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

August 22, 2019

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

RE: **Notice of Exempt Modification for T-Mobile:**
806383- T-Mobile Site ID: CT11142A
56 Cosgrove Road, Willington, CT 06279
Latitude: 41° 53' 32.92"/Longitude: -71° 15' 38.15"

Dear Ms. Bachman:

T-Mobile currently maintains six (6) total antennas at the 101-foot mount on the existing 140-foot self-support tower, located at 56 Cosgrove Road, Willington, CT. The tower is owned by Crown Castle. The property is owned by Ms. Isabella Drobney. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700 MHz antennas on the existing antenna mount at the 101-foot level.

Planned Modifications:

Tower:

Remove and Replace:

(3) ANDREW LNX-6515DS-A1M (**REMOVE) –** (3) RFS-APXVAARR24_43U-NA20 Antenna 1900/2100/600/700 MHz **(REPLACE)**

Install New:
(3) 4449 B12/B71 RRUs
(3) HYBRID CABLE
(3) KRY 112 144/1 TMAs

Existing to Remain:

(3) TMA
(12) 1-5/8" Coax
(1) ¼" Coax
(3) RR90-17-XXDP Antenna (Dormant)

Ground:

Internal upgrades to ground cabinets.
Upgrade existing breakers.

The facility was constructed on or about 1986. An email was sent to Ms. Margaret Dupilka of the Land Use Department in the Town of Willington inquiring on original zoning documents. On March 13, 1997 the Connecticut Siting Council in Docket No. 58 approved modifications to the tower.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § l 6-S0j- 73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to First Selectman- Ms. Erika Wiecenski & Ms. Susan Yorgensen of the Planning & Zoning Commission. A copy of this letter is also being sent to the property owner, Ms. Isabella Drobney. Crown Castle is the tower owner.

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

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

Sincerely,

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

Attachments

cc:

Ms. Erika Wiecenski, First-Selectwoman
Town of Willington
40 Old Farms Road
Willington, CT 06279
(860)487-3100

Ms. Susan Y orgensen
Town of Willington Planning and Zoning Commission
40 Old Farms Road
Willington, CT 06279
(860)487-3123

Property owner:
Ms. Isabella Drobney
56 Cosgrove Road
Willington, CT 06279

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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

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Exhibit A

Original Facility Approval

TOWN OF WILLINGTON
APPLICATION FOR ZONING AND BUILDING PERMIT

NOTICE: This application must be typed or printed in ink and filed

The undersigned hereby applies for a permit to: ERECT (X), ALTER ( ), ENLARGE ( ), REPAIR ( ), REMOVE ( ), DEMOLISH ( ), a building or structure herein described and in accordance with plans and specifications submitted in duplicate, herewith, as shown on accompanying survey map.

LOCATION Whitford Hill, Willington, CT E. ( ), W. ( ), S. ( ), N. ( ) side
(Street & Number or nearest main thoroughfare) (If no number is assigned indicate above on which side of street)

LOT # ..... ZONE ..... INTENDED USE OF BUILDING To house electrical equipment for mobile telephone system

SIZE OF LOT: #FT. FRONT ..... #FT. DEEP ..... AREA OF LOT .....

SIZE OF BUILDING: 15½ FT. X 21 FT. NO. OF STORIES 1 TOTAL FLOOR AREA 325.5 SQ. FT.

DISTANCE OF BUILDING FROM LOT LINES: FRONT SEE ATTACHED PLAN, SIDE ....., SIDE ....., REAR .....

WORK WILL START ON OR ABOUT November 1, 1986

OWNER OF LAND Martin W. & Isabella M. Drobney ADDRESS Cosgrove Rd., W. Willington, C/O METRO MOBILE CTS OF NEW H

OWNER OF BUILDING METRO MOBILE CTS of Hartford ADDRESS 5 Eversley Ave., Norwalk, CT

ARCHITECT CON-SERV, INC. 647-6672-1824 ADDRESS 7 Karen Cir., S-3, Billerica, 01

BUILDER NOREAST ENGINEERING & CONSTRUCTION CORP. ADDRESS 740 A Main Street Woburn, MA 01801

HOME IMPROVEMENT CONT. REG. # N/A

This space to be used for Buildings to be Altered, Enlarged, Repaired, Removed or Demolished, Change in use and Special Permit Application.

STATE PROPOSED WORK TO BE DONE OR CHANGE in USE IN DETAIL:
(Attach separate sheet if necessary)

Terry Dill
Agent 1-800-722-2822

How is building presently heated .....
How will building be heated .....
If building is to be demolished or removed, have you notified the proper authorities, to have their respective service connections, removed or sealed and plugged. Water ( ), Sewer ( ), Elect. ( ), Gas ( ).

I hereby agree to comply with the requirements of the Zoning Regulations of the Town of Willington and the provisions of the State Building Code and all other State and Health Codes. The plans and specifications submitted herewith have been prepared in accordance with and are intended to meet these requirements. I hereby certify that I am familiar with the regulations or that I have employed competent persons to assist me in the preparation of the plans and specifications. I further agree that as owner or agent for the owner that the work will be done in accordance with these regulations and that I will employ whatever competent assistance or workmen as may be needed to carry on the work in accordance with the regulations and to remove, replace, or repair any work not found to be in accordance with the regulations by any authority.

Tel. of Person responsible 617-331-4975 Date of Submission 10/30/86

IMPORTANT: I hereby certify that I have read and understand the foregoing information.

SIGNED [signature]
Owner or Duly Authorized Agent (Affidavit)

ADDRESS .....

DO NOT WRITE BELOW THIS LINE

PERMIT NO. /DATE

Map/Parcel

COMMENTS/CONDITIONS:

* CERTIFICATE OF SITING COUNCIL OF CT NEEDED (FOUND)

Est. Cost.Const. $90,000

Tower 28,000
Footing 12,000
Build 35,000
Site 15,000
90,000

Building	455
Zoning	15
Driveway	
Heating	
Electrical	
Plumbing	
Septic	
Other	
TOTAL FD.	470 pd
(chk #/cash)	

[signature] 11/29/86 [signature] 12-11-86
ZONING AGENT/DATE BUILDING OFFICIAL/DATE

PLANNING & ZONING COMMISSION

Willington, Connecticut 06279

ZONING PERMIT

Date of Application ..... 19 ..

This permit is hereby applied for in accordance with the requirements of the Willington Zoning Regulations for:

☑ new construction ☐ swimming pool ☐ change of use ☑ other .....
☐ addition ☐ sign ☐ excavating/filling .....

Zoning District ..... Lot Area ..... Lot Frontage ..... Required Approvals ..... (all data)

Record Map # ..... Subdivision ..... Lot No. ..... Special Permit, yes ☐, no ☐

Location ..... Site Plan Approval, yes ☐, no ☐
(House Number) (Street)

Property Owner ..... Address ..... Phone .....

PROPERTY USE: ☐ Single Family Residence ☐ Multi-Family Residence ☐ Commercial ☐ Industrial ☐ Other .....

PROPOSED STRUCTURES

Existing Structures: No. ..... Use .....

1. Description .....
2. Dimensions .....
3. Livable Floor Area .....
4. Estimated Cost of Construction $ .....
☐ Health Dept. Approval: # ..... Date: .....
☐ Driveway permit: # ..... Date: .....

Conditions of Approval:

Reasons for Denial:

☐ Plot Plan Attached
☐ Conforming All Aspects
☐ Non Conforming

☐ Variance granted to .....

SIGN PERMIT ONLY — Permanent ☐ Temporary ☐
☐ Signed Legend

	Blackboard	Lettering
Color		
Dimensions		
Area		
Building Frontage		
Permitted Area		

Letter Style _____
Material _____
Finish _____
Lighting _____
Front Set-Back _____
Sketch to Scale Attached ☐

Approved by _____

Date _____

For ..... Date ..... 19 .....

Permit void if:
a. Work or activity not commenced within 3 months of the date of issuance
b. Construction authorized not completed within 1 year of the date of issuance.

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

..... Permit hereby ☐ Issued ☐ Denied
Signature of owner or authorized agent (Agent's phone)

Fee of ..... PAID .....
Date ..... 19 ..
Permit # .....

by _____
LAND USE AGENT
WILLINGTON LAND USE AGENCY

Zip # .....

ZONING CERTIFICATE OF COMPLIANCE

Willington, Connecticut 06279

Issued to ..... Address ..... Zone .....

For ..... (Premises covered by certificate)
(House No.) (Street)

Lot # ..... Record # ..... Subdivision # .....

To verify that a plot plan (attached) certified by ..... on ..... 19 ..... of the above-referenced lot and the structures thereon has been presented to the Zoning Enforcement Officer, and such plan indicates that the construction or use is in conformance with all the applicable Zoning Regulations. Such lot, structures, and/or use are hereby authorized for occupancy. This certificate is based on the certified plot plan submitted. Falsification, by mis-representation or omission shall constitute a violation of the Willington Zoning Regulations and shall invalidate this Certificate.

Date ..... 19 ... by _____
LAND USE AGENT
PLANNING ZONING COMMISSION

Barbadora, Jeff

From: Margaret DuPilka <mdupilka@willingtonct.org>
Sent: Tuesday, August 7, 2018 2:40 PM
To: Barbadora, Jeff
Subject: 56 Cosgrove Rd
Attachments: 20180807121251923.pdf

Note sure if this is what you are looking for. Peggy

-----Original Message-----
From: TOBCopyRoom@willingtonct.org [mailto:TOBCopyRoom@willingtonct.org]
Sent: Tuesday, August 07, 2018 12:13 PM
To: Margaret DuPilka <mdupilka@willingtonct.org>
Subject: Message from "TOB-COPYROOM-COPIER"

This E-mail was sent from "TOB-COPYROOM-COPIER" (MP C4503).

Scan Date: 08.07.2018 12:12:51 (-0400)
Queries to: TOBCopyRoom@willingtonct.org

Bell Atlantic NYNEX Mobile
20 Alexander Drive
P.O. Box 5029
Wallingford, CT 06492
Telephone: 203-269-8858

Jennifer Young Gaudet
Manager - Regulatory

February 25, 1997

RECEIVED
FEB 25 1997
CONNECTICUT
SITING COUNCIL

HAND DELIVERED

Mr. Joel M. Rinebold, Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: Bell Atlantic NYNEX Mobile - GPS Antennas - Windsor, Vernon, Wallingford, Rocky Hill, Branford, Milford, Darien, Fairfield, Guilford and North Haven Cell Sites

Dear Mr. Rinebold:

Bell Atlantic NYNEX Mobile ("BANM" or the "Company") plans to mount a small Global Positioning Satellite System ("GPS") receive-only antenna on its towers at the existing BANM facilities referenced above. Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification to each facility pursuant to R.C.S.A. § 16-50j-72(b). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the chief elected official of each town in which a referenced facility is located, as shown on the attached Appendix A.

The addition of BANM's GPS antenna to each tower site does not constitute a modification as defined in C.G.S. § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. The addition of the GPS antenna will have no effect on any of the sites.

The planned change to each facility falls squarely within those activities provided for in R.C.S.A. § 16-50j-72(b). The height of the tower will be unaffected. In the case of monopoles, the GPS antenna will be placed on the top platform, where BANM's other antennas are located, and will not extend above the existing antennas. In the case of lattice towers, the GPS antenna will be placed on an approximately 2' sidearm at the 60' level of the tower. Attached as Appendix B is relevant tower and site data for each of the sites. The addition of the GPS antenna will have no effect on the site boundary or noise levels at any of the sites. Nor will there be any effect on the total radio frequency electromagnetic radiation power density at any of the sites, because the GPS antennas are receive-only antennas.

BANM therefore respectfully requests the Council's acknowledgment under R.C.S.A. § 16-50j-72(b) of the addition of the GPS antennas at the referenced facilities.

Respectfully yours,

Jennifer Young Gaudet
Manager - Regulatory

Enclosures

Site	Address	Type of Tower	Tower Height	Docket
Windsor	482 Pigeon Hill Road	lattice	160'	58
Vernon	South Street	lattice	130'	58
Willington	Cosgrove Road	lattice	140'	58
Rocky Hill	France Street	monopole	140'	58
Branford	1801 North Main Street	monopole	110'	122
Milford	423 Oronoque Road	monopole	100'	56
Darien	Ledge Road	monopole	100'	155
Fairfield	281 Woodhouse Road	monopole	160'	86
Guilford	131 Manor Road	monopole	150'	56
North Haven	117 Washington Avenue	monopole	120'	117

Exempt Mod.

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

10 Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

March 13, 1997

Jennifer Young Gaudet
Regulatory Manager
Bell Atlantic NYNEX Mobile
20 Alexander Drive, P.O. Box 5029
Wallingford, CT 06492

Re: **DOCKET NO. 56** - Bell Atlantic NYNEX Mobile Certificate of Environmental Compatibility and Public Need for telecommunications facilities in New Haven County. Notice of Intent to Modify Guilford & Milford Facilities.

DOCKET NO. 58 - Bell Atlantic NYNEX Mobile Certificate of Environmental Compatibility and Public Need for telecommunications facilities in the Towns of Glastonbury, Haddam, Hartford, Portland, Rocky Hill, Somers, Willington, Vernon, and Windsor Connecticut. Notice of Intent to Modify Rocky Hill, Vernon, [redacted] and Windsor Facilities.

DOCKET NO. 86 - Bell Atlantic NYNEX Mobile, Certificate of Environmental Compatibility and Public Need for telecommunications facilities in the Towns of Greenwich and Fairfield. Notice of Intent to Modify Fairfield Facility.

DOCKET NO. 117 - Bell Atlantic NYNEX Mobile Certificate of Environmental Compatibility and Public Need for a telecommunications facility in the Town of North Haven, Connecticut. Notice of Intent to Modify Facility.

DOCKET NO. 122 - Bell Atlantic NYNEX Mobile Certificate of Environmental Compatibility and Public Need for a telecommunications facility in the Town of Branford, Connecticut. Notice of Intent to Modify Facility.

DOCKET NO. 155 - Bell Atlantic NYNEX Mobile Certificate of Environmental Compatibility and Public Need for a telecommunications facility located in the Town of Darien, Connecticut. Notice of Intent to Modify Facility.

Dear Ms. Gaudet:

At a public meeting held on March 12, 1997, the Connecticut Siting Council (Council) acknowledged your notice to modify existing telecommunications facilities in Guilford, Milford, Rocky Hill, Vernon, Willington, Windsor, Fairfield, North Haven, Branford, and Darien, Connecticut, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies.

The proposed modifications are to be implemented as specified in your notice dated February 25, 1997. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequency electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. These facilities have been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequency now used on this tower. Any additional change to these facilities will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Science and Technology, Bulletin No. 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such

failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston

Mortimer A. Gelston
Chairman

MAG/RKE/ss

c: Honorable Francis J. Brady, Mayor of Windsor
Honorable Tony Muro, Mayor of Vernon
Honorable John Patton, First Selectman of Willington
Honorable Donald W. Unwin, Mayor of Rocky Hill
Honorable Dominic A. Buonocore, First Selectman of Branford
Honorable Frederick L. Lisman, Mayor of Milford
Honorable Henry M. Sanders, First Selectman of Darien
Honorable Paul A. Audley, First Selectman of Fairfield
Honorable Edward J. Lynch, First Selectman of Guilford
Honorable Anthony P. Rescigno, First Selectman of North Haven

Exhibit B

Property card

56 COSGROVE RD

Location	56 COSGROVE RD	**Mblu**	33/ / 024-00/ /
Acct#	00058300	**Owner**	DROBNEY ISABEL N
Assessment	$172,310	**Appraisal**	$246,150
PID	3010	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$180,500	$65,650	$246,150
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$126,360	$45,950	$172,310

Owner of Record

Owner	DROBNEY ISABEL N
Co-Owner	AKA ISABELLA
Address	56 COSGROVE RD
	WILLINGTON, CT 06279
Sale Price	$0
Certificate	
Book & Page	204/369
Sale Date	05/29/2013

Building Information

Building 1 : Section 1

Year Built:	1958
Living Area:	1,963
Replacement Cost:	$237,151
Building Percent Good:	71
Replacement Cost Less Depreciation:	$168,380

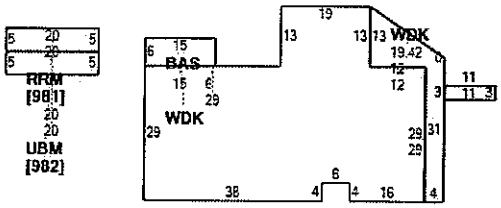
Building Attributes	
Field	**Description**
Style	Ranch
Model	Residential
Grade:	Good
Stories:	1
Occupancy	1

Building Photo

(http://images.vgsi.com/photos/WillingtonCTPhotos//\00\00\04\

Building Layout

Exterior Wall 1	Stucco/Masonry
Exterior Wall 2	Brick Veneer
Roof Structure:	Gable or Hip
Roof Cover	Asbestos Shing
Interior Wall 1	Drywall/Sheet
Interior Wall 2	Wood Panel
Interior Flr 1	Hardwood
Interior Flr 2	Linoleum
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	4 Bedrooms
Total Bthrms:	2
Total Half Baths:	0
Total Xtra Fixtrs:	1
Total Rooms:	6
Bath Style:	Average
Kitchen Style:	Average
Fireplaces	2
Basement Garage	2



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,963	1,963
RRM	Rec Room	0	0
UBM	Unfinished Basement	0	0
WDK	Wood Deck	326	0
		2,289	1,963

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 1010
Description Single Fam MDL-01
Zone R80
Neighborhood 110
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 4.2
Frontage
Depth
Assessed Value $45,950
Appraised Value $65,650

Outbuildings

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD1	SHED FRAME			312.00 S.F.	$1,870	1
FGR3	GARAGE-POOR			1424.00 S.F.	$10,250	1

Valuation History

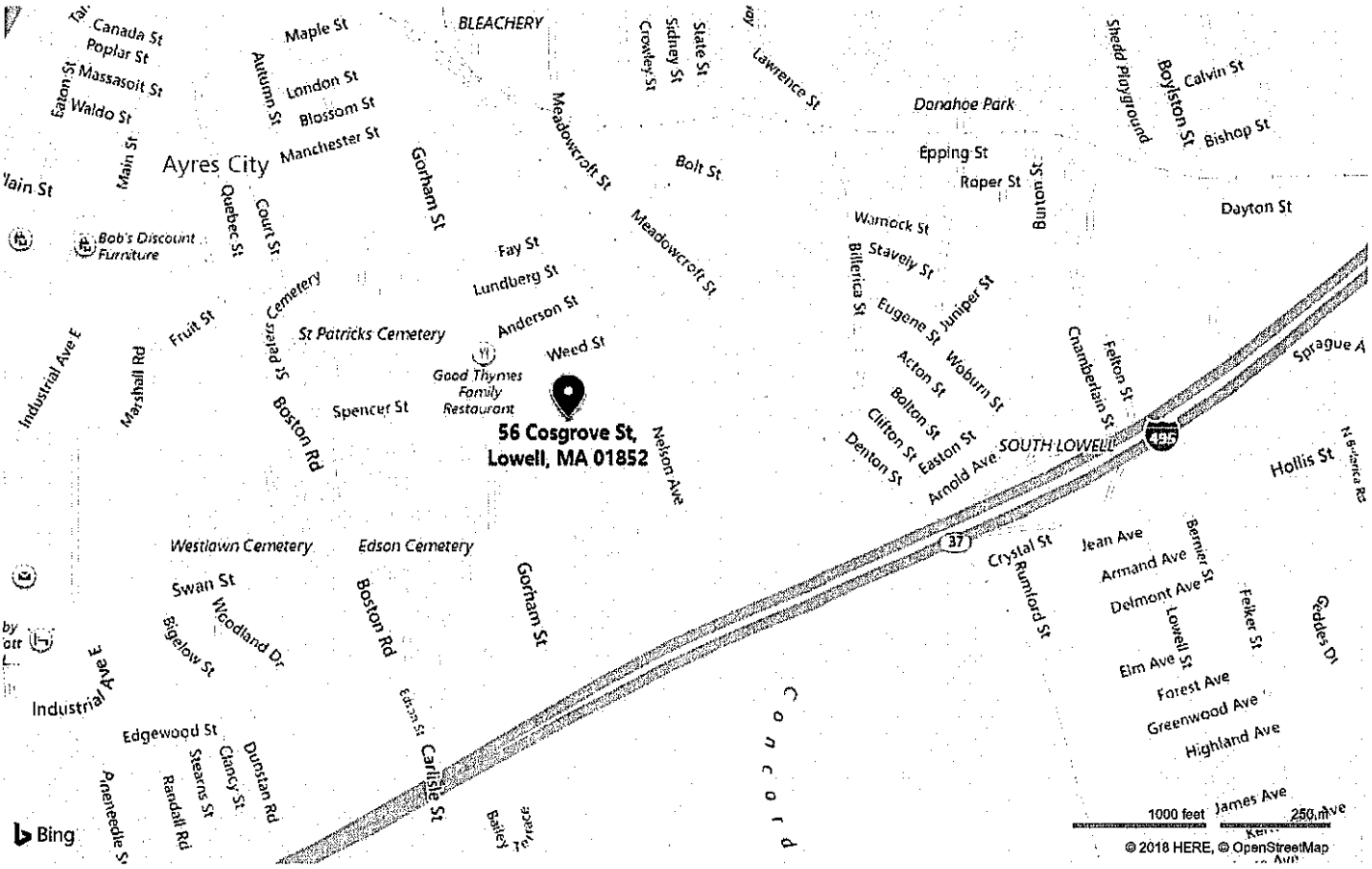
Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$180,500	$65,650	$246,150

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$126,360	$45,950	$172,310

bing maps

56 Cosgrove St, Lowell, MA 01852

Location: 42.619881485361084, -71.30272803319164



bing maps

56 Cosgrove St, Lowell, MA 01852

Location: 42.619881485361084, -71.30272803319164

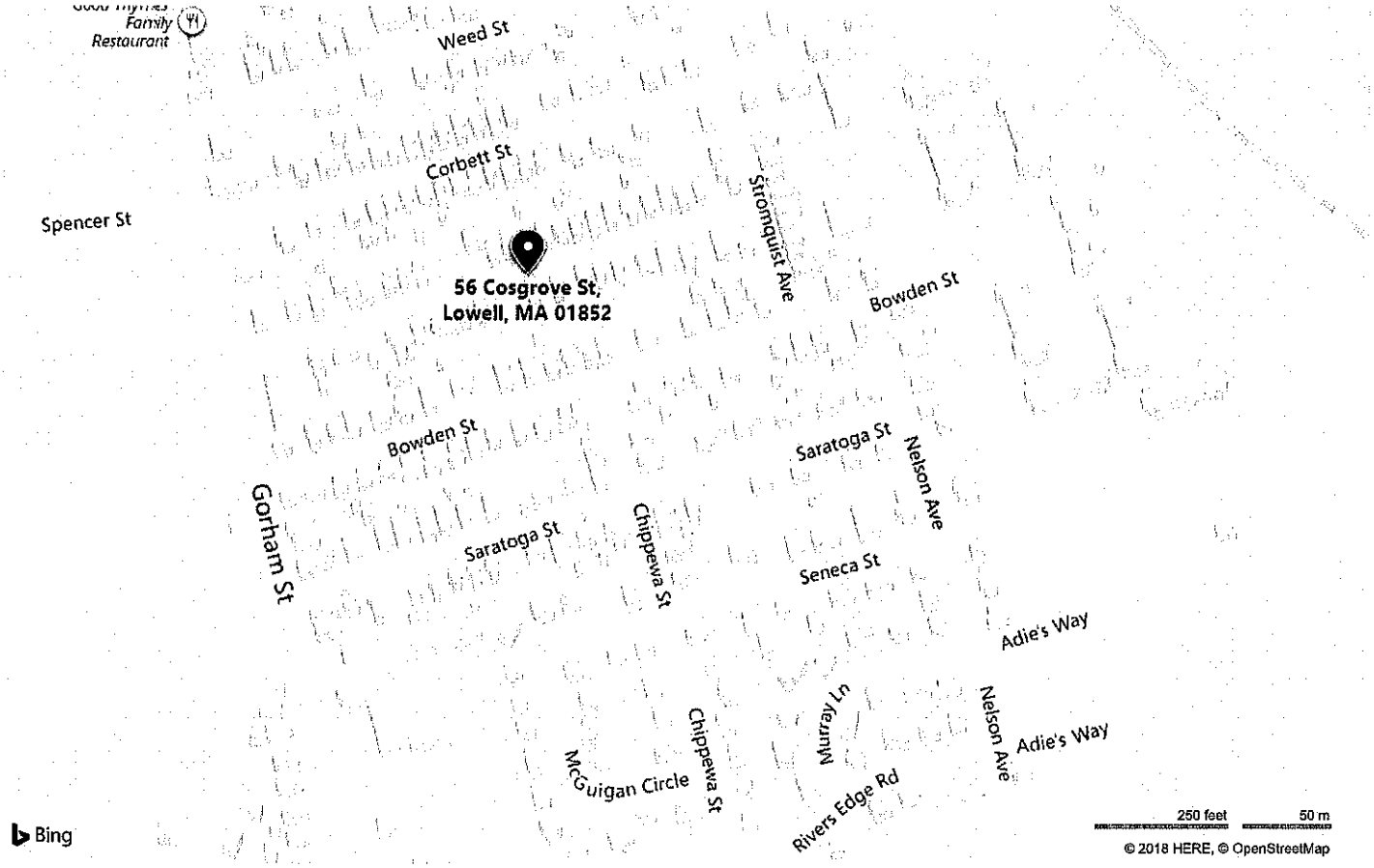


Exhibit C

Construction Drawings

SCOPE OF WORK

ITEMS TO BE INSTALLED ON & REMOVED FROM EXISTING TOWER:

- REMOVE (3) ANTENNAS, (3) RRUS

- INSTALL T-MOBILE ANTENNA (APXVAARR24_43-U-NA20) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL T-MOBILE RADIO (4449 B71+B12) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- INSTALL T-MOBILE TMA (KRY 112 144/1) (TYP. 1 PER SECTOR, TOTAL OF 3).
- INSTALL T-MOBILE COAX JUMPER CABLES (TYP. OF 4 PER SECTOR, TOTAL OF 12).
- INSTALL T-MOBILE FIBER JUMPER CABLES (TYP. OF 1 PER SECTOR, TOTAL OF 3.).
- INSTALL T-MOBILE HB114-U6x12-120-LI HYBRID CABLE (TOTAL OF 3).

ITEMS TO BE INSTALLED ON EXISTING EQUIPMENT PAD:

- REMOVE (1) DUS41
- INSTALL (2) ERICSSON BASEBAND 6630 UNITS
- INSTALL ODE CABINET UPGRADE
- INSTALL T-MOBILE RADIO (4415 B66) (TOTAL OF 3).

ITEMS TO REMAIN:
- (3) ANTENNAS, (3) TMAS, (12) COAX CABLES., (1) 1/4" COAX

SITE ADDRESS:	55 COSGROVE RD WET WIMMINGTON, CT 06279
LATITUDE (NAD 83):	N 41°53' 32.92"
LONGITUDE (NAD 83):	W -72° 15' 38.15"
COUNTY:	TOLLAND
JURISDICTION:	----
LANDLORD:	CROWN CASTLE INTERNATIONAL 500 W. CUMMINGS PARK, STE 3600 WOBURN, MA 01801
STRUCTURE TYPE:	SELF SUPPORT
STRUCTURE HEIGHT:	140'-0'"
RAD CENTER:	102'-0"
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

NOTE:

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

L600 PROJECT
SITE NUMBER: CT11142A

SITE NAME: WILMINGTON/RT-320/COSG_1

CROWN SITE NAME: HRT 087 943325

BU#: 806383

T-MOBILE RAN TEMPLATE: CUSTOM

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
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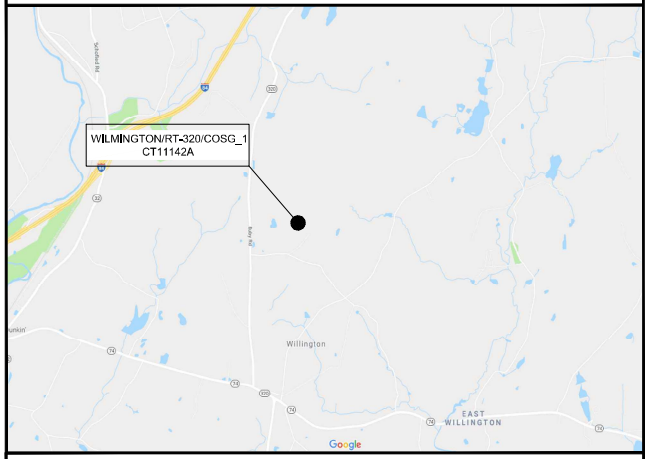
C-1	SITE PLAN
S-1	PROPOSED TOWER ELEVATION & ANTENNA LAYOUT PLAN
S-2	EQUIPMENT DETAILS
RF-1	ANTENNA INFORMATION CHART
RF-2	RF EQUIPMENT SCHEMATIC
E-1	ONE LINE DIAGRAM
G-1	GROUNDING RISER DIAGRAM

CROWN CASTLE SITE ID #: 806383
CROWN CASTLE SITE NAME: HRT 087 943325

ENGINEERING

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

VICINITY MAP



HEAD WEST ON ST. JAMES AVENUE TOWARD TRINITY PLACE (0.1 MILE), MERGE ONTO I-90 W VIA THE RAMP TO NEW YORK (0.2 MILE), MERGE ONTO I-90 W (10.2 MILES0, KEEP LEFT TO SAY ON I-90 W (44.1 MILES), USE THE RIGHT 2 LANES TO TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY (0.7 MILE), CONTINUE ONTO I-84 (17.5 MILES), TAKE EXIT 71 TOWARD CT-320/RUBY RD (0.2 MILE), TURN LEFT ONTO CT-320 S (0.2 MILE), TURN RIGHT TO STAY ON CT-230 S (2.4 MILES), TURN LEFT ONTO COSGROVE RD. (0.3 MILE), SITE WILL BE ON THE LEFT (0.2 MILE).

GENERAL NOTES

1. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
2. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
3. HANDICAP REQUIREMENTS ARE NOT REQUIRED.
4. THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS.
5. ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. EQUIPMENT, ANTENNAS/RADIOS AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.
6. NO COMMERCIAL SIGNAGE IS PROPOSED.

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

811

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

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

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

STATE OF CONNECTICUT
DANIEL J. CORNING
34055
LICENSED PROFESSIONAL ENGINEER

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

SUBMITTALS

1	08/19/19	ISSUED FOR CONSTRUCTION
0	07/16/19	ISSUED FOR PERMITTING

WILMINGTON/RT-320/COSG_1
CT11142A
HRT 087 943325
806383
55 COSGROVE RD
WET WIMMINGTON, CT 06279

TITLE SHEET

T-1

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED- NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800-788-7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" - CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
   THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY 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, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED-STD-10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE" AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: T-MOBILE
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 20,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT BUNDLES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING, SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW " CT11142A".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1 Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3 Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3 Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (-)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

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

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

STATE OF CONNECTICUT
DANIEL J. CORNING
34055
LICENSED
PROFESSIONAL ENGINEER

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

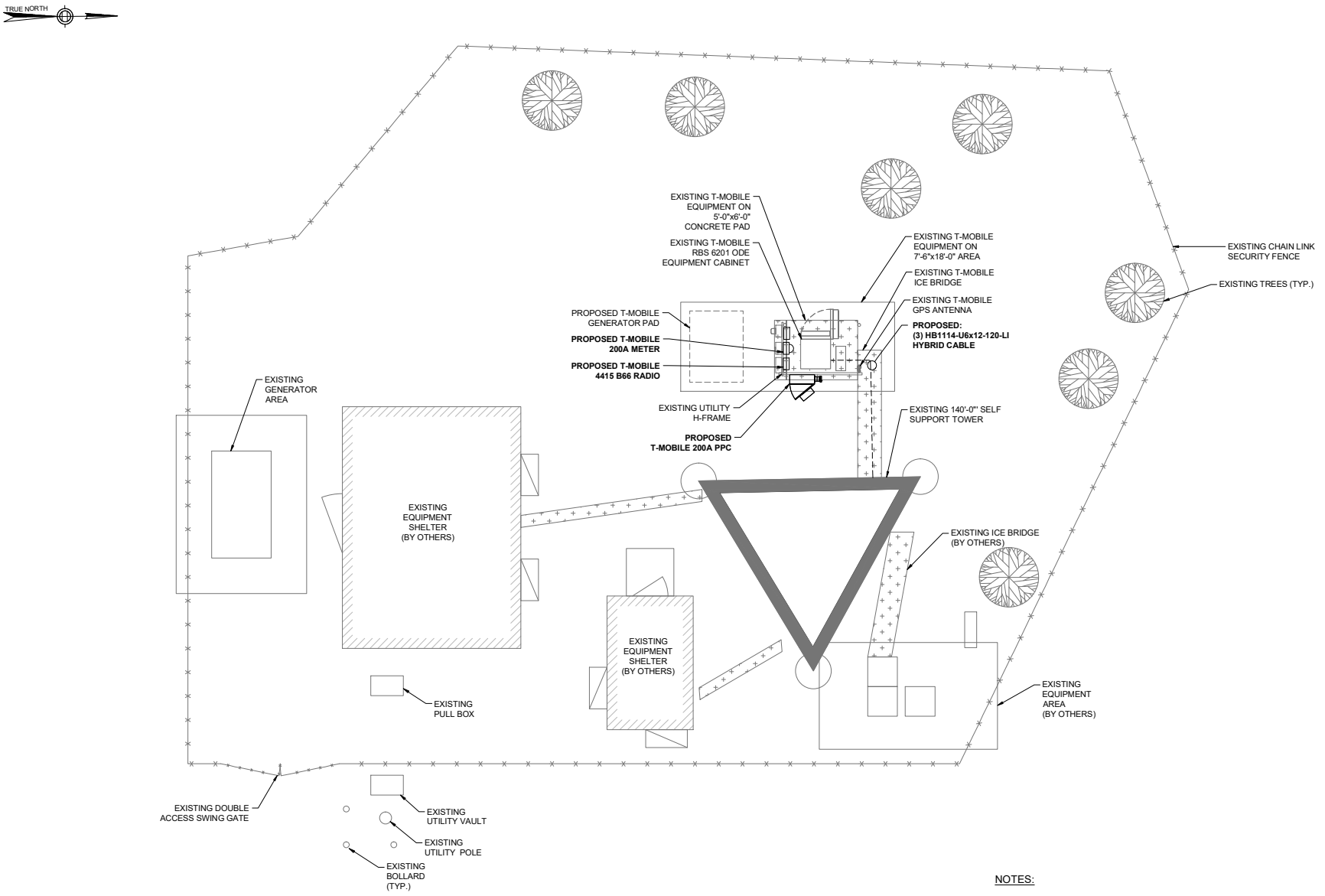
SUBMITTALS

1	08/19/19	ISSUED FOR CONSTRUCTION
0	07/16/19	ISSUED FOR PERMITTING

WILMINGTON/RT-320/COSG_1
CT11142A
HRT 087 943325
806383
55 COSGROVE RD
WET WIMMINGTON, CT 06279

GENERAL NOTES

GN-1



NOTES:

1. PLAN BASED ON ASBUILT DRAWINGS ISSUED BY CROWN CASTLE ON 05/17/2018. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.

1 SITE PLAN

SCALE: 1/4" = 1'-0"

T-Mobile
T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

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

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BOSTON, MA 02116

STATE OF CONNECTICUT
DANIEL J. CORNING
34056
LICENSED PROFESSIONAL ENGINEER

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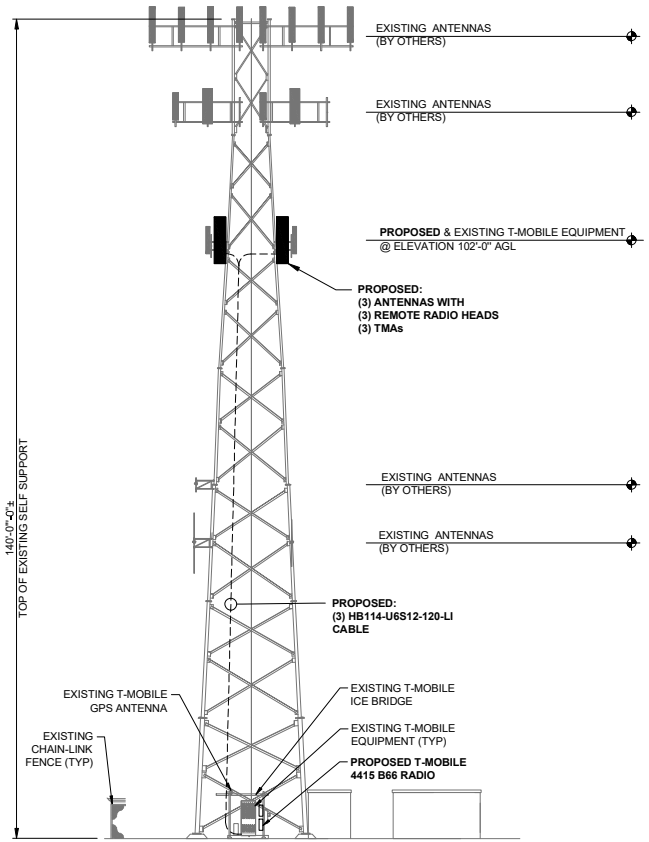
HRT 087 943325
806383
55 COSGROVE RD
WET WIMMINGTON, CT 06279

SITE PLAN

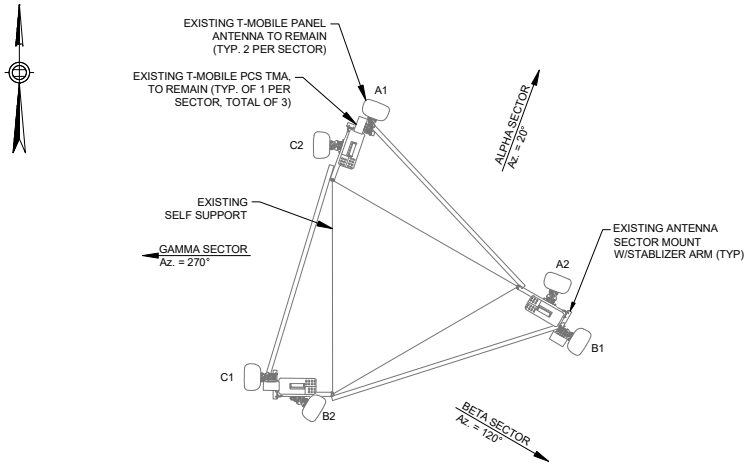
C-1

NOTES:

1. CONTRACTOR SHALL REFER TO THE STRUCTURAL ANALYSIS REPORT; SITE NUMBER: CT11142A; SITE NAME: WILMINGTON/RT-320/COSG_1; CROWN BU NUMBER: 806383; CROWN SITE NAME: HRT 087 943325; CROWN ORDER NUMBER: 806383; ISSUED BY FDH INFRASTRUCTURE SERVICES. DATED ON 06/20/19. PER THIS ANALYSIS NO MODIFICATIONS ARE REQUIRED. THE CONTRACTOR SHALL VERIFY ALL EXISTING MEMBERS AND HARDWARE ARE INSTALLED PROPERLY AS DESCRIBED IN THIS REPORT.

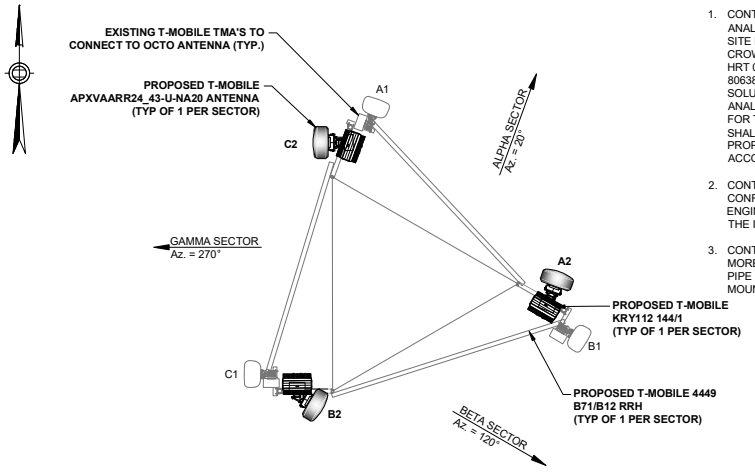


1 TOWER ELEVATION — SCALE: 3/32" = 1'-0"



ELEVATION 102'-0"

2 EXISTING ANTENNA LAYOUT — SCALE: N.T.S.



ELEVATION 102'-0"

3 PROPOSED ANTENNA LAYOUT — SCALE: N.T.S.

NOTES:

1. CONTRACTOR SHALL REFER TO THE MOUNT ANALYSIS REPORT; SITE NUMBER: CT11142A; SITE NAME: WILMINGTON/RT-320/COSG_1; CROWN BU NUMBER: 806383; CROWN SITE NAME: HRT 087 943325; CROWN ORDER NUMBER: 806383; ISSUED BY MASTEC NETWORK SOLUCTIONS, DATED ON 06/07/2019. PER THIS ANALYSIS NO MODIFICATIONS ARE REQUIRED FOR THE PROPOSED EQUIPMENT. CONTRACTOR SHALL CONFIRM ALL AT&T EXISTING AND PROPOSED EQUIPMENT ARE INSTALLED IN ACCORDANCE WITH THIS REPORT.
2. CONTRACTOR TO VERIFY FINAL RF CONFIGURATION AND NOTIFY CARRIER AND ENGINEER W/ ANY DISCREPANCIES PRIOR TO THE INSTALLATION.
3. CONTRACTOR SHALL NOT EXCEED MOUNTING MORE THAN (2) RRHS PER ANTENNA MOUNTING PIPE - RELOCATE TO AN ADJACENT ANTENNA MOUNTING PIPE AS NEEDED.

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BOSTON, MA 02116

STATE OF CONNECTICUT
DANIEL J. CORNING
34055
LICENSED PROFESSIONAL ENGINEER

PROJECT NO:	ERCC0004
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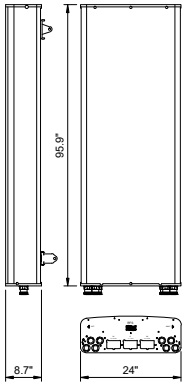
806383
55 COSGROVE RD
WET WIMMINGTON, CT 06279

PROPOSED TOWER ELEVATION & ANTENNA LAYOUT PLAN

S-1

MANUFACTURER: RFS
MODEL NO.: APXVAARR24_43-U-NA20

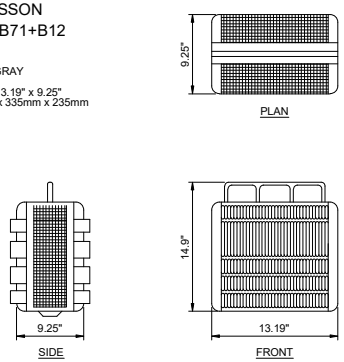
COLOR: LIGHT GRAY
DIMENSIONS (LxWxD): 95.9" x 24" x 8.7"
2436mm x 609mm x 222mm
WEIGHT (lbs): 58
CONNECTOR: 8 x 4.3-10 FEMALE AT BOTTOM +
6 AISG CONNECTORS (3 MALE/3 FEMALE)
SURVIVAL/RATED WIND VELOCITY (KM/H): 241 (150)



1 ANTENNA SPECIFICATIONS
SCALE: N.T.S.

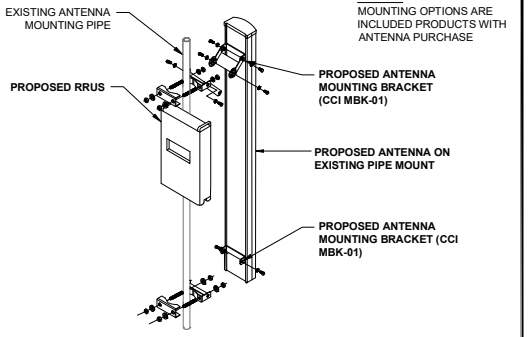
MANUFACTURER: ERICSSON
MODEL NO.: 4449 B71+B12

COLOR: LIGHT GRAY
DIMENSIONS (LxWxD): 14.9" x 13.19" x 9.25"
378mm x 335mm x 235mm
WEIGHT (lbs): 74



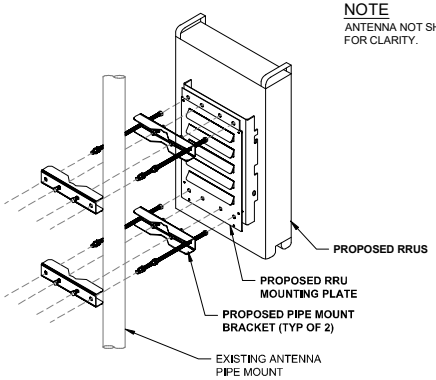
2 RRUS SPECIFICATIONS
SCALE: N.T.S.

NOTE
MOUNTING OPTIONS ARE INCLUDED PRODUCTS WITH ANTENNA PURCHASE



3 RRU MOUNTING DETAIL W/ANTENNA
SCALE: N.T.S.

NOTE
ANTENNA NOT SHOWN FOR CLARITY.



4 RRU MOUNTING DETAIL
SCALE: N.T.S.

MANUFACTURER: ERICSSON
MODEL NO.: KRY 112 144/1

DIMENSIONS (LxWxD): 12.1" x 4.9" x 4.3"
308mm x 124mm x 109mm
WEIGHT (lbs): 12.1

5 TMA SPECIFICATIONS
SCALE: N.T.S.

6 DETAIL NOT USED
SCALE: N.T.S.

7 DETAIL NOT USED
SCALE: N.T.S.

8 DETAIL NOT USED
SCALE: N.T.S.

9 DETAIL NOT USED
SCALE: N.T.S.

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BOSTON, MA 02116

STATE OF CONNECTICUT
DANIEL J. CORNING
21055
LICENSED PROFESSIONAL ENGINEER

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

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WILMINGTON/RT-320/COSG_1
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806383
55 COSGROVE RD
WET WIMMINGTON, CT 06279

EQUIPMENT DETAILS

S-2

CUSTOM - TOWER TOP EQUIPMENT SCHEDULE (RE: ----)														
ANTENNA NUMBER (FROM L TO R)	ANTENNA MODEL	ANTENNA AZIMUTH	MECH. TILT	ELEC. TILT	ANTENNA CENTERLINE FROM GROUND	TMA/RRUS MODEL	TMA/RRUS QUANTITY	COAX/HYBRID CABLE			JUMPERS		
								SIZE/TYPE	QUANTITY	LENGTH	TYPE	QTY	LENGTH
A1	RR90-17-XXDP	20°	0°	2°	102'-0"	TWIN STYLE 1A-PCS TMA **RADIO 4415 B66 (ON GROUND)**	0	1-1/4" COAX	4	152'-0"'	-	-	-
A2	**APXVAARR24_43-U-NA20**	**20°**	**0°**	**2°**	**102'-0"**	**RADIO 4449 B71+B12** **TWIN STYLE 1B-AWS TMA**	**2** **2**	**HB6X12**	**1**	**152'-0"'**	**FIBER** **COAX**	**1** **4**	**10'** **10'**
B1	RR90-17-XXDP	120°	0°	2°	102'-0"	TWIN STYLE 1A-PCS TMA **RADIO 4415 B66 (ON GROUND)**	0	1-1/4" COAX	4	152'-0"'	-	-	-
B2	**APXVAARR24_43-U-NA20**	**120°**	**0°**	**2°**	**102'-0"**	**RADIO 4449 B71+B12** **TWIN STYLE 1B-AWS TMA**	**2** **2**	**HB6X12**	**1**	**152'-0"'**	**FIBER** **COAX**	**1** **4**	**10'** **10'**
C1	RR90-17-XXDP	270°	0°	2°	102'-0"	TWIN STYLE 1A-PCS TMA **RADIO 4415 B66 (ON GROUND)**	0	1-1/4" COAX	4	152'-0"'	-	-	-
C2	**APXVAARR24_43-U-NA20**	**270°**	**0°**	**2°**	**102'-0"**	**RADIO 4449 B71+B12** **TWIN STYLE 1B-AWS TMA**	**2** **2**	**HB6X12**	**1**	**152'-0"'**	**FIBER** **COAX**	**1** **4**	**10'** **10'**

NOTES:

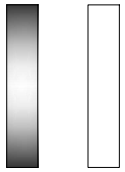
1. EQUIPMENT LISTED IN **BOLD**, DELINEATES THAT THE EQUIPMENT IS PROPOSED
2. * DENOTES THAT EQUIPMENT IS TO BE GROUND MOUNTED

1 EQUIPMENT INFORMATION CHART

SCALE: NONE

KEY
EXISTING
PROPOSED

KEY
ANTENNA POSITION AS VIEW FROM BEHIND



EQUIPMENT NOTES:

1. THE HYBRID CABLE LENGTH SHOW IS ONLY AN ESTIMATE AND SHOULD NOT BE USED FOR ORDERING MATERIALS. CONFIRM THE REQUIRED HYBRID CABLE LENGTH WITH T-MOBILE PRIOR TO ORDERING OR INSTALLATION.
2. THE CONTRACTOR SHALL TEST THE OPTICAL FIBER AFTER INSTALLATION IN ACCORDANCE WITH T-MOBILE STANDARDS AND SUPPLY THE RESULTS TO T-MOBILE.
3. THE CONTRACTOR SHALL CONFIRM THE TOWER TOP EQUIPMENT LIST ABOVE WITH THE FINAL T-MOBILE RFDS PRIOR TO INSTALLATION.
4. ALL EXISTING AND PROPOSED ANTENNA CABLES SHALL BE COLOR CODED PER T-MOBILE STANDARDS.
5. REFER TO EQUIPMENT INSTALLATION STANDARDS FOR ADDITIONAL INFORMATION.
6. REFER TO EQUIPMENT MANUFACTURER'S SPECIFICATION SHEETS FOR ADDITIONAL INFORMATION NOT LISTED ABOVE.

2 ANTENNA KEY

SCALE: NONE

CUSTOM - TOWER LOADING SUMMARY				
EQUIPMENT TYPE	EXISTING QUANTITY	QUANTITY REMOVED	QUANTITY ADDED	TOTAL QUANTITY
PANEL ANTENNA	6	3	3	6
COAX CABLE	13	0	0	13
HYBRID CABLE	0	0	3	3
FIBER JUMPER	0	0	0	3
COAX JUMPER	0	0	12	12
TMA	3	0	3	6
RADIO	0	0	3	3

3 ANTENNA & CABLE SCHEDULE

SCALE: NONE

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
LIVERPOOL, NY 13088

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

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

STATE OF CONNECTICUT
DANIEL J. CORNING
34055
LICENSED PROFESSIONAL ENGINEER

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

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HRT 087 943325
806383
55 COSGROVE RD
WET WIMMINGTON, CT 06279

ANTENNA INFORMATION CHART

RF-1

ONE LINE DIAGRAM NOTES:

1. ELECTRICAL SERVICE SHALL BE 200A, 240/120V, 1Ø, 3W

2. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT, REFER TO VENDOR PRINTS PROVIDED BY EQUIPMENT MANUFACTURER.

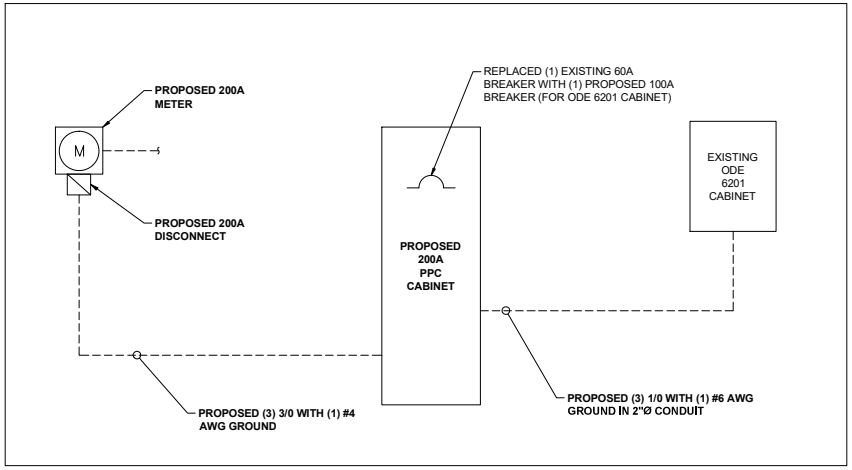
NOTES:

1. CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND ENSURE ALL ELECTRICAL EQUIPMENT IS SUITABLE FOR AVAILABLE FAULT CURRENT.

2. CONTRACTOR SHALL COORDINATE UTILITY SERVICES WITH LOCAL UTILITY COMPANIES. VERIFY ALL REQUIREMENTS WITH UTILITY COMPANY STANDARDS.

3. ONE-LINE DIAGRAM IS SCHEMATIC ONLY AND NOT INDICATIVE OF ACTUAL EQUIPMENT LAYOUT.

4. CONTRACTOR SHALL LABEL METER SOCKET WITH SERVICE OWNER NAMEPLATE W/ 1/2" MINIMUM LETTERS.



1 ONE LINE DIAGRAM

SCALE: NONE

T-MOBILE NORTHEAST LLC
103 MONARCH DRIVE
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25055
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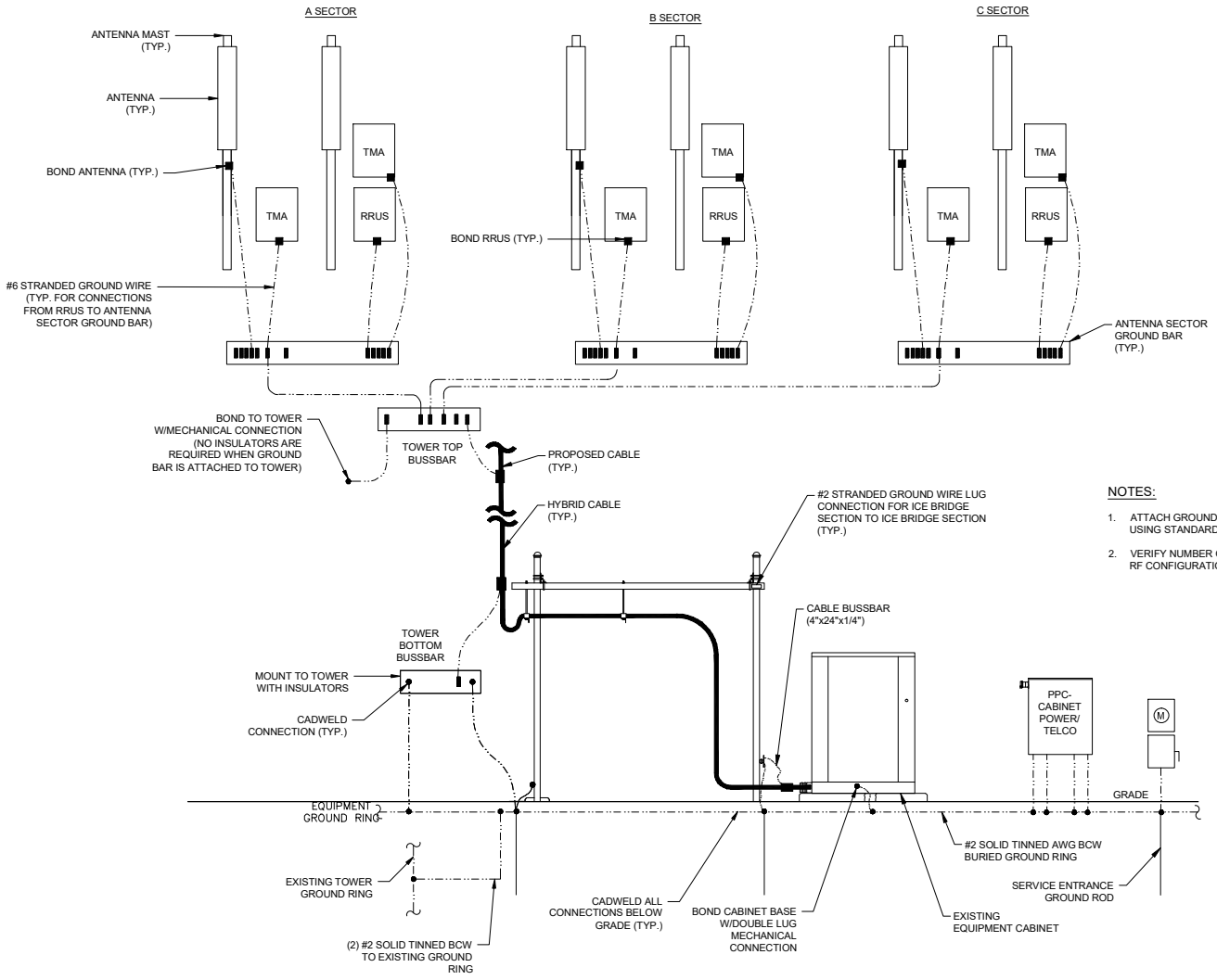
WET WIMMINGTON, CT 06279

ONE LINE DIAGRAM

E-1



NOTES:

1. ATTACH GROUND BAR DIRECTLY TO THE TOWER USING STANDARD ADAPTER.
2. VERIFY NUMBER OF CABLES/TMAS PER T-MOBILE RF CONFIGURATION.

GROUNDING NOTES:

1. BELOW GROUND ALL GROUNDING CONDUCTORS TO BE #2 AWG SOLID TINNED BARE COPPER WIRE (BCW) U.O.N.
2. ABOVE GROUND ALL GROUNDING CONDUCTORS TO BE #2 AWG STRANDED INSULATED COPPER WIRE U.O.N.
3. PROVIDE BONDING AND GROUNDING CONDUCTORS WITH GREEN TYPE THWN INSULATION, U.O.N.
4. LEAVE 4' EXCESS GROUND WIRE COILED UP ABOVE GRADE. SEAL/WEATHERPROOF CONDUIT.

1 GROUNDING RISER DIAGRAM

SCALE: N.T.S.

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GROUNDING RISER DIAGRAM

G-1

Exhibit D

Structural Analysis Report

Date: **June 20, 2019**

Denice Nicholson
Crown Castle
3 Corporate Dr
Clifton Park, NY 12065

FDH Infrastructure Services, LLC
6521 Meridien Drive, Suite 107
Raleigh, NC 27616
919.755.1012

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11142A
	Carrier Site Name:	Willington/ Rt-320/Cosg_1
Crown Castle Designation:	**Crown Castle BU Number:**	806383
	Crown Castle Site Name:	HRT 087 943325
	Crown Castle JDE Job Number:	559177
	Crown Castle Work Order Number:	1749529
	Crown Castle Order Number:	479813 Rev. 0
Engineering Firm Designation:	**FDH-IS Project Number:**	19BMVE1400
Site Data:	**COSGROVE ROAD WHIFFORD HILL, WEST WILLINGTON, Tolland County, CT** **Latitude *41° 53' 32.92"*, Longitude *-72° 15' 38.15"*** **140 Foot - Self Support Tower**	

Dear Denice Nicholson,

FDH Infrastructure Services, LLC is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower.

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

LC5: Proposed Equipment Configuration **Sufficient Capacity – 68.6 %**

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

Respectfully submitted by:

Akash Nikam, PE
Project Engineer I

Reviewed by:

Krystyn M. Perez, PE
Vice President, Structural Engineering
CT PE License No. 32975

STATE OF CONNECTICUT
KRYSTYN M. PEREZ
No. 32975
LICENSED PROFESSIONAL ENGINEER

06/20/2019

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1) INTRODUCTION

This tower is a 140 ft Self Support tower designed by ROHN.

The tower has been modified per reinforcement drawings prepared by FDH Velocitel in May of 2015. Reinforcement consists of foundation repairs.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
101.0	102.0	3	ems wireless	RR90-17-00DP	1 15	1/4 1-1/4
		3	ericsson	KRY 112 144/1		
		3	ericsson	KRY 112 489/2		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20		
	101.0	1	-	(3) 4' Sector Frames		
50.0	50.0	1	gps	GPS_RESERVED	-	-

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)
137.0	139.0	3	alcatel lucent	RRH2X60-AWS	1 14	3/8 1-5/8
		3	alcatel lucent	RRH2X60-PCS		
		6	andrew	HBXX-6517DS-VTM		
		3	andrew	LNX-6514DS-VTM		
		3	andrew	LNX-8513DS-A1M		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
		6	rfs celwave	FD9R6004/2C-3L		
	137.0	1	crown mounts	Sector Mount [SM 510-3]		
124.0	125.0	3	alcatel lucent	PCS 1900MHZ 4X45W-65MHZ	3 1	1-1/4 7/8
		6	alcatel lucent	RRH2X50-800		
		3	commscope	NNVV-65B-R4		
		3	nokia	FZHN		
		3	rfs celwave	APXVTM14-ALU-I20		
	124.0	1	crown mounts	Sector Mount [SM 502-3]		
60.0	60.0	1	crown mounts	Side Arm Mount [SO 203-1]	1	1/2
		1	gps	GPS_A		
50.0	50.0	1	gps	GPS_A	1	1/2

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	JGI Eastern, Inc.	1069386	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Rohn	1069383	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Rohn	1069394	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH Velocitel	5670805	CCISITES
4-POST-MODIFICATION INSPECTION	Sinnott Gering and Schmitt Towers, Inc.	5786395	CCISITES
4-MOUNT ANALYSIS REPORTS	MasTec Network Solutions	8458752	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

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

This analysis may be affected if any assumptions are not valid or have been made in error. FDH Infrastructure Services, LLC 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[2]	Pass / Fail
T1	140 - 120	Leg	ROHN 2 STD	3	-18.24	38.68	47.2	Pass
T2	120 - 100	Leg	ROHN 2.5 EH	39	-42.09	78.15	53.9	Pass
T3	100 - 80	Leg	ROHN 3 EH	69	-64.27	99.06	64.9	Pass
T4	80 - 60	Leg	ROHN 3.5 EH	90	-86.06	132.01	65.2	Pass
T5	60 - 40	Leg	ROHN 4 X-STR	111	-106.91	167.90	63.7	Pass
T6	40 - 20	Leg	ROHN 5 EH	132	-125.70	211.31	59.5	Pass
T7	20 - 0	Leg	ROHN 5 X-STR	147	-145.29	211.86	68.6	Pass
T1	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	12	-3.23	11.65	27.7 51.9 (b)	Pass
T2	120 - 100	Diagonal	L1 3/4x1 3/4x3/16	47	-2.89	6.72	43.1 48.6 (b)	Pass
T3	100 - 80	Diagonal	L2x2x3/16	74	-3.77	6.31	59.7	Pass
T4	80 - 60	Diagonal	L2 1/2x2 1/2x3/16	95	-4.04	9.65	41.9 61.7 (b)	Pass
T5	60 - 40	Diagonal	L3x3x3/16	117	-4.39	13.19	33.3 67.2 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity[2]	Pass / Fail
T6	40 - 20	Diagonal	L3x3x3/16	137	-5.41	9.05	59.8 63.0 (b)	Pass
T7	20 - 0	Diagonal	L3x3x1/4	152	-5.80	9.92	58.4	Pass
T1	140 - 120	Top Girt	L2x2x1/8	4	-0.39	4.27	9.0 9.7 (b)	Pass
T2	120 - 100	Top Girt	L2x2x1/8	41	-0.16	4.22	3.7	Pass
							Summary	
						Leg (T7)	68.6	Pass
						Diagonal (T5)	67.2	Pass
						Top Girt (T1)	9.7	Pass
						Bolt Checks	67.2	Pass
						Rating =	**68.6**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	0	32.7	Pass
1,2	Base Foundation	0	25.6	Pass
1,2	Base Foundation Soil Interaction	0	42.0	Pass

Structure Rating (max from all components) =	**68.6%[2]**

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.

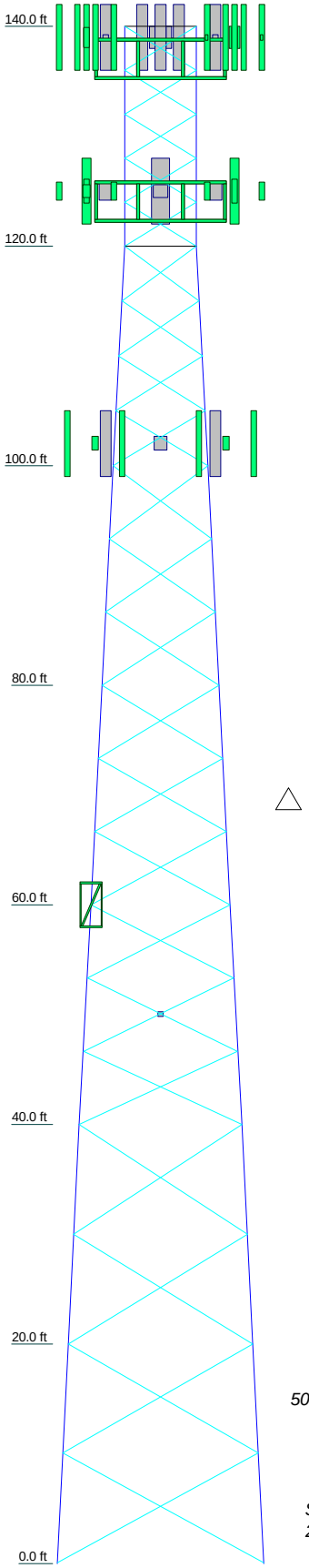
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7				
Legs	ROHN 2 STD	ROHN 2.5 EH	ROHN 3 EH	ROHN 3.5 EH	ROHN 4 X-STR	ROHN 5 EH	ROHN 5 X-STR				
Leg Grade	A618-50										
Diagonals	L1 3/4x1 3/4x3/16		L2x2x3/16	L2 1/2x2 1/2x3/16	L3x3x3/16		L3x3x1/4				
Diagonal Grade	A36						A572-50				
Top Girts	L2x2x1/8				N.A.						
Face Width (ft)	6.52083	6.5625	8.60417	10.6354	12.6771	14.7708	16.7708	18.7708			
# Panels @ (ft)	5 @ 4	4 @ 5	9 @ 6.66667			2 @ 10	2 @ 9.95833				
Weight (K)	0.7	1.0	1.1	1.5	1.9	2.1	2.4	10.8			



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A618-50	50 ksi	70 ksi	A572-50	50 ksi	65 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 125.00 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50.00 mph basic wind with 2.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60.00 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TIA-222-H Annex S
8. TOWER RATING: 68.6%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 150 K
SHEAR: 16 K

UPLIFT: -126 K
SHEAR: 14 K

AXIAL 89 K
SHEAR 7 K
MOMENT 686 kip-ft

TORQUE 5 kip-ft
50.00 mph WIND - 2.00 in ICE

AXIAL 29 K
SHEAR 26 K
MOMENT 2280 kip-ft

TORQUE 18 kip-ft
REACTIONS - 125.00 mph WIND

FDH Infrastructure Services, LLC
6521 Meridien Drive, Suite 107
Raleigh, NC 27616
Phone: 919.755.1012
FAX: .919.755.1031

Job: **806383-HRT 087 943325**			
Project: **19BMVE1400**			
Client: Crown Castle	Drawn by: Akash Nikam	App'd:	
Code: TIA-222-H	Date: 06/20/19	Scale: NTS	
Path:		Dwg No. E-1	

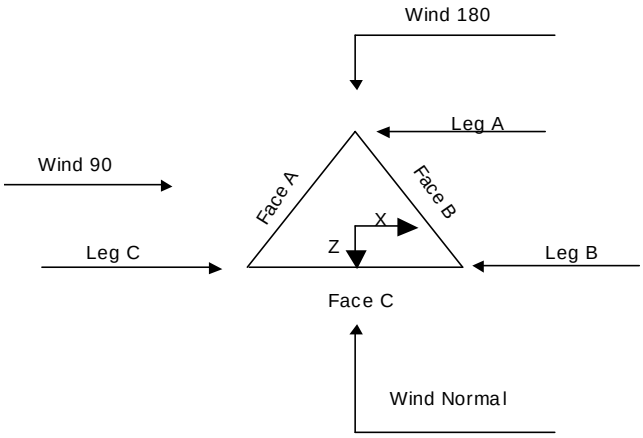
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 140.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.52 ft at the top and 18.77 ft at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower base elevation above sea level: 933.00 ft.
Basic wind speed of 125.00 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 2.00 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50.00 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60.00 mph.
TIA-222-H Annex S.
Pressures are calculated at each section.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Stress ratio used in tower member design 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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	140.00-120.00			6.52	1	20.00
T2	120.00-100.00		08N087	6.56	1	20.00
T3	100.00-80.00		09N006	8.60	1	20.00
T4	80.00-60.00		10N007	10.64	1	20.00
T5	60.00-40.00		11N007	12.68	1	20.00
T6	40.00-20.00		12N004	14.77	1	20.00
T7	20.00-0.00		13N003	16.77	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	140.00-120.00	4.00	X Brace	No	No	0.00	0.00
T2	120.00-100.00	5.00	X Brace	No	No	0.00	0.00
T3	100.00-80.00	6.67	X Brace	No	No	0.00	0.00
T4	80.00-60.00	6.67	X Brace	No	No	0.00	0.00
T5	60.00-40.00	6.67	X Brace	No	No	0.00	0.00
T6	40.00-20.00	10.00	X Brace	No	No	0.00	0.00
T7	20.00-0.00	9.96	X Brace	No	No	0.00	1.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 140.00-120.00	Pipe	ROHN 2 STD	A618-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 120.00-100.00	Pipe	ROHN 2.5 EH	A618-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 100.00-80.00	Pipe	ROHN 3 EH	A618-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 80.00-60.00	Pipe	ROHN 3.5 EH	A618-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 60.00-40.00	Pipe	ROHN 4 X-STR	A618-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T6 40.00-20.00	Pipe	ROHN 5 EH	A618-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T7 20.00-0.00	Pipe	ROHN 5 X-STR	A618-50 (50 ksi)	Single Angle	L3x3x1/4	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 140.00-120.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 120.00-100.00	Single Angle	L2x2x1/8	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

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
T1 140.00-120.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T2 120.00-100.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T3 100.00-80.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T4 80.00-60.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T5 60.00-40.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T6 40.00-20.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00
T7 20.00-0.00	0.00	0.00	A36 (36 ksi)	1	1	1	36.00	36.00	36.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T7 20.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1
				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
140.00-120.00														
T2	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
120.00-100.00														
T3	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
100.00-80.00														
T4 80.00-60.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 60.00-40.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 40.00-20.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 20.00-0.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 140.00-120.00	Flange	0.63 A325N	4	0.50 A325N	1	0.50 A325N	1	0.50 A325N	0	0.50 A325N	0	0.50 A325N	0	0.50 A325N	0
T2 120.00-100.00	Flange	0.75 A325N	4	0.50 A325N	1	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T3 100.00-80.00	Flange	0.88 A325N	4	0.50 A325N	1	0.50 A325N	0	0.00 A325N	0	0.50 A325N	0	0.50 A325N	0	0.50 A325N	0
T4 80.00-60.00	Flange	0.88 A325N	4	0.50 A325N	1	0.50 A325N	0	0.50 A325N	0	0.50 A325N	0	0.50 A325N	0	0.50 A325N	0
T5 60.00-40.00	Flange	1.00 A325N	4	0.50 A325N	1	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T6 40.00-20.00	Flange	1.00 A325N	4	0.63 A325N	1	0.63 A325N	0	0.00 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0
T7 20.00-0.00	Flange	1.00 A449	0	0.63 A325N	1	0.63 A325N	0	0.00 A325N	0	0.63 A325N	0	0.63 A325N	0	0.63 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
****													
LDF7-50A(1-5/8)	C	No	No	Ar (CaAa)	137.00 - 8.00	0.00	0.3	14	8	0.50	1.98		0.82
LDF2-50(3/8)	C	No	No	Ar (CaAa)	137.00 - 8.00	0.00	0.25	1	1	0.50	0.44		0.08
****													
HB114-08U3M12-XXXF(7/8)	B	No	No	Ar (CaAa)	124.00 - 8.00	0.00	-0.33	1	1	0.50	1.11		0.68
HB114-1-08U4-M5F(1-1/4)	B	No	No	Ar (CaAa)	124.00 - 8.00	0.00	-0.35	3	3	0.50	1.54		1.30
***													
***													
LDF1-50A(1/4)	A	No	No	Ar (CaAa)	101.00 - 8.00	0.00	0.365	1	1	0.50	0.34		0.06
FLC 114-50J(1-1/4)	A	No	No	Ar (CaAa)	101.00 - 8.00	0.00	0.4	15	8	0.50	1.58		0.70
***													
LDF4-50A(1/2)	C	No	No	Ar (CaAa)	60.00 - 8.00	4.00	0.26	1	1	0.50	0.63		0.15
***													
LDF4-50A(1/2)	B	No	No	Ar (CaAa)	50.00 - 8.00	0.00	-0.355	1	1	0.50	0.63		0.15
***													
Feedline Ladder (Af)	A	No	No	Af (CaAa)	101.00 - 8.00	0.00	0.4	1	1	3.00	3.00		8.40
Feedline Ladder (Af)	B	No	No	Af (CaAa)	124.00 - 8.00	0.00	-0.35	1	1	3.00	3.00		8.40
Feedline Ladder (Af)	C	No	No	Af (CaAa)	137.00 - 8.00	0.00	0.3	1	1	3.00	3.00		8.40
***													
Safety Line 3/8	C	No	No	Ar (CaAa)	140.00 - 8.00	0.00	0.5	1	1	0.50	0.38		0.22

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	4.292	0.000	0.05
		C	0.000	0.000	57.122	0.000	0.34
T2	120.00-100.00	A	0.000	0.000	2.905	0.000	0.02
		B	0.000	0.000	21.460	0.000	0.26
		C	0.000	0.000	67.070	0.000	0.40
T3	100.00-80.00	A	0.000	0.000	58.090	0.000	0.38
		B	0.000	0.000	21.460	0.000	0.26
		C	0.000	0.000	67.070	0.000	0.40
T4	80.00-60.00	A	0.000	0.000	58.090	0.000	0.38
		B	0.000	0.000	21.460	0.000	0.26
		C	0.000	0.000	67.070	0.000	0.40
T5	60.00-40.00	A	0.000	0.000	58.090	0.000	0.38
		B	0.000	0.000	22.085	0.000	0.26
		C	0.000	0.000	68.320	0.000	0.41
T6	40.00-20.00	A	0.000	0.000	58.090	0.000	0.38
		B	0.000	0.000	22.710	0.000	0.26
		C	0.000	0.000	68.320	0.000	0.41
T7	20.00-0.00	A	0.000	0.000	34.854	0.000	0.23
		B	0.000	0.000	13.626	0.000	0.16
		C	0.000	0.000	40.992	0.000	0.24

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
T1	140.00-120.00	A	1.950	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	11.046	0.000	0.20
		C		0.000	0.000	83.538	0.000	1.66
T2	120.00-100.00	A	1.918	0.000	0.000	3.968	0.000	0.08

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	54.750	0.000	0.99
		C		0.000	0.000	96.177	0.000	1.90
T3	100.00-80.00	A	1.879	0.000	0.000	78.817	0.000	1.59
		B		0.000	0.000	54.186	0.000	0.97
		C		0.000	0.000	95.477	0.000	1.87
T4	80.00-60.00	A	1.833	0.000	0.000	78.144	0.000	1.56
		B		0.000	0.000	53.495	0.000	0.95
		C		0.000	0.000	94.619	0.000	1.83
T5	60.00-40.00	A	1.772	0.000	0.000	77.270	0.000	1.51
		B		0.000	0.000	56.767	0.000	0.97
		C		0.000	0.000	101.843	0.000	1.89
T6	40.00-20.00	A	1.684	0.000	0.000	75.999	0.000	1.46
		B		0.000	0.000	59.277	0.000	0.97
		C		0.000	0.000	99.870	0.000	1.81
T7	20.00-0.00	A	1.509	0.000	0.000	44.087	0.000	0.81
		B		0.000	0.000	33.593	0.000	0.52
		C		0.000	0.000	57.573	0.000	0.99

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	140.00-120.00	-8.89	3.26	-8.17	4.10
T2	120.00-100.00	-9.48	-2.79	-8.15	-2.54
T3	100.00-80.00	-10.93	-16.48	-9.73	-14.08
T4	80.00-60.00	-11.52	-17.34	-10.76	-15.65
T5	60.00-40.00	-11.94	-17.58	-11.92	-16.00
T6	40.00-20.00	-14.16	-21.04	-13.73	-19.53
T7	20.00-0.00	-10.76	-15.81	-10.73	-15.31

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	LDF7-50A(1-5/8)	120.00 - 137.00	0.6000	0.5822
T1	3	LDF2-50(3/8)	120.00 - 137.00	0.6000	0.5822
T1	5	HB114-08U3M12-XXXF(7/8)	120.00 - 124.00	0.6000	0.5822
T1	6	HB114-1-08U4-M5F(1-1/4)	120.00 - 124.00	0.6000	0.5822
T1	18	Feedline Ladder (Af)	120.00 - 124.00	0.6000	0.5822
T1	19	Feedline Ladder (Af)	120.00 - 137.00	0.6000	0.5822
T1	21	Safety Line 3/8	120.00 - 140.00	0.6000	0.5822
T2	2	LDF7-50A(1-5/8)	100.00 - 120.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	3	LDF2-50(3/8)	100.00 - 120.00	0.6000	0.6000
T2	5	HB114-08U3M12-XXXF(7/8)	100.00 - 120.00	0.6000	0.6000
T2	6	HB114-1-08U4-M5F(1-1/4)	100.00 - 120.00	0.6000	0.6000
T2	10	LDF1-50A(1/4)	100.00 - 101.00	0.6000	0.6000
T2	11	FLC 114-50J(1-1/4)	100.00 - 101.00	0.6000	0.6000
T2	17	Feedline Ladder (Af)	100.00 - 101.00	0.6000	0.6000
T2	18	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T2	19	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T2	21	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T3	2	LDF7-50A(1-5/8)	80.00 - 100.00	0.6000	0.6000
T3	3	LDF2-50(3/8)	80.00 - 100.00	0.6000	0.6000
T3	5	HB114-08U3M12-XXXF(7/8)	80.00 - 100.00	0.6000	0.6000
T3	6	HB114-1-08U4-M5F(1-1/4)	80.00 - 100.00	0.6000	0.6000
T3	10	LDF1-50A(1/4)	80.00 - 100.00	0.6000	0.6000
T3	11	FLC 114-50J(1-1/4)	80.00 - 100.00	0.6000	0.6000
T3	17	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T3	18	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T3	19	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T3	21	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T4	2	LDF7-50A(1-5/8)	60.00 - 80.00	0.6000	0.6000
T4	3	LDF2-50(3/8)	60.00 - 80.00	0.6000	0.6000
T4	5	HB114-08U3M12-XXXF(7/8)	60.00 - 80.00	0.6000	0.6000
T4	6	HB114-1-08U4-M5F(1-1/4)	60.00 - 80.00	0.6000	0.6000
T4	10	LDF1-50A(1/4)	60.00 - 80.00	0.6000	0.6000
T4	11	FLC 114-50J(1-1/4)	60.00 - 80.00	0.6000	0.6000
T4	17	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T4	18	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T4	19	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T4	21	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T5	2	LDF7-50A(1-5/8)	40.00 - 60.00	0.6000	0.6000
T5	3	LDF2-50(3/8)	40.00 - 60.00	0.6000	0.6000
T5	5	HB114-08U3M12-XXXF(7/8)	40.00 - 60.00	0.6000	0.6000
T5	6	HB114-1-08U4-M5F(1-1/4)	40.00 - 60.00	0.6000	0.6000
T5	10	LDF1-50A(1/4)	40.00 - 60.00	0.6000	0.6000
T5	11	FLC 114-50J(1-1/4)	40.00 - 60.00	0.6000	0.6000
T5	13	LDF4-50A(1/2)	40.00 - 60.00	0.6000	0.6000
T5	15	LDF4-50A(1/2)	40.00 - 50.00	0.6000	0.6000
T5	17	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T5	18	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T5	19	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T5	21	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T6	2	LDF7-50A(1-5/8)	20.00 - 40.00	0.6000	0.6000
T6	3	LDF2-50(3/8)	20.00 - 40.00	0.6000	0.6000
T6	5	HB114-08U3M12-XXXF(7/8)	20.00 - 40.00	0.6000	0.6000
T6	6	HB114-1-08U4-M5F(1-1/4)	20.00 - 40.00	0.6000	0.6000
T6	10	LDF1-50A(1/4)	20.00 - 40.00	0.6000	0.6000
T6	11	FLC 114-50J(1-1/4)	20.00 - 40.00	0.6000	0.6000
T6	13	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000
T6	15	LDF4-50A(1/2)	20.00 - 40.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	17	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T6	18	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T6	19	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T6	21	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T7	2	LDF7-50A(1-5/8)	8.00 - 20.00	0.6000	0.6000
T7	3	LDF2-50(3/8)	8.00 - 20.00	0.6000	0.6000
T7	5	HB114-08U3M12-XXXF(7/8)	8.00 - 20.00	0.6000	0.6000
T7	6	HB114-1-08U4-M5F(1-1/4)	8.00 - 20.00	0.6000	0.6000
T7	10	LDF1-50A(1/4)	8.00 - 20.00	0.6000	0.6000
T7	11	FLC 114-50J(1-1/4)	8.00 - 20.00	0.6000	0.6000
T7	13	LDF4-50A(1/2)	8.00 - 20.00	0.6000	0.6000
T7	15	LDF4-50A(1/2)	8.00 - 20.00	0.6000	0.6000
T7	17	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000
T7	18	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000
T7	19	Feedline Ladder (Af)	8.00 - 20.00	0.6000	0.6000
T7	21	Safety Line 3/8	8.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
LNX-8513DS-A1M w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.41 8.97 9.50 10.59	7.08 8.27 9.18 11.02	0.06 0.13 0.21 0.39
LNX-8513DS-A1M w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.41 8.97 9.50 10.59	7.08 8.27 9.18 11.02	0.06 0.13 0.21 0.39
LNX-8513DS-A1M w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.41 8.97 9.50 10.59	7.08 8.27 9.18 11.02	0.06 0.13 0.21 0.39
(2) HBXX-6517DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.51 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.21 0.40
(2) HBXX-6517DS-VTM w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.51 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.21 0.40
(2) HBXX-6517DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.97 8.73 9.51 11.11	5.99 6.72 7.47 9.02	0.08 0.14 0.21 0.40
LNX-6514DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice	8.32 8.88 9.40	7.00 8.19 9.08	0.06 0.13 0.20

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
						2" Ice	10.47	10.90	0.38
LNX-6514DS-VTM w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.32 8.88 9.40 10.47	7.00 8.19 9.08 10.90	0.06 0.13 0.20 0.38
LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.32 8.88 9.40 10.47	7.00 8.19 9.08 10.90	0.06 0.13 0.20 0.38
RRH2X60-PCS	A	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.65 1.83 2.01 2.40	0.05 0.07 0.09 0.14
RRH2X60-PCS	B	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.65 1.83 2.01 2.40	0.05 0.07 0.09 0.14
RRH2X60-PCS	C	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.39 2.59 3.01	1.65 1.83 2.01 2.40	0.05 0.07 0.09 0.14
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.31 0.39 0.47 0.65	0.08 0.12 0.17 0.29	0.00 0.01 0.01 0.02
RRH2X60-AWS	C	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.06 2.24 2.63	1.24 1.39 1.54 1.89	0.04 0.06 0.08 0.13
RRH2X60-AWS	B	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.06 2.24 2.63	1.24 1.39 1.54 1.89	0.04 0.06 0.08 0.13
RRH2X60-AWS	A	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.06 2.24 2.63	1.24 1.39 1.54 1.89	0.04 0.06 0.08 0.13
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21
DB-T1-6Z-8AB-0Z	B	From Leg	4.00 0.00 2.00	0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21
Sector Mount [SM 510-3]	C	None		0.000	137.00	No Ice 1/2" Ice 1" Ice 2" Ice	40.10 57.33 74.56 109.02	40.10 57.33 74.56 109.02	2.40 3.09 3.78 5.17

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
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NNVV-65B-R4 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.56 13.14 13.70 14.85	7.76 8.80 9.69 11.52	0.12 0.21 0.32 0.55
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.56 13.14 13.70 14.85	7.76 8.80 9.69 11.52	0.12 0.21 0.32 0.55
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.56 13.14 13.70 14.85	7.76 8.80 9.69 11.52	0.12 0.21 0.32 0.55
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.71	2.86 3.23 3.61 4.40	0.08 0.13 0.19 0.33
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
PCS 1900MHz 4x45W-65MHz	C	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
(2) RRH2x50-800	A	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.79 1.96 2.14 2.53	0.05 0.07 0.10 0.15
(2) RRH2x50-800	B	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.79 1.96 2.14 2.53	0.05 0.07 0.10 0.15
(2) RRH2x50-800	C	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.79 1.96 2.14 2.53	0.05 0.07 0.10 0.15
FZHN	A	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.02 2.20 2.38 2.77	0.61 0.71 0.83 1.09	0.04 0.06 0.07 0.12
FZHN	B	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.02 2.20 2.38 2.77	0.61 0.71 0.83 1.09	0.04 0.06 0.07 0.12

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
FZHN	C	From Leg	4.00 0.00 1.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.02 2.20 2.38 2.77	0.61 0.71 0.83 1.09	0.04 0.06 0.07 0.12
Empty Mount Pipe	A	From Leg	4.00 0.00 0.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
Empty Mount Pipe	B	From Leg	4.00 0.00 0.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
Empty Mount Pipe	C	From Leg	4.00 0.00 0.00	0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.20 1.50 1.81 2.47	1.20 1.50 1.81 2.47	0.02 0.03 0.04 0.08
Sector Mount [SM 502-3]	C	None		0.000	124.00	No Ice 1/2" Ice 1" Ice 2" Ice	33.02 47.36 61.70 90.38	33.02 47.36 61.70 90.38	1.67 2.22 2.77 3.88
*** ***									
RR90-17-00DP w/ Mount Pipe	A	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.59 5.02 5.44 6.30	3.32 4.09 4.78 6.23	0.03 0.07 0.12 0.22
RR90-17-00DP w/ Mount Pipe	B	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.59 5.02 5.44 6.30	3.32 4.09 4.78 6.23	0.03 0.07 0.12 0.22
RR90-17-00DP w/ Mount Pipe	C	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.59 5.02 5.44 6.30	3.32 4.09 4.78 6.23	0.03 0.07 0.12 0.22
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
KRY 112 489/2	A	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	0.02 0.02 0.03 0.05
KRY 112 489/2	B	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.56 0.66 0.76 1.00	0.37 0.45 0.54 0.75	0.02 0.02 0.03 0.05
KRY 112 489/2	C	From Leg	2.00 0.00 1.00	0.000	101.00	No Ice 1/2" Ice 1" Ice	0.56 0.66 0.76	0.37 0.45 0.54	0.02 0.02 0.03

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
						2" Ice	1.00	0.75	0.05
KRY 112 144/1	A	From Leg	2.00	0.000	101.00	No Ice	0.35	0.16	0.01
			0.00			1/2" Ice	0.43	0.22	0.01
			1.00			1" Ice	0.51	0.28	0.02
						2" Ice	0.70	0.44	0.03
KRY 112 144/1	B	From Leg	2.00	0.000	101.00	No Ice	0.35	0.16	0.01
			0.00			1/2" Ice	0.43	0.22	0.01
			1.00			1" Ice	0.51	0.28	0.02
						2" Ice	0.70	0.44	0.03
KRY 112 144/1	C	From Leg	2.00	0.000	101.00	No Ice	0.35	0.16	0.01
			0.00			1/2" Ice	0.43	0.22	0.01
			1.00			1" Ice	0.51	0.28	0.02
						2" Ice	0.70	0.44	0.03
RADIO 4449 B12/B71	A	From Leg	2.00	0.000	101.00	No Ice	1.65	1.30	0.08
			0.00			1/2" Ice	1.81	1.44	0.09
			1.00			1" Ice	1.98	1.60	0.11
						2" Ice	2.34	1.92	0.16
RADIO 4449 B12/B71	B	From Leg	2.00	0.000	101.00	No Ice	1.65	1.30	0.08
			0.00			1/2" Ice	1.81	1.44	0.09
			1.00			1" Ice	1.98	1.60	0.11
						2" Ice	2.34	1.92	0.16
RADIO 4449 B12/B71	C	From Leg	2.00	0.000	101.00	No Ice	1.65	1.30	0.08
			0.00			1/2" Ice	1.81	1.44	0.09
			1.00			1" Ice	1.98	1.60	0.11
						2" Ice	2.34	1.92	0.16
(3) 4' Sector Frames	C	None		0.000	101.00	No Ice	3.55	3.55	0.13
						1/2" Ice	6.19	6.19	0.19
						1" Ice	8.83	8.83	0.25
						2" Ice	14.11	14.11	0.37
1.9" x10' Horizontal Pipe	A	From Leg	0.50	0.000	101.00	No Ice	0.04	1.90	0.03
			0.00			1/2" Ice	0.06	2.92	0.04
			0.00			1" Ice	0.10	3.96	0.08
						2" Ice	0.20	5.65	0.16
1.9" x10' Horizontal Pipe	B	From Leg	0.50	0.000	101.00	No Ice	0.04	1.90	0.03
			0.00			1/2" Ice	0.06	2.92	0.04
			0.00			1" Ice	0.10	3.96	0.08
						2" Ice	0.20	5.65	0.16
1.9" x10' Horizontal Pipe	C	From Leg	0.50	0.000	101.00	No Ice	0.04	1.90	0.03
			0.00			1/2" Ice	0.06	2.92	0.04
			0.00			1" Ice	0.10	3.96	0.08
						2" Ice	0.20	5.65	0.16
Pipe Mount	A	From Leg	2.00	0.000	101.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
Pipe Mount	B	From Leg	2.00	0.000	101.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
Pipe Mount	C	From Leg	2.00	0.000	101.00	No Ice	1.20	1.20	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.81	1.81	0.04
						2" Ice	2.47	2.47	0.08
***									
GPS_A	C	From Leg	2.00	0.000	60.00	No Ice	0.26	0.26	0.00
			0.00			1/2" Ice	0.32	0.32	0.00
			0.00			1" Ice	0.39	0.39	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	0.56	0.56	0.02
Side Arm Mount [SO 203-1]	C	From Leg	0.00	0.000	60.00	No Ice	2.96	3.36	0.13
			0.00			1/2" Ice	4.10	4.68	0.15
			0.00			1" Ice	5.24	6.00	0.18
						2" Ice	7.52	8.64	0.24
***									
GPS_A	A	From Leg	0.50	0.000	50.00	No Ice	0.26	0.26	0.00
			0.00			1/2" Ice	0.32	0.32	0.00
			0.00			1" Ice	0.39	0.39	0.01
						2" Ice	0.56	0.56	0.02
***									
GPS_RESERVED	B	From Leg	0.50	0.000	50.00	No Ice	0.00	0.00	0.00
			0.00			1/2" Ice	0.00	0.00	0.00
			0.00			1" Ice	0.00	0.00	0.00
						2" Ice	0.00	0.00	0.00

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1	130.00	1.065	33	134.792	A	11.898	7.917	7.917	39.95	0.000	0.000
140.00-120.00					B	11.898	7.917		39.95	4.292	0.000
					C	11.898	7.917		39.95	57.122	0.000
T2	110.00	1.016	32	156.465	A	11.338	9.600	9.600	45.85	2.905	0.000
120.00-100.00					B	11.338	9.600		45.85	21.460	0.000
					C	11.338	9.600		45.85	67.070	0.000
T3	90.00	0.959	30	198.237	A	11.365	11.687	11.687	50.70	58.090	0.000
100.00-80.00					B	11.365	11.687		50.70	21.460	0.000
					C	11.365	11.687		50.70	67.070	0.000
T4 80.00-60.00	70.00	0.892	28	239.800	A	16.320	13.356	13.356	45.01	58.090	0.000
					B	16.320	13.356		45.01	21.460	0.000
					C	16.320	13.356		45.01	67.070	0.000
T5 60.00-40.00	50.00	0.811	25	281.989	A	22.277	15.027	15.027	40.28	58.090	0.000
					B	22.277	15.027		40.28	22.085	0.000
					C	22.277	15.027		40.28	68.320	0.000
T6 40.00-20.00	30.00	0.701	22	324.700	A	18.156	18.574	18.574	50.57	58.090	0.000
					B	18.156	18.574		50.57	22.710	0.000
					C	18.156	18.574		50.57	68.320	0.000
T7 20.00-0.00	10.00	0.7	22	364.700	A	19.839	18.574	18.574	48.35	34.854	0.000
					B	19.839	18.574		48.35	13.626	0.000
					C	19.839	18.574		48.35	40.992	0.000

Tower Pressure - With Ice

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	130.00	1.065	5	1.95	141.291	A	11.898	47.134	20.915	35.43	0.000	0.000
140.00-120.00						B	11.898	47.134		35.43	11.046	0.000
						C	11.898	47.134		35.43	83.538	0.000
T2	110.00	1.016	5	1.92	162.865	A	11.338	46.961	22.406	38.43	3.968	0.000
120.00-100.00						B	11.338	46.961		38.43	54.750	0.000
						C	11.338	46.961		38.43	96.177	0.000
T3 100.00-80.00	90.00	0.959	5	1.88	204.509	A	11.365	45.598	24.238	42.55	78.817	0.000
						B	11.365	45.598		42.55	54.186	0.000
						C	11.365	45.598		42.55	95.477	0.000
T4 80.00-60.00	70.00	0.892	4	1.83	245.918	A	16.320	49.525	25.596	38.87	78.144	0.000
						B	16.320	49.525		38.87	53.495	0.000
						C	16.320	49.525		38.87	94.619	0.000
T5 60.00-40.00	50.00	0.811	4	1.77	287.905	A	22.277	53.182	26.863	35.60	77.270	0.000
						B	22.277	53.182		35.60	56.767	0.000
						C	22.277	53.182		35.60	101.843	0.000
T6 40.00-20.00	30.00	0.701	4	1.68	330.320	A	18.156	50.200	29.819	43.62	75.999	0.000
						B	18.156	50.200		43.62	59.277	0.000
						C	18.156	50.200		43.62	99.870	0.000
T7 20.00-0.00	10.00	0.7	3	1.51	369.735	A	19.839	48.603	28.649	41.86	44.087	0.000
						B	19.839	48.603		41.86	33.593	0.000
						C	19.839	48.603		41.86	57.573	0.000

Tower Pressure - Service

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	130.00	1.065	8	134.792	A	11.898	7.917	7.917	39.95	0.000	0.000
140.00-120.00					B	11.898	7.917		39.95	4.292	0.000
					C	11.898	7.917		39.95	57.122	0.000
T2	110.00	1.016	8	156.465	A	11.338	9.600	9.600	45.85	2.905	0.000
120.00-100.00					B	11.338	9.600		45.85	21.460	0.000
					C	11.338	9.600		45.85	67.070	0.000
T3	90.00	0.959	7	198.237	A	11.365	11.687	11.687	50.70	58.090	0.000
100.00-80.00					B	11.365	11.687		50.70	21.460	0.000
					C	11.365	11.687		50.70	67.070	0.000
T4 80.00-60.00	70.00	0.892	7	239.800	A	16.320	13.356	13.356	45.01	58.090	0.000
					B	16.320	13.356		45.01	21.460	0.000
					C	16.320	13.356		45.01	67.070	0.000
T5 60.00-40.00	50.00	0.811	6	281.989	A	22.277	15.027	15.027	40.28	58.090	0.000
					B	22.277	15.027		40.28	22.085	0.000
					C	22.277	15.027		40.28	68.320	0.000
T6 40.00-20.00	30.00	0.701	5	324.700	A	18.156	18.574	18.574	50.57	58.090	0.000
					B	18.156	18.574		50.57	22.710	0.000
					C	18.156	18.574		50.57	68.320	0.000
T7 20.00-0.00	10.00	0.7	5	364.700	A	19.839	18.574	18.574	48.35	34.854	0.000
					B	19.839	18.574		48.35	13.626	0.000
					C	19.839	18.574		48.35	40.992	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.40	0.74	A	0.147	2.783	33	1	1	16.388	2.17	108.73	C
140.00-120.00			B	0.147	2.783		1	1	16.388			
			C	0.147	2.783		1	1	16.388			
T2	0.68	0.95	A	0.134	2.832	32	1	1	16.772	2.49	124.55	C
120.00-100.00			B	0.134	2.832		1	1	16.772			
			C	0.134	2.832		1	1	16.772			
T3	1.04	1.13	A	0.116	2.899	30	1	1	17.968	2.83	141.70	C
100.00-80.00			B	0.116	2.899		1	1	17.968			
			C	0.116	2.899		1	1	17.968			
T4	1.04	1.49	A	0.124	2.87	28	1	1	23.872	3.03	151.34	C
80.00-60.00			B	0.124	2.87		1	1	23.872			
			C	0.124	2.87		1	1	23.872			
T5	1.05	1.92	A	0.132	2.838	25	1	1	30.632	3.17	158.48	C
60.00-40.00			B	0.132	2.838		1	1	30.632			
			C	0.132	2.838		1	1	30.632			
T6	1.05	2.08	A	0.113	2.912	22	1	1	27.968	2.64	132.20	C
40.00-20.00			B	0.113	2.912		1	1	27.968			
			C	0.113	2.912		1	1	27.968			
T7 20.00-0.00	0.63	2.45	A	0.105	2.943	22	1	1	29.634	2.30	114.87	C
			B	0.105	2.943		1	1	29.634			
			C	0.105	2.943		1	1	29.634			
Sum Weight:	5.89	10.77						OTM	1284.41 kip-ft	18.64		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.40	0.74	A	0.147	2.783	33	0.8	1	14.009	1.99	99.37	A
140.00-120.00			B	0.147	2.783		0.8	1	14.009			
			C	0.147	2.783		0.8	1	14.009			
T2	0.68	0.95	A	0.134	2.832	32	0.8	1	14.505	2.32	115.89	A
120.00-100.00			B	0.134	2.832		0.8	1	14.505			
			C	0.134	2.832		0.8	1	14.505			
T3	1.04	1.13	A	0.116	2.899	30	0.8	1	15.695	2.67	133.31	A
100.00-80.00			B	0.116	2.899		0.8	1	15.695			
			C	0.116	2.899		0.8	1	15.695			
T4	1.04	1.49	A	0.124	2.87	28	0.8	1	20.608	2.80	140.24	A
80.00-60.00			B	0.124	2.87		0.8	1	20.608			
			C	0.124	2.87		0.8	1	20.608			
T5	1.05	1.92	A	0.132	2.838	25	0.8	1	26.177	2.90	144.87	A
60.00-40.00			B	0.132	2.838		0.8	1	26.177			
			C	0.132	2.838		0.8	1	26.177			
T6	1.05	2.08	A	0.113	2.912	22	0.8	1	24.337	2.45	122.37	A
40.00-20.00			B	0.113	2.912		0.8	1	24.337			
			C	0.113	2.912		0.8	1	24.337			
T7 20.00-0.00	0.63	2.45	A	0.105	2.943	22	0.8	1	25.667	2.08	104.03	A
			B	0.105	2.943		0.8	1	25.667			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
Sum Weight:	5.89	10.77	C	0.105	2.943		0.8	1 OTM	25.667 1188.73 kip-ft	17.20		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.40	0.74	A	0.147	2.783	33	0.85	1	14.604	1.91	95.49	A
140.00-120.00			B	0.147	2.783		0.85	1	14.604			
			C	0.147	2.783		0.85	1	14.604			
T2	0.68	0.95	A	0.134	2.832	32	0.85	1	15.072	2.25	112.52	A
120.00-100.00			B	0.134	2.832		0.85	1	15.072			
			C	0.134	2.832		0.85	1	15.072			
T3	1.04	1.13	A	0.116	2.899	30	0.85	1	16.263	2.77	138.27	B
100.00-80.00			B	0.116	2.899		0.85	1	16.263			
			C	0.116	2.899		0.85	1	16.263			
T4	1.04	1.49	A	0.124	2.87	28	0.85	1	21.424	2.91	145.68	B
80.00-60.00			B	0.124	2.87		0.85	1	21.424			
			C	0.124	2.87		0.85	1	21.424			
T5	1.05	1.92	A	0.132	2.838	25	0.85	1	27.291	3.01	150.69	B
60.00-40.00			B	0.132	2.838		0.85	1	27.291			
			C	0.132	2.838		0.85	1	27.291			
T6	1.05	2.08	A	0.113	2.912	22	0.85	1	25.245	2.54	126.92	B
40.00-20.00			B	0.113	2.912		0.85	1	25.245			
			C	0.113	2.912		0.85	1	25.245			
T7 20.00-0.00	0.63	2.45	A	0.105	2.943	22	0.85	1	26.659	2.16	107.99	B
			B	0.105	2.943		0.85	1	26.659			
			C	0.105	2.943		0.85	1	26.659			
Sum Weight:	5.89	10.77						OTM	1197.10 kip-ft	17.55		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.86	4.00	A	0.418	2.03	5	1	1	42.258	0.62	31.08	C
140.00-120.00			B	0.418	2.03		1	1	42.258			
			C	0.418	2.03		1	1	42.258			
T2	2.98	4.09	A	0.358	2.153	5	1	1	40.410	0.73	36.56	C
120.00-100.00			B	0.358	2.153		1	1	40.410			
			C	0.358	2.153		1	1	40.410			
T3	4.43	4.15	A	0.279	2.355	5	1	1	38.384	0.82	41.03	C
100.00-80.00			B	0.279	2.355		1	1	38.384			
			C	0.279	2.355		1	1	38.384			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T4	4.33	5.19	A	0.268	2.385	4	1	1	45.518	0.83	41.39	C
80.00-60.00			B	0.268	2.385		1	1	45.518			
			C	0.268	2.385		1	1	45.518			
T5	4.37	6.31	A	0.262	2.402	4	1	1	53.552	0.84	42.05	C
60.00-40.00			B	0.262	2.402		1	1	53.552			
			C	0.262	2.402		1	1	53.552			
T6	4.24	5.71	A	0.207	2.573	4	1	1	47.057	0.70	35.17	C
40.00-20.00			B	0.207	2.573		1	1	47.057			
			C	0.207	2.573		1	1	47.057			
T7 20.00-0.00	2.32	5.82	A	0.185	2.646	3	1	1	47.641	0.57	28.52	C
			B	0.185	2.646		1	1	47.641			
			C	0.185	2.646		1	1	47.641			
Sum Weight:	24.53	35.28						OTM	361.88 kip-ft	5.12		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	1.86	4.00	A	0.418	2.03	5	0.8	1	39.878	0.60	29.98	A
140.00-120.00			B	0.418	2.03		0.8	1	39.878			
			C	0.418	2.03		0.8	1	39.878			
T2	2.98	4.09	A	0.358	2.153	5	0.8	1	38.142	0.71	35.51	A
120.00-100.00			B	0.358	2.153		0.8	1	38.142			
			C	0.358	2.153		0.8	1	38.142			
T3	4.43	4.15	A	0.279	2.355	5	0.8	1	36.111	0.80	39.94	A
100.00-80.00			B	0.279	2.355		0.8	1	36.111			
			C	0.279	2.355		0.8	1	36.111			
T4	4.33	5.19	A	0.268	2.385	4	0.8	1	42.254	0.80	39.92	A
80.00-60.00			B	0.268	2.385		0.8	1	42.254			
			C	0.268	2.385		0.8	1	42.254			
T5	4.37	6.31	A	0.262	2.402	4	0.8	1	49.096	0.80	40.21	A
60.00-40.00			B	0.262	2.402		0.8	1	49.096			
			C	0.262	2.402		0.8	1	49.096			
T6	4.24	5.71	A	0.207	2.573	4	0.8	1	43.426	0.68	33.78	A
40.00-20.00			B	0.207	2.573		0.8	1	43.426			
			C	0.207	2.573		0.8	1	43.426			
T7 20.00-0.00	2.32	5.82	A	0.185	2.646	3	0.8	1	43.674	0.54	26.96	A
			B	0.185	2.646		0.8	1	43.674			
			C	0.185	2.646		0.8	1	43.674			
Sum Weight:	24.53	35.28						OTM	349.71 kip-ft	4.93		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.86	4.00	A	0.418	2.03	5	0.85	1	40.473	0.59	29.35	A
140.00-120.00			B	0.418	2.03		0.85	1	40.473			
			C	0.418	2.03		0.85	1	40.473			
T2	2.98	4.09	A	0.358	2.153	5	0.85	1	38.709	0.70	35.18	A
120.00-100.00			B	0.358	2.153		0.85	1	38.709			
			C	0.358	2.153		0.85	1	38.709			
T3	4.43	4.15	A	0.279	2.355	5	0.85	1	36.679	0.81	40.67	B
100.00-80.00			B	0.279	2.355		0.85	1	36.679			
			C	0.279	2.355		0.85	1	36.679			
T4	4.33	5.19	A	0.268	2.385	4	0.85	1	43.070	0.81	40.71	B
80.00-60.00			B	0.268	2.385		0.85	1	43.070			
			C	0.268	2.385		0.85	1	43.070			
T5	4.37	6.31	A	0.262	2.402	4	0.85	1	50.210	0.82	41.06	B
60.00-40.00			B	0.262	2.402		0.85	1	50.210			
			C	0.262	2.402		0.85	1	50.210			
T6	4.24	5.71	A	0.207	2.573	4	0.85	1	44.334	0.69	34.46	B
40.00-20.00			B	0.207	2.573		0.85	1	44.334			
			C	0.207	2.573		0.85	1	44.334			
T7 20.00-0.00	2.32	5.82	A	0.185	2.646	3	0.85	1	44.666	0.55	27.55	B
			B	0.185	2.646		0.85	1	44.666			
			C	0.185	2.646		0.85	1	44.666			
Sum Weight:	24.53	35.28						OTM	351.14 kip-ft	4.98		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.40	0.74	A	0.147	2.783	8	1	1	16.388	0.53	26.37	C
140.00-120.00			B	0.147	2.783		1	1	16.388			
			C	0.147	2.783		1	1	16.388			
T2	0.68	0.95	A	0.134	2.832	8	1	1	16.772	0.60	30.21	C
120.00-100.00			B	0.134	2.832		1	1	16.772			
			C	0.134	2.832		1	1	16.772			
T3	1.04	1.13	A	0.116	2.899	7	1	1	17.968	0.69	34.37	C
100.00-80.00			B	0.116	2.899		1	1	17.968			
			C	0.116	2.899		1	1	17.968			
T4	1.04	1.49	A	0.124	2.87	7	1	1	23.872	0.73	36.70	C
80.00-60.00			B	0.124	2.87		1	1	23.872			
			C	0.124	2.87		1	1	23.872			
T5	1.05	1.92	A	0.132	2.838	6	1	1	30.632	0.77	38.43	C
60.00-40.00			B	0.132	2.838		1	1	30.632			
			C	0.132	2.838		1	1	30.632			
T6	1.05	2.08	A	0.113	2.912	5	1	1	27.968	0.64	32.06	C
40.00-20.00			B	0.113	2.912		1	1	27.968			
			C	0.113	2.912		1	1	27.968			
T7 20.00-0.00	0.63	2.45	A	0.105	2.943	5	1	1	29.634	0.56	27.86	C
			B	0.105	2.943		1	1	29.634			
			C	0.105	2.943		1	1	29.634			
Sum Weight:	5.89	10.77						OTM	311.50 kip-ft	4.52		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.40	0.74	A	0.147	2.783	8	0.8	1	14.009	0.48	24.10	A
140.00-120.00			B	0.147	2.783		0.8	1	14.009			
			C	0.147	2.783		0.8	1	14.009			
T2	0.68	0.95	A	0.134	2.832	8	0.8	1	14.505	0.56	28.11	A
120.00-100.00			B	0.134	2.832		0.8	1	14.505			
			C	0.134	2.832		0.8	1	14.505			
T3	1.04	1.13	A	0.116	2.899	7	0.8	1	15.695	0.65	32.33	A
100.00-80.00			B	0.116	2.899		0.8	1	15.695			
			C	0.116	2.899		0.8	1	15.695			
T4	1.04	1.49	A	0.124	2.87	7	0.8	1	20.608	0.68	34.01	A
80.00-60.00			B	0.124	2.87		0.8	1	20.608			
			C	0.124	2.87		0.8	1	20.608			
T5	1.05	1.92	A	0.132	2.838	6	0.8	1	26.177	0.70	35.14	A
60.00-40.00			B	0.132	2.838		0.8	1	26.177			
			C	0.132	2.838		0.8	1	26.177			
T6	1.05	2.08	A	0.113	2.912	5	0.8	1	24.337	0.59	29.68	A
40.00-20.00			B	0.113	2.912		0.8	1	24.337			
			C	0.113	2.912		0.8	1	24.337			
T7 20.00-0.00	0.63	2.45	A	0.105	2.943	5	0.8	1	25.667	0.50	25.23	A
			B	0.105	2.943		0.8	1	25.667			
			C	0.105	2.943		0.8	1	25.667			
Sum Weight:	5.89	10.77						OTM	288.30 kip-ft	4.17		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.40	0.74	A	0.147	2.783	8	0.85	1	14.604	0.46	23.16	A
140.00-120.00			B	0.147	2.783		0.85	1	14.604			
			C	0.147	2.783		0.85	1	14.604			
T2	0.68	0.95	A	0.134	2.832	8	0.85	1	15.072	0.55	27.29	A
120.00-100.00			B	0.134	2.832		0.85	1	15.072			
			C	0.134	2.832		0.85	1	15.072			
T3	1.04	1.13	A	0.116	2.899	7	0.85	1	16.263	0.67	33.53	B
100.00-80.00			B	0.116	2.899		0.85	1	16.263			
			C	0.116	2.899		0.85	1	16.263			
T4	1.04	1.49	A	0.124	2.87	7	0.85	1	21.424	0.71	35.33	B
80.00-60.00			B	0.124	2.87		0.85	1	21.424			
			C	0.124	2.87		0.85	1	21.424			
T5	1.05	1.92	A	0.132	2.838	6	0.85	1	27.291	0.73	36.55	B
60.00-40.00			B	0.132	2.838		0.85	1	27.291			
			C	0.132	2.838		0.85	1	27.291			
T6	1.05	2.08	A	0.113	2.912	5	0.85	1	25.245	0.62	30.78	B
40.00-20.00			B	0.113	2.912		0.85	1	25.245			
			C	0.113	2.912		0.85	1	25.245			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T7 20.00-0.00	0.63	2.45	A	0.105	2.943	5	0.85	1	26.659	0.52	26.19	B
			B	0.105	2.943		0.85	1	26.659			
			C	0.105	2.943		0.85	1	26.659			
Sum Weight:	5.89	10.77						OTM	290.33 kip-ft	4.26		

Discrete Appurtenance Pressures - No Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
LNX-8513DS-A1M w/ Mount Pipe	0.000	0.06	0.00	-7.77	139.00	1.086	34	8.41	7.08
LNX-8513DS-A1M w/ Mount Pipe	120.000	0.06	6.73	3.88	139.00	1.086	34	8.41	7.08
LNX-8513DS-A1M w/ Mount Pipe	240.000	0.06	-6.73	3.88	139.00	1.086	34	8.41	7.08
HBXX-6517DS-VTM w/ Mount Pipe	0.000	0.15	0.00	-7.77	139.00	1.086	34	15.94	11.98
HBXX-6517DS-VTM w/ Mount Pipe	120.000	0.15	6.73	3.88	139.00	1.086	34	15.94	11.98
HBXX-6517DS-VTM w/ Mount Pipe	240.000	0.15	-6.73	3.88	139.00	1.086	34	15.94	11.98
LNX-6514DS-VTM w/ Mount Pipe	0.000	0.06	0.00	-7.77	139.00	1.086	34	8.32	7.00
LNX-6514DS-VTM w/ Mount Pipe	120.000	0.06	6.73	3.88	139.00	1.086	34	8.32	7.00
LNX-6514DS-VTM w/ Mount Pipe	240.000	0.06	-6.73	3.88	139.00	1.086	34	8.32	7.00
RRH2X60-PCS	0.000	0.05	0.00	-7.77	139.00	1.086	34	2.20	1.65
RRH2X60-PCS	120.000	0.05	6.73	3.88	139.00	1.086	34	2.20	1.65
RRH2X60-PCS	240.000	0.05	-6.73	3.88	139.00	1.086	34	2.20	1.65
FD9R6004/2C-3L	0.000	0.01	0.00	-7.77	139.00	1.086	34	0.63	0.15
FD9R6004/2C-3L	120.000	0.01	6.73	3.88	139.00	1.086	34	0.63	0.15
FD9R6004/2C-3L	240.000	0.01	-6.73	3.88	139.00	1.086	34	0.63	0.15
RRH2X60-AWS	240.000	0.04	-6.73	3.88	139.00	1.086	34	1.88	1.24
RRH2X60-AWS	120.000	0.04	6.73	3.88	139.00	1.086	34	1.88	1.24
RRH2X60-AWS	0.000	0.04	0.00	-7.77	139.00	1.086	34	1.88	1.24
DB-T1-6Z-8AB-0Z	0.000	0.04	0.00	-7.77	139.00	1.086	34	4.80	2.00
DB-T1-6Z-8AB-0Z	120.000	0.04	6.73	3.88	139.00	1.086	34	4.80	2.00
Sector Mount [SM 510-3]	0.000	2.40	0.00	0.00	137.00	1.081	34	40.10	40.10
NNVV-65B-R4 w/ Mount Pipe	0.000	0.12	0.00	-7.78	125.00	1.053	33	12.56	7.76
NNVV-65B-R4 w/ Mount Pipe	120.000	0.12	6.74	3.89	125.00	1.053	33	12.56	7.76
NNVV-65B-R4 w/ Mount Pipe	240.000	0.12	-6.74	3.89	125.00	1.053	33	12.56	7.76
APXVTM14-ALU-I20 w/ Mount Pipe	0.000	0.08	0.00	-7.78	125.00	1.053	33	4.09	2.86
APXVTM14-ALU-I20 w/ Mount Pipe	120.000	0.08	6.74	3.89	125.00	1.053	33	4.09	2.86
APXVTM14-ALU-I20 w/ Mount Pipe	240.000	0.08	-6.74	3.89	125.00	1.053	33	4.09	2.86

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
PCS 1900MHz 4x45W-65MHz	0.000	0.06	0.00	-7.78	125.00	1.053	33	2.32	2.24
PCS 1900MHz 4x45W-65MHz	120.000	0.06	6.74	3.89	125.00	1.053	33	2.32	2.24
PCS 1900MHz 4x45W-65MHz	240.000	0.06	-6.74	3.89	125.00	1.053	33	2.32	2.24
RRH2x50-800	0.000	0.10	0.00	-7.78	125.00	1.053	33	4.27	3.58
RRH2x50-800	120.000	0.10	6.74	3.89	125.00	1.053	33	4.27	3.58
RRH2x50-800	240.000	0.10	-6.74	3.89	125.00	1.053	33	4.27	3.58
FZHN	0.000	0.04	0.00	-7.78	125.00	1.053	33	2.02	0.61
FZHN	120.000	0.04	6.74	3.89	125.00	1.053	33	2.02	0.61
FZHN	240.000	0.04	-6.74	3.89	125.00	1.053	33	2.02	0.61
Empty Mount Pipe	0.000	0.02	0.00	-7.78	124.00	1.051	33	1.20	1.20
Empty Mount Pipe	120.000	0.02	6.74	3.89	124.00	1.051	33	1.20	1.20
Empty Mount Pipe	240.000	0.02	-6.74	3.89	124.00	1.051	33	1.20	1.20
Sector Mount [SM 502-3]	0.000	1.67	0.00	0.00	124.00	1.051	33	33.02	33.02
RR90-17-00DP w/ Mount Pipe	0.000	0.03	0.00	-6.91	102.00	0.994	31	4.59	3.32
RR90-17-00DP w/ Mount Pipe	120.000	0.03	5.98	3.45	102.00	0.994	31	4.59	3.32
RR90-17-00DP w/ Mount Pipe	240.000	0.03	-5.98	3.45	102.00	0.994	31	4.59	3.32
APXVAARR24_43-U-NA20 w/ Mount Pipe	0.000	0.19	0.00	-6.91	102.00	0.994	31	14.69	6.87
APXVAARR24_43-U-NA20 w/ Mount Pipe	120.000	0.19	5.98	3.45	102.00	0.994	31	14.69	6.87
APXVAARR24_43-U-NA20 w/ Mount Pipe	240.000	0.19	-5.98	3.45	102.00	0.994	31	14.69	6.87
KRY 112 489/2	0.000	0.02	0.00	-6.91	102.00	0.994	31	0.56	0.37
KRY 112 489/2	120.000	0.02	5.98	3.45	102.00	0.994	31	0.56	0.37
KRY 112 489/2	240.000	0.02	-5.98	3.45	102.00	0.994	31	0.56	0.37
KRY 112 144/1	0.000	0.01	0.00	-6.91	102.00	0.994	31	0.35	0.16
KRY 112 144/1	120.000	0.01	5.98	3.45	102.00	0.994	31	0.35	0.16
KRY 112 144/1	240.000	0.01	-5.98	3.45	102.00	0.994	31	0.35	0.16
RADIO 4449 B12/B71	0.000	0.08	0.00	-6.91	102.00	0.994	31	1.65	1.30
RADIO 4449 B12/B71	120.000	0.08	5.98	3.45	102.00	0.994	31	1.65	1.30
RADIO 4449 B12/B71	240.000	0.08	-5.98	3.45	102.00	0.994	31	1.65	1.30
(3) 4' Sector Frames	0.000	0.13	0.00	0.00	101.00	0.991	31	3.55	3.55
1.9" x10' Horizontal Pipe	0.000	0.03	0.00	-5.41	101.00	0.991	31	0.04	1.90
1.9" x10' Horizontal Pipe	120.000	0.03	4.68	2.70	101.00	0.991	31	0.04	1.90
1.9" x10' Horizontal Pipe	240.000	0.03	-4.68	2.70	101.00	0.991	31	0.04	1.90
Pipe Mount	0.000	0.02	0.00	-6.91	101.00	0.991	31	1.20	1.20
Pipe Mount	120.000	0.02	5.98	3.45	101.00	0.991	31	1.20	1.20
Pipe Mount	240.000	0.02	-5.98	3.45	101.00	0.991	31	1.20	1.20
GPS_A	240.000	0.00	-8.07	4.66	60.00	0.854	27	0.26	0.26
Side Arm Mount [SO 203-1]	240.000	0.13	-6.34	3.66	60.00	0.854	27	2.96	3.36
GPS_A	0.000	0.00	0.00	-8.42	50.00	0.811	25	0.26	0.26
GPS_RESERVED	120.000	0.00	7.29	4.21	50.00	0.811	25	0.00	0.00
	Sum Weight:	7.89							

Discrete Appurtenance Pressures - With Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
LNX-8513DS-A1M w/ Mount Pipe	0.000	0.39	0.00	-7.77	139.00	1.086	5	10.55	10.96	1.96
LNX-8513DS-A1M w/ Mount Pipe	120.000	0.39	6.73	3.88	139.00	1.086	5	10.55	10.96	1.96
LNX-8513DS-A1M w/ Mount Pipe	240.000	0.39	-6.73	3.88	139.00	1.086	5	10.55	10.96	1.96
HBXX-6517DS-VTM w/ Mount Pipe	0.000	0.78	0.00	-7.77	139.00	1.086	5	22.10	17.93	1.96
HBXX-6517DS-VTM w/ Mount Pipe	120.000	0.78	6.73	3.88	139.00	1.086	5	22.10	17.93	1.96
HBXX-6517DS-VTM w/ Mount Pipe	240.000	0.78	-6.73	3.88	139.00	1.086	5	22.10	17.93	1.96
LNX-6514DS-VTM w/ Mount Pipe	0.000	0.38	0.00	-7.77	139.00	1.086	5	10.43	10.84	1.96
LNX-6514DS-VTM w/ Mount Pipe	120.000	0.38	6.73	3.88	139.00	1.086	5	10.43	10.84	1.96
LNX-6514DS-VTM w/ Mount Pipe	240.000	0.38	-6.73	3.88	139.00	1.086	5	10.43	10.84	1.96
RRH2X60-PCS	0.000	0.14	0.00	-7.77	139.00	1.086	5	3.00	2.38	1.96
RRH2X60-PCS	120.000	0.14	6.73	3.88	139.00	1.086	5	3.00	2.38	1.96
RRH2X60-PCS	240.000	0.14	-6.73	3.88	139.00	1.086	5	3.00	2.38	1.96
FD9R6004/2C-3L	0.000	0.04	0.00	-7.77	139.00	1.086	5	1.28	0.58	1.96
FD9R6004/2C-3L	120.000	0.04	6.73	3.88	139.00	1.086	5	1.28	0.58	1.96
FD9R6004/2C-3L	240.000	0.04	-6.73	3.88	139.00	1.086	5	1.28	0.58	1.96
RRH2X60-AWS	240.000	0.12	-6.73	3.88	139.00	1.086	5	2.62	1.88	1.96
RRH2X60-AWS	120.000	0.12	6.73	3.88	139.00	1.086	5	2.62	1.88	1.96
RRH2X60-AWS	0.000	0.12	0.00	-7.77	139.00	1.086	5	2.62	1.88	1.96
DB-T1-6Z-8AB-0Z	0.000	0.21	0.00	-7.77	139.00	1.086	5	5.90	2.80	1.96
DB-T1-6Z-8AB-0Z	120.000	0.21	6.73	3.88	139.00	1.086	5	5.90	2.80	1.96
Sector Mount [SM 510-3]	0.000	5.11	0.00	0.00	137.00	1.081	5	107.64	107.64	1.96
NNVV-65B-R4 w/ Mount Pipe	0.000	0.53	0.00	-7.78	125.00	1.053	5	14.78	11.42	1.94
NNVV-65B-R4 w/ Mount Pipe	120.000	0.53	6.74	3.89	125.00	1.053	5	14.78	11.42	1.94
NNVV-65B-R4 w/ Mount Pipe	240.000	0.53	-6.74	3.89	125.00	1.053	5	14.78	11.42	1.94
APXVTM14-ALU-I20 w/ Mount Pipe	0.000	0.32	0.00	-7.78	125.00	1.053	5	5.66	4.35	1.94
APXVTM14-ALU-I20 w/ Mount Pipe	120.000	0.32	6.74	3.89	125.00	1.053	5	5.66	4.35	1.94
APXVTM14-ALU-I20 w/ Mount Pipe	240.000	0.32	-6.74	3.89	125.00	1.053	5	5.66	4.35	1.94
PCS 1900MHz 4x45W-65MHz	0.000	0.17	0.00	-7.78	125.00	1.053	5	3.16	3.07	1.94
PCS 1900MHz 4x45W-65MHz	120.000	0.17	6.74	3.89	125.00	1.053	5	3.16	3.07	1.94
PCS 1900MHz 4x45W-65MHz	240.000	0.17	-6.74	3.89	125.00	1.053	5	3.16	3.07	1.94
RRH2x50-800	0.000	0.30	0.00	-7.78	125.00	1.053	5	5.79	5.01	1.94
RRH2x50-800	120.000	0.30	6.74	3.89	125.00	1.053	5	5.79	5.01	1.94
RRH2x50-800	240.000	0.30	-6.74	3.89	125.00	1.053	5	5.79	5.01	1.94
FZHN	0.000	0.11	0.00	-7.78	125.00	1.053	5	2.75	1.07	1.94
FZHN	120.000	0.11	6.74	3.89	125.00	1.053	5	2.75	1.07	1.94
FZHN	240.000	0.11	-6.74	3.89	125.00	1.053	5	2.75	1.07	1.94
Empty Mount Pipe	0.000	0.08	0.00	-7.78	124.00	1.051	5	2.43	2.43	1.94
Empty Mount Pipe	120.000	0.08	6.74	3.89	124.00	1.051	5	2.43	2.43	1.94
Empty Mount Pipe	240.000	0.08	-6.74	3.89	124.00	1.051	5	2.43	2.43	1.94
Sector Mount [SM 502-3]	0.000	3.81	0.00	0.00	124.00	1.051	5	88.68	88.68	1.94
RR90-17-00DP w/	0.000	0.21	0.00	-6.91	102.00	0.994	5	6.21	6.09	1.90

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Mount Pipe										
RR90-17-00DP w/ Mount Pipe	120.000	0.21	5.98	3.45	102.00	0.994	5	6.21	6.09	1.90
RR90-17-00DP w/ Mount Pipe	240.000	0.21	-5.98	3.45	102.00	0.994	5	6.21	6.09	1.90
APXVAARR24_43-U-NA20 w/ Mount Pipe	0.000	0.76	0.00	-6.91	102.00	0.994	5	17.67	9.53	1.90
APXVAARR24_43-U-NA20 w/ Mount Pipe	120.000	0.76	5.98	3.45	102.00	0.994	5	17.67	9.53	1.90
APXVAARR24_43-U-NA20 w/ Mount Pipe	240.000	0.76	-5.98	3.45	102.00	0.994	5	17.67	9.53	1.90
KRY 112 489/2	0.000	0.04	0.00	-6.91	102.00	0.994	5	0.98	0.73	1.90
KRY 112 489/2	120.000	0.04	5.98	3.45	102.00	0.994	5	0.98	0.73	1.90
KRY 112 489/2	240.000	0.04	-5.98	3.45	102.00	0.994	5	0.98	0.73	1.90
KRY 112 144/1	0.000	0.03	0.00	-6.91	102.00	0.994	5	0.68	0.42	1.90
KRY 112 144/1	120.000	0.03	5.98	3.45	102.00	0.994	5	0.68	0.42	1.90
KRY 112 144/1	240.000	0.03	-5.98	3.45	102.00	0.994	5	0.68	0.42	1.90
RADIO 4449 B12/B71	0.000	0.16	0.00	-6.91	102.00	0.994	5	2.30	1.89	1.90
RADIO 4449 B12/B71	120.000	0.16	5.98	3.45	102.00	0.994	5	2.30	1.89	1.90
RADIO 4449 B12/B71	240.000	0.16	-5.98	3.45	102.00	0.994	5	2.30	1.89	1.90
(3) 4' Sector Frames	0.000	0.36	0.00	0.00	101.00	0.991	5	13.59	13.59	1.90
1.9" x10' Horizontal Pipe	0.000	0.15	0.00	-5.41	101.00	0.991	5	0.19	5.48	1.90
1.9" x10' Horizontal Pipe	120.000	0.15	4.68	2.70	101.00	0.991	5	0.19	5.48	1.90
1.9" x10' Horizontal Pipe	240.000	0.15	-4.68	2.70	101.00	0.991	5	0.19	5.48	1.90
Pipe Mount	0.000	0.07	0.00	-6.91	101.00	0.991	5	2.40	2.40	1.90
Pipe Mount	120.000	0.07	5.98	3.45	101.00	0.991	5	2.40	2.40	1.90
Pipe Mount	240.000	0.07	-5.98	3.45	101.00	0.991	5	2.40	2.40	1.90
GPS_A	240.000	0.02	-8.07	4.66	60.00	0.854	4	0.53	0.53	1.80
Side Arm Mount [SO 203-1]	240.000	0.23	-6.34	3.66	60.00	0.854	4	7.07	8.12	1.80
GPS_A	0.000	0.02	0.00	-8.42	50.00	0.811	4	0.52	0.52	1.77
GPS_RESERVED	120.000	0.00	7.29	4.21	50.00	0.811	4	0.00	0.00	1.77
	Sum Weight:	24.34								

Discrete Appurtenance Pressures - Service $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
LNX-8513DS-A1M w/ Mount Pipe	0.000	0.06	0.00	-7.77	139.00	1.086	8	8.41	7.08
LNX-8513DS-A1M w/ Mount Pipe	120.000	0.06	6.73	3.88	139.00	1.086	8	8.41	7.08
LNX-8513DS-A1M w/ Mount Pipe	240.000	0.06	-6.73	3.88	139.00	1.086	8	8.41	7.08
HBXX-6517DS-VTM w/ Mount Pipe	0.000	0.15	0.00	-7.77	139.00	1.086	8	15.94	11.98
HBXX-6517DS-VTM w/ Mount Pipe	120.000	0.15	6.73	3.88	139.00	1.086	8	15.94	11.98
HBXX-6517DS-VTM w/ Mount Pipe	240.000	0.15	-6.73	3.88	139.00	1.086	8	15.94	11.98
LNX-6514DS-VTM w/ Mount Pipe	0.000	0.06	0.00	-7.77	139.00	1.086	8	8.32	7.00
LNX-6514DS-VTM w/ Mount Pipe	120.000	0.06	6.73	3.88	139.00	1.086	8	8.32	7.00
LNX-6514DS-VTM w/ Mount Pipe	240.000	0.06	-6.73	3.88	139.00	1.086	8	8.32	7.00

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
RRH2X60-PCS	0.000	0.05	0.00	-7.77	139.00	1.086	8	2.20	1.65
RRH2X60-PCS	120.000	0.05	6.73	3.88	139.00	1.086	8	2.20	1.65
RRH2X60-PCS	240.000	0.05	-6.73	3.88	139.00	1.086	8	2.20	1.65
FD9R6004/2C-3L	0.000	0.01	0.00	-7.77	139.00	1.086	8	0.63	0.15
FD9R6004/2C-3L	120.000	0.01	6.73	3.88	139.00	1.086	8	0.63	0.15
FD9R6004/2C-3L	240.000	0.01	-6.73	3.88	139.00	1.086	8	0.63	0.15
RRH2X60-AWS	240.000	0.04	-6.73	3.88	139.00	1.086	8	1.88	1.24
RRH2X60-AWS	120.000	0.04	6.73	3.88	139.00	1.086	8	1.88	1.24
RRH2X60-AWS	0.000	0.04	0.00	-7.77	139.00	1.086	8	1.88	1.24
DB-T1-6Z-8AB-0Z	0.000	0.04	0.00	-7.77	139.00	1.086	8	4.80	2.00
DB-T1-6Z-8AB-0Z	120.000	0.04	6.73	3.88	139.00	1.086	8	4.80	2.00
Sector Mount [SM 510-3]	0.000	2.40	0.00	0.00	137.00	1.081	8	40.10	40.10
NNVV-65B-R4 w/ Mount Pipe	0.000	0.12	0.00	-7.78	125.00	1.053	8	12.56	7.76
NNVV-65B-R4 w/ Mount Pipe	120.000	0.12	6.74	3.89	125.00	1.053	8	12.56	7.76
NNVV-65B-R4 w/ Mount Pipe	240.000	0.12	-6.74	3.89	125.00	1.053	8	12.56	7.76
APXVTM14-ALU-I20 w/ Mount Pipe	0.000	0.08	0.00	-7.78	125.00	1.053	8	4.09	2.86
APXVTM14-ALU-I20 w/ Mount Pipe	120.000	0.08	6.74	3.89	125.00	1.053	8	4.09	2.86
APXVTM14-ALU-I20 w/ Mount Pipe	240.000	0.08	-6.74	3.89	125.00	1.053	8	4.09	2.86
PCS 1900MHz 4x45W-65MHz	0.000	0.06	0.00	-7.78	125.00	1.053	8	2.32	2.24
PCS 1900MHz 4x45W-65MHz	120.000	0.06	6.74	3.89	125.00	1.053	8	2.32	2.24
PCS 1900MHz 4x45W-65MHz	240.000	0.06	-6.74	3.89	125.00	1.053	8	2.32	2.24
RRH2x50-800	0.000	0.10	0.00	-7.78	125.00	1.053	8	4.27	3.58
RRH2x50-800	120.000	0.10	6.74	3.89	125.00	1.053	8	4.27	3.58
RRH2x50-800	240.000	0.10	-6.74	3.89	125.00	1.053	8	4.27	3.58
FZHN	0.000	0.04	0.00	-7.78	125.00	1.053	8	2.02	0.61
FZHN	120.000	0.04	6.74	3.89	125.00	1.053	8	2.02	0.61
FZHN	240.000	0.04	-6.74	3.89	125.00	1.053	8	2.02	0.61
Empty Mount Pipe	0.000	0.02	0.00	-7.78	124.00	1.051	8	1.20	1.20
Empty Mount Pipe	120.000	0.02	6.74	3.89	124.00	1.051	8	1.20	1.20
Empty Mount Pipe	240.000	0.02	-6.74	3.89	124.00	1.051	8	1.20	1.20
Sector Mount [SM 502-3]	0.000	1.67	0.00	0.00	124.00	1.051	8	33.02	33.02
RR90-17-00DP w/ Mount Pipe	0.000	0.03	0.00	-6.91	102.00	0.994	8	4.59	3.32
RR90-17-00DP w/ Mount Pipe	120.000	0.03	5.98	3.45	102.00	0.994	8	4.59	3.32
RR90-17-00DP w/ Mount Pipe	240.000	0.03	-5.98	3.45	102.00	0.994	8	4.59	3.32
APXVAARR24_43-U-NA20 w/ Mount Pipe	0.000	0.19	0.00	-6.91	102.00	0.994	8	14.69	6.87
APXVAARR24_43-U-NA20 w/ Mount Pipe	120.000	0.19	5.98	3.45	102.00	0.994	8	14.69	6.87
APXVAARR24_43-U-NA20 w/ Mount Pipe	240.000	0.19	-5.98	3.45	102.00	0.994	8	14.69	6.87
KRY 112 489/2	0.000	0.02	0.00	-6.91	102.00	0.994	8	0.56	0.37
KRY 112 489/2	120.000	0.02	5.98	3.45	102.00	0.994	8	0.56	0.37
KRY 112 489/2	240.000	0.02	-5.98	3.45	102.00	0.994	8	0.56	0.37
KRY 112 144/1	0.000	0.01	0.00	-6.91	102.00	0.994	8	0.35	0.16
KRY 112 144/1	120.000	0.01	5.98	3.45	102.00	0.994	8	0.35	0.16
KRY 112 144/1	240.000	0.01	-5.98	3.45	102.00	0.994	8	0.35	0.16
RADIO 4449 B12/B71	0.000	0.08	0.00	-6.91	102.00	0.994	8	1.65	1.30

Description	Aiming Azimuth °	Weight K	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
RADIO 4449 B12/B71	120.000	0.08	5.98	3.45	102.00	0.994	8	1.65	1.30
RADIO 4449 B12/B71	240.000	0.08	-5.98	3.45	102.00	0.994	8	1.65	1.30
(3) 4' Sector Frames	0.000	0.13	0.00	0.00	101.00	0.991	8	3.55	3.55
1.9" x10' Horizontal Pipe	0.000	0.03	0.00	-5.41	101.00	0.991	8	0.04	1.90
1.9" x10' Horizontal Pipe	120.000	0.03	4.68	2.70	101.00	0.991	8	0.04	1.90
1.9" x10' Horizontal Pipe	240.000	0.03	-4.68	2.70	101.00	0.991	8	0.04	1.90
Pipe Mount	0.000	0.02	0.00	-6.91	101.00	0.991	8	1.20	1.20
Pipe Mount	120.000	0.02	5.98	3.45	101.00	0.991	8	1.20	1.20
Pipe Mount	240.000	0.02	-5.98	3.45	101.00	0.991	8	1.20	1.20
GPS_A	240.000	0.00	-8.07	4.66	60.00	0.854	6	0.26	0.26
Side Arm Mount [SO 203-1]	240.000	0.13	-6.34	3.66	60.00	0.854	6	2.96	3.36
GPS_A	0.000	0.00	0.00	-8.42	50.00	0.811	6	0.26	0.26
GPS_RESERVED	120.000	0.00	7.29	4.21	50.00	0.811	6	0.00	0.00
	Sum Weight:	7.89							

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	5.45					
Bracing Weight	5.31					
Total Member Self-Weight	10.77			-10.43	9.49	
Total Weight	24.54			-10.43	9.49	
Wind 0 deg - No Ice		-0.04	-26.38	-2278.26	14.10	-17.58
Wind 30 deg - No Ice		12.05	-20.95	-1843.22	-1043.35	-12.31
Wind 60 deg - No Ice		19.55	-11.29	-1001.89	-1707.77	-12.06
Wind 90 deg - No Ice		23.06	0.04	-5.82	-1988.95	-17.68
Wind 120 deg - No Ice		21.87	12.67	1069.87	-1852.42	-9.30
Wind 150 deg - No Ice		12.61	21.85	1871.70	-1077.15	10.16
Wind 180 deg - No Ice		0.04	24.94	2161.73	4.89	17.58
Wind 210 deg - No Ice		-12.05	20.95	1822.37	1062.34	12.31
Wind 240 deg - No Ice		-20.79	12.00	1028.88	1809.62	12.06
Wind 270 deg - No Ice		-23.06	-0.04	-15.03	2007.93	17.68
Wind 300 deg - No Ice		-20.62	-11.95	-1042.88	1788.54	9.30
Wind 330 deg - No Ice		-12.61	-21.85	-1892.55	1096.14	-10.16
Member Ice	24.51					
Total Weight Ice	84.14			-34.35	42.00	
Wind 0 deg - Ice		-0.01	-7.34	-678.88	42.88	-4.60
Wind 30 deg - Ice		3.52	-6.11	-575.33	-269.32	-4.37
Wind 60 deg - Ice		5.92	-3.42	-337.55	-483.16	-4.46
Wind 90 deg - Ice		6.87	0.01	-33.48	-563.97	-4.57
Wind 120 deg - Ice		6.20	3.59	279.58	-499.99	-1.97
Wind 150 deg - Ice		3.60	6.23	512.91	-273.96	2.38
Wind 180 deg - Ice		0.01	7.15	598.00	41.13	4.60
Wind 210 deg - Ice		-3.52	6.11	506.63	353.32	4.37
Wind 240 deg - Ice		-6.08	3.51	274.94	577.71	4.46
Wind 270 deg - Ice		-6.87	-0.01	-35.22	647.97	4.57
Wind 300 deg - Ice		-6.04	-3.50	-342.19	573.45	1.97
Wind 330 deg - Ice		-3.60	-6.23	-581.61	357.96	-2.38
Total Weight	24.54			-10.43	9.49	
Wind 0 deg - Service		-0.01	-6.40	-549.71	1.65	-4.26
Wind 30 deg - Service		2.92	-5.08	-444.20	-254.81	-2.98
Wind 60 deg - Service		4.74	-2.74	-240.16	-415.95	-2.93
Wind 90 deg - Service		5.59	0.01	1.42	-484.14	-4.29

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 120 deg - Service		5.30	3.07	262.30	-451.03	-2.26
Wind 150 deg - Service		3.06	5.30	456.76	-263.01	2.46
Wind 180 deg - Service		0.01	6.05	527.10	-0.59	4.26
Wind 210 deg - Service		-2.92	5.08	444.80	255.87	2.98
Wind 240 deg - Service		-5.04	2.91	252.36	437.11	2.93
Wind 270 deg - Service		-5.59	-0.01	-0.82	485.20	4.29
Wind 300 deg - Service		-5.00	-2.90	-250.10	432.00	2.26
Wind 330 deg - Service		-3.06	-5.30	-456.17	264.07	-2.46

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
T1	140 - 120	Leg	Max Tension	15	13.57	-0.00	-0.01
			Max. Compression	2	-18.24	0.07	0.02
			Max. Mx	22	-0.56	0.64	-0.01
			Max. My	16	-1.49	0.01	-0.68
			Max. Vy	3	-1.12	0.48	-0.00
			Max. Vx	8	-1.10	-0.00	0.42
		Diagonal	Max Tension	5	3.11	0.00	0.00
			Max. Compression	16	-3.23	0.00	0.00
			Max. Mx	35	0.59	0.03	-0.00
			Max. My	12	-1.87	0.00	0.00
			Max. Vy	35	-0.03	0.03	-0.00
			Max. Vx	12	-0.00	0.00	0.00
		Top Girt	Max Tension	14	0.42	0.00	0.00
			Max. Compression	3	-0.39	0.00	0.00
			Max. Mx	26	0.03	-0.07	0.00
			Max. My	26	0.04	0.00	0.00
			Max. Vy	26	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
T2	120 - 100	Leg	Max Tension	15	34.24	-0.11	-0.01
			Max. Compression	2	-42.09	0.27	0.02
			Max. Mx	14	32.98	-0.28	-0.02
			Max. My	24	-4.36	-0.01	0.22
			Max. Vy	6	0.42	-0.27	0.01
			Max. Vx	24	-0.40	-0.01	0.22
		Diagonal	Max Tension	4	2.92	0.00	0.00
			Max. Compression	4	-2.89	0.00	0.00
			Max. Mx	35	0.73	0.04	-0.00
			Max. My	32	0.73	0.03	-0.00
			Max. Vy	33	0.03	0.04	-0.00
			Max. Vx	32	0.00	0.00	0.00
		Top Girt	Max Tension	7	0.15	0.00	0.00
			Max. Compression	18	-0.16	0.00	0.00
			Max. Mx	26	-0.01	-0.07	0.00
			Max. My	26	-0.01	0.00	0.00
			Max. Vy	26	0.04	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
T3	100 - 80	Leg	Max Tension	15	53.77	-0.13	-0.03
			Max. Compression	2	-64.27	0.13	0.03
			Max. Mx	14	39.00	-0.28	-0.02
			Max. My	24	-4.46	-0.01	0.22
			Max. Vy	10	0.07	0.27	0.01
			Max. Vx	20	0.08	-0.01	-0.22
		Diagonal	Max Tension	5	3.71	0.00	0.00
			Max. Compression	4	-3.77	0.00	0.00
			Max. Mx	37	0.76	0.06	-0.01
			Max. My	27	-1.19	0.05	0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	37	0.05	0.06	-0.01
			Max. Vx	33	0.00	0.00	0.00
T4	80 - 60	Leg	Max Tension	15	72.56	-0.14	-0.02
			Max. Compression	2	-86.06	0.24	0.03
			Max. Mx	2	-86.06	0.24	0.03
			Max. My	20	-6.18	-0.02	-0.24
			Max. Vy	33	-0.06	-0.17	-0.01
			Max. Vx	20	0.09	-0.02	-0.24
		Diagonal	Max Tension	16	4.01	0.00	0.00
			Max. Compression	2	-4.04	0.00	0.00
			Max. Mx	27	1.06	0.10	-0.01
			Max. My	27	0.56	0.09	0.01
			Max. Vy	37	0.06	0.09	-0.01
			Max. Vx	27	-0.00	0.00	0.00
T5	60 - 40	Leg	Max Tension	15	90.05	-0.19	-0.02
			Max. Compression	2	-106.91	0.31	0.03
			Max. Mx	33	3.41	-0.55	-0.01
			Max. My	20	-7.04	-0.02	-0.27
			Max. Vy	33	0.15	-0.55	-0.01
			Max. Vx	3	0.09	-0.11	0.16
		Diagonal	Max Tension	16	4.37	0.00	0.00
			Max. Compression	16	-4.39	0.00	0.00
			Max. Mx	27	1.04	0.13	-0.01
			Max. My	27	-1.05	0.10	0.02
			Max. Vy	37	0.08	0.12	-0.02
			Max. Vx	27	-0.00	0.00	0.00
T6	40 - 20	Leg	Max Tension	15	105.62	-0.33	-0.05
			Max. Compression	2	-125.70	0.53	0.04
			Max. Mx	33	4.00	-0.91	-0.01
			Max. My	20	-8.96	-0.05	-0.63
			Max. Vy	33	0.17	-0.91	-0.01
			Max. Vx	20	-0.15	-0.05	-0.63
		Diagonal	Max Tension	16	5.18	0.00	0.00
			Max. Compression	2	-5.41	0.00	0.00
			Max. Mx	37	0.48	0.17	-0.02
			Max. My	27	1.32	0.16	0.02
			Max. Vy	37	0.09	0.16	0.02
			Max. Vx	27	-0.00	0.00	0.00
T7	20 - 0	Leg	Max Tension	15	126.30	0.58	0.04
			Max. Compression	2	-150.79	0.00	-0.00
			Max. Mx	33	6.71	-0.91	-0.01
			Max. My	24	-9.57	-0.05	0.90
			Max. Vy	2	-7.67	0.00	-0.00
			Max. Vx	8	-2.29	0.00	-0.00
		Diagonal	Max Tension	16	5.44	0.00	0.00
			Max. Compression	2	-5.80	0.00	0.00
			Max. Mx	37	0.12	0.22	-0.02
			Max. My	36	1.76	0.17	-0.03
			Max. Vy	37	0.09	0.22	-0.02
			Max. Vx	36	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	137.91	12.76	-7.81

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_x	18	137.91	12.76	-7.81
	Max. H_z	5	-104.94	-9.61	7.00
	Min. Vert	7	-114.46	-10.92	6.72
	Min. H_x	7	-114.46	-10.92	6.72
	Min. H_z	18	137.91	12.76	-7.81
Leg B	Max. Vert	10	141.25	-13.40	-8.07
	Max. H_x	23	-119.92	11.59	7.02
	Max. H_z	23	-119.92	11.59	7.02
	Min. Vert	23	-119.92	11.59	7.02
	Min. H_x	10	141.25	-13.40	-8.07
	Min. H_z	10	141.25	-13.40	-8.07
Leg A	Max. Vert	2	150.10	-0.55	16.35
	Max. H_x	21	8.22	2.27	0.59
	Max. H_z	2	150.10	-0.55	16.35
	Min. Vert	15	-125.69	0.53	-14.19
	Min. H_x	8	10.30	-2.29	0.74
	Min. H_z	15	-125.69	0.53	-14.19

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	24.54	-0.00	-0.00	-10.43	9.49	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	29.45	-0.04	-26.38	-2280.41	16.00	-17.58
0.9 Dead+1.0 Wind 0 deg - No Ice	22.08	-0.04	-26.38	-2277.28	13.15	-17.58
1.2 Dead+1.0 Wind 30 deg - No Ice	29.45	12.05	-20.95	-1845.35	-1041.48	-12.31
0.9 Dead+1.0 Wind 30 deg - No Ice	22.08	12.05	-20.95	-1842.22	-1044.33	-12.31
1.2 Dead+1.0 Wind 60 deg - No Ice	29.45	19.55	-11.29	-1004.00	-1705.92	-12.06
0.9 Dead+1.0 Wind 60 deg - No Ice	22.08	19.55	-11.29	-1000.87	-1708.77	-12.06
1.2 Dead+1.0 Wind 90 deg - No Ice	29.45	23.06	0.04	-7.90	-1987.11	-17.68
0.9 Dead+1.0 Wind 90 deg - No Ice	22.08	23.06	0.04	-4.78	-1989.95	-17.68
1.2 Dead+1.0 Wind 120 deg - No Ice	29.45	21.87	12.67	1067.81	-1850.57	-9.30
0.9 Dead+1.0 Wind 120 deg - No Ice	22.08	21.87	12.67	1070.94	-1853.42	-9.30
1.2 Dead+1.0 Wind 150 deg - No Ice	29.45	12.61	21.85	1869.67	-1075.29	10.16
0.9 Dead+1.0 Wind 150 deg - No Ice	22.08	12.61	21.85	1872.80	-1078.13	10.16
1.2 Dead+1.0 Wind 180 deg - No Ice	29.45	0.04	24.94	2159.70	6.78	17.58
0.9 Dead+1.0 Wind 180 deg - No Ice	22.08	0.04	24.94	2162.83	3.94	17.58
1.2 Dead+1.0 Wind 210 deg - No Ice	29.45	-12.05	20.95	1820.33	1064.26	12.31
0.9 Dead+1.0 Wind 210 deg - No Ice	22.08	-12.05	20.95	1823.46	1061.41	12.31
1.2 Dead+1.0 Wind 240 deg -	29.45	-20.79	12.00	1026.82	1811.57	12.06

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
No Ice 0.9 Dead+1.0 Wind 240 deg - No Ice	22.08	-20.79	12.00	1029.95	1808.72	12.06
1.2 Dead+1.0 Wind 270 deg - No Ice	29.45	-23.06	-0.04	-17.12	2009.89	17.68
0.9 Dead+1.0 Wind 270 deg - No Ice	22.08	-23.06	-0.04	-13.99	2007.04	17.68
1.2 Dead+1.0 Wind 300 deg - No Ice	29.45	-20.62	-11.95	-1044.99	1790.49	9.30
0.9 Dead+1.0 Wind 300 deg - No Ice	22.08	-20.62	-11.95	-1041.86	1787.64	9.30
1.2 Dead+1.0 Wind 330 deg - No Ice	29.45	-12.61	-21.85	-1894.69	1098.07	-10.16
0.9 Dead+1.0 Wind 330 deg - No Ice	22.08	-12.61	-21.85	-1891.56	1095.22	-10.16
1.2 Dead+1.0 Ice+1.0 Temp	89.05	-0.00	-0.00	-36.44	43.90	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	89.05	-0.01	-7.34	-680.98	44.77	-4.60
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	89.05	3.52	-6.11	-577.43	-267.43	-4.37
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	89.05	5.92	-3.42	-339.65	-481.28	-4.46
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	89.05	6.87	0.01	-35.56	-562.09	-4.57
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	89.05	6.20	3.59	277.50	-498.10	-1.97
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	89.05	3.60	6.23	510.84	-272.07	2.38
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	89.05	0.01	7.15	595.93	43.02	4.60
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	89.05	-3.52	6.11	504.56	355.23	4.37
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	89.05	-6.08	3.51	272.86	579.62	4.46
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	89.05	-6.87	-0.01	-37.31	649.89	4.57
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	89.05	-6.04	-3.50	-344.28	575.36	1.97
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	89.05	-3.60	-6.23	-583.71	359.87	-2.38
Dead+Wind 0 deg - Service	24.54	-0.01	-6.40	-560.45	10.61	-4.26
Dead+Wind 30 deg - Service	24.54	2.92	-5.08	-454.94	-245.86	-2.98
Dead+Wind 60 deg - Service	24.54	4.74	-2.74	-250.89	-407.00	-2.93
Dead+Wind 90 deg - Service	24.54	5.59	0.01	-9.31	-475.20	-4.29
Dead+Wind 120 deg - Service	24.54	5.30	3.07	251.58	-442.08	-2.26
Dead+Wind 150 deg - Service	24.54	3.06	5.30	446.05	-254.06	2.46
Dead+Wind 180 deg - Service	24.54	0.01	6.05	516.39	8.37	4.26
Dead+Wind 210 deg - Service	24.54	-2.92	5.08	434.09	264.84	2.98
Dead+Wind 240 deg - Service	24.54	-5.04	2.91	241.64	446.08	2.93
Dead+Wind 270 deg - Service	24.54	-5.59	-0.01	-11.54	494.18	4.29
Dead+Wind 300 deg - Service	24.54	-5.00	-2.90	-260.83	440.97	2.26
Dead+Wind 330 deg - Service	24.54	-3.06	-5.30	-466.90	273.04	-2.46

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-24.54	0.00	0.00	24.54	0.00	0.000%
2	-0.04	-29.45	-26.38	0.04	29.45	26.38	0.000%
3	-0.04	-22.08	-26.38	0.04	22.08	26.38	0.000%
4	12.05	-29.45	-20.95	-12.05	29.45	20.95	0.000%
5	12.05	-22.08	-20.95	-12.05	22.08	20.95	0.000%
6	19.55	-29.45	-11.29	-19.55	29.45	11.29	0.000%
7	19.55	-22.08	-11.29	-19.55	22.08	11.29	0.000%
8	23.06	-29.45	0.04	-23.06	29.45	-0.04	0.000%
9	23.06	-22.08	0.04	-23.06	22.08	-0.04	0.000%
10	21.87	-29.45	12.67	-21.87	29.45	-12.67	0.000%
11	21.87	-22.08	12.67	-21.87	22.08	-12.67	0.000%
12	12.61	-29.45	21.85	-12.61	29.45	-21.85	0.000%
13	12.61	-22.08	21.85	-12.61	22.08	-21.85	0.000%
14	0.04	-29.45	24.94	-0.04	29.45	-24.94	0.000%
15	0.04	-22.08	24.94	-0.04	22.08	-24.94	0.000%
16	-12.05	-29.45	20.95	12.05	29.45	-20.95	0.000%
17	-12.05	-22.08	20.95	12.05	22.08	-20.95	0.000%
18	-20.79	-29.45	12.00	20.79	29.45	-12.00	0.000%
19	-20.79	-22.08	12.00	20.79	22.08	-12.00	0.000%
20	-23.06	-29.45	-0.04	23.06	29.45	0.04	0.000%
21	-23.06	-22.08	-0.04	23.06	22.08	0.04	0.000%
22	-20.62	-29.45	-11.95	20.62	29.45	11.95	0.000%
23	-20.62	-22.08	-11.95	20.62	22.08	11.95	0.000%
24	-12.61	-29.45	-21.85	12.61	29.45	21.85	0.000%
25	-12.61	-22.08	-21.85	12.61	22.08	21.85	0.000%
26	0.00	-89.05	0.00	0.00	89.05	0.00	0.000%
27	-0.01	-89.05	-7.34	0.01	89.05	7.34	0.000%
28	3.52	-89.05	-6.11	-3.52	89.05	6.11	0.000%
29	5.92	-89.05	-3.42	-5.92	89.05	3.42	0.000%
30	6.87	-89.05	0.01	-6.87	89.05	-0.01	0.000%
31	6.20	-89.05	3.59	-6.20	89.05	-3.59	0.000%
32	3.60	-89.05	6.23	-3.60	89.05	-6.23	0.000%
33	0.01	-89.05	7.15	-0.01	89.05	-7.15	0.000%
34	-3.52	-89.05	6.11	3.52	89.05	-6.11	0.000%
35	-6.08	-89.05	3.51	6.08	89.05	-3.51	0.000%
36	-6.87	-89.05	-0.01	6.87	89.05	0.01	0.000%
37	-6.04	-89.05	-3.50	6.04	89.05	3.50	0.000%
38	-3.60	-89.05	-6.23	3.60	89.05	6.23	0.000%
39	-0.01	-24.54	-6.40	0.01	24.54	6.40	0.000%
40	2.92	-24.54	-5.08	-2.92	24.54	5.08	0.000%
41	4.74	-24.54	-2.74	-4.74	24.54	2.74	0.000%
42	5.59	-24.54	0.01	-5.59	24.54	-0.01	0.000%
43	5.30	-24.54	3.07	-5.30	24.54	-3.07	0.000%
44	3.06	-24.54	5.30	-3.06	24.54	-5.30	0.000%
45	0.01	-24.54	6.05	-0.01	24.54	-6.05	0.000%
46	-2.92	-24.54	5.08	2.92	24.54	-5.08	0.000%
47	-5.04	-24.54	2.91	5.04	24.54	-2.91	0.000%
48	-5.59	-24.54	-0.01	5.59	24.54	0.01	0.000%
49	-5.00	-24.54	-2.90	5.00	24.54	2.90	0.000%
50	-3.06	-24.54	-5.30	3.06	24.54	5.30	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140 - 120	2.53	39	0.165	0.018
T2	120 - 100	1.84	39	0.148	0.017
T3	100 - 80	1.26	39	0.121	0.014
T4	80 - 60	0.79	39	0.092	0.010
T5	60 - 40	0.44	39	0.064	0.007
T6	40 - 20	0.20	39	0.039	0.004
T7	20 - 0	0.06	39	0.020	0.002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
137.00	LNX-8513DS-A1M w/ Mount Pipe	39	2.42	0.163	0.018	164360
124.00	NNVV-65B-R4 w/ Mount Pipe	39	1.98	0.152	0.017	51385
101.00	RR90-17-00DP w/ Mount Pipe	39	1.28	0.122	0.014	41473
60.00	GPS_A	39	0.44	0.064	0.007	42219
50.00	GPS_A	39	0.31	0.051	0.006	48465

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140 - 120	10.33	2	0.676	0.073
T2	120 - 100	7.53	2	0.606	0.069
T3	100 - 80	5.12	2	0.493	0.056
T4	80 - 60	3.20	2	0.375	0.043
T5	60 - 40	1.79	2	0.261	0.030
T6	40 - 20	0.82	2	0.159	0.018
T7	20 - 0	0.24	2	0.081	0.008

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
137.00	LNX-8513DS-A1M w/ Mount Pipe	2	9.90	0.667	0.072	40175
124.00	NNVV-65B-R4 w/ Mount Pipe	2	8.07	0.623	0.070	12560
101.00	RR90-17-00DP w/ Mount Pipe	2	5.23	0.499	0.057	10039
60.00	GPS_A	2	1.79	0.261	0.030	10361
50.00	GPS_A	2	1.25	0.207	0.024	11907

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	140	Leg	A325N	0.63	4	3.24	20.34	0.159	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	3.11	5.71	0.545	1.05	Member Block Shear
		Top Girt	A325N	0.50	1	0.42	4.13	0.102	1.05	Member Bearing
T2	120	Leg	A325N	0.75	4	8.56	30.10	0.284	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	2.92	5.71	0.511	1.05	Member Block Shear
		Top Girt	A325N	0.50	1	0.15	4.13	0.037	1.05	Member Bearing
T3	100	Leg	A325N	0.88	4	13.44	41.56	0.323	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	3.71	6.20	0.599	1.05	Member Bearing
T4	80	Leg	A325N	0.88	4	18.14	41.56	0.437	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	4.01	6.20	0.648	1.05	Member Bearing
T5	60	Leg	A325N	1.00	4	22.51	54.52	0.413	1.05	Bolt Tension
		Diagonal	A325N	0.50	1	4.37	6.20	0.705	1.05	Member Bearing
T6	40	Leg	A325N	1.00	4	26.40	54.52	0.484	1.05	Bolt Tension
		Diagonal	A325N	0.63	1	5.18	7.83	0.662	1.05	Member Bearing
T7	20	Diagonal	A325N	0.63	1	5.44	11.70	0.465	1.05	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	ROHN 2 STD	20.00	4.00	61.0 K=1.00	1.07	-18.24	36.84	0.495 [1]
T2	120 - 100	ROHN 2.5 EH	20.03	5.01	65.0 K=1.00	2.25	-42.09	74.43	0.565 [1]
T3	100 - 80	ROHN 3 EH	20.03	6.68	70.5 K=1.00	3.02	-64.27	94.34	0.681 [1]
T4	80 - 60	ROHN 3.5 EH	20.03	6.68	61.3 K=1.00	3.68	-86.06	125.73	0.685 [1]
T5	60 - 40	ROHN 4 X-STR	20.04	6.68	54.3 K=1.00	4.41	-106.91	159.90	0.669 [1]
T6	40 - 20	ROHN 5 EH	20.03	10.02	65.4 K=1.00	6.11	-125.70	201.25	0.625 [1]
T7	20 - 0	ROHN 5 X-STR	20.03	9.97	65.1 K=1.00	6.11	-145.29	201.77	0.720 [1]

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L1 3/4x1 3/4x3/16	7.68	3.62	126.6 K=1.00	0.62	-3.23	11.09	0.291 [1]
T2	120 - 100	L1 3/4x1 3/4x3/16	9.73	4.77	166.7 K=1.00	0.62	-2.89	6.40	0.453 [1]
T3	100 - 80	L2x2x3/16	12.27	6.06	184.5 K=1.00	0.71	-3.77	6.01	0.627 [1]
T4	80 - 60	L2 1/2x2 1/2x3/16	14.02	6.91	167.6 K=1.00	0.90	-4.04	9.20	0.440 [1]
T5	60 - 40	L3x3x3/16	15.89	7.83	157.6 K=1.00	1.09	-4.39	12.56	0.350 [1]
T6	40 - 20	L3x3x3/16	19.10	9.45	190.3 K=1.00	1.09	-5.41	8.61	0.628 [1]
T7	20 - 0	L3x3x1/4 KL/R > 200 (C) - 152	20.80	10.30	208.8 K=1.00	1.44	-5.80	9.45	0.613 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L2x2x1/8	6.52	6.11	184.6 K=1.00	0.48	-0.39	4.07	0.095 [1]
T2	120 - 100	L2x2x1/8	6.56	6.16	185.8 K=1.00	0.48	-0.16	4.01	0.039 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	ROHN 2 STD	20.00	4.00	61.0	1.07	12.95	48.35	0.268 [1]
T2	120 - 100	ROHN 2.5 EH	20.03	5.01	65.0	2.25	34.24	101.41	0.338 [1]
T3	100 - 80	ROHN 3 EH	20.03	6.68	70.5	3.02	53.77	135.72	0.396 [1]
T4	80 - 60	ROHN 3.5 EH	20.03	6.68	61.3	3.68	72.56	165.53	0.438 [1]
T5	60 - 40	ROHN 4 X-STR	20.04	6.68	54.3	4.41	90.05	198.34	0.454 [1]
T6	40 - 20	ROHN 5 EH	20.03	10.02	65.4	6.11	105.62	275.04	0.384 [1]
T7	20 - 0	ROHN 5 X-STR	20.03	0.08	0.5	6.11	126.30	275.04	0.459 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L1 3/4x1 3/4x3/16	7.68	3.62	83.3	0.38	3.11	16.44	0.189 [1]
T2	120 - 100	L1 3/4x1 3/4x3/16	9.73	4.77	109.0	0.38	2.92	16.44	0.177 [1]
T3	100 - 80	L2x2x3/16	12.27	6.06	119.8	0.45	3.71	19.50	0.190 [1]
T4	80 - 60	L2 1/2x2 1/2x3/16	14.02	6.91	108.2	0.59	4.01	25.60	0.157 [1]
T5	60 - 40	L3x3x3/16	15.89	7.83	101.3	0.73	4.37	31.74	0.138 [1]
T6	40 - 20	L3x3x3/16	19.10	9.45	122.3	0.71	5.18	30.97	0.167 [1]
T7	20 - 0	L3x3x1/4	20.80	10.30	134.5	0.94	5.44	45.79	0.119 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L2x2x1/8	6.52	6.11	121.2	0.30	0.42	13.25	0.032 [1]
T2	120 - 100	L2x2x1/8	6.56	6.16	122.0	0.30	0.15	13.25	0.012 [1]

[1] P_u / ϕP_n controls

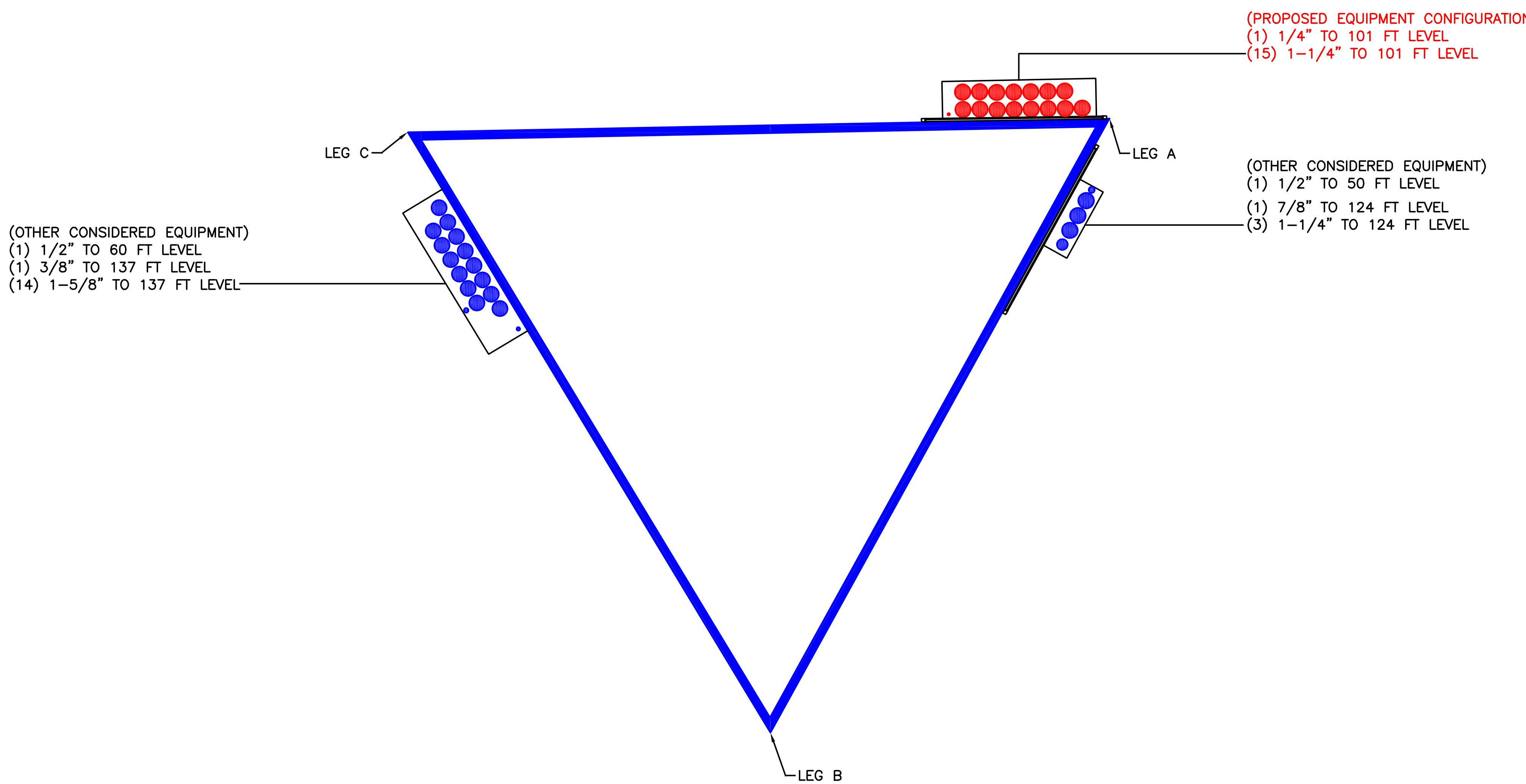
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	140 - 120	Leg	ROHN 2 STD	3	-18.24	38.68	47.2	Pass
T2	120 - 100	Leg	ROHN 2.5 EH	39	-42.09	78.15	53.9	Pass
T3	100 - 80	Leg	ROHN 3 EH	69	-64.27	99.06	64.9	Pass
T4	80 - 60	Leg	ROHN 3.5 EH	90	-86.06	132.01	65.2	Pass
T5	60 - 40	Leg	ROHN 4 X-STR	111	-106.91	167.90	63.7	Pass
T6	40 - 20	Leg	ROHN 5 EH	132	-125.70	211.31	59.5	Pass
T7	20 - 0	Leg	ROHN 5 X-STR	147	-145.29	211.86	68.6	Pass
T1	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	12	-3.23	11.65	27.7 51.9 (b)	Pass
T2	120 - 100	Diagonal	L1 3/4x1 3/4x3/16	47	-2.89	6.72	43.1 48.6 (b)	Pass
T3	100 - 80	Diagonal	L2x2x3/16	74	-3.77	6.31	59.7	Pass
T4	80 - 60	Diagonal	L2 1/2x2 1/2x3/16	95	-4.04	9.65	41.9 61.7 (b)	Pass
T5	60 - 40	Diagonal	L3x3x3/16	117	-4.39	13.19	33.3 67.2 (b)	Pass
T6	40 - 20	Diagonal	L3x3x3/16	137	-5.41	9.05	59.8 63.0 (b)	Pass
T7	20 - 0	Diagonal	L3x3x1/4	152	-5.80	9.92	58.4	Pass
T1	140 - 120	Top Girt	L2x2x1/8	4	-0.39	4.27	9.0 9.7 (b)	Pass
T2	120 - 100	Top Girt	L2x2x1/8	41	-0.16	4.22	3.7	Pass
							Summary	

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Leg (T7)	68.6	Pass
						Diagonal (T5)	67.2	Pass
						Top Girt (T1)	9.7	Pass
						Bolt Checks	67.2	Pass
						RATING =	**68.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806383 TOWER ID:C_BASELEVEL

CROWN REGION ADDRESS

USA

20	8/12/2014	UPDATED PER WORK ORDER 974271	LRW
21	5/2/2015	UPDATED PER WORK ORDER 1005436	AMT
22	24/8/2015	UPDATED PER WORK ORDER 1093592 1094955	SLW
23	16/03/17	UPDATED PER WORK ORDER 1231962	ADE
24	03/11/17	UPDATED PER WORK ORDER 1484321	ASF
25	25/05/18	UPDATED PER WORK ORDER 1580448	GL
26	23/04/19	UPDATED PER WORK ORDER 1721473	NK
27	30/05/19	UPDATED PER WORK ORDER 1749527	AS
28	04/06/19	UPDATED PER WORK ORDER 1751411	SK

DRAWN BY: ATF
CHECKED BY:
DRAWING DATE: 19/12/00

SITE AUDIT INFORMATION

SITE NUMBER: SITEMASTER
SITE NAME: 01/03/00

SITE NAME

HRT 087 943325

BUSINESS UNIT NUMBER

806383

SITE ADDRESS

COSGROVE ROAD
WEST WILLINGTON, CT 06279
TOLLAND COUNTY
USA

SHEET TITLE

BASE LEVEL DRAWING

SHEET NUMBER

N.T.S.

A1-0

PLOT DATE: 8/24/2015 FILE NAME: 806383_BASELEVEL.dwg

Xref U:\AutoCAD\Border\BASELEVEL_BORDER.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

CCIplate

Project Information

BU #	806383
Site Name	HRT 087 943325
Order #	479813 Rev 0

Tower Information

Tower Type	Self Support
TIA-222 Rev	H

☑ Apply TIA-222-H Section 15.5

Applied Loads

	Comp.	Uplift
Axial (k)	0.00	126.00
Shear (k)	16.00	14.00

Anchor Rod Data

Quantity:	4	
Diameter (in):	1	
Material Grade:	A449	Fy=92 ksi Fu=120 ksi
Grout Considered:	Yes	Not Considered, lar<=1(d)
l_{ar} (in):	0	
Eta Factor, ɳ:	0.55	
Thread Type:	N-Included	
Configuration:	Symmetrical	

Anchor Rod Results

Axial, Pu_t (kips)	31.50	
Shear, Vu (kips)	3.50	
Moment, Mu (kip-in)	-	
Axial Cap., φPn_t (kips)	54.54	
Shear Cap., ϕVn (kips)	35.34	
Moment Cap., ϕMn (kip-in)	-	
Stress Rating	32.7%	**Pass**

Pier and Pad Foundation

BU # :	806383
Site Name:	HRT 087 943325
App. Number:	479813 Rev 0

TIA-222 Revision:	H
Tower Type:	Self Support

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	150	kips
Compression Shear, Vu_comp:	16	kips
Uplift, P_{uplift}:	126	kips
Uplift Shear, V_{u_uplift}:	14	kips
Tower Height, **H**:	140	ft
Base Face Width, **BW**:	18.77	ft
BP Dist. Above Fdn, bp_{dist}:	1.75	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	3	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	16	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	11	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	12.5	ft
Pad Width, **W**:	7	ft
Pad Thickness, **T**:	2	ft
Pad Rebar Size (Bottom), **Sp**:	6	
Pad Rebar Quantity (Bottom), **mp**:	8	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, **δc**:	150	pcf

Soil Properties		
Total Soil Unit Weight, **γ**:	115	pcf
Ultimate Net Bearing, Qnet:	16.000	ksf
Cohesion, **Cu**:		ksf
Friction Angle, **ϕ**:	35	degrees
SPT Blow Count, N_{blows}:	100	
Base Friction, **μ**:		
Neglected Depth, **N**:	3.34	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Uplift (kips)	285.67	126.00	**42.0%**	**Pass**
Lateral (Sliding) (kips)	98.55	14.00	**13.5%**	**Pass**
Bearing Pressure (ksf)	13.08	4.95	**36.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	825.36	176.00	**20.3%**	**Pass**
*Pier Flexure (Tension) (kip*ft)*	624.62	154.00	**23.5%**	**Pass**
Pier Compression (kip)	1727.31	164.00	**9.0%**	**Pass**
*Pad Flexure (kip*ft)*	307.01	43.93	**13.6%**	**Pass**
Pad Shear - 1-way (kips)	137.16	7.55	**5.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.027	**15.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	614.02	105.60	**16.4%**	**Pass**
Pad Shear - 2-way (Uplift) (ksi)	0.164	0.044	**25.6%**	**Pass**
*Flexural 2-way (Tension) (kip*ft)*	614.02	92.40	**14.3%**	**Pass**

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

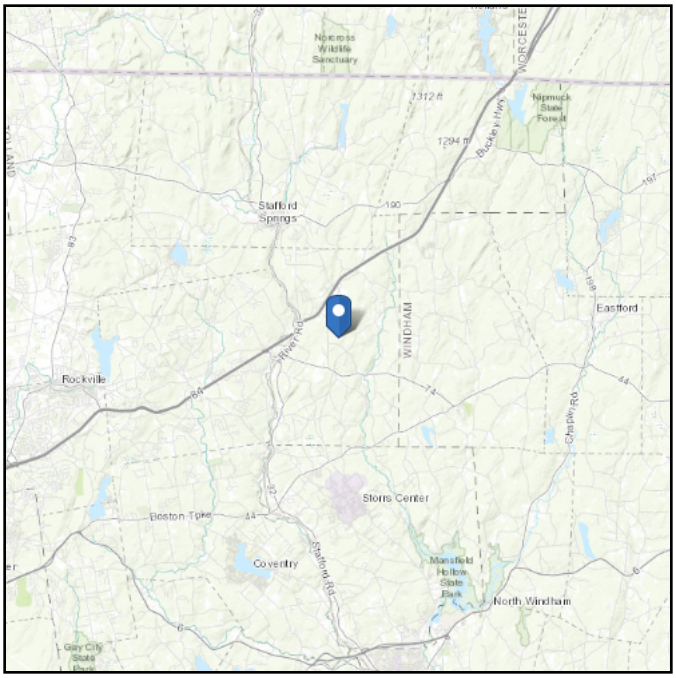
Soil Rating*:	**42.0%**
Structural Rating*:	**25.6%**

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 933.47 ft (NAVD 88)
Latitude: 41.892478
Longitude: -72.260597



Wind

Results:

Wind Speed:	125 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	95 Vmph
100-year MRI	102 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Jun 18 2019

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

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

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

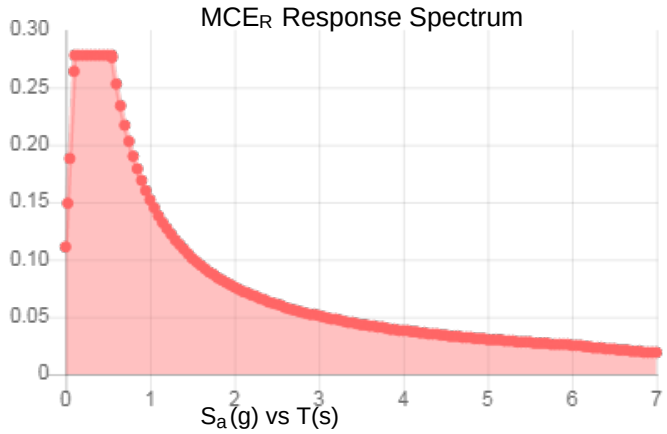
Seismic

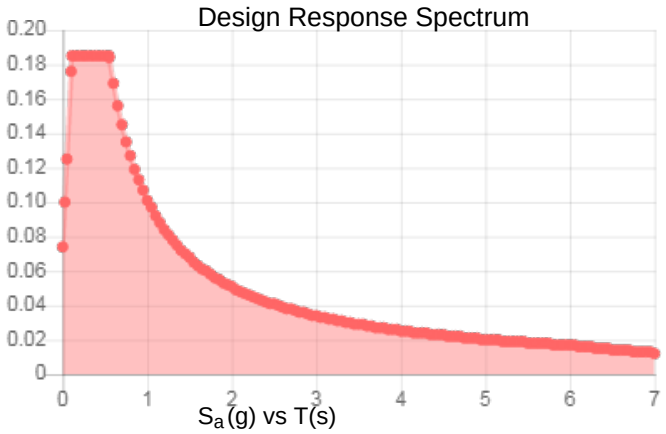
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.174	S_{DS} :	0.185
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.086
S_{MS} :	0.278	PGA_M :	0.138
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Jun 18 2019

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Jun 18 2019

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

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

Exhibit E

Mount Analysis

Date: **June 7, 2019**

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

MasTec Network Solutions
507 Airport Blvd, Suite 111
Morrisville, NC 27560
(919) 244-5207

Subject:	**Mount Analysis**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CT11142A
	Carrier Site Name:	Willington/ Rt-320/Cosg_1
Crown Castle Designation:	**Crown Castle BU Number**	806383
	Crown Castle Site Name:	HRT 087 943325
	Crown Castle JDE Job Number:	559177
	Crown Castle Order Number:	479813, Rev. 0
Engineering Firm Designation:	**MasTec Network Solutions Project Number:**	18811-MNO1
Site Data:	**Cosgrove Road Whifford Hill, West Willington, Tolland County, CT 06279** **Latitude: 41° 53' 32.92", Longitude: -72° 15' 38.15"**	
Structure Information:	**Tower Height & Type:**	**140 ft Self-Support Tower**
	Mount Elevation:	**101.0 ft**
	Mount Type:	**4 ft Sector Frame**

Dear Charles McGuirt,

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

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

Sector Frame Mount **Sufficient**

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

Mount analysis prepared by: Richard Torbert, EI

Respectfully submitted by:

Raphael I. Mohamed, PE, Peng
Senior Director of Engineering
CT PE License No. 25112

TABLE OF CONTENTS

1) INTRODUCTION

This is a 4' Sector Frame, mapped by Paul J. Ford & Company, dated April 6, 2019.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-H
Risk Category: II
Ultimate Wind Speed: 125 mph
Exposure Category: B
Topographic Factor: 1
Ice Thickness: 2 in
Wind Speed with Ice: 50 mph
Seismic Ss: 0.174
Seismic S1: 0.063
Live Loading Wind Speed: 30 mph
Man Live Load at Mid/End-Points: 250 lb
Man Live Load at Mount Pipes: 500 lb

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
101.0	102.0	3	EMS Wireless	RR90-17-00DP	(3) 4' Sector Frames
		3	RFS	APXVAARR24_43-U-NA20	
		3	Ericsson	KRY 112 144/1	
		3	Ericsson	KRY 112 489/2	
		3	Ericsson	Radio 4449 B12/71	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
4-ORDER INFORMATION	Crown Castle	479813, Rev.0	CCIsites
4-MOUNT MAPPING	Paul J. Ford & Companies	-	On File

3.1) Analysis Method

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

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

3.2) Assumptions

1. The antenna mounting system was properly fabricated, installed, and maintained in good condition in accordance with its original design, TIA Standards, and/or manufacturer's specifications.
2. The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 of the referenced drawings.
3. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected members unless otherwise specified in this report.
4. The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5. Steel grades have been assumed as follows, unless noted otherwise:

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

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

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity (Sector Frame)

Notes	Component	Beam No.	Centerline (ft)	% Capacity	Pass / Fail
1, 2	Mast Pipe	--	101.0	22.8	Pass
	Frame Rail	--		42.6	Pass
	Stabilizer	--		13.1	Pass
	Mount Pipe	--		20.8	Pass
	1/2" Threaded Rod	--		79.8	Pass

Structure Rating (max from all components) =	79.8%

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

Table 4 – Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)	Notes
N27	Existing	957	Leg	Rohn 2.5 EH	74,4300	1

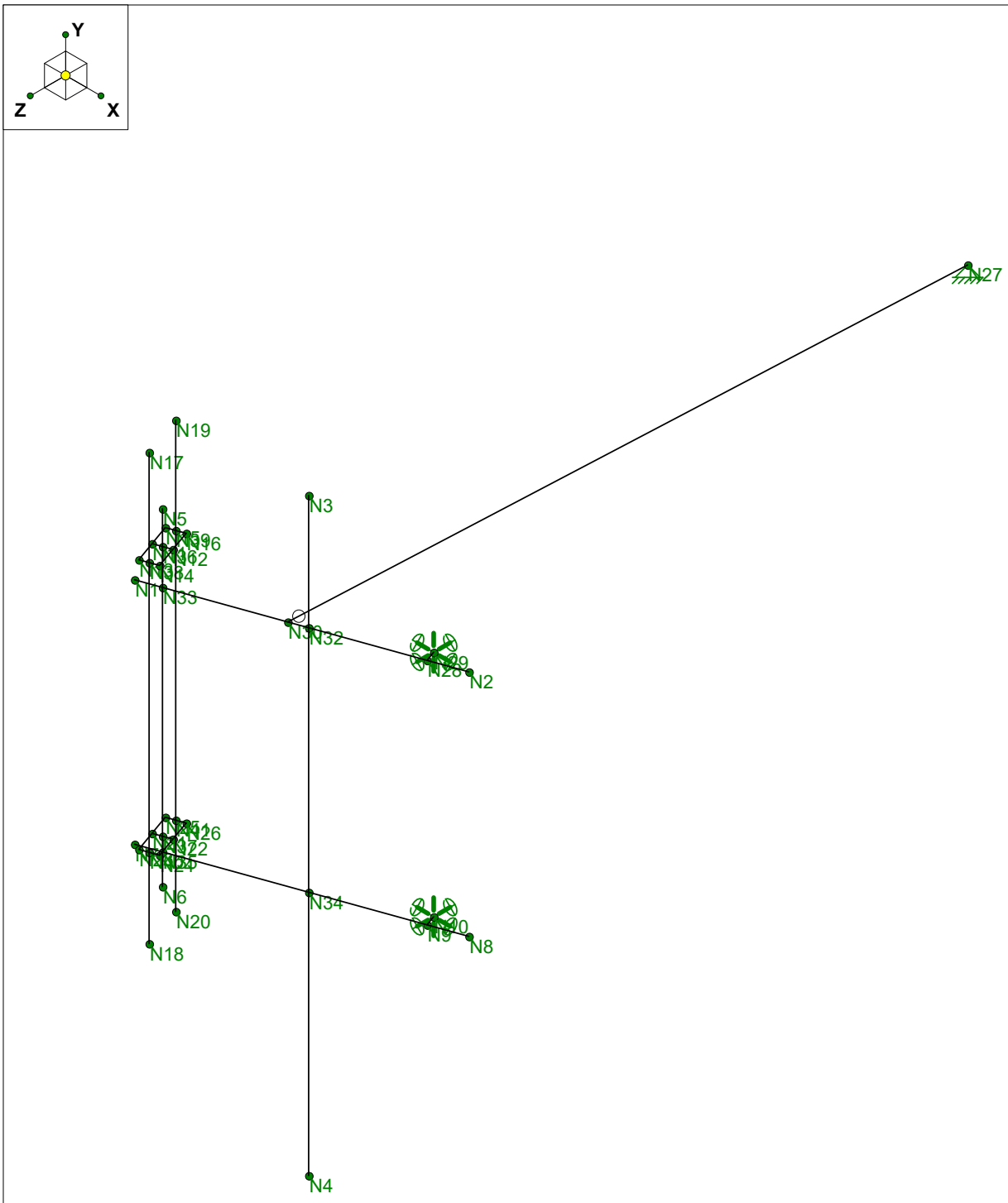
Notes:
1) Tieback connection point is within 25% of either end of the connected tower member

4.1) Recommendations

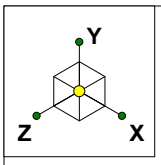
The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

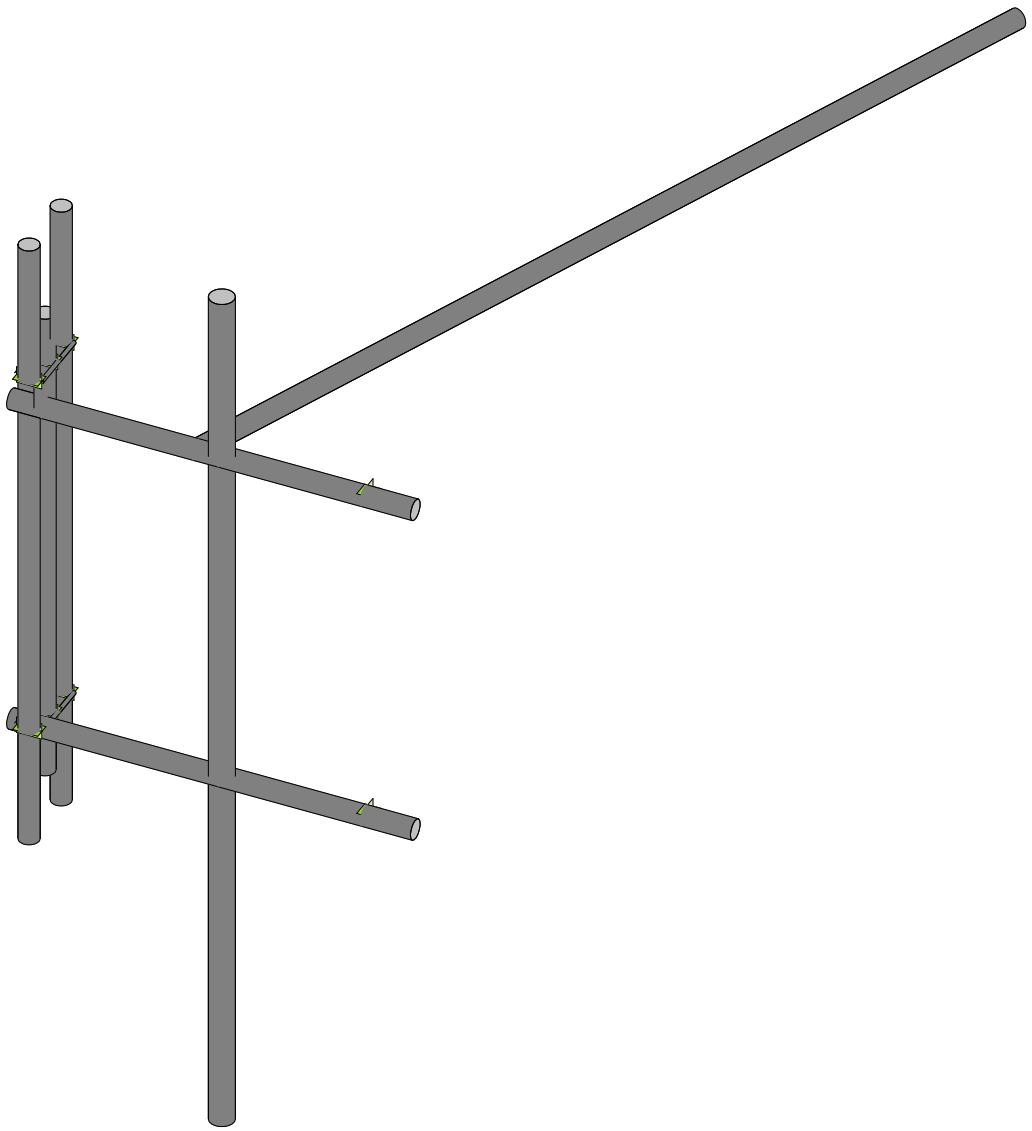
APPENDIX A

WIRE FRAME AND RENDERED MODELS

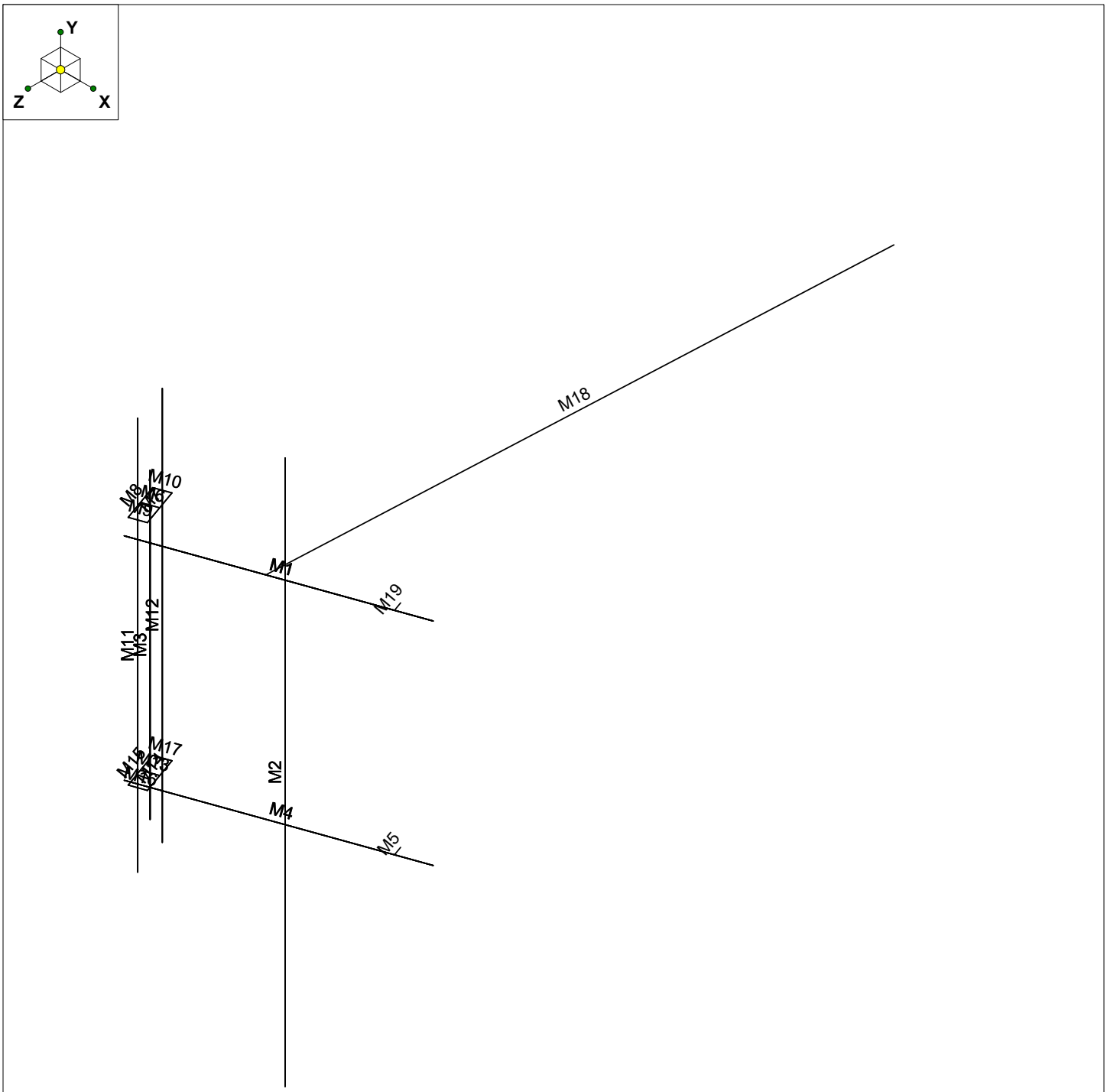


MasTec	806383 - HRT 087 943325	Joint Labels
RJT		June 7, 2019 at 11:58 AM
18811-MNO1		806383.R3D

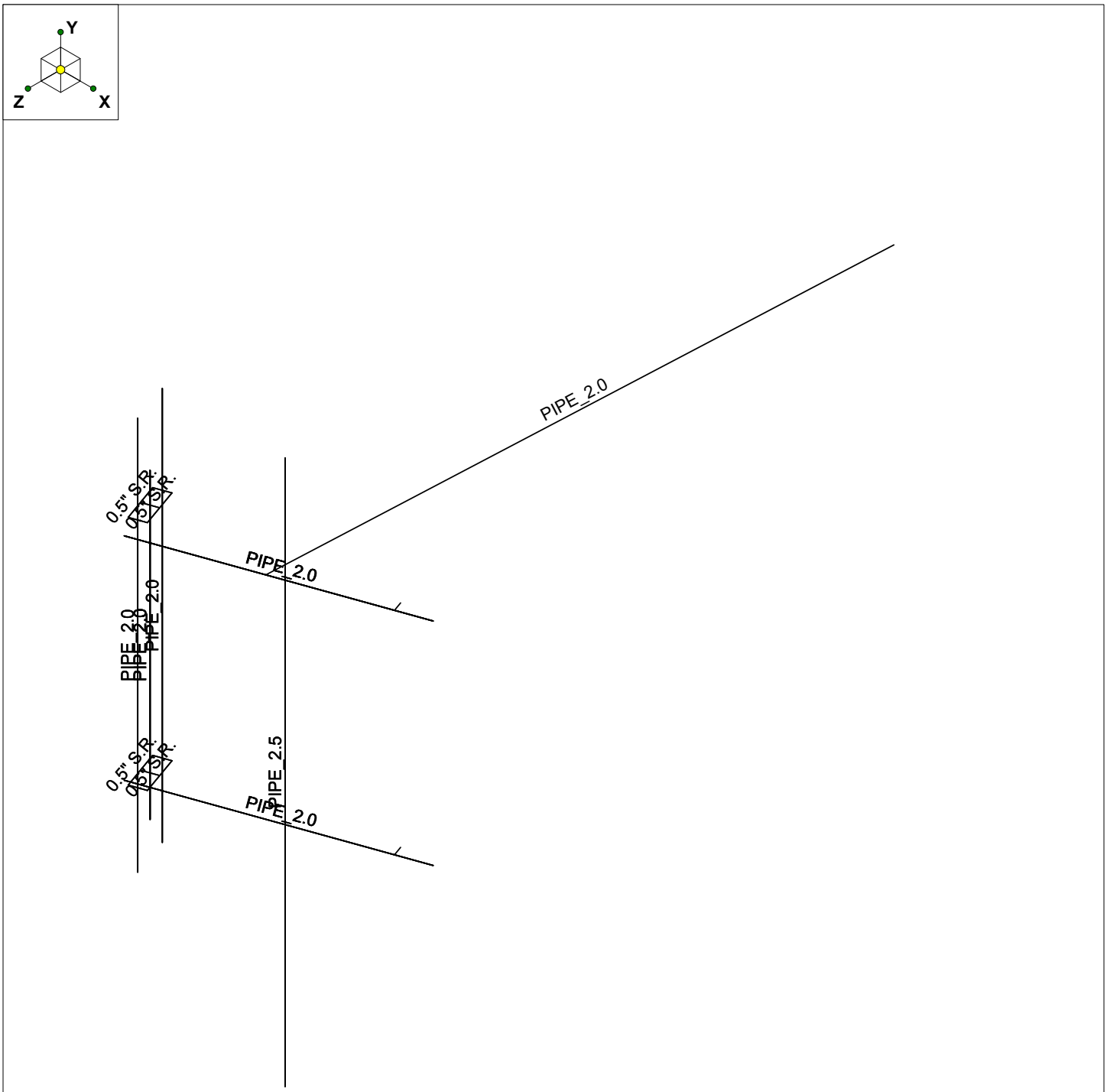




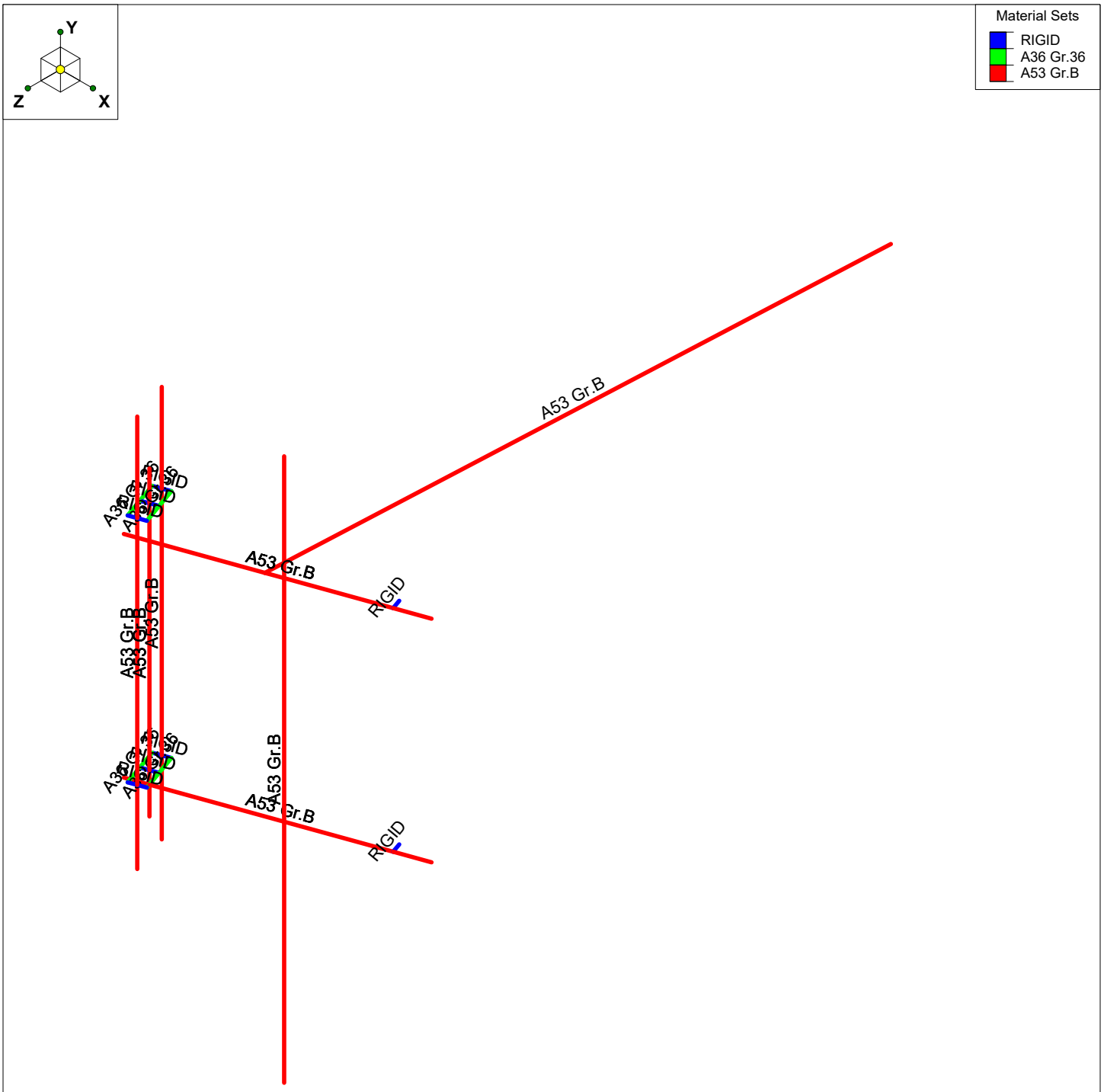
MasTec	806383 - HRT 087 943325	Rendered View
RJT		June 7, 2019 at 11:59 AM
18811-MNO1		806383.R3D



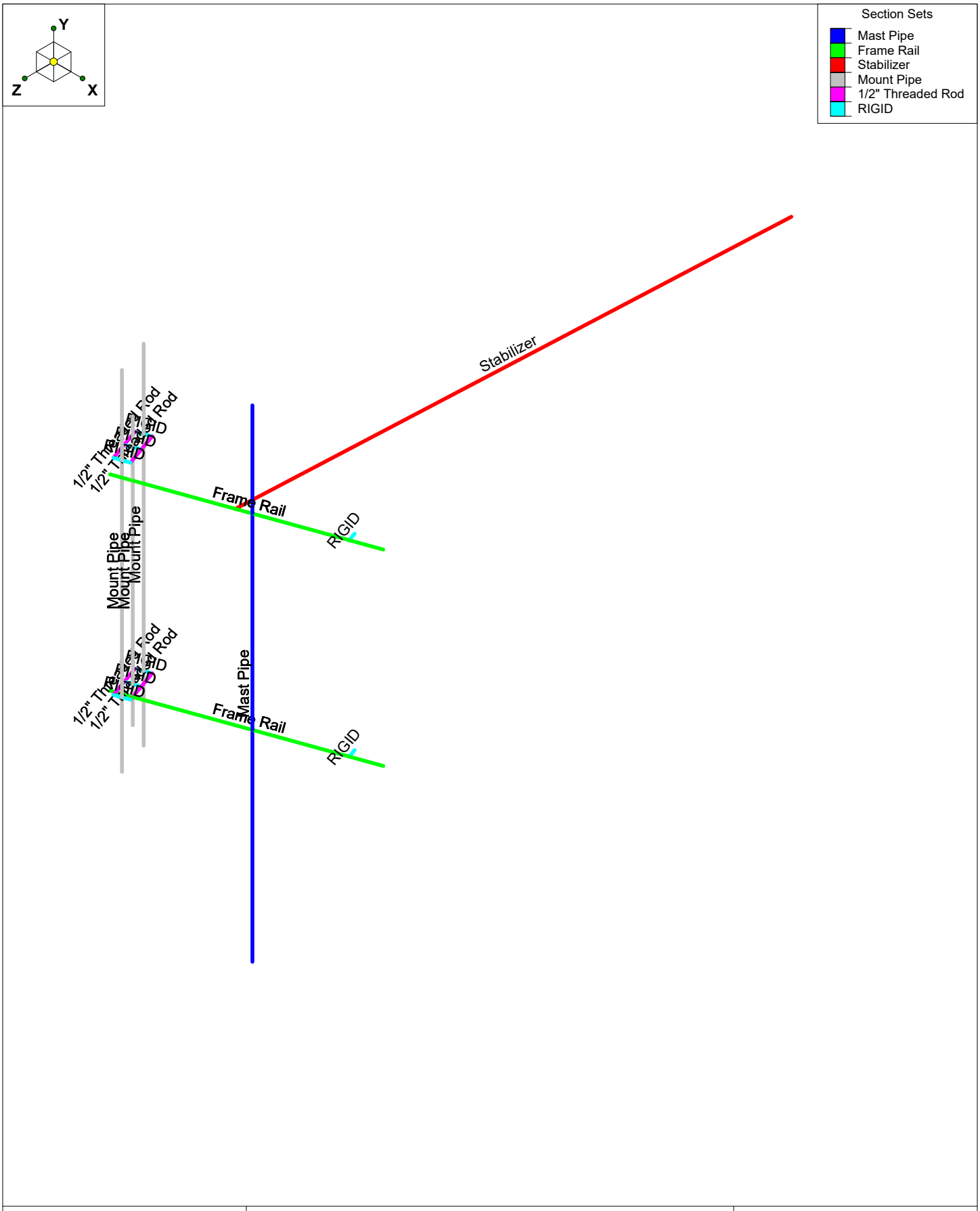
MasTec	806383 - HRT 087 943325	Member Labels
RJT		June 7, 2019 at 11:59 AM
18811-MNO1		806383.R3D



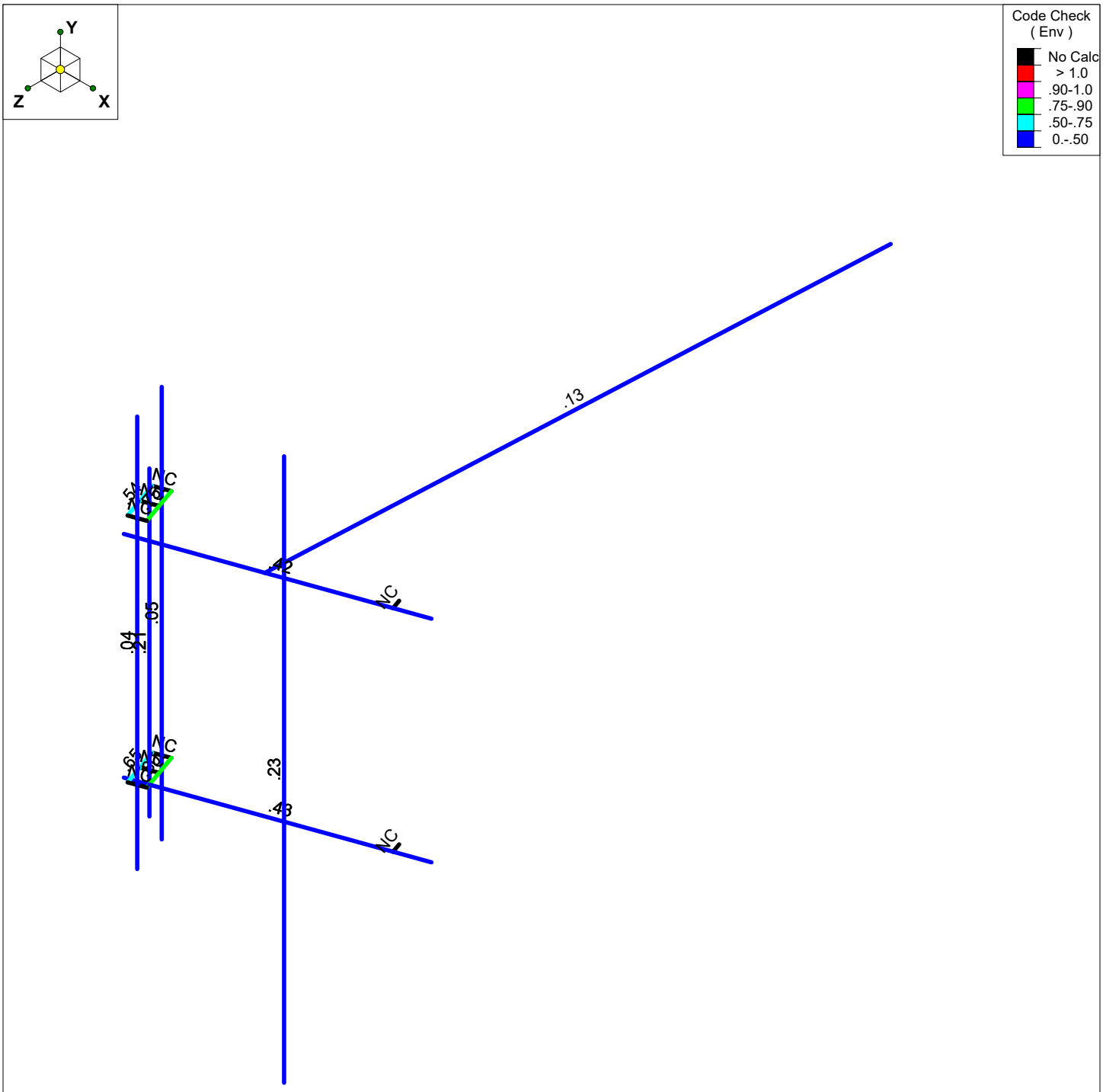
MasTec	806383 - HRT 087 943325	Member Shapes
RJT		June 7, 2019 at 11:59 AM
18811-MNO1		806383.R3D



MasTec	806383 - HRT 087 943325	Material Sets
RJT		June 7, 2019 at 12:00 PM
18811-MNO1		806383.R3D

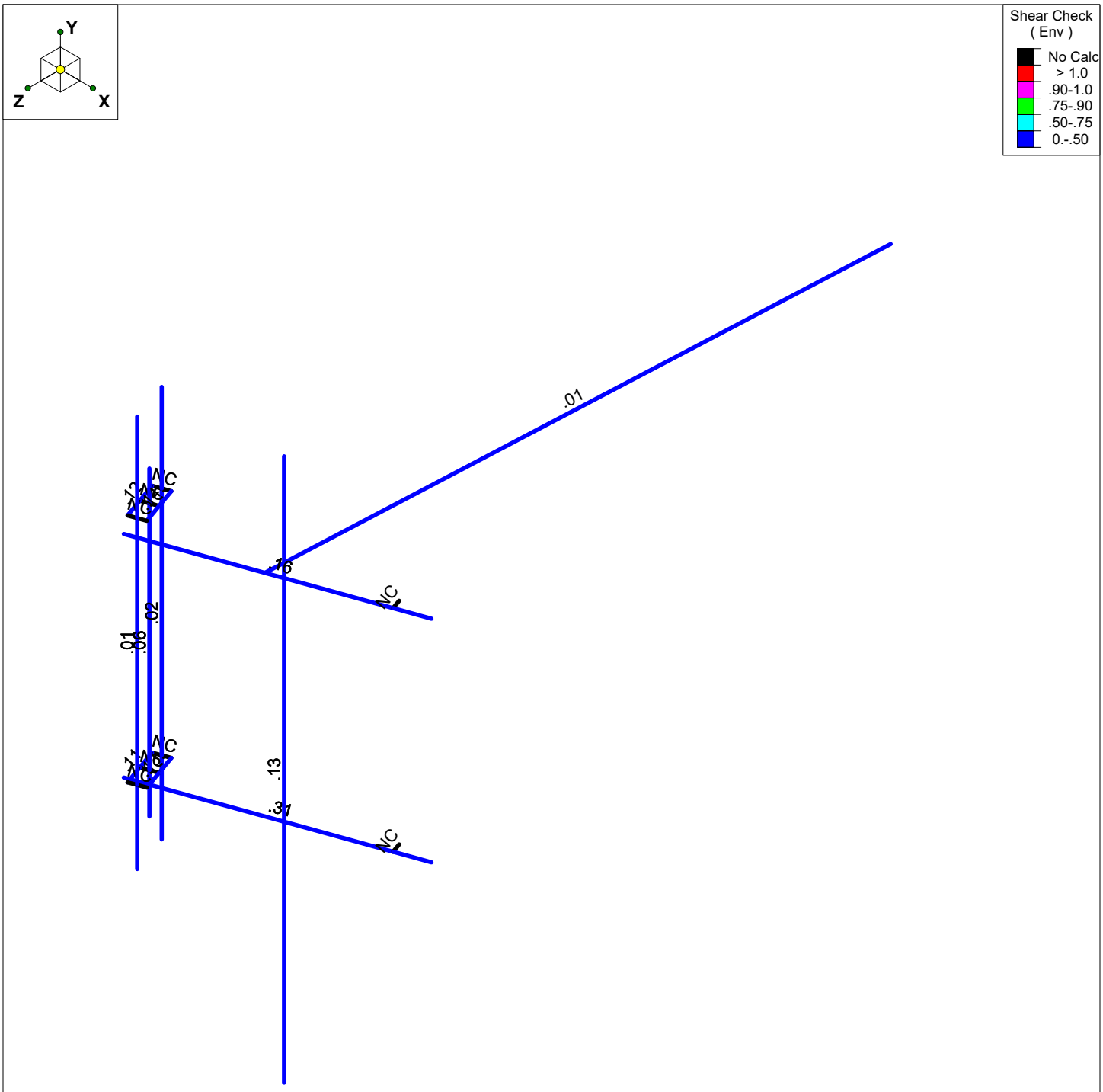


MasTec	806383 - HRT 087 943325	Section Sets
RJT		June 7, 2019 at 12:00 PM
18811-MNO1		806383.R3D



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

MasTec	806383 - HRT 087 943325	Bending Capacity
RJT		June 7, 2019 at 12:00 PM
18811-MNO1		806383.R3D



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

MasTec	806383 - HRT 087 943325	Shear Capacity
RJT		June 7, 2019 at 12:00 PM
18811-MNO1		806383.R3D

APPENDIX B

SOFTWARE INPUT CALCULATIONS

MasTec Network Solutions

Mount Analysis Tool

Site Name	HRT 087 943325		
Site ID	806383		
Job Number	18811-MNO1	Mount Existing?	Crown
Code	H	Risk Category	II

Legend
Input
Calculated
Notes

Maximum Capacity		
Controlling Capacity	79.8%	PASS

Analysis Parameters		
Mount Height	101	ft
Exposure Category	B	(B,C, or D)
Ultimate Wind Speed	125	mph
Ice Wind Speed	50	mph
Design Ice Thickness, t_i	2	in
Maintenance Wind Speed	30	mph
Run Earthquake Analysis?	Yes	
Ground Elevation	943	ft, Google Earth
S_1	0.063	USGS
S_{DS}	0.185	2.7.5
Vertical Seismic Loads, E_v	0.037	2.7.6
Seismic Response Coefficient, C_s	0.093	2.7.7.1.1
C_s Min	0.030	2.7.7.1.1

Wind Parameters					
Gust Effect Factor, G_h	1.000	2.6.9	K_s	1.000	2.6.7
K_Z	0.991	2.6.5.2	K_e	0.966	2.6.8
K_{Zt}	1.000	2.6.6	K_a	0.900	16.6
K_d	0.950	Table 2-2	*Note for Rooftop Structures greater than 50', unobstructed for 90 deg and protruding 50' above surrounding buildings Ks must be calculated.		
q_z	32.859	psf, 2.6.11.6			
C/D	124.439	Table 2-9			
t_{iz}	2.237	in, 2.6.10			
q_{iz}	5.257	psf, 2.6.9.6	I, Ice	1.000	Table 2-3
C/D_{iz}	49.776	Table 2-9	I, EQ	1.000	Table 2-3
$q_{Maintenance}$	1.952	psf, 2.6.9.6	$K_{es\ (Wind)}$	1.000	Table S-1
$C/D_{Maintenance}$	29.865	Table 2-9	$K_{es\ (ice)}$	1.000	Table S-1
Ice Dead, Grating	0.020876011	ksf			

Pipe Mounts (Orientation Drawn Top-Down)			
Risa 3D Label	Elevation (ft)	Length (in)	Diameter (in)
M2	101	108	2.875
M12	101	78	2.375

Appurtenances					
Model	Type	Height (in)	Width (in)	Depth (in)	Weight (lbs)
EMS Wireless RR90-17-00DP	Antenna	56	8	2.75	13.5
RFS APXVAARR24_43-U-NA20	Antenna	95.9	24	8.7	128
Ericsson Radio 4449 B12/B71	RRU, TMA, Etc.	14.95	13.19	9.25	75
Ericsson KRY 112 144/1	RRU, TMA, Etc.	7	6	3	11
Ericsson KRY 112 489/2	RRU, TMA, Etc.	11	6.1	3.94	15.4

Pipe Mount	Antenna	Elevation (ft)	Quantity	Orientation (deg)	Front Exposed (%)	Side Exposed (%)	Type	Height (in)	Width (in)	Depth (in)	Weight (lbs)	Front CaAa (ft^2)	Side CaAa (ft^2)	Front F_A (kips)	Side F_A (kips)	Top %	Bottom %
M2	RFS APXVAARR24_43-U-NA20	102	1	0	100.0%	100.0%	Antenna	95.900	24.000	8.700	128.000	20.243	8.889	0.665	0.292	0.0%	83.3%
M2	Ericsson Radio 4449 B12/B71	103	1	0	0.0%	100.0%	RRU, TMA, Etc.	14.950	13.190	9.250	75.000	1.643	1.152	0.000	0.038	20.9%	34.7%
M2																	
M2																	
M2																	
M2																	
M12	EMS Wireless RR90-17-00DP	102	1	90	100.0%	100.0%	Antenna	56.000	8.000	2.750	13.500	4.356	1.974	0.065	0.143	0.0%	70.5%
M12	Ericsson KRY 112 144/1	102	1	0	100.0%	100.0%	RRU, TMA, Etc.	7.000	6.000	3.000	11.000	0.350	0.175	0.012	0.006	30.1%	39.1%
M12	Ericsson KRY 112 489/2	102	1	0	100.0%	100.0%	RRU, TMA, Etc.	11.000	6.100	3.940	15.400	0.559	0.365	0.018	0.012	27.6%	41.7%
M12																	
M12																	
M12																	

Member	Section Set	Member Length (ft)	Flat/Round	Wind Projection (in)	D_c (in)	A_w (in^2)	C_f	Front Wind (klf)	Side Wind (klf)	Front Ice Wind (klf)	Side Ice Wind (klf)	Ice Dead (klf)	Front Maint Wind (klf)	Side Maint Wind (klf)
M1	Frame Rail	3.999999945	Round	2.380	2.380	32.441	1.200	0.007	0.001	0.004	0.003	0.013	0.000	0.000
M2	Mast Pipe	9	Round	2.880	2.880	35.954	1.200	0.009	0.009	0.004	0.004	0.014	0.001	0.001
M3	Mount Pipe	5	Round	0.500	0.500	19.230	1.200	0.002	0.002	0.003	0.003	0.007	0.000	0.000
M4	Frame Rail	3.999999945	Round	2.380	2.380	32.441	1.200	0.007	0.001	0.004	0.003	0.013	0.000	0.000
M5	RIGID	0.166666496	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000
M6	RIGID	0.250000853	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.005	0.005	0.006	0.000	0.000
M7	1/2" Threaded Rod	0.666666926	Round	0.500	0.500	19.230	1.200	0.000	0.001	0.000	0.001	0.007	0.000	0.000
M8	1/2" Threaded Rod	0.666666592	Round	0.500	0.500	19.230	1.200	0.000	0.001	0.000	0.001	0.007	0.000	0.000
M9	RIGID	0.25000052	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.005	0.005	0.006	0.000	0.000
M10	RIGID	0.249999577	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.005	0.005	0.006	0.000	0.000
M11	Mount Pipe	6.5	Round	0.500	0.500	19.230	1.200	0.002	0.002	0.003	0.003	0.007	0.000	0.000
M12	Mount Pipe	6.5	Round	0.500	0.500	19.230	1.200	0.002	0.002	0.003	0.003	0.007	0.000	0.000
M13	RIGID	0.250000853	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.005	0.005	0.006	0.000	0.000
M14	1/2" Threaded Rod	0.666666926	Round	0.500	0.500	19.230	1.200	0.000	0.001	0.000	0.001	0.007	0.000	0.000
M15	1/2" Threaded Rod	0.666666592	Round	0.500	0.500	19.230	1.200	0.000	0.001	0.000	0.001	0.007	0.000	0.000
M16	RIGID	0.25000052	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.005	0.005	0.006	0.000	0.000
M17	RIGID	0.249999577	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.005	0.005	0.006	0.000	0.000
M18	Stabilizer	9.927607183	Round	2.380	2.380	32.441	1.200	0.000	0.008	0.000	0.001	0.013	0.000	0.000
M19	RIGID	0.166666496	Flat	0.000	0.000	15.717	2.000	0.000	0.000	0.001	0.001	0.006	0.000	0.000

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI S100-12: LRFD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: ASD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mast Pipe	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
2	Frame Rail	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	Stabilizer	PIPE_2.0	HBrace	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
4	Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	1/2" Threa...	0.5" S.R.	Beam	BAR	A36 Gr.36	Typical	.196	.003	.003	.006

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	-55.484483	0	-80.473406	0	
2	N2	-51.713598	0	-81.807732	0	
3	N3	-53.52048	1.75	-81.168368	0	
4	N4	-53.52048	-7.25	-81.168368	0	
5	N5	-55.170242	1.041667	-80.5846	0	
6	N6	-55.170242	-3.958333	-80.5846	0	
7	N7	-55.484483	-3.5	-80.473406	0	
8	N8	-51.713598	-3.5	-81.807732	0	
9	N9	-52.184958	-3.5	-81.640941	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
10	N10	-52.240555	-3.5	-81.798061	0	
11	N11	-55.288083	0.541667	-80.542902	0	
12	N12	-55.052402	0.541667	-80.626298	0	
13	N13	-55.176889	0.541667	-80.228662	0	
14	N14	-54.941208	0.541667	-80.312057	0	
15	N15	-55.399276	0.541667	-80.857143	0	
16	N16	-55.163596	0.541667	-80.940538	0	
17	N17	-55.059049	2	-80.27036	0	
18	N18	-55.059049	-4.5	-80.27036	0	
19	N19	-55.281436	2	-80.898841	0	
20	N20	-55.281436	-4.5	-80.898841	0	
21	N21	-55.288083	-3.291667	-80.542902	0	
22	N22	-55.052402	-3.291667	-80.626298	0	
23	N23	-55.176889	-3.291667	-80.228662	0	
24	N24	-54.941208	-3.291667	-80.312057	0	
25	N25	-55.399276	-3.291667	-80.857143	0	
26	N26	-55.163596	-3.291667	-80.940538	0	
27	N27	-53.286447	0.	-91.001461	0	
28	N28	-52.184958	0	-81.640941	0	
29	N29	-52.240555	0	-81.798061	0	
30	N30	-53.75616	0	-81.084972	0	
31	N32	-53.52048	0	-81.168368	0	
32	N33	-55.170242	0	-80.5846	0	
33	N34	-53.52048	-3.5	-81.168368	0	
34	N35	-55.170242	-3.5	-80.5846	0	
35	N36	-55.170242	0.541667	-80.5846	0	
36	N37	-55.170242	-3.291667	-80.5846	0	
37	N38	-55.059049	0.541667	-80.27036	0	
38	N39	-55.281436	0.541667	-80.898841	0	
39	N40	-55.059049	-3.291667	-80.27036	0	
40	N41	-55.281436	-3.291667	-80.898841	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N29	Reaction	Reaction	Reaction	Reaction		Reaction
2	N10	Reaction	Reaction	Reaction	Reaction		Reaction
3	N27	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			Frame Rail	Beam	Pipe	A53 Gr.B	Typical
2	M2	N3	N4			Mast Pipe	Column	Pipe	A53 Gr.B	Typical
3	M3	N5	N6			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
4	M4	N7	N8			Frame Rail	Beam	Pipe	A53 Gr.B	Typical
5	M5	N9	N10			RIGID	None	None	RIGID	Typical
6	M6	N11	N12			RIGID	None	None	RIGID	Typical
7	M7	N16	N14			1/2" Threaded ...	Beam	BAR	A36 Gr.36	Typical
8	M8	N15	N13			1/2" Threaded ...	Beam	BAR	A36 Gr.36	Typical
9	M9	N13	N14			RIGID	None	None	RIGID	Typical
10	M10	N15	N16			RIGID	None	None	RIGID	Typical
11	M11	N17	N18			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
12	M12	N19	N20			Mount Pipe	Column	Pipe	A53 Gr.B	Typical
13	M13	N21	N22			RIGID	None	None	RIGID	Typical
14	M14	N26	N24			1/2" Threaded ...	Beam	BAR	A36 Gr.36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
15	M15	N25	N23			1/2" Threaded ...	Beam	BAR	A36 Gr.36	Typical
16	M16	N23	N24			RIGID	None	None	RIGID	Typical
17	M17	N25	N26			RIGID	None	None	RIGID	Typical
18	M18	N30	N27			Stabilizer	HBrace	Pipe	A53 Gr.B	Typical
19	M19	N28	N29			RIGID	None	None	RIGID	Typical

Joint Loads and Enforced Displacements (BLC 42 : Man 1 (500 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N34	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 43 : Man 2 (500 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N41	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 44 : Man 3 (500 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N40	L	Y	-.5

Joint Loads and Enforced Displacements (BLC 45 : Man 4 (250 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N8	L	Y	-.25

Joint Loads and Enforced Displacements (BLC 46 : Man 5 (250 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N7	L	Y	-.25

Joint Loads and Enforced Displacements (BLC 47 : Man 6 (250 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k,k-ft), (in,rad), (k*s^2/f...
1	N34	L	Y	-.25

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.128	%41.6
2	M2	Y	-.075	%27.8
3	M12	Y	-.014	%35.3
4	M12	Y	-.011	%34.6
5	M12	Y	-.015	%34.6

Member Point Loads (BLC 2 : Ice Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.606	%41.6
2	M2	Y	-.062	%27.8
3	M12	Y	-.136	%35.3
4	M12	Y	-.014	%34.6
5	M12	Y	-.024	%34.6

Member Point Loads (BLC 3 : Full Wind Antenna (0 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	-.333	0
2	M12	Z	-.032	0

Member Point Loads (BLC 3 : Full Wind Antenna (0 Deg)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
3	M12	Z	-.012	%34.6
4	M12	Z	-.018	%34.6
5	M2	Z	-.333	%83.3
6	M12	Z	-.032	%70.5

Member Point Loads (BLC 4 : Full Wind Antenna (30 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	-.248	0
2	M12	Z	-.037	0
3	M12	Z	-.009	%34.6
4	M12	Z	-.015	%34.6
5	M2	Z	-.248	%83.3
6	M12	Z	-.037	%70.5
7	M2	X	.143	0
8	M2	X	.005	%27.8
9	M12	X	.021	0
10	M12	X	.005	%34.6
11	M12	X	.008	%34.6
12	M2	X	.143	%83.3
13	M12	X	.021	%70.5

Member Point Loads (BLC 5 : Full Wind Antenna (60 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	-.096	0
2	M12	Z	-.031	0
3	M12	Z	-.004	%34.6
4	M12	Z	-.007	%34.6
5	M2	Z	-.096	%83.3
6	M12	Z	-.031	%70.5
7	M2	X	.167	0
8	M2	X	.025	%27.8
9	M12	X	.053	0
10	M12	X	.006	%34.6
11	M12	X	.012	%34.6
12	M2	X	.167	%83.3
13	M12	X	.053	%70.5

Member Point Loads (BLC 6 : Full Wind Antenna (90 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	0	0
2	M12	Z	0	0
3	M12	Z	0	%34.6
4	M12	Z	0	%34.6
5	M2	Z	0	%83.3
6	M12	Z	0	%70.5
7	M2	X	.146	0
8	M2	X	.038	%27.8
9	M12	X	.072	0
10	M12	X	.006	%34.6
11	M12	X	.012	%34.6
12	M2	X	.146	%83.3
13	M12	X	.072	%70.5

Member Point Loads (BLC 7 : Full Wind Antenna (120 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 7 : Full Wind Antenna (120 Deg)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	.096	0
2	M12	Z	.031	0
3	M12	Z	.004	%34.6
4	M12	Z	.007	%34.6
5	M2	Z	.096	%83.3
6	M12	Z	.031	%70.5
7	M2	X	.167	0
8	M2	X	.025	%27.8
9	M12	X	.053	0
10	M12	X	.006	%34.6
11	M12	X	.012	%34.6
12	M2	X	.167	%83.3
13	M12	X	.053	%70.5

Member Point Loads (BLC 8 : Full Wind Antenna (150 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	.248	0
2	M12	Z	.037	0
3	M12	Z	.009	%34.6
4	M12	Z	.015	%34.6
5	M2	Z	.248	%83.3
6	M12	Z	.037	%70.5
7	M2	X	.143	0
8	M2	X	.005	%27.8
9	M12	X	.021	0
10	M12	X	.005	%34.6
11	M12	X	.008	%34.6
12	M2	X	.143	%83.3
13	M12	X	.021	%70.5

Member Point Loads (BLC 15 : Ice Wind Antenna (0 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	-.065	0
2	M12	Z	-.012	0
3	M12	Z	-.005	%34.6
4	M12	Z	-.007	%34.6
5	M2	Z	-.065	%83.3
6	M12	Z	-.012	%70.5

Member Point Loads (BLC 16 : Ice Wind Antenna (30 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	-.05	0
2	M12	Z	-.011	0
3	M12	Z	-.004	%34.6
4	M12	Z	-.006	%34.6
5	M2	Z	-.05	%83.3
6	M12	Z	-.011	%70.5
7	M2	X	.029	0
8	M2	X	.001	%27.8
9	M12	X	.007	0
10	M12	X	.002	%34.6
11	M12	X	.003	%34.6
12	M2	X	.029	%83.3
13	M12	X	.007	%70.5

Member Point Loads (BLC 17 : Ice Wind Antenna (60 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	-.021	0
2	M12	Z	-.008	0
3	M12	Z	-.002	%34.6
4	M12	Z	-.003	%34.6
5	M2	Z	-.021	%83.3
6	M12	Z	-.008	%70.5
7	M2	X	.036	0
8	M2	X	.008	%27.8
9	M12	X	.014	0
10	M12	X	.004	%34.6
11	M12	X	.005	%34.6
12	M2	X	.036	%83.3
13	M12	X	.014	%70.5

Member Point Loads (BLC 18 : Ice Wind Antenna (90 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	0	0
2	M12	Z	0	0
3	M12	Z	0	%34.6
4	M12	Z	0	%34.6
5	M2	Z	0	%83.3
6	M12	Z	0	%70.5
7	M2	X	.034	0
8	M2	X	.012	%27.8
9	M12	X	.018	0
10	M12	X	.004	%34.6
11	M12	X	.006	%34.6
12	M2	X	.034	%83.3
13	M12	X	.018	%70.5

Member Point Loads (BLC 19 : Ice Wind Antenna (120 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	.021	0
2	M12	Z	.008	0
3	M12	Z	.002	%34.6
4	M12	Z	.003	%34.6
5	M2	Z	.021	%83.3
6	M12	Z	.008	%70.5
7	M2	X	.036	0
8	M2	X	.008	%27.8
9	M12	X	.014	0
10	M12	X	.004	%34.6
11	M12	X	.005	%34.6
12	M2	X	.036	%83.3
13	M12	X	.014	%70.5

Member Point Loads (BLC 20 : Ice Wind Antenna (150 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	.05	0
2	M12	Z	.008	0
3	M12	Z	.002	%34.6
4	M12	Z	.003	%34.6
5	M2	Z	.05	%83.3
6	M12	Z	.008	%70.5
7	M2	X	.029	0

Member Point Loads (BLC 20 : Ice Wind Antenna (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
8	M2	X	.008	%27.8
9	M12	X	.014	0
10	M12	X	.004	%34.6
11	M12	X	.005	%34.6
12	M2	X	.029	%83.3
13	M12	X	.014	%70.5

Member Point Loads (BLC 27 : Seismic Antenna (0 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Z	-.012	%41.6
2	M2	Z	-.007	%27.8
3	M12	Z	-.001	%35.3
4	M12	Z	-.001	%34.6
5	M12	Z	-.001	%34.6

Member Point Loads (BLC 28 : Seismic Antenna (90 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	X	.012	%41.6
2	M2	X	.007	%27.8
3	M12	X	.001	%35.3
4	M12	X	.001	%34.6
5	M12	X	.001	%34.6

Member Point Loads (BLC 41 : Seismic Vertical Antennas)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M2	Y	-.026	%41.6
2	M2	Y	-.015	%27.8
3	M12	Y	-.003	%35.3
4	M12	Y	-.002	%34.6
5	M12	Y	-.003	%34.6

Member Distributed Loads (BLC 2 : Ice Dead)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-.013	-.013	0	%100
2	M2	Y	-.014	-.014	0	%100
3	M3	Y	-.007	-.007	0	%100
4	M4	Y	-.013	-.013	0	%100
5	M5	Y	-.006	-.006	0	%100
6	M6	Y	-.006	-.006	0	%100
7	M7	Y	-.007	-.007	0	%100
8	M8	Y	-.007	-.007	0	%100
9	M9	Y	-.006	-.006	0	%100
10	M10	Y	-.006	-.006	0	%100
11	M11	Y	-.007	-.007	0	%100
12	M12	Y	-.007	-.007	0	%100
13	M13	Y	-.006	-.006	0	%100
14	M14	Y	-.007	-.007	0	%100
15	M15	Y	-.007	-.007	0	%100
16	M16	Y	-.006	-.006	0	%100
17	M17	Y	-.006	-.006	0	%100
18	M18	Y	-.013	-.013	0	%100
19	M19	Y	-.006	-.006	0	%100

Member Distributed Loads (BLC 9 : Full Wind Members (0 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.007	-.007	0	%100
2	M3	Z	-.002	-.002	0	%100
3	M4	Z	-.007	-.007	0	%100
4	M7	Z	0	0	0	%100
5	M8	Z	0	0	0	%100
6	M11	Z	-.002	-.002	0	%100
7	M12	Z	-.002	-.002	0	%100
8	M14	Z	0	0	0	%100
9	M15	Z	0	0	0	%100
10	M18	Z	0	0	0	%100
11	M2	Z	-.009	-.009	%83.3	%100
12	M1	X	0	0	0	%100
13	M2	X	0	0	0	%100
14	M3	X	0	0	0	%100
15	M4	X	0	0	0	%100
16	M7	X	0	0	0	%100
17	M8	X	0	0	0	%100
18	M11	X	0	0	0	%100
19	M14	X	0	0	0	%100
20	M15	X	0	0	0	%100
21	M18	X	0	0	0	%100
22	M12	X	0	0	%70.5	%100

Member Distributed Loads (BLC 10 : Full Wind Members (30 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.003	-.003	0	%100
2	M3	Z	-.001	-.001	0	%100
3	M4	Z	-.003	-.003	0	%100
4	M7	Z	-.001	-.001	0	%100
5	M8	Z	-.001	-.001	0	%100
6	M11	Z	-.001	-.001	0	%100
7	M12	Z	-.001	-.001	0	%100
8	M14	Z	-.001	-.001	0	%100
9	M15	Z	-.001	-.001	0	%100
10	M18	Z	-.001	-.001	0	%100
11	M2	Z	-.008	-.008	%83.3	%100
12	M1	X	.002	.002	0	%100
13	M2	X	.005	.005	0	%100
14	M3	X	.001	.001	0	%100
15	M4	X	.002	.002	0	%100
16	M7	X	0	0	0	%100
17	M8	X	0	0	0	%100
18	M11	X	.001	.001	0	%100
19	M14	X	0	0	0	%100
20	M15	X	0	0	0	%100
21	M18	X	.001	.001	0	%100
22	M12	X	.001	.001	%70.5	%100

Member Distributed Loads (BLC 11 : Full Wind Members (60 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	0	0	0	%100
2	M3	Z	-.001	-.001	0	%100
3	M4	Z	0	0	0	%100
4	M7	Z	-.001	-.001	0	%100
5	M8	Z	-.001	-.001	0	%100
6	M11	Z	-.001	-.001	0	%100

Member Distributed Loads (BLC 11 : Full Wind Members (60 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
7	M12	Z	-.001	-.001	0	%100
8	M14	Z	-.001	-.001	0	%100
9	M15	Z	-.001	-.001	0	%100
10	M18	Z	-.003	-.003	0	%100
11	M2	Z	-.005	-.005	%83.3	%100
12	M1	X	0	0	0	%100
13	M2	X	.008	.008	0	%100
14	M3	X	.001	.001	0	%100
15	M4	X	0	0	0	%100
16	M7	X	.001	.001	0	%100
17	M8	X	.001	.001	0	%100
18	M11	X	.001	.001	0	%100
19	M14	X	.001	.001	0	%100
20	M15	X	.001	.001	0	%100
21	M18	X	.005	.005	0	%100
22	M12	X	.001	.001	%70.5	%100

Member Distributed Loads (BLC 12 : Full Wind Members (90 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	0	0	0	%100
2	M3	Z	0	0	0	%100
3	M4	Z	0	0	0	%100
4	M7	Z	0	0	0	%100
5	M8	Z	0	0	0	%100
6	M11	Z	0	0	0	%100
7	M12	Z	0	0	0	%100
8	M14	Z	0	0	0	%100
9	M15	Z	0	0	0	%100
10	M18	Z	0	0	0	%100
11	M2	Z	0	0	%83.3	%100
12	M1	X	.001	.001	0	%100
13	M2	X	.009	.009	0	%100
14	M3	X	.002	.002	0	%100
15	M4	X	.001	.001	0	%100
16	M7	X	.001	.001	0	%100
17	M8	X	.001	.001	0	%100
18	M11	X	.002	.002	0	%100
19	M14	X	.001	.001	0	%100
20	M15	X	.001	.001	0	%100
21	M18	X	.008	.008	0	%100
22	M12	X	.002	.002	%70.5	%100

Member Distributed Loads (BLC 13 : Full Wind Members (120 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.002	.002	0	%100
2	M3	Z	.001	.001	0	%100
3	M4	Z	.002	.002	0	%100
4	M7	Z	0	0	0	%100
5	M8	Z	0	0	0	%100
6	M11	Z	.001	.001	0	%100
7	M12	Z	.001	.001	0	%100
8	M14	Z	0	0	0	%100
9	M15	Z	0	0	0	%100
10	M18	Z	.003	.003	0	%100
11	M2	Z	.005	.005	%83.3	%100
12	M1	X	.004	.004	0	%100

Member Distributed Loads (BLC 13 : Full Wind Members (120 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
13	M2	X	.008	.008	0	%100
14	M3	X	.001	.001	0	%100
15	M4	X	.004	.004	0	%100
16	M7	X	.001	.001	0	%100
17	M8	X	.001	.001	0	%100
18	M11	X	.001	.001	0	%100
19	M14	X	.001	.001	0	%100
20	M15	X	.001	.001	0	%100
21	M18	X	.005	.005	0	%100
22	M12	X	.001	.001	%70.5	%100

Member Distributed Loads (BLC 14 : Full Wind Members (150 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.007	.007	0	%100
2	M3	Z	.001	.001	0	%100
3	M4	Z	.007	.007	0	%100
4	M7	Z	0	0	0	%100
5	M8	Z	0	0	0	%100
6	M11	Z	.001	.001	0	%100
7	M12	Z	.001	.001	0	%100
8	M14	Z	0	0	0	%100
9	M15	Z	0	0	0	%100
10	M18	Z	.002	.002	0	%100
11	M2	Z	.008	.008	%83.3	%100
12	M1	X	.004	.004	0	%100
13	M2	X	.005	.005	0	%100
14	M3	X	.001	.001	0	%100
15	M4	X	.004	.004	0	%100
16	M7	X	0	0	0	%100
17	M8	X	0	0	0	%100
18	M11	X	.001	.001	0	%100
19	M14	X	0	0	0	%100
20	M15	X	0	0	0	%100
21	M18	X	.001	.001	0	%100
22	M12	X	.001	.001	%70.5	%100

Member Distributed Loads (BLC 21 : Ice Wind Members (0 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.004	-.004	0	%100
2	M3	Z	-.003	-.003	0	%100
3	M4	Z	-.004	-.004	0	%100
4	M5	Z	-.001	-.001	0	%100
5	M6	Z	-.005	-.005	0	%100
6	M7	Z	0	0	0	%100
7	M8	Z	0	0	0	%100
8	M9	Z	-.005	-.005	0	%100
9	M10	Z	-.005	-.005	0	%100
10	M11	Z	-.003	-.003	0	%100
11	M12	Z	-.003	-.003	0	%100
12	M13	Z	-.005	-.005	0	%100
13	M14	Z	0	0	0	%100
14	M15	Z	0	0	0	%100
15	M16	Z	-.005	-.005	0	%100
16	M17	Z	-.005	-.005	0	%100
17	M18	Z	0	0	0	%100
18	M19	Z	-.001	-.001	0	%100

Member Distributed Loads (BLC 21 : Ice Wind Members (0 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
19	M2	Z	-.004	-.004	%83.3	%100
20	M1	X	0	0	0	%100
21	M2	X	0	0	0	%100
22	M3	X	0	0	0	%100
23	M4	X	0	0	0	%100
24	M5	X	0	0	0	%100
25	M6	X	0	0	0	%100
26	M7	X	0	0	0	%100
27	M8	X	0	0	0	%100
28	M9	X	0	0	0	%100
29	M10	X	0	0	0	%100
30	M11	X	0	0	0	%100
31	M13	X	0	0	0	%100
32	M14	X	0	0	0	%100
33	M15	X	0	0	0	%100
34	M16	X	0	0	0	%100
35	M17	X	0	0	0	%100
36	M18	X	0	0	0	%100
37	M19	X	0	0	0	%100
38	M12	X	0	0	%70.5	%100

Member Distributed Loads (BLC 22 : Ice Wind Members (30 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.003	-.003	0	%100
2	M3	Z	-.003	-.003	0	%100
3	M4	Z	-.003	-.003	0	%100
4	M5	Z	-.001	-.001	0	%100
5	M6	Z	-.005	-.005	0	%100
6	M7	Z	-.001	-.001	0	%100
7	M8	Z	-.001	-.001	0	%100
8	M9	Z	-.005	-.005	0	%100
9	M10	Z	-.005	-.005	0	%100
10	M11	Z	-.003	-.003	0	%100
11	M12	Z	-.003	-.003	0	%100
12	M13	Z	-.005	-.005	0	%100
13	M14	Z	-.001	-.001	0	%100
14	M15	Z	-.001	-.001	0	%100
15	M16	Z	-.005	-.005	0	%100
16	M17	Z	-.005	-.005	0	%100
17	M18	Z	0	0	0	%100
18	M19	Z	-.001	-.001	0	%100
19	M2	Z	-.004	-.004	%83.3	%100
20	M1	X	.001	.001	0	%100
21	M2	X	.002	.002	0	%100
22	M3	X	.002	.002	0	%100
23	M4	X	.001	.001	0	%100
24	M5	X	0	0	0	%100
25	M6	X	.003	.003	0	%100
26	M7	X	0	0	0	%100
27	M8	X	0	0	0	%100
28	M9	X	.003	.003	0	%100
29	M10	X	.003	.003	0	%100
30	M11	X	.001	.001	0	%100
31	M13	X	.003	.003	0	%100
32	M14	X	0	0	0	%100
33	M15	X	0	0	0	%100

Member Distributed Loads (BLC 22 : Ice Wind Members (30 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
34	M16	X	.003	.003	0	%100
35	M17	X	.003	.003	0	%100
36	M18	X	0	0	0	%100
37	M19	X	0	0	0	%100
38	M12	X	.001	.001	%70.5	%100

Member Distributed Loads (BLC 23 : Ice Wind Members (60 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	-.001	-.001	0	%100
2	M3	Z	-.002	-.002	0	%100
3	M4	Z	-.001	-.001	0	%100
4	M5	Z	0	0	0	%100
5	M6	Z	-.003	-.003	0	%100
6	M7	Z	0	0	0	%100
7	M8	Z	0	0	0	%100
8	M9	Z	-.003	-.003	0	%100
9	M10	Z	-.003	-.003	0	%100
10	M11	Z	-.001	-.001	0	%100
11	M12	Z	-.001	-.001	0	%100
12	M13	Z	-.003	-.003	0	%100
13	M14	Z	0	0	0	%100
14	M15	Z	0	0	0	%100
15	M16	Z	-.003	-.003	0	%100
16	M17	Z	-.003	-.003	0	%100
17	M18	Z	0	0	0	%100
18	M19	Z	0	0	0	%100
19	M2	Z	-.002	-.002	%83.3	%100
20	M1	X	.002	.002	0	%100
21	M2	X	.004	.004	0	%100
22	M3	X	.003	.003	0	%100
23	M4	X	.002	.002	0	%100
24	M5	X	.001	.001	0	%100
25	M6	X	.005	.005	0	%100
26	M7	X	.001	.001	0	%100
27	M8	X	.001	.001	0	%100
28	M9	X	.005	.005	0	%100
29	M10	X	.005	.005	0	%100
30	M11	X	.003	.003	0	%100
31	M13	X	.005	.005	0	%100
32	M14	X	.001	.001	0	%100
33	M15	X	.001	.001	0	%100
34	M16	X	.005	.005	0	%100
35	M17	X	.005	.005	0	%100
36	M18	X	.001	.001	0	%100
37	M19	X	.001	.001	0	%100
38	M12	X	.003	.003	%70.5	%100

Member Distributed Loads (BLC 24 : Ice Wind Members (90 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	0	0	0	%100
2	M3	Z	0	0	0	%100
3	M4	Z	0	0	0	%100
4	M5	Z	0	0	0	%100
5	M6	Z	0	0	0	%100
6	M7	Z	0	0	0	%100
7	M8	Z	0	0	0	%100

Member Distributed Loads (BLC 24 : Ice Wind Members (90 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
8	M9	Z	0	0	0	%100
9	M10	Z	0	0	0	%100
10	M11	Z	0	0	0	%100
11	M12	Z	0	0	0	%100
12	M13	Z	0	0	0	%100
13	M14	Z	0	0	0	%100
14	M15	Z	0	0	0	%100
15	M16	Z	0	0	0	%100
16	M17	Z	0	0	0	%100
17	M18	Z	0	0	0	%100
18	M19	Z	0	0	0	%100
19	M2	Z	0	0	%83.3	%100
20	M1	X	.003	.003	0	%100
21	M2	X	.004	.004	0	%100
22	M3	X	.003	.003	0	%100
23	M4	X	.003	.003	0	%100
24	M5	X	.001	.001	0	%100
25	M6	X	.005	.005	0	%100
26	M7	X	.001	.001	0	%100
27	M8	X	.001	.001	0	%100
28	M9	X	.005	.005	0	%100
29	M10	X	.005	.005	0	%100
30	M11	X	.003	.003	0	%100
31	M13	X	.005	.005	0	%100
32	M14	X	.001	.001	0	%100
33	M15	X	.001	.001	0	%100
34	M16	X	.005	.005	0	%100
35	M17	X	.005	.005	0	%100
36	M18	X	.001	.001	0	%100
37	M19	X	.001	.001	0	%100
38	M12	X	.003	.003	%70.5	%100

Member Distributed Loads (BLC 25 : Ice Wind Members (120 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.002	.002	0	%100
2	M3	Z	.002	.002	0	%100
3	M4	Z	.002	.002	0	%100
4	M5	Z	0	0	0	%100
5	M6	Z	.003	.003	0	%100
6	M7	Z	0	0	0	%100
7	M8	Z	0	0	0	%100
8	M9	Z	.003	.003	0	%100
9	M10	Z	.003	.003	0	%100
10	M11	Z	.001	.001	0	%100
11	M12	Z	.001	.001	0	%100
12	M13	Z	.003	.003	0	%100
13	M14	Z	0	0	0	%100
14	M15	Z	0	0	0	%100
15	M16	Z	.003	.003	0	%100
16	M17	Z	.003	.003	0	%100
17	M18	Z	0	0	0	%100
18	M19	Z	0	0	0	%100
19	M2	Z	.002	.002	%83.3	%100
20	M1	X	.003	.003	0	%100
21	M2	X	.004	.004	0	%100
22	M3	X	.003	.003	0	%100

Member Distributed Loads (BLC 25 : Ice Wind Members (120 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
23	M4	X	.003	.003	0	%100
24	M5	X	.001	.001	0	%100
25	M6	X	.005	.005	0	%100
26	M7	X	0	0	0	%100
27	M8	X	0	0	0	%100
28	M9	X	.005	.005	0	%100
29	M10	X	.005	.005	0	%100
30	M11	X	.003	.003	0	%100
31	M13	X	.005	.005	0	%100
32	M14	X	0	0	0	%100
33	M15	X	0	0	0	%100
34	M16	X	.005	.005	0	%100
35	M17	X	.005	.005	0	%100
36	M18	X	.001	.001	0	%100
37	M19	X	.001	.001	0	%100
38	M12	X	.003	.003	%70.5	%100

Member Distributed Loads (BLC 26 : Ice Wind Members (150 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Z	.003	.003	0	%100
2	M3	Z	.003	.003	0	%100
3	M4	Z	.003	.003	0	%100
4	M5	Z	.001	.001	0	%100
5	M6	Z	.005	.005	0	%100
6	M7	Z	0	0	0	%100
7	M8	Z	0	0	0	%100
8	M9	Z	.005	.005	0	%100
9	M10	Z	.005	.005	0	%100
10	M11	Z	.003	.003	0	%100
11	M12	Z	.003	.003	0	%100
12	M13	Z	.005	.005	0	%100
13	M14	Z	0	0	0	%100
14	M15	Z	0	0	0	%100
15	M16	Z	.005	.005	0	%100
16	M17	Z	.005	.005	0	%100
17	M18	Z	0	0	0	%100
18	M19	Z	.001	.001	0	%100
19	M2	Z	.004	.004	%83.3	%100
20	M1	X	.002	.002	0	%100
21	M2	X	.002	.002	0	%100
22	M3	X	.002	.002	0	%100
23	M4	X	.002	.002	0	%100
24	M5	X	0	0	0	%100
25	M6	X	.003	.003	0	%100
26	M7	X	0	0	0	%100
27	M8	X	0	0	0	%100
28	M9	X	.003	.003	0	%100
29	M10	X	.003	.003	0	%100
30	M11	X	.001	.001	0	%100
31	M13	X	.003	.003	0	%100
32	M14	X	0	0	0	%100
33	M15	X	0	0	0	%100
34	M16	X	.003	.003	0	%100
35	M17	X	.003	.003	0	%100
36	M18	X	0	0	0	%100
37	M19	X	0	0	0	%100

Member Distributed Loads (BLC 26 : Ice Wind Members (150 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
38	M12	X	.001	.001	%70.5	%100

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead	None		-1			5			
2	Ice Dead	None					5	19		
3	Full Wind Antenna (0 Deg)	None					6			
4	Full Wind Antenna (30 Deg)	None					13			
5	Full Wind Antenna (60 Deg)	None					13			
6	Full Wind Antenna (90 Deg)	None					13			
7	Full Wind Antenna (120 Deg)	None					13			
8	Full Wind Antenna (150 Deg)	None					13			
9	Full Wind Members (0 Deg)	None						22		
10	Full Wind Members (30 Deg)	None						22		
11	Full Wind Members (60 Deg)	None						22		
12	Full Wind Members (90 Deg)	None						22		
13	Full Wind Members (120 Deg)	None						22		
14	Full Wind Members (150 Deg)	None						22		
15	Ice Wind Antenna (0 Deg)	None					6			
16	Ice Wind Antenna (30 Deg)	None					13			
17	Ice Wind Antenna (60 Deg)	None					13			
18	Ice Wind Antenna (90 Deg)	None					13			
19	Ice Wind Antenna (120 Deg)	None					13			
20	Ice Wind Antenna (150 Deg)	None					13			
21	Ice Wind Members (0 Deg)	None						38		
22	Ice Wind Members (30 Deg)	None						38		
23	Ice Wind Members (60 Deg)	None						38		
24	Ice Wind Members (90 Deg)	None						38		
25	Ice Wind Members (120 Deg)	None						38		
26	Ice Wind Members (150 Deg)	None						38		
27	Seismic Antenna (0 Deg)	None					5			
28	Seismic Antenna (90 Deg)	None					5			
29	Seismic Members (0 Deg)	None		-.037	-.092					
30	Seismic Members (30 Deg)	None	.046	-.037	-.08					
31	Seismic Members (60 Deg)	None	.08	-.037	-.046					
32	Seismic Members (90 Deg)	None	.092	-.037	-5.666e-...					
33	Seismic Members (120 Deg)	None	.08	-.037	.046					
34	Seismic Members (150 Deg)	None	.046	-.037	.08					
35	Seismic Members (180 Deg)	None	1.133e-17	-.037	.092					
36	Seismic Members (210 Deg)	None	-.046	-.037	.08					
37	Seismic Members (240 Deg)	None	-.08	-.037	.046					
38	Seismic Members (270 Deg)	None	-.092	-.037	1.7e-17					
39	Seismic Members (300 Deg)	None	-.08	-.037	-.046					
40	Seismic Members (330 Deg)	None	-.046	-.037	-.08					
41	Seismic Vertical Antennas	None					5			
42	Man 1 (500 lbs)	None				1				
43	Man 2 (500 lbs)	None				1				
44	Man 3 (500 lbs)	None				1				
45	Man 4 (250 lbs)	None				1				
46	Man 5 (250 lbs)	None				1				
47	Man 6 (250 lbs)	None				1				

Load Combinations

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.4D	Yes	Y		1	1.4																				
2	1.2D + 1.0..	Yes	Y		1	1.2	3	1	9	1																
3	1.2D + 1.0..	Yes	Y		1	1.2	4	1	10	1																
4	1.2D + 1.0..	Yes	Y		1	1.2	5	1	11	1																
5	1.2D + 1.0..	Yes	Y		1	1.2	6	1	12	1																
6	1.2D + 1.0..	Yes	Y		1	1.2	7	1	13	1																
7	1.2D + 1.0..	Yes	Y		1	1.2	8	1	14	1																
8	1.2D + 1.0..	Yes	Y		1	1.2	3	-1	9	-1																
9	1.2D + 1.0..	Yes	Y		1	1.2	4	-1	10	-1																
10	1.2D + 1.0..	Yes	Y		1	1.2	5	-1	11	-1																
11	1.2D + 1.0..	Yes	Y		1	1.2	6	-1	12	-1																
12	1.2D + 1.0..	Yes	Y		1	1.2	7	-1	13	-1																
13	1.2D + 1.0..	Yes	Y		1	1.2	8	-1	14	-1																
14	1.2D + 1.0..	Yes	Y		1	1.2	2	1	15	1	21	1														
15	1.2D + 1.0..	Yes	Y		1	1.2	2	1	16	1	22	1														
16	1.2D + 1.0..	Yes	Y		1	1.2	2	1	17	1	23	1														
17	1.2D + 1.0..	Yes	Y		1	1.2	2	1	18	1	24	1														
18	1.2D + 1.0..	Yes	Y		1	1.2	2	1	19	1	25	1														
19	1.2D + 1.0..	Yes	Y		1	1.2	2	1	20	1	26	1														
20	1.2D + 1.0..	Yes	Y		1	1.2	2	1	15	-1	21	-1														
21	1.2D + 1.0..	Yes	Y		1	1.2	2	1	16	-1	22	-1														
22	1.2D + 1.0..	Yes	Y		1	1.2	2	1	17	-1	23	-1														
23	1.2D + 1.0..	Yes	Y		1	1.2	2	1	18	-1	24	-1														
24	1.2D + 1.0..	Yes	Y		1	1.2	2	1	19	-1	25	-1														
25	1.2D + 1.0..	Yes	Y		1	1.2	2	1	20	-1	26	-1														
26	1.2D + 1.5..	Yes	Y		1	1.2	3	.059	9	.059	42	1.5														
27	1.2D + 1.5..	Yes	Y		1	1.2	4	.059	10	.059	42	1.5														
28	1.2D + 1.5..	Yes	Y		1	1.2	5	.059	11	.059	42	1.5														
29	1.2D + 1.5..	Yes	Y		1	1.2	6	.059	12	.059	42	1.5														
30	1.2D + 1.5..	Yes	Y		1	1.2	7	.059	13	.059	42	1.5														
31	1.2D + 1.5..	Yes	Y		1	1.2	8	.059	14	.059	42	1.5														
32	1.2D + 1.5..	Yes	Y		1	1.2	3	-.059	9	-.059	42	1.5														
33	1.2D + 1.5..	Yes	Y		1	1.2	4	-.059	10	-.059	42	1.5														
34	1.2D + 1.5..	Yes	Y		1	1.2	5	-.059	11	-.059	42	1.5														
35	1.2D + 1.5..	Yes	Y		1	1.2	6	-.059	12	-.059	42	1.5														
36	1.2D + 1.5..	Yes	Y		1	1.2	7	-.059	13	-.059	42	1.5														
37	1.2D + 1.5..	Yes	Y		1	1.2	8	-.059	14	-.059	42	1.5														
38	1.2D + 1.5..	Yes	Y		1	1.2	3	.059	9	.059	43	1.5														
39	1.2D + 1.5..	Yes	Y		1	1.2	4	.059	10	.059	43	1.5														
40	1.2D + 1.5..	Yes	Y		1	1.2	5	.059	11	.059	43	1.5														
41	1.2D + 1.5..	Yes	Y		1	1.2	6	.059	12	.059	43	1.5														
42	1.2D + 1.5..	Yes	Y		1	1.2	7	.059	13	.059	43	1.5														
43	1.2D + 1.5..	Yes	Y		1	1.2	8	.059	14	.059	43	1.5														
44	1.2D + 1.5..	Yes	Y		1	1.2	3	-.059	9	-.059	43	1.5														
45	1.2D + 1.5..	Yes	Y		1	1.2	4	-.059	10	-.059	43	1.5														
46	1.2D + 1.5..	Yes	Y		1	1.2	5	-.059	11	-.059	43	1.5														
47	1.2D + 1.5..	Yes	Y		1	1.2	6	-.059	12	-.059	43	1.5														
48	1.2D + 1.5..	Yes	Y		1	1.2	7	-.059	13	-.059	43	1.5														
49	1.2D + 1.5..	Yes	Y		1	1.2	8	-.059	14	-.059	43	1.5														
50	1.2D + 1.5..	Yes	Y		1	1.2	3	.059	9	.059	44	1.5														
51	1.2D + 1.5..	Yes	Y		1	1.2	4	.059	10	.059	44	1.5														
52	1.2D + 1.5..	Yes	Y		1	1.2	5	.059	11	.059	44	1.5														
53	1.2D + 1.5..	Yes	Y		1	1.2	6	.059	12	.059	44	1.5														
54	1.2D + 1.5..	Yes	Y		1	1.2	7	.059	13	.059	44	1.5														
55	1.2D + 1.5..	Yes	Y		1	1.2	8	.059	14	.059	44	1.5														
56	1.2D + 1.5..	Yes	Y		1	1.2	3	-.059	9	-.059	44	1.5														

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
57	1.2D + 1.5..	Yes	Y		1	1.2	4	-.059	10	-.059	44	1.5												
58	1.2D + 1.5..	Yes	Y		1	1.2	5	-.059	11	-.059	44	1.5												
59	1.2D + 1.5..	Yes	Y		1	1.2	6	-.059	12	-.059	44	1.5												
60	1.2D + 1.5..	Yes	Y		1	1.2	7	-.059	13	-.059	44	1.5												
61	1.2D + 1.5..	Yes	Y		1	1.2	8	-.059	14	-.059	44	1.5												
62	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
63	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
64	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
65	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
66	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
67	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
68	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
69	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
70	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
71	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
72	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
73	1.2D + 1.5..	Yes	Y		1	1.2	45	1.5																
74	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
75	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
76	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
77	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
78	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
79	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
80	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
81	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
82	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
83	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
84	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
85	1.2D + 1.5..	Yes	Y		1	1.2	46	1.5																
86	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
87	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
88	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
89	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
90	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
91	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
92	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
93	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
94	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
95	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
96	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
97	1.2D + 1.5..	Yes	Y		1	1.2	47	1.5																
98	1.2D + 1.0..	Yes	Y		1	1.2	27	1	28		29	1	40	1										
99	1.2D + 1.0..	Yes	Y		1	1.2	27	.866	28	.5	30	1	40	1										
100	1.2D + 1.0..	Yes	Y		1	1.2	27	.5	28	.866	31	1	40	1										
101	1.2D + 1.0..	Yes	Y		1	1.2	27		28	1	32	1	40	1										
102	1.2D + 1.0..	Yes	Y		1	1.2	27	-.5	28	.866	33	1	40	1										
103	1.2D + 1.0..	Yes	Y		1	1.2	27	-.866	28	.5	34	1	40	1										
104	1.2D + 1.0..	Yes	Y		1	1.2	27	-1	28		35	1	40	1										
105	1.2D + 1.0..	Yes	Y		1	1.2	27	-.866	28	-.5	36	1	40	1										
106	1.2D + 1.0..	Yes	Y		1	1.2	27	-.5	28	-.866	37	1	40	1										
107	1.2D + 1.0..	Yes	Y		1	1.2	27		28	-1	38	1	40	1										
108	1.2D + 1.0..	Yes	Y		1	1.2	27	.5	28	-.866	39	1	40	1										
109	1.2D + 1.0..	Yes	Y		1	1.2	27	.866	28	-.5	40	1	40	1										

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N29	max	.643	24	.929	15	.434	7	-.022	9	0	109	-.097	12
2		min	-.282	6	.029	9	-.534	13	-.378	14	0	1	-.708	18
3	N10	max	.137	10	.934	21	.386	2	.291	7	0	109	.019	2
4		min	-.596	16	.031	3	-.286	8	-.478	13	0	1	-.733	20
5	N27	max	.043	8	.085	19	.952	13	0	109	0	109	0	109
6		min	-.043	2	.021	13	-.954	7	0	1	0	1	0	1
7	Totals:	max	.69	11	1.859	25	.866	2						
8		min	-.69	5	.503	7	-.866	8						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M1	PIPE_2.0	.420	3.5	16	.161	1.833		8	26.521	32.13	1.872	1.872	2....	H1-1b
2	M2	PIPE_2.5	.228	5.25	8	.129	5.25		8	26.137	50.715	3.596	3.596	2....	H1-1b
3	M3	PIPE_2.0	.208	4.531	46	.064	4.531		43	23.809	32.13	1.872	1.872	1....	H1-1b
4	M4	PIPE_2.0	.426	3.5	21	.307	3.5		8	26.521	32.13	1.872	1.872	2....	H1-1b
5	M7	0.5" S.R.	.751	.333	43	.142	.333		41	5.096	6.35	.052	.052	1....	H1-1b
6	M8	0.5" S.R.	.541	.333	44	.119	.333		41	5.096	6.35	.052	.052	1....	H1-1b
7	M11	PIPE_2.0	.041	5.281	55	.012	5.281		43	19.36	32.13	1.872	1.872	1....	H1-1b
8	M12	PIPE_2.0	.055	1.422	11	.015	5.281		43	19.36	32.13	1.872	1.872	1....	H1-1b
9	M14	0.5" S.R.	.798	.333	49	.126	.333		48	5.096	6.35	.052	.052	1....	H1-1b
10	M15	0.5" S.R.	.650	.333	38	.110	.333		49	5.096	6.35	.052	.052	1....	H1-1b
11	M18	PIPE_2.0	.131	4.964	25	.009	9.928		24	9.981	32.13	1.872	1.872	1....	H1-1b

APPENDIX D

ADDITIONAL CALCULATIONS

Input Connection Info. For Each Boundary Conditions							
Joint Label	Bolt Qty.	Bolt Axis	Bolt Orientation	Diameter (in.)	Bolt Type	Horizontal Spacing	Vertical Spacing
N29	2	Horizontal	0	0.5	U-Bolt	3	5
N10	2	Horizontal	0	0.5	U-Bolt	3	5
N27	2	Horizontal	90	0.5	U-Bolt	3	5

Bolt Types			
Bolt Type	Fu (ksi)	Fnt (ksi)	Fnv (ksi)
A325N	120	90	54
A325X	120	90	68
A490N	150	113	68
A490X	150	113	85
U-Bolt	58	44	27
Threaded Rod	58	44	27
OTHER	0	0	0

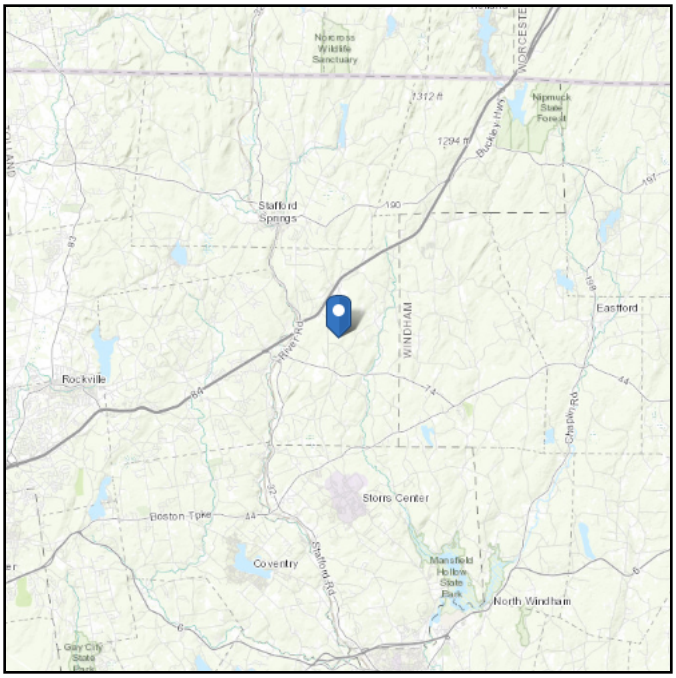
Results	
Limit State	Capacity (%)
Shear	25.4%
Tension	8.5%
Combined	6.6%

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 933.47 ft (NAVD 88)
Latitude: 41.892478
Longitude: -72.260597



Wind

Results:

Wind Speed:	125 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	95 Vmph
100-year MRI	102 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Fri May 17 2019

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

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

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

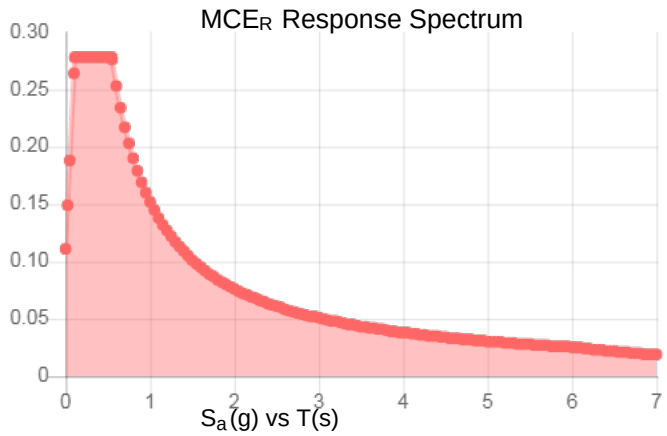
Seismic

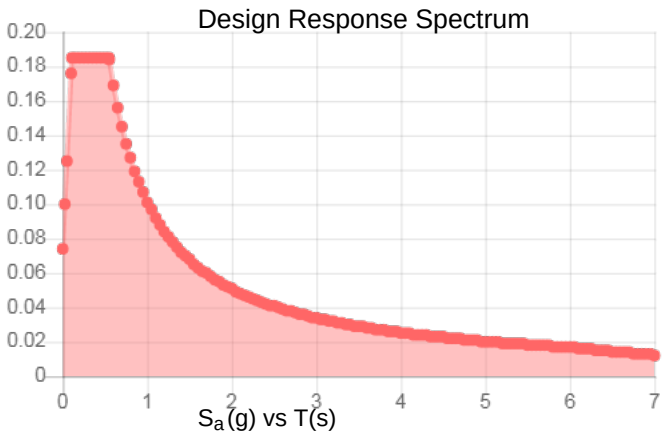
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.174	S_{DS} :	0.185
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.086
S_{MS} :	0.278	PGA_M :	0.138
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Fri May 17 2019

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri May 17 2019

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

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

Exhibit F

Power Density/RF Emissions Report

Transcom Engineering, Inc.
Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11142A

Willington/ Rt-320/Cosg_1
56 Cosgrove Road
Willington, CT 06279

May 31, 2019

Transcom Engineering Project Number: 737001-0106

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**13.62 %**

Transcom Engineering, Inc.
Wireless Network Design and Deployment

May 31, 2019

T-MOBILE
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CT11142A – Willington/ Rt-320/Cosg_1**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **56 Cosgrove Road, Willington, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **56 Cosgrove Road, Willington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	2	60
GSM	1900 MHz (PCS)	1	15
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAARR24_43-U-NA20	102
A	2	EMS RR90-17-XXDP (Dormant)	102
B	1	RFS APXVAARR24_43-U-NA20	102
B	2	EMS RR90-17-XXDP (Dormant)	102
C	1	RFS APXVAARR24_43-U-NA20	102
C	2	EMS RR90-17-XXDP (Dormant)	102

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz (PCS) & 2100 MHz (AWS)** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **1.46 dB** of cable loss calculated into the system gains / losses for this site. For each ground mounted **2100 MHz (AWS)** radio there was **1.55 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **120 feet** of **1-1/4"** coax.

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,659.35	5.46
Antenna A2	EMS RR90-17-XXDP	Dormant	N/A	0	0	0.00	0.00
						Sector A Composite MPE%	**5.46**
Antenna B1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,659.35	5.46
Antenna B2	EMS RR90-17-XXDP	Dormant	N/A	0	0	0.00	0.00
						Sector B Composite MPE%	**5.46**
Antenna C1	RFS APXVAARR24_43-U-NA20	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	15.65 / 16.35 / 12.95 / 13.35	11	415	10,659.35	5.46
Antenna C2	EMS RR90-17-XXDP	Dormant	N/A	0	0	0.00	0.00
						Sector C Composite MPE%	**5.46**

Table 3: T-MOBILE Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**5.46 %**
Verizon Wireless	2.97 %
Willington FD	0.10 %
MetroPCS	0.96 %
Nextel	0.24 %
Sprint	3.89 %
Site Total MPE %:	**13.62 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	5.46 %
T-MOBILE Sector B Total:	5.46 %
T-MOBILE Sector C Total:	5.46 %
Site Total:	13.62 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	4	1,049.69	102	16.38	1900 MHz (PCS)	1000	1.64%
T-Mobile 2100 MHz (AWS) LTE	2	1,811.97	102	14.14	2100 MHz (AWS)	1000	1.41%
T-Mobile 1900 MHz (PCS) GSM	1	393.63	102	1.54	1900 MHz (PCS)	1000	0.15%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	102	6.16	600 MHz	400	1.54%
T-Mobile 700 MHz LTE	2	432.54	102	3.37	700 MHz	467	0.72%
						Total:	**5.46%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	5.46 %
Sector B:	5.46 %
Sector C:	5.46 %
T-MOBILE Maximum Total (per sector):	5.46 %
Site Total:	13.62 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.62 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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