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

March 25, 2021

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

RE: **Notice of Exempt Modification for T-Mobile:**
857013 - T-Mobile Site ID: CTNL140B
280 Ross Road, Killingly, CT 06239
Latitude: 41° 46′ 17.59″ / Longitude: -71° 51′ 20.39″

Dear Attorney Bachman:

T-Mobile currently maintains six (6) antennas at the 107-foot mount on the existing 119-foot Monopole Tower, located at 280 Ross Road, Killingly, CT. The tower is owned by Crown Castle and the property is owned by Snake Meadow Club Inc. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700 MHz antennas which will be capable of providing 5G services. The new antennas will be installed at the 107-ft level of the tower. T-Mobile is also proposing tower mount modification as shown on the enclosed Mount Analysis Report.

Planned Modifications:
Tower:

Remove and Replace:
(3) LNX 6515DS-A1M Antenna **(REMOVE)** - (3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz **(REPLACE)**

Install New:
(1) 1 1/4" Hybrid Fiber Line
(3) Radio 4449 B71/B12

Existing to Remain:
(12) 1 5/8" Coax
(3) APX16DWV-16DWV-S-E-A20 Antenna 1900 MHz
(3) TMA

Ground:

Upgrade to existing ground cabinet. (Internally)

The facility was approved by the Connecticut Siting Council on June 23, 2004 in Docket No. 283. The approval was given with condition which this exempt modification is in compliance with.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with

R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mary Calorio, Town Manager for the Town of Killingly, Ann-Marie Aubrey, Director of Planning & Development, Crown Castle as the tower owner, and Snake Meadow Club Inc., the property owner.

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

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

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

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

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

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

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

Sincerely,

Anne Marie Zsamba
Project Manager - Site Acquisition
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(201) 236-9224
AnneMarie.Zsamba@crowncastle.com

Attachments
cc:

Mary Calorio, Town Manager
Killingly Town Hall
172 Main Street, 2nd Floor
Killingly, CT 06239

Ann-Marie L. Aubrey, Planning Director
Planning Department
Killingly Town Hall
172 Main Street,

Killingly, CT 06239
860-779-5311

Snake Meadow Club Inc., Property Owner
C/O Paul Chase
PO Box 236
Central Village, CT 06332

Crown Castle, Tower Owner

ORIGIN ID:SCHA (201) 236-9224
ANNE MARIE ZSAMBA
CROWN CASTLE
21 HEATHER DRIVE

GANSEVOORT, NY 12831
UNITED STATES US

SHIP DATE: 25MAR21
ACTWGT: 0.50 LB
CAD: 104924194/INET4340

BILL SENDER

TO **SNAKE MEADOW CLUB INC.**

C/O PAUL CHASE
PO BOX 236
CENTRAL VILLAGE CT 06332
(201) 236-9224

REF: 1734.7680
INV:
PO:
DEPT:

56DJ3/AC39/FE4A

J211121011901uv

FedEx Express

FRI - 26 MAR 4:30P
STANDARD OVERNIGHT

TRK# 0201 **7732 6683 2056**

EB GONA

06332
BDL
CT-US

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ORIGIN ID:SCHA (201) 236-9224
ANNE MARIE ZSAMBA
CROWN CASTLE
21 HEATHER DRIVE

GANSEVOORT, NY 12831
UNITED STATES US

SHIP DATE: 25MAR21
ACTWGT: 0.50 LB
CAD: 104924194/INET4340

BILL SENDER

TO **ANN-MARIE AUBREY, PLANNING DIRECTOR**
TOWN OF KILLINGLY
PLANNING DEPARTMENT
172 MAIN STREET
KILLINGLY CT 06239
(860) 779-5311

REF: 1734.7680
INV:
PO:
DEPT:

56DJ3/AC39/FE4A

J211121011901uv

FedEx Express

FRI - 26 MAR 4:30P
STANDARD OVERNIGHT

TRK# 0201 **7732 6686 6915**

EB GONA

06239
BDL
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Exhibit A

Original Facility Approval

Connecticut Siting Council(/CSC)

Decisions (/CSC/Decisions/Decisions) >

Meetings and Minutes (/CSC/Common-Elements/v4-template/Council-Activity) >

Pending Matters (/CSC/1_Applications-and-Other-Pending-Matters/Pending-Matters) >

About Us (/CSC/Common-Elements/Common-Elements/Connecticut-Siting-Council---Description) >

Contact Us (/CSC/Common-Elements/Common-Elements/Contact-Us) >

Search Connecticut Siting Council

DOCKET NO. 283 – New Cingular Wireless PCS,LLC Certificate of Environmental Compatibility and Public need for the construction, maintenance and operation of a wireless telecommunications facility at 280 Ross Road in Killingly, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		June 23, 2004

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to AT&T Wireless PCS, LLC d/b/a AT&T Wireless for the construction, maintenance and operation of a wireless telecommunications facility at Site C, located at 280 Ross Road, Killingly, Connecticut. The Council denies certification of Site A and Site B located at 25 Klocek Road, Killingly, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless and other entities, both public and private, but such tower shall not exceed a height of 120 feet above ground level. The height at the top of the antennas shall not exceed 123 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Killingly, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:

a. comments from the Town of Killingly regarding the type of tower to be constructed;
b. a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
c. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case

   modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.
7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. Any request for extension of this period shall be filed with the Council not later than sixty days prior to expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Norwich Bulletin.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
AT&T Wireless PCS, LLC d/b/a AT&T Wireless	Christopher B. Fisher, Esq. Lucia Chiocchio, Esq. Cuddy & Feder LLP

Exhibit B

Property Card

tyler clt division

RESIDENTIAL PROPERTY RECORD CARD 2020

TOWN OF KILLINGLY

Situs : 280 ROSS RD | **Map ID: 001365** | **Class: PA 490 FOREST** | Card: 1 of 1 | Printed: June 4, 2020

CURRENT OWNER

SNAKE MEADOW CLUB INC
% PAUL CHASE
PO BOX 236
CENTRAL VILLAGE CT 06332-0236

GENERAL INFORMATION

Living Units	
Neighborhood	113
Alternate Id	256-2
Vol / Pg	625/206
District	7
Zoning	RURAL DEVELOPMENT
Class	600

Property Notes

MONOPOLE & TELECOM FACILTY

Land Information

Type		Size	Influence Factors	Influence %	Value
Primary	AC	0.5000			44,000
Excess	AC	7.3000			12,780

Total Acres: 7.8
Spot: Location:

Assessment Information

	Assessed	Appraised	Cost	Income	
Land	32,030	56,800	56,800	0	56,800
Building	108,150	154,500	154,500	0	154,500
Total	140,180	211,300	211,300	0	211,300

Manual Override Reason
Base Date of Value 10/01/2019
Value Flag COST APPROACH **Effective Date of Value** 10/01/2020
MONOPOLE BLDG 154500

Entrance Information

Date	ID	Entry Code	Source
07/27/07	AD	Complete	Other

Permit Information

Date Issued	Number	Price	Purpose		% Complete
11/30/18	26488	12,500	31 ELEC	Install Dc Generator On Existing Cc	997
10/06/17	25597	6,500	81 CELE	Cellular Facility Cabinet - 100 Amp	997
08/18/17	25494	31,000	97 BPP	Install 2 High Capacity Sector Mou	995
09/27/16	24777	15,000	73 CREP	Verizon Wireless To Repl All 12 A	995
07/14/15	23754	15,000	97 BPP	Install 3 New Antennaes, 3 New B	995

Sales/Ownership History

Transfer Date	Price	Type	Validity	Deed Reference	Deed Type	Grantee
04/01/95	40,000	Land Only				

tyler
clt division

RESIDENTIAL PROPERTY RECORD CARD 2020

TOWN OF KILLINGLY

Situs : 280 ROSS RD	Parcel Id: 001365	Class: PA 490 FOREST	Card: 1 of 1	Printed: June 4, 2020

Dwelling Information

Style		Year Built	
Story height		Eff Year Built	
Attic		Year Remodeled	
Exterior Walls		Amenities	
Masonry Trim	x		
Color		In-law Apt	No

Basement

Basement		# Car Bsmt Gar	
FBLA Size	x	FBLA Type	
Rec Rm Size	x	Rec Rm Type	

Heating & Cooling / Fireplaces

Heat Type		Stacks	
Fuel Type		Openings	
System Type		Pre-Fab	

Room Detail

Bedrooms		Full Baths	
Family Rooms		Half Baths	
Kitchens		Extra Fixtures	
Total Rooms			
Kitchen Type		Bath Type	
Kitchen Remod		Bath Remod	

Adjustments

Int vs Ext		Unfinished Area	
Cathedral Ceiling	x	Unheated Area	

Grade & Depreciation

Grade		Market Adj	
Condition		Functional	
CDU		Economic	
Cost & Design	0	% Good Ovr	
% Complete			

Dwelling Computations

Base Price		% Good	
Plumbing		% Good Override	
Basement		Functional	
Heating		Economic	
Attic		% Complete	
Other Features	0	C&D Factor	
		Adj Factor	
Subtotal		Additions	
Ground Floor Area			
Total Living Area		Dwelling Value	

Building Notes

Outbuilding Data

Type	Size 1	Size 2	Area	Qty	Yr Blt	Grade	Condition	Value

Condominium / Mobile Home Information

Complex Name			
Condo Model			
Unit Number			
Unit Level		Unit Location	
Unit Parking		Unit View	
Model (MH)		Model Make (MH)	

Addition Details

Line #	Low	1st	2nd	3rd	Value

Exhibit C

Construction Drawings

T-MOBILE SITE NAME:

NL140/CINGULAR ROSS RD_MP

T-MOBILE SITE NUMBER:

CTNL140B

CROWN BU: 857013 / APP#: 494424

67D04G CONFIGURATION

280 ROSS ROAD
KILLINGLY, CT 06239

EXISTING 119'-0" MONOPOLE

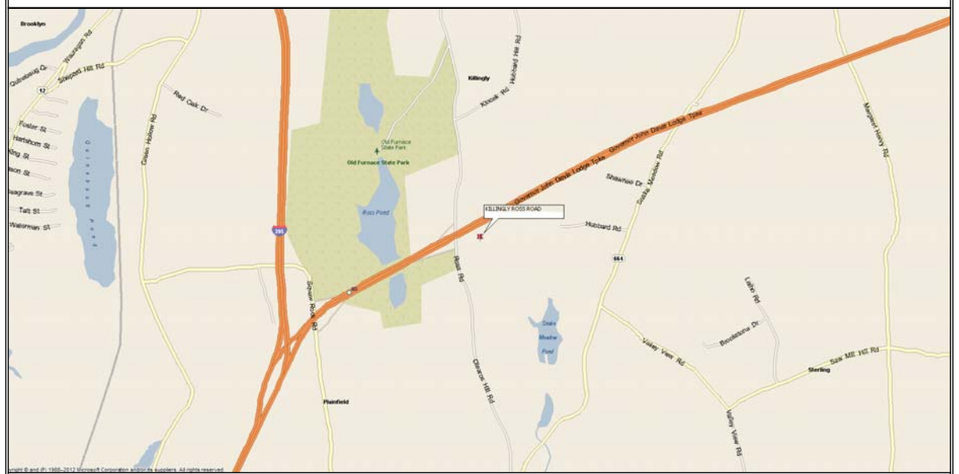
PROJECT SUMMARY

SITE TYPE:	EXISTING EQUIPMENT UPGRADE
SITE ADDRESS:	280 ROSS ROAD KILLINGLY, CT 06239
JURISDICTION:	WINDHAM COUNTY

NAD83

LATITUDE:	41.771391° N
LONGITUDE:	71.855831° W
TOWER OWNER:	CROWN CASTLE 3200 HORIZON DRIVE, SUITE 150 KING OF PRUSSIA, PA 19406 JASON SMITH (610) 635-3225
CUSTOMER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054 (973) 397-4800
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION

LOCATION MAP



NO SCALE

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	2
A-1	OVERALL SITE PLAN	2
A-2	ANTENNA/CABLE SCHEDULE AND AZIMUTH PLANS	2
A-3	TOWER ELEVATION	2
A-4	ANTENNA AND RRU DETAILS	2
A-5	HANDRAIL KIT DETAILS	2
E-1	PANEL SCEHDULE AND ONE-LINE DIAGRAM	2

CONTACT INFORMATION

A&E FIRM:	B+T GROUP 1717 S. BOULDER, STE. 300 TULSA, OK 74119
CONTACT:	MIKE OAKES
PHONE:	(918) 587-4630
ELECTRIC PROVIDER:	CONNECTICUT LIGHT & POWER (860) 947-2000
TELCO PROVIDER:	PIONEER TELEPHONE (800) 808-9000

DRIVING DIRECTIONS

DEPART BRUCE SUNDLUN TERMINAL ON AIRPORT CONNECTOR RD. TAKE RAMP ONTO I-95. AT EXIT 14-15, TURN RIGHT ONTO RAMP. KEEP LEFT TO STAY ON RAMP. TAKE RAMP ONTO RI-37. AT EXIT 1B, TAKE RAMP ONTO I-295. AT EXIT 6, TURN RIGHT ONTO RAMP. KEEP LEFT TO STAY ON RAMP. KEEP LEFT TO STAY ON RAMP. KEEP RIGHT TO STAY ON RAMP. KEEP RIGHT TO STAY ON RAMP. BEAR RIGHT ONTO US-6A. ROAD NAME CHANGES TO US-6. KEEP RIGHT ONTO LOCAL ROAD. KEEP STRAIGHT ONTO US-6. KEEP LEFT ONTO GOVERNOR JOHN DAVIS LODGE TPKE. AT EXIT 90, KEEP RIGHT ONTO RAMP. TURN LEFT ONTO SQUAW ROCK RD. TAKE RAMP ONTO GOVERNOR JOHN DAVIS LODGE TPKE. KEEP RIGHT ONTO RAMP. TURN LEFT ONTO ROSS RD. TURN RIGHT ONTO ACCESS ROAD AND ARRIVE AT KILLINGLY ROSS ROAD.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
T-MOBILE PROP:		
T-MOBILE R.F. MGR.:		
T-MOBILE NetOps:		
T-MOBILE CONST. MGR.:		
INTERCONNECT:		
T-MOBILE SITE DEV. MGR.:		
PROPERTY OWNER:		
PLANNING:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CODE COMPLIANCE

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

CODE TYPE	CODE
BUILDING/DWELLING	2018 CONNECTICUT STATE BUILDING CODE
STRUCTURAL	2018 CONNECTICUT STATE BUILDING CODE
MECHANICAL	2018 CONNECTICUT STATE BUILDING CODE
ELECTRICAL	NEC 2017

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES:

- REMOVE (3) EXISTING ANTENNAS AT 110'-0".
- REMOVE (1) DUS41.
- REMOVE (6) RUS01 B12.
- INSTALL (1) NEW SITEPRO1 HRK14 HANDRAIL KIT.
- INSTALL (3) NEW ANTENNAS AT 110'-0".
- INSTALL (3) NEW RRUS AT 110'-0".
- INSTALL (1) NEW 6X12 HCS FIBER.
- INSTALL (2) NEW BB 6630.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

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

811

CTNL140B
BU #: 857013
NL140/CINGULAR ROSS RD_MP
280 ROSS ROAD
KILLINGLY, CT 06239
EXISTING 119'-0" MONOPOLE

PROJECT NO:	102936.004.01
CHECKED BY:	GEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	8/29/19	JDP	CONSTRUCTION
1	10/11/29	JJD	CONSTRUCTION
2	3/16/21	LHT	CONSTRUCTION

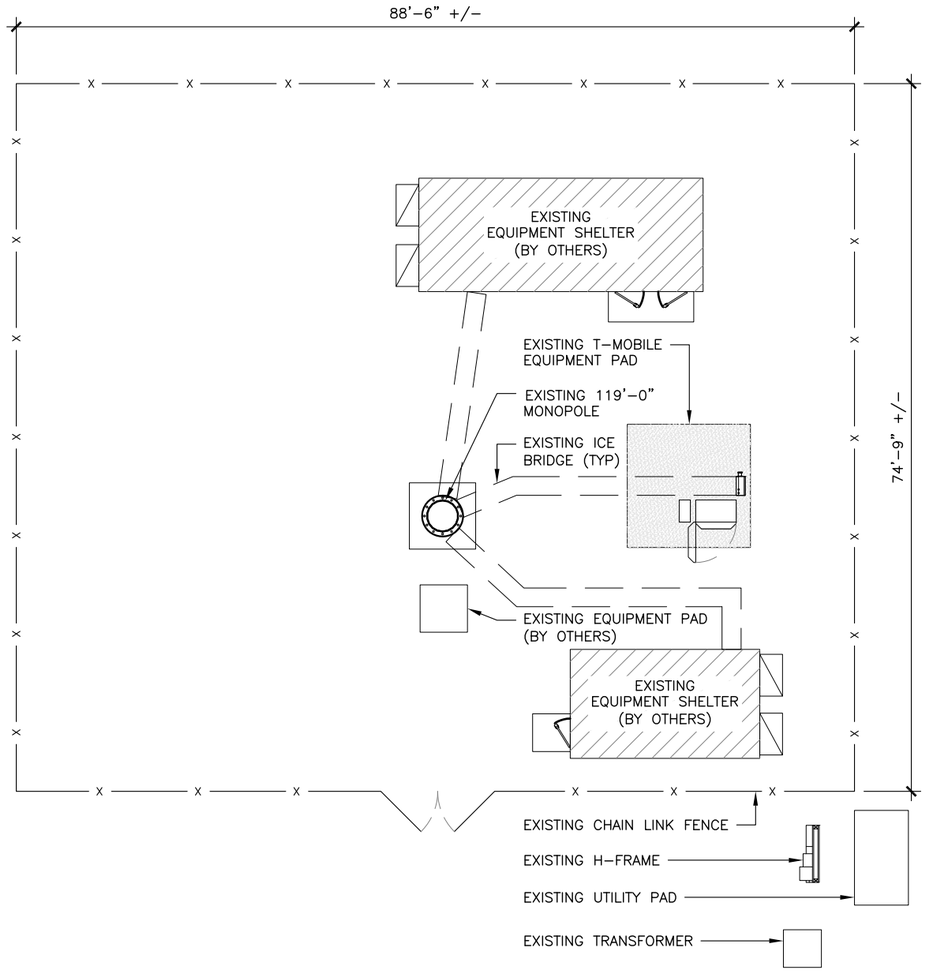
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER
3/16/21

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-1
REVISION: 2

102936.004_857013_Killingly Ross Road.dwg — Sheet:T-1 — User: ghoyes — Mar 16, 2021 — 5:24pm



1 OVERALL SITE PLAN

SCALE: 0' 8' 16' 32' 48'

N

GENERAL NOTES:

1. SUBJECT PROPERTY IS SITUATED AT 280 ROSS ROAD, KILLINGLY, CT 06239.

2. APPLICANT: T-MOBILE
A DELAWARE LIMITED LIABILITY COMPANY
4 SYLVAN WAY
PARSIPPANY, NEW JERSEY 07054
(973) 397-4800

   TOWER OWNER: CROWN CASTLE INTERNATIONAL

- THE APPLICANT IS TO UPDATE THEIR NETWORK BY INSTALLING SIX (6) NEW PANEL ANTENNAS, THREE (3) RRUS, AND ONE (1) ADDITIONAL CABLE MOUNTED ON AN EXISTING MONOPOLE.

3. THIS FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR MAINTENANCE AND SHALL BE MONITORED FROM A REMOTE FACILITY.

4. THE EXISTING SITE IS LOCATED AT LATITUDE OF 41.771391° N± AND LONGITUDE OF 71.855831° W±. THE HORIZONTAL DATUM ARE IN TERMS OF NORTH AMERICAN DATUM OF 1983 (NAD 83).

5. THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATED "ISSUED FOR CONSTRUCTION"

6. ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:

   6.A. CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
   6.B. CURRENT PREVAILING UTILITY COMPANY AUTHORITY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.

7. THE CONTRACTOR SHALL NOTIFY B+T GROUP, P.A. IMMEDIATELY IF ANY FIELD-CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON, AND/OR IF SUCH CONDITIONS WOULD OR COULD RENDER THE DESIGNS SHOWN HEREON INAPPROPRIATE AND/OR INEFFECTIVE.

8. THE CONTRACTOR IS RESPONSIBLE TO PROTECT, REPAIR AND/OR REPLACE ANY DAMAGED STRUCTURES, UTILITIES OR LANDSCAPED AREA WHICH MAY BE DISTURBED DURING THE CONSTRUCTION OF THIS FACILITY.

9. THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.

10. SITE INFORMATION SHOWN TAKEN FROM CROWN SITE PLANS AND FROM CROWN INSPECTION PHOTOS.

11. NO GUARANTEE IS MADE NOR SHOULD BE ASSUMED AS TO THE COMPLETENESS OR ACCURACY OF THE HORIZONTAL OR VERTICAL LOCATIONS. ALL PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN PRIOR TO CONSTRUCTION ACTIVITIES.

12. ALL IMPROVEMENTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE TOWNSHIP ENGINEER WHO WILL BE GIVEN PROPER NOTIFICATION PRIOR TO THE START OF ANY CONSTRUCTION.

B+T GRP

CROWN CASTLE

T-Mobile

CTNL140B
BU #: 857013
NL140/CINGULAR ROSS RD_MP
280 ROSS ROAD
KILLINGLY, CT 06239
EXISTING 119'-0" MONOPOLE

PROJECT NO:	102936.004.01
CHECKED BY:	GEH

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	8/29/19	JDP	CONSTRUCTION
1	10/11/29	JJD	CONSTRUCTION
2	3/16/21	LHT	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

STATE OF CONNECTICUT
31627
LICENSED
PROFESSIONAL ENGINEER

3/16/21

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SHEET NUMBER:	REVISION:
A-1	2

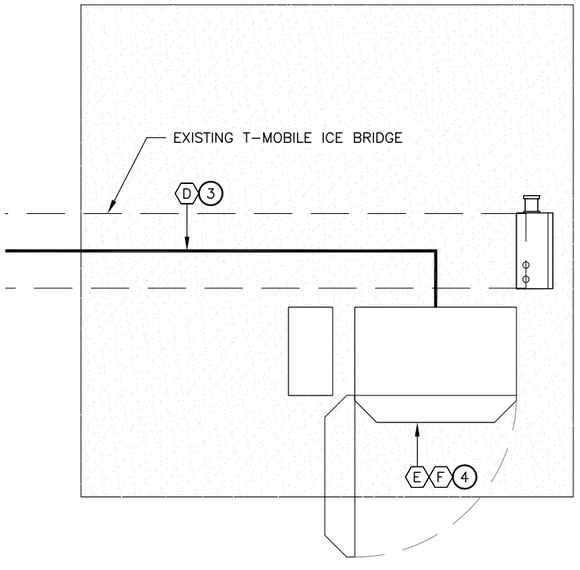
102936.004_857013_Killingly Ross Road.dwg – Sheet:A-1 – User: ghoyes – Mar 16, 2021 – 5:24pm

LEGEND

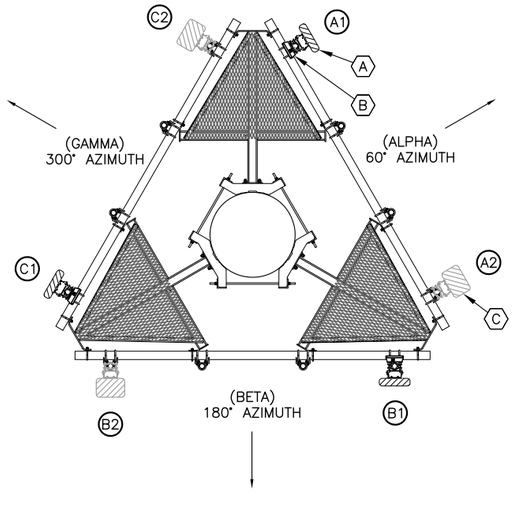
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING RFS APX16DWV-16DWV-S-E-A20 ANTENNA TO REMAIN (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING TMA TO REMAIN	2	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	EXISTING ANDREW LNX-6515DS-A1M ANTENNA TO BE REMOVED (TOTAL OF 3)	3	INSTALL (1) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
D	EXISTING 1 5/8" COAX TO REMAIN (TOTAL OF 12, 6 UNCONNECTED)	4	INSTALL (2) NEW BB6630
E	REMOVE (1) EXISTING DUS41	5	INSTALL (1) NEW SITEPRO1 HRK14 HANDRAIL KIT
F	REMOVE (6) EXISTING RUS01 B12		

ANTENNA AND CABLE SCHEDULE

SECTOR	POSITION	EXISTING ANTENNAS	PROPOSED ANTENNA CONFIGURATION		E-TILT	M-TILT	ANTENNA CENTERLINE	TMA/RRU	CABLES	JUMPER TYPE	CABLE LENGTH
60° – ALPHA	A1	RFS APX16DWV-16DWV-S-E-A20	GSM UMTS	–	2°/2°	0°	110'-0"	1/0	(2) 1 5/8" COAX (CONNECTED) (2) 1 5/8" COAX (UNCONNECTED)	1/2" COAX	160'-0"
	A2	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71 B12**	**2°/2°**	**0°**		**0/1**	**(1) 6x12 HCS FIBER**	**DC/FIBER**	**160'-0"**
180° – BETA	B1	RFS APX16DWV-16DWV-S-E-A20	GSM UMTS	–	2°/2°	0°	110'-0"	1/0	(2) 1 5/8" COAX (CONNECTED) (2) 1 5/8" COAX (UNCONNECTED)	1/2" COAX	160'-0"
	B2	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71 B12**	**2°/2°**	**0°**		**0/1**	**(1) 6x12 HCS FIBER (SHARED)**	**DC/FIBER**	**–**
300° – GAMMA	C1	RFS APX16DWV-16DWV-S-E-A20	GSM UMTS	–	2°/2°	0°	110'-0"	1/0	(2) 1 5/8" COAX (CONNECTED) (2) 1 5/8" COAX (UNCONNECTED)	1/2" COAX	160'-0"
	C2	**RFS APXVAARR24_43-U-NA20**	**LTE**	**B71 B12**	**2°/2°**	**0°**		**0/1**	**(1) 6x12 HCS FIBER (SHARED)**	**DC/FIBER**	**–**

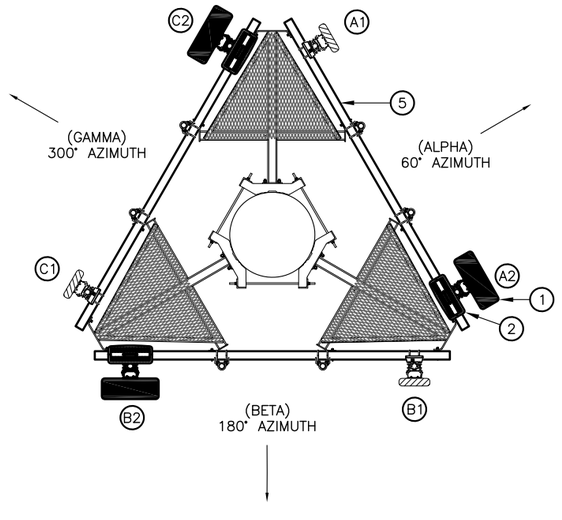


1 ENLARGED AREA PLAN
SCALE: 0' 1' 2' 4' 10'



2 EXISTING ANTENNA ORIENTATION
SCALE: 0' 1' 4' 8' 16'

N



3 PROPOSED ANTENNA ORIENTATION
SCALE: 0' 1' 4' 8' 16'

N

B+T GRP

CROWN CASTLE

T-Mobile

CTNL140B
BU #: 857013
CTNL140/CINGULAR ROSS RD_MP
280 ROSS ROAD
KILLINGLY, CT 06239
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SHEET NUMBER:	REVISION:
A-2	2

102936.004_857013_Killingly Ross Road.dwg — Sheet:A-2 — User: ghayes — Mar 16, 2021 – 5:24pm

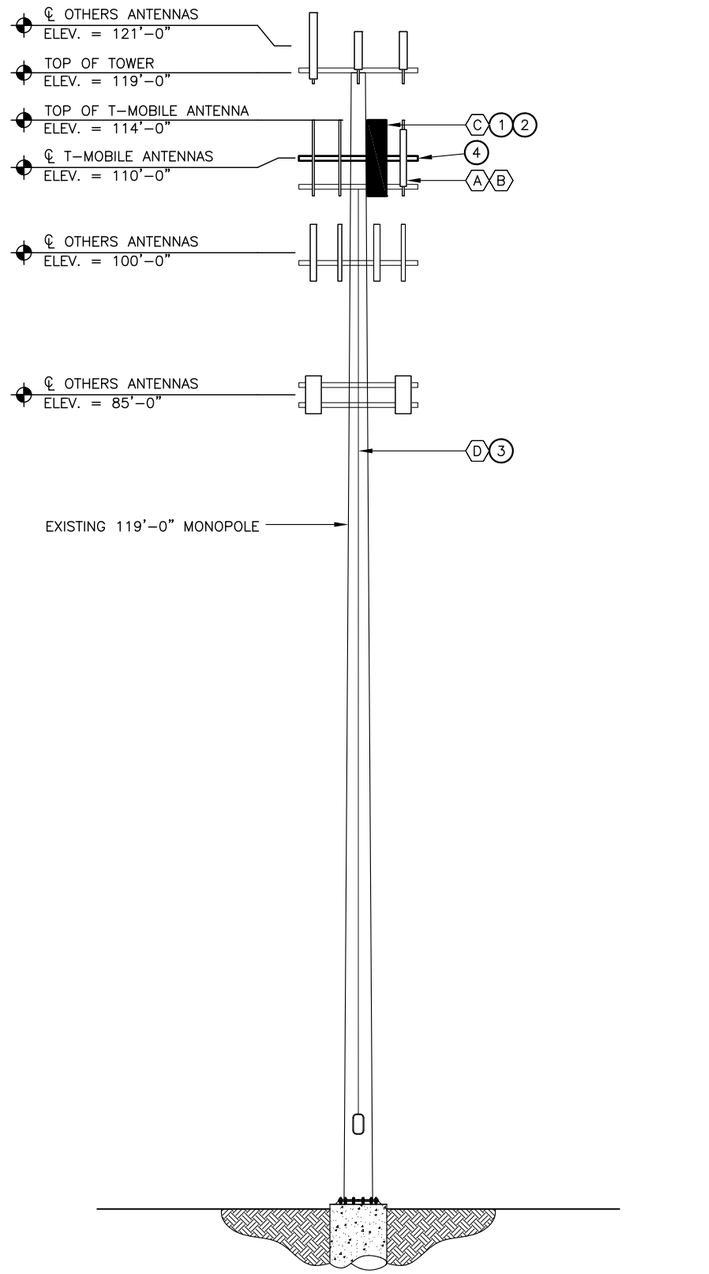
LEGEND			
EXISTING/DEMOLITION NOTES		INSTALLATION NOTES	
A	EXISTING RFS APX16DWV-16DWV-S-E-A20 ANTENNA TO REMAIN (TOTAL OF 3)	1	INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. (TYP. OF 1 PER SECTOR, TOTAL OF 3)
B	EXISTING TMA TO REMAIN	2	INSTALL RADIO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
C	EXISTING ANDREW LNX-6515DS-A1M ANTENNA TO BE REMOVED (TOTAL OF 3)	3	INSTALL (1) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
D	EXISTING 1 5/8" COAX TO REMAIN (TOTAL OF 12, 6 UNCONNECTED)	4	INSTALL (1) NEW SITEPRO1 HRK14 HANDRAIL KIT

EXISTING MOUNT IS SUFFICIENT PER MOUNT ANALYSIS BY INFINIGY ENGINEERING, PLLC DATED 1/11/21.

EXISTING TOWER IS SUFFICIENT PER STRUCTURAL ANALYSIS BY CROWN CASTLE DATED 1/15/21.

LEGEND:

- **NEW**
- EXISTING
- FUTURE



1 TOWER ELEVATION

SCALE: 0' 8' 16' 32' 48'

B+T GRP

CROWN CASTLE

T-Mobile

CTNL140B
BU #: 857013
CTNL140/CINGULAR ROSS RD_MP
280 ROSS ROAD
KILLINGLY, CT 06239
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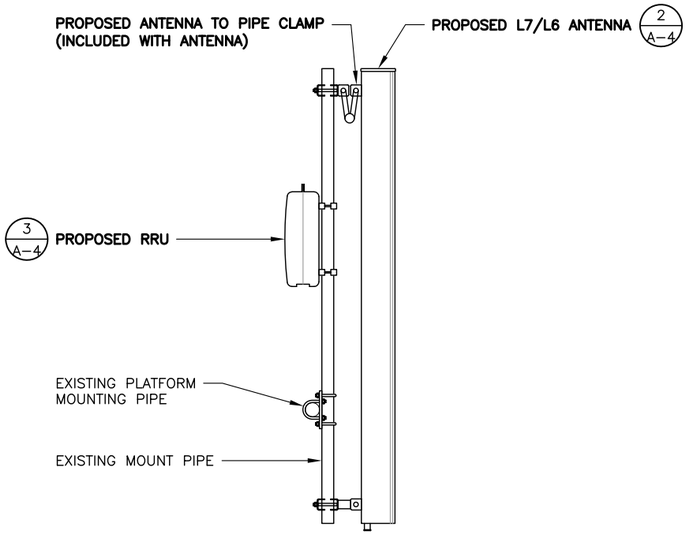
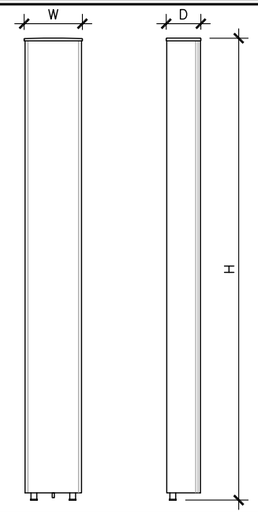
SHEET NUMBER:	REVISION:
A-3	2

102936.004_857013_Killingly Ross Road.dwg – Sheet:A-3 – User: ghoyes – Mar 16, 2021 – 5:24pm



1 PROPOSED L7/L6 ANTENNA & RRU MOUNTING DETAIL

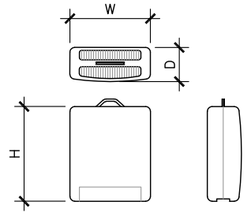
SCALE: 3/8" = 1'-0"



ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24.0"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128.0 LBS

2 L7/L6 ANTENNA DETAIL

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

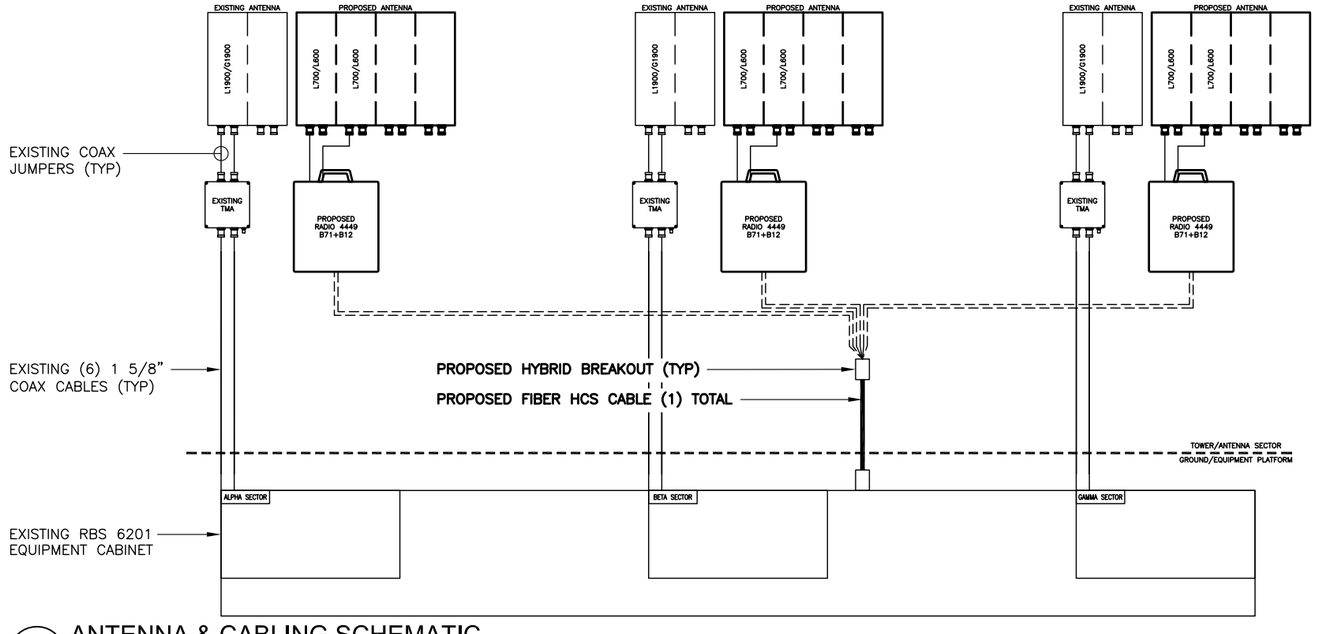


RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449
WIDTH	13.2"
DEPTH	10.4"
HEIGHT	14.9"
WEIGHT	74 LBS

3 REMOTE RADIO UNIT (RRU)

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

NOTES:
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS.
2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTHS.
3. REFER TO ANTENNA ORIENTATION ON SHEET A-2 FOR EXACT ANTENNA POSITIONING.



4 ANTENNA & CABLING SCHEMATIC

SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T-Mobile

CTNL140B
BU #: 857013

CTNL140/CINGULAR ROSS RD_MP

280 ROSS ROAD
KILLINGLY, CT 06239

EXISTING 119'-0" MONOPOLE

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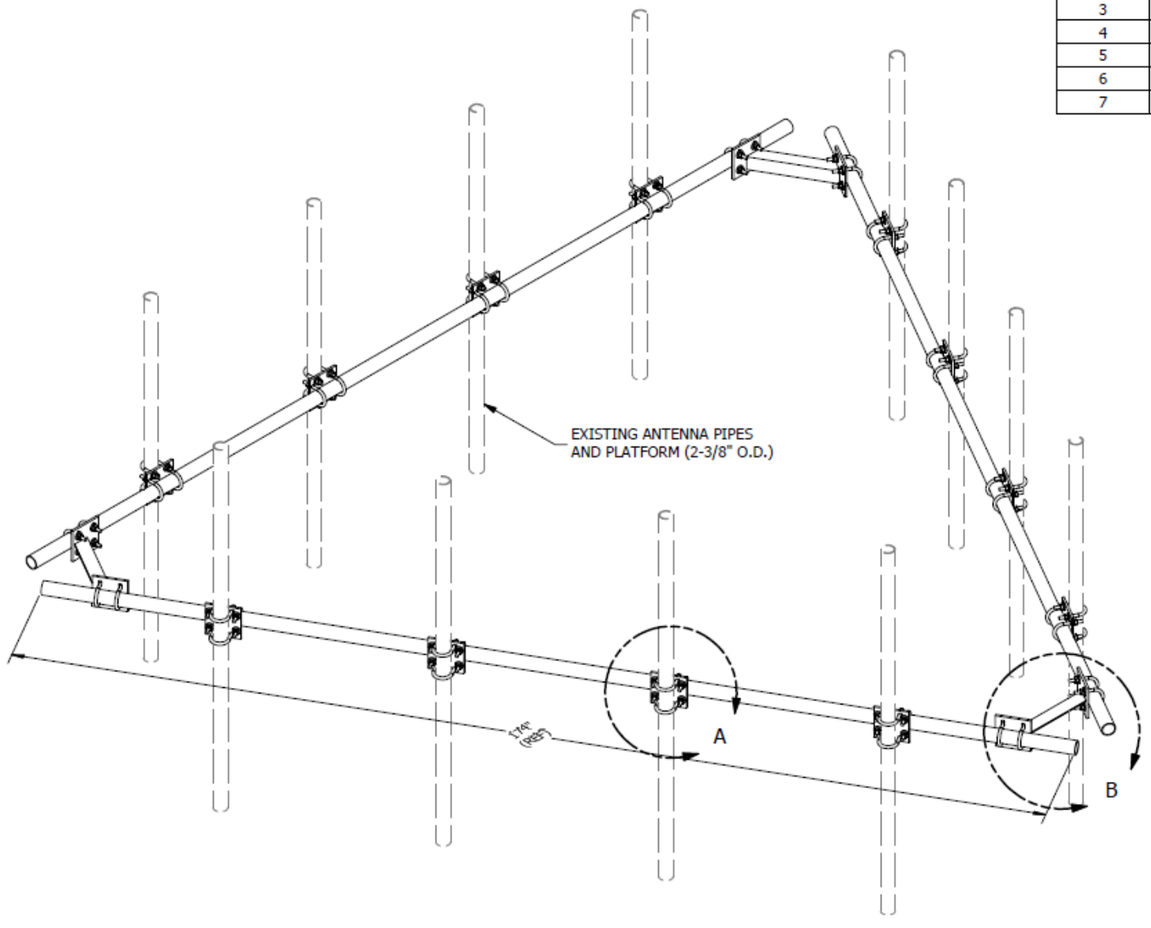
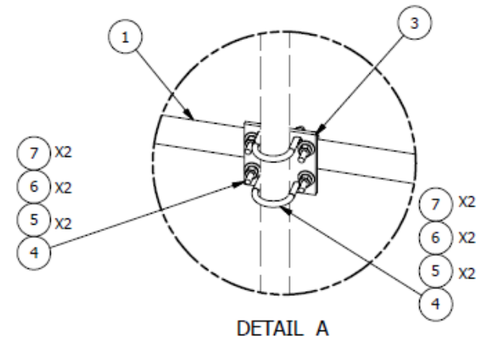
SHEET NUMBER:	REVISION:
A-4	2

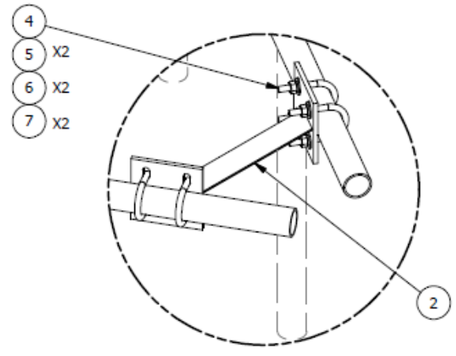
102936.004_857013_Killingly Ross Road.dwg — Sheet:A-4 — User: ghayes — Mar 16, 2021 — 5:24pm



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	167.24
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	302.36



DETAIL A



DETAIL B

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP		CEK	7/11/2014

REVISION HISTORY

DESCRIPTION: HANDRAIL KIT FOR 14'-6" FACE

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	KC8 5/30/2012		HRK14	1 OF 1
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.	
81 / 01	CUSTOMER	BMC 7/13/2014	HRK14	

1 SITEPRO1 HRK14 HANDRAIL KIT DETAIL
SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T···Mobile

CTNL140B
BU #: 857013
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SHEET NUMBER: A-5
REVISION: 2

102936.004_857013_Killingly Ross Road.dwg — Sheet:A-5 — User: ghayes — Mar 16, 2021 — 5:24pm

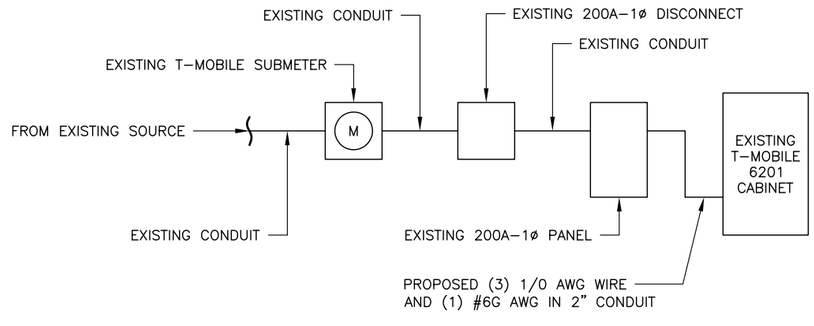
FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
EQUIPMENT	2	60A	1	2	20A	1	EQUIPMENT
			3	4			
RBS 6201	2	**100A**	5	6			
			7	8			

RATED VOLTAGE: ■120/240 □_____. 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS	
RATED AMPS: □100 ■200 □400 □_____.	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X	
□MAIN LUGS ONLY ■MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH	
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS	GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL			

REPLACE EXISTING BREAKER IN POSITION 5 AND 7 WITH A NEW 2P 100A BREAKER
REPLACE EXISTING WIRES FOR EXISTING 6201 CABINET WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG. MINIMUM CONDUIT SIZE TO BE 2".
IF 100A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS.

1 FINAL T-MOBILE PANEL DETAIL

SCALE: N.T.S.



2 ONE-LINE DIAGRAM

SCALE: N.T.S.

B+T GRP

CROWN CASTLE

T···Mobile

CTNL140B
BU #: 857013

CTNL140/CINGULAR ROSS RD_MP

280 ROSS ROAD
KILLINGLY, CT 06239

EXISTING 119'-0" MONOPOLE

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SHEET NUMBER:	REVISION:
E-1	2

102936.004_857013_Killingly Ross Road.dwg — Sheet:E-1 — User: ghayes — Mar 16, 2021 — 5:25pm

Exhibit D

Structural Analysis Report

Date: **January 15, 2021**

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CTNL140B
	Site Name:	NL140/Cingular Ross Rd_MP
Crown Castle Designation:	**BU Number:**	857013
	Site Name:	KILLINGLY ROSS ROAD
	JDE Job Number:	576614
	Work Order Number:	1913711
	Order Number:	494424 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	1913711
Site Data:	**280 ROSS ROAD, KILLINGLY, Windham County, CT** **Latitude *41° 46' 17.59"*, Longitude *-71° 51' 20.39"*** **119 Foot - Monopole Tower**	

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration **Sufficient Capacity – 52.9%**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Kenneth Sukitch, E.I.T.

Respectfully submitted by:

Digitally signed by Maham Barimani
Date: 2021.01.15 14:26:56 -05'00'

STATE OF CONNECTICUT
MAHAM BARIMANI
30501
LICENSED
PROFESSIONAL ENGINEER

Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 119 ft Monopole tower mapped by GPD Associates.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
107.0	110.0	3	ericsson	KRY 112 489/2	12 1	1-5/8 1-1/4
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
	107.0	1	tower mounts	Platform Mount [LP 304-1_HR-1]		
		1	sitepro1	HRK14		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
119.0	121.0	6	ericsson	RRUS 11 B12	12 2 1	1-5/8 7/8 1/2
		3	kmw communications	AM-X-CD-17-65-00T-RET w/ Mount Pipe		
		6	powerwave technologies	7770.00 w/ Mount Pipe		
		6	powerwave technologies	LGP21401		
		6	powerwave technologies	LGP21901		
		1	raycap	DC6-48-60-18-8F		
	119.0	1	tower mounts	Platform Mount [LP 1202-1]		
100.0	100.0	3	antel	LPA-80080/6CF w/ Mount Pipe	13	1-5/8
		3	commscope	CBC78T-DS-43-2X		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		3	samsung telecommunications	RFV01U-D1A		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	samsung telecommunications	RFV01U-D2A		
		1	tower mounts	Platform Mount [LP 304-1]		
85.0	85.0	6	cci antennas	BFA8F-A5A W/RRH w/ Mount Pipe	1	7/8
		1	raycap	RHCDC-1390-PF-48		
		6	raycap	RHCDC-3441-P-48-NA		
		1	tower mounts	Sector Mount [SM 406-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4908007	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4908012	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4908008	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	119 - 84.33	Pole	TP29.03x19.0986x0.5	1	-17.21	2061.37	19.4	Pass
L2	84.33 - 45.5	Pole	TP39.15x26.9902x0.625	2	-31.45	3479.77	28.0	Pass
L3	45.5 - 0	Pole	TP50.9295x36.4996x0.6875	3	-54.47	5180.22	29.6	Pass
							Summary	
						Pole (L3)	29.6	Pass
						Rating =	29.6	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	36.0	Pass
1	Base Plate	0	52.9	Pass
1	Base Foundation (Structure)	0	33.7	Pass
1	Base Foundation (Soil Interaction)	0	28.1	Pass

Structure Rating (max from all components) =	52.9%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

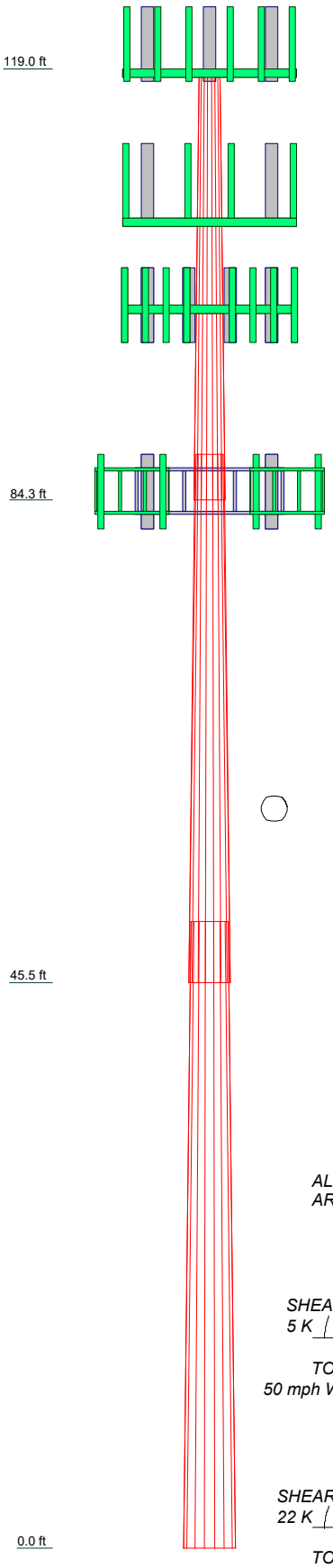
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	34.67	42.46	50.39
Number of Sides	18	18	18
Thickness (in)	0.5000	0.6250	0.6875
Socket Length (ft)	3.63	4.89	
Top Dia (in)	19.0986	26.9902	36.4996
Bot Dia (in)	29.0300	39.1500	50.9295
Grade	A572-50		
Weight (K)	4.4	9.3	16.1



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower is located in Windham County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 130 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 29.6%

ALL REACTIONS ARE FACTORED

AXIAL 79 K

SHEAR 5 K *MOMENT 446 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 54 K

SHEAR 22 K *MOMENT 1928 kip-ft*

TORQUE 0 kip-ft
REACTIONS - 130 mph WIND

CROWN CASTLE
The Pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX:

Job: ***BU# 857013***			
Project:			
Client: Crown Castle	Drawn by: KSukitch		App'd:
Code: TIA-222-H	Date: 01/15/21		Scale: NTS
Path: C:\Users\KSukitch\Desktop\Work Area\857013\WO 1913711 - SA\Prod\857013.eri			Dwg No. E-1

Tower Input Data

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

3) Tower is located in Windham County, Connecticut.
4) Tower base elevation above sea level: 453.00 ft.
5) Basic wind speed of 130 mph.
6) Risk Category II.
7) Exposure Category B.
8) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
9) Topographic Category: 1.
10) Crest Height: 0.00 ft.
11) Nominal ice thickness of 1.5000 in.
12) Ice thickness is considered to increase with height.
13) Ice density of 56 pcf.
14) A wind speed of 50 mph is used in combination with ice.
15) Temperature drop of 50 °F.
16) Deflections calculated using a wind speed of 60 mph.
17) A non-linear (P-delta) analysis was used.
18) Pressures are calculated at each section.
19) Stress ratio used in pole design is 1.05.
20) Tower analysis based on target reliabilities in accordance with Annex S.
21) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
22) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	119.00-84.33	34.67	3.63	18	19.0986	29.0300	0.5000	2.0000	A572-50 (50 ksi)
L2	84.33-45.50	42.46	4.89	18	26.9902	39.1500	0.6250	2.5000	A572-50

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	45.50-0.00	50.39		18	36.4996	50.9295	0.6875	2.7500	(50 ksi) A572-50 (50 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	19.3161	29.5160	1289.8952	6.6025	9.7021	132.9503	2581.4878	14.7608	2.4814	4.963
	29.4007	45.2771	4656.0720	10.1282	14.7472	315.7250	9318.2707	22.6429	4.2293	8.459
L2	28.3657	52.3019	4593.2065	9.3596	13.7110	335.0014	9192.4568	26.1559	3.6503	5.84
	39.6575	76.4240	14330.2027	13.6764	19.8882	720.5379	28679.2614	38.2192	5.7904	9.265
L3	38.3785	78.1464	12662.1056	12.7133	18.5418	682.8955	25340.8723	39.0806	5.2139	7.584
	51.6091	109.6343	34963.7360	17.8359	25.8722	1351.4025	69973.4782	54.8276	7.7536	11.278

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 119.00-84.33				1	1	1			
L2 84.33-45.50				1	1	1			
L3 45.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
*** ****** EUCAHYBRID 78-12C6-24MM5(7/8) *****	A	No	Surface Ar (CaAa)	85.00 - 0.00	1	1	-0.400 -0.400	1.1000		0.73

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
******									
LDF4-50A(1/2)	C	No	No	Inside Pole	119.00 - 3.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF5-50A(7/8)	C	No	No	Inside Pole	119.00 - 3.00	2	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
LDF7-50A(1-5/8)	C	No	No	Inside Pole	119.00 - 3.00	12	No Ice	0.00	0.82

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
******									
AVA7-50(1-5/8)	C	No	No	Inside Pole	107.00 - 7.00	6	No Ice	0.00	0.70
							1/2" Ice	0.00	0.70
							1" Ice	0.00	0.70
							2" Ice	0.00	0.70
LDF7-50A(1-5/8)	C	No	No	Inside Pole	107.00 - 7.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
***									
HB114-U6S12-XXX-LI(1-1/4)	C	No	No	Inside Pole	107.00 - 7.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
							2" Ice	0.00	1.70
******									
HJ7-50A(1-5/8)	B	No	No	Inside Pole	100.00 - 7.00	12	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
							2" Ice	0.00	1.04
HB158-1-08U8-S8J18(1-5/8)	B	No	No	Inside Pole	100.00 - 7.00	1	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
							2" Ice	0.00	1.30
*****									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	119.00-84.33	A	0.000	0.000	0.074	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.22
		C	0.000	0.000	0.000	0.000	0.61
L2	84.33-45.50	A	0.000	0.000	4.271	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.54
		C	0.000	0.000	0.000	0.000	0.83
L3	45.50-0.00	A	0.000	0.000	5.005	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.53
		C	0.000	0.000	0.000	0.000	0.87

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	119.00-84.33	A	1.425	0.000	0.000	0.265	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.22
		C		0.000	0.000	0.000	0.000	0.61
L2	84.33-45.50	A	1.363	0.000	0.000	15.341	0.000	0.20
		B		0.000	0.000	0.000	0.000	0.54
		C		0.000	0.000	0.000	0.000	0.83
L3	45.50-0.00	A	1.223	0.000	0.000	17.407	0.000	0.22
		B		0.000	0.000	0.000	0.000	0.53
		C		0.000	0.000	0.000	0.000	0.87

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	119.00-84.33	-0.0205	0.0066	-0.0400	0.0130
L2	84.33-45.50	-0.8327	0.2706	-1.6018	0.5205
L3	45.50-0.00	-0.8362	0.2717	-1.6151	0.5248

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	18	EUCAHYBRID 78-12C6-24MM5(7/8)	84.33 - 85.00	1.0000	1.0000
L2	18	EUCAHYBRID 78-12C6-24MM5(7/8)	45.50 - 84.33	1.0000	1.0000
L3	18	EUCAHYBRID 78-12C6-24MM5(7/8)	0.00 - 45.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
** 119 **									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.75 6.18 6.61 7.49	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29
AM-X-CD-17-65-00T-RET w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.09 6.66 7.24 8.43	4.31 4.86 5.42 6.57	0.09 0.17 0.26 0.48
AM-X-CD-17-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice Ice	6.09 6.66 7.24	4.31 4.86 5.42	0.09 0.17 0.26

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
						1" Ice	8.43	6.57	0.48
						2" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.09 6.66 7.24 8.43	4.31 4.86 5.42 6.57	0.09 0.17 0.26 0.48
(2) LGP21401	A	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	B	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) LGP21401	C	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.21 0.27 0.35 0.52	0.01 0.02 0.03 0.05
(2) RRUS 11 B12	A	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.83 3.04 3.26 3.71	1.18 1.33 1.48 1.83	0.05 0.07 0.10 0.15
(2) RRUS 11 B12	B	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.83 3.04 3.26 3.71	1.18 1.33 1.48 1.83	0.05 0.07 0.10 0.15
(2) RRUS 11 B12	C	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.83 3.04 3.26 3.71	1.18 1.33 1.48 1.83	0.05 0.07 0.10 0.15
(2) LGP21901	A	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.23 0.29 0.36 0.53	0.16 0.21 0.28 0.42	0.01 0.01 0.01 0.02
(2) LGP21901	B	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.23 0.29 0.36 0.53	0.16 0.21 0.28 0.42	0.01 0.01 0.01 0.02
(2) LGP21901	C	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.23 0.29 0.36 0.53	0.16 0.21 0.28 0.42	0.01 0.01 0.01 0.02
DC6-48-60-18-8F	C	From Leg	4.00 0.00 2.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.02 0.04 0.07 0.13
Platform Mount [LP 1202-1]	C	None		0.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	23.61 28.39 33.20 42.89	23.61 28.39 33.20 42.89	3.40 4.08 4.83 6.57
7'x2" Antenna Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice	1.66 2.39 2.83	1.66 2.39 2.83	0.03 0.04 0.06

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
						1" Ice	3.71	3.71	0.10
						2" Ice			
7'x2" Antenna Mount Pipe	B	From Leg	4.00	0.0000	119.00	No Ice	1.66	1.66	0.03
			0.00			1/2"	2.39	2.39	0.04
			0.00			Ice	2.83	2.83	0.06
						1" Ice	3.71	3.71	0.10
						2" Ice			
7'x2" Antenna Mount Pipe	C	From Leg	4.00	0.0000	119.00	No Ice	1.66	1.66	0.03
			0.00			1/2"	2.39	2.39	0.04
			0.00			Ice	2.83	2.83	0.06
						1" Ice	3.71	3.71	0.10
						2" Ice			
** 107 **									
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	107.00	No Ice	6.29	2.76	0.06
			0.00			1/2"	6.86	3.27	0.11
			3.00			Ice	7.45	3.79	0.16
						1" Ice	8.68	4.90	0.29
						2" Ice			
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	6.29	2.76	0.06
			0.00			1/2"	6.86	3.27	0.11
			3.00			Ice	7.45	3.79	0.16
						1" Ice	8.68	4.90	0.29
						2" Ice			
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	6.29	2.76	0.06
			0.00			1/2"	6.86	3.27	0.11
			3.00			Ice	7.45	3.79	0.16
						1" Ice	8.68	4.90	0.29
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00	0.0000	107.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			3.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00	0.0000	107.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			3.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00	0.0000	107.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			3.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
KRY 112 489/2	A	From Leg	4.00	0.0000	107.00	No Ice	0.56	0.37	0.02
			0.00			1/2"	0.66	0.45	0.02
			3.00			Ice	0.76	0.54	0.03
						1" Ice	1.00	0.75	0.05
						2" Ice			
KRY 112 489/2	B	From Leg	4.00	0.0000	107.00	No Ice	0.56	0.37	0.02
			0.00			1/2"	0.66	0.45	0.02
			3.00			Ice	0.76	0.54	0.03
						1" Ice	1.00	0.75	0.05
						2" Ice			
KRY 112 489/2	C	From Leg	4.00	0.0000	107.00	No Ice	0.56	0.37	0.02
			0.00			1/2"	0.66	0.45	0.02
			3.00			Ice	0.76	0.54	0.03
						1" Ice	1.00	0.75	0.05
						2" Ice			
RADIO 4449 B12/B71	A	From Leg	4.00	0.0000	107.00	No Ice	1.65	1.16	0.07
			0.00			1/2"	1.81	1.30	0.09
			3.00			Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
RADIO 4449 B12/B71	B	From Leg	4.00	0.0000	107.00	No Ice	1.65	1.16	0.07
			0.00				1.81	1.30	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			3.00			1/2" Ice	1.98 2.34	1.45 1.76	0.11 0.16
						1" Ice 2" Ice			
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 3.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
Platform Mount [LP 304-1_HR-1]	C	None		0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	21.41 26.62 31.66 41.38	21.41 26.62 31.66 41.38	1.60 2.06 2.60 3.96
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
** 100 **									
LPA-80080/6CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.56 5.11 5.61 6.65	10.26 11.43 12.31 14.13	0.05 0.11 0.19 0.36
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.50 5.97 6.45 7.44	4.38 4.84 5.30 6.26	0.10 0.17 0.25 0.46
DB-T1-6Z-8AB-0Z	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) RFV01U-D2A	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D2A	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
CBC78T-DS-43-2X	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.37 0.45 0.53 0.72	0.51 0.60 0.70 0.93	0.02 0.03 0.04 0.06
CBC78T-DS-43-2X	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.37 0.45 0.53 0.72	0.51 0.60 0.70 0.93	0.02 0.03 0.04 0.06
CBC78T-DS-43-2X	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.37 0.45 0.53 0.72	0.51 0.60 0.70 0.93	0.02 0.03 0.04 0.06
RFV01U-D1A	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
(2) RFV01U-D1A	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
Platform Mount [LP 304-1]	C	None		0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	17.49 21.37 25.28 33.17	17.49 21.37 25.28 33.17	1.35 1.71 2.13 3.16
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
** 85 **									
(2) BFA8F-A5A W/RRH w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	15.85 16.62 17.40 19.01	5.69 6.28 6.88 8.15	0.16 0.27 0.39 0.67
(2) BFA8F-A5A W/RRH w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice 1" Ice	15.85 16.62 17.40 19.01	5.69 6.28 6.88 8.15	0.16 0.27 0.39 0.67

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							2" Ice			
(2) BFA8F-A5A W/RRH w/ Mount Pipe	C	From Leg	4.00 0.00 0.00		0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	15.85 16.62 17.40 19.01	5.69 6.28 6.88 8.15	0.16 0.27 0.39 0.67
(2) RHCDC-3441-P-48-NA	A	From Leg	4.00 0.00 0.00		0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.41 0.49 0.58 0.78	0.18 0.24 0.31 0.47	0.00 0.01 0.01 0.02
(2) RHCDC-3441-P-48-NA	B	From Leg	4.00 0.00 0.00		0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.41 0.49 0.58 0.78	0.18 0.24 0.31 0.47	0.00 0.01 0.01 0.02
(2) RHCDC-3441-P-48-NA	C	From Leg	4.00 0.00 0.00		0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.41 0.49 0.58 0.78	0.18 0.24 0.31 0.47	0.00 0.01 0.01 0.02
RHCDC-1390-PF-48	B	From Leg	4.00 0.00 0.00		0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.18 3.41 3.63 4.11	1.20 1.35 1.50 1.85	0.02 0.04 0.07 0.13
Sector Mount [SM 406-3]	A	None			0.0000	85.00	No Ice 1/2" Ice 1" Ice 2" Ice	19.76 29.24 38.80 58.91	19.76 29.24 38.80 58.91	0.92 1.31 1.84 3.33
******										

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice

Comb. No.	Description
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	119 - 84.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.75	-0.23	-0.82
			Max. Mx	8	-17.21	-271.23	-0.83
			Max. My	14	-17.22	-0.62	-270.99
			Max. Vy	8	12.64	-271.23	-0.83
			Max. Vx	14	12.60	-0.62	-270.99
			Max. Torque	21			0.36
L2	84.33 - 45.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.20	-0.44	-0.94
			Max. Mx	8	-31.45	-902.71	-3.55
			Max. My	14	-31.45	-3.36	-899.98
			Max. Vy	8	18.43	-902.71	-3.55
			Max. Vx	14	18.36	-3.36	-899.98
			Max. Torque	19			0.49
L3	45.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.91	-0.04	-0.71
			Max. Mx	8	-54.47	-1923.07	-7.16
			Max. My	14	-54.47	-6.94	-1916.97
			Max. Vy	8	22.11	-1923.07	-7.16
			Max. Vx	14	22.05	-6.94	-1916.97
			Max. Torque	19			0.49

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	78.91	0.00	0.00
	Max. H_x	20	54.47	22.10	0.07

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_z	2	54.47	0.07	22.03
	Max. M_x	2	1916.41	0.07	22.03
	Max. M_z	8	1923.07	-22.10	-0.07
	Max. Torsion	19	0.49	19.10	-10.95
	Min. Vert	5	40.86	-10.99	19.04
	Min. H_x	8	54.47	-22.10	-0.07
	Min. H_z	14	54.47	-0.07	-22.03
	Min. M_x	14	-1916.97	-0.07	-22.03
	Min. M_z	20	-1922.95	22.10	0.07
	Min. Torsion	7	-0.49	-19.10	10.95

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	45.40	0.00	0.00	0.22	-0.05	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	54.47	-0.07	-22.03	-1916.41	6.82	0.20
0.9 Dead+1.0 Wind 0 deg - No Ice	40.86	-0.07	-22.03	-1904.78	6.80	0.20
1.2 Dead+1.0 Wind 30 deg - No Ice	54.47	10.99	-19.04	-1656.18	-955.61	0.40
0.9 Dead+1.0 Wind 30 deg - No Ice	40.86	10.99	-19.04	-1646.14	-949.76	0.40
1.2 Dead+1.0 Wind 60 deg - No Ice	54.47	19.10	-10.95	-952.10	-1662.00	0.49
0.9 Dead+1.0 Wind 60 deg - No Ice	40.86	19.10	-10.95	-946.36	-1651.84	0.49
1.2 Dead+1.0 Wind 90 deg - No Ice	54.47	22.10	0.07	7.16	-1923.07	0.45
0.9 Dead+1.0 Wind 90 deg - No Ice	40.86	22.10	0.07	7.05	-1911.32	0.45
1.2 Dead+1.0 Wind 120 deg - No Ice	54.47	19.17	11.08	964.59	-1668.88	0.29
0.9 Dead+1.0 Wind 120 deg - No Ice	40.86	19.17	11.08	958.63	-1658.68	0.29
1.2 Dead+1.0 Wind 150 deg - No Ice	54.47	11.11	19.11	1663.62	-967.53	0.05
0.9 Dead+1.0 Wind 150 deg - No Ice	40.86	11.11	19.11	1653.40	-961.61	0.05
1.2 Dead+1.0 Wind 180 deg - No Ice	54.47	0.07	22.03	1916.97	-6.94	-0.20
0.9 Dead+1.0 Wind 180 deg - No Ice	40.86	0.07	22.03	1905.20	-6.89	-0.20
1.2 Dead+1.0 Wind 210 deg - No Ice	54.47	-10.99	19.04	1656.75	955.49	-0.40
0.9 Dead+1.0 Wind 210 deg - No Ice	40.86	-10.99	19.04	1646.56	949.67	-0.40
1.2 Dead+1.0 Wind 240 deg - No Ice	54.47	-19.10	10.95	952.67	1661.88	-0.49
0.9 Dead+1.0 Wind 240 deg - No Ice	40.86	-19.10	10.95	946.78	1651.75	-0.49
1.2 Dead+1.0 Wind 270 deg - No Ice	54.47	-22.10	-0.07	-6.60	1922.95	-0.45
0.9 Dead+1.0 Wind 270 deg - No Ice	40.86	-22.10	-0.07	-6.63	1911.23	-0.45
1.2 Dead+1.0 Wind 300 deg - No Ice	54.47	-19.17	-11.08	-964.02	1668.76	-0.29
0.9 Dead+1.0 Wind 300 deg - No Ice	40.86	-19.17	-11.08	-958.21	1658.59	-0.29
1.2 Dead+1.0 Wind 330 deg - No Ice	54.47	-11.11	-19.11	-1663.06	967.41	-0.05
0.9 Dead+1.0 Wind 330 deg - No Ice	40.86	-11.11	-19.11	-1652.98	961.52	-0.05

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
1.2 Dead+1.0 Ice+1.0 Temp	78.91	0.00	0.00	0.71	-0.04	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	78.91	-0.01	-5.15	-443.30	1.06	0.02
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	78.91	2.57	-4.46	-383.24	-221.64	0.06
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	78.91	4.47	-2.57	-220.28	-384.98	0.09
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	78.91	5.16	0.01	1.91	-445.18	0.10
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	78.91	4.48	2.59	223.80	-386.11	0.08
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	78.91	2.59	4.47	385.94	-223.60	0.03
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	78.91	0.01	5.15	444.87	-1.19	-0.02
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	78.91	-2.57	4.46	384.81	221.51	-0.06
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	78.91	-4.47	2.57	221.85	384.85	-0.09
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	78.91	-5.16	-0.01	-0.34	445.05	-0.10
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	78.91	-4.48	-2.59	-222.23	385.98	-0.08
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	78.91	-2.59	-4.47	-384.37	223.47	-0.03
Dead+Wind 0 deg - Service	45.40	-0.01	-4.42	-382.79	1.33	0.04
Dead+Wind 30 deg - Service	45.40	2.20	-3.82	-330.78	-191.00	0.08
Dead+Wind 60 deg - Service	45.40	3.83	-2.20	-190.09	-332.16	0.10
Dead+Wind 90 deg - Service	45.40	4.43	0.01	1.61	-384.33	0.09
Dead+Wind 120 deg - Service	45.40	3.85	2.22	192.93	-333.54	0.06
Dead+Wind 150 deg - Service	45.40	2.23	3.83	332.63	-193.38	0.01
Dead+Wind 180 deg - Service	45.40	0.01	4.42	383.25	-1.43	-0.04
Dead+Wind 210 deg - Service	45.40	-2.20	3.82	331.25	190.90	-0.08
Dead+Wind 240 deg - Service	45.40	-3.83	2.20	190.55	332.06	-0.10
Dead+Wind 270 deg - Service	45.40	-4.43	-0.01	-1.14	384.23	-0.09
Dead+Wind 300 deg - Service	45.40	-3.85	-2.22	-192.47	333.44	-0.06
Dead+Wind 330 deg - Service	45.40	-2.23	-3.83	-332.16	193.28	-0.01

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	-45.40	0.00	0.00	45.40	0.00	0.000%
2	-0.07	-54.47	-22.03	0.07	54.47	22.03	0.000%
3	-0.07	-40.86	-22.03	0.07	40.86	22.03	0.000%
4	10.99	-54.47	-19.04	-10.99	54.47	19.04	0.000%
5	10.99	-40.86	-19.04	-10.99	40.86	19.04	0.000%
6	19.10	-54.47	-10.95	-19.10	54.47	10.95	0.000%
7	19.10	-40.86	-10.95	-19.10	40.86	10.95	0.000%
8	22.10	-54.47	0.07	-22.10	54.47	-0.07	0.000%
9	22.10	-40.86	0.07	-22.10	40.86	-0.07	0.000%
10	19.17	-54.47	11.08	-19.17	54.47	-11.08	0.000%
11	19.17	-40.86	11.08	-19.17	40.86	-11.08	0.000%
12	11.11	-54.47	19.11	-11.11	54.47	-19.11	0.000%
13	11.11	-40.86	19.11	-11.11	40.86	-19.11	0.000%
14	0.07	-54.47	22.03	-0.07	54.47	-22.03	0.000%
15	0.07	-40.86	22.03	-0.07	40.86	-22.03	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
16	-10.99	-54.47	19.04	10.99	54.47	-19.04	0.000%
17	-10.99	-40.86	19.04	10.99	40.86	-19.04	0.000%
18	-19.10	-54.47	10.95	19.10	54.47	-10.95	0.000%
19	-19.10	-40.86	10.95	19.10	40.86	-10.95	0.000%
20	-22.10	-54.47	-0.07	22.10	54.47	0.07	0.000%
21	-22.10	-40.86	-0.07	22.10	40.86	0.07	0.000%
22	-19.17	-54.47	-11.08	19.17	54.47	11.08	0.000%
23	-19.17	-40.86	-11.08	19.17	40.86	11.08	0.000%
24	-11.11	-54.47	-19.11	11.11	54.47	19.11	0.000%
25	-11.11	-40.86	-19.11	11.11	40.86	19.11	0.000%
26	0.00	-78.91	0.00	0.00	78.91	0.00	0.000%
27	-0.01	-78.91	-5.15	0.01	78.91	5.15	0.000%
28	2.57	-78.91	-4.46	-2.57	78.91	4.46	0.000%
29	4.47	-78.91	-2.57	-4.47	78.91	2.57	0.000%
30	5.16	-78.91	0.01	-5.16	78.91	-0.01	0.000%
31	4.48	-78.91	2.59	-4.48	78.91	-2.59	0.000%
32	2.59	-78.91	4.47	-2.59	78.91	-4.47	0.000%
33	0.01	-78.91	5.15	-0.01	78.91	-5.15	0.000%
34	-2.57	-78.91	4.46	2.57	78.91	-4.46	0.000%
35	-4.47	-78.91	2.57	4.47	78.91	-2.57	0.000%
36	-5.16	-78.91	-0.01	5.16	78.91	0.01	0.000%
37	-4.48	-78.91	-2.59	4.48	78.91	2.59	0.000%
38	-2.59	-78.91	-4.47	2.59	78.91	4.47	0.000%
39	-0.01	-45.40	-4.42	0.01	45.40	4.42	0.000%
40	2.20	-45.40	-3.82	-2.20	45.40	3.82	0.000%
41	3.83	-45.40	-2.20	-3.83	45.40	2.20	0.000%
42	4.43	-45.40	0.01	-4.43	45.40	-0.01	0.000%
43	3.85	-45.40	2.22	-3.85	45.40	-2.22	0.000%
44	2.23	-45.40	3.83	-2.23	45.40	-3.83	0.000%
45	0.01	-45.40	4.42	-0.01	45.40	-4.42	0.000%
46	-2.20	-45.40	3.82	2.20	45.40	-3.82	0.000%
47	-3.83	-45.40	2.20	3.83	45.40	-2.20	0.000%
48	-4.43	-45.40	-0.01	4.43	45.40	0.01	0.000%
49	-3.85	-45.40	-2.22	3.85	45.40	2.22	0.000%
50	-2.23	-45.40	-3.83	2.23	45.40	3.83	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	0.00002273
3	Yes	4	0.00000001	0.00001252
4	Yes	4	0.00000001	0.00060287
5	Yes	4	0.00000001	0.00041016
6	Yes	4	0.00000001	0.00056993
7	Yes	4	0.00000001	0.00038685
8	Yes	4	0.00000001	0.00004823
9	Yes	4	0.00000001	0.00003203
10	Yes	4	0.00000001	0.00061481
11	Yes	4	0.00000001	0.00041760
12	Yes	4	0.00000001	0.00059622
13	Yes	4	0.00000001	0.00040467
14	Yes	4	0.00000001	0.00002739
15	Yes	4	0.00000001	0.00001640
16	Yes	4	0.00000001	0.00057460
17	Yes	4	0.00000001	0.00039006
18	Yes	4	0.00000001	0.00060938
19	Yes	4	0.00000001	0.00041451
20	Yes	4	0.00000001	0.00003978
21	Yes	4	0.00000001	0.00002592
22	Yes	4	0.00000001	0.00058672
23	Yes	4	0.00000001	0.00039816
24	Yes	4	0.00000001	0.00060343
25	Yes	4	0.00000001	0.00040993
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00037136
28	Yes	4	0.00000001	0.00038282
29	Yes	4	0.00000001	0.00038391
30	Yes	4	0.00000001	0.00037479
31	Yes	4	0.00000001	0.00038813
32	Yes	4	0.00000001	0.00038797
33	Yes	4	0.00000001	0.00037512
34	Yes	4	0.00000001	0.00038533
35	Yes	4	0.00000001	0.00038506
36	Yes	4	0.00000001	0.00037339
37	Yes	4	0.00000001	0.00038442
38	Yes	4	0.00000001	0.00038376
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000740
41	Yes	4	0.00000001	0.00000664
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000752
44	Yes	4	0.00000001	0.00000702
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000672
47	Yes	4	0.00000001	0.00000761
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000682
50	Yes	4	0.00000001	0.00000718

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	119 - 84.33	5.165	43	0.3793	0.0004
L2	87.96 - 45.5	2.855	43	0.3131	0.0002
L3	50.39 - 0	0.912	43	0.1717	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	(2) 7770.00 w/ Mount Pipe	43	5.165	0.3793	0.0004	103313
107.00	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	43	4.234	0.3579	0.0003	43047
100.00	LPA-80080/6CF w/ Mount Pipe	43	3.707	0.3436	0.0003	27187
85.00	(2) BFA8F-A5A W/RRH w/ Mount Pipe	43	2.660	0.3040	0.0002	16184

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	119 - 84.33	25.852	10	1.8994	0.0021
L2	87.96 - 45.5	14.291	10	1.5672	0.0012
L3	50.39 - 0	4.563	10	0.8597	0.0004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	(2) 7770.00 w/ Mount Pipe	10	25.852	1.8994	0.0021	20704
107.00	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	10	21.192	1.7918	0.0017	8626
100.00	LPA-80080/6CF w/ Mount Pipe	10	18.554	1.7203	0.0015	5447
85.00	(2) BFA8F-A5A W/RRH w/ Mount Pipe	10	13.314	1.5217	0.0012	3240

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	119 - 84.33 (1)	TP29.03x19.0986x0.5	34.67	0.00	0.0	43.6269	-17.21	1963.21	0.009
L2	84.33 - 45.5 (2)	TP39.15x26.9902x0.625	42.46	0.00	0.0	73.6459	-31.45	3314.07	0.009
L3	45.5 - 0 (3)	TP50.9295x36.4996x0.6875	50.39	0.00	0.0	109.6340	-54.47	4933.54	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	119 - 84.33 (1)	TP29.03x19.0986x0.5	271.73	1395.13	0.195	0.00	1395.13	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L2	84.33 - 45.5 (2)	TP39.15x26.9902x0.625	904.92	3184.70	0.284	0.00	3184.70	0.000
L3	45.5 - 0 (3)	TP50.9295x36.4996x0.6875	1927.58	6436.05	0.299	0.00	6436.05	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	119 - 84.33 (1)	TP29.03x19.0986x0.5	12.67	588.96	0.022	0.29	1417.90	0.000
L2	84.33 - 45.5 (2)	TP39.15x26.9902x0.625	18.48	994.22	0.019	0.29	3232.39	0.000
L3	45.5 - 0 (3)	TP50.9295x36.4996x0.6875	22.16	1480.06	0.015	0.29	6512.19	0.000

Pole Interaction Design Data

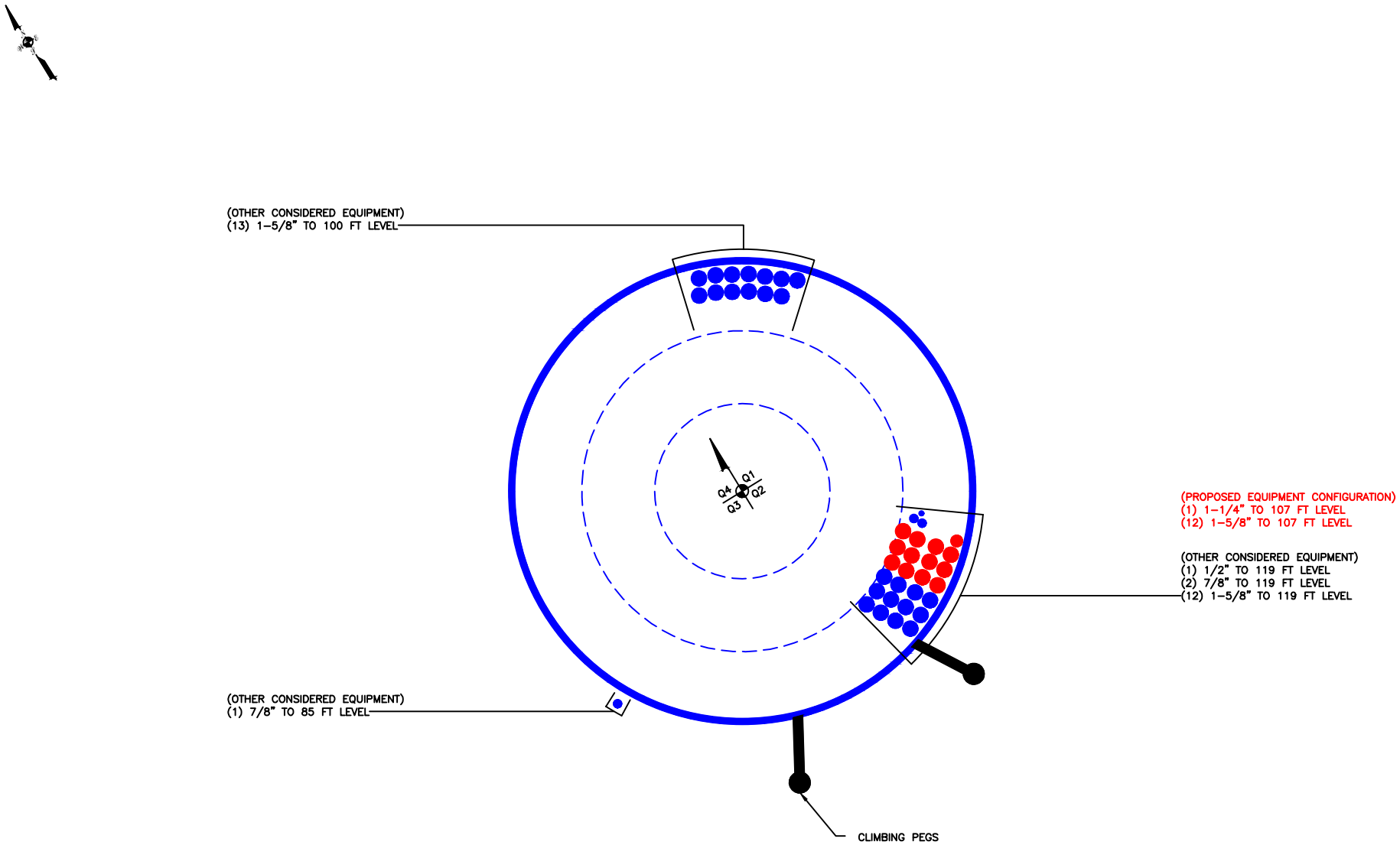
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	119 - 84.33 (1)	0.009	0.195	0.000	0.022	0.000	0.204	1.050	4.8.2
L2	84.33 - 45.5 (2)	0.009	0.284	0.000	0.019	0.000	0.294	1.050	4.8.2
L3	45.5 - 0 (3)	0.011	0.299	0.000	0.015	0.000	0.311	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	119 - 84.33	Pole	TP29.03x19.0986x0.5	1	-17.21	2061.37	19.4	Pass
L2	84.33 - 45.5	Pole	TP39.15x26.9902x0.625	2	-31.45	3479.77	28.0	Pass
L3	45.5 - 0	Pole	TP50.9295x36.4996x0.6875	3	-54.47	5180.22	29.6	Pass
							Summary	
						Pole (L3)	29.6	Pass
						RATING =	**29.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(13) 1-5/8" TO 100 FT LEVEL
Q1
Q2
Q3
Q4
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-1/4" TO 107 FT LEVEL
(12) 1-5/8" TO 107 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 119 FT LEVEL
(2) 7/8" TO 119 FT LEVEL
(12) 1-5/8" TO 119 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 85 FT LEVEL
CLIMBING PEGS

APPENDIX C

ADDITIONAL CALCULATIONS

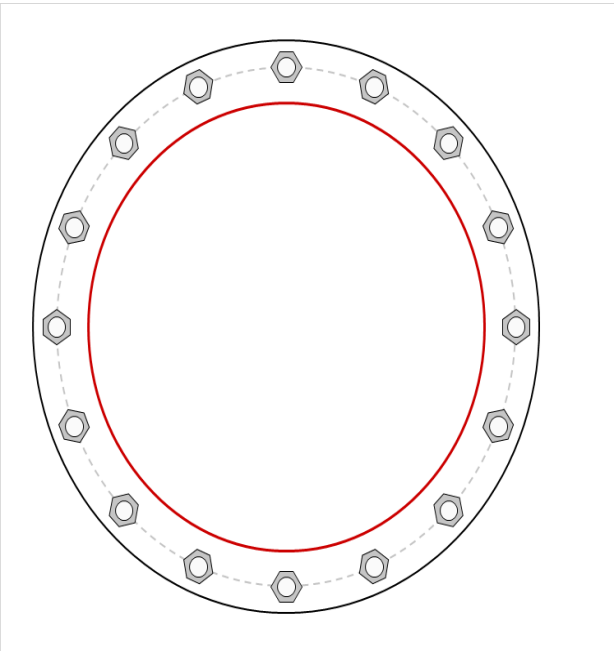
Monopole Base Plate Connection

Site Info	
BU #	857013
Site Name	KILLINGLY ROSS ROAD
Order #	494424 - Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1

Applied Loads	
Moment (kip-ft)	1927.58
Axial Force (kips)	54.47
Shear Force (kips)	22.16

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 59" BC

Base Plate Data

65" OD x 2" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

50.9295" x 0.6875" 18-sided pole (A572-50; Fy=50 ksi, Fu=65 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_c = 101.36	ϕPn_c = 268.39	**Stress Rating**
Vu = 1.38	ϕVn = 120.77	**36.0%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	25.02	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**53.0%**	**Pass**

Pier and Pad Foundation

BU # :	857013
Site Name:	KILLINGLY ROSS
App. Number:	494424 - Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	54.47	kips
Base Shear, Vu_comp:	22.14	kips
Moment, M_u:	1927.59	ft-kips
Tower Height, **H**:	119	ft
BP Dist. Above Fdn, bp_{dist}:	3.25	in

Pier Properties		
Pier Shape:	Circular	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	39	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	7	ft
Pad Width, W_1:	25	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	25	
Pad Clear Cover, cc_{pad}:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ:	130	pcf
Ultimate Gross Bearing, Qult:	15.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	38	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.45	
Neglected Depth, **N**:	4.17	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	361.70	22.14	**5.8%**	**Pass**
Bearing Pressure (ksf)	11.25	1.83	**15.5%**	**Pass**
*Overturning (kip*ft)*	7480.76	2099.64	**28.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	7565.88	2027.22	**25.5%**	**Pass**
Pier Compression (kip)	18370.97	85.64	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	2730.73	720.25	**25.1%**	**Pass**
Pad Shear - 1-way (kips)	776.40	111.45	**13.7%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.024	**13.9%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3437.16	1216.33	**33.7%**	**Pass**

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

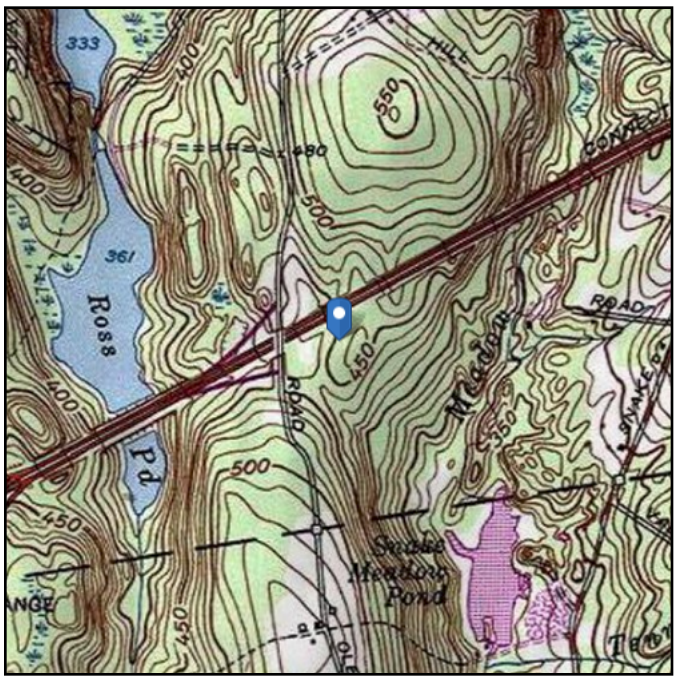
Soil Rating*:	**28.1%**
Structural Rating*:	**33.7%**

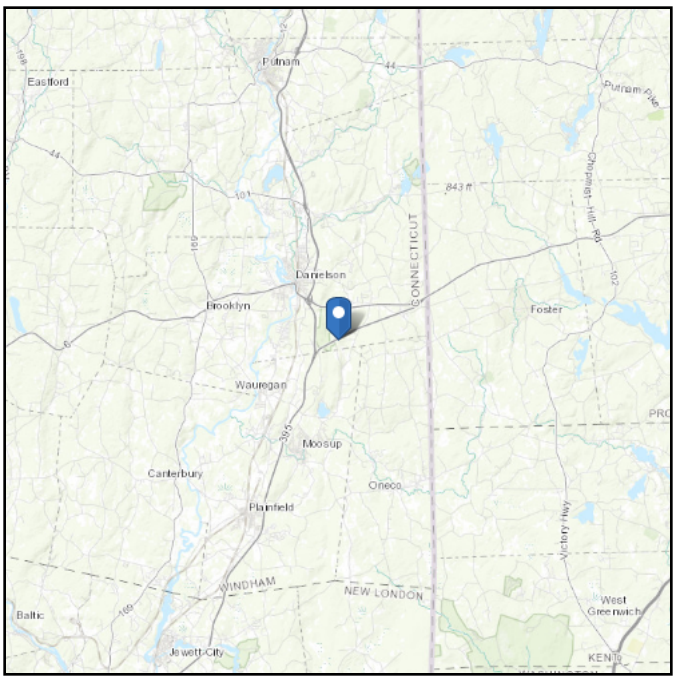
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 452.89 ft (NAVD 88)
Latitude: 41.771553
Longitude: -71.855664





Wind

Results:

Wind Speed:	130 Vmph
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	97 Vmph
100-year MRI	106 Vmph

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

Date Accessed: Mon Nov 23 2020

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

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

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

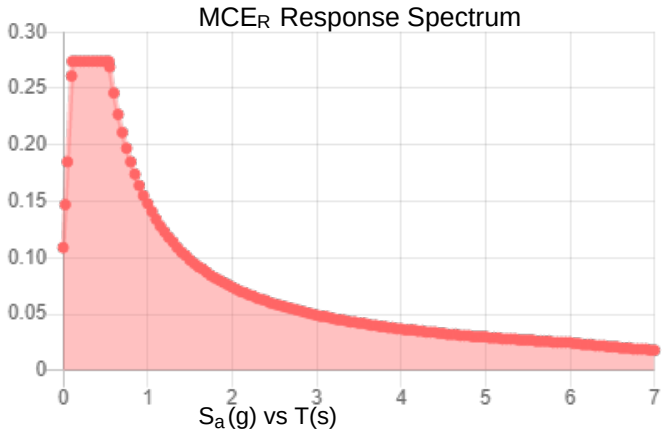
Seismic

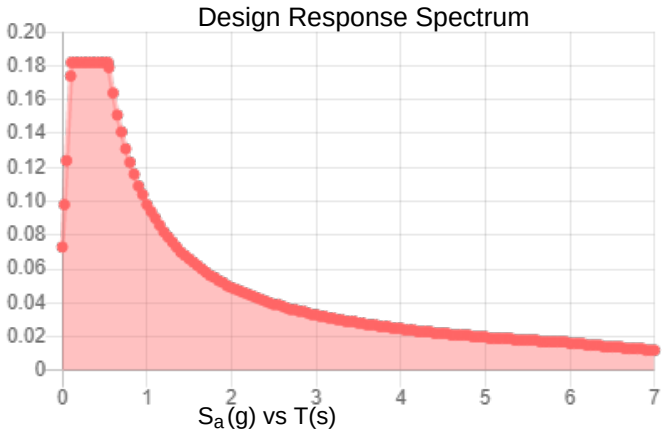
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.171	S_{DS} :	0.182
S_1 :	0.062	S_{D1} :	0.098
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.086
S_{MS} :	0.274	PGA_M :	0.137
S_{M1} :	0.148	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Nov 23 2020

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Nov 23 2020

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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Exhibit E

Mount Analysis

Date: **January 11, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704-405-6589

Infinigy Engineering, PLLC
1033 Watervliet Shaker Road
Albany, NY 12205
518-690-0790
structural@infinigy.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile L600**	
	Carrier Site Number:	CTNL140B
	Carrier Site Name:	NL140/Cingular Ross Rd_MP
Crown Castle Designation:	**Crown Castle BU Number:**	857013
	Crown Castle Site Name:	KILLINGLY ROSS ROAD
	Crown Castle JDE Job Number:	576614
	Crown Castle Order Number:	494424 Rev. 0
Engineering Firm Designation:	**Infinigy Engineering, PLLC Report Designation:** 1039-Z0001-B	
Site Data:	**280 Ross Road, Killingly, Windham County, CT 06239** **Latitude 41°46'17.59" Longitude -71°51'20.39"**	
Structure Information:	**Tower Height & Type:**	**119.0 ft Monopole**
	Mount Elevation:	**107.0 ft**
	Mount Type:	**14.4 ft Platform**

Dear Darcy Tarr,

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

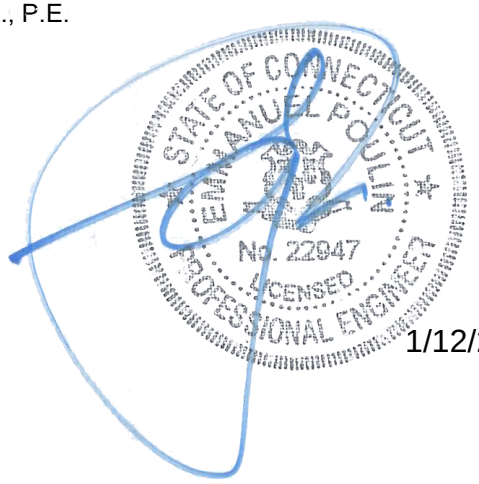
The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform **Sufficient**
***Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.**

This analysis utilizes an ultimate 3-second gust wind speed of 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Jacques Grimaldi, M.S., P.E.

Respectfully Submitted by:
Emmanuel Poulin, P.E.
518-690-0790
structural@infinigy.com
CT PE License No. 22947



1/12/21

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3 sector 14.4 ft Platform.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC / 2018 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.171
Seismic S_1:	0.062
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
107.0	110.0	3	RFS/CELWAVE	APX16DWV-16DWV-S-E-A20	14.4 ft Platform
		3	RFS/CELWAVE	APXVAARR24_43-U-NA20	
		3	ERICSSON	KRY 112 489/2	
		3	ERICSSON	RADIO 4449 B12/B71	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	494424 Rev. 0	CCI Sites
Mount Mapping Report	Infinigy Engineering, PLLC	Site ID: 417511	Infinigy
Loading Document	T-Mobile	RFDS Version: 3.1	TSA

3.1) Analysis Method

RISA-3D (Version 18.0.5), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

Infinigy Mount Analysis Tool V2.1.4, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

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

3.2) Assumptions

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

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36) / Q345 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Bracing(s)	M24	107.0	90.7	Pass
	Standoff(s)	M3		86.2	Pass
	Mount Pipe(s)	MP5		61.4	Pass
	Handrail(s)	M46		42.3	Pass
	Mount Connection(s)	-		28.4	Pass

Structure Rating (max from all components) =	90.7%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D – Additional Calculations” for detailed mount connection calculations.

4.1) Recommendations

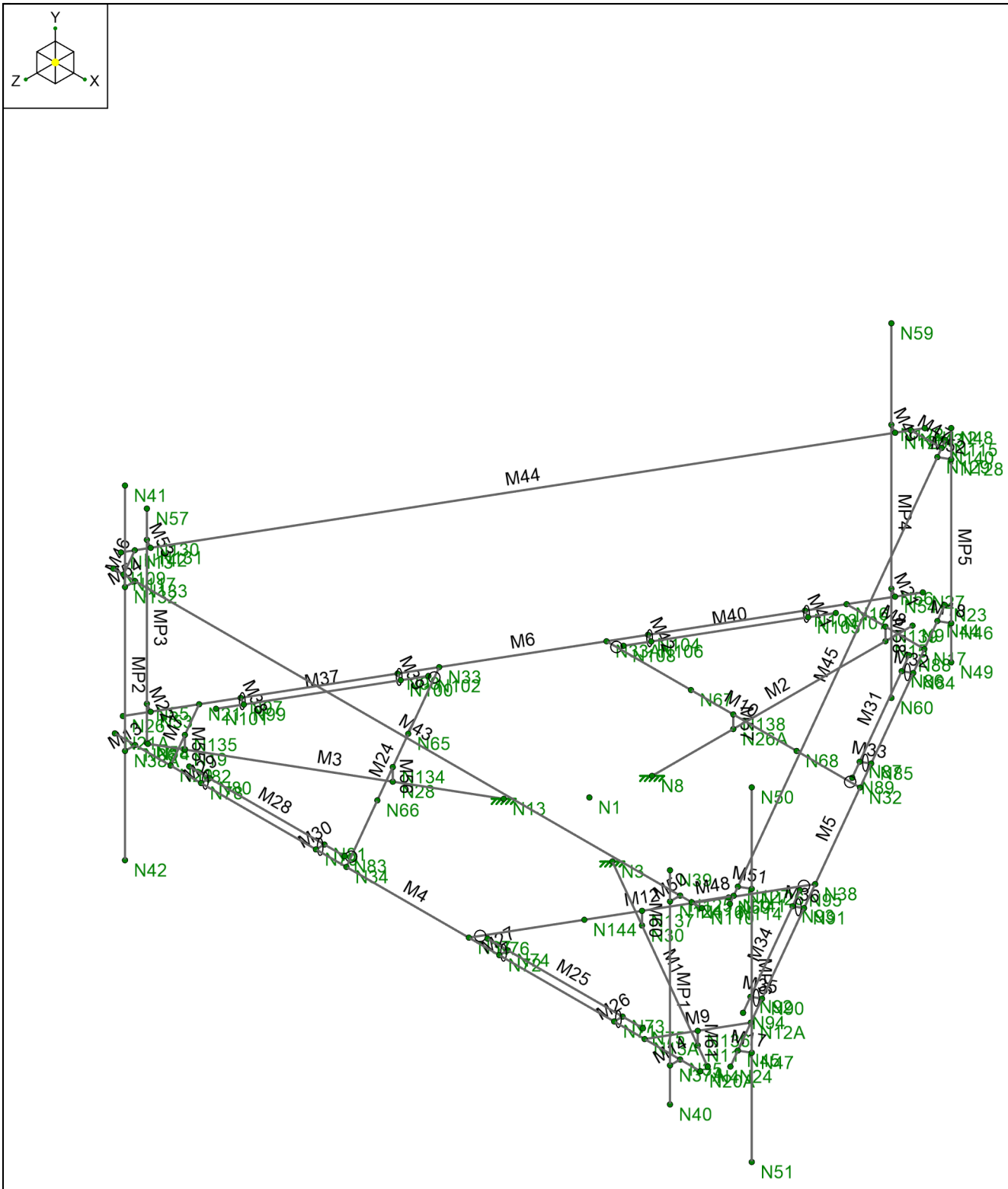
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Installation of Site Pro 1 HRK14 handrail kit at a distance of 42” above the face Horizontal.

No structural modifications are required at this time, provided that the above-listed changes are implemented.

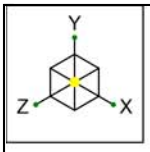
APPENDIX A

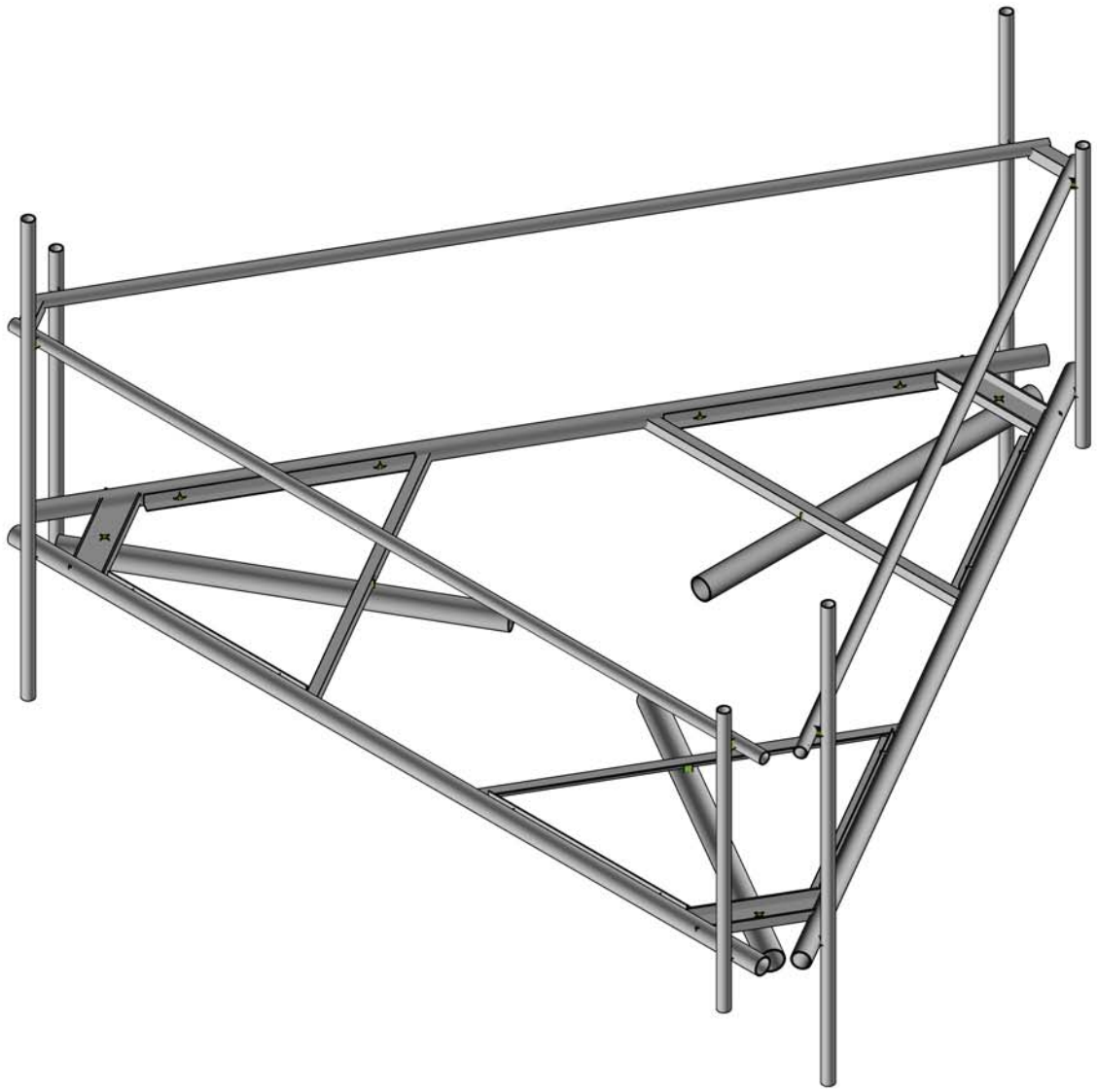
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Infinigy Engineering, PLLC	857013	Wireframe
JG		Jan 11, 2021
1039-Z0001-B		857013_loaded.r3d





Envelope Only Solution

Infinigy Engineering, PLLC	857013	Rendered
JG		Jan 11, 2021
1039-Z0001-B		857013_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

PROJECT INFORMATION	
Client:	Crown Castle
Carrier:	T-Mobile
Engineer:	Jacques Grimaldi

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	B	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil	
Ground Elevation:	452.89	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	107.0	ft
Tower Height AGL:	119.0	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.95	
Ground Ele. Factor (K_e):	0.98	*Rev H Only
Rooftop Speed-Up (K_s):	1.00	*Rev H Only
Topographic Factor (K_{zt}):	1.00	
Gust Effect Factor (G_h):	1.0	

CODE STANDARDS		
Building Code:	2015 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-10	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	130	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1.5	in
Flat Pressure:	81.47	psf
Round Pressure:	48.88	psf
Ice Wind Pressure:	7.23	psf

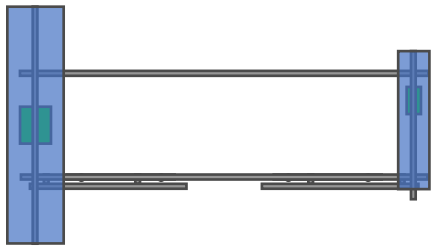
SEISMIC DATA		
Short-Period Accel. (S_s):	0.17	g
1-Second Accel. (S_1):	0.06	g
Short-Period Design (S_{DS}):	0.18	
1-Second Design (S_{D1}):	0.10	
Short-Period Coeff. (F_a):	1.60	
1-Second Coeff. (F_v):	2.40	
Amplification Factor (a_p):	1.00	
Response Mod. (R_p):	2.50	
Overstrength (Ω_o):	1.00	

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

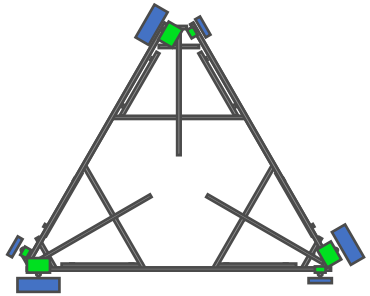
Infinigy Load Calculator V2.1.4

Program Inputs

ELEVATION VIEW



PLAN VIEW



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Infinigy Load Calculator V2.1.4

APPURTENANCE INFORMATION

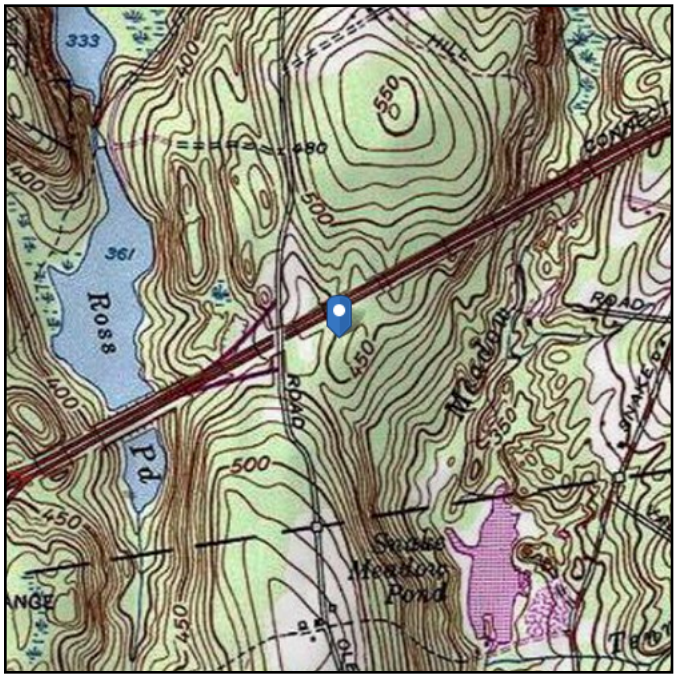
Appurtenance Name	Elevation	Qty.	K_a	q_z (psf)	EPA_N (ft^2)	EPA_T (ft^2)	Wind F_z (lbs)	Wind F_x (lbs)	Weight (lbs)	Seismic F (lbs)	Member (α sector)
ES/CELWAVE APX16DWV-16DWV-S-E-A2	110.0	3	0.90	41.06	6.29	2.76	232.44	101.99	40.70	3.71	MP1
RFS/CELWAVE APXVAARR24_43-U-NA2(	110.0	3	0.90	41.06	14.69	6.87	542.98	254.00	96.80	8.83	MP2
ERICSSON KRY 112 489/2	110.0	3	0.90	41.06	0.56	0.37	20.66	13.49	15.40	1.40	MP1
ERICSSON RADIO 4449 B12/B71	110.0	3	0.90	41.06	1.64	1.15	60.72	42.59	75.00	6.84	MP2

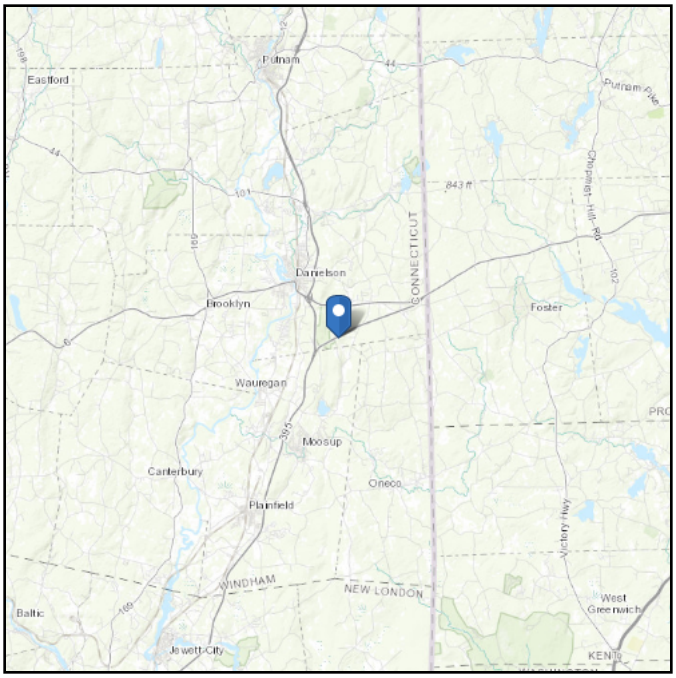
ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 452.89 ft (NAVD 88)
Latitude: 41.771553
Longitude: -71.855664





Wind

Results:

Wind Speed:	130 Vmph
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	97 Vmph
100-year MRI	106 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Mon Jan 11 2021

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

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

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

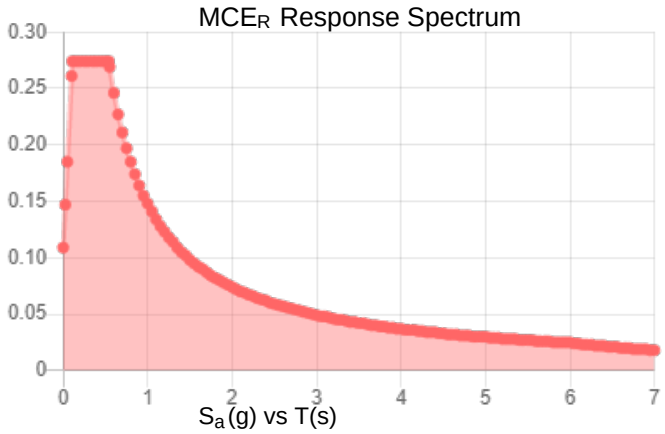
Seismic

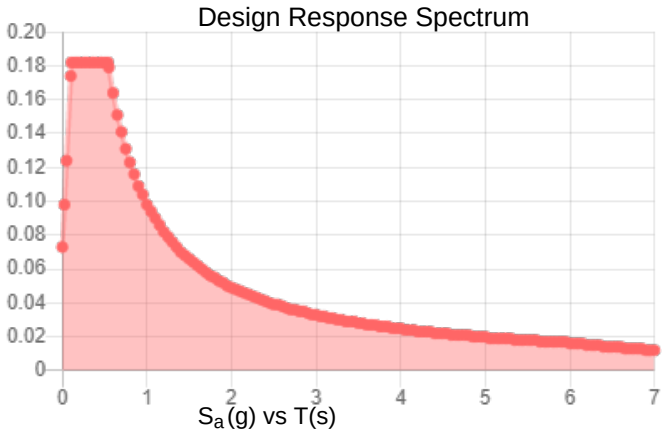
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.171	S_{DS} :	0.182
S_1 :	0.062	S_{D1} :	0.098
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.086
S_{MS} :	0.274	PGA_M :	0.137
S_{M1} :	0.148	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Jan 11 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Jan 11 2021

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	M1	N3	N4		Standoff Pipe	Beam	None	A53 Gr.B	Typical
2	M2	N8	N9		Standoff Pipe	Beam	None	A53 Gr.B	Typical
3	M3	N13	N14		Standoff Pipe	Beam	None	A53 Gr.B	Typical
4	M4	N20A	N21A		Horizontals	Beam	None	A53 Gr.B	Typical
5	M5	N23	N24		Horizontals	Beam	None	A53 Gr.B	Typical
6	M6	N26	N27		Horizontals	Beam	None	A53 Gr.B	Typical
7	M7	N21	N20	270	Corner Connection Plates	Beam	None	A36 Gr.36	Typical
8	M8	N16	N17	270	Corner Connection Plates	Beam	None	A36 Gr.36	Typical
9	M9	N13A	N12A	270	Corner Connection Plates	Beam	None	A36 Gr.36	Typical
10	M10	N33A	N32	180	Bracings	Beam	None	A36 Gr.36	Typical
11	M12	N38	N37	180	Bracings	Beam	None	A36 Gr.36	Typical
12	M13	N38A	N36		RIGID	None	None	RIGID	Typical
13	M14	N37A	N35		RIGID	None	None	RIGID	Typical
14	MP1	N39	N40		Pipe Mounts	Column	Wide Flange	A53 Gr.B	Typical
15	MP2	N41	N42		Pipe Mounts	Column	Wide Flange	A53 Gr.B	Typical
16	M17	N47	N45		RIGID	None	None	RIGID	Typical
17	M18	N46	N44		RIGID	None	None	RIGID	Typical
18	MP5	N48	N49		Pipe Mounts	Column	Wide Flange	A53 Gr.B	Typical
19	MP6	N50	N51		Pipe Mounts	Column	Wide Flange	A53 Gr.B	Typical
20	M21	N56	N54		RIGID	None	None	RIGID	Typical
21	M22	N55	N53		RIGID	None	None	RIGID	Typical
22	MP3	N57	N58		Pipe Mounts	Column	Wide Flange	A53 Gr.B	Typical
23	MP4	N59	N60		Pipe Mounts	Column	Wide Flange	A53 Gr.B	Typical
24	M24	N34	N33	180	Bracings	Beam	None	A36 Gr.36	Typical
25	M25	N75	N76		Bracing Angles	Beam	None	A36 Gr.36	Typical
26	M26	N73	N71		RIGID	None	None	RIGID	Typical
27	M27	N74	N72		RIGID	None	None	RIGID	Typical
28	M28	N82	N83	270	Bracing Angles	Beam	None	A36 Gr.36	Typical
29	M29	N80	N78		RIGID	None	None	RIGID	Typical
30	M30	N81	N79		RIGID	None	None	RIGID	Typical
31	M31	N88	N89		Bracing Angles	Beam	None	A36 Gr.36	Typical
32	M32	N86	N84		RIGID	None	None	RIGID	Typical
33	M33	N87	N85		RIGID	None	None	RIGID	Typical
34	M34	N94	N95	270	Bracing Angles	Beam	None	A36 Gr.36	Typical
35	M35	N92	N90		RIGID	None	None	RIGID	Typical
36	M36	N93	N91		RIGID	None	None	RIGID	Typical
37	M37	N101	N102		Bracing Angles	Beam	None	A36 Gr.36	Typical
38	M38	N99	N97		RIGID	None	None	RIGID	Typical
39	M39	N100	N98		RIGID	None	None	RIGID	Typical
40	M40	N107	N108	270	Bracing Angles	Beam	None	A36 Gr.36	Typical
41	M41	N105	N103		RIGID	None	None	RIGID	Typical
42	M42	N106	N104		RIGID	None	None	RIGID	Typical
43	M43	N109	N110		Handrail	Beam	HSS Pipe	A53 Gr.B	Typical
44	M44	N112	N113		Handrail	Beam	HSS Pipe	A53 Gr.B	Typical
45	M45	N114	N115		Handrail	Beam	HSS Pipe	A53 Gr.B	Typical
46	M46	N142	N117	90	Corner plates	Beam	Single Angle	Q345	Typical
47	M47	N140	N143	90	Corner plates	Beam	Single Angle	Q345	Typical
48	M48	N116	N141	90	Corner plates	Beam	Single Angle	Q345	Typical
49	M49	N122	N123		RIGID	None	None	RIGID	Typical
50	M50	N124	N125		RIGID	None	None	RIGID	Typical
51	M51	N126	N127		RIGID	None	None	RIGID	Typical
52	M52	N128	N129		RIGID	None	None	RIGID	Typical
53	M53	N130	N131		RIGID	None	None	RIGID	Typical
54	M54	N132	N133		RIGID	None	None	RIGID	Typical
55	M55	N135	N19		RIGID	None	None	RIGID	Typical
56	M56	N134	N28		RIGID	None	None	RIGID	Typical
57	M57	N138	N26A		RIGID	None	None	RIGID	Typical
58	M58	N139	N15		RIGID	None	None	RIGID	Typical
59	M60	N137	N30		RIGID	None	None	RIGID	Typical
60	M61	N136	N11		RIGID	None	None	RIGID	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[LB]
1	General				
2	RIGID		30	88.5	0
3	Total General		30	88.5	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	L2x2x2	6	275.8	38.395
7	A36 Gr.36	L2x2x4	3	224.9	60.198
8	A36 Gr.36	C6X8.2	3	69	46.763
9	A53 Gr.B	PIPE_2.0	9	990	286.344
10	A53 Gr.B	PIPE_3.0	3	519.4	304.891
11	A53 Gr.B	PIPE_4.0	3	231	193.89
12	Q345	L2.5x2.5x3	3	27.2	6.952
13	Total HR Steel		30	2337.3	937.433

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
1	Self Weight	DL		-1			18		6
2	Wind Load AZI 0	WLZ					36		
3	Wind Load AZI 30	None					36		
4	Wind Load AZI 60	None					36		
5	Wind Load AZI 90	WLX					36		
6	Wind Load AZI 120	None					36		
7	Wind Load AZI 150	None					36		
8	Wind Load AZI 180	None					36		
9	Wind Load AZI 210	None					36		
10	Wind Load AZI 240	None					36		
11	Wind Load AZI 270	None					36		
12	Wind Load AZI 300	None					36		
13	Wind Load AZI 330	None					36		
14	Distr. Wind Load Z	WLZ						60	
15	Distr. Wind Load X	WLX						60	
16	Ice Weight	OL1					18	60	6
17	Ice Wind Load AZI 0	OL2					36		
18	Ice Wind Load AZI 30	None					36		
19	Ice Wind Load AZI 60	None					36		
20	Ice Wind Load AZI 90	OL3					36		
21	Ice Wind Load AZI 120	None					36		
22	Ice Wind Load AZI 150	None					36		
23	Ice Wind Load AZI 180	None					36		
24	Ice Wind Load AZI 210	None					36		
25	Ice Wind Load AZI 240	None					36		
26	Ice Wind Load AZI 270	None					36		
27	Ice Wind Load AZI 300	None					36		
28	Ice Wind Load AZI 330	None					36		
29	Distr. Ice Wind Load Z	OL2						60	
30	Distr. Ice Wind Load X	OL3						60	
31	Seismic Load Z	ELZ			-0.091		18		
32	Seismic Load X	ELX	-0.091				18		
33	Service Live Loads	LL					1		
34	Maintenance Load 1	LL				1			
35	Maintenance Load 2	LL				1			
36	Maintenance Load 3	LL				1			
37	Maintenance Load 4	LL				1			
38	Maintenance Load 5	LL				1			
39	Maintenance Load 6	LL				1			
40	BLC 1 Transient Area Loads	None						42	
41	BLC 16 Transient Area Loads	None						42	

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4								
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15			

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1		
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15			
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-0.866	15	-0.5		
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1		
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1						
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30	
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	0.866	30	0.5
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	16	1	21	1	29	-0.5	30	0.866
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.236	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.236	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.236	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.236	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.236	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.236	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.236	31	-1	32					
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.236	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.236	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.236	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.236	31	0.5	32	-0.866				
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.236	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.864	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.864	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.864	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.864	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.864	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.864	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.864	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.864	31	-0.866	32	-0.5				
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.864	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.864	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.864	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.864	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.213	14	0.213	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.213	14	0.184	15	0.107	33	1.5
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.213	14	0.107	15	0.184	33	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.213	14		15	0.213	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.213	14	-0.107	15	0.184	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.213	14	-0.184	15	0.107	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.213	14	-0.213	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.213	14	-0.184	15	-0.107	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.213	14	-0.107	15	-0.184	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.213	14		15	-0.213	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.213	14	0.107	15	-0.184	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.213	14	0.184	15	-0.107	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.053	14	0.053	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.053	14	0.046	15	0.027
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.053	14	0.027	15	0.046
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.053	14		15	0.053
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.053	14	-0.027	15	0.046
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.053	14	-0.046	15	0.027
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.053	14	-0.053	15	
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.053	14	-0.046	15	-0.027
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.053	14	-0.027	15	-0.046
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.053	14		15	-0.053
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.053	14	0.027	15	-0.046
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.053	14	0.046	15	-0.027
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.053	14	0.053	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.053	14	0.046	15	0.027
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.053	14	0.027	15	0.046
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.053	14		15	0.053
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.053	14	-0.027	15	0.046
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.053	14	-0.046	15	0.027
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.053	14	-0.053	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.053	14	-0.046	15	-0.027
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.053	14	-0.027	15	-0.046
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.053	14		15	-0.053
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.053	14	0.027	15	-0.046
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.053	14	0.046	15	-0.027
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.053	14	0.053	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.053	14	0.046	15	0.027
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.053	14	0.027	15	0.046
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.053	14		15	0.053
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.053	14	-0.027	15	0.046
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.053	14	-0.046	15	0.027
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.053	14	-0.053	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.053	14	-0.046	15	-0.027
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.053	14	-0.027	15	-0.046
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.053	14		15	-0.053
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.053	14	0.027	15	-0.046
111	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.053	14	0.046	15	-0.027
112	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.053	14	0.053	15	
113	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.053	14	0.046	15	0.027
114	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.053	14	0.027	15	0.046
115	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.053	14		15	0.053
116	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.053	14	-0.027	15	0.046
117	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.053	14	-0.046	15	0.027
118	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.053	14	-0.053	15	
119	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.053	14	-0.046	15	-0.027
120	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.053	14	-0.027	15	-0.046
121	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.053	14		15	-0.053
122	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.053	14	0.027	15	-0.046
123	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.053	14	0.046	15	-0.027
124	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.053	14	0.053	15	
125	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.053	14	0.046	15	0.027
126	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.053	14	0.027	15	0.046
127	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.053	14		15	0.053
128	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.053	14	-0.027	15	0.046

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
129	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.053	14	-0.046	15	0.027
130	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.053	14	-0.053	15	
131	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.053	14	-0.046	15	-0.027
132	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.053	14	-0.027	15	-0.046
133	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.053	14		15	-0.053
134	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.053	14	0.027	15	-0.046
135	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.053	14	0.046	15	-0.027
136	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.053	14	0.053	15	
137	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.053	14	0.046	15	0.027
138	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.053	14	0.027	15	0.046
139	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.053	14		15	0.053
140	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.053	14	-0.027	15	0.046
141	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.053	14	-0.046	15	0.027
142	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.053	14	-0.053	15	
143	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.053	14	-0.046	15	-0.027
144	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.053	14	-0.027	15	-0.046
145	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.053	14		15	-0.053
146	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.053	14	0.027	15	-0.046

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N13	max	-755.493	18	2442.297	31	5818.432	38	1092.011	14	1022.99	3	753.993	23
2		min	-9974.183	37	195.35	24	281.47	20	-4460.194	33	-1019.669	9	-7253.096	30
3	N8	max	890.765	5	2423.297	27	-818.269	14	8391.967	27	1409.397	11	1757.869	23
4		min	-886.239	23	183.459	20	-11537.473	33	-957.161	20	-1409.868	5	-1844.697	5
5	N3	max	9964.638	29	2416.42	35	5815.34	28	980.104	14	1024.078	7	7298.822	36
6		min	819.618	22	188.926	16	243.157	22	-4193.478	33	-1018.243	13	-818.713	17
7	Totals:	max	3507.717	17	7093.684	36	3629.586	14						
8		min	-3507.72	11	1694.186	54	-3629.586	20						

Envelope AISC 15th (360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	M24	L2x2x4	0.907	37.481	31	0.057	37.481	y	34	5684.038	30585.6	690.934	1390.455	1.353	H2-1
2	M12	L2x2x4	0.904	37.481	34	0.057	37.481	y	38	5684.038	30585.6	690.934	1391.632	1.358	H2-1
3	M10	L2x2x4	0.895	37.481	28	0.057	37.481	y	30	5684.038	30585.6	690.934	1390.452	1.353	H2-1
4	M3	PIPE_4.0	0.862	0	31	0.225	0		9	81734.03	93240	10631.25	10631.25	2.355	H1-1b
5	M2	PIPE_4.0	0.856	0	27	0.236	0		5	81734.03	93240	10631.25	10631.25	2.354	H1-1b
6	M1	PIPE_4.0	0.853	0	35	0.224	0		13	81734.03	93240	10631.25	10631.25	2.354	H1-1b
7	M7	C6X8.2	0.728	11.5	33	0.409	11.5	y	35	70285.703	77436	2107.841	13932	1.375	H1-1b
8	M8	C6X8.2	0.727	11.5	29	0.404	11.5	y	31	70285.703	77436	2107.841	13932	1.375	H1-1b
9	M9	C6X8.2	0.721	11.5	38	0.408	11.5	y	27	70285.703	77436	2107.841	13932	1.373	H1-1b
10	MP5	PIPE_2.0	0.614	50	10	0.155	50		10	23808.54	32130	1871.625	1871.625	1.912	H1-1b
11	MP3	PIPE_2.0	0.613	50	2	0.15	50		2	23808.54	32130	1871.625	1871.625	1.835	H1-1b
12	MP1	PIPE_2.0	0.594	50	6	0.154	50		6	23808.54	32130	1871.625	1871.625	1.88	H1-1b
13	MP6	PIPE_2.0	0.59	68	2	0.155	68		12	14916.096	32130	1871.625	1871.625	2.955	H1-1b
14	MP4	PIPE_2.0	0.587	68	6	0.154	68		4	14916.096	32130	1871.625	1871.625	2.471	H1-1b
15	MP2	PIPE_2.0	0.569	68	10	0.157	68		8	14916.096	32130	1871.625	1871.625	2.642	H1-1b
16	M46	L2.5x2.5x3	0.423	9.071	2	0.132	0	z	2	27928.049	29192.4	872.574	1971.83	1.5	H2-1
17	M47	L2.5x2.5x3	0.417	9.071	10	0.132	0	z	10	27928.049	29192.4	872.574	1971.83	1.5	H2-1
18	M48	L2.5x2.5x3	0.407	9.071	6	0.131	0	z	6	27928.049	29192.4	872.574	1971.83	1.5	H2-1
19	M45	PIPE_2.0	0.325	7.25	9	0.271	3.625		7	4678.524	32130	1871.625	1871.625	2.223	H1-1b
20	M44	PIPE_2.0	0.324	166.75	7	0.274	3.625		10	4678.524	32130	1871.625	1871.625	2.062	H1-1b
21	M43	PIPE_2.0	0.313	166.75	11	0.272	3.625		2	4678.524	32130	1871.625	1871.625	2.059	H1-1b
22	M5	PIPE_3.0	0.195	7.214	10	0.13	7.214		5	21477.544	65205	5748.75	5748.75	2.158	H1-1b
23	M6	PIPE_3.0	0.195	7.214	2	0.127	7.214		9	21477.544	65205	5748.75	5748.75	2.169	H1-1b
24	M4	PIPE_3.0	0.189	7.214	6	0.128	7.214		13	21477.544	65205	5748.75	5748.75	2.161	H1-1b
25	M28	L2x2x2	0.168	22.981	27	0.013	6.224	z	37	7686.173	15908.4	402.563	701.61	1.24	H2-1
26	M25	L2x2x2	0.168	22.981	27	0.012	6.224	y	37	7686.173	15908.4	396.008	701.774	1.241	H2-1
27	M40	L2x2x2	0.167	22.981	34	0.013	6.224	z	33	7686.173	15908.4	402.563	700.362	1.233	H2-1
28	M34	L2x2x2	0.161	22.981	30	0.013	6.224	z	29	7686.173	15908.4	402.563	702.415	1.245	H2-1
29	M37	L2x2x2	0.161	22.981	36	0.013	6.224	y	33	7686.173	15908.4	396.008	702.733	1.247	H2-1
30	M31	L2x2x2	0.159	22.981	32	0.013	6.224	y	29	7686.173	15908.4	396.008	702.906	1.248	H2-1

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

FROM ZERO TO INFINIGY

the solutions are endless

Bolt Calculation Tool, V1.4

PROJECT DATA	
Site Name:	Killingly Ross road
Site Number:	857013
Job Code:	1039-Z0001-B
Connection Description:	Standoff to Collar mount

APPLIED LOADS		
Bolt Tension:	5785.74	lbs
Bolt Shear:	789.70	lbs

BOLT PROPERTIES		
Bolt Type:	Bolt	-
Bolt Diameter:	0.625	in
Bolt Grade:	A325	-
# of Bolts:	4	-
Threads Excluded?	No	-

BOLT CHECK		
Tensile Strength	20340.15	
Shear Strength	13805.83	
Tensile Usage	28.4%	
Shear Usage	5.7%	
Interaction Check	0.08	***≤1.05***
Result	Pass	

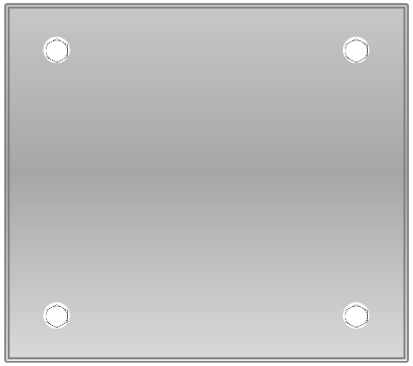

Exhibit F

Power Density/RF Emissions Report

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CTNL140B

NL140/CingularRossRd_MP
280 Ross Road
Killingly, CT 06239

June 6, 2019

Transcom Engineering Project Number: 737001-0149

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**14.71 %**

June 6, 2019

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

Emissions Analysis for Site: **CTNL140B – NL140/CingularRossRd_MP**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **280 Ross Road, Killingly, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **280 Ross Road, Killingly, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

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

Table 1: Channel Data Table

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

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APX16DWV-16DWV-S-E-ACU	110
A	2	RFS APXVAARR24_43-U-NA20	110
B	1	RFS APX16DWV-16DWV-S-E-ACU	110
B	2	RFS APXVAARR24_43-U-NA20	110
C	1	RFS APX16DWV-16DWV-S-E-ACU	110
C	2	RFS APXVAARR24_43-U-NA20	110

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz (PCS)** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **1.65 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **160 feet** of **1-5/8”** coax.

RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	4,656.27	1.55
Antenna A2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.93
						Sector A Composite MPE%	**3.48**
Antenna B1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	4,656.27	1.55
Antenna B2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.93
						Sector B Composite MPE%	**3.48**
Antenna C1	RFS APX16DWV-16DWV-S-E-ACU	1900 MHz (PCS)	15.9	5	175	4,656.27	1.55
Antenna C2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.93
						Sector C Composite MPE%	**3.48**

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**3.48 %**
SmartSky	0.04 %
AT&T	2.69 %
MetroPCS	0.68 %
Verizon Wireless	7.82 %
Site Total MPE %:	**14.71 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	3.48 %
T-MOBILE Sector B Total:	3.48 %
T-MOBILE Sector C Total:	3.48 %
Site Total:	14.71 %

Table 5: Site MPE Summary

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	4	1,064.29	110	14.15	1900 MHz (PCS)	1000	1.42%
T-Mobile 1900 MHz (PCS) GSM	1	399.11	110	1.33	1900 MHz (PCS)	1000	0.13%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	110	5.24	600 MHz	400	1.31%
T-Mobile 700 MHz LTE	2	432.54	110	2.88	700 MHz	467	0.62%
						Total:	**3.48%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	3.48 %
Sector B:	3.48 %
Sector C:	3.48 %
T-MOBILE Maximum Total (per sector):	3.48 %
Site Total:	14.71 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **14.71 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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