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 6, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification
CCTMO LLC/ T-Mobile co-location
Site ID CT11279D
300 Governors Highway, South Windsor

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, CCTMO, LLC owns the existing monopole telecommunications tower and related facility at 300 Governors Highway, South Windsor, Connecticut (Latitude: 41.833463 Longitude: -72.603052). T-Mobile intends to replace six antennas and related equipment at this existing telecommunications facility in South Windsor ("South Windsor 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 Town Manger Matthew Galligan, and the property owner, Electron Technologies Corporation.

The existing South Windsor Facility consists of a 165 foot tall monopole tower.[1] T-Mobile plans to replace six antennas and three TMAs (tower mounted amplifiers) at a centerline of 169 feet. (See the plans revised to February 28, 2014 attached hereto as Exhibit A). T-Mobile will also install fiber cable and reuse existing coax cable. The existing South Windsor Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated February 20, 2014 and attached hereto as Exhibit B.

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

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for the approval of this structure, it does reference this structure in connection with notices of intent captioned EM-AT&T-132-020701 and EM-CING-132-030728.

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement antennas will be installed at a centerline of 169 feet, merely replacing existing antennas located at the same 169 foot elevation. 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 of the site boundaries. T-Mobile's equipment will be located entirely within the existing compound and lease area.

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

4. The operation of the replacement antennas 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 27, 2014, T-Mobile's operations would add 0.412% 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 61.292% 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 equipment at the South Windsor Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence construction approximately sixty days from the date of the Council's notice of acknowledgement.

Sincerely,

Julie D. Kohler, Esq.

cc: Town of South Windsor, Town Manager Matthew Galligan
CCTMO LLC
Electron Technologies Corporation
Sheldon J. Freincle, Northeast Site Solutions

EXHIBIT A

OVERALL SITE PLAN

N.T.S.

CONFIGURATION

2C

SUBMITTALS	
LE REV A	01.22.14
LE REV 0	02.28.14

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11279D

SITE NAME:
SOUTH WINDSOR/RT 5

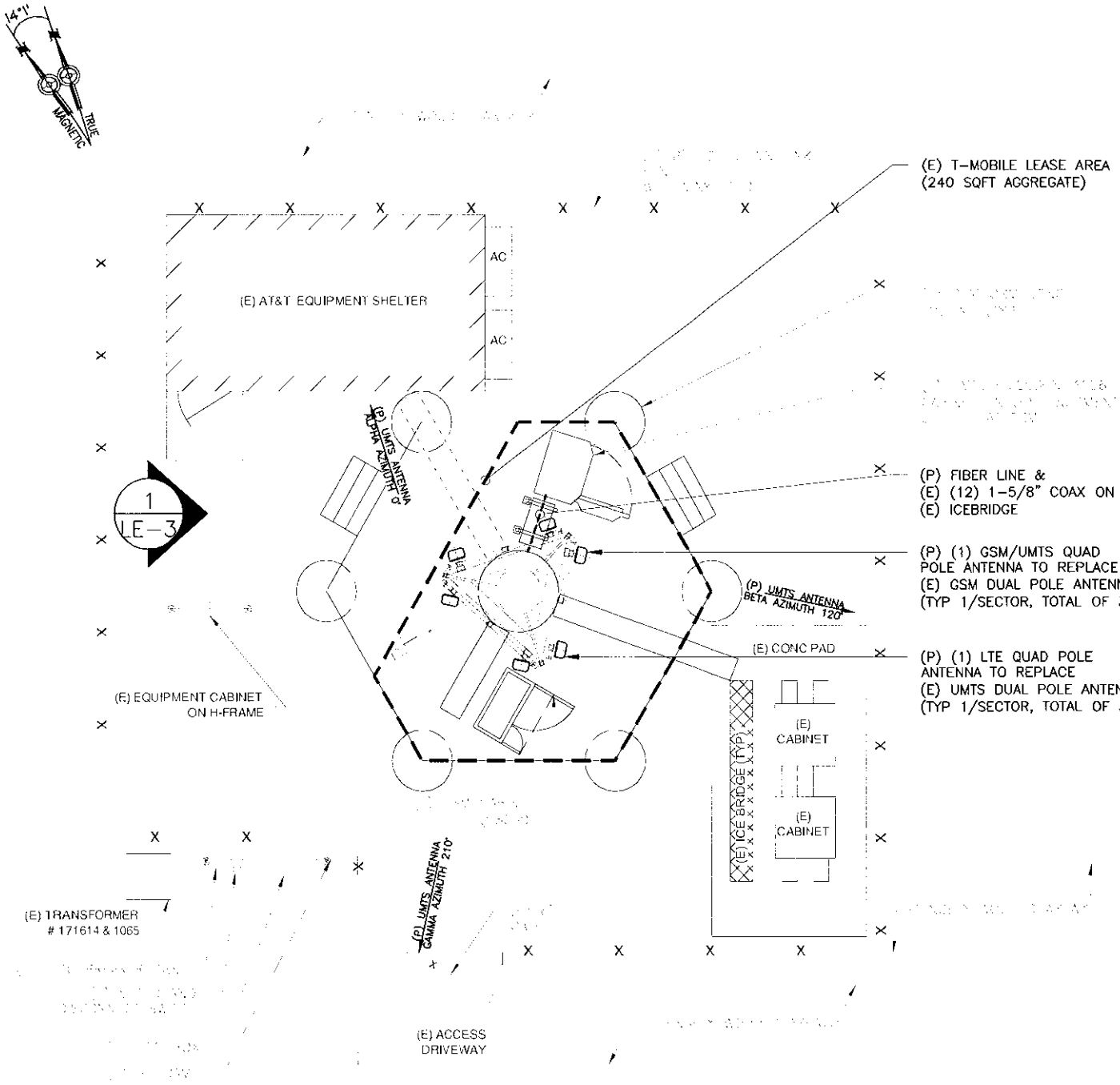
SITE ADDRESS:
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT, 06074

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



SITE PLAN

SCALE: 1" = 10'-0"

10 0 10 20 30

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.

CONFIGURATION

2C

SUBMITTALS	
LE REV A	01.22.14
LE REV 0	02.28.14

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11279D

SITE NAME:
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NORTHEAST SITE SOLUTIONS
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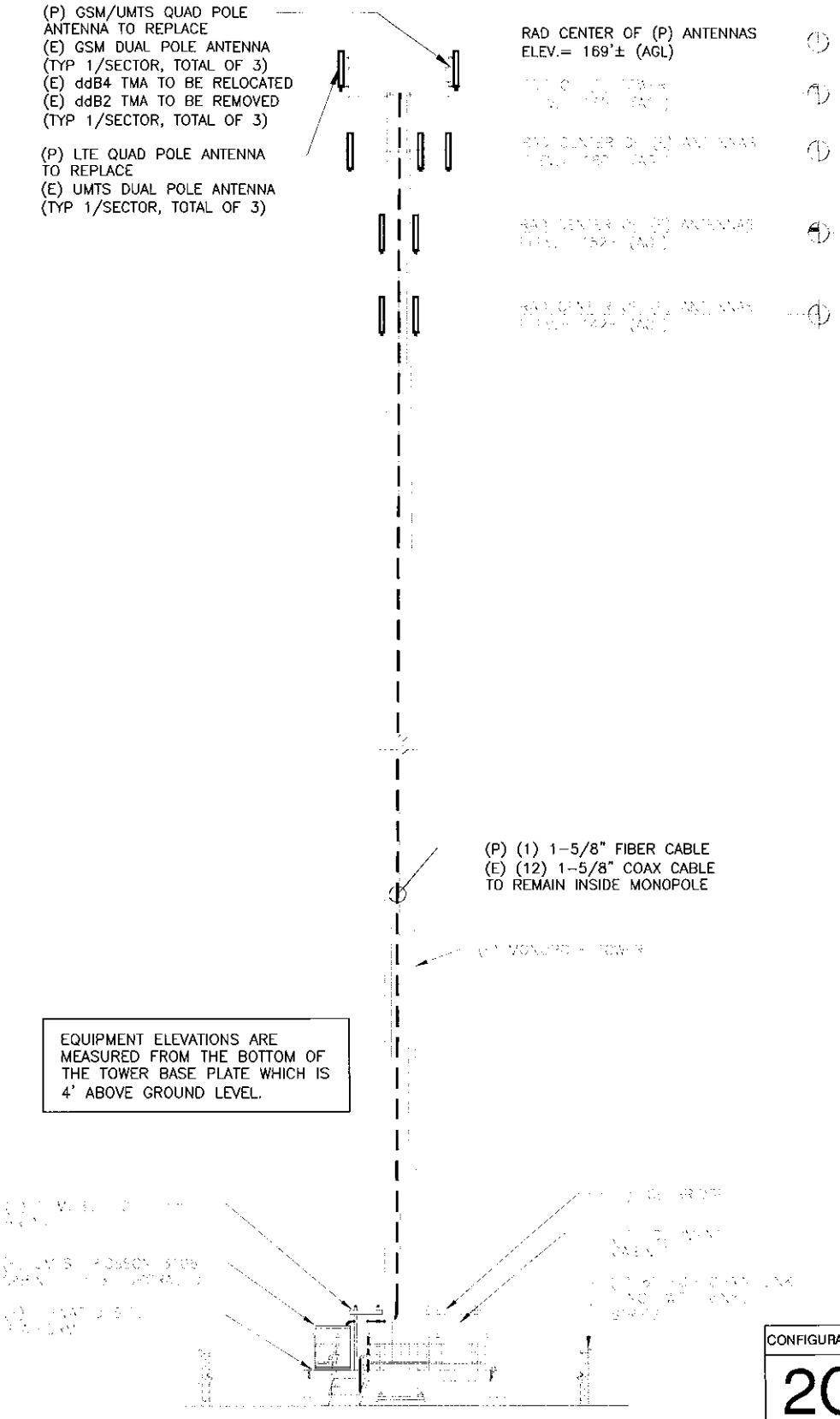

WEST ELEVATION VIEW

SCALE: 1" = 20'-0"

20 0 20 40 60

CONFIGURATION

2C

SUBMITTALS	
LE REV A	01.22.14
LE REV 0	02.28.14

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11279D

SITE NAME:
SOUTH WINDSOR/RT 5

SITE ADDRESS:
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SOUTH WINDSOR, CT, 06074

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

EXHIBIT B

Date: **February 20th, 2014**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6607

GPD Group
520 South Main Street, Suite 2531
Akron, OH 44311
(614) 859-1607
dpalkovic@gpdgroup.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11279D
	Carrier Site Name:	South Windsor/Rt 5
Crown Castle Designation:	**Crown Castle BU Number:**	828054
	Crown Castle Site Name:	South Windsor/Rt 5
	Crown Castle JDE Job Number:	259660
	Crown Castle Work Order Number:	712478
	Crown Castle Application Number:	216335 Rev. 3
Engineering Firm Designation:	**GPD Group Project Number:**	2014777.828054.02
Site Data:	**300 Governors Highway, South Windsor, Hartford County, CT 06074**	
	Latitude *41° 50' 0.4"*, Longitude *-72° 36' 11"*	
	165 Foot – Modified EEI Monopole Tower	

Dear Mr. Charles McGuirt,

GPD Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 617856, in accordance with application 216335, revision 3.

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

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 Connecticut State Building Code based upon a wind speed of 80 mph fastest mile.

We at *GPD Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully **submitted by:**

STATE OF CONNECTICUT JOHN N. KABAK 28336 LICENSED PROFESSIONAL ENGINEER

02/20/2014

John N. Kabak, P.E.
Connecticut #: PEN.0028336

TABLE OF CONTENTS

1) INTRODUCTION

The existing monopole has four major sections connected with slip joints. It has an 18-sided cross section and is evenly tapered from 45.5" (flat-flat) at the base to 16.25" (flat-flat) at the top. The structure is galvanized and has no tower lighting.

This tower is a 165 ft Monopole tower designed by Engineered Endeavors Incorporated in June of 2000. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

Modifications designed by NATCOMM Consulting Engineers Inc. (Project #: 09009.CO2, dated: 03/19/2009) consist of installing new stiffener plates to the existing base plate. These modifications were installed and were considered in this analysis.

Modifications designed by CENTEK Engineering (Job #: 10003.C04, dated: 06/04/2010) consist of adding reinforcement plates to the existing tower shaft from 0' to 104'. These modifications were installed and were considered in this analysis.

Modifications designed by GPD Group (Job #: 2012721.97, dated 06/29/2012) which consisted of replacing the existing base plate anchor bolts and installing stiffener plates to the existing base plate were installed and were considered in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 28 mph with 1 inch ice thickness (in accordance with ASCE 7 ice conditions) and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

165.0	165.0	3	Ericsson	ERICSSON AIR 21 B2A B4P	1	1-5/8	1,2
		3	Ericsson	ERICSSON AIR 21 B4A B2P			
		3	Ericsson	KRY 112 144/1			

Notes:
1) See Appendix B for proposed coax.
2) Equipment elevations are measured from the bottom of the tower baseplate which is 4' above ground level.

Table 2 - Existing and Reserved Antenna and Cable Information

165.0	165.0	9	Ericsson	AIR 21	14	1-5/8	1,2
		3	Ericsson	AIR 33			
		1	Andrew	HP2-102			
		3	Andrew	ETW190VS12UB			
		1	Andrew	ATJB200-A01-007			
		1		Platform Mount [LP 712-1]	12	1-5/8	2
156.0	157.0	3	Communication Components Inc.	DTMABP7819VG12A	12	1-5/8	2
		3	Ericsson	RRUS 11			
	156.0	3	Powerwave Technologies	7770.00			
		6	CSS	DUO1417-8686			
		1		Platform Mount [LP 714-1]			
148.0	148.0	3	Andrew	932LG65VTE-B	6	1-5/8	2
138.0	138.0	1		Side Arm Mount [SO 102-3]	6	1-5/8	2
		3	RFS Celwave	APXV18-206517-A			
128.0	128.0	1		Side Arm Mount [SO 102-3]	6 3 1	1/2 1/4 5/16	2
		3	Argus Technologies	LLPX310R			
		3	Dragonwave	A-ANT-18G-2-C			
		3	Dragonwave	HORIZON DUO			
		3	Samsung Telecommunications	WIMAX DAP HEAD			
111.0	111.0	1		Platform Mount [LP 303-1]	18	1-5/8	2
		3	Antel	BXA-171063-12BF			
		3	Antel	BXA-70063/6CF			
		6	Antel	LPA-80063/6CF			

Notes:
1) Existing equipment to be removed, not considered in this analysis.
2) Equipment elevations are measured from the bottom of the tower baseplate which is 4' above ground level.

Table 3 - Design Antenna and Cable Information

170	170	6		EMS RR90-17		
		1		Low Profile Platform		
160	160	12		EMS RR90-17		
		1		Low Profile Platform		
150	150	12		EMS RR90-17		
		1		Low Profile Platform		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

[illegible]	[illegible]	[illegible]	[illegible]
Tower Manufacturer Drawings	EEI Job #: 6255 Rev. 2, dated: 06/06/2000	D. Palkovic	GPD Group
Tower Foundation Drawings	EEI Job #: 6255 Rev. 1, dated: 03/10/2000	Doc ID: 3436661	Crown DMZ
Tower Star Beam Base Sketches	NATCOMM Consulting Engineers Inc. Project #: 06139, dated: 1/4/2007	D. Palkovic	GPD Group
Recommendations for Helical Anchor Foundation	David C. Kraft, P.E. Ph.D, Civil Engineering/Foundation Technologies Project # ASI99864, dated: 01/16/2000	D. Palkovic	GPD Group
Helical Anchor standards	Hubbell Power Systems Drawing #: SA1070889, dated: 01/08/2013	D. Palkovic	GPD Group
Geotechnical Report	FPA Job #: 99A076AR1, dated: 10/20/1999	Doc ID: 3436696	Crown DMZ
Tower Reinforcement Drawings	NATCOMM Consulting Engineers Inc. Project #: 09009.CO2, dated: 03/19/2009	D. Palkovic	GPD Group
Tower Reinforcement Drawings	CENTEK Engineering Job #: 10003.C04, dated: 06/04/2010	D. Palkovic	GPD Group
Post Modification Inspection Report	TEP Project #: 103179, dated: 12/03/2010	Doc ID: 3773025	Crown DMZ
Tower Reinforcement Drawings	GPD Project #: 2012712.97, dated: 06/29/2012	Doc ID: 3793344	Crown DMZ
Post Modification Inspection Report	TEP Project #: 129375, dated: 03/13/2013	Doc ID: 3773024	Crown DMZ

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount sizes, weights, and manufacturers are best estimates based on site photos provided and were determined without the benefit of a site visit by GPD.
6) All member connections and foundation steel reinforcing are assumed designed to meet or exceed the load carrying capacity of the connected member and surrounding soils respectively unless otherwise specified in this report.
7) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package dated 02/13/2014 with any adjustments as noted below.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

L1	169 - 137.357	Pole	TP22.2976x16.25x0.25	1	-6.34	883.59	55.6	Pass
L2	137.357 - 105.5	Pole	TP27.7972x21.1695x0.3125	2	-13.02	1417.23	92.3	Pass
L3	105.5 - 91.8516	Pole	TP30.3712x27.7972x0.6961	3	-15.41	2217.45	71.6	Pass
L4	91.8516 - 85.8	Pole	TP30.8852x28.9358x0.7429	4	-19.13	2475.73	76.1	Pass
L5	85.8 - 47.3672	Pole	TP38.1248x30.8852x0.824	5	-30.32	3852.25	67.7	Pass
L6	47.3672 - 41.4	Pole	TP38.4887x36.3829x0.8047	6	-35.97	3909.10	73.6	Pass
L7	41.4 - 4	Pole	TP45.5x38.4887x0.727	7	-49.63	4216.56	83.0	Pass
						Summary	ELC:	Load Case 5
						Pole (L2)	92.3	Pass
						Rating =	92.3	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

1	Anchor Rods	0	86.8	Pass
1	Base Plate	0	95.9	Pass
1	Base Foundation System	0	80.9	Pass

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

4.1) Recommendations

The design of the modified tower and its foundations are sufficient for the proposed loading and do not require modifications.

5) DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

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

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

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.

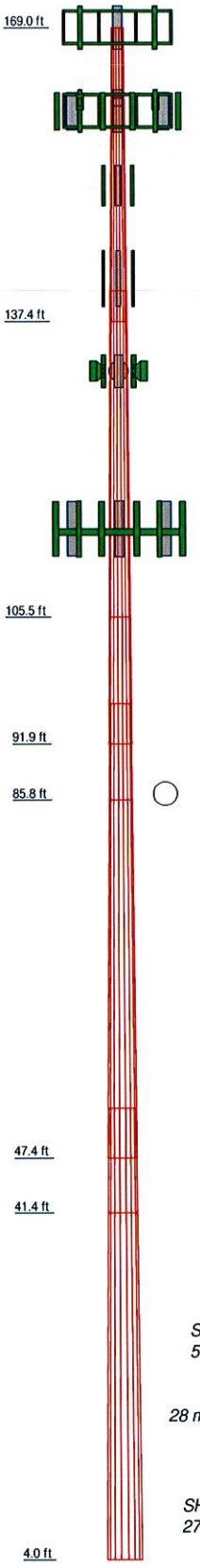
GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

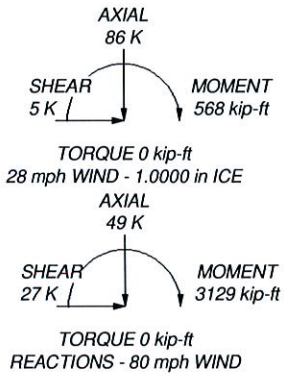
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7
Length (ft)	31.64	35.14	13.65	10.35	38.43	11.23	37.40
Number of Sides	18	18	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.6961	0.7429	0.8240	0.8047	0.7270
Socket Length (ft)	3.29		4.30		5.27		
Top Dia (in)	16.2500	21.1695	27.7972	28.9358	30.8852	36.3829	38.4887
Bot Dia (in)	22.2976	27.7972	30.3712	30.8852	38.1248	38.4887	45.5000
Grade	A572-65		43.474166ksi		43.549927ksi		50.781327ksi / 51.028669ksi
Weight (K)	1.6	2.9	2.7	2.3	10.8	3.4	11.6

Total Weight (K) 35.2





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
9' Ladder	169	932LG65VTE-B w/ Mount Pipe	152
Platform Mount [LP 712-1]	169	932LG65VTE-B w/ Mount Pipe	152
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	169	932LG65VTE-B w/ Mount Pipe	152
		Side Arm Mount [SO 102-3]	142
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	169	APXV18-206517-A w/ Mount Pipe	142
		APXV18-206517-A w/ Mount Pipe	142
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	169	APXV18-206517-A w/ Mount Pipe	142
		Side Arm Mount [SO 102-3]	132
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	169	LLPX310R w/ Mount Pipe	132
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	169	LLPX310R w/ Mount Pipe	132
		LLPX310R w/ Mount Pipe	132
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	169	WIMAX DAP HEAD	132
		WIMAX DAP HEAD	132
KRY 112 144/1	169	WIMAX DAP HEAD	132
KRY 112 144/1	169	HORIZON DUO	132
KRY 112 144/1	169	HORIZON DUO	132
Platform Mount [LP 1201-1]	160	HORIZON DUO	132
7770.00 w/ Mount Pipe	160	5' x 2' Pipe Mount	132
7770.00 w/ Mount Pipe	160	5' x 2' Pipe Mount	132
7770.00 w/ Mount Pipe	160	5' x 2' Pipe Mount	132
(2) DUO1417-8686 w/ Mount Pipe	160	A-ANT-18G-2-C	132
(2) DUO1417-8686 w/ Mount Pipe	160	A-ANT-18G-2-C	132
(2) DUO1417-8686 w/ Mount Pipe	160	A-ANT-18G-2-C	132
RRUS 11	160	BXA-171063-12BF w/ Mount Pipe	115
RRUS 11	160	BXA-70063/6CF w/ Mount Pipe	115
RRUS 11	160	BXA-70063/6CF w/ Mount Pipe	115
DTMABP7819VG12A	160	BXA-70063/6CF w/ Mount Pipe	115
DTMABP7819VG12A	160	(2) LPA-80063/6CF w/ Mount Pipe	115
DTMABP7819VG12A	160	(2) LPA-80063/6CF w/ Mount Pipe	115
6' x 2" Mount Pipe	160	(2) LPA-80063/6CF w/ Mount Pipe	115
6' x 2" Mount Pipe	160	Platform Mount [LP 303-1]	115
6' x 2" Mount Pipe	160	BXA-171063-12BF w/ Mount Pipe	115
		BXA-171063-12BF w/ Mount Pipe	115

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	50.723072ksi	51 ksi	66 ksi
43.474166ksi	43 ksi	58 ksi	50.781327ksi	51 ksi	66 ksi
43.549927ksi	44 ksi	59 ksi	51.028669ksi	51 ksi	66 ksi

TOWER DESIGN NOTES

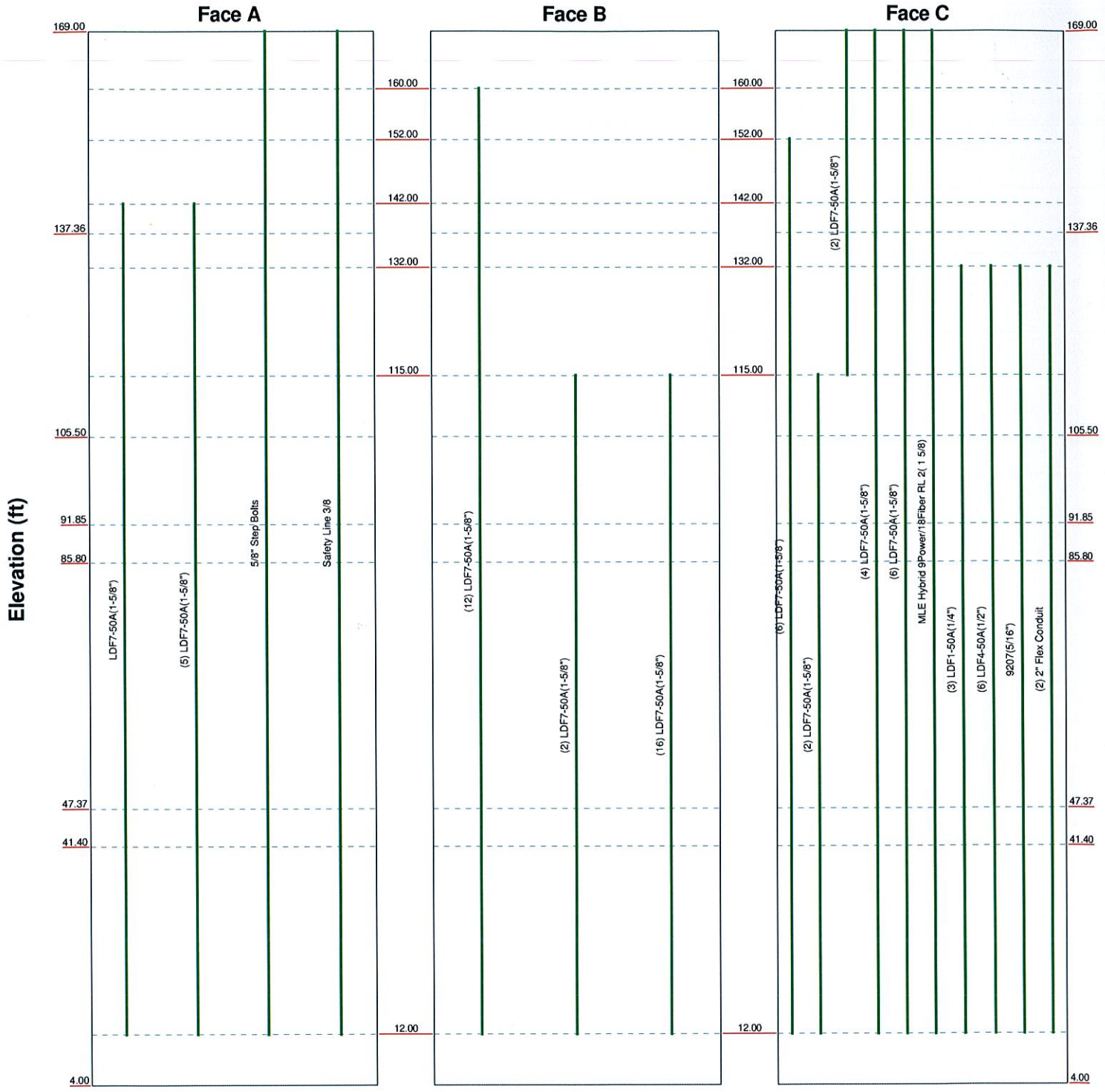
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.

GPD Group
520 S. Main St.
Akron, OH 44311
Consulting Engineers
Phone: (330) 572-2100
FAX: (330) 572-2102

Job: South Windsor/Rt 5 BU: 828054			
Project: 2014777.828054.02			
Client: Crown CastleUSA, Inc.	Drawn by: MSaid	App'd:	
Code: TIA/EIA-222-F	Date: 02/20/14	Scale: NTS	
Path: T:\Crown\828054-02\Aero Calculations\Working RISA\828054 South Windsor.e		Dwg No. E-1	

Feed Line Distribution Chart
4' - 169'

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



GPD Group
520 S. Main St.
Akron, OH 44311
Consulting Engineers
Phone: (330) 572-2100
FAX: (330) 572-2102

Job: South Windsor/Rt 5 BU: 828054			
Project: 2014777.828054.02			
Client: Crown CastleUSA, Inc.	Drawn by: MSaid	App'd:	
Code: TIA/EIA-222-F	Date: 02/20/14	Scale: NTS	
Path: T:\Crown\828054.02\Aero Calculations\Working RISA\828054 South Windsor.en		Dwg No. E-7	

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

1. Tower is located in Hartford County, Connecticut.
2. Basic wind speed of 80 mph.
3. Nominal ice thickness of 1.0000 in.
4. Ice thickness is considered to increase with height.
5. Ice density of 56 pcf.
6. A wind speed of 28 mph is used in combination with ice.
7. Temperature drop of 50 °F.
8. Deflections calculated using a wind speed of 50 mph.
9. A non-linear (P-delta) analysis was used.
10. Pressures are calculated at each section.
11. Stress ratio used in pole design is 1.333.
12. Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	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	[redacted]
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	

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	169.00-137.36	31.64	3.29	18	16.2500	22.2976	0.2500	1.0000	A572-65 (65 ksi)
L2	137.36-105.50	35.14	0.00	18	21.1695	27.7972	0.3125	1.2500	A572-65 (65 ksi)
L3	105.50-91.85	13.65	4.30	18	27.7972	30.3712	0.6961	2.7844	43.474166ksi (43 ksi)
L4	91.85-85.80	10.35	0.00	18	28.9358	30.8852	0.7429	2.9717	43.549927ksi (44 ksi)
L5	85.80-47.37	38.43	5.27	18	30.8852	38.1248	0.8240	3.2958	50.723072ksi (51 ksi)
L6	47.37-41.40	11.23	0.00	18	36.3829	38.4887	0.8047	3.2188	50.781327ksi (51 ksi)
L7	41.40-4.00	37.40		18	38.4887	45.5000	0.7270	2.9080	51.028669ksi (51 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	16.5007	12.6960	410.6240	5.6800	8.2550	49.7425	821.7883	6.3492	2.4200	9.68
	22.6416	17.4948	1074.4058	7.8269	11.3272	94.8520	2150.2253	8.7490	3.4844	13.938
L2	22.1254	20.6875	1136.9721	7.4042	10.7541	105.7245	2275.4402	10.3457	3.1758	10.163
	28.2260	27.2614	2601.7661	9.7571	14.1210	184.2482	5206.9557	13.6333	4.3423	13.895
L3	28.2260	59.8769	5556.1159	9.6209	14.1210	393.4651	11119.5426	29.9441	3.6672	5.268
	30.8397	65.5638	7294.3433	10.5347	15.4286	472.7816	14598.2847	32.7881	4.1202	5.919
L4	30.2041	66.4812	6675.9947	10.0085	14.6994	454.1676	13360.7738	33.2469	3.7851	5.095
	31.3616	71.0779	8158.7451	10.7005	15.6897	520.0073	16328.2256	35.5457	4.1282	5.557
L5	31.3616	78.6178	8975.7672	10.6717	15.6897	572.0811	17963.3449	39.3164	3.9856	4.837
	38.7129	97.5512	17147.7571	13.2418	19.3674	885.3929	34318.0776	48.7849	5.2598	6.384
L6	37.9465	90.8696	14531.9755	12.6303	18.4825	786.2551	29083.0725	45.4434	4.9871	6.198
	39.0825	96.2480	17268.0528	13.3778	19.5523	883.1742	34558.8273	48.1331	5.3578	6.658
L7	39.0825	87.1361	15697.7906	13.4054	19.5523	802.8632	31416.2367	43.5763	5.4945	7.558
	46.2019	103.3149	26165.7076	15.8944	23.1140	1132.0285	52365.8446	51.6672	6.7285	9.255

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
L1 169.00-137.36				1	1	1		
L2 137.36-105.50				1	1	1		
L3 105.50-91.85				1	1	0.926023		
L4 91.85-85.80				1	1	0.933571		
L5 85.80-47.37				1	1	0.935375		
L6 47.37-41.40				1	1	0.939618		
L7 41.40-4.00				1	1	0.956219		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF7-50A(1-5/8")	A	No	CaAa (Out Of Face)	142.00 - 12.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
						2" Ice	0.60	10.54
						4" Ice	1.00	30.04
LDF7-50A(1-5/8")	A	No	CaAa (Out Of Face)	142.00 - 12.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
5/8" Step Bolts	A	No	CaAa (Out Of Face)	169.00 - 12.00	1	No Ice	0.00	1.00
						1/2" Ice	0.00	1.56
						1" Ice	0.00	2.73
						2" Ice	0.00	6.91
						4" Ice	0.00	22.58
Safety Line 3/8	A	No	CaAa (Out Of Face)	169.00 - 12.00	1	No Ice	0.00	0.22
						1/2" Ice	0.00	0.75
						1" Ice	0.00	1.28
						2" Ice	0.00	2.34
						4" Ice	0.00	4.46
LDF7-50A(1-5/8")	B	No	Inside Pole	160.00 - 12.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	115.00 - 12.00	2	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
						2" Ice	0.60	10.54
						4" Ice	1.00	30.04
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	115.00 - 12.00	16	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF7-50A(1-5/8")	C	No	Inside Pole	152.00 - 12.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	115.00 - 12.00	2	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	169.00 - 115.00	2	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
						2" Ice	0.60	10.54
						4" Ice	1.00	30.04
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	169.00 - 12.00	4	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
LDF7-50A(1-5/8")	C	No	Inside Pole	169.00 - 12.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	CaAa (Out Of Face)	169.00 - 12.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	2.37
						1" Ice	0.00	4.28
						2" Ice	0.00	9.93
						4" Ice	0.00	28.56

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF1-50A(1/4")	C	No	CaAa (Out Of Face)	132.00 - 12.00	3	No Ice	0.00	0.06
						1/2" Ice	0.00	0.58
						1" Ice	0.00	1.70
						2" Ice	0.00	5.79
						4" Ice	0.00	21.29
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	132.00 - 12.00	6	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
						1" Ice	0.00	2.14
						2" Ice	0.00	6.58
						4" Ice	0.00	22.78
9207(5/16")	C	No	CaAa (Out Of Face)	132.00 - 12.00	1	No Ice	0.00	0.60
						1/2" Ice	0.00	1.11
						1" Ice	0.00	2.22
						2" Ice	0.00	6.29
						4" Ice	0.00	21.76
2" Flex Conduit	C	No	CaAa (Out Of Face)	132.00 - 12.00	2	No Ice	0.00	0.32
						1/2" Ice	0.00	1.85
						1" Ice	0.00	3.98
						2" Ice	0.00	10.09
						4" Ice	0.00	29.64

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	169.00-137.36	A	0.000	0.000	0.000	0.919	0.06
		B	0.000	0.000	0.000	0.000	0.22
		C	0.000	0.000	0.000	12.531	0.42
L2	137.36-105.50	A	0.000	0.000	0.000	6.308	0.20
		B	0.000	0.000	0.000	3.762	0.45
		C	0.000	0.000	0.000	8.853	0.57
L3	105.50-91.85	A	0.000	0.000	0.000	2.702	0.08
		B	0.000	0.000	0.000	5.405	0.34
		C	0.000	0.000	0.000	0.000	0.25
L4	91.85-85.80	A	0.000	0.000	0.000	1.198	0.04
		B	0.000	0.000	0.000	2.396	0.15
		C	0.000	0.000	0.000	0.000	0.11
L5	85.80-47.37	A	0.000	0.000	0.000	7.610	0.24
		B	0.000	0.000	0.000	15.219	0.95
		C	0.000	0.000	0.000	0.000	0.70
L6	47.37-41.40	A	0.000	0.000	0.000	1.182	0.04
		B	0.000	0.000	0.000	2.363	0.15
		C	0.000	0.000	0.000	0.000	0.11
L7	41.40-4.00	A	0.000	0.000	0.000	5.821	0.18
		B	0.000	0.000	0.000	11.642	0.72
		C	0.000	0.000	0.000	0.000	0.53

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	169.00-137.36	A	1.202	0.000	0.000	0.000	2.035	0.32
		B		0.000	0.000	0.000	0.000	0.22
		C		0.000	0.000	0.000	27.740	1.48
L2	137.36-105.50	A	1.169	0.000	0.000	0.000	13.964	1.25
		B		0.000	0.000	0.000	8.328	1.29
		C		0.000	0.000	0.000	19.599	2.61
L3	105.50-91.85	A	1.140	0.000	0.000	0.000	5.815	0.50
		B		0.000	0.000	0.000	11.630	1.44
		C		0.000	0.000	0.000	0.000	1.13
L4	91.85-85.80	A	1.126	0.000	0.000	0.000	2.578	0.22
		B		0.000	0.000	0.000	5.157	0.64
		C		0.000	0.000	0.000	0.000	0.50

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L5	85.80-47.37	A	1.087	0.000	0.000	0.000	15.968	1.32
		B		0.000	0.000	0.000	31.936	3.83
		C		0.000	0.000	0.000	0.000	2.98
L6	47.37-41.40	A	1.036	0.000	0.000	0.000	2.479	0.21
		B		0.000	0.000	0.000	4.958	0.59
		C		0.000	0.000	0.000	0.000	0.46
L7	41.40-4.00	A	1.000	0.000	0.000	0.000	11.701	0.90
		B		0.000	0.000	0.000	23.403	2.65
		C		0.000	0.000	0.000	0.000	2.03

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	169.00-137.36	-0.4068	0.1958	-0.6658	0.3204
L2	137.36-105.50	-0.1410	0.0000	-0.2318	0.0000
L3	105.50-91.85	0.4132	0.0000	0.6894	0.0000
L4	91.85-85.80	0.4165	0.0000	0.7001	0.0000
L5	85.80-47.37	0.4263	0.0000	0.7213	0.0000
L6	47.37-41.40	0.4330	0.0000	0.7436	0.0000
L7	41.40-4.00	0.3504	0.0000	0.6067	0.0000

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
9' Ladder	C	None			0.0000	169.00	No Ice	4.50	2.25	0.08
							1/2" Ice	5.50	2.75	0.12
							1" Ice	6.50	3.25	0.17
							2" Ice	8.50	4.25	0.26
							4" Ice	12.50	6.25	0.44
Platform Mount [LP 712-1]	C	None			0.0000	169.00	No Ice	24.53	24.53	1.34
							1/2" Ice	29.94	29.94	1.65
							1" Ice	35.35	35.35	1.96
							2" Ice	46.17	46.17	2.58
							4" Ice	67.81	67.81	3.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	169.00	No Ice	6.90	5.72	0.11
			0.00				1/2" Ice	7.46	6.63	0.17
							1" Ice	8.00	7.42	0.24
							2" Ice	9.10	9.07	0.39
							4" Ice	11.44	12.58	0.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	169.00	No Ice	6.90	5.72	0.11
			0.00				1/2" Ice	7.46	6.63	0.17
							1" Ice	8.00	7.42	0.24
							2" Ice	9.10	9.07	0.39
							4" Ice	11.44	12.58	0.82
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	169.00	No Ice	6.90	5.72	0.11
			0.00				1/2" Ice	7.46	6.63	0.17
							1" Ice	8.00	7.42	0.24
							2" Ice	9.10	9.07	0.39
							4" Ice	11.44	12.58	0.82
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	169.00	No Ice	6.90	5.72	0.11
			0.00				1/2" Ice	7.46	6.63	0.17
							1" Ice	8.00	7.42	0.24
							2" Ice	9.10	9.07	0.39
							4" Ice	11.44	12.58	0.82
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	169.00	No Ice	6.90	5.72	0.11
			0.00				1/2" Ice	7.46	6.63	0.17
							1" Ice	8.00	7.42	0.24
							2" Ice	9.10	9.07	0.39
							4" Ice	11.44	12.58	0.82
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	169.00	No Ice	6.90	5.72	0.11
			0.00				1/2" Ice	7.46	6.63	0.17
							1" Ice	8.00	7.42	0.24
							2" Ice	9.10	9.07	0.39
							4" Ice	11.44	12.58	0.82
KRY 112 144/1	A	From Leg	4.00	0.00	0.0000	169.00	No Ice	0.41	0.20	0.01
			0.00				1/2" Ice	0.50	0.27	0.01
							1" Ice	0.59	0.35	0.02
							2" Ice	0.81	0.53	0.03
							4" Ice	1.36	1.00	0.08
KRY 112 144/1	B	From Leg	4.00	0.00	0.0000	169.00	No Ice	0.41	0.20	0.01
			0.00				1/2" Ice	0.50	0.27	0.01
							1" Ice	0.59	0.35	0.02
							2" Ice	0.81	0.53	0.03
							4" Ice	1.36	1.00	0.08
KRY 112 144/1	C	From Leg	4.00	0.00	0.0000	169.00	No Ice	0.41	0.20	0.01
			0.00				1/2" Ice	0.50	0.27	0.01
							1" Ice	0.59	0.35	0.02
							2" Ice	0.81	0.53	0.03
							4" Ice	1.36	1.00	0.08
Platform Mount [LP 1201-1]	C	None			0.0000	160.00	No Ice	23.10	23.10	2.10
							1/2" Ice	26.80	26.80	2.50
							1" Ice	30.50	30.50	2.90
							2" Ice	37.90	37.90	3.70
							4" Ice	52.70	52.70	5.30
7770.00 w/ Mount Pipe	A	From Leg	4.00		0.0000	160.00	No Ice	6.22	4.35	0.06

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
			0.00				1/2" Ice	6.77	5.20	0.11
			0.00				1" Ice	7.30	5.92	0.16
							2" Ice	8.38	7.41	0.29
							4" Ice	10.69	10.76	0.68
7770.00 w/ Mount Pipe	B	From Leg	4.00		0.0000	160.00	No Ice	6.22	4.35	0.06
			0.00				1/2" Ice	6.77	5.20	0.11
			0.00				1" Ice	7.30	5.92	0.16
							2" Ice	8.38	7.41	0.29
							4" Ice	10.69	10.76	0.68
7770.00 w/ Mount Pipe	C	From Leg	4.00		0.0000	160.00	No Ice	6.22	4.35	0.06
			0.00				1/2" Ice	6.77	5.20	0.11
			0.00				1" Ice	7.30	5.92	0.16
							2" Ice	8.38	7.41	0.29
							4" Ice	10.69	10.76	0.68
(2) DUO1417-8686 w/ Mount Pipe	A	From Leg	4.00		0.0000	160.00	No Ice	7.48	6.10	0.05
			0.00				1/2" Ice	8.30	7.30	0.11
			0.00				1" Ice	9.05	8.36	0.18
							2" Ice	10.41	10.14	0.35
							4" Ice	13.27	13.93	0.81
(2) DUO1417-8686 w/ Mount Pipe	B	From Leg	4.00		0.0000	160.00	No Ice	7.48	6.10	0.05
			0.00				1/2" Ice	8.30	7.30	0.11
			0.00				1" Ice	9.05	8.36	0.18
							2" Ice	10.41	10.14	0.35
							4" Ice	13.27	13.93	0.81
(2) DUO1417-8686 w/ Mount Pipe	C	From Leg	4.00		0.0000	160.00	No Ice	7.48	6.10	0.05
			0.00				1/2" Ice	8.30	7.30	0.11
			0.00				1" Ice	9.05	8.36	0.18
							2" Ice	10.41	10.14	0.35
							4" Ice	13.27	13.93	0.81
RRUS 11	A	From Leg	4.00		0.0000	160.00	No Ice	3.25	1.37	0.05
			0.00				1/2" Ice	3.49	1.55	0.07
			1.00				1" Ice	3.74	1.74	0.10
							2" Ice	4.27	2.14	0.15
							4" Ice	5.43	3.04	0.31
RRUS 11	B	From Leg	4.00		0.0000	160.00	No Ice	3.25	1.37	0.05
			0.00				1/2" Ice	3.49	1.55	0.07
			1.00				1" Ice	3.74	1.74	0.10
							2" Ice	4.27	2.14	0.15
							4" Ice	5.43	3.04	0.31
RRUS 11	C	From Leg	4.00		0.0000	160.00	No Ice	3.25	1.37	0.05
			0.00				1/2" Ice	3.49	1.55	0.07
			1.00				1" Ice	3.74	1.74	0.10
							2" Ice	4.27	2.14	0.15
							4" Ice	5.43	3.04	0.31
DTMABP7819VG12A	A	From Leg	4.00		0.0000	160.00	No Ice	1.14	0.39	0.02
			0.00				1/2" Ice	1.28	0.49	0.03
			1.00				1" Ice	1.44	0.59	0.04
							2" Ice	1.77	0.83	0.06
							4" Ice	2.54	1.41	0.14
DTMABP7819VG12A	B	From Leg	4.00		0.0000	160.00	No Ice	1.14	0.39	0.02
			0.00				1/2" Ice	1.28	0.49	0.03
			1.00				1" Ice	1.44	0.59	0.04
							2" Ice	1.77	0.83	0.06
							4" Ice	2.54	1.41	0.14
DTMABP7819VG12A	C	From Leg	4.00		0.0000	160.00	No Ice	1.14	0.39	0.02
			0.00				1/2" Ice	1.28	0.49	0.03
			1.00				1" Ice	1.44	0.59	0.04
							2" Ice	1.77	0.83	0.06
							4" Ice	2.54	1.41	0.14
6' x 2" Mount Pipe	A	From Leg	4.00		0.0000	160.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
							2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.0000	160.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
							2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23
6' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.0000	160.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.92	1.92	0.03
			0.00				1" Ice	2.29	2.29	0.05
							2" Ice	3.06	3.06	0.09
							4" Ice	4.70	4.70	0.23
932LG65VTE-B w/ Mount Pipe	A	From Leg	1.00	0.00	0.0000	152.00	No Ice	4.49	4.79	0.04
			0.00				1/2" Ice	4.95	5.50	0.08
			0.00				1" Ice	5.42	6.23	0.13
							2" Ice	6.38	7.72	0.25
							4" Ice	8.42	10.94	0.61
932LG65VTE-B w/ Mount Pipe	B	From Leg	1.00	0.00	0.0000	152.00	No Ice	4.49	4.79	0.04
			0.00				1/2" Ice	4.95	5.50	0.08
			0.00				1" Ice	5.42	6.23	0.13
							2" Ice	6.38	7.72	0.25
							4" Ice	8.42	10.94	0.61
932LG65VTE-B w/ Mount Pipe	C	From Leg	1.00	0.00	0.0000	152.00	No Ice	4.49	4.79	0.04
			0.00				1/2" Ice	4.95	5.50	0.08
			0.00				1" Ice	5.42	6.23	0.13
							2" Ice	6.38	7.72	0.25
							4" Ice	8.42	10.94	0.61
Side Arm Mount [SO 102-3]	C	None			0.0000	142.00	No Ice	3.00	3.00	0.08
							1/2" Ice	3.48	3.48	0.11
							1" Ice	3.96	3.96	0.14
							2" Ice	4.92	4.92	0.20
							4" Ice	6.84	6.84	0.32
APXV18-206517-A w/ Mount Pipe	A	From Leg	1.00	0.00	0.0000	142.00	No Ice	5.40	4.70	0.05
			0.00				1/2" Ice	5.96	5.86	0.10
			0.00				1" Ice	6.48	6.73	0.15
							2" Ice	7.55	8.51	0.28
							4" Ice	9.92	12.28	0.68
APXV18-206517-A w/ Mount Pipe	B	From Leg	1.00	0.00	0.0000	142.00	No Ice	5.40	4.70	0.05
			0.00				1/2" Ice	5.96	5.86	0.10
			0.00				1" Ice	6.48	6.73	0.15
							2" Ice	7.55	8.51	0.28
							4" Ice	9.92	12.28	0.68
APXV18-206517-A w/ Mount Pipe	C	From Leg	1.00	0.00	0.0000	142.00	No Ice	5.40	4.70	0.05
			0.00				1/2" Ice	5.96	5.86	0.10
			0.00				1" Ice	6.48	6.73	0.15
							2" Ice	7.55	8.51	0.28
							4" Ice	9.92	12.28	0.68
Side Arm Mount [SO 102-3]	C	None			0.0000	132.00	No Ice	3.00	3.00	0.08
							1/2" Ice	3.48	3.48	0.11
							1" Ice	3.96	3.96	0.14
							2" Ice	4.92	4.92	0.20
							4" Ice	6.84	6.84	0.32
LLPX310R w/ Mount Pipe	A	From Leg	1.00	0.00	0.0000	132.00	No Ice	5.28	3.45	0.07
			0.00				1/2" Ice	5.73	4.03	0.11
			0.00				1" Ice	6.19	4.62	0.16
							2" Ice	7.13	5.91	0.28
							4" Ice	9.20	8.90	0.62
LLPX310R w/ Mount Pipe	C	From Leg	1.00	0.00	0.0000	132.00	No Ice	5.28	3.45	0.07
			0.00				1/2" Ice	5.73	4.03	0.11
			0.00				1" Ice	6.19	4.62	0.16
							2" Ice	7.13	5.91	0.28
							4" Ice	9.20	8.90	0.62
LLPX310R w/ Mount Pipe	B	From Leg	1.00	0.00	0.0000	132.00	No Ice	5.28	3.45	0.07
			0.00				1/2" Ice	5.73	4.03	0.11
			0.00				1" Ice	6.19	4.62	0.16
							2" Ice	7.13	5.91	0.28

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
							4" Ice	9.20	8.90	0.62
WIMAX DAP HEAD	A	From Leg	1.00	0.00	0.0000	132.00	No Ice	1.80	0.78	0.03
			0.00				1/2" Ice	1.99	0.92	0.04
			0.00				1" Ice	2.18	1.07	0.06
							2" Ice	2.59	1.39	0.09
							4" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	B	From Leg	1.00	0.00	0.0000	132.00	No Ice	1.80	0.78	0.03
			0.00				1/2" Ice	1.99	0.92	0.04
			0.00				1" Ice	2.18	1.07	0.06
							2" Ice	2.59	1.39	0.09
							4" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	C	From Leg	1.00	0.00	0.0000	132.00	No Ice	1.80	0.78	0.03
			0.00				1/2" Ice	1.99	0.92	0.04
			0.00				1" Ice	2.18	1.07	0.06
							2" Ice	2.59	1.39	0.09
							4" Ice	3.51	2.14	0.20
HORIZON DUO	A	From Leg	1.00	0.00	0.0000	132.00	No Ice	0.55	0.34	0.01
			0.00				1/2" Ice	0.65	0.43	0.01
			0.00				1" Ice	0.76	0.52	0.02
							2" Ice	1.00	0.73	0.04
							4" Ice	1.60	1.25	0.10
HORIZON DUO	B	From Leg	1.00	0.00	0.0000	132.00	No Ice	0.55	0.34	0.01
			0.00				1/2" Ice	0.65	0.43	0.01
			0.00				1" Ice	0.76	0.52	0.02
							2" Ice	1.00	0.73	0.04
							4" Ice	1.60	1.25	0.10
HORIZON DUO	C	From Leg	1.00	0.00	0.0000	132.00	No Ice	0.55	0.34	0.01
			0.00				1/2" Ice	0.65	0.43	0.01
			0.00				1" Ice	0.76	0.52	0.02
							2" Ice	1.00	0.73	0.04
							4" Ice	1.60	1.25	0.10
5' x 2' Pipe Mount	A	From Leg	1.00	0.00	0.0000	132.00	No Ice	1.00	1.00	0.03
			0.00				1/2" Ice	1.39	1.39	0.04
			0.00				1" Ice	1.70	1.70	0.05
							2" Ice	2.35	2.35	0.08
							4" Ice	3.78	3.78	0.20
5' x 2' Pipe Mount	B	From Leg	1.00	0.00	0.0000	132.00	No Ice	1.00	1.00	0.03
			0.00				1/2" Ice	1.39	1.39	0.04
			0.00				1" Ice	1.70	1.70	0.05
							2" Ice	2.35	2.35	0.08
							4" Ice	3.78	3.78	0.20
5' x 2' Pipe Mount	C	From Leg	1.00	0.00	0.0000	132.00	No Ice	1.00	1.00	0.03
			0.00				1/2" Ice	1.39	1.39	0.04
			0.00				1" Ice	1.70	1.70	0.05
							2" Ice	2.35	2.35	0.08
							4" Ice	3.78	3.78	0.20
Platform Mount [LP 303-1]	C	None			0.0000	115.00	No Ice	14.66	14.66	1.25
							1/2" Ice	18.87	18.87	1.48
							1" Ice	23.08	23.08	1.71
							2" Ice	31.50	31.50	2.18
							4" Ice	48.34	48.34	3.10
BXA-171063-12BF w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	115.00	No Ice	4.97	5.23	0.04
			0.00				1/2" Ice	5.52	6.39	0.09
			0.00				1" Ice	6.04	7.26	0.14
							2" Ice	7.09	9.05	0.27
							4" Ice	9.36	12.82	0.67
BXA-171063-12BF w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	115.00	No Ice	4.97	5.23	0.04
			0.00				1/2" Ice	5.52	6.39	0.09
			0.00				1" Ice	6.04	7.26	0.14
							2" Ice	7.09	9.05	0.27
							4" Ice	9.36	12.82	0.67
BXA-171063-12BF w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	115.00	No Ice	4.97	5.23	0.04
			0.00				1/2" Ice	5.52	6.39	0.09
			0.00				1" Ice	6.04	7.26	0.14

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
						2" Ice	7.09	9.05	0.27
						4" Ice	9.36	12.82	0.67
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.00	0.0000	115.00	No Ice	8.23	5.66	0.05
			0.00			1/2" Ice	8.99	6.92	0.11
			0.00			1" Ice	9.71	8.04	0.18
						2" Ice	11.09	9.94	0.34
						4" Ice	13.97	13.94	0.83
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00	0.0000	115.00	No Ice	8.23	5.66	0.05
			0.00			1/2" Ice	8.99	6.92	0.11
			0.00			1" Ice	9.71	8.04	0.18
						2" Ice	11.09	9.94	0.34
						4" Ice	13.97	13.94	0.83
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00	0.0000	115.00	No Ice	8.23	5.66	0.05
			0.00			1/2" Ice	8.99	6.92	0.11
			0.00			1" Ice	9.71	8.04	0.18
						2" Ice	11.09	9.94	0.34
						4" Ice	13.97	13.94	0.83
(2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.00	0.0000	115.00	No Ice	10.58	10.67	0.05
			0.00			1/2" Ice	11.24	11.93	0.14
			0.00			1" Ice	11.87	12.91	0.25
						2" Ice	13.16	14.92	0.48
						4" Ice	15.87	19.16	1.09
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.00	0.0000	115.00	No Ice	10.58	10.67	0.05
			0.00			1/2" Ice	11.24	11.93	0.14
			0.00			1" Ice	11.87	12.91	0.25
						2" Ice	13.16	14.92	0.48
						4" Ice	15.87	19.16	1.09
(2) LPA-80063/6CF w/ Mount Pipe	C	From Leg	4.00	0.0000	115.00	No Ice	10.58	10.67	0.05
			0.00			1/2" Ice	11.24	11.93	0.14
			0.00			1" Ice	11.87	12.91	0.25
						2" Ice	13.16	14.92	0.48
						4" Ice	15.87	19.16	1.09

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
A-ANT-18G-2-C	A	Paraboloid w/Shroud (HP)	From Leg	1.00	40.0000		132.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.06
				0.00					1" Ice	4.31	0.10
									2" Ice	4.94	0.19
									4" Ice	6.34	0.43
A-ANT-18G-2-C	B	Paraboloid w/Shroud (HP)	From Leg	1.00	40.0000		132.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.06
				0.00					1" Ice	4.31	0.10
									2" Ice	4.94	0.19
									4" Ice	6.34	0.43
A-ANT-18G-2-C	C	Paraboloid w/Shroud (HP)	From Leg	1.00	40.0000		132.00	2.17	No Ice	3.72	0.03
				0.00					1/2" Ice	4.01	0.06
				0.00					1" Ice	4.31	0.10
									2" Ice	4.94	0.19
									4" Ice	6.34	0.43

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 137.357	43.321	34	2.6216	0.0008
L2	140.643 - 105.5	28.440	34	2.2719	0.0006
L3	105.5 - 91.8516	14.711	31	1.3748	0.0002
L4	96.1484 - 85.8	12.153	31	1.2361	0.0002
L5	85.8 - 47.3672	9.589	31	1.1104	0.0002
L6	52.6328 - 41.4	3.472	31	0.6552	0.0001
L7	41.4 - 4	2.048	31	0.5353	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
169.00	9' Ladder	34	43.321	2.6216	0.0008	14498
160.00	Platform Mount [LP 1201-1]	34	38.418	2.5457	0.0008	8054
152.00	932LG65VTE-B w/ Mount Pipe	34	34.157	2.4591	0.0007	4263
142.00	Side Arm Mount [SO 102-3]	34	29.096	2.2995	0.0007	2709
132.00	A-ANT-18G-2-C	31	24.469	2.0622	0.0005	2406
115.00	Platform Mount [LP 303-1]	31	17.767	1.5902	0.0003	2159

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	169 - 137.357	110.467	5	6.6865	0.0021
L2	140.643 - 105.5	72.580	5	5.7969	0.0017
L3	105.5 - 91.8516	37.565	5	3.5113	0.0005
L4	96.1484 - 85.8	31.038	6	3.1573	0.0004
L5	85.8 - 47.3672	24.493	6	2.8365	0.0004
L6	52.6328 - 41.4	8.870	6	1.6741	0.0002
L7	41.4 - 4	5.233	6	1.3677	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
169.00	9' Ladder	5	110.467	6.6865	0.0021	5823
160.00	Platform Mount [LP 1201-1]	5	97.987	6.4935	0.0020	3234
152.00	932LG65VTE-B w/ Mount Pipe	5	87.141	6.2734	0.0019	1710
142.00	Side Arm Mount [SO 102-3]	5	74.251	5.8673	0.0017	1084
132.00	A-ANT-18G-2-C	5	62.459	5.2631	0.0014	959
115.00	Platform Mount [LP 303-1]	5	45.365	4.0604	0.0007	855

Compression Checks

Pole Design Data

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 $\frac{P}{P_a}$
L1	169 - 137.357 (1)	TP22.2976x16.25x0.25	31.64	0.00	0.0	39.000	16.9964	-6.29	662.86	0.009
L2	137.357 - 105.5 (2)	TP27.7972x21.1695x0.3125	35.14	0.00	0.0	39.000	27.2614	-12.91	1063.19	0.012
L3	105.5 - 91.8516 (3)	TP30.3712x27.7972x0.6961	13.65	0.00	0.0	26.084	63.7734	-15.28	1663.50	0.009
L4	91.8516 - 85.8 (4)	TP30.8852x28.9358x0.7429	10.35	0.00	0.0	26.130	71.0779	-18.99	1857.26	0.010
L5	85.8 - 47.3672 (5)	TP38.1248x30.8852x0.824	38.43	0.00	0.0	30.434	94.9572	-30.11	2889.91	0.010
L6	47.3672 - 41.4 (6)	TP38.4887x36.3829x0.8047	11.23	0.00	0.0	30.469	96.2480	-35.74	2932.56	0.012
L7	41.4 - 4 (7)	TP45.5x38.4887x0.727	37.40	0.00	0.0	30.617	103.3150	-49.35	3163.21	0.016

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	169 - 137.357 (1)	TP22.2976x16.25x0.25	210.35	28.206	39.000	0.723	0.00	0.000	39.000	0.000
L2	137.357 - 105.5 (2)	TP27.7972x21.1695x0.3125	722.50	47.056	39.000	1.207	0.00	0.000	39.000	0.000
L3	105.5 - 91.8516 (3)	TP30.3712x27.7972x0.6961	910.01	24.428	26.084	0.937	0.00	0.000	26.084	0.000
L4	91.8516 - 85.8 (4)	TP30.8852x28.9358x0.7429	1126.87	26.004	26.130	0.995	0.00	0.000	26.130	0.000
L5	85.8 - 47.3672 (5)	TP38.1248x30.8852x0.824	1881.66	26.931	30.434	0.885	0.00	0.000	30.434	0.000
L6	47.3672 - 41.4 (6)	TP38.4887x36.3829x0.8047	2157.63	29.317	30.469	0.962	0.00	0.000	30.469	0.000
L7	41.4 - 4 (7)	TP45.5x38.4887x0.727	3128.78	33.166	30.617	1.083	0.00	0.000	30.617	0.000

Pole Shear Design Data

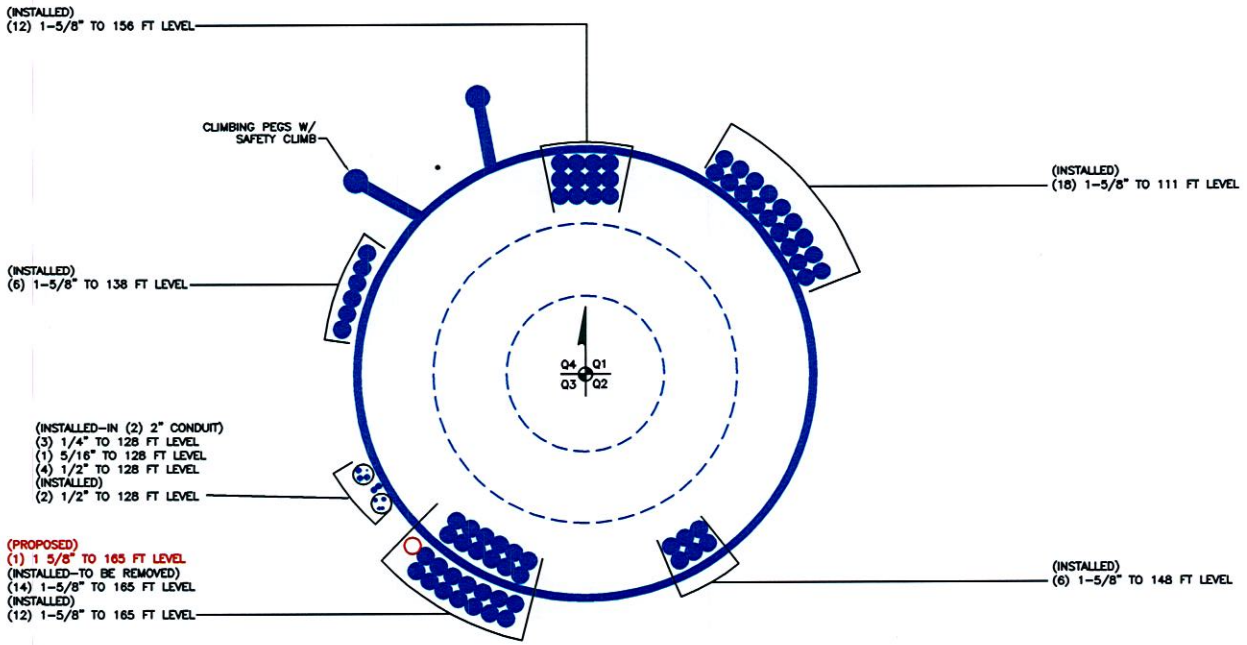
Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	169 - 137.357 (1)	TP22.2976x16.25x0.25	10.86	0.639	26.000	0.049	0.00	0.000	26.000	0.000
L2	137.357 - 105.5 (2)	TP27.7972x21.1695x0.3125	19.67	0.722	26.000	0.055	0.06	0.002	26.000	0.000
L3	105.5 - 91.8516 (3)	TP30.3712x27.7972x0.6961	20.46	0.321	17.390	0.037	0.07	0.001	17.390	0.000
L4	91.8516 - 85.8 (4)	TP30.8852x28.9358x0.7429	21.42	0.301	17.420	0.035	0.08	0.001	17.420	0.000
L5	85.8 - 47.3672 (5)	TP38.1248x30.8852x0.824	24.08	0.254	20.289	0.025	0.08	0.001	20.289	0.000
L6	47.3672 - 41.4 (6)	TP38.4887x36.3829x0.8047	24.98	0.260	20.313	0.026	0.09	0.001	20.313	0.000
L7	41.4 - 4 (7)	TP45.5x38.4887x0.727	26.97	0.261	20.412	0.026	0.13	0.001	20.412	0.000

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	169 - 137.357	Pole	TP22.2976x16.25x0.25	1	-6.29	883.59	55.0	Pass
L2	137.357 - 105.5	Pole	TP27.7972x21.1695x0.3125	2	-12.91	1417.23	91.5	Pass
L3	105.5 - 91.8516	Pole	TP30.3712x27.7972x0.6961	3	-15.28	2217.45	69.2	Pass
L4	91.8516 - 85.8	Pole	TP30.8852x28.9358x0.7429	4	-18.99	2475.73	73.5	Pass
L5	85.8 - 47.3672	Pole	TP38.1248x30.8852x0.824	5	-30.11	3852.25	65.4	Pass
L6	47.3672 - 41.4	Pole	TP38.4887x36.3829x0.8047	6	-35.74	3909.10	71.1	Pass
L7	41.4 - 4	Pole	TP45.5x38.4887x0.727	7	-49.35	4216.56	80.0	Pass
						Summary	ELC:	Load Case 5
						Pole (L2)	91.5	Pass
						Rating =	91.5	Pass

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 828054 TOWER ID: C_BASELEVEL

CROWN REGION ADDRESS

USA

23/01/13	APPLICATION ADDED PER WORK ORDER # 560661	DMK
11/02/13	UPDATED PER WORK ORDER # 560637	lb
04/04/13	UPDATED PER WORK ORDER # 613863	GDJ
06/06/13	UPDATED PER WORK ORDER # 635797	RG
13/02/14	UPDATED PER WORK ORDER # 712499	KM

DRAWN BY: AH
CHECKED BY: DMK
DRAWING DATE: 22/1/13

SITE NUMBER:
SITE NAME:

SITE NAME

SOUTH WINDSOR RT 5

BUSINESS UNIT NUMBER

828054

SITE ADDRESS

300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT, 06074
HARTFORD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING | 1" = 1'-0" | 1

PLOT DATE: 2/13/2014 FILE NAME: 828054_BASELEVEL.dwg
I:\TEMPLATES\TYPICAL BLOCKS FOR TEMPLATES\TITLE BLOCK STD-VER 5.1.dwg

APPENDIX C

ADDITIONAL CALCULATIONS

Reinforcement 1

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	37.4	6	PL1.25x6-12	F	0	T&C
37.4	81.8	6	PL1.25x6-12	F	0	T&C
81.8	101.5	6	PL1.25x4-18	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 2

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 3

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Top Height	Section Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter	Equivalent Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.
133.3568	165.0000	0.2500	65	80	55.0%										**55.0%**	165.0000	31.6432	3.2865	18	16.2500	22.2976	0.2500	65.0	1.00
101.5000	136.6432	0.3125	65	80	91.5%										**91.5%**	136.6432	35.1432	0.0000	18	21.1695	27.7972	0.3125	65.0	1.00
87.8516	101.5000	0.3125	65	80	47.4%	6	PL1.25x4-18	69.2%							**69.2%**	101.5000	13.6484	4.2969	18	27.7972	30.3712	0.6961	43.5	0.93
81.8000	92.1484	0.3750	65	80	50.4%	6	PL1.25x4-18	73.5%							**73.5%**	92.1484	10.3484	0.0000	18	28.9358	30.8852	0.7429	43.5	0.93
43.3672	81.8000	0.3750	65	80	52.4%	6	PL1.25x6-12	65.4%							**65.4%**	81.8000	38.4328	5.2656	18	30.8852	38.1248	0.8240	50.7	0.94
37.4000	48.6328	0.3750	65	80	57.1%	6	PL1.25x6-12	71.1%							**71.1%**	48.6328	11.2328	0.0000	18	36.3829	38.4887	0.8047	50.8	0.94
0.0000	37.4000	0.3750	65	80	64.6%	6	PL1.25x6-12	80.0%							**80.0%**	37.4000	37.4000	0.0000	18	38.4887	45.5000	0.7270	51.0	0.96

	Top Elevation Failure	Bottom Elevation Failure	Section Failure %
1	103.5	112.5	117.5%
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
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17			
18			
19			
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24			
25			
26			
27			
28			
29			
30			

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: *828054*
Site Name: *South Windsor/Rt 5*
App #: *216335 Rev. 3*

Pole Manufacturer:	*Other*

Reactions		
Moment:	3128.78	ft-kips
Axial:	49.37	kips
Shear:	26.95	kips

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Data		
Qty:	6	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	300	in

Plate Data		
Diam:		in
Thick:		in
Grade:		ksi
Single-Rod B-eff:	24.07	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	45.5	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Anchor Rod Results

Maximum Rod Tension:	75.2 Kips	Non-Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	38.6% **Pass**	Fty*ASIF

Base Plate Results

	Flexural Check		Non-Rigid
Base Plate Stress:	#DIV/0!	ksi	Service ASD
Allowable Plate Stress:	0.0	ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	#DIV/0!	#DIV/0!	Y.L. Length: 150.00

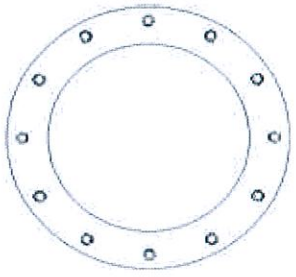
n/a

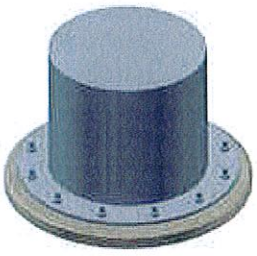
Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev F

Site Data

BU#: *828054*
Site Name: *South Windsor/Rt 5*
App #: *216335 Rev. 3*

Pole Manufacturer:	*Other*

Reactions		
Moment:	3128.78	ft-kips
Axial:	49.37	kips
Shear:	26.95	kips

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	130	ksi
Bolt Circle:	54	in

If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results

		Non-Rigid
Maximum Rod Tension:	227.6 Kips	Service, ASD
Allowable Tension:	262.4 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	86.8% **Pass**	

Plate Data		
Diam:		in
Thick:		in
Grade:		ksi
Single-Rod B-eff:	12.03	in

Base Plate Results

	Flexural Check	Non-Rigid
Base Plate Stress:	#DIV/0! ksi	Service ASD
Allowable Plate Stress:	0.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	#DIV/0! #DIV/0!	Y.L. Length: 13.98

Stiffener Data (Welding at both sides)		
Config:		*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

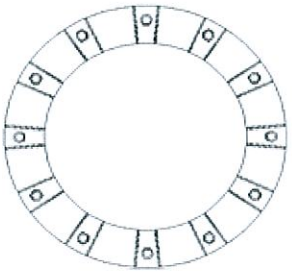
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

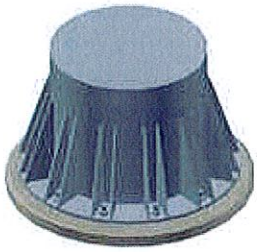
Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	45.5	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *828054*
Site Name: *South Windsor/Rt 5*
App #: *216335 Rev. 3*

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	Other	
Yield, Fy:	130	ksi
Strength, Fu:	150	ksi
Bolt Circle:	54	in
Anchor Spacing:	8	in

Plate Data		
W=Side:	60	in
Thick:	2.5	in
Grade:	60	ksi
Clip Distance:	4	in

Stiffener Data (Welding at both sides)		
Configuration:	Stiffened	
Weld Type:	Both	**
Groove Depth:	0.4375	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.25	in
Fillet V. Weld:	0.25	in
Width:	6	in
Height:	14	in
Thick:	1	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	45.5	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	2085.42713	ft-kips
Unfactored Axial, P:	32.913	kips
Unfactored Shear, V:	17.967	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	227.6 Kips
Allowable Tension:	262.4 Kips
Anchor Rod Stress Ratio:	86.8% **Pass**

Base Plate Results — Shear Check Only

Base Plate Stress:	7.9 ksi
Allowable PL Bending Stress:	32.0 ksi
Base Plate Stress Ratio:	24.6% **Pass**

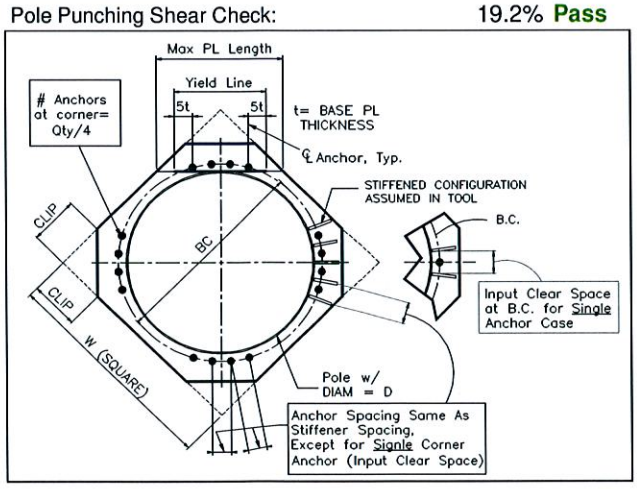
PL Ref. Data
Yield Line (in): N/A, Roark
Max PL Length: 39.35

Stiffener Results

Horizontal Weld :	95.9% **Pass**
Vertical Weld:	90.5% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	20.3% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	51.3% **Pass**
Plate Comp. (AISC Bracket):	63.3% **Pass**

Pole Results

Pole Punching Shear Check:	19.2% **Pass**



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job 2014777.828054.02
Sheet No. 1 of 2
Calculated by MS Date 02/20th/2014
Checked by IH Date 02/20th/2014

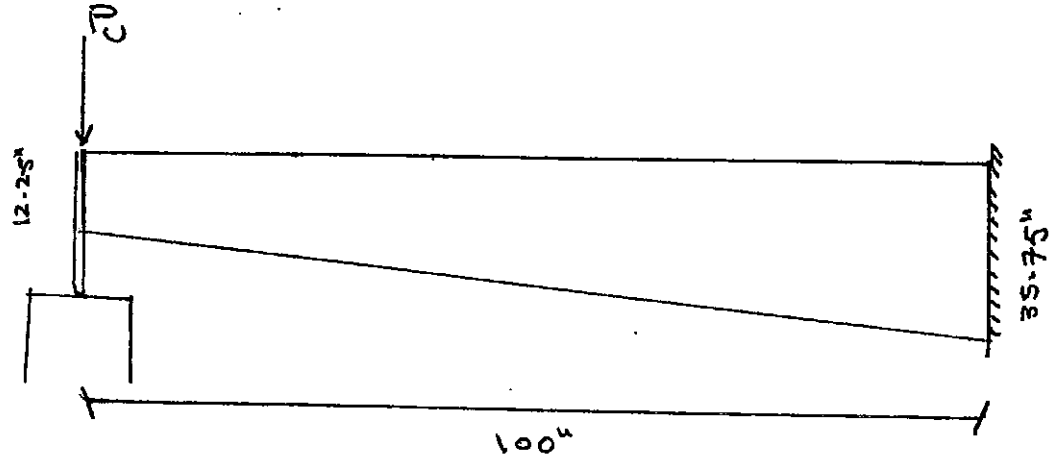
Tapered Beam Analysis

Beam Properties:

$f_t = 0.625^{"}$ $F_y = 36$ ksi

$f_w = 12.0^{"}$ $I_x = 6390 in^4$

$W_t = 0.375^{"}$



$P_u = 91.662$ K

$$f_b = \frac{MC}{I} = \frac{91.662 K \times 100^{"} \times \frac{1}{2} \times 35.75^{"}}{6390 in^4} = 25.641 ksi$$

$$F_b = (0.66 F_y) SF = 0.66 \times 36 ksi \times \frac{4}{3} = 31.68 ksi$$

$$\text{Beam Rating} = \frac{f_y}{F_y} = \frac{25.641}{31.68} = 80.9\%$$

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job 2014777-828054.02
Sheet No. 2 of 2
Calculated by MS Date 02/20th/2014
Checked by JH Date 02/20th/2014

Bolt Tension check

$$B_T = \frac{My}{\sum y^2} = \frac{Pu \times 100'' \times 20.5''}{(8)(20.5'')^2 + (8)(15.5'')} = 35.56\ K$$

Bolt Allowable Tension: $\frac{\pi}{4}(1'')^2 \times 44\ Ksi \times \frac{4}{3} = 46.1\ K$

$$\text{Rating} : \frac{35.56}{46.1\ K} = 77.1\ \%$$

Bolt Shear check

$$B_v = \frac{Pu}{16} = 5.73K$$

$$\text{Rating} = \frac{5.73}{31.8 \times \frac{4}{3}} = 13.5\ \%$$

Plate Bending

Considering the plate section between the two stiffeners

$S_x = 8.9\ in^3$ Plate Bending $= \frac{B_T \times 2''}{8.9\ in^3} = 7.99\ Ksi$

Plate Allowable $= \frac{3}{4} \times 36\ Ksi \times \frac{4}{3} = 36\ Ksi$

$$\text{Rating} = \frac{7.99\ Ksi}{36\ Ksi} = 22.2\ \%$$

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11279D

South Windsor / Route 5
300 Governors Highway
South Windsor, CT 06074

February 27, 2014

EBI Project Number: 62141025

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

EBI Consulting
environmental | engineering | due diligence

February 27, 2014

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

Re: Emissions Values for Site: **CT11279D - South Windsor / Route 5**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 300 Governors Highway, South Windsor, 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 μW/cm2 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 (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS and AWS bands is 1000 μW/cm2. 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 300 Governors Highway, South Windsor, 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, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is 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 (1935.000 MHz—to 1945.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
4) 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.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

7) The antenna mounting height centerline of the proposed antennas is **165 feet** above ground level (AGL)
8) 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11279D - South Windsor / Route 5
Site Addresss	300 Governors Highway, South Windsor, CT 06074
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	165	159	None	0	0	48.326044	0.687216	0.06872%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	165	159	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	165	159	1-5/8"	0	0	24.163022	0.343608	0.03436%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	165	159	1-5/8"	0	0	24.163022	0.343608	0.03436%
														Sector total Power Density Value:		0.137%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	165	159	None	0	0	48.326044	0.687216	0.06872%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	165	159	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	165	159	1-5/8"	0	0	24.163022	0.343608	0.03436%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	165	159	1-5/8"	0	0	24.163022	0.343608	0.03436%
														Sector total Power Density Value:		0.137%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	165	159	None	0	0	48.326044	0.687216	0.06872%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	165	159	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	165	159	1-5/8"	0	0	24.163022	0.343608	0.03436%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	165	159	1-5/8"	0	0	24.163022	0.343608	0.03436%
														Sector total Power Density Value:		0.137%	

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.412%
Verizon Wireless	29.150%
MetroPCS	6.030%
Clearwire	1.070%
Sprint	8.440%
AT&T	16.190%
Total Site MPE %	**61.292%**

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Summary

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

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.412% (0.137% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **61.292%** 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.

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