

May 17, 2016

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: **EM-T-Mobile - 015-151125**
T-Mobile Site ID: CT11014B
623 Pine Street, Bridgeport, CT
Notice of Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T-Mobile Northeast LLC ("T-Mobile") Notice of Exempt Modification on December 28, 2015. T-Mobile hereby notifies the Council that construction was completed as per the requirements set forth in the acknowledgement.

Please do not hesitate to contact me with any questions, or if you require additional information regarding the work completed under this approval.

Sincerely,

A handwritten signature in black ink, appearing to read "Jamie Ford". The signature is written in a cursive, flowing style.

Jamie Ford
Vertical Development LLC
35 Griffin Rd. S
Bloomfield, CT 06002

STRUCTURAL ANALYSIS REPORT

T-MOBILE L1900 UPGRADE
RF CONFIGURATION: 792D

EXISTING 250' SELF-SUPPORT TOWER

T-MOBILE SITE: CT11014B
CT014/ I-95/ X24/ BLA

623 PINE STREET
BRIDGEPORT, CT 06516

REVISION 1

MAY 09, 2016
TEC W.O. 8250.CT11014B

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STUUTUAL ANALYSIS EOT

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W.O. Number: 8250.CT11014B		Report Date: 5/9/2016
Client: T-Mobile		Revision: 1
Site Name: CT014/ I-95/ X24/BLA		
Owner: Radio Communications Corp.		
Site Address: 623 Pine Street		FCC Regulation Number: -
City, State: Bridgeport, CT 06516		County: Fairfield

Structure Type: Self-Support		Manufacturer: Rohn	
Structure Height: 250 ft.		Year Built: Unknown	
Original Drawings:	Structure: No	Foundation: No	
Previous Analysis:	Yes		
Documents provided:			
	<u>Item</u>	<u>By</u>	<u>No.</u> <u>Date</u>
	Structural Analysis Report (16 pages)	KM Consulting Engineers	040306.02 8/29/12
	Structural Analysis Report (31 pages)	KM Consulting Engineers	121101.03 2/6/15
	RFDS (10 pages)	T-Mobile	CT11014B 4/13/16
	Construction Drawings (2 sheets)	TECTONIC	8250.CT11014B 4/20/16

Type:	Visual Inspection from Ground	Date:	4/13/2016
General Condition:			
	Tower:	Good	
	Foundation:	Good	
Finish:	Galvanized	Condition:	Intact
Observations:	None		

T-Mobile is proposing to add three (3) RRHs as a part of this upgrade. The final T-Mobile configuration upon this upgrade will be as follows:

Antennas:

Height (ft.)	Carrier	Qty	Manuf.	Model	Mount	Leg (s)
180	T-Mobile	3	Ericsson	AIR 21 B2A/B4P	(3) 14' Sector Frames	A,B,C
		3	Ericsson	AIR 32 B4A/B2P		
		3	Commscope	LNx-6515DS-VTM		
		3	Generic	Twin AWS TMA		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 11 B12		

Cables:

Height (ft.)	Qty	Nom. Size	Location	Comments
180	30	1-5/8" dia	Face AB	Existing to remain
180	1	Hybriflex	Face AB	Existing to remain
180	3	4AWG DC cable	Face AB	Existing to remain
180	1	6x12 Hybriflex	Face AB	To be stacked on existing

W.O. Number: 8250.CT11014B	Report Date: 5/9/2016
Client: T-Mobile	Revision: 1
Site Name: CT014/ I-95/ X24/BLA	

APPENDIX A

Design Standard: TIA/EIA-222-F
Building Code: 2005 Connecticut State Building Code w/ 2013 CT Supplemental Code

	<u>Capacity (no ice)</u>	<u>Capacity w/ ice</u>	<u>Service</u>
Wind Speed:	85 mph	74 mph	50 mph
Basic Ice Thickness:	0 inch	0.5 inch	0 inch

Assumptions:

1. The tower was designed, manufactured, and constructed in accordance with the approved tower drawings
2. The foundation was designed and constructed based on site-specific geotechnical information.
3. Tower member and appurtenance sizes are solely based on the analysis reports provided by the client and site visit photos.
4. All tower bolted connections have been designed such that the member capacity governs.
5. Anchor rods conform to ASTM F1554 Gr. 36.

APPENDIX B

<u>Element</u>	<u>% Usage</u>
Legs	80%
Diagonals	60%
Horizontals	38%
Anchor Rods	70%

Foundation Reactions (Envelope):

Total Weight (w/ ice)	273	kips
Total Shear	64	kips
Overturning Moment	7714	kips
Compression (per leg)	400	kips
Uplift (per leg)	222	kips
Max Shear (per leg)	43	kips

W.O. Number: 8250.CT11014B
Client: T-Mobile
Site Name: CT014/ I-95/ X24/BLA

Report Date: 5/9/2016
Revision: 1

Conclusions

Based on our analysis, the existing self-support tower has adequate capacity to support the proposed T-Mobile upgrade as described herein in accordance with current code requirements.

No information with regards to the foundation was made available at the time of this report. As such, the foundation has not been evaluated.

Furthermore, based on our analysis, the existing antenna support mounts have sufficient capacity to support the proposed upgrade as referenced in this report. Due to the limited information on the mount support connection to the tower, the existing connections have not been evaluated in detail. However, based on reviewing the end reactions, we believe that the connections are adequate to support the additional load due to the proposed T-Mobile installations.

This analysis is solely based on the documents referenced in this report and information provided by T-Mobile. This analysis may be affected if any assumptions are not valid or have been made in error. TECTONIC should be notified to determine the effect on the structural integrity of the tower.

Any further changes to the antenna configuration or other appurtenances should be reviewed with respect to their effect on structural loads prior to implementation.

Prepared by: Garrett Miller
Structural Engineer

Reviewed by: Ian Marinaccio
Structural Engineer

Approved by:




Edward N. Iamiceli, P.E.
Senior Project Manager

Date:

5/9/16

THE END OF THE WORLD

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
12' Platform	259	TMA (12" x 8") (Clearwire)	118
20' x 2" Omni Antenna	256	VHLP1-23-1WH (Clearwire)	118
(2) 8'x3"OD Omni	256	VHLP2.5-11-3WH (Clearwire)	118
Flash Beacon Lighting	256	VHLP1-23-1WH (Clearwire)	118
(5) 2.375"x6" Pipe Mount	256	(2) HBXX-6516DS-A2M w/ Mount Pipe (Verizon)	110
(2) 2.375"x6" Pipe Mount	256	(2) HBXX-6516DS-A2M w/ Mount Pipe (Verizon)	110
(2) 20' x 2" Omni Antenna	256	(2) HBXX-6516DS-A2M w/ Mount Pipe (Verizon)	110
8'x3"OD Omni	238	800 10734V01 w/ Mount Pipe (Verizon)	110
8'x3"OD Omni	238	800 10734V01 w/ Mount Pipe (Verizon)	110
4' Standoff	238	800 10734V01 w/ Mount Pipe (Verizon)	110
4' Standoff	238	800 10734V01 w/ Mount Pipe (Verizon)	110
RRUS 32 B2 (T-Mobile)	180	AWS LTE RRH (Verizon)	110
RRUS 32 B2 (T-Mobile)	180	AWS LTE RRH (Verizon)	110
RRUS 32 B2 (T-Mobile)	180	AWS LTE RRH (Verizon)	110
ERICSSON AIR 21 B2A B4P (T-Mobile)	180	AWS LTE RRH (Verizon)	110
ERICSSON AIR 21 B2A B4P (T-Mobile)	180	700 MHz RRH (Verizon)	110
ERICSSON AIR 21 B2A B4P (T-Mobile)	180	700 MHz RRH (Verizon)	110
ERICSSON AIR 32 B4A B2P (T-Mobile)	180	700 MHz RRH (Verizon)	110
ERICSSON AIR 32 B4A B2P (T-Mobile)	180	RRH2X60-PCS (Verizon)	110
ERICSSON AIR 32 B4A B2P (T-Mobile)	180	RRH2X60-PCS (Verizon)	110
LNx-6515DS-VTM (T-Mobile)	180	RRH2X60-PCS (Verizon)	110
LNx-6515DS-VTM (T-Mobile)	180	(2) CBC78-DF-2X (Verizon)	110
LNx-6515DS-VTM (T-Mobile)	180	(2) CBC78-DF-2X (Verizon)	110
LNx-6515DS-VTM (T-Mobile)	180	(2) CBC78-DF-2X (Verizon)	110
TMA (12" x 8") (T-Mobile)	180	GPS_A (Verizon)	110
TMA (12" x 8") (T-Mobile)	180	OVP Fiber Box (Verizon)	110
TMA (12" x 8") (T-Mobile)	180	(3) 12' Sector Frames (Verizon)	110
RRUS 11 B12 (T-Mobile)	180	(2) APL866513-42T6 w/ Mount Pipe (Verizon)	110
RRUS 11 B12 (T-Mobile)	180	(2) APL866513-42T9 w/ Mount Pipe (Verizon)	110
RRUS 11 B12 (T-Mobile)	180	(3) 14' Sector Frames (T-Mobile)	110
48"x8" w/6'-2.375"OD Pipe (Clearwire)	118	(2) APL866513-42T9 w/ Mount Pipe (Verizon)	110
48"x8" w/6'-2.375"OD Pipe (Clearwire)	118	4' Standoff	100
48"x8" w/6'-2.375"OD Pipe (Clearwire)	118	(2) 48"x8" w/6'-2.375"OD Pipe	100
TMA (12" x 8") (Clearwire)	118		
TMA (12" x 8") (Clearwire)	118		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 3 STD	C	REINF ROHN 3 STD w/ L4x4x1/4
B	L1 3/4x1 3/4x3/16	D	L3x3x1/4

MATERIAL STRENGTH

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

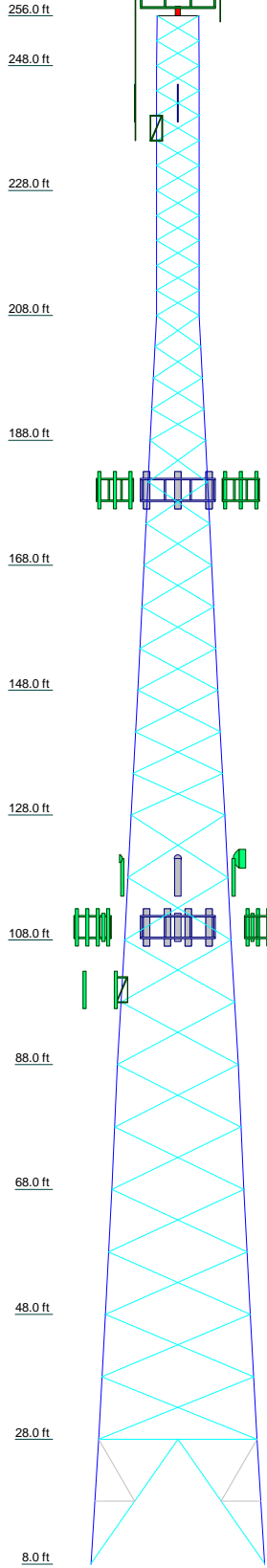
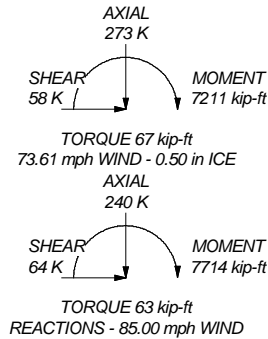
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85.00 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 73.61 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50.00 mph wind.
5. TOWER RATING: 80.1%

MAX. CORNER REACTIONS AT BASE:

DOWN: 400 K
SHEAR: 43 K

UPLIFT: -222 K
SHEAR: 29 K



Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13
Legs	ROHN 3 EH	ROHN 3 EH	ROHN 4 EH	ROHN 5 EH	ROHN 6 EH	ROHN 6 EH	ROHN 8 EH	ROHN 8 EH	ROHN 8 EH	ROHN 8 EH	P10x.5	P10x.5	P10x.5
Leg Grade													
Diagonals													
Diagonal Grade													
Top Girts													
Horizontals													
Red. Horizontals													
Red. Diagonals													
Red. Hips													
Inner Bracing													
Face Width (ft)	27.8333	25.333	23.229	21.25	19.25	17.0833	14.989	12.906	10.916	8.916	6.833	4.75	2.667
# Panels @ (ft)	52.0	1 @ 19.9167	10 @ 10	6.8	7.1	7.4	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Weight (K)													

<p>TECTONIC Practical Solutions. Exceptional Service</p>	<p>1279 Route 300 Newburgh, NY 12550 Phone: (845) 567-6656 FAX: (845) 567-8703</p>		<p>Job: 8250.CT11014B Project: CT014/ I-95/ X24/BLA</p>
	<p>Client: T-Mobile Code: TIA/EIA-222-F Path:</p>	<p>Drawn by: Ian Marinaccio Date: 05/09/16</p>	<p>App'd: Scale: NTS Dwg No. E-1</p>

Tower Information

The main tower is a 3x free standing tower with an overall height of 256.00 ft above the ground line.

The base of the tower is set at an elevation of 8.00 ft above the ground line.

The face width of the tower is 6.60 ft at the top and 27.83 ft at the base.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Basic wind speed of 85.00 mph.

Nominal ice thickness of 0.50 in.

Ice density of 56 pcf.

A wind speed of 73.61 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50.00 mph.

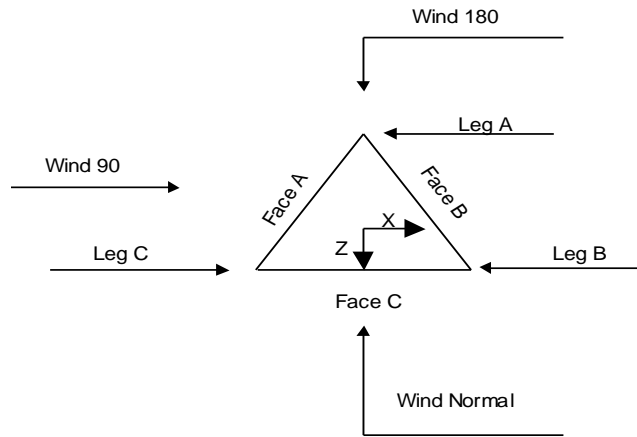
Pressures are calculated at each section.

Stress ratio used in tower member design is 1.333.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Design Criteria

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



Triangular Tower

Tower Specifications

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	256.00-248.00			6.60	1	8.00
T2	248.00-228.00			6.90	1	20.00
T3	228.00-208.00			6.90	1	20.00
T4	208.00-188.00			6.83	1	20.00
T5	188.00-168.00			8.92	1	20.00
T6	168.00-148.00			10.92	1	20.00
T7	148.00-128.00			12.91	1	20.00
T8	128.00-108.00			14.99	1	20.00
T9	108.00-88.00			17.08	1	20.00
T10	88.00-68.00			19.25	1	20.00
T11	68.00-48.00			21.25	1	20.00
T12	48.00-28.00			23.23	1	20.00
T13	28.00-8.00			25.33	1	20.00

Tower Specifications (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	256.00-248.00	4.00	X Brace	No	No	0.00	0.00
T2	248.00-228.00	4.00	X Brace	No	No	0.00	0.00



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Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T3	228.00-208.00	4.00	X Brace	No	No	0.00	0.00
T4	208.00-188.00	5.00	X Brace	No	No	0.00	0.00
T5	188.00-168.00	6.67	X Brace	No	No	0.00	0.00
T6	168.00-148.00	6.67	X Brace	No	No	0.00	0.00
T7	148.00-128.00	6.67	X Brace	No	No	0.00	0.00
T8	128.00-108.00	10.00	X Brace	No	No	0.00	0.00
T9	108.00-88.00	10.00	X Brace	No	No	0.00	0.00
T10	88.00-68.00	10.00	X Brace	No	No	0.00	0.00
T11	68.00-48.00	10.00	X Brace	No	No	0.00	0.00
T12	48.00-28.00	10.00	X Brace	No	No	0.00	0.00
T13	28.00-8.00	19.92	K1 Down	No	Yes	0.00	1.00

Tower Sizing (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 256.00-248.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 248.00-228.00	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T3 228.00-208.00	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T4 208.00-188.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Single Angle	L2x2x1/4	A36 (36 ksi)
T5 188.00-168.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T6 168.00-148.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T7 148.00-128.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T8 128.00-108.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Single Angle	L4x4x3/8	A572-50 (50 ksi)
T9 108.00-88.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Single Angle	L4x4x5/16	A572-50 (50 ksi)
T10 88.00-68.00	Pipe	P10x.5	A572-50 (50 ksi)	Single Angle	L5x5x3/8	A572-50 (50 ksi)
T11 68.00-48.00	Pipe	P10x.5	A572-50 (50 ksi)	Single Angle	L5x5x3/8	A572-50 (50 ksi)
T12 48.00-28.00	Pipe	P10x.5	A572-50 (50 ksi)	Single Angle	L5x5x3/8	A572-50 (50 ksi)
T13 28.00-8.00	Pipe	P10x.5	A572-50 (50 ksi)	Arbitrary Shape	REINF ROHN 3 STD w/ L4x4x1/4	A572-50 (50 ksi)

Tower Sizing (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 256.00-248.00	Single Angle	L3x3x1/4	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

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Tower Section Details (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T13 28.00-8.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Details (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T13 28.00-8.00	Solid Round		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Details (cont'd)

Tower Elevation ft	Redundant Bracing Grade	Redundant Type	Redundant Size	K Factor	
T13 28.00-8.00	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 1.5 STD	1
		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal (1)	Pipe	ROHN 3 STD	1

Tower Section Details (cont'd)

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 256.00-248.00	0.00	0.00	A36 (36 ksi)	1.03	1.03	1.03	36.00	36.00	36.00
T2 248.00-228.00	0.00	0.00	A36 (36 ksi)	1.03	1.03	1.03	36.00	36.00	36.00
T3 228.00-208.00	0.00	0.00	A36 (36 ksi)	1.03	1.03	1.03	36.00	36.00	36.00
T4 208.00-188.00	0.00	0.00	A36 (36 ksi)	1.03	1.03	1.03	36.00	36.00	36.00
T5 188.00-168.00	0.00	0.00	A36 (36 ksi)	1.03	1.03	1.03	36.00	36.00	36.00
T6	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00

Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in							
168.00-148.00			(36 ksi)						
T7	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00
148.00-128.00			(36 ksi)						
T8	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00
128.00-108.00			(36 ksi)						
T9	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00
108.00-88.00			(36 ksi)						
T10	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00
88.00-68.00			(36 ksi)						
T11	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00
68.00-48.00			(36 ksi)						
T12	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00
48.00-28.00			(36 ksi)						
T13	0.00	0.00	A36	1.03	1.03	1.03	36.00	36.00	36.00
28.00-8.00			(36 ksi)						

T Tower S (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹									
			Legs	X Brace Diags		K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
				X	Y							X
T1	No	No	1	1	1	1	1	1	1	1	1	1
256.00-248.00												
T2	No	No	1	1	1	1	1	1	1	1	1	1
248.00-228.00												
T3	No	No	1	1	1	1	1	1	1	1	1	1
228.00-208.00												
T4	No	No	1	1	1	1	1	1	1	1	1	1
208.00-188.00												
T5	No	No	1	1	1	1	1	1	1	1	1	1
188.00-168.00												
T6	No	No	1	1	1	1	1	1	1	1	1	1
168.00-148.00												
T7	No	No	1	1	1	1	1	1	1	1	1	1
148.00-128.00												
T8	No	No	1	1	1	1	1	1	1	1	1	1
128.00-108.00												
T9	No	No	1	1	1	1	1	1	1	1	1	1
108.00-88.00												
T10	No	No	1	1	1	1	1	1	1	1	1	1
88.00-68.00												
T11	No	No	1	1	1	1	1	1	1	1	1	1
68.00-48.00												
T12	No	No	1	1	1	1	1	1	1	1	1	1
48.00-28.00												
T13	No	No	2	1	1	1	1	1	1	1	1	1
28.00-8.00												

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



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T Tower S (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 256.00-248.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T2 248.00-228.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T3 228.00-208.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T4 208.00-188.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T5 188.00-168.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T6 168.00-148.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T7 148.00-128.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 128.00-108.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 108.00-88.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T10 88.00-68.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T11 68.00-48.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T12 48.00-28.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T13 28.00-8.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

T Tower S (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 256.00-248.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T2 248.00-228.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T3 228.00-208.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T4 208.00-188.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T5 188.00-168.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T6 168.00-148.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T7 148.00-128.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
T8 128.00-108.00	Flange	0.75	0	A325N	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0



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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T9 108.00-88.00	Flange	0.75	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10 88.00-68.00	Flange	0.75	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11 68.00-48.00	Flange	0.75	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12 48.00-28.00	Flange	0.75	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13 28.00-8.00	Flange	1.00	16	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0	0.63	0
		F1554-36		A325N		A325N		A325N		A325N		A325N		A325N	

Legend

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF6-50A(1-1/4)	C	Yes	Ar (CfAe)	256.00 - 14.00	0.00	0.4	7	7	1.55	1.55		0.60
LDF5-50A(7/8)	C	Yes	Ar (CfAe)	256.00 - 14.00	0.00	0.4	2	2	1.03	1.03		0.33
LDF4-50A(1/2)	C	Yes	Ar (CfAe)	256.00 - 14.00	0.00	0.4	1	1	0.63	0.63		0.15
Feedline Ladder (Af) ***	C	Yes	Af (CfAe)	256.00 - 14.00	0.00	0.4	1	1	3.00	3.00	12.00	8.40
LDF7-50A(1-5/8) (T-Mobile)	B	Yes	Ar (CfAe)	180.00 - 14.00	0.00	0.45	30	10	1.98	1.98		0.82
Hybriflex (1E+1P)	B	Yes	Ar (CfAe)	180.00 - 14.00	0.00	0.48	2	2	1.54	1.54		1.42
4 AWG(2) (T-Mobile 3E)	B	Yes	Ar (CfAe)	180.00 - 14.00	0.00	0.43	3	3	2.00	2.00		2.00
Feedline Ladder (Af) ***	B	Yes	Af (CfAe)	180.00 - 14.00	0.00	0.43	1	1	3.00	3.00	12.00	8.40
LDF7-50A(1-5/8) (Verizon)	A	Yes	Ar (CfAe)	110.00 - 14.00	0.00	-0.45	18	9	1.98	1.98		0.82
Hybriflex (Verizon)	A	Yes	Ar (CfAe)	110.00 - 14.00	0.00	-0.48	1	1	1.54	1.54		1.42
Feedline Ladder (Af) ***	A	Yes	Af (CfAe)	110.00 - 14.00	0.00	-0.45	1	1	3.00	3.00	12.00	8.40
2" Rigid Conduit (Clearwire)	A	Yes	Ar (CfAe)	83.00 - 14.00	0.00	0.43	2	2	2.00	2.00		2.80
LDF4-50A(1/2") (Clearwire)	A	Yes	Ar (CfAe)	83.00 - 14.00	0.00	0.44	2	2	0.63	0.63		0.15
Feedline Ladder (Af) (Clearwire)	A	Yes	Af (CfAe)	83.00 - 14.00	0.00	0.44	1	1	3.00	3.00	12.00	8.40



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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	256.00-248.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	9.023	2.000	0.000	0.000	0.11
T2	248.00-228.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	22.558	5.000	0.000	0.000	0.27
T3	228.00-208.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	22.558	5.000	0.000	0.000	0.27
T4	208.00-188.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	22.558	5.000	0.000	0.000	0.27
T5	188.00-168.00	A	0.000	0.000	0.000	0.000	0.00
		B	28.880	3.000	0.000	0.000	0.50
		C	22.558	5.000	0.000	0.000	0.27
T6	168.00-148.00	A	0.000	0.000	0.000	0.000	0.00
		B	48.133	5.000	0.000	0.000	0.84
		C	22.558	5.000	0.000	0.000	0.27
T7	148.00-128.00	A	0.000	0.000	0.000	0.000	0.00
		B	48.133	5.000	0.000	0.000	0.84
		C	22.558	5.000	0.000	0.000	0.27
T8	128.00-108.00	A	3.227	0.500	0.000	0.000	0.05
		B	48.133	5.000	0.000	0.000	0.84
		C	22.558	5.000	0.000	0.000	0.27
T9	108.00-88.00	A	32.267	5.000	0.000	0.000	0.49
		B	48.133	5.000	0.000	0.000	0.84
		C	22.558	5.000	0.000	0.000	0.27
T10	88.00-68.00	A	38.842	8.750	0.000	0.000	0.71
		B	48.133	5.000	0.000	0.000	0.84
		C	22.558	5.000	0.000	0.000	0.27
T11	68.00-48.00	A	41.033	10.000	0.000	0.000	0.78
		B	48.133	5.000	0.000	0.000	0.84
		C	22.558	5.000	0.000	0.000	0.27
T12	48.00-28.00	A	41.033	10.000	0.000	0.000	0.78
		B	48.133	5.000	0.000	0.000	0.84
		C	22.558	5.000	0.000	0.000	0.27
T13	28.00-8.00	A	28.723	7.000	0.000	0.000	0.54
		B	33.693	3.500	0.000	0.000	0.59
		C	15.791	3.500	0.000	0.000	0.19

d L L r A r S Ar I

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T1	256.00-248.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		15.690	2.444	0.000	0.000	0.22
T2	248.00-228.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		39.225	6.111	0.000	0.000	0.55
T3	228.00-208.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		39.225	6.111	0.000	0.000	0.55



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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
T4	208.00-188.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		39.225	6.111	0.000	0.000	0.55
T5	188.00-168.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		43.880	3.667	0.000	0.000	1.16
		C		39.225	6.111	0.000	0.000	0.55
T6	168.00-148.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		73.133	6.111	0.000	0.000	1.94
		C		39.225	6.111	0.000	0.000	0.55
T7	148.00-128.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		73.133	6.111	0.000	0.000	1.94
		C		39.225	6.111	0.000	0.000	0.55
T8	128.00-108.00	A	0.500	4.893	0.611	0.000	0.000	0.11
		B		73.133	6.111	0.000	0.000	1.94
		C		39.225	6.111	0.000	0.000	0.55
T9	108.00-88.00	A	0.500	48.933	6.111	0.000	0.000	1.12
		B		73.133	6.111	0.000	0.000	1.94
		C		39.225	6.111	0.000	0.000	0.55
T10	88.00-68.00	A	0.500	58.471	12.269	0.000	0.000	1.44
		B		73.133	6.111	0.000	0.000	1.94
		C		39.225	6.111	0.000	0.000	0.55
T11	68.00-48.00	A	0.500	61.650	14.322	0.000	0.000	1.54
		B		73.133	6.111	0.000	0.000	1.94
		C		39.225	6.111	0.000	0.000	0.55
T12	48.00-28.00	A	0.500	61.650	14.322	0.000	0.000	1.54
		B		73.133	6.111	0.000	0.000	1.94
		C		39.225	6.111	0.000	0.000	0.55
T13	28.00-8.00	A	0.500	43.155	10.026	0.000	0.000	1.08
		B		51.193	4.278	0.000	0.000	1.36
		C		27.458	4.278	0.000	0.000	0.38

d L S d

Section	Elevation ft	Face	A _R ft ²	A _R Ice ft ²	A _F ft ²	A _F Ice ft ²
T1	256.00-248.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	1.080	1.279	2.129
T2	248.00-228.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	2.210	2.655	4.420
T3	228.00-208.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	2.213	2.658	4.426
T4	208.00-188.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	1.816	2.181	3.632
T5	188.00-168.00	A	0.000	0.000	0.000	0.000
		B	0.000	1.444	2.404	3.610
		C	0.000	1.384	2.078	3.460
T6	168.00-148.00	A	0.000	0.000	0.000	0.000
		B	0.000	2.288	4.570	6.863
		C	0.000	1.316	2.370	3.947
T7	148.00-128.00	A	0.000	0.000	0.000	0.000
		B	0.000	2.212	4.419	6.636
		C	0.000	1.272	2.292	3.816

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Section	Elevation	Face	A_R	A_R	A_F	A_F
	ft		ft ²	Ice ft ²	ft ²	Ice ft ²
T8	128.00-108.00	A	0.000	0.109	0.293	0.437
		B	0.000	1.568	4.176	6.272
		C	0.000	0.902	2.166	3.607
T9	108.00-88.00	A	0.000	1.058	2.837	4.232
		B	0.000	1.519	4.044	6.074
		C	0.000	0.873	2.098	3.493
T10	88.00-68.00	A	0.000	1.333	4.424	6.666
		B	0.000	1.484	4.939	7.418
		C	0.000	0.853	2.562	4.266
T11	68.00-48.00	A	0.000	1.409	4.663	7.044
		B	0.000	1.458	4.855	7.292
		C	0.000	0.839	2.518	4.194
T12	48.00-28.00	A	0.000	1.390	4.600	6.948
		B	0.000	1.439	4.789	7.193
		C	0.000	0.827	2.484	4.136
T13	28.00-8.00	A	1.371	2.972	1.469	2.481
		B	1.428	3.077	1.530	2.568
		C	0.741	1.770	0.793	1.477

CPX CPZ CPX CPZ

Section	Elevation	CP _X	CP _Z	CP _X	CP _Z
	ft	in	in	Ice in	Ice in
T1	256.00-248.00	-7.42	5.55	-7.90	5.90
T2	248.00-228.00	-8.22	6.15	-8.90	6.64
T3	228.00-208.00	-7.46	5.58	-8.31	6.20
T4	208.00-188.00	-8.06	6.00	-9.31	6.92
T5	188.00-168.00	3.62	10.38	3.12	11.81
T6	168.00-148.00	9.85	13.15	9.91	14.87
T7	148.00-128.00	10.97	14.86	11.04	16.80
T8	128.00-108.00	9.59	15.76	9.99	18.62
T9	108.00-88.00	-2.34	21.24	-3.38	24.45
T10	88.00-68.00	-2.39	15.70	-3.42	19.24
T11	68.00-48.00	-2.63	15.49	-3.73	19.25
T12	48.00-28.00	-2.81	16.50	-3.99	20.53
T13	28.00-8.00	-2.44	14.28	-3.49	17.89

CPX CPZ CPX CPZ

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	K
(2) 20' x 2" Omni Antenna	C	From Leg	4.00	0.000	256.00	No Ice	4.00	0.03
			0.00			1/2" Ice	6.03	
			10.00					
20' x 2" Omni Antenna	C	From Leg	4.00	0.000	256.00	No Ice	4.00	0.03
			0.00			1/2" Ice	6.03	

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral	Vert						°
(2) 8'x3"OD Omni	B	From Leg	4.00		-10.00	0.000	256.00	No Ice	2.40	2.40	0.01
			0.00		0.00			1/2" Ice	3.19	3.19	0.03
			4.00		4.00						
Flash Beacon Lighting	A	From Leg	2.00		0.00	0.000	256.00	No Ice	2.70	2.70	0.05
			0.00		0.00			1/2" Ice	3.10	3.10	0.07
			0.00		0.00						
(5) 2.375"x6' Pipe Mount	B	From Leg	4.00		0.00	0.000	256.00	No Ice	1.43	1.43	0.02
			0.00		0.00			1/2" Ice	1.92	1.92	0.03
			2.00		2.00						
(5) 2.375"x6' Pipe Mount	B	From Leg	4.00		0.00	0.000	256.00	No Ice	1.43	1.43	0.02
			0.00		0.00			1/2" Ice	1.92	1.92	0.03
			2.00		2.00						
(5) 2.375"x6' Pipe Mount	C	From Leg	4.00		0.00	0.000	256.00	No Ice	1.43	1.43	0.02
			0.00		0.00			1/2" Ice	1.92	1.92	0.03
			2.00		2.00						
12' Platform	C	None			0.000	259.00	No Ice	32.03	32.03	1.34	
					0.000		1/2" Ice	38.71	38.71	1.80	

8'x3"OD Omni	A	From Leg	4.00		0.00	0.000	238.00	No Ice	2.40	2.40	0.01
			0.00		0.00			1/2" Ice	3.19	3.19	0.03
			4.00		4.00						
8'x3"OD Omni	C	From Leg	4.00		0.00	0.000	238.00	No Ice	2.40	2.40	0.01
			0.00		0.00			1/2" Ice	3.19	3.19	0.03
			4.00		4.00						
4' Standoff	A	From Leg	0.00		0.00	0.000	238.00	No Ice	1.67	3.27	0.06
			0.00		0.00			1/2" Ice	2.51	4.99	0.09
			0.00		0.00						
4' Standoff	C	From Leg	0.00		0.00	0.000	238.00	No Ice	1.67	3.27	0.06
			0.00		0.00			1/2" Ice	2.51	4.99	0.09
			0.00		0.00						

RRUS 32 B2 (T-Mobile)	A	From Leg	4.00		0.00	0.000	180.00	No Ice	3.16	1.84	0.05
			0.00		0.00			1/2" Ice	3.42	2.07	0.07
			0.00		0.00						
RRUS 32 B2 (T-Mobile)	B	From Leg	4.00		0.00	0.000	180.00	No Ice	3.16	1.84	0.05
			0.00		0.00			1/2" Ice	3.42	2.07	0.07
			0.00		0.00						
RRUS 32 B2 (T-Mobile)	C	From Leg	4.00		0.00	0.000	180.00	No Ice	3.16	1.84	0.05
			0.00		0.00			1/2" Ice	3.42	2.07	0.07
			0.00		0.00						
ERICSSON AIR 21 B2A B4P (T-Mobile)	A	From Leg	4.00		0.00	0.000	180.00	No Ice	6.59	4.30	0.09
			0.00		0.00			1/2" Ice	7.03	4.70	0.13
			0.00		0.00						
ERICSSON AIR 21 B2A B4P (T-Mobile)	B	From Leg	4.00		0.00	0.000	180.00	No Ice	6.59	4.30	0.09
			0.00		0.00			1/2" Ice	7.03	4.70	0.13
			0.00		0.00						
ERICSSON AIR 21 B2A B4P (T-Mobile)	C	From Leg	4.00		0.00	0.000	180.00	No Ice	6.59	4.30	0.09
			0.00		0.00			1/2" Ice	7.03	4.70	0.13
			0.00		0.00						
ERICSSON AIR 32 B4A B2P (T-Mobile)	A	From Leg	4.00		0.00	0.000	180.00	No Ice	7.40	6.21	0.13
			0.00		0.00			1/2" Ice	7.97	7.14	0.19
			0.00		0.00						
ERICSSON AIR 32 B4A B2P (T-Mobile)	B	From Leg	4.00		0.00	0.000	180.00	No Ice	7.40	6.21	0.13
			0.00		0.00			1/2" Ice	7.97	7.14	0.19
			0.00		0.00						
ERICSSON AIR 32 B4A C	C	From Leg	4.00		0.00	0.000	180.00	No Ice	7.40	6.21	0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
B2P (T-Mobile)			0.00 0.00		1/2" Ice	7.97	7.14	0.19
LNX-6515DS-VTM (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	11.45 12.06	7.70 8.29	0.05 0.12
LNX-6515DS-VTM (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	11.45 12.06	7.70 8.29	0.05 0.12
LNX-6515DS-VTM (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	11.45 12.06	7.70 8.29	0.05 0.12
TMA (12" x 8") (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	0.93 1.07	0.35 0.45	0.02 0.03
TMA (12" x 8") (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	0.93 1.07	0.35 0.45	0.02 0.03
TMA (12" x 8") (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	0.93 1.07	0.35 0.45	0.02 0.03
RRUS 11 B12 (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	3.31 3.55	1.36 1.54	0.05 0.07
RRUS 11 B12 (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	3.31 3.55	1.36 1.54	0.05 0.07
RRUS 11 B12 (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.000	180.00 1/2" Ice	3.31 3.55	1.36 1.54	0.05 0.07
(3) 14' Sector Frames (T-Mobile) ***	C	None		0.000	180.00 1/2" Ice	26.69 37.60	26.69 37.60	1.08 1.49
48"x8" w/6'-2.375"OD Pipe (Clearwire)	A	From Leg	1.00 0.00 0.00	0.000	118.00 1/2" Ice	4.21 4.74	2.74 3.52	0.04 0.08
48"x8" w/6'-2.375"OD Pipe (Clearwire)	B	From Leg	1.00 0.00 0.00	0.000	118.00 1/2" Ice	4.21 4.74	2.74 3.52	0.04 0.08
48"x8" w/6'-2.375"OD Pipe (Clearwire)	C	From Leg	1.00 0.00 0.00	0.000	118.00 1/2" Ice	4.21 4.74	2.74 3.52	0.04 0.08
TMA (12" x 8") (Clearwire)	A	From Leg	1.00 0.00 0.00	0.000	118.00 1/2" Ice	0.93 1.07	0.35 0.45	0.02 0.03
TMA (12" x 8") (Clearwire)	B	From Leg	1.00 0.00 0.00	0.000	118.00 1/2" Ice	0.93 1.07	0.35 0.45	0.02 0.03
TMA (12" x 8") (Clearwire)	C	From Leg	1.00 0.00 0.00	0.000	118.00 1/2" Ice	0.93 1.07	0.35 0.45	0.02 0.03

(2) APL866513-42T6 w/ Mount Pipe (Verizon)	A	From Leg	4.00 0.00 0.00	0.000	110.00 1/2" Ice	4.29 4.67	3.81 4.23	15.70 15.73
(2) APL866513-42T9 w/ Mount Pipe (Verizon)	B	From Leg	4.00 0.00 0.00	0.000	110.00 1/2" Ice	4.29 4.67	3.81 4.23	15.70 15.73

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			Vert	ft					
			ft	ft					
			ft	ft					
(2) APL866513-42T9 w/ Mount Pipe (Verizon)	C	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	4.29 4.67	3.81 4.23	15.70 15.73
(2) HBXX-6516DS-A2M w/ Mount Pipe (Verizon)	A	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	6.18 6.65	4.53 5.20	0.05 0.10
(2) HBXX-6516DS-A2M w/ Mount Pipe (Verizon)	B	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	6.18 6.65	4.53 5.20	0.05 0.10
(2) HBXX-6516DS-A2M w/ Mount Pipe (Verizon)	C	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	6.18 6.65	4.53 5.20	0.05 0.10
800 10734V01 w/ Mount Pipe (Verizon)	A	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	6.17 6.59	2.42 2.80	24.30 24.33
800 10734V01 w/ Mount Pipe (Verizon)	B	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	6.17 6.59	2.42 2.80	24.30 24.33
800 10734V01 w/ Mount Pipe (Verizon)	C	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	6.17 6.59	2.42 2.80	24.30 24.33
AWS LTE RRH (Verizon)	A	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.92 3.16	2.19 2.41	0.04 0.07
AWS LTE RRH (Verizon)	B	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.92 3.16	2.19 2.41	0.04 0.07
AWS LTE RRH (Verizon)	C	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.92 3.16	2.19 2.41	0.04 0.07
700 MHz RRH (Verizon)	A	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.49 2.71	2.21 2.42	0.05 0.07
700 MHz RRH (Verizon)	B	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.49 2.71	2.21 2.42	0.05 0.07
700 MHz RRH (Verizon)	C	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.49 2.71	2.21 2.42	0.05 0.07
RRH2X60-PCS (Verizon)	A	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.57 2.79	2.01 2.22	0.06 0.08
RRH2X60-PCS (Verizon)	B	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.57 2.79	2.01 2.22	0.06 0.08
RRH2X60-PCS (Verizon)	C	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	2.57 2.79	2.01 2.22	0.06 0.08
(2) CBC78-DF-2X (Verizon)	A	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	0.45 0.55	0.44 0.53	0.01 0.02
(2) CBC78-DF-2X (Verizon)	B	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	0.45 0.55	0.44 0.53	0.01 0.02
(2) CBC78-DF-2X (Verizon)	C	From Leg	4.00 0.00 0.00	0.00	110.00	No Ice 1/2" Ice	0.45 0.55	0.44 0.53	0.01 0.02

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CT014/ I-95/ X24/BLA

05/09/16

T-Mobile

Ian Marinaccio

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
GPS_A (Verizon)	C	From Leg	4.00 0.00 0.00	0.000	110.00	No Ice 1/2" Ice	0.30 0.37	0.30 0.37	0.00 0.00
OVP Fiber Box (Verizon)	C	From Leg	4.00 0.00 0.00	0.000	110.00	No Ice 1/2" Ice	2.93 3.16	1.91 2.11	0.04 0.06
(3) 12' Sector Frames (Verizon) ***	C	None		0.000	110.00	No Ice 1/2" Ice	33.02 47.36	33.02 47.36	1.67 2.22
(2) 48"x8" w/6'-2.375"OD Pipe	C	From Leg	4.00 0.00 0.00	0.000	100.00	No Ice 1/2" Ice	4.21 4.74	2.74 3.52	0.04 0.08
4' Standoff	C	From Leg	0.00 0.00 0.00	0.000	100.00	No Ice 1/2" Ice	1.67 2.51	3.27 4.99	0.06 0.09

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Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K	
VHLP1-23-1WH (Clearwire)	A	Paraboloid w/o Radome	From Leg	1.00 0.00 3.00	Worst		118.00	1.27	No Ice 1/2" Ice	1.28 1.45	0.01 0.02
VHLP2.5-11-3WH (Clearwire)	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 3.00	Worst		118.00	2.92	No Ice 1/2" Ice	6.68 7.07	0.05 0.08
VHLP1-23-1WH (Clearwire)	C	Paraboloid w/o Radome	From Leg	1.00 0.00 3.00	Worst		118.00	1.27	No Ice 1/2" Ice	1.28 1.45	0.01 0.02

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Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice



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T-Mobile

Ian Marinaccio

Comb. No.	Description
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	256 - 248	Leg	Max Tension	8	3.86	-0.02	-0.01
			Max. Compression	23	-5.78	0.04	-0.00
			Max. Mx	6	-5.31	0.04	-0.00
			Max. My	7	-0.86	-0.00	-0.04
			Max. Vy	12	-0.90	0.00	0.00
			Max. Vx	19	-1.19	0.00	0.00
		Diagonal	Max Tension	18	1.88	0.00	0.00
			Max. Compression	18	-1.85	0.00	0.00
			Max. Mx	19	0.59	0.01	-0.00
			Max. My	18	-1.64	0.01	-0.00
			Max. Vy	21	0.01	0.01	-0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	2	0.48	0.00	0.00
			Max. Compression	12	-0.50	0.00	0.00
			Max. Mx	14	-0.01	-0.04	0.00
			Max. My	14	-0.01	0.00	0.00
Max. Vy	14		0.03	0.00	0.00		
Max. Vx	14		-0.00	0.00	0.00		
T2	248 - 228	Leg	Max Tension	8	20.06	0.00	-0.04
			Max. Compression	23	-24.13	0.06	-0.04
			Max. Mx	17	-7.46	0.12	0.03
			Max. My	15	4.52	0.02	-0.13
			Max. Vy	23	0.11	0.09	-0.03
		Diagonal	Max. Vx	15	0.13	0.02	0.10
			Max Tension	18	3.20	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft			
T3	228 - 208	Leg	Max. Compression	24	-3.21	0.00	0.00			
			Max. Mx	23	1.85	0.02	0.00			
			Max. My	19	-2.83	0.00	-0.00			
			Max. Vy	23	-0.01	0.02	0.00			
			Max. Vx	19	0.00	0.00	0.00			
			Max Tension	8	45.99	0.06	0.00			
			Max. Compression	23	-52.84	-0.61	-0.09			
			Max. Mx	23	-52.84	-0.61	-0.09			
			Max. My	11	-1.65	0.02	0.39			
			Max. Vy	23	0.18	-0.61	-0.09			
			Max. Vx	11	0.12	0.02	0.39			
			Max Tension	24	4.35	0.00	0.00			
			Max. Compression	19	-4.51	0.00	0.00			
			Max. Mx	23	3.32	0.02	-0.00			
T4	208 - 188	Leg	Max. My	19	-2.61	-0.00	-0.01			
			Max. Vy	23	-0.01	0.02	-0.00			
			Max. Vx	19	-0.00	0.00	0.00			
			Max Tension	8	63.10	-0.35	-0.00			
			Max. Compression	23	-72.79	0.30	0.02			
			Max. Mx	23	-58.37	0.61	0.09			
			Max. My	7	-3.16	-0.01	-0.65			
			Max. Vy	6	0.13	0.61	-0.13			
			Max. Vx	11	0.15	-0.03	-0.60			
			Max Tension	19	3.17	0.00	0.00			
			Max. Compression	19	-3.37	0.00	0.00			
			Max. Mx	21	1.33	0.02	-0.00			
			Max. My	19	-3.35	-0.00	-0.01			
			Max. Vy	21	0.02	0.02	-0.00			
T5	188 - 168	Leg	Max. Vx	19	0.00	0.00	0.00			
			Max Tension	8	80.98	-0.70	0.01			
			Max. Compression	19	-94.93	0.56	-0.05			
			Max. Mx	12	67.09	-0.99	0.01			
			Max. My	9	-4.31	-0.03	0.90			
			Max. Vy	12	-1.10	-0.99	0.01			
			Max. Vx	9	1.00	-0.02	0.64			
			Max Tension	5	5.31	0.00	0.00			
			Max. Compression	5	-5.33	0.00	0.00			
			Max. Mx	21	3.17	0.04	-0.01			
			Max. My	19	1.22	0.03	-0.01			
			Max. Vy	21	0.02	0.04	-0.01			
			Max. Vx	19	0.00	0.00	0.00			
			T6	168 - 148	Leg	Max Tension	8	104.28	-0.50	0.02
Max. Compression	6	-122.25				0.56	-0.01			
Max. Mx	12	103.19				-0.61	0.02			
Max. My	9	-6.20				0.00	0.61			
Max. Vy	12	0.08				-0.61	0.02			
Max. Vx	9	0.12				0.00	0.61			
Max Tension	11	5.95				0.00	0.00			
Max. Compression	11	-5.96				0.00	0.00			
Max. Mx	19	3.26				0.07	-0.01			
Max. My	19	-5.13				0.01	-0.01			
Max. Vy	21	0.03				0.07	-0.01			
Max. Vx	19	0.00				0.00	0.00			
T7	148 - 128	Leg				Max Tension	8	127.04	-0.69	0.01
						Max. Compression	6	-149.12	1.97	-0.15
			Max. Mx	2	-146.86	1.97	-0.07			
			Max. My	9	-8.17	0.62	1.19			
			Max. Vy	2	-0.33	1.97	-0.07			
			Max. Vx	10	-0.24	-0.05	1.15			
			Max Tension	11	6.41	0.00	0.00			
			Max. Compression	11	-6.60	0.00	0.00			

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	128 - 108	Leg	Max. Mx	21	4.10	0.08	0.01
			Max. My	18	-6.13	0.04	-0.01
			Max. Vy	21	0.04	0.08	0.01
			Max. Vx	18	0.00	0.00	0.00
			Max Tension	8	148.28	-3.12	0.10
			Max. Compression	6	-229.95	0.67	-0.09
			Max. Mx	12	89.63	4.22	0.09
		Diagonal	Max. My	9	-9.73	-1.81	2.37
			Max. Vy	4	3.88	-3.50	-0.06
			Max. Vx	3	1.03	-1.44	-1.18
			Max Tension	11	7.96	0.00	0.00
			Max. Compression	11	-9.69	0.00	0.00
			Max. Mx	19	3.75	0.26	-0.03
			Max. My	18	-6.57	0.03	-0.03
T9	108 - 88	Leg	Max. Vy	19	-0.08	0.26	-0.03
			Max. Vx	18	0.01	0.00	0.00
			Max Tension	8	116.61	-1.36	-0.05
			Max. Compression	6	-264.15	2.74	-0.16
			Max. Mx	4	103.49	-3.50	-0.06
			Max. My	9	-70.00	0.89	1.77
			Max. Vy	2	-0.38	2.74	-0.01
		Diagonal	Max. Vx	7	0.29	-0.72	-1.29
			Max Tension	11	10.99	0.00	0.00
			Max. Compression	11	-10.92	0.00	0.00
			Max. Mx	19	6.67	0.24	-0.03
			Max. My	18	-9.99	0.07	-0.03
			Max. Vy	19	-0.08	0.24	-0.03
			Max. Vx	18	0.00	0.00	0.00
T10	88 - 68	Leg	Max Tension	8	144.25	-2.55	-0.01
			Max. Compression	6	-297.47	2.54	-0.04
			Max. Mx	2	-275.96	2.74	-0.01
			Max. My	9	-69.56	0.89	1.77
			Max. Vy	12	0.31	-2.53	0.03
			Max. Vx	6	-0.18	-0.04	-1.68
			Max Tension	11	11.79	0.00	0.00
		Diagonal	Max. Compression	11	-11.73	0.00	0.00
			Max. Mx	19	6.93	0.39	-0.04
			Max. My	18	-10.74	0.15	-0.05
			Max. Vy	19	-0.12	0.39	-0.04
			Max. Vx	18	0.01	0.00	0.00
			Max Tension	8	171.50	-2.26	-0.00
			Max. Compression	6	-331.83	3.31	-0.05
T11	68 - 48	Leg	Max. Mx	6	-331.83	3.31	-0.05
			Max. My	7	-72.28	-0.78	-2.56
			Max. Vy	2	-0.37	3.29	0.01
			Max. Vx	7	-0.37	-0.78	-2.56
			Max Tension	11	12.30	0.00	0.00
			Max. Compression	11	-12.93	0.00	0.00
			Max. Mx	19	6.98	0.43	-0.05
		Diagonal	Max. My	19	6.98	0.43	-0.05
			Max. Vy	19	-0.13	0.43	-0.05
			Max. Vx	19	0.01	0.00	0.00
			Max Tension	8	196.97	-2.42	0.00
			Max. Compression	6	-365.41	-3.90	-0.12
			Max. Mx	6	-365.41	-3.90	-0.12
			Max. My	7	-76.68	-2.01	-4.84
T12	48 - 28	Leg	Max. Vy	6	0.62	1.39	0.00
			Max. Vx	7	0.44	-0.57	-3.44
			Max Tension	11	12.49	0.00	0.00
			Max. Compression	11	-13.15	0.00	0.00
			Max. Mx	20	4.79	0.50	0.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft	
T13	28 - 8	Leg	Max. My	19	6.84	0.50	-0.07	
			Max. Vy	20	-0.14	0.50	0.05	
			Max. Vx	19	0.01	0.00	0.00	
			Max Tension	8	223.48	1.06	0.00	
			Max. Compression	6	-402.02	0.00	0.00	
			Max. Mx	6	-371.79	15.56	0.42	
			Max. My	7	-77.07	-2.01	-4.84	
			Max. Vy	2	-14.69	0.00	-0.00	
			Max. Vx	6	5.72	0.00	0.00	
			Diagonal	Max Tension	11	18.42	-0.25	-0.06
		Max. Compression		11	-20.25	0.00	0.00	
		Max. Mx		17	10.66	-0.34	-0.02	
		Max. My		11	-18.59	0.13	-0.18	
		Max. Vy		17	0.09	-0.34	-0.02	
		Max. Vx		24	-0.02	0.00	0.00	
		Horizontal		Max Tension	11	10.23	-0.19	0.00
				Max. Compression	11	-10.72	-0.19	0.00
				Max. Mx	21	-0.66	-0.28	-0.02
				Max. My	2	0.44	-0.12	0.02
			Max. Vy	21	0.09	-0.28	-0.02	
			Max. Vx	2	-0.00	-0.12	0.02	
			Redund Horz 1 Bracing	Max Tension	11	2.24	0.00	0.00
				Max. Compression	11	-1.17	0.00	0.00
				Max. Mx	14	0.49	0.02	0.00
			Redund Diag 1 Bracing	Max. Vy	14	-0.01	0.00	0.00
		Max Tension		18	1.33	0.00	0.00	
		Max. Compression		6	-1.95	0.00	0.00	
		Redund Hip 1 Bracing	Max. Mx	14	-0.16	0.04	0.00	
			Max. Vy	14	0.01	0.00	0.00	
			Max Tension	11	0.03	0.00	0.00	
Redund Hip Diagonal 1 Bracing	Max. Compression	18	-0.03	0.00	0.00			
	Max. Mx	14	-0.01	0.02	0.00			
	Max. Vy	14	-0.01	0.00	0.00			
Inner Bracing	Max Tension	19	0.08	0.00	0.00			
	Max. Compression	25	-0.09	0.00	0.00			
	Max. Mx	14	0.05	0.22	0.00			
	Max. Vy	14	-0.06	0.00	0.00			
	Max Tension	1	0.00	0.00	0.00			
	Max. Compression	17	-0.02	0.00	0.00			
	Max. Mx	14	-0.01	0.21	0.00			
	Max. Vy	14	0.06	0.00	0.00			

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	398.66	38.18	-20.64
	Max. H _x	10	398.66	38.18	-20.64
	Max. H _z	3	-183.40	-20.31	13.91
	Min. Vert	4	-219.81	-25.40	13.44
	Min. H _x	4	-219.81	-25.40	13.44
	Min. H _z	10	398.66	38.18	-20.64



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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg B	Max. Vert	6	399.93	-38.21	-20.63
	Max. H _x	12	-218.95	25.41	13.39
	Max. H _z	13	-182.58	20.33	13.83
	Min. Vert	12	-218.95	25.41	13.39
	Min. H _x	6	399.93	-38.21	-20.63
	Min. H _z	6	399.93	-38.21	-20.63
Leg A	Max. Vert	2	396.08	-0.03	43.31
	Max. H _x	11	78.10	3.66	6.12
	Max. H _z	2	396.08	-0.03	43.31
	Min. Vert	8	-221.99	0.05	-28.73
	Min. H _x	5	77.86	-3.64	6.12
	Min. H _z	8	-221.99	0.05	-28.73

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Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	239.76	0.00	0.00	46.76	-14.85	-0.00
Dead+Wind 0 deg - No Ice	239.76	0.00	-63.66	-7620.87	-11.94	-1.83
Dead+Wind 30 deg - No Ice	239.76	30.33	-52.47	-6308.18	-3687.10	30.09
Dead+Wind 60 deg - No Ice	239.76	51.64	-29.78	-3565.94	-6283.63	52.85
Dead+Wind 90 deg - No Ice	239.76	60.65	-0.00	49.67	-7364.40	63.19
Dead+Wind 120 deg - No Ice	239.76	55.18	31.83	3883.10	-6665.17	58.69
Dead+Wind 150 deg - No Ice	239.76	30.32	52.47	6404.62	-3692.14	33.11
Dead+Wind 180 deg - No Ice	239.76	-0.00	59.56	7277.20	-17.76	1.72
Dead+Wind 210 deg - No Ice	239.76	-30.33	52.47	6401.71	3657.40	-30.09
Dead+Wind 240 deg - No Ice	239.76	-55.19	31.83	3878.06	6632.55	-56.86
Dead+Wind 270 deg - No Ice	239.76	-60.65	0.00	43.85	7334.69	-63.19
Dead+Wind 300 deg - No Ice	239.76	-51.63	-29.78	-3570.98	6256.84	-54.57
Dead+Wind 330 deg - No Ice	239.76	-30.32	-52.47	-6311.09	3662.44	-33.11
Dead+Ice+Temp	273.29	0.00	0.00	112.57	-43.23	-0.00
Dead+Wind 0 deg+Ice+Temp	273.29	-0.02	-57.68	-6992.50	-37.57	-5.43
Dead+Wind 30 deg+Ice+Temp	273.29	27.80	-48.14	-5853.67	-3488.96	29.13
Dead+Wind 60 deg+Ice+Temp	273.29	47.57	-27.43	-3293.34	-5955.70	54.90
Dead+Wind 90 deg+Ice+Temp	273.29	55.64	0.02	118.23	-6944.48	67.33
Dead+Wind 120 deg+Ice+Temp	273.29	50.00	28.86	3670.01	-6206.82	63.51
Dead+Wind 150 deg+Ice+Temp	273.29	27.84	48.16	6084.47	-3498.76	38.20
Dead+Wind 180 deg+Ice+Temp	273.29	0.02	54.90	6934.20	-48.89	5.17
Dead+Wind 210 deg+Ice+Temp	273.29	-27.80	48.14	6078.81	3402.50	-29.13
Dead+Wind 240 deg+Ice+Temp	273.29	-49.98	28.82	3660.21	6114.71	-58.08
Dead+Wind 270 deg+Ice+Temp	273.29	-55.64	-0.02	106.91	6858.03	-67.33
Dead+Wind 300 deg+Ice+Temp	273.29	-47.59	-27.47	-3303.14	5874.90	-60.07
Dead+Wind 330 deg+Ice+Temp	273.29	-27.84	-48.16	-5859.33	3412.30	-38.20
Dead+Wind 0 deg - Service	239.76	0.00	-22.03	-2606.40	-13.85	-0.63
Dead+Wind 30 deg - Service	239.76	10.49	-18.16	-2152.18	-1285.53	10.41
Dead+Wind 60 deg - Service	239.76	17.87	-10.31	-1203.30	-2183.98	18.29
Dead+Wind 90 deg - Service	239.76	20.99	-0.00	47.77	-2557.95	21.87
Dead+Wind 120 deg - Service	239.76	19.09	11.01	1374.22	-2316.00	20.31
Dead+Wind 150 deg - Service	239.76	10.49	18.15	2246.71	-1287.27	11.46
Dead+Wind 180 deg - Service	239.76	-0.00	20.61	2548.65	-15.86	0.59
Dead+Wind 210 deg - Service	239.76	-10.49	18.16	2245.71	1255.82	-10.41
Dead+Wind 240 deg - Service	239.76	-19.10	11.02	1372.47	2285.29	-19.67
Dead+Wind 270 deg - Service	239.76	-20.99	0.00	45.76	2528.24	-21.87
Dead+Wind 300 deg - Service	239.76	-17.87	-10.30	-1205.05	2155.28	-18.88
Dead+Wind 330 deg - Service	239.76	-10.49	-18.15	-2153.19	1257.57	-11.46

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-239.76	0.00	-0.00	239.76	-0.00	0.000%
2	0.00	-239.76	-63.66	-0.00	239.76	63.66	0.000%
3	30.33	-239.76	-52.47	-30.33	239.76	52.47	0.000%
4	51.64	-239.76	-29.78	-51.64	239.76	29.78	0.000%
5	60.65	-239.76	-0.00	-60.65	239.76	0.00	0.000%
6	55.18	-239.76	31.83	-55.18	239.76	-31.83	0.000%
7	30.32	-239.76	52.47	-30.32	239.76	-52.47	0.000%
8	-0.00	-239.76	59.56	0.00	239.76	-59.56	0.000%
9	-30.33	-239.76	52.47	30.33	239.76	-52.47	0.000%
10	-55.19	-239.76	31.83	55.19	239.76	-31.83	0.000%
11	-60.65	-239.76	0.00	60.65	239.76	-0.00	0.000%
12	-51.63	-239.76	-29.78	51.63	239.76	29.78	0.000%
13	-30.32	-239.76	-52.47	30.32	239.76	52.47	0.000%
14	0.00	-273.29	0.00	-0.00	273.29	-0.00	0.000%
15	-0.02	-273.29	-57.68	0.02	273.29	57.68	0.000%
16	27.80	-273.29	-48.14	-27.80	273.29	48.14	0.000%
17	47.57	-273.29	-27.43	-47.57	273.29	27.43	0.000%
18	55.64	-273.29	0.02	-55.64	273.29	-0.02	0.000%
19	50.00	-273.29	28.86	-50.00	273.29	-28.86	0.000%
20	27.84	-273.29	48.16	-27.84	273.29	-48.16	0.000%
21	0.02	-273.29	54.90	-0.02	273.29	-54.90	0.000%
22	-27.80	-273.29	48.14	27.80	273.29	-48.14	0.000%
23	-49.98	-273.29	28.82	49.98	273.29	-28.82	0.000%
24	-55.64	-273.29	-0.02	55.64	273.29	0.02	0.000%
25	-47.59	-273.29	-27.47	47.59	273.29	27.47	0.000%
26	-27.84	-273.29	-48.16	27.84	273.29	48.16	0.000%
27	0.00	-239.76	-22.03	-0.00	239.76	22.03	0.000%
28	10.49	-239.76	-18.16	-10.49	239.76	18.16	0.000%
29	17.87	-239.76	-10.31	-17.87	239.76	10.31	0.000%
30	20.99	-239.76	-0.00	-20.99	239.76	0.00	0.000%
31	19.09	-239.76	11.01	-19.09	239.76	-11.01	0.000%
32	10.49	-239.76	18.15	-10.49	239.76	-18.15	0.000%
33	-0.00	-239.76	20.61	0.00	239.76	-20.61	0.000%
34	-10.49	-239.76	18.16	10.49	239.76	-18.16	0.000%
35	-19.10	-239.76	11.02	19.10	239.76	-11.02	0.000%
36	-20.99	-239.76	0.00	20.99	239.76	-0.00	0.000%
37	-17.87	-239.76	-10.30	17.87	239.76	10.30	0.000%
38	-10.49	-239.76	-18.15	10.49	239.76	18.15	0.000%

M T r S r d

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	256 - 248	6.61	31	0.259	0.074
T2	248 - 228	6.17	31	0.257	0.069
T3	228 - 208	5.10	31	0.241	0.059
T4	208 - 188	4.12	31	0.211	0.045
T5	188 - 168	3.28	31	0.181	0.032
T6	168 - 148	2.55	31	0.159	0.026
T7	148 - 128	1.91	31	0.134	0.021

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T8	128 - 108	1.38	31	0.108	0.015
T9	108 - 88	0.96	31	0.084	0.013
T10	88 - 68	0.62	31	0.065	0.010
T11	68 - 48	0.36	31	0.050	0.007
T12	48 - 28	0.16	31	0.033	0.005
T13	28 - 8	0.03	27	0.017	0.003

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Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
259.00	12' Platform	31	6.61	0.259	0.074	249425
256.00	(2) 20' x 2" Omni Antenna	31	6.61	0.259	0.074	249425
238.00	8'x3"OD Omni	31	5.63	0.251	0.064	79670
180.00	RRUS 32 B2	31	2.98	0.172	0.029	50583
121.00	VHLP1-23-1WH	31	1.22	0.099	0.014	42712
118.00	48"x8" w/6'-2.375"OD Pipe	31	1.15	0.096	0.014	47499
110.00	(2) APL866513-42T6 w/ Mount Pipe	31	1.00	0.086	0.013	67364
100.00	(2) 48"x8" w/6'-2.375"OD Pipe	31	0.81	0.076	0.012	66789

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	256 - 248	18.92	6	0.743	0.233
T2	248 - 228	17.67	6	0.737	0.217
T3	228 - 208	14.61	6	0.691	0.185
T4	208 - 188	11.80	6	0.605	0.142
T5	188 - 168	9.40	6	0.519	0.100
T6	168 - 148	7.30	6	0.455	0.079
T7	148 - 128	5.47	6	0.384	0.063
T8	128 - 108	3.94	6	0.309	0.047
T9	108 - 88	2.74	6	0.240	0.039
T10	88 - 68	1.78	6	0.187	0.030
T11	68 - 48	1.03	6	0.142	0.023
T12	48 - 28	0.46	6	0.095	0.016
T13	28 - 8	0.10	2	0.047	0.009

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Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
259.00	12' Platform	6	18.92	0.743	0.233	92341
256.00	(2) 20' x 2" Omni Antenna	6	18.92	0.743	0.233	92341
238.00	8'x3"OD Omni	6	16.12	0.721	0.201	28579



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Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	RRUS 32 B2	6	8.52	0.492	0.090	17696
121.00	VHLP1-23-1WH	6	3.49	0.283	0.044	14949
118.00	48"x8" w/6'-2.375"OD Pipe	6	3.30	0.273	0.043	16654
110.00	(2) APL866513-42T6 w/ Mount Pipe	6	2.85	0.246	0.040	23794
100.00	(2) 48"x8" w/6'-2.375"OD Pipe	6	2.33	0.217	0.036	23492

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load Allowable	Allowable Ratio	Criteria
T13	28	Leg	F1554-36	1.00	16	13.97	15.03	0.929 ✓	1.333	Bolt Tension

Compression Checks

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Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	256 - 248	ROHN 3 STD	8.00	4.00	41.3 K=1.00	25.65	2.23	-5.78	57.17	0.101 ✓
T2	248 - 228	ROHN 3 EH	20.00	4.00	42.2 K=1.00	25.51	3.02	-24.13	76.95	0.314 ✓
T3	228 - 208	ROHN 4 EH	20.00	4.00	32.5 K=1.00	26.84	4.41	-52.84	118.29	0.447 ✓
T4	208 - 188	ROHN 5 EH	20.04	5.01	32.7 K=1.00	26.81	6.11	-72.79	163.89	0.444 ✓
T5	188 - 168	ROHN 6 EH	20.03	6.68	36.5 K=1.00	26.31	8.40	-94.93	221.15	0.429 ✓
T6	168 - 148	ROHN 6 EH	20.03	6.68	36.5 K=1.00	26.31	8.40	-122.25	221.15	0.553 ✓
T7	148 - 128	ROHN 6 EH	20.04	6.68	36.5 K=1.00	26.31	8.40	-149.12	221.15	0.674 ✓
T8	128 - 108	ROHN 8 EHS	20.04	10.02	41.2 K=1.00	25.67	9.72	-229.95	249.46	0.922 ✓
T9	108 - 88	ROHN 8 EH	20.04	10.02	41.8 K=1.00	25.58	12.76	-264.15	326.48	0.809 ✓
T10	88 - 68	P10x.5	20.03	10.02	33.1 K=1.00	26.76	16.10	-297.47	430.81	0.690 ✓
T11	68 - 48	P10x.5	20.03	10.02	33.1 K=1.00	26.76	16.10	-331.83	430.82	0.770 ✓
T12	48 - 28	P10x.5	20.04	10.02	33.1	26.76	16.10	-365.41	430.80	0.848 ✓

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









05/09/16

T-Mobile


Ian Marinaccio

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T13	28 - 8	P10x.5	20.05	9.98	K=1.00 66.0 K=2.00	21.66	16.10	-372.44	348.73	1.068  

REINFORCEMENT SCHEDULE FOR T-MOBILE

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	256 - 248	L1 3/4x1 3/4x3/16	7.91	3.83	133.8 K=1.00	8.34	0.62	-1.85	5.18	0.357 
T2	248 - 228	L2x2x1/4	7.98	3.82	117.2 K=1.00	10.68	0.94	-3.21	10.02	0.320 
T3	228 - 208	L2x2x1/4	7.92	3.75	115.0 K=1.00	10.98	0.94	-4.51	10.30	0.438 
T4	208 - 188	L2x2x1/4	10.00	4.88	149.8 K=1.00	6.65	0.94	-3.12	6.24	0.499 
T5	188 - 168	L2 1/2x2 1/2x1/4	12.51	6.13	149.7 K=1.00	6.66	1.19	-5.33	7.93	0.672 
T6	168 - 148	L3x3x1/4	14.23	6.99	141.7 K=1.00	7.43	1.44	-5.96	10.70	0.557 
T7	148 - 128	L3x3x1/4	16.09	7.93	160.8 K=1.00	5.78	1.44	-6.60	8.32	0.793 
T8	128 - 108	L4x4x3/8	19.35	9.56	145.6 K=1.00	7.05	2.86	-9.69	20.15	0.481 
T9	108 - 88	L4x4x5/16	20.27	10.04	152.3 K=1.00	6.44	2.40	-10.92	15.46	0.707 
T10	88 - 68	L5x5x3/8	23.04	11.30	136.9 K=1.00	7.96	3.61	-11.60	28.74	0.404 
T11	68 - 48	L5x5x3/8	24.84	12.20	147.9 K=1.00	6.83	3.61	-12.93	24.65	0.525 
T12	48 - 28	L5x5x3/8	26.75	13.17	159.7 K=1.00	5.86	3.61	-13.15	21.14	0.622 
T13	28 - 8	REINF ROHN 3 STD w/ L4x4x1/4	24.30	12.15	121.7 K=1.00	10.08	4.17	-18.59	42.05	0.442 

REINFORCEMENT SCHEDULE FOR T-MOBILE

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T13	28 - 8	ROHN 3 STD	25.33	12.22	126.0 K=1.00	9.40	2.23	-10.72	20.96	0.511 



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T-Mobile

Ian Marinaccio

T

Section No.	Elevation ft	Size	L ft	L _a ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	256 - 248	L3x3x1/4	6.60	6.31	128.0 K=1.00	9.12	1.44	-0.50	13.13	0.038



d

Section No.	Elevation ft	Size	L ft	L _a ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 1.5 STD	6.33	5.89	113.4 K=1.00	11.20	0.80	-1.17	8.96	0.130



d

Section No.	Elevation ft	Size	L ft	L _a ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 1.5 STD	11.49	10.59	204.0 K=1.00	3.59	0.80	-1.95	2.87	0.682



d

Section No.	Elevation ft	Size	L ft	L _a ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 1.5 STD	6.33	6.33	122.1 K=1.00	9.98	0.80	-0.03	7.98	0.004



d

Section No.	Elevation ft	Size	L ft	L _a ft	KL/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 3 STD	15.10	15.10	155.7 K=1.00	6.16	2.23	-0.09	13.73	0.006



I

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T13	28 - 8	ROHN 3 STD	12.67	12.67	130.6 K=1.00	8.75	2.23	-0.02	19.50	0.001 ✓

Tension Checks

L T

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T1	256 - 248	ROHN 3 STD	8.00	4.00	41.3	30.00	2.23	3.86	66.85	0.058 ✓
T2	248 - 228	ROHN 3 EH	20.00	4.00	42.2	30.00	3.02	20.06	90.48	0.222 ✓
T3	228 - 208	ROHN 4 EH	20.00	4.00	32.5	30.00	4.41	45.99	132.22	0.348 ✓
T4	208 - 188	ROHN 5 EH	20.04	5.01	32.7	30.00	6.11	63.10	183.36	0.344 ✓
T5	188 - 168	ROHN 6 EH	20.03	6.68	36.5	30.00	8.40	80.98	252.15	0.321 ✓
T6	168 - 148	ROHN 6 EH	20.03	6.68	36.5	30.00	8.40	104.28	252.15	0.414 ✓
T7	148 - 128	ROHN 6 EH	20.04	6.68	36.5	30.00	8.40	127.04	252.15	0.504 ✓
T8	128 - 108	ROHN 8 EHS	20.04	10.02	41.2	30.00	9.72	148.23	291.58	0.508 ✓
T9	108 - 88	ROHN 8 EH	20.04	10.02	41.8	30.00	12.76	116.61	382.88	0.305 ✓
T10	88 - 68	P10x.5	20.03	10.02	33.1	30.00	16.10	144.25	483.02	0.299 ✓
T11	68 - 48	P10x.5	20.03	10.02	33.1	30.00	16.10	171.50	483.02	0.355 ✓
T12	48 - 28	P10x.5	20.04	10.02	33.1	30.00	16.10	196.97	483.02	0.408 ✓
T13	28 - 8	P10x.5	20.05	0.08	0.3	30.00	16.10	223.48	483.02	0.463 ✓

L T

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T1	256 - 248	L1 3/4x1 3/4x3/16	7.91	3.83	85.6	21.60	0.62	1.88	13.42	0.140 ✓
T2	248 - 228	L2x2x1/4	7.98	3.82	75.3	21.60	0.94	3.20	20.26	0.158 ✓



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Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T3	228 - 208	L2x2x1/4	7.92	3.75	73.9	21.60	0.94	4.35	20.26	0.215 ✓
T4	208 - 188	L2x2x1/4	10.00	4.88	96.2	21.60	0.94	3.17	20.26	0.157 ✓
T5	188 - 168	L2 1/2x2 1/2x1/4	12.51	6.13	95.6	21.60	1.19	5.31	25.70	0.207 ✓
T6	168 - 148	L3x3x1/4	14.23	6.99	90.2	21.60	1.44	5.95	31.10	0.191 ✓
T7	148 - 128	L3x3x1/4	15.46	7.62	98.3	21.60	1.44	6.41	31.10	0.206 ✓
T8	128 - 108	L4x4x3/8	18.46	9.12	89.0	32.50	2.15	7.96	69.71	0.114 ✓
T9	108 - 88	L4x4x5/16	21.22	10.51	101.7	32.50	1.80	10.99	58.50	0.188 ✓
T10	88 - 68	L5x5x3/8	23.04	11.30	86.9	32.50	2.71	11.79	87.99	0.134 ✓
T11	68 - 48	L5x5x3/8	24.84	12.20	93.8	32.50	2.71	12.30	87.99	0.140 ✓
T12	48 - 28	L5x5x3/8	25.78	12.69	97.6	32.50	2.71	12.49	87.99	0.142 ✓
T13	28 - 8	REINF ROHN 3 STD w/ L4x4x1/4	24.30	11.37	113.9	30.00	4.17	18.42	125.18	0.147 ✓

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Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T13	28 - 8	ROHN 3 STD	25.33	12.22	126.0	30.00	2.23	10.23	66.85	0.153 ✓

T-Mobile

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T1	256 - 248	L3x3x1/4	6.60	6.31	81.4	21.60	1.44	0.48	31.10	0.015 ✓

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Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 1.5 STD	6.33	5.89	113.4	21.60	0.80	2.24	17.27	0.130

✓

d

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 1.5 STD	11.49	10.59	204.0	21.60	0.80	1.33	17.27	0.077

✓

d

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 1.5 STD	6.33	6.33	122.1	21.60	0.80	0.03	17.27	0.001

✓

d

Section No.	Elevation ft	Size	L ft	L _a ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T13	28 - 8	ROHN 3 STD	15.10	15.10	155.7	21.60	2.23	0.08	48.13	0.002

✓

S

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
T1	256 - 248	Leg	ROHN 3 STD	1	-5.78	76.21	7.6	Pass
T2	248 - 228	Leg	ROHN 3 EH	19	-24.13	102.57	23.5	Pass
T3	228 - 208	Leg	ROHN 4 EH	52	-52.84	157.67	33.5	Pass
T4	208 - 188	Leg	ROHN 5 EH	85	-72.79	218.47	33.3	Pass
T5	188 - 168	Leg	ROHN 6 EH	113	-94.93	294.79	32.2	Pass
T6	168 - 148	Leg	ROHN 6 EH	134	-122.25	294.79	41.5	Pass
T7	148 - 128	Leg	ROHN 6 EH	155	-149.12	294.79	50.6	Pass
T8	128 - 108	Leg	ROHN 8 EHS	176	-229.95	332.53	69.2	Pass
T9	108 - 88	Leg	ROHN 8 EH	191	-264.15	435.19	60.7	Pass
T10	88 - 68	Leg	P10x.5	206	-297.47	574.28	51.8	Pass
T11	68 - 48	Leg	P10x.5	221	-331.83	574.28	57.8	Pass
T12	48 - 28	Leg	P10x.5	236	-365.41	574.26	63.6	Pass



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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail	
T13	28 - 8	Leg	P10x.5	251	-372.44	464.85	80.1	Pass	
T1	256 - 248	Diagonal	L1 3/4x1 3/4x3/16	8	-1.85	6.90	26.8	Pass	
T2	248 - 228	Diagonal	L2x2x1/4	22	-3.21	13.35	24.0	Pass	
T3	228 - 208	Diagonal	L2x2x1/4	56	-4.51	13.73	32.8	Pass	
T4	208 - 188	Diagonal	L2x2x1/4	89	-3.12	8.32	37.5	Pass	
T5	188 - 168	Diagonal	L2 1/2x2 1/2x1/4	116	-5.33	10.57	50.4	Pass	
T6	168 - 148	Diagonal	L3x3x1/4	136	-5.96	14.27	41.8	Pass	
T7	148 - 128	Diagonal	L3x3x1/4	157	-6.60	11.09	59.5	Pass	
T8	128 - 108	Diagonal	L4x4x3/8	178	-9.69	26.86	36.1	Pass	
T9	108 - 88	Diagonal	L4x4x5/16	199	-10.92	20.60	53.0	Pass	
T10	88 - 68	Diagonal	L5x5x3/8	208	-11.60	38.32	30.3	Pass	
T11	68 - 48	Diagonal	L5x5x3/8	223	-12.93	32.86	39.3	Pass	
T12	48 - 28	Diagonal	L5x5x3/8	238	-13.15	28.18	46.7	Pass	
T13	28 - 8	Diagonal	REINF ROHN 3 STD w/ L4x4x1/4	254	-18.59	56.05	33.2	Pass	
T13	28 - 8	Horizontal	ROHN 3 STD	253	-10.72	27.94	38.4	Pass	
T1	256 - 248	Top Girt	L3x3x1/4	6	-0.50	17.51	2.8	Pass	
T13	28 - 8	Redund Horz 1 Bracing	ROHN 1.5 STD	262	-1.17	11.94	9.8	Pass	
T13	28 - 8	Redund Diag 1 Bracing	ROHN 1.5 STD	263	-1.95	3.82	51.1	Pass	
T13	28 - 8	Redund Hip 1 Bracing	ROHN 1.5 STD	278	-0.03	10.64	0.3	Pass	
T13	28 - 8	Redund Hip Diagonal 1 Bracing	ROHN 3 STD	279	-0.09	18.30	0.5	Pass	
T13	28 - 8	Inner Bracing	ROHN 3 STD	281	-0.01	19.50	0.4	Pass	
							Summary		
							Leg (T13)	80.1	Pass
							Diagonal (T7)	59.5	Pass
							Horizontal (T13)	38.4	Pass
							Top Girt (T1)	2.8	Pass
							Redund Horz 1 Bracing (T13)	9.8	Pass
							Redund Diag 1 Bracing (T13)	51.1	Pass
							Redund Hip 1 Bracing (T13)	0.3	Pass
							Redund Hip Diagonal 1 Bracing (T13)	0.5	Pass
							Inner Bracing (T13)	0.4	Pass
							Bolt Checks	69.7	Pass
							RATING =	80.1	Pass

ANTENNA MOUNT ANALYSIS □E□O□T



Practical Solutions, Exceptional Service

Job No. 8250.CT11014B
 Sheet No. of
 Calculated By IM Date : 05/05/16
 Checked By EI Date : 05/05/16

CALCULATION OF WIND LOAD ON APPURTENANCES - REV-F

Appurtenance Centerline = 180 ft
 County: Fairfield
 Wind Speed = 85 mph
 Ice Thickness = 0.5 in Radial ice per Rev F

Per, TIA/EIA-222-F-1996:
 Design Wind Load, $F = q_z G_H (C_A A_A)$

$q_z =$ 30.03 psf
 $K_z =$ 1.62 $G_H =$ 1.12 Sec 2.3.4.2
 $G_H =$ 1.12

No Ice

(E) or (P)?	Appurtenance	Quantity	Length or Diameter (in)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna Ca	Normal Antenna Aa Each (ft^2)	Transverse Antenna Aa Each (ft^2)	Manufacturer Wind Area Each (ft^2)	Normal Antenna Wind Load Each (lb)	Transverse Antenna Wind Load Each (lb)	Antenna Weight with bracket Each (lb)
(E)	AIR 21 B2A/B4P	1	56.0	12.0	8.0	Flat	1.40	4.67	3.11	N.A.	220	147	91
(E)	AIR 32 B4A/B2P	1	54.0	12.0	8.6	Flat	1.40	4.50	3.23	N.A.	212	152	109
(E)	LNX-6515DS-VTM	1	96.4	11.9	7.1	Flat	1.44	7.93	4.75	N.A.	384	230	50
(E)	TMA	1	18.0	12.0	6.0	Flat	1.40	1.50	0.75	N.A.	71	35	30
(E)	RRUS11 B12	1	20.0	17.0	7.0	Flat	1.40	2.36	0.97	N.A.	111	46	51
(P)	RRUS 32 B2	1	27.1	12.0	7.0	Flat	1.40	2.26	1.32	N.A.	106	62	53

0.5" Ice

Amount of Radial Ice: 0.50 in

Appurtenance	Quantity	Length or Diameter (in)	Width (in)	Depth (in)	Flat or Cylindrical?	Antenna Ca	Normal Antenna Aa Each (ft^2)	Transverse Antenna Aa Each (ft^2)	25% reduction Normal Antenna Wind Load Each (lb)	25% reduction Transverse Antenna Wind Load Each (lb)	Ice Weight Alone (lbs)	
(E)	AIR 21 B2A/B4P	1	57.0	13.0	9.0	Cylindrical	0.80	5.15	3.56	104	72	42
(E)	AIR 32 B4A/B2P	1	55.0	13.0	9.6	Cylindrical	0.80	4.97	3.67	100	74	42
(E)	LNX-6515DS-VTM	1	97.4	12.9	8.1	Cylindrical	0.81	8.69	5.48	178	112	66
(E)	TMA	1	19.0	13.0	7.0	Cylindrical	0.80	1.72	0.92	35	19	14
(E)	RRUS11 B12	1	21.0	18.0	8.0	Cylindrical	0.80	2.63	1.17	53	24	21
(P)	RRUS 32 B2	1	28.1	13.0	8.0	Cylindrical	0.80	2.54	1.56	51	32	21

NOTES:

(E) Existing Antennas

(P) Proposed Antennas

CALCULATION OF WIND LOAD ON MOUNTING SYSTEM - REV-F

Mount Centerline = 180 ft
County: Fairfield
Wind Speed = 85 mph
Ice Thickness = 0.5 in Radial ice per Rev F

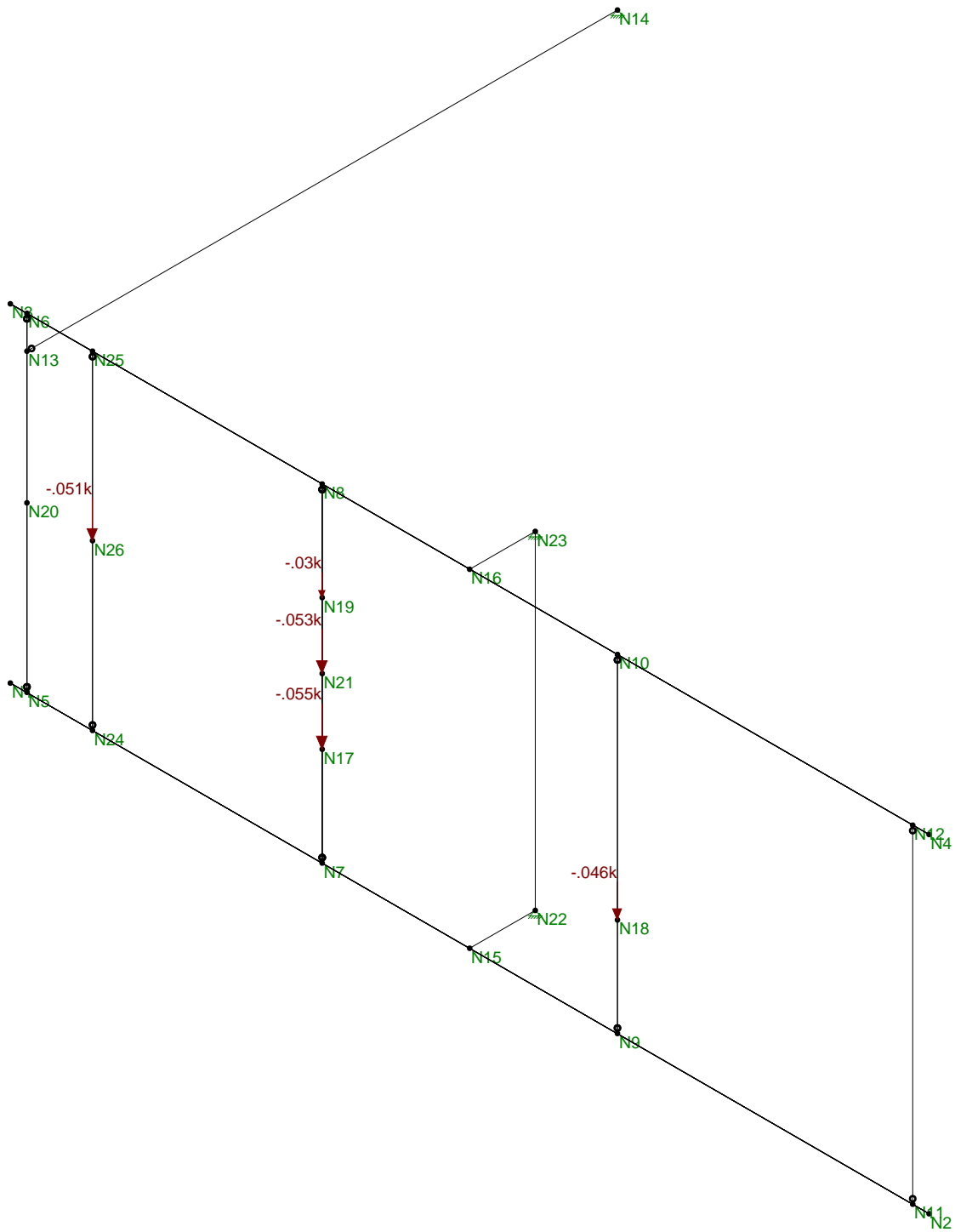
Per, TIA/EIA-222-F-1996:

Design Wind Load, $F = q_z G_H (C_d A_d)$

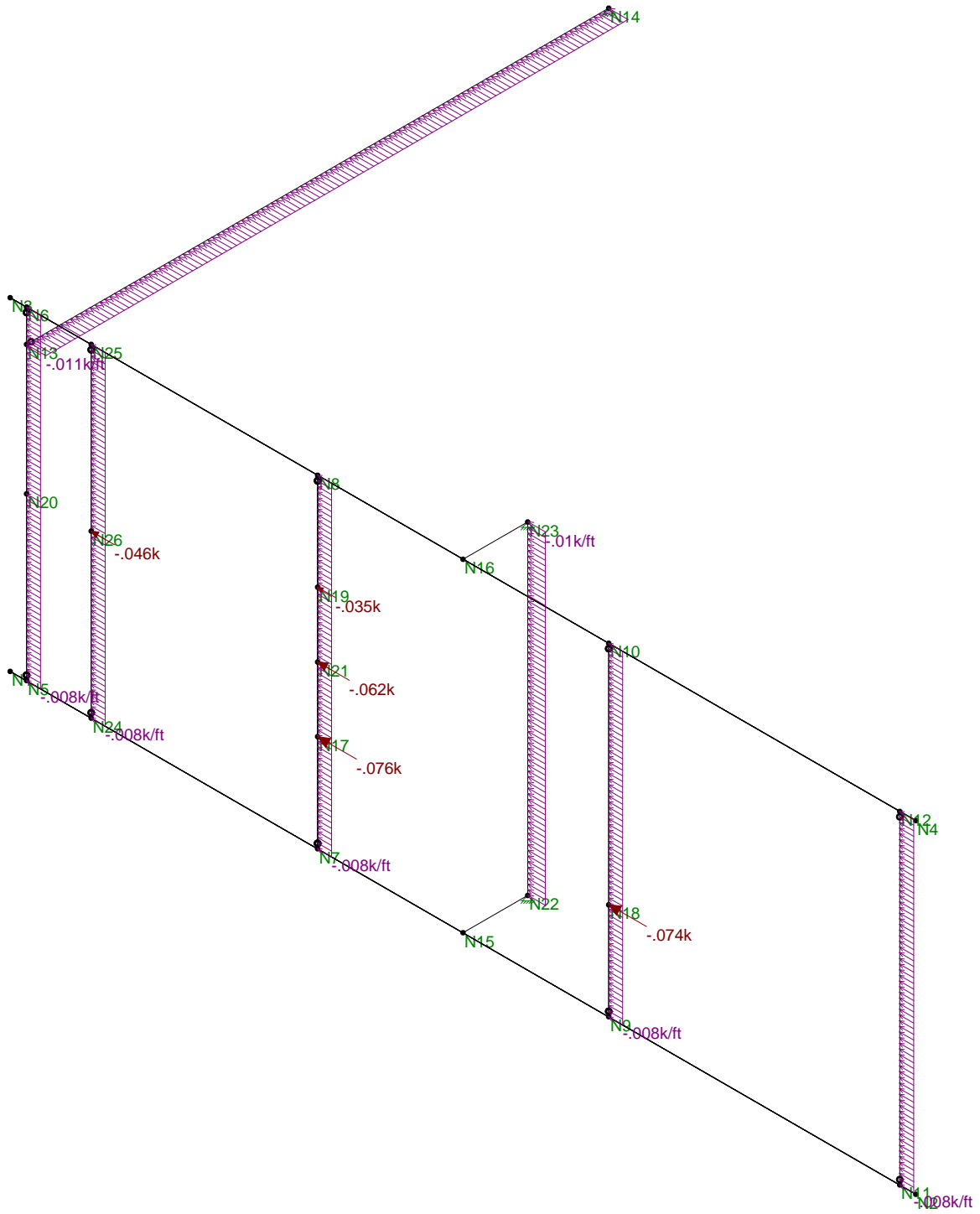
$Q_z = 30.03$ psf
 $K_z = 1.62$
 $G_H = 1.12$ Sec 2.3.4.2

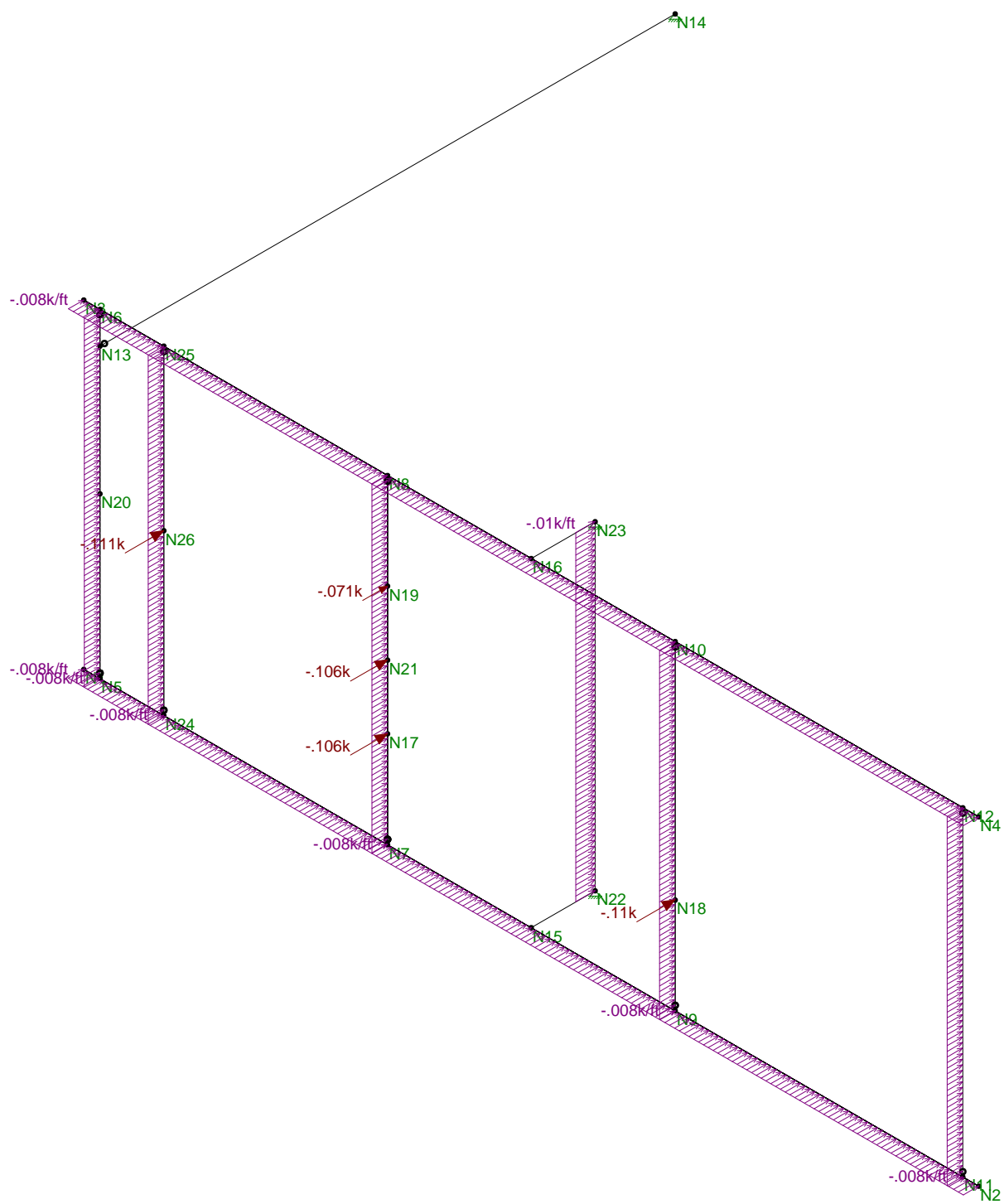
Mount member sizes are estimated based on site photos.

Description	Quantity	Round Members	Total Length Feet	Diameter Inches	Aspect Ratio Length/Width	Ca Coefficient	Projected Area Ac (ft^2, no ice)	Projected Area Ac (ft^2, ice)	No Ice		Ice		Approximate			
									Wind Force Each Lbs	Wind Force Each Lbs/ft	Wind Force Each 25% reduction Lbs	Wind Force Each 25% reduction Lbs/ft	Volume of ice Each Ft^2	Ice Weight Each Lbs	Ice Weight Each Lbs/ft	
Vertical Mount Pipe	5	2" PIPE	6.0	2.38	30.3	1.20	1.19	1.69	48	8	51	9	0.19	11	2	
Horizontal Pipe	2	2" PIPE	14.0	2.38	70.7	1.20	2.77	3.94	112	8	119	9	0.44	25	2	
Vertical Support pipe	1	2 1/2" PIPE	6.0	2.88	25.0	1.20	1.44	1.94	58	10	59	10	0.22	12	2	
Description	Quantity	Flat Members	Total Length Feet	Width Inches	Depth Inches	Aspect Ratio Length/Width	Ca Coefficient	Projected Area Ac (ft^2, no ice)	Projected Area Ac (ft^2, ice)	No Ice		Ice		Approximate		
										Wind Force Lbs	Wind Force Lbs/ft	Wind Force 25% reduction Lbs	Wind Force 25% reduction Lbs/ft	Volume of ice Ft^2	Ice Weight Lbs	Ice Weight Lbs/ft
Tieback L2x2x3/16	1	2"	9.0	2.0	2.0	54.0	2.00	1.50	2.25	101	11	114	13	0.31	18	2



Loads: BLC 1, DL
Envelope Only Solution







Hot Rolled Steel Properties

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

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Mem...Surface(Pl...
1	DL	None		-1.05		5		
2	WLX	None				5	9	
3	WLZ	None				5	9	
4	DLi	None				5	9	
5	WLXi	None				5	9	
6	WLZi	None				4	9	

Load Combinations

	Description	Solve	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DL+WLX	Yes	Y		1	1	2	1												
2	DL+WLZ	Yes	Y		1	1			3	1										
3	DL+.7*(WLX+WLZ)	Yes	Y		1	1	2	.7	3	.7										
4	DL+DLi+WLXi	Yes	Y		1	1					4	1	5	1						
5	DL+DLi+WLZi	Yes	Y		1	1					4	1			6	1				
6	DL+DLi+.7*(WLXi+...	Yes	Y		1	1					4	1	5	.7	6	.7				

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	2" STD Pipe	HSS2.375x0.1...	Beam	HSS Pipe	A53 Gr.B	Typical	1	.627	.627	1.25
2	L2x2x3/16	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
3	2.5" STD Pipe	HSS2.875x0.2...	Beam	Pipe	A53 Gr.B	Typical	1.59	1.45	1.45	2.89

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N14	max	.058	4	.019	4	.186	3	0	1	0	1	0	1
2		min	0	2	.009	2	.064	4	0	1	0	1	0	1
3	N22	max	.166	1	.355	5	.587	2	0	1	0	1	0	1
4		min	-.202	5	.233	1	.079	1	0	1	0	1	0	1
5	N23	max	.448	4	.345	4	.205	2	0	1	0	1	0	1
6		min	.14	2	.223	2	-.188	4	0	1	0	1	0	1
7	Totals:	max	.642	1	.708	5	.978	2						
8		min	0	5	.476	1	0	4						



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

Member	Shape	Code	Loc[ft]	LC	Shea...Loc.....	L...Pnc/o...	Pnt/o...	Mnyy/om [k-ft]	Mnzz/.....	Eqn				
1	M1	HSS2.375x0.154	.827	7	5	.054	7	2	3.339	20.958	1.245	1.245	1..H1-1b	
2	M2	HSS2.375x0.154	.763	7	5	.039	7	5	3.339	20.958	1.245	1.245	1..H1-1b	
3	M7	L2x2x3	.490	4.5	4	.012	0	z	4	1.408	15.564	.371	.575	1..H2-1
4	M8	HSS2.875x0.203	.254	5	5	.074	0	3	27.227	33.323	2.393	2.393	2..H1-1b	
5	M4	HSS2.375x0.154	.233	2.5	2	.140	0	2	15.622	20.958	1.245	1.245	1..H1-1b	
6	M11	HSS2.375x0.154	.131	2.5	2	.117	0	2	15.622	20.958	1.245	1.245	1..H1-1b	
7	M5	HSS2.375x0.154	.110	1.51	2	.029	0	3	15.622	20.958	1.245	1.245	1..H1-1b	
8	M3	HSS2.375x0.154	.064	4.479	3	.111	4.5...	3	15.622	20.958	1.245	1.245	1..H1-1b	
9	M6	HSS2.375x0.154	.023	2.5	5	.009	0	3	15.622	20.958	1.245	1.245	1..H1-1b	

The maximum member stress does not exceed is 83% of its allowable capacity. Therefore, the existing mount is adequate.



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

www.ct.gov/csc

December 28, 2015

Eric Dahl
Vertical Development
20 Commercial Street
Branford, CT 06405

RE: **EM-T-MOBILE-015-151125** - T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 623 Pine Street, Bridgeport, Connecticut.

Dear Mr. Dahl:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Within 45 days following completion of the equipment installation, T-Mobile shall provide documentation certified by a Professional Engineer that the foundation does not exceed 100 percent of its post-construction structural rating;
- Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by T-Mobile Northeast LLC shall be removed within 60 days of the date the antenna ceased to function;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated November 23, 2015 and additional information received on December 10, 2015. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site by any dimension, increase noise levels at the tower site boundary by six decibels or more, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996 and by the state Department of Energy and Environmental Protection pursuant to Connecticut General Statutes § 22a-162. This facility has also been carefully modeled to ensure



December 28, 2015

Page 2 of 2

that radio frequency emissions are conservatively below state and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,



Melanie A. Bachman
Acting Executive Director

MAB/CH/lm

- c: The Honorable Joseph P. Ganim, Mayor, City of Bridgeport
Parag Agrawal, Planning Director, City of Bridgeport
David Kooris, Director, Office of Planning and Economic Development, City of Bridgeport
Radio Communications Corporation