From: Mary Caulfield [mailto:mcaulfield@clinellc.com]
Sent: Monday, March 19, 2018 12:38 PM
To: CSC-DL Siting Council
Subject: RE: AT&T CT5154 / 10071028 // 4 Oliver Road, Enfield, CT // Notice of Exempt Mod

Good Afternoon,

Please find attached the updated soft copy for AT&T for an exempt modification at 4 Oliver Road, Enfield, CT, which contains the required proof the filings have been sent to the chief elected official, zoning official, underlying property and tower owner.

Please let me know should anything additional be needed.

Thanks,
Mary

Mary Caulfield
Site Acquisition Consultant
978.994.0252
mcaulfield@clinellc.com

From: Mary Caulfield
Sent: Friday, March 2, 2018 2:21 PM
To: 'siting.council@ct.gov' <siting.council@ct.gov>
Subject: AT&T CT5154 / 10071028 // 4 Oliver Road, Enfield, CT // Notice of Exempt Mod

Good Afternoon,

Please find attached a soft copy of a filing for AT&T for an exempt modification at 4 Oliver Road, Enfield, CT. Hard copies are in route to you and should arrive by close of business Monday, 3/5.

Please let me know should anything additional be needed.

Thanks,
Mary

CENTERLINE COMMUNICATIONS

Mary Caulfield | Site Acquisition Consultant
95 Ryan Drive, Suite 1 | Raynham, MA 02767
Cell: 978.994.0252 | Fax: 508.819.3017
mcaulfield@clinellc.com | www.centerlinecommunications.com

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

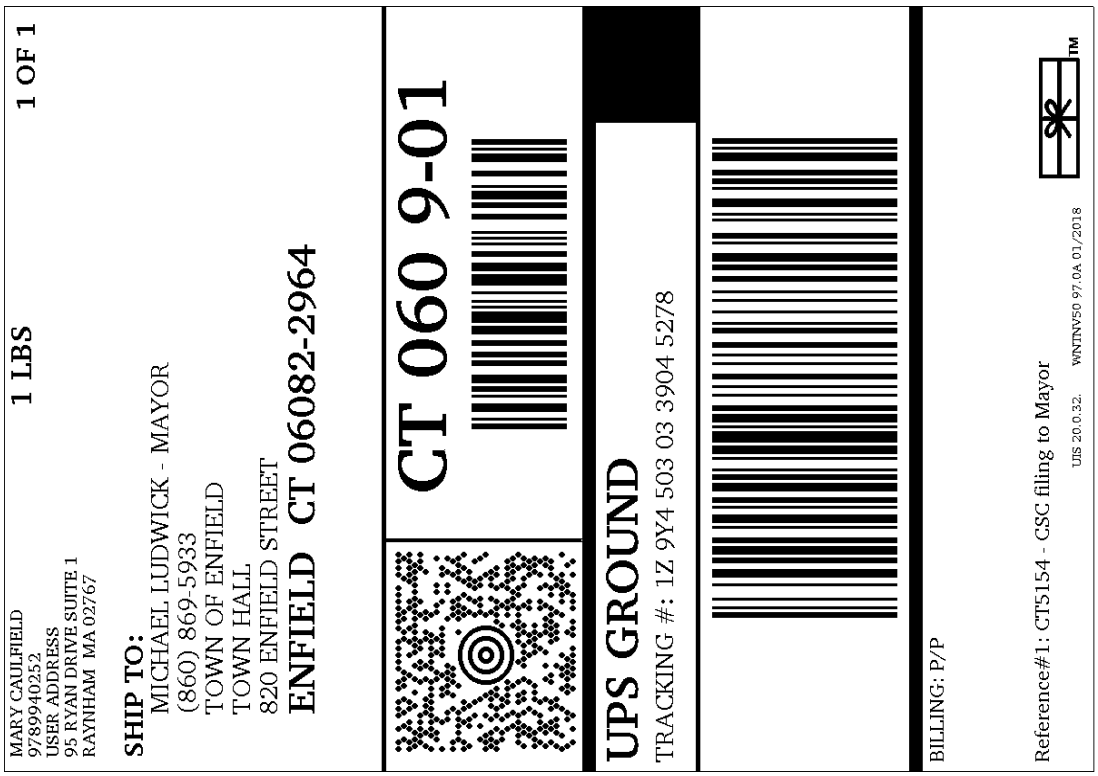
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages. Hand the package to any UPS driver in your area.

UPS Access Point™
138 EXPRESS 286
286 BROADWAY
TAUNTON ,MA 02780

UPS Access Point™
MARYN-LOCKR-STOP & SHOP
36 NEW STATE HWY
RAYNHAM ,MA 02767

UPS Access Point™
TAILORS R US
566 WASHINGTON ST
SOUTH EASTON ,MA 02375

FOLD HERE



UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

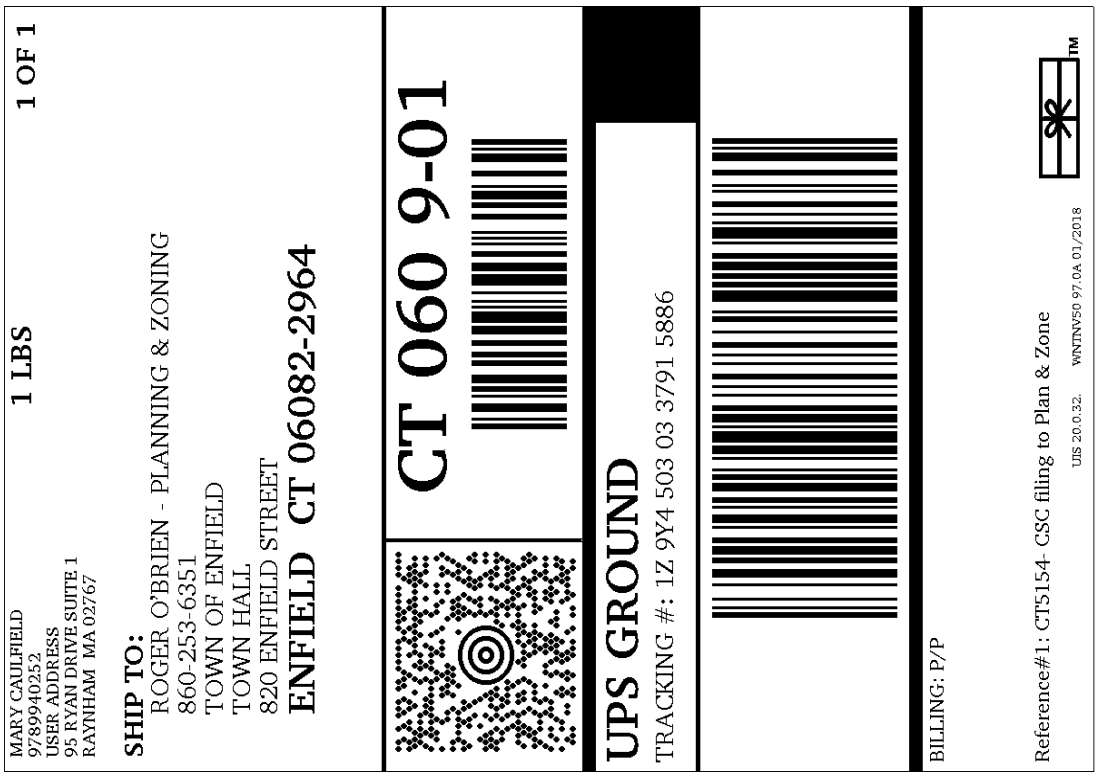
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
138 EXPRESS 286
286 BROADWAY
TAUNTON ,MA 02780

UPS Access Point™
MARYN-LOCKR-STOP & SHOP
36 NEW STATE HWY
RAYNHAM ,MA 02767

UPS Access Point™
TAILORS R US
566 WASHINGTON ST
SOUTH EASTON ,MA 02375

FOLD HERE



UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
   Hand the package to any UPS driver in your area.

UPS Access Point™
138 EXPRESS 286
286 BROADWAY
TAUNTON ,MA 02780

UPS Access Point™
MARYN-LOCKR-STOP & SHOP
36 NEW STATE HWY
RAYNHAM ,MA 02767

UPS Access Point™
TAILORS R US
566 WASHINGTON ST
SOUTH EASTON ,MA 02375

FOLD HERE

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

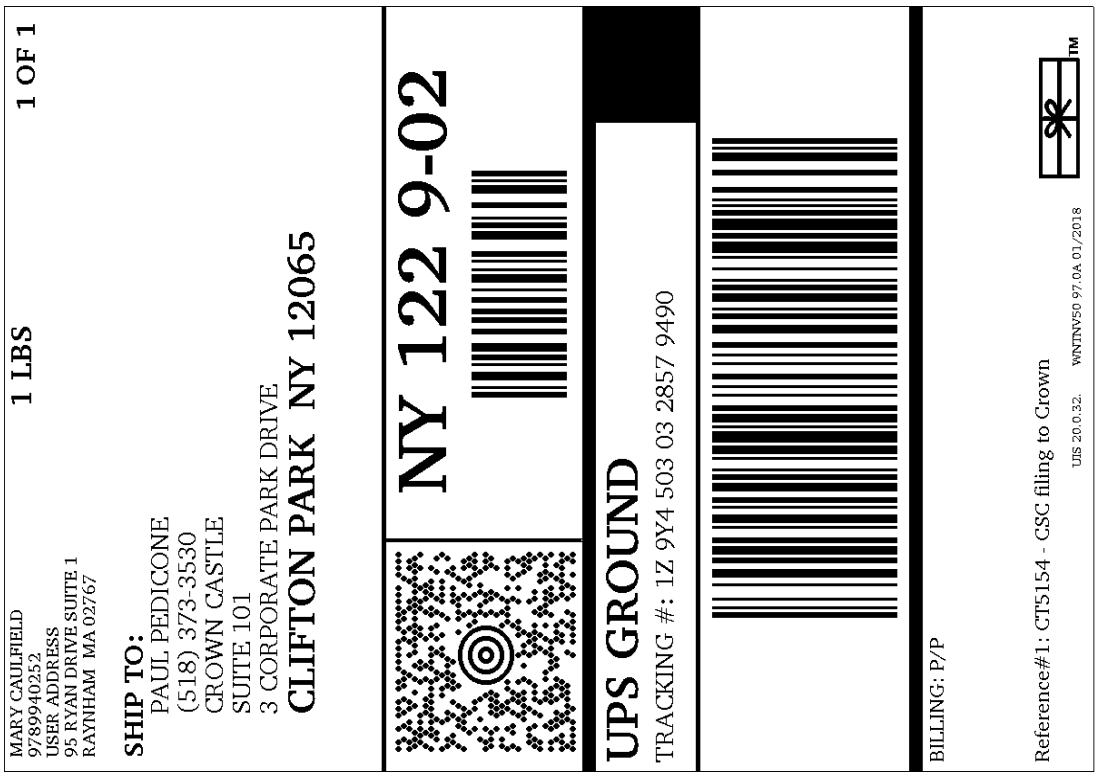
   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages. Hand the package to any UPS driver in your area.

UPS Access Point™
138 EXPRESS 286
286 BROADWAY
TAUNTON ,MA 02780

UPS Access Point™
MARYN-LOCKR-STOP & SHOP
36 NEW STATE HWY
RAYNHAM ,MA 02767

UPS Access Point™
TAILORS R US
566 WASHINGTON ST
SOUTH EASTON ,MA 02375

FOLD HERE



Mary Caulfield, Site Acquisition Consultant
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

March 2, 2018

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification // Site Number: CT5154 (Name: Enfield, CT)
4 Oliver Road, Enfield, CT 06082
N -72.5923194 // W -72.5923194

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains 9 total antennas at the 163-foot mount on the existing 160-foot monopole tower, located at 4 Oliver Road, Enfield, CT. The tower is owned by Crown Castle. The property is owned by Oliver Road Holding LLC. AT&T now intends to replace 6 of its existing antennas with 6 new LTE (700/1900/2300 band) antennas for its LTE upgrade. AT&T also intends to install 6 new remote radios and relocate 3 existing remote radios (1 at each sector); and certain in-cabinet upgrades at the base.

The current proposal involves an antenna swap only (six for six); no antennas will be added.

Note that this facility was originally approved by the CSC on September 18, 1991, Docket No. 139.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §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 Michael Ludwick, Mayor for the Town of Enfield, Rojer J. O'Brien, Director of Planning for the Town of Enfield, as well as the tower owner, Crown Castle, and the ground owner, Oliver Road Holding LLC.

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

Attached to accommodate this filing are construction drawings dated January 1, 2018 by Hudson Design Group LLC, a structural analysis dated October 19, 2017 by Paul J. Ford & Company and an Emissions Analysis Report dated January 22, 2018 by Centerline Communications, LLC.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications 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 antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading, pursuant to the structural analysis by Paul J. Ford & Company, dated October 19, 2017.

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

Sincerely,

_____

Mary Caulfield, Site Acquisition Consultant
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

cc: Michael Ludwick, Mayor, Town of Enfield
Roger J. O'Brien, Director of Planning, Town of Enfield
Crown Castle, Tower Owner
Oliver Road Holding LLC, Property Owner

PJF PAUL J. FORD & COMPANY

Date: **October 19, 2017**

Marianne Dunst
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6580

Paul J. Ford and Company
250 East Broad Street, Suite 600
Columbus, Ohio 43215
nmiller@pjfweb.com
614-221-6679

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5154
	Carrier Site Name:	Enfield, CT
Crown Castle Designation:	**Crown Castle BU Number:**	806373
	Crown Castle Site Name:	HRT 101 943232
	Crown Castle JDE Job Number:	448475
	Crown Castle Work Order Number:	1477020
	Crown Castle Application Number:	397763 Rev. 2
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37517-2810.002.7805
Site Data:	**4 Oliver Road, ENFIELD, Hartford County, CT**	
	Latitude *41° 57' 36.2"*, Longitude *-72° 35' 32.3"*	
	150 Foot - Monopole Tower with 10' Extension	

Dear Marianne Dunst,

Paul J. Ford and Company 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 1096833, in accordance with application 397763, revision 2.

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:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the referenced drawings for the determined available structural capacity to be effective.

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

Respectfully submitted by:

Nathan C. Miller

Nathan C. Miller, E.I.
Structural Engineer

STATE OF CONNECTICUT JUSTIN R. KLINE No. 30301 LICENSED PROFESSIONAL ENGINEER

10.20.17

tnxTower Report - version 7.0.5.1

PAUL J. FORD & COMPANY

Date: **October 19, 2017**

Marianne Dunst
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
704-405-6580

Paul J. Ford and Company
250 East Broad Street, Suite 600
Columbus, Ohio 43215
nmiller@pjfweb.com
614-221-6679

Subject: **Structural Analysis Report**

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5154
	Carrier Site Name:	Enfield, CT
Crown Castle Designation:	**Crown Castle BU Number:**	806373
	Crown Castle Site Name:	HRT 101 943232
	Crown Castle JDE Job Number:	448475
	Crown Castle Work Order Number:	1477020
	Crown Castle Application Number:	397763 Rev. 2
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37517-2810.002.7805
Site Data:	**4 Oliver Road, ENFIELD, Hartford County, CT**	
	Latitude *41° 57' 36.2"*, Longitude *-72° 35' 32.3"*	
	150 Foot - Monopole Tower with 10' Extension	

Dear Marianne Dunst,

Paul J. Ford and Company 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 1096833, in accordance with application 397763, revision 2.

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:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the referenced drawings for the determined available structural capacity to be effective.

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

Respectfully submitted by:

Nathan C. Miller, E.I.
Structural Engineer

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA
Table 1 - Proposed Antenna and Cable Information
Table 2 - Existing and Reserved Antenna and Cable Information
Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE
Table 4 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 5 - Section Capacity (Summary)
Table 6 – Tower Components vs. Capacity
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 160 ft Monopole tower designed by VALMONT in November of 1991. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
158.0	163.0	3	cci antennas	HPA-65R-BUU-H8 w/ MP	1 4	3/8 3/4	---
		3	cci antennas	TPA-65R-LCUUUU-H8 w/ MP			
		3	ericsson	RRUS 11			
	158.0	3	ericsson	RRUS 32			
		3	ericsson	RRUS 32 B2			
		2	raycap	DC6-48-60-18-8F			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
158.0	163.0	3	andrew	SBNH-1D6565C w/ MP	1 12	1/8 1-5/8	3
		3	powerwave	7770.00 w/ Mount Pipe			
		6	powerwave	LGP13519			
		6	powerwave	LGP21401			
		3	powerwave	7770.00 w/ Mount Pipe	1 2	3/8 3/4	1
	158.0	3	ericsson	RRUS 11 B12			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 303-1]			
149.0	149.0	3	alcatel lucent	B13 RRH 4X30	2	1-5/8	2
		3	alcatel lucent	PCS B25 RRH4x30			
		1	antel	BXA-80063/4CF w/ MP			
		2	antel	BXA-80080/4CF w/ MP			
		6	commscope	SBNHH-1D65B w/ MP			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	alcatel lucent	RRH4X45-AWS4 B66			
		1	antel	BXA-70063/6CF w/ MP	10	7/8	1
		1	antel	BXA-70063/6CFx4 w/ MP			
		1	antel	BXA-70063/6CFx6 w/ MP			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		1	tower mounts	Platform Mount [LP 602-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
137.0	138.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	---	---	1
	137.0	1	tower mounts	Side Arm Mount [SO 101-3]			
	135.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
135.0	139.0	1	andrew	VHLP2.5-11	1 3 1 6	5/8 1-1/4 1/2 1/4	1
		1	dragonwave	HORIZON COMPACT			
	135.0	3	alcatel lucent	TD-RRH8x20-25			
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe			
		1	motorola	TIMING 2000			
		1	rfs celwave	APXV9ERR18-C-A20 w/ Mount Pipe			
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	samsung telecommunications	WIMAX DAP HEAD			
		1	tower mounts	Platform Mount [LP 602-1]			
116.0	117.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	1 6	1-1/4 1-5/8	1
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
	116.0	1	tower mounts	T-Arm Mount [TA 602-3]			
47.0	48.0	1	lucent	KS24019-L112A	1	1/2	1
	47.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
---	---	---	---	---	---	---

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 07-07210G, 07/26/2007	821582	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 128355, 02/12/2013	3747614	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	SAC, 1991-16, 11/06/1991	821581	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 10614-91, 11/09/1991	822743	CCISITES
4-PROPOSED TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37516-2997.002.7700, 09/29/2016	6488069	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was modified in conformance with the referenced modification drawings.
5) Monopole will be modified in conformance with the referenced proposed modification drawings.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20x20x0.25	Pole	21.3%	Pass
155 - 150.5	Pole	TP20x20x0.25	Pole	36.4%	Pass
150.5 - 150	Pole	TP20.3x20.3x0.25	Pole	37.1%	Pass
150 - 145	Pole	TP21.325x20.3x0.25	Pole	30.4%	Pass
145 - 140	Pole	TP22.35x21.325x0.25	Pole	41.4%	Pass
140 - 135	Pole	TP23.375x22.35x0.25	Pole	52.1%	Pass
135 - 130	Pole	TP24.4x23.375x0.25	Pole	66.1%	Pass
130 - 125	Pole	TP25.425x24.4x0.25	Pole	78.6%	Pass
125 - 120	Pole	TP26.45x25.425x0.25	Pole	90.0%	Pass
120 - 119.75	Pole + Reinf.	TP26.501x26.45x0.3688	Reinf. 4 Tension Rupture	75.3%	Pass
119.75 - 114.75	Pole + Reinf.	TP27.526x26.501x0.3625	Reinf. 4 Tension Rupture	84.6%	Pass
114.75 - 111.75	Pole + Reinf.	TP28.141x27.526x0.3625	Reinf. 4 Tension Rupture	90.4%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
111.75 - 111.5	Pole + Reinf.	TP28.192x28.141x0.4	Reinf. 3 Tension Rupture	82.8%	Pass
111.5 - 106.5	Pole + Reinf.	TP29.217x28.192x0.3938	Reinf. 3 Tension Rupture	91.2%	Pass
106.5 - 102	Pole + Reinf.	TP31.13x29.217x0.3875	Reinf. 3 Tension Rupture	98.1%	Pass
102 - 97	Pole + Reinf.	TP30.665x29.64x0.5125	Reinf. 3 Tension Rupture	82.1%	Pass
97 - 92	Pole + Reinf.	TP31.69x30.665x0.5125	Reinf. 3 Tension Rupture	87.0%	Pass
92 - 87	Pole + Reinf.	TP32.715x31.69x0.5	Reinf. 3 Tension Rupture	91.4%	Pass
87 - 82	Pole + Reinf.	TP33.74x32.715x0.5	Reinf. 3 Tension Rupture	95.4%	Pass
82 - 79.33	Pole + Reinf.	TP34.288x33.74x0.5	Reinf. 3 Tension Rupture	97.5%	Pass
79.33 - 79.08	Pole + Reinf.	TP34.339x34.288x0.7625	Reinf. 6 Tension Rupture	77.1%	Pass
79.08 - 75.25	Pole + Reinf.	TP35.124x34.339x0.75	Reinf. 6 Tension Rupture	79.8%	Pass
75.25 - 75	Pole + Reinf.	TP35.176x35.124x0.75	Reinf. 6 Tension Rupture	80.0%	Pass
75 - 70	Pole + Reinf.	TP36.201x35.176x0.7375	Reinf. 6 Tension Rupture	83.3%	Pass
70 - 65	Pole + Reinf.	TP37.226x36.201x0.725	Reinf. 6 Tension Rupture	86.5%	Pass
65 - 63.25	Pole + Reinf.	TP37.585x37.226x0.725	Reinf. 6 Tension Rupture	87.6%	Pass
63.25 - 63	Pole + Reinf.	TP37.636x37.585x0.8	Reinf. 5 Compression	75.8%	Pass
63 - 58	Pole + Reinf.	TP38.661x37.636x0.775	Reinf. 5 Compression	78.5%	Pass
58 - 55	Pole + Reinf.	TP40.49x38.661x0.775	Reinf. 5 Compression	80.0%	Pass
55 - 48.08	Pole + Reinf.	TP39.945x38.526x0.8375	Reinf. 5 Compression	79.4%	Pass
48.08 - 43.08	Pole + Reinf.	TP40.97x39.945x0.8125	Reinf. 5 Compression	81.6%	Pass
43.08 - 38.08	Pole + Reinf.	TP41.994x40.97x0.8125	Reinf. 5 Compression	83.6%	Pass
38.08 - 37.75	Pole + Reinf.	TP42.062x41.994x0.8125	Reinf. 5 Compression	83.7%	Pass
37.75 - 37.5	Pole + Reinf.	TP42.113x42.062x0.8625	Reinf. 5 Compression	79.1%	Pass
37.5 - 35.75	Pole + Reinf.	TP42.472x42.113x0.8625	Reinf. 5 Compression	79.7%	Pass
35.75 - 35.5	Pole + Reinf.	TP42.523x42.472x0.5875	Reinf. 1 Compression	89.7%	Pass
35.5 - 30.5	Pole + Reinf.	TP43.548x42.523x0.575	Reinf. 1 Compression	91.2%	Pass
30.5 - 25.5	Pole + Reinf.	TP44.573x43.548x0.575	Reinf. 1 Compression	92.7%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.598x44.573x0.575	Reinf. 1 Compression	94.0%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.623x45.598x0.5688	Reinf. 1 Compression	95.2%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.648x46.623x0.5625	Reinf. 1 Compression	96.4%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.673x47.648x0.5625	Reinf. 1 Compression	97.4%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.698x48.673x0.5625	Reinf. 1 Compression	98.4%	Pass
0.5 - 0	Pole + Reinf.	TP49.8x49.698x0.5625	Reinf. 1 Compression	98.5%	Pass
				Summary	
			Pole	93.9%	Pass
			Reinforcement	98.5%	Pass
			Overall	98.5%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	99.8	Pass
1	Base Plate	0	64.0	Pass
1	Base Foundation Structural Steel	0	71.0	Pass
1	Base Foundation Soil Interaction	0	81.7	Pass
1	Extension Connection	150	20.9	Pass

Structure Rating (max from all components) =	**99.8%**

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

4.1) Recommendations

The monopole and its foundation will have sufficient capacity to carry the proposed loading configuration once the proposed modifications are installed.

- Install the modifications as per the proposed modification drawings referenced in Table 4.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97.00 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.00 ft.
8) Nominal ice thickness of 1.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56.00 pcf.
11) A wind speed of 50.00 mph is used in combination with ice.
12) Temperature drop of 50.00 °F.
13) Deflections calculated using a wind speed of 60.00 mph.
14) A non-linear (P-delta) analysis was used.
15) Pressures are calculated at each section.
16) Stress ratio used in pole design is 1.
17) 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-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric				

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	160.00-155.00	5.00	0.00	Round	20.0000	20.0000	0.2500		A53-B-35 (35 ksi)
L2	155.00-150.50	4.50	0.00	Round	20.0000	20.0000	0.2500		A53-B-35 (35 ksi)
L3	150.50-150.00	0.50	0.00	Round	20.3000	20.3000	0.2500		A53-B-35 (35 ksi)
L4	150.00-145.00	5.00	0.00	12	20.3000	21.3250	0.2500	1.0000	A572-65 (65 ksi)
L5	145.00-140.00	5.00	0.00	12	21.3250	22.3500	0.2500	1.0000	A572-65 (65 ksi)
L6	140.00-135.00	5.00	0.00	12	22.3500	23.3750	0.2500	1.0000	A572-65 (65 ksi)
L7	135.00-130.00	5.00	0.00	12	23.3750	24.3999	0.2500	1.0000	A572-65 (65 ksi)
L8	130.00-125.00	5.00	0.00	12	24.3999	25.4249	0.2500	1.0000	A572-65 (65 ksi)
L9	125.00-120.00	5.00	0.00	12	25.4249	26.4499	0.2500	1.0000	A572-65

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
L10	120.00-119.75	0.25	0.00	12	26.4499	26.5012	0.3688	1.4750	(65 ksi) A572-65 (65 ksi)
L11	119.75-114.75	5.00	0.00	12	26.5012	27.5262	0.3625	1.4500	A572-65 (65 ksi)
L12	114.75-111.75	3.00	0.00	12	27.5262	28.1411	0.3625	1.4500	A572-65 (65 ksi)
L13	111.75-111.50	0.25	0.00	12	28.1411	28.1924	0.4000	1.6000	A572-65 (65 ksi)
L14	111.50-106.50	5.00	0.00	12	28.1924	29.2174	0.3937	1.5750	A572-65 (65 ksi)
L15	106.50-97.17	9.33	4.83	12	29.2174	31.1300	0.3875	1.5500	A572-65 (65 ksi)
L16	97.17-97.00	5.00	0.00	12	29.6399	30.6650	0.5125	2.0500	A572-65 (65 ksi)
L17	97.00-92.00	5.00	0.00	12	30.6650	31.6902	0.5125	2.0500	A572-65 (65 ksi)
L18	92.00-87.00	5.00	0.00	12	31.6902	32.7153	0.5000	2.0000	A572-65 (65 ksi)
L19	87.00-82.00	5.00	0.00	12	32.7153	33.7404	0.5000	2.0000	A572-65 (65 ksi)
L20	82.00-79.33	2.67	0.00	12	33.7404	34.2879	0.5000	2.0000	A572-65 (65 ksi)
L21	79.33-79.08	0.25	0.00	12	34.2879	34.3391	0.7625	3.0500	A572-65 (65 ksi)
L22	79.08-75.25	3.83	0.00	12	34.3391	35.1244	0.7500	3.0000	A572-65 (65 ksi)
L23	75.25-75.00	0.25	0.00	12	35.1244	35.1756	0.7500	3.0000	A572-65 (65 ksi)
L24	75.00-70.00	5.00	0.00	12	35.1756	36.2008	0.7375	2.9500	A572-65 (65 ksi)
L25	70.00-65.00	5.00	0.00	12	36.2008	37.2259	0.7250	2.9000	A572-65 (65 ksi)
L26	65.00-63.25	1.75	0.00	12	37.2259	37.5847	0.7250	2.9000	A572-65 (65 ksi)
L27	63.25-63.00	0.25	0.00	12	37.5847	37.6360	0.8000	3.2000	A572-65 (65 ksi)
L28	63.00-58.00	5.00	0.00	12	37.6360	38.6611	0.7750	3.1000	A572-65 (65 ksi)
L29	58.00-49.08	8.92	5.92	12	38.6611	40.4900	0.7750	3.1000	A572-65 (65 ksi)
L30	49.08-48.08	6.92	0.00	12	38.5262	39.9447	0.8375	3.3500	A572-65 (65 ksi)
L31	48.08-43.08	5.00	0.00	12	39.9447	40.9696	0.8125	3.2500	A572-65 (65 ksi)
L32	43.08-38.08	5.00	0.00	12	40.9696	41.9945	0.8125	3.2500	A572-65 (65 ksi)
L33	38.08-37.75	0.33	0.00	12	41.9945	42.0621	0.8125	3.2500	A572-65 (65 ksi)
L34	37.75-37.50	0.25	0.00	12	42.0621	42.1133	0.8625	3.4500	A572-65 (65 ksi)
L35	37.50-35.75	1.75	0.00	12	42.1133	42.4720	0.8625	3.4500	A572-65 (65 ksi)
L36	35.75-35.50	0.25	0.00	12	42.4720	42.5233	0.5875	2.3500	A572-65 (65 ksi)
L37	35.50-30.50	5.00	0.00	12	42.5233	43.5482	0.5750	2.3000	A572-65 (65 ksi)
L38	30.50-25.50	5.00	0.00	12	43.5482	44.5731	0.5750	2.3000	A572-65 (65 ksi)
L39	25.50-20.50	5.00	0.00	12	44.5731	45.5980	0.5750	2.3000	A572-65 (65 ksi)
L40	20.50-15.50	5.00	0.00	12	45.5980	46.6228	0.5687	2.2750	A572-65 (65 ksi)
L41	15.50-10.50	5.00	0.00	12	46.6228	47.6477	0.5625	2.2500	A572-65 (65 ksi)
L42	10.50-5.50	5.00	0.00	12	47.6477	48.6726	0.5625	2.2500	A572-65 (65 ksi)
L43	5.50-0.50	5.00	0.00	12	48.6726	49.6975	0.5625	2.2500	A572-65 (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
L44	0.50-0.00	0.50		12	49.6975	49.8000	0.5625	2.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
L2	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
	20.0000	15.5116	756.4335	6.9832	10.0000	75.6434	1512.8671	7.7512	0.0000	0
L3	20.3000	15.7472	791.4264	7.0893	10.1500	77.9730	1582.8528	7.8689	0.0000	0
	20.3000	15.7472	791.4264	7.0893	10.1500	77.9730	1582.8528	7.8689	0.0000	0
L4	21.0161	16.1403	828.1804	7.1779	10.5154	78.7588	1678.1181	7.9437	4.7704	19.082
	22.0773	16.9654	961.7977	7.5448	11.0463	87.0693	1948.8628	8.3498	5.0451	20.18
L5	22.0773	16.9654	961.7977	7.5448	11.0463	87.0693	1948.8628	8.3498	5.0451	20.18
	23.1384	17.7905	1109.0650	7.9118	11.5773	95.7966	2247.2664	8.7559	5.3198	21.279
L6	23.1384	17.7905	1109.0650	7.9118	11.5773	95.7966	2247.2664	8.7559	5.3198	21.279
	24.1995	18.6156	1270.6462	8.2787	12.1082	104.9407	2574.6736	9.1620	5.5945	22.378
L7	24.1995	18.6156	1270.6462	8.2787	12.1082	104.9407	2574.6736	9.1620	5.5945	22.378
	25.2607	19.4407	1447.2054	8.6457	12.6392	114.5016	2932.4304	9.5681	5.8692	23.477
L8	25.2607	19.4407	1447.2054	8.6457	12.6392	114.5016	2932.4304	9.5681	5.8692	23.477
	26.3218	20.2658	1639.4063	9.0126	13.1701	124.4793	3321.8816	9.9742	6.1439	24.576
L9	26.3218	20.2658	1639.4063	9.0126	13.1701	124.4793	3321.8816	9.9742	6.1439	24.576
	27.3830	21.0909	1847.9128	9.3796	13.7011	134.8738	3744.3724	10.3803	6.4186	25.674
L10	27.3830	30.9681	2688.7772	9.3371	13.7011	196.2460	5448.1915	15.2416	6.1003	16.543
	27.4360	31.0290	2704.6585	9.3554	13.7276	197.0234	5480.3714	15.2715	6.1141	16.581
L11	27.4360	30.5104	2660.7250	9.3576	13.7276	193.8230	5391.3502	15.0163	6.1308	16.913
	28.4972	31.7068	2986.1678	9.7246	14.2585	209.4300	6050.7856	15.6051	6.4055	17.67
L12	28.4972	31.7068	2986.1678	9.7246	14.2585	209.4300	6050.7856	15.6051	6.4055	17.67
	29.1339	32.4246	3193.6169	9.9448	14.5771	219.0844	6471.1337	15.9584	6.5703	18.125
L13	29.1339	35.7306	3509.7386	9.9313	14.5771	240.7705	7111.6819	17.5855	6.4698	16.175
	29.1869	35.7966	3529.2266	9.9497	14.6037	241.6673	7151.1700	17.6180	6.4836	16.209
L14	29.1869	35.2452	3476.4268	9.9519	14.6037	238.0518	7044.1831	17.3466	6.5003	16.509
	30.2481	36.5448	3875.3259	10.3189	15.1346	256.0574	7852.4609	17.9862	6.7750	17.206
L15	30.2481	35.9725	3816.2942	10.3211	15.1346	252.1569	7732.8468	17.7046	6.7918	17.527
	32.2281	38.3590	4627.3364	11.0058	16.1253	286.9605	9376.2381	18.8791	7.3043	18.85
L16	31.7107	48.0674	5205.2218	10.4276	15.3534	339.0262	10547.1906	23.6573	6.5700	12.819
	31.7468	49.7592	5774.3893	10.7946	15.8845	363.5241	11700.4782	24.4900	6.8447	13.356
L17	31.7468	49.7592	5774.3893	10.7946	15.8845	363.5241	11700.4782	24.4900	6.8447	13.356
	32.8081	51.4509	6383.6048	11.1616	16.4155	388.8767	12934.9140	25.3226	7.1195	13.892
L18	32.8081	50.2161	6235.4009	11.1661	16.4155	379.8484	12634.6128	24.7149	7.1530	14.306
	33.8694	51.8666	6870.6579	11.5331	16.9465	405.4317	13921.8157	25.5272	7.4277	14.855
L19	33.8694	51.8666	6870.6579	11.5331	16.9465	405.4317	13921.8157	25.5272	7.4277	14.855
	34.9307	53.5171	7547.6591	11.9001	17.4775	431.8488	15293.6035	26.3395	7.7024	15.405
L20	34.9307	53.5171	7547.6591	11.9001	17.4775	431.8488	15293.6035	26.3395	7.7024	15.405
	35.4974	54.3985	7926.7351	12.0961	17.7611	446.2971	16061.7144	26.7733	7.8491	15.698
L21	35.4974	82.3132	11808.7108	12.0021	17.7611	664.8630	23927.6496	40.5120	7.1456	9.371
	35.5505	82.4390	11862.9567	12.0204	17.7877	666.9203	24037.5665	40.5740	7.1594	9.389
L22	35.5505	81.1177	11681.5188	12.0249	17.7877	656.7201	23669.9241	39.9237	7.1929	9.591
	36.3634	83.0142	12520.1083	12.3060	18.1944	688.1285	25369.1338	40.8570	7.4033	9.871
L23	36.3634	83.0142	12520.1083	12.3060	18.1944	688.1285	25369.1338	40.8570	7.4033	9.871

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
	36.4165	83.1379	12576.2006	12.3244	18.2210	690.2042	25482.7920	40.9180	7.4171	9.889
L24	36.4165	81.7820	12380.0732	12.3289	18.2210	679.4404	25085.3846	40.2506	7.4506	10.102
	37.4778	84.2165	13518.8898	12.6959	18.7520	720.9301	27392.9358	41.4488	7.7253	10.475
L25	37.4778	82.8182	13303.8140	12.7003	18.7520	709.4607	26957.1340	40.7606	7.7588	10.702
	38.5391	85.2114	14490.7847	13.0673	19.2830	751.4784	29362.2584	41.9385	8.0336	11.081
L26	38.5391	85.2114	14490.7847	13.0673	19.2830	751.4784	29362.2584	41.9385	8.0336	11.081
	38.9106	86.0491	14922.3285	13.1958	19.4689	766.4702	30236.6831	42.3507	8.1297	11.213
L27	38.9106	94.7575	16365.7098	13.1689	19.4689	840.6081	33161.3650	46.6368	7.9287	9.911
	38.9637	94.8895	16434.2186	13.1873	19.4954	842.9773	33300.1825	46.7017	7.9424	9.928
L28	38.9637	91.9866	15953.0866	13.1962	19.4954	818.2981	32325.2785	45.2730	8.0094	10.335
	40.0250	94.5449	17321.4657	13.5632	20.0265	864.9285	35097.9856	46.5321	8.2842	10.689
L29	40.0250	94.5449	17321.4657	13.5632	20.0265	864.9285	35097.9856	46.5321	8.2842	10.689
	41.9183	99.1088	19952.9551	14.2180	20.9738	951.3267	40430.0965	48.7783	8.7743	11.322
L30	41.1416	101.6371	18427.2733	13.4926	19.9566	923.3680	37338.6517	50.0227	8.0805	9.648
	41.3538	105.4623	20587.1362	14.0004	20.6913	994.9638	41715.1195	51.9053	8.4607	10.102
L31	41.3538	102.3796	20010.9229	14.0093	20.6913	967.1158	40547.5551	50.3881	8.5277	10.496
	42.4148	105.0609	21624.7445	14.3762	21.2222	1018.9665	43817.5951	51.7078	8.8023	10.834
L32	42.4148	105.0609	21624.7445	14.3762	21.2222	1018.9665	43817.5951	51.7078	8.8023	10.834
	43.4759	107.7423	23323.0806	14.7431	21.7531	1072.1715	47258.8844	53.0275	9.0770	11.172
L33	43.4759	107.7423	23323.0806	14.7431	21.7531	1072.1715	47258.8844	53.0275	9.0770	11.172
	43.5459	107.9192	23438.1967	14.7674	21.7882	1075.7307	47492.1410	53.1146	9.0951	11.194
L34	43.5459	114.4216	24790.1813	14.7495	21.7882	1137.7820	50231.6283	56.3148	8.9611	10.39
	43.5989	114.5639	24882.7984	14.7678	21.8147	1140.6432	50419.2956	56.3849	8.9749	10.406
L35	43.5989	114.5639	24882.7984	14.7678	21.8147	1140.6432	50419.2956	56.3849	8.9749	10.406
	43.9703	115.5601	25537.5906	14.8962	22.0005	1160.7721	51746.0821	56.8752	9.0710	10.517
L36	43.9703	79.2351	17742.3520	14.9947	22.0005	806.4515	35950.8154	38.9971	9.8080	16.694
	44.0234	79.3320	17807.5541	15.0130	22.0271	808.4397	36082.9325	39.0448	9.8217	16.718
L37	44.0234	77.6673	17444.2598	15.0175	22.0271	791.9466	35346.7996	38.2255	9.8552	17.14
	45.0844	79.5648	18754.3568	15.3844	22.5580	831.3854	38001.4115	39.1594	10.1299	17.617
L38	45.0844	79.5648	18754.3568	15.3844	22.5580	831.3854	38001.4115	39.1594	10.1299	17.617
	46.1454	81.4624	20128.4585	15.7513	23.0888	871.7826	40785.7140	40.0933	10.4046	18.095
L39	46.1454	81.4624	20128.4585	15.7513	23.0888	871.7826	40785.7140	40.0933	10.4046	18.095
	47.2065	83.3600	21568.0927	16.1182	23.6197	913.1384	43702.8031	41.0273	10.6793	18.573
L40	47.2065	82.4654	21342.5426	16.1205	23.6197	903.5891	43245.7775	40.5869	10.6960	18.806
	48.2675	84.3423	22833.2650	16.4874	24.1506	945.4520	46266.3853	41.5107	10.9707	19.289

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
L41	48.2675	83.4268	22591.5452	16.4896	24.1506	935.4431	45776.5955	41.0601	10.9874	19.533
	49.3286	85.2831	24133.4020	16.8565	24.6815	977.7921	48900.8154	41.9738	11.2621	20.021
L42	49.3286	85.2831	24133.4020	16.8565	24.6815	977.7921	48900.8154	41.9738	11.2621	20.021
	50.3896	87.1395	25743.8651	17.2234	25.2124	1021.0788	52164.0501	42.8874	11.5368	20.51
L43	50.3896	87.1395	25743.8651	17.2234	25.2124	1021.0788	52164.0501	42.8874	11.5368	20.51
	51.4506	88.9958	27424.4244	17.5903	25.7433	1065.3029	55569.3190	43.8010	11.8114	20.998
L44	51.4506	88.9958	27424.4244	17.5903	25.7433	1065.3029	55569.3190	43.8010	11.8114	20.998
	51.5568	89.1814	27596.3936	17.6270	25.7964	1069.7769	55917.7751	43.8924	11.8389	21.047

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 160.00-155.00				1	1	1			
L2 155.00-150.50				1	1	1			
L3 150.50-150.00				1	1	1			
L4 150.00-145.00				1	1	1			
L5 145.00-140.00				1	1	1			
L6 140.00-135.00				1	1	1			
L7 135.00-130.00				1	1	1			
L8 130.00-125.00				1	1	1			
L9 125.00-120.00				1	1	1			
L10 120.00-119.75				1	1	0.971514			
L11 119.75-114.75				1	1	0.976769			
L12 114.75-111.75				1	1	0.970413			
L13 111.75-111.50				1	1	0.964081			
L14 111.50-106.50				1	1	0.966922			
L15 106.50-97.17				1	1	0.971852			
L16 97.17-97.00				1	1	0.976551			
L17 97.00-92.00				1	1	0.968501			
L18 92.00-87.00				1	1	0.984604			
L19 87.00-82.00				1	1	0.977369			
L20 82.00-79.33				1	1	0.973685			
L21 79.33-79.08				1	1	0.939347			
L22 79.08-75.25				1	1	0.944261			
L23 75.25-75.00				1	1	0.9436			
L24 75.00-				1	1	0.946214			

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
70.00									
L25 70.00-65.00				1	1	0.949692			
L26 65.00-63.25				1	1	0.945483			
L27 63.25-63.00				1	1	0.937201			
L28 63.00-58.00				1	1	0.95371			
L29 58.00-49.08				1	1	0.946204			
L30 49.08-48.08				1	1	0.944353			
L31 48.08-43.08				1	1	0.961703			
L32 43.08-38.08				1	1	0.95117			
L33 38.08-37.75				1	1	0.950494			
L34 37.75-37.50				1	1	0.948443			
L35 37.50-35.75				1	1	0.94464			
L36 35.75-35.50				1	1	0.974564			
L37 35.50-30.50				1	1	0.989859			
L38 30.50-25.50				1	1	0.984525			
L39 25.50-20.50				1	1	0.979434			
L40 20.50-15.50				1	1	0.985145			
L41 15.50-10.50				1	1	0.991207			
L42 10.50-5.50				1	1	0.98666			
L43 5.50-0.50				1	1	0.982303			
L44 0.50-0.00				1	1	0.981877			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	82.08 - 32.00	1	No Ice	0.21	0.00
						1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	113.50 - 0.00	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	121.25 - 113.50	1	No Ice	0.13	0.00
						1/2" Ice	0.24	0.00
						1" Ice	0.35	0.00
**********								
2" (Nominal) Conduit	C	No	Inside Pole	158.00 - 0.00	1	No Ice	0.00	0.72
						1/2" Ice	0.00	0.72
						1" Ice	0.00	0.72
FB-L98B-002-75000(3/8)	C	No	Inside Pole	158.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	158.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
FB-L98B-002-	C	No	Inside Pole	158.00 - 0.00	1	No Ice	0.00	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
75000(3/8)						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	158.00 - 0.00	4	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
***								
LDF5-50A(7/8)	C	No	Inside Pole	149.00 - 0.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
FLC 114-50J(1-1/4)	C	No	Inside Pole	149.00 - 0.00	1	No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
LDF5-50A(7/8)	C	No	Inside Pole	149.00 - 0.00	10	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	149.00 - 116.00	1	No Ice	0.20	1.30
						1/2" Ice	0.30	2.81
						1" Ice	0.40	4.94
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	116.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	2.81
						1" Ice	0.00	4.94
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	149.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	2.81
						1" Ice	0.00	4.94
***								
FSJ4-50B(1/2)	C	No	Inside Pole	135.00 - 0.00	1	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
LDF1-50A(1/4)	C	No	Inside Pole	135.00 - 0.00	6	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	135.00 - 0.00	1	No Ice	0.24	0.72
						1/2" Ice	0.34	2.48
						1" Ice	0.44	4.84
HB058-M12-XXXF(5/8)	C	No	Inside Pole	135.00 - 0.00	1	No Ice	0.00	0.24
						1/2" Ice	0.00	0.24
						1" Ice	0.00	0.24
HB114-1-08U4-M5J(1-1/4)	C	No	Inside Pole	135.00 - 0.00	3	No Ice	0.00	1.08
						1/2" Ice	0.00	1.08
						1" Ice	0.00	1.08
***								
AL7-50(1-5/8)	C	No	CaAa (Out Of Face)	116.00 - 0.00	2	No Ice	0.20	0.52
						1/2" Ice	0.30	2.02
						1" Ice	0.40	4.14
AL7-50(1-5/8)	C	No	CaAa (Out Of Face)	116.00 - 0.00	4	No Ice	0.00	0.52
						1/2" Ice	0.00	2.02
						1" Ice	0.00	4.14
MLE Hybrid 3Power/6Fiber RL 2(1-1/4)	C	No	CaAa (Out Of Face)	116.00 - 0.00	1	No Ice	0.00	0.68
						1/2" Ice	0.00	1.75
						1" Ice	0.00	3.43
***								
LDF4-50A(1/2)	C	No	CaAa (Out Of Face)	47.00 - 0.00	1	No Ice	0.06	0.15
						1/2" Ice	0.16	0.84
						1" Ice	0.26	2.14

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-155.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	155.00-150.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	150.50-150.00	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L4	150.00-145.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.792	0.05
L5	145.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.990	0.06
L6	140.00-135.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.990	0.06
L7	135.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.178	0.08
L8	130.00-125.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.178	0.08
L9	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.334	0.08
L10	120.00-119.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.140	0.00
L11	119.75-114.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.045	0.09
L12	114.75-111.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.336	0.06
L13	111.75-111.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.199	0.01
L14	111.50-106.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.10
L15	106.50-97.17	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	7.428	0.19
L16	97.17-97.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.135	0.00
L17	97.00-92.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.10
L18	92.00-87.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.981	0.10
L19	87.00-82.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.998	0.10
L20	82.00-79.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.682	0.05
L21	79.33-79.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.01
L22	79.08-75.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.847	0.08
L23	75.25-75.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.01
L24	75.00-70.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.022	0.10
L25	70.00-65.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.022	0.10
L26	65.00-63.25	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.758	0.04
L27	63.25-63.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.251	0.01
L28	63.00-58.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.022	0.10
L29	58.00-49.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.960	0.18
L30	49.08-48.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.004	0.02
L31	48.08-43.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.267	0.10
L32	43.08-38.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.335	0.10
L33	38.08-37.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.352	0.01
L34	37.75-37.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.267	0.01
L35	37.50-35.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.867	0.04
L36	35.75-35.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.267	0.01
L37	35.50-30.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.022	0.10
L38	30.50-25.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.293	0.10
L39	25.50-20.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.293	0.10
L40	20.50-15.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.293	0.10
L41	15.50-10.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.293	0.10
L42	10.50-5.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.293	0.10
L43	5.50-0.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.293	0.10
L44	0.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.429	0.01

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	160.00-155.00	A	2.338	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L2	155.00-150.50	A	2.331	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.02
L3	150.50-150.00	A	2.327	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L4	150.00-145.00	A	2.323	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.650	0.15
L5	145.00-140.00	A	2.315	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.305	0.19
L6	140.00-135.00	A	2.307	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.297	0.19
L7	135.00-130.00	A	2.298	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.774	0.28
L8	130.00-125.00	A	2.289	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.756	0.28
L9	125.00-120.00	A	2.280	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.528	0.27
L10	120.00-119.75	A	2.275	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.494	0.01
L11	119.75-114.75	A	2.270	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.676	0.38
L12	114.75-111.75	A	2.262	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.917	0.43
L13	111.75-111.50	A	2.259	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.663	0.04
L14	111.50-106.50	A	2.254	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.246	0.70
L15	106.50-97.17	A	2.238	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	24.600	1.30
L16	97.17-97.00	A	2.228	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.448	0.02
L17	97.00-92.00	A	2.222	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.115	0.69
L18	92.00-87.00	A	2.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.066	0.68
L19	87.00-82.00	A	2.197	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.071	0.68
L20	82.00-79.33	A	2.187	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.781	0.36
L21	79.33-79.08	A	2.183	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.821	0.03
L22	79.08-75.25	A	2.177	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.557	0.51
L23	75.25-75.00	A	2.171	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.818	0.03
L24	75.00-70.00	A	2.164	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.322	0.66
L25	70.00-65.00	A	2.148	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	16.242	0.65
L26	65.00-63.25	A	2.137	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.665	0.23
L27	63.25-63.00	A	2.134	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.808	0.03
L28	63.00-58.00	A	2.125	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.119	0.64
L29	58.00-49.08	A	2.099	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	28.516	1.12
L30	49.08-48.08	A	2.079	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.197	0.13
L31	48.08-43.08	A	2.066	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.674	0.64
L32	43.08-38.08	A	2.042	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	18.039	0.64
L33	38.08-37.75	A	2.028	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.185	0.04
L34	37.75-37.50	A	2.026	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.897	0.03
L35	37.50-35.75	A	2.021	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.268	0.22
L36	35.75-35.50	A	2.015	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.894	0.03
L37	35.50-30.50	A	2.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	16.800	0.61
L38	30.50-25.50	A	1.967	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	14.349	0.60
L39	25.50-20.50	A	1.929	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	14.153	0.59
L40	20.50-15.50	A	1.882	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.914	0.58
L41	15.50-10.50	A	1.822	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.606	0.56
L42	10.50-5.50	A	1.736	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	13.164	0.53
L43	5.50-0.50	A	1.573	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.334	0.48
L44	0.50-0.00	A	1.227	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.057	0.04

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	160.00-155.00	0.0000	0.0000	0.0000	0.0000
L2	155.00-150.50	0.0000	0.0000	0.0000	0.0000
L3	150.50-150.00	0.0000	0.0000	0.0000	0.0000

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L4	150.00-145.00	-0.1835	0.1060	-0.4424	0.2554
L5	145.00-140.00	-0.2248	0.1298	-0.5332	0.3078
L6	140.00-135.00	-0.2258	0.1304	-0.5410	0.3124
L7	135.00-130.00	-0.4511	0.2605	-0.9223	0.5325
L8	130.00-125.00	-0.4544	0.2623	-0.9387	0.5420
L9	125.00-120.00	-0.4851	0.2801	-1.0268	0.5928
L10	120.00-119.75	-0.5647	0.3260	-1.2208	0.7048
L11	119.75-114.75	-0.6065	0.3502	-1.2904	0.7450
L12	114.75-111.75	-0.7380	0.4261	-1.4679	0.8475
L13	111.75-111.50	-0.7525	0.4344	-1.4819	0.8556
L14	111.50-106.50	-0.7560	0.4365	-1.4964	0.8640
L15	106.50-97.17	-0.7650	0.4417	-1.5344	0.8859
L16	97.17-97.00	-0.7678	0.4433	-1.5472	0.8933
L17	97.00-92.00	-0.7708	0.4450	-1.5578	0.8994
L18	92.00-87.00	-0.7765	0.4483	-1.5816	0.9131
L19	87.00-82.00	-0.7846	0.4530	-1.6084	0.9286
L20	82.00-79.33	-0.9390	0.5421	-1.8382	1.0613
L21	79.33-79.08	-0.9411	0.5433	-1.8461	1.0659
L22	79.08-75.25	-0.9440	0.5450	-1.8570	1.0722
L23	75.25-75.00	-0.9468	0.5466	-1.8678	1.0784
L24	75.00-70.00	-0.9504	0.5487	-1.8812	1.0861
L25	70.00-65.00	-0.9569	0.5525	-1.9059	1.1004
L26	65.00-63.25	-0.9612	0.5550	-1.9218	1.1095
L27	63.25-63.00	-0.9625	0.5557	-1.9264	1.1122
L28	63.00-58.00	-0.9657	0.5575	-1.9382	1.1190
L29	58.00-49.08	-0.9739	0.5623	-1.9675	1.1359
L30	49.08-48.08	-0.9754	0.5631	-1.9742	1.1398
L31	48.08-43.08	-1.0155	0.5863	-2.1013	1.2132
L32	43.08-38.08	-1.0313	0.5954	-2.1524	1.2427
L33	38.08-37.75	-1.0344	0.5972	-2.1625	1.2485
L34	37.75-37.50	-1.0348	0.5974	-2.1635	1.2491
L35	37.50-35.75	-1.0359	0.5981	-2.1671	1.2512
L36	35.75-35.50	-1.0370	0.5987	-2.1705	1.2532
L37	35.50-30.50	-0.9915	0.5724	-2.1125	1.2197
L38	30.50-25.50	-0.8789	0.5074	-1.9557	1.1291
L39	25.50-20.50	-0.8826	0.5096	-1.9619	1.1327
L40	20.50-15.50	-0.8862	0.5116	-1.9634	1.1336
L41	15.50-10.50	-0.8896	0.5136	-1.9580	1.1304
L42	10.50-5.50	-0.8929	0.5155	-1.9395	1.1198
L43	5.50-0.50	-0.8961	0.5174	-1.8838	1.0876
L44	0.50-0.00	-0.8978	0.5184	-1.7218	0.9941

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 5.00	0.00	158.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 5.00	0.00	158.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00	0.00	158.00	No Ice	5.75	4.25	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
			0.00					1/2"	6.18	5.01	0.10
			5.00					Ice	6.61	5.71	0.16
								1" Ice			
RRUS 11 B12	A	From Leg	4.00			0.00	158.00	No Ice	2.83	1.18	0.05
			0.00					1/2"	3.04	1.33	0.07
			0.00					Ice	3.26	1.48	0.10
								1" Ice			
RRUS 11 B12	B	From Leg	4.00			0.00	158.00	No Ice	2.83	1.18	0.05
			0.00					1/2"	3.04	1.33	0.07
			0.00					Ice	3.26	1.48	0.10
								1" Ice			
RRUS 11 B12	C	From Leg	4.00			0.00	158.00	No Ice	2.83	1.18	0.05
			0.00					1/2"	3.04	1.33	0.07
			0.00					Ice	3.26	1.48	0.10
								1" Ice			
DC6-48-60-18-8F	A	From Leg	4.00			0.00	158.00	No Ice	0.92	0.92	0.02
			0.00					1/2"	1.46	1.46	0.04
			0.00					Ice	1.64	1.64	0.06
								1" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00			0.00	158.00	No Ice	13.21	9.58	0.10
			0.00					1/2"	13.90	11.05	0.20
			5.00					Ice	14.59	12.50	0.30
								1" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00			0.00	158.00	No Ice	13.21	9.58	0.10
			0.00					1/2"	13.90	11.05	0.20
			5.00					Ice	14.59	12.50	0.30
								1" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00			0.00	158.00	No Ice	13.21	9.58	0.10
			0.00					1/2"	13.90	11.05	0.20
			5.00					Ice	14.59	12.50	0.30
								1" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	A	From Leg	4.00			0.00	158.00	No Ice	13.54	10.96	0.11
			0.00					1/2"	14.24	12.49	0.22
			5.00					Ice	14.95	14.04	0.33
								1" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00			0.00	158.00	No Ice	13.54	10.96	0.11
			0.00					1/2"	14.24	12.49	0.22
			5.00					Ice	14.95	14.04	0.33
								1" Ice			
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.00			0.00	158.00	No Ice	13.54	10.96	0.11
			0.00					1/2"	14.24	12.49	0.22
			5.00					Ice	14.95	14.04	0.33
								1" Ice			
RRUS 11	A	From Leg	4.00			0.00	158.00	No Ice	2.79	1.19	0.05
			0.00					1/2"	3.00	1.34	0.07
			5.00					Ice	3.21	1.50	0.10
								1" Ice			
RRUS 11	B	From Leg	4.00			0.00	158.00	No Ice	2.79	1.19	0.05
			0.00					1/2"	3.00	1.34	0.07
			5.00					Ice	3.21	1.50	0.10
								1" Ice			
RRUS 11	C	From Leg	4.00			0.00	158.00	No Ice	2.79	1.19	0.05
			0.00					1/2"	3.00	1.34	0.07
			5.00					Ice	3.21	1.50	0.10
								1" Ice			
RRUS 32	A	From Leg	4.00			0.00	158.00	No Ice	2.86	1.78	0.06
			0.00					1/2"	3.08	1.97	0.08
			0.00					Ice	3.32	2.17	0.10
								1" Ice			
RRUS 32	B	From Leg	4.00			0.00	158.00	No Ice	2.86	1.78	0.06
			0.00					1/2"	3.08	1.97	0.08
			0.00					Ice	3.32	2.17	0.10
								1" Ice			
RRUS 32	C	From Leg	4.00			0.00	158.00	No Ice	2.86	1.78	0.06
			0.00					1/2"	3.08	1.97	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00					Ice	3.32	2.17	0.10
								1" Ice			
RRUS 32 B2	A	From Leg	4.00			0.00	158.00	No Ice	2.73	1.67	0.05
			0.00					1/2"	2.95	1.86	0.07
			0.00					Ice	3.18	2.05	0.10
								1" Ice			
RRUS 32 B2	B	From Leg	4.00			0.00	158.00	No Ice	2.73	1.67	0.05
			0.00					1/2"	2.95	1.86	0.07
			0.00					Ice	3.18	2.05	0.10
								1" Ice			
RRUS 32 B2	C	From Leg	4.00			0.00	158.00	No Ice	2.73	1.67	0.05
			0.00					1/2"	2.95	1.86	0.07
			0.00					Ice	3.18	2.05	0.10
								1" Ice			
(2) DC6-48-60-18-8F	A	From Leg	4.00			0.00	158.00	No Ice	0.92	0.92	0.02
			0.00					1/2"	1.46	1.46	0.04
			0.00					Ice	1.64	1.64	0.06
								1" Ice			
Platform Mount [LP 303-1]	C	None				0.00	158.00	No Ice	14.66	14.66	1.25
								1/2"	18.87	18.87	1.48
								Ice	23.08	23.08	1.71
								1" Ice			
***											
BXA-70063/6CFx6 w/ Mount Pipe	A	From Leg	4.00			0.00	149.00	No Ice	7.81	5.40	0.04
			0.00					1/2"	8.36	6.55	0.10
			0.00					Ice	8.87	7.41	0.17
								1" Ice			
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00			0.00	149.00	No Ice	7.82	5.41	0.04
			0.00					1/2"	8.37	6.56	0.10
			0.00					Ice	8.89	7.42	0.17
								1" Ice			
BXA-70063/6CFx4 w/ Mount Pipe	C	From Leg	4.00			0.00	149.00	No Ice	7.81	5.40	0.04
			0.00					1/2"	8.36	6.55	0.10
			0.00					Ice	8.87	7.41	0.17
								1" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	4.00			0.00	149.00	No Ice	4.80	2.00	0.04
			0.00					1/2"	5.07	2.19	0.08
			0.00					Ice	5.35	2.39	0.12
								1" Ice			
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00			0.00	149.00	No Ice	4.95	3.42	0.03
			0.00					1/2"	5.32	4.02	0.07
			0.00					Ice	5.71	4.64	0.12
								1" Ice			
BXA-80080/4CF w/ Mount Pipe	B	From Leg	4.00			0.00	149.00	No Ice	5.04	4.03	0.03
			0.00					1/2"	5.42	4.65	0.08
			0.00					Ice	5.81	5.28	0.13
								1" Ice			
BXA-80080/4CF w/ Mount Pipe	C	From Leg	4.00			0.00	149.00	No Ice	5.04	4.03	0.03
			0.00					1/2"	5.42	4.65	0.08
			0.00					Ice	5.81	5.28	0.13
								1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00			0.00	149.00	No Ice	8.40	7.07	0.07
			0.00					1/2"	8.96	8.26	0.14
			0.00					Ice	9.49	9.18	0.21
								1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00			0.00	149.00	No Ice	8.40	7.07	0.07
			0.00					1/2"	8.96	8.26	0.14
			0.00					Ice	9.49	9.18	0.21
								1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00			0.00	149.00	No Ice	8.40	7.07	0.07
			0.00					1/2"	8.96	8.26	0.14
			0.00					Ice	9.49	9.18	0.21
								1" Ice			
B13 RRH 4X30	A	From Leg	4.00			0.00	149.00	No Ice	2.06	1.32	0.06
			0.00					1/2"	2.24	1.48	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00					Ice	2.43	1.64	0.09
								1" Ice			
B13 RRH 4X30	B	From Leg	4.00			0.00	149.00	No Ice	2.06	1.32	0.06
			0.00					1/2"	2.24	1.48	0.07
			0.00					Ice	2.43	1.64	0.09
								1" Ice			
B13 RRH 4X30	C	From Leg	4.00			0.00	149.00	No Ice	2.06	1.32	0.06
			0.00					1/2"	2.24	1.48	0.07
			0.00					Ice	2.43	1.64	0.09
								1" Ice			
PCS B25 RRH4x30	A	From Leg	4.00			0.00	149.00	No Ice	2.20	1.74	0.06
			0.00					1/2"	2.39	1.92	0.08
			0.00					Ice	2.59	2.11	0.10
								1" Ice			
PCS B25 RRH4x30	B	From Leg	4.00			0.00	149.00	No Ice	2.20	1.74	0.06
			0.00					1/2"	2.39	1.92	0.08
			0.00					Ice	2.59	2.11	0.10
								1" Ice			
PCS B25 RRH4x30	C	From Leg	4.00			0.00	149.00	No Ice	2.20	1.74	0.06
			0.00					1/2"	2.39	1.92	0.08
			0.00					Ice	2.59	2.11	0.10
								1" Ice			
RRH4X45-AWS4 B66	A	From Leg	4.00			0.00	149.00	No Ice	2.66	1.59	0.06
			0.00					1/2"	2.88	1.77	0.08
			0.00					Ice	3.10	1.96	0.11
								1" Ice			
RRH4X45-AWS4 B66	B	From Leg	4.00			0.00	149.00	No Ice	2.66	1.59	0.06
			0.00					1/2"	2.88	1.77	0.08
			0.00					Ice	3.10	1.96	0.11
								1" Ice			
RRH4X45-AWS4 B66	C	From Leg	4.00			0.00	149.00	No Ice	2.66	1.59	0.06
			0.00					1/2"	2.88	1.77	0.08
			0.00					Ice	3.10	1.96	0.11
								1" Ice			
DB-T1-6Z-8AB-0Z	C	From Leg	4.00			0.00	149.00	No Ice	4.80	2.00	0.04
			0.00					1/2"	5.07	2.19	0.08
			0.00					Ice	5.35	2.39	0.12
								1" Ice			
Platform Mount [LP 602-1]	C	None				0.00	149.00	No Ice	32.03	32.03	1.34
								1/2"	38.71	38.71	1.80
								Ice	45.39	45.39	2.26
								1" Ice			
***											
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.00			0.00	137.00	No Ice	2.32	2.24	0.06
			0.00					1/2"	2.53	2.44	0.08
			1.00					Ice	2.74	2.65	0.11
								1" Ice			
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00			0.00	137.00	No Ice	2.32	2.24	0.06
			0.00					1/2"	2.53	2.44	0.08
			1.00					Ice	2.74	2.65	0.11
								1" Ice			
PCS 1900MHz 4x45W-65MHz	C	From Leg	4.00			0.00	137.00	No Ice	2.32	2.24	0.06
			0.00					1/2"	2.53	2.44	0.08
			1.00					Ice	2.74	2.65	0.11
								1" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	4.00			0.00	137.00	No Ice	2.06	1.93	0.06
			0.00					1/2"	2.24	2.11	0.09
			-2.00					Ice	2.43	2.29	0.11
								1" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	4.00			0.00	137.00	No Ice	2.06	1.93	0.06
			0.00					1/2"	2.24	2.11	0.09
			-2.00					Ice	2.43	2.29	0.11
								1" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	4.00			0.00	137.00	No Ice	2.06	1.93	0.06
			0.00					1/2"	2.24	2.11	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			-2.00				Ice	2.43	2.29	0.11
							1" Ice			
Side Arm Mount [SO 101-3]	C	None			0.00	137.00	No Ice	7.50	7.50	0.25
							1/2" Ice	8.90	8.90	0.33
							1" Ice	10.30	10.30	0.41
***										
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.00	0.00	0.00	135.00	No Ice	4.54	2.98	0.05
			0.00				1/2" Ice	4.89	3.53	0.08
			0.00				1" Ice	5.25	4.09	0.13
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.00	0.00	0.00	135.00	No Ice	4.54	2.98	0.05
			0.00				1/2" Ice	4.89	3.53	0.08
			0.00				1" Ice	5.25	4.09	0.13
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	135.00	No Ice	4.54	2.98	0.05
			0.00				1/2" Ice	4.89	3.53	0.08
			0.00				1" Ice	5.25	4.09	0.13
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.00	0.00	135.00	No Ice	8.26	6.95	0.08
			0.00				1/2" Ice	8.82	8.13	0.15
			0.00				1" Ice	9.35	9.02	0.23
APXV9ERR18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.00	0.00	135.00	No Ice	8.26	7.47	0.09
			0.00				1/2" Ice	8.82	8.66	0.16
			0.00				1" Ice	9.35	9.56	0.24
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	135.00	No Ice	8.26	6.95	0.08
			0.00				1/2" Ice	8.82	8.13	0.15
			0.00				1" Ice	9.35	9.02	0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.00	0.00	135.00	No Ice	6.58	4.96	0.08
			0.00				1/2" Ice	7.03	5.75	0.13
			0.00				1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.00	0.00	135.00	No Ice	6.58	4.96	0.08
			0.00				1/2" Ice	7.03	5.75	0.13
			0.00				1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.00	0.00	135.00	No Ice	6.58	4.96	0.08
			0.00				1/2" Ice	7.03	5.75	0.13
			0.00				1" Ice	7.47	6.47	0.19
TIMING 2000	A	From Leg	4.00	0.00	0.00	135.00	No Ice	0.11	0.11	0.00
			0.00				1/2" Ice	0.15	0.15	0.00
			0.00				1" Ice	0.20	0.20	0.01
TD-RRH8x20-25	A	From Leg	4.00	0.00	0.00	135.00	No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			0.00				1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	B	From Leg	4.00	0.00	0.00	135.00	No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			0.00				1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	4.00	0.00	0.00	135.00	No Ice	4.05	1.53	0.07
			0.00				1/2" Ice	4.30	1.71	0.10
			0.00				1" Ice	4.56	1.90	0.13
WIMAX DAP HEAD	A	From Leg	4.00	0.00	0.00	135.00	No Ice	1.55	0.68	0.03
			0.00				1/2" Ice	1.70	0.80	0.04
			0.00				1" Ice	1.87	0.92	0.06
WIMAX DAP HEAD	B	From Leg	4.00	0.00	0.00	135.00	No Ice	1.55	0.68	0.03
			0.00				1/2"	1.70	0.80	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	1.87	0.92	0.06
						1" Ice			
WIMAX DAP HEAD	C	From Leg	4.00	0.00	135.00	No Ice	1.55	0.68	0.03
			0.00			1/2"	1.70	0.80	0.04
			0.00			Ice	1.87	0.92	0.06
						1" Ice			
HORIZON COMPACT	C	From Leg	4.00	0.00	135.00	No Ice	0.72	0.37	0.01
			0.00			1/2"	0.83	0.45	0.02
			4.00			Ice	0.94	0.54	0.03
						1" Ice			
Platform Mount [LP 602-1]	C	None		0.00	135.00	No Ice	32.03	32.03	1.34
						1/2"	38.71	38.71	1.80
						Ice	45.39	45.39	2.26
						1" Ice			
***									
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.00	116.00	No Ice	11.68	9.84	0.08
			0.00			1/2"	12.40	11.37	0.17
			1.00			Ice	13.14	12.91	0.27
						1" Ice			
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.00	116.00	No Ice	11.68	9.84	0.08
			0.00			1/2"	12.40	11.37	0.17
			1.00			Ice	13.14	12.91	0.27
						1" Ice			
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.00	116.00	No Ice	11.68	9.84	0.08
			0.00			1/2"	12.40	11.37	0.17
			1.00			Ice	13.14	12.91	0.27
						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.00	116.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78	6.43	0.17
			1.00			Ice	7.21	7.13	0.23
						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.00	116.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78	6.43	0.17
			1.00			Ice	7.21	7.13	0.23
						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.00	116.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78	6.43	0.17
			1.00			Ice	7.21	7.13	0.23
						1" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.00	116.00	No Ice	6.32	5.63	0.11
			0.00			1/2"	6.76	6.42	0.17
			1.00			Ice	7.20	7.12	0.23
						1" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0.00	116.00	No Ice	6.32	5.63	0.11
			0.00			1/2"	6.76	6.42	0.17
			1.00			Ice	7.20	7.12	0.23
						1" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00	0.00	116.00	No Ice	6.32	5.63	0.11
			0.00			1/2"	6.76	6.42	0.17
			1.00			Ice	7.20	7.12	0.23
						1" Ice			
KRY 112 144/1	A	From Leg	4.00	0.00	116.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			1.00			Ice	0.51	0.30	0.02
						1" Ice			
KRY 112 144/1	B	From Leg	4.00	0.00	116.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			1.00			Ice	0.51	0.30	0.02
						1" Ice			
KRY 112 144/1	C	From Leg	4.00	0.00	116.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			1.00			Ice	0.51	0.30	0.02
						1" Ice			
RRUS 11 B12	A	From Leg	4.00	0.00	116.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07

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
			1.00			Ice	3.26	1.48	0.10
						1" Ice			
RRUS 11 B12	B	From Leg	4.00	0.00	116.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			1.00			Ice	3.26	1.48	0.10
						1" Ice			
RRUS 11 B12	C	From Leg	4.00	0.00	116.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			1.00			Ice	3.26	1.48	0.10
						1" Ice			
T-Arm Mount [TA 602-3]	C	None		0.00	116.00	No Ice	11.59	11.59	0.77
						1/2"	15.44	15.44	0.99
						Ice	19.29	19.29	1.21
						1" Ice			
***									
KS24019-L112A	B	From Leg	4.00	0.00	47.00	No Ice	0.14	0.14	0.01
			0.00			1/2"	0.20	0.20	0.01
			1.00			Ice	0.26	0.26	0.01
						1" Ice			
Side Arm Mount [SO 701-1]	B	None		0.00	47.00	No Ice	0.85	1.67	0.07
						1/2"	1.14	2.34	0.08
						Ice	1.43	3.01	0.09
						1" Ice			

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
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Leg	1.00	0.00		135.00	2.92	No Ice	6.68	0.05
				0.00					1/2" Ice	7.07	0.08
				4.00					1" Ice	7.46	0.12

Tower Pressures - No Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 160.00-155.00	157.50	1.393	31.87	8.333	A	0.000	8.333	8.333	100.00	0.000	0.000
					B	0.000	8.333		100.00	0.000	0.000
					C	0.000	8.333		100.00	0.000	0.000
L2 155.00-150.50	152.75	1.384	31.66	7.500	A	0.000	7.500	7.500	100.00	0.000	0.000
					B	0.000	7.500		100.00	0.000	0.000
					C	0.000	7.500		100.00	0.000	0.000
L3 150.50-150.00	150.25	1.379	31.55	0.846	A	0.000	0.846	0.846	100.00	0.000	0.000
					B	0.000	0.846		100.00	0.000	0.000
					C	0.000	0.846		100.00	0.000	0.000
L4 150.00-145.00	147.48	1.373	31.43	8.978	A	0.000	8.978	8.978	100.00	0.000	0.000
					B	0.000	8.978		100.00	0.000	0.000
					C	0.000	8.978		100.00	0.000	0.792
L5 145.00-140.00	142.48	1.364	31.20	9.420	A	0.000	9.420	9.420	100.00	0.000	0.000
					B	0.000	9.420		100.00	0.000	0.000
					C	0.000	9.420		100.00	0.000	0.990
L6 140.00-135.00	137.48	1.353	30.97	9.862	A	0.000	9.862	9.862	100.00	0.000	0.000
					B	0.000	9.862		100.00	0.000	0.000
					C	0.000	9.862		100.00	0.000	0.990
L7 135.00-	132.48	1.343	30.73	10.304	A	0.000	10.304	10.304	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
130.00					B	0.000	10.304		100.00	0.000	0.000
					C	0.000	10.304		100.00	0.000	2.178
L8 130.00-125.00	127.48	1.332	30.48	10.746	A	0.000	10.746	10.746	100.00	0.000	0.000
					B	0.000	10.746		100.00	0.000	0.000
					C	0.000	10.746		100.00	0.000	2.178
L9 125.00-120.00	122.48	1.321	30.22	11.188	A	0.000	11.188	11.188	100.00	0.000	0.000
					B	0.000	11.188		100.00	0.000	0.000
					C	0.000	11.188		100.00	0.000	2.334
L10 120.00-119.75	119.87	1.315	30.09	0.571	A	0.000	0.571	0.571	100.00	0.000	0.000
					B	0.000	0.571		100.00	0.000	0.000
					C	0.000	0.571		100.00	0.000	0.140
L11 119.75-114.75	117.23	1.309	29.95	11.653	A	0.000	11.653	11.653	100.00	0.000	0.000
					B	0.000	11.653		100.00	0.000	0.000
					C	0.000	11.653		100.00	0.000	3.045
L12 114.75-111.75	113.24	1.299	29.73	7.204	A	0.000	7.204	7.204	100.00	0.000	0.000
					B	0.000	7.204		100.00	0.000	0.000
					C	0.000	7.204		100.00	0.000	2.336
L13 111.75-111.50	111.62	1.295	29.64	0.608	A	0.000	0.608	0.608	100.00	0.000	0.000
					B	0.000	0.608		100.00	0.000	0.000
					C	0.000	0.608		100.00	0.000	0.199
L14 111.50-106.50	108.99	1.289	29.49	12.382	A	0.000	12.382	12.382	100.00	0.000	0.000
					B	0.000	12.382		100.00	0.000	0.000
					C	0.000	12.382		100.00	0.000	3.981
L15 106.50-97.17	101.79	1.27	29.07	24.288	A	0.000	24.288	24.288	100.00	0.000	0.000
					B	0.000	24.288		100.00	0.000	0.000
					C	0.000	24.288		100.00	0.000	7.428
L16 97.17-97.00	97.08	1.258	28.78	0.449	A	0.000	0.449	0.449	100.00	0.000	0.000
					B	0.000	0.449		100.00	0.000	0.000
					C	0.000	0.449		100.00	0.000	0.135
L17 97.00-92.00	94.49	1.251	28.62	13.449	A	0.000	13.449	13.449	100.00	0.000	0.000
					B	0.000	13.449		100.00	0.000	0.000
					C	0.000	13.449		100.00	0.000	3.981
L18 92.00-87.00	89.49	1.236	28.29	13.891	A	0.000	13.891	13.891	100.00	0.000	0.000
					B	0.000	13.891		100.00	0.000	0.000
					C	0.000	13.891		100.00	0.000	3.981
L19 87.00-82.00	84.49	1.221	27.95	14.333	A	0.000	14.333	14.333	100.00	0.000	0.000
					B	0.000	14.333		100.00	0.000	0.000
					C	0.000	14.333		100.00	0.000	3.998
L20 82.00-79.33	80.66	1.21	27.68	7.835	A	0.000	7.835	7.835	100.00	0.000	0.000
					B	0.000	7.835		100.00	0.000	0.000
					C	0.000	7.835		100.00	0.000	2.682
L21 79.33-79.08	79.20	1.205	27.57	0.740	A	0.000	0.740	0.740	100.00	0.000	0.000
					B	0.000	0.740		100.00	0.000	0.000
					C	0.000	0.740		100.00	0.000	0.251
L22 79.08-75.25	77.16	1.198	27.42	11.476	A	0.000	11.476	11.476	100.00	0.000	0.000
					B	0.000	11.476		100.00	0.000	0.000
					C	0.000	11.476		100.00	0.000	3.847
L23 75.25-75.00	75.12	1.192	27.27	0.758	A	0.000	0.758	0.758	100.00	0.000	0.000
					B	0.000	0.758		100.00	0.000	0.000
					C	0.000	0.758		100.00	0.000	0.251
L24 75.00-70.00	72.49	1.183	27.06	15.395	A	0.000	15.395	15.395	100.00	0.000	0.000
					B	0.000	15.395		100.00	0.000	0.000
					C	0.000	15.395		100.00	0.000	5.022
L25 70.00-65.00	67.49	1.165	26.66	15.837	A	0.000	15.837	15.837	100.00	0.000	0.000
					B	0.000	15.837		100.00	0.000	0.000
					C	0.000	15.837		100.00	0.000	5.022
L26 65.00-63.25	64.12	1.153	26.37	5.647	A	0.000	5.647	5.647	100.00	0.000	0.000
					B	0.000	5.647		100.00	0.000	0.000
					C	0.000	5.647		100.00	0.000	1.758
L27 63.25-63.00	63.12	1.149	26.29	0.811	A	0.000	0.811	0.811	100.00	0.000	0.000
					B	0.000	0.811		100.00	0.000	0.000
					C	0.000	0.811		100.00	0.000	0.251
L28 63.00-58.00	60.49	1.139	26.05	16.456	A	0.000	16.456	16.456	100.00	0.000	0.000
					B	0.000	16.456		100.00	0.000	0.000
					C	0.000	16.456		100.00	0.000	5.022
L29 58.00-49.08	53.51	1.109	25.39	30.456	A	0.000	30.456	30.456	100.00	0.000	0.000
					B	0.000	30.456		100.00	0.000	0.000
					C	0.000	30.456		100.00	0.000	8.960

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L30 49.08-48.08	48.58	1.087	24.88	3.437	A	0.000	3.437	3.437	100.00	0.000	0.000
					B	0.000	3.437		100.00	0.000	0.000
					C	0.000	3.437		100.00	0.000	1.004
L31 48.08-43.08	45.57	1.073	24.54	17.452	A	0.000	17.452	17.452	100.00	0.000	0.000
					B	0.000	17.452		100.00	0.000	0.000
					C	0.000	17.452		100.00	0.000	5.267
L32 43.08-38.08	40.57	1.047	23.95	17.894	A	0.000	17.894	17.894	100.00	0.000	0.000
					B	0.000	17.894		100.00	0.000	0.000
					C	0.000	17.894		100.00	0.000	5.335
L33 38.08-37.75	37.91	1.032	23.61	1.197	A	0.000	1.197	1.197	100.00	0.000	0.000
					B	0.000	1.197		100.00	0.000	0.000
					C	0.000	1.197		100.00	0.000	0.352
L34 37.75-37.50	37.62	1.03	23.57	0.908	A	0.000	0.908	0.908	100.00	0.000	0.000
					B	0.000	0.908		100.00	0.000	0.000
					C	0.000	0.908		100.00	0.000	0.267
L35 37.50-35.75	36.62	1.024	23.44	6.385	A	0.000	6.385	6.385	100.00	0.000	0.000
					B	0.000	6.385		100.00	0.000	0.000
					C	0.000	6.385		100.00	0.000	1.867
L36 35.75-35.50	35.62	1.018	23.30	0.917	A	0.000	0.917	0.917	100.00	0.000	0.000
					B	0.000	0.917		100.00	0.000	0.000
					C	0.000	0.917		100.00	0.000	0.267
L37 35.50-30.50	32.99	1.002	22.93	18.564	A	0.000	18.564	18.564	100.00	0.000	0.000
					B	0.000	18.564		100.00	0.000	0.000
					C	0.000	18.564		100.00	0.000	5.022
L38 30.50-25.50	27.99	0.968	22.15	19.006	A	0.000	19.006	19.006	100.00	0.000	0.000
					B	0.000	19.006		100.00	0.000	0.000
					C	0.000	19.006		100.00	0.000	4.293
L39 25.50-20.50	22.99	0.929	21.25	19.448	A	0.000	19.448	19.448	100.00	0.000	0.000
					B	0.000	19.448		100.00	0.000	0.000
					C	0.000	19.448		100.00	0.000	4.293
L40 20.50-15.50	17.99	0.882	20.18	19.890	A	0.000	19.890	19.890	100.00	0.000	0.000
					B	0.000	19.890		100.00	0.000	0.000
					C	0.000	19.890		100.00	0.000	4.293
L41 15.50-10.50	12.99	0.85	19.45	20.333	A	0.000	20.333	20.333	100.00	0.000	0.000
					B	0.000	20.333		100.00	0.000	0.000
					C	0.000	20.333		100.00	0.000	4.293
L42 10.50-5.50	7.99	0.85	19.45	20.775	A	0.000	20.775	20.775	100.00	0.000	0.000
					B	0.000	20.775		100.00	0.000	0.000
					C	0.000	20.775		100.00	0.000	4.293
L43 5.50-0.50	2.99	0.85	19.45	21.217	A	0.000	21.217	21.217	100.00	0.000	0.000
					B	0.000	21.217		100.00	0.000	0.000
					C	0.000	21.217		100.00	0.000	4.293
L44 0.50-0.00	0.25	0.85	19.45	2.146	A	0.000	2.146	2.146	100.00	0.000	0.000
					B	0.000	2.146		100.00	0.000	0.000
					C	0.000	2.146		100.00	0.000	0.429

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 160.00-155.00	157.50	1.393	8.47	2.3383	10.282	A	0.000	10.282	10.282	100.00	0.000	0.000
						B	0.000	10.282		100.00	0.000	0.000
						C	0.000	10.282		100.00	0.000	0.000
L2 155.00-150.50	152.75	1.384	8.41	2.3312	9.248	A	0.000	9.248	9.248	100.00	0.000	0.000
						B	0.000	9.248		100.00	0.000	0.000
						C	0.000	9.248		100.00	0.000	0.000
L3 150.50-150.00	150.25	1.379	8.38	2.3273	1.040	A	0.000	1.040	1.040	100.00	0.000	0.000
						B	0.000	1.040		100.00	0.000	0.000
						C	0.000	1.040		100.00	0.000	0.000
L4 150.00-145.00	147.48	1.373	8.35	2.3230	10.914	A	0.000	10.914	10.914	100.00	0.000	0.000
						B	0.000	10.914		100.00	0.000	0.000
						C	0.000	10.914		100.00	0.000	2.650
L5 145.00-	142.48	1.364	8.29	2.3150	11.349	A	0.000	11.349	11.349	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
140.00						B	0.000	11.349		100.00	0.000	0.000
						C	0.000	11.349		100.00	0.000	3.305
L6 140.00-135.00	137.48	1.353	8.23	2.3068	11.784	A	0.000	11.784	11.784	100.00	0.000	0.000
						B	0.000	11.784		100.00	0.000	0.000
						C	0.000	11.784		100.00	0.000	3.297
L7 135.00-130.00	132.48	1.343	8.16	2.2982	12.219	A	0.000	12.219	12.219	100.00	0.000	0.000
						B	0.000	12.219		100.00	0.000	0.000
						C	0.000	12.219		100.00	0.000	6.774
L8 130.00-125.00	127.48	1.332	8.10	2.2894	12.654	A	0.000	12.654	12.654	100.00	0.000	0.000
						B	0.000	12.654		100.00	0.000	0.000
						C	0.000	12.654		100.00	0.000	6.756
L9 125.00-120.00	122.48	1.321	8.03	2.2803	13.089	A	0.000	13.089	13.089	100.00	0.000	0.000
						B	0.000	13.089		100.00	0.000	0.000
						C	0.000	13.089		100.00	0.000	7.528
L10 120.00-119.75	119.87	1.315	7.99	2.2754	0.666	A	0.000	0.666	0.666	100.00	0.000	0.000
						B	0.000	0.666		100.00	0.000	0.000
						C	0.000	0.666		100.00	0.000	0.494
L11 119.75-114.75	117.23	1.309	7.96	2.2703	13.545	A	0.000	13.545	13.545	100.00	0.000	0.000
						B	0.000	13.545		100.00	0.000	0.000
						C	0.000	13.545		100.00	0.000	10.676
L12 114.75-111.75	113.24	1.299	7.90	2.2625	8.335	A	0.000	8.335	8.335	100.00	0.000	0.000
						B	0.000	8.335		100.00	0.000	0.000
						C	0.000	8.335		100.00	0.000	7.917
L13 111.75-111.50	111.62	1.295	7.88	2.2592	0.702	A	0.000	0.702	0.702	100.00	0.000	0.000
						B	0.000	0.702		100.00	0.000	0.000
						C	0.000	0.702		100.00	0.000	0.663
L14 111.50-106.50	108.99	1.289	7.84	2.2538	14.260	A	0.000	14.260	14.260	100.00	0.000	0.000
						B	0.000	14.260		100.00	0.000	0.000
						C	0.000	14.260		100.00	0.000	13.246
L15 106.50-97.17	101.79	1.27	7.72	2.2384	27.768	A	0.000	27.768	27.768	100.00	0.000	0.000
						B	0.000	27.768		100.00	0.000	0.000
						C	0.000	27.768		100.00	0.000	24.600
L16 97.17-97.00	97.08	1.258	7.65	2.2279	0.513	A	0.000	0.513	0.513	100.00	0.000	0.000
						B	0.000	0.513		100.00	0.000	0.000
						C	0.000	0.513		100.00	0.000	0.448
L17 97.00-92.00	94.49	1.251	7.60	2.2219	15.300	A	0.000	15.300	15.300	100.00	0.000	0.000
						B	0.000	15.300		100.00	0.000	0.000
						C	0.000	15.300		100.00	0.000	13.115
L18 92.00-87.00	89.49	1.236	7.52	2.2098	15.733	A	0.000	15.733	15.733	100.00	0.000	0.000
						B	0.000	15.733		100.00	0.000	0.000
						C	0.000	15.733		100.00	0.000	13.066
L19 87.00-82.00	84.49	1.221	7.43	2.1971	16.164	A	0.000	16.164	16.164	100.00	0.000	0.000
						B	0.000	16.164		100.00	0.000	0.000
						C	0.000	16.164		100.00	0.000	13.071
L20 82.00-79.33	80.66	1.21	7.35	2.1870	8.808	A	0.000	8.808	8.808	100.00	0.000	0.000
						B	0.000	8.808		100.00	0.000	0.000
						C	0.000	8.808		100.00	0.000	8.781
L21 79.33-79.08	79.20	1.205	7.33	2.1830	0.831	A	0.000	0.831	0.831	100.00	0.000	0.000
						B	0.000	0.831		100.00	0.000	0.000
						C	0.000	0.831		100.00	0.000	0.821
L22 79.08-75.25	77.16	1.198	7.29	2.1773	12.866	A	0.000	12.866	12.866	100.00	0.000	0.000
						B	0.000	12.866		100.00	0.000	0.000
						C	0.000	12.866		100.00	0.000	12.557
L23 75.25-75.00	75.12	1.192	7.25	2.1715	0.849	A	0.000	0.849	0.849	100.00	0.000	0.000
						B	0.000	0.849		100.00	0.000	0.000
						C	0.000	0.849		100.00	0.000	0.818
L24 75.00-70.00	72.49	1.183	7.19	2.1637	17.198	A	0.000	17.198	17.198	100.00	0.000	0.000
						B	0.000	17.198		100.00	0.000	0.000
						C	0.000	17.198		100.00	0.000	16.322
L25 70.00-65.00	67.49	1.165	7.08	2.1483	17.627	A	0.000	17.627	17.627	100.00	0.000	0.000
						B	0.000	17.627		100.00	0.000	0.000
						C	0.000	17.627		100.00	0.000	16.242
L26 65.00-63.25	64.12	1.153	7.01	2.1374	6.271	A	0.000	6.271	6.271	100.00	0.000	0.000
						B	0.000	6.271		100.00	0.000	0.000
						C	0.000	6.271		100.00	0.000	5.665
L27 63.25-63.00	63.12	1.149	6.98	2.1340	0.900	A	0.000	0.900	0.900	100.00	0.000	0.000
						B	0.000	0.900		100.00	0.000	0.000
						C	0.000	0.900		100.00	0.000	0.808

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L28 63.00-58.00	60.49	1.139	6.92	2.1249	18.227	A	0.000	18.227	18.227	100.00	0.000	0.000
						B	0.000	18.227		100.00	0.000	0.000
						C	0.000	18.227		100.00	0.000	16.119
L29 58.00-49.08	53.51	1.109	6.75	2.0990	33.576	A	0.000	33.576	33.576	100.00	0.000	0.000
						B	0.000	33.576		100.00	0.000	0.000
						C	0.000	33.576		100.00	0.000	28.516
L30 49.08-48.08	48.58	1.087	6.61	2.0789	3.787	A	0.000	3.787	3.787	100.00	0.000	0.000
						B	0.000	3.787		100.00	0.000	0.000
						C	0.000	3.787		100.00	0.000	3.197
L31 48.08-43.08	45.57	1.073	6.52	2.0656	19.173	A	0.000	19.173	19.173	100.00	0.000	0.000
						B	0.000	19.173		100.00	0.000	0.000
						C	0.000	19.173		100.00	0.000	17.674
L32 43.08-38.08	40.57	1.047	6.36	2.0417	19.595	A	0.000	19.595	19.595	100.00	0.000	0.000
						B	0.000	19.595		100.00	0.000	0.000
						C	0.000	19.595		100.00	0.000	18.039
L33 38.08-37.75	37.91	1.032	6.27	2.0280	1.308	A	0.000	1.308	1.308	100.00	0.000	0.000
						B	0.000	1.308		100.00	0.000	0.000
						C	0.000	1.308		100.00	0.000	1.185
L34 37.75-37.50	37.62	1.03	6.26	2.0264	0.992	A	0.000	0.992	0.992	100.00	0.000	0.000
						B	0.000	0.992		100.00	0.000	0.000
						C	0.000	0.992		100.00	0.000	0.897
L35 37.50-35.75	36.62	1.024	6.23	2.0209	6.975	A	0.000	6.975	6.975	100.00	0.000	0.000
						B	0.000	6.975		100.00	0.000	0.000
						C	0.000	6.975		100.00	0.000	6.268
L36 35.75-35.50	35.62	1.018	6.19	2.0154	1.001	A	0.000	1.001	1.001	100.00	0.000	0.000
						B	0.000	1.001		100.00	0.000	0.000
						C	0.000	1.001		100.00	0.000	0.894
L37 35.50-30.50	32.99	1.002	6.09	1.9999	20.231	A	0.000	20.231	20.231	100.00	0.000	0.000
						B	0.000	20.231		100.00	0.000	0.000
						C	0.000	20.231		100.00	0.000	16.800
L38 30.50-25.50	27.99	0.968	5.89	1.9673	20.646	A	0.000	20.646	20.646	100.00	0.000	0.000
						B	0.000	20.646		100.00	0.000	0.000
						C	0.000	20.646		100.00	0.000	14.349
L39 25.50-20.50	22.99	0.929	5.65	1.9290	21.056	A	0.000	21.056	21.056	100.00	0.000	0.000
						B	0.000	21.056		100.00	0.000	0.000
						C	0.000	21.056		100.00	0.000	14.153
L40 20.50-15.50	17.99	0.882	5.36	1.8823	21.459	A	0.000	21.459	21.459	100.00	0.000	0.000
						B	0.000	21.459		100.00	0.000	0.000
						C	0.000	21.459		100.00	0.000	13.914
L41 15.50-10.50	12.99	0.85	5.17	1.8220	21.851	A	0.000	21.851	21.851	100.00	0.000	0.000
						B	0.000	21.851		100.00	0.000	0.000
						C	0.000	21.851		100.00	0.000	13.606
L42 10.50-5.50	7.99	0.85	5.17	1.7356	22.221	A	0.000	22.221	22.221	100.00	0.000	0.000
						B	0.000	22.221		100.00	0.000	0.000
						C	0.000	22.221		100.00	0.000	13.164
L43 5.50-0.50	2.99	0.85	5.17	1.5731	22.528	A	0.000	22.528	22.528	100.00	0.000	0.000
						B	0.000	22.528		100.00	0.000	0.000
						C	0.000	22.528		100.00	0.000	12.334
L44 0.50-0.00	0.25	0.85	5.17	1.2273	2.248	A	0.000	2.248	2.248	100.00	0.000	0.000
						B	0.000	2.248		100.00	0.000	0.000
						C	0.000	2.248		100.00	0.000	1.057

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 160.00-155.00	157.50	1.393	10.91	8.333	A	0.000	8.333	8.333	100.00	0.000	0.000
					B	0.000	8.333		100.00	0.000	0.000
					C	0.000	8.333		100.00	0.000	0.000
L2 155.00-150.50	152.75	1.384	10.84	7.500	A	0.000	7.500	7.500	100.00	0.000	0.000
					B	0.000	7.500		100.00	0.000	0.000
					C	0.000	7.500		100.00	0.000	0.000
L3 150.50-	150.25	1.379	10.80	0.846	A	0.000	0.846	0.846	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
150.00					B	0.000	0.846		100.00	0.000	0.000
					C	0.000	0.846		100.00	0.000	0.000
L4 150.00-145.00	147.48	1.373	10.76	8.978	A	0.000	8.978	8.978	100.00	0.000	0.000
					B	0.000	8.978		100.00	0.000	0.000
					C	0.000	8.978		100.00	0.000	0.792
L5 145.00-140.00	142.48	1.364	10.68	9.420	A	0.000	9.420	9.420	100.00	0.000	0.000
					B	0.000	9.420		100.00	0.000	0.000
					C	0.000	9.420		100.00	0.000	0.990
L6 140.00-135.00	137.48	1.353	10.60	9.862	A	0.000	9.862	9.862	100.00	0.000	0.000
					B	0.000	9.862		100.00	0.000	0.000
					C	0.000	9.862		100.00	0.000	0.990
L7 135.00-130.00	132.48	1.343	10.52	10.304	A	0.000	10.304	10.304	100.00	0.000	0.000
					B	0.000	10.304		100.00	0.000	0.000
					C	0.000	10.304		100.00	0.000	2.178
L8 130.00-125.00	127.48	1.332	10.43	10.746	A	0.000	10.746	10.746	100.00	0.000	0.000
					B	0.000	10.746		100.00	0.000	0.000
					C	0.000	10.746		100.00	0.000	2.178
L9 125.00-120.00	122.48	1.321	10.35	11.188	A	0.000	11.188	11.188	100.00	0.000	0.000
					B	0.000	11.188		100.00	0.000	0.000
					C	0.000	11.188		100.00	0.000	2.334
L10 120.00-119.75	119.87	1.315	10.30	0.571	A	0.000	0.571	0.571	100.00	0.000	0.000
					B	0.000	0.571		100.00	0.000	0.000
					C	0.000	0.571		100.00	0.000	0.140
L11 119.75-114.75	117.23	1.309	10.25	11.653	A	0.000	11.653	11.653	100.00	0.000	0.000
					B	0.000	11.653		100.00	0.000	0.000
					C	0.000	11.653		100.00	0.000	3.045
L12 114.75-111.75	113.24	1.299	10.18	7.204	A	0.000	7.204	7.204	100.00	0.000	0.000
					B	0.000	7.204		100.00	0.000	0.000
					C	0.000	7.204		100.00	0.000	2.336
L13 111.75-111.50	111.62	1.295	10.15	0.608	A	0.000	0.608	0.608	100.00	0.000	0.000
					B	0.000	0.608		100.00	0.000	0.000
					C	0.000	0.608		100.00	0.000	0.199
L14 111.50-106.50	108.99	1.289	10.10	12.382	A	0.000	12.382	12.382	100.00	0.000	0.000
					B	0.000	12.382		100.00	0.000	0.000
					C	0.000	12.382		100.00	0.000	3.981
L15 106.50-97.17	101.79	1.27	9.95	24.288	A	0.000	24.288	24.288	100.00	0.000	0.000
					B	0.000	24.288		100.00	0.000	0.000
					C	0.000	24.288		100.00	0.000	7.428
L16 97.17-97.00	97.08	1.258	9.85	0.449	A	0.000	0.449	0.449	100.00	0.000	0.000
					B	0.000	0.449		100.00	0.000	0.000
					C	0.000	0.449		100.00	0.000	0.135
L17 97.00-92.00	94.49	1.251	9.80	13.449	A	0.000	13.449	13.449	100.00	0.000	0.000
					B	0.000	13.449		100.00	0.000	0.000
					C	0.000	13.449		100.00	0.000	3.981
L18 92.00-87.00	89.49	1.236	9.69	13.891	A	0.000	13.891	13.891	100.00	0.000	0.000
					B	0.000	13.891		100.00	0.000	0.000
					C	0.000	13.891		100.00	0.000	3.981
L19 87.00-82.00	84.49	1.221	9.57	14.333	A	0.000	14.333	14.333	100.00	0.000	0.000
					B	0.000	14.333		100.00	0.000	0.000
					C	0.000	14.333		100.00	0.000	3.998
L20 82.00-79.33	80.66	1.21	9.48	7.835	A	0.000	7.835	7.835	100.00	0.000	0.000
					B	0.000	7.835		100.00	0.000	0.000
					C	0.000	7.835		100.00	0.000	2.682
L21 79.33-79.08	79.20	1.205	9.44	0.740	A	0.000	0.740	0.740	100.00	0.000	0.000
					B	0.000	0.740		100.00	0.000	0.000
					C	0.000	0.740		100.00	0.000	0.251
L22 79.08-75.25	77.16	1.198	9.39	11.476	A	0.000	11.476	11.476	100.00	0.000	0.000
					B	0.000	11.476		100.00	0.000	0.000
					C	0.000	11.476		100.00	0.000	3.847
L23 75.25-75.00	75.12	1.192	9.33	0.758	A	0.000	0.758	0.758	100.00	0.000	0.000
					B	0.000	0.758		100.00	0.000	0.000
					C	0.000	0.758		100.00	0.000	0.251
L24 75.00-70.00	72.49	1.183	9.27	15.395	A	0.000	15.395	15.395	100.00	0.000	0.000
					B	0.000	15.395		100.00	0.000	0.000
					C	0.000	15.395		100.00	0.000	5.022
L25 70.00-65.00	67.49	1.165	9.13	15.837	A	0.000	15.837	15.837	100.00	0.000	0.000
					B	0.000	15.837		100.00	0.000	0.000
					C	0.000	15.837		100.00	0.000	5.022

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L26 65.00-63.25	64.12	1.153	9.03	5.647	A	0.000	5.647	5.647	100.00	0.000	0.000
					B	0.000	5.647		100.00	0.000	0.000
					C	0.000	5.647		100.00	0.000	1.758
L27 63.25-63.00	63.12	1.149	9.00	0.811	A	0.000	0.811	0.811	100.00	0.000	0.000
					B	0.000	0.811		100.00	0.000	0.000
					C	0.000	0.811		100.00	0.000	0.251
L28 63.00-58.00	60.49	1.139	8.92	16.456	A	0.000	16.456	16.456	100.00	0.000	0.000
					B	0.000	16.456		100.00	0.000	0.000
					C	0.000	16.456		100.00	0.000	5.022
L29 58.00-49.08	53.51	1.109	8.69	30.456	A	0.000	30.456	30.456	100.00	0.000	0.000
					B	0.000	30.456		100.00	0.000	0.000
					C	0.000	30.456		100.00	0.000	8.960
L30 49.08-48.08	48.58	1.087	8.52	3.437	A	0.000	3.437	3.437	100.00	0.000	0.000
					B	0.000	3.437		100.00	0.000	0.000
					C	0.000	3.437		100.00	0.000	1.004
L31 48.08-43.08	45.57	1.073	8.40	17.452	A	0.000	17.452	17.452	100.00	0.000	0.000
					B	0.000	17.452		100.00	0.000	0.000
					C	0.000	17.452		100.00	0.000	5.267
L32 43.08-38.08	40.57	1.047	8.20	17.894	A	0.000	17.894	17.894	100.00	0.000	0.000
					B	0.000	17.894		100.00	0.000	0.000
					C	0.000	17.894		100.00	0.000	5.335
L33 38.08-37.75	37.91	1.032	8.08	1.197	A	0.000	1.197	1.197	100.00	0.000	0.000
					B	0.000	1.197		100.00	0.000	0.000
					C	0.000	1.197		100.00	0.000	0.352
L34 37.75-37.50	37.62	1.03	8.07	0.908	A	0.000	0.908	0.908	100.00	0.000	0.000
					B	0.000	0.908		100.00	0.000	0.000
					C	0.000	0.908		100.00	0.000	0.267
L35 37.50-35.75	36.62	1.024	8.02	6.385	A	0.000	6.385	6.385	100.00	0.000	0.000
					B	0.000	6.385		100.00	0.000	0.000
					C	0.000	6.385		100.00	0.000	1.867
L36 35.75-35.50	35.62	1.018	7.98	0.917	A	0.000	0.917	0.917	100.00	0.000	0.000
					B	0.000	0.917		100.00	0.000	0.000
					C	0.000	0.917		100.00	0.000	0.267
L37 35.50-30.50	32.99	1.002	7.85	18.564	A	0.000	18.564	18.564	100.00	0.000	0.000
					B	0.000	18.564		100.00	0.000	0.000
					C	0.000	18.564		100.00	0.000	5.022
L38 30.50-25.50	27.99	0.968	7.58	19.006	A	0.000	19.006	19.006	100.00	0.000	0.000
					B	0.000	19.006		100.00	0.000	0.000
					C	0.000	19.006		100.00	0.000	4.293
L39 25.50-20.50	22.99	0.929	7.28	19.448	A	0.000	19.448	19.448	100.00	0.000	0.000
					B	0.000	19.448		100.00	0.000	0.000
					C	0.000	19.448		100.00	0.000	4.293
L40 20.50-15.50	17.99	0.882	6.91	19.890	A	0.000	19.890	19.890	100.00	0.000	0.000
					B	0.000	19.890		100.00	0.000	0.000
					C	0.000	19.890		100.00	0.000	4.293
L41 15.50-10.50	12.99	0.85	6.66	20.333	A	0.000	20.333	20.333	100.00	0.000	0.000
					B	0.000	20.333		100.00	0.000	0.000
					C	0.000	20.333		100.00	0.000	4.293
L42 10.50-5.50	7.99	0.85	6.66	20.775	A	0.000	20.775	20.775	100.00	0.000	0.000
					B	0.000	20.775		100.00	0.000	0.000
					C	0.000	20.775		100.00	0.000	4.293
L43 5.50-0.50	2.99	0.85	6.66	21.217	A	0.000	21.217	21.217	100.00	0.000	0.000
					B	0.000	21.217		100.00	0.000	0.000
					C	0.000	21.217		100.00	0.000	4.293
L44 0.50-0.00	0.25	0.85	6.66	2.146	A	0.000	2.146	2.146	100.00	0.000	0.000
					B	0.000	2.146		100.00	0.000	0.000
					C	0.000	2.146		100.00	0.000	0.429

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice

Comb. No.	Description
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	160 - 155	Pole	Max Tension	39	0.00	-0.00	-0.00
			Max. Compression	26	-11.31	0.03	1.92
			Max. Mx	8	-2.38	-49.54	0.25
			Max. My	2	-2.38	0.00	49.89
			Max. Vy	8	7.91	-49.54	0.25
			Max. Vx	2	-7.92	0.00	49.89
			Max. Torque	20			-0.74
L2	155 - 150.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.91	0.07	1.93
			Max. Mx	8	-2.66	-85.82	0.27
			Max. My	2	-2.65	-0.01	86.17
			Max. Vy	8	8.21	-85.82	0.27
			Max. Vx	2	-8.21	-0.01	86.17
			Max. Torque	20			-0.74
L3	150.5 - 150	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-11.98	0.07	1.93

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-2.69	-89.93	0.27
			Max. My	2	-2.69	-0.01	90.28
			Max. Vy	8	8.24	-89.93	0.27
			Max. Vx	2	-8.24	-0.01	90.28
			Max. Torque	20			-0.74
L4	150 - 145	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.88	1.33	2.42
			Max. Mx	20	-5.10	159.76	0.08
			Max. My	2	-5.09	-0.09	160.35
			Max. Vy	8	15.57	-159.34	0.61
			Max. Vx	2	-15.65	-0.09	160.35
			Max. Torque	18			-0.92
L5	145 - 140	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.79	1.54	2.37
			Max. Mx	20	-5.51	239.09	-0.22
			Max. My	2	-5.49	-0.38	240.10
			Max. Vy	8	16.17	-238.66	0.91
			Max. Vx	2	-16.26	-0.38	240.10
			Max. Torque	18			-0.92
L6	140 - 135	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.88	2.12	2.09
			Max. Mx	20	-6.55	324.86	-1.03
			Max. My	2	-6.54	-1.53	325.93
			Max. Vy	8	18.29	-324.56	1.76
			Max. Vx	2	-18.23	-1.53	325.93
			Max. Torque	16			-1.01
L7	135 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.45	2.61	1.87
			Max. Mx	8	-9.12	-442.38	2.87
			Max. My	2	-9.12	-3.09	443.43
			Max. Vy	8	23.95	-442.38	2.87
			Max. Vx	2	-23.90	-3.09	443.43
			Max. Torque	16			-1.01
L8	130 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.53	2.92	1.75
			Max. Mx	8	-9.70	-564.04	4.00
			Max. My	2	-9.71	-4.64	564.86
			Max. Vy	8	24.74	-564.04	4.00
			Max. Vx	2	-24.69	-4.64	564.86
			Max. Torque	14			-1.10
L9	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.65	3.23	1.63
			Max. Mx	8	-10.33	-689.70	5.12
			Max. My	2	-10.34	-6.18	690.29
			Max. Vy	8	25.55	-689.70	5.12
			Max. Vx	2	-25.50	-6.18	690.29
			Max. Torque	14			-1.21
L10	120 - 119.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.71	3.25	1.62
			Max. Mx	8	-10.39	-696.09	5.18
			Max. My	2	-10.40	-6.26	696.67
			Max. Vy	8	25.59	-696.09	5.18
			Max. Vx	2	-25.54	-6.26	696.67
			Max. Torque	14			-1.22
L11	119.75 - 114.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.33	3.67	1.42
			Max. Mx	8	-12.93	-834.39	6.30
			Max. My	2	-12.94	-7.81	834.74
			Max. Vy	8	30.50	-834.39	6.30
			Max. Vx	2	-30.45	-7.81	834.74
			Max. Torque	14			-1.37
L12	114.75 - 111.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.40	4.14	1.18
			Max. Mx	8	-13.45	-926.69	6.98
			Max. My	2	-13.45	-8.73	926.90
			Max. Vy	8	31.07	-926.69	6.98
			Max. Vx	2	-31.02	-8.73	926.90

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	14			-1.49
L13	111.75 - 111.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.50	4.18	1.15
			Max. Mx	8	-13.51	-934.46	7.03
			Max. My	2	-13.52	-8.80	934.66
			Max. Vy	8	31.12	-934.46	7.03
			Max. Vx	2	-31.06	-8.80	934.66
			Max. Torque	14			-1.50
L14	111.5 - 106.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.37	4.97	0.74
			Max. Mx	8	-14.43	-1092.35	8.15
			Max. My	2	-14.43	-10.34	1092.33
			Max. Vy	8	32.08	-1092.35	8.15
			Max. Vx	2	-32.03	-10.34	1092.33
			Max. Torque	14			-1.71
L15	106.5 - 97.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.07	5.70	0.35
			Max. Mx	8	-15.30	-1238.58	9.16
			Max. My	2	-15.31	-11.72	1238.36
			Max. Vy	8	32.95	-1238.58	9.16
			Max. Vx	2	-32.90	-11.72	1238.36
			Max. Torque	14			-1.90
L16	97.17 - 97	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.39	6.52	-0.08
			Max. Mx	8	-17.15	-1406.05	10.27
			Max. My	2	-17.16	-13.25	1405.61
			Max. Vy	8	34.09	-1406.05	10.27
			Max. Vx	2	-34.03	-13.25	1405.61
			Max. Torque	14			-2.13
L17	97 - 92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.56	7.34	-0.53
			Max. Mx	8	-18.37	-1578.84	11.39
			Max. My	2	-18.37	-14.79	1578.18
			Max. Vy	8	35.08	-1578.84	11.39
			Max. Vx	2	-35.03	-14.79	1578.18
			Max. Torque	14			-2.35
L18	92 - 87	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.77	8.18	-0.98
			Max. Mx	8	-19.65	-1756.65	12.51
			Max. My	2	-19.65	-16.32	1755.76
			Max. Vy	8	36.09	-1756.65	12.51
			Max. Vx	2	-36.04	-16.32	1755.76
			Max. Torque	24			2.59
L19	87 - 82	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.00	9.03	-1.44
			Max. Mx	8	-20.96	-1939.46	13.62
			Max. My	2	-20.97	-17.85	1938.36
			Max. Vy	8	37.09	-1939.46	13.62
			Max. Vx	2	-37.04	-17.85	1938.36
			Max. Torque	24			2.86
L20	82 - 79.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.21	9.49	-1.69
			Max. Mx	8	-21.68	-2039.18	14.21
			Max. My	2	-21.68	-18.67	2037.96
			Max. Vy	8	37.66	-2039.18	14.21
			Max. Vx	2	-37.61	-18.67	2037.96
			Max. Torque	24			3.04
L21	79.33 - 79.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.35	9.54	-1.72
			Max. Mx	8	-21.79	-2048.59	14.27
			Max. My	2	-21.80	-18.74	2047.36
			Max. Vy	8	37.71	-2048.59	14.27
			Max. Vx	2	-37.65	-18.74	2047.36
			Max. Torque	24			3.06
L22	79.08 -	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	75.25						
			Max. Compression	26	-66.47	10.19	-2.08
			Max. Mx	8	-23.14	-2194.57	15.12
			Max. My	2	-23.15	-19.91	2193.18
			Max. Vy	8	38.57	-2194.57	15.12
			Max. Vx	2	-38.52	-19.91	2193.18
			Max. Torque	24			3.33
L23	75.25 - 75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.61	10.24	-2.10
			Max. Mx	8	-23.25	-2204.22	15.17
			Max. My	2	-23.26	-19.99	2202.81
			Max. Vy	8	38.63	-2204.22	15.17
			Max. Vx	2	-38.57	-19.99	2202.81
			Max. Torque	24			3.34
L24	75 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.41	11.11	-2.59
			Max. Mx	8	-25.06	-2400.05	16.28
			Max. My	2	-25.06	-21.52	2398.42
			Max. Vy	8	39.75	-2400.05	16.28
			Max. Vx	2	-39.70	-21.52	2398.42
			Max. Torque	24			3.69
L25	70 - 65	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-72.23	12.00	-3.08
			Max. Mx	8	-26.91	-2601.48	17.39
			Max. My	2	-26.92	-23.04	2599.63
			Max. Vy	8	40.87	-2601.48	17.39
			Max. Vx	2	-40.82	-23.04	2599.63
			Max. Torque	24			4.05
L26	65 - 63.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.23	12.31	-3.25
			Max. Mx	8	-27.56	-2673.30	17.78
			Max. My	2	-27.56	-23.57	2671.38
			Max. Vy	8	41.27	-2673.30	17.78
			Max. Vx	2	-41.22	-23.57	2671.38
			Max. Torque	24			4.18
L27	63.25 - 63	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.38	12.36	-3.27
			Max. Mx	8	-27.69	-2683.62	17.83
			Max. My	2	-27.69	-23.65	2681.69
			Max. Vy	8	41.32	-2683.62	17.83
			Max. Vx	2	-41.26	-23.65	2681.69
			Max. Torque	24			4.20
L28	63 - 58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.39	13.25	-3.77
			Max. Mx	8	-29.72	-2892.89	18.94
			Max. My	2	-29.72	-25.17	2890.73
			Max. Vy	8	42.44	-2892.89	18.94
			Max. Vx	2	-42.39	-25.17	2890.73
			Max. Torque	24			4.56
L29	58 - 49.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-78.22	13.79	-4.07
			Max. Mx	8	-30.96	-3021.12	19.60
			Max. My	2	-30.97	-26.08	3018.84
			Max. Vy	8	43.10	-3021.12	19.60
			Max. Vx	2	-43.05	-26.08	3018.84
			Max. Torque	24			4.78
L30	49.08 - 48.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.52	15.04	-4.77
			Max. Mx	8	-36.18	-3325.30	21.13
			Max. My	2	-36.19	-28.18	3322.72
			Max. Vy	8	44.83	-3325.30	21.13
			Max. Vx	2	-44.78	-28.18	3322.72
			Max. Torque	24			5.29
L31	48.08 - 43.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.92	15.88	-5.35
			Max. Mx	8	-38.55	-3552.37	22.22
			Max. My	2	-38.56	-29.73	3549.53

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	45.99	-3552.37	22.22
			Max. Vx	2	-45.94	-29.73	3549.53
			Max. Torque	24			5.65
L32	43.08 - 38.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.20	16.82	-5.88
			Max. Mx	8	-40.88	-3784.83	23.32
			Max. My	2	-40.88	-31.25	3781.77
			Max. Vy	8	47.05	-3784.83	23.32
			Max. Vx	2	-47.01	-31.25	3781.77
			Max. Torque	24			6.04
L33	38.08 - 37.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.42	16.89	-5.92
			Max. Mx	8	-41.05	-3800.36	23.39
			Max. My	2	-41.05	-31.35	3797.29
			Max. Vy	8	47.12	-3800.36	23.39
			Max. Vx	2	-47.07	-31.35	3797.29
			Max. Torque	24			6.07
L34	37.75 - 37.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.59	16.94	-5.95
			Max. Mx	8	-41.17	-3812.14	23.44
			Max. My	2	-41.18	-31.42	3809.06
			Max. Vy	8	47.18	-3812.14	23.44
			Max. Vx	2	-47.12	-31.42	3809.06
			Max. Torque	24			6.08
L35	37.5 - 35.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.79	17.26	-6.13
			Max. Mx	8	-42.01	-3894.97	23.83
			Max. My	2	-42.01	-31.95	3891.81
			Max. Vy	8	47.56	-3894.97	23.83
			Max. Vx	2	-47.51	-31.95	3891.81
			Max. Torque	24			6.22
L36	35.75 - 35.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-93.92	17.31	-6.16
			Max. Mx	8	-42.13	-3906.86	23.88
			Max. My	2	-42.13	-32.03	3903.69
			Max. Vy	8	47.60	-3906.86	23.88
			Max. Vx	2	-47.54	-32.03	3903.69
			Max. Torque	24			6.24
L37	35.5 - 30.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-96.71	18.24	-6.68
			Max. Mx	8	-44.05	-4146.98	24.98
			Max. My	2	-44.05	-33.54	4143.59
			Max. Vy	8	48.53	-4146.98	24.98
			Max. Vx	2	-48.48	-33.54	4143.59
			Max. Torque	24			6.60
L38	30.5 - 25.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-99.52	19.17	-7.21
			Max. Mx	8	-46.02	-4391.56	26.07
			Max. My	2	-46.02	-35.03	4387.97
			Max. Vy	8	49.39	-4391.56	26.07
			Max. Vx	2	-49.34	-35.03	4387.97
			Max. Torque	24			6.90
L39	25.5 - 20.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-102.35	20.09	-7.73
			Max. Mx	8	-48.03	-4640.36	27.15
			Max. My	2	-48.03	-36.52	4636.55
			Max. Vy	8	50.21	-4640.36	27.15
			Max. Vx	2	-50.16	-36.52	4636.55
			Max. Torque	24			7.20
L40	20.5 - 15.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-105.19	20.95	-8.23
			Max. Mx	8	-50.08	-4893.14	28.22
			Max. My	2	-50.08	-38.00	4889.12
			Max. Vy	8	50.98	-4893.14	28.22
			Max. Vx	2	-50.94	-38.00	4889.12
			Max. Torque	24			7.49
L41	15.5 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-108.03	21.80	-8.72
			Max. Mx	8	-52.17	-5149.68	29.29
			Max. My	2	-52.17	-39.47	5145.46
			Max. Vy	8	51.72	-5149.68	29.29
			Max. Vx	2	-51.67	-39.47	5145.46
			Max. Torque	24			7.78
L42	10.5 - 5.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-110.86	22.62	-9.19
			Max. Mx	8	-54.30	-5409.90	30.35
			Max. My	2	-54.30	-40.93	5405.47
			Max. Vy	8	52.46	-5409.90	30.35
			Max. Vx	2	-52.41	-40.93	5405.47
			Max. Torque	24			8.07
L43	5.5 - 0.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.62	23.36	-9.62
			Max. Mx	8	-56.45	-5673.79	31.40
			Max. My	2	-56.45	-42.38	5669.16
			Max. Vy	8	53.19	-5673.79	31.40
			Max. Vx	2	-53.15	-42.38	5669.16
			Max. Torque	24			8.38
L44	0.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-113.88	23.41	-9.65
			Max. Mx	8	-56.69	-5700.39	31.50
			Max. My	2	-56.69	-42.53	5695.73
			Max. Vy	8	53.25	-5700.39	31.50
			Max. Vx	2	-53.21	-42.53	5695.73
			Max. Torque	24			8.41

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	113.88	-0.00	0.00
	Max. H_x	20	56.70	53.15	-0.19
	Max. H_z	2	56.70	-0.30	53.19
	Max. M_x	2	5695.73	-0.30	53.19
	Max. M_z	8	5700.39	-53.24	0.22
	Max. Torsion	24	8.41	26.49	45.96
	Min. Vert	9	42.52	-53.24	0.22
	Min. H_x	8	56.70	-53.24	0.22
	Min. H_z	15	42.52	0.22	-53.17
	Min. M_x	14	-5693.85	0.22	-53.17
	Min. M_z	20	-5691.10	53.15	-0.19
	Min. Torsion	13	-8.39	-26.43	-46.00

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	47.25	-0.00	0.00	0.44	1.47	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	56.70	0.30	-53.19	-5695.73	-42.53	-7.48
0.9 Dead+1.6 Wind 0 deg - No Ice	42.52	0.30	-53.19	-5636.00	-42.48	-7.47
1.2 Dead+1.6 Wind 30 deg - No Ice	56.70	26.81	-46.15	-4944.37	-2877.05	-4.73
0.9 Dead+1.6 Wind 30 deg - No Ice	42.52	26.81	-46.15	-4892.54	-2847.24	-4.72
1.2 Dead+1.6 Wind 60 deg - No Ice	56.70	46.17	-26.74	-2869.29	-4946.24	-0.77
0.9 Dead+1.6 Wind 60 deg - No Ice	42.52	46.17	-26.74	-2839.25	-4894.72	-0.76

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+1.6 Wind 90 deg - No Ice	56.70	53.24	-0.22	-31.50	-5700.39	3.38
0.9 Dead+1.6 Wind 90 deg - No Ice	42.52	53.24	-0.22	-31.26	-5640.90	3.40
1.2 Dead+1.6 Wind 120 deg - No Ice	56.70	46.07	26.33	2810.34	-4931.00	6.69
0.9 Dead+1.6 Wind 120 deg - No Ice	42.52	46.07	26.33	2780.73	-4879.65	6.69
1.2 Dead+1.6 Wind 150 deg - No Ice	56.70	26.43	46.00	4923.72	-2820.89	8.39
0.9 Dead+1.6 Wind 150 deg - No Ice	42.52	26.43	46.00	4871.88	-2791.73	8.39
1.2 Dead+1.6 Wind 180 deg - No Ice	56.70	-0.22	53.17	5693.85	33.52	7.59
0.9 Dead+1.6 Wind 180 deg - No Ice	42.52	-0.22	53.17	5633.91	32.68	7.59
1.2 Dead+1.6 Wind 210 deg - No Ice	56.70	-26.74	46.08	4936.12	2870.63	4.79
0.9 Dead+1.6 Wind 210 deg - No Ice	42.52	-26.74	46.08	4884.12	2840.00	4.77
1.2 Dead+1.6 Wind 240 deg - No Ice	56.70	-46.09	26.70	2863.89	4938.70	0.79
0.9 Dead+1.6 Wind 240 deg - No Ice	42.52	-46.09	26.70	2833.65	4886.36	0.78
1.2 Dead+1.6 Wind 270 deg - No Ice	56.70	-53.15	0.19	28.50	5691.10	-3.42
0.9 Dead+1.6 Wind 270 deg - No Ice	42.52	-53.15	0.19	28.04	5630.85	-3.44
1.2 Dead+1.6 Wind 300 deg - No Ice	56.70	-46.01	-26.40	-2818.77	4925.78	-6.82
0.9 Dead+1.6 Wind 300 deg - No Ice	42.52	-46.01	-26.40	-2789.31	4873.59	-6.83
1.2 Dead+1.6 Wind 330 deg - No Ice	56.70	-26.49	-45.96	-4916.93	2834.50	-8.41
0.9 Dead+1.6 Wind 330 deg - No Ice	42.52	-26.49	-45.96	-4865.40	2804.30	-8.41
1.2 Dead+1.0 Ice+1.0 Temp	113.88	0.00	-0.00	9.65	23.41	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	113.88	0.07	-14.55	-1732.31	13.04	-3.98
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	113.88	7.32	-12.62	-1501.81	-854.70	-2.55
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	113.88	12.62	-7.31	-866.57	-1488.51	-0.46
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	113.88	14.56	-0.05	2.04	-1719.65	1.76
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	113.88	12.60	7.22	871.62	-1484.66	3.52
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	113.88	7.24	12.59	1515.86	-841.26	4.38
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	113.88	-0.05	14.55	1751.01	31.10	4.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	113.88	-7.31	12.61	1519.05	899.42	2.57
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	113.88	-12.61	7.30	884.46	1532.97	0.46
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	113.88	-14.54	0.04	16.41	1763.68	-1.77
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	113.88	-12.59	-7.23	-854.42	1529.66	-3.55
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	113.88	-7.25	-12.58	-1495.16	890.58	-4.38
Dead+Wind 0 deg - Service	47.25	0.06	-11.38	-1212.89	-7.91	-0.13
Dead+Wind 30 deg - Service	47.25	5.74	-9.87	-1053.07	-611.81	-0.17
Dead+Wind 60 deg - Service	47.25	9.88	-5.72	-610.97	-1052.66	-0.17
Dead+Wind 90 deg - Service	47.25	11.39	-0.05	-6.38	-1213.10	-0.13
Dead+Wind 120 deg - Service	47.25	9.86	5.63	599.05	-1049.35	-0.04
Dead+Wind 150 deg - Service	47.25	5.65	9.84	1049.28	-599.81	0.11

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+Wind 180 deg - Service	47.25	-0.05	11.37	1213.13	8.28	0.16
Dead+Wind 210 deg - Service	47.25	-5.72	9.86	1051.95	612.72	0.18
Dead+Wind 240 deg - Service	47.25	-9.86	5.71	610.47	1053.31	0.17
Dead+Wind 270 deg - Service	47.25	-11.37	0.04	6.40	1213.35	0.11
Dead+Wind 300 deg - Service	47.25	-9.84	-5.65	-600.18	1050.52	0.00
Dead+Wind 330 deg - Service	47.25	-5.67	-9.83	-1047.17	605.01	-0.11

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-47.25	0.00	0.00	47.25	0.00	0.000%
2	0.30	-56.70	-53.19	-0.30	56.70	53.19	0.000%
3	0.30	-42.52	-53.19	-0.30	42.52	53.19	0.001%
4	26.81	-56.70	-46.15	-26.81	56.70	46.15	0.000%
5	26.81	-42.52	-46.15	-26.81	42.52	46.15	0.000%
6	46.17	-56.70	-26.74	-46.17	56.70	26.74	0.000%
7	46.17	-42.52	-26.74	-46.17	42.52	26.74	0.000%
8	53.24	-56.70	-0.22	-53.24	56.70	0.22	0.002%
9	53.24	-42.52	-0.22	-53.24	42.52	0.22	0.003%
10	46.07	-56.70	26.33	-46.07	56.70	-26.33	0.000%
11	46.07	-42.52	26.33	-46.07	42.52	-26.33	0.000%
12	26.43	-56.70	46.00	-26.43	56.70	-46.00	0.000%
13	26.43	-42.52	46.00	-26.43	42.52	-46.00	0.000%
14	-0.22	-56.70	53.17	0.22	56.70	-53.17	0.000%
15	-0.22	-42.52	53.17	0.22	42.52	-53.17	0.000%
16	-26.74	-56.70	46.08	26.74	56.70	-46.08	0.000%
17	-26.74	-42.52	46.08	26.74	42.52	-46.08	0.000%
18	-46.09	-56.70	26.70	46.09	56.70	-26.70	0.000%
19	-46.09	-42.52	26.70	46.09	42.52	-26.70	0.000%
20	-53.15	-56.70	0.19	53.15	56.70	-0.19	0.000%
21	-53.15	-42.52	0.19	53.15	42.52	-0.19	0.001%
22	-46.01	-56.70	-26.40	46.01	56.70	26.40	0.000%
23	-46.01	-42.52	-26.40	46.01	42.52	26.40	0.000%
24	-26.49	-56.70	-45.96	26.49	56.70	45.96	0.000%
25	-26.49	-42.52	-45.96	26.49	42.52	45.96	0.000%
26	0.00	-113.88	0.00	-0.00	113.88	0.00	0.000%
27	0.07	-113.88	-14.55	-0.07	113.88	14.55	0.000%
28	7.32	-113.88	-12.62	-7.32	113.88	12.62	0.000%
29	12.62	-113.88	-7.31	-12.62	113.88	7.31	0.000%
30	14.56	-113.88	-0.05	-14.56	113.88	0.05	0.000%
31	12.60	-113.88	7.22	-12.60	113.88	-7.22	0.000%
32	7.24	-113.88	12.59	-7.24	113.88	-12.59	0.000%
33	-0.05	-113.88	14.55	0.05	113.88	-14.55	0.000%
34	-7.31	-113.88	12.61	7.31	113.88	-12.61	0.000%
35	-12.61	-113.88	7.30	12.61	113.88	-7.30	0.000%
36	-14.54	-113.88	0.04	14.54	113.88	-0.04	0.000%
37	-12.59	-113.88	-7.23	12.59	113.88	7.23	0.000%
38	-7.25	-113.88	-12.58	7.25	113.88	12.58	0.000%
39	0.06	-47.25	-11.38	-0.06	47.25	11.38	0.004%
40	5.74	-47.25	-9.87	-5.74	47.25	9.87	0.000%
41	9.88	-47.25	-5.72	-9.88	47.25	5.72	0.000%
42	11.39	-47.25	-0.05	-11.39	47.25	0.05	0.004%
43	9.86	-47.25	5.63	-9.86	47.25	-5.63	0.000%
44	5.65	-47.25	9.84	-5.65	47.25	-9.84	0.000%
45	-0.05	-47.25	11.38	0.05	47.25	-11.37	0.004%
46	-5.72	-47.25	9.86	5.72	47.25	-9.86	0.000%
47	-9.86	-47.25	5.71	9.86	47.25	-5.71	0.000%
48	-11.37	-47.25	0.04	11.37	47.25	-0.04	0.004%
49	-9.84	-47.25	-5.65	9.84	47.25	5.65	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
50	-5.67	-47.25	-9.83	5.67	47.25	9.83	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	21	0.00000001	0.00010456
3	Yes	20	0.00000001	0.00014938
4	Yes	26	0.00000001	0.00000000
5	Yes	25	0.00000001	0.00000000
6	Yes	26	0.00000001	0.00000000
7	Yes	25	0.00000001	0.00000000
8	Yes	19	0.00001660	0.00010698
9	Yes	18	0.00002148	0.00014600
10	Yes	26	0.00000001	0.00000000
11	Yes	25	0.00000001	0.00000000
12	Yes	26	0.00000001	0.00000000
13	Yes	25	0.00000001	0.00000000
14	Yes	22	0.00000001	0.00011096
15	Yes	22	0.00000001	0.00007890
16	Yes	26	0.00000001	0.00000000
17	Yes	25	0.00000001	0.00000000
18	Yes	26	0.00000001	0.00000000
19	Yes	25	0.00000001	0.00000000
20	Yes	21	0.00000001	0.00010096
21	Yes	20	0.00000001	0.00014241
22	Yes	26	0.00000001	0.00000000
23	Yes	25	0.00000001	0.00000000
24	Yes	26	0.00000001	0.00000000
25	Yes	25	0.00000001	0.00000000
26	Yes	16	0.00000001	0.00013059
27	Yes	24	0.00000001	0.00011393
28	Yes	25	0.00000001	0.00009920
29	Yes	25	0.00000001	0.00010149
30	Yes	24	0.00000001	0.00011061
31	Yes	25	0.00000001	0.00010262
32	Yes	25	0.00000001	0.00009761
33	Yes	24	0.00000001	0.00011502
34	Yes	25	0.00000001	0.00010769
35	Yes	25	0.00000001	0.00010452
36	Yes	24	0.00000001	0.00011366
37	Yes	25	0.00000001	0.00010094
38	Yes	25	0.00000001	0.00010697
39	Yes	16	0.00010426	0.00009898
40	Yes	20	0.00000001	0.00010209
41	Yes	20	0.00000001	0.00010579
42	Yes	16	0.00010424	0.00011071
43	Yes	20	0.00000001	0.00009977
44	Yes	20	0.00000001	0.00009917
45	Yes	16	0.00010424	0.00011877
46	Yes	20	0.00000001	0.00010607
47	Yes	20	0.00000001	0.00010161
48	Yes	16	0.00010425	0.00009861
49	Yes	20	0.00000001	0.00010097
50	Yes	20	0.00000001	0.00010270

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	33.36	40	2.01	0.00
L2	155 - 150.5	31.26	40	2.00	0.00
L3	150.5 - 150	29.38	40	1.98	0.00
L4	150 - 145	29.18	40	1.98	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	145 - 140	27.13	40	1.93	0.00
L6	140 - 135	25.13	40	1.88	0.00
L7	135 - 130	23.21	40	1.80	0.00
L8	130 - 125	21.36	40	1.72	0.00
L9	125 - 120	19.62	40	1.62	0.00
L10	120 - 119.75	17.98	40	1.51	0.00
L11	119.75 - 114.75	17.90	40	1.50	0.00
L12	114.75 - 111.75	16.37	40	1.42	0.00
L13	111.75 - 111.5	15.49	40	1.37	0.00
L14	111.5 - 106.5	15.42	40	1.36	0.00
L15	106.5 - 97.17	14.04	40	1.28	0.00
L16	102 - 97	12.87	40	1.20	0.00
L17	97 - 92	11.63	40	1.16	0.00
L18	92 - 87	10.45	40	1.08	0.00
L19	87 - 82	9.36	40	1.01	0.00
L20	82 - 79.33	8.35	40	0.93	0.00
L21	79.33 - 79.08	7.84	40	0.89	0.00
L22	79.08 - 75.25	7.79	40	0.88	0.00
L23	75.25 - 75	7.10	40	0.84	0.00
L24	75 - 70	7.06	40	0.84	0.00
L25	70 - 65	6.20	40	0.79	0.00
L26	65 - 63.25	5.41	40	0.73	0.00
L27	63.25 - 63	5.14	40	0.71	0.00
L28	63 - 58	5.11	40	0.71	0.00
L29	58 - 49.08	4.39	40	0.66	0.00
L30	55 - 48.08	3.98	40	0.63	0.00
L31	48.08 - 43.08	3.10	40	0.59	0.00
L32	43.08 - 38.08	2.51	40	0.54	0.00
L33	38.08 - 37.75	1.97	40	0.49	0.00
L34	37.75 - 37.5	1.93	40	0.49	0.00
L35	37.5 - 35.75	1.91	40	0.48	0.00
L36	35.75 - 35.5	1.73	40	0.47	0.00
L37	35.5 - 30.5	1.71	40	0.47	0.00
L38	30.5 - 25.5	1.26	40	0.40	0.00
L39	25.5 - 20.5	0.88	40	0.33	0.00
L40	20.5 - 15.5	0.56	40	0.26	0.00
L41	15.5 - 10.5	0.32	40	0.20	0.00
L42	10.5 - 5.5	0.15	40	0.13	0.00
L43	5.5 - 0.5	0.04	40	0.07	0.00
L44	0.5 - 0	0.00	40	0.01	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.00	7770.00 w/ Mount Pipe	40	32.52	2.01	0.00	14495
149.00	BXA-70063/6CFx6 w/ Mount Pipe	40	28.76	1.97	0.00	7624
139.00	VHLP2.5-11	40	24.74	1.86	0.00	4188
137.00	PCS 1900MHz 4x45W-65MHz	40	23.97	1.83	0.00	3896
135.00	LLPX310R-V1 w/ Mount Pipe	40	23.21	1.80	0.00	3636
116.00	LNX-6515DS-VTM w/ Mount Pipe	40	16.74	1.44	0.00	3397
47.00	KS24019-L112A	40	2.97	0.58	0.00	6626

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	160 - 155	156.02	4	9.44	0.02
L2	155 - 150.5	146.23	4	9.40	0.02
L3	150.5 - 150	137.49	4	9.28	0.02
L4	150 - 145	136.52	4	9.27	0.02

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	145 - 140	126.98	4	9.07	0.02
L6	140 - 135	117.69	4	8.80	0.02
L7	135 - 130	108.70	4	8.46	0.02
L8	130 - 125	100.10	4	8.06	0.02
L9	125 - 120	91.95	4	7.59	0.01
L10	120 - 119.75	84.30	4	7.08	0.01
L11	119.75 - 114.75	83.93	4	7.06	0.01
L12	114.75 - 111.75	76.77	4	6.67	0.01
L13	111.75 - 111.5	72.67	4	6.43	0.01
L14	111.5 - 106.5	72.33	4	6.41	0.01
L15	106.5 - 97.17	65.85	4	6.02	0.01
L16	102 - 97	60.37	4	5.64	0.01
L17	97 - 92	54.58	4	5.44	0.01
L18	92 - 87	49.07	4	5.09	0.01
L19	87 - 82	43.94	4	4.73	0.01
L20	82 - 79.33	39.19	4	4.36	0.01
L21	79.33 - 79.08	36.80	4	4.17	0.01
L22	79.08 - 75.25	36.59	4	4.15	0.01
L23	75.25 - 75	33.34	4	3.96	0.01
L24	75 - 70	33.13	4	3.95	0.01
L25	70 - 65	29.13	4	3.70	0.01
L26	65 - 63.25	25.40	4	3.44	0.01
L27	63.25 - 63	24.16	4	3.35	0.01
L28	63 - 58	23.98	4	3.34	0.01
L29	58 - 49.08	20.61	4	3.10	0.01
L30	55 - 48.08	18.71	4	2.96	0.01
L31	48.08 - 43.08	14.55	4	2.77	0.01
L32	43.08 - 38.08	11.77	4	2.54	0.00
L33	38.08 - 37.75	9.24	4	2.30	0.00
L34	37.75 - 37.5	9.08	4	2.29	0.00
L35	37.5 - 35.75	8.96	4	2.28	0.00
L36	35.75 - 35.5	8.14	4	2.20	0.00
L37	35.5 - 30.5	8.03	4	2.19	0.00
L38	30.5 - 25.5	5.90	4	1.87	0.00
L39	25.5 - 20.5	4.11	4	1.55	0.00
L40	20.5 - 15.5	2.65	4	1.24	0.00
L41	15.5 - 10.5	1.51	4	0.94	0.00
L42	10.5 - 5.5	0.69	4	0.63	0.00
L43	5.5 - 0.5	0.19	4	0.33	0.00
L44	0.5 - 0	0.00	4	0.03	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
158.00	7770.00 w/ Mount Pipe	4	152.10	9.43	0.02	3322
149.00	BXA-70063/6CFx6 w/ Mount Pipe	4	134.60	9.23	0.02	1730
139.00	VHLP2.5-11	4	115.86	8.74	0.02	939
137.00	PCS 1900MHz 4x45W-65MHz	4	112.25	8.60	0.02	872
135.00	LLPX310R-V1 w/ Mount Pipe	4	108.70	8.46	0.02	812
116.00	LNX-6515DS-VTM w/ Mount Pipe	4	78.52	6.77	0.01	748
47.00	KS24019-L112A	4	13.93	2.73	0.01	1417

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	160 - 155 (1)	TP20x20x0.25	5.00	0.00	0.0	15.5116	-2.38

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L2	155 - 150.5 (2)	TP20x20x0.25	4.50	0.00	0.0	15.5116	-2.65
L3	150.5 - 150 (3)	TP20.3x20.3x0.25	0.50	0.00	0.0	15.7472	-2.69
L4	150 - 145 (4)	TP21.325x20.3x0.25	5.00	0.00	0.0	16.9654	-5.09
L5	145 - 140 (5)	TP22.35x21.325x0.25	5.00	0.00	0.0	17.7905	-5.48
L6	140 - 135 (6)	TP23.375x22.35x0.25	5.00	0.00	0.0	18.6156	-6.50
L7	135 - 130 (7)	TP24.3999x23.375x0.25	5.00	0.00	0.0	19.4407	-9.08
L8	130 - 125 (8)	TP25.4249x24.3999x0.25	5.00	0.00	0.0	20.2658	-9.67
L9	125 - 120 (9)	TP26.4499x25.4249x0.25	5.00	0.00	0.0	21.0909	-10.30
L10	120 - 119.75 (10)	TP26.5012x26.4499x0.3688	0.25	0.00	0.0	31.0290	-10.36
L11	119.75 - 114.75 (11)	TP27.5262x26.5012x0.3625	5.00	0.00	0.0	31.7068	-12.90
L12	114.75 - 111.75 (12)	TP28.1411x27.5262x0.3625	3.00	0.00	0.0	32.4246	-13.42
L13	111.75 - 111.5 (13)	TP28.1924x28.1411x0.4	0.25	0.00	0.0	35.7966	-13.48
L14	111.5 - 106.5 (14)	TP29.2174x28.1924x0.3938	5.00	0.00	0.0	36.5448	-14.40
L15	106.5 - 97.17 (15)	TP31.13x29.2174x0.3875	9.33	0.00	0.0	37.1235	-15.27
L16	97.17 - 97 (16)	TP30.665x29.6399x0.5125	5.00	0.00	0.0	49.7592	-17.13
L17	97 - 92 (17)	TP31.6902x30.665x0.5125	5.00	0.00	0.0	51.4509	-18.34
L18	92 - 87 (18)	TP32.7153x31.6902x0.5	5.00	0.00	0.0	51.8666	-19.62
L19	87 - 82 (19)	TP33.7404x32.7153x0.5	5.00	0.00	0.0	53.5171	-20.94
L20	82 - 79.33 (20)	TP34.2879x33.7404x0.5	2.67	0.00	0.0	54.3985	-21.66
L21	79.33 - 79.08 (21)	TP34.3391x34.2879x0.7625	0.25	0.00	0.0	82.4390	-21.77
L22	79.08 - 75.25 (22)	TP35.1244x34.3391x0.75	3.83	0.00	0.0	83.0142	-23.12
L23	75.25 - 75 (23)	TP35.1756x35.1244x0.75	0.25	0.00	0.0	83.1379	-23.23
L24	75 - 70 (24)	TP36.2008x35.1756x0.7375	5.00	0.00	0.0	84.2165	-25.04
L25	70 - 65 (25)	TP37.2259x36.2008x0.725	5.00	0.00	0.0	85.2114	-26.90
L26	65 - 63.25 (26)	TP37.5847x37.2259x0.725	1.75	0.00	0.0	86.0491	-27.54
L27	63.25 - 63 (27)	TP37.636x37.5847x0.8	0.25	0.00	0.0	94.8895	-27.67
L28	63 - 58 (28)	TP38.6611x37.636x0.775	5.00	0.00	0.0	94.5449	-29.70
L29	58 - 49.08 (29)	TP40.49x38.6611x0.775	8.92	0.00	0.0	96.0798	-30.95
L30	49.08 - 48.08 (30)	TP39.9447x38.5262x0.8375	6.92	0.00	0.0	105.4620	-36.17
L31	48.08 - 43.08 (31)	TP40.9696x39.9447x0.8125	5.00	0.00	0.0	105.0610	-38.54
L32	43.08 - 38.08 (32)	TP41.9945x40.9696x0.8125	5.00	0.00	0.0	107.7420	-40.87
L33	38.08 - 37.75 (33)	TP42.0621x41.9945x0.8125	0.33	0.00	0.0	107.9190	-41.03
L34	37.75 - 37.5 (34)	TP42.1133x42.0621x0.8625	0.25	0.00	0.0	114.5640	-41.16
L35	37.5 - 35.75 (35)	TP42.472x42.1133x0.8625	1.75	0.00	0.0	115.5600	-42.00
L36	35.75 - 35.5 (36)	TP42.5233x42.472x0.5875	0.25	0.00	0.0	79.3320	-42.12

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L37	35.5 - 30.5 (37)	TP43.5482x42.5233x0.575	5.00	0.00	0.0	79.5648	-44.04
L38	30.5 - 25.5 (38)	TP44.5731x43.5482x0.575	5.00	0.00	0.0	81.4624	-46.01
L39	25.5 - 20.5 (39)	TP45.598x44.5731x0.575	5.00	0.00	0.0	83.3600	-48.03
L40	20.5 - 15.5 (40)	TP46.6228x45.598x0.5688	5.00	0.00	0.0	84.3423	-50.08
L41	15.5 - 10.5 (41)	TP47.6477x46.6228x0.5625	5.00	0.00	0.0	85.2831	-52.17
L42	10.5 - 5.5 (42)	TP48.6726x47.6477x0.5625	5.00	0.00	0.0	87.1395	-54.29
L43	5.5 - 0.5 (43)	TP49.6975x48.6726x0.5625	5.00	0.00	0.0	88.9958	-56.45
L44	0.5 - 0 (44)	TP49.8x49.6975x0.5625	0.50	0.00	0.0	89.1814	-56.69

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L1	160 - 155 (1)	TP20x20x0.25	49.89	0.00
L2	155 - 150.5 (2)	TP20x20x0.25	86.17	0.00
L3	150.5 - 150 (3)	TP20.3x20.3x0.25	90.28	0.00
L4	150 - 145 (4)	TP21.325x20.3x0.25	160.35	0.00
L5	145 - 140 (5)	TP22.35x21.325x0.25	240.20	0.00
L6	140 - 135 (6)	TP23.375x22.35x0.25	326.67	0.00
L7	135 - 130 (7)	TP24.3999x23.375x0.25	445.11	0.00
L8	130 - 125 (8)	TP25.4249x24.3999x0.25	567.43	0.00
L9	125 - 120 (9)	TP26.4499x25.4249x0.25	693.76	0.00
L10	120 - 119.75 (10)	TP26.5012x26.4499x0.3688	700.18	0.00
L11	119.75 - 114.75 (11)	TP27.5262x26.5012x0.3625	839.15	0.00
L12	114.75 - 111.75 (12)	TP28.1411x27.5262x0.3625	931.85	0.00
L13	111.75 - 111.5 (13)	TP28.1924x28.1411x0.4	939.66	0.00
L14	111.5 - 106.5 (14)	TP29.2174x28.1924x0.3938	1098.22	0.00
L15	106.5 - 97.17 (15)	TP31.13x29.2174x0.3875	1245.05	0.00
L16	97.17 - 97 (16)	TP30.665x29.6399x0.5125	1413.20	0.00
L17	97 - 92 (17)	TP31.6902x30.665x0.5125	1586.67	0.00
L18	92 - 87 (18)	TP32.7153x31.6902x0.5	1765.15	0.00
L19	87 - 82 (19)	TP33.7404x32.7153x0.5	1948.64	0.00
L20	82 - 79.33 (20)	TP34.2879x33.7404x0.5	2048.72	0.00
L21	79.33 - 79.08 (21)	TP34.3391x34.2879x0.7625	2058.17	0.00
L22	79.08 - 75.25 (22)	TP35.1244x34.3391x0.75	2204.66	0.00
L23	75.25 - 75 (23)	TP35.1756x35.1244x0.75	2214.34	0.00
L24	75 - 70 (24)	TP36.2008x35.1756x0.7375	2410.84	0.00
L25	70 - 65 (25)	TP37.2259x36.2008x0.725	2612.95	0.00
L26	65 - 63.25 (26)	TP37.5847x37.2259x0.725	2685.01	0.00
L27	63.25 - 63 (27)	TP37.636x37.5847x0.8	2695.36	0.00
L28	63 - 58 (28)	TP38.6611x37.636x0.775	2905.30	0.00

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L29	58 - 49.08 (29)	TP40.49x38.6611x0.775	3033.94	0.00
L30	49.08 - 48.08 (30)	TP39.9447x38.5262x0.8375	3339.06	0.00
L31	48.08 - 43.08 (31)	TP40.9696x39.9447x0.8125	3566.78	0.00
L32	43.08 - 38.08 (32)	TP41.9945x40.9696x0.8125	3799.91	0.00
L33	38.08 - 37.75 (33)	TP42.0621x41.9945x0.8125	3815.48	0.00
L34	37.75 - 37.5 (34)	TP42.1133x42.0621x0.8625	3827.30	0.00
L35	37.5 - 35.75 (35)	TP42.472x42.1133x0.8625	3910.37	0.00
L36	35.75 - 35.5 (36)	TP42.5233x42.472x0.5875	3922.28	0.00
L37	35.5 - 30.5 (37)	TP43.5482x42.5233x0.575	4163.07	0.00
L38	30.5 - 25.5 (38)	TP44.5731x43.5482x0.575	4408.33	0.00
L39	25.5 - 20.5 (39)	TP45.598x44.5731x0.575	4657.79	0.00
L40	20.5 - 15.5 (40)	TP46.6228x45.598x0.5688	4911.23	0.00
L41	15.5 - 10.5 (41)	TP47.6477x46.6228x0.5625	5168.43	0.00
L42	10.5 - 5.5 (42)	TP48.6726x47.6477x0.5625	5429.30	0.00
L43	5.5 - 0.5 (43)	TP49.6975x48.6726x0.5625	5693.85	0.00
L44	0.5 - 0 (44)	TP49.8x49.6975x0.5625	5720.50	0.00

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	160 - 155 (1)	TP20x20x0.25	7.92	0.04
L2	155 - 150.5 (2)	TP20x20x0.25	8.21	0.04
L3	150.5 - 150 (3)	TP20.3x20.3x0.25	8.24	0.04
L4	150 - 145 (4)	TP21.325x20.3x0.25	15.65	0.47
L5	145 - 140 (5)	TP22.35x21.325x0.25	16.29	0.81
L6	140 - 135 (6)	TP23.375x22.35x0.25	18.40	0.95
L7	135 - 130 (7)	TP24.3999x23.375x0.25	24.08	0.94
L8	130 - 125 (8)	TP25.4249x24.3999x0.25	24.88	1.00
L9	125 - 120 (9)	TP26.4499x25.4249x0.25	25.68	1.06
L10	120 - 119.75 (10)	TP26.5012x26.4499x0.3688	25.74	1.07
L11	119.75 - 114.75 (11)	TP27.5262x26.5012x0.3625	30.64	1.16
L12	114.75 - 111.75 (12)	TP28.1411x27.5262x0.3625	31.20	1.23
L13	111.75 - 111.5 (13)	TP28.1924x28.1411x0.4	31.26	1.23
L14	111.5 - 106.5 (14)	TP29.2174x28.1924x0.3938	32.22	1.35
L15	106.5 - 97.17 (15)	TP31.13x29.2174x0.3875	33.08	1.46
L16	97.17 - 97 (16)	TP30.665x29.6399x0.5125	34.24	1.59
L17	97 - 92 (17)	TP31.6902x30.665x0.5125	35.22	1.72
L18	92 - 87 (18)	TP32.7153x31.6902x0.5	36.22	1.85
L19	87 - 82 (19)	TP33.7404x32.7153x0.5	37.23	1.98
L20	82 - 79.33	TP34.2879x33.7404x0.5	37.79	2.07

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
	(20)			
L21	79.33 - 79.08 (21)	TP34.3391x34.2879x0.7625	37.85	2.08
L22	79.08 - 75.25 (22)	TP35.1244x34.3391x0.75	38.71	2.22
L23	75.25 - 75 (23)	TP35.1756x35.1244x0.75	38.77	2.22
L24	75 - 70 (24)	TP36.2008x35.1756x0.7375	39.89	2.40
L25	70 - 65 (25)	TP37.2259x36.2008x0.725	41.01	2.58
L26	65 - 63.25 (26)	TP37.5847x37.2259x0.725	41.40	2.64
L27	63.25 - 63 (27)	TP37.636x37.5847x0.8	41.45	2.65
L28	63 - 58 (28)	TP38.6611x37.636x0.775	42.58	2.83
L29	58 - 49.08 (29)	TP40.49x38.6611x0.775	43.24	2.94
L30	49.08 - 48.08 (30)	TP39.9447x38.5262x0.8375	44.97	3.20
L31	48.08 - 43.08 (31)	TP40.9696x39.9447x0.8125	46.13	3.36
L32	43.08 - 38.08 (32)	TP41.9945x40.9696x0.8125	47.19	3.55
L33	38.08 - 37.75 (33)	TP42.0621x41.9945x0.8125	47.25	3.56
L34	37.75 - 37.5 (34)	TP42.1133x42.0621x0.8625	47.30	3.57
L35	37.5 - 35.75 (35)	TP42.472x42.1133x0.8625	47.69	3.64
L36	35.75 - 35.5 (36)	TP42.5233x42.472x0.5875	47.72	3.65
L37	35.5 - 30.5 (37)	TP43.5482x42.5233x0.575	48.66	3.83
L38	30.5 - 25.5 (38)	TP44.5731x43.5482x0.575	49.52	3.98
L39	25.5 - 20.5 (39)	TP45.598x44.5731x0.575	50.34	4.13
L40	20.5 - 15.5 (40)	TP46.6228x45.598x0.5688	51.12	4.27
L41	15.5 - 10.5 (41)	TP47.6477x46.6228x0.5625	51.85	4.42
L42	10.5 - 5.5 (42)	TP48.6726x47.6477x0.5625	52.59	4.57
L43	5.5 - 0.5 (43)	TP49.6975x48.6726x0.5625	53.32	4.72
L44	0.5 - 0 (44)	TP49.8x49.6975x0.5625	53.38	4.73

CCIpole

per TIA-222- G

Site BU: 806373

Work Order:

Copyright © 2017 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	160	9.5	0	0	20	20	0.25	n/a	A53-B-35
2	150.5	0.5	0	0	20.30	20.3	0.25	n/a	A53-B-35
3	150	52.83	4.83	12	20.30	31.13	0.25	1	A572-65
4	102	52.92	5.92	12	29.64	40.49	0.375	1.5	A572-65
5	55	55	0	12	38.53	49.8	0.4375	1.75	A572-65

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
1	0	37.75	plate	100FP-060100	3				o				o				o
2	37.75	75.25	plate	100FP-040100	3	o				o				o			
3	75.25	111.75	plate	100FP-040100	3				o				o				o
4	111.75	120	plate	100FP-040075	3	o				o				o			
5	35.75	63.25	plate	CCI-SFP-085125	3		o				o				o		
6	63.25	79.33	plate	CCI-SFP-065125	3		o				o				o		
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	6	1	6	0.5	35.000	35.000	17.000	4.750	1.1875	A514-GR100
2	4	1	4	0.5	20.000	20.000	20.000	2.750	1.1875	A514-GR100
3	4	1	4	0.5	20.000	20.000	20.000	2.750	1.1875	A514-GR100
4	4	0.75	3	0.375	17.000	17.000	15.000	2.063	1.1875	A514-GR100
5	8.5	1.25	10.625	0.625	45.000	45.000	17.000	9.063	1.1875	A572-65
6	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	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	160 - 155	5		0	20.000	20.000	0.25	A53-B-35	1.000
2	155 - 150.5	4.5	0	0	20.000	20.000	0.25	A53-B-35	1.000
3	150.5 - 150	0.5	0	0	20.300	20.300	0.25	A53-B-35	1.000
4	150 - 145	5		12	20.300	21.325	0.25	A572-65	1.000
5	145 - 140	5		12	21.325	22.350	0.25	A572-65	1.000
6	140 - 135	5		12	22.350	23.375	0.25	A572-65	1.000
7	135 - 130	5		12	23.375	24.400	0.25	A572-65	1.000
8	130 - 125	5		12	24.400	25.425	0.25	A572-65	1.000
9	125 - 120	5		12	25.425	26.450	0.25	A572-65	1.000
10	120 - 119.75	0.25		12	26.450	26.501	0.36875	A572-65	0.972
11	119.75 - 114.75	5		12	26.501	27.526	0.3625	A572-65	0.977
12	114.75 - 111.75	3		12	27.526	28.141	0.3625	A572-65	0.970
13	111.75 - 111.5	0.25		12	28.141	28.192	0.4	A572-65	0.964
14	111.5 - 106.5	5		12	28.192	29.217	0.39375	A572-65	0.967
15	106.5 - 102	9.33	4.83	12	29.217	31.130	0.3875	A572-65	0.972
16	102 - 97	5		12	29.640	30.665	0.5125	A572-65	0.977
17	97 - 92	5		12	30.665	31.690	0.5125	A572-65	0.969
18	92 - 87	5		12	31.690	32.715	0.5	A572-65	0.985
19	87 - 82	5		12	32.715	33.740	0.5	A572-65	0.977
20	82 - 79.33	2.67		12	33.740	34.288	0.5	A572-65	0.974
21	79.33 - 79.08	0.25		12	34.288	34.339	0.7625	A572-65	0.939
22	79.08 - 75.25	3.83		12	34.339	35.124	0.75	A572-65	0.944
23	75.25 - 75	0.25		12	35.124	35.176	0.75	A572-65	0.944
24	75 - 70	5		12	35.176	36.201	0.7375	A572-65	0.946
25	70 - 65	5		12	36.201	37.226	0.725	A572-65	0.950
26	65 - 63.25	1.75		12	37.226	37.585	0.725	A572-65	0.945
27	63.25 - 63	0.25		12	37.585	37.636	0.8	A572-65	0.937
28	63 - 58	5		12	37.636	38.661	0.775	A572-65	0.954
29	58 - 55	8.92	5.92	12	38.661	40.490	0.775	A572-65	0.946
30	55 - 48.08	6.92		12	38.526	39.945	0.8375	A572-65	0.944
31	48.08 - 43.08	5		12	39.945	40.970	0.8125	A572-65	0.962
32	43.08 - 38.08	5		12	40.970	41.994	0.8125	A572-65	0.951
33	38.08 - 37.75	0.33		12	41.994	42.062	0.8125	A572-65	0.950
34	37.75 - 37.5	0.25		12	42.062	42.113	0.8625	A572-65	0.948
35	37.5 - 35.75	1.75		12	42.113	42.472	0.8625	A572-65	0.945
36	35.75 - 35.5	0.25		12	42.472	42.523	0.5875	A572-65	0.975
37	35.5 - 30.5	5		12	42.523	43.548	0.575	A572-65	0.990
38	30.5 - 25.5	5		12	43.548	44.573	0.575	A572-65	0.985
39	25.5 - 20.5	5		12	44.573	45.598	0.575	A572-65	0.979
40	20.5 - 15.5	5		12	45.598	46.623	0.56875	A572-65	0.985
41	15.5 - 10.5	5		12	46.623	47.648	0.5625	A572-65	0.991
42	10.5 - 5.5	5		12	47.648	48.673	0.5625	A572-65	0.987
43	5.5 - 0.5	5		12	48.673	49.698	0.5625	A572-65	0.982
44	0.5 - 0	0.5		12	49.698	49.800	0.5625	A572-65	0.982

TNX Section Forces

Increment (ft): 5		TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	160 - 155	2.38	49.89	7.92
2	155 - 150.5	2.65	86.17	8.21
3	150.5 - 150	2.69	90.28	8.24
4	150 - 145	5.09	160.35	15.65
5	145 - 140	5.48	240.20	16.29
6	140 - 135	6.50	326.67	18.40
7	135 - 130	9.08	445.11	24.08
8	130 - 125	9.67	567.43	24.88
9	125 - 120	10.30	693.76	25.68
10	120 - 119.75	10.36	700.18	25.74
11	119.75 - 114.75	12.90	839.15	30.64
12	114.75 - 111.75	13.42	931.85	31.20
13	111.75 - 111.5	13.48	939.66	31.26
14	111.5 - 106.5	14.40	1098.22	32.22
15	106.5 - 102	15.27	1245.05	33.08
16	102 - 97	17.13	1413.20	34.24
17	97 - 92	18.34	1586.67	35.22
18	92 - 87	19.62	1765.15	36.22
19	87 - 82	20.94	1948.64	37.23
20	82 - 79.33	21.66	2048.71	37.79
21	79.33 - 79.08	21.77	2058.16	37.85
22	79.08 - 75.25	23.12	2204.66	38.71
23	75.25 - 75	23.23	2214.34	38.77
24	75 - 70	25.04	2410.84	39.89
25	70 - 65	26.90	2612.95	41.01
26	65 - 63.25	27.54	2685.01	41.40
27	63.25 - 63	27.67	2695.36	41.45
28	63 - 58	29.70	2905.30	42.58
29	58 - 55	30.95	3033.94	43.24
30	55 - 48.08	36.17	3339.06	44.97
31	48.08 - 43.08	38.54	3566.77	46.13
32	43.08 - 38.08	40.87	3799.91	47.19
33	38.08 - 37.75	41.03	3815.49	47.25
34	37.75 - 37.5	41.16	3827.30	47.30
35	37.5 - 35.75	42.00	3910.36	47.69
36	35.75 - 35.5	42.12	3922.28	47.72
37	35.5 - 30.5	44.04	4163.08	48.66
38	30.5 - 25.5	46.01	4408.33	49.52
39	25.5 - 20.5	48.03	4657.79	50.34
40	20.5 - 15.5	50.08	4911.23	51.12
41	15.5 - 10.5	52.17	5168.43	51.85
42	10.5 - 5.5	54.29	5429.30	52.59
43	5.5 - 0.5	56.45	5693.85	53.32
44	0.5 - 0	56.69	5720.50	53.38

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
160 - 155	Pole	TP20x20x0.25	Pole	21.3%	Pass
155 - 150.5	Pole	TP20x20x0.25	Pole	36.4%	Pass
150.5 - 150	Pole	TP20.3x20.3x0.25	Pole	37.1%	Pass
150 - 145	Pole	TP21.325x20.3x0.25	Pole	30.4%	Pass
145 - 140	Pole	TP22.35x21.325x0.25	Pole	41.4%	Pass
140 - 135	Pole	TP23.375x22.35x0.25	Pole	52.1%	Pass
135 - 130	Pole	TP24.4x23.375x0.25	Pole	66.1%	Pass
130 - 125	Pole	TP25.425x24.4x0.25	Pole	78.6%	Pass
125 - 120	Pole	TP26.45x25.425x0.25	Pole	90.0%	Pass
120 - 119.75	Pole + Reinf.	TP26.501x26.45x0.3688	Reinf. 4 Tension Rupture	75.3%	Pass
119.75 - 114.75	Pole + Reinf.	TP27.526x26.501x0.3625	Reinf. 4 Tension Rupture	84.6%	Pass
114.75 - 111.75	Pole + Reinf.	TP28.141x27.526x0.3625	Reinf. 4 Tension Rupture	90.4%	Pass
111.75 - 111.5	Pole + Reinf.	TP28.192x28.141x0.4	Reinf. 3 Tension Rupture	82.8%	Pass
111.5 - 106.5	Pole + Reinf.	TP29.217x28.192x0.3938	Reinf. 3 Tension Rupture	91.2%	Pass
106.5 - 102	Pole + Reinf.	TP31.13x29.217x0.3875	Reinf. 3 Tension Rupture	98.1%	Pass
102 - 97	Pole + Reinf.	TP30.665x29.64x0.5125	Reinf. 3 Tension Rupture	82.1%	Pass
97 - 92	Pole + Reinf.	TP31.69x30.665x0.5125	Reinf. 3 Tension Rupture	87.0%	Pass
92 - 87	Pole + Reinf.	TP32.715x31.69x0.5	Reinf. 3 Tension Rupture	91.4%	Pass
87 - 82	Pole + Reinf.	TP33.74x32.715x0.5	Reinf. 3 Tension Rupture	95.4%	Pass
82 - 79.33	Pole + Reinf.	TP34.288x33.74x0.5	Reinf. 3 Tension Rupture	97.5%	Pass
79.33 - 79.08	Pole + Reinf.	TP34.339x34.288x0.7625	Reinf. 6 Tension Rupture	77.1%	Pass
79.08 - 75.25	Pole + Reinf.	TP35.124x34.339x0.75	Reinf. 6 Tension Rupture	79.8%	Pass
75.25 - 75	Pole + Reinf.	TP35.176x35.124x0.75	Reinf. 6 Tension Rupture	80.0%	Pass
75 - 70	Pole + Reinf.	TP36.201x35.176x0.7375	Reinf. 6 Tension Rupture	83.3%	Pass
70 - 65	Pole + Reinf.	TP37.226x36.201x0.725	Reinf. 6 Tension Rupture	86.5%	Pass
65 - 63.25	Pole + Reinf.	TP37.585x37.226x0.725	Reinf. 6 Tension Rupture	87.6%	Pass
63.25 - 63	Pole + Reinf.	TP37.636x37.585x0.8	Reinf. 5 Compression	75.8%	Pass
63 - 58	Pole + Reinf.	TP38.661x37.636x0.775	Reinf. 5 Compression	78.5%	Pass
58 - 55	Pole + Reinf.	TP40.49x38.661x0.775	Reinf. 5 Compression	80.0%	Pass
55 - 48.08	Pole + Reinf.	TP39.945x38.526x0.8375	Reinf. 5 Compression	79.4%	Pass
48.08 - 43.08	Pole + Reinf.	TP40.97x39.945x0.8125	Reinf. 5 Compression	81.6%	Pass
43.08 - 38.08	Pole + Reinf.	TP41.994x40.97x0.8125	Reinf. 5 Compression	83.6%	Pass
38.08 - 37.75	Pole + Reinf.	TP42.062x41.994x0.8125	Reinf. 5 Compression	83.7%	Pass
37.75 - 37.5	Pole + Reinf.	TP42.113x42.062x0.8625	Reinf. 5 Compression	79.1%	Pass
37.5 - 35.75	Pole + Reinf.	TP42.472x42.113x0.8625	Reinf. 5 Compression	79.7%	Pass
35.75 - 35.5	Pole + Reinf.	TP42.523x42.472x0.5875	Reinf. 1 Compression	89.7%	Pass
35.5 - 30.5	Pole + Reinf.	TP43.548x42.523x0.575	Reinf. 1 Compression	91.2%	Pass
30.5 - 25.5	Pole + Reinf.	TP44.573x43.548x0.575	Reinf. 1 Compression	92.7%	Pass
25.5 - 20.5	Pole + Reinf.	TP45.598x44.573x0.575	Reinf. 1 Compression	94.0%	Pass
20.5 - 15.5	Pole + Reinf.	TP46.623x45.598x0.5688	Reinf. 1 Compression	95.2%	Pass
15.5 - 10.5	Pole + Reinf.	TP47.648x46.623x0.5625	Reinf. 1 Compression	96.4%	Pass
10.5 - 5.5	Pole + Reinf.	TP48.673x47.648x0.5625	Reinf. 1 Compression	97.4%	Pass
5.5 - 0.5	Pole + Reinf.	TP49.698x48.673x0.5625	Reinf. 1 Compression	98.4%	Pass
0.5 - 0	Pole + Reinf.	TP49.8x49.698x0.5625	Reinf. 1 Compression	98.5%	Pass
				Summary	
			Pole	93.9%	Pass
			Reinforcement	98.5%	Pass
			Overall	98.5%	Pass

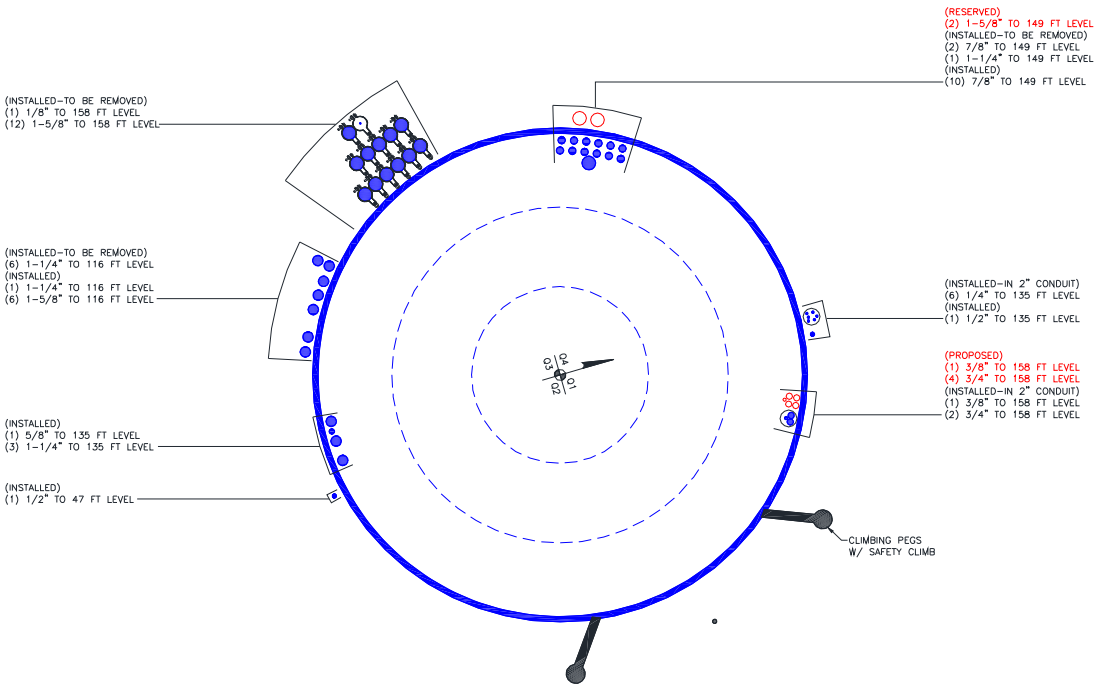
Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
160 - 155	756	n/a	756	15.51	n/a	15.51	21.3%						
155 - 150.5	756	n/a	756	15.51	n/a	15.51	36.4%						
150.5 - 150	791	n/a	791	15.75	n/a	15.75	37.1%						
150 - 145	963	n/a	963	16.94	n/a	16.94	30.4%						
145 - 140	1111	n/a	1111	17.77	n/a	17.77	41.4%						
140 - 135	1272	n/a	1272	18.59	n/a	18.59	52.1%						
135 - 130	1449	n/a	1449	19.41	n/a	19.41	66.1%						
130 - 125	1642	n/a	1642	20.24	n/a	20.24	78.6%						
125 - 120	1850	n/a	1850	21.06	n/a	21.06	90.0%						
120 - 119.75	1861	842	2703	21.10	9.00	30.10	60.3%				75.3%		
119.75 - 114.75	2088	906	2994	21.93	9.00	30.93	68.9%				84.6%		
114.75 - 111.75	2232	945	3178	22.42	9.00	31.42	74.3%				90.4%		
111.75 - 111.5	2245	1287	3531	22.46	12.00	34.46	67.6%			82.8%			
111.5 - 106.5	2501	1378	3879	23.29	12.00	35.29	75.8%			91.2%			
106.5 - 102	2747	1463	4211	24.03	12.00	36.03	82.8%			98.1%			
102 - 97	4289	1513	5802	36.52	12.00	48.52	61.3%			82.1%			
97 - 92	4739	1611	6351	37.76	12.00	49.76	65.0%			87.0%			
92 - 87	5220	1714	6934	39.00	12.00	51.00	68.4%			91.4%			
87 - 82	5733	1819	7551	40.23	12.00	52.23	72.0%			95.4%			
82 - 79.33	6019	1876	7896	40.89	12.00	52.89	73.9%			97.5%			
79.33 - 79.08	6047	5785	11832	40.95	36.38	77.33	49.7%			65.5%			77.1%
79.08 - 75.25	6476	6042	12518	41.90	36.38	78.27	51.9%			67.8%			79.8%
75.25 - 75	6505	6059	12563	41.96	36.38	78.34	52.0%		67.9%				80.0%
75 - 70	7097	6402	13499	43.20	36.38	79.57	54.8%		70.8%				83.3%
70 - 65	7723	6755	14479	44.43	36.38	80.81	57.5%		73.5%				86.5%
65 - 63.25	7951	6881	14832	44.87	36.38	81.24	58.5%		74.5%				87.6%
63.25 - 63	7984	8370	16355	44.93	43.88	88.80	53.3%		67.9%			75.8%	
63 - 58	8661	8813	17474	46.16	43.88	90.04	55.8%		70.3%			78.5%	
58 - 55	9086	9084	18169	46.91	43.88	90.78	57.3%		71.7%			80.0%	
55 - 48.08	11103	9383	20486	55.58	43.88	99.45	54.2%		71.2%			79.4%	
48.08 - 43.08	11990	9851	21840	57.02	43.88	100.89	56.2%		73.1%			81.6%	
43.08 - 38.08	12922	10330	23253	58.46	43.88	102.33	58.1%		75.0%			83.6%	
38.08 - 37.75	12985	10362	23348	58.55	43.88	102.43	58.3%		75.1%			83.7%	
37.75 - 37.5	13034	11800	24834	58.63	49.88	108.50	55.0%	61.9%				79.1%	
37.5 - 35.75	13373	11994	25367	59.13	49.88	109.01	55.7%	62.4%				79.7%	
35.75 - 35.5	13422	4290	17712	59.20	18.00	77.20	80.0%	89.7%					
35.5 - 30.5	14427	4493	18920	60.65	18.00	78.65	82.2%	91.2%					
30.5 - 25.5	15480	4701	20181	62.09	18.00	80.09	84.2%	92.7%					
25.5 - 20.5	16584	4913	21497	63.53	18.00	81.53	86.2%	94.0%					
20.5 - 15.5	17739	5131	22869	64.97	18.00	82.97	88.2%	95.2%					
15.5 - 10.5	18946	5353	24298	66.41	18.00	84.41	90.1%	96.4%					
10.5 - 5.5	20207	5579	25786	67.85	18.00	85.85	91.9%	97.4%					
5.5 - 0.5	21522	5811	27333	69.30	18.00	87.30	93.7%	98.4%					
0.5 - 0	21657	5834	27491	69.44	18.00	87.44	93.9%	98.5%					

Note: Section capacity checked in 5 degree increments.

APPENDIX B

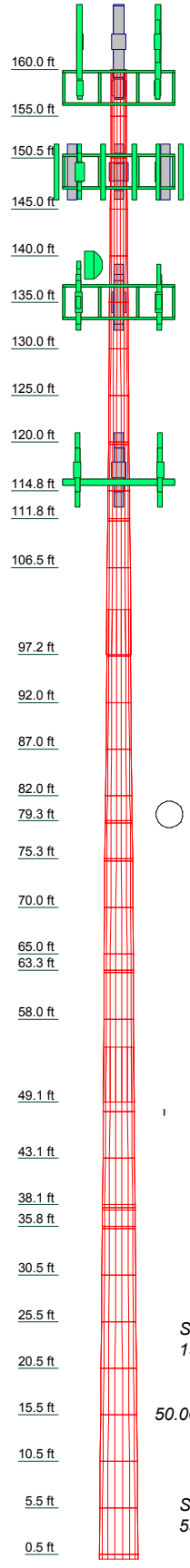
BASE LEVEL DRAWING


(RESERVED)
(2) 1-5/8" TO 149 FT LEVEL
(INSTALLED-TO BE REMOVED)
(2) 7/8" TO 149 FT LEVEL
(1) 1-1/4" TO 149 FT LEVEL
(INSTALLED)
(10) 7/8" TO 149 FT LEVEL
(INSTALLED-TO BE REMOVED)
(1) 1/8" TO 158 FT LEVEL
(12) 1-5/8" TO 158 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-1/4" TO 116 FT LEVEL
(INSTALLED)
(1) 1-1/4" TO 116 FT LEVEL
(6) 1-5/8" TO 116 FT LEVEL
(INSTALLED-IN 2" CONDUIT)
(6) 1/4" TO 135 FT LEVEL
(INSTALLED)
(1) 1/2" TO 135 FT LEVEL
(PROPOSED)
(1) 3/8" TO 158 FT LEVEL
(4) 3/4" TO 158 FT LEVEL
(INSTALLED-IN 2" CONDUIT)
(1) 3/8" TO 158 FT LEVEL
(2) 3/4" TO 158 FT LEVEL
(INSTALLED)
(1) 5/8" TO 135 FT LEVEL
(3) 1-1/4" TO 135 FT LEVEL
(INSTALLED)
(1) 1/2" TO 47 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB
04
03
01
02

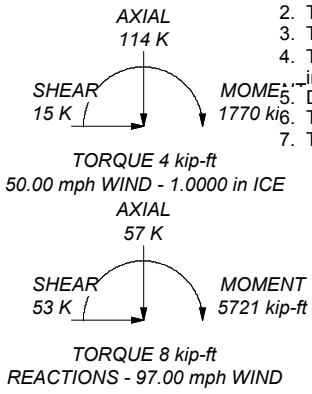
APPENDIX C

ADDITIONAL CALCULATIONS

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	37	38	39	40	41	42	43	44
Length (ft)	5.00	4.50	0	5.000	5.00	5.00	5.00	5.00	5.00	5.00	5.000	5.00	5.00	5.000	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.000	5.00	5.00	5.00	5.00	5.00	5.000	6.92	5.00	5.00	5.00	5.00	5.00	5.00	5.000	5.00	5.00	5.00	5.00	5.00	5.00	5.00	0.505
Number of Sides	12	0	0	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500	0.3125	0.3125	0.3125	0.3125	0.3750	0.3750	0.5000	0.5000	0.5000	0.5000	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.6250	0.7500	0.7750	0.8750	0.8125	0.8125	0.8750	0.8750	0.8750	0.8750	0.8750	0.7500	0.7500	0.6875	0.6875	0.6250	0.6250	0.5625
Socket Length (ft)															4.83														5.92																	
Top Dia (in)	20.0000	20.0000	20.0000	20.3800	21.3250	22.3500	23.3750	24.3992	24.4992	24.5992	25.3625	25.5625	26.3125	26.5125	28.1299	28.3299	29.2174	31.1300	31.6902	31.6902	32.7153	32.7153	33.7403	33.7403	34.7653	34.7653	35.7903	37.6350	38.6611	40.4900	40.9699	41.9945	42.5722	43.5482	43.5482	44.5731	44.5731	45.5980	45.5980	46.6228	46.6228	47.6477	47.6477	48.6726
Bot Dia (in)	20.0000	20.0000	20.0000	21.3260	21.3250	22.3500	23.3750	24.3992	25.4492	24.4992	25.5625	26.3125	27.5625	26.5125	29.2174	29.3174	30.1300	31.6902	31.6902	32.7153	32.7153	33.7403	33.7403	34.7653	34.7653	35.7903	35.7903	38.6611	40.4900	40.9699	41.9945	42.5722	43.5482	43.5482	44.5731	44.5731	45.5980	45.5980	46.6228	46.6228	47.6477	47.6477	48.6726	48.6726
Grade	A53-B-35														A572-65																															
Weight (K)	0.3	0.2	0.0	0.3	0.3	0.3	0.3	0.3	0.4	0.0	0.5	0.3	0.6	0.6	1.1	0.8	0.8	0.9	0.9	0.5	1.0	1.1	1.3	1.4	1.5	1.5	1.4	1.5	2.8	2.3	1.7	1.7	1.1	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.1	0.0



ALL REACTIONS ARE FACTORED



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
7770.00 w/ Mount Pipe	158	800MHz 2X50W RRH W/FILTER	137
7770.00 w/ Mount Pipe	158	800MHz 2X50W RRH W/FILTER	137
7770.00 w/ Mount Pipe	158	800MHz 2X50W RRH W/FILTER	137
RRUS 11 B12	158	Side Arm Mount [SO 101-3]	137
RRUS 11 B12	158	LLPX310R-V1 w/ Mount Pipe	135
RRUS 11 B12	158	LLPX310R-V1 w/ Mount Pipe	135
DC6-48-60-18-8F	158	LLPX310R-V1 w/ Mount Pipe	135
HPA-65R-BUU-H8 w/ Mount Pipe	158	APXVSPP18-C-A20 w/ Mount Pipe	135
HPA-65R-BUU-H8 w/ Mount Pipe	158	APXV9ERR18-C-A20 w/ Mount Pipe	135
HPA-65R-BUU-H8 w/ Mount Pipe	158	APXVSPP18-C-A20 w/ Mount Pipe	135
TPA-65R-LCUUUU-H8 w/ Mount Pipe	158	APXVTM14-C-120 w/ Mount Pipe	135
TPA-65R-LCUUUU-H8 w/ Mount Pipe	158	APXVTM14-C-120 w/ Mount Pipe	135
TPA-65R-LCUUUU-H8 w/ Mount Pipe	158	APXVTM14-C-120 w/ Mount Pipe	135
RRUS 11	158	TIMING 2000	135
RRUS 11	158	TD-RRH8x20-25	135
RRUS 11	158	TD-RRH8x20-25	135
RRUS 32	158	TD-RRH8x20-25	135
RRUS 32	158	WIMAX DAP HEAD	135
RRUS 32	158	WIMAX DAP HEAD	135
RRUS 32 B2	158	WIMAX DAP HEAD	135
RRUS 32 B2	158	HORIZON COMPACT	135
RRUS 32 B2	158	Platform Mount [LP 602-1]	135
(2) DC6-48-60-18-8F	158	VHLP2.5-11	135
Platform Mount [LP 303-1]	158	LNX-6515DS-VTM w/ Mount Pipe	116
BXA-70063/6CFx6 w/ Mount Pipe	149	LNX-6515DS-VTM w/ Mount Pipe	116
BXA-70063/6CF w/ Mount Pipe	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
BXA-70063/6CFx4 w/ Mount Pipe	149		
DB-T1-6Z-8AB-0Z	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
BXA-80063/4CF w/ Mount Pipe	149		
BXA-80080/4CF w/ Mount Pipe	149	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	116
BXA-80080/4CF w/ Mount Pipe	149		
(2) SBNHH-1D65B w/ Mount Pipe	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
(2) SBNHH-1D65B w/ Mount Pipe	149		
(2) SBNHH-1D65B w/ Mount Pipe	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
B13 RRH 4X30	149		
B13 RRH 4X30	149	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	116
B13 RRH 4X30	149		
PCS B25 RRH4x30	149	KRY 112 144/1	116
PCS B25 RRH4x30	149	KRY 112 144/1	116
PCS B25 RRH4x30	149	KRY 112 144/1	116
PCS B25 RRH4x30	149	RRUS 11 B12	116
RRH4X45-AWS4 B66	149	RRUS 11 B12	116
RRH4X45-AWS4 B66	149	RRUS 11 B12	116
RRH4X45-AWS4 B66	149	RRUS 11 B12	116
DB-T1-6Z-8AB-0Z	149	T-Arm Mount [TA 602-3]	116
Platform Mount [LP 602-1]	149	LNX-6515DS-VTM w/ Mount Pipe	116
PCS 1900MHz 4x45W-65MHz	137	Side Arm Mount [SO 701-1]	47
PCS 1900MHz 4x45W-65MHz	137	KS24019-L112A	47
PCS 1900MHz 4x45W-65MHz	137		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A572-65	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-G Standard.
3. Tower designed for a 97.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

Paul J. Ford and Company
250 East Broad Street, Suite 600
Columbus, Ohio 43215
Phone: 614-221-6679
FAX:

Job: 151-Ft Monopole / HRY 101 943232		
Project: 37517-2810.001 / BU # 806373		
Client: CCI	Drawn by: nmiller	App'd:
Code: TIA-222-G	Date: 10/23/17	Scale: NTS
Path: G:\TOWER\375_Crown_Castle\2017\37517-2810_806373_HRT 101 943232\37517-2810.002.7805_SA_1477020\37517-2810.002_CCIpole.eri		Dwg No. E-1

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Job Number:	37516-2997.003.7805	Page:	1
Site Number:	806373	Date:	10/23/2017
Site Name:	HRT 101 943232	Version:	2.6
By:	MLS	Effective:	12/10/2015

Channel Jump Analysis

Revision= LRFD Passing= 100% Design/Analysis = Analysis @ 150 ft - in elevation

TNX Tower Output @ Connection:			
Moment	=	90.28	k-ft
Axial	=	2.69	kips
Shear	=	8.24	kips
Design Capacity	=		
Pole Geometry:			
Diameter	=	20.3	in
Thickness	=	1/4	in
Pole Grade	=	A572 Gr. 65	
Extension Geometry:			
Diameter	=	20	in
Thickness	=	1/4	in
Height	=	10	ft
Extension Grade	=	A53 Gr. B	
Channel Jump Information			
Number of Legs	=	3	
Unbraced Length	=	22	in
Channel Grade	=	A572 Gr. 50	
K	=	2.10	
Channel Circle	=	22.54	in
Circle Override	=		in
Type	=	MC10X28.5	

	Extension	Pole
Blind Bolt	EXISTING AJAX	EXISTING AJAX
Bolt Method	Case 1	Case 1
Bolt Qty.	6	6
Spacing (in)	3	3
End Dist. (in)	2	2

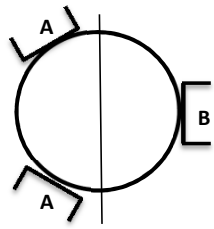
New Port Information			
Elevation #1	=		ft
Elevation #2	=		ft
Elevation #3	=		ft
Elevation #4	=		ft

Design Reactions

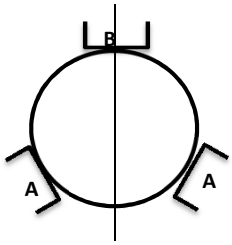
Moment k-ft	Axial kips	Shear kips
90.28	2.69	8.24

Load Distribution

Moment of Inertia, I in^2	Axial / Leg kips
190.52	0.897



Case 1



Case 2

Member Forces

Case	d	Tension (kips)	Comp. (kips)	Mx (k-in)	My (k-in)	M (k-in)
1a	5.64	31.15	32.94	74.19	42.83	85.67
1b	11.27	63.19	64.98	0.00	9.95	9.95
2a	9.76	54.60	56.40	17.59	30.47	35.19
2b	0.00	0.90	0.90	110.91	0.00	110.91

Tensile Strength

Case	P_{n1} kips	P_{n2} kips	øtPnt kips	P_{rt} kips	Capacity
1a	418.5	508.655	376.65	31.15	8.3%
1b	418.5	508.655	376.65	63.19	16.8%
2a	418.5	508.655	376.65	54.60	14.5%
2b	418.5	508.655	376.65	0.90	0.2%

Compression Strength

Case	$4.71*\sqrt{(E/F_y)}$	KL/r	F_e ksi	F_{cr} ksi	øcPnc kips	P_{rc} kips	Capacity
1a	113.43	39.83	180.44	44.52	335.40	32.94	9.8%
1b	113.43	39.83	180.44	44.52	335.40	64.98	19.4%
2a	113.43	39.83	180.44	44.52	335.40	56.40	16.8%
2b	113.43	39.83	180.44	44.52	335.40	0.90	0.3%

Flexural Strength

Case	ø	I_3 in^4	∑I in^4	M k-in	f_A ksi	F_A ksi	øbMn k-in	Capacity
1a	60	97.325	205.95	85.67	7.18947	45	-	16.0%
1b	0	11.3	205.95	9.95	-	-	287.28	3.5%
2a	30	39.975	205.95	35.19	3.71842	45	-	8.3%
2b	90	126	205.95	110.91	-	-	1350	8.2%

Combined Strength

Case	Flexure + Tension (H1) Prt / Pnt	Mr / Mn	Capacity
1a	0.041	0.160	20.1%
1b	0.084	0.035	11.9%
2a	0.072	0.083	15.5%
2b	0.001	0.082	8.3%

Case	Flexure + Compression (H1) Prc / Pnc	Mr / Mn	Capacity
1a	0.049	0.160	20.9%
1b	0.097	0.035	13.1%
2a	0.084	0.083	16.7%
2b	0.001	0.082	8.3%

Bolt Check

Case	Location	Channel Comp. kips	e in	Shear on Bolt kips	Bearing Capacity kips	Shear Capacity kips	Tension on Bolt kips	Tension Capacity kips	Limit Capacity
1a	Ext	32.94	1.27	5.50	24.36	37.00	1.51	30.00	5.4%
	Pole	32.94	1.12	6.75	32.48	37.00	2.66	30.00	5.1%
1b	Ext	64.98	1.27	10.83	24.36	37.00	2.98	30.00	20.8%
	Pole	64.98	1.12	10.83	32.48	37.00	2.98	30.00	12.1%
2a	Ext	56.40	1.27	9.40	24.36	37.00	2.58	30.00	15.6%
	Pole	56.40	1.12	9.46	32.48	37.00	3.26	30.00	9.7%
2b	Ext	0.90	1.27	0.48	24.36	37.00	0.03	30.00	0.0%
	Pole	0.90	1.12	5.74	32.48	37.00	0.03	30.00	3.1%

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 10/23/2017
PJF Project: 37517-2810.002.7805
Client Ref. # 806373
Site Name: HRT 101 943232
Description: 160' Pole
Owner: Crown Castle
Engineer: NCM

Asymmetric Anchor Rod Analysis

Moment =	5721	k-ft	TIA Ref.	G	Location =	Base Plate		
Axial =	57.0	kips	ASIF =	1.0000	η =	0.50	for BP, Rev. G Sect. 4.9.9	
Shear =	53.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	19							

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.0	58.06	0.00	3.98	245.37	239.37	250.95	0.00	260.00	96.5%
2	2.250	#18J A615 Gr 75	75	100	22.5	58.06	0.00	3.98	240.95	234.95	246.53	0.00	260.00	94.8%
3	2.250	#18J A615 Gr 75	75	100	45.0	58.06	0.00	3.98	239.45	233.45	245.03	0.00	260.00	94.2%
4	2.250	#18J A615 Gr 75	75	100	67.5	58.06	0.00	3.98	241.27	235.26	246.85	0.00	260.00	94.9%
5	2.250	#18J A615 Gr 75	75	100	90.0	58.06	0.00	3.98	244.78	238.77	250.36	0.00	260.00	96.3%
6	2.250	#18J A615 Gr 75	75	100	112.5	58.06	0.00	3.98	247.52	241.52	253.10	0.00	260.00	97.3%
7	2.250	#18J A615 Gr 75	75	100	135.0	58.06	0.00	3.98	247.71	241.71	253.29	0.00	260.00	97.4%
8	2.250	#18J A615 Gr 75	75	100	157.5	58.06	0.00	3.98	245.24	239.24	250.82	0.00	260.00	96.5%
9	2.250	#18J A615 Gr 75	75	100	180.0	58.06	0.00	3.98	241.69	235.69	247.27	0.00	260.00	95.1%
10	2.250	#18J A615 Gr 75	75	100	202.5	58.06	0.00	3.98	239.52	233.52	245.10	0.00	260.00	94.3%
11	2.250	#18J A615 Gr 75	75	100	225.0	58.06	0.00	3.98	240.55	234.55	246.13	0.00	260.00	94.7%
12	2.250	#18J A615 Gr 75	75	100	247.5	58.06	0.00	3.98	244.68	238.68	250.26	0.00	260.00	96.3%
13	2.250	#18J A615 Gr 75	75	100	270.0	58.06	0.00	3.98	249.91	243.90	255.49	0.00	260.00	98.3%
14	2.250	#18J A615 Gr 75	75	100	292.5	58.06	0.00	3.98	253.57	247.57	259.15	0.00	260.00	99.7%
15	2.250	#18J A615 Gr 75	75	100	315.0	58.06	0.00	3.98	253.82	247.82	259.40	0.00	260.00	99.8%
16	2.250	#18J A615 Gr 75	75	100	337.5	58.06	0.00	3.98	250.54	244.54	256.12	0.00	260.00	98.5%
17	2.250	A193 Gr B7	105	125	12.3	63.00	0.00	3.98	262.73	256.73	268.30	0.00	325.00	82.6%
18	2.250	A193 Gr B7	105	125	125.3	63.00	0.00	3.98	268.84	262.84	274.41	0.00	325.00	84.4%
19	2.250	A193 Gr B7	105	125	238.3	63.00	0.00	3.98	262.73	256.73	268.30	0.00	325.00	82.6%
								75.61						

© Copyright 2011, Paul J. Ford and Company, all right reserved.

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

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data	
BU#:	
Site Name:	
App #:	
Pole Manufacturer:	*Other*

Reactions		
Mu:	4854.2	ft-kips
Axial, Pu:	48	kips
Shear, Vu:	44.6	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

Reactions adjusted to account for post installed anchors

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	58.06	in

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

Anchor Rod Results

Max Rod (Cu+ Vu/ή):	259.4	Kips
Allowable Axial, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	99.8%	**Pass**

Rigid
AISC LRFD
φ*Tn

Plate Data		
Diam:	64.06	in
Thick:	2.75	in
Grade:	60	ksi
Single-Rod B-eff:	10.01	in

Base Plate Results Flexural Check

Base Plate Stress:	34.6	ksi
Allowable Plate Stress:	54.0	ksi
Base Plate Stress Ratio:	64.0%	**Pass**

Rigid
AISC LRFD
φ*Fy
Y.L. Length: 29.85

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

n/a

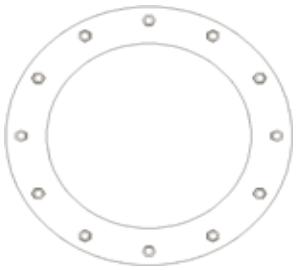
Stiffener Results

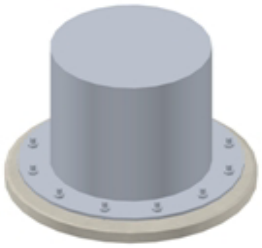
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	49.8	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None





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

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

Drilled Pier Foundation

BU # :	806373
Site Name:	
App. Number:	

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	5721	
Axial Force (kips)	57	
Shear Force (kips)	53	

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

Pier Design Data		
Depth	24.5	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 24.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	36	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	4	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	6.58	-
Soil Safety Factor	1.63	-
Max Moment (kip-ft)	6022.32	-
Rating	*81.7%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	358.56	-
End Bearing (kips)	490.68	-
Weight of Concrete (kips)	117.57	-
Total Capacity (kips)	849.23	-
Axial (kips)	174.57	-
Rating	*20.6%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	6.60	-
Critical Moment (kip-ft)	6022.30	-
Critical Moment Capacity	8485.40	-
Rating	*71.0%*	-

Soil Interaction Rating	**81.7%**
Structural Foundation Rating	**71.0%**

Soil Profile

Groundwater Depth	4	ft	# of Layers	4

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	3.5	3.5	100	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	4	0.5	100	150	0	28	0.464	0.464				38	Cohesionless
3	4	5	1	62.6	87.6	0	42	0.523	0.523			8	38	Cohesionless
4	5	24.5	19.5	65	87.6	0	42	1.076	1.076			17	60	Cohesionless

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5154

Enfield CT
4 Oliver Street
Enfield, CT 6082

January 22, 2018

Centerline Communications Project Number: 950012-015

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**11.03 %**

January 22, 2018

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5154 – Enfield CT**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **4 Oliver Street, Enfield, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **4 Oliver Street, Enfield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	4	60
LTE	2300 MHz (WCS)	4	60

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	163
A	2	CCI HPA-65R-BUU-H8	163
A	3	CCI TPA-65R-LCUUUU-H8	163
B	1	Powerwave 7770	163
B	2	CCI HPA-65R-BUU-H8	163
B	3	CCI TPA-65R-LCUUUU-H8	163
C	1	Powerwave 7770	163
C	2	CCI HPA-65R-BUU-H8	163
C	3	CCI TPA-65R-LCUUUU-H8	163

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.40
Antenna A2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	360	9,981.05	1.87
Antenna A3	CCI TPA-65R-LCUUUU-H8	2300 MHz (WCS)	14.45	4	240	6,686.69	0.98
						Sector A Composite MPE%	**3.25**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.40
Antenna B2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	360	9,981.05	1.87
Antenna B3	CCI TPA-65R-LCUUUU-H8	2300 MHz (WCS)	14.45	4	240	6,686.69	0.98
						Sector B Composite MPE%	**3.25**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.40
Antenna C2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	360	9,981.05	1.87
Antenna C3	CCI TPA-65R-LCUUUU-H8	2300 MHz (WCS)	14.45	4	240	6,686.69	0.98
						Sector C Composite MPE%	**3.25**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**3.25 %**
Verizon Wireless	3.40 %
T-Mobile	3.27 %
Clearwire	0.11 %
Sprint	0.38 %
Nextel	0.22 %
XM Satellite Radio	0.13 %
PageNet	0.27 %
Site Total MPE %:	**11.03 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	3.25 %
AT&T Sector B Total:	3.25 %
AT&T Sector C Total:	3.25 %
Site Total:	11.03 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	163	1.21	850 MHz	567	0.21%
AT&T 1900 MHz (PCS) UMTS	2	656.33	163	1.91	1900 MHz (PCS)	1000	0.19%
AT&T 700 MHz LTE	2	1,239.23	163	3.61	700 MHz	467	0.77%
AT&T 1900 MHz (PCS) LTE	4	1,875.65	163	10.94	1900 MHz (PCS)	1000	1.09%
AT&T 2300 MHz (WCS) LTE	4	1,671.67	163	9.75	2300 MHz (WCS)	1000	0.98%
						Total:	**3.25%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

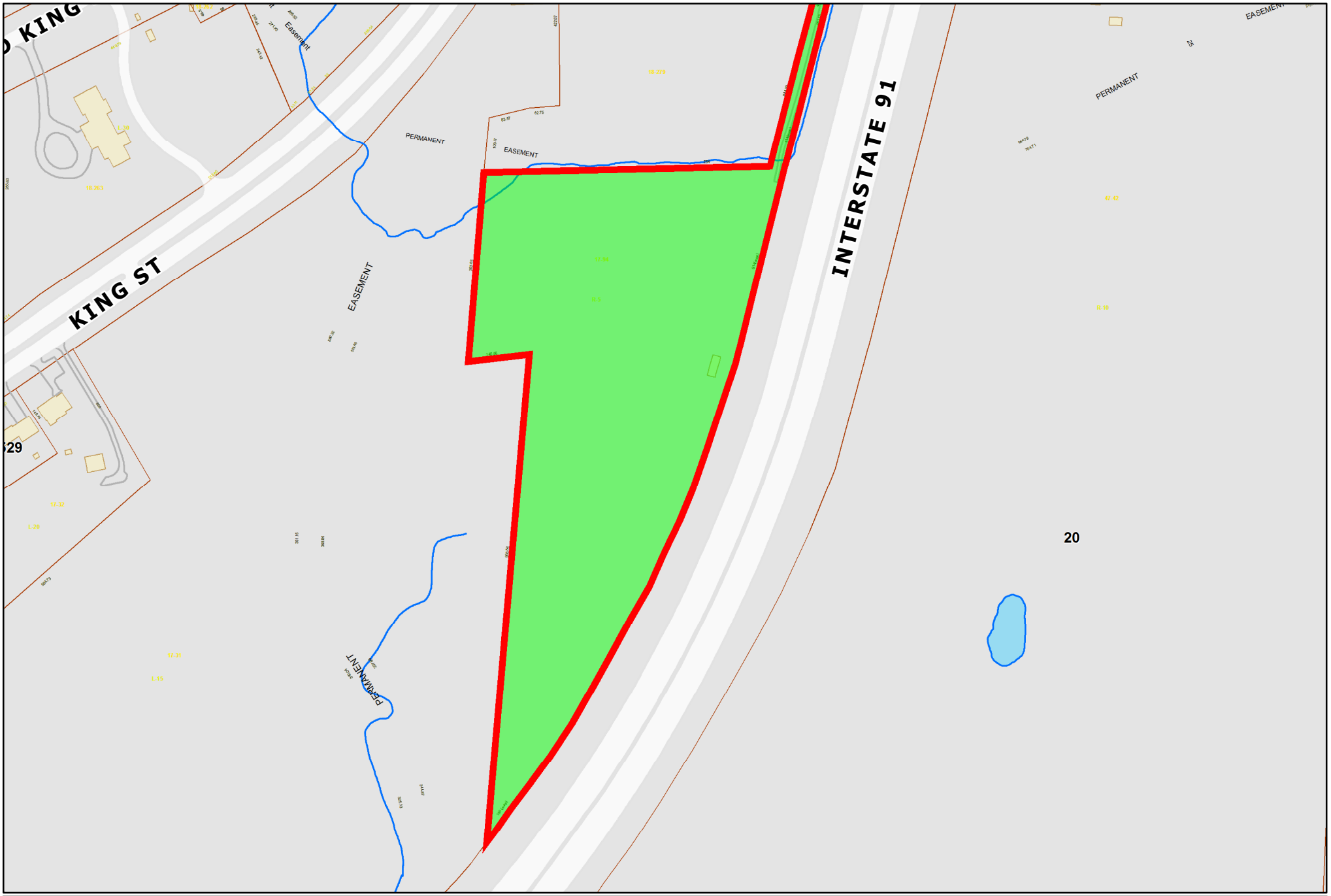
The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	3.25 %
Sector B:	3.25 %
Sector C:	3.25 %
AT&T Maximum Total (per sector):	3.25 %
Site Total:	11.03 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.03 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767



Oliver Road 17-94

N
W E
S

Feet
0 50 100 200 300 400
1 inch = 248 feet

The Town of Enfield, CT shall assume no liability for any errors,omissions, or inaccuracies in the information provided regardless of how caused or any decision made or action taken or not taken by reader in reliance upon any information or data furnished hereunder.

OLIVER RD

Location	OLIVER RD	**Mblu**	017/ / 0094/ /
Acct#	002100020005	**Owner**	OLIVER ROAD HOLDING LLC
Assessment	$761,910	**Appraisal**	$1,121,510
PID	4299	**Building Count**	1
Fire District	1		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$884,020	$237,490	$1,121,510

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$618,810	$143,100	$761,910

Owner of Record

Owner	OLIVER ROAD HOLDING LLC
Co-Owner	C/O CROWN CASTLE
Address	PMB 353 - 4017 WASHINGTON RD MCMURRAY, PA 15317

Sale Price	$150,000
Certificate	
Book & Page	2520/ 875
Sale Date	10/25/2010
Instrument	28

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
OLIVER ROAD HOLDING LLC	$150,000		2520/ 875	28	10/25/2010
SMYTH MICHAEL E	$0	1	454/ 889		12/05/1980

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	

Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
Blocked FPL(s)	
Bsmt Garage(s)	
Fin Bsmt	
FBM Quality	
Whirlpool(s)	
Walk Out	
Solar	

Building Photo

(http://images.vgsi.com/photos2/EnfieldCTPhotos//\00\01\64/56

Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	300
Description	Ind Land
Zone	I-1
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	10.22
Frontage	
Depth	
Assessed Value	$143,100
Appraised Value	$237,490

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN2	FENCE-6' CHAIN			220 L.F.	$1,870	1
SHD1	Shed	FR	Frame	120 S.F.	$1,130	1
BRN8	Pole Barn	TY	Typical	11050 S.F.	$140,390	1
TWR5	Cell Twr5 Carriers			1 UNITS	$740,630	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$1,062,140	$237,490	$1,299,630
2015	$1,062,140	$237,490	$1,299,630
2014	$1,062,140	$237,490	$1,299,630

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$743,500	$143,100	$886,600
2015	$743,500	$131,370	$874,870
2014	$743,500	$131,370	$874,870

(c) 2016 Vision Government Solutions, Inc. All rights reserved.

PROJECT INFORMATION

SCOPE OF WORK: **** BIRD SITE *****

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:

- (1) AT&T ANTENNA (HPA-65R-BUU-H8) @ POSITION 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- (1) AT&T ANTENNA (TPA-65R-LCUUUU-H8) @ POSITION 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
- (3) AT&T RRUS-32 B2 @ POS 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- (3) AT&T RRUS-32 WCS @ POS 4 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- (1) AT&T COMBINER (DBC0061F1V51-2) @ POSITION 2 (TYP. 1 PER SECTOR, TOTAL OF 3).
- INSTALL (2) DC6-48-60-18-8C SQUID ALONG WITH (4) DC TRUNKS AND (1) FIBER CABLE.
- NEW JUMPER CABLES: COAX JUMPERS (2) PER SECTOR FROM EACH RRU (TOTAL OF 6).
- NEW FIBER JUMPERS: FIBER JUMPERS (3) FROM THE SQUID TO EACH RRU (TOTAL OF 9).
- INSTALL NEW HANDRAIL KIT ON PLATFORM.

ITEMS TO BE MOUNTED INSIDE EXISTING EQUIPMENT:

- PROPOSED OUTDOOR EMMERSON 5216 POWERPLANT (TO REPLACE EXISTING POWERPLANT)
- PROPOSED FLEX PURCELL CABINET (TO REPLACE EXISTING BBU)
- PROPOSED (1) FIBER MANAGEMENT BOX ON ICE BRIDGE POST ALONG WITH (1) OUTDOOR RATED DC6.
- REPLACE (3) DIPLEXERS WITH (3) DBC0061F1V51-2 LOW BAND COMBINERS.
- INSTALL 5216, (1) XMU, (2) FIBER TRAYS & RELOCATE SIAD, PDU IN PROPOSED PURCELL.

ITEMS TO REMAIN:

- (3) ANTENNAS, (3) RRU'S, (2) DC POWER CABLES, (1) FIBER RUNS & (1) SURGE ARRESTOR.

ITEMS TO BE REMOVED:

- EXISTING TMA'S & DIPLEXERS @ POS 1

1. THE 1ST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE ALPHA SECTOR. IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS.
2. 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE BETA SECTOR.
3. 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE GAMMA SECTOR.
4. SQUID ALARMS ARE NOT TO BE DAISY CHAINED.

SITE ADDRESS:	4 OLIVER ROAD ENFIELD, CT 06082
LATITUDE:	41.960056 N 41° 57' 36.20" N
LONGITUDE:	72.592306 W 72° 35' 32.30" W
TYPE OF SITE:	MONOPOLE/OUTDOOR EQUIPMENT
TOWER HEIGHT:	160'-0"±
RAD CENTER:	163'-0"±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	DETAILS	1
A-4	SCHEMATIC AND NOTES	1
RF-1	PLUMBING DIAGRAM	1
G-1	GROUNDING DETAILS	1

CROWN CASTLE SITE NAME: HRT 101 943232
CROWN CASTLE SITE #: 806373

SITE NUMBER: CT5154

SITE NAME: ENFIELD, CT

PROJECT: LTE 2C/3C 2017 UPGRADE

BU# 806373 -HRT 101 943232

NOTE:

ALL CONSTRUCTION ACTIVITIES ARE TO BE COMPLETED DIRECTLY THROUGH CROWN. CONTRACTOR MUST HAVE CONSTRUCTION PO AND NTP FROM CROWN DIRECT IN ORDER TO BEGIN. PLEASE CONTACT THE CROWN CONSTRUCTION MANAGER: TAMMY NOSEK 518-860-7063

VICINITY MAP

DIRECTIONS TO SITE:

FROM ROCKY HILL, CT: MERGE ONTO I-91 N VIA THE RAMP TO HARTFORD 21.3 MI. TAKE EXIT 46 FOR KING ST/US-5 0.3 MI. TURN RIGHT AT KING ST/US-5 0.9 MI. TURN RIGHT AT OLIVER RD 164 FT.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL BEFORE YOU DIG

CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT · DEREK J. CREASER · NO. 28357 · LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5154	T-1	1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CROWN CASTLE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2012 WITH 2016 CT BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT
DEREK J. CREASER
No. 29554
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5154	GN-1	1

NOTE:

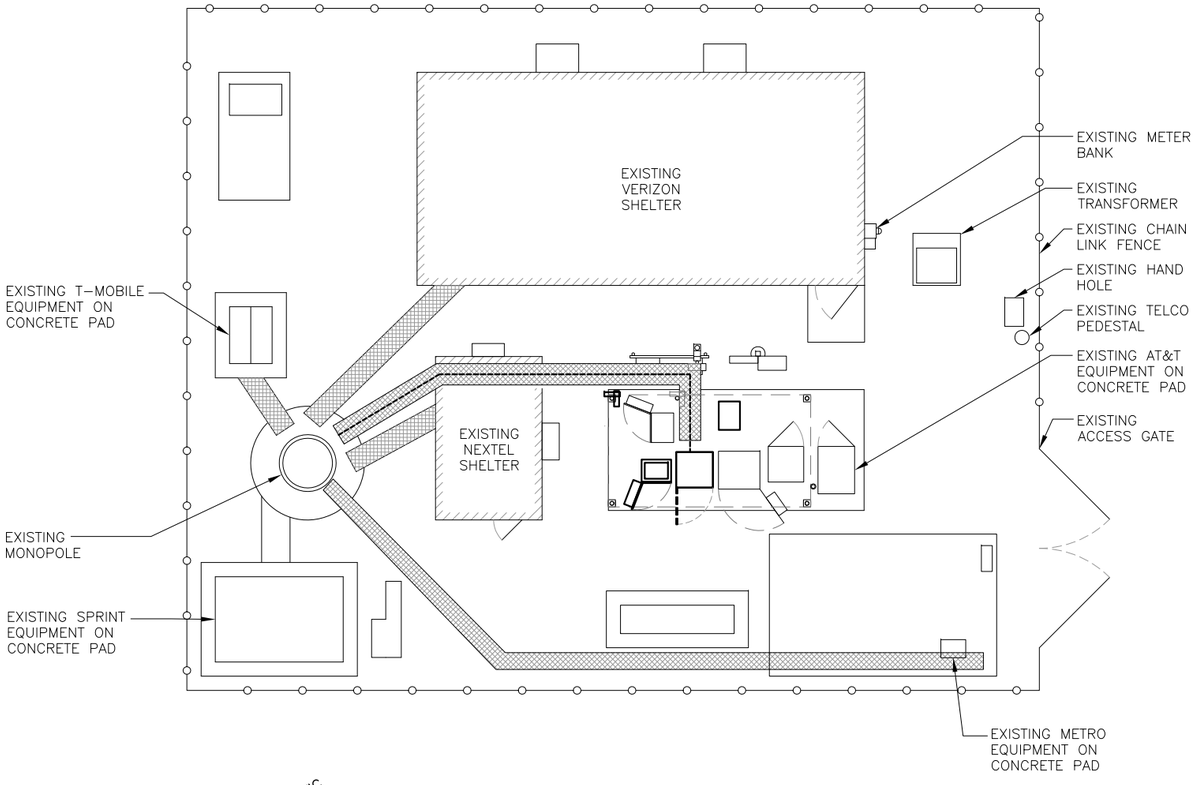
AN ASSESMENT FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: OCTOBER 31, 2017 (REV 1.)

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

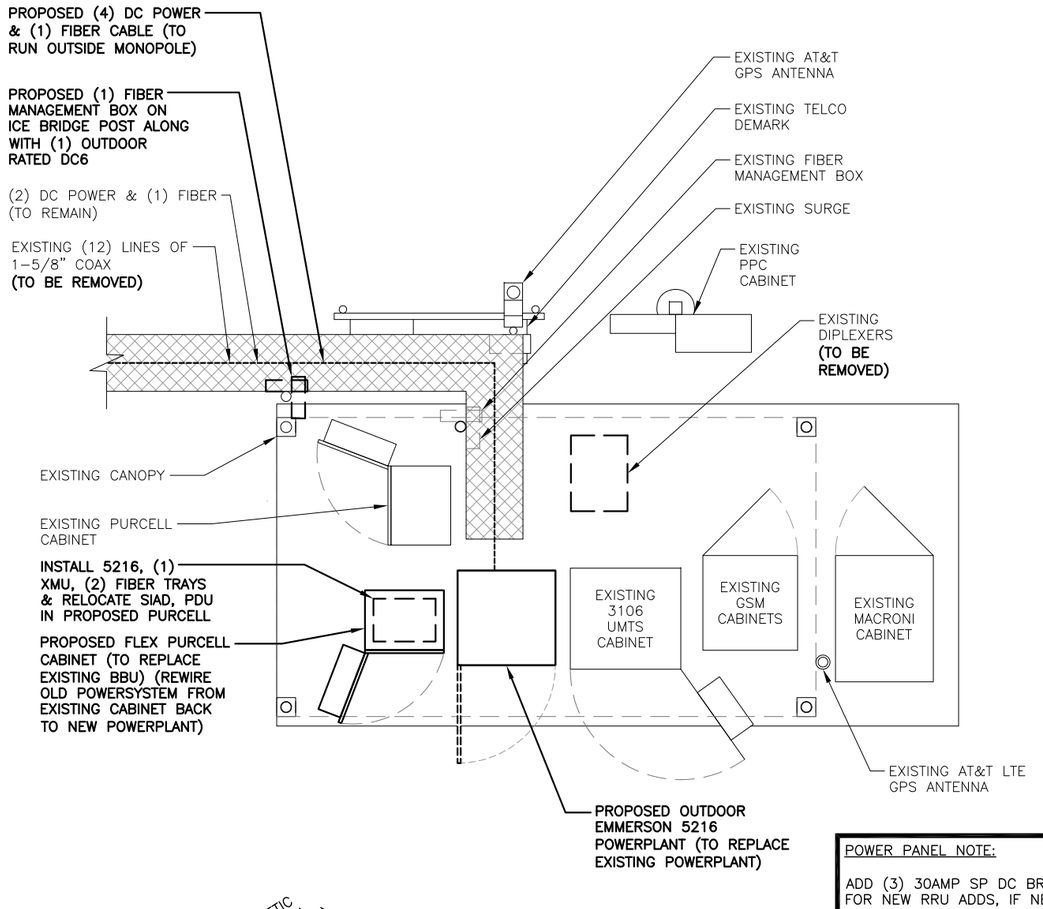
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"



POWER PANEL NOTE:

ADD (3) 30AMP SP DC BREAKER FOR NEW RRU ADDS, IF NEEDED

MAGNETIC NORTH 13°54' TRUE NORTH

EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

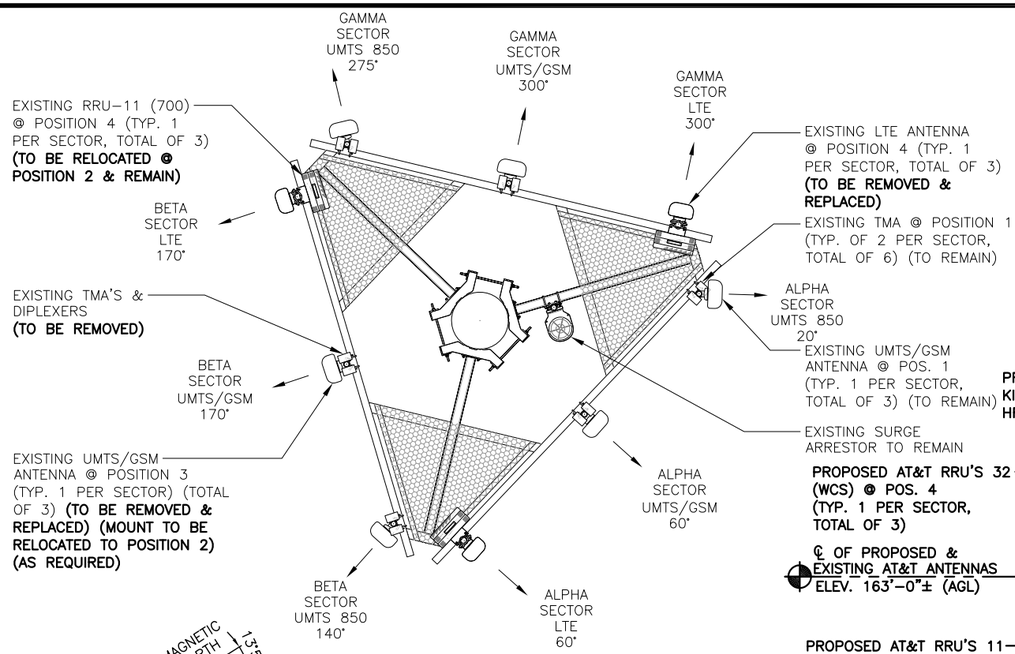
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT · DEREK J. CREASER · No. 23455 · LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN
(LTE 2C/3C)

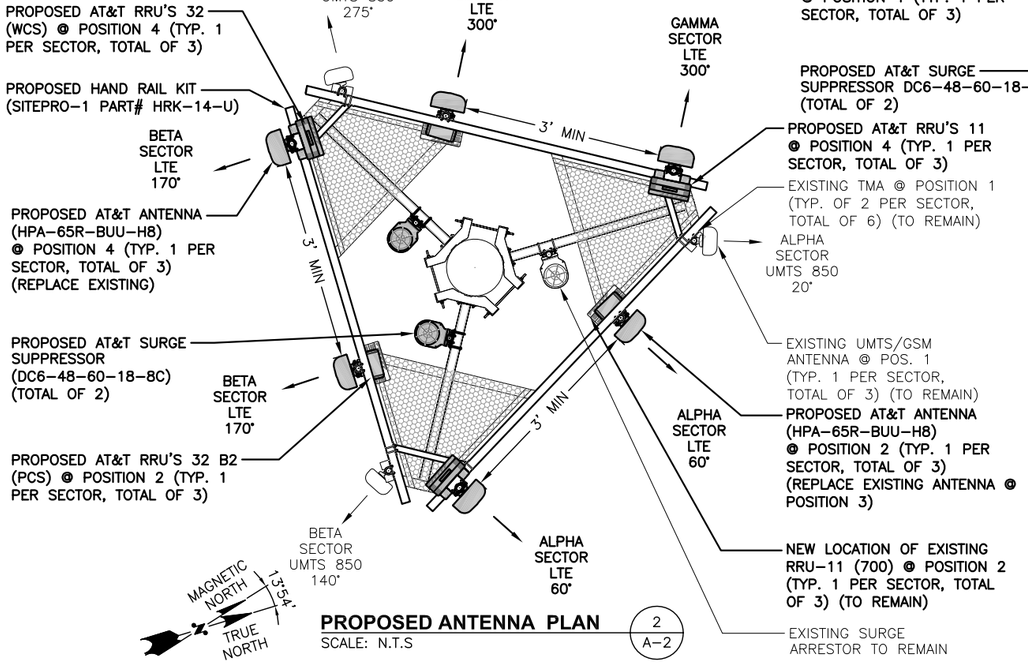
SITE NUMBER	DRAWING NUMBER	REV
CT5154	A-1	1



EXISTING ANTENNA PLAN

SCALE: N.T.S

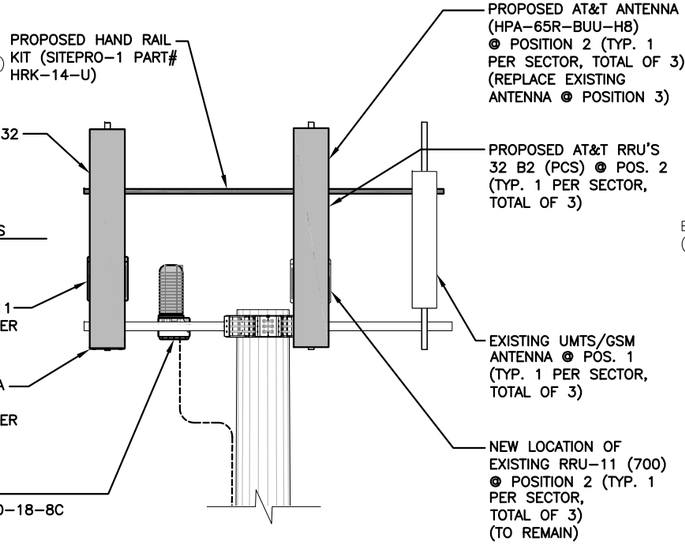
1 / A-2



PROPOSED ANTENNA PLAN

SCALE: N.T.S

2 / A-2



ENLARGED ANTENNA ELEVATION

22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

4 / A-2

0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:

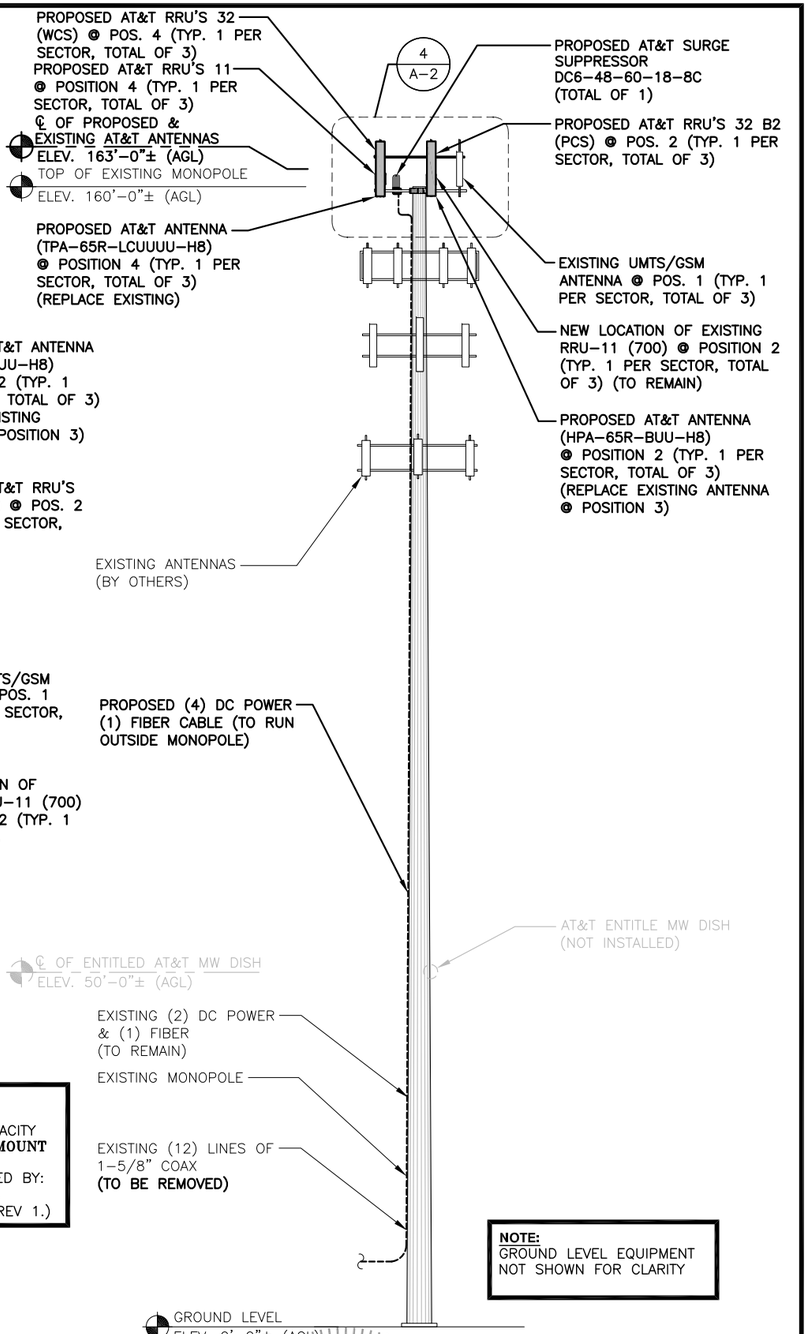
ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

NOTE:

AN ASSESMENT FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: OCTOBER 31, 2017 (REV 1.)

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



ELEVATION

22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

3 / A-2

0 5'-4" 10'-8" 21'-4" 32'-0"

NOTE:
GROUND LEVEL EQUIPMENT NOT SHOWN FOR CLARITY

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

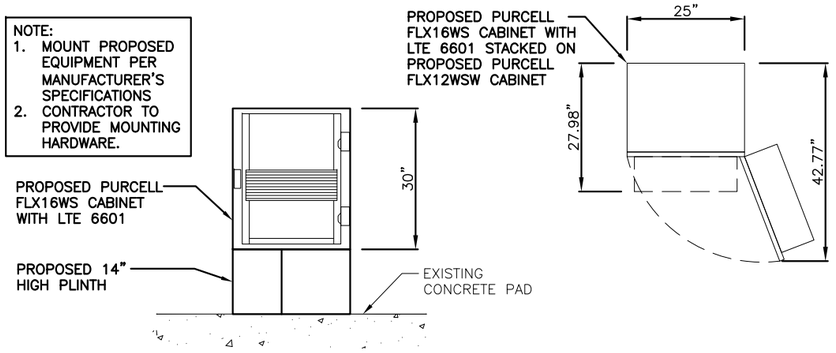
STATE OF CONNECTICUT — DANIEL J. CRAIN — 21255 — LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5154	A-2	1

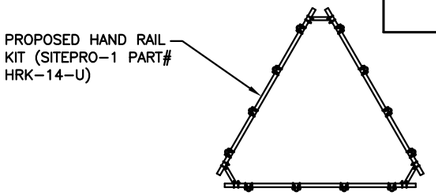
NOTE:
1. MOUNT PROPOSED EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS
2. CONTRACTOR TO PROVIDE MOUNTING HARDWARE.



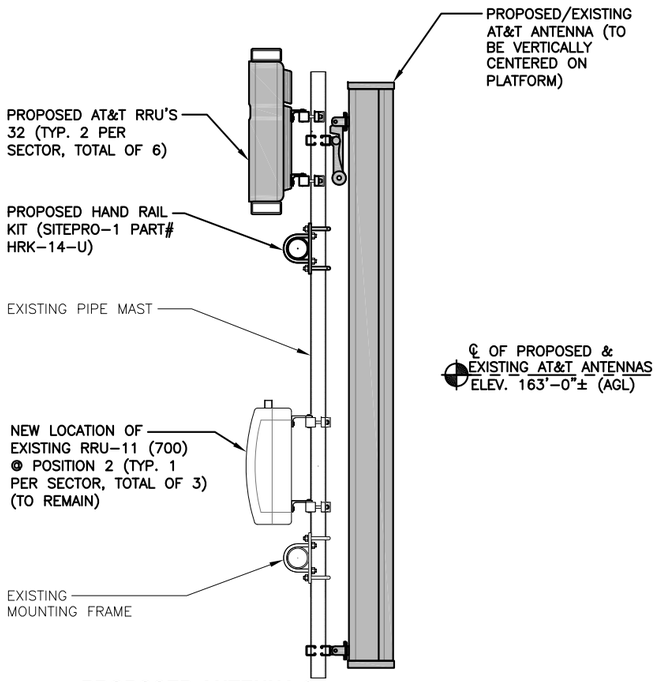
PROPOSED PURCELL MOUNTING DETAIL 1 / A-3
SCALE: N.T.S

NOTE:

PER FINDINGS OF MOUNT ANALYSIS BY HUDSON DESIGN GROUP LLC. DATED AUGUST 03, 2017 ALL ANTENNAS ARE TO BE CENTERED ON THE PLATFORM BASE FRAME.



PROPOSED HANDRAIL KIT 8 / A-3
SCALE: N.T.S



PROPOSED ANTENNA & RRH MOUNTING DETAIL 2 / A-3
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

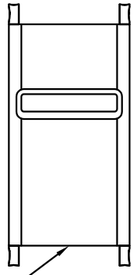
RRU CHART

QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
–	RRUS-12	20.4"	18.5"	7.5"
6(P)	RRUS-32	27.2"	12.1"	7.0"
–	RRUS-E2	20.4"	18.5"	7.5"
–	LTE-A2	16.4"	15.2"	3.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRU DETAIL 3 / A-3
SCALE: N.T.S

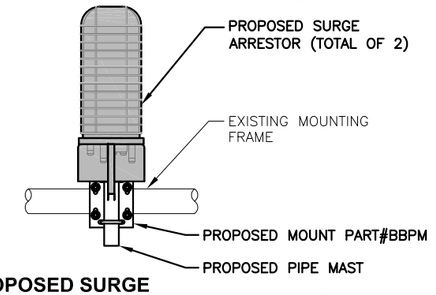
FINAL ANTENNA SCHEDULE

SECTOR	BAND	ANTENNA		SIZE (INCHES) (L X W X D)	RAD CENTER	TMA		AZIMUTH	RRU'S		SIZE (INCHES) (L X W X D)	COAX JUMPERS	FIBER JUMPERS
ALPHA	UMTS DB	EXISTING	7770.00	55X11X5	158'-0"±	EXISTING EXISTING	LGP 21901 LGP 21901	20°	–	–	–	–	–
	LTE 700 BC/PCS	PROPOSED	HPA-65R-BUU-H8	92.8X14.4X7.3	158'-0"±	–	–	60°	EXISTING PROPOSED	RRU-11 RRU-32 B2	– 27.2X12.1X7.0	– 1*	– 2**
	–	–	–	–	–	–	–	–	–	–	–	–	–
	LTE WCS	PROPOSED	TPA-65R-LCUUUU-H8	96X14.4X8.6	158'-0"±	–	–	60°	PROPOSED	RRUS-32	27.2X12.1X7.0	1*	1**
BETA	UMTS DB	EXISTING	7770.00	55X11X5	158'-0"±	EXISTING EXISTING	LGP 21901 LGP 21901	140°	–	–	–	–	–
	LTE 700 BC/PCS	PROPOSED	HPA-65R-BUU-H8	92.8X14.4X7.3	158'-0"±	–	–	170°	EXISTING PROPOSED	RRU-11 RRU-32 B2	– 27.2X12.1X7.0	– 1*	– 2**
	–	–	–	–	–	–	–	–	–	–	–	–	–
	LTE WCS	PROPOSED	TPA-65R-LCUUUU-H8	96X14.4X8.6	158'-0"±	–	–	170°	PROPOSED	RRUS-32	27.2X12.1X7.0	1*	1**
GAMMA	UMTS DB	EXISTING	7770.00	55X11X5	158'-0"±	EXISTING EXISTING	LGP 21901 LGP 21901	275°	–	–	–	–	–
	LTE 700 BC/PCS	PROPOSED	HPA-65R-BUU-H8	92.8X14.4X7.3	158'-0"±	–	–	300°	EXISTING PROPOSED	RRU-11 RRU-32 B2	– 27.2X12.1X7.0	– 1*	– 2**
	–	–	–	–	–	–	–	–	–	–	–	–	–
	LTE WCS	PROPOSED	TPA-65R-LCUUUU-H8	96X14.4X8.6	158'-0"±	–	–	300°	PROPOSED	RRUS-32	27.2X12.1X7.0	1*	1**

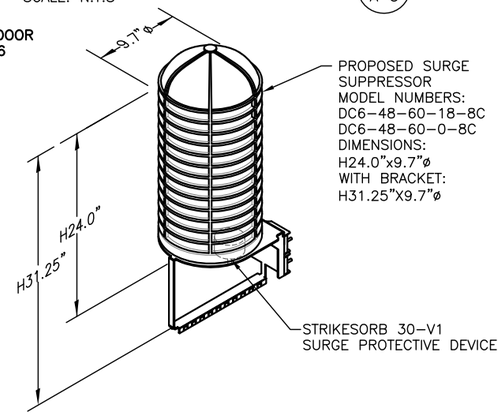
NOTE:
1. PROPOSED DC POWER PLANT TO BE FED BY (11) 30A BREAKERS (ONE PER RECTIFIER) WIRED WITH A MINIMUM OF #10 AWG CONDUCTORS.
2. CONTRACTOR TO VERIFY IF THE BATTERY DISCONNECT NEEDS TO BE REPLACED. RUN (2) #4/0 & (1) #4/0 G FROM THE DISCONNECT TO THE NEW POWER PLANT IF NECESSARY.

EMERSON OUTDOOR 5216 -48V DC POWER PLANT 4 / A-3
SCALE: N.T.S

FINAL ANTENNA CONFIGURATION TABLE 7 / A-3



PROPOSED SURGE ARRESTOR MOUNTING DETAIL 6 / A-3
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL 5 / A-3
SCALE: N.T.S

*COAX JUMPER NOTE:
COAX JUMPERS (2) PER SECTOR, FROM EACH RRU (TOTAL OF 6).

**FIBER JUMPER NOTE:
FIBER JUMPERS (3) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 9).

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

ALL ANTENNAS AND LINES TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.

NOTE:

1. THE 1ST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE ALPHA SECTOR. IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS.
2. 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE BETA SECTOR.
3. 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE GAMMA SECTOR.
4. SQUID ALARMS ARE NOT TO BE DAISY CHAINED.

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT
DEREK J. CAPLE
No. 28354
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5154	A-3	1

COAX COLOR CODING AND IDENTIFICATION NOTES

1. SECTOR ORIENTATION/AZIMUTH WILL VARY FROM REGION TO REGION AND IS SITE SPECIFIC. REFER TO RF REPORT FOR EACH SITE TO DETERMINE THE ANTENNA LOCATION AND FUNCTION OF EACH TOWER SECTOR FACE.

2. THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE EXCEPT IN LOCATIONS WHERE ENVIRONMENTAL CONDITIONS CAUSE PHYSICAL DAMAGE, THE PHYSICAL TAGS ARE PREFERRED.

3. THE STANDARD IS BASED ON 8 COLORED TAPES–RED, BLUE, GREEN, YELLOW, ORANGE, BROWN, WHITE, AND VIOLET. THESE TAPES MUST BE 3/4" WIDE & UV RESISTANT SUCH AS SCOTCH 35 VINYL ELECTRICAL COLOR CODING TAPE AND SHOULD BE READILY AVAILABLE TO THE ELECTRICIAN OR SUBCONTRACTOR ON SITE.

4. USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE MARKING COLOR CONVENTION TABLE".

5. WHEN AN EXISTING COAXIAL LINE THAT IS INTENDED TO BE A SHARED LINE BETWEEN GSM/3G AND IS–136/TDMA IS ENCOUNTERED, THE SUBCONTRACTOR SHALL REMOVE THE EXISTING COLOR CODING SCHEME AND REPLACE IT WITH THE COLOR CODING AND TAGGING STANDARD THAT IS OUTLINED IN THE CURRENT VERSION OF ND–00027. IN THE ABSENCE OF AN EXISTING COLOR CODING AND TAGGING SCHEME, OR WHEN INSTALLING PROPOSED COAXIAL CABLES, THE GUIDELINE SHALL BE IMPLEMENTED AT THE SITE REGARDLESS OF TECHNOLOGY.

6. ALL COLOR CODE TAPE SHALL BE 3M–35 AND SHALL BE INSTALLED USING A MINIMUM OF 3 WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID UNRAVELING.

7. ALL COLOR BANDS INSTALLED AT THE TOP OF THE TOWER SHALL BE A MINIMUM OF 3" WIDE, AND SHALL HAVE A MINIMUM OF 3/4" OF SPACE BETWEEN EACH COLOR.

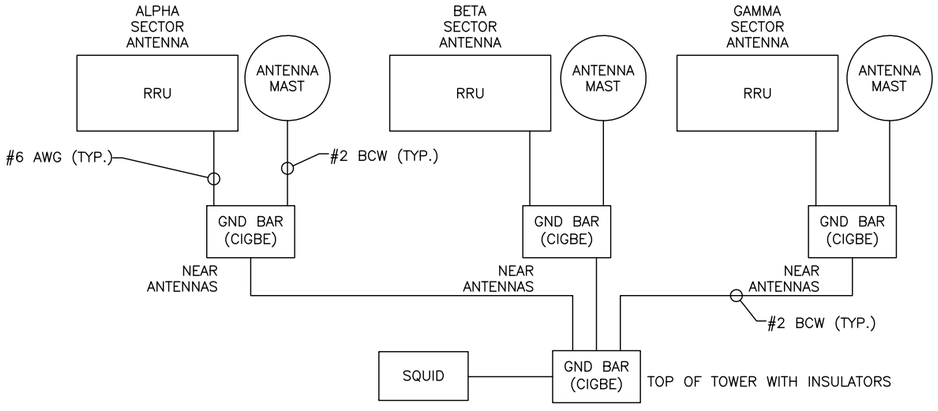
8. ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE TO SIDE.

9. IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE GSM TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

CABLE MARKING TAGS

WHEN USING THE ALTERNATIVE LABELING METHOD, EACH RF CABLE SHALL BE IDENTIFIED WITH A METAL ID TAG MADE OF STAINLESS STEEL OR BRASS, THE TAG SHALL BE 1 1/2" IN DIAMETER WITH 1/4" STAMPED LETTERS AND NUMBERS INDICATING THE SECTOR, ANTENNA POSITION, AND CABLE NUMBER. THE ID MARKING LOCATIONS SHOULD BE AS PER CABLING MARKING LOCATIONS TABLE. THE TAG SHOULD BE ATTACHED WITH CORROSION PROOF WIRE AROUND THE CABLE AT THE SAME LOCATION AS DEFINED ABOVE. THE TAG SHOULD BE LABELED AS SHOWN ON THE GSM AND UMTS LINE TAG DETAIL.

CABLE MARKING LOCATIONS TABLE	
NO.	LOCATIONS
①	EACH TOP JUMPER SHALL BE COLOR CODED WITH 1 SET OF 3" WIDE BANDS
②	EACH MAIN COAX SHALL BE COLORED RED WITH 1 SET OF 3" WIDE BANDS NEAR THE TOP JUMPER CONNECTION AND WITH 1 SET OF 3/4" WIDE COLOR BANDS. JUST PRIOR TO ENTERING THE BTS FOR THE TRANSMITTER BUILDING.
③	CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER.
④	ALL BOTTOM JUMPERS SHALL BE COLORED WITH 1 SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPERS.
⑤	ALL BOTTOM JUMPERS SHALL BE COLORED WITH 1 SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPERS.



NOTE:
TOWER GROUNDED, GROUND BAR TO HAVE INSULATORS.

SCHEMATIC DIAGRAM GROUNDING SYSTEM

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

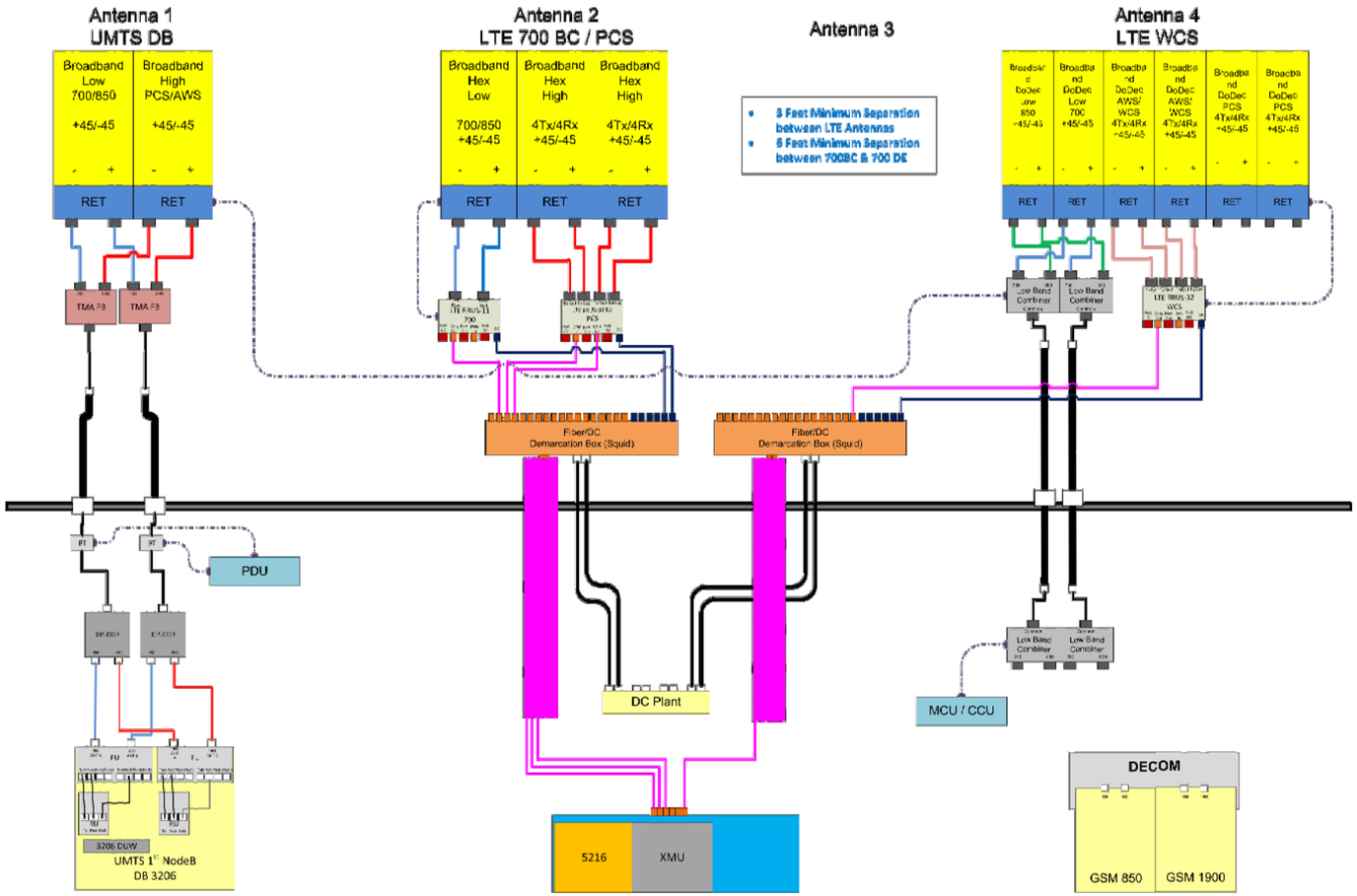
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT · DEREK J. CREASER · NO. 25857 · LICENSED PROFESSIONAL ENGINEER

AT&T

SCHEMATIC AND NOTES
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5154	A–4	1



PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTES:

1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

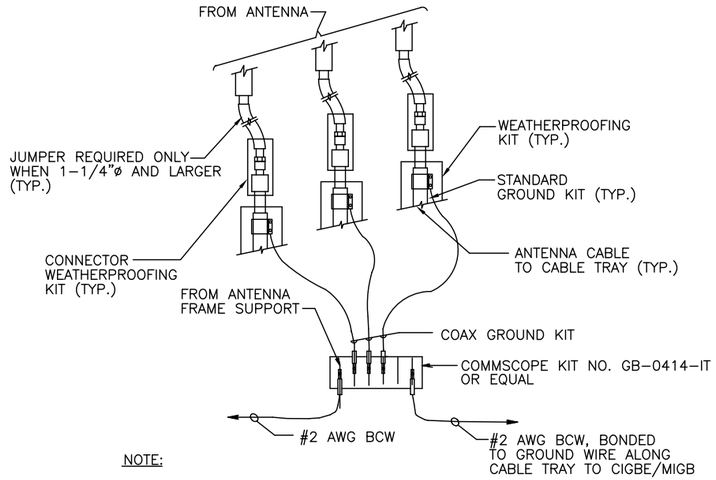
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT · DEREK J. CREASER · NO. 28581 · LICENSED PROFESSIONAL ENGINEER

AT&T

PLUMBING DIAGRAM
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5154	RF–1	1



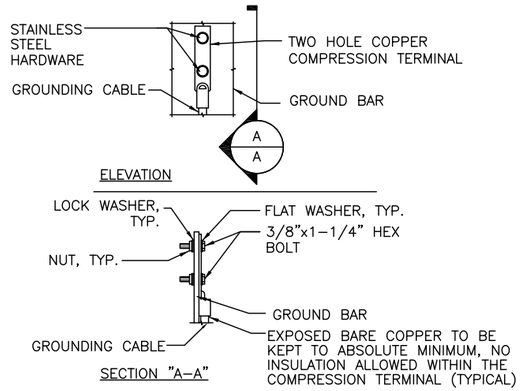
NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

2 / G-1



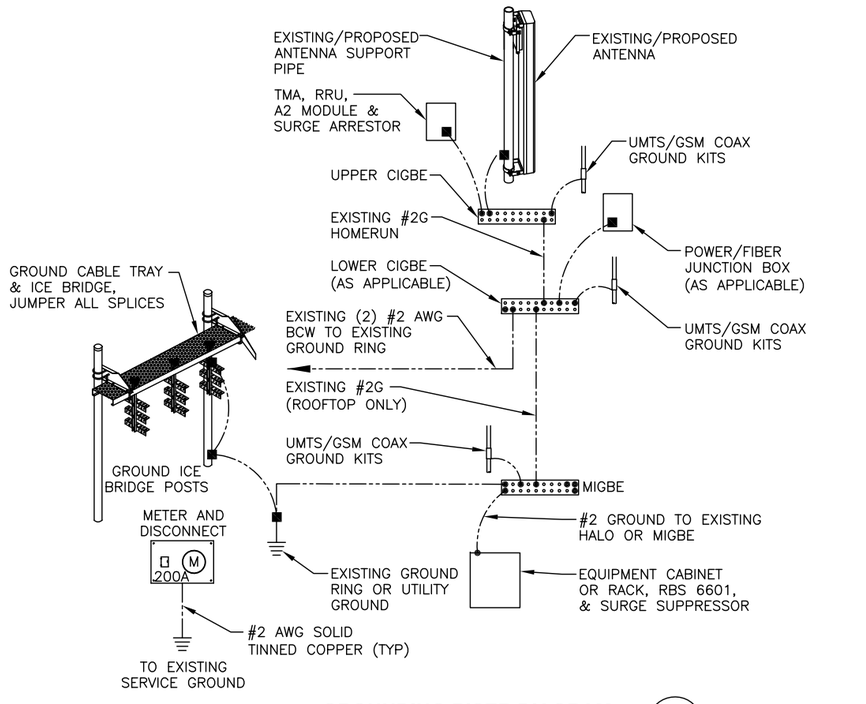
NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S

3 / G-1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

1 / G-1

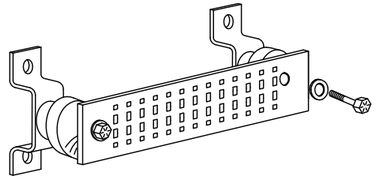
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G-1

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CROWN CASTLE
500 CUMMINGS PARK DR. #3600
WOBURN, MA 01801

SITE NUMBER: CT5154
SITE NAME: ENFIELD, CT
CCI SITE # 806373
4 OLIVER ROAD
ENFIELD, CT 06082
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	01/12/18	ISSUED FOR CONSTRUCTION	SG	AT	DJC
0	11/06/17	ISSUED FOR REVIEW	SG	AT	DJC
A	09/08/17	ISSUED FOR REVIEW	SG	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SG

STATE OF CONNECTICUT
DEREK J. CREASER
No. 25055
LICENSED PROFESSIONAL ENGINEER

AT&T

GROUNDING DETAILS
(LTE 2C/3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5154	G-1	1