Crown Castle
12 Gill Street, Suite 5800
Woburn, MA 01801

January 20, 2017

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

RE: **Notice of Exempt Modification for Sprint / Crown Site BU: 828054**
Sprint Site ID: CT60XC014
Located at: 300 Governors Highway, South Windsor, CT 06903
Latitude: 41° 6' 6.35"/ Longitude: -73° 35' 41.45"

Dear Ms. Bachman,

Sprint currently maintains three (3) antennas at the 148-foot level of the existing 165-foot monopole at 300 Governors Highway, South Windsor, CT. The tower is owned by Crown Castle. The property is owned by Electron Technologies. Sprint now intends to replace three (3) antennas with three (3) RFS antennas. Sprint also intends to replace feedlines with three (3) hybrid lines and install three (3) 800MHz RRUs and three (3) 1900MHz RRUs.

A request for original zoning documents was sent to the Town of South Windsor but has not been answered.

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 Carolyn Mirek, Mayor, Town of South Windsor, as well as the property owner and the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modification 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, Sprint respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Amanda Goodall.

Sincerely,

Amanda Goodall
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
339-205-7017
Amanda.Goodall@crowncastle.com

Attachments:

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table report (RF Emissions Analysis Report)

cc: The Honorable Carolyn Mirek, Mayor, Town of South Windsor
1540 Sullivan Avenue
South Windsor, CT 06074

Electron Technologies Corp.
300 Governors Highway
PO Box 316
South Windsor, CT 06074

Town of South Windsor, CT

Property Listing Report

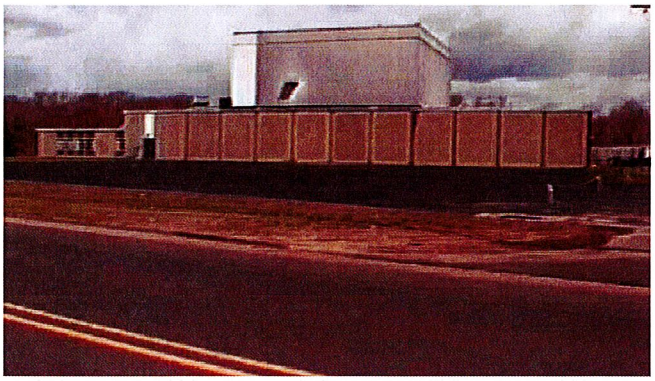
Map Block Lot 71-22 | Account 36900300

Property Information

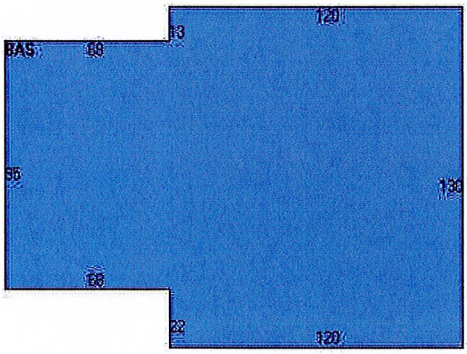
Property Location	300 GOVERNORS HIGHWAY
Owner	ELECTRON TECHNOLOGIES
Co-Owner	P.O.BOX 316
Mailing Address	300 GOVERNORS HIGHWAY SOUTH WINDSOR CT 06074
Land Use	301 Industrial
Land Class	I
Zoning Code	I
Census Tract	4874

Neighborhood	C400
Acreage	6.03
Utilities	
Lot Setting/Desc	
Water Information	MDC 860.278.7850
Trash Day	MONDAY

Photo



Sketch



Primary Construction Details

Year Built	1965
Stories	1.00
Building Style	Light Industrial
Building Use	Comm/Ind
Building Condition	C
Floors	Concrete
Total Rooms	0

Bedrooms	
Full Bathrooms	12
Half Bathrooms	
Bath Style	n/a
Kitchen Style	n/a
Roof Style	Flat
Roof Cover	Tar & Gravel

Exterior Walls	Precast Panel
Interior Walls	Minimum
Heating Type	Forced Hot Air
Heating Fuel	Gas
AC Type	
Gross Bldg Area	22060
Total Living Area	22060

Report Created On 1/20/2017

Town of South Windsor, CT

Property Listing Report | Map Block Lot 71-22 | Account 36900300

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	643400	450400
Extras	0	0
Improvements	666600	466600
Outbuildings	23200	16200
Land	318700	223100
Total	985300	689700

Outbuilding and Extra Items

Type	Description
Paving	36700.00 S.F.
Lights	1.00 UNITS
Fence	1080.00 L.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area	22060	22060

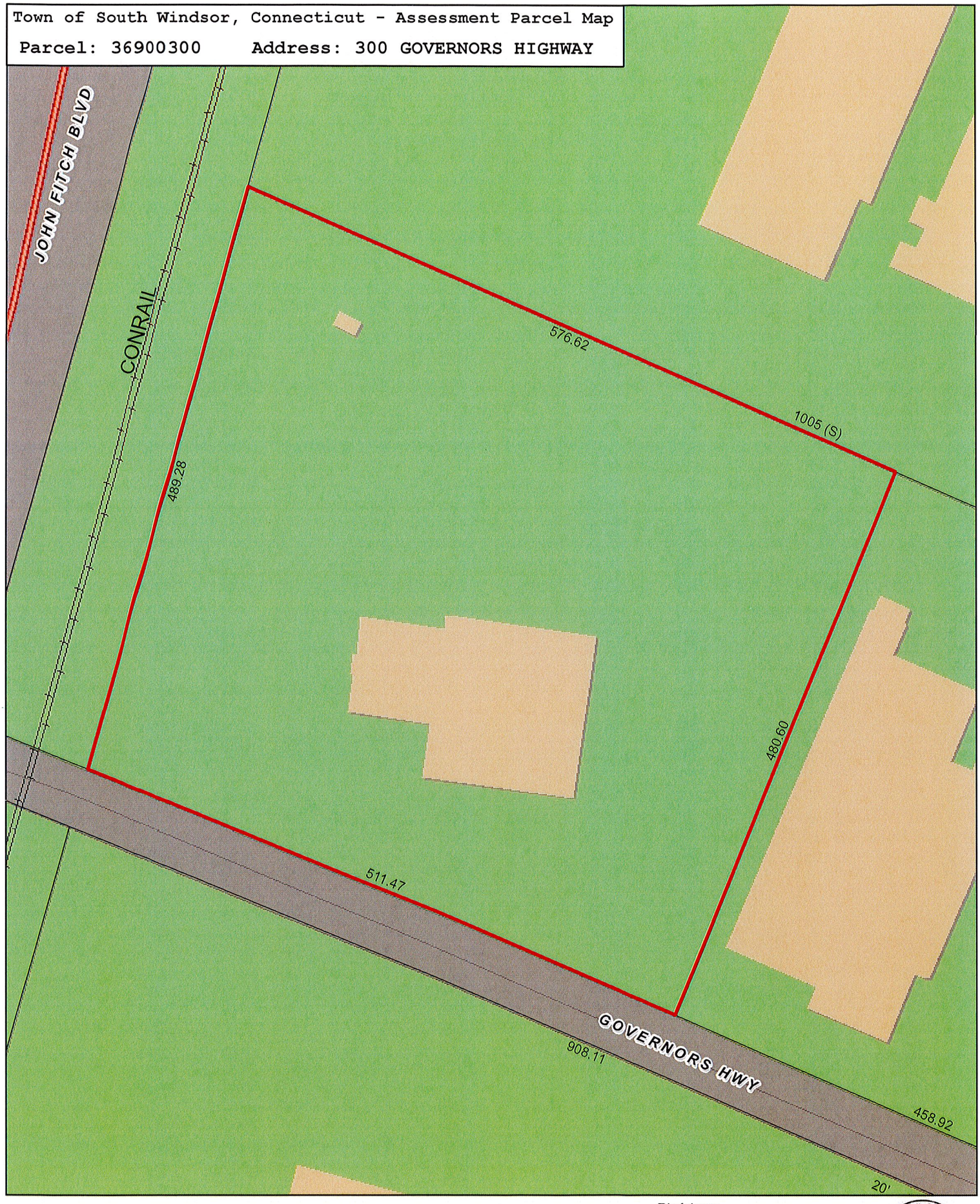
Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
ELECTRON TECHNOLOGIES CORPORATIO	540/ 418	10/4/1988	800000

Report Created On 1/20/2017

Town of South Windsor, Connecticut - Assessment Parcel Map

Parcel: 36900300 Address: 300 GOVERNORS HIGHWAY



Approximate Scale:
1 inch = 100 feet

0 80 160 240 Feet

Map Produced:
July 2012

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of South Windsor and its mapping contractors assume no legal responsibility for the information contained herein.

Sprint

SPRINT SITE NUMBER: CT60XC014
SPRINT SITE NAME: ---
SITE TYPE: MONOPOLE
TOWER HEIGHT: 165'-0"

CROWN CASTLE BU #: 828054
SITE ADDRESS: 300 GOVERNORS HIGHWAY SOUTH WINDSOR, CT 06074
COUNTY: HARTFORD
JURISDICTION: TOWN OF SOUTH WINDSOR

SPRINT 2016-2017 LOCAL ASK INITIATIVE

SITE INFORMATION

CROWN CASTLE SITE NAME:	SOUTH WINDSOR/RT 5
SITE ADDRESS:	300 GOVERNORS HIGHWAY SOUTH WINDSOR, CT 06074
COUNTY:	HARTFORD
MAP/PARCEL #:	SWIN-003690-000300
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 50' 0.4"
LONGITUDE:	-72° 36' 11.0"
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	70 FT.
CURRENT ZONING:	I
JURISDICTION:	TOWN OF SOUTH WINDSOR
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	VB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	ELECTRON TECHNOLOGIES CORP 300 GOVERNORS HWY, P.O. BOX 316 SOUTH WINDSOR, CT 06074
TOWER OWNER:	CCTMO LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	SPRINT 6391 SPRINT PARKWAY OVERLAND PARK, KS 66251-2650
CROWN CASTLE APPLICATION ID:	367042
ELECTRIC PROVIDER:	CONNECTICUT LIGHT & POWER CO (800) 286-2000
TELCO PROVIDER:	AT&T (866) 620-6900

PROJECT TEAM

CROWN CASTLE A&E FIRM:
CROWN CASTLE
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
CROWNAE.APPROVAL@CROWNCASTLE.COM

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

MARYELLEN PERROTTA - PROJECT MANAGER
(781) 970-0057
JASON D'AMICO - CONSTRUCTION MANAGER
(860) 209-0104

WILLIAM STONE - A&E PROJECT MANAGER
WILLIAM.STONE.CONTRACTOR@CROWNCASTLE.COM
(518) 373-3543

SPRINT CONTACT:

FLORENCE NICOLAS
FLORENCE.NICOLAS@SPRINT.COM

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
T-3	GENERAL NOTES
C-1	ENLARGED SITE PLAN
C-2	EXISTING AND FINAL ELEVATION
C-3	ANTENNA PLANS AND SCHEMATIC
C-4	CONDUIT ROUTING SCHEMATIC
C-5	INSTALLATION SPECS AND DETAILS
C-6	MOUNT SPECIFICATIONS
C-7	PLUMBING DIAGRAM
E-1	ONE-LINE DIAGRAM AND PANEL SCHEDULE
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

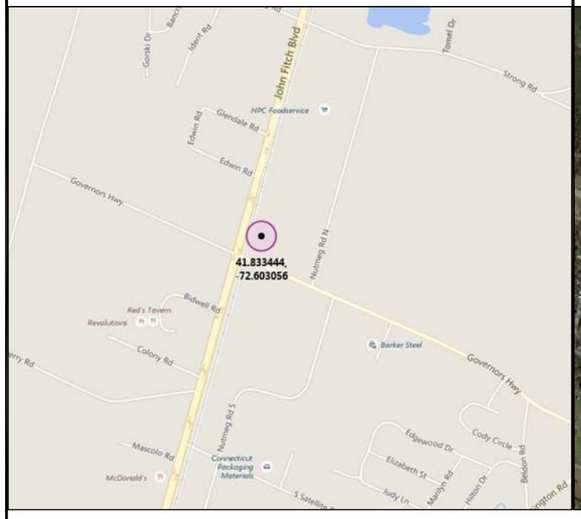
- REMOVE (3) ANTENNAS
- REMOVE (6) 1-5/8" COAX CABLES
- RELOCATE (3) RRHs FROM GROUND TO TOWER
- INSTALL (3) ANTENNAS
- INSTALL (3) 1-1/4" HYBRID CABLES
- INSTALL (3) RRHs
- INSTALL (1) T-ARM MOUNT KIT

DESIGN PACKAGE BASED ON RF DATA SHEET
VERSION: 3.12
ISSUED: 10/04/16

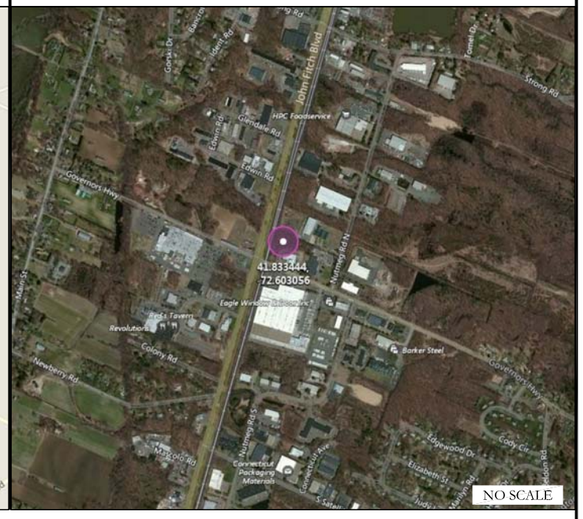
DESIGN PACKAGE BASED ON THE APPLICATION
ID: 367042
REVISION: 1

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.

VICINITY MAP



AERIAL MAP



DRIVING DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

EXIT BRADLEY INTERNATIONAL AIRPORT VIA SCHOEPHOESTER RD TOWARD CT-20 E. CONTINUE ONTO CT-20 E/BRADLEY INTERNATIONAL AIRPORT CON, THEN USE THE LEFT TWO LANES TO MERGE ONTO I-91 N TOWARD SPRINGFIELD. TAKE EXIT 44 FOR US-5 S TOWARD E. WINDSOR, THEN TURN RIGHT ONTO US-5 S. TURN LEFT ONTO GOVERNORS HWY, THEN TURN LEFT INTO THE FIRST PARKING LOT. SITE ACCESS IS ON THE NORTH WEST CORNER OF THE PARKING LOT.

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2016 CONNECTICUT STATE BUILDING CODE/2012 IBC W/ CT AMMENDMENTS
MECHANICAL	2016 CONNECTICUT STATE BUILDING CODE/2012 IMC W/ CT AMMENDMENTS
ELECTRICAL	2016 CONNECTICUT STATE BUILDING CODE/2014 NEC W/ CT AMMENDMENTS

REFERENCE DOCUMENTS:
STRUCTURAL ANALYSIS: BY OTHERS

CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!

811

APPROVALS

APPROVAL	SIGNATURE	DATE
SITE ACQ. & ZONING		
CONSTRUCTION MGR		
A&E MGR		
PLANNING CONSULTANT		
RF MGR		
PROPERTY OWNER		
SPRINT REP.		

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING 165'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/22/16	CJ	PRELIMINARY	LR
0	01/09/17	CJ	CONSTRUCTION	LR

DocuSigned by:
Justin Linette
1B4005B2647C4D...

STATE OF CONNECTICUT
JUSTIN PETER LINETTE
No. 31965
LICENSED
PROFESSIONAL ENGINEER

1/10/2017 | 10:29:13 AM EST

Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: T-1
REVISION: 0

CROWN CASTLE SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES, SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE TOWER SITE" AND LATEST VERSION OF TIA 1019 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
4. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS.
5. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
6. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
13. NOTICE TO PROCEED- NO WORK TO COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

SPRINT CONSTRUCTION NOTES

SECTION 01 100 – SCOPE OF WORK

THE WORK:

MUST COMPLY WITH ALL APPLICABLE ADOPTED CODES AND STANDARDS, AND PORTIONS THEREOF. SPRINT METHOD OF PROCEDURE (MOP) AND SPRINT STANDARDS AT THE TIME OF CONSTRUCTION START.

PRECEDENCE:

SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS. INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. ALONG WITH SPRINT CONSTRUCTION MANAGER APPROVAL.

SITE FAMILIARITY:

CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION.

ON-SITE SUPERVISION:

THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE:

THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. PROVIDE ALL MATERIALS AND LABOR AS REQUIRED TO PROVIDE A COMPLETE FUNCTIONING SYSTEM. MODIFICATIONS MAY BE REQUIRED TO SUITE JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

B. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.

C. MARK THE FIELD SET OF DRAWINGS IN RED, DOCUMENTING ANY CHANGES FROM THE CONSTRUCTION DOCUMENTS.

METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION:

CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS. CONTRACTOR IS RESPONSIBLE FOR DISTRIBUTION OF LATEST MOPS.

A. TOP HAT
B. HOW TO INSTALL A NEW CABINET
C. BASE BAND UNIT IN EXISTING UNIT
D. INSTALLATION OF BATTERIES
E. INSTALLATION OF FIBER CABLE
F. INSTALLATION OF RRU'S
G. CABLING
H. TS-0200 REV 5 – ANTENNA LINE ACCEPTANCE STANDARDS
I. SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.
J. COMMISSIONING MOPS

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

A. COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DRAWINGS.

B. CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT TO ENSURE IT IS PROTECTED AND HANDLED PROPERLY THROUGHOUT THE CONSTRUCTION DURATION.

C. CONTRACTOR IS RESPONSIBLE FOR RECEIPT OF SPRINT FURNISHED EQUIPMENT AT CELL SITE OR CONTRACTORS LOCATION. CONTRACTOR TO COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE. CONTRACTOR MAY BE REQUIRED TO PICK UP MATERIAL AT LOCATION PRESCRIBED BY SPRINT.

SECTION 01 300 – CELL SITE CONSTRUCTION

NOTICE TO PROCEED:

NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF WORK ORDER.

SITE CLEANLINESS:

CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

SECTION 01 400 – SUBMITTALS AND TESTS

ALTERNATIVES:

AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED.

TESTS AND INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. COAX SWEEPS AND FIBER TESTS PER TS-200 REV 5 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT: PROVIDE AN AUTOMATED REPORT UPLOADED TO SITERRA USING A COMMERCIAL MADE-FOR PURPOSE ELECTRONIC ANTENNA ALIGNMENT TOOL (AAT). INSTALLED AZIMUTH, CENTERLINE AND DOWNTILT MUST CONFORM WITH RF CONFIGURATION DATA.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
4. ALL TESTING REQUIRED BY APPLICABLE INSTALLATION MOPS.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
1. AZIMUTH, DOWNTILT, AGL FROM SUNSIGHT INSTRUMENTS – ANTENNA ALIGNMENT TOOL (AAT)
2. SWEEP AND FIBER TESTS.
3. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT.
4. ALL AVAILABLE JURISDICTIONAL PERMIT AND OCCUPANCY INFORMATION.
5. PDF SCAN OF REDLINES PRODUCED IN FIELD.
6. A PDF SCAN OF REDLINE MARK-UPS SUITABLE FOR USE IN ELECTRONIC AS-BUILT DRAWING PRODUCTION.
7. LIEN WAIVERS.
8. FINAL PAYMENT APPLICATION.
9. REQUIRED FINAL CONSTRUCTION PHOTOS.
10. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS.
11. APPLICABLE POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINT'S DOCUMENT REPOSITORY OF RECORD).
12. CLOSEOUT PHOTOGRAPHS AND CLOSEOUT CHECKLIST: SPRINT WILL PROVIDE SEPARATE GUIDANCE.

a. PROVIDE PHOTOGRAPHS OF FINAL PROJECT PER THE FOLLOWING LIST. ADDITIONAL PHOTOS MAY BE REQUIRED TO SUPPORT ACCEPTANCE PROCESSES
(i) BACK MAIN FIBER CABLE ROUTE (MINIMUM TWO PHOTOS)
(ii) OF EACH ANTENNA AND RRU
(iii) MANUFACTURERS NAME TAG FOR ALL SERIALIZED EQUIPMENT
(iv) PULL AND DISTRIBUTION BOXES INTERMEDIATE BETWEEN RRU'S AND RBS (DOOR OPEN)
(v) RBS CABINET WITH DOOR OPEN SHOWING MODIFICATIONS
(vi) POWER CABINET, DOORS OPEN, BATTERIES INSTALLED
(vii) BREAK OUT CYLINDERS
(viii) ASR SIGNAGE FOR SPRINT OWNED TOWERS
(ix) RADIATION EXPOSURE WARNING SIGNS
(x) PHOTOGRAPH FROM EACH SECTOR FROM APPROXIMATELY RAD CENTER OF ANY NEW ANTENNA AT HORIZON.

b. LOAD PHOTOS TO SITERRA PROJECT LIBRARY 15. IN 15 CREATE NEW CATEGORY; 2.5 DEPLOYMENT, AND SECTION; PERMANENT CONSTRUCTION. LABEL PHOTOS WITH SITE CASCADE AND VIEW BEING DEPICTED. CAMERAS USED TO TAKE PHOTOS SHALL BE GPS ENABLED SUCH THAT THE GPS COORDINATES ARE INCLUDED IN THE PHOTO MEDIA-FILE INFORMATION.

COMMISSIONING:

PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPS

INTEGRATION:

PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPS

SECTION 09 900 – PAINTING

QUALITY ASSURANCE:

A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS OF ACCEPTABLE MANUFACTURERS WHICH HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR THREE YEARS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. COMPLY WITH ALL ENVIRONMENTAL REGULATIONS FOR VOLATILE ORGANIC COMPOUNDS.

MATERIALS:

A. MANUFACTURERS: BENJAMIN MOORE, ICI DEVOE COATINGS, PPG, SHERWIN WILLIAMS OR APPROVED PROVIDE PREMIUM GRADE, PROFESSIONAL-QUALITY PRODUCTS FOR COATING SYSTEMS.

PAINT SCHEDULE:

A. EXTERIOR ANTENNAE AND ANTENNA MOUNTING HARDWARE: ONE COAT OF PRIMER AND TWO FINISH COATS. PAINT FOR ANTENNAE SHALL BE NON-METALLIC BASED AND CONTAIN NO METALLIC PARTICLES. PROVIDE COLORS AND PATTERNS AS REQUIRED TO MASK APPEARANCE OF ANTENNAE ON ADJACENT BUILDING SURFACES AND AS ACCEPTABLE TO THE OWNER. REFER TO ANTENNA MANUFACTURER'S INSTRUCTION WHENEVER POSSIBLE.

B. WATER TANKS: TOUCH UP – PREPARE SURFACES TO BE REPAIRED. FOLLOW INDUSTRY STANDARDS AND REQUIREMENTS OF OWNER TO MATCH EXISTING COATING AND FINISH.

PAINTING APPLICATION:

1. INSPECT SURFACES, REPORT UNSATISFACTORY CONDITIONS IN WRITING; BEGINNING WORK MEANS ACCEPTANCE OF SUBSTRATE.
2. COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR PREPARATION, PRIMING AND COATING WORK. COORDINATE WITH WORK OF OTHER SECTIONS.
3. MATCH APPROVED MOCK-UPS FOR COLOR, TEXTURE, AND PATTERN. RE-COAT OR REMOVE AND REPLACE WORK WHICH DOES NOT MATCH OR SHOWS LOSS OF ADHESION.
4. CLEAN UP, TOUCH UP AND PROTECT WORK.

TOUCHUP PAINTING:

1. GALVANIZING DAMAGE AND ALL BOLTS AND NUTS SHALL BE TOUCHED UP AFTER TOWER ERECTION WITH "GALVANOX," "DRY GALV," OR "ZINC-IT."
2. FIELD TOUCHUP PAINT SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. ALL METAL COMPONENTS SHALL BE HANDLED WITH CARE TO PREVENT DAMAGE TO THE COMPONENTS, THEIR PRESERVATIVE TREATMENT, OR THEIR PROTECTIVE COATINGS.

SECTION 11 700 – ANTENNA ASSEMBLY, REMOTE RADIO UNITS AND CABLE INSTALLATION

SUMMARY:

THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRU'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRU'S:

THE NUMBER AND TYPE OF ANTENNAS AND RRU'S TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

NV FIBER CABLE:

EXISTING NV FIBER CABLE WILL BE USED AT EACH SITE. CABLE SHALL BE USED PER THE CONSTRUCTION DRAWINGS AND THE APPLICABLE MANUFACTURER'S REQUIREMENTS.

JUMPERS AND CONNECTIONS:

FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRU'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE JUMPERS BETWEEN THE RRU'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2" FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE, MINIMUM LENGTH FOR JUMPER SHALL BE SO AS TO ALLOW FOR THE PROPER BEND RADIUS PER MANUFACTURER OR SPRINT SPECIFICATIONS.

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:

INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, FURNISHED BY SPRINT.

ANTENNA INSTALLATION:

THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH AND FEED ORIENTATION INFORMATION SHALL BE AS DESIGNATED ON THE CONSTRUCTION DRAWINGS.

A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.

B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE CONSTRUCTION DRAWINGS.

FIBER CABLE INSTALLATION:

A. THE CONTRACTOR SHALL ROUTE, TEST AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAT THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.

C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.

1. FASTENING MAIN FIBER CABLES:

a. LATTICE AND GUYED TOWERS:

ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS. HOISTING GRIPS SHOULD BE INSTALLED AT MID-POINT IF CABLE RUN EXCEEDS 200' AS WELL AS TOP SIDE.

a. MONOPOLE:

ALL CABLES SHALL BE PERMANENTLY SUPPORTED WITH HOISTING GRIPS AT INTERVALS OF NO MORE THAN 200' (ONE HOISTING GRIP PER COAX).

1. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA). WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES.

a. FIBER: SUPPORT FIBER BUNDLES USING 1/2" VELCRO STRAPS OF THE REQUIRED LENGTH AT 18" O.C. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.

b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.

2. FASTENING OR SECURING JUMPERS SHOULD CONSIST OF STAINLESS STEEL CLIPS, 18" FROM REAR OF CONNECTOR AND 24" THEREAFTER AND AT NO TIME SHALL THEY CONTACT TOWER OR STRUCTURAL STEEL.

3. CABLE INSTALLATION:

a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE. NOTIFY THE CONSTRUCTION MANAGER.

b. CABLE ROUTING CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOPE AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.

c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM BEND RADIUS.

5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED IN TS 0200 REV 5.
7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY A ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING 165'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/22/16	CJ	PRELIMINARY	LR
0	01/09/17	CJ	CONSTRUCTION	LR

DocuSigned by:
Justin Linette
1B4008B2547C41D...

STATE OF CONNECTICUT
JUSTIN PETER LINETTE
No. 31965
LICENSED PROFESSIONAL ENGINEER

1/10/2017 | 10:29:13 AM EST

Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: **T-2**
REVISION: **0**

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

A. ALL FIBER AND COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.

B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.

1. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF AMALGAMATING TAPE.
2. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
3. JMA-WPS SERIES ENCLOSURE.
4. BUTYL AND TAPE, 1 COMPLETE WRAP OF 3/4" PRE-TAPE, BUTYL WRAPPED IN HALF INCH LAP LAYERS, ENDED WITH SHINGLED DOWNWARD 3 WRAPS OF 2" TAPE, 3 WRAPS OF 3/4" TAPE SHINGLED DOWNWARD, FREE OF WRINKLES, BUCKLES AND FLAGGING.
5. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

C. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE CONSTRUCTION DRAWINGS.

FIBER CABLE INSTALLATION:

A. THE CONTRACTOR SHALL ROUTE, TEST AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAT THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.

C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.

1. FASTENING MAIN FIBER CABLES:

a. LATTICE AND GUYED TOWERS:

ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS. HOISTING GRIPS SHOULD BE INSTALLED AT MID-POINT IF CABLE RUN EXCEEDS 200' AS WELL AS TOP SIDE.

b. MONOPOLE:

ALL CABLES SHALL BE PERMANENTLY SUPPORTED WITH HOISTING GRIPS AT INTERVALS OF NO MORE THAN 200' (ONE HOISTING GRIP PER COAX).

2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA). WITHIN THE MMBS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES.

a. FIBER: SUPPORT FIBER BUNDLES USING 1/2" VELCRO STRAPS OF THE REQUIRED LENGTH AT 18" O.C. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.

b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.

3. FASTENING OR SECURING JUMPERS SHOULD CONSIST OF STAINLESS STEEL CLIPS, 18" FROM REAR OF CONNECTOR AND 24" THEREAFTER AND AT NO TIME SHALL THEY CONTACT TOWER OR STRUCTURAL STEEL.

4. CABLE INSTALLATION:

a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE. NOTIFY THE CONSTRUCTION MANAGER.

b. CABLE ROUTING CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOPE AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.

c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURER'S RECOMMENDED MAXIMUM BEND RADIUS.

5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.

6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED IN TS 0200 REV 5.

7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

A. ALL FIBER AND COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.

B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.

1. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF AMALGAMATING TAPE.
2. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
3. JMA-WPS SERIES ENCLOSURE.
4. BUTYL AND TAPE, 1 COMPLETE WRAP OF 3/4" PRE-TAPE, BUTYL WRAPPED IN HALF INCH LAP LAYERS, ENDED WITH SHINGLED DOWNWARD 3 WRAPS OF 2" TAPE, 3 WRAPS OF 3/4" TAPE SHINGLED DOWNWARD, FREE OF WRINKLES, BUCKLES AND FLAGGING.
5. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800 – INSTALLATION OF MULTIMODAL BASE STATIONS (MMBS) AND RELATED EQUIPMENT

SUMMARY:

A. THIS SECTION SPECIFIES MMBS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BUT NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).

B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRED BY THE APPLICABLE INSTALLATION MOPS.

C. COMPLY WITH MANUFACTURER'S INSTALLATION AND START-UP REQUIREMENTS.

DC CIRCUIT BREAKER LABELING:

A. LABEL CIRCUIT BREAKERS ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE – EN 2012-001, REV 1.

SECTION 26 100 – BASIC ELECTRICAL REQUIREMENTS

SUMMARY:

THIS SECTION SPECIFIES BASIC ELECTRICAL REQUIREMENTS FOR SYSTEMS AND COMPONENTS.

QUALITY ASSURANCE:

A. ALL EQUIPMENT FURNISHED UNDER DIVISION 26 SHALL CARRY UL LABELS AND LISTINGS WHERE SUCH LABELS AND LISTING ARE AVAILABLE IN THE INDUSTRY.

B. MANUFACTURERS OF EQUIPMENT SHALL HAVE A MINIMUM OF THREE YEARS EXPERIENCE WITH THEIR EQUIPMENT INSTALLED AND OPERATING IN THE FIELD IN A USE SIMILAR TO THE NEW USE FOR THIS PROJECT.

C. MATERIALS AND EQUIPMENT: ALL MATERIALS AND EQUIPMENT SPECIFIED IN DIVISION 26 OF THE SAME TYPE SHALL BE OF THE SAME MANUFACTURER AND SHALL BE NEW, OF THE BEST QUALITY AND DESIGN, AND FREE FROM DEFECTS.

SUPPORTING DEVICES:

A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS. PROVIDE PRODUCTS BY THE FOLLOWING:

1. ALLIED TUBE AND CONDUIT.
2. B-LINE SYSTEM.
3. UNISTRUT DIVERSIFIED PRODUCTS.
4. THOMAS & BETTS

B. FASTENERS: TYPES, MATERIALS AND CONSTRUCTION FEATURES AS FOLLOWS:

1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL. DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
3. FASTEN BY MEANS OF WOOD SCREWS IN WOOD.
4. TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
7. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

SUPPORTING DEVICES:

A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.

B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.

C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:

1. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.
2. USE VIBRATION AND SHOCK-RESISTANT FASTNERS FOR ATTACHMENTS TO CONCRETE SLABS.

ELECTRICAL IDENTIFICATION:

A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.

B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

SECTION 26 200 – ELECTRICAL MATERIALS AND EQUIPMENT

CONDUIT:

A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR UNDERGROUND RUNS. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED – SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.

B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.

C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.

D. ALL UNDERGROUND CONDUIT OR CONDUIT IN CONCRETE SHOULD BE PVC. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATIONS C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.

E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6-FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRED BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.

F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

HUBS AND BOXES:

A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED HUB SHALL INCLUDE LOCK NUT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION

B. CABLE TERMINATION FITTINGS FOR CONDUIT

1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL BY ROXTEC.

2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO – CL2075, OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.

C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES OR EQUAL.

D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKET COVERS. OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION, PROVIDE CROUSE-HINDS FORM 8 OR EQUAL.

E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, RACO, OR APPROVED EQUAL.

SUPPLEMENTAL GROUNDING SYSTEM:

A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM TO THE EXTENT INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMET. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS EXCEPT AS OTHERWISE NOTED.

B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO-HOLE SPADES WITH NO-OX.

C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CONSTRUCTION MANAGER FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

EXISTING STRUCTURE:

A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES, AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

CONDUIT AND CONDUCTOR INSTALLATION:

A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

ADDITIONAL REQUIRED NOTES:

- GC IS RESPONSIBLE FOR HIRING ALL 3RD PARTY SPECIAL INSPECTIONS AS REQUIRED PER MUNICIPALITY
- GC IS RESPONSIBLE FOR VERIFYING ALL FIELD MEASUREMENTS PRIOR TO STARTING CONSTRUCTION
- DO NOT OPEN RRU PACKAGES IN THE RAIN
- NO OPEN FLAME ON SITE
- GC TO ENSURE HYBRIDS ARE SUPPORTED EVERY 3'-0" ON HORIZONTAL AND 4'-0" ON VERTICAL RUNS

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING 165'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/22/16	CJ	PRELIMINARY	LR
0	01/09/17	CJ	CONSTRUCTION	LR

DocuSigned by:
Justin Linette
1B400BB254764JD...

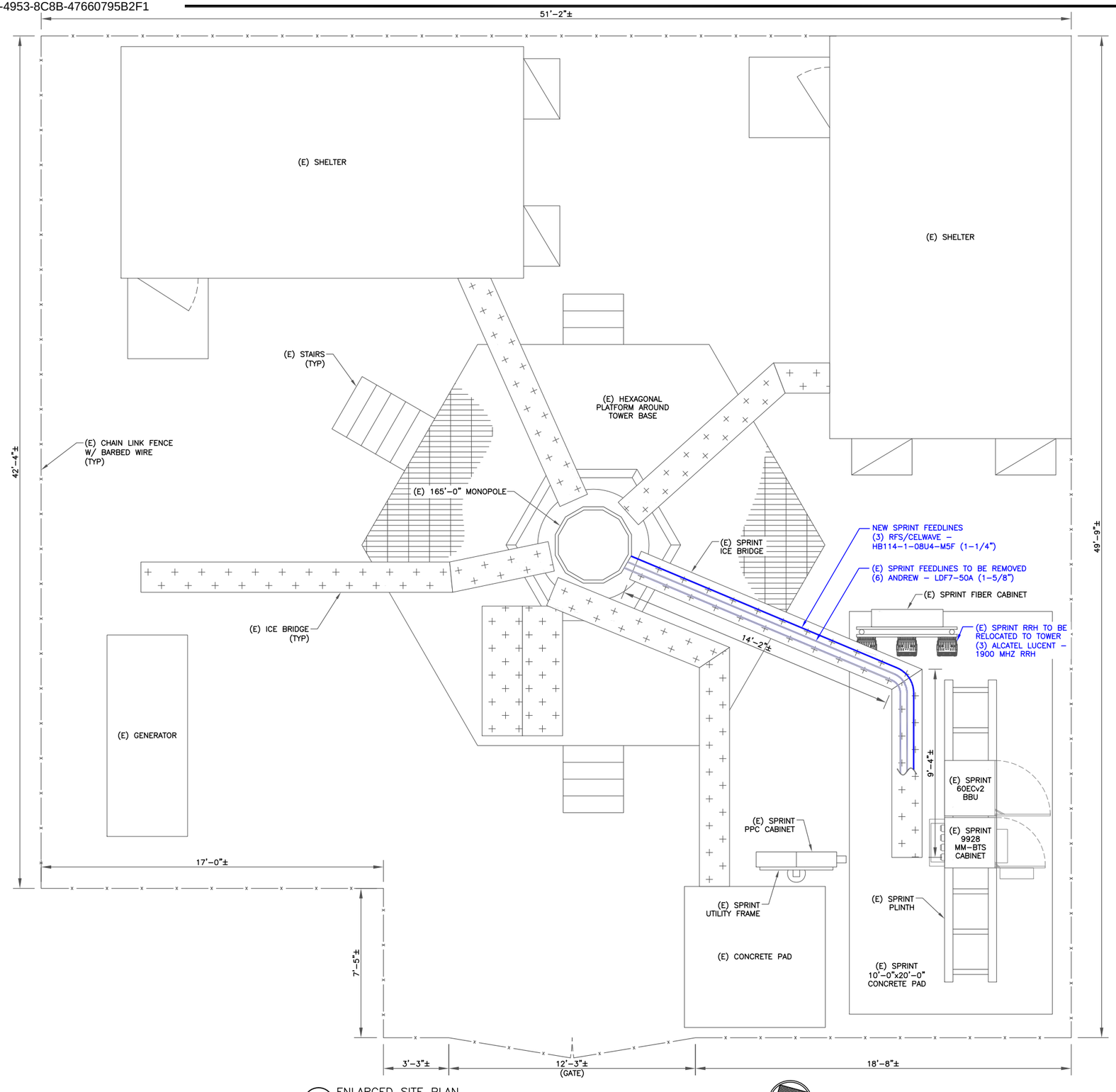
STATE OF CONNECTICUT
JUSTIN PETER LINETTE
No. 31965
LICENSED
PROFESSIONAL ENGINEER

1/10/2017 | 10:29:13 AM EST

Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: T-3

REVISION: 0



1 ENLARGED SITE PLAN

SCALE: 4' 3' 2' 1' 0 4' 1/4"=1'-0" (FULL SIZE) 1/8"=1'-0" (11x17)

Sprint

CROWN CASTLE

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

SPRINT SITE NUMBER:
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SOUTH WINDSOR/RT 5

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DocuSigned by:
Justin Linette
1B4008B2547C41D...

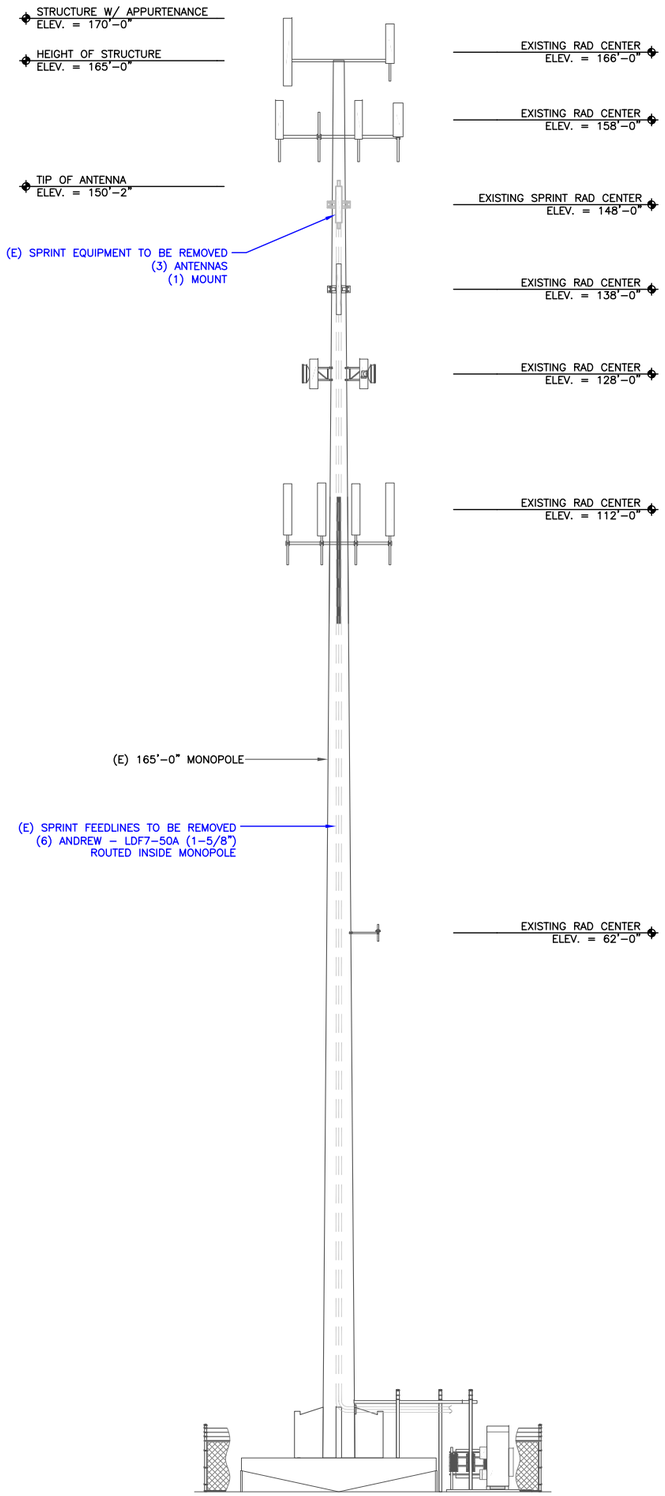
STATE OF CONNECTICUT
JUSTIN PETER LINETTE
No. 31965
LICENSED PROFESSIONAL ENGINEER

1/10/2017 | 10:29:13 AM EST

Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: C-1

REVISION: 0



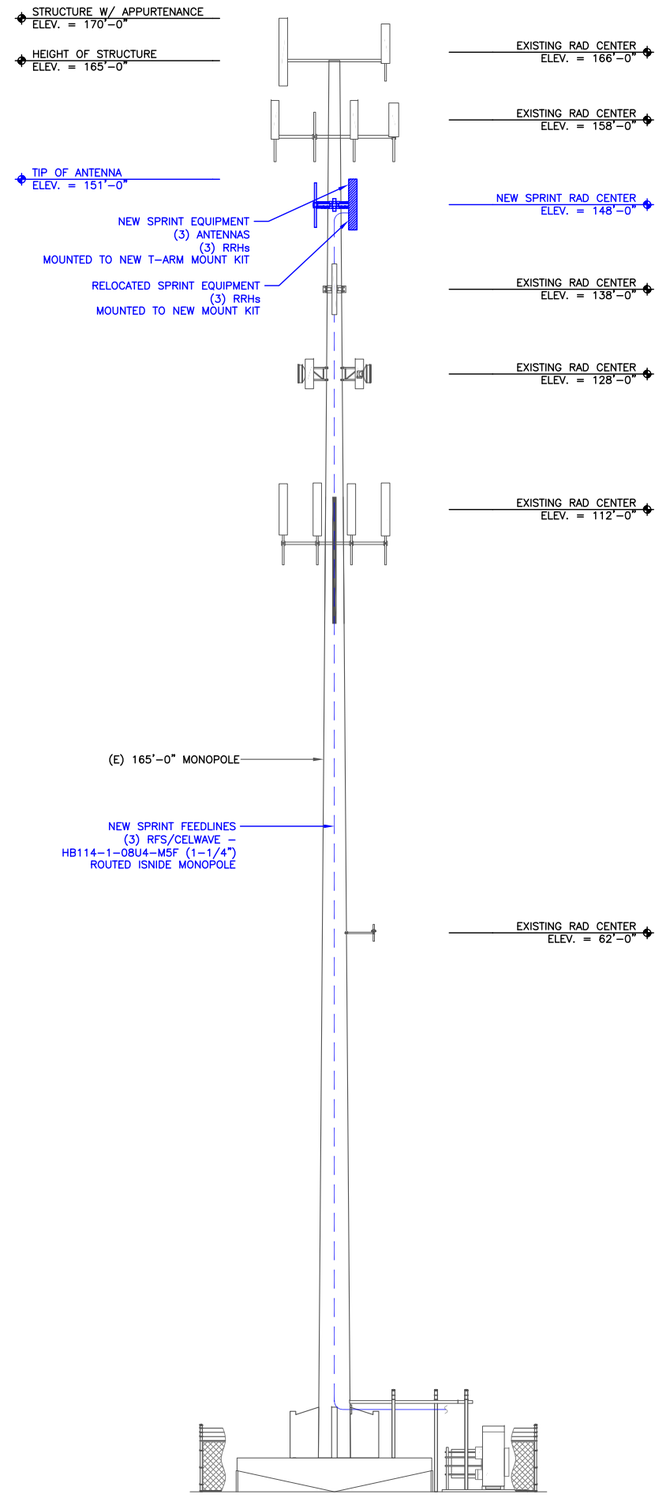
SPRINT EQUIPMENT

ANTENNA CL: 148'-0"
MOUNT CL: 148'-0"

1 EXISTING ELEVATION
SCALE: NOT TO SCALE

INSTALLER NOTE:

DIRECT TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ CLIMBING PEGS/STEPS AND SAFETY CLIMB.



SPRINT EQUIPMENT

ANTENNA CL: 148'-0"
MOUNT CL: 148'-0"

2 FINAL ELEVATION
SCALE: NOT TO SCALE

Sprint

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

SPRINT SITE NUMBER:
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0	01/09/17	CJ	CONSTRUCTION	LR

DocuSigned by:
Justin Linette
1B4008B2547C41D...

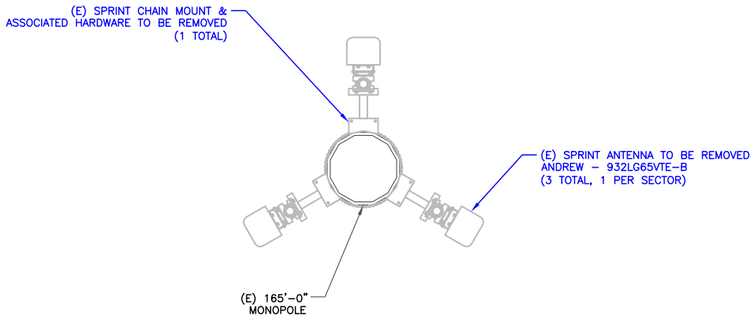
STATE OF CONNECTICUT
JUSTIN PETER LINETTE
No. 31965
LICENSED
PROFESSIONAL ENGINEER

1/10/2017 | 10:29:13 AM EST

Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: C-2

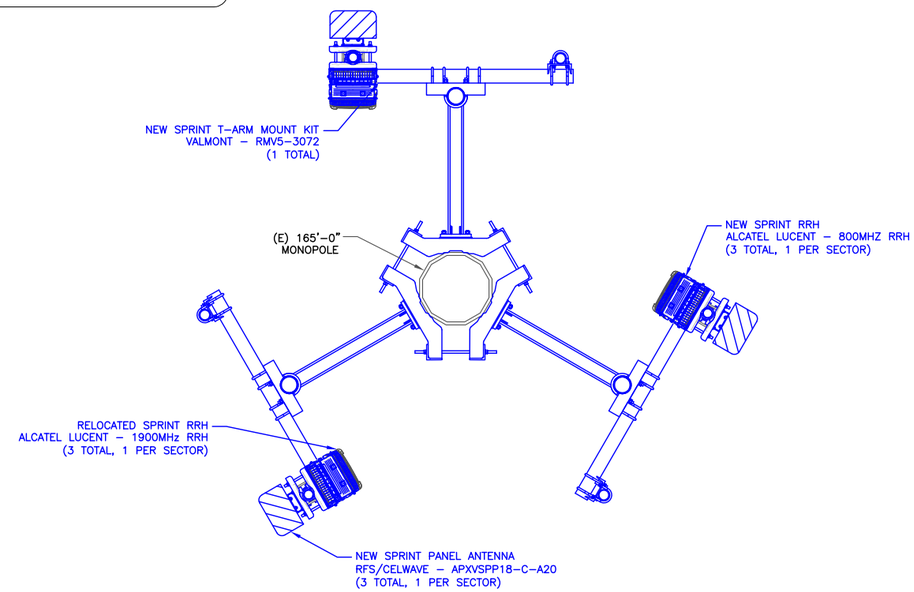
REVISION: 0



1 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE

INSTALLER NOTE:

CONTRACTOR TO REFERENCE LATEST RFDS FOR CORRECT AZIMUTHS.

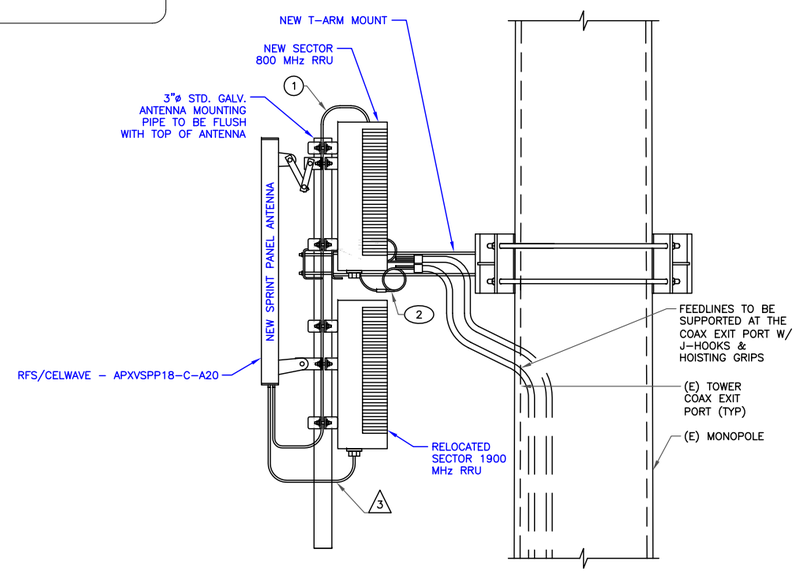


2 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

KEYED CABLE LEGEND

1. 1/2" RF JUMPERS
2. ETHERNET/FIBER
3. RET



4 ANTENNA SCHEMATIC
SCALE: NOT TO SCALE

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING 165'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/22/16	CJ	PRELIMINARY	LR
0	01/09/17	CJ	CONSTRUCTION	LR

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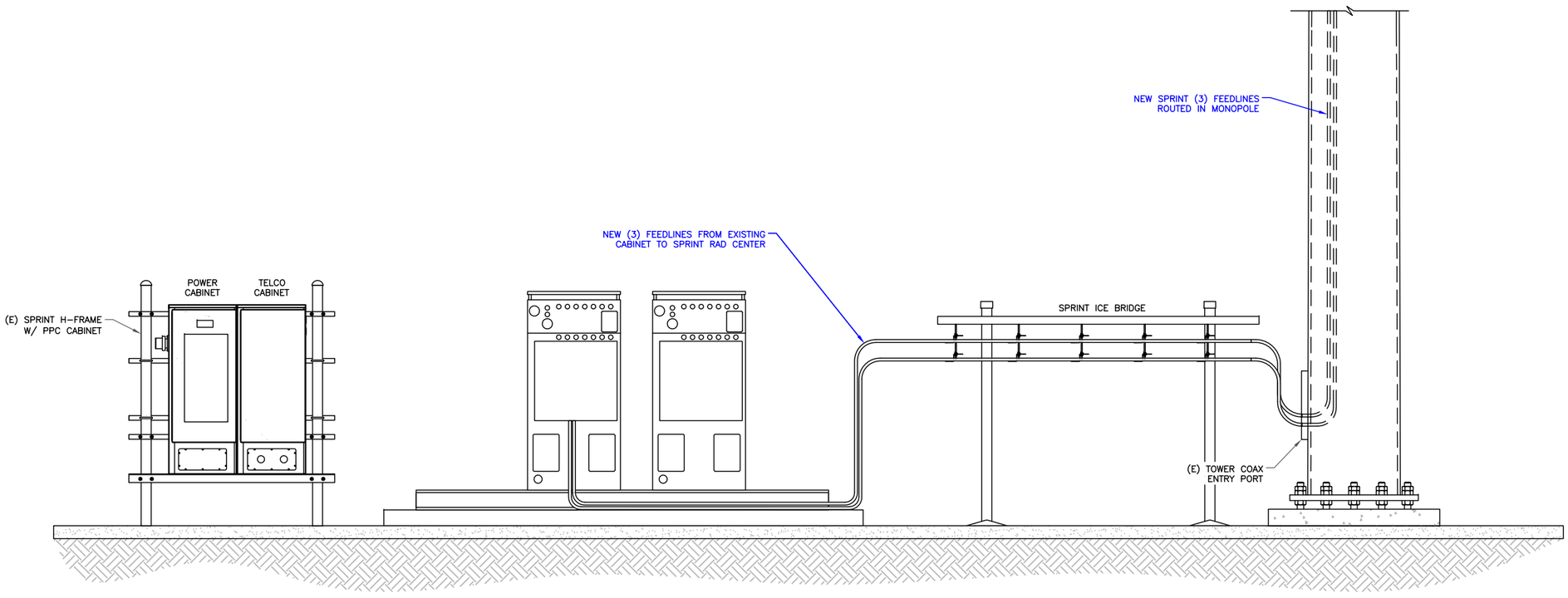
Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: C-3

REVISION: 0



1 FEEDLINE ROUTING SCHEMATIC
SCALE: NOT TO SCALE

Sprint

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

SPRINT SITE NUMBER:
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SHEET NUMBER: C-4

REVISION: 0

REV. 0 7/25/16

SPRINT CONSTRUCTION SPECIFICATIONS
MINI–MACRO CELL SITES

1) BASIC REQUIREMENTS
   a) MEET ALL REQUIREMENTS OF JURISDICTIONS.
   b) IF EQUIPMENT FURNISHED BY THE COMPANY DOES NOT MATCH THE EQUIPMENT LISTED ON THE RFDS AND SHOWN ON THE PERMITTING DRAWINGS, RESOLVE DISCREPANCY THROUGH INSTALLER'S CONSTRUCTION MANAGER AND COMPANY'S POINT OF CONTACT
   c) CABLE INSTALLATIONS
      i) ALL CABLES MUST BE OUTDOOR RATED AND HAVE UV RESISTANT OUTER JACKETS
      ii) CABLE BENDS MUST NOT EXCEED MANUFACTURER'S ALLOWABLE CABLE BEND RADII
      iii) AT RADIOS INSTALL SERVICE LOOPS FOR POWER, FIBER, AND ETHERNET SECURED AT LEAST TWICE 180° TO THE STRUCTURE
      iv) SPARE FIBERS MUST BE ENCASED IN A LOW PROFILE WEATHERTIGHT ASSEMBLY
   d) FIBERS MUST BE FIELD–TERMINATED WITH LC TYPE CONNECTORS
   e) CONDUITS IN EARTH: PROVIDE PVC. CONDUITS EXPOSED IN FACILITIES: PROVIDE RGS. HAND DIG TRENCHES IN COMPOUNDS
   f) SECURE AND SUPPORT CONDUITS AND CABLES ON NO MORE THAN 48" INTERVALS
   g) ON TOWER SITES RGS CONDUITS MAY BE SURFACE MOUNTED AWAY FROM WALKWAYS AND ACCESS/EGRESS PATHS. IF INSTALLATIONS IN WALKWAYS AND ACCESS/EGRESS PATHS CANNOT BE AVOIDED, IDENTIFY THE CONDUIT ENVELOPE/TRIP HAZARD BY ALTERNATING YELLOW AND BLACK STRIPES PAINTED ON CONCRETE AND CONDUIT.

2) SPRINT – FURNISHED EQUIPMENT
   a) INSTALL THE FOLLOWING EQUIPMENT AT LOCATIONS AND AZIMUTHS SHOWN ON THE CONSTRUCTION DRAWINGS.
      i) PANEL ANTENNAS
      ii) RADIOS
      iii) GPS ANTENNAS
      iv) FILTERS
      v) 120 VOLT DIN–RAIL CIRCUIT BREAKER ASSEMBLY

3) TOWER INSTALLATIONS
   a)MEET ALL REQUIREMENTS OF THE TOWER OWNER
   b) INSTALL CORRUGATED FLEXIBLE CONDUIT UP THE TOWER TO COMPANY'S RAD CENTER
   c) PROVIDE HANGING GRIPS OR CONDUIT CLAMPS AND ENSURE CONDUITS AS WELL AS INNER CABLES ARE SUPPORTED
   d) CONDUIT RISERS: AT THE TOP OF THE TOWER TURN CONDUIT DOWN AND PROVIDE CABLE TERMINATION FITTINGS. EXTEND CABLES TO RADIOS EXPOSED AND SECURED TO THE STRUCTURE, AT CONDUIT EXIT FROM TOWER, PROVIDE DRIP LOOPS AND WEEP HOLES.
   e) AT THE ICE BRIDGE RUN CABLES IN RGS CONDUIT. UTILIZE CONDULETS TO MAKE COMPACT 90 DEGREE TURNS

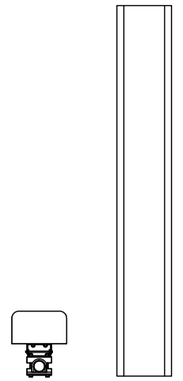
4) AC POWER TIE–IN
   a) INSTALL SPRINT'S 120 VOLT DIN–RAIL CIRCUIT BREAKER ASSEMBLY IN THE EXISTING POWER PROTECTION CABINET TELCO SECTION
   b) INSTALL A 20 AMPERE MOLDED CASE CIRCUIT BREAKER IN AVAILABLE SPACE IN THE ADJACENT PPC POWER SECTION LOAD CENTER

5) GROUNDING
   a) 120 VOLT CIRCUITS: POWER CABLES MUST BE 3–WIRE WITH EQUIPMENT GROUNDING CONDUCTOR
   b) SUPPLEMENTAL GROUNDING: ALL GROUNDING HARDWARE MUST BE UL STAMPED AS SUITABLE FOR GROUNDING HARDWARE
   c) RADIOS: BOND RADIO TO THE TOWER TOP OR SECTOR GROUND BAR WITH #6 BARE TINNED COPPER WIRE (GREEN INSULATED ON ROOFTOPS)
   d) DIN–RAIL CIRCUIT BREAKER ASSEMBLY: BOND SURGE ARRESTOR TO PPC TELCO BOARD GROUND BAR

6) MINOR MATERIALS
   a) CONDUIT
      i) RIGID GALVANIZED STEEL CONDUIT (RGS): UL LISTED, COMPLIANT WITH ANSI STANDARD C80, HOT–DIP GALVANIZED, WITH THREADED FITTINGS. MANUFACTURERS: ALLIED, REPUBLIC, WHEATLAND, OR EQUAL.
      ii)CORRUGATED FLEXIBLE CONDUIT: DURALINE OR EQUAL.
      iii) LIQUID–TIGHT FLEXIBLEMETALLIC CONDUIT (LFMC): UL LABLED, UC RESISTANT, FLAME RETARDANT PVC JACKET, HOT–DIP GALVANIZED, GREY. MANUFACTURERS: AFC, ANACONDA, SOUTHWIRE, OR EQUAL.
      iv) PVC CONDUIT: SCHEDULE 40. CARLON OR EQUAL
      v) CABINET HUBS AND CABLE TERMINATION FITTINGS: OZ GEDNEY OR ROXTEC
   b) COAXIAL CABLE JUMPERS: ½" LDF–4 MANUFACTURERS: COMMSCOPE, RFS OR FCT.
   c)FASTENERS AND HARDWARE
      i) TO SECURE RACEWAYS, UTILIZE NON CORRODING NON–MAGNETS METALLIC FASTENERS AND HARDWARE SUITABLE FOR THE PURPOSE
   d) POWER CABLES – 3/C #12 SOOW BY SOUTHWIRE OR EQUAL
   e) ETHERNET CABLES AND CONNECTORS: OUTDOOR RATED, CAT 5E, BELDEN OR EQUAL
   f) FIBER CABLES: CORNING "FREEDOM FAN OUT" OUTDOOR RISER CABLE, 4F, SINGLE MODE, OR EQUAL
   g) RF TRANSPARENT PAINT FOR ANTENNA CONCEALMENT: SELECT NO/LOW CARBON PAINTS, WITH NO/LOW TITANIUM DIOXIDE, AND WITHOUT SUSPENDED METAL PARTICLES (ALUMINUM, ZINC, COPPER, ETC)

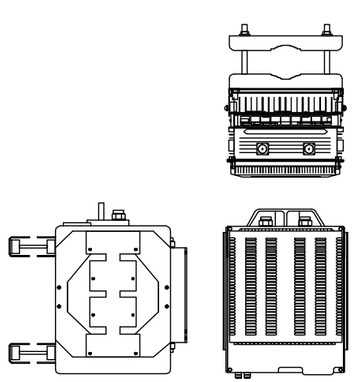
7) COLOR CODING
   a) COLOR CODE CABLES AND CONDUITS AS REQUIRED BY SPRINT STANDARD TS–0200

8) TESTING AND CONSTRUCTION COMPLETE
   a) SWEEP ALL COAXIAL CABLES ACCORDING TO SPRINT STANDARD TS–0200
   b) PANEL ANTENNA ALIGNMENT – USING ELECTRONIC ALIGNMENT TOOL. AZIMUTH/DOWNTILT +/– 1 DEGREE
   c) LEAVE EQUIPMENT DE–ENERGIZED UNTIL INSTRUCTED BY THE COMMISSIONING AND INTEGRATION TEAM TO ENERGIZE
   d) OTHER REQUIREMENTS AND DELIVERABLES MAY BE REQUIRED BEFORE THE CONSTRUCTION COMPLETE MILESTONE CAN BE ACTUALIZED IN SITERRA (SPRINT'S DATABASE–OF–RECORD).



RFS/CELWAVE – APXVSPP18–C–A20
WEIGHT (WITHOUT MOUNTING HARDWARE): 92.0 LBS
SIZE (HxWxD): 72.0x11.8x7.9 IN.
MOUNTING HARDWARE: APM40–2 DOWNTILT KIT
MOUNTING HARDWARE WEIGHT: 7.5 LBS

1 RFS/CELWAVE – APXVSPP18–C–A20
SCALE: NOT TO SCALE



ALCATEL LUCENT – 800MHZ RRH
WEIGHT (WITHOUT MOUNTING HARDWARE): 53.0 LBS
SIZE (HxWxD): 19.7x13.0x10.8 IN.

2 ALCATEL LUCENT – 800MHZ RRH
SCALE: NOT TO SCALE

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
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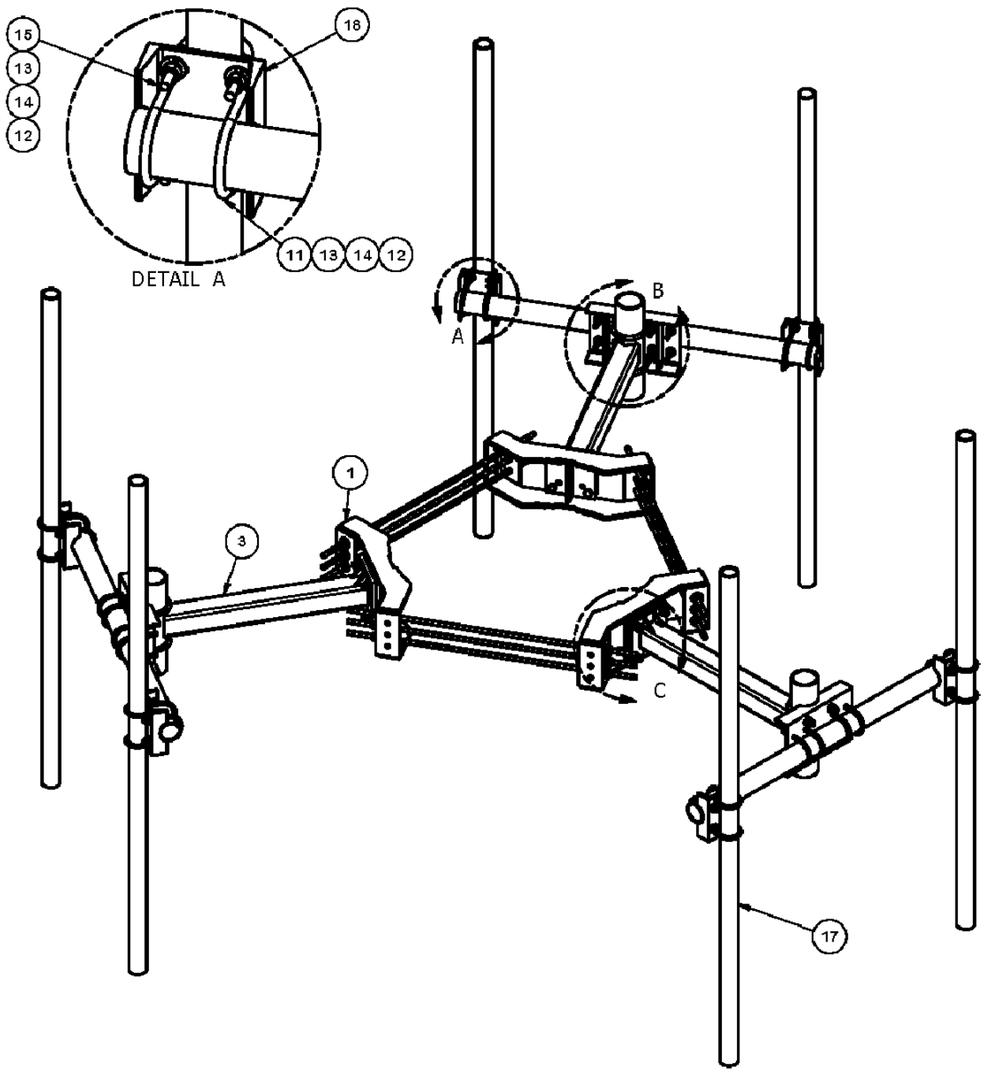
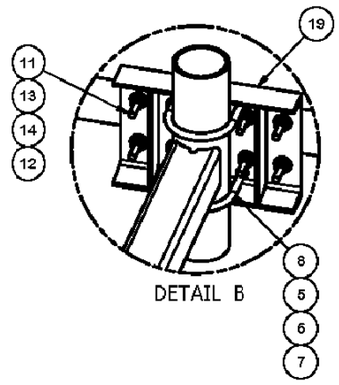
REVISION: 0



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.16	204.48
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		2.09	18.82
2	9	G58R-48	5/8" X 48" GALV THREADED ROD		4.39	39.52
3	3	X-SV197-36	SUPPORT ARM WELDMENT - 36"		67.29	201.88
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	42	G58LW	5/8" HDG LOCK WASHER		0.03	1.09
7	24	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.11
8	6	X-UB5458	5/8" X 4-5/8" X 7" X 3' U-BOLT (HDG.)		0.66	3.94
9	18	G58FW	5/8" HDG USS FLATWASHER		0.07	1.27
10	18	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	2.34
11	24	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.66	15.75
12	66	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.72
13	66	G12FW	1/2" HDG USS FLATWASHER		0.03	2.25
14	66	G12LW	1/2" HDG LOCK WASHER		0.01	0.92
15	12	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.66	7.88
16	3	P360	3-1/2" X 60" SCH 40 GALVANIZED PIPE		37.97	113.90
17	6	A	B	C	D	
18	6	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	51.66
19	3	X-SP216	LARGE SUPPORT CROSS PLATE		20.83	62.48



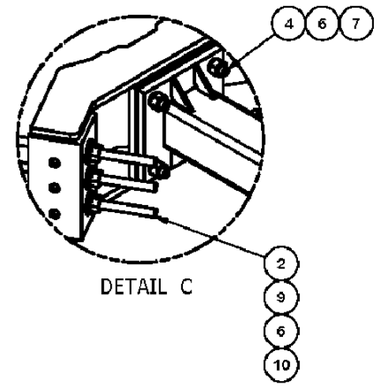


TABLE					
"ASSEMBLY NO."	PART NO. "A"	PART DESCRIPTION "B"	LENGTH "C"	UNIT WT. "D"	TOTAL WT.
RMV5-3072	P3072	2-7/8" O.D. SCH. 40 PIPE	72"	34.84	955.29
RMV5-3084	P3084	2-7/8" O.D. SCH. 40 PIPE	84"	40.65	990.15
RMV5-3096	P3096	2-7/8" O.D. SCH. 40 PIPE	96"	46.45	1,024.95

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REMOVE FLATWASHERS FROM ARM TO CLAMP RING CONNECTION		CEK	11/4/11

REVISION HISTORY

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION				
MONOPOLE TRIPLE T-ARM FOR 6 ANTENNAS				
GPD NO. 4543	DRAWN BY CEK 4/15/2011	ENG. APPROVAL	PART NO. SEE "ASSEMBLY NO."	PAGE 1 OF 2
CLASS 81 / SUB 01	DRAWING USAGE CUSTOMER	CHECKED BY BMC 4/28/2011	DWG. NO. RMV5-3XXX	

SITE PRO 1 — A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

1 VALMONT – RMV5-3072 T-ARM MOUNT KIT
SCALE: NOT TO SCALE

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING 165'-0" MONOPOLE

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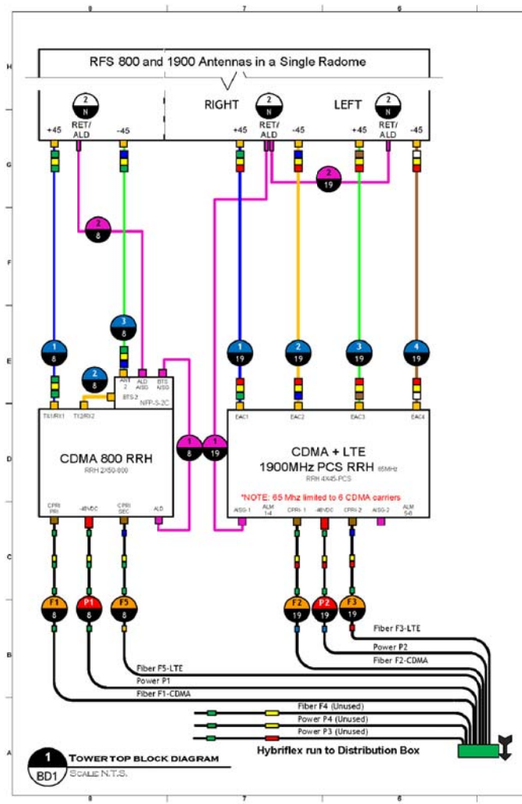
Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: C-6
REVISION: 0



Power Feed Polarity Definition:
IF wires are BLACK AND BLACK/ WHITE STRIPE:
Black= -48VDC Feed (Battery)
Black/White Stripe= Return

IF wires are RED AND BLACK:
Red= -48VDC Feed (Battery)
Black= Return

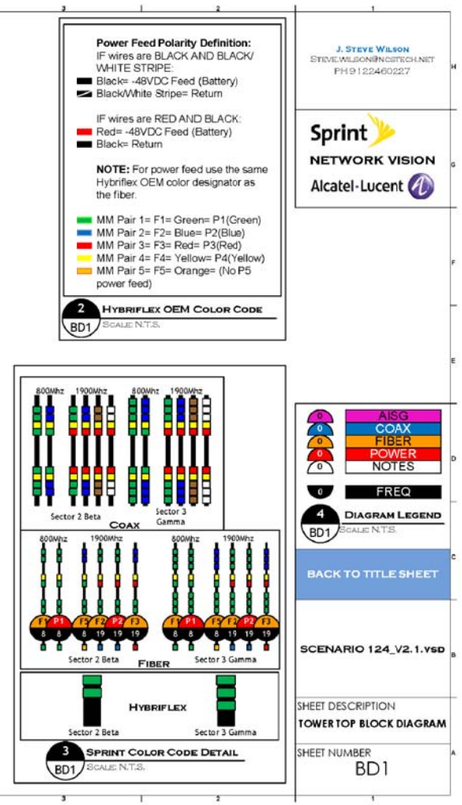
NOTE: For power feed use the same Hybriflex OEM color designator as the fiber.

MM Pair 1= F1= Green= P1(Green)
MM Pair 2= F2= Blue= P2(Blue)
MM Pair 3= F3= Red= P3(Red)
MM Pair 4= F4= Yellow= P4(Yellow)
MM Pair 5= F5= Orange= (No P5 power feed)

2 HYBRIFLEX OEM COLOR CODE
BD1 SCALE: N.T.S.

J. STEVE WILSON
STEVE.WILSON@NCSTECH.NET
PH 9122460227

Sprint
NETWORK VISION
Alcatel·Lucent



3 SPRINT COLOR CODE DETAIL
BD1 SCALE: N.T.S.

AISG
COAX
FIBER
POWER
NOTES
FREQ

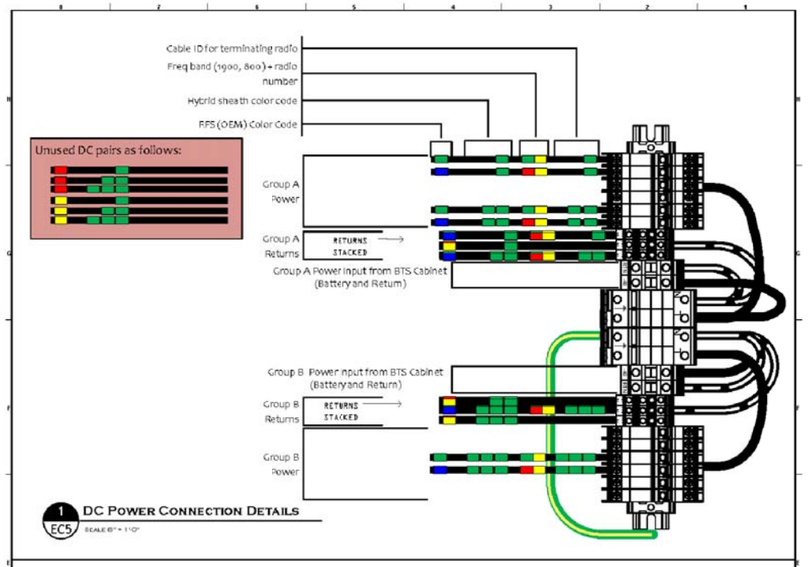
4 DIAGRAM LEGEND
BD1 SCALE: N.T.S.

BACK TO TITLE SHEET

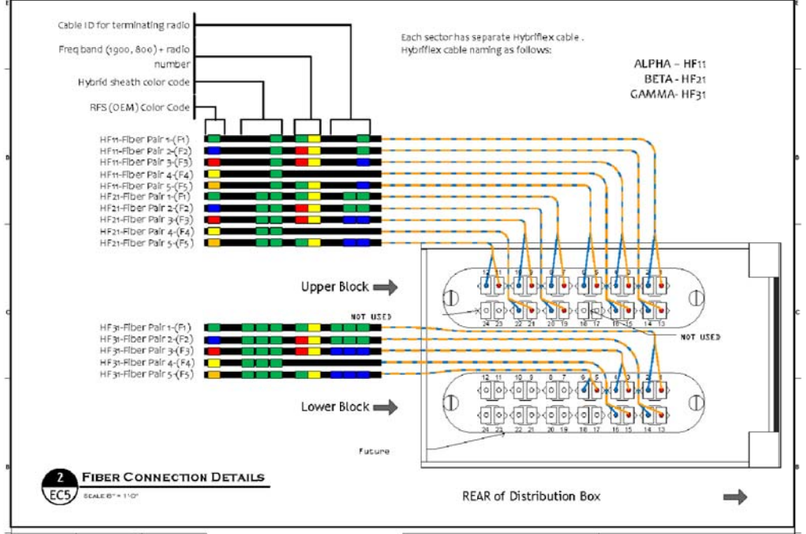
SCENARIO 124_V2.1.VSD

SHEET DESCRIPTION
TOWER TOP BLOCK DIAGRAM

SHEET NUMBER
BD1



1 EC5 DC POWER CONNECTION DETAILS
SCALE: 6" = 1'-0"



2 EC5 FIBER CONNECTION DETAILS
SCALE: 6" = 1'-0"

SHEET NUMBER: EC5
SHEET DESCRIPTION: DISTRIBUTION BOX CONNECTION DETAILS FOR TOWER MOUNTED RRH
FILE NAME: SCENARIO 124_V2.1.VSD

BACK TO TITLE SHEET

Sprint
NETWORK VISION
Alcatel·Lucent

J. STEVE WILSON
STEVE.WILSON@NCSTECH.NET
PH 9122460227

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

Sprint

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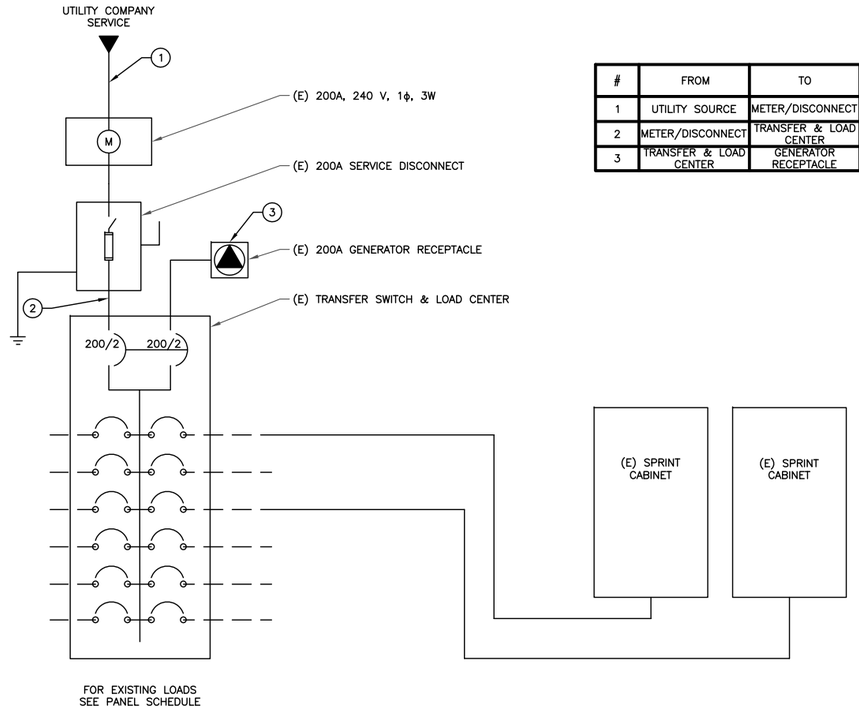
SHEET NUMBER: C-7
REVISION: 0



#	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING

1 ELECTRICAL ONE-LINE DIAGRAM
SCALE: NOT TO SCALE

EXISTING PANEL PANEL

MAIN: 200 AMP MAIN BREAKER	**VOLTAGE/PHASE**: 120/240V, 1-PHASE, 3-WIRE	**SHORT CIRCUIT CURRENT RATING**: 22,000 AMPS
MOUNTING: SURFACE	**ENCLOSURE**: NEMA 1	**SURGE PROTECTION DEVICE**: YES
SERVICE FROM: N/A	**MANUFACTURER**: NORTHERN TECHNOLOGIES, INC (SQUARE D)	**MODEL NUMBER**: QO142M200

DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAD (VA) A-PHASE	LOAD (VA) B-PHASE	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
SURGE ARRESTOR	0	NC	60	1	300		2	10	C	300	TELCO FAN
SURGE ARRESTOR	0	NC	-	3		180	4	15	NC	180	GFCI
BTS CABINET	9600	C	100	5	11760		6	30	C	2160	CLEARWIRE
BTS CABINET	9600	C	-	7		11760	8	-	C	2160	CLEARWIRE
				9	0		10				
				11		0	12				
BASE LOAD (VA) =					12060	11940					
25% OF CONTINUOUS LOAD (VA) =					3015	2940					
TOTAL LOAD (VA) =					15075	14880					
TOTAL LOAD (A) =					126	124					

"C" DESIGNATION IDENTIFIES CONTINUOUS LOADS AND MOTOR LOADS AS REQUIRED BY SECTIONS 230.42 AND 430.24 OF THE NEC

2 EXISTING PANEL SCHEDULE
SCALE: NOT TO SCALE

Sprint

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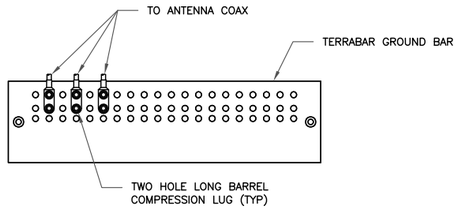
1/10/2017 | 10:29:13 AM EST

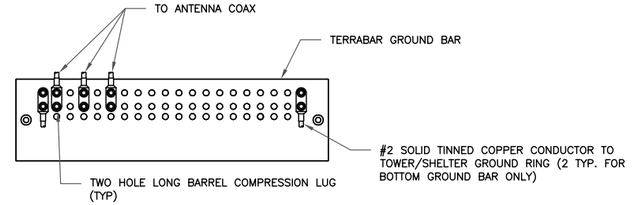
SHEET NUMBER: E-1
REVISION: 0



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

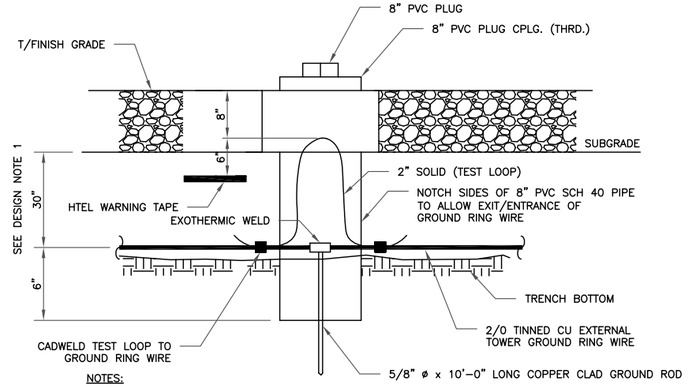
1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. INSTALL GROUND BARS AT 75 FT. INTERVAL MAXIMUM.
4. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

3 INSPECTION PORT DETAIL
SCALE: NOT TO SCALE

NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF MONOPOLE, ANTENNA LOCATION AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET IN/ON THE POLE SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE 2/0 AWG. STRANDED IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM 8 FEET TO 10 FEET.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE

SINGLE CONNECTOR AT GROUND BARS

SINGLE CONNECTOR AT STEEL OBJECTS

SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING 165'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/22/16	CJ	PRELIMINARY	LR
0	01/09/17	CJ	CONSTRUCTION	LR

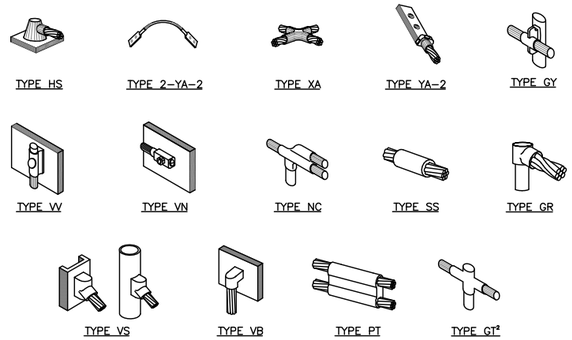
DocuSigned by:
Justin Linette
1B400B2547C31D...

STATE OF CONNECTICUT
JUSTIN PETER LINETTE
No. 31965
LICENSED PROFESSIONAL ENGINEER

1/10/2017 | 10:29:13 AM EST

Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: G-1
REVISION: 0

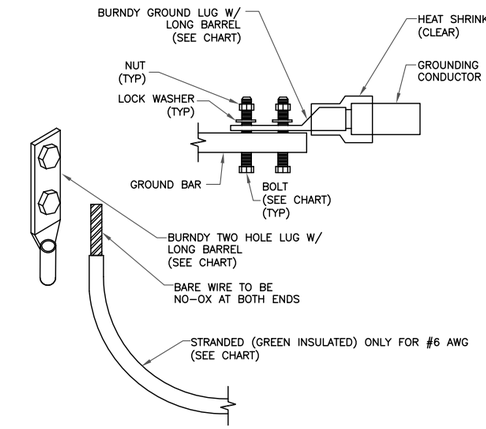


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

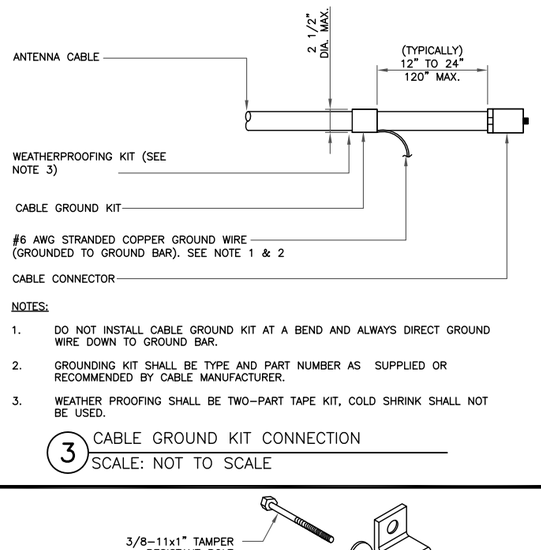
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

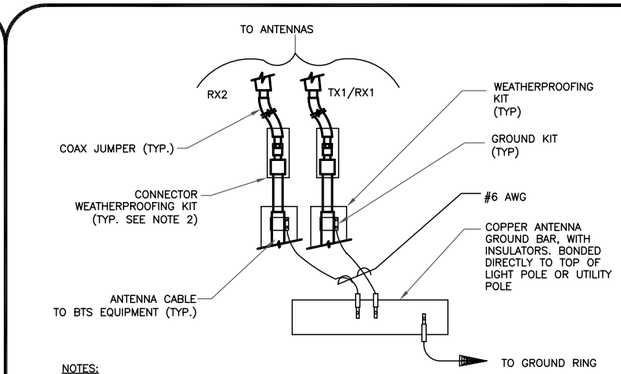
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

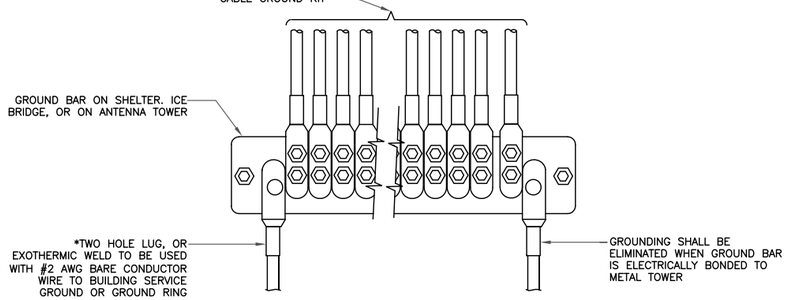
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



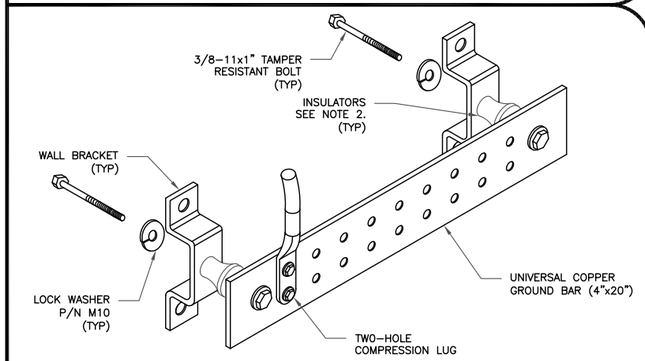
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



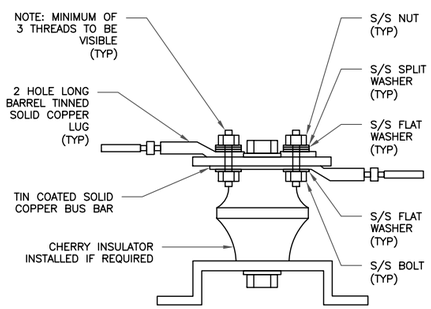
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



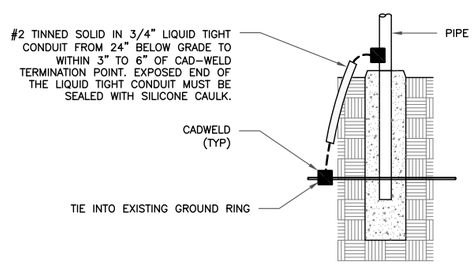
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

Sprint

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

SPRINT SITE NUMBER:
CT60XC014

BU #: **828054**
SOUTH WINDSOR/RT 5

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

EXISTING 165'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/22/16	CJ	PRELIMINARY	LR
0	01/09/17	CJ	CONSTRUCTION	LR

DocuSigned by:
Justin Linette
1B4008B2547C4JD...

STATE OF CONNECTICUT
JUSTIN PETER LINETTE
No. 31965
LICENSED PROFESSIONAL ENGINEER

1/10/2017 | 10:29:13 AM EST

Crown Castle USA, Inc. Firm Registration #PEC.0001101

SHEET NUMBER: G-2
REVISION: 0

Certificate Of Completion

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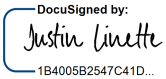
Justin Linette justin.linette@crowncastle.com Crown Castle International Corp. Security Level: Email, Account Authentication (None)	DocuSigned by:  1B4005B2547C41D...	Sent: 1/10/2017 | 10:06:55 AM Viewed: 1/10/2017 | 10:27:32 AM Signed: 1/10/2017 | 10:29:14 AM
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In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Notary Events		Timestamp

Envelope Summary Events	Status	Timestamps
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Certified Delivered	Security Checked	1/10/2017 | 10:27:32 AM
Signing Complete	Security Checked	1/10/2017 | 10:29:14 AM
Completed	Security Checked	1/10/2017 | 10:29:14 AM

Payment Events	Status	Timestamps

Date: **December 5, 2016**

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6607

SSOE Group
320 Seven Springs Way, Suite 350
Brentwood, TN 37027
(615) 661-7585
djones@ssoe.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Sprint PCS* Co-Locate** **Carrier Site Number:**	 CT60XC014
Crown Castle Designation:	**Crown Castle BU Number:** **Crown Castle Site Name:** **Crown Castle JDE Job Number:** **Crown Castle Work Order Number:** **Crown Castle Application Number:**	828054 South Windsor/Rt 5 405470 1331882 367042 Rev. 4
Engineering Firm Designation:	**SSOE Group Project Number:**	017-00013-00 BC 1007
Site Data:	**300 Governors Highway, South Windsor, CT 06074, Hartford County** **Latitude *41° 50' 0.4",* Longitude *-72° 36' 11.0"*** **169 Foot – Modified EEI Monopole Tower**	

Dear Mr. Charles McGuirt,

SSOE Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 976040, in accordance with application 367042, revision 4.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 123 mph converted to a nominal 3-second gust wind speed of 95 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis

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

Structural analysis prepared by: Dominique E. Jones

Respectfully submitted by:

STATE OF CONNECTICUT
BARRY W. BURGESS
NO. 26165
LICENSED
PROFESSIONAL ENGINEER

Barry W. Burgess, PE
Section Manager

12/05/2016

`

1) INTRODUCTION

The existing 169' monopole has eighteen sides and is evenly tapered from 45.5" (flat-flat) at the base to 15.5" (flat-flat) at the top. It has four major sections, connected with slip joints. The structure is galvanized and has no tower lighting.

The tower was originally designed for Northern Technologies by Engineered Endeavors, Inc. of Mentor, Ohio for an 80 mph wind speed with 0.0" radial ice in accordance with TIA/EIA-222-F.

Modifications designed by Natcomm Consulting Engineers (Project#: 09009.C02, dated 03/19/09) which consisted of installing stiffeners to the base plate, were considered in this analysis.

Modifications designed by Centex Engineering (Job#: 10003.004, dated 6/15/10) which consisted of adding shaft reinforcement from 0.0' – 104.0', were considered in this analysis.

Modifications designed by GPD Group (Job#: 2012712.97, dated 6/29/12), which consisted of installing additional stiffeners to the base plate and replacing existing anchor bolts, were considered in this analysis.

Modifications designed by Paul J. Ford and Company (Project #: 37512-1535.002.7700, dated 12/30/14) consisted of adding shaft reinforcement from 98.5' – 113.5', installing new micro-piles at the base of tower, and removing existing stiffeners and bolts at the tower base, were considered in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 95 mph with no ice, 40 mph with 1" ice thickness and 60 mph under service loads, exposure category C.

Table 1 – Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
148.0	148.0	3	Alcatel Lucent	1900MHz RRH	3	1-1/4	1
		3	Alcatel Lucent	800MHZ RRH			
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		1	Site Pro 1	RMV5-3XXX			

Notes:
1) See Appendix B for the proposed coax layout. .

Table 2 – Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
165.0	167.0	3	Ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	7	1-5/8	
		3	Ericsson	KRY 112 144/1			
	166.0	3	Ericsson	Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe			
		3	Ericsson	RRUS 11 B12			
	165.0	1		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)	Note
156.0	158.0	1	CCI Antennas	HPA-65R-BUU-H6 w/ Mount Pipe			1
		2	CCI Antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		3	Ericsson	RRUS12/RRUS A2			
		3	CCI Antennas	DTMABP7819VG12A			
		6	Powerwave Technologies	7770.00 w/ Mount Pipe	3 12	3/8 1-5/8	
		3	CCI Antennas	DTMABP7819VG12A			
		3	Ericsson	RRUS 11			
		1	Raycap	DC6-48-60-18-8F			
	156.0	1		Platform Mount [LP 714-1]			
148.0	148.0	3	Andrew	932LG65VTE-B w/ Mount Pipe	6	1-5/8	2
		1		Side Arm Mount [SO 103-3]			
138.0	138.0	3	RFS Celwave	APXV18-206517-A w/ Mount Pipe	6	1-5/8	
		1		Pipe Mount [PM 601-3]			
128.0	128.0	3	Argus Technologies	LLPX310R w/ Mount Pipe	3 1 6	1/4 5/16 1/2	
		3	Dragonwave	A-ANT-18G-2-C			
		3	Dragonwave	HORIZON DUO			
		3	Samsung Telecomm.	WIMAX DAP HEAD			
		1		Side Arm Mount [SO 103-3]			
108.0	112.0	3	Alcatel Lucent	RRH2X60-AWS	20	1-5/8	
		3	Alcatel Lucent	RRH2X60-PCS			
		6	Andrew	HBXX-6517DS-A2M w/ Mount Pipe			
		6	Andrew	LNX-6514DS-A1M w/ Mount Pipe			
		2	RFS Celwave	DB-T1-6Z-8AB-0Z			
	108.0	1		Platform Mount [LP 303-1]			

Notes:
1) Reserved Loading
2) Existing equipment to be removed; not considered in this analysis.

Table 3 – Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
175.0	175.0	6	EMS Wireless	EMS RR90-17	-	-
		1		Low Profile Mount		
165.0	165.0	12	EMS Wireless	EMS RR90-17	-	-
		1		Low Profile Mount		
155.0	155.0	12	EMS Wireless	EMS RR90-17	-	-
		1		Low Profile Mount		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Original Tower Drawings	Engineered Endeavors Inc. Job #: 99-1371, dated 1/31/00	Doc ID#: 3436681	Crown DMZ
Foundation Drawings	Engineered Endeavors Inc. Project #: 6253, dated 3/10/00	Doc ID#: 3436661	Crown DMZ
Geotechnical Report	Tower Engineering Professionals Project #: 47923.6344, dated 11/20/14	Doc ID#: 3436696	Crown DMZ
Modification Drawings	Natcomm Consulting Engineers Project#: 09009.C02, dated 03/19/09	Doc ID#: 3487016	Crown DMZ
Modification Drawings	Centex Engineering Job #: 10003.004, dated 6/15/10	Doc ID#: 3487016	Crown DMZ
Modification Drawings	GPD Group Job #: 2012712.97, dated 6/29/12	Doc ID#: 3793344	Crown DMZ
Modification Drawings	Paul J. Ford and Company Project #: 37512-1535.002.7700, dated 12/30/14	Doc ID#: 5431037	Crown DMZ

3.1) Analysis Method

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

3.2) Assumptions

1) The tower and foundation were constructed in accordance with their original design and maintained per the manufacturer's specifications, are in good condition, and the tower is twist free and plumb.
2) 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.
3) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package, dated 12/7/16 with any adjustments as noted below.

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

4) ANALYSIS RESULTS

Table 5 – Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
169 - 164	Pole	TP16.455x15.5x0.25	Pole	3.2%	Pass
164 - 159	Pole	TP17.409x16.455x0.25	Pole	10.5%	Pass
159 - 154	Pole	TP18.364x17.409x0.25	Pole	22.3%	Pass
154 - 149	Pole	TP19.318x18.364x0.25	Pole	34.9%	Pass
149 - 144	Pole	TP20.273x19.318x0.25	Pole	47.4%	Pass
144 - 139	Pole	TP21.228x20.273x0.25	Pole	58.3%	Pass
139 - 136.66	Pole	TP22.31x21.228x0.25	Pole	63.0%	Pass
136.66 - 131.66	Pole	TP22.114x21.174x0.3125	Pole	61.5%	Pass
131.66 - 126.66	Pole	TP23.055x22.114x0.3125	Pole	69.2%	Pass
126.66 - 121.66	Pole	TP23.996x23.055x0.3125	Pole	77.0%	Pass
121.66 - 116.66	Pole	TP24.936x23.996x0.3125	Pole	83.9%	Pass
116.66 - 111.66	Pole	TP25.877x24.936x0.3125	Pole	90.2%	Pass
111.66 - 111	Pole	TP26.002x25.877x0.3125	Pole	91.0%	Pass
111 - 110.75	Pole + Reinf.	TP26.049x26.002x0.575	Reinf. 3 Tension Rupture	81.8%	Pass
110.75 - 105.75	Pole + Reinf.	TP26.989x26.049x0.5625	Reinf. 3 Tension Rupture	90.8%	Pass
105.75 - 101.5	Pole + Reinf.	TP27.789x26.989x0.55	Reinf. 3 Tension Rupture	97.8%	Pass
101.5 - 101.25	Pole + Reinf.	TP27.836x27.789x0.9875	Reinf. 1 Tension Rupture	66.8%	Pass
101.25 - 101	Pole + Reinf.	TP27.883x27.836x0.9875	Reinf. 1 Tension Rupture	67.1%	Pass
101 - 100.75	Pole + Reinf.	TP27.93x27.883x0.725	Reinf. 1 Tension Rupture	89.3%	Pass
100.75 - 95.75	Pole + Reinf.	TP28.871x27.93x0.7125	Reinf. 1 Tension Rupture	96.7%	Pass
95.75 - 92.17	Pole + Reinf.	TP30.36x28.871x0.7	Reinf. 1 Tension Rupture	101.8%	**Fail**
92.17 - 87.17	Pole + Reinf.	TP29.861x28.92x0.7625	Reinf. 1 Tension Rupture	102.8%	**Fail**
87.17 - 82.17	Pole + Reinf.	TP30.802x29.861x0.75	Reinf. 1 Tension Rupture	108.7%	**Fail**
82.17 - 81.8	Pole + Reinf.	TP30.871x30.802x0.75	Reinf. 1 Tension Rupture	109.2%	**Fail**
81.8 - 81.55	Pole + Reinf.	TP30.918x30.871x0.95	Reinf. 2 Tension Rupture	76.5%	Pass
81.55 - 76.55	Pole + Reinf.	TP31.859x30.918x0.925	Reinf. 2 Tension Rupture	80.8%	Pass
76.55 - 71.55	Pole + Reinf.	TP32.8x31.859x0.9	Reinf. 2 Tension Rupture	84.8%	Pass
71.55 - 66.55	Pole + Reinf.	TP33.741x32.8x0.875	Reinf. 2 Tension Rupture	88.8%	Pass
66.55 - 61.55	Pole + Reinf.	TP34.682x33.741x0.8625	Reinf. 2 Tension Rupture	92.5%	Pass
61.55 - 56.55	Pole + Reinf.	TP35.623x34.682x0.85	Reinf. 2 Tension Rupture	96.1%	Pass
56.55 - 51.55	Pole + Reinf.	TP36.564x35.623x0.825	Reinf. 2 Tension Rupture	99.6%	Pass
51.55 - 48.67	Pole + Reinf.	TP38.11x36.564x0.825	Reinf. 2 Tension Rupture	101.5%	**Fail**
48.67 - 42.34	Pole + Reinf.	TP37.546x36.356x0.825	Reinf. 2 Tension Rupture	108.8%	**Fail**
42.34 - 37.34	Pole + Reinf.	TP38.485x37.546x0.8	Reinf. 2 Tension Rupture	112.0%	**Fail**
37.34 - 32.34	Pole + Reinf.	TP39.425x38.485x0.8	Reinf. 2 Tension Rupture	115.0%	**Fail**
32.34 - 27.34	Pole + Reinf.	TP40.364x39.425x0.775	Reinf. 2 Tension Rupture	117.9%	**Fail**
27.34 - 22.34	Pole + Reinf.	TP41.304x40.364x0.775	Reinf. 2 Tension Rupture	120.7%	**Fail**
22.34 - 17.34	Pole + Reinf.	TP42.243x41.304x0.7625	Reinf. 2 Tension Rupture	123.3%	**Fail**
17.34 - 12.34	Pole + Reinf.	TP43.182x42.243x0.75	Reinf. 2 Tension Rupture	125.8%	**Fail**
12.34 - 7.34	Pole + Reinf.	TP44.122x43.182x0.7375	Reinf. 2 Tension Rupture	128.2%	**Fail**
7.34 - 2.34	Pole + Reinf.	TP45.061x44.122x0.725	Reinf. 2 Tension Rupture	130.4%	**Fail**
2.34 - 0	Pole + Reinf.	TP45.5x45.061x0.725	Reinf. 2 Tension Rupture	131.4%	**Fail**
				Summary	
			Pole	91.0%	Pass
			Reinforcement	131.4%	**Fail**
			Overall	**131.4%**	**Fail**

Table 6 – Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Foundation		98.9%	Pass

Structure Rating (max from all components) =	131.4%

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

4.1) Recommendations

The tower does not have sufficient capacity to carry the existing, reserved, and proposed loads. Modifications will be required to bring the tower into compliance with the TIA-222-G standard for the proposed, reserved and existing loading. The following components require modifications:

a. Tower legs from 0' to 48.7' and 81.8 – 95.75.

Further engineering and detailing is required to design the necessary modifications. Anchor rods, base plate and foundation are sufficient.

5) DISCLAIMER OF WARRANTIES

SSOE Group has not performed a site visit to the tower to verify member sizes or antenna/coax loading. SSOE Group shall be contacted immediately if the existing conditions are not as represented on the tower elevation contained in this report in order to evaluate the significance of the discrepancy. SSOE Group has not performed a condition assessment of the tower foundation. This report does not replace a full tower inspection

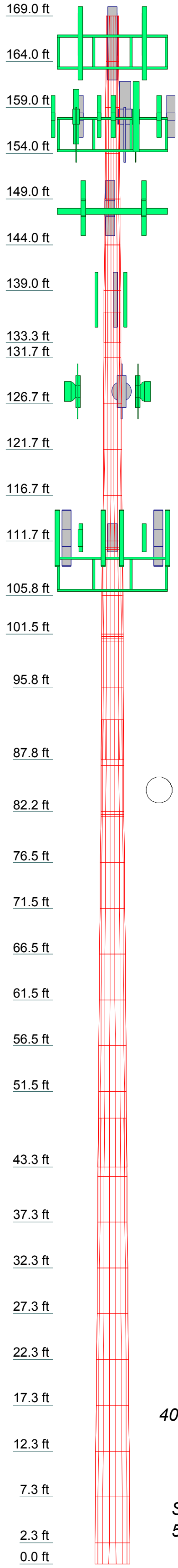
The engineering services rendered by SSOE Group in connection with this structural analysis are limited to an analysis of the tower structure and theoretical capacity of its main structural members. Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as part of our work. We recommend that material of suitable size and strength be purchased from a reputable tower manufacturer.

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.2500		15.5000	16.4546	A572-65	0.2
2	5.00	18	0.2500		16.4546	17.4092		0.2
3	5.00	18	0.2500		17.4092	18.3638		0.2
4	5.00	18	0.2500		18.3638	19.3183		0.3
5	5.00	18	0.2500		19.3183	20.2729		0.3
6	5.00	18	0.2500		20.2729	21.2275		0.3
7	[illegible]	18	[illegible]	3.33	[illegible]	[illegible]		0.3
8	[illegible]	18	[illegible]		[illegible]	[illegible]		0.4
9	5.00	18	0.3125		[illegible]	[illegible]		0.4
10	5.00	18	0.3125		23.0550	23.9956		0.4
11	5.00	18	0.3125		23.9956	24.9362		0.4
12	[illegible]	18	[illegible]		[illegible]	[illegible]		0.4
13	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
14	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
15	[illegible]	18	[illegible]		[illegible]	[illegible]		0.7
16	[illegible]	18	[illegible]		[illegible]	[illegible]		0.6
17	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
18	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
19	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
20	[illegible]	18	[illegible]		[illegible]	[illegible]		1.0
21	[illegible]	18	[illegible]	4.33	[illegible]	[illegible]		1.6
22	[illegible]	18	[illegible]		[illegible]	[illegible]		1.1
23	[illegible]	18	[illegible]		[illegible]	[illegible]		1.1
24	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
25	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
26	[illegible]	18	[illegible]		[illegible]	[illegible]		1.4
27	5.00	18	0.9000		31.8589	32.7999		1.4
28	5.00	18	0.8750		32.7999	33.7410		1.4
29	5.00	18	0.8625		33.7410	34.6820		1.4
30	5.00	18	0.8500		34.6820	35.6230		1.5
31	5.00	18	0.8250		35.6230	36.5641		1.5
32	[illegible]	18	0.8250	5.33	36.5641	38.1100		2.5
33	[illegible]	18	[illegible]		[illegible]	[illegible]		1.9
34	5.00	18	[illegible]		[illegible]	[illegible]		1.5
35	5.00	18	0.8000		38.4855	39.4249		1.5
36	5.00	18	0.7750		39.4249	40.3642		1.6
37	5.00	18	0.7750		40.3642	41.3036		1.6
38	5.00	18	0.7625		41.3036	42.2430		1.6
39	5.00	18	0.7500		42.2430	43.1824		1.6
40	5.00	18	0.7375		43.1824	44.1217		1.6
41	5.00	18	0.7250		[illegible]	[illegible]		1.7
42	2.34	18	[illegible]		[illegible]	[illegible]		0.8
								36.8



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 95 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 131.4%

ALL REACTIONS ARE FACTORED

AXIAL 144 K
SHEAR 9 K
MOMENT 1088 kip-ft
TORQUE 0 kip-ft
40 mph WIND - 1.0000 in ICE

AXIAL 63 K
SHEAR 54 K
MOMENT 5777 kip-ft
TORQUE 2 kip-ft
REACTIONS - 95 mph WIND

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SSOE Group
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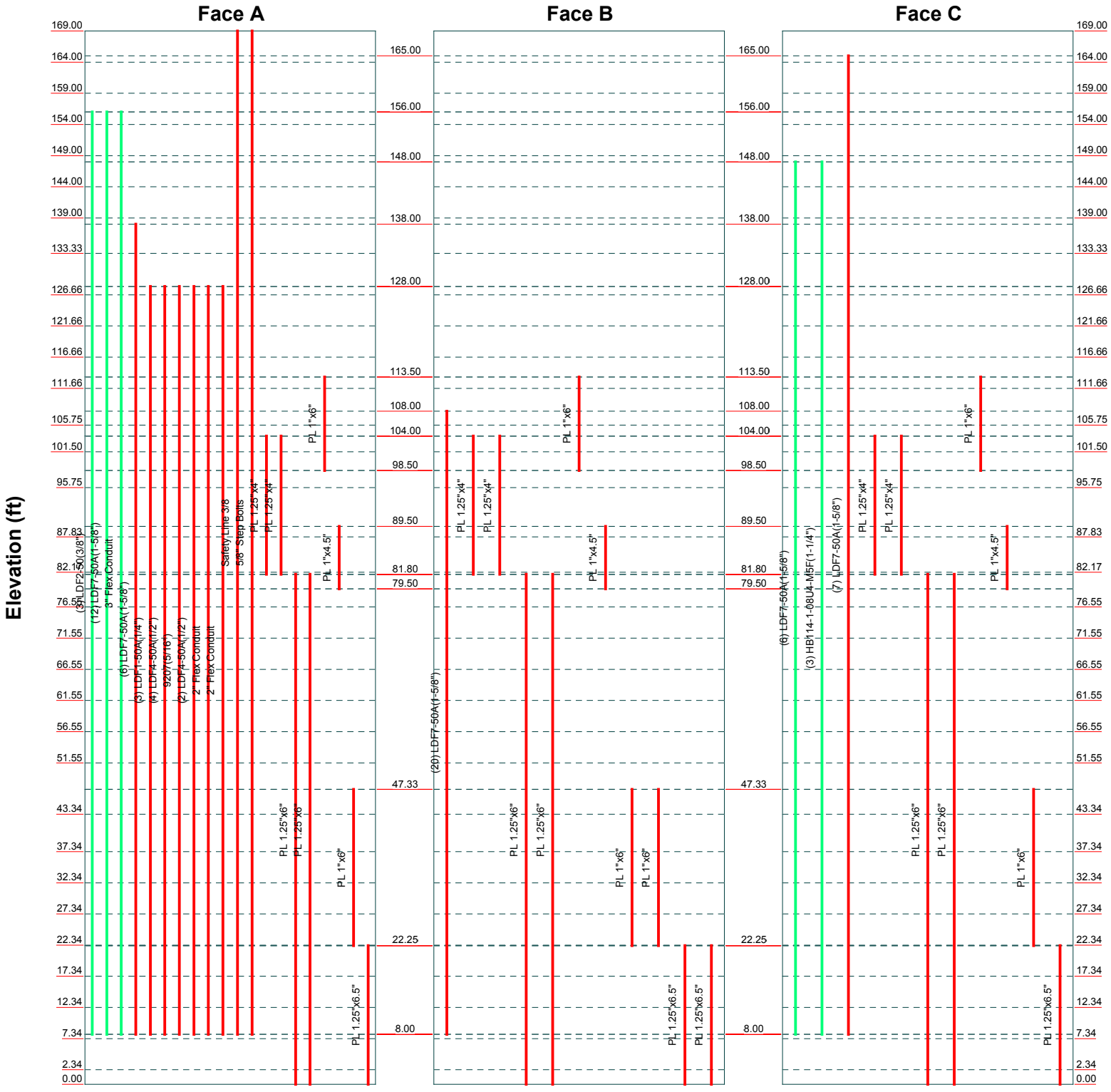
FAX: (615) 661-7569

Job: **BU 828054**		
Project: **017-00013-00**		
Client: CCI	Drawn by: 15310	App'd:
Code: TIA-222-G	Date: 12/01/16	Scale: NTS
Path: G:\DEPT\Telecom\Crown Castle\Current Projects\DJ Projects\SA\828054\tnx\828054_MOD.eri		Dwg No. E-1

Feed Line Distribution Chart
0' - 169'

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



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Job: ***BU 828054***			
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Code: TIA-222-G	Date: 12/01/16	Scale: NTS	
Path: G:\DEPT\Telecom\Crown Castle\Current Projects\DJ Projects\SA\828054\tnx\828054_MOD.eri		Dwg No. E-7	

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 95 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	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)

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
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 (65 ksi)
L6	144.00-139.00	5.00	0.00	18	20.2729	21.2275	0.2500	1.0000	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	21.1737	22.1143	0.3125	1.2500	A572-65 (65 ksi)
L9	131.66-126.66	5.00	0.00	18	22.1143	23.0550	0.3125	1.2500	A572-65 (65 ksi)
L10	126.66-121.66	5.00	0.00	18	23.0550	23.9956	0.3125	1.2500	A572-65 (65 ksi)
L11	121.66-116.66	5.00	0.00	18	23.9956	24.9362	0.3125	1.2500	A572-65 (65 ksi)
L12	116.66-111.66	5.00	0.00	18	24.9362	25.8769	0.3125	1.2500	A572-65 (65 ksi)
L13	111.66-111.00	0.66	0.00	18	25.8769	26.0016	0.3125	1.2500	A572-65 (65 ksi)
L14	111.00-110.75	0.25	0.00	18	26.0016	26.0487	0.5750	2.3000	A572-65 (65 ksi)
L15	110.75-105.75	5.00	0.00	18	26.0487	26.9893	0.5625	2.2500	A572-65 (65 ksi)
L16	105.75-101.50	4.25	0.00	18	26.9893	27.7888	0.5500	2.2000	A572-65 (65 ksi)
L17	101.50-101.25	0.25	0.00	18	27.7888	27.8359	0.9875	3.9500	A572-65 (65 ksi)
L18	101.25-101.00	0.25	0.00	18	27.8359	27.8829	0.9875	3.9500	A572-65 (65 ksi)
L19	101.00-100.75	0.25	0.00	18	27.8829	27.9299	0.7250	2.9000	A572-65 (65 ksi)
L20	100.75-95.75	5.00	0.00	18	27.9299	28.8706	0.7125	2.8500	A572-65 (65 ksi)
L21	95.75-87.83	7.92	4.33	18	28.8706	30.3600	0.7000	2.8000	A572-65 (65 ksi)
L22	87.83-87.17	5.00	0.00	18	28.9198	29.8609	0.7625	3.0500	A572-65 (65 ksi)
L23	87.17-82.17	5.00	0.00	18	29.8609	30.8019	0.7500	3.0000	A572-65 (65 ksi)
L24	82.17-81.80	0.37	0.00	18	30.8019	30.8708	0.7500	3.0000	A572-65 (65 ksi)
L25	81.80-81.55	0.25	0.00	18	30.8708	30.9178	0.9500	3.8000	A572-65 (65 ksi)
L26	81.55-76.55	5.00	0.00	18	30.9178	31.8589	0.9250	3.7000	A572-65 (65 ksi)
L27	76.55-71.55	5.00	0.00	18	31.8589	32.7999	0.9000	3.6000	A572-65 (65 ksi)
L28	71.55-66.55	5.00	0.00	18	32.7999	33.7410	0.8750	3.5000	A572-65 (65 ksi)
L29	66.55-61.55	5.00	0.00	18	33.7410	34.6820	0.8625	3.4500	A572-65 (65 ksi)
L30	61.55-56.55	5.00	0.00	18	34.6820	35.6230	0.8500	3.4000	A572-65 (65 ksi)
L31	56.55-51.55	5.00	0.00	18	35.6230	36.5641	0.8250	3.3000	A572-65 (65 ksi)
L32	51.55-43.34	8.21	5.33	18	36.5641	38.1100	0.8250	3.3000	A572-65 (65 ksi)
L33	43.34-42.34	6.33	0.00	18	36.3563	37.5461	0.8250	3.3000	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
L34	42.34-37.34	5.00	0.00	18	37.5461	38.4855	0.8000	3.2000	(65 ksi) A572-65 (65 ksi)
L35	37.34-32.34	5.00	0.00	18	38.4855	39.4249	0.8000	3.2000	A572-65 (65 ksi)
L36	32.34-27.34	5.00	0.00	18	39.4249	40.3642	0.7750	3.1000	A572-65 (65 ksi)
L37	27.34-22.34	5.00	0.00	18	40.3642	41.3036	0.7750	3.1000	A572-65 (65 ksi)
L38	22.34-17.34	5.00	0.00	18	41.3036	42.2430	0.7625	3.0500	A572-65 (65 ksi)
L39	17.34-12.34	5.00	0.00	18	42.2430	43.1824	0.7500	3.0000	A572-65 (65 ksi)
L40	12.34-7.34	5.00	0.00	18	43.1824	44.1217	0.7375	2.9500	A572-65 (65 ksi)
L41	7.34-2.34	5.00	0.00	18	44.1217	45.0611	0.7250	2.9000	A572-65 (65 ksi)
L42	2.34-0.00	2.34		18	45.0611	45.5000	0.7250	2.9000	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	15.7391	12.1009	355.5445	5.4138	7.8740	45.1542	711.5567	6.0516	2.2880	9.152
	16.7084	12.8583	426.5776	5.7526	8.3589	51.0326	853.7165	6.4304	2.4560	9.824
L2	16.7084	12.8583	426.5776	5.7526	8.3589	51.0326	853.7165	6.4304	2.4560	9.824
	17.6777	13.6158	506.4925	6.0915	8.8439	57.2705	1013.6514	6.8092	2.6240	10.496
L3	17.6777	13.6158	506.4925	6.0915	8.8439	57.2705	1013.6514	6.8092	2.6240	10.496
	18.6470	14.3733	595.8124	6.4304	9.3288	63.8682	1192.4089	7.1880	2.7920	11.168
L4	18.6470	14.3733	595.8124	6.4304	9.3288	63.8682	1192.4089	7.1880	2.7920	11.168
	19.6164	15.1307	695.0606	6.7693	9.8137	70.8254	1391.0359	7.5668	2.9600	11.84
L5	19.6164	15.1307	695.0606	6.7693	9.8137	70.8254	1391.0359	7.5668	2.9600	11.84
	20.5857	15.8882	804.7602	7.1081	10.2986	78.1424	1610.5793	7.9456	3.1280	12.512
L6	20.5857	15.8882	804.7602	7.1081	10.2986	78.1424	1610.5793	7.9456	3.1280	12.512
	21.5550	16.6456	925.4345	7.4470	10.7836	85.8189	1852.0867	8.3244	3.2960	13.184
L7	21.5550	16.6456	925.4345	7.4470	10.7836	85.8189	1852.0867	8.3244	3.2960	13.184
	22.6542	17.5046	1076.2196	7.8313	11.3335	94.9593	2153.8554	8.7540	3.4866	13.946
L8	22.1370	20.6917	1137.6553	7.4057	10.7562	105.7671	2276.8075	10.3478	3.1766	10.165
	22.4555	21.6247	1298.5914	7.7396	11.2341	115.5940	2598.8915	10.8144	3.3421	10.695
L9	22.4555	21.6247	1298.5914	7.7396	11.2341	115.5940	2598.8915	10.8144	3.3421	10.695
	23.4106	22.5577	1474.0317	8.0736	11.7119	125.8574	2950.0030	11.2810	3.5077	11.225
L10	23.4106	22.5577	1474.0317	8.0736	11.7119	125.8574	2950.0030	11.2810	3.5077	11.225
	24.3658	23.4907	1664.6016	8.4075	12.1898	136.5573	3331.3936	11.7476	3.6732	11.754
L11	24.3658	23.4907	1664.6016	8.4075	12.1898	136.5573	3331.3936	11.7476	3.6732	11.754
	25.3209	24.4237	1870.9273	8.7414	12.6676	147.6937	3744.3165	12.2142	3.8388	12.284
L12	25.3209	24.4237	1870.9273	8.7414	12.6676	147.6937	3744.3165	12.2142	3.8388	12.284
	26.2761	25.3567	2093.6344	9.0754	13.1455	159.2667	4190.0237	12.6808	4.0043	12.814
L13	26.2761	25.3567	2093.6344	9.0754	13.1455	159.2667	4190.0237	12.6808	4.0043	12.814
	26.4027	25.4804	2124.4288	9.1196	13.2088	160.8341	4251.6530	12.7426	4.0263	12.884
L14	26.4027	46.4049	3790.3404	9.0265	13.2088	286.9552	7585.6683	23.2068	3.5643	6.199
	26.4505	46.4907	3811.4125	9.0431	13.2327	288.0295	7627.8402	23.2498	3.5726	6.213
L15	26.4505	45.5023	3734.0472	9.0476	13.2327	282.1830	7473.0078	22.7555	3.5946	6.39
	27.4057	47.1817	4162.9437	9.3815	13.7106	303.6304	8331.3651	23.5954	3.7601	6.685
L16	27.4057	46.1551	4076.2125	9.3860	13.7106	297.3045	8157.7887	23.0819	3.7821	6.877
	28.2175	47.5509	4457.3130	9.6698	14.1167	315.7468	8920.4909	23.7799	3.9228	7.132

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
L17	28.2175	84.0041	7623.4445	9.5145	14.1167	540.0289	15256.9202	42.0100	3.1528	3.193
	28.2653	84.1515	7663.6487	9.5312	14.1406	541.9597	15337.3815	42.0838	3.1611	3.201
L18	28.2653	84.1515	7663.6487	9.5312	14.1406	541.9597	15337.3815	42.0838	3.1611	3.201
	28.3130	84.2990	7703.9940	9.5479	14.1645	543.8938	15418.1251	42.1575	3.1694	3.21
L19	28.3130	62.4944	5823.3295	9.6411	14.1645	411.1209	11654.3215	31.2531	3.6314	5.009
	28.3608	62.6026	5853.6364	9.6578	14.1884	412.5647	11714.9752	31.3073	3.6397	5.02
L20	28.3608	61.5516	5760.6450	9.6622	14.1884	406.0106	11528.8700	30.7816	3.6617	5.139
	29.3160	63.6788	6378.7942	9.9961	14.6663	434.9299	12765.9817	31.8455	3.8272	5.372
L21	29.3160	62.5894	6275.2352	10.0006	14.6663	427.8689	12558.7276	31.3007	3.8492	5.499
	30.8284	65.8986	7324.1268	10.5293	15.4229	474.8871	14657.8908	32.9556	4.1114	5.873
L22	30.1941	68.1457	6825.8856	9.9959	14.6913	464.6216	13660.7528	34.0793	3.7479	4.915
	30.3215	70.4232	7533.3896	10.3299	15.1693	496.6200	15076.6919	35.2183	3.9135	5.132
L23	30.3215	69.2984	7419.4449	10.3344	15.1693	489.1085	14848.6525	34.6558	3.9355	5.247
	31.2771	71.5386	8162.4760	10.6684	15.6474	521.6516	16335.6924	35.7761	4.1011	5.468
L24	31.2771	71.5386	8162.4760	10.6684	15.6474	521.6516	16335.6924	35.7761	4.1011	5.468
	31.3470	71.7026	8218.7340	10.6929	15.6824	524.0749	16448.2825	35.8581	4.1133	5.484
L25	31.3470	90.2202	10204.3974	10.6219	15.6824	650.6926	20422.2220	45.1187	3.7613	3.959
	31.3948	90.3620	10252.6140	10.6386	15.7063	652.7722	20518.7186	45.1896	3.7695	3.968
L26	31.3948	88.0575	10007.8130	10.6475	15.7063	637.1860	20028.7945	44.0371	3.8135	4.123
	32.3504	90.8203	10979.6734	10.9815	16.1843	678.4146	21973.7941	45.4188	3.9792	4.302
L27	32.3504	88.4371	10708.8474	10.9904	16.1843	661.6807	21431.7858	44.2270	4.0232	4.47
	33.3059	91.1253	11715.3607	11.3245	16.6624	703.1033	23446.1367	45.5713	4.1888	4.654
L28	33.3059	88.6635	11416.7339	11.3333	16.6624	685.1811	22848.4902	44.3402	4.2328	4.837
	34.2615	91.2770	12456.3624	11.6674	17.1404	726.7251	24929.1152	45.6472	4.3984	5.027
L29	34.2615	90.0072	12292.4293	11.6719	17.1404	717.1609	24601.0333	45.0122	4.4204	5.125
	35.2170	92.5834	13378.4178	12.0059	17.6185	759.3413	26774.4392	46.3005	4.5860	5.317
L30	35.2170	91.2753	13199.1525	12.0104	17.6185	749.1664	26415.6727	45.6463	4.6080	5.421
	36.1726	93.8142	14331.4742	12.3444	18.0965	791.9473	28681.8061	46.9160	4.7737	5.616
L31	36.1726	91.1204	13939.9835	12.3533	18.0965	770.3138	27898.3095	45.5688	4.8177	5.84
	37.1281	93.5845	15101.7710	12.6874	18.5745	813.0358	30223.4133	46.8012	4.9833	6.04
L32	37.1281	93.5845	15101.7710	12.6874	18.5745	813.0358	30223.4133	46.8012	4.9833	6.04
	38.6979	97.6326	17147.4981	13.2362	19.3599	885.7234	34317.5593	48.8256	5.2554	6.37
L33	37.9345	93.0405	14839.9106	12.6136	18.4690	803.5039	29699.3479	46.5291	4.9467	5.996
	38.1253	96.1561	16381.1950	13.0360	19.0734	858.8493	32783.9448	48.0872	5.1561	6.25
L34	38.1253	93.3057	15917.2607	13.0449	19.0734	834.5257	31855.4658	46.6617	5.2001	6.5
	39.0792	95.6910	17169.4592	13.3783	19.5506	878.2051	34361.5105	47.8546	5.3654	6.707
L35	39.0792	95.6910	17169.4592	13.3783	19.5506	878.2051	34361.5105	47.8546	5.3654	6.707
	40.0331	98.0762	18485.6665	13.7118	20.0278	922.9990	36995.6570	49.0474	5.5308	6.913
L36	40.0331	95.0729	17942.7849	13.7207	20.0278	895.8927	35909.1794	47.5455	5.5748	7.193
	40.9869	97.3836	19283.1274	14.0542	20.5050	940.4095	38591.6280	48.7010	5.7401	7.407
L37	40.9869	97.3836	19283.1274	14.0542	20.5050	940.4095	38591.6280	48.7010	5.7401	7.407
	41.9408	99.6943	20688.6109	14.3877	20.9822	986.0060	41404.4443	49.8566	5.9054	7.62
L38	41.9408	98.1166	20373.7632	14.3921	20.9822	971.0006	40774.3348	49.0676	5.9274	7.774
	42.8947	100.3900	21823.0720	14.7256	21.4594	1016.9451	43674.8594	50.2046	6.0928	7.991
L39	42.8947	98.7741	21484.7281	14.7300	21.4594	1001.1784	42997.7263	49.3964	6.1148	8.153
	43.8485	101.0103	22977.2195	15.0635	21.9366	1047.4355	45984.6730	50.5147	6.2801	8.373
L40	43.8485	99.3560	22614.2396	15.0679	21.9366	1030.8888	45258.2357	49.6874	6.3021	8.545
	44.8024	101.5549	24149.1895	15.4014	22.4138	1077.4228	48330.1551	50.7871	6.4674	8.769
L41	44.8024	99.8624	23760.4071	15.4058	22.4138	1060.0772	47552.0788	49.9407	6.4894	8.951
	45.7563	102.0241	25337.0191	15.7393	22.8911	1106.8526	50707.3773	51.0217	6.6548	9.179
L42	45.7563	102.0241	25337.0191	15.7393	22.8911	1106.8526	50707.3773	51.0217	6.6548	9.179
	46.2019	103.0340	26096.9145	15.8951	23.1140	1129.0523	52228.1680	51.5268	6.7320	9.286

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				1	1	1			

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
164.00-159.00									
L3				1	1	1			
159.00-154.00									
L4				1	1	1			
154.00-149.00									
L5				1	1	1			
149.00-144.00									
L6				1	1	1			
144.00-139.00									
L7				1	1	1			
139.00-133.33									
L8				1	1	1			
133.33-131.66									
L9				1	1	1			
131.66-126.66									
L10				1	1	1			
126.66-121.66									
L11				1	1	1			
121.66-116.66									
L12				1	1	1			
116.66-111.66									
L13				1	1	1			
111.66-111.00									
L14				1	1	0.936267			
111.00-110.75									
L15				1	1	0.942328			
110.75-105.75									
L16				1	1	0.951692			
105.75-101.50									
L17				1	1	0.894832			
101.50-101.25									
L18				1	1	0.89382			
101.25-101.00									
L19				1	1	0.9168			
101.00-100.75									
L20				1	1	0.915958			
100.75-95.75									
L21				1	1	0.920553			
95.75-87.83									
L22				1	1	0.924364			
87.83-87.17									
L23				1	1	0.925608			
87.17-82.17									
L24				1	1	0.924635			
82.17-81.80									
L25				1	1	0.900325			
81.80-81.55									
L26				1	1	0.908115			
81.55-76.55									
L27				1	1	0.917367			
76.55-71.55									
L28				1	1	0.928114			
71.55-66.55									
L29				1	1	0.927116			
66.55-61.55									
L30				1	1	0.926892			
61.55-56.55									
L31				1	1	0.941135			
56.55-51.55									

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
L32 51.55-43.34				1	1	0.933863			
L33 43.34-42.34				1	1	0.928122			
L34 42.34-37.34				1	1	0.944317			
L35 37.34-32.34				1	1	0.932751			
L36 32.34-27.34				1	1	0.950867			
L37 27.34-22.34				1	1	0.940043			
L38 22.34-17.34				1	1	0.944665			
L39 17.34-12.34				1	1	0.949934			
L40 12.34-7.34				1	1	0.955849			
L41 7.34-2.34				1	1	0.962413			
L42 2.34-0.00				1	1	0.958049			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A(1-5/8")	A	Surface Ar (CaAa)	138.00 - 8.00	6	1	-0.300 -0.100	1.9800		0.82
LDF1-50A(1/4")	A	Surface Ar (CaAa)	128.00 - 8.00	3	3	-0.400 -0.400	0.0000		0.06
LDF4-50A(1/2")	A	Surface Ar (CaAa)	128.00 - 8.00	4	4	-0.500 -0.500	0.0000		0.15
9207(5/16")	A	Surface Ar (CaAa)	128.00 - 8.00	1	1	-0.400 -0.400	0.0000		0.60
LDF4-50A(1/2")	A	Surface Ar (CaAa)	128.00 - 8.00	2	1	-0.450 -0.450	0.6300		0.15
2" Flex Conduit	A	Surface Ar (CaAa)	128.00 - 8.00	1	1	-0.400 -0.400	2.0000		0.32
2" Flex Conduit	A	Surface Ar (CaAa)	128.00 - 8.00	1	1	-0.500 -0.500	2.0000		0.32
LDF7-50A(1-5/8")	B	Surface Ar (CaAa)	108.00 - 8.00	20	9	-0.400 -0.400	1.9800		0.82
LDF7-50A(1-5/8")	C	Surface Ar (CaAa)	165.00 - 8.00	7	4	-0.500 -0.400	1.9800		0.82
Safety Line 3/8	A	Surface Ar (CaAa)	169.00 - 8.00	1	1	0.500 0.500	0.3750		0.22
5/8" Step Bolts	A	Surface Ar (CaAa)	169.00 - 8.00	1	1	0.500 0.500	0.4167		1.00
PL 1.25"x4"	A	Surface Af (CaAa)	104.00 - 81.80	1	1	0.000 0.000	4.0000	10.5000	0.00
PL 1.25"x4"	B	Surface Af (CaAa)	104.00 - 81.80	1	1	0.000 0.000	4.0000	10.5000	0.00
PL 1.25"x4"	C	Surface Af (CaAa)	104.00 - 81.80	1	1	0.000 0.000	4.0000	10.5000	0.00
PL 1.25"x4"	A	Surface Af (CaAa)	104.00 - 81.80	1	1	0.500 0.500	4.0000	10.5000	0.00

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
PL 1.25"x4"	B	Surface Af (CaAa)	104.00 - 81.80	1	1	0.500 0.500	4.0000	10.5000	0.00
PL 1.25"x4"	C	Surface Af (CaAa)	104.00 - 81.80	1	1	0.500 0.500	4.0000	10.5000	0.00
PL 1.25"x6"	A	Surface Af (CaAa)	81.80 - 0.00	1	1	0.000 0.000	6.0000	14.5000	0.00
PL 1.25"x6"	B	Surface Af (CaAa)	81.80 - 0.00	1	1	0.000 0.000	6.0000	14.5000	0.00
PL 1.25"x6"	C	Surface Af (CaAa)	81.80 - 0.00	1	1	0.000 0.000	6.0000	14.5000	0.00
PL 1.25"x6"	A	Surface Af (CaAa)	81.80 - 0.00	1	1	0.500 0.500	6.0000	14.5000	0.00
PL 1.25"x6"	B	Surface Af (CaAa)	81.80 - 0.00	1	1	0.500 0.500	6.0000	14.5000	0.00
PL 1.25"x6"	C	Surface Af (CaAa)	81.80 - 0.00	1	1	0.500 0.500	6.0000	14.5000	0.00
PL 1"x6"	A	Surface Af (CaAa)	113.50 - 98.50	1	1	-0.250 -0.250	6.0000	14.0000	0.00
PL 1"x6"	B	Surface Af (CaAa)	113.50 - 98.50	1	1	-0.250 -0.250	6.0000	14.0000	0.00
PL 1"x6"	C	Surface Af (CaAa)	113.50 - 98.50	1	1	-0.250 -0.250	6.0000	14.0000	0.00
PL 1"x4.5"	A	Surface Af (CaAa)	89.50 - 79.50	1	1	-0.250 -0.250	4.5000	11.0000	0.00
PL 1"x4.5"	B	Surface Af (CaAa)	89.50 - 79.50	1	1	-0.250 -0.250	4.5000	11.0000	0.00
PL 1"x4.5"	C	Surface Af (CaAa)	89.50 - 79.50	1	1	-0.250 -0.250	4.5000	11.0000	0.00
PL 1"x6"	A	Surface Af (CaAa)	47.33 - 22.25	1	1	-0.350 -0.350	6.0000	14.0000	0.00
PL 1"x6"	B	Surface Af (CaAa)	47.33 - 22.25	1	1	-0.350 -0.350	6.0000	14.0000	0.00
PL 1"x6"	B	Surface Af (CaAa)	47.33 - 22.25	1	1	0.400 0.400	6.0000	14.0000	0.00
PL 1"x6"	C	Surface Af (CaAa)	47.33 - 22.25	1	1	-0.350 -0.350	6.0000	14.0000	0.00
PL 1.25"x6.5"	A	Surface Af (CaAa)	22.25 - 0.00	1	1	-0.350 -0.350	6.5000	15.5000	0.00
PL 1.25"x6.5"	B	Surface Af (CaAa)	22.25 - 0.00	1	1	-0.350 -0.350	6.5000	15.5000	0.00
PL 1.25"x6.5"	B	Surface Af (CaAa)	22.25 - 0.00	1	1	0.400 0.400	6.5000	15.5000	0.00
PL 1.25"x6.5"	C	Surface Af (CaAa)	22.25 - 0.00	1	1	-0.350 -0.350	6.5000	15.5000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF2-50(3/8")	A	No	Inside Pole	156.00 - 8.00	3	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
LDF7-50A(1-5/8")	A	No	Inside Pole	156.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
3" Flex Conduit	A	No	Inside Pole	156.00 - 8.00	1	No Ice	0.00	0.48
						1/2" Ice	0.00	0.48

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	0.48
HB114-1-08U4-M5F(1-1/4")	C	No	Inside Pole	148.00 - 8.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08

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	0.396	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.792	0.000	0.01
L2	164.00-159.00	A	0.000	0.000	0.396	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.03
L3	159.00-154.00	A	0.000	0.000	0.396	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.03
L4	154.00-149.00	A	0.000	0.000	0.396	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.03
L5	149.00-144.00	A	0.000	0.000	0.396	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.06
L6	144.00-139.00	A	0.000	0.000	0.396	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.07
L7	139.00-133.33	A	0.000	0.000	1.374	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	4.491	0.000	0.08
L8	133.33-131.66	A	0.000	0.000	0.462	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.320	0.000	0.02
L9	131.66-126.66	A	0.000	0.000	2.005	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.07
L10	126.66-121.66	A	0.000	0.000	3.701	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.07
L11	121.66-116.66	A	0.000	0.000	3.701	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.960	0.000	0.07
L12	116.66-111.66	A	0.000	0.000	5.538	0.000	0.10
		B	0.000	0.000	1.837	0.000	0.00
		C	0.000	0.000	5.797	0.000	0.07
L13	111.66-111.00	A	0.000	0.000	1.154	0.000	0.01
		B	0.000	0.000	0.663	0.000	0.00
		C	0.000	0.000	1.188	0.000	0.01
L14	111.00-110.75	A	0.000	0.000	0.435	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.448	0.000	0.00
L15	110.75-105.75	A	0.000	0.000	8.701	0.000	0.10
		B	0.000	0.000	9.009	0.000	0.04
		C	0.000	0.000	8.960	0.000	0.07

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
L16	105.75-101.50	A	0.000	0.000	10.729	0.000	0.08
		B	0.000	0.000	15.157	0.000	0.07
		C	0.000	0.000	10.949	0.000	0.06
L17	101.50-101.25	A	0.000	0.000	0.768	0.000	0.00
		B	0.000	0.000	1.029	0.000	0.00
		C	0.000	0.000	0.781	0.000	0.00
L18	101.25-101.00	A	0.000	0.000	0.768	0.000	0.00
		B	0.000	0.000	1.029	0.000	0.00
		C	0.000	0.000	0.781	0.000	0.00
L19	101.00-100.75	A	0.000	0.000	0.768	0.000	0.00
		B	0.000	0.000	1.029	0.000	0.00
		C	0.000	0.000	0.781	0.000	0.00
L20	100.75-95.75	A	0.000	0.000	12.617	0.000	0.10
		B	0.000	0.000	17.827	0.000	0.08
		C	0.000	0.000	12.877	0.000	0.07
L21	95.75-87.83	A	0.000	0.000	17.666	0.000	0.15
		B	0.000	0.000	25.914	0.000	0.13
		C	0.000	0.000	18.077	0.000	0.11
L22	87.83-87.17	A	0.000	0.000	1.883	0.000	0.01
		B	0.000	0.000	2.578	0.000	0.01
		C	0.000	0.000	1.918	0.000	0.01
L23	87.17-82.17	A	0.000	0.000	14.117	0.000	0.10
		B	0.000	0.000	19.327	0.000	0.08
		C	0.000	0.000	14.377	0.000	0.07
L24	82.17-81.80	A	0.000	0.000	1.033	0.000	0.01
		B	0.000	0.000	1.415	0.000	0.01
		C	0.000	0.000	1.052	0.000	0.01
L25	81.80-81.55	A	0.000	0.000	0.873	0.000	0.00
		B	0.000	0.000	1.133	0.000	0.00
		C	0.000	0.000	0.885	0.000	0.00
L26	81.55-76.55	A	0.000	0.000	15.238	0.000	0.10
		B	0.000	0.000	20.448	0.000	0.08
		C	0.000	0.000	15.498	0.000	0.07
L27	76.55-71.55	A	0.000	0.000	13.701	0.000	0.10
		B	0.000	0.000	18.910	0.000	0.08
		C	0.000	0.000	13.960	0.000	0.07
L28	71.55-66.55	A	0.000	0.000	13.701	0.000	0.10
		B	0.000	0.000	18.910	0.000	0.08
		C	0.000	0.000	13.960	0.000	0.07
L29	66.55-61.55	A	0.000	0.000	13.701	0.000	0.10
		B	0.000	0.000	18.910	0.000	0.08
		C	0.000	0.000	13.960	0.000	0.07
L30	61.55-56.55	A	0.000	0.000	13.701	0.000	0.10
		B	0.000	0.000	18.910	0.000	0.08
		C	0.000	0.000	13.960	0.000	0.07
L31	56.55-51.55	A	0.000	0.000	13.701	0.000	0.10
		B	0.000	0.000	18.910	0.000	0.08
		C	0.000	0.000	13.960	0.000	0.07
L32	51.55-43.34	A	0.000	0.000	26.502	0.000	0.16
		B	0.000	0.000	39.053	0.000	0.13
		C	0.000	0.000	26.927	0.000	0.11
L33	43.34-42.34	A	0.000	0.000	3.740	0.000	0.02
		B	0.000	0.000	5.782	0.000	0.02
		C	0.000	0.000	3.792	0.000	0.01
L34	42.34-37.34	A	0.000	0.000	18.701	0.000	0.10
		B	0.000	0.000	28.910	0.000	0.08
		C	0.000	0.000	18.960	0.000	0.07
L35	37.34-32.34	A	0.000	0.000	18.701	0.000	0.10
		B	0.000	0.000	28.910	0.000	0.08
		C	0.000	0.000	18.960	0.000	0.07
L36	32.34-27.34	A	0.000	0.000	18.701	0.000	0.10

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	28.910	0.000	0.08
		C	0.000	0.000	18.960	0.000	0.07
L37	27.34-22.34	A	0.000	0.000	18.701	0.000	0.10
		B	0.000	0.000	28.910	0.000	0.08
		C	0.000	0.000	18.960	0.000	0.07
L38	22.34-17.34	A	0.000	0.000	19.110	0.000	0.10
		B	0.000	0.000	29.729	0.000	0.08
		C	0.000	0.000	19.369	0.000	0.07
L39	17.34-12.34	A	0.000	0.000	19.117	0.000	0.10
		B	0.000	0.000	29.743	0.000	0.08
		C	0.000	0.000	19.377	0.000	0.07
L40	12.34-7.34	A	0.000	0.000	18.626	0.000	0.08
		B	0.000	0.000	28.560	0.000	0.07
		C	0.000	0.000	18.851	0.000	0.06
L41	7.34-2.34	A	0.000	0.000	15.417	0.000	0.00
		B	0.000	0.000	20.833	0.000	0.00
		C	0.000	0.000	15.417	0.000	0.00
L42	2.34-0.00	A	0.000	0.000	7.203	0.000	0.00
		B	0.000	0.000	9.733	0.000	0.00
		C	0.000	0.000	7.203	0.000	0.00

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	2.351	0.000	0.000	5.098	0.000	0.09
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.578	0.000	0.03
L2	164.00-159.00	A	2.344	0.000	0.000	5.084	0.000	0.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.880	0.000	0.17
L3	159.00-154.00	A	2.337	0.000	0.000	5.069	0.000	0.11
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.871	0.000	0.17
L4	154.00-149.00	A	2.329	0.000	0.000	5.054	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.862	0.000	0.17
L5	149.00-144.00	A	2.321	0.000	0.000	5.039	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.852	0.000	0.20
L6	144.00-139.00	A	2.313	0.000	0.000	5.023	0.000	0.14
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.842	0.000	0.21
L7	139.00-133.33	A	2.305	0.000	0.000	8.753	0.000	0.51
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	8.880	0.000	0.23
L8	133.33-131.66	A	2.298	0.000	0.000	2.767	0.000	0.17
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	2.611	0.000	0.07
L9	131.66-126.66	A	2.292	0.000	0.000	12.866	0.000	0.60
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.815	0.000	0.21
L10	126.66-121.66	A	2.283	0.000	0.000	25.393	0.000	0.82
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.804	0.000	0.20
L11	121.66-116.66	A	2.274	0.000	0.000	25.304	0.000	0.82
		B		0.000	0.000	0.000	0.000	0.00

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
		C		0.000	0.000	7.792	0.000	0.20
L12	116.66-111.66	A	2.264	0.000	0.000	27.621	0.000	0.85
		B		0.000	0.000	2.410	0.000	0.04
		C		0.000	0.000	10.190	0.000	0.24
L13	111.66-111.00	A	2.259	0.000	0.000	4.205	0.000	0.12
		B		0.000	0.000	0.869	0.000	0.01
		C		0.000	0.000	1.900	0.000	0.04
L14	111.00-110.75	A	2.258	0.000	0.000	1.585	0.000	0.05
		B		0.000	0.000	0.328	0.000	0.00
		C		0.000	0.000	0.716	0.000	0.02
L15	110.75-105.75	A	2.252	0.000	0.000	31.650	0.000	0.91
		B		0.000	0.000	12.831	0.000	0.25
		C		0.000	0.000	14.318	0.000	0.30
L16	105.75-101.50	A	2.242	0.000	0.000	32.395	0.000	0.85
		B		0.000	0.000	22.991	0.000	0.45
		C		0.000	0.000	17.732	0.000	0.34
L17	101.50-101.25	A	2.238	0.000	0.000	2.132	0.000	0.05
		B		0.000	0.000	1.581	0.000	0.03
		C		0.000	0.000	1.272	0.000	0.02
L18	101.25-101.00	A	2.237	0.000	0.000	2.132	0.000	0.05
		B		0.000	0.000	1.581	0.000	0.03
		C		0.000	0.000	1.272	0.000	0.02
L19	101.00-100.75	A	2.236	0.000	0.000	2.132	0.000	0.05
		B		0.000	0.000	1.581	0.000	0.03
		C		0.000	0.000	1.272	0.000	0.02
L20	100.75-95.75	A	2.231	0.000	0.000	38.962	0.000	1.00
		B		0.000	0.000	27.997	0.000	0.55
		C		0.000	0.000	21.810	0.000	0.41
L21	95.75-87.83	A	2.215	0.000	0.000	58.416	0.000	1.53
		B		0.000	0.000	41.252	0.000	0.82
		C		0.000	0.000	31.454	0.000	0.60
L22	87.83-87.17	A	2.205	0.000	0.000	5.446	0.000	0.14
		B		0.000	0.000	4.000	0.000	0.08
		C		0.000	0.000	3.175	0.000	0.06
L23	87.17-82.17	A	2.198	0.000	0.000	40.610	0.000	1.02
		B		0.000	0.000	29.917	0.000	0.58
		C		0.000	0.000	23.730	0.000	0.44
L24	82.17-81.80	A	2.191	0.000	0.000	2.967	0.000	0.07
		B		0.000	0.000	2.188	0.000	0.04
		C		0.000	0.000	1.735	0.000	0.03
L25	81.80-81.55	A	2.190	0.000	0.000	2.192	0.000	0.05
		B		0.000	0.000	1.661	0.000	0.03
		C		0.000	0.000	1.352	0.000	0.02
L26	81.55-76.55	A	2.183	0.000	0.000	40.835	0.000	1.00
		B		0.000	0.000	30.266	0.000	0.56
		C		0.000	0.000	24.078	0.000	0.42
L27	76.55-71.55	A	2.168	0.000	0.000	38.637	0.000	0.95
		B		0.000	0.000	28.185	0.000	0.52
		C		0.000	0.000	21.997	0.000	0.39
L28	71.55-66.55	A	2.153	0.000	0.000	38.463	0.000	0.95
		B		0.000	0.000	28.135	0.000	0.52
		C		0.000	0.000	21.948	0.000	0.39
L29	66.55-61.55	A	2.137	0.000	0.000	38.277	0.000	0.94
		B		0.000	0.000	28.083	0.000	0.52
		C		0.000	0.000	21.896	0.000	0.38
L30	61.55-56.55	A	2.120	0.000	0.000	38.078	0.000	0.92
		B		0.000	0.000	28.027	0.000	0.51
		C		0.000	0.000	21.839	0.000	0.38
L31	56.55-51.55	A	2.101	0.000	0.000	37.864	0.000	0.91
		B		0.000	0.000	27.966	0.000	0.51
		C		0.000	0.000	21.779	0.000	0.38

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
L32	51.55-43.34	A	2.074	0.000	0.000	67.337	0.000	1.54
		B		0.000	0.000	57.098	0.000	0.96
		C		0.000	0.000	41.283	0.000	0.68
L33	43.34-42.34	A	2.053	0.000	0.000	8.925	0.000	0.20
		B		0.000	0.000	8.405	0.000	0.14
		C		0.000	0.000	5.753	0.000	0.09
L34	42.34-37.34	A	2.038	0.000	0.000	44.175	0.000	0.96
		B		0.000	0.000	41.837	0.000	0.66
		C		0.000	0.000	28.611	0.000	0.45
L35	37.34-32.34	A	2.011	0.000	0.000	43.836	0.000	0.94
		B		0.000	0.000	41.694	0.000	0.66
		C		0.000	0.000	28.496	0.000	0.44
L36	32.34-27.34	A	1.980	0.000	0.000	43.449	0.000	0.92
		B		0.000	0.000	41.532	0.000	0.64
		C		0.000	0.000	28.364	0.000	0.44
L37	27.34-22.34	A	1.944	0.000	0.000	42.999	0.000	0.90
		B		0.000	0.000	41.343	0.000	0.63
		C		0.000	0.000	28.212	0.000	0.43
L38	22.34-17.34	A	1.901	0.000	0.000	42.869	0.000	0.88
		B		0.000	0.000	41.935	0.000	0.63
		C		0.000	0.000	28.437	0.000	0.42
L39	17.34-12.34	A	1.846	0.000	0.000	42.195	0.000	0.84
		B		0.000	0.000	41.663	0.000	0.61
		C		0.000	0.000	28.213	0.000	0.41
L40	12.34-7.34	A	1.772	0.000	0.000	38.539	0.000	0.72
		B		0.000	0.000	39.500	0.000	0.55
		C		0.000	0.000	26.945	0.000	0.37
L41	7.34-2.34	A	1.650	0.000	0.000	20.367	0.000	0.20
		B		0.000	0.000	27.434	0.000	0.27
		C		0.000	0.000	20.367	0.000	0.20
L42	2.34-0.00	A	1.432	0.000	0.000	9.209	0.000	0.08
		B		0.000	0.000	12.409	0.000	0.11
		C		0.000	0.000	9.209	0.000	0.08

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	0.2048	0.0468	0.1998	-0.4978
L2	164.00-159.00	0.7263	0.4532	0.6343	0.0413
L3	159.00-154.00	0.7337	0.4572	0.6534	0.0394
L4	154.00-149.00	0.7407	0.4609	0.6719	0.0377
L5	149.00-144.00	0.7472	0.4644	0.6899	0.0361
L6	144.00-139.00	0.7534	0.4677	0.7074	0.0347
L7	139.00-133.33	0.4786	0.4193	0.2920	-0.0084
L8	133.33-131.66	0.4246	0.4097	0.2119	-0.0168
L9	131.66-126.66	0.2991	0.4457	-0.1497	0.1285
L10	126.66-121.66	-0.0023	0.5299	-0.7428	0.3650
L11	121.66-116.66	-0.0015	0.5362	-0.7629	0.3755
L12	116.66-111.66	-0.0005	0.4174	-0.6923	0.3413
L13	111.66-111.00	-0.0002	0.3023	-0.5859	0.2891
L14	111.00-110.75	-0.0001	0.3029	-0.5873	0.2899
L15	110.75-105.75	0.0901	-0.1497	-0.4733	-0.0357
L16	105.75-101.50	0.1408	-0.4668	-0.2994	-0.3010
L17	101.50-101.25	0.1237	-0.4098	-0.2699	-0.2714
L18	101.25-101.00	0.1239	-0.4102	-0.2702	-0.2717

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L19	101.00-100.75	0.1240	-0.4106	-0.2706	-0.2721
L20	100.75-95.75	0.1442	-0.4769	-0.2995	-0.3012
L21	95.75-87.83	0.1609	-0.5303	-0.3243	-0.3267
L22	87.83-87.17	0.1378	-0.4540	-0.2946	-0.2965
L23	87.17-82.17	0.1394	-0.4588	-0.2969	-0.3011
L24	82.17-81.80	0.1410	-0.4634	-0.3003	-0.3049
L25	81.80-81.55	0.1212	-0.3984	-0.2780	-0.2823
L26	81.55-76.55	0.1352	-0.4439	-0.3009	-0.3061
L27	76.55-71.55	0.1485	-0.4865	-0.3226	-0.3294
L28	71.55-66.55	0.1514	-0.4949	-0.3283	-0.3369
L29	66.55-61.55	0.1542	-0.5031	-0.3338	-0.3444
L30	61.55-56.55	0.1569	-0.5113	-0.3388	-0.3520
L31	56.55-51.55	0.1597	-0.5193	-0.3435	-0.3597
L32	51.55-43.34	0.2572	-0.2868	-0.2222	-0.1980
L33	43.34-42.34	0.3310	-0.0957	-0.1163	-0.0540
L34	42.34-37.34	0.3347	-0.0959	-0.1125	-0.0554
L35	37.34-32.34	0.3408	-0.0963	-0.1107	-0.0565
L36	32.34-27.34	0.3469	-0.0967	-0.1081	-0.0578
L37	27.34-22.34	0.3530	-0.0971	-0.1045	-0.0594
L38	22.34-17.34	0.3720	-0.0682	-0.0858	-0.0442
L39	17.34-12.34	0.3784	-0.0676	-0.0777	-0.0460
L40	12.34-7.34	0.3759	-0.0095	-0.0311	-0.0027
L41	7.34-2.34	0.3127	0.4617	0.3255	0.4805
L42	2.34-0.00	0.3160	0.4668	0.3278	0.4842

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	20	LDF7-50A(1-5/8")	164.00 - 165.00	1.0000	1.0000
L1	22	Safety Line 3/8	164.00 - 169.00	1.0000	1.0000
L1	23	5/8" Step Bolts	164.00 - 169.00	1.0000	1.0000
L2	20	LDF7-50A(1-5/8")	159.00 - 164.00	1.0000	1.0000
L2	22	Safety Line 3/8	159.00 - 164.00	1.0000	1.0000
L2	23	5/8" Step Bolts	159.00 - 164.00	1.0000	1.0000
L3	20	LDF7-50A(1-5/8")	154.00 - 159.00	1.0000	1.0000
L3	22	Safety Line 3/8	154.00 - 159.00	1.0000	1.0000
L3	23	5/8" Step Bolts	154.00 - 159.00	1.0000	1.0000
L4	20	LDF7-50A(1-5/8")	149.00 - 154.00	1.0000	1.0000
L4	22	Safety Line 3/8	149.00 - 154.00	1.0000	1.0000
L4	23	5/8" Step Bolts	149.00 - 154.00	1.0000	1.0000
L5	20	LDF7-50A(1-5/8")	144.00 - 149.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L5	22	Safety Line 3/8	144.00 - 149.00	1.0000	1.0000
L5	23	5/8" Step Bolts	144.00 - 149.00	1.0000	1.0000
L6	20	LDF7-50A(1-5/8")	139.00 - 144.00	1.0000	1.0000
L6	22	Safety Line 3/8	139.00 - 144.00	1.0000	1.0000
L6	23	5/8" Step Bolts	139.00 - 144.00	1.0000	1.0000
L7	6	LDF7-50A(1-5/8")	133.33 - 138.00	1.0000	1.0000
L7	20	LDF7-50A(1-5/8")	133.33 - 139.00	1.0000	1.0000
L7	22	Safety Line 3/8	133.33 - 139.00	1.0000	1.0000
L7	23	5/8" Step Bolts	133.33 - 139.00	1.0000	1.0000
L9	6	LDF7-50A(1-5/8")	126.66 - 131.66	1.0000	1.0000
L9	8	LDF1-50A(1/4")	126.66 - 128.00	1.0000	1.0000
L9	9	LDF4-50A(1/2")	126.66 - 128.00	1.0000	1.0000
L9	10	9207(5/16")	126.66 - 128.00	1.0000	1.0000
L9	11	LDF4-50A(1/2")	126.66 - 128.00	1.0000	1.0000
L9	12	2" Flex Conduit	126.66 - 128.00	1.0000	1.0000
L9	13	2" Flex Conduit	126.66 - 128.00	1.0000	1.0000
L9	20	LDF7-50A(1-5/8")	126.66 - 131.66	1.0000	1.0000
L9	22	Safety Line 3/8	126.66 - 131.66	1.0000	1.0000
L9	23	5/8" Step Bolts	126.66 - 131.66	1.0000	1.0000
L10	6	LDF7-50A(1-5/8")	121.66 - 126.66	1.0000	1.0000
L10	8	LDF1-50A(1/4")	121.66 - 126.66	1.0000	1.0000
L10	9	LDF4-50A(1/2")	121.66 - 126.66	1.0000	1.0000
L10	10	9207(5/16")	121.66 - 126.66	1.0000	1.0000
L10	11	LDF4-50A(1/2")	121.66 - 126.66	1.0000	1.0000
L10	12	2" Flex Conduit	121.66 - 126.66	1.0000	1.0000
L10	13	2" Flex Conduit	121.66 - 126.66	1.0000	1.0000
L10	20	LDF7-50A(1-5/8")	121.66 - 126.66	1.0000	1.0000
L10	22	Safety Line 3/8	121.66 - 126.66	1.0000	1.0000
L10	23	5/8" Step Bolts	121.66 - 126.66	1.0000	1.0000
L11	6	LDF7-50A(1-5/8")	116.66 - 121.66	1.0000	1.0000
L11	8	LDF1-50A(1/4")	116.66 - 121.66	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L11	9	LDF4-50A(1/2")	116.66 - 121.66	1.0000	1.0000
L11	10	9207(5/16")	116.66 - 121.66	1.0000	1.0000
L11	11	LDF4-50A(1/2")	116.66 - 121.66	1.0000	1.0000
L11	12	2" Flex Conduit	116.66 - 121.66	1.0000	1.0000
L11	13	2" Flex Conduit	116.66 - 121.66	1.0000	1.0000
L11	20	LDF7-50A(1-5/8")	116.66 - 121.66	1.0000	1.0000
L11	22	Safety Line 3/8	116.66 - 121.66	1.0000	1.0000
L11	23	5/8" Step Bolts	116.66 - 121.66	1.0000	1.0000
L12	6	LDF7-50A(1-5/8")	111.66 - 116.66	1.0000	1.0000
L12	8	LDF1-50A(1/4")	111.66 - 116.66	1.0000	1.0000
L12	9	LDF4-50A(1/2")	111.66 - 116.66	1.0000	1.0000
L12	10	9207(5/16")	111.66 - 116.66	1.0000	1.0000
L12	11	LDF4-50A(1/2")	111.66 - 116.66	1.0000	1.0000
L12	12	2" Flex Conduit	111.66 - 116.66	1.0000	1.0000
L12	13	2" Flex Conduit	111.66 - 116.66	1.0000	1.0000
L12	20	LDF7-50A(1-5/8")	111.66 - 116.66	1.0000	1.0000
L12	22	Safety Line 3/8	111.66 - 116.66	1.0000	1.0000
L12	23	5/8" Step Bolts	111.66 - 116.66	1.0000	1.0000
L12	40	PL 1"x6"	111.66 - 113.50	1.0000	1.0000
L12	41	PL 1"x6"	111.66 - 113.50	1.0000	1.0000
L12	42	PL 1"x6"	111.66 - 113.50	1.0000	1.0000
L13	6	LDF7-50A(1-5/8")	111.00 - 111.66	1.0000	1.0000
L13	8	LDF1-50A(1/4")	111.00 - 111.66	1.0000	1.0000
L13	9	LDF4-50A(1/2")	111.00 - 111.66	1.0000	1.0000
L13	10	9207(5/16")	111.00 - 111.66	1.0000	1.0000
L13	11	LDF4-50A(1/2")	111.00 - 111.66	1.0000	1.0000
L13	12	2" Flex Conduit	111.00 - 111.66	1.0000	1.0000
L13	13	2" Flex Conduit	111.00 - 111.66	1.0000	1.0000
L13	20	LDF7-50A(1-5/8")	111.00 - 111.66	1.0000	1.0000
L13	22	Safety Line 3/8	111.00 - 111.66	1.0000	1.0000
L13	23	5/8" Step Bolts	111.00 - 111.66	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L13	40	PL 1"x6"	111.00 - 111.66	1.0000	1.0000
L13	41	PL 1"x6"	111.00 - 111.66	1.0000	1.0000
L13	42	PL 1"x6"	111.00 - 111.66	1.0000	1.0000
L14	6	LDF7-50A(1-5/8")	110.75 - 111.00	1.0000	1.0000
L14	8	LDF1-50A(1/4")	110.75 - 111.00	1.0000	1.0000
L14	9	LDF4-50A(1/2")	110.75 - 111.00	1.0000	1.0000
L14	10	9207(5/16")	110.75 - 111.00	1.0000	1.0000
L14	11	LDF4-50A(1/2")	110.75 - 111.00	1.0000	1.0000
L14	12	2" Flex Conduit	110.75 - 111.00	1.0000	1.0000
L14	13	2" Flex Conduit	110.75 - 111.00	1.0000	1.0000
L14	20	LDF7-50A(1-5/8")	110.75 - 111.00	1.0000	1.0000
L14	22	Safety Line 3/8	110.75 - 111.00	1.0000	1.0000
L14	23	5/8" Step Bolts	110.75 - 111.00	1.0000	1.0000
L14	40	PL 1"x6"	110.75 - 111.00	1.0000	1.0000
L14	41	PL 1"x6"	110.75 - 111.00	1.0000	1.0000
L14	42	PL 1"x6"	110.75 - 111.00	1.0000	1.0000
L15	6	LDF7-50A(1-5/8")	105.75 - 110.75	1.0000	1.0000
L15	8	LDF1-50A(1/4")	105.75 - 110.75	1.0000	1.0000
L15	9	LDF4-50A(1/2")	105.75 - 110.75	1.0000	1.0000
L15	10	9207(5/16")	105.75 - 110.75	1.0000	1.0000
L15	11	LDF4-50A(1/2")	105.75 - 110.75	1.0000	1.0000
L15	12	2" Flex Conduit	105.75 - 110.75	1.0000	1.0000
L15	13	2" Flex Conduit	105.75 - 110.75	1.0000	1.0000
L15	15	LDF7-50A(1-5/8")	105.75 - 108.00	1.0000	1.0000
L15	20	LDF7-50A(1-5/8")	105.75 - 110.75	1.0000	1.0000
L15	22	Safety Line 3/8	105.75 - 110.75	1.0000	1.0000
L15	23	5/8" Step Bolts	105.75 - 110.75	1.0000	1.0000
L15	40	PL 1"x6"	105.75 - 110.75	1.0000	1.0000
L15	41	PL 1"x6"	105.75 - 110.75	1.0000	1.0000
L15	42	PL 1"x6"	105.75 - 110.75	1.0000	1.0000
L16	6	LDF7-50A(1-5/8")	101.50 - 105.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L16	8	LDF1-50A(1/4")	101.50 - 105.75	1.0000	1.0000
L16	9	LDF4-50A(1/2")	101.50 - 105.75	1.0000	1.0000
L16	10	9207(5/16")	101.50 - 105.75	1.0000	1.0000
L16	11	LDF4-50A(1/2")	101.50 - 105.75	1.0000	1.0000
L16	12	2" Flex Conduit	101.50 - 105.75	1.0000	1.0000
L16	13	2" Flex Conduit	101.50 - 105.75	1.0000	1.0000
L16	15	LDF7-50A(1-5/8")	101.50 - 105.75	1.0000	1.0000
L16	20	LDF7-50A(1-5/8")	101.50 - 105.75	1.0000	1.0000
L16	22	Safety Line 3/8	101.50 - 105.75	1.0000	1.0000
L16	23	5/8" Step Bolts	101.50 - 105.75	1.0000	1.0000
L16	27	PL 1.25"x4"	101.50 - 104.00	1.0000	1.0000
L16	28	PL 1.25"x4"	101.50 - 104.00	1.0000	1.0000
L16	29	PL 1.25"x4"	101.50 - 104.00	1.0000	1.0000
L16	30	PL 1.25"x4"	101.50 - 104.00	1.0000	1.0000
L16	31	PL 1.25"x4"	101.50 - 104.00	1.0000	1.0000
L16	32	PL 1.25"x4"	101.50 - 104.00	1.0000	1.0000
L16	40	PL 1"x6"	101.50 - 105.75	1.0000	1.0000
L16	41	PL 1"x6"	101.50 - 105.75	1.0000	1.0000
L16	42	PL 1"x6"	101.50 - 105.75	1.0000	1.0000
L17	6	LDF7-50A(1-5/8")	101.25 - 101.50	1.0000	1.0000
L17	8	LDF1-50A(1/4")	101.25 - 101.50	1.0000	1.0000
L17	9	LDF4-50A(1/2")	101.25 - 101.50	1.0000	1.0000
L17	10	9207(5/16")	101.25 - 101.50	1.0000	1.0000
L17	11	LDF4-50A(1/2")	101.25 - 101.50	1.0000	1.0000
L17	12	2" Flex Conduit	101.25 - 101.50	1.0000	1.0000
L17	13	2" Flex Conduit	101.25 - 101.50	1.0000	1.0000
L17	15	LDF7-50A(1-5/8")	101.25 - 101.50	1.0000	1.0000
L17	20	LDF7-50A(1-5/8")	101.25 - 101.50	1.0000	1.0000
L17	22	Safety Line 3/8	101.25 - 101.50	1.0000	1.0000
L17	23	5/8" Step Bolts	101.25 - 101.50	1.0000	1.0000
L17	27	PL 1.25"x4"	101.25 - 101.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	28	PL 1.25"x4"	101.25 - 101.50	1.0000	1.0000
L17	29	PL 1.25"x4"	101.25 - 101.50	1.0000	1.0000
L17	30	PL 1.25"x4"	101.25 - 101.50	1.0000	1.0000
L17	31	PL 1.25"x4"	101.25 - 101.50	1.0000	1.0000
L17	32	PL 1.25"x4"	101.25 - 101.50	1.0000	1.0000
L17	40	PL 1"x6"	101.25 - 101.50	1.0000	1.0000
L17	41	PL 1"x6"	101.25 - 101.50	1.0000	1.0000
L17	42	PL 1"x6"	101.25 - 101.50	1.0000	1.0000
L18	6	LDF7-50A(1-5/8")	101.00 - 101.25	1.0000	1.0000
L18	8	LDF1-50A(1/4")	101.00 - 101.25	1.0000	1.0000
L18	9	LDF4-50A(1/2")	101.00 - 101.25	1.0000	1.0000
L18	10	9207(5/16")	101.00 - 101.25	1.0000	1.0000
L18	11	LDF4-50A(1/2")	101.00 - 101.25	1.0000	1.0000
L18	12	2" Flex Conduit	101.00 - 101.25	1.0000	1.0000
L18	13	2" Flex Conduit	101.00 - 101.25	1.0000	1.0000
L18	15	LDF7-50A(1-5/8")	101.00 - 101.25	1.0000	1.0000
L18	20	LDF7-50A(1-5/8")	101.00 - 101.25	1.0000	1.0000
L18	22	Safety Line 3/8	101.00 - 101.25	1.0000	1.0000
L18	23	5/8" Step Bolts	101.00 - 101.25	1.0000	1.0000
L18	27	PL 1.25"x4"	101.00 - 101.25	1.0000	1.0000
L18	28	PL 1.25"x4"	101.00 - 101.25	1.0000	1.0000
L18	29	PL 1.25"x4"	101.00 - 101.25	1.0000	1.0000
L18	30	PL 1.25"x4"	101.00 - 101.25	1.0000	1.0000
L18	31	PL 1.25"x4"	101.00 - 101.25	1.0000	1.0000
L18	32	PL 1.25"x4"	101.00 - 101.25	1.0000	1.0000
L18	40	PL 1"x6"	101.00 - 101.25	1.0000	1.0000
L18	41	PL 1"x6"	101.00 - 101.25	1.0000	1.0000
L18	42	PL 1"x6"	101.00 - 101.25	1.0000	1.0000
L19	6	LDF7-50A(1-5/8")	100.75 - 101.00	1.0000	1.0000
L19	8	LDF1-50A(1/4")	100.75 - 101.00	1.0000	1.0000
L19	9	LDF4-50A(1/2")	100.75 - 101.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	10	9207(5/16")	100.75 - 101.00	1.0000	1.0000
L19	11	LDF4-50A(1/2")	100.75 - 101.00	1.0000	1.0000
L19	12	2" Flex Conduit	100.75 - 101.00	1.0000	1.0000
L19	13	2" Flex Conduit	100.75 - 101.00	1.0000	1.0000
L19	15	LDF7-50A(1-5/8")	100.75 - 101.00	1.0000	1.0000
L19	20	LDF7-50A(1-5/8")	100.75 - 101.00	1.0000	1.0000
L19	22	Safety Line 3/8	100.75 - 101.00	1.0000	1.0000
L19	23	5/8" Step Bolts	100.75 - 101.00	1.0000	1.0000
L19	27	PL 1.25"x4"	100.75 - 101.00	1.0000	1.0000
L19	28	PL 1.25"x4"	100.75 - 101.00	1.0000	1.0000
L19	29	PL 1.25"x4"	100.75 - 101.00	1.0000	1.0000
L19	30	PL 1.25"x4"	100.75 - 101.00	1.0000	1.0000
L19	31	PL 1.25"x4"	100.75 - 101.00	1.0000	1.0000
L19	32	PL 1.25"x4"	100.75 - 101.00	1.0000	1.0000
L19	40	PL 1"x6"	100.75 - 101.00	1.0000	1.0000
L19	41	PL 1"x6"	100.75 - 101.00	1.0000	1.0000
L19	42	PL 1"x6"	100.75 - 101.00	1.0000	1.0000
L20	6	LDF7-50A(1-5/8")	95.75 - 100.75	1.0000	1.0000
L20	8	LDF1-50A(1/4")	95.75 - 100.75	1.0000	1.0000
L20	9	LDF4-50A(1/2")	95.75 - 100.75	1.0000	1.0000
L20	10	9207(5/16")	95.75 - 100.75	1.0000	1.0000
L20	11	LDF4-50A(1/2")	95.75 - 100.75	1.0000	1.0000
L20	12	2" Flex Conduit	95.75 - 100.75	1.0000	1.0000
L20	13	2" Flex Conduit	95.75 - 100.75	1.0000	1.0000
L20	15	LDF7-50A(1-5/8")	95.75 - 100.75	1.0000	1.0000
L20	20	LDF7-50A(1-5/8")	95.75 - 100.75	1.0000	1.0000
L20	22	Safety Line 3/8	95.75 - 100.75	1.0000	1.0000
L20	23	5/8" Step Bolts	95.75 - 100.75	1.0000	1.0000
L20	27	PL 1.25"x4"	95.75 - 100.75	1.0000	1.0000
L20	28	PL 1.25"x4"	95.75 - 100.75	1.0000	1.0000
L20	29	PL 1.25"x4"	95.75 - 100.75	1.0000	1.0000
L20	30	PL 1.25"x4"	95.75 - 100.75	1.0000	1.0000
L20	31	PL 1.25"x4"	95.75 - 100.75	1.0000	1.0000
L20	32	PL 1.25"x4"	95.75 - 100.75	1.0000	1.0000
L20	40	PL 1"x6"	98.50 - 100.75	1.0000	1.0000
L20	41	PL 1"x6"	98.50 - 100.75	1.0000	1.0000
L20	42	PL 1"x6"	98.50 - 100.75	1.0000	1.0000
L21	6	LDF7-50A(1-5/8")	87.83 - 95.75	1.0000	1.0000
L21	8	LDF1-50A(1/4")	87.83 - 95.75	1.0000	1.0000
L21	9	LDF4-50A(1/2")	87.83 - 95.75	1.0000	1.0000
L21	10	9207(5/16")	87.83 - 95.75	1.0000	1.0000
L21	11	LDF4-50A(1/2")	87.83 - 95.75	1.0000	1.0000
L21	12	2" Flex Conduit	87.83 - 95.75	1.0000	1.0000
L21	13	2" Flex Conduit	87.83 - 95.75	1.0000	1.0000
L21	15	LDF7-50A(1-5/8")	87.83 - 95.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L21	20	LDF7-50A(1-5/8")	87.83 - 95.75	1.0000	1.0000
L21	22	Safety Line 3/8	87.83 - 95.75	1.0000	1.0000
L21	23	5/8" Step Bolts	87.83 - 95.75	1.0000	1.0000
L21	27	PL 1.25"x4"	87.83 - 95.75	1.0000	1.0000
L21	28	PL 1.25"x4"	87.83 - 95.75	1.0000	1.0000
L21	29	PL 1.25"x4"	87.83 - 95.75	1.0000	1.0000
L21	30	PL 1.25"x4"	87.83 - 95.75	1.0000	1.0000
L21	31	PL 1.25"x4"	87.83 - 95.75	1.0000	1.0000
L21	32	PL 1.25"x4"	87.83 - 95.75	1.0000	1.0000
L21	44	PL 1"x4.5"	87.83 - 89.50	1.0000	1.0000
L21	45	PL 1"x4.5"	87.83 - 89.50	1.0000	1.0000
L21	46	PL 1"x4.5"	87.83 - 89.50	1.0000	1.0000
L23	6	LDF7-50A(1-5/8")	82.17 - 87.17	1.0000	1.0000
L23	8	LDF1-50A(1/4")	82.17 - 87.17	1.0000	1.0000
L23	9	LDF4-50A(1/2")	82.17 - 87.17	1.0000	1.0000
L23	10	9207(5/16")	82.17 - 87.17	1.0000	1.0000
L23	11	LDF4-50A(1/2")	82.17 - 87.17	1.0000	1.0000
L23	12	2" Flex Conduit	82.17 - 87.17	1.0000	1.0000
L23	13	2" Flex Conduit	82.17 - 87.17	1.0000	1.0000
L23	15	LDF7-50A(1-5/8")	82.17 - 87.17	1.0000	1.0000
L23	20	LDF7-50A(1-5/8")	82.17 - 87.17	1.0000	1.0000
L23	22	Safety Line 3/8	82.17 - 87.17	1.0000	1.0000
L23	23	5/8" Step Bolts	82.17 - 87.17	1.0000	1.0000
L23	27	PL 1.25"x4"	82.17 - 87.17	1.0000	1.0000
L23	28	PL 1.25"x4"	82.17 - 87.17	1.0000	1.0000
L23	29	PL 1.25"x4"	82.17 - 87.17	1.0000	1.0000
L23	30	PL 1.25"x4"	82.17 - 87.17	1.0000	1.0000
L23	31	PL 1.25"x4"	82.17 - 87.17	1.0000	1.0000
L23	32	PL 1.25"x4"	82.17 - 87.17	1.0000	1.0000
L23	44	PL 1"x4.5"	82.17 - 87.17	1.0000	1.0000
L23	45	PL 1"x4.5"	82.17 - 87.17	1.0000	1.0000
L23	46	PL 1"x4.5"	82.17 - 87.17	1.0000	1.0000
L24	6	LDF7-50A(1-5/8")	81.80 - 82.17	1.0000	1.0000
L24	8	LDF1-50A(1/4")	81.80 - 82.17	1.0000	1.0000
L24	9	LDF4-50A(1/2")	81.80 - 82.17	1.0000	1.0000
L24	10	9207(5/16")	81.80 - 82.17	1.0000	1.0000
L24	11	LDF4-50A(1/2")	81.80 - 82.17	1.0000	1.0000
L24	12	2" Flex Conduit	81.80 - 82.17	1.0000	1.0000
L24	13	2" Flex Conduit	81.80 - 82.17	1.0000	1.0000
L24	15	LDF7-50A(1-5/8")	81.80 - 82.17	1.0000	1.0000
L24	20	LDF7-50A(1-5/8")	81.80 - 82.17	1.0000	1.0000
L24	22	Safety Line 3/8	81.80 - 82.17	1.0000	1.0000
L24	23	5/8" Step Bolts	81.80 - 82.17	1.0000	1.0000
L24	27	PL 1.25"x4"	81.80 - 82.17	1.0000	1.0000
L24	28	PL 1.25"x4"	81.80 - 82.17	1.0000	1.0000
L24	29	PL 1.25"x4"	81.80 - 82.17	1.0000	1.0000
L24	30	PL 1.25"x4"	81.80 - 82.17	1.0000	1.0000
L24	31	PL 1.25"x4"	81.80 - 82.17	1.0000	1.0000
L24	32	PL 1.25"x4"	81.80 - 82.17	1.0000	1.0000
L24	44	PL 1"x4.5"	81.80 - 82.17	1.0000	1.0000
L24	45	PL 1"x4.5"	81.80 - 82.17	1.0000	1.0000
L24	46	PL 1"x4.5"	81.80 - 82.17	1.0000	1.0000
L25	6	LDF7-50A(1-5/8")	81.55 - 81.80	1.0000	1.0000
L25	8	LDF1-50A(1/4")	81.55 - 81.80	1.0000	1.0000
L25	9	LDF4-50A(1/2")	81.55 - 81.80	1.0000	1.0000
L25	10	9207(5/16")	81.55 - 81.80	1.0000	1.0000
L25	11	LDF4-50A(1/2")	81.55 - 81.80	1.0000	1.0000
L25	12	2" Flex Conduit	81.55 - 81.80	1.0000	1.0000
L25	13	2" Flex Conduit	81.55 - 81.80	1.0000	1.0000
L25	15	LDF7-50A(1-5/8")	81.55 - 81.80	1.0000	1.0000
L25	20	LDF7-50A(1-5/8")	81.55 - 81.80	1.0000	1.0000
L25	22	Safety Line 3/8	81.55 - 81.80	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L25	23	5/8" Step Bolts	81.55 - 81.80	1.0000	1.0000
L25	33	PL 1.25"x6"	81.55 - 81.80	1.0000	1.0000
L25	34	PL 1.25"x6"	81.55 - 81.80	1.0000	1.0000
L25	35	PL 1.25"x6"	81.55 - 81.80	1.0000	1.0000
L25	36	PL 1.25"x6"	81.55 - 81.80	1.0000	1.0000
L25	37	PL 1.25"x6"	81.55 - 81.80	1.0000	1.0000
L25	38	PL 1.25"x6"	81.55 - 81.80	1.0000	1.0000
L25	44	PL 1"x4.5"	81.55 - 81.80	1.0000	1.0000
L25	45	PL 1"x4.5"	81.55 - 81.80	1.0000	1.0000
L25	46	PL 1"x4.5"	81.55 - 81.80	1.0000	1.0000
L26	6	LDF7-50A(1-5/8")	76.55 - 81.55	1.0000	1.0000
L26	8	LDF1-50A(1/4")	76.55 - 81.55	1.0000	1.0000
L26	9	LDF4-50A(1/2")	76.55 - 81.55	1.0000	1.0000
L26	10	9207(5/16")	76.55 - 81.55	1.0000	1.0000
L26	11	LDF4-50A(1/2")	76.55 - 81.55	1.0000	1.0000
L26	12	2" Flex Conduit	76.55 - 81.55	1.0000	1.0000
L26	13	2" Flex Conduit	76.55 - 81.55	1.0000	1.0000
L26	15	LDF7-50A(1-5/8")	76.55 - 81.55	1.0000	1.0000
L26	20	LDF7-50A(1-5/8")	76.55 - 81.55	1.0000	1.0000
L26	22	Safety Line 3/8	76.55 - 81.55	1.0000	1.0000
L26	23	5/8" Step Bolts	76.55 - 81.55	1.0000	1.0000
L26	33	PL 1.25"x6"	76.55 - 81.55	1.0000	1.0000
L26	34	PL 1.25"x6"	76.55 - 81.55	1.0000	1.0000
L26	35	PL 1.25"x6"	76.55 - 81.55	1.0000	1.0000
L26	36	PL 1.25"x6"	76.55 - 81.55	1.0000	1.0000
L26	37	PL 1.25"x6"	76.55 - 81.55	1.0000	1.0000
L26	38	PL 1.25"x6"	76.55 - 81.55	1.0000	1.0000
L26	44	PL 1"x4.5"	79.50 - 81.55	1.0000	1.0000
L26	45	PL 1"x4.5"	79.50 - 81.55	1.0000	1.0000
L26	46	PL 1"x4.5"	79.50 - 81.55	1.0000	1.0000
L27	6	LDF7-50A(1-5/8")	71.55 - 76.55	1.0000	1.0000
L27	8	LDF1-50A(1/4")	71.55 - 76.55	1.0000	1.0000
L27	9	LDF4-50A(1/2")	71.55 - 76.55	1.0000	1.0000
L27	10	9207(5/16")	71.55 - 76.55	1.0000	1.0000
L27	11	LDF4-50A(1/2")	71.55 - 76.55	1.0000	1.0000
L27	12	2" Flex Conduit	71.55 - 76.55	1.0000	1.0000
L27	13	2" Flex Conduit	71.55 - 76.55	1.0000	1.0000
L27	15	LDF7-50A(1-5/8")	71.55 - 76.55	1.0000	1.0000
L27	20	LDF7-50A(1-5/8")	71.55 - 76.55	1.0000	1.0000
L27	22	Safety Line 3/8	71.55 - 76.55	1.0000	1.0000
L27	23	5/8" Step Bolts	71.55 - 76.55	1.0000	1.0000
L27	33	PL 1.25"x6"	71.55 - 76.55	1.0000	1.0000
L27	34	PL 1.25"x6"	71.55 - 76.55	1.0000	1.0000
L27	35	PL 1.25"x6"	71.55 - 76.55	1.0000	1.0000
L27	36	PL 1.25"x6"	71.55 - 76.55	1.0000	1.0000
L27	37	PL 1.25"x6"	71.55 - 76.55	1.0000	1.0000
L27	38	PL 1.25"x6"	71.55 - 76.55	1.0000	1.0000
L28	6	LDF7-50A(1-5/8")	66.55 - 71.55	1.0000	1.0000
L28	8	LDF1-50A(1/4")	66.55 - 71.55	1.0000	1.0000
L28	9	LDF4-50A(1/2")	66.55 - 71.55	1.0000	1.0000
L28	10	9207(5/16")	66.55 - 71.55	1.0000	1.0000
L28	11	LDF4-50A(1/2")	66.55 - 71.55	1.0000	1.0000
L28	12	2" Flex Conduit	66.55 - 71.55	1.0000	1.0000
L28	13	2" Flex Conduit	66.55 - 71.55	1.0000	1.0000
L28	15	LDF7-50A(1-5/8")	66.55 - 71.55	1.0000	1.0000
L28	20	LDF7-50A(1-5/8")	66.55 - 71.55	1.0000	1.0000
L28	22	Safety Line 3/8	66.55 - 71.55	1.0000	1.0000
L28	23	5/8" Step Bolts	66.55 - 71.55	1.0000	1.0000
L28	33	PL 1.25"x6"	66.55 - 71.55	1.0000	1.0000
L28	34	PL 1.25"x6"	66.55 - 71.55	1.0000	1.0000
L28	35	PL 1.25"x6"	66.55 - 71.55	1.0000	1.0000
L28	36	PL 1.25"x6"	66.55 - 71.55	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L28	37	PL 1.25"x6"	66.55 - 71.55	1.0000	1.0000
L28	38	PL 1.25"x6"	66.55 - 71.55	1.0000	1.0000
L29	6	LDF7-50A(1-5/8")	61.55 - 66.55	1.0000	1.0000
L29	8	LDF1-50A(1/4")	61.55 - 66.55	1.0000	1.0000
L29	9	LDF4-50A(1/2")	61.55 - 66.55	1.0000	1.0000
L29	10	9207(5/16")	61.55 - 66.55	1.0000	1.0000
L29	11	LDF4-50A(1/2")	61.55 - 66.55	1.0000	1.0000
L29	12	2" Flex Conduit	61.55 - 66.55	1.0000	1.0000
L29	13	2" Flex Conduit	61.55 - 66.55	1.0000	1.0000
L29	15	LDF7-50A(1-5/8")	61.55 - 66.55	1.0000	1.0000
L29	20	LDF7-50A(1-5/8")	61.55 - 66.55	1.0000	1.0000
L29	22	Safety Line 3/8	61.55 - 66.55	1.0000	1.0000
L29	23	5/8" Step Bolts	61.55 - 66.55	1.0000	1.0000
L29	33	PL 1.25"x6"	61.55 - 66.55	1.0000	1.0000
L29	34	PL 1.25"x6"	61.55 - 66.55	1.0000	1.0000
L29	35	PL 1.25"x6"	61.55 - 66.55	1.0000	1.0000
L29	36	PL 1.25"x6"	61.55 - 66.55	1.0000	1.0000
L29	37	PL 1.25"x6"	61.55 - 66.55	1.0000	1.0000
L29	38	PL 1.25"x6"	61.55 - 66.55	1.0000	1.0000
L30	6	LDF7-50A(1-5/8")	56.55 - 61.55	1.0000	1.0000
L30	8	LDF1-50A(1/4")	56.55 - 61.55	1.0000	1.0000
L30	9	LDF4-50A(1/2")	56.55 - 61.55	1.0000	1.0000
L30	10	9207(5/16")	56.55 - 61.55	1.0000	1.0000
L30	11	LDF4-50A(1/2")	56.55 - 61.55	1.0000	1.0000
L30	12	2" Flex Conduit	56.55 - 61.55	1.0000	1.0000
L30	13	2" Flex Conduit	56.55 - 61.55	1.0000	1.0000
L30	15	LDF7-50A(1-5/8")	56.55 - 61.55	1.0000	1.0000
L30	20	LDF7-50A(1-5/8")	56.55 - 61.55	1.0000	1.0000
L30	22	Safety Line 3/8	56.55 - 61.55	1.0000	1.0000
L30	23	5/8" Step Bolts	56.55 - 61.55	1.0000	1.0000
L30	33	PL 1.25"x6"	56.55 - 61.55	1.0000	1.0000
L30	34	PL 1.25"x6"	56.55 - 61.55	1.0000	1.0000
L30	35	PL 1.25"x6"	56.55 - 61.55	1.0000	1.0000
L30	36	PL 1.25"x6"	56.55 - 61.55	1.0000	1.0000
L30	37	PL 1.25"x6"	56.55 - 61.55	1.0000	1.0000
L30	38	PL 1.25"x6"	56.55 - 61.55	1.0000	1.0000
L31	6	LDF7-50A(1-5/8")	51.55 - 56.55	1.0000	1.0000
L31	8	LDF1-50A(1/4")	51.55 - 56.55	1.0000	1.0000
L31	9	LDF4-50A(1/2")	51.55 - 56.55	1.0000	1.0000
L31	10	9207(5/16")	51.55 - 56.55	1.0000	1.0000
L31	11	LDF4-50A(1/2")	51.55 - 56.55	1.0000	1.0000
L31	12	2" Flex Conduit	51.55 - 56.55	1.0000	1.0000
L31	13	2" Flex Conduit	51.55 - 56.55	1.0000	1.0000
L31	15	LDF7-50A(1-5/8")	51.55 - 56.55	1.0000	1.0000
L31	20	LDF7-50A(1-5/8")	51.55 - 56.55	1.0000	1.0000
L31	22	Safety Line 3/8	51.55 - 56.55	1.0000	1.0000
L31	23	5/8" Step Bolts	51.55 - 56.55	1.0000	1.0000
L31	33	PL 1.25"x6"	51.55 - 56.55	1.0000	1.0000
L31	34	PL 1.25"x6"	51.55 - 56.55	1.0000	1.0000
L31	35	PL 1.25"x6"	51.55 - 56.55	1.0000	1.0000
L31	36	PL 1.25"x6"	51.55 - 56.55	1.0000	1.0000
L31	37	PL 1.25"x6"	51.55 - 56.55	1.0000	1.0000
L31	38	PL 1.25"x6"	51.55 - 56.55	1.0000	1.0000
L32	6	LDF7-50A(1-5/8")	43.34 - 51.55	1.0000	1.0000
L32	8	LDF1-50A(1/4")	43.34 - 51.55	1.0000	1.0000
L32	9	LDF4-50A(1/2")	43.34 - 51.55	1.0000	1.0000
L32	10	9207(5/16")	43.34 - 51.55	1.0000	1.0000
L32	11	LDF4-50A(1/2")	43.34 - 51.55	1.0000	1.0000
L32	12	2" Flex Conduit	43.34 - 51.55	1.0000	1.0000
L32	13	2" Flex Conduit	43.34 - 51.55	1.0000	1.0000
L32	15	LDF7-50A(1-5/8")	43.34 - 51.55	1.0000	1.0000
L32	20	LDF7-50A(1-5/8")	43.34 - 51.55	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L32	22	Safety Line 3/8	43.34 - 51.55	1.0000	1.0000
L32	23	5/8" Step Bolts	43.34 - 51.55	1.0000	1.0000
L32	33	PL 1.25"x6"	43.34 - 51.55	1.0000	1.0000
L32	34	PL 1.25"x6"	43.34 - 51.55	1.0000	1.0000
L32	35	PL 1.25"x6"	43.34 - 51.55	1.0000	1.0000
L32	36	PL 1.25"x6"	43.34 - 51.55	1.0000	1.0000
L32	37	PL 1.25"x6"	43.34 - 51.55	1.0000	1.0000
L32	38	PL 1.25"x6"	43.34 - 51.55	1.0000	1.0000
L32	47	PL 1"x6"	43.34 - 47.33	1.0000	1.0000
L32	48	PL 1"x6"	43.34 - 47.33	1.0000	1.0000
L32	49	PL 1"x6"	43.34 - 47.33	1.0000	1.0000
L32	50	PL 1"x6"	43.34 - 47.33	1.0000	1.0000
L34	6	LDF7-50A(1-5/8")	37.34 - 42.34	1.0000	1.0000
L34	8	LDF1-50A(1/4")	37.34 - 42.34	1.0000	1.0000
L34	9	LDF4-50A(1/2")	37.34 - 42.34	1.0000	1.0000
L34	10	9207(5/16")	37.34 - 42.34	1.0000	1.0000
L34	11	LDF4-50A(1/2")	37.34 - 42.34	1.0000	1.0000
L34	12	2" Flex Conduit	37.34 - 42.34	1.0000	1.0000
L34	13	2" Flex Conduit	37.34 - 42.34	1.0000	1.0000
L34	15	LDF7-50A(1-5/8")	37.34 - 42.34	1.0000	1.0000
L34	20	LDF7-50A(1-5/8")	37.34 - 42.34	1.0000	1.0000
L34	22	Safety Line 3/8	37.34 - 42.34	1.0000	1.0000
L34	23	5/8" Step Bolts	37.34 - 42.34	1.0000	1.0000
L34	33	PL 1.25"x6"	37.34 - 42.34	1.0000	1.0000
L34	34	PL 1.25"x6"	37.34 - 42.34	1.0000	1.0000
L34	35	PL 1.25"x6"	37.34 - 42.34	1.0000	1.0000
L34	36	PL 1.25"x6"	37.34 - 42.34	1.0000	1.0000
L34	37	PL 1.25"x6"	37.34 - 42.34	1.0000	1.0000
L34	38	PL 1.25"x6"	37.34 - 42.34	1.0000	1.0000
L34	47	PL 1"x6"	37.34 - 42.34	1.0000	1.0000
L34	48	PL 1"x6"	37.34 - 42.34	1.0000	1.0000
L34	49	PL 1"x6"	37.34 - 42.34	1.0000	1.0000
L34	50	PL 1"x6"	37.34 - 42.34	1.0000	1.0000
L35	6	LDF7-50A(1-5/8")	32.34 - 37.34	1.0000	1.0000
L35	8	LDF1-50A(1/4")	32.34 - 37.34	1.0000	1.0000
L35	9	LDF4-50A(1/2")	32.34 - 37.34	1.0000	1.0000
L35	10	9207(5/16")	32.34 - 37.34	1.0000	1.0000
L35	11	LDF4-50A(1/2")	32.34 - 37.34	1.0000	1.0000
L35	12	2" Flex Conduit	32.34 - 37.34	1.0000	1.0000
L35	13	2" Flex Conduit	32.34 - 37.34	1.0000	1.0000
L35	15	LDF7-50A(1-5/8")	32.34 - 37.34	1.0000	1.0000
L35	20	LDF7-50A(1-5/8")	32.34 - 37.34	1.0000	1.0000
L35	22	Safety Line 3/8	32.34 - 37.34	1.0000	1.0000
L35	23	5/8" Step Bolts	32.34 - 37.34	1.0000	1.0000
L35	33	PL 1.25"x6"	32.34 - 37.34	1.0000	1.0000
L35	34	PL 1.25"x6"	32.34 - 37.34	1.0000	1.0000
L35	35	PL 1.25"x6"	32.34 - 37.34	1.0000	1.0000
L35	36	PL 1.25"x6"	32.34 - 37.34	1.0000	1.0000
L35	37	PL 1.25"x6"	32.34 - 37.34	1.0000	1.0000
L35	38	PL 1.25"x6"	32.34 - 37.34	1.0000	1.0000
L35	47	PL 1"x6"	32.34 - 37.34	1.0000	1.0000
L35	48	PL 1"x6"	32.34 - 37.34	1.0000	1.0000
L35	49	PL 1"x6"	32.34 - 37.34	1.0000	1.0000
L35	50	PL 1"x6"	32.34 - 37.34	1.0000	1.0000
L36	6	LDF7-50A(1-5/8")	27.34 - 32.34	1.0000	1.0000
L36	8	LDF1-50A(1/4")	27.34 - 32.34	1.0000	1.0000
L36	9	LDF4-50A(1/2")	27.34 - 32.34	1.0000	1.0000
L36	10	9207(5/16")	27.34 - 32.34	1.0000	1.0000
L36	11	LDF4-50A(1/2")	27.34 - 32.34	1.0000	1.0000
L36	12	2" Flex Conduit	27.34 - 32.34	1.0000	1.0000
L36	13	2" Flex Conduit	27.34 - 32.34	1.0000	1.0000
L36	15	LDF7-50A(1-5/8")	27.34 - 32.34	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L36	20	LDF7-50A(1-5/8")	27.34 - 32.34	1.0000	1.0000
L36	22	Safety Line 3/8	27.34 - 32.34	1.0000	1.0000
L36	23	5/8" Step Bolts	27.34 - 32.34	1.0000	1.0000
L36	33	PL 1.25"x6"	27.34 - 32.34	1.0000	1.0000
L36	34	PL 1.25"x6"	27.34 - 32.34	1.0000	1.0000
L36	35	PL 1.25"x6"	27.34 - 32.34	1.0000	1.0000
L36	36	PL 1.25"x6"	27.34 - 32.34	1.0000	1.0000
L36	37	PL 1.25"x6"	27.34 - 32.34	1.0000	1.0000
L36	38	PL 1.25"x6"	27.34 - 32.34	1.0000	1.0000
L36	47	PL 1"x6"	27.34 - 32.34	1.0000	1.0000
L36	48	PL 1"x6"	27.34 - 32.34	1.0000	1.0000
L36	49	PL 1"x6"	27.34 - 32.34	1.0000	1.0000
L36	50	PL 1"x6"	27.34 - 32.34	1.0000	1.0000
L37	6	LDF7-50A(1-5/8")	22.34 - 27.34	1.0000	1.0000
L37	8	LDF1-50A(1/4")	22.34 - 27.34	1.0000	1.0000
L37	9	LDF4-50A(1/2")	22.34 - 27.34	1.0000	1.0000
L37	10	9207(5/16")	22.34 - 27.34	1.0000	1.0000
L37	11	LDF4-50A(1/2")	22.34 - 27.34	1.0000	1.0000
L37	12	2" Flex Conduit	22.34 - 27.34	1.0000	1.0000
L37	13	2" Flex Conduit	22.34 - 27.34	1.0000	1.0000
L37	15	LDF7-50A(1-5/8")	22.34 - 27.34	1.0000	1.0000
L37	20	LDF7-50A(1-5/8")	22.34 - 27.34	1.0000	1.0000
L37	22	Safety Line 3/8	22.34 - 27.34	1.0000	1.0000
L37	23	5/8" Step Bolts	22.34 - 27.34	1.0000	1.0000
L37	33	PL 1.25"x6"	22.34 - 27.34	1.0000	1.0000
L37	34	PL 1.25"x6"	22.34 - 27.34	1.0000	1.0000
L37	35	PL 1.25"x6"	22.34 - 27.34	1.0000	1.0000
L37	36	PL 1.25"x6"	22.34 - 27.34	1.0000	1.0000
L37	37	PL 1.25"x6"	22.34 - 27.34	1.0000	1.0000
L37	38	PL 1.25"x6"	22.34 - 27.34	1.0000	1.0000
L37	47	PL 1"x6"	22.34 - 27.34	1.0000	1.0000
L37	48	PL 1"x6"	22.34 - 27.34	1.0000	1.0000
L37	49	PL 1"x6"	22.34 - 27.34	1.0000	1.0000
L37	50	PL 1"x6"	22.34 - 27.34	1.0000	1.0000
L38	6	LDF7-50A(1-5/8")	17.34 - 22.34	1.0000	1.0000
L38	8	LDF1-50A(1/4")	17.34 - 22.34	1.0000	1.0000
L38	9	LDF4-50A(1/2")	17.34 - 22.34	1.0000	1.0000
L38	10	9207(5/16")	17.34 - 22.34	1.0000	1.0000
L38	11	LDF4-50A(1/2")	17.34 - 22.34	1.0000	1.0000
L38	12	2" Flex Conduit	17.34 - 22.34	1.0000	1.0000
L38	13	2" Flex Conduit	17.34 - 22.34	1.0000	1.0000
L38	15	LDF7-50A(1-5/8")	17.34 - 22.34	1.0000	1.0000
L38	20	LDF7-50A(1-5/8")	17.34 - 22.34	1.0000	1.0000
L38	22	Safety Line 3/8	17.34 - 22.34	1.0000	1.0000
L38	23	5/8" Step Bolts	17.34 - 22.34	1.0000	1.0000
L38	33	PL 1.25"x6"	17.34 - 22.34	1.0000	1.0000
L38	34	PL 1.25"x6"	17.34 - 22.34	1.0000	1.0000
L38	35	PL 1.25"x6"	17.34 - 22.34	1.0000	1.0000
L38	36	PL 1.25"x6"	17.34 - 22.34	1.0000	1.0000
L38	37	PL 1.25"x6"	17.34 - 22.34	1.0000	1.0000
L38	38	PL 1.25"x6"	17.34 - 22.34	1.0000	1.0000
L38	47	PL 1"x6"	22.25 - 22.34	1.0000	1.0000
L38	48	PL 1"x6"	22.25 - 22.34	1.0000	1.0000
L38	49	PL 1"x6"	22.25 - 22.34	1.0000	1.0000
L38	50	PL 1"x6"	22.25 - 22.34	1.0000	1.0000
L38	51	PL 1.25"x6.5"	17.34 - 22.25	1.0000	1.0000
L38	52	PL 1.25"x6.5"	17.34 - 22.25	1.0000	1.0000
L38	53	PL 1.25"x6.5"	17.34 - 22.25	1.0000	1.0000
L38	54	PL 1.25"x6.5"	17.34 - 22.25	1.0000	1.0000
L39	6	LDF7-50A(1-5/8")	12.34 - 17.34	1.0000	1.0000
L39	8	LDF1-50A(1/4")	12.34 - 17.34	1.0000	1.0000
L39	9	LDF4-50A(1/2")	12.34 - 17.34	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	10	9207(5/16")	12.34 - 17.34	1.0000	1.0000
L39	11	LDF4-50A(1/2")	12.34 - 17.34	1.0000	1.0000
L39	12	2" Flex Conduit	12.34 - 17.34	1.0000	1.0000
L39	13	2" Flex Conduit	12.34 - 17.34	1.0000	1.0000
L39	15	LDF7-50A(1-5/8")	12.34 - 17.34	1.0000	1.0000
L39	20	LDF7-50A(1-5/8")	12.34 - 17.34	1.0000	1.0000
L39	22	Safety Line 3/8	12.34 - 17.34	1.0000	1.0000
L39	23	5/8" Step Bolts	12.34 - 17.34	1.0000	1.0000
L39	33	PL 1.25"x6"	12.34 - 17.34	1.0000	1.0000
L39	34	PL 1.25"x6"	12.34 - 17.34	1.0000	1.0000
L39	35	PL 1.25"x6"	12.34 - 17.34	1.0000	1.0000
L39	36	PL 1.25"x6"	12.34 - 17.34	1.0000	1.0000
L39	37	PL 1.25"x6"	12.34 - 17.34	1.0000	1.0000
L39	38	PL 1.25"x6"	12.34 - 17.34	1.0000	1.0000
L39	51	PL 1.25"x6.5"	12.34 - 17.34	1.0000	1.0000
L39	52	PL 1.25"x6.5"	12.34 - 17.34	1.0000	1.0000
L39	53	PL 1.25"x6.5"	12.34 - 17.34	1.0000	1.0000
L39	54	PL 1.25"x6.5"	12.34 - 17.34	1.0000	1.0000
L40	6	LDF7-50A(1-5/8")	8.00 - 12.34	1.0000	1.0000
L40	8	LDF1-50A(1/4")	8.00 - 12.34	1.0000	1.0000
L40	9	LDF4-50A(1/2")	8.00 - 12.34	1.0000	1.0000
L40	10	9207(5/16")	8.00 - 12.34	1.0000	1.0000
L40	11	LDF4-50A(1/2")	8.00 - 12.34	1.0000	1.0000
L40	12	2" Flex Conduit	8.00 - 12.34	1.0000	1.0000
L40	13	2" Flex Conduit	8.00 - 12.34	1.0000	1.0000
L40	15	LDF7-50A(1-5/8")	8.00 - 12.34	1.0000	1.0000
L40	20	LDF7-50A(1-5/8")	8.00 - 12.34	1.0000	1.0000
L40	22	Safety Line 3/8	8.00 - 12.34	1.0000	1.0000
L40	23	5/8" Step Bolts	8.00 - 12.34	1.0000	1.0000
L40	33	PL 1.25"x6"	7.34 - 12.34	1.0000	1.0000
L40	34	PL 1.25"x6"	7.34 - 12.34	1.0000	1.0000
L40	35	PL 1.25"x6"	7.34 - 12.34	1.0000	1.0000
L40	36	PL 1.25"x6"	7.34 - 12.34	1.0000	1.0000
L40	37	PL 1.25"x6"	7.34 - 12.34	1.0000	1.0000
L40	38	PL 1.25"x6"	7.34 - 12.34	1.0000	1.0000
L40	51	PL 1.25"x6.5"	7.34 - 12.34	1.0000	1.0000
L40	52	PL 1.25"x6.5"	7.34 - 12.34	1.0000	1.0000
L40	53	PL 1.25"x6.5"	7.34 - 12.34	1.0000	1.0000
L40	54	PL 1.25"x6.5"	7.34 - 12.34	1.0000	1.0000
L41	33	PL 1.25"x6"	2.34 - 7.34	1.0000	1.0000
L41	34	PL 1.25"x6"	2.34 - 7.34	1.0000	1.0000
L41	35	PL 1.25"x6"	2.34 - 7.34	1.0000	1.0000
L41	36	PL 1.25"x6"	2.34 - 7.34	1.0000	1.0000
L41	37	PL 1.25"x6"	2.34 - 7.34	1.0000	1.0000
L41	38	PL 1.25"x6"	2.34 - 7.34	1.0000	1.0000
L41	51	PL 1.25"x6.5"	2.34 - 7.34	1.0000	1.0000
L41	52	PL 1.25"x6.5"	2.34 - 7.34	1.0000	1.0000
L41	53	PL 1.25"x6.5"	2.34 - 7.34	1.0000	1.0000
L41	54	PL 1.25"x6.5"	2.34 - 7.34	1.0000	1.0000
L42	33	PL 1.25"x6"	0.00 - 2.34	1.0000	1.0000
L42	34	PL 1.25"x6"	0.00 - 2.34	1.0000	1.0000
L42	35	PL 1.25"x6"	0.00 - 2.34	1.0000	1.0000
L42	36	PL 1.25"x6"	0.00 - 2.34	1.0000	1.0000
L42	37	PL 1.25"x6"	0.00 - 2.34	1.0000	1.0000
L42	38	PL 1.25"x6"	0.00 - 2.34	1.0000	1.0000
L42	51	PL 1.25"x6.5"	0.00 - 2.34	1.0000	1.0000
L42	52	PL 1.25"x6.5"	0.00 - 2.34	1.0000	1.0000
L42	53	PL 1.25"x6.5"	0.00 - 2.34	1.0000	1.0000
L42	54	PL 1.25"x6.5"	0.00 - 2.34	1.0000	1.0000

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 Centroid-Leg	4.00 0.00 2.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	11.78 12.50 13.23	11.04 12.56 14.12	0.16 0.25 0.36
KRY 112 144/1	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.17 0.23 0.30	0.01 0.01 0.02
RRUS 11 B12	A	From Centroid-Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.18 1.33 1.48	0.05 0.07 0.10
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	11.78 12.50 13.23	11.04 12.56 14.12	0.16 0.25 0.36
KRY 112 144/1	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.17 0.23 0.30	0.01 0.01 0.02
RRUS 11 B12	B	From Centroid-Leg	4.00 0.00 1.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.18 1.33 1.48	0.05 0.07 0.10
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 2.00	-30.0000	165.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
Ericsson Air 21 B4A B12P-B5P 8FT w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 1.00	-30.0000	165.00	No Ice 1/2" Ice 1" Ice	11.78 12.50 13.23	11.04 12.56 14.12	0.16 0.25 0.36
KRY 112 144/1	C	From Centroid-Leg	4.00 0.00 2.00	-30.0000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.17 0.23 0.30	0.01 0.01 0.02
RRUS 11 B12	C	From Centroid-Leg	4.00 0.00 1.00	-30.0000	165.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	1.18 1.33 1.48	0.05 0.07 0.10
Platform Mount [LP 601-1]	C	None		0.0000	165.00	No Ice 1/2" Ice 1" Ice	28.47 33.59 38.71	28.47 33.59 38.71	1.12 1.51 1.91
9' Ladder	A	From Centroid-Leg	3.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice 1" Ice	4.50 5.50 6.50	2.25 2.75 3.25	0.08 0.12 0.17
(2) 7770.00 w/ Mount Pipe	A	From Centroid-Leg	3.76 1.37 2.00	20.0000	156.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Centroid-Leg	3.76 1.37 2.00	20.0000	156.00	No Ice 1/2" Ice 1" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30
(2) DTMABP7819VG12A	A	From Centroid-Leg	3.76 1.37	20.0000	156.00	No Ice 1/2" Ice	0.98 1.10	0.34 0.42	0.02 0.03

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
		g	2.00			1" Ice	1.23	0.51	0.04
RRUS12/RRUS A2	A	From	3.76	20.0000	156.00	No Ice	3.14	1.84	0.07
		Centroid-Le	1.37			1/2" Ice	3.36	2.01	0.10
		g	2.00			1" Ice	3.59	2.20	0.13
RRUS 11	A	From	3.76	20.0000	156.00	No Ice	2.78	1.19	0.05
		Centroid-Le	1.37			1/2" Ice	2.99	1.33	0.07
		g	2.00			1" Ice	3.21	1.49	0.10
(2) 7770.00 w/ Mount Pipe	B	From	3.76	40.0000	156.00	No Ice	5.75	4.25	0.06
		Centroid-Le	1.37			1/2" Ice	6.18	5.01	0.10
		g	2.00			1" Ice	6.61	5.71	0.16
HPA-65R-BUU-H8 w/ Mount Pipe	B	From	3.76	40.0000	156.00	No Ice	13.21	9.58	0.10
		Centroid-Le	1.37			1/2" Ice	13.90	11.05	0.20
		g	2.00			1" Ice	14.59	12.50	0.30
(2) DTMABP7819VG12A	B	From	3.76	40.0000	156.00	No Ice	0.98	0.34	0.02
		Centroid-Le	1.37			1/2" Ice	1.10	0.42	0.03
		g	2.00			1" Ice	1.23	0.51	0.04
RRUS12/RRUS A2	B	From	3.76	40.0000	156.00	No Ice	3.14	1.84	0.07
		Centroid-Le	1.37			1/2" Ice	3.36	2.01	0.10
		g	2.00			1" Ice	3.59	2.20	0.13
RRUS 11	B	From	3.76	40.0000	156.00	No Ice	2.78	1.19	0.05
		Centroid-Le	1.37			1/2" Ice	2.99	1.33	0.07
		g	2.00			1" Ice	3.21	1.49	0.10
DC6-48-60-18-8F	B	From	3.76	40.0000	156.00	No Ice	2.20	2.20	0.02
		Centroid-Le	1.37			1/2" Ice	2.40	2.40	0.04
		g	2.00			1" Ice	2.60	2.60	0.07
(2) 7770.00 w/ Mount Pipe	C	From	3.76	40.0000	156.00	No Ice	5.75	4.25	0.06
		Centroid-Le	1.37			1/2" Ice	6.18	5.01	0.10
		g	2.00			1" Ice	6.61	5.71	0.16
HPA-65R-BUU-H6 w/ Mount Pipe	C	From	3.76	40.0000	156.00	No Ice	9.90	8.11	0.08
		Centroid-Le	1.37			1/2" Ice	10.47	9.30	0.16
		g	2.00			1" Ice	11.01	10.21	0.25
(2) DTMABP7819VG12A	C	From	3.76	40.0000	156.00	No Ice	0.98	0.34	0.02
		Centroid-Le	1.37			1/2" Ice	1.10	0.42	0.03
		g	2.00			1" Ice	1.23	0.51	0.04
RRUS12/RRUS A2	C	From	3.76	40.0000	156.00	No Ice	3.14	1.84	0.07
		Centroid-Le	1.37			1/2" Ice	3.36	2.01	0.10
		g	2.00			1" Ice	3.59	2.20	0.13
RRUS 11	C	From	3.76	40.0000	156.00	No Ice	2.78	1.19	0.05
		Centroid-Le	1.37			1/2" Ice	2.99	1.33	0.07
		g	2.00			1" Ice	3.21	1.49	0.10
Platform Mount [LP 714-1]	C	None		0.0000	156.00	No Ice	37.47	37.47	1.60
						1/2" Ice	44.23	44.23	2.04
						1" Ice	50.99	50.99	2.48
2" x 6' Mount Pipe	A	From	3.76	0.0000	156.00	No Ice	1.20	1.20	0.03
		Centroid-Le	1.37			1/2" Ice	1.80	1.80	0.04
		g	0.00			1" Ice	2.17	2.17	0.05
2" x 6' Mount Pipe	B	From	3.76	0.0000	156.00	No Ice	1.20	1.20	0.03
		Centroid-Le	1.37			1/2" Ice	1.80	1.80	0.04
		g	0.00			1" Ice	2.17	2.17	0.05
2" x 6' Mount Pipe	C	From	3.76	0.0000	156.00	No Ice	1.20	1.20	0.03
		Centroid-Le	1.37			1/2" Ice	1.80	1.80	0.04
		g	0.00			1" Ice	2.17	2.17	0.05
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	2.99	-5.0000	148.00	No Ice	8.26	6.95	0.08
			-0.26			1/2" Ice	8.82	8.13	0.15
			0.00			1" Ice	9.35	9.02	0.23
1900MHz RRH	A	From Leg	2.99	-5.0000	148.00	No Ice	2.49	3.26	0.04
			-0.26			1/2" Ice	2.70	3.48	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	2.91	3.72	0.11
800MHZ RRH	A	From Leg	2.99	-5.0000	148.00	No Ice	2.13	1.77	0.05
			-0.26			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	2.99	0.0000	148.00	No Ice	8.26	6.95	0.08
			-0.26			1/2" Ice	8.82	8.13	0.15
			0.00			1" Ice	9.35	9.02	0.23
1900MHz RRH	B	From Leg	2.99	0.0000	148.00	No Ice	2.49	3.26	0.04
			-0.26			1/2" Ice	2.70	3.48	0.08
			0.00			1" Ice	2.91	3.72	0.11
800MHZ RRH	B	From Leg	2.99	0.0000	148.00	No Ice	2.13	1.77	0.05
			-0.26			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	2.99	10.0000	148.00	No Ice	8.26	6.95	0.08
			-0.26			1/2" Ice	8.82	8.13	0.15
			0.00			1" Ice	9.35	9.02	0.23
1900MHz RRH	C	From Leg	2.99	10.0000	148.00	No Ice	2.49	3.26	0.04
			-0.26			1/2" Ice	2.70	3.48	0.08
			0.00			1" Ice	2.91	3.72	0.11
800MHZ RRH	C	From Leg	2.99	10.0000	148.00	No Ice	2.13	1.77	0.05
			-0.26			1/2" Ice	2.32	1.95	0.07
			0.00			1" Ice	2.51	2.13	0.10
T-Arm Mount [TA 702-3]	C	None		0.0000	148.00	No Ice	5.64	5.64	0.34
						1/2" Ice	6.55	6.55	0.43
						1" Ice	7.46	7.46	0.52
APXV18-206517-A w/ Mount Pipe	A	From Leg	0.94	20.0000	138.00	No Ice	5.40	4.70	0.05
			0.34			1/2" Ice	5.96	5.86	0.10
			0.00			1" Ice	6.48	6.73	0.15
APXV18-206517-A w/ Mount Pipe	B	From Leg	0.94	40.0000	138.00	No Ice	5.40	4.70	0.05
			0.34			1/2" Ice	5.96	5.86	0.10
			0.00			1" Ice	6.48	6.73	0.15
APXV18-206517-A w/ Mount Pipe	C	From Leg	0.94	40.0000	138.00	No Ice	5.40	4.70	0.05
			0.34			1/2" Ice	5.96	5.86	0.10
			0.00			1" Ice	6.48	6.73	0.15
Pipe Mount [PM 601-3]	C	None		0.0000	138.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
LLPX310R w/ Mount Pipe	A	From Leg	2.82	20.0000	128.00	No Ice	4.54	2.98	0.05
			1.03			1/2" Ice	4.89	3.53	0.08
			0.00			1" Ice	5.25	4.09	0.13
HORIZON DUO	A	From Leg	2.82	20.0000	128.00	No Ice	0.00	0.29	0.01
			1.03			1/2" Ice	0.00	0.37	0.01
			0.00			1" Ice	0.00	0.44	0.02
WIMAX DAP HEAD	A	From Leg	2.82	20.0000	128.00	No Ice	1.55	0.68	0.03
			1.03			1/2" Ice	1.70	0.80	0.04
			0.00			1" Ice	1.87	0.92	0.06
LLPX310R w/ Mount Pipe	B	From Leg	2.82	40.0000	128.00	No Ice	4.54	2.98	0.05
			1.03			1/2" Ice	4.89	3.53	0.08
			0.00			1" Ice	5.25	4.09	0.13
HORIZON DUO	B	From Leg	2.82	40.0000	128.00	No Ice	0.00	0.29	0.01
			1.03			1/2" Ice	0.00	0.37	0.01
			0.00			1" Ice	0.00	0.44	0.02
WIMAX DAP HEAD	B	From Leg	2.82	40.0000	128.00	No Ice	1.55	0.68	0.03
			1.03			1/2" Ice	1.70	0.80	0.04
			0.00			1" Ice	1.87	0.92	0.06
LLPX310R w/ Mount Pipe	C	From Leg	2.82	40.0000	128.00	No Ice	4.54	2.98	0.05
			1.03			1/2" Ice	4.89	3.53	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	5.25	4.09	0.13
HORIZON DUO	C	From Leg	2.82	40.0000	128.00	No Ice	0.00	0.29	0.01
			1.03			1/2" Ice	0.00	0.37	0.01
			0.00			1" Ice	0.00	0.44	0.02
WIMAX DAP HEAD	C	From Leg	2.82	40.0000	128.00	No Ice	1.55	0.68	0.03
			1.03			1/2" Ice	1.70	0.80	0.04
			0.00			1" Ice	1.87	0.92	0.06
Side Arm Mount [SO 103-3]	C	None		0.0000	128.00	No Ice	9.50	9.50	0.22
						1/2" Ice	11.80	11.80	0.32
						1" Ice	14.10	14.10	0.41
2" x 6' Mount Pipe	A	From Leg	2.82	20.0000	128.00	No Ice	1.20	1.20	0.03
			1.03			1/2" Ice	1.80	1.80	0.04
			0.00			1" Ice	2.17	2.17	0.05
2" x 6' Mount Pipe	B	From Leg	2.82	40.0000	128.00	No Ice	1.20	1.20	0.03
			1.03			1/2" Ice	1.80	1.80	0.04
			0.00			1" Ice	2.17	2.17	0.05
2" x 6' Mount Pipe	C	From Leg	2.82	40.0000	128.00	No Ice	1.20	1.20	0.03
			1.03			1/2" Ice	1.80	1.80	0.04
			0.00			1" Ice	2.17	2.17	0.05
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	108.00	No Ice	8.77	6.96	0.07
			0.00			1/2" Ice	9.34	8.18	0.14
			4.00			1" Ice	9.89	9.14	0.21
(2) LNX-6514DS-A1M w/ Mount Pipe	A	From Centroid-Leg	4.00	0.0000	108.00	No Ice	8.40	7.07	0.06
			0.00			1/2" Ice	8.95	8.25	0.13
			4.00			1" Ice	9.48	9.15	0.21
RRH2X60-AWS	A	From Centroid-Leg	4.00	0.0000	108.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			4.00			1" Ice	4.03	2.29	0.11
(2) RRH2X60-PCS	A	From Centroid-Leg	4.00	0.0000	108.00	No Ice	2.20	1.72	0.06
			0.00			1/2" Ice	2.39	1.90	0.08
			4.00			1" Ice	2.59	2.09	0.10
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	108.00	No Ice	8.77	6.96	0.07
			0.00			1/2" Ice	9.34	8.18	0.14
			4.00			1" Ice	9.89	9.14	0.21
(2) LNX-6514DS-A1M w/ Mount Pipe	B	From Centroid-Leg	4.00	0.0000	108.00	No Ice	8.40	7.07	0.06
			0.00			1/2" Ice	8.95	8.25	0.13
			4.00			1" Ice	9.48	9.15	0.21
RRH2X60-AWS	B	From Centroid-Leg	4.00	0.0000	108.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			4.00			1" Ice	4.03	2.29	0.11
(2) DB-T1-6Z-8AB-0Z	B	From Centroid-Leg	4.00	0.0000	108.00	No Ice	0.00	0.00	0.00
			0.00			1/2" Ice	0.00	0.00	0.00
			4.00			1" Ice	0.00	0.00	0.00
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	108.00	No Ice	8.77	6.96	0.07
			0.00			1/2" Ice	9.34	8.18	0.14
			4.00			1" Ice	9.89	9.14	0.21
(2) LNX-6514DS-A1M w/ Mount Pipe	C	From Centroid-Leg	4.00	0.0000	108.00	No Ice	8.40	7.07	0.06
			0.00			1/2" Ice	8.95	8.25	0.13
			4.00			1" Ice	9.48	9.15	0.21
RRH2X60-AWS	C	From Centroid-Leg	4.00	0.0000	108.00	No Ice	3.50	1.82	0.06
			0.00			1/2" Ice	3.76	2.05	0.08
			4.00			1" Ice	4.03	2.29	0.11
RRH2X60-PCS	C	From Centroid-Leg	4.00	0.0000	108.00	No Ice	2.20	1.72	0.06
			0.00			1/2" Ice	2.39	1.90	0.08
			4.00			1" Ice	2.59	2.09	0.10
Platform Mount [LP 303-1]	C	None		0.0000	108.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48

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
						1" Ice	23.08	23.08	1.71

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
A-ANT-18G-2-C	A	Paraboloid w/Shroud (HP)	From Leg	2.82 1.03 0.00	40.0000		128.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.31	0.03 0.06 0.10
A-ANT-18G-2-C	B	Paraboloid w/Shroud (HP)	From Leg	2.82 1.03 0.00	40.0000		128.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.31	0.03 0.06 0.10
A-ANT-18G-2-C	C	Paraboloid w/Shroud (HP)	From Leg	2.82 1.03 0.00	40.0000		128.00	2.17	No Ice 1/2" Ice 1" Ice	3.72 4.01 4.31	0.03 0.06 0.10

Load Combinations

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

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

Maximum 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	39	0.00	0.00	-0.00
			Max. Compression	26	-8.54	-0.02	0.96
			Max. Mx	8	-2.15	-8.90	0.22
			Max. My	2	-2.03	-0.01	9.35
			Max. Vy	8	4.95	-8.90	0.22
			Max. Vx	2	-5.10	-0.01	9.35
			Max. Torque	8			0.37
L2	164 - 159	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.35	-0.13	0.96
			Max. Mx	8	-2.42	-34.38	0.20
			Max. My	2	-2.30	-0.03	35.59
			Max. Vy	8	5.24	-34.38	0.20
			Max. Vx	2	-5.40	-0.03	35.59
			Max. Torque	8			0.37
L3	159 - 154	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.60	-1.11	0.54
			Max. Mx	8	-5.26	-80.09	-0.06
			Max. My	2	-4.94	0.22	83.36
			Max. Vy	8	11.50	-80.09	-0.06
			Max. Vx	2	-12.06	0.22	83.36
			Max. Torque	16			1.21
L4	154 - 149	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.52	-1.21	0.54
			Max. Mx	8	-5.66	-138.39	-0.43
			Max. My	2	-5.35	0.53	144.44
			Max. Vy	8	11.81	-138.39	-0.43
			Max. Vx	2	-12.38	0.53	144.44
			Max. Torque	16			1.31

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	149 - 144	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.13	-1.30	0.55
			Max. Mx	8	-6.88	-206.34	-0.82
			Max. My	2	-6.53	0.87	215.23
			Max. Vy	8	14.15	-206.34	-0.82
			Max. Vx	2	-14.73	0.87	215.23
			Max. Torque	16			1.34
L6	144 - 139	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.16	-1.39	0.56
			Max. Mx	8	-7.42	-277.88	-1.22
			Max. My	2	-7.06	1.22	289.65
			Max. Vy	8	14.47	-277.88	-1.22
			Max. Vx	2	-15.06	1.22	289.65
			Max. Torque	16			1.34
L7	139 - 133.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.29	-1.22	0.58
			Max. Mx	8	-7.99	-313.06	-1.41
			Max. My	2	-7.57	1.42	326.57
			Max. Vy	8	15.52	-313.06	-1.41
			Max. Vx	2	-16.42	1.42	326.57
			Max. Torque	16			1.47
L8	133.33 - 131.663	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.24	-0.81	0.64
			Max. Mx	8	-8.86	-391.61	-1.84
			Max. My	2	-8.34	1.86	411.26
			Max. Vy	8	15.90	-391.61	-1.84
			Max. Vx	2	-17.47	1.86	411.26
			Max. Torque	16			1.72
L9	131.663 - 126.663	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.97	-0.26	0.68
			Max. Mx	8	-10.16	-474.33	-2.27
			Max. My	2	-9.52	2.33	503.68
			Max. Vy	8	18.07	-474.33	-2.27
			Max. Vx	2	-20.41	2.33	503.68
			Max. Torque	5			-2.11
L10	126.663 - 121.663	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.86	0.53	0.63
			Max. Mx	8	-10.94	-565.38	-2.76
			Max. My	2	-10.22	2.91	608.33
			Max. Vy	8	18.39	-565.38	-2.76
			Max. Vx	2	-21.48	2.91	608.33
			Max. Torque	5			-2.20
L11	121.663 - 116.663	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.78	1.34	0.57
			Max. Mx	8	-11.74	-658.03	-3.26
			Max. My	2	-10.97	3.49	718.30
			Max. Vy	8	18.70	-658.03	-3.26
			Max. Vx	2	-22.54	3.49	718.30
			Max. Torque	5			-2.30
L12	116.663 - 111.663	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.84	2.16	0.51
			Max. Mx	8	-12.57	-752.24	-3.76
			Max. My	2	-11.76	4.08	833.63
			Max. Vy	6	19.19	-694.54	410.57
			Max. Vx	2	-23.62	4.08	833.63
			Max. Torque	5			-2.35

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L13	111.663 - 111	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.13	2.27	0.50
			Max. Mx	8	-12.69	-764.85	-3.82
			Max. My	2	-11.88	4.15	849.32
			Max. Vy	6	19.29	-707.28	418.05
			Max. Vx	2	-23.76	4.15	849.32
			Max. Torque	5			-2.36
L14	111 - 110.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.27	2.32	0.50
			Max. Mx	8	-12.76	-769.61	-3.85
			Max. My	2	-11.94	4.18	855.27
			Max. Vy	6	19.33	-712.11	420.88
			Max. Vx	2	-23.82	4.18	855.27
			Max. Torque	5			-2.36
L15	110.75 - 105.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.46	3.77	1.78
			Max. Mx	8	-16.36	-894.61	-3.84
			Max. My	2	-15.41	4.93	1006.89
			Max. Vy	6	24.75	-835.68	493.83
			Max. Vx	2	-30.33	4.93	1006.89
			Max. Torque	5			-2.36
L16	105.75 - 101.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.26	4.42	2.14
			Max. Mx	8	-17.43	-1001.39	-4.11
			Max. My	2	-16.49	5.37	1137.95
			Max. Vy	8	25.53	-1001.39	-4.11
			Max. Vx	2	-31.33	5.37	1137.95
			Max. Torque	5			-1.95
L17	101.5 - 101.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.47	4.47	2.17
			Max. Mx	8	-17.53	-1007.77	-4.13
			Max. My	2	-16.60	5.40	1145.79
			Max. Vy	8	25.57	-1007.77	-4.13
			Max. Vx	2	-31.38	5.40	1145.79
			Max. Torque	5			-1.93
L18	101.25 - 101	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.67	4.51	2.19
			Max. Mx	8	-17.62	-1014.17	-4.15
			Max. My	2	-16.69	5.42	1153.65
			Max. Vy	8	25.63	т ф Ў Ÿ	-4.15
			Max. Vx	2	-31.45	5.42	1153.65
			Max. Torque	5			-1.93
L19	101 - 100.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.86	4.54	2.21
			Max. Mx	8	-17.70	-1020.59	-4.16
			Max. My	2	-16.76	5.45	1161.53
			Max. Vy	8	25.68	-1020.59	-4.16
			Max. Vx	2	-31.51	5.45	1161.53
			Max. Torque	5			-1.92
L20	100.75 - 95.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.46	5.33	2.65
			Max. Mx	8	-19.19	-1151.45	-4.49
			Max. My	2	-18.26	5.97	1322.15
			Max. Vy	8	26.68	-1151.45	-4.49
			Max. Vx	2	-32.71	5.97	1322.15
			Max. Torque	5			-1.92
L21	95.75 - 87.833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.00	5.90	2.97
			Max. Mx	8	-20.28	-1248.32	-4.72
			Max. My	2	-19.37	6.34	1440.95

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	27.40	-1248.32	-4.72
			Max. Vx	2	-33.56	6.34	1440.95
			Max. Torque	5			-1.90
L22	87.833 - 87.166	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.12	6.70	3.43
			Max. Mx	8	-22.95	-1388.11	-5.04
			Max. My	2	-22.03	6.87	1612.19
			Max. Vy	8	28.52	-1388.11	-5.04
			Max. Vx	2	-34.89	6.87	1612.19
			Max. Torque	5			-1.85
L23	87.166 - 82.166	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.98	7.51	3.88
			Max. Mx	8	-24.63	-1533.14	-5.36
			Max. My	2	-23.74	7.39	1789.69
			Max. Vy	8	29.51	-1533.14	-5.36
			Max. Vx	2	-36.08	7.39	1789.69
			Max. Torque	5			-1.84
L24	82.166 - 81.8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.27	7.57	3.92
			Max. Mx	8	-24.76	-1543.95	-5.38
			Max. My	2	-23.88	7.43	1802.92
			Max. Vy	8	29.58	-1543.95	-5.38
			Max. Vx	2	-36.16	7.43	1802.92
			Max. Torque	5			-1.82
L25	81.8 - 81.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.48	7.61	3.94
			Max. Mx	8	-24.87	-1551.35	-5.39
			Max. My	2	-23.98	7.46	1811.98
			Max. Vy	8	29.63	-1551.35	-5.39
			Max. Vx	2	-36.23	7.46	1811.98
			Max. Torque	5			-1.82
L26	81.55 - 76.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.62	8.43	4.41
			Max. Mx	8	-26.86	-1702.01	-5.71
			Max. My	2	-25.99	7.98	1996.21
			Max. Vy	8	30.65	-1702.01	-5.71
			Max. Vx	2	-37.44	7.98	1996.21
			Max. Torque	5			-1.81
L27	76.55 - 71.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-81.68	9.25	4.88
			Max. Mx	8	-28.89	-1857.75	-6.02
			Max. My	2	-28.06	8.50	2186.42
			Max. Vy	8	31.67	-1857.75	-6.02
			Max. Vx	2	-38.62	8.50	2186.42
			Max. Torque	5			-1.79
L28	71.55 - 66.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.76	10.07	5.36
			Max. Mx	8	-30.96	-2018.52	-6.33
			Max. My	2	-30.16	9.03	2382.51
			Max. Vy	8	32.67	-2018.52	-6.33
			Max. Vx	2	-39.79	9.03	2382.51
			Max. Torque	5			-1.76
L29	66.55 - 61.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.85	10.90	5.85
			Max. Mx	8	-33.06	-2184.29	-6.63
			Max. My	2	-32.30	9.55	2584.38
			Max. Vy	8	33.66	-2184.29	-6.63
			Max. Vx	2	-40.94	9.55	2584.38
			Max. Torque	5			-1.74

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L30	61.55 - 56.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.95	11.74	6.34
			Max. Mx	8	-35.20	-2354.98	-6.93
			Max. My	2	-34.47	10.08	2791.96
			Max. Vy	8	34.64	-2354.98	-6.93
			Max. Vx	2	-42.07	10.08	2791.96
			Max. Torque	5			-1.71
L31	56.55 - 51.55	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.06	12.56	6.84
			Max. Mx	8	-37.36	-2530.53	-7.23
			Max. My	2	-36.69	10.60	3005.14
			Max. Vy	8	35.61	-2530.53	-7.23
			Max. Vx	2	-43.18	10.60	3005.14
			Max. Torque	5			-1.68
L32	51.55 - 43.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-100.54	13.01	7.09
			Max. Mx	8	-38.62	-2633.84	-7.39
			Max. My	2	-37.97	10.90	3130.46
			Max. Vy	8	36.15	-2633.84	-7.39
			Max. Vx	2	-43.81	10.90	3130.46
			Max. Torque	5			-1.67
L33	43.336 - 42.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-108.49	13.99	7.61
			Max. Mx	8	-43.29	-2867.02	-7.76
			Max. My	2	-42.68	11.56	3412.97
			Max. Vy	8	37.49	-2867.02	-7.76
			Max. Vx	2	-45.36	11.56	3412.97
			Max. Torque	24			-1.72
L34	42.336 - 37.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-112.94	14.70	7.97
			Max. Mx	8	-45.54	-3056.58	-8.05
			Max. My	2	-44.98	12.08	3642.33
			Max. Vy	8	38.37	-3056.58	-8.05
			Max. Vx	2	-46.37	12.08	3642.33
			Max. Torque	24			-1.77
L35	37.336 - 32.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-117.39	15.40	8.32
			Max. Mx	8	-47.82	-3250.44	-8.33
			Max. My	2	-47.33	12.60	3876.65
			Max. Vy	8	39.22	-3250.44	-8.33
			Max. Vx	2	-47.35	12.60	3876.65
			Max. Torque	24			-1.83
L36	32.336 - 27.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-121.82	16.08	8.67
			Max. Mx	8	-50.14	-3448.45	-8.60
			Max. My	2	-49.71	13.11	4115.75
			Max. Vy	8	40.03	-3448.45	-8.60
			Max. Vx	2	-48.28	13.11	4115.75
			Max. Torque	24			-1.89
L37	27.336 - 22.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-126.24	16.73	9.02
			Max. Mx	8	-52.48	-3650.43	-8.87
			Max. My	2	-52.12	13.62	4359.39
			Max. Vy	8	40.81	-3650.43	-8.87
			Max. Vx	2	-49.17	13.62	4359.39
			Max. Torque	24			-1.94

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L38	22.336 - 17.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-130.65	17.31	9.33
			Max. Mx	8	-54.86	-3856.18	-9.14
			Max. My	2	-54.57	14.13	4607.32
			Max. Vy	8	41.54	-3856.18	-9.14
			Max. Vx	2	-50.00	14.13	4607.32
			Max. Torque	24			-2.00
L39	17.336 - 12.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-135.01	17.87	9.65
			Max. Mx	8	-57.26	-4065.45	-9.40
			Max. My	2	-57.05	14.64	4859.26
			Max. Vy	8	42.21	-4065.45	-9.40
			Max. Vx	2	-50.77	14.64	4859.26
			Max. Torque	24			-2.05
L40	12.336 - 7.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-139.15	18.31	9.90
			Max. Mx	8	-59.66	-4277.03	-9.68
			Max. My	2	-59.53	15.14	5114.88
			Max. Vy	8	42.47	-4277.03	-9.68
			Max. Vx	2	-51.48	15.14	5114.88
			Max. Torque	24			-2.09
L41	7.336 - 2.336	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-142.28	18.22	9.76
			Max. Mx	8	-61.83	-4489.59	-10.10
			Max. My	2	-61.78	15.64	5372.38
			Max. Vy	8	42.61	-4489.59	-10.10
			Max. Vx	2	-51.58	15.64	5372.38
			Max. Torque	24			-2.09
L42	2.336 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	31	-143.68	-775.01	-450.01
			Max. Mx	8	-62.85	-4589.13	-10.29
			Max. My	2	-62.84	15.88	5492.83
			Max. Vy	8	42.68	-4589.13	-10.29
			Max. Vx	2	-51.62	15.88	5492.83
			Max. Torque	24			-2.09

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	31	143.68	-6.25	-3.62
	Max. H_x	20	62.88	42.62	0.07
	Max. H_z	2	62.88	0.10	51.58
	Max. M_x	2	5492.83	0.10	51.58
	Max. M_z	8	4589.13	-42.65	-0.08
	Max. Torsion	16	1.89	26.96	-47.27
	Min. Vert	23	47.16	29.03	17.12
	Min. H_x	8	62.88	-42.65	-0.08
	Min. H_z	15	47.16	-0.05	-51.56
	Min. M_x	14	-5483.45	-0.05	-51.56
	Min. M_z	20	-4585.83	42.62	0.07
	Min. Torsion	24	-2.09	25.90	45.26

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	52.40	0.03	0.00	-2.75	-0.03	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	62.88	-0.10	-51.58	-5492.83	15.88	1.76
0.9 Dead+1.6 Wind 0 deg - No Ice	47.16	-0.10	-51.58	-5424.17	15.64	1.75
1.2 Dead+1.6 Wind 30 deg - No Ice	62.88	26.94	-47.26	-5028.03	-2845.35	2.01
0.9 Dead+1.6 Wind 30 deg - No Ice	47.16	26.94	-47.26	-4965.10	-2810.38	2.01
1.2 Dead+1.6 Wind 60 deg - No Ice	62.88	38.83	-22.61	-2547.62	-4351.49	0.72
0.9 Dead+1.6 Wind 60 deg - No Ice	47.16	38.83	-22.61	-2514.58	-4296.68	0.73
1.2 Dead+1.6 Wind 90 deg - No Ice	62.88	42.65	0.08	10.29	-4589.13	-0.69
0.9 Dead+1.6 Wind 90 deg - No Ice	47.16	42.65	0.08	10.98	-4531.42	-0.69
1.2 Dead+1.6 Wind 120 deg - No Ice	62.88	29.07	17.09	2083.00	-3525.89	-0.70
0.9 Dead+1.6 Wind 120 deg - No Ice	47.16	29.07	17.09	2056.09	-3479.06	-0.69
1.2 Dead+1.6 Wind 150 deg - No Ice	62.88	25.91	45.23	4765.06	-2719.06	-1.80
0.9 Dead+1.6 Wind 150 deg - No Ice	47.16	25.91	45.23	4707.31	-2685.73	-1.80
1.2 Dead+1.6 Wind 180 deg - No Ice	62.88	0.05	51.56	5483.45	-9.70	-1.70
0.9 Dead+1.6 Wind 180 deg - No Ice	47.16	0.05	51.56	5416.59	-9.54	-1.69
1.2 Dead+1.6 Wind 210 deg - No Ice	62.88	-26.96	47.27	5022.89	2848.86	-1.89
0.9 Dead+1.6 Wind 210 deg - No Ice	47.16	-26.96	47.27	4961.73	2813.83	-1.89
1.2 Dead+1.6 Wind 240 deg - No Ice	62.88	-38.83	22.66	2547.25	4350.60	-0.68
0.9 Dead+1.6 Wind 240 deg - No Ice	47.16	-38.83	22.66	2515.93	4295.81	-0.68
1.2 Dead+1.6 Wind 270 deg - No Ice	62.88	-42.62	-0.07	-15.12	4585.83	0.95
0.9 Dead+1.6 Wind 270 deg - No Ice	47.16	-42.62	-0.07	-14.04	4528.17	0.95
1.2 Dead+1.6 Wind 300 deg - No Ice	62.88	-29.03	-17.12	-2093.97	3520.60	0.88
0.9 Dead+1.6 Wind 300 deg - No Ice	47.16	-29.03	-17.12	-2065.22	3473.86	0.87
1.2 Dead+1.6 Wind 330 deg - No Ice	62.88	-25.90	-45.26	-4775.80	2718.89	2.09
0.9 Dead+1.6 Wind 330 deg - No Ice	47.16	-25.90	-45.26	-4716.22	2685.55	2.08
1.2 Dead+1.0 Ice+1.0 Temp	143.68	-0.00	-0.00	-9.71	18.18	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	143.68	-0.00	-8.72	-1062.93	19.08	-0.12
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	143.68	4.31	-7.49	-919.26	-504.18	-0.08
1.2 Dead+1.0 Wind 60 deg+1.0	143.68	6.74	-3.89	-502.48	-833.69	-0.05

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
Ice+1.0 Temp 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	143.68	7.79	0.00	-9.38	-949.87	-0.16
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	143.68	6.25	3.62	450.01	-775.01	-0.18
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	143.68	4.50	7.81	916.81	-515.49	0.04
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	143.68	-0.00	8.71	1042.95	18.60	0.13
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	143.68	-4.31	7.49	900.00	541.41	0.12
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	143.68	-6.74	3.90	484.02	870.17	0.07
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	143.68	-7.78	0.00	-9.83	985.95	0.20
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	143.68	-6.26	-3.63	-470.27	810.77	0.19
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	143.68	-4.50	-7.81	-937.03	552.09	-0.01
Dead+Wind 0 deg - Service	52.40	-0.02	-11.51	-1220.78	3.51	0.16
Dead+Wind 30 deg - Service	52.40	6.01	-10.54	-1118.03	-631.53	0.20
Dead+Wind 60 deg - Service	52.40	8.66	-5.04	-567.10	-965.08	0.14
Dead+Wind 90 deg - Service	52.40	9.51	0.02	0.18	-1017.34	-0.01
Dead+Wind 120 deg - Service	52.40	6.48	3.81	459.46	-781.29	-0.16
Dead+Wind 150 deg - Service	52.40	5.78	10.09	1055.09	-603.28	-0.14
Dead+Wind 180 deg - Service	52.40	0.01	11.50	1214.50	-2.16	-0.14
Dead+Wind 210 deg - Service	52.40	-6.01	10.54	1112.70	632.27	-0.15
Dead+Wind 240 deg - Service	52.40	-8.66	5.05	562.83	964.86	-0.12
Dead+Wind 270 deg - Service	52.40	-9.51	-0.02	-5.45	1016.59	0.06
Dead+Wind 300 deg - Service	52.40	-6.48	-3.82	-466.09	780.11	0.18
Dead+Wind 330 deg - Service	52.40	-5.78	-10.09	-1061.68	603.22	0.20

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	-52.40	0.00	-0.03	52.40	0.00	0.062%
2	-0.10	-62.88	-51.58	0.10	62.88	51.58	0.000%
3	-0.10	-47.16	-51.58	0.10	47.16	51.58	0.000%
4	26.94	-62.88	-47.26	-26.94	62.88	47.26	0.000%
5	26.94	-47.16	-47.26	-26.94	47.16	47.26	0.000%
6	38.83	-62.88	-22.61	-38.83	62.88	22.61	0.000%
7	38.83	-47.16	-22.61	-38.83	47.16	22.61	0.000%
8	42.65	-62.88	0.08	-42.65	62.88	-0.08	0.000%
9	42.65	-47.16	0.08	-42.65	47.16	-0.08	0.000%
10	29.07	-62.88	17.09	-29.07	62.88	-17.09	0.000%
11	29.07	-47.16	17.09	-29.07	47.16	-17.09	0.000%
12	25.91	-62.88	45.23	-25.91	62.88	-45.23	0.000%
13	25.91	-47.16	45.23	-25.91	47.16	-45.23	0.000%
14	0.05	-62.88	51.56	-0.05	62.88	-51.56	0.000%
15	0.05	-47.16	51.56	-0.05	47.16	-51.56	0.000%
16	-26.96	-62.88	47.27	26.96	62.88	-47.27	0.000%
17	-26.96	-47.16	47.27	26.96	47.16	-47.27	0.000%
18	-38.83	-62.88	22.66	38.83	62.88	-22.66	0.000%
19	-38.83	-47.16	22.66	38.83	47.16	-22.66	0.000%
20	-42.62	-62.88	-0.07	42.62	62.88	0.07	0.000%
21	-42.62	-47.16	-0.07	42.62	47.16	0.07	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
22	-29.03	-62.88	-17.12	29.03	62.88	17.12	0.000%
23	-29.03	-47.16	-17.12	29.03	47.16	17.12	0.000%
24	-25.90	-62.88	-45.26	25.90	62.88	45.26	0.000%
25	-25.90	-47.16	-45.26	25.90	47.16	45.26	0.000%
26	0.00	-143.68	0.00	0.00	143.68	0.00	0.000%
27	-0.00	-143.68	-8.72	0.00	143.68	8.72	0.000%
28	4.31	-143.68	-7.49	-4.31	143.68	7.49	0.000%
29	6.74	-143.68	-3.89	-6.74	143.68	3.89	0.000%
30	7.79	-143.68	0.00	-7.79	143.68	-0.00	0.000%
31	6.27	-143.68	3.63	-6.25	143.68	-3.62	0.010%
32	4.50	-143.68	7.81	-4.50	143.68	-7.81	0.000%
33	-0.00	-143.68	8.71	0.00	143.68	-8.71	0.000%
34	-4.31	-143.68	7.49	4.31	143.68	-7.49	0.000%
35	-6.74	-143.68	3.90	6.74	143.68	-3.90	0.000%
36	-7.78	-143.68	0.00	7.78	143.68	-0.00	0.000%
37	-6.26	-143.68	-3.63	6.26	143.68	3.63	0.000%
38	-4.50	-143.68	-7.81	4.50	143.68	7.81	0.000%
39	-0.02	-52.40	-11.51	0.02	52.40	11.51	0.000%
40	6.01	-52.40	-10.54	-6.01	52.40	10.54	0.000%
41	8.66	-52.40	-5.04	-8.66	52.40	5.04	0.000%
42	9.51	-52.40	0.02	-9.51	52.40	-0.02	0.000%
43	6.48	-52.40	3.81	-6.48	52.40	-3.81	0.000%
44	5.78	-52.40	10.09	-5.78	52.40	-10.09	0.000%
45	0.01	-52.40	11.50	-0.01	52.40	-11.50	0.000%
46	-6.01	-52.40	10.54	6.01	52.40	-10.54	0.000%
47	-8.66	-52.40	5.05	8.66	52.40	-5.05	0.000%
48	-9.51	-52.40	-0.02	9.51	52.40	0.02	0.000%
49	-6.48	-52.40	-3.82	6.48	52.40	3.82	0.000%
50	-5.78	-52.40	-10.09	5.78	52.40	10.09	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00029020
2	Yes	5	0.00000001	0.00052147
3	Yes	5	0.00000001	0.00022149
4	Yes	7	0.00000001	0.00014407
5	Yes	6	0.00000001	0.00074853
6	Yes	7	0.00000001	0.00013417
7	Yes	6	0.00000001	0.00071576
8	Yes	5	0.00000001	0.00017390
9	Yes	5	0.00000001	0.00006181
10	Yes	7	0.00000001	0.00011564
11	Yes	6	0.00000001	0.00064185
12	Yes	7	0.00000001	0.00014213
13	Yes	6	0.00000001	0.00074672
14	Yes	6	0.00000001	0.00006804
15	Yes	5	0.00000001	0.00052042
16	Yes	7	0.00000001	0.00013749
17	Yes	6	0.00000001	0.00071209
18	Yes	7	0.00000001	0.00013710
19	Yes	6	0.00000001	0.00073253
20	Yes	5	0.00000001	0.00093809
21	Yes	5	0.00000001	0.00040186
22	Yes	7	0.00000001	0.00011850

23	Yes	6	0.00000001	0.00065775
24	Yes	7	0.00000001	0.00013804
25	Yes	6	0.00000001	0.00072363
26	Yes	5	0.00000001	0.00032305
27	Yes	7	0.00000001	0.00062273
28	Yes	7	0.00000001	0.00085761
29	Yes	7	0.00000001	0.00080919
30	Yes	7	0.00000001	0.00057607
31	Yes	7	0.00000001	0.00071345
32	Yes	7	0.00000001	0.00083930
33	Yes	7	0.00000001	0.00061078
34	Yes	7	0.00000001	0.00087944
35	Yes	7	0.00000001	0.00081958
36	Yes	7	0.00000001	0.00059530
37	Yes	7	0.00000001	0.00076496
38	Yes	7	0.00000001	0.00089720
39	Yes	4	0.00000001	0.00093797
40	Yes	6	0.00000001	0.00006439
41	Yes	5	0.00000001	0.00084123
42	Yes	4	0.00000001	0.00065196
43	Yes	5	0.00000001	0.00054980
44	Yes	5	0.00000001	0.00099273
45	Yes	5	0.00000001	0.00005546
46	Yes	6	0.00000001	0.00006153
47	Yes	5	0.00000001	0.00086000
48	Yes	4	0.00000001	0.00075182
49	Yes	5	0.00000001	0.00058787
50	Yes	5	0.00000001	0.00096351

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	169 - 164 (1)	TP16.4546x15.5x0.25	5.00	0.00	0.0	12.8583	-2.03	955.31	0.002
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	5.00	0.00	0.0	13.6158	-2.19	1011.59	0.002
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	5.00	0.00	0.0	14.3733	-4.73	1067.86	0.004
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	5.00	0.00	0.0	15.1307	-5.07	1124.14	0.005
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	5.00	0.00	0.0	15.8882	-6.22	1180.41	0.005
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	5.00	0.00	0.0	16.6456	-6.76	1236.69	0.005
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	5.67	0.00	0.0	16.9997	-7.26	1262.99	0.006
L8	133.33 - 131.663 (8)	TP22.1143x21.1737x0.3125	5.00	0.00	0.0	21.6247	-8.02	1606.61	0.005
L9	131.663 - 126.663 (9)	TP23.055x22.1143x0.3125	5.00	0.00	0.0	22.5577	-9.20	1675.92	0.005
L10	126.663 - 121.663 (10)	TP23.9956x23.055x0.3125	5.00	0.00	0.0	23.4907	-9.91	1745.24	0.006
L11	121.663 - 116.663 (11)	TP24.9362x23.9956x0.3125	5.00	0.00	0.0	24.4237	-10.67	1814.56	0.006
L12	116.663 - 111.663 (12)	TP25.8769x24.9362x0.3125	5.00	0.00	0.0	25.3567	-11.48	1883.87	0.006
L13	111.663 - 111 (13)	TP26.0016x25.8769x0.3125	0.66	0.00	0.0	25.4804	-11.60	1893.07	0.006
L14	111 - 110.75	TP26.0487x26.0016x0.575	0.25	0.00	0.0	46.4907	-11.67	3454.03	0.003

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L15	110.75 - 105.75 (15)	TP26.9893x26.0487x0.5625	5.00	0.00	0.0	47.1817	-15.11	3505.37	0.004
L16	105.75 - 101.5 (16)	TP27.7888x26.9893x0.55	4.25	0.00	0.0	47.5508	-16.20	3532.79	0.005
L17	101.5 - 101.25 (17)	TP27.8359x27.7888x0.9875	0.25	0.00	0.0	84.1515	-16.31	6252.04	0.003
L18	101.25 - 101 (18)	TP27.8829x27.8359x0.9875	0.25	0.00	0.0	84.2990	-16.40	6262.99	0.003
L19	101 - 100.75 (19)	TP27.9299x27.8829x0.725	0.25	0.00	0.0	62.6026	-16.48	4651.06	0.004
L20	100.75 - 95.75 (20)	TP28.8706x27.9299x0.7125	5.00	0.00	0.0	63.6788	-17.98	4731.02	0.004
L21	95.75 - 87.833 (21)	TP30.36x28.8706x0.7	7.92	0.00	0.0	64.0875	-19.09	4761.38	0.004
L22	87.833 - 87.166 (22)	TP29.8609x28.9198x0.7625	5.00	0.00	0.0	70.4232	-21.74	5232.09	0.004
L23	87.166 - 82.166 (23)	TP30.8019x29.8609x0.75	5.00	0.00	0.0	71.5386	-23.46	5314.96	0.004
L24	82.166 - 81.8 (24)	TP30.8708x30.8019x0.75	0.37	0.00	0.0	71.7026	-23.60	5327.14	0.004
L25	81.8 - 81.55 (25)	TP30.9178x30.8708x0.95	0.25	0.00	0.0	90.3620	-23.71	6713.45	0.004
L26	81.55 - 76.55 (26)	TP31.8589x30.9178x0.925	5.00	0.00	0.0	90.8203	-25.72	6747.50	0.004
L27	76.55 - 71.55 (27)	TP32.7999x31.8589x0.9	5.00	0.00	0.0	91.1253	-27.79	6770.16	0.004
L28	71.55 - 66.55 (28)	TP33.741x32.7999x0.875	5.00	0.00	0.0	91.2770	-29.90	6781.42	0.004
L29	66.55 - 61.55 (29)	TP34.682x33.741x0.8625	5.00	0.00	0.0	92.5834	-32.04	6878.48	0.005
L30	61.55 - 56.55 (30)	TP35.623x34.682x0.85	5.00	0.00	0.0	93.8142	-34.23	6969.92	0.005
L31	56.55 - 51.55 (31)	TP36.5641x35.623x0.825	5.00	0.00	0.0	93.5845	-36.46	6952.86	0.005
L32	51.55 - 43.336 (32)	TP38.11x36.5641x0.825	8.21	0.00	0.0	95.0044	-37.75	7058.35	0.005
L33	43.336 - 42.336 (33)	TP37.5461x36.3563x0.825	6.33	0.00	0.0	96.1561	-42.46	7143.91	0.006
L34	42.336 - 37.336 (34)	TP38.4855x37.5461x0.8	5.00	0.00	0.0	95.6910	-44.79	7109.36	0.006
L35	37.336 - 32.336 (35)	TP39.4249x38.4855x0.8	5.00	0.00	0.0	98.0762	-47.15	7286.57	0.006
L36	32.336 - 27.336 (36)	TP40.3642x39.4249x0.775	5.00	0.00	0.0	97.3836	-49.56	7235.11	0.007
L37	27.336 - 22.336 (37)	TP41.3036x40.3642x0.775	5.00	0.00	0.0	99.6943	-52.00	7406.79	0.007
L38	22.336 - 17.336 (38)	TP42.243x41.3036x0.7625	5.00	0.00	0.0	100.3900	-54.47	7458.48	0.007
L39	17.336 - 12.336 (39)	TP43.1824x42.243x0.75	5.00	0.00	0.0	101.0100	-56.98	7504.56	0.008
L40	12.336 - 7.336 (40)	TP44.1217x43.1824x0.7375	5.00	0.00	0.0	101.5550	-59.48	7545.02	0.008
L41	7.336 - 2.336 (41)	TP45.0611x44.1217x0.725	5.00	0.00	0.0	102.0240	-61.77	7579.88	0.008
L42	2.336 - 0 (42)	TP45.5x45.0611x0.725	2.34	0.00	0.0	103.0340	-62.84	7654.91	0.008

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	169 - 164 (1)	TP16.4546x15.5x0.25	9.35	315.95	0.030	0.00	315.95	0.000
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	36.36	354.58	0.103	0.00	354.58	0.000
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	86.26	395.42	0.218	0.00	395.42	0.000
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	151.11	438.50	0.345	0.00	438.50	0.000
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	226.79	483.80	0.469	0.00	483.80	0.000
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	306.55	531.33	0.577	0.00	531.33	0.000
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	346.07	554.30	0.624	0.00	554.30	0.000
L8	133.33 - 131.663 (8)	TP22.1143x21.1737x0.3125	436.57	715.67	0.610	0.00	715.67	0.000
L9	131.663 - 126.663 (9)	TP23.055x22.1143x0.3125	535.04	779.21	0.687	0.00	779.21	0.000
L10	126.663 - 121.663 (10)	TP23.9956x23.055x0.3125	645.77	845.46	0.764	0.00	845.46	0.000
L11	121.663 - 116.663 (11)	TP24.9362x23.9956x0.3125	761.95	914.41	0.833	0.00	914.41	0.000
L12	116.663 - 111.663 (12)	TP25.8769x24.9362x0.3125	883.63	986.06	0.896	0.00	986.06	0.000
L13	111.663 - 111 (13)	TP26.0016x25.8769x0.3125	900.19	995.77	0.904	0.00	995.77	0.000
L14	111 - 110.75 (14)	TP26.0487x26.0016x0.575	906.47	1783.27	0.508	0.00	1783.27	0.000
L15	110.75 - 105.75 (15)	TP26.9893x26.0487x0.5625	1064.18	1879.85	0.566	0.00	1879.85	0.000
L16	105.75 - 101.5 (16)	TP27.7888x26.9893x0.55	1200.75	1954.87	0.614	0.00	1954.87	0.000
L17	101.5 - 101.25 (17)	TP27.8359x27.7888x0.9875	1208.93	3355.41	0.360	0.00	3355.41	0.000
L18	101.25 - 101 (18)	TP27.8829x27.8359x0.9875	1217.11	3367.38	0.361	0.00	3367.38	0.000
L19	101 - 100.75 (19)	TP27.9299x27.8829x0.725	1225.32	2554.29	0.480	0.00	2554.29	0.000
L20	100.75 - 95.75 (20)	TP28.8706x27.9299x0.7125	1392.79	2692.76	0.517	0.00	2692.76	0.000
L21	95.75 - 87.833 (21)	TP30.36x28.8706x0.7	1516.79	2778.94	0.546	0.00	2778.94	0.000
L22	87.833 - 87.166 (22)	TP29.8609x28.9198x0.7625	1695.70	3074.70	0.552	0.00	3074.70	0.000
L23	87.166 - 82.166 (23)	TP30.8019x29.8609x0.75	1881.30	3229.68	0.583	0.00	3229.68	0.000
L24	82.166 - 81.8 (24)	TP30.8708x30.8019x0.75	1895.13	3244.68	0.584	0.00	3244.68	0.000
L25	81.8 - 81.55 (25)	TP30.9178x30.8708x0.95	1904.61	4041.47	0.471	0.00	4041.47	0.000
L26	81.55 - 76.55 (26)	TP31.8589x30.9178x0.925	2097.38	4200.23	0.499	0.00	4200.23	0.000
L27	76.55 - 71.55 (27)	TP32.7999x31.8589x0.9	2296.58	4353.09	0.528	0.00	4353.09	0.000
L28	71.55 - 66.55 (28)	TP33.741x32.7999x0.875	2502.14	4499.33	0.556	0.00	4499.33	0.000
L29	66.55 - 61.55 (29)	TP34.682x33.741x0.8625	2713.97	4701.27	0.577	0.00	4701.27	0.000
L30	61.55 - 56.55 (30)	TP35.623x34.682x0.85	2931.95	4903.14	0.598	0.00	4903.14	0.000
L31	56.55 - 51.55 (31)	TP36.5641x35.623x0.825	3155.97	5033.71	0.627	0.00	5033.71	0.000
L32	51.55 - 43.336	TP38.11x36.5641x0.825	3287.74	5189.36	0.634	0.00	5189.36	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L33	43.336 - 42.336 (33)	TP37.5461x36.3563x0.825	3584.93	5317.35	0.674	0.00	5317.35	0.000
L34	42.336 - 37.336 (34)	TP38.4855x37.5461x0.8	3826.37	5437.18	0.704	0.00	5437.18	0.000
L35	37.336 - 32.336 (35)	TP39.4249x38.4855x0.8	4073.15	5714.52	0.713	0.00	5714.52	0.000
L36	32.336 - 27.336 (36)	TP40.3642x39.4249x0.775	4325.06	5822.31	0.743	0.00	5822.31	0.000
L37	27.336 - 22.336 (37)	TP41.3036x40.3642x0.775	4581.85	6104.61	0.751	0.00	6104.61	0.000
L38	22.336 - 17.336 (38)	TP42.243x41.3036x0.7625	4843.26	6296.16	0.769	0.00	6296.16	0.000
L39	17.336 - 12.336 (39)	TP43.1824x42.243x0.75	5108.97	6484.93	0.788	0.00	6484.93	0.000
L40	12.336 - 7.336 (40)	TP44.1217x43.1824x0.7375	5378.63	6670.59	0.806	0.00	6670.59	0.000
L41	7.336 - 2.336 (41)	TP45.0611x44.1217x0.725	5650.26	6852.80	0.825	0.00	6852.80	0.000
L42	2.336 - 0 (42)	TP45.5x45.0611x0.725	5777.29	6990.24	0.826	0.00	6990.24	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	169 - 164 (1)	TP16.4546x15.5x0.25	5.10	472.03	0.011	0.00	632.68	0.000
L2	164 - 159 (2)	TP17.4092x16.4546x0.25	5.74	505.79	0.011	0.11	710.02	0.000
L3	159 - 154 (3)	TP18.3638x17.4092x0.25	12.63	533.93	0.024	1.12	791.82	0.001
L4	154 - 149 (4)	TP19.3183x18.3638x0.25	13.32	562.07	0.024	1.22	878.07	0.001
L5	149 - 144 (5)	TP20.2729x19.3183x0.25	15.75	590.21	0.027	1.25	968.78	0.001
L6	144 - 139 (6)	TP21.2275x20.2729x0.25	16.16	618.34	0.026	1.25	1063.95	0.001
L7	139 - 133.33 (7)	TP22.31x21.2275x0.25	17.55	631.50	0.028	1.38	1109.97	0.001
L8	133.33 - 131.663 (8)	TP22.1143x21.1737x0.3125	18.67	803.30	0.023	1.62	1433.09	0.001
L9	131.663 - 126.663 (9)	TP23.055x22.1143x0.3125	21.61	837.96	0.026	2.11	1560.33	0.001
L10	126.663 - 121.663 (10)	TP23.9956x23.055x0.3125	22.71	872.62	0.026	2.20	1692.99	0.001
L11	121.663 - 116.663 (11)	TP24.9362x23.9956x0.3125	23.80	907.28	0.026	2.30	1831.06	0.001
L12	116.663 - 111.663 (12)	TP25.8769x24.9362x0.3125	24.92	941.94	0.026	2.22	1974.53	0.001
L13	111.663 - 111 (13)	TP26.0016x25.8769x0.3125	25.06	946.53	0.026	2.22	1993.97	0.001
L14	111 - 110.75 (14)	TP26.0487x26.0016x0.575	25.11	1727.01	0.015	2.22	3570.88	0.001
L15	110.75 - 105.75 (15)	TP26.9893x26.0487x0.5625	31.61	1752.68	0.018	1.95	3764.30	0.001
L16	105.75 - 101.5 (16)	TP27.7888x26.9893x0.55	32.64	1766.40	0.018	1.93	3914.52	0.000
L17	101.5 - 101.25 (17)	TP27.8359x27.7888x0.9875	32.70	3126.02	0.010	1.93	6719.02	0.000
L18	101.25 - 101 (18)	TP27.8829x27.8359x0.9875	32.77	3131.50	0.010	1.92	6743.00	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L19	101 - 100.75 (19)	TP27.9299x27.8829x0.725	32.84	2325.53	0.014	1.92	5114.83	0.000
L20	100.75 - 95.75 (20)	TP28.8706x27.9299x0.7125	34.13	2365.51	0.014	1.90	5392.11	0.000
L21	95.75 - 87.833 (21)	TP30.36x28.8706x0.7	35.04	2380.69	0.015	1.88	5564.68	0.000
L22	87.833 - 87.166 (22)	TP29.8609x28.9198x0.7625	36.48	2616.04	0.014	1.85	6156.92	0.000
L23	87.166 - 82.166 (23)	TP30.8019x29.8609x0.75	37.74	2657.48	0.014	1.82	6467.25	0.000
L24	82.166 - 81.8 (24)	TP30.8708x30.8019x0.75	37.83	2663.57	0.014	1.82	6497.29	0.000
L25	81.8 - 81.55 (25)	TP30.9178x30.8708x0.95	37.89	3356.72	0.011	1.82	8092.83	0.000
L26	81.55 - 76.55 (26)	TP31.8589x30.9178x0.925	39.19	3373.75	0.012	1.80	8410.75	0.000
L27	76.55 - 71.55 (27)	TP32.7999x31.8589x0.9	40.47	3385.08	0.012	1.77	8716.83	0.000
L28	71.55 - 66.55 (28)	TP33.741x32.7999x0.875	41.74	3390.71	0.012	1.74	9009.67	0.000
L29	66.55 - 61.55 (29)	TP34.682x33.741x0.8625	42.98	3439.24	0.012	1.72	9414.08	0.000
L30	61.55 - 56.55 (30)	TP35.623x34.682x0.85	44.20	3484.96	0.013	1.69	9818.25	0.000
L31	56.55 - 51.55 (31)	TP36.5641x35.623x0.825	45.40	3476.43	0.013	1.66	10079.75	0.000
L32	51.55 - 43.336 (32)	TP38.11x36.5641x0.825	46.07	3529.18	0.013	1.67	10391.42	0.000
L33	43.336 - 42.336 (33)	TP37.5461x36.3563x0.825	47.74	3571.96	0.013	1.69	10647.67	0.000
L34	42.336 - 37.336 (34)	TP38.4855x37.5461x0.8	48.83	3554.68	0.014	1.74	10887.67	0.000
L35	37.336 - 32.336 (35)	TP39.4249x38.4855x0.8	49.88	3643.29	0.014	1.78	11443.00	0.000
L36	32.336 - 27.336 (36)	TP40.3642x39.4249x0.775	50.88	3617.56	0.014	1.83	11658.83	0.000
L37	27.336 - 22.336 (37)	TP41.3036x40.3642x0.775	51.84	3703.39	0.014	1.87	12224.17	0.000
L38	22.336 - 17.336 (38)	TP42.243x41.3036x0.7625	52.73	3729.24	0.014	1.92	12607.75	0.000
L39	17.336 - 12.336 (39)	TP43.1824x42.243x0.75	53.55	3752.28	0.014	1.97	12985.75	0.000
L40	12.336 - 7.336 (40)	TP44.1217x43.1824x0.7375	54.32	3772.51	0.014	2.01	13357.50	0.000
L41	7.336 - 2.336 (41)	TP45.0611x44.1217x0.725	54.40	3789.94	0.014	2.01	13722.33	0.000
L42	2.336 - 0 (42)	TP45.5x45.0611x0.725	54.44	3827.46	0.014	2.01	13997.58	0.000

Pole Interaction Design Data

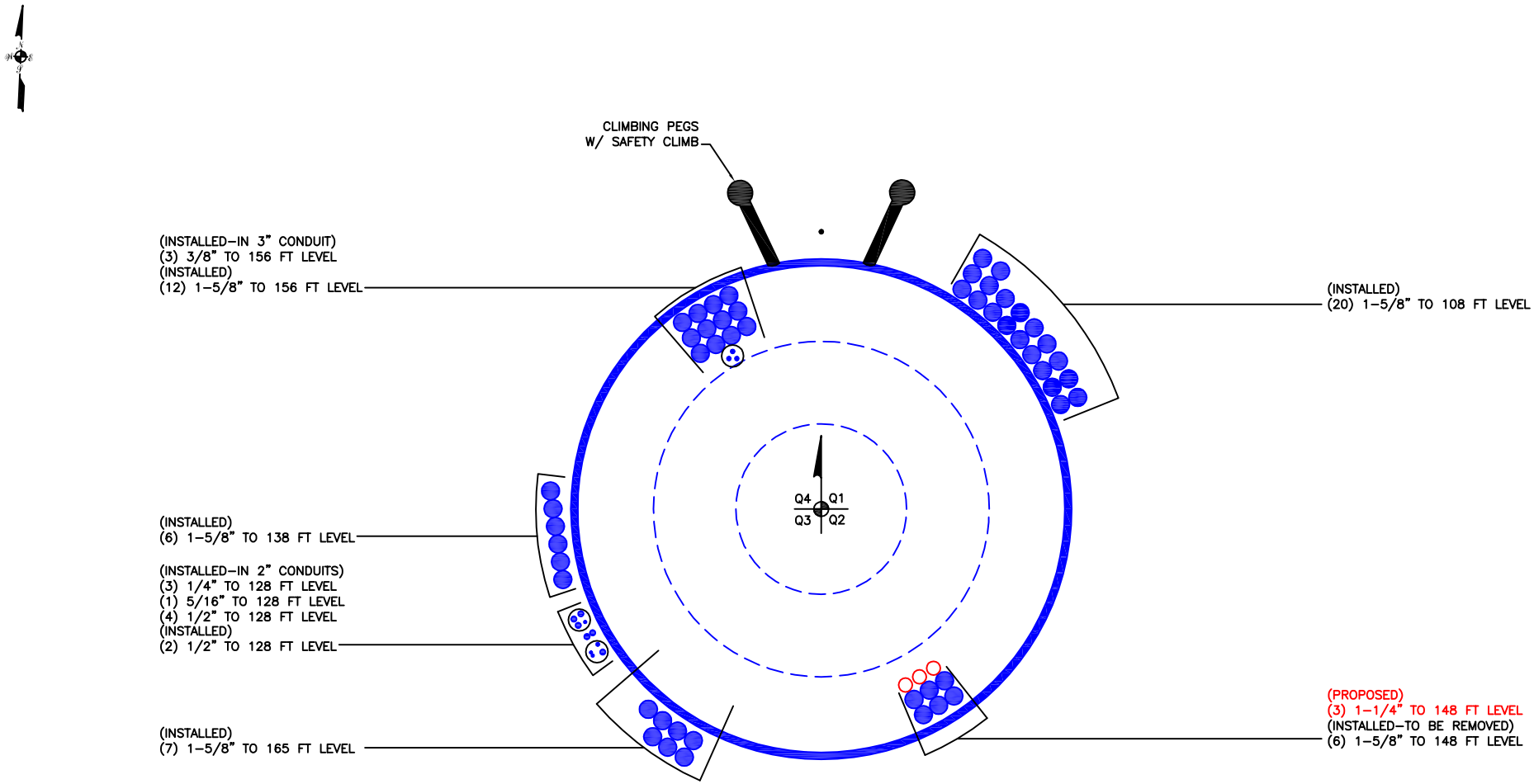
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	169 - 164 (1)	0.002	0.030	0.000	0.011	0.000	0.032	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L2	164 - 159 (2)	0.002	0.103	0.000	0.011	0.000	0.105	1.000	4.8.2
L3	159 - 154 (3)	0.004	0.218	0.000	0.024	0.001	0.223	1.000	4.8.2
L4	154 - 149 (4)	0.005	0.345	0.000	0.024	0.001	0.350	1.000	4.8.2
L5	149 - 144 (5)	0.005	0.469	0.000	0.027	0.001	0.475	1.000	4.8.2
L6	144 - 139 (6)	0.005	0.577	0.000	0.026	0.001	0.583	1.000	4.8.2
L7	139 - 133.33 (7)	0.006	0.624	0.000	0.028	0.001	0.631	1.000	4.8.2
L8	133.33 - 131.663 (8)	0.005	0.610	0.000	0.023	0.001	0.616	1.000	4.8.2
L9	131.663 - 126.663 (9)	0.005	0.687	0.000	0.026	0.001	0.693	1.000	4.8.2
L10	126.663 - 121.663 (10)	0.006	0.764	0.000	0.026	0.001	0.770	1.000	4.8.2
L11	121.663 - 116.663 (11)	0.006	0.833	0.000	0.026	0.001	0.840	1.000	4.8.2
L12	116.663 - 111.663 (12)	0.006	0.896	0.000	0.026	0.001	0.903	1.000	4.8.2
L13	111.663 - 111 (13)	0.006	0.904	0.000	0.026	0.001	0.911	1.000	4.8.2
L14	111 - 110.75 (14)	0.003	0.508	0.000	0.015	0.001	0.512	1.000	4.8.2
L15	110.75 - 105.75 (15)	0.004	0.566	0.000	0.018	0.001	0.571	1.000	4.8.2
L16	105.75 - 101.5 (16)	0.005	0.614	0.000	0.018	0.000	0.619	1.000	4.8.2
L17	101.5 - 101.25 (17)	0.003	0.360	0.000	0.010	0.000	0.363	1.000	4.8.2
L18	101.25 - 101 (18)	0.003	0.361	0.000	0.010	0.000	0.364	1.000	4.8.2
L19	101 - 100.75 (19)	0.004	0.480	0.000	0.014	0.000	0.483	1.000	4.8.2
L20	100.75 - 95.75 (20)	0.004	0.517	0.000	0.014	0.000	0.521	1.000	4.8.2
L21	95.75 - 87.833 (21)	0.004	0.546	0.000	0.015	0.000	0.550	1.000	4.8.2
L22	87.833 - 87.166 (22)	0.004	0.552	0.000	0.014	0.000	0.556	1.000	4.8.2
L23	87.166 - 82.166 (23)	0.004	0.583	0.000	0.014	0.000	0.587	1.000	4.8.2
L24	82.166 - 81.8 (24)	0.004	0.584	0.000	0.014	0.000	0.589	1.000	4.8.2
L25	81.8 - 81.55 (25)	0.004	0.471	0.000	0.011	0.000	0.475	1.000	4.8.2
L26	81.55 - 76.55 (26)	0.004	0.499	0.000	0.012	0.000	0.503	1.000	4.8.2
L27	76.55 - 71.55	0.004	0.528	0.000	0.012	0.000	0.532	1.000	4.8.2

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(27)						✔		
L28	71.55 - 66.55 (28)	0.004	0.556	0.000	0.012	0.000	0.561 ✔	1.000	4.8.2 ✔
L29	66.55 - 61.55 (29)	0.005	0.577	0.000	0.012	0.000	0.582 ✔	1.000	4.8.2 ✔
L30	61.55 - 56.55 (30)	0.005	0.598	0.000	0.013	0.000	0.603 ✔	1.000	4.8.2 ✔
L31	56.55 - 51.55 (31)	0.005	0.627	0.000	0.013	0.000	0.632 ✔	1.000	4.8.2 ✔
L32	51.55 - 43.336 (32)	0.005	0.634	0.000	0.013	0.000	0.639 ✔	1.000	4.8.2 ✔
L33	43.336 - 42.336 (33)	0.006	0.674	0.000	0.013	0.000	0.680 ✔	1.000	4.8.2 ✔
L34	42.336 - 37.336 (34)	0.006	0.704	0.000	0.014	0.000	0.710 ✔	1.000	4.8.2 ✔
L35	37.336 - 32.336 (35)	0.006	0.713	0.000	0.014	0.000	0.719 ✔	1.000	4.8.2 ✔
L36	32.336 - 27.336 (36)	0.007	0.743	0.000	0.014	0.000	0.750 ✔	1.000	4.8.2 ✔
L37	27.336 - 22.336 (37)	0.007	0.751	0.000	0.014	0.000	0.758 ✔	1.000	4.8.2 ✔
L38	22.336 - 17.336 (38)	0.007	0.769	0.000	0.014	0.000	0.777 ✔	1.000	4.8.2 ✔
L39	17.336 - 12.336 (39)	0.008	0.788	0.000	0.014	0.000	0.796 ✔	1.000	4.8.2 ✔
L40	12.336 - 7.336 (40)	0.008	0.806	0.000	0.014	0.000	0.814 ✔	1.000	4.8.2 ✔
L41	7.336 - 2.336 (41)	0.008	0.825	0.000	0.014	0.000	0.833 ✔	1.000	4.8.2 ✔
L42	2.336 - 0 (42)	0.008	0.826	0.000	0.014	0.000	0.835 ✔	1.000	4.8.2 ✔

APPENDIX B

BASE LEVEL DRAWING


CLIMBING PEGS
W/ SAFETY CLIMB
(INSTALLED–IN 3" CONDUIT)
(3) 3/8" TO 156 FT LEVEL
(INSTALLED)
(12) 1–5/8" TO 156 FT LEVEL
(INSTALLED)
(20) 1–5/8" TO 108 FT LEVEL
(INSTALLED)
(6) 1–5/8" TO 138 FT LEVEL
(INSTALLED–IN 2" CONDUITS)
(3) 1/4" TO 128 FT LEVEL
(1) 5/16" TO 128 FT LEVEL
(4) 1/2" TO 128 FT LEVEL
(INSTALLED)
(2) 1/2" TO 128 FT LEVEL
(INSTALLED)
(7) 1–5/8" TO 165 FT LEVEL
(PROPOSED)
(3) 1–1/4" TO 148 FT LEVEL
(INSTALLED–TO BE REMOVED)
(6) 1–5/8" TO 148 FT LEVEL
Q4
Q1
Q3
Q2

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 828054

Work Order: 1322525

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	3.333	18	15.5	22.31	0.25	1	A572-65
2	136.663	48.83	4.333	18	21.17	30.36	0.3125	1.25	A572-65
3	92.166	48.83	5.333	18	28.92	38.11	0.375	1.5	A572-65
4	48.669	48.669	0	18	36.36	45.5	0.375	1.5	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	81.8	101.5	plate	PL 1.25"x4"	6	1			1			1			1			1			1		
2	0	81.8	plate	PL 1.25"x6"	6	1			1			1			1			1			1		
3	101	111	plate	CCI-AFP-060100	3			1						1						1			
4																							
5																							
6																							
7																							
8																							
9																							
10																							

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	4	1.25	5	0.625	30.000	30.000	18.000	3.438	1.1875	A572-65
2	6	1.25	7.5	0.625	36.000	36.000	12.000	5.938	1.1875	A572-65
3	6	1	6	0.5	30.000	30.000	16.000	4.750	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 - 136.663	5.67	3.333	18	21.228	22.310	0.25	A572-65	1.000
8	136.663 - 131.663	5		18	21.174	22.114	0.3125	A572-65	1.000
9	131.663 - 126.663	5		18	22.114	23.055	0.3125	A572-65	1.000
10	126.663 - 121.663	5		18	23.055	23.996	0.3125	A572-65	1.000
11	121.663 - 116.663	5		18	23.996	24.936	0.3125	A572-65	1.000
12	116.663 - 111.663	5		18	24.936	25.877	0.3125	A572-65	1.000
13	111.663 - 111	0.663		18	25.877	26.002	0.3125	A572-65	1.000
14	111 - 110.75	0.25		18	26.002	26.049	0.575	A572-65	0.936
15	110.75 - 105.75	5		18	26.049	26.989	0.5625	A572-65	0.942
16	105.75 - 101.5	4.25		18	26.989	27.789	0.55	A572-65	0.952
17	101.5 - 101.25	0.25		18	27.789	27.836	0.9875	A572-65	0.895
18	101.25 - 101	0.25		18	27.836	27.883	0.9875	A572-65	0.894
19	101 - 100.75	0.25		18	27.883	27.930	0.725	A572-65	0.917
20	100.75 - 95.75	5		18	27.930	28.871	0.7125	A572-65	0.916
21	95.75 - 92.166	7.917	4.333	18	28.871	30.360	0.7	A572-65	0.921
22	92.166 - 87.166	5		18	28.920	29.861	0.7625	A572-65	0.924
23	87.166 - 82.166	5		18	29.861	30.802	0.75	A572-65	0.926
24	82.166 - 81.8	0.366		18	30.802	30.871	0.75	A572-65	0.925
25	81.8 - 81.55	0.25		18	30.871	30.918	0.95	A572-65	0.900
26	81.55 - 76.55	5		18	30.918	31.859	0.925	A572-65	0.908
27	76.55 - 71.55	5		18	31.859	32.800	0.9	A572-65	0.917
28	71.55 - 66.55	5		18	32.800	33.741	0.875	A572-65	0.928
29	66.55 - 61.55	5		18	33.741	34.682	0.8625	A572-65	0.927
30	61.55 - 56.55	5		18	34.682	35.623	0.85	A572-65	0.927
31	56.55 - 51.55	5		18	35.623	36.564	0.825	A572-65	0.941
32	51.55 - 48.669	8.214	5.333	18	36.564	38.110	0.825	A572-65	0.934
33	48.669 - 42.336	6.333		18	36.356	37.546	0.825	A572-65	0.928
34	42.336 - 37.336	5		18	37.546	38.485	0.8	A572-65	0.944
35	37.336 - 32.336	5		18	38.485	39.425	0.8	A572-65	0.933
36	32.336 - 27.336	5		18	39.425	40.364	0.775	A572-65	0.951
37	27.336 - 22.336	5		18	40.364	41.304	0.775	A572-65	0.940
38	22.336 - 17.336	5		18	41.304	42.243	0.7625	A572-65	0.945
39	17.336 - 12.336	5		18	42.243	43.182	0.75	A572-65	0.950
40	12.336 - 7.336	5		18	43.182	44.122	0.7375	A572-65	0.956
41	7.336 - 2.336	5		18	44.122	45.061	0.725	A572-65	0.962
42	2.336 - 0	2.336		18	45.061	45.500	0.725	A572-65	0.958

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	169 - 164	2.0269	9.3545	5.1004
2	164 - 159	2.1853	36.363	5.7357
3	159 - 154	4.7325	86.257	12.632
4	154 - 149	5.0729	151.11	13.316
5	149 - 144	6.2247	226.79	15.752
6	144 - 139	6.7601	306.55	16.159
7	139 - 136.663	7.2565	346.07	17.55
8	136.663 - 131.663	8.0222	436.57	18.668
9	131.663 - 126.663	9.197	535.04	21.615
10	126.663 - 121.663	9.9073	645.77	22.708
11	121.663 - 116.663	10.669	761.95	23.801
12	116.663 - 111.663	11.479	883.63	24.915
13	111.663 - 111	11.6	900.19	25.056
14	111 - 110.75	11.668	906.47	25.11
15	110.75 - 105.75	15.112	1064.2	31.607
16	105.75 - 101.5	16.201	1200.8	32.644
17	101.5 - 101.25	16.312	1208.9	32.703
18	101.25 - 101	16.403	1217.1	32.77
19	101 - 100.75	16.477	1225.3	32.835
20	100.75 - 95.75	17.977	1392.8	34.132
21	95.75 - 92.166	19.086	1516.8	35.045
22	92.166 - 87.166	21.744	1695.7	36.479
23	87.166 - 82.166	23.459	1881.3	37.743
24	82.166 - 81.8	23.601	1895.1	37.826
25	81.8 - 81.55	23.705	1904.6	37.89
26	81.55 - 76.55	25.719	2097.4	39.193
27	76.55 - 71.55	27.786	2296.6	40.474
28	71.55 - 66.55	29.895	2502.1	41.736
29	66.55 - 61.55	32.043	2714	42.979
30	61.55 - 56.55	34.23	2931.9	44.201
31	56.55 - 51.55	36.457	3156	45.396
32	51.55 - 48.669	37.75	3287.7	46.074
33	48.669 - 42.336	42.462	3584.9	47.74
34	42.336 - 37.336	44.79	3826.4	48.829
35	37.336 - 32.336	47.154	4073.1	49.881
36	32.336 - 27.336	49.558	4325.1	50.883
37	27.336 - 22.336	51.995	4581.9	51.835
38	22.336 - 17.336	54.469	4843.3	52.731
39	17.336 - 12.336	57.0	5109.0	53.6
40	12.336 - 7.336	59.5	5378.6	54.3
41	7.336 - 2.336	61.8	5650.3	54.4
42	2.336 - 0	62.8	5777.3	54.4

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
169 - 164	Pole	TP16.455x15.5x0.25	Pole	3.2%	Pass
164 - 159	Pole	TP17.409x16.455x0.25	Pole	10.5%	Pass
159 - 154	Pole	TP18.364x17.409x0.25	Pole	22.3%	Pass
154 - 149	Pole	TP19.318x18.364x0.25	Pole	34.9%	Pass
149 - 144	Pole	TP20.273x19.318x0.25	Pole	47.4%	Pass
144 - 139	Pole	TP21.228x20.273x0.25	Pole	58.3%	Pass
139 - 136.66	Pole	TP22.31x21.228x0.25	Pole	63.0%	Pass
136.66 - 131.66	Pole	TP22.114x21.174x0.3125	Pole	61.5%	Pass
131.66 - 126.66	Pole	TP23.055x22.114x0.3125	Pole	69.2%	Pass
126.66 - 121.66	Pole	TP23.996x23.055x0.3125	Pole	77.0%	Pass
121.66 - 116.66	Pole	TP24.936x23.996x0.3125	Pole	83.9%	Pass
116.66 - 111.66	Pole	TP25.877x24.936x0.3125	Pole	90.2%	Pass
111.66 - 111	Pole	TP26.002x25.877x0.3125	Pole	91.0%	Pass
111 - 110.75	Pole + Reinf.	TP26.049x26.002x0.575	Reinf. 3 Tension Rupture	81.8%	Pass
110.75 - 105.75	Pole + Reinf.	TP26.989x26.049x0.5625	Reinf. 3 Tension Rupture	90.8%	Pass
105.75 - 101.5	Pole + Reinf.	TP27.789x26.989x0.55	Reinf. 3 Tension Rupture	97.8%	Pass
101.5 - 101.25	Pole + Reinf.	TP27.836x27.789x0.9875	Reinf. 1 Tension Rupture	66.8%	Pass
101.25 - 101	Pole + Reinf.	TP27.883x27.836x0.9875	Reinf. 1 Tension Rupture	67.1%	Pass
101 - 100.75	Pole + Reinf.	TP27.93x27.883x0.725	Reinf. 1 Tension Rupture	89.3%	Pass
100.75 - 95.75	Pole + Reinf.	TP28.871x27.93x0.7125	Reinf. 1 Tension Rupture	96.7%	Pass
95.75 - 92.17	Pole + Reinf.	TP30.36x28.871x0.7	Reinf. 1 Tension Rupture	101.8%	Pass
92.17 - 87.17	Pole + Reinf.	TP29.861x28.92x0.7625	Reinf. 1 Tension Rupture	102.8%	Pass
87.17 - 82.17	Pole + Reinf.	TP30.802x29.861x0.75	Reinf. 1 Tension Rupture	108.7%	Fail
82.17 - 81.8	Pole + Reinf.	TP30.871x30.802x0.75	Reinf. 1 Tension Rupture	109.2%	Fail
81.8 - 81.55	Pole + Reinf.	TP30.918x30.871x0.95	Reinf. 2 Tension Rupture	76.5%	Pass
81.55 - 76.55	Pole + Reinf.	TP31.859x30.918x0.925	Reinf. 2 Tension Rupture	80.8%	Pass
76.55 - 71.55	Pole + Reinf.	TP32.8x31.859x0.9	Reinf. 2 Tension Rupture	84.8%	Pass
71.55 - 66.55	Pole + Reinf.	TP33.741x32.8x0.875	Reinf. 2 Tension Rupture	88.8%	Pass
66.55 - 61.55	Pole + Reinf.	TP34.682x33.741x0.8625	Reinf. 2 Tension Rupture	92.5%	Pass
61.55 - 56.55	Pole + Reinf.	TP35.623x34.682x0.85	Reinf. 2 Tension Rupture	96.1%	Pass
56.55 - 51.55	Pole + Reinf.	TP36.564x35.623x0.825	Reinf. 2 Tension Rupture	99.6%	Pass
51.55 - 48.67	Pole + Reinf.	TP38.11x36.564x0.825	Reinf. 2 Tension Rupture	101.5%	Pass
48.67 - 42.34	Pole + Reinf.	TP37.546x36.356x0.825	Reinf. 2 Tension Rupture	108.8%	Fail
42.34 - 37.34	Pole + Reinf.	TP38.485x37.546x0.8	Reinf. 2 Tension Rupture	112.0%	Fail
37.34 - 32.34	Pole + Reinf.	TP39.425x38.485x0.8	Reinf. 2 Tension Rupture	115.0%	Fail
32.34 - 27.34	Pole + Reinf.	TP40.364x39.425x0.775	Reinf. 2 Tension Rupture	117.9%	Fail
27.34 - 22.34	Pole + Reinf.	TP41.304x40.364x0.775	Reinf. 2 Tension Rupture	120.7%	Fail
22.34 - 17.34	Pole + Reinf.	TP42.243x41.304x0.7625	Reinf. 2 Tension Rupture	123.3%	Fail
17.34 - 12.34	Pole + Reinf.	TP43.182x42.243x0.75	Reinf. 2 Tension Rupture	125.8%	Fail
12.34 - 7.34	Pole + Reinf.	TP44.122x43.182x0.7375	Reinf. 2 Tension Rupture	128.2%	Fail
7.34 - 2.34	Pole + Reinf.	TP45.061x44.122x0.725	Reinf. 2 Tension Rupture	130.4%	Fail
2.34 - 0	Pole + Reinf.	TP45.5x45.061x0.725	Reinf. 2 Tension Rupture	131.4%	Fail
				Summary	
			Pole	91.0%	Pass
			Reinforcement	131.4%	Fail
			Overall	131.4%	Fail

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity			
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3
169 - 164	426	n/a	426	12.86	n/a	12.86	3.2%			
164 - 159	506	n/a	506	13.62	n/a	13.62	10.5%			
159 - 154	596	n/a	596	14.37	n/a	14.37	22.3%			
154 - 149	695	n/a	695	15.13	n/a	15.13	34.9%			
149 - 144	804	n/a	804	15.89	n/a	15.89	47.4%			
144 - 139	925	n/a	925	16.65	n/a	16.65	58.3%			
139 - 136.66	985	n/a	985	17.00	n/a	17.00	63.0%			
136.66 - 131.66	1298	n/a	1298	21.62	n/a	21.62	61.5%			
131.66 - 126.66	1474	n/a	1474	22.56	n/a	22.56	69.2%			
126.66 - 121.66	1664	n/a	1664	23.49	n/a	23.49	77.0%			
121.66 - 116.66	1870	n/a	1870	24.42	n/a	24.42	83.9%			
116.66 - 111.66	2093	n/a	2093	25.36	n/a	25.36	90.2%			
111.66 - 111	2124	n/a	2124	25.48	n/a	25.48	91.0%			
111 - 110.75	2135	1674	3809	25.53	18.00	43.53	50.5%			81.8%
110.75 - 105.75	2378	1790	4169	26.46	18.00	44.46	56.2%			90.8%
105.75 - 101.5	2599	1893	4491	27.25	18.00	45.25	60.6%			97.8%
101.5 - 101.25	2612	5093	7705	27.30	48.00	75.30	35.7%	66.8%		57.5%
101.25 - 101	2625	5109	7735	27.35	48.00	75.35	35.8%	67.1%		57.8%
101 - 100.75	2639	3215	5854	27.39	30.00	57.39	47.7%	89.3%		
100.75 - 95.75	2918	3424	6342	28.33	30.00	58.33	51.7%	96.7%		
95.75 - 92.17	3129	3578	6707	28.99	30.00	58.99	54.5%	101.8%		
92.17 - 87.17	3854	3652	7505	35.09	30.00	65.09	55.0%	102.8%		
87.17 - 82.17	4235	3874	8109	36.21	30.00	66.21	58.3%	108.7%		
82.17 - 81.8	4263	3891	8154	36.30	30.00	66.30	58.5%	109.2%		
81.8 - 81.55	4283	5891	10174	36.35	45.00	81.35	47.2%		76.5%	
81.55 - 76.55	4691	6237	10928	37.47	45.00	82.47	49.9%		80.8%	
76.55 - 71.55	5125	6592	11717	38.59	45.00	83.59	52.5%		84.8%	
71.55 - 66.55	5584	6957	12541	39.71	45.00	84.71	54.9%		88.8%	
66.55 - 61.55	6070	7333	13403	40.83	45.00	85.83	57.3%		92.5%	
61.55 - 56.55	6583	7718	14301	41.95	45.00	86.95	59.6%		96.1%	
56.55 - 51.55	7125	8114	15238	43.07	45.00	88.07	61.8%		99.6%	
51.55 - 48.67	7450	8346	15796	43.72	45.00	88.72	63.1%		101.5%	
48.67 - 42.34	7720	8537	16257	44.24	45.00	89.24	67.6%		108.8%	
42.34 - 37.34	8321	8952	17272	45.36	45.00	90.36	70.0%		112.0%	
37.34 - 32.34	8951	9377	18328	46.48	45.00	91.48	72.3%		115.0%	
32.34 - 27.34	9613	9811	19424	47.60	45.00	92.60	74.7%		117.9%	
27.34 - 22.34	10306	10256	20563	48.71	45.00	93.71	77.0%		120.7%	
22.34 - 17.34	11032	10711	21743	49.83	45.00	94.83	79.2%		123.3%	
17.34 - 12.34	11792	11176	22967	50.95	45.00	95.95	81.4%		125.8%	
12.34 - 7.34	12585	11650	24235	52.07	45.00	97.07	83.6%		128.2%	
7.34 - 2.34	13413	12134	25548	53.19	45.00	98.19	85.6%		130.4%	
2.34 - 0	13812	12364	26177	53.71	45.00	98.71	86.5%		131.4%	

Note: Section capacity checked in 5 degree increments.

BU#: 828054
Project #: 017-00013-00

Tower Reactions		
Tower Type	Monopole	
Moment	5777.0	kip-ft
Compression	63.0	kip

Micropile/Rock Anchor Design Strength		
Allowable Strength	306.3	kip

Micropile/Rock Anchor Details		
Diameter of Bar, d_b	3.94	in
Diameter of Hole, d_h	7.5	in
Length of Bond, l_b	25	ft

Moment of Inertia Calculation		
Number of Piles	2	
Distance from Centroid	58.75	in
Number of Piles	4	
Distance from Centroid	29.375	in
Number of Piles	0	
Distance from Centroid	0	in
Number of Piles	0	
Distance from Centroid	0	in

Micropile/ Rock Anchor Capacities		
Steel Anchor Strength Capacity	98.9%	OK

Overall Capacity	98.9%	OK

Capacity Calculations			
Compression Load			
Farest Distance from Centroid, y	58.8	in	
Moment of Inheria, I	10354.7	in^2	
Moment, Mu	5777.0	k-ft	
Axial load due to Moment, Pu	403.8	kip	<--- Controls
Axial load due to Compression, Pu	63.0	kip	
Tension, Tu	0.0	kip	
Steel Anchor Strength Check			
ϕ	1.33		
1.333xAllowable Stress	408.3	kip	
Steel Capacity	98.9%		

Radio Frequency – Electromagnetic Energy (RF-EME) Compliance Report

Site No. CT60XC014
South Windsor/Rt 5
300 Governors Highway
South Windsor, Connecticut 06074
Hartford County
41.833444; -72.603056 NAD83
Monopole

EBI Project No. 6217000113
January 13, 2017

Prepared for:

Sprint Nextel
c/o Alcatel-Lucent
600-700 Mountain Avenue
Room 6A-744
Murray Hill, NJ 07974

Prepared by:

EBI Consulting
environmental | engineering | due diligence

EXECUTIVE SUMMARY

Purpose of Report

EnviroBusiness Inc. (dba EBI Consulting) has been contracted by Sprint to conduct radio frequency electromagnetic (RF-EME) modeling for Sprint Site CT60XC014 located at 300 Governors Highway in South Windsor, Connecticut to determine RF-EME exposure levels from proposed Sprint wireless communications equipment at this site. As described in greater detail in Appendix A of this report, the Federal Communications Commission (FCC) has developed Maximum Permissible Exposure (MPE) Limits for general public exposures and occupational exposures. This report summarizes the results of RF-EME modeling in relation to relevant FCC RF-EME compliance standards for limiting human exposure to RF-EME fields.

This report contains a detailed summary of the RF EME analysis for the site.

This document addresses the compliance of Sprint's proposed transmitting facilities independently and in relation to all existing collocated facilities at the site.

Modeling results included in this report are based on drawings dated January 9, 2017 as provided to EBI Consulting. Subsequent changes to the drawings or site design may yield changes in the MPE levels or FCC Compliance recommendations.

Maximum Permissible Exposure (MPE) Summary			
Location	**% of FCC General Public/Uncontrolled Exposure Limit**	**% of FCC Occupational/Controlled Exposure Limit**	**Power Density (mW/cm^2)**
All Carrier Equipment			
Ground	3.00	0.60	0.01600
Sprint Equipment			
Ground	1.60	0.32	0.00853

Statement of Compliance

Based on worst-case predictive modeling, there are no modeled exposures on any accessible ground-level walking/working surface related to Sprint's proposed equipment in the area that exceed the FCC's occupational and/or general public exposure limits at this site. As such, the proposed Sprint project is in compliance with FCC rules and regulations.

Signage is recommended at the site as presented in Section 9.0. Posting of the signage brings the site into compliance with FCC rules and regulations.

1.0 LOCATION OF ALL EXISTING ANTENNAS AND FACILITIES AND EXISTING RF LEVELS

Sprint proposes the replacement of three (3) wireless telecommunication antennas on a monopole in South Windsor, Connecticut. The proposed modification will result in a total of three (3) Sprint antennas at the site. There are three sectors (A, B and C) proposed at the site, with one (1) proposed antenna per sector.

Based on drawings and aerial photography review, unknown carrier wireless antennas are also present on the monopole. These antennas were included in the modeling analysis.

2.0 LOCATION OR ALL APPROVED (BUT NOT INSTALLED) ANTENNAS AND FACILITIES AND EXPECTED RF LEVELS FROM THE APPROVED FACILITIES

There are no antennas or facilities that are approved and not installed based on information provided to EBI and Sprint at the time of this report.

3.0 NUMBER AND TYPES OF WIRELESS TELECOMMUNICATION SITES (WTS) WITHIN 100 FEET OF THE PROPOSED SITE

There are no other Wireless Telecommunication Service (WTS) sites observed within 100 feet of the proposed site.

4.0 LOCATION AND NUMBER OF THE SPRINT ANTENNAS AND BACK-UP FACILITIES PER STRUCTURE AND NUMBER AND LOCATION OF OTHER TELECOMMUNICATION FACILITIES ON THE PROPERTY

Sprint proposes the replacement of three (3) wireless telecommunication antennas on a monopole in South Windsor, Connecticut. The proposed modification will result in a total of three (3) Sprint antennas at the site. There are three sectors (A, B and C) proposed at the site, with one (1) proposed antenna per sector. In each sector, there is proposed to be one antenna transmitting in the 800 MHz and the 1900 MHz frequency ranges. The Sector A antennas were assumed to be oriented 0° from true north. The Sector B antennas were assumed to be oriented 120° from true north. The Sector C antennas were assumed to be oriented 240° from true north. The bottoms of the Sector A, B, and C antennas will be 145 feet above ground level.

Based on drawings and aerial photography review, unknown carrier wireless antennas are also present on the monopole. These antennas were included in the modeling analysis.

5.0 POWER RATING FOR ALL EXISTING AND PROPOSED BACKUP EQUIPMENT SUBJECT TO THE APPLICATION

The operating power of each frequency, for modeling purposes, was assumed to be the following:

Sprint Operating Powers Per Sector		
Frequency (MHz)	**Power (Watts)**	**# of Transmitters**
1900	20	6
800	20	1

Additional transmitter information used in the modeling of Sprint antennas is summarized in the RoofView® export file presented in Appendix C.

6.0 TOTAL NUMBER OF WATTS PER INSTALLATION AND THE TOTAL NUMBER OF WATTS FOR ALL INSTALLATIONS ON THE STRUCTURE

The Effective Radiated Power (ERP) for each carrier and frequency is summarized below:

Effective Radiated Power (ERP) per Frequency	
Frequency (MHz)	**ERP (Watts)**
1900	11,811
800	1,107
Other Carriers (Total)*	11,915

* Other carrier ERPs were not provided. The ERP calculation is based on worst-case assumptions of other carrier operating powers.

7.0 PREFERRED METHOD OF ATTACHMENT OF PROPOSED ANTENNA WITH PLOT OR ROOF PLAN INCLUDING: DIRECTIONALITY OF ANTENNAS, HEIGHT OF ANTENNAS ABOVE NEAREST WALKING SURFACE, DISCUSS NEARBY INHABITED BUILDINGS

Based on the information provided to EBI, the proposed antennas are to be pipe-mounted to the monopole antenna array and operating in the directions, frequencies, and heights mentioned in section 4.0 above. There is a large building approximately 213 feet to the south of the proposed site that appears to be of commercial use.

8.0 ESTIMATED AMBIENT RADIO FREQUENCY FIELDS FOR THE PROPOSED SITE

Based on worst-case predictive modeling, there are no modeled exposures on any accessible ground-level walking/working surface related to Sprint's proposed equipment in the area that exceed the FCC's occupational and/or general public exposure limits at this site. As such, the proposed Sprint project is in compliance with FCC rules and regulations.

Maximum Permissible Exposure (MPE) Summary			
Location	**% of FCC General Public/Uncontrolled Exposure Limit**	**% of FCC Occupational/Controlled Exposure Limit**	**Power Density (mW/cm^2)**
All Carrier Equipment			
Ground	3.00	0.60	0.01600
Sprint Equipment			
Ground	1.60	0.32	0.00853

The inputs used in the modeling are summarized in the RoofView® export file presented in Appendix C.

There are no modeled areas on the ground that exceed the FCC's limits for general public or occupational exposure in front of the other carrier antennas.

9.0 SIGNAGE AT THE FACILITY IDENTIFYING ALL WTS EQUIPMENT AND SAFETY PRECAUTIONS FOR PEOPLE NEARING THE EQUIPMENT AS MAY BE REQUIRED BY THE APPLICABLE FCC ADOPTED STANDARDS (DISCUSS SIGNAGE FOR THOSE WHO SPEAK LANGUAGES OTHER THAN ENGLISH)

Signs are the primary means for control of access to areas where RF exposure levels may potentially exceed the MPE. It is recommended that Notice signs be installed for the new antennas making people aware of the antennas locations. There are no exposures above the FCC limits in front of the proposed antennas and therefore barriers are not recommended.

Workers that are elevated above the ground may be exposed to power densities greater than the occupational limit. Workers should be informed about the presence of antennas and their associated fields and practice RF Safety Procedures.

Access to this site is accomplished via a gate in the fence surrounding the monopole. Workers must be elevated to antenna level to access them, so these antennas are not accessible to the general public.

10.0 STATEMENT ON WHO PRODUCED THIS REPORT AND QUALIFICATIONS

Please see the certifications attached in Appendix B below.

11.0 LIMITATIONS

This report was prepared for the use of Sprint. It was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same locale under like circumstances. The conclusions provided by EBI are based solely on the information provided by the client. The observations in this report are valid on the date of the investigation. Any additional information that becomes available concerning the site should be provided to EBI so that our conclusions may be revised and modified, if necessary. This report has been prepared in accordance with Standard Conditions for Engagement and authorized proposal, both of which are integral parts of this report. No other warranty, expressed or implied, is made.

12.0 SUMMARY AND CONCLUSIONS

EBI has prepared this Radiofrequency Emissions Compliance Report for the proposed Sprint telecommunications equipment at the site located at 300 Governors Highway in South Windsor, Connecticut.

EBI has conducted theoretical modeling to estimate the worst-case power density from proposed Sprint antennas and the other carriers' existing antennas to document potential MPE levels at this location and ensure that site control measures are adequate to meet FCC and OSHA requirements. As presented in the preceding sections, based on worst-case predictive modeling, there are no modeled exposures on any accessible ground-level walking/working surface related to Sprint's proposed equipment in the area that exceed the FCC's occupational and/or general public exposure limits at this site. As such, the proposed Sprint project is in compliance with FCC rules and regulations.

Signage is recommended at the site as presented in Section 9.0. Posting of the signage brings the site into compliance with FCC rules and regulations.

Appendix A

Federal Communications

Commission (FCC) Requirements

The FCC has established Maximum Permissible Exposure (MPE) limits for human exposure to Radiofrequency Electromagnetic (RF-EME) energy fields, based on exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP) and, over a wide range of frequencies, the exposure limits developed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI) to replace the 1982 ANSI guidelines. Limits for localized absorption are based on recommendations of both ANSI/IEEE and NCRP.

The FCC guidelines incorporate two separate tiers of exposure limits that are based upon occupational/controlled exposure limits (for workers) and general public/uncontrolled exposure limits for members of the general public.

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

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

Table 1 and Figure 1 (below), which are included within the FCC's OET Bulletin 65, summarize the MPE limits for RF emissions. These limits are designed to provide a substantial margin of safety. They vary by frequency to take into account the different types of equipment that may be in operation at a particular facility and are "time-averaged" limits to reflect different durations resulting from controlled and uncontrolled exposures.

The FCC's MPEs are measured in terms of power (mW) over a unit surface area (cm^2). Known as the power density, the FCC has established an occupational MPE of 5 milliwatts per square centimeter (mW/cm^2) and an uncontrolled MPE of 1 mW/cm2 for equipment operating in the 1900 MHz frequency range. For the Sprint equipment operating at 800 MHz, the FCC's occupational MPE is 2.66 mW/cm^2 and an uncontrolled MPE of 0.53 mW/cm^2. These limits are considered protective of these populations.

Table 1: Limits for Maximum Permissible Exposure (MPE)

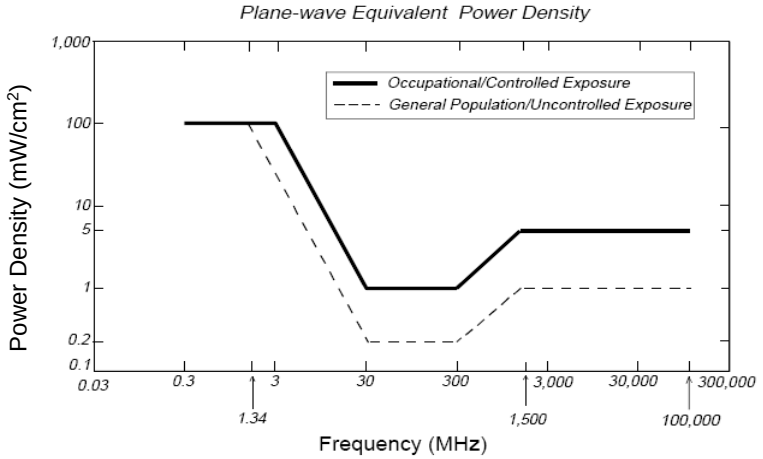
(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $[E]^2$, $[H]^2$, or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1,500	--	--	f/300	6
1,500-100,000	--	--	5	6

(B) Limits for General Public/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (E) (V/m)**	**Magnetic Field Strength (H) (A/m)**	**Power Density (S) (mW/cm^2)**	**Averaging Time $[E]^2$, $[H]^2$, or S (minutes)**
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1,500	--	--	f/1,500	30
1,500-100,000	--	--	1.0	30

f = Frequency in (MHz)
* Plane-wave equivalent power density

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)



Based on the above, the most restrictive thresholds for exposures of unlimited duration to RF energy for several personal wireless services are summarized below:

Personal Wireless Service	Approximate Frequency	Occupational MPE	Public MPE
Personal Communication Services (PCS)	1,950 MHz	5.00 mW/cm^2	1.00 mW/cm^2
Cellular Telephone	870 MHz	2.90 mW/cm^2	0.58 mW/cm^2
Specialized Mobile Radio	855 MHz	2.85 mW/cm^2	0.57 mW/cm^2
Most Restrictive Freq, Range	30-300 MHz	1.00 mW/cm^2	0.20 mW/cm^2

MPE limits are designed to provide a substantial margin of safety. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

Personal Communication Services (PCS) facilities used by Sprint in this area operate within a frequency range of 800-1900 MHz. Facilities typically consist of: 1) electronic transceivers (the radios or cabinets) connected to wired telephone lines; and 2) antennas that send the wireless signals created by the transceivers to be received by individual subscriber units (PCS telephones). Transceivers are typically connected to antennas by coaxial cables.

Because of the short wavelength of PCS services, the antennas require line-of-site paths for good propagation, and are typically installed above ground level. Antennas are constructed to concentrate energy towards the horizon, with as little energy as possible scattered towards the ground or the sky. This design, combined with the low power of PCS facilities, generally results in no possibility for exposure to approach Maximum Permissible Exposure (MPE) levels, with the exception of areas directly in front of the antennas.

FCC Compliance Requirement

A site is considered out of compliance with FCC regulations if there are areas that exceed the FCC exposure limits and there are no RF hazard mitigation measures in place. Any carrier which has an installation that contributes more than 5% of the applicable MPE must participate in mitigating these RF hazards.

Appendix B

Certifications

Preparer Certification

I, Alexandra Vest, state that:

- I am an employee of EnviroBusiness Inc. (d/b/a EBI Consulting), which provides RF-EME safety and compliance services to the wireless communications industry.
- I have successfully completed RF-EME safety training, and I am aware of the potential hazards from RF-EME and would be classified "occupational" under the FCC regulations.
- I am familiar with the FCC rules and regulations as well as OSHA regulations both in general and as they apply to RF-EME exposure.
- I have reviewed the data provided by the client and incorporated it into this Site Compliance Report such that the information contained in this report is true and accurate to the best of my knowledge.

Appendix C

Roofview® Export File / Antenna Inventory

StartMapDefinition

Roof Max X	Roof Max Y	Map Max X	Map Max Y	X Offset	Y Offset	Number of envelope		List Of Area
120	100	150	120	20	20	1	$AE$81:$D $AE$81:$DZ$200	$AE$81:$D

StartSettingsData

Standard	Method	Uptime	Scale Facto	Low Thr	Low Color	Mid Thr	Mid Color	Hi Thr	Hi Color	Over Color	Ap Ht Mult	Ap Ht Method
4	2	1	1	5	1	500	6	5000	6	6	1.5	1

StartAntennaData It is advisable to provide an ID (ant 1) for all antennas

ID	Name	(MHz) Freq	Trans Power	Trans Count	Coax Len	Coax Type	Other Loss	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir	Uptime Profile	ON flag
SPT A1	Sprint	800	20	1	10	1/2 LDF	0.5		16.8667	RFS	APXVSPP18	16	33	145			6	13.4 65;0		ON•
SPT A1	Sprint	1900	20	6	10	1/2 LDF	0.5		101.2002	RFS	APXVSPP18	16	33	145			6	15.9 65;0		ON•
SPT B1	Sprint	800	20	1	10	1/2 LDF	0.5		16.8667	RFS	APXVSPP18	39	17	145			6	13.4 65;120		ON•
SPT B1	Sprint	1900	20	6	10	1/2 LDF	0.5		101.2002	RFS	APXVSPP18	39	17	145			6	15.9 65;120		ON•
SPT C1	Sprint	800	20	1	10	1/2 LDF	0.5		16.8667	RFS	APXVSPP18	11	8	145			6	13.4 65;240		ON•
SPT C1	Sprint	1900	20	6	10	1/2 LDF	0.5		101.2002	RFS	APXVSPP18	11	8	145			6	15.9 65;240		ON•
UNK 1 A1	Unknown 1	850	50	1			3		25.05936	Unknown	Unknown	9	30	164			4	12 63;0		ON•
UNK 1 A2	Unknown 1	850	50	1			3		25.05936	Unknown	Unknown	34	31	164			4	12 63;0		ON•
UNK 1 B1	Unknown 1	850	50	1			3		25.05936	Unknown	Unknown	38	24	164			4	12 63;120		ON•
UNK 1 B2	Unknown 1	850	50	1			3		25.05936	Unknown	Unknown	27	6	164			4	12 63;120		ON•
UNK 1 C1	Unknown 1	850	50	1			3		25.05936	Unknown	Unknown	17	6	164			4	12 63;240		ON•
UNK 1 C2	Unknown 1	850	50	1			3		25.05936	Unknown	Unknown	6	21	164			4	12 63;240		ON•
UNK 2 A1	Unknown 2	850	33	1			3		16.53918	Unknown	Unknown	9	30	156			4	12 63;0		ON•
UNK 2 A2	Unknown 2	850	34	1			3		17.04037	Unknown	Unknown	28	31	156			4	12 63;0		ON•
UNK 2 A3	Unknown 2	850	33	1			3		16.53918	Unknown	Unknown	34	31	156			4	12 63;0		ON•
UNK 2 B1	Unknown 2	850	33	1			3		16.53918	Unknown	Unknown	38	24	156			4	12 63;120		ON•
UNK 2 B2	Unknown 2	850	34	1			3		17.04037	Unknown	Unknown	32	14	156			4	12 63;120		ON•
UNK 2 B3	Unknown 2	850	33	1			3		16.53918	Unknown	Unknown	27	6	156			4	12 63;120		ON•
UNK 2 C1	Unknown 2	850	33	1			3		16.53918	Unknown	Unknown	17	6	156			4	12 63;240		ON•
UNK 2 C2	Unknown 2	850	34	1			3		17.04037	Unknown	Unknown	8	17	156			4	12 63;240		ON•
UNK 2 C3	Unknown 2	850	33	1			3		16.53918	Unknown	Unknown	5	21	156			4	12 63;240		ON•
UNK 3 A1	Unknown 3	850	100	1			3		50.11872	Unknown	Unknown	22	13	136			4	12 63;0		ON•
UNK 3 B1	Unknown 3	850	100	1			3		50.11872	Unknown	Unknown	25	18	136			4	12 63;120		ON•
UNK 3 C1	Unknown 3	850	100	1			3		50.11872	Unknown	Unknown	18	18	136			4	12 63;240		ON•
UNK 4 A1	Unknown 4	850	100	1			3		50.11872	Unknown	Unknown	22	25	126			4	12 63;0		ON•
UNK 4 B1	Unknown 4	850	100	1			3		50.11872	Unknown	Unknown	28	17	126			4	12 63;120		ON•
UNK 4 C1	Unknown 4	850	100	1			3		50.11872	Unknown	Unknown	16	17	126			4	12 63;240		ON•
UNK 5 A1	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	8	31	110			4	12 63;0		ON•
UNK 5 A2	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	17	31	110			4	12 63;0		ON•
UNK 5 A3	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	27	31	110			4	12 63;0		ON•
UNK 5 A4	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	34	31	110			4	12 63;0		ON•
UNK 5 B1	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	38	31	110			4	12 63;120		ON•
UNK 5 B2	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	35	18	110			4	12 63;120		ON•
UNK 5 B3	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	30	10	110			4	12 63;120		ON•
UNK 5 B4	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	26	5	110			4	12 63;120		ON•
UNK 5 C1	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	17	6	110			4	12 63;240		ON•
UNK 5 C2	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	13	11	110			4	12 63;240		ON•
UNK 5 C3	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	8	17	110			4	12 63;240		ON•
UNK 5 C4	Unknown 5	850	25	1			3		12.52968	Unknown	Unknown	5	21	110			4	12 63;240		ON•

StartSymbolData

Sym	Map Marke	Roof X	Roof Y	Map Label	Description (notes for this table only)
Sym		5	35	AC Unit	Sample symbols
Sym		14	5	Roof Access	
Sym		45	5	AC Unit	
Sym		45	20	Ladder	