Robinson+Cole

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Also admitted in Massachusetts

January 25, 2019

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

Re: **Notice of Exempt Modification – Facility Modification**
340 Bloomfield Avenue, Windsor, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 127-foot level on the existing 148-foot tower at 340 Bloomfield Avenue in Windsor, Connecticut (the "Property"). The facility is owned by Crown Castle ("Crown"). The Council approved Cellco's use of the tower in 2004. Cellco now intends to replace six (6) of its existing remote radio heads ("RRHs") with six (6) newer model RRHs. The new RRHs will be installed behind Cellco's antennas. Included in Attachment 1 are specifications for Cellco's replacement RRHs.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Windsor Mayor, Donald S. Trinks; Windsor Town Manager, Peter Souza; Eric Barz, Windsor's Town Planner; and Crown, the tower owner. The Town of Windsor is the owner of the Property.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement RRHs will be installed at the 127-foot level on the 148-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

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

4. The operation of the replacement RRHs will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included behind Attachment 2.

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

6. The tower can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

A copy of the parcel map and owner information for the Property is included in Attachment 4. A Certificate of Mailing verifying that this filing was sent to municipal officials is included in Attachment 5.

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Donald S. Trinks, Windsor Mayor
Peter Souza, Windsor Town Manager
Eric Barz, AICP, Windsor Town Planner
Crown Castle
Tim Parks

ATTACHMENT 1

SAMSUNG

Dual-Band Radio Unit
700/850MHz (B13/B5)
RFV01U-D2A

Samsung's RFV01U-D2A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D2A RU targets dual-band support across Band 13 (700MHz) and Band 5 (850MHz), making it an ideal product for broad coverage footprints across multiple common low-end, long-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B13: DL(746-756MHz)/UL(777-787MHz)
B5: DL(869-894MHz)/UL(824-849MHz)
Instantaneous Bandwidth: 10MHz(B13) + 25MHz(B5)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 207mm (29.9L)
Weight: 31.9kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

SAMSUNG

Dual-Band Radio Unit
AWS/PCS (B66/B2)
RFV01U-D1A

Samsung's RFV01U-D1A is a compact remote Radio Unit (RU) designed for deployments that require flexibility in installation and rapid onlining, without compromising on coverage, capacity or operational expenses.

The RFV01U-D1A RU targets dual-band support across Band 66 (AWS) and Band 2 (PCS), making it an ideal product for broad coverage footprints across multiple common mid-range frequencies.

The RU handles all Radio Frequency (RF) processing in a single, compact unit, and is designed to interface via CPRI with Samsung's CDU baseband offerings, in both distributed- and central-RAN configurations.

In addition to its minimal footprint and ease of installation, the RU is also designed to reduce cost of ownership through its integrated spectrum analyzer, which allows for remote RF monitoring, greatly reducing the need for on-site maintenance visits.

Features and Benefits

- Dual-band support for broad frequency coverage
- Minimal footprint reduces site costs
- Rapid, easy installation
- Flexibly deployable in any location
- Remote RF monitoring capability
- Convection cooled, silent operation
- Built-in Broadcast Auxiliary Services (BAS) filter ensures compliant AWS operation without impacting footprint

Key Technical Specifications

Duplex Type: FDD
Operating Frequencies:
B66: DL(2,110-2,180MHz)/UL(1,710-1,780MHz)
B2: DL(1,930-1,990MHz)/UL(1,850-1,910MHz)
Instantaneous Bandwidth:
70MHz(B66) + 60MHz(B2)
RF Chain: 4T4R/2T4R/2T2R
Output Power: Total 320W
DU-RU Interface: CPRI (10Gbps)
Dimensions: 380 x 380 x 255mm (36.8L)
Weight: 38.3kg
Input Power: -48V DC
Operating Temp.: -40 - 55°(w/o solar load)
Cooling: Natural convection

ATTACHMENT 2

	General	Power	Density					
Site Name: Windsor 3								
Tower Height: 148'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T	1	252	144	850	0.0048	0.5667	0.08%	
*AT&T	1	493	144	1900	0.0093	1.0000	0.09%	
*AT&T	1	234	144	1900	0.0044	1.0000	0.04%	
*AT&T	1	828	144	737	0.0156	0.4913	0.32%	
*AT&T	1	2153	144	1900	0.0407	1.0000	0.41%	
*T-Mobile	4	1167	143	1900/2100	0.0894	1.0000	0.89%	
*T-Mobile	2	2334	143	2100	0.0894	1.0000	0.89%	
*T-Mobile	1	865	143	700	0.0166	0.4667	0.36%	
*Clearwire	2	153	130	2496	0.0072	1.0000	0.07%	
*Clearwire	1	211	130	23 GHz	0.0049	1.0000	0.05%	
*Sprint	3	35	110	1900	0.0035	1.0000	0.03%	
*Sprint	1	20	110	850	0.0007	0.5667	0.01%	
*Sprint	2	35	110	2500	0.0023	1.0000	0.02%	
*Town			var.				8.83%	
Verizon	**1**	**6100**	**127**	**0.1339**	**1970**	**1.0**	**13.39%**	
Verizon	**1**	**1900**	**127**	**0.0417**	**869**	**0.579333**	**7.20%**	
Verizon	**3**	**1233**	**127**	**0.0271**	**869**	**0.579333**	**4.67%**	
Verizon	**1**	**6200**	**127**	**0.1361**	**2145**	**1.0**	**13.61%**	
Verizon	**1**	**2200**	**127**	**0.0483**	**746**	**0.497333**	**9.71%**	
								60.7%
* Source: Siting Council								

ATTACHMENT 3

Pier Structural Engineering Corp.
55 Northfield Drive E, Suite 198
Waterloo, ON N2K 3T6
Tel: 519-885-3806
Fax: 519-884-3806
www.p-sec.ca

October 31, 2018

Denice Nicholson, Tower Structural Analyst
Crown Castle
3 Corporate Park Drive Suite 101
Clifton Park, NY 12065

Subject:	**Structural Analysis Report**	
Carrier Designation:	Carrier Co-Locate:	**Verizon Wireless**
	Carrier Site Number:	**N/A**
	Carrier Site Name:	**Windsor 3**
Crown Castle Designation:	Crown Castle BU Number:	**855662**
	Crown Castle Site Name:	**WINDSORCENTRAL**
	Crown Castle JDE Job Number:	**538939**
	Crown Castle WO Number:	**1652085**
	Crown Castle Order Number:	**464182 Rev. 0**
Engineering Firm Designation:	P-SEC Project Number:	**18866**
Site Data:	**340 BLOOMFIELD AVENUE, WINDSOR, Hartford County, CT** **Latitude *41° 51' 9.34"*, Longitude *-72° 39' 37.79"*** **148-ft Monopole Tower**	

Dear Denice Nicholson,

Pier Structural Engineering Corp. (P-SEC) 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 1279629, in accordance with order 464182, revision 0.

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

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2018 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 121 mph. Applicable Standard references and design criteria are listed in Section 2-Analysis Criteria.

We at P-SEC 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.

Structural analysis prepared by: Licheng Luo, E.I.T.

Respectfully submitted by:

10/31/18

Shawn Hoffmeyer, P.E., P.Eng.
CT PE# 31228

tnxTower Report - version 8.0.4.0

Pier Structural Engineering Corp.
55 Northfield Drive E, Suite 198
Waterloo, ON N2K 3T6
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Structural analysis prepared by: Licheng Luo, E.I.T.

Respectfully submitted by:

Shawn Hoffmeyer, P.E., P.Eng.
CT PE# 31228

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 148-ft Monopole tower originally designed by Summit Manufacturing in November of 2000 for a wind speed of 80 mph per TIA/EIA-222 F. The tower was reinforced per B+T Group modification drawings of October of 2014.

2) ANALYSIS CRITERIA

The following design parameters have been used in our analysis:

Design Standard:		TIA-222-H Standard
County/State:		Hartford County, CT
Wind Speeds:	*CASE 1*	121 mph (3-second gust)
	CASE 2	50 mph (3-second gust) with 2" radial solid ice
	CASE 3	60 mph (3-second gust) for serviceability
Exposure Category:		C
Topographic Category:		1
Risk Category:		II
Seismic Ss:		NA
Seismic S1:		NA

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
126	127	3	antel	BXA-70063-4CF-EDIN-X	8	1-5/8
		1	antel	BXA-70080-6CF-4		
		6	commscope	SBNHH-1D65B		
		2	powerwave	P65-16-XL-R		
		2	rfs celwave	DB-T1-6Z-8AB-0Z		
	126	3	samsung	RFV01U-D1A		
		3	samsung	RFV01U-D2A		
		1	--	Platform Mount [LP 403-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148	148	1	--	Miscellaneous [NA 510-1]	6 2 1	1-5/8 3/4 3/8
		1	--	Platform Mount [LP 1201-1]		
	146	3	kathrein	800 10121		
		2	quintel technology	QS66512-2		
		1	quintel technology	QS86512-2		
		3	ericsson	RRUS 11		
		1	raycap	DC6-48-60-18-8F		
		3	ericsson	RRUS12/RRUS A2		
		3	cci antennas	DTMABP7819VG12A		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
142	143	3	commscope	LNX-6515DS-VTM	13	1-5/8
		3	ericsson	ERICSSON AIR 21 B2A *B4P*		
		3	ericsson	ERICSSON AIR 21 B4A B2P		
	142	3	ericsson	KRY 112 144/1		
		3	ericsson	RRUS 11 B12		
		1	--	Platform Mount [LP 1201-1]		
111	112	3	alcatel lucent	TME-800MHz 2X50W RRH W/FILTER	--	--
	111	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz		
		1	--	Pipe Mount [PM 601-3]		
109	116	1	kathrein	K732267	3 5 1 3	1-1/4 7/8 5/8 5/16
		1	decibel	DB205-L		
	110	4	rfs celwave	APXVSPP18-C-A20		
		3	rfs celwave	APXVTM14-C-120		
		3	alcatel lucent	TD-RRH8X20-25		
	109	1	--	Platform Mount [LP 1201-1]		
79	79	1	crown mounts	Side Arm Mount [SO 702-3]	2	7/8
	76	1	kathrein	K732267		
	75	1	sinclair	SRL-227		
74	75	1	radiowaves	HP2-23	1	3/8
	74	1	--	Pipe Mount [PM 601-1]		
50	51	1	pctel	GPS-TMG-HR-26N	1	1/2
	50	1	--	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tectonic, Proj. No. 2323.138 dated 9/29/2000	5269642	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit, Proj. No. 11986 dated 11/08/2000	4864324	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit, Proj. No. 11986 dated 11/08/2000	5338627	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	B+T Group, Proj. No. 91728.005.01 dated 10/29/2014	5373232	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, Proj. No. 58885 dated 4/23/2015	5649676	CCISITES
APPLICATION	Verizon Wireless, Revision #0 dated 10/17/2018	464182	CCISITES

3.1) Analysis Method

tnxTower (8.0.4.0), 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\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) P-SEC did not analyze antenna supporting mounts as part of this analysis report and assumed they are structurally sufficient. It is the carrier's responsibility to ensure structural compliance of their existing and/or proposed antenna supporting mounts.
5) All equipment model numbers, quantities, and centerline elevations are as provided in the CCI CAD package dated 10/24/2018.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	148 - 143	Pole	TP24.975x24x0.2188	Pole	3.8%	Pass
L2	143 - 138	Pole	TP25.95x24.975x0.2188	Pole	11.5%	Pass
L3	138 - 133	Pole	TP26.925x25.95x0.2188	Pole	18.5%	Pass
L4	133 - 128	Pole	TP27.901x26.925x0.2188	Pole	25.0%	Pass
L5	128 - 123	Pole	TP28.876x27.901x0.2188	Pole	33.8%	Pass
L6	123 - 119.75	Pole	TP30.241x28.876x0.2188	Pole	39.4%	Pass
L7	119.75 - 114.75	Pole	TP30.047x29.072x0.25	Pole	40.8%	Pass
L8	114.75 - 109.75	Pole	TP31.022x30.047x0.25	Pole	47.3%	Pass
L9	109.75 - 104.75	Pole	TP31.997x31.022x0.25	Pole	55.3%	Pass
L10	104.75 - 99.75	Pole	TP32.972x31.997x0.25	Pole	62.6%	Pass
L11	99.75 - 94.75	Pole	TP33.947x32.972x0.25	Pole	69.3%	Pass
L12	94.75 - 93.5	Pole	TP34.191x33.947x0.25	Pole	71.0%	Pass
L13	93.5 - 93.25	Pole + Reinf.	TP34.24x34.191x0.4375	Reinf. 5 Tension Rupture	59.7%	Pass
L14	93.25 - 88.25	Pole + Reinf.	TP35.215x34.24x0.4313	Reinf. 5 Tension Rupture	65.0%	Pass
L15	88.25 - 83.25	Pole + Reinf.	TP36.19x35.215x0.425	Reinf. 5 Tension Rupture	70.2%	Pass
L16	83.25 - 79.5	Pole + Reinf.	TP37.847x36.19x0.425	Reinf. 5 Tension Rupture	73.9%	Pass
L17	79.5 - 74.5	Pole + Reinf.	TP37.396x36.421x0.4875	Reinf. 5 Tension Rupture	70.0%	Pass
L18	74.5 - 69.5	Pole + Reinf.	TP38.371x37.396x0.475	Reinf. 5 Tension Rupture	74.1%	Pass
L19	69.5 - 64.5	Pole + Reinf.	TP39.346x38.371x0.475	Reinf. 5 Tension Rupture	77.9%	Pass
L20	64.5 - 60.5	Pole + Reinf.	TP40.126x39.346x0.4688	Reinf. 5 Tension Rupture	80.9%	Pass
L21	60.5 - 60.25	Pole + Reinf.	TP40.175x40.126x0.525	Reinf. 3 Tension Rupture	71.3%	Pass
L22	60.25 - 55.25	Pole + Reinf.	TP41.15x40.175x0.525	Reinf. 3 Tension Rupture	74.6%	Pass
L23	55.25 - 50.25	Pole + Reinf.	TP42.125x41.15x0.5125	Reinf. 3 Tension Rupture	77.7%	Pass
L24	50.25 - 45.25	Pole + Reinf.	TP43.101x42.125x0.5125	Reinf. 3 Tension Rupture	80.8%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L25	45.25 - 45	Pole + Reinf.	TP44.222x43.101x0.5125	Reinf. 3 Tension Rupture	80.9%	Pass
L26	45 - 38.5	Pole + Reinf.	TP43.792x42.524x0.575	Reinf. 3 Tension Rupture	77.2%	Pass
L27	38.5 - 35.5	Pole + Reinf.	TP44.377x43.792x0.575	Reinf. 3 Tension Rupture	78.7%	Pass
L28	35.5 - 35.25	Pole + Reinf.	TP44.426x44.377x0.575	Reinf. 3 Tension Rupture	78.6%	Pass
L29	35.25 - 31.75	Pole + Reinf.	TP45.108x44.426x0.575	Reinf. 3 Tension Rupture	80.3%	Pass
L30	31.75 - 31.5	Pole + Reinf.	TP45.157x45.108x0.725	Reinf. 1 Compression	64.5%	Pass
L31	31.5 - 28.25	Pole + Reinf.	TP45.791x45.157x0.725	Reinf. 1 Compression	65.8%	Pass
L32	28.25 - 28	Pole + Reinf.	TP45.84x45.791x0.5375	Reinf. 2 Compression	74.3%	Pass
L33	28 - 23	Pole + Reinf.	TP46.815x45.84x0.5375	Reinf. 2 Compression	76.3%	Pass
L34	23 - 18	Pole + Reinf.	TP47.79x46.815x0.525	Reinf. 2 Compression	78.3%	Pass
L35	18 - 13	Pole + Reinf.	TP48.765x47.79x0.525	Reinf. 2 Compression	80.2%	Pass
L36	13 - 8	Pole + Reinf.	TP49.74x48.765x0.525	Reinf. 2 Compression	81.9%	Pass
L37	8 - 3	Pole + Reinf.	TP50.715x49.74x0.525	Reinf. 2 Compression	83.6%	Pass
L38	3 - 0	Pole + Reinf.	TP51.3x50.715x0.5188	Reinf. 2 Compression	84.6%	Pass
					Summary	
				Pole	72.8%	Pass
				Reinforcement	84.6%	Pass
				Overall	**84.6%**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
2	Anchor Rods	--	82.6	Pass
2	Base Plate	--	73.9	Pass
2	Base Foundation - Soil	--	64.2	Pass
2	Base Foundation - Structural	--	78.0	Pass

Structure Rating (max from all components) =	**84.6%**

Notes: 1) See full member breakdown and section capacities in Appendix A.
2) See additional documentation in Appendix C for supporting calculations.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed loading configuration.

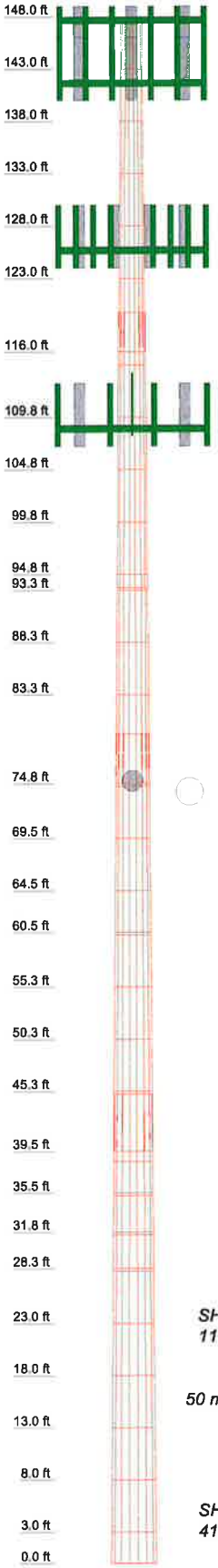
No modifications are required at this time.

Should you have any questions, please call us anytime at 519-885-3806.

encl.
855662_464182 SA Report_20181031.doc

APPENDIX A

TNXTOWER OUTPUT



Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Length (ft)	5.00	5.00	5.00	5.00	5.00	7.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.2188	0.2188	0.2188	0.2188	0.2188	0.2188	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.4250	0.4250	0.4750	0.4750	0.4750	0.4688	0.4750	0.5313	0.5125	0.5125	0.5125	0.5313	0.5250	0.5250	0.5250	0.5250	0.5250	0.5250	0.5250	0.5313	0.5250	0.5188
Socket Length (ft)						3.75										4.75							5.50														
Top Dia (in)	24.0000	24.9752	25.9503	26.9255	27.9006	28.8758	29.8509	30.8261	31.8012	32.7764	33.7515	34.7267	35.7018	36.6770	37.6521	38.6273	39.6024	40.5776	41.5527	42.5279	43.5030	44.4782	45.4533	46.4285	47.4036	48.3788	49.3539	50.3291	51.3042	52.2794	53.2545	54.2297	55.2048	56.1800	57.1551	58.1303
Bot Dia (in)	24.9752	25.9503	26.9255	27.9006	28.8758	30.2410	31.2161	32.1913	33.1664	34.1416	35.1167	36.0919	37.0670	38.0422	39.0173	39.9925	40.9676	41.9428	42.9179	43.8931	44.8682	45.8434	46.8185	47.7937	48.7688	49.7440	50.7191	51.6943	52.6694	53.6446	54.6197	55.5949	56.5700	57.5452	58.5203	59.4955
Grade	A607-65																																			
Weight (K)	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.8	0.8	0.8	1.4	0.9	0.9	1.0	0.8	0.1	1.1	1.1	1.1	1.3	1.7	0.9	1.0	1.1	1.5	1.5	1.5	1.5	1.5	0.9	28.7

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 121 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.70 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S
9. ----------
10. E - Existing, R - Reserved, P - Proposed
11. Proposed loading at 126ft elevation
12. Reserved loading at 148ft elevation
13. TOWER RATING: 84.6%

ALL REACTIONS ARE FACTORED

AXIAL 98 K

SHEAR 11 K *MOMENT 1193 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 1.7000 in ICE

AXIAL 57 K

SHEAR 41 K *MOMENT 4013 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 121 mph WIND

Pier Structural Engineerng Corp.
198-55 Northfield Drive E.
Waterloo, ON N2K3T6
Phone: (519) 885-3806
FAX: (519) 884-3806
P-SEC Consulting Engineers

Job: ***PSEC 18866 (for VERIZON WIRELESS)***
Project: ***855662 - WINDSORCENTRAL***
Client: CROWN CASTLE | Drawn by: Licheng Luo | App'd:
Code: TIA-222-H | Date: 10/31/18 | Scale: N
Path: | Dwg No.

tnxTower	Job	Page
	PSEC 18866 (for VERIZON WIRELESS)	1 of 25
	Project	**Date**
	855662 - WINDSORCENTRAL	14:52:21 10/31/18
	Client	**Designed by**
	CROWN CASTLE	Licheng Luo

Pier Structural Engineerng Corp.
198-55 Northfield Drive E.
Waterloo, ON N2K3T6
Phone: (519) 885-3806
FAX: (519) 884-3806

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Tower base elevation above sea level: 115.00 ft.
Basic wind speed of 121 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.7000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.

E - Existing, R - Reserved, P - Proposed.
Proposed loading at 126ft elevation.
Reserved loading at 148ft elevation.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation 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	148.00-143.00	5.00	0.00	18	24.0000	24.9752	0.2188	0.8752	A607-65 (65 ksi)
L2	143.00-138.00	5.00	0.00	18	24.9752	25.9503	0.2188	0.8752	A607-65 (65 ksi)
L3	138.00-133.00	5.00	0.00	18	25.9503	26.9255	0.2188	0.8752	A607-65 (65 ksi)
L4	133.00-128.00	5.00	0.00	18	26.9255	27.9006	0.2188	0.8752	A607-65 (65 ksi)
L5	128.00-123.00	5.00	0.00	18	27.9006	28.8758	0.2188	0.8752	A607-65 (65 ksi)
L6	123.00-116.00	7.00	3.75	18	28.8758	30.2410	0.2188	0.8752	A607-65 (65 ksi)
L7	116.00-114.75	5.00	0.00	18	29.0720	30.0470	0.2500	1.0000	A607-65 (65 ksi)
L8	114.75-109.75	5.00	0.00	18	30.0470	31.0220	0.2500	1.0000	A607-65 (65 ksi)
L9	109.75-104.75	5.00	0.00	18	31.0220	31.9970	0.2500	1.0000	A607-65 (65 ksi)
L10	104.75-99.75	5.00	0.00	18	31.9970	32.9720	0.2500	1.0000	A607-65 (65 ksi)
L11	99.75-94.75	5.00	0.00	18	32.9720	33.9470	0.2500	1.0000	A607-65 (65 ksi)
L12	94.75-93.50	1.25	0.00	18	33.9470	34.1908	0.2500	1.0000	A607-65 (65 ksi)
L13	93.50-93.25	0.25	0.00	18	34.1908	34.2395	0.4375	1.7500	A607-65 (65 ksi)
L14	93.25-88.25	5.00	0.00	18	34.2395	35.2145	0.4313	1.7250	A607-65 (65 ksi)
L15	88.25-83.25	5.00	0.00	18	35.2145	36.1895	0.4250	1.7000	A607-65 (65 ksi)
L16	83.25-74.75	8.50	4.75	18	36.1895	37.8470	0.4250	1.7000	A607-65 (65 ksi)
L17	74.75-74.50	5.00	0.00	18	36.4208	37.3959	0.4875	1.9500	A607-65 (65 ksi)
L18	74.50-69.50	5.00	0.00	18	37.3959	38.3711	0.4750	1.9000	A607-65 (65 ksi)
L19	69.50-64.50	5.00	0.00	18	38.3711	39.3462	0.4750	1.9000	A607-65 (65 ksi)
L20	64.50-60.50	4.00	0.00	18	39.3462	40.1263	0.4688	1.8750	A607-65 (65 ksi)
L21	60.50-60.25	0.25	0.00	18	40.1263	40.1751	0.5250	2.1000	A607-65 (65 ksi)
L22	60.25-55.25	5.00	0.00	18	40.1751	41.1503	0.5250	2.1000	A607-65 (65 ksi)
L23	55.25-50.25	5.00	0.00	18	41.1503	42.1254	0.5125	2.0500	A607-65 (65 ksi)
L24	50.25-45.25	5.00	0.00	18	42.1254	43.1006	0.5125	2.0500	A607-65 (65 ksi)
L25	45.25-39.50	5.75	5.50	18	43.1006	44.2220	0.5125	2.0500	A607-65 (65 ksi)
L26	39.50-38.50	6.50	0.00	18	42.5243	43.7919	0.5750	2.3000	A607-65 (65 ksi)
L27	38.50-35.50	3.00	0.00	18	43.7919	44.3770	0.5750	2.3000	A607-65 (65 ksi)
L28	35.50-35.25	0.25	0.00	18	44.3770	44.4257	0.5750	2.3000	A607-65 (65 ksi)

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
L29	35.25-31.75	3.50	0.00	18	44.4257	45.1083	0.5750	2.3000	A607-65 (65 ksi)
L30	31.75-31.50	0.25	0.00	18	45.1083	45.1570	0.7250	2.9000	A607-65 (65 ksi)
L31	31.50-28.25	3.25	0.00	18	45.1570	45.7908	0.7250	2.9000	A607-65 (65 ksi)
L32	28.25-28.00	0.25	0.00	18	45.7908	45.8396	0.5375	2.1500	A607-65 (65 ksi)
L33	28.00-23.00	5.00	0.00	18	45.8396	46.8147	0.5375	2.1500	A607-65 (65 ksi)
L34	23.00-18.00	5.00	0.00	18	46.8147	47.7897	0.5250	2.1000	A607-65 (65 ksi)
L35	18.00-13.00	5.00	0.00	18	47.7897	48.7648	0.5250	2.1000	A607-65 (65 ksi)
L36	13.00-8.00	5.00	0.00	18	48.7648	49.7399	0.5250	2.1000	A607-65 (65 ksi)
L37	8.00-3.00	5.00	0.00	18	49.7399	50.7150	0.5250	2.1000	A607-65 (65 ksi)
L38	3.00-0.00	3.00		18	50.7150	51.3000	0.5188	2.0750	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	24.3365	16.5154	1180.0298	8.4423	12.1920	96.7872	2361.6124	8.2592	3.8389	17.545
	25.3267	17.1926	1331.2262	8.7885	12.6874	104.9252	2664.2041	8.5979	4.0105	18.33
L2	25.3267	17.1926	1331.2262	8.7885	12.6874	104.9252	2664.2041	8.5979	4.0105	18.33
	26.3169	17.8698	1494.8156	9.1347	13.1828	113.3917	2991.5982	8.9366	4.1822	19.114
L3	26.3169	17.8698	1494.8156	9.1347	13.1828	113.3917	2991.5982	8.9366	4.1822	19.114
	27.3071	18.5470	1671.2863	9.4809	13.6781	122.1867	3344.7717	9.2753	4.3538	19.899
L4	27.3071	18.5470	1671.2863	9.4809	13.6781	122.1867	3344.7717	9.2753	4.3538	19.899
	28.2973	19.2242	1861.1263	9.8270	14.1735	131.3101	3724.7015	9.6139	4.5254	20.683
L5	28.2973	19.2242	1861.1263	9.8270	14.1735	131.3101	3724.7015	9.6139	4.5254	20.683
	29.2875	19.9014	2064.8239	10.1732	14.6689	140.7620	4132.3647	9.9526	4.6970	21.467
L6	29.2875	19.9014	2064.8239	10.1732	14.6689	140.7620	4132.3647	9.9526	4.6970	21.467
	30.6738	20.8496	2374.2106	10.6579	15.3624	154.5466	4751.5452	10.4268	4.9373	22.565
L7	30.2245	22.8703	2400.2595	10.2318	14.7686	162.5246	4803.6774	11.4373	4.6767	18.707
	30.4720	23.6439	2652.1817	10.5779	15.2639	173.7553	5307.8533	11.8242	4.8483	19.393
L8	30.4720	23.6439	2652.1817	10.5779	15.2639	173.7553	5307.8533	11.8242	4.8483	19.393
	31.4620	24.4176	2921.1418	10.9241	15.7592	185.3612	5846.1272	12.2111	5.0199	20.08
L9	31.4620	24.4176	2921.1418	10.9241	15.7592	185.3612	5846.1272	12.2111	5.0199	20.08
	32.4521	25.1913	3207.6971	11.2702	16.2545	197.3423	6419.6150	12.5980	5.1915	20.766
L10	32.4521	25.1913	3207.6971	11.2702	16.2545	197.3423	6419.6150	12.5980	5.1915	20.766
	33.4421	25.9649	3512.4053	11.6163	16.7498	209.6985	7029.4324	12.9849	5.3631	21.452
L11	33.4421	25.9649	3512.4053	11.6163	16.7498	209.6985	7029.4324	12.9849	5.3631	21.452
	34.4321	26.7386	3835.8239	11.9624	17.2451	222.4300	7676.6950	13.3718	5.5347	22.139
L12	34.4321	26.7386	3835.8239	11.9624	17.2451	222.4300	7676.6950	13.3718	5.5347	22.139
	34.6796	26.9320	3919.6673	12.0490	17.3689	225.6715	7844.4923	13.4686	5.5776	22.31
L13	34.6507	46.8706	6746.3636	11.9824	17.3689	388.4161	13501.6043	23.4398	5.2476	11.994
	34.7002	46.9383	6775.6372	11.9997	17.3937	389.5461	13560.1899	23.4736	5.2562	12.014
L14	34.7012	46.2763	6682.5478	12.0019	17.3937	384.1942	13373.8887	23.1426	5.2672	12.214
	35.6912	47.6109	7277.5354	12.3481	17.8890	406.8169	14564.6467	23.8100	5.4388	12.612
L15	35.6922	46.9293	7175.9306	12.3503	17.8890	401.1371	14361.3036	23.4691	5.4498	12.823
	36.6822	48.2445	7796.3262	12.6964	18.3843	424.0759	15602.9110	24.1268	5.6214	13.227
L16	36.6822	48.2445	7796.3262	12.6964	18.3843	424.0759	15602.9110	24.1268	5.6214	13.227

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
	38.3653	50.4804	8931.2919	13.2848	19.2263	464.5357	17874.3359	25.2450	5.9131	13.913
L17	37.8481	55.6004	9070.0277	12.7563	18.5017	490.2256	18151.9900	27.8055	5.5521	11.389
	37.8976	57.1093	9828.6750	13.1025	18.9971	517.3771	19670.2829	28.5601	5.7237	11.741
L18	37.8995	55.6638	9586.3912	13.1069	18.9971	504.6233	19185.3964	27.8372	5.7457	12.096
	38.8897	57.1340	10366.2179	13.4531	19.4925	531.8054	20746.0760	28.5724	5.9173	12.457
L19	38.8897	57.1340	10366.2179	13.4531	19.4925	531.8054	20746.0760	28.5724	5.9173	12.457
	39.8799	58.6042	11187.2290	13.7993	19.9879	559.7006	22389.1784	29.3077	6.0889	12.819
L20	39.8809	57.8424	11045.3547	13.8015	19.9879	552.6026	22105.2433	28.9267	6.0999	13.013
	40.6730	59.0031	11723.7026	14.0784	20.3842	575.1372	23462.8315	29.5071	6.2372	13.306
L21	40.6644	65.9897	13074.7533	14.0585	20.3842	641.4166	26166.7107	33.0011	6.1382	11.692
	40.7139	66.0709	13123.1063	14.0758	20.4090	643.0073	26263.4804	33.0418	6.1468	11.708
L22	40.7139	66.0709	13123.1063	14.0758	20.4090	643.0073	26263.4804	33.0418	6.1468	11.708
	41.7041	67.6959	14115.3649	14.4220	20.9043	675.2364	28249.3032	33.8544	6.3184	12.035
L23	41.7060	66.1044	13792.0080	14.4264	20.9043	659.7679	27602.1638	33.0585	6.3404	12.372
	42.6962	67.6907	14808.8952	14.7726	21.3997	692.0138	29637.2764	33.8518	6.5121	12.706
L24	42.6962	67.6907	14808.8952	14.7726	21.3997	692.0138	29637.2764	33.8518	6.5121	12.706
	43.6864	69.2770	15874.5764	15.1188	21.8951	725.0291	31770.0409	34.6451	6.6837	13.041
L25	43.6864	69.2770	15874.5764	15.1188	21.8951	725.0291	31770.0409	34.6451	6.6837	13.041
	44.8251	71.1012	17161.9154	15.5169	22.4648	763.9478	34346.4130	35.5573	6.8811	13.426
L26	44.1808	76.5596	17021.0858	14.8920	21.6024	787.9272	34064.5683	38.2871	6.4723	11.256
	44.3788	78.8731	18611.1763	15.3420	22.2463	836.5965	37246.8416	39.4440	6.6954	11.644
L27	44.3788	78.8731	18611.1763	15.3420	22.2463	836.5965	37246.8416	39.4440	6.6954	11.644
	44.9729	79.9408	19377.2953	15.5497	22.5435	859.5513	38780.0877	39.9780	6.7983	11.823
L28	44.9729	79.9408	19377.2953	15.5497	22.5435	859.5513	38780.0877	39.9780	6.7983	11.823
	45.0224	80.0298	19442.0710	15.5670	22.5683	861.4782	38909.7243	40.0225	6.8069	11.838
L29	45.0224	80.0298	19442.0710	15.5670	22.5683	861.4782	38909.7243	40.0225	6.8069	11.838
	45.7154	81.2755	20364.1440	15.8093	22.9150	888.6817	40755.0836	40.6455	6.9271	12.047
L30	45.6923	102.1326	25417.9460	15.7561	22.9150	1109.2272	50869.3376	51.0760	6.6631	9.19
	45.7418	102.2448	25501.8007	15.7734	22.9398	1111.6850	51037.1573	51.1321	6.6716	9.202
L31	45.7418	102.2448	25501.8007	15.7734	22.9398	1111.6850	51037.1573	51.1321	6.6716	9.202
	46.3854	103.7032	26608.7491	15.9984	23.2617	1143.8847	53252.5107	51.8615	6.7832	9.356
L32	46.4143	77.2033	19974.4314	16.0649	23.2617	858.6817	39975.1457	38.6090	7.1132	13.234
	46.4638	77.2865	20039.0594	16.0822	23.2865	860.5438	40104.4868	38.6506	7.1218	13.25
L33	46.4638	77.2865	20039.0594	16.0822	23.2865	860.5438	40104.4868	38.6506	7.1218	13.25
	47.4539	78.9500	21361.0624	16.4284	23.7818	898.2088	42750.2322	39.4825	7.2934	13.569
L34	47.4559	77.1348	20881.2051	16.4328	23.7818	878.0313	41789.8863	38.5747	7.3154	13.934
	48.4460	78.7596	22228.7612	16.7790	24.2772	915.6236	44486.7715	39.3873	7.4870	14.261
L35	48.4460	78.7596	22228.7612	16.7790	24.2772	915.6236	44486.7715	39.3873	7.4870	14.261
	49.4361	80.3844	23633.0805	17.1251	24.7725	954.0038	47297.2581	40.1998	7.6586	14.588
L36	49.4361	80.3844	23633.0805	17.1251	24.7725	954.0038	47297.2581	40.1998	7.6586	14.588
	50.4262	82.0092	25095.3342	17.4713	25.2679	993.1722	50223.6896	41.0124	7.8302	14.915
L37	50.4262	82.0092	25095.3342	17.4713	25.2679	993.1722	50223.6896	41.0124	7.8302	14.915
	51.4163	83.6340	26616.6934	17.8174	25.7632	1033.1285	53268.4096	41.8250	8.0018	15.242
L38	51.4173	82.6487	26309.6543	17.8197	25.7632	1021.2108	52653.9275	41.3322	8.0128	15.446
	52.0114	83.6120	27240.3475	18.0273	26.0604	1045.2774	54516.5385	41.8139	8.1158	15.645

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 148.00-143.00				1	1	1			
L2 143.00-138.00				1	1	1			
L3 138.00-133.00				1	1	1			
L4 133.00-128.00				1	1	1			
L5 128.00-123.00				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L6 123.00-116.00				1	1	1			
L7 116.00-114.75				1	1	1			
L8 114.75-109.75				1	1	1			
L9 109.75-104.75				1	1	1			
L10 104.75-99.75				1	1	1			
L11 99.75-94.75				1	1	1			
L12 94.75-93.50				1	1	1			
L13 93.50-93.25				1	1	0.958094			
L14 93.25-88.25				1	1	0.960809			
L15 88.25-83.25				1	1	0.964226			
L16 83.25-74.75				1	1	0.956693			
L17 74.75-74.50				1	1	0.959261			
L18 74.50-69.50				1	1	0.975776			
L19 69.50-64.50				1	1	0.967801			
L20 64.50-60.50				1	1	0.974373			
L21 60.50-60.25				1	1	0.967363			
L22 60.25-55.25				1	1	0.958431			
L23 55.25-50.25				1	1	0.972794			
L24 50.25-45.25				1	1	0.964481			
L25 45.25-39.50				1	1	0.964075			
L26 39.50-38.50				1	1	0.964244			
L27 38.50-35.50				1	1	0.960076			
L28 35.50-35.25				1	1	0.990973			
L29 35.25-31.75				1	1	0.98578			
L30 31.75-31.50				1	1	0.992017			
L31 31.50-28.25				1	1	0.98534			
L32 28.25-28.00				1	1	1.11262			
L33 28.00-23.00				1	1	1.10388			
L34 23.00-18.00				1	1	1.12128			
L35				1	1	1.11305			

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
18.00-13.00									
L36 13.00-8.00				1	1	1.10515			
L37 8.00-3.00				1	1	1.09756			
L38 3.00-0.00				1	1	1.10618			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
***										
LDF4-50A(1/2") (Carrier 50' E)	A	No	Surface Ar (CaAa)	50.00 - 0.00	1	1	0.000 0.020	0.6300		0.15
***										
Safety Line 3/8 (To Top)	A	No	Surface Ar (CaAa)	148.00 - 0.00	1	1	0.490 0.500	0.3750		0.22
MOD										
CCI 8.5" x 1.25" Plate (Reinf. EL. 0' to 35')	A	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.000 0.050	8.5000	19.5000	0.00
CCI 8.5" x 1.25" Plate (Reinf. EL. 0' to 35')	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.000 0.050	8.5000	19.5000	0.00
CCI 8.5" x 1.25" Plate (Reinf. EL. 0' to 35')	C	No	Surface Af (CaAa)	35.50 - 0.00	1	1	0.000 0.050	8.5000	19.5000	0.00
***										
CCI 6.5" x 1.25" Plate (Reinf. EL. 25.5' to 60.5')	A	No	Surface Af (CaAa)	60.50 - 25.50	1	1	0.000 0.050	6.5000	15.5000	0.00
CCI 6.5" x 1.25" Plate (Reinf. EL. 25.5' to 60.5')	B	No	Surface Af (CaAa)	60.50 - 25.50	1	1	0.000 0.050	6.5000	15.5000	0.00
CCI 6.5" x 1.25" Plate (Reinf. EL. 25.5' to 60.5')	C	No	Surface Af (CaAa)	60.50 - 35.50	1	1	0.000 0.050	6.5000	15.5000	0.00
***										
CCI 6" x 1" Plate (Reinf. EL.60.5' to 95.5')	A	No	Surface Af (CaAa)	95.50 - 60.50	1	1	0.000 0.050	6.0000	14.0000	0.00
CCI 6" x 1" Plate (Reinf. EL.60.5' to 95.5')	B	No	Surface Af (CaAa)	95.50 - 60.50	1	1	0.000 0.050	6.0000	14.0000	0.00
CCI 6" x 1" Plate (Reinf. EL.60.5' to 95.5')	C	No	Surface Af (CaAa)	95.50 - 60.50	1	1	0.000 0.050	6.0000	14.0000	0.00
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft²/ft	Weight plf
***											
2-1/2" Rigid Conduit (Carrier 148' E)	B	No	No	Inside Pole	148.00 - 0.00	0.0000	0	2	No Ice	0.00	0.00
									1/2" Ice	0.00	0.00
									1" Ice	0.00	0.00

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
									2" Ice		
LDF7-50A(1-5/8") (Carrier 148' E)	B	No	No	Inside Pole	148.00 - 0.00	0.0000	0	6	No	0.00	0.82
									Ice	0.00	0.82
									1/2" Ice	0.00	0.82
									1" Ice	0.00	0.82
									2" Ice		
FB-L98B-002-75000(3/8) (Carrier 148' E)	B	No	No	Inside Pole	148.00 - 0.00	0.0000	0	1	No	0.00	0.06
									Ice	0.00	0.06
									1/2" Ice	0.00	0.06
									1" Ice	0.00	0.06
									2" Ice		
WR-VG86ST-BRD(3/4) (Carrier 148' E)	B	No	No	Inside Pole	148.00 - 0.00	0.0000	0	2	No	0.00	0.58
									Ice	0.00	0.58
									1/2" Ice	0.00	0.58
									1" Ice	0.00	0.58
									2" Ice		
***											
MLE Hybrid 9Power/18Fiber RL 2(1-5/8") (Carrier 142' E)	A	No	No	Inside Pole	142.00 - 0.00	0.0000	0	13	No	0.00	1.07
									Ice	0.00	1.07
									1/2" Ice	0.00	1.07
									1" Ice	0.00	1.07
									2" Ice		
***											
HJ7-50A(1-5/8") (Carrier 126' E)	C	No	No	Inside Pole	126.00 - 0.00	0.0000	0	8	No	0.00	1.04
									Ice	0.00	1.04
									1/2" Ice	0.00	1.04
									1" Ice	0.00	1.04
									2" Ice		
***											
LDF5-50A(7/8") (Carrier 109' E)	A	No	No	Inside Pole	109.00 - 0.00	0.0000	0	5	No	0.00	0.33
									Ice	0.00	0.33
									1/2" Ice	0.00	0.33
									1" Ice	0.00	0.33
									2" Ice		
***											
ATCB-B01-006(5/16") (Carrier 109' E)	A	No	No	Inside Pole	109.00 - 0.00	0.0000	0	3	No	0.00	0.00
									Ice	0.00	0.00
									1/2" Ice	0.00	0.00
									1" Ice	0.00	0.00
									2" Ice		
MLE Hybrid 3Power/6Fiber RL 2(1-1/4") (Carrier 109' E)	A	No	No	Inside Pole	109.00 - 0.00	0.0000	0	3	No	0.00	0.68
									Ice	0.00	0.68
									1/2" Ice	0.00	0.68
									1" Ice	0.00	0.68
									2" Ice		
HB058-M12-XXXF(5/8") (Carrier 109' E)	A	No	No	Inside Pole	109.00 - 0.00	0.0000	0	1	No	0.00	0.24
									Ice	0.00	0.24
									1/2" Ice	0.00	0.24
									1" Ice	0.00	0.24
									2" Ice		
***											

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
LDF5-50A(7/8") (Carrier 79' E)	A	No	No	Inside Pole	79.00 - 0.00	0.0000	0	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.33 0.33 0.33 0.33
***											
LDF2-50(3/8") (Carrier 74' E)	A	No	No	Inside Pole	74.00 - 0.00	0.0000	0	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.08 0.08 0.08 0.08
***											
Detuner (To Top)	A	No	No	CaAa (Out Of Face)	147.00 - 15.00	36.0000	0	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.04 0.14 0.24 0.44	0.00 0.00 0.00 0.00
Detuner (To Top)	B	No	No	CaAa (Out Of Face)	147.00 - 15.00	36.0000	0	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.04 0.14 0.24 0.44	0.00 0.00 0.00 0.00
Detuner (To Top)	C	No	No	CaAa (Out Of Face)	147.00 - 15.00	36.0000	0	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.04 0.14 0.24 0.44	0.00 0.00 0.00 0.00
***											

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
QS86512-2 w/ Mount Pipe (Carrier 148' R)	A	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.70 12.42 13.15 14.52	11.74 13.27 14.83 17.19	0.17 0.27 0.38 0.63
QS66512-2 w/ Mount Pipe (Carrier 148' R)	B	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.37 8.93 9.46 10.53	8.46 9.66 10.55 12.35	0.14 0.21 0.30 0.49
QS66512-2 w/ Mount Pipe (Carrier 148' R)	C	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.37 8.93 9.46 10.53	8.46 9.66 10.55 12.35	0.14 0.21 0.30 0.49

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
RRUS12/RRUS A2 (Carrier 148' R)	A	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.36 3.59 4.07	1.84 2.01 2.20 2.59	0.07 0.10 0.13 0.20
RRUS12/RRUS A2 (Carrier 148' R)	B	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.36 3.59 4.07	1.84 2.01 2.20 2.59	0.07 0.10 0.13 0.20
RRUS12/RRUS A2 (Carrier 148' R)	C	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.14 3.36 3.59 4.07	1.84 2.01 2.20 2.59	0.07 0.10 0.13 0.20
DTMABP7819VG12A (Carrier 148' R)	A	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
DTMABP7819VG12A (Carrier 148' R)	B	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
DTMABP7819VG12A (Carrier 148' R)	C	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.98 1.10 1.23 1.52	0.34 0.42 0.51 0.71	0.02 0.03 0.04 0.06
800 10121 w/ Mount Pipe (Carrier 148' E)	A	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.39 5.81 6.23 7.10	4.60 5.35 6.05 7.48	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe (Carrier 148' E)	B	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.39 5.81 6.23 7.10	4.60 5.35 6.05 7.48	0.07 0.11 0.17 0.30
800 10121 w/ Mount Pipe (Carrier 148' E)	C	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.39 5.81 6.23 7.10	4.60 5.35 6.05 7.48	0.07 0.11 0.17 0.30
RRUS 11 (Carrier 148' E)	A	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.10 0.15
RRUS 11 (Carrier 148' E)	B	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.10 0.15
RRUS 11 (Carrier 148' E)	C	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.10 0.15
DC6-48-60-18-8F (Carrier 148' E)	A	From Leg	4.00 0.00 -2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.20 2.40 2.60 3.04	2.20 2.40 2.60 3.04	0.02 0.04 0.07 0.13
(2) 6' x 2" Mount Pipe (Carrier 148' E)	A	From Leg	0.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6' x 2" Mount Pipe	B	From Leg	0.00	0.0000	148.00	No Ice	1.43	1.43	0.02

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
(Carrier 148' E)			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
(2) 6' x 2" Mount Pipe	C	From Leg	0.00	0.0000	148.00	No Ice	1.43	1.43	0.02
(Carrier 148' E)			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
Platform Mount [LP 1201-1]	C	None		0.0000	148.00	No Ice	23.10	23.10	2.10
(Carrier 148' E)						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
Miscellaneous [NA 510-1]	C	None		0.0000	148.00	No Ice	6.00	6.00	0.26
(Carrier 148' R)						1/2" Ice	8.50	8.50	0.34
						1" Ice	11.00	11.00	0.42
						2" Ice	16.00	16.00	0.59
***									
ERICSSON AIR 21 B2A	A	From Leg	4.00	0.0000	142.00	No Ice	6.33	5.64	0.11
B4P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
(Carrier 142' E)			1.00			1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
ERICSSON AIR 21 B2A	B	From Leg	4.00	0.0000	142.00	No Ice	6.33	5.64	0.11
B4P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
(Carrier 142' E)			1.00			1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
ERICSSON AIR 21 B2A	C	From Leg	4.00	0.0000	142.00	No Ice	6.33	5.64	0.11
B4P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
(Carrier 142' E)			1.00			1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
ERICSSON AIR 21 B4A	A	From Leg	4.00	0.0000	142.00	No Ice	6.33	5.64	0.11
B2P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
(Carrier 142' E)			1.00			1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
ERICSSON AIR 21 B4A	B	From Leg	4.00	0.0000	142.00	No Ice	6.33	5.64	0.11
B2P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
(Carrier 142' E)			1.00			1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
ERICSSON AIR 21 B4A	C	From Leg	4.00	0.0000	142.00	No Ice	6.33	5.64	0.11
B2P w/ Mount Pipe			0.00			1/2" Ice	6.78	6.43	0.17
(Carrier 142' E)			1.00			1" Ice	7.21	7.13	0.23
						2" Ice	8.12	8.59	0.38
LNX-6515DS-VTM w/	A	From Leg	4.00	0.0000	142.00	No Ice	11.68	9.84	0.08
Mount Pipe			0.00			1/2" Ice	12.40	11.37	0.17
(Carrier 142' E)			1.00			1" Ice	13.14	12.91	0.27
						2" Ice	14.51	15.27	0.51
LNX-6515DS-VTM w/	B	From Leg	4.00	0.0000	142.00	No Ice	11.68	9.84	0.08
Mount Pipe			0.00			1/2" Ice	12.40	11.37	0.17
(Carrier 142' E)			1.00			1" Ice	13.14	12.91	0.27
						2" Ice	14.51	15.27	0.51
LNX-6515DS-VTM w/	C	From Leg	4.00	0.0000	142.00	No Ice	11.68	9.84	0.08
Mount Pipe			0.00			1/2" Ice	12.40	11.37	0.17
(Carrier 142' E)			1.00			1" Ice	13.14	12.91	0.27
						2" Ice	14.51	15.27	0.51
RRUS 11 B12	A	From Leg	4.00	0.0000	142.00	No Ice	2.83	1.18	0.05
(Carrier 142' E)			0.00			1/2" Ice	3.04	1.33	0.07
			0.00			1" Ice	3.26	1.48	0.10
						2" Ice	3.71	1.83	0.15
RRUS 11 B12	B	From Leg	4.00	0.0000	142.00	No Ice	2.83	1.18	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
(Carrier 142' E)			0.00			1/2" Ice	3.04	1.33	0.07
			0.00			1" Ice	3.26	1.48	0.10
						2" Ice	3.71	1.83	0.15
RRUS 11 B12	C	From Leg	4.00	0.0000	142.00	No Ice	2.83	1.18	0.05
(Carrier 142' E)			0.00			1/2" Ice	3.04	1.33	0.07
			0.00			1" Ice	3.26	1.48	0.10
						2" Ice	3.71	1.83	0.15
KRY 112 144/1	A	From Leg	4.00	0.0000	142.00	No Ice	0.35	0.17	0.01
(Carrier 142' E)			0.00			1/2" Ice	0.43	0.23	0.01
			0.00			1" Ice	0.51	0.30	0.02
						2" Ice	0.70	0.46	0.03
KRY 112 144/1	B	From Leg	4.00	0.0000	142.00	No Ice	0.35	0.17	0.01
(Carrier 142' E)			0.00			1/2" Ice	0.43	0.23	0.01
			0.00			1" Ice	0.51	0.30	0.02
						2" Ice	0.70	0.46	0.03
KRY 112 144/1	C	From Leg	4.00	0.0000	142.00	No Ice	0.35	0.17	0.01
(Carrier 142' E)			0.00			1/2" Ice	0.43	0.23	0.01
			0.00			1" Ice	0.51	0.30	0.02
						2" Ice	0.70	0.46	0.03
5' x 2" Pipe Mount	A	From Leg	4.00	0.0000	142.00	No Ice	1.00	1.00	0.03
(Carrier 142' E)			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
5' x 2" Pipe Mount	B	From Leg	4.00	0.0000	142.00	No Ice	1.00	1.00	0.03
(Carrier 142' E)			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
5' x 2" Pipe Mount	C	From Leg	4.00	0.0000	142.00	No Ice	1.00	1.00	0.03
(Carrier 142' E)			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
Platform Mount [LP 1201-1]	C	None		0.0000	142.00	No Ice	23.10	23.10	2.10
(Carrier 142' E)						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
***									
(3) RFV01U-D1A	A	From Leg	4.00	0.0000	126.00	No Ice	1.88	1.25	0.08
(Carrier 126' P)			0.00			1/2" Ice	2.05	1.39	0.10
			0.00			1" Ice	2.22	1.54	0.12
						2" Ice	2.60	1.86	0.18
RFV01U-D2A	A	From Leg	4.00	0.0000	126.00	No Ice	1.88	1.01	0.07
(Carrier 126' P)			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
						2" Ice	2.60	1.59	0.15
(2) RFV01U-D2A	B	From Leg	4.00	0.0000	126.00	No Ice	1.88	1.01	0.07
(Carrier 126' P)			0.00			1/2" Ice	2.05	1.14	0.09
			0.00			1" Ice	2.22	1.28	0.11
						2" Ice	2.60	1.59	0.15
BXA-70063-4CF-EDIN-X w/	A	From Leg	4.00	0.0000	126.00	No Ice	4.95	3.69	0.03
Mount Pipe			0.00			1/2" Ice	5.32	4.29	0.07
(Carrier 126' E)			1.00			1" Ice	5.71	4.91	0.12
						2" Ice	6.51	6.18	0.23
BXA-70063-4CF-EDIN-X w/	B	From Leg	4.00	0.0000	126.00	No Ice	4.95	3.69	0.03
Mount Pipe			0.00			1/2" Ice	5.32	4.29	0.07
(Carrier 126' E)			1.00			1" Ice	5.71	4.91	0.12
						2" Ice	6.51	6.18	0.23
BXA-70063-4CF-EDIN-X w/	C	From Leg	4.00	0.0000	126.00	No Ice	4.95	3.69	0.03

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
Mount Pipe			0.00			1/2" Ice	5.32	4.29	0.07
(Carrier 126' E)			1.00			1" Ice	5.71	4.91	0.12
						2" Ice	6.51	6.18	0.23
P65-16-XL-R w/ Mount Pipe	A	From Leg	4.00	0.0000	126.00	No Ice	8.37	6.36	0.06
(Carrier 126' E)			0.00			1/2" Ice	8.93	7.54	0.12
			1.00			1" Ice	9.46	8.43	0.20
						2" Ice	10.53	10.24	0.37
P65-16-XL-R w/ Mount Pipe	B	From Leg	4.00	0.0000	126.00	No Ice	8.37	6.36	0.06
(Carrier 126' E)			0.00			1/2" Ice	8.93	7.54	0.12
			1.00			1" Ice	9.46	8.43	0.20
						2" Ice	10.53	10.24	0.37
(2) SBNHH-1D65B w/	A	From Leg	4.00	0.0000	126.00	No Ice	8.39	7.08	0.08
Mount Pipe			0.00			1/2" Ice	8.95	8.28	0.15
(Carrier 126' E)			1.00			1" Ice	9.48	9.19	0.22
						2" Ice	10.56	11.03	0.40
(2) SBNHH-1D65B w/	B	From Leg	4.00	0.0000	126.00	No Ice	8.39	7.08	0.08
Mount Pipe			0.00			1/2" Ice	8.95	8.28	0.15
(Carrier 126' E)			1.00			1" Ice	9.48	9.19	0.22
						2" Ice	10.56	11.03	0.40
(2) SBNHH-1D65B w/	C	From Leg	4.00	0.0000	126.00	No Ice	8.39	7.08	0.08
Mount Pipe			0.00			1/2" Ice	8.95	8.28	0.15
(Carrier 126' E)			1.00			1" Ice	9.48	9.19	0.22
						2" Ice	10.56	11.03	0.40
BXA-70080-6CF-4 w/ Mount	C	From Leg	4.00	0.0000	126.00	No Ice	6.01	6.20	0.04
Pipe			0.00			1/2" Ice	6.56	7.36	0.10
(Carrier 126' E)			1.00			1" Ice	7.08	8.23	0.16
						2" Ice	8.14	10.02	0.31
(2) DB-T1-6Z-8AB-0Z	C	From Leg	4.00	0.0000	126.00	No Ice	4.80	2.00	0.04
(Carrier 126' E)			0.00			1/2" Ice	5.07	2.19	0.08
			1.00			1" Ice	5.35	2.39	0.12
						2" Ice	5.93	2.81	0.21
Platform Mount [LP 403-1]	C	None		0.0000	126.00	No Ice	18.85	18.85	1.50
(Carrier 126' E)						1/2" Ice	24.30	24.30	1.80
						1" Ice	29.75	29.75	2.09
						2" Ice	40.65	40.65	2.69
***									
TME-800MHz 2X50W RRH	A	From Leg	1.00	0.0000	111.00	No Ice	2.06	1.93	0.06
W/FILTER			0.00			1/2" Ice	2.24	2.11	0.09
(Carrier 111' E)			0.00			1" Ice	2.43	2.29	0.11
						2" Ice	2.83	2.68	0.17
TME-800MHz 2X50W RRH	B	From Leg	1.00	0.0000	111.00	No Ice	2.06	1.93	0.06
W/FILTER			0.00			1/2" Ice	2.24	2.11	0.09
(Carrier 111' E)			0.00			1" Ice	2.43	2.29	0.11
						2" Ice	2.83	2.68	0.17
TME-800MHz 2X50W RRH	C	From Leg	1.00	0.0000	111.00	No Ice	2.06	1.93	0.06
W/FILTER			0.00			1/2" Ice	2.24	2.11	0.09
(Carrier 111' E)			0.00			1" Ice	2.43	2.29	0.11
						2" Ice	2.83	2.68	0.17
PCS 1900MHz	A	From Leg	1.00	0.0000	111.00	No Ice	2.32	2.24	0.06
4x45W-65MHz			0.00			1/2" Ice	2.53	2.44	0.08
(Carrier 111' E)			0.00			1" Ice	2.74	2.65	0.11
						2" Ice	3.19	3.09	0.17
PCS 1900MHz	B	From Leg	1.00	0.0000	111.00	No Ice	2.32	2.24	0.06
4x45W-65MHz			0.00			1/2" Ice	2.53	2.44	0.08
(Carrier 111' E)			0.00			1" Ice	2.74	2.65	0.11
						2" Ice	3.19	3.09	0.17
PCS 1900MHz	C	From Leg	1.00	0.0000	111.00	No Ice	2.32	2.24	0.06

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
4x45W-65MHz			0.00			1/2" Ice	2.53	2.44	0.08
(Carrier 111' E)			0.00			1" Ice	2.74	2.65	0.11
						2" Ice	3.19	3.09	0.17
Pipe Mount [PM 601-3]	C	None		0.0000	111.00	No Ice	4.39	4.39	0.20
(Carrier 111' E)						1/2" Ice	5.48	5.48	0.24
						1" Ice	6.57	6.57	0.28
						2" Ice	8.75	8.75	0.36
***									
APXVTM14-C-120 w/	A	From Leg	4.00	0.0000	109.00	No Ice	6.58	4.96	0.08
Mount Pipe			0.00			1/2" Ice	7.03	5.75	0.13
(Carrier 109' E)			1.00			1" Ice	7.47	6.47	0.19
						2" Ice	8.38	7.94	0.34
APXVTM14-C-120 w/	B	From Leg	4.00	0.0000	109.00	No Ice	6.58	4.96	0.08
Mount Pipe			0.00			1/2" Ice	7.03	5.75	0.13
(Carrier 109' E)			1.00			1" Ice	7.47	6.47	0.19
						2" Ice	8.38	7.94	0.34
APXVTM14-C-120 w/	C	From Leg	4.00	0.0000	109.00	No Ice	6.58	4.96	0.08
Mount Pipe			0.00			1/2" Ice	7.03	5.75	0.13
(Carrier 109' E)			1.00			1" Ice	7.47	6.47	0.19
						2" Ice	8.38	7.94	0.34
APXVSPP18-C-A20 w/	A	From Leg	4.00	0.0000	109.00	No Ice	8.26	6.95	0.08
Mount Pipe			0.00			1/2" Ice	8.82	8.13	0.15
(Carrier 109' E)			1.00			1" Ice	9.35	9.02	0.23
						2" Ice	10.42	10.84	0.41
APXVSPP18-C-A20 w/	B	From Leg	4.00	0.0000	109.00	No Ice	8.26	6.95	0.08
Mount Pipe			0.00			1/2" Ice	8.82	8.13	0.15
(Carrier 109' E)			1.00			1" Ice	9.35	9.02	0.23
						2" Ice	10.42	10.84	0.41
(2) APXVSPP18-C-A20 w/	C	From Leg	4.00	0.0000	109.00	No Ice	8.26	6.95	0.08
Mount Pipe			0.00			1/2" Ice	8.82	8.13	0.15
(Carrier 109' E)			1.00			1" Ice	9.35	9.02	0.23
						2" Ice	10.42	10.84	0.41
TD-RRH8X20-25	A	From Leg	4.00	0.0000	109.00	No Ice	4.05	1.53	0.07
(Carrier 109' E)			0.00			1/2" Ice	4.30	1.71	0.10
			1.00			1" Ice	4.56	1.90	0.13
						2" Ice	5.10	2.30	0.20
TD-RRH8X20-25	B	From Leg	4.00	0.0000	109.00	No Ice	4.05	1.53	0.07
(Carrier 109' E)			0.00			1/2" Ice	4.30	1.71	0.10
			1.00			1" Ice	4.56	1.90	0.13
						2" Ice	5.10	2.30	0.20
TD-RRH8X20-25	C	From Leg	4.00	0.0000	109.00	No Ice	4.05	1.53	0.07
(Carrier 109' E)			0.00			1/2" Ice	4.30	1.71	0.10
			1.00			1" Ice	4.56	1.90	0.13
						2" Ice	5.10	2.30	0.20
DB205-L	B	From Leg	4.00	0.0000	109.00	No Ice	1.72	1.72	0.04
(Carrier 109' E)			0.00			1/2" Ice	3.45	3.45	0.05
			7.00			1" Ice	5.20	5.20	0.08
						2" Ice	8.75	8.75	0.16
K732267	A	From Leg	4.00	0.0000	109.00	No Ice	3.10	0.65	0.01
(Carrier 109' E)			0.00			1/2" Ice	3.47	0.81	0.04
			7.00			1" Ice	3.84	0.97	0.06
						2" Ice	4.58	1.30	0.10
5' x 2" Pipe Mount	A	From Leg	4.00	0.0000	109.00	No Ice	1.00	1.00	0.03
(Carrier 109' E)			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
5' x 2" Pipe Mount	B	From Leg	4.00	0.0000	109.00	No Ice	1.00	1.00	0.03

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
(Carrier 109' E)			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
5' x 2" Pipe Mount	C	From Leg	4.00	0.0000	109.00	No Ice	1.00	1.00	0.03
(Carrier 109' E)			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
Platform Mount [LP 1201-1]	C	None		0.0000	109.00	No Ice	23.10	23.10	2.10
(Carrier 109' E)						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
***									
SRL-227	A	From Leg	6.00	0.0000	79.00	No Ice	4.63	1.45	0.04
(Carrier 79' E)			0.00			1/2" Ice	9.39	3.73	0.07
			-4.00			1" Ice	14.15	6.02	0.11
						2" Ice	23.67	10.59	0.18
K732267	B	From Leg	4.00	0.0000	79.00	No Ice	3.10	0.65	0.01
(Carrier 79' E)			0.00			1/2" Ice	3.47	0.81	0.04
			-3.00			1" Ice	3.84	0.97	0.06
						2" Ice	4.58	1.30	0.10
4'x2.4" Pipe Mount	A	From Leg	6.00	0.0000	79.00	No Ice	0.87	0.87	0.03
(Carrier 79' E)			0.00			1/2" Ice	1.12	1.12	0.03
			0.00			1" Ice	1.37	1.37	0.04
						2" Ice	1.91	1.91	0.07
4'x2.4" Pipe Mount	B	From Leg	6.00	0.0000	79.00	No Ice	0.87	0.87	0.03
(Carrier 79' E)			0.00			1/2" Ice	1.12	1.12	0.03
			0.00			1" Ice	1.37	1.37	0.04
						2" Ice	1.91	1.91	0.07
4'x2.4" Pipe Mount	C	From Leg	6.00	0.0000	79.00	No Ice	0.87	0.87	0.03
(Carrier 79' E)			0.00			1/2" Ice	1.12	1.12	0.03
			0.00			1" Ice	1.37	1.37	0.04
						2" Ice	1.91	1.91	0.07
Side Arm Mount [SO 702-3]	C	None		0.0000	79.00	No Ice	3.22	3.22	0.08
(Carrier 79' E)						1/2" Ice	4.15	4.15	0.11
						1" Ice	5.08	5.08	0.15
						2" Ice	6.94	6.94	0.21
***									
Pipe Mount [PM 601-1]	A	From Leg	1.00	0.0000	74.00	No Ice	3.00	0.90	0.07
(Carrier 74' E)			0.00			1/2" Ice	3.74	1.12	0.08
			0.00			1" Ice	4.48	1.34	0.09
						2" Ice	5.96	1.78	0.12
***									
GPS-TMG-HR-26N	A	From Leg	4.00	0.0000	50.00	No Ice	0.21	0.13	0.00
(Carrier 50' E)			0.00			1/2" Ice	0.27	0.18	0.00
			1.00			1" Ice	0.33	0.24	0.01
						2" Ice	0.49	0.37	0.02
2' x 2" Pipe Mount	A	From Leg	3.00	0.0000	50.00	No Ice	0.02	0.02	0.01
(Carrier 50' E)			0.00			1/2" Ice	0.05	0.05	0.01
			0.00			1" Ice	0.09	0.09	0.01
						2" Ice	0.19	0.19	0.01
Side Arm Mount [SO 701-1]	A	From Leg	1.50	0.0000	50.00	No Ice	0.85	1.67	0.07
(Carrier 50' E)			0.00			1/2" Ice	1.14	2.34	0.08
			0.00			1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
***									
Detuner Mount	C	None		0.0000	147.00	No Ice	2.83	2.83	0.20
(Carrier 147' E)						1/2" Ice	3.92	3.92	0.24

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
						1" Ice	5.01	5.01	0.28
						2" Ice	7.19	7.19	0.36
Detuner Mount (Carrier 95' E)	C	None		0.0000	95.00	No Ice	2.83	2.83	0.20
						1/2" Ice	3.92	3.92	0.24
						1" Ice	5.01	5.01	0.28
						2" Ice	7.19	7.19	0.36
Detuner Mount (Carrier 50' E)	C	None		0.0000	50.00	No Ice	2.83	2.83	0.20
						1/2" Ice	3.92	3.92	0.24
						1" Ice	5.01	5.01	0.28
						2" Ice	7.19	7.19	0.36
Detuner Mount (Carrier 15' E)	C	None		0.0000	15.00	No Ice	2.83	2.83	0.20
						1/2" Ice	3.92	3.92	0.24
						1" Ice	5.01	5.01	0.28
						2" Ice	7.19	7.19	0.36
***									

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
HP2-23 (Carrier 74' E)	A	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 1.00	0.0000		74.00	2.04	No Ice	3.27	0.03
									1/2" Ice	3.55	0.05
									1" Ice	3.82	0.06
									2" Ice	4.36	0.10
***											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice

Comb. No.	Description
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	98.25	-0.00	-0.00
	Max. H_x	23	42.75	35.17	20.47
	Max. H_z	3	42.75	-0.01	34.03
	Max. M_x	2	3680.67	-0.01	34.03
	Max. M_z	8	3679.91	-34.65	0.03
	Max. Torsion	6	2.14	-35.18	20.49
	Min. Vert	15	42.75	0.01	-41.01
	Min. H_x	7	42.75	-35.18	20.49
	Min. H_z	15	42.75	0.01	-41.01
	Min. M_x	14	-4013.46	0.01	-41.01
	Min. M_z	20	-3679.37	34.65	0.00
	Min. Torsion	18	-2.09	29.99	-17.53

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	47.50	-0.00	0.00	-1.84	-0.18	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	57.00	0.01	-34.03	-3680.67	-3.64	-1.07
0.9 Dead+1.0 Wind 0 deg - No Ice	42.75	0.01	-34.03	-3640.37	-3.52	-1.08
1.2 Dead+1.0 Wind 30 deg - No Ice	57.00	17.31	-30.25	-3213.16	-1841.49	-1.82
0.9 Dead+1.0 Wind 30 deg - No Ice	42.75	17.31	-30.25	-3178.05	-1821.61	-1.81
1.2 Dead+1.0 Wind 60 deg - No Ice	57.00	35.18	-20.49	-2013.02	-3452.80	-2.14
0.9 Dead+1.0 Wind 60 deg - No Ice	42.75	35.18	-20.49	-1991.51	-3416.82	-2.11
1.2 Dead+1.0 Wind 90 deg - No Ice	57.00	34.65	-0.03	-6.96	-3679.91	-1.90
0.9 Dead+1.0 Wind 90 deg - No Ice	42.75	34.65	-0.03	-6.28	-3640.25	-1.86
1.2 Dead+1.0 Wind 120 deg - No Ice	57.00	29.97	17.51	1851.87	-3183.34	-1.02
0.9 Dead+1.0 Wind 120 deg - No Ice	42.75	29.97	17.51	1832.61	-3149.03	-0.98
1.2 Dead+1.0 Wind 150 deg - No Ice	57.00	16.86	29.51	3185.21	-1823.21	0.04
0.9 Dead+1.0 Wind 150 deg - No Ice	42.75	16.86	29.51	3151.45	-1803.44	0.07
1.2 Dead+1.0 Wind 180 deg - No Ice	57.00	-0.01	41.01	4013.46	3.12	1.08
0.9 Dead+1.0 Wind 180 deg - No Ice	42.75	-0.01	41.01	3972.43	3.15	1.09
1.2 Dead+1.0 Wind 210 deg - No Ice	57.00	-17.32	30.29	3211.26	1841.64	1.83
0.9 Dead+1.0 Wind 210 deg - No Ice	42.75	-17.32	30.29	3177.37	1821.88	1.82
1.2 Dead+1.0 Wind 240 deg - No Ice	57.00	-29.99	17.53	1857.72	3186.21	2.09
0.9 Dead+1.0 Wind 240 deg - No Ice	42.75	-29.99	17.53	1838.38	3151.99	2.06
1.2 Dead+1.0 Wind 270 deg - No Ice	57.00	-34.65	-0.00	-0.20	3679.37	1.88
0.9 Dead+1.0 Wind 270 deg - No Ice	42.75	-34.65	-0.00	0.38	3639.89	1.85
1.2 Dead+1.0 Wind 300 deg - No Ice	57.00	-35.17	-20.47	-2007.18	3448.94	1.06
0.9 Dead+1.0 Wind 300 deg - No Ice	42.75	-35.17	-20.47	-1985.75	3413.14	1.02
1.2 Dead+1.0 Wind 330 deg - No Ice	57.00	-16.85	-29.48	-3187.14	1822.06	-0.04
0.9 Dead+1.0 Wind 330 deg - No Ice	42.75	-16.85	-29.48	-3152.14	1802.42	-0.06
1.2 Dead+1.0 Ice+1.0 Temp	98.25	0.00	0.00	-6.23	2.43	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	98.25	-0.00	-10.84	-1193.14	2.49	-0.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	98.25	5.36	-9.39	-1034.37	-585.66	-0.49
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	98.25	9.28	-5.42	-600.35	-1016.55	-0.76
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	98.25	10.73	0.00	-6.77	-1174.49	-0.84

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	98.25	9.29	5.44	587.96	-1016.34	-0.66
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	98.25	5.36	9.40	1022.05	-585.76	-0.33
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	98.25	0.00	10.84	1180.83	2.54	0.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	98.25	-5.36	9.39	1022.08	590.84	0.49
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	98.25	-9.28	5.43	588.01	1021.40	0.75
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	98.25	-10.73	-0.01	-6.72	1179.52	0.84
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	98.25	-9.29	-5.43	-600.30	1021.55	0.67
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	98.25	-5.36	-9.39	-1034.34	590.64	0.33
Dead+Wind 0 deg - Service	47.50	0.00	-7.49	-806.07	-0.94	-0.24
Dead+Wind 30 deg - Service	47.50	3.81	-6.66	-704.00	-402.78	-0.40
Dead+Wind 60 deg - Service	47.50	7.74	-4.51	-441.70	-755.29	-0.47
Dead+Wind 90 deg - Service	47.50	7.62	-0.01	-2.96	-804.61	-0.41
Dead+Wind 120 deg - Service	47.50	6.59	3.85	403.47	-696.17	-0.22
Dead+Wind 150 deg - Service	47.50	3.71	6.49	694.99	-398.77	0.01
Dead+Wind 180 deg - Service	47.50	-0.00	9.02	876.21	0.54	0.24
Dead+Wind 210 deg - Service	47.50	-3.81	6.66	700.70	402.52	0.40
Dead+Wind 240 deg - Service	47.50	-6.60	3.86	404.75	696.51	0.46
Dead+Wind 270 deg - Service	47.50	-7.62	-0.00	-1.49	804.21	0.41
Dead+Wind 300 deg - Service	47.50	-7.74	-4.50	-440.43	754.15	0.23
Dead+Wind 330 deg - Service	47.50	-3.71	-6.48	-698.28	398.23	-0.01

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	148 - 143	19.850	41	1.1925	0.0035
L2	143 - 138	18.602	41	1.1905	0.0031
L3	138 - 133	17.360	41	1.1805	0.0028
L4	133 - 128	16.133	41	1.1610	0.0026
L5	128 - 123	14.932	41	1.1337	0.0023
L6	123 - 116	13.762	41	1.0985	0.0021
L7	119.75 - 114.75	13.024	41	1.0707	0.0019
L8	114.75 - 109.75	11.915	41	1.0415	0.0017
L9	109.75 - 104.75	10.851	41	0.9907	0.0015
L10	104.75 - 99.75	9.842	41	0.9339	0.0013
L11	99.75 - 94.75	8.897	41	0.8714	0.0011
L12	94.75 - 93.5	8.019	41	0.8041	0.0010
L13	93.5 - 93.25	7.811	41	0.7868	0.0009
L14	93.25 - 88.25	7.770	41	0.7847	0.0009
L15	88.25 - 83.25	6.970	41	0.7422	0.0009
L16	83.25 - 74.75	6.217	41	0.6972	0.0008
L17	79.5 - 74.5	5.683	41	0.6624	0.0007
L18	74.5 - 69.5	5.001	41	0.6387	0.0007
L19	69.5 - 64.5	4.356	41	0.5931	0.0006
L20	64.5 - 60.5	3.759	41	0.5467	0.0005
L21	60.5 - 60.25	3.317	41	0.5086	0.0005
L22	60.25 - 55.25	3.290	41	0.5064	0.0005

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L23	55.25 - 50.25	2.783	45	0.4632	0.0004
L24	50.25 - 45.25	2.321	45	0.4186	0.0004
L25	45.25 - 39.5	1.907	45	0.3736	0.0003
L26	45 - 38.5	1.887	45	0.3714	0.0003
L27	38.5 - 35.5	1.401	45	0.3389	0.0003
L28	35.5 - 35.25	1.196	45	0.3136	0.0003
L29	35.25 - 31.75	1.180	45	0.3114	0.0003
L30	31.75 - 31.5	0.962	45	0.2818	0.0002
L31	31.5 - 28.25	0.948	45	0.2801	0.0002
L32	28.25 - 28	0.764	45	0.2581	0.0002
L33	28 - 23	0.751	45	0.2559	0.0002
L34	23 - 18	0.507	45	0.2107	0.0002
L35	18 - 13	0.310	45	0.1647	0.0001
L36	13 - 8	0.162	45	0.1188	0.0001
L37	8 - 3	0.061	45	0.0730	0.0001
L38	3 - 0	0.009	45	0.0275	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	QS86512-2 w/ Mount Pipe	41	19.850	1.1925	0.0035	49586
147.00	Detuner Mount	41	19.601	1.1924	0.0035	49586
142.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	41	18.353	1.1893	0.0031	38720
126.00	(3) RFV01U-D1A	41	14.459	1.1211	0.0023	8112
111.00	TME-800MHz 2X50W RRH W/FILTER	41	11.112	1.0048	0.0016	5568
109.00	APXVTM14-C-120 w/ Mount Pipe	41	10.696	0.9822	0.0015	5213
95.00	Detuner Mount	41	8.061	0.8079	0.0010	4627
79.00	SRL-227	41	5.613	0.6593	0.0007	8613
75.00	HP2-23	41	5.067	0.6416	0.0007	8360
74.00	Pipe Mount [PM 601-1]	41	4.934	0.6353	0.0007	7895
50.00	GPS-TMG-HR-26N	45	2.299	0.4163	0.0004	6392
15.00	Detuner Mount	45	0.215	0.1371	0.0001	6209

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	148 - 143 (1)	TP24.9752x24x0.2188	5.00	0.00	0.0	17.1926	-4.41	1219.40	0.004
L2	143 - 138 (2)	TP25.9503x24.9752x0.2188	5.00	0.00	0.0	17.8698	-8.32	1252.59	0.007
L3	138 - 133 (3)	TP26.9255x25.9503x0.2188	5.00	0.00	0.0	18.5470	-8.79	1284.66	0.007
L4	133 - 128 (4)	TP27.9006x26.9255x0.2188	5.00	0.00	0.0	19.2242	-9.27	1315.61	0.007
L5	128 - 123 (5)	TP28.8758x27.9006x0.2188	5.00	0.00	0.0	19.9014	-12.70	1345.43	0.009
L6	123 - 116 (6)	TP30.241x28.8758x0.2188	7.00	0.00	0.0	20.3416	-13.09	1364.21	0.010

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L7	116 - 114.75 (7)	TP30.047x29.072x0.25	5.00	0.00	0.0	23.6439	-14.04	1650.35	0.009
L8	114.75 - 109.75 (8)	TP31.022x30.047x0.25	5.00	0.00	0.0	24.4176	-15.36	1686.61	0.009
L9	109.75 - 104.75 (9)	TP31.997x31.022x0.25	5.00	0.00	0.0	25.1913	-19.45	1721.75	0.011
L10	104.75 - 99.75 (10)	TP32.972x31.997x0.25	5.00	0.00	0.0	25.9649	-20.25	1755.76	0.012
L11	99.75 - 94.75 (11)	TP33.947x32.972x0.25	5.00	0.00	0.0	26.7386	-21.30	1788.65	0.012
L12	94.75 - 93.5 (12)	TP34.1908x33.947x0.25	1.25	0.00	0.0	26.9320	-21.50	1796.70	0.012
L13	93.5 - 93.25 (13)	TP34.2395x34.1908x0.4375	0.25	0.00	0.0	46.9383	-21.57	3487.28	0.006
L14	93.25 - 88.25 (14)	TP35.2145x34.2395x0.4313	5.00	0.00	0.0	47.6109	-22.71	3537.25	0.006
L15	88.25 - 83.25 (15)	TP36.1895x35.2145x0.425	5.00	0.00	0.0	48.2445	-23.89	3584.33	0.007
L16	83.25 - 74.75 (16)	TP37.847x36.1895x0.425	8.50	0.00	0.0	49.2309	-24.78	3657.61	0.007
L17	74.75 - 74.5 (17)	TP37.3959x36.4208x0.4875	5.00	0.00	0.0	57.1093	-27.28	4242.94	0.006
L18	74.5 - 69.5 (18)	TP38.3711x37.3959x0.475	5.00	0.00	0.0	57.1340	-28.73	4244.77	0.007
L19	69.5 - 64.5 (19)	TP39.3462x38.3711x0.475	5.00	0.00	0.0	58.6042	-30.12	4354.00	0.007
L20	64.5 - 60.5 (20)	TP40.1263x39.3462x0.4688	4.00	0.00	0.0	59.0031	-31.28	4383.63	0.007
L21	60.5 - 60.25 (21)	TP40.1751x40.1263x0.525	0.25	0.00	0.0	66.0710	-31.36	4908.74	0.006
L22	60.25 - 55.25 (22)	TP41.1503x40.1751x0.525	5.00	0.00	0.0	67.6959	-32.94	5029.47	0.007
L23	55.25 - 50.25 (23)	TP42.1254x41.1503x0.5125	5.00	0.00	0.0	67.6907	-34.55	5029.08	0.007
L24	50.25 - 45.25 (24)	TP43.1006x42.1254x0.5125	5.00	0.00	0.0	69.2769	-36.50	5146.93	0.007
L25	45.25 - 39.5 (25)	TP44.222x43.1006x0.5125	5.75	0.00	0.0	69.3563	-36.60	5152.82	0.007
L26	39.5 - 38.5 (26)	TP43.7919x42.5243x0.575	6.50	0.00	0.0	78.8730	-40.41	5859.87	0.007
L27	38.5 - 35.5 (27)	TP44.377x43.7919x0.575	3.00	0.00	0.0	79.9408	-41.52	5939.20	0.007
L28	35.5 - 35.25 (28)	TP44.4257x44.377x0.575	0.25	0.00	0.0	80.0298	-41.63	5945.81	0.007
L29	35.25 - 31.75 (29)	TP45.1083x44.4257x0.575	3.50	0.00	0.0	81.2755	-42.96	6038.36	0.007
L30	31.75 - 31.5 (30)	TP45.157x45.1083x0.725	0.25	0.00	0.0	102.2450	-43.09	7596.28	0.006
L31	31.5 - 28.25 (31)	TP45.7908x45.157x0.725	3.25	0.00	0.0	103.7030	-44.61	7704.63	0.006
L32	28.25 - 28 (32)	TP45.8396x45.7908x0.5375	0.25	0.00	0.0	77.2865	-44.72	5742.00	0.008
L33	28 - 23 (33)	TP46.8147x45.8396x0.5375	5.00	0.00	0.0	78.9500	-46.79	5865.59	0.008
L34	23 - 18 (34)	TP47.7897x46.8147x0.525	5.00	0.00	0.0	78.7596	-48.90	5851.44	0.008
L35	18 - 13 (35)	TP48.7648x47.7897x0.525	5.00	0.00	0.0	80.3844	-51.28	5972.16	0.009
L36	13 - 8 (36)	TP49.7399x48.7648x0.525	5.00	0.00	0.0	82.0092	-53.45	6092.87	0.009
L37	8 - 3 (37)	TP50.715x49.7399x0.525	5.00	0.00	0.0	83.6340	-55.65	6205.21	0.009
L38	3 - 0 (38)	TP51.3x50.715x0.5188	3.00	0.00	0.0	83.6120	-56.98	6167.87	0.009

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	148 - 143 (1)	TP24.9752x24x0.2188	21.65	620.16	0.035	0.00	620.16	0.000
L2	143 - 138 (2)	TP25.9503x24.9752x0.2188	72.21	662.36	0.109	0.00	662.36	0.000
L3	138 - 133 (3)	TP26.9255x25.9503x0.2188	127.11	705.27	0.180	0.00	705.27	0.000
L4	133 - 128 (4)	TP27.9006x26.9255x0.2188	184.35	748.85	0.246	0.00	748.85	0.000
L5	128 - 123 (5)	TP28.8758x27.9006x0.2188	263.54	793.01	0.332	0.00	793.01	0.000
L6	123 - 116 (6)	TP30.241x28.8758x0.2188	319.86	822.00	0.389	0.00	822.00	0.000
L7	116 - 114.75 (7)	TP30.047x29.072x0.25	408.60	1010.68	0.404	0.00	1010.68	0.000
L8	114.75 - 109.75 (8)	TP31.022x30.047x0.25	500.75	1066.97	0.469	0.00	1066.97	0.000
L9	109.75 - 104.75 (9)	TP31.997x31.022x0.25	616.75	1123.98	0.549	0.00	1123.98	0.000
L10	104.75 - 99.75 (10)	TP32.972x31.997x0.25	735.22	1181.66	0.622	0.00	1181.66	0.000
L11	99.75 - 94.75 (11)	TP33.947x32.972x0.25	855.95	1239.93	0.690	0.00	1239.93	0.000
L12	94.75 - 93.5 (12)	TP34.1908x33.947x0.25	886.71	1254.59	0.707	0.00	1254.59	0.000
L13	93.5 - 93.25 (13)	TP34.2395x34.1908x0.4375	892.89	2411.78	0.370	0.00	2411.78	0.000
L14	93.25 - 88.25 (14)	TP35.2145x34.2395x0.4313	1018.78	2518.71	0.404	0.00	2518.71	0.000
L15	88.25 - 83.25 (15)	TP36.1895x35.2145x0.425	1148.97	2625.56	0.438	0.00	2625.56	0.000
L16	83.25 - 74.75 (16)	TP37.847x36.1895x0.425	1249.43	2734.67	0.457	0.00	2734.67	0.000
L17	74.75 - 74.5 (17)	TP37.3959x36.4208x0.4875	1388.94	3203.21	0.434	0.00	3203.21	0.000
L18	74.5 - 69.5 (18)	TP38.3711x37.3959x0.475	1534.27	3292.54	0.466	0.00	3292.54	0.000
L19	69.5 - 64.5 (19)	TP39.3462x38.3711x0.475	1683.91	3465.25	0.486	0.00	3465.25	0.000
L20	64.5 - 60.5 (20)	TP40.1263x39.3462x0.4688	1807.58	3560.82	0.508	0.00	3560.82	0.000
L21	60.5 - 60.25 (21)	TP40.1751x40.1263x0.525	1815.40	3981.02	0.456	0.00	3981.02	0.000
L22	60.25 - 55.25 (22)	TP41.1503x40.1751x0.525	1974.04	4180.56	0.472	0.00	4180.56	0.000
L23	55.25 - 50.25 (23)	TP42.1254x41.1503x0.5125	2136.97	4284.43	0.499	0.00	4284.43	0.000
L24	50.25 - 45.25 (24)	TP43.1006x42.1254x0.5125	2304.63	4488.83	0.513	0.00	4488.83	0.000
L25	45.25 - 39.5 (25)	TP44.222x43.1006x0.5125	2313.14	4499.18	0.514	0.00	4499.18	0.000
L26	39.5 - 38.5 (26)	TP43.7919x42.5243x0.575	2538.47	5179.57	0.490	0.00	5179.57	0.000
L27	38.5 - 35.5 (27)	TP44.377x43.7919x0.575	2644.93	5321.70	0.497	0.00	5321.70	0.000
L28	35.5 - 35.25 (28)	TP44.4257x44.377x0.575	2653.88	5333.63	0.498	0.00	5333.63	0.000
L29	35.25 - 31.75 (29)	TP45.1083x44.4257x0.575	2780.18	5502.05	0.505	0.00	5502.05	0.000
L30	31.75 - 31.5 (30)	TP45.157x45.1083x0.725	2789.28	6882.72	0.405	0.00	6882.72	0.000
L31	31.5 - 28.25 (31)	TP45.7908x45.157x0.725	2908.68	7082.07	0.411	0.00	7082.07	0.000
L32	28.25 - 28 (32)	TP45.8396x45.7908x0.5375	2917.94	5327.84	0.548	0.00	5327.84	0.000
L33	28 - 23 (33)	TP46.8147x45.8396x0.5375	3105.30	5561.03	0.558	0.00	5561.03	0.000
L34	23 - 18 (34)	TP47.7897x46.8147x0.525	3296.43	5668.86	0.581	0.00	5668.86	0.000
L35	18 - 13 (35)	TP48.7648x47.7897x0.525	3491.18	5906.47	0.591	0.00	5906.47	0.000
L36	13 - 8 (36)	TP49.7399x48.7648x0.525	3689.48	6148.97	0.600	0.00	6148.97	0.000
L37	8 - 3 (37)	TP50.715x49.7399x0.525	3891.00	6387.72	0.609	0.00	6387.72	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L38	3 - 0 (38)	TP51.3x50.715x0.5188	4013.46	6425.66	0.625	0.00	6425.66	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	148 - 143 (1)	TP24.9752x24x0.2188	5.61	299.35	0.019	0.00	642.65	0.000
L2	143 - 138 (2)	TP25.9503x24.9752x0.2188	10.75	313.62	0.034	1.06	694.74	0.002
L3	138 - 133 (3)	TP26.9255x25.9503x0.2188	11.22	325.50	0.034	1.06	748.87	0.001
L4	133 - 128 (4)	TP27.9006x26.9255x0.2188	11.69	337.38	0.035	1.06	805.02	0.001
L5	128 - 123 (5)	TP28.8758x27.9006x0.2188	17.18	349.27	0.049	1.62	863.21	0.002
L6	123 - 116 (6)	TP30.241x28.8758x0.2188	17.49	357.00	0.049	1.62	902.12	0.002
L7	116 - 114.75 (7)	TP30.047x29.072x0.25	18.01	414.95	0.043	1.62	1064.71	0.002
L8	114.75 - 109.75 (8)	TP31.022x30.047x0.25	19.24	428.53	0.045	1.62	1136.13	0.001
L9	109.75 - 104.75 (9)	TP31.997x31.022x0.25	23.48	442.11	0.053	1.42	1209.88	0.001
L10	104.75 - 99.75 (10)	TP32.972x31.997x0.25	23.93	455.68	0.053	1.42	1285.94	0.001
L11	99.75 - 94.75 (11)	TP33.947x32.972x0.25	24.52	469.26	0.052	1.42	1364.33	0.001
L12	94.75 - 93.5 (12)	TP34.1908x33.947x0.25	24.72	472.66	0.052	1.42	1384.28	0.001
L13	93.5 - 93.25 (13)	TP34.2395x34.1908x0.4375	24.78	823.77	0.030	1.42	2375.81	0.001
L14	93.25 - 88.25 (14)	TP35.2145x34.2395x0.4313	25.62	835.57	0.031	1.42	2482.55	0.001
L15	88.25 - 83.25 (15)	TP36.1895x35.2145x0.425	26.48	846.69	0.031	1.42	2589.25	0.001
L16	83.25 - 74.75 (16)	TP37.847x36.1895x0.425	27.12	864.00	0.031	1.42	2697.51	0.001
L17	74.75 - 74.5 (17)	TP37.3959x36.4208x0.4875	28.58	1002.27	0.029	1.84	3154.57	0.001
L18	74.5 - 69.5 (18)	TP38.3711x37.3959x0.475	29.49	1002.70	0.029	1.93	3244.82	0.001
L19	69.5 - 64.5 (19)	TP39.3462x38.3711x0.475	30.59	1028.50	0.030	1.08	3416.13	0.000
L20	64.5 - 60.5 (20)	TP40.1263x39.3462x0.4688	31.27	1035.50	0.030	1.08	3511.80	0.000
L21	60.5 - 60.25 (21)	TP40.1751x40.1263x0.525	31.31	1159.55	0.027	1.08	3920.43	0.000
L22	60.25 - 55.25 (22)	TP41.1503x40.1751x0.525	32.17	1188.06	0.027	1.08	4118.30	0.000
L23	55.25 - 50.25 (23)	TP42.1254x41.1503x0.5125	33.02	1187.97	0.028	1.08	4223.28	0.000
L24	50.25 - 45.25 (24)	TP43.1006x42.1254x0.5125	34.03	1215.81	0.028	1.08	4426.07	0.000
L25	45.25 - 39.5 (25)	TP44.222x43.1006x0.5125	34.07	1217.20	0.028	1.08	4436.33	0.000
L26	39.5 - 38.5 (26)	TP43.7919x42.5243x0.575	35.27	1384.22	0.025	1.08	5100.42	0.000
L27	38.5 - 35.5 (27)	TP44.377x43.7919x0.575	35.75	1402.96	0.025	1.08	5241.33	0.000
L28	35.5 - 35.25 (28)	TP44.4257x44.377x0.575	35.79	1404.52	0.025	1.08	5253.16	0.000
L29	35.25 - 31.75 (29)	TP45.1083x44.4257x0.575	36.42	1426.38	0.026	1.08	5420.18	0.000
L30	31.75 - 31.5 (30)	TP45.157x45.1083x0.725	36.46	1794.40	0.020	1.08	6756.23	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L31	31.5 - 28.25 (31)	TP45.7908x45.157x0.725	37.05	1819.99	0.020	1.08	6953.60	0.000
L32	28.25 - 28 (32)	TP45.8396x45.7908x0.5375	37.09	1356.38	0.027	1.08	5254.26	0.000
L33	28 - 23 (33)	TP46.8147x45.8396x0.5375	37.89	1385.57	0.027	1.08	5485.65	0.000
L34	23 - 18 (34)	TP47.7897x46.8147x0.525	38.60	1382.23	0.028	1.08	5594.94	0.000
L35	18 - 13 (35)	TP48.7648x47.7897x0.525	39.36	1410.75	0.028	1.08	5830.82	0.000
L36	13 - 8 (36)	TP49.7399x48.7648x0.525	40.00	1439.26	0.028	1.08	6071.57	0.000
L37	8 - 3 (37)	TP50.715x49.7399x0.525	40.65	1467.78	0.028	1.08	6317.18	0.000
L38	3 - 0 (38)	TP51.3x50.715x0.5188	41.03	1467.39	0.028	1.08	6393.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	148 - 143 (1)	0.004	0.035	0.000	0.019	0.000	0.039	1.050	4.8.2
L2	143 - 138 (2)	0.007	0.109	0.000	0.034	0.002	0.117	1.050	4.8.2
L3	138 - 133 (3)	0.007	0.180	0.000	0.034	0.001	0.188	1.050	4.8.2
L4	133 - 128 (4)	0.007	0.246	0.000	0.035	0.001	0.255	1.050	4.8.2
L5	128 - 123 (5)	0.009	0.332	0.000	0.049	0.002	0.344	1.050	4.8.2
L6	123 - 116 (6)	0.010	0.389	0.000	0.049	0.002	0.401	1.050	4.8.2
L7	116 - 114.75 (7)	0.009	0.404	0.000	0.043	0.002	0.415	1.050	4.8.2
L8	114.75 - 109.75 (8)	0.009	0.469	0.000	0.045	0.001	0.481	1.050	4.8.2
L9	109.75 - 104.75 (9)	0.011	0.549	0.000	0.053	0.001	0.563	1.050	4.8.2
L10	104.75 - 99.75 (10)	0.012	0.622	0.000	0.053	0.001	0.637	1.050	4.8.2
L11	99.75 - 94.75 (11)	0.012	0.690	0.000	0.052	0.001	0.705	1.050	4.8.2
L12	94.75 - 93.5 (12)	0.012	0.707	0.000	0.052	0.001	0.722	1.050	4.8.2
L13	93.5 - 93.25 (13)	0.006	0.370	0.000	0.030	0.001	0.377	1.050	4.8.2
L14	93.25 - 88.25 (14)	0.006	0.404	0.000	0.031	0.001	0.412	1.050	4.8.2
L15	88.25 - 83.25 (15)	0.007	0.438	0.000	0.031	0.001	0.445	1.050	4.8.2
L16	83.25 - 74.75 (16)	0.007	0.457	0.000	0.031	0.001	0.465	1.050	4.8.2
L17	74.75 - 74.5 (17)	0.006	0.434	0.000	0.029	0.001	0.441	1.050	4.8.2
L18	74.5 - 69.5 (18)	0.007	0.466	0.000	0.029	0.001	0.474	1.050	4.8.2
L19	69.5 - 64.5 (19)	0.007	0.486	0.000	0.030	0.000	0.494	1.050	4.8.2
L20	64.5 - 60.5 (20)	0.007	0.508	0.000	0.030	0.000	0.516	1.050	4.8.2
L21	60.5 - 60.25 (21)	0.006	0.456	0.000	0.027	0.000	0.463	1.050	4.8.2
L22	60.25 - 55.25 (22)	0.007	0.472	0.000	0.027	0.000	0.479	1.050	4.8.2
L23	55.25 - 50.25 (23)	0.007	0.499	0.000	0.028	0.000	0.506	1.050	4.8.2
L24	50.25 - 45.25 (24)	0.007	0.513	0.000	0.028	0.000	0.521	1.050	4.8.2
L25	45.25 - 39.5	0.007	0.514	0.000	0.028	0.000	0.522	1.050	4.8.2

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	(25)								
L26	39.5 - 38.5 (26)	0.007	0.490	0.000	0.025	0.000	0.498	1.050	4.8.2
L27	38.5 - 35.5 (27)	0.007	0.497	0.000	0.025	0.000	0.505	1.050	4.8.2
L28	35.5 - 35.25 (28)	0.007	0.498	0.000	0.025	0.000	0.505	1.050	4.8.2
L29	35.25 - 31.75 (29)	0.007	0.505	0.000	0.026	0.000	0.513	1.050	4.8.2
L30	31.75 - 31.5 (30)	0.006	0.405	0.000	0.020	0.000	0.411	1.050	4.8.2
L31	31.5 - 28.25 (31)	0.006	0.411	0.000	0.020	0.000	0.417	1.050	4.8.2
L32	28.25 - 28 (32)	0.008	0.548	0.000	0.027	0.000	0.556	1.050	4.8.2
L33	28 - 23 (33)	0.008	0.558	0.000	0.027	0.000	0.567	1.050	4.8.2
L34	23 - 18 (34)	0.008	0.581	0.000	0.028	0.000	0.591	1.050	4.8.2
L35	18 - 13 (35)	0.009	0.591	0.000	0.028	0.000	0.600	1.050	4.8.2
L36	13 - 8 (36)	0.009	0.600	0.000	0.028	0.000	0.610	1.050	4.8.2
L37	8 - 3 (37)	0.009	0.609	0.000	0.028	0.000	0.619	1.050	4.8.2
L38	3 - 0 (38)	0.009	0.625	0.000	0.028	0.000	0.635	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	% Capacity	Pass Fail
L1	148 - 143	Pole	TP24.975x24x0.2188	Pole	3.8%	Pass
L2	143 - 138	Pole	TP25.95x24.975x0.2188	Pole	11.5%	Pass
L3	138 - 133	Pole	TP26.925x25.95x0.2188	Pole	18.5%	Pass
L4	133 - 128	Pole	TP27.901x26.925x0.2188	Pole	25.0%	Pass
L5	128 - 123	Pole	TP28.876x27.901x0.2188	Pole	33.8%	Pass
L6	123 - 119.75	Pole	TP30.241x28.876x0.2188	Pole	39.4%	Pass
L7	119.75 - 114.75	Pole	TP30.047x29.072x0.25	Pole	40.8%	Pass
L8	114.75 - 109.75	Pole	TP31.022x30.047x0.25	Pole	47.3%	Pass
L9	109.75 - 104.75	Pole	TP31.997x31.022x0.25	Pole	55.3%	Pass
L10	104.75 - 99.75	Pole	TP32.972x31.997x0.25	Pole	62.6%	Pass
L11	99.75 - 94.75	Pole	TP33.947x32.972x0.25	Pole	69.3%	Pass
L12	94.75 - 93.5	Pole	TP34.191x33.947x0.25	Pole	71.0%	Pass
L13	93.5 - 93.25	Pole + Reinf.	TP34.24x34.191x0.4375	Reinf. 5 Tension Rupture	59.7%	Pass
L14	93.25 - 88.25	Pole + Reinf.	TP35.215x34.24x0.4313	Reinf. 5 Tension Rupture	65.0%	Pass
L15	88.25 - 83.25	Pole + Reinf.	TP36.19x35.215x0.425	Reinf. 5 Tension Rupture	70.2%	Pass
L16	83.25 - 79.5	Pole + Reinf.	TP37.847x36.19x0.425	Reinf. 5 Tension Rupture	73.9%	Pass
L17	79.5 - 74.5	Pole + Reinf.	TP37.396x36.421x0.4875	Reinf. 5 Tension Rupture	70.0%	Pass
L18	74.5 - 69.5	Pole + Reinf.	TP38.371x37.396x0.475	Reinf. 5 Tension Rupture	74.1%	Pass
L19	69.5 - 64.5	Pole + Reinf.	TP39.346x38.371x0.475	Reinf. 5 Tension Rupture	77.9%	Pass
L20	64.5 - 60.5	Pole + Reinf.	TP40.126x39.346x0.4688	Reinf. 5 Tension Rupture	80.9%	Pass
L21	60.5 - 60.25	Pole + Reinf.	TP40.175x40.126x0.525	Reinf. 3 Tension Rupture	71.3%	Pass
L22	60.25 - 55.25	Pole + Reinf.	TP41.15x40.175x0.525	Reinf. 3 Tension Rupture	74.6%	Pass
L23	55.25 - 50.25	Pole + Reinf.	TP42.125x41.15x0.5125	Reinf. 3 Tension Rupture	77.7%	Pass
L24	50.25 - 45.25	Pole + Reinf.	TP43.101x42.125x0.5125	Reinf. 3 Tension Rupture	80.8%	Pass
L25	45.25 - 45	Pole + Reinf.	TP44.222x43.101x0.5125	Reinf. 3 Tension Rupture	80.9%	Pass
L26	45 - 38.5	Pole + Reinf.	TP43.792x42.524x0.575	Reinf. 3 Tension Rupture	77.2%	Pass
L27	38.5 - 35.5	Pole + Reinf.	TP44.377x43.792x0.575	Reinf. 3 Tension Rupture	78.7%	Pass
L28	35.5 - 35.25	Pole + Reinf.	TP44.426x44.377x0.575	Reinf. 3 Tension Rupture	78.6%	Pass
L29	35.25 - 31.75	Pole + Reinf.	TP45.108x44.426x0.575	Reinf. 3 Tension Rupture	80.3%	Pass
L30	31.75 - 31.5	Pole + Reinf.	TP45.157x45.108x0.725	Reinf. 1 Compression	64.5%	Pass
L31	31.5 - 28.25	Pole + Reinf.	TP45.791x45.157x0.725	Reinf. 1 Compression	65.8%	Pass
L32	28.25 - 28	Pole + Reinf.	TP45.84x45.791x0.5375	Reinf. 2 Compression	74.3%	Pass

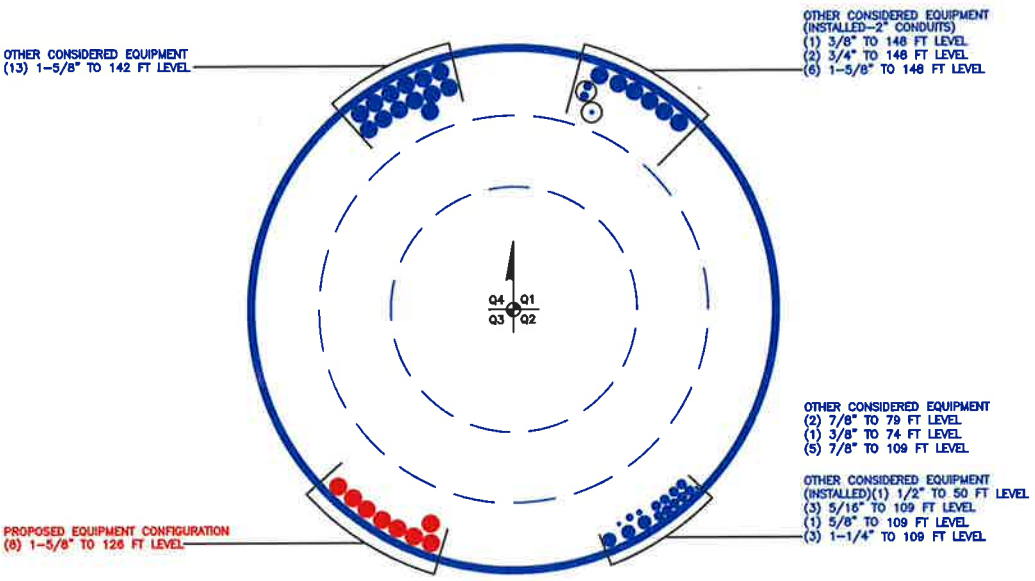
Section No.	Elevation ft	Component Type	Size	Critical Element	% Capacity	Pass Fail
L33	28 - 23	Pole + Reinf.	TP46.815x45.84x0.5375	Reinf. 2 Compression	76.3%	Pass
L34	23 - 18	Pole + Reinf.	TP47.79x46.815x0.525	Reinf. 2 Compression	78.3%	Pass
L35	18 - 13	Pole + Reinf.	TP48.765x47.79x0.525	Reinf. 2 Compression	80.2%	Pass
L36	13 - 8	Pole + Reinf.	TP49.74x48.765x0.525	Reinf. 2 Compression	81.9%	Pass
L37	8 - 3	Pole + Reinf.	TP50.715x49.74x0.525	Reinf. 2 Compression	83.6%	Pass
L38	3 - 0	Pole + Reinf.	TP51.3x50.715x0.5188	Reinf. 2 Compression	84.6%	Pass
					Summary	
				Pole	72.8%	Pass
				Reinforcement	84.6%	Pass
				Overall	**84.6%**	**Pass**

Program Version 8.0.4.0 - 8/15/2018 File:H:/PROJECTS/JOB 18000 - 18999/18800 - 18899/18866 - CCI - 855662 - WINDSORCENTRAL/855662_LC7_20181031 Reinf.eri

APPENDIX B

BASE LEVEL DRAWING

TX LINE LAYOUT



BUSINESS UNIT: 855662 TOWER ID: C_BASELEVEL

Clients

CROWN CASTLE

Professional Stamp

Revisions

No.	Description	Date
A	ISSUED FOR REVIEW	10.30.18

Engineering Firm

P-SEC
ph: 519-885-3806
fx: 519-886-0076
www.p-sec.ca
PIER STRUCTURAL ENGINEERING CORP
55 NORTHFIELD DR. E, SUITE 198
WATERLOO, ON N2K 3T6

PSEC Job No.

18866

Site Name

855662
WINDSORCENTRAL

Site Design

Sheet Title

TX LINES

Drawn by	Sheet
LLC	A-1
Checked by	
Approved By	

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 855662

Work Order: 1652085

CROWN CASTLE

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	148	32	3.75	18	24	30.241	0.2188	Auto	A607-65
2	119.75	45	4.75	18	29.07	37.847	0.25	Auto	A607-65
3	79.5	40	5.5	18	36.42	44.222	0.3125	Auto	A607-65
4	45	45	0	18	42.52	51.3	0.375	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	35.5	plate	CCI-SFP-085125	1																		x
2	0	31.75	plate	CCI-SFP-085125	2								x					x					
3	28.25	60.5	plate	CCI-SFP-065125	2						x						x						
4	35.5	60.5	plate	CCI-SFP-065125	1																		x
5	60.5	93.5	plate	CCI-SFP-060100	3						x						x						x
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	8.5	1.25	10.625	0.625	45.000	45.000	17.000	9.063	1.1875	A572-65
2	8.5	1.25	10.625	0.625	45.000	45.000	17.000	9.063	1.1875	A572-65
3	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
4	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
5	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	148 - 143	5		18	24.000	24.975	0.2188	A607-65	1.000
2	143 - 138	5		18	24.975	25.950	0.2188	A607-65	1.000
3	138 - 133	5		18	25.950	26.925	0.2188	A607-65	1.000
4	133 - 128	5		18	26.925	27.901	0.2188	A607-65	1.000
5	128 - 123	5		18	27.901	28.876	0.2188	A607-65	1.000
6	123 - 119.75	7	3.75	18	28.876	30.241	0.2188	A607-65	1.000
7	119.75 - 114.75	5		18	29.072	30.047	0.25	A607-65	1.000
8	114.75 - 109.75	5		18	30.047	31.022	0.25	A607-65	1.000
9	109.75 - 104.75	5		18	31.022	31.997	0.25	A607-65	1.000
10	104.75 - 99.75	5		18	31.997	32.972	0.25	A607-65	1.000
11	99.75 - 94.75	5		18	32.972	33.947	0.25	A607-65	1.000
12	94.75 - 93.5	1.25		18	33.947	34.191	0.25	A607-65	1.000
13	93.5 - 93.25	0.25		18	34.191	34.240	0.4375	A607-65	0.958
14	93.25 - 88.25	5		18	34.240	35.215	0.43125	A607-65	0.961
15	88.25 - 83.25	5		18	35.215	36.190	0.425	A607-65	0.964
16	83.25 - 79.5	8.5	4.75	18	36.190	37.847	0.425	A607-65	0.957
17	79.5 - 74.5	5		18	36.421	37.396	0.4875	A607-65	0.959
18	74.5 - 69.5	5		18	37.396	38.371	0.475	A607-65	0.976
19	69.5 - 64.5	5		18	38.371	39.346	0.475	A607-65	0.968
20	64.5 - 60.5	4		18	39.346	40.126	0.46875	A607-65	0.974
21	60.5 - 60.25	0.25		18	40.126	40.175	0.525	A607-65	0.967
22	60.25 - 55.25	5		18	40.175	41.150	0.525	A607-65	0.958
23	55.25 - 50.25	5		18	41.150	42.125	0.5125	A607-65	0.973
24	50.25 - 45.25	5		18	42.125	43.101	0.5125	A607-65	0.964
25	45.25 - 45	5.75	5.5	18	43.101	44.222	0.5125	A607-65	0.964
26	45 - 38.5	6.5		18	42.524	43.792	0.575	A607-65	0.964
27	38.5 - 35.5	3		18	43.792	44.377	0.575	A607-65	0.960
28	35.5 - 35.25	0.25		18	44.377	44.426	0.575	A607-65	0.991
29	35.25 - 31.75	3.5		18	44.426	45.108	0.575	A607-65	0.986
30	31.75 - 31.5	0.25		18	45.108	45.157	0.725	A607-65	0.992
31	31.5 - 28.25	3.25		18	45.157	45.791	0.725	A607-65	0.985
32	28.25 - 28	0.25		18	45.791	45.840	0.5375	A607-65	1.113
33	28 - 23	5		18	45.840	46.815	0.5375	A607-65	1.104
34	23 - 18	5		18	46.815	47.790	0.525	A607-65	1.121
35	18 - 13	5		18	47.790	48.765	0.525	A607-65	1.113
36	13 - 8	5		18	48.765	49.740	0.525	A607-65	1.105
37	8 - 3	5		18	49.740	50.715	0.525	A607-65	1.098
38	3 - 0	3		18	50.715	51.300	0.51875	A607-65	1.106

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	148 - 143	4.41	21.65	5.61
2	143 - 138	8.34	72.24	10.73
3	138 - 133	8.79	127.11	11.22
4	133 - 128	9.27	184.35	11.69
5	128 - 123	12.70	263.54	17.18
6	123 - 119.75	13.09	319.86	17.49
7	119.75 - 114.75	14.04	408.60	18.01
8	114.75 - 109.75	15.36	500.75	19.24
9	109.75 - 104.75	19.45	616.75	23.48
10	104.75 - 99.75	20.25	735.21	23.93
11	99.75 - 94.75	21.30	855.95	24.52
12	94.75 - 93.5	21.50	886.71	24.72
13	93.5 - 93.25	21.57	892.89	24.78
14	93.25 - 88.25	22.71	1018.78	25.62
15	88.25 - 83.25	23.89	1148.97	26.48
16	83.25 - 79.5	24.78	1249.43	27.12
17	79.5 - 74.5	27.28	1388.94	28.58
18	74.5 - 69.5	28.73	1534.27	29.49
19	69.5 - 64.5	30.12	1683.91	30.59
20	64.5 - 60.5	31.28	1807.58	31.27
21	60.5 - 60.25	31.36	1815.40	31.31
22	60.25 - 55.25	32.94	1974.04	32.17
23	55.25 - 50.25	34.55	2136.97	33.02
24	50.25 - 45.25	36.50	2304.63	34.03
25	45.25 - 45	36.60	2313.14	34.07
26	45 - 38.5	40.41	2538.46	35.26
27	38.5 - 35.5	41.52	2644.94	35.75
28	35.5 - 35.25	41.63	2653.88	35.79
29	35.25 - 31.75	42.96	2780.18	36.42
30	31.75 - 31.5	43.09	2789.28	36.46
31	31.5 - 28.25	44.61	2908.68	37.05
32	28.25 - 28	44.72	2917.94	37.09
33	28 - 23	46.79	3105.30	37.89
34	23 - 18	48.90	3296.43	38.60
35	18 - 13	51.28	3491.19	39.36
36	13 - 8	53.45	3689.48	40.00
37	8 - 3	55.65	3891.00	40.65
38	3 - 0	56.98	4013.46	41.03

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP24.975x24x0.2188	Pole	3.8%	Pass
143 - 138	Pole	TP25.95x24.975x0.2188	Pole	11.5%	Pass
138 - 133	Pole	TP26.925x25.95x0.2188	Pole	18.5%	Pass
133 - 128	Pole	TP27.901x26.925x0.2188	Pole	25.0%	Pass
128 - 123	Pole	TP28.876x27.901x0.2188	Pole	33.8%	Pass
123 - 119.75	Pole	TP30.241x28.876x0.2188	Pole	39.4%	Pass
119.75 - 114.75	Pole	TP30.047x29.072x0.25	Pole	40.8%	Pass
114.75 - 109.75	Pole	TP31.022x30.047x0.25	Pole	47.3%	Pass
109.75 - 104.75	Pole	TP31.997x31.022x0.25	Pole	55.3%	Pass
104.75 - 99.75	Pole	TP32.972x31.997x0.25	Pole	62.6%	Pass
99.75 - 94.75	Pole	TP33.947x32.972x0.25	Pole	69.3%	Pass
94.75 - 93.5	Pole	TP34.191x33.947x0.25	Pole	71.0%	Pass
93.5 - 93.25	Pole + Reinf.	TP34.24x34.191x0.4375	Reinf. 5 Tension Rupture	59.7%	Pass
93.25 - 88.25	Pole + Reinf.	TP35.215x34.24x0.4313	Reinf. 5 Tension Rupture	65.0%	Pass
88.25 - 83.25	Pole + Reinf.	TP36.19x35.215x0.425	Reinf. 5 Tension Rupture	70.2%	Pass
83.25 - 79.5	Pole + Reinf.	TP37.847x36.19x0.425	Reinf. 5 Tension Rupture	73.9%	Pass
79.5 - 74.5	Pole + Reinf.	TP37.396x36.421x0.4875	Reinf. 5 Tension Rupture	70.0%	Pass
74.5 - 69.5	Pole + Reinf.	TP38.371x37.396x0.475	Reinf. 5 Tension Rupture	74.1%	Pass
69.5 - 64.5	Pole + Reinf.	TP39.346x38.371x0.475	Reinf. 5 Tension Rupture	77.9%	Pass
64.5 - 60.5	Pole + Reinf.	TP40.126x39.346x0.4688	Reinf. 5 Tension Rupture	80.9%	Pass
60.5 - 60.25	Pole + Reinf.	TP40.175x40.126x0.525	Reinf. 3 Tension Rupture	71.3%	Pass
60.25 - 55.25	Pole + Reinf.	TP41.15x40.175x0.525	Reinf. 3 Tension Rupture	74.6%	Pass
55.25 - 50.25	Pole + Reinf.	TP42.125x41.15x0.5125	Reinf. 3 Tension Rupture	77.7%	Pass
50.25 - 45.25	Pole + Reinf.	TP43.101x42.125x0.5125	Reinf. 3 Tension Rupture	80.8%	Pass
45.25 - 45	Pole + Reinf.	TP44.222x43.101x0.5125	Reinf. 3 Tension Rupture	80.9%	Pass
45 - 38.5	Pole + Reinf.	TP43.792x42.524x0.575	Reinf. 3 Tension Rupture	77.2%	Pass
38.5 - 35.5	Pole + Reinf.	TP44.377x43.792x0.575	Reinf. 3 Tension Rupture	78.7%	Pass
35.5 - 35.25	Pole + Reinf.	TP44.426x44.377x0.575	Reinf. 3 Tension Rupture	78.6%	Pass
35.25 - 31.75	Pole + Reinf.	TP45.108x44.426x0.575	Reinf. 3 Tension Rupture	80.3%	Pass
31.75 - 31.5	Pole + Reinf.	TP45.157x45.108x0.725	Reinf. 1 Compression	64.5%	Pass
31.5 - 28.25	Pole + Reinf.	TP45.791x45.157x0.725	Reinf. 1 Compression	65.8%	Pass
28.25 - 28	Pole + Reinf.	TP45.84x45.791x0.5375	Reinf. 2 Compression	74.3%	Pass
28 - 23	Pole + Reinf.	TP46.815x45.84x0.5375	Reinf. 2 Compression	76.3%	Pass
23 - 18	Pole + Reinf.	TP47.79x46.815x0.525	Reinf. 2 Compression	78.3%	Pass
18 - 13	Pole + Reinf.	TP48.765x47.79x0.525	Reinf. 2 Compression	80.2%	Pass
13 - 8	Pole + Reinf.	TP49.74x48.765x0.525	Reinf. 2 Compression	81.9%	Pass
8 - 3	Pole + Reinf.	TP50.715x49.74x0.525	Reinf. 2 Compression	83.6%	Pass
3 - 0	Pole + Reinf.	TP51.3x50.715x0.5188	Reinf. 2 Compression	84.6%	Pass
				Summary	
			Pole	72.8%	Pass
			Reinforcement	84.6%	Pass
			Overall	84.6%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity					
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5
148 - 143	1331	n/a	1331	17.19	n/a	17.19	3.8%					
143 - 138	1494	n/a	1494	17.87	n/a	17.87	11.5%					
138 - 133	1671	n/a	1671	18.55	n/a	18.55	18.5%					
133 - 128	1860	n/a	1860	19.22	n/a	19.22	25.0%					
128 - 123	2064	n/a	2064	19.90	n/a	19.90	33.8%					
123 - 119.75	2204	n/a	2204	20.34	n/a	20.34	39.4%					
119.75 - 114.75	2651	n/a	2651	23.64	n/a	23.64	40.8%					
114.75 - 109.75	2920	n/a	2920	24.42	n/a	24.42	47.3%					
109.75 - 104.75	3207	n/a	3207	25.19	n/a	25.19	55.3%					
104.75 - 99.75	3511	n/a	3511	25.96	n/a	25.96	62.6%					
99.75 - 94.75	3834	n/a	3834	26.74	n/a	26.74	69.3%					
94.75 - 93.5	3918	n/a	3918	26.93	n/a	26.93	71.0%					
93.5 - 93.25	3935	2822	6757	26.97	18.00	44.97	41.0%					59.7%
93.25 - 88.25	4284	2979	7262	27.74	18.00	45.74	45.2%					65.0%
88.25 - 83.25	4652	3140	7792	28.52	18.00	46.52	49.3%					70.2%
83.25 - 79.5	4942	3263	8205	29.10	18.00	47.10	52.4%					73.9%
79.5 - 74.5	6388	3345	9733	36.78	18.00	54.78	46.0%					70.0%
74.5 - 69.5	6906	3515	10421	37.75	18.00	55.75	49.1%					74.1%
69.5 - 64.5	7450	3690	11140	38.72	18.00	56.72	52.1%					77.9%
64.5 - 60.5	7906	3833	11739	39.49	18.00	57.49	54.5%					80.9%
60.5 - 60.25	7935	5273	13208	39.54	24.38	63.91	48.7%			71.3%	71.3%	
60.25 - 55.25	8531	5522	14054	40.50	24.38	64.88	51.4%			74.6%	74.6%	
55.25 - 50.25	9157	5777	14934	41.47	24.38	65.85	54.1%			77.7%	77.7%	
50.25 - 45.25	9813	6038	15851	42.44	24.38	66.81	56.7%			80.8%	80.8%	
45.25 - 45	9847	6051	15897	42.49	24.38	66.86	56.9%			80.9%	80.9%	
45 - 38.5	12303	6226	18529	51.68	24.38	76.05	51.3%			77.2%	77.2%	
38.5 - 35.5	12807	6388	19194	52.37	24.38	76.75	52.5%			78.7%	78.7%	
35.5 - 35.25	12856	6737	19593	52.43	26.88	79.30	52.5%	68.0%		78.6%		
35.25 - 31.75	13463	6937	20400	53.24	26.88	80.12	53.9%	69.5%		80.3%		
31.75 - 31.5	13800	12075	25875	53.30	48.13	101.42	47.0%	64.5%	54.8%	61.2%		
31.5 - 28.25	14389	12408	26798	54.05	48.13	102.18	48.2%	65.8%	56.0%	62.4%		
28.25 - 28	14322	5866	20187	54.11	31.88	85.99	62.1%	66.3%	74.3%			
28 - 23	15257	6111	21369	55.27	31.88	87.15	64.1%	68.2%	76.3%			
23 - 18	16233	6362	22595	56.43	31.88	88.31	66.1%	70.0%	78.3%			
18 - 13	17249	6618	23867	57.59	31.88	89.47	68.0%	71.8%	80.2%			
13 - 8	18307	6880	25186	58.75	31.88	90.63	69.9%	73.5%	81.9%			
8 - 3	19407	7146	26553	59.91	31.88	91.79	71.8%	75.1%	83.6%			
3 - 0	20088	7309	27396	60.61	31.88	92.49	72.8%	76.0%	84.6%			

Note: Section capacity checked in 5 degree increments.

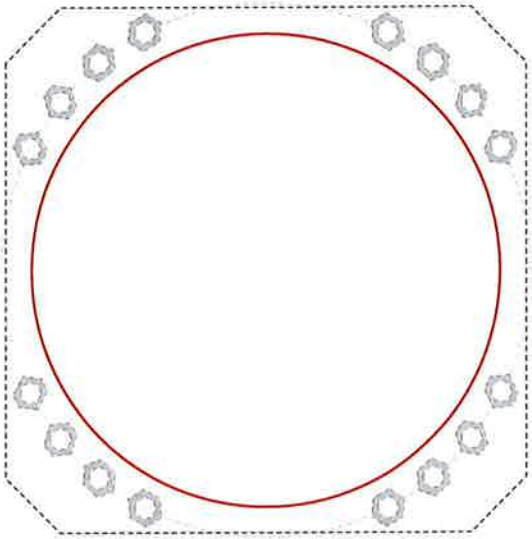
Monopole Base Plate Connection

Site Info	
BU #	855662
Site Name	WINDSORCENTRAL
Order #	464182 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

Applied Loads	
Moment (kip-ft)	4013.46
Axial Force (kips)	56.98
Shear Force (kips)	41.03

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 58" BC

Base Plate Data

57" OD x 2.75" Plate (A572-55; Fy=55 ksi, Fu=70 ksi)

Stiffener Data

N/A

Pole Data

51.3" x 0.375" 18-sided pole (A607-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu_c = 211.03	ϕPn_c = 243.75	**Stress Rating**
Vu = 2.56	ϕVn = 73.13	**82.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	38.42	(Flexural)
Allowable Stress (ksi):	49.5	
Stress Rating:	**73.9%**	**Pass**

Drilled Pier Foundation

BU # :	855662
Site Name:	WINDSORCENTRAL
Order Number:	464182 Rev 0
TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	4013	
Axial Force (kips)	57	
Shear Force (kips)	14	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	32.5	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 32.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	20	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.42	-
Soil Safety Factor	1.97	-
Max Moment (kip-ft)	4097.89	-
Rating*	*64.2%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	139.86	-
End Bearing (kips)	189.92	-
Weight of Concrete (kips)	140.71	-
Total Capacity (kips)	329.78	-
Axial (kips)	197.71	-
Rating*	*57.1%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.40	-
Critical Moment (kip-ft)	4097.89	-
Critical Moment Capacity	5001.61	-
Rating*	*78.0%*	-

Soil Interaction Rating*	**64.2%**
Structural Foundation Rating*	**78.0%**

*Rating per TIA-222-H Section 15.5

Check Limitation	
Apply TIA-222-H Section 15.5:	☑

Soil Profile

Groundwater Depth	2	ft	# of Layers: 5

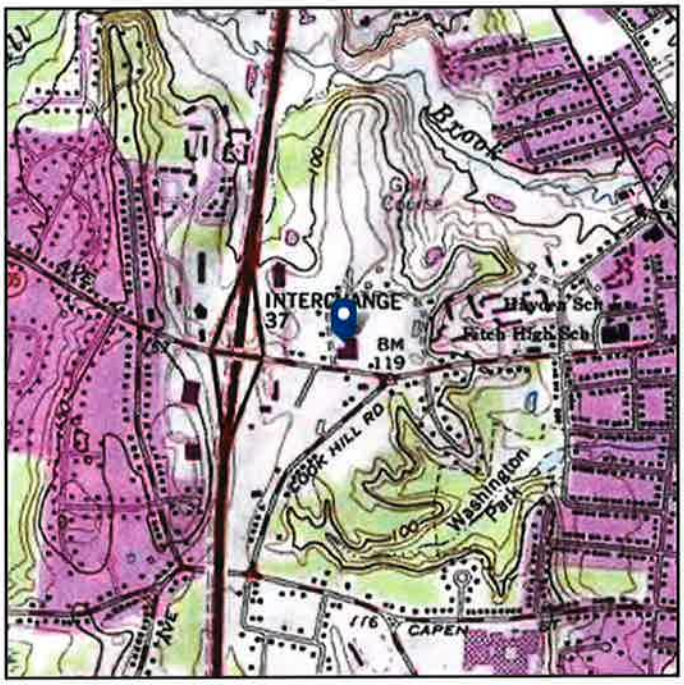
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	5	3	50	87.6	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	5	12	7	55	87.6	0	35	0.000	0.000	0.30	0.30			Cohesionless
4	12	16	4	50	87.6	0	31	0.000	0.000	0.44	0.44			Cohesionless
5	16	32.5	16.5	50	87.6	0.8	0	0.440	0.440	0.28	0.28	6.58		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 115.16 ft (NAVD 88)
Latitude: 41.852594
Longitude: -72.660497



Wind

Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Mon Oct 29 2018

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

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

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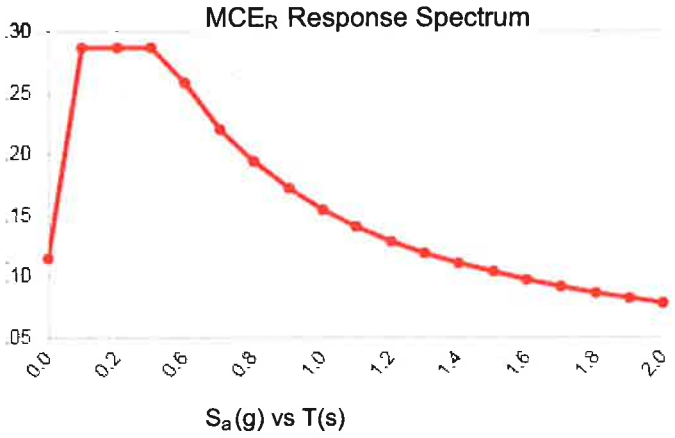
Seismic

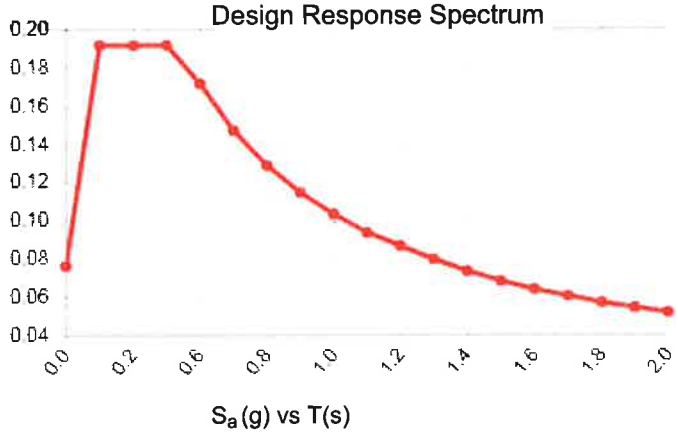
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.179	S_{DS} :	0.191
S_1 :	0.064	S_{D1} :	0.103
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.089
S_{MS} :	0.286	PGA_M :	0.142
S_{M1} :	0.154	F_{PGA} :	1.600
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Oct 29 2018

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

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Ice

Results:

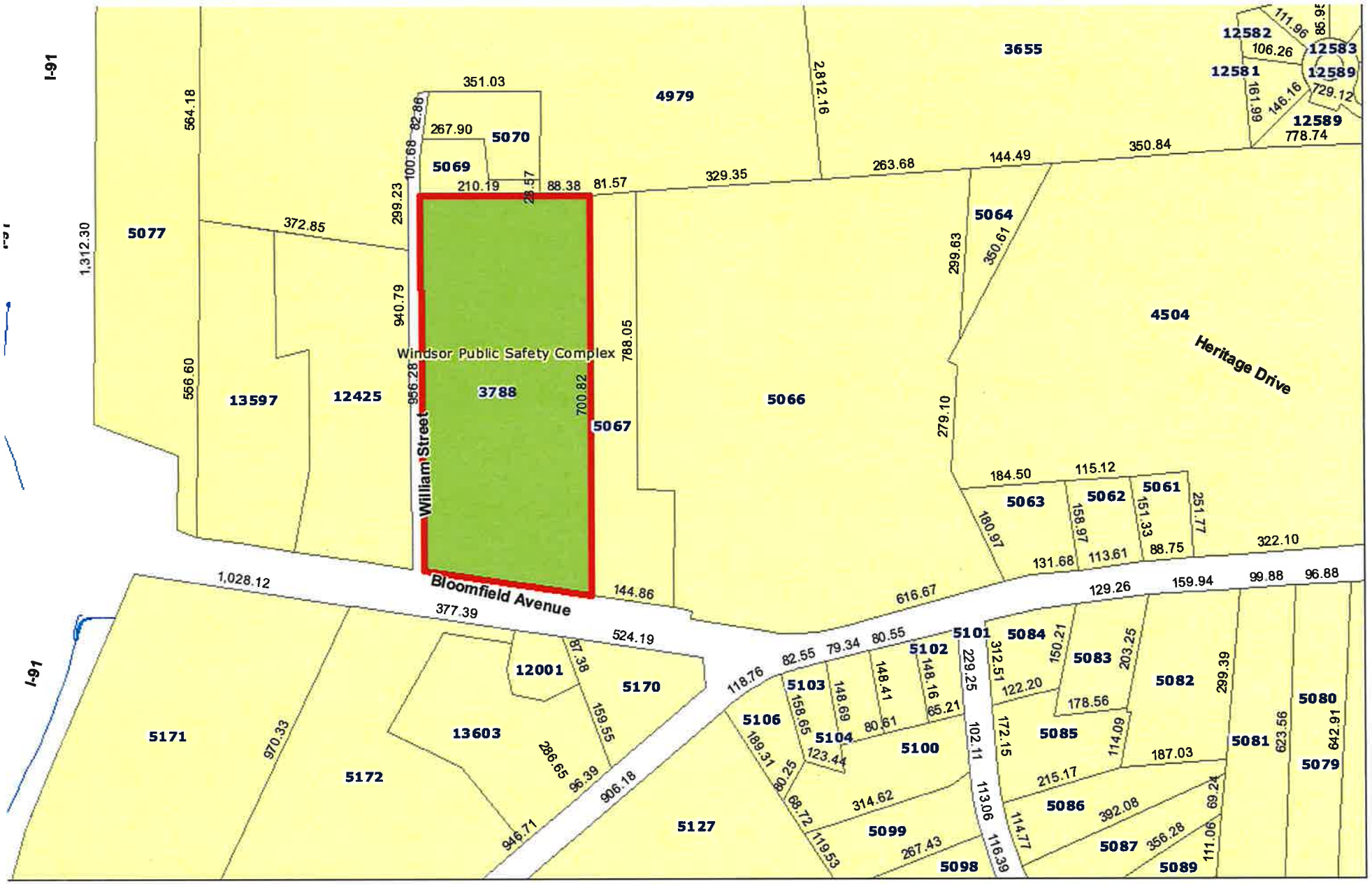
Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Oct 29 2018

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

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

855662 – WINDSORCENTRAL
Exposure C, Topographic Category 1

ATTACHMENT 4



Hartford County, Connecticut

Horizontal Datum is Connecticut State Plane Feet, NAD83

1 inch = 299 feet

0 125 250 500 Feet

Property Boundaries not legally binding for title or zoning purposes.

The Town of Windsor makes no warranty as to th accuracy, reliability, or completeness of the information and is not responsible for any error or omissions for results obtained from the use of the information.

340 BLOOMFIELD AVE

Property Details

Property Owner: WINDSOR TOWN OF

Property Co-Owner PUBLIC SAFETY COMPLEX

Mailing Address 275 BROAD STREET
WINDSOR, CT
06095

File Code 3788

Land Area (Acres) 4.65000000

Census Tract 4736.02

Map 54

Block 456

Lot 98

Property Type Municipal MDL-94

Zone NZ

Construction Details

Year Built 1978

Building Style Fire Station

Stories 1

Grade Average

Building ID 5787

Total Rooms

Bedrooms

Bathrooms

Half Baths

Living Area

Exterior Wall Brick Veneer

Heating Type Forced Air

Heating Fuel Gas

AC Type Central

Valuation

Assessed Land Value $244,160

Assessed Building Value $1,941,730

Total Assessed Value $2,185,890

Appraised Land Value $348,800

Appraised Building Value $2,773,900

Total Appraised Value $3,122,700

Last Sale Date Aug 06, 1963

Last Sale Price $0

Qualified Sale

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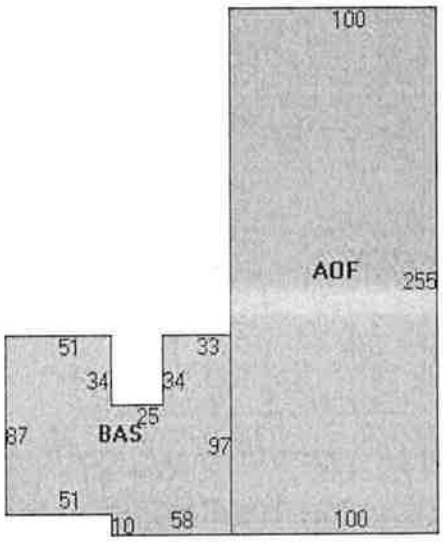
Parcel Sketch



Prior Owners

Prior Owners

Sale Date	Owner Name	Sale Price	Book / Page

Sub Area Detail

Code	Gross Area (Sq Ft)	Living Area (Sq Ft)
AOF	25500	25500
BAS	9213	9213

Outbuildings & Extra Features

Code	Description	Appraised Value	Assessed Value
0	PAVING-ASPHALT	$60000.00	$42000.00
0	ELEVATED TANK	$2000.00	$1400.00
0	SHED FRAME	$4400.00	$3080.00
0	LIGHTS-IN W/PL	$13400.00	$9380.00
0	W/DOUBLE LIGHT	$5200.00	$3640.00
0	SHED FRAME	$2700.00	$1890.00

- **AOF** Office Area
- **APT** Apartment
- **BAS** First Floor
- **CAN** Canopy
- **CDN** Canopy (Det)
- **CLP** Loading Platform (Finished)
- **EAF** Attic (Expan)(Finished)
- **EAU** Attic (Expan)(Unfinished)
- **FAT** Attic (Finished)
- **FBM** Basement (Finished)
- **FCB** Cabana (Encl)(Finished)
- **FCP** Carport (Framed)
- **FDC** Carport (Det)(Framed)
- **FDS** Porch (Scrn)(Det)(Finished)
- **FDU** Utility (Det)(Finished)
- **FEP** Porch (Encl)(Finished)
- **FGR** Garage (Framed)
- **FHS** Half-Story (Finished)
- **FLL** Lower Level (Finished)
- **FOP** Porch (Open)(Finished)
- **FSP** Porch (Screen)(Finished)
- **FST** Utility (Finished)
- **FUS** Upper-Story (Finished)
- **PTO** Patio
- **SDA** Store Display Area
- **SFB** Base (Semi-Finished)
- **SPA** Service Prod Area
- **TQS** Three-Qtr Story
- **UAT** Attic (Unifinished)
- **UBM** Basement (Unfinished)
- **UCB** Cabana (Encl)(Unfinished)
- **UDS** Porch (Scrn)(Despan)(Unifinished)
- **UDU** Utility (Det)(Unifinished)
- **UEP** Porch (Encl)(Unfinished)
- **UHS** Half-Story (Unfinished)
- **ULP** Loading Platform (Unfinished)
- **UOP** Porch (Open)(Unfinished)
- **USP** Porch (Scrn)(Unfinished)
- **UST** Utility (Strg)(Unfinished)
- **UUS** Upper-Story (Unfinished)
- **WDK** Wood Deck

ATTACHMENT 5

UNITED STATES POSTAL SERVICE®

Certificate of Mailing — Firm

Name and Address of Sender	TOTAL NO. of Pieces Listed by Sender	TOTAL NO. of Pieces Received at Post Office™	Affix Stamp Here *Postmark with Date of Receipt.*
Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103	3	3	neopost 01/25/2019 US POSTAGE $002.38 ZIP 06103 041L12203037
	Postmaster, per *(name of receiving employee)*		

USPS® Tracking Number / Firm-specific Identifier	Address (Name, Street, City, State, and ZIP Code™)	Postage	Fee	Special Handling	Parcel Airlift
1.	Donald S. Trinks, Mayor Town of Windsor 275 Broad Street Windsor, CT 06095				
2.	Peter Souza, Town Manager Town of Windsor 275 Broad Street Windsor, CT 06095	OLD STATE HOUSE STA 06103 JAN 25 2019 USPS			
3.	Eric Barz, AICP, Town Planner Town of Windsor 275 Broad Street Windsor, CT 06095				
4.					
5.					
6.					