



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

June 20, 2016

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

RE: Notice of Exempt Modification  
**EM-T-MOBILE-094-160606**  
123 Costello Road, Newington CT 06111  
Latitude: 41.655206  
Longitude: -72.721396  
T-Mobile Site#: CT11782A\_L1900

Dear Ms. Bachman:

As requested, please find the enclosed revised submission for 123 Costello Road, Newington CT 06111. We have included both the parcel map and property card as required from letter received dated June 9, 2016.

**EM-T-MOBILE-094-160606**

As previously submitted, T-Mobile currently maintains nine (9) antennas at the 95-foot level of the existing 145-foot monopole at 123 Costello Road, Newington Ct 06111. The tower is owned by Crown Castle. The property is owned by Costello Industries Inc. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 1900 MHz antenna. The antenna would be installed at the 95-foot level of the tower.

This facility was approved by the Town of Newington PZC. The town file is no longer available – See attached letter from the Town Planner.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-SOj-73, a copy of this letter is being sent to Mayor Stephen Woods, Elected Official for the Town of Newington, as well as the property owner and the tower owner.



The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

**Denise Sabo**

Mobile: 860-209-4690

Fax: 413-521-0558

Office: 199 Brickyard Rd, Farmington, CT 06032

Email: [denise@northeastsitesolutions.com](mailto:denise@northeastsitesolutions.com)

Attachments

cc: Stephen Woods- Mayor - as elected official

Crown Castle - as tower owner

Costello Industries Inc - as property owner

# Exhibit A

**Deborah Chase**

---

**From:** Minor, Craig <CMinor@NewingtonCT.Gov>  
**Sent:** Tuesday, May 31, 2016 3:45 PM  
**To:** Denise Sabo  
**Subject:** 123 Costello Road

Denise:

I have searched our files, and I do not have a copy of the original approval document for the PCS tower at 123 Costello Road.

Craig Minor, AICP  
Town Planner

\*\*\*\*\*  
The information contained in this electronic message may be confidential and/or privileged.  
If you received this in error, please inform the sender and remove any record of this  
message. Please note that messages to or from the Town of Newington may be subject to  
Freedom of Information statutes and regulations.

# Exhibit B

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2015.

## Town of Newington

# ASSESSOR'S OFFICE



Information on the Property Records for the Municipality of Newington was last updated on 6/10/2016.

## Property Summary Information

Parcel Data And Values

Building ▾

Outbuildings

Sales

Permits

Google Map

### Parcel Information

Location:	123 COSTELLO RD	Property Use:	Industrial	Primary Use:	Office Warehouse
Unique ID:	C0685500	Map Block Lot:	32/018/00A	Acres:	2.84
490 Acres:	0.00	Zone:	PD	Volume / Page:	0573/0098
Developers Map / Lot:	S/E 2020 & 2815	Census:			

### Value Information

	Appraised Value	70% Assessed Value
Land	382,500	267,750
Buildings	118,943	83,260

Detached Outbuildings	287,500	201,250
Total	788,943	552,260

### Owner's Information

#### Owner's Data

COSTELLO INDUSTRIES INC  
123 COSTELLO RD  
NEWINGTON CT 06111

[Back To Search \(JavaScript:window.history.back\(1\);\)](#)

[Print View \(PrintPage.aspx?towncode=094&uniqueid=C0685500\)](#)

Information Published With Permission From The Assessor





Search Properties ? x

NEWINGTON

123 Costello R

1 property found Show All on Map

123 COSTELLO RD

C0685500  
Current Owner

1 Sort by Address

Property Info ? x

Address 123 COSTELLO RD, NEWINGTON

Property more

ID 09003094-C0685500  
ID C0685500

Ownership

Name Current Owner  
Address

Valuation more

Total Assessment \$513,233  
Land \$330,900  
Last Sale \$ on

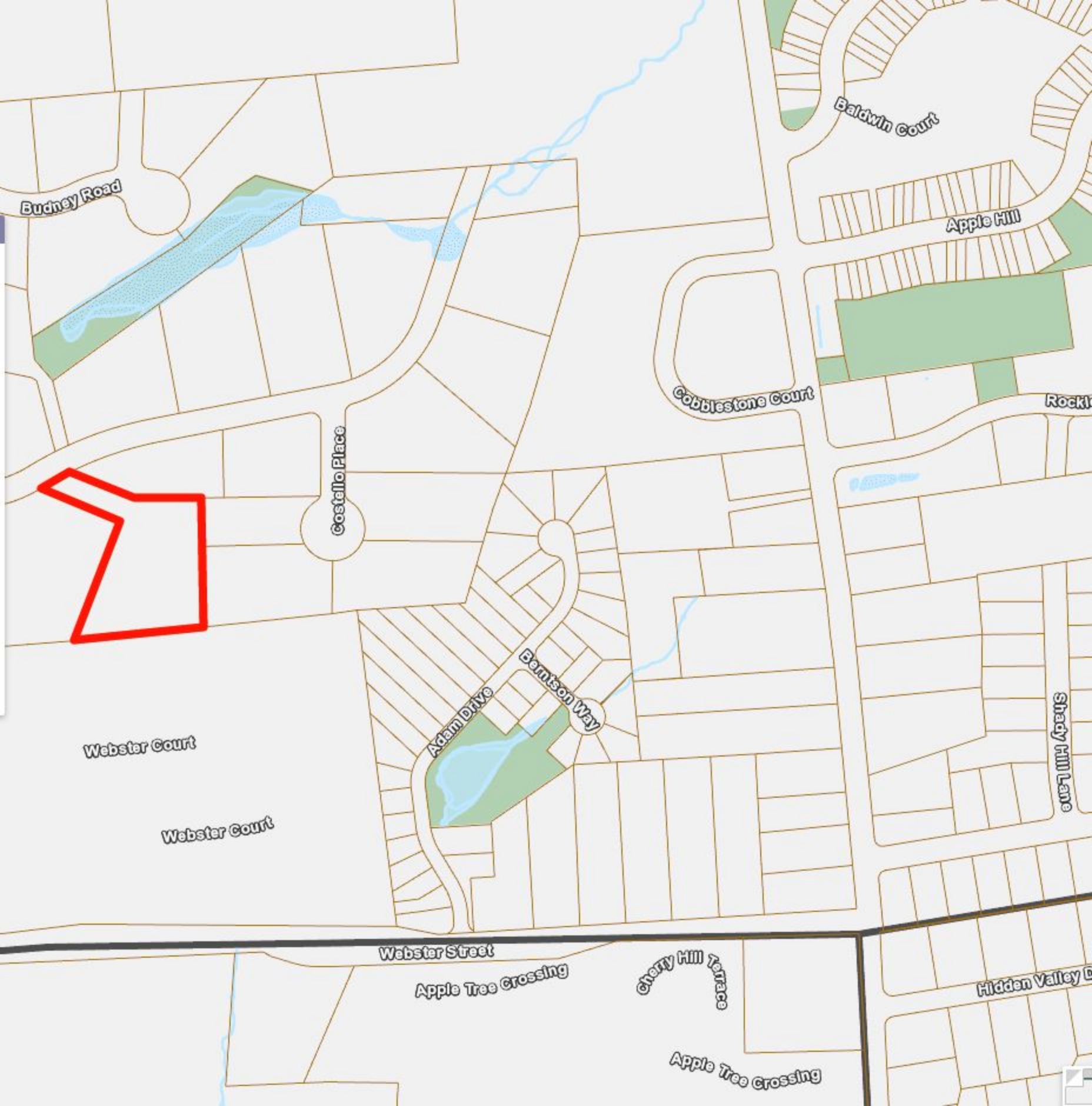
Land more

Area 2.84 Acres  
Zone

Miscellaneous

MBLU 32-018.00A

Property Record Card

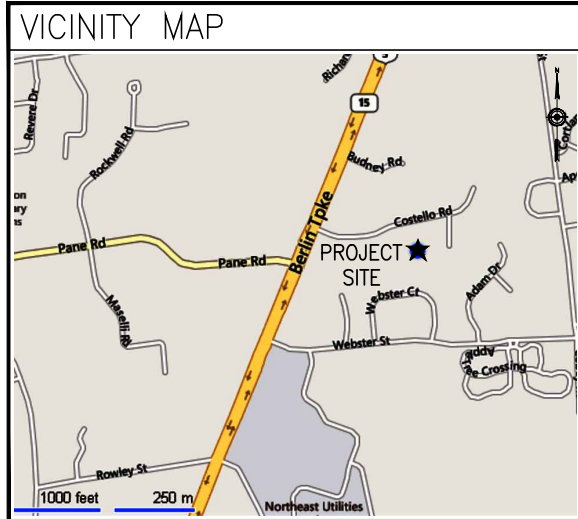




# Exhibit C

**T-Mobile**  
**T-MOBILE NORTHEAST LLC**  
**SITE #: CT11782A**  
**SITE NAME: CT782/COSTELLO MP**  
**SITE ADDRESS:**  
**123 COSTELLO ROAD**  
**NEWINGTON, CT 06111**  
**WIRELESS BROADBAND FACILITY**  
**CONSTRUCTION DRAWINGS**  
**(792DB CONFIGURATION)**

CROWN SITE #: 881364  
 CROWN SITE NAME: CT782/COSTELLO MP



**DO NOT SCALE DRAWINGS**

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

**CALL BEFORE YOU DIG:**  
 WWW.CBYD.COM  
 CALL 800 922 4455, OR 811  
 CALL THREE WORKING DAYS PRIOR TO DIGGING  
 SAFETY PRECAUTIONS SHALL BE IMPLEMENTED BY CONTRACTOR(S) AT ALL TRENCHING IN ACCORDANCE WITH CURRENT OSHA STANDARDS.

**COLOR CODE FOR UTILITY LOCATIONS**

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

- GENERAL NOTES**
- THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
  - THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
  - THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T-MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
  - THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
  - THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
  - THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
  - THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
  - THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
  - THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
  - THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
  - THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
  - THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
  - THE CONTRACTOR SHALL NOTIFY THE T-MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T-MOBILE REPRESENTATIVE.
  - THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
  - THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.
  - ATLANTIS DESIGN GROUP, INC. HAS NOT CONDUCTED A STRUCTURAL ANALYSIS FOR THIS PROJECT AND DOES NOT ASSUME ANY LIABILITY FOR THE STRUCTURE AND COMPONENTS.
  - REFER TO STRUCTURAL ANALYSIS DOCUMENT ENTITLED, "STRUCTURAL ANALYSIS REPORT " PREPARED BY AW SOLUTIONS, "T-MOBILE SITE ID CT11782A", DATED APRIL 22, 2016.

**SITE INFORMATION**

SITE NUMBER: CT11782A  
 SITE NAME: CT782/COSTELLO MP  
 SITE ADDRESS: 123 COSTELLO ROAD  
 NEWINGTON, CT 06111

LAT./LONG.: N 41.655206 / W -72.721396

JURISDICTION: TOWN OF NEWINGTON, CT

PROPERTY OWNER: COSTELLO INDUSTRIES INC  
 123 COSTELLO RD  
 NEWINGTON, CT 06111

**CODE COMPLIANCE**

CONNECTICUT STATE BUILDING CODE  
 2005 CONNECTICUT BUILDING CODE WITH 2013 AMENDMENT  
 2011 NATIONAL ELECTRICAL CODE

CONSTRUCTION TYPE: 2B      USE GROUP: N/A

**PROJECT SUB-CONTRACTORS**

APPLICANT: T-MOBILE NORTHEAST, LLC.  
 35 GRIFFIN ROAD SOUTH  
 BLOOMFIELD, CT 06002  
 (860) 692-7100

PROJECT MANAGER: LISA LIN ALLEN  
 NORTHEAST SITE SOLUTIONS  
 54 MAIN STREET  
 STURBRIDGE, MA 01566  
 (508) 434-5237

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

**SHEET INDEX**

SHEET	DESCRIPTION
T-1	TITLE SHEET
N-1	GENERAL AND ELECTRICAL NOTES
A-1	SITE PLAN
A-2	ELEVATION
A-3	ANTENNA PLAN AND DETAILS
E-1	GROUNDING AND COAX/FIBER DIAGRAM
E-2	GROUNDING DETAILS

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

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

**SUBMITTALS**

DATE	DESCRIPTION	REVISION
06/11/16	ISSUED FOR REVIEW	A
06/13/16	FINAL CD	0

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

PROJECT NO: CT11782A  
 DRAWN BY: FG  
 CHECKED BY: KM



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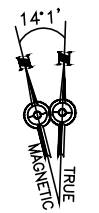
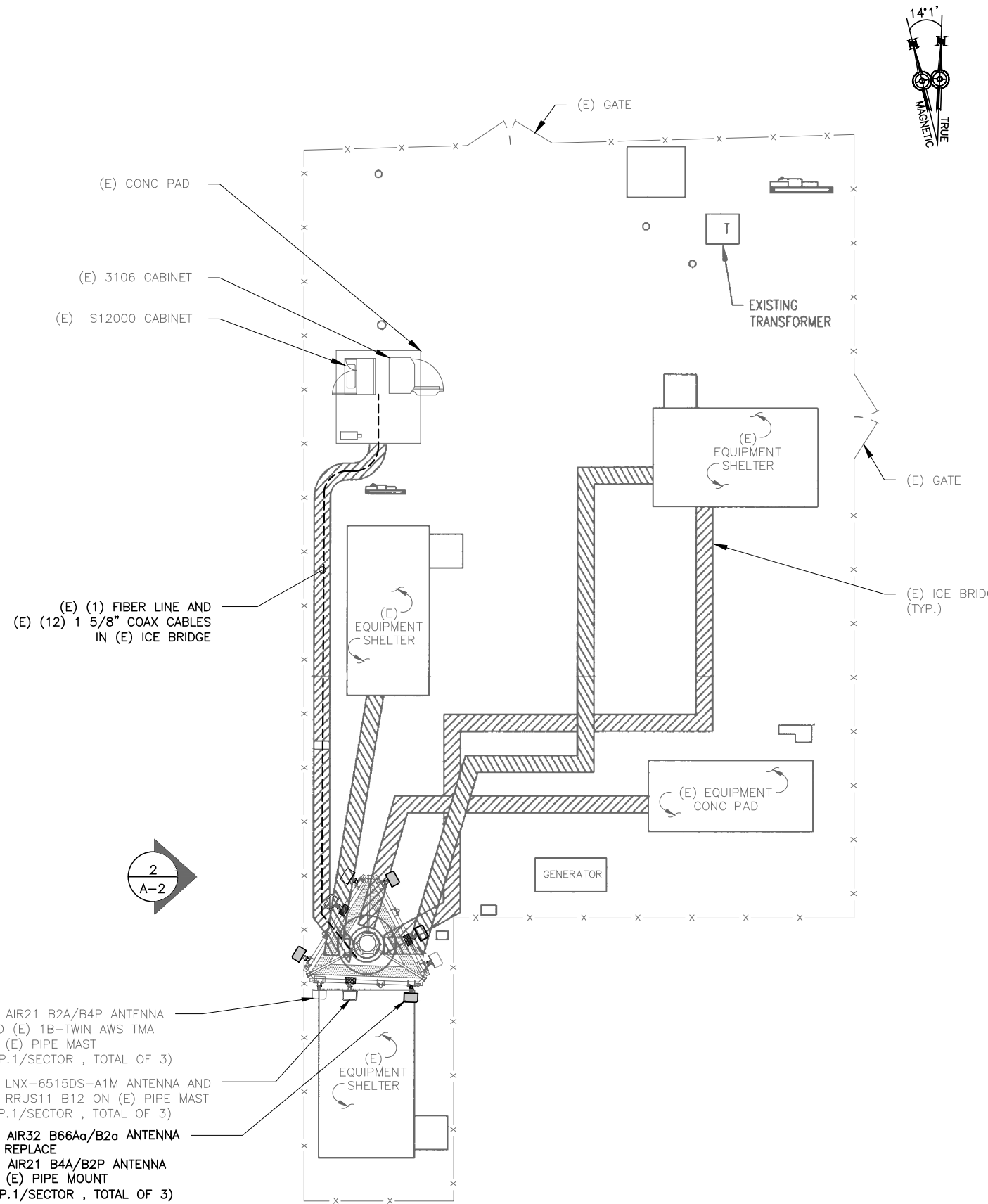
SITE NAME  
 CT11782A  
 CT782/COSTELLO MP  
 123 COSTELLO ROAD  
 NEWINGTON, CT 06111

SHEET TITLE  
 TITLE SHEET

SHEET NUMBER  
**T-1**







GENERAL SITE NOTES

1. SITE INFORMATION WAS OBTAINED FROM A FIELD INVESTIGATION PERFORMED BY ATLANTIS DESIGN GROUP, INC. CONTRACTOR TO FIELD VERIFY DIMENSIONS AS NECESSARY BEFORE CONSTRUCTION.
2. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE SIGNS OF ADVERTISING.
3. THE PROPOSED DEVELOPMENT IS UNMANNED AND THEREFORE DOES NOT REQUIRE A MEANS OF WATER SUPPLY OR SEWAGE DISPOSAL.
4. NO LANDSCAPING WORK IS PROPOSED IN CONJUNCTION WITH THIS DEVELOPMENT OTHER THAN THAT WHICH IS SHOWN.
5. THE PROPOSED DEVELOPMENT DOES NOT INCLUDE OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES.
6. UTILITIES SHOWN ON PLAN ARE TAKEN FROM OWNERS RECORDS AND FIELD LOCATION OF VISIBLE SURFACE FEATURES. THE EXISTENCE, EXTENT AND EXACT HORIZONTAL AND VERTICAL LOCATIONS OF UTILITIES HAS NOT BEEN VERIFIED. ANY CONTRACTOR PERFORMING WORK ON THIS SITE MUST CONTACT CALL BEFORE YOU DIG THREE WORKING DAYS PRIOR TO COMMENCING WORK.
7. ALL OBSOLETE OR UNUSED FACILITIES SHALL BE REMOVED WITHIN 12 MONTHS OF CESSATION OF OPERATIONS.

**T-Mobile**

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

**ATLANTIS DESIGN GROUP, INC.**  
 54 Jacqueline Road, Suite #7  
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 Phone number: 617-852-3811  
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SUBMITTALS

DATE	DESCRIPTION	REVISION
05/11/16	ISSUED FOR REVIEW	A
05/13/16	FINAL CD	0

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

PROJECT NO: CT11782A  
 DRAWN BY: FG  
 CHECKED BY: KM

SITE LEGEND

- SITE PROPERTY LINE
- STREET OR ROAD
- CHAIN LINK FENCE
- OPAQUE WOODEN FENCE
- BOARD ON BOARD FENCE
- DECIDUOUS TREES/SHRUBS
- EVERGREEN TREES/SHRUBS
- TREE LINE
- UTILITY POLE
- (E) EXISTING
- (N) NEW
- (P) PROPOSED
- (F) FUTURE
- PROP. LTE ANTENNA
- PROP. UMS/GSM ANTENNA
- EX. GSM ANTENNA
- EX. UMS ANTENNA

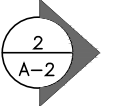
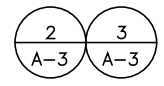


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SITE NAME  
 CT11782A  
 CT782/COSTELLO MP  
 123 COSTELLO ROAD  
 NEWINGTON, CT 06111

SHEET TITLE  
 COMPOUND PLAN

SHEET NUMBER  
 A-1



**1 COMPOUND PLAN**  
 A-1 SCALE: 1/16" = 1'-0" (11x17)  
 1/8" = 1'-0" (24x36)

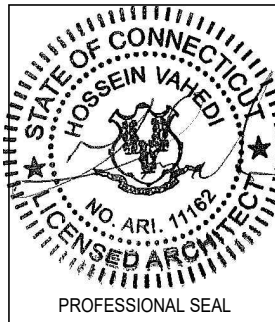




SUBMITTALS		
DATE	DESCRIPTION	REVISION
05/11/16	ISSUED FOR REVIEW	A
05/13/16	FINAL CD	0

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

PROJECT NO: CT11782A  
 DRAWN BY: FG  
 CHECKED BY: KM

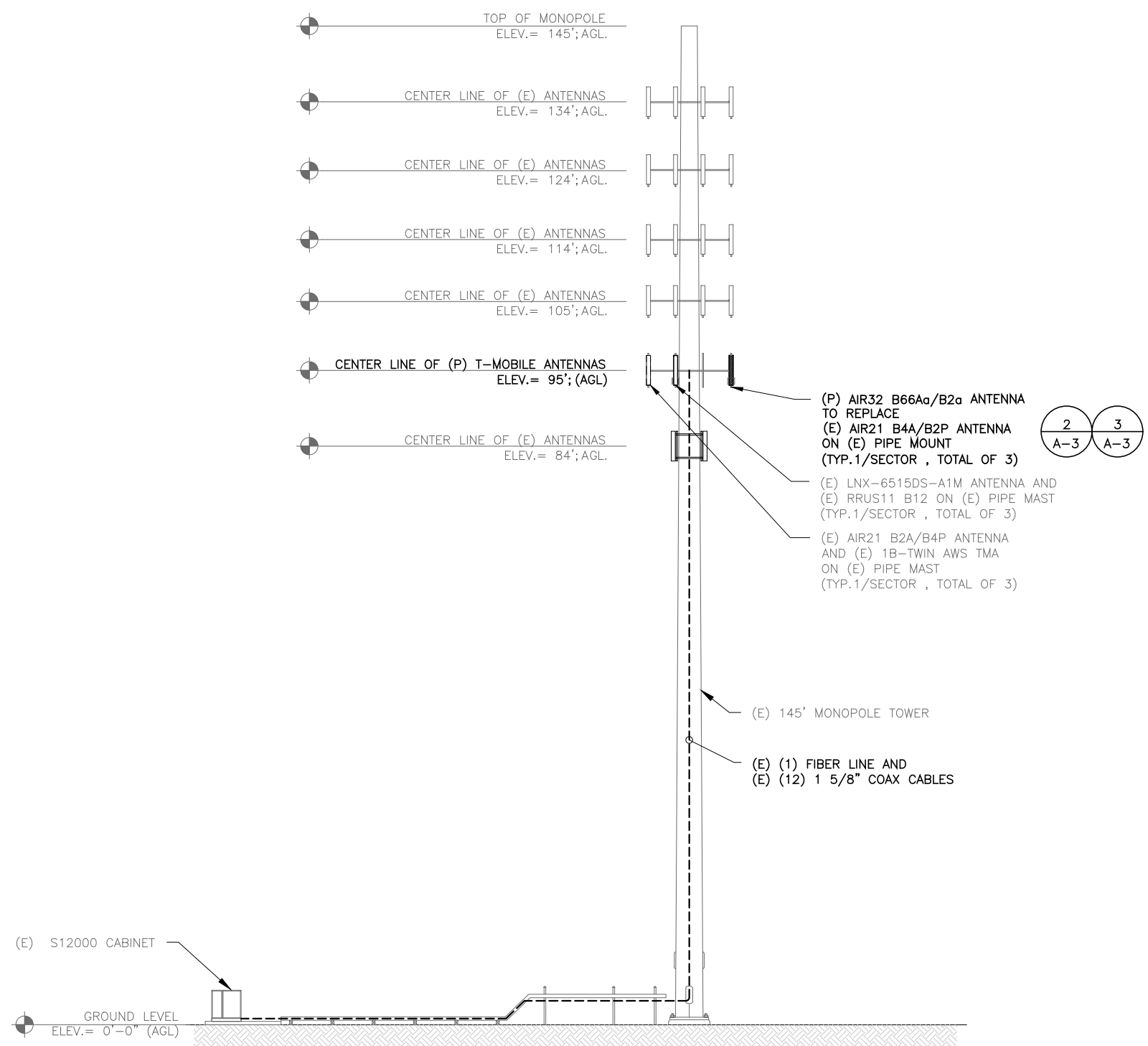


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SITE NAME  
 CT11782A  
 CT782/COSTELLO MP  
 123 COSTELLO ROAD  
 NEWINGTON, CT 06111

SHEET TITLE  
 ELEVATION  
 AND ANTENNA PLAN

SHEET NUMBER  
**A-2**



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



SUBMITTALS		
DATE	DESCRIPTION	REVISION
06/11/16	ISSUED FOR REVIEW	A
06/13/16	FINAL CD	0

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

PROJECT NO:	CT11782A
DRAWN BY:	FG
CHECKED BY:	KM

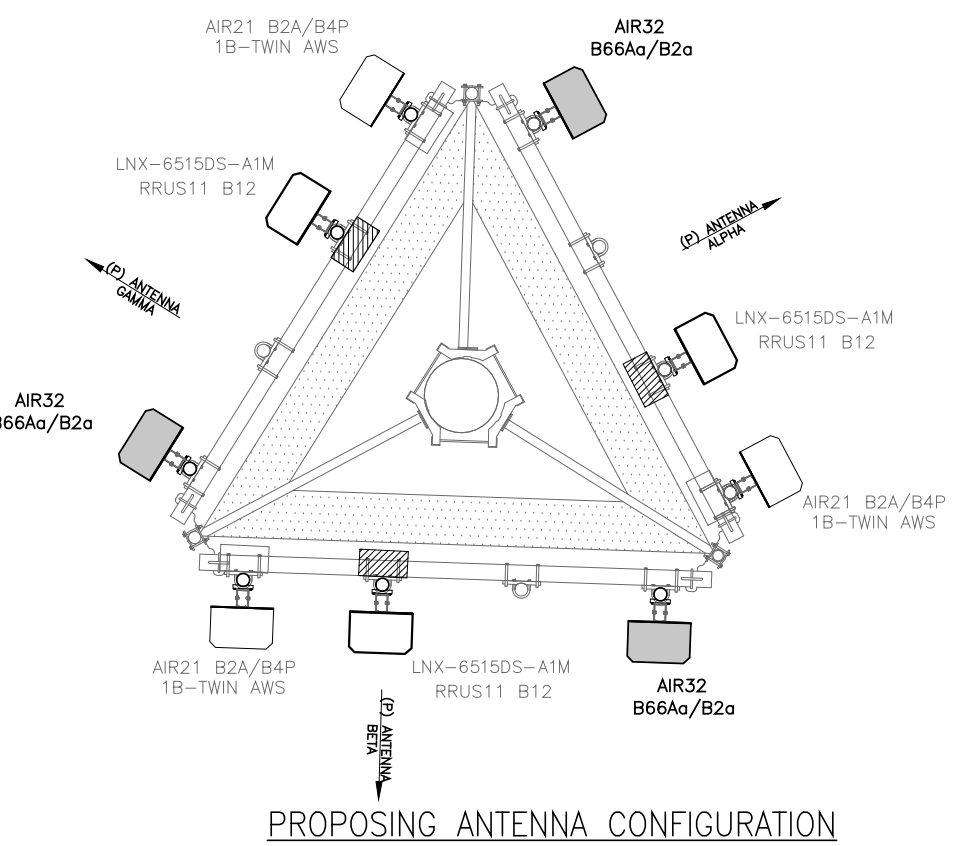
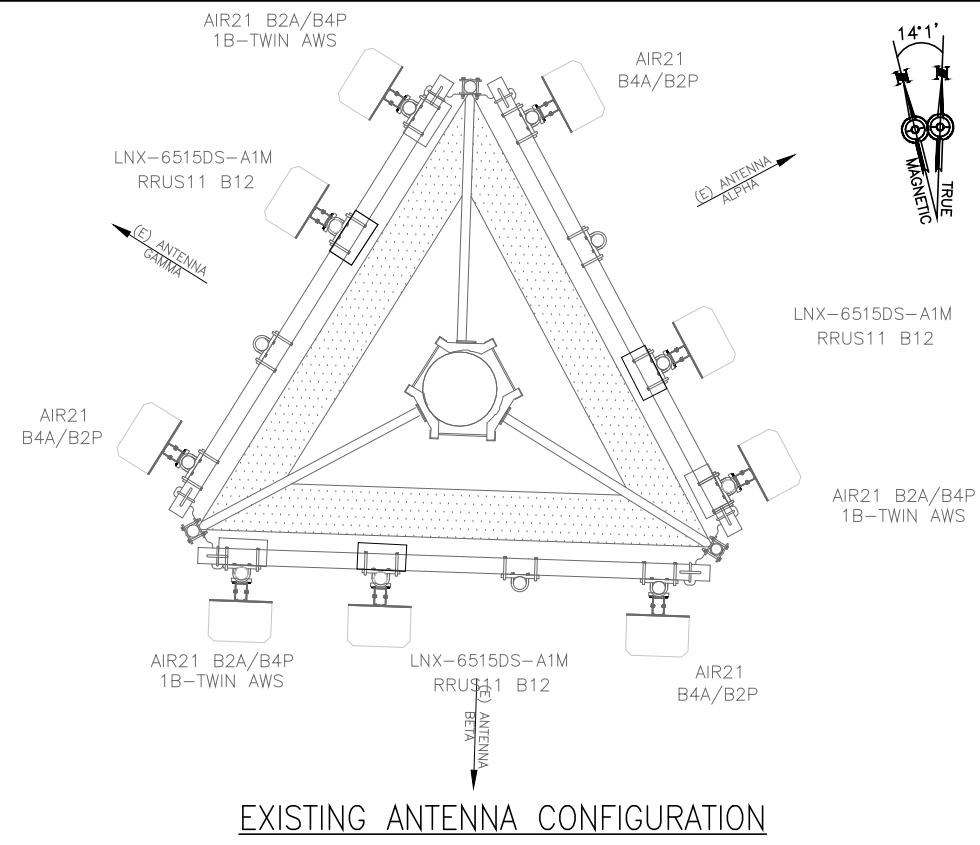


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SITE NAME  
 CT11782A  
 CT782/COSTELLO MP  
 123 COSTELLO ROAD  
 NEWINGTON, CT 06111

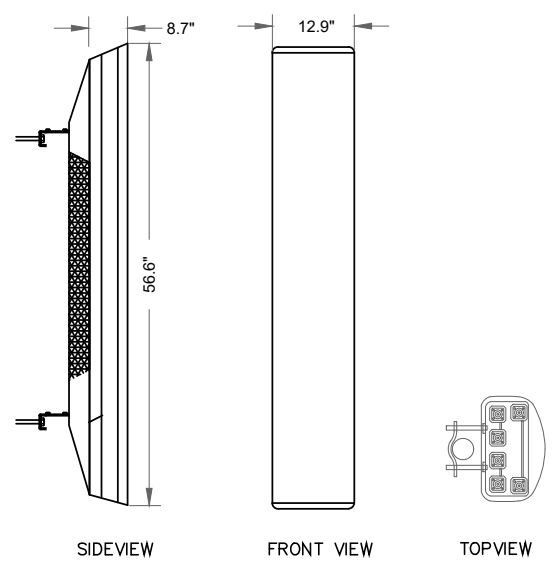
SHEET TITLE  
 ANTENNA PLAN AND DETAILS

SHEET NUMBER  
**A-3**



**ANTENNA PLAN**  
 SCALE: N.T.S

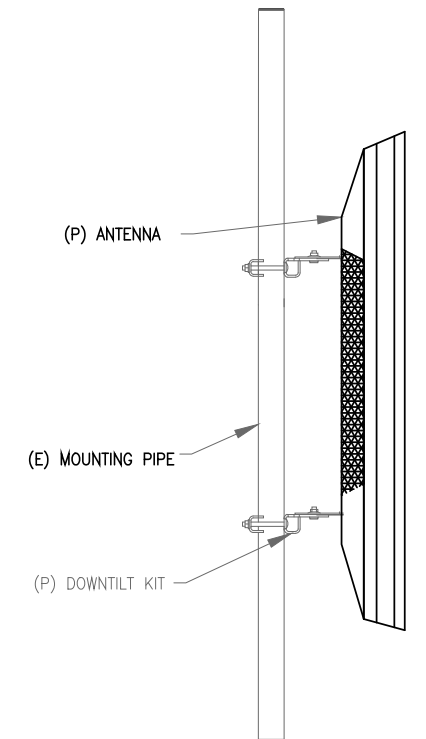
1  
 A-3



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

**ERICSSON AIR32 B66Aa/B2a ANTENNA DETAILS**  
 SCALE: N.T.S

2  
 A-3



**ANTENNA MOUNT DETAILS**  
 SCALE: N.T.S

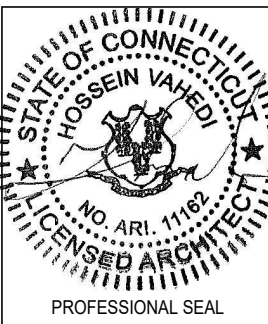
3  
 A-3

SUBMITTALS

DATE	DESCRIPTION	REVISION
06/11/16	ISSUED FOR REVIEW	A
06/13/16	FINAL CD	0

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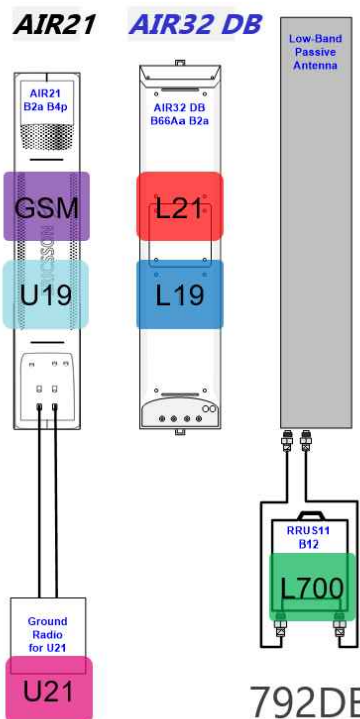


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SITE NAME  
 CT11782A  
 CT782/COSTELLO MP  
 123 COSTELLO ROAD  
 NEWINGTON, CT 06111

SHEET TITLE  
 GROUNDING  
 AND POWER  
 DIAGRAMS

SHEET NUMBER  
**E-1**



**TRUNK FIBER NOTES:**

- IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO 3/8" COAXIAL CABLE, AND SIMILAR INSTALLATION TECHNIQUES APPLY. ALL CABLES ARE INDIVIDUALLY SERIALIZED, BE SURE TO WRITE DOWN THE CABLE SERIAL NUMBER FOR FUTURE REFERENCE.
- THE TERMINATED FIBER ENDS (THE BROKEN OUT FIBERS PLUS CONNECTORS) HOWEVER ARE FRAGILE, AND THESE MUST BE PROTECTED DURING THE INSTALLATION PROCESS.
- LEAVE THE PROTECTIVE TUBE AND SOCK AROUND THE FIBER TAILS AND CONNECTORS IN PLACE DURING HOISTING AND SECURING THE CABLE. REMOVE THIS ONLY JUST PRIOR TO MAKING THE FINAL CONNECTIONS TO THE OVP BOX.
- DO NOT BEND THE FIBER ENDS (IN THE ORANGE FURCATION TUBES) TIGHTER THAN 3/4" (19MM) BEND RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS FIBERS.
- BE SURE THAT THE LACE UP ENDS AND FIBER CONNECTORS ARE NOT DAMAGED BY ATTACHMENT OF A HOISTING GRIP OR DURING THE HOISTING PROCESS. ATTACH A HOISTING GRIP ON THE JACKETED CABLE NO LESS THAN 6 INCHES BELOW THE FIBER BREAKOUT POINT. IF A HOISTING GRIP IS NOT EASILY ATTACHED, USE A SIMPLE LINE ATTACHED BELOW THE FIBER BREAK-OUT POINT (I.E. AT THE CABLE OUTER JACKET). PREVENT THE FIBER TAILS (IN PROTECTIVE TUBE) AT THE CABLE END FROM UNDUE MOVEMENT DURING HOISTING BY SECURING THE PROTECTIVE TUBE (WITH OUTER SOCK) TO THE HOISTING LINE.
- DURING HOISTING ENSURE THAT THERE IS A FREE PATH AND THAT THE CABLE, AND ESPECIALLY THE FIBER ENDS, WILL NOT BE SNAGGED ON TOWER MEMBERS OR OTHER OBSTACLES.
- INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO +70C).
- MINIMUM CABLE BEND RADII ARE 22.2" (565MM) LOADED (WITH TENSION ON THE CABLE) AND 11.1" (280MM) UNLOADED.
- MAXIMUM CABLE TENSILE LOAD IS 3560 N (800 LB) SHORT TERM (DURING INSTALLATION) AND 1070 N (240 LB) LONG TERM.
- COMMSCOPE NON LACE UP GRIP RECOMMENDED FOR MONOPOLE INSTALLATIONS.
- MAXIMUM HANGER SPACING 3FT (0.9 M).

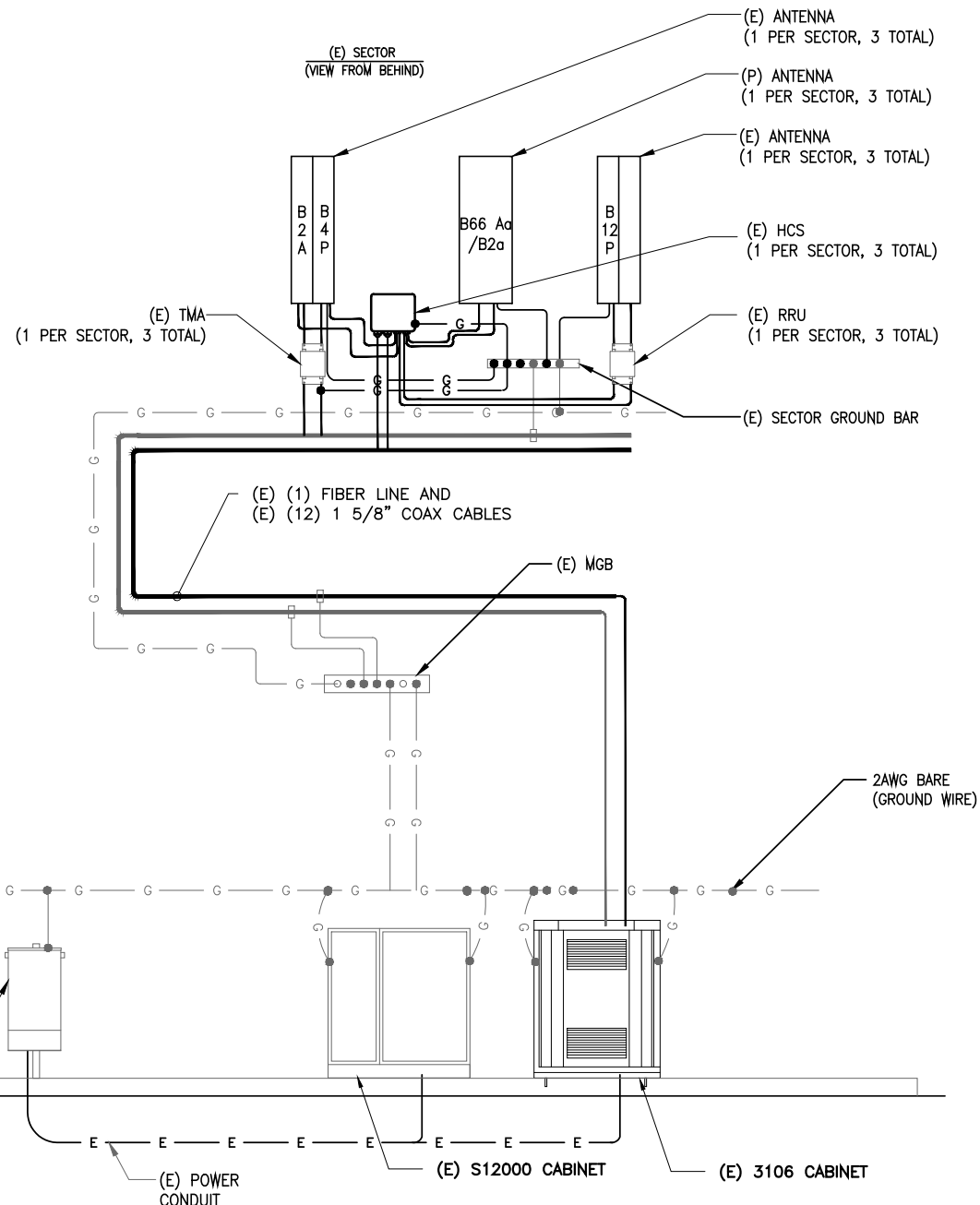
**HYBRID FIBER/POWER JUMPER NOTES:**

- IN GENERAL THIS CABLE WILL HANDLE SIMILARLY TO A 3/8" COAXIAL CABLE.
- THE TERMINATED FIBER ENDS HOWEVER ARE FRAGILE AND MUST BE PROTECTED DURING INSTALLATION. LEAVE THE PACKAGING AROUND THE FIBER ENDS IN PLACE UNTIL READY TO CONNECT THE JUMPER BETWEEN OVP AND RRU OR BBU.
- DO NOT BEND THE FIBER BREAKOUT CABLE (BETWEEN THE MAIN CABLE AND THE FIBER CONNECTOR) TIGHTER THAN 3/4" (19MM) RADIUS, ELSE THERE IS A RISK OF BREAKING THE GLASS.
- ATTACH THE MAIN CABLE SECURELY TO THE STRUCTURE OR EQUIPMENT USING HANGERS AND/OR CABLE TIES TO PREVENT STRAIN ON CONNECTIONS FROM MOVEMENT IN WIND OR SNOW/ICE CONDITIONS.
- ENSURE THE LC FIBER CONNECTORS ARE SEATED FIRMLY IN PANEL IN OVP OR IN EQUIPMENT.
- INSTALLATION TEMPERATURE RANGE IS -22F TO 158F (-30C TO 70C).
- MINIMUM CABLE BEND RADII ARE 10.3 INCH (265MM) LOADED (WITH TENSION ON THE CABLE) AND 5.2 INCH (130MM) UNLOADED.
- MAXIMUM CABLE TENSILE LOAD IS 350 LB (1560N) SHORT TERM (DURING INSTALLATION) AND 105 LB (470N) LONG TERM.
- STANDARD LENGTHS AVAILABLE ARE 6 FEET, 15 FEET AND 20 FEET

**792DB CONFIGURATION  
 COAX/FIBER PLUMBING DIAGRAM**

SCALE: N.T.S

2  
 E-1



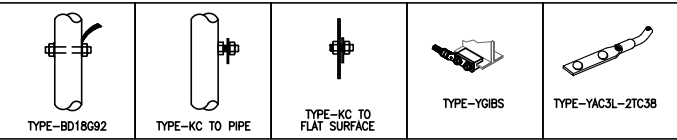
**GROUNDING DIAGRAM**

SCALE: N.T.S

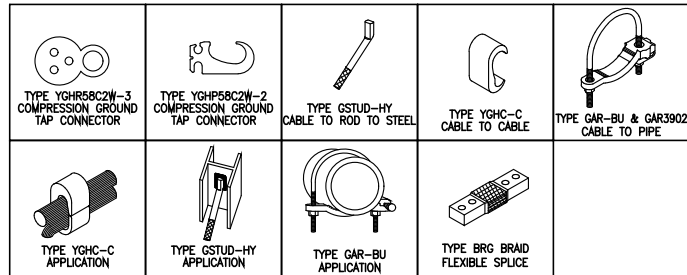
1  
 E-1

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

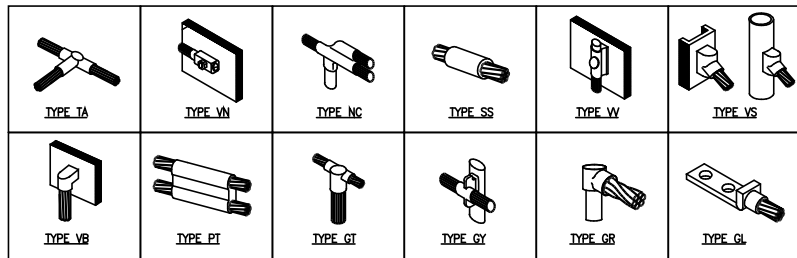




**1 BURNDY GROUNDING DETAILS**  
E-3 SCALE: NTS



**2 BURNDY GROUNDING PRODUCTS**  
E-3 SCALE: NTS



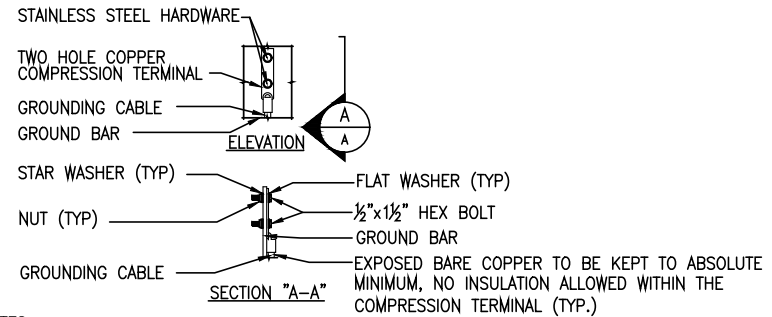
**3 CADWELD GROUNDING CONNECTION PRODUCTS**  
E-3 SCALE: NTS

**TERMINATION TYPES:**

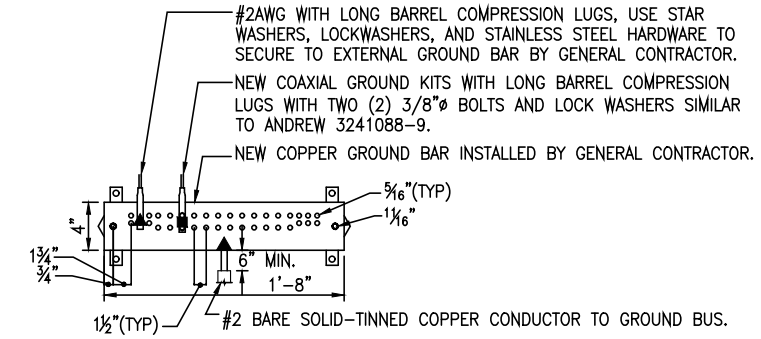
- A. MECHANICAL COMPRESSION LUG
- B. DOUBLE BARRELL COMPRESSION CONNECTOR
- C. EXOTHERMIC TERMINATION
- D. BEAM CLAMP

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

**7 GROUNDING TERMINATION MATRIX**  
E-3 SCALE: NTS

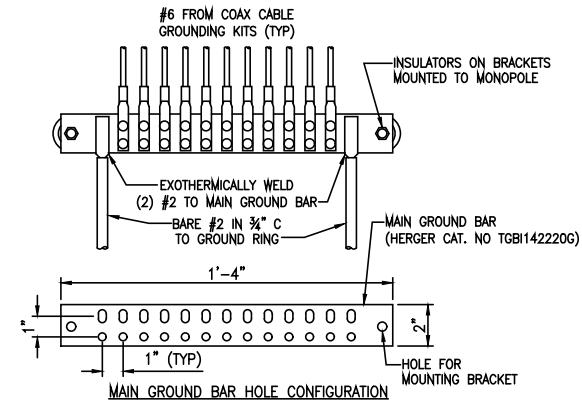


- NOTES:**
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

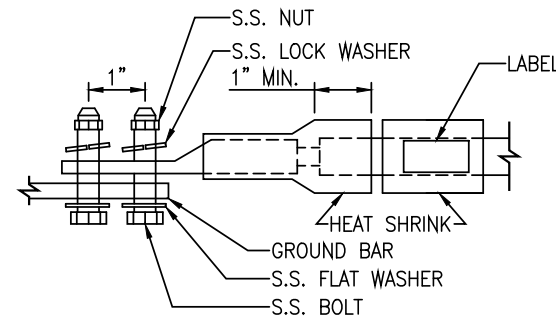


- NOTES:**
- ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
  - FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
  - ALL HOLES ARE COUNTERSUNK 1/16".

**4 TYPICAL GROUND BAR CONNECTIONS DETAIL**  
E-3 SCALE: NTS



**5 GROUND BAR DETAIL**  
E-3 SCALE: NTS



- LUG NOTES:**
- ALL HARDWARE IS 18-8 STAINLESS STEEL, INCLUDING LOCK WASHERS.
  - ALL HARDWARE SHALL BE S.S. 3/8" OR LARGER.
  - FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH ANTI-OXIDIZATION COMPOUND PRIOR TO MATING.

**6 GROUND BAR DETAILS**  
E-3 SCALE: NTS

SUBMITTALS		
DATE	DESCRIPTION	REVISION
05/11/16	ISSUED FOR REVIEW	A
05/13/16	FINAL CD	0

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

PROJECT NO:	CT11782A
DRAWN BY:	FG
CHECKED BY:	KM



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SITE NAME  
CT11782A  
CT782/COSTELLO MP  
123 COSTELLO ROAD  
NEWINGTON, CT 06111

SHEET TITLE  
GROUNDING DETAILS

SHEET NUMBER  
E-2

# Exhibit D



Date: **April 22, 2016**

Charles McGuirt  
Crown Castle  
3530 Toringdon Way Suite 300  
Charlotte, NC 28277

AW Solutions  
300 Crown Oak Centre Drive  
Longwood, FL 32750  
(407) 260-0231

**Subject: Structural Analysis Report**

**Carrier Designation:** **T-Mobile Co-Locate**  
**Carrier Site Number:** CT11782A  
**Carrier Site Name:** CT782/Costello MP

**Crown Castle Designation:** **Crown Castle BU Number:** 881364  
**Crown Castle Site Name:** Newington  
**Crown Castle JDE Job Number:** 374004  
**Crown Castle Work Order Number:** 1226283  
**Crown Castle Application Number:** 343224 Rev. 0

**Engineering Firm Designation:** **AW Solutions Project Number:** 881364

**Site Data:** **123 Costello Road, Newington, Hartford County, CT**  
**Latitude 41° 39' 18.72", Longitude -72° 43' 17.19"**  
**145 Foot - Monopole Tower**

Mr. McGuirt,

AW Solutions is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural ‘Statement of Work’ and the terms of Crown Castle Purchase Order Number 895515, in accordance with application 343224, revision 0.

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

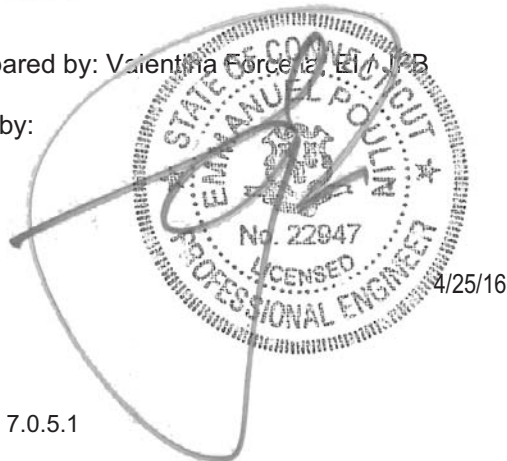
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**  
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA-222-G, as allowed by Sections 104.10 and 104.11 of the 2005 CT State Building Code with 2009 Amendments, based upon a wind speed of 95 mph 3-second gust, exposure category C.

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

Structural analysis prepared by: Valentin Forcelia, EIT/JTB

Respectfully submitted by:



Emmanuel Poulin, PE  
VP of Engineering

## TABLE OF CONTENTS

### 1) INTRODUCTION

### 2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

### 3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

### 4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 – Tower Components vs. Capacity

4.1) Recommendations

### 5) APPENDIX A

tnxTower Output

### 6) APPENDIX B

Base Level Drawing

### 7) APPENDIX C

Additional Calculations

## 1) INTRODUCTION

This tower is a 145 ft Monopole tower designed by SUMMIT in August of 1999. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F. The tower has been reinforced in November of 2015 by Paul J. Ford. The reinforcement consists of (3) flat plats from 0' 6" to 35' 6" and (3) flat plates from 35' 7" to 60' 7".

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 95 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C.

**Table 1 - Proposed Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
94.0	95.0	3	commscope	LNx-6515DS-A1M w/ Mount Pipe	1	1-1/4	-
		3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			

**Table 2 - Existing and Reserved Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
133.0	139.0	2	andrew	VHLP2.5-11	2 6	1/2 5/16	1
		2	dragonwave	HORIZON COMPACT			
		2	samsung telecommunications	WIMAX DAP HEAD			
	135.0	3	argus technologies	LLPX310R-V1 w/ Mount Pipe			
		1	motorola	TIMING 2000			
		1	samsung telecommunications	WIMAX DAP HEAD			
	133.0	1	tower mounts	Platform Mount [LP 712-1]			
124.0	124.0	3	alcatel lucent	TD-RRH8x20-25	4	1-1/4	1
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
		1	tower mounts	Platform Mount [LP 712-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
122.0	122.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	-	-	1
		1	tower mounts	Pipe Mount [PM 601-3]			
	118.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
114.0	116.0	1	lucent	KS24019-L112A	-	-	1
	114.0	3	alcatel lucent	RRH2x60-700	-	-	2
		3	alcatel lucent	RRH4X45-AWS4 B66			
		9	andrew	SBNHH-1D65B w/ Mount Pipe			
		3	antel	BXA-80063/4CFx5 w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		6	rfs celwave	FD9R6004/2C-3L			
1	tower mounts	Platform Mount [LP 712-1]					
105.0	105.0	3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	2	3/4 3/8	2
		3	ericsson	RRUS 32 B30	1		
		6	ericsson	RRUS-11	12	1-5/8 3/4 3/8	1
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP2140X			
		1	raycap	DC6-48-60-18-8F	-	-	2
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 712-1]			
94.0	95.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	3
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	12	1-5/8	1
	94.0	3	ericsson	KRY 112 144/1			
		1	tower mounts	Platform Mount [LP 712-1]			
87.0	87.0	3	kathrein	742 213 w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
77.0	77.0	1	symmetricom	58532A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Equipment to be Removed

**Table 3 - Design Antenna and Cable Information**

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
-						

**3) ANALYSIS PROCEDURE**

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-TOWER MANUFACTURER DRAWINGS	Summit	1425417	CCISITES
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti	1425352	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit/PJF	1425473	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF	5976614	CCISITES
4-POST-MODIFICATION INSPECTION	ETS	6120832	CCISITES

**3.1) Analysis Method**

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

**3.2) Assumptions**

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

**4) ANALYSIS RESULTS**

**Table 5 - Section Capacity (Summary)**

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
145 - 140	Pole	TP24.923x24x0.1875	Pole	0.2%	Pass
140 - 135	Pole	TP25.847x24.923x0.1875	Pole	1.3%	Pass
135 - 130	Pole	TP26.77x25.847x0.1875	Pole	4.9%	Pass
130 - 125	Pole	TP27.709x26.77x0.25	Pole	6.0%	Pass
125 - 120	Pole	TP28.648x27.709x0.25	Pole	10.7%	Pass
120 - 115	Pole	TP29.588x28.648x0.25	Pole	15.7%	Pass
115 - 110	Pole	TP30.527x29.588x0.25	Pole	23.3%	Pass



110 - 105	Pole	TP31.466x30.527x0.25	Pole	30.8%	Pass
105 - 100	Pole	TP32.405x31.466x0.25	Pole	40.4%	Pass
100 - 95	Pole	TP33.345x32.405x0.25	Pole	49.2%	Pass
95 - 90	Pole	TP34.284x33.345x0.25	Pole	59.4%	Pass
90 - 89.25	Pole	TP35.27x34.284x0.25	Pole	60.9%	Pass
89.25 - 84.25	Pole	TP34.851x33.925x0.3125	Pole	53.8%	Pass
84.25 - 79.25	Pole	TP35.777x34.851x0.3125	Pole	60.6%	Pass
79.25 - 74.25	Pole	TP36.703x35.777x0.3125	Pole	66.9%	Pass
74.25 - 69.25	Pole	TP37.629x36.703x0.3125	Pole	72.7%	Pass
69.25 - 64.25	Pole	TP38.555x37.629x0.3125	Pole	78.1%	Pass
64.25 - 59.25	Pole	TP39.482x38.555x0.3125	Pole	83.2%	Pass
59.25 - 58.08	Pole	TP39.698x39.482x0.3125	Pole	84.3%	Pass
58.08 - 57.83	Pole	TP39.744x39.698x0.3125	Pole	84.6%	Pass
57.83 - 52.83	Pole	TP40.67x39.744x0.3125	Pole	89.3%	Pass
52.83 - 49.5	Pole	TP42.26x40.67x0.3125	Pole	92.3%	Pass
49.5 - 43.25	Pole	TP41.82x40.663x0.375	Pole	79.1%	Pass
43.25 - 38.25	Pole	TP42.746x41.82x0.375	Pole	82.4%	Pass
38.25 - 38.08	Pole	TP42.777x42.746x0.375	Pole	82.5%	Pass
38.08 - 37.83	Pole	TP42.823x42.777x0.375	Pole	82.7%	Pass
37.83 - 32.83	Pole	TP43.749x42.823x0.375	Pole	85.9%	Pass
32.83 - 31.25	Pole	TP44.042x43.749x0.375	Pole	86.9%	Pass
31.25 - 31	Pole + Reinf.	TP44.089x44.042x0.5875	Reinf. 1 Compression	76.0%	Pass
31 - 26	Pole + Reinf.	TP45.015x44.089x0.575	Reinf. 1 Compression	78.8%	Pass
26 - 21	Pole + Reinf.	TP45.941x45.015x0.575	Reinf. 1 Compression	81.5%	Pass
21 - 16	Pole + Reinf.	TP46.867x45.941x0.575	Reinf. 1 Compression	84.1%	Pass
16 - 11	Pole + Reinf.	TP47.793x46.867x0.5625	Reinf. 1 Compression	86.6%	Pass
11 - 6	Pole + Reinf.	TP48.719x47.793x0.5625	Reinf. 1 Compression	89.0%	Pass
6 - 1	Pole + Reinf.	TP49.645x48.719x0.5625	Reinf. 1 Compression	91.3%	Pass
1 - 0	Pole + Reinf.	TP49.83x49.645x0.5625	Reinf. 1 Compression	91.7%	Pass
				Summary	
			Pole	92.3%	Pass
			Reinforcement	91.7%	Pass
			Overall	92.3%	Pass

**Table 6 - Tower Component Stresses vs. Capacity - LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	89.0	Pass
1	Base Plate	0	70.7	Pass
1	Base Foundation Structural	0	68.0	Pass
1	Base Foundation Soil Interaction	0	65.4	Pass
1	Flange Connection	130	7.3	Pass

<b>Structure Rating (max from all components) =</b>	<b>92.3%</b>
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Notes:

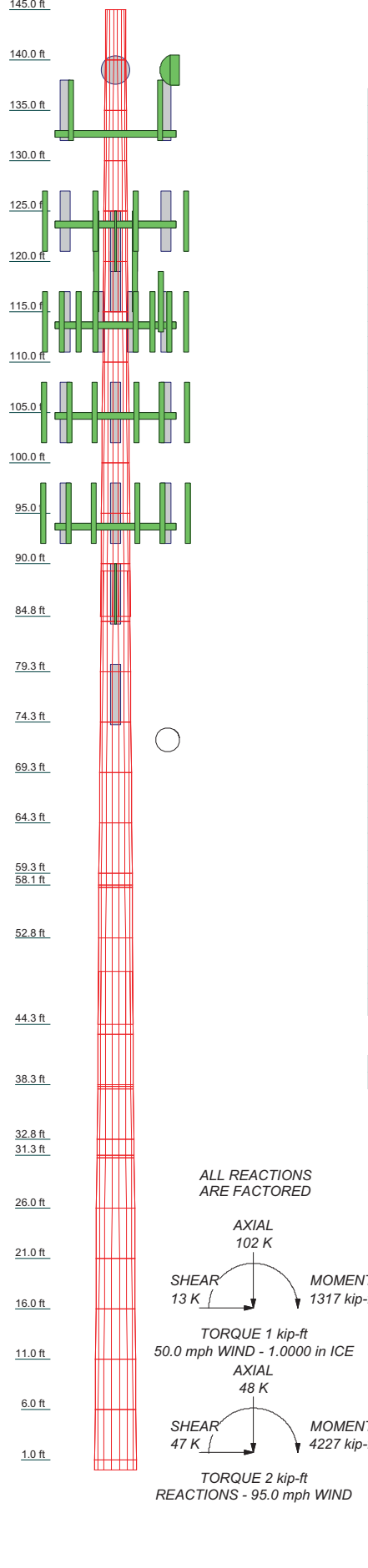
- 1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity consumed.

#### 4.1) Recommendations

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

**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
Length (ft)	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.1875	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	
Socket Length (ft)	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	4.5000	
Top Dia (in)	24.0000	24.9233	25.8467	26.7700	27.6933	28.6167	29.5400	30.4633	31.3867	32.3100	33.2333	34.1567	35.0800	36.0033	36.9267	37.8500	38.7733	39.6967	40.6200	41.5433	42.4667	43.3900	44.3133	45.2367	46.1600	47.0833	48.0067	48.9300	49.8533	50.7767	51.7000	52.6233	53.5467	54.4700	55.3933	56.3167	57.2400
Bot Dia (in)	24.9233	25.8467	26.7700	27.6933	28.6167	29.5400	30.4633	31.3867	32.3100	33.2333	34.1567	35.0800	36.0033	36.9267	37.8500	38.7733	39.6967	40.6200	41.5433	42.4667	43.3900	44.3133	45.2367	46.1600	47.0833	48.0067	48.9300	49.8533	50.7767	51.7000	52.6233	53.5467	54.4700	55.3933	56.3167	57.2400	
Grade	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Weight (K)	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	



**DESIGNED APPURTENANCE LOADING**

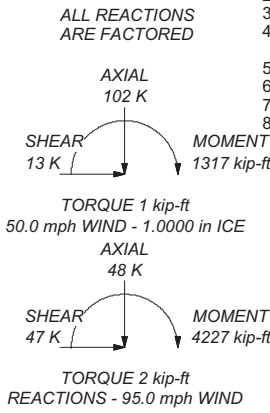
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [LP 712-1]	133	(3) SBNHH-1D65B w/ Mount Pipe	114
(3) 2.375" OD x 5' Mount Pipe	133	RRH2x60-700	114
(3) 2.375" OD x 5' Mount Pipe	133	RRH4X45-AWS4 B66	114
(3) 2.375" OD x 5' Mount Pipe	133	Platform Mount [LP 712-1]	114
TIMING 2000	133	BXA-80063/4CFx5 w/ Mount Pipe	114
LLPX310R-V1 w/ Mount Pipe	133	AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
WIMAX DAP HEAD	133	(2) LGP2140X	105
HORIZON COMPACT	133	DC6-48-60-18-8F	105
LLPX310R-V1 w/ Mount Pipe	133	(2) RRUS-11	105
HORIZON COMPACT	133	7770.00 w/ Mount Pipe	105
WIMAX DAP HEAD	133	AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
LLPX310R-V1 w/ Mount Pipe	133	(2) LGP2140X	105
WIMAX DAP HEAD	133	(2) RRUS-11	105
VHLP2.5-11	133	7770.00 w/ Mount Pipe	105
VHLP2.5-11	133	AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
2.375" OD x 5' Mount Pipe	124	(2) LGP2140X	105
2.375" OD x 5' Mount Pipe	124	(2) RRUS-11	105
APXVSP18-C-A20 w/ Mount Pipe	124	OPA-65R-LCUU-H6 w/ Mount Pipe	105
APXVTM14-C-120 w/ Mount Pipe	124	RRUS 32 B30	105
IBC1900HG-2A	124	DC6-48-60-18-8F	105
IBC1900BB-1	124	OPA-65R-LCUU-H6 w/ Mount Pipe	105
TD-RRH8x20-25	124	RRUS 32 B30	105
APXVSP18-C-A20 w/ Mount Pipe	124	OPA-65R-LCUU-H6 w/ Mount Pipe	105
APXVTM14-C-120 w/ Mount Pipe	124	RRUS 32 B30	105
IBC1900BB-1	124	Platform Mount [LP 712-1]	105
IBC1900HG-2A	124	7770.00 w/ Mount Pipe	105
TD-RRH8x20-25	124	2.375" OD x 5' Mount Pipe	94
APXVSP18-C-A20 w/ Mount Pipe	124	2.375" OD x 5' Mount Pipe	94
APXVTM14-C-120 w/ Mount Pipe	124	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	94
IBC1900HG-2A	124	IBC1900HG-2A	94
TD-RRH8x20-25	124	TD-RRH8x20-25	94
IBC1900BB-1	124	IBC1900BB-1	94
Platform Mount [LP 712-1]	124	Platform Mount [LP 712-1]	94
2.375" OD x 5' Mount Pipe	124	2.375" OD x 5' Mount Pipe	94
800MHz 2X50W RRH W/FILTER	122	800MHz 2X50W RRH W/FILTER	94
PCS 1900MHz 4x45W-65MHz	122	PCS 1900MHz 4x45W-65MHz	94
800MHz 2X50W RRH W/FILTER	122	800MHz 2X50W RRH W/FILTER	94
PCS 1900MHz 4x45W-65MHz	122	PCS 1900MHz 4x45W-65MHz	94
800MHz 2X50W RRH W/FILTER	122	800MHz 2X50W RRH W/FILTER	94
Pipe Mount [PM 601-3]	122	Pipe Mount [PM 601-3]	94
PCS 1900MHz 4x45W-65MHz	122	PCS 1900MHz 4x45W-65MHz	94
(2) FD9R6004/2C-3L	114	(2) FD9R6004/2C-3L	94
BXA-80063/4CFx5 w/ Mount Pipe	114	BXA-80063/4CFx5 w/ Mount Pipe	94
KS24019-L112A	114	KS24019-L112A	94
DB-T1-6Z-8AB-0Z	114	DB-T1-6Z-8AB-0Z	94
(2) FD9R6004/2C-3L	114	(2) FD9R6004/2C-3L	94
BXA-80063/4CFx5 w/ Mount Pipe	114	BXA-80063/4CFx5 w/ Mount Pipe	94
(2) FD9R6004/2C-3L	114	(2) FD9R6004/2C-3L	94
(3) SBNHH-1D65B w/ Mount Pipe	114	(3) SBNHH-1D65B w/ Mount Pipe	87
RRH2x60-700	114	RRH2x60-700	87
DB-T1-6Z-8AB-0Z	114	DB-T1-6Z-8AB-0Z	87
RRH4X45-AWS4 B66	114	RRH4X45-AWS4 B66	87
(3) SBNHH-1D65B w/ Mount Pipe	114	(3) SBNHH-1D65B w/ Mount Pipe	77
RRH2x60-700	114	RRH2x60-700	77
RRH4X45-AWS4 B66	114	RRH4X45-AWS4 B66	77

**MATERIAL STRENGTH**

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

**TOWER DESIGN NOTES**

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 95.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TOWER RATING: 92.3%



**AW Solutions**  
 300 Crown Oak Centre Drive  
 Longwood, FL 32750  
 Phone: (407) 260-0231  
 FAX: (407) 260-0749

Job: **BU881364**  
 Project: **WO1226283**  
 Client: Crown Castle  
 Code: TIA-222-G  
 Path: C:\Users\Valentina.Forcella\Documents\REMODEL\BU881364 - WO1226283\Rev01

Drawn by: Valentina Forcella  
 Date: 04/22/16  
 Scale: NTS  
 Dwg No. E-1

## Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- 1) Tower is located in Hartford County, Connecticut.
- 2) Basic wind speed of 95.0 mph.
- 3) Structure Class II.
- 4) Exposure Category C.
- 5) Topographic Category 1.
- 6) Crest Height 0.0000 ft.
- 7) Nominal ice thickness of 1.0000 in.
- 8) Ice thickness is considered to increase with height.
- 9) Ice density of 56 pcf.
- 10) A wind speed of 50.0 mph is used in combination with ice.
- 11) Temperature drop of 50 °F.
- 12) Deflections calculated using a wind speed of 60.0 mph.
- 13) A non-linear (P-delta) analysis was used.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in pole design is 1.
- 16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile  Include Bolts In Member Capacity  Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt.  Autocalc Torque Arm Areas  Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption  <div style="text-align: center; background-color: #e0e0e0; padding: 2px;"><b>Poles</b></div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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## Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	145.0000- 140.0000	5.0000	0.00	18	24.0000	24.9233	0.1875	0.7500	A607-65 (65 ksi)
L2	140.0000- 135.0000	5.0000	0.00	18	24.9233	25.8467	0.1875	0.7500	A607-65 (65 ksi)
L3	135.0000- 130.0000	5.0000	0.00	18	25.8467	26.7700	0.1875	0.7500	A607-65 (65 ksi)
L4	130.0000- 125.0000	5.0000	0.00	18	26.7700	27.7092	0.2500	1.0000	A607-65 (65 ksi)
L5	125.0000- 120.0000	5.0000	0.00	18	27.7092	28.6485	0.2500	1.0000	A607-65 (65 ksi)
L6	120.0000-	5.0000	0.00	18	28.6485	29.5877	0.2500	1.0000	A607-65

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
L7	115.0000-110.0000	5.0000	0.00	18	29.5877	30.5269	0.2500	1.0000	(65 ksi) A607-65
L8	110.0000-105.0000	5.0000	0.00	18	30.5269	31.4661	0.2500	1.0000	(65 ksi) A607-65
L9	105.0000-100.0000	5.0000	0.00	18	31.4661	32.4054	0.2500	1.0000	(65 ksi) A607-65
L10	100.0000-95.0000	5.0000	0.00	18	32.4054	33.3446	0.2500	1.0000	(65 ksi) A607-65
L11	95.0000-90.0000	5.0000	0.00	18	33.3446	34.2838	0.2500	1.0000	(65 ksi) A607-65
L12	90.0000-84.7500	5.2500	4.50	18	34.2838	35.2700	0.2500	1.0000	(65 ksi) A607-65
L13	84.7500-84.2500	5.0000	0.00	18	33.9247	34.8508	0.3125	1.2500	(65 ksi) A607-65
L14	84.2500-79.2500	5.0000	0.00	18	34.8508	35.7770	0.3125	1.2500	(65 ksi) A607-65
L15	79.2500-74.2500	5.0000	0.00	18	35.7770	36.7031	0.3125	1.2500	(65 ksi) A607-65
L16	74.2500-69.2500	5.0000	0.00	18	36.7031	37.6293	0.3125	1.2500	(65 ksi) A607-65
L17	69.2500-64.2500	5.0000	0.00	18	37.6293	38.5554	0.3125	1.2500	(65 ksi) A607-65
L18	64.2500-59.2500	5.0000	0.00	18	38.5554	39.4816	0.3125	1.2500	(65 ksi) A607-65
L19	59.2500-58.0833	1.1667	0.00	18	39.4816	39.6977	0.3125	1.2500	(65 ksi) A607-65
L20	58.0833-57.8333	0.2500	0.00	18	39.6977	39.7440	0.3125	1.2500	(65 ksi) A607-65
L21	57.8333-52.8333	5.0000	0.00	18	39.7440	40.6701	0.3125	1.2500	(65 ksi) A607-65
L22	52.8333-44.2500	8.5833	5.25	18	40.6701	42.2600	0.3125	1.2500	(65 ksi) A607-65
L23	44.2500-43.2500	6.2500	0.00	18	40.6625	41.8201	0.3750	1.5000	(65 ksi) A607-65
L24	43.2500-38.2500	5.0000	0.00	18	41.8201	42.7461	0.3750	1.5000	(65 ksi) A607-65
L25	38.2500-38.0833	0.1667	0.00	18	42.7461	42.7769	0.3750	1.5000	(65 ksi) A607-65
L26	38.0833-37.8333	0.2500	0.00	18	42.7769	42.8232	0.3750	1.5000	(65 ksi) A607-65
L27	37.8333-32.8333	5.0000	0.00	18	42.8232	43.7492	0.3750	1.5000	(65 ksi) A607-65
L28	32.8333-31.2500	1.5833	0.00	18	43.7492	44.0425	0.3750	1.5000	(65 ksi) A607-65
L29	31.2500-31.0000	0.2500	0.00	18	44.0425	44.0888	0.5875	2.3500	(65 ksi) A607-65
L30	31.0000-26.0000	5.0000	0.00	18	44.0888	45.0148	0.5750	2.3000	(65 ksi) A607-65
L31	26.0000-21.0000	5.0000	0.00	18	45.0148	45.9408	0.5750	2.3000	(65 ksi) A607-65
L32	21.0000-16.0000	5.0000	0.00	18	45.9408	46.8668	0.5750	2.3000	(65 ksi) A607-65
L33	16.0000-11.0000	5.0000	0.00	18	46.8668	47.7928	0.5625	2.2500	(65 ksi) A607-65
L34	11.0000-6.0000	5.0000	0.00	18	47.7928	48.7188	0.5625	2.2500	(65 ksi) A607-65
L35	6.0000-1.0000	5.0000	0.00	18	48.7188	49.6448	0.5625	2.2500	(65 ksi) A607-65
L36	1.0000-0.0000	1.0000		18	49.6448	49.8300	0.5625	2.2500	(65 ksi) A607-65

### Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	It/Q in <sup>2</sup>	w in	w/t
L1	24.3702	14.1714	1015.2211	8.4534	12.1920	83.2694	2031.7780	7.0871	3.8940	20.768
	25.3078	14.7209	1137.9555	8.7812	12.6611	89.8784	2277.4084	7.3619	4.0565	21.635
L2	25.3078	14.7209	1137.9555	8.7812	12.6611	89.8784	2277.4084	7.3619	4.0565	21.635
	26.2454	15.2704	1270.2034	9.1090	13.1301	96.7398	2542.0783	7.6367	4.2190	22.501
L3	26.2454	15.2704	1270.2034	9.1090	13.1301	96.7398	2542.0783	7.6367	4.2190	22.501
	27.1830	15.8199	1412.3200	9.4368	13.5992	103.8535	2826.4984	7.9115	4.3815	23.368
L4	27.1830	21.0436	1869.8421	9.4146	13.5992	137.4969	3742.1446	10.5238	4.2715	17.086
	28.1367	21.7889	2075.6269	9.7480	14.0763	147.4556	4153.9849	10.8965	4.4368	17.747
L5	28.1367	21.7889	2075.6269	9.7480	14.0763	147.4556	4153.9849	10.8965	4.4368	17.747
	29.0904	22.5342	2295.9817	10.0815	14.5534	157.7624	4594.9846	11.2692	4.6021	18.409
L6	29.0904	22.5342	2295.9817	10.0815	14.5534	157.7624	4594.9846	11.2692	4.6021	18.409
	30.0441	23.2794	2531.4052	10.4149	15.0305	168.4174	5066.1412	11.6419	4.7674	19.07
L7	30.0441	23.2794	2531.4052	10.4149	15.0305	168.4174	5066.1412	11.6419	4.7674	19.07
	30.9978	24.0247	2782.3955	10.7483	15.5077	179.4206	5568.4521	12.0146	4.9327	19.731
L8	30.9978	24.0247	2782.3955	10.7483	15.5077	179.4206	5568.4521	12.0146	4.9327	19.731
	31.9515	24.7700	3049.4511	11.0817	15.9848	190.7720	6102.9147	12.3874	5.0980	20.392
L9	31.9515	24.7700	3049.4511	11.0817	15.9848	190.7720	6102.9147	12.3874	5.0980	20.392
	32.9053	25.5153	3333.0703	11.4152	16.4619	202.4715	6670.5263	12.7601	5.2633	21.053
L10	32.9053	25.5153	3333.0703	11.4152	16.4619	202.4715	6670.5263	12.7601	5.2633	21.053
	33.8590	26.2606	3633.7515	11.7486	16.9390	214.5192	7272.2844	13.1328	5.4286	21.715
L11	33.8590	26.2606	3633.7515	11.7486	16.9390	214.5192	7272.2844	13.1328	5.4286	21.715
	34.8127	27.0058	3951.9931	12.0820	17.4162	226.9151	7909.1863	13.5055	5.5940	22.376
L12	34.8127	27.0058	3951.9931	12.0820	17.4162	226.9151	7909.1863	13.5055	5.5940	22.376
	35.8141	27.7884	4305.5913	12.4321	17.9172	240.3055	8616.8481	13.8968	5.7675	23.07
L13	35.8141	27.7884	4305.5913	12.4321	17.9172	240.3055	8616.8481	13.8968	5.7675	23.07
	35.2944	33.3391	4758.6642	11.9323	17.2337	276.1248	9523.5900	16.6727	5.4207	17.346
L14	35.3885	34.2577	5162.9606	12.2611	17.7042	291.6230	10332.714	17.1321	5.5837	17.868
	35.3885	34.2577	5162.9606	12.2611	17.7042	291.6230	10332.714	17.1321	5.5837	17.868
L15	36.3289	35.1763	5589.5314	12.5899	18.1747	307.5445	11186.417	17.5915	5.7467	18.39
	36.3289	35.1763	5589.5314	12.5899	18.1747	307.5445	11186.417	17.5915	5.7467	18.39
L16	37.2693	36.0950	6038.9738	12.9187	18.6452	323.8891	12085.893	18.0509	5.9098	18.911
	37.2693	36.0950	6038.9738	12.9187	18.6452	323.8891	12085.893	18.0509	5.9098	18.911
L17	38.2098	37.0136	6511.8851	13.2475	19.1157	340.6569	13032.338	18.5103	6.0728	19.433
	38.2098	37.0136	6511.8851	13.2475	19.1157	340.6569	13032.338	18.5103	6.0728	19.433
L18	39.1502	37.9322	7008.8626	13.5762	19.5862	357.8478	14026.947	18.9697	6.2358	19.954
	39.1502	37.9322	7008.8626	13.5762	19.5862	357.8478	14026.947	18.9697	6.2358	19.954
L19	40.0906	38.8508	7530.5036	13.9050	20.0566	375.4620	15070.916	19.4291	6.3988	20.476
	40.0906	38.8508	7530.5036	13.9050	20.0566	375.4620	15070.916	19.4291	6.3988	20.476
L20	40.3101	39.0652	7655.8362	13.9817	20.1664	379.6329	15321.746	19.5363	6.4368	20.598
	40.3101	39.0652	7655.8362	13.9817	20.1664	379.6329	15321.746	19.5363	6.4368	20.598
L21	40.3571	39.1111	7682.8721	13.9982	20.1899	380.5297	15375.853	19.5593	6.4449	20.624
	40.3571	39.1111	7682.8721	13.9982	20.1899	380.5297	15375.853	19.5593	6.4449	20.624
L22	41.2975	40.0297	8237.0399	14.3270	20.6604	398.6869	16484.918	20.0187	6.6079	21.145
	41.2975	40.0297	8237.0399	14.3270	20.6604	398.6869	16484.918	20.0187	6.6079	21.145
L23	42.2771	47.9523	9833.0477	14.3021	20.6566	476.0251	19679.033	23.9807	6.4966	17.324
	42.4652	49.3300	10705.175	14.7130	21.2446	503.9013	21424.436	24.6697	6.7003	17.868
L24	42.4652	49.3300	10705.175	14.7130	21.2446	503.9013	21424.436	24.6697	6.7003	17.868
	43.4055	50.4322	11438.883	15.0417	21.7150	526.7734	22892.817	25.2209	6.8633	18.302



Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L25	43.4055	50.4322	11438.883 0	15.0417	21.7150	526.7734	22892.817 6	25.2209	6.8633	18.302
	43.4368	50.4689	11463.905 5	15.0527	21.7307	527.5447	22942.895 6	25.2392	6.8687	18.317
L26	43.4368	50.4689	11463.905 5	15.0527	21.7307	527.5447	22942.895 6	25.2392	6.8687	18.317
	43.4839	50.5240	11501.500 2	15.0691	21.7542	528.7025	23018.134 3	25.2668	6.8769	18.338
L27	43.4839	50.5240	11501.500 2	15.0691	21.7542	528.7025	23018.134 3	25.2668	6.8769	18.338
	44.4241	51.6262	12270.753 2	15.3979	22.2246	552.1245	24557.652 7	25.8180	7.0399	18.773
L28	44.4241	51.6262	12270.753 2	15.3979	22.2246	552.1245	24557.652 7	25.8180	7.0399	18.773
	44.7219	51.9752	12521.306 5	15.5020	22.3736	559.6471	25059.088 8	25.9925	7.0915	18.911
L29	44.7219	81.0316	19331.721 1	15.4265	22.3736	864.0426	38688.879 3	40.5235	6.7175	11.434
	44.7689	81.1179	19393.579 4	15.4429	22.3971	865.8971	38812.677 4	40.5667	6.7256	11.448
L30	44.7689	79.4148	18997.317 2	15.4474	22.3971	848.2046	38019.631 5	39.7149	6.7476	11.735
	45.7092	81.1048	20236.141 2	15.7761	22.8675	884.9300	40498.909 7	40.5601	6.9106	12.018
L31	45.7092	81.1048	20236.141 2	15.7761	22.8675	884.9300	40498.909 7	40.5601	6.9106	12.018
	46.6495	82.7948	21527.683 7	16.1049	23.3379	922.4339	43083.694 1	41.4053	7.0736	12.302
L32	46.6495	82.7948	21527.683 7	16.1049	23.3379	922.4339	43083.694 1	41.4053	7.0736	12.302
	47.5898	84.4848	22873.043 1	16.4336	23.8083	960.7161	45776.183 1	42.2504	7.2366	12.585
L33	47.5898	82.6705	22393.934 1	16.4380	23.8083	940.5926	44817.334 6	41.3431	7.2586	12.904
	48.5301	84.3238	23764.500 6	16.7668	24.2787	978.8195	47560.271 2	42.1699	7.4215	13.194
L34	48.5301	84.3238	23764.500 6	16.7668	24.2787	978.8195	47560.271 2	42.1699	7.4215	13.194
	49.4704	85.9770	25189.877 9	17.0955	24.7491	1017.8079	50412.901 3	42.9967	7.5845	13.484
L35	49.4704	85.9770	25189.877 9	17.0955	24.7491	1017.8079	50412.901 3	42.9967	7.5845	13.484
	50.4106	87.6303	26671.140 6	17.4242	25.2196	1057.5578	53377.375 7	43.8235	7.7475	13.773
L36	50.4106	87.6303	26671.140 6	17.4242	25.2196	1057.5578	53377.375 7	43.8235	7.7475	13.773
	50.5987	87.9610	26974.193 9	17.4900	25.3136	1065.5992	53983.881 2	43.9888	7.7801	13.831

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft <sup>2</sup>	in					in	in	in
L1 145.0000-140.0000				1	1	1			
L2 140.0000-135.0000				1	1	1			
L3 135.0000-130.0000				1	1	1			
L4 130.0000-125.0000				1	1	1			
L5 125.0000-120.0000				1	1	1			
L6 120.0000-115.0000				1	1	1			
L7 115.0000-110.0000				1	1	1			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_r$	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
ft	ft <sup>2</sup>	in							
L8 110.0000-105.0000				1	1	1			
L9 105.0000-100.0000				1	1	1			
L10 100.0000-95.0000				1	1	1			
L11 95.0000-90.0000				1	1	1			
L12 90.0000-84.7500				1	1	1			
L13 84.7500-84.2500				1	1	1			
L14 84.2500-79.2500				1	1	1			
L15 79.2500-74.2500				1	1	1			
L16 74.2500-69.2500				1	1	1			
L17 69.2500-64.2500				1	1	1			
L18 64.2500-59.2500				1	1	1			
L19 59.2500-58.0833				1	1	1			
L20 58.0833-57.8333				1	1	1			
L21 57.8333-52.8333				1	1	1			
L22 52.8333-44.2500				1	1	1			
L23 44.2500-43.2500				1	1	1			
L24 43.2500-38.2500				1	1	1			
L25 38.2500-38.0833				1	1	1			
L26 38.0833-37.8333				1	1	1			
L27 37.8333-32.8333				1	1	1			
L28 32.8333-31.2500				1	1	1			
L29 31.2500-31.0000				1	1	1.03438			
L30 31.0000-26.0000				1	1	1.04813			
L31 26.0000-21.0000				1	1	1.04005			
L32 21.0000-16.0000				1	1	1.03229			
L33 16.0000-11.0000				1	1	1.04733			
L34 11.0000-6.0000				1	1	1.04001			
L35 6.0000-1.0000				1	1	1.03297			
L36 1.0000-0.0000				1	1	1.03159			

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HB158-1-08U8-S8J18( 1-5/8)	B	Surface Ar (CaAa)	114.0000 - 0.0000	1	1	0.300 0.300	1.9800		1.30
HJ7-50A(1-5/8")	A	Surface Ar (CaAa)	94.0000 - 0.0000	5	5	-0.500 -0.200	1.9800		1.04
MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4") *77*	C	Surface Ar (CaAa)	94.0000 - 0.0000	1	1	0.350 0.350	1.2500		0.46
LDF4-50A(1/2)	C	Surface Ar (CaAa)	77.0000 - 0.0000	1	1	-0.200 -0.200	0.0000		0.15
*Reinf 5976614*									
Flat Plate 8.5" x 1.25" (Rev. G)	A	Surface Ar (CaAa)	35.5000 - 0.0000	1	1	0.000 0.000	8.5000		0.00
Flat Plate 8.5" x 1.25" (Rev. G)	B	Surface Ar (CaAa)	35.5000 - 0.0000	1	1	0.000 0.000	8.5000		0.00
Flat Plate 8.5" x 1.25" (Rev. G)	C	Surface Ar (CaAa)	35.5000 - 0.0000	1	1	0.000 0.000	8.5000		0.00
Flat Plate 6" x 1" (Rev. G)	A	Surface Ar (CaAa)	60.5833 - 35.5833	1	1	0.000 0.000	6.0000		0.00
Flat Plate 6" x 1" (Rev. G)	B	Surface Ar (CaAa)	60.5833 - 35.5833	1	1	0.000 0.000	6.0000		0.00
Flat Plate 6" x 1" (Rev. G)	C	Surface Ar (CaAa)	60.5833 - 35.5833	1	1	0.000 0.000	6.0000		0.00

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CAAA ft <sup>2</sup> /ft	Weight plf	
*133*								
ATCB-B01-005(5/16")	A	No	Inside Pole	133.0000 - 0.0000	6	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.07 0.07 0.07
FSJ4-50B(1/2)	A	No	Inside Pole	133.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.14 0.14 0.14
2" Conduit	A	No	Inside Pole	133.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.16 1.16 1.16
*124*								
HB114-1-08U4-M5J(1 1/4")	A	No	Inside Pole	124.0000 - 0.0000	4	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.08 1.08 1.08
*114*								
LDF4-50A(1/2)	B	No	Inside Pole	114.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.15 0.15 0.15
HB158-1-08U8-S8J18( 1-5/8)	B	No	Inside Pole	114.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.30 1.30 1.30
LDF7-50A(1-5/8)	B	No	Inside Pole	114.0000 - 0.0000	6	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.82 0.82 0.82
*105*								
LCF158-50A(1-5/8")	C	No	Inside Pole	105.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.80 0.80 0.80
FB-L98B-002-75000( 3/8)	C	No	Inside Pole	105.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.06 0.06 0.06
WR-VG86ST-BRD( 3/4)	C	No	Inside Pole	105.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.59 0.59 0.59
2" Conduit	C	No	Inside Pole	105.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	1.16 1.16 1.16

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>AA</sub>		Weight
						ft <sup>2</sup> /ft	plf	
FB-L98B-002-75000(3/8)	C	No	Inside Pole	105.0000 - 0.0000	1	No Ice	0.0000	0.06
						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	105.0000 - 0.0000	2	No Ice	0.0000	0.59
						1/2" Ice	0.0000	0.59
						1" Ice	0.0000	0.59
2" Conduit	C	No	Inside Pole	105.0000 - 0.0000	1	No Ice	0.0000	1.16
						1/2" Ice	0.0000	1.16
						1" Ice	0.0000	1.16
*94*								
HJ7-50A(1-5/8")	A	No	Inside Pole	94.0000 - 0.0000	6	No Ice	0.0000	1.04
						1/2" Ice	0.0000	1.04
						1" Ice	0.0000	1.04
MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	C	No	Inside Pole	94.0000 - 0.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	1.07
						1" Ice	0.0000	1.07
*87*								
AVA7-50(1-5/8)	B	No	Inside Pole	87.0000 - 0.0000	6	No Ice	0.0000	0.70
						1/2" Ice	0.0000	0.70
						1" Ice	0.0000	0.70

**Feed Line/Linear Appurtenances Section Areas**

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub>		Weight K
					In Face ft <sup>2</sup>	Out Face ft <sup>2</sup>	
L1	145.0000-140.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	140.0000-135.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	135.0000-130.0000	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	130.0000-125.0000	A	0.000	0.000	0.000	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L5	125.0000-120.0000	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L6	120.0000-115.0000	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L7	115.0000-110.0000	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.792	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.00
L8	110.0000-105.0000	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.990	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.00
L9	105.0000-100.0000	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.990	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.07
L10	100.0000-95.0000	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.990	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.07
L11	95.0000-90.0000	A	0.000	0.000	3.960	0.000	0.08
		B	0.000	0.000	0.990	0.000	0.04
		C	0.000	0.000	0.500	0.000	0.08
L12	90.0000-84.7500	A	0.000	0.000	5.197	0.000	0.10
		B	0.000	0.000	1.040	0.000	0.05
		C	0.000	0.000	0.656	0.000	0.08
L13	84.7500-84.2500	A	0.000	0.000	0.495	0.000	0.01
		B	0.000	0.000	0.099	0.000	0.01
		C	0.000	0.000	0.063	0.000	0.01
L14	84.2500-79.2500	A	0.000	0.000	4.950	0.000	0.09

Tower Sectio n	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
		B	0.000	0.000	0.990	0.000	0.06
		C	0.000	0.000	0.625	0.000	0.08
L15	79.2500-74.2500	A	0.000	0.000	4.950	0.000	0.09
		B	0.000	0.000	0.990	0.000	0.06
		C	0.000	0.000	0.625	0.000	0.08
L16	74.2500-69.2500	A	0.000	0.000	4.950	0.000	0.09
		B	0.000	0.000	0.990	0.000	0.06
		C	0.000	0.000	0.625	0.000	0.08
L17	69.2500-64.2500	A	0.000	0.000	4.950	0.000	0.09
		B	0.000	0.000	0.990	0.000	0.06
		C	0.000	0.000	0.625	0.000	0.08
L18	64.2500-59.2500	A	0.000	0.000	5.456	0.000	0.09
		B	0.000	0.000	1.496	0.000	0.06
		C	0.000	0.000	1.131	0.000	0.08
L19	59.2500-58.0833	A	0.000	0.000	1.598	0.000	0.02
		B	0.000	0.000	0.674	0.000	0.01
		C	0.000	0.000	0.589	0.000	0.02
L20	58.0833-57.8333	A	0.000	0.000	0.343	0.000	0.00
		B	0.000	0.000	0.145	0.000	0.00
		C	0.000	0.000	0.126	0.000	0.00
L21	57.8333-52.8333	A	0.000	0.000	6.862	0.000	0.09
		B	0.000	0.000	2.902	0.000	0.06
		C	0.000	0.000	2.537	0.000	0.08
L22	52.8333-44.2500	A	0.000	0.000	11.825	0.000	0.16
		B	0.000	0.000	5.027	0.000	0.10
		C	0.000	0.000	4.401	0.000	0.14
L23	44.2500-43.2500	A	0.000	0.000	1.382	0.000	0.02
		B	0.000	0.000	0.590	0.000	0.01
		C	0.000	0.000	0.517	0.000	0.02
L24	43.2500-38.2500	A	0.000	0.000	6.925	0.000	0.09
		B	0.000	0.000	2.965	0.000	0.06
		C	0.000	0.000	2.600	0.000	0.08
L25	38.2500-38.0833	A	0.000	0.000	0.231	0.000	0.00
		B	0.000	0.000	0.099	0.000	0.00
		C	0.000	0.000	0.087	0.000	0.00
L26	38.0833-37.8333	A	0.000	0.000	0.347	0.000	0.00
		B	0.000	0.000	0.149	0.000	0.00
		C	0.000	0.000	0.131	0.000	0.00
L27	37.8333-32.8333	A	0.000	0.000	6.982	0.000	0.09
		B	0.000	0.000	3.022	0.000	0.06
		C	0.000	0.000	2.657	0.000	0.08
L28	32.8333-31.2500	A	0.000	0.000	2.240	0.000	0.03
		B	0.000	0.000	0.986	0.000	0.02
		C	0.000	0.000	0.871	0.000	0.03
L29	31.2500-31.0000	A	0.000	0.000	0.354	0.000	0.00
		B	0.000	0.000	0.156	0.000	0.00
		C	0.000	0.000	0.138	0.000	0.00
L30	31.0000-26.0000	A	0.000	0.000	7.075	0.000	0.09
		B	0.000	0.000	3.115	0.000	0.06
		C	0.000	0.000	2.750	0.000	0.08
L31	26.0000-21.0000	A	0.000	0.000	7.075	0.000	0.09
		B	0.000	0.000	3.115	0.000	0.06
		C	0.000	0.000	2.750	0.000	0.08
L32	21.0000-16.0000	A	0.000	0.000	7.096	0.000	0.09
		B	0.000	0.000	3.136	0.000	0.06
		C	0.000	0.000	2.771	0.000	0.08
L33	16.0000-11.0000	A	0.000	0.000	7.142	0.000	0.09
		B	0.000	0.000	3.182	0.000	0.06
		C	0.000	0.000	2.817	0.000	0.08
L34	11.0000-6.0000	A	0.000	0.000	7.142	0.000	0.09
		B	0.000	0.000	3.182	0.000	0.06
		C	0.000	0.000	2.817	0.000	0.08
L35	6.0000-1.0000	A	0.000	0.000	7.142	0.000	0.09
		B	0.000	0.000	3.182	0.000	0.06
		C	0.000	0.000	2.817	0.000	0.08
L36	1.0000-0.0000	A	0.000	0.000	1.428	0.000	0.02
		B	0.000	0.000	0.636	0.000	0.01
		C	0.000	0.000	0.563	0.000	0.02

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A <sub>R</sub>	A <sub>F</sub>	C <sub>A</sub> A <sub>A</sub> In Face	C <sub>A</sub> A <sub>A</sub> Out Face	Weight
n	ft		in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	K
L1	145.0000-140.0000	A	2.315	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	140.0000-135.0000	A	2.307	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	135.0000-130.0000	A	2.298	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	130.0000-125.0000	A	2.289	0.000	0.000	0.000	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L5	125.0000-120.0000	A	2.280	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L6	120.0000-115.0000	A	2.271	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L7	115.0000-110.0000	A	2.261	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	2.601	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L8	110.0000-105.0000	A	2.251	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	3.241	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.00
L9	105.0000-100.0000	A	2.240	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	3.230	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.07
L10	100.0000-95.0000	A	2.229	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	3.219	0.000	0.10
		C		0.000	0.000	0.000	0.000	0.07
L11	95.0000-90.0000	A	2.217	0.000	0.000	7.167	0.000	0.19
		B		0.000	0.000	3.207	0.000	0.10
		C		0.000	0.000	2.274	0.000	0.12
L12	90.0000-84.7500	A	2.205	0.000	0.000	9.390	0.000	0.24
		B		0.000	0.000	3.354	0.000	0.11
		C		0.000	0.000	2.971	0.000	0.13
L13	84.7500-84.2500	A	2.197	0.000	0.000	0.894	0.000	0.02
		B		0.000	0.000	0.319	0.000	0.01
		C		0.000	0.000	0.283	0.000	0.01
L14	84.2500-79.2500	A	2.190	0.000	0.000	8.925	0.000	0.22
		B		0.000	0.000	3.180	0.000	0.12
		C		0.000	0.000	2.815	0.000	0.13
L15	79.2500-74.2500	A	2.176	0.000	0.000	8.908	0.000	0.22
		B		0.000	0.000	3.166	0.000	0.11
		C		0.000	0.000	3.998	0.000	0.14
L16	74.2500-69.2500	A	2.161	0.000	0.000	8.889	0.000	0.22
		B		0.000	0.000	3.151	0.000	0.11
		C		0.000	0.000	4.948	0.000	0.15
L17	69.2500-64.2500	A	2.146	0.000	0.000	8.870	0.000	0.22
		B		0.000	0.000	3.136	0.000	0.11
		C		0.000	0.000	4.917	0.000	0.15
L18	64.2500-59.2500	A	2.129	0.000	0.000	10.217	0.000	0.25
		B		0.000	0.000	4.487	0.000	0.14
		C		0.000	0.000	6.251	0.000	0.18
L19	59.2500-58.0833	A	2.118	0.000	0.000	3.256	0.000	0.08
		B		0.000	0.000	1.920	0.000	0.05
		C		0.000	0.000	2.329	0.000	0.06
L20	58.0833-57.8333	A	2.116	0.000	0.000	0.697	0.000	0.02
		B		0.000	0.000	0.411	0.000	0.01
		C		0.000	0.000	0.499	0.000	0.01
L21	57.8333-52.8333	A	2.106	0.000	0.000	13.926	0.000	0.32
		B		0.000	0.000	8.202	0.000	0.22
		C		0.000	0.000	9.943	0.000	0.25
L22	52.8333-44.2500	A	2.079	0.000	0.000	23.800	0.000	0.55
		B		0.000	0.000	13.986	0.000	0.37

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L23	44.2500-43.2500	C		0.000	0.000	16.928	0.000	0.43
		A	2.057	0.000	0.000	2.773	0.000	0.06
		B		0.000	0.000	1.629	0.000	0.04
		C		0.000	0.000	1.972	0.000	0.05
L24	43.2500-38.2500	A	2.043	0.000	0.000	13.783	0.000	0.31
		B		0.000	0.000	8.075	0.000	0.21
		C		0.000	0.000	9.753	0.000	0.25
L25	38.2500-38.0833	A	2.029	0.000	0.000	0.459	0.000	0.01
		B		0.000	0.000	0.268	0.000	0.01
		C		0.000	0.000	0.324	0.000	0.01
L26	38.0833-37.8333	A	2.028	0.000	0.000	0.688	0.000	0.02
		B		0.000	0.000	0.402	0.000	0.01
		C		0.000	0.000	0.485	0.000	0.01
L27	37.8333-32.8333	A	2.014	0.000	0.000	14.301	0.000	0.33
		B		0.000	0.000	8.600	0.000	0.22
		C		0.000	0.000	10.249	0.000	0.26
L28	32.8333-31.2500	A	1.994	0.000	0.000	4.726	0.000	0.11
		B		0.000	0.000	2.922	0.000	0.07
		C		0.000	0.000	3.438	0.000	0.09
L29	31.2500-31.0000	A	1.988	0.000	0.000	0.746	0.000	0.02
		B		0.000	0.000	0.461	0.000	0.01
		C		0.000	0.000	0.542	0.000	0.01
L30	31.0000-26.0000	A	1.971	0.000	0.000	14.872	0.000	0.33
		B		0.000	0.000	9.182	0.000	0.23
		C		0.000	0.000	10.787	0.000	0.27
L31	26.0000-21.0000	A	1.933	0.000	0.000	14.787	0.000	0.33
		B		0.000	0.000	9.106	0.000	0.23
		C		0.000	0.000	10.675	0.000	0.26
L32	21.0000-16.0000	A	1.887	0.000	0.000	14.684	0.000	0.32
		B		0.000	0.000	9.015	0.000	0.22
		C		0.000	0.000	10.537	0.000	0.26
L33	16.0000-11.0000	A	1.829	0.000	0.000	14.552	0.000	0.31
		B		0.000	0.000	8.898	0.000	0.22
		C		0.000	0.000	10.362	0.000	0.25
L34	11.0000-6.0000	A	1.746	0.000	0.000	14.366	0.000	0.30
		B		0.000	0.000	8.732	0.000	0.21
		C		0.000	0.000	10.113	0.000	0.24
L35	6.0000-1.0000	A	1.598	0.000	0.000	14.032	0.000	0.28
		B		0.000	0.000	8.435	0.000	0.19
		C		0.000	0.000	9.668	0.000	0.22
L36	1.0000-0.0000	A	1.315	0.000	0.000	2.679	0.000	0.05
		B		0.000	0.000	1.574	0.000	0.03
		C		0.000	0.000	1.764	0.000	0.04

### Feed Line Center of Pressure

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>z</sub> in	CP <sub>x</sub> Ice in	CP <sub>z</sub> Ice in
L1	145.0000-140.0000	0.0000	0.0000	0.0000	0.0000
L2	140.0000-135.0000	0.0000	0.0000	0.0000	0.0000
L3	135.0000-130.0000	0.0000	0.0000	0.0000	0.0000
L4	130.0000-125.0000	0.0000	0.0000	0.0000	0.0000
L5	125.0000-120.0000	0.0000	0.0000	0.0000	0.0000
L6	120.0000-115.0000	0.0000	0.0000	0.0000	0.0000
L7	115.0000-110.0000	0.2342	0.0246	0.6039	0.0635
L8	110.0000-105.0000	0.2877	0.0302	0.7287	0.0766



Section	Elevation	CP <sub>x</sub>	CP <sub>z</sub>	CP <sub>x</sub>	CP <sub>z</sub>
	ft	in	in	Ice in	Ice in
L9	105.0000- 100.0000	0.2878	0.0303	0.7318	0.0769
L10	100.0000-95.0000	0.2879	0.0303	0.7346	0.0772
L11	95.0000-90.0000	-0.7310	0.2930	-0.7455	0.4877
L12	90.0000-84.7500	-0.9214	0.3429	-0.9609	0.5504
L13	84.7500-84.2500	-0.9216	0.3429	-0.9613	0.5507
L14	84.2500-79.2500	-0.9250	0.3442	-0.9692	0.5541
L15	79.2500-74.2500	-0.9310	0.3465	-0.8917	0.6769
L16	74.2500-69.2500	-0.9369	0.3487	-0.8342	0.7743
L17	69.2500-64.2500	-0.9425	0.3508	-0.8465	0.7830
L18	64.2500-59.2500	-0.8895	0.3311	-0.7769	0.7161
L19	59.2500-58.0833	-0.7643	0.2846	-0.6223	0.5722
L20	58.0833-57.8333	-0.7651	0.2848	-0.6237	0.5732
L21	57.8333-52.8333	-0.7679	0.2859	-0.6292	0.5770
L22	52.8333-44.2500	-0.7746	0.2884	-0.6433	0.5862
L23	44.2500-43.2500	-0.7748	0.2885	-0.6459	0.5886
L24	43.2500-38.2500	-0.7774	0.2895	-0.6535	0.5902
L25	38.2500-38.0833	-0.7796	0.2903	-0.6590	0.5932
L26	38.0833-37.8333	-0.7798	0.2904	-0.6594	0.5935
L27	37.8333-32.8333	-0.7798	0.2904	-0.6445	0.5780
L28	32.8333-31.2500	-0.7768	0.2893	-0.6293	0.5616
L29	31.2500-31.0000	-0.7779	0.2897	-0.6311	0.5624
L30	31.0000-26.0000	-0.7811	0.2909	-0.6364	0.5646
L31	26.0000-21.0000	-0.7869	0.2931	-0.6468	0.5682
L32	21.0000-16.0000	-0.7912	0.2947	-0.6574	0.5706
L33	16.0000-11.0000	-0.7934	0.2955	-0.6687	0.5712
L34	11.0000-6.0000	-0.7989	0.2976	-0.6813	0.5683
L35	6.0000-1.0000	-0.8043	0.2996	-0.6976	0.5564
L36	1.0000-0.0000	-0.8074	0.3008	-0.7195	0.5216

### Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L7	14	HB158-1-08U8-S8J18( 1-5/8)	110.00 - 114.00	1.0000	1.0000
L8	14	HB158-1-08U8-S8J18( 1-5/8)	105.00 - 110.00	1.0000	1.0000
L9	14	HB158-1-08U8-S8J18( 1-5/8)	100.00 - 105.00	1.0000	1.0000
L10	14	HB158-1-08U8-S8J18( 1-5/8)	95.00 - 100.00	1.0000	1.0000
L11	14	HB158-1-08U8-S8J18( 1-5/8)	90.00 - 95.00	1.0000	1.0000
L11	25	HJ7-50A(1-5/8")	90.00 - 94.00	1.0000	1.0000
L11	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	90.00 - 94.00	1.0000	1.0000
L12	14	HB158-1-08U8-S8J18( 1-5/8)	84.75 - 90.00	1.0000	1.0000
L12	25	HJ7-50A(1-5/8")	84.75 - 90.00	1.0000	1.0000
L12	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	84.75 - 90.00	1.0000	1.0000
L14	14	HB158-1-08U8-S8J18( 1-5/8)	79.25 - 84.25	1.0000	1.0000
L14	25	HJ7-50A(1-5/8")	79.25 - 84.25	1.0000	1.0000
L14	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	79.25 - 84.25	1.0000	1.0000
L15	14	HB158-1-08U8-S8J18( 1-5/8)	74.25 - 79.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L15	25	HJ7-50A(1-5/8")	74.25 - 79.25	1.0000	1.0000
L15	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	74.25 - 79.25	1.0000	1.0000
L15	32	LDF4-50A(1/2)	74.25 - 77.00	1.0000	1.0000
L16	14	HB158-1-08U8-S8J18( 1-5/8)	69.25 - 74.25	1.0000	1.0000
L16	25	HJ7-50A(1-5/8")	69.25 - 74.25	1.0000	1.0000
L16	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	69.25 - 74.25	1.0000	1.0000
L16	32	LDF4-50A(1/2)	69.25 - 74.25	1.0000	1.0000
L17	14	HB158-1-08U8-S8J18( 1-5/8)	64.25 - 69.25	1.0000	1.0000
L17	25	HJ7-50A(1-5/8")	64.25 - 69.25	1.0000	1.0000
L17	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	64.25 - 69.25	1.0000	1.0000
L17	32	LDF4-50A(1/2)	64.25 - 69.25	1.0000	1.0000
L18	14	HB158-1-08U8-S8J18( 1-5/8)	59.25 - 64.25	1.0000	1.0000
L18	25	HJ7-50A(1-5/8")	59.25 - 64.25	1.0000	1.0000
L18	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	59.25 - 64.25	1.0000	1.0000
L18	32	LDF4-50A(1/2)	59.25 - 64.25	1.0000	1.0000
L18	37	Flat Plate 6" x 1" (Rev. G)	59.25 - 60.58	1.0000	1.0000
L18	38	Flat Plate 6" x 1" (Rev. G)	59.25 - 60.58	1.0000	1.0000
L18	39	Flat Plate 6" x 1" (Rev. G)	59.25 - 60.58	1.0000	1.0000
L19	14	HB158-1-08U8-S8J18( 1-5/8)	58.08 - 59.25	1.0000	1.0000
L19	25	HJ7-50A(1-5/8")	58.08 - 59.25	1.0000	1.0000
L19	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	58.08 - 59.25	1.0000	1.0000
L19	32	LDF4-50A(1/2)	58.08 - 59.25	1.0000	1.0000
L19	37	Flat Plate 6" x 1" (Rev. G)	58.08 - 59.25	1.0000	1.0000
L19	38	Flat Plate 6" x 1" (Rev. G)	58.08 - 59.25	1.0000	1.0000
L19	39	Flat Plate 6" x 1" (Rev. G)	58.08 - 59.25	1.0000	1.0000
L20	14	HB158-1-08U8-S8J18( 1-5/8)	57.83 - 58.08	1.0000	1.0000
L20	25	HJ7-50A(1-5/8")	57.83 - 58.08	1.0000	1.0000
L20	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	57.83 - 58.08	1.0000	1.0000
L20	32	LDF4-50A(1/2)	57.83 - 58.08	1.0000	1.0000
L20	37	Flat Plate 6" x 1" (Rev. G)	57.83 - 58.08	1.0000	1.0000
L20	38	Flat Plate 6" x 1" (Rev. G)	57.83 - 58.08	1.0000	1.0000
L20	39	Flat Plate 6" x 1" (Rev. G)	57.83 - 58.08	1.0000	1.0000
L21	14	HB158-1-08U8-S8J18( 1-5/8)	52.83 - 57.83	1.0000	1.0000
L21	25	HJ7-50A(1-5/8")	52.83 - 57.83	1.0000	1.0000
L21	28	MLE Hybrid 3Power/6Fiber	52.83 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L21	32	RL 2 10AWG(1-1/4") LDF4-50A(1/2)	57.83 52.83 - 57.83	1.0000	1.0000
L21	37	Flat Plate 6" x 1" (Rev. G)	52.83 - 57.83	1.0000	1.0000
L21	38	Flat Plate 6" x 1" (Rev. G)	52.83 - 57.83	1.0000	1.0000
L21	39	Flat Plate 6" x 1" (Rev. G)	52.83 - 57.83	1.0000	1.0000
L22	14	HB158-1-08U8-S8J18( 1-5/8)	44.25 - 52.83	1.0000	1.0000
L22	25	HJ7-50A(1-5/8")	44.25 - 52.83	1.0000	1.0000
L22	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	44.25 - 52.83	1.0000	1.0000
L22	32	LDF4-50A(1/2)	44.25 - 52.83	1.0000	1.0000
L22	37	Flat Plate 6" x 1" (Rev. G)	44.25 - 52.83	1.0000	1.0000
L22	38	Flat Plate 6" x 1" (Rev. G)	44.25 - 52.83	1.0000	1.0000
L22	39	Flat Plate 6" x 1" (Rev. G)	44.25 - 52.83	1.0000	1.0000
L24	14	HB158-1-08U8-S8J18( 1-5/8)	38.25 - 43.25	1.0000	1.0000
L24	25	HJ7-50A(1-5/8")	38.25 - 43.25	1.0000	1.0000
L24	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	38.25 - 43.25	1.0000	1.0000
L24	32	LDF4-50A(1/2)	38.25 - 43.25	1.0000	1.0000
L24	37	Flat Plate 6" x 1" (Rev. G)	38.25 - 43.25	1.0000	1.0000
L24	38	Flat Plate 6" x 1" (Rev. G)	38.25 - 43.25	1.0000	1.0000
L24	39	Flat Plate 6" x 1" (Rev. G)	38.25 - 43.25	1.0000	1.0000
L25	14	HB158-1-08U8-S8J18( 1-5/8)	38.08 - 38.25	1.0000	1.0000
L25	25	HJ7-50A(1-5/8")	38.08 - 38.25	1.0000	1.0000
L25	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	38.08 - 38.25	1.0000	1.0000
L25	32	LDF4-50A(1/2)	38.08 - 38.25	1.0000	1.0000
L25	37	Flat Plate 6" x 1" (Rev. G)	38.08 - 38.25	1.0000	1.0000
L25	38	Flat Plate 6" x 1" (Rev. G)	38.08 - 38.25	1.0000	1.0000
L25	39	Flat Plate 6" x 1" (Rev. G)	38.08 - 38.25	1.0000	1.0000
L26	14	HB158-1-08U8-S8J18( 1-5/8)	37.83 - 38.08	1.0000	1.0000
L26	25	HJ7-50A(1-5/8")	37.83 - 38.08	1.0000	1.0000
L26	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	37.83 - 38.08	1.0000	1.0000
L26	32	LDF4-50A(1/2)	37.83 - 38.08	1.0000	1.0000
L26	37	Flat Plate 6" x 1" (Rev. G)	37.83 - 38.08	1.0000	1.0000
L26	38	Flat Plate 6" x 1" (Rev. G)	37.83 - 38.08	1.0000	1.0000
L26	39	Flat Plate 6" x 1" (Rev. G)	37.83 - 38.08	1.0000	1.0000
L27	14	HB158-1-08U8-S8J18( 1-5/8)	32.83 - 37.83	1.0000	1.0000
L27	25	HJ7-50A(1-5/8")	32.83 - 37.83	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
L27	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	32.83 - 37.83	1.0000	1.0000
L27	32	LDF4-50A(1/2)	32.83 - 37.83	1.0000	1.0000
L27	34	Flat Plate 8.5" x 1.25" (Rev. G)	32.83 - 35.50	1.0000	1.0000
L27	35	Flat Plate 8.5" x 1.25" (Rev. G)	32.83 - 35.50	1.0000	1.0000
L27	36	Flat Plate 8.5" x 1.25" (Rev. G)	32.83 - 35.50	1.0000	1.0000
L27	37	Flat Plate 6" x 1" (Rev. G)	35.58 - 37.83	1.0000	1.0000
L27	38	Flat Plate 6" x 1" (Rev. G)	35.58 - 37.83	1.0000	1.0000
L27	39	Flat Plate 6" x 1" (Rev. G)	35.58 - 37.83	1.0000	1.0000
L28	14	HB158-1-08U8-S8J18( 1- 5/8)	31.25 - 32.83	1.0000	1.0000
L28	25	HJ7-50A(1-5/8")	31.25 - 32.83	1.0000	1.0000
L28	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	31.25 - 32.83	1.0000	1.0000
L28	32	LDF4-50A(1/2)	31.25 - 32.83	1.0000	1.0000
L28	34	Flat Plate 8.5" x 1.25" (Rev. G)	31.25 - 32.83	1.0000	1.0000
L28	35	Flat Plate 8.5" x 1.25" (Rev. G)	31.25 - 32.83	1.0000	1.0000
L28	36	Flat Plate 8.5" x 1.25" (Rev. G)	31.25 - 32.83	1.0000	1.0000
L29	14	HB158-1-08U8-S8J18( 1- 5/8)	31.00 - 31.25	1.0000	1.0000
L29	25	HJ7-50A(1-5/8")	31.00 - 31.25	1.0000	1.0000
L29	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	31.00 - 31.25	1.0000	1.0000
L29	32	LDF4-50A(1/2)	31.00 - 31.25	1.0000	1.0000
L29	34	Flat Plate 8.5" x 1.25" (Rev. G)	31.00 - 31.25	1.0000	1.0000
L29	35	Flat Plate 8.5" x 1.25" (Rev. G)	31.00 - 31.25	1.0000	1.0000
L29	36	Flat Plate 8.5" x 1.25" (Rev. G)	31.00 - 31.25	1.0000	1.0000
L30	14	HB158-1-08U8-S8J18( 1- 5/8)	26.00 - 31.00	1.0000	1.0000
L30	25	HJ7-50A(1-5/8")	26.00 - 31.00	1.0000	1.0000
L30	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	26.00 - 31.00	1.0000	1.0000
L30	32	LDF4-50A(1/2)	26.00 - 31.00	1.0000	1.0000
L30	34	Flat Plate 8.5" x 1.25" (Rev. G)	26.00 - 31.00	1.0000	1.0000
L30	35	Flat Plate 8.5" x 1.25" (Rev. G)	26.00 - 31.00	1.0000	1.0000
L30	36	Flat Plate 8.5" x 1.25" (Rev. G)	26.00 - 31.00	1.0000	1.0000
L31	14	HB158-1-08U8-S8J18( 1- 5/8)	21.00 - 26.00	1.0000	1.0000
L31	25	HJ7-50A(1-5/8")	21.00 - 26.00	1.0000	1.0000
L31	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	21.00 - 26.00	1.0000	1.0000
L31	32	LDF4-50A(1/2)	21.00 - 26.00	1.0000	1.0000
L31	34	Flat Plate 8.5" x 1.25" (Rev. G)	21.00 - 26.00	1.0000	1.0000
L31	35	Flat Plate 8.5" x 1.25"	21.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
		(Rev. G)	26.00		
L31	36	Flat Plate 8.5" x 1.25"	21.00 -	1.0000	1.0000
		(Rev. G)	26.00		
L32	14	HB158-1-08U8-S8J18( 1-5/8)	16.00 -	1.0000	1.0000
L32	25	HJ7-50A(1-5/8")	16.00 -	1.0000	1.0000
		(Rev. G)	21.00		
L32	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	16.00 -	1.0000	1.0000
L32	32	LDF4-50A(1/2)	16.00 -	1.0000	1.0000
		(Rev. G)	21.00		
L32	34	Flat Plate 8.5" x 1.25"	16.00 -	1.0000	1.0000
		(Rev. G)	21.00		
L32	35	Flat Plate 8.5" x 1.25"	16.00 -	1.0000	1.0000
		(Rev. G)	21.00		
L32	36	Flat Plate 8.5" x 1.25"	16.00 -	1.0000	1.0000
		(Rev. G)	21.00		
L33	14	HB158-1-08U8-S8J18( 1-5/8)	11.00 -	1.0000	1.0000
L33	25	HJ7-50A(1-5/8")	11.00 -	1.0000	1.0000
		(Rev. G)	16.00		
L33	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	11.00 -	1.0000	1.0000
L33	32	LDF4-50A(1/2)	11.00 -	1.0000	1.0000
		(Rev. G)	16.00		
L33	34	Flat Plate 8.5" x 1.25"	11.00 -	1.0000	1.0000
		(Rev. G)	16.00		
L33	35	Flat Plate 8.5" x 1.25"	11.00 -	1.0000	1.0000
		(Rev. G)	16.00		
L33	36	Flat Plate 8.5" x 1.25"	11.00 -	1.0000	1.0000
		(Rev. G)	16.00		
L34	14	HB158-1-08U8-S8J18( 1-5/8)	6.00 - 11.00	1.0000	1.0000
L34	25	HJ7-50A(1-5/8")	6.00 - 11.00	1.0000	1.0000
L34	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	6.00 - 11.00	1.0000	1.0000
L34	32	LDF4-50A(1/2)	6.00 - 11.00	1.0000	1.0000
L34	34	Flat Plate 8.5" x 1.25"	6.00 - 11.00	1.0000	1.0000
		(Rev. G)			
L34	35	Flat Plate 8.5" x 1.25"	6.00 - 11.00	1.0000	1.0000
		(Rev. G)			
L34	36	Flat Plate 8.5" x 1.25"	6.00 - 11.00	1.0000	1.0000
		(Rev. G)			
L35	14	HB158-1-08U8-S8J18( 1-5/8)	1.00 - 6.00	1.0000	1.0000
L35	25	HJ7-50A(1-5/8")	1.00 - 6.00	1.0000	1.0000
L35	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	1.00 - 6.00	1.0000	1.0000
L35	32	LDF4-50A(1/2)	1.00 - 6.00	1.0000	1.0000
L35	34	Flat Plate 8.5" x 1.25"	1.00 - 6.00	1.0000	1.0000
		(Rev. G)			
L35	35	Flat Plate 8.5" x 1.25"	1.00 - 6.00	1.0000	1.0000
		(Rev. G)			
L35	36	Flat Plate 8.5" x 1.25"	1.00 - 6.00	1.0000	1.0000
		(Rev. G)			
L36	14	HB158-1-08U8-S8J18( 1-5/8)	0.00 - 1.00	1.0000	1.0000
L36	25	HJ7-50A(1-5/8")	0.00 - 1.00	1.0000	1.0000
L36	28	MLE Hybrid 3Power/6Fiber RL 2 10AWG(1-1/4")	0.00 - 1.00	1.0000	1.0000
L36	32	LDF4-50A(1/2)	0.00 - 1.00	1.0000	1.0000
L36	34	Flat Plate 8.5" x 1.25"	0.00 - 1.00	1.0000	1.0000
		(Rev. G)			
L36	35	Flat Plate 8.5" x 1.25"	0.00 - 1.00	1.0000	1.0000
		(Rev. G)			
L36	36	Flat Plate 8.5" x 1.25"	0.00 - 1.00	1.0000	1.0000
		(Rev. G)			

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement  ft	C <sub>AA</sub> Front  ft <sup>2</sup>	C <sub>AA</sub> Side  ft <sup>2</sup>	Weight  K
Platform Mount [LP 712-1]	C	None		0.000	133.0000	No Ice 24.5300 1/2" 29.9400 Ice 35.3500	24.5300 29.9400 35.3500	1.34 1.65 1.96
(3) 2.375" OD x 5' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	133.0000	No Ice 1.1875 1/2" 1.4956 Ice 1.8071 1" Ice	1.1875 1.4956 1.8071	0.02 0.03 0.04
(3) 2.375" OD x 5' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.000	133.0000	No Ice 1.1875 1/2" 1.4956 Ice 1.8071 1" Ice	1.1875 1.4956 1.8071	0.02 0.03 0.04
(3) 2.375" OD x 5' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.000	133.0000	No Ice 1.1875 1/2" 1.4956 Ice 1.8071 1" Ice	1.1875 1.4956 1.8071	0.02 0.03 0.04
TIMING 2000	A	From Leg	4.0000 0.00 2.00	0.000	133.0000	No Ice 0.1079 1/2" 0.1518 Ice 0.2031 1" Ice	0.1079 0.1518 0.2031	0.00 0.00 0.01
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.0000 0.00 2.00	0.000	133.0000	No Ice 4.5378 1/2" 4.8914 Ice 5.2539 1" Ice	2.9834 3.5263 4.0859	0.05 0.08 0.13
WIMAX DAP HEAD	A	From Leg	4.0000 0.00 6.00	0.000	133.0000	No Ice 1.5467 1/2" 1.7037 Ice 1.8681 1" Ice	0.6840 0.7999 0.9228	0.03 0.04 0.06
HORIZON COMPACT	A	From Leg	4.0000 0.00 6.00	0.000	133.0000	No Ice 0.7208 1/2" 0.8278 Ice 0.9422 1" Ice	0.3681 0.4499 0.5391	0.01 0.02 0.03
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.0000 0.00 2.00	0.000	133.0000	No Ice 4.5378 1/2" 4.8914 Ice 5.2539 1" Ice	2.9834 3.5263 4.0859	0.05 0.08 0.13
HORIZON COMPACT	B	From Leg	4.0000 0.00 6.00	0.000	133.0000	No Ice 0.7208 1/2" 0.8278 Ice 0.9422 1" Ice	0.3681 0.4499 0.5391	0.01 0.02 0.03
WIMAX DAP HEAD	B	From Leg	4.0000 0.00 6.00	0.000	133.0000	No Ice 1.5467 1/2" 1.7037 Ice 1.8681 1" Ice	0.6840 0.7999 0.9228	0.03 0.04 0.06
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.0000 0.00 2.00	0.000	133.0000	No Ice 4.5378 1/2" 4.8914 Ice 5.2539 1" Ice	2.9834 3.5263 4.0859	0.05 0.08 0.13
WIMAX DAP HEAD	C	From Leg	4.0000 0.00 2.00	0.000	133.0000	No Ice 1.5467 1/2" 1.7037 Ice 1.8681 1" Ice	0.6840 0.7999 0.9228	0.03 0.04 0.06
*124*								
Platform Mount [LP 712-1]	C	None		0.000	124.0000	No Ice 24.5300 1/2" 29.9400 Ice 35.3500 1" Ice	24.5300 29.9400 35.3500	1.34 1.65 1.96

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
2.375" OD x 5' Mount Pipe	A	From Leg	4.0000	0.000	124.0000	No Ice	1.1875	1.1875	0.02
			0.00			1/2"	1.4956	1.4956	0.03
			0.00			Ice	1.8071	1.8071	0.04
						1" Ice			
2.375" OD x 5' Mount Pipe	B	From Leg	4.0000	0.000	124.0000	No Ice	1.1875	1.1875	0.02
			0.00			1/2"	1.4956	1.4956	0.03
			0.00			Ice	1.8071	1.8071	0.04
						1" Ice			
2.375" OD x 5' Mount Pipe	C	From Leg	4.0000	0.000	124.0000	No Ice	1.1875	1.1875	0.02
			0.00			1/2"	1.4956	1.4956	0.03
			0.00			Ice	1.8071	1.8071	0.04
						1" Ice			
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000	0.000	124.0000	No Ice	8.2619	6.9458	0.08
			0.00			1/2"	8.8215	8.1266	0.15
			0.00			Ice	9.3462	9.0212	0.23
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000	0.000	124.0000	No Ice	6.5799	4.9591	0.08
			0.00			1/2"	7.0306	5.7544	0.13
			0.00			Ice	7.4733	6.4723	0.19
						1" Ice			
IBC1900HG-2A	A	From Leg	4.0000	0.000	124.0000	No Ice	0.9660	0.4635	0.02
			0.00			1/2"	1.0908	0.5576	0.03
			0.00			Ice	1.2230	0.6599	0.04
						1" Ice			
IBC1900BB-1	A	From Leg	4.0000	0.000	124.0000	No Ice	0.9660	0.4635	0.02
			0.00			1/2"	1.0908	0.5576	0.03
			0.00			Ice	1.2230	0.6599	0.04
						1" Ice			
TD-RRH8x20-25	A	From Leg	4.0000	0.000	124.0000	No Ice	4.0455	1.5345	0.07
			0.00			1/2"	4.2975	1.7142	0.10
			0.00			Ice	4.5570	1.9008	0.13
						1" Ice			
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000	0.000	124.0000	No Ice	8.2619	6.9458	0.08
			0.00			1/2"	8.8215	8.1266	0.15
			0.00			Ice	9.3462	9.0212	0.23
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000	0.000	124.0000	No Ice	6.5799	4.9591	0.08
			0.00			1/2"	7.0306	5.7544	0.13
			0.00			Ice	7.4733	6.4723	0.19
						1" Ice			
IBC1900BB-1	B	From Leg	4.0000	0.000	124.0000	No Ice	0.9660	0.4635	0.02
			0.00			1/2"	1.0908	0.5576	0.03
			0.00			Ice	1.2230	0.6599	0.04
						1" Ice			
IBC1900HG-2A	B	From Leg	4.0000	0.000	124.0000	No Ice	0.9660	0.4635	0.02
			0.00			1/2"	1.0908	0.5576	0.03
			0.00			Ice	1.2230	0.6599	0.04
						1" Ice			
TD-RRH8x20-25	B	From Leg	4.0000	0.000	124.0000	No Ice	4.0455	1.5345	0.07
			0.00			1/2"	4.2975	1.7142	0.10
			0.00			Ice	4.5570	1.9008	0.13
						1" Ice			
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000	0.000	124.0000	No Ice	8.2619	6.9458	0.08
			0.00			1/2"	8.8215	8.1266	0.15
			0.00			Ice	9.3462	9.0212	0.23
						1" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000	0.000	124.0000	No Ice	6.5799	4.9591	0.08
			0.00			1/2"	7.0306	5.7544	0.13
			0.00			Ice	7.4733	6.4723	0.19
						1" Ice			
IBC1900HG-2A	C	From Leg	4.0000	0.000	124.0000	No Ice	0.9660	0.4635	0.02
			0.00			1/2"	1.0908	0.5576	0.03
			0.00			Ice	1.2230	0.6599	0.04
						1" Ice			
TD-RRH8x20-25	C	From Leg	4.0000	0.000	124.0000	No Ice	4.0455	1.5345	0.07
						1/2"			
						Ice			
						1" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
			0.00			1/2"	4.2975	1.7142	0.10
			0.00			Ice	4.5570	1.9008	0.13
IBC1900BB-1	C	From Leg	4.0000	0.000	124.0000	1" Ice	0.9660	0.4635	0.02
			0.00			No Ice	1.0908	0.5576	0.03
			0.00			1/2"	1.2230	0.6599	0.04
						Ice			
						1" Ice			
*122*									
Pipe Mount [PM 601-3]	C	None		0.000	122.0000	No Ice	4.3900	4.3900	0.20
						1/2"	5.4800	5.4800	0.24
						Ice	6.5700	6.5700	0.28
						1" Ice			
PCS 1900MHz 4x45W-65MHz	A	From Leg	1.0000	0.000	122.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2"	2.5266	2.4407	0.08
			0.00			Ice	2.7388	2.6507	0.11
						1" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	1.0000	0.000	122.0000	No Ice	2.0583	1.9317	0.06
			0.00			1/2"	2.2398	2.1087	0.09
			-4.00			Ice	2.4287	2.2931	0.11
						1" Ice			
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.0000	0.000	122.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2"	2.5266	2.4407	0.08
			0.00			Ice	2.7388	2.6507	0.11
						1" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	1.0000	0.000	122.0000	No Ice	2.0583	1.9317	0.06
			0.00			1/2"	2.2398	2.1087	0.09
			-4.00			Ice	2.4287	2.2931	0.11
						1" Ice			
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.0000	0.000	122.0000	No Ice	2.3218	2.2381	0.06
			0.00			1/2"	2.5266	2.4407	0.08
			0.00			Ice	2.7388	2.6507	0.11
						1" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	1.0000	0.000	122.0000	No Ice	2.0583	1.9317	0.06
			0.00			1/2"	2.2398	2.1087	0.09
			-4.00			Ice	2.4287	2.2931	0.11
						1" Ice			
*114*									
Platform Mount [LP 712-1]	C	None		0.000	114.0000	No Ice	24.5300	24.5300	1.34
						1/2"	29.9400	29.9400	1.65
						Ice	35.3500	35.3500	1.96
						1" Ice			
BXA-80063/4CFx5 w/ Mount Pipe	A	From Leg	4.0000	0.000	114.0000	No Ice	4.9453	3.6158	0.03
			0.00			1/2"	5.3243	4.2169	0.07
			0.00			Ice	5.7120	4.8343	0.12
						1" Ice			
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.000	114.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2"	0.3862	0.1189	0.01
			0.00			Ice	0.4656	0.1685	0.01
						1" Ice			
BXA-80063/4CFx5 w/ Mount Pipe	B	From Leg	4.0000	0.000	114.0000	No Ice	4.9453	3.6158	0.03
			0.00			1/2"	5.3243	4.2169	0.07
			0.00			Ice	5.7120	4.8343	0.12
						1" Ice			
KS24019-L112A	B	From Leg	4.0000	0.000	114.0000	No Ice	0.1407	0.1407	0.01
			0.00			1/2"	0.1979	0.1979	0.01
			2.00			Ice	0.2621	0.2621	0.01
						1" Ice			
DB-T1-6Z-8AB-OZ	B	From Leg	4.0000	0.000	114.0000	No Ice	4.8000	2.0000	0.04
			0.00			1/2"	5.0704	2.1926	0.08
			0.00			Ice	5.3481	2.3926	0.12
						1" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.000	114.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2"	0.3862	0.1189	0.01
			0.00			Ice	0.4656	0.1685	0.01
						1" Ice			



Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
BXA-80063/4CFx5 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.000	114.0000	No Ice	4.9453	3.6158	0.03
						1/2"	5.3243	4.2169	0.07
						Ice	5.7120	4.8343	0.12
(2) FD9R6004/2C-3L	C	From Leg	4.0000 0.00 0.00	0.000	114.0000	1" Ice			
						No Ice	0.3142	0.0762	0.00
						1/2"	0.3862	0.1189	0.01
*114R* (3) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	114.0000	Ice	0.4656	0.1685	0.01
						1" Ice			
						No Ice	8.4472	7.4231	0.08
RRH2x60-700	A	From Leg	4.0000 0.00 0.00	0.000	114.0000	1/2"	8.9900	8.4681	0.15
						Ice	9.5175	9.3636	0.23
						1" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000 0.00 0.00	0.000	114.0000	No Ice	3.5002	1.8157	0.06
						1/2"	3.7609	2.0519	0.08
						Ice	4.0285	2.2894	0.11
RRH4X45-AWS4 B66	A	From Leg	4.0000 0.00 0.00	0.000	114.0000	1" Ice			
						No Ice	4.8000	2.0000	0.04
						1/2"	5.0704	2.1926	0.08
(3) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.000	114.0000	Ice	5.3481	2.3926	0.12
						1" Ice			
						No Ice	2.6600	1.5861	0.06
RRH2x60-700	B	From Leg	4.0000 0.00 0.00	0.000	114.0000	1/2"	2.8781	1.7690	0.08
						Ice	3.1037	1.9588	0.11
						1" Ice			
RRH4X45-AWS4 B66	B	From Leg	4.0000 0.00 0.00	0.000	114.0000	No Ice	8.4472	7.4231	0.08
						1/2"	8.9900	8.4681	0.15
						Ice	9.5175	9.3636	0.23
(3) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.000	114.0000	1" Ice			
						No Ice	3.5002	1.8157	0.06
						1/2"	3.7609	2.0519	0.08
RRH2x60-700	C	From Leg	4.0000 0.00 0.00	0.000	114.0000	Ice	4.0285	2.2894	0.11
						1" Ice			
						No Ice	2.6600	1.5861	0.06
RRH4X45-AWS4 B66	C	From Leg	4.0000 0.00 0.00	0.000	114.0000	1/2"	2.8781	1.7690	0.08
						Ice	3.1037	1.9588	0.11
						1" Ice			
*105* Platform Mount [LP 712-1]	C	None		0.000	105.0000	No Ice	24.5300	24.5300	1.34
						1/2"	29.9400	29.9400	1.65
						Ice	35.3500	35.3500	1.96
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	105.0000	1" Ice			
						No Ice	5.9829	4.4337	0.06
						1/2"	6.5103	5.3733	0.11
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	105.0000	Ice	6.9885	6.1201	0.17
						1" Ice			
						No Ice	8.2619	6.3042	0.07
(2) LGP2140X	A	From Leg	4.0000 0.00 0.00	0.000	105.0000	1/2"	8.8215	7.4790	0.14
						Ice	9.3462	8.3676	0.21
						1" Ice			
						No Ice	1.0800	0.3580	0.01
						1/2"	1.2137	0.4536	0.02
						Ice	1.3548	0.5563	0.03

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub>		Weight	
			Horz	Lateral			Front	Side		
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
DC6-48-60-18-8F	A	From Leg	4.0000	0.000	0.000	105.0000	1" Ice			
			0.00				No Ice	0.7915	0.7915	0.02
			0.00				1/2"	1.2743	1.2743	0.04
(2) RRUS-11	A	From Leg	4.0000	0.000	0.000	105.0000	Ice	1.4503	1.4503	0.05
			0.00				1" Ice			
			0.00				No Ice	2.7845	1.1872	0.05
7770.00 w/ Mount Pipe	B	From Leg	4.0000	0.000	0.000	105.0000	1/2"	2.9919	1.3342	0.07
			0.00				Ice	3.2066	1.4897	0.09
			0.00				1" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000	0.000	0.000	105.0000	No Ice	5.9829	4.4337	0.06
			0.00				1/2"	6.5103	5.3733	0.11
			0.00				Ice	6.9885	6.1201	0.17
(2) LGP2140X	B	From Leg	4.0000	0.000	0.000	105.0000	1" Ice			
			0.00				No Ice	8.2619	6.3042	0.07
			0.00				1/2"	8.8215	7.4790	0.14
(2) RRUS-11	B	From Leg	4.0000	0.000	0.000	105.0000	Ice	9.3462	8.3676	0.21
			0.00				1" Ice			
			0.00				No Ice	1.0800	0.3580	0.01
7770.00 w/ Mount Pipe	C	From Leg	4.0000	0.000	0.000	105.0000	1/2"	1.2137	0.4536	0.02
			0.00				Ice	1.3548	0.5563	0.03
			0.00				1" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.0000	0.000	0.000	105.0000	No Ice	2.7845	1.1872	0.05
			0.00				1/2"	2.9919	1.3342	0.07
			0.00				Ice	3.2066	1.4897	0.09
(2) LGP2140X	C	From Leg	4.0000	0.000	0.000	105.0000	1" Ice			
			0.00				No Ice	5.9829	4.4337	0.06
			0.00				1/2"	6.5103	5.3733	0.11
(2) RRUS-11	C	From Leg	4.0000	0.000	0.000	105.0000	Ice	6.9885	6.1201	0.17
			0.00				1" Ice			
			0.00				No Ice	8.2619	6.3042	0.07
*105R* OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.0000	0.000	0.000	105.0000	1/2"	8.8215	7.4790	0.14
			0.00				Ice	9.3462	8.3676	0.21
			0.00				1" Ice			
RRUS 32 B30	A	From Leg	4.0000	0.000	0.000	105.0000	No Ice	1.0800	0.3580	0.01
			0.00				1/2"	1.2137	0.4536	0.02
			0.00				Ice	1.3548	0.5563	0.03
DC6-48-60-18-8F	A	From Leg	4.0000	0.000	0.000	105.0000	1" Ice			
			0.00				No Ice	2.7845	1.1872	0.05
			0.00				1/2"	2.9919	1.3342	0.07
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.0000	0.000	0.000	105.0000	Ice	3.2066	1.4897	0.09
			0.00				1" Ice			
			0.00				No Ice	2.7845	1.1872	0.05
RRUS 32 B30	B	From Leg	4.0000	0.000	0.000	105.0000	1/2"	2.9919	1.3342	0.07
			0.00				Ice	3.2066	1.4897	0.09
			0.00				1" Ice			
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.0000	0.000	0.000	105.0000	No Ice	5.9829	4.4337	0.06
			0.00				1/2"	6.5103	5.3733	0.11
			0.00				Ice	6.9885	6.1201	0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
RRUS 32 B30	C	From Leg	4.0000 0.00 0.00	0.000	105.0000	1" Ice No Ice 1/2" Ice 1" Ice	2.6923 2.9115 3.1382	1.5727 1.7556 1.9455	0.06 0.08 0.10
*94* Platform Mount [LP 712-1]	C	None		0.000	94.0000	No Ice 1/2" Ice 1" Ice	24.5300 29.9400 35.3500	24.5300 29.9400 35.3500	1.34 1.65 1.96
2.375" OD x 5' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	1.1875 1.4956 1.8071	1.1875 1.4956 1.8071	0.02 0.03 0.04
2.375" OD x 5' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	1.1875 1.4956 1.8071	1.1875 1.4956 1.8071	0.02 0.03 0.04
2.375" OD x 5' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	1.1875 1.4956 1.8071	1.1875 1.4956 1.8071	0.02 0.03 0.04
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
KRY 112 144/1	A	From Leg	4.0000 0.00 0.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
KRY 112 144/1	B	From Leg	4.0000 0.00 0.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
KRY 112 144/1	C	From Leg	4.0000 0.00 0.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	0.3500 0.4259 0.5093	0.1750 0.2343 0.3009	0.01 0.01 0.02
*94P* AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	6.7474 7.2017 7.6475	6.0700 6.8671 7.5828	0.15 0.21 0.28
LNx-6515DS-A1M w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
RRUS 11 B12	A	From Leg	4.0000 0.00 1.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	2.8333 3.0426 3.2593	1.1821 1.3299 1.4848	0.05 0.07 0.10
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.000	94.0000	No Ice 1/2" Ice 1" Ice	6.7474 7.2017 7.6475	6.0700 6.8671 7.5828	0.15 0.21 0.28
LNx-6515DS-A1M w/ Mount Pipe	B	From Leg	4.0000 0.00	0.000	94.0000	No Ice 1/2"	11.6828 12.4043	9.8418 11.3657	0.08 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	Ice	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			1.00			Ice	13.1351	12.9138	0.27
RRUS 11 B12	B	From Leg	4.0000 0.00 1.00	0.000	94.0000	1" Ice No Ice	2.8333 3.0426	1.1821 1.3299	0.05 0.07
						Ice	3.2593	1.4848	0.10
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.000	94.0000	1" Ice No Ice	6.7474 7.2017	6.0700 6.8671	0.15 0.21
						Ice	7.6475	7.5828	0.28
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.000	94.0000	1" Ice No Ice	11.6828 12.4043	9.8418 11.3657	0.08 0.17
						Ice	13.1351	12.9138	0.27
RRUS 11 B12	C	From Leg	4.0000 0.00 1.00	0.000	94.0000	1" Ice No Ice	2.8333 3.0426	1.1821 1.3299	0.05 0.07
						Ice	3.2593	1.4848	0.10
						1" Ice			
*87* Pipe Mount [PM 601-3]	C	None		0.000	87.0000	No Ice	4.3900	4.3900	0.20
						1/2"	5.4800	5.4800	0.24
						Ice	6.5700	6.5700	0.28
						1" Ice			
742 213 w/ Mount Pipe	A	From Leg	1.0000 0.00 0.00	0.000	87.0000	No Ice	5.3729	4.6203	0.05
						1/2"	5.9502	6.0004	0.09
						Ice	6.5014	6.9816	0.15
						1" Ice			
742 213 w/ Mount Pipe	B	From Leg	1.0000 0.00 0.00	0.000	87.0000	No Ice	5.3729	4.6203	0.05
						1/2"	5.9502	6.0004	0.09
						Ice	6.5014	6.9816	0.15
						1" Ice			
742 213 w/ Mount Pipe	C	From Leg	1.0000 0.00 0.00	0.000	87.0000	No Ice	5.3729	4.6203	0.05
						1/2"	5.9502	6.0004	0.09
						Ice	6.5014	6.9816	0.15
						1" Ice			
*77** Side Arm Mount [SO 701-1]	A	From Leg	3.0000 0.00 0.00	0.000	77.0000	No Ice	0.8500	1.6700	0.07
						1/2"	1.1400	2.3400	0.08
						Ice	1.4300	3.0100	0.09
						1" Ice			
58532A	A	From Leg	3.0000 0.00 0.00	0.000	77.0000	No Ice	0.1893	0.1893	0.00
						1/2"	0.2483	0.2483	0.00
						Ice	0.3147	0.3147	0.01
						1" Ice			

### Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight K	
VHLP2.5-11	A	Paraboloid w/Shroud (HP)	From Leg	4.0000 0.00 6.00	0.000		133.0000	2.9167	No Ice 1/2" Ice 1" Ice	6.6800 7.0700 7.4600	0.05 0.08 0.12
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	4.0000 0.00 6.00	0.000		133.0000	2.9167	No Ice 1/2" Ice 1" Ice	6.6800 7.0700 7.4600	0.05 0.08 0.12

### Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
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	145 - 140	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-0.68	-0.00	0.00
			Max. Mx	20	-0.26	0.95	0.00
			Max. My	14	-0.26	-0.00	-0.95
			Max. Vy	20	-0.38	0.95	0.00
			Max. Vx	14	0.38	-0.00	-0.95
			Max. Torque	3			-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-1.82	-0.98	0.57
			Max. Mx	8	-0.59	-6.29	-0.24
			Max. My	2	-0.58	0.70	6.55
			Max. Vy	20	-1.41	6.12	0.79
			Max. Vx	14	1.48	-0.73	-6.52
			Max. Torque	14			0.90
L3	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.82	-1.25	0.83
			Max. Mx	20	-2.73	24.94	1.88
			Max. My	14	-2.72	-1.64	-25.91
			Max. Vy	20	-4.66	24.94	1.88
			Max. Vx	14	4.75	-1.64	-25.91
			Max. Torque	22			-1.03
L4	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.70	-1.26	0.84
			Max. Mx	20	-3.15	49.32	2.84
			Max. My	14	-3.13	-2.39	-50.72
			Max. Vy	20	-5.09	49.32	2.84
			Max. Vx	14	5.18	-2.39	-50.72
			Max. Torque	22			-1.03
L5	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.53	-1.28	0.85
			Max. Mx	20	-6.41	94.03	3.82
			Max. My	14	-6.38	-3.16	-95.88
			Max. Vy	20	-10.84	94.03	3.82
			Max. Vx	14	10.93	-3.16	-95.88
			Max. Torque	22			-1.03
L6	120 - 115	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.48	-1.30	0.87
			Max. Mx	20	-6.89	149.35	4.81
			Max. My	14	-6.87	-3.94	-151.65
			Max. Vy	20	-11.29	149.35	4.81
			Max. Vx	14	11.38	-3.94	-151.65
			Max. Torque	22			-1.03
L7	115 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.87	-2.65	1.49
			Max. Mx	20	-9.93	233.99	6.15
			Max. My	14	-9.88	-5.18	-237.19
			Max. Vy	20	-18.57	233.99	6.15
			Max. Vx	14	18.74	-5.18	-237.19
			Max. Torque	14			1.51
L8	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.98	-2.76	1.50
			Max. Mx	20	-10.52	327.94	7.46
			Max. My	14	-10.47	-6.29	-331.99
			Max. Vy	20	-19.02	327.94	7.46
			Max. Vx	14	19.19	-6.29	-331.99
			Max. Torque	14			1.51
L9	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.59	-2.88	2.73
			Max. Mx	20	-13.84	453.10	9.01
			Max. My	14	-13.79	-7.42	-457.77
			Max. Vy	20	-25.26	453.10	9.01
			Max. Vx	14	25.44	-7.42	-457.77
			Max. Torque	22			-1.88
L10	100 - 95	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.83	-2.99	2.75
			Max. Mx	20	-14.60	580.51	10.34
			Max. My	14	-14.55	-8.54	-586.05
			Max. Vy	20	-25.71	580.51	10.34
			Max. Vx	14	25.89	-8.54	-586.05
			Max. Torque	22			-1.88
L11	95 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.92	-2.88	2.69
			Max. Mx	20	-18.14	734.98	11.67
			Max. My	14	-18.08	-9.63	-741.39
			Max. Vy	20	-31.44	734.98	11.67
			Max. Vx	14	31.62	-9.63	-741.39
			Max. Torque	22			-1.88

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L12	90 - 84.75	Pole	Max. Torque	22			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.16	-2.85	2.67
			Max. Mx	20	-18.28	758.59	11.87
			Max. My	14	-18.23	-9.79	-765.12
			Max. Vy	20	-31.51	758.59	11.87
			Max. Vx	14	31.69	-9.79	-765.12
L13	84.75 - 84.25	Pole	Max. Torque	22			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.21	-2.68	2.58
			Max. Mx	20	-20.13	920.06	13.20
			Max. My	14	-20.07	-10.87	-927.51
			Max. Vy	20	-32.98	920.06	13.20
			Max. Vx	14	33.17	-10.87	-927.51
L14	84.25 - 79.25	Pole	Max. Torque	22			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.94	-2.49	2.48
			Max. Mx	20	-21.22	1086.04	14.53
			Max. My	14	-21.16	-11.95	-1094.46
			Max. Vy	20	-33.41	1086.04	14.53
			Max. Vx	14	33.62	-11.95	-1094.46
L15	79.25 - 74.25	Pole	Max. Torque	22			-1.88
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.87	-2.30	3.06
			Max. Mx	20	-22.43	1254.41	16.18
			Max. My	14	-22.38	-13.03	-1263.38
			Max. Vy	20	-33.93	1254.41	16.18
			Max. Vx	14	34.10	-13.03	-1263.38
L16	74.25 - 69.25	Pole	Max. Torque	22			-2.21
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.68	-2.12	2.90
			Max. Mx	20	-23.61	1425.07	17.49
			Max. My	14	-23.55	-14.10	-1434.89
			Max. Vy	20	-34.34	1425.07	17.49
			Max. Vx	14	34.52	-14.10	-1434.89
L17	69.25 - 64.25	Pole	Max. Torque	22			-2.21
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.51	-1.93	2.73
			Max. Mx	20	-24.81	1597.75	18.80
			Max. My	14	-24.76	-15.17	-1608.43
			Max. Vy	20	-34.74	1597.75	18.80
			Max. Vx	14	34.92	-15.17	-1608.43
L18	64.25 - 59.25	Pole	Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.45	-1.74	2.56
			Max. Mx	20	-26.05	1772.38	20.10
			Max. My	14	-26.00	-16.22	-1784.04
			Max. Vy	20	-35.13	1772.38	20.10
			Max. Vx	14	35.35	-16.22	-1784.04
L19	59.25 - 58.0833	Pole	Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.96	-1.69	2.52
			Max. Mx	20	-26.34	1813.42	20.41
			Max. My	14	-26.28	-16.47	-1825.40
			Max. Vy	20	-35.23	1813.42	20.41
			Max. Vx	14	35.59	-16.47	-1825.40
L20	58.0833 - 57.8333	Pole	Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.07	-1.68	2.52
			Max. Mx	20	-26.42	1822.23	20.47
			Max. My	14	-26.36	-16.52	-1834.30



Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L21	57.8333 - 52.8333	Pole	Max. Vy	20	-35.24	1822.23	20.47
			Max. Vx	14	35.62	-16.52	-1834.30
			Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.27	-1.49	2.35
L22	52.8333 - 44.25	Pole	Max. Mx	20	-27.68	1999.55	21.76
			Max. My	14	-27.59	-17.58	-2014.92
			Max. Vy	20	-35.69	1999.55	21.76
			Max. Vx	14	36.64	-17.58	-2014.92
			Max. Torque	22			-2.20
L23	44.25 - 43.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.74	-1.36	2.23
			Max. Mx	20	-28.54	2118.94	22.62
			Max. My	14	-28.44	-18.28	-2138.09
			Max. Vy	20	-35.96	2118.94	22.62
L24	43.25 - 38.25	Pole	Max. Vx	14	37.29	-18.28	-2138.09
			Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.19	-1.11	2.02
			Max. Mx	20	-31.14	2345.76	24.22
L25	38.25 - 38.0833	Pole	Max. My	14	-31.02	-19.59	-2375.42
			Max. Vy	20	-36.61	2345.76	24.22
			Max. Vx	14	38.66	-19.59	-2375.42
			Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
L26	38.0833 - 37.8333	Pole	Max. Compression	26	-78.58	-0.91	1.85
			Max. Mx	20	-32.62	2529.77	25.50
			Max. My	14	-32.50	-20.63	-2571.02
			Max. Vy	20	-37.01	2529.77	25.50
			Max. Vx	14	39.61	-20.63	-2571.02
L27	37.8333 - 32.8333	Pole	Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.66	-0.90	1.84
			Max. Mx	20	-32.69	2535.93	25.54
			Max. My	14	-32.57	-20.67	-2577.62
L28	32.8333 - 31.25	Pole	Max. Vy	20	-37.01	2535.93	25.54
			Max. Vx	14	39.61	-20.67	-2577.62
			Max. Torque	22			-2.20
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.78	-0.89	1.83
L29	31.25 - 31	Pole	Max. Mx	20	-32.76	2545.19	25.61
			Max. My	14	-32.64	-20.72	-2587.53
			Max. Vy	20	-37.03	2545.19	25.61
			Max. Vx	14	39.64	-20.72	-2587.53
			Max. Torque	22			-2.20
L29	31.25 - 31	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.04	-0.62	1.61
			Max. Mx	20	-34.73	2790.76	27.27
			Max. My	14	-34.61	-22.08	-2852.70
			Max. Vy	20	-37.60	2790.76	27.27
L29	31.25 - 31	Pole	Max. Vx	14	40.95	-22.08	-2852.70
			Max. Torque	22			-2.20
L29	31.25 - 31	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.19	-0.61	1.60



Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L30	31 - 26	Pole	Max. Mx	20	-34.87	2800.16	27.33
			Max. My	14	-34.75	-22.13	-2862.93
			Max. Vy	20	-37.60	2800.16	27.33
			Max. Vx	14	40.98	-22.13	-2862.93
			Max. Torque	22			-2.16
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.36	-0.41	1.43
			Max. Mx	20	-36.98	2989.40	28.59
			Max. My	14	-36.87	-23.16	-3070.44
			Max. Vy	20	-38.10	2989.40	28.59
L31	26 - 21	Pole	Max. Vx	14	42.04	-23.16	-3070.44
			Max. Torque	22			-2.15
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.54	-0.20	1.26
			Max. Mx	20	-39.13	3181.03	29.84
			Max. My	14	-39.03	-24.17	-3283.08
			Max. Vy	20	-38.56	3181.03	29.84
			Max. Vx	14	43.04	-24.17	-3283.08
			Max. Torque	22			-2.04
			Max Tension	1	0.00	0.00	0.00
L32	21 - 16	Pole	Max. Compression	26	-91.71	0.00	1.09
			Max. Mx	20	-41.31	3374.86	31.09
			Max. My	14	-41.22	-25.19	-3500.59
			Max. Vy	20	-38.98	3374.86	31.09
			Max. Vx	14	43.99	-25.19	-3500.59
			Max. Torque	20			-2.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.88	0.21	0.93
			Max. Mx	20	-43.51	3570.73	32.33
			Max. My	14	-43.45	-26.20	-3722.72
L33	16 - 11	Pole	Max. Vy	20	-39.37	3570.73	32.33
			Max. Vx	14	44.89	-26.20	-3722.72
			Max. Torque	20			-2.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-98.03	0.41	0.77
			Max. Mx	20	-45.75	3768.51	33.56
			Max. My	14	-45.71	-27.20	-3949.34
			Max. Vy	20	-39.75	3768.51	33.56
			Max. Vx	14	45.79	-27.20	-3949.34
			Max. Torque	20			-2.00
L34	11 - 6	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.11	0.60	0.63
			Max. Mx	20	-48.00	3968.17	34.78
			Max. My	14	-47.99	-28.19	-4180.45
			Max. Vy	20	-40.12	3968.17	34.78
			Max. Vx	14	46.68	-28.19	-4180.45
			Max. Torque	20			-2.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.69	0.64	0.60
			Max. Mx	20	-48.46	4008.32	35.03
L35	6 - 1	Pole	Max. My	14	-48.46	-28.39	-4227.21
			Max. Vy	20	-40.20	4008.32	35.03
			Max. Vx	14	46.86	-28.39	-4227.21
			Max. Torque	20			-2.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.69	0.64	0.60
			Max. Mx	20	-48.46	4008.32	35.03
			Max. My	14	-48.46	-28.39	-4227.21
			Max. Vy	20	-40.20	4008.32	35.03
			Max. Vx	14	46.86	-28.39	-4227.21
L36	1 - 0	Pole	Max. Torque	20			-2.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-101.69	0.64	0.60
			Max. Mx	20	-48.46	4008.32	35.03
			Max. My	14	-48.46	-28.39	-4227.21
			Max. Vy	20	-40.20	4008.32	35.03
			Max. Vx	14	46.86	-28.39	-4227.21
			Max. Torque	20			-2.00

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	101.69	0.06	13.03
	Max. H <sub>x</sub>	21	36.36	40.18	0.25
	Max. H <sub>z</sub>	3	36.36	0.29	46.78
	Max. M <sub>x</sub>	2	4218.83	0.29	46.78
	Max. M <sub>z</sub>	8	3995.32	-40.09	-0.14

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. Torsion	8	1.97	-40.09	-0.14
	Min. Vert	19	36.36	34.53	-19.92
	Min. H <sub>x</sub>	9	36.36	-40.09	-0.14
	Min. H <sub>z</sub>	15	36.36	-0.21	-46.85
	Min. M <sub>x</sub>	14	-4227.21	-0.21	-46.85
	Min. M <sub>z</sub>	20	-4008.32	40.18	0.25
	Min. Torsion	20	-2.00	40.18	0.25

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	40.40	0.00	0.00	-0.47	0.19	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	48.48	-0.29	-46.78	-4218.83	40.89	-0.67
0.9 Dead+1.6 Wind 0 deg - No Ice	36.36	-0.29	-46.78	-4181.50	40.40	-0.68
1.2 Dead+1.6 Wind 30 deg - No Ice	48.48	19.94	-34.79	-3468.85	-1981.20	0.77
0.9 Dead+1.6 Wind 30 deg - No Ice	36.36	19.94	-34.79	-3437.18	-1963.28	0.76
1.2 Dead+1.6 Wind 60 deg - No Ice	48.48	34.50	-19.90	-1988.03	-3444.72	-0.70
0.9 Dead+1.6 Wind 60 deg - No Ice	36.36	34.50	-19.90	-1969.80	-3413.45	-0.69
1.2 Dead+1.6 Wind 90 deg - No Ice	48.48	40.09	0.14	18.88	-3995.32	-1.97
0.9 Dead+1.6 Wind 90 deg - No Ice	36.36	40.09	0.14	18.83	-3959.09	-1.96
1.2 Dead+1.6 Wind 120 deg - No Ice	48.48	35.74	20.95	2057.06	-3484.97	-1.67
0.9 Dead+1.6 Wind 120 deg - No Ice	36.36	35.74	20.95	2038.55	-3453.56	-1.66
1.2 Dead+1.6 Wind 150 deg - No Ice	48.48	22.31	38.66	3579.61	-2063.85	-0.60
0.9 Dead+1.6 Wind 150 deg - No Ice	36.36	22.31	38.66	3547.75	-2045.45	-0.58
1.2 Dead+1.6 Wind 180 deg - No Ice	48.48	0.21	46.85	4227.21	-28.39	0.41
0.9 Dead+1.6 Wind 180 deg - No Ice	36.36	0.21	46.85	4190.10	-28.13	0.43
1.2 Dead+1.6 Wind 210 deg - No Ice	48.48	-19.89	34.91	3486.02	1974.96	-0.80
0.9 Dead+1.6 Wind 210 deg - No Ice	36.36	-19.89	34.91	3454.47	1957.02	-0.79
1.2 Dead+1.6 Wind 240 deg - No Ice	48.48	-34.53	19.92	1989.67	3450.05	0.70
0.9 Dead+1.6 Wind 240 deg - No Ice	36.36	-34.53	19.92	1971.73	3418.64	0.69
1.2 Dead+1.6 Wind 270 deg - No Ice	48.48	-40.18	-0.25	-35.03	4008.32	2.00
0.9 Dead+1.6 Wind 270 deg - No Ice	36.36	-40.18	-0.25	-34.50	3971.85	1.99
1.2 Dead+1.6 Wind 300 deg - No Ice	48.48	-35.84	-20.91	-2052.57	3499.74	1.93
0.9 Dead+1.6 Wind 300 deg - No Ice	36.36	-35.84	-20.91	-2033.82	3468.07	1.91
1.2 Dead+1.6 Wind 330 deg - No Ice	48.48	-22.36	-38.64	-3576.94	2070.98	0.60
0.9 Dead+1.6 Wind 330 deg - No Ice	36.36	-22.36	-38.64	-3544.80	2052.41	0.58
1.2 Dead+1.0 Ice+1.0 Temp	101.69	0.00	-0.00	-0.60	0.64	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	101.69	-0.06	-13.03	-1315.81	9.99	0.10

Load Combination	Vertical	Shear <sub>x</sub>	Shear <sub>z</sub>	Overturning Moment, M <sub>x</sub>	Overturning Moment, M <sub>z</sub>	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	101.69	6.29	-10.94	-1120.90	-641.88	0.13
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	101.69	10.89	-6.28	-644.29	-1115.50	-0.34
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	101.69	12.14	0.03	3.66	-1275.70	-0.71
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	101.69	10.96	6.39	655.73	-1119.06	-0.67
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	101.69	6.40	11.08	1129.11	-651.50	-0.43
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	101.69	0.04	13.04	1316.59	-5.98	-0.15
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	101.69	-6.28	10.96	1123.76	641.46	-0.13
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	101.69	-10.90	6.28	643.48	1117.81	0.34
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	101.69	-12.16	-0.05	-8.68	1279.84	0.72
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	101.69	-10.98	-6.38	-655.88	1123.61	0.72
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	101.69	-6.41	-11.07	-1129.68	654.24	0.43
Dead+Wind 0 deg - Service	40.40	-0.06	-10.43	-937.28	9.20	0.28
Dead+Wind 30 deg - Service	40.40	4.45	-7.76	-770.58	-439.78	0.17
Dead+Wind 60 deg - Service	40.40	7.70	-4.44	-441.78	-764.72	-0.16
Dead+Wind 90 deg - Service	40.40	8.94	0.03	3.82	-886.99	-0.44
Dead+Wind 120 deg - Service	40.40	7.97	4.67	456.39	-773.71	-0.44
Dead+Wind 150 deg - Service	40.40	4.98	8.62	794.54	-458.18	-0.41
Dead+Wind 180 deg - Service	40.40	0.05	10.45	938.41	-6.17	-0.33
Dead+Wind 210 deg - Service	40.40	-4.44	7.79	773.67	438.65	-0.18
Dead+Wind 240 deg - Service	40.40	-7.70	4.44	441.41	766.16	0.16
Dead+Wind 270 deg - Service	40.40	-8.96	-0.06	-8.14	890.14	0.45
Dead+Wind 300 deg - Service	40.40	-7.99	-4.66	-456.14	777.25	0.49
Dead+Wind 330 deg - Service	40.40	-4.99	-8.62	-794.68	460.02	0.41

## Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-40.40	0.00	0.00	40.40	0.00	0.000%
2	-0.29	-48.48	-46.78	0.29	48.48	46.78	0.000%
3	-0.29	-36.36	-46.78	0.29	36.36	46.78	0.000%
4	19.94	-48.48	-34.79	-19.94	48.48	34.79	0.000%
5	19.94	-36.36	-34.79	-19.94	36.36	34.79	0.000%
6	34.50	-48.48	-19.90	-34.50	48.48	19.90	0.000%
7	34.50	-36.36	-19.90	-34.50	36.36	19.90	0.000%
8	40.09	-48.48	0.14	-40.09	48.48	-0.14	0.000%
9	40.09	-36.36	0.14	-40.09	36.36	-0.14	0.000%
10	35.74	-48.48	20.95	-35.74	48.48	-20.95	0.000%
11	35.74	-36.36	20.95	-35.74	36.36	-20.95	0.000%
12	22.31	-48.48	38.66	-22.31	48.48	-38.66	0.000%
13	22.31	-36.36	38.66	-22.31	36.36	-38.66	0.000%
14	0.21	-48.48	46.85	-0.21	48.48	-46.85	0.000%
15	0.21	-36.36	46.85	-0.21	36.36	-46.85	0.000%
16	-19.89	-48.48	34.91	19.89	48.48	-34.91	0.000%
17	-19.89	-36.36	34.91	19.89	36.36	-34.91	0.000%
18	-34.53	-48.48	19.92	34.53	48.48	-19.92	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
19	-34.53	-36.36	19.92	34.53	36.36	-19.92	0.000%
20	-40.18	-48.48	-0.25	40.18	48.48	0.25	0.000%
21	-40.18	-36.36	-0.25	40.18	36.36	0.25	0.000%
22	-35.84	-48.48	-20.91	35.84	48.48	20.91	0.000%
23	-35.84	-36.36	-20.91	35.84	36.36	20.91	0.000%
24	-22.36	-48.48	-38.64	22.36	48.48	38.64	0.000%
25	-22.36	-36.36	-38.64	22.36	36.36	38.64	0.000%
26	0.00	-101.69	0.00	-0.00	101.69	0.00	0.000%
27	-0.06	-101.69	-13.03	0.06	101.69	13.03	0.000%
28	6.29	-101.69	-10.94	-6.29	101.69	10.94	0.000%
29	10.89	-101.69	-6.28	-10.89	101.69	6.28	0.000%
30	12.14	-101.69	0.03	-12.14	101.69	-0.03	0.000%
31	10.96	-101.69	6.39	-10.96	101.69	-6.39	0.000%
32	6.40	-101.69	11.08	-6.40	101.69	-11.08	0.000%
33	0.04	-101.69	13.04	-0.04	101.69	-13.04	0.000%
34	-6.28	-101.69	10.96	6.28	101.69	-10.96	0.000%
35	-10.90	-101.69	6.28	10.90	101.69	-6.28	0.000%
36	-12.16	-101.69	-0.05	12.16	101.69	0.05	0.000%
37	-10.98	-101.69	-6.38	10.98	101.69	6.38	0.000%
38	-6.41	-101.69	-11.07	6.41	101.69	11.07	0.000%
39	-0.06	-40.40	-10.43	0.06	40.40	10.43	0.000%
40	4.45	-40.40	-7.76	-4.45	40.40	7.76	0.000%
41	7.70	-40.40	-4.44	-7.70	40.40	4.44	0.000%
42	8.94	-40.40	0.03	-8.94	40.40	-0.03	0.000%
43	7.97	-40.40	4.67	-7.97	40.40	-4.67	0.000%
44	4.98	-40.40	8.62	-4.98	40.40	-8.62	0.000%
45	0.05	-40.40	10.45	-0.05	40.40	-10.45	0.000%
46	-4.44	-40.40	7.79	4.44	40.40	-7.79	0.000%
47	-7.70	-40.40	4.44	7.70	40.40	-4.44	0.000%
48	-8.96	-40.40	-0.06	8.96	40.40	0.06	0.000%
49	-7.99	-40.40	-4.66	7.99	40.40	4.66	0.000%
50	-4.99	-40.40	-8.62	4.99	40.40	8.62	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	6	0.00000001	0.00000622
3	Yes	5	0.00000001	0.00005069
4	Yes	7	0.00000001	0.00000794
5	Yes	6	0.00000001	0.00005709
6	Yes	7	0.00000001	0.00000791
7	Yes	6	0.00000001	0.00005684
8	Yes	6	0.00000001	0.00000947
9	Yes	5	0.00000001	0.00008885
10	Yes	7	0.00000001	0.00000770
11	Yes	6	0.00000001	0.00005512
12	Yes	7	0.00000001	0.00000813
13	Yes	6	0.00000001	0.00005812
14	Yes	6	0.00000001	0.00001049
15	Yes	5	0.00000001	0.00009829
16	Yes	7	0.00000001	0.00000771
17	Yes	6	0.00000001	0.00005534
18	Yes	7	0.00000001	0.00000774
19	Yes	6	0.00000001	0.00005563
20	Yes	6	0.00000001	0.00001609
21	Yes	6	0.00000001	0.00000492
22	Yes	7	0.00000001	0.00000822
23	Yes	6	0.00000001	0.00005896
24	Yes	7	0.00000001	0.00000773
25	Yes	6	0.00000001	0.00005512
26	Yes	5	0.00000001	0.00002461
27	Yes	8	0.00000001	0.00001470
28	Yes	8	0.00000001	0.00001678

29	Yes	8	0.00000001	0.00001676
30	Yes	8	0.00000001	0.00001448
31	Yes	8	0.00000001	0.00001679
32	Yes	8	0.00000001	0.00001691
33	Yes	8	0.00000001	0.00001462
34	Yes	8	0.00000001	0.00001660
35	Yes	8	0.00000001	0.00001656
36	Yes	8	0.00000001	0.00001444
37	Yes	8	0.00000001	0.00001694
38	Yes	8	0.00000001	0.00001688
39	Yes	5	0.00000001	0.00003210
40	Yes	5	0.00000001	0.00009160
41	Yes	5	0.00000001	0.00009061
42	Yes	5	0.00000001	0.00003352
43	Yes	5	0.00000001	0.00008772
44	Yes	5	0.00000001	0.00009878
45	Yes	5	0.00000001	0.00003365
46	Yes	5	0.00000001	0.00008655
47	Yes	5	0.00000001	0.00008692
48	Yes	5	0.00000001	0.00003468
49	Yes	5	0.00000001	0.00009934
50	Yes	5	0.00000001	0.00008898

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 140	23.67	45	1.283	0.004
L2	140 - 135	22.33	45	1.283	0.004
L3	135 - 130	20.99	45	1.282	0.003
L4	130 - 125	19.65	45	1.278	0.003
L5	125 - 120	18.31	45	1.272	0.003
L6	120 - 115	16.99	45	1.262	0.003
L7	115 - 110	15.67	45	1.246	0.003
L8	110 - 105	14.38	45	1.223	0.002
L9	105 - 100	13.11	45	1.193	0.002
L10	100 - 95	11.89	45	1.154	0.002
L11	95 - 90	10.70	45	1.107	0.002
L12	90 - 84.75	9.57	45	1.052	0.002
L13	89.25 - 84.25	9.41	45	1.043	0.001
L14	84.25 - 79.25	8.33	45	1.011	0.001
L15	79.25 - 74.25	7.30	45	0.952	0.001
L16	74.25 - 69.25	6.34	45	0.888	0.001
L17	69.25 - 64.25	5.44	45	0.820	0.001
L18	64.25 - 59.25	4.62	45	0.750	0.001
L19	59.25 - 58.0833	3.87	45	0.676	0.001
L20	58.0833 - 57.8333	3.71	45	0.659	0.001
L21	57.8333 - 52.8333	3.68	45	0.655	0.001
L22	52.8333 - 44.25	3.03	45	0.579	0.001
L23	49.5 - 43.25	2.64	45	0.527	0.001
L24	43.25 - 38.25	1.98	45	0.474	0.000
L25	38.25 - 38.0833	1.52	45	0.404	0.000
L26	38.0833 - 37.8333	1.51	45	0.402	0.000
L27	37.8333 - 32.8333	1.49	45	0.398	0.000
L28	32.8333 - 31.25	1.11	45	0.327	0.000
L29	31.25 - 31	1.00	45	0.304	0.000
L30	31 - 26	0.99	45	0.302	0.000
L31	26 - 21	0.70	45	0.254	0.000
L32	21 - 16	0.46	45	0.206	0.000
L33	16 - 11	0.27	45	0.158	0.000
L34	11 - 6	0.13	45	0.109	0.000
L35	6 - 1	0.04	45	0.059	0.000
L36	1 - 0	0.00	45	0.010	0.000

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
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**Critical Deflections and Radius of Curvature - Service Wind**

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
139.0000	VHLP2.5-11	45	22.06	1.283	0.004	444865
133.0000	Platform Mount [LP 712-1]	45	20.45	1.281	0.003	93103
124.0000	Platform Mount [LP 712-1]	45	18.05	1.271	0.003	32112
122.0000	Pipe Mount [PM 601-3]	45	17.52	1.267	0.003	26076
114.0000	Platform Mount [LP 712-1]	45	15.41	1.242	0.003	13845
105.0000	Platform Mount [LP 712-1]	45	13.11	1.193	0.002	8212
94.0000	Platform Mount [LP 712-1]	45	10.47	1.096	0.002	5419
87.0000	Pipe Mount [PM 601-3]	45	8.92	1.026	0.001	7211
77.0000	Side Arm Mount [SO 701-1]	45	6.86	0.923	0.001	4435

**Maximum Tower Deflections - Design Wind**

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 140	106.75	14	5.791	0.015
L2	140 - 135	100.70	14	5.791	0.015
L3	135 - 130	94.64	14	5.787	0.014
L4	130 - 125	88.60	14	5.772	0.013
L5	125 - 120	82.58	14	5.744	0.012
L6	120 - 115	76.60	14	5.698	0.011
L7	115 - 110	70.67	14	5.626	0.011
L8	110 - 105	64.84	14	5.523	0.010
L9	105 - 100	59.14	14	5.385	0.009
L10	100 - 95	53.59	14	5.209	0.008
L11	95 - 90	48.25	14	4.996	0.007
L12	90 - 84.75	43.16	14	4.748	0.006
L13	89.25 - 84.25	42.41	14	4.707	0.006
L14	84.25 - 79.25	37.56	14	4.564	0.006
L15	79.25 - 74.25	32.92	14	4.297	0.005
L16	74.25 - 69.25	28.57	14	4.008	0.005
L17	69.25 - 64.25	24.54	14	3.702	0.004
L18	64.25 - 59.25	20.83	14	3.382	0.004
L19	59.25 - 58.0833	17.46	14	3.050	0.003
L20	58.0833 - 57.8333	16.73	14	2.972	0.003
L21	57.8333 - 52.8333	16.57	14	2.955	0.003
L22	52.8333 - 44.25	13.66	14	2.611	0.002
L23	49.5 - 43.25	11.92	14	2.378	0.002
L24	43.25 - 38.25	8.94	14	2.140	0.002
L25	38.25 - 38.0833	6.87	14	1.822	0.001
L26	38.0833 - 37.8333	6.81	14	1.811	0.001
L27	37.8333 - 32.8333	6.71	14	1.796	0.001
L28	32.8333 - 31.25	5.00	14	1.474	0.001
L29	31.25 - 31	4.53	14	1.372	0.001
L30	31 - 26	4.46	14	1.362	0.001
L31	26 - 21	3.14	14	1.147	0.001
L32	21 - 16	2.06	14	0.930	0.001
L33	16 - 11	1.19	14	0.713	0.000
L34	11 - 6	0.56	14	0.490	0.000
L35	6 - 1	0.17	14	0.267	0.000
L36	1 - 0	0.00	14	0.044	0.000

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
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**Critical Deflections and Radius of Curvature - Design Wind**

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
139.0000	VHLP2.5-11	14	99.48	5.790	0.015	115878
133.0000	Platform Mount [LP 712-1]	14	92.22	5.782	0.014	21258
124.0000	Platform Mount [LP 712-1]	14	81.38	5.737	0.013	7280
122.0000	Pipe Mount [PM 601-3]	14	78.98	5.719	0.012	5910
114.0000	Platform Mount [LP 712-1]	14	69.50	5.608	0.011	3134
105.0000	Platform Mount [LP 712-1]	14	59.14	5.385	0.009	1857
94.0000	Platform Mount [LP 712-1]	14	47.21	4.950	0.007	1222
87.0000	Pipe Mount [PM 601-3]	14	40.21	4.632	0.006	1623
77.0000	Side Arm Mount [SO 701-1]	14	30.93	4.165	0.005	996

**Compression Checks**

**Pole Design Data**

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio $\frac{P_u}{\phi P_n}$
L1	145 - 140 (1)	TP24.9233x24x0.1875	5.0000	0.0000	0.0	14.720 9	-0.26	1006.31	0.000
L2	140 - 135 (2)	TP25.8467x24.9233x0.1875	5.0000	0.0000	0.0	15.270 4	-0.57	1029.86	0.001
L3	135 - 130 (3)	TP26.77x25.8467x0.1875	5.0000	0.0000	0.0	15.819 9	-2.71	1052.41	0.003
L4	130 - 125 (4)	TP27.7092x26.77x0.25	5.0000	0.0000	0.0	21.788 9	-3.13	1579.13	0.002
L5	125 - 120 (5)	TP28.6485x27.7092x0.25	5.0000	0.0000	0.0	22.534 2	-6.38	1617.37	0.004
L6	120 - 115 (6)	TP29.5877x28.6485x0.25	5.0000	0.0000	0.0	23.279 4	-6.87	1654.57	0.004
L7	115 - 110 (7)	TP30.5269x29.5877x0.25	5.0000	0.0000	0.0	24.024 7	-9.88	1690.72	0.006
L8	110 - 105 (8)	TP31.4661x30.5269x0.25	5.0000	0.0000	0.0	24.770 0	-10.48	1725.83	0.006
L9	105 - 100 (9)	TP32.4054x31.4661x0.25	5.0000	0.0000	0.0	25.515 3	-13.79	1759.90	0.008
L10	100 - 95 (10)	TP33.3446x32.4054x0.25	5.0000	0.0000	0.0	26.260 6	-14.55	1792.92	0.008
L11	95 - 90 (11)	TP34.2838x33.3446x0.25	5.0000	0.0000	0.0	27.005 8	-18.09	1824.91	0.010
L12	90 - 84.75 (12)	TP35.27x34.2838x0.25	5.2500	0.0000	0.0	27.117 6	-18.23	1829.61	0.010
L13	84.75 - 84.25 (13)	TP34.8508x33.9247x0.3125	5.0000	0.0000	0.0	34.257 7	-20.08	2478.41	0.008
L14	84.25 - 79.25 (14)	TP35.777x34.8508x0.3125	5.0000	0.0000	0.0	35.176 3	-21.17	2525.45	0.008
L15	79.25 - 74.25 (15)	TP36.7031x35.777x0.3125	5.0000	0.0000	0.0	36.095 0	-22.39	2571.47	0.009
L16	74.25 - 69.25 (16)	TP37.6293x36.7031x0.3125	5.0000	0.0000	0.0	37.013 6	-23.57	2616.48	0.009
L17	69.25 - 64.25 (17)	TP38.5554x37.6293x0.3125	5.0000	0.0000	0.0	37.932 2	-24.77	2660.47	0.009
L18	64.25 - 59.25	TP39.4816x38.5554x0.3125	5.0000	0.0000	0.0	38.850	-26.01	2703.45	0.010

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> K	φP <sub>n</sub> K	Ratio P <sub>u</sub> / φP <sub>n</sub>
L19	(18) 59.25 - 58.0833	25 TP39.6977x39.4816x0.31	1.1667	0.0000	0.0	8 39.065	-26.30	2713.34	0.010
L20	58.0833 - 57.8333	25 TP39.744x39.6977x0.312	0.2500	0.0000	0.0	2 39.111	-26.38	2715.45	0.010
L21	(20) 57.8333 - 52.8333	5 TP40.6701x39.744x0.312	5.0000	0.0000	0.0	1 40.029	-27.63	2757.12	0.010
L22	(21) 52.8333 - 44.25	5 TP42.26x40.6701x0.3125	8.5833	0.0000	0.0	7 40.642	-28.50	2784.34	0.010
L23	(22) 44.25 - 43.25	5 TP41.8201x40.6625x0.37	6.2500	0.0000	0.0	1 49.330	-31.02	3568.86	0.009
L24	(23) 43.25 - 38.25	5 TP42.7461x41.8201x0.37	5.0000	0.0000	0.0	0 50.432	-32.50	3625.40	0.009
L25	(24) 38.25 - 38.0833	5 TP42.7769x42.7461x0.37	0.1667	0.0000	0.0	2 50.468	-32.57	3627.26	0.009
L26	(25) 38.0833 - 37.8333	5 TP42.8232x42.7769x0.37	0.2500	0.0000	0.0	9 50.524	-32.64	3630.06	0.009
L27	(26) 37.8333 - 32.8333	5 TP43.7492x42.8232x0.37	5.0000	0.0000	0.0	0 51.626	-34.14	3685.50	0.009
L28	(27) 32.8333 - 31.25	5 TP44.0425x43.7492x0.37	1.5833	0.0000	0.0	2 51.975	-34.61	3702.84	0.009
L29	(28) 31.25 - 31	5 TP44.0888x44.0425x0.58	0.2500	0.0000	0.0	2 81.117	-34.75	6026.65	0.006
L30	(29) 31 - 26	75 TP45.0148x44.0888x0.57	5.0000	0.0000	0.0	9 81.104	-36.87	6025.68	0.006
L31	(30) 26 - 21	5 TP45.9408x45.0148x0.57	5.0000	0.0000	0.0	8 82.794	-39.03	6151.24	0.006
L32	(31) 21 - 16	5 TP46.8668x45.9408x0.57	5.0000	0.0000	0.0	8 84.484	-41.22	6276.80	0.007
L33	(32) 16 - 11	5 TP47.7928x46.8668x0.56	5.0000	0.0000	0.0	8 84.323	-43.45	6264.84	0.007
L34	(33) 11 - 6	25 TP48.7188x47.7928x0.56	5.0000	0.0000	0.0	8 85.977	-45.71	6387.66	0.007
L35	(34) 6 - 1	25 TP49.6448x48.7188x0.56	5.0000	0.0000	0.0	0 87.630	-47.99	6510.49	0.007
L36	(35) 1 - 0	25 TP49.83x49.6448x0.5625	1.0000	0.0000	0.0	3 87.961	-48.46	6535.06	0.007
L36	(36)	0				0			

### Pole Bending Design Data

Section No.	Elevation ft	Size	M <sub>ux</sub> kip-ft	φM <sub>nx</sub> kip-ft	Ratio M <sub>ux</sub> / φM <sub>nx</sub>	M <sub>uy</sub> kip-ft	φM <sub>ny</sub> kip-ft	Ratio M <sub>uy</sub> / φM <sub>ny</sub>
L1	145 - 140 (1)	TP24.9233x24x0.1875	0.95	512.00	0.002	0.00	512.00	0.000
L2	140 - 135 (2)	TP25.8467x24.9233x0.1875	6.79	543.69	0.012	0.00	543.69	0.000
L3	135 - 130 (3)	TP26.77x25.8467x0.1875	26.45	575.73	0.046	0.00	575.73	0.000
L4	130 - 125 (4)	TP27.7092x26.77x0.25	51.43	890.56	0.058	0.00	890.56	0.000
L5	125 - 120 (5)	TP28.6485x27.7092x0.25	96.76	943.60	0.103	0.00	943.60	0.000
L6	120 - 115 (6)	TP29.5877x28.6485x0.25	152.70	997.51	0.153	0.00	997.51	0.000
L7	115 - 110 (7)	TP30.5269x29.5877x0.25	238.67	1052.22	0.227	0.00	1052.22	0.000
L8	110 - 105 (8)	TP31.4661x30.5269x0.25	333.81	1107.66	0.301	0.00	1107.66	0.000
L9	105 - 100 (9)	TP32.4054x31.4661x0.25	460.31	1163.78	0.396	0.00	1163.78	0.000
L10	100 - 95 (10)	TP33.3446x32.4054x0.25	588.91	1220.52	0.483	0.00	1220.52	0.000
L11	95 - 90 (11)	TP34.2838x33.3446x0.25	744.56	1277.81	0.583	0.00	1277.81	0.000
L12	90 - 84.75 (12)	TP35.27x34.2838x0.25	768.34	1286.44	0.597	0.00	1286.44	0.000
L13	84.75 - 84.25 (13)	TP34.8508x33.9247x0.3125	930.99	1758.15	0.530	0.00	1758.15	0.000
L14	84.25 - 79.25 (14)	TP35.777x34.8508x0.3125	1098.15	1839.99	0.597	0.00	1839.99	0.000
L15	79.25 - 74.25 (15)	TP36.7031x35.777x0.3125	1267.93	1922.88	0.659	0.00	1922.88	0.000
L16	74.25 - 69.25 (16)	TP37.6293x36.7031x0.3125	1439.62	2006.74	0.717	0.00	2006.74	0.000



Section No.	Elevation ft	Size	$M_{ux}$	$\phi M_{nx}$	Ratio	$M_{uy}$	$\phi M_{ny}$	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{nx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ny}}$
L17	69.25 - 64.25 (17)	TP38.5554x37.6293x0.3125	1613.33	2091.55	0.771	0.00	2091.55	0.000
L18	64.25 - 59.25 (18)	TP39.4816x38.5554x0.3125	1789.00	2177.22	0.822	0.00	2177.22	0.000
L19	59.25 - 58.0833 (19)	TP39.6977x39.4816x0.3125	1830.35	2197.33	0.833	0.00	2197.33	0.000
L20	58.0833 - 57.8333 (20)	TP39.744x39.6977x0.3125	1839.24	2201.65	0.835	0.00	2201.65	0.000
L21	57.8333 - 52.8333 (21)	TP40.6701x39.744x0.3125	2018.57	2288.36	0.882	0.00	2288.36	0.000
L22	52.8333 - 44.25 (22)	TP42.26x40.6701x0.3125	2139.49	2346.57	0.912	0.00	2346.57	0.000
L23	44.25 - 43.25 (23)	TP41.8201x40.6625x0.375	2375.50	3037.97	0.782	0.00	3037.97	0.000
L24	43.25 - 38.25 (24)	TP42.7461x41.8201x0.375	2571.10	3155.66	0.815	0.00	3155.66	0.000
L25	38.25 - 38.0833 (25)	TP42.7769x42.7461x0.375	2577.71	3159.61	0.816	0.00	3159.61	0.000
L26	38.0833 - 37.8333 (26)	TP42.8232x42.7769x0.375	2587.62	3165.53	0.817	0.00	3165.53	0.000
L27	37.8333 - 32.8333 (27)	TP43.7492x42.8232x0.375	2788.23	3284.60	0.849	0.00	3284.60	0.000
L28	32.8333 - 31.25 (28)	TP44.0425x43.7492x0.375	2852.78	3322.56	0.859	0.00	3322.56	0.000
L29	31.25 - 31 (29)	TP44.0888x44.0425x0.5875	2863.02	5360.98	0.534	0.00	5360.98	0.000
L30	31 - 26 (30)	TP45.0148x44.0888x0.575	3070.53	5478.82	0.560	0.00	5478.82	0.000
L31	26 - 21 (31)	TP45.9408x45.0148x0.575	3283.17	5711.02	0.575	0.00	5711.02	0.000
L32	21 - 16 (32)	TP46.8668x45.9408x0.575	3500.68	5948.03	0.589	0.00	5948.03	0.000
L33	16 - 11 (33)	TP47.7928x46.8668x0.5625	3722.81	6060.12	0.614	0.00	6060.12	0.000
L34	11 - 6 (34)	TP48.7188x47.7928x0.5625	3949.44	6301.50	0.627	0.00	6301.50	0.000
L35	6 - 1 (35)	TP49.6448x48.7188x0.5625	4180.55	6547.61	0.638	0.00	6547.61	0.000
L36	1 - 0 (36)	TP49.83x49.6448x0.5625	4227.31	6597.39	0.641	0.00	6597.39	0.000

### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual $V_u$	$\phi V_n$	Ratio	Actual $T_u$	$\phi T_n$	Ratio
			K	K	$\frac{V_u}{\phi V_n}$	kip-ft	kip-ft	$\frac{T_u}{\phi T_n}$
L1	145 - 140 (1)	TP24.9233x24x0.1875	0.38	503.15	0.001	0.00	1025.25	0.000
L2	140 - 135 (2)	TP25.8467x24.9233x0.1875	1.51	514.93	0.003	0.76	1088.71	0.001
L3	135 - 130 (3)	TP26.77x25.8467x0.1875	4.78	526.20	0.009	0.88	1152.87	0.001
L4	130 - 125 (4)	TP27.7092x26.77x0.25	5.21	789.56	0.007	0.88	1783.29	0.000
L5	125 - 120 (5)	TP28.6485x27.7092x0.25	10.97	808.68	0.014	0.88	1889.52	0.000
L6	120 - 115 (6)	TP29.5877x28.6485x0.25	11.41	827.28	0.014	0.88	1997.46	0.000
L7	115 - 110 (7)	TP30.5269x29.5877x0.25	18.80	845.36	0.022	1.45	2107.00	0.001
L8	110 - 105 (8)	TP31.4661x30.5269x0.25	19.26	862.92	0.022	1.45	2218.03	0.001
L9	105 - 100 (9)	TP32.4054x31.4661x0.25	25.50	879.95	0.029	1.67	2330.40	0.001
L10	100 - 95 (10)	TP33.3446x32.4054x0.25	25.95	896.46	0.029	1.67	2444.02	0.001
L11	95 - 90 (11)	TP34.2838x33.3446x0.25	31.68	912.45	0.035	1.67	2558.73	0.001
L12	90 - 84.75 (12)	TP35.27x34.2838x0.25	31.75	914.81	0.035	1.67	2576.03	0.001
L13	84.75 - 84.25 (13)	TP34.8508x33.9247x0.3125	33.22	1239.21	0.027	1.67	3520.60	0.000
L14	84.25 - 79.25 (14)	TP35.777x34.8508x0.3125	33.66	1262.73	0.027	1.66	3684.47	0.000
L15	79.25 - 74.25 (15)	TP36.7031x35.777x0.3125	34.14	1285.74	0.027	1.86	3850.45	0.000

Section No.	Elevation ft	Size	Actual $V_u$ K	$\phi V_n$ K	Ratio $\frac{V_u}{\phi V_n}$	Actual $T_u$ kip-ft	$\phi T_n$ kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L16	74.25 - 69.25 (16)	TP37.6293x36.7031x0.3125	34.55	1308.24	0.026	1.85	4018.40	0.000
L17	69.25 - 64.25 (17)	TP38.5554x37.6293x0.3125	34.95	1330.24	0.026	1.85	4188.22	0.000
L18	64.25 - 59.25 (18)	TP39.4816x38.5554x0.3125	35.34	1351.73	0.026	1.85	4359.77	0.000
L19	59.25 - 58.0833 (19)	TP39.6977x39.4816x0.3125	35.58	1356.67	0.026	1.85	4400.04	0.000
L20	58.0833 - 57.8333 (20)	TP39.744x39.6977x0.3125	35.61	1357.72	0.026	1.82	4408.68	0.000
L21	57.8333 - 52.8333 (21)	TP40.6701x39.744x0.3125	36.13	1378.56	0.026	1.81	4582.32	0.000
L22	52.8333 - 44.25 (22)	TP42.26x40.6701x0.3125	36.46	1392.17	0.026	1.81	4698.90	0.000
L23	44.25 - 43.25 (23)	TP41.8201x40.6625x0.375	38.66	1784.43	0.022	1.08	6083.36	0.000
L24	43.25 - 38.25 (24)	TP42.7461x41.8201x0.375	39.61	1812.70	0.022	0.94	6319.04	0.000
L25	38.25 - 38.0833 (25)	TP42.7769x42.7461x0.375	39.62	1813.63	0.022	0.91	6326.94	0.000
L26	38.0833 - 37.8333 (26)	TP42.8232x42.7769x0.375	39.64	1815.03	0.022	0.91	6338.80	0.000
L27	37.8333 - 32.8333 (27)	TP43.7492x42.8232x0.375	40.63	1842.75	0.022	0.78	6577.22	0.000
L28	32.8333 - 31.25 (28)	TP44.0425x43.7492x0.375	40.95	1851.42	0.022	0.75	6653.24	0.000
L29	31.25 - 31 (29)	TP44.0888x44.0425x0.5875	40.98	3013.33	0.014	0.69	10735.08	0.000
L30	31 - 26 (30)	TP45.0148x44.0888x0.5875	42.04	3012.84	0.014	0.53	10971.08	0.000
L31	26 - 21 (31)	TP45.9408x45.0148x0.5875	43.04	3075.62	0.014	0.35	11436.00	0.000
L32	21 - 16 (32)	TP46.8668x45.9408x0.5875	43.99	3138.40	0.014	0.17	11910.58	0.000
L33	16 - 11 (33)	TP47.7928x46.8668x0.5875	44.89	3132.42	0.014	0.03	12135.08	0.000
L34	11 - 6 (34)	TP48.7188x47.7928x0.5875	45.79	3193.83	0.014	0.20	12618.42	0.000
L35	6 - 1 (35)	TP49.6448x48.7188x0.5875	46.69	3255.25	0.014	0.38	13111.25	0.000
L36	1 - 0 (36)	TP49.83x49.6448x0.5875	46.86	3267.53	0.014	0.41	13210.92	0.000

**Pole Interaction Design Data**

Section No.	Elevation ft	Ratio $P_u$	Ratio $M_{ux}$	Ratio $M_{uy}$	Ratio $V_u$	Ratio $T_u$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$	$\phi V_n$	$\phi T_n$			
L1	145 - 140 (1)	0.000	0.002	0.000	0.001	0.000	0.002	1.000	4.8.2 ✓
L2	140 - 135 (2)	0.001	0.012	0.000	0.003	0.001	0.013	1.000	4.8.2 ✓
L3	135 - 130 (3)	0.003	0.046	0.000	0.009	0.001	0.049	1.000	4.8.2 ✓
L4	130 - 125 (4)	0.002	0.058	0.000	0.007	0.000	0.060	1.000	4.8.2 ✓
L5	125 - 120 (5)	0.004	0.103	0.000	0.014	0.000	0.107	1.000	4.8.2 ✓
L6	120 - 115 (6)	0.004	0.153	0.000	0.014	0.000	0.157	1.000	4.8.2 ✓
L7	115 - 110 (7)	0.006	0.227	0.000	0.022	0.001	0.233	1.000	4.8.2 ✓

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$P_u$	$M_{ux}$	$M_{uy}$	$V_u$	$T_u$			
		$\phi P_n$	$\phi M_{nx}$	$\phi M_{ny}$	$\phi V_n$	$\phi T_n$			
L8	110 - 105 (8)	0.006	0.301	0.000	0.022	0.001	0.308	1.000	4.8.2 ✓
L9	105 - 100 (9)	0.008	0.396	0.000	0.029	0.001	0.404	1.000	4.8.2 ✓
L10	100 - 95 (10)	0.008	0.483	0.000	0.029	0.001	0.492	1.000	4.8.2 ✓
L11	95 - 90 (11)	0.010	0.583	0.000	0.035	0.001	0.594	1.000	4.8.2 ✓
L12	90 - 84.75 (12)	0.010	0.597	0.000	0.035	0.001	0.608	1.000	4.8.2 ✓
L13	84.75 - 84.25 (13)	0.008	0.530	0.000	0.027	0.000	0.538	1.000	4.8.2 ✓
L14	84.25 - 79.25 (14)	0.008	0.597	0.000	0.027	0.000	0.606	1.000	4.8.2 ✓
L15	79.25 - 74.25 (15)	0.009	0.659	0.000	0.027	0.000	0.669	1.000	4.8.2 ✓
L16	74.25 - 69.25 (16)	0.009	0.717	0.000	0.026	0.000	0.727	1.000	4.8.2 ✓
L17	69.25 - 64.25 (17)	0.009	0.771	0.000	0.026	0.000	0.781	1.000	4.8.2 ✓
L18	64.25 - 59.25 (18)	0.010	0.822	0.000	0.026	0.000	0.832	1.000	4.8.2 ✓
L19	59.25 - 58.0833 (19)	0.010	0.833	0.000	0.026	0.000	0.843	1.000	4.8.2 ✓
L20	58.0833 - 57.8333 (20)	0.010	0.835	0.000	0.026	0.000	0.846	1.000	4.8.2 ✓
L21	57.8333 - 52.8333 (21)	0.010	0.882	0.000	0.026	0.000	0.893	1.000	4.8.2 ✓
L22	52.8333 - 44.25 (22)	0.010	0.912	0.000	0.026	0.000	0.923	1.000	4.8.2 ✓
L23	44.25 - 43.25 (23)	0.009	0.782	0.000	0.022	0.000	0.791	1.000	4.8.2 ✓
L24	43.25 - 38.25 (24)	0.009	0.815	0.000	0.022	0.000	0.824	1.000	4.8.2 ✓
L25	38.25 - 38.0833 (25)	0.009	0.816	0.000	0.022	0.000	0.825	1.000	4.8.2 ✓
L26	38.0833 - 37.8333 (26)	0.009	0.817	0.000	0.022	0.000	0.827	1.000	4.8.2 ✓
L27	37.8333 - 32.8333 (27)	0.009	0.849	0.000	0.022	0.000	0.859	1.000	4.8.2 ✓
L28	32.8333 - 31.25 (28)	0.009	0.859	0.000	0.022	0.000	0.868	1.000	4.8.2 ✓
L29	31.25 - 31 (29)	0.006	0.534	0.000	0.014	0.000	0.540	1.000	4.8.2 ✓
L30	31 - 26 (30)	0.006	0.560	0.000	0.014	0.000	0.567	1.000	4.8.2 ✓
L31	26 - 21 (31)	0.006	0.575	0.000	0.014	0.000	0.581	1.000	4.8.2 ✓
L32	21 - 16 (32)	0.007	0.589	0.000	0.014	0.000	0.595	1.000	4.8.2 ✓
L33	16 - 11 (33)	0.007	0.614	0.000	0.014	0.000	0.621	1.000	4.8.2 ✓
L34	11 - 6 (34)	0.007	0.627	0.000	0.014	0.000	0.634	1.000	4.8.2 ✓
L35	6 - 1 (35)	0.007	0.638	0.000	0.014	0.000	0.646	1.000	4.8.2 ✓
L36	1 - 0 (36)	0.007	0.641	0.000	0.014	0.000	0.648	1.000	4.8.2 ✓

### Section Capacity Table

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
145 - 140	Pole	TP24.923x24x0.1875	Pole	0.2%	Pass
140 - 135	Pole	TP25.847x24.923x0.1875	Pole	1.3%	Pass
135 - 130	Pole	TP26.77x25.847x0.1875	Pole	4.9%	Pass
130 - 125	Pole	TP27.709x26.77x0.25	Pole	6.0%	Pass
125 - 120	Pole	TP28.648x27.709x0.25	Pole	10.7%	Pass
120 - 115	Pole	TP29.588x28.648x0.25	Pole	15.7%	Pass
115 - 110	Pole	TP30.527x29.588x0.25	Pole	23.3%	Pass
110 - 105	Pole	TP31.466x30.527x0.25	Pole	30.8%	Pass
105 - 100	Pole	TP32.405x31.466x0.25	Pole	40.4%	Pass
100 - 95	Pole	TP33.345x32.405x0.25	Pole	49.2%	Pass
95 - 90	Pole	TP34.284x33.345x0.25	Pole	59.4%	Pass
90 - 89.25	Pole	TP35.27x34.284x0.25	Pole	60.9%	Pass
89.25 - 84.25	Pole	TP34.851x33.925x0.3125	Pole	53.8%	Pass
84.25 - 79.25	Pole	TP35.777x34.851x0.3125	Pole	60.6%	Pass
79.25 - 74.25	Pole	TP36.703x35.777x0.3125	Pole	66.9%	Pass
74.25 - 69.25	Pole	TP37.629x36.703x0.3125	Pole	72.7%	Pass
69.25 - 64.25	Pole	TP38.555x37.629x0.3125	Pole	78.1%	Pass
64.25 - 59.25	Pole	TP39.482x38.555x0.3125	Pole	83.2%	Pass
59.25 - 58.08	Pole	TP39.698x39.482x0.3125	Pole	84.3%	Pass
58.08 - 57.83	Pole	TP39.744x39.698x0.3125	Pole	84.6%	Pass
57.83 - 52.83	Pole	TP40.67x39.744x0.3125	Pole	89.3%	Pass
52.83 - 49.5	Pole	TP42.26x40.67x0.3125	Pole	92.3%	Pass
49.5 - 43.25	Pole	TP41.82x40.663x0.375	Pole	79.1%	Pass
43.25 - 38.25	Pole	TP42.746x41.82x0.375	Pole	82.4%	Pass
38.25 - 38.08	Pole	TP42.777x42.746x0.375	Pole	82.5%	Pass
38.08 - 37.83	Pole	TP42.823x42.777x0.375	Pole	82.7%	Pass
37.83 - 32.83	Pole	TP43.749x42.823x0.375	Pole	85.9%	Pass
32.83 - 31.25	Pole	TP44.042x43.749x0.375	Pole	86.9%	Pass
31.25 - 31	Pole + Reinf.	TP44.089x44.042x0.5875	Reinf. 1 Compression	76.0%	Pass
31 - 26	Pole + Reinf.	TP45.015x44.089x0.575	Reinf. 1 Compression	78.8%	Pass
26 - 21	Pole + Reinf.	TP45.941x45.015x0.575	Reinf. 1 Compression	81.5%	Pass
21 - 16	Pole + Reinf.	TP46.867x45.941x0.575	Reinf. 1 Compression	84.1%	Pass
16 - 11	Pole + Reinf.	TP47.793x46.867x0.5625	Reinf. 1 Compression	86.6%	Pass
11 - 6	Pole + Reinf.	TP48.719x47.793x0.5625	Reinf. 1 Compression	89.0%	Pass

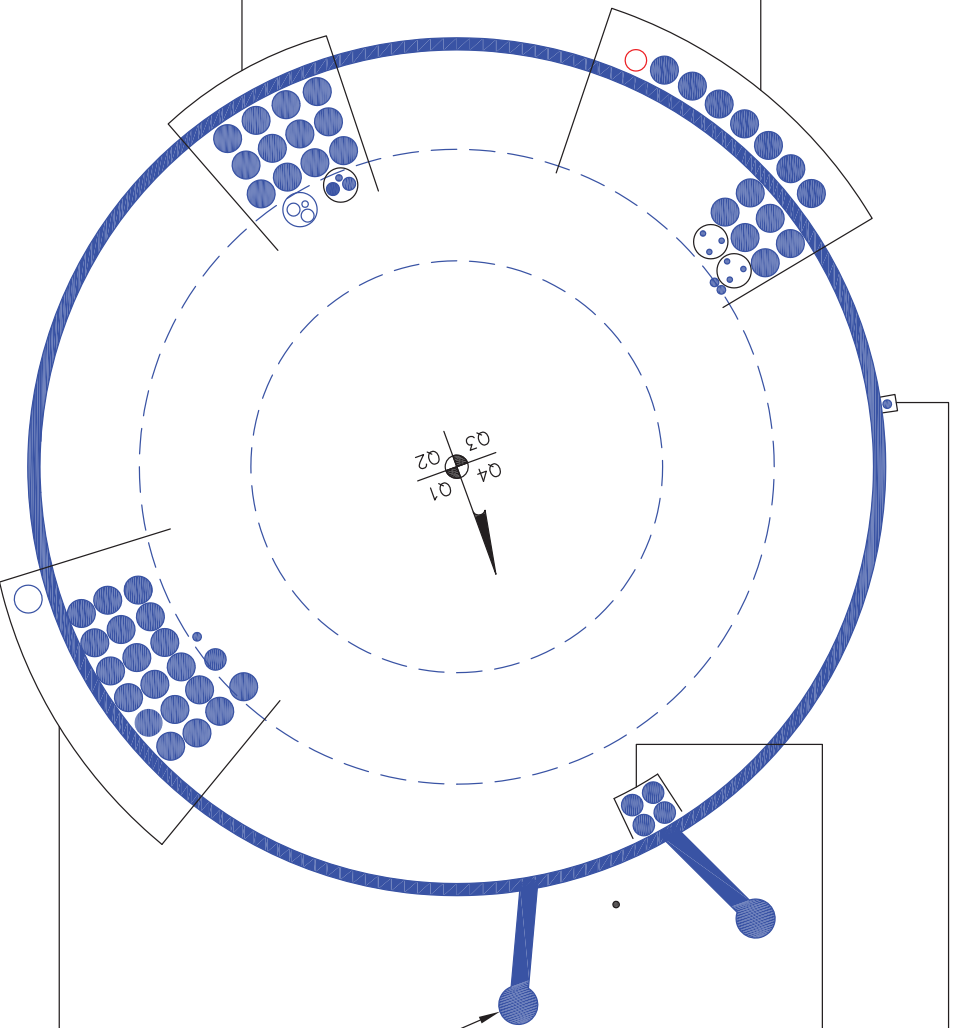
6 - 1	Pole + Reinf.	TP49.645x48.719x0.5625	Reinf. 1 Compression	91.3%	Pass
1 - 0	Pole + Reinf.	TP49.83x49.645x0.5625	Reinf. 1 Compression	91.7%	Pass
				Summary	
			Pole	92.3%	Pass
			Reinforcement	91.7%	Pass
			Overall	92.3%	Pass

**APPENDIX B**  
**BASE LEVEL DRAWING**

- (PROPOSED)
- (1) 1-1/4" TO 94 FT LEVEL
- (INSTALLED-TO BE REMOVED)
- (1) 1-5/8" TO 94 FT LEVEL
- (INSTALLED)
- (12) 1-5/8" TO 94 FT LEVEL

- (INSTALLED-IN (2) CONDUITS)
- (6) 5/16" TO 133 FT LEVEL
- (INSTALLED)
- (2) 1/2" TO 133 FT LEVEL

- (RESERVED-IN CONDUIT)
- (1) 3/8" TO 105 FT LEVEL
- (2) 3/4" TO 105 FT LEVEL
- (INSTALLED-BUNDLED IN CONDUIT)
- (1) 3/8" TO 105 FT LEVEL
- (2) 3/4" TO 105 FT LEVEL
- (INSTALLED)
- (12) 1-5/8" TO 105 FT LEVEL



- (INSTALLED)
- (1) 1/2" TO 77 FT LEVEL

- (INSTALLED)
- (4) 1-1/4" TO 124 FT LEVEL

CLIMBING PEGS  
W/ SAFETY CLIMB

- (INSTALLED)
- (6) 1-5/8" TO 87 FT LEVEL

- (RESERVED)
- (1) 1-5/8" TO 114 FT LEVEL
- (INSTALLED-TO BE REMOVED)
- (1) 1-1/4" TO 114 FT LEVEL
- (6) 1-5/8" TO 114 FT LEVEL
- (INSTALLED)
- (1) 1/2" TO 114 FT LEVEL
- (7) 1-5/8" TO 114 FT LEVEL



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**

# Additional Calculations



per TIA-222- G

Site BU: 881364

Work Order: 1226283



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## 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	145	15	0	18	24	26.77	0.1875	0.75	A607-65
2	130	45.25	4.5	18	26.77	35.27	0.25	1	A607-65
3	89.25	45	5.25	18	33.92	42.26	0.3125	1.25	A607-65
4	49.5	49.5	0	18	40.66	49.83	0.375	1.5	A607-65

## 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	0	31.25	plate	CCI-AFP-085125	3			x																
2	38.0833	58.0833	plate	CCI-AFP-060100	3			x																
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								

## Reinforcement Details

	B (in)	H (in)	Gross Area (in <sup>2</sup> )	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L <sub>u</sub> (in)	Net Area (in <sup>2</sup> )	Bolt Hole Size (in)	Reinforcement Material
1	8.5	1.25	10.625	0.625	51.000	51.000	17.000	9.063	1.1875	A572-65
2	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65

# TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	145 - 140	5		18	24.000	24.923	0.1875	A607-65	1.000
2	140 - 135	5		18	24.923	25.847	0.1875	A607-65	1.000
3	135 - 130	5	0	18	25.847	26.770	0.1875	A607-65	1.000
4	130 - 125	5		18	26.770	27.709	0.25	A607-65	1.000
5	125 - 120	5		18	27.709	28.648	0.25	A607-65	1.000
6	120 - 115	5		18	28.648	29.588	0.25	A607-65	1.000
7	115 - 110	5		18	29.588	30.527	0.25	A607-65	1.000
8	110 - 105	5		18	30.527	31.466	0.25	A607-65	1.000
9	105 - 100	5		18	31.466	32.405	0.25	A607-65	1.000
10	100 - 95	5		18	32.405	33.345	0.25	A607-65	1.000
11	95 - 90	5		18	33.345	34.284	0.25	A607-65	1.000
12	90 - 89.25	5.25	4.5	18	34.284	35.270	0.25	A607-65	1.000
13	89.25 - 84.25	5		18	33.925	34.851	0.3125	A607-65	1.000
14	84.25 - 79.25	5		18	34.851	35.777	0.3125	A607-65	1.000
15	79.25 - 74.25	5		18	35.777	36.703	0.3125	A607-65	1.000
16	74.25 - 69.25	5		18	36.703	37.629	0.3125	A607-65	1.000
17	69.25 - 64.25	5		18	37.629	38.555	0.3125	A607-65	1.000
18	64.25 - 59.25	5		18	38.555	39.482	0.3125	A607-65	1.000
19	59.25 - 58.0833	1.1667		18	39.482	39.698	0.3125	A607-65	1.000
20	58.0833 - 57.8333	0.25		18	39.698	39.744	0.3125	A607-65	1.000
21	57.8333 - 52.8333	5		18	39.744	40.670	0.3125	A607-65	1.000
22	52.8333 - 49.5	8.5833	5.25	18	40.670	42.260	0.3125	A607-65	1.000
23	49.5 - 43.25	6.25		18	40.663	41.820	0.375	A607-65	1.000
24	43.25 - 38.25	5		18	41.820	42.746	0.375	A607-65	1.000
25	38.25 - 38.0833	0.1667		18	42.746	42.777	0.375	A607-65	1.000
26	38.0833 - 37.8333	0.25		18	42.777	42.823	0.375	A607-65	1.000
27	37.8333 - 32.8333	5		18	42.823	43.749	0.375	A607-65	1.000
28	32.8333 - 31.25	1.5833		18	43.749	44.042	0.375	A607-65	1.000
29	31.25 - 31	0.25		18	44.042	44.089	0.5875	A607-65	1.034
30	31 - 26	5		18	44.089	45.015	0.575	A607-65	1.048
31	26 - 21	5		18	45.015	45.941	0.575	A607-65	1.040
32	21 - 16	5		18	45.941	46.867	0.575	A607-65	1.032
33	16 - 11	5		18	46.867	47.793	0.5625	A607-65	1.047
34	11 - 6	5		18	47.793	48.719	0.5625	A607-65	1.040
35	6 - 1	5		18	48.719	49.645	0.5625	A607-65	1.033
36	1 - 0	1		18	49.645	49.830	0.5625	A607-65	1.032

## TNX Section Forces

Increment (ft):		5	TNX Output		
	Section Height (ft)	P <sub>u</sub> (K)	M <sub>ux</sub> (kip-ft)	V <sub>u</sub> (K)	
1	145 - 140	0.2577	0.9497	0.3823	
2	140 - 135	0.5718	6.79	1.5137	
3	135 - 130	2.7141	26.452	4.7831	
4	130 - 125	3.1311	51.431	5.2109	
5	125 - 120	6.384	96.758	10.967	
6	120 - 115	6.8673	152.7	11.412	
7	115 - 110	9.8843	238.67	18.803	
8	110 - 105	10.475	333.8	19.256	
9	105 - 100	13.792	460.31	25.502	
10	100 - 95	14.55	588.91	25.95	
11	95 - 90	18.089	744.56	31.684	
12	90 - 89.25	18.232	768.34	31.746	
13	89.25 - 84.25	20.076	930.99	33.218	
14	84.25 - 79.25	21.174	1098.2	33.657	
15	79.25 - 74.25	22.39	1267.9	34.143	
16	74.25 - 69.25	23.566	1439.6	34.555	
17	69.25 - 64.25	24.775	1613.3	34.954	
18	64.25 - 59.25	26.014	1789	35.34	
19	59.25 - 58.0833	26.297	1830.3	35.577	
20	58.0833 - 57.8333	26.377	1839.2	35.612	
21	57.8333 - 52.8333	27.634	2018.6	36.134	
22	52.8333 - 49.5	28.497	2139.5	36.457	
23	49.5 - 43.25	31.023	2375.5	38.657	
24	43.25 - 38.25	32.5	2571.1	39.614	
25	38.25 - 38.0833	32.569	2577.7	39.615	
26	38.0833 - 37.8333	32.643	2587.6	39.64	
27	37.8333 - 32.8333	34.141	2788.2	40.626	
28	32.8333 - 31.25	34.615	2852.8	40.952	
29	31.25 - 31	34.753	2863	40.978	
30	31 - 26	36.869	3070.5	42.036	
31	26 - 21	39.03	3283.2	43.04	
32	21 - 16	41.222	3500.7	43.989	
33	16 - 11	43.449	3722.8	44.889	
34	11 - 6	45.707	3949.4	45.788	
35	6 - 1	47.995	4180.5	46.685	
36	1 - 0	48.457	4227.3	46.864	

# Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
145 - 140	Pole	TP24.923x24x0.1875	Pole	0.2%	Pass
140 - 135	Pole	TP25.847x24.923x0.1875	Pole	1.3%	Pass
135 - 130	Pole	TP26.77x25.847x0.1875	Pole	4.9%	Pass
130 - 125	Pole	TP27.709x26.77x0.25	Pole	6.0%	Pass
125 - 120	Pole	TP28.648x27.709x0.25	Pole	10.7%	Pass
120 - 115	Pole	TP29.588x28.648x0.25	Pole	15.7%	Pass
115 - 110	Pole	TP30.527x29.588x0.25	Pole	23.3%	Pass
110 - 105	Pole	TP31.466x30.527x0.25	Pole	30.8%	Pass
105 - 100	Pole	TP32.405x31.466x0.25	Pole	40.4%	Pass
100 - 95	Pole	TP33.345x32.405x0.25	Pole	49.2%	Pass
95 - 90	Pole	TP34.284x33.345x0.25	Pole	59.4%	Pass
90 - 89.25	Pole	TP35.27x34.284x0.25	Pole	60.9%	Pass
89.25 - 84.25	Pole	TP34.851x33.925x0.3125	Pole	53.8%	Pass
84.25 - 79.25	Pole	TP35.777x34.851x0.3125	Pole	60.6%	Pass
79.25 - 74.25	Pole	TP36.703x35.777x0.3125	Pole	66.9%	Pass
74.25 - 69.25	Pole	TP37.629x36.703x0.3125	Pole	72.7%	Pass
69.25 - 64.25	Pole	TP38.555x37.629x0.3125	Pole	78.1%	Pass
64.25 - 59.25	Pole	TP39.482x38.555x0.3125	Pole	83.2%	Pass
59.25 - 58.08	Pole	TP39.698x39.482x0.3125	Pole	84.3%	Pass
58.08 - 57.83	Pole	TP39.744x39.698x0.3125	Pole	84.6%	Pass
57.83 - 52.83	Pole	TP40.67x39.744x0.3125	Pole	89.3%	Pass
52.83 - 49.5	Pole	TP42.26x40.67x0.3125	Pole	92.3%	Pass
49.5 - 43.25	Pole	TP41.82x40.663x0.375	Pole	79.1%	Pass
43.25 - 38.25	Pole	TP42.746x41.82x0.375	Pole	82.4%	Pass
38.25 - 38.08	Pole	TP42.777x42.746x0.375	Pole	82.5%	Pass
38.08 - 37.83	Pole	TP42.823x42.777x0.375	Pole	82.7%	Pass
37.83 - 32.83	Pole	TP43.749x42.823x0.375	Pole	85.9%	Pass
32.83 - 31.25	Pole	TP44.042x43.749x0.375	Pole	86.9%	Pass
31.25 - 31	Pole + Reinf.	TP44.089x44.042x0.5875	Reinf. 1 Compression	76.0%	Pass
31 - 26	Pole + Reinf.	TP45.015x44.089x0.575	Reinf. 1 Compression	78.8%	Pass
26 - 21	Pole + Reinf.	TP45.941x45.015x0.575	Reinf. 1 Compression	81.5%	Pass
21 - 16	Pole + Reinf.	TP46.867x45.941x0.575	Reinf. 1 Compression	84.1%	Pass
16 - 11	Pole + Reinf.	TP47.793x46.867x0.5625	Reinf. 1 Compression	86.6%	Pass
11 - 6	Pole + Reinf.	TP48.719x47.793x0.5625	Reinf. 1 Compression	89.0%	Pass
6 - 1	Pole + Reinf.	TP49.645x48.719x0.5625	Reinf. 1 Compression	91.3%	Pass
1 - 0	Pole + Reinf.	TP49.83x49.645x0.5625	Reinf. 1 Compression	91.7%	Pass
				Summary	
			Pole	92.3%	Pass
			Reinforcement	91.7%	Pass
			Overall	92.3%	Pass

## Additional Calculations

Section Elevation (ft)	Moment of Inertia (in <sup>4</sup> )			Area (in <sup>2</sup> )			% Capacity		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
145 - 140	1138	n/a	1138	14.72	n/a	14.72	0.2%		
140 - 135	1270	n/a	1270	15.27	n/a	15.27	1.3%		
135 - 130	1412	n/a	1412	15.82	n/a	15.82	4.9%		
130 - 125	2075	n/a	2075	21.79	n/a	21.79	6.0%		
125 - 120	2295	n/a	2295	22.53	n/a	22.53	10.7%		
120 - 115	2531	n/a	2531	23.28	n/a	23.28	15.7%		
115 - 110	2781	n/a	2781	24.02	n/a	24.02	23.3%		
110 - 105	3048	n/a	3048	24.77	n/a	24.77	30.8%		
105 - 100	3332	n/a	3332	25.51	n/a	25.51	40.4%		
100 - 95	3632	n/a	3632	26.26	n/a	26.26	49.2%		
95 - 90	3951	n/a	3951	27.00	n/a	27.00	59.4%		
90 - 89.25	4000	n/a	4000	27.12	n/a	27.12	60.9%		
89.25 - 84.25	5161	n/a	5161	34.26	n/a	34.26	53.8%		
84.25 - 79.25	5588	n/a	5588	35.18	n/a	35.18	60.6%		
79.25 - 74.25	6037	n/a	6037	36.09	n/a	36.09	66.9%		
74.25 - 69.25	6510	n/a	6510	37.01	n/a	37.01	72.7%		
69.25 - 64.25	7006	n/a	7006	37.93	n/a	37.93	78.1%		
64.25 - 59.25	7528	n/a	7528	38.85	n/a	38.85	83.2%		
59.25 - 58.08	7653	n/a	7653	39.06	n/a	39.06	84.3%		
58.08 - 57.83	7680	n/a	7680	39.11	n/a	39.11	84.6%		
57.83 - 52.83	8234	n/a	8234	40.03	n/a	40.03	89.3%		
52.83 - 49.5	8618	n/a	8618	40.64	n/a	40.64	92.3%		
49.5 - 43.25	10701	n/a	10701	49.33	n/a	49.33	79.1%		
43.25 - 38.25	11435	n/a	11435	50.43	n/a	50.43	82.4%		
38.25 - 38.08	11460	n/a	11460	50.47	n/a	50.47	82.5%		
38.08 - 37.83	11497	n/a	11497	50.52	n/a	50.52	82.7%		
37.83 - 32.83	12266	n/a	12266	51.62	n/a	51.62	85.9%		
32.83 - 31.25	12517	n/a	12517	51.97	n/a	51.97	86.9%		
31.25 - 31	12599	6763	19362	52.03	31.88	83.90	71.1%	76.0%	
31 - 26	13416	7039	20454	53.13	31.88	85.01	73.7%	78.8%	
26 - 21	14267	7320	21587	54.23	31.88	86.11	76.2%	81.5%	
21 - 16	15153	7607	22760	55.33	31.88	87.21	78.6%	84.1%	
16 - 11	16075	7899	23974	56.44	31.88	88.31	80.9%	86.6%	
11 - 6	17034	8197	25231	57.54	31.88	89.41	83.1%	89.0%	
6 - 1	18031	8501	26531	58.64	31.88	90.52	85.2%	91.3%	
1 - 0	18234	8562	26796	58.86	31.88	90.74	85.6%	91.7%	

Note: Section capacity checked in 5 degree increments.

# Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F / G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
  - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
  - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding  $(1) \times (\text{Rod Diameter})$

## Site Data

BU#: 881364		
Site Name: Newington		
App #: 343224 Rev. 0		
Anchor Rod Data		
Eta Factor, $\eta$	0.5	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, $F_y$ :	75	ksi
Strength, $F_u$ :	100	ksi
Bolt Circle:	57	in
Anchor Spacing:	6	in

## Plate Data

W=Side:	56	in
Thick:	3.25	in
Grade:	50	ksi
Clip Distance:	12	in

## Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

## Pole Data

Diam:	49.83	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

## Base Reactions

TIA Revision:	G	
Factored Moment, $M_u$ :	4227	ft-kips
Factored Axial, $P_u$ :	48	kips
Factored Shear, $V_u$ :	47	kips

## Anchor Rod Results

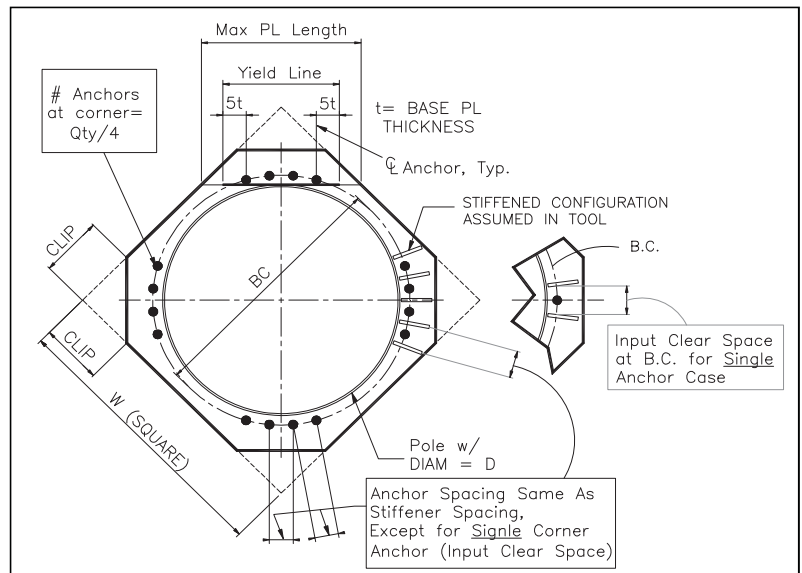
TIA G --> Max Rod ( $C_u + V_u/\eta$ ):	231.4 Kips
Axial Design Strength, $\Phi * F_u * A_{net}$ :	260.0 Kips
Anchor Rod Stress Ratio:	89.0% <b>Pass</b>

## Base Plate Results

Base Plate Stress:	31.8 ksi	Flexural Check
PL Design Bending Strength, $\Phi * F_y$ :	45.0 ksi	
Base Plate Stress Ratio:	70.7% <b>Pass</b>	

## PL Ref. Data

Yield Line (in):	29.37
Max PL Length:	29.37



\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes



## Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev G

### Site Data

BU#: 881364  
 Site Name: Newington  
 App #: 343224 Rev. 0

Reactions		
Mu	26.45	ft-kips
Axial, Pu:	2.71	kips
Shear, Vu:	4.78	kips
Elevation:	130	feet

Bolt Threads:
X-Excluded
$\phi V_n = \phi(0.55 \cdot A_b \cdot F_u)$
$\phi = 0.75, \phi^* V_n$ (kips):
21.87

Pole Manufacturer:	Other
--------------------	-------

If No stiffeners, Criteria: TIA G <-Only Applicable to Unstiffened Cases

Bolt Data		
Qty:	18	
Diameter (in.):	0.75	Bolt Fu: 120
Bolt Material:	A325	Bolt Fy: 92
N/A:	100	<-- Disregard
N/A:	75	<-- Disregard
Circle (in.):	30	

Flange Bolt Results	
Bolt Tension Capacity, $\phi^* T_n, B1$ :	30.06 kips
Adjusted $\phi^* T_n$ (due to $V_u = V_u / Q_t$ ), B:	30.06 kips
Max Bolt directly applied Tu:	2.20 Kips
Min. PL "tc" for B cap. w/o Pry:	0.738 in
Min PL "treq" for actual T w/ Pry:	0.148 in
Min PL "t1" for actual T w/o Pry:	0.200 in
T allowable w/o Prying:	30.06 kips
Prying Force, q:	0.00 kips
Total Bolt Tension = Tu + q:	2.20 kips
Non-Prying Bolt Stress Ratio, Tu/B:	7.3% <b>Pass</b>

Rigid
$\phi^* T_n$
$\phi T_n [(1 - (V_u / \phi V_n)^2)^{0.5}]$

Plate Data		
Diam:	34	in
Thick, t:	1.5	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.72	in

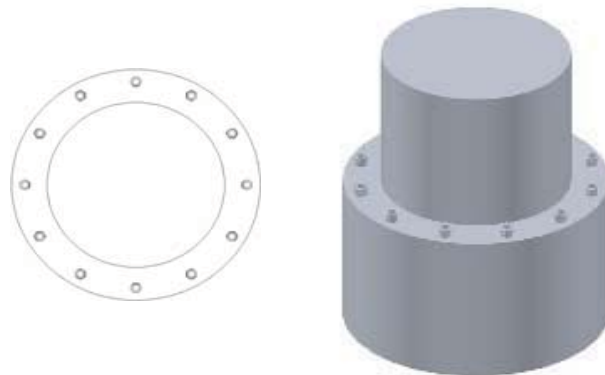
Exterior Flange Plate Results	
Flexural Check	
Compression Side Plate Stress:	0.9 ksi
Allowable Plate Stress:	45.0 ksi
Compression Plate Stress Ratio:	2.0% <b>Pass</b>
<b>No Prying</b>	
Tension Side Stress Ratio, $(treq/t)^2$ :	1.0% <b>Pass</b>

$\alpha' < 0$  case

Rigid
TIA G
$\phi^* F_y$
Comp. Y.L. Length:
13.54

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

Pole Data		
Diam:	26.77	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None



\* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

BU:	881364
Site Name:	Newington
App Number:	343224 Rev. 0
Work Order:	1226283

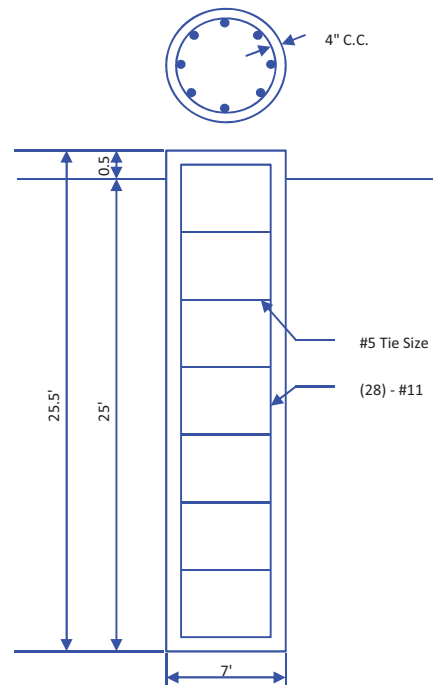


Monopole Drilled Pier

Input

<b>Criteria</b>	
TIA Revision:	G
ACI 318 Revision:	2005
Seismic Category:	B
<b>Forces</b>	
Compression	48 kips
Shear	47 kips
Moment	4227 k-ft
Swelling Force	0 kips
<b>Foundation Dimensions</b>	
Pier Diameter:	7 ft
Ext. above grade:	0.5 ft
Depth below grade:	25 ft
<b>Material Properties</b>	
Number of Rebar:	28
Rebar Size:	11
Tie Size	5
Rebar tensile strength:	60 ksi
Concrete Strength:	3000 psi
Ultimate Concrete Strain	0.003 in/in
Clear Cover to Ties:	4 in

Soil Profile: 881364



Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.5	0	3.5	125	0	0			0	
2	6.5	3.5	10	125	0	34			0	
3	2	10	12	62.6	0	34			0	
4	13	12	25	62.6	0	30			12	

Analysis Results

<b>Soil Lateral Capacity</b>	
Depth to Zero Shear:	5.73 ft
Max Moment, Mu:	4518.33 k-ft
Soil Safety Factor:	2.03
Safety Factor Req'd:	1.33
<b>RATING:</b>	<b>65.4%</b>

<b>Soil Axial Capacity</b>	
Skin Friction (k):	217.58 kips
End Bearing (k):	346.36 kips
Comp. Capacity (k), φCn:	563.94 kips
Comp. (k), Cu:	48.00 kips
<b>RATING:</b>	<b>8.5%</b>

<b>Concrete/Steel Check</b>	
Mu (from soil analysis)	4518.33 k-ft
φMn	6645.34 k-ft
<b>RATING:</b>	<b>68.0%</b>

rho provided	0.79
rho required	0.33 OK

Rebar Spacing	6.82
Spacing required	22.56 OK

Dev. Length required	18.93
Dev. Length provided	61.78 OK

**Overall Foundation Rating: 68.0%**

# Exhibit E

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

T-Mobile Existing Facility

Site ID: CT11782A

CT782/Costello MP  
123 Costello Road  
Newington, CT 06111

**May 18, 2016**

**EBI Project Number: 6216002444**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>24.04 %</b>

May 18, 2016

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

Emissions Analysis for Site: **CT11782A – CT782/Costello MP**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **123 Costello Road, Newington, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **123 Costello Road, Newington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Ericsson AIR32 B2A/B66A & AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B2A/B66A & AIR21 B2A/B4P** have a maximum gain of **15.9 dBd** at their main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerline of the proposed antennas is **95 feet** above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



### T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B2A/B66A	Make / Model:	Ericsson AIR32 B2A/B66A	Make / Model:	Ericsson AIR32 B2A/B66A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	95	Height (AGL):	95	Height (AGL):	95
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	4.24	Antenna B1 MPE%	4.24	Antenna C1 MPE%	4.24
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	95	Height (AGL):	95	Height (AGL):	95
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	3.18	Antenna B2 MPE%	3.18	Antenna C2 MPE%	3.18
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	95	Height (AGL):	95	Height (AGL):	95
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.84	Antenna B3 MPE%	0.84	Antenna C3 MPE%	0.84

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	8.26 %
Verizon Wireless	3.04 %
MetroPCS	2.00 %
Clearwire	2.00 %
Sprint	2.57 %
Nextel	0.57 %
AT&T	5.60 %
<b>Site Total MPE %:</b>	<b>24.04 %</b>

T-Mobile Sector 1 Total:	8.26 %
T-Mobile Sector 2 Total:	8.26 %
T-Mobile Sector 3 Total:	8.26 %
<b>Site Total:</b>	<b>24.04 %</b>

T-Mobile_per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	2	2334.27	95	21.19	1900	1000	2.12 %
T-Mobile 2100 MHz (AWS) LTE	2	2334.27	95	21.19	2100	1000	2.12 %
T-Mobile 1900 MHz (PCS) GSM	2	1167.14	95	10.59	1900	1000	1.06 %
T-Mobile 1900 MHz (PCS) UMTS	2	1167.14	95	10.59	1900	1000	1.06 %
T-Mobile 2100 MHz (AWS) UMTS	2	1167.14	95	10.59	2100	1000	1.06 %
T-Mobile 700 MHz LTE	1	865.21	95	3.93	700	467	0.84 %
						<b>Total:</b>	<b>8.26 %</b>

## Summary

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

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	8.26 %
Sector 2:	8.26 %
Sector 3:	8.26 %
T-Mobile Per Sector Maximum:	8.26 %
Site Total:	24.04 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **24.04%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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