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

April 22, 2019

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

RE: **Notice of Exempt Modification for AT&T: 842859**
AT&T Site ID: 10070954
371 Terryville Avenue, Bristol, CT 06010
Latitude: 41° 40' 47.89"/ Longitude: 72° 57' 44.79"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 168-foot level of the existing 169-foot monopole tower at 371 Terryville Ave. Bristol, CT 06010. The tower is owned by Crown Castle. Bristol Hospital owns the property. AT&T now intends to replace three (3) antennas, remove six (6) TMS, replace three (3) RRH's with six (6) new RRH's, add one (1) DC6, add two (2) DC power cables, and remove three (3) coax.

This facility was approved by the City of Bristol Zoning Commission on 12/09/2003, this approval was given without conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §6-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Town Mayor Ellen Zoppo-Sassu, Town of Bristol, Brian Skinner, Zoning Enforcement Officer, Town of Bristol, the property owner and Crown Castle is the tower owner.

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

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

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

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

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

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

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

Sincerely,

Anne Marie Zsamba
Real Estate Specialist
3 Corporate Park Drive, Suite 101, Clifton Park, NY 12065
201-236-9224
AnneMarie.Zsamba@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: Ellen Zoppo-Sassu, Mayor
City Hall
111 N. Main St.
Second Floor
Bristol, CT 06010

Brian Skinner, ZEO
City Hall
111 N. Main St.
Second Floor
Bristol, CT 06010

Bristol Hospital
Administration Brewster Rd.
Bristol, CT 06010

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

SHIP DATE: 22APR19
ACTWGT: 2.00 LB
CAD: 104924194/INET4100

BILL SENDER

TO **BRIAN SKINNER, ZEO**
TOWN OF BRISTOL
CITY HALL - 2ND FLOOR
111 N MAIN STREET
BRISTOL CT 06010
(860) 584-6215

REF: 1734.7680
INV:
PO:
DEPT:

565J1/D7E5/23AD

FedEx Express

J191019010701uv

TUE - 23 APR 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7750 2683 3788**

EB BNHA

06010
BDL
CT-US

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Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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

SHIP DATE: 22APR19
ACTWGT: 4.00 LB
CAD: 104924194/INET4100

BILL SENDER

TO **MELANIE BACHMAN**
CONNECTICUT SITING COUNCIL
10 FRANKLIN SQUARE
NEW BRITAIN CT 06051
(860) 827-2951
INV:
PO:
REF: 1765.6680
DEPT:

565J1/D7E5/23AD

FedEx Express

J191019010701uv

TUE - 23 APR 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7750 2694 9161**

EB BDLA

06051
BDL
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Fee Received $15.00

CT-833 17647

ZONING PERMIT
CITY OF BRISTOL ZONING COMMISSION

THIS IS TO CERTIFY that in accordance with Section XII.D of the Zoning Regulations, This Permit is hereby granted.

PROPERTY INFORMATION

Location: 371 Terryville Avenue,

Zoning District: I, Property Use: Telecommunications.

TYPE OF PERMIT

- ☐ New Construction
- ☐ Addition
- ☐ Accessory Structure
- ☐ Fence
- ☐ Deck
- ☐ Swimming Pool
- ☐ Home Business/Office
- ☐ Change of Use
- ☒ Other: See Below

SIGNS

Classification: ☐ Permanent ☐ Temporary (30-day) ☐ Portable (1-Year)

Type: ☐ Wall ☐ Freestanding ☐ A-Frame ☐ Sandwich ☐ Other: _____

DESCRIPTION OF ACTIVITY

Construct telecommunications facility, 171' high tower retaining walls associated equipment per submitted plans

OTHER APPROVALS

Description: CT. Siting Council approval 4/3/02

APPLICANT INFORMATION

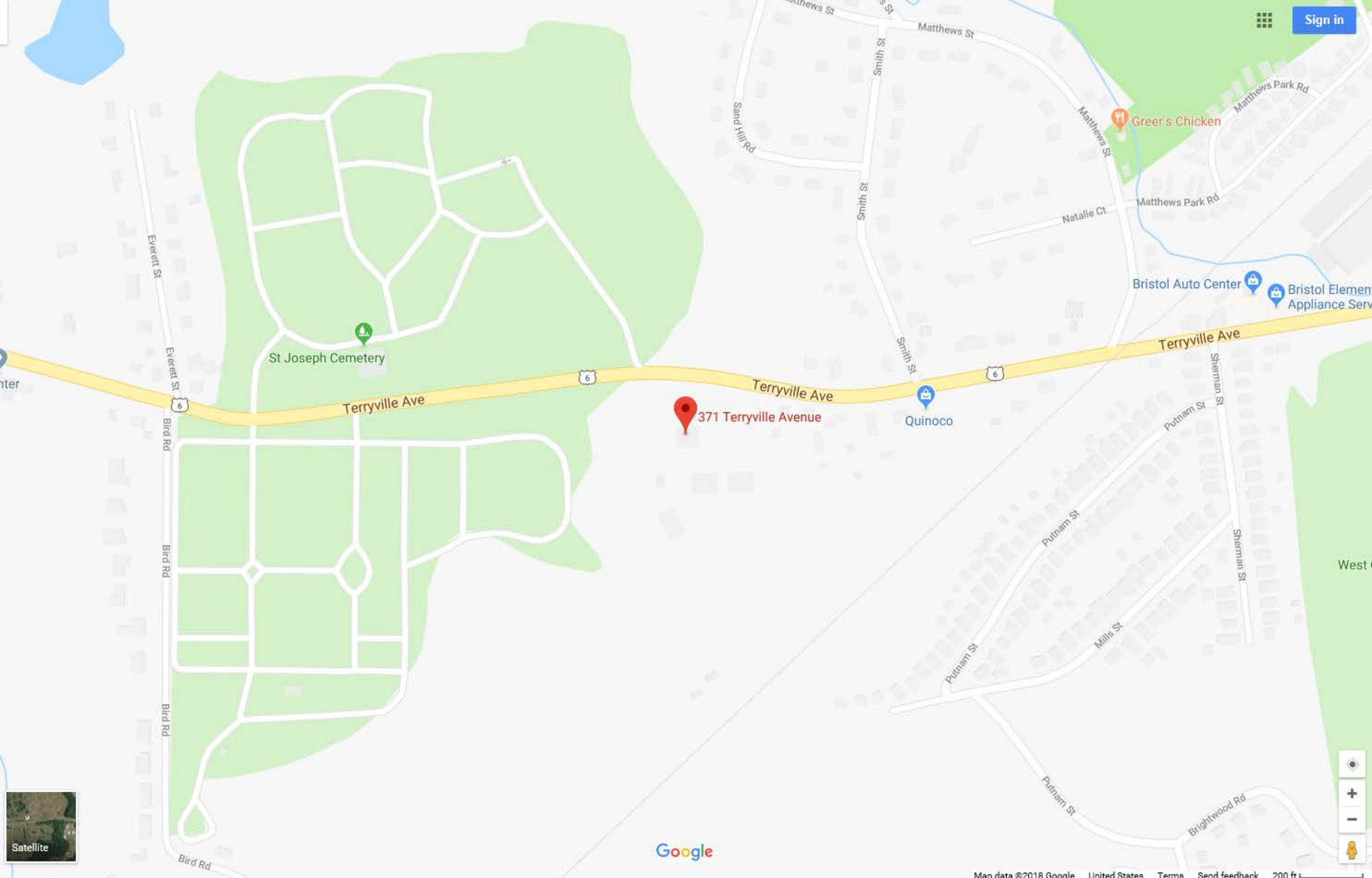
Applicant Name(s): Peter Maxwell

Business Name: VZW corp.

This permit is based upon the plan submitted. Falsification, by misrepresentation or omission, or failure to comply with the conditions of approval of this permit shall constitute a violation of the City of Bristol Zoning Regulations.

Approved by: _____ 12/9/03

Zoning Enforcement Officer — Date Issued


Sign in
Matthews St
Smith St
Sand Hill Rd
Greer's Chicken
Matthews Park Rd
Natalie Ct
Bristol Auto Center
Bristol Elemen
Appliance Serv
Everett St
St Joseph Cemetery
Terryville Ave
6
371 Terryville Avenue
Quinoco
Sherman St
Putnam St
Mills St
Bird Rd
Brightwood Rd
West
Satellite
Google
Map data ©2018 Google
United States
Terms
Send feedback
200 ft

371 TERRYVILLE AVE

Location	371 TERRYVILLE AVE	**Mblu**	61/ / 67-1/ /
Acct#	0136999	**Owner**	BRISTOL HOSPITAL INC
Assessment	$363,370	**Appraisal**	$519,100
PID	2194	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$280,000	$239,100	$519,100
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$196,000	$167,370	$363,370

Owner of Record

Owner BRISTOL HOSPITAL INC
Co-Owner
Address BREWSTER RD
BRISTOL, CT 06010

Sale Price $400,000
Certificate 1
Book & Page 1564/ 795
Sale Date 06/08/2004
Instrument 00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
BRISTOL HOSPITAL INC	$400,000	1	1564/ 795	00	06/08/2004
LAVIERO REALTY LLC	$0		1564/ 792		06/08/2004
LAVIERO REALTY LLC	$0		1352/ 30		02/08/2001
LAVIERO MORRIS + RICHARD	$0		1139/ 447		09/23/1994
GTT CORP TRUSTEE OF OREGON	$0		1103/ 330		09/30/1993

Building Information

Building 1 : Section 1

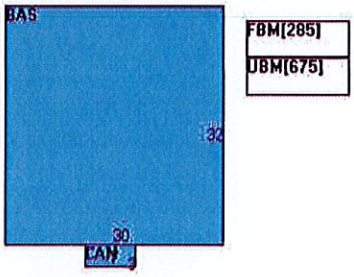
Year Built: 1996
Living Area: 960
Replacement Cost: $117,937
Building Percent Good: 91
Replacement Cost Less Depreciation: $107,300

Building Photo

Building Attributes	
Field	**Description**
STYLE	Office Bldg
MODEL	Comm/Ind
Stories:	1
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Drywall/Sheetr
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Electr Basebrd
AC Type	Central
Bldg Use	Hospital 94
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	Heat/AC Split
Frame Type	Wood Frame
Baths/Plumbing	Average
Ceiling/Wall	Ceil & Walls
Rooms/Prtns	Average
Wall Height	10
% Comn Wall	

0136999 03/20/2016
(http://images.vgsi.com/photos2/BristolCTPhotos//\00\03\34/29.JPG)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	960	960
CAN	Canopy	21	0
FBM	Basement, Finshed	285	0
UBM	Basement, Unfinished	675	0
		1,941	960

Building 2 : Section 1

Year Built: 1996
Living Area: 3,900
Replacement Cost: $185,406
Building Percent Good: 78
Replacement Cost Less Depreciation: $144,600

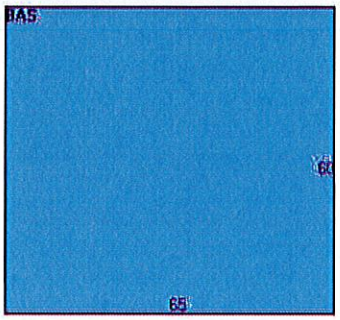
Building Photo

Building Attributes : Bldg 2 of 2	
Field	**Description**
STYLE	Pre-Eng Garage
MODEL	Ind/Comm
Stories:	1
Occupancy	1

Exterior Wall 1	Pre-finsh Metl
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Metal/Tin
Interior Wall 1	Minim/Masonry
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Hot Air-no Duc
AC Type	None
Bldg Use	Hospital 96
Bedrooms	
Full Baths	
Half Baths	
1st Floor Use:	
Heat/AC	None
Frame Type	Steel
Baths/Plumbing	Average
Ceiling/Wall	None
Rooms/Prtns	Average
Wall Height	18
% Comn Wall	

(http://images.vgsi.com/photos2/BristolCTPhotos//\00\02\98/62.jpg)

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	3,900	3,900
		3,900	3,900

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
OHD	Overhead Door	2 Units	$0	2
MEZ2	Mezzanine Fin.	600 S.F.	$12,900	2

Land

Land Use

Use Code	928
Description	Hospital 94
Zone	I
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	1.8
Frontage	412
Depth	
Assessed Value	$167,370
Appraised Value	$239,100

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving Asph.			8285 S.F.	$8,700	1
LT1	Light (1fixt)			2 UNITS	$1,900	1
FN3	Fence 6'			470 L.F.	$3,600	1
SHD1	Shed	MT	Metal	160 S.F.	$1,000	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	$280,000	$239,100	$519,100
2016	$283,100	$227,400	$510,500
2015	$283,100	$227,400	$510,500

Assessment			
Valuation Year	Improvements	Land	Total
2017	$196,000	$167,370	$363,370
2016	$198,170	$159,180	$357,350
2015	$198,170	$159,180	$357,350

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE REMOVED FROM EXISTING TOWER & ON GROUND:

- REMOVE (3) EXISTING ANTENNAS, (6) RRH's, (3) TMA's, (12) ANTENNA MOUNTING PIPES

ITEMS TO BE REMOVED FROM EXISTING TOWER:

- INSTALL AT&T ANTENNA (800-10966) (ALPHA AND BETA, TOTAL OF 2).
- INSTALL AT&T ANTENNA (800-10965) (GAMMA ONLY, TOTAL OF 1).
- INSTALL AT&T 4449 B5/12 (700) (TYP. OF 1 PER SECTOR, TOTAL OF 3) ALPHA & BETA, TOTAL OF 2.
- INSTALL AT&T 4426 B66 (AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- INSTALL (12) SITE PRO 1 P3096 MOUNTING PIPES WITH (12) CROSSOVER PLATES INSTALL (1) SITE PRO 1 HRK-14-U WITH (12) CROSSOVER PLATES INSTALL (1) SITE PRO 1 PRK-1245.
- INSTALL SURGE ARRESTOR (DC6-48-60-18-8F) (TOTAL OF 1).
- INSTALL (2) DC TRUNK CABLES.

ITEMS TO BE INSTALLED IN EXISTING SHELTER:

- SWAP (2) DUS WITH (2) 6630.
- ADD IDLe
- ADD 6630 FOR 5G
- HARVEST RXAIT

ITEMS TO REMAIN:

- (6) ANTENNAS, (6) RRU'S, (6) TMAS, (2) SURGE SUPPRESSOR, (7) COAX CABLES (4) DC TRUNK CABLES (2) FIBER TRUNK CABLES.

SITE ADDRESS:	371 TERRYVILLE AVENUE BRISTOL, CT 06010
LATITUDE (NAD 83):	N 41° 40' 47.71"
LONGITUDE (NAD 83):	W 72° 57' 45.18"
LANDLORD:	CROWN CASTLE INTERNATIONAL 500 W. CUMMINGS PARK, STE 3600 WOBURN, MA 01801
TYPE OF SITE:	MONOPOLE/OUTDOOR
TOWER HEIGHT:	168'-5"'
RAD CENTER:	167'
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

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

CROWN CASTLE SITE ID #: 842859
CROWN CASTLE SITE NAME: BRISTOL CENTER

ENGINEERING

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

at&t

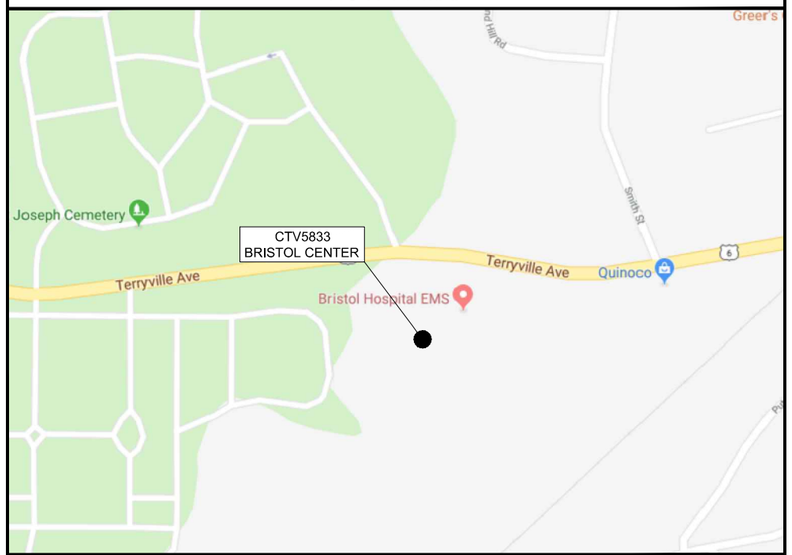
SITE NUMBER: CTV5833

FA LOCATION CODE: 10070954
SITE NAME: BRISTOL CENTER
CROWN SITE NAME: BRISTOL CENTER
PROJECT: 5G/4TX4RX/4TX4RX/LTE 6C
PACE ID: MRCTB034959, MRCTB034962, MRCTB034967, MRCTB034939
BU#: 842859

NOTE:

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

VICINITY MAP



UPDATED 10/04BRISTOL WEST CENTRAL GSM-833I-84 EAST TO EXIT 20, RT. 8 NORTH. TAKE RT. 8 NORTH TO EXIT 39, AT THE BOTTOM OF THE RAMP GO RIGHT ON RT. 6. CONTINUE ON RT. 6 EAST FOR 5.5 MILES JUST PAST CEMETERY. MAKE RIGHT INTO 371 AND THROUGH GATE. LOOK TO YOUR RIGHT FOR THE 2ND GATE ENTRANCE TO OUR CELL SITE. DEMARC INSIDE COMPOUND.ADDRESS:371 TERRYVILLE AVE BRISTOL, CT 06010 MONOPOLE ACCESS:FIRST GATE 8899 SECOND GATE 8899/6664CONTACT:T-1: HCGS: 712434 HCGS 723 139METER: 88-703-933POWER COMPANY: NORTHEAST UTILITIES.GSM T1 #1: HCGS 712434 ET-121GSM T1#2: HCGS 723139 ET-54GSM T1#3: HCGS 744366 ET-247UMTS ON FIBER

GENERAL NOTES

1. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

811

UNDERGROUND SERVICE ALERT

STATE LAW REQUIRES
TWO WORKING DAYS NOTICE PRIOR TO ANY
EARTH MOVING ACTIVITIES BY CALLING
DIAL 811

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

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

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

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

SUBMITTALS

0	04/12/19	ISSUED FOR PERMITTING

FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

TITLE SHEET

T-1

PART 1 - GENERAL

1.1 GENERAL CONDITIONS:

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

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

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

1.2 LAWS, REGULATIONS, ORDINANCES, STATUTES AND CODES.

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

1.3 REFERENCES:

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

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

1.4 SCOPE OF WORK

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

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

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

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

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

PART 2 - PRODUCTS

2.1 GENERAL:

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

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

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

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

2.2 MATERIALS AND EQUIPMENT:

A. CONDUIT:

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

B. CONDUCTORS AND CABLE:

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

C. DISCONNECT SWITCHES:

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

D. CHEMICAL ELECTROLYTIC GROUNDING SYSTEM:

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

E. SYSTEM GROUNDING:

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

F. OTHER MATERIALS:

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

G. PANELS AND LOAD CENTERS:

1. ALL PANEL DIRECTORIES SHALL BE TYPEWRITTEN.

PART 3 - EXECUTION

3.1 GENERAL:

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

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

3.2 LABOR AND WORKMANSHIP:

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

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

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

3.3 COORDINATION:

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

3.4 INSTALLATION:

A. CONDUIT:

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

B. CONDUCTORS AND CABLE:

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

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

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

C. DISCONNECT SWITCHES:

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

D. GROUNDING:

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

3.5 ACCEPTANCE TESTING:

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

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

C. TEST PROCEDURES:

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

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

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

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

PROJECT NO: ERCC0004

DRAWN BY: CM

CHECKED BY: CAT

SUBMITTALS

0	04/12/19	ISSUED FOR PERMITTING

FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

GENERAL NOTES I

GN-1

ANTENNA MOUNTING

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

TORQUE REQUIREMENTS

12. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
13. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
    A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
    B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.
    C. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
14. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
15. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
16. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4 - 29.8 NM).
17. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7 - 2.3 NM).

FIBER & POWER CABLE MOUNTING

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

COAXIAL CABLE NOTES

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

GENERAL CABLE AND EQUIPMENT NOTES

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

GROUNDING NOTES

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

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM
EXOTHERMIC WITH INSPECTION SLEEVE
GROUNDING BAR
SHELTER GROUNDING BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
SINGLE POLE SWITCH
DUPLEX RECEPTACLE
DUPLEX GFCI RECEPTACLE
FLUORESCENT LIGHTING FIXTURE (2) TWO LAMPS 48-T8 — F
EXISTING SMOKE DETECTION (DC) — SD
EXISTING EMERGENCY LIGHTING (DC)
SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW LED-1-25A400/51K-SR4-120-PE-DDBTXD
EXISTING UTILITY POLE

CALLOUT REFERENCE — X
REVISION REFERENCE — 1
WORKPOINT — W.P.
SECTION REFERENCE — XX / X-X
DETAIL REFERENCE — XX / X-X
ELEVATION REFERENCE — X / X

EXISTING CHAIN LINK FENCE — X — X — X — X
EXISTING WOOD/WROUGHT IRON FENCE
EXISTING WALL STRUCTURE
LEASE AREA
PROPERTY LINE (PL)
SETBACKS
PROPOSED/EXISTING ICE BRIDGE
PROPOSED/EXISTING CABLE TRAY
EXISTING WATER LINE
PROPOSED UNDERGROUND POWER — W — W — W — W — W —
PROPOSED UNDERGROUND TELCO — UGP — UGP — UGP — UGP —
PROPOSED OVERHEAD POWER — UGT — UGT — UGT — UGT —
PROPOSED OVERHEAD TELCO — OHP — OHP — OHP — OHP —
PROPOSED OVERHEAD UTILITIES — OHT — OHT — OHT — OHT — OHT —
PROPOSED ABOVE GROUND POWER — OHT — OHT — OHT — OHT — OHT —
PROPOSED ABOVE GROUND TELCO — AGP — AGP — AGP — AGP — AGP —
— AGT — AGT — AGT — AGT — AGT —

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

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

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

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

PROJECT NO: ERCC0004

DRAWN BY: CM

CHECKED BY: CAT

SUBMITTALS

0	04/12/19	ISSUED FOR PERMITTING

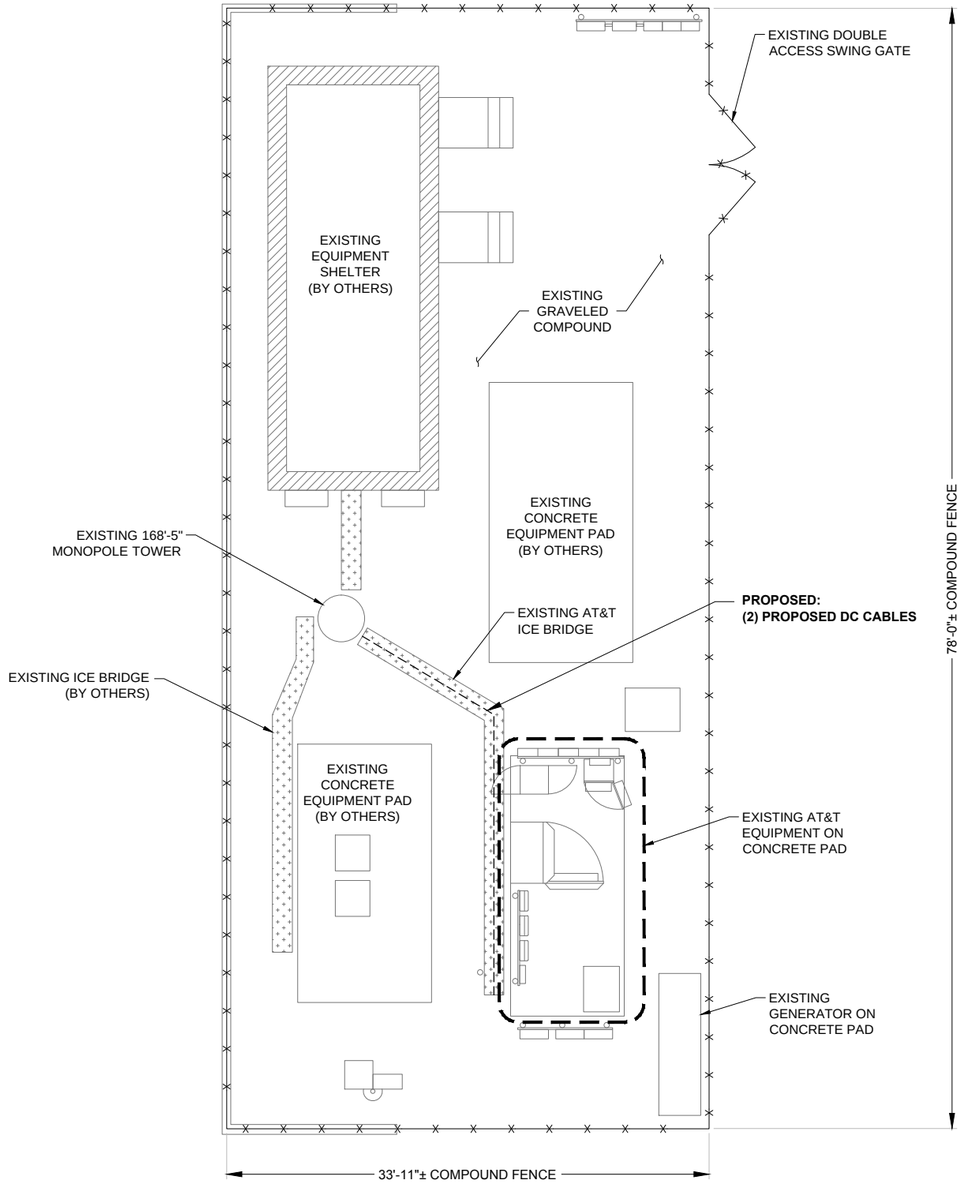
FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

GENERAL NOTES II

GN-2

TRUE NORTH



NOTES:

1. PLAN BASED ON MASTER CONSULTING CONNECTICUT DRAWINGS ISSUED BY MASER CONSULTING CONNECTICUT ON 01/03/18. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.

1 SITE PLAN

SCALE: 3/16" = 1'-0"

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065

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120 ST. JAMES AVENUE, 5TH FLOOR
BOSTON, MA 02116

STATE OF CONNECTICUT
CRAIG A. THOMAS
No. 0029052
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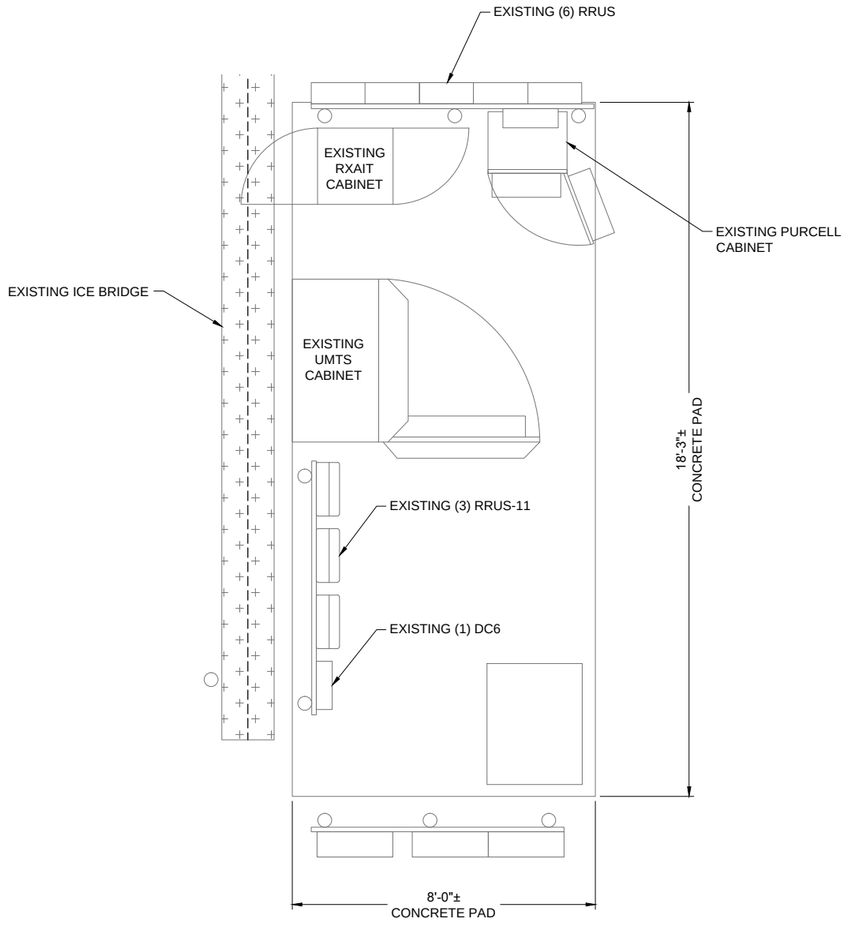
BRISTOL, CT 06010

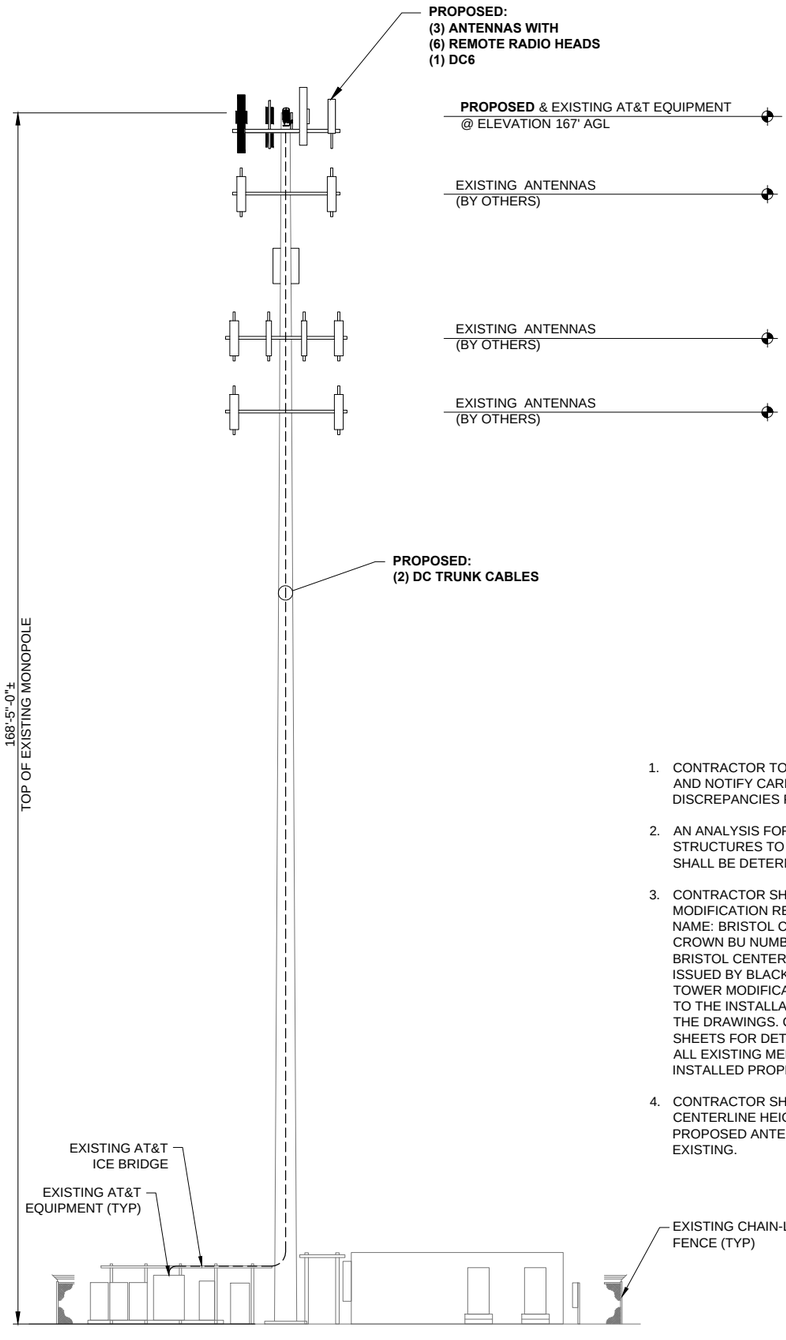
SITE PLAN

C-1

TRUE NORTH



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



1. CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.
2. AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL REFER TO THE STRUCTURAL MODIFICATION REPORT; SITE NUMBER: CTV5833; SITE NAME: BRISTOL CENTER; FA LOCATION: 10070954; CROWN BU NUMBER: 842859; CROWN SITE NAME: BRISTOL CENTER; CROWN ORDER NUMBER: 475338; ISSUED BY BLACK & VEATCH. DATED ON 03/20/2019. THE TOWER MODIFICATIONS MUST BE PERFORMED PRIOR TO THE INSTALLATION OF THE EQUIPMENT SHOWN ON THE DRAWINGS. CONTRACTOR SHALL REFER TO SHEETS FOR DETAILS. THE CONTRACTOR SHALL VERIFY ALL EXISTING MEMBERS AND HARDWARE ARE INSTALLED PROPERLY AS DESCRIBED IN THIS REPORT.
4. CONTRACTOR SHALL VERIFY THE EXISTING ANTENNA CENTERLINE HEIGHT ABOVE GROUND LEVEL. PROPOSED ANTENNA CENTERLINE SHALL MATCH EXISTING.

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

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BOSTON, MA 02116

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

PROJECT NO:	ERCC0004
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SUBMITTALS

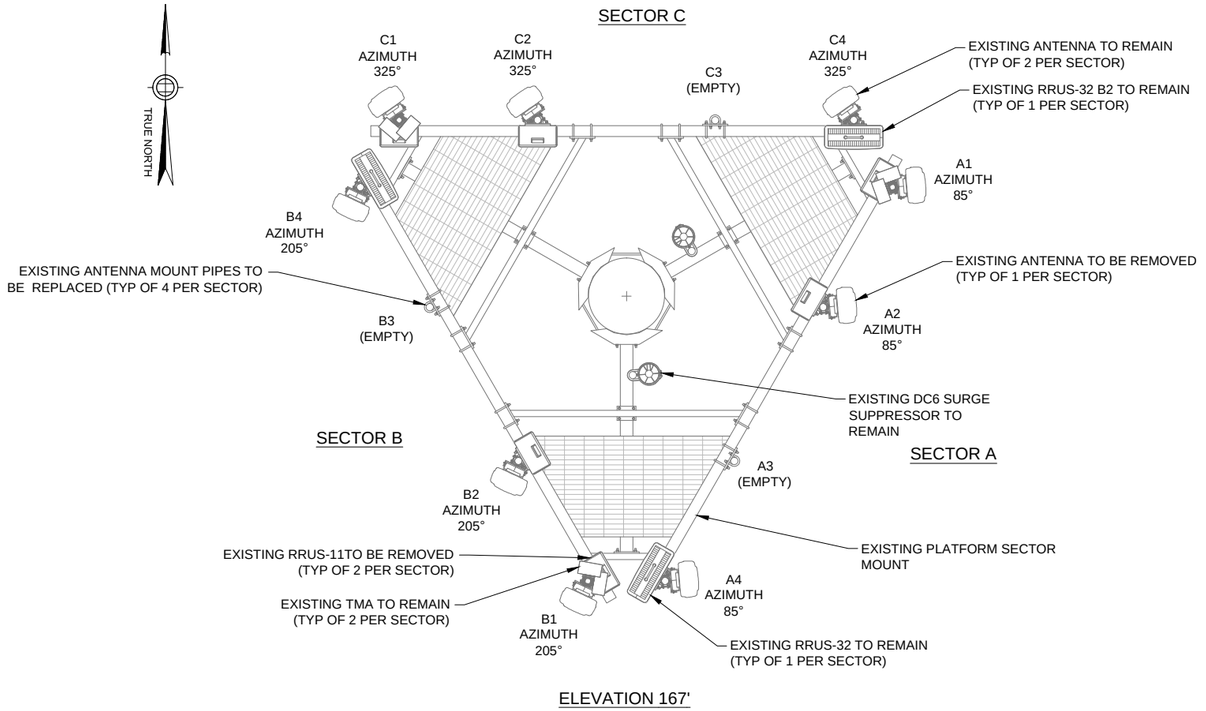
0	04/12/19	ISSUED FOR PERMITTING

FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

EQUIPMENT LAYOUT & PROPOSED TOWER ELEVATION

C-2



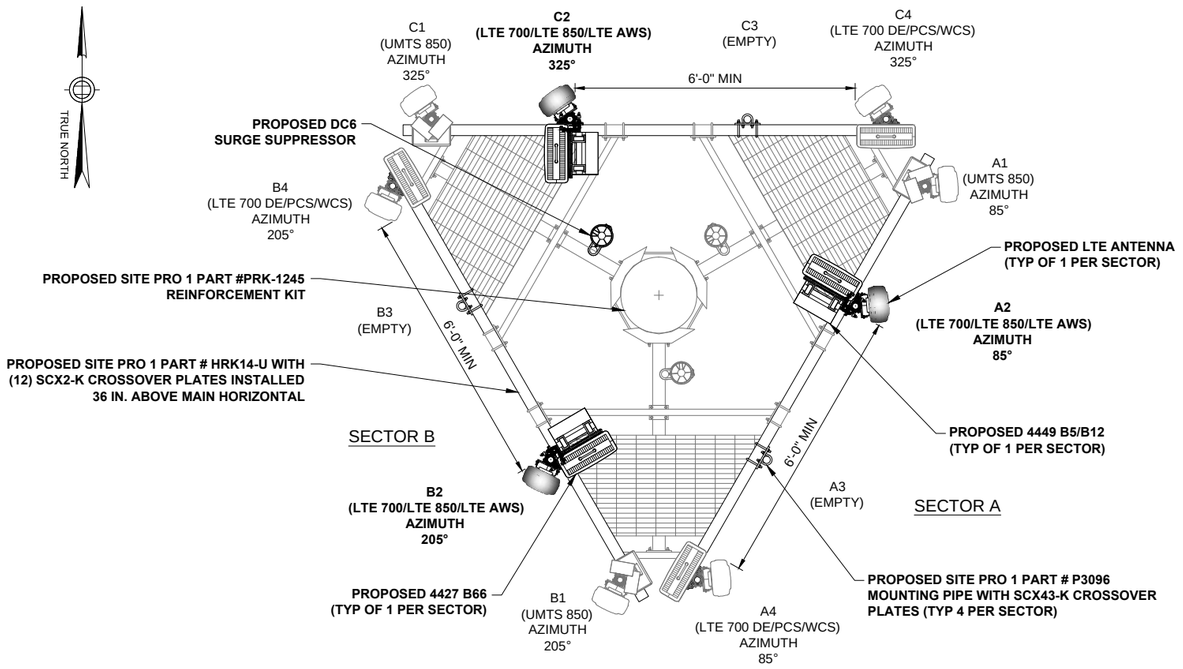
ELEVATION 167'

1 EXISTING ANTENNA LAYOUT

SCALE: N.T.S.

NOTES:

1. CONTRACTOR SHALL REFER TO THE MOUNT MODIFICATION REPORT; SITE NUMBER: CTV5833; SITE NAME: BRISTOL CENTER; FA LOCATION: 10070954; CROWN BU NUMBER: 842859; CROWN SITE NAME: BRISTOL CENTER; CROWN ORDER NUMBER: 475338; ISSUED BY INFINIGY. DATED ON 02/05/19. THE MOUNT MODIFICATIONS MUST BE PERFORMED PRIOR TO THE INSTALLATION OF THE EQUIPMENT SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING MEMBERS AND HARDWARE ARE INSTALLED PROPERLY AS DESCRIBED IN THIS REPORT.
2. CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.
3. CONTRACTOR SHALL NOT EXCEED MOUNTING MORE THAN (2) RRHS PER ANTENNA MOUNTING PIPE - RELOCATE TO AN ADJACENT ANTENNA MOUNTING PIPE AS NEEDED.



ELEVATION 167'

2 PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.

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STATE OF CONNECTICUT
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SUBMITTALS

0	04/12/19	ISSUED FOR PERMITTING

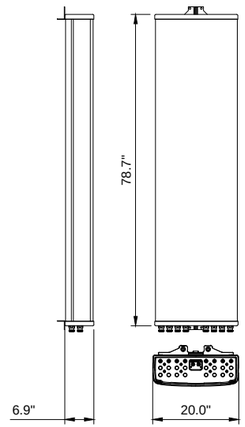
FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

EXISTING & PROPOSED
ANTENNA LAYOUT

C-3

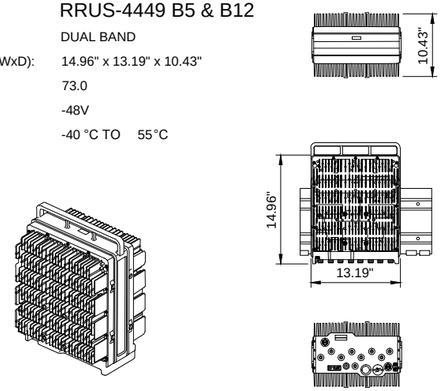
MANUFACTURER:	KATHREIN
MODEL NO.:	80010965
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
COLOR:	LIGHT GRAY
DIMENSIONS (LxWxD):	78.7" x 20.0" x 6.9" 1999mm x 508mm x 175mm
WEIGHT (lbs):	97.6
CONNECTOR:	8 x 4.3-10 FEMALE
FRONT WIND LOAD:	254 LBF @ 93 MPH 1130 N @ 150 KM/H
SIDE WIND LOAD:	256 LBF @ 93 MPH 1140 N @ 150 KM/H
WIND SPEED MAX.:	>150 MPH (>241 KM/H)



1 ANTENNA SPECIFICATIONS

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL NO.:	RRUS-4449 B5 & B12
TECHNOLOGY:	DUAL BAND
DIMENSIONS (HxWxD):	14.96" x 13.19" x 10.43"
WEIGHT (lbs):	73.0
POWER SUPPLY:	-48V
TEMPERATURE:	-40 °C TO 55°C

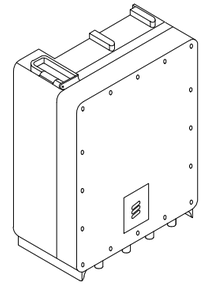


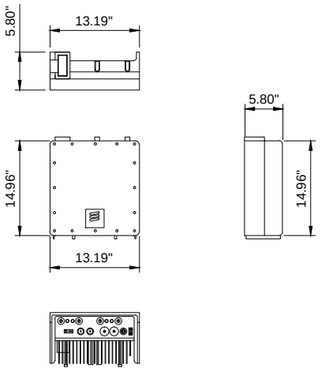
2 RRUS SPECIFICATIONS

SCALE: N.T.S.

MANUFACTURER:	ERICSSON
MODEL NO.:	RRUS-4426 B66
DIMENSIONS (HxWxD):	14.96" x 13.19" x 5.80"
WEIGHT (lbs):	48.4
POWER SUPPLY:	-48V

NOTE:
PENDING FINAL PRODUCT SPECIFICATION



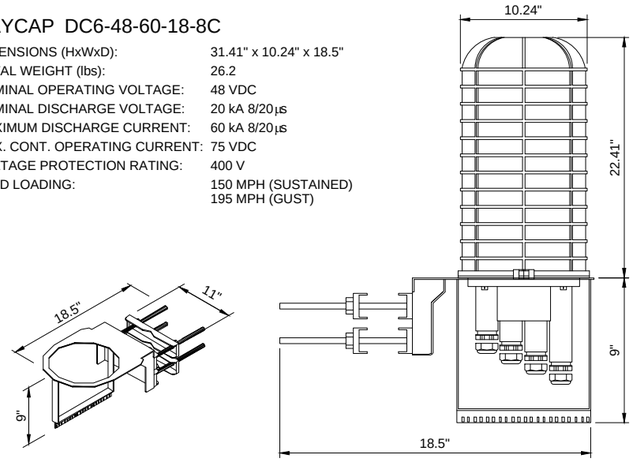


3 RRUS SPECIFICATIONS

SCALE: N.T.S.

RAYCAP DC6-48-60-18-8C

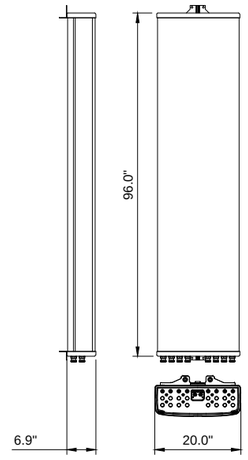
DIMENSIONS (HxWxD):	31.41" x 10.24" x 18.5"
TOTAL WEIGHT (lbs):	26.2
NOMINAL OPERATING VOLTAGE:	48 VDC
NOMINAL DISCHARGE VOLTAGE:	20 kA 8/20μs
MAXIMUM DISCHARGE CURRENT:	60 kA 8/20μs
MAX. CONT. OPERATING CURRENT:	75 VDC
VOLTAGE PROTECTION RATING:	400 V
WIND LOADING:	150 MPH (SUSTAINED) 195 MPH (GUST)



4 DC SURGE PROTECTION SPECIFICATIONS

SCALE: N.T.S.

MANUFACTURER:	KATHREIN
MODEL NO.:	80010966
RADOME MATERIAL:	FIBERGLASS, UV RESISTANT
COLOR:	LIGHT GRAY
DIMENSIONS (LxWxD):	96.0" x 20.0" x 6.9" 2438mm x 508mm x 175mm
WEIGHT (lbs):	114.6
CONNECTOR:	8 x 4.3-10 FEMALE
FRONT WIND LOAD:	315 LBF @ 93 MPH 1400 N @ 150 KM/H
SIDE WIND LOAD:	316 LBF @ 93 MPH 1405 N @ 150 KM/H
WIND SPEED MAX.:	>150 MPH (>241 KM/H)



5 ANTENNA SPECIFICATIONS

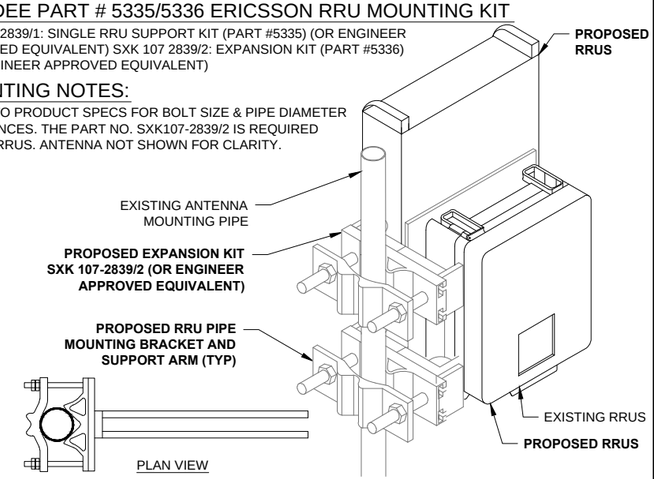
SCALE: N.T.S.

CUE DEE PART # 5335/5336 ERICSSON RRU MOUNTING KIT

SXK 107 2839/1: SINGLE RRU SUPPORT KIT (PART #5335) (OR ENGINEER APPROVED EQUIVALENT) SXK 107 2839/2: EXPANSION KIT (PART #5336) (OR ENGINEER APPROVED EQUIVALENT)

MOUNTING NOTES:

REFER TO PRODUCT SPECS FOR BOLT SIZE & PIPE DIAMETER TOLERANCES. THE PART NO. SXK107-2839/2 IS REQUIRED FOR (2) RRUS. ANTENNA NOT SHOWN FOR CLARITY.

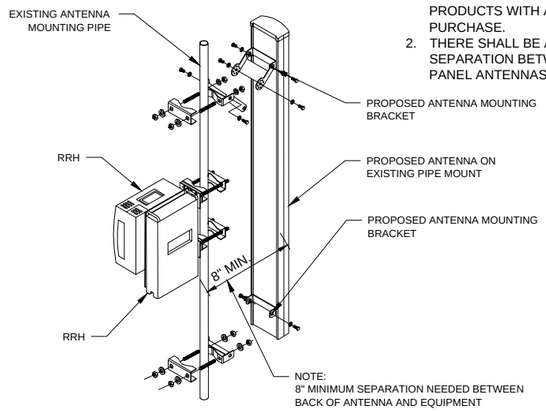


6 RRU MOUNTING DETAIL

SCALE: N.T.S.

NOTES:

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



7 ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

8 DETAIL NOT USED

SCALE: N.T.S.

9 DETAIL NOT USED

SCALE: N.T.S.

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BOSTON, MA 02116

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

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

SUBMITTALS

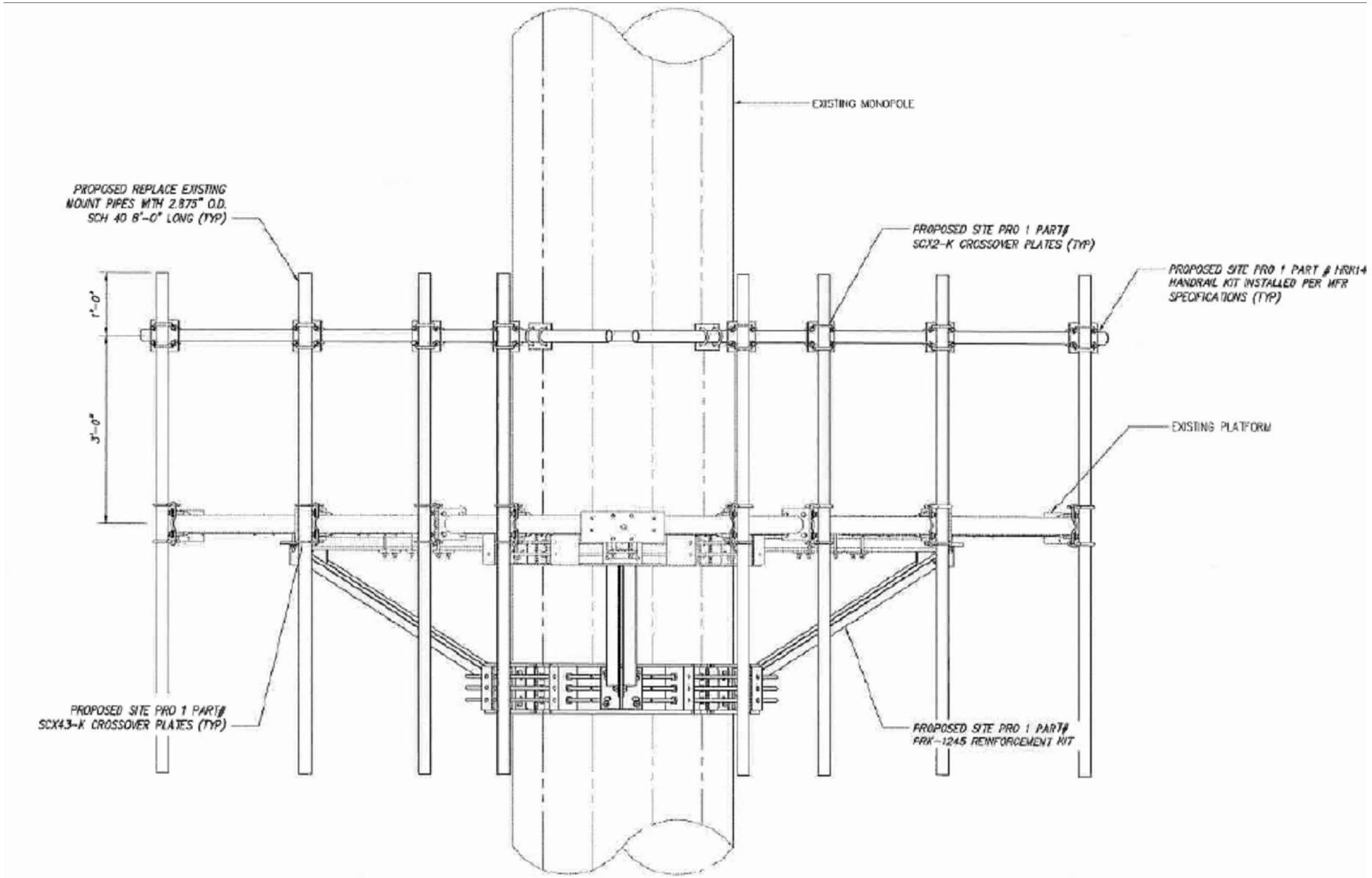
0	04/12/19	ISSUED FOR PERMITTING

FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

EQUIPMENT DETAILS

C-4



1 MOUNT ELEVATION
SCALE: NOT TO SCALE

at&t
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EAST SYRACUSE, NY 13057

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SUBMITTALS

0	04/12/19	ISSUED FOR PERMITTING

FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

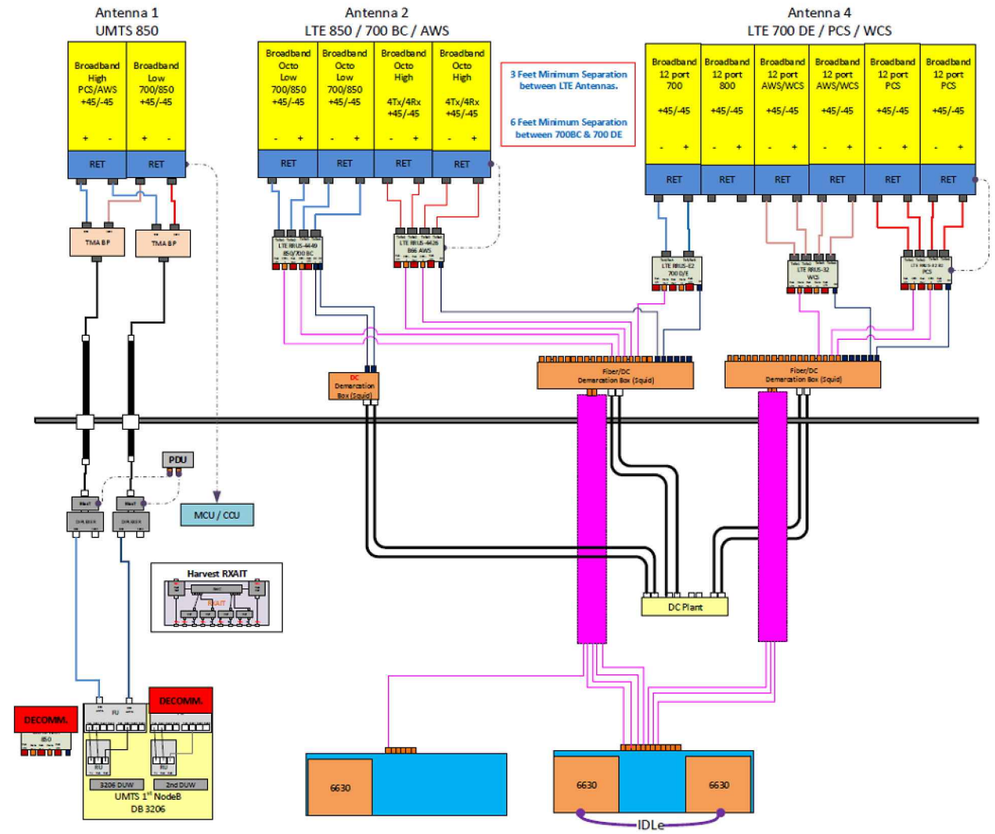
EQUIPMENT DETAILS

S-1

ANTENNA NUMBER	ANTENNA MODEL	ANTENNA BAND	AZIMUTH	ANTENNA CENTERLINE FROM GROUND	TMA's	RRH's	FEEDER	RAYCAP
A1	800-10121 (54.5"x10.3"x5.9")	UMTS 850	**85°**	**167'**	(2) LGP 21401	-	(1) 1-5/8" ANDREW (850) (LENGTH @ 217')	(1) RAYCAP DC6-48-60-18-8F (2) RAYCAP DC6-48-60-18-8F
A2	**800-10966 (96"x20"x6.9")**	**LTE 700 LTE 850 LTE AWS**	**85°**	**167'**	**-**	**(1) B5/B12 4449 (1) 4426 B66**	**(2) DC CABLES** (4) FIBER (LENGTH @ 217')	
A3	-	-	-	-	-	-	-	
A4	TPA-65R-LCUUUU-H8 (96"x14.4"x8.6")	LTE 700 LTE 1900 LTE WCS	85°	167'	-	(1) RRUS 32 B2 (1) RRUS 32	(4) FIBER (LENGTH @ 217')	
B1	800-10121 (54.5"x10.3"x5.9")		**205°**	**167'**	(2) LGP 21401	-	(1) 1-5/8" ANDREW (850) (LENGTH @ 217')	
B2	**800-10966 (96"x20"x6.9")**		**205°**	**167'**	**-**	**(1) B5/B12 4449 (1) 4426 B66**	(4) FIBER (LENGTH @ 217')	
B3	-		205°	167'	-	-	-	
B4	TPA-65R-LCUUUU-H8 (96"x14.4"x8.6")		205°	167'	-	(1) RRUS 32 B2 (1) RRUS 32	(4) FIBER (LENGTH @ 217')	
G1	800-10121 (54.5"x10.3"x5.9")		**325°**	**167'**	(2) LGP 21401	-	(1) 1-5/8" ANDREW (850) (LENGTH @ 217')	
G2	**800-10966 (96"x20"x6.9")**		**325°**	**167'**	**-**	**(1) B5/B12 4449 (1) 4426 B66**	(4) FIBER (LENGTH @ 217')	
G3	-		325°	167'	-	-	-	
G4	TPA-65R-LCUUUU-H8 (96"x14.4"x8.6")		325°	167'	-	(1) RRUS 32 B2 (1) RRUS 32	(4) FIBER (LENGTH @ 217')	

1 ANTENNA INFORMATION CHART — SCALE: NONE

Diagram - Sector A — Diagram File Name - CT5833_ABC_Multicarrier_1.vsd
Atoll Site Name - CTV5833 — Location Name - BRISTOL CENTER — Market - CONNECTICUT — Market Cluster - NEW ENGLAND
Comments: Important Note: For detailed radio to antenna wiring refer to the latest 4T4R Antenna/ radio Port connections Field Notice (RF-HW-2016-265)



2 RF EQUIPMENT SCHEMATIC — SCALE: NONE

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

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

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

PROJECT NO: ERCC0004

DRAWN BY: CM

CHECKED BY: CAT

SUBMITTALS

0	04/12/19	ISSUED FOR PERMITTING

FA# 10070954
SITE# CTV5833
BRISTOL CENTER

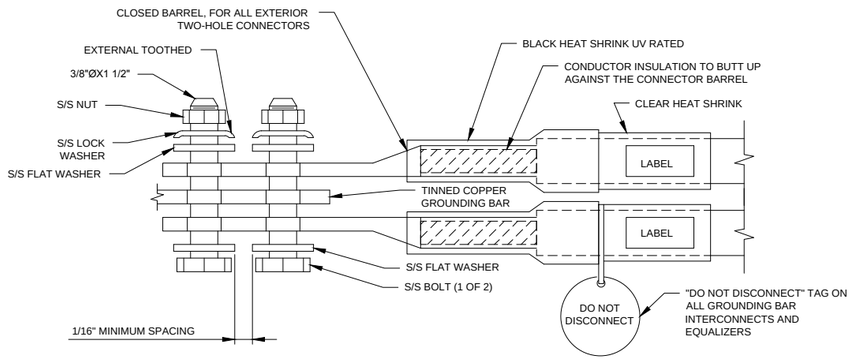
371 TERRYVILLE AVENUE
BRISTOL, CT 06010

ANTENNA CHART &
RF EQUIPMENT
SCHEMATIC

RF-1

NOTES:

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



1 EXTERIOR TWO HOLE LUG DETAIL

SCALE: NONE

GENERAL NOTES:

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

GROUNDING NOTES:

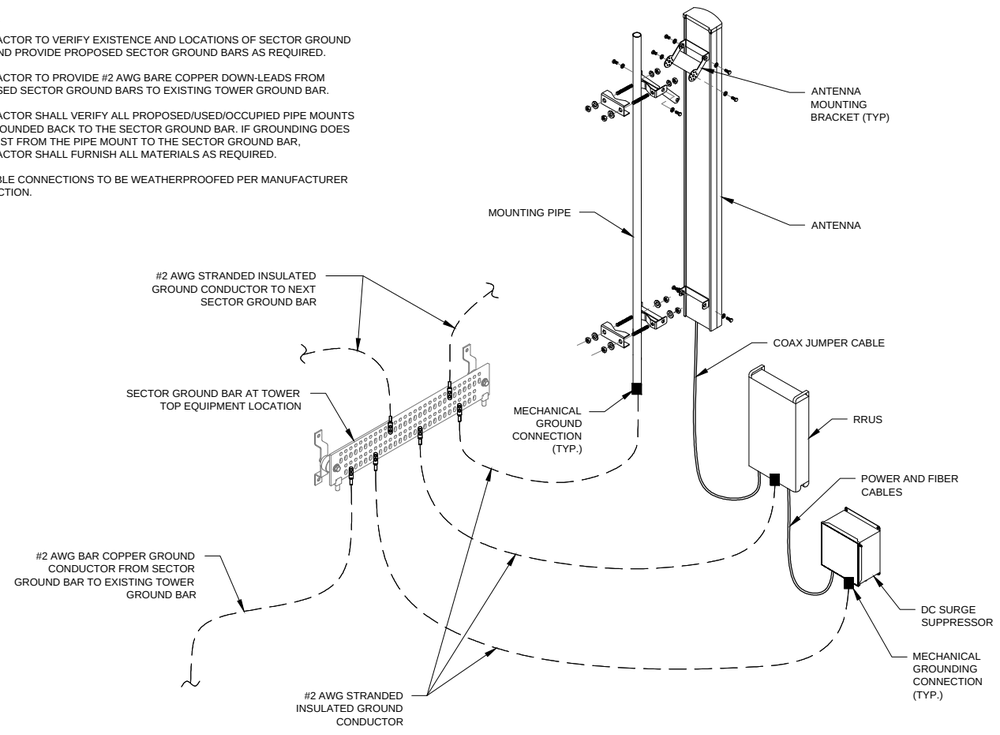
1. TOWER GROUNDING BAR: EXTEND (2) #2 AWG TINNED CU WIRE FROM BURIED GROUND RING UP TO THE TOWER GROUND BAR AND MAKE A MECHANICAL CONNECTION. SECURE GROUND BAR DIRECTLY TO TOWER WITH STAINLESS STEEL MOUNTING MATERIAL.
2. ANTENNA GROUNDING BAR: ANDREW CORPORATION PART #UGBKIT-0424-T MOUNT GROUND BAR DIRECTLY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

2 GROUNDING BAR DETAIL

SCALE: NONE

NOTES:

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



3 TYPICAL ANTENNA GROUNDING SCHEMATIC

SCALE: NONE

at&t
5841 BRIDGE STREET
EAST SYRACUSE, NY 13057

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

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

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

PROJECT NO: ERCC0004

DRAWN BY: CM

CHECKED BY: CAT

SUBMITTALS

0	04/12/19	ISSUED FOR PERMITTING

FA# 10070954
SITE# CTV5833
BRISTOL CENTER

371 TERRYVILLE AVENUE
BRISTOL, CT 06010

GROUNDING DETAILS

G-1

Date: **March 20, 2019**

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Black & Veatch, Corp.
6800 W. 115th., Suite 2292
Overland Park, KS 66211
(913) 458-6984

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	10070954
	Carrier Site Name:	BRISTOL CENTER
Crown Castle Designation:	**Crown Castle BU Number:**	842859
	Crown Castle Site Name:	BRISTOL CENTER
	Crown Castle JDE Job Number:	553477
	Crown Castle Work Order Number:	1706223
	Crown Castle Order Number:	475338 Rev. 2
Engineering Firm Designation:	**Black & Veatch, Corp. Project Number:**	400087
Site Data:	**371 Terryville Avenue, Bristol, Hartford County, CT** **Latitude *41° 40' 47.71"*, Longitude *-72° 57' 45.18"*** **168.333 Foot - Monopole Tower**	

Dear Timothy Howell,

Black & Veatch, Corp. is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower.

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

LC4: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code. Applicable standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Graham Burkholder

Respectfully submitted by:

Joshua J. Riley, P.E.
Professional Engineer

03/25/2019

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 168.333 ft Monopole tower designed by Engineered Endeavors, Inc.

This tower has been modified multiple times in the past to accommodate additional loading.

The tower has been modified per reinforcement drawings prepared by Black & Veatch Corp. in May of 2012. Reinforcement consists of the addition of reinforcement plates from 0' – 120' and stiffener plates and anchor rods at the base. Refer to the Post Modification Inspection Report by Black & Veatch Corp. in October of 2012. All reinforcement plates are considered ineffective in this analysis.

The tower was later modified per reinforcement drawings prepared by GPD Group in February of 2013. Reinforcement consists of the removal of all stiffener plates, and the addition of reinforcement plates from 0.75' – 115.83' and base plate stiffener plates and transition stiffener plates at the base. Refer to the Legacy Modification Inspection Report by B+T Group in March of 2015.

The tower was later modified per reinforcement drawings prepared by GPD Group in August of 2013. Reinforcement consists of the addition of new rebar to the existing foundation. Refer to the Post Modification Inspection Report by GPD Group in December of 2013.

The tower was later modified per reinforcement drawings prepared by Black & Veatch Corp. in September of 2015. Reinforcement consists of the removal of reinforcement plates from 0' – 84.67' and all stiffener plates, as well as the addition of reinforcement plates from 1.25' – 84.33' and 87.92' – 127.33', baseplate stiffener plates and transition stiffener plates at the base, and new rebar to the existing foundation. Refer to the Post Modification Inspection Report by Engineered Tower Solutions, PLLC in February of 2016.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
168.0	171.0	1	sitepro1	HRK14-U	6 6 3	1-5/8 7/8 3/8
	169.0	6	powerwave technologies	LGP21401		
	168.0	1	cci tower mounts	Platform Mount [LP 303-1]		
		3	sitepro1	P3096 Mount Pipe		
		3	ericsson	RRUS 32		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 4426 B66		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS E2 B29		
		1	kathrein	80010798 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8F		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	167.0	2	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		3	kathrein	800 10121 w/ Mount Pipe		
		1	kathrein	80010965 w/ Mount Pipe		
		2	kathrein	80010966 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		
	165.5	1	sitepro1	PRK-1245		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
158.0	158.0	3	alcatel lucent	1900MHz RRH (65MHz)	4	1-1/4
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		3	alcatel lucent	TD-RRH8x20-25		
		1	cci tower mounts	T-Arm Mount [TA 602-3]		
		2	powerwave technologies	P40-16-XLPP-RR-A w/ Mount Pipe		
		1	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
	155.5	1	sitepro1	PQ-1245L [NA 509-3]		
138.0	140.0	6	antel	BXA-70063/4CF w/ Mount Pipe	7 1	1-5/8 1-1/4
		6	commscope	SBNHH-1D65B w/ Mount Pipe		
		1	raycap	RVZDC-6627-PF-48		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	samsung telecommunications	RFV01U-D1A		
		3	samsung telecommunications	RFV01U-D2A		
	138.0	1	cci tower mounts	Platform Mount [LP 303-1]		
128.0	130.0	3	andrew	ONEBASE TWIN DUAL DUPLEX TMA	12 1	1-5/8 1-1/4
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
	128.0	1	cci tower mounts	Platform Mount [LP 303-1]		
70.0	70.0	1	cci tower mounts	Side Arm Mount [SO 701-1]	1	1/2
		1	gps	GPS_A		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	5452600	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors, Inc.	4529295	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors, Inc.	5135435	CCISITES
4-POST-MODIFICATION INSPECTION	Black & Veatch Corp.	5111172	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Group	5111173	CCISITES
4-POST-MODIFICATION INSPECTION	GPD Group	5114340	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD Group	4964264	CCISITES
4-POST-MODIFICATION INSPECTION	B+T Group	5595874	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Black & Veatch Corp.	5907572	CCISITES
4-POST-MODIFICATION INSPECTION	Engineered Tower Solutions, PLLC	6121087	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Black & Veatch Corp.	8189203	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

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

3.2) Assumptions

1) Tower and structures were built and maintained in accordance with the manufacturer's specifications.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, appurtenance loading, tower/foundation details, and geotechnical data. The loading on the structure is based on CAD level drawings and carrier orders provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
168.33 - 163.33	Pole	TP19.834x19x0.1875	Pole	10.2%	Pass
163.33 - 158.33	Pole	TP20.669x19.834x0.1875	Pole	20.2%	Pass
158.33 - 153.33	Pole	TP21.503x20.669x0.1875	Pole	34.9%	Pass
153.33 - 148.33	Pole	TP22.337x21.503x0.1875	Pole	48.2%	Pass
148.33 - 143.33	Pole	TP23.171x22.337x0.1875	Pole	60.2%	Pass
143.33 - 138.33	Pole	TP24.006x23.171x0.1875	Pole	71.2%	Pass
138.33 - 134.16	Pole	TP25.313x24.006x0.1875	Pole	84.5%	Pass
134.16 - 129.16	Pole	TP25.149x24.326x0.25	Pole	69.2%	Pass
129.16 - 125.5	Pole	TP25.752x25.149x0.25	Pole	76.6%	Pass
125.5 - 125.25	Pole	TP25.794x25.752x0.25	Pole	77.1%	Pass
125.25 - 120.5	Pole	TP26.576x25.794x0.25	Pole	85.8%	Pass
120.5 - 120.25	Pole + Reinf.	TP26.617x26.576x0.6125	Reinf. 19 Tension Rupture	67.8%	Pass
120.25 - 115.25	Pole + Reinf.	TP27.44x26.617x0.6	Reinf. 19 Tension Rupture	75.2%	Pass
115.25 - 113.83	Pole + Reinf.	TP27.674x27.44x0.6	Reinf. 19 Tension Rupture	77.3%	Pass
113.83 - 113.48	Pole + Reinf.	TP27.731x27.674x0.65	Reinf. 10 Tension Rupture	63.3%	Pass
113.48 - 113.25	Pole + Reinf.	TP27.769x27.731x0.65	Reinf. 10 Tension Rupture	63.6%	Pass
113.25 - 108.25	Pole + Reinf.	TP28.592x27.769x0.6375	Reinf. 10 Tension Rupture	69.4%	Pass
108.25 - 103.25	Pole + Reinf.	TP29.415x28.592x0.625	Reinf. 10 Tension Rupture	75.0%	Pass
103.25 - 98.25	Pole + Reinf.	TP30.238x29.415x0.6125	Reinf. 10 Tension Rupture	80.4%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.061x30.238x0.6	Reinf. 10 Tension Rupture	85.5%	Pass
93.25 - 89.82	Pole + Reinf.	TP31.626x31.061x0.7	Reinf. 10 Tension Rupture	82.2%	Pass
89.82 - 89.57	Pole + Reinf.	TP31.667x31.626x0.7	Reinf. 10 Tension Rupture	82.4%	Pass
89.57 - 89.11	Pole + Reinf.	TP32.493x31.667x0.7	Reinf. 10 Tension Rupture	82.8%	Pass
89.11 - 83.55	Pole + Reinf.	TP32.155x31.242x0.75	Reinf. 16 Tension Rupture	84.8%	Pass
83.55 - 82.83	Pole + Reinf.	TP32.274x32.155x0.7375	Reinf. 16 Tension Rupture	85.4%	Pass
82.83 - 82.58	Pole + Reinf.	TP32.315x32.274x0.8625	Reinf. 16 Tension Rupture	69.6%	Pass
82.58 - 81.5	Pole + Reinf.	TP32.492x32.315x0.8625	Reinf. 16 Tension Rupture	70.4%	Pass
81.5 - 81.25	Pole + Reinf.	TP32.533x32.492x0.6875	Reinf. 2 Tension Rupture	85.7%	Pass
81.25 - 76.25	Pole + Reinf.	TP33.354x32.533x0.675	Reinf. 2 Tension Rupture	89.5%	Pass
76.25 - 74.92	Pole + Reinf.	TP33.572x33.354x0.6625	Reinf. 2 Tension Rupture	90.5%	Pass
74.92 - 74.67	Pole + Reinf.	TP33.613x33.572x0.8625	Reinf. 9 Tension Rupture	74.9%	Pass
74.67 - 74.17	Pole + Reinf.	TP33.695x33.613x0.8625	Reinf. 9 Tension Rupture	75.2%	Pass
74.17 - 73.92	Pole + Reinf.	TP33.736x33.695x0.9375	Reinf. 9 Tension Rupture	69.2%	Pass
73.92 - 68.92	Pole + Reinf.	TP34.557x33.736x0.9125	Reinf. 9 Tension Rupture	72.2%	Pass
68.92 - 64.25	Pole + Reinf.	TP35.323x34.557x0.8875	Reinf. 9 Tension Rupture	75.0%	Pass
64.25 - 64	Pole + Reinf.	TP35.364x35.323x0.7375	Reinf. 3 Tension Rupture	86.2%	Pass

64 - 59	Pole + Reinf.	TP36.185x35.364x0.7375	Reinf. 3 Tension Rupture	89.3%	Pass
59 - 54	Pole + Reinf.	TP37.006x36.185x0.7125	Reinf. 3 Tension Rupture	92.4%	Pass
54 - 52	Pole + Reinf.	TP37.334x37.006x0.7125	Reinf. 3 Tension Rupture	93.5%	Pass
52 - 51.75	Pole + Reinf.	TP37.375x37.334x0.7375	Reinf. 3 Tension Rupture	89.7%	Pass
51.75 - 51	Pole + Reinf.	TP37.498x37.375x0.7375	Reinf. 3 Tension Rupture	90.1%	Pass
51 - 50.75	Pole + Reinf.	TP37.539x37.498x0.8625	Reinf. 15 Tension Rupture	82.5%	Pass
50.75 - 49	Pole + Reinf.	TP38.702x37.539x0.8625	Reinf. 15 Tension Rupture	83.4%	Pass
49 - 42.66	Pole + Reinf.	TP37.854x37.201x0.9125	Reinf. 15 Tension Rupture	84.8%	Pass
42.66 - 41.75	Pole + Reinf.	TP37.948x37.854x0.9125	Reinf. 15 Tension Rupture	85.4%	Pass
41.75 - 41.5	Pole + Reinf.	TP37.974x37.948x0.95	Reinf. 15 Tension Rupture	82.8%	Pass
41.5 - 36.5	Pole + Reinf.	TP38.489x37.974x0.925	Reinf. 15 Tension Rupture	86.1%	Pass
36.5 - 31.5	Pole + Reinf.	TP39.004x38.489x0.925	Reinf. 15 Tension Rupture	89.3%	Pass
31.5 - 31.25	Pole + Reinf.	TP39.03x39.004x0.925	Reinf. 15 Tension Rupture	88.8%	Pass
31.25 - 30.5	Pole + Reinf.	TP39.107x39.03x0.925	Reinf. 15 Tension Rupture	89.3%	Pass
30.5 - 30.25	Pole + Reinf.	TP39.133x39.107x0.975	Reinf. 13 Tension Rupture	77.2%	Pass
30.25 - 29.83	Pole + Reinf.	TP39.176x39.133x0.975	Reinf. 13 Tension Rupture	77.4%	Pass
29.83 - 29.58	Pole + Reinf.	TP39.202x39.176x0.875	Reinf. 8 Tension Rupture	92.4%	Pass
29.58 - 28.25	Pole + Reinf.	TP39.339x39.202x0.875	Reinf. 8 Tension Rupture	93.2%	Pass
28.25 - 28	Pole + Reinf.	TP39.365x39.339x1.225	Reinf. 8 Tension Rupture	69.0%	Pass
28 - 23	Pole + Reinf.	TP39.88x39.365x1.225	Reinf. 8 Tension Rupture	71.5%	Pass
23 - 19.25	Pole + Reinf.	TP40.267x39.88x1.2	Reinf. 8 Tension Rupture	73.3%	Pass
19.25 - 19	Pole + Reinf.	TP40.292x40.267x1.025	Reinf. 13 Tension Rupture	78.8%	Pass
19 - 14.5	Pole + Reinf.	TP40.756x40.292x1.025	Reinf. 13 Tension Rupture	81.1%	Pass
14.5 - 14.25	Pole + Reinf.	TP40.782x40.756x1.0125	Reinf. 5 Tension Rupture	82.0%	Pass
14.25 - 10.5	Pole + Reinf.	TP41.168x40.782x1	Reinf. 5 Tension Rupture	84.0%	Pass
10.5 - 10.25	Pole + Reinf.	TP41.194x41.168x1.025	Reinf. 6 Tension Rupture	80.3%	Pass
10.25 - 5.25	Pole + Reinf.	TP41.709x41.194x1.025	Reinf. 6 Tension Rupture	82.7%	Pass
5.25 - 0.25	Pole + Reinf.	TP42.224x41.709x1	Reinf. 6 Tension Rupture	85.2%	Pass
0.25 - 0	Pole + Reinf.	TP42.25x42.224x1	Reinf. 6 Tension Rupture	85.3%	Pass
				Summary	
			Pole	85.8%	Pass
			Reinforcement	93.5%	Pass
			Overall	93.5%	Pass

Table 5 - Tower Component Stresses vs. Capacity (Monopole) - LC4

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods Group 1	0	68.3	Pass
1	Anchor Rods Group 2	0	68.3	Pass
1	Base Plate	0	74.5	Pass
1	Base Foundation	0	86.1	Pass
1	Base Foundation Soil Interaction	0	60.9	Pass

Structure Rating (max from all components) =	93.5%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed. Rating per TIA-222-H Section 15.5

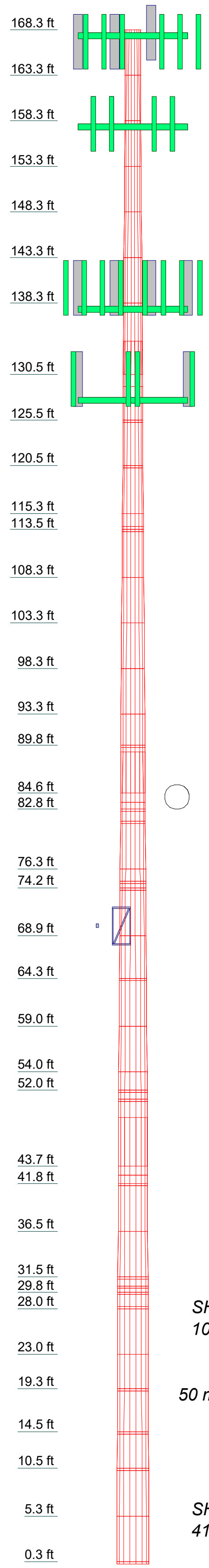
4.1) Recommendations

The tower and its foundation will have sufficient capacity to carry the proposed loading configuration after proper installation of the proposed reinforcements shown in Appendix D.

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	0.1875		19.0000	19.8343	A572-65	0.2
2	5.00	18	0.1875		19.8343	20.6685		0.2
3	5.00	18	0.1875		20.6685	21.5028		0.2
4	5.00	18	0.1875		21.5028	22.3370		0.2
5	5.00	18	0.1875		22.3370	23.1713		0.2
6	5.00	18	0.1875		23.1713	24.0055		0.2
7	5.00 / 7.83	18	0.1875	3.66	24.0055	25.3125		0.4
8–17	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
18	5.00	18	0.6250		28.592	29.415		0.9
19	5.00	18	0.6125		29.415	30.238		0.9
20	5.00	18	0.6000		30.238	31.061		1.0
21–37	[illegible]	18	[illegible]	4.56	[illegible]	[illegible]		[illegible]
38	5.00	18	0.7125		36.185	39.005		1.3
39–47	[illegible]	18	[illegible]	5.34	[illegible]	[illegible]		[illegible]
48	5.00	18	0.9250		[illegible]	[illegible]		2.0
49–63	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
64	5.00	18	1.0000		[illegible]	[illegible]		2.2
65	0.25	18	1.0000		42.2	42.2		43.0



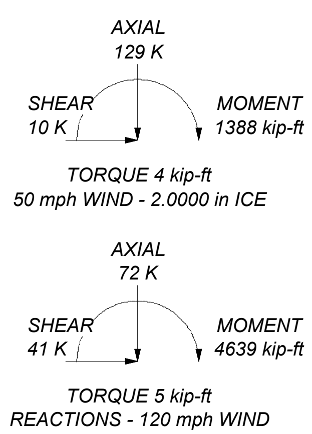
MATERIAL STRENGTH

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-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S

ALL REACTIONS ARE FACTORED



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Job: BRISTOL CENTER (BU # 842859)			
Project: 400087 (842859.1706223)			
Client: Crown Castle	Drawn by: Graham M. Burkholder, E.I.T.		App'd:
Code: TIA-222-H	Date: 03/20/19		Scale: NTS
Path:			Dwg No. E-1

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Tower base elevation above sea level: 564.80 ft.
3) Basic wind speed of 120 mph.
4) Risk Category II.
5) Exposure Category C.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height: 0.00 ft.
9) Nominal ice thickness of 2.0000 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) Deflections calculated using a wind speed of 60 mph.
15) TIA-222-H Annex S.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Tower analysis based on target reliabilities in accordance with Annex S.
20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
21) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

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

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	168.33-163.33	5.00	0.00	18	19.0000	19.8343	0.1875	0.7500	A572-65 (65 ksi)
L2	163.33-158.33	5.00	0.00	18	19.8343	20.6685	0.1875	0.7500	A572-65 (65 ksi)
L3	158.33-153.33	5.00	0.00	18	20.6685	21.5028	0.1875	0.7500	A572-65 (65 ksi)
L4	153.33-148.33	5.00	0.00	18	21.5028	22.3370	0.1875	0.7500	A572-65 (65 ksi)
L5	148.33-143.33	5.00	0.00	18	22.3370	23.1713	0.1875	0.7500	A572-65 (65 ksi)
L6	143.33-138.33	5.00	0.00	18	23.1713	24.0055	0.1875	0.7500	A572-65 (65 ksi)
L7	138.33-130.50	7.83	3.66	18	24.0055	25.3125	0.1875	0.7500	A572-65 (65 ksi)
L8	130.50-129.16	5.00	0.00	18	24.3261	25.1492	0.2500	1.0000	A572-65 (65 ksi)
L9	129.16-125.50	3.66	0.00	18	25.1492	25.7524	0.2500	1.0000	A572-65 (65 ksi)
L10	125.50-125.25	0.25	0.00	18	25.7524	25.7936	0.2500	1.0000	A572-65 (65 ksi)
L11	125.25-120.50	4.75	0.00	18	25.7936	26.5755	0.2500	1.0000	A572-65 (65 ksi)
L12	120.50-120.25	0.25	0.00	18	26.5755	26.6167	0.6125	2.4500	A572-65 (65 ksi)
L13	120.25-115.25	5.00	0.00	18	26.6167	27.4398	0.6000	2.4000	A572-65 (65 ksi)
L14	115.25-113.83	1.42	0.00	18	27.4398	27.6735	0.6000	2.4000	A572-65 (65 ksi)
L15	113.83-113.48	0.35	0.00	18	27.6735	27.7311	0.6500	2.6000	A572-65 (65 ksi)
L16	113.48-113.25	0.23	0.00	18	27.7311	27.7690	0.6500	2.6000	A572-65 (65 ksi)
L17	113.25-108.25	5.00	0.00	18	27.7690	28.5921	0.6375	2.5500	A572-65 (65 ksi)
L18	108.25-103.25	5.00	0.00	18	28.5921	29.4152	0.6250	2.5000	A572-65 (65 ksi)
L19	103.25-98.25	5.00	0.00	18	29.4152	30.2383	0.6125	2.4500	A572-65 (65 ksi)
L20	98.25-93.25	5.00	0.00	18	30.2383	31.0614	0.6000	2.4000	A572-65 (65 ksi)
L21	93.25-89.82	3.43	0.00	18	31.0614	31.6260	0.7000	2.8000	A572-65 (65 ksi)
L22	89.82-89.57	0.25	0.00	18	31.6260	31.6672	0.7000	2.8000	A572-65 (65 ksi)
L23	89.57-84.55	5.02	4.56	18	31.6672	32.4932	0.7000	2.8000	A572-65 (65 ksi)
L24	84.55-83.55	5.56	0.00	18	31.2421	32.1551	0.7500	3.0000	A572-65 (65 ksi)
L25	83.55-82.83	0.72	0.00	18	32.1551	32.2736	0.7375	2.9500	A572-65 (65 ksi)
L26	82.83-82.58	0.25	0.00	18	32.2736	32.3147	0.8625	3.4500	A572-65 (65 ksi)
L27	82.58-81.50	1.08	0.00	18	32.3147	32.4919	0.8625	3.4500	A572-65 (65 ksi)
L28	81.50-81.25	0.25	0.00	18	32.4919	32.5330	0.6875	2.7500	A572-65 (65 ksi)
L29	81.25-76.25	5.00	0.00	18	32.5330	33.3536	0.6750	2.7000	A572-65 (65 ksi)
L30	76.25-74.92	1.33	0.00	18	33.3536	33.5719	0.6625	2.6500	A572-65 (65 ksi)
L31	74.92-74.67	0.25	0.00	18	33.5719	33.6130	0.8625	3.4500	A572-65 (65 ksi)
L32	74.67-74.17	0.50	0.00	18	33.6130	33.6950	0.8625	3.4500	A572-65 (65 ksi)
L33	74.17-73.92	0.25	0.00	18	33.6950	33.7361	0.9375	3.7500	A572-65 (65 ksi)
L34	73.92-68.92	5.00	0.00	18	33.7361	34.5567	0.9125	3.6500	A572-65 (65 ksi)
L35	68.92-64.25	4.67	0.00	18	34.5567	35.3233	0.8875	3.5500	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
L36	64.25-64.00	0.25	0.00	18	35.3233	35.3643	0.7375	2.9500	(65 ksi) A572-65 (65 ksi)
L37	64.00-59.00	5.00	0.00	18	35.3643	36.1850	0.7375	2.9500	A572-65 (65 ksi)
L38	59.00-54.00	5.00	0.00	18	36.1850	37.0056	0.7125	2.8500	A572-65 (65 ksi)
L39	54.00-52.00	2.00	0.00	18	37.0056	37.3339	0.7125	2.8500	A572-65 (65 ksi)
L40	52.00-51.75	0.25	0.00	18	37.3339	37.3749	0.7375	2.9500	A572-65 (65 ksi)
L41	51.75-51.00	0.75	0.00	18	37.3749	37.4980	0.7375	2.9500	A572-65 (65 ksi)
L42	51.00-50.75	0.25	0.00	18	37.4980	37.5391	0.8625	3.4500	A572-65 (65 ksi)
L43	50.75-43.66	7.09	5.34	18	37.5391	38.7021	0.8625	3.4500	A572-65 (65 ksi)
L44	43.66-42.66	6.34	0.00	18	37.2009	37.8540	0.9125	3.6500	A572-65 (65 ksi)
L45	42.66-41.75	0.91	0.00	18	37.8540	37.9482	0.9125	3.6500	A572-65 (65 ksi)
L46	41.75-41.50	0.25	0.00	18	37.9482	37.9739	0.9500	3.8000	A572-65 (65 ksi)
L47	41.50-36.50	5.00	0.00	18	37.9739	38.4891	0.9250	3.7000	A572-65 (65 ksi)
L48	36.50-31.50	5.00	0.00	18	38.4891	39.0043	0.9250	3.7000	A572-65 (65 ksi)
L49	31.50-31.25	0.25	0.00	18	39.0043	39.0301	0.9250	3.7000	A572-65 (65 ksi)
L50	31.25-30.50	0.75	0.00	18	39.0301	39.1073	0.9250	3.7000	A572-65 (65 ksi)
L51	30.50-30.25	0.25	0.00	18	39.1073	39.1331	0.9750	3.9000	A572-65 (65 ksi)
L52	30.25-29.83	0.42	0.00	18	39.1331	39.1764	0.9750	3.9000	A572-65 (65 ksi)
L53	29.83-29.58	0.25	0.00	18	39.1764	39.2021	0.8750	3.5000	A572-65 (65 ksi)
L54	29.58-28.25	1.33	0.00	18	39.2021	39.3392	0.8750	3.5000	A572-65 (65 ksi)
L55	28.25-28.00	0.25	0.00	18	39.3392	39.3649	1.2250	4.9000	A572-65 (65 ksi)
L56	28.00-23.00	5.00	0.00	18	39.3649	39.8801	1.2250	4.9000	A572-65 (65 ksi)
L57	23.00-19.25	3.75	0.00	18	39.8801	40.2665	1.2000	4.8000	A572-65 (65 ksi)
L58	19.25-19.00	0.25	0.00	18	40.2665	40.2923	1.0250	4.1000	A572-65 (65 ksi)
L59	19.00-14.50	4.50	0.00	18	40.2923	40.7559	1.0250	4.1000	A572-65 (65 ksi)
L60	14.50-14.25	0.25	0.00	18	40.7559	40.7817	1.0125	4.0500	A572-65 (65 ksi)
L61	14.25-10.50	3.75	0.00	18	40.7817	41.1681	1.0000	4.0000	A572-65 (65 ksi)
L62	10.50-10.25	0.25	0.00	18	41.1681	41.1939	1.0250	4.1000	A572-65 (65 ksi)
L63	10.25-5.25	5.00	0.00	18	41.1939	41.7091	1.0250	4.1000	A572-65 (65 ksi)
L64	5.25-0.25	5.00	0.00	18	41.7091	42.2242	1.0000	4.0000	A572-65 (65 ksi)
L65	0.25-0.00	0.25		18	42.2242	42.2500	1.0000	4.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia.	Area	I	r	C	I/C	J	It/Q	w	w/t
	in	in^2	in^4	in	in	in^3	in^4	in^2	in	
L1	19.2642	11.1958	500.5935	6.6784	9.6520	51.8642	1001.8456	5.5990	3.0140	16.075
	20.1113	11.6923	570.1878	6.9746	10.0758	56.5898	1141.1259	5.8472	3.1608	16.858
L2	20.1113	11.6923	570.1878	6.9746	10.0758	56.5898	1141.1259	5.8472	3.1608	16.858
	20.9584	12.1888	645.9507	7.2708	10.4996	61.5215	1292.7513	6.0955	3.3077	17.641
L3	20.9584	12.1888	645.9507	7.2708	10.4996	61.5215	1292.7513	6.0955	3.3077	17.641
	21.8055	12.6852	728.1440	7.5669	10.9234	66.6591	1457.2461	6.3438	3.4545	18.424
L4	21.8055	12.6852	728.1440	7.5669	10.9234	66.6591	1457.2461	6.3438	3.4545	18.424
	22.6527	13.1817	817.0297	7.8631	11.3472	72.0028	1635.1345	6.5921	3.6013	19.207
L5	22.6527	13.1817	817.0297	7.8631	11.3472	72.0028	1635.1345	6.5921	3.6013	19.207
	23.4998	13.6782	912.8698	8.1592	11.7710	77.5524	1826.9407	6.8404	3.7481	19.99
L6	23.4998	13.6782	912.8698	8.1592	11.7710	77.5524	1826.9407	6.8404	3.7481	19.99
	24.3469	14.1747	1015.9261	8.4554	12.1948	83.3081	2033.1890	7.0887	3.8950	20.773
L7	24.3469	14.1747	1015.9261	8.4554	12.1948	83.3081	2033.1890	7.0887	3.8950	20.773
	25.6741	14.9525	1192.5150	8.9194	12.8588	92.7396	2386.5992	7.4777	4.1250	22
L8	25.2753	19.1044	1399.0884	8.5470	12.3577	113.2161	2800.0177	9.5540	3.8414	15.366
	25.4986	19.7575	1547.5421	8.8392	12.7758	121.1306	3097.1205	9.8806	3.9863	15.945
L9	25.4986	19.7575	1547.5421	8.8392	12.7758	121.1306	3097.1205	9.8806	3.9863	15.945
	26.1111	20.2362	1662.7552	9.0534	13.0822	127.1003	3327.6984	10.1200	4.0924	16.37
L10	26.1111	20.2362	1662.7552	9.0534	13.0822	127.1003	3327.6984	10.1200	4.0924	16.37
	26.1529	20.2688	1670.8181	9.0680	13.1031	127.5129	3343.8346	10.1363	4.0997	16.399
L11	26.1529	20.2688	1670.8181	9.0680	13.1031	127.5129	3343.8346	10.1363	4.0997	16.399
	26.9469	20.8893	1829.0041	9.3456	13.5004	135.4782	3660.4148	10.4466	4.2373	16.949
L12	26.8910	50.4740	4298.4858	9.2169	13.5004	318.3979	8602.6276	25.2418	3.5993	5.876
	26.9328	50.5540	4318.9591	9.2315	13.5213	319.4198	8643.6013	25.2818	3.6065	5.888
L13	26.9347	49.5461	4236.9212	9.2359	13.5213	313.3524	8479.4175	24.7778	3.6285	6.048
	27.7705	51.1136	4651.9099	9.5281	13.9394	333.7239	9309.9409	25.5617	3.7734	6.289
L14	27.7705	51.1136	4651.9099	9.5281	13.9394	333.7239	9309.9409	25.5617	3.7734	6.289
	28.0079	51.5588	4774.5177	9.6111	14.0581	339.6264	9555.3179	25.7843	3.8145	6.358
L15	28.0001	55.7522	5143.7896	9.5933	14.0581	365.8939	10294.3475	27.8814	3.7265	5.733
	28.0587	55.8711	5176.7608	9.6138	14.0874	367.4742	10360.3333	27.9408	3.7367	5.749
L16	28.0587	55.8711	5176.7608	9.6138	14.0874	367.4742	10360.3333	27.9408	3.7367	5.749
	28.0971	55.9492	5198.5042	9.6272	14.1066	368.5145	10403.8486	27.9799	3.7433	5.759
L17	28.0990	54.8985	5105.5864	9.6317	14.1066	361.9277	10217.8909	27.4545	3.7653	5.906
	28.9348	56.5640	5584.4928	9.9239	14.5248	384.4804	11176.3339	28.2874	3.9102	6.134
L18	28.9367	55.4797	5482.3408	9.9283	14.5248	377.4474	10971.8953	27.7451	3.9322	6.292
	29.7725	57.1125	5980.7750	10.2205	14.9429	400.2416	11969.4196	28.5617	4.0771	6.523
L19	29.7745	55.9946	5868.7971	10.2250	14.9429	392.7479	11745.3165	28.0026	4.0991	6.692
	30.6103	57.5947	6386.4492	10.5171	15.3610	415.7563	12781.3019	28.8028	4.2439	6.929
L20	30.6122	56.4431	6264.0358	10.5216	15.3610	407.7872	12536.3140	28.2269	4.2659	7.11
	31.4480	58.0106	6800.5442	10.8138	15.7792	430.9823	13610.0368	29.0108	4.4108	7.351
L21	31.4325	67.4569	7856.0865	10.7783	15.7792	497.8769	15722.5102	33.7348	4.2348	6.05
	32.0059	68.7114	8302.5961	10.9787	16.0660	516.7802	16616.1171	34.3622	4.3342	6.192
L22	32.0059	68.7114	8302.5961	10.9787	16.0660	516.7802	16616.1171	34.3622	4.3342	6.192
	32.0477	68.8028	8335.7862	10.9933	16.0869	518.1717	16682.5408	34.4080	4.3414	6.202
L23	32.0477	68.8028	8335.7862	10.9933	16.0869	518.1717	16682.5408	34.4080	4.3414	6.202
	32.8865	70.6381	9020.8018	11.2866	16.5065	546.4985	18053.4733	35.3258	4.4868	6.41
L24	32.3688	72.5865	8526.4614	10.8247	15.8710	537.2353	17064.1421	36.3002	4.1786	5.571
	32.5355	74.7599	9315.5208	11.1488	16.3348	570.2867	18643.2991	37.3871	4.3393	5.786
L25	32.5374	73.5432	9171.2044	11.1533	16.3348	561.4518	18354.4766	36.7786	4.3613	5.914
	32.6577	73.8206	9275.3900	11.1953	16.3950	565.7447	18562.9848	36.9173	4.3822	5.942
L26	32.6385	85.9904	10719.0118	11.1510	16.3950	653.7972	21452.1280	43.0034	4.1622	4.826
	32.6801	86.1027	10761.0746	11.1655	16.4159	655.5293	21536.3089	43.0595	4.1694	4.834
L27	32.6801	86.1027	10761.0746	11.1655	16.4159	655.5293	21536.3089	43.0595	4.1694	4.834
	32.8601	86.5880	10944.0505	11.2285	16.5059	663.0384	21902.5015	43.3022	4.2006	4.87
L28	32.8871	69.4013	8869.1181	11.2906	16.5059	537.3300	17749.9064	34.7072	4.5086	6.558
	32.9288	69.4908	8903.4907	11.3051	16.5268	538.7320	17818.6969	34.7520	4.5158	6.568
L29	32.9307	68.2541	8751.9069	11.3096	16.5268	529.5600	17515.3297	34.1335	4.5378	6.723
	33.7641	70.0124	9445.8339	11.6009	16.9437	557.4851	18904.0970	35.0128	4.6822	6.937
L30	33.7660	68.7421	9281.5539	11.6054	16.9437	547.7894	18575.3207	34.3776	4.7042	7.101
	33.9876	69.2012	9468.7336	11.6829	17.0545	555.2029	18949.9264	34.6072	4.7427	7.159
L31	33.9568	89.5446	12103.8343	11.6119	17.0545	709.7130	24223.5952	44.7808	4.3907	5.091
	33.9985	89.6569	12149.4437	11.6264	17.0754	711.5177	24314.8740	44.8370	4.3979	5.099
L32	33.9985	89.6569	12149.4437	11.6264	17.0754	711.5177	24314.8740	44.8370	4.3979	5.099
	34.0818	89.8816	12241.0060	11.6556	17.1171	715.1339	24498.1189	44.9493	4.4123	5.116
L33	34.0702	97.4742	13214.4678	11.6289	17.1171	772.0047	26446.3235	48.7463	4.2803	4.566
	34.1119	97.5963	13264.1890	11.6435	17.1379	773.9669	26545.8314	48.8074	4.2875	4.573
L34	34.1157	95.0661	12940.0220	11.6524	17.1379	755.0517	25897.0709	47.5421	4.3315	4.747
	34.9491	97.4430	13935.0885	11.9437	17.5548	793.8038	27888.5131	48.7308	4.4760	4.905
L35	34.9529	94.8437	13583.5408	11.9526	17.5548	773.7781	27184.9552	47.4309	4.5200	5.093
	35.7313	97.0029	14532.5399	12.2247	17.9442	809.8733	29084.2020	48.5107	4.6549	5.245

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
L36	35.7544	80.9592	12234.8357	12.2779	17.9442	681.8263	24485.7702	40.4873	4.9189	6.67
	35.7961	81.0552	12278.4346	12.2925	17.9651	683.4620	24573.0255	40.5353	4.9261	6.679
L37	35.7961	81.0552	12278.4346	12.2925	17.9651	683.4620	24573.0255	40.5353	4.9261	6.679
	36.6294	82.9763	13172.3016	12.5838	18.3820	716.5886	26361.9357	41.4960	5.0706	6.875
L38	36.6333	80.2201	12752.7272	12.5927	18.3820	693.7633	25522.2348	40.1177	5.1146	7.178
	37.4666	82.0760	13658.4816	12.8841	18.7989	726.5591	27334.9354	41.0458	5.2590	7.381
L39	37.4666	82.0760	13658.4816	12.8841	18.7989	726.5591	27334.9354	41.0458	5.2590	7.381
	37.7999	82.8184	14032.4630	13.0006	18.9656	739.8895	28083.3904	41.4171	5.3168	7.462
L40	37.7961	85.6658	14495.1039	12.9917	18.9656	764.2832	29009.2808	42.8410	5.2728	7.15
	37.8377	85.7618	14543.9162	13.0063	18.9865	766.0150	29106.9697	42.8891	5.2800	7.159
L41	37.8377	85.7618	14543.9162	13.0063	18.9865	766.0150	29106.9697	42.8891	5.2800	7.159
	37.9627	86.0500	14691.0105	13.0500	19.0490	771.2222	29401.3518	43.0332	5.3017	7.189
L42	37.9434	100.2925	17006.3413	13.0056	19.0490	892.7682	34035.0601	50.1558	5.0817	5.892
	37.9851	100.4048	17063.5491	13.0202	19.0698	894.7923	34149.5508	50.2120	5.0889	5.9
L43	37.9851	100.4048	17063.5491	13.0202	19.0698	894.7923	34149.5508	50.2120	5.0889	5.9
	39.1661	103.5887	18738.8566	13.4331	19.6607	953.1140	37502.3702	51.8042	5.2936	6.137
L44	38.1925	105.1011	17485.5643	12.8824	18.8980	925.2580	34994.1365	52.5605	4.9414	5.415
	38.2972	106.9927	18446.7563	13.1142	19.2298	959.2787	36917.7853	53.5065	5.0563	5.541
L45	38.2972	106.9927	18446.7563	13.1142	19.2298	959.2787	36917.7853	53.5065	5.0563	5.541
	38.3928	107.2655	18588.2135	13.1477	19.2777	964.2356	37200.8858	53.6429	5.0729	5.559
L46	38.3870	111.5606	19293.3879	13.1343	19.2777	1000.8155	38612.1626	55.7909	5.0069	5.27
	38.4132	111.6382	19333.7143	13.1435	19.2908	1002.2270	38692.8684	55.8297	5.0114	5.275
L47	38.4170	108.7738	18863.0921	13.1524	19.2908	977.8308	37751.0047	54.3972	5.0554	5.465
	38.9402	110.2864	19660.9969	13.3353	19.5525	1005.5506	39347.8642	55.1537	5.1461	5.563
L48	38.9402	110.2864	19660.9969	13.3353	19.5525	1005.5506	39347.8642	55.1537	5.1461	5.563
	39.4633	111.7989	20481.0911	13.5182	19.8142	1033.6580	40989.1317	55.9101	5.2368	5.661
L49	39.4633	111.7989	20481.0911	13.5182	19.8142	1033.6580	40989.1317	55.9101	5.2368	5.661
	39.4895	111.8746	20522.6837	13.5273	19.8273	1035.0735	41072.3717	55.9479	5.2413	5.666
L50	39.4895	111.8746	20522.6837	13.5273	19.8273	1035.0735	41072.3717	55.9479	5.2413	5.666
	39.5679	112.1014	20647.7994	13.5547	19.8665	1039.3259	41322.7678	56.0614	5.2549	5.681
L51	39.5602	118.0063	21678.5088	13.5370	19.8665	1091.2076	43385.5427	59.0143	5.1669	5.299
	39.5864	118.0860	21722.4718	13.5461	19.8796	1092.7008	43473.5266	59.0542	5.1714	5.304
L52	39.5864	118.0860	21722.4718	13.5461	19.8796	1092.7008	43473.5266	59.0542	5.1714	5.304
	39.6303	118.2199	21796.4635	13.5615	19.9016	1095.2116	43621.6073	59.1212	5.1790	5.312
L53	39.6458	106.3725	19714.9456	13.5970	19.9016	990.6212	39455.8326	53.1964	5.3550	6.12
	39.6719	106.4440	19754.7500	13.6061	19.9147	991.9690	39535.4939	53.2321	5.3596	6.125
L54	39.6719	106.4440	19754.7500	13.6061	19.9147	991.9690	39535.4939	53.2321	5.3596	6.125
	39.8111	106.8246	19967.4108	13.6548	19.9843	999.1548	39961.0952	53.4225	5.3837	6.153
L55	39.7571	148.1936	27198.1957	13.5305	19.9843	1360.9780	54432.1795	74.1109	4.7677	3.892
	39.7832	148.2938	27253.3788	13.5397	19.9974	1362.8469	54542.6182	74.1610	4.7722	3.896
L56	39.7832	148.2938	27253.3788	13.5397	19.9974	1362.8469	54542.6182	74.1610	4.7722	3.896
	40.3064	150.2969	28372.7708	13.7226	20.2591	1400.4948	56782.8752	75.1627	4.8629	3.97
L57	40.3102	147.3249	27847.6959	13.7314	20.2591	1374.5769	55732.0345	73.6764	4.9069	4.089
	40.7026	148.7966	28690.6082	13.8686	20.4554	1402.5939	57418.9683	74.4124	4.9749	4.146
L58	40.7296	127.6664	24837.3730	13.9307	20.4554	1214.2213	49707.4276	63.8453	5.2829	5.154
	40.7557	127.7502	24886.3174	13.9399	20.4685	1215.8363	49805.3809	63.8872	5.2874	5.158
L59	40.7557	127.7502	24886.3174	13.9399	20.4685	1215.8363	49805.3809	63.8872	5.2874	5.158
	41.2266	129.2587	25778.3466	14.1045	20.7040	1245.0888	51590.6131	64.6416	5.3690	5.238
L60	41.2285	127.7225	25488.0183	14.1089	20.7040	1231.0660	51009.5743	63.8734	5.3910	5.324
	41.2546	127.8053	25537.6101	14.1181	20.7171	1232.6822	51108.8233	63.9148	5.3956	5.329
L61	41.2566	126.2671	25246.1216	14.1225	20.7171	1218.6123	50525.4628	63.1456	5.4176	5.418
	41.6489	127.4936	25988.9227	14.2597	20.9134	1242.6927	52012.0423	63.7589	5.4856	5.486
L62	41.6451	130.5996	26588.9383	14.2508	20.9134	1271.3831	53212.8630	65.3122	5.4416	5.309
	41.6712	130.6834	26640.1569	14.2599	20.9265	1273.0357	53315.3675	65.3541	5.4461	5.313
L63	41.6712	130.6834	26640.1569	14.2599	20.9265	1273.0357	53315.3675	65.3541	5.4461	5.313
	42.1944	132.3595	27678.3881	14.4428	21.1882	1306.3116	55393.1961	66.1923	5.5368	5.402
L64	42.1982	129.2105	27053.1159	14.4517	21.1882	1276.8012	54141.8290	64.6175	5.5808	5.581
	42.7214	130.8457	28093.2745	14.6346	21.4499	1309.7150	56223.5148	65.4353	5.6715	5.671
L65	42.7214	130.8457	28093.2745	14.6346	21.4499	1309.7150	56223.5148	65.4353	5.6715	5.671
	42.7475	130.9275	28145.9707	14.6437	21.4630	1311.3717	56328.9766	65.4762	5.6760	5.676

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 168.33-163.33				1	1	1			
L2 163.33-158.33				1	1	1			
L3 158.33-153.33				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
L4 153.33-148.33				1	1	1			
L5 148.33-143.33				1	1	1			
L6 143.33-138.33				1	1	1			
L7 138.33-130.50				1	1	1			
L8 130.50-129.16				1	1	1			
L9 129.16-125.50				1	1	1			
L10 125.50-125.25				1	1	1			
L11 125.25-120.50				1	1	1			
L12 120.50-120.25				1	1	0.977627			
L13 120.25-115.25				1	1	0.979701			
L14 115.25-113.83				1	1	0.97484			
L15 113.83-113.48				1	1	0.967539			
L16 113.48-113.25				1	1	0.966725			
L17 113.25-108.25				1	1	0.967764			
L18 108.25-103.25				1	1	0.969905			
L19 103.25-98.25				1	1	0.973125			
L20 98.25-93.25				1	1	0.977407			
L21 93.25-89.82				1	1	0.922674			
L22 89.82-89.57				1	1	0.921923			
L23 89.57-84.55				1	1	0.920559			
L24 84.55-83.55				1	1	0.937472			
L25 83.55-82.83				1	1	0.950993			
L26 82.83-82.58				1	1	1.02487			
L27 82.58-81.50				1	1	1.02116			
L28 81.50-81.25				1	1	1.07871			
L29 81.25-76.25				1	1	1.0823			
L30 76.25-74.92				1	1	1.09811			
L31 74.92-74.67				1	1	1.0488			
L32 74.67-74.17				1	1	1.04708			
L33 74.17-73.92				1	1	0.964732			
L34 73.92-68.92				1	1	0.974603			
L35 68.92-64.25				1	1	0.986862			
L36 64.25-64.00				1	1	0.959451			
L37 64.00-59.00				1	1	0.947048			
L38 59.00-54.00				1	1	0.967354			
L39 54.00-52.00				1	1	0.962614			
L40 52.00-51.75				1	1	1.035			
L41 51.75-51.00				1	1	1.03295			
L42 51.00-50.75				1	1	0.975314			
L43 50.75-43.66				1	1	0.970558			
L44 43.66-42.66				1	1	1.03383			
L45 42.66-41.75				1	1	1.03224			
L46 41.75-41.50				1	1	1.04583			
L47 41.50-36.50				1	1	1.06421			
L48 36.50-31.50				1	1	1.0553			
L49 31.50-31.25				1	1	1.08167			
L50 31.25-30.50				1	1	1.08031			
L51 30.50-30.25				1	1	1.05122			
L52 30.25-29.83				1	1	1.05047			
L53 29.83-29.58				1	1	1.05423			
L54 29.58-28.25				1	1	1.052			
L55 28.25-28.00				1	1	0.960332			
L56 28.00-23.00				1	1	0.951612			
L57 23.00-19.25				1	1	0.964299			
L58 19.25-19.00				1	1	0.982498			
L59 19.00-14.50				1	1	0.975302			
L60 14.50-14.25				1	1	0.994457			
L61 14.25-10.50				1	1	1.0005			
L62 10.50-10.25				1	1	0.983963			
L63 10.25-5.25				1	1	0.976135			
L64 5.25-0.25				1	1	0.992114			
L65 0.25-0.00				1	1	0.991729			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	No	Surface Ar (CaAa)	168.33 - 10.00	1	1	0.000 0.000	0.3750		0.22
***										
WR-VG86ST-BRDA(7/8)	C	No	Surface Ar (CaAa)	168.00 - 8.00	6	6	-0.180 0.000	0.8800		0.68
FB-L98B-034-XXXXXX(3/8)	C	No	Surface Ar (CaAa)	168.00 - 8.00	2	2	-0.200 -0.180	0.3937		0.05
***										
LDF4-50A(1/2)	C	No	Surface Ar (CaAa)	70.00 - 8.00	1	1	0.180 0.200	0.6250		0.15
HB114-21U3M12-XXXF(1-1/4)	C	No	Surface Ar (CaAa)	158.00 - 8.00	1	1	0.250 0.280	1.5400		1.22
***										
(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	A	No	Surface Ar (CaAa)	138.00 - 8.00	2	2	0.060 0.130	1.9800		1.30
***										
PL0.625x5 Reinforcement - Wind Area/Weight	A	No	Surface Af (CaAa)	120.00 - 84.67	1	1	0.000 0.000	0.0000	0.0000	10.63
PL0.625x5 Reinforcement - Wind Area/Weight	B	No	Surface Af (CaAa)	120.00 - 84.67	1	1	0.000 0.000	0.0000	0.0000	10.63
PL0.625x5 Reinforcement - Wind Area/Weight	C	No	Surface Af (CaAa)	120.00 - 84.67	1	1	0.000 0.000	0.0000	0.0000	10.63
***										
PL1.25x6 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	30.75 - 0.00	1	1	-0.167 -0.167	6.0000	14.5000	0.00
PL1.25x6 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	30.75 - 0.00	1	1	0.333 0.333	6.0000	14.5000	0.00
PL1.25x6 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	30.75 - 0.00	1	1	-0.333 -0.333	6.0000	14.5000	0.00
PL1.25x6 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	30.75 - 0.00	1	1	0.167 0.167	6.0000	14.5000	0.00
PL1.25x6 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	47.92 - 27.75	1	1	-0.333 -0.333	6.0000	14.5000	0.00
PL1.25x6 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	47.92 - 27.75	1	1	0.500 0.500	6.0000	14.5000	0.00
PL1.25x6 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	47.92 - 27.75	1	1	-0.167 -0.167	6.0000	14.5000	0.00
PL1.25x6 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	47.92 - 27.75	1	1	-0.167 -0.167	6.0000	14.5000	0.00
PL1.25x5 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	75.42 - 45.38	1	1	-0.167 -0.167	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	75.42 - 45.38	1	1	0.333 0.333	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	75.42 - 45.38	1	1	-0.333 -0.333	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	75.42 - 45.38	1	1	0.167 0.167	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	87.92 - 72.75	1	1	-0.333 -0.333	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	87.92 - 72.75	1	1	0.500 0.500	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	87.92 - 72.75	1	1	-0.167 -0.160	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	87.92 - 72.75	1	1	-0.167 -0.167	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	A	No	Surface Af (CaAa)	115.83 - 85.83	1	1	0.500 0.500	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	B	No	Surface Af (CaAa)	115.83 - 85.83	1	1	0.500 0.500	5.0000	12.5000	0.00
PL1.25x5 Reinforcement - Wind Area	C	No	Surface Af (CaAa)	115.83 - 85.83	1	1	0.500 0.500	5.0000	12.5000	0.00
***										
CCI-SFP-060100	A	No	Surface Af (CaAa)	43.75 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	No	Surface Af (CaAa)	43.75 - 0.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	No	Surface Af	43.75 -	1	1	-0.500	6.0000	14.0000	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
			(CaAa)	0.00			-0.500			
CCI-SFP-060100	C	No	Surface Af (CaAa)	43.75 - 0.00	1	1	0.500 0.500	6.0000	14.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	84.33 - 43.75	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	84.33 - 43.75	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	84.33 - 43.75	1	1	-0.500 -0.500	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	84.33 - 43.75	1	1	0.500 0.500	4.5000	11.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	27.75 - 17.75	1	1	-0.333 -0.333	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	27.75 - 17.75	1	1	-0.167 -0.167	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	27.75 - 17.75	1	1	-0.167 -0.167	4.5000	11.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	27.75 - 17.75	1	1	0.167 0.167	4.5000	11.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	72.75 - 62.75	1	1	-0.333 -0.333	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	72.75 - 62.75	1	1	-0.167 -0.167	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	72.75 - 62.75	1	1	-0.167 -0.167	4.5000	11.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	72.75 - 62.75	1	1	0.167 0.167	4.5000	11.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	120.50 - 87.92	1	1	-0.333 -0.333	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	120.50 - 87.92	1	1	-0.167 -0.167	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	120.50 - 87.92	1	1	-0.167 -0.167	4.5000	11.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	127.33 - 120.50	1	1	-0.333 -0.333	4.5000	11.0000	19.14
CCI-SFP-045100	B	No	Surface Af (CaAa)	127.33 - 120.50	1	1	-0.167 -0.167	4.5000	11.0000	19.14
CCI-SFP-045100	C	No	Surface Af (CaAa)	127.33 - 120.50	1	1	-0.167 -0.167	4.5000	11.0000	19.14
***										
CCI-SFP-060100	A	No	Surface Af (CaAa)	33.50 - 8.50	1	1	0.333 0.333	6.0000	14.0000	0.00
CCI-SFP-060100	B	No	Surface Af (CaAa)	33.50 - 8.50	1	1	-0.333 -0.333	6.0000	14.0000	0.00
CCI-SFP-060100	B	No	Surface Af (CaAa)	32.50 - 12.50	1	1	0.500 0.500	6.0000	14.0000	0.00
CCI-SFP-060100	C	No	Surface Af (CaAa)	32.50 - 12.50	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	53.58 - 33.50	1	1	0.333 0.333	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	53.58 - 33.50	1	1	-0.333 -0.333	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	52.58 - 32.50	1	1	0.500 0.500	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	52.58 - 32.50	1	1	0.000 0.000	4.5000	11.0000	0.00
CCI-SFP-045100	A	No	Surface Af (CaAa)	90.00 - 80.00	1	1	0.333 0.333	4.5000	11.0000	0.00
CCI-SFP-045100	B	No	Surface Af (CaAa)	90.00 - 80.00	1	1	0.333 0.333	4.5000	11.0000	0.00
CCI-SFP-045100	C	No	Surface Af (CaAa)	90.00 - 80.00	1	1	0.333 0.333	4.5000	11.0000	0.00
CCI-SFP-040125	A	No	Surface Af (CaAa)	122.00 - 112.00	1	1	0.333 0.333	4.0000	10.5000	0.00
CCI-SFP-040125	B	No	Surface Af (CaAa)	122.00 - 112.00	1	1	0.333 0.333	4.0000	10.5000	0.00
CCI-SFP-040125	C	No	Surface Af (CaAa)	122.00 - 112.00	1	1	0.333 0.333	4.0000	10.5000	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
TS 6.5x1	A	No	Surface Af (CaAa)	12.00 - 0.00	1	1	-0.333 -0.333	1.0000	15.0000	0.00
TS 6.5x1	C	No	Surface Af (CaAa)	12.00 - 0.00	1	1	-0.167 -0.167	1.0000	15.0000	0.00
TS 6.5x1	B	No	Surface Af (CaAa)	16.00 - 0.00	1	1	0.333 0.333	1.0000	15.0000	0.00
TS 6.5x1	C	No	Surface Af (CaAa)	16.00 - 0.00	1	1	0.167 0.167	1.0000	15.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***									
3/8" Ground Wire	A	No	No	Inside Pole	168.33 - 0.00	2	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
							2" Ice	0.00	0.08
LDF2-50(3/8)	C	No	No	Inside Pole	168.00 - 0.00	1	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
							2" Ice	0.00	0.08
LDF7-50A(1-5/8)	C	No	No	Inside Pole	168.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
LDF6-50A(1-1/4)	C	No	No	Inside Pole	158.00 - 0.00	3	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60
							2" Ice	0.00	0.60
***									
LDF7-50A(1-5/8)	A	No	No	Inside Pole	138.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
***									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	128.00 - 8.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	B	No	No	Inside Pole	128.00 - 8.00	1	No Ice	0.00	0.68
							1/2" Ice	0.00	0.68
							1" Ice	0.00	0.68
							2" Ice	0.00	0.68

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	168.33-163.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.019	0.000	0.04
L2	163.33-158.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.221	0.000	0.05
L3	158.33-153.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	3.940	0.000	0.06
L4	153.33-148.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.991	0.000	0.06
L5	148.33-143.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.991	0.000	0.06
L6	143.33-138.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.991	0.000	0.06
L7	138.33-130.50	A	0.000	0.000	2.970	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	6.253	0.000	0.10
L8	130.50-129.16	A	0.000	0.000	0.529	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.066	0.000	0.02
L9	129.16-125.50	A	0.000	0.000	2.658	0.000	0.06
		B	0.000	0.000	1.207	0.000	0.06
		C	0.000	0.000	4.132	0.000	0.08
L10	125.50-125.25	A	0.000	0.000	0.264	0.000	0.01
		B	0.000	0.000	0.165	0.000	0.01
		C	0.000	0.000	0.364	0.000	0.01
L11	125.25-120.50	A	0.000	0.000	6.015	0.000	0.13
		B	0.000	0.000	4.134	0.000	0.14
		C	0.000	0.000	7.925	0.000	0.15
L12	120.50-120.25	A	0.000	0.000	0.453	0.000	0.00
		B	0.000	0.000	0.354	0.000	0.00
		C	0.000	0.000	0.554	0.000	0.00
L13	120.25-115.25	A	0.000	0.000	9.547	0.000	0.09
		B	0.000	0.000	7.567	0.000	0.10
		C	0.000	0.000	11.558	0.000	0.11
L14	115.25-113.83	A	0.000	0.000	3.757	0.000	0.03
		B	0.000	0.000	3.195	0.000	0.03
		C	0.000	0.000	4.329	0.000	0.03
L15	113.83-113.48	A	0.000	0.000	0.926	0.000	0.01
		B	0.000	0.000	0.787	0.000	0.01
		C	0.000	0.000	1.067	0.000	0.01
L16	113.48-113.25	A	0.000	0.000	0.609	0.000	0.00
		B	0.000	0.000	0.517	0.000	0.00
		C	0.000	0.000	0.701	0.000	0.01
L17	113.25-108.25	A	0.000	0.000	10.730	0.000	0.09
		B	0.000	0.000	8.750	0.000	0.11
		C	0.000	0.000	12.741	0.000	0.12
L18	108.25-103.25	A	0.000	0.000	9.897	0.000	0.09
		B	0.000	0.000	7.917	0.000	0.11
		C	0.000	0.000	11.908	0.000	0.12
L19	103.25-98.25	A	0.000	0.000	9.897	0.000	0.09
		B	0.000	0.000	7.917	0.000	0.11
		C	0.000	0.000	11.908	0.000	0.12
L20	98.25-93.25	A	0.000	0.000	9.897	0.000	0.09
		B	0.000	0.000	7.917	0.000	0.11
		C	0.000	0.000	11.908	0.000	0.12
L21	93.25-89.82	A	0.000	0.000	6.924	0.000	0.06
		B	0.000	0.000	5.566	0.000	0.07
		C	0.000	0.000	8.304	0.000	0.08
L22	89.82-89.57	A	0.000	0.000	0.682	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.01
		C	0.000	0.000	0.783	0.000	0.01
L23	89.57-84.55	A	0.000	0.000	15.718	0.000	0.09
		B	0.000	0.000	10.924	0.000	0.10
		C	0.000	0.000	14.930	0.000	0.11
L24	84.55-83.55	A	0.000	0.000	3.396	0.000	0.01
		B	0.000	0.000	2.167	0.000	0.01
		C	0.000	0.000	3.548	0.000	0.01
L25	83.55-82.83	A	0.000	0.000	2.573	0.000	0.01
		B	0.000	0.000	1.685	0.000	0.01
		C	0.000	0.000	2.803	0.000	0.01
L26	82.83-82.58	A	0.000	0.000	0.891	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.970	0.000	0.00
L27	82.58-81.50	A	0.000	0.000	3.848	0.000	0.01
		B	0.000	0.000	2.520	0.000	0.01
		C	0.000	0.000	4.192	0.000	0.01
L28	81.50-81.25	A	0.000	0.000	0.891	0.000	0.00
		B	0.000	0.000	0.583	0.000	0.00
		C	0.000	0.000	0.970	0.000	0.00
L29	81.25-76.25	A	0.000	0.000	15.001	0.000	0.04
		B	0.000	0.000	8.854	0.000	0.05
		C	0.000	0.000	16.595	0.000	0.06
L30	76.25-74.92	A	0.000	0.000	4.158	0.000	0.01
		B	0.000	0.000	2.939	0.000	0.01
		C	0.000	0.000	4.582	0.000	0.02
L31	74.92-74.67	A	0.000	0.000	0.911	0.000	0.00
		B	0.000	0.000	0.813	0.000	0.00
		C	0.000	0.000	0.991	0.000	0.00
L32	74.67-74.17	A	0.000	0.000	1.823	0.000	0.00
		B	0.000	0.000	1.625	0.000	0.01
		C	0.000	0.000	1.982	0.000	0.01
L33	74.17-73.92	A	0.000	0.000	0.911	0.000	0.00
		B	0.000	0.000	0.813	0.000	0.00
		C	0.000	0.000	0.991	0.000	0.00
L34	73.92-68.92	A	0.000	0.000	17.592	0.000	0.04
		B	0.000	0.000	15.931	0.000	0.05
		C	0.000	0.000	19.573	0.000	0.06
L35	68.92-64.25	A	0.000	0.000	16.248	0.000	0.04
		B	0.000	0.000	14.788	0.000	0.05
		C	0.000	0.000	18.419	0.000	0.06
L36	64.25-64.00	A	0.000	0.000	0.870	0.000	0.00
		B	0.000	0.000	0.792	0.000	0.00
		C	0.000	0.000	0.986	0.000	0.00
L37	64.00-59.00	A	0.000	0.000	11.772	0.000	0.04
		B	0.000	0.000	13.021	0.000	0.05
		C	0.000	0.000	16.908	0.000	0.06
L38	59.00-54.00	A	0.000	0.000	9.897	0.000	0.04
		B	0.000	0.000	12.083	0.000	0.05
		C	0.000	0.000	15.970	0.000	0.06
L39	54.00-52.00	A	0.000	0.000	5.144	0.000	0.02
		B	0.000	0.000	6.453	0.000	0.02
		C	0.000	0.000	6.823	0.000	0.03
L40	52.00-51.75	A	0.000	0.000	0.682	0.000	0.00
		B	0.000	0.000	0.979	0.000	0.00
		C	0.000	0.000	0.986	0.000	0.00
L41	51.75-51.00	A	0.000	0.000	2.047	0.000	0.01
		B	0.000	0.000	2.938	0.000	0.01
		C	0.000	0.000	2.958	0.000	0.01
L42	51.00-50.75	A	0.000	0.000	0.682	0.000	0.00
		B	0.000	0.000	0.979	0.000	0.00
		C	0.000	0.000	0.986	0.000	0.00
L43	50.75-43.66	A	0.000	0.000	26.447	0.000	0.05
		B	0.000	0.000	29.179	0.000	0.07
		C	0.000	0.000	30.820	0.000	0.09
L44	43.66-42.66	A	0.000	0.000	4.146	0.000	0.01
		B	0.000	0.000	3.500	0.000	0.01
		C	0.000	0.000	4.611	0.000	0.01
L45	42.66-41.75	A	0.000	0.000	3.790	0.000	0.01
		B	0.000	0.000	3.199	0.000	0.01
		C	0.000	0.000	4.215	0.000	0.01
L46	41.75-41.50	A	0.000	0.000	1.037	0.000	0.00
		B	0.000	0.000	0.875	0.000	0.00
		C	0.000	0.000	1.153	0.000	0.00
L47	41.50-36.50	A	0.000	0.000	20.730	0.000	0.04
		B	0.000	0.000	17.500	0.000	0.05
		C	0.000	0.000	23.054	0.000	0.06
L48	36.50-31.50	A	0.000	0.000	21.230	0.000	0.04
		B	0.000	0.000	18.250	0.000	0.05
		C	0.000	0.000	23.304	0.000	0.06
L49	31.50-31.25	A	0.000	0.000	1.099	0.000	0.00
		B	0.000	0.000	1.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	1.215	0.000	0.00
L50	31.25-30.50	A	0.000	0.000	3.547	0.000	0.01
		B	0.000	0.000	3.500	0.000	0.01
		C	0.000	0.000	3.896	0.000	0.01
L51	30.50-30.25	A	0.000	0.000	1.349	0.000	0.00
		B	0.000	0.000	1.500	0.000	0.00
		C	0.000	0.000	1.465	0.000	0.00
L52	30.25-29.83	A	0.000	0.000	2.266	0.000	0.00
		B	0.000	0.000	2.520	0.000	0.00
		C	0.000	0.000	2.462	0.000	0.01
L53	29.83-29.58	A	0.000	0.000	1.349	0.000	0.00
		B	0.000	0.000	1.500	0.000	0.00
		C	0.000	0.000	1.465	0.000	0.00
L54	29.58-28.25	A	0.000	0.000	7.177	0.000	0.01
		B	0.000	0.000	7.980	0.000	0.01
		C	0.000	0.000	7.795	0.000	0.02
L55	28.25-28.00	A	0.000	0.000	1.349	0.000	0.00
		B	0.000	0.000	1.500	0.000	0.00
		C	0.000	0.000	1.465	0.000	0.00
L56	28.00-23.00	A	0.000	0.000	24.605	0.000	0.04
		B	0.000	0.000	28.813	0.000	0.05
		C	0.000	0.000	28.116	0.000	0.06
L57	23.00-19.25	A	0.000	0.000	18.360	0.000	0.03
		B	0.000	0.000	21.563	0.000	0.04
		C	0.000	0.000	21.040	0.000	0.05
L58	19.25-19.00	A	0.000	0.000	1.224	0.000	0.00
		B	0.000	0.000	1.438	0.000	0.00
		C	0.000	0.000	1.403	0.000	0.00
L59	19.00-14.50	A	0.000	0.000	17.157	0.000	0.03
		B	0.000	0.000	23.688	0.000	0.05
		C	0.000	0.000	23.061	0.000	0.06
L60	14.50-14.25	A	0.000	0.000	0.849	0.000	0.00
		B	0.000	0.000	1.292	0.000	0.00
		C	0.000	0.000	1.257	0.000	0.00
L61	14.25-10.50	A	0.000	0.000	12.972	0.000	0.03
		B	0.000	0.000	17.375	0.000	0.04
		C	0.000	0.000	17.090	0.000	0.05
L62	10.50-10.25	A	0.000	0.000	0.889	0.000	0.00
		B	0.000	0.000	1.042	0.000	0.00
		C	0.000	0.000	1.046	0.000	0.00
L63	10.25-5.25	A	0.000	0.000	13.431	0.000	0.03
		B	0.000	0.000	17.583	0.000	0.02
		C	0.000	0.000	18.485	0.000	0.05
L64	5.25-0.25	A	0.000	0.000	10.790	0.000	0.03
		B	0.000	0.000	15.833	0.000	0.00
		C	0.000	0.000	16.624	0.000	0.03
L65	0.25-0.00	A	0.000	0.000	0.540	0.000	0.00
		B	0.000	0.000	0.792	0.000	0.00
		C	0.000	0.000	0.831	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	168.33-163.33	A	1.998	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	10.386	0.000	0.17
L2	163.33-158.33	A	1.992	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	10.951	0.000	0.18
L3	158.33-153.33	A	1.985	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.500	0.000	0.23
L4	153.33-148.33	A	1.979	0.000	0.000	0.000	0.000	0.00
		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	13.655	0.000	0.23
L5	148.33-143.33	A	1.972	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.625	0.000	0.23
L6	143.33-138.33	A	1.965	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	13.594	0.000	0.23
L7	138.33-130.50	A	1.956	0.000	0.000	7.381	0.000	0.15
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	21.233	0.000	0.36
L8	130.50-129.16	A	1.950	0.000	0.000	1.315	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.621	0.000	0.06
L9	129.16-125.50	A	1.946	0.000	0.000	5.181	0.000	0.13
		B		0.000	0.000	1.585	0.000	0.09
		C		0.000	0.000	11.482	0.000	0.23
L10	125.50-125.25	A	1.943	0.000	0.000	0.462	0.000	0.01
		B		0.000	0.000	0.216	0.000	0.01
		C		0.000	0.000	0.891	0.000	0.02
L11	125.25-120.50	A	1.939	0.000	0.000	10.126	0.000	0.27
		B		0.000	0.000	5.473	0.000	0.23
		C		0.000	0.000	18.273	0.000	0.39
L12	120.50-120.25	A	1.935	0.000	0.000	0.756	0.000	0.01
		B		0.000	0.000	0.511	0.000	0.01
		C		0.000	0.000	1.184	0.000	0.02
L13	120.25-115.25	A	1.931	0.000	0.000	17.648	0.000	0.32
		B		0.000	0.000	12.760	0.000	0.27
		C		0.000	0.000	26.197	0.000	0.45
L14	115.25-113.83	A	1.925	0.000	0.000	6.563	0.000	0.11
		B		0.000	0.000	5.177	0.000	0.10
		C		0.000	0.000	8.986	0.000	0.15
L15	113.83-113.48	A	1.924	0.000	0.000	1.617	0.000	0.03
		B		0.000	0.000	1.276	0.000	0.02
		C		0.000	0.000	2.214	0.000	0.04
L16	113.48-113.25	A	1.923	0.000	0.000	1.063	0.000	0.02
		B		0.000	0.000	0.838	0.000	0.02
		C		0.000	0.000	1.455	0.000	0.02
L17	113.25-108.25	A	1.919	0.000	0.000	19.679	0.000	0.34
		B		0.000	0.000	14.806	0.000	0.29
		C		0.000	0.000	28.190	0.000	0.47
L18	108.25-103.25	A	1.910	0.000	0.000	18.509	0.000	0.32
		B		0.000	0.000	13.646	0.000	0.27
		C		0.000	0.000	26.991	0.000	0.45
L19	103.25-98.25	A	1.901	0.000	0.000	18.470	0.000	0.32
		B		0.000	0.000	13.619	0.000	0.27
		C		0.000	0.000	26.922	0.000	0.44
L20	98.25-93.25	A	1.891	0.000	0.000	18.429	0.000	0.32
		B		0.000	0.000	13.590	0.000	0.27
		C		0.000	0.000	26.849	0.000	0.44
L21	93.25-89.82	A	1.883	0.000	0.000	12.790	0.000	0.22
		B		0.000	0.000	9.478	0.000	0.19
		C		0.000	0.000	18.547	0.000	0.30
L22	89.82-89.57	A	1.879	0.000	0.000	1.158	0.000	0.02
		B		0.000	0.000	0.917	0.000	0.02
		C		0.000	0.000	1.577	0.000	0.03
L23	89.57-84.55	A	1.873	0.000	0.000	25.706	0.000	0.41
		B		0.000	0.000	16.941	0.000	0.32
		C		0.000	0.000	30.167	0.000	0.49
L24	84.55-83.55	A	1.867	0.000	0.000	5.131	0.000	0.07
		B		0.000	0.000	3.000	0.000	0.05
		C		0.000	0.000	6.510	0.000	0.09
L25	83.55-82.83	A	1.865	0.000	0.000	3.880	0.000	0.05
		B		0.000	0.000	2.343	0.000	0.04
		C		0.000	0.000	5.052	0.000	0.07
L26	82.83-82.58	A	1.864	0.000	0.000	1.343	0.000	0.02
		B		0.000	0.000	0.811	0.000	0.01
		C		0.000	0.000	1.749	0.000	0.02
L27	82.58-81.50	A	1.862	0.000	0.000	5.800	0.000	0.08
		B		0.000	0.000	3.504	0.000	0.05

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	7.552	0.000	0.11
L28	81.50-81.25	A	1.861	0.000	0.000	1.342	0.000	0.02
		B		0.000	0.000	0.811	0.000	0.01
		C		0.000	0.000	1.748	0.000	0.02
L29	81.25-76.25	A	1.854	0.000	0.000	23.244	0.000	0.32
		B		0.000	0.000	12.625	0.000	0.20
		C		0.000	0.000	31.324	0.000	0.44
L30	76.25-74.92	A	1.847	0.000	0.000	6.460	0.000	0.09
		B		0.000	0.000	4.240	0.000	0.06
		C		0.000	0.000	8.602	0.000	0.12
L31	74.92-74.67	A	1.845	0.000	0.000	1.402	0.000	0.02
		B		0.000	0.000	1.172	0.000	0.02
		C		0.000	0.000	1.804	0.000	0.02
L32	74.67-74.17	A	1.844	0.000	0.000	2.803	0.000	0.04
		B		0.000	0.000	2.344	0.000	0.03
		C		0.000	0.000	3.607	0.000	0.05
L33	74.17-73.92	A	1.843	0.000	0.000	1.401	0.000	0.02
		B		0.000	0.000	1.172	0.000	0.02
		C		0.000	0.000	1.803	0.000	0.02
L34	73.92-68.92	A	1.836	0.000	0.000	26.384	0.000	0.36
		B		0.000	0.000	22.604	0.000	0.32
		C		0.000	0.000	35.666	0.000	0.49
L35	68.92-64.25	A	1.824	0.000	0.000	24.132	0.000	0.33
		B		0.000	0.000	20.841	0.000	0.30
		C		0.000	0.000	34.547	0.000	0.47
L36	64.25-64.00	A	1.817	0.000	0.000	1.290	0.000	0.02
		B		0.000	0.000	1.114	0.000	0.02
		C		0.000	0.000	1.846	0.000	0.02
L37	64.00-59.00	A	1.809	0.000	0.000	18.647	0.000	0.26
		B		0.000	0.000	18.699	0.000	0.27
		C		0.000	0.000	33.295	0.000	0.45
L38	59.00-54.00	A	1.794	0.000	0.000	16.222	0.000	0.22
		B		0.000	0.000	17.465	0.000	0.25
		C		0.000	0.000	31.977	0.000	0.43
L39	54.00-52.00	A	1.782	0.000	0.000	8.222	0.000	0.11
		B		0.000	0.000	9.362	0.000	0.13
		C		0.000	0.000	13.394	0.000	0.18
L40	52.00-51.75	A	1.779	0.000	0.000	1.085	0.000	0.01
		B		0.000	0.000	1.424	0.000	0.02
		C		0.000	0.000	1.869	0.000	0.02
L41	51.75-51.00	A	1.777	0.000	0.000	3.254	0.000	0.04
		B		0.000	0.000	4.270	0.000	0.06
		C		0.000	0.000	5.604	0.000	0.07
L42	51.00-50.75	A	1.775	0.000	0.000	1.084	0.000	0.01
		B		0.000	0.000	1.423	0.000	0.02
		C		0.000	0.000	1.867	0.000	0.02
L43	50.75-43.66	A	1.762	0.000	0.000	40.157	0.000	0.50
		B		0.000	0.000	41.958	0.000	0.54
		C		0.000	0.000	56.513	0.000	0.72
L44	43.66-42.66	A	1.746	0.000	0.000	6.095	0.000	0.07
		B		0.000	0.000	4.910	0.000	0.06
		C		0.000	0.000	8.110	0.000	0.10
L45	42.66-41.75	A	1.742	0.000	0.000	5.553	0.000	0.07
		B		0.000	0.000	4.473	0.000	0.06
		C		0.000	0.000	7.379	0.000	0.09
L46	41.75-41.50	A	1.740	0.000	0.000	1.518	0.000	0.02
		B		0.000	0.000	1.223	0.000	0.02
		C		0.000	0.000	2.017	0.000	0.03
L47	41.50-36.50	A	1.729	0.000	0.000	30.300	0.000	0.36
		B		0.000	0.000	24.414	0.000	0.31
		C		0.000	0.000	40.234	0.000	0.50
L48	36.50-31.50	A	1.705	0.000	0.000	30.677	0.000	0.36
		B		0.000	0.000	25.070	0.000	0.31
		C		0.000	0.000	40.260	0.000	0.49
L49	31.50-31.25	A	1.691	0.000	0.000	1.568	0.000	0.02
		B		0.000	0.000	1.338	0.000	0.02
		C		0.000	0.000	2.057	0.000	0.02
L50	31.25-30.50	A	1.689	0.000	0.000	5.036	0.000	0.06
		B		0.000	0.000	4.682	0.000	0.06

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	6.500	0.000	0.08
L51	30.50-30.25	A	1.686	0.000	0.000	1.901	0.000	0.02
		B		0.000	0.000	2.006	0.000	0.02
		C		0.000	0.000	2.388	0.000	0.03
L52	30.25-29.83	A	1.684	0.000	0.000	3.192	0.000	0.04
		B		0.000	0.000	3.369	0.000	0.04
		C		0.000	0.000	4.011	0.000	0.05
L53	29.83-29.58	A	1.682	0.000	0.000	1.899	0.000	0.02
		B		0.000	0.000	2.005	0.000	0.02
		C		0.000	0.000	2.386	0.000	0.03
L54	29.58-28.25	A	1.678	0.000	0.000	10.097	0.000	0.11
		B		0.000	0.000	10.658	0.000	0.12
		C		0.000	0.000	12.682	0.000	0.15
L55	28.25-28.00	A	1.673	0.000	0.000	1.897	0.000	0.02
		B		0.000	0.000	2.002	0.000	0.02
		C		0.000	0.000	2.381	0.000	0.03
L56	28.00-23.00	A	1.657	0.000	0.000	34.064	0.000	0.40
		B		0.000	0.000	38.057	0.000	0.44
		C		0.000	0.000	45.575	0.000	0.54
L57	23.00-19.25	A	1.626	0.000	0.000	25.277	0.000	0.29
		B		0.000	0.000	28.341	0.000	0.32
		C		0.000	0.000	33.875	0.000	0.39
L58	19.25-19.00	A	1.610	0.000	0.000	1.681	0.000	0.02
		B		0.000	0.000	1.885	0.000	0.02
		C		0.000	0.000	2.250	0.000	0.03
L59	19.00-14.50	A	1.589	0.000	0.000	24.124	0.000	0.27
		B		0.000	0.000	31.480	0.000	0.36
		C		0.000	0.000	37.969	0.000	0.44
L60	14.50-14.25	A	1.564	0.000	0.000	1.206	0.000	0.01
		B		0.000	0.000	1.752	0.000	0.02
		C		0.000	0.000	2.107	0.000	0.03
L61	14.25-10.50	A	1.541	0.000	0.000	18.614	0.000	0.22
		B		0.000	0.000	23.565	0.000	0.29
		C		0.000	0.000	29.408	0.000	0.37
L62	10.50-10.25	A	1.514	0.000	0.000	1.294	0.000	0.02
		B		0.000	0.000	1.412	0.000	0.02
		C		0.000	0.000	1.854	0.000	0.02
L63	10.25-5.25	A	1.471	0.000	0.000	19.081	0.000	0.24
		B		0.000	0.000	23.826	0.000	0.27
		C		0.000	0.000	28.749	0.000	0.39
L64	5.25-0.25	A	1.326	0.000	0.000	14.482	0.000	0.18
		B		0.000	0.000	21.016	0.000	0.20
		C		0.000	0.000	22.846	0.000	0.29
L65	0.25-0.00	A	0.973	0.000	0.000	0.676	0.000	0.01
		B		0.000	0.000	0.984	0.000	0.01
		C		0.000	0.000	1.063	0.000	0.01

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	168.33-163.33	0.6777	3.3098	0.7610	3.6607
L2	163.33-158.33	0.7184	3.4941	0.8070	3.8274
L3	158.33-153.33	0.2664	3.9555	0.2795	4.3803
L4	153.33-148.33	0.2401	4.0342	0.2513	4.5154
L5	148.33-143.33	0.2437	4.0837	0.2580	4.6183
L6	143.33-138.33	0.2470	4.1309	0.2645	4.7181
L7	138.33-130.50	-1.1892	2.3613	-0.9044	2.9003
L8	130.50-129.16	-1.2493	2.3087	-0.9537	2.8628
L9	129.16-125.50	-0.7309	2.4837	-0.7381	2.8965
L10	125.50-125.25	-0.3458	2.0899	-0.5640	2.8879
L11	125.25-120.50	-0.3110	1.8836	-0.5255	2.6955
L12	120.50-120.25	-0.2224	1.5945	-0.3890	2.3747
L13	120.25-115.25	-0.2161	1.5529	-0.3565	2.1803

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L14	115.25-113.83	-0.1707	1.2306	-0.2975	1.8232
L15	113.83-113.48	-0.1713	1.2356	-0.2986	1.8313
L16	113.48-113.25	-0.1715	1.2372	-0.2990	1.8339
L17	113.25-108.25	-0.2030	1.4677	-0.3398	2.0879
L18	108.25-103.25	-0.2188	1.5886	-0.3616	2.2291
L19	103.25-98.25	-0.2222	1.6193	-0.3687	2.2796
L20	98.25-93.25	-0.2256	1.6495	-0.3757	2.3295
L21	93.25-89.82	-0.2252	1.6518	-0.3779	2.3488
L22	89.82-89.57	-0.1814	1.3322	-0.3251	2.0224
L23	89.57-84.55	0.5816	0.6298	0.2928	1.4450
L24	84.55-83.55	0.8907	-0.9835	0.5911	-0.0309
L25	83.55-82.83	0.8463	-1.2726	0.5651	-0.3503
L26	82.83-82.58	0.8481	-1.2751	0.5666	-0.3514
L27	82.58-81.50	0.8504	-1.2784	0.5686	-0.3529
L28	81.50-81.25	0.8525	-1.2814	0.5705	-0.3543
L29	81.25-76.25	0.9992	-1.5011	0.6491	-0.4042
L30	76.25-74.92	0.4910	-1.1634	0.2138	-0.1530
L31	74.92-74.67	-0.2314	-0.6147	-0.4015	0.2059
L32	74.67-74.17	-0.2317	-0.6155	-0.4019	0.2059
L33	74.17-73.92	-0.2320	-0.6164	-0.4024	0.2060
L34	73.92-68.92	-1.2785	-0.5780	-1.3449	0.3292
L35	68.92-64.25	-1.6452	-0.5229	-1.7373	0.5801
L36	64.25-64.00	-1.6592	-0.5274	-1.7536	0.5832
L37	64.00-59.00	-1.8185	-0.3778	-1.8940	0.8760
L38	59.00-54.00	-1.9105	-0.3179	-1.9794	1.0041
L39	54.00-52.00	-1.5684	-1.5137	-1.6696	-0.2207
L40	52.00-51.75	-1.1509	-0.2330	-1.2829	0.8325
L41	51.75-51.00	-1.1528	-0.2334	-1.2852	0.8335
L42	51.00-50.75	-1.1549	-0.2338	-1.2876	0.8345
L43	50.75-43.66	0.0116	-0.6041	-0.2654	0.4239
L44	43.66-42.66	1.3163	-1.6849	0.9182	-0.4408
L45	42.66-41.75	1.3190	-1.6883	0.9226	-0.4501
L46	41.75-41.50	1.3206	-1.6904	0.9242	-0.4517
L47	41.50-36.50	1.3280	-1.6996	0.9312	-0.4592
L48	36.50-31.50	1.3391	-1.8183	0.9479	-0.5570
L49	31.50-31.25	1.3724	-1.6163	0.9840	-0.4597
L50	31.25-30.50	0.9012	-1.2841	0.5817	-0.2354
L51	30.50-30.25	0.1407	-0.7540	-0.0837	0.1370
L52	30.25-29.83	0.1407	-0.7545	-0.0837	0.1364
L53	29.83-29.58	0.1408	-0.7549	-0.0836	0.1359
L54	29.58-28.25	0.1410	-0.7561	-0.0833	0.1346
L55	28.25-28.00	0.1413	-0.7575	-0.0831	0.1333
L56	28.00-23.00	-1.0399	-0.6993	-1.1789	0.2364
L57	23.00-19.25	-1.1141	-0.7018	-1.2490	0.2331
L58	19.25-19.00	-1.1182	-0.7043	-1.2532	0.2280
L59	19.00-14.50	-1.0973	-0.4960	-1.2223	0.5955
L60	14.50-14.25	-1.0506	-0.2214	-1.1352	1.0634
L61	14.25-10.50	-1.3869	-1.6004	-1.4485	0.0095
L62	10.50-10.25	-1.7250	-2.8579	-1.7611	-0.8564
L63	10.25-5.25	-1.7461	-1.5358	-1.7821	-0.2664
L64	5.25-0.25	-1.7242	-0.7719	-1.7387	0.0430
L65	0.25-0.00	-1.7320	-0.7760	-1.7394	-0.1123

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	163.33 - 168.33	1.0000	1.0000
L1	5	WR-VG86ST-BRDA(7/8)	163.33 - 168.00	1.0000	1.0000
L1	6	FB-L98B-034-XXXXXX(3/8)	163.33 - 168.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	1	Safety Line 3/8	158.33 - 163.33	1.0000	1.0000
L2	5	WR-VG86ST-BRDA(7/8)	158.33 - 163.33	1.0000	1.0000
L2	6	FB-L98B-034-XXXXXX(3/8)	158.33 - 163.33	1.0000	1.0000
L3	1	Safety Line 3/8	153.33 - 158.33	1.0000	1.0000
L3	5	WR-VG86ST-BRDA(7/8)	153.33 - 158.33	1.0000	1.0000
L3	6	FB-L98B-034-XXXXXX(3/8)	153.33 - 158.33	1.0000	1.0000
L3	15	HB114-21U3M12-XXXF(1-1/4)	153.33 - 158.00	1.0000	1.0000
L4	1	Safety Line 3/8	148.33 - 153.33	1.0000	1.0000
L4	5	WR-VG86ST-BRDA(7/8)	148.33 - 153.33	1.0000	1.0000
L4	6	FB-L98B-034-XXXXXX(3/8)	148.33 - 153.33	1.0000	1.0000
L4	15	HB114-21U3M12-XXXF(1-1/4)	148.33 - 153.33	1.0000	1.0000
L5	1	Safety Line 3/8	143.33 - 148.33	1.0000	1.0000
L5	5	WR-VG86ST-BRDA(7/8)	143.33 - 148.33	1.0000	1.0000
L5	6	FB-L98B-034-XXXXXX(3/8)	143.33 - 148.33	1.0000	1.0000
L5	15	HB114-21U3M12-XXXF(1-1/4)	143.33 - 148.33	1.0000	1.0000
L6	1	Safety Line 3/8	138.33 - 143.33	1.0000	1.0000
L6	5	WR-VG86ST-BRDA(7/8)	138.33 - 143.33	1.0000	1.0000
L6	6	FB-L98B-034-XXXXXX(3/8)	138.33 - 143.33	1.0000	1.0000
L6	15	HB114-21U3M12-XXXF(1-1/4)	138.33 - 143.33	1.0000	1.0000
L7	1	Safety Line 3/8	130.50 - 138.33	1.0000	1.0000
L7	5	WR-VG86ST-BRDA(7/8)	130.50 - 138.33	1.0000	1.0000
L7	6	FB-L98B-034-XXXXXX(3/8)	130.50 - 138.33	1.0000	1.0000
L7	15	HB114-21U3M12-XXXF(1-1/4)	130.50 - 138.33	1.0000	1.0000
L7	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	130.50 - 138.00	1.0000	1.0000
L9	1	Safety Line 3/8	125.50 - 129.16	1.0000	1.0000
L9	5	WR-VG86ST-BRDA(7/8)	125.50 - 129.16	1.0000	1.0000
L9	6	FB-L98B-034-XXXXXX(3/8)	125.50 - 129.16	1.0000	1.0000
L9	15	HB114-21U3M12-XXXF(1-1/4)	125.50 - 129.16	1.0000	1.0000
L9	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	125.50 - 129.16	1.0000	1.0000
L9	73	CCI-SFP-045100	125.50 - 127.33	1.0000	1.0000
L9	74	CCI-SFP-045100	125.50 - 127.33	1.0000	1.0000
L9	75	CCI-SFP-045100	125.50 - 127.33	1.0000	1.0000
L10	1	Safety Line 3/8	125.25 - 125.50	1.0000	1.0000
L10	5	WR-VG86ST-BRDA(7/8)	125.25 - 125.50	1.0000	1.0000
L10	6	FB-L98B-034-XXXXXX(3/8)	125.25 - 125.50	1.0000	1.0000
L10	15	HB114-21U3M12-XXXF(1-1/4)	125.25 - 125.50	1.0000	1.0000
L10	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	125.25 - 125.50	1.0000	1.0000
L10	73	CCI-SFP-045100	125.25 - 125.50	1.0000	1.0000
L10	74	CCI-SFP-045100	125.25 - 125.50	1.0000	1.0000
L10	75	CCI-SFP-045100	125.25 - 125.50	1.0000	1.0000
L11	1	Safety Line 3/8	120.50 - 125.25	1.0000	1.0000
L11	5	WR-VG86ST-BRDA(7/8)	120.50 - 125.25	1.0000	1.0000
L11	6	FB-L98B-034-XXXXXX(3/8)	120.50 - 125.25	1.0000	1.0000
L11	15	HB114-21U3M12-XXXF(1-1/4)	120.50 - 125.25	1.0000	1.0000
L11	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	120.50 - 125.25	1.0000	1.0000
L11	73	CCI-SFP-045100	120.50 - 125.25	1.0000	1.0000
L11	74	CCI-SFP-045100	120.50 - 125.25	1.0000	1.0000
L11	75	CCI-SFP-045100	120.50 - 125.25	1.0000	1.0000
L11	88	CCI-SFP-040125	120.50 - 122.00	1.0000	1.0000
L11	89	CCI-SFP-040125	120.50 - 122.00	1.0000	1.0000
L11	90	CCI-SFP-040125	120.50 - 122.00	1.0000	1.0000
L12	1	Safety Line 3/8	120.25 - 120.50	1.0000	1.0000
L12	5	WR-VG86ST-BRDA(7/8)	120.25 - 120.50	1.0000	1.0000
L12	6	FB-L98B-034-XXXXXX(3/8)	120.25 - 120.50	1.0000	1.0000
L12	15	HB114-21U3M12-XXXF(1-1/4)	120.25 - 120.50	1.0000	1.0000
L12	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	120.25 - 120.50	1.0000	1.0000
L12	70	CCI-SFP-045100	120.25 - 120.50	1.0000	1.0000
L12	71	CCI-SFP-045100	120.25 - 120.50	1.0000	1.0000
L12	72	CCI-SFP-045100	120.25 - 120.50	1.0000	1.0000
L12	88	CCI-SFP-040125	120.25 - 120.50	1.0000	1.0000
L12	89	CCI-SFP-040125	120.25 - 120.50	1.0000	1.0000
L12	90	CCI-SFP-040125	120.25 - 120.50	1.0000	1.0000
L13	1	Safety Line 3/8	115.25 - 120.25	1.0000	1.0000
L13	5	WR-VG86ST-BRDA(7/8)	115.25 - 120.25	1.0000	1.0000
L13	6	FB-L98B-034-XXXXXX(3/8)	115.25 - 120.25	1.0000	1.0000
L13	15	HB114-21U3M12-XXXF(1-1/4)	115.25 - 120.25	1.0000	1.0000
L13	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	115.25 - 120.25	1.0000	1.0000
L13	30	PL0.625x5 Reinforcement - Wind Area/Weight	115.25 - 120.00	1.0000	1.0000
L13	31	PL0.625x5 Reinforcement - Wind Area/Weight	115.25 - 120.00	1.0000	1.0000
L13	32	PL0.625x5 Reinforcement - Wind Area/Weight	115.25 - 120.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L13	50	PL1.25x5 Reinforcement - Wind Area	115.25 - 115.83	1.0000	1.0000
L13	51	PL1.25x5 Reinforcement - Wind Area	115.25 - 115.83	1.0000	1.0000
L13	52	PL1.25x5 Reinforcement - Wind Area	115.25 - 115.83	1.0000	1.0000
L13	70	CCI-SFP-045100	115.25 - 120.25	1.0000	1.0000
L13	71	CCI-SFP-045100	115.25 - 120.25	1.0000	1.0000
L13	72	CCI-SFP-045100	115.25 - 120.25	1.0000	1.0000
L13	88	CCI-SFP-040125	115.25 - 120.25	1.0000	1.0000
L13	89	CCI-SFP-040125	115.25 - 120.25	1.0000	1.0000
L13	90	CCI-SFP-040125	115.25 - 120.25	1.0000	1.0000
L14	1	Safety Line 3/8	113.83 - 115.25	1.0000	1.0000
L14	5	WR-VG86ST-BRDA(7/8)	113.83 - 115.25	1.0000	1.0000
L14	6	FB-L98B-034-XXXXXX(3/8)	113.83 - 115.25	1.0000	1.0000
L14	15	HB114-21U3M12-XXXF(1-1/4)	113.83 - 115.25	1.0000	1.0000
L14	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	113.83 - 115.25	1.0000	1.0000
L14	30	PL0.625x5 Reinforcement - Wind Area/Weight	113.83 - 115.25	1.0000	1.0000
L14	31	PL0.625x5 Reinforcement - Wind Area/Weight	113.83 - 115.25	1.0000	1.0000
L14	32	PL0.625x5 Reinforcement - Wind Area/Weight	113.83 - 115.25	1.0000	1.0000
L14	50	PL1.25x5 Reinforcement - Wind Area	113.83 - 115.25	1.0000	1.0000
L14	51	PL1.25x5 Reinforcement - Wind Area	113.83 - 115.25	1.0000	1.0000
L14	52	PL1.25x5 Reinforcement - Wind Area	113.83 - 115.25	1.0000	1.0000
L14	70	CCI-SFP-045100	113.83 - 115.25	1.0000	1.0000
L14	71	CCI-SFP-045100	113.83 - 115.25	1.0000	1.0000
L14	72	CCI-SFP-045100	113.83 - 115.25	1.0000	1.0000
L14	88	CCI-SFP-040125	113.83 - 115.25	1.0000	1.0000
L14	89	CCI-SFP-040125	113.83 - 115.25	1.0000	1.0000
L14	90	CCI-SFP-040125	113.83 - 115.25	1.0000	1.0000
L15	1	Safety Line 3/8	113.48 - 113.83	1.0000	1.0000
L15	5	WR-VG86ST-BRDA(7/8)	113.48 - 113.83	1.0000	1.0000
L15	6	FB-L98B-034-XXXXXX(3/8)	113.48 - 113.83	1.0000	1.0000
L15	15	HB114-21U3M12-XXXF(1-1/4)	113.48 - 113.83	1.0000	1.0000
L15	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	113.48 - 113.83	1.0000	1.0000
L15	30	PL0.625x5 Reinforcement - Wind Area/Weight	113.48 - 113.83	1.0000	1.0000
L15	31	PL0.625x5 Reinforcement - Wind Area/Weight	113.48 - 113.83	1.0000	1.0000
L15	32	PL0.625x5 Reinforcement - Wind Area/Weight	113.48 - 113.83	1.0000	1.0000
L15	50	PL1.25x5 Reinforcement - Wind Area	113.48 - 113.83	1.0000	1.0000
L15	51	PL1.25x5 Reinforcement - Wind Area	113.48 - 113.83	1.0000	1.0000
L15	52	PL1.25x5 Reinforcement - Wind Area	113.48 - 113.83	1.0000	1.0000
L15	70	CCI-SFP-045100	113.48 - 113.83	1.0000	1.0000
L15	71	CCI-SFP-045100	113.48 - 113.83	1.0000	1.0000
L15	72	CCI-SFP-045100	113.48 - 113.83	1.0000	1.0000
L15	88	CCI-SFP-040125	113.48 - 113.83	1.0000	1.0000
L15	89	CCI-SFP-040125	113.48 - 113.83	1.0000	1.0000
L15	90	CCI-SFP-040125	113.48 - 113.83	1.0000	1.0000
L16	1	Safety Line 3/8	113.25 - 113.48	1.0000	1.0000
L16	5	WR-VG86ST-BRDA(7/8)	113.25 - 113.48	1.0000	1.0000
L16	6	FB-L98B-034-XXXXXX(3/8)	113.25 - 113.48	1.0000	1.0000
L16	15	HB114-21U3M12-XXXF(1-1/4)	113.25 - 113.48	1.0000	1.0000
L16	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	113.25 - 113.48	1.0000	1.0000
L16	30	PL0.625x5 Reinforcement - Wind Area/Weight	113.25 - 113.48	1.0000	1.0000
L16	31	PL0.625x5 Reinforcement - Wind Area/Weight	113.25 - 113.48	1.0000	1.0000
L16	32	PL0.625x5 Reinforcement - Wind Area/Weight	113.25 - 113.48	1.0000	1.0000
L16	50	PL1.25x5 Reinforcement - Wind Area	113.25 - 113.48	1.0000	1.0000
L16	51	PL1.25x5 Reinforcement - Wind Area	113.25 - 113.48	1.0000	1.0000
L16	52	PL1.25x5 Reinforcement - Wind Area	113.25 - 113.48	1.0000	1.0000
L16	70	CCI-SFP-045100	113.25 - 113.48	1.0000	1.0000
L16	71	CCI-SFP-045100	113.25 - 113.48	1.0000	1.0000
L16	72	CCI-SFP-045100	113.25 - 113.48	1.0000	1.0000
L16	88	CCI-SFP-040125	113.25 - 113.48	1.0000	1.0000
L16	89	CCI-SFP-040125	113.25 - 113.48	1.0000	1.0000
L16	90	CCI-SFP-040125	113.25 - 113.48	1.0000	1.0000
L17	1	Safety Line 3/8	108.25 - 113.25	1.0000	1.0000
L17	5	WR-VG86ST-BRDA(7/8)	108.25 - 113.25	1.0000	1.0000
L17	6	FB-L98B-034-XXXXXX(3/8)	108.25 - 113.25	1.0000	1.0000
L17	15	HB114-21U3M12-XXXF(1-1/4)	108.25 - 113.25	1.0000	1.0000
L17	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	108.25 - 113.25	1.0000	1.0000
L17	30	PL0.625x5 Reinforcement - Wind Area/Weight	108.25 - 113.25	1.0000	1.0000
L17	31	PL0.625x5 Reinforcement - Wind Area/Weight	108.25 - 113.25	1.0000	1.0000
L17	32	PL0.625x5 Reinforcement - Wind Area/Weight	108.25 - 113.25	1.0000	1.0000
L17	50	PL1.25x5 Reinforcement - Wind Area	108.25 - 113.25	1.0000	1.0000
L17	51	PL1.25x5 Reinforcement - Wind Area	108.25 - 113.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	52	PL1.25x5 Reinforcement - Wind Area	108.25 - 113.25	1.0000	1.0000
L17	70	CCI-SFP-045100	108.25 - 113.25	1.0000	1.0000
L17	71	CCI-SFP-045100	108.25 - 113.25	1.0000	1.0000
L17	72	CCI-SFP-045100	108.25 - 113.25	1.0000	1.0000
L17	88	CCI-SFP-040125	112.00 - 113.25	1.0000	1.0000
L17	89	CCI-SFP-040125	112.00 - 113.25	1.0000	1.0000
L17	90	CCI-SFP-040125	112.00 - 113.25	1.0000	1.0000
L18	1	Safety Line 3/8	103.25 - 108.25	1.0000	1.0000
L18	5	WR-VG86ST-BRDA(7/8)	103.25 - 108.25	1.0000	1.0000
L18	6	FB-L98B-034-XXXXXX(3/8)	103.25 - 108.25	1.0000	1.0000
L18	15	HB114-21U3M12-XXXF(1-1/4)	103.25 - 108.25	1.0000	1.0000
L18	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	103.25 - 108.25	1.0000	1.0000
L18	30	PL0.625x5 Reinforcement - Wind Area/Weight	103.25 - 108.25	1.0000	1.0000
L18	31	PL0.625x5 Reinforcement - Wind Area/Weight	103.25 - 108.25	1.0000	1.0000
L18	32	PL0.625x5 Reinforcement - Wind Area/Weight	103.25 - 108.25	1.0000	1.0000
L18	50	PL1.25x5 Reinforcement - Wind Area	103.25 - 108.25	1.0000	1.0000
L18	51	PL1.25x5 Reinforcement - Wind Area	103.25 - 108.25	1.0000	1.0000
L18	52	PL1.25x5 Reinforcement - Wind Area	103.25 - 108.25	1.0000	1.0000
L18	70	CCI-SFP-045100	103.25 - 108.25	1.0000	1.0000
L18	71	CCI-SFP-045100	103.25 - 108.25	1.0000	1.0000
L18	72	CCI-SFP-045100	103.25 - 108.25	1.0000	1.0000
L19	1	Safety Line 3/8	98.25 - 103.25	1.0000	1.0000
L19	5	WR-VG86ST-BRDA(7/8)	98.25 - 103.25	1.0000	1.0000
L19	6	FB-L98B-034-XXXXXX(3/8)	98.25 - 103.25	1.0000	1.0000
L19	15	HB114-21U3M12-XXXF(1-1/4)	98.25 - 103.25	1.0000	1.0000
L19	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	98.25 - 103.25	1.0000	1.0000
L19	30	PL0.625x5 Reinforcement - Wind Area/Weight	98.25 - 103.25	1.0000	1.0000
L19	31	PL0.625x5 Reinforcement - Wind Area/Weight	98.25 - 103.25	1.0000	1.0000
L19	32	PL0.625x5 Reinforcement - Wind Area/Weight	98.25 - 103.25	1.0000	1.0000
L19	50	PL1.25x5 Reinforcement - Wind Area	98.25 - 103.25	1.0000	1.0000
L19	51	PL1.25x5 Reinforcement - Wind Area	98.25 - 103.25	1.0000	1.0000
L19	52	PL1.25x5 Reinforcement - Wind Area	98.25 - 103.25	1.0000	1.0000
L19	70	CCI-SFP-045100	98.25 - 103.25	1.0000	1.0000
L19	71	CCI-SFP-045100	98.25 - 103.25	1.0000	1.0000
L19	72	CCI-SFP-045100	98.25 - 103.25	1.0000	1.0000
L20	1	Safety Line 3/8	93.25 - 98.25	1.0000	1.0000
L20	5	WR-VG86ST-BRDA(7/8)	93.25 - 98.25	1.0000	1.0000
L20	6	FB-L98B-034-XXXXXX(3/8)	93.25 - 98.25	1.0000	1.0000
L20	15	HB114-21U3M12-XXXF(1-1/4)	93.25 - 98.25	1.0000	1.0000
L20	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	93.25 - 98.25	1.0000	1.0000
L20	30	PL0.625x5 Reinforcement - Wind Area/Weight	93.25 - 98.25	1.0000	1.0000
L20	31	PL0.625x5 Reinforcement - Wind Area/Weight	93.25 - 98.25	1.0000	1.0000
L20	32	PL0.625x5 Reinforcement - Wind Area/Weight	93.25 - 98.25	1.0000	1.0000
L20	50	PL1.25x5 Reinforcement - Wind Area	93.25 - 98.25	1.0000	1.0000
L20	51	PL1.25x5 Reinforcement - Wind Area	93.25 - 98.25	1.0000	1.0000
L20	52	PL1.25x5 Reinforcement - Wind Area	93.25 - 98.25	1.0000	1.0000
L20	70	CCI-SFP-045100	93.25 - 98.25	1.0000	1.0000
L20	71	CCI-SFP-045100	93.25 - 98.25	1.0000	1.0000
L20	72	CCI-SFP-045100	93.25 - 98.25	1.0000	1.0000
L21	1	Safety Line 3/8	89.82 - 93.25	1.0000	1.0000
L21	5	WR-VG86ST-BRDA(7/8)	89.82 - 93.25	1.0000	1.0000
L21	6	FB-L98B-034-XXXXXX(3/8)	89.82 - 93.25	1.0000	1.0000
L21	15	HB114-21U3M12-XXXF(1-1/4)	89.82 - 93.25	1.0000	1.0000
L21	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	89.82 - 93.25	1.0000	1.0000
L21	30	PL0.625x5 Reinforcement - Wind Area/Weight	89.82 - 93.25	1.0000	1.0000
L21	31	PL0.625x5 Reinforcement - Wind Area/Weight	89.82 - 93.25	1.0000	1.0000
L21	32	PL0.625x5 Reinforcement - Wind Area/Weight	89.82 - 93.25	1.0000	1.0000
L21	50	PL1.25x5 Reinforcement - Wind Area	89.82 - 93.25	1.0000	1.0000
L21	51	PL1.25x5 Reinforcement - Wind Area	89.82 - 93.25	1.0000	1.0000
L21	52	PL1.25x5 Reinforcement - Wind Area	89.82 - 93.25	1.0000	1.0000
L21	70	CCI-SFP-045100	89.82 - 93.25	1.0000	1.0000
L21	71	CCI-SFP-045100	89.82 - 93.25	1.0000	1.0000
L21	72	CCI-SFP-045100	89.82 - 93.25	1.0000	1.0000
L21	85	CCI-SFP-045100	89.82 - 90.00	1.0000	1.0000
L21	86	CCI-SFP-045100	89.82 - 90.00	1.0000	1.0000
L21	87	CCI-SFP-045100	89.82 - 90.00	1.0000	1.0000
L22	1	Safety Line 3/8	89.57 - 89.82	1.0000	1.0000
L22	5	WR-VG86ST-BRDA(7/8)	89.57 - 89.82	1.0000	1.0000
L22	6	FB-L98B-034-XXXXXX(3/8)	89.57 - 89.82	1.0000	1.0000
L22	15	HB114-21U3M12-XXXF(1-1/4)	89.57 - 89.82	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L22	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	89.57 - 89.82	1.0000	1.0000
L22	30	PL0.625x5 Reinforcement - Wind Area/Weight	89.57 - 89.82	1.0000	1.0000
L22	31	PL0.625x5 Reinforcement - Wind Area/Weight	89.57 - 89.82	1.0000	1.0000
L22	32	PL0.625x5 Reinforcement - Wind Area/Weight	89.57 - 89.82	1.0000	1.0000
L22	50	PL1.25x5 Reinforcement - Wind Area	89.57 - 89.82	1.0000	1.0000
L22	51	PL1.25x5 Reinforcement - Wind Area	89.57 - 89.82	1.0000	1.0000
L22	52	PL1.25x5 Reinforcement - Wind Area	89.57 - 89.82	1.0000	1.0000
L22	70	CCI-SFP-045100	89.57 - 89.82	1.0000	1.0000
L22	71	CCI-SFP-045100	89.57 - 89.82	1.0000	1.0000
L22	72	CCI-SFP-045100	89.57 - 89.82	1.0000	1.0000
L22	85	CCI-SFP-045100	89.57 - 89.82	1.0000	1.0000
L22	86	CCI-SFP-045100	89.57 - 89.82	1.0000	1.0000
L22	87	CCI-SFP-045100	89.57 - 89.82	1.0000	1.0000
L23	1	Safety Line 3/8	84.55 - 89.57	1.0000	1.0000
L23	5	WR-VG86ST-BRDA(7/8)	84.55 - 89.57	1.0000	1.0000
L23	6	FB-L98B-034-XXXXXX(3/8)	84.55 - 89.57	1.0000	1.0000
L23	15	HB114-21U3M12-XXXF(1-1/4)	84.55 - 89.57	1.0000	1.0000
L23	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	84.55 - 89.57	1.0000	1.0000
L23	30	PL0.625x5 Reinforcement - Wind Area/Weight	84.67 - 89.57	1.0000	1.0000
L23	31	PL0.625x5 Reinforcement - Wind Area/Weight	84.67 - 89.57	1.0000	1.0000
L23	32	PL0.625x5 Reinforcement - Wind Area/Weight	84.67 - 89.57	1.0000	1.0000
L23	46	PL1.25x5 Reinforcement - Wind Area	84.55 - 87.92	1.0000	1.0000
L23	47	PL1.25x5 Reinforcement - Wind Area	84.55 - 87.92	1.0000	1.0000
L23	48	PL1.25x5 Reinforcement - Wind Area	84.55 - 87.92	1.0000	1.0000
L23	49	PL1.25x5 Reinforcement - Wind Area	84.55 - 87.92	1.0000	1.0000
L23	50	PL1.25x5 Reinforcement - Wind Area	85.83 - 89.57	1.0000	1.0000
L23	51	PL1.25x5 Reinforcement - Wind Area	85.83 - 89.57	1.0000	1.0000
L23	52	PL1.25x5 Reinforcement - Wind Area	85.83 - 89.57	1.0000	1.0000
L23	70	CCI-SFP-045100	87.92 - 89.57	1.0000	1.0000
L23	71	CCI-SFP-045100	87.92 - 89.57	1.0000	1.0000
L23	72	CCI-SFP-045100	87.92 - 89.57	1.0000	1.0000
L23	85	CCI-SFP-045100	84.55 - 89.57	1.0000	1.0000
L23	86	CCI-SFP-045100	84.55 - 89.57	1.0000	1.0000
L23	87	CCI-SFP-045100	84.55 - 89.57	1.0000	1.0000
L23	58	CCI-SFP-045100	84.55 - 84.33	1.0000	1.0000
L23	59	CCI-SFP-045100	84.55 - 84.33	1.0000	1.0000
L23	60	CCI-SFP-045100	84.55 - 84.33	1.0000	1.0000
L23	61	CCI-SFP-045100	84.55 - 84.33	1.0000	1.0000
L25	1	Safety Line 3/8	82.83 - 83.55	1.0000	1.0000
L25	5	WR-VG86ST-BRDA(7/8)	82.83 - 83.55	1.0000	1.0000
L25	6	FB-L98B-034-XXXXXX(3/8)	82.83 - 83.55	1.0000	1.0000
L25	15	HB114-21U3M12-XXXF(1-1/4)	82.83 - 83.55	1.0000	1.0000
L25	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	82.83 - 83.55	1.0000	1.0000
L25	46	PL1.25x5 Reinforcement - Wind Area	82.83 - 83.55	1.0000	1.0000
L25	47	PL1.25x5 Reinforcement - Wind Area	82.83 - 83.55	1.0000	1.0000
L25	48	PL1.25x5 Reinforcement - Wind Area	82.83 - 83.55	1.0000	1.0000
L25	49	PL1.25x5 Reinforcement - Wind Area	82.83 - 83.55	1.0000	1.0000
L25	58	CCI-SFP-045100	82.83 - 83.55	1.0000	1.0000
L25	59	CCI-SFP-045100	82.83 - 83.55	1.0000	1.0000
L25	60	CCI-SFP-045100	82.83 - 83.55	1.0000	1.0000
L25	61	CCI-SFP-045100	82.83 - 83.55	1.0000	1.0000
L25	85	CCI-SFP-045100	82.83 - 83.55	1.0000	1.0000
L25	86	CCI-SFP-045100	82.83 - 83.55	1.0000	1.0000
L25	87	CCI-SFP-045100	82.83 - 83.55	1.0000	1.0000
L26	1	Safety Line 3/8	82.58 - 82.83	1.0000	1.0000
L26	5	WR-VG86ST-BRDA(7/8)	82.58 - 82.83	1.0000	1.0000
L26	6	FB-L98B-034-XXXXXX(3/8)	82.58 - 82.83	1.0000	1.0000
L26	15	HB114-21U3M12-XXXF(1-1/4)	82.58 - 82.83	1.0000	1.0000
L26	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	82.58 - 82.83	1.0000	1.0000
L26	46	PL1.25x5 Reinforcement - Wind Area	82.58 - 82.83	1.0000	1.0000
L26	47	PL1.25x5 Reinforcement - Wind Area	82.58 - 82.83	1.0000	1.0000
L26	48	PL1.25x5 Reinforcement - Wind Area	82.58 - 82.83	1.0000	1.0000
L26	49	PL1.25x5 Reinforcement - Wind Area	82.58 - 82.83	1.0000	1.0000
L26	58	CCI-SFP-045100	82.58 - 82.83	1.0000	1.0000
L26	59	CCI-SFP-045100	82.58 - 82.83	1.0000	1.0000
L26	60	CCI-SFP-045100	82.58 - 82.83	1.0000	1.0000
L26	61	CCI-SFP-045100	82.58 - 82.83	1.0000	1.0000
L26	85	CCI-SFP-045100	82.58 - 82.83	1.0000	1.0000
L26	86	CCI-SFP-045100	82.58 - 82.83	1.0000	1.0000
L26	87	CCI-SFP-045100	82.58 - 82.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L27	1	Safety Line 3/8	81.50 - 82.58	1.0000	1.0000
L27	5	WR-VG86ST-BRDA(7/8)	81.50 - 82.58	1.0000	1.0000
L27	6	FB-L98B-034-XXXXXX(3/8)	81.50 - 82.58	1.0000	1.0000
L27	15	HB114-21U3M12-XXXF(1-1/4)	81.50 - 82.58	1.0000	1.0000
L27	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	81.50 - 82.58	1.0000	1.0000
L27	46	PL1.25x5 Reinforcement - Wind Area	81.50 - 82.58	1.0000	1.0000
L27	47	PL1.25x5 Reinforcement - Wind Area	81.50 - 82.58	1.0000	1.0000
L27	48	PL1.25x5 Reinforcement - Wind Area	81.50 - 82.58	1.0000	1.0000
L27	49	PL1.25x5 Reinforcement - Wind Area	81.50 - 82.58	1.0000	1.0000
L27	58	CCI-SFP-045100	81.50 - 82.58	1.0000	1.0000
L27	59	CCI-SFP-045100	81.50 - 82.58	1.0000	1.0000
L27	60	CCI-SFP-045100	81.50 - 82.58	1.0000	1.0000
L27	61	CCI-SFP-045100	81.50 - 82.58	1.0000	1.0000
L27	85	CCI-SFP-045100	81.50 - 82.58	1.0000	1.0000
L27	86	CCI-SFP-045100	81.50 - 82.58	1.0000	1.0000
L27	87	CCI-SFP-045100	81.50 - 82.58	1.0000	1.0000
L28	1	Safety Line 3/8	81.25 - 81.50	1.0000	1.0000
L28	5	WR-VG86ST-BRDA(7/8)	81.25 - 81.50	1.0000	1.0000
L28	6	FB-L98B-034-XXXXXX(3/8)	81.25 - 81.50	1.0000	1.0000
L28	15	HB114-21U3M12-XXXF(1-1/4)	81.25 - 81.50	1.0000	1.0000
L28	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	81.25 - 81.50	1.0000	1.0000
L28	46	PL1.25x5 Reinforcement - Wind Area	81.25 - 81.50	1.0000	1.0000
L28	47	PL1.25x5 Reinforcement - Wind Area	81.25 - 81.50	1.0000	1.0000
L28	48	PL1.25x5 Reinforcement - Wind Area	81.25 - 81.50	1.0000	1.0000
L28	49	PL1.25x5 Reinforcement - Wind Area	81.25 - 81.50	1.0000	1.0000
L28	58	CCI-SFP-045100	81.25 - 81.50	1.0000	1.0000
L28	59	CCI-SFP-045100	81.25 - 81.50	1.0000	1.0000
L28	60	CCI-SFP-045100	81.25 - 81.50	1.0000	1.0000
L28	61	CCI-SFP-045100	81.25 - 81.50	1.0000	1.0000
L28	85	CCI-SFP-045100	81.25 - 81.50	1.0000	1.0000
L28	86	CCI-SFP-045100	81.25 - 81.50	1.0000	1.0000
L28	87	CCI-SFP-045100	81.25 - 81.50	1.0000	1.0000
L29	1	Safety Line 3/8	76.25 - 81.25	1.0000	1.0000
L29	5	WR-VG86ST-BRDA(7/8)	76.25 - 81.25	1.0000	1.0000
L29	6	FB-L98B-034-XXXXXX(3/8)	76.25 - 81.25	1.0000	1.0000
L29	15	HB114-21U3M12-XXXF(1-1/4)	76.25 - 81.25	1.0000	1.0000
L29	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	76.25 - 81.25	1.0000	1.0000
L29	46	PL1.25x5 Reinforcement - Wind Area	76.25 - 81.25	1.0000	1.0000
L29	47	PL1.25x5 Reinforcement - Wind Area	76.25 - 81.25	1.0000	1.0000
L29	48	PL1.25x5 Reinforcement - Wind Area	76.25 - 81.25	1.0000	1.0000
L29	49	PL1.25x5 Reinforcement - Wind Area	76.25 - 81.25	1.0000	1.0000
L29	58	CCI-SFP-045100	76.25 - 81.25	1.0000	1.0000
L29	59	CCI-SFP-045100	76.25 - 81.25	1.0000	1.0000
L29	60	CCI-SFP-045100	76.25 - 81.25	1.0000	1.0000
L29	61	CCI-SFP-045100	76.25 - 81.25	1.0000	1.0000
L29	85	CCI-SFP-045100	80.00 - 81.25	1.0000	1.0000
L29	86	CCI-SFP-045100	80.00 - 81.25	1.0000	1.0000
L29	87	CCI-SFP-045100	80.00 - 81.25	1.0000	1.0000
L30	1	Safety Line 3/8	74.92 - 76.25	1.0000	1.0000
L30	5	WR-VG86ST-BRDA(7/8)	74.92 - 76.25	1.0000	1.0000
L30	6	FB-L98B-034-XXXXXX(3/8)	74.92 - 76.25	1.0000	1.0000
L30	15	HB114-21U3M12-XXXF(1-1/4)	74.92 - 76.25	1.0000	1.0000
L30	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	74.92 - 76.25	1.0000	1.0000
L30	42	PL1.25x5 Reinforcement - Wind Area	74.92 - 75.42	1.0000	1.0000
L30	43	PL1.25x5 Reinforcement - Wind Area	74.92 - 75.42	1.0000	1.0000
L30	44	PL1.25x5 Reinforcement - Wind Area	74.92 - 75.42	1.0000	1.0000
L30	45	PL1.25x5 Reinforcement - Wind Area	74.92 - 75.42	1.0000	1.0000
L30	46	PL1.25x5 Reinforcement - Wind Area	74.92 - 76.25	1.0000	1.0000
L30	47	PL1.25x5 Reinforcement - Wind Area	74.92 - 76.25	1.0000	1.0000
L30	48	PL1.25x5 Reinforcement - Wind Area	74.92 - 76.25	1.0000	1.0000
L30	49	PL1.25x5 Reinforcement - Wind Area	74.92 - 76.25	1.0000	1.0000
L30	58	CCI-SFP-045100	74.92 - 76.25	1.0000	1.0000
L30	59	CCI-SFP-045100	74.92 - 76.25	1.0000	1.0000
L30	60	CCI-SFP-045100	74.92 - 76.25	1.0000	1.0000
L30	61	CCI-SFP-045100	74.92 - 76.25	1.0000	1.0000
L31	1	Safety Line 3/8	74.67 - 74.92	1.0000	1.0000
L31	5	WR-VG86ST-BRDA(7/8)	74.67 - 74.92	1.0000	1.0000
L31	6	FB-L98B-034-XXXXXX(3/8)	74.67 - 74.92	1.0000	1.0000
L31	15	HB114-21U3M12-XXXF(1-1/4)	74.67 - 74.92	1.0000	1.0000
L31	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	74.67 - 74.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L31	42	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	43	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	44	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	45	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	46	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	47	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	48	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	49	PL1.25x5 Reinforcement - Wind Area	74.67 - 74.92	1.0000	1.0000
L31	58	CCI-SFP-045100	74.67 - 74.92	1.0000	1.0000
L31	59	CCI-SFP-045100	74.67 - 74.92	1.0000	1.0000
L31	60	CCI-SFP-045100	74.67 - 74.92	1.0000	1.0000
L31	61	CCI-SFP-045100	74.67 - 74.92	1.0000	1.0000
L32	1	Safety Line 3/8	74.17 - 74.67	1.0000	1.0000
L32	5	WR-VG86ST-BRDA(7/8)	74.17 - 74.67	1.0000	1.0000
L32	6	FB-L98B-034-XXXXXX(3/8)	74.17 - 74.67	1.0000	1.0000
L32	15	HB114-21U3M12-XXXF(1-1/4)	74.17 - 74.67	1.0000	1.0000
L32	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	74.17 - 74.67	1.0000	1.0000
L32	42	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	43	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	44	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	45	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	46	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	47	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	48	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	49	PL1.25x5 Reinforcement - Wind Area	74.17 - 74.67	1.0000	1.0000
L32	58	CCI-SFP-045100	74.17 - 74.67	1.0000	1.0000
L32	59	CCI-SFP-045100	74.17 - 74.67	1.0000	1.0000
L32	60	CCI-SFP-045100	74.17 - 74.67	1.0000	1.0000
L32	61	CCI-SFP-045100	74.17 - 74.67	1.0000	1.0000
L33	1	Safety Line 3/8	73.92 - 74.17	1.0000	1.0000
L33	5	WR-VG86ST-BRDA(7/8)	73.92 - 74.17	1.0000	1.0000
L33	6	FB-L98B-034-XXXXXX(3/8)	73.92 - 74.17	1.0000	1.0000
L33	15	HB114-21U3M12-XXXF(1-1/4)	73.92 - 74.17	1.0000	1.0000
L33	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	73.92 - 74.17	1.0000	1.0000
L33	42	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	43	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	44	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	45	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	46	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	47	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	48	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	49	PL1.25x5 Reinforcement - Wind Area	73.92 - 74.17	1.0000	1.0000
L33	58	CCI-SFP-045100	73.92 - 74.17	1.0000	1.0000
L33	59	CCI-SFP-045100	73.92 - 74.17	1.0000	1.0000
L33	60	CCI-SFP-045100	73.92 - 74.17	1.0000	1.0000
L33	61	CCI-SFP-045100	73.92 - 74.17	1.0000	1.0000
L34	1	Safety Line 3/8	68.92 - 73.92	1.0000	1.0000
L34	5	WR-VG86ST-BRDA(7/8)	68.92 - 73.92	1.0000	1.0000
L34	6	FB-L98B-034-XXXXXX(3/8)	68.92 - 73.92	1.0000	1.0000
L34	13	LDF4-50A(1/2)	68.92 - 70.00	1.0000	1.0000
L34	15	HB114-21U3M12-XXXF(1-1/4)	68.92 - 73.92	1.0000	1.0000
L34	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	68.92 - 73.92	1.0000	1.0000
L34	42	PL1.25x5 Reinforcement - Wind Area	68.92 - 73.92	1.0000	1.0000
L34	43	PL1.25x5 Reinforcement - Wind Area	68.92 - 73.92	1.0000	1.0000
L34	44	PL1.25x5 Reinforcement - Wind Area	68.92 - 73.92	1.0000	1.0000
L34	45	PL1.25x5 Reinforcement - Wind Area	68.92 - 73.92	1.0000	1.0000
L34	46	PL1.25x5 Reinforcement - Wind Area	72.75 - 73.92	1.0000	1.0000
L34	47	PL1.25x5 Reinforcement - Wind Area	72.75 - 73.92	1.0000	1.0000
L34	48	PL1.25x5 Reinforcement - Wind Area	72.75 - 73.92	1.0000	1.0000
L34	49	PL1.25x5 Reinforcement - Wind Area	72.75 - 73.92	1.0000	1.0000
L34	58	CCI-SFP-045100	68.92 - 73.92	1.0000	1.0000
L34	59	CCI-SFP-045100	68.92 - 73.92	1.0000	1.0000
L34	60	CCI-SFP-045100	68.92 - 73.92	1.0000	1.0000
L34	61	CCI-SFP-045100	68.92 - 73.92	1.0000	1.0000
L34	66	CCI-SFP-045100	68.92 - 72.75	1.0000	1.0000
L34	67	CCI-SFP-045100	68.92 - 72.75	1.0000	1.0000
L34	68	CCI-SFP-045100	68.92 - 72.75	1.0000	1.0000
L34	69	CCI-SFP-045100	68.92 - 72.75	1.0000	1.0000
L35	1	Safety Line 3/8	64.25 - 68.92	1.0000	1.0000
L35	5	WR-VG86ST-BRDA(7/8)	64.25 - 68.92	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L35	6	FB-L98B-034-XXXXXX(3/8)	64.25 - 68.92	1.0000	1.0000
L35	13	LDF4-50A(1/2)	64.25 - 68.92	1.0000	1.0000
L35	15	HB114-21U3M12-XXXF(1-1/4)	64.25 - 68.92	1.0000	1.0000
L35	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	64.25 - 68.92	1.0000	1.0000
L35	42	PL1.25x5 Reinforcement - Wind Area	64.25 - 68.92	1.0000	1.0000
L35	43	PL1.25x5 Reinforcement - Wind Area	64.25 - 68.92	1.0000	1.0000
L35	44	PL1.25x5 Reinforcement - Wind Area	64.25 - 68.92	1.0000	1.0000
L35	45	PL1.25x5 Reinforcement - Wind Area	64.25 - 68.92	1.0000	1.0000
L35	58	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L35	59	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L35	60	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L35	61	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L35	66	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L35	67	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L35	68	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L35	69	CCI-SFP-045100	64.25 - 68.92	1.0000	1.0000
L36	1	Safety Line 3/8	64.00 - 64.25	1.0000	1.0000
L36	5	WR-VG86ST-BRDA(7/8)	64.00 - 64.25	1.0000	1.0000
L36	6	FB-L98B-034-XXXXXX(3/8)	64.00 - 64.25	1.0000	1.0000
L36	13	LDF4-50A(1/2)	64.00 - 64.25	1.0000	1.0000
L36	15	HB114-21U3M12-XXXF(1-1/4)	64.00 - 64.25	1.0000	1.0000
L36	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	64.00 - 64.25	1.0000	1.0000
L36	42	PL1.25x5 Reinforcement - Wind Area	64.00 - 64.25	1.0000	1.0000
L36	43	PL1.25x5 Reinforcement - Wind Area	64.00 - 64.25	1.0000	1.0000
L36	44	PL1.25x5 Reinforcement - Wind Area	64.00 - 64.25	1.0000	1.0000
L36	45	PL1.25x5 Reinforcement - Wind Area	64.00 - 64.25	1.0000	1.0000
L36	58	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L36	59	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L36	60	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L36	61	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L36	66	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L36	67	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L36	68	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L36	69	CCI-SFP-045100	64.00 - 64.25	1.0000	1.0000
L37	1	Safety Line 3/8	59.00 - 64.00	1.0000	1.0000
L37	5	WR-VG86ST-BRDA(7/8)	59.00 - 64.00	1.0000	1.0000
L37	6	FB-L98B-034-XXXXXX(3/8)	59.00 - 64.00	1.0000	1.0000
L37	13	LDF4-50A(1/2)	59.00 - 64.00	1.0000	1.0000
L37	15	HB114-21U3M12-XXXF(1-1/4)	59.00 - 64.00	1.0000	1.0000
L37	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	59.00 - 64.00	1.0000	1.0000
L37	42	PL1.25x5 Reinforcement - Wind Area	59.00 - 64.00	1.0000	1.0000
L37	43	PL1.25x5 Reinforcement - Wind Area	59.00 - 64.00	1.0000	1.0000
L37	44	PL1.25x5 Reinforcement - Wind Area	59.00 - 64.00	1.0000	1.0000
L37	45	PL1.25x5 Reinforcement - Wind Area	59.00 - 64.00	1.0000	1.0000
L37	58	CCI-SFP-045100	59.00 - 64.00	1.0000	1.0000
L37	59	CCI-SFP-045100	59.00 - 64.00	1.0000	1.0000
L37	60	CCI-SFP-045100	59.00 - 64.00	1.0000	1.0000
L37	61	CCI-SFP-045100	59.00 - 64.00	1.0000	1.0000
L37	66	CCI-SFP-045100	62.75 - 64.00	1.0000	1.0000
L37	67	CCI-SFP-045100	62.75 - 64.00	1.0000	1.0000
L37	68	CCI-SFP-045100	62.75 - 64.00	1.0000	1.0000
L37	69	CCI-SFP-045100	62.75 - 64.00	1.0000	1.0000
L38	1	Safety Line 3/8	54.00 - 59.00	1.0000	1.0000
L38	5	WR-VG86ST-BRDA(7/8)	54.00 - 59.00	1.0000	1.0000
L38	6	FB-L98B-034-XXXXXX(3/8)	54.00 - 59.00	1.0000	1.0000
L38	13	LDF4-50A(1/2)	54.00 - 59.00	1.0000	1.0000
L38	15	HB114-21U3M12-XXXF(1-1/4)	54.00 - 59.00	1.0000	1.0000
L38	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	54.00 - 59.00	1.0000	1.0000
L38	42	PL1.25x5 Reinforcement - Wind Area	54.00 - 59.00	1.0000	1.0000
L38	43	PL1.25x5 Reinforcement - Wind Area	54.00 - 59.00	1.0000	1.0000
L38	44	PL1.25x5 Reinforcement - Wind Area	54.00 - 59.00	1.0000	1.0000
L38	45	PL1.25x5 Reinforcement - Wind Area	54.00 - 59.00	1.0000	1.0000
L38	58	CCI-SFP-045100	54.00 - 59.00	1.0000	1.0000
L38	59	CCI-SFP-045100	54.00 - 59.00	1.0000	1.0000
L38	60	CCI-SFP-045100	54.00 - 59.00	1.0000	1.0000
L38	61	CCI-SFP-045100	54.00 - 59.00	1.0000	1.0000
L39	1	Safety Line 3/8	52.00 - 54.00	1.0000	1.0000
L39	5	WR-VG86ST-BRDA(7/8)	52.00 - 54.00	1.0000	1.0000
L39	6	FB-L98B-034-XXXXXX(3/8)	52.00 - 54.00	1.0000	1.0000
L39	13	LDF4-50A(1/2)	52.00 - 54.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L39	15	HB114-21U3M12-XXXF(1-1/4)	52.00 - 54.00	1.0000	1.0000
L39	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	52.00 - 54.00	1.0000	1.0000
L39	42	PL1.25x5 Reinforcement - Wind Area	52.00 - 54.00	1.0000	1.0000
L39	43	PL1.25x5 Reinforcement - Wind Area	52.00 - 54.00	1.0000	1.0000
L39	44	PL1.25x5 Reinforcement - Wind Area	52.00 - 54.00	1.0000	1.0000
L39	45	PL1.25x5 Reinforcement - Wind Area	52.00 - 54.00	1.0000	1.0000
L39	58	CCI-SFP-045100	52.00 - 54.00	1.0000	1.0000
L39	59	CCI-SFP-045100	52.00 - 54.00	1.0000	1.0000
L39	60	CCI-SFP-045100	52.00 - 54.00	1.0000	1.0000
L39	61	CCI-SFP-045100	52.00 - 54.00	1.0000	1.0000
L39	81	CCI-SFP-045100	52.00 - 53.58	1.0000	1.0000
L39	82	CCI-SFP-045100	52.00 - 53.58	1.0000	1.0000
L39	83	CCI-SFP-045100	52.00 - 52.58	1.0000	1.0000
L39	84	CCI-SFP-045100	52.00 - 52.58	1.0000	1.0000
L40	1	Safety Line 3/8	51.75 - 52.00	1.0000	1.0000
L40	5	WR-VG86ST-BRDA(7/8)	51.75 - 52.00	1.0000	1.0000
L40	6	FB-L98B-034-XXXXXX(3/8)	51.75 - 52.00	1.0000	1.0000
L40	13	LDF4-50A(1/2)	51.75 - 52.00	1.0000	1.0000
L40	15	HB114-21U3M12-XXXF(1-1/4)	51.75 - 52.00	1.0000	1.0000
L40	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	51.75 - 52.00	1.0000	1.0000
L40	42	PL1.25x5 Reinforcement - Wind Area	51.75 - 52.00	1.0000	1.0000
L40	43	PL1.25x5 Reinforcement - Wind Area	51.75 - 52.00	1.0000	1.0000
L40	44	PL1.25x5 Reinforcement - Wind Area	51.75 - 52.00	1.0000	1.0000
L40	45	PL1.25x5 Reinforcement - Wind Area	51.75 - 52.00	1.0000	1.0000
L40	58	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L40	59	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L40	60	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L40	61	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L40	81	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L40	82	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L40	83	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L40	84	CCI-SFP-045100	51.75 - 52.00	1.0000	1.0000
L41	1	Safety Line 3/8	51.00 - 51.75	1.0000	1.0000
L41	5	WR-VG86ST-BRDA(7/8)	51.00 - 51.75	1.0000	1.0000
L41	6	FB-L98B-034-XXXXXX(3/8)	51.00 - 51.75	1.0000	1.0000
L41	13	LDF4-50A(1/2)	51.00 - 51.75	1.0000	1.0000
L41	15	HB114-21U3M12-XXXF(1-1/4)	51.00 - 51.75	1.0000	1.0000
L41	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	51.00 - 51.75	1.0000	1.0000
L41	42	PL1.25x5 Reinforcement - Wind Area	51.00 - 51.75	1.0000	1.0000
L41	43	PL1.25x5 Reinforcement - Wind Area	51.00 - 51.75	1.0000	1.0000
L41	44	PL1.25x5 Reinforcement - Wind Area	51.00 - 51.75	1.0000	1.0000
L41	45	PL1.25x5 Reinforcement - Wind Area	51.00 - 51.75	1.0000	1.0000
L41	58	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L41	59	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L41	60	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L41	61	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L41	81	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L41	82	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L41	83	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L41	84	CCI-SFP-045100	51.00 - 51.75	1.0000	1.0000
L42	1	Safety Line 3/8	50.75 - 51.00	1.0000	1.0000
L42	5	WR-VG86ST-BRDA(7/8)	50.75 - 51.00	1.0000	1.0000
L42	6	FB-L98B-034-XXXXXX(3/8)	50.75 - 51.00	1.0000	1.0000
L42	13	LDF4-50A(1/2)	50.75 - 51.00	1.0000	1.0000
L42	15	HB114-21U3M12-XXXF(1-1/4)	50.75 - 51.00	1.0000	1.0000
L42	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	50.75 - 51.00	1.0000	1.0000
L42	42	PL1.25x5 Reinforcement - Wind Area	50.75 - 51.00	1.0000	1.0000
L42	43	PL1.25x5 Reinforcement - Wind Area	50.75 - 51.00	1.0000	1.0000
L42	44	PL1.25x5 Reinforcement - Wind Area	50.75 - 51.00	1.0000	1.0000
L42	45	PL1.25x5 Reinforcement - Wind Area	50.75 - 51.00	1.0000	1.0000
L42	58	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L42	59	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L42	60	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L42	61	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L42	81	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L42	82	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L42	83	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L42	84	CCI-SFP-045100	50.75 - 51.00	1.0000	1.0000
L43	1	Safety Line 3/8	43.66 - 50.75	1.0000	1.0000
L43	5	WR-VG86ST-BRDA(7/8)	43.66 - 50.75	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L43	6	FB-L98B-034-XXXXXX(3/8)	43.66 - 50.75	1.0000	1.0000
L43	13	LDF4-50A(1/2)	43.66 - 50.75	1.0000	1.0000
L43	15	HB114-21U3M12-XXXF(1-1/4)	43.66 - 50.75	1.0000	1.0000
L43	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	43.66 - 50.75	1.0000	1.0000
L43	38	PL1.25x6 Reinforcement - Wind Area	43.66 - 47.92	1.0000	1.0000
L43	39	PL1.25x6 Reinforcement - Wind Area	43.66 - 47.92	1.0000	1.0000
L43	40	PL1.25x6 Reinforcement - Wind Area	43.66 - 47.92	1.0000	1.0000
L43	41	PL1.25x6 Reinforcement - Wind Area	43.66 - 47.92	1.0000	1.0000
L43	42	PL1.25x5 Reinforcement - Wind Area	45.38 - 50.75	1.0000	1.0000
L43	43	PL1.25x5 Reinforcement - Wind Area	45.38 - 50.75	1.0000	1.0000
L43	44	PL1.25x5 Reinforcement - Wind Area	45.38 - 50.75	1.0000	1.0000
L43	45	PL1.25x5 Reinforcement - Wind Area	45.38 - 50.75	1.0000	1.0000
L43	54	CCI-SFP-060100	43.66 - 43.75	1.0000	1.0000
L43	55	CCI-SFP-060100	43.66 - 43.75	1.0000	1.0000
L43	56	CCI-SFP-060100	43.66 - 43.75	1.0000	1.0000
L43	57	CCI-SFP-060100	43.66 - 43.75	1.0000	1.0000
L43	58	CCI-SFP-045100	43.75 - 50.75	1.0000	1.0000
L43	59	CCI-SFP-045100	43.75 - 50.75	1.0000	1.0000
L43	60	CCI-SFP-045100	43.75 - 50.75	1.0000	1.0000
L43	61	CCI-SFP-045100	43.75 - 50.75	1.0000	1.0000
L43	81	CCI-SFP-045100	43.66 - 50.75	1.0000	1.0000
L43	82	CCI-SFP-045100	43.66 - 50.75	1.0000	1.0000
L43	83	CCI-SFP-045100	43.66 - 50.75	1.0000	1.0000
L43	84	CCI-SFP-045100	43.66 - 50.75	1.0000	1.0000
L45	1	Safety Line 3/8	41.75 - 42.66	1.0000	1.0000
L45	5	WR-VG86ST-BRDA(7/8)	41.75 - 42.66	1.0000	1.0000
L45	6	FB-L98B-034-XXXXXX(3/8)	41.75 - 42.66	1.0000	1.0000
L45	13	LDF4-50A(1/2)	41.75 - 42.66	1.0000	1.0000
L45	15	HB114-21U3M12-XXXF(1-1/4)	41.75 - 42.66	1.0000	1.0000
L45	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	41.75 - 42.66	1.0000	1.0000
L45	38	PL1.25x6 Reinforcement - Wind Area	41.75 - 42.66	1.0000	1.0000
L45	39	PL1.25x6 Reinforcement - Wind Area	41.75 - 42.66	1.0000	1.0000
L45	40	PL1.25x6 Reinforcement - Wind Area	41.75 - 42.66	1.0000	1.0000
L45	41	PL1.25x6 Reinforcement - Wind Area	41.75 - 42.66	1.0000	1.0000
L45	54	CCI-SFP-060100	41.75 - 42.66	1.0000	1.0000
L45	55	CCI-SFP-060100	41.75 - 42.66	1.0000	1.0000
L45	56	CCI-SFP-060100	41.75 - 42.66	1.0000	1.0000
L45	57	CCI-SFP-060100	41.75 - 42.66	1.0000	1.0000
L45	81	CCI-SFP-045100	41.75 - 42.66	1.0000	1.0000
L45	82	CCI-SFP-045100	41.75 - 42.66	1.0000	1.0000
L45	83	CCI-SFP-045100	41.75 - 42.66	1.0000	1.0000
L45	84	CCI-SFP-045100	41.75 - 42.66	1.0000	1.0000
L46	1	Safety Line 3/8	41.50 - 41.75	1.0000	1.0000
L46	5	WR-VG86ST-BRDA(7/8)	41.50 - 41.75	1.0000	1.0000
L46	6	FB-L98B-034-XXXXXX(3/8)	41.50 - 41.75	1.0000	1.0000
L46	13	LDF4-50A(1/2)	41.50 - 41.75	1.0000	1.0000
L46	15	HB114-21U3M12-XXXF(1-1/4)	41.50 - 41.75	1.0000	1.0000
L46	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	41.50 - 41.75	1.0000	1.0000
L46	38	PL1.25x6 Reinforcement - Wind Area	41.50 - 41.75	1.0000	1.0000
L46	39	PL1.25x6 Reinforcement - Wind Area	41.50 - 41.75	1.0000	1.0000
L46	40	PL1.25x6 Reinforcement - Wind Area	41.50 - 41.75	1.0000	1.0000
L46	41	PL1.25x6 Reinforcement - Wind Area	41.50 - 41.75	1.0000	1.0000
L46	54	CCI-SFP-060100	41.50 - 41.75	1.0000	1.0000
L46	55	CCI-SFP-060100	41.50 - 41.75	1.0000	1.0000
L46	56	CCI-SFP-060100	41.50 - 41.75	1.0000	1.0000
L46	57	CCI-SFP-060100	41.50 - 41.75	1.0000	1.0000
L46	81	CCI-SFP-045100	41.50 - 41.75	1.0000	1.0000
L46	82	CCI-SFP-045100	41.50 - 41.75	1.0000	1.0000
L46	83	CCI-SFP-045100	41.50 - 41.75	1.0000	1.0000
L46	84	CCI-SFP-045100	41.50 - 41.75	1.0000	1.0000
L47	1	Safety Line 3/8	36.50 - 41.50	1.0000	1.0000
L47	5	WR-VG86ST-BRDA(7/8)	36.50 - 41.50	1.0000	1.0000
L47	6	FB-L98B-034-XXXXXX(3/8)	36.50 - 41.50	1.0000	1.0000
L47	13	LDF4-50A(1/2)	36.50 - 41.50	1.0000	1.0000
L47	15	HB114-21U3M12-XXXF(1-1/4)	36.50 - 41.50	1.0000	1.0000
L47	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	36.50 - 41.50	1.0000	1.0000
L47	38	PL1.25x6 Reinforcement - Wind Area	36.50 - 41.50	1.0000	1.0000
L47	39	PL1.25x6 Reinforcement - Wind Area	36.50 - 41.50	1.0000	1.0000
L47	40	PL1.25x6 Reinforcement - Wind Area	36.50 - 41.50	1.0000	1.0000
L47	41	PL1.25x6 Reinforcement - Wind Area	36.50 - 41.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L47	54	CCI-SFP-060100	36.50 - 41.50	1.0000	1.0000
L47	55	CCI-SFP-060100	36.50 - 41.50	1.0000	1.0000
L47	56	CCI-SFP-060100	36.50 - 41.50	1.0000	1.0000
L47	57	CCI-SFP-060100	36.50 - 41.50	1.0000	1.0000
L47	81	CCI-SFP-045100	36.50 - 41.50	1.0000	1.0000
L47	82	CCI-SFP-045100	36.50 - 41.50	1.0000	1.0000
L47	83	CCI-SFP-045100	36.50 - 41.50	1.0000	1.0000
L47	84	CCI-SFP-045100	36.50 - 41.50	1.0000	1.0000
L48	1	Safety Line 3/8	31.50 - 36.50	1.0000	1.0000
L48	5	WR-VG86ST-BRDA(7/8)	31.50 - 36.50	1.0000	1.0000
L48	6	FB-L98B-034-XXXXXX(3/8)	31.50 - 36.50	1.0000	1.0000
L48	13	LDF4-50A(1/2)	31.50 - 36.50	1.0000	1.0000
L48	15	HB114-21U3M12-XXXF(1-1/4)	31.50 - 36.50	1.0000	1.0000
L48	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	31.50 - 36.50	1.0000	1.0000
L48	38	PL1.25x6 Reinforcement - Wind Area	31.50 - 36.50	1.0000	1.0000
L48	39	PL1.25x6 Reinforcement - Wind Area	31.50 - 36.50	1.0000	1.0000
L48	40	PL1.25x6 Reinforcement - Wind Area	31.50 - 36.50	1.0000	1.0000
L48	41	PL1.25x6 Reinforcement - Wind Area	31.50 - 36.50	1.0000	1.0000
L48	54	CCI-SFP-060100	31.50 - 36.50	1.0000	1.0000
L48	55	CCI-SFP-060100	31.50 - 36.50	1.0000	1.0000
L48	56	CCI-SFP-060100	31.50 - 36.50	1.0000	1.0000
L48	57	CCI-SFP-060100	31.50 - 36.50	1.0000	1.0000
L48	77	CCI-SFP-060100	31.50 - 33.50	1.0000	1.0000
L48	78	CCI-SFP-060100	31.50 - 33.50	1.0000	1.0000
L48	79	CCI-SFP-060100	31.50 - 32.50	1.0000	1.0000
L48	80	CCI-SFP-060100	31.50 - 32.50	1.0000	1.0000
L48	81	CCI-SFP-045100	33.50 - 36.50	1.0000	1.0000
L48	82	CCI-SFP-045100	33.50 - 36.50	1.0000	1.0000
L48	83	CCI-SFP-045100	32.50 - 36.50	1.0000	1.0000
L48	84	CCI-SFP-045100	32.50 - 36.50	1.0000	1.0000
L49	1	Safety Line 3/8	31.25 - 31.50	1.0000	1.0000
L49	5	WR-VG86ST-BRDA(7/8)	31.25 - 31.50	1.0000	1.0000
L49	6	FB-L98B-034-XXXXXX(3/8)	31.25 - 31.50	1.0000	1.0000
L49	13	LDF4-50A(1/2)	31.25 - 31.50	1.0000	1.0000
L49	15	HB114-21U3M12-XXXF(1-1/4)	31.25 - 31.50	1.0000	1.0000
L49	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	31.25 - 31.50	1.0000	1.0000
L49	38	PL1.25x6 Reinforcement - Wind Area	31.25 - 31.50	1.0000	1.0000
L49	39	PL1.25x6 Reinforcement - Wind Area	31.25 - 31.50	1.0000	1.0000
L49	40	PL1.25x6 Reinforcement - Wind Area	31.25 - 31.50	1.0000	1.0000
L49	41	PL1.25x6 Reinforcement - Wind Area	31.25 - 31.50	1.0000	1.0000
L49	54	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L49	55	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L49	56	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L49	57	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L49	77	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L49	78	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L49	79	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L49	80	CCI-SFP-060100	31.25 - 31.50	1.0000	1.0000
L50	1	Safety Line 3/8	30.50 - 31.25	1.0000	1.0000
L50	5	WR-VG86ST-BRDA(7/8)	30.50 - 31.25	1.0000	1.0000
L50	6	FB-L98B-034-XXXXXX(3/8)	30.50 - 31.25	1.0000	1.0000
L50	13	LDF4-50A(1/2)	30.50 - 31.25	1.0000	1.0000
L50	15	HB114-21U3M12-XXXF(1-1/4)	30.50 - 31.25	1.0000	1.0000
L50	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	30.50 - 31.25	1.0000	1.0000
L50	34	PL1.25x6 Reinforcement - Wind Area	30.50 - 30.75	1.0000	1.0000
L50	35	PL1.25x6 Reinforcement - Wind Area	30.50 - 30.75	1.0000	1.0000
L50	36	PL1.25x6 Reinforcement - Wind Area	30.50 - 30.75	1.0000	1.0000
L50	37	PL1.25x6 Reinforcement - Wind Area	30.50 - 30.75	1.0000	1.0000
L50	38	PL1.25x6 Reinforcement - Wind Area	30.50 - 31.25	1.0000	1.0000
L50	39	PL1.25x6 Reinforcement - Wind Area	30.50 - 31.25	1.0000	1.0000
L50	40	PL1.25x6 Reinforcement - Wind Area	30.50 - 31.25	1.0000	1.0000
L50	41	PL1.25x6 Reinforcement - Wind Area	30.50 - 31.25	1.0000	1.0000
L50	54	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000
L50	55	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000
L50	56	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000
L50	57	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000
L50	77	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000
L50	78	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000
L50	79	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000
L50	80	CCI-SFP-060100	30.50 - 31.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L51	1	Safety Line 3/8	30.25 - 30.50	1.0000	1.0000
L51	5	WR-VG86ST-BRDA(7/8)	30.25 - 30.50	1.0000	1.0000
L51	6	FB-L98B-034-XXXXXX(3/8)	30.25 - 30.50	1.0000	1.0000
L51	13	LDF4-50A(1/2)	30.25 - 30.50	1.0000	1.0000
L51	15	HB114-21U3M12-XXXF(1-1/4)	30.25 - 30.50	1.0000	1.0000
L51	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	30.25 - 30.50	1.0000	1.0000
L51	34	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	35	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	36	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	37	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	38	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	39	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	40	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	41	PL1.25x6 Reinforcement - Wind Area	30.25 - 30.50	1.0000	1.0000
L51	54	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L51	55	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L51	56	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L51	57	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L51	77	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L51	78	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L51	79	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L51	80	CCI-SFP-060100	30.25 - 30.50	1.0000	1.0000
L52	1	Safety Line 3/8	29.83 - 30.25	1.0000	1.0000
L52	5	WR-VG86ST-BRDA(7/8)	29.83 - 30.25	1.0000	1.0000
L52	6	FB-L98B-034-XXXXXX(3/8)	29.83 - 30.25	1.0000	1.0000
L52	13	LDF4-50A(1/2)	29.83 - 30.25	1.0000	1.0000
L52	15	HB114-21U3M12-XXXF(1-1/4)	29.83 - 30.25	1.0000	1.0000
L52	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	29.83 - 30.25	1.0000	1.0000
L52	34	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	35	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	36	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	37	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	38	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	39	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	40	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	41	PL1.25x6 Reinforcement - Wind Area	29.83 - 30.25	1.0000	1.0000
L52	54	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L52	55	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L52	56	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L52	57	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L52	77	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L52	78	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L52	79	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L52	80	CCI-SFP-060100	29.83 - 30.25	1.0000	1.0000
L53	1	Safety Line 3/8	29.58 - 29.83	1.0000	1.0000
L53	5	WR-VG86ST-BRDA(7/8)	29.58 - 29.83	1.0000	1.0000
L53	6	FB-L98B-034-XXXXXX(3/8)	29.58 - 29.83	1.0000	1.0000
L53	13	LDF4-50A(1/2)	29.58 - 29.83	1.0000	1.0000
L53	15	HB114-21U3M12-XXXF(1-1/4)	29.58 - 29.83	1.0000	1.0000
L53	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	29.58 - 29.83	1.0000	1.0000
L53	34	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	35	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	36	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	37	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	38	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	39	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	40	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	41	PL1.25x6 Reinforcement - Wind Area	29.58 - 29.83	1.0000	1.0000
L53	54	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L53	55	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L53	56	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L53	57	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L53	77	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L53	78	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L53	79	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L53	80	CCI-SFP-060100	29.58 - 29.83	1.0000	1.0000
L54	1	Safety Line 3/8	28.25 - 29.58	1.0000	1.0000
L54	5	WR-VG86ST-BRDA(7/8)	28.25 - 29.58	1.0000	1.0000
L54	6	FB-L98B-034-XXXXXX(3/8)	28.25 - 29.58	1.0000	1.0000
L54	13	LDF4-50A(1/2)	28.25 - 29.58	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L54	15	HB114-21U3M12-XXXF(1-1/4)	28.25 - 29.58	1.0000	1.0000
L54	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	28.25 - 29.58	1.0000	1.0000
L54	34	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	35	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	36	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	37	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	38	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	39	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	40	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	41	PL1.25x6 Reinforcement - Wind Area	28.25 - 29.58	1.0000	1.0000
L54	54	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L54	55	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L54	56	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L54	57	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L54	77	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L54	78	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L54	79	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L54	80	CCI-SFP-060100	28.25 - 29.58	1.0000	1.0000
L55	1	Safety Line 3/8	28.00 - 28.25	1.0000	1.0000
L55	5	WR-VG86ST-BRDA(7/8)	28.00 - 28.25	1.0000	1.0000
L55	6	FB-L98B-034-XXXXXX(3/8)	28.00 - 28.25	1.0000	1.0000
L55	13	LDF4-50A(1/2)	28.00 - 28.25	1.0000	1.0000
L55	15	HB114-21U3M12-XXXF(1-1/4)	28.00 - 28.25	1.0000	1.0000
L55	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	28.00 - 28.25	1.0000	1.0000
L55	34	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	35	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	36	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	37	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	38	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	39	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	40	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	41	PL1.25x6 Reinforcement - Wind Area	28.00 - 28.25	1.0000	1.0000
L55	54	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L55	55	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L55	56	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L55	57	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L55	77	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L55	78	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L55	79	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L55	80	CCI-SFP-060100	28.00 - 28.25	1.0000	1.0000
L56	1	Safety Line 3/8	23.00 - 28.00	1.0000	1.0000
L56	5	WR-VG86ST-BRDA(7/8)	23.00 - 28.00	1.0000	1.0000
L56	6	FB-L98B-034-XXXXXX(3/8)	23.00 - 28.00	1.0000	1.0000
L56	13	LDF4-50A(1/2)	23.00 - 28.00	1.0000	1.0000
L56	15	HB114-21U3M12-XXXF(1-1/4)	23.00 - 28.00	1.0000	1.0000
L56	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	23.00 - 28.00	1.0000	1.0000
L56	34	PL1.25x6 Reinforcement - Wind Area	23.00 - 28.00	1.0000	1.0000
L56	35	PL1.25x6 Reinforcement - Wind Area	23.00 - 28.00	1.0000	1.0000
L56	36	PL1.25x6 Reinforcement - Wind Area	23.00 - 28.00	1.0000	1.0000
L56	37	PL1.25x6 Reinforcement - Wind Area	23.00 - 28.00	1.0000	1.0000
L56	38	PL1.25x6 Reinforcement - Wind Area	27.75 - 28.00	1.0000	1.0000
L56	39	PL1.25x6 Reinforcement - Wind Area	27.75 - 28.00	1.0000	1.0000
L56	40	PL1.25x6 Reinforcement - Wind Area	27.75 - 28.00	1.0000	1.0000
L56	41	PL1.25x6 Reinforcement - Wind Area	27.75 - 28.00	1.0000	1.0000
L56	54	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L56	55	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L56	56	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L56	57	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L56	62	CCI-SFP-045100	23.00 - 27.75	1.0000	1.0000
L56	63	CCI-SFP-045100	23.00 - 27.75	1.0000	1.0000
L56	64	CCI-SFP-045100	23.00 - 27.75	1.0000	1.0000
L56	65	CCI-SFP-045100	23.00 - 27.75	1.0000	1.0000
L56	77	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L56	78	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L56	79	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L56	80	CCI-SFP-060100	23.00 - 28.00	1.0000	1.0000
L57	1	Safety Line 3/8	19.25 - 23.00	1.0000	1.0000
L57	5	WR-VG86ST-BRDA(7/8)	19.25 - 23.00	1.0000	1.0000
L57	6	FB-L98B-034-XXXXXX(3/8)	19.25 - 23.00	1.0000	1.0000
L57	13	LDF4-50A(1/2)	19.25 - 23.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L57	15	HB114-21U3M12-XXXF(1-1/4)	19.25 - 23.00	1.0000	1.0000
L57	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	19.25 - 23.00	1.0000	1.0000
L57	34	PL1.25x6 Reinforcement - Wind Area	19.25 - 23.00	1.0000	1.0000
L57	35	PL1.25x6 Reinforcement - Wind Area	19.25 - 23.00	1.0000	1.0000
L57	36	PL1.25x6 Reinforcement - Wind Area	19.25 - 23.00	1.0000	1.0000
L57	37	PL1.25x6 Reinforcement - Wind Area	19.25 - 23.00	1.0000	1.0000
L57	54	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L57	55	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L57	56	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L57	57	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L57	62	CCI-SFP-045100	19.25 - 23.00	1.0000	1.0000
L57	63	CCI-SFP-045100	19.25 - 23.00	1.0000	1.0000
L57	64	CCI-SFP-045100	19.25 - 23.00	1.0000	1.0000
L57	65	CCI-SFP-045100	19.25 - 23.00	1.0000	1.0000
L57	77	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L57	78	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L57	79	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L57	80	CCI-SFP-060100	19.25 - 23.00	1.0000	1.0000
L58	1	Safety Line 3/8	19.00 - 19.25	1.0000	1.0000
L58	5	WR-VG86ST-BRDA(7/8)	19.00 - 19.25	1.0000	1.0000
L58	6	FB-L98B-034-XXXXXX(3/8)	19.00 - 19.25	1.0000	1.0000
L58	13	LDF4-50A(1/2)	19.00 - 19.25	1.0000	1.0000
L58	15	HB114-21U3M12-XXXF(1-1/4)	19.00 - 19.25	1.0000	1.0000
L58	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	19.00 - 19.25	1.0000	1.0000
L58	34	PL1.25x6 Reinforcement - Wind Area	19.00 - 19.25	1.0000	1.0000
L58	35	PL1.25x6 Reinforcement - Wind Area	19.00 - 19.25	1.0000	1.0000
L58	36	PL1.25x6 Reinforcement - Wind Area	19.00 - 19.25	1.0000	1.0000
L58	37	PL1.25x6 Reinforcement - Wind Area	19.00 - 19.25	1.0000	1.0000
L58	54	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L58	55	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L58	56	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L58	57	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L58	62	CCI-SFP-045100	19.00 - 19.25	1.0000	1.0000
L58	63	CCI-SFP-045100	19.00 - 19.25	1.0000	1.0000
L58	64	CCI-SFP-045100	19.00 - 19.25	1.0000	1.0000
L58	65	CCI-SFP-045100	19.00 - 19.25	1.0000	1.0000
L58	77	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L58	78	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L58	79	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L58	80	CCI-SFP-060100	19.00 - 19.25	1.0000	1.0000
L59	1	Safety Line 3/8	14.50 - 19.00	1.0000	1.0000
L59	5	WR-VG86ST-BRDA(7/8)	14.50 - 19.00	1.0000	1.0000
L59	6	FB-L98B-034-XXXXXX(3/8)	14.50 - 19.00	1.0000	1.0000
L59	13	LDF4-50A(1/2)	14.50 - 19.00	1.0000	1.0000
L59	15	HB114-21U3M12-XXXF(1-1/4)	14.50 - 19.00	1.0000	1.0000
L59	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	14.50 - 19.00	1.0000	1.0000
L59	34	PL1.25x6 Reinforcement - Wind Area	14.50 - 19.00	1.0000	1.0000
L59	35	PL1.25x6 Reinforcement - Wind Area	14.50 - 19.00	1.0000	1.0000
L59	36	PL1.25x6 Reinforcement - Wind Area	14.50 - 19.00	1.0000	1.0000
L59	37	PL1.25x6 Reinforcement - Wind Area	14.50 - 19.00	1.0000	1.0000
L59	54	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	55	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	56	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	57	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	62	CCI-SFP-045100	17.75 - 19.00	1.0000	1.0000
L59	63	CCI-SFP-045100	17.75 - 19.00	1.0000	1.0000
L59	64	CCI-SFP-045100	17.75 - 19.00	1.0000	1.0000
L59	65	CCI-SFP-045100	17.75 - 19.00	1.0000	1.0000
L59	77	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	78	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	79	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	80	CCI-SFP-060100	14.50 - 19.00	1.0000	1.0000
L59	93	TS 6.5x1	14.50 - 16.00	1.0000	1.0000
L59	94	TS 6.5x1	14.50 - 16.00	1.0000	1.0000
L60	1	Safety Line 3/8	14.25 - 14.50	1.0000	1.0000
L60	5	WR-VG86ST-BRDA(7/8)	14.25 - 14.50	1.0000	1.0000
L60	6	FB-L98B-034-XXXXXX(3/8)	14.25 - 14.50	1.0000	1.0000
L60	13	LDF4-50A(1/2)	14.25 - 14.50	1.0000	1.0000
L60	15	HB114-21U3M12-XXXF(1-1/4)	14.25 - 14.50	1.0000	1.0000
L60	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	14.25 - 14.50	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L60	34	PL1.25x6 Reinforcement - Wind Area	14.25 - 14.50	1.0000	1.0000
L60	35	PL1.25x6 Reinforcement - Wind Area	14.25 - 14.50	1.0000	1.0000
L60	36	PL1.25x6 Reinforcement - Wind Area	14.25 - 14.50	1.0000	1.0000
L60	37	PL1.25x6 Reinforcement - Wind Area	14.25 - 14.50	1.0000	1.0000
L60	54	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	55	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	56	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	57	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	77	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	78	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	79	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	80	CCI-SFP-060100	14.25 - 14.50	1.0000	1.0000
L60	93	TS 6.5x1	14.25 - 14.50	1.0000	1.0000
L60	94	TS 6.5x1	14.25 - 14.50	1.0000	1.0000
L61	1	Safety Line 3/8	10.50 - 14.25	1.0000	1.0000
L61	5	WR-VG86ST-BRDA(7/8)	10.50 - 14.25	1.0000	1.0000
L61	6	FB-L98B-034-XXXXXX(3/8)	10.50 - 14.25	1.0000	1.0000
L61	13	LDF4-50A(1/2)	10.50 - 14.25	1.0000	1.0000
L61	15	HB114-21U3M12-XXXF(1-1/4)	10.50 - 14.25	1.0000	1.0000
L61	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	10.50 - 14.25	1.0000	1.0000
L61	34	PL1.25x6 Reinforcement - Wind Area	10.50 - 14.25	1.0000	1.0000
L61	35	PL1.25x6 Reinforcement - Wind Area	10.50 - 14.25	1.0000	1.0000
L61	36	PL1.25x6 Reinforcement - Wind Area	10.50 - 14.25	1.0000	1.0000
L61	37	PL1.25x6 Reinforcement - Wind Area	10.50 - 14.25	1.0000	1.0000
L61	54	CCI-SFP-060100	10.50 - 14.25	1.0000	1.0000
L61	55	CCI-SFP-060100	10.50 - 14.25	1.0000	1.0000
L61	56	CCI-SFP-060100	10.50 - 14.25	1.0000	1.0000
L61	57	CCI-SFP-060100	10.50 - 14.25	1.0000	1.0000
L61	77	CCI-SFP-060100	10.50 - 14.25	1.0000	1.0000
L61	78	CCI-SFP-060100	10.50 - 14.25	1.0000	1.0000
L61	79	CCI-SFP-060100	12.50 - 14.25	1.0000	1.0000
L61	80	CCI-SFP-060100	12.50 - 14.25	1.0000	1.0000
L61	91	TS 6.5x1	10.50 - 12.00	1.0000	1.0000
L61	92	TS 6.5x1	10.50 - 12.00	1.0000	1.0000
L61	93	TS 6.5x1	10.50 - 14.25	1.0000	1.0000
L61	94	TS 6.5x1	10.50 - 14.25	1.0000	1.0000
L62	1	Safety Line 3/8	10.25 - 10.50	1.0000	1.0000
L62	5	WR-VG86ST-BRDA(7/8)	10.25 - 10.50	1.0000	1.0000
L62	6	FB-L98B-034-XXXXXX(3/8)	10.25 - 10.50	1.0000	1.0000
L62	13	LDF4-50A(1/2)	10.25 - 10.50	1.0000	1.0000
L62	15	HB114-21U3M12-XXXF(1-1/4)	10.25 - 10.50	1.0000	1.0000
L62	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	10.25 - 10.50	1.0000	1.0000
L62	34	PL1.25x6 Reinforcement - Wind Area	10.25 - 10.50	1.0000	1.0000
L62	35	PL1.25x6 Reinforcement - Wind Area	10.25 - 10.50	1.0000	1.0000
L62	36	PL1.25x6 Reinforcement - Wind Area	10.25 - 10.50	1.0000	1.0000
L62	37	PL1.25x6 Reinforcement - Wind Area	10.25 - 10.50	1.0000	1.0000
L62	54	CCI-SFP-060100	10.25 - 10.50	1.0000	1.0000
L62	55	CCI-SFP-060100	10.25 - 10.50	1.0000	1.0000
L62	56	CCI-SFP-060100	10.25 - 10.50	1.0000	1.0000
L62	57	CCI-SFP-060100	10.25 - 10.50	1.0000	1.0000
L62	77	CCI-SFP-060100	10.25 - 10.50	1.0000	1.0000
L62	78	CCI-SFP-060100	10.25 - 10.50	1.0000	1.0000
L62	91	TS 6.5x1	10.25 - 10.50	1.0000	1.0000
L62	92	TS 6.5x1	10.25 - 10.50	1.0000	1.0000
L62	93	TS 6.5x1	10.25 - 10.50	1.0000	1.0000
L62	94	TS 6.5x1	10.25 - 10.50	1.0000	1.0000
L63	1	Safety Line 3/8	10.00 - 10.25	1.0000	1.0000
L63	5	WR-VG86ST-BRDA(7/8)	8.00 - 10.25	1.0000	1.0000
L63	6	FB-L98B-034-XXXXXX(3/8)	8.00 - 10.25	1.0000	1.0000
L63	13	LDF4-50A(1/2)	8.00 - 10.25	1.0000	1.0000
L63	15	HB114-21U3M12-XXXF(1-1/4)	8.00 - 10.25	1.0000	1.0000
L63	21	(1)HB158-1-08U8-S8J18(1-5/8)+(1)HB114-U6S12-XXX-LI	8.00 - 10.25	1.0000	1.0000
L63	34	PL1.25x6 Reinforcement - Wind Area	5.25 - 10.25	1.0000	1.0000
L63	35	PL1.25x6 Reinforcement - Wind Area	5.25 - 10.25	1.0000	1.0000
L63	36	PL1.25x6 Reinforcement - Wind Area	5.25 - 10.25	1.0000	1.0000
L63	37	PL1.25x6 Reinforcement - Wind Area	5.25 - 10.25	1.0000	1.0000
L63	54	CCI-SFP-060100	5.25 - 10.25	1.0000	1.0000
L63	55	CCI-SFP-060100	5.25 - 10.25	1.0000	1.0000
L63	56	CCI-SFP-060100	5.25 - 10.25	1.0000	1.0000
L63	57	CCI-SFP-060100	5.25 - 10.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L63	77	CCI-SFP-060100	8.50 - 10.25	1.0000	1.0000
L63	78	CCI-SFP-060100	8.50 - 10.25	1.0000	1.0000
L63	91	TS 6.5x1	5.25 - 10.25	1.0000	1.0000
L63	92	TS 6.5x1	5.25 - 10.25	1.0000	1.0000
L63	93	TS 6.5x1	5.25 - 10.25	1.0000	1.0000
L63	94	TS 6.5x1	5.25 - 10.25	1.0000	1.0000
L64	34	PL1.25x6 Reinforcement - Wind Area	0.25 - 5.25	1.0000	1.0000
L64	35	PL1.25x6 Reinforcement - Wind Area	0.25 - 5.25	1.0000	1.0000
L64	36	PL1.25x6 Reinforcement - Wind Area	0.25 - 5.25	1.0000	1.0000
L64	37	PL1.25x6 Reinforcement - Wind Area	0.25 - 5.25	1.0000	1.0000
L64	54	CCI-SFP-060100	0.25 - 5.25	1.0000	1.0000
L64	55	CCI-SFP-060100	0.25 - 5.25	1.0000	1.0000
L64	56	CCI-SFP-060100	0.25 - 5.25	1.0000	1.0000
L64	57	CCI-SFP-060100	0.25 - 5.25	1.0000	1.0000
L64	91	TS 6.5x1	0.25 - 5.25	1.0000	1.0000
L64	92	TS 6.5x1	0.25 - 5.25	1.0000	1.0000
L64	93	TS 6.5x1	0.25 - 5.25	1.0000	1.0000
L64	94	TS 6.5x1	0.25 - 5.25	1.0000	1.0000
L65	34	PL1.25x6 Reinforcement - Wind Area	0.00 - 0.25	1.0000	1.0000
L65	35	PL1.25x6 Reinforcement - Wind Area	0.00 - 0.25	1.0000	1.0000
L65	36	PL1.25x6 Reinforcement - Wind Area	0.00 - 0.25	1.0000	1.0000
L65	37	PL1.25x6 Reinforcement - Wind Area	0.00 - 0.25	1.0000	1.0000
L65	54	CCI-SFP-060100	0.00 - 0.25	1.0000	1.0000
L65	55	CCI-SFP-060100	0.00 - 0.25	1.0000	1.0000
L65	56	CCI-SFP-060100	0.00 - 0.25	1.0000	1.0000
L65	57	CCI-SFP-060100	0.00 - 0.25	1.0000	1.0000
L65	91	TS 6.5x1	0.00 - 0.25	1.0000	1.0000
L65	92	TS 6.5x1	0.00 - 0.25	1.0000	1.0000
L65	93	TS 6.5x1	0.00 - 0.25	1.0000	1.0000
L65	94	TS 6.5x1	0.00 - 0.25	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
Platform Mount [LP 303-1]	C	None		0.0000	168.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
HRK14-U	C	From Leg	0.00 0.00 3.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.03 7.20 9.05 13.71	4.19 6.05 7.96 11.63	0.30 0.39 0.52 0.68
Site Pro 1 PRK-1245 Tri-Sector Kickers	C	From Leg	0.00 0.00 -2.50	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.33 2.73 3.41	1.75 2.26 2.80 3.79	0.47 0.51 0.57 0.63
Sitepro1 P3096 Mount Pipe	A	From Leg	4.00 6.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 3.19 3.67 4.68	2.40 3.19 3.67 4.68	0.04 0.06 0.08 0.14
Sitepro1 P3096 Mount Pipe	B	From Leg	4.00 6.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.40 3.19 3.67 4.68	2.40 3.19 3.67 4.68	0.04 0.06 0.08 0.14
Sitepro1 P3096 Mount Pipe	C	From Leg	4.00 6.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.40 3.19 3.67	2.40 3.19 3.67	0.04 0.06 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	4.68	4.68	0.14
800 10121 w/ Mount Pipe	A	From Leg	4.00 -6.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.39 5.81 6.23 7.10	4.60 5.35 6.05 7.48	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe	B	From Leg	4.00 -6.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.39 5.81 6.23 7.10	4.60 5.35 6.05 7.48	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe	C	From Leg	4.00 -6.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.39 5.81 6.23 7.10	4.60 5.35 6.05 7.48	0.07 0.11 0.17 0.30
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00 -2.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.54 14.24 14.95 16.31	10.96 12.49 14.04 16.39	0.11 0.22 0.33 0.59
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.00 2.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	13.54 14.24 14.95 16.31	10.96 12.49 14.04 16.39	0.11 0.22 0.33 0.59
80010966 w/ Mount Pipe	B	From Leg	4.00 2.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	17.60 18.33 19.07 20.49	9.64 11.15 12.70 15.03	0.15 0.26 0.39 0.68
80010966 w/ Mount Pipe	C	From Leg	4.00 -2.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	17.60 18.33 19.07 20.49	9.64 11.15 12.70 15.03	0.15 0.26 0.39 0.68
80010965 w/ Mount Pipe	A	From Leg	4.00 -2.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.05 14.69 15.30 16.53	7.63 8.90 9.96 11.92	0.13 0.22 0.33 0.57
80010798 w/ Mount Pipe	A	From Leg	4.00 2.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	10.92 11.53 12.12 13.29	7.48 8.75 9.80 11.76	0.11 0.19 0.28 0.49
DC6-48-60-18-8F	B	From Leg	1.00 0.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
DC6-48-60-18-8F	A	From Leg	1.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
RRUS 4449 B5/B12	A	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	B	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	C	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4426 B66	A	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	0.73 0.84 0.97 1.24	0.10 0.11 0.13 0.17
RRUS 4426 B66	B	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	0.73 0.84 0.97 1.24	0.10 0.11 0.13 0.17

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
RRUS 4426 B66	C	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	0.73 0.84 0.97 1.24	0.10 0.11 0.13 0.17
RRUS 32	A	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.08 3.32 3.81	1.78 1.97 2.17 2.58	0.06 0.08 0.10 0.16
RRUS 32	B	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.08 3.32 3.81	1.78 1.97 2.17 2.58	0.06 0.08 0.10 0.16
RRUS 32	C	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.86 3.08 3.32 3.81	1.78 1.97 2.17 2.58	0.06 0.08 0.10 0.16
RRUS E2 B29	A	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.15 3.36 3.59 4.07	1.29 1.44 1.60 1.95	0.05 0.08 0.10 0.17
RRUS E2 B29	B	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.15 3.36 3.59 4.07	1.29 1.44 1.60 1.95	0.05 0.08 0.10 0.17
RRUS E2 B29	C	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.15 3.36 3.59 4.07	1.29 1.44 1.60 1.95	0.05 0.08 0.10 0.17
RRUS 32 B2	A	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	B	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
RRUS 32 B2	C	From Leg	4.00 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.73 2.95 3.18 3.66	1.67 1.86 2.05 2.46	0.05 0.07 0.10 0.16
(2) LGP21401	A	From Leg	4.00 0.00 1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) LGP21401	B	From Leg	4.00 0.00 1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) LGP21401	C	From Leg	4.00 0.00 1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
DC6-48-60-18-8F	B	From Leg	1.00 0.00 -1.00	0.0000	168.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.92 1.46 1.64 2.04	0.92 1.46 1.64 2.04	0.02 0.04 0.06 0.11
***									
T-Arm Mount [TA 602-3]	C	None		0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.59 15.44 19.29 26.99	11.59 15.44 19.29 26.99	0.77 0.99 1.21 1.64
PQ-1245L [NA 509-3]	C	From Leg	0.00 0.00 -2.50	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.84 16.96 22.08 32.32	11.84 16.96 22.08 32.32	0.28 0.30 0.32 0.36

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) 6' x 2" Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6' x 2" Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6' x 2" Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	A	From Face	2.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	B	From Leg	2.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	C	From Leg	2.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
P40-16-XLPP-RR-A w/ Mount Pipe	A	From Face	3.00 2.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.24 8.70 9.16 10.09	4.83 5.57 6.27 7.67	0.07 0.14 0.21 0.37
P40-16-XLPP-RR-A w/ Mount Pipe	B	From Leg	3.00 2.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.24 8.70 9.16 10.09	4.83 5.57 6.27 7.67	0.07 0.14 0.21 0.37
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	3.00 2.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.26 8.82 9.35 10.42	6.95 8.13 9.02 10.84	0.08 0.15 0.23 0.41
APXVTM14-C-120 w/ Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.58 7.03 7.47 8.38	4.96 5.75 6.47 7.94	0.08 0.13 0.19 0.34
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	3.00 -2.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.58 7.03 7.47 8.38	4.96 5.75 6.47 7.94	0.08 0.13 0.19 0.34
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	3.00 -2.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.58 7.03 7.47 8.38	4.96 5.75 6.47 7.94	0.08 0.13 0.19 0.34
1900MHz RRH (65MHz)	A	From Face	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
1900MHz RRH (65MHz)	B	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
1900MHz RRH (65MHz)	C	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
800 EXTERNAL NOTCH FILTER	A	From Face	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.32 0.40 0.48 0.67	0.01 0.02 0.02 0.04
800 EXTERNAL NOTCH	B	From Leg	3.00	0.0000	158.00	No Ice	0.66	0.32	0.01

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
FILTER			0.00 0.00			1/2" Ice 1" Ice 2" Ice	0.76 0.87 1.11	0.40 0.48 0.67	0.02 0.02 0.04
800 EXTERNAL NOTCH FILTER	C	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.32 0.40 0.48 0.67	0.01 0.02 0.02 0.04
800MHZ RRH	A	From Face	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	B	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	C	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
TD-RRH8x20-25	A	From Face	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
TD-RRH8x20-25	B	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
TD-RRH8x20-25	C	From Leg	3.00 0.00 0.00	0.0000	158.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.05 4.30 4.56 5.10	1.53 1.71 1.90 2.30	0.07 0.10 0.13 0.20
*** ***									
Platform Mount [LP 303-1]	C	None		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.66 18.87 23.08 31.50	14.66 18.87 23.08 31.50	1.25 1.48 1.71 2.18
BXA-70063/4CF w/ Mount Pipe	A	From Leg	4.00 -6.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.62 4.22 4.83 6.11	0.03 0.07 0.12 0.23
BXA-70063/4CF w/ Mount Pipe	A	From Leg	4.00 6.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.62 4.22 4.83 6.11	0.03 0.07 0.12 0.23
BXA-70063/4CF w/ Mount Pipe	B	From Leg	4.00 -2.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.62 4.22 4.83 6.11	0.03 0.07 0.12 0.23
BXA-70063/4CF w/ Mount Pipe	B	From Leg	4.00 6.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.62 4.22 4.83 6.11	0.03 0.07 0.12 0.23
BXA-70063/4CF w/ Mount Pipe	C	From Leg	4.00 -2.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.62 4.22 4.83 6.11	0.03 0.07 0.12 0.23
BXA-70063/4CF w/ Mount Pipe	C	From Leg	4.00 6.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.62 4.22 4.83 6.11	0.03 0.07 0.12 0.23
SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 -2.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.44 9.00 9.53 10.62	7.10 8.30 9.21 11.06	0.07 0.14 0.21 0.40

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
SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 2.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.44 9.00 9.53 10.62	7.10 8.30 9.21 11.06	0.07 0.14 0.21 0.40
SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 -6.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.44 9.00 9.53 10.62	7.10 8.30 9.21 11.06	0.07 0.14 0.21 0.40
SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 2.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.44 9.00 9.53 10.62	7.10 8.30 9.21 11.06	0.07 0.14 0.21 0.40
SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 -6.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.44 9.00 9.53 10.62	7.10 8.30 9.21 11.06	0.07 0.14 0.21 0.40
SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 2.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.44 9.00 9.53 10.62	7.10 8.30 9.21 11.06	0.07 0.14 0.21 0.40
RFV01U-D2A	A	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	B	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	C	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D1A	A	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	B	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RFV01U-D1A	C	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RVZDC-6627-PF-48	C	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	0.03 0.06 0.10 0.18
DB-T1-6Z-8AB-0Z	C	From Leg	4.00 0.00 2.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21
***									
Platform Mount [LP 303-1]	C	None		0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.66 18.87 23.08 31.50	14.66 18.87 23.08 31.50	1.25 1.48 1.71 2.18
6' x 2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6' x 2" Mount Pipe	B	From Leg	3.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' x 2" Mount Pipe	C	From Leg	3.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	3.00 -6.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	3.00 -6.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	3.00 -6.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	3.00 6.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.32 6.76 7.20 8.10	5.63 6.41 7.12 8.57	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	3.00 6.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.32 6.76 7.20 8.10	5.63 6.41 7.12 8.57	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	3.00 6.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.32 6.76 7.20 8.10	5.63 6.41 7.12 8.57	0.11 0.17 0.23 0.38
ONEBASE TWIN DUAL DUPLEX TMA	A	From Leg	3.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.26 0.34 0.42 0.60	0.01 0.02 0.02 0.04
ONEBASE TWIN DUAL DUPLEX TMA	B	From Leg	3.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.26 0.34 0.42 0.60	0.01 0.02 0.02 0.04
ONEBASE TWIN DUAL DUPLEX TMA	C	From Leg	3.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.26 0.34 0.42 0.60	0.01 0.02 0.02 0.04
***									
Side Arm Mount [SO 701-1]	A	From Face	0.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.85 1.14 1.43 2.01	1.67 2.34 3.01 4.35	0.07 0.08 0.09 0.12
GPS_A	A	From Face	3.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.26 0.32 0.39 0.56	0.26 0.32 0.39 0.56	0.00 0.00 0.01 0.02

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice

Comb. No.	Description
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	168.333 - 163.333	Pole	Max Tension	27	0.00	-0.00	-0.00
			Max. Compression	26	-13.02	0.95	-2.19
			Max. Mx	20	-4.16	34.54	-0.55
			Max. My	14	-4.20	0.74	-34.38
			Max. Vy	20	-8.06	34.54	-0.55
			Max. Vx	14	7.99	0.74	-34.38
			Max. Torque	27			2.46
L2	163.333 - 158.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13.73	1.09	-2.45
			Max. Mx	20	-4.43	75.72	-0.73
			Max. My	14	-4.47	0.89	-75.20
			Max. Vy	20	-8.41	75.72	-0.73
			Max. Vx	14	8.33	0.89	-75.20
			Max. Torque	27			2.46
L3	158.333 - 153.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.62	7.14	-6.06

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	20	-6.77	140.90	-0.89
			Max. My	14	-6.91	1.58	-137.08
			Max. Vy	20	-13.45	140.90	-0.89
			Max. Vx	2	-12.91	2.63	133.52
			Max. Torque	13			-4.99
L4	153.333 - 148.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.43	7.32	-6.43
			Max. Mx	20	-7.13	208.97	-0.17
			Max. My	14	-7.27	0.83	-202.47
			Max. Vy	20	-13.79	208.97	-0.17
			Max. Vx	2	-13.25	3.51	198.86
			Max. Torque	13			-4.99
L5	148.333 - 143.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.25	7.48	-6.79
			Max. Mx	20	-7.53	278.74	0.56
			Max. My	14	-7.65	0.07	-269.57
			Max. Vy	20	-14.13	278.74	0.56
			Max. Vx	2	-13.59	4.38	265.89
			Max. Torque	13			-4.98
L6	143.333 - 138.333	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.09	7.62	-7.14
			Max. Mx	20	-7.95	350.20	1.30
			Max. My	14	-8.07	-0.70	-338.35
			Max. Vy	20	-14.47	350.20	1.30
			Max. Vx	2	-13.93	5.24	334.62
			Max. Torque	25			4.98
L7	138.333 - 130.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.60	8.88	-8.43
			Max. Mx	20	-10.68	435.35	1.36
			Max. My	14	-10.82	-0.79	-420.80
			Max. Vy	20	-19.24	435.35	1.36
			Max. Vx	2	-18.61	5.72	416.62
			Max. Torque	11			-5.45
L8	130.5 - 129.164	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.13	9.11	-8.76
			Max. Mx	20	-11.48	532.52	1.77
			Max. My	14	-11.61	-1.20	-514.83
			Max. Vy	20	-19.63	532.52	1.77
			Max. Vx	2	-19.01	6.26	510.63
			Max. Torque	11			-5.44
L9	129.164 - 125.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.34	9.28	-9.02
			Max. Mx	20	-14.26	613.95	2.05
			Max. My	14	-14.39	-1.51	-593.94
			Max. Vy	20	-22.40	613.95	2.05
			Max. Vx	2	-21.76	6.66	589.70
			Max. Torque	11			-5.44
L10	125.5 - 125.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.43	9.30	-9.04
			Max. Mx	20	-14.33	619.55	2.07
			Max. My	14	-14.47	-1.53	-599.39
			Max. Vy	20	-22.41	619.55	2.07
			Max. Vx	2	-21.78	6.68	595.14
			Max. Torque	11			-5.44
L11	125.25 - 120.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.12	9.53	-9.40
			Max. Mx	20	-15.34	727.43	2.44
			Max. My	14	-15.48	-1.92	-704.12
			Max. Vy	20	-23.02	727.43	2.44
			Max. Vx	2	-22.40	7.21	699.96
			Max. Torque	11			-5.44
L12	120.5 - 120.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.23	9.55	-9.42
			Max. Mx	20	-15.43	733.19	2.46
			Max. My	14	-15.56	-1.94	-709.71
			Max. Vy	20	-23.04	733.19	2.46
			Max. Vx	2	-22.42	7.23	705.56
			Max. Torque	11			-5.43
L13	120.25 - 115.25	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-44.69	9.76	-9.76
			Max. Mx	20	-16.82	850.27	2.87
			Max. My	14	-16.95	-2.37	-823.29
			Max. Vy	20	-23.80	850.27	2.87
			Max. Vx	2	-23.22	7.76	819.58
			Max. Torque	11			-5.43
L14	115.25 - 113.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.45	9.82	-9.86
			Max. Mx	20	-17.22	884.22	2.99
			Max. My	14	-17.35	-2.49	-856.22
			Max. Vy	20	-24.03	884.22	2.99
			Max. Vx	2	-23.46	7.91	852.70
			Max. Torque	11			-5.43
L15	113.83 - 113.48	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.65	9.84	-9.88
			Max. Mx	20	-17.34	892.64	3.02
			Max. My	14	-17.47	-2.52	-864.38
			Max. Vy	20	-24.08	892.64	3.02
			Max. Vx	2	-23.51	7.95	860.92
			Max. Torque	11			-5.43
L16	113.48 - 113.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.77	9.85	-9.90
			Max. Mx	20	-17.41	898.18	3.04
			Max. My	14	-17.54	-2.54	-869.76
			Max. Vy	20	-24.11	898.18	3.04
			Max. Vx	2	-23.55	7.98	866.33
			Max. Torque	11			-5.43
L17	113.25 - 108.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.39	10.06	-10.24
			Max. Mx	20	-18.92	1020.69	3.46
			Max. My	14	-19.04	-2.97	-988.53
			Max. Vy	20	-24.90	1020.69	3.46
			Max. Vx	2	-24.38	8.50	986.10
			Max. Torque	11			-5.43
L18	108.25 - 103.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.97	10.27	-10.58
			Max. Mx	20	-20.46	1147.06	3.88
			Max. My	14	-20.58	-3.41	-1110.99
			Max. Vy	20	-25.66	1147.06	3.88
			Max. Vx	2	-25.18	9.03	1109.93
			Max. Torque	11			-5.42
L19	103.25 - 98.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.57	10.47	-10.92
			Max. Mx	20	-22.02	1277.23	4.30
			Max. My	2	-22.10	9.55	1237.73
			Max. Vy	20	-26.42	1277.23	4.30
			Max. Vx	2	-25.98	9.55	1237.73
			Max. Torque	11			-5.42
L20	98.25 - 93.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.19	10.68	-11.25
			Max. Mx	20	-23.61	1411.16	4.72
			Max. My	2	-23.68	10.08	1369.48
			Max. Vy	20	-27.17	1411.16	4.72
			Max. Vx	2	-26.76	10.08	1369.48
			Max. Torque	11			-5.42
L21	93.25 - 89.82	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.09	10.81	-11.49
			Max. Mx	20	-24.80	1505.22	5.01
			Max. My	2	-24.86	10.43	1462.15
			Max. Vy	20	-27.70	1505.22	5.01
			Max. Vx	2	-27.31	10.43	1462.15
			Max. Torque	11			-5.41
L22	89.82 - 89.57	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.23	10.83	-11.51
			Max. Mx	20	-24.89	1512.15	5.03
			Max. My	2	-24.96	10.46	1468.98
			Max. Vy	20	-27.73	1512.15	5.03
			Max. Vx	2	-27.35	10.46	1468.98
			Max. Torque	11			-5.41

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L23	89.57 - 84.5521	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.50	10.84	-11.53
			Max. Mx	20	-25.05	1524.80	5.07
			Max. My	2	-25.11	10.51	1481.44
			Max. Vy	20	-27.80	1524.80	5.07
			Max. Vx	2	-27.43	10.51	1481.44
			Max. Torque	11			-5.41
L24	84.5521 - 83.5521	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.45	11.10	-11.81
			Max. Mx	20	-28.20	1682.34	5.54
			Max. My	2	-28.25	11.09	1637.01
			Max. Vy	20	-28.83	1682.34	5.54
			Max. Vx	2	-28.51	11.09	1637.01
			Max. Torque	11			-5.41
L25	83.5521 - 82.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.88	11.13	-11.86
			Max. Mx	20	-28.45	1703.19	5.60
			Max. My	2	-28.50	11.16	1657.62
			Max. Vy	20	-28.94	1703.19	5.60
			Max. Vx	2	-28.63	11.16	1657.62
			Max. Torque	11			-5.41
L26	82.83 - 82.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.04	11.15	-11.88
			Max. Mx	20	-28.55	1710.43	5.62
			Max. My	2	-28.61	11.19	1664.78
			Max. Vy	20	-28.98	1710.43	5.62
			Max. Vx	2	-28.66	11.19	1664.78
			Max. Torque	11			-5.41
L27	82.58 - 81.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.76	11.19	-11.94
			Max. Mx	20	-28.98	1741.83	5.71
			Max. My	2	-29.04	11.30	1695.83
			Max. Vy	20	-29.17	1741.83	5.71
			Max. Vx	2	-28.86	11.30	1695.83
			Max. Torque	11			-5.41
L28	81.5 - 81.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.92	11.21	-11.95
			Max. Mx	20	-29.08	1749.12	5.74
			Max. My	2	-29.14	11.33	1703.04
			Max. Vy	20	-29.20	1749.12	5.74
			Max. Vx	2	-28.90	11.33	1703.04
			Max. Torque	11			-5.41
L29	81.25 - 76.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.83	11.44	-12.25
			Max. Mx	20	-30.88	1897.04	6.16
			Max. My	2	-30.93	11.85	1849.40
			Max. Vy	20	-29.98	1897.04	6.16
			Max. Vx	2	-29.68	11.85	1849.40
			Max. Torque	11			-5.41
L30	76.25 - 74.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.63	11.50	-12.33
			Max. Mx	20	-31.36	1937.03	6.27
			Max. My	2	-31.41	11.99	1888.98
			Max. Vy	20	-30.19	1937.03	6.27
			Max. Vx	2	-29.89	11.99	1888.98
			Max. Torque	11			-5.41
L31	74.92 - 74.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.80	11.51	-12.34
			Max. Mx	20	-31.48	1944.58	6.30
			Max. My	2	-31.53	12.01	1896.46
			Max. Vy	20	-30.22	1944.58	6.30
			Max. Vx	2	-29.92	12.01	1896.46
			Max. Torque	11			-5.41
L32	74.67 - 74.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.16	11.53	-12.37
			Max. Mx	20	-31.70	1959.71	6.34
			Max. My	2	-31.75	12.06	1911.43
			Max. Vy	20	-30.30	1959.71	6.34
			Max. Vx	2	-30.01	12.06	1911.43

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	11			-5.41
L33	74.17 - 73.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.34	11.54	-12.39
			Max. Mx	20	-31.81	1967.29	6.36
			Max. My	2	-31.86	12.09	1918.94
			Max. Vy	20	-30.35	1967.29	6.36
			Max. Vx	2	-30.05	12.09	1918.94
			Max. Torque	11			-5.41
L34	73.92 - 68.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.01	12.00	-12.57
			Max. Mx	20	-34.04	2121.33	6.82
			Max. My	2	-34.08	12.69	2071.43
			Max. Vy	20	-31.28	2121.33	6.82
			Max. Vx	2	-31.00	12.69	2071.43
			Max. Torque	11			-5.41
L35	68.92 - 64.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.33	12.20	-12.92
			Max. Mx	20	-36.09	2269.19	7.14
			Max. My	2	-36.13	13.10	2217.93
			Max. Vy	20	-32.07	2269.19	7.14
			Max. Vx	2	-31.79	13.10	2217.93
			Max. Torque	11			-5.40
L36	64.25 - 64	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.49	12.21	-12.94
			Max. Mx	20	-36.19	2277.21	7.16
			Max. My	2	-36.23	13.12	2225.88
			Max. Vy	20	-32.10	2277.21	7.16
			Max. Vx	2	-31.82	13.12	2225.88
			Max. Torque	11			-5.40
L37	64 - 59	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.50	12.36	-13.35
			Max. Mx	20	-38.06	2439.55	7.51
			Max. My	2	-38.09	13.56	2386.78
			Max. Vy	20	-32.85	2439.55	7.51
			Max. Vx	2	-32.58	13.56	2386.78
			Max. Torque	11			-5.40
L38	59 - 54	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.46	12.48	-13.76
			Max. Mx	20	-39.96	2605.51	7.85
			Max. My	2	-40.00	13.99	2551.31
			Max. Vy	20	-33.56	2605.51	7.85
			Max. Vx	2	-33.29	13.99	2551.31
			Max. Torque	11			-5.40
L39	54 - 52	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.70	12.52	-13.88
			Max. Mx	20	-40.74	2672.90	7.99
			Max. My	2	-40.77	14.16	2618.13
			Max. Vy	20	-33.85	2672.90	7.99
			Max. Vx	2	-33.58	14.16	2618.13
			Max. Torque	11			-5.40
L40	52 - 51.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.87	12.52	-13.90
			Max. Mx	20	-40.85	2681.36	8.01
			Max. My	2	-40.89	14.18	2626.52
			Max. Vy	20	-33.88	2681.36	8.01
			Max. Vx	2	-33.60	14.18	2626.52
			Max. Torque	11			-5.40
L41	51.75 - 51	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.39	12.51	-13.95
			Max. Mx	20	-41.16	2706.81	8.06
			Max. My	2	-41.20	14.25	2651.75
			Max. Vy	20	-34.00	2706.81	8.06
			Max. Vx	2	-33.72	14.25	2651.75
			Max. Torque	11			-5.40
L42	51 - 50.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.56	12.52	-13.97
			Max. Mx	20	-41.29	2715.32	8.08
			Max. My	2	-41.32	14.27	2660.18
			Max. Vy	20	-34.03	2715.32	8.08

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-33.75	14.27	2660.18
			Max. Torque	11			-5.40
L43	50.75 - 43.6641	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.86	12.52	-14.06
			Max. Mx	20	-42.06	2775.03	8.19
			Max. My	2	-42.09	14.42	2719.39
			Max. Vy	20	-34.34	2775.03	8.19
			Max. Vx	2	-34.06	14.42	2719.39
			Max. Torque	11			-5.40
L44	43.6641 - 42.6641	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.47	12.57	-14.39
			Max. Mx	20	-47.37	2996.39	8.63
			Max. My	2	-47.40	14.97	2938.92
			Max. Vy	20	-35.52	2996.39	8.63
			Max. Vx	2	-35.24	14.97	2938.92
			Max. Torque	11			-5.39
L45	42.6641 - 41.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.18	12.59	-14.44
			Max. Mx	20	-47.84	3028.91	8.69
			Max. My	2	-47.87	15.04	2971.17
			Max. Vy	20	-35.65	3028.91	8.69
			Max. Vx	2	-35.38	15.04	2971.17
			Max. Torque	11			-5.39
L46	41.75 - 41.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.38	12.60	-14.45
			Max. Mx	20	-47.98	3037.82	8.71
			Max. My	2	-48.01	15.07	2980.02
			Max. Vy	20	-35.68	3037.82	8.71
			Max. Vx	2	-35.40	15.07	2980.02
			Max. Torque	11			-5.39
L47	41.5 - 36.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.38	12.68	-14.69
			Max. Mx	20	-50.65	3218.08	9.05
			Max. My	2	-50.68	15.49	3158.84
			Max. Vy	20	-36.44	3218.08	9.05
			Max. Vx	2	-36.17	15.49	3158.84
			Max. Torque	11			-5.39
L48	36.5 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-102.39	12.75	-14.91
			Max. Mx	20	-53.36	3401.98	9.39
			Max. My	2	-53.38	15.91	3341.30
			Max. Vy	20	-37.15	3401.98	9.39
			Max. Vx	2	-36.88	15.91	3341.30
			Max. Torque	11			-5.39
L49	31.5 - 31.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-102.60	12.75	-14.92
			Max. Mx	20	-53.51	3411.26	9.41
			Max. My	2	-53.53	15.93	3350.52
			Max. Vy	20	-37.17	3411.26	9.41
			Max. Vx	2	-36.90	15.93	3350.52
			Max. Torque	11			-5.39
L50	31.25 - 30.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.23	12.76	-14.95
			Max. Mx	20	-53.92	3439.18	9.46
			Max. My	2	-53.94	16.00	3378.22
			Max. Vy	20	-37.29	3439.18	9.46
			Max. Vx	2	-37.02	16.00	3378.22
			Max. Torque	11			-5.39
L51	30.5 - 30.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.45	12.76	-14.96
			Max. Mx	20	-54.07	3448.50	9.47
			Max. My	2	-54.09	16.02	3387.47
			Max. Vy	20	-37.31	3448.50	9.47
			Max. Vx	2	-37.04	16.02	3387.47
			Max. Torque	11			-5.39
L52	30.25 - 29.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-103.82	12.76	-14.98
			Max. Mx	20	-54.31	3464.19	9.50
			Max. My	2	-54.32	16.05	3403.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-37.38	3464.19	9.50
			Max. Vx	2	-37.11	16.05	3403.04
			Max. Torque	11			-5.39
L53	29.83 - 29.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-104.03	12.76	-14.99
			Max. Mx	20	-54.44	3473.53	9.52
			Max. My	2	-54.46	16.07	3412.32
			Max. Vy	20	-37.41	3473.53	9.52
			Max. Vx	2	-37.14	16.07	3412.32
			Max. Torque	11			-5.39
L54	29.58 - 28.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-105.14	12.76	-15.04
			Max. Mx	20	-55.12	3523.41	9.61
			Max. My	2	-55.14	16.19	3461.81
			Max. Vy	20	-37.62	3523.41	9.61
			Max. Vx	2	-37.35	16.19	3461.81
			Max. Torque	11			-5.39
L55	28.25 - 28	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-105.38	12.76	-15.05
			Max. Mx	20	-55.30	3532.81	9.63
			Max. My	2	-55.31	16.21	3471.14
			Max. Vy	20	-37.63	3532.81	9.63
			Max. Vx	2	-37.36	16.21	3471.14
			Max. Torque	11			-5.39
L56	28 - 23	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-110.11	12.75	-15.26
			Max. Mx	20	-58.48	3722.76	9.96
			Max. My	2	-58.49	16.62	3659.68
			Max. Vy	20	-38.37	3722.76	9.96
			Max. Vx	2	-38.10	16.62	3659.68
			Max. Torque	11			-5.39
L57	23 - 19.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.64	12.74	-15.42
			Max. Mx	20	-60.88	3867.54	10.22
			Max. My	2	-60.90	16.93	3803.41
			Max. Vy	20	-38.88	3867.54	10.22
			Max. Vx	2	-38.62	16.93	3803.41
			Max. Torque	11			-5.39
L58	19.25 - 19	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.86	12.74	-15.44
			Max. Mx	20	-61.04	3877.26	10.23
			Max. My	2	-61.05	16.95	3813.06
			Max. Vy	20	-38.90	3877.26	10.23
			Max. Vx	2	-38.63	16.95	3813.06
			Max. Torque	11			-5.39
L59	19 - 14.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-117.64	12.65	-15.69
			Max. Mx	20	-63.62	4053.47	10.53
			Max. My	2	-63.63	17.32	3988.02
			Max. Vy	20	-39.44	4053.47	10.53
			Max. Vx	2	-39.18	17.32	3988.02
			Max. Torque	11			-5.39
L60	14.5 - 14.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-117.85	12.64	-15.71
			Max. Mx	20	-63.78	4063.33	10.55
			Max. My	2	-63.79	17.34	3997.81
			Max. Vy	20	-39.45	4063.33	10.55
			Max. Vx	2	-39.19	17.34	3997.81
			Max. Torque	11			-5.39
L61	14.25 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-121.00	12.58	-15.96
			Max. Mx	20	-65.96	4212.22	10.80
			Max. My	2	-65.97	17.64	4145.71
			Max. Vy	20	-39.99	4212.22	10.80
			Max. Vx	2	-39.75	17.64	4145.71
			Max. Torque	11			-5.39
L62	10.5 - 10.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-121.21	12.59	-15.98
			Max. Mx	20	-66.13	4222.21	10.82

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-66.13	17.66	4155.64
			Max. Vy	20	-40.00	4222.21	10.82
			Max. Vx	2	-39.76	17.66	4155.64
			Max. Torque	25			5.39
L63	10.25 - 5.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-125.14	12.59	-16.31
			Max. Mx	20	-69.01	4423.86	11.17
			Max. My	2	-69.01	18.05	4356.28
			Max. Vy	20	-40.69	4423.86	11.17
			Max. Vx	2	-40.54	18.05	4356.28
			Max. Torque	25			5.39
L64	5.25 - 0.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-128.80	12.56	-16.59
			Max. Mx	20	-71.88	4628.78	11.54
			Max. My	2	-71.88	18.41	4560.66
			Max. Vy	20	-41.33	4628.78	11.54
			Max. Vx	2	-41.27	18.41	4560.66
			Max. Torque	25			5.39
L65	0.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-128.97	12.55	-16.60
			Max. Mx	20	-72.04	4639.11	11.56
			Max. My	2	-72.04	18.43	4570.97
			Max. Vy	20	-41.34	4639.11	11.56
			Max. Vx	2	-41.28	18.43	4570.97
			Max. Torque	25			5.39

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	128.97	0.00	-0.00
	Max. H_x	20	72.04	41.33	0.07
	Max. H_z	2	72.04	0.07	41.27
	Max. M_x	2	4570.97	0.07	41.27
	Max. M_z	8	4596.22	-40.79	-0.07
	Max. Torsion	25	5.39	20.00	34.07
	Min. Vert	3	54.03	0.07	41.27
	Min. H_x	8	72.04	-40.79	-0.07
	Min. H_z	14	72.04	-0.07	-40.69
	Min. M_x	14	-4515.02	-0.07	-40.69
	Min. M_z	20	-4639.11	41.33	0.07
	Min. Torsion	13	-5.38	-20.40	-34.77

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	60.03	-0.00	0.00	2.72	2.93	-0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	72.04	-0.07	-41.27	-4570.97	18.43	-4.05
0.9 Dead+1.0 Wind 0 deg - No Ice	54.03	-0.07	-41.27	-4509.14	17.20	-4.09
1.2 Dead+1.0 Wind 30 deg - No Ice	72.04	20.07	-34.34	-3893.87	-2286.61	-1.46
0.9 Dead+1.0 Wind 30 deg - No Ice	54.03	20.07	-34.34	-3841.04	-2255.93	-1.47
1.2 Dead+1.0 Wind 60 deg - No Ice	72.04	35.22	-20.01	-2250.63	-3999.60	1.44
0.9 Dead+1.0 Wind 60 deg - No Ice	54.03	35.22	-20.01	-2220.58	-3945.35	1.45
1.2 Dead+1.0 Wind 90 deg - No Ice	72.04	40.79	0.07	18.16	-4596.22	3.84
0.9 Dead+1.0 Wind 90 deg - No Ice	54.03	40.79	0.07	17.01	-4533.61	3.87
1.2 Dead+1.0 Wind 120 deg - No Ice	72.04	35.76	20.40	2288.54	-4024.11	5.32
0.9 Dead+1.0 Wind 120 deg - No Ice	54.03	35.76	20.40	2256.24	-3969.56	5.36
1.2 Dead+1.0 Wind 150 deg - No Ice	72.04	20.40	34.77	3936.30	-2324.45	5.33

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 150 deg - No Ice	54.03	20.40	34.77	3881.28	-2293.23	5.38
1.2 Dead+1.0 Wind 180 deg - No Ice	72.04	0.07	40.69	4515.02	-11.30	4.04
0.9 Dead+1.0 Wind 180 deg - No Ice	54.03	0.07	40.69	4452.08	-12.00	4.08
1.2 Dead+1.0 Wind 210 deg - No Ice	72.04	-20.14	34.45	3893.95	2289.98	1.45
0.9 Dead+1.0 Wind 210 deg - No Ice	54.03	-20.14	34.45	3839.45	2257.42	1.46
1.2 Dead+1.0 Wind 240 deg - No Ice	72.04	-35.47	20.15	2262.34	4015.57	-1.44
0.9 Dead+1.0 Wind 240 deg - No Ice	54.03	-35.47	20.15	2230.47	3959.33	-1.44
1.2 Dead+1.0 Wind 270 deg - No Ice	72.04	-41.33	-0.07	-11.56	4639.11	-3.82
0.9 Dead+1.0 Wind 270 deg - No Ice	54.03	-41.33	-0.07	-12.19	4574.24	-3.85
1.2 Dead+1.0 Wind 300 deg - No Ice	72.04	-35.66	-20.34	-2278.33	4024.97	-5.31
0.9 Dead+1.0 Wind 300 deg - No Ice	54.03	-35.66	-20.34	-2247.82	3968.53	-5.35
1.2 Dead+1.0 Wind 330 deg - No Ice	72.04	-20.00	-34.07	-3883.12	2304.69	-5.34
0.9 Dead+1.0 Wind 330 deg - No Ice	54.03	-20.00	-34.07	-3830.27	2271.76	-5.39
1.2 Dead+1.0 Ice+1.0 Temp	128.97	-0.00	0.00	16.60	12.55	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	128.97	-0.00	-10.30	-1349.40	13.82	-3.55
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	128.97	5.03	-8.65	-1154.32	-669.29	-3.02
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	128.97	8.76	-5.02	-660.88	-1173.56	-1.70
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	128.97	10.20	0.00	17.97	-1352.47	0.07
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	128.97	8.88	5.10	698.02	-1177.48	1.83
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	128.97	5.05	8.69	1192.82	-673.68	3.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	128.97	0.00	10.19	1370.08	11.31	3.55
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	128.97	-5.04	8.67	1186.53	693.73	3.02
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	128.97	-8.81	5.05	695.47	1200.71	1.70
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	128.97	-10.30	-0.00	15.46	1384.61	-0.07
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	128.97	-8.86	-5.08	-663.76	1201.17	-1.83
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	128.97	-4.98	-8.56	-1150.37	693.60	-3.08
Dead+Wind 0 deg - Service	60.03	-0.02	-9.72	-1066.65	6.49	-0.98
Dead+Wind 30 deg - Service	60.03	4.73	-8.09	-908.30	-532.39	-0.35
Dead+Wind 60 deg - Service	60.03	8.29	-4.71	-524.18	-932.92	0.35
Dead+Wind 90 deg - Service	60.03	9.60	0.02	6.27	-1072.43	0.93
Dead+Wind 120 deg - Service	60.03	8.42	4.80	537.12	-938.69	1.29
Dead+Wind 150 deg - Service	60.03	4.80	8.19	922.31	-541.25	1.29
Dead+Wind 180 deg - Service	60.03	0.02	9.58	1057.55	-0.45	0.98
Dead+Wind 210 deg - Service	60.03	-4.74	8.11	912.35	537.52	0.35
Dead+Wind 240 deg - Service	60.03	-8.35	4.74	530.97	941.02	-0.35
Dead+Wind 270 deg - Service	60.03	-9.73	-0.02	-0.67	1086.85	-0.93
Dead+Wind 300 deg - Service	60.03	-8.40	-4.79	-530.67	943.25	-1.29
Dead+Wind 330 deg - Service	60.03	-4.71	-8.02	-905.79	540.97	-1.29

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-60.03	0.00	0.00	60.03	-0.00	0.000%
2	-0.07	-72.04	-41.27	0.07	72.04	41.27	0.000%
3	-0.07	-54.03	-41.27	0.07	54.03	41.27	0.000%
4	20.07	-72.04	-34.34	-20.07	72.04	34.34	0.000%
5	20.07	-54.03	-34.34	-20.07	54.03	34.34	0.000%
6	35.22	-72.04	-20.01	-35.22	72.04	20.01	0.000%
7	35.22	-54.03	-20.01	-35.22	54.03	20.01	0.000%
8	40.79	-72.04	0.07	-40.79	72.04	-0.07	0.000%
9	40.79	-54.03	0.07	-40.79	54.03	-0.07	0.000%
10	35.76	-72.04	20.40	-35.76	72.04	-20.40	0.000%
11	35.76	-54.03	20.40	-35.76	54.03	-20.40	0.000%
12	20.40	-72.04	34.77	-20.40	72.04	-34.77	0.000%
13	20.40	-54.03	34.77	-20.40	54.03	-34.77	0.000%
14	0.07	-72.04	40.69	-0.07	72.04	-40.69	0.000%
15	0.07	-54.03	40.69	-0.07	54.03	-40.69	0.000%
16	-20.14	-72.04	34.45	20.14	72.04	-34.45	0.000%
17	-20.14	-54.03	34.45	20.14	54.03	-34.45	0.000%
18	-35.47	-72.04	20.15	35.47	72.04	-20.15	0.000%
19	-35.47	-54.03	20.15	35.47	54.03	-20.15	0.000%
20	-41.33	-72.04	-0.07	41.33	72.04	0.07	0.000%
21	-41.33	-54.03	-0.07	41.33	54.03	0.07	0.000%
22	-35.66	-72.04	-20.34	35.66	72.04	20.34	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
23	-35.66	-54.03	-20.34	35.66	54.03	20.34	0.000%
24	-20.00	-72.04	-34.07	20.00	72.04	34.07	0.000%
25	-20.00	-54.03	-34.07	20.00	54.03	34.07	0.000%
26	0.00	-128.97	0.00	0.00	128.97	-0.00	0.000%
27	-0.00	-128.97	-10.30	0.00	128.97	10.30	0.000%
28	5.03	-128.97	-8.65	-5.03	128.97	8.65	0.000%
29	8.76	-128.97	-5.02	-8.76	128.97	5.02	0.000%
30	10.19	-128.97	0.00	-10.20	128.97	-0.00	0.000%
31	8.88	-128.97	5.10	-8.88	128.97	-5.10	0.000%
32	5.05	-128.97	8.69	-5.05	128.97	-8.69	0.000%
33	0.00	-128.97	10.19	-0.00	128.97	-10.19	0.000%
34	-5.04	-128.97	8.67	5.04	128.97	-8.67	0.000%
35	-8.81	-128.97	5.05	8.81	128.97	-5.05	0.000%
36	-10.30	-128.97	-0.00	10.30	128.97	0.00	0.000%
37	-8.86	-128.97	-5.08	8.86	128.97	5.08	0.000%
38	-4.98	-128.97	-8.56	4.98	128.97	8.56	0.000%
39	-0.02	-60.03	-9.72	0.02	60.03	9.72	0.000%
40	4.73	-60.03	-8.09	-4.73	60.03	8.09	0.000%
41	8.29	-60.03	-4.71	-8.29	60.03	4.71	0.000%
42	9.60	-60.03	0.02	-9.60	60.03	-0.02	0.000%
43	8.42	-60.03	4.80	-8.42	60.03	-4.80	0.000%
44	4.80	-60.03	8.19	-4.80	60.03	-8.19	0.000%
45	0.02	-60.03	9.58	-0.02	60.03	-9.58	0.000%
46	-4.74	-60.03	8.11	4.74	60.03	-8.11	0.000%
47	-8.35	-60.03	4.74	8.35	60.03	-4.74	0.000%
48	-9.73	-60.03	-0.02	9.73	60.03	0.02	0.000%
49	-8.40	-60.03	-4.79	8.40	60.03	4.79	0.000%
50	-4.71	-60.03	-8.02	4.71	60.03	8.02	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00001425
2	Yes	6	0.00000001	0.00028933
3	Yes	6	0.00000001	0.00009656
4	Yes	7	0.00000001	0.00018784
5	Yes	6	0.00000001	0.00096578
6	Yes	7	0.00000001	0.00018837
7	Yes	6	0.00000001	0.00096600
8	Yes	6	0.00000001	0.00029462
9	Yes	6	0.00000001	0.00009758
10	Yes	7	0.00000001	0.00020936
11	Yes	7	0.00000001	0.00004630
12	Yes	7	0.00000001	0.00018133
13	Yes	6	0.00000001	0.00092931
14	Yes	6	0.00000001	0.00022337
15	Yes	6	0.00000001	0.00007541
16	Yes	7	0.00000001	0.00019349
17	Yes	6	0.00000001	0.00099744
18	Yes	7	0.00000001	0.00019620
19	Yes	7	0.00000001	0.00004305
20	Yes	6	0.00000001	0.00022635
21	Yes	6	0.00000001	0.00007536
22	Yes	7	0.00000001	0.00018061
23	Yes	6	0.00000001	0.00092374
24	Yes	7	0.00000001	0.00020588
25	Yes	7	0.00000001	0.00004580
26	Yes	5	0.00000001	0.00098915
27	Yes	7	0.00000001	0.00084506
28	Yes	8	0.00000001	0.00018336
29	Yes	8	0.00000001	0.00019219
30	Yes	7	0.00000001	0.00080541
31	Yes	8	0.00000001	0.00020345
32	Yes	8	0.00000001	0.00019236

33	Yes	7	0.00000001	0.00087718
34	Yes	8	0.00000001	0.00021468
35	Yes	8	0.00000001	0.00020286
36	Yes	7	0.00000001	0.00084133
37	Yes	8	0.00000001	0.00019279
38	Yes	8	0.00000001	0.00020539
39	Yes	5	0.00000001	0.00027026
40	Yes	5	0.00000001	0.00080917
41	Yes	5	0.00000001	0.00081713
42	Yes	5	0.00000001	0.00027978
43	Yes	6	0.00000001	0.00006561
44	Yes	5	0.00000001	0.00079468
45	Yes	5	0.00000001	0.00025761
46	Yes	5	0.00000001	0.00091780
47	Yes	5	0.00000001	0.00095048
48	Yes	5	0.00000001	0.00027048
49	Yes	5	0.00000001	0.00079219
50	Yes	6	0.00000001	0.00006324

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168.333 - 163.333	34.173	48	2.1017	0.0232
L2	163.333 - 158.333	31.976	48	2.0918	0.0218
L3	158.333 - 153.333	29.801	48	2.0610	0.0206
L4	153.333 - 148.333	27.669	48	2.0062	0.0177
L5	148.333 - 143.333	25.608	48	1.9283	0.0150
L6	143.333 - 138.333	23.638	48	1.8321	0.0125
L7	138.333 - 130.5	21.776	48	1.7215	0.0103
L8	134.164 - 129.164	20.318	48	1.6166	0.0085
L9	129.164 - 125.5	18.659	48	1.5412	0.0075
L10	125.5 - 125.25	17.510	48	1.4531	0.0064
L11	125.25 - 120.5	17.434	48	1.4469	0.0063
L12	120.5 - 120.25	16.055	48	1.3241	0.0051
L13	120.25 - 115.25	15.986	48	1.3213	0.0050
L14	115.25 - 113.83	14.633	48	1.2615	0.0045
L15	113.83 - 113.48	14.261	48	1.2442	0.0044
L16	113.48 - 113.25	14.170	48	1.2402	0.0043
L17	113.25 - 108.25	14.110	48	1.2375	0.0043
L18	108.25 - 103.25	12.845	48	1.1774	0.0039
L19	103.25 - 98.25	11.645	48	1.1142	0.0035
L20	98.25 - 93.25	10.513	48	1.0480	0.0031
L21	93.25 - 89.82	9.452	48	0.9793	0.0027
L22	89.82 - 89.57	8.763	48	0.9380	0.0025
L23	89.57 - 84.5521	8.714	48	0.9349	0.0025
L24	89.1146 - 83.5521	8.625	48	0.9294	0.0025
L25	83.5521 - 82.83	7.562	48	0.8898	0.0023
L26	82.83 - 82.58	7.428	48	0.8810	0.0023
L27	82.58 - 81.5	7.382	48	0.8784	0.0022
L28	81.5 - 81.25	7.185	48	0.8670	0.0022
L29	81.25 - 76.25	7.140	48	0.8637	0.0022
L30	76.25 - 74.92	6.270	48	0.7969	0.0019
L31	74.92 - 74.67	6.051	48	0.7790	0.0019
L32	74.67 - 74.17	6.010	48	0.7763	0.0018
L33	74.17 - 73.92	5.929	48	0.7710	0.0018
L34	73.92 - 68.92	5.889	48	0.7685	0.0018
L35	68.92 - 64.25	5.110	48	0.7178	0.0016
L36	64.25 - 64	4.432	48	0.6692	0.0015
L37	64 - 59	4.397	48	0.6661	0.0015
L38	59 - 54	3.732	48	0.6043	0.0013
L39	54 - 52	3.133	48	0.5407	0.0011
L40	52 - 51.75	2.911	48	0.5153	0.0010
L41	51.75 - 51	2.884	48	0.5122	0.0010
L42	51 - 50.75	2.805	48	0.5031	0.0010
L43	50.75 - 43.6641	2.778	48	0.5004	0.0010
L44	49.0026 - 42.6641	2.599	48	0.4819	0.0009

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L45	42.6641 - 41.75	1.982	48	0.4428	0.0008
L46	41.75 - 41.5	1.898	48	0.4329	0.0008
L47	41.5 - 36.5	1.875	48	0.4303	0.0008
L48	36.5 - 31.5	1.453	48	0.3762	0.0007
L49	31.5 - 31.25	1.087	48	0.3213	0.0006
L50	31.25 - 30.5	1.071	48	0.3186	0.0006
L51	30.5 - 30.25	1.021	48	0.3103	0.0006
L52	30.25 - 29.83	1.005	48	0.3076	0.0005
L53	29.83 - 29.58	0.978	48	0.3032	0.0005
L54	29.58 - 28.25	0.963	48	0.3003	0.0005
L55	28.25 - 28	0.881	48	0.2848	0.0005
L56	28 - 23	0.866	48	0.2826	0.0005
L57	23 - 19.25	0.593	48	0.2392	0.0004
L58	19.25 - 19	0.418	48	0.2056	0.0003
L59	19 - 14.5	0.408	48	0.2030	0.0003
L60	14.5 - 14.25	0.238	48	0.1561	0.0003
L61	14.25 - 10.5	0.230	48	0.1535	0.0003
L62	10.5 - 10.25	0.125	48	0.1131	0.0002
L63	10.25 - 5.25	0.120	48	0.1105	0.0002
L64	5.25 - 0.25	0.032	48	0.0574	0.0001
L65	0.25 - 0	0.000	1	0.0000	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.00	Platform Mount [LP 303-1]	48	34.027	2.1014	0.0231	13531
158.00	T-Arm Mount [TA 602-3]	48	29.657	2.0581	0.0204	6474
138.00	Platform Mount [LP 303-1]	48	21.657	1.7128	0.0102	2498
128.00	Platform Mount [LP 303-1]	48	18.287	1.5161	0.0071	2609
70.00	Side Arm Mount [SO 701-1]	48	5.274	0.7287	0.0017	5602

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	168.333 - 163.333	145.202	20	8.8966	0.0977
L2	163.333 - 158.333	135.935	20	8.8579	0.0921
L3	158.333 - 153.333	126.755	20	8.7299	0.0868
L4	153.333 - 148.333	117.754	20	8.5080	0.0749
L5	148.333 - 143.333	109.036	20	8.1868	0.0634
L6	143.333 - 138.333	100.693	20	7.7863	0.0531
L7	138.333 - 130.5	92.800	20	7.3229	0.0437
L8	134.164 - 129.164	86.610	20	6.8818	0.0360
L9	129.164 - 125.5	79.561	20	6.5640	0.0315
L10	125.5 - 125.25	74.675	20	6.1922	0.0270
L11	125.25 - 120.5	74.352	20	6.1659	0.0267
L12	120.5 - 120.25	68.484	20	5.6460	0.0213
L13	120.25 - 115.25	68.189	20	5.6340	0.0212
L14	115.25 - 113.83	62.429	20	5.3807	0.0189
L15	113.83 - 113.48	60.842	20	5.3073	0.0184
L16	113.48 - 113.25	60.455	20	5.2902	0.0182
L17	113.25 - 108.25	60.200	20	5.2789	0.0181
L18	108.25 - 103.25	54.812	20	5.0236	0.0163
L19	103.25 - 98.25	49.698	20	4.7547	0.0145
L20	98.25 - 93.25	44.871	20	4.4733	0.0129
L21	93.25 - 89.82	40.344	20	4.1805	0.0114
L22	89.82 - 89.57	37.406	20	4.0044	0.0105
L23	89.57 - 84.5521	37.197	20	3.9915	0.0104

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L24	89.1146 - 83.5521	36.818	20	3.9680	0.0103
L25	83.5521 - 82.83	32.284	20	3.7992	0.0096
L26	82.83 - 82.58	31.712	20	3.7617	0.0094
L27	82.58 - 81.5	31.516	20	3.7504	0.0094
L28	81.5 - 81.25	30.674	20	3.7020	0.0092
L29	81.25 - 76.25	30.480	20	3.6880	0.0091
L30	76.25 - 74.92	26.770	20	3.4030	0.0080
L31	74.92 - 74.67	25.833	20	3.3264	0.0078
L32	74.67 - 74.17	25.659	20	3.3150	0.0077
L33	74.17 - 73.92	25.313	20	3.2923	0.0076
L34	73.92 - 68.92	25.141	20	3.2818	0.0076
L35	68.92 - 64.25	21.820	20	3.0654	0.0069
L36	64.25 - 64	18.924	20	2.8579	0.0062
L37	64 - 59	18.775	20	2.8447	0.0062
L38	59 - 54	15.935	20	2.5810	0.0054
L39	54 - 52	13.375	20	2.3092	0.0046
L40	52 - 51.75	12.431	20	2.2008	0.0043
L41	51.75 - 51	12.316	20	2.1877	0.0043
L42	51 - 50.75	11.976	20	2.1486	0.0042
L43	50.75 - 43.6641	11.864	20	2.1373	0.0041
L44	49.0026 - 42.6641	11.096	20	2.0582	0.0039
L45	42.6641 - 41.75	8.461	20	1.8911	0.0035
L46	41.75 - 41.5	8.103	20	1.8489	0.0034
L47	41.5 - 36.5	8.007	20	1.8378	0.0034
L48	36.5 - 31.5	6.203	20	1.6068	0.0029
L49	31.5 - 31.25	4.643	20	1.3722	0.0024
L50	31.25 - 30.5	4.572	20	1.3604	0.0024
L51	30.5 - 30.25	4.361	20	1.3250	0.0023
L52	30.25 - 29.83	4.292	20	1.3137	0.0023
L53	29.83 - 29.58	4.177	20	1.2948	0.0022
L54	29.58 - 28.25	4.110	20	1.2823	0.0022
L55	28.25 - 28	3.762	20	1.2160	0.0021
L56	28 - 23	3.698	20	1.2068	0.0021
L57	23 - 19.25	2.532	20	1.0212	0.0017
L58	19.25 - 19	1.786	20	0.8780	0.0014
L59	19 - 14.5	1.740	20	0.8669	0.0014
L60	14.5 - 14.25	1.017	20	0.6665	0.0011
L61	14.25 - 10.5	0.983	20	0.6552	0.0011
L62	10.5 - 10.25	0.536	20	0.4829	0.0008
L63	10.25 - 5.25	0.511	20	0.4716	0.0007
L64	5.25 - 0.25	0.135	20	0.2452	0.0004
L65	0.25 - 0	0.000	20	0.0117	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
168.00	Platform Mount [LP 303-1]	20	144.583	8.8952	0.0973	3543
158.00	T-Arm Mount [TA 602-3]	20	126.148	8.7181	0.0863	1676
138.00	Platform Mount [LP 303-1]	20	92.293	7.2863	0.0430	613
128.00	Platform Mount [LP 303-1]	20	77.980	6.4580	0.0302	632
70.00	Side Arm Mount [SO 701-1]	20	22.518	3.1117	0.0070	1320

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	168.333 - 163.333 (1)	TP19.8343x19x0.1875	5.00	0.00	0.0	11.6923	-4.17	684.00	0.006
L2	163.333 - 158.333 (2)	TP20.6685x19.8343x0.1875	5.00	0.00	0.0	12.1888	-4.44	713.04	0.006
L3	158.333 - 153.333 (3)	TP21.5028x20.6685x0.1875	5.00	0.00	0.0	12.6852	-6.77	742.09	0.009
L4	153.333 - 148.333 (4)	TP22.337x21.5028x0.1875	5.00	0.00	0.0	13.1817	-7.13	771.13	0.009
L5	148.333 - 143.333 (5)	TP23.1713x22.337x0.1875	5.00	0.00	0.0	13.6782	-7.53	800.17	0.009
L6	143.333 - 138.333 (6)	TP24.0055x23.1713x0.1875	5.00	0.00	0.0	14.1747	-7.95	829.22	0.010
L7	138.333 - 130.5 (7)	TP25.3125x24.0055x0.1875	7.83	0.00	0.0	14.5887	-10.68	853.44	0.013
L8	130.5 - 129.164 (8)	TP25.1492x24.3261x0.25	5.00	0.00	0.0	19.7575	-11.48	1155.82	0.010
L9	129.164 - 125.5 (9)	TP25.7524x25.1492x0.25	3.66	0.00	0.0	20.2362	-14.26	1183.82	0.012
L10	125.5 - 125.25 (10)	TP25.7936x25.7524x0.25	0.25	0.00	0.0	20.2688	-14.33	1185.73	0.012
L11	125.25 - 120.5 (11)	TP26.5755x25.7936x0.25	4.75	0.00	0.0	20.8893	-15.34	1222.02	0.013
L12	120.5 - 120.25 (12)	TP26.6167x26.5755x0.6125	0.25	0.00	0.0	50.5540	-15.43	2957.41	0.005
L13	120.25 - 115.25 (13)	TP27.4398x26.6167x0.6	5.00	0.00	0.0	51.1136	-16.82	2990.15	0.006
L14	115.25 - 113.83 (14)	TP27.6735x27.4398x0.6	1.42	0.00	0.0	51.5588	-17.22	3016.19	0.006
L15	113.83 - 113.48 (15)	TP27.7311x27.6735x0.65	0.35	0.00	0.0	55.8711	-17.34	3268.46	0.005
L16	113.48 - 113.25 (16)	TP27.769x27.7311x0.65	0.23	0.00	0.0	55.9492	-17.41	3273.03	0.005
L17	113.25 - 108.25 (17)	TP28.5921x27.769x0.6375	5.00	0.00	0.0	56.5640	-18.92	3308.99	0.006
L18	108.25 - 103.25 (18)	TP29.4152x28.5921x0.625	5.00	0.00	0.0	57.1125	-20.46	3341.08	0.006
L19	103.25 - 98.25 (19)	TP30.2383x29.4152x0.6125	5.00	0.00	0.0	57.5947	-22.02	3369.29	0.007
L20	98.25 - 93.25 (20)	TP31.0614x30.2383x0.6	5.00	0.00	0.0	58.0106	-23.61	3393.62	0.007
L21	93.25 - 89.82 (21)	TP31.626x31.0614x0.7	3.43	0.00	0.0	68.7114	-24.80	4019.62	0.006
L22	89.82 - 89.57 (22)	TP31.6672x31.626x0.7	0.25	0.00	0.0	68.8028	-24.89	4024.97	0.006
L23	89.57 - 84.5521 (23)	TP32.4932x31.6672x0.7	5.02	0.00	0.0	68.9694	-25.05	4034.71	0.006
L24	84.5521 - 83.5521 (24)	TP32.1551x31.2421x0.75	5.56	0.00	0.0	74.7599	-28.20	4373.45	0.006
L25	83.5521 - 82.83 (25)	TP32.2736x32.1551x0.7375	0.72	0.00	0.0	73.8206	-28.45	4318.51	0.007
L26	82.83 - 82.58 (26)	TP32.3147x32.2736x0.8625	0.25	0.00	0.0	86.1027	-28.55	5037.01	0.006
L27	82.58 - 81.5 (27)	TP32.4919x32.3147x0.8625	1.08	0.00	0.0	86.5880	-28.98	5065.40	0.006
L28	81.5 - 81.25 (28)	TP32.533x32.4919x0.6875	0.25	0.00	0.0	69.4908	-29.08	4065.21	0.007
L29	81.25 - 76.25 (29)	TP33.3536x32.533x0.675	5.00	0.00	0.0	70.0124	-30.88	4095.72	0.008
L30	76.25 - 74.92 (30)	TP33.5719x33.3536x0.6625	1.33	0.00	0.0	69.2012	-31.36	4048.27	0.008
L31	74.92 - 74.67 (31)	TP33.613x33.5719x0.8625	0.25	0.00	0.0	89.6569	-31.48	5244.93	0.006
L32	74.67 - 74.17 (32)	TP33.695x33.613x0.8625	0.50	0.00	0.0	89.8816	-31.70	5258.07	0.006
L33	74.17 - 73.92 (33)	TP33.7361x33.695x0.9375	0.25	0.00	0.0	97.5963	-31.81	5709.38	0.006
L34	73.92 - 68.92 (34)	TP34.5567x33.7361x0.9125	5.00	0.00	0.0	97.4430	-34.04	5700.42	0.006
L35	68.92 - 64.25 (35)	TP35.3233x34.5567x0.8875	4.67	0.00	0.0	97.0029	-36.09	5674.67	0.006
L36	64.25 - 64 (36)	TP35.3643x35.3233x0.7375	0.25	0.00	0.0	81.0553	-36.19	4741.73	0.008
L37	64 - 59 (37)	TP36.185x35.3643x0.7375	5.00	0.00	0.0	82.9763	-38.06	4854.11	0.008
L38	59 - 54 (38)	TP37.0056x36.185x0.7125	5.00	0.00	0.0	82.0760	-39.96	4801.45	0.008
L39	54 - 52 (39)	TP37.3339x37.0056x0.7125	2.00	0.00	0.0	82.8184	-40.74	4844.87	0.008
L40	52 - 51.75 (40)	TP37.3749x37.3339x0.7375	0.25	0.00	0.0	85.7618	-40.85	5017.07	0.008
L41	51.75 - 51 (41)	TP37.498x37.3749x0.7375	0.75	0.00	0.0	86.0500	-41.16	5033.92	0.008
L42	51 - 50.75 (42)	TP37.5391x37.498x0.8625	0.25	0.00	0.0	100.4050	-41.29	5873.68	0.007
L43	50.75 - 43.6641 (43)	TP38.7021x37.5391x0.8625	7.09	0.00	0.0	101.1900	-42.06	5919.62	0.007
L44	43.6641 - 42.6641 (44)	TP37.854x37.2009x0.9125	6.34	0.00	0.0	106.9930	-47.37	6259.07	0.008
L45	42.6641 - 41.75 (45)	TP37.9482x37.854x0.9125	0.91	0.00	0.0	107.2650	-47.84	6275.03	0.008
L46	41.75 - 41.5 (46)	TP37.9739x37.9482x0.95	0.25	0.00	0.0	111.6380	-47.98	6530.84	0.007
L47	41.5 - 36.5 (47)	TP38.4891x37.9739x0.925	5.00	0.00	0.0	110.2860	-50.65	6451.75	0.008
L48	36.5 - 31.5 (48)	TP39.0043x38.4891x0.925	5.00	0.00	0.0	111.7990	-53.36	6540.24	0.008
L49	31.5 - 31.25 (49)	TP39.0301x39.0043x0.925	0.25	0.00	0.0	111.8750	-53.51	6544.66	0.008
L50	31.25 - 30.5 (50)	TP39.1073x39.0301x0.925	0.75	0.00	0.0	112.1010	-53.92	6557.93	0.008
L51	30.5 - 30.25 (51)	TP39.1331x39.1073x0.975	0.25	0.00	0.0	118.0860	-54.07	6908.03	0.008
L52	30.25 - 29.83 (52)	TP39.1764x39.1331x0.975	0.42	0.00	0.0	118.2200	-54.31	6915.86	0.008
L53	29.83 - 29.58 (53)	TP39.2021x39.1764x0.875	0.25	0.00	0.0	106.4440	-54.44	6226.98	0.009
L54	29.58 - 28.25 (54)	TP39.3392x39.2021x0.875	1.33	0.00	0.0	106.8250	-55.12	6249.24	0.009
L55	28.25 - 28 (55)	TP39.3649x39.3392x1.225	0.25	0.00	0.0	148.2940	-55.30	8675.19	0.006
L56	28 - 23 (56)	TP39.8801x39.3649x1.225	5.00	0.00	0.0	150.2970	-58.48	8792.37	0.007
L57	23 - 19.25 (57)	TP40.2665x39.8801x1.2	3.75	0.00	0.0	148.7970	-60.88	8704.60	0.007
L58	19.25 - 19 (58)	TP40.2923x40.2665x1.025	0.25	0.00	0.0	127.7500	-61.04	7473.39	0.008
L59	19 - 14.5 (59)	TP40.7559x40.2923x1.025	4.50	0.00	0.0	129.2590	-63.62	7561.63	0.008
L60	14.5 - 14.25 (60)	TP40.7817x40.7559x1.0125	0.25	0.00	0.0	127.8050	-63.78	7476.61	0.009
L61	14.25 - 10.5 (61)	TP41.1681x40.7817x1	3.75	0.00	0.0	127.4940	-65.96	7458.37	0.009
L62	10.5 - 10.25 (62)	TP41.1939x41.1681x1.025	0.25	0.00	0.0	130.6830	-66.13	7644.98	0.009
L63	10.25 - 5.25 (63)	TP41.7091x41.1939x1.025	5.00	0.00	0.0	132.3590	-69.01	7743.03	0.009
L64	5.25 - 0.25 (64)	TP42.2242x41.7091x1	5.00	0.00	0.0	130.8460	-71.88	7654.48	0.009
L65	0.25 - 0 (65)	TP42.25x42.2242x1	0.25	0.00	0.0	130.9280	-72.04	7659.26	0.009

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	168.333 - 163.333 (1)	TP19.8343x19x0.1875	34.86	341.82	0.102	0.00	341.82	0.000
L2	163.333 - 158.333 (2)	TP20.6685x19.8343x0.1875	76.04	367.36	0.207	0.00	367.36	0.000
L3	158.333 - 153.333 (3)	TP21.5028x20.6685x0.1875	140.90	393.43	0.358	0.00	393.43	0.000
L4	153.333 - 148.333 (4)	TP22.337x21.5028x0.1875	208.97	420.00	0.498	0.00	420.00	0.000
L5	148.333 - 143.333 (5)	TP23.1713x22.337x0.1875	278.74	447.01	0.624	0.00	447.01	0.000
L6	143.333 - 138.333 (6)	TP24.0055x23.1713x0.1875	350.20	474.44	0.738	0.00	474.44	0.000
L7	138.333 - 130.5 (7)	TP25.3125x24.0055x0.1875	435.35	497.58	0.875	0.00	497.58	0.000
L8	130.5 - 129.164 (8)	TP25.1492x24.3261x0.25	532.53	741.42	0.718	0.00	741.42	0.000
L9	129.164 - 125.5 (9)	TP25.7524x25.1492x0.25	613.96	773.20	0.794	0.00	773.20	0.000
L10	125.5 - 125.25 (10)	TP25.7936x25.7524x0.25	619.56	775.38	0.799	0.00	775.38	0.000
L11	125.25 - 120.5 (11)	TP26.5755x25.7936x0.25	727.44	817.24	0.890	0.00	817.24	0.000
L12	120.5 - 120.25 (12)	TP26.6167x26.5755x0.6125	733.19	1977.61	0.371	0.00	1977.61	0.000
L13	120.25 - 115.25 (13)	TP27.4398x26.6167x0.6	850.27	2066.17	0.412	0.00	2066.17	0.000
L14	115.25 - 113.83 (14)	TP27.6735x27.4398x0.6	884.23	2102.71	0.421	0.00	2102.71	0.000
L15	113.83 - 113.48 (15)	TP27.7311x27.6735x0.65	892.64	2275.13	0.392	0.00	2275.13	0.000
L16	113.48 - 113.25 (16)	TP27.769x27.7311x0.65	898.18	2281.57	0.394	0.00	2281.57	0.000
L17	113.25 - 108.25 (17)	TP28.5921x27.769x0.6375	1020.70	2380.42	0.429	0.00	2380.42	0.000
L18	108.25 - 103.25 (18)	TP29.4152x28.5921x0.625	1147.07	2478.00	0.463	0.00	2478.00	0.000
L19	103.25 - 98.25 (19)	TP30.2383x29.4152x0.6125	1277.23	2574.05	0.496	0.00	2574.05	0.000
L20	98.25 - 93.25 (20)	TP31.0614x30.2383x0.6	1411.17	2668.32	0.529	0.00	2668.32	0.000
L21	93.25 - 89.82 (21)	TP31.626x31.0614x0.7	1505.23	3199.52	0.470	0.00	3199.52	0.000
L22	89.82 - 89.57 (22)	TP31.6672x31.626x0.7	1512.16	3208.13	0.471	0.00	3208.13	0.000
L23	89.57 - 84.5521 (23)	TP32.4932x31.6672x0.7	1524.80	3223.86	0.473	0.00	3223.86	0.000
L24	84.5521 - 83.5521 (24)	TP32.1551x31.2421x0.75	1682.35	3530.79	0.476	0.00	3530.79	0.000
L25	83.5521 - 82.83 (25)	TP32.2736x32.1551x0.7375	1703.20	3502.67	0.486	0.00	3502.67	0.000
L26	82.83 - 82.58 (26)	TP32.3147x32.2736x0.8625	1710.44	4058.54	0.421	0.00	4058.54	0.000
L27	82.58 - 81.5 (27)	TP32.4919x32.3147x0.8625	1741.83	4105.03	0.424	0.00	4105.03	0.000
L28	81.5 - 81.25 (28)	TP32.533x32.4919x0.6875	1749.13	3335.43	0.524	0.00	3335.43	0.000
L29	81.25 - 76.25 (29)	TP33.3536x32.533x0.675	1897.05	3451.53	0.550	0.00	3451.53	0.000
L30	76.25 - 74.92 (30)	TP33.5719x33.3536x0.6625	1937.04	3437.40	0.564	0.00	3437.40	0.000
L31	74.92 - 74.67 (31)	TP33.613x33.5719x0.8625	1944.59	4405.18	0.441	0.00	4405.18	0.000
L32	74.67 - 74.17 (32)	TP33.695x33.613x0.8625	1959.72	4427.57	0.443	0.00	4427.57	0.000
L33	74.17 - 73.92 (33)	TP33.7361x33.695x0.9375	1967.30	4791.82	0.411	0.00	4791.82	0.000
L34	73.92 - 68.92 (34)	TP34.5567x33.7361x0.9125	2121.34	4914.64	0.432	0.00	4914.64	0.000
L35	68.92 - 64.25 (35)	TP35.3233x34.5567x0.8875	2269.20	5014.13	0.453	0.00	5014.13	0.000
L36	64.25 - 64 (36)	TP35.3643x35.3233x0.7375	2277.22	4231.48	0.538	0.00	4231.48	0.000
L37	64 - 59 (37)	TP36.185x35.3643x0.7375	2439.56	4436.57	0.550	0.00	4436.57	0.000
L38	59 - 54 (38)	TP37.0056x36.185x0.7125	2605.53	4498.31	0.579	0.00	4498.31	0.000
L39	54 - 52 (39)	TP37.3339x37.0056x0.7125	2672.91	4580.84	0.583	0.00	4580.84	0.000
L40	52 - 51.75 (40)	TP37.3749x37.3339x0.7375	2681.38	4742.59	0.565	0.00	4742.59	0.000
L41	51.75 - 51 (41)	TP37.498x37.3749x0.7375	2706.82	4774.83	0.567	0.00	4774.83	0.000
L42	51 - 50.75 (42)	TP37.5391x37.498x0.8625	2715.32	5539.88	0.490	0.00	5539.88	0.000
L43	50.75 - 43.6641 (43)	TP38.7021x37.5391x0.8625	2775.04	5627.87	0.493	0.00	5627.87	0.000
L44	43.6641 - 42.6641 (44)	TP37.854x37.2009x0.9125	2996.41	5939.13	0.505	0.00	5939.13	0.000
L45	42.6641 - 41.75 (45)	TP37.9482x37.854x0.9125	3028.92	5969.82	0.507	0.00	5969.82	0.000
L46	41.75 - 41.5 (46)	TP37.9739x37.9482x0.95	3037.83	6205.04	0.490	0.00	6205.04	0.000
L47	41.5 - 36.5 (47)	TP38.4891x37.9739x0.925	3218.09	6225.62	0.517	0.00	6225.62	0.000
L48	36.5 - 31.5 (48)	TP39.0043x38.4891x0.925	3401.99	6399.63	0.532	0.00	6399.63	0.000
L49	31.5 - 31.25 (49)	TP39.0301x39.0043x0.925	3411.28	6408.40	0.532	0.00	6408.40	0.000
L50	31.25 - 30.5 (50)	TP39.1073x39.0301x0.925	3439.19	6434.72	0.534	0.00	6434.72	0.000
L51	30.5 - 30.25 (51)	TP39.1331x39.1073x0.975	3448.52	6765.18	0.510	0.00	6765.18	0.000
L52	30.25 - 29.83 (52)	TP39.1764x39.1331x0.975	3464.20	6780.73	0.511	0.00	6780.73	0.000
L53	29.83 - 29.58 (53)	TP39.2021x39.1764x0.875	3473.55	6141.52	0.566	0.00	6141.52	0.000
L54	29.58 - 28.25 (54)	TP39.3392x39.2021x0.875	3523.42	6186.02	0.570	0.00	6186.02	0.000
L55	28.25 - 28 (55)	TP39.3649x39.3392x1.225	3532.82	8437.75	0.419	0.00	8437.75	0.000
L56	28 - 23 (56)	TP39.8801x39.3649x1.225	3722.78	8670.83	0.429	0.00	8670.83	0.000
L57	23 - 19.25 (57)	TP40.2665x39.8801x1.2	3867.56	8683.83	0.445	0.00	8683.83	0.000
L58	19.25 - 19 (58)	TP40.2923x40.2665x1.025	3877.28	7527.55	0.515	0.00	7527.55	0.000
L59	19 - 14.5 (59)	TP40.7559x40.2923x1.025	4053.48	7708.66	0.526	0.00	7708.66	0.000
L60	14.5 - 14.25 (60)	TP40.7817x40.7559x1.0125	4063.34	7631.84	0.532	0.00	7631.84	0.000
L61	14.25 - 10.5 (61)	TP41.1681x40.7817x1	4212.23	7693.82	0.547	0.00	7693.82	0.000
L62	10.5 - 10.25 (62)	TP41.1939x41.1681x1.025	4222.23	7881.68	0.536	0.00	7881.68	0.000
L63	10.25 - 5.25 (63)	TP41.7091x41.1939x1.025	4423.88	8087.70	0.547	0.00	8087.70	0.000
L64	5.25 - 0.25 (64)	TP42.2242x41.7091x1	4628.79	8108.77	0.571	0.00	8108.77	0.000
L65	0.25 - 0 (65)	TP42.25x42.2242x1	4639.13	8119.03	0.571	0.00	8119.03	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	168.333 - 163.333 (1)	TP19.8343x19x0.1875	8.06	205.20	0.039	1.46	353.06	0.004
L2	163.333 - 158.333 (2)	TP20.6685x19.8343x0.1875	8.41	213.91	0.039	1.46	383.68	0.004
L3	158.333 - 153.333 (3)	TP21.5028x20.6685x0.1875	13.45	222.63	0.060	3.62	415.57	0.009
L4	153.333 - 148.333 (4)	TP22.337x21.5028x0.1875	13.79	231.34	0.060	3.62	448.74	0.008
L5	148.333 - 143.333 (5)	TP23.1713x22.337x0.1875	14.13	240.05	0.059	3.62	483.18	0.007
L6	143.333 - 138.333 (6)	TP24.0055x23.1713x0.1875	14.47	248.77	0.058	3.61	518.89	0.007
L7	138.333 - 130.5 (7)	TP25.3125x24.0055x0.1875	19.24	256.03	0.075	4.03	549.64	0.007
L8	130.5 - 129.164 (8)	TP25.1492x24.3261x0.25	19.63	346.75	0.057	4.03	756.10	0.005
L9	129.164 - 125.5 (9)	TP25.7524x25.1492x0.25	22.40	355.14	0.063	4.02	793.17	0.005
L10	125.5 - 125.25 (10)	TP25.7936x25.7524x0.25	22.41	355.72	0.063	4.02	795.73	0.005
L11	125.25 - 120.5 (11)	TP26.5755x25.7936x0.25	23.02	366.61	0.063	4.02	845.20	0.005
L12	120.5 - 120.25 (12)	TP26.6167x26.5755x0.6125	23.04	887.22	0.026	4.02	2020.48	0.002
L13	120.25 - 115.25 (13)	TP27.4398x26.6167x0.6	23.80	897.04	0.027	4.01	2108.49	0.002
L14	115.25 - 113.83 (14)	TP27.6735x27.4398x0.6	24.03	904.86	0.027	4.01	2145.38	0.002
L15	113.83 - 113.48 (15)	TP27.7311x27.6735x0.65	24.08	980.54	0.025	4.01	2325.47	0.002
L16	113.48 - 113.25 (16)	TP27.769x27.7311x0.65	24.11	981.91	0.025	4.01	2331.97	0.002
L17	113.25 - 108.25 (17)	TP28.5921x27.769x0.6375	24.90	992.70	0.025	4.01	2430.25	0.002
L18	108.25 - 103.25 (18)	TP29.4152x28.5921x0.625	25.66	1002.32	0.026	4.01	2527.16	0.002
L19	103.25 - 98.25 (19)	TP30.2383x29.4152x0.6125	26.42	1010.79	0.026	4.01	2622.47	0.002
L20	98.25 - 93.25 (20)	TP31.0614x30.2383x0.6	27.17	1018.09	0.027	4.00	2715.90	0.001
L21	93.25 - 89.82 (21)	TP31.626x31.0614x0.7	27.70	1205.89	0.023	4.00	3265.95	0.001
L22	89.82 - 89.57 (22)	TP31.6672x31.626x0.7	27.73	1207.49	0.023	4.00	3274.65	0.001
L23	89.57 - 84.5521 (23)	TP32.4932x31.6672x0.7	27.80	1210.41	0.023	4.00	3290.53	0.001
L24	84.5521 - 83.5521 (24)	TP32.1551x31.2421x0.75	28.83	1312.04	0.022	4.00	3608.50	0.001
L25	83.5521 - 82.83 (25)	TP32.2736x32.1551x0.7375	28.94	1295.55	0.022	4.00	3578.03	0.001
L26	82.83 - 82.58 (26)	TP32.3147x32.2736x0.8625	28.98	1511.10	0.019	4.00	4162.22	0.001
L27	82.58 - 81.5 (27)	TP32.4919x32.3147x0.8625	29.17	1519.62	0.019	4.00	4209.27	0.001
L28	81.5 - 81.25 (28)	TP32.533x32.4919x0.6875	29.20	1219.56	0.024	4.00	3401.20	0.001
L29	81.25 - 76.25 (29)	TP33.3536x32.533x0.675	29.98	1228.72	0.024	4.00	3516.38	0.001
L30	76.25 - 74.92 (30)	TP33.5719x33.3536x0.6625	30.19	1214.48	0.025	4.00	3500.18	0.001
L31	74.92 - 74.67 (31)	TP33.613x33.5719x0.8625	30.22	1573.48	0.019	4.00	4512.93	0.001
L32	74.67 - 74.17 (32)	TP33.695x33.613x0.8625	30.30	1577.42	0.019	4.00	4535.57	0.001
L33	74.17 - 73.92 (33)	TP33.7361x33.695x0.9375	30.35	1712.81	0.018	3.99	4919.77	0.001
L34	73.92 - 68.92 (34)	TP34.5567x33.7361x0.9125	31.28	1710.12	0.018	3.92	5038.70	0.001
L35	68.92 - 64.25 (35)	TP35.3233x34.5567x0.8875	32.07	1702.40	0.019	3.92	5133.95	0.001
L36	64.25 - 64 (36)	TP35.3643x35.3233x0.7375	32.10	1422.52	0.023	3.92	4313.71	0.001
L37	64 - 59 (37)	TP36.185x35.3643x0.7375	32.85	1456.23	0.023	3.91	4520.60	0.001
L38	59 - 54 (38)	TP37.0056x36.185x0.7125	33.56	1440.43	0.023	3.91	4578.23	0.001
L39	54 - 52 (39)	TP37.3339x37.0056x0.7125	33.85	1453.46	0.023	3.91	4661.43	0.001
L40	52 - 51.75 (40)	TP37.3749x37.3339x0.7375	33.88	1505.12	0.023	3.91	4829.21	0.001
L41	51.75 - 51 (41)	TP37.498x37.3749x0.7375	34.00	1510.18	0.023	3.91	4861.72	0.001
L42	51 - 50.75 (42)	TP37.5391x37.498x0.8625	34.03	1762.11	0.019	3.91	5659.79	0.001
L43	50.75 - 43.6641 (43)	TP38.7021x37.5391x0.8625	34.34	1775.88	0.019	3.91	5748.66	0.001
L44	43.6641 - 42.6641 (44)	TP37.854x37.2009x0.9125	35.52	1877.72	0.019	3.91	6074.71	0.001
L45	42.6641 - 41.75 (45)	TP37.9482x37.854x0.9125	35.65	1882.51	0.019	3.91	6105.72	0.001
L46	41.75 - 41.5 (46)	TP37.9739x37.9482x0.95	35.68	1959.25	0.018	3.91	6352.62	0.001
L47	41.5 - 36.5 (47)	TP38.4891x37.9739x0.925	36.44	1935.53	0.019	3.91	6367.25	0.001
L48	36.5 - 31.5 (48)	TP39.0043x38.4891x0.925	37.15	1962.07	0.019	3.91	6543.10	0.001
L49	31.5 - 31.25 (49)	TP39.0301x39.0043x0.925	37.17	1963.40	0.019	3.91	6551.96	0.001
L50	31.25 - 30.5 (50)	TP39.1073x39.0301x0.925	37.29	1967.38	0.019	3.91	6578.56	0.001
L51	30.5 - 30.25 (51)	TP39.1331x39.1073x0.975	37.31	2072.41	0.018	3.91	6925.36	0.001
L52	30.25 - 29.83 (52)	TP39.1764x39.1331x0.975	37.38	2074.76	0.018	3.91	6941.07	0.001
L53	29.83 - 29.58 (53)	TP39.2021x39.1764x0.875	37.41	1868.09	0.020	3.91	6270.25	0.001
L54	29.58 - 28.25 (54)	TP39.3392x39.2021x0.875	37.62	1874.77	0.020	3.91	6315.17	0.001
L55	28.25 - 28 (55)	TP39.3649x39.3392x1.225	37.63	2602.56	0.014	3.91	8692.83	0.000
L56	28 - 23 (56)	TP39.8801x39.3649x1.225	38.37	2637.71	0.015	3.91	8929.25	0.000
L57	23 - 19.25 (57)	TP40.2665x39.8801x1.2	38.88	2611.38	0.015	3.91	8934.17	0.000
L58	19.25 - 19 (58)	TP40.2923x40.2665x1.025	38.90	2242.02	0.017	3.91	7709.92	0.001
L59	19 - 14.5 (59)	TP40.7559x40.2923x1.025	39.44	2268.49	0.017	3.91	7893.07	0.000
L60	14.5 - 14.25 (60)	TP40.7817x40.7559x1.0125	39.45	2242.98	0.018	3.91	7811.83	0.001
L61	14.25 - 10.5 (61)	TP41.1681x40.7817x1	39.99	2237.51	0.018	3.89	7870.94	0.000
L62	10.5 - 10.25 (62)	TP41.1939x41.1681x1.025	40.00	2293.49	0.017	3.88	8068.02	0.000
L63	10.25 - 5.25 (63)	TP41.7091x41.1939x1.025	40.69	2322.91	0.018	3.85	8276.30	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 $\frac{T_u}{\phi T_n}$
L64	5.25 - 0.25 (64)	TP42.2242x41.7091x1	41.33	2296.34	0.018	3.83	8290.28	0.000
L65	0.25 - 0 (65)	TP42.25x42.2242x1	41.34	2297.78	0.018	3.82	8300.65	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	168.333 - 163.333 (1)	0.006	0.102	0.000	0.039	0.004	0.110	1.050	4.8.2
L2	163.333 - 158.333 (2)	0.006	0.207	0.000	0.039	0.004	0.215	1.050	4.8.2
L3	158.333 - 153.333 (3)	0.009	0.358	0.000	0.060	0.009	0.372	1.050	4.8.2
L4	153.333 - 148.333 (4)	0.009	0.498	0.000	0.060	0.008	0.511	1.050	4.8.2
L5	148.333 - 143.333 (5)	0.009	0.624	0.000	0.059	0.007	0.637	1.050	4.8.2
L6	143.333 - 138.333 (6)	0.010	0.738	0.000	0.058	0.007	0.752	1.050	4.8.2
L7	138.333 - 130.5 (7)	0.013	0.875	0.000	0.075	0.007	0.894	1.050	4.8.2
L8	130.5 - 129.164 (8)	0.010	0.718	0.000	0.057	0.005	0.732	1.050	4.8.2
L9	129.164 - 125.5 (9)	0.012	0.794	0.000	0.063	0.005	0.811	1.050	4.8.2
L10	125.5 - 125.25 (10)	0.012	0.799	0.000	0.063	0.005	0.816	1.050	4.8.2
L11	125.25 - 120.5 (11)	0.013	0.890	0.000	0.063	0.005	0.907	1.050	4.8.2
L12	120.5 - 120.25 (12)	0.005	0.371	0.000	0.026	0.002	0.377	1.050	4.8.2
L13	120.25 - 115.25 (13)	0.006	0.412	0.000	0.027	0.002	0.418	1.050	4.8.2
L14	115.25 - 113.83 (14)	0.006	0.421	0.000	0.027	0.002	0.427	1.050	4.8.2
L15	113.83 - 113.48 (15)	0.005	0.392	0.000	0.025	0.002	0.398	1.050	4.8.2
L16	113.48 - 113.25 (16)	0.005	0.394	0.000	0.025	0.002	0.400	1.050	4.8.2
L17	113.25 - 108.25 (17)	0.006	0.429	0.000	0.025	0.002	0.435	1.050	4.8.2
L18	108.25 - 103.25 (18)	0.006	0.463	0.000	0.026	0.002	0.470	1.050	4.8.2
L19	103.25 - 98.25 (19)	0.007	0.496	0.000	0.026	0.002	0.503	1.050	4.8.2
L20	98.25 - 93.25 (20)	0.007	0.529	0.000	0.027	0.001	0.537	1.050	4.8.2
L21	93.25 - 89.82 (21)	0.006	0.470	0.000	0.023	0.001	0.477	1.050	4.8.2
L22	89.82 - 89.57 (22)	0.006	0.471	0.000	0.023	0.001	0.478	1.050	4.8.2
L23	89.57 - 84.5521 (23)	0.006	0.473	0.000	0.023	0.001	0.480	1.050	4.8.2
L24	84.5521 - 83.5521 (24)	0.006	0.476	0.000	0.022	0.001	0.483	1.050	4.8.2
L25	83.5521 - 82.83 (25)	0.007	0.486	0.000	0.022	0.001	0.493	1.050	4.8.2
L26	82.83 - 82.58 (26)	0.006	0.421	0.000	0.019	0.001	0.428	1.050	4.8.2
L27	82.58 - 81.5 (27)	0.006	0.424	0.000	0.019	0.001	0.430	1.050	4.8.2
L28	81.5 - 81.25 (28)	0.007	0.524	0.000	0.024	0.001	0.532	1.050	4.8.2
L29	81.25 - 76.25 (29)	0.008	0.550	0.000	0.024	0.001	0.558	1.050	4.8.2
L30	76.25 - 74.92 (30)	0.008	0.564	0.000	0.025	0.001	0.572	1.050	4.8.2
L31	74.92 - 74.67 (31)	0.006	0.441	0.000	0.019	0.001	0.448	1.050	4.8.2
L32	74.67 - 74.17 (32)	0.006	0.443	0.000	0.019	0.001	0.449	1.050	4.8.2
L33	74.17 - 73.92 (33)	0.006	0.411	0.000	0.018	0.001	0.416	1.050	4.8.2
L34	73.92 - 68.92 (34)	0.006	0.432	0.000	0.018	0.001	0.438	1.050	4.8.2
L35	68.92 - 64.25 (35)	0.006	0.453	0.000	0.019	0.001	0.459	1.050	4.8.2
L36	64.25 - 64 (36)	0.008	0.538	0.000	0.023	0.001	0.546	1.050	4.8.2
L37	64 - 59 (37)	0.008	0.550	0.000	0.023	0.001	0.558	1.050	4.8.2
L38	59 - 54 (38)	0.008	0.579	0.000	0.023	0.001	0.588	1.050	4.8.2
L39	54 - 52 (39)	0.008	0.583	0.000	0.023	0.001	0.592	1.050	4.8.2
L40	52 - 51.75 (40)	0.008	0.565	0.000	0.023	0.001	0.574	1.050	4.8.2
L41	51.75 - 51 (41)	0.008	0.567	0.000	0.023	0.001	0.576	1.050	4.8.2
L42	51 - 50.75 (42)	0.007	0.490	0.000	0.019	0.001	0.498	1.050	4.8.2
L43	50.75 - 43.6641 (43)	0.007	0.493	0.000	0.019	0.001	0.501	1.050	4.8.2
L44	43.6641 - 42.6641 (44)	0.008	0.505	0.000	0.019	0.001	0.512	1.050	4.8.2
L45	42.6641 - 41.75 (45)	0.008	0.507	0.000	0.019	0.001	0.515	1.050	4.8.2
L46	41.75 - 41.5 (46)	0.007	0.490	0.000	0.018	0.001	0.497	1.050	4.8.2
L47	41.5 - 36.5 (47)	0.008	0.517	0.000	0.019	0.001	0.525	1.050	4.8.2
L48	36.5 - 31.5 (48)	0.008	0.532	0.000	0.019	0.001	0.540	1.050	4.8.2
L49	31.5 - 31.25 (49)	0.008	0.532	0.000	0.019	0.001	0.541	1.050	4.8.2
L50	31.25 - 30.5 (50)	0.008	0.534	0.000	0.019	0.001	0.543	1.050	4.8.2
L51	30.5 - 30.25 (51)	0.008	0.510	0.000	0.018	0.001	0.518	1.050	4.8.2
L52	30.25 - 29.83 (52)	0.008	0.511	0.000	0.018	0.001	0.519	1.050	4.8.2
L53	29.83 - 29.58 (53)	0.009	0.566	0.000	0.020	0.001	0.575	1.050	4.8.2
L54	29.58 - 28.25 (54)	0.009	0.570	0.000	0.020	0.001	0.579	1.050	4.8.2
L55	28.25 - 28 (55)	0.006	0.419	0.000	0.014	0.000	0.425	1.050	4.8.2

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
L56	28 - 23 (56)	0.007	0.429	0.000	0.015	0.000	0.436	1.050	4.8.2
L57	23 - 19.25 (57)	0.007	0.445	0.000	0.015	0.000	0.453	1.050	4.8.2
L58	19.25 - 19 (58)	0.008	0.515	0.000	0.017	0.001	0.524	1.050	4.8.2
L59	19 - 14.5 (59)	0.008	0.526	0.000	0.017	0.000	0.535	1.050	4.8.2
L60	14.5 - 14.25 (60)	0.009	0.532	0.000	0.018	0.001	0.541	1.050	4.8.2
L61	14.25 - 10.5 (61)	0.009	0.547	0.000	0.018	0.000	0.557	1.050	4.8.2
L62	10.5 - 10.25 (62)	0.009	0.536	0.000	0.017	0.000	0.545	1.050	4.8.2
L63	10.25 - 5.25 (63)	0.009	0.547	0.000	0.018	0.000	0.556	1.050	4.8.2
L64	5.25 - 0.25 (64)	0.009	0.571	0.000	0.018	0.000	0.581	1.050	4.8.2
L65	0.25 - 0 (65)	0.009	0.571	0.000	0.018	0.000	0.581	1.050	4.8.2

Section Capacity Table

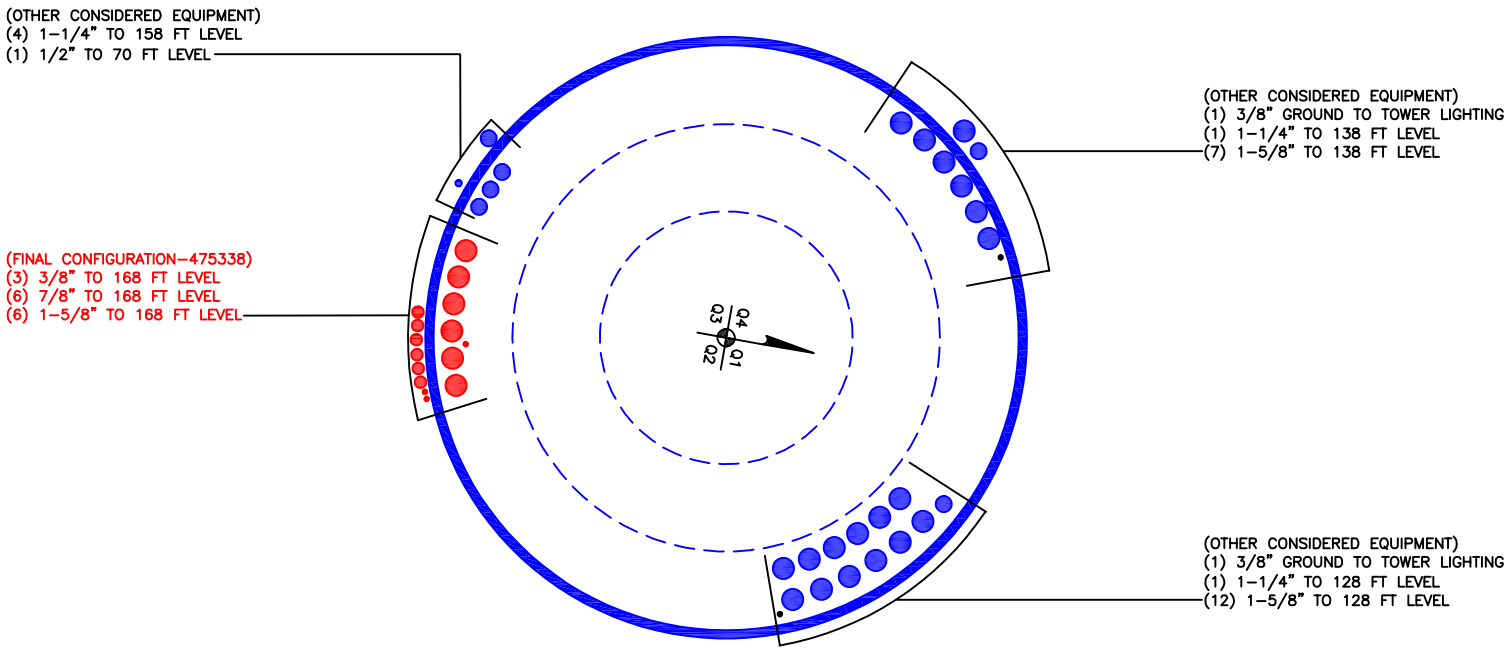
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	168.333 - 163.333	Pole	TP19.8343x19x0.1875	1	-4.17	718.20	10.5	Pass
L2	163.333 - 158.333	Pole	TP20.6685x19.8343x0.1875	2	-4.44	748.69	20.5	Pass
L3	158.333 - 153.333	Pole	TP21.5028x20.6685x0.1875	3	-6.77	779.19	35.4	Pass
L4	153.333 - 148.333	Pole	TP22.337x21.5028x0.1875	4	-7.13	809.69	48.7	Pass
L5	148.333 - 143.333	Pole	TP23.1713x22.337x0.1875	5	-7.53	840.18	60.7	Pass
L6	143.333 - 138.333	Pole	TP24.0055x23.1713x0.1875	6	-7.95	870.68	71.6	Pass
L7	138.333 - 130.5	Pole	TP25.3125x24.0055x0.1875	7	-10.68	896.11	85.2	Pass
L8	130.5 - 129.164	Pole	TP25.1492x24.3261x0.25	8	-11.48	1213.61	69.7	Pass
L9	129.164 - 125.5	Pole	TP25.7524x25.1492x0.25	9	-14.26	1243.01	77.2	Pass
L10	125.5 - 125.25	Pole	TP25.7936x25.7524x0.25	10	-14.33	1245.02	77.7	Pass
L11	125.25 - 120.5	Pole	TP26.5755x25.7936x0.25	11	-15.34	1283.12	86.4	Pass
L12	120.5 - 120.25	Pole	TP26.6167x26.5755x0.6125	12	-15.43	3105.28	35.9	Pass
L13	120.25 - 115.25	Pole	TP27.4398x26.6167x0.6	13	-16.82	3139.66	39.8	Pass
L14	115.25 - 113.83	Pole	TP27.6735x27.4398x0.6	14	-17.22	3167.00	40.7	Pass
L15	113.83 - 113.48	Pole	TP27.7311x27.6735x0.65	15	-17.34	3431.88	37.9	Pass
L16	113.48 - 113.25	Pole	TP27.769x27.7311x0.65	16	-17.41	3436.68	38.1	Pass
L17	113.25 - 108.25	Pole	TP28.5921x27.769x0.6375	17	-18.92	3474.44	41.4	Pass
L18	108.25 - 103.25	Pole	TP29.4152x28.5921x0.625	18	-20.46	3508.13	44.7	Pass
L19	103.25 - 98.25	Pole	TP30.2383x29.4152x0.6125	19	-22.02	3537.75	48.0	Pass
L20	98.25 - 93.25	Pole	TP31.0614x30.2383x0.6	20	-23.61	3563.30	51.1	Pass
L21	93.25 - 89.82	Pole	TP31.626x31.0614x0.7	21	-24.80	4220.60	45.4	Pass
L22	89.82 - 89.57	Pole	TP31.6672x31.626x0.7	22	-24.89	4226.22	45.5	Pass
L23	89.57 - 84.5521	Pole	TP32.4932x31.6672x0.7	23	-25.05	4236.45	45.7	Pass
L24	84.5521 - 83.5521	Pole	TP32.1551x31.2421x0.75	24	-28.20	4592.12	46.0	Pass
L25	83.5521 - 82.83	Pole	TP32.2736x32.1551x0.7375	25	-28.45	4534.44	47.0	Pass
L26	82.83 - 82.58	Pole	TP32.3147x32.2736x0.8625	26	-28.55	5288.86	40.7	Pass
L27	82.58 - 81.5	Pole	TP32.4919x32.3147x0.8625	27	-28.98	5318.67	41.0	Pass
L28	81.5 - 81.25	Pole	TP32.533x32.4919x0.6875	28	-29.08	4268.47	50.7	Pass
L29	81.25 - 76.25	Pole	TP33.3536x32.533x0.675	29	-30.88	4300.51	53.1	Pass
L30	76.25 - 74.92	Pole	TP33.5719x33.3536x0.6625	30	-31.36	4250.68	54.5	Pass
L31	74.92 - 74.67	Pole	TP33.613x33.5719x0.8625	31	-31.48	5507.18	42.7	Pass
L32	74.67 - 74.17	Pole	TP33.695x33.613x0.8625	32	-31.70	5520.97	42.8	Pass
L33	74.17 - 73.92	Pole	TP33.7361x33.695x0.9375	33	-31.81	5994.85	39.7	Pass
L34	73.92 - 68.92	Pole	TP34.5567x33.7361x0.9125	34	-34.04	5985.44	41.7	Pass
L35	68.92 - 64.25	Pole	TP35.3233x34.5567x0.8875	35	-36.09	5958.40	43.7	Pass
L36	64.25 - 64	Pole	TP35.3643x35.3233x0.7375	36	-36.19	4978.82	52.0	Pass
L37	64 - 59	Pole	TP36.185x35.3643x0.7375	37	-38.06	5096.82	53.2	Pass
L38	59 - 54	Pole	TP37.0056x36.185x0.7125	38	-39.96	5041.52	56.0	Pass
L39	54 - 52	Pole	TP37.3339x37.0056x0.7125	39	-40.74	5087.11	56.4	Pass
L40	52 - 51.75	Pole	TP37.3749x37.3339x0.7375	40	-40.85	5267.92	54.7	Pass
L41	51.75 - 51	Pole	TP37.498x37.3749x0.7375	41	-41.16	5285.62	54.8	Pass
L42	51 - 50.75	Pole	TP37.5391x37.498x0.8625	42	-41.29	6167.36	47.4	Pass
L43	50.75 - 43.6641	Pole	TP38.7021x37.5391x0.8625	43	-42.06	6215.60	47.7	Pass
L44	43.6641 - 42.6641	Pole	TP37.854x37.2009x0.9125	44	-47.37	6572.02	48.8	Pass
L45	42.6641 - 41.75	Pole	TP37.9482x37.854x0.9125	45	-47.84	6588.78	49.1	Pass
L46	41.75 - 41.5	Pole	TP37.9739x37.9482x0.95	46	-47.98	6857.38	47.4	Pass
L47	41.5 - 36.5	Pole	TP38.4891x37.9739x0.925	47	-50.65	6774.34	50.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L48	36.5 - 31.5	Pole	TP39.0043x38.4891x0.925	48	-53.36	6867.25	51.4	Pass
L49	31.5 - 31.25	Pole	TP39.0301x39.0043x0.925	49	-53.51	6871.89	51.5	Pass
L50	31.25 - 30.5	Pole	TP39.1073x39.0301x0.925	50	-53.92	6885.83	51.7	Pass
L51	30.5 - 30.25	Pole	TP39.1331x39.1073x0.975	51	-54.07	7253.43	49.3	Pass
L52	30.25 - 29.83	Pole	TP39.1764x39.1331x0.975	52	-54.31	7261.65	49.4	Pass
L53	29.83 - 29.58	Pole	TP39.2021x39.1764x0.875	53	-54.44	6538.33	54.7	Pass
L54	29.58 - 28.25	Pole	TP39.3392x39.2021x0.875	54	-55.12	6561.70	55.1	Pass
L55	28.25 - 28	Pole	TP39.3649x39.3392x1.225	55	-55.30	9108.95	40.5	Pass
L56	28 - 23	Pole	TP39.8801x39.3649x1.225	56	-58.48	9231.99	41.5	Pass
L57	23 - 19.25	Pole	TP40.2665x39.8801x1.2	57	-60.88	9139.83	43.1	Pass
L58	19.25 - 19	Pole	TP40.2923x40.2665x1.025	58	-61.04	7847.06	49.9	Pass
L59	19 - 14.5	Pole	TP40.7559x40.2923x1.025	59	-63.62	7939.71	50.9	Pass
L60	14.5 - 14.25	Pole	TP40.7817x40.7559x1.0125	60	-63.78	7850.44	51.6	Pass
L61	14.25 - 10.5	Pole	TP41.1681x40.7817x1	61	-65.96	7831.29	53.0	Pass
L62	10.5 - 10.25	Pole	TP41.1939x41.1681x1.025	62	-66.13	8027.23	51.9	Pass
L63	10.25 - 5.25	Pole	TP41.7091x41.1939x1.025	63	-69.01	8130.18	53.0	Pass
L64	5.25 - 0.25	Pole	TP42.2242x41.7091x1	64	-71.88	8037.20	55.3	Pass
L65	0.25 - 0	Pole	TP42.25x42.2242x1	65	-72.04	8042.22	55.3	Pass
							Summary	
						Pole (L11)	86.4	Pass
						RATING =	**86.4**	**Pass**

***NOTE: Above stress ratios for reinforced sections are approximate. More exact calculations are presented in Appendix C.**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 842859 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 842859

Work Order: 1706223

CROWN CASTLE

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	168.3333	37.8333	3.6641	18	19	25.3125	0.1875	Auto	A572-65
2	134.1641	49.612	4.5625	18	24.33	32.4932	0.25	Auto	A572-65
3	89.1146	45.4505	5.3385	18	31.24	38.7021	0.3125	Auto	A572-65
4	49.0026	49.0026	0	18	37.20	42.25	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	89.83	113.83	plate	5"x1.25"	3				E						E						E		
2	74.17	89.92	plate	5"x1.25"	4			E					E						E				E
3	47.375	74.17	plate	5"x1.25"	4		E				E					E				E			
4	29.83	45.42	plate	6"x1.25"	4			E					E						E				E
5	0	28.25	plate	6"x1.25" (Welded)	4		E				E					E				E			
6	0	41.75	plate	CI-SFP-060100 (Lu=12	4	E						E			E						E		
7	41.75	82.83	plate	CI-SFP-045100 (Lu=12	4	E						E			E						E		
8	19.25	29.83	plate	CCI-SFP-045100	4			E					E						E				E
9	64.25	74.92	plate	CCI-SFP-045100	4			E					E						E				E
10	87.9	125.5	plate	I-SFP-045100 (Modifie	3			E					E						E				
11																							
12	10.5	31.5	plate	CCI-SFP-060100	2									P								P	
13	14.5	30.5	plate	CI-SFP-060100 (Lu=12	2				P									P					
14	31.5	52	plate	CCI-SFP-045100	2									P								P	
15	30.5	51	plate	CI-SFP-045100 (Lu=12	2				P									P					
16	81.5	88.5	plate	CCI-SFP-045100	3					P						P						P	
17	0	10.5	plate	TS 6.5"x1"	2			P									P						
18	0	14.5	plate	TS 6.5"x1"	2					P									P				
19	113.5	120.5	plate	CCI-SFP-040125	3						P						P						P
20																							

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	5	1.25	6.25	0.625	24.000	24.000	17.250	4.688	1.1875	A572-65
2	5	1.25	6.25	0.625	24.000	24.000	17.250	4.688	1.1875	A572-65
3	5	1.25	6.25	0.625	24.000	24.000	17.250	4.688	1.1875	A572-65
4	6	1.25	7.5	0.625	30.000	30.000	18.000	5.938	1.1875	A572-65
5	6	1.25	7.5	0.625	n/a	30.000	18.000	5.938	1.1875	A572-65
6	6	1	6	0.5	24.000	24.000	12.000	4.750	1.1875	A572-65
7	4.5	1	4.5	0.5	18.000	18.000	12.000	3.250	1.1875	A572-65
8	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
9	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
10	4.5	1	4.5	0.5	18.000	22.000	20.000	3.250	1.1875	A572-65
12	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
13	6	1	6	0.5	24.000	24.000	12.000	4.750	1.1875	A572-65
14	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
15	4.5	1	4.5	0.5	18.000	18.000	12.000	3.250	1.1875	A572-65
16	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	A572-65
17	1	6.5	6.5	3.25	n/a	n/a	0.000	6.500	0.0000	A572-65
18	1	6.5	6.5	3.25	n/a	n/a	0.000	6.500	0.0000	A572-65
19	4	1.25	5	0.625	18.000	18.000	27.000	3.438	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	168.333 - 163.333	5		18	19.000	19.834	0.1875	A572-65	1.000
2	163.333 - 158.333	5		18	19.834	20.669	0.1875	A572-65	1.000
3	158.333 - 153.333	5		18	20.669	21.503	0.1875	A572-65	1.000
4	153.333 - 148.333	5		18	21.503	22.337	0.1875	A572-65	1.000
5	148.333 - 143.333	5		18	22.337	23.171	0.1875	A572-65	1.000
6	143.333 - 138.333	5		18	23.171	24.006	0.1875	A572-65	1.000
7	138.333 - 134.164	7.8333	3.6641	18	24.006	25.313	0.1875	A572-65	1.000
8	134.164 - 129.164	5		18	24.326	25.149	0.25	A572-65	1.000
9	129.164 - 125.5	3.6641		18	25.149	25.752	0.25	A572-65	1.000
10	125.5 - 125.25	0.25		18	25.752	25.794	0.25	A572-65	1.000
11	125.25 - 120.5	4.75		18	25.794	26.576	0.25	A572-65	1.000
12	120.5 - 120.25	0.25		18	26.576	26.617	0.6125	A572-65	0.978
13	120.25 - 115.25	5		18	26.617	27.440	0.6	A572-65	0.980
14	115.25 - 113.83	1.42		18	27.440	27.674	0.6	A572-65	0.975
15	113.83 - 113.48	0.35		18	27.674	27.731	0.65	A572-65	0.968
16	113.48 - 113.25	0.23		18	27.731	27.769	0.65	A572-65	0.967
17	113.25 - 108.25	5		18	27.769	28.592	0.6375	A572-65	0.968
18	108.25 - 103.25	5		18	28.592	29.415	0.625	A572-65	0.970
19	103.25 - 98.25	5		18	29.415	30.238	0.6125	A572-65	0.973
20	98.25 - 93.25	5		18	30.238	31.061	0.6	A572-65	0.977
21	93.25 - 89.82	3.43		18	31.061	31.626	0.7	A572-65	0.923
22	89.82 - 89.57	0.25		18	31.626	31.667	0.7	A572-65	0.922
23	89.57 - 89.1146	5.0179	4.5625	18	31.667	32.493	0.7	A572-65	0.921
24	89.1146 - 83.5521	5.5625		18	31.242	32.155	0.75	A572-65	0.937
25	83.5521 - 82.83	0.7221		18	32.155	32.274	0.7375	A572-65	0.951
26	82.83 - 82.58	0.25		18	32.274	32.315	0.8625	A572-65	1.025
27	82.58 - 81.5	1.08		18	32.315	32.492	0.8625	A572-65	1.021
28	81.5 - 81.25	0.25		18	32.492	32.533	0.6875	A572-65	1.079
29	81.25 - 76.25	5		18	32.533	33.354	0.675	A572-65	1.082
30	76.25 - 74.92	1.33		18	33.354	33.572	0.6625	A572-65	1.098
31	74.92 - 74.67	0.25		18	33.572	33.613	0.8625	A572-65	1.049
32	74.67 - 74.17	0.5		18	33.613	33.695	0.8625	A572-65	1.047
33	74.17 - 73.92	0.25		18	33.695	33.736	0.9375	A572-65	0.965
34	73.92 - 68.92	5		18	33.736	34.557	0.9125	A572-65	0.975
35	68.92 - 64.25	4.67		18	34.557	35.323	0.8875	A572-65	0.987
36	64.25 - 64	0.25		18	35.323	35.364	0.7375	A572-65	0.959
37	64 - 59	5		18	35.364	36.185	0.7375	A572-65	0.947
38	59 - 54	5		18	36.185	37.006	0.7125	A572-65	0.967
39	54 - 52	2		18	37.006	37.334	0.7125	A572-65	0.963
40	52 - 51.75	0.25		18	37.334	37.375	0.7375	A572-65	1.035
41	51.75 - 51	0.75		18	37.375	37.498	0.7375	A572-65	1.033
42	51 - 50.75	0.25		18	37.498	37.539	0.8625	A572-65	0.975
43	50.75 - 49.0026	7.0859	5.3385	18	37.539	38.702	0.8625	A572-65	0.971
44	49.0026 - 42.6641	6.3385		18	37.201	37.854	0.9125	A572-65	1.034
45	42.6641 - 41.75	0.9141		18	37.854	37.948	0.9125	A572-65	1.032
46	41.75 - 41.5	0.25		18	37.948	37.974	0.95	A572-65	1.046
47	41.5 - 36.5	5		18	37.974	38.489	0.925	A572-65	1.064
48	36.5 - 31.5	5		18	38.489	39.004	0.925	A572-65	1.055
49	31.5 - 31.25	0.25		18	39.004	39.030	0.925	A572-65	1.082
50	31.25 - 30.5	0.75		18	39.030	39.107	0.925	A572-65	1.080
51	30.5 - 30.25	0.25		18	39.107	39.133	0.975	A572-65	1.051
52	30.25 - 29.83	0.42		18	39.133	39.176	0.975	A572-65	1.050
53	29.83 - 29.58	0.25		18	39.176	39.202	0.875	A572-65	1.054
54	29.58 - 28.25	1.33		18	39.202	39.339	0.875	A572-65	1.052
55	28.25 - 28	0.25		18	39.339	39.365	1.225	A572-65	0.960
56	28 - 23	5		18	39.365	39.880	1.225	A572-65	0.952
57	23 - 19.25	3.75		18	39.880	40.267	1.2	A572-65	0.964
58	19.25 - 19	0.25		18	40.267	40.292	1.025	A572-65	0.982
59	19 - 14.5	4.5		18	40.292	40.756	1.025	A572-65	0.975
60	14.5 - 14.25	0.25		18	40.756	40.782	1.0125	A572-65	0.994
61	14.25 - 10.5	3.75		18	40.782	41.168	1	A572-65	1.000
62	10.5 - 10.25	0.25		18	41.168	41.194	1.025	A572-65	0.984
63	10.25 - 5.25	5		18	41.194	41.709	1.025	A572-65	0.976
64	5.25 - 0.25	5		18	41.709	42.224	1	A572-65	0.992
65	0.25 - 0	0.25		18	42.224	42.250	1	A572-65	0.992

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	168.333 - 163.333	4.17	34.86	8.06
2	163.333 - 158.333	4.44	76.04	8.41
3	158.333 - 153.333	6.77	140.90	13.45
4	153.333 - 148.333	7.13	208.97	13.79
5	148.333 - 143.333	7.53	278.74	14.13
6	143.333 - 138.333	7.95	350.20	14.47
7	138.333 - 134.164	10.68	435.35	19.24
8	134.164 - 129.164	11.48	532.53	19.63
9	129.164 - 125.5	14.26	613.96	22.40
10	125.5 - 125.25	14.33	619.56	22.41
11	125.25 - 120.5	15.34	727.44	23.02
12	120.5 - 120.25	15.43	733.19	23.04
13	120.25 - 115.25	16.82	850.27	23.80
14	115.25 - 113.83	17.22	884.22	24.03
15	113.83 - 113.48	17.34	892.64	24.08
16	113.48 - 113.25	17.41	898.18	24.11
17	113.25 - 108.25	18.92	1020.70	24.90
18	108.25 - 103.25	20.46	1147.06	25.66
19	103.25 - 98.25	22.02	1277.23	26.42
20	98.25 - 93.25	23.61	1411.17	27.17
21	93.25 - 89.82	24.80	1505.23	27.70
22	89.82 - 89.57	24.89	1512.16	27.73
23	89.57 - 89.1146	25.05	1524.80	27.80
24	89.1146 - 83.5521	28.20	1682.35	28.83
25	83.5521 - 82.83	28.45	1703.20	28.94
26	82.83 - 82.58	28.55	1710.44	28.98
27	82.58 - 81.5	28.98	1741.84	29.17
28	81.5 - 81.25	29.08	1749.13	29.20
29	81.25 - 76.25	30.88	1897.05	29.98
30	76.25 - 74.92	31.36	1937.04	30.19
31	74.92 - 74.67	31.48	1944.59	30.22
32	74.67 - 74.17	31.70	1959.72	30.30
33	74.17 - 73.92	31.81	1967.30	30.35
34	73.92 - 68.92	34.04	2121.35	31.28
35	68.92 - 64.25	36.09	2269.20	32.07
36	64.25 - 64	36.19	2277.22	32.10
37	64 - 59	38.06	2439.56	32.85
38	59 - 54	39.96	2605.52	33.56
39	54 - 52	40.74	2672.91	33.85
40	52 - 51.75	40.85	2681.38	33.88
41	51.75 - 51	41.16	2706.83	34.00
42	51 - 50.75	41.29	2715.33	34.03
43	50.75 - 49.0026	42.06	2775.04	34.34
44	49.0026 - 42.6641	47.37	2996.41	35.52
45	42.6641 - 41.75	47.84	3028.92	35.65
46	41.75 - 41.5	47.98	3037.84	35.68
47	41.5 - 36.5	50.65	3218.09	36.44
48	36.5 - 31.5	53.36	3401.99	37.15
49	31.5 - 31.25	53.51	3411.28	37.17
50	31.25 - 30.5	53.92	3439.19	37.29
51	30.5 - 30.25	54.07	3448.52	37.31
52	30.25 - 29.83	54.31	3464.20	37.38
53	29.83 - 29.58	54.44	3473.55	37.41
54	29.58 - 28.25	55.12	3523.42	37.62
55	28.25 - 28	55.30	3532.82	37.63
56	28 - 23	58.48	3722.77	38.37
57	23 - 19.25	60.88	3867.56	38.88
58	19.25 - 19	61.04	3877.28	38.90
59	19 - 14.5	63.62	4053.49	39.44
60	14.5 - 14.25	63.78	4063.35	39.45
61	14.25 - 10.5	65.96	4212.23	39.99
62	10.5 - 10.25	66.13	4222.22	40.00
63	10.25 - 5.25	69.01	4423.88	40.69
64	5.25 - 0.25	71.88	4628.79	41.33
65	0.25 - 0	72.04	4639.12	41.34

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
168.33 - 163.33	Pole	TP19.834x19x0.1875	Pole	10.2%	Pass
163.33 - 158.33	Pole	TP20.669x19.834x0.1875	Pole	20.2%	Pass
158.33 - 153.33	Pole	TP21.503x20.669x0.1875	Pole	34.9%	Pass
153.33 - 148.33	Pole	TP22.337x21.503x0.1875	Pole	48.2%	Pass
148.33 - 143.33	Pole	TP23.171x22.337x0.1875	Pole	60.2%	Pass
143.33 - 138.33	Pole	TP24.006x23.171x0.1875	Pole	71.2%	Pass
138.33 - 134.16	Pole	TP25.313x24.006x0.1875	Pole	84.5%	Pass
134.16 - 129.16	Pole	TP25.149x24.326x0.25	Pole	69.2%	Pass
129.16 - 125.5	Pole	TP25.752x25.149x0.25	Pole	76.6%	Pass
125.5 - 125.25	Pole	TP25.794x25.752x0.25	Pole	77.1%	Pass
125.25 - 120.5	Pole	TP26.576x25.794x0.25	Pole	85.8%	Pass
120.5 - 120.25	Pole + Reinf.	TP26.617x26.576x0.6125	Reinf. 19 Tension Rupture	67.8%	Pass
120.25 - 115.25	Pole + Reinf.	TP27.44x26.617x0.6	Reinf. 19 Tension Rupture	75.2%	Pass
115.25 - 113.83	Pole + Reinf.	TP27.674x27.44x0.6	Reinf. 19 Tension Rupture	77.3%	Pass
113.83 - 113.48	Pole + Reinf.	TP27.731x27.674x0.65	Reinf. 10 Tension Rupture	63.3%	Pass
113.48 - 113.25	Pole + Reinf.	TP27.769x27.731x0.65	Reinf. 10 Tension Rupture	63.6%	Pass
113.25 - 108.25	Pole + Reinf.	TP28.592x27.769x0.6375	Reinf. 10 Tension Rupture	69.4%	Pass
108.25 - 103.25	Pole + Reinf.	TP29.415x28.592x0.625	Reinf. 10 Tension Rupture	75.0%	Pass
103.25 - 98.25	Pole + Reinf.	TP30.238x29.415x0.6125	Reinf. 10 Tension Rupture	80.4%	Pass
98.25 - 93.25	Pole + Reinf.	TP31.061x30.238x0.6	Reinf. 10 Tension Rupture	85.5%	Pass
93.25 - 89.82	Pole + Reinf.	TP31.626x31.061x0.7	Reinf. 10 Tension Rupture	82.2%	Pass
89.82 - 89.57	Pole + Reinf.	TP31.667x31.626x0.7	Reinf. 10 Tension Rupture	82.4%	Pass
89.57 - 89.11	Pole + Reinf.	TP32.493x31.667x0.7	Reinf. 10 Tension Rupture	82.8%	Pass
89.11 - 83.55	Pole + Reinf.	TP32.155x31.242x0.75	Reinf. 16 Tension Rupture	84.8%	Pass
83.55 - 82.83	Pole + Reinf.	TP32.274x32.155x0.7375	Reinf. 16 Tension Rupture	85.4%	Pass
82.83 - 82.58	Pole + Reinf.	TP32.315x32.274x0.8625	Reinf. 16 Tension Rupture	69.6%	Pass
82.58 - 81.5	Pole + Reinf.	TP32.492x32.315x0.8625	Reinf. 16 Tension Rupture	70.4%	Pass
81.5 - 81.25	Pole + Reinf.	TP32.533x32.492x0.6875	Reinf. 2 Tension Rupture	85.7%	Pass
81.25 - 76.25	Pole + Reinf.	TP33.354x32.533x0.675	Reinf. 2 Tension Rupture	89.5%	Pass
76.25 - 74.92	Pole + Reinf.	TP33.572x33.354x0.6625	Reinf. 2 Tension Rupture	90.5%	Pass
74.92 - 74.67	Pole + Reinf.	TP33.613x33.572x0.8625	Reinf. 9 Tension Rupture	74.9%	Pass
74.67 - 74.17	Pole + Reinf.	TP33.695x33.613x0.8625	Reinf. 9 Tension Rupture	75.2%	Pass
74.17 - 73.92	Pole + Reinf.	TP33.736x33.695x0.9375	Reinf. 9 Tension Rupture	69.2%	Pass
73.92 - 68.92	Pole + Reinf.	TP34.557x33.736x0.9125	Reinf. 9 Tension Rupture	72.2%	Pass
68.92 - 64.25	Pole + Reinf.	TP35.323x34.557x0.8875	Reinf. 9 Tension Rupture	75.0%	Pass
64.25 - 64	Pole + Reinf.	TP35.364x35.323x0.7375	Reinf. 3 Tension Rupture	86.2%	Pass
64 - 59	Pole + Reinf.	TP36.185x35.364x0.7375	Reinf. 3 Tension Rupture	89.3%	Pass
59 - 54	Pole + Reinf.	TP37.006x36.185x0.7125	Reinf. 3 Tension Rupture	92.4%	Pass
54 - 52	Pole + Reinf.	TP37.334x37.006x0.7125	Reinf. 3 Tension Rupture	93.5%	Pass
52 - 51.75	Pole + Reinf.	TP37.375x37.334x0.7375	Reinf. 3 Tension Rupture	89.7%	Pass
51.75 - 51	Pole + Reinf.	TP37.498x37.375x0.7375	Reinf. 3 Tension Rupture	90.1%	Pass
51 - 50.75	Pole + Reinf.	TP37.539x37.498x0.8625	Reinf. 15 Tension Rupture	82.5%	Pass
50.75 - 49	Pole + Reinf.	TP38.702x37.539x0.8625	Reinf. 15 Tension Rupture	83.4%	Pass
49 - 42.66	Pole + Reinf.	TP37.854x37.201x0.9125	Reinf. 15 Tension Rupture	84.8%	Pass
42.66 - 41.75	Pole + Reinf.	TP37.948x37.854x0.9125	Reinf. 15 Tension Rupture	85.4%	Pass
41.75 - 41.5	Pole + Reinf.	TP37.974x37.948x0.95	Reinf. 15 Tension Rupture	82.8%	Pass
41.5 - 36.5	Pole + Reinf.	TP38.489x37.974x0.925	Reinf. 15 Tension Rupture	86.1%	Pass
36.5 - 31.5	Pole + Reinf.	TP39.004x38.489x0.925	Reinf. 15 Tension Rupture	89.3%	Pass
31.5 - 31.25	Pole + Reinf.	TP39.03x39.004x0.925	Reinf. 15 Tension Rupture	88.8%	Pass
31.25 - 30.5	Pole + Reinf.	TP39.107x39.03x0.925	Reinf. 15 Tension Rupture	89.3%	Pass
30.5 - 30.25	Pole + Reinf.	TP39.133x39.107x0.975	Reinf. 13 Tension Rupture	77.2%	Pass
30.25 - 29.83	Pole + Reinf.	TP39.176x39.133x0.975	Reinf. 13 Tension Rupture	77.4%	Pass
29.83 - 29.58	Pole + Reinf.	TP39.202x39.176x0.875	Reinf. 8 Tension Rupture	92.4%	Pass
29.58 - 28.25	Pole + Reinf.	TP39.339x39.202x0.875	Reinf. 8 Tension Rupture	93.2%	Pass
28.25 - 28	Pole + Reinf.	TP39.365x39.339x1.225	Reinf. 8 Tension Rupture	69.0%	Pass
28 - 23	Pole + Reinf.	TP39.88x39.365x1.225	Reinf. 8 Tension Rupture	71.5%	Pass
23 - 19.25	Pole + Reinf.	TP40.267x39.88x1.2	Reinf. 8 Tension Rupture	73.3%	Pass
19.25 - 19	Pole + Reinf.	TP40.292x40.267x1.025	Reinf. 13 Tension Rupture	78.8%	Pass
19 - 14.5	Pole + Reinf.	TP40.756x40.292x1.025	Reinf. 13 Tension Rupture	81.1%	Pass
14.5 - 14.25	Pole + Reinf.	TP40.782x40.756x1.0125	Reinf. 5 Tension Rupture	82.0%	Pass
14.25 - 10.5	Pole + Reinf.	TP41.168x40.782x1	Reinf. 5 Tension Rupture	84.0%	Pass
10.5 - 10.25	Pole + Reinf.	TP41.194x41.168x1.025	Reinf. 6 Tension Rupture	80.3%	Pass
10.25 - 5.25	Pole + Reinf.	TP41.709x41.194x1.025	Reinf. 6 Tension Rupture	82.7%	Pass
5.25 - 0.25	Pole + Reinf.	TP42.224x41.709x1	Reinf. 6 Tension Rupture	85.2%	Pass
0.25 - 0	Pole + Reinf.	TP42.25x42.224x1	Reinf. 6 Tension Rupture	85.3%	Pass
				Summary	
			Pole	85.8%	Pass
			Reinforcement	93.5%	Pass
			Overall	93.5%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*																		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R12	R13	R14	R15	R16	R17	R18	R19
168.33 - 163.33	570	n/a	570	11.69	n/a	11.69	10.2%																		
163.33 - 158.33	646	n/a	646	12.19	n/a	12.19	20.2%																		
158.33 - 153.33	728	n/a	728	12.68	n/a	12.68	34.9%																		
153.33 - 148.33	817	n/a	817	13.18	n/a	13.18	48.2%																		
148.33 - 143.33	913	n/a	913	13.68	n/a	13.68	60.2%																		
143.33 - 138.33	1016	n/a	1016	14.17	n/a	14.17	71.2%																		
138.33 - 134.16	1107	n/a	1107	14.59	n/a	14.59	84.5%																		
134.16 - 129.16	1547	n/a	1547	19.76	n/a	19.76	69.2%																		
129.16 - 125.5	1662	n/a	1662	20.24	n/a	20.24	76.6%																		
125.5 - 125.25	1670	n/a	1670	20.27	n/a	20.27	77.1%																		
125.25 - 120.5	1828	n/a	1828	20.89	n/a	20.89	85.8%																		
120.5 - 120.25	1839	2472	4311	20.92	28.50	49.42	37.2%										59.6%								67.8%
120.25 - 115.25	2017	2619	4636	21.57	28.50	50.07	41.7%										66.3%								75.2%
115.25 - 113.83	2069	2661	4731	21.76	28.50	50.26	43.0%										68.1%								77.3%
113.83 - 113.48	2083	3142	5225	21.81	32.25	54.06	39.9%	62.8%									63.3%								
113.48 - 113.25	2092	3150	5242	21.84	32.25	54.09	40.1%	63.1%									63.6%								
113.25 - 108.25	2285	3330	5615	22.49	32.25	54.74	44.1%	68.8%									69.4%								
108.25 - 103.25	2490	3515	6005	23.14	32.25	55.39	48.1%	74.3%									75.0%								
103.25 - 98.25	2706	3705	6411	23.79	32.25	56.04	52.0%	79.6%									80.4%								
98.25 - 93.25	2935	3900	6835	24.45	32.25	56.70	55.8%	84.7%									85.5%								
93.25 - 89.82	3107	5146	8254	24.90	38.50	63.40	51.4%		79.7%								82.2%								
89.82 - 89.57	3120	5159	8279	24.93	38.50	63.43	51.6%		79.9%								82.4%								
89.57 - 89.11	3142	5182	8324	24.99	38.50	63.49	51.9%		80.4%								82.8%								
89.11 - 83.55	4079	5217	9297	31.58	38.50	70.08	49.2%		79.4%													84.8%			
83.55 - 82.83	4125	5254	9379	31.70	38.50	70.20	49.6%		79.9%													85.4%			
82.83 - 82.58	4107	6604	10711	31.74	56.50	88.24	41.9%		69.4%					64.4%								69.6%			
82.58 - 81.5	4175	6674	10849	31.92	56.50	88.42	42.4%		70.1%					65.1%								70.4%			
81.5 - 81.25	4193	4659	8852	31.96	43.00	74.96	52.8%		85.7%					78.1%											
81.25 - 76.25	4522	4886	9408	32.77	43.00	75.77	55.7%		89.5%					81.8%											
76.25 - 74.92	4612	4947	9559	32.99	43.00	75.99	56.4%		90.5%					82.7%											
74.92 - 74.67	4632	7438	12070	33.03	61.00	94.03	45.3%		72.6%					68.7%		74.9%									
74.67 - 74.17	4667	7472	12139	33.11	61.00	94.11	45.5%		72.9%					69.0%		75.2%									
74.17 - 73.92	4678	8511	13189	33.15	61.00	94.15	41.3%			66.4%				65.8%		69.2%									
73.92 - 68.92	5031	8914	13945	33.96	61.00	94.96	43.4%			69.4%				68.7%		72.2%									
68.92 - 64.25	5376	9298	14674	34.73	61.00	95.73	45.4%			72.0%				71.4%		75.0%									
64.25 - 64	5395	6949	12344	34.77	43.00	77.77	53.8%			86.2%				85.3%											
64 - 59	5783	7263	13046	35.58	43.00	78.58	56.2%			89.3%				88.5%											
59 - 54	6189	7584	13772	36.39	43.00	79.39	58.5%			92.4%				91.5%											
54 - 52	6356	7714	14070	36.72	43.00	79.72	59.5%			93.5%				92.7%											
52 - 51.75	6381	8133	14514	36.76	52.00	88.76	58.8%			89.7%				83.5%						75.0%					
51.75 - 51	6445	8185	14629	36.88	52.00	88.88	59.2%			90.1%				83.9%						75.4%					
51 - 50.75	6466	10681	17147	36.92	61.00	97.92	50.2%			77.2%				77.1%						74.6%	82.5%				
50.75 - 49	6617	10839	17456	37.21	61.00	98.21	50.9%			78.1%				78.0%						75.5%	83.4%				
49 - 42.66	7915	10518	18433	44.61	66.00	110.61	49.1%				75.6%			76.4%						72.8%	84.8%				
42.66 - 41.75	7975	10568	18543	44.72	66.00	110.72	49.5%				76.1%			77.0%						73.3%	85.4%				
41.75 - 41.5	7991	11183	19175	44.75	72.00	116.75	48.0%				73.8%		66.3%							68.3%	82.8%				
41.5 - 36.5	8324	11477	19801	45.36	72.00	117.36	50.1%				76.7%		69.0%							71.0%	86.1%				
36.5 - 31.5	8667	11774	20441	45.98	72.00	117.98	52.2%				79.5%		71.6%							73.8%	89.3%				
31.5 - 31.25	8683	11850	20532	46.01	75.00	121.01	51.9%				79.0%		69.6%					64.6%			88.8%				
31.25 - 30.5	8735	11895	20630	46.10	75.00	121.10	52.2%				79.4%		70.0%					65.0%			89.3%				
30.5 - 30.25	8752	13118	21870	46.13	78.00	124.13	49.4%				75.3%		68.4%					64.7%	77.2%						
30.25 - 29.83	8782	13146	21928	46.18	78.00	124.18	49.6%				75.6%		68.6%					64.9%	77.4%						
29.83 - 29.58	8799	11003	19802	46.21	66.00	112.21	55.7%						75.6%		92.4%			71.1%	86.7%						
29.58 - 28.25	8892	11077	19970	46.38	66.00	112.38	56.3%						76.3%		93.2%			71.7%	87.5%						
28.25 - 28	8910	18439	27349	46.41	96.00	142.41	41.2%					62.7%	60.4%		69.0%			58.8%	64.1%						
28 - 23	9268	18908	28176	47.02	96.00	143.02	42.9%					65.0%	62.6%		71.5%			61.0%	66.4%						
23 - 19.25	9543	19263	28806	47.48	96.00	143.48	44.1%					66.6%	64.2%		73.3%			62.6%	68.1%						
19.25 - 19	9567	15532	25099	47.51	78.00	125.51	50.9%					76.2%	73.0%					70.4%	78.8%						
19 - 14.5	9904	15879	25783	48.06	78.00	126.06	52.6%					78.4%	75.2%					72.5%	81.1%						
14.5 - 14.25	9921	15641	25562	48.09	79.00	127.09	53.7%					82.0%	79.0%					73.7%						68.1%	
14.25 - 10.5	10208	15923	26131	48.55	79.00	127.55	55.1%					84.0%	80.9%					75.4%						69.7%	
10.5 - 10.25	10224	16395	26619	48.58	80.00	128.58	53.9%					74.3%	80.3%										61.8%	61.8%	
10.25 - 5.25	10616	16786	27402	49.20	80.00	129.20	55.7%					76.6%	82.7%										63.6%	63.6%	
5.25 - 0.25	11018	17181	28199	49.81	80.00	129.81	57.6%					78.9%	85.2%										65.5%	65.5%	
0.25 - 0	11038	17201	28239	49.84	80.00	129.84	57.7%					79.0%	85.3%										65.6%	65.6%	

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

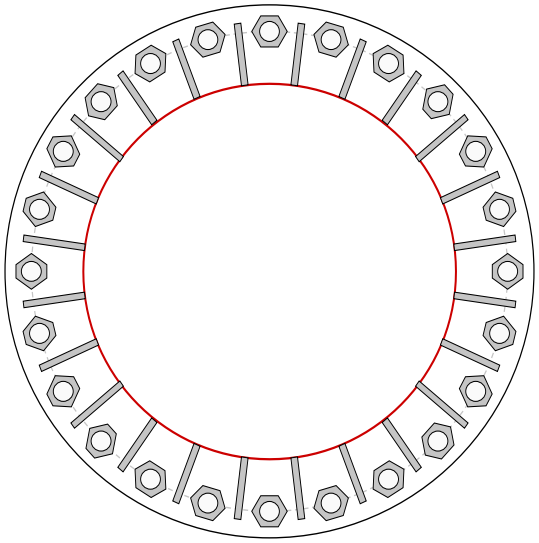
Monopole Base Plate Connection

Site Info	
BU #	842859
Site Name	BRISTOL CENTER
Order #	475338 Rev 2

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	4639.12
Axial Force (kips)	72.04
Shear Force (kips)	41.34

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 54" BC
GROUP 2: (12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 54" BC

Base Plate Data

60" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(24) 15"H x 7"W x 0.75"T, Notch: 0.75"
plate: Fy= 65 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.375" groove, 45° dbl bevel, 0.375" fillet
vert. weld: 0.3125" fillet

Pole Data

42.25" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:		
Pu_c = 174.7	ϕPn_c = 243.75	**Stress Rating**
Vu = 1.72	ϕVn = 73.13	**68.3%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 174.7	ϕPn_c = 243.75	**Stress Rating**
Vu = 1.72	ϕVn = 73.13	**68.3%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	26.4	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**46.6%**	**Pass**

Stiffener Summary

Horizontal Weld:	**59.8%**	**Pass**
Vertical Weld:	**74.5%**	**Pass**
Plate Flexure+Shear:	**27.2%**	**Pass**
Plate Tension+Shear:	**58.3%**	**Pass**
Plate Compression:	**72.0%**	**Pass**

Pole Summary

Punching Shear:	**24.0%**	**Pass**

Drilled Pier Foundation

BU # :	842859
Site Name:	BRISTOL CENTER
Order Number:	475338 Rev 2

TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	**Comp.**	**Uplift**
Moment (kip-ft)	4639.12	
Axial Force (kips)	72.04	
Shear Force (kips)	41.34	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	26	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 17.5' below grade		
Pier Diameter	6.5	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	
Rebar Quantity	8	
Rebar Size	11	
Rebar Cage Diameter	64	in
Pier Section 2		
From 17.5' below grade to 26' below grade		
Pier Diameter	6.5	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	8.19	-
Soil Safety Factor	2.08	-
Max Moment (kip-ft)	4955.92	-
Rating*	*60.9%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	530.52	-
End Bearing (kips)	412.88	-
Weight of Concrete (kips)	161.27	-
Total Capacity (kips)	943.40	-
Axial (kips)	233.31	-
Rating*	*23.6%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	8.02	-
Critical Moment (kip-ft)	4955.56	-
Critical Moment Capacity	5480.84	-
Rating*	*86.1%*	-

Soil Interaction Rating*	**60.9%**
Structural Foundation Rating*	**86.1%**

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐

*Rating per TIA-222-H Section 15.5

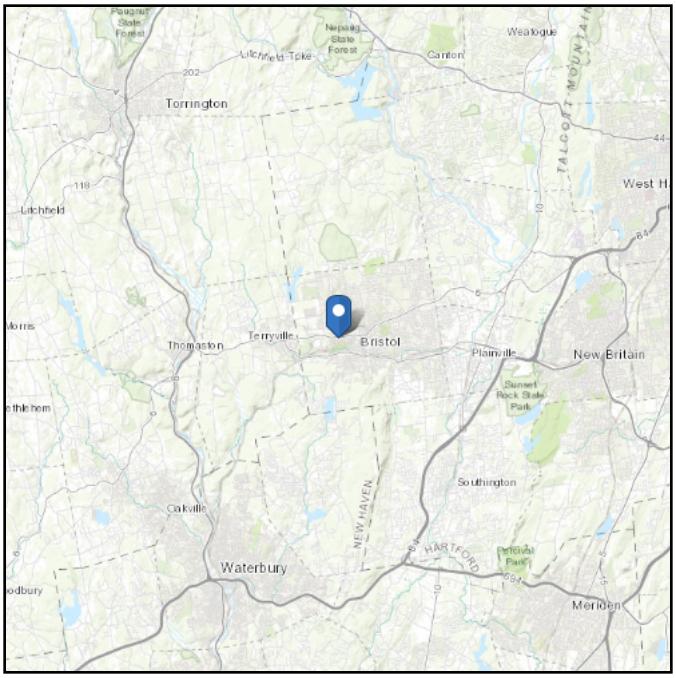
Soil Profile			
Groundwater Depth	n/a	ft	# of Layers: 8

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	105	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	4	5	1	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	5	6	1	110	150		30	0.000	0.000	1.32	1.32			Cohesionless
4	6	8	2	115	150		31	0.000	0.000	0.59	0.59			Cohesionless
5	8	12	4	120	150		33	0.000	0.000	1.20	1.20			Cohesionless
6	12	20	8	115	150		31	0.000	0.000	1.73	1.73			Cohesionless
7	20	25	5	125	150		35	0.00	0.00	2.22	2.22			Cohesionless
8	25	26	1	130	150		37	0.00	0.00	2.40	2.40	16.59		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-10	**Elevation:**	564.8 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.679919
Soil Class:	D - Stiff Soil	**Longitude:**	-72.96255



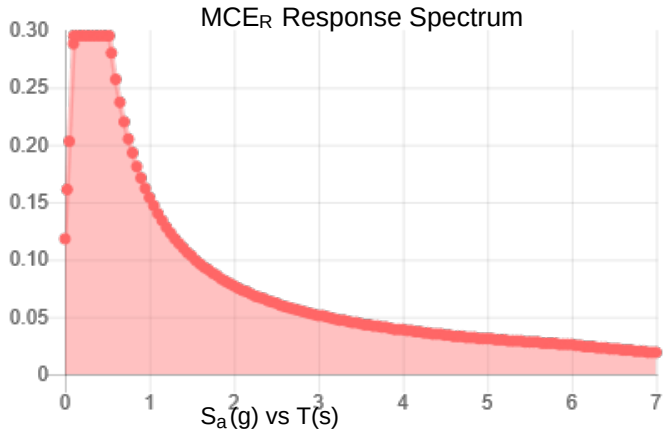
Seismic

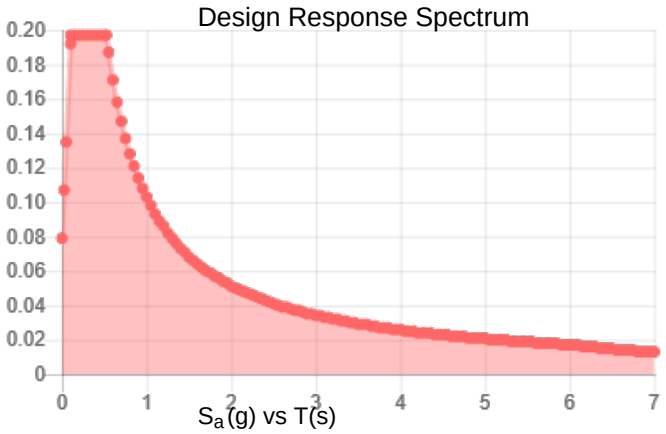
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.185	S_{DS} :	0.197
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.094
S_{MS} :	0.295	PGA_M :	0.151
S_{M1} :	0.154	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Mar 11 2019

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Mar 11 2019

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

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

APPENDIX D

STRUCTURAL DESIGN DRAWINGS

MONOPOLE REINFORCEMENT DRAWINGS

SITE NAME: BRISTOL CENTER
BU NUMBER: 842859

SITE ADDRESS:
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

HOT WORK INCLUDED	
N/A	BASE GRINDING ONLY
X	BASE WELDING (AND GRINDING)
N/A	AERIAL GRINDING ONLY
X	AERIAL WELDING (AND GRINDING)

SAFETY CLIMB: 'LOOK UP'
THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER REINFORCEMENTS AND EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS.

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF THE 2018 CONNECTICUT STATE BUILDING CODE AND THE TIA-222-H STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS USING AN ULTIMATE 3-SECOND GUST WIND SPEED OF 120 MPH WITH NO ICE, 50 MPH WITH 2.00 INCH ICE THICKNESS AND 60 MPH UNDER SERVICE LOADS, EXPOSURE CATEGORY C.

TOWER INFORMATION

TOWER MANUFACTURER / CCI DOC #:	EEI / CCI DOC #5135435
TOWER HEIGHT / TYPE:	168.3 FT MONOPOLE TOWER
TOWER LOCATION: DATUM: NAD 1983	LATITUDE 41° 40' 47.71" LONGITUDE -72° 57' 45.18"
STRUCTURAL DESIGN DRAWING:	B&V / WO #1706223
STRUCTURAL ANALYSIS REPORT:	B&V / WO #1683996
ORDER ID:	475338 REV #2

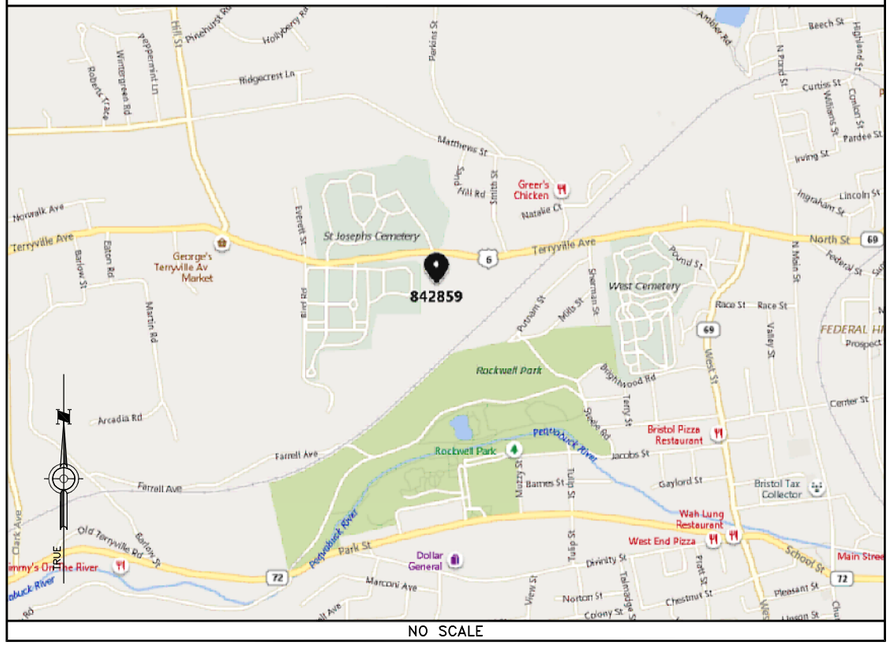
PROJECT CONTACTS

CROWN PROJECT MANAGER
DAN VADNEY
(518) 373-3510
DAN.VADNEY@CROWNCASTLE.COM

CROWN CONSTRUCTION MANAGER
JASON D'AMICO
(860) 209-0104
JASON.DAMICO@CROWNCASTLE.COM

BLACK & VEATCH CONTACTS
CROWNCASTLERFI@BV.COM
PATRICK DAVIS, P.E.
(913) 458-6984

LOCATION MAP



NO SCALE

DRIVING DIRECTIONS

FROM I-84 WEST TAKE EXIT 33 FOR CONNECTICUT 72 W TOWARD BRISTOL 0.3 MI. KEEP LEFT AT THE FORK AND MERGE ONTO CT-72 W 4.1 MI. TURN RIGHT ONTO CT-72 0.4 MI. TAKE THE 3RD RIGHT ONTO RIVERSIDE AVE 1.0 MI. TURN RIGHT ONTO N MAIN ST 0.7 MI. TURN LEFT ONTO NORTH ST DESTINATION WILL BE ON THE LEFT.

ATTENTION ALL CONTRACTORS

ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT 800-788-7011.

DRAWING INDEX

DO NOT SCALE DRAWINGS

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

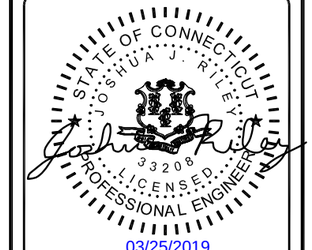
PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TYW
CHECKED BY:	LM

REV	DATE	DESCRIPTION
0	03/21/19	ISSUED FOR CONSTRUCTION



BU #842859
WO #1706223
BRISTOL CENTER
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

SHEET TITLE
TITLE PAGE

SHEET NUMBER
TM-1

MI CHECKLIST

REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
PRE–CONSTRUCTION			
X	MI CHECKLIST DRAWING	CED–SOW–10007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVED SHOP DRAWINGS	CED–SOW–10007	ONCE THE PRE–MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY/SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	CED–SOW–10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED–SOW–10007 CED–STD–10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED–SOW–10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED–SOW–10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION REPORT	CED–SOW–10066 CED–STD–10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON–DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	NDE OF MONOPOLE BASE PLATE	ENG–SOW–10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED–SOW–10007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			
CONSTRUCTION			
N/A	FOUNDATION INSPECTIONS	CED–SOW–10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONCRETE COMP. STRENGTH AND SLUMP TEST	CED–SOW–10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
N/A	EARTHWORK	CED–SOW–10144	FOUNDATION SUB–GRADES SHALL BE INSPECTED AND APPROVED BY AN APPROVED FOUNDATION INSPECTOR AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
N/A	MICROPILE/ROCK ANCHOR	CED–SOW–10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT, ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
N/A	POST–INSTALLED ANCHOR ROD VERIFICATION	CED–SOW–10007	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	BASE PLATE GROUT VERIFICATION	ENG–STD–10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	CED–SOW–10066 CED–STD–10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON–SITE COLD GALVANIZING VERIFICATION	ENG–STD–10149 ENG–BUL–10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON–SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
N/A	TENSION TWIST AND PLUMB	CED–PRC–10182 CED–STD–10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS–BUILT DRAWINGS	CED–SOW–10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS DESCRIPTION AND APPLICABLE STANDARDS SHALL BE APPLIED.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			
POST–CONSTRUCTION			
X	CONSTRUCTION COMPLIANCE LETTER	CED–SOW–10007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
N/A	POST–INSTALLED ANCHOR ROD PULL TESTS	CED–PRC–10119	POST–INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED–SOW–10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
N/A	BOLT INSTALLATION VERIFICATION REPORT	CED–SOW–10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE–TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED–PRC–10283 CED–FRM–10285	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED–SOW–10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			
N/A			

MODIFICATION INSPECTION NOTES

GENERAL

1. THE MI IS AN ON–SITE VISUAL AND HANDS–ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.
3. THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.
4. ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED–LST–10173, "APPROVED MI VENDORS".
5. TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).
6. REFER TO CROWN CED–SOW–10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:
   - THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
   - THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON–SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE–TENSIONING OPERATIONS.
   - WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON–SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:
   - PRE–CONSTRUCTION GENERAL SITE CONDITION
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
     - RAW MATERIALS
     - PHOTOS OF ALL CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - WELD PREPARATION
     - BOLT INSTALLATION
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS
     - FINAL INFIELD CONDITION
2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.
3. THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED–SOW–10007.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TYW
CHECKED BY:	LM

REV	DATE	DESCRIPTION
0	03/21/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT · JOSHUA J. RILEY · 33208 · LICENSED PROFESSIONAL ENGINEER

03/25/2019

BU #842859
WO #1706223
BRISTOL CENTER
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

SHEET TITLE

MODIFICATION INSPECTION CHECKLIST

SHEET NUMBER

TM-2

GENERAL NOTES

1. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED, THAT HE IS PROPERLY LICENSED, AND THAT HE IS PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.

2. THE GENERAL NOTES AND TYPICAL DETAILS ARE APPLICABLE TO ALL PARTS OF THE STRUCTURE AND SHALL BE READ IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS AND PROJECT SPECIFICATIONS.

3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING APPROVALS FROM ALL AUTHORITIES HAVING JURISDICTION FOR THIS PROJECT AND SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY, OR CITY) ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.

5. ERECT GUARDS AND BARRIERS PER APPLICABLE LABOR AND CONSTRUCTION SAFETY REGULATIONS.

6. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, POSSIBLE INTERFERENCES, AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO THE ENGINEER OF RECORD (EOR) AND FIELD PERSONNEL IMMEDIATELY. ANY AND ALL FIELD CHANGES SHALL BE APPROVED AND DOCUMENTED BY THE EOR PRIOR TO FIELD IMPLEMENTATION.

7. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR TWO (2) YEARS FROM THE DATE OF COMPLETED CONSTRUCTION.

8. USE ONLY THE LATEST ISSUES OF ANY APPLICABLE CODES, STANDARDS, OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES AND SPECIFICATIONS, UNO.

9. ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH ANSI, ASTM, ACI, TIA, AND AISC STANDARDS AS REFERENCED IN THE APPLICABLE CODE.

10. STRUCTURAL ELEMENTS SHOWN ON THESE DRAWINGS ARE DESIGNED IN ACCORDANCE WITH APPLICABLE BUILDING CODES/STANDARDS. ALL CONSTRUCTION, EXCEPT WHERE NOTED OTHERWISE, SHALL COMPLY WITH THOSE CODES/STANDARDS.

11. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS, AND IN CONFORMANCE WITH THE DRAWINGS. ANY AND ALL SUBSTITUTIONS MUST BE DULY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER OF RECORD PRIOR TO FABRICATION AND INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.

12. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION PROCEDURES MEET THE REQUIREMENTS OF OSHA, THE OWNER, AND ALL OTHER APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY REGULATIONS. CONSTRUCTION SHALL BE PERFORMED ONLY IN "GOOD WEATHER". "GOOD WEATHER" MEANS LITTLE OR NO WIND AND RAIN AND MINIMUM TEMPERATURE OF 50 DEGREES F. CONTACT ENGINEER FOR ADDITIONAL INSTRUCTIONS IF "GOOD WEATHER" CANNOT BE ACHIEVED.

14. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIAL ACCESS, WITH THE RESIDENT LEASING AGENT.

15. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES OR BURIED SERVICES AFFECTED BY THIS CONSTRUCTION. CONTRACTOR IS ALSO RESPONSIBLE FOR TEMPORARILY RELOCATING ANY LINES OR STRUTS AS NECESSARY TO COMPLETE THE REQUIRED WORK.

16. STRUCTURAL DESIGN IS FOR THE COMPLETE CONDITION ONLY. THE CONTRACTOR MUST BE COGNIZANT THAT THE REMOVAL OF ANY STRUCTURAL COMPONENT OF AN EXISTING TOWER HAS THE POTENTIAL TO CAUSE THE PARTIAL OR COMPLETE COLLAPSE OF THE STRUCTURE. ALL NECESSARY PRECAUTIONS MUST BE TAKEN TO ENSURE STRUCTURAL INTEGRITY, INCLUDING, BUT NOT LIMITED TO, ENGINEERING ASSESSMENT OF CONSTRUCTION STRESSES WITH INSTALLATION MAXIMUM WIND SPEED AND/OR TEMPORARY BRACING AND SHORING.

17. DO NOT SCALE DRAWINGS.

18. FOR THIS ANALYSIS AND MODIFICATION, THE TOWER HAS BEEN ASSUMED TO BE IN GOOD CONDITION WITHOUT ANY DEFECTS. IF THE CONTRACTOR DISCOVERS ANY INDICATION OF AN EXISTING STRUCTURAL DEFECT, CONTACT THE ENGINEER OF RECORD IMMEDIATELY.

19. MODIFICATION WORK SHALL BE COMPLETED IN CALM WIND CONDITIONS / OR APPROPRIATE WIND SPEED FOR THE TYPE OF MODIFICATION WORK TO BE INSTALLED.

20. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE CROWN POC. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE ENGINEER OF RECORD. IF THE GENERAL CONTRACTOR FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GENERAL CONTRACTOR SHALL CONTACT THE CROWN POC TO DETERMINE A METHOD OF RESOLUTION.

21. CONTRACTOR TO VERIFY REQUIRED STEEL PLATE LENGTHS FROM BOTTOM OF SECTION TO BOTTOM OF NEXT SECTION.

22. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.

23. ALL CHANGES/ALTERNATES/REVISIONS TO THESE DRAWINGS SHALL BE DOCUMENTED BY REQUEST FOR INFORMATION (RFI) FORM APPROVED BY ENGINEER OF RECORD. FINAL WORK AUTHORIZATION AND ALL CHANGE ORDERS SHALL BE APPROVED BY CLIENT AND/OR CLIENT REPRESENTATIVE PRIOR TO PROCEEDING WITH ANY WORK THAT DEVIATES FROM THE ORIGINAL DESIGN, SCOPE, PRICE AND/OR SCHEDULE.

24. 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/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).

25. IN THE EVENT OF AN EMERGENCY, CONTRACTOR SHALL CONTACT BLACK & VEATCH AND CROWN CASTLE PERSONNEL TO REPORT ANY EVENT OR EMERGENCY INCIDENT AT ANY CROWN CASTLE TOWER SITE PER THE CONTACT INFORMATION PROVIDED ON SHEET TM-1.

26. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR.

27. IF, DURING THE COURSE OF A FOUNDATION MODIFICATION, THE GC ENCOUNTERS EXISTING CONDUIT LOCATED WITHIN THE CONFINES OF THE EXISTING OR PROPOSED FOUNDATION CONCRETE, AND THIS CONDUIT IS NOT IN A LOCATION THAT IS SPECIFIED WITHIN THESE DESIGN DRAWINGS, THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE BEFORE PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS. IF CONDUIT IS TO BE INSTALLED THROUGH THE EXISTING FOUNDATION OR PROPOSED FOUNDATION MODIFICATION AND HASN'T BEEN SPECIFIED WITHIN THESE DESIGN DRAWINGS THEN THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE PRIOR TO PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS.

STRUCTURAL STEEL NOTES

1. DESIGN, FABRICATION, ERECTION, ALTERATION AND MAINTENANCE SHALL CONFORM TO THE FOLLOWING, UNLESS NOTED OTHERWISE (UNO).
   A. TIA-222: STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   B. TIA-1019-A: INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
   C. AISC: MANUAL OF STEEL CONSTRUCTION

2. ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS, UNO.
   A. STRUCTURAL STEEL, ASTM A572 GRADE 65 (FY = 65 KSI).
   B. ALL BOLTS, ASTM A325 TYPE 1 GALVANIZED HIGH STRENGTH BOLTS.
   C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
   D. ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
   E. ALL SHIMS, ASTM A36.

3. ALL HOLES SHALL BE CUT WITH A GRINDER OR DRILLED. HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER OF RECORD.

4. ALL FASTENERS SHALL NOT BE REUSED.

5. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED ASTM A325 BOLTS.

6. ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.

7. HOT-DIP GALVANIZE ALL ITEMS, UNO.
   GALVANIZE PER ASTM A123, ASTM A153/A153M OR ASTM A653 G90, AS APPLICABLE.

8. FOR A LIST OF CROWN APPROVED COLD GALVANIZING COMPOUNDS, REFER TO CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN".

9. AFTER FINAL INSPECTION, ALL EXPOSED STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING WELDS, FIELD DRILLED HOLES, AND SHAFT INTERIORS (WHERE ACCESSIBLE), SHALL BE CLEANED AND COLD GALVANIZING APPLIED BY BRUSH IN ACCORDANCE WITH CROWN ENG-BUL-10149, "TOWER PROTECTIVE COATINGS BULLETIN". PHOTO DOCUMENTATION IS REQUIRED TO BE SUBMITTED TO THE MI INSPECTOR.

BASE PLATE GROUT REMOVAL NOTES

1. WHEN BASE PLATE GROUT REMOVAL IS SPECIFIED IN THE TOWER MODIFICATION TABLE, THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS:

   A. THE GC SHALL BEGIN THIS PROCEDURE AS EARLY AS POSSIBLE DURING THE MODIFICATION PROCESS SO THAT IF ISSUES ARISE, THEY CAN BE RESOLVED WITHIN THE ANTICIPATED MODIFICATION TIMELINE.

   B. IF ANY DETERIORATED GROUT EXISTS, BEGIN AT THIS LOCATION. REMOVE DETERIORATED GROUT AND THE GROUT AROUND THE NEAREST ONE OR TWO ANCHOR RODS TO FULLY EXPOSE THE LEVELING NUT. IF THE GC DISCOVERS THAT A HALF NUT OR JAM NUT WAS USED AS A LEVELING NUT, OR IF NO LEVELING NUT IS PRESENT, IMMEDIATELY CONTACT CED AND THE CROWN POC (TYPICALLY THE MOD PM) FOR A RESOLUTION. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.

   C. OTHERWISE, CHECK THE LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR". IF SEVERE CORROSION / MATERIAL LOSS IS FOUND OR CORROSION EXISTS TO THE POINT WHERE THE LEVELING NUT IS UNABLE TO BE TIGHTENED WHEN OBVIOUSLY LOOSE, IMMEDIATELY NOTIFY THE CROWN POC (TYPICALLY THE MOD PM). REFERENCE ENG-BUL-10114 "RUST CLASSIFICATION" FOR EXAMPLES OF MATERIAL LOSS. DO NOT REMOVE ANY ADDITIONAL GROUT UNTIL DIRECTED TO BY CROWN.

   D. IN THE EVENT THAT SEVERE CORROSION IS NOT ENCOUNTERED, AND BEING SURE TO CHECK EACH ANCHOR ROD FOR CORROSION PER ENG-BUL-10114 "RUST CLASSIFICATION", REMOVE ALL EXISTING BASEPLATE GROUT WHILE CHECKING EACH LEVELING NUT FOR TIGHTNESS IN ACCORDANCE WITH SECTION 1.3.2.3 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR".

   E. CONSISTENT WITH SECTION 1.3.2.4 OF ENG-PRC-10012 "BASE PLATE GROUT REPAIR", HAND TOOL CLEAN TO SSPC-SP2 AND SOLVENT CLEAN TO SSPC-SP1, ALL EXPOSED STRUCTURAL STEEL ELEMENTS, INCLUDING ANCHOR RODS, LEVELING NUTS, AND UNDERSIDE OF BASE PLATE TO THE GREATEST EXTENT POSSIBLE. ENSURE THAT ALL OLD GROUT IS REMOVED TO ALLOW COLD GALVANIZING TO ADHERE TO THE STEEL.

   F. APPLY BY BRUSH TWO COATS OF A CROWN-APPROVED COLD-GALVANIZING COMPOUND TO ALL EXPOSED STRUCTURAL STEEL ELEMENTS BENEATH THE BASE PLATE, AND ALLOW CURING IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. A LIST OF CROWN-APPROVED DIRECT APPLICATION COLD-GALVANIZING COMPOUNDS CAN BE FOUND IN ENG-STD-10149 "TOWER PROTECTIVE COATINGS GUIDELINES" SECTION 2.1.1.

   G. THE GC SHALL PROVIDE PHOTOS OF EACH ANCHOR ROD WITH LEVELING NUT AFTER CLEANING BUT BEFORE COLD-GALVANIZATION, AND ALSO AGAIN AFTER COLD-GALVANIZATION, FOR INCLUSION IN THE MI REPORT.

WELDING NOTES

1. ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE-STEEL".

2. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.

3. ALL ARC WELDING ON CROWN STRUCTURES SHALL BE DONE IN ACCORDANCE WITH THE CROWN ENG-PLN-10015, "CUTTING AND WELDING SAFETY PLAN" AND AWS D1.1 (LATEST EDITION). THIS SHALL INCLUDE A CERTIFIED WELDING INSPECTOR (CWI) FOR ACCEPTANCE OR REJECTION OF ALL WELDING OPERATIONS, PRE-DURING-POST, USING THE ACCEPTANCE CRITERIA OF AWS D1.1. THE CWI SHALL WORK WITH THE GC ON THE LEVEL OF INTERACTION NEEDED TO CONDUCT THE WELDING INSPECTION. THE CERTIFIED WELDING INSPECTION IS THE RESPONSIBILITY OF THE GC.

4. FOR ALL WELDING, USE E80XX ELECTRODES FOR SMAW PROCESS AND E8XT-XX ELECTRODES FOR FCAW PROCESS, UNO.

5. SURFACES TO BE WELDED SHALL BE FREE FROM SCALE, SLAG, RUST, MOISTURE, GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING. GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING.

6. REPAIR THE GALVANIZED COATING. ALL AREAS AFFECTED BY THE FIELD DRILLING, FIELD GRINDING AND FIELD WELDING, BOTH INSIDE AND OUTSIDE THE MONOPOLE, SHALL BE REPAIRED PER CROWN DOCUMENT ENG-STD-10149. PRODUCTS TO BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. AREAS THAT HAVE BEEN TOUCHED UP SHOULD BE INSPECTED AS PART OF THE ROUTINE MAINTENANCE OF THE STRUCTURE. NO SPRAY PAINT IS ALLOWED. AFTER ZINC-RICH PAINT IS DRY, OVERCOAT WITH OWNER'S PAINT SPECIFICATIONS, APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0° F. WHEN THE TEMPERATURE IS BETWEEN 0° F AND 32° F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70° F DURING THE WELDING PROCESS.

8. DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS.

9. FIELD NDE MINIMUM REQUIREMENTS
   - FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
   - FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
   - FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: TOWER BASE PLATE NDE, AND ENG-BUL-10051: NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
   - ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

10. MOVE ALL COAX AND OTHER FLAMMABLE MATERIALS FROM ANY AREA THAT MAY BE HEATED DURING CONSTRUCTION.

11. CONTRACTOR SHALL MAKE PROPER PRECAUTIONS AND PROCEDURES TO PROTECT THE STRUCTURE FROM CATCHING FIRE DURING ALL WELDING OPERATIONS. THE FOLLOWING FIRE SAFETY PREVENTION PROTOCOL IS THE MINIMUM REQUIREMENTS DURING WELDING OPERATIONS. ALSO REFERENCE CROWN DOCUMENT ENG-BUL-10172 FOR ADDITIONAL WELDING REQUIREMENTS.
    - 500 GALLON WATER TANK WITH PUMP TO BE ON SITE AT ALL TIMES.
    - 2 FIRE EXTINGUISHERS ON SITE AT ALL TIMES.
    - 2 MAN FIRE WATCH ON ANY ADJACENT STRUCTURES, FIELDS AND POLE.
    - INTERMITTENT COOLING OF WELDED SURFACE TO REDUCE HEAT IN STRUCTURE.

DETAIL DRAWINGS SHALL GOVERN OVER ANY VARIANCE FROM THIS SHEET

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TYW
CHECKED BY:	LM

REV	DATE	DESCRIPTION
0	03/21/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER

03/25/2019

BU #842859
WO #1706223
BRISTOL CENTER
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

SHEET TITLE

NOTES

SHEET NUMBER

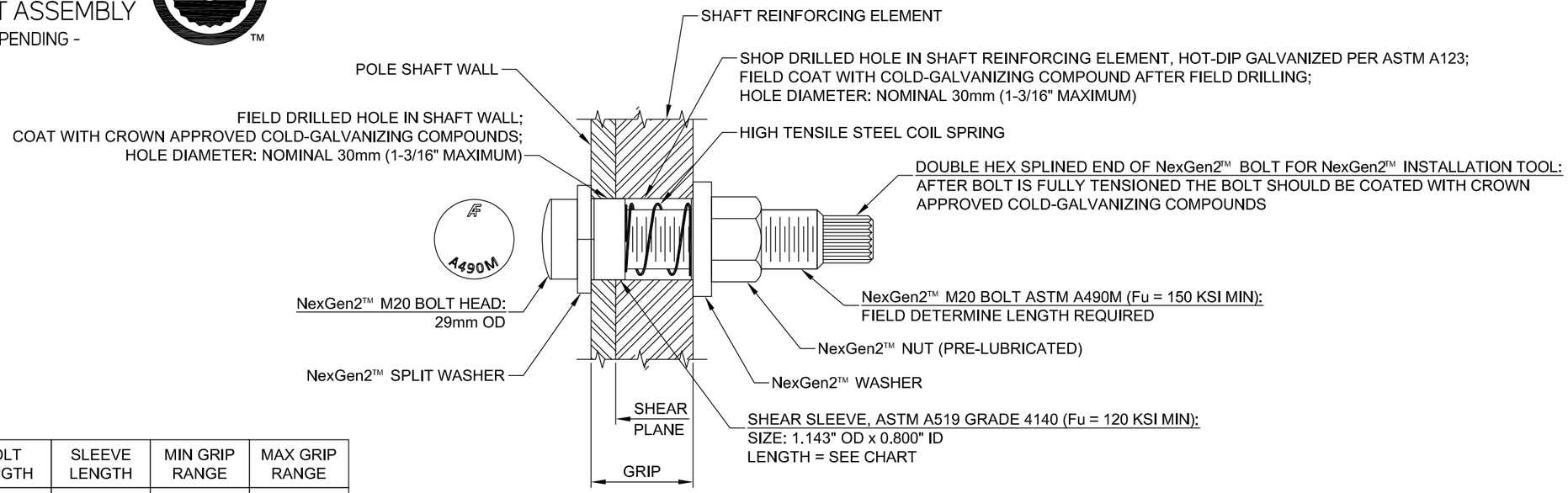
TM-3

NEXGEN2 BLIND BOLT ASSEMBLY

- PATENT PENDING -

INTERIOR OF POLE SHAFT

EXTERIOR OF POLE SHAFT



PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
2NG2036	M20x95	11/16"	15/16"	1-7/16"
2NG2048	M20x95	1-3/16"	1-7/16"	1-7/8"
2NG2057	M20x95	1-5/8"	1-7/8"	2-1/4"
2NG2068	M20x135	2"	2-1/4"	2-11/16"
2NG2096	M20x135	2-7/16"	2-11/16"	3-3/4"
2NG2127	M20x175	3"	3-3/4"	5"
2NG2212	M20x250	4"	5"	8-5/16"

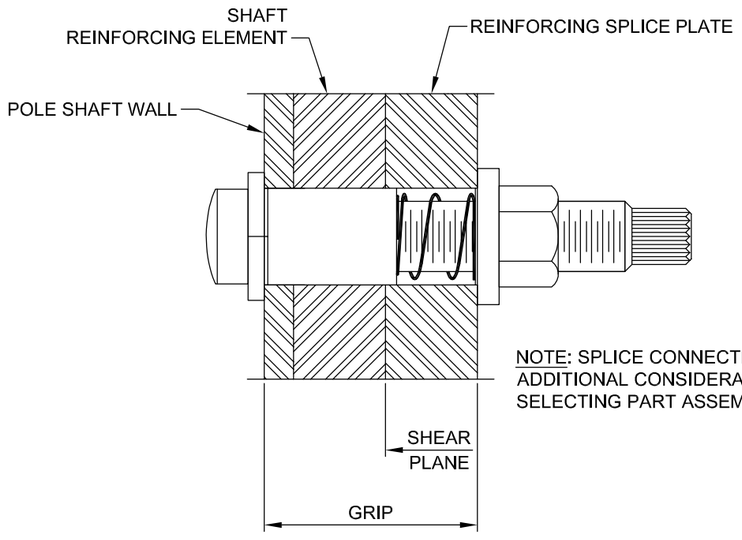
MANUFACTURER:
ALLFASTENERS
959 LAKE ROAD, MEDINA, OHIO, USA 44256
PHONE: 440-232-6060 | FAX: 440-232-60625
WEBSITE: WWW.ALLFASTENERS.COM | WWW.AFTOWER.COM

NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30mm DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: NexGen2™ COMPLETE ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AS APPROPRIATE.

NOTE: INSTALL PER MANUFACTURER'S INSTRUCTIONS.

TYPICAL NG2™ BOLT DETAIL



NOTE: SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TYW
CHECKED BY:	LM

REV	DATE	DESCRIPTION
0	03/21/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED
PROFESSIONAL ENGINEER

03/25/2019

BU #842859
WO #1706223
BRISTOL CENTER
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

SHEET TITLE

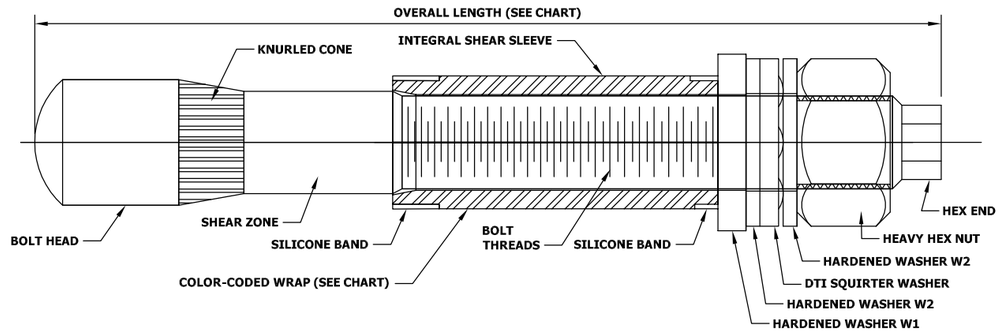
NEXGEN2 BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER

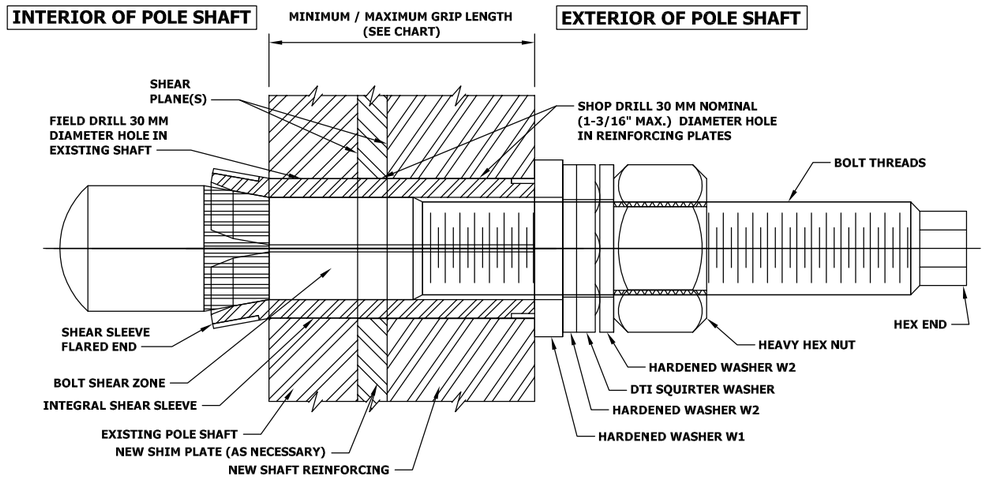
TM-4

FORGBolt™ NOTE SHEET: A325/PC8.8 LANDSCAPE VERSION DATE 01/29/2015; Rev. 1.0 04/23/2015

NOTES:
1. **ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**
2. **ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009.**



PRE-INSTALLED FORGBolt™ ASSEMBLY DETAIL 1



INSTALLED FORGBolt™ ASSEMBLY DETAIL 2

BOLT HOLE NOTES:

1. **ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".**
2. **ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.**

DISTRIBUTOR CONTACT:
PRECISION TOWER PRODUCTS
PHONE: **888-926-4857**
EMAIL: info@precisiontowerproducts.com
WEB: www.precisiontowerproducts.com

CONTAINS PROPRIETARY INFORMATION
PATENT PENDING

FORGBolt™		AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 120 ksi minimum)					
GROUP A		FORGBolt™ Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code
FORGBolt™ A325 - PC8.8	1	**135**	5.31	1.3	3/8" to 1"	--	**RED**
	2	**160**	6.30	1.6	3/4" to 1-1/2"	--	**GREEN**
	3	**195**	7.68	1.9	1-1/4" to 2-1/4"	--	**BLUE**
	4	**260**	10.24	2.6	2" to 3-1/2"	Splice Bolt	**YELLOW**
	5	**365**	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	**ORANGE**
	6	**440**	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	**BLACK**
DTI Note		Each Group A (A325/PC8.8) FORGBolt™ assembly shall have a 'Squirter' DTI that is compatible with a M20-PC8.8 bolt.					

FORGBolt™ Installation

Follow all Manufacturer/Distributer Recommendations for Installation, Tightening, and Inspection.

1. FIELD DRILL HOLES TO 30 MM DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
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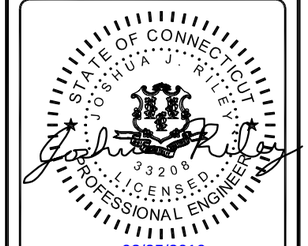

BU #842859
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SHEET TITLE
FORGBOLT BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER
TM-5

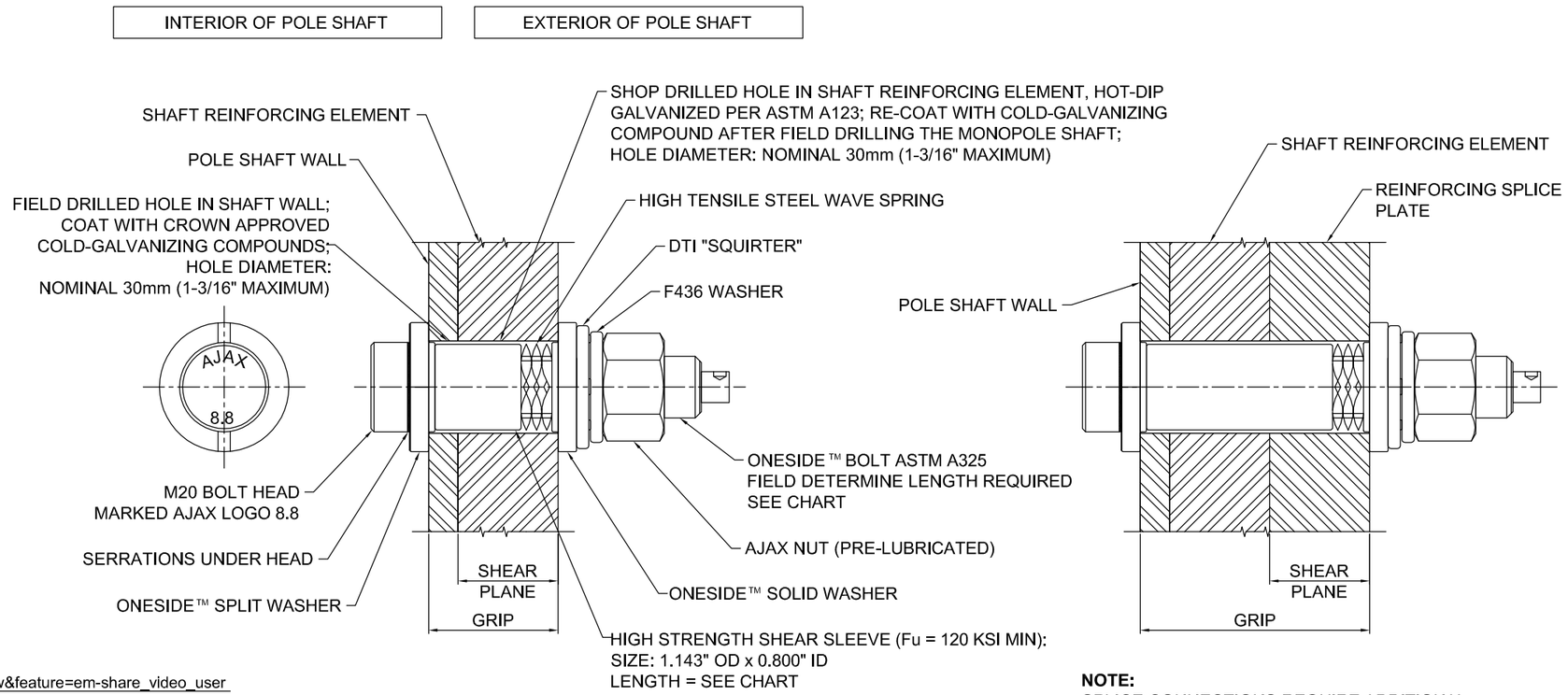
AJAX FASTENERS

ONESIDE™

PATENT US 7,373,709B2

MANUFACTURER INSTALLATION VIDEO

https://www.youtube.com/watch?v=ZGBS0eLrZsw&feature=em-share_video_user



NOTE:
SPLICE CONNECTIONS REQUIRE ADDITIONAL CONSIDERATION WHEN SELECTING PART ASSEMBLIES

AJAX ONESIDE™ BOLT DETAIL

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20 x 65	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MTO	121.0 / 211.0	4.724" / 8.310"

MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

DISTRIBUTOR
IRA SVENSGAARD AND ASSOCIATES
PETER SVENDSGAARD - PETERS@IRASVENS.COM
JOHN KILLAM - JOHN@IRASVENS.COM
PHONE (530) 647-8225
FAX (530) 647-8229

BOLT ASSEMBLY AND INSTALLATION:
1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

INSPECTION:
1. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
2. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: *MODIFICATION INSPECTION SOW*.

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH
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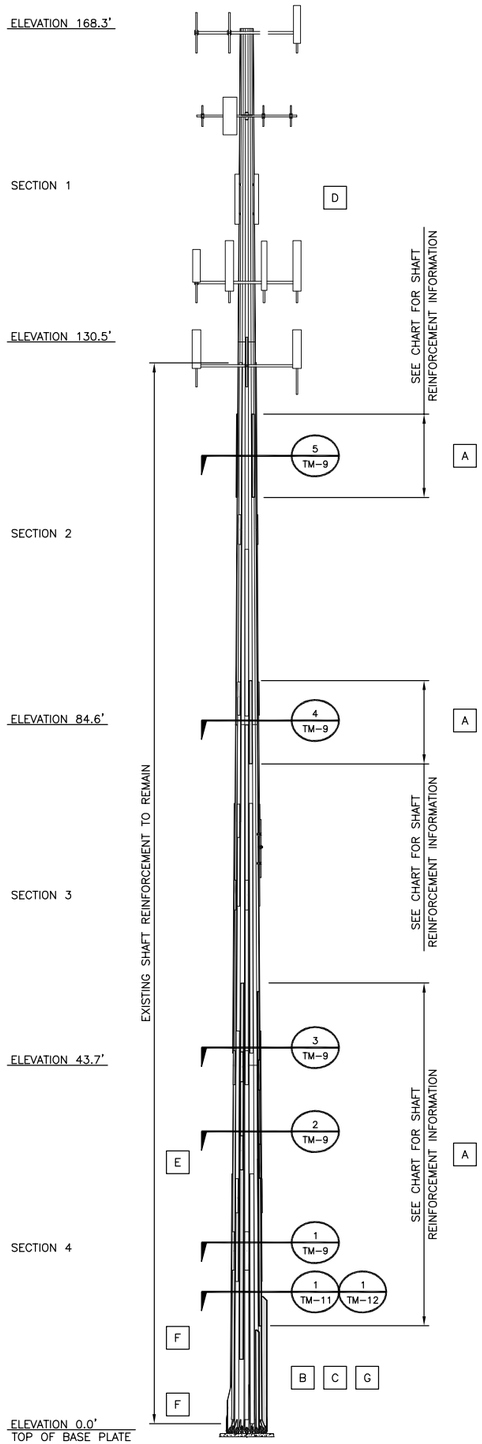
SHEET TITLE

AJAX ONESIDE BOLT SPECS & TIGHTENING PROCEDURE

SHEET NUMBER

TM-6



TOWER ELEVATION

NO SCALE

POLE MODIFICATION SCHEDULE			
CALLOUT	ELEVATION (FT)	MODIFICATION	REFERENCE SHEET
A	8.5 – 38.5 80.0 – 90.0 112.0 – 122.0	INSTALL NEW FLAT PLATE REINFORCEMENT	TM–8, TM–9, & TM–10
B	0.0 – 64.3	REMOVE EXISTING FLAT PLATE REINFORCEMENT ON FLATS 4 & 13	TM–9, TM–11, & TM–12
C	0.8 – 5.3 8.8 – 13.3	REMOVE EXISTING FLAT PLATE REINFORCEMENT ON FLATS 3, 5, 12. & 14	TM–9, TM–11, & TM–12
D	148.0	REMOVE ALL MOUNTS, FEEDLINES, AND ASSOCIATED EQUIPMENT	–
E	0.0	INSTALL (4) NEW TRANSITION STIFFENER PLATES	TM–11 & TM–12
F	0.0	REMOVE EXISTING BASE PLATE GROUT SEE BASE PLATE GROUT REMOVAL NOTES	TM–3
G	0.0	CLIMBING PATH MAY BECOME OBSTRUCTED AFTER INSTALLATION OF THE PROPOSED MODIFICATIONS. IF NOT ALREADY EXISTING ON THIS TOWER, CONTRACTOR TO PROVIDE NEW SIGNAGE PER CROWN CASTLE REQUIREMENTS.	–
FOR PARTS NOT DETAILED WITHIN THE DRAWING AND STARTING WITH "CCI–", SEE THE FOLLOWING CATALOG FOR DETAILS: CED–CAT–10300, MONOPOLE STANDARD DRAWINGS AND APPROVED REINFORCEMENT COMPONENTS.			

PRIOR TO FABRICATION AND INSTALLATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.

CCI FLAT PLATE (65 KSI) REINFORCEMENT SCHEDULE										
BOTTOM ELEVATION	TOP ELEVATION	PART NUMBER	FLATS / DEGREES (°)	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAX INTERMEDIATE BOLT SPACING	BOLT QUANTITY PER PLATE	STEEL WEIGHT PER PLATE (BLACK)	TOTAL BOLT QUANTITY	TOTAL STEEL WEIGHT (BLACK)
8'–6"	33'–6"	CCI–SFP–06010025	9, 17	8	8	1'–4"	31	510.0	62	1020.0
12'–6"	32'–6"	CFP–06010020	4, 13	8	8	1'–0"	32	408.3	64	816.6
33'–7"	43'–7"	CCI–SFP–04510010	9, 17	6	6	1'–8"	16	153.0	32	306.0
32'–7"	42'–7"	CFP–04510010	4, 13	6	6	1'–0"	19	153.1	38	306.2
43'–8"	53'–8"	CCI–SFP–04510010	9, 17	6	6	1'–8"	16	153.0	32	306.0
42'–8"	52'–8"	CFP–04510010	4, 13	6	6	1'–0"	19	153.1	38	306.2
80'–0"	90'–0"	CCI–SFP–04510010	5, 11, 17	6	6	1'–8"	16	153.0	48	459.0
112'–0"	122'–0"	CCI–SFP–04012510	6, 12, 18	6	6	2'–3"	15	170.4	45	511.2
								TOTAL	359	4031.2

NOTES FOR CROWN REINFORCING (65 KSI) MATERIAL

1. APPROVED FASTENERS MAY BE USED ON THIS PROJECT AS INDICATED IN THE FOLLOWING TABLE:

FORGBOLT	APPROVED
NEXGEN2	APPROVED
AJAX ONESIDED	APPROVED

ORDERING INFORMATION AND INSTALLATION DETAILS FOR APPROVED FASTENERS CAN BE FOUND IN CED–CAT–10300.

2. ALL FLAT PLATE REINFORCEMENT IS TO BE INSTALLED CENTERED ON ITS DESIGNATED FLAT OR AZIMUTH, UNO, WITH A TOLERANCE FROM CENTER OF THE FLAT OR AZIMUTH AS FOLLOWS:

ALLOWABLE FLAT PLATE CENTERING TOLERANCE	3/8"

GC SHALL REDLINE ALL DEVIATIONS FROM CENTER, INCLUDING THOSE WITHIN TOLERANCE.

3. GC SHALL REPLACE ANY STEP BOLTS AND STEP BOLT CLIPS THAT INTERFERE WITH THE INSTALLATION OF FLAT PLATE. REFERENCE CED–CAT–10300 FOR APPROVED OPTIONS. CCI–SB–0100 IS THE DEFAULT OPTION; OTHER OPTIONS MAY BE REQUIRED FOR FIT–UP.

4. FOR PLATES STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" ± 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE RUN SHALL BEGIN AT THE PROPOSED ELEVATION 3". FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE BOTTOM PLATE TO THE TOP OF THE TOP PLATE.

5. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESS SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. SINGLE AND STACKED SHIMS IN BOLT TERMINATION REGIONS SHALL BE NO GREATER THAN A TOTAL OF 1/4" WITHOUT EOR APPROVAL. SINGLE AND STACKED SHIMS AT INTERMEDIATE CONNECTIONS SHALL BE NO GREATER THAN A TOTAL OF 5/8" WITHOUT EOR APPROVAL.

6. SHIM MATERIAL SHALL BE STEEL GRADE A36 OR GREATER IF WELDED, UNO, AND SHALL REQUIRE MTR; IF SHIMS ARE NOT WELDED, THERE IS NO MINIMUM REQUIRED STEEL GRADE.

7. IF UNEXPECTED HOLES ARE FOUND IN A LOCATION WHERE FLAT PLATE IS PROPOSED TO BE INSTALLED, THE GC SHALL NOT PLACE NEW BOLT HOLES WITHIN A CENTER–TO–CENTER DISTANCE OF 3 TIMES THE DIAMETER OF THE LARGER OF THE TWO HOLES, WITHOUT EOR APPROVAL. EXISTING HOLES MAY INCLUDE BUT ARE NOT LIMITED TO EMPTY BOLT HOLES AND JACKING NUTS WITH CENTER HOLES.

MANUFACTURER POLE SPECIFICATIONS	
POLE SHAFT TYPE	18 SIDED POLYGON
SHAFT STEEL	ASTM A572 GRADE 65
BASE PLATE STEEL	ASTM A572 GRADE 60
ANCHOR RODS	2 1/4"ø #18J ASTM A615 GRADE 75

MANUFACTURER SHAFT SECTION DATA					
SHAFT SECTION	SHAFT LENGTH (FT)	THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLAT (IN) @ TOP	DIAMETER ACROSS FLAT (IN) @ BOTTOM
1	37.83	0.1875	44	19.000	25.313
2	49.61	0.2500	55	24.326	32.493
3	45.45	0.3125	64	31.242	38.702
4	49.00	0.3750		37.201	42.250
NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES					

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

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Joshua Riley
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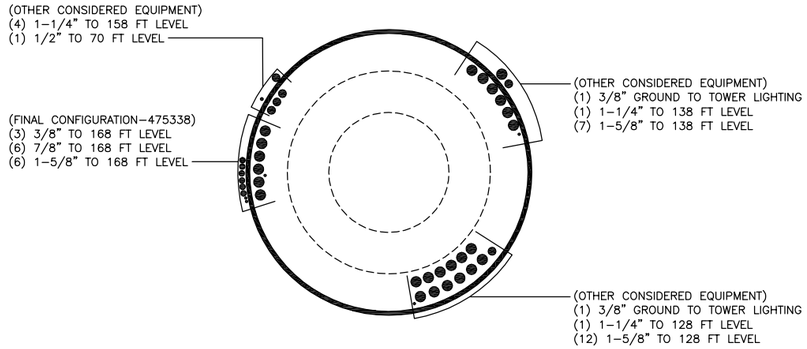
SHEET TITLE

TOWER ELEVATION

SHEET NUMBER

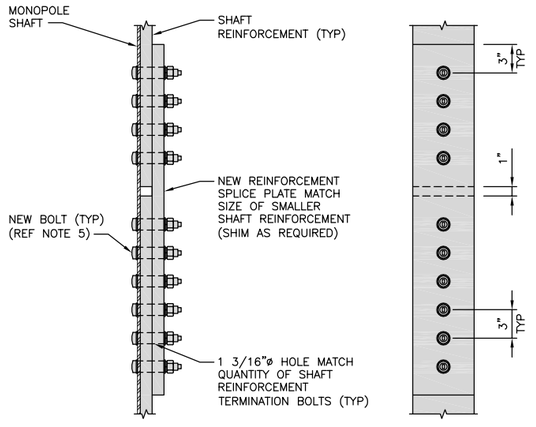
TM-7



COAX FEEDLINE PLAN

NO SCALE

EXISTING FEEDLINE PLAN SHOWN ON THIS DRAWING IS BASED ON CURRENT BEST KNOWLEDGE OF THE EXISTING CONDITION. IF THE EXISTING FEEDLINE LAYOUT IS NOT AS SHOWN ON THIS DRAWING CONTRACTOR SHALL NOTIFY ENGINEER.



REINFORCED SPLICE PLATE DETAIL

NO SCALE

SPLICE PLATE SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	CCI-PART # / DIMENSIONS	FLATS / DEGREES (°)	QUANTITY	QUANTITY OF BOLT HOLES PER PLATE	TOTAL BOLT HOLE QUANTITY	ADDITIONAL BOLTS*
31'-3"	35'-4"	CCI-SP-045100-6-8	9, 17	2	14	28	–
30'-3"	34'-4"	CCI-SP-045100-6-8	4, 13	2	14	28	–
41'-10"	45'-5"	CCI-SP-045100-6-6	9, 17	2	12	24	–
40'-10"	44'-5"	CCI-SP-045100-6-6	4, 13	2	12	24	–
					TOTAL	104	–

* NUMBER OF ADDITIONAL BOLTS WHEN SPLICING INTO EXISTING FLAT PLATE.

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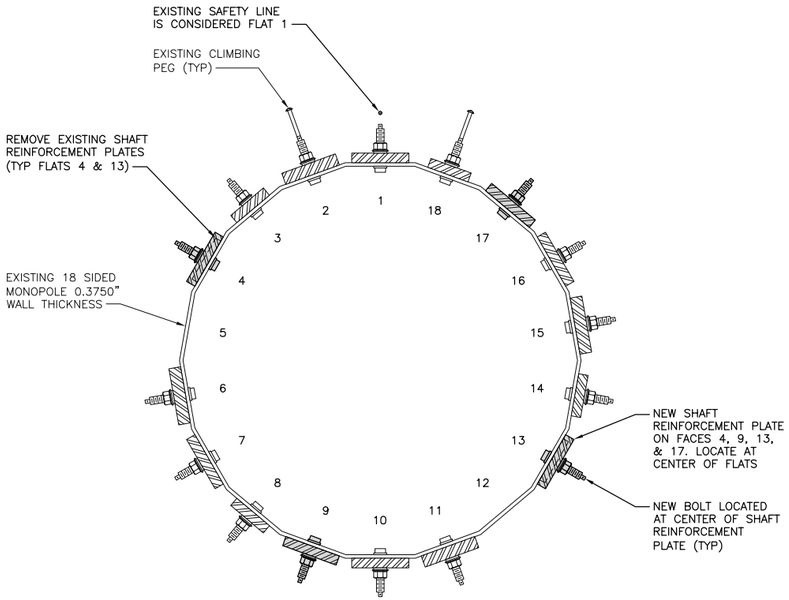
SHEET TITLE

COAX FEEDLINE PLAN & SPLICE PLATE DETAIL

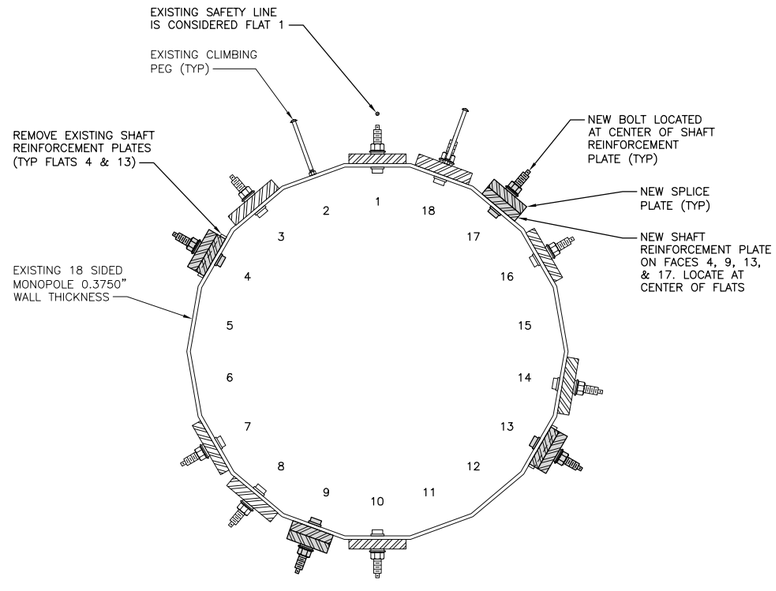
SHEET NUMBER

TM-8

CLIMBING PATH MAY BECOME OBSTRUCTED AFTER INSTALLATION OF THE PROPOSED MODIFICATIONS. IF NOT ALREADY EXISTING ON THIS TOWER, CONTRACTOR TO PROVIDE NEW SIGNAGE PER CROWN CASTLE REQUIREMENTS.



SECTION 1
NO SCALE



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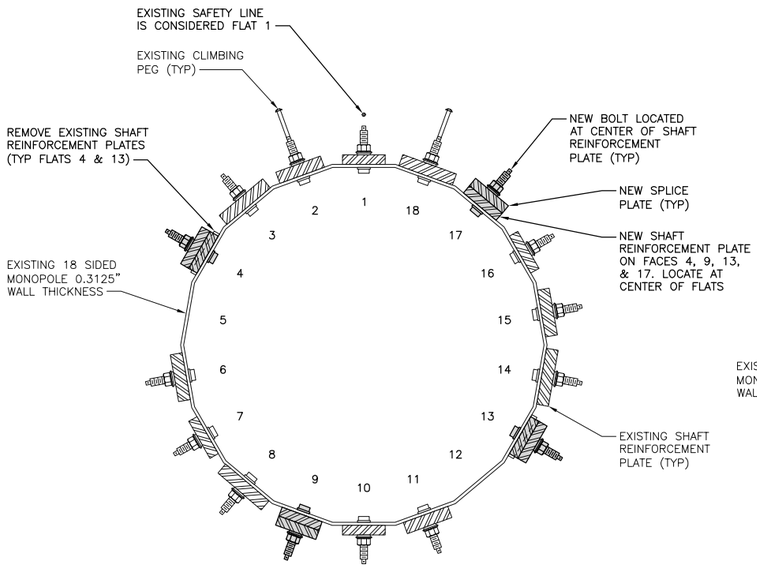

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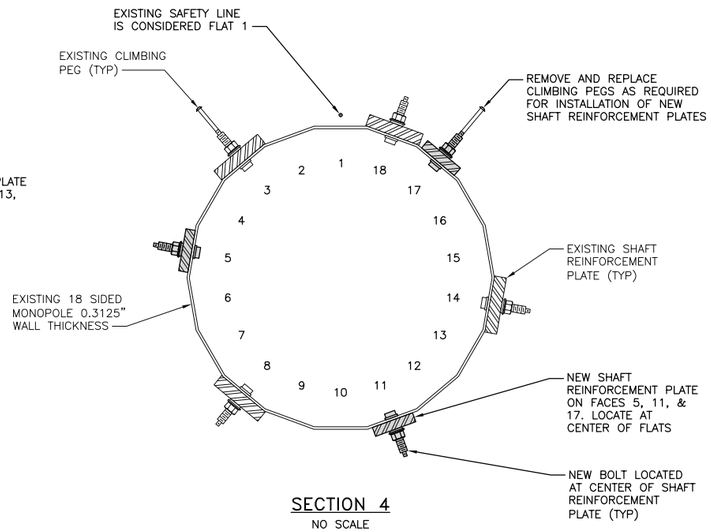

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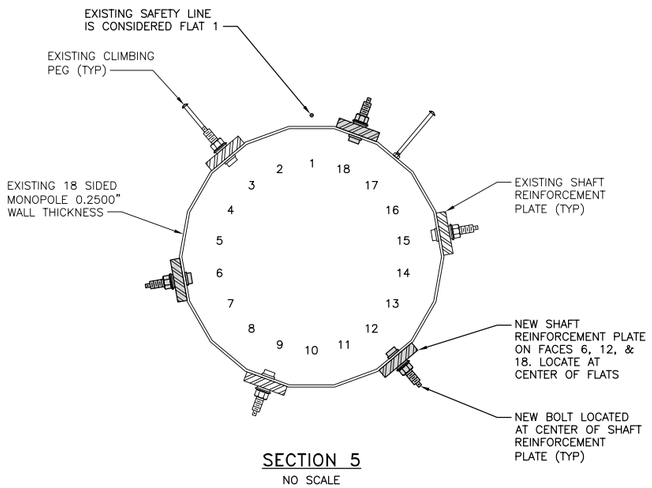

SECTION 5
NO SCALE

PREPARED FOR:

CROWN CASTLE

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SHEET TITLE

TOWER SECTIONS

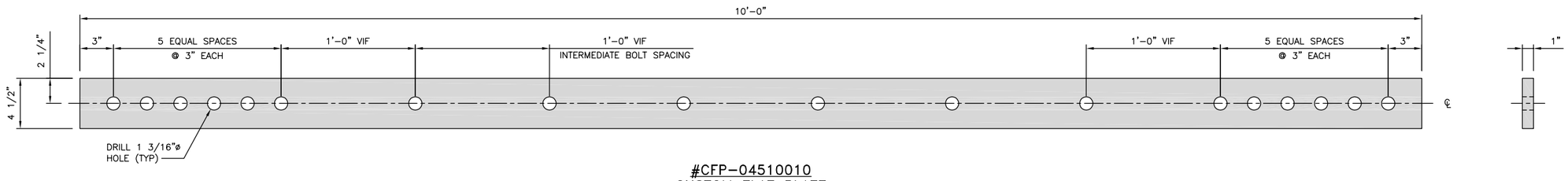
SHEET NUMBER

TM-9

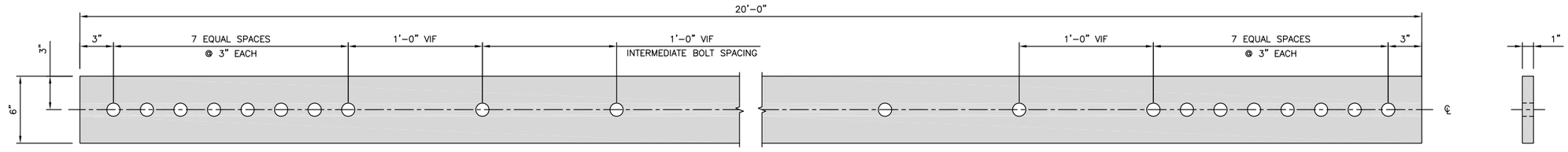
AFTER REMOVING EXISTING REINFORCEMENT ON FLATS 4 & 13 CONTRACTOR TO MATCH EXISTING BOLT HOLES ON TOWER WITH HOLES IN NEW FLAT PLATE REINFORCEMENT. HOLE LOCATIONS SHOWN HERE ARE PRELIMINARY AND BASED ON CURRENT KNOWLEDGE OF EXISTING REINFORCEMENTS. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF EXISTING HOLES PRIOR TO FABRICATION. REAM OUT EXISTING HOLES IN TOWER SHAFT AS REQUIRED TO ALLOW FOR NEW BOLT INSTALLATION. ALL BOLTS TO BE A MINIMUM 3" FROM ADJACENT BOLTS OR BOLT HOLES.

NOTES

1. ALL HOLES ARE TO BE DRILLED. DO NOT BURN OR PUNCH.
2. TOLERANCES: FRACTIONS ± 1/16"
   ANGLES ± 1/2 DEGREE
   DECIMALS ± .010"
3. THE 65 KSI MATERIAL SHALL CONFORM TO THE FOLLOWING.
   A. MATERIAL SHALL BE ASTM A572 HAVING A MINIMUM TENSILE STRENGTH (Fu) OF 80 KSI AND A MINIMUM YIELD STRENGTH (Fy) OF 65 KSI.
   B. THE FINISH SHALL BE HOT–DIPPED GALVANIZED PER ASTM A123.



#CFP–04510010
CUSTOM FLAT PLATE
(4) PL 1"x4 1/2"x10'–0" (A572–65)
NO SCALE



#CFP–06010020
CUSTOM FLAT PLATE
(2) PL 1"x6"x20'–0" (A572–65)
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TYW
CHECKED BY:	LM

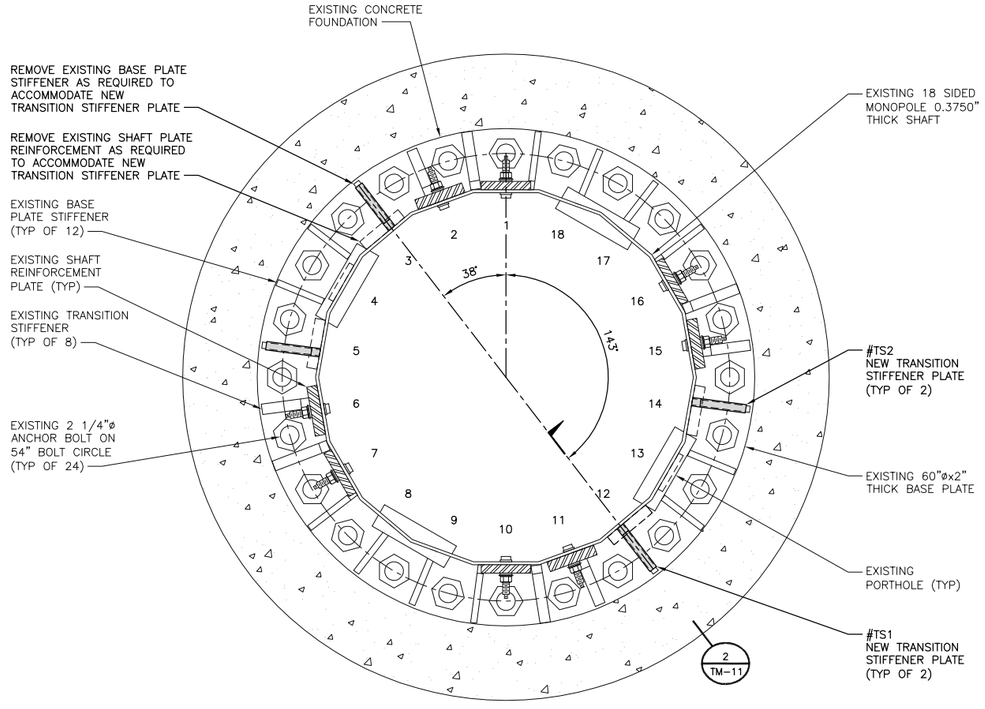
REV	DATE	DESCRIPTION
0	03/21/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSHUA J. RILEY
3208
LICENSED
PROFESSIONAL ENGINEER
03/25/2019

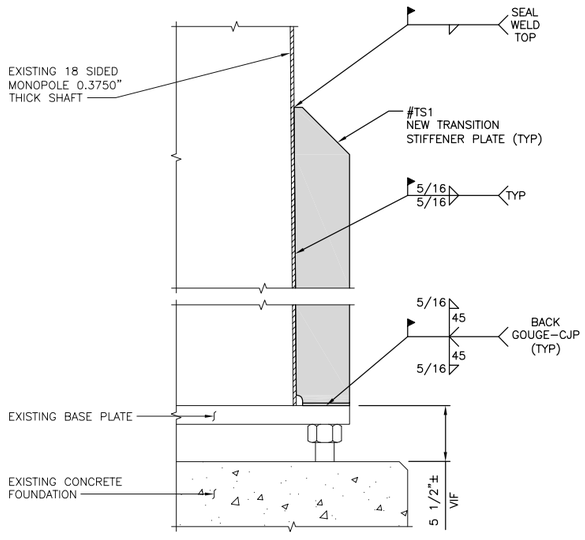
BU #842859
WO #1706223
BRISTOL CENTER
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

SHEET TITLE
CUSTOM FLAT PLATE DETAILS

SHEET NUMBER
TM-10



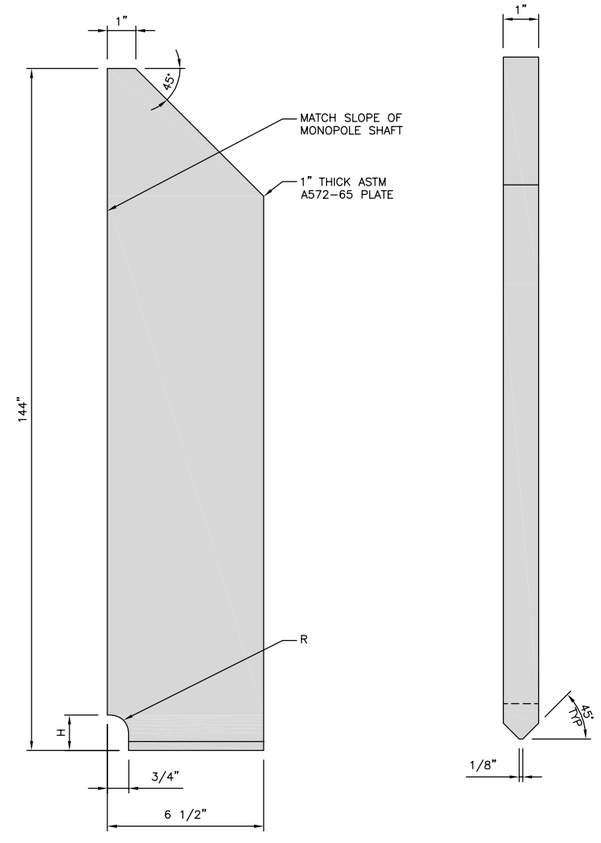
SECTION 1
TRANSITION STIFFENER PLATE PLAN
NO SCALE



SECTION 2
NO SCALE

NOTES

1. ALL NEW PLATES SHALL BE HOT–DIPPED GALVANIZED.



NOTE
R = STIFFENER THICKNESS/2
H = STIFFENER THICKNESS

#TS1
TRANSITION STIFFENER PLATE
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TYW
CHECKED BY:	LM

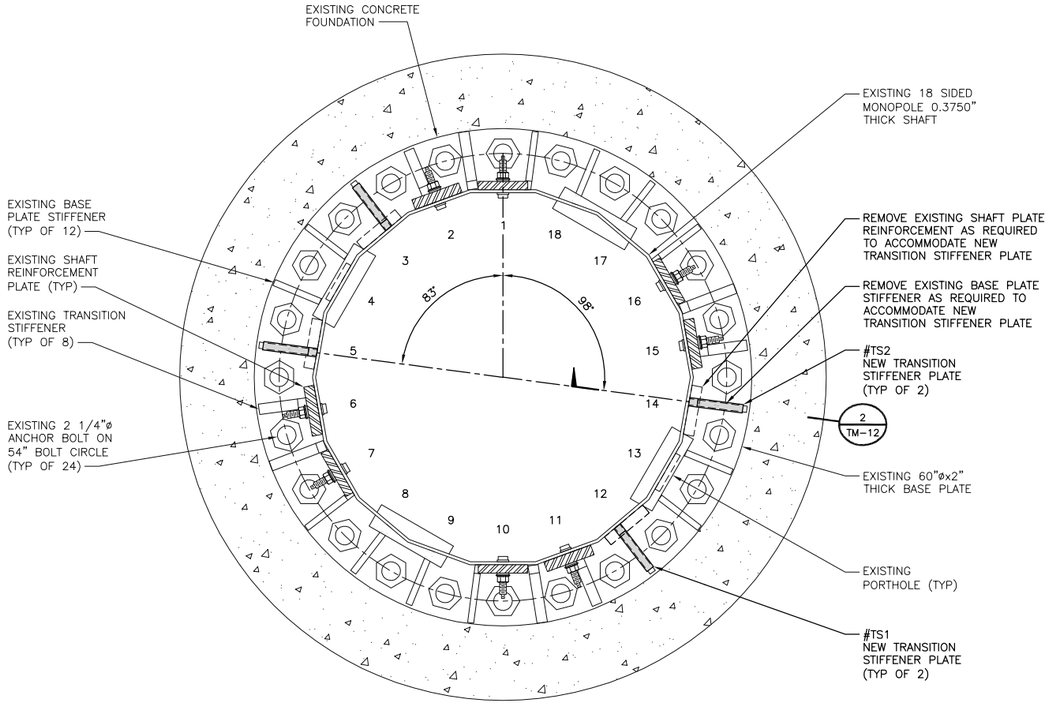
REV	DATE	DESCRIPTION
0	03/21/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
03/25/2019

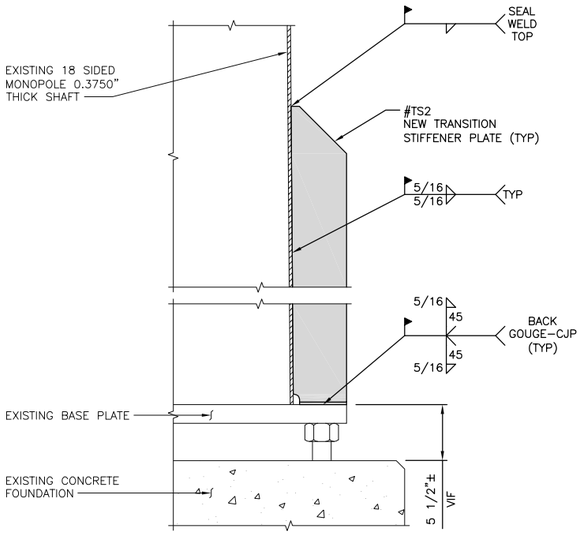
BU #842859
WO #1706223
BRISTOL CENTER
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

SHEET TITLE
TRANSITION STIFFENER PLATE DETAILS

SHEET NUMBER
TM-11



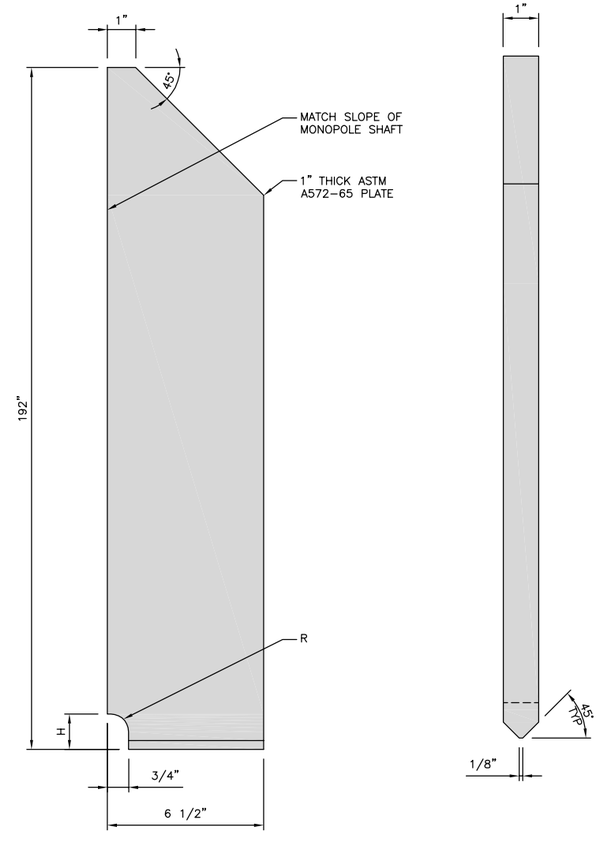
SECTION 1
TRANSITION STIFFENER PLATE PLAN
NO SCALE



SECTION 2
NO SCALE

NOTES

1. ALL NEW PLATES SHALL BE HOT–DIPPED GALVANIZED.



NOTE
R = STIFFENER THICKNESS/2
H = STIFFENER THICKNESS

#TS2
TRANSITION STIFFENER PLATE
NO SCALE

PREPARED FOR:

CROWN CASTLE

BLACK & VEATCH

6800 W 115TH ST, SUITE 2292
OVERLAND PARK, KS 66211

PROJECT NO:	400087
DRAWN BY:	TYW
CHECKED BY:	LM

REV	DATE	DESCRIPTION
0	03/21/19	ISSUED FOR CONSTRUCTION

STATE OF CONNECTICUT
JOSHUA J. RILEY
33208
LICENSED PROFESSIONAL ENGINEER
03/25/2019

BU #842859
WO #1706223
BRISTOL CENTER
371 TERRYVILLE AVENUE
BRISTOL, CT 06010
HARTFORD COUNTY, USA

SHEET TITLE
TRANSITION STIFFENER PLATE DETAILS

SHEET NUMBER
TM-12

Date: **February 5, 2019**

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

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

Subject:	**Mount Modification Report**	
Carrier Designation:	**AT&T Mount Modification**	
	Carrier Site Number:	10070954
	Carrier Site Name:	Bristol Center
Crown Castle Designation:	**Crown Castle BU Number:**	842859
	Crown Castle Site Name:	Bristol Center
	Crown Castle JDE Job Number:	553477
	Crown Castle Order Number:	475338, Rev. 0
Engineering Firm Designation:	**Infinigy Report Designation:**	1039-A0002-B
Site Data:	**371 Terryville Avenue, Bristol, CT, 06010** **Latitude 41°40'47.71" Longitude -72°57'45.18"**	
Structure Information:	**Tower Height & Type:**	**168.5 ft Monopole**
	Mount Elevation:	**168.0 ft**
	Mount Type:	**14.5 ft Platform**

Dear Charles McGuirt,

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

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

Platform (typical) **Sufficient**

The analysis has been performed in accordance with the TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 120 mph from the 2015 International Building Code. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

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

Mount analysis prepared by: Christopher Kudlacik
Respectfully Submitted by:

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

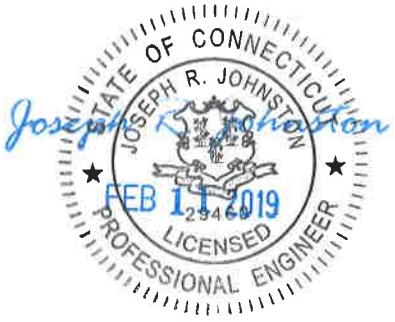


TABLE OF CONTENTS

1) INTRODUCTION

This mount is an existing 14.5 ft Platform.This mount is installed at the 168.0 ft elevation on 3 sector(s) of the 168.5 ft Monopole.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.7 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
168.0	168.0	2	CCI	TPA-65R-LCUUUUH8	Platform w/ HRK14-U Handrail and PRK-1245 Kit
		3	Kathrein	80010121	
		1	Kathrein	80010798	
	169.0	1	Kathrein	80010965	
		2	Kathrein	80010966	
	168.0	3	Ericsson	RRUS 32	
		3	Ericsson	RRUS 32 B2	
		3	Ericsson	RRUS 4426 B66	
		3	Ericsson	RRUS 4449 B5/B12	
		3	Ericsson	RRUS E2 B29	
	169.0	6	Powerwave	LGP21401	
	167.0	2	Raycap	DC6-48-60-18-8F	
	168.0	1	Raycap	DC6-48-60-18-8F	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	AT&T Application	475336, Rev. 0	CCI Sites
Black & Veatch Structural Analysis	June 05, 2018	842859	CCI Sites
Photos	Crown Castle	October 12, 2018	CCI Sites

3.1) Analysis Method

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Horizontal	M11	168.0	11.5	Pass
	Mount Pipe	MP12		50.4	Pass
	Standoff	M3		33.8	Pass
	Handrail	M35		22.1	Pass
	Bolt Check	--		69.7	Pass

Structure Rating (max from all components) =	69.7%

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

4.1) Recommendations

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

- Replace existing mount pipes with (12) sitepro1 P3096 Mounting Pipes with (12) SCX43-K Crossover Plates
- Install (1) Sitepro1 HRK14-U Handrail 36 in. above main horizontal with (12) SCX2-K Crossover Plates
- Install (1) Sitepro1 PRK-1245 Reinforcment Kit per manufacters specifications

RF EMISSIONS COMPLIANCE REPORT

Crown Castle on behalf of AT&T Mobility, LLC

Crown Castle Site Name: BRISTOL CENTER
Crown Castle Site BU: 842859
AT&T Mobility, LLC Site FA #: 10070954
371 TERRYVILLE AVENUE
BRISTOL, CT
4/12/2019

Report Status:

AT&T Mobility, LLC Is Compliant

Prepared By:

Site Safe, LLC

8618 Westwood Center Drive
Suite 315

Vienna, VA 22182

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

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

My signature on the cover of this document indicates:

That I am registered as a Professional Engineer in the jurisdiction indicated; and

That I have extensive professional experience in the wireless communications engineering industry; and

That I am an employee of Site Safe, LLC in Vienna, Virginia; and

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

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

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

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

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

That such consideration of possible exposure of humans to radio frequency energy must utilize the standards set by the FCC, which is the federal agency having jurisdiction over communications facilities; and

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

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

That when applying the uncontrolled environment standards, the predicted Maximum Power Density at two meters above ground level from the proposed AT&T Mobility, LLC operation is

no more than 1.599% of the maximum permissible exposure limit in any accessible area on the ground; and

That it is understood per FCC Guidelines and OET Bulletin 65 Appendix A, that regardless of the existent radio-frequency environment, only those licenses whose contributions exceed five percent of the exposure limit pertinent to their operation(s) bear any responsibility for bringing any non-compliant area(s) into compliance; and

That when applying the uncontrolled environment standards, the cumulative predicted energy density from the existing and proposed operations is no more than 4.539% of the maximum in any accessible area up to two meters above the ground per OET Bulletin 65; and

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

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

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

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

Crown Castle
BRISTOL CENTER
Site Summary

Carrier	Area Maximum Percentage MPE
AT&T Mobility, LLC	0.109 %
AT&T Mobility, LLC (Proposed)	0.32 %
AT&T Mobility, LLC (Proposed)	0.31 %
AT&T Mobility, LLC (Proposed)	0.283 %
AT&T Mobility, LLC (Proposed)	0.163 %
AT&T Mobility, LLC (Proposed)	0.174 %
AT&T Mobility, LLC (Proposed)	0.24 %
Sprint	0.153 %
Sprint	0.194 %
Sprint	0.116 %
Sprint	0.117 %
Sprint	0.335 %
T-Mobile	0.1 %
T-Mobile	0.2 %
Verizon Wireless	0.383 %
Verizon Wireless	0.53 %
Verizon Wireless	0.29 %
Verizon Wireless	0.521 %
Composite Site MPE:	4.539 %

AT&T Mobility, LLC
BRISTOL CENTER
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	0.61985	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.10938	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Kathrein-Scala	800-10121	167	85	1043	0.36511	0.064431	0.556774	0.098254
Kathrein-Scala	800-10121	167	205	1043	0.36511	0.064431	0.556774	0.098254
Kathrein-Scala	800-10121	167	325	1043	0.36511	0.064431	0.556774	0.098254

AT&T Mobility, LLC (Proposed)
BRISTOL CENTER
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	3.19767	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.31977	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Kathrein-Scala	800-10966	167	85	7364	1.554556	0.155456	3.062825	0.306283
Kathrein-Scala	800-10966	167	205	7364	1.538592	0.153859	3.062826	0.306283
Kathrein-Scala	800-10965	167	325	7114	1.071629	0.107163	2.601257	0.260126

AT&T Mobility, LLC (Proposed)
BRISTOL CENTER
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	1.75539	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.30977	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Kathrein-Scala	800-10966	167	85	4287	1.035159	0.182675	1.677202	0.295977
Kathrein-Scala	800-10966	167	205	4287	1.04098	0.183702	1.677202	0.295977
Kathrein-Scala	800-10965	167	325	3607	0.799688	0.141121	0.815477	0.143908

AT&T Mobility, LLC (Proposed)
BRISTOL CENTER
Carrier Summary

Frequency:	763	MHz
Maximum Permissible Exposure (MPE):	508.67	µW/cm^2
Maximum power density at ground level:	1.44112	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.28331	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Kathrein-Scala	800-10966	167	85	3623	0.983498	0.193348	1.288841	0.253376
Kathrein-Scala	800-10966	167	205	3623	0.983498	0.193348	1.288841	0.253376
Kathrein-Scala	800-10965	167	325	2959	0.831428	0.163452	1.051005	0.206619

AT&T Mobility, LLC (Proposed)
BRISTOL CENTER
Carrier Summary

Frequency:	2300	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.63393	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.16339	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	TPA-65R-LCUUUU-H8	167	85	4366	0.722098	0.07221	1.584587	0.158459
CCI Antennas	TPA-65R-LCUUUU-H8	167	205	4366	0.718884	0.071888	1.584587	0.158459
Kathrein-Scala	800-10798	167	325	2099	0.653224	0.065322	1.243174	0.124317

AT&T Mobility, LLC (Proposed)
BRISTOL CENTER
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.73661	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.17366	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	TPA-65R-LCUUUU-H8	167	85	3892	0.691485	0.069148	1.572098	0.15721
CCI Antennas	TPA-65R-LCUUUU-H8	167	205	3892	0.691485	0.069148	1.572098	0.15721
Kathrein-Scala	800-10798	167	325	3751	0.812025	0.081203	1.461518	0.146152

AT&T Mobility, LLC (Proposed)
BRISTOL CENTER
Carrier Summary

Frequency:	737	MHz
Maximum Permissible Exposure (MPE):	491.33	µW/cm^2
Maximum power density at ground level:	1.18156	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.24048	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
CCI Antennas	TPA-65R-LCUUUU-H8	167	85	3632	0.754557	0.153573	0.787426	0.160263
CCI Antennas	TPA-65R-LCUUUU-H8	167	205	3632	0.752445	0.153143	0.787426	0.160263
Kathrein-Scala	800-10798	167	325	2905	0.724881	0.147533	1.131879	0.230369

Sprint
BRISTOL CENTER
Carrier Summary

Frequency:	1990	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.53125	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.15312	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Powerwave	P40-16-XLPP-RR	158	355	3583	0.764896	0.07649	1.22806	0.122806
Powerwave	P40-16-XLPP-RR	158	200	3583	0.764896	0.07649	1.22806	0.122806
RFS	APXVSPP18-C-A20	158	280	2113	0.410591	0.041059	0.755799	0.07558

Sprint
BRISTOL CENTER
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.93708	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.19371	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Powerwave	P40-16-XLPP-RR	158	355	3583	0.764896	0.07649	1.22806	0.122806
Powerwave	P40-16-XLPP-RR	158	200	3583	0.764896	0.07649	1.22806	0.122806
RFS	APXVSPP18-C-A20	158	280	3804	0.739065	0.073906	1.360439	0.136044

Sprint
BRISTOL CENTER
Carrier Summary

Frequency:	869	MHz
Maximum Permissible Exposure (MPE):	579.33	µW/cm^2
Maximum power density at ground level:	0.67055	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.11575	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Powerwave	P40-16-XLPP-RR	158	355	1315	0.610723	0.105418	0.629446	0.10865
Powerwave	P40-16-XLPP-RR	158	200	1315	0.610452	0.105371	0.629446	0.10865
RFS	APXVSPP18-C-A20	158	280	1084	0.308076	0.053178	0.314742	0.054328

Sprint
BRISTOL CENTER
Carrier Summary

Frequency:	862	MHz
Maximum Permissible Exposure (MPE):	574.67	µW/cm^2
Maximum power density at ground level:	0.67055	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.11669	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Powerwave	P40-16-XLPP-RR	158	355	1315	0.610723	0.106274	0.629446	0.109532
Powerwave	P40-16-XLPP-RR	158	200	1315	0.610452	0.106227	0.629446	0.109532
RFS	APXVSPP18-C-A20	158	280	1084	0.308076	0.05361	0.314742	0.05477

Sprint
BRISTOL CENTER
Carrier Summary

Frequency:	2500	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	3.34993	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.33499	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
RFS	APXVTM14-C-I20	158	355	6168	0.883774	0.088377	1.686104	0.16861
RFS	APXVTM14-C-I20	158	200	6168	0.88323	0.088323	1.686104	0.16861
RFS	APXVTM14-C-I20	158	280	6168	0.883774	0.088377	1.686104	0.16861

T-Mobile
BRISTOL CENTER
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	1.00091	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.10009	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR 21 B4A B2P	130	30	2061	0.597229	0.059723	0.682926	0.068293
Ericsson	AIR 21 B4A B2P	130	150	2061	0.597021	0.059702	0.682926	0.068293
Ericsson	AIR 21 B4A B2P	130	270	2061	0.597021	0.059702	0.682926	0.068293

T-Mobile
BRISTOL CENTER
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	2.00182	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.20018	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Ericsson	AIR 21 B2A B4P	130	30	2061	0.597229	0.059723	0.682926	0.068293
Ericsson	AIR 21 B2A B4P	130	30	2061	0.597229	0.059723	0.682926	0.068293
Ericsson	AIR 21 B2A B4P	130	150	2061	0.597021	0.059702	0.682926	0.068293
Ericsson	AIR 21 B2A B4P	130	150	2061	0.597021	0.059702	0.682926	0.068293
Ericsson	AIR 21 B2A B4P	130	270	2061	0.597021	0.059702	0.682926	0.068293
Ericsson	AIR 21 B2A B4P	130	270	2061	0.597021	0.059702	0.682926	0.068293

Verizon Wireless
BRISTOL CENTER
Carrier Summary

Frequency:	2100	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	3.83366	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.38337	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	SBNHH-1D65B	140	60	4980	2.347572	0.234757	3.628893	0.362889
ANDREW	SBNHH-1D65B	140	180	4980	2.325522	0.232552	3.628893	0.362889
ANDREW	SBNHH-1D65B	140	300	4980	2.325522	0.232552	3.628893	0.362889

Verizon Wireless
BRISTOL CENTER
Carrier Summary

Frequency:	1900	MHz
Maximum Permissible Exposure (MPE):	1000	µW/cm^2
Maximum power density at ground level:	5.29882	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.52988	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	SBNHH-1D65B	140	60	4583	4.100403	0.41004	5.232118	0.523212
ANDREW	SBNHH-1D65B	140	180	4583	4.100403	0.41004	5.232116	0.523212
ANDREW	SBNHH-1D65B	140	300	4583	4.041649	0.404165	5.232119	0.523212

Verizon Wireless
BRISTOL CENTER
Carrier Summary

Frequency:	751	MHz
Maximum Permissible Exposure (MPE):	500.67	µW/cm^2
Maximum power density at ground level:	1.45266	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.29015	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
ANDREW	SBNHH-1D65B	140	60	2043	0.761657	0.152129	1.226814	0.245036
ANDREW	SBNHH-1D65B	140	180	2043	0.761657	0.152129	1.226814	0.245036
ANDREW	SBNHH-1D65B	140	300	2043	0.760685	0.151934	1.226814	0.245036

Verizon Wireless
BRISTOL CENTER
Carrier Summary

Frequency:	850	MHz
Maximum Permissible Exposure (MPE):	566.67	µW/cm^2
Maximum power density at ground level:	2.95315	µW/cm^2
Highest percentage of Maximum Permissible Exposure:	0.52114	%

					On Axis		Area	
Antenna Make	**Model**	**Height (feet)**	**Orientation (degrees true)**	**ERP (Watts)**	**Max Power Density (µW/cm^2)**	**Percent of MPE**	**Max Power Density (µW/cm^2)**	**Percent of MPE**
Antel	BXA-70063-4CF	140	60	3192	2.20577	0.389254	2.908475	0.51326
Antel	BXA-70063-4CF	140	180	3192	2.20577	0.389254	2.908475	0.51326
Antel	BXA-70063-4CF	140	300	3192	2.208583	0.38975	2.908474	0.51326