10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

June 19, 2020

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

RE: Notice of Exempt Modification
7 West View Dr., Danbury, CT 06810
Latitude: 41.39600000
Longitude: -73.42380000
T-Mobile Site#: CT11923C – Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 50-foot level of the existing 100-foot lattice tower at 7 West View Dr., Danbury, CT. The 100-foot lattice tower and property are owned by Seven T LLC. T-Mobile now intends to add three (3) new 2500 MHz antennas. The new antennas will be installed at the same 50-foot level of the tower.

Planned Modifications:
Tower:

Remove
(12) 1-5/8" coax

Remove and Replace:
N/A

Install New:
(3) AIR 6449 B41 2500 MHz
(3) Ericsson Radio 4415 B25
(3) 1-5/8" Hybrid

Existing to Remain:
(3) AIR 21 1900/2100 MHz
(3) AIR 32 1900/2100 MHz
(3) APXVARR24_43 600/700 MHz
(3) Radio 4449 B71B85
(3) TMA
(6) 1-5/8" coax

(4) 1-5/8” Hybrid

Ground:
Install New: 6160 Cabinet

This tower was originally approved by the City of Danbury. Documentation on the original approval and subsequent approvals for the tower are enclosed with the submission. T-Mobile was approved for tower-sharing by the Connecticut Siting Council on June 9, 2004. The proposed modification complies with all previous approvals.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Mayor -Mark Boughton, Elected Official, and Sharon Calitro, Director of Planning and Zoning for the City of Danbury, as well as the owner.

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

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

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

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

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

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

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

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

Sincerely,

Kyle Richers
Transcend Wireless
Cell: 908-447-4716
Email: krichers@transcendwireless.com

Attachments
cc: Mark Boughton – Mayor of City of Danbury
Sharon Calitro– Director of Planning & Zoning for City of Danbury
Seven T LLC – Owner

Exhibit A

Original Facility Approval

CITY OF DANBURY
Building Department
155 DEER HILL AVENUE
DANBURY, CONNECTICUT 06810

Certificate of Approval

Issued Date: 05/31/2017 Application #: 17-00060059 Parcel #L14107

Property Zone: RA-8

Owner: SEVEN T LLC
Contractor: D & A CONSTRUCTION MANAGEMENT

Property Address: 7 WESTVIEW DR

Owner Address: 39 PADANARAM RD.
DANBURY, CT, 06811

Application type: COMMERCIAL ALTERATION

The described portion has been inspected for substantial compliance with the current Connecticut State Building Code.

Work Description: UPGRADE/REPLACE EXISTING CELL TOWER EQUIPMENT.

Stipulations or conditions:

David Newland
Building Official City of Danbury

CITY OF DANBURY
Building Department

155 DEER HILL AVENUE
DANBURY, CONNECTICUT 06810

Certificate of Approval

Issued Date: 06/03/2015 Application #: 15-00056347 Parcel #L14107-

Property Zone: RA-8

Owner: SEVEN T LLC
Contractor: TRANSCEND WIRELESS LLC

Property Address: 7 WESTVIEW DR

Owner Address: 39 PADANARAM RD.
DANBURY, CT, 06811

Application type: CELL TOWER NEW CONSTRUCTION

The described portion has been inspected for substantial compliance with the current Connecticut State Building Code.

C

Work Description: UPGRADE EXISTING TELECOMMUNICATION FACILITY. .ADD 3 ANTENNAS

Stipulations or conditions:

David Newland
Building Official City of Danbury

CITY OF DANBURY
Department of Permit Coordination
155 DEER HILL AVENUE
DANBURY, CONNECTICUT 06810

Certificate of Zoning Compliance

Issued Date: 03/04/2014 Application #: 13-00053832 Parcel #L14107-

Property Zone: RA-8

Owner: SEVEN T LLC
Contractor: HPC WIRELESS SERVICES LLC

Property Address: 7 WESTVIEW DR

Owner Address: 39 PADANARAM RD.
DANBURY, CT, 06811

Application type: CELL TOWER

Work Description: REPLACE 6 EXISTING ANTENNAS & ONE FIBER CABLE.

Stipulations or conditions:

Approved..... Timothy Rosati
Sean Hearty
Zoning Enforcement Officer, City of Danbury

CITY OF DANBURY
Building Department

155 DEER HILL AVENUE
DANBURY, CONNECTICUT 06810

Certificate of Completion

Issued Date: 03/04/2014 Application #: 13-00053832 Parcel #L14107-

Property Zone: RA-8

Owner: SEVEN T LLC
Contractor: HPC WIRELESS SERVICES LLC

Property Address: 7 WESTVIEW DR

Owner Address: 39 PADANARAM RD.
DANBURY, CT, 06811

Application type: CELL TOWER NEW CONSTRUCTION

The described portion has been inspected for substantial compliance with the current Connecticut State Building Code.

Work Description: REPLACE 6 EXISTING ANTENNAS & ONE FIBER CABLE.

Stipulations or conditions:

David Newland
Building Official City of Danbury

City of Danbury
155 DEER HILL AVE.
DANBURY CT 06810

City of Danbury

C E R T I F I C A T E O F C O M P L I A N C E

P E R M A N E N T

Issue Date 1/05/10

Parcel Number L14107-
Property Address . . . 7 WESTVIEW DR
DANBURY CT 06811
Subdivision Name . . .
Legal Description . . .
Property Zoning . . . . RES, SF 8000

Owner . . . . . SEVEN T LLC

Contractor . . . . . MAXTON TECHNOLOGY INC.
508 936-6393

Application number . . 09-00046693 000 000
Description of Work . . CELL TOWER NEW CONSTRUCTION
Construction type . . .
Occupancy type . . . .
Flood Zone . . . . . .
Special conditions . .
REPLACE 3 ANTENNAS AND ADD EQUIPMENT CABINET TO EXISTING PAD.

Approved . . . . . _____
Zoning Enforcement Officer

VOID UNLESS SIGNED BY ZONING ENFORCEMENT OFFICER

City of Danbury
155 DEER HILL AVE.
DANBURY CT 06810

City of Danbury

C E R T I F I C A T E O F O C C U P A N C Y

P E R M A N E N T

Issue Date	1/05/10
Parcel Number	L14107-
Property Address . . .	7 WESTVIEW DR DANBURY CT 06811
Subdivision Name . . .	
Legal Description . . .	
Property Zoning	RES, SF 8000
Owner	SEVEN T LLC
Contractor	MAXTON TECHNOLOGY INC. 508 936-6393
Application number . .	09-00046693 000 000
Description of Work . .	CELL TOWER NEW CONSTRUCTION
Construction type . . .	
Occupancy type	
Flood Zone	
Special conditions . .	REPLACE 3 ANTENNAS AND ADD EQUIPMENT CABINET TO EXISTING PAD.

Approved . . . . . Leo P. Mull
Building Official

VOID UNLESS SIGNED BY BUILDING OFFICIAL

City of Danbury
155 DEER HILL AVE.
DANBURY CT 06810

City of Danbury

C E R T I F I C A T E O F C O M P L I A N C E

P E R M A N E N T

Issue Date 5/20/05

Parcel Number L14107-
Property Address . . . 7 WESTVIEW DR
DANBURY CT 06811
Subdivision Name . . .
Legal Description . . .
Property Zoning . . . . RES, SF 8000

Owner . . . . . SEVEN T LLC

Contractor . . . . . COSTROTTA CONSTRUCTION MGMNT I

Application number . . 04-00037316 000 000
Description of Work . . CELL TOWER NEW CONSTRUCTION
Construction type . . .
Occupancy type . . . .
Flood Zone . . . . . .
Special conditions . .
INSTALLATION OF TELECOMMUNICATION ANTENNAS AND ASSOCIATED EQUIPMENT ON AN EXISTING TOWER.

Approved . . . . . _____
Zoning Enforcement Officer

VOID UNLESS SIGNED BY ZONING ENFORCEMENT OFFICER

City of Danbury
155 DEER HILL AVE.
DANBURY CT 06810

City of Danbury

C E R T I F I C A T E O F O C C U P A N C Y

P E R M A N E N T

Issue Date 5/20/05

Parcel Number L14107-
Property Address . . . 7 WESTVIEW DR
DANBURY CT 06811
Subdivision Name . . .
Legal Description . . .
Property Zoning . . . . RES, SF 8000

Owner . . . . . SEVEN T LLC

Contractor . . . . . COSTROTTA CONSTRUCTION MGMNT I

Application number . . 04-00037316 000 000
Description of Work . . CELL TOWER NEW CONSTRUCTION
Construction type . . .
Occupancy type . . . .
Flood Zone . . . . . .
Special conditions . . .
INSTALLATION OF TELECOMMUNICATION ANTENNAS AND ASSOCIATED EQUIPMENT ON AN EXISTING TOWER.

Approved . . . . . Leo P Mull
Building Official

VOID UNLESS SIGNED BY BUILDING OFFICIAL

Building Department Record

Department of Buildings

№ 19147 Dated Nov. 13, 1989

To the Building Inspector of the City of Danbury:

The undersigned files the following application to erect Addition to radio building

Located Westview Dr. Assessors Lot L-14107

Distance from street line ..... from adjacent property lines ..... from rear line .....

from nearest building ..... No. of tenements .....

Lot dimensions ..... Size of Building or Additions 28 x 38'

If new Dwelling or Addition. No. of Rooms and Baths .....

If new Garage or Addition. No. of Cars to be used for .....

LOT PLAN

Zone Ra-8 Septic System ☐ City Sewer ☐ City Water ☐

Use Group No. _____

Construction wood

Footings concrete Width 16" Thickness 8"

Foundation walls concrete Depth 42" Thickness 8"

Exterior walls ..... Thickness .....

Interior walls sheetrock Thickness .....

Ceilings " "

Floors concrete

Size: Sills 2 x 6 Floor Joists ..... Post or Lalley Cols. .....

Size: Plate 2 x 4 Ceiling Joists 2x6 Roof Rafters 2 x 8

Type of Heat None No. of Chimneys ..... Flue size .....

Kind of Roof (Gable, Shed, Hip, Other Gable) Roof Covering 240 # asphalt
(Mark with an X kind of Roof)

No. of Stories 1½ Height Basement ..... 1st 9'

2nd 8' 3rd ..... 4th .....

Estimated Cost $ 22,500. Name of Architect or Engineer .....
(If building contains over 5,000 square feet)

All details of construction to be in accordance with the ordinances of the City of Danbury.

Permit Fee Paid $ 164.00 Adjusted Fee $ ..... Adjusted Cost $ .....

☒ Application for Certificate of Occupancy

Builder Glenwood Construciton Co.

Electrical Contractor ..... License No. .....

Plumbing & Heating Contractor ..... License No. .....

Owner Robert Kaufman

Phone ..... Address 41 Padanaram Rd. Danbury, Ct.

Assessor Note: .....

.....

March - 1974	Name	Address	Permit No.	Kind of Construction	Builder	Est. Cost
1	Joseph Joo	Hamilton Dr.	7965	One-Car Garage	Self	1,000.00
1	Abraham Gorlicki	Lot #59 Carol St.	G-7966	One-family Dwelling	M. Lounsbury	30,000.00
1	Les Juhas	Mill Plain Rd.	G-7967	Addition	Commercial Structures	3,000.00
1	Anthony Cordio	Lot #12 Richter Dr.	G-7968	One-family Dwelling	self	26,000.00
4	Charles Linek	50 Lincoln Ave.	7969	Re-side Dwelling	Apex Products, Inc.	2,800.00
4	Charles Walters	Lot #84 Sturdevant Dr.	G-7970	One-family Dwelling	Self	30,000.00
4	Francis Despees	22 E. Pembroke Rd.	7971	Swimming Pool	self	500.00
4	Albert MacMonegle	35 Oak Ridge Gate	7972	Basement Playroom	self	500.00
5	Roger Manning	12 Cushing Dr.	7973	Deck	self	500.00
5	James Botelho	46 Olive St. Ext.	7974	One-Car Garage	Self	1,000.00
5	Joseph Walker	32 Seneca Rd.	7975	Basement Playroom	Gene Passarella	1,500.00
6	Mrs. Lena Holmgren	80 Franklin St.	G-7976	Alterations	J. Gilbert	2,000.00
6	Edward Gallagher	44 Oak Ridge Gate	G-7977	Basement Playroom	J. Vaghi	3,000.00
6	Charles Williams	Lot 18N South View Ave.	G-7978	One-family Dwelling	self	18,000.00
6	A.M. Lypenski	41 Driftway Rd.	G-7979	Alterations	self	1,500.00
* 7	Robert Kaufman	So. W. Cor. of Westview Dr.	7980	Tower	Self	5,000.00
7	Virginia George	Shelter Rock Rd.	7981	Addition	Glenwood Corp.	5,000.00
7	Robert Kaufman	41 Padanaram Rd.	7982	Addition	Self	60,000.00
7	Frank Annin	1 Roundhill Rd.	7983	Swimming Pool	Self	3,000.00
7	George Huse	Lot # 11 Lindencrest Dr.	G-7984	One-family Dwelling	self	37,000.00
7	Albert Goelin	129 Carol St.	G-7985	Addition	E Cerroni	2,800.00
7	Peter Filous	Lot #5 Nabby Rd.	G-7986	One-family Dwelling	self	35,000.00
7	Peter LaManna	Benson Dr.	7987	Swimming Pool	self	1,200.00
7	Michael Stavros	10 Hayestown Rd.	7988	Alterations		800.00
8 Extend	Bear Mountain Corp.	Lot #52 Mendes Rd.	G-7989	One-family Dwelling	Self	18,000.00
8	" " "	Lot # 61 " "	G-7990	" " "	"	18,000.00
8	" " "	Lot # 64 Elaine Dr.	G-7991	" " "	"	18,000.00
8	" " "	Lot # 66 " "	G-7992	" " "	"	18,000.00
8	" " "	Lot # 67 Mendes Rd.	G-7993	" " "	"	18,000.00
11	Ruimi Caetano	36 Town Hill Ave.	7994	Re-side Dwelling	Chas. Tahan	1,000.00
11	Jean Haddad	39 Padanaram Rd.	7995	Addn + Alterations	Don Metz	8,000.00
13	Des Thomas & Fenster	93 West St.	7996	Alterations & Office	Harold Noe	5,000.00
13	Rocky Ledge Bldg Corp.	Lot 59+60 Hunters Lane	G-7997	One-family Dwelling	Self	26,000.00
14	David Layton	13 Pocono Point Rd.	G-7998	Addition	John Layda	5,000.00
18	Elmer Heyde	6 Alexander Ave.	7999	Addition & Garage	Self	500.00
					Forward	387,600.00

Exhibit B

Property card

7 WESTVIEW DR

Location	7 WESTVIEW DR	**Mblu**	L14/ / 107/ /
Acct#		**Owner**	SEVEN T LLC
Assessment	$354,900	**Appraisal**	$507,000
PID	10750	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$413,300	$93,700	$507,000
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$289,300	$65,600	$354,900

Owner of Record

Owner	SEVEN T LLC	**Sale Price**	$0
Co-Owner		**Book & Page**	1579/ 817
Address	39 PADANARAM RD DANBURY, CT 06811	**Sale Date**	08/27/2003
		Instrument	03

Ownership History

Ownership History				
Owner	**Sale Price**	**Book & Page**	**Instrument**	**Sale Date**
SEVEN T LLC	$0	1579/ 817	03	08/27/2003
KAUFMAN ROBERT J	$0	0580/0698		05/05/1976

Building Information

Building 1 : Section 1

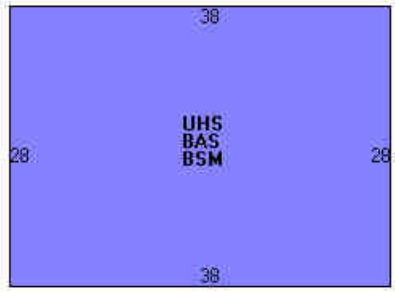
Year Built:	1979
Living Area:	1,064
Replacement Cost:	$151,045
Building Percent Good:	75
Replacement Cost Less Depreciation:	$113,300

Building Photo


Building Photo
(http://images.vgsi.com/photos2/DanburyCTPhotos//\00\02\90/98.jpg)

Building Attributes	
Field	**Description**
Style	Cape Cod
Model	Residential
Grade:	Average
Stories:	1 1/2 Stories
Occupancy	
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure:	Gable
Roof Cover	Asphalt Shngl.
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Flr 1	Minimum/Plywd
Interior Flr 2	
Heat Fuel	Coal or Wood
Heat Type:	None
AC Type:	None
Total Bedrooms:	00
Total Bthrms:	0
Total Half Baths:	0
Total Xtra Fixtrs:	
Total Rooms:	1 Room
Bath Style:	Average
Kitchen Style:	Average
Fireplaces	
Whirlpool	
Addn'l Kitchen	
Bsm Gar	
Fin Bsm Area	
Fin Bsm Qual	
Nhbd	
MH Park	

Building Layout



(http://images.vgsi.com/photos2/DanburyCTPhotos//Sketches/10750_1075

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,064	1,064
BSM	Basement	1,064	0
UHS	Half Story, Unfinished	1,064	0
		3,192	1,064

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	201R
Description	Comm/Res MDL-01
Zone	RA-8
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.23
Frontage	0
Depth	0
Assessed Value	$65,600
Appraised Value	$93,700

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CEL	Cell Tower			1 UNITS	$300,000	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$413,300	$93,700	$507,000
2018	$413,300	$93,700	$507,000
2017	$413,300	$93,700	$507,000

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2019	$289,300	$65,600	$354,900
2018	$289,300	$65,600	$354,900
2017	$289,300	$65,600	$354,900

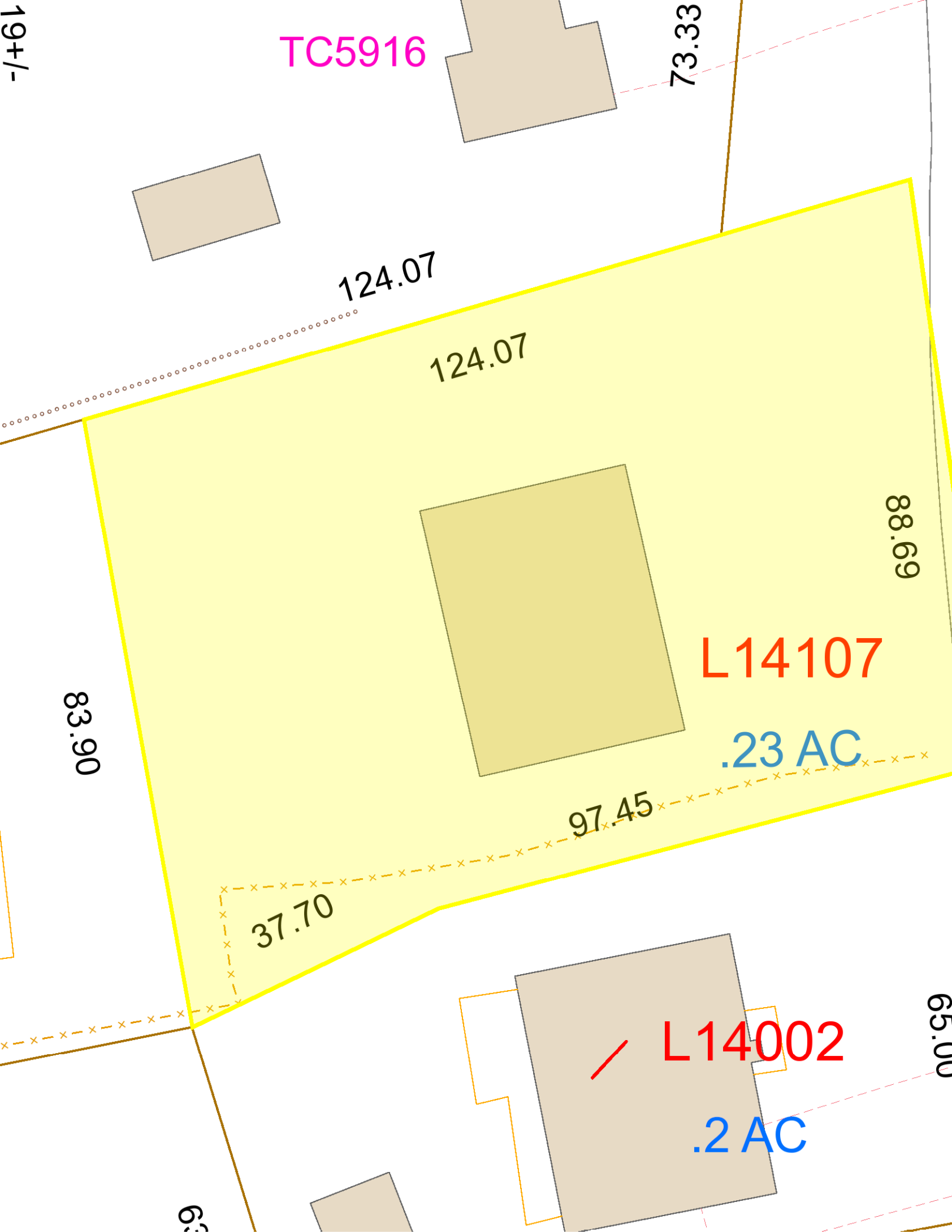

TC5916
73.33
124.07
124.07
88.69
L14107
.23 AC
83.90
97.45
37.70
L14002
.2 AC
65.00

Exhibit C

Construction Drawings

T-Mobile

WIRELESS COMMUNICATIONS FACILITY

CT923/W. VIEW DR_GT
SITE ID: CT11923C
7 WEST VIEW DRIVE
DANBURY, CT 06810

T-MOBILE RF CONFIGURATION

67D5992DBL_3xAIR+1OP

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTON, PLUMBING, ELECTRICAL, AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUITS AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT 'CALL BEFORE YOU DIG' AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH THE OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

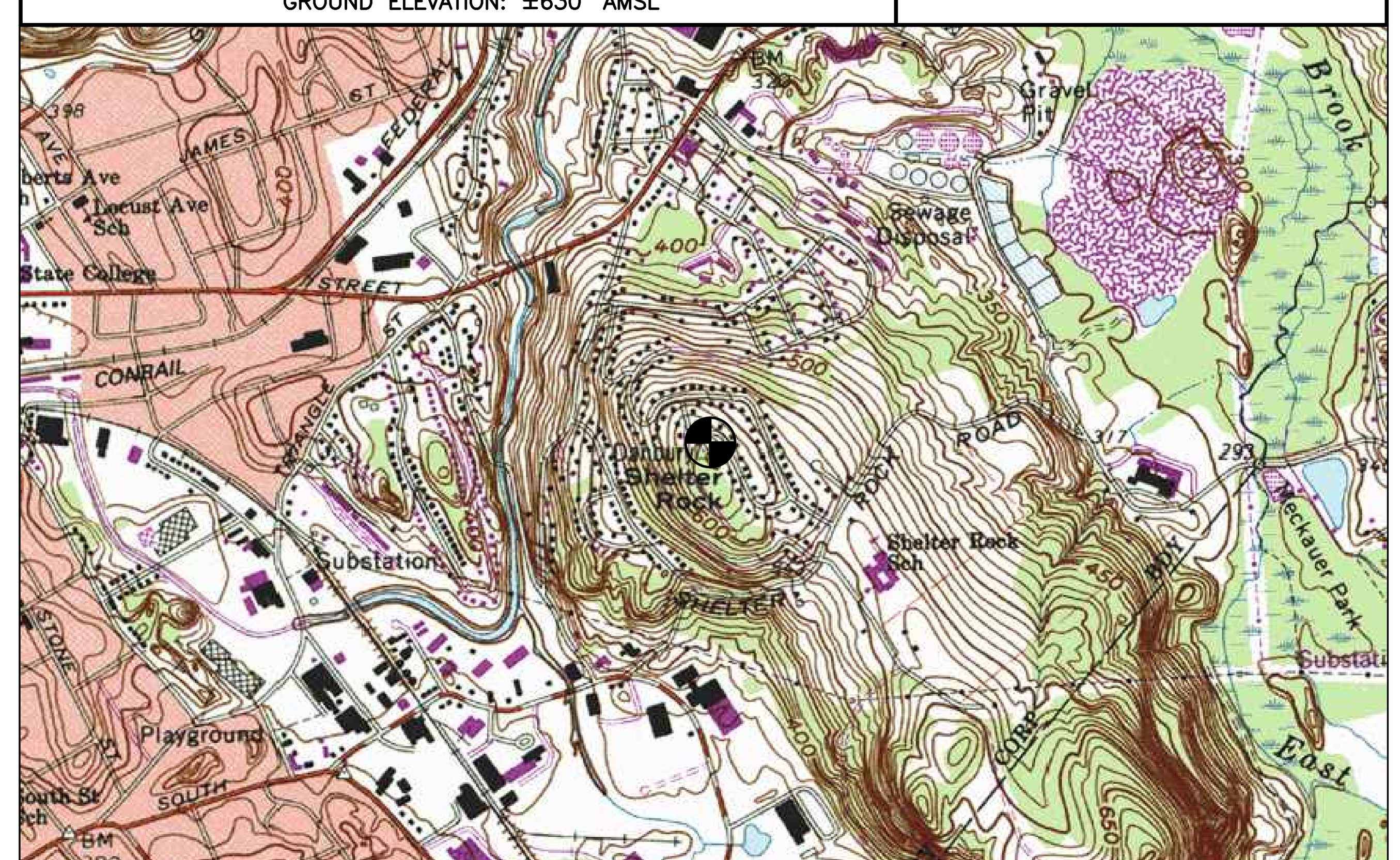
SITE DIRECTIONS

FROM: 35 GRIFFIN ROAD SOUTH, BLOOMFIELD, CT 06002
TO: 7 WST VIEW DRIVE, DANBURY, CT 06810

1.	HEAD NORTH ON GRIFFIN ROAD S. TOWARD HARTMAN RD.	0.21 MI.
2.	TAKE THE 2ND RIGHT ONTO DAY HILL RD.	0.14 MI.
3.	TAKE THE 1ST RIGHT ONTO BLUE HILLS AVENUE EXT/CT-187	1.89 MI.
4.	TURN LEFT ONTO CT-305/OLD WINDSOR RD.	2.32 MI.
5.	STAY STRAIGHT TO GO ONTO BLOOMFIELD AVE/CT-305.	0.01 MI.
6.	MERGE ONTO I-91 S TOWARD HARTFORD	5.66 MI.
7.	MERGE ONTO I-84 W via EXIT 32A TOWARD WATERBURY	13.29 MI.
8.	KEEP LEFT TO TAKE I-84 TOWARD WATERBURY	40.69 MI.
9.	MERGE ONTO NEWTOWN RD via EXIT 8 TOWARD BETHEL	1.68 MI.
10.	TURN LEFT ONTO OLD SHELTER ROCK RD	0.14 MI.
11.	TAKE THE 1ST LEFT ONTO WOODSIDE AVE	0.02 MI.
12.	TAKE THE 1ST RIGHT ONTO TOPSTONE DR.	0.17 MI.
13.	TAKE THE 1ST RIGHT TO STAY ON TOPSTONE DR.	0.17 MI.
14.	TAKE THE 1ST RIGHT ONTO WESTVIEW DR.	0.06 MI.

SITE COORDINATES: LATITUDE: 41° 23' 45.37" N
LONGITUDE: 73° 25' 26.31" W
GROUND ELEVATION: ±630' AMSL

COORDINATES AND GROUND ELEVATION ARE REFERENCED FROM GOOGLE EARTH



VICINITY MAP

NORTH

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

A. AT EXISTING EQUIPMENT PLATFORM

- REMOVE EXISTING NORTEL CABINET
- ADD (1) ENCLOSURE 6160
- ADD (1) BATTERY CABINET B160
- ADD (1) iXRe ROUTER
- ADD (3) BB6630 FOR L2500
- ADD (1) BB6648 FOR N2500
- REMOVE (12) COAX LINES
- ADD (3) 6X12 HCS

B. AT EXISTING ANTENNA SECTORS

- ADD (1) AIR6449 B41 PER SECTOR, TOTAL (3)
- ADD (1) RADIO 4415 B25 PER SECTOR, TOTAL (3)

PROJECT INFORMATION

SITE NAME:	CT923/W. VIEW DR_GT
SITE ID:	CT11923C
SITE ADDRESS:	7 WEST VIEW DRIVE DANBURY, CT 06810
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	DAN REID (PROJECT MANAGER) TRANSCEND WIRELESS, LLC (203) 592-8291
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405 CARLO F. CENTORE, PE (203) 488-0580 EXT. 122
PROJECT COORDINATES:	LATITUDE: 41°-23'-45.37" N LONGITUDE: 73°-25'-26.31" W GROUND ELEVATION: 630'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	GENERAL NOTES AND SPECIFICATIONS	0
C-1	SITE LOCATION PLAN	0
C-2	EQUIPMENT PLAN AND ELEVATION	0
C-3	ANTENNA MOUNTING CONFIGURATION	0
C-4	TYPICAL EQUIPMENT DETAILS	0
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REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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CT923/W. VIEW DR_GT
SITE ID: CT11923C
7 WEST VIEW DRIVE
DANBURY, CT 06810

DATE: 05/19/20
SCALE: AS NOTED
JOB NO. 20074.05

TITLE SHEET

T-1

Sheet No. 1 of 7

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2015 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE.

1. DESIGN CRITERIA:

- RISK CATEGORY II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 100 MPH (Vasd) (EXPOSURE C/ IMPORTANCE FACTOR 1.0 BASED ON ASCE 7-10).

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
4. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
5. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2017 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS, SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND IT'S COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS, ARE TO BE BROUGHT TO THE ATTENTION OF THE SITE OWNER'S CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT "DIG SAFE" (DIAL 811) AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH OWNER'S ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.
20. THE COUNTY/CITY/TOWN WILL MAKE PERIODIC FIELD OBSERVATION AND INSPECTIONS TO MONITOR THE INSTALLATION, MATERIALS, WORKMANSHIP AND EQUIPMENT INCORPORATED INTO THE PROJECT TO ENSURE COMPLIANCE WITH THE DESIGN PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS AND APPROVED SHOP DRAWINGS.
21. THE COUNTY/CITY/TOWN MUST BE NOTIFIED (2) WORKING DAYS PRIOR TO CONCEALMENT/BURIAL OF ANY SYSTEM OR MATERIAL THAT WILL PREVENT THE DIRECT INSPECTION OF MATERIALS, METHODS OR WORKMANSHIP. EXAMPLES OF THESE PROCESSES ARE BACKFILLING A GROUND RING OR TOWER FOUNDATION, POURING TOWER FOUNDATIONS, BURYING GROUND RODS, PLATES OR GRIDS, ETC. THE CONTRACTOR MAY PROCEED WITH THE SCHEDULED PROCESS (2) WORKING DAYS AFTER PROVIDING NOTICE UNLESS NOTIFIED OTHERWISE BY THE COUNTY/CITY/TOWN.

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T-MOBILE NORTHEAST LLC

WIRELESS COMMUNICATIONS FACILITY

CT923/W. VIEW DR_GT

SITE ID: CT11923C

7 WEST VIEW DRIVE
DANBURY, CT 06810

DATE: 05/19/20

SCALE: AS NOTED

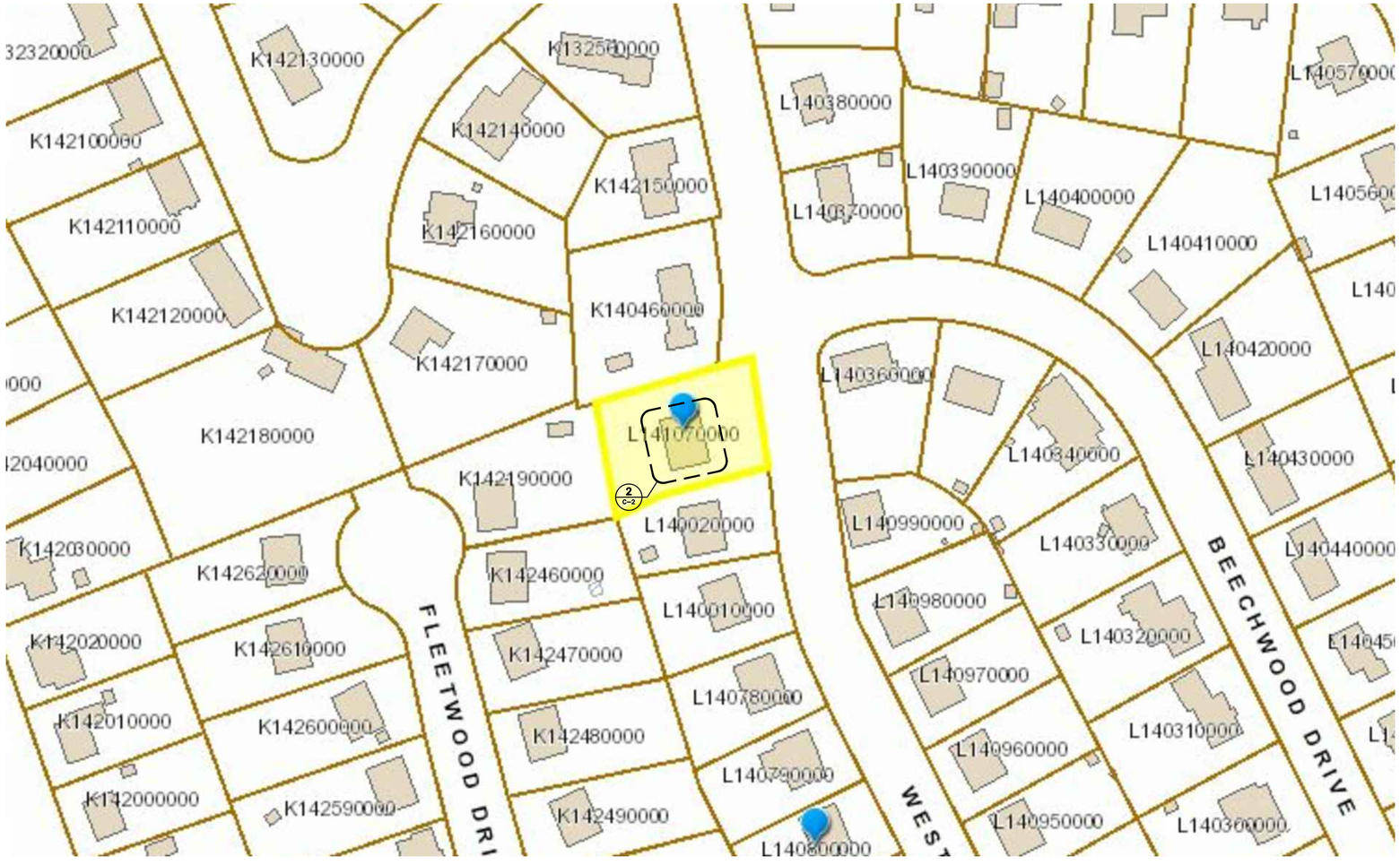
JOB NO. 20074.05

GENERAL NOTES AND SPECIFICATIONS

N-1

ANTENNA SCHEDULE

SECTOR	EXISTING/PROPOSED	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	(E/P) RRU (QTY)	(E/P) TMA (QTY)	(QTY) PROPOSED COAX (LENGTH)
A1	EXISTING	ERICSSON (AIR32 KRD901146-1 B66A B2A)	56.6 x 12.9 x 8.7	50'	40°			(1) 6x12 HCS (±50FT)
A2	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.5 x 8.3	50'	40°			
A3	EXISTING	ERICCSON (AIR21 KRC118023-1 B2A B4P)	56.2 x 12.1 x 7.9	50'	40°		(E) GENERIC TWIN STYLE 1B-AWS (1)	
A4	EXISTING	RFS (APXVAARR24-43-U-NA20)	95.9 x 24.0 x 8.7	50'	40°	(P) RADIO 4415 B25 (1), (E) RADIO 4449 B71+B85 (1)		
B1	EXISTING	ERICSSON (AIR32 KRD901146-1 B66A B2A)	56.6 x 12.9 x 8.7	50'	170°			(1) 6x12 HCS (±50FT)
B2	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.5 x 8.3	50'	170°			
B3	EXISTING	ERICCSON (AIR21 KRC118023-1 B2A B4P)	56.2 x 12.1 x 7.9	50'	170°		(E) GENERIC TWIN STYLE 1B-AWS (1)	
B4	EXISTING	RFS (APXVAARR24-43-U-NA20)	95.9 x 24.0 x 8.7	50'	170°	(P) RADIO 4415 B25 (1), (E) RADIO 4449 B71+B85 (1)		
C1	EXISTING	ERICSSON (AIR32 KRD901146-1 B66A B2A)	56.6 x 12.9 x 8.7	50'	290°			(1) 6x12 HCS (±50FT)
C2	PROPOSED	ERICSSON (AIR6449 B41)	33.1 x 20.5 x 8.3	50'	290°			
C3	EXISTING	ERICCSON (AIR21 KRC118023-1 B2A B4P)	56.2 x 12.1 x 7.9	50'	290°		(E) GENERIC TWIN STYLE 1B-AWS (1)	
C4	EXISTING	RFS (APXVAARR24-43-U-NA20)	95.9 x 24.0 x 8.7	50'	290°	(P) RADIO 4415 B25 (1), (E) RADIO 4449 B71+B85 (1)		



1 / C-1 SITE LOCATION PLAN
SCALE: 1' = 50'

TRUE NORTH

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

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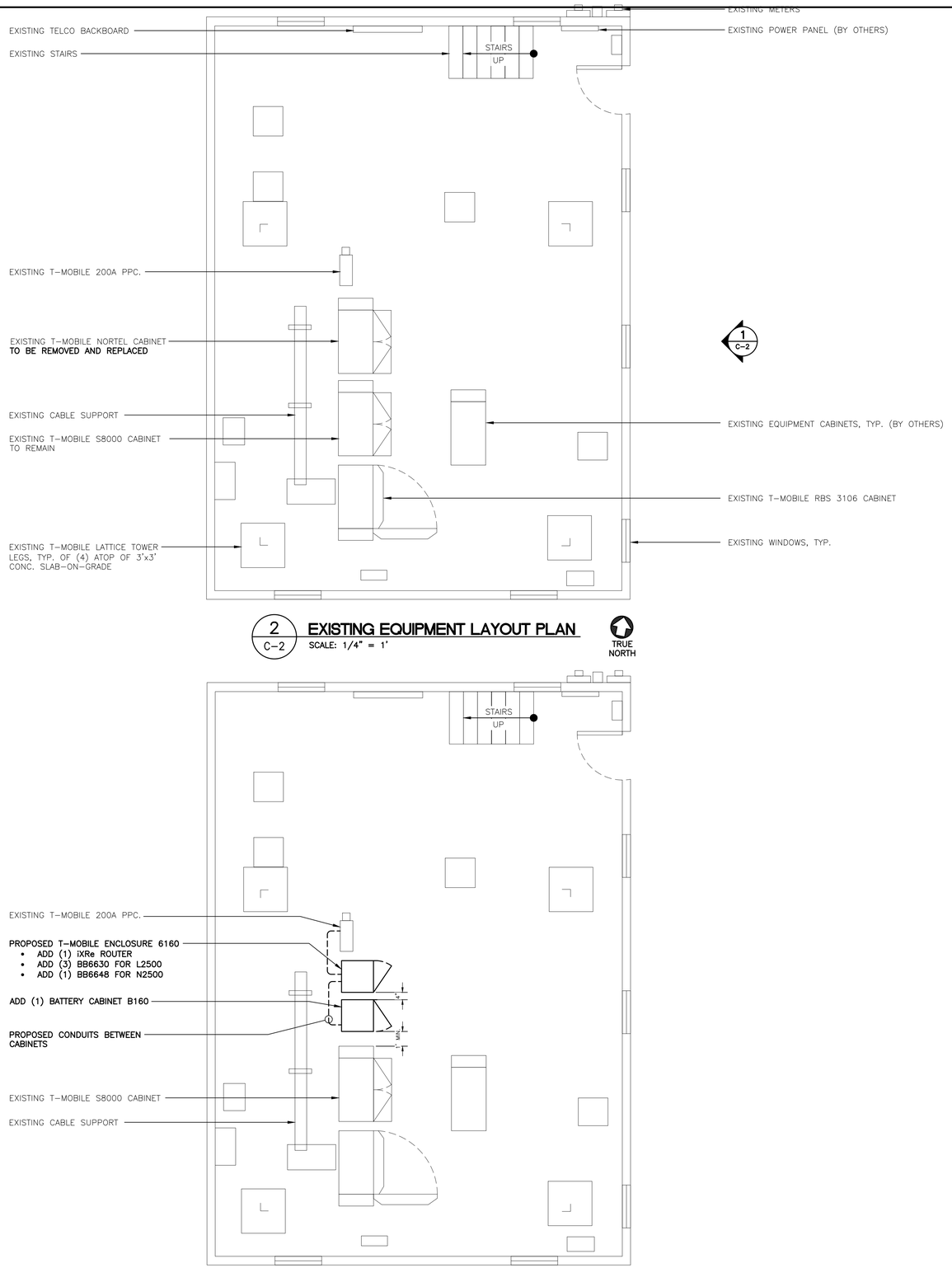
SITE LOCATION PLAN

C-1

Sheet No. 3 of 7



2 C-2 **EXISTING EQUIPMENT LAYOUT PLAN**
SCALE: 1/4" = 1'

TRUE NORTH

3 C-2 **PROPOSED EQUIPMENT LAYOUT PLAN**
SCALE: 1/4" = 1'

TRUE NORTH

STRUCTURAL COMPLIANCE

ANTENNA MOUNTS

A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNTS WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

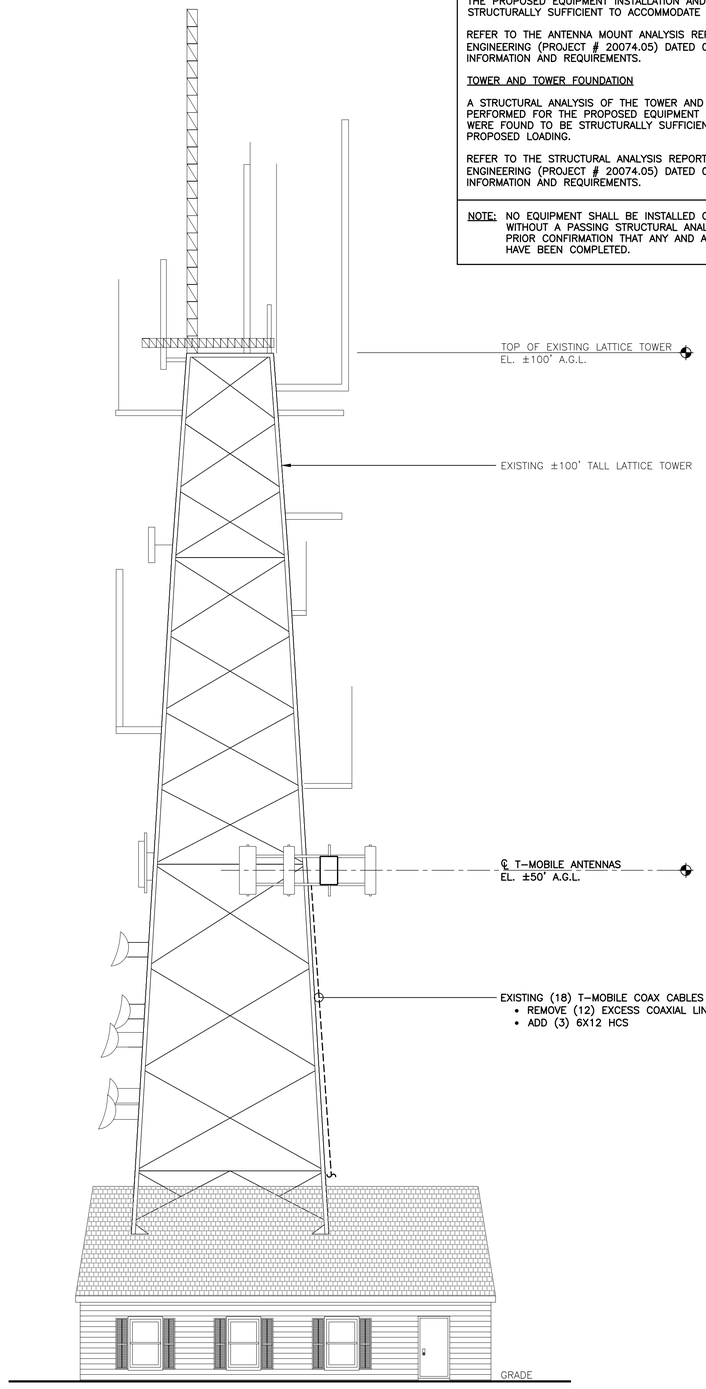
REFER TO THE ANTENNA MOUNT ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20074.05) DATED 05/26/20 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TOWER AND TOWER FOUNDATION

A STRUCTURAL ANALYSIS OF THE TOWER AND TOWER FOUNDATION WAS PERFORMED FOR THE PROPOSED EQUIPMENT INSTALLATION AND THEY WERE FOUND TO BE STRUCTURALLY SUFFICIENT TO ACCOMMODATE THE PROPOSED LOADING.

REFER TO THE STRUCTURAL ANALYSIS REPORT PREPARED BY CENTEK ENGINEERING (PROJECT # 20074.05) DATED 05/27/20 FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

NOTE: NO EQUIPMENT SHALL BE INSTALLED ON THE HOSTING STRUCTURE WITHOUT A PASSING STRUCTURAL ANALYSIS REPORT AND CONTRACTOR PRIOR CONFIRMATION THAT ANY AND ALL REQUISITE MODIFICATIONS HAVE BEEN COMPLETED.



1 C-2 **WEST TOWER ELEVATION - PROPOSED**
SCALE: 1" = 7'

GRAPHIC SCALE
7 0 3.5 7 14 28
(IN FEET)
1 inch = 7 ft.

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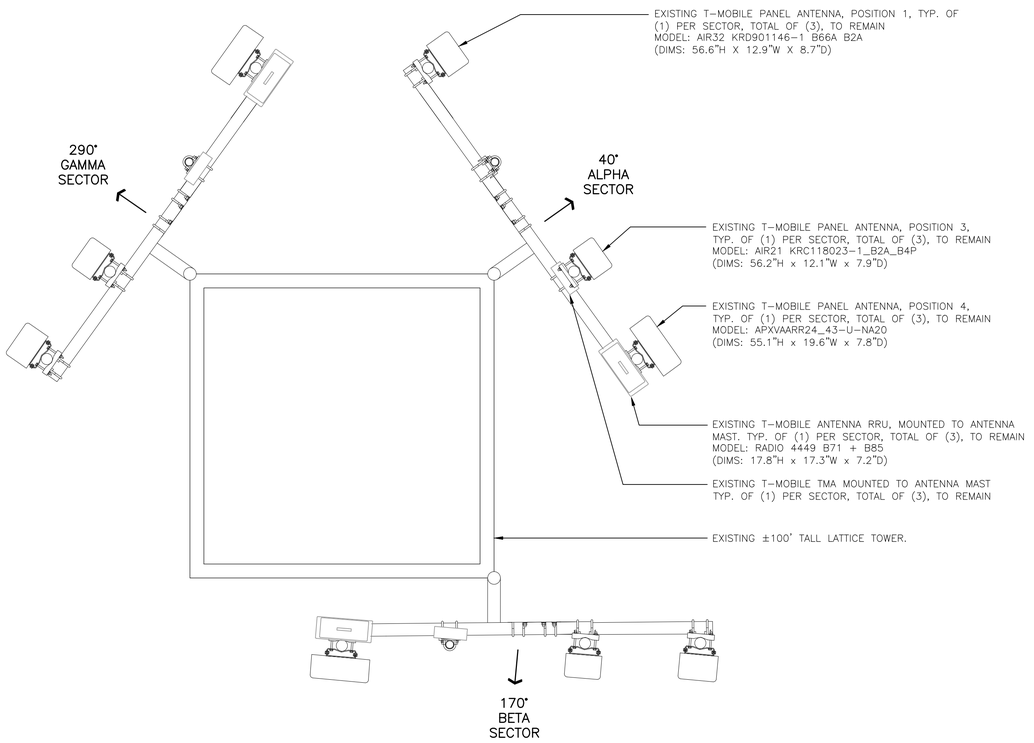
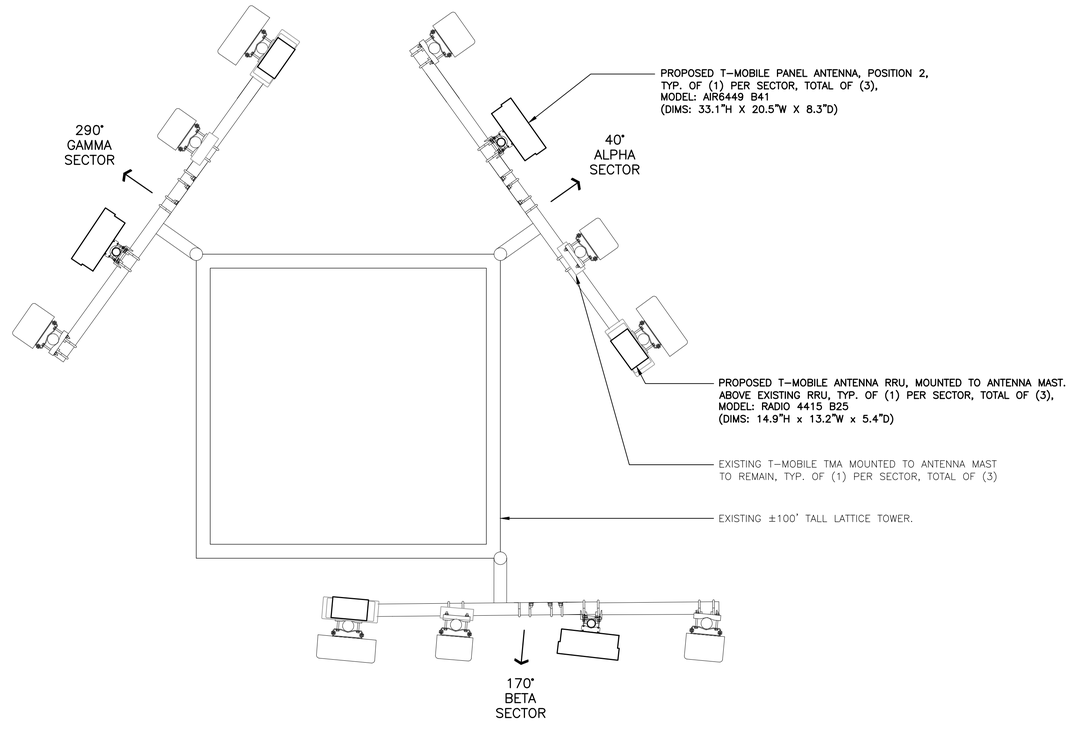
EQUIPMENT PLAN AND ELEVATION

C-2

Sheet No. 4 of 7



1 C-3 **EXISTING ANTENNA MOUNTING CONFIGURATION**
SCALE: 1/2" = 1' **50' ELEVATION** TRUE NORTH



2 C-3 **PROPOSED ANTENNA MOUNTING CONFIGURATION**
SCALE: 1/2" = 1' **50' ELEVATION** TRUE NORTH

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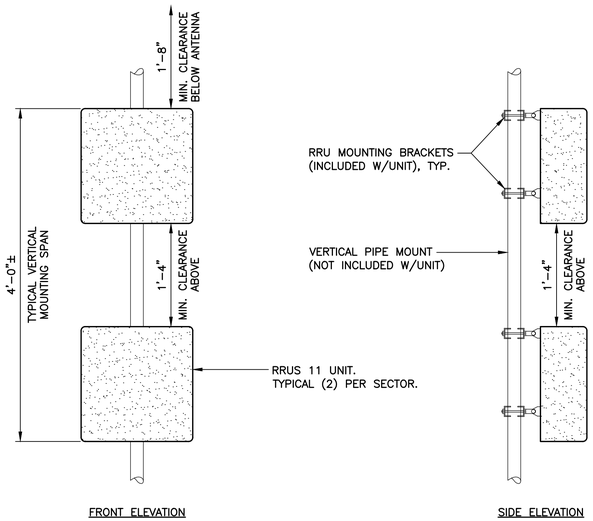
ANTENNA MOUNTING CONFIGURATION

C-3

Sheet No. 5 of 7

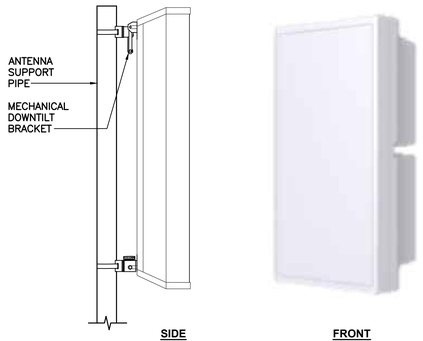


FRONT ELEVATION SIDE ELEVATION

NOTES:

1. T–MOBILE SHALL SUPPLY RRU, AND RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE–MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

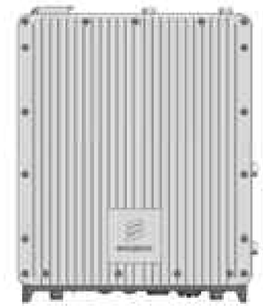
1 / C–4 **TYPICAL RRUS MOUNTING DETAILS**
SCALE: NOT TO SCALE



SIDE FRONT

ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: AIR6449 B41	33.1"L x 20.6"W x 8.6"D	±104 LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.		

2 / C–4 **PROPOSED ANTENNA DETAIL**
SCALE: NOT TO SCALE



FRONT VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4415 B25	14.9"L x 13.2"W x 5.4"D	±46 LBS.	BEHIND ANT.: 8" MIN. BELOW ANT.: 20" MIN. BELOW RRU: 16" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T–MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.			

3 / C–4 **PROPOSED RRU DETAIL**
SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: ENCLOSURE 6160	62.0"H x 26.0"W x 26.0"D	±1200 LBS

4 / C–4 **ENCLOSURE 6160 (OUTDOOR)**
SCALE: NOT TO SCALE

EQUIPMENT CABINET		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: ERICSSON MODEL: BATTERY CABINET B160	62.0"H x 26.0"W x 26.0"D	±1883 LBS

5 / C–4 **BATTERY CABINET DETAIL**
NOT TO SCALE

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TYPICAL EQUIPMENT DETAILS

C-4

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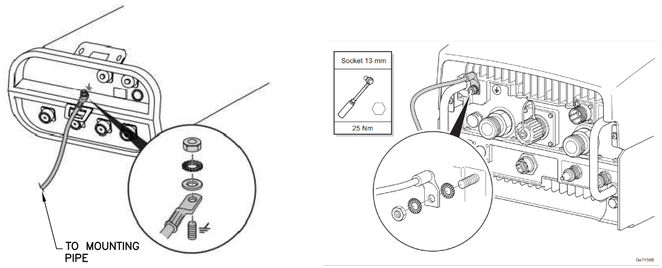
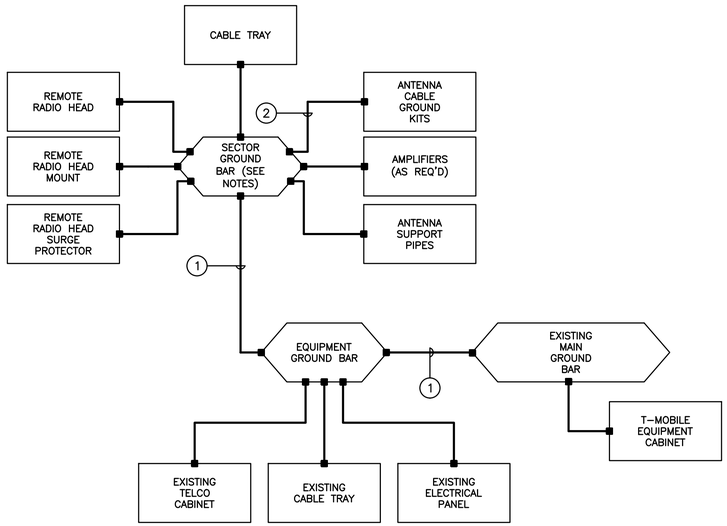


1 E-1 TYPICAL ANTENNA/RRU GROUNDING DETAILS

SCALE: NOT TO SCALE



GROUNDING SCHEMATIC NOTES

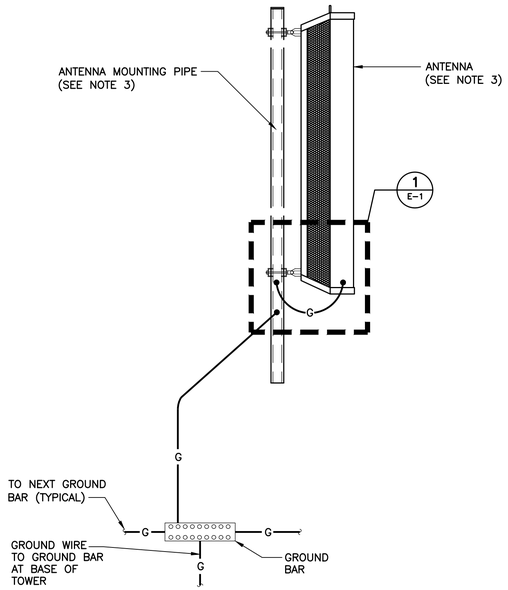
1. #2 AWG
2. #6 AWG

GENERAL NOTES:

1. ALL SURGE SUPPRESSION EQUIPMENT SHALL BE BONDED TO GROUND PER MANUFACTURER'S SPECIFICATIONS
2. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE, GROUND CONDUCTORS SHOWN SHALL BE #2 AWG (SOLID TINNED BCW – EXTERIOR; STRANDED GREEN INSULATED – INTERIOR).
3. ALL SECTOR GROUND BARS SHALL BE BONDED TOGETHER WITH #2 AWG SOLID TINNED BCW.
4. BOND ALL EQUIPMENT CABINETS AND BATTERY CABINETS TO GROUND PER MANUFACTURER'S SPECIFICATIONS.
5. COORDINATE ALL ROOF MOUNTED EQUIPMENT WITH OWNER.
6. ALL ROOF MOUNTED AMPLIFIERS AND ASSOCIATED EQUIPMENT SHALL BE BONDED TO THE SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS.
7. ALL GROUNDING SHALL BE IN ACCORDANCE WITH NEC AND OWNER'S REQUIREMENTS.

4 E-1 TYPICAL GROUNDING SCHEMATIC DETAIL

SCALE: NOT TO SCALE



NOTES:

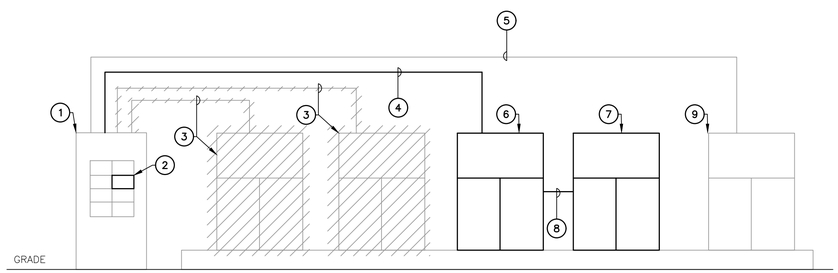
1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

2 E-1 TYPICAL ANTENNA GROUNDING DETAIL

SCALE: NOT TO SCALE

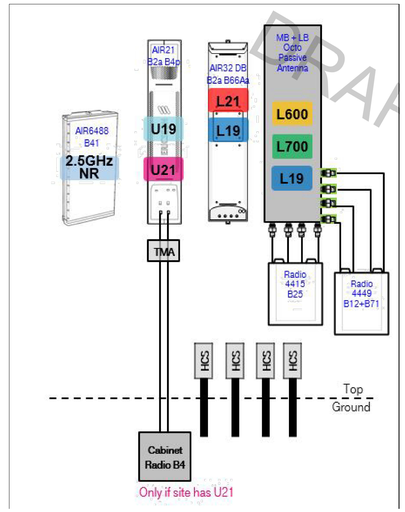
RISER DIAGRAM NOTES

1. EXISTING 200A PPC CABINET TO REMAIN.
2. NEW 100A/2P CIRCUIT BREAKER TO SERVE NEW EQUIPMENT CABINET.
3. EXISTING CABINETS AND ASSOCIATED CONDUITS AND CONDUCTORS TO BE REMOVED.
4. (3) #1 AWG, (1) #8 AWG GROUND, 1–1/4" CONDUIT.
5. EXISTING CONDUITS AND CONDUCTORS TO REMAIN.
6. NEW T–MOBILE EQUIPMENT CABINET
7. NEW T–MOBILE BATTERY CABINET
8. DC CONDUIT AND CONDUCTORS FOR BATTERY CABINET CONNECTION PER MANUFACTURERS SPECIFICATIONS.
9. EXISTING CABINET TO REMAIN.



5 E-1 ELECTRICAL POWER RISER DIAGRAM

SCALE: NOT TO SCALE



3 E-1 PROPOSED PLUMBING DIAGRAM

SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	06/18/20	ASC	CJC	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

T-Mobile

Transcend Wireless

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

T-MOBILE NORTHEAST LLC

WIRELESS COMMUNICATIONS FACILITY

CT923/W. VIEW DR_GT

SITE ID: CT11923C

7 WEST VIEW DRIVE
DANBURY, CT 06810

DATE:	05/19/20
SCALE:	AS NOTED
JOB NO.	20074.05

TYPICAL ELECTRICAL DETAILS

E-1

Sheet No. 7 of 7

Exhibit D

Structural Analysis Report

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

100-ft Existing Lattice Tower

Proposed T-Mobile
Antenna Upgrade

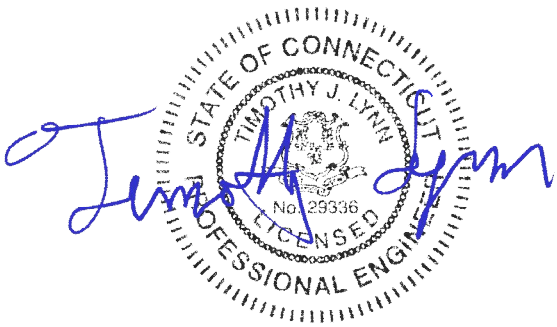
T-Mobile Site Ref: CT11923C

7 West View Drive
Danbury, CT

CENTEK Project No. 20074.05

Date: May 27, 2020

Max Stress Ratio = 64.6%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by T-Mobile on the existing self-supporting lattice tower located in Danbury, Connecticut.

The host tower is a 100-ft, three legged, tapered lattice tower. The tower geometry, structure member sizes and foundation information were obtained from a previous structural report prepared by Centek Engineering dated February 10, 2017.

Antenna and appurtenance information were obtained a structural analysis report prepared by B&T Group dated September 26, 2019, verification conducted from grade by Centek personnel on May 18, 2020 and a T-Mobile RF sheet.

The tower is made up of four (4) tapered vertical steel sections consisting of A36 steel angle legs. Diagonal lateral support bracing consists of steel angle construction. The vertical tower sections are connected by bolted sleeve connections while the legs and bracing are connected by bolted connections. The tower face width is 8.5-ft at the top and 21.0-ft at the bottom.

Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- UNKNOWN (Existing):
  Antennas: One (1) ROHN 25 tower 55' long mounted to the tower extending 15-ft above top of tower.
- UNKNOWN (Existing):
  Antennas: One (1) 15-ft Omni-directional whip, two (2) 10-ft Omni-directional whips, two (2) 8-ft Omni-directional whips and one (1) 6-ft yagi antenna mounted to the top of the tower.
  Coax Cables: Two (2) 1-5/8" Ø and four (4) 7/8" coax cables running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) DB292 yagi antenna pipe mounted with an elevation of 93-ft above the existing tower base.
  Coax Cables: One (1) 7/8" Ø coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) DB2225 dipole antenna pipe mounted with an elevation of 90-ft above the existing tower base.
  Coax Cables: One (1) 7/8" Ø coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) DB252 yagi antenna pipe mounted with an elevation of 89-ft above the existing tower base.
  Coax Cables: One (1) 7/8" Ø coax cable running on the outside of the existing tower.

- UNKNOWN (Existing):
  Antennas: Two (2) grid dish antennas, one (1) DB633 Omni-directional whip and one (1) DB499 yagi antenna pipe mounted with an elevation of 85-ft above the existing tower base.
  Coax Cables: Two (2) 7/8" Ø and two (2) 1/2" coax cables running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: Three (3) 8-ft Omni-directional whips, one (1) 15-ft Omni-directional whip and one (1) DB432 yagi antennas mounted on four (4) 6-ft side arms with an elevation of 83-ft above the existing tower base.
  Coax Cables: Five (5) 7/8" Ø coax cables running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) 3-ft grid dish leg mounted with an elevation of 80-ft above the existing tower base.
  Coax Cables: One (1) 1/2" coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: Three (2) TA-2304-2-DAB panel antennas pipe mounted with an elevation of 79-ft above the existing tower base.
  Coax Cables: Three (3) 1/2" coax cables running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: Two (2) Empty 6-ft side arms with an elevation of 74-ft above the existing tower base.
- UNKNOWN (Existing):
  Antennas: One (1) 10-ft Omni-directional whip antenna mounted on a 2-ft standoff mount with an elevation of 66-ft above the existing tower base.
  Coax Cables: One (1) 1/2" Ø coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) 4-ft dish mounted on a 2-ft standoff mount with an elevation of 60-ft above the existing tower base.
  Coax Cables: One (1) 1/2" coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: Three (3) 15-ft Omni-directional whip antennas mounted on three (3) 6-ft side arms with an elevation of 58-ft above the existing tower base.
  Coax Cables: Three (3) 1/2" Ø coax cables running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) 3-ft yagi antenna pipe mounted with an elevation of 38-ft above the existing tower base.
  Coax Cables: One (1) 1/2" coax cable running on the outside of the existing tower.

- UNKNOWN (Existing):
  Antennas: One (1) 4-ft dish mounted on a 2-ft standoff mount with an elevation of 38-ft above the existing tower base.
  Coax Cables: One (1) 1/2" coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) 4-ft dish mounted on a 2-ft standoff mount with an elevation of 36-ft above the existing tower base.
  Coax Cables: One (1) 1/2" coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) DB254 yagi antenna pipe mounted with an elevation of 34-ft above the existing tower base.
  Coax Cables: One (1) 1/2" coax cable running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: Two (2) 4-ft dishes mounted on two (2) 2-ft standoff mounts with an elevation of 29-ft above the existing tower base.
  Coax Cables: Two (2) 1/2" coax cables running on the outside of the existing tower.
- UNKNOWN (Existing):
  Antennas: One (1) 4-ft dish mounted on a 2-ft standoff mount with an elevation of 26-ft above the existing tower base.
  Coax Cables: One (1) 1/2" coax cable running on the outside of the existing tower.
- T-MOBILE (EXISTING TO REMAIN):
  Antennas: Three (3) Ericsson AIR32 panel antennas, three (3) Ericsson AIR21 panel antennas, three (3) RFS APXVAARR24-43 panel antennas, three (3) Ericsson 4449 remote radio units and three (3) TMAs mounted on three (3) 12-ft T-frames with a RAD center elevation of +/- 50-ft AGL.
  Cables: Six (6) 1-5/8" ∅ coax cables, one (1) 9x18 fiber cable and three (3) 6x12 fiber cables.
- T-MOBILE (EXISTING TO REMOVE):
  Cables: Twelve (12) 1-5/8" ∅ coax cables.
- **T-MOBILE (PROPOSED):**
  Antennas: Three (3) Ericsson AIR6449 panel antennas and three (3) Ericsson 4415 remote radio units mounted on three (3) 12-ft T-frames with a RAD center elevation of +/- 50-ft AGL.
  Cables: Three (3) 6x12 fiber cables routed along the exterior of the tower.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.

Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower, and the model assumes that the tower members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (3-second gust) with no ice and the applicable wind and ice combination to determine stresses in members as per guidelines of TIA-222-G-2005 entitled "Structural Standard for Antenna Support Structures and Antennas", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Load and Resistance Factor Design (LRFD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix N of the CSBC[1] and the wind speed data available in the TIA-222-G-2005 Standard.

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA-222-G-2005, gravity loads of the tower structure and its components, and the application of 0.75" radial ice on the tower structure and its components.

Basic Wind Speed:	Fairfield County; v = 90-100 mph (Nominal)	*[Annex B of TIA-222-G-2005]*
	Danbury; v = 93 mph (Nominal)	*[Appendix N of the 2018 CT Building Code]*
Load Cases:	Load Case 1; 93 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[Appendix N of the 2016 CT Building Code]*
	Load Case 2; 50 mph wind speed w/ 0.75" radial ice plus gravity load – used in calculation of tower stresses.	*[Annex B of TIA-222-G-2005]*

[1] The 2015 International Building Code as amended by the 2018 Connecticut State Building Code (CSBC).

Tower Capacity

- Calculated stresses were found to be within allowable limits. This tower was found to be at **64.6%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T5)	0'-0"- 15'-0"	51.4%	**PASS**
Diagonal (T5)	0'-0"- 15'-0"	64.6%	**PASS**

Foundation and Anchors

The existing foundation consists of three (3) 2.5-ft ∅ x 18.5-ft long reinforced concrete caissons. The sub-grade conditions used in the analysis of the existing foundation were obtained from a previous structural analysis prepared by Tectonic 644.CT11923C dated July 7, 2013. The tower legs are connected to the three (3) reinforced caissons by means of four (4) 1.5" ∅ ASTM A354-BC anchor bolts per leg embedded into the concrete foundation structure.

- The tower reactions developed from the governing Load Case 1 of the proposed reinforced tower condition were used in the verification of the foundation and anchor bolts:

Leg Reactions	Vector	Proposed Tower Reactions
Leg	Shear	**12 kips**
	Compression	**68 kips**
	Uplift	**56 kips**
Base	Shear	**35 kips**
	Compression	**27 kips**
	Moment	**1819 kip-ft**

- The anchor bolts were found to be within allowable limits.

Tower Section	Component	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	15.1%	**PASS**

- The foundation was found to be within allowable limits.

Foundation Type	Design Limit	Limit/FS	Proposed Loading	Result
Reinforced Concrete Caisson (x3)	Uplift	1.00 (1)	2.07	**PASS**

Note 1: Minimum required Factor of Safety (FS) of 1.0 required per TIA-222-G section 9.4

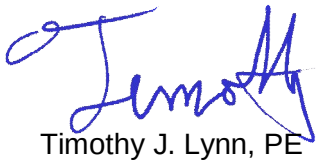
C o n c l u s i o n

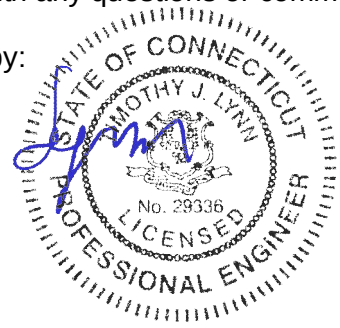
This analysis shows that the subject tower **is adequate** to support the proposed antenna configuration.

The analysis is based, in part, on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:





Timothy J. Lynn, PE
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

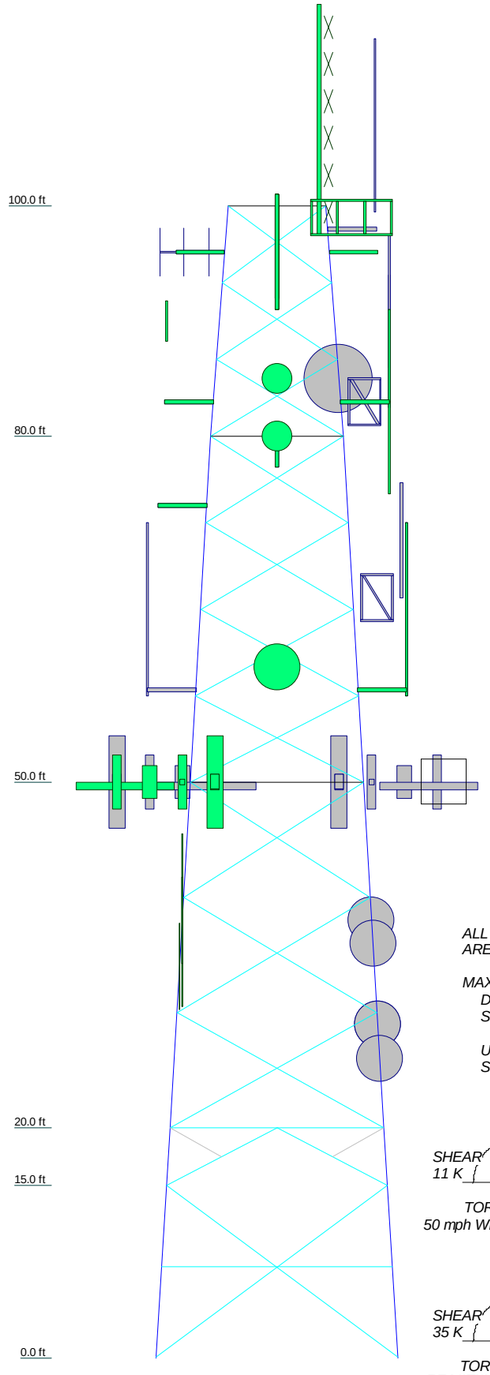
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly RISA Tower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.

Section													
Legs	L5x5x3/8	A36	L2x2 1/2x3/16	A36	L2 1/2x2 1/2x3/16	N.A.	N.A.	N.A.	N.A.	8.5	3 @ 6.66667	19
	L6x6x3/8		L2 1/2x2 1/2x3/16		L2x2 1/2x3/16					11.42	4 @ 7.5	3.4
	L6x6x9/16		L3x3 1/2x1/4		L2x3x3/16					15	3 @ 10	5.3
	L6x6x1/2		A		N.A.	L3x3x1/4	B	C		18.58	1 @ 5	1.4
			L3 1/2x4x1/4			N.A.	L3 1/2x3 1/2x1/4	N.A.	N.A.	19.19	1 @ 14.9167	2.9
Leg Grade												
Diagonals										21		14.9
Diagonal Grade												
Top Girts												
Horizontals												
Sec. Horizontals												
Red. Diagonals												
Inner Bracing												
Face Width (ft)												
# Panels @ (ft)												
Weight (K)												



ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS
DOWN: 68 K
SHEAR: 12 K

UPLIFT: -56 K
SHEAR: 11 K

AXIAL 73 K
SHEAR 11 K *MOMENT 627 kip-ft*
TORQUE 9 kip-ft
50 mph WIND - 0.7500 in ICE

AXIAL 27 K
SHEAR 35 K *MOMENT 1819 kip-ft*
TORQUE 23 kip-ft
REACTIONS - 93 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ROHN 25 tower 55'	107.5	15' x 3" Dia Omni	58
15' x 3" Dia Omni	100	6' Standoff Arm	58
Pirod 10' Box Arm	99	15' x 3" Dia Omni	58
6' Standoff Arm	98	APXVAARR24-43 (T-Mobile - Existing)	50
6' Standoff Arm	96	AIR21 B2A/B4P (T-Mobile - Existing)	50
6' Standoff Arm	96	AIR6449 (T-Mobile - Proposed)	50
6' Yagi	96	AIR32 (T-Mobile - Existing)	50
8' x 3" Dia Omni	96	4415 B25 (T-Mobile - Proposed)	50
8' x 3" Dia Omni	96	4449 B12,B71 (T-Mobile - Existing)	50
10' x 3" Dia Omni	96	KRY 112-144-1 TMA (T-Mobile - Existing)	50
10' x 3" Dia Omni	96	APXVAARR24-43 (T-Mobile - Existing)	50
6' Standoff Arm	96	AIR21 B2A/B4P (T-Mobile - Existing)	50
DB292-A	93	AIR6449 (T-Mobile - Proposed)	50
DB225-2-A	90	AIR32 (T-Mobile - Existing)	50
DB252	89	4415 B25 (T-Mobile - Proposed)	50
DB499-A	85.5	4449 B12,B71 (T-Mobile - Existing)	50
DB633-C	85	KRY 112-144-1 TMA (T-Mobile - Existing)	50
3-ft Grid Dish	85	APXVAARR24-43 (T-Mobile - Existing)	50
6'x3' Grid Dish	85	AIR21 B2A/B4P (T-Mobile - Existing)	50
DB432-A	84	AIR6449 (T-Mobile - Proposed)	50
6' Standoff Arm	83	AIR32 (T-Mobile - Existing)	50
8' x 3" Dia Omni	83	4415 B25 (T-Mobile - Proposed)	50
2-ft Stand Off	83	4449 B12,B71 (T-Mobile - Existing)	50
15' x 3" Dia Omni	83	KRY 112-144-1 TMA (T-Mobile - Existing)	50
6' Standoff Arm	83	Pirod 12' T-Frame Sector Mount (1) (T-Mobile - Existing)	50
8' x 3" Dia Omni	83	Pirod 12' T-Frame Sector Mount (1) (T-Mobile - Existing)	50
8' x 3" Dia Omni	83	Pirod 12' T-Frame Sector Mount (1) (T-Mobile - Existing)	50
6' Standoff Arm	83	3' Yagi	38
6' Standoff Arm	83	2" Std. x 7.5' Pipe	38
3-ft Grid Dish	80	4-ft Dish	38
TA-2304-2-DAB	79	2-ft Stand Off	38
TA-2304-2-DAB	79	2-ft Stand Off	36
TA-2304-2-DAB	79	4-ft Dish	36
6' Standoff Arm	74	2" Std. x 7.5' Pipe	34
6' Standoff Arm	74	DB254-A	34
2-ft Stand Off	66	2-ft Stand Off	29
10' x 3" Dia Omni	66	2-ft Stand Off	29
2-ft Stand Off	60	4-ft Dish	29
4-ft Dish	60	4-ft Dish	29
6' Standoff Arm	58	4-ft Dish	26
15' x 3" Dia Omni	58	2-ft Stand Off	26
6' Standoff Arm	58		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2 1/2x2 1/2x1/4	C	L2x2 1/2x1/4
B	L2 1/2x2 1/2x1/8		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

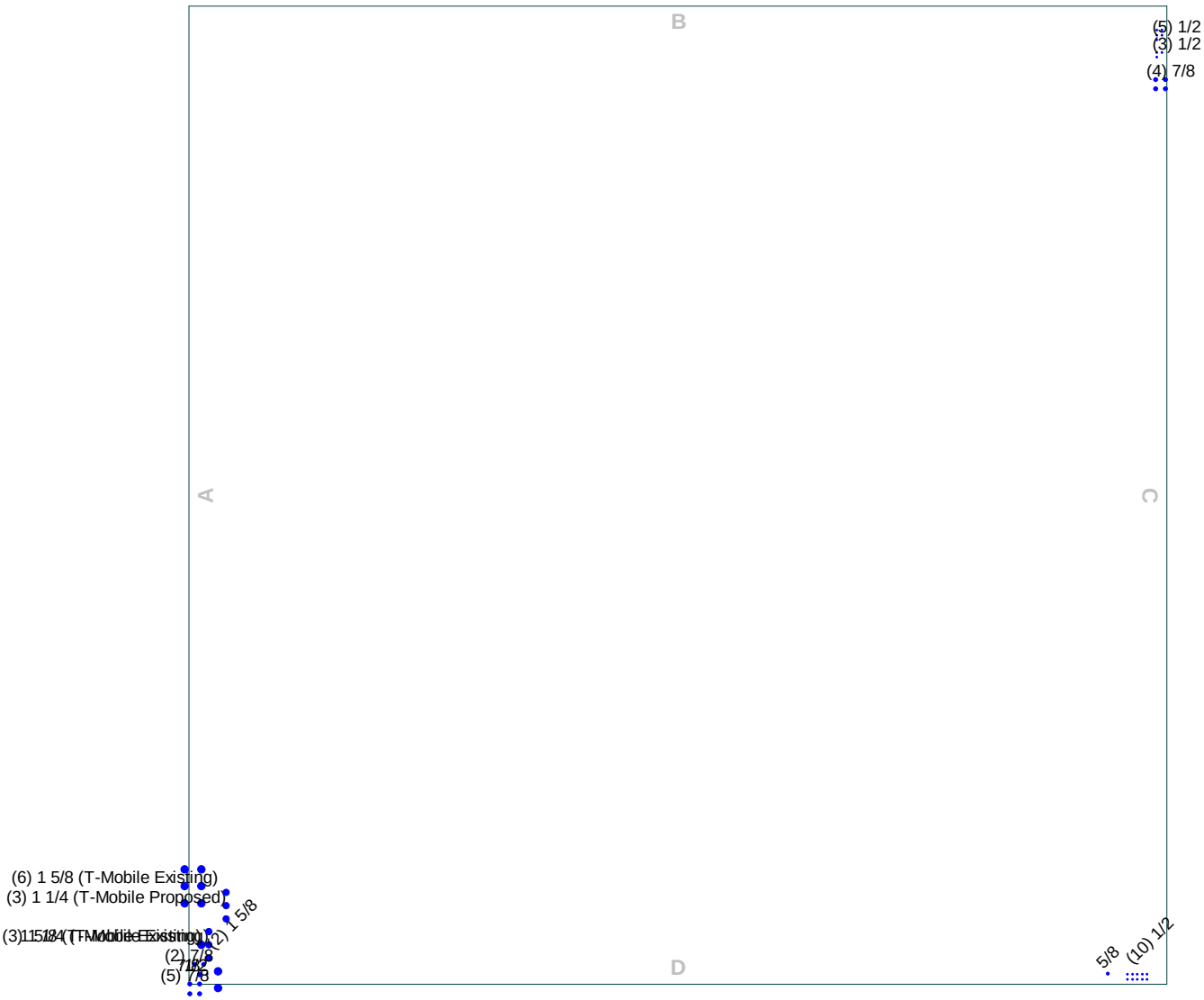
1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 64.6%

Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job:	***20074.05 - CT11923C***		
Project:	***100' Lattice Tower - 7 West View Dr., Danbury, CT***		
Client: T-Mobile	Drawn by: TJL	App'd:	
Code: TIA-222-G	Date: 05/27/20	Scale: NTS	
Path: J:\Jobs\20074\00 WMS_CT11923C\05_Structural\Tower Analysis\Backup Documentation\ER Files\100' Lattice Tower Danbury, CT.eri		Dwg No. E-1	

Feed Line Plan

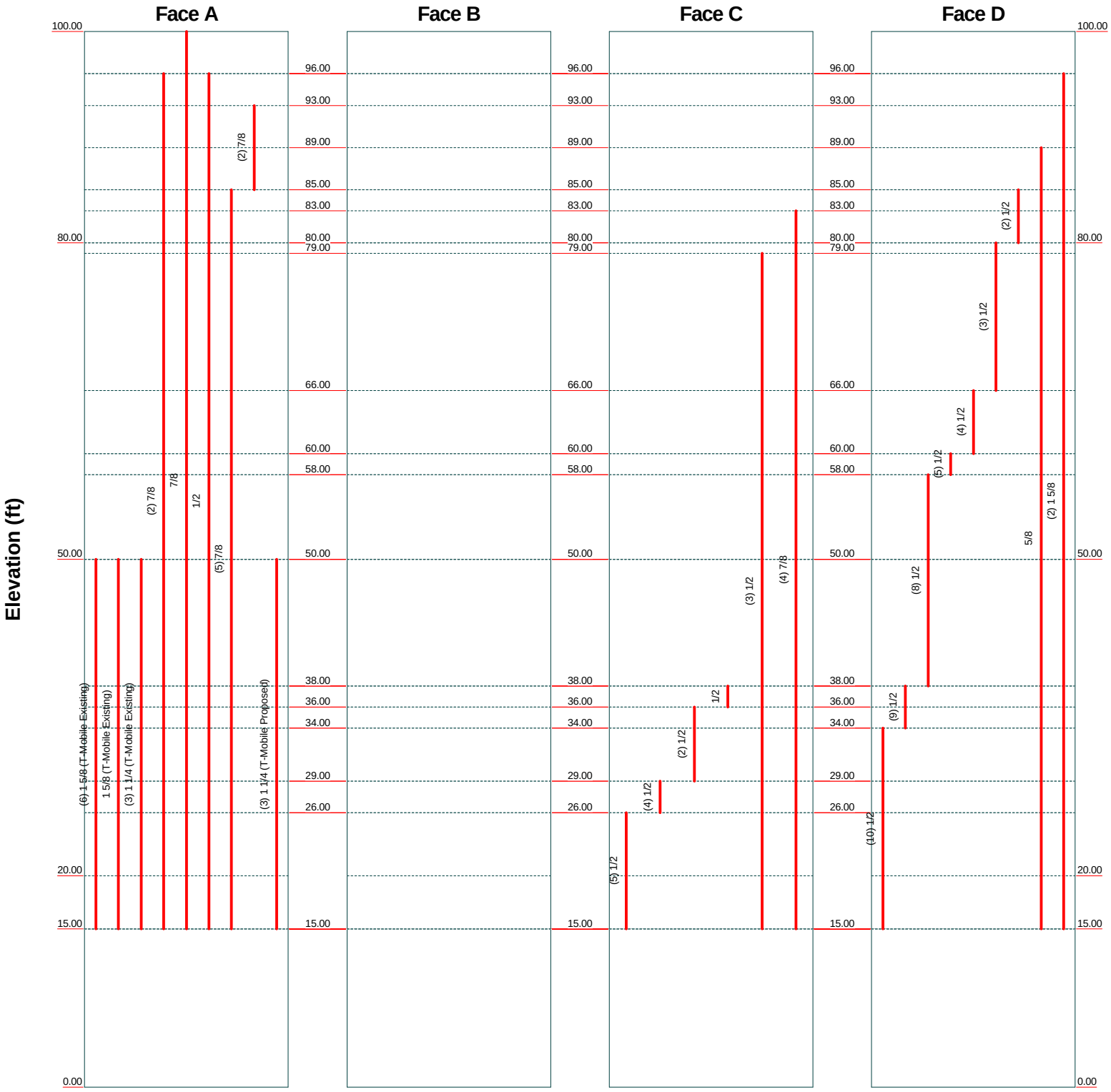
Round Flat App In Face App Out Face



Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job: ***20074.05 - CT11923C***		
	Project: ***100' Lattice Tower - 7 West View Dr., Danbury, CT***		
	Client: T-Mobile	Drawn by: TJL	App'd:
	Code: TIA-222-G	Date: 05/27/20	Scale: NTS
	Path: J:\Jobs\2007400.WI\05_CT11923C\05_Structural\Tower Analysis\Backup Documentation\ER Files\100' Lattice Tower Danbury, CT.eri		Dwg No. E-7

Feed Line Distribution Chart
0' - 100'

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



Centek Engineering Inc.
63-2 North Branford Rd.
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: **20074.05 - CT11923C**		
Project: ***100' Lattice Tower - 7 West View Dr., Danbury, CT***		
Client: T-Mobile	Drawn by: TJL	App'd:
Code: TIA-222-G	Date: 05/27/20	Scale: NTS
Path: J:\Jobs\2007400.WI\05_CT11923C\05_Structural\Tower Analysis\Backup Documentation\ER Files\100' Lattice Tower Danbury, CT.eri		Dwg No. E-7

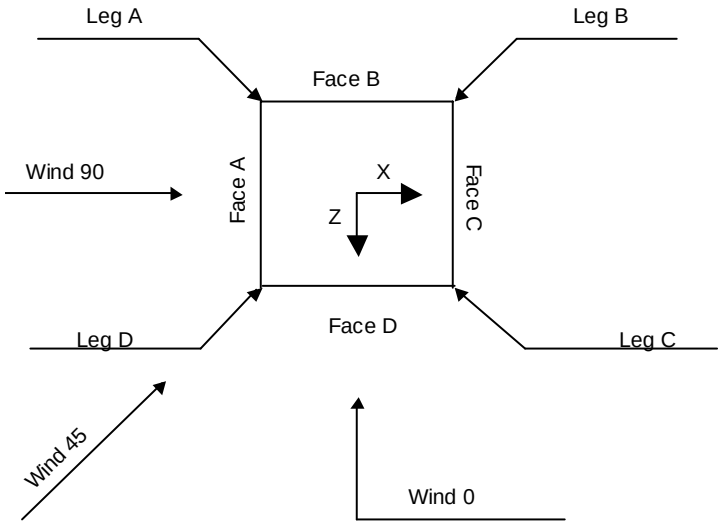
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 100.00 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 8.50 ft at the top and 21.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 93 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	100.00-80.00			8.50	1	20.00
T2	80.00-50.00			11.42	1	30.00
T3	50.00-20.00			15.00	1	30.00
T4	20.00-15.00			18.58	1	5.00
T5	15.00-0.00			19.19	1	15.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	100.00-80.00	6.67	X Brace	No	No	0.0000	0.0000
T2	80.00-50.00	7.50	X Brace	No	No	0.0000	0.0000
T3	50.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T4	20.00-15.00	5.00	K1 Down	No	Yes	0.0000	0.0000
T5	15.00-0.00	14.92	X Brace	No	Yes	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 100.00-80.00	Equal Angle	L5x5x3/8	A36 (36 ksi)	Single Angle	L2x2 1/2x3/16	A36 (36 ksi)
T2 80.00-50.00	Equal Angle	L6x6x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 50.00-20.00	Equal Angle	L6x6x9/16	A36 (36 ksi)	Single Angle	L3x3 1/2x1/4	A36 (36 ksi)
T4 20.00-15.00	Equal Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T5 15.00-0.00	Equal Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3 1/2x4x1/4	A36 (36 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 100.00-80.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 80.00-50.00	Single Angle	L2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 50.00-20.00	Single Angle	L2x3x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T4 20.00-15.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T4 20.00-15.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2 1/2x1/4	A36 (36 ksi)
T5 15.00-0.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T4 20.00-15.00	A36 (36 ksi)	Diagonal (1)	Single Angle	L2 1/2x2 1/2x1/8	1

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 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1.02	1	1	36.0000	36.0000	36.0000
T2 80.00-50.00	0.00	0.0000	A36 (36 ksi)	1.02	1	1	36.0000	36.0000	36.0000
T3 50.00-20.00	0.00	0.0000	A36 (36 ksi)	1.02	1	1	36.0000	36.0000	36.0000
T4 20.00-15.00	0.00	0.0000	A36 (36 ksi)	1.02	1	1	36.0000	36.0000	36.0000
T5 15.00-0.00	0.00	0.0000	A36 (36 ksi)	1.02	1	1	36.0000	36.0000	36.0000

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
100.00-80.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
80.00-50.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
50.00-20.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
20.00-15.00				1	1	1	1	1	1	1
T5 15.00-0.00	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 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 80.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 50.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 20.00-15.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 15.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	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 100.00-80.00	Sleeve SS	0.6250 A325N	12	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 80.00-50.00	Sleeve SS	0.6250 A325N	16	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 50.00-20.00	Sleeve SS	0.6250 A325N	16	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 20.00-15.00	Sleeve SS	0.6250 A325N	0	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1	0.6250 A325N	0
T5 15.00-0.00	Sleeve SS	1.5000 A354-BC	4	0.6250 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	2

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
1 5/8 (T-Mobile Existing)	A	No	No	Ar (CaAa)	50.00 - 15.00	-2.0000	-0.4	6	3	1.9800	1.9800		1.04
1 5/8 (T-Mobile Existing)	A	No	No	Ar (CaAa)	50.00 - 15.00	-2.0000	-0.46	1	1	1.9800	1.9800		1.04
1 1/4 (T-Mobile Existing)	A	No	No	Ar (CaAa)	50.00 - 15.00	-4.0000	-0.46	3	3	1.5500	1.5500		0.66
7/8	A	No	No	Ar (CaAa)	96.00 - 15.00	-3.0000	-0.48	2	1	1.1100	1.1100		0.54
7/8	A	No	No	Ar (CaAa)	100.00 - 15.00	-2.0000	-0.49	1	1	1.1100	1.1100		0.54
1/2	A	No	No	Ar (CaAa)	96.00 - 15.00	-4.0000	-0.49	1	1	0.5800	0.5800		0.25
1/2	C	No	No	Ar (CaAa)	26.00 - 15.00	-2.0000	-0.47	5	3	0.5800	0.5800		0.25

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
1/2	C	No	No	Ar (CaAa)	29.00 - 26.00	-2.0000	-0.47	4	2	0.5800	0.5800		0.25
1/2	C	No	No	Ar (CaAa)	36.00 - 29.00	-2.0000	-0.47	2	2	0.5800	0.5800		0.25
1/2	C	No	No	Ar (CaAa)	38.00 - 36.00	-2.0000	-0.47	1	1	0.5800	0.5800		0.25
1/2	D	No	No	Ar (CaAa)	34.00 - 15.00	-2.0000	-0.47	10	5	0.5800	0.5800		0.25
1/2	D	No	No	Ar (CaAa)	38.00 - 34.00	-2.0000	-0.47	9	5	0.5800	0.5800		0.25
1/2	D	No	No	Ar (CaAa)	58.00 - 38.00	-2.0000	-0.47	8	4	0.5800	0.5800		0.25
1/2	D	No	No	Ar (CaAa)	60.00 - 58.00	-2.0000	-0.47	5	3	0.5800	0.5800		0.25
1/2	D	No	No	Ar (CaAa)	66.00 - 60.00	-2.0000	-0.47	4	2	0.5800	0.5800		0.25
1/2	D	No	No	Ar (CaAa)	80.00 - 66.00	-2.0000	-0.47	3	2	0.5800	0.5800		0.25
1/2	D	No	No	Ar (CaAa)	85.00 - 80.00	-2.0000	-0.47	2	2	0.5800	0.5800		0.25
5/8	D	No	No	Ar (CaAa)	89.00 - 15.00	-2.0000	-0.44	1	1	0.8800	0.8800		0.40
1/2	C	No	No	Ar (CaAa)	79.00 - 15.00	-2.0000	-0.45	3	2	0.5800	0.5800		0.25
7/8	C	No	No	Ar (CaAa)	83.00 - 15.00	-2.0000	-0.42	4	2	1.1100	1.1100		0.54
7/8	A	No	No	Ar (CaAa)	85.00 - 15.00	-2.0000	-0.5	5	3	1.1100	1.1100		0.54
7/8	A	No	No	Ar (CaAa)	93.00 - 85.00	-2.0000	-0.5	2	2	1.1100	1.1100		0.54
1 5/8	D	No	No	Ar (CaAa)	96.00 - 15.00	-2.0000	0.47	2	1	1.9800	1.9800		1.04
1 1/4 (T-Mobile Proposed)	A	No	No	Ar (CaAa)	50.00 - 15.00	-8.0000	-0.42	3	3	1.5500	1.5500		0.66

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	100.00-80.00	A	0.000	0.000	11.251	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.332	0.000	0.01
		D	0.000	0.000	7.708	0.000	0.04
T2	80.00-50.00	A	0.000	0.000	28.380	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	18.366	0.000	0.09
		D	0.000	0.000	22.640	0.000	0.11
T3	50.00-20.00	A	0.000	0.000	97.860	0.000	0.47
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	21.904	0.000	0.10
		D	0.000	0.000	30.296	0.000	0.14
T4	20.00-15.00	A	0.000	0.000	16.310	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	4.540	0.000	0.02

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
		D	0.000	0.000	5.320	0.000	0.02
T5	15.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	100.00-80.00	A	1.658	0.000	0.000	45.971	0.000	0.58
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	3.525	0.000	0.05
		D		0.000	0.000	29.097	0.000	0.35
T2	80.00-50.00	A	1.605	0.000	0.000	94.724	0.000	1.24
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	60.064	0.000	0.70
		D		0.000	0.000	79.985	0.000	0.94
T3	50.00-20.00	A	1.509	0.000	0.000	253.222	0.000	3.67
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	72.819	0.000	0.80
		D		0.000	0.000	84.355	0.000	1.03
T4	20.00-15.00	A	1.408	0.000	0.000	41.043	0.000	0.58
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	14.027	0.000	0.15
		D		0.000	0.000	13.860	0.000	0.16
T5	15.00-0.00	A	1.293	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	100.00-80.00	-4.7459	5.8974	-11.0788	14.8361
T2	80.00-50.00	-2.2131	7.2474	-4.0906	15.0272
T3	50.00-20.00	-13.6039	19.7265	-19.6612	29.2851
T4	20.00-15.00	-10.3883	16.0432	-16.1387	24.8912
T5	15.00-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	4	7/8	80.00 - 96.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	5	7/8	80.00 - 100.00	0.6000	0.6000
T1	6	1/2	80.00 - 96.00	0.6000	0.6000
T1	17	1/2	80.00 - 85.00	0.6000	0.6000
T1	18	5/8	80.00 - 89.00	0.6000	0.6000
T1	20	7/8	80.00 - 83.00	0.6000	0.6000
T1	21	7/8	80.00 - 85.00	0.6000	0.6000
T1	22	7/8	85.00 - 93.00	0.6000	0.6000
T1	23	1 5/8	80.00 - 96.00	0.6000	0.6000
T2	4	7/8	50.00 - 80.00	0.6000	0.6000
T2	5	7/8	50.00 - 80.00	0.6000	0.6000
T2	6	1/2	50.00 - 80.00	0.6000	0.6000
T2	13	1/2	50.00 - 58.00	0.6000	0.6000
T2	14	1/2	58.00 - 60.00	0.6000	0.6000
T2	15	1/2	60.00 - 66.00	0.6000	0.6000
T2	16	1/2	66.00 - 80.00	0.6000	0.6000
T2	18	5/8	50.00 - 80.00	0.6000	0.6000
T2	19	1/2	50.00 - 79.00	0.6000	0.6000
T2	20	7/8	50.00 - 80.00	0.6000	0.6000
T2	21	7/8	50.00 - 80.00	0.6000	0.6000
T2	23	1 5/8	50.00 - 80.00	0.6000	0.6000
T3	1	1 5/8	20.00 - 50.00	0.6000	0.6000
T3	2	1 5/8	20.00 - 50.00	0.6000	0.6000
T3	3	1 1/4	20.00 - 50.00	0.6000	0.6000
T3	4	7/8	20.00 - 50.00	0.6000	0.6000
T3	5	7/8	20.00 - 50.00	0.6000	0.6000
T3	6	1/2	20.00 - 50.00	0.6000	0.6000
T3	7	1/2	20.00 - 26.00	0.6000	0.6000
T3	8	1/2	26.00 - 29.00	0.6000	0.6000
T3	9	1/2	29.00 - 36.00	0.6000	0.6000
T3	10	1/2	36.00 - 38.00	0.6000	0.6000
T3	11	1/2	20.00 - 34.00	0.6000	0.6000
T3	12	1/2	34.00 - 38.00	0.6000	0.6000
T3	13	1/2	38.00 - 50.00	0.6000	0.6000
T3	18	5/8	20.00 - 50.00	0.6000	0.6000
T3	19	1/2	20.00 - 50.00	0.6000	0.6000
T3	20	7/8	20.00 - 50.00	0.6000	0.6000
T3	21	7/8	20.00 - 50.00	0.6000	0.6000
T3	23	1 5/8	20.00 - 50.00	0.6000	0.6000
T3	24	1 1/4	20.00 - 50.00	0.6000	0.6000
T4	1	1 5/8	15.00 - 20.00	0.6000	0.6000
T4	2	1 5/8	15.00 - 20.00	0.6000	0.6000
T4	3	1 1/4	15.00 - 20.00	0.6000	0.6000
T4	4	7/8	15.00 - 20.00	0.6000	0.6000
T4	5	7/8	15.00 - 20.00	0.6000	0.6000
T4	6	1/2	15.00 - 20.00	0.6000	0.6000
T4	7	1/2	15.00 - 20.00	0.6000	0.6000
T4	11	1/2	15.00 - 20.00	0.6000	0.6000
T4	18	5/8	15.00 - 20.00	0.6000	0.6000
T4	19	1/2	15.00 - 20.00	0.6000	0.6000
T4	20	7/8	15.00 - 20.00	0.6000	0.6000
T4	21	7/8	15.00 - 20.00	0.6000	0.6000
T4	23	1 5/8	15.00 - 20.00	0.6000	0.6000
T4	24	1 1/4	15.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
3' Yagi	D	From Leg	0.00	0.0000	38.00	No Ice	2.08	2.08	0.03
			0.00			1/2" Ice	3.79	3.79	0.05
			0.00			1" Ice	5.52	5.52	0.09
2" Std. x 7.5' Pipe	D	From Leg	0.00	0.0000	38.00	No Ice	1.78	1.78	0.03
			0.00			1/2" Ice	2.56	2.56	0.04
			0.00			1" Ice	3.11	3.11	0.06
DB254-A	D	From Leg	0.00	0.0000	34.00	No Ice	1.10	1.10	0.01
			0.00			1/2" Ice	1.98	1.98	0.01
			0.00			1" Ice	2.86	2.86	0.02
2-ft Stand Off	D	From Face	0.00	0.0000	60.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
2" Std. x 7.5' Pipe	D	From Leg	0.00	0.0000	34.00	No Ice	1.78	1.78	0.03
			0.00			1/2" Ice	2.56	2.56	0.04
			0.00			1" Ice	3.11	3.11	0.06
2-ft Stand Off	C	From Face	0.00	0.0000	38.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
2-ft Stand Off	C	From Face	0.00	0.0000	36.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
2-ft Stand Off	C	From Face	0.00	0.0000	29.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
2-ft Stand Off	C	From Face	0.00	0.0000	29.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
2-ft Stand Off	C	From Face	0.00	0.0000	26.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
ROHN 25 tower 55'	C	From Leg	0.00	0.0000	107.50	No Ice	20.00	20.00	0.40
			0.00			1/2" Ice	28.00	28.00	0.55
			0.00			1" Ice	36.00	36.00	0.70
Pirod 10' Box Arm	C	From Leg	3.00	0.0000	99.00	No Ice	5.00	5.00	0.25
			0.00			1/2" Ice	10.00	10.00	0.30
			0.00			1" Ice	15.00	15.00	0.35
6' Standoff Arm	C	From Leg	3.00	0.0000	96.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
8' x 3" Dia Omni	C	From Leg	6.00	0.0000	83.00	No Ice	2.40	2.40	0.03
			0.00			1/2" Ice	3.19	3.19	0.04
			4.00			1" Ice	3.67	3.67	0.07
8' x 3" Dia Omni	C	From Leg	6.00	0.0000	83.00	No Ice	2.40	2.40	0.03
			0.00			1/2" Ice	3.19	3.19	0.04
			-4.00			1" Ice	3.67	3.67	0.07
6' Standoff Arm	C	From Leg	3.00	0.0000	83.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
15' x 3" Dia Omni	C	From Leg	6.00	0.0000	58.00	No Ice	4.50	4.50	0.04
			0.00			1/2" Ice	6.03	6.03	0.07
			7.00			1" Ice	7.58	7.58	0.12
6' Standoff Arm	C	From Leg	3.00	0.0000	58.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
TA-2304-2-DAB	B	From Face	0.00	0.0000	79.00	No Ice	1.96	1.86	0.01
			0.00			1/2" Ice	2.22	2.12	0.02

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
			0.00			1" Ice	2.48	2.38	0.04
TA-2304-2-DAB	C	From Face	0.00	0.0000	79.00	No Ice	1.96	1.86	0.01
			0.00			1/2" Ice	2.22	2.12	0.02
			0.00			1" Ice	2.48	2.38	0.04
TA-2304-2-DAB	D	From Face	0.00	0.0000	79.00	No Ice	1.96	1.86	0.01
			0.00			1/2" Ice	2.22	2.12	0.02
			0.00			1" Ice	2.48	2.38	0.04
6' Standoff Arm	A	From Leg	3.00	0.0000	96.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
6' Yagi	A	From Leg	0.00	0.0000	96.00	No Ice	5.00	5.00	0.04
			0.00			1/2" Ice	6.50	6.50	0.06
			0.00			1" Ice	8.00	8.00	0.08
6' Standoff Arm	A	From Leg	3.00	0.0000	83.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
6' Standoff Arm	A	From Leg	3.00	0.0000	74.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
15' x 3" Dia Omni	A	From Leg	6.00	0.0000	58.00	No Ice	4.50	4.50	0.04
			0.00			1/2" Ice	6.03	6.03	0.07
			7.00			1" Ice	7.58	7.58	0.12
6' Standoff Arm	A	From Leg	3.00	0.0000	58.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
15' x 3" Dia Omni	B	From Leg	6.00	0.0000	100.00	No Ice	4.50	4.50	0.04
			0.00			1/2" Ice	6.03	6.03	0.07
			7.00			1" Ice	7.58	7.58	0.12
6' Standoff Arm	B	From Leg	3.00	0.0000	98.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
DB292-A	B	From Leg	2.00	0.0000	93.00	No Ice	1.80	1.80	0.01
			0.00			1/2" Ice	3.24	3.24	0.02
			0.00			1" Ice	4.68	4.68	0.02
8' x 3" Dia Omni	B	From Leg	6.00	0.0000	83.00	No Ice	2.40	2.40	0.03
			0.00			1/2" Ice	3.19	3.19	0.04
			7.00			1" Ice	3.67	3.67	0.07
2-ft Stand Off	B	From Leg	3.00	0.0000	83.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
15' x 3" Dia Omni	B	From Leg	6.00	0.0000	83.00	No Ice	4.50	4.50	0.04
			0.00			1/2" Ice	6.03	6.03	0.07
			7.00			1" Ice	7.58	7.58	0.12
6' Standoff Arm	B	From Leg	3.00	0.0000	83.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
10' x 3" Dia Omni	B	From Leg	6.00	0.0000	66.00	No Ice	3.00	3.00	0.03
			0.00			1/2" Ice	4.03	4.03	0.05
			5.00			1" Ice	5.03	5.03	0.08
2-ft Stand Off	B	From Leg	3.00	0.0000	66.00	No Ice	1.07	1.07	0.02
			0.00			1/2" Ice	1.62	1.62	0.03
			0.00			1" Ice	2.17	2.17	0.04
15' x 3" Dia Omni	B	From Leg	6.00	0.0000	58.00	No Ice	4.50	4.50	0.04
			0.00			1/2" Ice	6.03	6.03	0.07
			7.00			1" Ice	7.58	7.58	0.12
6' Standoff Arm	B	From Leg	3.00	0.0000	58.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1" Ice	3.26	0.24	0.10
DB225-2-A	B	From Face	2.00	0.0000	90.00	No Ice	3.21	3.21	0.07
			0.00			1/2" Ice	5.78	5.78	0.10
			0.00			1" Ice	8.35	8.35	0.12
DB252	B	From Face	2.00	0.0000	89.00	No Ice	3.20	3.20	0.03
			0.00			1/2" Ice	5.76	5.76	0.03
			0.00			1" Ice	8.32	8.32	0.04
DB432-A	B	From Face	2.00	0.0000	84.00	No Ice	0.30	0.30	0.01
			0.00			1/2" Ice	0.54	0.54	0.01
			0.00			1" Ice	0.78	0.78	0.01
DB499-A	B	From Face	2.00	0.0000	85.50	No Ice	0.25	0.25	0.01
			0.00			1/2" Ice	0.45	0.45	0.01
			0.00			1" Ice	0.65	0.65	0.01
8' x 3" Dia Omni	D	None		0.0000	96.00	No Ice	2.40	2.40	0.03
						1/2" Ice	3.19	3.19	0.04
						1" Ice	3.67	3.67	0.07
8' x 3" Dia Omni	D	None		0.0000	96.00	No Ice	2.40	2.40	0.03
						1/2" Ice	3.19	3.19	0.04
						1" Ice	3.67	3.67	0.07
10' x 3" Dia Omni	D	None		0.0000	96.00	No Ice	3.00	3.00	0.03
						1/2" Ice	4.03	4.03	0.05
						1" Ice	5.03	5.03	0.08
10' x 3" Dia Omni	D	None		0.0000	96.00	No Ice	3.00	3.00	0.03
						1/2" Ice	4.03	4.03	0.05
						1" Ice	5.03	5.03	0.08
DB633-C	D	From Leg	6.00	0.0000	85.00	No Ice	0.65	0.65	0.01
			0.00			1/2" Ice	0.86	0.86	0.01
			5.00			1" Ice	1.09	1.09	0.02
6' Standoff Arm	D	From Leg	3.00	0.0000	96.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
6' Standoff Arm	D	From Leg	3.00	0.0000	83.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
6' Standoff Arm	D	From Leg	3.00	0.0000	74.00	No Ice	2.40	0.13	0.05
			0.00			1/2" Ice	2.83	0.18	0.07
			0.00			1" Ice	3.26	0.24	0.10
APXVAARR24-43	A	From Leg	3.00	0.0000	50.00	No Ice	20.24	8.89	0.15
(T-Mobile - Existing)			-6.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
AIR21 B2A/B4P	A	From Leg	3.00	0.0000	50.00	No Ice	6.05	4.36	0.08
(T-Mobile - Existing)			-2.00			1/2" Ice	6.42	4.70	0.12
			0.00			1" Ice	6.80	5.06	0.17
AIR6449	A	From Leg	3.00	0.0000	50.00	No Ice	5.65	2.42	0.10
(T-Mobile - Proposed)			2.00			1/2" Ice	5.96	2.64	0.14
			0.00			1" Ice	6.26	2.87	0.18
AIR32	A	From Leg	3.00	0.0000	50.00	No Ice	6.51	4.71	0.13
(T-Mobile - Existing)			6.00			1/2" Ice	6.89	5.07	0.18
			0.00			1" Ice	7.27	5.43	0.23
4415 B25	A	From Leg	3.00	0.0000	50.00	No Ice	1.84	0.82	0.05
(T-Mobile - Proposed)			-6.00			1/2" Ice	2.01	0.94	0.06
			0.00			1" Ice	2.19	1.07	0.08
4449 B12,B71	A	From Leg	3.00	0.0000	50.00	No Ice	1.65	1.16	0.08
(T-Mobile - Existing)			-6.00			1/2" Ice	1.81	1.29	0.10
			0.00			1" Ice	1.98	1.44	0.11
KRY 112-144-1 TMA	A	From Leg	3.00	0.0000	50.00	No Ice	0.35	0.14	0.02
(T-Mobile - Existing)			-2.00			1/2" Ice	0.43	0.20	0.02

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
			0.00			1" Ice	0.51	0.26	0.02
APXVAARR24-43	B	From Leg	3.00	0.0000	50.00	No Ice	20.24	8.89	0.15
(T-Mobile - Existing)			-6.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
AIR21 B2A/B4P	B	From Leg	3.00	0.0000	50.00	No Ice	6.05	4.36	0.08
(T-Mobile - Existing)			-2.00			1/2" Ice	6.42	4.70	0.12
			0.00			1" Ice	6.80	5.06	0.17
AIR6449	B	From Leg	3.00	0.0000	50.00	No Ice	5.65	2.42	0.10
(T-Mobile - Proposed)			2.00			1/2" Ice	5.96	2.64	0.14
			0.00			1" Ice	6.26	2.87	0.18
AIR32	B	From Leg	3.00	0.0000	50.00	No Ice	6.51	4.71	0.13
(T-Mobile - Existing)			6.00			1/2" Ice	6.89	5.07	0.18
			0.00			1" Ice	7.27	5.43	0.23
4415 B25	B	From Leg	3.00	0.0000	50.00	No Ice	1.84	0.82	0.05
(T-Mobile - Proposed)			-6.00			1/2" Ice	2.01	0.94	0.06
			0.00			1" Ice	2.19	1.07	0.08
4449 B12,B71	B	From Leg	3.00	0.0000	50.00	No Ice	1.65	1.16	0.08
(T-Mobile - Existing)			-6.00			1/2" Ice	1.81	1.29	0.10
			0.00			1" Ice	1.98	1.44	0.11
KRY 112-144-1 TMA	B	From Leg	3.00	0.0000	50.00	No Ice	0.35	0.14	0.02
(T-Mobile - Existing)			-2.00			1/2" Ice	0.43	0.20	0.02
			0.00			1" Ice	0.51	0.26	0.02
APXVAARR24-43	D	From Leg	3.00	0.0000	50.00	No Ice	20.24	8.89	0.15
(T-Mobile - Existing)			-6.00			1/2" Ice	20.89	9.49	0.27
			0.00			1" Ice	21.54	10.09	0.39
AIR21 B2A/B4P	D	From Leg	3.00	0.0000	50.00	No Ice	6.05	4.36	0.08
(T-Mobile - Existing)			-2.00			1/2" Ice	6.42	4.70	0.12
			0.00			1" Ice	6.80	5.06	0.17
AIR6449	D	From Leg	3.00	0.0000	50.00	No Ice	5.65	2.42	0.10
(T-Mobile - Proposed)			2.00			1/2" Ice	5.96	2.64	0.14
			0.00			1" Ice	6.26	2.87	0.18
AIR32	D	From Leg	3.00	0.0000	50.00	No Ice	6.51	4.71	0.13
(T-Mobile - Existing)			6.00			1/2" Ice	6.89	5.07	0.18
			0.00			1" Ice	7.27	5.43	0.23
4415 B25	D	From Leg	3.00	0.0000	50.00	No Ice	1.84	0.82	0.05
(T-Mobile - Proposed)			-6.00			1/2" Ice	2.01	0.94	0.06
			0.00			1" Ice	2.19	1.07	0.08
4449 B12,B71	D	From Leg	3.00	0.0000	50.00	No Ice	1.65	1.16	0.08
(T-Mobile - Existing)			-6.00			1/2" Ice	1.81	1.29	0.10
			0.00			1" Ice	1.98	1.44	0.11
KRY 112-144-1 TMA	D	From Leg	3.00	0.0000	50.00	No Ice	0.35	0.14	0.02
(T-Mobile - Existing)			-2.00			1/2" Ice	0.43	0.20	0.02
			0.00			1" Ice	0.51	0.26	0.02
Pirod 12' T-Frame Sector	A	From Leg	3.00	0.0000	50.00	No Ice	13.60	13.60	0.47
Mount (1)			5.00			1/2" Ice	18.40	18.40	0.60
(T-Mobile - Existing)			0.00			1" Ice	23.20	23.20	0.73
Pirod 12' T-Frame Sector	B	From Leg	3.00	0.0000	50.00	No Ice	13.60	13.60	0.47
Mount (1)			5.00			1/2" Ice	18.40	18.40	0.60
(T-Mobile - Existing)			0.00			1" Ice	23.20	23.20	0.73
Pirod 12' T-Frame Sector	D	From Leg	3.00	0.0000	50.00	No Ice	13.60	13.60	0.47
Mount (1)			5.00			1/2" Ice	18.40	18.40	0.60
(T-Mobile - Existing)			0.00			1" Ice	23.20	23.20	0.73

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
3-ft Grid Dish	D	Grid	From	0.00	Worst		85.00	2.83	No Ice	5.19	0.01
			Face	0.00					1/2" Ice	6.67	0.04
				0.00					1" Ice	7.04	0.08
3-ft Grid Dish	D	Grid	From	0.00	Worst		80.00	2.83	No Ice	5.19	0.01
			Face	0.00					1/2" Ice	6.67	0.04
				0.00					1" Ice	7.04	0.08
4-ft Dish	D	Paraboloid w/o Radome	From	0.00	Worst		60.00	4.00	No Ice	12.57	0.08
			Face	0.00					1/2" Ice	13.10	0.15
				0.00					1" Ice	13.62	0.21
4-ft Dish	C	Paraboloid w/o Radome	From	0.00	Worst		38.00	4.00	No Ice	12.57	0.08
			Face	0.00					1/2" Ice	13.10	0.15
				0.00					1" Ice	13.62	0.21
4-ft Dish	C	Paraboloid w/o Radome	From	0.00	Worst		36.00	4.00	No Ice	12.57	0.08
			Face	0.00					1/2" Ice	13.10	0.15
				0.00					1" Ice	13.62	0.21
4-ft Dish	C	Paraboloid w/o Radome	From	0.00	Worst		29.00	4.00	No Ice	12.57	0.08
			Face	0.00					1/2" Ice	13.10	0.15
				0.00					1" Ice	13.62	0.21
4-ft Dish	C	Paraboloid w/o Radome	From	0.00	Worst		29.00	4.00	No Ice	12.57	0.08
			Face	0.00					1/2" Ice	13.10	0.15
				0.00					1" Ice	13.62	0.21
4-ft Dish	C	Paraboloid w/o Radome	From	0.00	Worst		26.00	4.00	No Ice	12.57	0.08
			Face	0.00					1/2" Ice	13.10	0.15
				0.00					1" Ice	13.62	0.21
6'x3' Grid Dish	C	Grid	From	0.00	Worst		85.00	6.00	No Ice	28.27	0.05
			Face	0.00					1/2" Ice	29.07	0.06
				0.00					1" Ice	29.86	0.35

Tower Pressures - No Ice

$G_H = 0.850$

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	90.00	1.238	23	203.840	A	30.539	0.000	16.755	54.87	11.251	0.000
100.00-80.00					B	30.539	0.000		54.87	0.000	0.000
					C	30.539	0.000		54.87	1.332	0.000
					D	30.539	0.000		54.87	7.708	0.000
T2 80.00-50.00	65.00	1.156	22	404.502	A	57.470	0.000	30.107	52.39	28.380	0.000
					B	57.470	0.000		52.39	0.000	0.000
					C	57.470	0.000		52.39	18.366	0.000
					D	57.470	0.000		52.39	22.640	0.000
T3 50.00-20.00	35.00	1.015	19	512.217	A	62.206	0.000	30.107	48.40	97.860	0.000
					B	62.206	0.000		48.40	0.000	0.000
					C	62.206	0.000		48.40	21.904	0.000
					D	62.206	0.000		48.40	30.296	0.000
T4 20.00-15.00	17.50	0.877	17	95.830	A	16.274	0.000	5.019	30.84	16.310	0.000
					B	16.274	0.000		30.84	0.000	0.000
					C	16.274	0.000		30.84	4.540	0.000

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
					D	16.274	0.000		30.84	5.320	0.000
T5 15.00-0.00	7.50	0.85	16	305.641	A	35.699	0.000	15.055	42.17	0.000	0.000
					B	35.699	0.000		42.17	0.000	0.000
					C	35.699	0.000		42.17	0.000	0.000
					D	35.699	0.000		42.17	0.000	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 100.00-80.00	90.00	1.238	7	1.6583	209.383	A	30.539	32.420	27.869	44.27	45.971	0.000
						B	30.539	32.420		44.27	0.000	0.000
						C	30.539	32.420		44.27	3.525	0.000
						D	30.539	32.420		44.27	29.097	0.000
T2 80.00-50.00	65.00	1.156	6	1.6052	412.542	A	57.470	50.390	46.216	42.85	94.724	0.000
						B	57.470	50.390		42.85	0.000	0.000
						C	57.470	50.390		42.85	60.064	0.000
						D	57.470	50.390		42.85	79.985	0.000
T3 50.00-20.00	35.00	1.015	6	1.5089	519.775	A	62.206	47.419	45.249	41.28	253.222	0.000
						B	62.206	47.419		41.28	0.000	0.000
						C	62.206	47.419		41.28	72.819	0.000
						D	62.206	47.419		41.28	84.355	0.000
T4 20.00-15.00	17.50	0.877	5	1.4078	97.006	A	16.274	13.824	7.374	24.50	41.043	0.000
						B	16.274	13.824		24.50	0.000	0.000
						C	16.274	13.824		24.50	14.027	0.000
						D	16.274	13.824		24.50	13.860	0.000
T5 15.00-0.00	7.50	0.85	5	1.2934	308.880	A	35.699	21.232	21.545	37.84	0.000	0.000
						B	35.699	21.232		37.84	0.000	0.000
						C	35.699	21.232		37.84	0.000	0.000
						D	35.699	21.232		37.84	0.000	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	90.00	1.238	10	203.840	A	30.539	0.000	16.755	54.87	11.251	0.000
100.00-80.00					B	30.539	0.000		54.87	0.000	0.000
					C	30.539	0.000		54.87	1.332	0.000
					D	30.539	0.000		54.87	7.708	0.000
T2 80.00-50.00	65.00	1.156	9	404.502	A	57.470	0.000	30.107	52.39	28.380	0.000
					B	57.470	0.000		52.39	0.000	0.000
					C	57.470	0.000		52.39	18.366	0.000
					D	57.470	0.000		52.39	22.640	0.000
T3 50.00-20.00	35.00	1.015	8	512.217	A	62.206	0.000	30.107	48.40	97.860	0.000

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
					B	62.206	0.000		48.40	0.000	0.000
					C	62.206	0.000		48.40	21.904	0.000
					D	62.206	0.000		48.40	30.296	0.000
T4 20.00-15.00	17.50	0.877	7	95.830	A	16.274	0.000	5.019	30.84	16.310	0.000
					B	16.274	0.000		30.84	0.000	0.000
					C	16.274	0.000		30.84	4.540	0.000
					D	16.274	0.000		30.84	5.320	0.000
T5 15.00-0.00	7.50	0.85	7	305.641	A	35.699	0.000	15.055	42.17	0.000	0.000
					B	35.699	0.000		42.17	0.000	0.000
					C	35.699	0.000		42.17	0.000	0.000
					D	35.699	0.000		42.17	0.000	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	0.10	1.89	A	0.15	3.206	23	1	1	30.539	2.18	108.99	D
100.00-80.00			B	0.15	3.206		1	1	30.539			
			C	0.15	3.206		1	1	30.539			
			D	0.15	3.206		1	1	30.539			
T2	0.33	3.41	A	0.142	3.242	22	1	1	57.470	4.22	140.52	D
80.00-50.00			B	0.142	3.242		1	1	57.470			
			C	0.142	3.242		1	1	57.470			
			D	0.142	3.242		1	1	57.470			
T3	0.72	5.31	A	0.121	3.342	19	1	1	62.206	4.84	161.21	D
50.00-20.00			B	0.121	3.342		1	1	62.206			
			C	0.121	3.342		1	1	62.206			
			D	0.121	3.342		1	1	62.206			
T4	0.12	1.38	A	0.17	3.113	17	1	1	16.274	0.93	186.20	D
20.00-15.00			B	0.17	3.113		1	1	16.274			
			C	0.17	3.113		1	1	16.274			
			D	0.17	3.113		1	1	16.274			
T5 15.00-0.00	0.00	2.87	A	0.117	3.365	16	1	1	35.699	1.63	108.91	D
			B	0.117	3.365		1	1	35.699			
			C	0.117	3.365		1	1	35.699			
			D	0.117	3.365		1	1	35.699			
Sum Weight:	1.28	14.86						OTM	668.01 kip-ft	13.80		

Tower Forces - No Ice - Wind 45 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	0.10	1.89	A	0.15	3.206	23	1.112	1.112	33.970	2.40	119.88	D
100.00-80.00			B	0.15	3.206		1.112	1.112	33.970			
			C	0.15	3.206		1.112	1.112	33.970			
			D	0.15	3.206		1.112	1.112	33.970			

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
T2	0.33	3.41	A	0.142	3.242	22	1.107	1.107	63.594	4.58	152.76	D
80.00-50.00			B	0.142	3.242		1.107	1.107	63.594			
			C	0.142	3.242		1.107	1.107	63.594			
			D	0.142	3.242		1.107	1.107	63.594			
T3	0.72	5.31	A	0.121	3.342	19	1.091	1.091	67.872	5.14	171.46	D
50.00-20.00			B	0.121	3.342		1.091	1.091	67.872			
			C	0.121	3.342		1.091	1.091	67.872			
			D	0.121	3.342		1.091	1.091	67.872			
T4	0.12	1.38	A	0.17	3.113	17	1.127	1.127	18.347	1.02	204.31	D
20.00-15.00			B	0.17	3.113		1.127	1.127	18.347			
			C	0.17	3.113		1.127	1.127	18.347			
			D	0.17	3.113		1.127	1.127	18.347			
T5 15.00-0.00	0.00	2.87	A	0.117	3.365	16	1.088	1.088	38.826	1.78	118.45	D
			B	0.117	3.365		1.088	1.088	38.826			
			C	0.117	3.365		1.088	1.088	38.826			
			D	0.117	3.365		1.088	1.088	38.826			
Sum Weight:	1.28	14.86						OTM	724.89 kip-ft	14.92		

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 ft^2	F K	w plf	Ctrl. Face
T1	0.98	6.50	A	0.301	2.588	7	1	1	49.963	1.01	50.50	D
100.00-80.00			B	0.301	2.588		1	1	49.963			
			C	0.301	2.588		1	1	49.963			
			D	0.301	2.588		1	1	49.963			
T2	2.88	11.12	A	0.261	2.731	6	1	1	87.094	2.02	67.47	D
80.00-50.00			B	0.261	2.731		1	1	87.094			
			C	0.261	2.731		1	1	87.094			
			D	0.261	2.731		1	1	87.094			
T3	5.50	13.39	A	0.211	2.934	6	1	1	89.542	2.39	79.59	D
50.00-20.00			B	0.211	2.934		1	1	89.542			
			C	0.211	2.934		1	1	89.542			
			D	0.211	2.934		1	1	89.542			
T4	0.89	3.95	A	0.31	2.554	5	1	1	24.599	0.42	84.50	D
20.00-15.00			B	0.31	2.554		1	1	24.599			
			C	0.31	2.554		1	1	24.599			
			D	0.31	2.554		1	1	24.599			
T5 15.00-0.00	0.00	6.69	A	0.184	3.048	5	1	1	47.842	0.57	38.21	D
			B	0.184	3.048		1	1	47.842			
			C	0.184	3.048		1	1	47.842			
			D	0.184	3.048		1	1	47.842			
Sum Weight:	10.25	41.65						OTM	317.72 kip-ft	6.42		

Tower Forces - With Ice - Wind 45 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	0.98	6.50	A	0.301	2.588	7	1.2	1.2	59.955	1.16	57.90	D
100.00-80.00			B	0.301	2.588		1.2	1.2	59.955			
			C	0.301	2.588		1.2	1.2	59.955			
			D	0.301	2.588		1.2	1.2	59.955			
T2	2.88	11.12	A	0.261	2.731	6	1.196	1.196	104.172	2.27	75.78	D
80.00-50.00			B	0.261	2.731		1.196	1.196	104.172			
			C	0.261	2.731		1.196	1.196	104.172			
			D	0.261	2.731		1.196	1.196	104.172			
T3	5.50	13.39	A	0.211	2.934	6	1.158	1.158	103.706	2.58	86.09	D
50.00-20.00			B	0.211	2.934		1.158	1.158	103.706			
			C	0.211	2.934		1.158	1.158	103.706			
			D	0.211	2.934		1.158	1.158	103.706			
T4	0.89	3.95	A	0.31	2.554	5	1.2	1.2	29.518	0.47	94.69	D
20.00-15.00			B	0.31	2.554		1.2	1.2	29.518			
			C	0.31	2.554		1.2	1.2	29.518			
			D	0.31	2.554		1.2	1.2	29.518			
T5 15.00-0.00	0.00	6.69	A	0.184	3.048	5	1.138	1.138	54.455	0.65	43.50	D
			B	0.184	3.048		1.138	1.138	54.455			
			C	0.184	3.048		1.138	1.138	54.455			
			D	0.184	3.048		1.138	1.138	54.455			
Sum Weight:	10.25	41.65						OTM	355.55 kip-ft	7.14		

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 ft^2	F K	w plf	Ctrl. Face
T1	0.10	1.89	A	0.15	3.206	10	1	1	30.539	0.91	45.36	D
100.00-80.00			B	0.15	3.206		1	1	30.539			
			C	0.15	3.206		1	1	30.539			
			D	0.15	3.206		1	1	30.539			
T2	0.33	3.41	A	0.142	3.242	9	1	1	57.470	1.75	58.49	D
80.00-50.00			B	0.142	3.242		1	1	57.470			
			C	0.142	3.242		1	1	57.470			
			D	0.142	3.242		1	1	57.470			
T3	0.72	5.31	A	0.121	3.342	8	1	1	62.206	2.01	67.10	D
50.00-20.00			B	0.121	3.342		1	1	62.206			
			C	0.121	3.342		1	1	62.206			
			D	0.121	3.342		1	1	62.206			
T4	0.12	1.38	A	0.17	3.113	7	1	1	16.274	0.39	77.50	D
20.00-15.00			B	0.17	3.113		1	1	16.274			
			C	0.17	3.113		1	1	16.274			
			D	0.17	3.113		1	1	16.274			
T5 15.00-0.00	0.00	2.87	A	0.117	3.365	7	1	1	35.699	0.68	45.33	D
			B	0.117	3.365		1	1	35.699			
			C	0.117	3.365		1	1	35.699			
			D	0.117	3.365		1	1	35.699			
Sum Weight:	1.28	14.86						OTM	278.05 kip-ft	5.74		

Tower Forces - Service - Wind 45 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	0.10	1.89	A	0.15	3.206	10	1.112	1.112	33.970	1.00	49.90	D
100.00-80.00			B	0.15	3.206		1.112	1.112	33.970			
			C	0.15	3.206		1.112	1.112	33.970			
			D	0.15	3.206		1.112	1.112	33.970			
T2	0.33	3.41	A	0.142	3.242	9	1.107	1.107	63.594	1.91	63.58	D
80.00-50.00			B	0.142	3.242		1.107	1.107	63.594			
			C	0.142	3.242		1.107	1.107	63.594			
			D	0.142	3.242		1.107	1.107	63.594			
T3	0.72	5.31	A	0.121	3.342	8	1.091	1.091	67.872	2.14	71.37	D
50.00-20.00			B	0.121	3.342		1.091	1.091	67.872			
			C	0.121	3.342		1.091	1.091	67.872			
			D	0.121	3.342		1.091	1.091	67.872			
T4	0.12	1.38	A	0.17	3.113	7	1.127	1.127	18.347	0.43	85.04	D
20.00-15.00			B	0.17	3.113		1.127	1.127	18.347			
			C	0.17	3.113		1.127	1.127	18.347			
			D	0.17	3.113		1.127	1.127	18.347			
T5 15.00-0.00	0.00	2.87	A	0.117	3.365	7	1.088	1.088	38.826	0.74	49.30	D
			B	0.117	3.365		1.088	1.088	38.826			
			C	0.117	3.365		1.088	1.088	38.826			
			D	0.117	3.365		1.088	1.088	38.826			
Sum Weight:	1.28	14.86						OTM	301.73 kip-ft	6.21		

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	6.98					
Bracing Weight	7.88					
Total Member Self-Weight	14.86			-3.14	4.24	
Total Weight	22.11			-3.14	4.24	
Wind 0 deg - No Ice		0.12	-20.54	-1077.81	-1.56	9.79
Wind 30 deg - No Ice		10.94	-18.83	-986.00	-566.49	13.69
Wind 45 deg - No Ice		15.40	-15.41	-807.37	-799.90	14.29
Wind 60 deg - No Ice		18.82	-10.94	-573.94	-978.50	13.92
Wind 90 deg - No Ice		20.54	-0.12	-8.94	-1070.29	10.43
Wind 120 deg - No Ice		18.71	10.73	557.62	-972.70	4.13
Wind 135 deg - No Ice		15.24	15.24	792.90	-791.69	0.45
Wind 150 deg - No Ice		10.73	18.71	973.93	-556.45	-3.27
Wind 180 deg - No Ice		-0.12	20.54	1071.54	10.04	-9.79
Wind 210 deg - No Ice		-10.94	18.83	979.73	574.97	-13.69
Wind 225 deg - No Ice		-15.40	15.41	801.10	808.37	-14.29
Wind 240 deg - No Ice		-18.82	10.94	567.67	986.97	-13.92
Wind 270 deg - No Ice		-20.54	0.12	2.66	1078.76	-10.43
Wind 300 deg - No Ice		-18.71	-10.73	-563.89	981.17	-4.13
Wind 315 deg - No Ice		-15.24	-15.24	-799.17	800.17	-0.45
Wind 330 deg - No Ice		-10.73	-18.71	-980.20	564.92	3.27

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
Member Ice	26.79					
Total Weight Ice	68.14			28.08	25.54	
Wind 0 deg - Ice		0.03	-9.87	-521.87	23.96	2.63
Wind 30 deg - Ice		5.32	-9.19	-481.74	-269.70	6.90
Wind 45 deg - Ice		7.51	-7.51	-388.66	-391.17	8.39
Wind 60 deg - Ice		9.19	-5.32	-267.18	-484.25	9.31
Wind 90 deg - Ice		9.87	-0.03	26.50	-524.37	9.23
Wind 120 deg - Ice		9.15	5.27	320.60	-482.66	6.68
Wind 135 deg - Ice		7.46	7.46	442.59	-388.93	4.67
Wind 150 deg - Ice		5.27	9.15	536.33	-266.95	2.34
Wind 180 deg - Ice		-0.03	9.87	578.04	27.13	-2.63
Wind 210 deg - Ice		-5.32	9.19	537.91	320.79	-6.90
Wind 225 deg - Ice		-7.51	7.51	444.83	442.26	-8.39
Wind 240 deg - Ice		-9.19	5.32	323.35	535.34	-9.31
Wind 270 deg - Ice		-9.87	0.03	29.67	575.45	-9.23
Wind 300 deg - Ice		-9.15	-5.27	-264.43	533.75	-6.68
Wind 315 deg - Ice		-7.46	-7.46	-386.42	440.02	-4.67
Wind 330 deg - Ice		-5.27	-9.15	-480.16	318.04	-2.34
Total Weight	22.11			-3.14	4.24	
Wind 0 deg - Service		0.05	-8.55	-456.68	-2.34	4.07
Wind 30 deg - Service		4.55	-7.84	-418.47	-237.48	5.70
Wind 45 deg - Service		6.41	-6.41	-344.12	-334.63	5.95
Wind 60 deg - Service		7.83	-4.55	-246.95	-408.97	5.80
Wind 90 deg - Service		8.55	-0.05	-11.78	-447.18	4.34
Wind 120 deg - Service		7.79	4.47	224.04	-406.56	1.72
Wind 135 deg - Service		6.34	6.34	321.97	-331.22	0.19
Wind 150 deg - Service		4.47	7.79	397.32	-233.30	-1.36
Wind 180 deg - Service		-0.05	8.55	437.95	2.49	-4.07
Wind 210 deg - Service		-4.55	7.84	399.73	237.63	-5.70
Wind 225 deg - Service		-6.41	6.41	325.38	334.78	-5.95
Wind 240 deg - Service		-7.83	4.55	228.22	409.12	-5.80
Wind 270 deg - Service		-8.55	0.05	-6.95	447.33	-4.34
Wind 300 deg - Service		-7.79	-4.47	-242.77	406.70	-1.72
Wind 315 deg - Service		-6.34	-6.34	-340.70	331.36	-0.19
Wind 330 deg - Service		-4.47	-7.79	-416.05	233.45	1.36

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice

Comb. No.	Description
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service
66	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	100 - 80	Leg	Max Tension	15	3.58	0.22	0.18
			Max. Compression	41	-5.45	-0.02	-0.03
			Max. Mx	18	1.82	-0.41	-0.07

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	1.56	-0.08	-0.41
			Max. Vy	24	0.48	0.00	0.00
			Max. Vx	2	0.51	0.00	-0.00
		Diagonal	Max Tension	2	1.61	0.00	0.00
			Max. Compression	2	-1.66	0.00	0.00
			Max. Mx	41	0.22	0.06	0.02
			Max. My	35	-0.18	0.06	-0.02
			Max. Vy	42	0.05	0.06	0.02
			Max. Vx	35	-0.01	0.00	0.00
		Top Girt	Max Tension	11	0.01	0.00	0.00
			Max. Compression	39	-0.10	0.00	0.00
			Max. Mx	34	-0.08	-0.13	0.00
			Max. My	44	-0.04	0.00	0.01
			Max. Vy	34	0.06	0.00	0.00
			Max. Vx	44	-0.00	0.00	0.00
T2	80 - 50	Leg	Max Tension	15	16.60	0.13	0.20
			Max. Compression	14	-20.58	-0.13	-0.07
			Max. Mx	26	7.02	-0.33	-0.07
			Max. My	10	7.47	-0.07	-0.33
			Max. Vy	26	-0.37	0.31	-0.07
			Max. Vx	10	-0.36	-0.07	0.31
		Diagonal	Max Tension	2	3.45	0.00	0.00
			Max. Compression	2	-3.49	0.00	0.00
			Max. Mx	40	0.76	0.11	-0.03
			Max. My	45	0.54	0.11	0.03
			Max. Vy	40	0.06	0.11	-0.03
			Max. Vx	44	0.01	0.00	0.00
		Top Girt	Max Tension	10	0.14	0.00	0.00
			Max. Compression	11	-0.11	0.00	0.00
			Max. Mx	34	0.06	-0.21	0.00
			Max. My	44	0.05	0.00	0.01
			Max. Vy	34	-0.07	0.00	0.00
			Max. Vx	44	-0.00	0.00	0.00
T3	50 - 20	Leg	Max Tension	23	36.20	0.57	0.29
			Max. Compression	6	-44.85	-0.32	-0.29
			Max. Mx	24	4.06	1.00	-0.71
			Max. My	4	4.07	-0.73	1.02
			Max. Vy	18	0.72	0.95	-0.32
			Max. Vx	2	0.72	-0.32	0.96
		Diagonal	Max Tension	18	6.36	0.00	0.00
			Max. Compression	18	-6.54	0.00	0.00
			Max. Mx	46	1.20	0.22	0.06
			Max. My	46	0.30	0.22	0.06
			Max. Vy	46	0.10	0.22	0.06
			Max. Vx	46	0.01	0.00	0.00
		Top Girt	Max Tension	18	0.27	0.00	0.00
			Max. Compression	18	-0.28	0.00	0.00
			Max. Mx	34	0.13	-0.37	0.00
			Max. My	38	0.10	0.00	0.02
			Max. Vy	34	0.10	0.00	0.00
			Max. Vx	38	-0.01	0.00	0.00
T4	20 - 15	Leg	Max Tension	7	40.41	0.23	0.26
			Max. Compression	22	-50.04	0.29	0.21
			Max. Mx	22	-5.32	1.54	-1.39
			Max. My	6	-5.31	-1.39	1.54
			Max. Vy	28	-0.51	1.51	-1.26
			Max. Vx	14	-0.51	-1.34	1.49
		Diagonal	Max Tension	19	5.99	0.00	0.00
			Max. Compression	18	-6.32	0.00	0.00
			Max. Mx	38	-2.27	0.05	-0.02
			Max. My	39	-2.48	0.05	-0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	38	-0.04	0.05	-0.02
			Max. Vx	39	-0.01	0.00	0.00
		Horizontal	Max Tension	18	5.52	0.06	0.00
			Max. Compression	19	-5.32	0.04	0.00
			Max. Mx	43	-0.21	0.21	-0.02
			Max. My	2	-0.35	0.08	-0.02
			Max. Vy	43	-0.09	0.21	-0.02
			Max. Vx	35	-0.01	0.20	-0.02
		Redund Diag 1 Bracing	Max Tension	22	0.42	0.00	0.00
			Max. Compression	22	-0.42	0.00	0.00
			Max. Mx	44	0.16	-0.03	0.00
			Max. My	39	0.14	0.00	0.00
			Max. Vy	44	0.02	0.00	0.00
			Max. Vx	39	-0.00	0.00	0.00
		Inner Bracing	Max Tension	31	0.00	0.00	0.00
			Max. Compression	48	-0.02	0.00	0.00
			Max. Mx	48	-0.02	-0.26	0.00
			Max. My	46	-0.02	0.00	-0.00
			Max. Vy	48	0.08	0.00	0.00
			Max. Vx	46	0.00	0.00	0.00
T5	15 - 0	Leg	Max Tension	23	57.03	-0.40	-0.36
			Max. Compression	22	-68.65	0.00	-0.00
			Max. Mx	22	-5.82	1.54	-1.39
			Max. My	6	-5.82	-1.39	1.54
			Max. Vy	10	6.05	-0.00	0.00
			Max. Vx	26	6.05	0.00	-0.00
		Diagonal	Max Tension	10	7.55	0.00	0.00
			Max. Compression	10	-7.70	0.00	0.00
			Max. Mx	46	2.05	0.27	0.07
			Max. My	44	2.28	0.24	0.07
			Max. Vy	46	0.11	0.27	0.07
			Max. Vx	44	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	22	0.91	0.10	0.02
			Max. Compression	22	-0.91	0.00	0.00
			Max. Mx	48	-0.36	0.18	0.07
			Max. My	45	-0.16	0.17	0.08
			Max. Vy	48	-0.10	0.18	0.07
			Max. Vx	45	-0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg D	Max. Vert	22	67.85	9.06	-8.53
	Max. H_x	24	65.76	9.80	-7.23
	Max. H_z	5	-54.13	-6.96	8.46
	Min. Vert	7	-56.21	-8.28	7.72
	Min. H_x	9	-54.12	-9.00	6.43
	Min. H_z	20	65.77	7.74	-9.28
Leg C	Max. Vert	14	66.98	-8.71	-8.69
	Max. H_x	29	-53.70	8.74	6.53
	Max. H_z	33	-53.71	6.54	8.73
	Min. Vert	31	-55.77	7.92	7.91
	Min. H_x	12	64.92	-9.53	-7.30

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_z	16	64.92	-7.32	-9.51
Leg B	Max. Vert	6	67.78	-8.53	9.06
	Max. H_x	25	-54.17	8.46	-6.97
	Max. H_z	4	65.70	-7.23	9.79
	Min. Vert	23	-56.26	7.72	-8.28
	Min. H_x	8	65.70	-9.28	7.74
	Min. H_z	21	-54.17	6.43	-9.00
Leg A	Max. Vert	30	67.40	8.70	8.72
	Max. H_x	28	65.34	9.39	7.48
	Max. H_z	32	65.34	7.46	9.41
	Min. Vert	15	-55.45	-7.90	-7.91
	Min. H_x	13	-53.39	-8.57	-6.67
	Min. H_z	17	-53.39	-6.66	-8.59

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	22.11	-0.00	0.00	-3.13	4.24	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	26.53	0.19	-32.87	-1721.37	-4.21	15.65
0.9 Dead+1.6 Wind 0 deg - No Ice	19.90	0.19	-32.87	-1720.20	-5.48	15.65
1.2 Dead+1.6 Wind 30 deg - No Ice	26.53	17.50	-30.12	-1574.55	-907.06	21.89
0.9 Dead+1.6 Wind 30 deg - No Ice	19.90	17.50	-30.12	-1573.39	-908.21	21.90
1.2 Dead+1.6 Wind 45 deg - No Ice	26.53	24.65	-24.65	-1289.08	-1280.07	22.86
0.9 Dead+1.6 Wind 45 deg - No Ice	19.90	24.65	-24.65	-1287.97	-1281.17	22.86
1.2 Dead+1.6 Wind 60 deg - No Ice	26.53	30.12	-17.50	-916.01	-1565.51	22.27
0.9 Dead+1.6 Wind 60 deg - No Ice	19.90	30.12	-17.50	-914.95	-1566.56	22.27
1.2 Dead+1.6 Wind 90 deg - No Ice	26.53	32.87	-0.19	-13.04	-1712.29	16.68
0.9 Dead+1.6 Wind 90 deg - No Ice	19.90	32.87	-0.19	-12.10	-1713.33	16.68
1.2 Dead+1.6 Wind 120 deg - No Ice	26.53	29.93	17.17	892.42	-1556.21	6.61
0.9 Dead+1.6 Wind 120 deg - No Ice	19.90	29.93	17.17	893.24	-1557.27	6.62
1.2 Dead+1.6 Wind 135 deg - No Ice	26.53	24.38	24.38	1268.43	-1266.94	0.73
0.9 Dead+1.6 Wind 135 deg - No Ice	19.90	24.38	24.38	1269.20	-1268.04	0.73
1.2 Dead+1.6 Wind 150 deg - No Ice	26.53	17.17	29.93	1557.75	-890.98	-5.21
0.9 Dead+1.6 Wind 150 deg - No Ice	19.90	17.17	29.93	1558.47	-892.13	-5.22
1.2 Dead+1.6 Wind 180 deg - No Ice	26.53	-0.19	32.87	1713.85	14.37	-15.65
0.9 Dead+1.6 Wind 180 deg - No Ice	19.90	-0.19	32.87	1714.56	13.09	-15.65
1.2 Dead+1.6 Wind 210 deg -	26.53	-17.50	30.12	1567.04	917.22	-21.90

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+1.6 Wind 210 deg - No Ice	19.90	-17.50	30.12	1567.76	915.83	-21.89
1.2 Dead+1.6 Wind 225 deg - No Ice	26.53	-24.65	24.65	1281.57	1290.23	-22.86
0.9 Dead+1.6 Wind 225 deg - No Ice	19.90	-24.65	24.65	1282.34	1288.79	-22.86
1.2 Dead+1.6 Wind 240 deg - No Ice	26.53	-30.12	17.50	908.51	1575.67	-22.26
0.9 Dead+1.6 Wind 240 deg - No Ice	19.90	-30.12	17.50	909.33	1574.18	-22.28
1.2 Dead+1.6 Wind 270 deg - No Ice	26.53	-32.87	0.19	5.53	1722.46	-16.68
0.9 Dead+1.6 Wind 270 deg - No Ice	19.90	-32.87	0.19	6.47	1720.96	-16.68
1.2 Dead+1.6 Wind 300 deg - No Ice	26.53	-29.93	-17.17	-899.94	1566.39	-6.62
0.9 Dead+1.6 Wind 300 deg - No Ice	19.90	-29.93	-17.17	-898.88	1564.90	-6.62
1.2 Dead+1.6 Wind 315 deg - No Ice	26.53	-24.38	-24.38	-1275.95	1277.11	-0.73
0.9 Dead+1.6 Wind 315 deg - No Ice	19.90	-24.38	-24.38	-1274.84	1275.67	-0.73
1.2 Dead+1.6 Wind 330 deg - No Ice	26.53	-17.17	-29.93	-1565.27	901.14	5.22
0.9 Dead+1.6 Wind 330 deg - No Ice	19.90	-17.17	-29.93	-1564.11	899.75	5.21
1.2 Dead+1.0 Ice+1.0 Temp	72.57	0.00	0.00	27.46	26.38	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	72.57	0.03	-9.87	-522.26	24.82	2.62
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	72.57	5.32	-9.19	-482.12	-268.71	6.89
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	72.57	7.51	-7.51	-389.08	-390.14	8.39
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	72.57	9.19	-5.32	-267.65	-483.17	9.31
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	72.57	9.87	-0.03	25.91	-523.30	9.23
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	72.57	9.15	5.27	319.89	-481.58	6.69
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	72.57	7.46	7.46	441.83	-387.89	4.67
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	72.57	5.27	9.15	535.52	-265.96	2.35
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	72.57	-0.03	9.87	577.25	28.00	-2.62
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	72.57	-5.32	9.19	537.12	321.55	-6.89
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	72.57	-7.51	7.51	444.07	442.96	-8.39
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	72.57	-9.19	5.32	322.64	535.99	-9.31
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	72.57	-9.87	0.03	29.08	576.12	-9.23
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	72.57	-9.15	-5.27	-264.90	534.40	-6.69
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	72.57	-7.46	-7.46	-386.84	440.71	-4.67
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	72.57	-5.27	-9.15	-480.55	318.80	-2.35
Dead+Wind 0 deg - Service	22.11	0.05	-8.55	-449.92	1.82	4.07

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 30 deg - Service	22.11	4.55	-7.84	-411.73	-233.03	5.70
Dead+Wind 45 deg - Service	22.11	6.41	-6.41	-337.47	-330.06	5.95
Dead+Wind 60 deg - Service	22.11	7.83	-4.55	-240.43	-404.30	5.80
Dead+Wind 90 deg - Service	22.11	8.55	-0.05	-5.55	-442.49	4.34
Dead+Wind 120 deg - Service	22.11	7.79	4.47	229.98	-401.89	1.72
Dead+Wind 135 deg - Service	22.11	6.34	6.34	327.78	-326.64	0.19
Dead+Wind 150 deg - Service	22.11	4.47	7.79	403.05	-228.84	-1.36
Dead+Wind 180 deg - Service	22.11	-0.05	8.55	443.66	6.65	-4.07
Dead+Wind 210 deg - Service	22.11	-4.55	7.84	405.46	241.50	-5.70
Dead+Wind 225 deg - Service	22.11	-6.41	6.41	331.21	338.53	-5.95
Dead+Wind 240 deg - Service	22.11	-7.83	4.55	234.17	412.78	-5.79
Dead+Wind 270 deg - Service	22.11	-8.55	0.05	-0.72	450.97	-4.34
Dead+Wind 300 deg - Service	22.11	-7.79	-4.47	-236.24	410.36	-1.72
Dead+Wind 315 deg - Service	22.11	-6.34	-6.34	-334.05	335.11	-0.19
Dead+Wind 330 deg - Service	22.11	-4.47	-7.79	-409.31	237.32	1.36

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-22.11	0.00	0.00	22.11	0.00	0.000%
2	0.19	-26.53	-32.87	-0.19	26.53	32.87	0.000%
3	0.19	-19.90	-32.87	-0.19	19.90	32.87	0.000%
4	17.50	-26.53	-30.12	-17.50	26.53	30.12	0.000%
5	17.50	-19.90	-30.12	-17.50	19.90	30.12	0.000%
6	24.65	-26.53	-24.65	-24.65	26.53	24.65	0.000%
7	24.65	-19.90	-24.65	-24.65	19.90	24.65	0.000%
8	30.12	-26.53	-17.50	-30.12	26.53	17.50	0.000%
9	30.12	-19.90	-17.50	-30.12	19.90	17.50	0.000%
10	32.87	-26.53	-0.19	-32.87	26.53	0.19	0.000%
11	32.87	-19.90	-0.19	-32.87	19.90	0.19	0.000%
12	29.93	-26.53	17.17	-29.93	26.53	-17.17	0.000%
13	29.93	-19.90	17.17	-29.93	19.90	-17.17	0.000%
14	24.38	-26.53	24.38	-24.38	26.53	-24.38	0.000%
15	24.38	-19.90	24.38	-24.38	19.90	-24.38	0.000%
16	17.17	-26.53	29.93	-17.17	26.53	-29.93	0.000%
17	17.17	-19.90	29.93	-17.17	19.90	-29.93	0.000%
18	-0.19	-26.53	32.87	0.19	26.53	-32.87	0.000%
19	-0.19	-19.90	32.87	0.19	19.90	-32.87	0.000%
20	-17.50	-26.53	30.12	17.50	26.53	-30.12	0.000%
21	-17.50	-19.90	30.12	17.50	19.90	-30.12	0.000%
22	-24.65	-26.53	24.65	24.65	26.53	-24.65	0.000%
23	-24.65	-19.90	24.65	24.65	19.90	-24.65	0.000%
24	-30.12	-26.53	17.50	30.12	26.53	-17.50	0.000%
25	-30.12	-19.90	17.50	30.12	19.90	-17.50	0.000%
26	-32.87	-26.53	0.19	32.87	26.53	-0.19	0.000%
27	-32.87	-19.90	0.19	32.87	19.90	-0.19	0.000%
28	-29.93	-26.53	-17.17	29.93	26.53	17.17	0.000%
29	-29.93	-19.90	-17.17	29.93	19.90	17.17	0.000%
30	-24.38	-26.53	-24.38	24.38	26.53	24.38	0.000%
31	-24.38	-19.90	-24.38	24.38	19.90	24.38	0.000%
32	-17.17	-26.53	-29.93	17.17	26.53	29.93	0.000%
33	-17.17	-19.90	-29.93	17.17	19.90	29.93	0.000%
34	0.00	-72.57	0.00	-0.00	72.57	-0.00	0.000%
35	0.03	-72.57	-9.87	-0.03	72.57	9.87	0.000%
36	5.32	-72.57	-9.19	-5.32	72.57	9.19	0.000%
37	7.51	-72.57	-7.51	-7.51	72.57	7.51	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
38	9.19	-72.57	-5.32	-9.19	72.57	5.32	0.000%
39	9.87	-72.57	-0.03	-9.87	72.57	0.03	0.000%
40	9.15	-72.57	5.27	-9.15	72.57	-5.27	0.000%
41	7.46	-72.57	7.46	-7.46	72.57	-7.46	0.000%
42	5.27	-72.57	9.15	-5.27	72.57	-9.15	0.000%
43	-0.03	-72.57	9.87	0.03	72.57	-9.87	0.000%
44	-5.32	-72.57	9.19	5.32	72.57	-9.19	0.000%
45	-7.51	-72.57	7.51	7.51	72.57	-7.51	0.000%
46	-9.19	-72.57	5.32	9.19	72.57	-5.32	0.000%
47	-9.87	-72.57	0.03	9.87	72.57	-0.03	0.000%
48	-9.15	-72.57	-5.27	9.15	72.57	5.27	0.000%
49	-7.46	-72.57	-7.46	7.46	72.57	7.46	0.000%
50	-5.27	-72.57	-9.15	5.27	72.57	9.15	0.000%
51	0.05	-22.11	-8.55	-0.05	22.11	8.55	0.000%
52	4.55	-22.11	-7.84	-4.55	22.11	7.84	0.000%
53	6.41	-22.11	-6.41	-6.41	22.11	6.41	0.000%
54	7.83	-22.11	-4.55	-7.83	22.11	4.55	0.000%
55	8.55	-22.11	-0.05	-8.55	22.11	0.05	0.000%
56	7.79	-22.11	4.47	-7.79	22.11	-4.47	0.000%
57	6.34	-22.11	6.34	-6.34	22.11	-6.34	0.000%
58	4.47	-22.11	7.79	-4.47	22.11	-7.79	0.000%
59	-0.05	-22.11	8.55	0.05	22.11	-8.55	0.000%
60	-4.55	-22.11	7.84	4.55	22.11	-7.84	0.000%
61	-6.41	-22.11	6.41	6.41	22.11	-6.41	0.000%
62	-7.83	-22.11	4.55	7.83	22.11	-4.55	0.000%
63	-8.55	-22.11	0.05	8.55	22.11	-0.05	0.000%
64	-7.79	-22.11	-4.47	7.79	22.11	4.47	0.000%
65	-6.34	-22.11	-6.34	6.34	22.11	6.34	0.000%
66	-4.47	-22.11	-7.79	4.47	22.11	7.79	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001

23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000461
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000476
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000797
51	Yes	4	0.00000001	0.00000001
52	Yes	4	0.00000001	0.00000001
53	Yes	4	0.00000001	0.00000001
54	Yes	4	0.00000001	0.00000001
55	Yes	4	0.00000001	0.00000001
56	Yes	4	0.00000001	0.00000001
57	Yes	4	0.00000001	0.00000001
58	Yes	4	0.00000001	0.00000001
59	Yes	4	0.00000001	0.00000001
60	Yes	4	0.00000001	0.00000001
61	Yes	4	0.00000001	0.00000001
62	Yes	4	0.00000001	0.00000001
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	100 - 80	0.299	52	0.0161	0.0034
T2	80 - 50	0.228	52	0.0152	0.0025
T3	50 - 20	0.120	62	0.0118	0.0011
T4	20 - 15	0.037	61	0.0060	0.0006
T5	15 - 0	0.022	61	0.0046	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.50	ROHN 25 tower 55'	52	0.299	0.0161	0.0034	Inf
100.00	15' x 3" Dia Omni	52	0.299	0.0161	0.0034	Inf
99.00	Pirod 10' Box Arm	52	0.296	0.0161	0.0034	Inf
98.00	6' Standoff Arm	52	0.292	0.0160	0.0034	Inf
96.00	6' Standoff Arm	52	0.285	0.0160	0.0033	Inf
93.00	DB292-A	52	0.275	0.0158	0.0032	Inf
90.00	DB225-2-A	52	0.264	0.0157	0.0030	756475
89.00	DB252	52	0.261	0.0157	0.0030	687701
85.50	DB499-A	52	0.248	0.0155	0.0028	521709
85.00	3-ft Grid Dish	52	0.247	0.0155	0.0028	504319
84.00	DB432-A	52	0.243	0.0155	0.0027	473421
83.00	8' x 3" Dia Omni	52	0.239	0.0154	0.0027	449431
80.00	3-ft Grid Dish	52	0.228	0.0152	0.0025	435436
79.00	TA-2304-2-DAB	52	0.225	0.0151	0.0025	458406
74.00	6' Standoff Arm	66	0.206	0.0147	0.0022	Inf
66.00	10' x 3" Dia Omni	52	0.175	0.0139	0.0017	570951
60.00	4-ft Dish	52	0.153	0.0132	0.0014	311924
58.00	15' x 3" Dia Omni	52	0.146	0.0129	0.0013	270950
50.00	APXVAARR24-43	62	0.120	0.0118	0.0011	187448
38.00	4-ft Dish	62	0.087	0.0098	0.0010	Inf
36.00	4-ft Dish	62	0.082	0.0095	0.0010	Inf
34.00	DB254-A	62	0.077	0.0091	0.0010	983498
29.00	4-ft Dish	61	0.063	0.0081	0.0009	323897
26.00	4-ft Dish	61	0.055	0.0075	0.0009	230834

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	100 - 80	1.146	6	0.0603	0.0132
T2	80 - 50	0.875	4	0.0580	0.0097
T3	50 - 20	0.460	22	0.0442	0.0042
T4	20 - 15	0.143	22	0.0229	0.0024
T5	15 - 0	0.083	22	0.0176	0.0012

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.50	ROHN 25 tower 55'	6	1.146	0.0603	0.0132	452527
100.00	15' x 3" Dia Omni	6	1.146	0.0603	0.0132	452527
99.00	Pirod 10' Box Arm	4	1.133	0.0603	0.0131	452527
98.00	6' Standoff Arm	4	1.119	0.0603	0.0129	452527
96.00	6' Standoff Arm	4	1.093	0.0602	0.0126	452527
93.00	DB292-A	4	1.053	0.0600	0.0121	323232
90.00	DB225-2-A	4	1.013	0.0597	0.0116	226263
89.00	DB252	4	1.000	0.0596	0.0114	205693

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
85.50	DB499-A	4	0.952	0.0591	0.0108	156043
85.00	3-ft Grid Dish	4	0.945	0.0591	0.0107	150842
84.00	DB432-A	4	0.931	0.0589	0.0105	141612
83.00	8' x 3" Dia Omni	4	0.917	0.0587	0.0103	134509
80.00	3-ft Grid Dish	4	0.875	0.0580	0.0097	131478
79.00	TA-2304-2-DAB	4	0.861	0.0578	0.0095	139478
74.00	6' Standoff Arm	4	0.789	0.0562	0.0084	383089
66.00	10' x 3" Dia Omni	4	0.673	0.0528	0.0066	161583
60.00	4-ft Dish	4	0.588	0.0498	0.0054	82548
58.00	15' x 3" Dia Omni	4	0.561	0.0487	0.0051	70976
50.00	APXVAARR24-43	22	0.460	0.0442	0.0042	49625
38.00	4-ft Dish	22	0.334	0.0371	0.0038	306671
36.00	4-ft Dish	22	0.314	0.0358	0.0038	731424
34.00	DB254-A	22	0.294	0.0345	0.0038	283145
29.00	4-ft Dish	22	0.244	0.0308	0.0036	87235
26.00	4-ft Dish	22	0.212	0.0284	0.0033	61594

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	100	Leg	A325N	0.6250	12	0.91	12.43	0.073 ✔	1	Bolt SS
		Diagonal	A325N	0.6250	2	0.81	10.44	0.077 ✔	1	Member Bearing
		Top Girt	A325N	0.6250	2	0.05	12.43	0.004 ✔	1	Bolt Shear
T2	80	Leg	A325N	0.6250	16	2.57	12.43	0.207 ✔	1	Bolt SS
		Diagonal	A325N	0.6250	2	1.72	10.44	0.165 ✔	1	Member Bearing
		Top Girt	A325N	0.6250	2	0.07	10.44	0.007 ✔	1	Member Bearing
T3	50	Leg	A325N	0.6250	16	5.61	12.43	0.451 ✔	1	Bolt SS
		Diagonal	A325N	0.6250	2	3.27	12.43	0.263 ✔	1	Bolt Shear
		Top Girt	A325N	0.6250	2	0.13	10.44	0.013 ✔	1	Member Bearing
T4	20	Diagonal	A325N	0.6250	2	3.16	12.43	0.254 ✔	1	Bolt Shear
		Horizontal	A325N	0.6250	1	5.52	10.44	0.529 ✔	1	Member Bearing
T5	15	Leg	A354-BC	1.5000	4	34.33	67.42	0.509 ✔	1	Bearing
		Diagonal	A325N	0.6250	2	3.85	12.43	0.310 ✔	1	Bolt Shear
		Secondary Horizontal	A325N	0.6250	2	0.46	12.43	0.037 ✔	1	Bolt Shear

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	100 - 80	L5x5x3/8	20.11	6.70	81.2 K=1.00	3.6100	-5.45	82.64	0.066 [1] ✔
T2	80 - 50	L6x6x3/8	30.11	7.53	75.9 K=1.00	4.3600	-20.58	101.82	0.202 [1] ✔
T3	50 - 20	L6x6x9/16	30.11	10.04	102.1 K=1.00	6.4300	-44.85	120.40	0.373 [1] ✔
T4	20 - 15	L6x6x1/2	5.02	5.02	51.0 K=1.00	5.7500	-50.04	162.43	0.308 [1] ✔
T5	15 - 0	L6x6x1/2	15.05	7.82	79.5 K=1.00	5.7500	-68.65	133.53	0.514 [1] ✔

[1] P_u / ϕP_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	100 - 80	L2x2 1/2x3/16	12.81	6.25	162.5 K=0.92	0.8090	-1.66	6.92	0.240 [1] ✔
T2	80 - 50	L2 1/2x2 1/2x3/16	16.38	7.96	175.7 K=0.91	0.9020	-3.49	6.60	0.529 [1] ✔
T3	50 - 20	L3x3 1/2x1/4	20.59	10.15	175.7 K=0.91	1.5600	-6.54	11.42	0.573 [1] ✔
T4	20 - 15	L2 1/2x2 1/2x1/4	10.82	10.15	143.6 K=0.91	1.1900	-6.32	13.04	0.484 [1] ✔
T5	15 - 0	L3 1/2x4x1/4	25.04	12.57	185.2 K=0.90	1.8100	-7.70	11.92	0.646 [1] ✔

[1] P_u / ϕP_n controls

Horizontal 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 $\frac{P_u}{\phi P_n}$
T4	20 - 15	L3x3x1/4	18.58	8.92	180.8 K=1.00	1.4400	-5.32	9.95	0.535 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal 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 $\frac{P_u}{\phi P_n}$
T5	15 - 0	L3 1/2x3 1/2x1/4	20.05	19.15	175.9 K=0.83	1.6900	-0.91	12.34	0.074 [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	100 - 80	L2 1/2x2 1/2x3/16	8.50	7.69	160.8 K=0.86	0.9020	-0.10	7.88	0.013 [1] ✔
T2	80 - 50	L2x2 1/2x3/16	11.42	10.61	229.5 K=0.77	0.8090	-0.11	3.47	0.033 [1] ✔
T3	50 - 20	KL/R > 200 (C) - 40 L2x3x3/16 KL/R > 200 (C) - 79	15.00	14.10	283.3 K=0.73	0.9020	-0.28	2.54	0.109 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) 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 $\frac{P_u}{\phi P_n}$
T4	20 - 15	L2 1/2x2 1/2x1/8	5.14	4.86	118.4 K=1.01	0.6094	-0.42	8.58	0.049 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing 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 $\frac{P_u}{\phi P_n}$
T4	20 - 15	L2x2 1/2x1/4 KL/R > 250 (C) - 130	13.14	13.14	371.8 K=1.00	1.0600	-0.02	1.73	0.014 [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	100 - 80	L5x5x3/8	20.11	6.70	51.6	3.6100	3.58	116.96	0.031 [1] ✔
T2	80 - 50	L6x6x3/8	30.11	7.53	48.0	4.3600	16.60	141.26	0.117 [1] ✔
T3	50 - 20	L6x6x9/16	30.11	10.04	65.1	6.4300	36.20	208.33	0.174 [1] ✔
T4	20 - 15	L6x6x1/2	5.02	5.02	32.4	5.7500	40.41	186.30	0.217 [1] ✔
T5	15 - 0	L6x6x1/2	15.05	7.82	50.5	4.1250	57.03	179.44	0.318 [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	100 - 80	L2x2 1/2x3/16	12.81	6.25	129.0	0.5013	1.61	21.81	0.074 [1] ✔
T2	80 - 50	L2 1/2x2 1/2x3/16	16.38	7.96	125.9	0.5710	3.45	24.84	0.139 [1] ✔
T3	50 - 20	L3x3 1/2x1/4	20.59	10.15	136.0	1.0294	6.36	44.78	0.142 [1] ✔
T4	20 - 15	L2 1/2x2 1/2x1/4	10.82	10.15	164.5	0.7519	5.99	32.71	0.183 [1] ✔
T5	15 - 0	L3 1/2x4x1/4	25.04	12.57	142.6	1.2169	7.55	52.93	0.143 [1] ✔

[1] P_u / ϕP_n controls

Horizontal 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 $\frac{P_u}{\phi P_n}$
T4	20 - 15	L3x3x1/4	18.58	8.92	175.0	0.9394	5.52	40.86	0.135 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T5	15 - 0	L3 1/2x3 1/2x1/4	20.05	19.15	215.2	1.1269	0.91	49.02	0.019 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	100 - 80	L2 1/2x2 1/2x3/16	8.50	7.69	124.7	0.5710	0.01	24.84	0.000 [1] ✔
T2	80 - 50	L2x2 1/2x3/16	11.42	10.61	220.2	0.5013	0.14	21.81	0.006 [1] ✔
T3	50 - 20	L2x3x3/16	15.00	14.10	298.3	0.5710	0.27	24.84	0.011 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T4	20 - 15	L2 1/2x2 1/2x1/8	5.14	4.86	74.0	0.6094	0.42	19.74	0.021 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T4	20 - 15	L2x2 1/2x1/4	13.14	13.14	266.1	1.0600	0.00	34.34	0.000 [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	100 - 80	Leg	L5x5x3/8	2	-5.45	82.64	6.6 7.3 (b)	Pass
T2	80 - 50	Leg	L6x6x3/8	34	-20.58	101.82	20.2 20.7 (b)	Pass
T3	50 - 20	Leg	L6x6x9/16	75	-44.85	120.40	37.3 45.1 (b)	Pass
T4	20 - 15	Leg	L6x6x1/2	105	-50.04	162.43	30.8	Pass
T5	15 - 0	Leg	L6x6x1/2	133	-68.65	133.53	51.4	Pass
T1	100 - 80	Diagonal	L2x2 1/2x3/16	12	-1.66	6.92	24.0	Pass
T2	80 - 50	Diagonal	L2 1/2x2 1/2x3/16	44	-3.49	6.60	52.9	Pass
T3	50 - 20	Diagonal	L3x3 1/2x1/4	83	-6.54	11.42	57.3	Pass
T4	20 - 15	Diagonal	L2 1/2x2 1/2x1/4	115	-6.32	13.04	48.4	Pass
T5	15 - 0	Diagonal	L3 1/2x4x1/4	138	-7.70	11.92	64.6	Pass
T4	20 - 15	Horizontal	L3x3x1/4	114	-5.32	9.95	53.5	Pass
T5	15 - 0	Secondary Horizontal	L3 1/2x3 1/2x1/4	145	-0.91	12.34	7.4	Pass
T1	100 - 80	Top Girt	L2 1/2x2 1/2x3/16	6	-0.10	7.88	1.3	Pass
T2	80 - 50	Top Girt	L2x2 1/2x3/16	40	-0.11	3.47	3.3	Pass
T3	50 - 20	Top Girt	L2x3x3/16	79	-0.28	2.54	10.9	Pass
T4	20 - 15	Redund Diag 1 Bracing	L2 1/2x2 1/2x1/8	128	-0.42	8.58	4.9	Pass
T4	20 - 15	Inner Bracing	L2x2 1/2x1/4	130	-0.02	1.73	1.4	Pass
							Summary	
						Leg (T5)	51.4	Pass
						Diagonal (T5)	64.6	Pass
						Horizontal (T4)	53.5	Pass
						Secondary Horizontal (T5)	7.4	Pass
						Top Girt (T3)	10.9	Pass
						Redund Diag 1 Bracing (T4)	4.9	Pass
						Inner Bracing (T4)	1.4	Pass
						Bolt Checks	52.9	Pass
						RATING =	**64.6**	**Pass**

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63-2 North Branford Road P: (203) 488-0580
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Subject:	Anchor Bolt Analysis
Location:	100-ft Lattice Tower Danbury, CT
Rev. 0: 5/27/20	Prepared by: T.J.L. Checked by: C.A.G. Job No. 20074.05

Anchor Bolt Analysis:

Input Data:

Tower Reactions:

Tension Force =	Tension := 56·kips	(Input From tnxTower)
Compression Force =	Compression := 68·kips	(Input From tnxTower)
Shear Force =	Shear := 12·kips	(Input From tnxTower)

Anchor Bolt Data:

ASTMA354-BC

Number of Anchor Bolts =	N := 4	(User Input)
Bolt Ultimate Strength =	F_u := 125·ksi	(User Input)
Bolt Yield Strength =	F_y := 90·ksi	(User Input)
Bolt Modulus =	E := 29000·ksi	(User Input)
Diameter of Anchor Bolts =	D := 1.5·in	(User Input)
Threads per Inch =	n := 6	(User Input)
	η := 0.7	

Anchor Bolt Analysis:

Calculated Anchor Bolt Properties:

Gross Area of Bolt = $A_g := \frac{\pi}{4} \cdot D^2 = 1.767 \cdot in^2$

Net Area of Bolt = $A_n := \frac{\pi}{4} \cdot \left(D - \frac{0.9743 \cdot in}{n} \right)^2 = 1.405 \cdot in^2$

Net Diameter = $D_n := \frac{2 \cdot \sqrt{A_n}}{\sqrt{\pi}} = 1.338 \cdot in$

Radius of Gyration of Bolt = $r := \frac{D_n}{4} = 0.334 \cdot in$

Section Modulus of Bolt = $S_x := \frac{\pi \cdot D_n^3}{32} = 0.235 \cdot in^3$

Check Anchor Bolt Tension Force:

Maximum Tensile Force = $T_{Max} := \frac{Tension}{N} = 14 \cdot kips$

Maximum Compressive Force = $C_{Max} := \frac{Compression}{N} = 17 \cdot kips$

Maximum Shear Force = $V_{Max} := \frac{Shear}{N} = 3 \cdot kips$

Design Tensile Strength = $\Phi R_{nt} := 0.8 \cdot F_u \cdot A_n = 140.525 \cdot k$

Bolt % of Capacity = $\frac{\left(C_{Max} + \frac{V_{Max}}{\eta} \right)}{\Phi R_{nt}} \cdot 100 = 15.1$

Condition1 = $Condition1 := if\left[\frac{\left(C_{Max} + \frac{V_{Max}}{\eta} \right)}{\Phi R_{nt}} \le 1.00, "OK", "Overstressed" \right]$

Condition1 = "OK"

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Subject:	FOUNDATION ANALYSIS
Location:	100-ft Lattice Tower Danbury, CT
Rev. 0: 5/27/20	Prepared by: T.J.L Checked by: C.A.G. Job no. 20074.05

Caisson Foundation:

Input Data:

Tower Data

Uplift =	$Uplift := 56 \cdot kips$	(User Input)
Compression =	$Comp := 68 \cdot kips$	(User Input)
Shear Force =	$Shear := 12 \cdot kips$	(User Input)
Tower Height =	$H_t := 100 \cdot ft$	(User Input)

Footing Data:

Length of Caisson =	$L_c := 18.5 \cdot ft$	(User Input)
Extension of Caisson Above Grade =	$L_{cag} := 1.5 \cdot ft$	(User Input)
Diameter of Caisson =	$d_c := 2.5 \cdot ft$	(User Input)
Length of Caisson Above Wate Table =	$L_{c.AWT} := 18.5 \cdot ft$	(User Input)
Length of Caisson Above Wate Table =	$L_{c.BWT} := 0 \cdot ft$	(User Input)

Material Properties:

Concrete Compressive Strength =	$f_c := 4000 \cdot psi$	(User Input)
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)
Ultimate Skin Friction =	$\mu := 1.35 \cdot ksf$	(User Input)
Ultimate Soil Bearing Capacity =	$q_u := 40000 \cdot psf$	(User Input)
Unit Weight of Soil =	$\gamma_{soil} := 120 \cdot pcf$	(User Input)
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)
Depth to Neglect =	$n := 4 \cdot ft$	(User Input)
Resistance Factor for Bearing =	$\Phi_{sBearing} := 0.75$	(TIA-222-G 9.4.1)
Resistance Factor for Friction =	$\Phi_{sFriction} := 0.75$	(TIA-222-G 9.4.1)

Calculated Properties:

Adjusted Concrete Unit Weight = $\gamma_c := \gamma_{conc} - 62.4pcf = 87.6 \cdot pcf$

Weight of Concrete Caisson (no water) = $WT_{c.comp} := \frac{\pi}{4} \cdot \left(d_c^{\,2} L_c \right) \cdot \gamma_{conc} = 13.622 \cdot kip$

Weight of Concrete Caisson (water) = $WT_{c.uplift} := \frac{\pi}{4} \cdot \left[\left(d_c^{\,2} L_{c.AWT} \right) \cdot \gamma_{conc} + \left(d_c^{\,2} L_{c.BWT} \right) \cdot \gamma_c \right] = 13.622 \cdot kip$

Check Uplift:

Uplift Resistance from Concrete Weight = $Uplift_{conc} := WT_{c.uplift} \cdot 0.9 = 12.26 \cdot kips$

Uplift Resistance from Skin Friction = $Uplift_{SF} := \pi \cdot d_c \cdot \left(L_c - L_{cag} - n \right) \cdot \mu \cdot \Phi_{sFriction} = 103.378 \cdot kips$

Total Uplift Resistance = $Uplift_R := Uplift_{conc} + Uplift_{SF} = 115.638 \cdot kips$

Uplift Check = $\frac{Uplift}{Uplift_R} = 48.43 \cdot \%$

$Uplift\_Check := if\left(\frac{Uplift_R}{Uplift} \geq 1.0, "Okay", "No\ Good" \right)$

Uplift_Check = "Okay"

Check Compression:

Total Compression Force = $Comp_{tot} := WT_{c.comp} + Comp = 81.622 \cdot kips$

Compression Resistance from Bearing = $Comp_{bearing} := \frac{\pi}{4} \cdot d_c^{\,2} \cdot q_u \cdot \Phi_{sBearing} = 147.262 \cdot kips$

Compression Resistance from Skin Friction = $Comp_{SF} := \pi \cdot d_c \cdot \left(L_c - L_{cag} - n \right) \cdot \mu \cdot \Phi_{sFriction} = 103.378 \cdot kips$

Total Compression Resistance = $Comp_R := Comp_{bearing} + Comp_{SF} = 250.64 \cdot kips$

Compression Check = $\frac{Comp_{tot}}{Comp_R} = 32.57 \cdot \%$

$Compression\_Check := if\left(\frac{Comp_R}{Comp_{tot}} \geq 1.0, "Okay", "No\ Good" \right)$

Compression_Check = "Okay"

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Section 1 - Site Information

Site ID: CT11923C
Status: Draft
Version: 9
Project Type: Anchor
Approved: Not Approved
Approved By: Not Approved
Last Modified: 5/12/2020 12:2:52 PM
Last Modified By: Dominic.Kallas2@T-Mobile.com

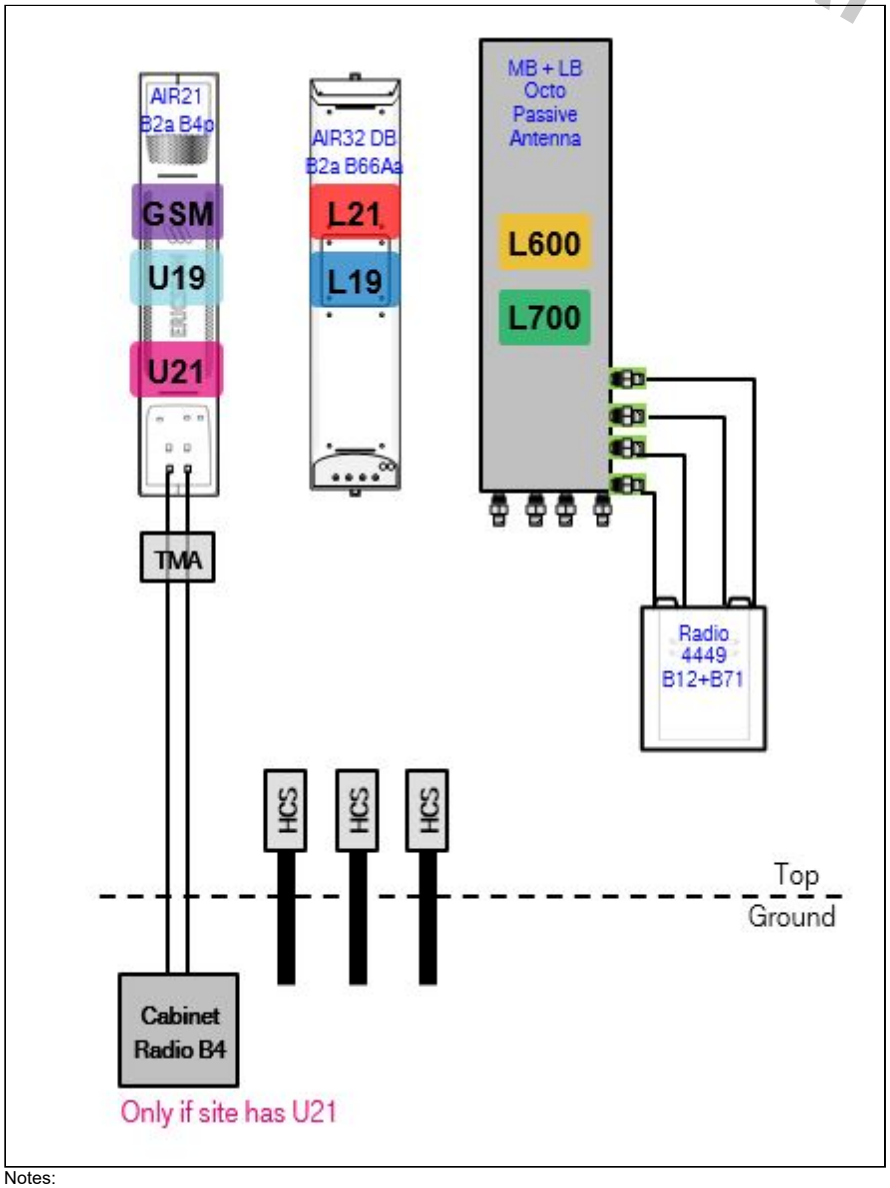
Site Name: CT923/W. View Dr_GT
Site Class: Guyed Tower
Site Type: Structure Non Building
Plan Year: 2020
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Steven T LLC

Latitude: 41.39600000
Longitude: -73.42380000
Address: 7 West View Dr
City, State: Danbury, CT
Region: NORTHEAST

RAN Template: 67D5A992DB Outdoor			AL Template: 67D5992DB_3xAIR+1OP	
Sector Count: 3	**Antenna Count:** 12	**Coax Line Count:** 6	**TMA Count:** 3	**RRU Count:** 6

Section 2 - Existing Template Images

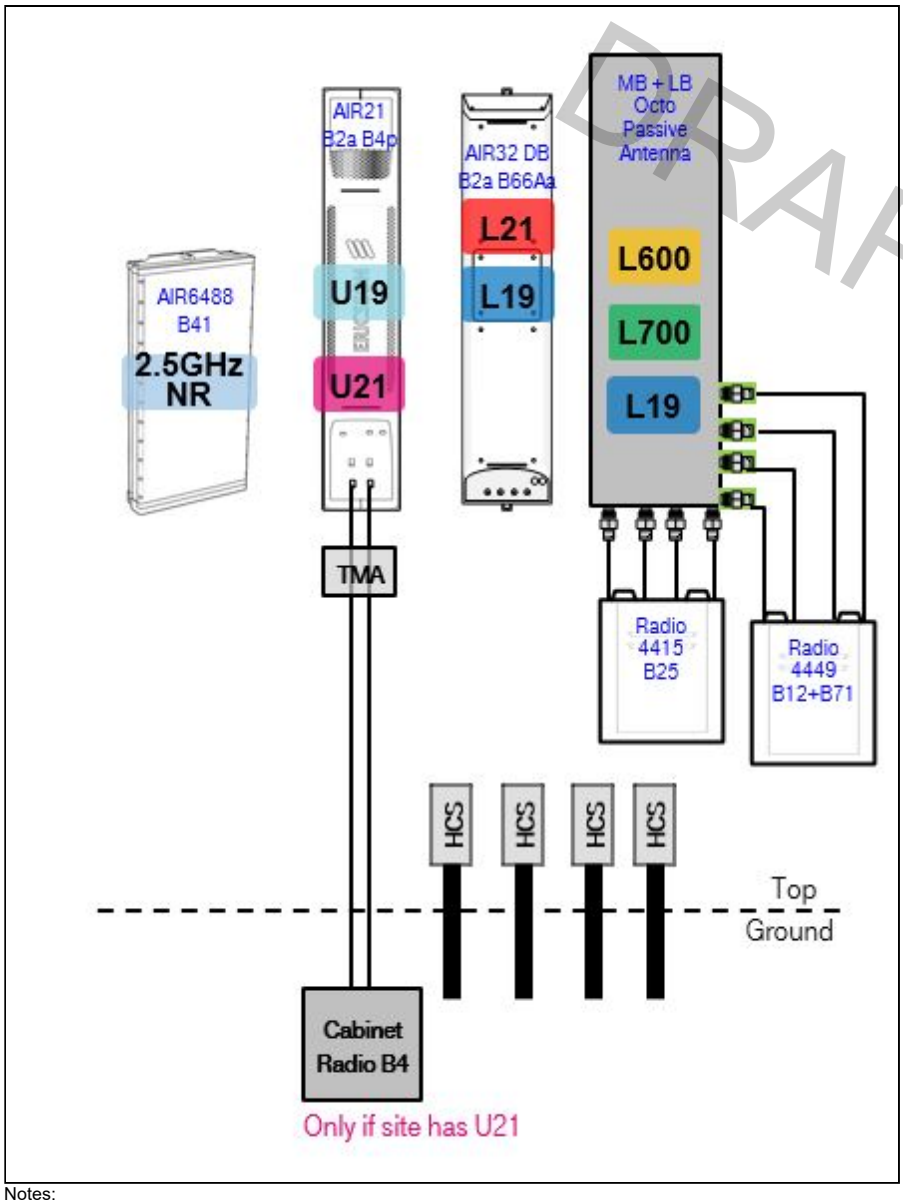
67D92DB_2xAIR+1OP.JPG



Notes:

Section 3 - Proposed Template Images

67D5992DB_3xAIR+1OP.JPG



Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92DB Outdoor

Enclosure	1	2
Enclosure Type	RBS 6131	Ancillary Equipment (Ericsson)
Baseband	DUW30 U2100; DUW30; DUG20 G1900; BB 6630 L2100 L1900 L700 L600; BB 6630 N600	
Hybrid Cable System	Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select Length & AWG* **(x 3)**	
Radio	RU22 **(x 6)** U2100	

Proposed RAN Equipment

Template: 67D5A992DB Outdoor

Enclosure	1	2	3	4
Enclosure Type	RBS 6131	Ancillary Equipment (Ericsson)	Enclosure 6160	B160
Baseband	DUW30 U2100; DUW30; DUG20 G1900; BB 6630 L1900 L600 L2100 L700; BB 6630 N600		BB 6630 **(x 3)** L2500; BB 6648 N2500	
Hybrid Cable System	Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select Length & AWG* **(x 3)**		Ericsson 6x12 HCS *Select AWG & Length* **(x 3)**	
Radio	RU22 **(x 6)** U2100			

RAN Scope of Work:

Remove Existing Nortel Cabinet

Add (1) Enclosure 6160.

Add (1) Battery Cabinet B160.

Add (1) iXRe Router to new Enclosure 6160.

Add (3) BB6630 for L2500 to new Enclosure 6160.

Add (1) BB6648 for N2500 to new Enclosure 6160.

Existing: (18) Coaxial Lines; (1) 9X18 HCS; (3) 6X12 HCS.

Remove (12) Coaxial Lines for new total of (6) Coaxial Lines.

Add (3) 6x12 HCS ([1] HCS per sector). Length of new HCS on each sector will match that of existing 6X12 HCS.

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Section 6 - A&L Equipment

Existing Template: 67D92DB_2xAIR+1OP
Proposed Template: 67D5992DB_3xAIR+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1				2		3			
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	40				40		40			
M. Tilt	0				0		0			
Height	50				50		50			
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	L2100	L2100	L1900	L1900	G1900	U2100		L700 L600 N600	L700 L600 N600	
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt	2	2	2	2	2	2		2	2	
Cables						Generic Feeder Coax **(x2)**				
TMAs						Generic Twin Style 1B - AWS (AtAntenna)				
Diplexers / Combiners										
Radio								Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	
Sector Equipment										

Unconnected Equipment:

Cable: Generic Feeder Coax | Cable: Generic Feeder Coax | Cable: Generic Feeder Coax

Scope of Work:

Replace LB Dual in Position 3 with (1) LB/MB Octo.
Replace RRUS11 B12 with (1) Radio 4449 B71+B12 for L600 and L700.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro											
Antenna	1				2		3		4			
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	40				40		40		40			
M. Tilt	0				0		0		0			
Height	50				50		50		50			
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Active Tech.	L2100	L2100	L1900	L1900	L2500 N2500	L2500 N2500	G1900	U2100	L600 N600 L700	L600 N600 L700	L1900	L1900
Dark Tech.												
Restricted Tech.												
Decomm. Tech.												
E. Tilt	2	2	2	2	2	2	2	2	2	2	2	2
Cables								Generic Feeder Coax **(x2)**				
TMAs								Generic Twin Style 1B - AWS (AtAntenna)				
Diplexers / Combiners												
Radio									Radio 4449 B71 +B85 (At Antenna)	SHARED Radio 4449 B71 +B85 (At Antenna)	Radio 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna)
Sector Equipment												

Unconnected Equipment:

Scope of Work:

Empty Mount in Position 2.

Add AIR6449 B41 for L2500 and N2500 to Position 2.

Add Radio 4415 B25 for L1900 2nd Carrier to Position 4 at antenna, and connect its ports to the Mid-Band ports of the octo antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Sector 2 (Existing) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1				2		3			
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	170				170		170			
M. Tilt	0				0		0			
Height	50				50		50			
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	L2100	L2100	L1900	L1900	G1900	U2100		L700 L600 N600	L700 L600 N600	
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt	2	2	2	2	2	2		2	2	
Cables						Generic Feeder Coax **(x2)**				
TMAs						Generic Twin Style 1B - AWS (AtAntenna)				
Diplexers / Combiners										
Radio								Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	
Sector Equipment										

Unconnected Equipment:

Cable: Generic Feeder Coax | Cable: Generic Feeder Coax | Cable: Generic Feeder Coax

Scope of Work:

Replace LB Dual in Position 3 with (1) LB/MB Octo.
Replace RRUS11 B12 with (1) Radio 4449 B71+B12 for L600 and L700.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro											
Antenna	1				2		3		4			
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	170				170		170		170			
M. Tilt	0				0		0		0			
Height	50				50		50		50			
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Active Tech.	L2100	L2100	L1900	L1900	L2500 N2500	L2500 N2500	G1900	U2100	L600 N600 L700	L600 N600 L700	L1900	L1900
Dark Tech.												
Restricted Tech.												
Decomm. Tech.												
E. Tilt	2	2	2	2	2	2	2	2	2	2	2	2
Cables								Generic Feeder Coax **(x2)**				
TMAs								Generic Twin Style 1B - AWS (AtAntenna)				
Diplexers / Combiners												
Radio									Radio 4449 B71 +B85 (At Antenna)	SHARED Radio 4449 B71 +B85 (At Antenna)	Radio 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna)
Sector Equipment												

Unconnected Equipment:

Scope of Work:

Empty Mount in Position 2.

Add AIR6449 B41 for L2500 and N2500 to Position 2.

Add Radio 4415 B25 for L1900 2nd Carrier to Position 4 at antenna, and connect its ports to the Mid-Band ports of the octo antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Sector 3 (Existing) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1				2		3			
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	290				290		290			
M. Tilt	0				0		0			
Height	50				50		50			
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	L2100	L2100	L1900	L1900	G1900	U2100		L700 L600 N600	L700 L600 N600	
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt	2	2	2	2	2	2		2	2	
Cables						Generic Feeder Coax **(x2)**				
TMAs						Generic Twin Style 1B - AWS (AtAntenna)				
Diplexers / Combiners										
Radio								Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	
Sector Equipment										

Unconnected Equipment:

Cable: Generic Feeder Coax | Cable: Generic Feeder Coax | Cable: Generic Feeder Coax | Cable: Generic Feeder Coax

Scope of Work:

Replace LB Dual in Position 3 with (1) LB/MB Octo.
Replace RRUS11 B12 with (1) Radio 4449 B71+B12 for L600 and L700.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro											
Antenna	1				2		3		4			
Antenna Model	Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)		Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	290				290		290		290			
M. Tilt	0				0		0		0			
Height	50				50		50		50			
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
Active Tech.	L2100	L2100	L1900	L1900	L2500 N2500	L2500 N2500	G1900	U2100	L600 N600 L700	L600 N600 L700	L1900	L1900
Dark Tech.												
Restricted Tech.												
Decomm. Tech.												
E. Tilt	2	2	2	2	2	2	2	2	2	2	2	2
Cables								Generic Feeder Coax **(x2)**				
TMAs								Generic Twin Style 1B - AWS (AtAntenna)				
Diplexers / Combiners												
Radio									Radio 4449 B71 +B85 (At Antenna)	SHARED Radio 4449 B71 +B85 (At Antenna)	Radio 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna)
Sector Equipment												

Unconnected Equipment:

Scope of Work:

Empty Mount in Position 2.

Add AIR6449 B41 for L2500 and N2500 to Position 2.

Add Radio 4415 B25 for L1900 2nd Carrier to Position 4 at antenna, and connect its ports to the Mid-Band ports of the octo antenna.

Ensure RET control is enabled for all technology layers according to the Design Documents.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5A992DB Outdoor	67D5992DB_3xAIR+1OP

CT11923C_Anchor_9_draft

Print Name: Standard
PORs: Anchor_Phase 3

Section 7 - Power Systems Equipment

Existing Power Systems Equipment

----- This section is intentionally blank. -----

Proposed Power Systems Equipment

Exhibit E

Mount Analysis

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

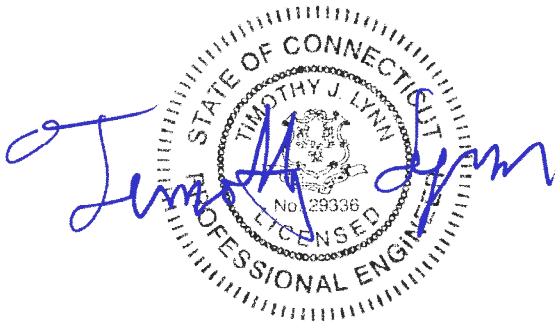
T-Mobile Site #: CT11923C

7 West View Drive
Danbury, CT

Centek Project No. 20074.05

Date: May 26, 2020

Max Stress Ratio = 67.3%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

Table of Contents

CENTEK engineering

Centered on Solutions℠

May 26, 2020

Mr. Dan Reid
Transcend Wireless
10 Industrial Ave
Mahwah, NJ 07430

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11923C
7 West View Drive
Danbury, CT 06810

Centek Project No. 20074.05

Dear Mr. Reid,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the mount, consisting three (3) 12-ft T -frame sector mounts with stiff arms to support the proposed/existing equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

- T-Mobile:
  T-Frames: Three (3) RFS APXVAARR24-43-NA20 panel antennas, three (3) Ericsson AIR21 panel antennas, three (3) Ericsson AIR32 panel antennas, three (3) Ericsson AIR6449 panel antennas, three (3) TMAs, three (3) Ericsson 4449 remote radio units and three (3) Ericsson 4415 remote radio units mounted on three (3) T-Frames with a RAD center elevation of 50-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 93 mph for Danbury as required in Appendix N of the 2018 Connecticut State Building Code.

A structural analysis of tower and foundation needs to be completed prior to any work.

Based on our review of the installation, it is our opinion that the subject antenna frames have sufficient capacity to support the aforementioned antenna configuration. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

STATE OF CONNECTICUT
TIMOTHY J. LYNN
No. 29336
LICENSED
PROFESSIONAL ENGINEER

Section 2 - Calculations

CENTEK engineering
Centered on Solutions℠ www.centekeng.com
63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: TIA-222-G Loads

Location: Danbury, CT

Rev. 0: 5/26/20

Prepared by: T.J.L. Checked by: C.A.G.
Job No. 20074.05

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed $V := 93$ mph (User Input - 2018 CSBC Appendix N)

Basic Wind Speed with Ice $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = Structure_Type := Lattice (User Input)

Structure Category = $SC := II$ (User Input)

Exposure Category = $Exp := C$ (User Input)

Structure Height = $h := 100$ ft (User Input)

Height to Center of Antennas = $z_{Ant} := 50$ ft (User Input)

Radial Ice Thickness = $t_i := 0.75$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H = 0.85$ (User Input)

Output

Wind Direction Probability Factor =

$$K_d := \begin{cases} 0.95 & \text{if Structure\_Type = Pole} \\ 0.85 & \text{if Structure\_Type = Lattice} \end{cases} = 0.85$$

(Per Table 2-2 of TIA-222-G)

Importance Factors =

$$I_{Wind} := \begin{cases} 0.87 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \end{cases} = 1$$

(Per Table 2-3 of TIA-222-G)

$$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.00 & \text{if } SC = 3 \end{cases} = 1$$

$$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \end{cases} = 1$$

$$K_{iz} := \left(\frac{z_{Ant}}{33}\right)^{0.1} = 1.042$$

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 1.564$$

Velocity Pressure Coefficient Antennas =

$$Kz_{Ant} := 2.01\left(\left(\frac{z_{Ant}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.094$$

Velocity Pressure w/o Ice Antennas =

$$qz_{Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V^2 \cdot I_{Wind} = 20.585$$

Velocity Pressure with Ice Antennas =

$$qz_{ice.Ant} := 0.00256 \cdot K_d \cdot Kz_{Ant} \cdot V_i^2 \cdot I_{Wind} = 5.95$$

CENTEK engineering
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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject:	TIA-222-G Loads
Location:	Danbury, CT
Rev. 0: 5/26/20	Prepared by: T.J.L. Checked by: C.A.G. Job No. 20074.05

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS APXVAARR24-43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 153$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 354$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 128$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 18.7$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 119$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 8.1$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 52$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 153$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1 \times 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 381$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 381$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR21		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56$	in	(User Input)
Antenna Width =	$W_{ant} := 12.1$	in	(User Input)
Antenna Thickness =	$T_{ant} := 7.9$	in	(User Input)
Antenna Weight =	$WT_{ant} := 90$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.6$		
Antenna Force Coefficient =	$Ca_{ant} = 1.29$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 107$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 70$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.3$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 41$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 4.5$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 30$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 90$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5353$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4575$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 148$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 148$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR32		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.6$	in	(User Input)
Antenna Width =	$W_{ant} := 12.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 132$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.4$		
Antenna Force Coefficient =	$Ca_{ant} = 1.28$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 114$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.4$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 77$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.6$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 43$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 4.9$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 32$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 132$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6352$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4970$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 161$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 161$	lbs

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR6449		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 33.1$	in	(User Input)
Antenna Width =	$W_{ant} := 20.5$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.3$	in	(User Input)
Antenna Weight =	$WT_{ant} := 103$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 1.6$		
Antenna Force Coefficient =	$Ca_{ant} = 1.2$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 4.7$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 99$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.9$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 40$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 5.9$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 36$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 2.9$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.Ant} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 17$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 103$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 5632$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4149$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 134$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 134$	lbs

Development of Wind & Ice Load on RRUS

RRUS Data:

RRUS Model = Ericsson 4449 B71B12

RRUS Shape = Flat (User Input)

RRUS Height = $L_{RRUS} := 14.9$ in (User Input)

RRUS Width = $W_{RRUS} := 13.2$ in (User Input)

RRUS Thickness = $T_{RRUS} := 10.4$ in (User Input)

RRUS Weight = $WT_{RRUS} := 74$ lbs (User Input)

Number of RRUS's = $N_{RRUS} := 1$ (User Input)

RRUS Aspect Ratio = $Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.1$

RRUS Force Coefficient = $Ca_{RRUS} = 1.2$

Wind Load (without ice)

Surface Area for One RRUS = $SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.4$ sf

Total RRUS Wind Force = $F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 29$ lbs

Surface Area for One RRUS = $SA_{RRUSS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.1$ sf

Total RRUS Wind Force = $F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSS} = 23$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 2$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 12$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.7$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSS} = 10$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 74$ lbs

Gravity Loads (ice only)

Volume of Each RRUS = $V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2045$ cu in

Volume of Ice on Each RRUS = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz})(W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 1936$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 63$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 63$ lbs

Development of Wind & Ice Load on RRUS

RRUS Data:

RRUS Model = Ericsson 4415 B25

RRUS Shape = Flat (User Input)

RRUS Height = $L_{RRUS} := 14.9$ in (User Input)

RRUS Width = $W_{RRUS} := 13.2$ in (User Input)

RRUS Thickness = $T_{RRUS} := 5.4$ in (User Input)

RRUS Weight = $WT_{RRUS} := 47$ lbs (User Input)

Number of RRUS's = $N_{RRUS} := 1$ (User Input)

RRUS Aspect Ratio = $Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.1$

RRUS Force Coefficient = $Ca_{RRUS} = 1.2$

Wind Load (without ice)

Surface Area for One RRUS = $SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.4$ sf

Total RRUS Wind Force = $F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 29$ lbs

Surface Area for One RRUS = $SA_{RRUSS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 0.6$ sf

Total RRUS Wind Force = $F_{RRUS} := qz_{Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSS} = 12$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 2$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 12$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.1$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.Ant} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSS} = 6$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 47$ lbs

Gravity Loads (ice only)

Volume of Each RRUS = $V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 1062$ cu in

Volume of Ice on Each RRUS = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz})(W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 1448$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 47$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 47$ lbs

Development of Wind & Ice Load on TMA

TMA Data:

TMA Model =	Ericsson KRY112 TMA		
TMA Shape =	Flat		(User Input)
TMA Height =	$L_{TMA} := 7.7$	in	(User Input)
TMA Width =	$W_{TMA} := 7.5$	in	(User Input)
TMA Thickness =	$T_{TMA} := 3.4$	in	(User Input)
TMA Weight =	$WT_{TMA} := 11$	lbs	(User Input)
Number of TMA's =	$N_{TMA} := 1$		(User Input)
TMA Aspect Ratio =	$Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1$		
TMA Force Coefficient =	$Ca_{TMA} = 1.2$		

Wind Load (without ice)

Surface Area for One TMA =	$SA_{TMAF} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.4$	sf
Total TMA Wind Force =	$F_{TMA} := qz_{Ant} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAF} = 8$	lbs
Surface Area for One TMA =	$SA_{TMAS} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.2$	sf
Total TMA Wind Force =	$F_{TMA} := qz_{Ant} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAS} = 4$	lbs

Wind Load (with ice)

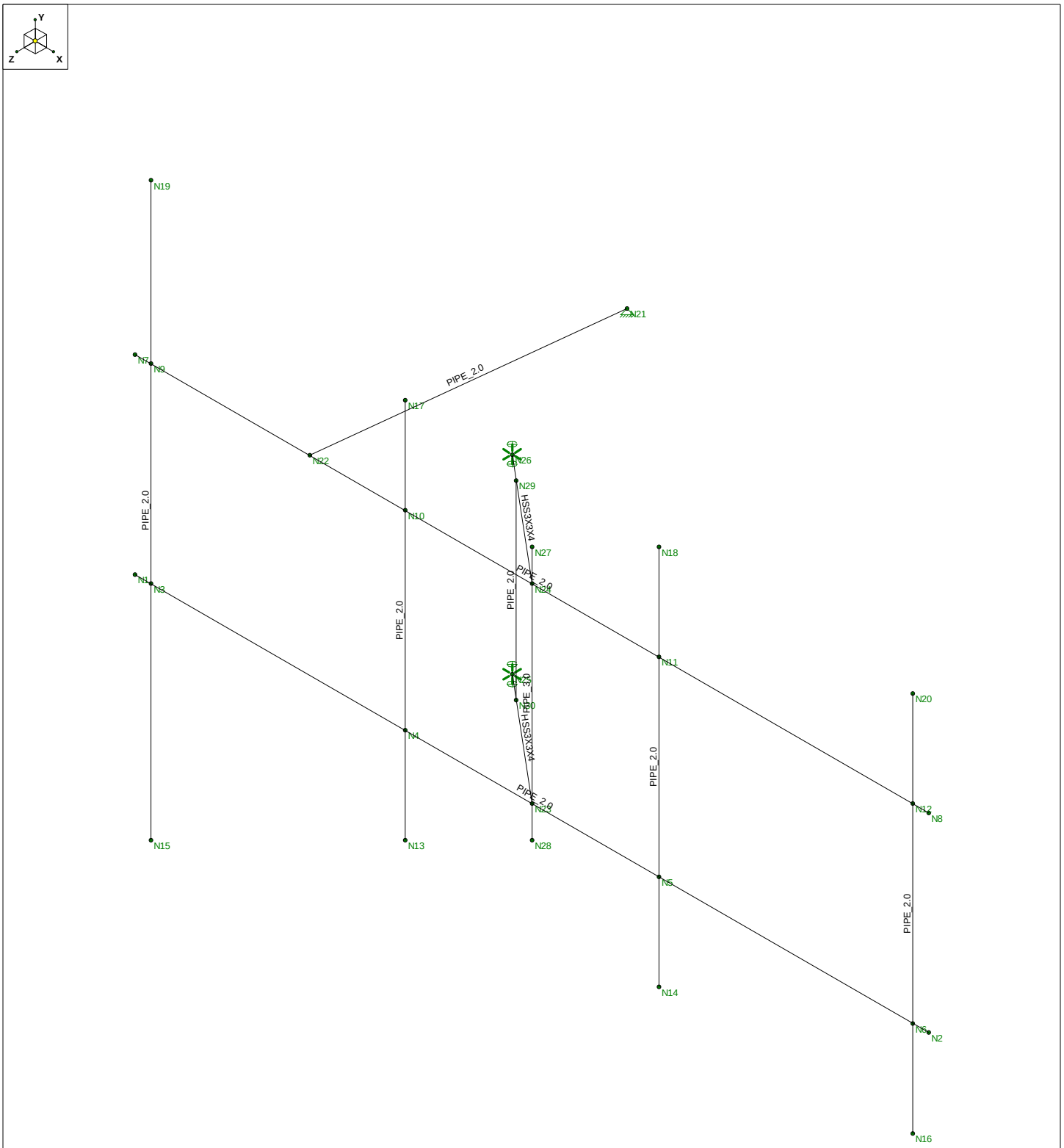
Surface Area for One TMA w/ Ice =	$SA_{ICETMAF} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (W_{TMA} + 2 \cdot t_{iz})}{144} = 0.8$	sf
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.Ant} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAF} = 5$	lbs
Surface Area for One TMA w/ Ice =	$SA_{ICETMAS} := \frac{(L_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz})}{144} = 0.5$	sf
Total TMA Wind Force w/ Ice =	$Fi_{TMA} := qz_{ice.Ant} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAS} = 3$	lbs

Gravity Load (without ice)

Weight of All TMAs =	$WT_{TMA} \cdot N_{TMA} = 11$	lbs

Gravity Loads (ice only)

Volume of Each TMA =	$V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 196$	cu in
Volume of Ice on Each TMA =	$V_{ice} := (L_{TMA} + 2 \cdot t_{iz})(W_{TMA} + 2 \cdot t_{iz}) \cdot (T_{TMA} + 2 \cdot t_{iz}) - V_{TMA} = 555$	cu in
Weight of Ice on Each TMA =	$W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 18$	lbs
Weight of Ice on All TMAs =	$W_{ICETMA} \cdot N_{TMA} = 18$	lbs



Envelope Only Solution

Centek		
TJL	CT11923C	May 26, 2020 at 4:27 PM
20074.05	Member Framing	Antenna Mount.r3d

(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): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
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?	No
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
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Outrigger	HSS3X3X4	Beam	Tube	A500 Gr.46	Typical	2.44	3.02	3.02	5.08
2	Horz	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
3	Vert	PIPE_3.0	Column	Pipe	A53 Grade B	Typical	2.07	2.85	2.85	5.69
4	Pipe 2.0	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
5	Antenna Mast	PIPE_2.0	Column	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
6	Stabilizer Arm	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[...	L-torq...	Kyy	Kzz	Cb	Functi...
1	M1	Horz	12.5			Lbyy						Lateral
2	M2	Horz	12.5			Lbyy						Lateral
3	M3	Antenna Mast	9			Lbyy						Lateral
4	M4	Antenna Mast	6			Lbyy						Lateral
5	M5	Antenna Mast	6			Lbyy						Lateral
6	M6	Antenna Mast	6			Lbyy						Lateral
7	M7	Pipe 2.0	4.528			Lbyy						Lateral
8	M8	Outrigger	2.5			Lbyy						Lateral
9	M9	Outrigger	2.5			Lbyy						Lateral
10	M10	Vert	4			Lbyy						Lateral
11	M11	Pipe 2.0	3			Lbyy						Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N1	N2		180	Horz	Beam	Pipe	A53 Gra...	Typical
2	M2	N7	N8		270	Horz	Beam	Pipe	A53 Gra...	Typical
3	M3	N19	N15			Antenna Mast	Column	Pipe	A53 Gra...	Typical
4	M4	N17	N13			Antenna Mast	Column	Pipe	A53 Gra...	Typical
5	M5	N18	N14			Antenna Mast	Column	Pipe	A53 Gra...	Typical
6	M6	N20	N16			Antenna Mast	Column	Pipe	A53 Gra...	Typical
7	M7	N22	N21			Pipe 2.0	Column	Pipe	A53 Gra...	Typical
8	M8	N24	N26			Outrigger	Beam	Tube	A500 Gr....	Typical
9	M9	N23	N25			Outrigger	Beam	Tube	A500 Gr....	Typical
10	M10	N27	N28			Vert	Column	Pipe	A53 Gra...	Typical
11	M11	N29	N30			Pipe 2.0	Column	Pipe	A53 Gra...	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	-6.25	0	2.5	0	
2	N2	6.25	0	2.5	0	
3	N3	-6	0	2.5	0	
4	N4	-2	0	2.5	0	
5	N5	2	0	2.5	0	
6	N6	6	0	2.5	0	
7	N7	-6.25	3	2.5	0	
8	N8	6.25	3	2.5	0	
9	N9	-6	3	2.5	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
10	N10	-2	3	2.5	0	
11	N11	2	3	2.5	0	
12	N12	6	3	2.5	0	
13	N13	-2	-1.5	2.5	0	
14	N14	2	-1.5	2.5	0	
15	N15	-6	-3.5	2.5	0	
16	N16	6	-1.5	2.5	0	
17	N17	-2	4.5	2.5	0	
18	N18	2	4.5	2.5	0	
19	N19	-6	5.5	2.5	0	
20	N20	6	4.5	2.5	0	
21	N21	-3	3	-2	0	
22	N22	-3.5	3	2.5	0	
23	N23	0	0	2.5	0	
24	N24	0	3	2.5	0	
25	N25	-1.915111	0	0.893031	0	
26	N26	-1.915111	3	0.893031	0	
27	N27	0	3.5	2.5	0	
28	N28	0	-.5	2.5	0	
29	N29	-1.532089	3	1.214425	0	
30	N30	-1.532089	0	1.214425	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	N21	Reaction	Reaction	Reaction			
2	N25	Reaction	Reaction	Reaction		Reaction	
3	N26	Reaction	Reaction	Reaction		Reaction	

Member Point Loads (BLC 2 : Dead Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.077	.5
2	M3	Y	-.077	7.5
3	M4	Y	-.045	.5
4	M4	Y	-.045	4
5	M5	Y	-.052	.5
6	M5	Y	-.052	2.5
7	M6	Y	-.066	.5
8	M6	Y	-.066	4
9	M4	Y	-.011	%50
10	M3	Y	-.074	2
11	M3	Y	-.047	4.5

Member Point Loads (BLC 3 : Ice Load)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Y	-.191	.5
2	M3	Y	-.191	7.5
3	M4	Y	-.074	.5
4	M4	Y	-.074	4

Member Point Loads (BLC 3 : Ice Load) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
5	M5	Y	-.067	.5
6	M5	Y	-.067	2.5
7	M6	Y	-.081	.5
8	M6	Y	-.081	4
9	M4	Y	-.018	%50
10	M3	Y	-.063	2
11	M3	Y	-.047	4.5

Member Point Loads (BLC 4 : Wind with Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	X	.026	.5
2	M3	X	.026	7.5
3	M4	X	.015	.5
4	M4	X	.015	4
5	M5	X	.009	.5
6	M5	X	.009	2.5
7	M6	X	.016	.5
8	M6	X	.016	4
9	M4	X	.003	%50
10	M3	X	.01	2
11	M3	X	.006	4.5

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	X	.064	.5
2	M3	X	.064	7.5
3	M4	X	.035	.5
4	M4	X	.035	4
5	M5	X	.02	.5
6	M5	X	.02	2.5
7	M6	X	.039	.5
8	M6	X	.039	4
9	M4	X	.004	%50
10	M3	X	.023	2
11	M3	X	.012	4.5

Member Point Loads (BLC 6 : Wind with Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Z	.06	.5
2	M3	Z	.06	7.5
3	M4	Z	.021	.5
4	M4	Z	.021	4
5	M5	Z	.018	.5
6	M5	Z	.018	2.5
7	M6	Z	.022	.5
8	M6	Z	.022	4

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M3	Z	.177	.5

Member Point Loads (BLC 7 : Wind Z) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	M3	Z	.177	7.5
3	M4	Z	.054	.5
4	M4	Z	.054	4
5	M5	Z	.05	.5
6	M5	Z	.05	2.5
7	M6	Z	.057	.5
8	M6	Z	.057	4

Member Distributed Loads (BLC 4 : Wind with Ice X)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M3	X	.002	.002	0	0
2	M4	X	.002	.002	0	0
3	M5	X	.002	.002	0	0
4	M6	X	.002	.002	0	0
5	M10	X	.002	.002	0	0
6	M11	X	.002	.002	0	0
7	M7	X	.002	.002	0	0

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M3	X	.005	.005	0	0
2	M4	X	.005	.005	0	0
3	M5	X	.005	.005	0	0
4	M6	X	.005	.005	0	0
5	M10	X	.005	.005	0	0
6	M11	X	.005	.005	0	0
7	M7	X	.005	.005	0	0

Member Distributed Loads (BLC 6 : Wind with Ice Z)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M2	Z	.002	.002	0	0
2	M1	Z	.002	.002	0	0
3	M10	Z	.002	.002	0	0
4	M11	Z	.002	.002	0	0

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M2	Z	.005	.005	0	0
2	M1	Z	.005	.005	0	0
3	M10	Z	.005	.005	0	0
4	M11	Z	.005	.005	0	0

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
1	Self Weight	DL		-1						
2	Dead Load	None					11			
3	Ice Load	None					11			

Basic Load Cases (Continued)

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distrib..	Area(...	Surfa...
4	Wind with Ice X	None					11	7		
5	Wind X	None					11	7		
6	Wind with Ice Z	None					8	4		
7	Wind Z	None					8	4		

Load Combinations

	Description	Solve	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.2D + 1.6W (X-direc...	Yes	Y		1	1.2	2	1.2	5	1.6																
2	0.9D + 1.6W (X-direc...	Yes	Y		1	.9	2	.9	5	1.6																
3	1.2D + 1.0Di + 1.0Wi...	Yes	Y		1	1.2	2	1.2	3	1	4	1														
4	1.2D + 1.6W (Z-direc...	Yes	Y		1	1.2	2	1.2	7	1.6																
5	0.9D + 1.6W (Z-direc...	Yes	Y		1	.9	2	.9	7	1.6																
6	1.2D + 1.0Di + 1.0Wi...	Yes	Y		1	1.2	2	1.2	3	1	6	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	N21	max	.185	4	.056	4	-.04	3	0	6	0	6	0	6
2		min	-.012	2	.022	2	-.859	4	0	1	0	1	0	1
3	N25	max	.292	4	.976	3	1.095	3	0	6	.769	5	0	6
4		min	-.111	2	.35	5	-.052	5	0	1	-1.053	3	0	1
5	N26	max	-.259	6	.996	3	-.384	2	0	6	1.113	6	0	6
6		min	-.823	1	.399	2	-1.08	6	0	1	-.502	2	0	1
7	Totals:	max	0	6	2.02	6	0	3						
8		min	-.876	1	.799	2	-1.338	4						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
1	N1	max	.029	3	-.271	5	.922	5	1.711e-03	3	1.938e-02	5	6.228e-03	3
2		min	-.03	5	-.849	3	-.096	3	-1.794e-02	5	-1.214e-03	3	1.776e-03	5
3	N2	max	.025	1	-.151	5	1.341	5	4.079e-03	4	1.439e-03	2	-5.35e-04	5
4		min	-.031	5	-.338	3	-.145	1	5.432e-04	2	-2.403e-02	4	-8.705e-04	1
5	N3	max	.029	3	-.263	2	.864	5	1.711e-03	3	1.938e-02	5	6.228e-03	3
6		min	-.03	5	-.832	6	-.093	3	-1.794e-02	5	-1.214e-03	3	1.776e-03	5
7	N4	max	.027	3	-.08	5	.112	5	1.206e-03	3	7.732e-03	5	6.928e-03	6
8		min	-.03	5	-.244	3	-.033	3	-5.141e-03	5	-8.758e-04	3	1.806e-03	2
9	N5	max	.025	1	-.065	5	.262	5	2.73e-03	6	1.552e-03	1	-9.391e-04	5
10		min	-.031	5	-.156	3	-.07	1	4.803e-04	2	-1.523e-02	5	-1.764e-03	3
11	N6	max	.025	1	-.149	5	1.269	5	4.079e-03	4	1.439e-03	2	-5.35e-04	5
12		min	-.031	5	-.335	3	-.141	1	5.432e-04	2	-2.403e-02	4	-8.704e-04	1
13	N7	max	.017	2	-.263	2	.488	5	2.691e-03	3	1.901e-02	5	5.974e-03	6
14		min	-.044	4	-.85	6	-.019	3	-3.897e-03	5	-6.011e-04	3	2.457e-04	2
15	N8	max	.018	2	-.151	5	1.499	4	4.774e-03	4	1.419e-03	2	-5.273e-04	5
16		min	-.042	4	-.338	3	-.122	2	5.465e-04	2	-2.495e-02	4	-1.119e-03	1
17	N9	max	.017	2	-.263	2	.431	5	2.691e-03	3	1.901e-02	5	5.973e-03	6
18		min	-.044	4	-.832	6	-.017	3	-3.897e-03	5	-6.011e-04	3	2.457e-04	2
19	N10	max	.017	2	-.08	5	.009	3	2.167e-03	3	3.517e-04	2	6.856e-03	3
20		min	-.043	4	-.244	3	-.028	5	-1.46e-03	5	-8.584e-04	4	2.045e-03	5

Envelope Joint Displacements (Continued)

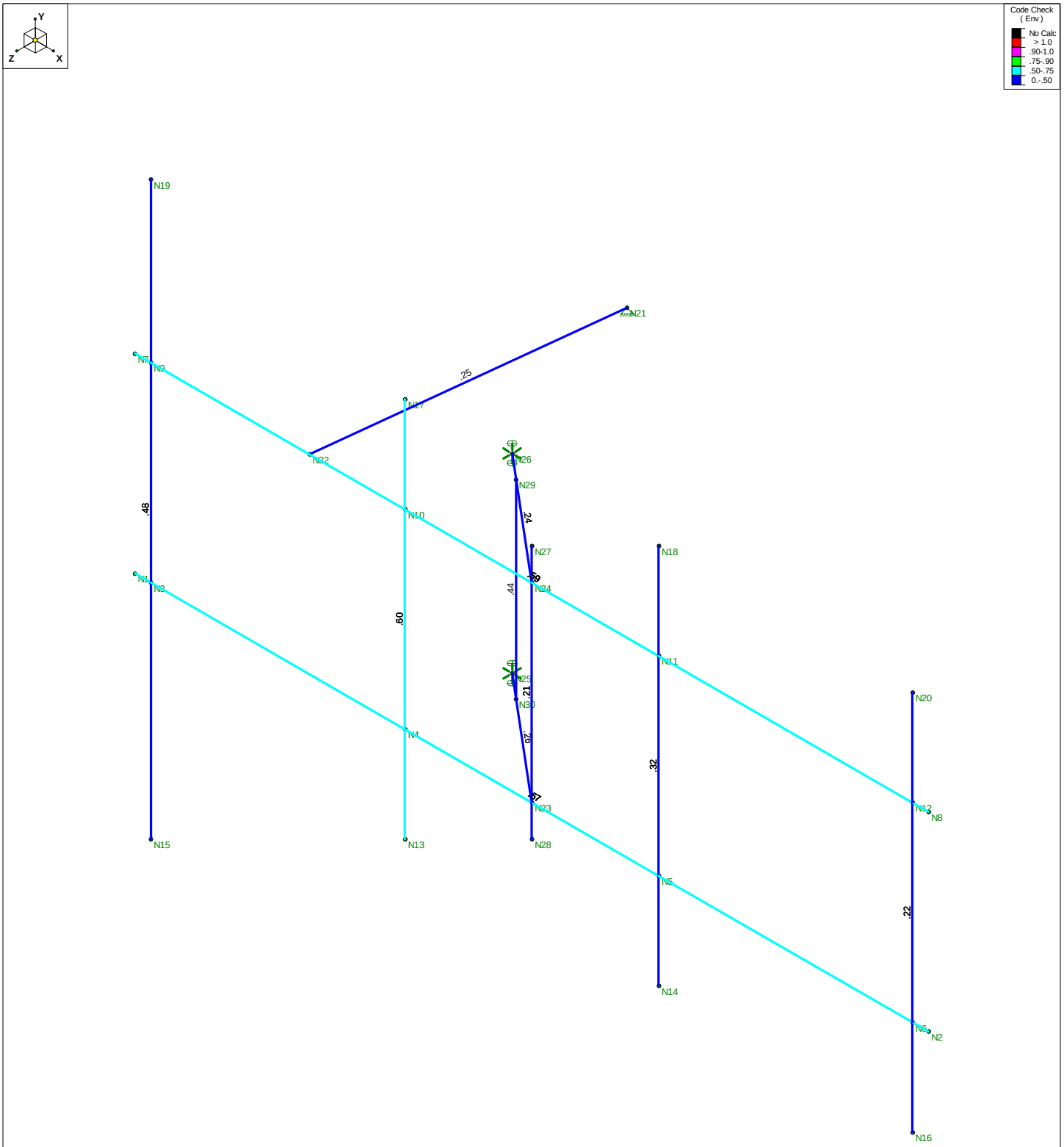
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [rad]	LC	Y Rotatio...	LC	Z Rotatio...	LC
21	N11	max	.018	2	-.065	5	.335	4	2.852e-03	6	1.346e-03	2	-9.644e-04	5
22		min	-.043	4	-.156	3	-.051	2	4.916e-04	2	-1.732e-02	4	-1.778e-03	3
23	N12	max	.018	2	-.149	5	1.424	4	4.774e-03	4	1.419e-03	2	-5.272e-04	5
24		min	-.042	4	-.335	3	-.118	2	5.465e-04	2	-2.495e-02	4	-1.119e-03	1
25	N13	max	.151	3	-.08	5	.204	5	1.206e-03	3	7.732e-03	5	6.928e-03	6
26		min	.009	5	-.244	3	-.055	3	-5.141e-03	5	-8.758e-04	3	1.85e-03	2
27	N14	max	.004	2	-.065	5	.23	5	2.73e-03	6	1.552e-03	1	-9.391e-04	5
28		min	-.051	4	-.156	3	-.097	3	4.803e-04	2	-1.523e-02	5	-1.753e-03	3
29	N15	max	.311	3	-.263	2	1.808	5	1.696e-03	3	1.938e-02	5	6.824e-03	3
30		min	.045	5	-.832	6	-.164	3	-2.349e-02	5	-1.214e-03	3	1.772e-03	5
31	N16	max	.011	2	-.149	5	1.2	5	4.079e-03	4	1.439e-03	2	-5.35e-04	5
32		min	-.042	4	-.335	3	-.155	1	5.432e-04	2	-2.403e-02	4	-8.258e-04	1
33	N17	max	-.016	2	-.08	5	.048	3	2.169e-03	3	3.517e-04	2	6.851e-03	6
34		min	-.157	6	-.244	3	-.048	5	-1.033e-03	5	-8.584e-04	4	1.783e-03	2
35	N18	max	.044	1	-.065	5	.385	4	2.943e-03	6	1.346e-03	2	-9.646e-04	5
36		min	-.023	5	-.156	3	-.042	2	4.917e-04	2	-1.732e-02	4	-1.835e-03	3
37	N19	max	.061	2	-.263	2	.445	4	2.946e-03	6	1.901e-02	5	6.015e-03	6
38		min	-.215	6	-.832	6	.023	2	5.071e-04	2	-6.011e-04	3	-2.037e-03	2
39	N20	max	.041	1	-.149	5	1.517	4	5.228e-03	4	1.419e-03	2	-5.274e-04	5
40		min	-.031	5	-.335	3	-.108	2	5.467e-04	2	-2.495e-02	4	-1.473e-03	1
41	N21	max	0	6	0	6	0	6	8.309e-03	6	5.686e-04	2	1.523e-02	3
42		min	0	1	0	1	0	1	2.86e-03	2	-3.777e-03	4	5.128e-03	5
43	N22	max	.017	2	-.145	5	.002	2	4.017e-03	3	5.25e-03	5	1.477e-02	3
44		min	-.044	4	-.454	3	-.003	6	-6.536e-04	5	-5.338e-04	3	4.659e-03	5
45	N23	max	.026	3	-.04	5	.036	5	2.414e-03	3	1.704e-03	1	2.385e-04	6
46		min	-.03	5	-.109	3	-.031	3	4.867e-04	5	-2.698e-03	5	-2.6e-04	1
47	N24	max	.017	2	-.04	5	.052	4	2.529e-03	6	1.276e-03	2	2.838e-04	6
48		min	-.043	4	-.109	3	-.02	2	6.548e-04	2	-4.3e-03	4	-2.591e-04	1
49	N25	max	0	6	0	6	0	6	3.599e-03	3	0	6	-1.167e-03	5
50		min	0	1	0	1	0	1	1.134e-03	5	0	1	-2.647e-03	3
51	N26	max	0	6	0	6	0	6	3.65e-03	6	0	6	-1.045e-03	5
52		min	0	1	0	1	0	1	1.258e-03	2	0	1	-2.603e-03	3
53	N27	max	.018	2	-.04	5	.058	4	2.529e-03	6	1.276e-03	2	2.838e-04	6
54		min	-.042	4	-.109	3	-.016	2	6.548e-04	2	-4.3e-03	4	-2.595e-04	1
55	N28	max	.027	3	-.04	5	.033	5	2.414e-03	3	1.704e-03	1	2.385e-04	6
56		min	-.031	5	-.109	3	-.046	3	4.864e-04	5	-2.698e-03	5	-2.596e-04	1
57	N29	max	.001	2	-.01	5	.003	6	3.486e-03	6	4.675e-04	2	-9.669e-04	5
58		min	-.002	6	-.026	3	-.001	2	1.192e-03	2	-9.74e-04	6	-2.408e-03	3
59	N30	max	.002	3	-.01	5	.002	5	3.437e-03	3	8.878e-04	3	-1.098e-03	5
60		min	-.002	5	-.026	3	-.003	3	1.077e-03	5	-7.438e-04	5	-2.454e-03	3

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...		...	phi*P...	phi*P...	phi*...	phi*...	Cb	Eqn
1	M1	PIPE_2.0	.673	6.25	3	.213	4....		4	6.295	32.13	1.872	1.872	1.5...	H1-...
2	M4	PIPE_2.0	.597	1.5	6	.199	1.5		4	20.867	32.13	1.872	1.872	1.4...	H1-...
3	M2	PIPE_2.0	.595	2....	4	.130	2....		4	6.295	32.13	1.872	1.872	1.5...	H1-...
4	M3	PIPE_2.0	.482	2....	6	.075	5....		3	12.144	32.13	1.872	1.872	3.2...	H1-...
5	M11	PIPE_2.0	.443	0	3	.087	0		3	28.843	32.13	1.872	1.872	2.2...	H1-...
6	M5	PIPE_2.0	.318	1.5	3	.065	1.5		4	20.867	32.13	1.872	1.872	1.4...	H1-...
7	M9	HSS3X3X4	.260	0	6	.062	1....	y	6	96.194	101....	8.556	8.556	2.1...	H1-...

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

	Member	Shape	Code Check	Lo...	LC	She...	Lo...	...	...	phi*P...	phi*P...	phi*...	phi*...	Cb	Eqn
8	M7	PIPE_2.0	.252	0	4	.011	4....		4	25.128	32.13	1.872	1.872	1.5...	H1-...
9	M8	HSS3X3X4	.237	0	3	.062	1....	y	6	96.194	101....	8.556	8.556	2.1...	H1-...
10	M6	PIPE_2.0	.216	1.5	3	.035	4		4	20.867	32.13	1.872	1.872	1.4...	H1-...
11	M10	PIPE_3.0	.213	.5	3	.109	.5		6	59.853	65.205	5.749	5.749	1.92	H1-...



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
TJL	CT11923C	May 26, 2020 at 4:27 PM
20074.05	Unity Check	Antenna Mount.r3d

Exhibit F

Power Density/RF Emissions Report

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11923C

CT923/W. View Dr_GT
7 West View Drive
Danbury, Connecticut 06810

June 17, 2020

EBI Project Number: 6220002636

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**48.84%**

June 17, 2020

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

Emissions Analysis for Site: CT11923C - CT923/W. View Dr_GT

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **7 West View Drive** in **Danbury, Connecticut** 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 ($\mu W/cm^2$). 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.

Public 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 MHz and 700 MHz frequency 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), 2100 MHz (AWS) and 11 GHz frequency 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 done for the proposed T-Mobile Wireless antenna facility located at 7 West View Drive in Danbury, Connecticut 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 4 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

7) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

8) 2 LTE channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

9) 2 NR channels (BRS Band - 2500 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

10) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

11) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

12) The antennas used in this modeling are the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 21 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s) in Sector A, the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 21 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s) in Sector B, the Ericsson AIR 32 for the 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 21 for the 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional

panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

13) The antenna mounting height centerline of the proposed antennas is 50 feet above ground level (AGL).

14) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.85 dBd
Height (AGL):	50 feet	Height (AGL):	50 feet	Height (AGL):	50 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	8,728.31	ERP (W):	8,728.31	ERP (W):	8,728.31
Antenna A1 MPE %:	**12.55%**	Antenna B1 MPE %:	**12.55%**	Antenna C1 MPE %:	**12.55%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	14.85 dBd / 14.45 dBd	Gain:	14.85 dBd / 14.45 dBd	Gain:	14.85 dBd / 14.45 dBd
Height (AGL):	50 feet	Height (AGL):	50 feet	Height (AGL):	50 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts	Total TX Power (W):	160 Watts
ERP (W):	4,672.83	ERP (W):	4,672.83	ERP (W):	4,672.83
Antenna A2 MPE %:	**6.72%**	Antenna B2 MPE %:	**6.72%**	Antenna C2 MPE %:	**6.72%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21	Make / Model:	Ericsson AIR 21
Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd	Gain:	15.35 dBd / 15.35 dBd
Height (AGL):	50 feet	Height (AGL):	50 feet	Height (AGL):	50 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts	Total TX Power (W):	180 Watts
ERP (W):	6,169.82	ERP (W):	6,169.82	ERP (W):	6,169.82
Antenna A3 MPE %:	**8.87%**	Antenna B3 MPE %:	**8.87%**	Antenna C3 MPE %:	**8.87%**
Antenna #:	**4**	Antenna #:	**4**	Antenna #:	**4**
Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20	Make / Model:	RFS APXVAARR24_43-UNA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd
Height (AGL):	50 feet	Height (AGL):	50 feet	Height (AGL):	50 feet
Channel Count:	7	Channel Count:	7	Channel Count:	7
Total TX Power (W):	260 Watts	Total TX Power (W):	260 Watts	Total TX Power (W):	260 Watts
ERP (W):	6,262.72	ERP (W):	6,262.72	ERP (W):	6,262.72
Antenna A4 MPE %:	**17.09%**	Antenna B4 MPE %:	**17.09%**	Antenna C4 MPE %:	**17.09%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	45.24%
Numerous Others	3.6%
Site Total MPE % :	48.84%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	45.24%
T-Mobile Sector B Total:	45.24%
T-Mobile Sector C Total:	45.24%
Site Total MPE % :	48.84%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz LTE	2	2056.61	50.0	59.15	1900 MHz LTE	1000	5.92%
T-Mobile 2100 MHz LTE	2	2307.55	50.0	66.37	2100 MHz LTE	1000	6.64%
T-Mobile 2500 MHz LTE	2	1221.97	50.0	35.15	2500 MHz LTE	1000	3.51%
T-Mobile 2500 MHz NR	2	1114.45	50.0	32.05	2500 MHz NR	1000	3.21%
T-Mobile 1900 MHz GSM	4	1028.30	50.0	59.15	1900 MHz GSM	1000	5.92%
T-Mobile 2100 MHz UMTS	2	1028.30	50.0	29.58	2100 MHz UMTS	1000	2.96%
T-Mobile 600 MHz LTE	2	591.73	50.0	17.02	600 MHz LTE	400	4.25%
T-Mobile 600 MHz NR	1	1577.94	50.0	22.69	600 MHz NR	400	5.67%
T-Mobile 700 MHz LTE	2	648.82	50.0	18.66	700 MHz LTE	467	4.00%
T-Mobile 1900 MHz LTE	2	1101.85	50.0	31.69	1900 MHz LTE	1000	3.17%
						Total:	**45.24%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

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:	45.24%
Sector B:	45.24%
Sector C:	45.24%
T-Mobile Maximum MPE % (Sector A):	45.24%
Site Total:	48.84%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **48.84%** 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.

Exhibit G

Mailing Receipts/Proof of Notice

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

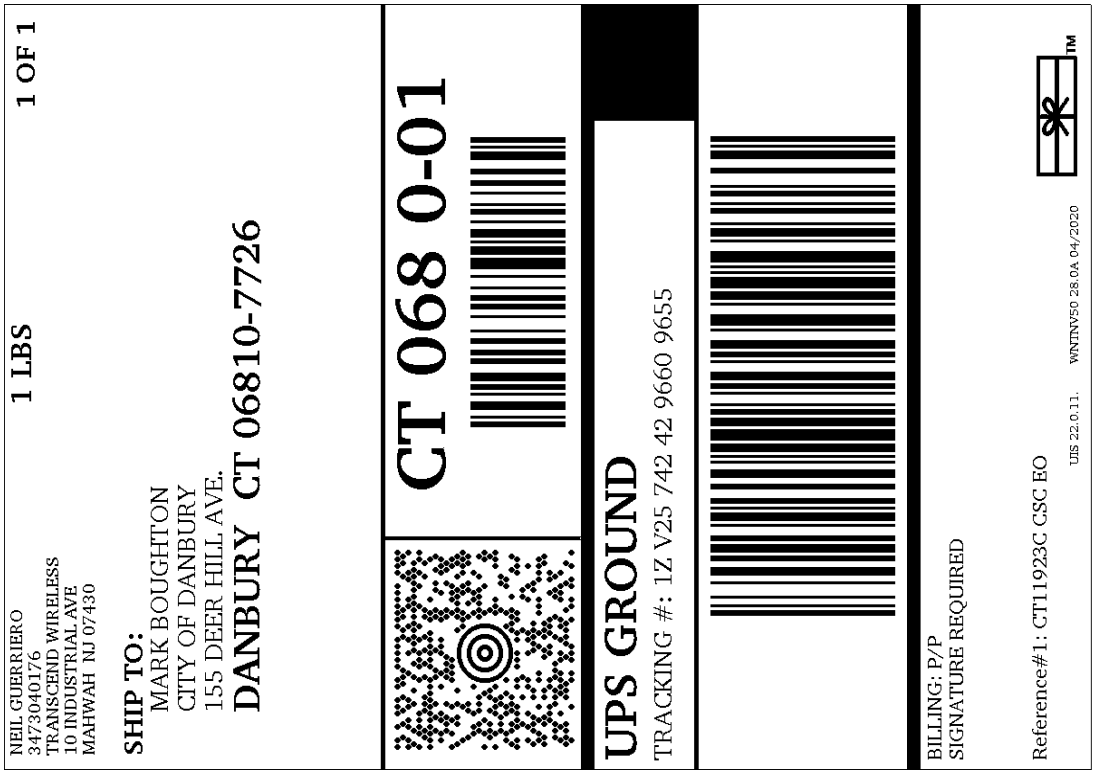
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
MICHAELS STORE # 7773
75 INTERSTATE SHOP CTR
RAMSEY ,NJ 07446

UPS Access Point™
THE UPS STORE
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

FOLD HERE



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2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

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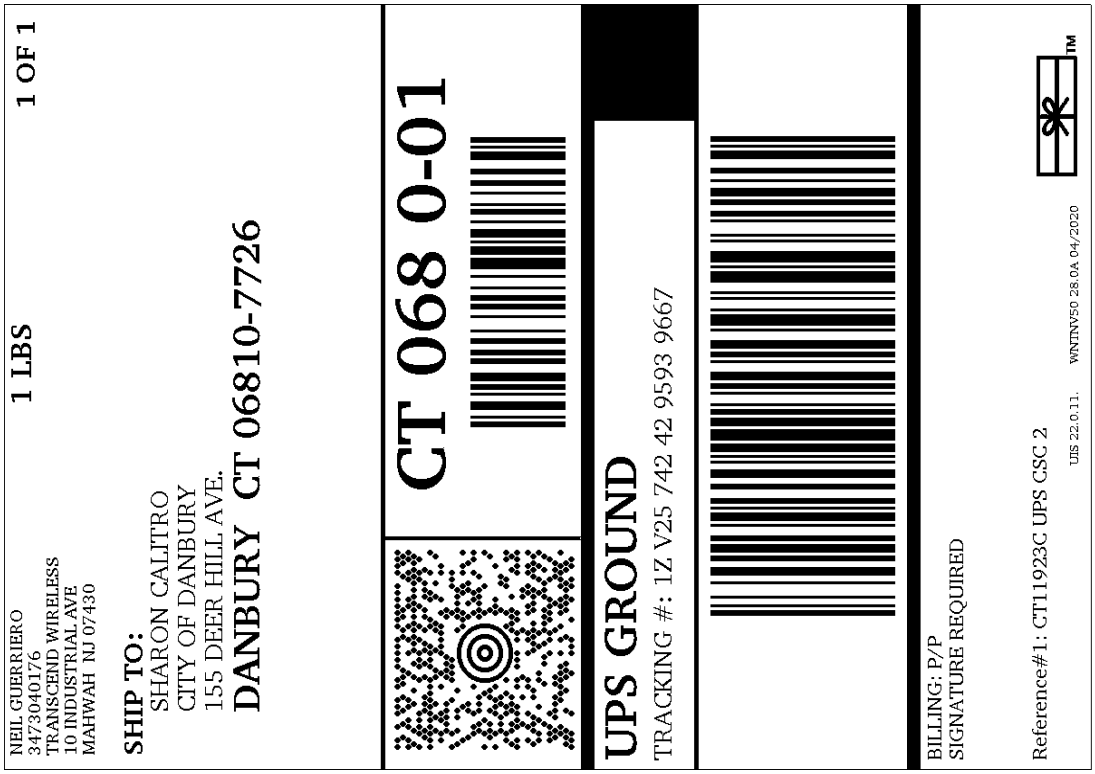
115 FRANKLIN TPKE
MAHWAH ,NJ 07430

UPS Access Point™
THE UPS STORE
120 E MAIN ST
RAMSEY ,NJ 07446

FOLD HERE



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3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
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