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

April 29, 2019

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

RE: **Notice of Exempt Modification for Crown Site BU: 828054**
AT&T Site ID: 10035346
300 Governors Highway, South Windsor, CT 06074
Latitude: 41° 50′ 0.40″/ Longitude: -72° 36′ 11.00″

Dear Ms. Bachman:

AT&T currently maintains (9) antennas at the 156-foot level of the existing 165-foot monopole at 300 Governors Highway in South Windsor, Connecticut. The tower is owned by Crown Castle. The property is owned by Electron Technologies. AT&T now intends to replace (3) antennas, add (3) remote radio heads, and add (1) mount platform reinforcement kit.

The facility was approved by the Town of South Windsor Planning and Zoning Commission in Application No. 99-51P on September 21, 1999. This approval was given without conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Andrew Paterna, Mayor, Michele R. Lipe, Director of Planning for the Town of South Windsor, as well as the property owner, and Crown Castle is the tower owner.

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

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

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

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

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

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

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

Sincerely,

Anne Marie Zsamba, Esq.
Real Estate Specialist
3 Corporate Park Drive, Suite 101, Clifton Park, NY 12065
(201) 236-9224
annemarie.zsamba@crowncastle.com

Attachments:

Exhibit-A: Compound Plan and Elevation Depicting the Planned Changes
Exhibit-B: Structural Modification Report
Exhibit-C: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Andrew Paterna, Mayor
Town of South Windsor
1540 Sullivan Avenue
South Windsor, CT 06074
860-644-2511

Michele R. Lipe, AICP
Planning Director
1540 Sullivan Avenue
South Windsor, CT 06074
860-644-2511 ext. 329

Electron Technologies
300 Governors Highway
South Windsor, CT 06074

ORIGIN ID:GFLA (518) 373-3523
ANNE MARIE ZSAMBA
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 29APR19
ACTWGT: 4.50 LB
CAD: 104924194/INET4100

BILL SENDER

TO **MELANIE BACHMAN**
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE

NEW BRITAIN CT 06051
(860) 827-2951
INV:
PO:
REF: 1765.6680
DEPT:

565J1/D66C/23AD

J191019010701uv

FedEx Express

TUE - 30 APR 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7750 8589 1963**

EB BDLA

06051
BDL
CT-US

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Town of South Windsor
1540 SULLIVAN AVENUE • SOUTH WINDSOR, CT 06074-2786
AREA CODE 860/644-2511
FAX 860/644-3781

CERTIFIED MAIL

September 21, 1999

Mr. Thomas M. Gilligan
Omnipoint Communications, Inc.
100 Filley Street
Bloomfield, CT 06002

Dear Mr. Gilligan:

Re: Appl 99-51P, Omnipoint Communications Services

We are pleased to advise you that the Planning & Zoning Commission voted on September 14, 1999 to approve with modifications the above referenced application for a request for a Special Exception to Section XVI for the construction of a 175 ft. multi-carrier telecommunications monopole on property located at 300 Governor's Highway, I zone as shown on plans prepared by Arcnet, Job No. A 99506823A, dated 5/9/99, as revised. This approval is subject to the following modifications:

1. Prior to commencement of any site work, a meeting must be held with Town Staff.

2. No building permit will be issued until the final mylars have been filed in the Town Clerk's office.

3. An as-built plan is required prior to issuance of a Certificate of Occupancy per Section 8.1.10 of the Zoning Regulations.

4. All plans used in the field by the developer must bear the stamp and authorized signature of the Town of South Windsor.

5. Special Exception approval is granted for five years and must be renewed prior to September 14, 2004. The attached Special Exception form must be completed and filed in the Town Clerk's office. The special exception will take effect upon filing.

Black and white transparent mylars of Sheet S-1 with the above modifications, together with three blueprint copies of the entire set of plans must be submitted to this Commission within 30 days to be stamped and signed.

After the mylars have been signed by the Commission, they will be returned to you for filing in the Office of the Town Clerk. After filing these plans, a copy of the receipt must be submitted to the Planning Department.

Sincerely,

Sue W. Larsen /dlw

Sue W. Larsen, Chairperson
Planning and Zoning Commission

SL/dlw

Attachment

cc: Town Engineer
Chief Building Official
Assessor
Superintendent of Pollution Control
Fire Marshal

300 GOVERNORS HIGHWAY

Location	300 GOVERNORS HIGHWAY	**Mblu**	71/ 22/ / /
Acct#	36900300	**Owner**	ELECTRON TECHNOLOGIES CORPORATIO
Assessment	$776,200	**Appraisal**	$1,108,900
PID	2698	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$628,200	$480,700	$1,108,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$439,700	$336,500	$776,200

Owner of Record

Owner	ELECTRON TECHNOLOGIES CORPORATIO	**Sale Price**	$800,000
Co-Owner	P.O.BOX 316	**Certificate**	
Address	300 GOVERNORS HIGHWAY SOUTH WINDSOR, CT 06074	**Book & Page**	540/ 418
		Sale Date	10/04/1988
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
ELECTRON TECHNOLOGIES CORPORATIO	$800,000		540/ 418	00	10/04/1988

Building Information

Building 1 : Section 1

Year Built:	1965
Living Area:	22,060
Replacement Cost:	$960,272
Building Percent Good:	63
Replacement Cost Less Depreciation:	$605,000

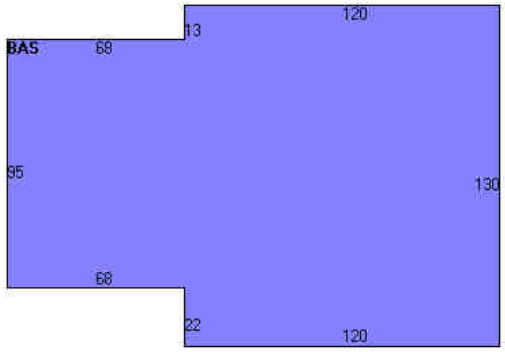
Building Attributes	
Field	**Description**
STYLE	Light Industrial

Building Photo

MODEL	Comm/Ind
Grade	C
Stories:	1.00
Occupancy	1
Exterior Wall 1	Precast Panel
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	Drywall
Interior Floor 1	Concrete
Interior Floor 2	Carpet
Heating Fuel	Gas
Heating Type	Forced Hot Air
% Central Air	100
Foundation	Poured Conc
Bldg Use	Industrial
Total Rooms	0
Total Bedrms	0
Total Fixtures	12
% Wet Sprinkler	
% Dry Sprinkler	
1st Floor Use	
Heat/AC	HEAT/AC SPLIT
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
% Finished	25
Class	C
Wall Height	16

(http://images.vgsi.com/photos/SouthWindsorCTPhotos//\00\00\19/99.JPG)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	22,060	22,060
		22,060	22,060

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	301
Description	Industrial
Zone	I
Neighborhood	C400
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	6.03
Frontage	0
Depth	0
Assessed Value	$336,500
Appraised Value	$480,700

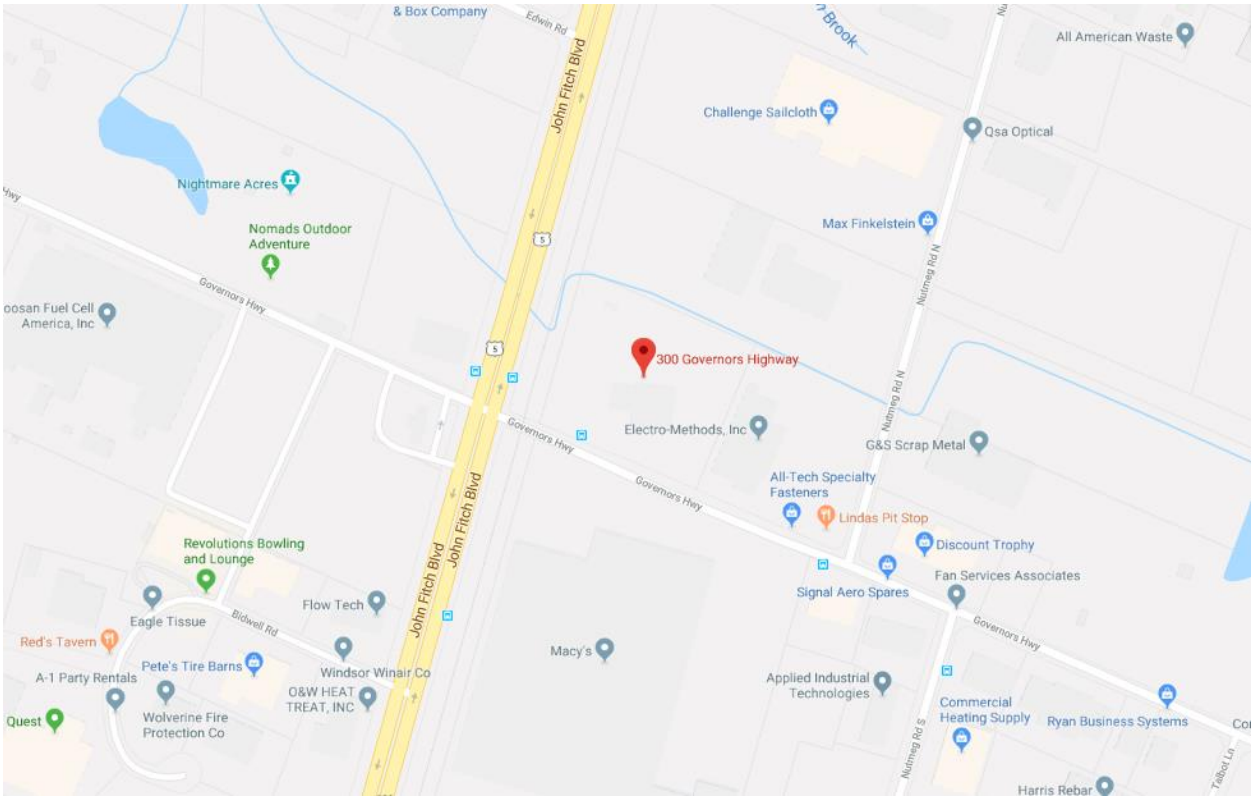
Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving	AS	Asphalt	36700 S.F.	$19,300	1
FN1	Fence			1080 L.F.	$3,200	1
LT1	Lights			1 UNITS	$700	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	$628,200	$480,700	$1,108,900
2017	$628,200	$480,700	$1,108,900
2016	$666,600	$318,700	$985,300

Assessment			
Valuation Year	Improvements	Land	Total
2017	$439,700	$336,500	$776,200
2017	$439,700	$336,500	$776,200
2016	$466,600	$223,100	$689,700


& Box Company
Edwin Rd
John Fitch Blvd
All American Waste
Challenge Sailcloth
Qsa Optical
Nightmare Acres
Nomads Outdoor Adventure
Max Finkelstein
Nutmeg Rd N
Governors Hwy
oosan Fuel Cell America, Inc
300 Governors Highway
Electro-Methods, Inc
G&S Scrap Metal
All-Tech Specialty Fasteners
Lindas Pit Stop
Discount Trophy
Revolutions Bowling and Lounge
Fan Services Associates
Signal Aero Spares
Eagle Tissue
Flow Tech
Bidwell Rd
Red's Tavern
Pete's Tire Barns
Windsor Winair Co
Macy's
A-1 Party Rentals
O&W HEAT TREAT, INC
Applied Industrial Technologies
Commercial Heating Supply
Ryan Business Systems
Quest
Wolverine Fire Protection Co
Nutmeg Rd S
Harris Rebar
Talbot Ln

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE REMOVED FROM EXISTING TOWER & ON GROUND:

- REMOVE (3) EXISTING ANTENNAS

- INSTALL (1) SITEPRO1 PKR-1245 PLATFORM REINFORCEMENT KIT.
- INSTALL (3) TMA MODEL # DTMABP7819VG12A
- INSTALL AT&T ANTENNA (HPA-65R-BUU-H8)-(TYP. OF 1 PER SECTOR, FOR 2 SECTORS).
- INSTALL AT&T ANTENNA (HPA-65R-BUU-H6)-(TYP. OF 1 PER SECTOR, FOR 1 SECTOR).
- INSTALL AT&T RRUS12/RRUSA2 (LTE PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).

ITEMS TO BE MOUNTED INSIDE EXISTING SHELTER:

- SWITCH BB TO 5216 AND ADD NEW XMU.
- ADD ARGUS MODULE.

FINAL CONFIGURATION:

- (9) ANTENNAS, (6) RRUS, (6) TMAS, (1) SURGE SUPPRESSOR, (12) COAX CABLES, (1) FIBER TRUNK CABLE & (2) DC TRUNK CABLES.

SITE ADDRESS:	300 GOVERNORS HIGHWAY SOUTH WINDSOR, CT 06074
LATITUDE (NAD 83):	N 41° 50' 00.40"
LONGITUDE (NAD 83):	W 72° 36' 11.00"
LANDLORD:	CROWN CASTLE INTERNATIONAL 500 W. CUMMINGS PARK, STE 3600 WOBURN, MA 01801
TYPE OF SITE:	MONOPOLE/INDOOR
TOWER HEIGHT:	165'
RAD CENTER:	158'
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
GN-1	GENERAL NOTES I
GN-2	GENERAL NOTES II
C-1	SITE PLAN
C-2	EQUIPMENT LAYOUT & PROPOSED TOWER ELEVATION
C-3	EXISTING & PROPOSED ANTENNA LAYOUT
C-4	EQUIPMENT DETAILS
RF-1	ANTENNA CHART & RF EQUIPMENT SCHEMATIC
G-1	GROUNDING DETAILS

CROWN CASTLE SITE ID #: 828054
CROWN CASTLE SITE NAME: SOUTH WINDSOR/RT 5

ENGINEERING

2018 CONNECTICUT STATE BUILDING CODE
2018 AMENDMENT WITH 2015 INTERNATIONAL BUILDING CODE
2009 ICC/ANSI A117.1 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES
2015 INTERNATIONAL MECHANICAL CODE
2015 INTERNATIONAL ENERGY CONSERVATION CODE
2017 NATIONAL ELECTRICAL CODE (NFPA 70 2017)
ANSI/TIA-222-G

at&t

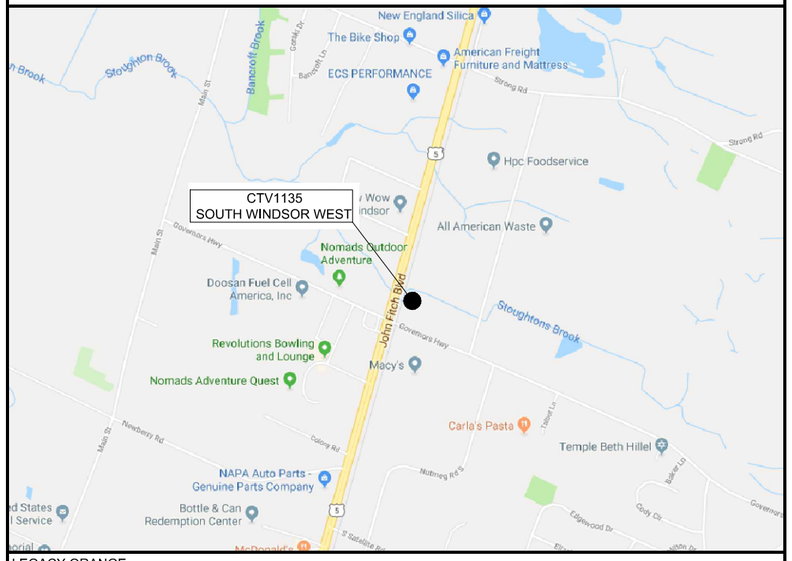
SITE NUMBER: CTV1135

FA LOCATION CODE: 10035346
SITE NAME: SOUTH WINDSOR WEST
CROWN SITE NAME: SOUTH WINDSOR/RT 5
PROJECT: LTE NEXT CARRIER/ LTE 2C
PACE ID: MRCTB018147
BU#: 828054

NOTE:

ALL CONSTRUCTION ACTIVITIES ARE TO BE COMPLETED DIRECTLY THROUGH CROWN. CONTRACTOR MUST HAVE CONSTRUCTION PO AND NTP FROM CROWN DIRECT IN ORDER TO BEGIN. PRE-APPROVAL TO ENTER THE PROPERTY MUST BE OBTAINED. FOR ACCESS AUTHORIZATION, PLEASE CONTACT CROWN.

VICINITY MAP



LEGACY ORANGE
TAKE INTERSTATE 91 TO EXIT 35 I 291 GO EAST RIGHT ON I 291 APPROX. 2 1 2 MILES ACROSS CT RIVER TO US HWY 5 EXIT GO NORTH LEFT ON RTE 5 AND FOLLOW APPROX. 2 MILES TO GOVERNOR S HWY STOP LIGHT FILENE S WAREHOUSE ON RIGHT TURN RIGHT ONTO GOVERNOR S HWY CROSS RAILROAD AND TURN LEFT INTO 1ST DRIVEWAY ELECTRON TECHNOLOGIES TOWER IS IN WOODS IMMEDIATELY BEHIND THE INDUSTRIAL BUILDING. GROUND LEVEL SHELTER

GENERAL NOTES

1. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

2. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

811

UNDERGROUND SERVICE ALERT

THE LAW REQUIRES
TWO WORKING DAYS NOTICE PRIOR TO
ANY EARTH MOVING ACTIVITIES.
DIAL 811

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
PROFESSIONAL ENGINEER

PROJECT NO:	ERCC0004
DRAWN BY:	JT
CHECKED BY:	CAT

SUBMITTALS

2	04/29/19	REVISED PER COMMENTS
1	03/21/19	ISSUED FOR CONSTRUCTION
0	03/11/19	ISSUED FOR PERMITTING

FA# 10035346
SITE# CTV1135
SOUTH WINDSOR WEST

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

TITLE SHEET

T-1

PART 1 - GENERAL

1.1 GENERAL CONDITIONS:

A. CONTRACTOR SHALL INSPECT THE EXISTING SITE CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS TO THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK, OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.

B. THE CONTRACTOR SHALL OBTAIN PERMITS, LICENSES, MAKE ALL DEPOSITS, AND PAY ALL FEES REQUIRED FOR THE CONSTRUCTION PERFORMANCE FOR THE WORK UNDER THIS SECTION.

C. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL SYSTEMS AND COMPONENTS COVERED UNDER THIS SECTION. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. DRAWING SHALL NOT BE SCALED TO DETERMINE DIMENSIONS.

1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES.

A. ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, AND ALL APPLICABLE LOCAL LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES. CONDUIT BENDS SHALL BE THE RADIUS BEND FOR THE TRADE SIZE OF CONDUIT IN COMPLIANCE WITH THE LATEST EDITIONS OF NEC.

1.3 REFERENCES:

A. THE PUBLICATIONS LISTED BELOW ARE PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE. THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION UNLESS OTHERWISE NOTED. EXCEPT AS MODIFIED BY THE REQUIREMENT SPECIFIED HEREIN OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISION OF THESE PUBLICATIONS.

1. ANSI/IEEE (AMERICAN NATIONAL STANDARDS INSTITUTE)
2. ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)
3. ICEA (INSULATED CABLE ENGINEERS ASSOCIATION)
4. NEMA (NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION)
5. NFPA (NATIONAL FIRE PROTECTION ASSOCIATION)
6. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
7. UL (UNDERWRITERS LABORATORIES INC.)
8. AT&T GROUNDING AND BONDING STANDARDS TP-76416

1.4 SCOPE OF WORK

A. WORK UNDER THIS SECTION SHALL CONSIST OF FURNISHING ALL LABOR, MATERIAL, AND ASSOCIATED SERVICES REQUIRED TO COMPLETE REQUIRED CONSTRUCTION AND BE OPERATIONAL.

B. ALL ELECTRICAL EQUIPMENT UNDER THIS CONTRACT SHALL BE PROPERLY TESTED, ADJUSTED, AND ALIGNED BY THE CONTRACTOR.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATING, DRAINING, TRENCHES, BACKFILLING, AND REMOVAL OF EXCESS DIRT.

D. THE CONTRACTOR SHALL FURNISH TO THE OWNER WITH CERTIFICATES OF A FINAL INSPECTION AND APPROVAL FROM THE INSPECTION AUTHORITIES HAVING JURISDICTION.

E. THE CONTRACTOR SHALL PREPARE A COMPLETE SET OF AS-BUILT DRAWINGS, DOCUMENT ALL WIRING EQUIPMENT CONDITIONS, AND CHANGES WHILE COMPLETING THIS CONTRACT. THE AS-BUILT DRAWINGS SHALL BE SUBMITTED AT COMPLETION OF THE PROJECT.

PART 2 - PRODUCTS

2.1 GENERAL:

A. ALL MATERIALS AND EQUIPMENT SHALL BE UL LISTED, NEW, AND FREE FROM DEFECTS.

B. ALL ITEMS OF MATERIALS AND EQUIPMENT SHALL BE ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION AS SUITABLE FOR THE USE INTENDED.

C. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

D. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 10,000 AIC MINIMUM. VERIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PER THE GOVERNING JURISDICTION.

2.2 MATERIALS AND EQUIPMENT:

A. CONDUIT:

1. RIGID METAL CONDUIT (RMC) SHALL BE HOT-DIPPED GALVANIZED INSIDE AND OUTSIDE INCLUDING ENDS AND THREADS AND ENAMELED OR LACQUERED INSIDE IN ADDITION TO GALVANIZING.
2. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE UL LISTED.
3. CONDUIT CLAMPS, STRAPS AND SUPPORTS SHALL BE STEEL OR MALLEABLE IRON. ALL FITTINGS SHALL BE COMPRESSION AND CONCRETE TIGHT TYPE. GROUNDING BUSHINGS WITH INSULATED THROATS SHALL BE INSTALLED ON ALL CONDUIT TERMINATIONS.
4. NONMETALLIC CONDUIT AND FITTINGS SHALL BE SCHEDULE 40 PVC. INSTALL USING SOLVENT-CEMENT-TYPE JOINTS AS RECOMMENDED BY THE MANUFACTURER.

B. CONDUCTORS AND CABLE:

1. CONDUCTORS AND CABLE SHALL BE FLAME-RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC, SINGLE CONDUCTOR, COPPER, TYPE THHN/THWN-2, 600 VOLT, SIZE AS INDICATED, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR USED.
2. #10 AWG AND SMALLER CONDUCTOR SHALL BE SOLID OR STRANDED AND #8 AWG AND LARGER CONDUCTORS SHALL BE STRANDED.
3. SOLDERLESS, COMPRESSION-TYPE CONNECTORS SHALL BE USED FOR TERMINATION OF ALL STRANDED CONDUCTORS.
4. STRAIN-RELIEF SUPPORTS GRIPS SHALL BE HUBBELL KELLEMS OR APPROVED EQUAL. CABLES SHALL BE SUPPORTED IN ACCORDANCE WITH THE NEC AND CABLE MANUFACTURER'S RECOMMENDATIONS.
5. ALL CONDUCTORS SHALL BE TAGGED AT BOTH ENDS OF THE CONDUCTOR, AT ALL PULL BOXES, J-BOXES, EQUIPMENT AND CABINETS AND SHALL BE IDENTIFIED WITH APPROVED PLASTIC TAGS (ACTION CRAFT, BRADY, OR APPROVED EQUAL).

C. DISCONNECT SWITCHES:

1. DISCONNECT SWITCHES SHALL BE HEAVY DUTY, DEAD-FRONT, QUICK-MAKE, QUICK-BREAK, EXTERNALLY OPERABLE, HANDLE LOCKABLE AND INTERLOCK WITH COVER IN CLOSED POSITION, RATING AS INDICATED, UL LABELED FURNISHED IN NEMA 3R ENCLOSURE, SQUARE-D OR ENGINEER APPROVED EQUAL.

D. CHEMICAL ELECTROLYTIC GROUNDING SYSTEM:

1. INSTALL CHEMICAL GROUNDING AS REQUIRED. THE SYSTEM SHALL BE ELECTROLYTIC MAINTENANCE FREE ELECTRODE CONSISTING OF RODS WITH A MINIMUM #2 AWG CU EXOTHERMICALLY WELDED PIGTAIL, PROTECTIVE BOXES, AND BACKFILL MATERIAL. MANUFACTURER SHALL BE LYNCOLE XIT GROUNDING ROD TYPES K2-(*)CS OR K2L-(*)CS (*) LENGTH AS REQUIRED.
2. GROUND ACCESS BOX SHALL BE A POLYPLASTIC BOX FOR NON-TRAFFIC APPLICATIONS, INCLUDING BOLT DOWN FLUSH COVER WITH "BREATHER" HOLES, XIT MODEL #XB-22. ALL DISCONNECT SWITCHES AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS ID NUMBERING, AND THE ELECTRICAL POWER SOURCE.
3. BACKFILL MATERIAL SHALL BE LYNCONITE AND LYNCOLE GROUNDING GRAVEL.

E. SYSTEM GROUNDING:

1. ALL GROUNDING COMPONENTS SHALL BE TINNED AND GROUNDING CONDUCTOR SHALL BE #2 AWG BARE, SOLID, TINNED, COPPER. ABOVE GRADE GROUNDING CONDUCTORS SHALL BE INSULATED WHERE NOTED.
2. GROUNDING BUSES SHALL BE BARE, TINNED, ANNEALED COPPER BARS OF RECTANGULAR CROSS SECTION. STANDARD BUS BARS MGB, SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THEY SHALL NOT BE FABRICATED OR MODIFIED IN THE FIELD. ALL GROUNDING BUSES SHALL BE IDENTIFIED WITH MINIMUM 3/4" LETTERS BY WAY OF STENCILING OR DESIGNATION PLATE.
3. CONNECTORS SHALL BE HIGH-CONDUCTIVITY, HEAVY DUTY, LISTED AND LABELED AS GROUNDING CONNECTORS FOR THE MATERIALS USED. USE TWO-HOLE COMPRESSION LUGS WITH HEAT SHRINK FOR MECHANICAL CONNECTIONS. INTERIOR CONNECTIONS USE TWO-HOLE COMPRESSION LUGS WITH INSPECTION WINDOW AND CLEAR HEAT SHRINK.
4. EXOTHERMIC WELDED CONNECTIONS SHALL BE PROVIDED IN KIT FORM AND SELECTED FOR THE SPECIFIC TYPES, SIZES, AND COMBINATIONS OF CONDUCTORS AND OTHER ITEMS TO BE CONNECTED.
5. GROUND RODS SHALL BE COPPER-CLAD STEEL WITH HIGH-STRENGTH STEEL CORE AND ELECTROLYTIC-GRADE COPPER OUTER SHEATH, MOLTEN WELDED TO CORE, 5/8"x10'-0". ALL GROUNDING RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES.
6. INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS IN COMPLIANCE WITH THE AT&T SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULLBOXES, DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.

F. OTHER MATERIALS:

6. THE CONTRACTOR SHALL PROVIDE OTHER MATERIALS, THOUGH NOT SPECIFICALLY DESCRIBED, WHICH ARE REQUIRED FOR A COMPLETELY OPERATIONAL SYSTEM AND PROPER INSTALLATION OF THE WORK.
7. PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.

G. PANELS AND LOAD CENTERS:

1. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

PART 3 - EXECUTION

3.1 GENERAL:

A. ALL MATERIAL AND EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. EQUIPMENT SHALL BE TIGHTLY COVERED AND PROTECTED AGAINST DIRT OR WATER, AND AGAINST CHEMICAL OR MECHANICAL INJURY DURING INSTALLATION AND CONSTRUCTION PERIODS.

3.2 LABOR AND WORKMANSHIP:

A. ALL LABOR FOR THE INSTALLATION OF MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL SYSTEM SHALL BE INSTALLED BY EXPERIENCED WIREMEN, IN A NEAT AND WORKMAN-LIKE MANNER.

B. ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED, ALIGNED AND TESTED BY THE CONTRACTOR AS REQUIRED TO PRODUCE THE INTENDED PERFORMANCE.

C. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL EXPOSED EQUIPMENT, REMOVE ALL LABELS AND ANY DEBRIS, CRATING OR CARTONS AND LEAVE THE INSTALLATION FINISHED AND READY FOR OPERATION.

3.3 COORDINATION:

A. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRICAL ITEMS WITH THE OWNER-FURNISHED EQUIPMENT DELIVERY SCHEDULE TO PREVENT UNNECESSARY DELAYS IN THE TOTAL WORK.

3.4 INSTALLATION:

A. CONDUIT:

1. ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT AS SPECIFIED. NO CONDUIT OR TUBING OF LESS THAN 3/4 INCH TRADE SIZE.
2. PROVIDE RIGID PVC SCHEDULE 80 CONDUITS FOR ALL RISERS, RMC OTHERWISE NOTED. EMT MAY BE INSTALLED FOR EXTERIOR CONDUITS WHERE NOT SUBJECT TO PHYSICAL DAMAGE.
3. INSTALL SCHEDULE 40 PVC CONDUIT WITH A MINIMUM COVER OF 24" UNDER ROADWAYS, PARKING LOTS, STREETS, AND ALLEYS. CONDUIT SHALL HAVE A MINIMUM COVER OF 18" IN ALL OTHER NON-TRAFFIC APPLICATIONS (REFER TO 2017 NEC, TABLE 300.5).
4. USE GALVANIZED FLEXIBLE STEEL CONDUIT WHERE DIRECT CONNECTION TO EQUIPMENT WITH MOVEMENT, VIBRATION, OR FOR EASE OF MAINTENANCE. USE LIQUID TIGHT, FLEXIBLE METAL CONDUIT FOR OUTDOOR APPLICATIONS. INSTALL GALVANIZED FLEXIBLE STEEL CONDUIT AT ALL POINTS OF CONNECTION TO EQUIPMENT MOUNTED ON SUPPORT TO ALLOW FOR EXPANSION AND CONTRACTION.
5. A RUN OF CONDUIT BETWEEN BOXES OR EQUIPMENT SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF THREE QUARTER-BENDS. CONDUIT BEND SHALL BE MADE WITH THE UL LISTED BENDER OR FACTORY 90 DEGREE ELBOWS MAY BE USED.
6. FIELD FABRICATED CONDUITS SHALL BE CUT SQUARE WITH A CONDUIT CUTTING TOOL AND REAMED TO PROVIDE A SMOOTH INSIDE SURFACE.
7. PROVIDE INSULATED GROUNDING BUSHING FOR ALL CONDUITS.
8. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL CONDUITS DURING CONSTRUCTION. TEMPORARY OPENINGS IN THE CONDUIT SYSTEM SHALL BE PLUGGED OR CAPPED TO PREVENT ENTRANCE OF MOISTURE OR FOREIGN MATTER. CONTRACTOR SHALL REPLACE ANY CONDUITS CONTAINING FOREIGN MATERIALS THAT CANNOT BE REMOVED.
9. ALL CONDUITS SHALL BE SWABBED CLEAN BY PULLING AN APPROPRIATE SIZE MANDREL THROUGH THE CONDUIT BEFORE INSTALLATION OF CONDUCTORS OR CABLES. CONDUIT SHALL BE FREE OF DIRT AND DEBRIS.
10. INSTALL PULL STRINGS IN ALL CLEAN EMPTY CONDUITS. IDENTIFY PULL STRINGS AT EACH END.
11. INSTALL 2" HIGHLY VISIBLE AND DETECTABLE TAPE 12" ABOVE ALL UNDERGROUND CONDUITS AND CONDUCTORS.
12. CONDUITS SHALL BE INSTALLED IN SUCH A MANNER AS TO INSURE AGAINST COLLECTION OF TRAPPED CONDENSATION.
13. PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS TO ALLOW FOR RACEWAYS AND CABLES TO BE ROUTED THROUGH THE BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE EFFECTIVELY SEALED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FIRE STOPS AT FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE, AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.

B. CONDUCTORS AND CABLE:

1. ALL POWER WIRING SHALL BE COLOR CODED AS FOLLOWS:

DESCRIPTION	208/240/120 VOLT SYSTEMS
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE
NEUTRAL	WHITE
GROUNDING	GREEN

2. SPLICES SHALL BE MADE ONLY AT OUTLETS, JUNCTION BOXES, OR ACCESSIBLE RACEWAY CONDUITS APPROVED FOR THIS PURPOSE.
3. PULLING LUBRICANTS SHALL BE UL APPROVED. CONTRACTOR SHALL USE NYLON OR HEMP ROPE FOR PULLING CONDUCTOR OR CABLES INTO THE CONDUIT.
4. CABLES SHALL BE NEATLY TRAINED, WITHOUT INTERLACING, AND BE OF SUFFICIENT LENGTH IN ALL BOXES & EQUIPMENT TO PERMIT MAKING A NEAT ARRANGEMENT. CABLES SHALL BE SECURED IN A MANNER TO AVOID TENSION ON CONDUCTORS OR TERMINALS. CONDUCTORS SHALL BE PROTECTED FROM MECHANICAL INJURY AND MOISTURE. SHARP BENDS OVER CONDUIT BUSHINGS IS PROHIBITED. DAMAGED CABLES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

C. DISCONNECT SWITCHES:

1. INSTALL DISCONNECT SWITCHES LEVEL AND PLUMB. CONNECT TO WIRING SYSTEM AND GROUNDING SYSTEM AS INDICATED.

D. GROUNDING:

1. ALL METALLIC PARTS OF ELECTRICAL EQUIPMENT WHICH DO NOT CARRY CURRENT SHALL BE GROUNDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING MANUFACTURER, AT&T GROUNDING AND BONDING STANDARDS TP-76416, ND-00135, AND THE NATIONAL ELECTRICAL CODE.
2. PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEM INDICATED WITH ASSEMBLY OF MATERIALS, INCLUDING GROUNDING ELECTRODES, BONDING JUMPERS AND ADDITIONAL ACCESSORIES AS REQUIRED FOR A COMPLETE INSTALLATION.
3. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUNDING CONDUCTORS SHALL NOT BE LOOPED OR SHARPLY BENT. ROUTE GROUNDING CONNECTIONS AND CONDUCTORS TO GROUND IN THE SHORTEST AND STRAIGHTEST PATHS POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES.
4. BUILDINGS AND/OR NEW TOWERS GREATER THAN 75 FEET IN HEIGHT AND WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 AWG COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). SEE STANDARD 6.3.2.2.
5. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUES SPECIFIED IN UL TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
6. CONTRACTOR SHALL VERIFY THE LOCATIONS OF GROUNDING TIE-IN-POINTS TO THE EXISTING GROUNDING SYSTEM. ALL UNDERGROUND GROUNDING CONNECTIONS SHALL BE MADE BY THE EXOTHERMIC WELD PROCESS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
7. ALL GROUNDING CONNECTIONS SHALL BE INSPECTED FOR TIGHTNESS. EXOTHERMIC WELDED CONNECTIONS SHALL BE APPROVED BY THE INSPECTOR HAVING JURISDICTION BEFORE BEING PERMANENTLY CONCEALED.
8. APPLY CORROSION-RESISTANT FINISH TO FIELD CONNECTIONS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATINGS HAVE BEEN DESTROYED. USE KOPR-SHIELD ANTI-OXIDATION COMPOUND ON ALL COMPRESSION GROUNDING CONNECTIONS.
9. A SEPARATE, CONTINUOUS, INSULATED EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FEEDER AND BRANCH CIRCUITS.
10. BOND ALL INSULATED GROUNDING BUSHINGS WITH A BARE #6 AWG GROUNDING CONDUCTOR TO A GROUND BUS.
11. DIRECT BURIED GROUNDING CONDUCTORS SHALL BE INSTALLED AT A NOMINAL DEPTH OF 36" MINIMUM BELOW GRADE, OR 6" BELOW THE FROST LINE, USE THE GREATER OF THE TWO DISTANCES.
12. ALL GROUNDING CONDUCTORS EMBEDDED IN OR PENETRATING CONCRETE SHALL BE INSTALLED IN SCHEDULE 40 PVC CONDUIT.
13. THE INSTALLATION OF CHEMICAL ELECTROLYTIC GROUNDING SYSTEM IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. REMOVE SEALING TAPE FROM LEACHING AND BREATHER HOLES. INSTALL PROTECTIVE BOX FLUSH WITH GRADE.
14. DRIVE GROUND RODS UNTIL TOPS ARE A MINIMUM DISTANCE OF 36" DEPTH OR 6" BELOW FROST LINE, USING THE GREATER OF THE TWO DISTANCES.
15. IF COAX ON THE ICE BRIDGE IS MORE THAN 6 FT. FROM THE GROUNDING BAR AT THE BASE OF THE TOWER, A SECOND GROUNDING BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE, TO GROUND THE COAX CABLE GROUNDING KITS AND IN-LINE ARRESTORS.
16. CONTRACTOR SHALL REPAIR, AND/OR REPLACE, EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.

3.5 ACCEPTANCE TESTING:

A. CERTIFIED PERSONNEL USING CERTIFIED EQUIPMENT SHALL PERFORM REQUIRED TESTS AND SUBMIT WRITTEN TEST REPORTS UPON COMPLETION.

B. WHEN MATERIAL AND/OR WORKMANSHIP IS FOUND NOT TO COMPLY WITH THE SPECIFIED REQUIREMENTS, THE NON-COMPLYING ITEMS SHALL BE REMOVED FROM THE PROJECT SITE AND REPLACED WITH ITEMS COMPLYING WITH THE SPECIFIED REQUIREMENTS PROMPTLY AFTER RECEIPT OF NOTICE FOR NON-COMPLIANCE.

C. TEST PROCEDURES:

1. ALL FEEDERS SHALL HAVE INSULATION TESTED AFTER INSTALLATION, BEFORE CONNECTION TO DEVICES. THE CONDUCTORS SHALL TEST FREE FROM SHORT CIRCUITS AND GROUNDS. TESTING SHALL BE FOR ONE MINUTE USING 1000V DC. PROVIDE WRITTEN DOCUMENTATION FOR ALL TEST RESULTS.
2. PRIOR TO ENERGIZING CIRCUITRY, TEST WIRING DEVICES FOR ELECTRICAL CONTINUITY AND PROPER POLARITY CONNECTIONS.
3. MEASURE AND RECORD VOLTAGES BETWEEN PHASES AND BETWEEN PHASE CONDUCTORS AND NEUTRALS. SUBMIT A REPORT OF MAXIMUM AND MINIMUM VOLTAGES.
4. PERFORM GROUNDING TEST TO MEASURE GROUNDING RESISTANCE OF GROUNDING SYSTEM USING THE IEEE STANDARD 3-POINT "FALL-OF-POTENTIAL" METHOD. PROVIDE PLOTTED TEST VALUES AND LOCATION SKETCH. NOTIFY THE ENGINEER IMMEDIATELY IF MEASURED VALUE IS OVER 5 OHMS.

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
PROFESSIONAL ENGINEER

PROJECT NO: ERCC0004

DRAWN BY: JT

CHECKED BY: CAT

SUBMITTALS

2	04/29/19	REVISED PER COMMENTS
1	03/21/19	ISSUED FOR CONSTRUCTION
0	03/11/19	ISSUED FOR PERMITTING

FA# 10035346
SITE# CTV1135
SOUTH WINDSOR WEST

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

GENERAL NOTES I

GN-1

ANTENNA MOUNTING

1. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
2. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
3. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
4. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
5. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
6. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
7. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50-OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.
8. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS. REFER TO ND-00246.
9. JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.
10. CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.
11. TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.

TORQUE REQUIREMENTS

12. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
13. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
    A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
    B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.
    C. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
14. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
15. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
16. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24,4 - 29,8 NM).
17. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1,7 - 2,3 NM).

FIBER & POWER CABLE MOUNTING

18. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.
19. THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.
20. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

21. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
22. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
23. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION.
24. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'-0".
25. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" O.C.
26. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
27. CONTRACTOR SHALL WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE. WEATHERPROOFING SHALL BE COMPLETED IN STRICT ACCORDANCE WITH AT&T STANDARDS.
28. CONTRACTOR SHALL GROUND ALL EQUIPMENT, INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES, AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED WIREMEN IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATION AND RECOMMENDATION.
29. CONTRACTOR SHALL PROVIDE STRAIN-RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES, COAX CABLES, AND RET CONTROL CABLES. CABLE STRAIN-RELIEFS AND CABLE SUPPORTS SHALL BE APPROVED FOR THE PURPOSE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
30. CONTRACTOR TO VERIFY THAT EXISTING COAX HANGERS ARE STACKABLE SNAP IN HANGERS. IF EXISTING HANGERS ARE NOT STACKABLE SNAP IN HANGERS THE CONTRACTOR SHALL REPLACE EXISTING HANGERS WITH NEW SNAP IN HANGERS IF APPLICABLE.

GENERAL CABLE AND EQUIPMENT NOTES

31. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
32. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.
33. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
34. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
35. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
    A. TEMPERATURE SHALL BE ABOVE 50° F.
    B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
    C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
    D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
36. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
    A. GROUNDING AT THE ANTENNA LEVEL.
    B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
    C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
    D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
    E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
37. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND
38. BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.
39. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANTENNA AND THE COAX CONFIGURATION IS THE CORRECT MAKE AND MODELS, PRIOR TO INSTALLATION.
40. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.
41. ANTENNA CONTRACTOR SHALL FURNISH AND INSTALL A 12'-0" T-BOOM SECTOR ANTENNA MOUNT, IF APPLICABLE, INCLUDING ALL HARDWARE.

GROUNDING NOTES

42. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
43. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND AT&T GROUNDING AND BONDING REQUIREMENTS (ATT-TP-76416) AND MANUFACTURER'S SPECIFICATIONS.
44. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.
45. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUNDING KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
    A. GROUNDING AT THE ANTENNA LEVEL.
    B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200', ADDITIONAL CABLE GROUNDING REQUIRED.
    C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
    D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
    E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
46. ALL PROPOSED GROUNDING BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUNDING BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUNDING BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
EXOTHERMIC WITH INSPECTION SLEEVE
GROUNDING BAR
SHELTER GROUNDING BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
SINGLE POLE SWITCH
DUPLEX RECEPTACLE
DUPLEX GFCI RECEPTACLE
FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8
EXISTING SMOKE DETECTION (DC)
EXISTING EMERGENCY LIGHTING (DC)
SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED-1-25A400/51K-SR4-120-PE-DDBTXD
EXISTING UTILITY POLE
EXISTING CHAIN LINK FENCE
EXISTING WOOD/WROUGHT IRON FENCE
EXISTING WALL STRUCTURE
LEASE AREA
PROPERTY LINE (PL)
SETBACKS
PROPOSED/EXISTING ICE BRIDGE
PROPOSED/EXISTING CABLE TRAY
EXISTING WATER LINE
PROPOSED UNDERGROUND POWER
PROPOSED UNDERGROUND TELCO
PROPOSED OVERHEAD POWER
PROPOSED OVERHEAD TELCO
PROPOSED OVERHEAD UTILITIES
PROPOSED ABOVE GROUND POWER
PROPOSED ABOVE GROUND TELCO

CALLOUT REFERENCE
REVISION REFERENCE
WORKPOINT
SECTION REFERENCE
DETAIL REFERENCE
ELEVATION REFERENCE

THESE DOCUMENTS ARE IN COMPLIANCE WITH AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FOLLOW CODES AND STANDARDS AS APPLICABLE: LATEST STATE BUILDING CODE. 2017 NATIONAL ELECTRIC CODE OR LATEST EDITION.

AB	ANCHOR BOLT	COL	COLUMN	FIN	FINISH(ED)	MAS	MASONRY	QTY	QUANTITY	TOF	TOP OF FOUNDATION
ABV	ABOVE	COMM	COMMON	FLR	FLOOR	MAX	MAXIMUM	RAD	RADIUS	TOP	TOP OF PLATE (PARAPET)
AC	ALTERNATING CURRENT	CONC	CONCRETE	FDN	FOUNDATION	MB	MACHINE BOLT	RECT	RECTIFIER	TOS	TOP OF STEEL
ADDL	ADDITIONAL	CONSTR	CONSTRUCTION	FOC	FACE OF CONCRETE	MECH	MECHANICAL	REF	REFERENCE	TOW	TOP OF WALL
AFF	ABOVE FINISHED FLOOR	DBL	DOUBLE	FOM	FACE OF MASONRY	MFR	MANUFACTURER	REINF	REINFORCEMENT	TVSS	TRANSIENT VOLTAGE SUPPRESSION
AFG	ABOVE FINISHED GRADE	DC	DIRECT CURRENT	FOS	FACE OF STUD	MGB	MASTER GROUND BAR	REQ'D	REQUIRED		SYSTEM
AIC	AMPERAGE INTERRUPTION CAPACITY	DEPT	DEPARTMENT	FOW	FACE OF WALL	MIN	MINIMUM	RET	REMOTE ELECTRIC TILT	TYP	TYPICAL
ALUM	ALUMINUM	DF	DOUGLAS FIR	FS	FINISH SURFACE	MISC	MISCELLANEOUS	RMC	RIGID METALLIC CONDUIT	UG	UNDERGROUND
ALT	ALTERNATE	DIA	DIAMETER	FT	FOOT	MTL	METAL	RRH	REMOTE RADIO HEAD	UL	UNDERWRITERS LABORATORY
ANT	ANTENNA	DIAG	DIAGONAL	FTG	FOOTING	MTS	MANUAL TRANSFER SWITCH	RRU	REMOTE RADIO UNIT	UNO	UNLESS NOTED OTHERWISE
APPROX	APPROXIMATE	DIM	DIMENSION	GA	GAUGE	MW	MICROWAVE	RWY	RACEWAY	UMTS	UNIVERSAL MOBILE
ARCH	ARCHITECTURAL	DWG	DRAWING	GEN	GENERATOR	(N)	NEW	SCH	SCHEDULE		TELECOMMUNICATIONS SYSTEM
ATS	AUTOMATIC TRANSFER SWITCH	DWL	DOWEL	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	NEC	NATIONAL ELECTRIC CODE	SHT	SHEET	UPS	UNINTERRUPTIBLE POWER SYSTEM
AWG	AMERICAN WIRE GAUGE	(E)	EXISTING	GLB	GLUE LAMINATED BEAM	NO./(#)	NUMBER	SIAD	SMART INTEGRATED DEVICE		(DC POWER PLANT)
BATT	BATTERY	EA	EACH	GLV	GALVANIZED	NTS	NOT TO SCALE	SIM	SIMILAR	VIF	VERIFIED IN FIELD
BLDG	BUILDING	EC	ELECTRICAL CONDUCTOR	GPS	GLOBAL POSITIONING SYSTEM	OC	ON CENTER	SPEC	SPECIFICATION	W	WIDE
BLK	BLOCK	EL	ELEVATION	GND	GROUND	OPNG	OPENING	SQ	SQUARE	W/	WITH
BLKG	BLOCKING	ELEC	ELECTRICAL	GSM	GLOBAL SYSTEM FOR MOBILE	(P)	PROPOSED	SS	STAINLESS STEEL	WD	WOOD
BM	BEAM	EMT	ELECTRICAL METALLIC TUBING	HDR	HEADER	P/C	PRECAST CONCRETE	STD	STANDARD	W.P.	WORK POINT
BTC	BARE TINNED COPPER CONDUCTOR	ENG	ENGINEER	HGR	HANGER	PCS	PERSONAL COMMUNICATION SERVICES	STL	STEEL	WP	WEATHERPROOF
BOF	BOTTOM OF FOOTING	EQ	EQUAL	HVAC	HEAT/VENTILATION/AIR CONDITIONING	PCU	PRIMARY CONTROL UNIT	STRUCT	STRUCTURAL	WT	WEIGHT
CAB	CABINET	EXP	EXPANSION	HT	HEIGHT	PRC	PRIMARY RADIO CABINET	TEMP	TEMPORARY		
CANT	CANTILEVERED	EXT	EXTERIOR	IGR	INTERIOR GROUND RING	PP	POLARIZING PRESERVING	THK	THICKNESS		
CEC	CALIFORNIA ELECTRIC CODE	FAB	FABRICATION	IN	INCH	PSF	POUNDS PER SQUARE FOOT	TMA	TOWER MOUNTED AMPLIFIER		
CHG	CHARGING	FF	FINISH FLOOR	INT	INTERIOR	PSI	POUNDS PER SQUARE INCH	TN	TOE NAIL		
CLG	CEILING	FG	FINISH GRADE	LB(S)	POUND(S)	PT	PRESSURE TREATED	TOA	TOP OF ANTENNA		
CLR	CLEAR	FIF	FACILITY INTERFACE FRAME	LF	LINEAR FEET	PWR	POWER CABINET	TOC	TOP OF CURB		

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CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
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JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
PROFESSIONAL ENGINEER

PROJECT NO: ERCC0004

DRAWN BY: JT

CHECKED BY: CAT

SUBMITTALS

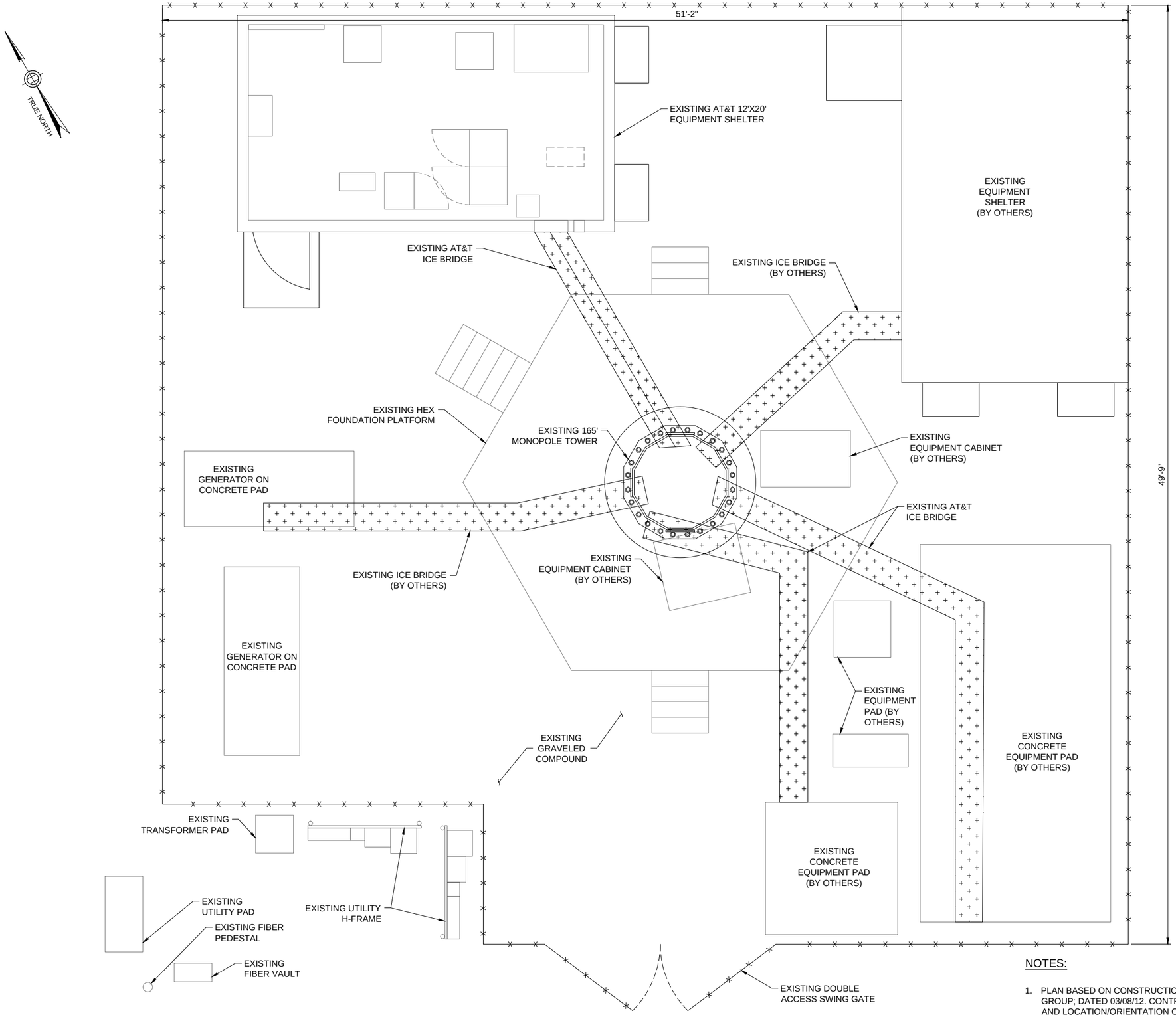
2	04/29/19	REVISED PER COMMENTS
1	03/21/19	ISSUED FOR CONSTRUCTION
0	03/11/19	ISSUED FOR PERMITTING

FA# 10035346
SITE# CTV1135
SOUTH WINDSOR WEST

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

GENERAL NOTES II

GN-2



NOTES:

1. PLAN BASED ON CONSTRUCTION DRAWINGS ISSUED BY HUDSON DESIGN GROUP; DATED 03/08/12. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.

1 SITE PLAN

SCALE: 3/8" = 1'-0"

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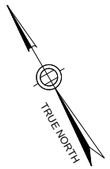
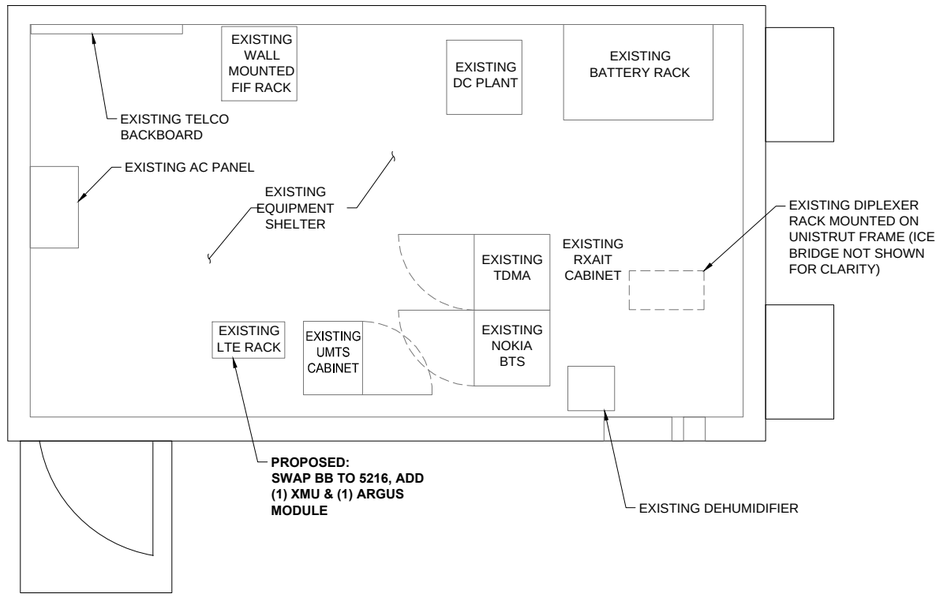
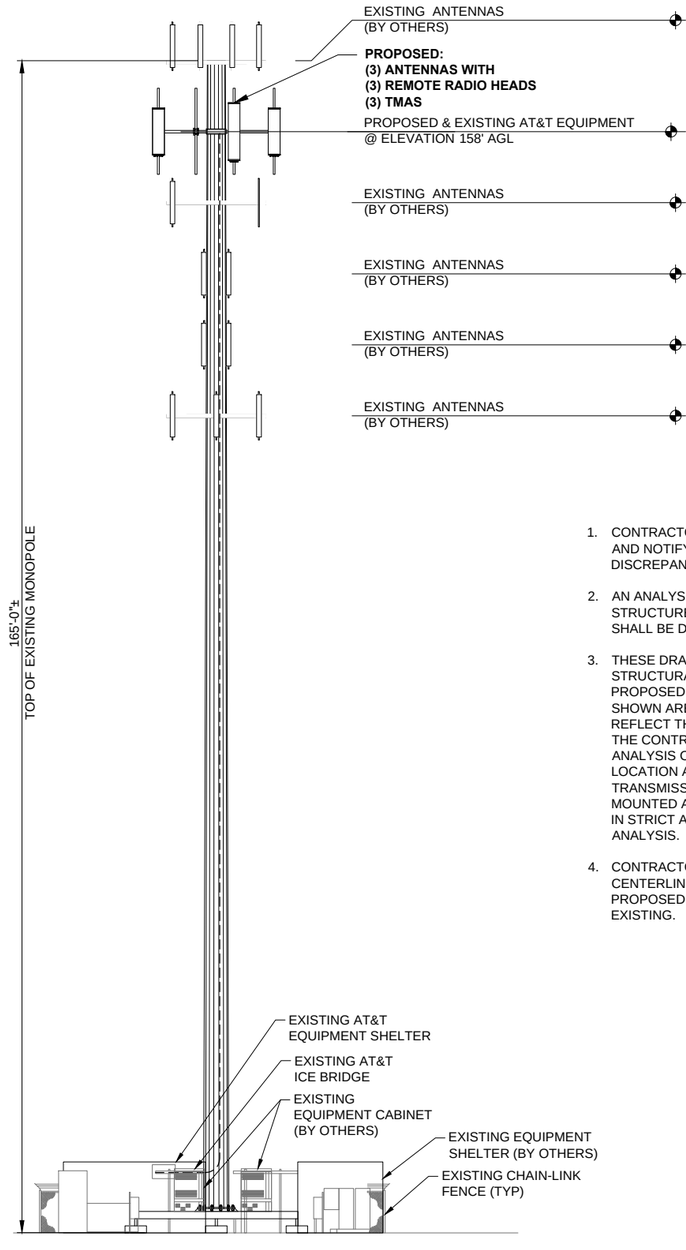
SITE PLAN

C-1





1 EQUIPMENT LAYOUT SCALE: 1/2" = 1'-0"



2 TOWER ELEVATION SCALE: 3/32" = 1'-0"

1. CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.
2. AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.
3. THESE DRAWINGS ARE NOT INTENDED TO REFLECT THE STRUCTURAL INTEGRITY OF THE TOWER. THE PROPOSED ANTENNAS AND TRANSMISSION LINES SHOWN ARE REPRESENTATIVE IN NATURE AND DO NOT REFLECT THE ACTUAL CONFIGURATIONS REQUIRED. THE CONTRACTOR SHALL REFER TO THE STRUCTURAL ANALYSIS OF THIS TOWER SITE FOR THE APPROVED LOCATION AND CONFIGURATION OF ALL ANTENNAS AND TRANSMISSION LINES. ALL ANTENNAS MUST BE MOUNTED AND THE TRANSMISSION LINES CONFIGURED IN STRICT ACCORDANCE WITH THE STRUCTURAL ANALYSIS.
4. CONTRACTOR SHALL VERIFY THE EXISTING ANTENNA CENTERLINE HEIGHT ABOVE GROUND LEVEL. PROPOSED ANTENNA CENTERLINE SHALL MATCH EXISTING.

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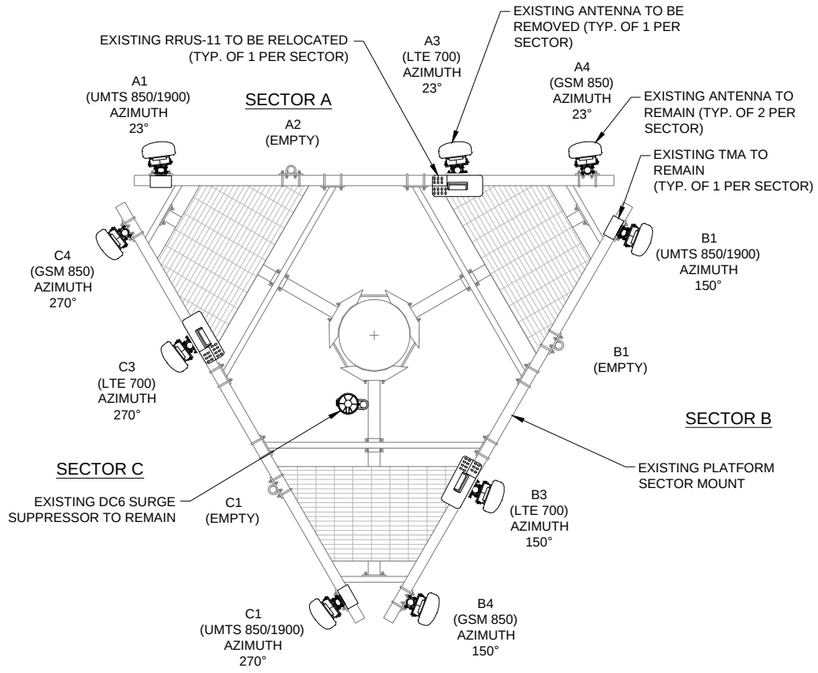
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EQUIPMENT LAYOUT & PROPOSED TOWER ELEVATION

C-2



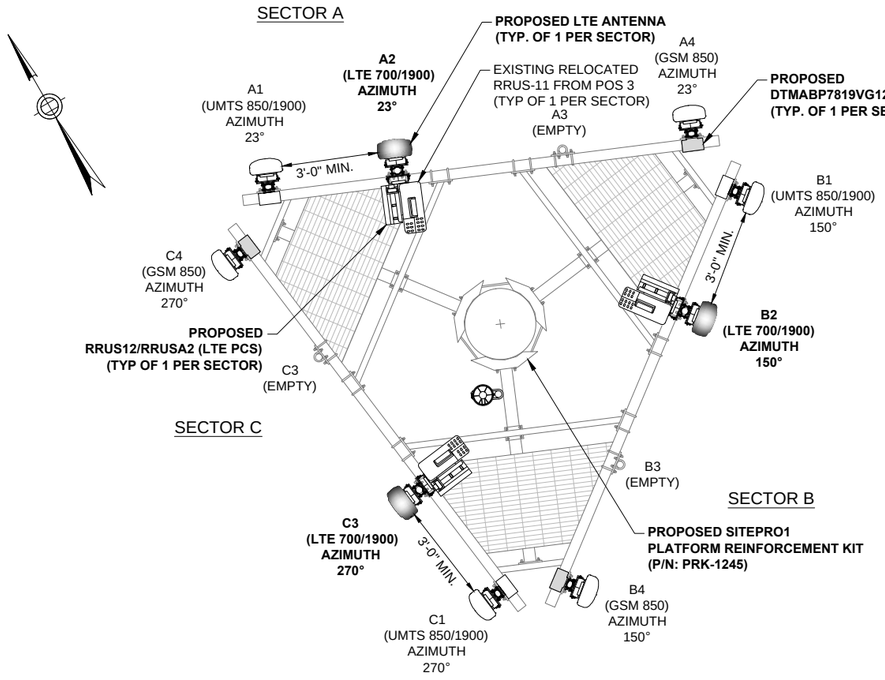
ELEVATION 158'

1 EXISTING ANTENNA LAYOUT

SCALE: N.T.S.

STRUCTURAL NOTE:

1. CONTRACTOR SHALL REFER TO THE TOWER EQUIPMENT INSTALLATION MOUNT MODIFICATION REPORT; SITE NUMBER: CTV1135; SITE NAME: SOUTH WINDSOR WEST; FA LOCATION:10035346; CROWN BU NUMER: 828054; CROWN SITE NAME: SOUTH WINDSOR/RT 5; CROWN ORDER NUMBER: CROWN ORDER; ISSUED BY INFINIGY ENGINEERING, PLLC. ON 02/11/19. THE MOUNT MODIFICATIONS MUST BE PERFORMED PRIOR TO THE INSTALLATION OF THE EQUIPMENT SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING MEMBERS AND HARDWARE ARE INSTALLED PROPERLY AS DESCRIBED IN THIS REPORT.
2. CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.
3. CONTRACTOR SHALL NOT EXCEED MOUNTING MORE THAN (2) RRHS PER ANTENNA MOUNTING PIPE - RELOCATE TO AN ADJACENT ANTENNA MOUNTING PIPE AS NEEDED.
4. CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.



ELEVATION 158'

NOTES:

1. THE CONTRACTOR SHALL ROTATE EACH SECTOR MOUNT 7° TO THE WEST TO ACCOMMODATE THE AZIMUTH OF THE PROPOSED LTE ANTENNAS.

2 PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.

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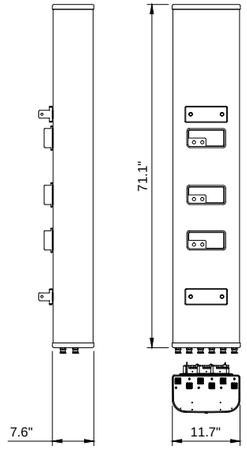
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING & PROPOSED
ANTENNA LAYOUT

C-3

MANUFACTURER: CCI
MODEL NO.: HPA65R-BU6A

COLOR: LIGHT GRAY
DIMENSIONS (LxWxD): 71.1" x 11.7" x 7.6"
1807mm x 297mm x 193mm
WEIGHT (lbs): 41.9
CONNECTOR: 6 x 4.3-10 FEMALE
FRONT WIND LOAD: 201 LBS @ 100 MPH
894 N @ 161 KPH
SIDE WIND LOAD: 142 LBS @ 100 MPH
633 N @ 161 KPH
WIND SPEED MAX.: >150 MPH (>241 KPH)

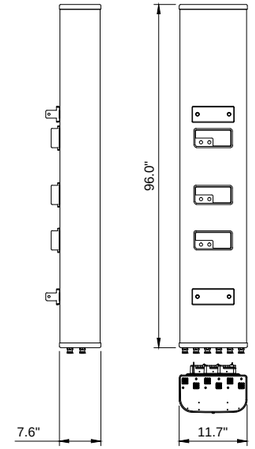


1 ANTENNA SPECIFICATIONS

SCALE: N.T.S.

MANUFACTURER: CCI
MODEL NO.: HPA65R-BU8A

COLOR: LIGHT GRAY
DIMENSIONS (LxWxD): 96.0" x 11.7" x 7.6"
2438mm x 297mm x 193mm
WEIGHT (lbs): 54.0
CONNECTOR: 6 x 4.3-10 FEMALE
FRONT WIND LOAD: 287 LBS @ 100 MPH
1278 N @ 161 KPH
SIDE WIND LOAD: 206 LBS @ 100 MPH
916 N @ 161 KPH
WIND SPEED MAX.: >150 MPH (>241 KPH)

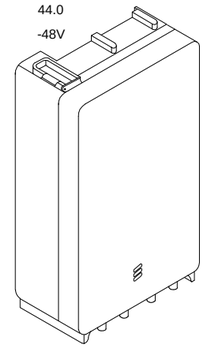


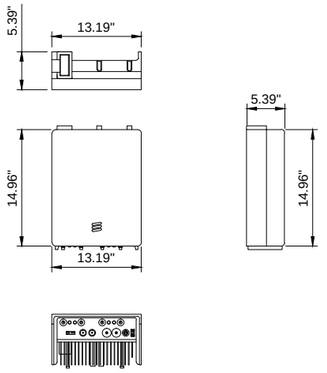
2 ANTENNA SPECIFICATIONS

SCALE: N.T.S.

MANUFACTURER: ERICSSON
MODEL NO.: RRUS-4415 B25
TECHNOLOGY: LTE 1900
DIMENSIONS (HxWxD): 14.96" x 13.19" x 5.39"
WEIGHT (lbs): 44.0
POWER SUPPLY: -48V

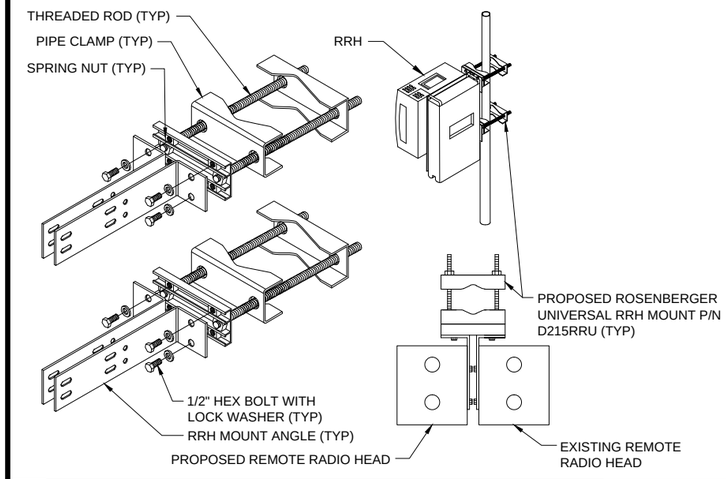
NOTE:
PENDING FINAL PRODUCT SPECIFICATION





3 RRUS SPECIFICATIONS

SCALE: N.T.S.

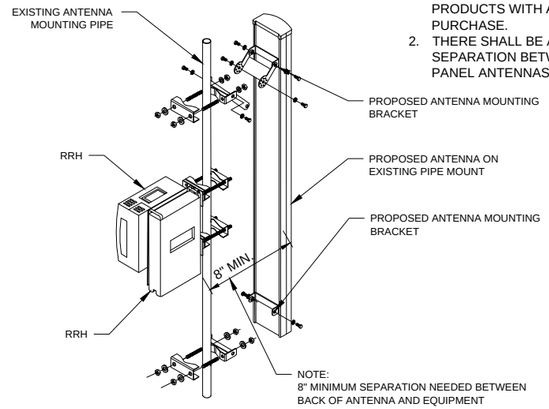


4 BACK TO BACK RRH MOUNTING KIT

SCALE: N.T.S.

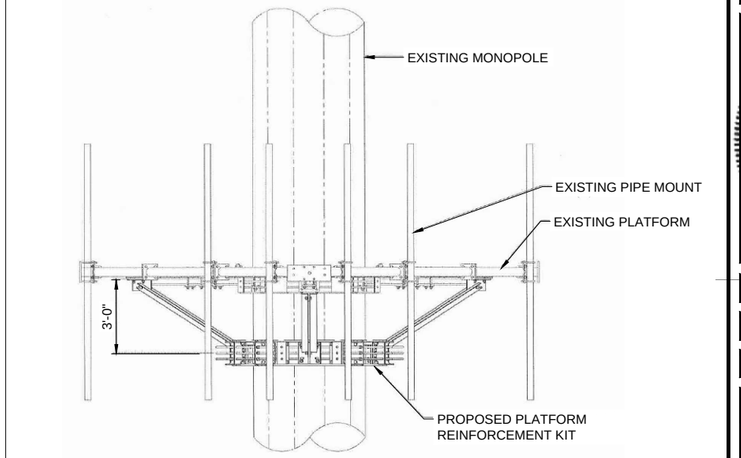
NOTES:

1. MOUNTING OPTIONS ARE INCLUDED PRODUCTS WITH ANTENNA PURCHASE.
2. THERE SHALL BE A MINIMUM 3'-0" SEPARATION BETWEEN ALL LTE PANEL ANTENNAS.



5 ANTENNA MOUNTING DETAIL

SCALE: N.T.S.



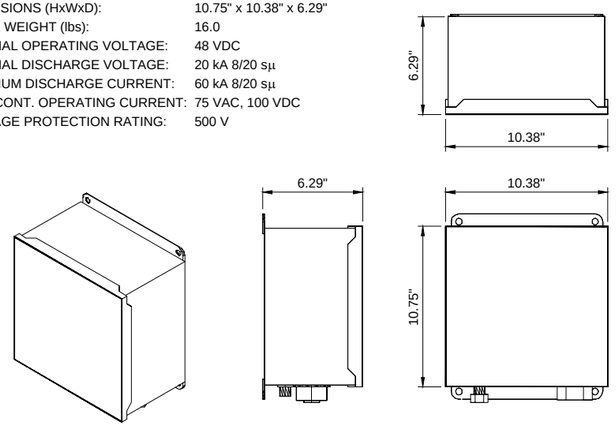
6 SITEPRO1 REINFORCEMENT KIT PRK-1245

SCALE: N.T.S.

DETAIL NOT USED

RAYCAP DC2-48-60-0-9E

DIMENSIONS (HxWxD): 10.75" x 10.38" x 6.29"
TOTAL WEIGHT (lbs): 16.0
NOMINAL OPERATING VOLTAGE: 48 VDC
NOMINAL DISCHARGE VOLTAGE: 20 kA 8/20 sμ
MAXIMUM DISCHARGE CURRENT: 60 kA 8/20 sμ
MAX. CONT. OPERATING CURRENT: 75 VAC, 100 VDC
VOLTAGE PROTECTION RATING: 500 V



DC2 SURGE SUPPRESSOR SPECIFICATIONS

DETAIL NOT USED

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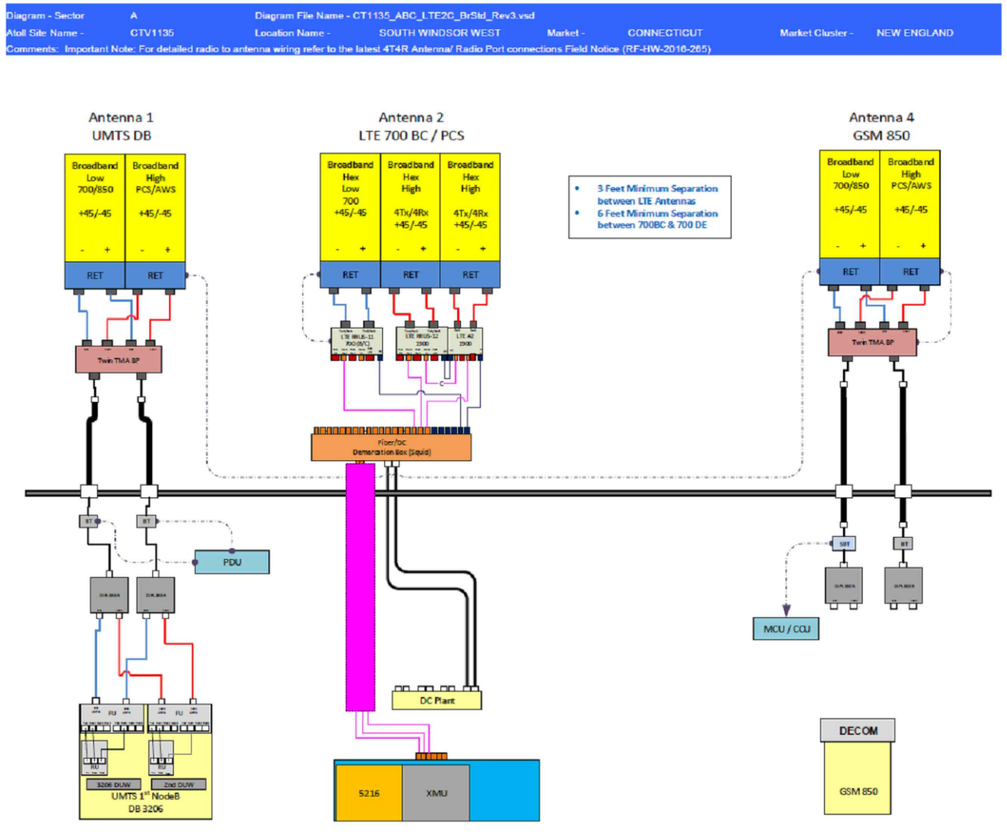
EQUIPMENT DETAILS

C-4

ANTENNA NUMBER	ANTENNA MODEL	ANTENNA BAND	AZIMUTH	ANTENNA CENTERLINE FROM GROUND	TMA's	RRH's	FEEDER	RAYCAP
A1	7770 (55"x11"x5")	UMTS	23°	158'	(1) DTMABP7819VG12A	-	(2) 1-5/8" EXISTING (LENGTH @ 180')	(1) RAYCAP DC6-48-60-18-8C
A2	**HPA65R-BU8A (96"x11.7"x7.6")**	**LTE**	**23°**	**158'**	**-**	**(1) RRUS12/RRUSA2 (LTE PCS)** (1) RRUS-11 (700)	(1) FIBER (LENGTH @ 180')	
A3	-	-	-	-	-	-	-	
A4	7770 (55"x11"x5")	UMTS	23°	158'	**(1) DTMABP7819VG12A**	-	(2) 1-5/8" EXISTING (LENGTH @ 180')	
B1	7770 (55"x11"x5")	UMTS	**150°**	**158'**	(1) DTMABP7819VG12A		(2) 1-5/8" EXISTING (LENGTH @ 180')	
B2	**HPA65R-BU8A (96"x11.7"x7.6")**	**LTE**	**150°**	**158'**	**-**	**(1) RRUS12/RRUSA2 (LTE PCS)** (1) RRUS-11 (700)	**-**	
B3	-	UMTS	150°	158'	-			
B4	7770 (55"x11"x5")	UMTS	150°	158'	**(1) DTMABP7819VG12A**		(2) 1-5/8" EXISTING (LENGTH @ 180')	
C1	7770 (55"x11"x5")	UMTS	**270°**	**158'**	(1) DTMABP7819VG12A		(2) 1-5/8" EXISTING (LENGTH @ 180')	
C2	**HPA65R-BU6A (71.2"x11.7"x8.4")**	**LTE**	**270°**	**158'**	**-**	**(1) RRUS12/RRUSA2 (LTE PCS)** (1) RRUS-11 (700)	**-**	
C3	-	UMTS	270°	158'	-			
C4	7770 (55"x11"x5")	UMTS	270°	158'	**(1) DTMABP7819VG12A**		(2) 1-5/8" EXISTING (LENGTH @ 180')	

*EQUIPMENT LISTED IN **BOLD**, DELINEATES THAT THE EQUIPMENT IS PROPOSED

1 ANTENNA INFORMATION CHART — SCALE: NONE



2 RF EQUIPMENT SCHEMATIC — SCALE: NONE

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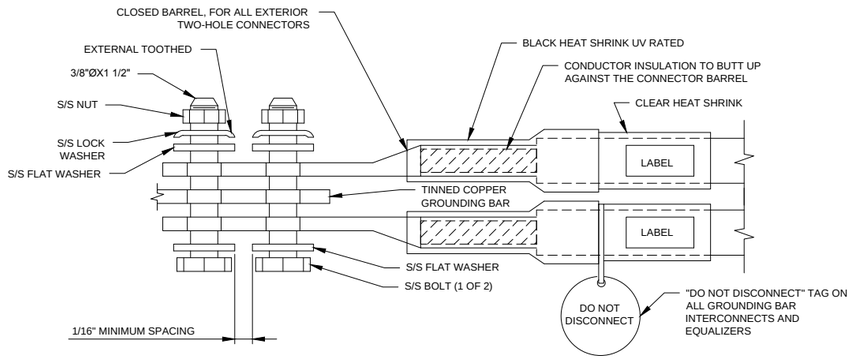
ANTENNA CHART & RF EQUIPMENT SCHEMATIC

RF-1

NOTES:

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUNDING BAR. ROUTE CONDUCTORS TO BURIED GROUNDING RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL GROUNDING BARS SHALL BE STAMPED IN TO THE METAL "IF STOLEN DO NOT RECYCLE." THE CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS.
3. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
5. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUNDING CONDUCTOR DOWN TO GROUNDING BUS.
6. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUNDING BAR AND BOLTED ON THE BACK SIDE. INSTALL BLACK HEAT-SHRINKING TUBE, 600 VOLT INSULATION, ON ALL GROUNDING TERMINATIONS. THE INTENT IS TO WEATHERPROOF THE COMPRESSION CONNECTION.
7. SUPPLIED AND INSTALLED BY CONTRACTOR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUNDING BAR AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
9. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).



1 EXTERIOR TWO HOLE LUG DETAIL — SCALE: NONE

GENERAL NOTES:

1. CONTRACTOR SHALL HAVE A COMPLETE UNDERSTANDING OF THE CONTENTS OF AT&T STANDARD TP-76416.
2. ALL INSTALLATIONS SHALL BE FIELD VERIFIED.
3. ALL GROUND CONNECTIONS FOR ALL RELOCATED EQUIPMENT SHALL BE RE-ESTABLISHED BY THE CONTRACTOR. CONTRACTOR SHALL FURNISH ALL MATERIALS AS REQUIRED.

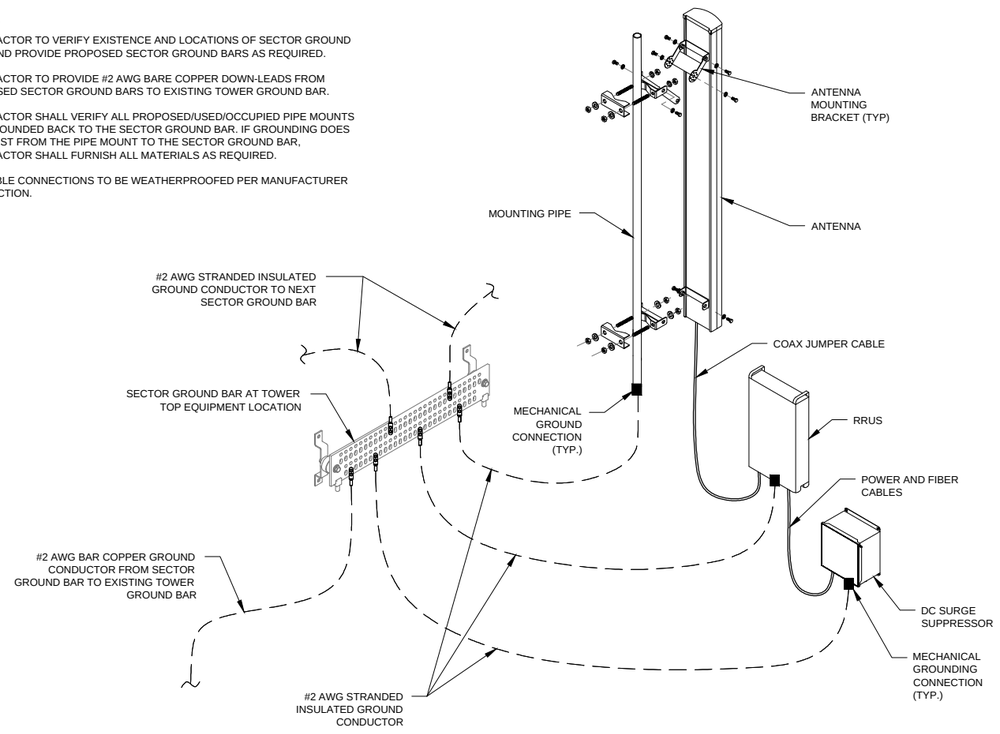
GROUNDING NOTES:

1. TOWER GROUNDING BAR: EXTEND (2) #2 AWG TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND MAKE A MECHANICAL CONNECTION. SECURE GROUND BAR DIRECTLY TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
2. ANTENNA GROUNDING BAR: ANDREW CORPORATION PART #UGBKIT-0424-T MOUNT GROUND BAR DIRECTLY TO TOWER. SECURE TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
3. GROUNDING BAR: LOCATED CLOSE TO GRADE LOCK BOX TESSCO PART #351546: INSTALL PER MANUFACTURER GUIDELINES.
4. EXOTHERMIC OR COMPRESSION CONNECTION FOR PIPE MOUNT TO ANTENNA ROUTE CONDUCTOR TO NEAREST GROUNDING BAR SO THE GROUNDING CONDUCTORS PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND. USE #2 AWG SOLID TINNED COPPER CONDUCTOR. GROUNDING CONNECTION SHALL BE LOCATED AT THE TOP 2" OF PIPE.
5. ALL GROUNDING CONDUCTORS SHALL BE #2 AWG COPPER TINNED UNLESS NOTED OTHERWISE.
6. ALL GROUNDING CONDUCTORS SHALL PROVIDE A STRAIGHT DOWNWARD PATH TO GROUND WITH GRADUAL BEND AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
7. KOPR-SHIELD ANTI-OXIDATION COMPOUND SHALL BE USED ON ALL COMPRESSION GROUNDING CONNECTIONS.
8. ALL EXOTHERMIC CONNECTIONS SHALL BE INSTALLED UTILIZING THE PROPER CONNECTION/MOLD AND MATERIALS FOR THE PARTICULAR APPLICATION.
9. ALL BOLTED GROUNDING CONNECTIONS SHALL BE INSTALLED WITH AN EXTERNAL TOOTHED LOCK WASHER. GROUNDING BUS BARS MAY HAVE PRE-PUNCHED HOLES OR TAPPED HOLES. ALL HARDWARE SHALL BE SECURITY TORQUE HARDWARE 3/8" STAINLESS STEEL.
10. EXTERNAL GROUNDING CONDUCTOR SHALL NOT BE INSTALLED OR ROUTED THROUGH HOLES IN ANY METAL OBJECTS, CONDUITS, OR SUPPORTS TO PRECLUDE ESTABLISHING A MAGNETIC CHOKE POINT.
11. PLASTIC CLIPS SHALL BE USED TO FASTEN AND SUPPORT GROUNDING CONDUCTORS. FERROUS METAL CLIPS WHICH COMPLETELY SURROUND THE GROUNDING CONDUCTOR SHALL NOT BE USED.
12. IF COAX ON ICE BRIDGE IS MORE THAT 6' FROM THE GROUND BAR AT THE BASE OF THE TOWER, A SECOND GROUND BAR WILL BE NEEDED AT THE END OF THE ICE BRIDGE RUN TO GROUND THE COAX GROUND KIT AND THE IN-LINE SURGE ARRESTORS (SURGE ARRESTORS INSTALLED BY LUCENT ONLY HAVE 6' GROUND TAILS).
13. CONTRACTOR SHALL REPAIR/PLACE EXISTING GROUNDING SYSTEM COMPONENTS DAMAGED DURING CONSTRUCTION AT THE CONTRACTORS EXPENSE.
14. DO NOT ALLOW THE COPPER CONDUCTOR TO TOUCH THE GALVANIZED GUY WIRE AT THE CONNECTION POINT OR AT ANY OTHER POINT. NO EXOTHERMICALLY WELDED CONNECTION SHALL BE MADE TO THE GUY WIRE.
15. CONTRACTOR SHALL VERIFY EXISTING SECTOR GROUNDING CONDITION AND GROUND THE PROPOSED EQUIPMENT IN THE SAME MANNER. A PROPOSED SECTOR GROUND BAR SHALL BE INSTALLED IF REQUIRED.

2 GROUNDING BAR DETAIL — SCALE: NONE

NOTES:

1. CONTRACTOR TO VERIFY EXISTENCE AND LOCATIONS OF SECTOR GROUND BARS AND PROVIDE PROPOSED SECTOR GROUND BARS AS REQUIRED.
2. CONTRACTOR TO PROVIDE #2 AWG BARE COPPER DOWN-LEADS FROM PROPOSED SECTOR GROUND BARS TO EXISTING TOWER GROUND BAR.
3. CONTRACTOR SHALL VERIFY ALL PROPOSED/USED/OCCUPIED PIPE MOUNTS ARE GROUNDED BACK TO THE SECTOR GROUND BAR. IF GROUNDING DOES NOT EXIST FROM THE PIPE MOUNT TO THE SECTOR GROUND BAR, CONTRACTOR SHALL FURNISH ALL MATERIALS AS REQUIRED.
4. ALL CABLE CONNECTIONS TO BE WEATHERPROOFED PER MANUFACTURER INSTRUCTION.



3 TYPICAL ANTENNA GROUNDING SCHEMATIC — SCALE: NONE

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

JACOBS
JACOBS ENGINEERING GROUP, INC.
120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
LICENSED
PROFESSIONAL ENGINEER

PROJECT NO: ERCC0004

DRAWN BY: JT

CHECKED BY: CAT

SUBMITTALS

2	04/29/19	REVISED PER COMMENTS
1	03/21/19	ISSUED FOR CONSTRUCTION
0	03/11/19	ISSUED FOR PERMITTING

FA# 10035346
SITE# CTV1135
SOUTH WINDSOR WEST

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

GROUNDING DETAILS

G-1

PAUL J. FORD & COMPANY

Date: **April 22, 2019**

Amanda D Brown
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Paul J. Ford & Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	10035346
	Carrier Site Name:	SOUTH WINDSOR WEST
Crown Castle Designation:	**Crown Castle BU Number:**	828054
	Crown Castle Site Name:	South Windsor/Rt 5
	Crown Castle JDE Job Number:	570586
	Crown Castle Work Order Number:	1727618
	Crown Castle Order Number:	489825 Rev. 0
Engineering Firm Designation:	**Paul J. Ford & Company Project Number:**	37519-0238.002.7805
Site Data:	**300 Governors Highway, South Windsor, Hartford County, CT** **Latitude *41° 50' 0.4"*, Longitude *-72° 36' 11"*** **169 Foot - Monopole Tower**	

Dear Amanda D Brown,

Paul J. Ford & Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code per section 1609.3 and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

Jaime Acuna
Structural Designer
jacuna@pauljford.com

C.J.P.

STATE OF CONNECTICUT
JOSEPH PACHICARAH JACOBS
No. PEN 22731
LICENSED PROFESSIONAL ENGINEER

APR 24 2019

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 169 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in January of 2000. The tower has been modified multiple times to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
156.0	158.0	1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	12 2 1	1-5/8 7/8 17/64
		2	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe		
		3	ericsson	RRUS12/RRUS A2		
		6	powerwave technologies	7770.00 w/ Mount Pipe		
	156.0	6	communication components inc.	DTMABP7819VG12A		
		3	ericsson	RRUS 11		
		1	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 714-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
165.0	167.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	11 2	1-5/8 1-3/8
		1	ericsson	KRY 112 144/1		
	166.0	3	ericsson	AIR 32 B2A/B66AA w/ Mount Pipe		
		2	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	165.0	1	tower mounts	Platform Mount [LP 601-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148.0	148.0	3	alcatel lucent	800MHZ RRH	3 1	1-1/4 1-1/2
		3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ		
		3	alcatel lucent	RRH2X50-800		
		3	commscope	NNVV-65B-R4 w/ Mount Pipe		
		3	nokia	AAHC w/ Mount Pipe		
		1	tower mounts	T-Arm Mount [TA 702-3]		
138.0	138.0	3	rfs celwave	APXV18-206517-A w/ Mount Pipe	6	1-5/8
		1	tower mounts	Pipe Mount [PM 601-3]		
124.0	128.0	2	andrew	VHLP800-11	3 6 1 2	1/4 1/2 5/16 2” Conduit
		3	argus technologies	LLPX310R w/ Mount Pipe		
		2	dragonwave	HORIZON DUO		
		3	samsung telecommunications	WIMAX DAP HEAD		
	124.0	1	tower mounts	Side Arm Mount [SO 701-3]		
118.0	119.0	1	sigfox	CAVITY FILTER	1	1/2
		1	sigfox	CXL 900-3LW		
		1	sigfox	LNA		
	118.0	1	tower mounts	Side Arm Mount [SO 304-1]		
111.0	111.0	3	alcatel lucent	B4 RRH2X60-4R	2 18	1-1/4 1-5/8
		6	andrew	HBXX-6517DS-A2M w/ Mount Pipe		
		6	andrew	LNX-6514DS-A1M w/ Mount Pipe		
		2	raycap	RRFDC-3315-PF-48		
		1	tower mounts	Platform Mount [LP 303-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FPA, 99A076AR1, 01/11/2000	3436696	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI, 6255 REV 1, 03/10/2000	3436661	CCISITES
4-TOWER MANUFACTURER DRAWINGS	EEI, 99-1371 REV 1, 01/31/2000	3436681	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Centek Engineering, 10003.CO4, 06/11/2010	3487016	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 103179, 12/03/2010	3773025	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2012712.97, 06/29/2012	3793344	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 03/13/2013	3773024	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37513-1535.003.7700 R1, 12/30/2014	5431037	CCISITES
4-POST-MODIFICATION INSPECTION	FDH Velocitel, 15BZLZ1500, 12/03/2015	6000997	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37516-2594.003.7700, 11/17/2016	6563357	CCISITES
4-POST-MODIFICATION INSPECTION	CCI, 1352522, 05/16/2017	6861018	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

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) Monopole was modified in conformance with the referenced modification drawings.
5) At the time of analysis, base plate grout was not installed, and it has not been considered in this analysis.
6) It is assumed that all base pole reactions are taken by the micropiles.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
169 - 164	Pole	TP16.455x15.5x0.25	Pole	4.1%	Pass
164 - 159	Pole	TP17.409x16.455x0.25	Pole	13.1%	Pass
159 - 154	Pole	TP18.364x17.409x0.25	Pole	25.4%	Pass
154 - 149	Pole	TP19.318x18.364x0.25	Pole	38.1%	Pass
149 - 144	Pole	TP20.273x19.318x0.25	Pole	51.4%	Pass
144 - 139	Pole	TP21.228x20.273x0.25	Pole	63.0%	Pass
139 - 133.33	Pole	TP22.31x21.228x0.25	Pole	68.1%	Pass
133.33 - 131.66	Pole	TP22.115x21.174x0.3125	Pole	65.9%	Pass
131.66 - 126.66	Pole	TP23.055x22.115x0.3125	Pole	73.0%	Pass
126.66 - 121.66	Pole	TP23.996x23.055x0.3125	Pole	80.0%	Pass
121.66 - 116.66	Pole	TP24.937x23.996x0.3125	Pole	86.0%	Pass
116.66 - 111.66	Pole	TP25.877x24.937x0.3125	Pole	91.1%	Pass
111.66 - 111	Pole	TP26.001x25.877x0.3125	Pole	91.8%	Pass
111 - 110.75	Pole + Reinf.	TP26.048x26.001x0.575	Reinf. 6 Tension Rupture	82.6%	Pass
110.75 - 105.75	Pole + Reinf.	TP26.989x26.048x0.5625	Reinf. 6 Tension Rupture	90.1%	Pass
105.75 - 101.5	Pole + Reinf.	TP27.788x26.989x0.55	Reinf. 6 Tension Rupture	95.9%	Pass
101.5 - 101.25	Pole + Reinf.	TP27.835x27.788x0.9875	Reinf. 12 Tension Rupture	65.4%	Pass
101.25 - 101	Pole + Reinf.	TP27.882x27.835x0.9875	Reinf. 12 Tension Rupture	65.7%	Pass
101 - 100.75	Pole + Reinf.	TP27.93x27.882x0.725	Reinf. 12 Tension Rupture	87.4%	Pass
100.75 - 95.75	Pole + Reinf.	TP28.87x27.93x0.7125	Reinf. 12 Tension Rupture	93.6%	Pass
95.75 - 87.83	Pole + Reinf.	TP30.36x28.87x0.7	Reinf. 12 Tension Rupture	97.7%	Pass
87.83 - 86.83	Pole + Reinf.	TP29.924x28.92x0.9375	Reinf. 12 Tension Rupture	80.6%	Pass
86.83 - 81.83	Pole + Reinf.	TP30.865x29.924x0.925	Reinf. 12 Tension Rupture	84.6%	Pass
81.83 - 81.5	Pole + Reinf.	TP30.927x30.865x0.925	Reinf. 12 Tension Rupture	84.9%	Pass
81.5 - 81.25	Pole + Reinf.	TP30.974x30.927x0.95	Reinf. 11 Tension Rupture	72.1%	Pass
81.25 - 76.25	Pole + Reinf.	TP31.915x30.974x0.925	Reinf. 11 Tension Rupture	75.3%	Pass
76.25 - 71.25	Pole + Reinf.	TP32.856x31.915x0.9	Reinf. 11 Tension Rupture	78.4%	Pass
71.25 - 66.25	Pole + Reinf.	TP33.797x32.856x0.875	Reinf. 11 Tension Rupture	81.2%	Pass
66.25 - 61.25	Pole + Reinf.	TP34.738x33.797x0.8625	Reinf. 11 Tension Rupture	83.9%	Pass
61.25 - 56.25	Pole + Reinf.	TP35.679x34.738x0.85	Reinf. 11 Tension Rupture	86.5%	Pass
56.25 - 51.25	Pole + Reinf.	TP36.619x35.679x0.825	Reinf. 11 Tension Rupture	88.9%	Pass
51.25 - 43.33	Pole + Reinf.	TP38.11x36.619x0.825	Reinf. 11 Tension Rupture	90.1%	Pass
43.33 - 42.33	Pole + Reinf.	TP37.546x36.357x1.0375	Reinf. 11 Tension Rupture	76.5%	Pass
42.33 - 37.4	Pole + Reinf.	TP38.473x37.546x1.025	Reinf. 11 Tension Rupture	78.4%	Pass
37.4 - 37.15	Pole + Reinf.	TP38.52x38.473x1.025	Reinf. 7 Tension Rupture	78.5%	Pass
37.15 - 32.15	Pole + Reinf.	TP39.459x38.52x1	Reinf. 7 Tension Rupture	80.2%	Pass
32.15 - 27.15	Pole + Reinf.	TP40.399x39.459x0.975	Reinf. 7 Tension Rupture	81.9%	Pass
27.15 - 22.15	Pole + Reinf.	TP41.338x40.399x0.9625	Reinf. 7 Tension Rupture	83.5%	Pass
22.15 - 19.5	Pole + Reinf.	TP41.836x41.338x0.95	Reinf. 7 Tension Rupture	84.3%	Pass
19.5 - 19.25	Pole + Reinf.	TP41.883x41.836x1.025	Reinf. 7 Tension Rupture	78.9%	Pass
19.25 - 14.25	Pole + Reinf.	TP42.822x41.883x1	Reinf. 7 Tension Rupture	80.3%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
14.25 - 9.25	Pole + Reinf.	TP43.762x42.822x1	Reinf. 7 Tension Rupture	83.0%	Pass
9.25 - 9	Pole + Reinf.	TP43.809x43.762x1	Reinf. 7 Tension Rupture	83.1%	Pass
9 - 8.75	Pole + Reinf.	TP43.856x43.809x1.025	Reinf. 7 Tension Rupture	80.1%	Pass
8.75 - 7	Pole + Reinf.	TP44.185x43.856x1.025	Reinf. 7 Tension Rupture	80.5%	Pass
7 - 6.75	Pole + Reinf.	TP44.232x44.185x0.975	Reinf. 7 Tension Rupture	83.7%	Pass
6.75 - 5	Pole + Reinf.	TP44.561x44.232x0.975	Reinf. 7 Tension Rupture	84.1%	Pass
5 - 4.75	Pole + Reinf.	TP44.607x44.561x1.45	Reinf. 3 Connection	66.4%	Pass
4.75 - 3	Pole + Reinf.	TP44.936x44.607x1.425	Reinf. 3 Connection	66.8%	Pass
3 - 2.75	Pole + Reinf.	TP44.983x44.936x1.45	Reinf. 7 Tension Rupture	59.0%	Pass
2.75 - 2.25	Pole + Reinf.	TP45.077x44.983x1.45	Reinf. 7 Tension Rupture	59.1%	Pass
2.25 - 2	Pole + Reinf.	TP45.124x45.077x1.2	Reinf. 8 Tension Rupture	70.9%	Pass
2 - 0	Pole + Reinf.	TP45.5x45.124x1.175	Reinf. 8 Tension Rupture	71.4%	Pass
				Summary	
			Pole	93.3%	Pass
			Reinforcement	99.5%	Pass
			Overall	99.5%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	68.0	Pass
1	Base Foundation	0	89.3	Pass

Structure Rating (max from all components) =	99.5%

Notes:

- All structural ratings are per TIA-222-H Section 15.5

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

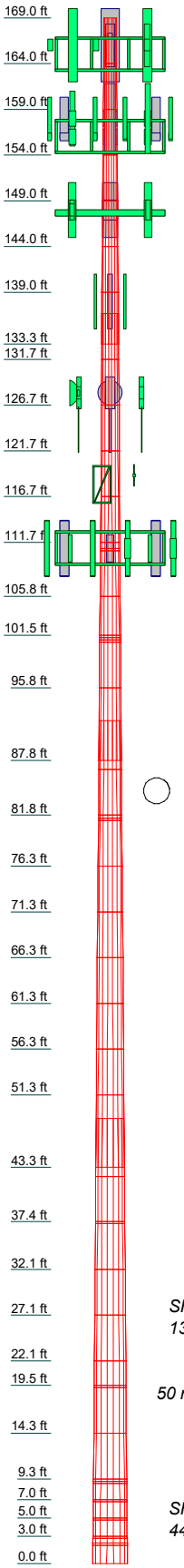
4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

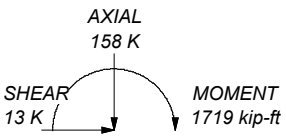
APPENDIX A

TNXTOWER OUTPUT

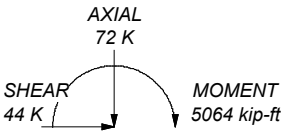
Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Length (ft)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.7500	0.7500	0.8750	0.8750	0.8750	0.9000	0.9000	0.9000	0.8750	0.8750	0.8500	0.8250	0.8250	0.8250	0.8250	1.0000	1.0000	0.9750	0.9625	0.9500	0.9375	1.0000	1.0000
Socket Length (ft)							3.33														4.33										5.33												
Top Dia (in)	15.5000	16.4546	17.4092	18.3638	19.3183	20.2729	21.2275	22.1821	23.1367	23.9960	24.9366	25.8772	26.8178	27.9220	28.8701	29.8107	30.7513	31.9146	32.8556	33.7966	34.7376	35.6785	36.6195	37.5605	38.5015	39.4425	40.3835	41.3245	42.2655	43.2065	44.1475	45.0885	46.0295	46.9705	47.9115	48.8525	49.7935	50.7345	51.6755	52.6165	53.5575	54.4985
Bot Dia (in)	16.4546	17.4092	18.3638	19.3183	20.2729	21.2275	22.1821	23.0554	23.9960	24.9366	25.8772	26.8178	27.9220	28.8701	29.8107	30.7513	31.9146	32.8556	33.7966	34.7376	35.6785	36.6195	37.5605	38.5015	39.4425	40.3835	41.3245	42.2655	43.2065	44.1475	45.0885	46.0295	46.9705	47.9115	48.8525	49.7935	50.7345	51.6755	52.6165	53.5575	54.4985	55.4395
Grade	A572-65																																									
Weight (K)	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.7	1.0	1.6	1.4	1.3	1.4	1.4	1.4	1.4	1.5	1.5	2.4	2.4	1.9	0.1	1.9	2.0	2.0	1.1	2.2	0.1	2.2	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.6



ALL REACTIONS ARE FACTORED



TORQUE 4 kip-ft
50 mph WIND - 2.0000 in ICE



TORQUE 10 kip-ft
REACTIONS - 125 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TIA-222-H Annex S

Paul J. Ford & Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job:	***165-Ft Monopole / South Windsor/Rt 5***		
Project:	***PJF# 37519-0238.002.7805 / BU# 828054***		
Client: Crown Castle	Drawn by: jacuna	App'd:	
Code: TIA-222-H	Date: 04/22/19	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

1. Tower base elevation above sea level: 70.11 ft.
2. Basic wind speed of 125 mph.
3. Risk Category II.
4. Exposure Category C.
5. Simplified Topographic Factor Procedure for wind speed-up calculations is used.
6. Topographic Category: 1.
7. Crest Height: 0.00 ft.
8. Nominal ice thickness of 2.0000 in.
9. Ice thickness is considered to increase with height.
10. Ice density of 56 pcf.
11. A wind speed of 50 mph is used in combination with ice.
12. Temperature drop of 50 °F.
13. Deflections calculated using a wind speed of 60 mph.
14. A non-linear (P-delta) analysis was used.
15. Pressures are calculated at each section.
16. Stress ratio used in pole design is 1.05.
17. Tower analysis based on target reliabilities in accordance with Annex S.
18. Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
19. 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-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H 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		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

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	169.00-164.00	5.00	0.00	18	15.5000	16.4546	0.2500	1.0000	A572-65 (65 ksi)
L2	164.00-159.00	5.00	0.00	18	16.4546	17.4092	0.2500	1.0000	A572-65 (65 ksi)
L3	159.00-154.00	5.00	0.00	18	17.4092	18.3638	0.2500	1.0000	A572-65 (65 ksi)
L4	154.00-149.00	5.00	0.00	18	18.3638	19.3183	0.2500	1.0000	A572-65 (65 ksi)
L5	149.00-144.00	5.00	0.00	18	19.3183	20.2729	0.2500	1.0000	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L6	144.00-139.00	5.00	0.00	18	20.2729	21.2275	0.2500	1.0000	(65 ksi) A572-65 (65 ksi)
L7	139.00-133.33	5.67	3.33	18	21.2275	22.3100	0.2500	1.0000	A572-65 (65 ksi)
L8	133.33-131.66	5.00	0.00	18	21.1742	22.1148	0.3125	1.2500	A572-65 (65 ksi)
L9	131.66-126.66	5.00	0.00	18	22.1148	23.0554	0.3125	1.2500	A572-65 (65 ksi)
L10	126.66-121.66	5.00	0.00	18	23.0554	23.9960	0.3125	1.2500	A572-65 (65 ksi)
L11	121.66-116.66	5.00	0.00	18	23.9960	24.9366	0.3125	1.2500	A572-65 (65 ksi)
L12	116.66-111.66	5.00	0.00	18	24.9366	25.8772	0.3125	1.2500	A572-65 (65 ksi)
L13	111.66-111.00	0.66	0.00	18	25.8772	26.0013	0.3125	1.2500	A572-65 (65 ksi)
L14	111.00-110.75	0.25	0.00	18	26.0013	26.0484	0.5750	2.3000	A572-65 (65 ksi)
L15	110.75-105.75	5.00	0.00	18	26.0484	26.9889	0.5625	2.2500	A572-65 (65 ksi)
L16	105.75-101.50	4.25	0.00	18	26.9889	27.7884	0.5500	2.2000	A572-65 (65 ksi)
L17	101.50-101.25	0.25	0.00	18	27.7884	27.8355	0.9875	3.9500	A572-65 (65 ksi)
L18	101.25-101.00	0.25	0.00	18	27.8355	27.8825	0.9875	3.9500	A572-65 (65 ksi)
L19	101.00-100.75	0.25	0.00	18	27.8825	27.9295	0.7250	2.9000	A572-65 (65 ksi)
L20	100.75-95.75	5.00	0.00	18	27.9295	28.8701	0.7125	2.8500	A572-65 (65 ksi)
L21	95.75-87.83	7.92	4.33	18	28.8701	30.3600	0.7000	2.8000	A572-65 (65 ksi)
L22	87.83-86.83	5.33	0.00	18	28.9205	29.9235	0.9375	3.7500	A572-65 (65 ksi)
L23	86.83-81.83	5.00	0.00	18	29.9235	30.8645	0.9250	3.7000	A572-65 (65 ksi)
L24	81.83-81.50	0.33	0.00	18	30.8645	30.9266	0.9250	3.7000	A572-65 (65 ksi)
L25	81.50-81.25	0.25	0.00	18	30.9266	30.9737	0.9500	3.8000	A572-65 (65 ksi)
L26	81.25-76.25	5.00	0.00	18	30.9737	31.9146	0.9250	3.7000	A572-65 (65 ksi)
L27	76.25-71.25	5.00	0.00	18	31.9146	32.8556	0.9000	3.6000	A572-65 (65 ksi)
L28	71.25-66.25	5.00	0.00	18	32.8556	33.7966	0.8750	3.5000	A572-65 (65 ksi)
L29	66.25-61.25	5.00	0.00	18	33.7966	34.7376	0.8625	3.4500	A572-65 (65 ksi)
L30	61.25-56.25	5.00	0.00	18	34.7376	35.6785	0.8500	3.4000	A572-65 (65 ksi)
L31	56.25-51.25	5.00	0.00	18	35.6785	36.6195	0.8250	3.3000	A572-65 (65 ksi)
L32	51.25-43.33	7.92	5.33	18	36.6195	38.1100	0.8250	3.3000	A572-65 (65 ksi)
L33	43.33-42.33	6.33	0.00	18	36.3569	37.5463	1.0375	4.1500	A572-65 (65 ksi)
L34	42.33-37.40	4.93	0.00	18	37.5463	38.4726	1.0250	4.1000	A572-65 (65 ksi)
L35	37.40-37.15	0.25	0.00	18	38.4726	38.5196	1.0250	4.1000	A572-65 (65 ksi)
L36	37.15-32.15	5.00	0.00	18	38.5196	39.4591	1.0000	4.0000	A572-65 (65 ksi)
L37	32.15-27.15	5.00	0.00	18	39.4591	40.3986	0.9750	3.9000	A572-65 (65 ksi)
L38	27.15-22.15	5.00	0.00	18	40.3986	41.3381	0.9625	3.8500	A572-65 (65 ksi)
L39	22.15-19.50	2.65	0.00	18	41.3381	41.8360	0.9500	3.8000	A572-65 (65 ksi)

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
L40	19.50-19.25	0.25	0.00	18	41.8360	41.8830	1.0250	4.1000	A572-65 (65 ksi)
L41	19.25-14.25	5.00	0.00	18	41.8830	42.8225	1.0000	4.0000	A572-65 (65 ksi)
L42	14.25-9.25	5.00	0.00	18	42.8225	43.7620	1.0000	4.0000	A572-65 (65 ksi)
L43	9.25-9.00	0.25	0.00	18	43.7620	43.8089	1.0000	4.0000	A572-65 (65 ksi)
L44	9.00-8.75	0.25	0.00	18	43.8089	43.8559	1.0250	4.1000	A572-65 (65 ksi)
L45	8.75-7.00	1.75	0.00	18	43.8559	44.1847	1.0250	4.1000	A572-65 (65 ksi)
L46	7.00-6.75	0.25	0.00	18	44.1847	44.2317	0.9750	3.9000	A572-65 (65 ksi)
L47	6.75-5.00	1.75	0.00	18	44.2317	44.5605	0.9750	3.9000	A572-65 (65 ksi)
L48	5.00-4.75	0.25	0.00	18	44.5605	44.6075	1.4500	5.8000	A572-65 (65 ksi)
L49	4.75-3.00	1.75	0.00	18	44.6075	44.9363	1.4250	5.7000	A572-65 (65 ksi)
L50	3.00-2.75	0.25	0.00	18	44.9363	44.9833	1.4500	5.8000	A572-65 (65 ksi)
L51	2.75-2.25	0.50	0.00	18	44.9833	45.0772	1.4500	5.8000	A572-65 (65 ksi)
L52	2.25-2.00	0.25	0.00	18	45.0772	45.1242	1.2000	4.8000	A572-65 (65 ksi)
L53	2.00-0.00	2.00		18	45.1242	45.5000	1.1750	4.7000	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	15.7005	12.1009	355.5445	5.4138	7.8740	45.1542	711.5567	6.0516	2.2880	9.152
	16.6699	12.8583	426.5776	5.7526	8.3589	51.0326	853.7165	6.4304	2.4560	9.824
L2	16.6699	12.8583	426.5776	5.7526	8.3589	51.0326	853.7165	6.4304	2.4560	9.824
	17.6392	13.6158	506.4925	6.0915	8.8439	57.2705	1013.6514	6.8092	2.6240	10.496
L3	17.6392	13.6158	506.4925	6.0915	8.8439	57.2705	1013.6514	6.8092	2.6240	10.496
	18.6085	14.3733	595.8124	6.4304	9.3288	63.8682	1192.4089	7.1880	2.7920	11.168
L4	18.6085	14.3733	595.8124	6.4304	9.3288	63.8682	1192.4089	7.1880	2.7920	11.168
	19.5778	15.1307	695.0606	6.7693	9.8137	70.8254	1391.0359	7.5668	2.9600	11.84
L5	19.5778	15.1307	695.0606	6.7693	9.8137	70.8254	1391.0359	7.5668	2.9600	11.84
	20.5471	15.8882	804.7602	7.1081	10.2986	78.1424	1610.5793	7.9456	3.1280	12.512
L6	20.5471	15.8882	804.7602	7.1081	10.2986	78.1424	1610.5793	7.9456	3.1280	12.512
	21.5164	16.6456	925.4345	7.4470	10.7836	85.8189	1852.0867	8.3244	3.2960	13.184
L7	21.5164	16.6456	925.4345	7.4470	10.7836	85.8189	1852.0867	8.3244	3.2960	13.184
	22.6156	17.5046	1076.2196	7.8313	11.3335	94.9593	2153.8554	8.7540	3.4866	13.946
L8	22.0888	20.6922	1137.7489	7.4059	10.7565	105.7730	2276.9948	10.3481	3.1767	10.165
	22.4078	21.6252	1298.6833	7.7398	11.2343	115.5995	2599.0753	10.8146	3.3422	10.695
L9	22.4078	21.6252	1298.6833	7.7398	11.2343	115.5995	2599.0753	10.8146	3.3422	10.695
	23.3629	22.5581	1474.1202	8.0737	11.7122	125.8625	2950.1801	11.2812	3.5078	11.225
L10	23.3629	22.5581	1474.1202	8.0737	11.7122	125.8625	2950.1801	11.2812	3.5078	11.225
	24.3180	23.4911	1664.6853	8.4076	12.1900	136.5619	3331.5611	11.7478	3.6733	11.755
L11	24.3180	23.4911	1664.6853	8.4076	12.1900	136.5619	3331.5611	11.7478	3.6733	11.755
	25.2731	24.4240	1871.0044	8.7416	12.6678	147.6978	3744.4707	12.2143	3.8388	12.284
L12	25.2731	24.4240	1871.0044	8.7416	12.6678	147.6978	3744.4707	12.2143	3.8388	12.284
	26.2282	25.3570	2093.7030	9.0755	13.1456	159.2702	4190.1609	12.6809	4.0044	12.814
L13	26.2282	25.3570	2093.7030	9.0755	13.1456	159.2702	4190.1609	12.6809	4.0044	12.814
	26.3542	25.4801	2124.3561	9.1195	13.2087	160.8304	4251.5075	12.7425	4.0262	12.884
L14	26.3137	46.4043	3790.2094	9.0263	13.2087	286.9485	7585.4060	23.2066	3.5642	6.199
	26.3615	46.4902	3811.2801	9.0430	13.2326	288.0227	7627.5752	23.2495	3.5725	6.213
L15	26.3634	45.5018	3733.9176	9.0475	13.2326	282.1764	7472.7483	22.7552	3.5945	6.39
	27.3185	47.1811	4162.7764	9.3814	13.7104	303.6222	8331.0303	23.5950	3.7601	6.685
L16	27.3204	46.1545	4076.0488	9.3858	13.7104	297.2965	8157.4610	23.0816	3.7821	6.876
	28.1323	47.5501	4457.1146	9.6696	14.1165	315.7373	8920.0940	23.7796	3.9228	7.132
L17	28.0648	84.0029	7623.0998	9.5143	14.1165	540.0124	15256.230	42.0094	3.1528	3.193

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
	28.1125	84.1503	7663.3002	9.5310	14.1404	541.9429	15336.6840	42.0831	3.1610	3.201
L18	28.1125	84.1503	7663.3002	9.5310	14.1404	541.9429	15336.6840	42.0831	3.1610	3.201
	28.1603	84.2977	7703.6417	9.5477	14.1643	543.8770	15417.4200	42.1568	3.1693	3.209
L19	28.2008	62.4935	5823.0658	9.6409	14.1643	411.1083	11653.7937	31.2527	3.6313	5.009
	28.2485	62.6017	5853.3698	9.6576	14.1882	412.5520	11714.4417	31.3068	3.6396	5.02
L20	28.2505	61.5506	5760.3828	9.6620	14.1882	405.9981	11528.3452	30.7812	3.6616	5.139
	29.2056	63.6777	6378.4734	9.9960	14.6660	434.9152	12765.3397	31.8449	3.8271	5.371
L21	29.2075	62.5884	6274.9198	10.0004	14.6660	427.8544	12558.0963	31.3001	3.8491	5.499
	30.7204	65.8986	7324.1268	10.5293	15.4229	474.8871	14657.8908	32.9556	4.1114	5.873
L22	30.0494	83.2668	8237.5161	9.9339	14.6916	560.6960	16485.8714	41.6413	3.4400	3.669
	30.2405	86.2516	9155.4966	10.2900	15.2012	602.2896	18323.0403	43.1340	3.6165	3.858
L23	30.2425	85.1382	9045.1151	10.2945	15.2012	595.0282	18102.1321	42.5772	3.6385	3.934
	31.1979	87.9009	9954.5115	10.6285	15.6792	634.8877	19922.1214	43.9588	3.8042	4.113
L24	31.1979	87.9009	9954.5115	10.6285	15.6792	634.8877	19922.1214	43.9588	3.8042	4.113
	31.2610	88.0832	10016.5865	10.6506	15.7107	637.5639	20046.3531	44.0500	3.8151	4.124
L25	31.2571	90.3885	10261.6096	10.6417	15.7107	653.1598	20536.7217	45.2028	3.7711	3.97
	31.3049	90.5303	10310.0020	10.6584	15.7346	655.2432	20633.5701	45.2738	3.7794	3.978
L26	31.3088	88.2214	10063.7839	10.6673	15.7346	639.5951	20140.8101	44.1191	3.8234	4.133
	32.2643	90.9840	11039.1420	11.0013	16.2126	680.8976	22092.8096	45.5006	3.9890	4.312
L27	32.2681	88.5964	10766.8023	11.0102	16.2126	664.0996	21547.7718	44.3066	4.0330	4.481
	33.2236	91.2844	11776.8183	11.3442	16.6906	705.5939	23569.1328	45.6509	4.1986	4.665
L28	33.2275	88.8181	11476.5780	11.3531	16.6906	687.6053	22968.2571	44.4175	4.2426	4.849
	34.1830	91.4315	12519.7125	11.6872	17.1687	729.2189	25055.8988	45.7244	4.4082	5.038
L29	34.1849	90.1595	12354.9219	11.6916	17.1687	719.6206	24726.1008	45.0883	4.4302	5.136
	35.1404	92.7355	13444.4596	12.0256	17.6467	761.8692	26906.6097	46.3766	4.5958	5.328
L30	35.1423	91.4252	13264.2852	12.0301	17.6467	751.6591	26546.0239	45.7213	4.6178	5.433
	36.0978	93.9639	14400.2007	12.3641	18.1247	794.5074	28819.3496	46.9909	4.7834	5.628
L31	36.1017	91.2657	14006.7845	12.3730	18.1247	772.8013	28031.9994	45.6415	4.8274	5.851
	37.0571	93.7297	15172.1508	12.7070	18.6027	815.5884	30364.2654	46.8737	4.9930	6.052
L32	37.0571	93.7297	15172.1508	12.7070	18.6027	815.5884	30364.2654	46.8737	4.9930	6.052
	38.5706	97.6326	17147.4981	13.2362	19.3599	885.7234	34317.5593	48.8256	5.2554	6.37
L33	37.7747	116.3077	18330.4548	12.5384	18.4693	992.4815	36685.0294	58.1649	4.5728	4.408
	37.9655	120.2244	20245.3636	12.9606	19.0735	1061.4379	40517.3666	60.1236	4.7822	4.609
L34	37.9674	118.8166	20021.9951	12.9651	19.0735	1049.7270	40070.3356	59.4196	4.8042	4.687
	38.9080	121.8303	21584.4890	13.2939	19.5441	1104.3990	43197.3794	60.9267	4.9672	4.846

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
L35	38.9080	121.8303	21584.4890	13.2939	19.5441	1104.3990	43197.3794	60.9267	4.9672	4.846
	38.9557	121.9831	21665.8171	13.3106	19.5680	1107.2084	43360.1427	61.0031	4.9755	4.854
L36	38.9596	119.0873	21179.6916	13.3195	19.5680	1082.3655	42387.2519	59.5550	5.0195	5.019
	39.9136	122.0692	22810.8723	13.6530	20.0452	1137.9704	45651.7597	61.0462	5.1848	5.185
L37	39.9174	119.0948	22284.0006	13.6619	20.0452	1111.6862	44597.3230	59.5587	5.2288	5.363
	40.8714	122.0022	23956.1779	13.9954	20.5225	1167.3137	47943.8780	61.0127	5.3942	5.532
L38	40.8733	120.4763	23671.5497	13.9998	20.5225	1153.4447	47374.2471	60.2496	5.4162	5.627
	41.8273	123.3464	25403.9551	14.3333	20.9997	1209.7269	50841.3373	61.6849	5.5815	5.799
L39	41.8292	121.7822	25097.3290	14.3378	20.9997	1195.1255	50227.6818	60.9027	5.6035	5.898
	42.3348	123.2836	26037.0640	14.5145	21.2527	1225.1185	52108.3882	61.6535	5.6911	5.991
L40	42.3233	132.7725	27938.3084	14.4879	21.2527	1314.5775	55913.3788	66.3989	5.5591	5.424
	42.3710	132.9253	28034.8916	14.5046	21.2766	1317.6425	56106.6722	66.4753	5.5674	5.432
L41	42.3748	129.7626	27401.3509	14.5135	21.2766	1287.8661	54838.7572	64.8936	5.6114	5.611
	43.3288	132.7445	29334.1327	14.8470	21.7538	1348.4594	58706.8639	66.3849	5.7768	5.777
L42	43.3288	132.7445	29334.1327	14.8470	21.7538	1348.4594	58706.8639	66.3849	5.7768	5.777
	44.2828	135.7264	31355.7294	15.1805	22.2311	1410.4462	62752.7174	67.8761	5.9421	5.942
L43	44.2828	135.7264	31355.7294	15.1805	22.2311	1410.4462	62752.7174	67.8761	5.9421	5.942
	44.3305	135.8755	31459.1757	15.1972	22.2549	1413.5821	62959.7462	67.9507	5.9504	5.95
L44	44.3266	139.1911	32189.1946	15.1883	22.2549	1446.3846	64420.7446	69.6088	5.9064	5.762
	44.3743	139.3439	32295.3383	15.2050	22.2788	1449.5997	64633.1717	69.6852	5.9146	5.77
L45	44.3743	139.3439	32295.3383	15.2050	22.2788	1449.5997	64633.1717	69.6852	5.9146	5.77
	44.7082	140.4137	33044.8735	15.3217	22.4458	1472.2050	66133.2283	70.2202	5.9725	5.827
L46	44.7159	133.7190	31542.2990	15.3395	22.4458	1405.2627	63126.1022	66.8722	6.0605	6.216
	44.7636	133.8643	31645.2814	15.3561	22.4697	1408.3535	63332.2024	66.9449	6.0688	6.224
L47	44.7636	133.8643	31645.2814	15.3561	22.4697	1408.3535	63332.2024	66.9449	6.0688	6.224
	45.0975	134.8819	32372.4452	15.4729	22.6367	1430.0842	64787.4869	67.4538	6.1267	6.284
L48	45.0242	198.4075	46586.7032	15.3042	22.6367	2058.0128	93234.7063	99.2226	5.2907	3.649
	45.0719	198.6237	46739.1543	15.3209	22.6606	2062.5732	93539.8092	99.3307	5.2989	3.654
L49	45.0758	195.3122	46013.1770	15.3298	22.6606	2030.5362	92086.8992	97.6747	5.3429	3.749
	45.4097	196.7995	47072.3254	15.4465	22.8276	2062.0755	94206.5899	98.4184	5.4008	3.79
L50	45.4058	200.1370	47815.6416	15.4376	22.8276	2094.6376	95694.2002	100.0875	5.3568	3.694
	45.4535	200.3532	47970.7640	15.4543	22.8515	2099.2385	96004.6491	100.1957	5.3651	3.7
L51	45.4535	200.3532	47970.7640	15.4543	22.8515	2099.2385	96004.6491	100.1957	5.3651	3.7
	45.5489	200.7856	48282.0079	15.4877	22.8992	2108.4552	96627.5466	100.4119	5.3816	3.711
L52	45.5875	167.1196	40648.3813	15.5764	22.8992	1775.0979	81350.2488	83.5757	5.8216	4.851

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
	45.6352	167.2985	40779.0757	15.5931	22.9231	1778.9514	81611.8095	83.6652	5.8299	4.858
L53	45.6391	163.9064	39997.7295	15.6020	22.9231	1744.8659	80048.0891	81.9688	5.8739	4.999
	46.0206	165.3079	41032.5467	15.7354	23.1140	1775.2248	82119.0850	82.6696	5.9400	5.055

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 169.00-164.00				1	1	1			
L2 164.00-159.00				1	1	1			
L3 159.00-154.00				1	1	1			
L4 154.00-149.00				1	1	1			
L5 149.00-144.00				1	1	1			
L6 144.00-139.00				1	1	1			
L7 139.00-133.33				1	1	1			
L8 133.33-131.66				1	1	1			
L9 131.66-126.66				1	1	1			
L10 126.66-121.66				1	1	1			
L11 121.66-116.66				1	1	1			
L12 116.66-111.66				1	1	1			
L13 111.66-111.00				1	1	1			
L14 111.00-110.75				1	1	0.936271			
L15 110.75-105.75				1	1	0.942334			
L16 105.75-101.50				1	1	0.951697			
L17 101.50-101.25				1	1	0.894841			
L18 101.25-101.00				1	1	0.893829			
L19 101.00-100.75				1	1	0.916808			
L20 100.75-95.75				1	1	0.915966			
L21 95.75-87.83				1	1	0.920543			
L22 87.83-86.83				1	1	0.912119			
L23 86.83-81.83				1	1	0.907746			
L24 81.83-81.50				1	1	0.906706			
L25 81.50-81.25				1	1	0.899386			
L26 81.25-76.25				1	1	0.907211			
L27 76.25-71.25				1	1	0.916495			
L28 71.25-66.25				1	1	0.92727			

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
L29 66.25-61.25				1	1	0.926308			
L30 61.25-56.25				1	1	0.926118			
L31 56.25-51.25				1	1	0.940381			
L32 51.25-43.33				1	1	0.933854			
L33 43.33-42.33				1	1	0.941952			
L34 42.33-37.40				1	1	0.938586			
L35 37.40-37.15				1	1	0.937868			
L36 37.15-32.15				1	1	0.946368			
L37 32.15-27.15				1	1	0.956053			
L38 27.15-22.15				1	1	0.9547			
L39 22.15-19.50				1	1	0.959994			
L40 19.50-19.25				1	1	0.954729			
L41 19.25-14.25				1	1	0.964453			
L42 14.25-9.25				1	1	0.951503			
L43 9.25-9.00				1	1	0.95087			
L44 9.00-8.75				1	1	0.963488			
L45 8.75-7.00				1	1	0.958934			
L46 7.00-6.75				1	1	0.968915			
L47 6.75-5.00				1	1	0.964507			
L48 5.00-4.75				1	1	0.856655			
L49 4.75-3.00				1	1	0.866584			
L50 3.00-2.75				1	1	0.876449			
L51 2.75-2.25				1	1	0.875119			
L52 2.25-2.00				1	1	0.856349			
L53 2.00-0.00				1	1	0.869367			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
**********											

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	165.00 - 111.00	1	No Ice	0.20	0.82
							1/2" Ice	0.30	2.33
							1" Ice	0.40	4.46
							2" Ice	0.60	10.55
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	165.00 - 111.00	5	No Ice	0.00	0.82
							1/2" Ice	0.00	2.33
							1" Ice	0.00	4.46
							2" Ice	0.00	10.55

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	111.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	2.33
							1" Ice	0.00	4.46
							2" Ice	0.00	10.55
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	165.00 - 0.00	4	No Ice	0.00	0.82
							1/2" Ice	0.00	2.33
							1" Ice	0.00	4.46
							2" Ice	0.00	10.55
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	CaAa (Out Of Face)	165.00 - 111.00	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
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	CaAa (Out Of Face)	111.00 - 0.00	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
HCS 6X12 6AWG(1-3/8)	C	No	No	CaAa (Out Of Face)	165.00 - 0.00	2	No Ice	0.00	1.70
							1/2" Ice	0.00	2.85
							1" Ice	0.00	4.61
							2" Ice	0.00	9.96
***									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	156.00 - 0.00	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
WR-VG86ST-BRDA(7/8")	C	No	No	Inside Pole	156.00 - 0.00	2	No Ice	0.00	0.68
							1/2" Ice	0.00	0.68
							1" Ice	0.00	0.68
							2" Ice	0.00	0.68
A-DQZNB2Yn1750N(17/64")	C	No	No	Inside Pole	156.00 - 0.00	1	No Ice	0.00	0.03
							1/2" Ice	0.00	0.03
							1" Ice	0.00	0.03
							2" Ice	0.00	0.03
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HB114-1-08U4-M5F(1-1/4)	C	No	No	Inside Pole	148.00 - 0.00	3	No Ice	0.00	1.08
							1/2" Ice	0.00	1.08
							1" Ice	0.00	1.08
							2" Ice	0.00	1.08
MLC6C-06C-008R-008R(1-1/2)	C	No	No	Inside Pole	148.00 - 0.00	1	No Ice	0.00	1.52
							1/2" Ice	0.00	1.52
							1" Ice	0.00	1.52
							2" Ice	0.00	1.52
***									
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	138.00 - 124.00	1	No Ice	0.20	0.82
							1/2" Ice	0.30	2.33
							1" Ice	0.40	4.46
							2" Ice	0.60	10.55
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	124.00 - 0.00	1	No Ice	0.00	0.82
							1/2" Ice	0.00	2.33
							1" Ice	0.00	4.46
							2" Ice	0.00	10.55
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	138.00 - 0.00	5	No Ice	0.00	0.82
							1/2" Ice	0.00	2.33
							1" Ice	0.00	4.46
							2" Ice	0.00	10.55
***									
LDF1-50A(1/4)	C	No	No	CaAa (Out Of Face)	124.00 - 0.00	3	No Ice	0.00	0.06
							1/2" Ice	0.00	0.58
							1" Ice	0.00	1.70
							2" Ice	0.00	5.79
LDF4-50A(1/2)	C	No	No	CaAa (Out Of Face)	124.00 - 0.00	6	No Ice	0.00	0.15
							1/2" Ice	0.00	0.84
							1" Ice	0.00	2.14
							2" Ice	0.00	6.56
9207(5/16)	C	No	No	CaAa (Out Of Face)	124.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.57
							1" Ice	0.00	1.69

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							2" Ice	0.00	5.76
2" (Nominal) Conduit	C	No	No	CaAa (Out Of Face)	124.00 - 0.00	1	No Ice	0.24	0.72
							1/2" Ice	0.34	2.48
							1" Ice	0.44	4.84
							2" Ice	0.64	11.41
2" (Nominal) Conduit	C	No	No	CaAa (Out Of Face)	124.00 - 0.00	1	No Ice	0.00	0.72
							1/2" Ice	0.00	2.48
							1" Ice	0.00	4.84
							2" Ice	0.00	11.41
***									
EC4-50(1/2)	C	No	No	CaAa (Out Of Face)	118.00 - 0.00	1	No Ice	0.00	0.16
							1/2" Ice	0.00	0.85
							1" Ice	0.00	2.15
							2" Ice	0.00	6.59
***									
LDF6-50A(1-1/4)	C	No	No	CaAa (Out Of Face)	111.00 - 0.00	1	No Ice	0.16	0.60
							1/2" Ice	0.25	1.85
							1" Ice	0.35	3.72
							2" Ice	0.55	9.27
LDF6-50A(1-1/4)	C	No	No	CaAa (Out Of Face)	111.00 - 0.00	1	No Ice	0.00	0.60
							1/2" Ice	0.00	1.85
							1" Ice	0.00	3.72
							2" Ice	0.00	9.27
LDF7-50A(1-5/8)	C	No	No	CaAa (Out Of Face)	111.00 - 0.00	16	No Ice	0.00	0.82
							1/2" Ice	0.00	2.33
							1" Ice	0.00	4.46
							2" Ice	0.00	10.55
HB158-1-08U8-S8J18(1-5/8)	C	No	No	CaAa (Out Of Face)	111.00 - 0.00	2	No Ice	0.20	1.30
							1/2" Ice	0.30	2.81
							1" Ice	0.40	4.94
							2" Ice	0.60	11.02
**********									
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	104.00 - 0.00	2	No Ice	0.21	0.00
							1/2" Ice	0.32	0.00
							1" Ice	0.43	0.00
							2" Ice	0.65	0.00
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	113.50 - 98.50	1	No Ice	0.17	0.00
							1/2" Ice	0.28	0.00
							1" Ice	0.39	0.00
							2" Ice	0.61	0.00
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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	169.00-164.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.361	0.01
L2	164.00-159.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.803	0.06
L3	159.00-154.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.803	0.09
L4	154.00-149.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.803	0.12
L5	149.00-144.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.803	0.14
L6	144.00-139.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.803	0.14
L7	139.00-133.33	A	0.000	0.000	0.000	0.000	0.00

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
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.969	0.19
L8	133.33-131.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.933	0.06
L9	131.66-126.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.793	0.17
L10	126.66-121.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.885	0.17
L11	121.66-116.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.990	0.18
L12	116.66-111.66	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.297	0.18
L13	111.66-111.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.505	0.02
L14	111.00-110.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.239	0.01
L15	110.75-105.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.776	0.27
L16	105.75-101.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.101	0.23
L17	101.50-101.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.343	0.01
L18	101.25-101.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.343	0.01
L19	101.00-100.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.343	0.01
L20	100.75-95.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.401	0.27
L21	95.75-87.83	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	9.545	0.42
L22	87.83-86.83	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.205	0.05
L23	86.83-81.83	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L24	81.83-81.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.398	0.02
L25	81.50-81.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L26	81.25-76.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L27	76.25-71.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L28	71.25-66.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L29	66.25-61.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L30	61.25-56.25	A	0.000	0.000	0.000	0.000	0.00

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
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L31	56.25-51.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L32	51.25-43.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	9.545	0.42
L33	43.33-42.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.205	0.05
L34	42.33-37.40	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.941	0.26
L35	37.40-37.15	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L36	37.15-32.15	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L37	32.15-27.15	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L38	27.15-22.15	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L39	22.15-19.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.194	0.14
L40	19.50-19.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L41	19.25-14.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L42	14.25-9.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.026	0.27
L43	9.25-9.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L44	9.00-8.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L45	8.75-7.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.109	0.09
L46	7.00-6.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L47	6.75-5.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.109	0.09
L48	5.00-4.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L49	4.75-3.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.109	0.09
L50	3.00-2.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L51	2.75-2.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.603	0.03
L52	2.25-2.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.301	0.01
L53	2.00-0.00	A	0.000	0.000	0.000	0.000	0.00

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
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.410	0.11

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	169.00-164.00	A	1.999	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.160	0.14
L2	164.00-159.00	A	1.993	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.788	0.67
L3	159.00-154.00	A	1.986	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.775	0.69
L4	154.00-149.00	A	1.980	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.762	0.72
L5	149.00-144.00	A	1.973	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.749	0.74
L6	144.00-139.00	A	1.966	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.735	0.74
L7	139.00-133.33	A	1.959	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.241	1.13
L8	133.33-131.66	A	1.954	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.895	0.35
L9	131.66-126.66	A	1.949	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.638	1.04
L10	126.66-121.66	A	1.941	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.707	1.23
L11	121.66-116.66	A	1.933	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.789	1.45
L12	116.66-111.66	A	1.925	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.857	1.47
L13	111.66-111.00	A	1.920	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.546	0.19
L14	111.00-110.75	A	1.919	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.729	0.12
L15	110.75-105.75	A	1.914	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	14.561	2.45
L16	105.75-101.50	A	1.906	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.500	2.07
L17	101.50-101.25	A	1.902	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.040	0.12
L18	101.25-101.00	A	1.901	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.040	0.12
L19	101.00-100.75	A	1.901	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.040	0.12
L20	100.75-95.75	A	1.896	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	19.146	2.43

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
L21	95.75-87.83	A	1.883	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	28.104	3.81
L22	87.83-86.83	A	1.874	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.549	0.48
L23	86.83-81.83	A	1.867	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.644	2.38
L24	81.83-81.50	A	1.861	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.162	0.16
L25	81.50-81.25	A	1.861	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.880	0.12
L26	81.25-76.25	A	1.854	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.565	2.36
L27	76.25-71.25	A	1.842	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.489	2.35
L28	71.25-66.25	A	1.829	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.409	2.33
L29	66.25-61.25	A	1.816	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.323	2.31
L30	61.25-56.25	A	1.801	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.231	2.29
L31	56.25-51.25	A	1.785	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.132	2.26
L32	51.25-43.33	A	1.762	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	26.913	3.53
L33	43.33-42.33	A	1.745	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.398	0.45
L34	42.33-37.40	A	1.732	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.570	2.15
L35	37.40-37.15	A	1.721	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.837	0.11
L36	37.15-32.15	A	1.708	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.655	2.15
L37	32.15-27.15	A	1.682	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.491	2.11
L38	27.15-22.15	A	1.651	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.299	2.06
L39	22.15-19.50	A	1.623	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.548	1.07
L40	19.50-19.25	A	1.612	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.803	0.10
L41	19.25-14.25	A	1.588	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.910	1.97
L42	14.25-9.25	A	1.533	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	15.565	1.89
L43	9.25-9.00	A	1.495	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.766	0.09

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
L44	9.00-8.75	A	1.491	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.765	0.09
L45	8.75-7.00	A	1.473	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.317	0.63
L46	7.00-6.75	A	1.453	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.753	0.09
L47	6.75-5.00	A	1.431	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.224	0.61
L48	5.00-4.75	A	1.404	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.738	0.09
L49	4.75-3.00	A	1.372	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.097	0.58
L50	3.00-2.75	A	1.332	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.716	0.08
L51	2.75-2.25	A	1.313	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.420	0.16
L52	2.25-2.00	A	1.292	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.703	0.08
L53	2.00-0.00	A	1.198	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.393	0.56

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	169.00-164.00	-0.4833	0.2791	-0.7303	0.4216
L2	164.00-159.00	-1.8825	1.0868	-2.5941	1.4977
L3	159.00-154.00	-1.9084	1.1018	-2.6587	1.5350
L4	154.00-149.00	-1.9324	1.1157	-2.7191	1.5699
L5	149.00-144.00	-1.9546	1.1285	-2.7757	1.6026
L6	144.00-139.00	-1.9752	1.1404	-2.8287	1.6331
L7	139.00-133.33	-2.6486	1.5292	-3.6381	2.1005
L8	133.33-131.66	-2.7774	1.6035	-3.7893	2.1877
L9	131.66-126.66	-2.8000	1.6166	-3.8348	2.2140
L10	126.66-121.66	-2.9003	1.6745	-3.9308	2.2694
L11	121.66-116.66	-3.0077	1.7365	-4.0273	2.3252
L12	116.66-111.66	-3.2624	1.8836	-4.4039	2.5426
L13	111.66-111.00	-3.6331	2.0976	-4.9136	2.8369
L14	111.00-110.75	-4.2090	2.4301	-5.5389	3.1979
L15	110.75-105.75	-4.2381	2.4469	-5.5927	3.2290
L16	105.75-101.50	-4.9368	2.8503	-6.3676	3.6763
L17	101.50-101.25	-5.3630	3.0963	-6.8178	3.9362
L18	101.25-101.00	-5.3670	3.0986	-6.8244	3.9401
L19	101.00-100.75	-5.3667	3.0985	-6.8274	3.9418
L20	100.75-95.75	-5.1967	3.0003	-6.6457	3.8369
L21	95.75-87.83	-5.1040	2.9468	-6.5744	3.7957
L22	87.83-86.83	-5.1223	2.9574	-6.6047	3.8133
L23	86.83-81.83	-5.1598	2.9790	-6.6591	3.8446
L24	81.83-81.50	-5.1926	2.9980	-6.7140	3.8763
L25	81.50-81.25	-5.1966	3.0002	-6.7203	3.8800
L26	81.25-76.25	-5.2278	3.0183	-6.7726	3.9101
L27	76.25-71.25	-5.2860	3.0518	-6.8690	3.9658
L28	71.25-66.25	-5.3420	3.0842	-6.9608	4.0188
L29	66.25-61.25	-5.3963	3.1156	-7.0481	4.0692
L30	61.25-56.25	-5.4487	3.1458	-7.1304	4.1168
L31	56.25-51.25	-5.4992	3.1750	-7.2075	4.1613
L32	51.25-43.33	-5.5624	3.2114	-7.2995	4.2144

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L33	43.33-42.33	-5.5700	3.2158	-7.3112	4.2211
L34	42.33-37.40	-5.5977	3.2319	-7.3256	4.2294
L35	37.40-37.15	-5.6217	3.2457	-7.3558	4.2469
L36	37.15-32.15	-5.6453	3.2593	-7.3837	4.2630
L37	32.15-27.15	-5.6893	3.2847	-7.4308	4.2902
L38	27.15-22.15	-5.7322	3.3095	-7.4676	4.3114
L39	22.15-19.50	-5.7640	3.3278	-7.4866	4.3224
L40	19.50-19.25	-5.7770	3.3354	-7.4924	4.3257
L41	19.25-14.25	-5.7980	3.3475	-7.4959	4.3278
L42	14.25-9.25	-5.8378	3.3704	-7.4814	4.3194
L43	9.25-9.00	-5.8581	3.3822	-7.4561	4.3048
L44	9.00-8.75	-5.8604	3.3835	-7.4530	4.3030
L45	8.75-7.00	-5.8681	3.3879	-7.4372	4.2939
L46	7.00-6.75	-5.8750	3.3919	-7.4167	4.2820
L47	6.75-5.00	-5.8826	3.3963	-7.3914	4.2674
L48	5.00-4.75	-5.8968	3.4045	-7.3660	4.2528
L49	4.75-3.00	-5.9039	3.4086	-7.3228	4.2278
L50	3.00-2.75	-5.9117	3.4131	-7.2641	4.1939
L51	2.75-2.25	-5.9145	3.4147	-7.2354	4.1774
L52	2.25-2.00	-5.9138	3.4143	-7.1979	4.1557
L53	2.00-0.00	-5.9217	3.4189	-7.0360	4.0622

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

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
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.75 7.20 7.65 8.57	6.07 6.87 7.58 9.06	0.15 0.21 0.28 0.44
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.75 7.20 7.65 8.57	6.07 6.87 7.58 9.06	0.15 0.21 0.28 0.44
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	165.00	No Ice	6.75 7.20	6.07 6.87	0.15 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
			1.00			1/2" Ice	7.65	7.58	0.28
						1" Ice	8.57	9.06	0.44
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00	0.0000	165.00	No Ice	20.48	11.02	0.16
			0.00			1/2" Ice	21.23	12.55	0.30
			1.00			1" Ice	21.99	14.10	0.44
						2" Ice	23.44	16.45	0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00	0.0000	165.00	No Ice	20.48	11.02	0.16
			0.00			1/2" Ice	21.23	12.55	0.30
			1.00			1" Ice	21.99	14.10	0.44
						2" Ice	23.44	16.45	0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00	0.0000	165.00	No Ice	20.48	11.02	0.16
			0.00			1/2" Ice	21.23	12.55	0.30
			1.00			1" Ice	21.99	14.10	0.44
						2" Ice	23.44	16.45	0.78
KRY 112 144/1	A	From Leg	4.00	0.0000	165.00	No Ice	0.35	0.17	0.01
			0.00			1/2" Ice	0.43	0.23	0.01
			2.00			1" Ice	0.51	0.30	0.02
						2" Ice	0.70	0.46	0.03
KRY 112 144/1	A	From Leg	4.00	0.0000	165.00	No Ice	0.35	0.17	0.01
			0.00			1/2" Ice	0.43	0.23	0.01
			1.00			1" Ice	0.51	0.30	0.02
						2" Ice	0.70	0.46	0.03
KRY 112 144/1	B	From Leg	4.00	0.0000	165.00	No Ice	0.35	0.17	0.01
			0.00			1/2" Ice	0.43	0.23	0.01
			1.00			1" Ice	0.51	0.30	0.02
						2" Ice	0.70	0.46	0.03
RADIO 4449 B12/B71	B	From Leg	4.00	0.0000	165.00	No Ice	1.65	1.16	0.07
			0.00			1/2" Ice	1.81	1.30	0.09
			1.00			1" Ice	1.98	1.45	0.11
						2" Ice	2.34	1.76	0.16
(2) RADIO 4449 B12/B71	C	From Leg	4.00	0.0000	165.00	No Ice	1.65	1.16	0.07
			0.00			1/2" Ice	1.81	1.30	0.09
			1.00			1" Ice	1.98	1.45	0.11
						2" Ice	2.34	1.76	0.16
8-ft Ladder	C	None		0.0000	165.00	No Ice	7.07	7.07	0.04
						1/2" Ice	9.73	9.73	0.07
						1" Ice	11.19	11.19	0.08
						2" Ice	13.98	13.98	0.11
Platform Mount [LP 601-1]	C	None		0.0000	165.00	No Ice	28.47	28.47	1.12
						1/2" Ice	33.59	33.59	1.51
						1" Ice	38.71	38.71	1.91
						2" Ice	48.95	48.95	2.69
***									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	156.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
						2" Ice	7.49	7.16	0.29
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	156.00	No Ice	5.75	4.25	0.06
			0.00			1/2" Ice	6.18	5.01	0.10
			2.00			1" Ice	6.61	5.71	0.16
						2" Ice	7.49	7.16	0.29

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
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.21 13.90 14.59 15.91	9.58 11.05 12.50 14.75	0.10 0.20 0.30 0.55
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.21 13.90 14.59 15.91	9.58 11.05 12.50 14.75	0.10 0.20 0.30 0.55
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	9.90 10.47 11.01 12.11	8.11 9.30 10.21 12.01	0.08 0.16 0.25 0.46
(2) DTMABP7819VG12A	A	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
(2) DTMABP7819VG12A	B	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
(2) DTMABP7819VG12A	C	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
RRUS 11	A	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.05 0.07 0.10 0.15
RRUS 11	B	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.05 0.07 0.10 0.15
RRUS 11	C	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.79 3.00 3.21 3.67	1.19 1.34 1.50 1.84	0.05 0.07 0.10 0.15
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
RRUS12/RRUS A2	A	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.36 3.59 4.07	1.84 2.01 2.20 2.59	0.07 0.10 0.13 0.20
RRUS12/RRUS A2	B	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.36 3.59 4.07	1.84 2.01 2.20 2.59	0.07 0.10 0.13 0.20

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
RRUS12/RRUS A2	C	From Leg	4.00 0.00 2.00	0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.36 3.59 4.07	1.84 2.01 2.20 2.59	0.07 0.10 0.13 0.20
Platform Mount [LP 714-1]	C	None		0.0000	156.00	No Ice 1/2" Ice 1" Ice 2" Ice	37.47 44.23 50.99 64.51	37.47 44.23 50.99 64.51	1.60 2.04 2.48 3.36
***									
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.51 13.11 13.67 14.82	7.41 8.60 9.50 11.33	0.10 0.19 0.29 0.52
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.51 13.11 13.67 14.82	7.41 8.60 9.50 11.33	0.10 0.19 0.29 0.52
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.51 13.11 13.67 14.82	7.41 8.60 9.50 11.33	0.10 0.19 0.29 0.52
AAHC w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.41 4.73 5.06 5.74	2.69 3.08 3.49 4.36	0.12 0.16 0.20 0.31
AAHC w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.41 4.73 5.06 5.74	2.69 3.08 3.49 4.36	0.12 0.16 0.20 0.31
AAHC w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.41 4.73 5.06 5.74	2.69 3.08 3.49 4.36	0.12 0.16 0.20 0.31
800MHZ RRH	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
PCS 1900MHZ 4X45W-65MHZ	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
PCS 1900MHZ 4X45W-65MHZ	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17

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
						2" Ice			
PCS 1900MHZ 4X45W-65MHZ	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
RRH2X50-800	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.70 1.86 2.03 2.40	1.28 1.43 1.58 1.91	0.05 0.07 0.09 0.14
RRH2X50-800	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.70 1.86 2.03 2.40	1.28 1.43 1.58 1.91	0.05 0.07 0.09 0.14
RRH2X50-800	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.70 1.86 2.03 2.40	1.28 1.43 1.58 1.91	0.05 0.07 0.09 0.14
T-Arm Mount [TA 702-3]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.64 6.55 7.46 9.28	5.64 6.55 7.46 9.28	0.34 0.43 0.52 0.70
**********									
APXV18-206517-A w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.40 5.96 6.48 7.55	4.70 5.86 6.73 8.51	0.05 0.10 0.15 0.28
APXV18-206517-A w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.40 5.96 6.48 7.55	4.70 5.86 6.73 8.51	0.05 0.10 0.15 0.28
APXV18-206517-A w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.40 5.96 6.48 7.55	4.70 5.86 6.73 8.51	0.05 0.10 0.15 0.28
Pipe Mount [PM 601-3]	C	None		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.39 5.48 6.57 8.75	4.39 5.48 6.57 8.75	0.20 0.24 0.28 0.36
***									
LLPX310R w/ Mount Pipe	A	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 4.79 5.12 5.82	2.85 3.37 3.91 5.01	0.04 0.08 0.12 0.22
LLPX310R w/ Mount Pipe	B	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 4.79 5.12 5.82	2.85 3.37 3.91 5.01	0.04 0.08 0.12 0.22
LLPX310R w/ Mount Pipe	C	From Leg	3.00 0.00 4.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.46 4.79 5.12 5.82	2.85 3.37 3.91 5.01	0.04 0.08 0.12 0.22
WIMAX DAP HEAD	A	From Leg	3.00 0.00	0.0000	124.00	No Ice	1.55 1.70	0.68 0.80	0.03 0.04

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
			4.00			1/2" Ice	1.87	0.92	0.06
						1" Ice	2.22	1.19	0.09
						2" Ice			
WIMAX DAP HEAD	B	From Leg	3.00	0.0000	124.00	No Ice	1.55	0.68	0.03
			0.00			1/2" Ice	1.70	0.80	0.04
			4.00			1" Ice	1.87	0.92	0.06
						2" Ice	2.22	1.19	0.09
WIMAX DAP HEAD	C	From Leg	3.00	0.0000	124.00	No Ice	1.55	0.68	0.03
			0.00			1/2" Ice	1.70	0.80	0.04
			4.00			1" Ice	1.87	0.92	0.06
						2" Ice	2.22	1.19	0.09
HORIZON DUO	A	From Leg	3.00	0.0000	124.00	No Ice	0.47	0.29	0.01
			0.00			1/2" Ice	0.56	0.37	0.01
			4.00			1" Ice	0.65	0.44	0.02
						2" Ice	0.86	0.62	0.04
HORIZON DUO	C	From Leg	3.00	0.0000	124.00	No Ice	0.47	0.29	0.01
			0.00			1/2" Ice	0.56	0.37	0.01
			4.00			1" Ice	0.65	0.44	0.02
						2" Ice	0.86	0.62	0.04
2.375" OD x 5' Mount Pipe	A	From Leg	3.00	0.0000	124.00	No Ice	1.19	1.19	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
2.375" OD x 5' Mount Pipe	B	From Leg	3.00	0.0000	124.00	No Ice	1.19	1.19	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
2.375" OD x 5' Mount Pipe	C	From Leg	3.00	0.0000	124.00	No Ice	1.19	1.19	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.46	2.46	0.08
Side Arm Mount [SO 701-3]	C	None		0.0000	124.00	No Ice	2.83	2.83	0.20
						1/2" Ice	3.92	3.92	0.24
						1" Ice	5.01	5.01	0.28
						2" Ice	7.19	7.19	0.36
**********									
CXL 900-3LW	B	From Leg	2.00	60.0000	118.00	No Ice	0.14	0.14	0.00
			0.00			1/2" Ice	0.33	0.33	0.00
			1.00			1" Ice	0.48	0.48	0.01
						2" Ice	0.81	0.81	0.02
LNA	B	From Leg	2.00	60.0000	118.00	No Ice	0.14	0.05	0.00
			0.00			1/2" Ice	0.19	0.09	0.00
			1.00			1" Ice	0.25	0.13	0.00
						2" Ice	0.39	0.24	0.01
CAVITY FILTER	B	From Leg	2.00	60.0000	118.00	No Ice	0.19	0.08	0.00
			0.00			1/2" Ice	0.25	0.12	0.00
			1.00			1" Ice	0.32	0.17	0.01
						2" Ice	0.47	0.29	0.02
Side Arm Mount [SO 304-1]	C	From Leg	0.00	60.0000	118.00	No Ice	0.63	0.94	0.02
			0.00			1/2" Ice	1.00	1.45	0.03
			0.00			1" Ice	1.37	1.96	0.04
						2" Ice	2.11	2.98	0.06

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) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.77 9.34 9.89 10.99	6.96 8.18 9.14 11.02	0.07 0.14 0.21 0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.77 9.34 9.89 10.99	6.96 8.18 9.14 11.02	0.07 0.14 0.21 0.40
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.77 9.34 9.89 10.99	6.96 8.18 9.14 11.02	0.07 0.14 0.21 0.40
(2) LNX-6514DS-A1M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.41 8.97 9.50 10.59	7.08 8.27 9.18 11.02	0.06 0.13 0.21 0.39
(2) LNX-6514DS-A1M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.41 8.97 9.50 10.59	7.08 8.27 9.18 11.02	0.06 0.13 0.21 0.39
(2) LNX-6514DS-A1M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.41 8.97 9.50 10.59	7.08 8.27 9.18 11.02	0.06 0.13 0.21 0.39
B4 RRH2X60-4R	A	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.36 3.61 3.88 4.42	2.00 2.24 2.48 2.97	0.06 0.08 0.11 0.18
B4 RRH2X60-4R	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.36 3.61 3.88 4.42	2.00 2.24 2.48 2.97	0.06 0.08 0.11 0.18
B4 RRH2X60-4R	C	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.36 3.61 3.88 4.42	2.00 2.24 2.48 2.97	0.06 0.08 0.11 0.18
(2) RRFDC-3315-PF-48	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.36 3.60 3.84 4.34	2.19 2.39 2.61 3.05	0.03 0.06 0.09 0.17
Platform Mount [LP 303-1]	C	None		0.0000	111.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.66 18.87 23.08 31.50	14.66 18.87 23.08 31.50	1.25 1.48 1.71 2.18
**********									

Dishes

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
VHLP800-11	A	Paraboloid w/o Radome	From Leg	3.00 0.00 4.00	0.0000		124.00	2.80	No Ice 1/2" Ice 1" Ice 2" Ice	6.16 6.53 6.90 7.64	0.02 0.06 0.09 0.17
VHLP800-11	C	Paraboloid w/o Radome	From Leg	3.00 0.00 4.00	0.0000		124.00	2.80	No Ice 1/2" Ice 1" Ice 2" Ice	6.16 6.53 6.90 7.64	0.02 0.06 0.09 0.17

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 169.00-164.00	166.48	1.409	51	6.744	A	0.000	6.744	6.744	100.00	0.000	0.000
					B	0.000	6.744		100.00	0.000	0.000
					C	0.000	6.744		100.00	0.000	0.361
L2 164.00-159.00	161.48	1.4	50	7.148	A	0.000	7.148	7.148	100.00	0.000	0.000
					B	0.000	7.148		100.00	0.000	0.000
					C	0.000	7.148		100.00	0.000	1.803
L3 159.00-154.00	156.48	1.391	50	7.552	A	0.000	7.552	7.552	100.00	0.000	0.000
					B	0.000	7.552		100.00	0.000	0.000
					C	0.000	7.552		100.00	0.000	1.803
L4 154.00-149.00	151.48	1.381	50	7.955	A	0.000	7.955	7.955	100.00	0.000	0.000
					B	0.000	7.955		100.00	0.000	0.000
					C	0.000	7.955		100.00	0.000	1.803
L5 149.00-144.00	146.48	1.372	49	8.359	A	0.000	8.359	8.359	100.00	0.000	0.000
					B	0.000	8.359		100.00	0.000	0.000
					C	0.000	8.359		100.00	0.000	1.803
L6 144.00-139.00	141.48	1.362	49	8.763	A	0.000	8.763	8.763	100.00	0.000	0.000
					B	0.000	8.763		100.00	0.000	0.000
					C	0.000	8.763		100.00	0.000	1.803
L7 139.00-133.33	136.14	1.351	49	10.426	A	0.000	10.426	10.426	100.00	0.000	0.000
					B	0.000	10.426		100.00	0.000	0.000
					C	0.000	10.426		100.00	0.000	2.969
L8 133.33-131.66	132.49	1.343	48	3.096	A	0.000	3.096	3.096	100.00	0.000	0.000
					B	0.000	3.096		100.00	0.000	0.000
					C	0.000	3.096		100.00	0.000	0.933
L9 131.66-126.66	129.14	1.336	48	9.536	A	0.000	9.536	9.536	100.00	0.000	0.000
					B	0.000	9.536		100.00	0.000	0.000
					C	0.000	9.536		100.00	0.000	2.793
L10 126.66-121.66	124.14	1.325	48	9.934	A	0.000	9.934	9.934	100.00	0.000	0.000
					B	0.000	9.934		100.00	0.000	0.000
					C	0.000	9.934		100.00	0.000	2.885
L11 121.66-116.66	119.14	1.313	47	10.331	A	0.000	10.331	10.331	100.00	0.000	0.000
					B	0.000	10.331		100.00	0.000	0.000
					C	0.000	10.331		100.00	0.000	2.990
L12 116.66-111.66	114.14	1.301	47	10.729	A	0.000	10.729	10.729	100.00	0.000	0.000
					B	0.000	10.729		100.00	0.000	0.000
					C	0.000	10.729		100.00	0.000	3.297
L13 111.66-111.00	111.33	1.295	47	1.446	A	0.000	1.446	1.446	100.00	0.000	0.000
					B	0.000	1.446		100.00	0.000	0.000
					C	0.000	1.446		100.00	0.000	0.505
L14 111.00-110.75	110.87	1.293	47	0.549	A	0.000	0.549	0.549	100.00	0.000	0.000
					B	0.000	0.549		100.00	0.000	0.000
					C	0.000	0.549		100.00	0.000	0.239
L15 110.75-105.75	108.24	1.287	46	11.184	A	0.000	11.184	11.184	100.00	0.000	0.000
					B	0.000	11.184		100.00	0.000	0.000
					C	0.000	11.184		100.00	0.000	4.776
L16 105.75-101.50	103.61	1.275	46	9.820	A	0.000	9.820	9.820	100.00	0.000	0.000
					B	0.000	9.820		100.00	0.000	0.000
					C	0.000	9.820		100.00	0.000	5.101

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L17 101.50-101.25	101.37	1.269	46	0.585	A	0.000	0.585	0.585	100.00	0.000	0.000
					B	0.000	0.585		100.00	0.000	0.000
					C	0.000	0.585		100.00	0.000	0.343
L18 101.25-101.00	101.12	1.269	46	0.586	A	0.000	0.586	0.586	100.00	0.000	0.000
					B	0.000	0.586		100.00	0.000	0.000
					C	0.000	0.586		100.00	0.000	0.343
L19 101.00-100.75	100.87	1.268	46	0.588	A	0.000	0.588	0.588	100.00	0.000	0.000
					B	0.000	0.588		100.00	0.000	0.000
					C	0.000	0.588		100.00	0.000	0.343
L20 100.75-95.75	98.24	1.261	45	11.970	A	0.000	11.970	11.970	100.00	0.000	0.000
					B	0.000	11.970		100.00	0.000	0.000
					C	0.000	11.970		100.00	0.000	6.401
L21 95.75-87.83	91.76	1.243	45	19.776	A	0.000	19.776	19.776	100.00	0.000	0.000
					B	0.000	19.776		100.00	0.000	0.000
					C	0.000	19.776		100.00	0.000	9.545
L22 87.83-86.83	87.33	1.23	44	2.512	A	0.000	2.512	2.512	100.00	0.000	0.000
					B	0.000	2.512		100.00	0.000	0.000
					C	0.000	2.512		100.00	0.000	1.205
L23 86.83-81.83	84.32	1.221	44	12.800	A	0.000	12.800	12.800	100.00	0.000	0.000
					B	0.000	12.800		100.00	0.000	0.000
					C	0.000	12.800		100.00	0.000	6.026
L24 81.83-81.50	81.66	1.213	44	0.859	A	0.000	0.859	0.859	100.00	0.000	0.000
					B	0.000	0.859		100.00	0.000	0.000
					C	0.000	0.859		100.00	0.000	0.398
L25 81.50-81.25	81.37	1.212	44	0.652	A	0.000	0.652	0.652	100.00	0.000	0.000
					B	0.000	0.652		100.00	0.000	0.000
					C	0.000	0.652		100.00	0.000	0.301
L26 81.25-76.25	78.74	1.204	43	13.244	A	0.000	13.244	13.244	100.00	0.000	0.000
					B	0.000	13.244		100.00	0.000	0.000
					C	0.000	13.244		100.00	0.000	6.026
L27 76.25-71.25	73.74	1.187	43	13.644	A	0.000	13.644	13.644	100.00	0.000	0.000
					B	0.000	13.644		100.00	0.000	0.000
					C	0.000	13.644		100.00	0.000	6.026
L28 71.25-66.25	68.74	1.17	42	14.044	A	0.000	14.044	14.044	100.00	0.000	0.000
					B	0.000	14.044		100.00	0.000	0.000
					C	0.000	14.044		100.00	0.000	6.026
L29 66.25-61.25	63.74	1.151	41	14.443	A	0.000	14.443	14.443	100.00	0.000	0.000
					B	0.000	14.443		100.00	0.000	0.000
					C	0.000	14.443		100.00	0.000	6.026
L30 61.25-56.25	58.74	1.132	41	14.842	A	0.000	14.842	14.842	100.00	0.000	0.000
					B	0.000	14.842		100.00	0.000	0.000
					C	0.000	14.842		100.00	0.000	6.026
L31 56.25-51.25	53.74	1.111	40	15.241	A	0.000	15.241	15.241	100.00	0.000	0.000
					B	0.000	15.241		100.00	0.000	0.000
					C	0.000	15.241		100.00	0.000	6.026
L32 51.25-43.33	47.26	1.081	39	24.957	A	0.000	24.957	24.957	100.00	0.000	0.000
					B	0.000	24.957		100.00	0.000	0.000
					C	0.000	24.957		100.00	0.000	9.545
L33 43.33-42.33	42.83	1.059	38	3.156	A	0.000	3.156	3.156	100.00	0.000	0.000
					B	0.000	3.156		100.00	0.000	0.000
					C	0.000	3.156		100.00	0.000	1.205
L34 42.33-37.40	39.85	1.043	38	15.791	A	0.000	15.791	15.791	100.00	0.000	0.000
					B	0.000	15.791		100.00	0.000	0.000
					C	0.000	15.791		100.00	0.000	5.941
L35 37.40-37.15	37.27	1.028	37	0.811	A	0.000	0.811	0.811	100.00	0.000	0.000
					B	0.000	0.811		100.00	0.000	0.000
					C	0.000	0.811		100.00	0.000	0.301
L36 37.15-32.15	34.64	1.012	36	16.432	A	0.000	16.432	16.432	100.00	0.000	0.000
					B	0.000	16.432		100.00	0.000	0.000
					C	0.000	16.432		100.00	0.000	6.026
L37 32.15-27.15	29.64	0.98	35	16.831	A	0.000	16.831	16.831	100.00	0.000	0.000
					B	0.000	16.831		100.00	0.000	0.000
					C	0.000	16.831		100.00	0.000	6.026
L38 27.15-22.15	24.64	0.942	34	17.229	A	0.000	17.229	17.229	100.00	0.000	0.000
					B	0.000	17.229		100.00	0.000	0.000
					C	0.000	17.229		100.00	0.000	6.026
L39 22.15-19.50	20.82	0.91	33	9.293	A	0.000	9.293	9.293	100.00	0.000	0.000
					B	0.000	9.293		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	9.293		100.00	0.000	3.194
L40 19.50-19.25	19.37	0.896	32	0.882	A	0.000	0.882	0.882	100.00	0.000	0.000
					B	0.000	0.882		100.00	0.000	0.000
					C	0.000	0.882		100.00	0.000	0.301
L41 19.25-14.25	16.74	0.869	31	17.855	A	0.000	17.855	17.855	100.00	0.000	0.000
					B	0.000	17.855		100.00	0.000	0.000
					C	0.000	17.855		100.00	0.000	6.026
L42 14.25-9.25	11.74	0.85	31	18.252	A	0.000	18.252	18.252	100.00	0.000	0.000
					B	0.000	18.252		100.00	0.000	0.000
					C	0.000	18.252		100.00	0.000	6.026
L43 9.25-9.00	9.12	0.85	31	0.923	A	0.000	0.923	0.923	100.00	0.000	0.000
					B	0.000	0.923		100.00	0.000	0.000
					C	0.000	0.923		100.00	0.000	0.301
L44 9.00-8.75	8.87	0.85	31	0.924	A	0.000	0.924	0.924	100.00	0.000	0.000
					B	0.000	0.924		100.00	0.000	0.000
					C	0.000	0.924		100.00	0.000	0.301
L45 8.75-7.00	7.87	0.85	31	6.496	A	0.000	6.496	6.496	100.00	0.000	0.000
					B	0.000	6.496		100.00	0.000	0.000
					C	0.000	6.496		100.00	0.000	2.109
L46 7.00-6.75	6.87	0.85	31	0.932	A	0.000	0.932	0.932	100.00	0.000	0.000
					B	0.000	0.932		100.00	0.000	0.000
					C	0.000	0.932		100.00	0.000	0.301
L47 6.75-5.00	5.87	0.85	31	6.552	A	0.000	6.552	6.552	100.00	0.000	0.000
					B	0.000	6.552		100.00	0.000	0.000
					C	0.000	6.552		100.00	0.000	2.109
L48 5.00-4.75	4.87	0.85	31	0.939	A	0.000	0.939	0.939	100.00	0.000	0.000
					B	0.000	0.939		100.00	0.000	0.000
					C	0.000	0.939		100.00	0.000	0.301
L49 4.75-3.00	3.87	0.85	31	6.598	A	0.000	6.598	6.598	100.00	0.000	0.000
					B	0.000	6.598		100.00	0.000	0.000
					C	0.000	6.598		100.00	0.000	2.109
L50 3.00-2.75	2.87	0.85	31	0.946	A	0.000	0.946	0.946	100.00	0.000	0.000
					B	0.000	0.946		100.00	0.000	0.000
					C	0.000	0.946		100.00	0.000	0.301
L51 2.75-2.25	2.50	0.85	31	1.896	A	0.000	1.896	1.896	100.00	0.000	0.000
					B	0.000	1.896		100.00	0.000	0.000
					C	0.000	1.896		100.00	0.000	0.603
L52 2.25-2.00	2.12	0.85	31	0.950	A	0.000	0.950	0.950	100.00	0.000	0.000
					B	0.000	0.950		100.00	0.000	0.000
					C	0.000	0.950		100.00	0.000	0.301
L53 2.00-0.00	1.00	0.85	31	7.638	A	0.000	7.638	7.638	100.00	0.000	0.000
					B	0.000	7.638		100.00	0.000	0.000
					C	0.000	7.638		100.00	0.000	2.410

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 169.00-164.00	166.48	1.409	8	1.9986	8.409	A	0.000	8.409	8.409	100.00	0.000	0.000
						B	0.000	8.409		100.00	0.000	0.000
						C	0.000	8.409		100.00	0.000	1.160
L2 164.00-159.00	161.48	1.4	8	1.9925	8.808	A	0.000	8.808	8.808	100.00	0.000	0.000
						B	0.000	8.808		100.00	0.000	0.000
						C	0.000	8.808		100.00	0.000	5.788
L3 159.00-154.00	156.48	1.391	8	1.9863	9.207	A	0.000	9.207	9.207	100.00	0.000	0.000
						B	0.000	9.207		100.00	0.000	0.000
						C	0.000	9.207		100.00	0.000	5.775
L4 154.00-149.00	151.48	1.381	8	1.9799	9.605	A	0.000	9.605	9.605	100.00	0.000	0.000
						B	0.000	9.605		100.00	0.000	0.000
						C	0.000	9.605		100.00	0.000	5.762
L5 149.00-144.00	146.48	1.372	8	1.9732	10.004	A	0.000	10.004	10.004	100.00	0.000	0.000
						B	0.000	10.004		100.00	0.000	0.000
						C	0.000	10.004		100.00	0.000	5.749

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L6 144.00-139.00	141.48	1.362	8	1.9664	10.402	A	0.000	10.402	10.402	100.00	0.000	0.000
						B	0.000	10.402		100.00	0.000	0.000
						C	0.000	10.402		100.00	0.000	5.735
L7 139.00-133.33	136.14	1.351	8	1.9588	12.277	A	0.000	12.277	12.277	100.00	0.000	0.000
						B	0.000	12.277		100.00	0.000	0.000
						C	0.000	12.277		100.00	0.000	9.241
L8 133.33-131.66	132.49	1.343	8	1.9535	3.641	A	0.000	3.641	3.641	100.00	0.000	0.000
						B	0.000	3.641		100.00	0.000	0.000
						C	0.000	3.641		100.00	0.000	2.895
L9 131.66-126.66	129.14	1.336	8	1.9485	11.159	A	0.000	11.159	11.159	100.00	0.000	0.000
						B	0.000	11.159		100.00	0.000	0.000
						C	0.000	11.159		100.00	0.000	8.638
L10 126.66-121.66	124.14	1.325	8	1.9408	11.551	A	0.000	11.551	11.551	100.00	0.000	0.000
						B	0.000	11.551		100.00	0.000	0.000
						C	0.000	11.551		100.00	0.000	8.707
L11 121.66-116.66	119.14	1.313	8	1.9329	11.942	A	0.000	11.942	11.942	100.00	0.000	0.000
						B	0.000	11.942		100.00	0.000	0.000
						C	0.000	11.942		100.00	0.000	8.789
L12 116.66-111.66	114.14	1.301	7	1.9246	12.333	A	0.000	12.333	12.333	100.00	0.000	0.000
						B	0.000	12.333		100.00	0.000	0.000
						C	0.000	12.333		100.00	0.000	9.857
L13 111.66-111.00	111.33	1.295	7	1.9198	1.657	A	0.000	1.657	1.657	100.00	0.000	0.000
						B	0.000	1.657		100.00	0.000	0.000
						C	0.000	1.657		100.00	0.000	1.546
L14 111.00-110.75	110.87	1.293	7	1.9190	0.629	A	0.000	0.629	0.629	100.00	0.000	0.000
						B	0.000	0.629		100.00	0.000	0.000
						C	0.000	0.629		100.00	0.000	0.729
L15 110.75-105.75	108.24	1.287	7	1.9144	12.779	A	0.000	12.779	12.779	100.00	0.000	0.000
						B	0.000	12.779		100.00	0.000	0.000
						C	0.000	12.779		100.00	0.000	14.561
L16 105.75-101.50	103.61	1.275	7	1.9061	11.170	A	0.000	11.170	11.170	100.00	0.000	0.000
						B	0.000	11.170		100.00	0.000	0.000
						C	0.000	11.170		100.00	0.000	15.500
L17 101.50-101.25	101.37	1.269	7	1.9019	0.664	A	0.000	0.664	0.664	100.00	0.000	0.000
						B	0.000	0.664		100.00	0.000	0.000
						C	0.000	0.664		100.00	0.000	1.040
L18 101.25-101.00	101.12	1.269	7	1.9014	0.665	A	0.000	0.665	0.665	100.00	0.000	0.000
						B	0.000	0.665		100.00	0.000	0.000
						C	0.000	0.665		100.00	0.000	1.040
L19 101.00-100.75	100.87	1.268	7	1.9010	0.667	A	0.000	0.667	0.667	100.00	0.000	0.000
						B	0.000	0.667		100.00	0.000	0.000
						C	0.000	0.667		100.00	0.000	1.040
L20 100.75-95.75	98.24	1.261	7	1.8959	13.550	A	0.000	13.550	13.550	100.00	0.000	0.000
						B	0.000	13.550		100.00	0.000	0.000
						C	0.000	13.550		100.00	0.000	19.146
L21 95.75-87.83	91.76	1.243	7	1.8830	22.262	A	0.000	22.262	22.262	100.00	0.000	0.000
						B	0.000	22.262		100.00	0.000	0.000
						C	0.000	22.262		100.00	0.000	28.104
L22 87.83-86.83	87.33	1.23	7	1.8738	2.826	A	0.000	2.826	2.826	100.00	0.000	0.000
						B	0.000	2.826		100.00	0.000	0.000
						C	0.000	2.826		100.00	0.000	3.549
L23 86.83-81.83	84.32	1.221	7	1.8672	14.356	A	0.000	14.356	14.356	100.00	0.000	0.000
						B	0.000	14.356		100.00	0.000	0.000
						C	0.000	14.356		100.00	0.000	17.644
L24 81.83-81.50	81.66	1.213	7	1.8612	0.961	A	0.000	0.961	0.961	100.00	0.000	0.000
						B	0.000	0.961		100.00	0.000	0.000
						C	0.000	0.961		100.00	0.000	1.162
L25 81.50-81.25	81.37	1.212	7	1.8606	0.729	A	0.000	0.729	0.729	100.00	0.000	0.000
						B	0.000	0.729		100.00	0.000	0.000
						C	0.000	0.729		100.00	0.000	0.880
L26 81.25-76.25	78.74	1.204	7	1.8545	14.790	A	0.000	14.790	14.790	100.00	0.000	0.000
						B	0.000	14.790		100.00	0.000	0.000
						C	0.000	14.790		100.00	0.000	17.565
L27 76.25-71.25	73.74	1.187	7	1.8423	15.179	A	0.000	15.179	15.179	100.00	0.000	0.000
						B	0.000	15.179		100.00	0.000	0.000
						C	0.000	15.179		100.00	0.000	17.489
L28 71.25-66.25	68.74	1.17	7	1.8294	15.568	A	0.000	15.568	15.568	100.00	0.000	0.000
						B	0.000	15.568		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	15.568		100.00	0.000	17.409
L29 66.25-61.25	63.74	1.151	7	1.8157	15.956	A	0.000	15.956	15.956	100.00	0.000	0.000
						B	0.000	15.956		100.00	0.000	0.000
						C	0.000	15.956		100.00	0.000	17.323
L30 61.25-56.25	58.74	1.132	7	1.8009	16.342	A	0.000	16.342	16.342	100.00	0.000	0.000
						B	0.000	16.342		100.00	0.000	0.000
						C	0.000	16.342		100.00	0.000	17.231
L31 56.25-51.25	53.74	1.111	6	1.7850	16.729	A	0.000	16.729	16.729	100.00	0.000	0.000
						B	0.000	16.729		100.00	0.000	0.000
						C	0.000	16.729		100.00	0.000	17.132
L32 51.25-43.33	47.26	1.081	6	1.7622	27.283	A	0.000	27.283	27.283	100.00	0.000	0.000
						B	0.000	27.283		100.00	0.000	0.000
						C	0.000	27.283		100.00	0.000	26.913
L33 43.33-42.33	42.83	1.059	6	1.7449	3.450	A	0.000	3.450	3.450	100.00	0.000	0.000
						B	0.000	3.450		100.00	0.000	0.000
						C	0.000	3.450		100.00	0.000	3.398
L34 42.33-37.40	39.85	1.043	6	1.7324	17.215	A	0.000	17.215	17.215	100.00	0.000	0.000
						B	0.000	17.215		100.00	0.000	0.000
						C	0.000	17.215		100.00	0.000	16.570
L35 37.40-37.15	37.27	1.028	6	1.7208	0.883	A	0.000	0.883	0.883	100.00	0.000	0.000
						B	0.000	0.883		100.00	0.000	0.000
						C	0.000	0.883		100.00	0.000	0.837
L36 37.15-32.15	34.64	1.012	6	1.7083	17.855	A	0.000	17.855	17.855	100.00	0.000	0.000
						B	0.000	17.855		100.00	0.000	0.000
						C	0.000	17.855		100.00	0.000	16.655
L37 32.15-27.15	29.64	0.98	6	1.6818	18.233	A	0.000	18.233	18.233	100.00	0.000	0.000
						B	0.000	18.233		100.00	0.000	0.000
						C	0.000	18.233		100.00	0.000	16.491
L38 27.15-22.15	24.64	0.942	5	1.6511	18.605	A	0.000	18.605	18.605	100.00	0.000	0.000
						B	0.000	18.605		100.00	0.000	0.000
						C	0.000	18.605		100.00	0.000	16.299
L39 22.15-19.50	20.82	0.91	5	1.6235	10.010	A	0.000	10.010	10.010	100.00	0.000	0.000
						B	0.000	10.010		100.00	0.000	0.000
						C	0.000	10.010		100.00	0.000	8.548
L40 19.50-19.25	19.37	0.896	5	1.6118	0.949	A	0.000	0.949	0.949	100.00	0.000	0.000
						B	0.000	0.949		100.00	0.000	0.000
						C	0.000	0.949		100.00	0.000	0.803
L41 19.25-14.25	16.74	0.869	5	1.5885	19.179	A	0.000	19.179	19.179	100.00	0.000	0.000
						B	0.000	19.179		100.00	0.000	0.000
						C	0.000	19.179		100.00	0.000	15.910
L42 14.25-9.25	11.74	0.85	5	1.5331	19.530	A	0.000	19.530	19.530	100.00	0.000	0.000
						B	0.000	19.530		100.00	0.000	0.000
						C	0.000	19.530		100.00	0.000	15.565
L43 9.25-9.00	9.12	0.85	5	1.4949	0.985	A	0.000	0.985	0.985	100.00	0.000	0.000
						B	0.000	0.985		100.00	0.000	0.000
						C	0.000	0.985		100.00	0.000	0.766
L44 9.00-8.75	8.87	0.85	5	1.4908	0.986	A	0.000	0.986	0.986	100.00	0.000	0.000
						B	0.000	0.986		100.00	0.000	0.000
						C	0.000	0.986		100.00	0.000	0.765
L45 8.75-7.00	7.87	0.85	5	1.4730	6.925	A	0.000	6.925	6.925	100.00	0.000	0.000
						B	0.000	6.925		100.00	0.000	0.000
						C	0.000	6.925		100.00	0.000	5.317
L46 7.00-6.75	6.87	0.85	5	1.4532	0.993	A	0.000	0.993	0.993	100.00	0.000	0.000
						B	0.000	0.993		100.00	0.000	0.000
						C	0.000	0.993		100.00	0.000	0.753
L47 6.75-5.00	5.87	0.85	5	1.4305	6.970	A	0.000	6.970	6.970	100.00	0.000	0.000
						B	0.000	6.970		100.00	0.000	0.000
						C	0.000	6.970		100.00	0.000	5.224
L48 5.00-4.75	4.87	0.85	5	1.4041	0.997	A	0.000	0.997	0.997	100.00	0.000	0.000
						B	0.000	0.997		100.00	0.000	0.000
						C	0.000	0.997		100.00	0.000	0.738
L49 4.75-3.00	3.87	0.85	5	1.3722	6.998	A	0.000	6.998	6.998	100.00	0.000	0.000
						B	0.000	6.998		100.00	0.000	0.000
						C	0.000	6.998		100.00	0.000	5.097
L50 3.00-2.75	2.87	0.85	5	1.3319	1.002	A	0.000	1.002	1.002	100.00	0.000	0.000
						B	0.000	1.002		100.00	0.000	0.000
						C	0.000	1.002		100.00	0.000	0.716
L51 2.75-2.25	2.50	0.85	5	1.3134	2.005	A	0.000	2.005	2.005	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						B	0.000	2.005		100.00	0.000	0.000
						C	0.000	2.005		100.00	0.000	1.420
L52 2.25-2.00	2.12	0.85	5	1.2922	1.004	A	0.000	1.004	1.004	100.00	0.000	0.000
						B	0.000	1.004		100.00	0.000	0.000
						C	0.000	1.004		100.00	0.000	0.703
L53 2.00-0.00	1.00	0.85	5	1.1982	8.038	A	0.000	8.038	8.038	100.00	0.000	0.000
						B	0.000	8.038		100.00	0.000	0.000
						C	0.000	8.038		100.00	0.000	5.393

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 169.00-164.00	166.48	1.409	11	6.744	A	0.000	6.744	6.744	100.00	0.000	0.000
					B	0.000	6.744		100.00	0.000	0.000
					C	0.000	6.744		100.00	0.000	0.361
L2 164.00-159.00	161.48	1.4	11	7.148	A	0.000	7.148	7.148	100.00	0.000	0.000
					B	0.000	7.148		100.00	0.000	0.000
					C	0.000	7.148		100.00	0.000	1.803
L3 159.00-154.00	156.48	1.391	11	7.552	A	0.000	7.552	7.552	100.00	0.000	0.000
					B	0.000	7.552		100.00	0.000	0.000
					C	0.000	7.552		100.00	0.000	1.803
L4 154.00-149.00	151.48	1.381	11	7.955	A	0.000	7.955	7.955	100.00	0.000	0.000
					B	0.000	7.955		100.00	0.000	0.000
					C	0.000	7.955		100.00	0.000	1.803
L5 149.00-144.00	146.48	1.372	11	8.359	A	0.000	8.359	8.359	100.00	0.000	0.000
					B	0.000	8.359		100.00	0.000	0.000
					C	0.000	8.359		100.00	0.000	1.803
L6 144.00-139.00	141.48	1.362	11	8.763	A	0.000	8.763	8.763	100.00	0.000	0.000
					B	0.000	8.763		100.00	0.000	0.000
					C	0.000	8.763		100.00	0.000	1.803
L7 139.00-133.33	136.14	1.351	11	10.426	A	0.000	10.426	10.426	100.00	0.000	0.000
					B	0.000	10.426		100.00	0.000	0.000
					C	0.000	10.426		100.00	0.000	2.969
L8 133.33-131.66	132.49	1.343	10	3.096	A	0.000	3.096	3.096	100.00	0.000	0.000
					B	0.000	3.096		100.00	0.000	0.000
					C	0.000	3.096		100.00	0.000	0.933
L9 131.66-126.66	129.14	1.336	10	9.536	A	0.000	9.536	9.536	100.00	0.000	0.000
					B	0.000	9.536		100.00	0.000	0.000
					C	0.000	9.536		100.00	0.000	2.793
L10 126.66-121.66	124.14	1.325	10	9.934	A	0.000	9.934	9.934	100.00	0.000	0.000
					B	0.000	9.934		100.00	0.000	0.000
					C	0.000	9.934		100.00	0.000	2.885
L11 121.66-116.66	119.14	1.313	10	10.331	A	0.000	10.331	10.331	100.00	0.000	0.000
					B	0.000	10.331		100.00	0.000	0.000
					C	0.000	10.331		100.00	0.000	2.990
L12 116.66-111.66	114.14	1.301	10	10.729	A	0.000	10.729	10.729	100.00	0.000	0.000
					B	0.000	10.729		100.00	0.000	0.000
					C	0.000	10.729		100.00	0.000	3.297
L13 111.66-111.00	111.33	1.295	10	1.446	A	0.000	1.446	1.446	100.00	0.000	0.000
					B	0.000	1.446		100.00	0.000	0.000
					C	0.000	1.446		100.00	0.000	0.505
L14 111.00-110.75	110.87	1.293	10	0.549	A	0.000	0.549	0.549	100.00	0.000	0.000
					B	0.000	0.549		100.00	0.000	0.000
					C	0.000	0.549		100.00	0.000	0.239
L15 110.75-105.75	108.24	1.287	10	11.184	A	0.000	11.184	11.184	100.00	0.000	0.000
					B	0.000	11.184		100.00	0.000	0.000
					C	0.000	11.184		100.00	0.000	4.776
L16 105.75-101.50	103.61	1.275	10	9.820	A	0.000	9.820	9.820	100.00	0.000	0.000
					B	0.000	9.820		100.00	0.000	0.000
					C	0.000	9.820		100.00	0.000	5.101
L17 101.50-101.25	101.37	1.269	10	0.585	A	0.000	0.585	0.585	100.00	0.000	0.000
					B	0.000	0.585		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	0.585		100.00	0.000	0.343
L18 101.25-101.00	101.12	1.269	10	0.586	A	0.000	0.586	0.586	100.00	0.000	0.000
					B	0.000	0.586		100.00	0.000	0.000
					C	0.000	0.586		100.00	0.000	0.343
L19 101.00-100.75	100.87	1.268	10	0.588	A	0.000	0.588	0.588	100.00	0.000	0.000
					B	0.000	0.588		100.00	0.000	0.000
					C	0.000	0.588		100.00	0.000	0.343
L20 100.75-95.75	98.24	1.261	10	11.970	A	0.000	11.970	11.970	100.00	0.000	0.000
					B	0.000	11.970		100.00	0.000	0.000
					C	0.000	11.970		100.00	0.000	6.401
L21 95.75-87.83	91.76	1.243	10	19.776	A	0.000	19.776	19.776	100.00	0.000	0.000
					B	0.000	19.776		100.00	0.000	0.000
					C	0.000	19.776		100.00	0.000	9.545
L22 87.83-86.83	87.33	1.23	10	2.512	A	0.000	2.512	2.512	100.00	0.000	0.000
					B	0.000	2.512		100.00	0.000	0.000
					C	0.000	2.512		100.00	0.000	1.205
L23 86.83-81.83	84.32	1.221	10	12.800	A	0.000	12.800	12.800	100.00	0.000	0.000
					B	0.000	12.800		100.00	0.000	0.000
					C	0.000	12.800		100.00	0.000	6.026
L24 81.83-81.50	81.66	1.213	9	0.859	A	0.000	0.859	0.859	100.00	0.000	0.000
					B	0.000	0.859		100.00	0.000	0.000
					C	0.000	0.859		100.00	0.000	0.398
L25 81.50-81.25	81.37	1.212	9	0.652	A	0.000	0.652	0.652	100.00	0.000	0.000
					B	0.000	0.652		100.00	0.000	0.000
					C	0.000	0.652		100.00	0.000	0.301
L26 81.25-76.25	78.74	1.204	9	13.244	A	0.000	13.244	13.244	100.00	0.000	0.000
					B	0.000	13.244		100.00	0.000	0.000
					C	0.000	13.244		100.00	0.000	6.026
L27 76.25-71.25	73.74	1.187	9	13.644	A	0.000	13.644	13.644	100.00	0.000	0.000
					B	0.000	13.644		100.00	0.000	0.000
					C	0.000	13.644		100.00	0.000	6.026
L28 71.25-66.25	68.74	1.17	9	14.044	A	0.000	14.044	14.044	100.00	0.000	0.000
					B	0.000	14.044		100.00	0.000	0.000
					C	0.000	14.044		100.00	0.000	6.026
L29 66.25-61.25	63.74	1.151	9	14.443	A	0.000	14.443	14.443	100.00	0.000	0.000
					B	0.000	14.443		100.00	0.000	0.000
					C	0.000	14.443		100.00	0.000	6.026
L30 61.25-56.25	58.74	1.132	9	14.842	A	0.000	14.842	14.842	100.00	0.000	0.000
					B	0.000	14.842		100.00	0.000	0.000
					C	0.000	14.842		100.00	0.000	6.026
L31 56.25-51.25	53.74	1.111	9	15.241	A	0.000	15.241	15.241	100.00	0.000	0.000
					B	0.000	15.241		100.00	0.000	0.000
					C	0.000	15.241		100.00	0.000	6.026
L32 51.25-43.33	47.26	1.081	8	24.957	A	0.000	24.957	24.957	100.00	0.000	0.000
					B	0.000	24.957		100.00	0.000	0.000
					C	0.000	24.957		100.00	0.000	9.545
L33 43.33-42.33	42.83	1.059	8	3.156	A	0.000	3.156	3.156	100.00	0.000	0.000
					B	0.000	3.156		100.00	0.000	0.000
					C	0.000	3.156		100.00	0.000	1.205
L34 42.33-37.40	39.85	1.043	8	15.791	A	0.000	15.791	15.791	100.00	0.000	0.000
					B	0.000	15.791		100.00	0.000	0.000
					C	0.000	15.791		100.00	0.000	5.941
L35 37.40-37.15	37.27	1.028	8	0.811	A	0.000	0.811	0.811	100.00	0.000	0.000
					B	0.000	0.811		100.00	0.000	0.000
					C	0.000	0.811		100.00	0.000	0.301
L36 37.15-32.15	34.64	1.012	8	16.432	A	0.000	16.432	16.432	100.00	0.000	0.000
					B	0.000	16.432		100.00	0.000	0.000
					C	0.000	16.432		100.00	0.000	6.026
L37 32.15-27.15	29.64	0.98	8	16.831	A	0.000	16.831	16.831	100.00	0.000	0.000
					B	0.000	16.831		100.00	0.000	0.000
					C	0.000	16.831		100.00	0.000	6.026
L38 27.15-22.15	24.64	0.942	7	17.229	A	0.000	17.229	17.229	100.00	0.000	0.000
					B	0.000	17.229		100.00	0.000	0.000
					C	0.000	17.229		100.00	0.000	6.026
L39 22.15-19.50	20.82	0.91	7	9.293	A	0.000	9.293	9.293	100.00	0.000	0.000
					B	0.000	9.293		100.00	0.000	0.000
					C	0.000	9.293		100.00	0.000	3.194

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L40 19.50-19.25	19.37	0.896	7	0.882	A	0.000	0.882	0.882	100.00	0.000	0.000
					B	0.000	0.882		100.00	0.000	0.000
					C	0.000	0.882		100.00	0.000	0.301
L41 19.25-14.25	16.74	0.869	7	17.855	A	0.000	17.855	17.855	100.00	0.000	0.000
					B	0.000	17.855		100.00	0.000	0.000
					C	0.000	17.855		100.00	0.000	6.026
L42 14.25-9.25	11.74	0.85	7	18.252	A	0.000	18.252	18.252	100.00	0.000	0.000
					B	0.000	18.252		100.00	0.000	0.000
					C	0.000	18.252		100.00	0.000	6.026
L43 9.25-9.00	9.12	0.85	7	0.923	A	0.000	0.923	0.923	100.00	0.000	0.000
					B	0.000	0.923		100.00	0.000	0.000
					C	0.000	0.923		100.00	0.000	0.301
L44 9.00-8.75	8.87	0.85	7	0.924	A	0.000	0.924	0.924	100.00	0.000	0.000
					B	0.000	0.924		100.00	0.000	0.000
					C	0.000	0.924		100.00	0.000	0.301
L45 8.75-7.00	7.87	0.85	7	6.496	A	0.000	6.496	6.496	100.00	0.000	0.000
					B	0.000	6.496		100.00	0.000	0.000
					C	0.000	6.496		100.00	0.000	2.109
L46 7.00-6.75	6.87	0.85	7	0.932	A	0.000	0.932	0.932	100.00	0.000	0.000
					B	0.000	0.932		100.00	0.000	0.000
					C	0.000	0.932		100.00	0.000	0.301
L47 6.75-5.00	5.87	0.85	7	6.552	A	0.000	6.552	6.552	100.00	0.000	0.000
					B	0.000	6.552		100.00	0.000	0.000
					C	0.000	6.552		100.00	0.000	2.109
L48 5.00-4.75	4.87	0.85	7	0.939	A	0.000	0.939	0.939	100.00	0.000	0.000
					B	0.000	0.939		100.00	0.000	0.000
					C	0.000	0.939		100.00	0.000	0.301
L49 4.75-3.00	3.87	0.85	7	6.598	A	0.000	6.598	6.598	100.00	0.000	0.000
					B	0.000	6.598		100.00	0.000	0.000
					C	0.000	6.598		100.00	0.000	2.109
L50 3.00-2.75	2.87	0.85	7	0.946	A	0.000	0.946	0.946	100.00	0.000	0.000
					B	0.000	0.946		100.00	0.000	0.000
					C	0.000	0.946		100.00	0.000	0.301
L51 2.75-2.25	2.50	0.85	7	1.896	A	0.000	1.896	1.896	100.00	0.000	0.000
					B	0.000	1.896		100.00	0.000	0.000
					C	0.000	1.896		100.00	0.000	0.603
L52 2.25-2.00	2.12	0.85	7	0.950	A	0.000	0.950	0.950	100.00	0.000	0.000
					B	0.000	0.950		100.00	0.000	0.000
					C	0.000	0.950		100.00	0.000	0.301
L53 2.00-0.00	1.00	0.85	7	7.638	A	0.000	7.638	7.638	100.00	0.000	0.000
					B	0.000	7.638		100.00	0.000	0.000
					C	0.000	7.638		100.00	0.000	2.410

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice

Comb. No.	Description
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	169 - 164	Pole	Max Tension	42	0.00	0.00	0.00
			Max. Compression	26	-9.30	0.65	-1.01
			Max. Mx	20	-2.31	12.40	-0.46
			Max. My	14	-2.30	0.28	-12.58
			Max. Vy	20	-6.79	12.40	-0.46
			Max. Vx	14	6.77	0.28	-12.58
			Max. Torque	22			0.47
L2	164 - 159	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.49	1.18	-1.34
			Max. Mx	20	-2.59	47.47	-0.53
			Max. My	14	-2.59	0.35	-47.54
			Max. Vy	8	7.23	-46.77	-0.43
			Max. Vx	14	7.21	0.35	-47.54
			Max. Torque	22			0.53
L3	159 - 154	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.44	0.78	-1.82
			Max. Mx	20	-5.22	102.76	-0.49
			Max. My	14	-5.20	0.14	-103.16
			Max. Vy	8	13.76	-102.46	-0.60
			Max. Vx	14	13.78	0.14	-103.16
			Max. Torque	22			0.56
L4	154 - 149	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.75	1.47	-2.25
			Max. Mx	20	-5.66	172.71	-0.38
			Max. My	14	-5.64	0.05	-173.22
			Max. Vy	8	14.21	-172.32	-0.77
			Max. Vx	14	14.24	0.05	-173.22
			Max. Torque	8			-0.50
L5	149 - 144	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.94	2.22	-2.73
			Max. Mx	20	-7.47	257.24	-0.28
			Max. My	14	-7.45	-0.03	-257.87
			Max. Vy	8	17.74	-256.74	-0.94

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	17.77	-0.03	-257.87
			Max. Torque	8			-0.54
L6	144 - 139	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.32	3.01	-3.22
			Max. Mx	20	-8.05	347.10	-0.17
			Max. My	14	-8.03	-0.11	-347.83
			Max. Vy	8	18.19	-346.49	-1.11
			Max. Vx	14	18.22	-0.11	-347.83
			Max. Torque	8			-0.58
L7	139 - 133.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.35	3.49	-3.51
			Max. Mx	20	-8.62	391.21	-0.13
			Max. My	14	-8.60	-0.13	-391.99
			Max. Vy	8	19.36	-390.53	-1.19
			Max. Vx	14	19.39	-0.13	-391.99
			Max. Torque	8			-0.61
L8	133.33 - 131.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.54	4.54	-4.15
			Max. Mx	20	-9.52	489.50	-0.04
			Max. My	14	-9.50	-0.19	-490.39
			Max. Vy	8	19.93	-488.66	-1.36
			Max. Vx	14	19.96	-0.19	-490.39
			Max. Torque	10			-0.68
L9	131.66 - 126.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.71	6.24	-4.49
			Max. Mx	20	-10.30	591.03	0.09
			Max. My	14	-10.24	-0.18	-592.32
			Max. Vy	8	20.98	-590.06	-1.22
			Max. Vx	14	21.17	-0.18	-592.32
			Max. Torque	12			-1.26
L10	126.66 - 121.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.43	7.67	-5.21
			Max. Mx	20	-11.58	701.32	0.11
			Max. My	14	-11.52	0.09	-704.27
			Max. Vy	8	22.48	-700.87	-0.04
			Max. Vx	14	22.67	0.09	-704.27
			Max. Torque	12			-1.43
L11	121.66 - 116.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.82	9.16	-6.23
			Max. Mx	8	-12.46	-814.40	1.11
			Max. My	14	-12.42	0.37	-819.01
			Max. Vy	8	23.03	-814.40	1.11
			Max. Vx	14	23.24	0.37	-819.01
			Max. Torque	12			-1.57
L12	116.66 - 111.66	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.16	10.76	-7.19
			Max. Mx	8	-13.38	-930.63	2.30
			Max. My	14	-13.34	0.67	-936.47
			Max. Vy	8	23.53	-930.63	2.30
			Max. Vx	14	23.75	0.67	-936.47
			Max. Torque	12			-1.75
L13	111.66 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.47	10.97	-7.32
			Max. Mx	8	-13.51	-946.16	2.46
			Max. My	14	-13.48	0.71	-952.17
			Max. Vy	8	23.60	-946.16	2.46
			Max. Vx	14	23.81	0.71	-952.17
			Max. Torque	12			-1.78
L14	111 - 110.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.65	9.63	-8.25
			Max. Mx	8	-15.80	-953.72	2.37
			Max. My	14	-15.77	0.48	-959.65
			Max. Vy	8	29.04	-953.72	2.37
			Max. Vx	14	29.21	0.48	-959.65

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	12			-1.77
L15	110.75 - 105.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.39	12.30	-9.82
			Max. Mx	8	-17.12	-1100.33	3.30
			Max. My	14	-17.09	0.67	-1107.44
			Max. Vy	8	29.71	-1100.33	3.30
			Max. Vx	14	29.88	0.67	-1107.44
			Max. Torque	20			1.62
L16	105.75 - 101.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.57	14.62	-11.19
			Max. Mx	8	-18.28	-1227.65	4.10
			Max. My	14	-18.25	0.83	-1235.76
			Max. Vy	8	30.32	-1227.65	4.10
			Max. Vx	14	30.49	0.83	-1235.76
			Max. Torque	12			-1.87
L17	101.5 - 101.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.79	14.77	-11.28
			Max. Mx	8	-18.39	-1235.22	4.14
			Max. My	14	-18.36	0.84	-1243.39
			Max. Vy	8	30.35	-1235.22	4.14
			Max. Vx	14	30.52	0.84	-1243.39
			Max. Torque	12			-1.89
L18	101.25 - 101	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.01	14.91	-11.36
			Max. Mx	8	-18.49	-1242.80	4.19
			Max. My	14	-18.46	0.85	-1251.03
			Max. Vy	8	30.40	-1242.80	4.19
			Max. Vx	14	30.56	0.85	-1251.03
			Max. Torque	12			-1.91
L19	101 - 100.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.21	15.05	-11.44
			Max. Mx	8	-18.57	-1250.39	4.23
			Max. My	14	-18.53	0.86	-1258.68
			Max. Vy	8	30.44	-1250.39	4.23
			Max. Vx	14	30.60	0.86	-1258.68
			Max. Torque	12			-1.93
L20	100.75 - 95.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.22	17.86	-13.09
			Max. Mx	8	-20.14	-1404.23	5.17
			Max. My	14	-20.11	1.06	-1413.72
			Max. Vy	8	31.21	-1404.23	5.17
			Max. Vx	14	31.38	1.06	-1413.72
			Max. Torque	12			-2.30
L21	95.75 - 87.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.10	19.94	-14.31
			Max. Mx	8	-21.31	-1517.01	5.83
			Max. My	14	-21.28	1.21	-1527.37
			Max. Vy	8	31.74	-1517.01	5.83
			Max. Vx	14	31.91	1.21	-1527.37
			Max. Torque	12			-2.56
L22	87.83 - 86.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.17	23.04	-16.13
			Max. Mx	8	-24.43	-1688.45	6.81
			Max. My	14	-24.40	1.44	-1700.11
			Max. Vy	8	32.69	-1688.45	6.81
			Max. Vx	14	32.86	1.44	-1700.11
			Max. Torque	12			-2.95
L23	86.83 - 81.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.58	26.00	-17.87
			Max. Mx	8	-26.45	-1853.48	7.74
			Max. My	14	-26.42	1.65	-1866.37
			Max. Vy	8	33.45	-1853.48	7.74

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	33.61	1.65	-1866.37
			Max. Torque	12			-3.32
L24	81.83 - 81.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.87	26.21	-17.99
			Max. Mx	8	-26.59	-1864.50	7.80
			Max. My	14	-26.57	1.67	-1877.47
			Max. Vy	8	33.49	-1864.50	7.80
			Max. Vx	14	33.66	1.67	-1877.47
			Max. Torque	12			-3.34
L25	81.5 - 81.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.10	26.36	-18.08
			Max. Mx	8	-26.70	-1872.87	7.84
			Max. My	14	-26.67	1.68	-1885.90
			Max. Vy	8	33.53	-1872.87	7.84
			Max. Vx	14	33.69	1.68	-1885.90
			Max. Torque	12			-3.36
L26	81.25 - 76.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.56	29.37	-19.84
			Max. Mx	8	-28.77	-2042.07	8.77
			Max. My	14	-28.74	1.91	-2056.35
			Max. Vy	8	34.28	-2042.07	8.77
			Max. Vx	14	34.45	1.91	-2056.35
			Max. Torque	12			-3.73
L27	76.25 - 71.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.03	32.45	-21.64
			Max. Mx	8	-30.89	-2214.96	9.68
			Max. My	14	-30.86	2.14	-2230.49
			Max. Vy	8	35.01	-2214.96	9.68
			Max. Vx	14	35.18	2.14	-2230.49
			Max. Torque	12			-4.11
L28	71.25 - 66.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.51	35.57	-23.46
			Max. Mx	8	-33.04	-2391.43	10.59
			Max. My	14	-33.01	2.38	-2408.23
			Max. Vy	8	35.72	-2391.43	10.59
			Max. Vx	14	35.89	2.38	-2408.23
			Max. Torque	12			-4.50
L29	66.25 - 61.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.01	38.72	-25.30
			Max. Mx	8	-35.22	-2571.41	11.50
			Max. My	14	-35.20	2.63	-2589.49
			Max. Vy	8	36.41	-2571.41	11.50
			Max. Vx	14	36.58	2.63	-2589.49
			Max. Torque	12			-4.88
L30	61.25 - 56.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.51	41.91	-27.16
			Max. Mx	8	-37.43	-2754.80	12.40
			Max. My	14	-37.41	2.89	-2774.17
			Max. Vy	8	37.09	-2754.80	12.40
			Max. Vx	14	37.26	2.89	-2774.17
			Max. Torque	12			-5.28
L31	56.25 - 51.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-105.02	45.12	-29.03
			Max. Mx	8	-39.67	-2941.49	13.29
			Max. My	14	-39.66	3.15	-2962.16
			Max. Vy	8	37.74	-2941.49	13.29
			Max. Vx	14	37.91	3.15	-2962.16
			Max. Torque	12			-5.67
L32	51.25 - 43.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-107.35	46.80	-30.01
			Max. Mx	8	-40.84	-3039.45	13.75
			Max. My	14	-40.83	3.29	-3060.80

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	38.07	-3039.45	13.75
			Max. Vx	14	38.24	3.29	-3060.80
			Max. Torque	12			-5.88
L33	43.33 - 42.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-116.07	50.90	-32.40
			Max. Mx	8	-46.18	-3283.13	14.87
			Max. My	14	-46.16	3.64	-3306.14
			Max. Vy	8	39.06	-3283.13	14.87
			Max. Vx	14	39.22	3.64	-3306.14
			Max. Torque	12			-6.39
L34	42.33 - 37.4	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-120.96	54.07	-34.24
			Max. Mx	8	-48.90	-3476.78	15.74
			Max. My	14	-48.88	3.92	-3501.09
			Max. Vy	8	39.67	-3476.78	15.74
			Max. Vx	14	39.84	3.92	-3501.09
			Max. Torque	12			-6.77
L35	37.4 - 37.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-121.21	54.24	-34.33
			Max. Mx	8	-49.05	-3486.68	15.78
			Max. My	14	-49.04	3.93	-3511.06
			Max. Vy	8	39.69	-3486.68	15.78
			Max. Vx	14	39.85	3.93	-3511.06
			Max. Torque	12			-6.79
L36	37.15 - 32.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-126.17	57.44	-36.19
			Max. Mx	8	-51.83	-3686.22	16.66
			Max. My	14	-51.82	4.22	-3711.91
			Max. Vy	8	40.28	-3686.22	16.66
			Max. Vx	14	40.45	4.22	-3711.91
			Max. Torque	12			-7.18
L37	32.15 - 27.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-131.12	60.63	-38.05
			Max. Mx	8	-54.65	-3888.59	17.52
			Max. My	14	-54.64	4.51	-3915.62
			Max. Vy	8	40.84	-3888.59	17.52
			Max. Vx	14	41.00	4.51	-3915.62
			Max. Torque	12			-7.57
L38	27.15 - 22.15	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-136.05	63.79	-39.88
			Max. Mx	8	-57.50	-4093.62	18.38
			Max. My	14	-57.49	4.81	-4121.99
			Max. Vy	8	41.35	-4093.62	18.38
			Max. Vx	14	41.52	4.81	-4121.99
			Max. Torque	12			-7.95
L39	22.15 - 19.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-138.65	65.45	-40.84
			Max. Mx	8	-59.02	-4203.30	18.83
			Max. My	14	-59.01	4.97	-4232.39
			Max. Vy	8	41.62	-4203.30	18.83
			Max. Vx	14	41.78	4.97	-4232.39
			Max. Torque	12			-8.15
L40	19.5 - 19.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-138.91	65.61	-40.93
			Max. Mx	8	-59.19	-4213.69	18.88
			Max. My	14	-59.19	4.98	-4242.84
			Max. Vy	8	41.62	-4213.69	18.88
			Max. Vx	14	41.78	4.98	-4242.84
			Max. Torque	12			-8.17
L41	19.25 - 14.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-143.95	68.68	-42.71
			Max. Mx	8	-62.23	-4422.55	19.72
			Max. My	14	-62.23	5.29	-4453.05
			Max. Vy	8	42.09	-4422.55	19.72

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	14	42.25	5.29	-4453.05
			Max. Torque	12			-8.53
L42	14.25 - 9.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-148.92	71.65	-44.43
			Max. Mx	8	-65.31	-4633.64	20.56
			Max. My	14	-65.31	5.60	-4665.50
			Max. Vy	8	42.53	-4633.64	20.56
			Max. Vx	14	42.69	5.60	-4665.50
			Max. Torque	12			-8.90
L43	9.25 - 9	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-149.17	71.80	-44.51
			Max. Mx	8	-65.48	-4644.26	20.60
			Max. My	14	-65.48	5.62	-4676.18
			Max. Vy	8	42.54	-4644.26	20.60
			Max. Vx	14	42.70	5.62	-4676.18
			Max. Torque	12			-8.92
L44	9 - 8.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-149.42	71.94	-44.60
			Max. Mx	8	-65.64	-4654.87	20.64
			Max. My	14	-65.64	5.63	-4686.86
			Max. Vy	8	42.56	-4654.87	20.64
			Max. Vx	14	42.72	5.63	-4686.86
			Max. Torque	12			-8.93
L45	8.75 - 7	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-151.18	72.92	-45.16
			Max. Mx	8	-66.74	-4729.35	20.93
			Max. My	14	-66.74	5.75	-4761.81
			Max. Vy	8	42.75	-4729.35	20.93
			Max. Vx	14	42.91	5.75	-4761.81
			Max. Torque	12			-9.06
L46	7 - 6.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-151.42	73.05	-45.24
			Max. Mx	8	-66.92	-4740.01	20.98
			Max. My	14	-66.92	5.76	-4772.54
			Max. Vy	8	42.73	-4740.01	20.98
			Max. Vx	14	42.89	5.76	-4772.54
			Max. Torque	12			-9.08
L47	6.75 - 5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-153.12	74.00	-45.79
			Max. Mx	8	-67.99	-4814.79	21.26
			Max. My	14	-67.99	5.87	-4847.79
			Max. Vy	8	42.92	-4814.79	21.26
			Max. Vx	14	43.08	5.87	-4847.79
			Max. Torque	12			-9.21
L48	5 - 4.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-153.40	74.14	-45.87
			Max. Mx	8	-68.21	-4825.49	21.31
			Max. My	14	-68.21	5.89	-4858.56
			Max. Vy	8	42.91	-4825.49	21.31
			Max. Vx	14	43.06	5.89	-4858.56
			Max. Torque	12			-9.23
L49	4.75 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-155.34	75.05	-46.39
			Max. Mx	8	-69.55	-4900.59	21.59
			Max. My	14	-69.55	6.00	-4934.14
			Max. Vy	8	43.11	-4900.59	21.59
			Max. Vx	14	43.26	6.00	-4934.14
			Max. Torque	12			-9.37
L50	3 - 2.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-155.63	75.17	-46.46
			Max. Mx	8	-69.77	-4911.35	21.64
			Max. My	14	-69.77	6.02	-4944.96
			Max. Vy	8	43.10	-4911.35	21.64
			Max. Vx	14	43.26	6.02	-4944.96
			Max. Torque	12			-9.39
L51	2.75 - 2.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-156.18	75.42	-46.61
			Max. Mx	8	-70.17	-4932.87	21.72
			Max. My	14	-70.17	6.05	-4966.63

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	43.16	-4932.87	21.72
			Max. Vx	14	43.32	6.05	-4966.63
			Max. Torque	12			-9.42
L52	2.25 - 2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-156.43	75.54	-46.68
			Max. Mx	8	-70.34	-4943.65	21.76
			Max. My	14	-70.34	6.07	-4977.47
			Max. Vy	8	43.18	-4943.65	21.76
			Max. Vx	14	43.34	6.07	-4977.47
			Max. Torque	12			-9.44
L53	2 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-158.31	76.43	-47.19
			Max. Mx	8	-71.68	-5030.03	22.09
			Max. My	14	-71.68	6.20	-5064.39
			Max. Vy	8	43.38	-5030.03	22.09
			Max. Vx	14	43.53	6.20	-5064.39
			Max. Torque	12			-9.60

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	158.31	-0.00	0.00
	Max. H_x	20	71.69	43.20	0.05
	Max. H_z	2	71.69	-0.36	43.48
	Max. M_x	2	5050.54	-0.36	43.48
	Max. M_z	8	5030.03	-43.36	0.20
	Max. Torsion	24	8.94	21.64	37.45
	Min. Vert	3	53.77	-0.36	43.48
	Min. H_x	8	71.69	-43.36	0.20
	Min. H_z	14	71.69	-0.01	-43.51
	Min. M_x	14	-5064.39	-0.01	-43.51
	Min. M_z	20	-5024.51	43.20	0.05
	Min. Torsion	12	-9.60	-21.50	-37.71

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	59.74	0.00	-0.00	3.98	5.82	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	71.69	0.36	-43.48	-5050.54	-41.15	-7.39
0.9 Dead+1.0 Wind 0 deg - No Ice	53.77	0.36	-43.48	-4990.88	-42.48	-7.40
1.2 Dead+1.0 Wind 30 deg - No Ice	71.69	21.92	-37.54	-4356.77	-2543.94	-3.91
0.9 Dead+1.0 Wind 30 deg - No Ice	53.77	21.92	-37.54	-4305.48	-2515.09	-3.94
1.2 Dead+1.0 Wind 60 deg - No Ice	71.69	37.63	-21.75	-2523.77	-4366.22	0.58
0.9 Dead+1.0 Wind 60 deg - No Ice	53.77	37.63	-21.75	-2494.59	-4315.38	0.55
1.2 Dead+1.0 Wind 90 deg - No Ice	71.69	43.36	-0.20	-22.09	-5030.03	4.99
0.9 Dead+1.0 Wind 90 deg - No Ice	53.77	43.36	-0.20	-23.09	-4971.15	4.96
1.2 Dead+1.0 Wind 120 deg - No Ice	71.69	37.69	21.79	2539.62	-4374.11	8.42
0.9 Dead+1.0 Wind 120 deg - No Ice	53.77	37.69	21.79	2507.76	-4323.17	8.40
1.2 Dead+1.0 Wind 150 deg - No Ice	71.69	21.50	37.71	4389.73	-2487.92	9.60

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
0.9 Dead+1.0 Wind 150 deg - No Ice	53.77	21.50	37.71	4335.56	-2459.69	9.59
1.2 Dead+1.0 Wind 180 deg - No Ice	71.69	0.01	43.51	5064.39	6.20	7.83
0.9 Dead+1.0 Wind 180 deg - No Ice	53.77	0.01	43.51	5002.08	4.34	7.84
1.2 Dead+1.0 Wind 210 deg - No Ice	71.69	-21.50	37.78	4399.69	2501.60	3.90
0.9 Dead+1.0 Wind 210 deg - No Ice	53.77	-21.50	37.78	4345.41	2469.64	3.92
1.2 Dead+1.0 Wind 240 deg - No Ice	71.69	-37.42	22.06	2574.83	4352.80	-1.03
0.9 Dead+1.0 Wind 240 deg - No Ice	53.77	-37.42	22.06	2542.58	4298.52	-1.01
1.2 Dead+1.0 Wind 270 deg - No Ice	71.69	-43.20	-0.05	-1.72	5024.51	-5.62
0.9 Dead+1.0 Wind 270 deg - No Ice	53.77	-43.20	-0.05	-2.94	4962.11	-5.60
1.2 Dead+1.0 Wind 300 deg - No Ice	71.69	-37.46	-21.66	-2511.86	4357.99	-8.41
0.9 Dead+1.0 Wind 300 deg - No Ice	53.77	-37.46	-21.66	-2482.80	4303.64	-8.39
1.2 Dead+1.0 Wind 330 deg - No Ice	71.69	-21.64	-37.45	-4345.30	2521.73	-8.94
0.9 Dead+1.0 Wind 330 deg - No Ice	53.77	-21.64	-37.45	-4294.13	2489.53	-8.94
1.2 Dead+1.0 Ice+1.0 Temp	158.31	0.00	-0.00	47.19	76.43	-0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	158.31	0.08	-13.33	-1582.08	65.23	-3.42
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	158.31	6.71	-11.53	-1360.69	-744.23	-1.78
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	158.31	11.55	-6.67	-768.38	-1334.45	0.32
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	158.31	13.31	-0.05	40.55	-1549.47	2.35
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	158.31	11.55	6.67	862.63	-1335.31	3.83
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	158.31	6.62	11.55	1459.20	-730.72	4.28
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	158.31	-0.00	13.34	1677.33	77.10	3.50
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	158.31	-6.62	11.57	1462.18	884.96	1.77
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	158.31	-11.51	6.73	871.63	1481.38	-0.43
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	158.31	-13.28	-0.00	46.61	1698.07	-2.50
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	158.31	-11.51	-6.65	-764.34	1481.65	-3.84
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	158.31	-6.65	-11.50	-1357.34	887.83	-4.16
Dead+Wind 0 deg - Service	59.74	0.08	-9.43	-1086.79	-4.38	-1.61
Dead+Wind 30 deg - Service	59.74	4.76	-8.14	-937.17	-544.53	-0.85
Dead+Wind 60 deg - Service	59.74	8.17	-4.72	-541.57	-937.82	0.12
Dead+Wind 90 deg - Service	59.74	9.41	-0.04	-1.66	-1080.80	1.08
Dead+Wind 120 deg - Service	59.74	8.18	4.73	551.23	-939.55	1.84
Dead+Wind 150 deg - Service	59.74	4.67	8.18	950.49	-532.44	2.10
Dead+Wind 180 deg - Service	59.74	0.00	9.44	1095.98	5.84	1.72
Dead+Wind 210 deg - Service	59.74	-4.66	8.20	952.67	544.41	0.85
Dead+Wind 240 deg - Service	59.74	-8.12	4.79	558.82	943.94	-0.23
Dead+Wind 270 deg - Service	59.74	-9.37	-0.01	2.74	1088.72	-1.23
Dead+Wind 300 deg - Service	59.74	-8.13	-4.70	-538.99	945.02	-1.84

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+Wind 330 deg - Service	59.74	-4.70	-8.13	-934.69	548.74	-1.96

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-59.74	0.00	-0.00	59.74	0.00	0.002%
2	0.36	-71.69	-43.48	-0.36	71.69	43.48	0.001%
3	0.36	-53.77	-43.48	-0.36	53.77	43.48	0.001%
4	21.92	-71.69	-37.54	-21.92	71.69	37.54	0.000%
5	21.92	-53.77	-37.54	-21.92	53.77	37.54	0.000%
6	37.63	-71.69	-21.75	-37.63	71.69	21.75	0.000%
7	37.63	-53.77	-21.75	-37.63	53.77	21.75	0.000%
8	43.36	-71.69	-0.20	-43.36	71.69	0.20	0.001%
9	43.36	-53.77	-0.20	-43.36	53.77	0.20	0.001%
10	37.69	-71.69	21.79	-37.69	71.69	-21.79	0.000%
11	37.69	-53.77	21.79	-37.69	53.77	-21.79	0.000%
12	21.50	-71.69	37.71	-21.50	71.69	-37.71	0.000%
13	21.50	-53.77	37.71	-21.50	53.77	-37.71	0.000%
14	0.01	-71.69	43.51	-0.01	71.69	-43.51	0.000%
15	0.01	-53.77	43.51	-0.01	53.77	-43.51	0.001%
16	-21.50	-71.69	37.78	21.50	71.69	-37.78	0.000%
17	-21.50	-53.77	37.78	21.50	53.77	-37.78	0.000%
18	-37.42	-71.69	22.06	37.42	71.69	-22.06	0.000%
19	-37.42	-53.77	22.06	37.42	53.77	-22.06	0.000%
20	-43.20	-71.69	-0.05	43.20	71.69	0.05	0.000%
21	-43.20	-53.77	-0.05	43.20	53.77	0.05	0.001%
22	-37.46	-71.69	-21.66	37.46	71.69	21.66	0.000%
23	-37.46	-53.77	-21.66	37.46	53.77	21.66	0.000%
24	-21.64	-71.69	-37.45	21.64	71.69	37.45	0.000%
25	-21.64	-53.77	-37.45	21.64	53.77	37.45	0.000%
26	0.00	-158.31	0.00	-0.00	158.31	0.00	0.000%
27	0.08	-158.31	-13.33	-0.08	158.31	13.33	0.000%
28	6.71	-158.31	-11.53	-6.71	158.31	11.53	0.000%
29	11.55	-158.31	-6.67	-11.55	158.31	6.67	0.000%
30	13.31	-158.31	-0.05	-13.31	158.31	0.05	0.000%
31	11.55	-158.31	6.67	-11.55	158.31	-6.67	0.000%
32	6.62	-158.31	11.56	-6.62	158.31	-11.55	0.000%
33	-0.00	-158.31	13.34	0.00	158.31	-13.34	0.000%
34	-6.62	-158.31	11.58	6.62	158.31	-11.57	0.000%
35	-11.51	-158.31	6.73	11.51	158.31	-6.73	0.000%
36	-13.28	-158.31	-0.00	13.28	158.31	0.00	0.000%
37	-11.51	-158.31	-6.65	11.51	158.31	6.65	0.000%
38	-6.65	-158.31	-11.50	6.65	158.31	11.50	0.000%
39	0.08	-59.74	-9.44	-0.08	59.74	9.43	0.002%
40	4.76	-59.74	-8.15	-4.76	59.74	8.14	0.001%
41	8.17	-59.74	-4.72	-8.17	59.74	4.72	0.001%
42	9.41	-59.74	-0.04	-9.41	59.74	0.04	0.004%
43	8.18	-59.74	4.73	-8.18	59.74	-4.73	0.000%
44	4.67	-59.74	8.18	-4.67	59.74	-8.18	0.001%
45	0.00	-59.74	9.44	-0.00	59.74	-9.44	0.002%
46	-4.66	-59.74	8.20	4.66	59.74	-8.20	0.000%
47	-8.12	-59.74	4.79	8.12	59.74	-4.79	0.000%
48	-9.38	-59.74	-0.01	9.37	59.74	0.01	0.002%
49	-8.13	-59.74	-4.70	8.13	59.74	4.70	0.001%
50	-4.70	-59.74	-8.13	4.70	59.74	8.13	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000743
2	Yes	22	0.00000001	0.00009220
3	Yes	21	0.00000001	0.00012432
4	Yes	28	0.00000001	0.00000000
5	Yes	27	0.00000001	0.00000000
6	Yes	28	0.00000001	0.00000000
7	Yes	27	0.00000001	0.00000000
8	Yes	22	0.00000001	0.00009019
9	Yes	21	0.00000001	0.00011884
10	Yes	28	0.00000001	0.00000000
11	Yes	27	0.00000001	0.00000000
12	Yes	28	0.00000001	0.00000000
13	Yes	27	0.00000001	0.00000000
14	Yes	23	0.00000001	0.00010320
15	Yes	22	0.00000001	0.00013707
16	Yes	28	0.00000001	0.00000000
17	Yes	27	0.00000001	0.00000000
18	Yes	28	0.00000001	0.00000000
19	Yes	27	0.00000001	0.00000000
20	Yes	23	0.00000001	0.00008476
21	Yes	22	0.00000001	0.00011172
22	Yes	28	0.00000001	0.00000000
23	Yes	27	0.00000001	0.00000000
24	Yes	28	0.00000001	0.00000000
25	Yes	27	0.00000001	0.00000000
26	Yes	19	0.00000001	0.00010832
27	Yes	25	0.00000001	0.00012306
28	Yes	26	0.00000001	0.00011099
29	Yes	26	0.00000001	0.00011190
30	Yes	25	0.00000001	0.00011958
31	Yes	26	0.00000001	0.00012663
32	Yes	26	0.00000001	0.00011580
33	Yes	25	0.00000001	0.00013125
34	Yes	26	0.00000001	0.00013819
35	Yes	26	0.00000001	0.00013790
36	Yes	25	0.00000001	0.00013036
37	Yes	26	0.00000001	0.00012069
38	Yes	26	0.00000001	0.00013067
39	Yes	18	0.00008443	0.00008970
40	Yes	20	0.00000001	0.00013582
41	Yes	20	0.00000001	0.00013849
42	Yes	17	0.00014777	0.00012626
43	Yes	21	0.00000001	0.00009532
44	Yes	20	0.00000001	0.00012573
45	Yes	18	0.00008445	0.00011106
46	Yes	21	0.00000001	0.00008729
47	Yes	21	0.00000001	0.00008726
48	Yes	18	0.00008446	0.00009604
49	Yes	20	0.00000001	0.00012746
50	Yes	21	0.00000001	0.00009345

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 164	35.231	46	2.2057	0.0053
L2	164 - 159	32.923	46	2.2040	0.0052
L3	159 - 154	30.625	46	2.1832	0.0049
L4	154 - 149	28.359	46	2.1428	0.0047
L5	149 - 144	26.148	46	2.0763	0.0046
L6	144 - 139	24.019	46	1.9879	0.0045
L7	139 - 133.33	21.993	46	1.8796	0.0044
L8	136.66 - 131.66	21.086	46	1.8237	0.0043
L9	131.66 - 126.66	19.210	46	1.7459	0.0042
L10	126.66 - 121.66	17.445	46	1.6255	0.0040
L11	121.66 - 116.66	15.809	46	1.4982	0.0036
L12	116.66 - 111.66	14.310	46	1.3654	0.0033

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L13	111.66 - 111	12.951	46	1.2288	0.0029
L14	111 - 110.75	12.783	46	1.2108	0.0029
L15	110.75 - 105.75	12.719	46	1.2069	0.0029
L16	105.75 - 101.5	11.498	46	1.1263	0.0027
L17	101.5 - 101.25	10.527	46	1.0543	0.0026
L18	101.25 - 101	10.472	46	1.0519	0.0026
L19	101 - 100.75	10.417	46	1.0494	0.0026
L20	100.75 - 95.75	10.362	46	1.0461	0.0025
L21	95.75 - 87.83	9.302	46	0.9782	0.0024
L22	92.16 - 86.83	8.585	46	0.9283	0.0023
L23	86.83 - 81.83	7.568	46	0.8896	0.0022
L24	81.83 - 81.5	6.667	46	0.8318	0.0021
L25	81.5 - 81.25	6.610	46	0.8280	0.0021
L26	81.25 - 76.25	6.566	46	0.8252	0.0021
L27	76.25 - 71.25	5.733	46	0.7676	0.0019
L28	71.25 - 66.25	4.959	46	0.7091	0.0018
L29	66.25 - 61.25	4.248	46	0.6496	0.0016
L30	61.25 - 56.25	3.599	46	0.5899	0.0015
L31	56.25 - 51.25	3.013	46	0.5302	0.0013
L32	51.25 - 43.33	2.489	46	0.4697	0.0012
L33	48.66 - 42.33	2.243	46	0.4387	0.0011
L34	42.33 - 37.4	1.684	46	0.3995	0.0010
L35	37.4 - 37.15	1.298	46	0.3498	0.0009
L36	37.15 - 32.15	1.279	46	0.3473	0.0009
L37	32.15 - 27.15	0.942	46	0.2968	0.0007
L38	27.15 - 22.15	0.658	46	0.2460	0.0006
L39	22.15 - 19.5	0.427	46	0.1955	0.0005
L40	19.5 - 19.25	0.326	46	0.1688	0.0004
L41	19.25 - 14.25	0.317	46	0.1665	0.0004
L42	14.25 - 9.25	0.168	46	0.1193	0.0003
L43	9.25 - 9	0.067	46	0.0730	0.0002
L44	9 - 8.75	0.063	46	0.0707	0.0002
L45	8.75 - 7	0.060	46	0.0685	0.0002
L46	7 - 6.75	0.037	46	0.0531	0.0001
L47	6.75 - 5	0.035	46	0.0507	0.0001
L48	5 - 4.75	0.019	46	0.0347	0.0001
L49	4.75 - 3	0.017	46	0.0331	0.0001
L50	3 - 2.75	0.007	46	0.0219	0.0001
L51	2.75 - 2.25	0.006	46	0.0203	0.0001
L52	2.25 - 2	0.004	46	0.0172	0.0000
L53	2 - 0	0.003	46	0.0153	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
165.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	46	33.384	2.2055	0.0053	27976
156.00	(2) 7770.00 w/ Mount Pipe	46	29.260	2.1618	0.0048	6534
148.00	NNVV-65B-R4 w/ Mount Pipe	46	25.715	2.0602	0.0046	3510
138.00	APXV18-206517-A w/ Mount Pipe	46	21.603	1.8547	0.0044	2913
128.00	VHLP800-11	46	17.906	1.6608	0.0041	2378
124.00	LLPX310R w/ Mount Pipe	46	16.558	1.5577	0.0038	2242
118.00	CXL 900-3LW	46	14.698	1.4008	0.0034	2147
111.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	46	12.783	1.2108	0.0029	2644

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 164	162.228	14	10.1621	0.0258

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L2	164 - 159	151.643	14	10.1553	0.0255
L3	159 - 154	141.102	14	10.0653	0.0240
L4	154 - 149	130.700	14	9.8837	0.0229
L5	149 - 144	120.548	14	9.5805	0.0225
L6	144 - 139	110.762	14	9.1750	0.0218
L7	139 - 133.33	101.446	14	8.6777	0.0210
L8	136.66 - 131.66	97.271	14	8.4202	0.0205
L9	131.66 - 126.66	88.639	14	8.0621	0.0198
L10	126.66 - 121.66	80.509	14	7.5071	0.0185
L11	121.66 - 116.66	72.972	14	6.9201	0.0167
L12	116.66 - 111.66	66.060	14	6.3072	0.0149
L13	111.66 - 111	59.795	14	5.6772	0.0133
L14	111 - 110.75	59.017	14	5.5937	0.0131
L15	110.75 - 105.75	58.725	14	5.5759	0.0130
L16	105.75 - 101.5	53.088	14	5.2035	0.0123
L17	101.5 - 101.25	48.609	14	4.8714	0.0116
L18	101.25 - 101	48.355	14	4.8599	0.0116
L19	101 - 100.75	48.101	14	4.8484	0.0116
L20	100.75 - 95.75	47.848	14	4.8332	0.0116
L21	95.75 - 87.83	42.956	14	4.5199	0.0109
L22	92.16 - 86.83	39.647	14	4.2890	0.0104
L23	86.83 - 81.83	34.951	14	4.1104	0.0100
L24	81.83 - 81.5	30.790	14	3.8433	0.0094
L25	81.5 - 81.25	30.525	14	3.8257	0.0094
L26	81.25 - 76.25	30.326	14	3.8128	0.0093
L27	76.25 - 71.25	26.475	14	3.5469	0.0087
L28	71.25 - 66.25	22.904	14	3.2763	0.0081
L29	66.25 - 61.25	19.619	14	3.0012	0.0074
L30	61.25 - 56.25	16.622	14	2.7256	0.0068
L31	56.25 - 51.25	13.914	14	2.4497	0.0061
L32	51.25 - 43.33	11.496	14	2.1699	0.0054
L33	48.66 - 42.33	10.358	14	2.0266	0.0050
L34	42.33 - 37.4	7.779	14	1.8454	0.0046
L35	37.4 - 37.15	5.993	14	1.6158	0.0040
L36	37.15 - 32.15	5.908	14	1.6043	0.0040
L37	32.15 - 27.15	4.351	14	1.3707	0.0034
L38	27.15 - 22.15	3.039	14	1.1359	0.0028
L39	22.15 - 19.5	1.972	14	0.9029	0.0022
L40	19.5 - 19.25	1.505	14	0.7797	0.0019
L41	19.25 - 14.25	1.465	14	0.7689	0.0019
L42	14.25 - 9.25	0.774	14	0.5508	0.0014
L43	9.25 - 9	0.310	14	0.3370	0.0008
L44	9 - 8.75	0.292	14	0.3265	0.0008
L45	8.75 - 7	0.275	14	0.3162	0.0008
L46	7 - 6.75	0.173	14	0.2450	0.0006
L47	6.75 - 5	0.160	14	0.2343	0.0006
L48	5 - 4.75	0.088	14	0.1603	0.0004
L49	4.75 - 3	0.079	14	0.1529	0.0004
L50	3 - 2.75	0.033	14	0.1011	0.0002
L51	2.75 - 2.25	0.028	14	0.0938	0.0002
L52	2.25 - 2	0.019	14	0.0792	0.0002
L53	2 - 0	0.015	14	0.0705	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
165.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	14	153.758	10.1617	0.0257	7023
156.00	(2) 7770.00 w/ Mount Pipe	14	134.837	9.9694	0.0232	1533
148.00	NNVV-65B-R4 w/ Mount Pipe	14	118.558	9.5064	0.0224	808
138.00	APXV18-206517-A w/ Mount Pipe	14	99.649	8.5628	0.0208	661
128.00	VHLP800-11	14	82.632	7.6700	0.0189	534
124.00	LLPX310R w/ Mount Pipe	14	76.423	7.1945	0.0175	501
118.00	CXL 900-3LW	14	67.849	6.4707	0.0153	477

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
111.00	(2) HBXX-6517DS-A2M w/ Mount Pipe	14	59.017	5.5937	0.0131	583

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	169 - 164 (1)	TP16.4546x15.5x0.25	5.00	0.00	0.0	12.8583	-2.30
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	5.00	0.00	0.0	13.6158	-2.58
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	5.00	0.00	0.0	14.3733	-5.20
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	5.00	0.00	0.0	15.1307	-5.64
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	5.00	0.00	0.0	15.8882	-7.45
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	5.00	0.00	0.0	16.6456	-8.03
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	5.67	0.00	0.0	17.0001	-8.61
L8	133.33 - 131.66 (8)	TP22.1148x21.1742x0.3125	5.00	0.00	0.0	21.6252	-9.50
L9	131.66 - 126.66 (9)	TP23.0554x22.1148x0.3125	5.00	0.00	0.0	22.5581	-10.24
L10	126.66 - 121.66 (10)	TP23.996x23.0554x0.3125	5.00	0.00	0.0	23.4911	-11.52
L11	121.66 - 116.66 (11)	TP24.9366x23.996x0.3125	5.00	0.00	0.0	24.4240	-12.42
L12	116.66 - 111.66 (12)	TP25.8772x24.9366x0.3125	5.00	0.00	0.0	25.3570	-13.34
L13	111.66 - 111 (13)	TP26.0013x25.8772x0.3125	0.66	0.00	0.0	25.4801	-13.48
L14	111 - 110.75 (14)	TP26.0484x26.0013x0.575	0.25	0.00	0.0	46.4902	-15.77
L15	110.75 - 105.75 (15)	TP26.9889x26.0484x0.5625	5.00	0.00	0.0	47.1811	-17.09
L16	105.75 - 101.5 (16)	TP27.7884x26.9889x0.55	4.25	0.00	0.0	47.5501	-18.25
L17	101.5 - 101.25 (17)	TP27.8355x27.7884x0.9875	0.25	0.00	0.0	84.1503	-18.36
L18	101.25 - 101 (18)	TP27.8825x27.8355x0.9875	0.25	0.00	0.0	84.2977	-18.46
L19	101 - 100.75 (19)	TP27.9295x27.8825x0.725	0.25	0.00	0.0	62.6017	-18.53
L20	100.75 - 95.75 (20)	TP28.8701x27.9295x0.7125	5.00	0.00	0.0	63.6777	-20.11
L21	95.75 - 87.83 (21)	TP30.36x28.8701x0.7	7.92	0.00	0.0	64.0888	-21.28
L22	87.83 - 86.83 (22)	TP29.9235x28.9205x0.9375	5.33	0.00	0.0	86.2516	-24.40
L23	86.83 - 81.83 (23)	TP30.8645x29.9235x0.925	5.00	0.00	0.0	87.9009	-26.42
L24	81.83 - 81.5 (24)	TP30.9266x30.8645x0.925	0.33	0.00	0.0	88.0832	-26.57
L25	81.5 - 81.25 (25)	TP30.9737x30.9266x0.95	0.25	0.00	0.0	90.5303	-26.67
L26	81.25 - 76.25 (26)	TP31.9146x30.9737x0.925	5.00	0.00	0.0	90.9840	-28.74
L27	76.25 - 71.25 (27)	TP32.8556x31.9146x0.9	5.00	0.00	0.0	91.2844	-30.86
L28	71.25 - 66.25 (28)	TP33.7966x32.8556x0.875	5.00	0.00	0.0	91.4314	-33.01

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L29	66.25 - 61.25 (29)	TP34.7376x33.7966x0.8625	5.00	0.00	0.0	92.7355	-35.20
L30	61.25 - 56.25 (30)	TP35.6785x34.7376x0.85	5.00	0.00	0.0	93.9639	-37.41
L31	56.25 - 51.25 (31)	TP36.6195x35.6785x0.825	5.00	0.00	0.0	93.7297	-39.66
L32	51.25 - 43.33 (32)	TP38.11x36.6195x0.825	7.92	0.00	0.0	95.0060	-40.83
L33	43.33 - 42.33 (33)	TP37.5463x36.3569x1.0375	6.33	0.00	0.0	120.2240	-46.16
L34	42.33 - 37.4 (34)	TP38.4726x37.5463x1.025	4.93	0.00	0.0	121.8300	-48.88
L35	37.4 - 37.15 (35)	TP38.5196x38.4726x1.025	0.25	0.00	0.0	121.9830	-49.04
L36	37.15 - 32.15 (36)	TP39.4591x38.5196x1	5.00	0.00	0.0	122.0690	-51.82
L37	32.15 - 27.15 (37)	TP40.3986x39.4591x0.975	5.00	0.00	0.0	122.0020	-54.64
L38	27.15 - 22.15 (38)	TP41.3381x40.3986x0.9625	5.00	0.00	0.0	123.3460	-57.49
L39	22.15 - 19.5 (39)	TP41.836x41.3381x0.95	2.65	0.00	0.0	123.2840	-59.01
L40	19.5 - 19.25 (40)	TP41.883x41.836x1.025	0.25	0.00	0.0	132.9250	-59.19
L41	19.25 - 14.25 (41)	TP42.8225x41.883x1	5.00	0.00	0.0	132.7450	-62.23
L42	14.25 - 9.25 (42)	TP43.762x42.8225x1	5.00	0.00	0.0	135.7260	-65.31
L43	9.25 - 9 (43)	TP43.8089x43.762x1	0.25	0.00	0.0	135.8760	-65.48
L44	9 - 8.75 (44)	TP43.8559x43.8089x1.025	0.25	0.00	0.0	139.3440	-65.64
L45	8.75 - 7 (45)	TP44.1847x43.8559x1.025	1.75	0.00	0.0	140.4140	-66.74
L46	7 - 6.75 (46)	TP44.2317x44.1847x0.975	0.25	0.00	0.0	133.8640	-66.92
L47	6.75 - 5 (47)	TP44.5605x44.2317x0.975	1.75	0.00	0.0	134.8820	-67.99
L48	5 - 4.75 (48)	TP44.6075x44.5605x1.45	0.25	0.00	0.0	198.6240	-68.21
L49	4.75 - 3 (49)	TP44.9363x44.6075x1.425	1.75	0.00	0.0	196.7990	-69.55
L50	3 - 2.75 (50)	TP44.9833x44.9363x1.45	0.25	0.00	0.0	200.3530	-69.77
L51	2.75 - 2.25 (51)	TP45.0772x44.9833x1.45	0.50	0.00	0.0	200.7860	-70.17
L52	2.25 - 2 (52)	TP45.1242x45.0772x1.2	0.25	0.00	0.0	167.2990	-70.34
L53	2 - 0 (53)	TP45.5x45.1242x1.175	2.00	0.00	0.0	165.3080	-71.68

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L1	169 - 164 (1)	TP16.4546x15.5x0.25	12.68	0.00
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	47.70	0.00
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	103.16	0.00
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	173.22	0.00
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	257.90	0.00
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	347.92	0.00
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	392.10	0.00
L8	133.33 - 131.66 (8)	TP22.1148x21.1742x0.3125	490.54	0.00
L9	131.66 - 126.66 (9)	TP23.0554x22.1148x0.3125	592.32	0.00

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L10	126.66 - 121.66 (10)	TP23.996x23.0554x0.3125	704.27	0.00
L11	121.66 - 116.66 (11)	TP24.9366x23.996x0.3125	819.01	0.00
L12	116.66 - 111.66 (12)	TP25.8772x24.9366x0.3125	936.48	0.00
L13	111.66 - 111 (13)	TP26.0013x25.8772x0.3125	952.17	0.00
L14	111 - 110.75 (14)	TP26.0484x26.0013x0.575	959.65	0.00
L15	110.75 - 105.75 (15)	TP26.9889x26.0484x0.5625	1107.44	0.00
L16	105.75 - 101.5 (16)	TP27.7884x26.9889x0.55	1235.76	0.00
L17	101.5 - 101.25 (17)	TP27.8355x27.7884x0.9875	1243.39	0.00
L18	101.25 - 101 (18)	TP27.8825x27.8355x0.9875	1251.03	0.00
L19	101 - 100.75 (19)	TP27.9295x27.8825x0.725	1258.68	0.00
L20	100.75 - 95.75 (20)	TP28.8701x27.9295x0.7125	1413.72	0.00
L21	95.75 - 87.83 (21)	TP30.36x28.8701x0.7	1527.37	0.00
L22	87.83 - 86.83 (22)	TP29.9235x28.9205x0.9375	1700.11	0.00
L23	86.83 - 81.83 (23)	TP30.8645x29.9235x0.925	1866.37	0.00
L24	81.83 - 81.5 (24)	TP30.9266x30.8645x0.925	1877.47	0.00
L25	81.5 - 81.25 (25)	TP30.9737x30.9266x0.95	1885.90	0.00
L26	81.25 - 76.25 (26)	TP31.9146x30.9737x0.925	2056.35	0.00
L27	76.25 - 71.25 (27)	TP32.8556x31.9146x0.9	2230.49	0.00
L28	71.25 - 66.25 (28)	TP33.7966x32.8556x0.875	2408.23	0.00
L29	66.25 - 61.25 (29)	TP34.7376x33.7966x0.8625	2589.49	0.00
L30	61.25 - 56.25 (30)	TP35.6785x34.7376x0.85	2774.17	0.00
L31	56.25 - 51.25 (31)	TP36.6195x35.6785x0.825	2962.16	0.00
L32	51.25 - 43.33 (32)	TP38.11x36.6195x0.825	3060.80	0.00
L33	43.33 - 42.33 (33)	TP37.5463x36.3569x1.0375	3306.14	0.00
L34	42.33 - 37.4 (34)	TP38.4726x37.5463x1.025	3501.09	0.00
L35	37.4 - 37.15 (35)	TP38.5196x38.4726x1.025	3511.06	0.00
L36	37.15 - 32.15 (36)	TP39.4591x38.5196x1	3711.92	0.00
L37	32.15 - 27.15 (37)	TP40.3986x39.4591x0.975	3915.63	0.00
L38	27.15 - 22.15 (38)	TP41.3381x40.3986x0.9625	4121.99	0.00
L39	22.15 - 19.5 (39)	TP41.836x41.3381x0.95	4232.39	0.00
L40	19.5 - 19.25 (40)	TP41.883x41.836x1.025	4242.84	0.00
L41	19.25 - 14.25 (41)	TP42.8225x41.883x1	4453.05	0.00
L42	14.25 - 9.25 (42)	TP43.762x42.8225x1	4665.50	0.00
L43	9.25 - 9 (43)	TP43.8089x43.762x1	4676.18	0.00
L44	9 - 8.75 (44)	TP43.8559x43.8089x1.025	4686.87	0.00

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L45	8.75 - 7 (45)	TP44.1847x43.8559x1.025	4761.82	0.00
L46	7 - 6.75 (46)	TP44.2317x44.1847x0.975	4772.54	0.00
L47	6.75 - 5 (47)	TP44.5605x44.2317x0.975	4847.80	0.00
L48	5 - 4.75 (48)	TP44.6075x44.5605x1.45	4858.57	0.00
L49	4.75 - 3 (49)	TP44.9363x44.6075x1.425	4934.15	0.00
L50	3 - 2.75 (50)	TP44.9833x44.9363x1.45	4944.97	0.00
L51	2.75 - 2.25 (51)	TP45.0772x44.9833x1.45	4966.63	0.00
L52	2.25 - 2 (52)	TP45.1242x45.0772x1.2	4977.48	0.00
L53	2 - 0 (53)	TP45.5x45.1242x1.175	5064.40	0.00

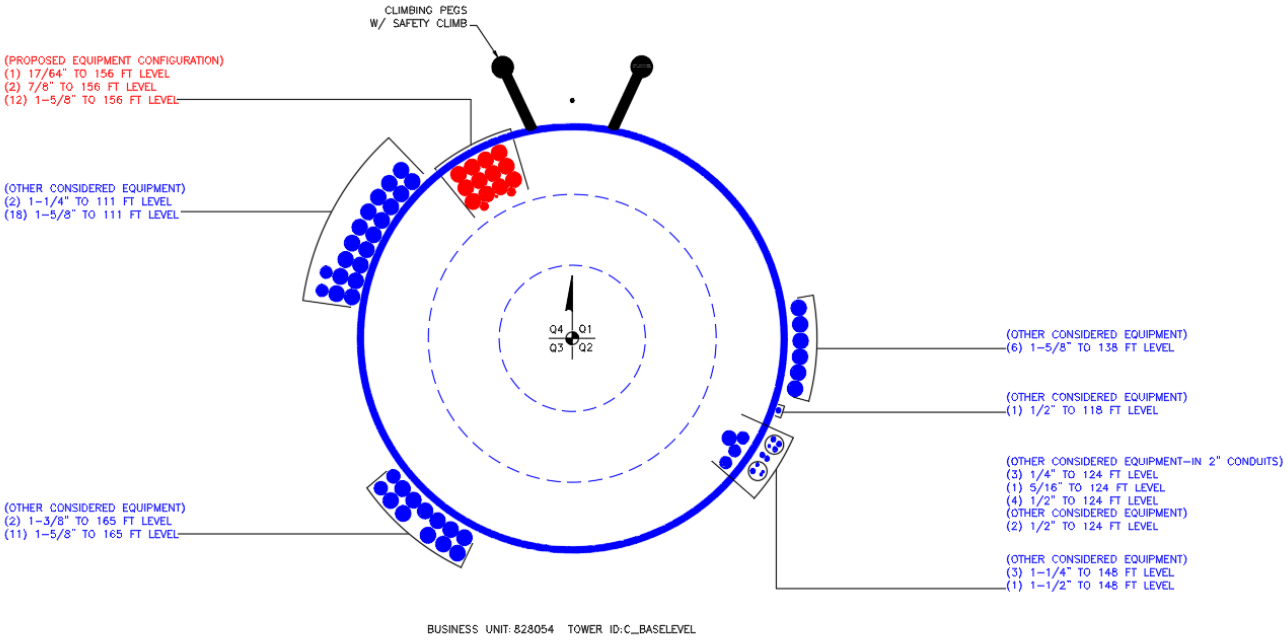
Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	169 - 164 (1)	TP16.4546x15.5x0.25	6.78	0.01
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	7.23	0.22
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	13.78	0.18
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	14.24	0.12
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	17.79	0.23
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	18.24	0.31
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	19.40	0.37
L8	133.33 - 131.66 (8)	TP22.1148x21.1742x0.3125	19.98	0.50
L9	131.66 - 126.66 (9)	TP23.0554x22.1148x0.3125	21.17	1.02
L10	126.66 - 121.66 (10)	TP23.996x23.0554x0.3125	22.67	1.18
L11	121.66 - 116.66 (11)	TP24.9366x23.996x0.3125	23.24	1.29
L12	116.66 - 111.66 (12)	TP25.8772x24.9366x0.3125	23.75	1.44
L13	111.66 - 111 (13)	TP26.0013x25.8772x0.3125	23.81	1.46
L14	111 - 110.75 (14)	TP26.0484x26.0013x0.575	29.21	1.46
L15	110.75 - 105.75 (15)	TP26.9889x26.0484x0.5625	29.88	0.89
L16	105.75 - 101.5 (16)	TP27.7884x26.9889x0.55	30.48	1.14
L17	101.5 - 101.25 (17)	TP27.8355x27.7884x0.9875	30.52	1.15
L18	101.25 - 101 (18)	TP27.8825x27.8355x0.9875	30.56	1.17
L19	101 - 100.75 (19)	TP27.9295x27.8825x0.725	30.60	1.19
L20	100.75 - 95.75 (20)	TP28.8701x27.9295x0.7125	31.38	1.51
L21	95.75 - 87.83 (21)	TP30.36x28.8701x0.7	31.91	1.74
L22	87.83 - 86.83 (22)	TP29.9235x28.9205x0.9375	32.86	2.07
L23	86.83 - 81.83 (23)	TP30.8645x29.9235x0.925	33.61	2.39
L24	81.83 - 81.5 (24)	TP30.9266x30.8645x0.925	33.66	2.41
L25	81.5 - 81.25 (25)	TP30.9737x30.9266x0.95	33.70	2.43
L26	81.25 - 76.25 (26)	TP31.9146x30.9737x0.925	34.45	2.75
L27	76.25 - 71.25 (27)	TP32.8556x31.9146x0.9	35.18	3.08

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L28	71.25 - 66.25 (28)	TP33.7966x32.8556x0.875	35.89	3.41
L29	66.25 - 61.25 (29)	TP34.7376x33.7966x0.8625	36.58	3.75
L30	61.25 - 56.25 (30)	TP35.6785x34.7376x0.85	37.26	4.09
L31	56.25 - 51.25 (31)	TP36.6195x35.6785x0.825	37.91	4.43
L32	51.25 - 43.33 (32)	TP38.11x36.6195x0.825	38.24	4.61
L33	43.33 - 42.33 (33)	TP37.5463x36.3569x1.0375	39.22	5.05
L34	42.33 - 37.4 (34)	TP38.4726x37.5463x1.025	39.84	5.38
L35	37.4 - 37.15 (35)	TP38.5196x38.4726x1.025	39.85	5.40
L36	37.15 - 32.15 (36)	TP39.4591x38.5196x1	40.45	5.74
L37	32.15 - 27.15 (37)	TP40.3986x39.4591x0.975	41.00	6.07
L38	27.15 - 22.15 (38)	TP41.3381x40.3986x0.9625	41.52	6.40
L39	22.15 - 19.5 (39)	TP41.836x41.3381x0.95	41.78	6.58
L40	19.5 - 19.25 (40)	TP41.883x41.836x1.025	41.78	6.59
L41	19.25 - 14.25 (41)	TP42.8225x41.883x1	42.25	6.91
L42	14.25 - 9.25 (42)	TP43.762x42.8225x1	42.69	7.23
L43	9.25 - 9 (43)	TP43.8089x43.762x1	42.70	7.24
L44	9 - 8.75 (44)	TP43.8559x43.8089x1.025	42.72	7.26
L45	8.75 - 7 (45)	TP44.1847x43.8559x1.025	42.91	7.37
L46	7 - 6.75 (46)	TP44.2317x44.1847x0.975	42.89	7.39
L47	6.75 - 5 (47)	TP44.5605x44.2317x0.975	43.08	7.50
L48	5 - 4.75 (48)	TP44.6075x44.5605x1.45	43.06	7.52
L49	4.75 - 3 (49)	TP44.9363x44.6075x1.425	43.26	7.63
L50	3 - 2.75 (50)	TP44.9833x44.9363x1.45	43.26	7.65
L51	2.75 - 2.25 (51)	TP45.0772x44.9833x1.45	43.32	7.68
L52	2.25 - 2 (52)	TP45.1242x45.0772x1.2	43.34	7.70
L53	2 - 0 (53)	TP45.5x45.1242x1.175	43.53	7.83

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 17/64" TO 156 FT LEVEL
(2) 7/8" TO 156 FT LEVEL
(12) 1-5/8" TO 156 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-1/4" TO 111 FT LEVEL
(18) 1-5/8" TO 111 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1-3/8" TO 165 FT LEVEL
(11) 1-5/8" TO 165 FT LEVEL
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 138 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 118 FT LEVEL
(OTHER CONSIDERED EQUIPMENT-IN 2" CONDUITS)
(3) 1/4" TO 124 FT LEVEL
(1) 5/16" TO 124 FT LEVEL
(4) 1/2" TO 124 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 124 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(3) 1-1/4" TO 148 FT LEVEL
(1) 1-1/2" TO 148 FT LEVEL
BUSINESS UNIT: 828054 TOWER ID:C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 828054

Work Order:

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	169	35.67	3.33	18	15.5	22.31	0.25	Auto	A572-65
2	136.66	48.83	4.33	18	21.17	30.36	0.3125	Auto	A572-65
3	92.16	48.83	5.33	18	28.92	38.11	0.375	Auto	A572-65
4	48.66	48.66	0	18	36.36	45.5	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	2.25	19.5	plate	I-065125; (1) (1.1875)	4		o				o					o				o			
2	19.5	44.58	plate	I-060100; (1) (1.1875)	4		o				o					o				o			
3	3	5	plate	FP 1.25 x 8_1	4		o				o					o				o			
4	81.5	88.5	plate	I-045100; (1) (1.1875)	3			o						o						o			
5	0	3	plate	FP 1.25 x 6_1	6	o			o			o			o			o			o		
6	101	111	plate	I-060100; (1) (1.1875)	3			o						o						o			
7	0	37.4	plate	6 x 1.25; (1) (1.1875)	4	o						o			o						o		
8	0	7	plate	6 x 1.25; (1) (1.1875)	2				o									o					
9	9	37.4	plate	6 x 1.25; (1) (1.1875)	2				o									o					
10	7	9	plate	FP 4 x 1.25_1	4			o		o							o		o				
11	37.4	81.5	plate	6 x 1.25; (1) (1.1875)	6	o			o			o			o			o			o		
12	81.5	101.5	plate	4 x 1.25; (1) (1.1875)	6	o			o			o			o			o			o		
13																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6.5	1.25	8.125	0.625	n/a	33.000	19.000	6.563	1.1875	A572-65
2	6	1	6	0.5	33.000	33.000	16.000	4.750	1.1875	A572-65
3	1.25	8	10	4	n/a	n/a	0.000	10.000	0.0000	A572-65
4	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
5	1.25	6	7.5	3	n/a	n/a	0.000	7.500	0.0000	A572-65
6	6	1	6	0.5	33.000	33.000	16.000	4.750	1.1875	A572-65
7	6	1.25	7.5	0.625	36.000	36.000	12.000	5.938	1.1875	A572-65
8	6	1.25	7.5	0.625	36.000	36.000	12.000	5.938	1.1875	A572-65
9	6	1.25	7.5	0.625	36.000	36.000	12.000	5.938	1.1875	A572-65
10	4	1.25	5	0.625	n/a	n/a	12.000	5.000	0.0000	A572-65
11	6	1.25	7.5	0.625	36.000	36.000	12.000	5.938	1.1875	A572-65
12	4	1.25	5	0.625	30.000	30.000	18.000	3.438	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	169 - 164	5		18	15.500	16.455	0.25	A572-65	1.000
2	164 - 159	5		18	16.455	17.409	0.25	A572-65	1.000
3	159 - 154	5		18	17.409	18.364	0.25	A572-65	1.000
4	154 - 149	5		18	18.364	19.318	0.25	A572-65	1.000
5	149 - 144	5		18	19.318	20.273	0.25	A572-65	1.000
6	144 - 139	5		18	20.273	21.228	0.25	A572-65	1.000
7	139 - 136.66	5.67	3.33	18	21.228	22.310	0.25	A572-65	1.000
8	136.66 - 131.66	5		18	21.174	22.115	0.3125	A572-65	1.000
9	131.66 - 126.66	5		18	22.115	23.055	0.3125	A572-65	1.000
10	126.66 - 121.66	5		18	23.055	23.996	0.3125	A572-65	1.000
11	121.66 - 116.66	5		18	23.996	24.937	0.3125	A572-65	1.000
12	116.66 - 111.66	5		18	24.937	25.877	0.3125	A572-65	1.000
13	111.66 - 111	0.66		18	25.877	26.001	0.3125	A572-65	1.000
14	111 - 110.75	0.25		18	26.001	26.048	0.575	A572-65	0.936
15	110.75 - 105.75	5		18	26.048	26.989	0.5625	A572-65	0.942
16	105.75 - 101.5	4.25		18	26.989	27.788	0.55	A572-65	0.952
17	101.5 - 101.25	0.25		18	27.788	27.835	0.9875	A572-65	0.895
18	101.25 - 101	0.25		18	27.835	27.882	0.9875	A572-65	0.894
19	101 - 100.75	0.25		18	27.882	27.930	0.725	A572-65	0.917
20	100.75 - 95.75	5		18	27.930	28.870	0.7125	A572-65	0.916
21	95.75 - 92.16	7.92	4.33	18	28.870	30.360	0.7	A572-65	0.921
22	92.16 - 86.83	5.33		18	28.920	29.924	0.9375	A572-65	0.912
23	86.83 - 81.83	5		18	29.924	30.865	0.925	A572-65	0.908
24	81.83 - 81.5	0.33		18	30.865	30.927	0.925	A572-65	0.907
25	81.5 - 81.25	0.25		18	30.927	30.974	0.95	A572-65	0.899
26	81.25 - 76.25	5		18	30.974	31.915	0.925	A572-65	0.907
27	76.25 - 71.25	5		18	31.915	32.856	0.9	A572-65	0.916
28	71.25 - 66.25	5		18	32.856	33.797	0.875	A572-65	0.927
29	66.25 - 61.25	5		18	33.797	34.738	0.8625	A572-65	0.926
30	61.25 - 56.25	5		18	34.738	35.679	0.85	A572-65	0.926
31	56.25 - 51.25	5		18	35.679	36.619	0.825	A572-65	0.940
32	51.25 - 48.66	7.92	5.33	18	36.619	38.110	0.825	A572-65	0.934
33	48.66 - 42.33	6.33		18	36.357	37.546	1.0375	A572-65	0.942
34	42.33 - 37.4	4.93		18	37.546	38.473	1.025	A572-65	0.939
35	37.4 - 37.15	0.25		18	38.473	38.520	1.025	A572-65	0.938
36	37.15 - 32.15	5		18	38.520	39.459	1	A572-65	0.946
37	32.15 - 27.15	5		18	39.459	40.399	0.975	A572-65	0.956
38	27.15 - 22.15	5		18	40.399	41.338	0.9625	A572-65	0.955
39	22.15 - 19.5	2.65		18	41.338	41.836	0.95	A572-65	0.960
40	19.5 - 19.25	0.25		18	41.836	41.883	1.025	A572-65	0.955
41	19.25 - 14.25	5		18	41.883	42.822	1	A572-65	0.964
42	14.25 - 9.25	5		18	42.822	43.762	1	A572-65	0.952
43	9.25 - 9	0.25		18	43.762	43.809	1	A572-65	0.951
44	9 - 8.75	0.25		18	43.809	43.856	1.025	A572-65	0.963
45	8.75 - 7	1.75		18	43.856	44.185	1.025	A572-65	0.959
46	7 - 6.75	0.25		18	44.185	44.232	0.975	A572-65	0.969
47	6.75 - 5	1.75		18	44.232	44.561	0.975	A572-65	0.965
48	5 - 4.75	0.25		18	44.561	44.607	1.45	A572-65	0.857
49	4.75 - 3	1.75		18	44.607	44.936	1.425	A572-65	0.867
50	3 - 2.75	0.25		18	44.936	44.983	1.45	A572-65	0.876
51	2.75 - 2.25	0.5		18	44.983	45.077	1.45	A572-65	0.875
52	2.25 - 2	0.25		18	45.077	45.124	1.2	A572-65	0.856
53	2 - 0	2		18	45.124	45.500	1.175	A572-65	0.869

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	169 - 164	2.30	12.68	6.78
2	164 - 159	2.58	47.71	7.22
3	159 - 154	5.20	103.16	13.78
4	154 - 149	5.64	173.22	14.24
5	149 - 144	7.45	257.90	17.79
6	144 - 139	8.03	347.92	18.24
7	139 - 136.66	8.61	392.10	19.40
8	136.66 - 131.66	9.50	490.54	19.98
9	131.66 - 126.66	10.24	592.32	21.17
10	126.66 - 121.66	11.52	704.27	22.67
11	121.66 - 116.66	12.42	819.01	23.24
12	116.66 - 111.66	13.34	936.47	23.75
13	111.66 - 111	13.48	952.17	23.81
14	111 - 110.75	15.77	959.65	29.21
15	110.75 - 105.75	17.09	1107.44	29.88
16	105.75 - 101.5	18.25	1235.76	30.49
17	101.5 - 101.25	18.36	1243.39	30.52
18	101.25 - 101	18.46	1251.03	30.56
19	101 - 100.75	18.53	1258.68	30.60
20	100.75 - 95.75	20.11	1413.72	31.38
21	95.75 - 92.16	21.28	1527.37	31.91
22	92.16 - 86.83	24.40	1700.11	32.86
23	86.83 - 81.83	26.42	1866.37	33.61
24	81.83 - 81.5	26.57	1877.47	33.66
25	81.5 - 81.25	26.67	1885.90	33.69
26	81.25 - 76.25	28.74	2056.35	34.45
27	76.25 - 71.25	30.86	2230.49	35.18
28	71.25 - 66.25	33.01	2408.23	35.89
29	66.25 - 61.25	35.20	2589.49	36.58
30	61.25 - 56.25	37.41	2774.17	37.26
31	56.25 - 51.25	39.66	2962.16	37.91
32	51.25 - 48.66	40.83	3060.80	38.24
33	48.66 - 42.33	46.16	3306.14	39.22
34	42.33 - 37.4	48.88	3501.09	39.84
35	37.4 - 37.15	49.04	3511.06	39.85
36	37.15 - 32.15	51.82	3711.92	40.45
37	32.15 - 27.15	54.64	3915.62	41.00
38	27.15 - 22.15	57.49	4121.99	41.52
39	22.15 - 19.5	59.01	4232.39	41.78
40	19.5 - 19.25	59.19	4242.84	41.78
41	19.25 - 14.25	62.23	4453.05	42.25
42	14.25 - 9.25	65.31	4665.50	42.69
43	9.25 - 9	65.48	4676.18	42.70
44	9 - 8.75	65.64	4686.86	42.72
45	8.75 - 7	66.74	4761.81	42.91
46	7 - 6.75	66.92	4772.54	42.89
47	6.75 - 5	67.99	4847.80	43.08
48	5 - 4.75	68.21	4858.57	43.06
49	4.75 - 3	69.55	4934.15	43.26
50	3 - 2.75	69.77	4944.97	43.26
51	2.75 - 2.25	70.17	4966.63	43.32
52	2.25 - 2	70.34	4977.47	43.34
53	2 - 0	71.68	5064.40	43.53

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
169 - 164	Pole	TP16.455x15.5x0.25	Pole	4.1%	Pass
164 - 159	Pole	TP17.409x16.455x0.25	Pole	13.1%	Pass
159 - 154	Pole	TP18.364x17.409x0.25	Pole	25.4%	Pass
154 - 149	Pole	TP19.318x18.364x0.25	Pole	38.1%	Pass
149 - 144	Pole	TP20.273x19.318x0.25	Pole	51.4%	Pass
144 - 139	Pole	TP21.228x20.273x0.25	Pole	63.0%	Pass
139 - 136.66	Pole	TP22.31x21.228x0.25	Pole	68.1%	Pass
136.66 - 131.66	Pole	TP22.115x21.174x0.3125	Pole	65.9%	Pass
131.66 - 126.66	Pole	TP23.055x22.115x0.3125	Pole	73.0%	Pass
126.66 - 121.66	Pole	TP23.996x23.055x0.3125	Pole	80.0%	Pass
121.66 - 116.66	Pole	TP24.937x23.996x0.3125	Pole	86.0%	Pass
116.66 - 111.66	Pole	TP25.877x24.937x0.3125	Pole	91.1%	Pass
111.66 - 111	Pole	TP26.001x25.877x0.3125	Pole	91.8%	Pass
111 - 110.75	Pole + Reinf.	TP26.048x26.001x0.575	Reinf. 6 Tension Rupture	82.6%	Pass
110.75 - 105.75	Pole + Reinf.	TP26.989x26.048x0.5625	Reinf. 6 Tension Rupture	90.1%	Pass
105.75 - 101.5	Pole + Reinf.	TP27.788x26.989x0.55	Reinf. 6 Tension Rupture	95.9%	Pass
101.5 - 101.25	Pole + Reinf.	TP27.835x27.788x0.9875	Reinf. 12 Tension Rupture	65.4%	Pass
101.25 - 101	Pole + Reinf.	TP27.882x27.835x0.9875	Reinf. 12 Tension Rupture	65.7%	Pass
101 - 100.75	Pole + Reinf.	TP27.93x27.882x0.725	Reinf. 12 Tension Rupture	87.4%	Pass
100.75 - 95.75	Pole + Reinf.	TP28.87x27.93x0.7125	Reinf. 12 Tension Rupture	93.6%	Pass
95.75 - 92.16	Pole + Reinf.	TP30.36x28.87x0.7	Reinf. 12 Tension Rupture	97.7%	Pass
92.16 - 86.83	Pole + Reinf.	TP29.924x28.92x0.9375	Reinf. 12 Tension Rupture	80.6%	Pass
86.83 - 81.83	Pole + Reinf.	TP30.865x29.924x0.925	Reinf. 12 Tension Rupture	84.6%	Pass
81.83 - 81.5	Pole + Reinf.	TP30.927x30.865x0.925	Reinf. 12 Tension Rupture	84.9%	Pass
81.5 - 81.25	Pole + Reinf.	TP30.974x30.927x0.95	Reinf. 11 Tension Rupture	72.1%	Pass
81.25 - 76.25	Pole + Reinf.	TP31.915x30.974x0.925	Reinf. 11 Tension Rupture	75.3%	Pass
76.25 - 71.25	Pole + Reinf.	TP32.856x31.915x0.9	Reinf. 11 Tension Rupture	78.4%	Pass
71.25 - 66.25	Pole + Reinf.	TP33.797x32.856x0.875	Reinf. 11 Tension Rupture	81.2%	Pass
66.25 - 61.25	Pole + Reinf.	TP34.738x33.797x0.8625	Reinf. 11 Tension Rupture	83.9%	Pass
61.25 - 56.25	Pole + Reinf.	TP35.679x34.738x0.85	Reinf. 11 Tension Rupture	86.5%	Pass
56.25 - 51.25	Pole + Reinf.	TP36.619x35.679x0.825	Reinf. 11 Tension Rupture	88.9%	Pass
51.25 - 48.66	Pole + Reinf.	TP38.11x36.619x0.825	Reinf. 11 Tension Rupture	90.1%	Pass
48.66 - 42.33	Pole + Reinf.	TP37.546x36.357x1.0375	Reinf. 11 Tension Rupture	76.5%	Pass
42.33 - 37.4	Pole + Reinf.	TP38.473x37.546x1.025	Reinf. 11 Tension Rupture	78.4%	Pass
37.4 - 37.15	Pole + Reinf.	TP38.52x38.473x1.025	Reinf. 7 Tension Rupture	78.5%	Pass
37.15 - 32.15	Pole + Reinf.	TP39.459x38.52x1	Reinf. 7 Tension Rupture	80.2%	Pass
32.15 - 27.15	Pole + Reinf.	TP40.399x39.459x0.975	Reinf. 7 Tension Rupture	81.9%	Pass
27.15 - 22.15	Pole + Reinf.	TP41.338x40.399x0.9625	Reinf. 7 Tension Rupture	83.5%	Pass
22.15 - 19.5	Pole + Reinf.	TP41.836x41.338x0.95	Reinf. 7 Tension Rupture	84.3%	Pass
19.5 - 19.25	Pole + Reinf.	TP41.883x41.836x1.025	Reinf. 7 Tension Rupture	78.9%	Pass
19.25 - 14.25	Pole + Reinf.	TP42.822x41.883x1	Reinf. 7 Tension Rupture	80.3%	Pass
14.25 - 9.25	Pole + Reinf.	TP43.762x42.822x1	Reinf. 7 Tension Rupture	81.7%	Pass
9.25 - 9	Pole + Reinf.	TP43.809x43.762x1	Reinf. 7 Tension Rupture	81.8%	Pass
9 - 8.75	Pole + Reinf.	TP43.856x43.809x1.025	Reinf. 7 Tension Rupture	78.8%	Pass
8.75 - 7	Pole + Reinf.	TP44.185x43.856x1.025	Reinf. 7 Tension Rupture	79.2%	Pass
7 - 6.75	Pole + Reinf.	TP44.232x44.185x0.975	Reinf. 7 Tension Rupture	82.3%	Pass
6.75 - 5	Pole + Reinf.	TP44.561x44.232x0.975	Reinf. 7 Tension Rupture	82.8%	Pass
5 - 4.75	Pole + Reinf.	TP44.607x44.561x1.45	Reinf. 3 Connection	65.4%	Pass
4.75 - 3	Pole + Reinf.	TP44.936x44.607x1.425	Reinf. 3 Connection	65.8%	Pass
3 - 2.75	Pole + Reinf.	TP44.983x44.936x1.45	Reinf. 7 Tension Rupture	58.1%	Pass
2.75 - 2.25	Pole + Reinf.	TP45.077x44.983x1.45	Reinf. 7 Tension Rupture	58.2%	Pass
2.25 - 2	Pole + Reinf.	TP45.124x45.077x1.2	Reinf. 8 Tension Rupture	69.8%	Pass
2 - 0	Pole + Reinf.	TP45.5x45.124x1.175	Reinf. 8 Tension Rupture	70.3%	Pass
				Summary	
			Pole	91.8%	Pass
			Reinforcement	97.7%	Pass
			Overall	97.7%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12
169 - 164	426	n/a	426	12.86	n/a	12.86	4.1%												
164 - 159	506	n/a	506	13.62	n/a	13.62	13.1%												
159 - 154	596	n/a	596	14.37	n/a	14.37	25.4%												
154 - 149	695	n/a	695	15.13	n/a	15.13	38.1%												
149 - 144	804	n/a	804	15.89	n/a	15.89	51.4%												
144 - 139	925	n/a	925	16.65	n/a	16.65	63.0%												
139 - 136.66	985	n/a	985	17.00	n/a	17.00	68.1%												
136.66 - 131.66	1298	n/a	1298	21.62	n/a	21.62	65.9%												
131.66 - 126.66	1474	n/a	1474	22.56	n/a	22.56	73.0%												
126.66 - 121.66	1664	n/a	1664	23.49	n/a	23.49	80.0%												
121.66 - 116.66	1870	n/a	1870	24.42	n/a	24.42	86.0%												
116.66 - 111.66	2093	n/a	2093	25.36	n/a	25.36	91.1%												
111.66 - 111	2124	n/a	2124	25.48	n/a	25.48	91.8%												
111 - 110.75	2135	1674	3809	25.53	18.00	43.53	51.1%						82.6%						
110.75 - 105.75	2378	1790	4168	26.46	18.00	44.46	55.8%						90.1%						
105.75 - 101.5	2598	1892	4491	27.25	18.00	45.25	59.4%						95.9%						
101.5 - 101.25	2612	5093	7705	27.30	48.00	75.30	35.0%						56.4%						65.4%
101.25 - 101	2625	5109	7734	27.35	48.00	75.35	35.1%						56.6%						65.7%
101 - 100.75	2639	3215	5853	27.39	30.00	57.39	46.7%												87.4%
100.75 - 95.75	2918	3424	6342	28.32	30.00	58.32	50.1%												93.6%
95.75 - 92.16	3129	3578	6708	28.99	30.00	58.99	52.3%												97.7%
92.16 - 86.83	3878	5292	9170	35.17	43.50	78.67	43.2%				76.1%								80.6%
86.83 - 81.83	4261	5615	9876	36.29	43.50	79.79	45.4%				80.0%								84.6%
81.83 - 81.5	4287	5636	9923	36.36	43.50	79.86	45.5%				80.2%								84.9%
81.5 - 81.25	4307	5911	10218	36.42	45.00	81.42	44.5%											72.1%	
81.25 - 76.25	4716	6257	10974	37.54	45.00	82.54	46.5%											75.3%	
76.25 - 71.25	5151	6613	11765	38.66	45.00	83.66	48.5%											78.4%	
71.25 - 66.25	5612	6979	12591	39.78	45.00	84.78	50.3%											81.2%	
66.25 - 61.25	6099	7355	13455	40.90	45.00	85.90	52.0%											83.9%	
61.25 - 56.25	6614	7741	14356	42.02	45.00	87.02	53.7%											86.5%	
56.25 - 51.25	7157	8137	15295	43.14	45.00	88.14	55.5%											88.9%	
51.25 - 48.66	7450	8346	15796	43.72	45.00	88.72	56.4%											90.1%	
48.66 - 42.33	7721	12538	20258	44.24	69.00	113.24	48.8%		74.2%									76.5%	
42.33 - 37.4	8312	13139	21452	45.34	69.00	114.34	50.4%		76.1%									78.4%	
37.4 - 37.15	8343	13170	21513	45.40	69.00	114.40	50.4%		76.2%					78.5%		74.2%			
37.15 - 32.15	8975	13796	22771	46.52	69.00	115.52	52.0%		77.9%					80.2%		76.0%			
32.15 - 27.15	9638	14436	24074	47.64	69.00	116.64	53.4%		79.6%					81.9%		77.6%			
27.15 - 22.15	10332	15091	25423	48.75	69.00	117.75	54.9%		81.2%					83.5%		79.2%			
22.15 - 19.5	10714	15444	26158	49.35	69.00	118.35	55.6%		82.0%					84.3%		79.9%			
19.5 - 19.25	10750	17315	28066	49.40	77.50	126.90	52.0%	75.1%						78.9%		73.6%			
19.25 - 14.25	11497	18072	29569	50.52	77.50	128.02	53.4%	76.5%						80.3%		75.0%			
14.25 - 9.25	12277	18845	31122	51.64	77.50	129.14	54.7%	77.8%						81.7%		76.3%			
9.25 - 9	12317	18884	31201	51.70	77.50	129.20	54.7%	77.9%						81.8%		76.4%			
9 - 8.75	12357	20125	32482	51.75	82.50	134.25	52.8%	75.0%						78.8%			64.7%		
8.75 - 7	12640	20418	33058	52.14	82.50	134.64	53.2%	75.4%						79.2%			65.1%		
7 - 6.75	12680	19237	31918	52.20	77.50	129.70	55.3%	78.5%						82.3%	77.0%				
6.75 - 5	12968	19515	32482	52.59	77.50	130.09	55.7%	78.9%						82.8%	77.4%				
5 - 4.75	13009	33772	46781	52.65	117.50	170.15	39.1%	56.0%		65.4%				60.1%	52.9%				
4.75 - 3	13301	34230	47531	53.04	117.50	170.54	39.4%	56.4%		65.8%				60.5%	53.2%				
3 - 2.75	13343	34565	47909	53.09	122.50	175.59	39.3%	55.8%				52.1%		58.1%	55.5%				
2.75 - 2.25	13428	34700	48127	53.20	122.50	175.70	39.4%	55.9%				52.2%		58.2%	55.6%				
2.25 - 2	13470	26940	40410	53.26	90.00	143.26	46.6%					62.6%		69.8%	69.8%				
2 - 0	13812	27354	41166	53.71	90.00	143.71	47.1%					63.0%		70.3%	70.3%				

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

PAUL J. FORD & COMPANY

Date:	4/23/2019
Job #:	37519-0238.002.7805

Applied Reactions for RISA 3D		
TNX Moment =	5064	k-ft
TNX Axial =	72	kips
TNX Shear =	44	kips
Total Unfactored Axial =	**60.00**	**kips**
Side Bending Moment =	**5064**	**k-ft**
Corner Bending Moment (Mx) =	**3580.8**	**k-ft**
Corner Bending Moment (Mz)=	**3580.8**	**k-ft**

Micropile Spring Constant		
Number of Piles =	6	
B.C. =	117.5	in
Ag =	4.03	in^2
E =	29000	ksi
Lu =	10	ft
k = An*E / Lu =	973.92	k/in

Helical Anchor Spring Constant		
Number of Piles =	6	
B.C. =	300	in
Ag =	8.28	in^2
E =	29000	ksi
Lu =	65	ft
k = An*E / Lu =	307.85	k/in

Micropile Capacity		
Max Tension from RISA =	121.798	kips
Anchor Type =	Micropile	
Ultimate Load, Pu' =	418	kips
An =		in^2
Capacity (Kips)= 0.8*Pu =	334.4	
Ratio = 121.798 / 334.4 =	**36.4%**	

Helical Anchor Capacity		
Max Tension from RISA =	93.793	kips
Anchors per	2	
Helical Anchor Type =	RD4500.337	
Design Torque =	21000	ft-lbs
Ultimate Capacity =	140	kips
Installed Torque =	15000	ft-lbs
Installed Capacity =	100	kips
Total Capacity =	105	kips
Ratio = 93.793 / 105 =	**89.3%**	

			Load Distribution
Micropile Effective Moment =	42934	k-in	33.7%
Anchor Effective Moment =	84414	k-in	66.3%
Total Effective Moment =	127347	k-in	

Reaction for Helical Load transfer at Base plate:

Moment =	**3356.7**	**k-ft**
Axial =	**47.7**	**kips**
Shear =	**44.0**	**kips**

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.5.7 - Effective 2-28-19

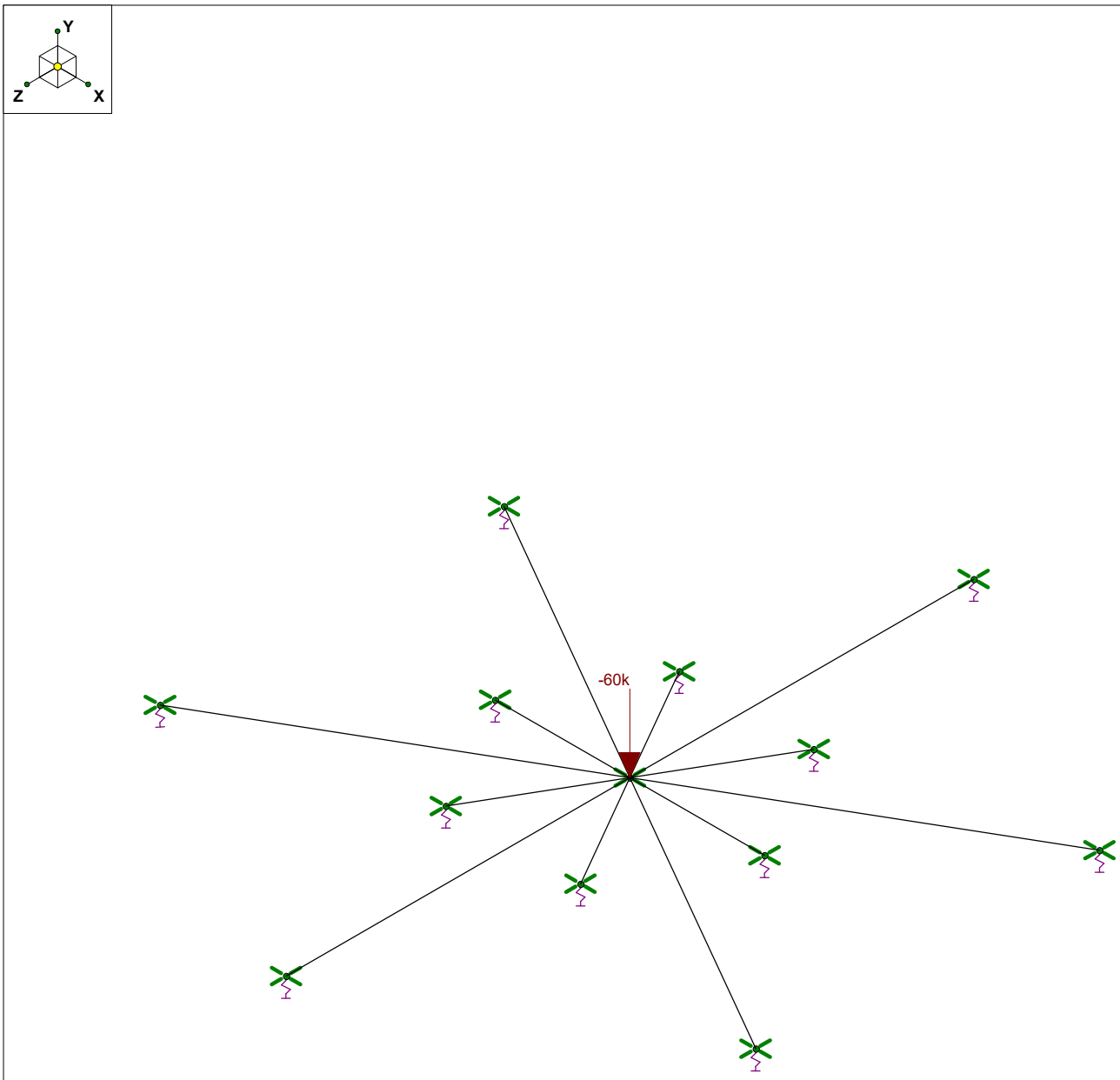
Date: 4/23/2019
PJF Project: 37519-0238.002.7805
Client Ref. # BU 828054
Site Name: South Windsor/Rt 5
Description: 165 Ft Monopole
Owner: CCI
Engineer: JAB

Asymmetric Anchor Rod Analysis

Moment =	3357	k-ft	TIA Ref.	H	η =	N/A	for Base Plates, Rev. G Sect. 4.9.9	Use An?	No	for Anchors or Bolts
Axial =	47.7	kips (+Comp, -Tension)	ASIF =	N/A	Threads =	N/A	for Flange Plates, Rev. G & H			
Shear =	44.0	kips	Max Ratio =	100.0%	Grout =	0.00	psi, for Base Plates, Rev. H Sect 4.9.9 (Note)			
Anchor Qty =	12		Location =	Base Plate						

** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. **

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Type	Area Override, in^2	Iar, in	Area, in^2	Max Net Comp, kips	Max Net Tension, kips	Tension Override, kips	Comp Override, kips	Tension Cap, kips	Comp Cap, kips	Capacity Ratio
1	2.250	A354 Gr BC	109	125	6.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
2	2.250	A354 Gr BC	109	125	53.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
3	2.250	A354 Gr BC	109	125	66.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
4	2.250	A354 Gr BC	109	125	113.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
5	2.250	A354 Gr BC	109	125	126.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
6	2.250	A354 Gr BC	109	125	173.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
7	2.250	A354 Gr BC	109	125	186.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
8	2.250	A354 Gr BC	109	125	233.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
9	2.250	A354 Gr BC	109	125	246.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
10	2.250	A354 Gr BC	109	125	293.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
11	2.250	A354 Gr BC	109	125	306.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
12	2.250	A354 Gr BC	109	125	353.5	54.00	Original	0.00		3.98	252.40	244.45	0.00	0.00	304.47	354.00	68.0%
										47.71							



Loads: BLC 1, Dead
Envelope Only Solution

Paul J. Ford and Company	BU 828054 / South Windsor- Rt 5	SK - 2
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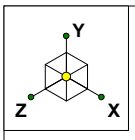

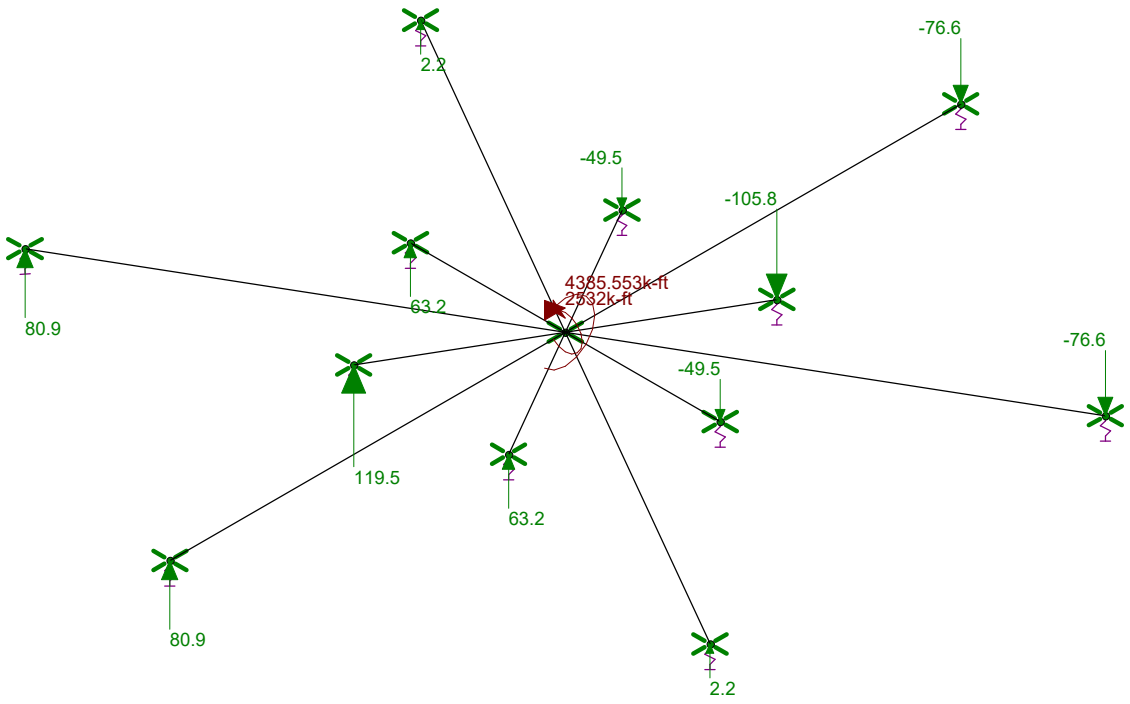

Loads: BLC 3, Wind 30
Y-direction Reaction Units are k and k-ft

Paul J. Ford and Company	BU 828054 / South Windsor- Rt 5	SK - 9
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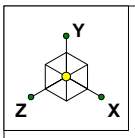

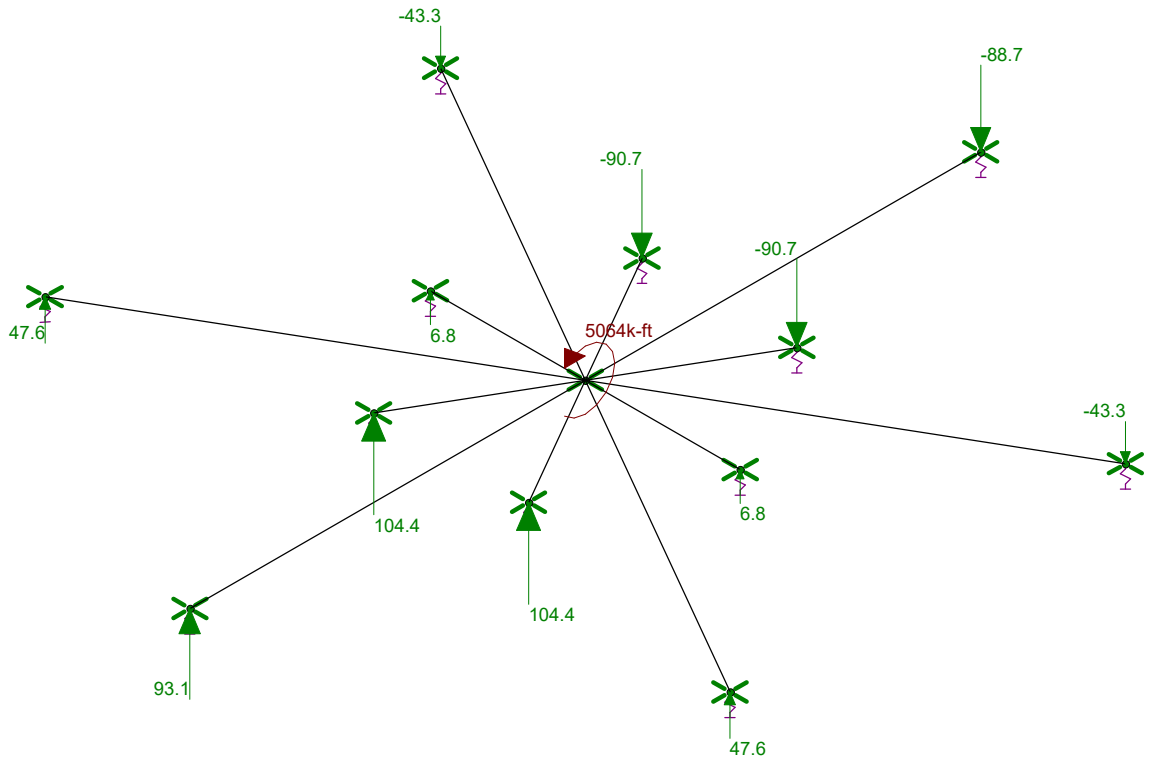

Loads: BLC 2, Wind 0
Y-direction Reaction Units are k and k-ft

Paul J. Ford and Company	BU 828054 / South Windsor- Rt 5	SK - 8
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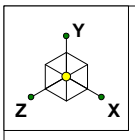

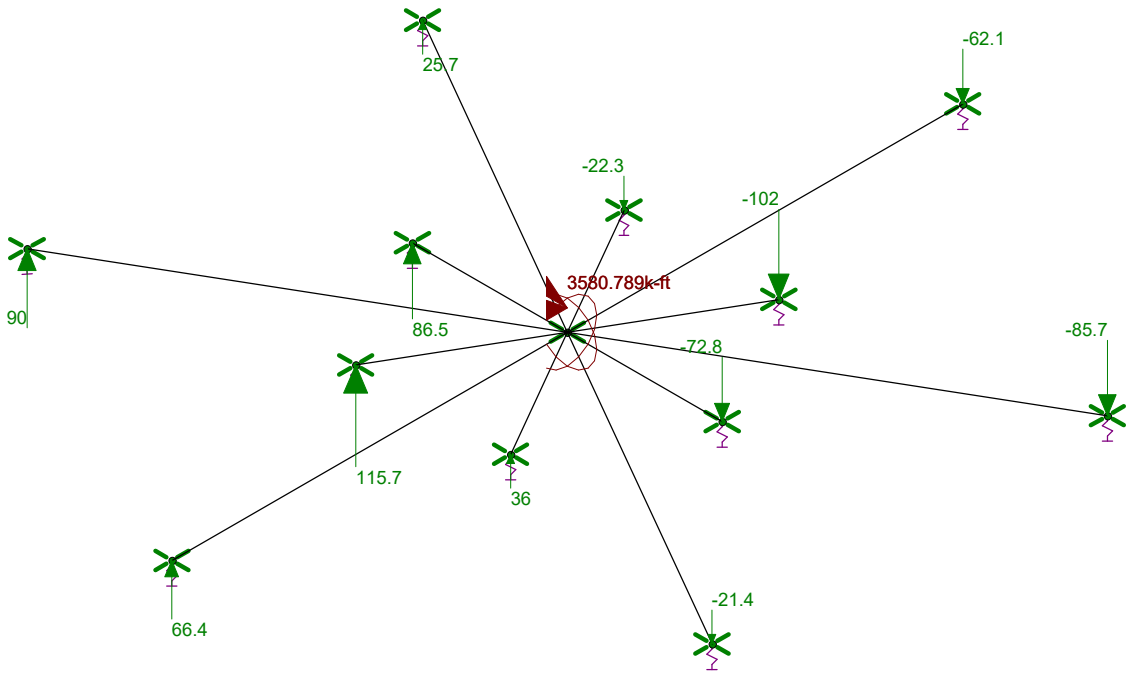

Loads: BLC 4, Wind 45
Y-direction Reaction Units are k and k-ft

Paul J. Ford and Company	BU 828054 / South Windsor- Rt 5	SK - 10
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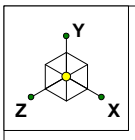

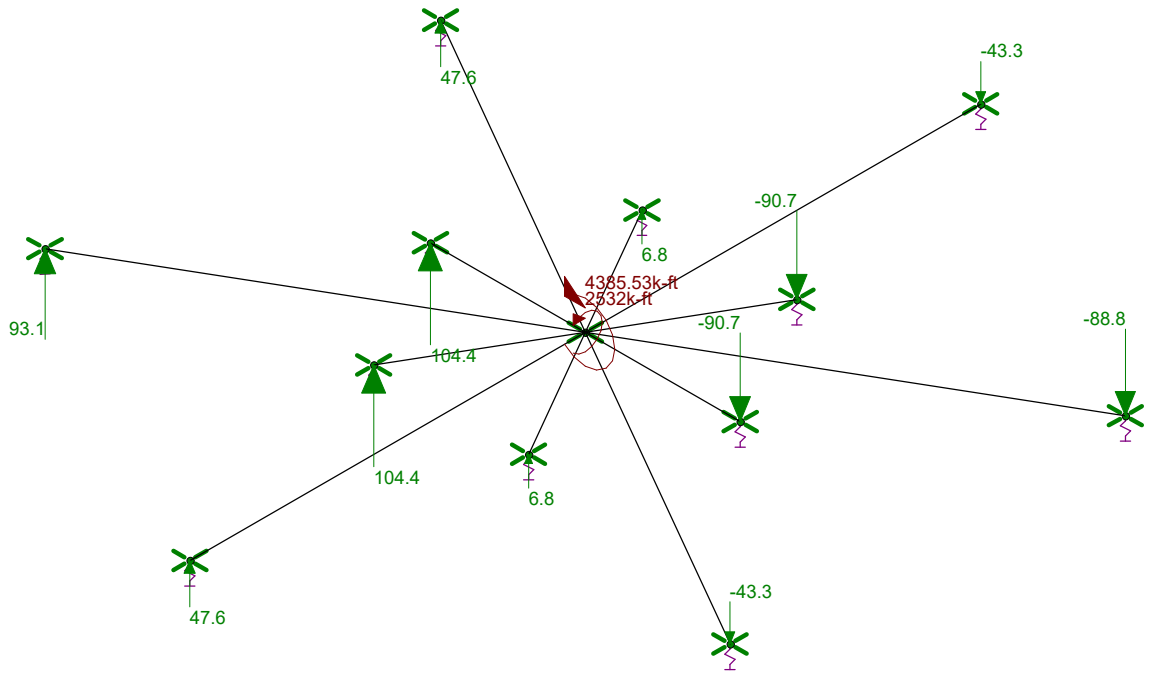

Loads: BLC 5, Wind 60
Y-direction Reaction Units are k and k-ft

Paul J. Ford and Company	BU 828054 / South Windsor- Rt 5	SK - 11
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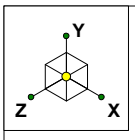

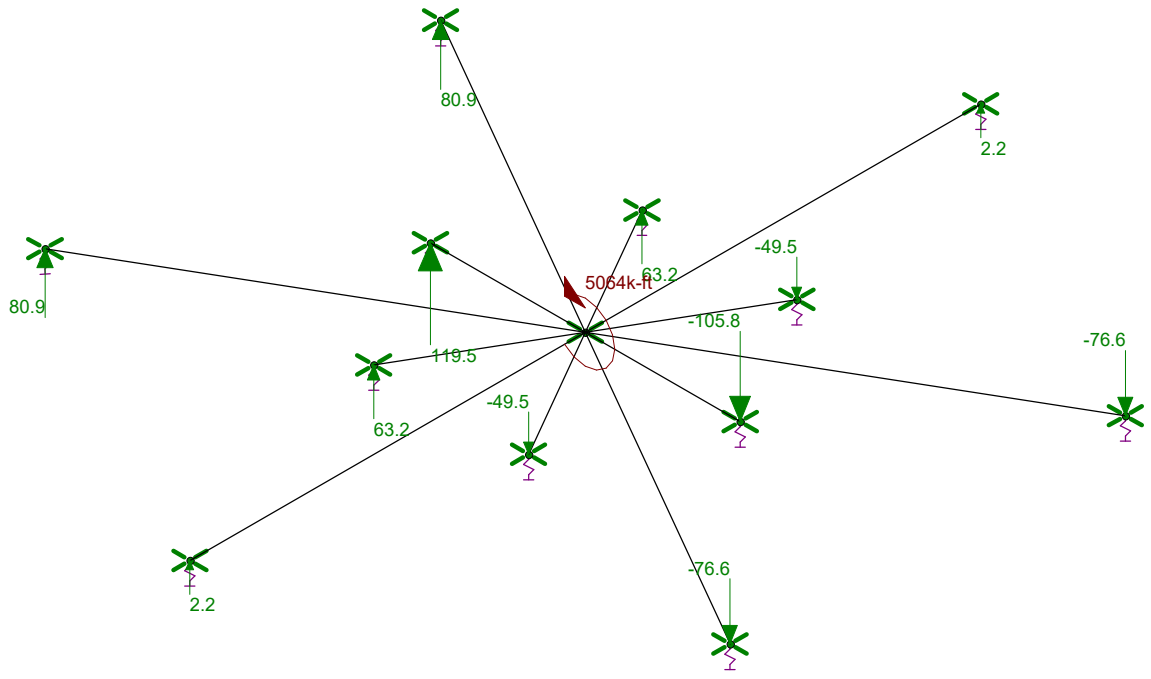

Loads: BLC 6, Wind 90
Y-direction Reaction Units are k and k-ft

Paul J. Ford and Company	BU 828054 / South Windsor- Rt 5	SK - 12
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Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E..	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3

General Material Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]
1	gen_Conc3NW	3155	1372	.15	.6	.145
2	gen_Conc4NW	3644	1584	.15	.6	.145
3	gen_Conc3LW	2085	906	.15	.6	.11
4	gen_Conc4LW	2408	1047	.15	.6	.11
5	gen_Alum	10600	4077	.3	1.29	.173
6	gen_Steel	29000	11154	.3	.65	.49
7	RIGID	1e+6		.3	0	0

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HR1A	W10x33	Beam	None	A36 Gr.36	Typical	9.71	36.6	171	.583

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	CENTER	0	0	0	0	
2	N2	0	0	12.49995	0	
3	N4	10.824885	0	6.249975	0	
4	N6	10.824885	0	-6.249975	0	
5	N8	-0.	0	-12.49995	0	
6	N10	-10.824885	0	-6.249975	0	
7	N12	-10.824885	0	6.249975	0	
8	N8A	4.895638	0	0	0	
9	N10A	2.447819	0	-4.239899	0	
10	N12A	-2.447819	0	-4.239899	0	
11	N14	-4.895638	0	0.	0	
12	N16	-2.447819	0	4.239899	0	
13	N18	2.447819	0	4.239899	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N14	Reaction	S973.92	Reaction			
2	N16	Reaction	S973.92	Reaction			
3	N18	Reaction	S973.92	Reaction			
4	N8A	Reaction	S973.92	Reaction			
5	N10A	Reaction	S973.92	Reaction			
6	N12A	Reaction	S973.92	Reaction			
7	N10	Reaction	S307.85	Reaction			
8	N8	Reaction	S307.85	Reaction			
9	N6	Reaction	S307.85	Reaction			
10	N4	Reaction	S307.85	Reaction			
11	N2	Reaction	S307.85	Reaction			
12	N12	Reaction	S307.85	Reaction			

Joint Boundary Conditions (Continued)

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
13	CENTER	Reaction		Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	CENTER	N2			RIGID	None	None	RIGID	Typical
2	M2	CENTER	N4			RIGID	None	None	RIGID	Typical
3	M3	CENTER	N6			RIGID	None	None	RIGID	Typical
4	M4	CENTER	N8			RIGID	None	None	RIGID	Typical
5	M5	CENTER	N10			RIGID	None	None	RIGID	Typical
6	M6	CENTER	N12			RIGID	None	None	RIGID	Typical
7	M7	CENTER	N8A			RIGID	None	None	RIGID	Typical
8	M8	CENTER	N10A			RIGID	None	None	RIGID	Typical
9	M9	CENTER	N12A			RIGID	None	None	RIGID	Typical
10	M10	CENTER	N14			RIGID	None	None	RIGID	Typical
11	M11	CENTER	N16			RIGID	None	None	RIGID	Typical
12	M12	CENTER	N18			RIGID	None	None	RIGID	Typical

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Dead	None		-1		1				
2	WInd 0	None				1				
3	Wind 30	None				2				
4	Wind 45	None				2				
5	Wind 60	None				2				
6	Wind 90	None				1				

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.2 Dead + Wind 0	Yes	Y		1	1.2	2	1																
2	0.9 Dead + Wind 0	Yes	Y		1	.9	2	1																
3	1.2 Dead + Wind 30	Yes	Y		1	1.2	3	1																
4	0.9 Dead + Wind 30	Yes	Y		1	.9	3	1																
5	1.2 Dead + Wind 45	Yes	Y		1	1.2	4	1																
6	0.9 Dead + Wind 45	Yes	Y		1	.9	4	1																
7	1.2 Dead + Wind 60	Yes	Y		1	1.2	5	1																
8	0.9 Dead + Wind 60	Yes	Y		1	.9	5	1																
9	1.2 Dead + Wind 90	Yes	Y		1	1.2	6	1																
10	0.9 Dead + Wind 90	Yes	Y		1	.9	6	1																
11	1.2 Dead + Wind 180	Yes	Y		1	1.2	2	-1																
12	0.9 Dead + Wind 180	Yes	Y		1	.9	2	-1																
13	1.2 Dead + Wind 210	Yes	Y		1	1.2	3	-1																
14	0.9 Dead + Wind 210	Yes	Y		1	.9	3	-1																
15	1.2 Dead + Wind 225	Yes	Y		1	1.2	4	-1																
16	0.9 Dead + Wind 225	Yes	Y		1	.9	4	-1																
17	1.2 Dead + Wind 240	Yes	Y		1	1.2	5	-1																
18	0.9 Dead + Wind 240	Yes	Y		1	.9	5	-1																
19	1.2 Dead + Wind 270	Yes	Y		1	1.2	6	-1																
20	0.9 Dead + Wind 270	Yes	Y		1	.9	6	-1																

Envelope Joint Reactions

Joint	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
No Data to Print ...												

Envelope Member Section Forces

Member	Sec	Axial[k]	LC	y Shear[k]	LC	z Shear[k]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
No Data to Print ...													

Envelope AISC ASD Steel Code Checks

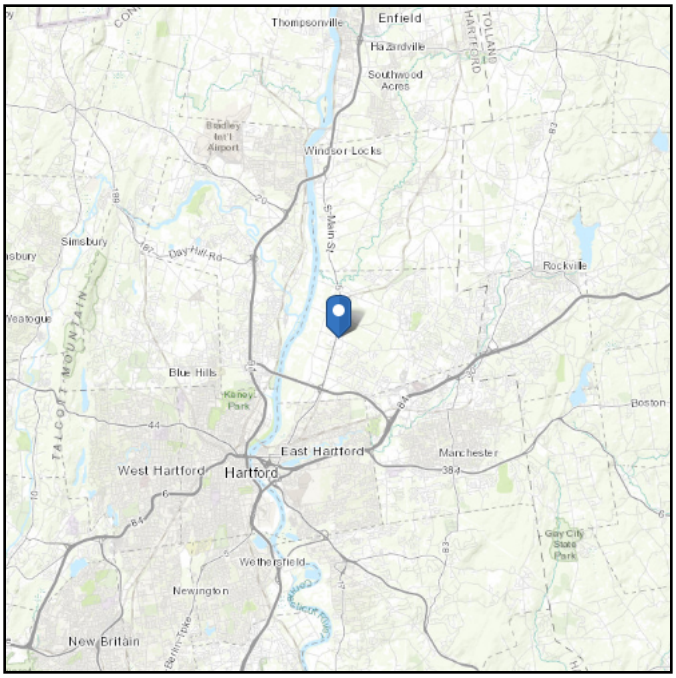
Member	Shape	Code C...	Loc[ft]	LC	Shear C...	Loc[ft]	Dir	LC	Fa [ksi]	Ft [ksi]	Fb y-y [...	Fb z-z [...	Cb	Cmy	Cmz	ASD Eqn
No Data to Print ...																

ASCE 7 Hazards Report

Address:
300 Governors Hwy
South Windsor, Connecticut
06074

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 70.11 ft (NAVD 88)
Latitude: 41.832274
Longitude: -72.603035



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Wed Jan 16 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

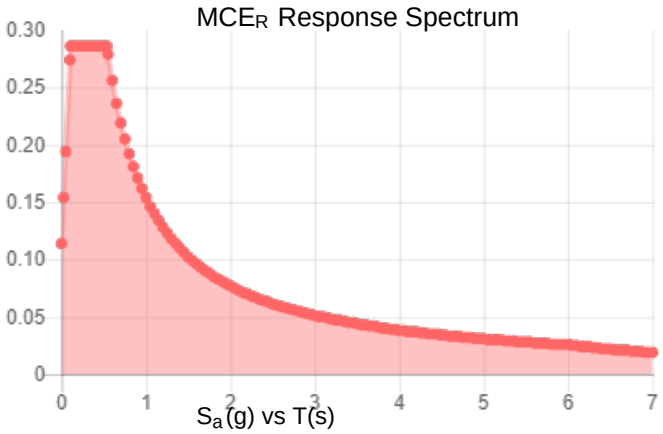
Seismic

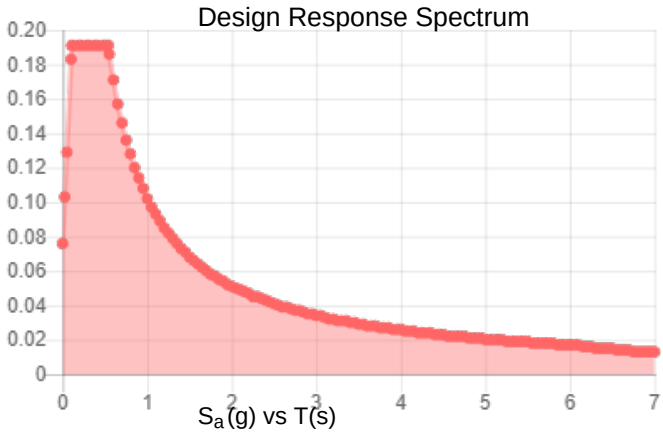
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.179	S_{DS} :	0.191
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.089
S_{MS} :	0.286	PGA_M :	0.143
S_{M1} :	0.154	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Wed Jan 16 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Wed Jan 16 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Date: **February 11, 2019**

Charles McGuirt
Crown Castle
3 Corporate Dr., St 101
Clifton Park, NY 12065

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Modification Report**	
Carrier Designation:	**AT&T Equipment Change-Out**	
	Carrier Site Number:	10035346
	Carrier Site Name:	South Windsor West
Crown Castle Designation:	**Crown Castle BU Number:**	828054
	Crown Castle Site Name:	South Windsor/Rt 5
	Crown Castle JDE Job Number:	553222
	Crown Castle Order Number:	475138 Rev.0
Engineering Firm Designation:	**Infinigy Report Designation:**	1039-A0002-B
Site Data:	**300 Governors Highway, South Windsor, Hartford County, CT, 06074 Latitude 41°50'0.40" Longitude 72°36'11.00"**	
Structure Information:	**Tower Height & Type:**	**165.0 ft Monopole**
	Mount Elevation:	**156.0 ft**
	Mount Type:	**14.0 ft Platform**

Dear Charles McGuirt,

Infinigy is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of AT&T's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform **Sufficent**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2015 IBC/2018 Connecticut State Building Code. Exposure Category C and Risk Category II were used in this analysis.

We at Infinigy Engineering, PLLC 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.

Mount analysis prepared by: Ishan Patel, E.I.T
Respectfully Submitted by:

Joe Johnston, P.E.
VP Structural Engineering / Principal

TABLE OF CONTENTS

1) INTRODUCTION

This mount is a existing 14.0 ft Platform mapped in TIA Inspection, dated March 27 2018. This mount is installed at the 156.0 ft elevation on 3 sector(s) of the 165.0 ft Monopole**.**

2) ANALYSIS CRITERIA

Building Code:	2015 IBC/2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.7 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount/Modification Detail
156.0	162.0	4	CCI	DTMABP7819VG12A	Platform w/Site Pro 1 PRK-1245
	158.0	6	Powerwave	7770	
		1	CCI	HPA-65R-BUU-H6	
		2	CCI	HPA-65R-BUU-H8	
	156.0	3	Ericsson	RRUS-12 w/A2	
		2	CCI	DTMABP7819VG12A	
		3	Ericsson	RRUS-11	
		1	Raycap	DC6-48-60-18-8F	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	AT&T	475138, Rev. 0	CCI Sites
Structural Analysis	Paul J. Ford & Co.	01-17-19	CCI Sites
Mount Photos	TIA Inspection	03-27-18	CCI Sites

3.1) Analysis Method

RISA-3D (Version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Wind Load Calculator (Version 3.0.2), a tool internally developed by Infinigy Engineering, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. In addition, Infinigy Bolt Calculator (Version 1.0.0) was used to calculate member stresses for round structural members for various loading cases, when applicable. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision B).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3(a) - Mount Component Stresses vs. Capacity (Platform)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Stand-off	M23	156.0	46.0	Pass
	Horizontal	M1		42.3	Pass
	Mount Pipe	MP2		43.2	Pass
	Bolts	--		31.7	Pass

Structure Rating (max from all components) =	46.0%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) All sectors are typical

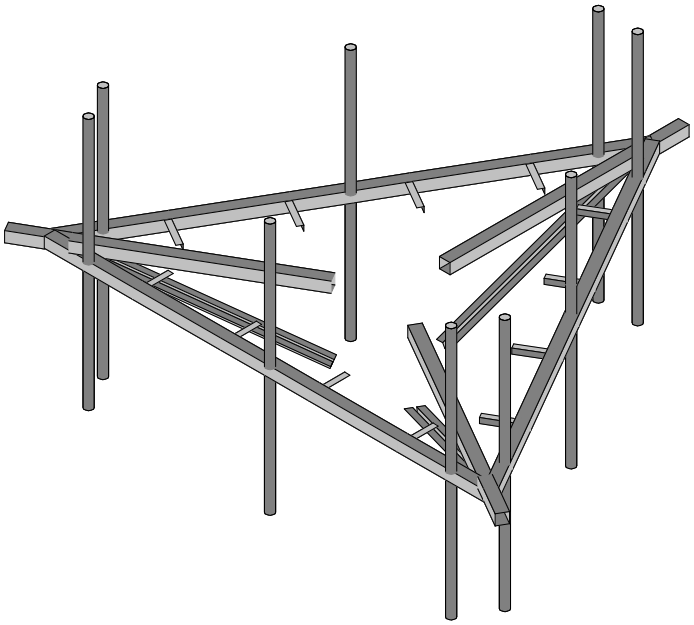
4.1) Recommendations

The Mount Platform has sufficient capacity to support the proposed loading ater the following modifications are installed:

- Install (1) Site Pro 1 PRK-1245 reinforcement kit per manufactures specifications.

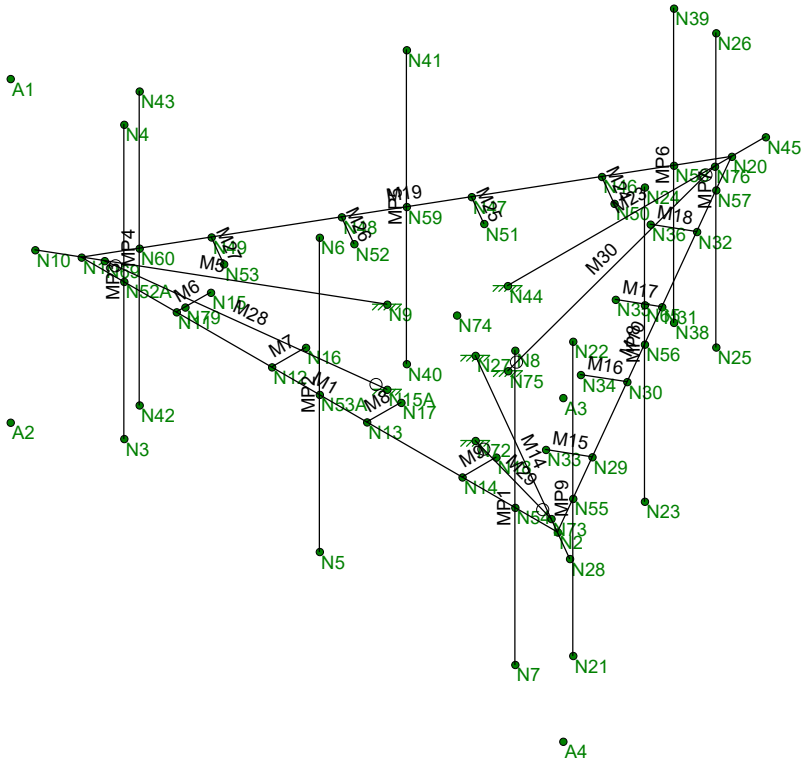
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Infinigy Engineering, PLLC.	828054	Proposed Configuration
IP		Feb 4, 2019 at 4:20 PM
1039-A0002-B		828054_Proposed.r3d



Infinigy Engineering, PLLC.	828054	Wireframe
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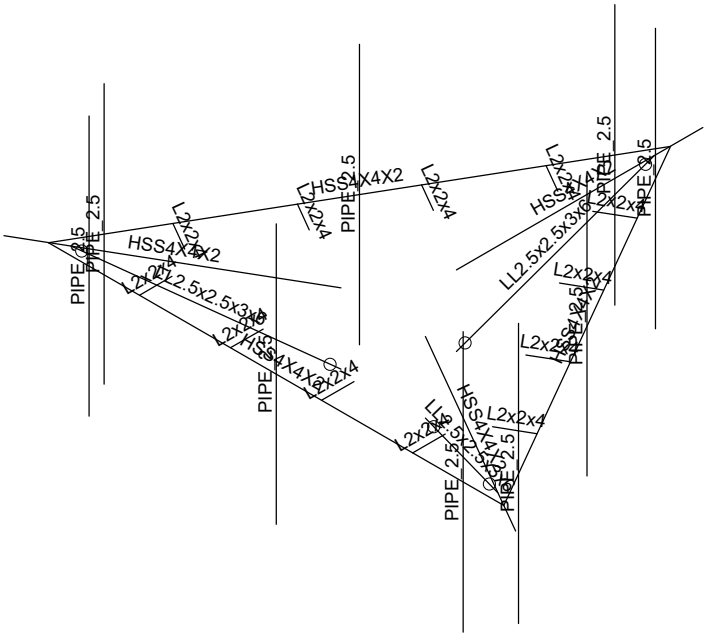
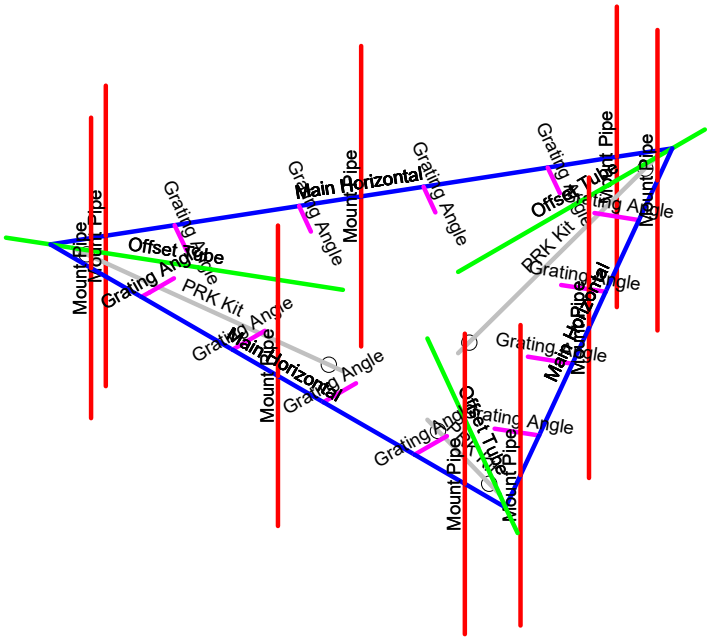
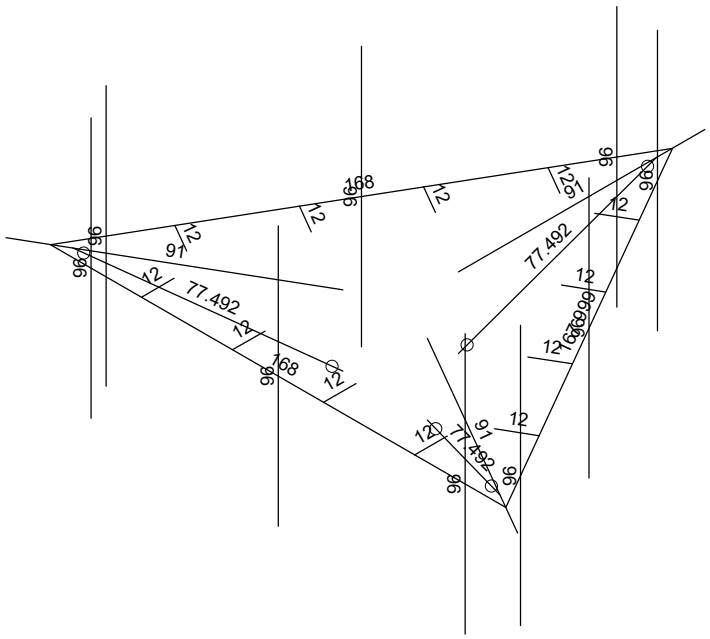
1039-A0002-B		828054_Proposed.r3d



Infinigy Engineering, PLLC.	828054	Member Shapes
IP		Feb 5, 2019 at 2:56 PM
1039-A0002-B		828054_Proposed.r3d

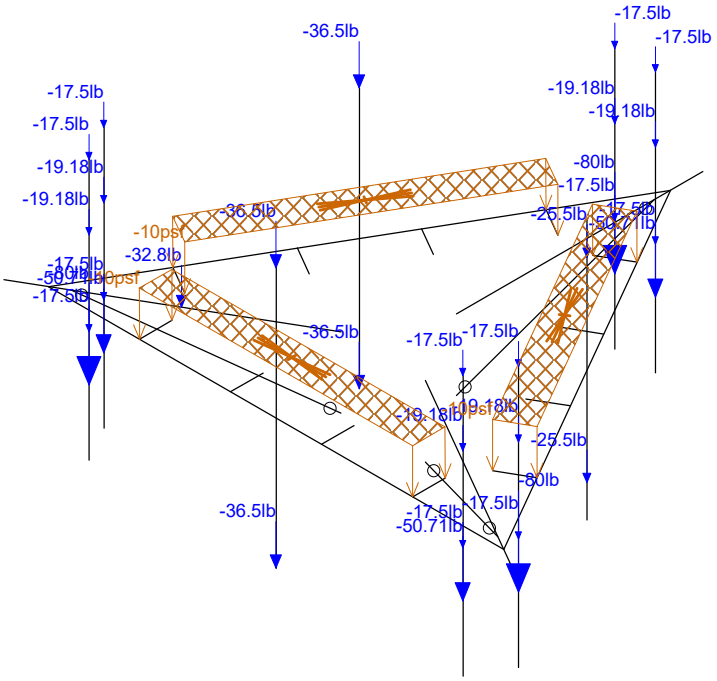


Infinigy Engineering, PLLC.	828054	Section Sets
IP		Feb 5, 2019 at 2:56 PM
1039-A0002-B		828054_Proposed.r3d



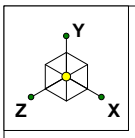
Member Length (in) Displayed

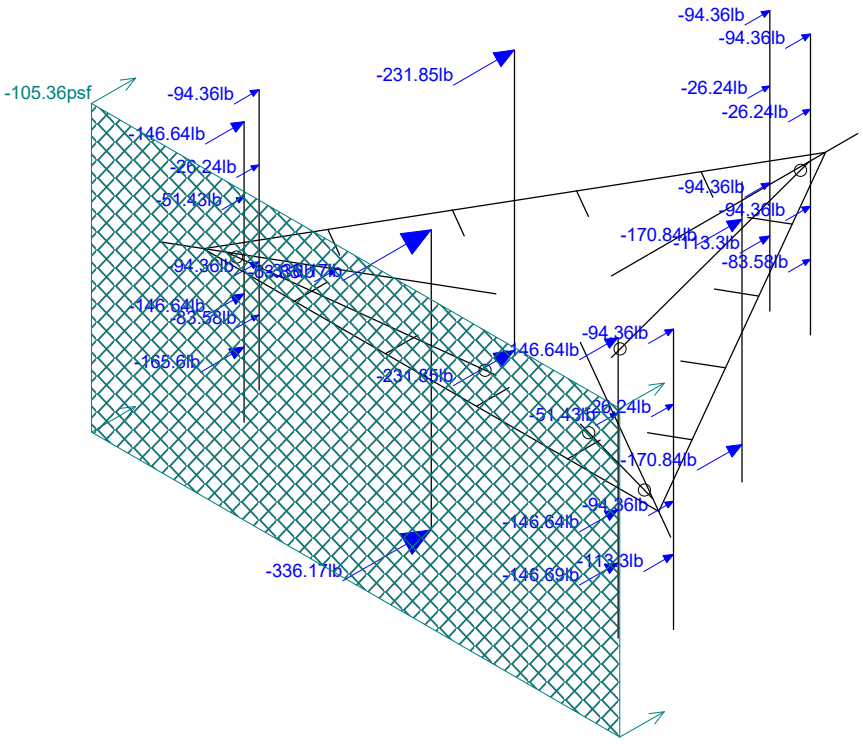
Infinigy Engineering, PLLC.	828054	Member Lengths
IP		Feb 5, 2019 at 2:56 PM
1039-A0002-B		828054_Proposed.r3d



Loads: BLC 1, Self Weight

Infinigy Engineering, PLLC.	828054	Dead Load
IP		Feb 5, 2019 at 2:56 PM
1039-A0002-B		828054_Proposed.r3d





Loads: BLC 2, Wind Load AZI 000

Infinigy Engineering, PLLC.	828054	Wind Load 0
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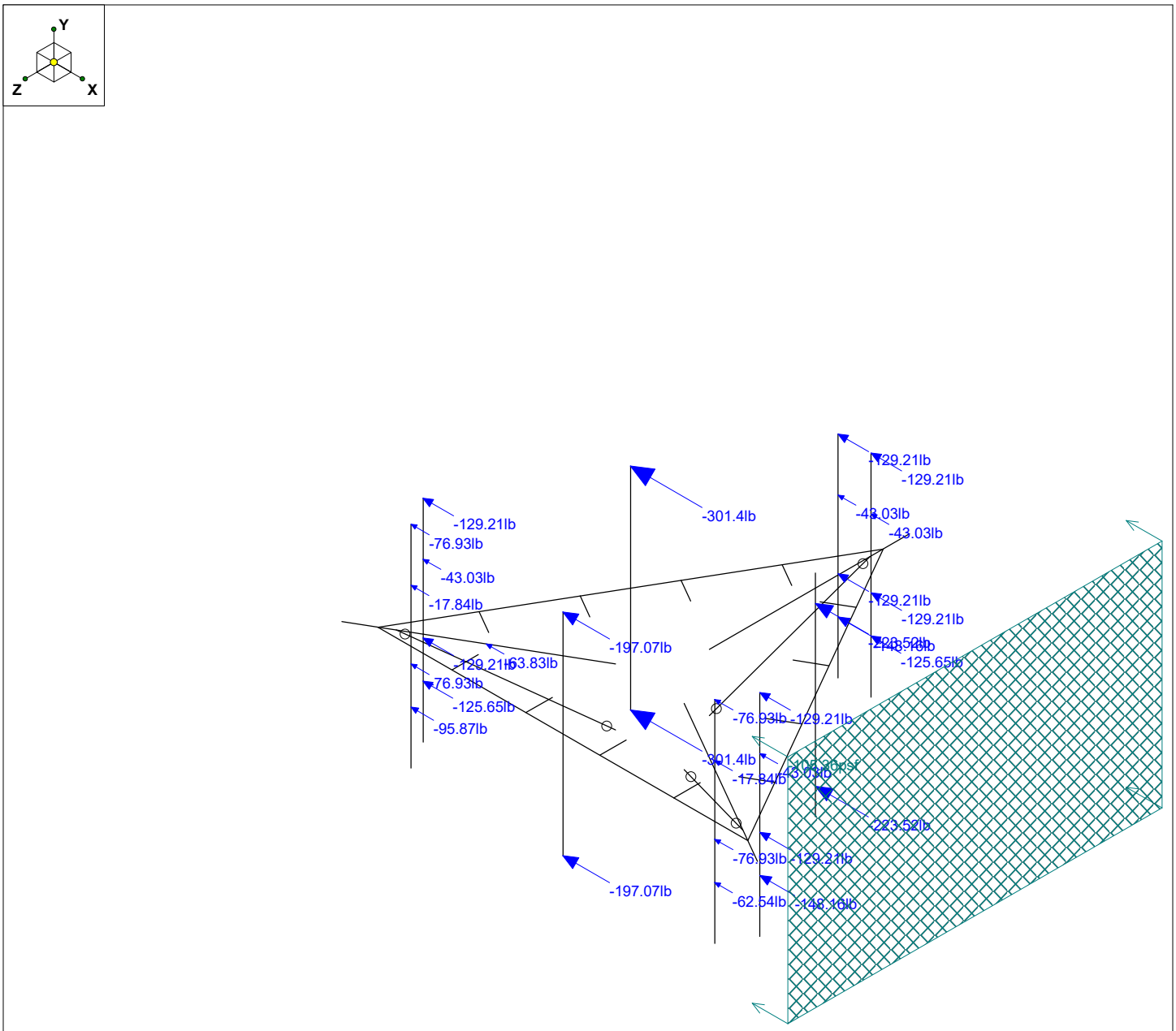
1039-A0002-B		828054_Proposed.r3d



Loads: BLC 3, Wind Load AZI 090

Infinigy Engineering, PLLC.	828054	Wind Load 90
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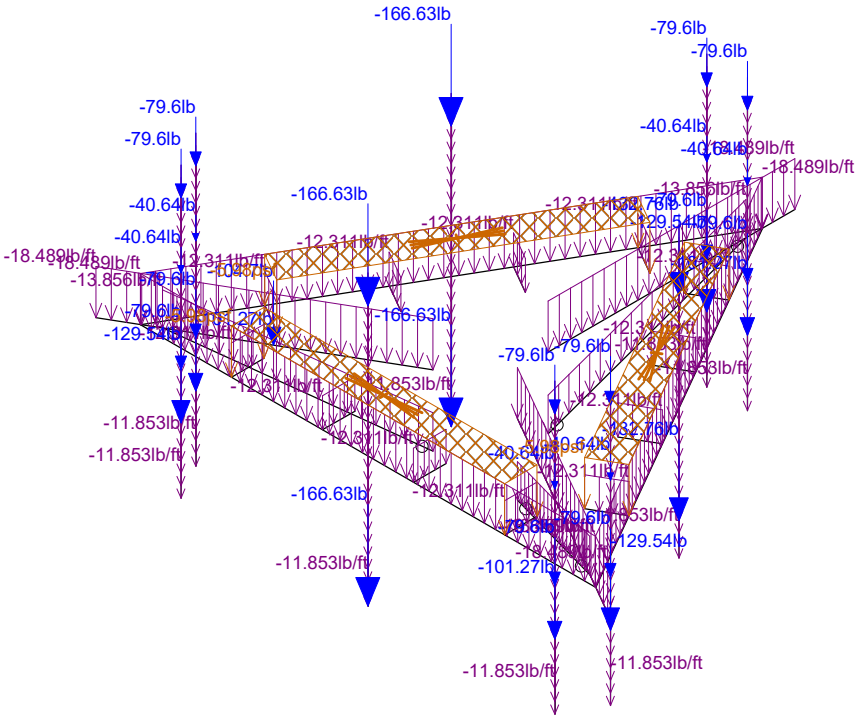
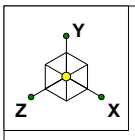
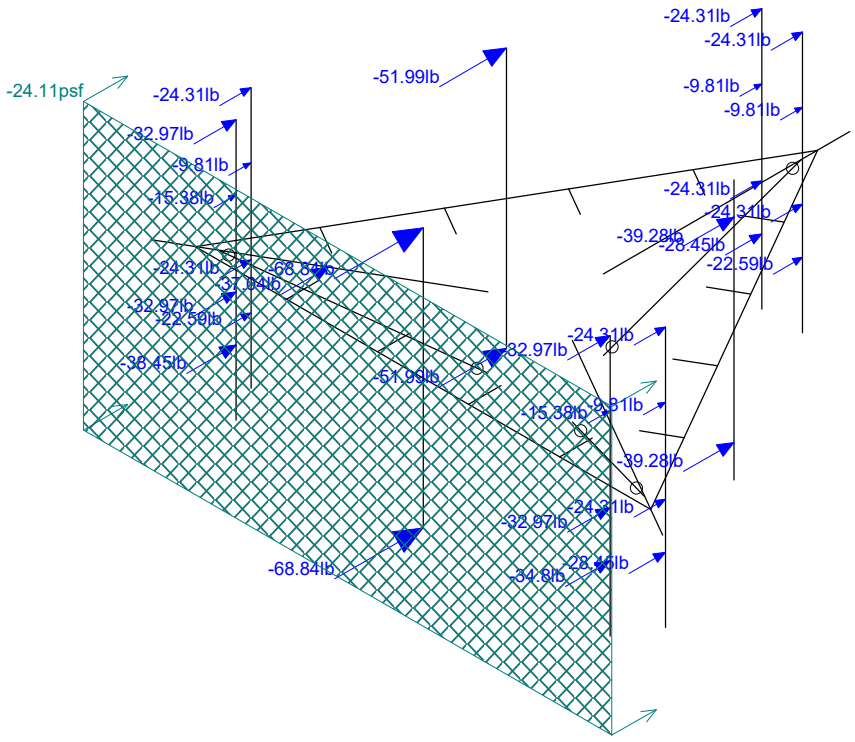
1039-A0002-B		828054_Proposed.r3d



Loads: BLC 4, Ice Weight

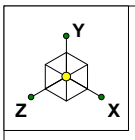
Infinigy Engineering, PLLC.	828054	Ice Load
IP		Feb 5, 2019 at 2:57 PM
1039-A0002-B		828054_Proposed.r3d

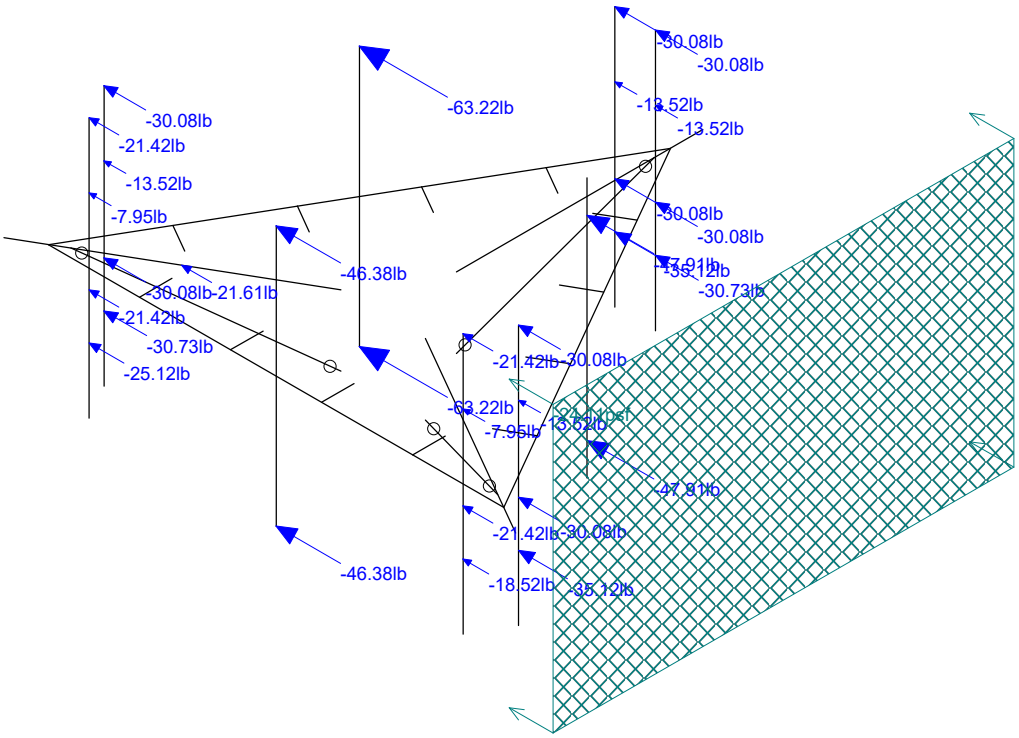




Loads: BLC 5, Wind + Ice Load AZI 000

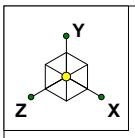
Infinigy Engineering, PLLC.	828054	Wind + Ice Load 0
IP		Feb 5, 2019 at 2:57 PM
1039-A0002-B		828054_Proposed.r3d

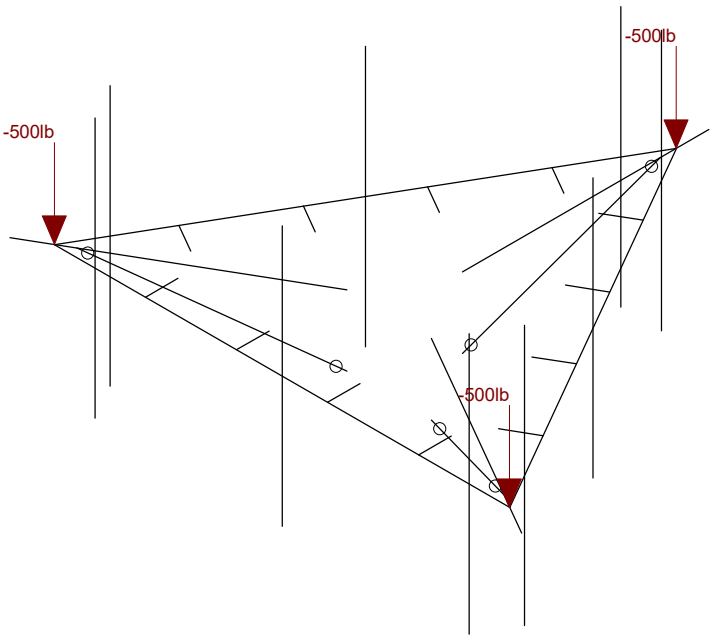




Loads: BLC 6, Wind + Ice Load AZI 090

Infinigy Engineering, PLLC.	828054	Wind + Ice Load 90
IP		Feb 5, 2019 at 2:57 PM
1039-A0002-B		828054_Proposed.r3d





Loads: BLC 7, Service Live 1

Infinigy Engineering, PLLC.	828054	Service Load
IP		Feb 5, 2019 at 2:58 PM
1039-A0002-B		828054_Proposed.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Site Name:	South Windsor
Client:	Crown Castle
Carrier:	AT&T
Engineer:	IP
Date:	2/5/2019

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2015 IBC
Structure Load Standard:	TIA-222-H
Antenna Load Standard:	TIA-222-H
Structure Risk Category:	II
Structure Type:	Mount - Platform
Number of Sectors:	3
Structure Shape 1:	Flat

Rooftop Inputs:

Rooftop Wind Speed-Up?:	No

Wind Loading Inputs:

Design Wind Velocity:	125	mph (ultimate 3-second gust)
Wind Centerline 1 (z_1):	156.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	C	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
52.68	1.00	**105.36**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
8.43	1.00	**24.11**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (ultimate 3-second gust)
Base Ice Thickness:	1.70	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
CCI HPA-65R-BUU-H6	156.0	1	1.00	Flat	Flat	52.68	9.49	499.72	289.01	341.69	447.04
CCI HPA-65R-BUU-H8	156.0	2	1.00	Flat	Flat	52.68	12.76	672.34	394.15	463.70	602.80
Powerwave 7770	156.0	3	1.00	Flat	Flat	52.68	5.57	293.28	153.86	188.72	258.43
Powerwave 7770	156.0	3	1.00	Flat	Flat	52.68	5.57	293.28	153.86	188.72	258.43
Ericsson RRUS-11	156.0	3	1.00	Flat	Flat	52.68	2.78	146.69	62.54	83.58	125.65
Ericsson RRUS 12 w/ A2	156.0	3	1.00	Flat	Flat	52.68	3.14	165.60	95.87	113.30	148.16
CCI DTMABP7819VG12A	156.0	3	1.00	Flat	Flat	52.68	0.98	51.43	17.84	26.24	43.03
CCI DTMABP7819VG12A	156.0	3	1.00	Flat	Flat	52.68	0.98	51.43	17.84	26.24	43.03
Raycap DC6-48-60-18-8F	156.0	1	1.00	Round	Round	52.68	1.21	63.83	63.83	63.83	63.83

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			Main Horizontal	Beam	Tube	A500 Gr.46	Typical
2	MP3	N3	N4			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
3	MP2	N5	N6			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
4	MP1	N7	N8			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
5	M5	N10	N9			Offset Tube	Beam	Tube	A500 Gr.46	Typical
6	M6	N11	N15		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
7	M7	N12	N16		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
8	M8	N13	N17		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
9	M9	N14	N18		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
10	M10	N2	N20			Main Horizontal	Beam	Tube	A500 Gr.46	Typical
11	MP9	N21	N22			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
12	MP8	N23	N24			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
13	MP7	N25	N26			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
14	M14	N28	N27			Offset Tube	Beam	Tube	A500 Gr.46	Typical
15	M15	N29	N33		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
16	M16	N30	N34		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
17	M17	N31	N35		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
18	M18	N32	N36		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
19	M19	N20	N1			Main Horizontal	Beam	Tube	A500 Gr.46	Typical
20	MP6	N38	N39			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
21	MP5	N40	N41			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
22	MP4	N42	N43			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
23	M23	N45	N44			Offset Tube	Beam	Tube	A500 Gr.46	Typical
24	M24	N46	N50		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
25	M25	N47	N51		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
26	M26	N48	N52		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
27	M27	N49	N53		90	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
28	M28	N69	N15A			PRK Kit	Beam	Double Angle (...	A36 Gr.36	Typical
29	M29	N73	N72			PRK Kit	Beam	Double Angle (...	A36 Gr.36	Typical
30	M30	N76	N75			PRK Kit	Beam	Double Angle (...	A36 Gr.36	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	Hot Rolled Steel				
2	A36 Gr.36	L2x2x4	12	144	38.5
3	A36 Gr.36	LL2.5x2.5x3x6	3	232.5	118.7
4	A500 Gr.46	HSS4X4X2	6	777	390
5	A53 Gr. B	PIPE 2.5	9	864	394.5
6	Total HR Steel		30	2017.5	941.6

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			31		3	
2	Wind Load AZI 000	WLZ					31		1	
3	Wind Load AZI 090	WLX					31		1	
4	Ice Weight	OL1					31	30	3	
5	Wind + Ice Load AZI 000	OL2					31		1	
6	Wind + Ice Load AZI 090	OL3					31		1	
7	Service Live 1	LL				3				
8	BLC 1 Transient Area Loads	None						60		
9		None						1		
10		None						1		
11		None						1		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
12	BLC 2 Transient Area Loads	None						25		
13	BLC 3 Transient Area Loads	None						29		
14	BLC 4 Transient Area Loads	None						60		
15	BLC 5 Transient Area Loads	None						25		
16	BLC 6 Transient Area Loads	None						29		

Load Combinations

	Description	Solve	PDelta	S...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Fa...
1	1.4D	Yes	Y		DL	1.4						
2	1.2D + 1W AZI 000	Yes	Y		DL	1.2	WLZ	1				
3	1.2D + 1W AZI 030	Yes	Y		DL	1.2	WLZ	.866	WLX	.5		
4	1.2D + 1W AZI 060	Yes	Y		DL	1.2	WLZ	.5	WLX	.866		
5	1.2D + 1W AZI 090	Yes	Y		DL	1.2			WLX	1		
6	1.2D + 1W AZI 120	Yes	Y		DL	1.2	WLZ	-.5	WLX	.866		
7	1.2D + 1W AZI 150	Yes	Y		DL	1.2	WLZ	-.866	WLX	.5		
8	1.2D + 1W AZI 180	Yes	Y		DL	1.2	WLZ	-1				
9	1.2D + 1W AZI 210	Yes	Y		DL	1.2	WLZ	-.866	WLX	-.5		
10	1.2D + 1W AZI 240	Yes	Y		DL	1.2	WLZ	-.5	WLX	-.866		
11	1.2D + 1W AZI 270	Yes	Y		DL	1.2			WLX	-1		
12	1.2D + 1W AZI 300	Yes	Y		DL	1.2	WLZ	.5	WLX	-.866		
13	1.2D + 1W AZI 330	Yes	Y		DL	1.2	WLZ	.866	WLX	-.5		
14	0.9D + 1W AZI 000	Yes	Y		DL	.9	WLZ	1				
15	0.9D + 1W AZI 030	Yes	Y		DL	.9	WLZ	.866	WLX	.5		
16	0.9D + 1W AZI 060	Yes	Y		DL	.9	WLZ	.5	WLX	.866		
17	0.9D + 1W AZI 090	Yes	Y		DL	.9			WLX	1		
18	0.9D + 1W AZI 120	Yes	Y		DL	.9	WLZ	-.5	WLX	.866		
19	0.9D + 1W AZI 150	Yes	Y		DL	.9	WLZ	-.866	WLX	.5		
20	0.9D + 1W AZI 180	Yes	Y		DL	.9	WLZ	-1				
21	0.9D + 1W AZI 210	Yes	Y		DL	.9	WLZ	-.866	WLX	-.5		
22	0.9D + 1W AZI 240	Yes	Y		DL	.9	WLZ	-.5	WLX	-.866		
23	0.9D + 1W AZI 270	Yes	Y		DL	.9			WLX	-1		
24	0.9D + 1W AZI 300	Yes	Y		DL	.9	WLZ	.5	WLX	-.866		
25	0.9D + 1W AZI 330	Yes	Y		DL	.9	WLZ	.866	WLX	-.5		
26	1.2D + 1.0Di	Yes	Y		DL	1.2	OL1	1				
27	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	1		
28	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5
29	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	.866
30	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1			OL3	1
31	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.866
32	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5
33	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	-1		
34	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5
35	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-.8...
36	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1			OL3	-1
37	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	-.8...
38	1.2D + 1.0Di + 1.0Wi AZI ...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5
39	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	.058		
40	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	.05	WLX	.029
41	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	.029	WLX	.05
42	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5			WLX	.058
43	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.029	WLX	.05
44	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.05	WLX	.029
45	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.058		
46	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.05	WLX	-.0...
47	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	-.029	WLX	-.05

Load Combinations (Continued)

	Description	Solve	PDelta	S...	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Fa..... ... .
48	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5			WLX	-.0...
49	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	.029	WLX	-.05
50	1.2D + 1.5L + 1.0WL (30 ...	Yes	Y		DL	1.2	LL	1.5	WLZ	.05	WLX	-.0...

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N9	max	4489.249	6	725.109	30	2100.384	24	-14.304	15	1534.721	14	-179.861	22
2		min	-3193.548	24	162.042	22	-2871.034	7	-801.546	34	-1549.902	20	-1327.377	29
3	N27	max	3175.24	16	631.49	36	2076.836	16	1.556	25	1208.592	21	1160.771	37
4		min	-4361.289	10	145.504	19	-2780.443	10	-735.179	32	-1192.092	15	151.829	18
5	N44	max	967.672	5	633.144	27	5036.911	2	1344.267	27	2578.759	23	189.292	23
6		min	-966.339	11	139.231	20	-3657.546	20	223.578	20	-2582.916	17	-216.909	5
7	N15A	max	-1029.007	25	2127.494	31	2894.276	30	.89	3	.373	9	.524	9
8		min	-5004.683	31	421.687	24	583.391	23	-.908	9	-.366	3	-.514	3
9	N72	max	4772.038	35	2032.107	35	2759.91	36	.909	25	.374	25	.525	25
10		min	978.495	16	400.02	16	551.945	17	-.942	7	-.387	7	-.544	7
11	N75	max	66.668	17	2030.313	27	-1147.938	20	0	50	.249	5	.624	23
12		min	-66.673	23	409.928	20	-5508.399	27	0	1	-.222	23	-.7	5
13	Totals:	max	7471.11	17	8114.431	38	7568.817	14						
14		min	-7471.11	11	1926.586	14	-7568.817	8						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[i...	Dir	LC	phi*Pnc...	phi*Pnt ...	phi*Mn ...	phi*Mn ...	Cb	Eqn
1	M23	HSS4X4X2	.460	14.368	5	.125	16.7...	y	30	58567.2...	73278	8240.413	8240.413	2...	H1-1b
2	MP2	PIPE_2.5	.432	48	2	.029	48		2	30038.4...	50715	3596.25	3596.25	1...	H1-1b
3	M5	HSS4X4X2	.427	14.368	28	.121	16.7...	y	34	58567.2...	73278	8240.413	8240.413	2...	H1-1b
4	M1	HSS4X4X2	.423	0	7	.110	168	z	2	34141.6...	73278	8240.413	8240.413	1...	H1-1b
5	M14	HSS4X4X2	.418	14.368	27	.123	16.7...	y	32	58567.2...	73278	8240.413	8240.413	2...	H1-1b
6	MP5	PIPE_2.5	.393	48	11	.026	48		11	30038.4...	50715	3596.25	3596.25	1...	H1-1b
7	M19	HSS4X4X2	.378	84	4	.092	168	z	11	34141.7...	73278	8240.413	8240.413	1...	H1-1b
8	M10	HSS4X4X2	.340	167.999	13	.091	167....	z	6	34141.9...	73278	8240.413	8240.413	1...	H1-1b
9	MP3	PIPE_2.5	.250	48	2	.027	48		2	30038.4...	50715	3596.25	3596.25	1.4	H1-1b
10	MP1	PIPE_2.5	.249	48	2	.026	48		2	30038.4...	50715	3596.25	3596.25	1...	H1-1b
11	MP8	PIPE_2.5	.243	48	5	.021	48		5	30038.4...	50715	3596.25	3596.25	1...	H1-1b
12	MP9	PIPE_2.5	.226	48	5	.025	48		5	30038.4...	50715	3596.25	3596.25	1...	H1-1b
13	MP6	PIPE_2.5	.226	48	5	.025	48		5	30038.4...	50715	3596.25	3596.25	1...	H1-1b
14	MP4	PIPE_2.5	.225	48	11	.023	48		11	30038.4...	50715	3596.25	3596.25	1...	H1-1b
15	MP7	PIPE_2.5	.225	48	11	.023	48		11	30038.4...	50715	3596.25	3596.25	1...	H1-1b
16	M28	LL2.5x2.5x3x6	.180	77.492	31	.008	0	z	9	34265.4...	58320	4643.061	2533.256	1...	H1-1b*
17	M29	LL2.5x2.5x3x6	.171	77.492	35	.009	0	z	7	34265.4...	58320	4643.061	2533.256	1...	H1-1b*
18	M30	LL2.5x2.5x3x6	.171	77.492	27	.007	0	z	5	34265.4...	58320	4643.061	2533.256	1	H1-1b*
19	M8	L2x2x4	.032	0	36	.004	0	z	38	29075.9...	30585.6	690.934	1576.849	2...	H2-1
20	M7	L2x2x4	.032	0	36	.004	0	z	38	29075.9...	30585.6	690.934	1576.849	2...	H2-1
21	M16	L2x2x4	.031	0	27	.004	0	z	38	29075.9...	30585.6	690.934	1576.849	2...	H2-1
22	M17	L2x2x4	.031	0	27	.004	0	z	38	29075.9...	30585.6	690.934	1576.849	2...	H2-1
23	M26	L2x2x4	.031	0	33	.004	0	z	29	29075.8...	30585.6	690.934	1576.849	2...	H2-1
24	M25	L2x2x4	.031	0	33	.004	0	z	28	29075.9...	30585.6	690.934	1576.849	2...	H2-1
25	M9	L2x2x4	.022	0	36	.003	0	z	38	29075.9...	30585.6	690.934	1576.849	2...	H2-1
26	M6	L2x2x4	.022	0	36	.003	0	z	38	29075.9...	30585.6	690.934	1576.849	2...	H2-1
27	M15	L2x2x4	.022	0	27	.003	0	z	38	29075.9...	30585.6	690.934	1576.849	2...	H2-1
28	M18	L2x2x4	.022	0	27	.003	0	z	38	29075.99	30585.6	690.934	1576.849	2...	H2-1
29	M24	L2x2x4	.022	0	33	.003	0	z	28	29075.9...	30585.6	690.934	1576.849	2...	H2-1
30	M27	L2x2x4	.022	0	33	.003	0	z	29	29075.8...	30585.6	690.934	1576.849	2...	H2-1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Main Horizontal	HSS4X4X2	Beam	Tube	A500 Gr.46	Typical	1.77	4.4	4.4	6.91
2	Offset Tube	HSS4X4X2	Beam	Tube	A500 Gr.46	Typical	1.77	4.4	4.4	6.91
3	Mount Pipe	PIPE 2.5	Beam	Pipe	A53 Gr. B	Typical	1.61	1.45	1.45	2.89
4	PRK Kit	LL2.5x2.5x3x6	Beam	Double Angle (3/4 Gap)	A36 Gr.36	Typical	1.8	3.09	1.07	.023
5	Grating Angle	L2x2x4	Beam	Single Angle	A36 Gr.36	Typical	.944	.346	.346	.021

Joint Boundary Conditions

	Joint Label	X [lb/in]	Y [lb/in]	Z [lb/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N9	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N27	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N44	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N15A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N72	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N75	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	MP3						Yes				None
3	MP2						Yes				None
4	MP1						Yes				None
5	M5						Yes				None
6	M6						Yes				None
7	M7						Yes				None
8	M8						Yes				None
9	M9						Yes				None
10	M10						Yes				None
11	MP9						Yes				None
12	MP8						Yes				None
13	MP7						Yes				None
14	M14						Yes				None
15	M15						Yes				None
16	M16						Yes				None
17	M17						Yes				None
18	M18						Yes				None
19	M19						Yes				None
20	MP6						Yes				None
21	MP5						Yes				None
22	MP4						Yes				None
23	M23						Yes				None
24	M24						Yes				None
25	M25						Yes				None
26	M26						Yes				None
27	M27						Yes				None
28	M28	BenPIN	BenPIN				Yes	Default			None
29	M29	BenPIN	BenPIN				Yes	Default			None
30	M30	BenPIN	BenPIN				Yes	Default			None

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm (\1E...	Density[lb/f...	Yield[psi]	Ry	Fu[psi]	Rt
1	A36 Gr.36	2.9e+7	1.115e+7	.3	.65	490	36000	1.5	58000	1.2
2	A572 Gr.50	2.9e+7	1.115e+7	.3	.65	490	50000	1.1	58000	1.2
3	A992	2.9e+7	1.115e+7	.3	.65	490	50000	1.1	58000	1.2
4	A500 Gr.42	2.9e+7	1.115e+7	.3	.65	490	42000	1.3	58000	1.1
5	A500 Gr.46	2.9e+7	1.115e+7	.3	.65	490	46000	1.2	58000	1.1
6	A53 Gr. B	2.9e+7	1.115e+7	.3	.65	490	35000	1.5	58000	1.2

Joint Loads and Enforced Displacements (BLC 7 : Service Live 1)

	Joint Label	L,D,M	Direction	Magnitude[(lb,lb-ft), (in,rad), (lb*s^2...
1	N1	L	Y	-500
2	N2	L	Y	-500
3	N20	L	Y	-500

Member Point Loads (BLC 1 : Self Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-36.5	0
2	MP1	Y	-17.5	41
3	MP3	Y	-17.5	41
4	MP1	Y	-50.71	24
5	MP3	Y	-80	24
6	MP1	Y	-19.18	72
7	MP3	Y	-19.18	72
8	M5	Y	-32.8	48
9	MP2	Y	-36.5	96
10	MP1	Y	-17.5	96
11	MP3	Y	-17.5	96
12	MP5	Y	-36.5	0
13	MP4	Y	-17.5	41
14	MP6	Y	-17.5	41
15	MP4	Y	-50.71	24
16	MP6	Y	-80	24
17	MP4	Y	-19.18	72
18	MP6	Y	-19.18	72
19	MP5	Y	-36.5	96
20	MP4	Y	-17.5	96
21	MP6	Y	-17.5	96
22	MP8	Y	-25.5	12
23	MP7	Y	-17.5	41
24	MP9	Y	-17.5	41
25	MP7	Y	-50.71	24
26	MP9	Y	-80	24
27	MP7	Y	-19.18	72
28	MP9	Y	-19.18	72
29	MP8	Y	-25.5	84
30	MP7	Y	-17.5	96
31	MP9	Y	-17.5	96

Member Point Loads (BLC 2 : Wind Load AZI 000)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Z	-336.17	0
2	MP1	Z	-146.64	41
3	MP3	Z	-146.64	41
4	MP1	Z	-146.69	24

Member Point Loads (BLC 2 : Wind Load AZI 000) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
5	MP3	Z	-165.6	24
6	MP1	Z	-51.43	72
7	MP3	Z	-51.43	72
8	M5	Z	-63.83	48
9	MP2	Z	-336.17	96
10	MP1	Z	-146.64	96
11	MP3	Z	-146.64	96
12	MP5	Z	-231.85	0
13	MP4	Z	-94.36	41
14	MP6	Z	-94.36	41
15	MP4	Z	-83.58	24
16	MP6	Z	-113.3	24
17	MP4	Z	-26.24	72
18	MP6	Z	-26.24	72
19	MP5	Z	-231.85	96
20	MP4	Z	-94.36	96
21	MP6	Z	-94.36	96
22	MP8	Z	-170.84	12
23	MP7	Z	-94.36	41
24	MP9	Z	-94.36	41
25	MP7	Z	-83.58	24
26	MP9	Z	-113.3	24
27	MP7	Z	-26.24	72
28	MP9	Z	-26.24	72
29	MP8	Z	-170.84	84
30	MP7	Z	-94.36	96
31	MP9	Z	-94.36	96

Member Point Loads (BLC 3 : Wind Load AZI 090)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-197.07	0
2	MP1	X	-76.93	41
3	MP3	X	-76.93	41
4	MP1	X	-62.54	24
5	MP3	X	-95.87	24
6	MP1	X	-17.84	72
7	MP3	X	-17.84	72
8	M5	X	-63.83	48
9	MP2	X	-197.07	96
10	MP1	X	-76.93	96
11	MP3	X	-76.93	96
12	MP5	X	-301.4	0
13	MP4	X	-129.21	41
14	MP6	X	-129.21	41
15	MP4	X	-125.65	24
16	MP6	X	-148.16	24
17	MP4	X	-43.03	72
18	MP6	X	-43.03	72
19	MP5	X	-301.4	96
20	MP4	X	-129.21	96
21	MP6	X	-129.21	96
22	MP8	X	-223.52	12
23	MP7	X	-129.21	41
24	MP9	X	-129.21	41
25	MP7	X	-125.65	24
26	MP9	X	-148.16	24

Member Point Loads (BLC 3 : Wind Load AZI 090) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
27	MP7	X	-43.03	72
28	MP9	X	-43.03	72
29	MP8	X	-223.52	84
30	MP7	X	-129.21	96
31	MP9	X	-129.21	96

Member Point Loads (BLC 4 : Ice Weight)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Y	-166.63	0
2	MP1	Y	-79.6	41
3	MP3	Y	-79.6	41
4	MP1	Y	-101.27	24
5	MP3	Y	-129.54	24
6	MP1	Y	-40.64	72
7	MP3	Y	-40.64	72
8	M5	Y	-104.7	48
9	MP2	Y	-166.63	96
10	MP1	Y	-79.6	96
11	MP3	Y	-79.6	96
12	MP5	Y	-166.63	0
13	MP4	Y	-79.6	41
14	MP6	Y	-79.6	41
15	MP4	Y	-101.27	24
16	MP6	Y	-129.54	24
17	MP4	Y	-40.64	72
18	MP6	Y	-40.64	72
19	MP5	Y	-166.63	96
20	MP4	Y	-79.6	96
21	MP6	Y	-79.6	96
22	MP8	Y	-132.76	12
23	MP7	Y	-79.6	41
24	MP9	Y	-79.6	41
25	MP7	Y	-101.27	24
26	MP9	Y	-129.54	24
27	MP7	Y	-40.64	72
28	MP9	Y	-40.64	72
29	MP8	Y	-132.76	84
30	MP7	Y	-79.6	96
31	MP9	Y	-79.6	96

Member Point Loads (BLC 5 : Wind + Ice Load AZI 000)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	Z	-68.84	0
2	MP1	Z	-32.97	41
3	MP3	Z	-32.97	41
4	MP1	Z	-34.8	24
5	MP3	Z	-38.45	24
6	MP1	Z	-15.38	72
7	MP3	Z	-15.38	72
8	M5	Z	-37.04	48
9	MP2	Z	-68.84	96
10	MP1	Z	-32.97	96
11	MP3	Z	-32.97	96
12	MP5	Z	-51.99	0
13	MP4	Z	-24.31	41
14	MP6	Z	-24.31	41

Member Point Loads (BLC 5 : Wind + Ice Load AZI 000) (Continued)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
15	MP4	Z	-22.59	24
16	MP6	Z	-28.45	24
17	MP4	Z	-9.81	72
18	MP6	Z	-9.81	72
19	MP5	Z	-51.99	96
20	MP4	Z	-24.31	96
21	MP6	Z	-24.31	96
22	MP8	Z	-39.28	12
23	MP7	Z	-24.31	41
24	MP9	Z	-24.31	41
25	MP7	Z	-22.59	24
26	MP9	Z	-28.45	24
27	MP7	Z	-9.81	72
28	MP9	Z	-9.81	72
29	MP8	Z	-39.28	84
30	MP7	Z	-24.31	96
31	MP9	Z	-24.31	96

Member Point Loads (BLC 6 : Wind + Ice Load AZI 090)

	Member Label	Direction	Magnitude[lb,lb-ft]	Location[in,%]
1	MP2	X	-46.38	0
2	MP1	X	-21.42	41
3	MP3	X	-21.42	41
4	MP1	X	-18.52	24
5	MP3	X	-25.12	24
6	MP1	X	-7.95	72
7	MP3	X	-7.95	72
8	M5	X	-21.61	48
9	MP2	X	-46.38	96
10	MP1	X	-21.42	96
11	MP3	X	-21.42	96
12	MP5	X	-63.22	0
13	MP4	X	-30.08	41
14	MP6	X	-30.08	41
15	MP4	X	-30.73	24
16	MP6	X	-35.12	24
17	MP4	X	-13.52	72
18	MP6	X	-13.52	72
19	MP5	X	-63.22	96
20	MP4	X	-30.08	96
21	MP6	X	-30.08	96
22	MP8	X	-47.91	12
23	MP7	X	-30.08	41
24	MP9	X	-30.08	41
25	MP7	X	-30.73	24
26	MP9	X	-35.12	24
27	MP7	X	-13.52	72
28	MP9	X	-13.52	72
29	MP8	X	-47.91	84
30	MP7	X	-30.08	96
31	MP9	X	-30.08	96

Member Distributed Loads (BLC 4 : Ice Weight)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-18.489	-18.489	0	%100
2	MP3	Y	-11.853	-11.853	0	%100
3	MP2	Y	-11.853	-11.853	0	%100
4	MP1	Y	-11.853	-11.853	0	%100
5	M5	Y	-18.489	-18.489	0	%100
6	M6	Y	-12.311	-12.311	0	%100
7	M7	Y	-12.311	-12.311	0	%100
8	M8	Y	-12.311	-12.311	0	%100
9	M9	Y	-12.311	-12.311	0	%100
10	M10	Y	-18.489	-18.489	0	%100
11	MP9	Y	-11.853	-11.853	0	%100
12	MP8	Y	-11.853	-11.853	0	%100
13	MP7	Y	-11.853	-11.853	0	%100
14	M14	Y	-18.489	-18.489	0	%100
15	M15	Y	-12.311	-12.311	0	%100
16	M16	Y	-12.311	-12.311	0	%100
17	M17	Y	-12.311	-12.311	0	%100
18	M18	Y	-12.311	-12.311	0	%100
19	M19	Y	-18.489	-18.489	0	%100
20	MP6	Y	-11.853	-11.853	0	%100
21	MP5	Y	-11.853	-11.853	0	%100
22	MP4	Y	-11.853	-11.853	0	%100
23	M23	Y	-18.489	-18.489	0	%100
24	M24	Y	-12.311	-12.311	0	%100
25	M25	Y	-12.311	-12.311	0	%100
26	M26	Y	-12.311	-12.311	0	%100
27	M27	Y	-12.311	-12.311	0	%100
28	M28	Y	-13.856	-13.856	0	%100
29	M29	Y	-13.856	-13.856	0	%100
30	M30	Y	-13.856	-13.856	0	%100

Member Distributed Loads (BLC 8 : BLC 1 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-2.656	-7.656	39.2	44.8
2	M1	Y	-7.656	-10.156	44.8	50.4
3	M1	Y	-10.156	-7.656	50.4	56
4	M1	Y	-7.656	-2.656	56	61.6
5	M1	Y	-2.656	-.156	61.6	67.2
6	M1	Y	-.156	-2.656	67.2	72.8
7	M1	Y	-2.656	-7.656	72.8	78.4
8	M1	Y	-7.656	-10.156	78.4	84
9	M1	Y	-10.156	-7.656	84	89.6
10	M1	Y	-7.656	-2.656	89.6	95.2
11	M1	Y	-2.656	-.156	95.2	100.8
12	M1	Y	-.156	-2.656	100.8	106.4
13	M1	Y	-2.656	-7.656	106.4	112
14	M1	Y	-7.656	-10.156	112	117.6
15	M1	Y	-10.156	-7.656	117.6	123.2
16	M1	Y	-7.656	-2.656	123.2	128.8
17	M6	Y	-7	-7	0	12
18	M7	Y	-14	-14	0	12
19	M8	Y	-14	-14	0	12
20	M9	Y	-7	-7	1.776e-15	12
21	M19	Y	-2.656	-7.656	39.2	44.8
22	M19	Y	-7.656	-10.156	44.8	50.4

Member Distributed Loads (BLC 8 : BLC 1 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
23	M19	Y	-10.156	-7.656	50.4	56
24	M19	Y	-7.656	-2.656	56	61.6
25	M19	Y	-2.656	-.156	61.6	67.2
26	M19	Y	-.156	-2.656	67.2	72.8
27	M19	Y	-2.656	-7.656	72.8	78.4
28	M19	Y	-7.656	-10.157	78.4	84
29	M19	Y	-10.157	-7.656	84	89.6
30	M19	Y	-7.656	-2.656	89.6	95.2
31	M19	Y	-2.656	-.156	95.2	100.8
32	M19	Y	-.156	-2.656	100.8	106.4
33	M19	Y	-2.656	-7.657	106.4	112
34	M19	Y	-7.657	-10.157	112	117.6
35	M19	Y	-10.157	-7.657	117.6	123.2
36	M19	Y	-7.657	-2.656	123.2	128.8
37	M24	Y	-7	-7	0	12
38	M25	Y	-14	-14	0	12
39	M26	Y	-14	-14	0	12
40	M27	Y	-7	-7	8.26e-6	12
41	M10	Y	-2.656	-7.656	39.2	44.8
42	M10	Y	-7.656	-10.156	44.8	50.4
43	M10	Y	-10.156	-7.656	50.4	56
44	M10	Y	-7.656	-2.656	56	61.6
45	M10	Y	-2.656	-.156	61.6	67.2
46	M10	Y	-.156	-2.656	67.2	72.8
47	M10	Y	-2.656	-7.656	72.8	78.4
48	M10	Y	-7.656	-10.156	78.4	84
49	M10	Y	-10.156	-7.656	84	89.6
50	M10	Y	-7.656	-2.656	89.6	95.2
51	M10	Y	-2.656	-.156	95.2	100.8
52	M10	Y	-.156	-2.656	100.8	106.4
53	M10	Y	-2.656	-7.656	106.4	112
54	M10	Y	-7.656	-10.156	112	117.6
55	M10	Y	-10.156	-7.656	117.6	123.2
56	M10	Y	-7.656	-2.656	123.2	128.8
57	M15	Y	-7	-7	0	12
58	M16	Y	-14	-14	0	12
59	M17	Y	-14	-14	0	12
60	M18	Y	-7	-7	3.883e-7	12

Member Distributed Loads (BLC 9 :)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Y	0	0	0	0

Member Distributed Loads (BLC 10 :)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Y	0	0	0	0

Member Distributed Loads (BLC 11 :)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Y	0	0	0	0

Member Distributed Loads (BLC 12 : BLC 2 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Z	-35.12	-35.12	0	168
2	MP3	Z	-25.243	-25.243	0	96

Member Distributed Loads (BLC 12 : BLC 2 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
3	MP2	Z	-25.243	-25.243	0	96
4	MP1	Z	-25.243	-25.243	0	96
5	M5	Z	-30.415	-30.415	0	91
6	M10	Z	-17.56	-17.56	0	167.999
7	MP9	Z	-25.243	-25.243	0	96
8	MP8	Z	-25.243	-25.243	0	96
9	MP7	Z	-25.243	-25.243	0	96
10	M14	Z	-30.415	-30.415	0	91
11	M15	Z	-15.207	-15.207	0	12
12	M16	Z	-15.207	-15.207	0	12
13	M17	Z	-15.207	-15.207	0	12
14	M18	Z	-15.207	-15.207	0	12
15	M19	Z	-17.56	-17.56	0	168
16	MP6	Z	-25.243	-25.243	0	96
17	MP5	Z	-25.243	-25.243	0	96
18	MP4	Z	-25.243	-25.243	0	96
19	M24	Z	-15.207	-15.207	0	12
20	M25	Z	-15.207	-15.207	0	12
21	M26	Z	-15.207	-15.207	0	12
22	M27	Z	-15.207	-15.207	0	12
23	M28	Z	-22.692	-22.692	0	77.492
24	M29	Z	-22.692	-22.692	0	77.492
25	M30	Z	-14.729	-14.729	0	77.492

Member Distributed Loads (BLC 13 : BLC 3 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	MP3	X	-25.243	-25.243	0	96
2	MP2	X	-25.243	-25.243	0	96
3	MP1	X	-25.243	-25.243	0	96
4	M5	X	-17.56	-17.56	0	91
5	M6	X	-17.56	-17.56	0	12
6	M7	X	-17.56	-17.56	0	12
7	M8	X	-17.56	-17.56	0	12
8	M9	X	-17.56	-17.56	0	12
9	M10	X	-30.415	-30.415	0	167.999
10	MP9	X	-25.243	-25.243	0	96
11	MP8	X	-25.243	-25.243	0	96
12	MP7	X	-25.243	-25.243	0	96
13	M14	X	-17.56	-17.56	0	91
14	M15	X	-8.78	-8.78	0	12
15	M16	X	-8.78	-8.78	0	12
16	M17	X	-8.78	-8.78	0	12
17	M18	X	-8.78	-8.78	0	12
18	M19	X	-30.415	-30.415	0	168
19	MP6	X	-25.243	-25.243	0	96
20	MP5	X	-25.243	-25.243	0	96
21	MP4	X	-25.243	-25.243	0	96
22	M23	X	-35.12	-35.12	0	91
23	M24	X	-8.78	-8.78	0	12
24	M25	X	-8.78	-8.78	0	12
25	M26	X	-8.78	-8.78	0	12
26	M27	X	-8.78	-8.78	0	12
27	M28	X	-17.353	-17.353	0	77.492
28	M29	X	-17.353	-17.353	0	77.492
29	M30	X	-21.95	-21.95	0	77.492

Member Distributed Loads (BLC 14 : BLC 4 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Y	-1.588	-4.578	39.2	44.8
2	M1	Y	-4.578	-6.073	44.8	50.4
3	M1	Y	-6.073	-4.578	50.4	56
4	M1	Y	-4.578	-1.588	56	61.6
5	M1	Y	-1.588	-.093	61.6	67.2
6	M1	Y	-.093	-1.588	67.2	72.8
7	M1	Y	-1.588	-4.578	72.8	78.4
8	M1	Y	-4.578	-6.073	78.4	84
9	M1	Y	-6.073	-4.578	84	89.6
10	M1	Y	-4.578	-1.588	89.6	95.2
11	M1	Y	-1.588	-.093	95.2	100.8
12	M1	Y	-.093	-1.588	100.8	106.4
13	M1	Y	-1.588	-4.578	106.4	112
14	M1	Y	-4.578	-6.073	112	117.6
15	M1	Y	-6.073	-4.578	117.6	123.2
16	M1	Y	-4.578	-1.588	123.2	128.8
17	M6	Y	-4.186	-4.186	0	12
18	M7	Y	-8.372	-8.372	0	12
19	M8	Y	-8.372	-8.372	0	12
20	M9	Y	-4.186	-4.186	1.776e-15	12
21	M19	Y	-1.588	-4.578	39.2	44.8
22	M19	Y	-4.578	-6.074	44.8	50.4
23	M19	Y	-6.074	-4.579	50.4	56
24	M19	Y	-4.579	-1.588	56	61.6
25	M19	Y	-1.588	-.093	61.6	67.2
26	M19	Y	-.093	-1.588	67.2	72.8
27	M19	Y	-1.588	-4.579	72.8	78.4
28	M19	Y	-4.579	-6.074	78.4	84
29	M19	Y	-6.074	-4.579	84	89.6
30	M19	Y	-4.579	-1.588	89.6	95.2
31	M19	Y	-1.588	-.093	95.2	100.8
32	M19	Y	-.093	-1.588	100.8	106.4
33	M19	Y	-1.588	-4.579	106.4	112
34	M19	Y	-4.579	-6.074	112	117.6
35	M19	Y	-6.074	-4.579	117.6	123.2
36	M19	Y	-4.579	-1.589	123.2	128.8
37	M24	Y	-4.186	-4.186	0	12
38	M25	Y	-8.372	-8.372	0	12
39	M26	Y	-8.372	-8.372	0	12
40	M27	Y	-4.186	-4.186	8.26e-6	12
41	M10	Y	-1.588	-4.578	39.2	44.8
42	M10	Y	-4.578	-6.073	44.8	50.4
43	M10	Y	-6.073	-4.578	50.4	56
44	M10	Y	-4.578	-1.588	56	61.6
45	M10	Y	-1.588	-.093	61.6	67.2
46	M10	Y	-.093	-1.588	67.2	72.8
47	M10	Y	-1.588	-4.578	72.8	78.4
48	M10	Y	-4.578	-6.073	78.4	84
49	M10	Y	-6.073	-4.578	84	89.6
50	M10	Y	-4.578	-1.588	89.6	95.2
51	M10	Y	-1.588	-.093	95.2	100.8
52	M10	Y	-.093	-1.588	100.8	106.4
53	M10	Y	-1.588	-4.578	106.4	112
54	M10	Y	-4.578	-6.073	112	117.6
55	M10	Y	-6.073	-4.578	117.6	123.2
56	M10	Y	-4.578	-1.588	123.2	128.8
57	M15	Y	-4.186	-4.186	0	12

Member Distributed Loads (BLC 14 : BLC 4 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
58	M16	Y	-8.372	-8.372	0	12
59	M17	Y	-8.372	-8.372	0	12
60	M18	Y	-4.186	-4.186	3.883e-7	12

Member Distributed Loads (BLC 15 : BLC 5 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	M1	Z	-8.037	-8.037	0	168
2	MP3	Z	-5.776	-5.776	0	96
3	MP2	Z	-5.776	-5.776	0	96
4	MP1	Z	-5.776	-5.776	0	96
5	M5	Z	-6.96	-6.96	0	91
6	M10	Z	-4.018	-4.018	0	167.999
7	MP9	Z	-5.776	-5.776	0	96
8	MP8	Z	-5.776	-5.776	0	96
9	MP7	Z	-5.776	-5.776	0	96
10	M14	Z	-6.96	-6.96	0	91
11	M15	Z	-3.48	-3.48	0	12
12	M16	Z	-3.48	-3.48	0	12
13	M17	Z	-3.48	-3.48	0	12
14	M18	Z	-3.48	-3.48	0	12
15	M19	Z	-4.018	-4.018	0	168
16	MP6	Z	-5.776	-5.776	0	96
17	MP5	Z	-5.776	-5.776	0	96
18	MP4	Z	-5.776	-5.776	0	96
19	M24	Z	-3.48	-3.48	0	12
20	M25	Z	-3.48	-3.48	0	12
21	M26	Z	-3.48	-3.48	0	12
22	M27	Z	-3.48	-3.48	0	12
23	M28	Z	-5.193	-5.193	0	77.492
24	M29	Z	-5.193	-5.193	0	77.492
25	M30	Z	-3.371	-3.371	0	77.492

Member Distributed Loads (BLC 16 : BLC 6 Transient Area Loads)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
1	MP3	X	-5.776	-5.776	0	96
2	MP2	X	-5.776	-5.776	0	96
3	MP1	X	-5.776	-5.776	0	96
4	M5	X	-4.018	-4.018	0	91
5	M6	X	-4.018	-4.018	0	12
6	M7	X	-4.018	-4.018	0	12
7	M8	X	-4.018	-4.018	0	12
8	M9	X	-4.018	-4.018	0	12
9	M10	X	-6.96	-6.96	0	167.999
10	MP9	X	-5.776	-5.776	0	96
11	MP8	X	-5.776	-5.776	0	96
12	MP7	X	-5.776	-5.776	0	96
13	M14	X	-4.018	-4.018	0	91
14	M15	X	-2.009	-2.009	0	12
15	M16	X	-2.009	-2.009	0	12
16	M17	X	-2.009	-2.009	0	12
17	M18	X	-2.009	-2.009	0	12
18	M19	X	-6.96	-6.96	0	168
19	MP6	X	-5.776	-5.776	0	96
20	MP5	X	-5.776	-5.776	0	96
21	MP4	X	-5.776	-5.776	0	96
22	M23	X	-8.037	-8.037	0	91

Member Distributed Loads (BLC 16 : BLC 6 Transient Area Loads) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,psf]	End Magnitude[lb/f...	Start Location[in,%]	End Location[in,%]
23	M24	X	-2.009	-2.009	0	12
24	M25	X	-2.009	-2.009	0	12
25	M26	X	-2.009	-2.009	0	12
26	M27	X	-2.009	-2.009	0	12
27	M28	X	-3.971	-3.971	0	77.492
28	M29	X	-3.971	-3.971	0	77.492
29	M30	X	-5.023	-5.023	0	77.492

APPENDIX D

ADDITIONAL CALCUATIONS

Date:	2/6/2019
Client	Crown
Carrier	T-Mobile
Engineer:	IP
Site:	828054
Job #:	1039-A0002-B

Code:	LRFD	
Axial:	2127.00	lbs
Shear:	5036.00	lbs

Bolt Capacity (Assume 1/2" A325 Threaded Rods)				
	Ult Load / Bolt	Factored Load (ϕ=0.75)	# of Bolts	Factor Joint Capacity
Axial (lb)	17026.7	12770.0	2	25540
Shear(lb)	10600.0	7950.0	2	15900

Interaction Check	
$T / \phi T_n$	8.3%
$V / \phi Vn$	31.7%
≤1.0	10.7%
	OK

APPENDIX E

MOD Modifications Design Drawings

GENERAL NOTES:

1. THESE DOCUMENTS WERE DESIGNED IN ACCORDANCE WITH THE LATEST VERSION OF APPLICABLE LOCAL/STATE/COUNTY/CITY BUILDING CODES, AS WELL AS ANSI/TIA-222 STANDARD, AWWA-D100 STANDARD, NDS, NEC, MSJC, AND/OR THE LATEST VERSION OF THE INTERNATIONAL BUILDING CODE, UNLESS NOTED OTHERWISE IN THE CORRESPONDING STRUCTURAL REPORT.
2. ALL CONSTRUCTION METHODS SHOULD FOLLOW STANDARDS OF GOOD CONSTRUCTION PRACTICE.
3. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN SIMILAR CONSTRUCTION.
4. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. IF OBSTRUCTIONS ARE FOUND, CONTRACTOR SHALL NOTIFY ENGINEER OF RECORD PRIOR TO CONTINUING WORK.
5. ANY CHANGES OR ADDITIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL CHANGES OR ADDITIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND/OR CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE DURING CONSTRUCTION. TIA-1019-A-2011 IS AN APPROPRIATE REFERENCE FOR THOSE DESIGNS MEETING TIA STANDARDS. THE ENGINEER OF RECORD MAY PROVIDE FORMAL RIGGING PLANS AT THE REQUEST AND EXPENSE OF THE CONTRACTOR.
7. INSTALLATION SHALL NOT INTERFERE NOR DENY ADEQUATE ACCESS TO OR FROM ANY EXISTING OR PROPOSED OPERATIONAL AND SAFETY EQUIPMENT.
8. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ANY FABRICATION. CONTACT INFINIGY ENGINEERING IF ANY DISCREPANCIES EXIST.

STEEL CONSTRUCTION NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE AISC MANUAL OF STEEL CONSTRUCTION 14TH EDITION, FOR THE DESIGN AND FABRICATION OF STEEL COMPONENTS.
2. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES, AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS' RECOMMENDATIONS.
3. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.
4. ALL EXTERIOR STEEL WORK SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
5. ALL STEEL MEMBERS AND CONNECTIONS SHALL MEET THE FOLLOWING GRADES:
   - ANGLES, CHANNELS, PLATES AND BARS TO BE A36. Fy=36 KSI, U.N.O.
   - W SHAPES TO BE A992. Fy=50 KSI, U.N.O.
   - RECTANGULAR HSS TO BE A500, GRADE B. FY=46 KSI, U.N.O.
   - ROUND HSS TO BE A500, GRADE B. FY=42 KSI, U.N.O.
   - STEEL PIPE TO BE A53, GRADE B. Fy=35 KSI, U.N.O.
   - BOLTS TO BE A325-X. Fu=120 KSI, U.N.O.
   - U-BOLTS AND LAG SCREWS TO BE A307 GR A. Fu=60 KSI, U.N.O.
6. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES, U.N.O.
7. ALL WELDING SHALL CONFORM TO AISC AND AWS D1.1 LATEST EDITION.
8. ALL HILTI ANCHORS TO BE CARBON STEEL, U.N.O.
   - MECHANICAL ANCHORS: KWIK BOLT-TZ, U.N.O.
   - CMU BLOCK ANCHORS: ADHESIVE - HY120, U.N.O.
   - CONCRETE ANCHORS: ADHESIVE - HY150, U.N.O.
   - CONCRETE REBAR: ADHESIVE - RE500, U.N.O.
9. ALL STUDS TO BE NELSON CAPACITOR DISCHARGE 1/4"-20 LOW CARBON STEEL COPPER-FLASH AT 55 KSI ULT/50 KSI YIELD, U.N.O.
10. BOLTS SHALL BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
11. MINIMUM EDGE DISTANCES SHALL CONFORM TO AISC TABLE J3.4.

CONCRETE CONSTRUCTION NOTES:

1. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI-318 BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR IS NOT PERMITTED.
2. EXISTING CONCRETE SURFACES THAT ARE TO BE IN CONTACT WITH NEW PROPOSED CONCRETE SHOULD BE WIRE BRUSHED CLEAN AND TREATED WITH APPROPRIATE MECHANICAL SCRATCH COAT AND REPAIR MATERIALS OR APPROPRIATE CHEMICAL METHODS SUCH AS THE APPLICATION OF A BONDING AGENT, EX. SAKRETE OR EQUIVALENT, TO ENSURE A QUALITY BOND BETWEEN EXISTING AND PROPOSED CONCRETE SURFACES.

FIBER REINFORCED POLYMER (FRP) NOTES:

1. FRP PLATES, SHAPES, BOLTS AND NUTS (STUD/NUT ASSEMBLIES) SHALL CONFORM TO ASTM D638, 695, 790. PLATES AND SHAPES TO BE FY = 5.35 KSI LW (SAFETY FACTOR OF 8), .945 KSI CW (SAFETY FACTOR OF 8) MIN.
2. IF FIELD FABRICATION IS REQUIRED, ALL CUT EDGES AND DRILLED HOLES TO BE SEALED USING VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
3. ALL FASTENERS TO BE 1/2" DIA FRP THREADED ROD WITH FIBER REINFORCED THERMOPLASTIC NUT, SPACED AT 12 INCHES ON CENTER MAXIMUM, U.N.O., FOR PANELS AND AS DESIGNED FOR STRUCTURAL MEMBERS.
4. THE COLOR AND SURFACE PATTERN OF EXPOSED FRP PANELS SHALL MATCH THE EXTERIOR OF THE EXISTING BUILDING, U.N.O.
5. STUD/NUT ASSEMBLIES SHOULD BE LUBRICATED FOR INSTALLATION
6. ENSURE BEARING SURFACES OF THE NUTS ARE PARALLEL TO THE SURFACES BEING FASTENED.
7. TORQUE BOLTS ACCORDING TO THE FOLLOWING TABLE:

INSTALLATION TORQUE TABLE

SIZE	ULTIMATE TORQUE STRENGTH	RECOMMENDED MAXIMUM INSTALLATION TORQUE
3/8-16 UNC	8 FT-LBS	4 FT-LBS
1/2-13 UNC	18 FT-LBS	8 FT-LBS
5/8-11 UNC	35 FT-LBS	16 FT-LBS
3/4-10 UNC	50 FT-LBS	24 FT-LBS
1-8 UNC	110 FT-LBS	50 FT-LBS

8. WHEN TIGHTENING FRP STUD/NUT ASSEMBLIES, WRENCHES MUST MAKE FULL CONTACT WITH ALL NUT EDGES. A STANDARD SIX POINT SOCKET IS RECOMMENDED.
9. STUD/NUT ASSEMBLIES SHOULD BE BONDED BY APPLYING BONDING AGENT TO ENTIRE NUT AND EXPOSED STUD.
10. ALL FRP MATERIALS TO BE PROVIDED BY FIBERGRATE COMPOSITE STRUCTURES, DALLAS TX, OR APPROVED EQUAL.
11. ALL FRP SHAPES TO BE DYNAFORM PULTRUDED STRUCTURAL SHAPES.
12. ALL FRP PLATES TO BE FIBERPLATE MOLDED FRP PLATE.
13. ALL FRP PANELS TO BE FIBERPLATE CLADDING PANEL.
14. EACH FRP PANEL TO BE IDENTIFIED WITH LARR#25536 AND FIBERGRATE COMPOSITE STRUCTURAL LABEL.
15. FRP MATERIAL TO BE CLASSIFIED AS CC1 OR BETTER, AND HAVE MAXIMUM FLAME SPREAD OF 50.
16. ALL DESIGN AND CONSTRUCTION TO BE COMPLETED IN ACCORDANCE WITH LOS ANGELES RESEARCH REPORT RR25536, DATED FEBRUARY 1, 2016.
17. SPECIAL INSPECTIONS MUST BE PROVIDED FOR ALL FRP INSTALLMENTS. SEE SPECIAL INSPECTION SECTION, THIS SHEET.

RATIO OF EDGE DISTANCE TO FRP FASTENER DIAMETER

	RANGE	RECOMMENDED
EDGE DISTANCE - CL* BOLT TO END	2.0-4.0	3.0
EDGE DISTANCE - CL* BOLT TO SIDE	1.5-3.5	2.5
BOLT PITCH - CL* TO CL*	4.0-5.0	5.0

WOOD CONSTRUCTION NOTES:

1. ALL EXISTING WOOD SHAPES ARE ASSUMED TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN.
2. ALL PROPOSED WOOD SHAPES ARE TO BE DOUGLAS FIR-LARCH WITH A REFERENCE DESIGN BENDING VALUE OF 1000 PSI MIN. U.N.O.
3. ALL EXISTING AND PROPOSED GLUED LAMINATED TIMBERS ARE TO BE 24F-1.8C DOUGLAS FIR BALANCED WITH A REFERENCE DESIGN BENDING VALUE OF 2400 PSI MIN. U.N.O.

MASONRY CONSTRUCTION NOTES:

1. ALL BRICK TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
   - FOR INTERIOR/ABOVE GRADE APPLICATIONS TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 100 PSI SHALL BE USED. FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 133 PSI.
   - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.
2. ALL CMU TO BE 1500 PSI MIN. REINFORCING BAR (IF APPLICABLE) TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. ALL MORTAR TO BE 2000 PSI MIN.
   - FOR INTERIOR/ABOVE GRADE APPLICATIONS, TYPE N MORTAR HAVING MINIMUM MODULUS OF RUPTURE OF 64 PSI SHALL BE USED FOR UNGROUTED BLOCKS, AND 158 PSI FOR FULLY GROUTED BLOCKS.
   - FOR EXTERIOR/BELOW GRADE APPLICATIONS TYPE M OR S MORTAR HAVING A MINIMUM MODULUS OF RUPTURE OF 84 PSI SHALL BE USED FOR UNGROUTED BLOCKS, AND 163 PSI FOR FULLY GROUTED BLOCKS.
   - BRICK AND MORTAR INSTALLATION TO CONFORM TO MSJC BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES.

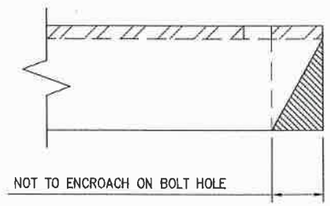
TOWER PLUMB & TENSION NOTES:

1. PLUMB AND TENSION TOWER UPON COMPLETION OF STRUCTURAL MODIFICATIONS DETAILED IN THESE DRAWINGS.
2. RETENSIONING OF EXISTING GUY WIRES SHALL BE PERFORMED AT A TIME WHEN THE WIND VELOCITY IS LESS THAN 10 MPH AT GROUND LEVEL AND WITH NO ICE ON THE STRUCTURE AND GUY WIRES.
3. PLUMB THE TOWER WHILE RETENSIONING THE EXISTING GUY WIRES. THE HORIZONTAL DISTANCE BETWEEN THE VERTICAL CENTERLINES AT ANY TWO ELEVATIONS SHALL NOT EXCEED 0.25% OF THE VERTICAL DISTANCE BETWEEN TWO ELEVATIONS FOR LATTICED STRUCTURES.
4. THE TWIST BETWEEN ANY TWO ELEVATIONS THROUGHOUT THE HEIGHT OF A LATTICE STRUCTURE SHALL NOT EXCEED 0.5 DEGREES IN 10 FEET. THE MAXIMUM TWIST OVER THE LATTICE STRUCTURE HEIGHT SHALL NOT EXCEED 5 DEGREES.

SPECIAL INSPECTIONS NOTES:

1. A QUALIFIED INDEPENDENT TESTING LABORATORY, EMPLOYED BY THE OWNER AND APPROVED BY THE JURISDICTION, SHALL PERFORM INSPECTION AND TESTING IN ACCORDANCE WITH THE THE GOVERNING BUILDING CODE, APPLICABLE SECTION(S) AS REQUIRED BY PROJECT SPECIFICATIONS FOR THE FOLLOWING CONSTRUCTION WORK:
   a. STRUCTURAL WELDING (CONTINUOUS INSPECTION OF FIELD WELDS ONLY).
   b. HIGH STRENGTH BOLTS (PERIODIC INSPECTION OF A325 AND/OR A490 BOLTS) TO BE TIGHTENED PER "TURN-OF-THE-NUT" METHOD.
   c. MECHANICAL AND EPOXIED ANCHORAGES.
   d. FIBER REINFORCED POLYMER.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT THE FRP MATERIAL SPECIFIED ON THE APPROVED DESIGN DOCUMENTS IS BEING INSTALLED.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT ALL CUT EDGES AND DRILLED HOLES ARE PROPERLY SEALED USING A VINYL ESTER SEALING KIT SUPPLIED BY THE MANUFACTURER.
      - THE SPECIAL INSPECTOR MUST VERIFY THAT THE STRUCTURE IS BUILT IN ACCORDANCE WITH THE APPROVED DESIGN DOCUMENTS.
2. THE INSPECTION AGENCY SHALL SUBMIT INSPECTION AND TEST REPORTS TO THE BUILDING DEPARTMENT, THE ENGINEER OF RECORD, AND THE OWNER UNLESS THE FABRICATOR IS APPROVED BY THE BUILDING OFFICIAL TO PERFORM WORK WITHOUT THE SPECIAL INSPECTIONS.

MAXIMUM ALLOWABLE ANGLE CLIP



INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
FEB 22 2019
LICENSED PROFESSIONAL ENGINEER

Joseph Johnston

No	Submittal / Revision	App'd	Date
0	ISSUED FOR REVIEW	TAG	02/07/19

Drawn: TAG Date: 02/07/19
Designed: JP Date: 02/07/19
Checked: AE Date: 02/07/19

Project Number: 1039-A0002-B

Project Title: BU# 828054

SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

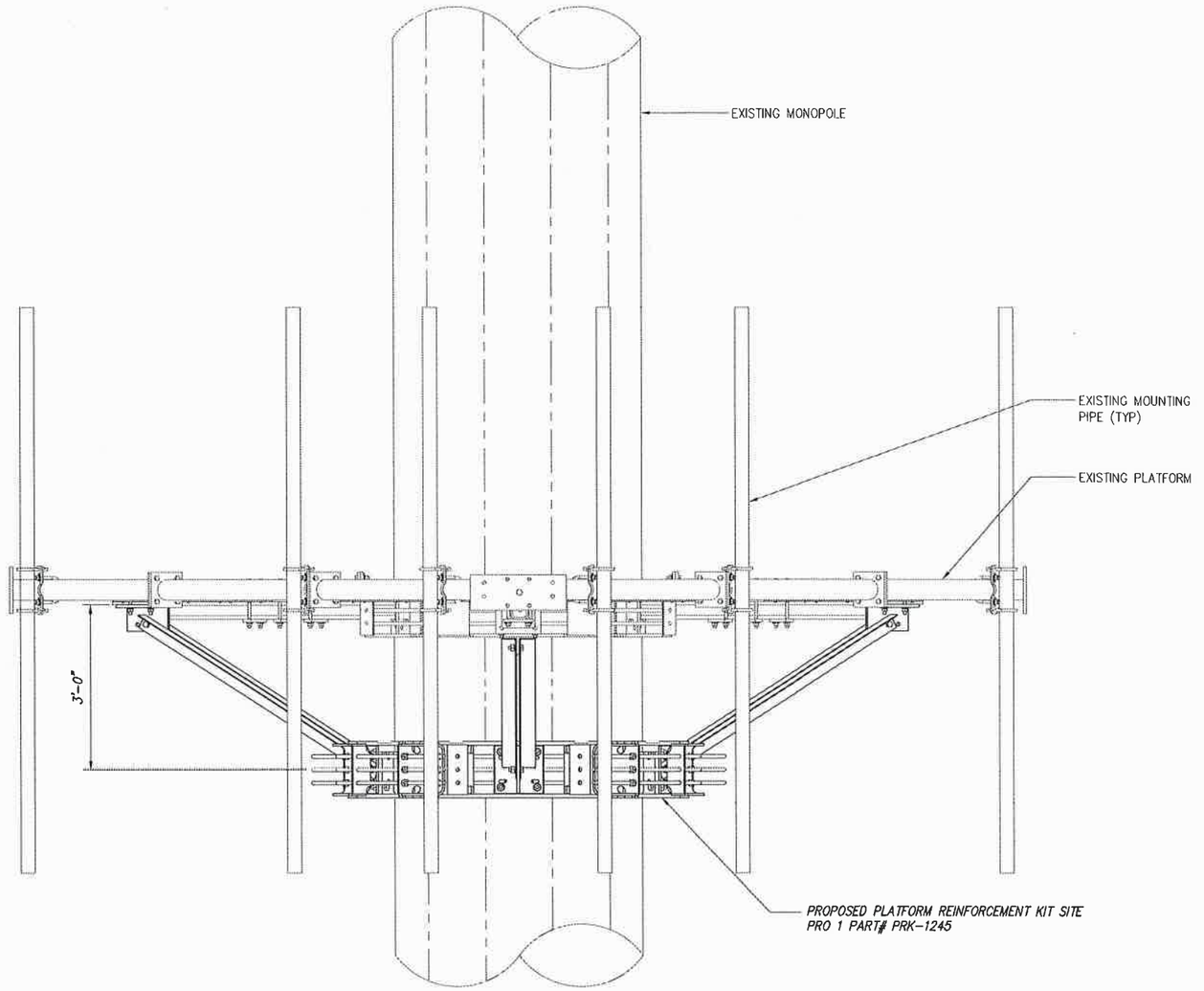
Prepared For:

CROWN CASTLE
3 Corporate Park, Suite 101
Clifton Park, NY 12065

Drawing Scale: AS NOTED
Date: 02/07/19

Drawing Title
GENERAL NOTES

Drawing Number
S1



INFINIGY
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29166
LICENSED
PROFESSIONAL ENGINEER
FEB 11 2019

Joseph R. Johnston

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SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

Prepared For:

CROWN CASTLE
3 Corporate Park, Suite 101
Clifton Park, NY 12065

Drawing Scale:
AS NOTED

Date:
02/07/19

Drawing Title
MOUNT DETAILS

Drawing Number
S2

RF EMISSIONS COMPLIANCE REPORT

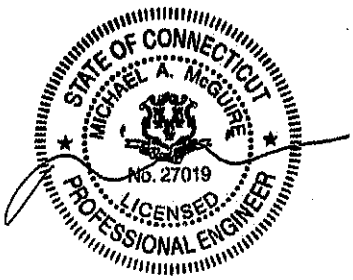
Crown Castle on behalf of AT&T Mobility, LLC

Site Name: South Windsor/Rt 5
Crown Castle Site BU: 475138
AT&T Mobility, LLC Site FA #: 10035346

300 Governors Highway
South Windsor, CT
2/25/2019

Report Status:

AT&T Mobility, LLC Is Compliant



sealed 26feb2019 mike@h2dc.com
H2DC PLLC CT CoA#: 0001714

Prepared By:

Sitesafe, LLC

8618 Westwood Center Drive,
Suite 315

Vienna, VA 22182

Voice 703-276-1100
Fax 703-276-1169

Engineering Statement in Re:
Electromagnetic Energy Analysis
Crown Castle
South Windsor, CT

My signature on the cover of this document indicates:

That I, Michael A McGuire, am currently and actively licensed to provide (in this state/jurisdiction as indicated within the professional electrical engineering seal on the cover of this document) professional electrical engineering services, as an employee of Hurricane Hill Development Company, PLLC , a duly authorized/registered engineering firm (in this state, as applicable) on behalf of SiteSafe, LLC; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission ("the FCC" and "the FCC Rules") both in general and specifically as they apply to the FCC's Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; and

That the technical information serving as the basis for this report was supplied by Crown Castle (See attached Site Summary and Carrier documents), and that AT&T Mobility, LLC's installations involve communications equipment, antennas and associated technical equipment at a location referred to as the "South Windsor/Rt 5" ("the site"); and

That AT&T Mobility, LLC proposes to operate at the site with transmit antennas listed in the carrier summary and with a maximum effective radiated power as specified by AT&T Mobility, LLC and shown on the worksheet, and that worst-case 100% duty cycle have been assumed; and

That in addition to the emitters specified in the worksheet, there are additional collocated point-to-point microwave facilities on this structure and, the antennas used are highly directional oriented at angles at or just below the horizontal and, that the energy present at ground level is typically so low as to be considered insignificant and have not been included in this analysis. A list of microwave antennas is included; and

That this analysis has been performed with the assumption that the ground immediately surrounding the tower is primarily flat or falling; and

That at this time, the FCC requires that certain licensees address specific levels of radio-frequency energy to which workers or members of the public might possibly be exposed (at §1.1307(b) of the FCC Rules); and

That such consideration of possible exposure of humans to radio-frequency radiation must utilize the standards set by the FCC, which is the Federal Agency having jurisdiction over communications facilities; and

That the FCC rules define two tiers of permissible exposure guidelines: 1) "uncontrolled environments," defined as situations in which persons may not be aware of (the "general public"), or may not be able to control their exposure to a transmission facility; and (2) "controlled environments," which defines situations in which persons are aware of their potential for exposure (industry personnel); and

That this statement specifically addresses the uncontrolled environment (which is more conservative than the controlled environment) and the limit set forth in the FCC rules for licensees of AT&T Mobility, LLC's operating frequency as shown on the attached antenna worksheet; and

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is no more than 1.796% of the maximum in any accessible area on the ground and

That it is understood per FCC Guidelines and OET65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the proposed operation is no more than 5.182% of the maximum in any accessible area up to two meters above the ground per OET-65; and

That the calculations provided in this report are based on data provided by the client and antenna pattern data supplied by the antenna manufacturer, in accordance with FCC guidelines listed in OET-65. Horizontal and vertical antenna patterns are combined for modeling purposes to accurately reflect the energy two meters above ground level where on-axis energy refers to maximum energy two meters above the ground along the azimuth of the antenna and where area energy refers to the maximum energy anywhere two meters above the ground regardless of the antenna azimuth, accounting for cumulative energy from multiple antennas for the carrier and frequency range indicated; and

That the Occupational Safety and Health Administration has policies in place which address worker safety in and around communications sites, thus individual companies will be responsible for their employees' training regarding Radio Frequency Safety.

In summary, it is stated here that the proposed operation at the site would not result in exposure of the Public to excessive levels of radio-frequency energy as defined in the FCC Rules and Regulations, specifically 47 CFR 1.1307 and that AT&T Mobility, LLC's proposed operation is completely compliant.

Finally, it is stated that access to the tower should be restricted to communication industry professionals, and approved contractor personnel trained in radio-frequency safety; and that the instant analysis addresses exposure levels at two meters above ground level and does not address exposure levels on the tower, or in the immediate proximity of the antennas.

Crown Castle
South Windsor/Rt 5
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	0.134 %
AT&T Mobility, LLC (Proposed)	0.456 %
AT&T Mobility, LLC (Proposed)	0.456 %
AT&T Mobility, LLC (Proposed)	0.456 %
AT&T Mobility, LLC (Proposed)	0.294 %
Clearwire	0.151 %
MetroPCS (Decommissioned)	0 %
Sigfox	0.001 %
Sprint	0.097 %
Sprint	0.139 %
Sprint	0.139 %
Sprint	0.095 %
Sprint	0.096 %
T-Mobile	0.128 %
T-Mobile	0.121 %
T-Mobile	0.27 %
T-Mobile	0.152 %
Verizon Wireless	0.662 %
Verizon Wireless	0.453 %
Verizon Wireless	0.422 %
Verizon Wireless	0.457 %
Composite Site MPE:	5.182 %

AT&T Mobility, LLC
South Windsor/Rt 5
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	0.76021	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.13415	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Powerwave	7770	158	23	547	0.207799	0.03667	0.323756	0.057133
Powerwave	7770	158	23	547	0.207799	0.03667	0.323756	0.057133
Powerwave	7770	158	141	547	0.207799	0.03667	0.323756	0.057133
Powerwave	7770	158	141	547	0.207799	0.03667	0.323756	0.057133
Powerwave	7770	158	263	547	0.207799	0.03667	0.323756	0.057133
Powerwave	7770	158	263	547	0.207799	0.03667	0.323756	0.057133

AT&T Mobility, LLC (Proposed)
South Windsor/Rt 5
Carrier Summary

Frequency:	2300	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.56204	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.4562	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	HPA-65R-BUU-H8	158	23	3350	2.102109	0.210211	2.750118	0.275012
CCI Antennas	HPA-65R-BUU-H8	158	141	3350	2.110976	0.211098	2.750118	0.275012
CCI Antennas	HPA-65R-BUU-H6	158	263	4530	3.714383	0.371438	4.528647	0.452865

AT&T Mobility, LLC (Proposed)
South Windsor/Rt 5
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.5613	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.45613	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	HPA-65R-BUU-H8	158	23	5360	2.792975	0.279297	3.933331	0.393333
CCI Antennas	HPA-65R-BUU-H8	158	141	5360	2.816298	0.28163	3.933331	0.393333
CCI Antennas	HPA-65R-BUU-H6	158	263	4530	3.714383	0.371438	4.528647	0.452865

AT&T Mobility, LLC (Proposed)
South Windsor/Rt 5
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.56217	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.45622	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	HPA-65R-BUU-H8	158	23	4777	3.25546	0.325546	4.175179	0.417518
CCI Antennas	HPA-65R-BUU-H8	158	141	4777	3.231258	0.323126	4.175179	0.417518
CCI Antennas	HPA-65R-BUU-H6	158	263	4530	3.714383	0.371438	4.528647	0.452865

AT&T Mobility, LLC (Proposed)
South Windsor/Rt 5
Carrier Summary

Frequency:	737	MHz
Maximum Permissible Exposure (MPE):	491.33	µW/cm^2
Maximum power density at ground level:	1.44607	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.29432	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	HPA-65R-BUU-H8	158	23	3382	0.87424	0.177932	0.896504	0.182464
CCI Antennas	HPA-65R-BUU-H8	158	141	3382	0.87424	0.177932	0.896504	0.182464
CCI Antennas	HPA-65R-BUU-H6	158	263	2350	0.924214	0.188103	1.417686	0.288539

Clearwire
South Windsor/Rt 5
Carrier Summary

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.51267	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.15127	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ARGUS	LLPX310R	128	20	1542	0.746975	0.074698	1.3546	0.13546
ARGUS	LLPX310R	128	160	1542	0.752709	0.075271	1.3546	0.13546
ARGUS	LLPX310R	128	280	1542	0.746975	0.074698	1.3546	0.13546

MetroPCS (Decommissioned)
South Windsor/Rt 5
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	0	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXV18-206517S	138	20	0	0	0	0	0
RFS	APXV18-206517S	138	160	0	0	0	0	0
RFS	APXV18-206517S	138	280	0	0	0	0	0

Sigfox
South Windsor/Rt 5
Carrier Summary

Frequency:	905.2	MHz
Maximum Permissible Exposure (MPE):	603.47	µW/cm^2
Maximum power density at ground level:	0.00402	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.00067	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Procom	CXL 900-3LW	119	0	1.22	0.004017	0.000666	0.004017	0.000666

Sprint
South Windsor/Rt 5
Carrier Summary

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	0.96881	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.09688	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Nokia	AAHC	148	120	2542	0.766033	0.076603	0.959245	0.095925
Nokia	AAHC	148	230	2542	0.766033	0.076603	0.959246	0.095925
Nokia	AAHC	148	355	2542	0.766033	0.076603	0.959245	0.095925

Sprint
South Windsor/Rt 5
Carrier Summary

Frequency:	1990	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.39054	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.13905	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Commscope	NNVV-65B-R4	148	120	2781	1.042949	0.104295	1.363407	0.136341
Commscope	NNVV-65B-R4	148	230	2781	1.042949	0.104295	1.363407	0.136341
Commscope	NNVV-65B-R4	148	355	2781	1.042949	0.104295	1.363407	0.136341

Sprint
South Windsor/Rt 5
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.39054	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.13905	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Commscope	NNVV-65B-R4	148	120	2781	1.042949	0.104295	1.363407	0.136341
Commscope	NNVV-65B-R4	148	230	2781	1.042949	0.104295	1.363407	0.136341
Commscope	NNVV-65B-R4	148	355	2781	1.042949	0.104295	1.363407	0.136341

Sprint
South Windsor/Rt 5
Carrier Summary

Frequency:	869	MHz
Maximum Permissible Exposure (MPE):	579.33	µW/cm^2
Maximum power density at ground level:	0.55315	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.09548	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Commscope	NNVV-65B-R4	148	120	782	0.382179	0.065969	0.541481	0.093466
Commscope	NNVV-65B-R4	148	230	782	0.382038	0.065944	0.541481	0.093466
Commscope	NNVV-65B-R4	148	355	782	0.382038	0.065944	0.541481	0.093466

Sprint
South Windsor/Rt 5
Carrier Summary

Frequency:	862	MHz
Maximum Permissible Exposure (MPE):	574.67	µW/cm^2
Maximum power density at ground level:	0.55315	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.09626	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Commscope	NNVV-65B-R4	148	120	782	0.382179	0.066504	0.541481	0.094225
Commscope	NNVV-65B-R4	148	230	782	0.382038	0.06648	0.541481	0.094225
Commscope	NNVV-65B-R4	148	355	782	0.382038	0.06648	0.541481	0.094225

T-Mobile
South Windsor/Rt 5
Carrier Summary

Frequency:	700	MHz
Maximum Permissible Exposure (MPE):	466.67	µW/cm^2
Maximum power density at ground level:	0.59812	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.12817	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	166	0	1307	0.301579	0.064624	0.315964	0.067707
RFS	APXVAARR24_43-U-NA20	166	120	1307	0.301465	0.0646	0.315964	0.067707
RFS	APXVAARR24_43-U-NA20	166	210	1307	0.301465	0.0646	0.315964	0.067707

T-Mobile
South Windsor/Rt 5
Carrier Summary

Frequency:	600	MHz
Maximum Permissible Exposure (MPE):	400	µW/cm^2
Maximum power density at ground level:	0.48545	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.12136	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVAARR24_43-U-NA20	166	0	1251	0.311086	0.077772	0.319775	0.079944
RFS	APXVAARR24_43-U-NA20	166	120	1251	0.311793	0.077948	0.319775	0.079944
RFS	APXVAARR24_43-U-NA20	166	210	1251	0.311793	0.077948	0.319775	0.079944

T-Mobile
South Windsor/Rt 5
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	2.70307	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.27031	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR 32 B2A-B66AA	166	0	2313	1.732463	0.173246	1.732463	0.173246
Ericsson	AIR 32 B2A-B66AA	166	120	2313	1.732463	0.173246	1.732463	0.173246
Ericsson	AIR 32 B2A-B66AA	166	210	2313	1.732463	0.173246	1.732463	0.173246

T-Mobile
South Windsor/Rt 5
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.51886	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.15189	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR 21 B2A B4P	167	0	2061	0.35372	0.035372	0.404222	0.040422
Ericsson	AIR 32 B2A-B66AA	166	0	2313	0.401882	0.040188	0.459284	0.045928
Ericsson	AIR 21 B2A B4P	167	120	2061	0.353856	0.035386	0.404222	0.040422
Ericsson	AIR 32 B2A-B66AA	166	120	2313	0.402033	0.040203	0.459284	0.045928
Ericsson	AIR 21 B2A B4P	167	210	2061	0.353856	0.035386	0.404222	0.040422
Ericsson	AIR 32 B2A-B66AA	166	210	2313	0.402033	0.040203	0.459284	0.045928

Verizon Wireless
South Windsor/Rt 5
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	3.74906	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.6616	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	LNX-6514DS-VTM	111	0	3784	2.421901	0.427394	3.702842	0.653443
ANDREW	LNX-6514DS-VTM	111	120	3784	2.421901	0.427394	3.702841	0.653443
ANDREW	LNX-6514DS-VTM	111	240	3784	2.418614	0.426814	3.702842	0.653443

Verizon Wireless
South Windsor/Rt 5
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.53339	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.45334	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	HBXX-6517DS-VTM	111	0	5130	2.191781	0.219178	4.178708	0.417871
ANDREW	HBXX-6517DS-VTM	111	120	5130	2.179248	0.217925	4.178708	0.417871
ANDREW	HBXX-6517DS-VTM	111	240	5130	2.191781	0.219178	4.178708	0.417871

Verizon Wireless
South Windsor/Rt 5
Carrier Summary

Frequency:	751	MHz
Maximum Permissible Exposure (MPE):	500.67	µW/cm^2
Maximum power density at ground level:	2.11215	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.42187	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	LNX-6514DS-VTM	111	0	1885	1.393626	0.278354	2.092008	0.417844
ANDREW	LNX-6514DS-VTM	111	120	1885	1.393626	0.278354	2.092008	0.417844
ANDREW	LNX-6514DS-VTM	111	240	1885	1.393271	0.278283	2.092008	0.417844

Verizon Wireless
South Windsor/Rt 5
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	4.57337	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.45734	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	HBXX-6517DS-VTM	111	0	5621	2.12918	0.212918	4.178784	0.417878
ANDREW	HBXX-6517DS-VTM	111	120	5621	2.119891	0.211989	4.178784	0.417878
ANDREW	HBXX-6517DS-VTM	111	240	5621	2.129181	0.212918	4.178784	0.417878

South Windsor/Rt 5
Composite Microwave Antenna Summary

Carrier	Antenna Make/Model	Height (feet)
Clearwire	Andrew VHLP800-11	128
Clearwire	Andrew VHLP800-11	128