COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

March 24, 2015

Via Overnight Mail and Electronic Mail

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

Re: Notice of Exempt Modification
Ten Thirty Tower Company LLC/T-Mobile Equipment Upgrade
Site ID CT11170C
1030 New Britain Avenue, West Hartford, CT

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, Ten Thirty Tower Company LLC owns the existing telecommunications tower and related facility at 1030 New Britain Avenue, West Hartford, CT 06110 (41.73130/-72.72380). T-Mobile intends to remove three (3) antennas, replace three (3) existing antennas with three (3) new antennas, and add/reuse related equipment at this existing telecommunications facility in West Hartford, CT ("West Hartford Facility"). Please accept this letter as notification, pursuant to R.C.S.A. §16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R. C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor, Scott Slifka, and the property owner, Ten Thirty Building Company LLC.

The existing West Hartford Facility consists of a 180-foot self-supporting tower.[1] T-Mobile plans to remove three (3) antennas and replace three (3) existing antennas on sector mounts with three (3) new antennas on sector mounts at a centerline of 165 feet.

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for approval of this structure, it does reference this structure in connection with a notices of intent captioned, EM-T-MOBILE-155-120702, EM-CING-155-120814, EM-METROPCS-155-130125B-MA, and EM-CING-155-130531.

T-Mobile will also add three (3) remote radio units (RRUs) at a centerline of 165 feet. T-Mobile plans to replace six (6) existing tower-mounted amplifiers ("TMAs") with three (3) new TMAs at the same centerline. Finally, T-Mobile will install a compact 2416 equipment cabinet mounted to a proposed H-frame and reuse existing hybrid and coax cables. (See the plans revised to February 20, 2015 attached hereto as **Exhibit A**). The existing West Hartford Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated February 6, 2015 and stamped March 20, 2015, and attached hereto as **Exhibit B**.

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

1. The proposed modification will not increase the height of the tower. T-Mobile's existing antennas are at a centerline of 165 feet; the replacement antennas and additional equipment will be installed at the same 165-foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The proposed modifications will not require an extension on the site boundaries or lease area, as depicted on Sheet 2 of Exhibit A. T-Mobile's equipment will be located entirely within the existing compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement antennas and additional equipment will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated February 18, 2015, T-Mobile's operations would add 4.28% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would be 17.27% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as **Exhibit C.**

For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and additional equipment at the West Hartford Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement of this exempt modification, T-Mobile shall commence construction approximately sixty days from the receipt of the Council's decision.

Sincerely,

Julie D. Kohler, Esq.

cc: Mayor Scott Slifka, Town of West Hartford
Ten Thirty Tower Company, LLC c/o Hirschfeld Communications, LLC
Ten Thirty Building Company LLC c/o Hirschfeld Communications, LLC
Sheldon Freincle, Northeast Site Solutions

EXHIBIT A

COMPOUND KEY PLAN (1 / LE–1)
N.T.S.

PROJECT: L700
CONFIGURATION
702CC

SUBMITTALS	
LE REV A	07.29.14
LE REV 0	08.05.14
LE REV 1	02.20.15

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11170C

SITE NAME:
HARTFORD/ N. BRITAIN AVE_1

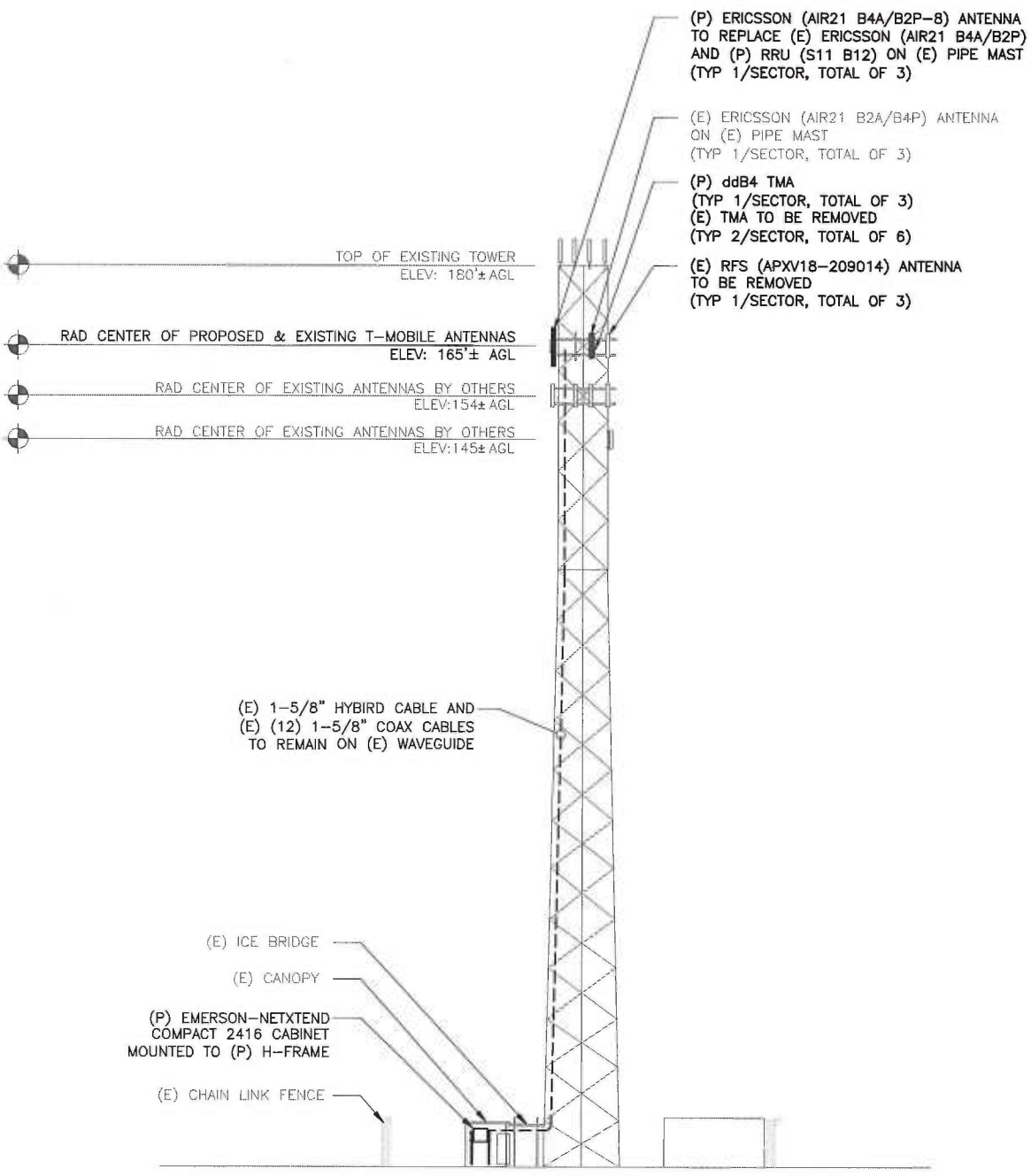
SITE ADDRESS:
1030 NEW BRITAIN AVE
WEST HARTFORD, CT 06110

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: MB | CHECKED BY:SM



ELEVATION 1
N.T.S LE-3

PROJECT: L700
CONFIGURATION
702CC

SUBMITTALS	
LE REV A	07.29.14
LE REV 0	08.05.14
LE REV 1	02.20.15

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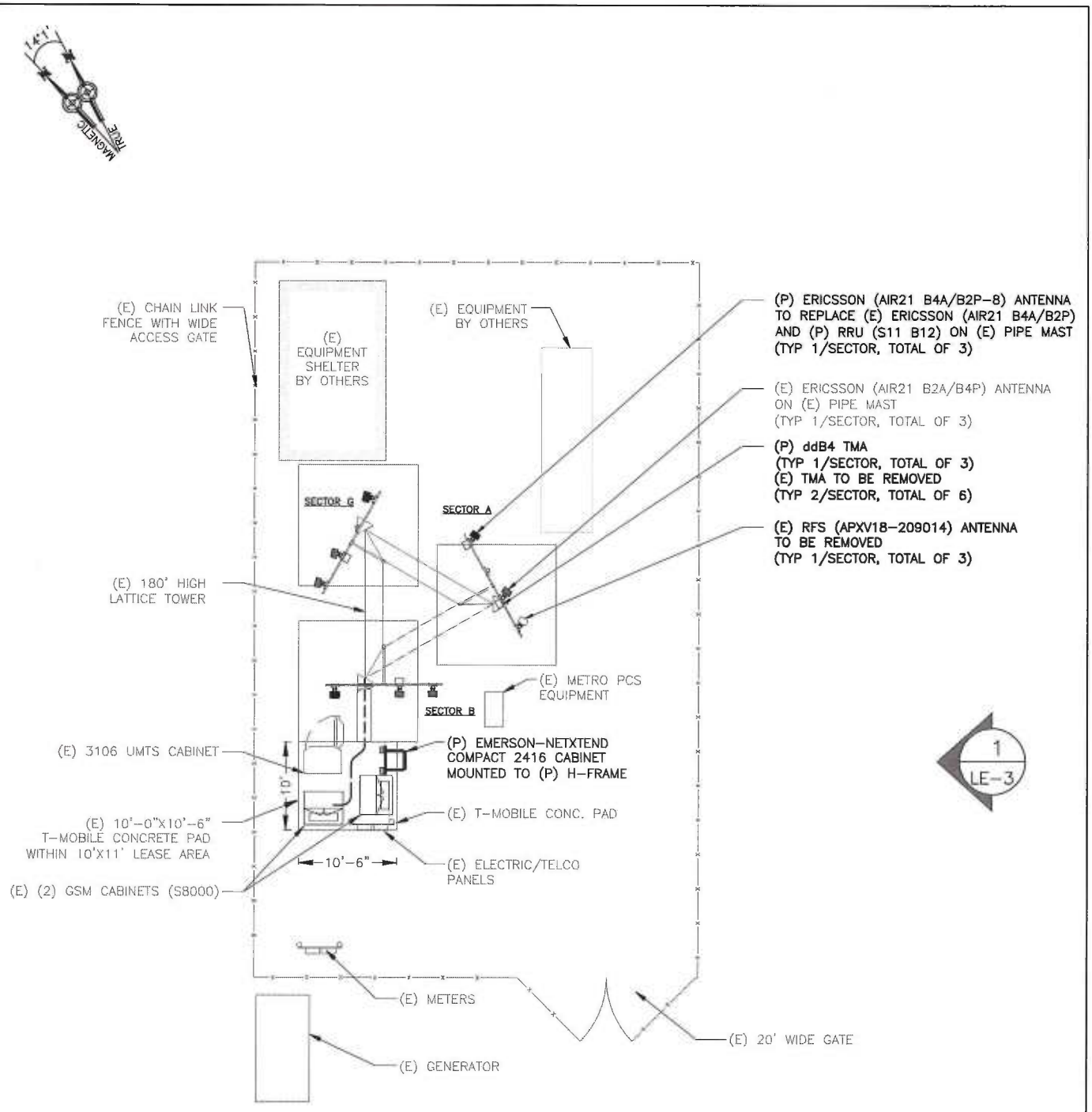

ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

SITE PLAN

SCALE:1:16

1
LE-2

PROJECT: L700

CONFIGURATION

702CC

SUBMITTALS	
LE REV A	07.29.14
LE REV 0	08.05.14
LE REV 1	02.20.15

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11170C

SITE NAME:
HARTFORD/ N. BRITAIN AVE_1

SITE ADDRESS:
1030 NEW BRITAIN AVE
WEST HARTFORD, CT 06110

NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
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(508) 434-5237

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: MB | CHECKED BY:SM

EXHIBIT B

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Structural Analysis Report

PJF Project No.: **64114-0002.003.8700**

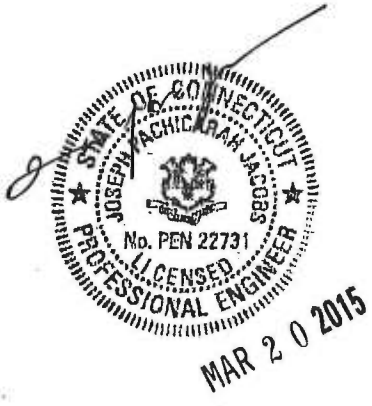
Structure: Existing 180-ft Self-Supporting Tower

Manufacturer: PiRod, Inc.
Location: West Hartford, Connecticut
Site Number: CT001

Prepared For:

Ten Thirty Tower Company LLC
c/o Hirschfeld Communications, LLC
1030 New Britain Ave.
West Hartford, CT 06110
Attn: Ian Ormesher

February 6, 2015



Analyzed by:
Rebekah M. Dorris, E.I.
Structural Designer
RDorris@pjfweb.com

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Executive Summary

Design Standard:
Paul J. Ford and Company has analyzed the existing West Hartford tower in accordance with the Telecommunications Industry Association Standard TIA/EIA-222-F and the 2005 CT State Building Code for the following design wind velocities:

80 mph Basic Wind Velocity without ice
69 mph Basic Wind Velocity with 0.5" radial ice
50 mph (Operational) Basic Wind Velocity without ice

Section 3108.4 of the International Building Code states: "Towers shall be designed to resist wind loads in accordance with TIA/EIA-222."

Proposed Antenna Loads:
The existing 180-ft self-supporting tower was analyzed for the following proposed antenna and coax loading.

Elev.	Antenna
165'	(3) Ericsson Air21 B4/B12
	(3) KRY 112 71
	(3) RRUS 11 B12

Please see page three of this report for a complete list of antennas that we considered in our structural analysis.

Stresses:
When the existing tower is analyzed in accordance with the above mentioned code requirements to support the proposed antenna load it is stressed to 87.5% of its safe capacity. The tower meets the minimum code requirements as it now stands.

Twist and Sway:
At the operational wind velocity noted above, the twist is 0.050 degrees and the sway is 0.507 degrees for the microwave antenna at an elevation of 159-ft.

Existing Foundations:
We calculated the capacity of the existing foundations using the recommendations of the geotechnical report that was provided to us. Our calculations indicate that the existing foundations are adequate to support the revised foundation loads indicated in our structural analysis.

Tower History:
The West Hartford tower was originally designed and manufactured by PiRod, Inc. in 1998. This model U-18 x 180' tower is PiRod, Inc. job number A-114804. Paul J. Ford and Company was supplied with the original tower and foundation design drawings.

The 180-ft self-supporting tower was originally designed in accordance with Telecommunications Industry Association Standard TIA/EIA-222-F for 80 mph Basic Wind Velocity without ice and 69 mph Basic Wind Velocity with 0.5" radial ice.

Project Description:
Hirschfeld Communications, LLC has asked Paul J. Ford and Company to provide a structural analysis of the existing 165-ft self-supporting tower located in West Hartford, Connecticut. In this analysis, we considered the existing and proposed/reserved antenna as shown in the table below.

Antenna and Feedline Loading:
Our structural analysis was completed considering the following antenna and feedline loading:

Status	Elev.	Antenna	Mount	Coax
Existing	180'	(6) Powerwave 7770.00	13' L.P. Platform	(12) 1 5/8"
		(2) Powerwave LGP 21401		
		(4) Powerwave LGP 21901		
		(3) KMW AM-X-CD-16-65-00T-RET		
		(6) RRU's		
Existing	165'	(3) Ericsson Air 21 B2/B4	(3) Sector Mounts	(12) 1 5/8" (1) Hybrid
Removed		~~(3) APXV18-209014~~		
		~~(6) ATMAA1412D-1A20~~		
		~~(3) Ericsson Air 21 B2/B4~~		
Proposed		**(3) Ericsson Air21 B4/B12**		
		(3) KRY 112 71		
		(3) RRUS 11 B12		
Existing	159'	(2) Andrew VHLP2	(3) Sector Mounts	(2) 1/2" (6) 1 5/8" (6) 5/16"
Existing	155'	(9) DB844H90T6-XY		
		(3) Kathrein 840 10054		
Existing	145'	(6) Dapa 48010	(3) Sector Mounts	(9) 1 5/8" (6) 1 5/8"
		(3) 2' Dishes		
		(3) 742 213		

Note: The antenna feedlines are assumed to be on 3 legs on t-brackets with no more than (25) coax on any one leg. All coax was assumed to be stacked in 2 rows.

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Structural Analysis:
Our structural analysis of this tower was completed according to the recommendations of the "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", TIA/EIA-222-F. This standard recommends a minimum basic design wind velocity of 80 mph (measured at 33-ft above grade) for Hartford County. If ice accumulation is considered, this standard allows a reduced design wind velocity of 69 mph with simultaneous 0.5" solid radial ice accumulation. The self-supporting tower was analyzed as a three-dimensional space truss using finite element software.

Results:
Our structural analysis of the existing West Hartford tower indicates that the legs from elevations 100-ft to 80-ft are stressed to 87.5% of their safe capacity. These are the structural components that control the capacity of the tower.

With the information that was provided to us, we were able to calculate the capacity of the existing foundations. Our calculations indicate that the existing foundations are adequate to support the revised foundation loads indicated in our structural analysis.

Component	Capacity	Pass / Fail
Base Soil	39.6%	Pass

Conclusion:
Paul J. Ford and Company performed a structural analysis of the existing West Hartford tower in accordance with the Telecommunications Industry Association Standard TIA/EIA-222-F. Our analysis indicates that the tower is adequate as it now stands to safely support the proposed antenna loading without the need for any modifications.

We calculated the capacity of the existing foundations using the recommendations of the geotechnical report by Clarence Welti Assoc., Inc. dated 2/10/1998. Our calculations indicate that the existing foundations are adequate to support the revised foundation loads indicated in our structural analysis.

We hope that this analysis satisfies your current needs. If you have any questions concerning our analysis, or if we can be of further service to you, please feel free to contact us at (614) 221-6679.

Sincerely,
Paul J. Ford and Company

Rebekah M. Dorris, EI
Structural Designer

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING STRUCTURES BY PAUL J. FORD AND COMPANY

1) Paul J. Ford and Company has not performed a site visit to verify the tower member sizes or the antenna/coax loading. We were provided with the original tower manufacturers drawings. If the existing conditions are not as represented on these drawings, we should be contacted immediately to evaluate the significance of the deviation.

2) No allowance was made for any damaged, missing, or rusted members. The analysis of this tower assumes that no physical deterioration has occurred in any of the structural components of the tower and that all the tower members have the same load carrying capacity as the day the tower was erected.

3) It is not possible to have all the very detailed information to perform a very thorough analysis of every structural sub-component of an existing tower. The structural analysis by Paul J. Ford and Company verifies the adequacy of the main structural members of the tower. Paul J. Ford and Company provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc.

4) It is the owner's responsibility to determine the amount of ice accumulation, if any, that should be considered in the structural analysis.

5) This tower has been analyzed according to the minimum design wind loads recommended by the Telecommunications Industry Association Standard TIA/EIA-222-F. If the owner or local or state agencies require a higher design wind load, Paul J. Ford and Company should be made aware of this requirement.

6) The attached sketches are a schematic representation of the tower that we have analyzed. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions and for the proper fit and clearance in the field.

7) Miscellaneous items such as antenna mounts etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

tnxTower	Job	Page
	Existing 180-ft S/S; West Hartford, CT	1 of 18
Paul J Ford and Company 250 E. Broad Street Suite 600 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	**Project** CT001 (PJF# 64114-0002)	**Date** 10:46:03 02/06/15
	Client Hirschfeld Communications, LLC	**Designed by** Rebekah Dorris

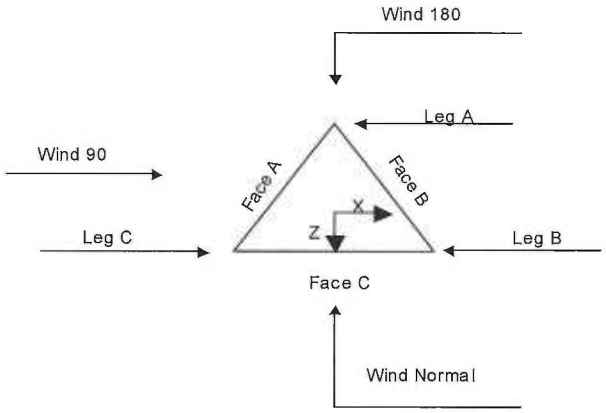
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.00 ft at the top and 18.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80.0 mph.
Nominal ice thickness of 0.50 in.
Ice density of 56 pcf.
A wind speed of 69.3 mph is used in combination with ice.
Deflections calculated using a wind speed of 50.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-170.00		106778 (48)	4.00	1	10.00
T2	170.00-150.00		100246 (48/54)	4.00	1	20.00
T3	150.00-130.00		119703 (54/60)	4.50	1	20.00
T4	130.00-120.00		U06 105218 [L2.5 x 3/16]	5.00	1	10.00
T5	120.00-100.00		U08 105217 [L2.5 x 3/16]	6.00	1	20.00
T6	100.00-80.00		U10 105217 [L2.5 x 3/16]	8.00	1	20.00
T7	80.00-60.00		U12 105218 [L3 x 3/16]	10.00	1	20.00
T8	60.00-40.00		U14 105218 [L3 x 3/16]	12.00	1	20.00
T9	40.00-20.00		U16 105219 [L3 x 5/16]	14.00	1	20.00
T10	20.00-0.00		U18 105219 [L3 x 5/16]	16.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	180.00-170.00	2.25	X Brace	No	Steps	6.00	6.00
T2	170.00-150.00	2.36	X Brace	No	Steps	6.80	6.80
T3	150.00-130.00	2.36	X Brace	No	Steps	6.80	6.80
T4	130.00-120.00	10.00	X Brace	No	No	0.00	0.00
T5	120.00-100.00	10.00	X Brace	No	No	0.00	0.00
T6	100.00-80.00	10.00	X Brace	No	No	0.00	0.00
T7	80.00-60.00	10.00	X Brace	No	No	0.00	0.00
T8	60.00-40.00	10.00	X Brace	No	No	0.00	0.00
T9	40.00-20.00	10.00	X Brace	No	No	0.00	0.00

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
T10	20.00-0.00	10.00	X Brace	No	No	0.00	0.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-170.00	Solid Round	1 1/2" solid	A572-50 (50 ksi)	Solid Round	3/4" solid	A572-50 (50 ksi)
T2 170.00-150.00	Solid Round	2" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T3 150.00-130.00	Solid Round	2 1/4" solid	A572-50 (50 ksi)	Solid Round	1" solid	A572-50 (50 ksi)
T4 130.00-120.00	Truss Leg	Pirod 105216 (12x1.25)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T5 120.00-100.00	Truss Leg	Pirod 105217 (12x1.5)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T6 100.00-80.00	Truss Leg	Pirod 105217 (12x1.5)	A572-50 (50 ksi)	Single Angle	L 2.5 x 2.5 x 3/16	A36 (36 ksi)
T7 80.00-60.00	Truss Leg	Pirod 105218 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T8 60.00-40.00	Truss Leg	Pirod 105218 (12x1.75)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 3/16	A36 (36 ksi)
T9 40.00-20.00	Truss Leg	Pirod 105219 (12x2)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)
T10 20.00-0.00	Truss Leg	Pirod 105219 (12x2)	A572-50 (50 ksi)	Single Angle	L 3 x 3 x 5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-170.00	Solid Round	7/8" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T2 170.00-150.00	Solid Round	7/8" solid	A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T3 150.00-130.00	Solid Round	1" solid	A572-50 (50 ksi)	Solid Round	1" solid	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T2 170.00-150.00	None	Solid Round		A36 (36 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)
T3 150.00-130.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8" solid	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 180.00-170.00	0.00	0.00	A36 (36 ksi)	1	1	1.02	36.00	36.00
T2 170.00-150.00	0.00	0.00	A36 (36 ksi)	1	1	1.03	54.00	54.00
T3 150.00-130.00	0.00	0.00	A36 (36 ksi)	1	1	1.03	36.00	36.00
T4 130.00-120.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	36.00	36.00
T5 120.00-100.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	36.00	36.00
T6 100.00-80.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	36.00	36.00
T7 80.00-60.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	36.00	36.00
T8 60.00-40.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	36.00	36.00
T9 40.00-20.00	0.00	0.50	A36 (36 ksi)	1	1	1.05	36.00	36.00
T10 20.00-0.00	0.00	0.75	A36 (36 ksi)	1	1	1.05	36.00	36.00

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	0.9	0.7	0.7	0.7	0.7	0.7	1
180.00-170.00				0.9	0.7	0.7	0.7	0.7	0.7	1
T2	No	No	1	0.9	0.7	0.7	0.7	0.7	0.7	1
170.00-150.00				0.9	0.7	0.7	0.7	0.7	0.7	1
T3	No	No	1	0.9	0.7	0.7	0.7	0.7	0.7	1
150.00-130.00				0.9	0.7	0.7	0.7	0.7	0.7	1
T4	Yes	No	1	1	1	1	1	1	1	1
130.00-120.00				1	1	1	1	1	1	1
T5	Yes	No	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			*Truss-Legs Used As Inner Members*		
Tower Elevation ft	*Leg Panels*	*X Brace Diagonals*	*Z Brace Diagonals*	*Leg Panels*	*X Brace Diagonals*	*Z Brace Diagonals*
T4 130.00-120.00	1	0.5	0.85	1	0.5	0.85
T5 120.00-100.00	1	0.5	0.85	1	0.5	0.85
T6 100.00-80.00	1	0.5	0.85	1	0.5	0.85
T7 80.00-60.00	1	0.5	0.85	1	0.5	0.85
T8 60.00-40.00	1	0.5	0.85	1	0.5	0.85
T9 40.00-20.00	1	0.5	0.85	1	0.5	0.85
T10 20.00-0.00	1	0.5	0.85	1	0.5	0.85

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Leg*		*Diagonal*		*Top Girt*		*Bottom Girt*		*Mid Girt*		*Long Horizontal*		*Short Horizontal*	
	Net Width Deduct in	*U*	*Net Width Deduct* in	*U*	*Net Width Deduct* in	*U*	*Net Width Deduct* in	*U*	*Net Width Deduct* in	*U*	*Net Width Deduct* in	*U*	*Net Width Deduct* in	*U*
T1 180.00-170.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T2 170.00-150.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T3 150.00-130.00	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1	0.00	1
T4 130.00-120.00	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 120.00-100.00	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 100.00-80.00	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 80.00-60.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T8 60.00-40.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T9 40.00-20.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75
T10 20.00-0.00	0.00	1	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75	0.00	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Leg Connection Type*	*Leg*		*Diagonal*		*Top Girt*		*Bottom Girt*		*Mid Girt*		*Long Horizontal*		*Short Horizontal*	
		Bolt Size in	*No.*	*Bolt Size* in	*No.*	*Bolt Size* in	*No.*	*Bolt Size* in	*No.*	*Bolt Size* in	*No.*	*Bolt Size* in	*No.*	*Bolt Size* in	*No.*
T1 180.00-170.00	Sleeve DS	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.63 A325N	0	0.00 A325N	0	0.63 A325N	0
T2 170.00-150.00	Sleeve DS	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0

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.
T3 150.00-130.00	Flange	1.00 A325N	6	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.50 A325N	0	0.00 A325N	0	0.50 A325N	0
T4 130.00-120.00	Flange	1.00 A325N	6	1.00 A325N	1	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0
T5 120.00-100.00	Flange	1.00 A325N	6	1.00 A325N	1	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0
T6 100.00-80.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0
T7 80.00-60.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0
T8 60.00-40.00	Flange	1.00 A325N	6	1.00 A325N	1	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0	0.00 A325N	0
T9 40.00-20.00	Flange	1.25 A325N	6	1.25 A325N	1	1.25 A325N	0	1.25 A325N	0	1.25 A325N	0	1.25 A325N	0	1.25 A325N	0
T10 20.00-0.00	Flange	1.25 F1554-105	6	1.25 A325N	1	1.25 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0	1.00 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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
LDF7-50A (1 5/8" foam) (TO 180') **	A	Yes	Ar (CfAe)	180.00 - 8.00	0.00	-0.45	12	6	0.75	1.98		0.92
LDF7-50A (1 5/8" foam) (TO 155') **	B	Yes	Ar (CfAe)	155.00 - 8.00	0.00	0.45	6	6	0.75	1.98		0.92
LDF7-50A (1 5/8" foam) (TO 145') **	C	Yes	Ar (CfAe)	145.00 - 8.00	0.00	0.45	15	8	0.75	1.98		0.92
LDF7-50A (1 5/8" foam) (12 Exist)	A	Yes	Ar (CfAe)	165.00 - 8.00	0.00	0.45	12	6	0.75	1.98		0.92
LDF7-50A (1 5/8" foam) (Hybid Line) **	A	Yes	Ar (CfAe)	165.00 - 8.00	0.00	0.35	1	1	1.98	1.98		0.92
9207 (5/16") (TO 155')	C	Yes	Ar (CfAe)	155.00 - 8.00	0.00	-0.45	6	6	0.33	0.33		0.06
LDF4-50A (1/2" foam) (TO 155') **	C	Yes	Ar (CfAe)	155.00 - 8.00	0.00	-0.48	2	2	0.63	0.63		0.15

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pirod 13' LP Platform (lattice tower)	C	None		0.000	180.00	No Ice	24.33	24.33	1.65
(ATT)						1/2" Ice	30.22	30.22	2.03
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.000	180.00	No Ice	6.22	4.82	0.09
(ATT)			0.00			1/2" Ice	6.71	5.51	0.14
			0.00						
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.000	180.00	No Ice	6.22	4.82	0.09
(ATT)			0.00			1/2" Ice	6.71	5.51	0.14
			0.00						
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.000	180.00	No Ice	6.22	4.82	0.09
(ATT)			0.00			1/2" Ice	6.71	5.51	0.14
			0.00						
(2) LGP21401	A	From Leg	4.00	0.000	180.00	No Ice	1.29	0.36	0.01
(ATT)			0.00			1/2" Ice	1.45	0.48	0.02
			0.00						
(2) LGP21901	B	From Leg	4.00	0.000	180.00	No Ice	0.27	0.18	0.01
(ATT)			0.00			1/2" Ice	0.34	0.25	0.01
			0.00						
(2) LGP21901	C	From Leg	4.00	0.000	180.00	No Ice	0.27	0.18	0.01
(ATT)			0.00			1/2" Ice	0.34	0.25	0.01
			0.00						
AM-X-CD-16-65-00T-RET	A	From Leg	4.00	0.000	180.00	No Ice	8.26	4.64	0.05
(ATT)			0.00			1/2" Ice	8.81	5.09	0.09
			0.00						
AM-X-CD-16-65-00T-RET	B	From Leg	4.00	0.000	180.00	No Ice	8.26	4.64	0.05
(ATT)			0.00			1/2" Ice	8.81	5.09	0.09
			0.00						
AM-X-CD-16-65-00T-RET	C	From Leg	4.00	0.000	180.00	No Ice	8.26	4.64	0.05
(ATT)			0.00			1/2" Ice	8.81	5.09	0.09
			0.00						
(2) RRU	A	From Leg	4.00	0.000	180.00	No Ice	2.57	0.96	0.05
(ATT)			0.00			1/2" Ice	2.78	1.11	0.07
			0.00						
(2) RRU	B	From Leg	4.00	0.000	180.00	No Ice	2.57	0.96	0.05
(ATT)			0.00			1/2" Ice	2.78	1.11	0.07
			0.00						
(2) RRU	C	From Leg	4.00	0.000	180.00	No Ice	2.57	0.96	0.05
(ATT)			0.00			1/2" Ice	2.78	1.11	0.07
			0.00						
**									
PiRod 12' Lightweight T-Frame	A	From Leg	2.00	0.000	165.00	No Ice	8.90	5.90	0.23
(T-Mobile)			0.00			1/2" Ice	13.80	8.70	0.32
			0.00						
PiRod 12' Lightweight T-Frame	B	From Leg	2.00	0.000	165.00	No Ice	8.90	5.90	0.23
(T-Mobile)			0.00			1/2" Ice	13.80	8.70	0.32
			0.00						
PiRod 12' Lightweight T-Frame	C	From Leg	2.00	0.000	165.00	No Ice	8.90	5.90	0.23
(T-Mobile)			0.00			1/2" Ice	13.80	8.70	0.32
			0.00						
ERICSSON AIR 21 B2A	A	From Leg	4.00	0.000	165.00	No Ice	6.53	4.36	0.07
(T-Mobile)			0.00			1/2" Ice	6.98	4.77	0.11
			0.00						
ERICSSON AIR 21 B2A	B	From Leg	4.00	0.000	165.00	No Ice	6.53	4.36	0.07
(T-Mobile)			0.00			1/2" Ice	6.98	4.77	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
ERICSSON AIR 21 B2A	C	From Leg	4.00	0.000	165.00	No Ice	6.53	4.36	0.07
(T-Mobile)			0.00			1/2" Ice	6.98	4.77	0.11
			0.00						
KRY 112 71	A	From Leg	4.00	0.000	165.00	No Ice	0.68	0.45	0.01
(T-Mobile)			0.00			1/2" Ice	0.80	0.56	0.02
			0.00						
KRY 112 71	B	From Leg	4.00	0.000	165.00	No Ice	0.68	0.45	0.01
(T-Mobile)			0.00			1/2" Ice	0.80	0.56	0.02
			0.00						
KRY 112 71	C	From Leg	4.00	0.000	165.00	No Ice	0.68	0.45	0.01
(T-Mobile)			0.00			1/2" Ice	0.80	0.56	0.02
			0.00						
RRUS 11 B12	A	From Leg	4.00	0.000	165.00	No Ice	3.31	1.36	0.05
(T-Mobile)			0.00			1/2" Ice	3.55	1.54	0.07
			0.00						
RRUS 11 B12	B	From Leg	4.00	0.000	165.00	No Ice	3.31	1.36	0.05
(T-Mobile)			0.00			1/2" Ice	3.55	1.54	0.07
			0.00						
RRUS 11 B12	C	From Leg	4.00	0.000	165.00	No Ice	3.31	1.36	0.05
(T-Mobile)			0.00			1/2" Ice	3.55	1.54	0.07
			0.00						
AIR 21 B4A/B12-B5P 2.4M	A	From Leg	4.00	0.000	165.00	No Ice	11.78	11.01	0.15
w/ Mount Pipe			0.00			1/2" Ice	12.50	12.53	0.25
(T-Mobile)			0.00						
AIR 21 B4A/B12-B5P 2.4M	B	From Leg	4.00	0.000	165.00	No Ice	11.78	11.01	0.15
w/ Mount Pipe			0.00			1/2" Ice	12.50	12.53	0.25
(T-Mobile)			0.00						
AIR 21 B4A/B12-B5P 2.4M	C	From Leg	4.00	0.000	165.00	No Ice	11.78	11.01	0.15
w/ Mount Pipe			0.00			1/2" Ice	12.50	12.53	0.25
(T-Mobile)			0.00						
**									
PiRod 12' Lightweight	A	From Leg	2.00	0.000	155.00	No Ice	8.90	5.90	0.23
T-Frame			0.00			1/2" Ice	13.80	8.70	0.32
(Sprint)			0.00						
PiRod 12' Lightweight	B	From Leg	2.00	0.000	155.00	No Ice	8.90	5.90	0.23
T-Frame			0.00			1/2" Ice	13.80	8.70	0.32
(Sprint)			0.00						
PiRod 12' Lightweight	C	From Leg	2.00	0.000	155.00	No Ice	8.90	5.90	0.23
T-Frame			0.00			1/2" Ice	13.80	8.70	0.32
(Sprint)			0.00						
(3) DB844H90 w/Mount Pipe	A	From Leg	4.00	0.000	155.00	No Ice	3.58	5.63	0.04
(Sprint)			0.00			1/2" Ice	4.20	6.73	0.08
			0.00						
(3) DB844H90 w/Mount Pipe	B	From Leg	4.00	0.000	155.00	No Ice	3.58	5.63	0.04
(Sprint)			0.00			1/2" Ice	4.20	6.73	0.08
			0.00						
(3) DB844H90 w/Mount Pipe	C	From Leg	4.00	0.000	155.00	No Ice	3.58	5.63	0.04
(Sprint)			0.00			1/2" Ice	4.20	6.73	0.08
			0.00						
840 10054 w/ Mount Pipe	A	From Leg	4.00	0.000	155.00	No Ice	5.41	2.39	0.05
(Clearwire)			0.00			1/2" Ice	5.83	2.92	0.09
			0.00						
840 10054 w/ Mount Pipe	B	From Leg	4.00	0.000	155.00	No Ice	5.41	2.39	0.05
(Clearwire)			0.00			1/2" Ice	5.83	2.92	0.09
			0.00						
840 10054 w/ Mount Pipe	C	From Leg	4.00	0.000	155.00	No Ice	5.41	2.39	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(Clearwire)			0.00 0.00			1/2" Ice	5.83	2.92	0.09
4'x2" Pipe Mount	A	From Leg	4.00	0.000	157.00	No Ice	0.79	0.79	0.03
(Clearwire)			0.00 0.00			1/2" Ice	1.03	1.03	0.03
4'x2" Pipe Mount	C	From Leg	4.00	0.000	157.00	No Ice	0.79	0.79	0.03
(Clearwire)			0.00 0.00			1/2" Ice	1.03	1.03	0.03
**									
PiRod 12' Lightweight	A	From Leg	2.00	0.000	145.00	No Ice	8.90	5.90	0.23
T-Frame			0.00			1/2" Ice	13.80	8.70	0.32
(Pocket)			0.00						
PiRod 12' Lightweight	B	From Leg	2.00	0.000	145.00	No Ice	8.90	5.90	0.23
T-Frame			0.00			1/2" Ice	13.80	8.70	0.32
(Pocket)			0.00						
PiRod 12' Lightweight	C	From Leg	2.00	0.000	145.00	No Ice	8.90	5.90	0.23
T-Frame			0.00			1/2" Ice	13.80	8.70	0.32
(Pocket)			0.00						
(2) 48010 w/Mount Pipe	A	From Leg	4.00	0.000	145.00	No Ice	5.12	3.49	0.04
(Pocket)			0.00 0.00			1/2" Ice	5.79	4.54	0.08
(2) 48010 w/Mount Pipe	B	From Leg	4.00	0.000	145.00	No Ice	5.12	3.49	0.04
(Pocket)			0.00 0.00			1/2" Ice	5.79	4.54	0.08
(2) 48010 w/Mount Pipe	C	From Leg	4.00	0.000	145.00	No Ice	5.12	3.49	0.04
(Pocket)			0.00 0.00			1/2" Ice	5.79	4.54	0.08
**									
**									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
2 ft standard	A	Paraboloid w/o	From	4.00	0.000		145.00	2.00	No Ice	3.14	0.01
(Pocket)		Radome	Leg	0.00 0.00					1/2" Ice	3.41	0.06
2 ft standard	B	Paraboloid w/o	From	4.00	0.000		145.00	2.00	No Ice	3.14	0.01
(Pocket)		Radome	Leg	0.00 0.00					1/2" Ice	3.41	0.06
2 ft standard	C	Paraboloid w/o	From	4.00	0.000		145.00	2.00	No Ice	3.14	0.01
(Pocket)		Radome	Leg	0.00 0.00					1/2" Ice	3.41	0.06
Andrew VHLP2-18	A	Paraboloid	From	4.00	0.000		159.00	2.17	No Ice	3.72	0.03
(Clearwire)		w/Radome	Leg	0.00 0.00					1/2" Ice	4.01	0.05
Andrew VHLP2-18	C	Paraboloid	From	4.00	0.000		159.00	2.17	No Ice	3.72	0.03
(Clearwire)		w/Radome	Leg	0.00 0.00					1/2" Ice	4.01	0.05

Truss-Leg Properties

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in^2	in^2	K	K	in	in	in^2
Pirod 105216 (12x1.25)	2176.93	3447.56	0.60	0.46	7.56	11.97	3.68
Pirod 105217 (12x1.5)	2303.92	3618.80	0.71	0.47	8.00	12.57	5.30
Pirod 105217 (12x1.5)	2303.92	3618.80	0.71	0.47	8.00	12.57	5.30
Pirod 105218 (12x1.75)	2432.86	3798.39	0.85	0.49	8.45	13.19	7.22
Pirod 105218 (12x1.75)	2432.86	3798.39	0.85	0.49	8.45	13.19	7.22
Pirod 105219 (12x2)	2608.79	4065.88	1.22	0.53	9.06	14.12	9.42
Pirod 105219 (12x2)	2608.79	4065.88	1.22	0.53	9.06	14.12	9.42

Load Combinations

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
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice
15	Dead+Wind 0 deg+Ice
16	Dead+Wind 30 deg+Ice
17	Dead+Wind 60 deg+Ice
18	Dead+Wind 90 deg+Ice
19	Dead+Wind 120 deg+Ice
20	Dead+Wind 150 deg+Ice
21	Dead+Wind 180 deg+Ice
22	Dead+Wind 210 deg+Ice
23	Dead+Wind 240 deg+Ice
24	Dead+Wind 270 deg+Ice
25	Dead+Wind 300 deg+Ice
26	Dead+Wind 330 deg+Ice
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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	23	260.38	20.84	-12.08
	Max. H_x	23	260.38	20.84	-12.08
	Max. H_z	17	-191.59	-15.97	9.22
	Min. Vert	4	-194.97	-15.87	9.18
	Min. H_x	17	-191.59	-15.97	9.22
	Min. H_z	23	260.38	20.84	-12.08
Leg B	Max. Vert	19	255.83	-20.93	-11.71
	Max. H_x	25	-195.66	16.14	9.06
	Max. H_z	25	-195.66	16.14	9.06
	Min. Vert	12	-196.03	16.02	8.90
	Min. H_x	19	255.83	-20.93	-11.71
	Min. H_z	19	255.83	-20.93	-11.71
Leg A	Max. Vert	15	257.60	-0.36	24.04
	Max. H_x	23	-94.88	0.57	-9.27
	Max. H_z	15	257.60	-0.36	24.04
	Min. Vert	8	-196.45	0.32	-18.38
	Min. H_x	17	131.51	-0.54	12.03
	Min. H_z	21	-195.06	0.23	-18.53

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	9.46	35	0.533	0.058
T2	170 - 150	8.31	35	0.525	0.056
T3	150 - 130	6.11	35	0.482	0.044
T4	130 - 120	4.20	35	0.388	0.031
T5	120 - 100	3.44	35	0.325	0.024
T6	100 - 80	2.23	35	0.243	0.016
T7	80 - 60	1.35	35	0.169	0.010
T8	60 - 40	0.73	35	0.117	0.007
T9	40 - 20	0.32	35	0.069	0.004
T10	20 - 0	0.09	35	0.034	0.002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Pirod 13' LP Platform (lattice tower)	35	9.46	0.533	0.058	67054
165.00	PiRod 12' Lightweight T-Frame	35	7.74	0.518	0.053	28571
159.00	Andrew VHLP2-18	35	7.07	0.507	0.050	24266
157.00	4'x2" Pipe Mount	35	6.86	0.502	0.048	23106
155.00	PiRod 12' Lightweight T-Frame	35	6.64	0.497	0.047	22051
145.00	2 ft standard	35	5.60	0.463	0.040	14353

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	25.86	23	1.426	0.150
T2	170 - 150	22.78	23	1.407	0.143
T3	150 - 130	16.89	23	1.300	0.111
T4	130 - 120	11.72	23	1.058	0.079
T5	120 - 100	9.63	23	0.893	0.061
T6	100 - 80	6.27	23	0.676	0.040
T7	80 - 60	3.81	23	0.472	0.027
T8	60 - 40	2.07	23	0.330	0.018
T9	40 - 20	0.90	23	0.195	0.009
T10	20 - 0	0.25	23	0.096	0.004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Pirod 13' LP Platform (lattice tower)	23	25.86	1.426	0.150	26291
165.00	PiRod 12' Lightweight T-Frame	23	21.27	1.391	0.137	11243
159.00	Andrew VHLP2-18	23	19.49	1.362	0.127	9559
157.00	4'x2" Pipe Mount	23	18.90	1.350	0.124	9105
155.00	PiRod 12' Lightweight T-Frame	23	18.32	1.337	0.120	8692
145.00	2 ft standard	23	15.51	1.253	0.103	5644

Bolt Design Data

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
T3	150	Leg	A325N	1.00	6	14.92	34.52	0.432 ✔	1.333	Bolt Tension
T4	130	Leg	A325N	1.00	6	15.12	34.56	0.438 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.00	1	5.67	7.75	0.731 ✔	1.333	Member Block Shear
T5	120	Leg	A325N	1.00	6	19.13	34.56	0.554 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.00	1	5.29	7.75	0.683 ✔	1.333	Member Block Shear
T6	100	Leg	A325N	1.00	6	22.11	34.56	0.640 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.00	1	4.26	7.75	0.549 ✔	1.333	Member Block Shear
T7	80	Leg	A325N	1.00	6	24.87	34.56	0.720 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.00	1	4.43	8.43	0.525 ✔	1.333	Member Block Shear
T8	60	Leg	A325N	1.00	6	27.45	34.56	0.794 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.00	1	4.60	8.43	0.546 ✔	1.333	Member Block Shear
T9	40	Leg	A325N	1.25	6	29.89	54.00	0.554 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.25	1	4.97	14.95	0.333 ✔	1.333	Member Block Shear
T10	20	Leg	F1554-10 5	1.25	6	32.10	50.62	0.634 ✔	1.333	Bolt Tension

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
		Diagonal	A325N	1.25	1	5.54	14.95	0.371 ✔	1.333	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	180 - 170	1 1/2" solid	10.00	2.25	72.0 K=1.00	20.56	1.77	-9.70	36.34	0.267 ✔
T2	170 - 150	2" solid	20.00	2.36	56.6 K=1.00	23.29	3.14	-45.56	73.16	0.623 ✔
T3	150 - 130	2 1/4" solid	20.00	2.36	50.3 K=1.00	24.30	3.98	-101.57	96.62	1.051 ✔
T4	130 - 120	Pirod 105216 (12x1.25)	10.02	10.02	45.4 K=1.00	25.05	3.68	-103.10	92.23	1.118 ✔
T5	120 - 100	Pirod 105217 (12x1.5)	20.03	10.02	37.8 K=1.00	26.13	5.30	-135.75	138.54	0.980 ✔
T6	100 - 80	Pirod 105217 (12x1.5)	20.03	10.02	37.8 K=1.00	26.13	5.30	-161.64	138.54	1.167 ✔
T7	80 - 60	Pirod 105218 (12x1.75)	20.03	10.02	32.4 K=1.00	26.85	7.22	-186.30	193.73	0.962 ✔
T8	60 - 40	Pirod 105218 (12x1.75)	20.03	10.02	32.4 K=1.00	26.85	7.22	-209.65	193.73	1.082 ✔
T9	40 - 20	Pirod 105219 (12x2)	20.03	10.02	28.4 K=1.00	27.35	9.42	-232.94	257.78	0.904 ✔
T10	20 - 0	Pirod 105219 (12x2)	20.03	10.02	28.4 K=1.00	27.35	9.42	-254.18	257.78	0.986 ✔

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T4	130 - 120	0.5	1.48	121.0	10.13	0.20	0.83	2.23	0.372 ✔
T5	120 - 100	0.5	1.47	120.0	10.28	0.20	0.64	2.26	0.284 ✔
T6	100 - 80	0.5	1.47	120.0	10.28	0.20	0.20	2.26	0.087 ✔
T7	80 - 60	0.5	1.46	119.0	10.42	0.20	0.18	2.29	0.078 ✔
T8	60 - 40	0.5	1.46	119.0	10.42	0.20	0.20	2.29	0.089 ✔
T9	40 - 20	0.625	1.45	94.4	13.67	0.31	0.21	4.69	0.044 ✔

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T10	20 - 0	0.625	1.45	94.4	13.67	0.31	0.78	4.69	0.166 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	3/4" solid	4.59	2.22	128.0 K=0.90	9.11	0.44	-1.54	4.02	0.383 ✔
T2	170 - 150	7/8" solid	5.04	2.44	120.6 K=0.90	10.26	0.60	-4.57	6.17	0.740 ✔
T3	150 - 130	1" solid	5.49	2.66	114.8 K=0.90	11.34	0.79	-4.91	8.90	0.551 ✔
T4	130 - 120	L 2.5 x 2.5 x 3/16	11.42	4.98	120.8 K=1.00	10.17	0.90	-6.66	9.17	0.726 ✔
T5	120 - 100	L 2.5 x 2.5 x 3/16	12.50	5.63	136.4 K=1.00	8.02	0.90	-4.70	7.24	0.650 ✔
T6	100 - 80	L 2.5 x 2.5 x 3/16	13.80	6.33	153.4 K=1.00	6.35	0.90	-4.70	5.73	0.822 ✔
T7	80 - 60	L 3 x 3 x 3/16	15.24	7.08	142.5 K=1.00	7.35	1.09	-4.76	8.01	0.594 ✔
T8	60 - 40	L 3 x 3 x 3/16	16.80	7.88	158.6 K=1.00	5.94	1.09	-4.96	6.47	0.767 ✔
T9	40 - 20	L 3 x 3 x 5/16	18.45	8.68	176.8 K=1.00	4.78	1.78	-5.36	8.51	0.631 ✔
T10	20 - 0	L 3 x 3 x 5/16	20.16	9.54	194.4 K=1.00	3.95	1.78	-6.95	7.03	0.987 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	7/8" solid	4.00	3.88	148.8 K=0.70	6.74	0.60	-0.21	4.06	0.051 ✔
T2	170 - 150	7/8" solid	4.07	3.91	150.0 K=0.70	6.64	0.60	-0.46	3.99	0.115 ✔
T3	150 - 130	7/8" solid	4.57	4.39	168.4 K=0.70	5.27	0.60	-1.23	3.17	0.388 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	7/8" solid	4.00	3.88	148.8 K=0.70	6.74	0.60	-0.72	4.06	0.177 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T2	170 - 150	7/8" solid	4.01	3.85	147.7 K=0.70	6.84	0.60	-0.90	4.11	0.219 ✔
T3	150 - 130	1" solid	4.51	4.33	145.4 K=0.70	7.07	0.79	-1.80	5.55	0.325 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	7/8" solid	4.00	3.88	148.8 K=0.70	6.74	0.60	-0.64	4.06	0.158 ✔
T2	170 - 150	7/8" solid	4.49	4.32	165.9 K=0.70	5.43	0.60	-1.89	3.26	0.580 ✔
T3	150 - 130	1" solid	4.99	4.80	161.2 K=0.70	5.75	0.79	-1.98	4.51	0.439 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	1 1/2" solid	10.00	2.25	72.0	30.00	1.77	7.67	53.01	0.145 ✔
T2	170 - 150	2" solid	20.00	2.36	56.6	30.00	3.14	39.61	94.25	0.420 ✔
T3	150 - 130	2 1/4" solid	20.00	2.36	50.3	30.00	3.98	89.55	119.28	0.751 ✔
T4	130 - 120	Pirod 105216 (12x1.25)	10.02	10.02	45.4	30.00	3.68	90.75	110.45	0.822 ✔
T5	120 - 100	Pirod 105217 (12x1.5)	20.03	10.02	37.8	30.00	5.30	114.79	159.04	0.722 ✔
T6	100 - 80	Pirod 105217 (12x1.5)	20.03	10.02	37.8	30.00	5.30	132.69	159.04	0.834 ✔
T7	80 - 60	Pirod 105218 (12x1.75)	20.03	10.02	32.4	30.00	7.22	149.22	216.47	0.689 ✔
T8	60 - 40	Pirod 105218 (12x1.75)	20.03	10.02	32.4	30.00	7.22	164.71	216.47	0.761 ✔
T9	40 - 20	Pirod 105219 (12x2)	20.03	10.02	28.4	30.00	9.42	179.36	282.74	0.634 ✔
T10	20 - 0	Pirod 105219 (12x2)	20.03	10.02	28.4	30.00	9.42	192.63	282.74	0.681 ✔

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	F_a ksi	A in^2	Actual V K	Allow. V_a K	Stress Ratio
T4	130 - 120	0.5	1.48	121.0	10.13	0.20	0.83	2.23	0.372 ✔
T5	120 - 100	0.5	1.47	120.0	10.28	0.20	0.64	2.26	0.284 ✔
T6	100 - 80	0.5	1.47	120.0	10.28	0.20	0.20	2.26	0.087 ✔
T7	80 - 60	0.5	1.46	119.0	10.42	0.20	0.18	2.29	0.078 ✔
T8	60 - 40	0.5	1.46	119.0	10.42	0.20	0.20	2.29	0.089 ✔
T9	40 - 20	0.625	1.45	94.4	13.67	0.31	0.21	4.69	0.044 ✔
T10	20 - 0	0.625	1.45	94.4	13.67	0.31	0.78	4.69	0.166 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	3/4" solid	4.59	2.22	142.3	30.00	0.44	1.54	13.25	0.116 ✔
T2	170 - 150	7/8" solid	5.04	2.44	134.0	30.00	0.60	4.62	18.04	0.256 ✔
T3	150 - 130	1" solid	5.12	2.47	118.7	30.00	0.79	4.91	23.56	0.208 ✔
T4	130 - 120	L 2.5 x 2.5 x 3/16	11.42	4.98	80.0	29.00	0.52	5.67	15.03	0.377 ✔
T5	120 - 100	L 2.5 x 2.5 x 3/16	11.93	5.38	86.2	29.00	0.52	5.29	15.03	0.352 ✔
T6	100 - 80	L 2.5 x 2.5 x 3/16	13.13	6.02	95.9	29.00	0.52	4.26	15.03	0.283 ✔
T7	80 - 60	L 3 x 3 x 3/16	15.24	7.08	93.1	29.00	0.66	4.43	19.12	0.231 ✔
T8	60 - 40	L 3 x 3 x 3/16	16.01	7.49	98.4	29.00	0.66	4.60	19.12	0.241 ✔
T9	40 - 20	L 3 x 3 x 5/16	17.62	8.27	111.0	29.00	1.01	4.97	29.37	0.169 ✔
T10	20 - 0	L 3 x 3 x 5/16	20.16	9.54	127.6	29.00	1.01	5.54	29.37	0.189 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	7/8" solid	4.00	3.88	212.6	30.00	0.60	0.31	18.04	0.017

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T2	170 - 150	7/8" solid	4.07	3.91	214.3	30.00	0.60	0.55	18.04	0.031 ✔
T3	150 - 130	7/8" solid	4.57	4.39	240.6	30.00	0.60	1.39	18.04	0.077 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	7/8" solid	4.00	3.88	212.6	30.00	0.60	0.71	18.04	0.040 ✔
T2	170 - 150	7/8" solid	4.01	3.85	211.1	30.00	0.60	0.91	18.04	0.050 ✔
T3	150 - 130	1" solid	4.51	4.33	207.7	30.00	0.79	1.96	23.56	0.083 ✔

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 170	7/8" solid	4.00	3.88	212.6	30.00	0.60	0.68	18.04	0.038 ✔
T2	170 - 150	7/8" solid	4.49	4.32	236.9	30.00	0.60	1.87	18.04	0.103 ✔
T3	150 - 130	1" solid	4.99	4.80	230.3	30.00	0.79	2.19	23.56	0.093 ✔

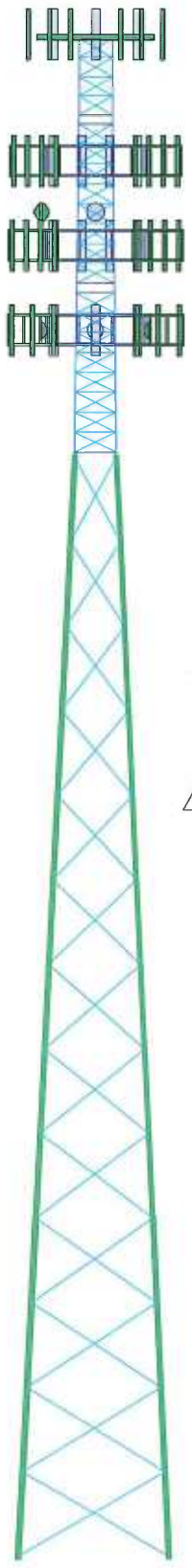
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 170	Leg	1 1/2" solid	3	-9.70	48.44	20.0	Pass
T2	170 - 150	Leg	2" solid	37	-45.56	97.53	46.7	Pass
T3	150 - 130	Leg	2 1/4" solid	101	-101.57	128.80	78.9	Pass
T4	130 - 120	Leg	Pirod 105216 (12x1.25)	165	-103.10	122.94	83.9	Pass
T5	120 - 100	Leg	Pirod 105217 (12x1.5)	174	-135.75	184.67	73.5	Pass
T6	100 - 80	Leg	Pirod 105217 (12x1.5)	189	-161.64	184.67	87.5	Pass
T7	80 - 60	Leg	Pirod 105218 (12x1.75)	204	-186.30	258.24	72.1	Pass
T8	60 - 40	Leg	Pirod 105218 (12x1.75)	219	-209.65	258.24	81.2	Pass
T9	40 - 20	Leg	Pirod 105219 (12x2)	234	-232.94	343.62	67.8	Pass
T10	20 - 0	Leg	Pirod 105219 (12x2)	249	-254.18	343.62	74.0	Pass
T1	180 - 170	Diagonal	3/4" solid	15	-1.54	5.36	28.7	Pass
T2	170 - 150	Diagonal	7/8" solid	51	-4.57	8.23	55.5	Pass
T3	150 - 130	Diagonal	1" solid	115	-4.91	11.87	41.4	Pass
T4	130 - 120	Diagonal	L 2.5 x 2.5 x 3/16	172	-6.66	12.23	54.4	Pass
T5	120 - 100	Diagonal	L 2.5 x 2.5 x 3/16	181	-4.70	9.65	48.7	Pass

tnxTower	Job	Page
	Existing 180-ft S/S; West Hartford, CT	18 of 18
Paul J Ford and Company 250 E. Broad Street Suite 600 Columbus, OH 43215 Phone: 614.221.6679 FAX: 614.448.4105	**Project** CT001 (PJF# 64114-0002)	**Date** 10:46:03 02/06/15
	Client Hirschfeld Communications, LLC	**Designed by** Rebekah Dorris

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T6	100 - 80	Diagonal	L 2.5 x 2.5 x 3/16	196	-4.70	7.63	61.6	Pass
T7	80 - 60	Diagonal	L 3 x 3 x 3/16	211	-4.76	10.68	44.6	Pass
T8	60 - 40	Diagonal	L 3 x 3 x 3/16	226	-4.96	8.62	57.5	Pass
T9	40 - 20	Diagonal	L 3 x 3 x 5/16	241	-5.36	11.34	47.3	Pass
T10	20 - 0	Diagonal	L 3 x 3 x 5/16	256	-6.95	9.38	74.1	Pass
T1	180 - 170	Horizontal	7/8" solid	30	-0.21	5.41	3.8	Pass
T2	170 - 150	Horizontal	7/8" solid	94	-0.46	5.32	8.6	Pass
T3	150 - 130	Horizontal	7/8" solid	158	-1.23	4.22	29.1	Pass
T1	180 - 170	Top Girt	7/8" solid	6	-0.72	5.41	13.3	Pass
T2	170 - 150	Top Girt	7/8" solid	41	-0.90	5.48	16.4	Pass
T3	150 - 130	Top Girt	1" solid	105	-1.80	7.40	24.4	Pass
T1	180 - 170	Bottom Girt	7/8" solid	7	-0.64	5.41	11.9	Pass
T2	170 - 150	Bottom Girt	7/8" solid	44	-1.89	4.35	43.5	Pass
T3	150 - 130	Bottom Girt	1" solid	107	-1.98	6.01	32.9	Pass
							Summary	
						Leg (T6)	87.5	Pass
						Diagonal (T10)	74.1	Pass
						Horizontal (T3)	29.1	Pass
						Top Girt (T3)	24.4	Pass
						Bottom Girt (T2)	43.5	Pass
						Bolt Checks	59.6	Pass
						RATING =	**87.5**	**Pass**

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirod 105219 (12x2)		Pirod 105218 (12x1.75)		Pirod 105217 (12x1.5)		B	SR 2 1/4" solid	SR 2" solid	A
Leg Grade	A572-50									
Diagonals	L 3 x 3 x 5/16		L 3 x 3 x 3/16		L 2.5 x 2.5 x 3/16			SR 1" solid	SR 7/8" solid	SR 3/4" solid
Diagonal Grade	A572-50									
Top Girts	A36							SR 1" solid	SR 7/8" solid	
Bottom Girts	N.A.							SR 1" solid	SR 7/8" solid	
Horizontals	N.A.							SR 7/8" solid		
Face Width (ft)	18	16	14	12	10	8	6	4.5	4	
# Panels @ (ft)	26.5	5.2	5.0	3.3	3.2	2.7	2.6	1.7	1.3	0.4
Weight (K)				13 @ 10			5	16 @ 2.35833	4 @ 2.25	



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/2" solid	B	Pirod 105216 (12x1.25)

MATERIAL STRENGTH

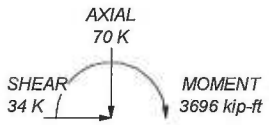
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

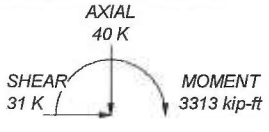
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69.3 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50.0 mph wind.
5. TOWER RATING: 87.5%

MAX. CORNER REACTIONS AT BASE:
DOWN: 260 K
SHEAR: 24 K

UPLIFT: -196 K
SHEAR: 18 K



TORQUE 10 kip-ft
69.3 mph WIND - 0.50 in ICE

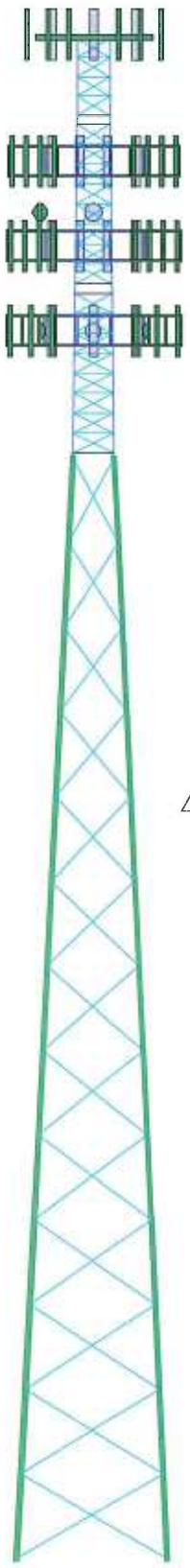


TORQUE 12 kip-ft
REACTIONS - 80.0 mph WIND

Paul J Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job: *Existing 180-ft S/S; West Hartford, CT*			
Project: *CT001 (PJF# 64114-0002)*			
Client: Hirschfeld Communications, LLC	Drawn by: Rebekah Dorris	App'd:	
Code: TIA/EIA-222-F	Date: 02/06/15	Scale: NTS	
Path: G:\TOWERS\641 Hirschfeld\Engineering\pjf#64114-0002 CT001 W Hartford\SA Design\Tower Models\64114-0002.003.eri		Dwg No. E-1	

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pirod 105219 (12x2)		Pirod 105218 (12x1.75)		Pirod 105217 (12x1.5)		B	SR 2 1/4" solid	SR 2" solid	A
Leg Grade	A572-50									
Diagonals	L 3 x 3 x 5/16		L 3 x 3 x 3/16		L 2.5 x 2.5 x 3/16			SR 1" solid	SR 7/8" solid	SR 3/4" solid
Diagonal Grade	A36							A572-50		
Top Girts	N.A.							SR 1" solid	SR 7/8" solid	
Bottom Girts	N.A.							SR 1" solid	SR 7/8" solid	
Horizontals	N.A.							SR 7/8" solid		
Face Width (ft)	18	16	14	12	10	8	6	4.5	4	
# Panels @ (ft)			13 @ 10					16 @ 2.35833	4 @ 2.25	
Weight (K)	26.5	5.2	5.0	3.3	3.2	2.7	2.6	1.7	1.3	0.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Pirod 13' LP Platform (lattice tower) (ATT)	180	AIR 21 B4A/B12-B5P 2.4M w/ Mount Pipe (T-Mobile)	165
(2) 7770.00 w/ Mount Pipe (ATT)	180	AIR 21 B4A/B12-B5P 2.4M w/ Mount Pipe (T-Mobile)	165
(2) 7770.00 w/ Mount Pipe (ATT)	180		
(2) 7770.00 w/ Mount Pipe (ATT)	180	Andrew VHLP2-18 (Clearwire)	159
(2) LGP21401 (ATT)	180	Andrew VHLP2-18 (Clearwire)	159
(2) LGP21901 (ATT)	180	4'x2" Pipe Mount (Clearwire)	157
(2) LGP21901 (ATT)	180	4'x2" Pipe Mount (Clearwire)	157
AM-X-CD-16-65-00T-RET (ATT)	180	(3) DB844H90 w/Mount Pipe (Sprint)	155
AM-X-CD-16-65-00T-RET (ATT)	180	(3) DB844H90 w/Mount Pipe (Sprint)	155
AM-X-CD-16-65-00T-RET (ATT)	180	840 10054 w/ Mount Pipe (Clearwire)	155
(2) RRU (ATT)	180	840 10054 w/ Mount Pipe (Clearwire)	155
(2) RRU (ATT)	180	840 10054 w/ Mount Pipe (Clearwire)	155
(2) RRU (ATT)	180	PiRod 12' Lightweight T-Frame (Sprint)	155
PiRod 12' Lightweight T-Frame (T-Mobile)	165	(3) DB844H90 w/Mount Pipe (Sprint)	155
		PiRod 12' Lightweight T-Frame (Sprint)	155
PiRod 12' Lightweight T-Frame (T-Mobile)	165	PiRod 12' Lightweight T-Frame (Sprint)	155
PiRod 12' Lightweight T-Frame (T-Mobile)	165	PiRod 12' Lightweight T-Frame (Pocket)	145
		(2) 48010 w/Mount Pipe (Pocket)	145
ERICSSON AIR 21 B2A (T-Mobile)	165	(2) 48010 w/Mount Pipe (Pocket)	145
ERICSSON AIR 21 B2A (T-Mobile)	165	(2) 48010 w/Mount Pipe (Pocket)	145
ERICSSON AIR 21 B2A (T-Mobile)	165	2 ft standard (Pocket)	145
KRY 112 71 (T-Mobile)	165	2 ft standard (Pocket)	145
KRY 112 71 (T-Mobile)	165	2 ft standard (Pocket)	145
KRY 112 71 (T-Mobile)	165	PiRod 12' Lightweight T-Frame (Pocket)	145
RRUS 11 B12 (T-Mobile)	165		
RRUS 11 B12 (T-Mobile)	165	PiRod 12' Lightweight T-Frame (Pocket)	145
RRUS 11 B12 (T-Mobile)	165		
AIR 21 B4A/B12-B5P 2.4M w/ Mount Pipe (T-Mobile)	165		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/2" solid	B	Pirod 105216 (12x1.25)

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 Hartford County, Connecticut.
2. Tower designed for a 80.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69.3 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50.0 mph wind.
5. TOWER RATING: 87.5%

MAX. CORNER REACTIONS AT BASE:
DOWN: 260 K
SHEAR: 24 K

UPLIFT: -196 K
SHEAR: 18 K

AXIAL
70 K
SHEAR
34 K
MOMENT
3696 kip-ft

TORQUE 10 kip-ft
69.3 mph WIND - 0.50 in ICE

AXIAL
40 K
SHEAR
31 K
MOMENT
3313 kip-ft

TORQUE 12 kip-ft
REACTIONS - 80.0 mph WIND

Paul J Ford and Company
250 E. Broad Street Suite 600
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FAX: 614.448.4105

Job: *Existing 180-ft S/S; West Hartford, CT*			
Project: *CT001 (PJF# 64114-0002)*			
Client: Hirschfeld Communications, LLC	Drawn by: Rebekah Dorris	App'd:	
Code: TIA/EIA-222-F	Date: 02/06/15	Scale: NTS	
Path: G:\TOWERS\61 Hirschfeld Communications\2014\64114-0002 CT001 W Hartford\EA 003\Tower\Models\64114-0002.003 ml		Dwg No. E-1	

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11170C

Hartford / NewBritain Avenue_1
1030 New Britain Avenue
West Hartford, CT 06110

February 18, 2015

EBI Project Number: 62151130

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	17.27 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

February 18, 2015

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

Emissions Analysis for Site: **CT11170C – Hartford / NewBritain Avenue_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1030 New Britain Avenue, West Hartford, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **1030 New Britain Avenue, West Hartford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

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

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

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

6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Ericsson AIR21 B4A/B12P** for 2100 MHz (AWS) and 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe for 1900 MHz and 2100 MHz. The **Ericsson AIR21 B4A/B12P** has a maximum gain of 15.9 **dBd** at its main lobe for 2100 MHz and a maximum gain of 3.6 **dBd** at its main lobe for 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **165 feet** above ground level (AGL).

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

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	165	Height (AGL):	165	Height (AGL):	165
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	# PCS Channels:	4
Total TX Power:	180	Total TX Power:	180	# AWS Channels:	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A1 MPE%	1.00	Antenna B1 MPE%	1.00	Antenna C1 MPE%	1.00
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P
Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd
Height (AGL):	165	Height (AGL):	165	Height (AGL):	165
Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power:	90	Total TX Power:	90	Total TX Power:	90
ERP (W):	3,021.53	ERP (W):	3,021.53	ERP (W):	3,021.53
Antenna A2 MPE%	0.43	Antenna B2 MPE%	0.43	Antenna C2 MPE%	0.43

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**4.28**
AT&T	9.71 %
Clearwire	0.77 %
Nextel	2.51 %
Site Total MPE %:	**17.27 %**

T-Mobile Sector 1 Total:	1.43 %
T-Mobile Sector 2 Total:	1.43 %
T-Mobile Sector 3 Total:	1.43 %
Site Total:	17.27 %

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Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.43 %
Sector 2:	1.43 %
Sector 3 :	1.43 %
T-Mobile Total:	4.28 %
Site Total:	17.27 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.27%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting

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