STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

October 11, 2022

Kenneth C. Baldwin, Esq.
Robinson & Cole
280 Trumbull Street
Hartford, CT 06103-3597
kbaldwin@rc.com

RE: **PETITION NO. 1470** – Cellco Partnership d/b/a Verizon Wireless, New Cingular Wireless PCS, LLC and T-Mobile Northeast, LLC joint declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed installation of a temporary telecommunications facility and associated equipment located at Sacred Heart University, 5151 Park Avenue, Fairfield, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) is in receipt of your correspondence dated October 6, 2022 regarding a change to the above-referenced declaratory ruling that was issued by the Council on December 20, 2021.

Pursuant to Condition No. 1 of the Council's December 20, 2021 Declaratory Ruling, your request to replace two antennas and install three remote radio heads on the existing Alpha Sector antenna mounts is hereby approved.

This approval applies only to the project changes described in your October 6, 2022 correspondence.

Please be advised that deviations from the standards established by the Council in the Declaratory Ruling are enforceable under the provisions of Connecticut General Statutes §16-50u.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

c: The Honorable Brenda L. Kupchick, First Selectwoman, Town of Fairfield (firstselectmanffld@fairfieldct.org)
Service List, dated December 3, 2021

Robinson+Cole

KENNETH C. BALDWIN

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Also admitted in Massachusetts
and New York

October 6, 2022

Via Electronic Mail

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

Re: **Petition No. 1470 – Petition for a Declaratory Ruling on the Need to Obtain a Siting Council Certificate for the Installation of a Temporary Telecommunications Facility at Sacred Heart University (SHU), 5151 Park Avenue, Fairfield, Connecticut**

Dear Attorney Bachman:

As you are aware, the Council approved Petition No. 1470 on December 16, 2021, subject to conditions including, but not limited to, the delegation of "any project changes" to Council staff.

The purpose of this letter is to notify you and the Council that the Cellco intends to remove two (2) existing antennas from its Alpha Sector and install two (2) MX10FIT645 antennas on the existing antenna mounts. Cellco also intends to install three (3) additional remote radio heads behind its antennas.

In support of these project changes, attached please find the following:

- Updated Stamped and Signed Mount Analysis
- Updated Stamped and Signed Structural Analysis
- Revised C-Squared Calculated Radio Frequency Exposure Report

We respectfully request staff approval for these project changes. If you have any questions or need any additional information about this change, please contact me.

Sincerely,

Kenneth C. Baldwin

Attachments
Copy to:
Anthony R. Befera
Brian Ross
Michael Humphreys

October 4, 2022

verizon

20 Alexander Drive, 2nd Floor
Wallington, CT 06492

RE:		
	Site Name:	PLATTSVILLE RELO CT
	TEP Number:	0316498
	Site Address:	5151 Park Avenue Fairfield, CT 06825

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by Verizon to perform a mount analysis on the existing Verizon antenna/RRH mount to determine their capability of supporting the following loading:

- **(4) MX10FIT665-CC Antennas (70.9"x12.2"x7.5" – Wt. = 53 lbs. /each)**
- **(2) MX10FIT645-XX Antennas (70.9"x15.0"x7.4" – Wt. = 53 lbs. /each)**
- **(4) RF4439D-25A RRH's (15.0"x15.0"x10.0" – Wt. = 98 lbs. /each)**
- **(4) RF4440D-13A RRH's (15.0"x15.0"x8.1" – Wt. = 82 lbs. /each)**
- **(4) RT4401-48A RRH's (13.9"x8.6"x4.2" – Wt. = 19 lbs. /each)**
- **(1) OVP Box (28.9"x15.7"x10.3" – Wt. = 32 lbs. /each)**

**Proposed equipment shown in bold*

Mount fabrication drawings prepared by SitePro1 P/N SNP12-3XX dated January 7, 2015 and Support Rail fabrications drawings by SitePro1 P/N HRA-12 dated July 7, 2016 were used to perform this analysis.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and the International Building Code 2015 with 2018 Connecticut State Building Code.
- TEP NE considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix N of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.14 in was used for this analysis.
- TEP NE considers this site to be exposure category C; tower is located near large, flat, open, terrain/grasslands.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.215 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.055.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 2.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing monopole with ring mounts and threaded rods. TEP NE considers the threaded rods to be the governing connection member.

Based on our evaluation, we have determined that the existing mount **IS CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	56	LC3	67%	**PASS**

Reference Documents:

- Mount fabrication drawings prepared by SitePro1 P/N SNP12-3XX dated January 7, 2015.
- Support Rail Kit drawings prepared by SitePro1 P/N HRA-12 dated July 7, 2016.

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to Verizon's mount must be tightened and re-plumbed prior to the installation of new appurtenances.
6. TEP NE performed a localized analysis on the mount itself and not on the supporting tower structure.

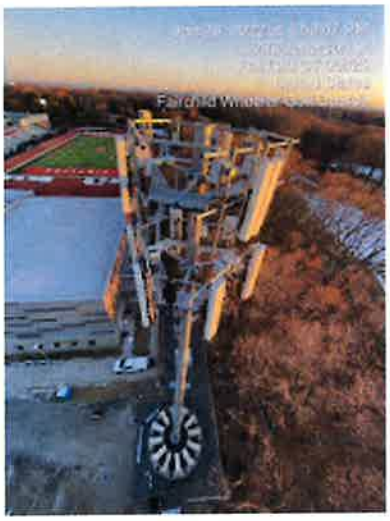
Please feel free to contact our office should you have any questions.

Respectfully Submitted,
TEP Northeast

Michael Cabral
Director

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:



TEP NORTHEAST

Wind & Ice Calculations

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC **Checked By:** MSC

TEP NORTHEAST

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\,(z/z_g)^{2/\alpha}$

z=	121.6	(ft)
z_g=	900	(ft)
α=	9.5	
K_z=	**1.319**	

$K_{zmin} \le K_z \le 2.01$

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}=	**1**	
K_h=	1	
K_c=	1.0	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
z=	121.6	
z_s=	285	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

(If Category 1 then K_{zt}=1.0)

Category= 1

2.6.10 Design Ice Thickness

Max Ice Thickness = t_i = 1.00 in
Importance Factor = I= 1.00 (from Table 2-3)
K_{iz} = 1.14 (from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.14 in

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC Checked By: MSC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	125.4	G_h=	0.85
2.6.9.2 Guyed Masts		G_h=	0.85
2.6.9.3 Pole Structures		G_h=	1.1
2.6.9 Appurtenances		G_h=	1.0

2.6.9.4 Structures Supported on Other Structures
(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

$F = q_z * G_h * (EPA)_A$

$q_z = 0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

q_z=	49.60	K_z=	1.319	(from 2.6.5.2)
$q_{z\,(ice)}$=	7.94	K_{zt}=	1.0	(from 2.6.6.2.1)
$q_{z\,(30)}$=	2.86	K_s=	1.0	(from 2.6.7)
		K_e=	0.99	(from 2.6.8)
		K_d=	0.95	(from Table 2-2)
		V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC Checked By: MSC

Delermine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance.

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = 1.14 in **Angle =** 0 (deg) **Equivalent Angle =** 180 (deg)

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	5.81	1.35	401	79	23
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	4.73	1.30	476	91	27
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.00	1.20	93	20	5
RF4439D-25A RRH (Shielded)	15.0	0.0	10.0	0.00	0.00	1.20	0	3	0
RF4440D-13A RRH	15.0	15.0	8.1	1.56	1.00	1.20	93	20	5
RT4401-48A RRH	13.9	8.6	4.2	0.83	1.62	1.20	49	12	3
RT4401-48A RRH (Shielded)	13.9	0.0	4.2	0.00	0.00	1.20	0	2	0
OVP Box	28.9	15.7	10.3	3.15	1.84	1.20	188	37	11
2" Pipe	2.4	12.0		0.20	0.20	1.20	12		
3-1/2" Pipe	4.0	12.0		0.33	0.33	1.20	20		
L4x4 Angle	4.0	12.0		0.33	0.33	2.00	33		
HSS 4x4	4.0	12.0		0.33	0.33	1.25	21		

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.14	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	401	271	369
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	476	269	424
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	93	62	85
RF4439D-25A RRH (Shielded)	15.0	7.5	10.0	0.78	1.04	2.00	1.50	1.20	1.20	47	62	50
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	93	50	82
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	49	25	48
RT4401-48A RRH (Shielded)	13.9	4.3	4.2	0.42	0.41	3.23	3.31	1.23	1.24	25	25	25
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	188	124	172

WIND LOADS WITH ICE:

MX10FIT665-CC Antennas	73.2	14.5	9.8	7.36	4.97	5.05	7.48	1.31	1.42	77	56	71
MX10FIT645-XX Antennas	73.2	17.3	9.7	8.78	4.92	4.24	7.56	1.28	1.42	89	55	81
RF4439D-25A RRH	17.3	17.3	12.3	2.07	1.47	1.00	1.41	1.20	1.20	20	14	18
RF4439D-25A RRH (Shielded)	17.3	8.6	12.3	1.04	1.47	2.00	1.41	1.20	1.20	10	14	11
RF4440D-13A RRH	17.3	17.3	10.4	2.07	1.25	1.00	1.66	1.20	1.20	20	12	18
RT4401-48A RRH	16.2	10.9	6.5	1.22	0.73	1.49	2.50	1.20	1.20	12	7	10
RT4401-48A RRH (Shielded)	16.2	5.4	6.5	0.61	0.73	2.97	2.50	1.22	1.20	6	7	6
OVP Box	31.2	18.0	12.6	3.89	2.72	1.73	2.48	1.20	1.20	37	26	34

WIND LOADS AT 30 MPH:

MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	23	16	21
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	27	15	24
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	5	4	5
RF4439D-25A RRH (Shielded)	15.0	7.5	10.0	0.78	1.04	2.00	1.50	1.20	1.20	3	4	3
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	5	3	5
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	3	1	2
RT4401-48A RRH (Shielded)	13.9	4.3	4.2	0.42	0.41	3.23	3.31	1.23	1.24	1	1	1
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	11	7	10

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.14 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	401	271	304
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	476	269	320
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	93	62	70
RF4439D-25A RRH (Shielded)	15.0	11.3	10.0	1.17	1.04	1.33	1.50	1.20	1.20	70	62	64
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	93	50	61
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	49	25	31
RT4401-48A RRH (Shielded)	13.9	6.5	4.2	0.62	0.41	2.16	3.31	1.20	1.24	37	25	28
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	186	124	140

WIND LOADS WITH ICE:

MX10FIT665-CC Antennas	73.2	14.5	9.8	7.36	4.97	5.05	7.48	1.31	1.42	77	56	61
MX10FIT645-XX Antennas	73.2	17.3	9.7	8.78	4.92	4.24	7.56	1.28	1.42	89	55	64
RF4439D-25A RRH	17.3	17.3	12.3	2.07	1.47	1.00	1.41	1.20	1.20	20	14	15
RF4439D-25A RRH (Shielded)	17.3	13.0	12.3	1.55	1.47	1.33	1.41	1.20	1.20	15	14	14
RF4440D-13A RRH	17.3	17.3	10.4	2.07	1.25	1.00	1.66	1.20	1.20	20	12	14
RT4401-48A RRH	16.2	10.9	6.5	1.22	0.73	1.49	2.50	1.20	1.20	12	7	8
RT4401-48A RRH (Shielded)	16.2	8.2	6.5	0.92	0.73	1.98	2.50	1.20	1.20	9	7	7
OVP Box	31.2	18.0	12.6	3.89	2.72	1.73	2.48	1.20	1.20	37	26	29

WIND LOADS AT 30 MPH:

MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	23	16	18
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	27	15	18
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	5	4	4
RF4439D-25A RRH (Shielded)	15.0	11.3	10.0	1.17	1.04	1.33	1.50	1.20	1.20	4	4	4
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	5	3	4
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	3	1	2
RT4401-48A RRH (Shielded)	13.9	6.5	4.2	0.62	0.41	2.16	3.31	1.20	1.24	2	1	2
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	11	7	8

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC Checked By: MSC

WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.14 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	401	271	271
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	476	269	269
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	93	62	62
RF4439D-25A RRH (Shielded)	15.0	0.0	10.0	0.00	1.04	0.00	1.50	1.20	1.20	0	62	62
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	93	50	50
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	49	25	25
RT4401-48A RRH (Shielded)	13.9	0.0	4.2	0.00	0.41	0.00	3.31	1.20	1.24	0	25	25
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	188	124	124

WIND LOADS WITH ICE:

MX10FIT665-CC Antennas	73.2	14.5	9.8	7.36	4.97	5.05	7.48	1.31	1.42	77	56	56
MX10FIT645-XX Antennas	73.2	17.3	9.7	8.78	4.92	4.24	7.56	1.28	1.42	89	55	55
RF4439D-25A RRH	17.3	17.3	12.3	2.07	1.47	1.00	1.41	1.20	1.20	20	14	14
RF4439D-25A RRH (Shielded)	17.3	2.3	12.3	0.27	1.47	7.58	1.41	1.42	1.20	3	14	14
RF4440D-13A RRH	17.3	17.3	10.4	2.07	1.25	1.00	1.66	1.20	1.20	20	12	12
RT4401-48A RRH	16.2	10.9	6.5	1.22	0.73	1.49	2.50	1.20	1.20	12	7	7
RT4401-48A RRH (Shielded)	16.2	2.3	6.5	0.26	0.73	7.10	2.50	1.40	1.20	3	7	7
OVP Box	31.2	18.0	12.6	3.89	2.72	1.73	2.48	1.20	1.20	37	26	26

WIND LOADS AT 30 MPH:

MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	23	16	16
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	27	15	15
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	5	4	4
RF4439D-25A RRH (Shielded)	15.0	0.0	10.0	0.00	1.04	0.00	1.50	1.20	1.20	0	4	4
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	5	3	3
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	3	1	1
RT4401-48A RRH (Shielded)	13.9	0.0	4.2	0.00	0.41	0.00	3.31	1.20	1.24	0	1	1
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	11	7	7

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC Checked By: MSC

WIND LOADS

Angle = 120 (deg)

Ice Thickness = 1.14 in.

Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	401	271	304
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	476	269	320
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	98	62	70
RF4439D-25A RRH (Shielded)	15.0	11.3	10.0	1.17	1.04	1.33	1.50	1.20	1.20	70	62	64
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	93	50	61
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	49	25	31
RT4401-48A RRH (Shielded)	13.9	6.5	4.2	0.62	0.41	2.16	3.31	1.20	1.24	37	25	28
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	188	124	140

WIND LOADS WITH ICE:

MX10FIT665-CC Antennas	73.2	14.5	9.8	7.36	4.97	5.05	7.48	1.31	1.42	77	56	61
MX10FIT645-XX Antennas	73.2	17.3	9.7	8.78	4.92	4.24	7.56	1.28	1.42	89	55	64
RF4439D-25A RRH	17.3	17.3	12.3	2.07	1.47	1.00	1.41	1.20	1.20	20	14	15
RF4439D-25A RRH (Shielded)	17.3	13.0	12.3	1.55	1.47	1.33	1.41	1.20	1.20	15	14	14
RF4440D-13A RRH	17.3	17.3	10.4	2.07	1.25	1.00	1.66	1.20	1.20	20	12	14
RT4401-48A RRH	16.2	10.9	6.5	1.22	0.73	1.49	2.50	1.20	1.20	12	7	8
RT4401-48A RRH (Shielded)	16.2	8.2	6.5	0.92	0.73	1.98	2.50	1.20	1.20	9	7	7
OVP Box	31.2	18.0	12.6	3.89	2.72	1.73	2.48	1.20	1.20	37	26	29

WIND LOADS AT 30 MPH:

MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	23	16	18
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	27	15	18
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	5	4	4
RF4439D-25A RRH (Shielded)	15.0	11.3	10.0	1.17	1.04	1.33	1.50	1.20	1.20	4	4	4
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	5	3	4
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	3	1	2
RT4401-48A RRH (Shielded)	13.9	6.5	4.2	0.62	0.41	2.16	3.31	1.20	1.24	2	1	2
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	11	7	8

Date: 10/5/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle = 150 (deg)

Ice Thickness = 1.14 in.

Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	401	271	369
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	476	269	424
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	98	62	85
RF4439D-25A RRH (Shielded)	15.0	7.5	10.0	0.78	1.04	2.00	1.50	1.20	1.20	47	62	50
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	93	50	82
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	49	25	43
RT4401-48A RRH (Shielded)	13.9	4.3	4.2	0.42	0.41	3.23	3.31	1.23	1.24	25	25	25
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	186	124	172

WIND LOADS WITH ICE:

MX10FIT665-CC Antennas	73.2	14.5	9.8	7.36	4.97	5.05	7.48	1.31	1.42	77	56	71
MX10FIT645-XX Antennas	73.2	17.3	9.7	8.78	4.92	4.24	7.56	1.28	1.42	89	55	81
RF4439D-25A RRH	17.3	17.3	12.3	2.07	1.47	1.00	1.41	1.20	1.20	20	14	18
RF4439D-25A RRH (Shielded)	17.3	8.6	12.3	1.04	1.47	2.00	1.41	1.20	1.20	10	14	11
RF4440D-13A RRH	17.3	17.3	10.4	2.07	1.25	1.00	1.66	1.20	1.20	20	12	18
RT4401-48A RRH	16.2	10.9	6.5	1.22	0.73	1.49	2.50	1.20	1.20	12	7	10
RT4401-48A RRH (Shielded)	16.2	5.4	6.5	0.61	0.73	2.97	2.50	1.22	1.20	6	7	6
OVP Box	31.2	18.0	12.6	3.89	2.72	1.73	2.48	1.20	1.20	37	26	34

WIND LOADS AT 30 MPH:

MX10FIT665-CC Antennas	70.9	12.2	7.5	6.01	3.69	5.81	9.45	1.35	1.48	23	16	21
MX10FIT645-XX Antennas	70.9	15.0	7.4	7.39	3.64	4.73	9.58	1.30	1.49	27	15	24
RF4439D-25A RRH	15.0	15.0	10.0	1.56	1.04	1.00	1.50	1.20	1.20	5	4	5
RF4439D-25A RRH (Shielded)	15.0	7.5	10.0	0.78	1.04	2.00	1.50	1.20	1.20	3	4	3
RF4440D-13A RRH	15.0	15.0	8.1	1.56	0.84	1.00	1.85	1.20	1.20	5	3	5
RT4401-48A RRH	13.9	8.6	4.2	0.83	0.41	1.62	3.31	1.20	1.24	3	1	2
RT4401-48A RRH (Shielded)	13.9	4.3	4.2	0.42	0.41	3.23	3.31	1.23	1.24	1	1	1
OVP Box	28.9	15.7	10.3	3.15	2.07	1.84	2.81	1.20	1.21	11	7	10

Date: 9/30/2022
Project Name: PLATTSVILLE RELO CT
Designed By: JC **Checked By:** MSC

TEP NORTHEAST

ICE WEIGHT CALCULATIONS

Thickness of ice:	1.14	in.
Density of ice:	56	pcf

MX10FIT665-CC Antenna

Weight of ice based on total radial SF area:

Height (in):	70.9	
Width (in):	12.2	
Depth (in):	7.5	
Total weight of ice on object:		127 lbs
Weight of object:	53.0	lbs
Combined weight of ice and object:		180 lbs

MX10FIT645-XX Antenna

Weight of ice based on total radial SF area:

Height (in):	70.9	
Width (in):	15.0	
Depth (in):	7.4	
Total weight of ice on object:		147 lbs
Weight of object:	53.0	lbs
Combined weight of ice and object:		200 lbs

RF4439D-25A RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	15.0	
Depth (in):	10.0	
Total weight of ice on object:		33 lbs
Weight of object:	98.0	lbs
Combined weight of ice and object:		131 lbs

RF4440D-13A RRH

Weight of ice based on total radial SF area:

Height (in):	15.0	
Width (in):	15.0	
Depth (in):	8.1	
Total weight of ice on object:		32 lbs
Weight of object:	82.0	lbs
Combined weight of ice and object:		114 lbs

RT4401-48A RRH

Weight of ice based on total radial SF area:

Height (in):	13.9	
Width (in):	8.6	
Depth (in):	4.2	
Total weight of ice on object:		17 lbs
Weight of object:	19.0	lbs
Combined weight of ice and object:		36 lbs

OVP Box

Weight of ice based on total radial SF area:

Height (in):	28.9	
Width (in):	15.7	
Depth (in):	10.3	
Total weight of ice on object:		67 lbs
Weight of object:	32.0	lbs
Combined weight of ice and object:		99 lbs

2" pipe

Per foot weight of ice:

diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

3-1/2" Pipe

Per foot weight of ice:

diameter (in):	4	
Per foot weight of ice on object:		7 plf

HSS 4x4

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		9 plf

L 4x4 Angles

Weight of ice based on total radial SF area:

Height (in):	4	
Width (in):	4	
Per foot weight of ice on object:		9 plf

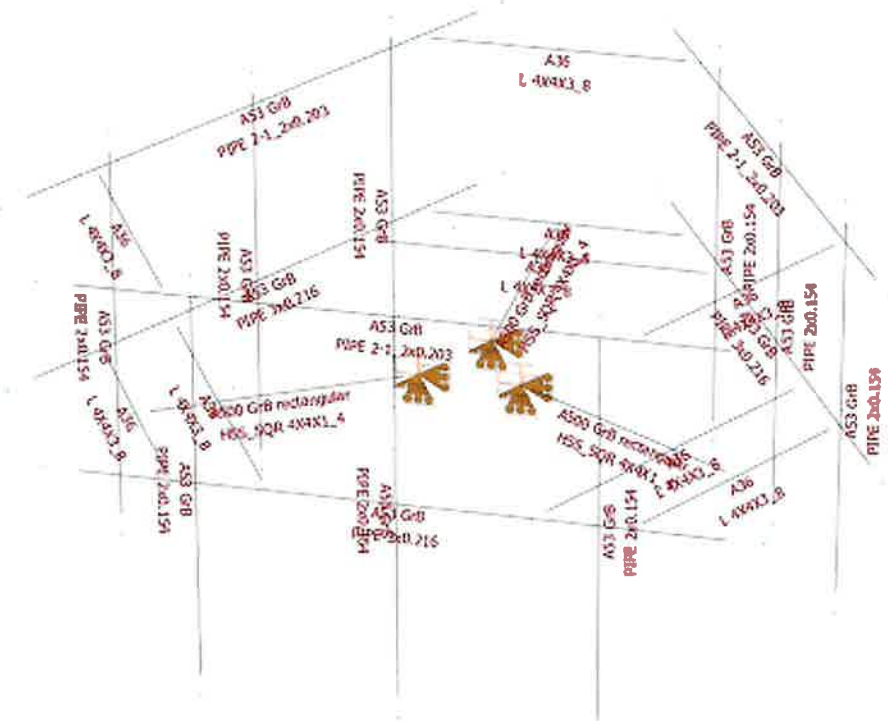
TEP NORTHEAST

Mount Calculations
(Existing Conditions)

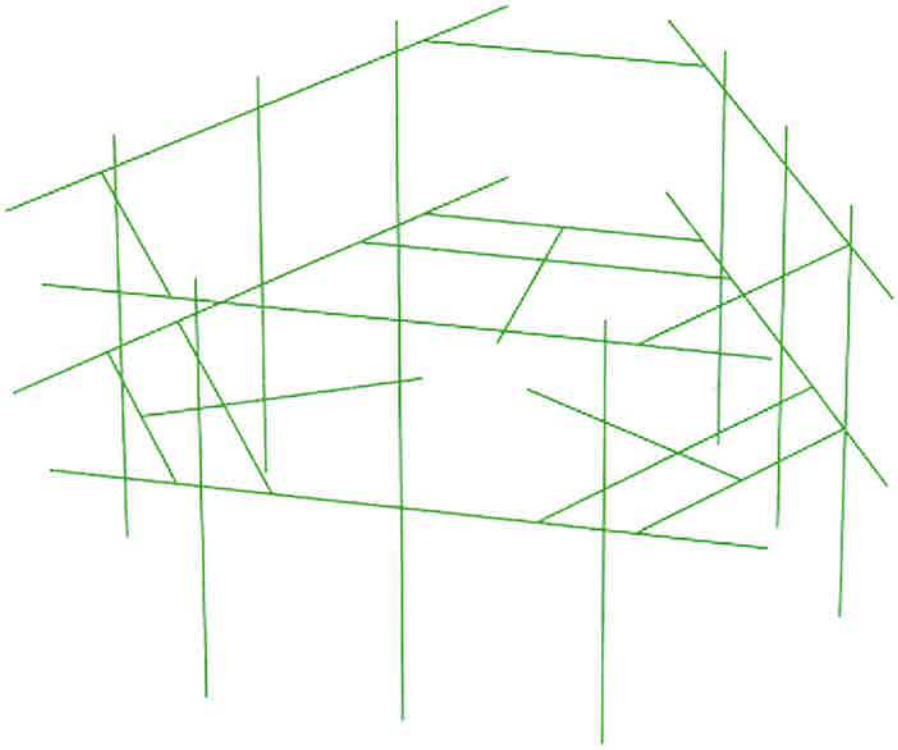

Y
X
Z

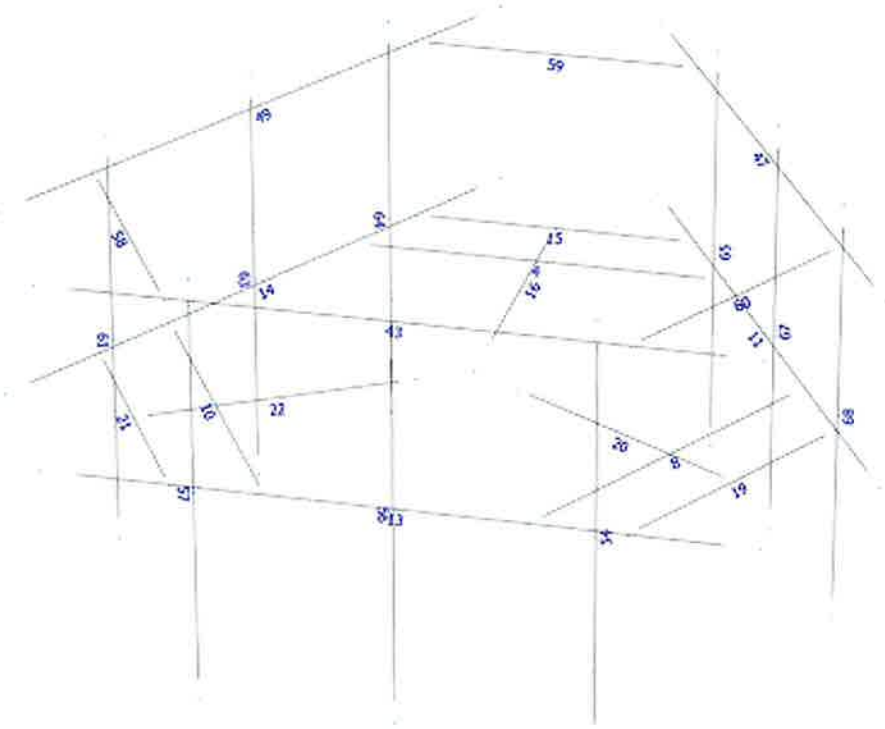
RAM Elements
CONNECT Edition

Current Date: 10/5/2022 12:58 PM
Units system: English



Design status
- Not designed
- Error on design
- Design O.K.
- With warnings

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Y
X
Z

RAM Elements
CONNECT Edition

Current Date: 10/5/2022 3:03 PM
Units system: English

Load data

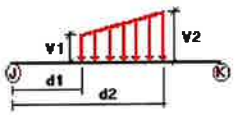
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
DL	Dead Load	No	DL
W0	Wind Load 0/60/120 deg	No	WIND
W30	Wind Load 30/90/150 deg	No	WIND
Di	Ice Load	No	LL
Wi0	Ice Wind Load 0/60/120 deg	No	WIND
Wi30	Ice Wind Load 30/90/150 deg	No	WIND
WL0	WL 30 mph 0/60/120 deg	No	WIND
WL30	WL 30 mph 30/90/150 deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL

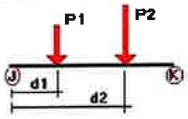
Distributed force on members



Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
DL	4	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.01	0.00	0.00	No	0.00	No
	10	y	-0.01	0.00	0.00	No	0.00	No
	15	y	-0.01	0.00	0.00	No	0.00	No
	19	y	-0.01	0.00	0.00	No	0.00	No
	21	y	-0.01	0.00	0.00	No	0.00	No
W0	4	z	-0.033	0.00	0.00	No	0.00	No
	8	z	-0.033	0.00	0.00	No	0.00	No
	10	z	-0.033	0.00	0.00	No	0.00	No
	11	z	-0.02	0.00	0.00	No	0.00	No
	13	z	-0.02	0.00	0.00	No	0.00	No
	14	z	-0.02	0.00	0.00	No	0.00	No
	15	z	-0.033	0.00	0.00	No	0.00	No
	19	z	-0.033	0.00	0.00	No	0.00	No
	20	z	-0.021	0.00	0.00	No	0.00	No
	21	z	-0.033	0.00	0.00	No	0.00	No
	22	z	-0.021	0.00	0.00	No	0.00	No
	43	z	-0.02	0.00	0.00	No	0.00	No
	47	z	-0.02	0.00	0.00	No	0.00	No
	49	z	-0.02	0.00	0.00	No	0.00	No
	54	z	-0.012	0.00	0.00	No	0.00	No
	56	z	-0.012	-0.012	0.00	No	1.50	No
		z	-0.012	-0.012	6.50	No	8.00	No
	57	z	-0.012	0.00	0.00	No	0.00	No

	58	z	-0.033	0.00	0.00	No	0.00	No
	59	z	-0.033	0.00	0.00	No	0.00	No
	60	z	-0.033	0.00	0.00	No	0.00	No
	61	z	-0.012	0.00	0.00	No	0.00	No
	63	z	-0.012	0.00	0.00	No	0.00	No
	64	z	-0.012	0.00	0.00	No	0.00	No
	65	z	-0.012	0.00	0.00	No	0.00	No
	67	z	-0.012	0.00	0.00	No	0.00	No
	68	z	-0.012	0.00	0.00	No	0.00	No
W30	8	x	-0.033	0.00	0.00	No	0.00	No
	10	x	-0.033	0.00	0.00	No	0.00	No
	11	x	-0.02	0.00	0.00	No	0.00	No
	14	x	-0.02	0.00	0.00	No	0.00	No
	16	x	-0.021	0.00	0.00	No	0.00	No
	19	x	-0.033	0.00	0.00	No	0.00	No
	20	x	-0.021	0.00	0.00	No	0.00	No
	21	x	-0.033	0.00	0.00	No	0.00	No
	22	x	-0.021	0.00	0.00	No	0.00	No
	47	x	-0.02	0.00	0.00	No	0.00	No
	49	x	-0.02	0.00	0.00	No	0.00	No
	54	x	-0.012	0.00	0.00	No	0.00	No
	56	x	-0.012	0.00	0.00	No	0.00	No
	57	x	-0.012	0.00	0.00	No	0.00	No
	58	x	-0.033	0.00	0.00	No	0.00	No
	60	x	-0.033	0.00	0.00	No	0.00	No
	61	x	-0.012	0.00	0.00	No	0.00	No
	63	x	-0.012	0.00	0.00	No	0.00	No
	64	x	-0.012	0.00	0.00	No	0.00	No
	65	x	-0.012	0.00	0.00	No	0.00	No
	67	x	-0.012	-0.012	0.00	No	1.50	No
		x	-0.012	-0.012	6.50	No	8.00	No
	68	x	-0.012	0.00	0.00	No	0.00	No
Di	4	y	-0.009	0.00	0.00	No	0.00	No
	8	y	-0.009	0.00	0.00	No	0.00	No
	10	y	-0.009	0.00	0.00	No	0.00	No
	11	y	-0.007	0.00	0.00	No	0.00	No
	13	y	-0.007	0.00	0.00	No	0.00	No
	14	y	-0.007	0.00	0.00	No	0.00	No
	15	y	-0.009	0.00	0.00	No	0.00	No
	16	y	-0.009	0.00	0.00	No	0.00	No
	19	y	-0.009	0.00	0.00	No	0.00	No
	20	y	-0.009	0.00	0.00	No	0.00	No
	21	y	-0.009	0.00	0.00	No	0.00	No
	22	y	-0.009	0.00	0.00	No	0.00	No
	43	y	-0.007	0.00	0.00	No	0.00	No
	47	y	-0.007	0.00	0.00	No	0.00	No
	49	y	-0.007	0.00	0.00	No	0.00	No
	54	y	-0.005	0.00	0.00	No	0.00	No
	56	y	-0.005	0.00	0.00	No	0.00	No
	57	y	-0.005	0.00	0.00	No	0.00	No
	58	y	-0.009	0.00	0.00	No	0.00	No
	59	y	-0.009	0.00	0.00	No	0.00	No
	60	y	-0.009	0.00	0.00	No	0.00	No
	61	y	-0.005	0.00	0.00	No	0.00	No
	63	y	-0.005	0.00	0.00	No	0.00	No
	64	y	-0.005	0.00	0.00	No	0.00	No
	65	y	-0.005	0.00	0.00	No	0.00	No
	67	y	-0.005	0.00	0.00	No	0.00	No
	68	y	-0.005	0.00	0.00	No	0.00	No

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
DL	54	y	-0.032	2.50	No
		y	-0.082	5.00	No
	56	y	-0.103	1.50	No
		y	-0.103	6.50	No
		y	-0.098	2.50	No
		y	-0.019	5.00	No
	61	y	-0.082	2.50	No
	63	y	-0.103	1.50	No
		y	-0.103	6.50	No
		y	-0.098	2.50	No
		y	-0.019	5.00	No
	65	y	-0.082	2.50	No
	67	y	-0.103	1.50	No
		y	-0.103	6.50	No
		y	-0.098	2.50	No
		y	-0.019	5.00	No
W0	54	z	-0.188	2.50	No
		z	-0.093	5.00	No
	56	z	-0.476	1.50	No
		z	-0.476	6.50	No
	61	z	-0.061	2.50	No
	63	z	-0.304	1.50	No
		z	-0.304	6.50	No
		z	-0.064	2.50	No
		z	-0.028	5.00	No
	65	z	-0.061	2.50	No
	67	z	-0.304	1.50	No
		z	-0.304	6.50	No
		z	-0.064	2.50	No
		z	-0.028	5.00	No
W30	54	x	-0.124	2.50	No
		x	-0.05	5.00	No
	56	x	-0.269	1.50	No
		x	-0.269	6.50	No
		x	-0.062	2.50	No
		x	-0.025	5.00	No
	61	x	-0.082	2.50	No
	63	x	-0.369	1.50	No
		x	-0.369	6.50	No
		x	-0.05	2.50	No
		x	-0.025	5.00	No
	65	x	-0.082	2.50	No
	67	x	-0.369	1.50	No
		x	-0.369	6.50	No
		x	-0.05	2.50	No
		x	-0.025	5.00	No
Di	54	y	-0.067	2.50	No
		y	-0.032	5.00	No
	56	y	-0.147	1.50	No
		y	-0.147	6.50	No
		y	-0.033	2.50	No
		y	-0.017	5.00	No
	61	y	-0.032	2.50	No
	63	y	-0.127	1.50	No
		y	-0.127	6.50	No
		y	-0.033	2.50	No
		y	-0.017	5.00	No
	65	y	-0.032	2.50	No
	67	y	-0.127	1.50	No
		y	-0.127	6.50	No
		y	-0.033	2.50	No

		y	-0.017	5.00	No
Wi0	54	z	-0.037	2.50	No
		z	-0.02	5.00	No
	56	z	-0.091	1.50	No
		z	-0.091	6.50	No
		z	-0.003	2.50	No
		z	-0.002	5.00	No
	61	z	-0.014	2.50	No
	63	z	-0.061	1.50	No
		z	-0.061	6.50	No
		z	-0.014	2.50	No
		z	-0.007	5.00	No
	65	z	-0.014	2.50	No
	67	z	-0.061	1.50	No
		z	-0.061	6.50	No
		z	-0.014	2.50	No
		z	-0.007	5.00	No
Wi30	54	x	-0.026	2.50	No
		x	-0.012	5.00	No
	56	x	-0.055	1.50	No
		x	-0.055	6.50	No
		x	-0.014	2.50	No
		x	-0.007	5.00	No
	61	x	-0.018	2.50	No
	63	x	-0.071	1.50	No
		x	-0.071	6.50	No
		x	-0.011	2.50	No
		x	-0.006	5.00	No
	65	x	-0.018	2.50	No
	67	x	-0.071	1.50	No
		x	-0.071	6.50	No
		x	-0.011	2.50	No
		x	-0.006	5.00	No
WL0	54	z	-0.011	2.50	No
		z	-0.005	5.00	No
	56	z	-0.027	1.50	No
		z	-0.027	6.50	No
	61	z	-0.004	2.50	No
	63	z	-0.018	1.50	No
		z	-0.018	6.50	No
		z	-0.004	2.50	No
		z	-0.002	5.00	No
	65	z	-0.004	2.50	No
	67	z	-0.018	1.50	No
		z	-0.018	6.50	No
		z	-0.004	2.50	No
		z	-0.002	5.00	No
WL30	54	x	-0.007	2.50	No
		x	-0.003	5.00	No
	56	x	-0.015	1.50	No
		x	-0.015	6.50	No
		x	-0.004	2.50	No
		x	-0.001	5.00	No
	61	x	-0.005	2.50	No
	63	x	-0.021	1.50	No
		x	-0.021	6.50	No
		x	-0.003	2.50	No
		x	-0.001	5.00	No
	65	x	-0.005	2.50	No
	67	x	-0.021	1.50	No
		x	-0.021	6.50	No
		x	-0.003	2.50	No
		x	-0.001	5.00	No
LL1	43	y	-0.25	6.25	No
LL2	43	y	-0.25	12.50	No
LLa1	54	y	-0.50	4.00	No

LLa2	56	y	-0.50	4.00	No
LLa3	57	y	-0.50	4.00	No

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
DL	Dead Load	No	0.00	-1.00	0.00
W0	Wind Load 0/60/120 deg	No	0.00	0.00	0.00
W30	Wind Load 30/90/150 deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
Wi0	Ice Wind Load 0/60/120 deg	No	0.00	0.00	0.00
Wi30	Ice Wind Load 30/90/150 deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0/60/120 deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30/90/150 deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
DL	0.00	0.00	0.00
W0	0.00	0.00	0.00
W30	0.00	0.00	0.00
Di	0.00	0.00	0.00
Wi0	0.00	0.00	0.00
Wi30	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

RAM Elements
CONNECT Edition

Current Date: 10/5/2022 3:04 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2DL+W0
LC2=1.2DL+W30
LC3=1.2DL-W0
LC4=1.2DL-W30
LC5=0.9DL+W0
LC6=0.9DL+W30
LC7=0.9DL-W0
LC8=0.9DL-W30
LC9=1.2DL+Di+Wi0
LC10=1.2DL+Di+Wi30
LC11=1.2DL+Di-Wi0
LC12=1.2DL+Di-Wi30
LC13=1.4DL
LC14=1.2DL+1.6LL1
LC15=1.2DL+1.6LL2
LC16=1.2DL+WL0+1.6LLa1
LC17=1.2DL+WL30+1.6LLa1
LC18=1.2DL-WL0+1.6LLa1
LC19=1.2DL-WL30+1.6LLa1
LC20=1.2DL+WL0+1.6LLa2
LC21=1.2DL+WL30+1.6LLa2
LC22=1.2DL-WL0+1.6LLa2
LC23=1.2DL-WL30+1.6LLa2
LC24=1.2DL+WL0+1.6LLa3
LC25=1.2DL+WL30+1.6LLa3
LC26=1.2DL-WL0+1.6LLa3
LC27=1.2DL-WL30+1.6LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	HSS_SQR 4X4X1_4	**16**	LC12 at 100.00%	0.41	OK	Eq. H1-1b
		20	LC3 at 100.00%	**0.48**	**OK**	Eq. H1-1b
		22	LC24 at 100.00%	0.46	OK	Eq. H1-1b
	L 4X4X3_8	**4**	LC9 at 50.00%	0.51	OK	Sec. F1
		8	LC12 at 50.00%	0.54	OK	Sec. F1
		10	LC11 at 50.00%	**0.54**	**OK**	Sec. F1
		15	LC3 at 50.00%	0.25	OK	Eq. H2-1
		19	LC2 at 50.00%	0.23	OK	Eq. H2-1
		21	LC4 at 46.88%	0.21	OK	Eq. H2-1
		58	LC3 at 100.00%	0.07	OK	Eq. H2-1
		59	LC2 at 0.00%	0.07	OK	Sec. F1
		60	LC15 at 0.00%	0.11	OK	Eq. H2-1
	PIPE 2-1_2x0.203	**43**	LC15 at 78.13%	**0.26**	**OK**	Eq. H1-1b
		47	LC4 at 50.00%	0.11	OK	Eq. H1-1b
		49	LC1 at 22.92%	0.12	OK	Eq. H1-1b
	PIPE 2x0.154	**54**	LC1 at 47.92%	0.29	OK	Eq. H1-1b
		56	LC3 at 50.00%	**0.67**	**OK**	Eq. H1-1b
		57	LC1 at 47.92%	0.23	OK	Eq. H1-1b
		61	LC3 at 47.92%	0.31	OK	Eq. H1-1b
		63	LC2 at 50.00%	0.56	OK	Eq. H1-1b
		64	LC2 at 47.92%	0.24	OK	Eq. H1-1b
		65	LC2 at 47.92%	0.27	OK	Eq. H1-1b
		67	LC4 at 50.00%	0.54	OK	Eq. H1-1b
		68	LC3 at 47.92%	0.28	OK	Eq. H1-1b
	PIPE 3x0.216	**11**	LC4 at 31.25%	0.31	OK	Eq. H1-1b

13	LC3 at 68.75%	0.30	OK	Eq. H1-1b
14	LC2 at 68.75%	**0.31**	**OK**	Eq. H1-1b

RAM Elements
CONNECT Edition

Current Date: 10/5/2022 3:04 PM
Units system: English

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
56	0.9278	0.00	0.5356	0
19	0.00	0.00	-1.0713	0
60	-0.9278	0.00	0.5356	0
1	0.00	0.00	0.00	0
3	0.00	0.00	-4.6713	0
7	-3.50	0.00	-4.6713	0
8	3.50	0.00	-4.6713	0
15	4.0455	0.00	2.3357	0
17	5.7955	0.00	-0.6954	0
18	2.2955	0.00	5.3667	0
20	-4.0455	0.00	2.3357	0
22	-2.2955	0.00	5.3667	0
23	-5.7955	0.00	-0.6954	0
24	1.5225	0.00	-8.0964	0
25	7.773	0.00	2.7297	0
28	-6.2505	0.00	5.3667	0
29	6.2505	0.00	5.3667	0
30	-1.5225	0.00	-8.0964	0
31	-7.773	0.00	2.7297	0
39	-2.6525	0.00	-6.1392	0
47	2.6525	0.00	-6.1392	0
48	0.00	0.00	-6.1392	0
53	3.9905	0.00	5.3667	0
54	5.3167	0.00	3.0696	0
55	6.643	0.00	0.7725	0
57	-6.643	0.00	0.7725	0
58	-5.3167	0.00	3.0696	0
59	-3.9905	0.00	5.3667	0
63	-4.6477	0.00	-2.6834	0

64	-2.9025	0.00	-5.7062	0
65	-6.393	0.00	0.3395	0
66	-3.0757	0.00	-5.8062	0
68	-4.8209	0.00	-2.7834	0
69	-6.5662	0.00	0.2395	0
78	6.393	0.00	0.3395	0
79	6.5662	0.00	0.2395	0
81	4.6477	0.00	-2.6834	0
83	4.8209	0.00	-2.7834	0
84	2.9025	0.00	-5.7062	0
85	3.0757	0.00	-5.8062	0
86	-3.4905	0.00	5.3667	0
87	-3.4905	0.00	5.5667	0
89	0.00	0.00	5.3667	0
91	0.00	0.00	5.5667	0
92	3.4905	0.00	5.3667	0
93	3.4905	0.00	5.5667	0
94	-3.4905	3.50	5.3667	0
95	-3.4905	3.50	5.5667	0
97	0.00	3.50	5.3667	0
99	0.00	3.50	5.5667	0
100	3.4905	3.50	5.3667	0
101	3.4905	3.50	5.5667	0
102	-6.2505	3.50	5.3667	0
103	6.2505	3.50	5.3667	0
104	7.773	3.50	2.7297	0
105	6.393	3.50	0.3395	0
106	6.5662	3.50	0.2395	0
108	4.6477	3.50	-2.6834	0
110	4.8209	3.50	-2.7834	0
111	2.9025	3.50	-5.7062	0
112	3.0757	3.50	-5.8062	0
113	1.5225	3.50	-8.0964	0
114	-1.5225	3.50	-8.0964	0
115	-2.9025	3.50	-5.7062	0
116	-3.0757	3.50	-5.8062	0
118	-4.6477	3.50	-2.6834	0
120	-4.8209	3.50	-2.7834	0
121	-6.393	3.50	0.3395	0
122	-6.5662	3.50	0.2395	0
123	-7.773	3.50	2.7297	0
124	3.4905	4.00	5.5667	0
126	0.00	4.00	5.5667	0
127	-3.4905	4.00	5.5667	0
128	-3.4905	-4.00	5.5667	0
129	0.00	-4.00	5.5667	0
131	3.4905	-4.00	5.5667	0
132	-3.9905	3.50	5.3667	0
133	-6.643	3.50	0.7725	0
134	-2.6525	3.50	-6.1392	0
135	2.6525	3.50	-6.1392	0
136	6.643	3.50	0.7725	0
137	3.9905	3.50	5.3667	0
138	-3.0757	4.00	-5.8062	0
139	-4.8209	4.00	-2.7834	0
141	-6.5662	4.00	0.2395	0
142	-3.0757	-4.00	-5.8062	0
143	-4.8209	-4.00	-2.7834	0
145	-6.5662	-4.00	0.2395	0
146	6.5662	4.00	0.2395	0
148	4.8209	4.00	-2.7834	0
149	3.0757	4.00	-5.8062	0
150	6.5662	-4.00	0.2395	0
152	4.8209	-4.00	-2.7834	0
153	3.0757	-4.00	-5.8062	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
56	1	1	1	1	1	1
19	1	1	1	1	1	1
60	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
4	8	7		L 4X4X3_8	A36	0.00	0.00	0.00
8	18	17		L 4X4X3_8	A36	0.00	0.00	0.00
10	23	22		L 4X4X3_8	A36	0.00	0.00	0.00
11	25	24		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
13	28	29		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
14	30	31		PIPE 3x0.216	A53 GrB	0.00	0.00	0.00
15	47	39		L 4X4X3_8	A36	0.00	0.00	0.00
16	48	19		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
19	53	55		L 4X4X3_8	A36	0.00	0.00	0.00
20	54	56		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
21	57	59		L 4X4X3_8	A36	0.00	0.00	0.00
22	58	60		HSS_SQR 4X4X1_4	A500 GrB rectangular	0.00	0.00	0.00
43	102	103		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
47	104	113		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
49	114	123		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
54	124	131		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
56	126	129		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
57	127	128		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
58	133	132		L 4X4X3_8	A36	0.00	0.00	0.00
59	135	134		L 4X4X3_8	A36	0.00	0.00	0.00
60	137	136		L 4X4X3_8	A36	0.00	0.00	0.00
61	141	145		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
63	139	143		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
64	138	142		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
65	149	153		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
67	148	152		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
68	146	150		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
15	270.00	0	0.00	0.00	0.00
19	270.00	0	0.00	0.00	0.00
21	270.00	0	0.00	0.00	0.00
54	0.00	2	-1.00	0.00	0.00
56	0.00	2	-1.00	0.00	0.00
57	0.00	2	-1.00	0.00	0.00
58	270.00	0	0.00	0.00	0.00
59	270.00	0	0.00	0.00	0.00
60	270.00	0	0.00	0.00	0.00
61	0.00	2	-1.00	0.00	0.00
63	0.00	2	-1.00	0.00	0.00
64	0.00	2	-1.00	0.00	0.00
65	0.00	2	-1.00	0.00	0.00
67	0.00	2	-1.00	0.00	0.00
68	0.00	2	-1.00	0.00	0.00

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

PLATTSVILLE RELO CT

5151 Park Avenue
Fairfield, CT 06825

Antennas Mounted on the
Temporary Ballasted Monopole

117'-6" Temporary Ballasted Monopole

Prepared for:

verizon

118 Flanders Road
Westborough, MA 01581

Dated: September 12, 2022 (Rev. 2)
November 18, 2021 (Rev.1)
November 4, 2021

Prepared by:

HUDSON
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SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by Verizon to conduct a structural evaluation of the existing 117'-6" temporary ballasted monopole supporting the proposed Verizon's antennas located at elevation 121'-7" above the ground level that is being relocated to 5151 Park Avenue Fairfield, CT. This analysis is to confirm that the existing tower and base structure with the new location and loading is in conformance with the original tower analysis and drawings referenced below.

This report represents this office's findings, conclusions and recommendations pertaining to the support of Verizon's existing and proposed antennas listed below.

The following documents were used for our reference:

- Temporary Monopole Design Drawings prepared by Ambor Structures dated June 29, 2015.
- Non-Penetrating Foundation Drawings prepared by Ambor Structures dated July 16, 2015.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **94.9 %** - (Pole Section-L3 from EL.85.428' to EL.105.428' Controlling).

FOUNDATION SUMMARY:

Based on our evaluation, we have determined that the existing foundation **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report.

- Per the Non-Penetrating Foundation Design Drawings (6) 2 ft x 2 ft x 6 ft concrete waste blocks per sector (typ. of 12 sectors, total of 72 blocks) each weighing a minimum of 3600 lbs are required to achieve its overturning capacity of 2500 ft-kips.

HDG recommends the following prior to installation:

1. Stripping topsoil and fill to provide a minimum 2-foot-thick layer of compacted structural fill or ¾-inch crushed stone base course. Crushed stone (if used) should be separated from the fill subgrade and excavation sidewalls using a non-woven geotextile fabric, such as Mirafi 140N or equal, to prevent stone from punching into the fill subgrade.

2. Prior to placing the base course, the existing fill subgrade should be proof-rolled with multiple passes of a minimum 5-ton vibratory roller. The subgrade should be firm and unyielding. If soft or unstable areas are identified, they should be evaluated by the geotechnical engineer to evaluate suitability or to further evaluate the extent of potential over-excavation and replacement needed to achieve a stable subgrade.

3. Once the subgrade has been properly prepared, the base course layer can be placed to achieve design foundation elevation. If a well-graded structural fill is used, it should be placed in maximum 12-inch-thick loose lifts (for vibratory rollers) or 6-inch-thick loose lifts (large plate compactors) and compacted to at least 95% of the maximum dry density as determined by ASTM D 1557. Crushed stone, if used, should be placed in similar lift thicknesses, and chinked/compacted using multiple passes of a vibratory roller or large plate compactor.

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APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	4' Lightning Rod	127'-5"	**Top of Monopole**
Verizon	**(4) MX10FIT665-CC Antennas**	121'-7"	**Platform**
Verizon	**(2) MX10FIT645-XX Antennas**	121'-7"	**Platform**
Verizon	**(4) RF4439d-25A RRH's**	121'-7"	**Platform**
Verizon	**(4) RF4440d-13A RRH's**	121'-7"	**Platform**
Verizon	**(4) RT4401-48A RRH's**	121'-7"	**Platform**
Verizon	**(2) SDX1926Q-43 Diplexers**	121'-7"	**Platform**
Verizon	**(1) OVP Box**	121'-7"	**Platform**
AT&T	**(6) TPA65R-BU8DA-K Antennas**	110'	**Sector Frame**
AT&T	**(3) 4449 B5/B12 RRH's**	110'	**Sector Frame**
AT&T	**(3) B2/B66A 8843 RRH's**	110'	**Sector Frame**
AT&T	**(3) 4415 B30 RRH's**	110'	**Sector Frame**
AT&T	**(1) Squid Surge Arrestor**	110'	**Sector Frame**
T-Mobile	**(3) APXVAALL24_43-U-NA20 Antennas**	90'	**Platform**
T-Mobile	**(3) AIR6449 B41 Antennas**	90'	**Platform**
T-Mobile	**(3) 4480 B71+B85 RRH's**	90'	**Platform**
T-Mobile	**(3) 4460 B25+B66 RRH's**	90'	**Platform**

Proposed Appurtenances shown in Bold.

VERIZON PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
Verizon	**(1) 12x24 Hybrid Cables**	121'-7"	Inside Monopole

Proposed Verizon Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	29.2 %	115.428 – 125.428	PASS	
Pole Section-L2	80.1 %	105.428 – 115.428	PASS	
Pole Section-L3	**94.9 %**	85.428 – 105.428	PASS	**Controlling**
Pole Section-L4	85.1 %	46.714 – 85.428	PASS	
Pole Section-L5	78.0 %	8 – 46.714	PASS	
Anchor Rods & Base Plate	59.1 %	-	PASS	

FOUNDATION COMPARISON SUMMARY:

	Design Capacity	Proposed Loading	Pass/Fail
Overturning	2500 ft-kips	2006.9 ft-kips	PASS

Note: *HDG referenced non-penetrating foundation design drawings provided by the client and prepared by Ambor Structures dated July 16, 2015. According to design drawings the non-penetrating foundation has an overturning moment capacity of 2500 ft-kips. To achieve said capacity there is a ballast requirement of a minimum of 251,000 lbs which consists of (6) 2 ft x 2 ft x 6 ft concrete waste blocks per sector, for a total of (72) concrete waste blocks, each block should weigh a minimum of 3,600 lbs.*

HUDSON Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: Fairfield
   Ultimate Wind Speed: 125 mph (3 second gust)
   Structural Class: II
   Exposure Category: C
   Topographic Category: 1
   Nominal Ice Thickness: 1 inch

2. Approximate height above grade to proposed antennas: 121'-7"

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

2. The temporary monopole and the non-penetrating foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

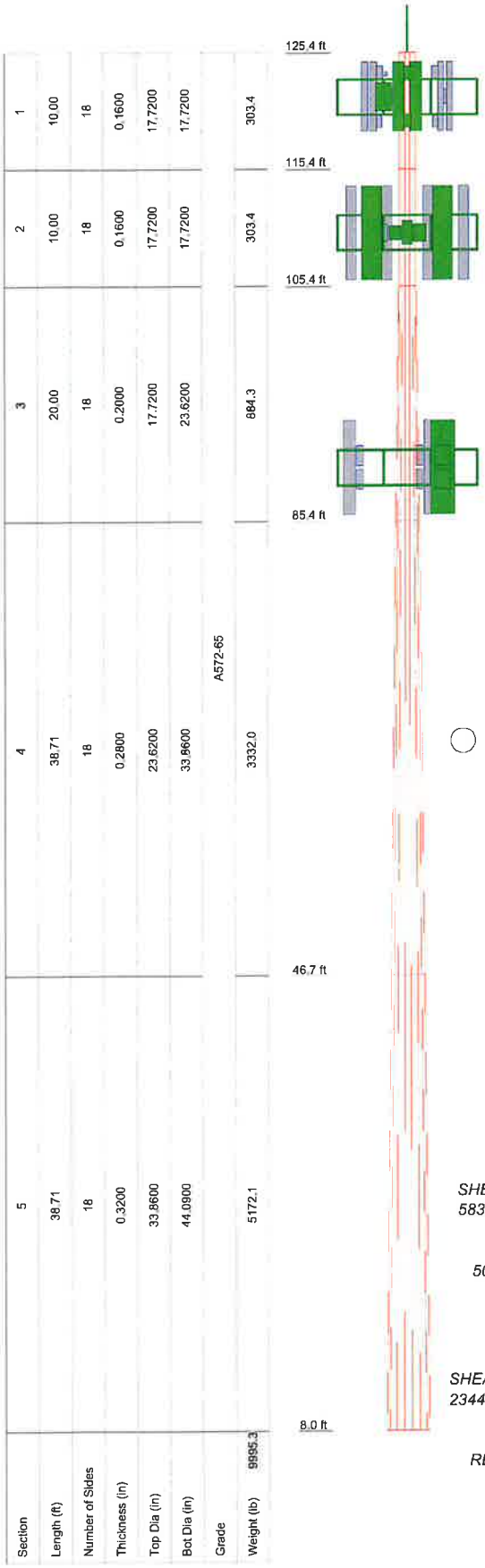
3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRHs and Junction Box be mounted on the proposed platform supported by the temporary ballasted monopole.

HUDSON
Design Group LLC

CALCULATIONS



Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	10.00	18	0.1600	17.7200	17.7200		303.4
2	10.00	18	0.1600	17.7200	17.7200		303.4
3	20.00	18	0.2000	17.7200	23.6200		884.3
4	38.71	18	0.2800	23.6200	33.8600		3332.0
5	38.71	18	0.3200	33.8600	44.0900		5172.1
							9995.3

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION
4' Lightning Rod	127.4
SNP12-XXX Tri-Comered Platform w/ Handrail (Verizon) (Verizon)	121.6
MX10FIT645-XX Antenna w/ Mounting Pipe	121.6
MX10FIT665-xx Antenna w/ Mounting Pipe	121.6
MX10FIT665-xx Antenna w/ Mounting Pipe	121.6
MX10FIT645-XX Antenna w/ Mounting Pipe	121.6
MX10FIT665-xx Antenna w/ Mounting Pipe	121.6
MX10FIT665-xx Antenna w/ Mounting Pipe	121.6
RF4439d-25A RRH	121.6
RF4439d-25A RRH	121.6
RF4439d-25A RRH	121.6
RF4439d-25A RRH	121.6
RF4440d-13A RRH	121.6
RF4440d-13A RRH	121.6
RF4440d-13A RRH	121.6
RF4440d-13A RRH	121.6
RT4401-48A RRH	121.6
RT4401-48A RRH	121.6
RT4401-48A RRH	121.6
RT4401-48A RRH	121.6
SDX1926Q-43 | E14F05P86 Diplexer	121.6
SDX1926Q-43 | E14F05P86 Diplexer	121.6
OVP w/ Mounting Pipe	121.6
(3) 12'-6" Sector Frames (ATI)	110
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	110
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	110
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	110

TYPE	ELEVATION
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	110
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	110
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	110
4449 B5/B12 RRH	110
4449 B5/B12 RRH	110
4449 B5/B12 RRH	110
B2/B66A 8843 RRH	110
B2/B66A 8843 RRH	110
B2/B66A 8843 RRH	110
4415 B30 RRH	110
4415 B30 RRH	110
4415 B30 RRH	110
Squid Surge Arrestor	110
Tri-Comered Platform w/ Handrail (T-Mobile) (T-Mobile)	90
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	90
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	90
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	90
AIR6449 B41 Antenna w/ Mounting Pipe	90
AIR6449 B41 Antenna w/ Mounting Pipe	90
AIR6449 B41 Antenna w/ Mounting Pipe	90
4480 B71+B85 RRH	90
4480 B71+B85 RRH	90
4480 B71+B85 RRH	90
4460 B25+B66 RRH	90
4460 B25+B66 RRH	90
4460 B25+B66 RRH	90

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 94.9%

ALL REACTIONS ARE FACTORED

AXIAL 44317 lb

SHEAR 5832 lb *MOMENT 506232 lb-ft*

TORQUE 123 lb-ft
50 mph WIND - 1.0000 in ICE

AXIAL 30261 lb

SHEAR 23440 lb *MOMENT 2006913 lb-ft*

TORQUE 471 lb-ft
REACTIONS - 125 mph WIND

Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845
Phone: (978)-557-5553
FAX: (978)-336-5586

Job: 117.5' Temporary Monopole			
Project: PLATTSVILLE RELO CT			
Client: VERIZON	Drawn by: LBW	App'd:	
Code: TIA-222-H	Date: 09/12/22	Scale: NTS	
Path:		Dwg No. E-1	

tnxTower	Job	Page
	117.5' Temporary Monopole	1 of 8
Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	**Project** PLATTSVILLE RELO CT	**Date** 10:44:37 09/12/22
	Client VERIZON	**Designed by** LBW

Tower Input Data

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

Tower base elevation above sea level: 8.00 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	125.43-115.43	10.00	0.00	18	17.7200	17.7200	0.1600	0.6400	A572-65 (65 ksi)
L2	115.43-105.43	10.00	0.00	18	17.7200	17.7200	0.1600	0.6400	A572-65 (65 ksi)
L3	105.43-85.43	20.00	0.00	18	17.7200	23.6200	0.2000	0.8000	A572-65 (65 ksi)
L4	85.43-46.71	38.71	0.00	18	23.6200	33.8600	0.2800	1.1200	A572-65 (65 ksi)
L5	46.71-8.00	38.71		18	33.8600	44.0900	0.3200	1.2800	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	17.9687	8.9177	347.4065	6.2338	9.0018	38.5932	695.2700	4.4597	2.8371	17.732
	17.9687	8.9177	347.4065	6.2338	9.0018	38.5932	695.2700	4.4597	2.8371	17.732
L2	17.9687	8.9177	347.4065	6.2338	9.0018	38.5932	695.2700	4.4597	2.8371	17.732
	17.9687	8.9177	347.4065	6.2338	9.0018	38.5932	695.2700	4.4597	2.8371	17.732
L3	17.9625	11.1217	431.2972	6.2196	9.0018	47.9125	863.1620	5.5619	2.7667	13.834
	23.9535	14.8670	1030.2320	8.3141	11.9990	85.8601	2061.8196	7.4349	3.8051	19.026
L4	23.9412	20.7427	1427.5948	8.2857	11.9990	118.9765	2857.0681	10.3733	3.6643	13.087
	34.3392	29.8432	4251.5225	11.9209	17.2009	247.1689	8508.6392	14.9244	5.4666	19.523
L5	34.3330	34.0659	4841.5400	11.9067	17.2009	281.4705	9689.4507	17.0362	5.3962	16.863
	44.7208	44.4563	10760.2904	15.5383	22.3977	480.4190	21534.7394	22.2324	7.1966	22.49

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 125.43-115.43				1	1	1			
L2 115.43-105.43				1	1	1			
L3 105.43-85.43				1	1	1			
L4 85.43-46.71				1	1	1			
L5 46.71-8.00				1	1	1			

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
6x24 Hybrid Fiber Cables	C	No	No	Inside Pole	90.00 - 11.00	2	No Ice	0.00	3.50
							1/2" Ice	0.00	3.50
							1" Ice	0.00	3.50
1/4	C	No	No	Inside Pole	90.00 - 11.00	2	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
** DC Cable	C	No	No	Inside Pole	110.00 - 11.00	3	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
Fiber	C	No	No	Inside Pole	110.00 - 11.00	1	No Ice	0.00	0.48
							1/2" Ice	0.00	0.48
							1" Ice	0.00	0.48
** 12X24 Hybrid Cable	C	No	No	Inside Pole	125.43 - 11.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20

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 lb
L1	125.43-115.43	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	32.00
L2	115.43-105.43	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	57.53
L3	105.43-85.43	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	209.97
L4	85.43-46.71	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	630.42
L5	46.71-8.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	581.57

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 lb
L1	125.43-115.43	A	1.138	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	32.00
L2	115.43-105.43	A	1.128	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	57.53
L3	105.43-85.43	A	1.111	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	209.97
L4	85.43-46.71	A	1.070	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	630.42
L5	46.71-8.00	A	0.981	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	581.57

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	125.43-115.43	0.0000	0.0000	0.0000	0.0000
L2	115.43-105.43	0.0000	0.0000	0.0000	0.0000
L3	105.43-85.43	0.0000	0.0000	0.0000	0.0000
L4	85.43-46.71	0.0000	0.0000	0.0000	0.0000
L5	46.71-8.00	0.0000	0.0000	0.0000	0.0000

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
4' Lightning Rod	C	None		0.0000	127.40	No Ice	0.79	0.79	50.00
						1/2" Ice	1.03	1.03	56.34
						1" Ice	1.28	1.28	65.48
**									
SNP12-XXX Tri-Cornered Platform w/ Handrail (Verizon) (Verizon)	C	None		0.0000	121.60	No Ice	23.30	16.71	3279.00
						1/2" Ice	34.44	25.87	3811.00
						1" Ice	44.64	34.43	4604.00
MX10FIT645-XX Antenna w/ Mounting Pipe	A	From Face	3.00	0.0000	121.60	No Ice	10.09	7.31	82.20
			0.75			1/2" Ice	10.77	8.59	161.42
			0.00			1" Ice	11.42	9.72	248.96
MX10FIT665-xx Antenna w/ Mounting Pipe	B	From Face	3.00	0.0000	121.60	No Ice	8.11	6.90	75.90
			0.75			1/2" Ice	8.57	7.85	142.99
			0.00			1" Ice	9.04	8.67	217.82
MX10FIT665-xx Antenna w/ Mounting Pipe	C	From Face	3.00	0.0000	121.60	No Ice	8.11	6.90	75.90
			0.75			1/2" Ice	8.57	7.85	142.99

tnxTower	Job: 117.5' Temporary Monopole	Page: 4 of 8
Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Project: PLATTSVILLE RELO CT	Date: 10:44:37 09/12/22
	Client: VERIZON	Designed by: LBW

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 lb
			0.00			1" Ice	9.04	8.67	217.82
MX10FIT645-XX Antenna w/ Mounting Pipe	A	From Face	3.00	0.0000	121.60	No Ice	10.09	7.31	82.20
			-0.75			1/2" Ice	10.77	8.59	161.42
			0.00			1" Ice	11.42	9.72	248.96
MX10FIT665-xx Antenna w/ Mounting Pipe	B	From Face	3.00	0.0000	121.60	No Ice	8.11	6.90	75.90
			-0.75			1/2" Ice	8.57	7.85	142.99
			0.00			1" Ice	9.04	8.67	217.82
MX10FIT665-xx Antenna w/ Mounting Pipe	C	From Face	3.00	0.0000	121.60	No Ice	8.11	6.90	75.90
			-0.75			1/2" Ice	8.57	7.85	142.99
			0.00			1" Ice	9.04	8.67	217.82
RF4439d-25A RRH	A	From Face	2.00	0.0000	121.60	No Ice	1.88	1.25	98.00
			0.00			1/2" Ice	2.05	1.39	116.34
			2.00			1" Ice	2.22	1.54	137.47
RF4439d-25A RRH	A	From Face	2.00	0.0000	121.60	No Ice	1.88	1.25	98.00
			0.00			1/2" Ice	2.05	1.39	116.34
			2.00			1" Ice	2.22	1.54	137.47
RF4439d-25A RRH	B	From Face	2.00	0.0000	121.60	No Ice	1.88	1.25	98.00
			0.00			1/2" Ice	2.05	1.39	116.34
			2.00			1" Ice	2.22	1.54	137.47
RF4439d-25A RRH	C	From Face	2.00	0.0000	121.60	No Ice	1.88	1.25	98.00
			0.00			1/2" Ice	2.05	1.39	116.34
			2.00			1" Ice	2.22	1.54	137.47
RF4440d-13A RRH	A	From Face	2.00	0.0000	121.60	No Ice	1.88	1.01	82.00
			2.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
RF4440d-13A RRH	A	From Face	2.00	0.0000	121.60	No Ice	1.88	1.01	82.00
			2.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
RF4440d-13A RRH	B	From Face	2.00	0.0000	121.60	No Ice	1.88	1.01	82.00
			2.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
RF4440d-13A RRH	C	From Face	2.00	0.0000	121.60	No Ice	1.88	1.01	82.00
			2.00			1/2" Ice	2.05	1.14	98.43
			0.00			1" Ice	2.22	1.28	117.53
RT4401-48A RRH	A	From Face	2.00	0.0000	121.60	No Ice	1.00	0.50	19.00
			0.00			1/2" Ice	1.12	0.60	26.83
			-2.00			1" Ice	1.26	0.71	36.59
RT4401-48A RRH	A	From Face	2.00	0.0000	121.60	No Ice	1.00	0.50	19.00
			0.00			1/2" Ice	1.12	0.60	26.83
			-2.00			1" Ice	1.26	0.71	36.59
RT4401-48A RRH	B	From Face	2.00	0.0000	121.60	No Ice	1.00	0.50	19.00
			0.00			1/2" Ice	1.12	0.60	26.83
			-2.00			1" Ice	1.26	0.71	36.59
RT4401-48A RRH	C	From Face	2.00	0.0000	121.60	No Ice	1.00	0.50	19.00
			0.00			1/2" Ice	1.12	0.60	26.83
			-2.00			1" Ice	1.26	0.71	36.59
SDX1926Q-43 | E14F05P86 Diplexer	A	From Face	2.00	0.0000	121.60	No Ice	0.24	0.10	7.00
			1.00			1/2" Ice	0.31	0.14	9.47
			2.00			1" Ice	0.38	0.20	13.04
SDX1926Q-43 | E14F05P86 Diplexer	A	From Face	2.00	0.0000	121.60	No Ice	0.24	0.10	7.00
			1.00			1/2" Ice	0.31	0.14	9.47
			2.00			1" Ice	0.38	0.20	13.04
OVP w/ Mounting Pipe	C	From Face	2.00	0.0000	121.60	No Ice	4.63	3.93	53.90
			2.00			1/2" Ice	5.18	4.65	101.19
			0.00			1" Ice	5.66	5.24	153.91
** (3) 12'-6" Sector Frames	C	None		0.0000	110.00	No Ice	19.00	13.50	3000.00

tnxTower	Job: 117.5' Temporary Monopole	Page: 5 of 8
Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978)-557-5553 FAX: (978)-336-5586	Project: PLATTSVILLE RELO CT	Date: 10:44:37 09/12/22
	Client: VERIZON	Designed by: LBW

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 lb
(AT&T)							1/2" Ice	28.50	21.00	3500.00
							1" Ice	37.00	27.50	4150.00
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	A	From Face	3.00		0.0000	110.00	No Ice	17.87	10.02	116.20
			-3.00				1/2" Ice	18.50	11.44	234.88
			0.00				1" Ice	19.14	12.72	363.91
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	B	From Face	3.00		0.0000	110.00	No Ice	17.87	10.02	116.20
			-3.00				1/2" Ice	18.50	11.44	234.88
			0.00				1" Ice	19.14	12.72	363.91
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	C	From Face	3.00		0.0000	110.00	No Ice	17.87	10.02	116.20
			-3.00				1/2" Ice	18.50	11.44	234.88
			0.00				1" Ice	19.14	12.72	363.91
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	A	From Face	3.00		0.0000	110.00	No Ice	17.87	10.02	116.20
			3.00				1/2" Ice	18.50	11.44	234.88
			0.00				1" Ice	19.14	12.72	363.91
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	B	From Face	3.00		0.0000	110.00	No Ice	17.87	10.02	116.20
			3.00				1/2" Ice	18.50	11.44	234.88
			0.00				1" Ice	19.14	12.72	363.91
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	C	From Face	3.00		0.0000	110.00	No Ice	17.87	10.02	116.20
			3.00				1/2" Ice	18.50	11.44	234.88
			0.00				1" Ice	19.14	12.72	363.91
4449 B5/B12 RRH	A	From Face	1.00		0.0000	110.00	No Ice	1.97	1.40	73.00
			-1.00				1/2" Ice	2.15	1.56	91.48
			0.00				1" Ice	2.33	1.72	112.77
4449 B5/B12 RRH	B	From Face	1.00		0.0000	110.00	No Ice	1.97	1.40	73.00
			-1.00				1/2" Ice	2.15	1.56	91.48
			0.00				1" Ice	2.33	1.72	112.77
4449 B5/B12 RRH	C	From Face	1.00		0.0000	110.00	No Ice	1.97	1.40	73.00
			-1.00				1/2" Ice	2.15	1.56	91.48
			0.00				1" Ice	2.33	1.72	112.77
B2/B66A 8843 RRH	A	From Face	1.00		0.0000	110.00	No Ice	1.64	1.35	72.00
			1.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
B2/B66A 8843 RRH	B	From Face	1.00		0.0000	110.00	No Ice	1.64	1.35	72.00
			1.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
B2/B66A 8843 RRH	C	From Face	1.00		0.0000	110.00	No Ice	1.64	1.35	72.00
			1.00				1/2" Ice	1.80	1.50	89.60
			0.00				1" Ice	1.97	1.65	109.91
4415 B30 RRH	A	From Face	1.00		0.0000	110.00	No Ice	1.64	0.68	44.00
			0.00				1/2" Ice	1.80	0.79	56.41
			0.00				1" Ice	1.97	0.91	71.18
4415 B30 RRH	B	From Face	1.00		0.0000	110.00	No Ice	1.64	0.68	44.00
			0.00				1/2" Ice	1.80	0.79	56.41
			0.00				1" Ice	1.97	0.91	71.18
4415 B30 RRH	C	From Face	1.00		0.0000	110.00	No Ice	1.64	0.68	44.00
			0.00				1/2" Ice	1.80	0.79	56.41
			0.00				1" Ice	1.97	0.91	71.18
Squid Surge Arrestor	C	From Face	1.00		0.0000	110.00	No Ice	0.81	0.81	33.00
			0.00				1/2" Ice	1.30	1.30	48.38
			0.00				1" Ice	1.48	1.48	66.11
**										
Tri-Cornered Platform w/ Handrail (T-Mobile)	C	None			0.0000	90.00	No Ice	23.50	17.00	3300.00
							1/2" Ice	34.50	26.00	3850.00
							1" Ice	45.00	34.50	4650.00
(T-Mobile) APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	A	From Face	3.00		0.0000	90.00	No Ice	20.24	10.79	157.20
			-3.00				1/2" Ice	20.89	12.21	290.89
			0.00				1" Ice	21.55	13.49	435.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	B	From Face	3.00 -3.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	157.20 290.89 435.20
APXVAALL24_43-U-NA20 Antenna w/ Mounting Pipe	C	From Face	3.00 -3.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	10.79 12.21 13.49	157.20 290.89 435.20
AIR6449 B41 Antenna w/ Mounting Pipe	A	From Face	0.00 3.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	6.42 7.00 7.50	3.89 4.62 5.22	124.90 179.59 240.17
AIR6449 B41 Antenna w/ Mounting Pipe	B	From Face	3.00 3.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	6.42 7.00 7.50	3.89 4.62 5.22	124.90 179.59 240.17
AIR6449 B41 Antenna w/ Mounting Pipe	C	From Face	3.00 3.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	6.42 7.00 7.50	3.89 4.62 5.22	124.90 179.59 240.17
4480 B71+B85 RRH	A	From Face	2.00 -3.00 1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.42 2.61 2.81	1.20 1.35 1.51	93.00 112.12 134.14
4480 B71+B85 RRH	B	From Face	2.00 -3.00 1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.42 2.61 2.81	1.20 1.35 1.51	93.00 112.12 134.14
4480 B71+B85 RRH	C	From Face	2.00 -3.00 1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.42 2.61 2.81	1.20 1.35 1.51	93.00 112.12 134.14
4460 B25+B66 RRH	A	From Face	2.00 -3.00 -1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	109.00 134.38 163.03
4460 B25+B66 RRH	B	From Face	2.00 -3.00 -1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	109.00 134.38 163.03
4460 B25+B66 RRH	C	From Face	2.00 -3.00 -1.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice	2.56 2.76 2.97	1.98 2.16 2.34	109.00 134.38 163.03

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

Comb. No.	Description
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
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 lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	125.428 - 115.428	Pole	Max Tension	20	0.10	-0.04	-0.86
			Max. Compression	26	-9345.64	1374.90	434.83
			Max. Mx	20	-5242.13	35885.40	1093.13
			Max. My	2	-5261.50	1289.69	35004.67
			Max. Vy	20	-5725.67	35885.40	1093.13
			Max. Vx	2	-5632.42	1289.69	35004.67
			Max. Torque	2			752.41
L2	115.428 - 105.428	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18555.28	1418.44	304.18
			Max. Mx	20	-10074.81	122994.14	2159.18
			Max. My	2	-10099.03	2443.91	121098.70
			Max. Vy	20	-12183.35	122994.14	2159.18
			Max. Vx	2	-12086.19	2443.91	121098.70
			Max. Torque	2			752.29
L3	105.428 - 85.428	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29259.94	723.20	-116.82
			Max. Mx	20	-16931.85	398709.81	4246.08
			Max. My	2	-16951.98	4423.10	395063.50

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	20	-18101.31	398709.81	4246.08
			Max. Vx	2	-18003.62	4423.10	395063.50
			Max. Torque	2			751.77
L4	85.428 - 46.714	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35539.83	683.96	-120.77
			Max. Mx	20	-22512.90	1146285.98	8598.00
			Max. My	2	-22521.61	8808.71	1139003.53
			Max. Vy	8	20648.24	-1145729.2 0	-8353.03
			Max. Vx	2	-20555.39	8808.71	1139003.53
			Max. Torque	24			475.08
L5	46.714 - 8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44317.47	641.44	-125.05
			Max. Mx	20	-30239.27	1998359.56	12702.09
			Max. My	2	-30239.61	12915.74	1987645.90
			Max. Vy	8	23398.50	-1997868.4 0	-12454.83
			Max. Vx	2	-23310.60	12915.74	1987645.90
			Max. Torque	24			472.21

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	125.428 - 115.428	Pole	TP17.72x17.72x0.16	1	-5227.43	39426.80	29.2	Pass
L2	115.428 - 105.428	Pole	TP17.72x17.72x0.16	2	-10056.10	39426.80	80.1	Pass
L3	105.428 - 85.428	Pole	TP23.62x17.72x0.2	3	-16915.90	116920.00	94.9	Pass
L4	85.428 - 46.714	Pole	TP33.86x23.62x0.28	4	-22506.10	482501.00	85.1	Pass
L5	46.714 - 8	Pole	TP44.09x33.86x0.32	5	-30239.40	1190110.00	78.0	Pass
							Summary	
						Pole (L3)	94.9	Pass
						RATING =	**94.9**	**Pass**

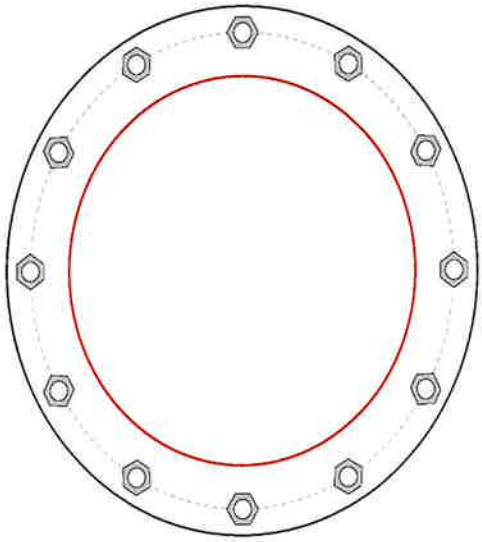
Monopole Base Plate Connection

Site Info	
BU #	
Site Name	Plattsville Relo CT
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.25

Applied Loads	
Moment (kip-ft)	2006.91
Axial Force (kips)	30.26
Shear Force (kips)	23.44

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 54" BC

Base Plate Data

60" OD x 2.75" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

44.09" x 0.32" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_c = 151.08	ϕPn_c = 243.75	**Stress Rating**
Vu = 1.95	ϕVn = 73.13	**59.1%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	19.99	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**42.3%**	**Pass**

Date: 9/12/2022
Project Name: PLATTESVILLE RELO CT
Designed By: LBW **Checked By:** MSC

HUDSON Design Group LLC

Check Concrete Waste Blocks:

Nominal Weight of Concrete: 150 pcf

Volume of Concrete: 24 ft^3

Weight of Concrete Waste Block: 3600 lbs

Item	Wt. (Lbs)	Qty.	Total (Lbs.)
Concrete Waste Blocks	3600	72	259200
	Total, T_{weight}		259200 lbs

Minimum Ballast Weight Requirement for Overturning:

HDG referenced Non-Penetrating Foundation Design Drawings provided by the client and prepared by Ambor Structures dated July 16, 2015.

= 251000 lbs.

Check Non-Penantrating Foundation Weight Requirements for Overturning:

= 251000 lbs. < 259200 lbs. O.K!

Check Soil Bearing Capacity:

Item	Wt. (Lbs)	Qty.	Total (Lbs.)
Monopole	30261	1	30261
Concrete Waste Blocks	3600	72	259200
Misc.	15000	1	15000
	Total, T_{weight}		304461 lbs

Diameter of Base: 24.5 ft

Area of Base: 472.7 ft^2

Bearing Pressure: 644.1 psf

Assumed Soil Bearing Capacity:

Due to lack of information a worse case presumptive load-bearing value was used to calculate the soil bearing capacity. According to the IBC 2015 Section 1806.2 the worse case presumptive load bearing value is 1500 psf.

= 1500 psf (See IBC 2015 Section 1806.2)

Check Soil Bearing Capacity:

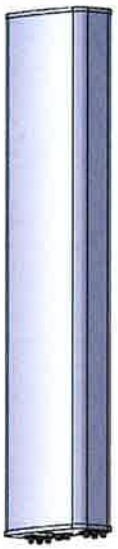
= 644.1 psf < 1500 psf O.K!

MX10FIT645-xx

NWAV™ X-Pol Ten-Port Antenna

X-Pol Ten-Port 6 ft, 45° Form in Tighter, with Smart Bias Ts, 698-4200 MHz:
2 ports 698-894 MHz, 4 ports 1695-2180 MHz, and 4 ports 3400-4200 MHz

- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for 3.4-4.2 GHz and ease of future network optimization.
- Optimized CBRS vertical breamwidth to maximize EIRP and RSRP performance
- SON-Ready array spacing supports beamforming capabilities
- Integrated Smart Bias-Ts reduce leasing costs



nwav

Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	±45°		±45°		
Average gain over all tilts, dBi	16.0	16.5	18.0	18.5	18.8
Horizontal beamwidth (HBW), degrees[1]	47.5	45.0	46.0	45.0	43.0
Front-to-back ratio, co-polar power @180°± 30°, dB	>22.0	>21.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>18.0	>15.0	>18	>18	>15
Vertical beamwidth (VBW), degrees[1]	13.5	12.5	6.0	5.8	5.5
Electrical downtilt (EDT) range, degrees	2-14		0-9		
First upper side lobe (USLS) suppression, dB[1]	≤-15.0	≤-15.0	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0		1.5:1 / -14.0		
Max passive intermodulation (PIM), 2x20W carrier, dBc	-153		-153		
Max input power per any port, watts	300		250		
Total composite power all ports (1-10), watts	1500				

[1] Typical value over frequency and tilt

MX10FIT645-xx

NWAV™ X-Pol Ten-Port Antenna

Electrical specification (minimum/maximum)	Ports 7, 8, 9, 10			
Frequency bands, MHz	3400-3550	3550-3700	3700-3950	3950-4200
Polarization	±45°			
Average gain over all tilts, dBi	13.0	13.4	13.7	14.0
Horizontal beamwidth (HBW), degrees	50	48	46	42
Front-to-back ratio, co-polar power @180°± 30°, dB	>22	>22	>22	>22
Vertical beamwidth (VBW), degrees[1]	25	24	23	22
Electrical downtilt (EDT) range, degrees	2-12 orderable in 1 deg increments			
First upper side lobe (USLS) suppression, dB[1]	≤-15	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB[1]	25	25	25	25
Max VSWR / return loss, dB	1.5:1 / -14.0			
Max input power per any port, watts	100			
Total composite power all ports (1-10), watts	1500			

[1] Typical value over frequency and tilt

* For ports 7-10, the electrical downtilt is FET configured with internal RET, where the required electrical downtilt is defined at the time of order per the ordering information below.

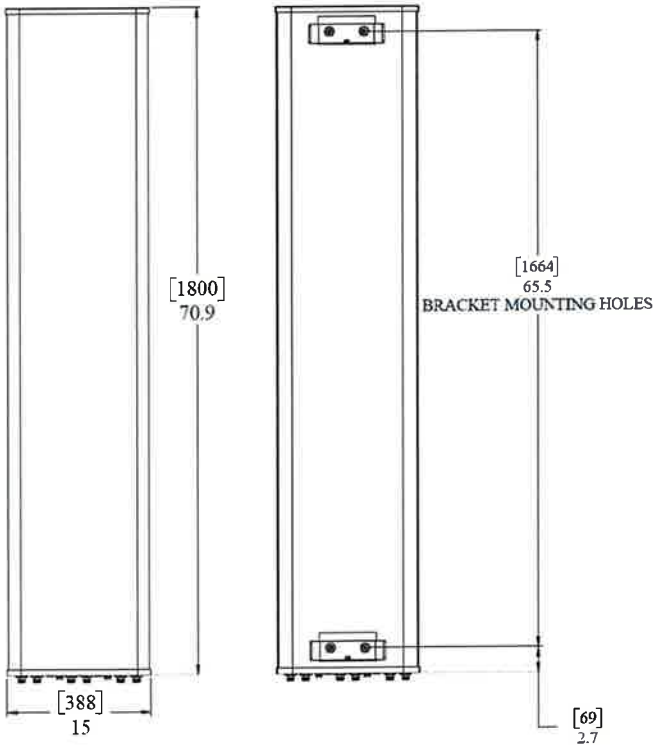
Ordering information	
Antenna model	**Description**
MX10FIT645-xx (xx represents the FET in one degree increments for 3.4-4.2 GHz)	6F X- Pol 10 Port FIT 45° 2-14°/ 0-9°/ 2-12°, 4.3-10 & SBTs
	xx=02 thru 12 for each 1 degree tilt 3.4-4.2GHz Examples: MX10FIT645-02 – 2deg, MX10FIT645-09 – 9deg, MX10FIT645-12-12deg
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations
91900314-02	Dual Mount Bracket (see 91900314 bracket document for details)

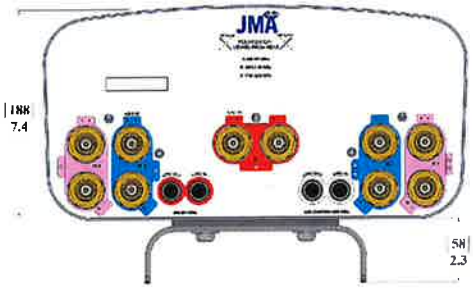
MX10FIT645-xx

NWAV™ X-Pol Ten-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	70.9/ 15/ 7.4 (1801/ 381/ 188)
Shipping dimensions length/width/height, inches (mm)	76.2/ 23.8/ 14.5 (1935/ 605/ 368)
No. of RF input ports, connector type, and location	10 x 4.3-10 female, bottom
RF connector torque	96 lbf·in (10.85 N·m or 8 lbf·ft)
Net antenna weight, lb (kg)	52.8 (24)
Shipping weight, lb (kg)	92.8 (42.1)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.2)
Range of mechanical up/down tilt	-2° to 12°
Rated wind survival speed, mph (km/h)	150 (241)
Frontal and lateral wind loading @ 150 km/h, lbf (N)	157.3 (699.7), 56.9 (253.1)
EPA frontal and lateral, ft^2, (m^2)	7.1 (0.66), 2.6 (0.24)

Front view	Back view	Bottom view





MX10FIT645-xx

NWAV™ X-Pol Ten-Port Antenna

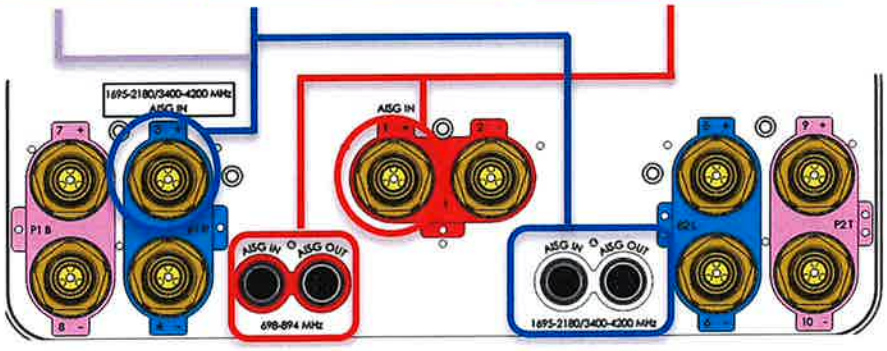
Remote electrical tilt (RET 1000) information	
RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9 or RF port bias-t
RET connector torque	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
RET interface connector quantity	2 pairs of AISG male/female connectors and 2 RFport bias-ts
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 698-894 MHz	1
Total no. of internal RETs 1695-2180 MHz	1
Total no. of internal RETs 3400-4200 MHz	1
RET input operating voltage, vdc	10-30
RET max power consumption, idle state, W	≤ 2.0
RET max power consumption, normal operating conditions, W	≤ 13.0
RET communication protocol	AISG 2.0 / 3GPP

RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF smart bias-t port as shown below:

Band	RF port	Band	RF port
3400-4200	7-10	1695-2180	3-6

Band	RF port
698-894	1-2



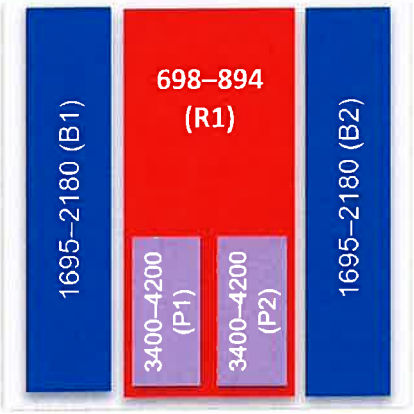
Note: The RET Device for 3400-4200 MHz is connected via the 1695-2180 Port 3 Bias T port or 1695-2180/3400-4200 MHz AISG ports.

Array topology

5 sets of radiating arrays

R1: 698-894 MHz
B1: 1695-2180 MHz
B2: 1695-2180 MHz
P1: 3400-4200 MHz
P2: 3400-4200 MHz

Band	RF port
698-894	1-2
1695-2180	3-4
1695-2180	5-6
3400-4200	7-8
3400-4200	9-10



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Calculated Radio Frequency Exposure

Plattsville Relo – Temporary Tower

5151 Park Avenue, Fairfield, CT 06825

October 6, 2022

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modification of the Verizon Wireless antenna arrays on a new temporary monopole tower located at 5151 Park Avenue in Fairfield, CT. The coordinates of the tower are 41.220258 N, 73.247433 W.

This report considers the planned antenna configuration for AT&T, Verizon Wireless and T-Mobile to derive the resulting % Maximum Permissible Exposure of its proposed installation.

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Calculation Methods

The power density calculation results were generated using the following formula as outlined in FCC bulletin OET 65, and Connecticut Siting Council recommendations:

$$\text{Power Density} = \left(\frac{1.6^2 \times 1.64 \times \text{ERP}}{4\pi \times R^2}\right) \text{X Off Beam Loss}$$

Where:

ERP = Effective Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna

V = Vertical Distance from radiation center of antenna

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all antenna channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not consider actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the final installations.

4. Calculation Results

Table 1 below outlines the cumulative power density information for the AT&T, Verizon Wireless and T-Mobile equipment at the site. The proposed antennas are directional in nature; therefore, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	% MPE
AT&T	110	763	1	3541	0.0118	0.5087	2.32%
AT&T	110	885	1	3883	0.0129	0.5900	2.19%
AT&T	110	1900	2	4562	0.0303	1.0000	3.03%
AT&T	110	2100	2	8226	0.0547	1.0000	5.47%
AT&T	110	2300	1	6747	0.0224	1.0000	2.24%
T-Mobile	90	2100	1	6153	0.0314	1.0000	3.14%
T-Mobile	90	1900	1	6013	0.0307	1.0000	3.07%
T-Mobile	90	1900	1	376	0.0019	1.0000	0.19%
T-Mobile	90	600	1	826	0.0042	0.4000	1.05%
T-Mobile	90	600	1	1652	0.0084	0.4000	2.11%
T-Mobile	90	700	1	826	0.0042	0.4667	0.90%
T-Mobile	90	2500	1	4488	0.0229	1.0000	2.29%
T-Mobile	90	2500	1	4488	0.0229	1.0000	2.29%
T-Mobile	90	2500	1	22440	0.1144	1.0000	11.44%
Verizon	121.7	3500	1	543	0.0015	1.0000	0.15%
Verizon	121.7	700	1	944	0.0025	0.4667	0.83%
Verizon	121.7	850	1	861	0.0023	0.5667	0.67%
Verizon	121.7	850	1	861	0.0023	0.5667	0.67%
Verizon	121.7	1900	1	1303	0.0035	1.0000	0.71%
Verizon	121.7	2100	1	1566	0.0042	1.0000	0.81%
						Total	**45.57%**

Table 1: Carrier Information

5. Conclusion

The above analysis concludes that RF exposure at ground level from the proposed site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Using conservative calculation methods, the highest expected percent of Maximum Permissible Exposure at ground level is **45.57% of the FCC General Population/Uncontrolled limit**.

As noted previously, the calculated % MPE levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in FCC OET Bulletin 65 Edition 97-01, ANSI/IEEE Std. C95.1 and ANSI/IEEE Std. C95.3.

Reviewed/Approved By: Martin J. Lavin
Senior RF Engineer
C Squared Systems, LLC

October 6, 2022
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

IEEE C95.1-2005, IEEE Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz IEEE-SA Standards Board

IEEE C95.3-2002 (R2008), IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields With Respect to Human Exposure to Such Fields, 100 kHz-300 GHz IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[1]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[2]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[1] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[2] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

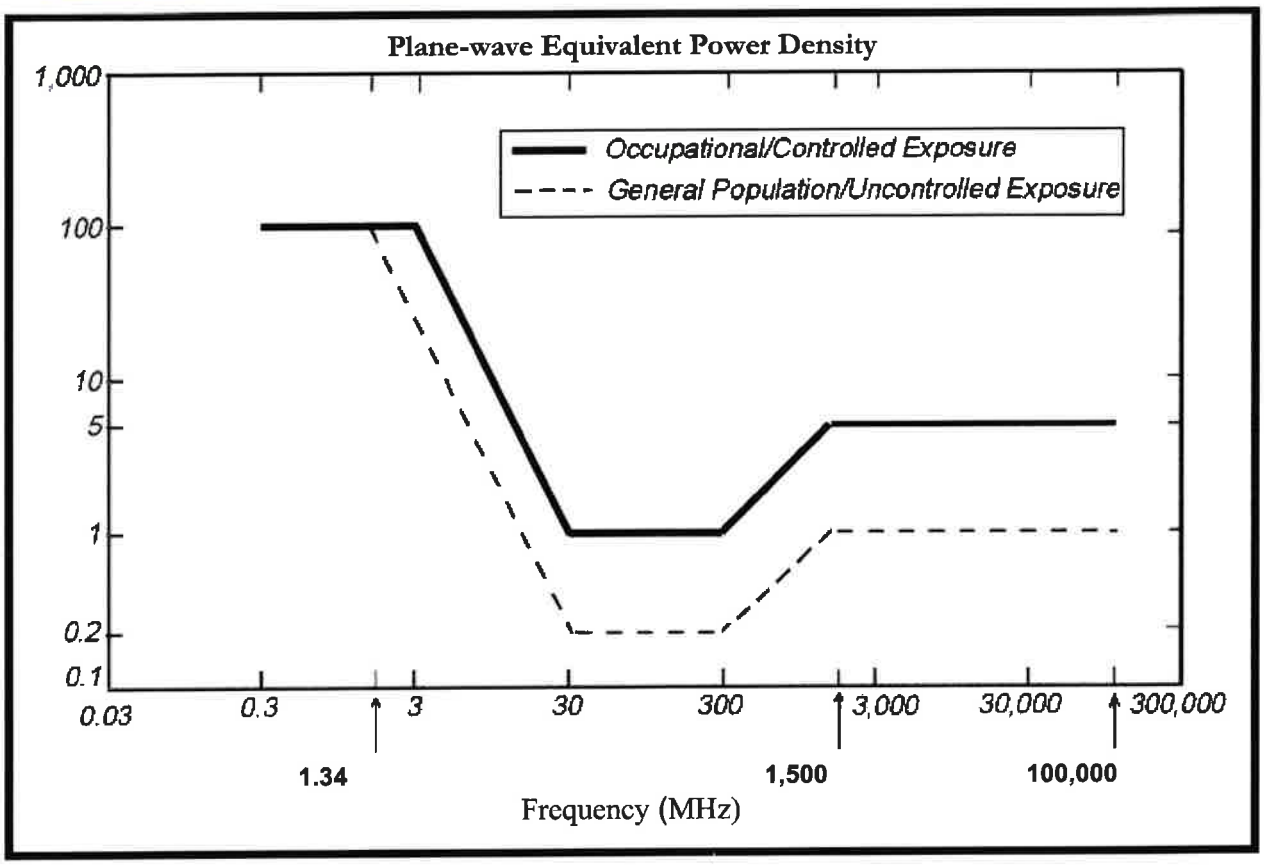

Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)