Permit # 2023-12

TOWN OF ELON

104 S. Williamson Avenue
Planning & Zoning
336-584-2859 336-584-5334 (fax)

CERTIFICATE OF PLANNING COMPLIANCE

Site Plan May Be Required (tbd by Planning Director)

Subject Property Street Address: 2948 Danieley Center Dr Elon, North Carolina 27244 (Tower) | 762 E. Haggard Blvd., Elon, NC 27244 (University)

Use Requested: ☐ **Starting or Relocating a Business** ☐ **Constructing a New Building or Structure**

☐ **Expanding an Existing Building or Structure** ☐ **Verification of Zoning District or Permitted Uses**

☒ **Other (describe)** Antenna upgrade on existing telecommunications tower.

Applicant (name/company name): Terry Holmes on behalf of Crown Castle USA Inc. agent for AT&T

Contact person: Terry Holmes

Mailing Address: 8000 Avalon Blvd. Ste. 700 **City:** Alpharetta **State:** GA **Zip** 30009

Email Address: terry.holmes@crowncastle.com

Phone # 470-235-6275 **Cell #**

Property Owner: Elon University / Crown Castle USA Inc. (Tower Owner)

Mailing Address: 100 Campus Dr. / 2285 Campus Box **City:** Elon **State:** NC **Zip** 27244

Email Address: cwaters@elon.edu Christopher Waters AVP for IT

Phone # 336-278-5055 **Cell #**

I further certify that I, the undersigned, am the owner of the subject property or I am making application with the full authority of the owner(s) and the statements herein are true and correct to the best of my knowledge. I also certify that I have or will comply with all applicable Town of Elon, Alamance County, or State of North Carolina Statutes, Codes, Ordinances or Regulations.

Applicant Authorized Agent (Terry Holmes) **Date** 5/1/2023

Owner (if different from Applicant) **Date** 4/27/23

To Be Completed by Zoning Official:

Jurisdiction: ☒ **Town Limits** ☐ **ETJ** **Planning District/Overlay:** Public Institutional

Request is: ☒ **Approved** ☐ **Denied** **Date:** 5/8/2023 **Zoning Official:** Mary Kathryn Harward

Remarks:

ALAMANCE COUNTY ELECTRICAL PERMIT APPLICATION

Master Permit Number_____

PROPERTY INFORMATION

Property Address 2948 Danieley Center, (762 E. Haggard) City, State, Zip Code Elon, NC 27244

Property Owner Name Crown Castle / Elon University Property Owner Phone 470-235-6275

Utility Owner Name Duke Energy Utility Owner Phone_____

Subdivision Name_____ Subdivision Lot Number_____

Geographic Parcel Identification Number_____ Tax Map Number 8855680411

Census Tract_____ Township Elon

Jurisdiction Alamance County Zoning_____

☐ Watershed ☐ Flood Zone ☐ Flood Certification ☐ Farm District ☐ Corner Lot

Water Type: ☒ City Water ☐ New Well ☐ Existing Well ☐ Community Well

Sewage Type: ☒ City Sewer ☐ New Septic ☐ Existing Septic

CONTRACTOR INFORMATION

Contractor Name Mastec Network Solutions Contractor Phone 678-995-6314

Contractor Street Address 701 Griffith Rd. City, State, Zip Code Charlotte, NC 28217

County Control Number_____ North Carolina License Number 29889

☐ Owner is Contractor ☐ Owner Occupied

BUILDING INFORMATION

Work Description AT&T Equipment Upgrade Construction Cost $3500

Building Use: ☐ Residential ■ Commercial ☐ Farm

Building Type: ☐ New ■ Existing ☐ Mobile Home ☐ Modular Home

Occupancy Type: ☐ 1 or 2 Family ☐ Apartments (3 or more) ☐ Assembly ☐ Assisted Living

☐ Business ☐ Educational ☐ Factory/Industrial ☐ High Hazard

☐ Hotel ☐ Institutional ☐ Mercantile ☐ Storage

■ Utility/Maintenance

Utility Company: ■ Duke Energy ☐ Randolph Electric ☐ Piedmont Electric Other Telecom Tower

Service Change: Old Amps_____ New Amps_____

Incoming Service: Overhead_____ Underground_____

New Service 1: Volts_____ Amps_____

A photo ID is required to accompany all applicant signatures

ALAMANCE COUNTY ELECTRICAL PERMIT APPLICATION

New Service 2: Volts_____ Amps_____

New Service 3: Volts_____ Amps_____

☐ Low Voltage Wiring Volts_____

☐ Modular Home	☐ Mobile Home	☐ Saw Service	☐ Addition Only
☐ Heating Units	☐ AC Units	☐ Hot Tub	☐ Swimming Pool
☐ Sewage Pump	☐ Well Service	☐ Farm Service	☐ Fence Service
☐ Gas Pumps	☐ Signs	☐ Transformers	☐ Generator

☐ Underground (Slab, Ditch) Inspection Required

☐ Solar Installation ☐ Footings

Other AT&T antenna replacement and swap on existing telecom tower.

I hereby certify that all information in this application is correct and all work will comply with the N.C. State Building Code and all other applicable state, local laws, ordinates, and regulations. The Inspection Department will be notified of any changes in the approved plans and specifications for the project permitted herein.

Applicant Printed Name Terry Holmes - Agent for Crown Castle on behalf of AT&T Applicant Phone 470-235-6275

Applicant Signature  Date 3.15.23

A photo ID is required to accompany all applicant signatures

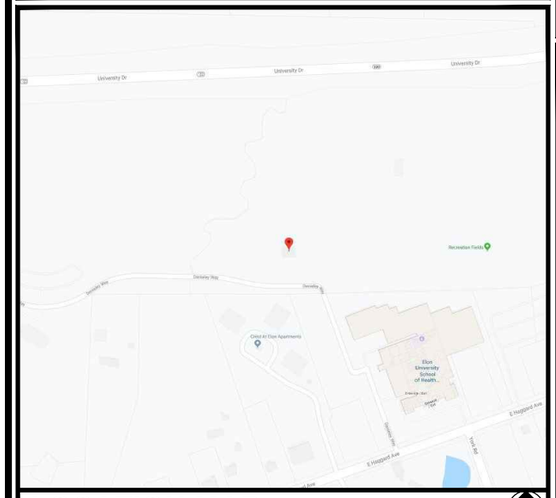
AT&T SITE NUMBER:	**062-043**
PROJECT DESCRIPTION:	**5G NR RADIO 5G NR 1SR CBAND UPGRADE**
CROWN BU#:	**819560**
CROWN APP ID:	**634661**
TOWER TYPE:	**190' MONOPOLE**
SITE ADDRESS:	**2948 DANIELEY CENTER DR ELON, NC 27244 (ALAMANCE COUNTY)**
JURISDICTION:	**TOWN OF ELON**
PRESENT OCCUPANCY TYPE:	**TELECOMMUNICATIONS FACILITY**
CURRENT ZONING:	**PI**
PARCEL # / PIN #:	**8855680411**

PROJECT INFORMATION

LATITUDE:	**N 36° 06' 30.61" (36.1084944°)***
LONGITUDE:	**W 79° 29' 25.75" (-79.4904944°)***
GROUND ELEVATION:	**± 658' (AMSL) ****

*** INFORMATION PROVIDED BY AT&T**
**** INFORMATION OBTAINED BY GOOGLE EARTH**

TOWER COORDINATES



LOCATION MAP

DIRECTIONS FROM AT&T GREENSBORO OFFICE TO SITE:
HEAD SOUTHWEST TOWARD PISGAH CHURCH RD. TURN LEFT TOWARD PISGAH CHURCH RD. TURN LEFT ONTO PISGAH CHURCH RD. TURN LEFT ONTO N ELM ST. TURN RIGHT TO MERGE ONTO I-840. MERGE ONTO I-840. USE THE RIGHT 2 LANES TO TAKE EXIT 21 TO MERGE ONTO I-40 E TOWARD I-85 N/DURHAM/RALEIGH. TAKE EXIT 141 FOR HUFFMAN MILL RD. USE THE LEFT 2 LANES TO TURN LEFT ONTO HUFFMAN MILL RD. CONTINUE ONTO SHADOWBROOK DR. CONTINUE ONTO BRIARCLIFF RD. TURN LEFT ONTO YORK RD. TURN LEFT ONTO E HAGGARD AVE. TURN RIGHT ONTO DANIELEY WAY/DANIELEY CTR DR. TURN LEFT TO STAY ON DANIELEY WAY/DANIELEY CTR DR. TURN RIGHT TO STAY ON DANIELEY WAY/DANIELEY CTR DR.

DRIVING DIRECTIONS

PROJECT INFORMATION:

AT&T

2948 DANIELEY CENTER DRIVE
ELON, NC 27244
(ALAMANCE COUNTY)

AT&T SITE #: 062-043
FA LOCATION CODE: 10154661

TOWER OWNER:
NAME: CROWN CASTLE
ADDRESS: 3530 TORINGDON WAY, STE 300
CITY, STATE, ZIP: CHARLOTTE, NC 28277

APPLICANT/LESSEE:
NAME: AT&T MOBILITY
ADDRESS: 2002 PISGAH CHURCH RD, STE 300
CITY, STATE, ZIP: GREENSBORO, NC 27455

SITE PROJECT MANAGER:
NAME: CROWN CASTLE
ADDRESS: 3530 TORINGDON WAY, SUITE 300
CITY, STATE, ZIP: CHARLOTTE, NC 28277
CONTACT: ROXANNE GARMAN
PHONE: (980) 209-8247

CIVIL ENGINEER:
NAME: TOWER ENGINEERING PROFESSIONALS
ADDRESS: 326 TRYON ROAD
CITY, STATE, ZIP: RALEIGH, NC 27603
CONTACT: SCOTT C. BRANTLEY, P.E.
PHONE: (919) 661-6351

ELECTRICAL ENGINEER:
NAME: TOWER ENGINEERING PROFESSIONALS
ADDRESS: 326 TRYON ROAD
CITY, STATE, ZIP: RALEIGH, NC 27603
CONTACT: MARK S. QUAKENBUSH, P.E.
PHONE: (919) 661-6351

CONTACT INFORMATION

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

1. **NORTH CAROLINA BUILDING CODE (2018 EDITION)**
2. **NORTH CAROLINA CODE COUNCIL**
3. **ANSI/TIA-222-H-2018**
4. **2020 NEC (NEC 2020 + NC ADDENDUM)**
5. **LOCAL BUILDING CODE**
6. **CITY/COUNTY ORDINANCES**

CODE COMPLIANCE

UTILITIES:
POWER COMPANY: DUKE ENERGY
BACKHAUL COMPANY: AT&T

APPLICANT/LESSEE:

AT&T

2002 PISGAH CHURCH ROAD, SUITE 300
GREENSBORO, NC 27455
OFFICE: (336) 286-6163
NOC #: (800) 638-2822

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277
OFFICE: (980) 209-8247

SHEET	DESCRIPTION	REV
T1	TITLE SHEET	0
T2-T6	APPENDIX B	0
N1	GENERAL NOTES	0
C1	TOWER ELEVATION & EXISTING ANTENNA SCHEDULE	0
C1A	EXISTING ANTENNA ORIENTATION	0
C1B	PROPOSED ANTENNA ORIENTATION	0
C1C	PROPOSED ANTENNA/CABLE SCHEDULE	0
C2	EQUIPMENT LAYOUT	0
E1	ELECTRICAL NOTES	0
E2	TYPICAL LTE ONE-LINE DIAGRAM	0
E3	TYPICAL LTE RISER DIAGRAM	0
	APPENDIX	
	MOUNT MODIFICATION DRAWINGS	

INDEX OF SHEETS

PLANS PREPARED FOR:

AT&T

2002 PISGAH CHURCH ROAD, SUITE 300
GREENSBORO, NC 27455

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:
AT&T SITE #: 062-043
CROWN BU #: 819560
CROWN APP ID: 634661
2948 DANIELEY CENTER DRIVE
ELON, NC 27244
(ALAMANCE COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net
N.C. LICENSE # P-1403

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 048226 ENGINEER SCOTT C. BRANTLEY

February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:

TITLE SHEET

SHEET NUMBER: **T-1**

REVISION: **0**

TEP #: 73021.814928

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: AT&T # 062-043 FA# 10154661 BU# 819560

Address: 2948 DANIELEY CENTER DR, ELON, NC Zip Code 27244

Owner/Authorized Agent: ROXANNE GARMAN (CROWN CASTLE) Phone # (980) 209 - 8247 E-Mail roxanne.garman@crowncastle.com

Owned By: ☐ City/County ☒ Private ☐ State

Code Enforcement Jurisdiction: ☒ City ELON ☐ County _____ ☐ State

CONTACT: Tower Engineering Professionals

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				( )	
Civil	Tower Engineering Professionals	Scott C. Brantley	048226	(919) 661-6351	sbrantley@tepgroup.net
Electrical	Tower Engineering Professionals	Mark S. Quakenbush	042109	(919) 661-6351	mquakenbush@tepgroup.net
Fire Alarm				( )	
Plumbing				( )	
Mechanical				( )	
Sprinkler-Standpipe				( )	
Structural				( )	
Retaining Walls >5' High				( )	
Other				( )	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☒ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core- Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III ☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): _____

RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): _____

OCCUPANCY CATEGORY (Table 1604.5): **Current:** ☐ I ☒ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA

Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ☒ II-B ☐ III-B ☐ V-B

Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D

Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry

Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☒ No ☐ Yes

Special Inspections Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor		N/A	
2nd Floor		N/A	
Mezzanine		N/A	
1st Floor		N/A	
Basement			
TOTAL			

N/A
NOT A BUILDING

Primary Occupancy Classification(s): Select one Select one Select one Select one

Assembly ☐ A-1 ☐ A-2 ☐ [illegible] ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate
Hazardous ☐ H-1 Detonate ☐ [illegible] ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☒

Accessory Occupancy Classification(s): N/A

Incidental Uses (Table 509): N/A

Special Uses (Chapter 4 – List Code Sections): N/A

Special Provisions: (Chapter 5 – List Code Sections): N/A

Mixed Occupancy: ☒ No ☐ Yes Separation: _____ Hr. Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculati[illegible]ach story, the area of the occupancy shall be such that the sum of t[illegible] actual floor area of each use divided by the allowable floor ar[illegible] not exceed 1.

$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Act[illegible]}}{\text{All[illegible]ncy B}} \leq 1$

_____ + _____ + ... = _____ ≤ 1.00

N/A
NOT A BUILDING

2018 NC Administrative Code and Policies

PLANS PREPARED FOR:
AT&T
2002 PISGAH CHURCH ROAD, SUITE 300
GREENSBORO, NC 27455

PLANS PREPARED FOR:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:
AT&T SITE #: 062-043
CROWN BU #: 819560
CROWN APP ID: 634661
2948 DANIELEY CENTER DRIVE
ELON, NC 27244
(ALAMANCE COUNTY)

PLANS PREPARED BY:
TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net
N.C. LICENSE # P-1403

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 048226 ENGINEER SCOTT C. BRANTLEY
February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW CHECKED BY: MCR

SHEET TITLE:
APPENDIX B

SHEET NUMBER: **T-2**
REVISION: 0
TEP #: 73021.814928

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]

[1] Frontage area increases from Section 506.2 are
a. Perimeter which fronts a public way
b. Total Building Perimeter
c. Ratio (F/P) = _____ (F/
d. W = Minimum width of publ
e. Percent of frontage increa

x W/30 = _____ (%)

[2] Unlimited area applicable under con
507.

[3] Maximum Building Area = total numb
n the building x D (maximum3 stories) (506.2).

[4] The maximum area of open parking garag
t comply with Table 406.5.4. The maximum area of air traffic control towers must comply with Table 412.
1.

[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

feet minimum width = _____ (F)

N/A
NOT A BUILDING

ALLOWABLE HEIGHT

	ALLOWABLE		PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)				
Building Height in Stories (Table 504.4)				

[1] Provide code reference if the "Shown on Plans" quantity is not b

N/A
NOT A BUILDING

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/_____* REDUCTION)	DETAIL # AND SHE	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing Walls and Partitions							
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction							
Including supporting beams and joists							
Floor Ceiling Assembly							
Columns Supporting Floors							
Roof Construction, including supporting beams and joists							
Roof Ceiling Assembly							
Columns Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

N/A
NOT A BUILDING

N/A
NOT A BUILDING

PLANS PREPARED FOR:
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2002 PISGAH CHURCH ROAD, SUITE 300
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PLANS PREPARED FOR:
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N.C. LICENSE # P-1403

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 048226 ENGINEER SCOTT C. BRANTLEY
February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:
APPENDIX B

SHEET NUMBER: **T-3**
REVISION: **0**
TEP #: 73021.814928

PERCENTAGE OF WALL OPENING CALCULATIONS

Fire Separation Distance (Feet) from Property Lines	Degree of Openings Protection (Table 705.8)	Allowable Area (%)	Actual Shown on Plans (%)

N/A
NOT A BUILDING

LIFE SAFETY REQUIREMENTS

Emergency Lighting:
Exit Signs:
Fire Alarm:
Smoke Detection Systems: ☐ Yes ☐ Partial _____
Panic Hardware: ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

- ☐ Fire and/or smoke rated wall locations (Chapter 7)
- ☐ Assumed and real property line locations (if not on the site plan)
- ☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
- ☐ Occupancy Use for each area as it relates to occupant loa tion (Table 1004.1.2)
- ☐ Occupant loads for each area
- ☐ Exit access travel distances (1017)
- ☐ Common path of travel distances (Tables 1006
- ☐ Dead end lengths (1020.4)
- ☐ Clear exit widths for each exit door
- ☐ Maximum calculated occupant load an accommodate based on egress width (1005.3)
- ☐ Actual occupant load for each exi
- ☐ A separate schematic plan ind loor/ceiling and/or roof structure is provided for purposes of occupancy sep
- ☐ Location of doors with pan 10)
- ☐ Location of doors with delaye and the amount of delay (1010.1.9.7)
- ☐ Location of doors with electroma gress locks (1010.1.9.9)
- ☐ Location of doors equipped with hold-open devices
- ☐ Location of emergency escape windows (1030)
- ☐ The square footage of each fire area (202)
- ☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
- ☐ Note any code exceptions or table notes that may have been utilized regarding the items above

N/A
NOT A BUILDING

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

Total Units	Accessible Units Required	Accessible Units Provided	Type A Units Required	Type A Units Provi	B	Type B Units Provided	Total accessible Units provided

N/A
NOT A BUILDING

AC

Lot or Parking Area	Total # of Parking		Accessible Spaces Provided			Total # Accessible Provided
	Required		Aisle	Van Spaces with 132" access Aisle	Van Spaces with 8' access Aisle	
Total						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

Use		Waterclosets			Urinals	Lavatories			Showers /Tubs	Drinking Fountains	
		Male	Female	Unisex		Male	Fem	Unisex		Regular	Accessible
Space	Exist'g										
	New										
	Req'd										

N/A
NOT A BUILDING

SPE

Special approval: (Local Jurisdiction, Dep C, DPI, DHHS, etc., describe below)

PLANS PREPARED FOR:
AT&T
2002 PISGAH CHURCH ROAD, SUITE 300
GREENSBORO, NC 27455

PLANS PREPARED FOR:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:
AT&T SITE #: 062-043
CROWN BU #: 819560
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2948 DANIELEY CENTER DRIVE
ELON, NC 27244
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PLANS PREPARED BY:
TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net
N.C. LICENSE # P-1403

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 048228 ENGINEER SCOTT C. BRANTLEY
February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:
APPENDIX B

SHEET NUMBER: **T-4**
REVISION: **0**
TEP #: 73021.814928

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: _____

Address: _____ Zip Code _____

Owner/Authorized Agent: _____ Phone # (___) _____ E-Mail _____

Owned By: ☐ City/County ☐ State

Code Enforcement Jurisdiction: ☐ City_____ ☐ State

CONTACT: _____

DESIGNER	FIRM	LICENSE #	TELEPHONE #	E-MAIL
Architectural			(___)___	
Civil			(___)___	
Electrical			(___)___	
Fire Alarm			(___)___	
Plumbing			(___)___	
Mechanical			(___)___	
Sprinkler-Standpipe			(___)___	
Structural			(___)___	
Retaining Walls >5' High			(___)___	
Other			(___)___	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/C... Contact the local inspection jurisdiction for possible additional procedu... quirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ ... ☐ Repair ☐ Chapter 14
Alteration ☐ ... ☐ Level II ☐ Level III
☐ ...erty ☐ Change of Use

CONSTRUCTED: (date) _____ **...ANCY(S)** (Ch. 3): _____

RENOVATED: (date) _____ **...UPANCY(S)** (Ch. 3): _____

OCCUPANCY CATEGORY (Table 160... ☐ II ☐ III ☐ IV
☐ II ☐ III ☐ IV

BASIC BUILDING DATA

Construction Type: ☐ I-A ☐ ... ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ☐ ...-B ☐ III-B ☐ V-B

Sprinklers: ☐ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D

Standpipes: ☐ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry

Fire District: ☐ No ☐ Yes **Flood Hazard Area:** ☐ No ☐ Yes

Special Inspections Required: ☐ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

N/A NOT A BUILDING

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor			
Basement			
TOTAL			

ALLOWABLE AREA

Primary Occupancy Classification(s): Select one Select one Select one Select one Select one Select one

Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-...
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Defla... ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ ...
☐ I-2 Condition ☐ 1 ☐ ...
☐ I-3 Condition ☐ ... ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-...
Storage ☐ S-1 Moderate ☐ ... ☐ High-piled
☐ Parking Garage ☐ ... ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☐

N/A NOT A BUILDING

Accessory Occupancy Classification(s): _____

Incidental Uses (Table 509): _____

Special Uses (Chapter 4 – List Code Sections): _____

Special Provisions: (Chapter 5 – List Code Sections): _____

Mixed Occupancy: ☐ No ☐ Yes Separation: _____ Hr. Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

$$\frac{\quad}{\quad} + \frac{\quad}{\quad} + \ldots = \frac{\quad}{\quad} \leq 1.00$$

PLANS PREPARED FOR:
AT&T
2002 PISGAH CHURCH ROAD, SUITE 300
GREENSBORO, NC 27455

PLANS PREPARED FOR:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:
AT&T SITE #: 062-043
CROWN BU #: 819560
CROWN APP ID: 634661
2948 DANIELEY CENTER DRIVE
ELON, NC 27244
(ALAMANCE COUNTY)

PLANS PREPARED BY:
TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net
N.C. LICENSE # P-1403

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 048226 ENGINEER SCOTT C. BRANTLEY
February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW CHECKED BY: MCR

SHEET TITLE:
APPENDIX B

SHEET NUMBER: **T-5**
REVISION: **0**
TEP #: 73021.814928

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

N/A
NOT A BUILDING

Thermal Zone

winter dry bulb: _____
summer dry bulb: _____

Interior design conditions

winter dry bulb: _____
summer dry bulb: _____
relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System

Unitary
- description of unit: _____
- heating efficiency: _____
- cooling efficiency: _____
- size category of unit: _____

Boiler
- Size category. If oversized, state reason.: _____

Chiller
- Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

N/A
NOT A BUILDING

Method of Compliance: Energy Code ☐ Perf ☐ Prescriptive
ASHRAE 90.1 ☐ P Prescriptive

Lighting schedule (each fixture type)

lamp type required in fixtur
number of lamps in fixtu
ballast type used in th
number of ballasts
total wattage pe
total interior w owed (whole building or space by space)
total exterior wat allowed

Additional Efficiency Packag ons
(When using the 2018 NCECC; not required for ASHRAE 90.1)

- ☐ C406.2 More Efficient HVAC Equipment Performance
- ☐ C406.3 Reduced Lighting Power Density
- ☐ C406.4 Enhanced Digital Lighting Controls
- ☐ C406.5 On-Site Renewable Energy
- ☐ C406.6 Dedicated Outdoor Air System
- ☐ C406.7 Reduced Energy Use in Service Water Heating

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February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:
APPENDIX B

SHEET NUMBER: **T-6**
REVISION: **0**
TEP #: 73021.814928

1. ALL REFERENCES MADE TO OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED AT&T OR IT'S DESIGNATED REPRESENTATIVE.

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

3. THE STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH ANSI/TIA-222-H-2018. THIS CONFORMS TO THE REQUIREMENTS OF THE NORTH CAROLINA BUILDING CODE, 2018 EDITION.

4. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING CODE, 2018 EDITION.

5. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.

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

7. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.

8. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATION. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.

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

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
RENTAL CHARGES, SAFETY, PROTECTION AND MAINTENANCE OF RENTED EQUIPMENT SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

11. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE AT&T PROJECT MANAGER.

12. BILL OF MATERIALS AND PART NUMBERS LISTED ON CONSTRUCTION DRAWINGS ARE INTENDED TO AID CONTRACTOR/OWNER. CONTRACTOR/OWNER SHALL VERIFY PARTS AND QUANTITIES WITH MANUFACTURER PRIOR TO BIDDING AND/OR ORDERING MATERIALS.

13. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.

14. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.

15. THE CONTRACTOR SHALL REWORK (DRY, SCARIFY, ETC.) ALL MATERIAL NOT SUITABLE FOR SUBGRADE IN ITS PRESENT STATE. AFTER REWORKING, IF THE MATERIAL REMAINS UNSUITABLE, THE CONTRACTOR SHALL UNDERCUT THIS MATERIAL AND REPLACE WITH APPROVED MATERIAL. ALL SUBGRADES SHALL BE PROOFROLLED WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK PRIOR TO PAVING. ANY SOFT MATERIAL SHALL BE REWORKED OR REPLACED.

16. THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL PIPES, DITCHES, AND OTHER DRAINAGE STRUCTURES FREE FROM OBSTRUCTION UNTIL WORK IS ACCEPTED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURE IN OPERABLE CONDITION.

17. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.

18. ANY BUILDINGS ON THIS SITE ARE INTENDED TO SHELTER EQUIPMENT WHICH WILL ONLY BE PERIODICALLY MAINTAINED AND ARE NOT INTENDED FOR HUMAN OCCUPANCY.

19. TEMPORARY FACILITIES FOR PROTECTION OF TOOLS AND EQUIPMENT SHALL CONFORM TO LOCAL REGULATIONS AND SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

20. THE CONTRACTOR AND ITS SUBCONTRACTORS SHALL CARRY LIABILITY INSURANCE IN THE AMOUNTS AND FORM IN ACCORDANCE WITH AT&T SPECIFICATIONS. CERTIFICATES DEMONSTRATING PROOF OF COVERAGE SHALL BE PROVIDED TO AT&T PRIOR TO THE START OF THE WORK ON THE PROJECT.

21. THE CONTRACTOR SHALL CONTACT ALL APPLICABLE UTILITY SERVICES TO VERIFY LOCATIONS OF EXISTING UTILITIES AND REQUIREMENTS FOR NEW UTILITY CONNECTIONS PRIOR TO EXCAVATING.

22. THE CONTRACTOR SHALL MAINTAIN THE JOB CLEAR OF TRASH AND DEBRIS. ALL WASTE MATERIALS SHALL BE REMOVED FROM THE SITE PRIOR TO SUBSTANTIAL COMPLETION AND PRIOR TO FINAL ACCEPTANCE. THE CONTRACTOR SHALL FURNISH ONE 55 GALLON BARREL, AND TRASH BAGS, AND SHALL REMOVE TRASH, DEBRIS, ETC., ON A DAILY BASIS.

23. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL CONDITIONS PRIOR TO SUBMITTING HIS PROPOSAL. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS SHOWN ON THESE DRAWINGS WITH THOSE AT THE SITE. ANY VARIATION WHICH REQUIRES PHYSICAL CHANGE SHALL BE BROUGHT TO THE ATTENTION OF THE AT&T PROJECT ENGINEER FOR FACILITIES/CONSTRUCTION.

24. THE CONTRACTOR SHALL GUARANTEE THE WORK PERFORMED ON THE PROJECT BY THE CONTRACTOR AND ANY OR ALL OF THE SUBCONTRACTORS WHO PERFORMED WORK FOR THE CONTRACTOR ON THIS PROJECT. THE GUARANTEE SHALL BE FOR A FULL YEAR FOLLOWING ISSUANCE OF THE FINAL PAYMENT OF RETAINAGE. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.

GENERAL NOTES

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GREENSBORO, NC 27455

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

AT&T SITE #: 062-043
CROWN BU #: 819560
CROWN APP ID: 634661
2948 DANIELEY CENTER DRIVE
ELON, NC 27244
(ALAMANCE COUNTY)

PLANS PREPARED BY:

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RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
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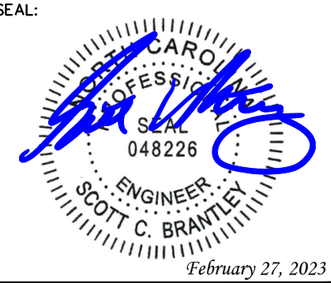
SEAL:



February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:

PROJECT NOTES

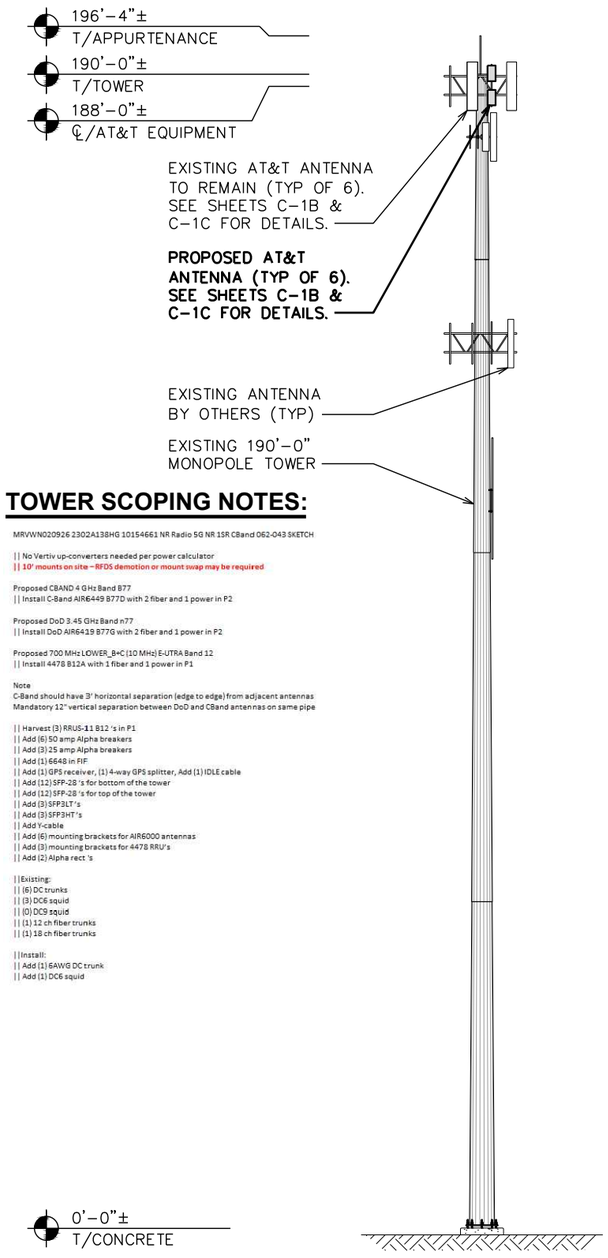
SHEET NUMBER: **N-1**

REVISION: **0**

TEP #: 73021.814928

NOTES:

1. PROPOSED CABLES TO BE ROUTED PER SPECIFICATIONS OF STRUCTURAL ANALYSIS.
2. THE TOWER DRAWING IS ONLY A GRAPHIC REPRESENTATION OF THE STRUCTURE. THE ACTUAL TOWER IN THE FIELD MAY VARY.



TOWER SCOPING NOTES:

MRVWN020926 2302A138HG 10154661 NR Radio 5G NR 1SR CBand D62-043 SKETCH

|| No Vertiv up-converters needed per power calculator
|| 10' mounts on site - RFDS demotion or mount swap may be required

Proposed CBAND 4 GHz Band 877
|| Install C-Band AIR6449 B77D with 2 fiber and 1 power in P2

Proposed DoD 3.45 GHz Band n77
|| Install DoD AIR6419 B77G with 2 fiber and 1 power in P2

Proposed 700 MHz LOWER_B+C (10 MHz) E-UTRA Band 12
|| Install 4478 B12A with 1 fiber and 1 power in P1

Note
C-Band should have 3' horizontal separation (edge to edge) from adjacent antennas
Mandatory 12" vertical separation between DoD and CBand antennas on same pipe

|| Harvest (3) RRUS-11 B12 's in P1
|| Add (6) 50 amp Alpha breakers
|| Add (3) 25 amp Alpha breakers
|| Add (1) 6648 in FIF
|| Add (1) GPS receiver, (1) 4-way GPS splitter, Add (1) IDLE cable
|| Add (12) SFP-28 's for bottom of the tower
|| Add (12) SFP-28 's for top of the tower
|| Add (3) SFP3LT 's
|| Add (3) SFP3HT 's
|| Add Y-cable
|| Add (6) mounting brackets for AIR6000 antennas
|| Add (3) mounting brackets for 4478 RRU's
|| Add (2) Alpha rect 's

|| Existing:
|| (6) DC trunks
|| (3) DC6 squid
|| (0) DC9 squid
|| (1) 12 ch fiber trunks
|| (1) 18 ch fiber trunks

|| Install:
|| Add (1) 6AWG DC trunk
|| Add (1) DC6 squid

TOWER ELEVATION

SCALE: 1" = 25'-0"

0 25 50
SCALE IN FEET

GENERAL NOTES:

1. THIS ANTENNA ORIENTATION PLAN IS A SCHEMATIC. THE CONTRACTOR SHALL VERIFY TOWER ORIENTATION AND FIELD COORDINATE REQUIRED ADJUSTMENTS TO ACHIEVE THE DESIRED ANTENNA AZIMUTHS.
2. ANTENNA CENTERLINE HEIGHT BASED ON TOP OF FOOTING ELEVATION.
3. ALL ANTENNAS, CABLES AND MOUNTS SHALL BE INSTALLED IN ACCORDANCE WITH THE STRUCTURAL ENGINEER'S RECOMMENDATIONS IN A MANNER CONSISTENT WITH THE STRUCTURAL ANALYSIS REPORT.
4. ALL ANTENNA BRACKETS PER ANTENNA MANUFACTURER, OR EQUAL. CONTRACTOR TO COORDINATE REQUIRED MECHANICAL DOWN TILT WITH AT&T.
5. ALL ANTENNA INFORMATION TO BE CONFIRMED WITH AT&T RF DESIGN PRIOR TO INSTALLATION.
6. CONTRACTOR IS TO VERIFY PROPOSED LOADING WITH PASSING STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION. IN THE EVENT THAT AN EXISTING MOUNT IS TO BE UTILIZED THE CONTRACTOR SHOULD ALSO VERIFY LOADING AGAINST THE PASSING MOUNT ANALYSIS. IF DISCREPANCIES ARISE, CONTRACTOR IS TO IMMEDIATELY NOTIFY CROWN CASTLE AND TOWER ENGINEERING PROFESSIONALS FOR CORRECTIVE ACTION.
7. LOADING INFORMATION PROVIDED BY CROWN CASTLE, AT&T RFDS ID: 4812233.

EXISTING ANTENNA/CABLE SCHEDULE

ANT. MARK	SECTOR	TECH.	MANUFACTURER /MODEL #	AZIMUTH (TN)	RAD CENTER	ELEC. D-TILT	TMA MODEL	COAX/ CABLE	SURGE PROTECTION	RRU MODEL
A1	ALPHA	LTE 700 LTE WCS *UMTS 1900	COMMSCOPE NNH4-65C-R6-V3	0°	188'	4° 2° 2°		(1) ⅜" FIBER$_{12}$ (2) ¾" DC POWER	(1) DC6-48-60-18-8F	*(1) RRUS-11 B12 *(1) RRUS-11 B2 (1) RRUS-32 B30
A3	ALPHA	LTE 700 LTE AWS, 5G AWS LTE 1900	KMW EPBQ-654L8H8-L2	0°	188'	4° 2° 2°				(1) RADIO 4478 B14 (1) RADIO 8843 B2/B66A
B1	BETA	LTE 700 LTE WCS *UMTS 1900	COMMSCOPE NNH4-65C-R6-V3	130°	188'	3° 2° 2°		(1) ⅜" FIBER$_{18}$ (2) ¾" DC POWER	(1) DC6-48-60-18-8F	*(1) RRUS-11 B12 *(1) RRUS-11 B2 (1) RRUS-32 B30
B3	BETA	LTE 700 LTE AWS, 5G AWS LTE 1900	KMW EPBQ-654L8H8-L2	130°	188'	3° 1° 2°				(1) RADIO 4478 B14 (1) RADIO 8843 B2/B66A
C1	GAMMA	LTE 700 LTE WCS *UMTS 1900	COMMSCOPE NNH4-65C-R6-V3	260°	188'	3° 2° 2°		(1) ¾" DC POWER (1) ⅞" DC POWER	(1) DC6-48-60-18-8C	*(1) RRUS-11 B12 *(1) RRUS-11 B2 (1) RRUS-32 B30
C3	GAMMA	LTE 700 LTE AWS, 5G AWS LTE 1900	KMW EPBQ-654L8H8-L2	260°	188'	3° 2° 2°				(1) RADIO 4478 B14 (1) RADIO 8843 B2/B66A

* - EXISTING AT&T EQUIPMENT/TECH TO BE REMOVED

EXISTING ANTENNA/CABLE SCHEDULE

SCALE: N.T.S.

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REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

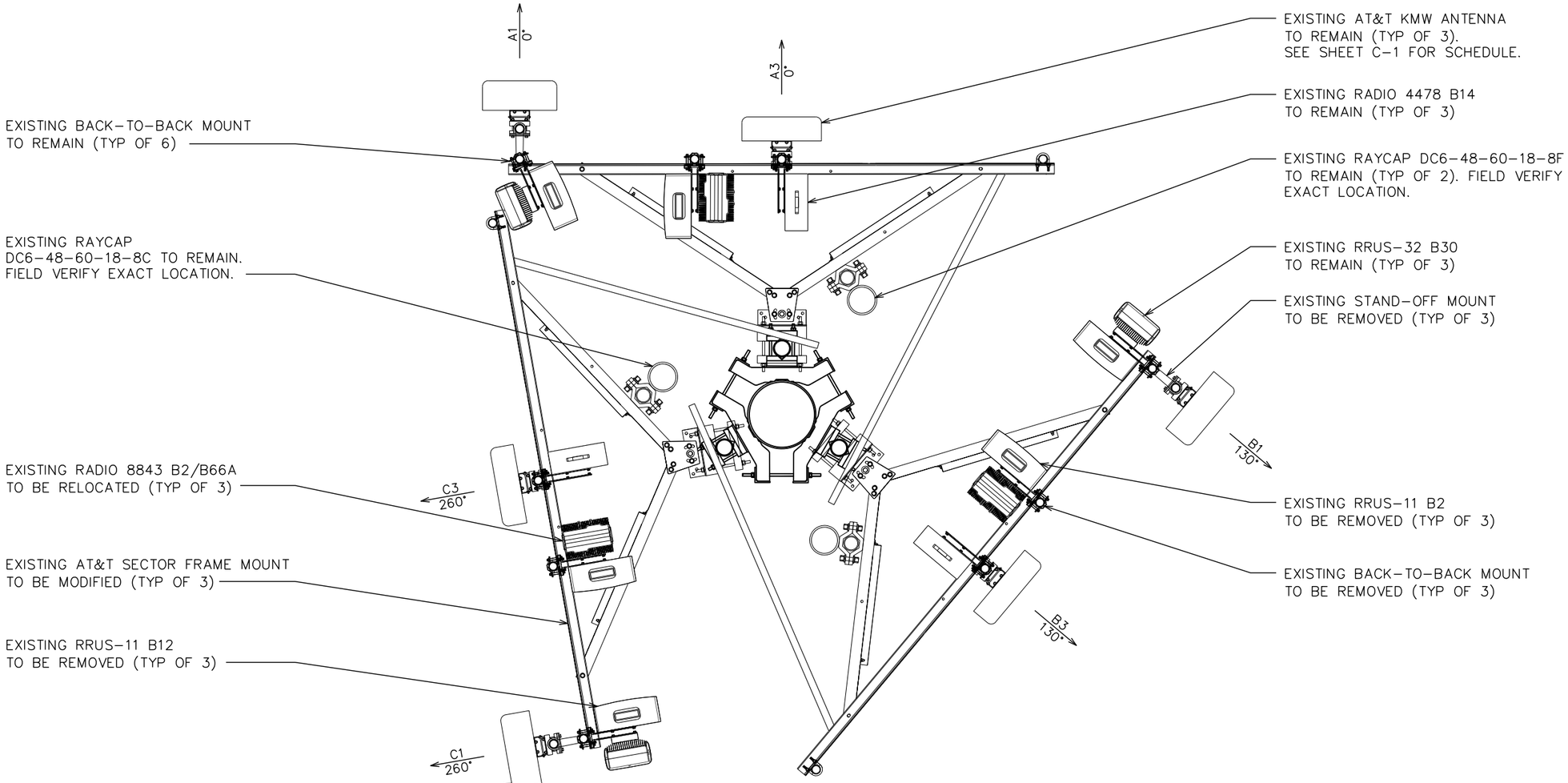
DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:
TOWER ELEVATION & EXISTING ANTENNA SCHEDULE

SHEET NUMBER: **C-1**
REVISION: **0**
TEP#: 73021.814928

NOTE:

TEP DID NOT PERFORM A TOWER CLIMB TO VERIFY MOUNT MAKE-UP. MOUNT DEPICTION SHOWN BELOW GENERATED TO THE FULLEST EXTENT POSSIBLE BY TEP VIA TOWER LEVEL PHOTOS AND PREVIOUS DOCUMENTATION PROVIDED BY CROWN CASTLE. PRIOR TO CONSTRUCTION, CONTRACTOR SHOULD FIELD VERIFY MOUNT COMPONENTS TO ENSURE AT&T INSTALL ADHERES TO ALL NECESSARY REQUIREMENTS.



EXISTING ANTENNA ORIENTATION

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

0 2 4

SCALE IN FEET

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REV	DATE	ISSUED FOR:
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DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:

EXISTING ANTENNA ORIENTATION

SHEET NUMBER: **C-1A**

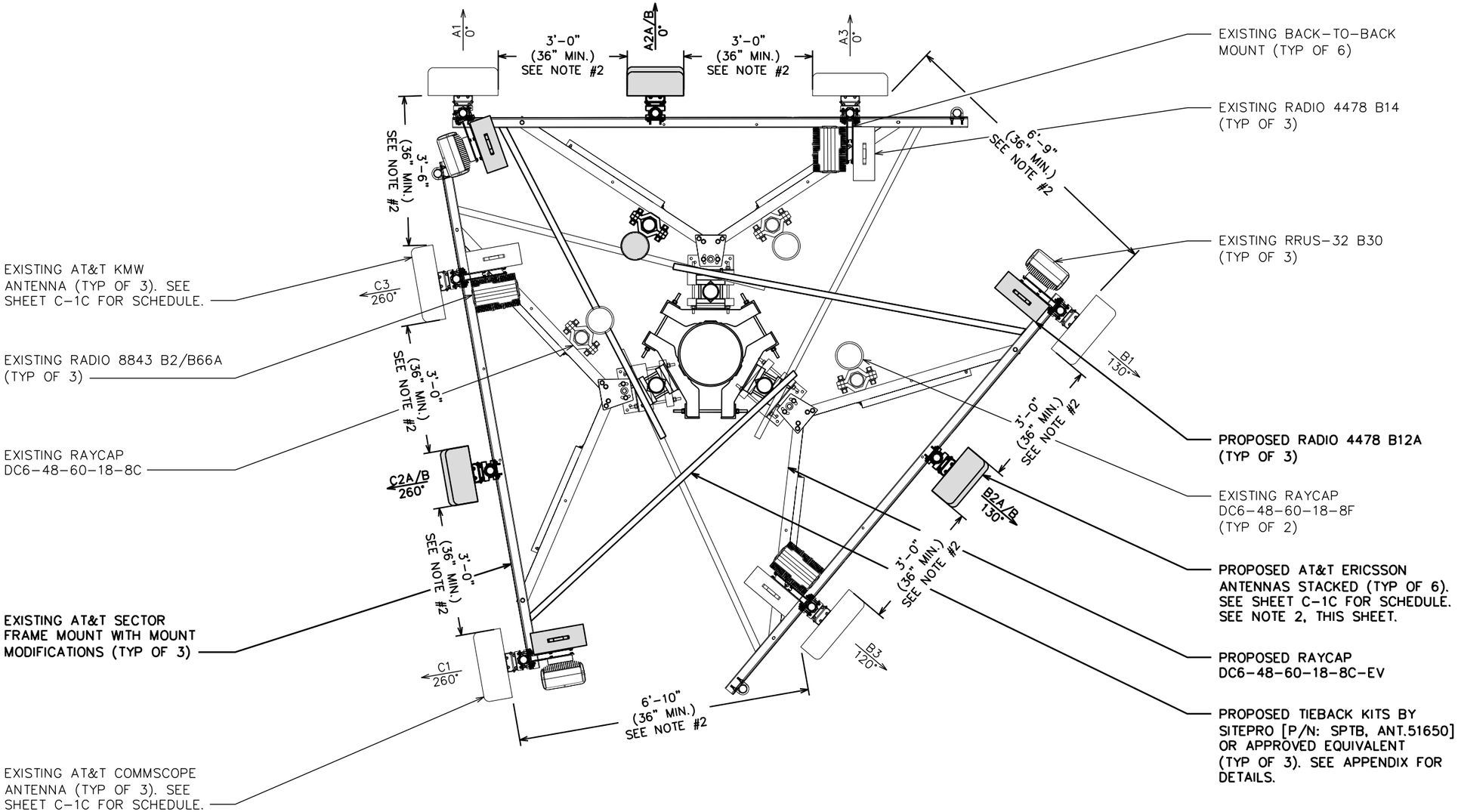
REVISION: **0**

TEP #: 73021.814928

NOTES:

1. MOUNT MODIFICATIONS REQUIRED PER CONDITIONAL MOUNT ANALYSIS REPORT BY TOWER ENGINEERING PROFESSIONALS, DATED FEBRUARY 16, 2023. MODIFICATIONS ARE AS FOLLOWS:
   - INSTALL (3) SITEPRO SPTB TIEBACK KITS (AT&T CONMAT ITEM NO. ANT.51650), OR APPROVED EQUIVALENT (1 PER SECTOR)

2. C BAND SPACING REQUIREMENTS:
   - C BAND ANTENNA TO BE INSTALLED AT BASE OF MOUNT PIPE, DOD BAND ANTENNA TO BE INSTALLED AT TOP OF MOUNT PIPE.
   - 12" MIN VERTICAL SEPARATION (EDGE-TO-EDGE) BETWEEN C BAND AND DOD BAND ANTENNAS (TYP, ALL SECTORS)
   - 36" MIN HORIZONTAL SEPARATION (EDGE-TO-EDGE) FROM C BAND ANTENNA TO ANY ADJACENT ANTENNA, WHEN POSSIBLE (TYP, ALL SECTORS)



PROPOSED ANTENNA ORIENTATION

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

0 2 4
SCALE IN FEET

TRUE NORTH

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TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net
N.C. LICENSE # P-1403

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 048226 ENGINEER SCOTT C. BRANTLEY
February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:
PROPOSED ANTENNA ORIENTATION

SHEET NUMBER: **C-1B**
REVISION: **0**
TEP#: 73021.814928

GENERAL NOTES:

1. THIS ANTENNA ORIENTATION PLAN IS A SCHEMATIC. THE CONTRACTOR SHALL VERIFY TOWER ORIENTATION AND FIELD COORDINATE REQUIRED ADJUSTMENTS TO ACHIEVE THE DESIRED ANTENNA AZIMUTHS.
2. ANTENNA CENTERLINE HEIGHT BASED ON TOP OF FOOTING ELEVATION.
3. ALL ANTENNAS, CABLES AND MOUNTS SHALL BE INSTALLED IN ACCORDANCE WITH THE STRUCTURAL ENGINEER'S RECOMMENDATIONS IN A MANNER CONSISTENT WITH THE STRUCTURAL ANALYSIS REPORT.
4. ALL ANTENNA BRACKETS PER ANTENNA MANUFACTURER, OR EQUAL. CONTRACTOR TO COORDINATE REQUIRED MECHANICAL DOWN TILT WITH AT&T.
5. ALL ANTENNA INFORMATION TO BE CONFIRMED WITH AT&T RF DESIGN PRIOR TO INSTALLATION.
6. CONTRACTOR IS TO VERIFY PROPOSED LOADING WITH PASSING STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION. IN THE EVENT THAT AN EXISTING MOUNT IS TO BE UTILIZE HE CONTRACTOR SHOULD ALSO VERIFY LOADING AGAINST THE PASSING MOUNT ANALYSIS. IF DISCREPANCIES ARISE, CONTRACTOR IS TO IMMEDIATELY NOTIFY CROWN CASTLE AND TOWER ENGINEERING PROFESSIONALS FOR CORRECTIVE ACTION.
7. LOADING INFORMATION PROVIDED BY CROWN CASTLE, AT&T RFDS ID: 4812233.
8. CABLE LENGTH TAKEN FROM AT&T RFDS. CONTRACTOR TO VERIFY LENGTH PRIOR TO ORDERING MATERIALS.

PROPOSED ANTENNA/CABLE SCHEDULE

ANT. MARK	SECTOR	TECH.	MANUFACTURER/ MODEL #	DIMS (HxWxD)	AZIMUTH (TN)	RAD CENTER	ELEC. D-TILT	TMA MODEL	COAX/CABLE	SURGE PROTECTION	RRU MODEL
A1	ALPHA	LTE 700 LTE WCS	COMMSCOPE NNH4-65C-R6-V3	H 96.0" W 19.6" D 7.8"	0°	188'	4° 2°		(1) 3/8" FIBER$_{12}$ (2) 3/4" DC POWER	(1) DC6-48-60-18-8F	**(1) RADIO 4478 B12A** (1) RRUS-32 B30
A2A	**ALPHA**	**5G DoD BAND**	**ERICSSON AIR6419 B77G**	**H 31.10" W 16.10" D 7.30"**	**0°**	**190'**	**0°**		**(1) 7/8" DC POWER 6AWG**	**(1) DC6-48-60-18-8C-EV**	
A2B	**ALPHA**	**5G C BAND**	**ERICSSON AIR6449 B77D**	**H 30.63" W 15.87" D 10.55"**	**0°**	**186'**	**0°**				
A3	ALPHA	LTE 700 LTE AWS, 5G AWS LTE 1900, 5G 1900	KMW EPBQ-654L8H8-L2	H 96.0" W 21.0" D 6.3"	0°	188'	4° 2° 2°				(1) RADIO 4478 B14 (1) RADIO 8843 B2/B66A
B1	BETA	LTE 700 LTE WCS	COMMSCOPE NNH4-65C-R6-V3	H 96.0" W 19.6" D 7.8"	120°	188'	3° 2°		(1) 3/8" FIBER$_{18}$ (2) 7/8" DC POWER	(1) DC6-48-60-18-8F	**(1) RADIO 4478 B12A** (1) RRUS-32 B30
B2A	**BETA**	**5G DoD BAND**	**ERICSSON AIR6419 B77G**	**H 31.10" W 16.10" D 7.30"**	**120°**	**190'**	**0°**				
B2B	**BETA**	**5G C BAND**	**ERICSSON AIR6449 B77D**	**H 30.63" W 15.87" D 10.55"**	**120°**	**186'**	**0°**				
B3	BETA	LTE 700 LTE AWS, 5G AWS LTE 1900, 5G 1900	KMW EPBQ-654L8H8-L2	H 96.0" W 21.0" D 6.3"	120°	188'	3° 2° 2°				(1) RADIO 4478 B14 (1) RADIO 8843 B2/B66A
C1	GAMMA	LTE 700 LTE WCS	COMMSCOPE NNH4-65C-R6-V3	H 96.0" W 19.6" D 7.8"	240°	188'	3° 2°		(1) 3/4" DC POWER (1) 7/8" DC POWER	(1) DC6-48-60-18-8C	**(1) RADIO 4478 B12A** (1) RRUS-32 B30
C2A	**GAMMA**	**5G DoD BAND**	**ERICSSON AIR6419 B77G**	**H 31.10" W 16.10" D 7.30"**	**240°**	**190'**	**0°**				
C2A	**GAMMA**	**5G C BAND**	**ERICSSON AIR6449 B77D**	**H 30.63" W 15.87" D 10.55"**	**240°**	**186'**	**0°**				
C3	GAMMA	LTE 700 LTE AWS, 5G AWS LTE 1900, 5G 1900	KMW EPBQ-654L8H8-L2	H 96.0" W 21.0" D 6.3"	240°	188'	3° 2° 2°				(1) RADIO 4478 B14 (1) RADIO 8843 B2/B66A

PROPOSED AT&T EQUIPMENT & TECHNOLOGY

PROPOSED ANTENNA/CABLE SCHEDULE

PLANS PREPARED FOR:
AT&T
2002 PISGAH CHURCH ROAD, SUITE 300
GREENSBORO, NC 27455

PLANS PREPARED FOR:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:
AT&T SITE #: 062-043
CROWN BU #: 819560
CROWN APP ID: 634661
2948 DANIELEY CENTER DRIVE
ELON, NC 27244
(ALAMANCE COUNTY)

PLANS PREPARED BY:
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SEAL:
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February 27, 2023

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DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:
PROPOSED ANTENNA/CABLE SCHEDULE

SHEET NUMBER:
C-1C

REVISION:
0

TEP #: 73021.814928

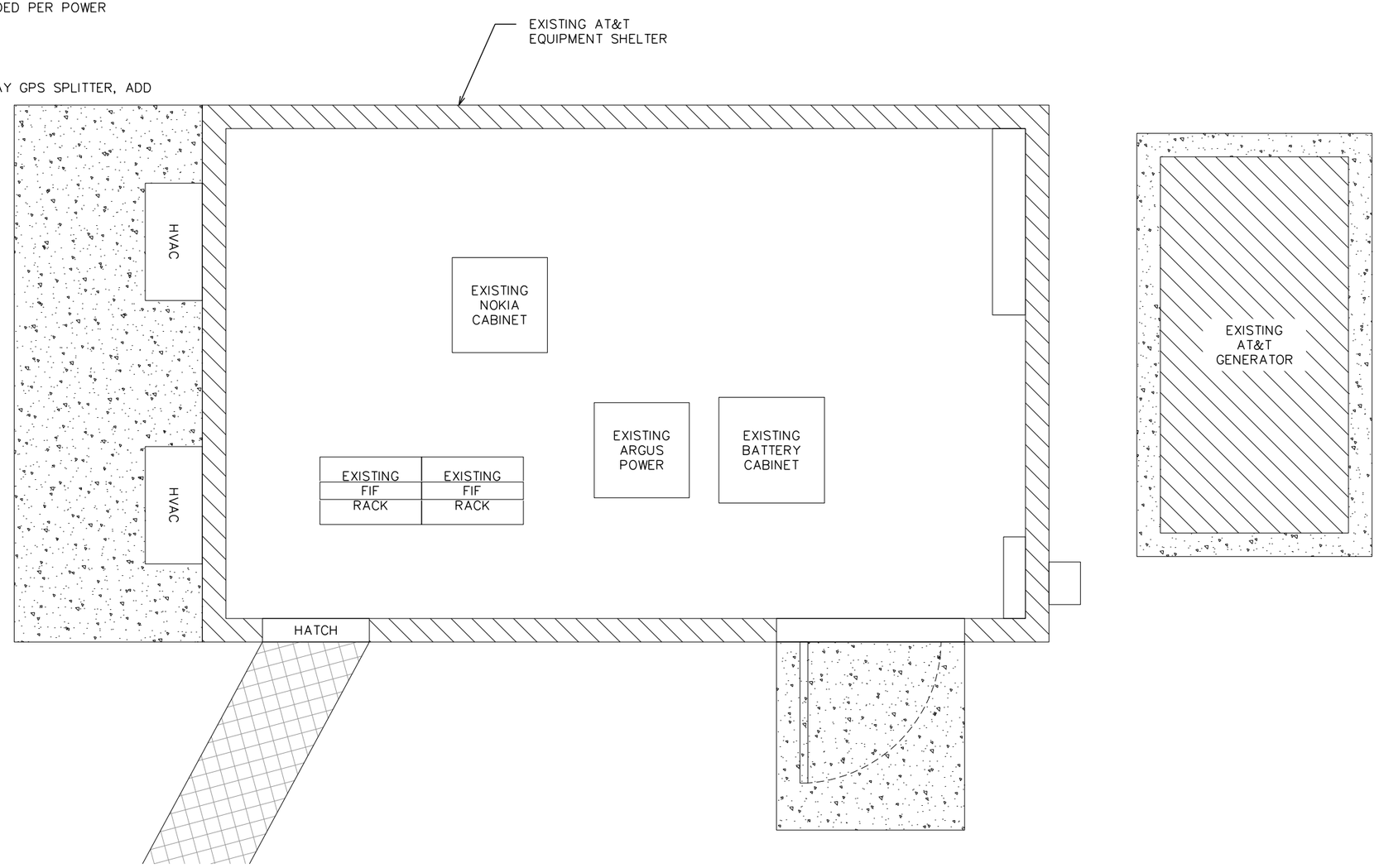
NOTES:

1. SHELTER VIEW SHOWN BELOW DRAWN FROM INFORMATION PROVIDED BY CROWN CASTLE. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION IS AS INDICATED ON SHELTERD PLAN DETAIL. IMMEDIATELY NOTIFY TEP OF ANY DISCREPANCIES.

2. TEP DID NOT VISIT THIS SITE. INFORMATION WAS REPRODUCED FROM SKETCHES PROVIDED BY CROWN CASTLE. TEP DOES NOT GUARANTEE, OR ENSURE THE PRECISION, ACCURACY, OR CORRECTNESS AND ASSUMES NO RESPONSIBILITY OR LIABILITY FOR DAMAGES, LOSS OF REVENUE, OR INJURY THAT MIGHT OCCUR. THE INFORMATION SUPPLIED BY THE CUSTOMER WAS INCORPORATED FOR REFERENCE ONLY.

3. EE NOTES:

- NO VERTIV UP-CONVERTERS NEEDED PER POWER CALCULATOR
- ADD (6) 50A ALPHA BREAKERS
- ADD (3) 25A ALPHA BREAKERS
- ADD (1) 6648 IN FIF
- ADD (1) GPS RECEIVER, (1) 4-WAY GPS SPLITTER, ADD (1) IDLE CABLE
- ADD (12) SFP-28's FOR BOTTOM OF THE TOWER
- ADD (12) SFP-28's FOR TOP OF THE TOWER
- ADD (3) SFP3LT's
- ADD (3) SFP3HT's
- ADD Y-CABLE
- ADD (2) ALPHA RECT's



VERIFY

EQUIPMENT LAYOUT

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

0 2 4

SCALE IN FEET

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AT&T

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PLANS PREPARED FOR:

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3530 TORINGDON WAY, SUITE 300
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DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:

EQUIPMENT LAYOUT

SHEET NUMBER: **C-2**

REVISION: **0**

TEP#: 73021.814928

SCOPE:

1. PROVIDE LABOR, MATERIALS, INSPECTION, AND TESTING TO PROVIDE CODE COMPLIANCE FOR ELECTRIC, TELEPHONE, AND GROUNDING/LIGHTNING SYSTEMS.

CODES:

1. THE INSTALLATION SHALL COMPLY WITH APPLICABLE LAWS AND CODES. THESE INCLUDE BUT ARE NOT LIMITED TO THE LATEST ADOPTED EDITIONS OF:
   A. THE NATIONAL ELECTRICAL SAFETY CODE
   B. THE NATIONAL ELECTRIC CODE – NFPA-70
   C. REGULATIONS OF THE SERVING UTILITY COMPANY
   D. LOCAL AND STATE AMENDMENTS
   E. THE INTERNATIONAL ELECTRIC CODE – IEC (WHERE APPLICABLE)
2. PERMITS REQUIRED SHALL BE OBTAINED BY THE CONTRACTOR.
3. AFTER COMPLETION AND FINAL INSPECTION OF THE WORK, THE OWNER SHALL BE FURNISHED A CERTIFICATE OF COMPLETION AND APPROVAL.

TESTING:

1. UPON COMPLETION OF THE INSTALLATION, OPERATE AND ADJUST THE EQUIPMENT AND SYSTEMS TO MEET SPECIFIED PERFORMANCE REQUIREMENTS. THE TESTING SHALL BE DONE BY QUALIFIED PERSONNEL.

GUARANTEE:

1. IN ADDITION TO THE GUARANTEE OF THE EQUIPMENT BY THE MANUFACTURER, EACH PIECE OF EQUIPMENT SPECIFIED HEREIN SHALL ALSO BE GUARANTEED FOR DEFECTS OF MATERIAL OR WORKMANSHIP OCCURRING DURING A PERIOD OF ONE (1) YEAR FROM FINAL ACCEPTANCE OF THE WORK BY THE OWNER AND WITHOUT EXPENSE TO THE OWNER.
2. THE WARRANTEE CERTIFICATES & GUARANTEES FURNISHED BY THE MANUFACTURERS SHALL BE TURNED OVER TO THE OWNER.

UTILITY CO-ORDINATION:

1. CONTRACTOR SHALL COORDINATE WORK WITH THE POWER AND TELEPHONE COMPANIES AND SHALL COMPLY WITH THE SERVICE REQUIREMENTS OF EACH UTILITY COMPANY.

EXAMINATION OF SITE:

1. PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL VISIT THE SITE OF THE JOB AND SHALL FAMILIARIZE HIMSELF WITH THE CONDITIONS AFFECTING THE PROPOSED ELECTRICAL INSTALLATION AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. FAILURE TO COMPLY WITH THE INTENT OF THIS SECTION WILL IN NO WAY RELIEVE THE CONTRACTOR OF PERFORMING THE WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM OR SYSTEMS.

CUTTING, PATCHING AND EXCAVATION:

1. COORDINATION OF SLEEVES, CHASES, ETC., BETWEEN SUBCONTRACTORS WILL BE REQUIRED PRIOR TO THE CONSTRUCTION OF ANY PORTION OF THE WORK. CUTTING AND PATCHING OF WALLS, PARTITIONS, FLOORS, AND CHASES IN CONCRETE, WOOD, STEEL OR MASONRY SHALL BE DONE AS PROVIDED ON THE DRAWINGS.
2. NECESSARY EXCAVATIONS AND BACKFILLING INCIDENTAL TO THE ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWING.
3. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS, ETC., WITH APPROVED METHOD AS LISTED BY UL.

RACEWAYS / CONDUITS GENERAL:

1. CONDUCTORS SHALL BE INSTALLED IN LISTED RACEWAYS. CONDUIT SHALL BE RIGID STEEL, EMT, SCH40 PVC, OR SCH80PVC AS INDICATED ON THE DRAWINGS. THE RACEWAY SYSTEM SHALL BE COMPLETE COMPLETE BEFORE INSTALLING CONDUCTORS.
2. EXTERIOR RACEWAYS AND GROUNDING SLEEVES SHALL BE SEALED AT POINTS OF ENTRANCE AND EXIT. THE RACEWAY SYSTEM SHALL BE BONDED PER NEC.

EXTERIOR CONDUIT:

1. EXPOSED CONDUIT SHALL BE NEATLY INSTALLED AND RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL ELEMENTS. SUPPORTS AND MOUNTING HARDWARE SHALL BE HOT DIPPED GALVANIZED STEEL.
2. THE CONDUIT SHALL BE RIGID STEEL AT GRADE TRANSITIONS OR WHERE EXPOSED TO DAMAGE.
3. UNDERGROUND CONDUITS SHALL BE RIGID STEEL, SCH40 PVC, OR SCH80 PVC AS INDICATED ON THE DRAWINGS.
4. BURIAL DEPTH OF CONDUITS SHALL BE AS REQUIRED BY CODE FOR EACH SPECIFIC CONDUIT TYPE AND APPLICATION, BUT SHALL NOT BE LESS THAN THE FROST DEPTH AT THE SITE.
5. CONDUIT ROUTES ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY ROUTES BEFORE BID. COORDINATE ROUTE WITH WIRELESS CARRIER AND/OR BUILDING OWNER.

INTERIOR CONDUIT:

1. CONCEALED CONDUIT IN WALLS OR INTERIOR SPACES ABOVE GRADE MAY BE EMT OR PVC.
2. CONDUIT RUNS SHALL USE APPROVED COUPLINGS AND CONNECTORS. PROVIDE INSULATED BUSHING FOR ALL CONDUIT TERMINATIONS. CONDUIT RUNS IN A WET LOCATION SHALL HAVE WATERPROOF FITTINGS.
3. PROVIDE SUPPORTS FOR CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS. CONDUITS SHALL BE SIZED AS REQUIRED BY NEC.

EQUIPMENT:

1. DISCONNECT SWITCHES SHALL BE SERVICE ENTRANCE RATED, HEAVY DUTY TYPE.
2. CONTRACTOR SHALL VERIFY MAXIMUM AVAILABLE FAULT CURRENT AND COORDINATE INSTALLATION WITH THE LOCAL UTILITY BEFORE STARTING WORK. CONTRACTOR WILL VERIFY THAT EXISTING CIRCUIT BREAKERS ARE RATED FOR MORE THAN AVAILABLE FAULT CURRENT AND REPLACE AS NECESSARY.
3. NEW CIRCUIT BREAKERS SHALL BE RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AS DETERMINED BY THE LOCAL UTILITY.

CONDUCTORS:

1. FURNISH AND INSTALL CONDUCTORS SPECIFIED IN THE DRAWINGS. CONDUCTORS SHALL BE COPPER AND SHALL HAVE TYPE THWN (MIN) (75° C) INSULATION, RATED FOR 600 VOLTS.
2. THE USE OF ALUMINUM CONDUCTORS SHALL BE LIMITED TO THE SERVICE FEEDERS INSTALLED BY THE UTILITY.
3. CONDUCTORS SHALL BE PROVIDED AND INSTALLED AS FOLLOWS:
   A. MINIMUM WIRE SIZE SHALL BE #12 AWG.
   B. CONDUCTORS SIZE #8 AND LARGER SHALL BE STRANDED. CONDUCTORS SIZED #10 AND #12 MAY BE SOLID OR STRANDED.
   C. CONNECTION FOR #10 AWG #12 AWG SHALL BE BY TWISTING TIGHT AND INSTALLING INSULATED PRESSURE OR WIRE NUT CONNECTIONS.
   D. CONNECTION FOR #8 AWG AND LARGER SHALL BE BY USE OF STEEL CRIMP-ON SLEEVES WITH NYLON INSULATOR.
3. CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC STANDARDS.

UL COMPLIANCE:

1. ELECTRICAL MATERIALS, DEVICES, CONDUCTORS, APPLIANCES, AND EQUIPMENT SHALL BE LABELED/LISTED BY UL OR ACCEPTED BY JURISDICTION (I.E., LOCAL COUNTY OR STATE) APPROVED THIRD PARTY TESTING AGENCY.

GROUNDING:

1. ELECTRICAL NEUTRALS, RACEWAYS AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250. THIS SHALL INCLUDE NEUTRAL CONDUCTORS, CONDUITS, SUPPORTS, CABINETS, BOXES, GROUND BUSSES, ETC. THE NEUTRAL CONDUCTOR FOR EACH SYSTEM SHALL BE GROUNDED AT A SINGLE POINT.
2. PROVIDE GROUND CONDUCTOR IN RACEWAYS PER NEC.
3. PROVIDE BONDING AND GROUND TO MEET NFPA 780 – "LIGHTNING PROTECTION" AS A MINIMUM.
4. PROVIDE GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS, AS REQUIRED BY THE NATIONAL ELECTRIC CODE, RADIO EQUIPMENT MANUFACTURERS, AND MOTOROLA R56 (AS APPLICABLE).

ABBREVIATIONS AND LEGEND

A	–	AMPERE
AFG	–	ABOVE FINISHED GRADE
ATS	–	AUTOMATIC TRANSFER SWITCH
AWG	–	AMERICAN WIRE GAUGE
BCW	–	BARE COPPER WIRE
BFG	–	BELOW FINISHED GRADE
BKR	–	BREAKER
C	–	CONDUIT
CKT	–	CIRCUIT
DISC	–	DISCONNECT
EGR	–	EXTERNAL GROUND RING
EMT	–	ELECTRIC METALLIC TUBING
FSC	–	FLEXIBLE STEEL CONDUIT
GEN	–	GENERATOR
GPS	–	GLOBAL POSITIONING SYSTEM
GRD	–	GROUND
IGB	–	ISOLATED GROUND BAR
IGR	–	INTERIOR GROUND RING (HALO)
KW	–	KILOWATTS
NEC	–	NATIONAL ELECTRIC CODE
PCS	–	PERSONAL COMMUNICATION SYSTEM
PH	–	PHASE
PNL	–	PANEL
PNLBD	–	PANELBOARD
PVC	–	RIGID NON-METALLIC CONDUIT
RGS	–	RIGID GALVANIZED STEEL CONDUIT
SW	–	SWITCH
TGB	–	TOWER GROUND BAR
UL	–	UNDERWRITERS LABORATORIES
V	–	VOLTAGE
W	–	WATTS
XFMR	–	TRANSFORMER
XMTR	–	TRANSMITTER

——E——	UNDERGROUND ELECTRICAL CONDUIT
——T——	UNDERGROUND TELEPHONE CONDUIT
	KILOWATT-HOUR METER
—— ——	UNDERGROUND BONDING AND GROUNDING CONDUCTOR.
⌀	GROUND ROD
●	CADWELD
⊠	GROUND ROD WITH INSPECTION WELL

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AT&T

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PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

AT&T SITE #: 062-043
CROWN BU #: 819560
CROWN APP ID: 634661
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SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 042109 ENGINEER MARK S. QUAKENBUSH

February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:

ELECTRICAL NOTES

SHEET NUMBER: **E-1**

REVISION: **0**

TEP#: 73021.814928

GENERAL NOTES:

1. CONTRACTOR SHALL COORDINATE INCOMING SERVICES WITH LOCAL UTILITIES PRIOR TO TRENCHING.
2. ALL CONDUCTORS SHALL BE COPPER, 75 DEGREES C RATED, AND CONDUCTOR INSULATION SHALL BE THWN OR THHN
3. ALL TERMINATIONS SHALL BE LISTED AND IDENTIFIED FOR USE WITH 75°C RATED CONDUCTORS OPERATING AT 75°C.
4. GROUND FAULT PROTECTION REQUIRED FOR UTILITY RECEPTACLES.
5. SERVICE NEUTRAL SHALL BE GROUNDED AT ONE LOCATION ONLY.
6. WHITE/NEUTRAL, GREEN/GROUND SHALL BE MAINTAINED THROUGHOUT THE SITE ELECTRICAL SYSTEM (TAPE WILL NOT BE ACCEPTABLE).
7. EQUIPMENT LOCATED OUTSIDE OR EXPOSED TO MOISTURE SHALL BE NEMA 3R RATED.
8. CONTRACTOR SHALL USE SCHEDULE 80 PVC CONDUIT THROUGHOUT, UNLESS OTHERWISE NOTED.
9. ALL NEWLY INSTALLED EQUIPMENT SHALL BE RATED AT 10K AIC MINIMUM. HIGHER RATINGS SHALL BE REQUIRED WHERE AVAILABLE FAULT CURRENT EXCEEDS THIS VALUE. EXACT FAULT CURRENT AVAILABLE SHALL BE COORDINATED WITH LOCAL UTILITY BASED ON EXACT CONDITIONS (XFMR SIZE, PERCENT IMPEDANCE, LENGTH OF CONDUCTORS, ETC).
10. CONTRACTOR TO VERIFY THAT EXISTING POWER FEED IS AT LEAST 200A, 120/240 VAC
11. CONTRACTOR TO VERIFY REPLACEMENT EQUIPMENT DOES NOT EXCEED SYSTEM CAPABILITY.

ELECTRICAL SCOPE :

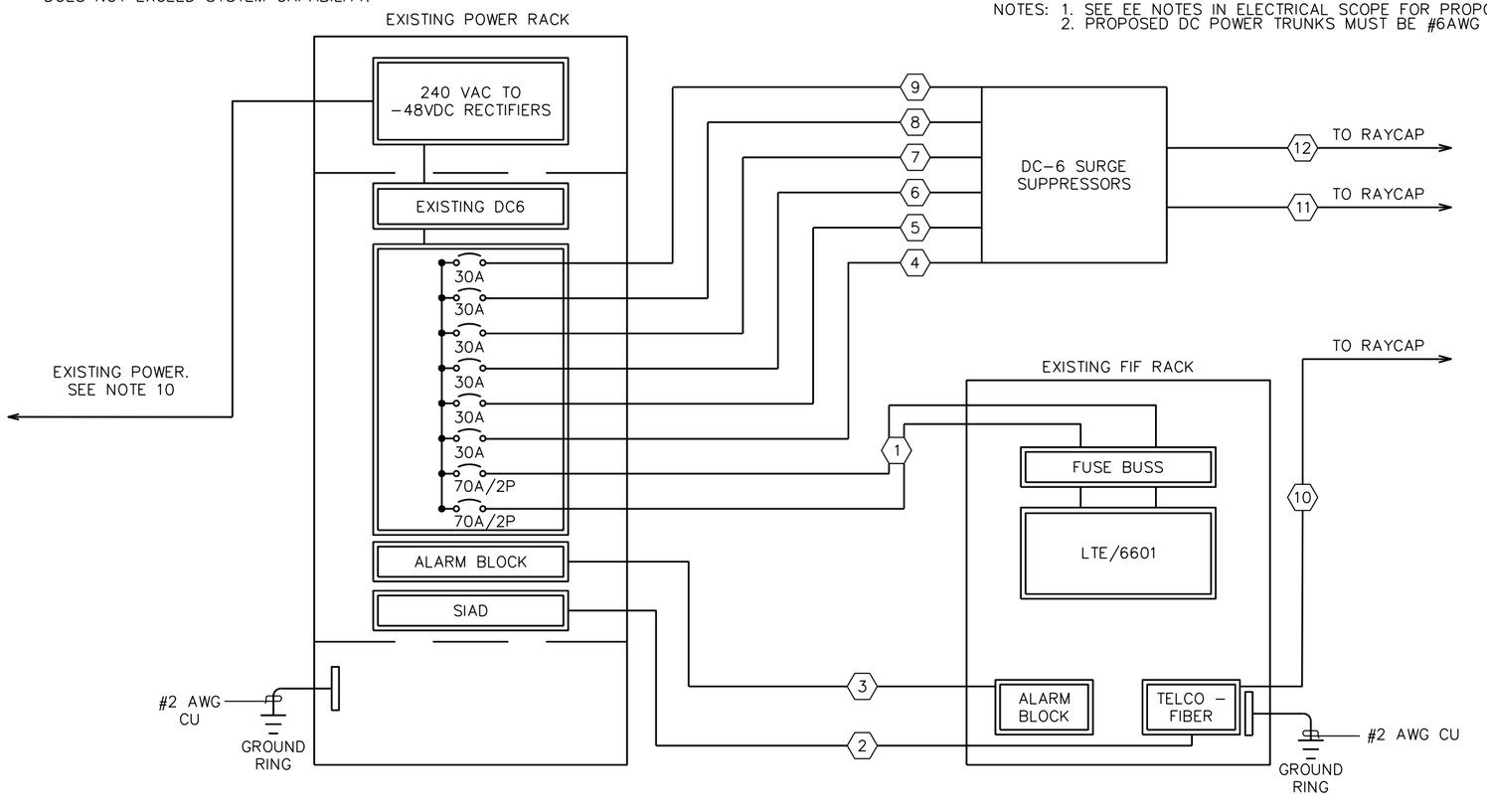
1. NEW ANTENNA's. SEE SHEET E-3 FOR DETAILS.
2. NEW RRU'S. SEE SHEER E-3 FOR DETAILS.
3. CONNECT EXISTING BREAKERS TO DC6 SURGE SUPPRESSOR. SEE MARK 5-7 ON THE CONDUIT SCHEDULE.
4. EE NOTES:

- NO VERTIV UP-CONVERTERS NEEDED PER POWER CALCULATOR
- ADD (6) 50A ALPHA BREAKERS
- ASS (3) 25A ALPHA BREAKERS
- ADD (1) 6648 IN FIF
- ADD (1) GPS RECEIVER, (1) 4-WAY GPS SPLITTER, ADD (1) IDLE CABLE
- ADD (12) SFP-28's FOR BOTTOM OF THE TOWER
- ADD (12) SFP-28's FOR TOP OF THE TOWER
- ADD (3) SFP3LT's
- ADD (3) SFP3HT's
- ADD Y-CABLE
- ADD (2) ALPHA RECT's

CABLE AND CONDUIT SCHEDULE

MARK	CONDUIT		CABLE			REMARKS
	QUANT.	SIZE	QUANT.	SIZE	GROUND SIZE	
1	2	2"	1	#4	#4	DC POWER FROM (2) 70A BREAKERS TO FIF RACK
2	1	2"	FIBER 12-PAIR			FIBER FROM TELCO BOX TO LTE/6601
3	1	2"	BELDIN CABLES			ALARM CONTROL FROM TELCO BOX TO LTE/6601
4	1	2"	1	#8	#8	PROPOSED DC POWER FROM POWER RACK TO DC-6 SURGE SUPPRESSOR
5			1	#8	#8	PROPOSED DC POWER FROM POWER RACK TO DC-6 SURGE SUPPRESSOR
6			1	#8	#8	PROPOSED DC POWER FROM POWER RACK TO DC-6 SURGE SUPPRESSOR
7	1	2"	1	#8	#8	DC POWER FROM POWER RACK TO DC-6 SURGE SUPPRESSOR
8			1	#8	#8	DC POWER FROM POWER RACK TO DC-6 SURGE SUPPRESSOR
9			1	#8	#8	DC POWER FROM POWER RACK TO DC-6 SURGE SUPPRESSOR
10	1	2"	FIBER 18-PAIR			FIBER FROM LTE/6601 TO RAYCAP
11	1	2"	3PR DC #8 AWG			DC POWER FROM DC-6 SURGE SUPPRESSOR TO RAYCAP
12	1	2"	3PR DC #8 AWG			DC POWER FROM DC-6 SURGE SUPPRESSOR TO RAYCAP

NOTES: 1. SEE EE NOTES IN ELECTRICAL SCOPE FOR PROPOSED BREAKER SIZE & QUANTITY.
2. PROPOSED DC POWER TRUNKS MUST BE #6AWG TO OPERATE RADIOS.



TYPICAL LTE ONE-LINE DIAGRAM

SCALE: N.T.S.

PLANS PREPARED FOR:

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DRAWN BY: JW | CHECKED BY: MCR

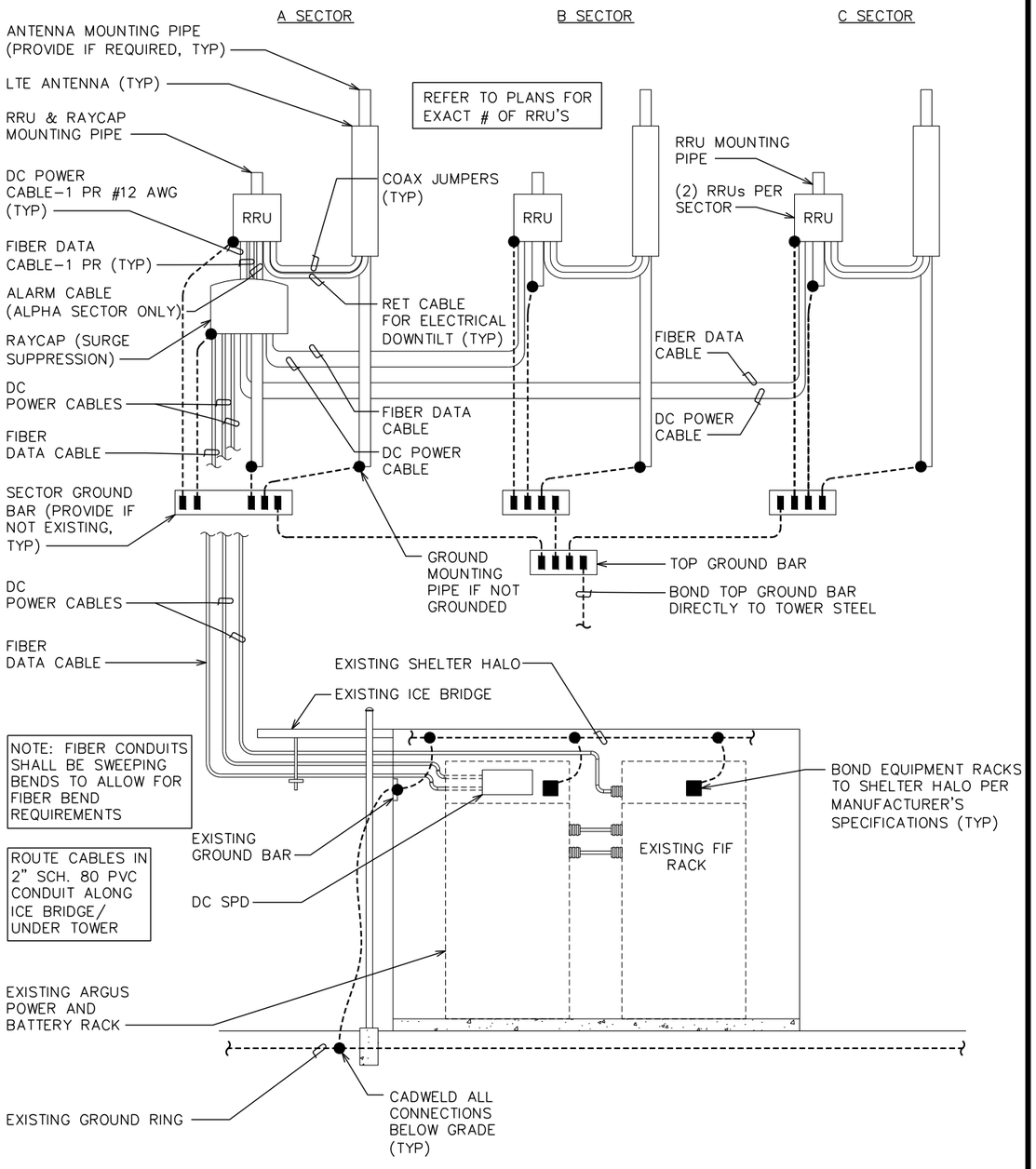
SHEET TITLE:

TYPICAL LTE ONE-LINE DIAGRAM

SHEET NUMBER: **E-2**

REVISION: **0**

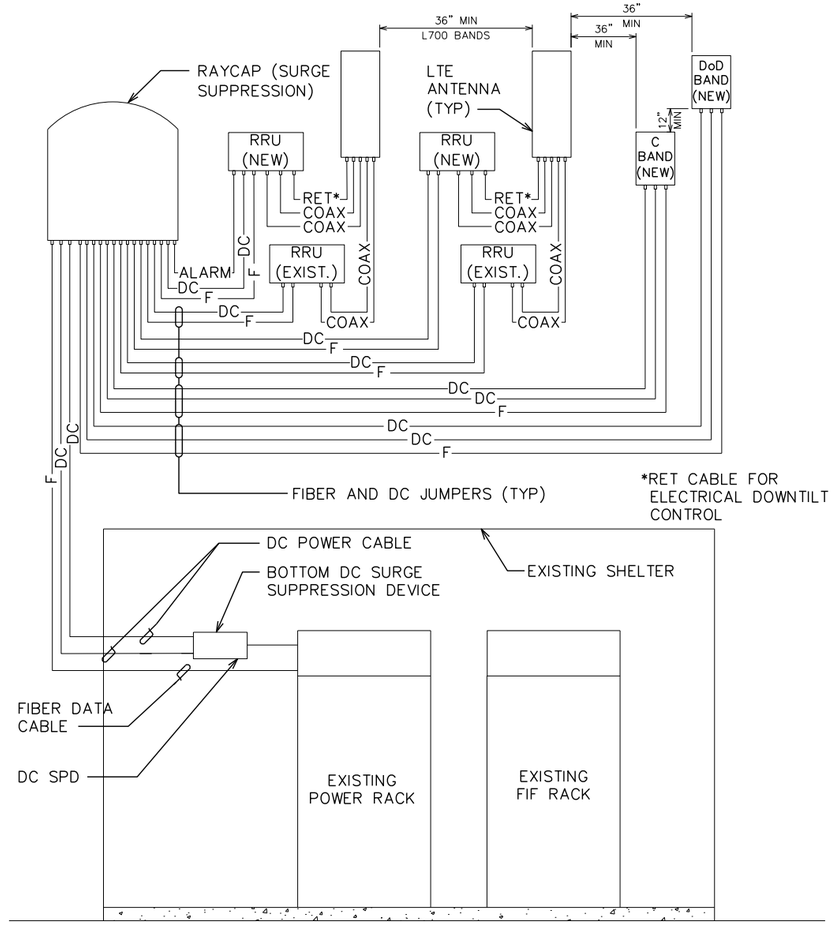
TEP #: 73021.814928



TYPICAL CABLE AND GROUNDING RISER DIAGRAM

SCALE: N.T.S.

NOTE: ONLY ONE SECTOR SHOWN BELOW, FOR SCHEMATIC PURPOSES ONLY. REFER TO SHEET C–1C FOR ADDITIONAL ANTENNA INFORMATION REGARDING POSSIBLE ADDITIONAL AND FUTURE ANTENNAS AND RRUS



TYPICAL RF RISER DIAGRAM

SCALE: N.T.S.

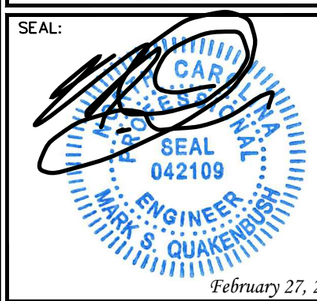
PLANS PREPARED FOR:
AT&T
2002 PISGAH CHURCH ROAD, SUITE 300
GREENSBORO, NC 27455

PLANS PREPARED FOR:
CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:
AT&T SITE #: 062-043
CROWN BU #: 819560
CROWN APP ID: 634661
2948 DANIELEY CENTER DRIVE
ELON, NC 27244
(ALAMANCE COUNTY)

PLANS PREPARED BY:
TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net
N.C. LICENSE # P-1403

SEAL:



February 27, 2023

REV	DATE	ISSUED FOR:
0	02-27-23	CONSTRUCTION

DRAWN BY: JW | CHECKED BY: MCR

SHEET TITLE:
TYPICAL LTE RISER DIAGRAM

SHEET NUMBER: **E-3**

REVISION: **0**

TEP #: 73021.814928

MOUNT DESIGN DRAWINGS

SITE NAME:

ELON UNIVERSITY

CROWN CASTLE BU NUMBER:

819560

SITE ADDRESS:

2948 DANIELEY CENTER DR
ELON, NC 27244
(ALAMANCE COUNTY)
N 36°06'30.61", W 79°29'25.75"

MODIFICATION PROVISIONS

THE MODIFICATIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE MOUNT MODIFICATION ANALYSIS REPORT COMPLETED BY TEP, JOB NO.: 73021.822315 DATED FEBRUARY 16, 2023 (REV 0).

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

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM TEP TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, CONTACT TEP FOR QUOTE AT RIGGING@TEPGROUP.NET

SAFETY CLIMB: 'LOOK UP'

LOOK UP!

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

INDEX OF SHEETS

PROJECT INFORMATION

TOWER HEIGHT:	190.0-FT
MOUNT ELEVATION:	187.0-FT
MOUNT WIDTH/TYPE:	12.5-FT/SECTOR MOUNT
JDE JOB NO.:	732234
ORDER NO.:	634661 REV. 0
DESIGN BUILDING CODE:	2018 INTERNATIONAL BUILDING CODE
DESIGN STANDARD:	TIA-222-H

PROJECT TEAM

CCI MODIFICATION PROJECT MANAGER:

NAME	CROWN CASTLE
CONTACT	DARCY TARR
PHONE	(704) 405-6589
EMAIL	DARCY.TARR@CROWNCASTLE.COM

ENGINEERING FIRM PROJECT MANAGER:

NAME	TOWER ENGINEERING PROFESSIONALS, INC.
CONTACT	JORDAN SHELLEY
PHONE	(919) 661-6351
EMAIL	CROWNMA@TEPGROUP.NET

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 042129 ENGINEER JORDAN W. SHELLEY

Electronic Copy

February 16, 2023

REV	DATE	ISSUED FOR:
0	02-16-23	MODIFICATION DRAWINGS

DRAWN BY: JCM | CHECKED BY: SEB

SHEET TITLE:

TITLE SHEET

SHEET NUMBER: **T-1**

REVISION: **0**

TEP#: 73021.822315

GENERAL NOTES:

1. THE CONTRACT DOCUMENTS ARE THE PROPERTY OF CROWN CASTLE (CROWN). THEY ARE PROVIDED TO THE GC AND ITS LOWER TIER CONTRACTORS AND MATERIAL SUPPLIERS FOR THE LIMITED PURPOSE OF USE IN COMPLETING THE WORK FOR THIS SITE, AND SHALL BE KEPT IN STRICT CONFIDENCE AND NOT DISCLOSED TO ANY THIRD PARTIES. THE CONTRACT DOCUMENTS SHALL NOT BE USED FOR ANY OTHER PURPOSE WHATSOEVER WITHOUT THE PRIOR WRITTEN CONSENT OF CROWN.

2. DETAIL DRAWINGS, INCLUDING NOTES AND TABLES, SHALL GOVERN OVER GENERAL NOTES AND TYPICAL DETAILS. CONTACT THE CROWN POINT OF CONTACT (POC) AND ENGINEER OF RECORD (EOR) FOR CLARIFICATION AS NEEDED.

3. DO NOT SCALE DRAWINGS.

4. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GC AND/OR FABRICATOR. ALL DIMENSIONS OF EXISTING STRUCTURAL ELEMENTS ARE ASSUMED BASED ON THE AVAILABLE DOCUMENTATION AND ARE PRELIMINARY UNTIL FIELD-VERIFIED BY THE GC, UNLESS NOTED OTHERWISE (UNO). WHERE DISCREPANCIES ARE FOUND, GC SHALL CONTACT THE CROWN POC AND EOR THROUGH RFI.

5. FOR THIS ANALYSIS AND MODIFICATION, THE MOUNT HAS BEEN ASSUMED TO BE IN GOOD CONDITION WITHOUT ANY STRUCTURAL DEFECTS, UNO. IF THE GC DISCOVERS ANY INDICATION OF AN EXISTING STRUCTURAL DEFECT, CONTACT THE CROWN POC AND EOR IMMEDIATELY.

6. ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS, SHALL BE THE RESPONSIBILITY OF THE GC RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253, "RIGGING PROGRAM", INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).

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

8. AERIAL AND UNDERGROUND UTILITIES AND FACILITIES MAY OR MAY NOT BE SHOWN ON THE DRAWINGS. THE GC SHALL TAKE EVERY PRECAUTION TO PRESERVE AND PROTECT THESE ITEMS, WHICH MAY INCLUDE AERIAL OR UNDERGROUND POWER LINES, TELEPHONE LINES, WATER LINES, SEWER LINES, CABLE TELEVISION FACILITIES, PIPELINES, STRUCTURES AND OTHER PUBLIC AND PRIVATE IMPROVEMENTS WITHIN OR ADJACENT TO THE WORK AREA. THE RESPONSIBILITY FOR DETERMINING THE ACTUAL ON-SITE LOCATION OF THESE ITEMS SHALL REST EXCLUSIVELY WITH THE GC.

9. ALL MANUFACTURER'S HARDWARE ASSEMBLY INSTRUCTIONS SHALL BE FOLLOWED, UNO. CONFLICTING NOTES SHALL BE BROUGHT TO THE ATTENTION OF THE EOR AND THE CROWN POC.

10. THE GC SHALL FABRICATE ALL REQUIRED ITEMS PER THE MATERIALS SPECIFIED BELOW, UNO ON THE DETAIL DRAWING SHEETS. IF THE GC FINDS FOR ANY COMPONENT THAT THE MATERIALS HAVE NOT BEEN CLEARLY SPECIFIED, THE GC SHALL SUBMIT AN RFI TO THE EOR TO CONFIRM THE REQUIRED MATERIAL.

11. CONTRACTOR PERSONNEL SHALL NOT DRILL HOLES IN ANY NEW OR EXISTING STRUCTURAL MEMBERS, OTHER THAN THOSE DRILLES HOLES SHOWN ON STRUCTURAL DRAWINGS, WITHOUT THE APPROVAL OF THE EOR.

12. FOR A LIST OF CROWN-APPROVED COLD GALVANIZING COMPOUNDS, REFER TO THE ENG-STD-10149, "TOWER PROTECTIVE COATINGS GUIDELINES".

13. ALL EXPOSES STRUCTURAL STEEL AS THE RESULT OF THIS SCOPE OF WORK INCLUDING BUT NOT LIMITED TO: FIELD DRILLED HOLES, AND SHAFT INTERIORS (WERE ACCESSIBLE), SHALL BE CLEANED AND TWO (2) COATS COLD GALVANIZING SHALL BE APPLIED BY BRUSH IN ACCORDANCE WITH ENG-STD-10149, "TOWER PROTECTIVE COATINGS GUIDELINES".

14. ALL TOWER GROUNDING AFFECTED BY THE WORK SHALL BE REPAIRED OR REPLACED IN ACCORDANCE WITH OPS-STD-10090, "TOWER GROUNDING", AND OPS-BUL-10133, "GROUNDING REPAIR RECOMMENDATION".

15. ANY HARDWARE REMOVED FROM THE EXISTING TOWER SHALL BE REPLACED WITH NEW HARDWARE OF EQUAL SIZE AND QUALITY, UNO. NO EXISTING FASTENERS SHALL BE REUSED.

16. ALL JOINTS USING ASTM A325 OR A490 BOLTS, U-BOLTS, V-BOLTS, AND THREADED RODS SHALL BE SNUG TIGHTENED, UNO.

17. A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED SNUG TIGHTENED ASTM A325 OR A490 BOLTS, U-BOLTS, V-BOLTS, AND THREADED RODS.

18. ALL JOINTS ARE BEARING TYPE CONNECTIONS UNO. IF NO BOLT LENGTH IS GIVEN IN THE BILL OF MATERIALS, THE CONNECTION MAY INCLUDE THREADS IN THE SHEAR PLANES, AND THE GC IS RESPONSIBLE FOR SIZING THE LENGTH OF THE BOLT.

19. IF ASTM A325 OR A490 BOLTS, AND/OR THREADED RODS ARE SPECIFIED TO BE PRE-TENSIONED, THESE SHALL BE INSTALLED AND TIGHTENED TO THE PRE-TENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE RCSC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS.

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

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

ELON UNIVERSITY
BU #: 819560
CARRIER: AT&T MOBILITY

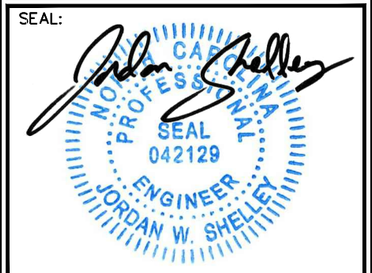
2948 DANIELEY CENTER DR
ELON, NC 27244

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



Electronic Copy

February 16, 2023

REV	DATE	ISSUED FOR:
0	02-16-23	MODIFICATION DRAWINGS

DRAWN BY: JCM | CHECKED BY: SEB

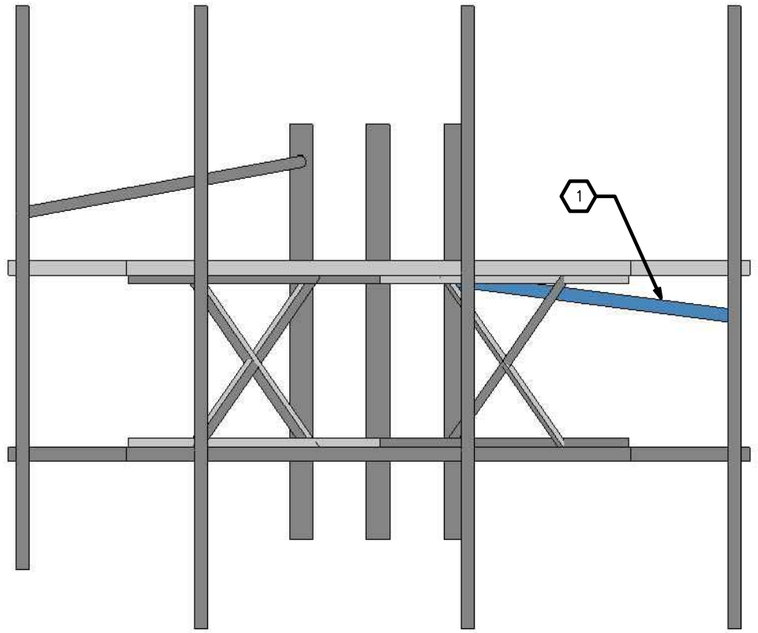
SHEET TITLE:

PROJECT NOTES

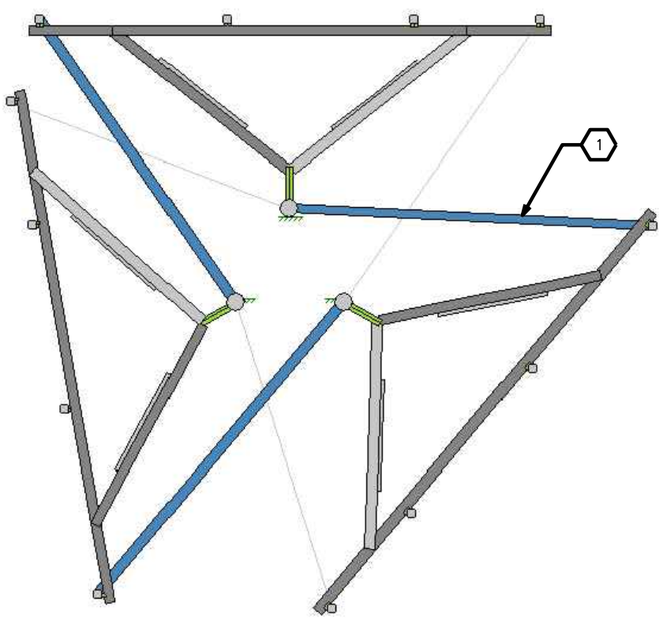
SHEET NUMBER: **N-1**

REVISION: **0**

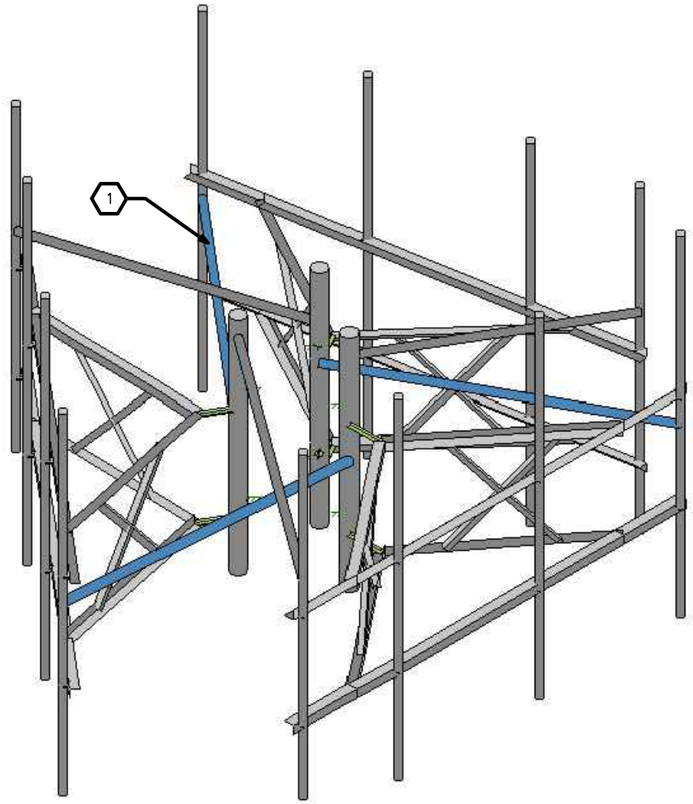
TEP#: 73021.822315



ELEVATION VIEW



PLAN VIEW



ISOMETRIC VIEW

MODIFICATION SCHEDULE

NO.	MODIFICATION DESCRIPTION	ELEVATION (FT.)	SHEET
1	INSTALL NEW TIEBACK KITS. CONNECT TO POSITION 1 MOUNT PIPE AND MAST PIPES WITH PROVIDED HARDWARE.	187.0	S-2

NOTES:

1. PRIOR TO FABRICATION, CONTRACTOR SHALL FIELD VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTHS AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.
2. PROPER FIT-UP OF THE PROPOSED MODIFICATIONS MAY REQUIRE FIELD CUTTING/TRIMMING. CONTACT EOR FOR APPROVAL UNO.
3. IF APPLICABLE, REFER TO THE BILL OF MATERIALS ON SHEET S-2 FOR REQUIRED MATERIAL GRADE SPECIFICATIONS.

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

ELON UNIVERSITY
BU #: 819560
CARRIER: AT&T MOBILITY

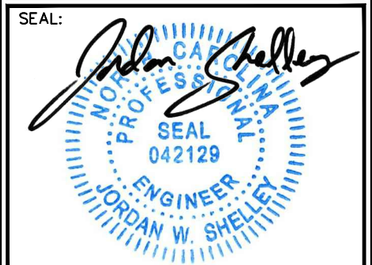
2948 DANIELEY CENTER DR
ELON, NC 27244

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



Electronic Copy

February 16, 2023

REV	DATE	ISSUED FOR:
0	02-16-23	MODIFICATION DRAWINGS

DRAWN BY: JCM | CHECKED BY: SEB

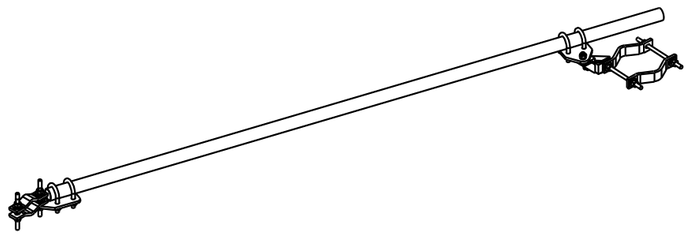
SHEET TITLE:

MOUNT MODIFICATION SCHEDULE

SHEET NUMBER: **S-1**

REVISION: **0**

TEP#: 73021.822315



SITEPRO SPTB ASSEMBLY

SCALE: N.T.S.

BILL OF MATERIALS

MANUFACTURER	PART NUMBER/DESCRIPTION	MATERIAL GRADE	QUANTITY	NOTES
SITEPRO	SPTB (CONMAT NO ANT. 51650)	–	3	1,2

NOTES:

1. CONTRACTOR MAY SUBSTITUTE EQUIVALENT PARTS WITH EOR APPROVAL.
2. UNO, CONNECTION HARDWARE IS INCLUDED WITH REINFORCEMENT KITS.

PLANS PREPARED FOR:

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

ELON UNIVERSITY
BU #: 819560
CARRIER: AT&T MOBILITY

2948 DANIELEY CENTER DR
ELON, NC 27244

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 042129 ENGINEER JORDAN W. SHELLEY

Electronic Copy

February 16, 2023

REV	DATE	ISSUED FOR:
0	02-16-23	MODIFICATION DRAWINGS

DRAWN BY: JCM | CHECKED BY: SEB

SHEET TITLE:

REINFORCEMENT DETAILS/PARTS

SHEET NUMBER: **S-2**

REVISION: **0**

TEP#: 73021.822315

8000 Avalon Blvd dSuite 600 & 700
Alpharetta, GA 30009

Phone: (470) 235-6275
www.crowncastle.com

March 9, 2023

NC - TOWN OF ELON (ALAMANCE COUNTY)
Planning Department
104 S. WILLIAMSON AVE. / P.O. BOX 595
ELON, NC 27244

Via Electronic Delivery

************NOTICE OF ELIGIBLE FACILITIES REQUEST************

RE: Request for Minor Modification to Existing Wireless Facility – Section 6409
Site Address: 2948 Danieley Center Dr, Elon, NC 27244
Crown Site Number: 819560 / Crown Site Name: Elon University
Customer Site Number: 062-043 / Application Number: 634661

Attention Planning Department:

On behalf of New Cingular Wireless PCS, LLC ("AT&T Mobility" or "Applicant"), Crown Castle USA Inc. ("Crown Castle") is pleased to submit this request to modify the existing wireless facility noted above through the collocation, replacement and/or removal of the Applicant's equipment as an eligible facilities request for a minor modification under Section 6409[1] and the rules of the Federal Communications Commission ("FCC").[2]

Section 6409 mandates that state and local governments must approve any eligible facilities request for the modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station. Under Section 6409, to toll the review period, if the reviewing authority determines that the application is incomplete, it must provide written notice to the applicant within 30 days, which clearly and specifically delineates all missing documents or information reasonably related to whether the request meets the federal requirements.[3] Additionally, if a state or local government, fails to issue any approvals required for this request within 60 days, these approvals are deemed granted. The FCC has clarified that the 30-day and 60-day deadlines begins when an applicant: (1) takes the first step required under state or local law; and (2) submits information sufficient to inform the jurisdiction that this modification qualifies under the federal law[4]. Please note that with the submission of this letter and enclosed items, the thirty and sixty-day review periods have started. Based on this filing, the deadline for written notice of incomplete application is April 8, 2023, and the deadline for issuance of approval is May 8, 2023.

[1] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6409 (2012) (codified at 47 U.S.C. § 1455).
[2] *Acceleration of Broadband Deployment by Improving Wireless Facility Siting Policies*, 29 FCC Rcd. 12865 (2014) (codified at 47 CFR § 1.6100); and *Implementation of State & Local Governments' Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012*, WT Docket No. 19-250 (June 10, 2020).
[3] *See* 47 CFR § 1.6100 (c)(3). [4] *See* 2020 Upgrade Order at paragraph 16.

CROWN CASTLE

8000 Avalon Blvd dSuite 600 & 700
Alpharetta, GA 30009

Phone: (470) 235-6275
www.crowncastle.com

The proposed scope of work for this project includes:
Add or replace antennas and ancillary equipment as per plans for an existing carrier on an existing wireless communication facility.

At the end of this letter is a checklist of the applicable substantial change criteria under Section 6409. Additionally, please find enclosed the following information in support of this request:

(1) CERTIFICATE OF PLANNING COMPLIANCE;
(2) Construction Drawings;
(3) Structural Analysis; and
(4) Section 6409 Substantial Change Checklist.

As these documents indicate, (i) the modification involves the collocation, removal or replacement of transmission equipment; and (ii) such modification will not substantially change the physical dimensions of such tower or base station. As such, it is an "eligible facilities request" as defined in the FCC's rules to which the 60-day deadline for approval applies. Accordingly, Applicant requests all authorization necessary for this proposed minor modification under Section 6409.

Deployment of AT&T upgraded technologies in the subject area will improve public safety by putting advanced wireless technologies into the hands of public safety agencies and first responders.

Due to the public safety benefits associated with this EFR, AT&T respectfully requests that the requisite approvals and building permit be issued within 15 days but no later than 60 days from the date of this letter, so that AT&T can proceed with this important modification expeditiously thereafter. If you have any questions regarding this application, please contact me.

Our goal is to work with you to obtain approvals earlier than the deadline. We will respond promptly to any request for related information you may have in connection with this request. Please let us know how we can work with you to expedite the approval process. We look forward to working with you on this important project, which will improve wireless telecommunication services in your community using collocation on existing infrastructure. If you have any questions, please do not hesitate to contact me.

Regards,

Terry Holmes

Terry Holmes
Site Acquisition Specialist
Crown Castle, Agent for Applicant
(470) 235-6275
Terry.Holmes@crowncastle.com

8000 Avalon Blvd dSuite 600 & 700
Alpharetta, GA 30009

Phone: (470) 235-6275
www.crowncastle.com

Section 6409 Substantial Change Checklist
Towers Outside of the Public Right of Way

The Federal Communications Commission has determined that a modification substantially changes the physical dimension of a wireless tower or base station under 47 U.S.C. § 1455(a) if it meets one of six enumerated criteria under 47 C.F.R. § 1.6100.

Criteria for Towers Outside the Public Rights of Way

YES/NO **NO**	Does the modification increase the height of the tower by more than the greater of: (a) 10% (b) or, the height of an additional antenna array plus separation of up to 20 feet from the top of the nearest existing antenna?
YES/NO **NO**	Does the modification add an appurtenance to the body of the tower that would protrude from the edge of the tower more than 20 feet or more than the width of the tower structure at the level of the appurtenance, whichever is greater?
YES/NO **NO**	Does the modification involve the installation of more than the standard number of new equipment cabinets for the technology involved or add more than four new equipment cabinets?
YES/NO **NO**	Does the modification entail any excavation or deployment outside the current site by more than 30 feet in any direction, not including any access or utility easements?
YES/NO **NO**	Does the modification defeat the concealment elements of the eligible support structure?
YES/NO **NO**	Does the modification violate conditions associated with the siting approval with the prior approval the tower or base station other than as specified in 47 C.F.R. § 1.6100(c)(7)(i) – (iv)?

If all questions in the above section are answered "NO," then the modification does not constitute a substantial change to the existing tower under 47 C.F.R. § 1.6100.

Date: **March 03, 2023**

MTS Engineering P.L.L.C.
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
(918) 587-4630

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Site Number:	062-043
	Site Name:	062-043
	FA Number:	10154661
Crown Castle Designation:	**BU Number:**	819560
	Site Name:	Elon University
	JDE Job Number:	732234
	Work Order Number:	2168175
	Order Number:	634661 Rev. 1
Engineering Firm Designation:	**Project Number:**	108789.011.01.0001
Site Data:	**2948 Danieley Center Dr, Elon, Alamance County, NC** **Latitude *36° 6' 30.61"*, Longitude *-79° 29' 25.75"*** **190 Foot - Monopole Tower**	

We are pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

LC4.7: Proposed Equipment Configuration w/ Proposed Modifications **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2018 North Carolina Building Code (2015 IBC) and 2017 NEC. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Daniel Hast, E.I

Respectfully submitted by: MTS Engineering, P.L.L.C
COA: P-2387, Expires: 6/30/2023

Brad R. Milanowski, P.E

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 190 ft. Monopole designed by Nello Corp.
The tower has been modified per reinforcement drawings prepared by Black & Veatch, in January of 2018. Reinforcement consists of installation of flat plate reinforcement between elevations 93.5' to 113.5' and 136' to 146'. Modifications designed by MTS Engineering, P.L.L.C., dated September of 2022 were incorporated in this analysis.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	115 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	30 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
187.0	190.0	3	Ericsson	AIR 6419 B77G_CCIV3	2 5 2	7/8 3/4 3/8
	188.0	3	Commscope	NNH4-65C-R6-V3		
		3	Ericsson	RRUS 4478 B12_CCIV2		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 8843 B2/B66A		
		3	Ericsson	RRUS-32 B30		
		3	KMW Com.	EPBQ-654L8H8-L2		
		1	Raycap	DC6-48-60-18-8C		
		1	Raycap	DC6-48-60-18-8C-EV		
		2	Raycap	DC6-48-60-18-8F		
	187.0	3	Site pro 1	SPTB tieback kits		
		1	--	Sector Mount [SM 1303-3]		
	186.0	3	Ericsson	AIR 6449 B77D_CCIV3		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180.0	180.0	3	Ericsson	AIR 32 B2A/B66AA	1 2	1-5/8 1-3/8
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4415 B25_TMO		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	RFS Celwave	APXVAALL24_43-U-NA20_TMO		
		1	--	Perfect Vision PV-LPP12M-HR-B		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
167.0	170.0	3	Fujitsu	TA08025-B604	1	1-3/4
		3	Fujitsu	TA08025-B605		
	169.0	3	JMA Wireless	MX08FRO665-21		
	168.0	1	Raycap	RDIDC-9181-PF-48		
	167.0	1	Commscope	MC-PK8-DSH		
160.0	161.0	1	CCI Antennas	BSA33R-BU8A	3	1-5/8
		2	Commscope	CDX1923Q-DS-43		
		4	Commscope	NHH-65C-R2B		
		3	Ericsson	AIR 6449 B77		
		3	Ericsson	RADIO 4408		
		1	Raycap	RCMDC-6627-PF-48		
	160.0	3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 8843 B2/B66A_CCIV2		
		1	Raycap	RHSDC-3315-PF-48		
		1	--	T-Arm Mount [TA 602-3_KCKR]		
120.0	127.5	1	--	Side Arm Mount [SO 701-1]	1	7/8
	122.5	1	--	Side Arm Mount [SO 701-1]		
	120.0	1	RFS Celwave	220-1N		
	117.5	1	--	Side Arm Mount [SO 701-1]		
	112.5	1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Manufacturer Drawing	4896301	CCI Sites
Tower Modification Drawing	7317881	CCI Sites
Post Modification Inspection	7596470	CCI Sites
Tower Modification Drawing	10565679	CCI Sites
Foundation Drawing	4896300	CCI Sites
Geotech Report	4896299	CCI Sites
Crown CAD Package	Date: 01/17/2023	CCI Sites

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

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

3.2) Assumptions

1) The tower and structures were maintained in accordance with the - TIA-222 standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) This analysis assumes modifications design by MTS Engineering, P.L.L.C. dated September 01, 2022 will be installed according to the drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	190 - 185	Pole	TP19.038x18x0.1875	1	-3.339	--	6.5	Pass
L2	185 - 180	Pole	TP20.077x19.038x0.1875	2	-3.553	--	16.2	Pass
L3	180 - 175	Pole	TP21.115x20.077x0.1875	3	-7.224	--	30.9	Pass
L4	175 - 170	Pole	TP22.154x21.115x0.1875	4	-7.556	--	43.0	Pass
L5	170 - 165	Pole	TP23.192x22.154x0.1875	5	-10.663	--	55.9	Pass
L6	165 - 160	Pole	TP24.23x23.192x0.1875	6	-11.097	--	68.5	Pass
L7	160 - 155	Pole	TP25.269x24.23x0.1875	7	-14.337	--	84.7	Pass
L8	155 - 153.58	Pole	TP25.563x25.269x0.1875	8	-14.486	--	88.7	Pass
L9	153.58 - 153.33	Pole + Reinf.	TP25.615x25.563x0.4625	9	-14.554	--	56.8	Pass
L10	153.33 - 148.33	Pole + Reinf.	TP26.653x25.615x0.45	10	-15.378	--	65.8	Pass
L11	148.33 - 144	Pole + Reinf.	TP27.553x26.653x0.4375	11	-16.118	--	73.0	Pass
L12	144 - 143.75	Pole + Reinf.	TP27.605x27.553x0.625	12	-16.183	--	54.1	Pass
L13	143.75 - 141	Pole + Reinf.	TP29.007x27.605x0.6125	13	-16.787	--	57.4	Pass
L14	141 - 136	Pole + Reinf.	TP28.82x27.801x0.4875	14	-18.528	--	75.4	Pass
L15	136 - 131	Pole + Reinf.	TP29.838x28.82x0.4813	15	-19.538	--	81.1	Pass
L16	131 - 126	Pole + Reinf.	TP30.857x29.838x0.475	16	-20.572	--	86.3	Pass
L17	126 - 123.25	Pole + Reinf.	TP31.417x30.857x0.4688	17	-21.148	--	89.0	Pass
L18	123.25 - 123	Pole + Reinf.	TP31.468x31.417x0.5375	18	-21.221	--	72.8	Pass
L19	123 - 118	Pole + Reinf.	TP32.486x31.468x0.525	19	-22.670	--	76.7	Pass
L20	118 - 113	Pole + Reinf.	TP33.504x32.486x0.5125	20	-23.866	--	80.4	Pass
L21	113 - 111.5	Pole + Reinf.	TP33.81x33.504x0.5125	21	-24.224	--	81.5	Pass
L22	111.5 - 111.25	Pole + Reinf.	TP33.861x33.81x0.7125	22	-24.318	--	60.7	Pass
L23	111.25 - 106.25	Pole + Reinf.	TP34.879x33.861x0.7	23	-25.862	--	63.5	Pass
L24	106.25 - 101.25	Pole + Reinf.	TP35.898x34.879x0.675	24	-27.435	--	66.1	Pass
L25	101.25 - 99.83	Pole + Reinf.	TP36.186x35.898x0.675	25	-27.883	--	66.8	Pass
L26	99.83 - 99.58	Pole + Reinf.	TP36.237x36.186x0.925	26	-27.998	--	49.4	Pass
L27	99.58 - 99.25	Pole + Reinf.	TP37.375x36.237x0.925	27	-28.136	--	49.5	Pass
L28	99.25 - 93	Pole + Reinf.	TP37.079x35.805x0.55	28	-31.863	--	84.1	Pass
L29	93 - 88	Pole + Reinf.	TP38.097x37.079x0.5375	29	-33.296	--	86.3	Pass
L30	88 - 83	Pole + Reinf.	TP39.116x38.097x0.5375	30	-34.754	--	88.3	Pass
L31	83 - 78	Pole + Reinf.	TP40.135x39.116x0.525	31	-36.236	--	90.2	Pass
L32	78 - 73.25	Pole + Reinf.	TP41.102x40.135x0.525	32	-37.664	--	91.8	Pass
L33	73.25 - 73	Pole + Reinf.	TP41.153x41.102x0.5875	33	-37.760	--	77.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L34	73 - 68	Pole + Reinf.	TP42.172x41.153x0.5875	34	-39.417	--	79.1	Pass
L35	68 - 63	Pole + Reinf.	TP43.191x42.172x0.575	35	-41.108	--	80.5	Pass
L36	63 - 58	Pole + Reinf.	TP44.21x43.191x0.5625	36	-42.823	--	81.9	Pass
L37	58 - 53	Pole + Reinf.	TP45.228x44.21x0.5625	37	-44.561	--	83.1	Pass
L38	53 - 52.75	Pole + Reinf.	TP46.604x45.228x0.5625	38	-44.659	--	83.2	Pass
L39	52.75 - 45.25	Pole	TP46.182x44.654x0.375	39	-48.589	--	93.1	Pass
L40	45.25 - 40.25	Pole	TP47.2x46.182x0.375	40	-49.981	--	94.0	Pass
L41	40.25 - 35.25	Pole	TP48.218x47.2x0.375	41	-51.400	--	94.8	Pass
L42	35.25 - 30.25	Pole	TP49.236x48.218x0.375	42	-52.843	--	95.6	Pass
L43	30.25 - 25.25	Pole	TP50.254x49.236x0.375	43	-54.313	--	96.3	Pass
L44	25.25 - 20.25	Pole	TP51.273x50.254x0.375	44	-55.807	--	97.0	Pass
L45	20.25 - 15.25	Pole	TP52.291x51.273x0.375	45	-57.327	--	97.7	Pass
L46	15.25 - 10.25	Pole	TP53.309x52.291x0.375	46	-58.872	--	98.3	Pass
L47	10.25 - 5.25	Pole	TP54.327x53.309x0.375	47	-60.440	--	98.9	Pass
L48	5.25 - 0.25	Pole	TP55.345x54.327x0.375	48	-62.034	--	99.4	Pass
L49	0.25 - 0	Pole	TP55.396x55.345x0.375	49	-62.127	--	99.4	Pass
							Summary	
						Pole	99.4	Pass
						Reinforcement	91.8	Pass
						Rating =	99.4	Pass

Table 5 - Tower Component Stresses vs. Capacity- LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	Base	88.4	Pass
1,2	Base Plate	Base	65.4	Pass
1,2	Base Foundation (Structure)	Base	57.7	Pass
1,2	Base Foundation (Soil Interaction)	Base	74.3	Pass

Structure Rating (max from all components) =	99.4%

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

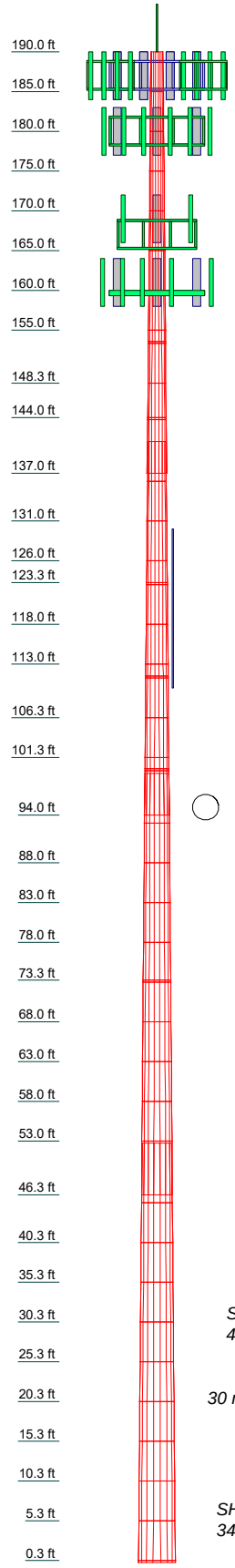
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration provided the modification drawings designed by MTS Engineering, P.L.L.C. (Doc. ID # 10565679) are installed.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Length (ft)	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.438	0.438	0.438	0.613	0.613	0.487	0.475	0.450	0.450	0.525	0.512	0.512	0.700	0.675	0.675	0.900	0.900	0.900	0.900	0.537	0.537	0.525	0.525	0.525	0.525	0.575	0.563	0.563	0.563	0.563	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375
Socket Length (ft)																																																		
Top Dia (in)	18.000	19.038	20.077	21.115	22.154	23.192	24.230	25.269	26.307	27.345	28.384	29.422	30.461	31.499	32.538	33.576	34.614	35.653	36.691	37.730	38.768	39.806	40.845	41.883	42.922	43.960	44.998	46.037	47.075	48.114	49.152	50.191	51.229	52.268	53.306	54.345	55.383	56.422	57.460	58.499	59.537	60.576	61.614	62.653	63.691	64.730	65.768	66.807	67.845
Bot Dia (in)	19.038	20.077	21.115	22.154	23.192	24.230	25.269	26.307	27.345	28.384	29.422	30.461	31.499	32.538	33.576	34.614	35.653	36.691	37.730	38.768	39.806	40.845	41.883	42.922	43.960	44.998	46.037	47.075	48.114	49.152	50.191	51.229	52.268	53.306	54.345	55.383	56.422	57.460	58.499	59.537	60.576	61.614	62.653	63.691	64.730	65.768	66.807	67.845	68.884
Grade	A572-65																																																	
Weight (K)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.6	0.5	0.0	1.1	0.7	0.7	0.7	0.4	0.8	0.8	0.9	1.3	1.2	1.3	1.2	1.3	1.8	1.3	1.2	1.0	1.1	1.1	11.0	1.2	1.3	1.3	1.3	1.3	1.8	1.4	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	36.0



ALL REACTIONS ARE FACTORED

AXIAL 101 K

SHEAR 4 K *MOMENT 634 kip-ft*

TORQUE 0 kip-ft
30 mph WIND - 1.500 in ICE

AXIAL 62 K

SHEAR 34 K *MOMENT 4924 kip-ft*

TORQUE 3 kip-ft
REACTIONS - 115 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Alamance County, North Carolina.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 30 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 99.4%

MTS Engineering P.L.L.C.
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 587-4630

Job:	***108789.011.01.0001 - Elon University, NC (BU# 819560***		
Project:			
Client: Crown Castle	Drawn by: GURUPRASAD	App'd:	
Code: TIA-222-H	Date: 03/03/23	Scale: NTS	
Path:		Dwg No. E-1	

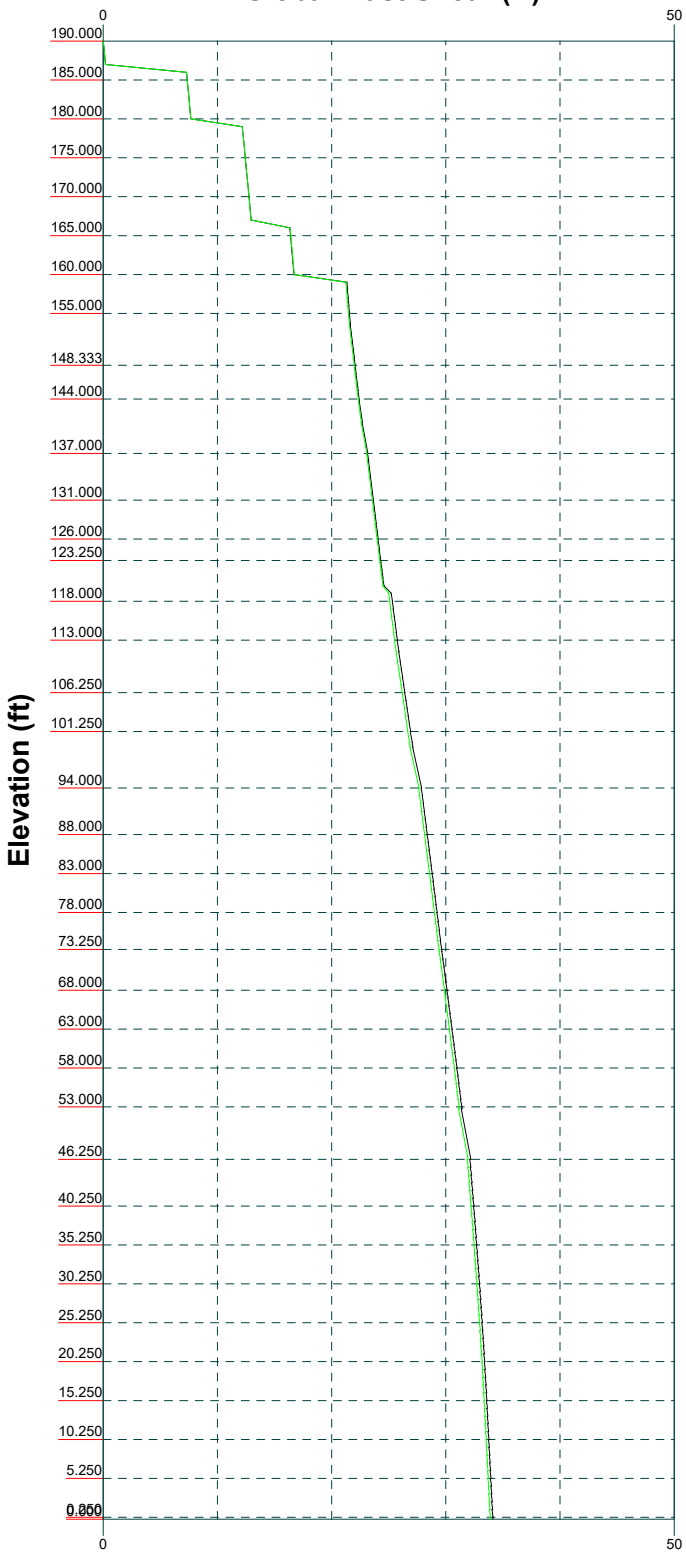
TIA-222-H - 115 mph/30 mph 1.500 in Ice Exposure C

Vx Vz

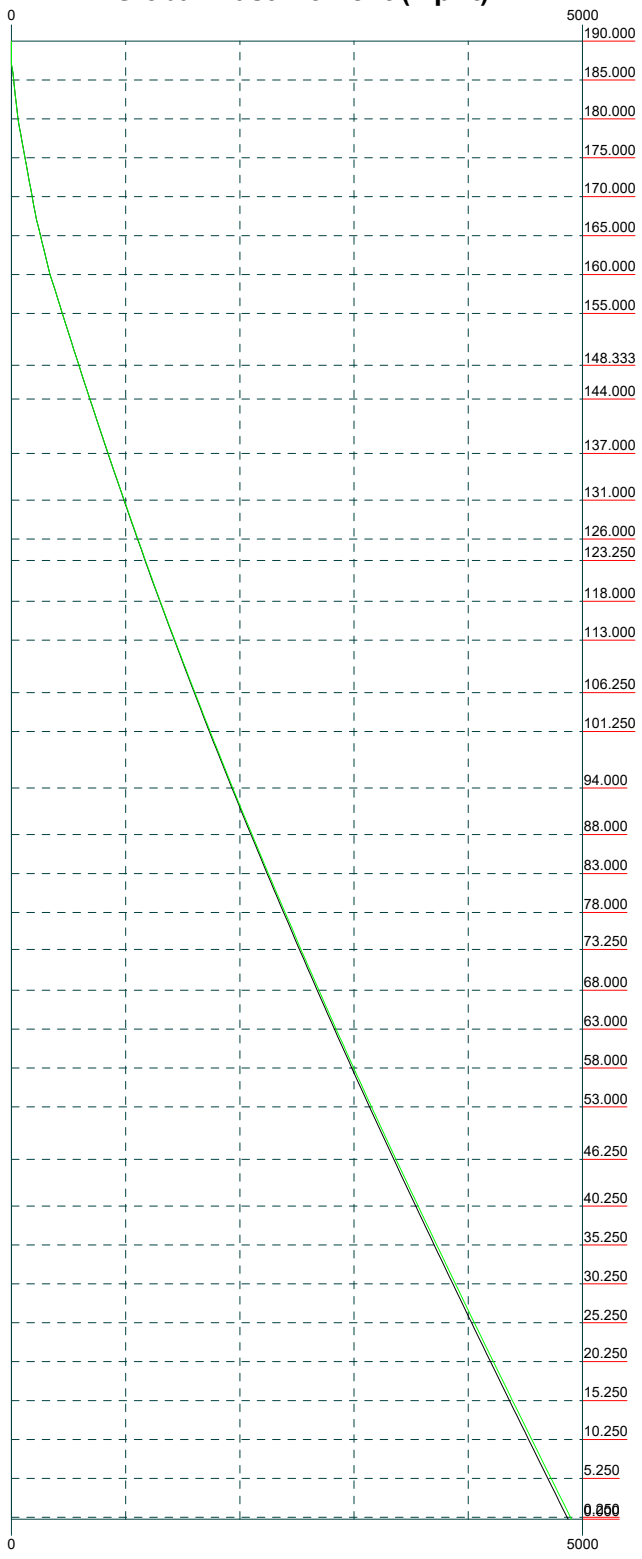
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)

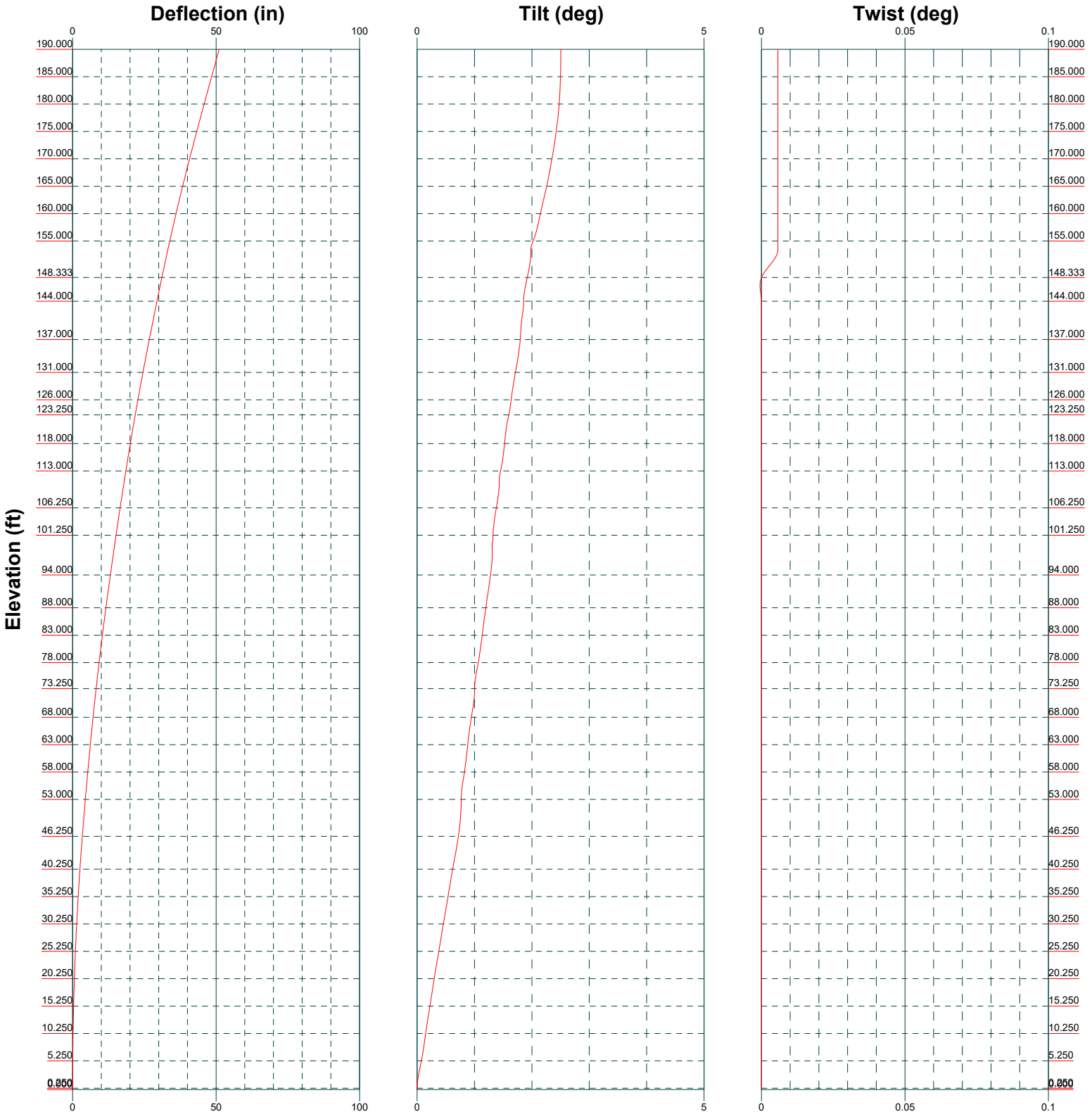


MTS Engineering P.L.L.C.
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 587-4630

Job: ***108789.011.01.0001 - Elon University, NC (BU# 819560***			
Project:			
Client: Crown Castle	Drawn by: GURUPRASAD	App'd:	
Code: TIA-222-H	Date: 03/03/23	Scale: NTS	
Path:		Dwg No. E-4	

TIA-222-H - Service - 60 mph

Maximum Values

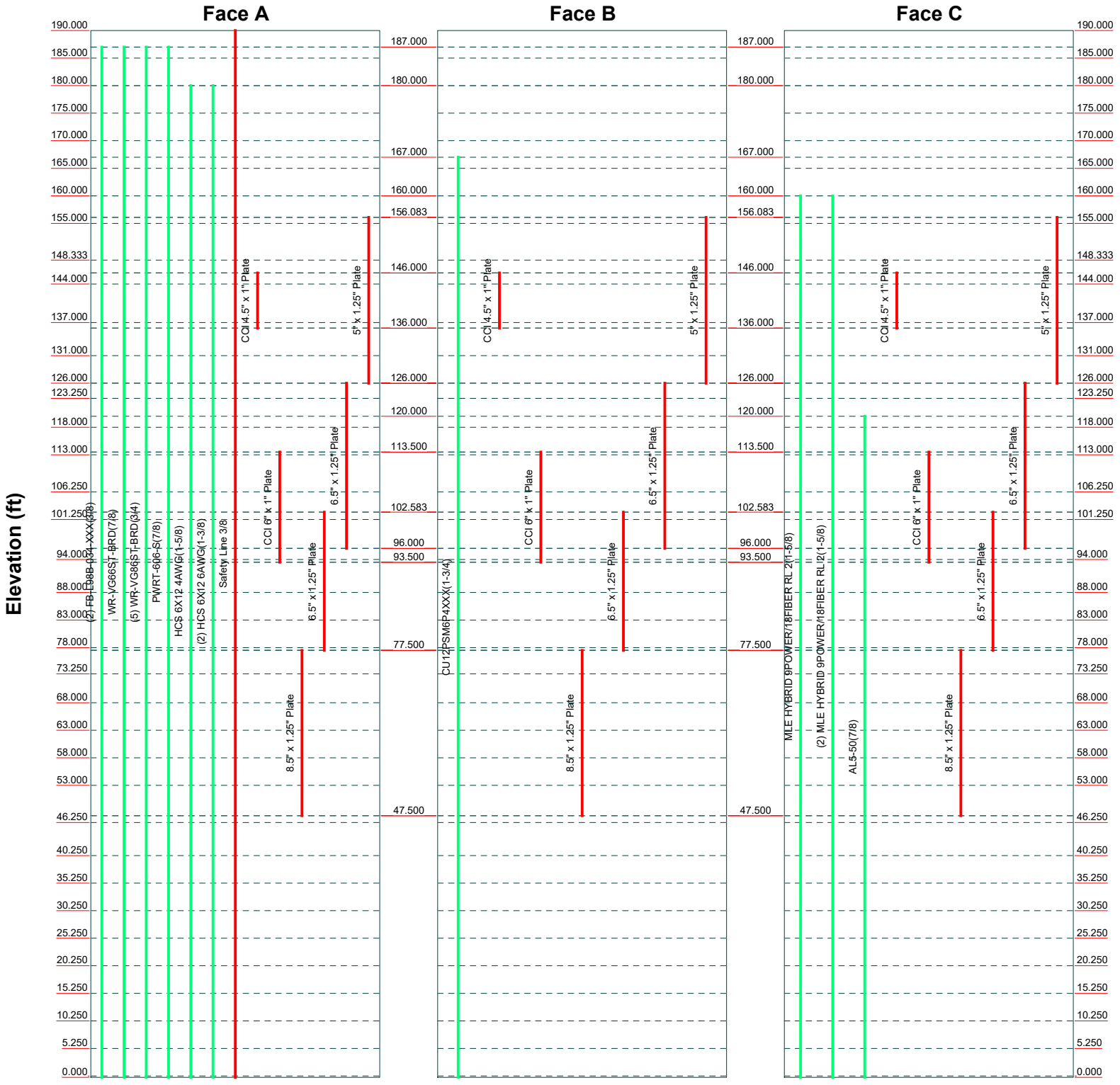


MTS Engineering P.L.L.C.
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 587-4630

Job: *108789.011.01.0001 - Elon University, NC (BU# 819560*			
Project:			
Client: Crown Castle	Drawn by: GURUPRASAD	App'd:	
Code: TIA-222-H	Date: 03/03/23	Scale: NTS	
Path:		Dwg No. E-5	

Feed Line Distribution Chart
0' - 190'

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



MTS Engineering P.L.L.C.
1717 S Boulder Ave, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 587-4630

Job: 108789.011.01.0001 - Elon University, NC (BU# 819560			
Project:			
Client: Crown Castle	Drawn by: GURUPRASAD	App'd:	
Code: TIA-222-H	Date: 03/03/23	Scale: NTS	
Path:		Dwg No. E-7	

Tower Input Data

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

Tower is located in Alamance County, North Carolina.
Tower base elevation above sea level: 653.000 ft.
Basic wind speed of 115 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 30 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	190.000-185.000	5.000	0.000	18	18.000	19.038	0.188	0.750	A572-65 (65 ksi)
L2	185.000-180.000	5.000	0.000	18	19.038	20.077	0.188	0.750	A572-65 (65 ksi)
L3	180.000-175.000	5.000	0.000	18	20.077	21.115	0.188	0.750	A572-65 (65 ksi)
L4	175.000-170.000	5.000	0.000	18	21.115	22.154	0.188	0.750	A572-65 (65 ksi)
L5	170.000-165.000	5.000	0.000	18	22.154	23.192	0.188	0.750	A572-65 (65 ksi)
L6	165.000-160.000	5.000	0.000	18	23.192	24.230	0.188	0.750	A572-65 (65 ksi)
L7	160.000-155.000	5.000	0.000	18	24.230	25.269	0.188	0.750	A572-65 (65 ksi)
L8	155.000-153.583	1.417	0.000	18	25.269	25.563	0.188	0.750	A572-65 (65 ksi)
L9	153.583-153.333	0.250	0.000	18	25.563	25.615	0.463	1.850	A572-65 (65 ksi)
L10	153.333-148.333	5.000	0.000	18	25.615	26.653	0.450	1.800	A572-65 (65 ksi)
L11	148.333-144.000	4.333	0.000	18	26.653	27.553	0.438	1.750	A572-65 (65 ksi)
L12	144.000-143.750	0.250	0.000	18	27.553	27.605	0.625	2.500	A572-65 (65 ksi)
L13	143.750-137.000	6.750	4.000	18	27.605	29.007	0.613	2.450	A572-65 (65 ksi)
L14	137.000-136.000	5.000	0.000	18	27.801	28.820	0.487	1.950	A572-65 (65 ksi)
L15	136.000-131.000	5.000	0.000	18	28.820	29.838	0.481	1.925	A572-65 (65 ksi)
L16	131.000-126.000	5.000	0.000	18	29.838	30.857	0.475	1.900	A572-65 (65 ksi)
L17	126.000-123.250	2.750	0.000	18	30.857	31.417	0.469	1.875	A572-65 (65 ksi)
L18	123.250-123.000	0.250	0.000	18	31.417	31.468	0.537	2.150	A572-65 (65 ksi)
L19	123.000-118.000	5.000	0.000	18	31.468	32.486	0.525	2.100	A572-65 (65 ksi)
L20	118.000-113.000	5.000	0.000	18	32.486	33.504	0.512	2.050	A572-65 (65 ksi)
L21	113.000-111.500	1.500	0.000	18	33.504	33.810	0.512	2.050	A572-65 (65 ksi)
L22	111.500-111.250	0.250	0.000	18	33.810	33.861	0.713	2.850	A572-65 (65 ksi)
L23	111.250-106.250	5.000	0.000	18	33.861	34.879	0.700	2.800	A572-65 (65 ksi)
L24	106.250-101.250	5.000	0.000	18	34.879	35.898	0.675	2.700	A572-65 (65 ksi)
L25	101.250-99.833	1.417	0.000	18	35.898	36.186	0.675	2.700	A572-65 (65 ksi)
L26	99.833-99.583	0.250	0.000	18	36.186	36.237	0.925	3.700	A572-65 (65 ksi)
L27	99.583-94.000	5.583	5.250	18	36.237	37.374	0.925	3.700	A572-65 (65 ksi)
L28	94.000-93.000	6.250	0.000	18	35.805	37.079	0.550	2.200	A572-65 (65 ksi)
L29	93.000-88.000	5.000	0.000	18	37.079	38.097	0.537	2.150	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L30	88.000-83.000	5.000	0.000	18	38.097	39.116	0.537	2.150	A572-65 (65 ksi)
L31	83.000-78.000	5.000	0.000	18	39.116	40.135	0.525	2.100	A572-65 (65 ksi)
L32	78.000-73.250	4.750	0.000	18	40.135	41.102	0.525	2.100	A572-65 (65 ksi)
L33	73.250-73.000	0.250	0.000	18	41.102	41.153	0.588	2.350	A572-65 (65 ksi)
L34	73.000-68.000	5.000	0.000	18	41.153	42.172	0.588	2.350	A572-65 (65 ksi)
L35	68.000-63.000	5.000	0.000	18	42.172	43.191	0.575	2.300	A572-65 (65 ksi)
L36	63.000-58.000	5.000	0.000	18	43.191	44.210	0.563	2.250	A572-65 (65 ksi)
L37	58.000-53.000	5.000	0.000	18	44.210	45.228	0.563	2.250	A572-65 (65 ksi)
L38	53.000-46.250	6.750	6.500	18	45.228	46.604	0.563	2.250	A572-65 (65 ksi)
L39	46.250-45.250	7.500	0.000	18	44.654	46.182	0.375	1.500	A572-65 (65 ksi)
L40	45.250-40.250	5.000	0.000	18	46.182	47.200	0.375	1.500	A572-65 (65 ksi)
L41	40.250-35.250	5.000	0.000	18	47.200	48.218	0.375	1.500	A572-65 (65 ksi)
L42	35.250-30.250	5.000	0.000	18	48.218	49.236	0.375	1.500	A572-65 (65 ksi)
L43	30.250-25.250	5.000	0.000	18	49.236	50.254	0.375	1.500	A572-65 (65 ksi)
L44	25.250-20.250	5.000	0.000	18	50.254	51.273	0.375	1.500	A572-65 (65 ksi)
L45	20.250-15.250	5.000	0.000	18	51.273	52.291	0.375	1.500	A572-65 (65 ksi)
L46	15.250-10.250	5.000	0.000	18	52.291	53.309	0.375	1.500	A572-65 (65 ksi)
L47	10.250-5.250	5.000	0.000	18	53.309	54.327	0.375	1.500	A572-65 (65 ksi)
L48	5.250-0.250	5.000	0.000	18	54.327	55.345	0.375	1.500	A572-65 (65 ksi)
L49	0.250-0.000	0.250		18	55.345	55.396	0.375	1.500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.249	10.601	424.933	6.323	9.144	46.471	850.425	5.301	2.838	15.136
	19.303	11.219	503.664	6.692	9.672	52.077	1007.991	5.610	3.021	16.111
L2	19.303	11.219	503.664	6.692	9.672	52.077	1007.991	5.610	3.021	16.111
	20.358	11.837	591.565	7.061	10.199	58.002	1183.908	5.919	3.204	17.085
L3	20.358	11.837	591.565	7.061	10.199	58.002	1183.908	5.919	3.204	17.085
	21.412	12.455	689.140	7.429	10.727	64.247	1379.187	6.228	3.386	18.06
L4	21.412	12.455	689.140	7.429	10.727	64.247	1379.187	6.228	3.386	18.06
	22.466	13.073	796.896	7.798	11.254	70.810	1594.840	6.538	3.569	19.035
L5	22.466	13.073	796.896	7.798	11.254	70.810	1594.840	6.538	3.569	19.035
	23.521	13.691	915.335	8.167	11.782	77.693	1831.875	6.847	3.752	20.009
L6	23.521	13.691	915.335	8.167	11.782	77.693	1831.875	6.847	3.752	20.009

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	24.575	14.308	1044.965	8.535	12.309	84.894	2091.306	7.156	3.935	20.984
L7	24.575	14.308	1044.965	8.535	12.309	84.894	2091.306	7.156	3.935	20.984
	25.630	14.926	1186.290	8.904	12.837	92.415	2374.142	7.465	4.117	21.959
L8	25.630	14.926	1186.290	8.904	12.837	92.415	2374.142	7.465	4.117	21.959
	25.928	15.102	1228.538	9.008	12.986	94.605	2458.694	7.552	4.169	22.235
L9	25.886	36.847	2932.936	8.911	12.986	225.854	5869.730	18.427	3.685	7.968
	25.939	36.923	2951.173	8.929	13.012	226.797	5906.230	18.465	3.694	7.988
L10	25.941	35.943	2875.695	8.934	13.012	220.997	5755.174	17.975	3.716	8.258
	26.995	37.426	3246.568	9.302	13.540	239.778	6497.408	18.717	3.899	8.664
L11	26.997	36.404	3160.905	9.307	13.540	233.452	6325.969	18.205	3.921	8.962
	27.911	37.653	3497.703	9.626	13.997	249.889	7000.008	18.830	4.079	9.324
L12	27.882	53.419	4893.779	9.559	13.997	349.630	9793.997	26.714	3.749	5.999
	27.935	53.522	4922.140	9.578	14.023	350.995	9850.757	26.766	3.758	6.014
L13	27.936	52.476	4830.405	9.582	14.023	344.454	9667.166	26.243	3.780	6.172
	29.360	55.201	5622.747	10.080	14.736	381.578	11252.893	27.606	4.027	6.575
L14	28.982	42.263	3983.457	9.696	14.123	282.055	7972.156	21.136	4.035	8.277
	29.189	43.839	4445.868	10.058	14.640	303.672	8897.586	21.924	4.214	8.645
L15	29.190	43.287	4391.775	10.060	14.640	299.977	8789.329	21.647	4.225	8.78
	30.224	44.842	4882.496	10.422	15.158	322.112	9771.417	22.425	4.404	9.152
L16	30.225	44.269	4822.166	10.424	15.158	318.132	9650.677	22.139	4.415	9.296
	31.259	45.805	5341.530	10.785	15.675	340.765	10690.089	22.907	4.595	9.673
L17	31.260	45.211	5274.501	10.788	15.675	336.489	10555.942	22.610	4.606	9.826
	31.829	46.045	5571.587	10.987	15.960	349.104	11150.505	23.027	4.704	10.036
L18	31.818	52.681	6346.270	10.962	15.960	397.645	12700.890	26.345	4.583	8.527
	31.870	52.767	6377.718	10.980	15.986	398.968	12763.828	26.389	4.592	8.544
L19	31.872	51.561	6236.955	10.985	15.986	390.163	12482.116	25.785	4.614	8.789
	32.906	53.258	6873.292	11.346	16.503	416.490	13755.629	26.634	4.794	9.131
L20	32.908	52.010	6717.518	11.351	16.503	407.051	13443.875	26.010	4.816	9.396
	33.942	53.667	7380.092	11.712	17.020	433.606	14769.894	26.839	4.995	9.746
L21	33.942	53.667	7380.092	11.712	17.020	433.606	14769.894	26.839	4.995	9.746
	34.252	54.164	7587.033	11.821	17.175	441.737	15184.048	27.087	5.049	9.851
L22	34.222	74.849	10358.900	11.750	17.175	603.122	20731.430	37.432	4.697	6.592
	34.273	74.964	10406.786	11.768	17.201	604.999	20827.266	37.489	4.706	6.604
L23	34.275	73.677	10235.782	11.772	17.201	595.057	20485.032	36.845	4.728	6.754
	35.309	75.940	11208.126	12.134	17.719	632.559	22431.000	37.977	4.907	7.01
L24	35.313	73.281	10831.569	12.143	17.719	611.307	21677.390	36.647	4.951	7.334
	36.347	75.463	11828.196	12.504	18.236	648.616	23671.956	37.739	5.130	7.6
L25	36.347	75.463	11828.196	12.504	18.236	648.616	23671.956	37.739	5.130	7.6
	36.640	76.081	12121.356	12.607	18.383	659.390	24258.662	38.048	5.181	7.675
L26	36.602	103.526	16262.392	12.518	18.383	884.658	32546.183	51.773	4.741	5.125
	36.654	103.675	16332.949	12.536	18.409	887.248	32687.389	51.847	4.750	5.135
L27	36.654	103.675	16332.949	12.536	18.409	887.248	32687.389	51.847	4.750	5.135
	37.808	107.014	17962.254	12.940	18.986	946.067	35948.143	53.517	4.950	5.351
L28	37.359	61.545	9664.390	12.516	18.189	531.331	19341.496	30.778	5.334	9.698
	37.566	63.768	10749.893	12.968	18.836	570.713	21513.932	31.890	5.558	10.105
L29	37.568	62.340	10516.366	12.972	18.836	558.315	21046.570	31.176	5.580	10.381
	38.602	64.078	11420.668	13.334	19.353	590.111	22856.363	32.045	5.759	10.715
L30	38.602	64.078	11420.668	13.334	19.353	590.111	22856.363	32.045	5.759	10.715
	39.636	65.816	12375.379	13.695	19.871	622.788	24767.041	32.914	5.938	11.048
L31	39.638	64.306	12099.332	13.700	19.871	608.896	24214.586	32.159	5.960	11.353
	40.673	66.004	13083.042	14.061	20.388	641.689	26183.298	33.008	6.140	11.695
L32	40.673	66.004	13083.042	14.061	20.388	641.689	26183.298	33.008	6.140	11.695
	41.656	67.616	14065.639	14.405	20.880	673.640	28149.787	33.815	6.310	12.019
L33	41.646	75.549	15667.500	14.383	20.880	750.357	31355.617	37.782	6.200	10.553
	41.698	75.644	15726.667	14.401	20.906	752.258	31474.028	37.829	6.209	10.569
L34	41.698	75.644	15726.667	14.401	20.906	752.258	31474.028	37.829	6.209	10.569
	42.732	77.544	16941.490	14.763	21.423	790.792	33905.273	38.779	6.388	10.874
L35	42.734	75.917	16595.990	14.767	21.423	774.664	33213.817	37.966	6.410	11.148
	43.768	77.776	17845.412	15.129	21.941	813.338	35714.306	38.895	6.590	11.46
L36	43.770	76.108	17472.835	15.133	21.941	796.357	34968.661	38.061	6.612	11.754
	44.805	77.926	18755.694	15.495	22.458	835.128	37536.067	38.971	6.791	12.073
L37	44.805	77.926	18755.694	15.495	22.458	835.128	37536.067	38.971	6.791	12.073

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	45.839	79.745	20099.857	15.856	22.976	874.820	40226.162	39.880	6.970	12.391
L38	45.839	79.745	20099.857	15.856	22.976	874.820	40226.162	39.880	6.970	12.391
	47.236	82.201	22014.254	16.345	23.675	929.867	44057.475	41.108	7.212	12.822
L39	46.629	52.703	13054.995	15.719	22.684	575.506	26127.169	26.357	7.199	19.198
	46.836	54.521	14453.014	16.261	23.460	616.065	28925.045	27.266	7.468	19.915
L40	46.836	54.521	14453.014	16.261	23.460	616.065	28925.045	27.266	7.468	19.915
	47.870	55.733	15438.385	16.623	23.977	643.870	30897.085	27.872	7.647	20.392
L41	47.870	55.733	15438.385	16.623	23.977	643.870	30897.085	27.872	7.647	20.392
	48.904	56.945	16467.556	16.984	24.495	672.290	32956.780	28.478	7.826	20.87
L42	48.904	56.945	16467.556	16.984	24.495	672.290	32956.780	28.478	7.826	20.87
	49.938	58.157	17541.478	17.346	25.012	701.324	35106.037	29.084	8.006	21.348
L43	49.938	58.157	17541.478	17.346	25.012	701.324	35106.037	29.084	8.006	21.348
	50.972	59.369	18661.103	17.707	25.529	730.971	37346.761	29.690	8.185	21.826
L44	50.972	59.369	18661.103	17.707	25.529	730.971	37346.761	29.690	8.185	21.826
	52.006	60.581	19827.385	18.069	26.046	761.232	39680.859	30.296	8.364	22.304
L45	52.006	60.581	19827.385	18.069	26.046	761.232	39680.859	30.296	8.364	22.304
	53.040	61.793	21041.275	18.430	26.564	792.107	42110.236	30.902	8.543	22.782
L46	53.040	61.793	21041.275	18.430	26.564	792.107	42110.236	30.902	8.543	22.782
	54.073	63.005	22303.725	18.792	27.081	823.595	44636.799	31.508	8.722	23.26
L47	54.073	63.005	22303.725	18.792	27.081	823.595	44636.799	31.508	8.722	23.26
	55.107	64.216	23615.689	19.153	27.598	855.698	47262.453	32.114	8.902	23.738
L48	55.107	64.216	23615.689	19.153	27.598	855.698	47262.453	32.114	8.902	23.738
	56.141	65.428	24978.119	19.514	28.115	888.414	49989.105	32.720	9.081	24.215
L49	56.141	65.428	24978.119	19.514	28.115	888.414	49989.105	32.720	9.081	24.215
	56.193	65.489	25047.582	19.533	28.141	890.066	50128.123	32.751	9.090	24.239

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 190.000-185.000				1	1	1			
L2 185.000-180.000				1	1	1			
L3 180.000-175.000				1	1	1			
L4 175.000-170.000				1	1	1			
L5 170.000-165.000				1	1	1			
L6 165.000-160.000				1	1	1			
L7 160.000-155.000				1	1	1			
L8 155.000-153.583				1	1	1			
L9 153.583-153.333				1	1	0.917668			
L10 153.333-148.333				1	1	0.921845			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L11 148.333-144.000				1	1	0.930503			
L12 144.000-143.750				1	1	0.907445			
L13 143.750-137.000				1	1	0.912702			
L14 137.000-136.000				1	1	0.944836			
L15 136.000-131.000				1	1	0.941721			
L16 131.000-126.000				1	1	0.939575			
L17 126.000-123.250				1	1	0.944331			
L18 123.250-123.000				1	1	0.931389			
L19 123.000-118.000				1	1	0.93798			
L20 118.000-113.000				1	1	0.945891			
L21 113.000-111.500				1	1	0.941688			
L22 111.500-111.250				1	1	0.921063			
L23 111.250-106.250				1	1	0.919874			
L24 106.250-101.250				1	1	0.936393			
L25 101.250-99.833				1	1	0.931792			
L26 99.833-99.583				1	1	0.919297			
L27 99.583-94.000				1	1	0.918053			
L28 94.000-93.000				1	1	0.954136			
L29 93.000-88.000				1	1	0.965288			
L30 88.000-83.000				1	1	0.955151			
L31 83.000-78.000				1	1	0.967743			
L32 78.000-73.250				1	1	0.958858			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L33 73.250-73.000				1	1	0.956916			
L34 73.000-68.000				1	1	0.946504			
L35 68.000-63.000				1	1	0.956671			
L36 63.000-58.000				1	1	0.967792			
L37 58.000-53.000				1	1	0.95839			
L38 53.000-46.250				1	1	0.957931			
L39 46.250-45.250				1	1	1			
L40 45.250-40.250				1	1	1			
L41 40.250-35.250				1	1	1			
L42 35.250-30.250				1	1	1			
L43 30.250-25.250				1	1	1			
L44 25.250-20.250				1	1	1			
L45 20.250-15.250				1	1	1			
L46 15.250-10.250				1	1	1			
L47 10.250-5.250				1	1	1			
L48 5.250-0.250				1	1	1			
L49 0.250-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
* Safety Line 3/8	A	No	Surface Ar (CaAa)	190.000 - 0.000	1	1	-0.160 -0.150	0.375		0.000
* CCI 4.5" x 1" Plate	A	No	Surface Af (CaAa)	146.000 - 136.000	1	1	0.000 0.050	4.500	11.000	0.000
CCI 4.5" x 1" Plate	B	No	Surface Af (CaAa)	146.000 - 136.000	1	1	0.000 0.050	4.500	11.000	0.000
CCI 4.5" x 1" Plate	C	No	Surface Af (CaAa)	146.000 - 136.000	1	1	0.000 0.050	4.500	11.000	0.000
* CCI 6" x 1" Plate	A	No	Surface Af (CaAa)	113.500 - 93.500	1	1	0.000 0.050	6.000	14.000	0.000
CCI 6" x 1" Plate	B	No	Surface Af	113.500 -	1	1	0.000	6.000	14.000	0.000

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
			(CaAa)	93.500			0.050			
CCI 6" x 1" Plate	C	No	Surface Af (CaAa)	113.500 - 93.500	1	1	0.000 0.050	6.000	14.000	0.000
*										
8.5" x 1.25" Plate	A	No	Surface Af (CaAa)	77.500 - 47.500	1	1	0.200 0.250	8.500	19.500	0.000
8.5" x 1.25" Plate	B	No	Surface Af (CaAa)	77.500 - 47.500	1	1	0.200 0.250	8.500	19.500	0.000
8.5" x 1.25" Plate	C	No	Surface Af (CaAa)	77.500 - 47.500	1	1	0.200 0.250	8.500	19.500	0.000
*										
6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	102.583 - 77.500	1	1	0.200 0.250	6.500	15.500	0.000
6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	102.583 - 77.500	1	1	0.200 0.250	6.500	15.500	0.000
6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	102.583 - 77.500	1	1	0.200 0.250	6.500	15.500	0.000
*										
6.5" x 1.25" Plate	A	No	Surface Af (CaAa)	126.000 - 96.000	1	1	-0.350 -0.300	6.500	15.500	0.000
6.5" x 1.25" Plate	B	No	Surface Af (CaAa)	126.000 - 96.000	1	1	-0.350 -0.300	6.500	15.500	0.000
6.5" x 1.25" Plate	C	No	Surface Af (CaAa)	126.000 - 96.000	1	1	-0.350 -0.300	6.500	15.500	0.000
*										
5" x 1.25" Plate	A	No	Surface Af (CaAa)	156.083 - 126.000	1	1	-0.350 -0.300	5.000	12.500	0.000
5" x 1.25" Plate	B	No	Surface Af (CaAa)	156.083 - 126.000	1	1	-0.350 -0.300	5.000	12.500	0.000
5" x 1.25" Plate	C	No	Surface Af (CaAa)	156.083 - 126.000	1	1	-0.350 -0.300	5.000	12.500	0.000
*										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
FB-L98B-034-XXX(3/8)	A	No	No	Inside Pole	187.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG66ST-BRD(7/8)	A	No	No	Inside Pole	187.000 - 0.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
WR-VG86ST-BRD(3/4)	A	No	No	Inside Pole	187.000 - 0.000	5	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
PWRT-606-S(7/8)	A	No	No	Inside Pole	187.000 - 0.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
HCS 6X12	A	No	No	Inside Pole	180.000 - 0.000	1	No Ice	0.000	0.002

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
4AWG(1-5/8)							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
HCS 6X12 6AWG(1-3/8)	A	No	No	Inside Pole	180.000 - 0.000	2	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
*									
CU12PSM6P4XXX(1-3/4)	B	No	No	Inside Pole	167.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
*									
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	Inside Pole	160.000 - 0.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	No	Inside Pole	160.000 - 0.000	2	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
AL5-50(7/8)	C	No	No	Inside Pole	120.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	190.000-185.000	A	0.000	0.000	0.188	0.000	0.011
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L2	185.000-180.000	A	0.000	0.000	0.188	0.000	0.025
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L3	180.000-175.000	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L4	175.000-170.000	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000	0.000
L5	170.000-165.000	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.005
		C	0.000	0.000	0.000	0.000	0.000
L6	165.000-160.000	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.000
L7	160.000-155.000	A	0.000	0.000	1.090	0.000	0.054
		B	0.000	0.000	0.902	0.000	0.014
		C	0.000	0.000	0.902	0.000	0.016

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L8	155.000-153.583	A	0.000	0.000	1.234	0.000	0.015
		B	0.000	0.000	1.181	0.000	0.004
		C	0.000	0.000	1.181	0.000	0.005
L9	153.583-153.333	A	0.000	0.000	0.218	0.000	0.003
		B	0.000	0.000	0.208	0.000	0.001
		C	0.000	0.000	0.208	0.000	0.001
L10	153.333-148.333	A	0.000	0.000	4.354	0.000	0.054
		B	0.000	0.000	4.167	0.000	0.014
		C	0.000	0.000	4.167	0.000	0.016
L11	148.333-144.000	A	0.000	0.000	5.273	0.000	0.047
		B	0.000	0.000	5.111	0.000	0.012
		C	0.000	0.000	5.111	0.000	0.014
L12	144.000-143.750	A	0.000	0.000	0.405	0.000	0.003
		B	0.000	0.000	0.396	0.000	0.001
		C	0.000	0.000	0.396	0.000	0.001
L13	143.750-137.000	A	0.000	0.000	10.941	0.000	0.073
		B	0.000	0.000	10.688	0.000	0.018
		C	0.000	0.000	10.688	0.000	0.022
L14	137.000-136.000	A	0.000	0.000	1.621	0.000	0.011
		B	0.000	0.000	1.583	0.000	0.003
		C	0.000	0.000	1.583	0.000	0.003
L15	136.000-131.000	A	0.000	0.000	4.354	0.000	0.054
		B	0.000	0.000	4.167	0.000	0.014
		C	0.000	0.000	4.167	0.000	0.016
L16	131.000-126.000	A	0.000	0.000	4.354	0.000	0.054
		B	0.000	0.000	4.167	0.000	0.014
		C	0.000	0.000	4.167	0.000	0.016
L17	126.000-123.250	A	0.000	0.000	3.082	0.000	0.030
		B	0.000	0.000	2.979	0.000	0.007
		C	0.000	0.000	2.979	0.000	0.009
L18	123.250-123.000	A	0.000	0.000	0.280	0.000	0.003
		B	0.000	0.000	0.271	0.000	0.001
		C	0.000	0.000	0.271	0.000	0.001
L19	123.000-118.000	A	0.000	0.000	5.604	0.000	0.054
		B	0.000	0.000	5.417	0.000	0.014
		C	0.000	0.000	5.417	0.000	0.017
L20	118.000-113.000	A	0.000	0.000	6.104	0.000	0.054
		B	0.000	0.000	5.917	0.000	0.014
		C	0.000	0.000	5.917	0.000	0.017
L21	113.000-111.500	A	0.000	0.000	3.181	0.000	0.016
		B	0.000	0.000	3.125	0.000	0.004
		C	0.000	0.000	3.125	0.000	0.005
L22	111.500-111.250	A	0.000	0.000	0.530	0.000	0.003
		B	0.000	0.000	0.521	0.000	0.001
		C	0.000	0.000	0.521	0.000	0.001
L23	111.250-106.250	A	0.000	0.000	10.604	0.000	0.054
		B	0.000	0.000	10.417	0.000	0.014
		C	0.000	0.000	10.417	0.000	0.017
L24	106.250-101.250	A	0.000	0.000	12.048	0.000	0.054
		B	0.000	0.000	11.861	0.000	0.014
		C	0.000	0.000	11.861	0.000	0.017
L25	101.250-99.833	A	0.000	0.000	4.540	0.000	0.015
		B	0.000	0.000	4.487	0.000	0.004
		C	0.000	0.000	4.487	0.000	0.005
L26	99.833-99.583	A	0.000	0.000	0.801	0.000	0.003
		B	0.000	0.000	0.792	0.000	0.001
		C	0.000	0.000	0.792	0.000	0.001
L27	99.583-94.000	A	0.000	0.000	15.722	0.000	0.061
		B	0.000	0.000	15.513	0.000	0.015
		C	0.000	0.000	15.513	0.000	0.019
L28	94.000-93.000	A	0.000	0.000	1.621	0.000	0.011

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	1.583	0.000	0.003
		C	0.000	0.000	1.583	0.000	0.003
L29	93.000-88.000	A	0.000	0.000	5.604	0.000	0.054
		B	0.000	0.000	5.417	0.000	0.014
		C	0.000	0.000	5.417	0.000	0.017
L30	88.000-83.000	A	0.000	0.000	5.604	0.000	0.054
		B	0.000	0.000	5.417	0.000	0.014
		C	0.000	0.000	5.417	0.000	0.017
L31	83.000-78.000	A	0.000	0.000	5.604	0.000	0.054
		B	0.000	0.000	5.417	0.000	0.014
		C	0.000	0.000	5.417	0.000	0.017
L32	78.000-73.250	A	0.000	0.000	6.741	0.000	0.052
		B	0.000	0.000	6.563	0.000	0.013
		C	0.000	0.000	6.563	0.000	0.016
L33	73.250-73.000	A	0.000	0.000	0.364	0.000	0.003
		B	0.000	0.000	0.354	0.000	0.001
		C	0.000	0.000	0.354	0.000	0.001
L34	73.000-68.000	A	0.000	0.000	7.271	0.000	0.054
		B	0.000	0.000	7.083	0.000	0.014
		C	0.000	0.000	7.083	0.000	0.017
L35	68.000-63.000	A	0.000	0.000	7.271	0.000	0.054
		B	0.000	0.000	7.083	0.000	0.014
		C	0.000	0.000	7.083	0.000	0.017
L36	63.000-58.000	A	0.000	0.000	7.271	0.000	0.054
		B	0.000	0.000	7.083	0.000	0.014
		C	0.000	0.000	7.083	0.000	0.017
L37	58.000-53.000	A	0.000	0.000	7.271	0.000	0.054
		B	0.000	0.000	7.083	0.000	0.014
		C	0.000	0.000	7.083	0.000	0.017
L38	53.000-46.250	A	0.000	0.000	8.045	0.000	0.073
		B	0.000	0.000	7.792	0.000	0.018
		C	0.000	0.000	7.792	0.000	0.023
L39	46.250-45.250	A	0.000	0.000	0.037	0.000	0.011
		B	0.000	0.000	0.000	0.000	0.003
		C	0.000	0.000	0.000	0.000	0.003
L40	45.250-40.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L41	40.250-35.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L42	35.250-30.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L43	30.250-25.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L44	25.250-20.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L45	20.250-15.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L46	15.250-10.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L47	10.250-5.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014
		C	0.000	0.000	0.000	0.000	0.017
L48	5.250-0.250	A	0.000	0.000	0.188	0.000	0.054
		B	0.000	0.000	0.000	0.000	0.014

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	0.000	0.000	0.017
L49	0.250-0.000	A	0.000	0.000	0.009	0.000	0.003
		B	0.000	0.000	0.000	0.000	0.001
		C	0.000	0.000	0.000	0.000	0.001

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	190.000-185.000	A	1.517	0.000	0.000	1.704	0.000	0.028
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L2	185.000-180.000	A	1.513	0.000	0.000	1.700	0.000	0.043
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L3	180.000-175.000	A	1.509	0.000	0.000	1.696	0.000	0.072
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L4	175.000-170.000	A	1.504	0.000	0.000	1.692	0.000	0.072
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	0.000	0.000	0.000
L5	170.000-165.000	A	1.500	0.000	0.000	1.687	0.000	0.071
		B		0.000	0.000	0.000	0.000	0.005
		C		0.000	0.000	0.000	0.000	0.000
L6	165.000-160.000	A	1.495	0.000	0.000	1.683	0.000	0.071
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.000
L7	160.000-155.000	A	1.491	0.000	0.000	2.904	0.000	0.083
		B		0.000	0.000	1.225	0.000	0.025
		C		0.000	0.000	1.225	0.000	0.027
L8	155.000-153.583	A	1.488	0.000	0.000	2.077	0.000	0.035
		B		0.000	0.000	1.602	0.000	0.019
		C		0.000	0.000	1.602	0.000	0.019
L9	153.583-153.333	A	1.487	0.000	0.000	0.366	0.000	0.006
		B		0.000	0.000	0.283	0.000	0.003
		C		0.000	0.000	0.283	0.000	0.003
L10	153.333-148.333	A	1.484	0.000	0.000	7.323	0.000	0.123
		B		0.000	0.000	5.651	0.000	0.066
		C		0.000	0.000	5.651	0.000	0.068
L11	148.333-144.000	A	1.480	0.000	0.000	8.172	0.000	0.126
		B		0.000	0.000	6.727	0.000	0.076
		C		0.000	0.000	6.727	0.000	0.078
L12	144.000-143.750	A	1.477	0.000	0.000	0.595	0.000	0.009
		B		0.000	0.000	0.511	0.000	0.006
		C		0.000	0.000	0.511	0.000	0.006
L13	143.750-137.000	A	1.474	0.000	0.000	16.043	0.000	0.230
		B		0.000	0.000	13.800	0.000	0.152
		C		0.000	0.000	13.800	0.000	0.156
L14	137.000-136.000	A	1.470	0.000	0.000	2.377	0.000	0.034
		B		0.000	0.000	2.045	0.000	0.023
		C		0.000	0.000	2.045	0.000	0.023
L15	136.000-131.000	A	1.466	0.000	0.000	7.287	0.000	0.122
		B		0.000	0.000	5.633	0.000	0.065
		C		0.000	0.000	5.633	0.000	0.068
L16	131.000-126.000	A	1.461	0.000	0.000	7.275	0.000	0.122
		B		0.000	0.000	5.627	0.000	0.065
		C		0.000	0.000	5.627	0.000	0.067

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L17	126.000-123.250	A	1.456	0.000	0.000	4.684	0.000	0.072
		B		0.000	0.000	3.780	0.000	0.040
		C		0.000	0.000	3.780	0.000	0.042
L18	123.250-123.000	A	1.454	0.000	0.000	0.426	0.000	0.006
		B		0.000	0.000	0.344	0.000	0.004
		C		0.000	0.000	0.344	0.000	0.004
L19	123.000-118.000	A	1.451	0.000	0.000	8.507	0.000	0.130
		B		0.000	0.000	6.868	0.000	0.073
		C		0.000	0.000	6.868	0.000	0.076
L20	118.000-113.000	A	1.445	0.000	0.000	9.139	0.000	0.135
		B		0.000	0.000	7.506	0.000	0.078
		C		0.000	0.000	7.506	0.000	0.082
L21	113.000-111.500	A	1.441	0.000	0.000	4.478	0.000	0.055
		B		0.000	0.000	3.990	0.000	0.038
		C		0.000	0.000	3.990	0.000	0.039
L22	111.500-111.250	A	1.440	0.000	0.000	0.746	0.000	0.009
		B		0.000	0.000	0.665	0.000	0.006
		C		0.000	0.000	0.665	0.000	0.007
L23	111.250-106.250	A	1.436	0.000	0.000	14.914	0.000	0.183
		B		0.000	0.000	13.290	0.000	0.126
		C		0.000	0.000	13.290	0.000	0.130
L24	106.250-101.250	A	1.430	0.000	0.000	16.719	0.000	0.198
		B		0.000	0.000	15.101	0.000	0.141
		C		0.000	0.000	15.101	0.000	0.145
L25	101.250-99.833	A	1.425	0.000	0.000	6.156	0.000	0.068
		B		0.000	0.000	5.699	0.000	0.052
		C		0.000	0.000	5.699	0.000	0.053
L26	99.833-99.583	A	1.424	0.000	0.000	1.086	0.000	0.012
		B		0.000	0.000	1.005	0.000	0.009
		C		0.000	0.000	1.005	0.000	0.009
L27	99.583-94.000	A	1.420	0.000	0.000	21.496	0.000	0.243
		B		0.000	0.000	19.701	0.000	0.181
		C		0.000	0.000	19.701	0.000	0.185
L28	94.000-93.000	A	1.415	0.000	0.000	2.331	0.000	0.031
		B		0.000	0.000	2.009	0.000	0.020
		C		0.000	0.000	2.009	0.000	0.020
L29	93.000-88.000	A	1.410	0.000	0.000	8.425	0.000	0.127
		B		0.000	0.000	6.827	0.000	0.071
		C		0.000	0.000	6.827	0.000	0.074
L30	88.000-83.000	A	1.402	0.000	0.000	8.409	0.000	0.126
		B		0.000	0.000	6.819	0.000	0.070
		C		0.000	0.000	6.819	0.000	0.074
L31	83.000-78.000	A	1.394	0.000	0.000	8.392	0.000	0.126
		B		0.000	0.000	6.811	0.000	0.070
		C		0.000	0.000	6.811	0.000	0.074
L32	78.000-73.250	A	1.385	0.000	0.000	9.373	0.000	0.128
		B		0.000	0.000	7.878	0.000	0.075
		C		0.000	0.000	7.878	0.000	0.079
L33	73.250-73.000	A	1.381	0.000	0.000	0.502	0.000	0.007
		B		0.000	0.000	0.423	0.000	0.004
		C		0.000	0.000	0.423	0.000	0.004
L34	73.000-68.000	A	1.376	0.000	0.000	10.022	0.000	0.135
		B		0.000	0.000	8.459	0.000	0.080
		C		0.000	0.000	8.459	0.000	0.083
L35	68.000-63.000	A	1.365	0.000	0.000	10.002	0.000	0.134
		B		0.000	0.000	8.449	0.000	0.079
		C		0.000	0.000	8.449	0.000	0.083
L36	63.000-58.000	A	1.355	0.000	0.000	9.980	0.000	0.133
		B		0.000	0.000	8.438	0.000	0.078
		C		0.000	0.000	8.438	0.000	0.082
L37	58.000-53.000	A	1.343	0.000	0.000	9.957	0.000	0.133

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	8.426	0.000	0.078
		C		0.000	0.000	8.426	0.000	0.082
L38	53.000-46.250	A	1.328	0.000	0.000	11.299	0.000	0.162
		B		0.000	0.000	9.253	0.000	0.088
		C		0.000	0.000	9.253	0.000	0.093
L39	46.250-45.250	A	1.317	0.000	0.000	0.303	0.000	0.014
		B		0.000	0.000	0.000	0.000	0.003
		C		0.000	0.000	0.000	0.000	0.003
L40	45.250-40.250	A	1.308	0.000	0.000	1.496	0.000	0.068
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L41	40.250-35.250	A	1.292	0.000	0.000	1.480	0.000	0.067
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L42	35.250-30.250	A	1.274	0.000	0.000	1.461	0.000	0.067
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L43	30.250-25.250	A	1.253	0.000	0.000	1.441	0.000	0.067
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L44	25.250-20.250	A	1.228	0.000	0.000	1.416	0.000	0.066
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L45	20.250-15.250	A	1.198	0.000	0.000	1.386	0.000	0.066
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L46	15.250-10.250	A	1.159	0.000	0.000	1.347	0.000	0.065
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L47	10.250-5.250	A	1.103	0.000	0.000	1.290	0.000	0.064
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L48	5.250-0.250	A	0.994	0.000	0.000	1.182	0.000	0.063
		B		0.000	0.000	0.000	0.000	0.014
		C		0.000	0.000	0.000	0.000	0.017
L49	0.250-0.000	A	0.730	0.000	0.000	0.046	0.000	0.003
		B		0.000	0.000	0.000	0.000	0.001
		C		0.000	0.000	0.000	0.000	0.001

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	190.000-185.000	-0.294	-0.059	-1.252	-0.252
L2	185.000-180.000	-0.295	-0.059	-1.265	-0.255
L3	180.000-175.000	-0.295	-0.059	-1.277	-0.258
L4	175.000-170.000	-0.295	-0.059	-1.288	-0.260
L5	170.000-165.000	-0.295	-0.059	-1.298	-0.262
L6	165.000-160.000	-0.295	-0.059	-1.307	-0.264
L7	160.000-155.000	-0.219	-0.044	-1.065	-0.215
L8	155.000-153.583	-0.115	-0.023	-0.641	-0.129
L9	153.583-153.333	-0.116	-0.023	-0.644	-0.130
L10	153.333-148.333	-0.117	-0.024	-0.651	-0.131
L11	148.333-144.000	-0.096	-0.019	-0.559	-0.113
L12	144.000-143.750	-0.079	-0.016	-0.477	-0.096
L13	143.750-137.000	-0.081	-0.016	-0.485	-0.098

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L14	137.000-136.000	-0.082	-0.016	-0.490	-0.099
L15	136.000-131.000	-0.126	-0.025	-0.690	-0.139
L16	131.000-126.000	-0.128	-0.026	-0.702	-0.142
L17	126.000-123.250	-0.111	-0.022	-0.643	-0.130
L18	123.250-123.000	-0.112	-0.023	-0.646	-0.130
L19	123.000-118.000	-0.113	-0.023	-0.651	-0.131
L20	118.000-113.000	-0.109	-0.022	-0.631	-0.127
L21	113.000-111.500	-0.075	-0.015	-0.453	-0.091
L22	111.500-111.250	-0.075	-0.015	-0.454	-0.092
L23	111.250-106.250	-0.076	-0.015	-0.458	-0.092
L24	106.250-101.250	-0.070	-0.014	-0.428	-0.086
L25	101.250-99.833	-0.057	-0.011	-0.353	-0.071
L26	99.833-99.583	-0.057	-0.012	-0.354	-0.071
L27	99.583-94.000	-0.064	-0.013	-0.393	-0.079
L28	94.000-93.000	-0.097	-0.020	-0.567	-0.114
L29	93.000-88.000	-0.125	-0.025	-0.699	-0.141
L30	88.000-83.000	-0.126	-0.025	-0.706	-0.142
L31	83.000-78.000	-0.128	-0.026	-0.713	-0.144
L32	78.000-73.250	-0.113	-0.023	-0.653	-0.132
L33	73.250-73.000	-0.112	-0.023	-0.649	-0.131
L34	73.000-68.000	-0.113	-0.023	-0.652	-0.131
L35	68.000-63.000	-0.114	-0.023	-0.657	-0.132
L36	63.000-58.000	-0.116	-0.023	-0.662	-0.133
L37	58.000-53.000	-0.118	-0.024	-0.666	-0.134
L38	53.000-46.250	-0.134	-0.027	-0.737	-0.149
L39	46.250-45.250	-0.296	-0.060	-1.317	-0.266
L40	45.250-40.250	-0.296	-0.060	-1.303	-0.263
L41	40.250-35.250	-0.296	-0.060	-1.293	-0.261
L42	35.250-30.250	-0.296	-0.060	-1.282	-0.258
L43	30.250-25.250	-0.297	-0.060	-1.267	-0.256
L44	25.250-20.250	-0.297	-0.060	-1.250	-0.252
L45	20.250-15.250	-0.297	-0.060	-1.228	-0.248
L46	15.250-10.250	-0.297	-0.060	-1.199	-0.242
L47	10.250-5.250	-0.297	-0.060	-1.155	-0.233
L48	5.250-0.250	-0.297	-0.060	-1.066	-0.215
L49	0.250-0.000	-0.297	-0.060	-0.843	-0.170

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	19	Safety Line 3/8	185.00 - 190.00	1.0000	1.0000
L2	19	Safety Line 3/8	180.00 - 185.00	1.0000	1.0000
L3	19	Safety Line 3/8	175.00 - 180.00	1.0000	1.0000
L4	19	Safety Line 3/8	170.00 - 175.00	1.0000	1.0000
L5	19	Safety Line 3/8	165.00 - 170.00	1.0000	1.0000
L6	19	Safety Line 3/8	160.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			165.00		
L7	19	Safety Line 3/8	155.00 - 160.00	1.0000	1.0000
L7	41	5" x 1.25" Plate	155.00 - 156.08	1.0000	1.0000
L7	42	5" x 1.25" Plate	155.00 - 156.08	1.0000	1.0000
L7	43	5" x 1.25" Plate	155.00 - 156.08	1.0000	1.0000
L8	19	Safety Line 3/8	153.58 - 155.00	1.0000	1.0000
L8	41	5" x 1.25" Plate	153.58 - 155.00	1.0000	1.0000
L8	42	5" x 1.25" Plate	153.58 - 155.00	1.0000	1.0000
L8	43	5" x 1.25" Plate	153.58 - 155.00	1.0000	1.0000
L9	19	Safety Line 3/8	153.33 - 153.58	1.0000	1.0000
L9	41	5" x 1.25" Plate	153.33 - 153.58	1.0000	1.0000
L9	42	5" x 1.25" Plate	153.33 - 153.58	1.0000	1.0000
L9	43	5" x 1.25" Plate	153.33 - 153.58	1.0000	1.0000
L10	19	Safety Line 3/8	148.33 - 153.33	1.0000	1.0000
L10	41	5" x 1.25" Plate	148.33 - 153.33	1.0000	1.0000
L10	42	5" x 1.25" Plate	148.33 - 153.33	1.0000	1.0000
L10	43	5" x 1.25" Plate	148.33 - 153.33	1.0000	1.0000
L11	19	Safety Line 3/8	144.00 - 148.33	1.0000	1.0000
L11	21	CCI 4.5" x 1" Plate	144.00 - 146.00	1.0000	1.0000
L11	22	CCI 4.5" x 1" Plate	144.00 - 146.00	1.0000	1.0000
L11	23	CCI 4.5" x 1" Plate	144.00 - 146.00	1.0000	1.0000
L11	41	5" x 1.25" Plate	144.00 - 148.33	1.0000	1.0000
L11	42	5" x 1.25" Plate	144.00 - 148.33	1.0000	1.0000
L11	43	5" x 1.25" Plate	144.00 - 148.33	1.0000	1.0000
L12	19	Safety Line 3/8	143.75 - 144.00	1.0000	1.0000
L12	21	CCI 4.5" x 1" Plate	143.75 - 144.00	1.0000	1.0000
L12	22	CCI 4.5" x 1" Plate	143.75 - 144.00	1.0000	1.0000
L12	23	CCI 4.5" x 1" Plate	143.75 - 144.00	1.0000	1.0000
L12	41	5" x 1.25" Plate	143.75 - 144.00	1.0000	1.0000
L12	42	5" x 1.25" Plate	143.75 - 144.00	1.0000	1.0000
L12	43	5" x 1.25" Plate	143.75 - 144.00	1.0000	1.0000
L13	19	Safety Line 3/8	137.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L13	21	CCI 4.5" x 1" Plate	137.00 - 143.75	1.0000	1.0000
L13	22	CCI 4.5" x 1" Plate	137.00 - 143.75	1.0000	1.0000
L13	23	CCI 4.5" x 1" Plate	137.00 - 143.75	1.0000	1.0000
L13	41	5" x 1.25" Plate	137.00 - 143.75	1.0000	1.0000
L13	42	5" x 1.25" Plate	137.00 - 143.75	1.0000	1.0000
L13	43	5" x 1.25" Plate	137.00 - 143.75	1.0000	1.0000
L14	19	Safety Line 3/8	136.00 - 137.00	1.0000	1.0000
L14	21	CCI 4.5" x 1" Plate	136.00 - 137.00	1.0000	1.0000
L14	22	CCI 4.5" x 1" Plate	136.00 - 137.00	1.0000	1.0000
L14	23	CCI 4.5" x 1" Plate	136.00 - 137.00	1.0000	1.0000
L14	41	5" x 1.25" Plate	136.00 - 137.00	1.0000	1.0000
L14	42	5" x 1.25" Plate	136.00 - 137.00	1.0000	1.0000
L14	43	5" x 1.25" Plate	136.00 - 137.00	1.0000	1.0000
L15	19	Safety Line 3/8	131.00 - 136.00	1.0000	1.0000
L15	41	5" x 1.25" Plate	131.00 - 136.00	1.0000	1.0000
L15	42	5" x 1.25" Plate	131.00 - 136.00	1.0000	1.0000
L15	43	5" x 1.25" Plate	131.00 - 136.00	1.0000	1.0000
L16	19	Safety Line 3/8	126.00 - 131.00	1.0000	1.0000
L16	41	5" x 1.25" Plate	126.00 - 131.00	1.0000	1.0000
L16	42	5" x 1.25" Plate	126.00 - 131.00	1.0000	1.0000
L16	43	5" x 1.25" Plate	126.00 - 131.00	1.0000	1.0000
L17	19	Safety Line 3/8	123.25 - 126.00	1.0000	1.0000
L17	37	6.5" x 1.25" Plate	123.25 - 126.00	1.0000	1.0000
L17	38	6.5" x 1.25" Plate	123.25 - 126.00	1.0000	1.0000
L17	39	6.5" x 1.25" Plate	123.25 - 126.00	1.0000	1.0000
L18	19	Safety Line 3/8	123.00 - 123.25	1.0000	1.0000
L18	37	6.5" x 1.25" Plate	123.00 - 123.25	1.0000	1.0000
L18	38	6.5" x 1.25" Plate	123.00 - 123.25	1.0000	1.0000
L18	39	6.5" x 1.25" Plate	123.00 - 123.25	1.0000	1.0000
L19	19	Safety Line 3/8	118.00 - 123.00	1.0000	1.0000
L19	37	6.5" x 1.25" Plate	118.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L19	38	6.5" x 1.25" Plate	123.00 118.00 - 123.00	1.0000	1.0000
L19	39	6.5" x 1.25" Plate	118.00 - 123.00	1.0000	1.0000
L20	19	Safety Line 3/8	113.00 - 118.00	1.0000	1.0000
L20	25	CCI 6" x 1" Plate	113.00 - 113.50	1.0000	1.0000
L20	26	CCI 6" x 1" Plate	113.00 - 113.50	1.0000	1.0000
L20	27	CCI 6" x 1" Plate	113.00 - 113.50	1.0000	1.0000
L20	37	6.5" x 1.25" Plate	113.00 - 118.00	1.0000	1.0000
L20	38	6.5" x 1.25" Plate	113.00 - 118.00	1.0000	1.0000
L20	39	6.5" x 1.25" Plate	113.00 - 118.00	1.0000	1.0000
L21	19	Safety Line 3/8	111.50 - 113.00	1.0000	1.0000
L21	25	CCI 6" x 1" Plate	111.50 - 113.00	1.0000	1.0000
L21	26	CCI 6" x 1" Plate	111.50 - 113.00	1.0000	1.0000
L21	27	CCI 6" x 1" Plate	111.50 - 113.00	1.0000	1.0000
L21	37	6.5" x 1.25" Plate	111.50 - 113.00	1.0000	1.0000
L21	38	6.5" x 1.25" Plate	111.50 - 113.00	1.0000	1.0000
L21	39	6.5" x 1.25" Plate	111.50 - 113.00	1.0000	1.0000
L22	19	Safety Line 3/8	111.25 - 111.50	1.0000	1.0000
L22	25	CCI 6" x 1" Plate	111.25 - 111.50	1.0000	1.0000
L22	26	CCI 6" x 1" Plate	111.25 - 111.50	1.0000	1.0000
L22	27	CCI 6" x 1" Plate	111.25 - 111.50	1.0000	1.0000
L22	37	6.5" x 1.25" Plate	111.25 - 111.50	1.0000	1.0000
L22	38	6.5" x 1.25" Plate	111.25 - 111.50	1.0000	1.0000
L22	39	6.5" x 1.25" Plate	111.25 - 111.50	1.0000	1.0000
L23	19	Safety Line 3/8	106.25 - 111.25	1.0000	1.0000
L23	25	CCI 6" x 1" Plate	106.25 - 111.25	1.0000	1.0000
L23	26	CCI 6" x 1" Plate	106.25 - 111.25	1.0000	1.0000
L23	27	CCI 6" x 1" Plate	106.25 - 111.25	1.0000	1.0000
L23	37	6.5" x 1.25" Plate	106.25 - 111.25	1.0000	1.0000
L23	38	6.5" x 1.25" Plate	106.25 - 111.25	1.0000	1.0000
L23	39	6.5" x 1.25" Plate	106.25 - 111.25	1.0000	1.0000
L24	19	Safety Line 3/8	101.25 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			106.25		
L24	25	CCI 6" x 1" Plate	101.25 - 106.25	1.0000	1.0000
L24	26	CCI 6" x 1" Plate	101.25 - 106.25	1.0000	1.0000
L24	27	CCI 6" x 1" Plate	101.25 - 106.25	1.0000	1.0000
L24	33	6.5" x 1.25" Plate	101.25 - 102.58	1.0000	1.0000
L24	34	6.5" x 1.25" Plate	101.25 - 102.58	1.0000	1.0000
L24	35	6.5" x 1.25" Plate	101.25 - 102.58	1.0000	1.0000
L24	37	6.5" x 1.25" Plate	101.25 - 106.25	1.0000	1.0000
L24	38	6.5" x 1.25" Plate	101.25 - 106.25	1.0000	1.0000
L24	39	6.5" x 1.25" Plate	101.25 - 106.25	1.0000	1.0000
L25	19	Safety Line 3/8	99.83 - 101.25	1.0000	1.0000
L25	25	CCI 6" x 1" Plate	99.83 - 101.25	1.0000	1.0000
L25	26	CCI 6" x 1" Plate	99.83 - 101.25	1.0000	1.0000
L25	27	CCI 6" x 1" Plate	99.83 - 101.25	1.0000	1.0000
L25	33	6.5" x 1.25" Plate	99.83 - 101.25	1.0000	1.0000
L25	34	6.5" x 1.25" Plate	99.83 - 101.25	1.0000	1.0000
L25	35	6.5" x 1.25" Plate	99.83 - 101.25	1.0000	1.0000
L25	37	6.5" x 1.25" Plate	99.83 - 101.25	1.0000	1.0000
L25	38	6.5" x 1.25" Plate	99.83 - 101.25	1.0000	1.0000
L25	39	6.5" x 1.25" Plate	99.83 - 101.25	1.0000	1.0000
L26	19	Safety Line 3/8	99.58 - 99.83	1.0000	1.0000
L26	25	CCI 6" x 1" Plate	99.58 - 99.83	1.0000	1.0000
L26	26	CCI 6" x 1" Plate	99.58 - 99.83	1.0000	1.0000
L26	27	CCI 6" x 1" Plate	99.58 - 99.83	1.0000	1.0000
L26	33	6.5" x 1.25" Plate	99.58 - 99.83	1.0000	1.0000
L26	34	6.5" x 1.25" Plate	99.58 - 99.83	1.0000	1.0000
L26	35	6.5" x 1.25" Plate	99.58 - 99.83	1.0000	1.0000
L26	37	6.5" x 1.25" Plate	99.58 - 99.83	1.0000	1.0000
L26	38	6.5" x 1.25" Plate	99.58 - 99.83	1.0000	1.0000
L26	39	6.5" x 1.25" Plate	99.58 - 99.83	1.0000	1.0000
L27	19	Safety Line 3/8	94.00 - 99.58	1.0000	1.0000
L27	25	CCI 6" x 1" Plate	94.00 - 99.58	1.0000	1.0000
L27	26	CCI 6" x 1" Plate	94.00 - 99.58	1.0000	1.0000
L27	27	CCI 6" x 1" Plate	94.00 - 99.58	1.0000	1.0000
L27	33	6.5" x 1.25" Plate	94.00 - 99.58	1.0000	1.0000
L27	34	6.5" x 1.25" Plate	94.00 - 99.58	1.0000	1.0000
L27	35	6.5" x 1.25" Plate	94.00 - 99.58	1.0000	1.0000
L27	37	6.5" x 1.25" Plate	96.00 - 99.58	1.0000	1.0000
L27	38	6.5" x 1.25" Plate	96.00 - 99.58	1.0000	1.0000
L27	39	6.5" x 1.25" Plate	96.00 - 99.58	1.0000	1.0000
L28	19	Safety Line 3/8	93.00 - 94.00	1.0000	1.0000
L28	25	CCI 6" x 1" Plate	93.50 - 94.00	1.0000	1.0000
L28	26	CCI 6" x 1" Plate	93.50 - 94.00	1.0000	1.0000
L28	27	CCI 6" x 1" Plate	93.50 - 94.00	1.0000	1.0000
L28	33	6.5" x 1.25" Plate	93.00 - 94.00	1.0000	1.0000
L28	34	6.5" x 1.25" Plate	93.00 - 94.00	1.0000	1.0000
L28	35	6.5" x 1.25" Plate	93.00 - 94.00	1.0000	1.0000
L29	19	Safety Line 3/8	88.00 - 93.00	1.0000	1.0000
L29	33	6.5" x 1.25" Plate	88.00 - 93.00	1.0000	1.0000
L29	34	6.5" x 1.25" Plate	88.00 - 93.00	1.0000	1.0000
L29	35	6.5" x 1.25" Plate	88.00 - 93.00	1.0000	1.0000
L30	19	Safety Line 3/8	83.00 - 88.00	1.0000	1.0000
L30	33	6.5" x 1.25" Plate	83.00 - 88.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L30	34	6.5" x 1.25" Plate	83.00 - 88.00	1.0000	1.0000
L30	35	6.5" x 1.25" Plate	83.00 - 88.00	1.0000	1.0000
L31	19	Safety Line 3/8	78.00 - 83.00	1.0000	1.0000
L31	33	6.5" x 1.25" Plate	78.00 - 83.00	1.0000	1.0000
L31	34	6.5" x 1.25" Plate	78.00 - 83.00	1.0000	1.0000
L31	35	6.5" x 1.25" Plate	78.00 - 83.00	1.0000	1.0000
L32	19	Safety Line 3/8	73.25 - 78.00	1.0000	1.0000
L32	29	8.5" x 1.25" Plate	73.25 - 77.50	1.0000	1.0000
L32	30	8.5" x 1.25" Plate	73.25 - 77.50	1.0000	1.0000
L32	31	8.5" x 1.25" Plate	73.25 - 77.50	1.0000	1.0000
L32	33	6.5" x 1.25" Plate	77.50 - 78.00	1.0000	1.0000
L32	34	6.5" x 1.25" Plate	77.50 - 78.00	1.0000	1.0000
L32	35	6.5" x 1.25" Plate	77.50 - 78.00	1.0000	1.0000
L33	19	Safety Line 3/8	73.00 - 73.25	1.0000	1.0000
L33	29	8.5" x 1.25" Plate	73.00 - 73.25	1.0000	1.0000
L33	30	8.5" x 1.25" Plate	73.00 - 73.25	1.0000	1.0000
L33	31	8.5" x 1.25" Plate	73.00 - 73.25	1.0000	1.0000
L34	19	Safety Line 3/8	68.00 - 73.00	1.0000	1.0000
L34	29	8.5" x 1.25" Plate	68.00 - 73.00	1.0000	1.0000
L34	30	8.5" x 1.25" Plate	68.00 - 73.00	1.0000	1.0000
L34	31	8.5" x 1.25" Plate	68.00 - 73.00	1.0000	1.0000
L35	19	Safety Line 3/8	63.00 - 68.00	1.0000	1.0000
L35	29	8.5" x 1.25" Plate	63.00 - 68.00	1.0000	1.0000
L35	30	8.5" x 1.25" Plate	63.00 - 68.00	1.0000	1.0000
L35	31	8.5" x 1.25" Plate	63.00 - 68.00	1.0000	1.0000
L36	19	Safety Line 3/8	58.00 - 63.00	1.0000	1.0000
L36	29	8.5" x 1.25" Plate	58.00 - 63.00	1.0000	1.0000
L36	30	8.5" x 1.25" Plate	58.00 - 63.00	1.0000	1.0000
L36	31	8.5" x 1.25" Plate	58.00 - 63.00	1.0000	1.0000
L37	19	Safety Line 3/8	53.00 - 58.00	1.0000	1.0000
L37	29	8.5" x 1.25" Plate	53.00 - 58.00	1.0000	1.0000
L37	30	8.5" x 1.25" Plate	53.00 - 58.00	1.0000	1.0000
L37	31	8.5" x 1.25" Plate	53.00 - 58.00	1.0000	1.0000
L38	19	Safety Line 3/8	46.25 - 53.00	1.0000	1.0000
L38	29	8.5" x 1.25" Plate	47.50 - 53.00	1.0000	1.0000
L38	30	8.5" x 1.25" Plate	47.50 - 53.00	1.0000	1.0000
L38	31	8.5" x 1.25" Plate	47.50 - 53.00	1.0000	1.0000
L39	19	Safety Line 3/8	45.25 - 46.25	1.0000	1.0000
L40	19	Safety Line 3/8	40.25 - 45.25	1.0000	1.0000
L41	19	Safety Line 3/8	35.25 - 40.25	1.0000	1.0000
L42	19	Safety Line 3/8	30.25 - 35.25	1.0000	1.0000
L43	19	Safety Line 3/8	25.25 - 30.25	1.0000	1.0000
L44	19	Safety Line 3/8	20.25 - 25.25	1.0000	1.0000
L45	19	Safety Line 3/8	15.25 - 20.25	1.0000	1.0000
L46	19	Safety Line 3/8	10.25 - 15.25	1.0000	1.0000
L47	19	Safety Line 3/8	5.25 - 10.25	1.0000	1.0000
L48	19	Safety Line 3/8	0.25 - 5.25	1.0000	1.0000
L49	19	Safety Line 3/8	0.00 - 0.25	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L7	41	5" x 1.25" Plate	155.00 - 156.08	Auto	0.1805
L7	42	5" x 1.25" Plate	155.00 - 156.08	Auto	0.1805
L7	43	5" x 1.25" Plate	155.00 - 156.08	Auto	0.1805
L8	41	5" x 1.25" Plate	153.58 - 155.00	Auto	0.1714
L8	42	5" x 1.25" Plate	153.58 - 155.00	Auto	0.1714
L8	43	5" x 1.25" Plate	153.58 - 155.00	Auto	0.1714
L9	41	5" x 1.25" Plate	153.33 - 153.58	Auto	0.2621
L9	42	5" x 1.25" Plate	153.33 - 153.58	Auto	0.2621
L9	43	5" x 1.25" Plate	153.33 - 153.58	Auto	0.2621
L10	41	5" x 1.25" Plate	148.33 - 153.33	Auto	0.2385
L10	42	5" x 1.25" Plate	148.33 - 153.33	Auto	0.2385
L10	43	5" x 1.25" Plate	148.33 - 153.33	Auto	0.2385
L11	21	CCI 4.5" x 1" Plate	144.00 - 146.00	Auto	0.1016
L11	22	CCI 4.5" x 1" Plate	144.00 - 146.00	Auto	0.1016
L11	23	CCI 4.5" x 1" Plate	144.00 - 146.00	Auto	0.1016
L11	41	5" x 1.25" Plate	144.00 - 148.33	Auto	0.2000
L11	42	5" x 1.25" Plate	144.00 - 148.33	Auto	0.2000
L11	43	5" x 1.25" Plate	144.00 - 148.33	Auto	0.2000
L12	21	CCI 4.5" x 1" Plate	143.75 - 144.00	Auto	0.1658
L12	22	CCI 4.5" x 1" Plate	143.75 - 144.00	Auto	0.1658
L12	23	CCI 4.5" x 1" Plate	143.75 - 144.00	Auto	0.1658
L12	41	5" x 1.25" Plate	143.75 - 144.00	Auto	0.2492
L12	42	5" x 1.25" Plate	143.75 - 144.00	Auto	0.2492
L12	43	5" x 1.25" Plate	143.75 - 144.00	Auto	0.2492
L13	21	CCI 4.5" x 1" Plate	137.00 - 143.75	Auto	0.1325
L13	22	CCI 4.5" x 1" Plate	137.00 - 143.75	Auto	0.1325
L13	23	CCI 4.5" x 1" Plate	137.00 - 143.75	Auto	0.1325
L13	41	5" x 1.25" Plate	137.00 - 143.75	Auto	0.2192
L13	42	5" x 1.25" Plate	137.00 - 143.75	Auto	0.2192
L13	43	5" x 1.25" Plate	137.00 - 143.75	Auto	0.2192
L14	21	CCI 4.5" x 1" Plate	136.00 -	Auto	0.0675

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
			137.00		
L14	22	CCI 4.5" x 1" Plate	136.00 - 137.00	Auto	0.0675
L14	23	CCI 4.5" x 1" Plate	136.00 - 137.00	Auto	0.0675
L14	41	5" x 1.25" Plate	136.00 - 137.00	Auto	0.1607
L14	42	5" x 1.25" Plate	136.00 - 137.00	Auto	0.1607
L14	43	5" x 1.25" Plate	136.00 - 137.00	Auto	0.1607
L15	41	5" x 1.25" Plate	131.00 - 136.00	Auto	0.1370
L15	42	5" x 1.25" Plate	131.00 - 136.00	Auto	0.1370
L15	43	5" x 1.25" Plate	131.00 - 136.00	Auto	0.1370
L16	41	5" x 1.25" Plate	126.00 - 131.00	Auto	0.0990
L16	42	5" x 1.25" Plate	126.00 - 131.00	Auto	0.0990
L16	43	5" x 1.25" Plate	126.00 - 131.00	Auto	0.0990
L17	37	6.5" x 1.25" Plate	123.25 - 126.00	Auto	0.2838
L17	38	6.5" x 1.25" Plate	123.25 - 126.00	Auto	0.2838
L17	39	6.5" x 1.25" Plate	123.25 - 126.00	Auto	0.2838
L18	37	6.5" x 1.25" Plate	123.00 - 123.25	Auto	0.2942
L18	38	6.5" x 1.25" Plate	123.00 - 123.25	Auto	0.2942
L18	39	6.5" x 1.25" Plate	123.00 - 123.25	Auto	0.2942
L19	37	6.5" x 1.25" Plate	118.00 - 123.00	Auto	0.2763
L19	38	6.5" x 1.25" Plate	118.00 - 123.00	Auto	0.2763
L19	39	6.5" x 1.25" Plate	118.00 - 123.00	Auto	0.2763
L20	25	CCI 6" x 1" Plate	113.00 - 113.50	Auto	0.1690
L20	26	CCI 6" x 1" Plate	113.00 - 113.50	Auto	0.1690
L20	27	CCI 6" x 1" Plate	113.00 - 113.50	Auto	0.1690
L20	37	6.5" x 1.25" Plate	113.00 - 118.00	Auto	0.2454
L20	38	6.5" x 1.25" Plate	113.00 - 118.00	Auto	0.2454
L20	39	6.5" x 1.25" Plate	113.00 - 118.00	Auto	0.2454
L21	25	CCI 6" x 1" Plate	111.50 - 113.00	Auto	0.1631
L21	26	CCI 6" x 1" Plate	111.50 - 113.00	Auto	0.1631
L21	27	CCI 6" x 1" Plate	111.50 - 113.00	Auto	0.1631
L21	37	6.5" x 1.25" Plate	111.50 - 113.00	Auto	0.2274

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L21	38	6.5" x 1.25" Plate	111.50 - 113.00	Auto	0.2274
L21	39	6.5" x 1.25" Plate	111.50 - 113.00	Auto	0.2274
L22	25	CCI 6" x 1" Plate	111.25 - 111.50	Auto	0.2165
L22	26	CCI 6" x 1" Plate	111.25 - 111.50	Auto	0.2165
L22	27	CCI 6" x 1" Plate	111.25 - 111.50	Auto	0.2165
L22	37	6.5" x 1.25" Plate	111.25 - 111.50	Auto	0.2768
L22	38	6.5" x 1.25" Plate	111.25 - 111.50	Auto	0.2768
L22	39	6.5" x 1.25" Plate	111.25 - 111.50	Auto	0.2768
L23	25	CCI 6" x 1" Plate	106.25 - 111.25	Auto	0.1971
L23	26	CCI 6" x 1" Plate	106.25 - 111.25	Auto	0.1971
L23	27	CCI 6" x 1" Plate	106.25 - 111.25	Auto	0.1971
L23	37	6.5" x 1.25" Plate	106.25 - 111.25	Auto	0.2589
L23	38	6.5" x 1.25" Plate	106.25 - 111.25	Auto	0.2589
L23	39	6.5" x 1.25" Plate	106.25 - 111.25	Auto	0.2589
L24	25	CCI 6" x 1" Plate	101.25 - 106.25	Auto	0.1599
L24	26	CCI 6" x 1" Plate	101.25 - 106.25	Auto	0.1599
L24	27	CCI 6" x 1" Plate	101.25 - 106.25	Auto	0.1599
L24	33	6.5" x 1.25" Plate	101.25 - 102.58	Auto	0.2144
L24	34	6.5" x 1.25" Plate	101.25 - 102.58	Auto	0.2144
L24	35	6.5" x 1.25" Plate	101.25 - 102.58	Auto	0.2144
L24	37	6.5" x 1.25" Plate	101.25 - 106.25	Auto	0.2246
L24	38	6.5" x 1.25" Plate	101.25 - 106.25	Auto	0.2246
L24	39	6.5" x 1.25" Plate	101.25 - 106.25	Auto	0.2246
L25	25	CCI 6" x 1" Plate	99.83 - 101.25	Auto	0.1408
L25	26	CCI 6" x 1" Plate	99.83 - 101.25	Auto	0.1408
L25	27	CCI 6" x 1" Plate	99.83 - 101.25	Auto	0.1408
L25	33	6.5" x 1.25" Plate	99.83 - 101.25	Auto	0.2069
L25	34	6.5" x 1.25" Plate	99.83 - 101.25	Auto	0.2069
L25	35	6.5" x 1.25" Plate	99.83 - 101.25	Auto	0.2069
L25	37	6.5" x 1.25" Plate	99.83 - 101.25	Auto	0.2069
L25	38	6.5" x 1.25" Plate	99.83 - 101.25	Auto	0.2069
L25	39	6.5" x 1.25" Plate	99.83 - 101.25	Auto	0.2069
L26	25	CCI 6" x 1" Plate	99.58 - 99.83	Auto	0.2091
L26	26	CCI 6" x 1" Plate	99.58 - 99.83	Auto	0.2091
L26	27	CCI 6" x 1" Plate	99.58 - 99.83	Auto	0.2091
L26	33	6.5" x 1.25" Plate	99.58 - 99.83	Auto	0.2700
L26	34	6.5" x 1.25" Plate	99.58 - 99.83	Auto	0.2700
L26	35	6.5" x 1.25" Plate	99.58 - 99.83	Auto	0.2700

Tower Section	Attachment Record No.	Description	Attachment Segment Elev.	Ratio Calculation Method	Effective Width Ratio
L26	37	6.5" x 1.25" Plate	99.58 - 99.83	Auto	0.2700
L26	38	6.5" x 1.25" Plate	99.58 - 99.83	Auto	0.2700
L26	39	6.5" x 1.25" Plate	99.58 - 99.83	Auto	0.2700
L27	25	CCI 6" x 1" Plate	94.00 - 99.58	Auto	0.1917
L27	26	CCI 6" x 1" Plate	94.00 - 99.58	Auto	0.1917
L27	27	CCI 6" x 1" Plate	94.00 - 99.58	Auto	0.1917
L27	33	6.5" x 1.25" Plate	94.00 - 99.58	Auto	0.2539
L27	34	6.5" x 1.25" Plate	94.00 - 99.58	Auto	0.2539
L27	35	6.5" x 1.25" Plate	94.00 - 99.58	Auto	0.2539
L27	37	6.5" x 1.25" Plate	96.00 - 99.58	Auto	0.2594
L27	38	6.5" x 1.25" Plate	96.00 - 99.58	Auto	0.2594
L27	39	6.5" x 1.25" Plate	96.00 - 99.58	Auto	0.2594
L28	25	CCI 6" x 1" Plate	93.50 - 94.00	Auto	0.0782
L28	26	CCI 6" x 1" Plate	93.50 - 94.00	Auto	0.0782
L28	27	CCI 6" x 1" Plate	93.50 - 94.00	Auto	0.0782
L28	33	6.5" x 1.25" Plate	93.00 - 94.00	Auto	0.1477
L28	34	6.5" x 1.25" Plate	93.00 - 94.00	Auto	0.1477
L28	35	6.5" x 1.25" Plate	93.00 - 94.00	Auto	0.1477
L29	33	6.5" x 1.25" Plate	88.00 - 93.00	Auto	0.1278
L29	34	6.5" x 1.25" Plate	88.00 - 93.00	Auto	0.1278
L29	35	6.5" x 1.25" Plate	88.00 - 93.00	Auto	0.1278
L30	33	6.5" x 1.25" Plate	83.00 - 88.00	Auto	0.1002
L30	34	6.5" x 1.25" Plate	83.00 - 88.00	Auto	0.1002
L30	35	6.5" x 1.25" Plate	83.00 - 88.00	Auto	0.1002
L31	33	6.5" x 1.25" Plate	78.00 - 83.00	Auto	0.0692
L31	34	6.5" x 1.25" Plate	78.00 - 83.00	Auto	0.0692
L31	35	6.5" x 1.25" Plate	78.00 - 83.00	Auto	0.0692
L32	29	8.5" x 1.25" Plate	73.25 - 77.50	Auto	0.2666
L32	30	8.5" x 1.25" Plate	73.25 - 77.50	Auto	0.2666
L32	31	8.5" x 1.25" Plate	73.25 - 77.50	Auto	0.2666
L32	33	6.5" x 1.25" Plate	77.50 - 78.00	Auto	0.0541
L32	34	6.5" x 1.25" Plate	77.50 - 78.00	Auto	0.0541
L32	35	6.5" x 1.25" Plate	77.50 - 78.00	Auto	0.0541
L33	29	8.5" x 1.25" Plate	73.00 - 73.25	Auto	0.2701
L33	30	8.5" x 1.25" Plate	73.00 - 73.25	Auto	0.2701
L33	31	8.5" x 1.25" Plate	73.00 - 73.25	Auto	0.2701
L34	29	8.5" x 1.25" Plate	68.00 - 73.00	Auto	0.2590
L34	30	8.5" x 1.25" Plate	68.00 - 73.00	Auto	0.2590
L34	31	8.5" x 1.25" Plate	68.00 - 73.00	Auto	0.2590
L35	29	8.5" x 1.25" Plate	63.00 - 68.00	Auto	0.2353
L35	30	8.5" x 1.25" Plate	63.00 - 68.00	Auto	0.2353
L35	31	8.5" x 1.25" Plate	63.00 - 68.00	Auto	0.2353
L36	29	8.5" x 1.25" Plate	58.00 - 63.00	Auto	0.2116
L36	30	8.5" x 1.25" Plate	58.00 - 63.00	Auto	0.2116
L36	31	8.5" x 1.25" Plate	58.00 - 63.00	Auto	0.2116
L37	29	8.5" x 1.25" Plate	53.00 - 58.00	Auto	0.1905
L37	30	8.5" x 1.25" Plate	53.00 - 58.00	Auto	0.1905
L37	31	8.5" x 1.25" Plate	53.00 - 58.00	Auto	0.1905
L38	29	8.5" x 1.25" Plate	47.50 - 53.00	Auto	0.1684
L38	30	8.5" x 1.25" Plate	47.50 - 53.00	Auto	0.1684
L38	31	8.5" x 1.25" Plate	47.50 - 53.00	Auto	0.1684

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 6'	C	None		0.000	193.000	No Ice	0.375	0.375	0.006
						1/2" Ice	0.989	0.989	0.010
						1" Ice	1.619	1.619	0.019
						2" Ice	2.464	2.464	0.047
*									
NNH4-65C-R6-V3 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	9.678	5.165	0.159
						1/2" Ice	10.268	5.709	0.269
						1" Ice	10.869	6.262	0.393
						2" Ice	12.100	7.399	0.685
NNH4-65C-R6-V3 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	9.678	5.165	0.159
						1/2" Ice	10.268	5.709	0.269
						1" Ice	10.869	6.262	0.393
						2" Ice	12.100	7.399	0.685
NNH4-65C-R6-V3 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	9.678	5.165	0.159
						1/2" Ice	10.268	5.709	0.269
						1" Ice	10.869	6.262	0.393
						2" Ice	12.100	7.399	0.685
EPBQ-654L8H8-L2 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	14.863	6.253	0.119
						1/2" Ice	15.721	7.022	0.228
						1" Ice	16.593	7.804	0.351
						2" Ice	18.382	9.414	0.642
EPBQ-654L8H8-L2 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	14.863	6.253	0.119
						1/2" Ice	15.721	7.022	0.228
						1" Ice	16.593	7.804	0.351
						2" Ice	18.382	9.414	0.642
EPBQ-654L8H8-L2 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	14.863	6.253	0.119
						1/2" Ice	15.721	7.022	0.228
						1" Ice	16.593	7.804	0.351
						2" Ice	18.382	9.414	0.642
DC6-48-60-18-8F	A	From Leg	1.000 0.000 1.000	0.000	187.000	No Ice	1.212	1.212	0.033
						1/2" Ice	1.892	1.892	0.055
						1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
DC6-48-60-18-8F	B	From Leg	1.000 0.000 1.000	0.000	187.000	No Ice	1.212	1.212	0.033
						1/2" Ice	1.892	1.892	0.055
						1" Ice	2.105	2.105	0.080
						2" Ice	2.570	2.570	0.138
RRUS-32 B30	A	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	3.314	2.424	0.077
						1/2" Ice	3.558	2.638	0.105
						1" Ice	3.809	2.860	0.136
						2" Ice	4.333	3.324	0.211
RRUS-32 B30	B	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	3.314	2.424	0.077
						1/2" Ice	3.558	2.638	0.105
						1" Ice	3.809	2.860	0.136
						2" Ice	4.333	3.324	0.211
RRUS-32 B30	C	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	3.314	2.424	0.077
						1/2" Ice	3.558	2.638	0.105
						1" Ice	3.809	2.860	0.136
						2" Ice	4.333	3.324	0.211
RRUS 4478 B14	A	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140
RRUS 4478 B14	B	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice	1.843	1.059	0.060
						1/2" Ice	2.012	1.197	0.076
						1" Ice	2.190	1.342	0.094
						2" Ice	2.566	1.656	0.140

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS 4478 B14	C	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.060 0.076 0.094 0.140
RRUS 8843 B2/B66A	A	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.072 0.090 0.110 0.159
RRUS 8843 B2/B66A	B	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.072 0.090 0.110 0.159
RRUS 8843 B2/B66A	C	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.639 1.799 1.966 2.323	1.353 1.500 1.655 1.986	0.072 0.090 0.110 0.159
DC6-48-60-18-8C	C	From Leg	1.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.145 1.792 2.002 2.451	1.145 1.792 2.002 2.451	0.026 0.047 0.070 0.125
AIR 6419 B77G_CCIV3 w/ Mount Pipe	A	From Leg	4.000 0.000 3.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.791 4.143 4.509 5.285	2.147 2.446 2.759 3.430	0.069 0.104 0.146 0.250
AIR 6419 B77G_CCIV3 w/ Mount Pipe	B	From Leg	4.000 0.000 3.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.791 4.143 4.509 5.285	2.147 2.446 2.759 3.430	0.069 0.104 0.146 0.250
AIR 6419 B77G_CCIV3 w/ Mount Pipe	C	From Leg	4.000 0.000 3.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.791 4.143 4.509 5.285	2.147 2.446 2.759 3.430	0.069 0.104 0.146 0.250
AIR 6449 B77D_CCIV3 w/ Mount Pipe	A	From Leg	4.000 0.000 -1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.650 3.990 4.350 5.110	2.720 3.030 3.360 4.050	0.110 0.150 0.196 0.310
AIR 6449 B77D_CCIV3 w/ Mount Pipe	B	From Leg	4.000 0.000 -1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.650 3.990 4.350 5.110	2.720 3.030 3.360 4.050	0.110 0.150 0.196 0.310
AIR 6449 B77D_CCIV3 w/ Mount Pipe	C	From Leg	4.000 0.000 -1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.650 3.990 4.350 5.110	2.720 3.030 3.360 4.050	0.110 0.150 0.196 0.310
RRUS 4478 B12_CCIV2	A	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.010 2.188 2.374 2.767	1.185 1.333 1.488 1.820	0.057 0.074 0.094 0.143
RRUS 4478 B12_CCIV2	B	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.010 2.188 2.374 2.767	1.185 1.333 1.488 1.820	0.057 0.074 0.094 0.143
RRUS 4478 B12_CCIV2	C	From Leg	4.000 0.000 1.000	0.000	187.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.010 2.188 2.374 2.767	1.185 1.333 1.488 1.820	0.057 0.074 0.094 0.143
DC6-48-60-18-8C-EV	A	From Leg	4.000	0.000	187.000	No Ice	2.736	2.736	0.026

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	2.962	2.962	0.052
			1.000			1" Ice	3.195	3.195	0.082
						2" Ice	3.683	3.683	0.152
9' horizontal x 2" Pipe Mount	A	From Leg	4.000	0.000	187.000	No Ice	1.900	0.010	0.027
			0.000			1/2" Ice	2.920	0.040	0.042
			0.000			1" Ice	3.970	0.090	0.063
						2" Ice	5.650	0.210	0.126
9' horizontal x 2" Pipe Mount	B	From Leg	4.000	0.000	187.000	No Ice	1.900	0.010	0.027
			0.000			1/2" Ice	2.920	0.040	0.042
			0.000			1" Ice	3.970	0.090	0.063
						2" Ice	5.650	0.210	0.126
9' horizontal x 2" Pipe Mount	C	From Leg	4.000	0.000	187.000	No Ice	1.900	0.010	0.027
			0.000			1/2" Ice	2.920	0.040	0.042
			0.000			1" Ice	3.970	0.090	0.063
						2" Ice	5.650	0.210	0.126
10'6"x2-3/8" Pipe Mount	A	From Leg	4.000	0.000	187.000	No Ice	2.494	2.494	0.036
			0.000			1/2" Ice	3.572	3.572	0.055
			1.000			1" Ice	4.667	4.667	0.080
						2" Ice	6.317	6.317	0.152
10'6"x2-3/8" Pipe Mount	B	From Leg	4.000	0.000	187.000	No Ice	2.494	2.494	0.036
			0.000			1/2" Ice	3.572	3.572	0.055
			1.000			1" Ice	4.667	4.667	0.080
						2" Ice	6.317	6.317	0.152
10'6"x2-3/8" Pipe Mount	C	From Leg	4.000	0.000	187.000	No Ice	2.494	2.494	0.036
			0.000			1/2" Ice	3.572	3.572	0.055
			1.000			1" Ice	4.667	4.667	0.080
						2" Ice	6.317	6.317	0.152
Sector Mount [SM 1303-3]	C	None		0.000	187.000	No Ice	38.780	38.780	1.104
						1/2" Ice	46.780	46.780	1.763
						1" Ice	54.730	54.730	2.567
						2" Ice	70.620	70.620	4.604
*									
AIR 32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.000	0.000	180.000	No Ice	3.763	3.146	0.194
			0.000			1/2" Ice	4.117	3.489	0.252
			0.000			1" Ice	4.480	3.842	0.320
						2" Ice	5.236	4.577	0.485
AIR 32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.000	0.000	180.000	No Ice	3.763	3.146	0.194
			0.000			1/2" Ice	4.117	3.489	0.252
			0.000			1" Ice	4.480	3.842	0.320
						2" Ice	5.236	4.577	0.485
AIR 32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.000	0.000	180.000	No Ice	3.763	3.146	0.194
			0.000			1/2" Ice	4.117	3.489	0.252
			0.000			1" Ice	4.480	3.842	0.320
						2" Ice	5.236	4.577	0.485
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Leg	4.000	0.000	180.000	No Ice	14.694	6.873	0.183
			0.000			1/2" Ice	15.455	7.554	0.311
			0.000			1" Ice	16.230	8.247	0.453
						2" Ice	17.816	9.670	0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Leg	4.000	0.000	180.000	No Ice	14.694	6.873	0.183
			0.000			1/2" Ice	15.455	7.554	0.311
			0.000			1" Ice	16.230	8.247	0.453
						2" Ice	17.816	9.670	0.782
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Leg	4.000	0.000	180.000	No Ice	14.694	6.873	0.183
			0.000			1/2" Ice	15.455	7.554	0.311
			0.000			1" Ice	16.230	8.247	0.453
						2" Ice	17.816	9.670	0.782
AIR6449 B41_T-MOBILE	A	From Leg	4.000	0.000	180.000	No Ice	5.187	2.705	0.128

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
w/ Mount Pipe			0.000 0.000			1/2" Ice 1" Ice 2" Ice	5.594 6.016 6.904	3.038 3.385 4.122	0.174 0.227 0.354
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.187 5.594 6.016 6.904	2.705 3.038 3.385 4.122	0.128 0.174 0.227 0.354
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	5.187 5.594 6.016 6.904	2.705 3.038 3.385 4.122	0.128 0.174 0.227 0.354
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.587 1.749 1.918 2.280	0.073 0.093 0.116 0.170
RADIO 4415 B25_TMO	A	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.870 0.997 1.134 1.432	0.047 0.062 0.079 0.122
RADIO 4415 B25_TMO	B	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.870 0.997 1.134 1.432	0.047 0.062 0.079 0.122
RADIO 4415 B25_TMO	C	From Leg	4.000 0.000 0.000	0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	0.870 0.997 1.134 1.432	0.047 0.062 0.079 0.122
Perfect Vision PV-LPP12M-HR-B *	C	None		0.000	180.000	No Ice 1/2" Ice 1" Ice 2" Ice	34.400 43.000 51.600 68.800	34.400 43.000 51.600 68.800	1.522 1.903 2.283 3.044
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	167.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.009 8.518 9.038 10.109	4.233 4.689 5.156 6.122	0.108 0.194 0.292 0.522
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	167.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.009 8.518 9.038 10.109	4.233 4.689 5.156 6.122	0.108 0.194 0.292 0.522
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	167.000	No Ice 1/2" Ice 1" Ice 2" Ice	8.009 8.518 9.038 10.109	4.233 4.689 5.156 6.122	0.108 0.194 0.292 0.522
TA08025-B605	A	From Leg	4.000 0.000 3.000	0.000	167.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.000 0.000 0.000 0.000	1.129 1.267 1.411 1.723	0.075 0.093 0.114 0.164
TA08025-B605	B	From Leg	4.000	0.000	167.000	No Ice	0.000	1.129	0.075

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	0.000	1.267	0.093
			3.000			1" Ice	0.000	1.411	0.114
						2" Ice	0.000	1.723	0.164
TA08025-B605	C	From Leg	4.000	0.000	167.000	No Ice	0.000	1.129	0.075
			0.000			1/2" Ice	0.000	1.267	0.093
			3.000			1" Ice	0.000	1.411	0.114
						2" Ice	0.000	1.723	0.164
TA08025-B604	A	From Leg	4.000	0.000	167.000	No Ice	0.000	0.981	0.064
			0.000			1/2" Ice	0.000	1.112	0.081
			3.000			1" Ice	0.000	1.250	0.100
						2" Ice	0.000	1.548	0.148
TA08025-B604	B	From Leg	4.000	0.000	167.000	No Ice	0.000	0.981	0.064
			0.000			1/2" Ice	0.000	1.112	0.081
			3.000			1" Ice	0.000	1.250	0.100
						2" Ice	0.000	1.548	0.148
TA08025-B604	C	From Leg	4.000	0.000	167.000	No Ice	0.000	0.981	0.064
			0.000			1/2" Ice	0.000	1.112	0.081
			3.000			1" Ice	0.000	1.250	0.100
						2" Ice	0.000	1.548	0.148
RDIDC-9181-PF-48	A	From Leg	4.000	0.000	167.000	No Ice	2.012	1.168	0.022
			0.000			1/2" Ice	2.189	1.311	0.040
			1.000			1" Ice	2.373	1.461	0.060
						2" Ice	2.763	1.784	0.110
(2) 8' x 2" Mount Pipe	A	From Leg	4.000	0.000	167.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
(2) 8' x 2" Mount Pipe	B	From Leg	4.000	0.000	167.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
(2) 8' x 2" Mount Pipe	C	From Leg	4.000	0.000	167.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
Commscope MC-PK8-DSH	C	None		0.000	167.000	No Ice	34.240	34.240	1.749
						1/2" Ice	62.950	62.950	2.099
						1" Ice	91.660	91.660	2.450
						2" Ice	149.080	149.080	3.151
*									
RHSDC-3315-PF-48	A	From Leg	2.000	0.000	160.000	No Ice	3.708	2.192	0.032
			0.000			1/2" Ice	3.950	2.395	0.062
			0.000			1" Ice	4.200	2.606	0.097
						2" Ice	4.723	3.049	0.176
AIR 6449 B77 w/ Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	3.650	2.715	0.108
			0.000			1/2" Ice	3.993	3.028	0.148
			1.000			1" Ice	4.351	3.355	0.195
						2" Ice	5.109	4.052	0.309
AIR 6449 B77 w/ Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	3.650	2.715	0.108
			0.000			1/2" Ice	3.993	3.028	0.148
			1.000			1" Ice	4.351	3.355	0.195
						2" Ice	5.109	4.052	0.309
AIR 6449 B77 w/ Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	3.650	2.715	0.108
			0.000			1/2" Ice	3.993	3.028	0.148
			1.000			1" Ice	4.351	3.355	0.195
						2" Ice	5.109	4.052	0.309
(2) NHH-65C-R2B w/ Mount	A	From Leg	4.000	0.000	160.000	No Ice	5.559	4.467	0.085

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pipe			0.000			1/2" Ice	6.067	4.964	0.166
			1.000			1" Ice	6.585	5.470	0.261
						2" Ice	7.648	6.511	0.493
(2) NHH-65C-R2B w/ Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	5.559	4.467	0.085
			0.000			1/2" Ice	6.067	4.964	0.166
			1.000			1" Ice	6.585	5.470	0.261
						2" Ice	7.648	6.511	0.493
BSA33R-BU8A w/ Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	24.718	10.557	0.186
			0.000			1/2" Ice	25.838	11.530	0.334
			1.000			1" Ice	26.976	12.520	0.497
						2" Ice	29.305	14.554	0.868
RCMDC-6627-PF-48	A	From Leg	4.000	0.000	160.000	No Ice	4.056	3.098	0.032
			0.000			1/2" Ice	4.316	3.335	0.068
			1.000			1" Ice	4.582	3.580	0.109
						2" Ice	5.138	4.092	0.203
(2) RRUS 4449 B5/B12	A	From Leg	4.000	0.000	160.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			0.000			1" Ice	2.328	1.727	0.111
						2" Ice	2.718	2.075	0.163
RRUS 4449 B5/B12	C	From Leg	4.000	0.000	160.000	No Ice	1.968	1.408	0.071
			0.000			1/2" Ice	2.144	1.564	0.090
			0.000			1" Ice	2.328	1.727	0.111
						2" Ice	2.718	2.075	0.163
RADIO 4408	A	From Leg	4.000	0.000	160.000	No Ice	0.604	0.331	0.010
			0.000			1/2" Ice	0.762	0.458	0.015
			1.000			1" Ice	0.940	0.603	0.022
						2" Ice	1.350	0.949	0.040
RADIO 4408	B	From Leg	4.000	0.000	160.000	No Ice	0.604	0.331	0.010
			0.000			1/2" Ice	0.762	0.458	0.015
			1.000			1" Ice	0.940	0.603	0.022
						2" Ice	1.350	0.949	0.040
RADIO 4408	C	From Leg	4.000	0.000	160.000	No Ice	0.604	0.331	0.010
			0.000			1/2" Ice	0.762	0.458	0.015
			1.000			1" Ice	0.940	0.603	0.022
						2" Ice	1.350	0.949	0.040
CDX1923Q-DS-43	B	From Leg	4.000	0.000	160.000	No Ice	0.316	0.466	0.017
			0.000			1/2" Ice	0.389	0.553	0.022
			1.000			1" Ice	0.469	0.647	0.028
						2" Ice	0.651	0.858	0.047
CDX1923Q-DS-43	C	From Leg	4.000	0.000	160.000	No Ice	0.316	0.466	0.017
			0.000			1/2" Ice	0.389	0.553	0.022
			1.000			1" Ice	0.469	0.647	0.028
						2" Ice	0.651	0.858	0.047
(2) RRUS 8843 B2/B66A_CCIV2	B	From Leg	4.000	0.000	160.000	No Ice	1.980	1.695	0.075
			0.000			1/2" Ice	2.157	1.861	0.096
			0.000			1" Ice	2.341	2.035	0.119
						2" Ice	2.733	2.405	0.176
RRUS 8843 B2/B66A_CCIV2	C	From Leg	4.000	0.000	160.000	No Ice	1.980	1.695	0.075
			0.000			1/2" Ice	2.157	1.861	0.096
			0.000			1" Ice	2.341	2.035	0.119
						2" Ice	2.733	2.405	0.176
4' x 2" Pipe Mount	A	From Leg	4.000	0.000	160.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
4' x 2" Pipe Mount	B	From Leg	4.000	0.000	160.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
4' x 2" Pipe Mount	C	From Leg	4.000	0.000	160.000	No Ice	0.785	0.785	0.029
			0.000			1/2" Ice	1.028	1.028	0.035
			0.000			1" Ice	1.281	1.281	0.044
						2" Ice	1.814	1.814	0.072
8' x 2" Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
8' x 2" Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
(2) 8' x 2" Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	1.900	1.900	0.029
			0.000			1/2" Ice	2.728	2.728	0.044
			0.000			1" Ice	3.401	3.401	0.063
						2" Ice	4.396	4.396	0.119
3' x 2" Pipe Mount	B	From Leg	1.000	0.000	160.000	No Ice	0.583	0.583	0.011
			0.000			1/2" Ice	0.770	0.770	0.017
			0.000			1" Ice	0.967	0.967	0.024
						2" Ice	1.388	1.388	0.047
12.5' x 2.375" Horizontal Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	2.980	0.010	0.046
			0.000			1/2" Ice	4.250	0.050	0.068
			-3.000			1" Ice	5.550	0.100	0.981
						2" Ice	8.060	0.240	0.183
12.5' x 2.375" Horizontal Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	2.980	0.010	0.046
			0.000			1/2" Ice	4.250	0.050	0.068
			-3.000			1" Ice	5.550	0.100	0.981
						2" Ice	8.060	0.240	0.183
12.5' x 2.375" Horizontal Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	2.980	0.010	0.046
			0.000			1/2" Ice	4.250	0.050	0.068
			-3.000			1" Ice	5.550	0.100	0.981
						2" Ice	8.060	0.240	0.183
T-Arm Mount [TA 602-3_KCKR]	C	None		0.000	160.000	No Ice	23.410	23.410	1.049
						1/2" Ice	28.720	28.720	1.424
						1" Ice	34.480	34.480	1.904
						2" Ice	46.490	46.490	3.213
*									
220-1N	A	From Leg	3.000	0.000	120.000	No Ice	5.500	5.500	0.025
			0.000			1/2" Ice	7.531	7.531	0.065
			0.000			1" Ice	9.579	9.579	0.118
						2" Ice	13.725	13.725	0.262
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	120.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			7.500			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	120.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			2.500			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	120.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079
			-2.500			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	120.000	No Ice	0.850	1.670	0.065
			0.000			1/2" Ice	1.140	2.340	0.079

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*			-7.500			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service

Comb. No.	Description
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	190 - 185	Pole	Max Tension	42	0.000	0.000	-0.000
			Max. Compression	26	-12.032	-0.004	0.621
			Max. Mx	8	-3.330	-19.476	0.069
			Max. My	2	-3.335	-0.003	19.618
			Max. Vy	8	7.360	-19.476	0.069
			Max. Vx	2	-7.358	-0.003	19.618
			Max. Torque	8			0.522
L2	185 - 180	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-12.512	0.016	0.658
			Max. Mx	8	-3.556	-57.066	0.062
			Max. My	2	-3.560	0.019	57.199
			Max. Vy	8	7.680	-57.066	0.062
			Max. Vx	2	-7.678	0.019	57.199
			Max. Torque	8			0.522
L3	180 - 175	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-21.081	0.042	0.715
			Max. Mx	8	-7.229	-118.465	0.043
			Max. My	2	-7.236	0.059	118.580
			Max. Vy	20	-12.444	118.446	0.181
			Max. Vx	2	-12.440	0.059	118.580
			Max. Torque	8			0.522
L4	175 - 170	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-21.639	0.069	0.770
			Max. Mx	8	-7.560	-181.476	0.022
			Max. My	2	-7.568	0.101	181.570
			Max. Vy	20	-12.768	181.459	0.241
			Max. Vx	2	-12.764	0.101	181.570
			Max. Torque	8			0.521
L5	170 - 165	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-28.205	0.097	1.271
			Max. Mx	8	-10.673	-254.499	0.090
			Max. My	2	-10.677	0.150	254.793
			Max. Vy	20	-16.409	254.485	0.406
			Max. Vx	2	-16.434	0.150	254.793
			Max. Torque	8			0.754
L6	165 - 160	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-28.822	0.128	1.335
			Max. Mx	8	-11.107	-337.274	0.055
			Max. My	2	-11.112	0.208	337.691
			Max. Vy	20	-16.717	337.262	0.484
			Max. Vx	2	-16.741	0.208	337.691
			Max. Torque	8			0.754
L7	160 - 155	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.214	0.762	2.248
			Max. Mx	20	-14.371	445.936	1.674
			Max. My	2	-14.395	1.424	445.760

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	21.574	-445.910	-1.139
			Max. Vx	2	-21.489	1.424	445.760
			Max. Torque	20			-1.067
L8	155 - 153.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.449	0.772	2.268
			Max. Mx	20	-14.520	476.543	1.965
			Max. My	2	-14.543	1.709	476.246
			Max. Vy	8	21.658	-476.517	-1.417
			Max. Vx	2	-21.573	1.709	476.246
			Max. Torque	20			-1.065
L9	153.583 - 153.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-39.510	0.774	2.274
			Max. Mx	20	-14.588	481.956	2.016
			Max. My	2	-14.611	1.760	481.637
			Max. Vy	8	21.662	-481.929	-1.466
			Max. Vx	2	-21.576	1.760	481.637
			Max. Torque	20			-1.064
L10	153.333 - 148.333	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-40.728	0.807	2.340
			Max. Mx	20	-15.410	591.252	3.044
			Max. My	2	-15.434	2.765	590.504
			Max. Vy	8	22.067	-591.222	-2.448
			Max. Vx	2	-21.981	2.765	590.504
			Max. Torque	20			-1.064
L11	148.333 - 144	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.858	0.836	2.398
			Max. Mx	20	-16.149	687.591	3.936
			Max. My	2	-16.173	3.638	686.470
			Max. Vy	8	22.416	-687.559	-3.301
			Max. Vx	2	-22.330	3.638	686.470
			Max. Torque	20			-1.063
L12	144 - 143.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-41.942	0.838	2.405
			Max. Mx	20	-16.215	693.196	3.988
			Max. My	2	-16.238	3.690	692.053
			Max. Vy	8	22.434	-693.164	-3.349
			Max. Vx	2	-22.347	3.690	692.053
			Max. Torque	20			-1.062
L13	143.75 - 137	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.863	0.856	2.438
			Max. Mx	20	-16.818	755.226	4.555
			Max. My	2	-16.841	4.244	753.845
			Max. Vy	8	22.691	-755.193	-3.892
			Max. Vx	2	-22.604	4.244	753.845
			Max. Torque	20			-1.062
L14	137 - 136	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-45.410	0.889	2.506
			Max. Mx	20	-18.559	870.104	5.590
			Max. My	2	-18.582	5.258	868.287
			Max. Vy	8	23.249	-870.067	-4.881
			Max. Vx	2	-23.162	5.258	868.287
			Max. Torque	20			-1.061
L15	136 - 131	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-46.807	0.923	2.573
			Max. Mx	20	-19.568	987.340	6.628
			Max. My	2	-19.591	6.275	985.084
			Max. Vy	8	23.665	-987.301	-5.874
			Max. Vx	2	-23.577	6.275	985.084
			Max. Torque	20			-1.060

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L16	131 - 126	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-48.228	0.957	2.640
			Max. Mx	20	-20.601	1106.650	7.666
			Max. My	2	-20.623	7.292	1103.952
			Max. Vy	8	24.080	-1106.608	-6.868
			Max. Vx	2	-23.992	7.292	1103.952
			Max. Torque	20			-1.059
L17	126 - 123.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.036	0.975	2.675
			Max. Mx	20	-21.176	1173.155	8.237
			Max. My	2	-21.198	7.852	1170.213
			Max. Vy	8	24.313	-1173.111	-7.415
			Max. Vx	2	-24.224	7.852	1170.213
			Max. Torque	20			-1.057
L18	123.25 - 123	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.116	0.978	2.683
			Max. Mx	20	-21.249	1179.233	8.289
			Max. My	2	-21.271	7.904	1176.268
			Max. Vy	8	24.324	-1179.188	-7.464
			Max. Vx	2	-24.235	7.904	1176.268
			Max. Torque	20			-1.056
L19	123 - 118	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.376	1.011	4.904
			Max. Mx	20	-22.694	1303.060	10.141
			Max. My	2	-22.730	8.922	1300.375
			Max. Vy	8	25.327	-1303.009	-7.647
			Max. Vx	2	-25.097	8.922	1300.375
			Max. Torque	20			-3.000
L20	118 - 113	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.015	1.044	4.967
			Max. Mx	20	-23.889	1430.730	11.178
			Max. My	2	-23.924	9.942	1426.893
			Max. Vy	8	25.763	-1430.676	-8.647
			Max. Vx	2	-25.533	9.942	1426.893
			Max. Torque	20			-2.999
L21	113 - 111.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.557	1.054	4.985
			Max. Mx	20	-24.246	1469.456	11.489
			Max. My	2	-24.281	10.248	1465.273
			Max. Vy	8	25.900	-1469.402	-8.947
			Max. Vx	2	-25.670	10.248	1465.273
			Max. Torque	20			-2.996
L22	111.5 - 111.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-53.666	1.058	4.994
			Max. Mx	20	-24.340	1475.930	11.541
			Max. My	2	-24.375	10.300	1471.690
			Max. Vy	8	25.913	-1475.876	-8.996
			Max. Vx	2	-25.682	10.300	1471.690
			Max. Torque	20			-2.996
L23	111.25 - 106.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-55.845	1.090	5.049
			Max. Mx	20	-25.883	1606.722	12.578
			Max. My	2	-25.918	11.320	1601.326
			Max. Vy	8	26.418	-1606.664	-9.998
			Max. Vx	2	-26.187	11.320	1601.326
			Max. Torque	20			-2.996
L24	106.25 - 101.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.093	1.124	5.109
			Max. Mx	20	-27.456	1740.010	13.616

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-27.490	12.342	1733.455
			Max. Vy	8	26.917	-1739.948	-11.001
			Max. Vx	2	-26.685	12.342	1733.455
			Max. Torque	20			-2.994
L25	101.25 - 99.833	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.772	1.134	5.125
			Max. Mx	20	-27.904	1778.237	13.910
			Max. My	2	-27.937	12.632	1771.353
			Max. Vy	8	27.062	-1778.174	-11.286
			Max. Vx	2	-26.830	12.632	1771.353
			Max. Torque	20			-2.992
L26	99.833 - 99.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.917	1.138	5.137
			Max. Mx	20	-28.019	1785.003	13.962
			Max. My	2	-28.052	12.685	1778.061
			Max. Vy	8	27.082	-1784.940	-11.335
			Max. Vx	2	-26.849	12.685	1778.061
			Max. Torque	20			-2.992
L27	99.583 - 94	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-59.107	1.139	5.138
			Max. Mx	20	-28.156	1794.026	14.031
			Max. My	2	-28.190	12.753	1787.007
			Max. Vy	8	27.118	-1793.962	-11.402
			Max. Vx	2	-26.886	12.753	1787.007
			Max. Torque	20			-2.992
L28	94 - 93	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-64.143	1.181	5.207
			Max. Mx	20	-31.883	1966.226	15.338
			Max. My	2	-31.916	14.038	1957.749
			Max. Vy	8	27.959	-1966.157	-12.665
			Max. Vx	2	-27.725	14.038	1957.749
			Max. Torque	20			-2.991
L29	93 - 88	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.017	1.216	5.267
			Max. Mx	20	-33.316	2107.028	16.383
			Max. My	2	-33.347	15.070	2097.382
			Max. Vy	8	28.392	-2106.955	-13.680
			Max. Vx	2	-28.159	15.070	2097.382
			Max. Torque	20			-2.990
L30	88 - 83	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-67.918	1.251	5.324
			Max. Mx	20	-34.772	2249.990	17.426
			Max. My	2	-34.802	16.101	2239.176
			Max. Vy	8	28.824	-2249.914	-14.694
			Max. Vx	2	-28.590	16.101	2239.176
			Max. Torque	20			-2.988
L31	83 - 78	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.844	1.285	5.379
			Max. Mx	20	-36.254	2395.095	18.466
			Max. My	2	-36.283	17.129	2383.111
			Max. Vy	8	29.250	-2395.014	-15.707
			Max. Vx	2	-29.017	17.129	2383.111
			Max. Torque	20			-2.986
L32	78 - 73.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.726	1.318	5.428
			Max. Mx	20	-37.681	2534.907	19.451
			Max. My	2	-37.708	18.104	2521.813
			Max. Vy	8	29.655	-2534.822	-16.668
			Max. Vx	2	-29.421	18.104	2521.813

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-2.984
L33	73.25 - 73	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-71.833	1.322	5.438
			Max. Mx	20	-37.777	2542.319	19.502
			Max. My	2	-37.804	18.156	2529.167
			Max. Vy	8	29.665	-2542.234	-16.718
			Max. Vx	2	-29.431	18.156	2529.167
			Max. Torque	20			-2.983
L34	73 - 68	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-73.994	1.354	5.482
			Max. Mx	20	-39.433	2691.721	20.536
			Max. My	2	-39.458	19.179	2677.400
			Max. Vy	8	30.119	-2691.631	-17.728
			Max. Vx	2	-29.886	19.179	2677.400
			Max. Torque	20			-2.983
L35	68 - 63	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-76.180	1.379	5.496
			Max. Mx	20	-41.122	2843.335	21.567
			Max. My	2	-41.147	20.201	2827.847
			Max. Vy	8	30.558	-2843.241	-18.737
			Max. Vx	2	-30.325	20.201	2827.847
			Max. Torque	20			-2.981
L36	63 - 58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.389	1.404	5.510
			Max. Mx	20	-42.837	2997.120	22.595
			Max. My	2	-42.860	21.221	2980.466
			Max. Vy	8	30.989	-2997.021	-19.744
			Max. Vx	2	-30.756	21.221	2980.466
			Max. Torque	20			-2.979
L37	58 - 53	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.623	1.429	5.525
			Max. Mx	20	-44.575	3153.037	23.619
			Max. My	2	-44.596	22.237	3135.218
			Max. Vy	8	31.412	-3152.934	-20.748
			Max. Vx	2	-31.180	22.237	3135.218
			Max. Torque	20			-2.978
L38	53 - 46.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-80.734	1.431	5.531
			Max. Mx	20	-44.672	3160.889	23.670
			Max. My	2	-44.693	22.289	3143.012
			Max. Vy	8	31.424	-3160.786	-20.798
			Max. Vx	2	-31.191	22.289	3143.012
			Max. Torque	20			-2.977
L39	46.25 - 45.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-85.892	1.468	5.547
			Max. Mx	20	-48.601	3399.531	25.206
			Max. My	2	-48.621	23.812	3379.906
			Max. Vy	8	32.202	-3399.420	-22.303
			Max. Vx	2	-31.969	23.812	3379.906
			Max. Torque	20			-2.976
L40	45.25 - 40.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-87.521	1.493	5.561
			Max. Mx	20	-49.992	3561.074	26.221
			Max. My	2	-50.010	24.823	3540.288
			Max. Vy	8	32.472	-3560.958	-23.305
			Max. Vx	2	-32.241	24.823	3540.288
			Max. Torque	20			-2.975
L41	40.25 - 35.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-89.178	1.518	5.576
			Max. Mx	20	-51.409	3723.942	27.226
			Max. My	2	-51.424	25.825	3702.001

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	32.732	-3723.821	-24.300
			Max. Vx	2	-32.502	25.825	3702.001
			Max. Torque	20			-2.973
L42	35.25 - 30.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-90.861	1.543	5.590
			Max. Mx	20	-52.851	3888.078	28.222
			Max. My	2	-52.865	26.820	3864.988
			Max. Vy	8	32.980	-3887.952	-25.288
			Max. Vx	2	-32.751	26.820	3864.988
			Max. Torque	20			-2.972
L43	30.25 - 25.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-92.570	1.568	5.604
			Max. Mx	20	-54.319	4053.410	29.208
			Max. My	2	-54.330	27.805	4029.180
			Max. Vy	8	33.212	-4053.280	-26.268
			Max. Vx	2	-32.984	27.805	4029.180
			Max. Torque	20			-2.971
L44	25.25 - 20.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-94.303	1.592	5.618
			Max. Mx	20	-55.813	4219.855	30.184
			Max. My	2	-55.821	28.782	4194.491
			Max. Vy	8	33.425	-4219.719	-27.240
			Max. Vx	2	-33.199	28.782	4194.491
			Max. Torque	20			-2.970
L45	20.25 - 15.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-96.057	1.617	5.632
			Max. Mx	20	-57.331	4387.306	31.151
			Max. My	2	-57.338	29.750	4360.816
			Max. Vy	8	33.614	-4387.165	-28.205
			Max. Vx	2	-33.390	29.750	4360.816
			Max. Torque	20			-2.969
L46	15.25 - 10.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-97.831	1.640	5.645
			Max. Mx	20	-58.874	4555.666	32.106
			Max. My	2	-58.879	30.708	4528.058
			Max. Vy	8	33.789	-4555.520	-29.160
			Max. Vx	2	-33.566	30.708	4528.058
			Max. Torque	20			-2.968
L47	10.25 - 5.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-99.615	1.662	5.658
			Max. Mx	20	-60.442	4724.898	33.051
			Max. My	2	-60.444	31.657	4696.180
			Max. Vy	8	33.963	-4724.746	-30.108
			Max. Vx	2	-33.742	31.657	4696.180
			Max. Torque	20			-2.968
L48	5.25 - 0.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.392	1.681	5.669
			Max. Mx	20	-62.034	4895.003	33.985
			Max. My	2	-62.034	32.596	4865.185
			Max. Vy	8	34.138	-4894.846	-31.046
			Max. Vx	2	-33.919	32.596	4865.185
			Max. Torque	20			-2.967
L49	0.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-101.477	1.682	5.669
			Max. Mx	20	-62.127	4903.531	34.032
			Max. My	2	-62.127	32.643	4873.658
			Max. Vy	8	34.124	-4903.374	-31.093
			Max. Vx	2	-33.905	32.643	4873.658
			Max. Torque	20			-2.967

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	101.477	0.000	0.000
	Max. H_x	21	46.598	34.117	0.186
	Max. H_z	2	62.131	0.186	33.898
	Max. M_x	2	4873.658	0.186	33.898
	Max. M_z	8	4903.374	-34.117	-0.186
	Max. Torsion	8	2.929	-34.117	-0.186
	Min. Vert	25	46.598	17.220	29.449
	Min. H_x	8	62.131	-34.117	-0.186
	Min. H_z	14	62.131	-0.186	-33.898
	Min. M_x	14	-4870.609	-0.186	-33.898
	Min. M_z	20	-4903.531	34.117	0.186
	Min. Torsion	20	-2.967	34.117	0.186

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	51.776	1.435	0.000	-1.132	-0.120	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	62.131	-0.186	-33.898	-4873.658	32.643	0.023
0.9 Dead+1.0 Wind 0 deg - No Ice	46.598	-0.186	-33.898	-4767.696	31.904	0.024
1.2 Dead+1.0 Wind 30 deg - No Ice	62.131	16.897	-29.263	-4204.768	-2423.655	-1.442
0.9 Dead+1.0 Wind 30 deg - No Ice	46.598	16.897	-29.263	-4113.294	-2371.203	-1.422
1.2 Dead+1.0 Wind 60 deg - No Ice	62.131	29.453	-16.788	-2409.384	-4230.412	-2.517
0.9 Dead+1.0 Wind 60 deg - No Ice	46.598	29.453	-16.788	-2356.824	-4138.842	-2.485
1.2 Dead+1.0 Wind 90 deg - No Ice	62.131	34.117	0.186	31.093	-4903.374	-2.929
0.9 Dead+1.0 Wind 90 deg - No Ice	46.598	34.117	0.186	30.777	-4797.253	-2.891
1.2 Dead+1.0 Wind 120 deg - No Ice	62.131	29.639	17.110	2462.602	-4262.549	-2.570
0.9 Dead+1.0 Wind 120 deg - No Ice	46.598	29.639	17.110	2409.628	-4170.308	-2.537
1.2 Dead+1.0 Wind 150 deg - No Ice	62.131	17.220	29.449	4233.933	-2479.790	-1.526
0.9 Dead+1.0 Wind 150 deg - No Ice	46.598	17.220	29.449	4142.602	-2426.128	-1.507
1.2 Dead+1.0 Wind 180 deg - No Ice	62.131	0.186	33.898	4870.609	-32.485	-0.062
0.9 Dead+1.0 Wind 180 deg - No Ice	46.598	0.186	33.898	4765.482	-31.788	-0.061
1.2 Dead+1.0 Wind 210 deg - No Ice	62.131	-16.897	29.263	4201.744	2423.764	1.434
0.9 Dead+1.0 Wind 210 deg - No Ice	46.598	-16.897	29.263	4111.098	2371.284	1.415

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 240 deg - No Ice	62.131	-29.453	16.788	2406.416	4230.520	2.548
0.9 Dead+1.0 Wind 240 deg - No Ice	46.598	-29.453	16.788	2354.667	4138.922	2.515
1.2 Dead+1.0 Wind 270 deg - No Ice	62.131	-34.117	-0.186	-34.031	4903.531	2.967
0.9 Dead+1.0 Wind 270 deg - No Ice	46.598	-34.117	-0.186	-32.912	4797.368	2.929
1.2 Dead+1.0 Wind 300 deg - No Ice	62.131	-29.639	-17.110	-2465.565	4262.752	2.578
0.9 Dead+1.0 Wind 300 deg - No Ice	46.598	-29.639	-17.110	-2411.781	4170.456	2.544
1.2 Dead+1.0 Wind 330 deg - No Ice	62.131	-17.220	-29.449	-4236.952	2479.995	1.495
0.9 Dead+1.0 Wind 330 deg - No Ice	46.598	-17.220	-29.449	-4144.795	2426.277	1.476
1.2 Dead+1.0 Ice+1.0 Temp	101.477	-0.000	-0.000	-5.669	1.682	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	101.477	-0.013	-3.981	-630.383	4.283	-0.027
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	101.477	1.993	-3.441	-545.469	-310.279	-0.231
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	101.477	3.465	-1.979	-315.997	-541.228	-0.372
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	101.477	4.009	0.013	-3.454	-626.681	-0.415
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	101.477	3.478	2.002	308.414	-543.742	-0.346
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	101.477	2.016	3.454	536.042	-314.636	-0.184
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	101.477	0.013	3.981	618.439	-0.750	0.027
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	101.477	-1.993	3.441	533.526	313.810	0.231
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	101.477	-3.465	1.979	304.055	544.759	0.373
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	101.477	-4.009	-0.013	-8.487	630.214	0.415
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	101.477	-3.478	-2.002	-320.355	547.277	0.346
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	101.477	-2.016	-3.454	-547.985	318.170	0.184
Dead+Wind 0 deg - Service	51.776	-0.048	-8.694	-1237.193	8.317	0.009
Dead+Wind 30 deg - Service	51.776	4.334	-7.505	-1067.487	-614.758	-0.374
Dead+Wind 60 deg - Service	51.776	7.554	-4.306	-612.079	-1073.090	-0.656
Dead+Wind 90 deg - Service	51.776	8.750	0.048	6.997	-1243.863	-0.764
Dead+Wind 120 deg - Service	51.776	7.602	4.388	623.857	-1081.334	-0.668
Dead+Wind 150 deg - Service	51.776	4.416	7.553	1073.219	-629.046	-0.393
Dead+Wind 180 deg - Service	51.776	0.048	8.694	1234.677	-8.188	-0.012
Dead+Wind 210 deg - Service	51.776	-4.334	7.505	1064.973	614.884	0.373
Dead+Wind 240 deg - Service	51.776	-7.554	4.306	609.567	1073.216	0.659
Dead+Wind 270 deg - Service	51.776	-8.750	-0.048	-9.508	1243.995	0.767
Dead+Wind 300 deg - Service	51.776	-7.602	-4.388	-626.369	1081.465	0.668
Dead+Wind 330 deg - Service	51.776	-4.416	-7.553	-1075.734	629.177	0.391

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	**0.000**	-51.776	0.000	-1.435	51.776	0.000	**2.771**%
2	-0.186	-62.131	-33.898	0.186	62.131	33.898	0.000%
3	-0.186	-46.598	-33.898	0.186	46.598	33.898	0.000%
4	16.897	-62.131	-29.263	-16.897	62.131	29.263	0.000%
5	16.897	-46.598	-29.263	-16.897	46.598	29.263	0.000%
6	29.453	-62.131	-16.788	-29.453	62.131	16.788	0.000%
7	29.453	-46.598	-16.788	-29.453	46.598	16.788	0.000%
8	34.117	-62.131	0.186	-34.117	62.131	-0.186	0.000%
9	34.117	-46.598	0.186	-34.117	46.598	-0.186	0.000%
10	29.639	-62.131	17.110	-29.639	62.131	-17.110	0.000%
11	29.639	-46.598	17.110	-29.639	46.598	-17.110	0.000%
12	17.220	-62.131	29.449	-17.220	62.131	-29.449	0.000%
13	17.220	-46.598	29.449	-17.220	46.598	-29.449	0.000%
14	0.186	-62.131	33.898	-0.186	62.131	-33.898	0.000%
15	0.186	-46.598	33.898	-0.186	46.598	-33.898	0.000%
16	-16.897	-62.131	29.263	16.897	62.131	-29.263	0.000%
17	-16.897	-46.598	29.263	16.897	46.598	-29.263	0.000%
18	-29.453	-62.131	16.788	29.453	62.131	-16.788	0.000%
19	-29.453	-46.598	16.788	29.453	46.598	-16.788	0.000%
20	-34.117	-62.131	-0.186	34.117	62.131	0.186	0.000%
21	-34.117	-46.598	-0.186	34.117	46.598	0.186	0.000%
22	-29.639	-62.131	-17.110	29.639	62.131	17.110	0.000%
23	-29.639	-46.598	-17.110	29.639	46.598	17.110	0.000%
24	-17.220	-62.131	-29.449	17.220	62.131	29.449	0.000%
25	-17.220	-46.598	-29.449	17.220	46.598	29.449	0.000%
26	0.000	-101.477	0.000	0.000	101.477	0.000	0.000%
27	-0.013	-101.477	-3.981	0.013	101.477	3.981	0.000%
28	1.993	-101.477	-3.441	-1.993	101.477	3.441	0.000%
29	3.465	-101.477	-1.979	-3.465	101.477	1.979	0.000%
30	4.009	-101.477	0.013	-4.009	101.477	-0.013	0.000%
31	3.478	-101.477	2.002	-3.478	101.477	-2.002	0.000%
32	2.016	-101.477	3.454	-2.016	101.477	-3.454	0.000%
33	0.013	-101.477	3.981	-0.013	101.477	-3.981	0.000%
34	-1.993	-101.477	3.441	1.993	101.477	-3.441	0.000%
35	-3.465	-101.477	1.979	3.465	101.477	-1.979	0.000%
36	-4.009	-101.477	-0.013	4.009	101.477	0.013	0.000%
37	-3.478	-101.477	-2.002	3.478	101.477	2.002	0.000%
38	-2.016	-101.477	-3.454	2.016	101.477	3.454	0.000%
39	-0.048	-51.776	-8.694	0.048	51.776	8.694	0.000%
40	4.334	-51.776	-7.505	-4.334	51.776	7.505	0.000%
41	7.554	-51.776	-4.306	-7.554	51.776	4.306	0.000%
42	8.750	-51.776	0.048	-8.750	51.776	-0.048	0.000%
43	7.602	-51.776	4.388	-7.602	51.776	-4.388	0.000%
44	4.416	-51.776	7.553	-4.416	51.776	-7.553	0.000%
45	0.048	-51.776	8.694	-0.048	51.776	-8.694	0.000%
46	-4.334	-51.776	7.505	4.334	51.776	-7.505	0.000%
47	-7.554	-51.776	4.306	7.554	51.776	-4.306	0.000%
48	-8.750	-51.776	-0.048	8.750	51.776	0.048	0.000%
49	-7.602	-51.776	-4.388	7.602	51.776	4.388	0.000%
50	-4.416	-51.776	-7.553	4.416	51.776	7.553	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	5	0.00000001	0.00000001

2	Yes	6	0.00000001	0.00058918
3	Yes	6	0.00000001	0.00019174
4	Yes	8	0.00000001	0.00022485
5	Yes	7	0.00000001	0.00059758
6	Yes	8	0.00000001	0.00023242
7	Yes	7	0.00000001	0.00061908
8	Yes	6	0.00000001	0.00056014
9	Yes	6	0.00000001	0.00019409
10	Yes	8	0.00000001	0.00022640
11	Yes	7	0.00000001	0.00059927
12	Yes	8	0.00000001	0.00023393
13	Yes	7	0.00000001	0.00062123
14	Yes	6	0.00000001	0.00061881
15	Yes	6	0.00000001	0.00020251
16	Yes	8	0.00000001	0.00022993
17	Yes	7	0.00000001	0.00061250
18	Yes	8	0.00000001	0.00022250
19	Yes	7	0.00000001	0.00059081
20	Yes	7	0.00000001	0.00015191
21	Yes	6	0.00000001	0.00057807
22	Yes	8	0.00000001	0.00023633
23	Yes	7	0.00000001	0.00062759
24	Yes	8	0.00000001	0.00022866
25	Yes	7	0.00000001	0.00060573
26	Yes	5	0.00000001	0.00051844
27	Yes	8	0.00000001	0.00025712
28	Yes	8	0.00000001	0.00029385
29	Yes	8	0.00000001	0.00029538
30	Yes	8	0.00000001	0.00025366
31	Yes	8	0.00000001	0.00028875
32	Yes	8	0.00000001	0.00028890
33	Yes	8	0.00000001	0.00024934
34	Yes	8	0.00000001	0.00028816
35	Yes	8	0.00000001	0.00028807
36	Yes	8	0.00000001	0.00025591
37	Yes	8	0.00000001	0.00030065
38	Yes	8	0.00000001	0.00029903
39	Yes	5	0.00000001	0.00035996
40	Yes	6	0.00000001	0.00057354
41	Yes	6	0.00000001	0.00062292
42	Yes	5	0.00000001	0.00084239
43	Yes	6	0.00000001	0.00058361
44	Yes	6	0.00000001	0.00062844
45	Yes	5	0.00000001	0.00036621
46	Yes	6	0.00000001	0.00060310
47	Yes	6	0.00000001	0.00055906
48	Yes	6	0.00000001	0.00008714
49	Yes	6	0.00000001	0.00064822
50	Yes	6	0.00000001	0.00059790

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190 - 185	51.050	49	2.502	0.006
L2	185 - 180	48.431	49	2.499	0.005
L3	180 - 175	45.828	49	2.473	0.005
L4	175 - 170	43.263	49	2.424	0.005
L5	170 - 165	40.762	49	2.351	0.004

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L6	165 - 160	38.348	49	2.259	0.004
L7	160 - 155	36.038	49	2.150	0.004
L8	155 - 153.583	33.853	49	2.023	0.003
L9	153.583 - 153.333	33.258	49	1.984	0.003
L10	153.333 - 148.333	33.155	49	1.981	0.003
L11	148.333 - 144	31.114	49	1.918	0.003
L12	144 - 143.75	29.401	49	1.857	0.003
L13	143.75 - 137	29.304	49	1.855	0.003
L14	141 - 136	28.244	49	1.826	0.003
L15	136 - 131	26.350	49	1.787	0.003
L16	131 - 126	24.517	49	1.714	0.002
L17	126 - 123.25	22.761	49	1.640	0.002
L18	123.25 - 123	21.829	49	1.598	0.002
L19	123 - 118	21.745	49	1.594	0.002
L20	118 - 113	20.112	49	1.526	0.002
L21	113 - 111.5	18.552	49	1.455	0.002
L22	111.5 - 111.25	18.098	49	1.434	0.002
L23	111.25 - 106.25	18.023	49	1.432	0.002
L24	106.25 - 101.25	16.551	49	1.380	0.002
L25	101.25 - 99.833	15.135	49	1.326	0.002
L26	99.833 - 99.583	14.744	49	1.311	0.002
L27	99.583 - 94	14.675	49	1.309	0.002
L28	99.25 - 93	14.584	49	1.306	0.002
L29	93 - 88	12.895	49	1.267	0.002
L30	88 - 83	11.604	49	1.200	0.001
L31	83 - 78	10.382	49	1.133	0.001
L32	78 - 73.25	9.231	49	1.067	0.001
L33	73.25 - 73	8.201	49	1.004	0.001
L34	73 - 68	8.148	49	1.001	0.001
L35	68 - 63	7.130	49	0.943	0.001
L36	63 - 58	6.174	49	0.885	0.001
L37	58 - 53	5.278	49	0.826	0.001
L38	53 - 46.25	4.442	49	0.769	0.001
L39	52.75 - 45.25	4.402	49	0.766	0.001
L40	45.25 - 40.25	3.239	49	0.705	0.001
L41	40.25 - 35.25	2.545	49	0.621	0.001
L42	35.25 - 30.25	1.939	49	0.538	0.000
L43	30.25 - 25.25	1.418	49	0.457	0.000
L44	25.25 - 20.25	0.981	49	0.378	0.000
L45	20.25 - 15.25	0.627	49	0.300	0.000
L46	15.25 - 10.25	0.353	49	0.223	0.000
L47	10.25 - 5.25	0.158	49	0.149	0.000
L48	5.25 - 0.25	0.041	49	0.075	0.000
L49	0.25 - 0	0.000	1	0.000	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
193.000	Lightning Rod 5/8" x 6'	49	51.050	2.502	0.006	20314
187.000	NNH4-65C-R6-V3 w/ Mount Pipe	49	49.478	2.502	0.006	20314
180.000	AIR 32 B2A/B66AA w/ Mount Pipe	49	45.828	2.473	0.005	7765
167.000	MX08FRO665-21 w/ Mount Pipe	49	39.302	2.298	0.004	3074
160.000	RHSDC-3315-PF-48	49	36.038	2.150	0.004	2430
120.000	220-1N	49	20.757	1.553	0.002	4126

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	190 - 185	200.480	22	9.857	0.023
L2	185 - 180	190.248	22	9.843	0.022
L3	180 - 175	180.072	22	9.744	0.021
L4	175 - 170	170.043	22	9.551	0.019
L5	170 - 165	160.262	22	9.264	0.018
L6	165 - 160	150.811	22	8.906	0.016
L7	160 - 155	141.765	22	8.476	0.014
L8	155 - 153.583	133.196	22	7.976	0.012
L9	153.583 - 153.333	130.864	22	7.824	0.012
L10	153.333 - 148.333	130.457	22	7.812	0.012
L11	148.333 - 144	122.447	22	7.562	0.011
L12	144 - 143.75	115.725	22	7.324	0.010
L13	143.75 - 137	115.343	22	7.314	0.010
L14	141 - 136	111.183	22	7.200	0.010
L15	136 - 131	103.742	22	7.049	0.010
L16	131 - 126	96.540	22	6.762	0.009
L17	126 - 123.25	89.640	22	6.468	0.009
L18	123.25 - 123	85.976	22	6.302	0.009
L19	123 - 118	85.647	22	6.289	0.009
L20	118 - 113	79.225	22	6.018	0.008
L21	113 - 111.5	73.086	22	5.741	0.008
L22	111.5 - 111.25	71.301	22	5.659	0.007
L23	111.25 - 106.25	71.006	22	5.649	0.007
L24	106.25 - 101.25	65.214	22	5.443	0.007
L25	101.25 - 99.833	59.639	22	5.232	0.006
L26	99.833 - 99.583	58.099	22	5.173	0.006
L27	99.583 - 94	57.829	22	5.165	0.006
L28	99.25 - 93	57.470	22	5.155	0.006
L29	93 - 88	50.820	22	5.000	0.006
L30	88 - 83	45.735	22	4.734	0.005
L31	83 - 78	40.923	22	4.472	0.005
L32	78 - 73.25	36.386	22	4.208	0.005
L33	73.25 - 73	32.328	22	3.962	0.004
L34	73 - 68	32.122	22	3.950	0.004
L35	68 - 63	28.110	22	3.721	0.004
L36	63 - 58	24.339	22	3.491	0.003
L37	58 - 53	20.807	22	3.261	0.003
L38	53 - 46.25	17.514	22	3.035	0.003
L39	52.75 - 45.25	17.356	22	3.023	0.003
L40	45.25 - 40.25	12.771	22	2.781	0.003
L41	40.25 - 35.25	10.035	22	2.449	0.002
L42	35.25 - 30.25	7.644	22	2.122	0.002
L43	30.25 - 25.25	5.590	22	1.802	0.002
L44	25.25 - 20.25	3.868	22	1.489	0.001
L45	20.25 - 15.25	2.470	22	1.182	0.001
L46	15.25 - 10.25	1.391	22	0.881	0.001
L47	10.25 - 5.25	0.624	22	0.586	0.000
L48	5.25 - 0.25	0.163	22	0.297	0.000
L49	0.25 - 0	0.000	22	0.014	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
193.000	Lightning Rod 5/8" x 6'	22	200.480	9.857	0.023	5561
187.000	NNH4-65C-R6-V3 w/ Mount Pipe	22	194.338	9.855	0.023	5561
180.000	AIR 32 B2A/B66AA w/ Mount Pipe	22	180.072	9.744	0.021	2101
167.000	MX08FRO665-21 w/ Mount Pipe	22	154.547	9.059	0.017	820
160.000	RHSDC-3315-PF-48	22	141.765	8.476	0.014	644
120.000	220-1N	22	81.760	6.127	0.009	1074

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	190 - 185 (1)	TP19.038x18x0.188	5.000	0.000	0.0	11.219	-3.339	656.290	0.005
L2	185 - 180 (2)	TP20.077x19.038x0.188	5.000	0.000	0.0	11.837	-3.553	692.441	0.005
L3	180 - 175 (3)	TP21.115x20.077x0.188	5.000	0.000	0.0	12.455	-7.224	728.593	0.010
L4	175 - 170 (4)	TP22.154x21.115x0.188	5.000	0.000	0.0	13.073	-7.556	764.744	0.010
L5	170 - 165 (5)	TP23.192x22.154x0.188	5.000	0.000	0.0	13.691	-10.663	800.895	0.013
L6	165 - 160 (6)	TP24.23x23.192x0.188	5.000	0.000	0.0	14.309	-11.097	837.046	0.013
L7	160 - 155 (7)	TP25.269x24.23x0.188	5.000	0.000	0.0	14.927	-14.337	873.198	0.016
L8	155 - 153.583 (8)	TP25.563x25.269x0.188	1.417	0.000	0.0	15.102	-14.486	883.443	0.016
L9	153.583 - 153.333 (9)	TP25.615x25.563x0.463	0.250	0.000	0.0	36.923	-14.554	2160.000	0.007
L10	153.333 - 148.333 (10)	TP26.653x25.615x0.45	5.000	0.000	0.0	37.426	-15.378	2189.430	0.007
L11	148.333 - 144 (11)	TP27.553x26.653x0.438	4.333	0.000	0.0	37.653	-16.118	2202.730	0.007
L12	144 - 143.75 (12)	TP27.605x27.553x0.625	0.250	0.000	0.0	53.522	-16.183	3131.020	0.005
L13	143.75 - 137 (13)	TP29.007x27.605x0.613	6.750	0.000	0.0	53.586	-16.787	3134.770	0.005
L14	137 - 136 (14)	TP28.82x27.801x0.488	5.000	0.000	0.0	43.839	-18.528	2564.580	0.007
L15	136 - 131 (15)	TP29.838x28.82x0.481	5.000	0.000	0.0	44.842	-19.538	2623.270	0.007
L16	131 - 126 (16)	TP30.857x29.838x0.475	5.000	0.000	0.0	45.805	-20.572	2679.570	0.008
L17	126 - 123.25 (17)	TP31.417x30.857x0.469	2.750	0.000	0.0	46.045	-21.148	2693.610	0.008
L18	123.25 - 123 (18)	TP31.468x31.417x0.538	0.250	0.000	0.0	52.768	-21.221	3086.900	0.007
L19	123 - 118 (19)	TP32.486x31.468x0.525	5.000	0.000	0.0	53.258	-22.670	3115.610	0.007
L20	118 - 113 (20)	TP33.504x32.486x0.513	5.000	0.000	0.0	53.667	-23.866	3139.530	0.008
L21	113 - 111.5 (21)	TP33.81x33.504x0.513	1.500	0.000	0.0	54.164	-24.224	3168.600	0.008
L22	111.5 - 111.25 (22)	TP33.861x33.81x0.713	0.250	0.000	0.0	74.964	-24.318	4385.410	0.006
L23	111.25 - 106.25 (23)	TP34.879x33.861x0.7	5.000	0.000	0.0	75.940	-25.862	4442.470	0.006
L24	106.25 - 101.25 (24)	TP35.898x34.879x0.675	5.000	0.000	0.0	75.463	-27.435	4414.590	0.006
L25	101.25 -	TP36.186x35.898x0.675	1.417	0.000	0.0	76.081	-27.883	4450.760	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L26	99.833 (25) 99.833 - 99.583 (26)	TP36.237x36.186x0.925	0.250	0.000	0.0	103.675	-27.998	6065.000	0.005
L27	99.583 - 94 (27)	TP37.375x36.237x0.925	5.583	0.000	0.0	103.874	-28.136	6076.650	0.005
L28	94 - 93 (28)	TP37.079x35.805x0.55	6.250	0.000	0.0	63.768	-31.863	3730.420	0.009
L29	93 - 88 (29)	TP38.097x37.079x0.538	5.000	0.000	0.0	64.078	-33.296	3748.560	0.009
L30	88 - 83 (30)	TP39.116x38.097x0.538	5.000	0.000	0.0	65.816	-34.754	3850.230	0.009
L31	83 - 78 (31)	TP40.135x39.116x0.525	5.000	0.000	0.0	66.004	-36.236	3861.210	0.009
L32	78 - 73.25 (32)	TP41.102x40.135x0.525	4.750	0.000	0.0	67.616	-37.664	3955.550	0.010
L33	73.25 - 73 (33)	TP41.153x41.102x0.588	0.250	0.000	0.0	75.644	-37.760	4425.190	0.009
L34	73 - 68 (34)	TP42.172x41.153x0.588	5.000	0.000	0.0	77.544	-39.417	4536.320	0.009
L35	68 - 63 (35)	TP43.191x42.172x0.575	5.000	0.000	0.0	77.776	-41.108	4549.900	0.009
L36	63 - 58 (36)	TP44.21x43.191x0.563	5.000	0.000	0.0	77.926	-42.823	4558.700	0.009
L37	58 - 53 (37)	TP45.228x44.21x0.563	5.000	0.000	0.0	79.745	-44.561	4665.100	0.010
L38	53 - 46.25 (38)	TP46.604x45.228x0.563	6.750	0.000	0.0	79.836	-44.659	4670.420	0.010
L39	46.25 - 45.25 (39)	TP46.182x44.654x0.375	7.500	0.000	0.0	54.521	-48.589	3189.490	0.015
L40	45.25 - 40.25 (40)	TP47.2x46.182x0.375	5.000	0.000	0.0	55.733	-49.981	3260.390	0.015
L41	40.25 - 35.25 (41)	TP48.218x47.2x0.375	5.000	0.000	0.0	56.945	-51.400	3331.290	0.015
L42	35.25 - 30.25 (42)	TP49.236x48.218x0.375	5.000	0.000	0.0	58.157	-52.843	3402.180	0.016
L43	30.25 - 25.25 (43)	TP50.254x49.236x0.375	5.000	0.000	0.0	59.369	-54.313	3473.080	0.016
L44	25.25 - 20.25 (44)	TP51.273x50.254x0.375	5.000	0.000	0.0	60.581	-55.807	3543.980	0.016
L45	20.25 - 15.25 (45)	TP52.291x51.273x0.375	5.000	0.000	0.0	61.793	-57.327	3614.870	0.016
L46	15.25 - 10.25 (46)	TP53.309x52.291x0.375	5.000	0.000	0.0	63.005	-58.872	3685.770	0.016
L47	10.25 - 5.25 (47)	TP54.327x53.309x0.375	5.000	0.000	0.0	64.216	-60.440	3756.660	0.016
L48	5.25 - 0.25 (48)	TP55.345x54.327x0.375	5.000	0.000	0.0	65.428	-62.034	3827.560	0.016
L49	0.25 - 0 (49)	TP55.396x55.345x0.375	0.250	0.000	0.0	65.489	-62.127	3831.110	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	190 - 185 (1)	TP19.038x18x0.188	19.598	317.995	0.062	0.000	317.995	0.000
L2	185 - 180 (2)	TP20.077x19.038x0.188	57.195	349.188	0.164	0.000	349.188	0.000
L3	180 - 175 (3)	TP21.115x20.077x0.188	118.611	381.257	0.311	0.000	381.257	0.000
L4	175 - 170 (4)	TP22.154x21.115x0.188	181.637	414.118	0.439	0.000	414.118	0.000
L5	170 - 165 (5)	TP23.192x22.154x0.188	254.863	447.689	0.569	0.000	447.689	0.000
L6	165 - 160 (6)	TP24.23x23.192x0.188	337.776	481.889	0.701	0.000	481.889	0.000
L7	160 - 155 (7)	TP25.269x24.23x0.188	447.153	516.635	0.866	0.000	516.635	0.000
L8	155 - 153.583 (8)	TP25.563x25.269x0.188	477.973	526.570	0.908	0.000	526.570	0.000
L9	153.583 - 153.333 (9)	TP25.615x25.563x0.463	483.423	1404.158	0.344	0.000	1404.158	0.000
L10	153.333 - 148.333 (10)	TP26.653x25.615x0.45	593.471	1484.525	0.400	0.000	1484.525	0.000
L11	148.333 - 144	TP27.553x26.653x0.438	690.462	1547.125	0.446	0.000	1547.125	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L12	144 - 143.75 (11)	TP27.605x27.553x0.625	696.106	2173.100	0.320	0.000	2173.100	0.000
L13	143.75 - 137 (12)	TP29.007x27.605x0.613	758.551	2224.817	0.341	0.000	2224.817	0.000
L14	137 - 136 (13)	TP28.82x27.801x0.488	874.183	1880.108	0.465	0.000	1880.108	0.000
L15	136 - 131 (14)	TP29.838x28.82x0.481	992.183	1994.275	0.498	0.000	1994.275	0.000
L16	131 - 126 (15)	TP30.857x29.838x0.475	1112.258	2109.767	0.527	0.000	2109.767	0.000
L17	126 - 123.25 (16)	TP31.417x30.857x0.469	1179.183	2161.392	0.546	0.000	2161.392	0.000
L18	123.25 - 123 (17)	TP31.468x31.417x0.538	1185.292	2470.117	0.480	0.000	2470.117	0.000
L19	123 - 118 (18)	TP32.486x31.468x0.525	1310.317	2578.592	0.508	0.000	2578.592	0.000
L20	118 - 113 (19)	TP33.504x32.486x0.513	1438.575	2684.567	0.536	0.000	2684.567	0.000
L21	113 - 111.5 (20)	TP33.81x33.504x0.513	1477.475	2734.900	0.540	0.000	2734.900	0.000
L22	111.5 - 111.25 (21)	TP33.861x33.81x0.713	1483.983	3745.700	0.396	0.000	3745.700	0.000
L23	111.25 - 106.25 (22)	TP34.879x33.861x0.7	1615.358	3916.333	0.412	0.000	3916.333	0.000
L24	106.25 - 101.25 (23)	TP35.898x34.879x0.675	1749.242	4015.742	0.436	0.000	4015.742	0.000
L25	101.25 - 99.833 (24)	TP36.186x35.898x0.675	1787.633	4082.450	0.438	0.000	4082.450	0.000
L26	99.833 - 99.583 (25)	TP36.237x36.186x0.925	1794.425	5493.175	0.327	0.000	5493.175	0.000
L27	99.583 - 94 (26)	TP37.375x36.237x0.925	1803.492	5514.567	0.327	0.000	5514.567	0.000
L28	94 - 93 (27)	TP37.079x35.805x0.55	1976.433	3533.425	0.559	0.000	3533.425	0.000
L29	93 - 88 (28)	TP38.097x37.079x0.538	2117.825	3653.525	0.580	0.000	3653.525	0.000
L30	88 - 83 (29)	TP39.116x38.097x0.538	2261.383	3855.842	0.586	0.000	3855.842	0.000
L31	83 - 78 (30)	TP40.135x39.116x0.525	2407.083	3972.858	0.606	0.000	3972.858	0.000
L32	78 - 73.25 (31)	TP41.102x40.135x0.525	2547.458	4170.667	0.611	0.000	4170.667	0.000
L33	73.25 - 73 (32)	TP41.153x41.102x0.588	2554.900	4657.417	0.549	0.000	4657.417	0.000
L34	73 - 68 (33)	TP42.172x41.153x0.588	2704.892	4895.992	0.552	0.000	4895.992	0.000
L35	68 - 63 (34)	TP43.191x42.172x0.575	2857.092	5035.575	0.567	0.000	5035.575	0.000
L36	63 - 58 (35)	TP44.21x43.191x0.563	3011.467	5170.483	0.582	0.000	5170.483	0.000
L37	58 - 53 (36)	TP45.228x44.21x0.563	3167.967	5416.233	0.585	0.000	5416.233	0.000
L38	53 - 46.25 (37)	TP46.604x45.228x0.563	3175.850	5428.667	0.585	0.000	5428.667	0.000
L39	46.25 - 45.25 (38)	TP46.182x44.654x0.375	3415.367	3555.117	0.961	0.000	3555.117	0.000
L40	45.25 - 40.25 (39)	TP47.2x46.182x0.375	3577.492	3688.433	0.970	0.000	3688.433	0.000
L41	40.25 - 35.25 (40)	TP48.218x47.2x0.375	3740.942	3822.900	0.979	0.000	3822.900	0.000
L42	35.25 - 30.25 (41)	TP49.236x48.218x0.375	3905.650	3958.433	0.987	0.000	3958.433	0.000
L43	30.25 - 25.25 (42)	TP50.254x49.236x0.375	4071.542	4094.958	0.994	0.000	4094.958	0.000
L44	25.25 - 20.25 (43)	TP51.273x50.254x0.375	4238.550	4232.392	1.001	0.000	4232.392	0.000
L45	20.25 - 15.25 (44)	TP52.291x51.273x0.375	4406.558	4370.667	1.008	0.000	4370.667	0.000
L46	15.25 - 10.25 (45)	TP53.309x52.291x0.375	4575.467	4509.692	1.015	0.000	4509.692	0.000
L47	10.25 - 5.25 (46)	TP54.327x53.309x0.375	4745.242	4649.400	1.021	0.000	4649.400	0.000
L48	5.25 - 0.25 (47)	TP55.345x54.327x0.375	4915.883	4789.717	1.026	0.000	4789.717	0.000
L49	0.25 - 0 (48)	TP55.396x55.345x0.375	4924.433	4796.742	1.027	0.000	4796.742	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	190 - 185 (1)	TP19.038x18x0.188	7.356	196.887	0.037	0.253	325.034	0.001
L2	185 - 180 (2)	TP20.077x19.038x0.188	7.681	207.732	0.037	0.268	361.829	0.001
L3	180 - 175 (3)	TP21.115x20.077x0.188	12.447	218.578	0.057	0.267	400.596	0.001
L4	175 - 170 (4)	TP22.154x21.115x0.188	12.771	229.423	0.056	0.267	441.336	0.001
L5	170 - 165 (5)	TP23.192x22.154x0.188	16.436	240.269	0.068	0.387	484.048	0.001
L6	165 - 160 (6)	TP24.23x23.192x0.188	16.744	251.114	0.067	0.386	528.732	0.001
L7	160 - 155 (7)	TP25.269x24.23x0.188	21.724	261.959	0.083	0.930	575.390	0.002
L8	155 - 153.583 (8)	TP25.563x25.269x0.188	21.808	265.033	0.082	0.929	588.971	0.002
L9	153.583 - 153.333 (9)	TP25.615x25.563x0.463	21.813	648.000	0.034	0.929	1427.367	0.001
L10	153.333 - 148.333 (10)	TP26.653x25.615x0.45	22.218	656.829	0.034	0.928	1507.258	0.001
L11	148.333 - 144 (11)	TP27.553x26.653x0.438	22.567	660.819	0.034	0.927	1569.217	0.001
L12	144 - 143.75 (12)	TP27.605x27.553x0.625	22.587	939.306	0.024	0.927	2219.375	0.000
L13	143.75 - 137 (13)	TP29.007x27.605x0.613	22.842	940.432	0.024	0.927	2270.100	0.000
L14	137 - 136 (14)	TP28.82x27.801x0.488	23.401	769.375	0.030	0.926	1908.958	0.000
L15	136 - 131 (15)	TP29.838x28.82x0.481	23.817	786.980	0.030	0.925	2023.267	0.000
L16	131 - 126 (16)	TP30.857x29.838x0.475	24.233	803.872	0.030	0.923	2138.833	0.000
L17	126 - 123.25 (17)	TP31.417x30.857x0.469	24.465	808.084	0.030	0.923	2190.117	0.000
L18	123.25 - 123 (18)	TP31.468x31.417x0.538	24.478	926.069	0.026	0.922	2508.442	0.000
L19	123 - 118 (19)	TP32.486x31.468x0.525	25.445	934.682	0.027	2.605	2616.158	0.001
L20	118 - 113 (20)	TP33.504x32.486x0.513	25.881	941.859	0.027	2.603	2721.283	0.001
L21	113 - 111.5 (21)	TP33.81x33.504x0.513	26.018	950.581	0.027	2.603	2771.917	0.001
L22	111.5 - 111.25 (22)	TP33.861x33.81x0.713	26.032	1315.620	0.020	2.603	3819.217	0.001
L23	111.25 - 106.25 (23)	TP34.879x33.861x0.7	26.536	1332.740	0.020	2.601	3989.233	0.001
L24	106.25 - 101.25 (24)	TP35.898x34.879x0.675	27.035	1324.380	0.020	2.600	4085.217	0.001
L25	101.25 - 99.833 (25)	TP36.186x35.898x0.675	27.180	1335.230	0.020	2.599	4152.442	0.001
L26	99.833 - 99.583 (26)	TP36.237x36.186x0.925	27.201	1819.500	0.015	2.599	5626.758	0.000
L27	99.583 - 94 (27)	TP37.375x36.237x0.925	27.237	1822.990	0.015	2.599	5648.391	0.000
L28	94 - 93 (28)	TP37.079x35.805x0.55	28.078	1119.130	0.025	2.598	3580.067	0.001
L29	93 - 88 (29)	TP38.097x37.079x0.538	28.511	1124.570	0.025	2.596	3699.033	0.001
L30	88 - 83 (30)	TP39.116x38.097x0.538	28.943	1155.070	0.025	2.595	3902.408	0.001
L31	83 - 78 (31)	TP40.135x39.116x0.525	29.369	1158.360	0.025	2.593	4018.158	0.001
L32	78 - 73.25 (32)	TP41.102x40.135x0.525	29.773	1186.670	0.025	2.591	4216.908	0.001
L33	73.25 - 73 (33)	TP41.153x41.102x0.588	29.781	1327.560	0.022	2.591	4716.225	0.001
L34	73 - 68 (34)	TP42.172x41.153x0.588	30.237	1360.900	0.022	2.590	4956.075	0.001
L35	68 - 63 (35)	TP43.191x42.172x0.575	30.676	1364.970	0.022	2.589	5094.183	0.001
L36	63 - 58 (36)	TP44.21x43.191x0.563	31.106	1367.610	0.023	2.587	5227.542	0.000
L37	58 - 53 (37)	TP45.228x44.21x0.563	31.529	1399.530	0.023	2.586	5474.408	0.000
L38	53 - 46.25 (38)	TP46.604x45.228x0.563	31.538	1401.130	0.023	2.586	5486.900	0.000
L39	46.25 - 45.25 (39)	TP46.182x44.654x0.375	32.319	956.848	0.034	2.585	3838.400	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L40	45.25 - 40.25 (40)	TP47.2x46.182x0.375	32.588	978.117	0.033	2.583	4010.942	0.001
L41	40.25 - 35.25 (41)	TP48.218x47.2x0.375	32.847	999.386	0.033	2.582	4187.267	0.001
L42	35.25 - 30.25 (42)	TP49.236x48.218x0.375	33.093	1020.650	0.032	2.581	4367.392	0.001
L43	30.25 - 25.25 (43)	TP50.254x49.236x0.375	33.324	1041.920	0.032	2.580	4551.308	0.001
L44	25.25 - 20.25 (44)	TP51.273x50.254x0.375	33.536	1063.190	0.032	2.579	4739.017	0.001
L45	20.25 - 15.25 (45)	TP52.291x51.273x0.375	33.724	1084.460	0.031	2.578	4930.525	0.001
L46	15.25 - 10.25 (46)	TP53.309x52.291x0.375	33.898	1105.730	0.031	2.578	5125.817	0.001
L47	10.25 - 5.25 (47)	TP54.327x53.309x0.375	34.071	1127.000	0.030	2.578	5324.908	0.000
L48	5.25 - 0.25 (48)	TP55.345x54.327x0.375	34.245	1148.270	0.030	2.578	5527.792	0.000
L49	0.25 - 0 (49)	TP55.396x55.345x0.375	34.231	1149.330	0.030	2.578	5538.033	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	190 - 185 (1)	0.005	0.062	0.000	0.037	0.001	0.068 ✔	1.050	4.8.2 ✔
L2	185 - 180 (2)	0.005	0.164	0.000	0.037	0.001	0.170 ✔	1.050	4.8.2 ✔
L3	180 - 175 (3)	0.010	0.311	0.000	0.057	0.001	0.324 ✔	1.050	4.8.2 ✔
L4	175 - 170 (4)	0.010	0.439	0.000	0.056	0.001	0.452 ✔	1.050	4.8.2 ✔
L5	170 - 165 (5)	0.013	0.569	0.000	0.068	0.001	0.587 ✔	1.050	4.8.2 ✔
L6	165 - 160 (6)	0.013	0.701	0.000	0.067	0.001	0.719 ✔	1.050	4.8.2 ✔
L7	160 - 155 (7)	0.016	0.866	0.000	0.083	0.002	0.889 ✔	1.050	4.8.2 ✔
L8	155 - 153.583 (8)	0.016	0.908	0.000	0.082	0.002	0.931 ✔	1.050	4.8.2 ✔
L9	153.583 - 153.333 (9)	0.007	0.344	0.000	0.034	0.001	0.352 ✔	1.050	4.8.2 ✔
L10	153.333 - 148.333 (10)	0.007	0.400	0.000	0.034	0.001	0.408 ✔	1.050	4.8.2 ✔
L11	148.333 - 144 (11)	0.007	0.446	0.000	0.034	0.001	0.455 ✔	1.050	4.8.2 ✔
L12	144 - 143.75 (12)	0.005	0.320	0.000	0.024	0.000	0.326 ✔	1.050	4.8.2 ✔
L13	143.75 - 137 (13)	0.005	0.341	0.000	0.024	0.000	0.347 ✔	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L14	137 - 136 (14)	0.007	0.465	0.000	0.030	0.000	0.473 ✔	1.050	4.8.2 ✔
L15	136 - 131 (15)	0.007	0.498	0.000	0.030	0.000	0.506 ✔	1.050	4.8.2 ✔
L16	131 - 126 (16)	0.008	0.527	0.000	0.030	0.000	0.536 ✔	1.050	4.8.2 ✔
L17	126 - 123.25 (17)	0.008	0.546	0.000	0.030	0.000	0.554 ✔	1.050	4.8.2 ✔
L18	123.25 - 123 (18)	0.007	0.480	0.000	0.026	0.000	0.487 ✔	1.050	4.8.2 ✔
L19	123 - 118 (19)	0.007	0.508	0.000	0.027	0.001	0.516 ✔	1.050	4.8.2 ✔
L20	118 - 113 (20)	0.008	0.536	0.000	0.027	0.001	0.544 ✔	1.050	4.8.2 ✔
L21	113 - 111.5 (21)	0.008	0.540	0.000	0.027	0.001	0.549 ✔	1.050	4.8.2 ✔
L22	111.5 - 111.25 (22)	0.006	0.396	0.000	0.020	0.001	0.402 ✔	1.050	4.8.2 ✔
L23	111.25 - 106.25 (23)	0.006	0.412	0.000	0.020	0.001	0.419 ✔	1.050	4.8.2 ✔
L24	106.25 - 101.25 (24)	0.006	0.436	0.000	0.020	0.001	0.442 ✔	1.050	4.8.2 ✔
L25	101.25 - 99.833 (25)	0.006	0.438	0.000	0.020	0.001	0.445 ✔	1.050	4.8.2 ✔
L26	99.833 - 99.583 (26)	0.005	0.327	0.000	0.015	0.000	0.332 ✔	1.050	4.8.2 ✔
L27	99.583 - 94 (27)	0.005	0.327	0.000	0.015	0.000	0.332 ✔	1.050	4.8.2 ✔
L28	94 - 93 (28)	0.009	0.559	0.000	0.025	0.001	0.569 ✔	1.050	4.8.2 ✔
L29	93 - 88 (29)	0.009	0.580	0.000	0.025	0.001	0.589 ✔	1.050	4.8.2 ✔
L30	88 - 83 (30)	0.009	0.586	0.000	0.025	0.001	0.596 ✔	1.050	4.8.2 ✔
L31	83 - 78 (31)	0.009	0.606	0.000	0.025	0.001	0.616 ✔	1.050	4.8.2 ✔
L32	78 - 73.25 (32)	0.010	0.611	0.000	0.025	0.001	0.621 ✔	1.050	4.8.2 ✔
L33	73.25 - 73 (33)	0.009	0.549	0.000	0.022	0.001	0.558 ✔	1.050	4.8.2 ✔
L34	73 - 68 (34)	0.009	0.552	0.000	0.022	0.001	0.562 ✔	1.050	4.8.2 ✔
L35	68 - 63 (35)	0.009	0.567	0.000	0.022	0.001	0.577 ✔	1.050	4.8.2 ✔
L36	63 - 58 (36)	0.009	0.582	0.000	0.023	0.000	0.592 ✔	1.050	4.8.2 ✔
L37	58 - 53 (37)	0.010	0.585	0.000	0.023	0.000	0.595 ✔	1.050	4.8.2 ✔
L38	53 - 46.25 (38)	0.010	0.585	0.000	0.023	0.000	0.595 ✔	1.050	4.8.2 ✔
L39	46.25 - 45.25 (39)	0.015	0.961	0.000	0.034	0.001	0.977 ✔	1.050	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L40	45.25 - 40.25 (40)	0.015	0.970	0.000	0.033	0.001	0.986 ✔	1.050	4.8.2 ✔
L41	40.25 - 35.25 (41)	0.015	0.979	0.000	0.033	0.001	0.995 ✔	1.050	4.8.2 ✔
L42	35.25 - 30.25 (42)	0.016	0.987	0.000	0.032	0.001	1.003 ✔	1.050	4.8.2 ✔
L43	30.25 - 25.25 (43)	0.016	0.994	0.000	0.032	0.001	1.011 ✔	1.050	4.8.2 ✔
L44	25.25 - 20.25 (44)	0.016	1.001	0.000	0.032	0.001	1.018 ✔	1.050	4.8.2 ✔
L45	20.25 - 15.25 (45)	0.016	1.008	0.000	0.031	0.001	1.025 ✔	1.050	4.8.2 ✔
L46	15.25 - 10.25 (46)	0.016	1.015	0.000	0.031	0.001	1.032 ✔	1.050	4.8.2 ✔
L47	10.25 - 5.25 (47)	0.016	1.021	0.000	0.030	0.000	1.038 ✔	1.050	4.8.2 ✔
L48	5.25 - 0.25 (48)	0.016	1.026	0.000	0.030	0.000	1.043 ✔	1.050	4.8.2 ✔
L49	0.25 - 0 (49)	0.016	1.027	0.000	0.030	0.000	1.044 ✔	1.050	4.8.2 ✔

Section Capacity Table

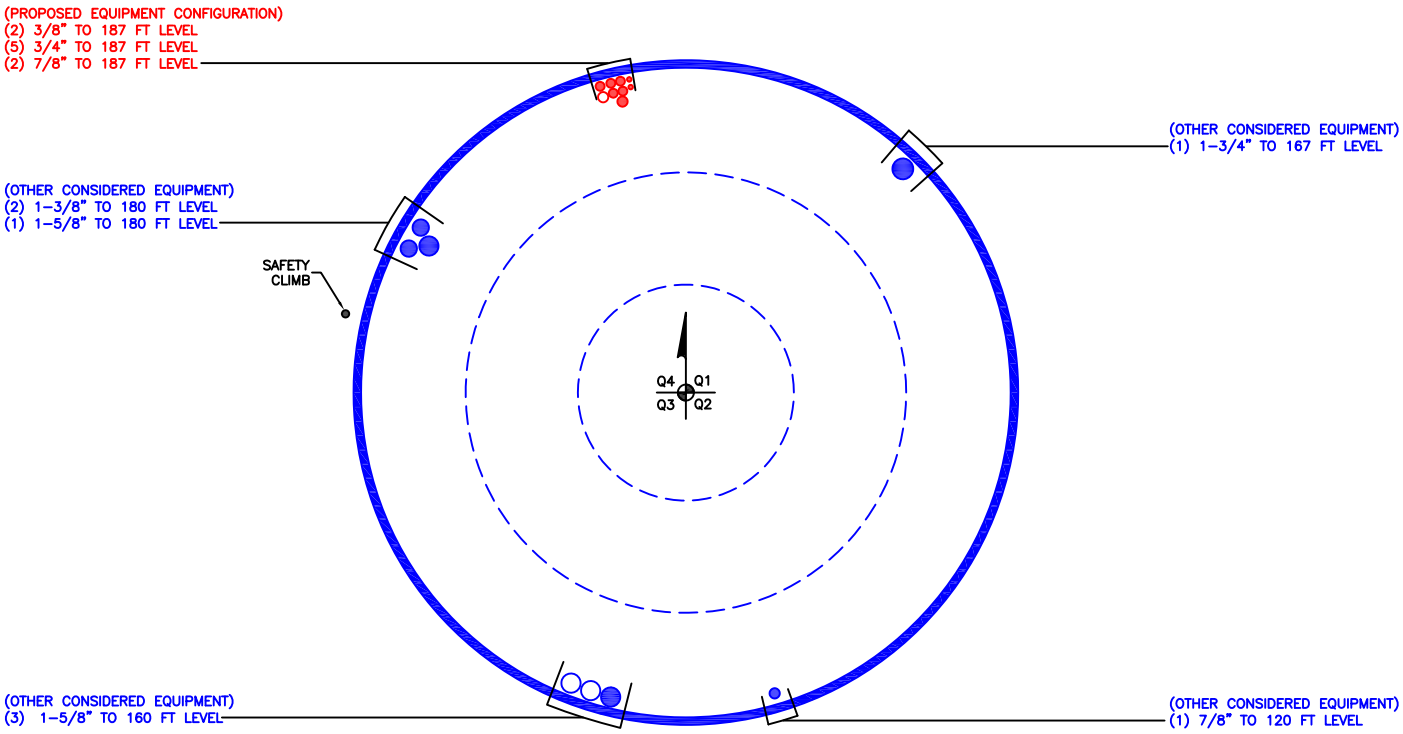
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	190 - 185	Pole	TP19.038x18x0.188	1	-3.339	689.104	**	**
L2	185 - 180	Pole	TP20.077x19.038x0.188	2	-3.553	727.063	**	**
L3	180 - 175	Pole	TP21.115x20.077x0.188	3	-7.224	765.023	**	**
L4	175 - 170	Pole	TP22.154x21.115x0.188	4	-7.556	802.981	**	**
L5	170 - 165	Pole	TP23.192x22.154x0.188	5	-10.663	840.940	**	**
L6	165 - 160	Pole	TP24.23x23.192x0.188	6	-11.097	878.898	**	**
L7	160 - 155	Pole	TP25.269x24.23x0.188	7	-14.337	916.858	**	**
L8	155 - 153.583	Pole	TP25.563x25.269x0.188	8	-14.486	927.615	**	**
L9	153.583 - 153.333	Pole	TP25.615x25.563x0.463	9	-14.554	2268.000	**	**
L10	153.333 - 148.333	Pole	TP26.653x25.615x0.45	10	-15.378	2298.901	**	**
L11	148.333 - 144	Pole	TP27.553x26.653x0.438	11	-16.118	2312.866	**	**
L12	144 - 143.75	Pole	TP27.605x27.553x0.625	12	-16.183	3287.571	**	**
L13	143.75 - 137	Pole	TP29.007x27.605x0.613	13	-16.787	3291.508	**	**
L14	137 - 136	Pole	TP28.82x27.801x0.488	14	-18.528	2692.809	**	**
L15	136 - 131	Pole	TP29.838x28.82x0.481	15	-19.538	2754.433	**	**
L16	131 - 126	Pole	TP30.857x29.838x0.475	16	-20.572	2813.548	**	**
L17	126 - 123.25	Pole	TP31.417x30.857x0.469	17	-21.148	2828.290	**	**
L18	123.25 - 123	Pole	TP31.468x31.417x0.538	18	-21.221	3241.245	**	**
L19	123 - 118	Pole	TP32.486x31.468x0.525	19	-22.670	3271.390	**	**
L20	118 - 113	Pole	TP33.504x32.486x0.513	20	-23.866	3296.506	**	**
L21	113 - 111.5	Pole	TP33.81x33.504x0.513	21	-24.224	3327.030	**	**
L22	111.5 - 111.25	Pole	TP33.861x33.81x0.713	22	-24.318	4604.680	**	**
L23	111.25 - 106.25	Pole	TP34.879x33.861x0.7	23	-25.862	4664.593	**	**
L24	106.25 - 101.25	Pole	TP35.898x34.879x0.675	24	-27.435	4635.319	**	**
L25	101.25 - 99.833	Pole	TP36.186x35.898x0.675	25	-27.883	4673.298	**	**

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L26	99.833 - 99.583	Pole	TP36.237x36.186x0.925	26	-27.998	6368.250	**	**
L27	99.583 - 94	Pole	TP37.375x36.237x0.925	27	-28.136	6380.482	**	**
L28	94 - 93	Pole	TP37.079x35.805x0.55	28	-31.863	3916.941	**	**
L29	93 - 88	Pole	TP38.097x37.079x0.538	29	-33.296	3935.988	**	**
L30	88 - 83	Pole	TP39.116x38.097x0.538	30	-34.754	4042.741	**	**
L31	83 - 78	Pole	TP40.135x39.116x0.525	31	-36.236	4054.270	**	**
L32	78 - 73.25	Pole	TP41.102x40.135x0.525	32	-37.664	4153.327	**	**
L33	73.25 - 73	Pole	TP41.153x41.102x0.588	33	-37.760	4646.449	**	**
L34	73 - 68	Pole	TP42.172x41.153x0.588	34	-39.417	4763.136	**	**
L35	68 - 63	Pole	TP43.191x42.172x0.575	35	-41.108	4777.395	**	**
L36	63 - 58	Pole	TP44.21x43.191x0.563	36	-42.823	4786.635	**	**
L37	58 - 53	Pole	TP45.228x44.21x0.563	37	-44.561	4898.355	**	**
L38	53 - 46.25	Pole	TP46.604x45.228x0.563	38	-44.659	4903.941	**	**
L39	46.25 - 45.25	Pole	TP46.182x44.654x0.375	39	-48.589	3348.964	**	**
L40	45.25 - 40.25	Pole	TP47.2x46.182x0.375	40	-49.981	3423.409	**	**
L41	40.25 - 35.25	Pole	TP48.218x47.2x0.375	41	-51.400	3497.854	**	**
L42	35.25 - 30.25	Pole	TP49.236x48.218x0.375	42	-52.843	3572.289	**	**
L43	30.25 - 25.25	Pole	TP50.254x49.236x0.375	43	-54.313	3646.734	**	**
L44	25.25 - 20.25	Pole	TP51.273x50.254x0.375	44	-55.807	3721.179	**	**
L45	20.25 - 15.25	Pole	TP52.291x51.273x0.375	45	-57.327	3795.613	**	**
L46	15.25 - 10.25	Pole	TP53.309x52.291x0.375	46	-58.872	3870.058	**	**
L47	10.25 - 5.25	Pole	TP54.327x53.309x0.375	47	-60.440	3944.493	**	**
L48	5.25 - 0.25	Pole	TP55.345x54.327x0.375	48	-62.034	4018.938	**	**
L49	0.25 - 0	Pole	TP55.396x55.345x0.375	49	-62.127	4022.665	**	**
							Summary	
						Pole	**	**
						RATING =	**	**

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

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 819560

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- H

Site BU: 819560

Work Order: 2168175

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	190	53	4	18	18	29.0069	0.1875	Auto	A572-65
2	141	47	5.25	18	27.80	37.3745	0.25	Auto	A572-65
3	99.25	53	6.5	18	35.81	46.6036	0.3125	Auto	A572-65
4	52.75	52.75	0	18	44.65	55.3962	0.375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	95.5	111.5	plate	CCI-SFP-060100	3				E						E						E		
2	138	144	plate	CCI-AFP-045100	3				E						E						E		
3	51.75	73.25	plate	CCI-AFP-085125	3			P						P						P			
4	73.25	99.833	plate	CCI-SFP-065125	3			P						P						P			
5	98.75	123.25	plate	CCI-SFP-065125	3						P						P						P
6	123.25	153.583	plate	CCI-AFP-050125	3						P						P						P
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	16.000	4.750	1.1875	A572-65
2	4.5	1	4.5	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	20.000	3.250	1.1875	A572-65
3	8.5	1.25	10.625	0.625	PC 8.8 - M20 (100)	51	PC 8.8 - M20 (100)	51.000	17.000	9.063	1.1875	A572-65
4	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
5	6.5	1.25	8.125	0.625	PC 8.8 - M20 (100)	33	PC 8.8 - M20 (100)	33.000	19.000	6.563	1.1875	A572-65
6	5	1.25	6.25	0.625	PC 8.8 - M20 (100)	30	PC 8.8 - M20 (100)	30.000	23.000	4.688	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)

TNX Geometry Input

Increment (ft): 5 Export to TNX

	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	190 - 185	5		18	18.000	19.038	0.1875	A572-65	1.000
2	185 - 180	5		18	19.038	20.077	0.1875	A572-65	1.000
3	180 - 175	5		18	20.077	21.115	0.1875	A572-65	1.000
4	175 - 170	5		18	21.115	22.154	0.1875	A572-65	1.000
5	170 - 165	5		18	22.154	23.192	0.1875	A572-65	1.000
6	165 - 160	5		18	23.192	24.230	0.1875	A572-65	1.000
7	160 - 155	5		18	24.230	25.269	0.1875	A572-65	1.000
8	155 - 153.583	1.417		18	25.269	25.563	0.1875	A572-65	1.000
9	153.583 - 153.333	0.25		18	25.563	25.615	0.4625	A572-65	0.918
10	153.333 - 148.333	5		18	25.615	26.653	0.45	A572-65	0.922
11	148.333 - 144	4.333		18	26.653	27.553	0.4375	A572-65	0.931
12	144 - 143.75	0.25		18	27.553	27.605	0.625	A572-65	0.907
13	143.75 - 141	6.75	4	18	27.605	29.007	0.6125	A572-65	0.913
14	141 - 136	5		18	27.801	28.820	0.4875	A572-65	0.945
15	136 - 131	5		18	28.820	29.838	0.48125	A572-65	0.942
16	131 - 126	5		18	29.838	30.857	0.475	A572-65	0.940
17	126 - 123.25	2.75		18	30.857	31.417	0.46875	A572-65	0.944
18	123.25 - 123	0.25		18	31.417	31.468	0.5375	A572-65	0.931
19	123 - 118	5		18	31.468	32.486	0.525	A572-65	0.938
20	118 - 113	5		18	32.486	33.504	0.5125	A572-65	0.946
21	113 - 111.5	1.5		18	33.504	33.810	0.5125	A572-65	0.942
22	111.5 - 111.25	0.25		18	33.810	33.861	0.7125	A572-65	0.921
23	111.25 - 106.25	5		18	33.861	34.879	0.7	A572-65	0.920
24	106.25 - 101.25	5		18	34.879	35.898	0.675	A572-65	0.936
25	101.25 - 99.833	1.417		18	35.898	36.186	0.675	A572-65	0.932
26	99.833 - 99.583	0.25		18	36.186	36.237	0.925	A572-65	0.919
27	99.583 - 99.25	5.583	5.25	18	36.237	37.375	0.925	A572-65	0.918
28	99.25 - 93	6.25		18	35.805	37.079	0.55	A572-65	0.954
29	93 - 88	5		18	37.079	38.097	0.5375	A572-65	0.965
30	88 - 83	5		18	38.097	39.116	0.5375	A572-65	0.955
31	83 - 78	5		18	39.116	40.135	0.525	A572-65	0.968
32	78 - 73.25	4.75		18	40.135	41.102	0.525	A572-65	0.959
33	73.25 - 73	0.25		18	41.102	41.153	0.5875	A572-65	0.957
34	73 - 68	5		18	41.153	42.172	0.5875	A572-65	0.947
35	68 - 63	5		18	42.172	43.191	0.575	A572-65	0.957
36	63 - 58	5		18	43.191	44.210	0.5625	A572-65	0.968
37	58 - 53	5		18	44.210	45.228	0.5625	A572-65	0.958
38	53 - 52.75	6.75	6.5	18	45.228	46.604	0.5625	A572-65	0.958
39	52.75 - 45.25	7.5		18	44.654	46.182	0.375	A572-65	1.000
40	45.25 - 40.25	5		18	46.182	47.200	0.375	A572-65	1.000
41	40.25 - 35.25	5		18	47.200	48.218	0.375	A572-65	1.000
42	35.25 - 30.25	5		18	48.218	49.236	0.375	A572-65	1.000
43	30.25 - 25.25	5		18	49.236	50.254	0.375	A572-65	1.000
44	25.25 - 20.25	5		18	50.254	51.273	0.375	A572-65	1.000
45	20.25 - 15.25	5		18	51.273	52.291	0.375	A572-65	1.000
46	15.25 - 10.25	5		18	52.291	53.309	0.375	A572-65	1.000
47	10.25 - 5.25	5		18	53.309	54.327	0.375	A572-65	1.000
48	5.25 - 0.25	5		18	54.327	55.345	0.375	A572-65	1.000
49	0.25 - 0	0.25		18	55.345	55.396	0.375	A572-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	190 - 185	3.33	19.62	7.36
2	185 - 180	3.56	57.20	7.68
3	180 - 175	7.22	118.61	12.45
4	175 - 170	7.56	181.64	12.77
5	170 - 165	10.66	254.86	16.44
6	165 - 160	11.10	337.78	16.74
7	160 - 155	14.34	447.15	21.72
8	155 - 153.583	14.49	477.97	21.81
9	153.583 - 153.333	14.55	483.42	21.81
10	153.333 - 148.333	15.38	593.47	22.22
11	148.333 - 144	16.12	690.46	22.57
12	144 - 143.75	16.18	696.11	22.59
13	143.75 - 141	16.79	758.55	22.84
14	141 - 136	18.53	874.19	23.40
15	136 - 131	19.54	992.18	23.82
16	131 - 126	20.57	1112.26	24.23
17	126 - 123.25	21.15	1179.18	24.47
18	123.25 - 123	21.22	1185.29	24.48
19	123 - 118	22.67	1310.32	25.44
20	118 - 113	23.87	1438.58	25.88
21	113 - 111.5	24.22	1477.48	26.02
22	111.5 - 111.25	24.32	1483.98	26.03
23	111.25 - 106.25	25.86	1615.36	26.54
24	106.25 - 101.25	27.43	1749.24	27.03
25	101.25 - 99.833	27.88	1787.63	27.18
26	99.833 - 99.583	28.00	1794.43	27.20
27	99.583 - 99.25	28.14	1803.49	27.24
28	99.25 - 93	31.86	1976.43	28.08
29	93 - 88	33.30	2117.83	28.51
30	88 - 83	34.75	2261.38	28.94
31	83 - 78	36.24	2407.08	29.37
32	78 - 73.25	37.66	2547.46	29.77
33	73.25 - 73	37.76	2554.90	29.78
34	73 - 68	39.42	2704.89	30.24
35	68 - 63	41.11	2857.09	30.68
36	63 - 58	42.82	3011.46	31.11
37	58 - 53	44.56	3167.97	31.53
38	53 - 52.75	44.66	3175.85	31.54
39	52.75 - 45.25	48.59	3415.37	32.32
40	45.25 - 40.25	49.98	3577.49	32.59
41	40.25 - 35.25	51.40	3740.94	32.85
42	35.25 - 30.25	52.84	3905.65	33.09
43	30.25 - 25.25	54.31	4071.55	33.32
44	25.25 - 20.25	55.81	4238.55	33.54
45	20.25 - 15.25	57.33	4406.56	33.72
46	15.25 - 10.25	58.87	4575.46	33.90
47	10.25 - 5.25	60.44	4745.24	34.07
48	5.25 - 0.25	62.03	4915.88	34.24
49	0.25 - 0	62.13	4924.44	34.23

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
190 - 185	Pole	TP19.038x18x0.1875	Pole	6.5%	Pass
185 - 180	Pole	TP20.077x19.038x0.1875	Pole	16.2%	Pass
180 - 175	Pole	TP21.115x20.077x0.1875	Pole	30.9%	Pass
175 - 170	Pole	TP22.154x21.115x0.1875	Pole	43.0%	Pass
170 - 165	Pole	TP23.192x22.154x0.1875	Pole	55.9%	Pass
165 - 160	Pole	TP24.23x23.192x0.1875	Pole	68.5%	Pass
160 - 155	Pole	TP25.269x24.23x0.1875	Pole	84.7%	Pass
155 - 153.58	Pole	TP25.563x25.269x0.1875	Pole	88.7%	Pass
153.58 - 153.33	Pole + Reinf.	TP25.615x25.563x0.4625	Reinf. 6 Tension Rupture	56.8%	Pass
153.33 - 148.33	Pole + Reinf.	TP26.653x25.615x0.45	Reinf. 6 Tension Rupture	65.8%	Pass
148.33 - 144	Pole + Reinf.	TP27.553x26.653x0.4375	Reinf. 6 Tension Rupture	73.0%	Pass
144 - 143.75	Pole + Reinf.	TP27.605x27.553x0.625	Reinf. 2 Tension Rupture	54.1%	Pass
143.75 - 141	Pole + Reinf.	TP29.007x27.605x0.6125	Reinf. 2 Tension Rupture	57.4%	Pass
141 - 136	Pole + Reinf.	TP28.82x27.801x0.4875	Reinf. 6 Tension Rupture	75.4%	Pass
136 - 131	Pole + Reinf.	TP29.838x28.82x0.4813	Reinf. 6 Tension Rupture	81.1%	Pass
131 - 126	Pole + Reinf.	TP30.857x29.838x0.475	Reinf. 6 Tension Rupture	86.3%	Pass
126 - 123.25	Pole + Reinf.	TP31.417x30.857x0.4688	Reinf. 6 Tension Rupture	89.0%	Pass
123.25 - 123	Pole + Reinf.	TP31.468x31.417x0.5375	Reinf. 5 Tension Rupture	72.8%	Pass
123 - 118	Pole + Reinf.	TP32.486x31.468x0.525	Reinf. 5 Tension Rupture	76.7%	Pass
118 - 113	Pole + Reinf.	TP33.504x32.486x0.5125	Reinf. 5 Tension Rupture	80.4%	Pass
113 - 111.5	Pole + Reinf.	TP33.81x33.504x0.5125	Reinf. 5 Tension Rupture	81.5%	Pass
111.5 - 111.25	Pole + Reinf.	TP33.861x33.81x0.7125	Reinf. 1 Tension Rupture	60.7%	Pass
111.25 - 106.25	Pole + Reinf.	TP34.879x33.861x0.7	Reinf. 1 Tension Rupture	63.5%	Pass
106.25 - 101.25	Pole + Reinf.	TP35.898x34.879x0.675	Reinf. 1 Tension Rupture	66.1%	Pass
101.25 - 99.83	Pole + Reinf.	TP36.186x35.898x0.675	Reinf. 1 Tension Rupture	66.8%	Pass
99.83 - 99.58	Pole + Reinf.	TP36.237x36.186x0.925	Reinf. 1 Tension Rupture	49.4%	Pass
99.58 - 99.25	Pole + Reinf.	TP37.375x36.237x0.925	Reinf. 1 Tension Rupture	49.5%	Pass
99.25 - 93	Pole + Reinf.	TP37.079x35.805x0.55	Reinf. 4 Tension Rupture	84.1%	Pass
93 - 88	Pole + Reinf.	TP38.097x37.079x0.5375	Reinf. 4 Tension Rupture	86.3%	Pass
88 - 83	Pole + Reinf.	TP39.116x38.097x0.5375	Reinf. 4 Tension Rupture	88.3%	Pass
83 - 78	Pole + Reinf.	TP40.135x39.116x0.525	Reinf. 4 Tension Rupture	90.2%	Pass
78 - 73.25	Pole + Reinf.	TP41.102x40.135x0.525	Reinf. 4 Tension Rupture	91.8%	Pass
73.25 - 73	Pole + Reinf.	TP41.153x41.102x0.5875	Reinf. 3 Compression	77.6%	Pass
73 - 68	Pole + Reinf.	TP42.172x41.153x0.5875	Reinf. 3 Compression	79.1%	Pass
68 - 63	Pole + Reinf.	TP43.191x42.172x0.575	Reinf. 3 Compression	80.5%	Pass
63 - 58	Pole + Reinf.	TP44.21x43.191x0.5625	Reinf. 3 Compression	81.9%	Pass
58 - 53	Pole + Reinf.	TP45.228x44.21x0.5625	Reinf. 3 Compression	83.1%	Pass
53 - 52.75	Pole + Reinf.	TP46.604x45.228x0.5625	Reinf. 3 Compression	83.2%	Pass
52.75 - 45.25	Pole	TP46.182x44.654x0.375	Pole	93.1%	Pass
45.25 - 40.25	Pole	TP47.2x46.182x0.375	Pole	94.0%	Pass
40.25 - 35.25	Pole	TP48.218x47.2x0.375	Pole	94.8%	Pass
35.25 - 30.25	Pole	TP49.236x48.218x0.375	Pole	95.6%	Pass
30.25 - 25.25	Pole	TP50.254x49.236x0.375	Pole	96.3%	Pass
25.25 - 20.25	Pole	TP51.273x50.254x0.375	Pole	97.0%	Pass
20.25 - 15.25	Pole	TP52.291x51.273x0.375	Pole	97.7%	Pass
15.25 - 10.25	Pole	TP53.309x52.291x0.375	Pole	98.3%	Pass
10.25 - 5.25	Pole	TP54.327x53.309x0.375	Pole	98.9%	Pass
5.25 - 0.25	Pole	TP55.345x54.327x0.375	Pole	99.4%	Pass
0.25 - 0	Pole	TP55.396x55.345x0.375	Pole	99.4%	Pass
				Summary	
			Pole	99.4%	Pass
			Reinforcement	91.8%	Pass
			Overall	99.4%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity* (100% Max. Allowable)						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
190 - 185	503	n/a	503	11.22	n/a	11.22	6.5%						
185 - 180	591	n/a	591	11.84	n/a	11.84	16.2%						
180 - 175	689	n/a	689	12.45	n/a	12.45	30.9%						
175 - 170	797	n/a	797	13.07	n/a	13.07	43.0%						
170 - 165	915	n/a	915	13.69	n/a	13.69	55.9%						
165 - 160	1045	n/a	1045	14.31	n/a	14.31	68.5%						
160 - 155	1186	n/a	1186	14.93	n/a	14.93	84.7%						
155 - 153.58	1228	n/a	1228	15.10	n/a	15.10	88.7%						
153.58 - 153.33	1236	1712	2948	15.13	18.75	33.88	36.9%						56.8%
153.33 - 148.33	1393	1846	3239	15.75	18.75	34.50	43.4%						65.8%
148.33 - 144	1540	1965	3505	16.29	18.75	35.04	48.8%						73.0%
144 - 143.75	1549	3365	4914	16.32	32.25	48.57	35.2%		54.1%				52.6%
143.75 - 141	1648	3499	5147	16.66	32.25	48.91	37.7%		57.4%				55.8%
141 - 136	2337	2140	4477	22.67	18.75	41.42	46.4%						75.4%
136 - 131	2596	2286	4882	23.48	18.75	42.23	50.5%						81.1%
131 - 126	2873	2437	5310	24.29	18.75	43.04	54.3%						86.3%
126 - 123.25	3034	2522	5556	24.73	18.75	43.48	56.4%						89.0%
123.25 - 123	3049	3306	6355	24.77	24.38	49.15	49.6%					72.8%	
123 - 118	3357	3512	6869	25.58	24.38	49.95	53.0%					76.7%	
118 - 113	3685	3725	7410	26.39	24.38	50.76	56.2%					80.4%	
113 - 111.5	3788	3790	7578	26.63	24.38	51.00	57.1%					81.5%	
111.5 - 111.25	3805	6563	10368	26.67	42.38	69.04	42.0%	60.7%				59.9%	
111.25 - 106.25	4162	6946	11107	27.48	42.38	69.85	44.5%	63.5%				62.6%	
106.25 - 101.25	4540	7340	11880	28.29	42.38	70.66	46.9%	66.1%				65.2%	
101.25 - 99.83	4651	7454	12105	28.51	42.38	70.89	47.6%	66.8%				65.9%	
99.83 - 99.58	4671	11800	16471	28.55	66.75	95.30	35.2%	49.4%			48.7%	48.7%	
99.58 - 99.25	4697	11843	16540	28.61	66.75	95.36	35.3%	49.5%			48.8%	48.8%	
99.25 - 93	6226	4521	10746	36.47	24.38	60.84	56.6%				84.1%		
93 - 88	6758	4762	11519	37.48	24.38	61.85	58.6%				86.3%		
88 - 83	7319	5009	12328	38.49	24.38	62.86	60.6%				88.3%		
83 - 78	7911	5263	13174	39.50	24.38	63.87	62.4%				90.2%		
78 - 73.25	8502	5510	14011	40.46	24.38	64.83	64.2%				91.8%		
73.25 - 73	8533	7262	15796	40.51	31.88	72.38	57.2%			77.6%			
73 - 68	9188	7611	16799	41.52	31.88	73.39	58.9%			79.1%			
68 - 63	9875	7967	17842	42.53	31.88	74.40	60.5%			80.5%			
63 - 58	10596	8332	18928	43.54	31.88	75.41	62.1%			81.9%			
58 - 53	11351	8705	20056	44.55	31.88	76.42	63.7%			83.1%			
53 - 52.75	11390	8724	20114	44.60	31.88	76.47	63.7%			83.2%			
52.75 - 45.25	14448	n/a	14448	54.52	n/a	54.52	93.1%						
45.25 - 40.25	15433	n/a	15433	55.73	n/a	55.73	94.0%						
40.25 - 35.25	16462	n/a	16462	56.94	n/a	56.94	94.8%						
35.25 - 30.25	17535	n/a	17535	58.15	n/a	58.15	95.6%						
30.25 - 25.25	18654	n/a	18654	59.37	n/a	59.37	96.3%						
25.25 - 20.25	19820	n/a	19820	60.58	n/a	60.58	97.0%						
20.25 - 15.25	21034	n/a	21034	61.79	n/a	61.79	97.7%						
15.25 - 10.25	22296	n/a	22296	63.00	n/a	63.00	98.3%						
10.25 - 5.25	23607	n/a	23607	64.21	n/a	64.21	98.9%						
5.25 - 0.25	24969	n/a	24969	65.43	n/a	65.43	99.4%						
0.25 - 0	25038	n/a	25038	65.49	n/a	65.49	99.4%						

Note: Section capacity checked using 5 degree increments.

**Rating per TIA-222-H Section 15.5.*

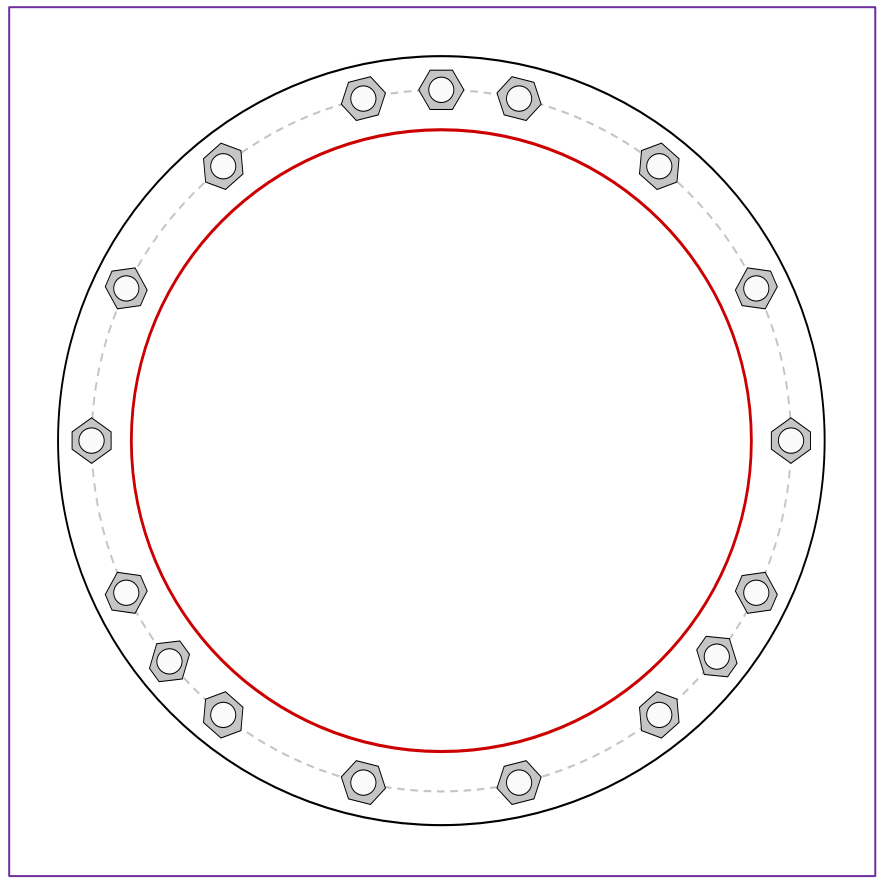
Monopole Base Plate Connection

Site Info	
BU #	819560
Site Name	Elon University, NC
Order #	634661 Rev# 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	4924.44
Axial Force (kips)	62.13
Shear Force (kips)	34.23

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (14) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 62.5" BC

GROUP 2: (3) 2-1/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 62.5" BC

pos. (deg): 90, 219, 322

Base Plate Data

68.5" OD x 3" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

55.3962" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

GROUP 1:		
Pu_t = 226.28	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.01	ϕVn = 149.1	**88.4%**
Mu = n/a	ϕMn = n/a	**Pass**

GROUP 2:		
Pu_t = 219.03	ϕPn_t = 304.69	**Stress Rating**
Vu = 2.01	ϕVn = 186.38	**68.5%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	30.88	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**65.4%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

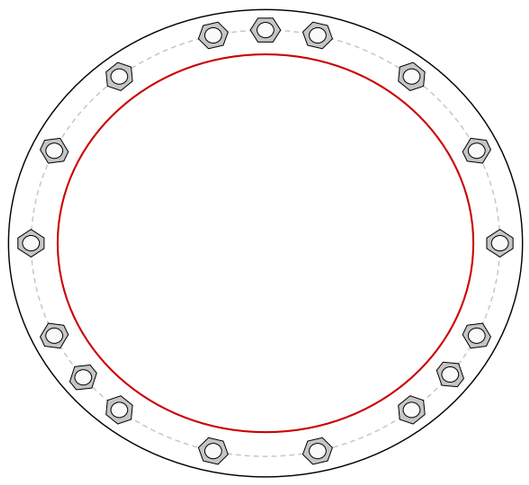
note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	No	No	
2	Yes	Yes	Yes	No	No	

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	2.25	A615-75	62.5	0.5	1.125	N-Included		No
2	1	25.714286	2.25	A615-75	62.5	0.5	1.125	N-Included		No
3	1	51.428571	2.25	A615-75	62.5	0.5	1.125	N-Included		No
4	1	77.142857	2.25	A615-75	62.5	0.5	1.125	N-Included		No
5	1	102.85714	2.25	A615-75	62.5	0.5	1.125	N-Included		No
6	1	128.57143	2.25	A615-75	62.5	0.5	1.125	N-Included		No
7	1	154.28571	2.25	A615-75	62.5	0.5	1.125	N-Included		No
8	1	180	2.25	A615-75	62.5	0.5	1.125	N-Included		No
9	1	205.71429	2.25	A615-75	62.5	0.5	1.125	N-Included		No
10	1	231.42857	2.25	A615-75	62.5	0.5	1.125	N-Included		No
11	1	257.14286	2.25	A615-75	62.5	0.5	1.125	N-Included		No
12	1	282.85714	2.25	A615-75	62.5	0.5	1.125	N-Included		No
13	1	308.57143	2.25	A615-75	62.5	0.5	1.125	N-Included		No
14	1	334.28571	2.25	A615-75	62.5	0.5	1.125	N-Included		No
15	2	90	2.25	A193 Gr. B7	62.5	0.5	1	N-Included		No
16	2	219	2.25	A193 Gr. B7	62.5	0.5	1	N-Included		No
17	2	322	2.25	A193 Gr. B7	62.5	0.5	1	N-Included		No

Plot Graphic



Pier and Pad Foundation

BU # :	819560
Site Name:	Elon University, NC
App. Number:	634661 Rev# 1

TIA-222 Revision:	H
Tower Type:	Monopole

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	62.13	kips
Base Shear, Vu_comp:	34.23	kips
Moment, M_u:	4924.44	ft-kips
Tower Height, **H**:	190	ft
BP Dist. Above Fdn, bp_{dist}:	3.375	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	43	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	14	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	10	ft
Pad Width, W_1:	24.5	ft
Pad Thickness, **T**:	4	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	23	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	100	pcf
Ultimate Net Bearing, Qnet:	6.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	29	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:		
Neglected Depth, **N**:	4.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	370.86	34.23	**8.8%**	**Pass**
Bearing Pressure (ksf)	5.25	3.21	**61.2%**	**Pass**
*Overturning (kip*ft)*	7124.09	5293.48	**74.3%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	8491.73	5146.94	**57.7%**	**Pass**
Pier Compression (kip)	24494.62	107.16	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	4410.93	2001.54	**43.2%**	**Pass**
Pad Shear - 1-way (kips)	1207.92	281.09	**22.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.031	**15.6%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	6708.74	3088.16	**43.8%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**57.7%**
Soil Rating*:	**74.3%**

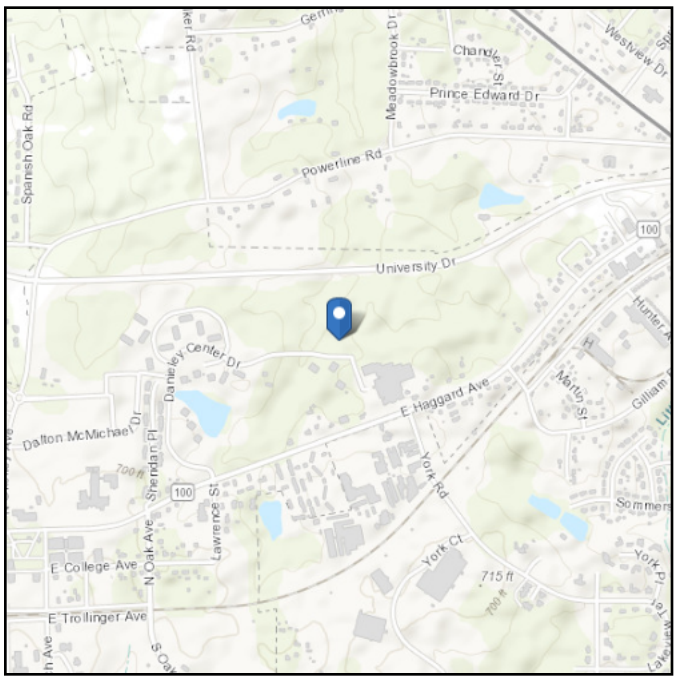
Version 4.1.1

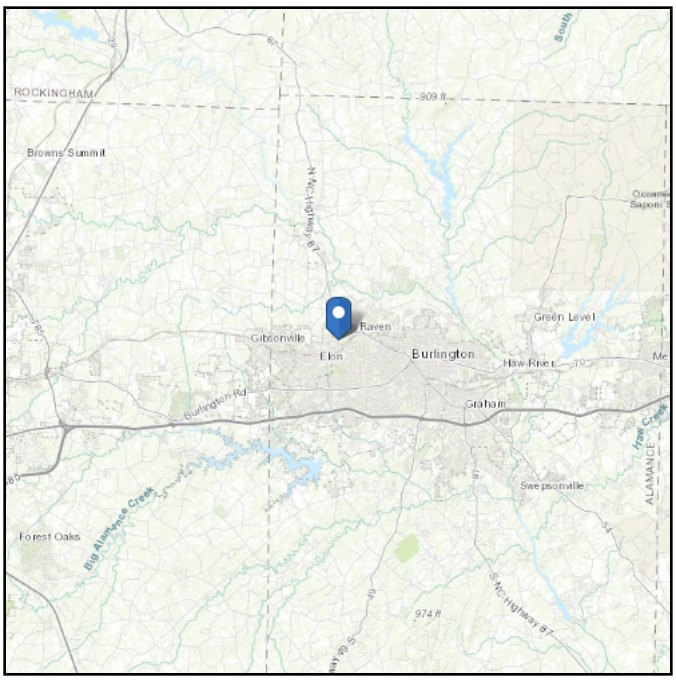
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Latitude: 36.108503
Longitude: -79.490486
Elevation: 653.26 ft (NAVD 88)





Wind

Results:

Wind Speed	115 Vmph
10-year MRI	76 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014
Date Accessed: Fri Feb 17 2023

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

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2.

Seismic

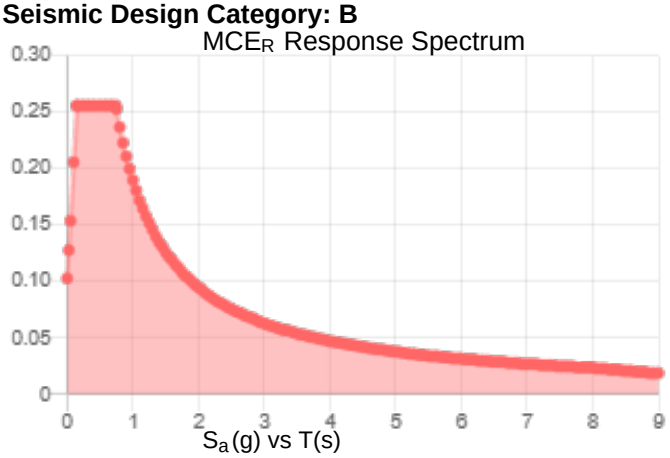
D - Stiff Soil

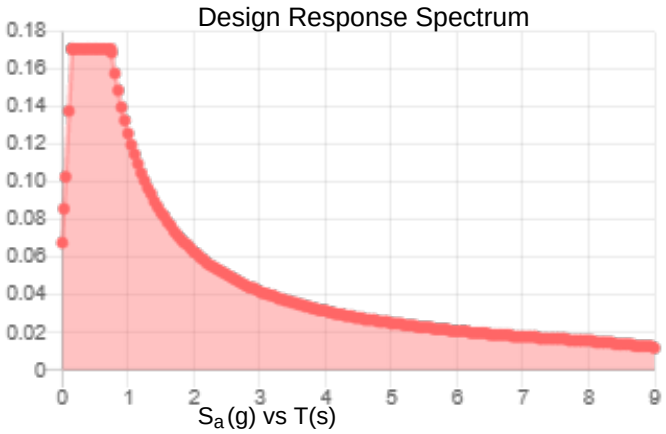
Site Soil Class:

Results:

S_S :	0.16	S_{D1} :	0.126
S_1 :	0.079	T_L :	8
F_a :	1.6	PGA :	0.074
F_v :	2.4	PGA_M :	0.118
S_{MS} :	0.256	F_{PGA} :	1.6
S_{M1} :	0.19	I_e :	1
S_{DS} :	0.171		

Seismic Design Category: B





Data Accessed: **Fri Feb 17 2023**

Date Source:

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed	30 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Feb 17 2023

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

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

To whom it may concern:

Please be advised that the listed individual(s) are representatives with permission to act on behalf of MasTec Network Solutions LLC. As such, they are authorized to represent MasTec Network Solutions to acquire Electrical / Building/ Zoning permits and Business licenses for MasTec Network Solutions in North Carolina and South Carolina.

- **Terry Holmes**

If you have any questions, please do not hesitate to call.

Sincerely,

Brad Conn
Director / Qualifier

MasTec
Network Solutions

MasTec Network Solutions
Mobile: 678-995-6314
Email: Brad.conn@mastec.com
www.mastecnetworksolutions.com
NC General Contractor license # 70037 – I
NC Electrical Contractor License # 29889 – U
SC General Contractor License # 115751
SC Electrical Contractor License # 111492 – EL5

STATE OF North Carolina

COUNTY OF Wake

On this 2 day of November, 2022, before me personally appeared Bradley Conn, A qualifying agent of MasTec Network Solutions, LLC, who executed the foregoing instrument, and acknowledged said instrument to be the free and voluntary and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that he / she was authorized to execute said instrument.

In WITNESS WHEREOF, I Have hereunto set my hand and affixed my official seal the day and year above written.

SHANNON KLEPCYK
Notary Public
Wake
County
My Comm. Exp.
12-14-2026
NORTH CAROLINA

Shannon Klepcyk
(Print name)
Notary Public in and for the state of North Carolina
Residing at: Wake County
Commission Expires: 12/14/26