



Northeast Site Solutions
Denise Sabo
420 Main Street, Box 2 Sturbridge MA 01566
860-209-4690
denise@northeastsitesolutions.com

June 14, 2018

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Exempt Modification Application
238 Meriden Road, Middlefield CT 06455
Latitude: 41.54595
Longitude: -72.71491
T-Mobile Site#: CT11309A-MWAAV

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing 133.5-foot monopole tower located at 238 Meriden Road, Middlefield Ct 06455. T-Mobile currently has approval for six (6) antennas at the 101-foot level of the existing 133.5-foot tower. The tower is owned by Crown Castle and the property is owned by James Kolman. T-Mobile now intends to install one (1) IBR1300 Dish. The new dish would be installed at the 101-foot and level of the tower.

Planned Modifications:

Remove:
NONE

Remove and Replace:
NONE

Install New:
(1)IBR1300 Dish
(1)Fiber line
(2)CAT6 Cables

Existing to Remain:
(12) 1-1/4" Coax
(1) 1-5/8"
(3) TMA
(6) AIR21 Antenna – 1900-2100 Mhz

This facility was first approved by the Connecticut Siting Council. TS No. TS-OCI-082-990816 – Approved in 1999 for the addition of Omnipoint telecommunication equipment to existing tower. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-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-SOj-73, a copy of this letter is being sent to Chief Executive Officer, Edward P. Bailey, Elected Official and Jerry Russ, Zoning Enforcement Officer for the Town of Middlefield, as well as the property owner and the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing 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 a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile 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,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 4 Angela's Way, Burlington CT 06013
Email: denise@northeastsitesolutions.com

Attachments

cc: Edward P. Bailey, Chief Executive Officer - as elected official
Jerry Russ, Zoning Enforcement Officer
Crown Castle - as tower owner
James Kolman – as property owner

Exhibit A



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

August 18, 1999

Honorable Charles R. Augur
First Selectman
Town of Middlefield
Town Administration Bldg.
393 Jackson Hill Road, P.O. Box 179
Middlefield, CT 06455

RE: TS-OCI-082-990816 – Omnipoint Communications request for an order to approve tower sharing at an existing telecommunications facility located at 238 Meriden Road in Middlefield, Connecticut.

Dear Mr. Augur:

The Connecticut Siting Council (Council) received this request for tower sharing, pursuant to Connecticut General Statutes § 16-50aa.

The Council will consider this item at the next meeting tentatively scheduled for Tuesday, August 31 1999, at 1:30 p.m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

Please call me or inform the Council if you have any questions or comments regarding this proposal.

Thank you for your cooperation and consideration.

Very truly yours,

A handwritten signature in black ink, appearing to read "Joel M. Rinebold".

Joel M. Rinebold
Executive Director

JMR/tsg

Enclosure: Notice of Tower Sharing



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square

New Britain, Connecticut 06051

Phone: (860) 827-2935

Fax: (860) 827-2950

September 3, 1999

J. Brendan Sharkey, Esq.
Omnipoint Communications, Inc.
100 Filley Street
Bloomfield, CT 06002

RE: TS-OCI-082-990816 – Omnipoint Communications request for an order to approve tower sharing at an existing telecommunications facility located at 238 Meriden Road in Middlefield, Connecticut.

Dear Mr. Sharkey:

At a public meeting held August 31, 1999, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures.

This facility has been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequency now used on this tower. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated August 16, 1999. Please notify the Council when all work is complete.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/RKE/sll

cc: Honorable Charles R. Augur, First Selectman, Town of Middlefield
Steve Kotfila, Site Development Manager, Sprint Spectrum, L.P.

Exhibit B



Map data ©2018 Google 100 ft



41°32'45.8"N 72°42'53.6"W

41.546050, -72.714896

238 MERIDEN RD & RT 66

Location 238 MERIDEN RD & RT 66

Mblu 2 / / 1 / /

Acct# 00131600

Owner KOLMAN JAMES

Assessment \$200,100

PID 1412

Building Count 1

Current Value

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$55,100	\$145,000	\$200,100

Owner of Record

Owner KOLMAN JAMES

Sale Price \$0

Co-Owner NORA L/U

Certificate

Address C/O 15 HIGBY RD

Book & Page 84/ 598

MIDDLEFIELD, CT 06455

Sale Date 06/27/1994

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
KOLMAN JAMES	\$0		84/ 598	06/27/1994

Building Information

Building 1 : Section 1

Year Built: 1850

Living Area: 2,390

Replacement Cost: \$183,494

Building Percent 30

Good:

Replacement Cost

Less Depreciation: \$55,000

Building Attributes	
Field	Description
Style	Old Style
Model	Residential
Grade:	Average +

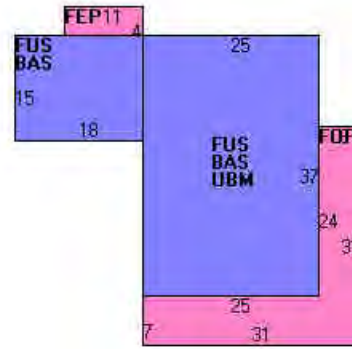
Stories:	2 Stories
Occupancy	1
Exterior Wall 1	Clapboard
Exterior Wall 2	
Roof Structure:	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Plastered
Interior Wall 2	
Interior Flr 1	Hardwood
Interior Flr 2	
Heat Fuel	Oil/Gas
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	6 Bedrooms
Total Bthrms:	1
Total Half Baths:	0
Total Xtra Fixtrs:	
Total Rooms:	12 Rooms
Bath Style:	Old Style
Kitchen Style:	Below Average
Whirlpool	

Building Photo



(<http://images.vgsi.com/photos/MiddlefieldCTPhotos/\01\00\11/>)

Building Layout



Building Sub-Areas (sq ft)			<u>Legend</u>
Code	Description	Gross Area	Living Area
BAS	First Floor	1,195	1,195
FUS	Upper Story, Finished	1,195	1,195
FEP	Porch, Enclosed	44	0
FOP	Porch, Open	361	0
UBM	Basement, Unfinished	925	0
		3,720	2,390

Extra Features

Extra Features	<u>Legend</u>
No Data for Extra Features	

Land

Land Use

Land Line Valuation

Use Code	0101	Size (Acres)	24.54
Description	Single Fam MDL-01	Frontage	
Zone	DD1	Depth	
Neighborhood	0300	Assessed Value	\$145,000
Alt Land Appr	No		
Category			

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
BRN1	BARN - 1 STORY			4032 S.F.	\$14,500	1
BRN1	BARN - 1 STORY			2560 S.F.	\$9,200	1

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Exhibit C

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MODIFICATION TO EXISTING WIRELESS TELECOMMUNICATION FACILITY BY

T-Mobile

T-MOBILE NORTHEAST LLC

SITE NUMBER: CT11309A
 SITE NAME: CT11309A_MIDDLEFIELD_RT66
 CROWN BU NUMBER: 841293
 SITE ADDRESS: 238 MERIDEN ROAD
 MIDDLEFIELD, CT 06455

APPLICANT:

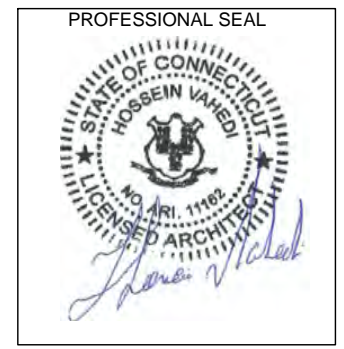
T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

PROJECT MANAGER

NSS NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 203-275-6669

CONSULTANT:

FORESITE LLC
 Architects . Engineers . Surveyors
 462 WALNUT STREET
 NEWTON, MA 02460
 617-212-3123



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REV	DESCRIPTION	DATE
A	PRELIMINARY	04/11/18

SITE NUMBER: CT11309A
 SITE NAME: CT11309A_MIDDLEFIELD_RT66
 SITE ADDRESS: 238 MERIDEN ROAD
 MIDDLEFIELD, CT 06455

SHEET TITLE:
 T-1: TITLE SHEET

PROJECT SCOPE:

ADDITION OF A BACKHAUL RADIO MICROWAVE DISH, (1) FIBER AND (2) CAT6 CABLES TO EXISTING TOWER.

PROJECT NOTES:

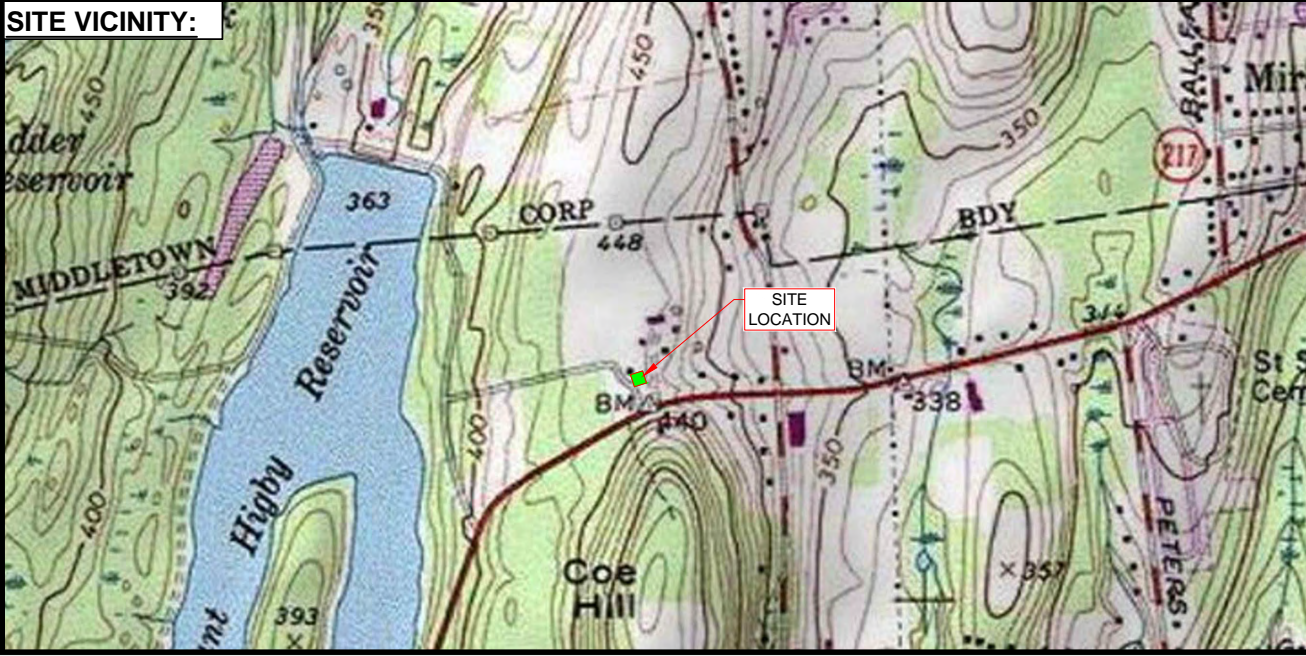
1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS IS NOT REQUIRED. POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED. NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.
4. PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT, A STRUCTURAL EVALUATION SHOULD BE PERFORMED TO CERTIFY THAT THE EXISTING/PROPOSED STRUCTURE AND COMPONENTS HAVE ADEQUATE STRUCTURAL CAPACITY PER ALL THE APPLICABLE CODES AND STANDARDS IN THE PROJECT JURISDICTION. CONTRACTOR SHOULD REVIEW THE REPORT AND ADHERE TO THE REPORT FULLY AND ALL THE RECOMMENDATIONS THEREIN, INCLUDING BUT NOT LIMITED TO ANTENNA PLACEMENT, COAX ROUTING, STRUCTURAL IMPROVEMENTS, ETC.

APPLICABLE STATE ADOPTION CODES:

2016 CONNECTICUT STATE BUILDING CODE (CSBC).
 ANSI/TIA-222-G-2005 STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.
 2014 NATIONAL ELECTRICAL CODE (NFPA 70) FOR POWER AND GROUNDING REQUIREMENTS.

T-MOBILE APPROVALS:

FSA CM	DATE
RF ENGINEER	DATE
FOPS	DATE
T-MOBILE ENGINEERING AND DEVELOPMENT	DATE
	DATE
	DATE



PROJECT INFORMATION:

ADDRESS: 238 MERIDEN ROAD
 MIDDLEFIELD, CT 06455

COORDINATES: 41.54595° N , -72.71491° W

STRUCTURE TYPE: EXISTING 133'± (AGL) MONOPOLE TOWER

JURISDICTION: TOWN OF MIDDLEFIELD, CT

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

PROJECT TEAM:

APPLICANT: T-MOBILE NORTHEAST, LLC.
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

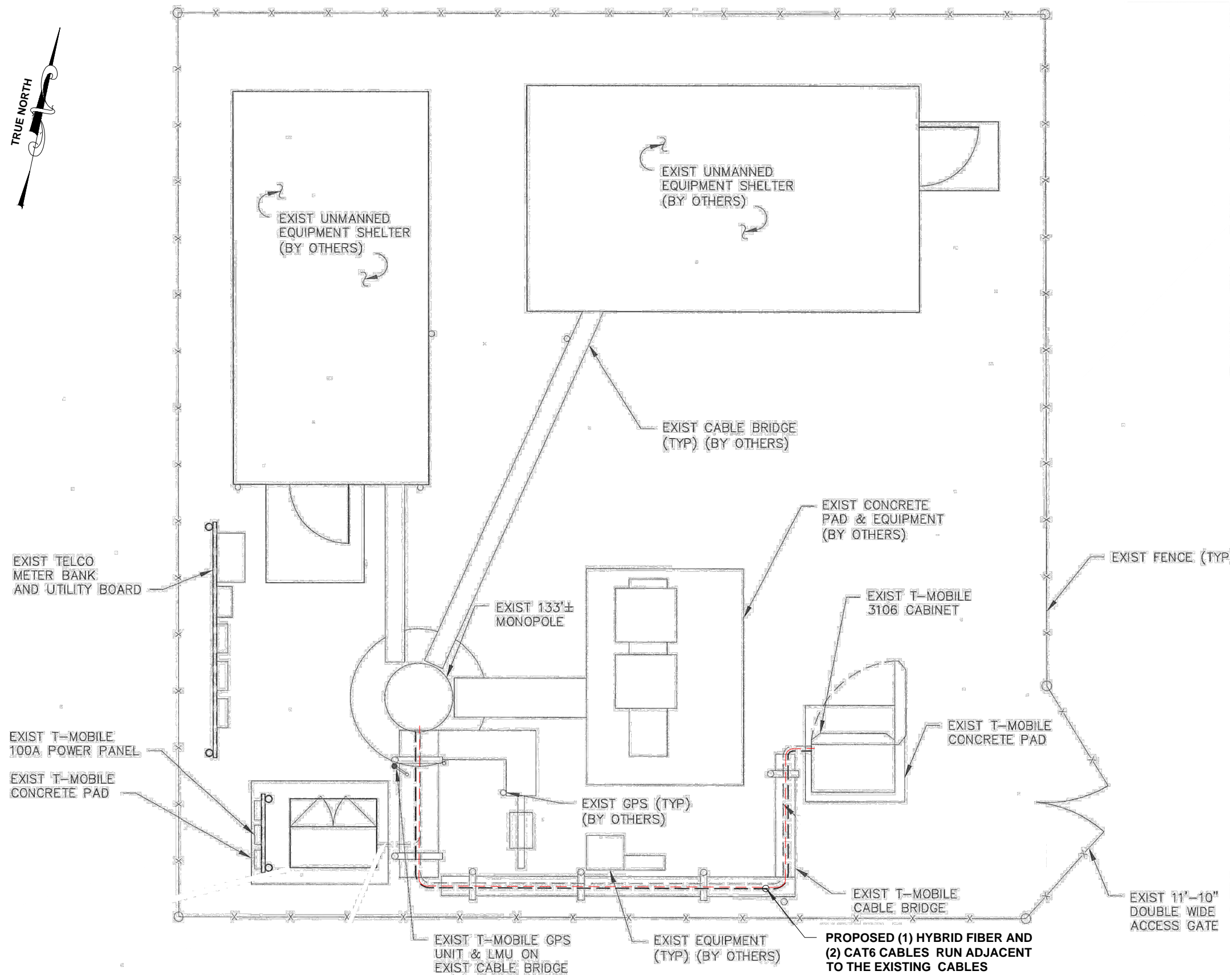
PROPERTY OWNER : CROWN CASTLE

PROJECT MANAGER: NORTHEAST SITE SOLUTIONS
 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 SHELDON FREINCLE
 SHELDON@NORTHEASTSITESOLUTIONS.COM
 201-776-8521

CONSULTANTS: FORESITE LLC
 462 WALNUT ST
 NEWTON, MA 02460
 SAEED MOSSAVAT
 SMOSSAVAT@FORESITELLC.COM
 617-212-3123

SHEET INDEX:

T-1: TITLE SHEET
 LE-1: SITE PLAN
 LE-2: ELEVATION
 LE-3: ANTENNA PLAN



SITE PLAN
SCALE: 1/8" = 1'-0"

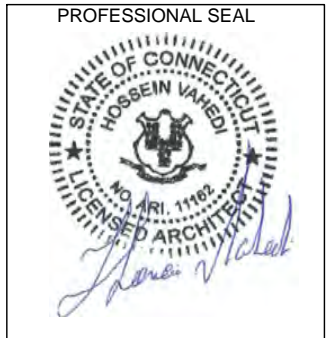
1
LE-1

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APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER
NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET
NEWTON, MA 02460
617-212-3123



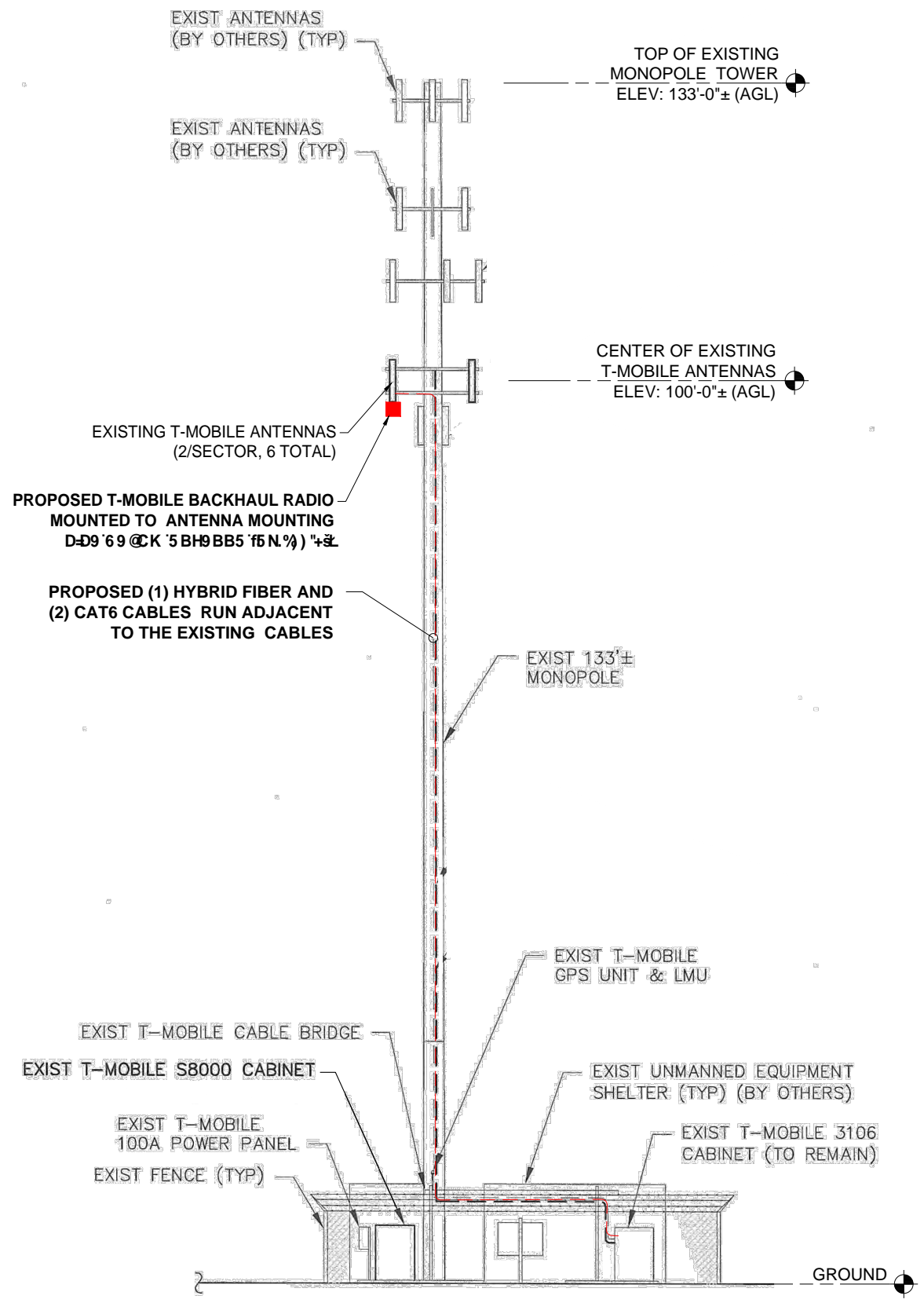
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REV	DESCRIPTION	DATE
A	PRELIMINARY	04/11/18

SITE NUMBER: CT11309A
SITE NAME: CT11309A_MIDDLEFIELD_RT66
SITE ADDRESS: 238 MERIDEN ROAD
MIDDLEFIELD, CT 06455

SHEET TITLE:
LE-1: PLAN AND ELEVATION

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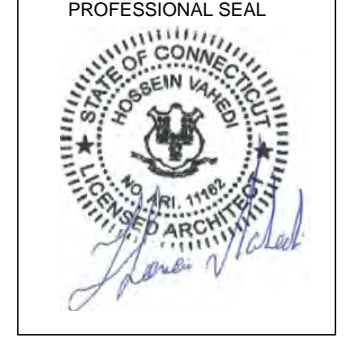


ELEVATION
 SCALE: 1/16" = 1'-0"
 1
 LE-2

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

PROJECT MANAGER
NSS NORTHEAST
 SITE SOLUTIONS
Turnkey Wireless Development
 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 203-275-6669

CONSULTANT:
FORESITE LLC
 Architects . Engineers . Surveyors
 462 WALNUT STREET
 NEWTON, MA 02460
 617-212-3123



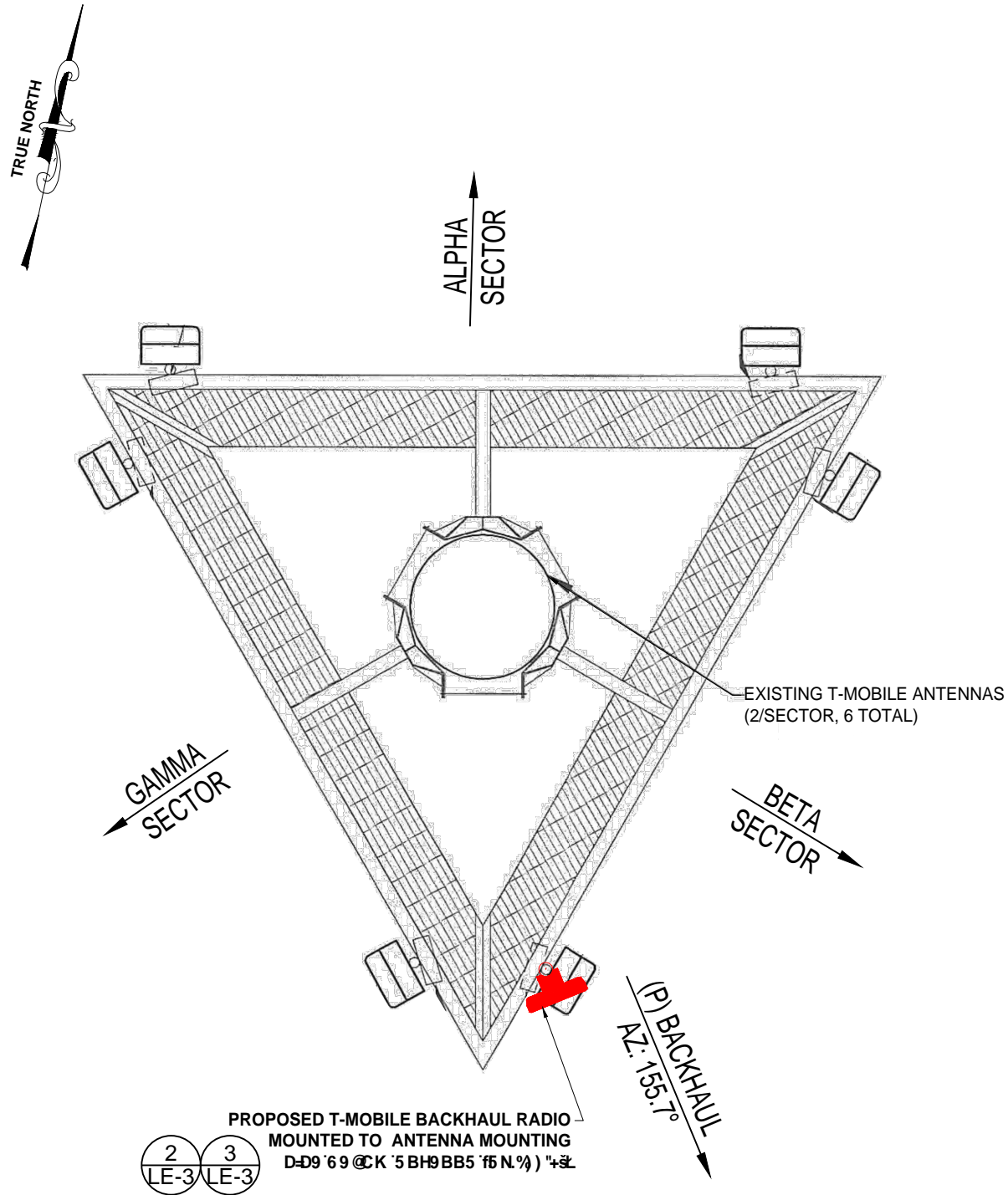
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REV	DESCRIPTION	DATE
A	PRELIMINARY	04/11/18

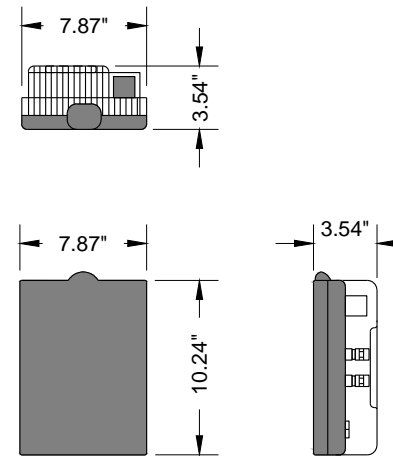
SITE NUMBER: CT11309A
 SITE NAME: CT11309A_MIDDLEFIELD_RT66
 SITE ADDRESS: 238 MERIDEN ROAD
 MIDDLEFIELD, CT 06455

SHEET TITLE:
 LE-2: ELVATION

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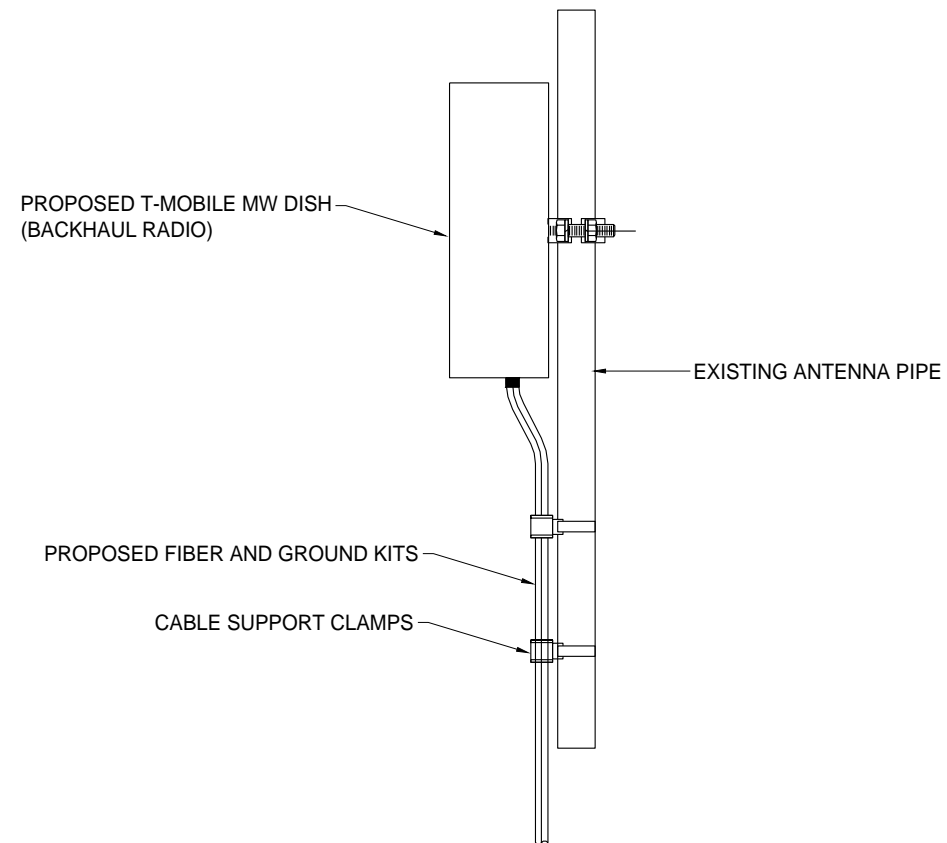


ANTENNA PLAN 1
N.T.S LE-3



MANUFACTURER: FASTBACK
MODEL: IBR 1300
FOOTPRINT: 10.24"HX7.87"WX3.54"D
WEIGHT: 8.82 LBS

BACKHAUL RADIO SPECIFICATIONS 2
N.T.S LE-3



BACKHAUL RADIO MOUNTING DETAIL 3
N.T.S LE-3

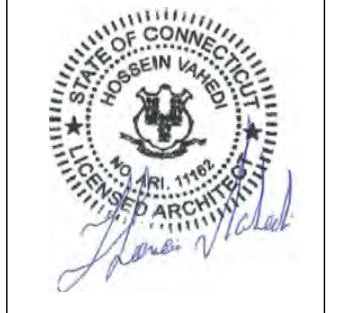
APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER
NSS NORTHEAST
SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET
NEWTON, MA 02460
617-212-3123

PROFESSIONAL SEAL



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REV	DESCRIPTION	DATE
A	PRELIMINARY	04/11/18

SITE NUMBER: CT11309A
SITE NAME: CT11309A_MIDDLEFIELD_RT66
SITE ADDRESS: 238 MERIDEN ROAD
MIDDLEFIELD, CT 06455

SHEET TITLE:
LE-3: ANTENNA PLAN

Exhibit D



Date: **May 8, 2018**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Mastec Network Solutions
1000 Centergreen Way, Suite 300
Cary, NC 27513
(919) 674-5866

Subject: Structural Analysis Report

Carrier Designation: **T-Mobile Co-Locate**
Carrier Site Number: CT11309A
Carrier Site Name: CT11309A_Middlefield_Rt66

Crown Castle Designation: **Crown Castle BU Number:** 876340
Crown Castle Site Name: COE HILL
Crown Castle JDE Job Number: 502905
Crown Castle Work Order Number: 1563708
Crown Castle Order Number: 439477 Rev. 0

Engineering Firm Designation: **Mastec Network Solutions Project Number:** 12941-SAR1

Site Data: **238 Meriden Rd., MIDDLEFIELD, Middlesex County, CT**
Latitude 41° 32' 45.6", Longitude -72° 42' 53.9"
133.5 Foot - Monopole Tower

Dear Charles McGuirt,

Mastec Network Solutions 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 1179340, in accordance with order 439477, revision 0.

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

LC7: 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 TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.000 and Risk Category II were used in this analysis

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

Structural analysis prepared by: PDH

Respectfully submitted by:

Raphael I. Mohamed, PE, PEng
Senior Director of Engineering
CT License No. 25112



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Additional Calculations

1) INTRODUCTION

This tower is a 119 ft Monopole tower designed by Summit Manufacturing, LLC in January of 1998, and mapped by FDH, Inc. in November 2007. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F. The tower has been modified per reinforcement drawings prepared by FDH, Inc. in April of 2009. Modifications consist of the addition of transition stiffeners, anchor rods and channel reinforcement between elevations 0' and 70.5' and 77' and 87'. The tower was later reinforced per reinforcement drawings prepared by Paul J. Ford, in May of 2010. Reinforcement consists the addition of a 14' pole extension. Reinforcement between 77' and 87' was not considered in this analysis. All other modifications were installed and considered as shown in the drawings.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

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
101.0	104.0	1	fastback networks	IBR 1300_CCIV2 w/ Mount Pipe	3	1/4	-

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
131.0	132.0	7	powerwave technologies	P65-15-XLH-RR w/ Mount Pipe	1 2 12 1	3/8* 3/4* 1-1/4 conduit	1
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	TT19-08BP111-001			
		6	ericsson	RRUS-11			
		1	raycap	DC6-48-60-18-8F			
	131.0	1	tower mounts	Platform Mount [LP 601-1]			
119.0	121.0	1	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe	1 3	7/8 1-1/4	1
		2	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		3	alcatel lucent	TD-RRH8x20-25			
	119.0	1	tower mounts	Platform Mount [LP 1201-1]			
117.0	117.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Side Arm Mount [SO 102-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
111.0	111.0	1	tower mounts	Platform Mount [LP 1201-1]	-	-	1
101.0	104.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	12 1	1-1/4 1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
	101.0	3	ericsson	KRY 112 144/1			
		1	tower mounts	Platform Mount [LP 713-1]			
95.0	95.0	3	rfs celwave	APXV18-206517S-ACU	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
60.0	61.0	1	symmetricom	58532A	1	1/2	1
	60.0	1	tower mounts	Side Arm Mount [SO 304-1]			
50.0	51.0	1	lucent	KS24019-L112A	1	1/2	1
	50.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Existing Equipment To Be Removed. Was Not Considered In This Analysis.
- * Feedlines are installed inside conduit.

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)
Unknown						

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	SEA Consultants Inc.	1613531	CCISITES
4-POST-MODIFICATION INSPECTION	FDH, Inc.	2427628	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, Inc.	1613597	CCISITES
4-TOWER MANUFACTURER DRAWINGS	FDH, Inc. (Mapping)/ Summit Manufacturing	1533009	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	FDH, Inc.	2331830	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Paul J. Ford and Co.	2642501	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.

This analysis may be affected if any assumptions are not valid or have been made in error. Mastec Network Solutions 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
133.5 - 128.5	Pole	TP10.75x10.75x0.365	Pole	15.4%	Pass
128.5 - 123.5	Pole	TP10.75x10.75x0.365	Pole	39.3%	Pass
123.5 - 121.5	Pole	TP10.75x10.75x0.365	Pole	49.1%	Pass
121.5 - 119	Pole	TP22x22x0.25	Pole	13.1%	Pass
119 - 114	Pole	TP22.95x22x0.25	Pole	19.4%	Pass
114 - 109	Pole	TP23.9x22.95x0.25	Pole	27.1%	Pass
109 - 104	Pole	TP24.85x23.9x0.25	Pole	34.9%	Pass
104 - 99	Pole	TP25.8x24.85x0.25	Pole	43.8%	Pass
99 - 94	Pole	TP26.75x25.8x0.25	Pole	52.7%	Pass
94 - 89	Pole	TP27.7x26.75x0.25	Pole	61.3%	Pass
89 - 84	Pole	TP28.65x27.7x0.25	Pole	69.3%	Pass
84 - 79	Pole	TP29.6x28.65x0.25	Pole	77.0%	Pass
79 - 78.75	Pole	TP30.36x29.6x0.25	Pole	77.4%	Pass
78.75 - 73.75	Pole	TP30.098x29.148x0.3125	Pole	63.7%	Pass
73.75 - 68.75	Pole	TP31.048x30.098x0.3125	Pole	68.5%	Pass
68.75 - 68.08	Pole	TP31.175x31.048x0.3125	Pole	69.1%	Pass
68.08 - 67.83	Pole + Reinf.	TP31.223x31.175x0.575	Reinf. 2 Tension Rupture	53.4%	Pass
67.83 - 62.83	Pole + Reinf.	TP32.173x31.223x0.5688	Reinf. 2 Tension Rupture	57.0%	Pass
62.83 - 57.83	Pole + Reinf.	TP33.124x32.173x0.5625	Reinf. 2 Tension Rupture	60.3%	Pass
57.83 - 52.83	Pole + Reinf.	TP34.074x33.124x0.55	Reinf. 2 Tension Rupture	63.5%	Pass
52.83 - 47.83	Pole + Reinf.	TP35.024x34.074x0.5438	Reinf. 2 Tension Rupture	66.5%	Pass

47.83 - 42.83	Pole + Reinf.	TP35.974x35.024x0.5375	Reinf. 2 Tension Rupture	69.4%	Pass
42.83 - 42.5	Pole + Reinf.	TP36.94x35.974x0.5375	Reinf. 2 Tension Rupture	69.5%	Pass
42.5 - 37.5	Pole + Reinf.	TP36.363x35.412x0.6	Reinf. 2 Tension Rupture	66.5%	Pass
37.5 - 32.5	Pole + Reinf.	TP37.313x36.363x0.5875	Reinf. 2 Tension Rupture	68.7%	Pass
32.5 - 27.5	Pole + Reinf.	TP38.263x37.313x0.5875	Reinf. 2 Tension Rupture	70.8%	Pass
27.5 - 22.5	Pole + Reinf.	TP39.214x38.263x0.575	Reinf. 2 Tension Rupture	72.8%	Pass
22.5 - 17.5	Pole + Reinf.	TP40.164x39.214x0.575	Reinf. 2 Tension Rupture	74.6%	Pass
17.5 - 12.5	Pole + Reinf.	TP41.114x40.164x0.5688	Reinf. 2 Tension Rupture	76.3%	Pass
12.5 - 7.5	Pole + Reinf.	TP42.065x41.114x0.5625	Reinf. 2 Tension Rupture	77.9%	Pass
7.5 - 2.5	Pole + Reinf.	TP43.015x42.065x0.5625	Reinf. 2 Tension Rupture	79.4%	Pass
2.5 - 0	Pole + Reinf.	TP43.49x43.015x0.5563	Reinf. 2 Tension Rupture	80.1%	Pass
				Summary	
			Pole	77.4%	Pass
			Reinforcement	80.1%	Pass
			Overall	80.1%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	119	66.6	Pass
1	Anchor Rods	0	59.2	Pass
1	Base Plate	0	53.7	Pass
1	Base Foundation	0	45.5	Pass
1	Base Foundation Soil Interaction	0	52.4	Pass

Structure Rating (max from all components) =	80.1%
---	--------------

Notes:

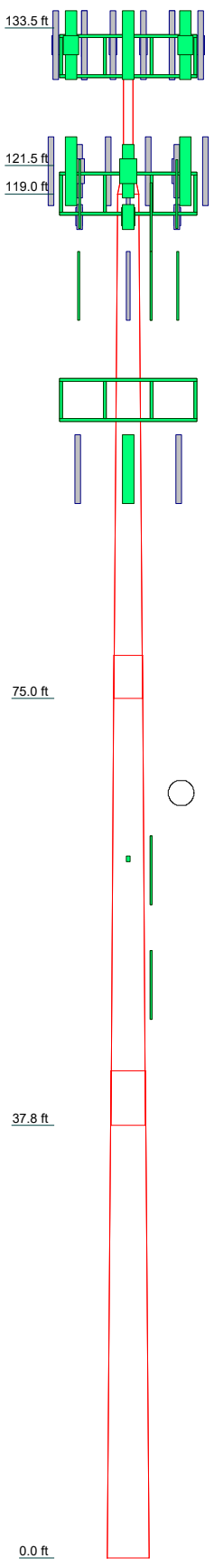
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4	5	
Length (ft)	12.00	2.50	44.00	41.00	42.50	
Number of Sides	1	1	12	12	12	
Thickness (in)	0.3650	0.2500	0.2500	0.3125	0.3750	
Socket Length (ft)		3.75	22.0000	4.75	35.4122	
Top Dia (in)	10.7500	10.7500	30.3600	29.1475	43.4900	
Bot Dia (in)	10.7500	22.0000		36.9400		
Grade	A53-B-35	A572-65	A607-65	A607-65		
Weight (K)	0.5	0.1	3.1	4.6	6.8	15.1




MATERIAL STRENGTH

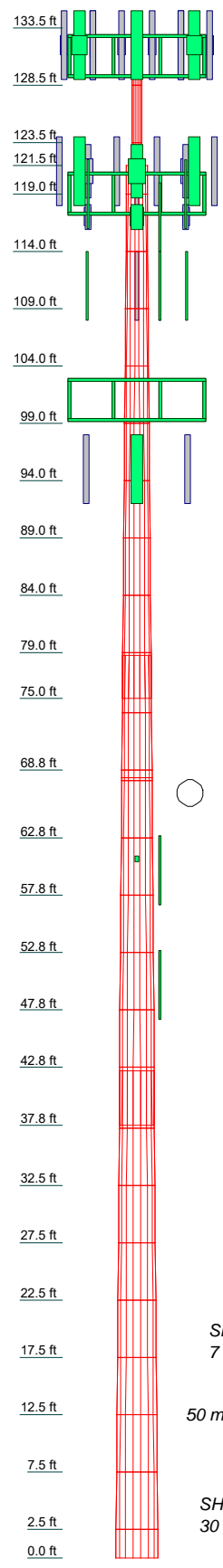
GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A607-65	65 ksi	80 ksi
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

 Mastec Network Solutions 1000 Centergreen Way, Suite 300 Cary, NC 27513 Phone: (919) 674-5866 FAX:	Job: 876340 - COE HILL		
	Project: 12941-SAR		
	Client: Crown Castle	Drawn by: pvhicks	App'd:
	Code: TIA-222-G	Date: 05/03/18	Scale: NTS
	Path:		Dwg No. E-1

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	0	0.3650					
2	5.00	0	0.3650					
3	2.50	0	0.3650					
4	2.50	0	0.3650					
5	5.00	0	0.2500					
6	5.00	12	0.2500					
7	5.00	12	0.2500					
8	5.00	12	0.2500					
9	5.00	12	0.2500					
10	5.00	12	0.2500					
11	5.00	12	0.2500					
12	5.00	12	0.2500					
13	5.00	12	0.2500					
14	5.00	12	0.2500					
15	5.00	12	0.2500					
16	5.00	12	0.2500					
17	5.00	12	0.2500					
18	5.00	12	0.2500					
19	5.00	12	0.2500					
20	5.00	12	0.2500					
21	5.00	12	0.2500					
22	5.00	12	0.2500					
23	5.00	12	0.2500					
24	5.00	12	0.2500					
25	5.00	12	0.2500					
26	5.00	12	0.2500					
27	5.00	12	0.2500					
28	5.00	12	0.2500					
29	5.00	12	0.2500					
30	5.00	12	0.2500					
31	5.00	12	0.2500					
32	2.50	12	0.2500					



DESIGNED APPURTENANCE LOADING

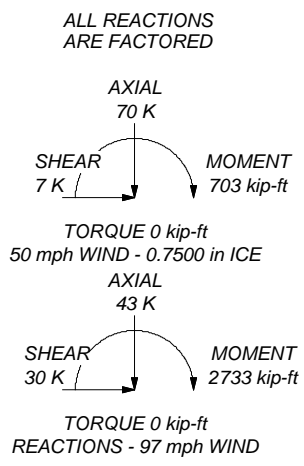
TYPE	ELEVATION	TYPE	ELEVATION
(2) P65-15-XLH-RR w/ Mount Pipe	131	PCS 1900MHz 4x45W-65MHz	117
(2) P65-15-XLH-RR w/ Mount Pipe	131	PCS 1900MHz 4x45W-65MHz	117
(3) P65-15-XLH-RR w/ Mount Pipe	131	Side Arm Mount [SO 102-3]	117
AM-X-CD-16-65-00T-RET w/ Mount Pipe	131	Platform Mount [LP 1201-1]	111
AM-X-CD-16-65-00T-RET w/ Mount Pipe	131	(3) 6' x 3" Mount Pipe	111
(2) TT19-08BP111-001	131	(3) 6' x 3" Mount Pipe	111
(2) TT19-08BP111-001	131	(3) 6' x 3" Mount Pipe	111
(2) TT19-08BP111-001	131	IBR 1300_CCIV2 w/ Mount Pipe	101
(2) RRUS-11	131	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	101
(2) RRUS-11	131	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	101
(2) RRUS-11	131	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	101
DC6-48-60-18-8F	131	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	101
Platform Mount [LP 601-1]	131	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	101
APXVSPP18-C-A20 w/ Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	101
APXVSPP18-C-A20 w/ Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	101
APXVTM14-C-120 w/ Mount Pipe	119	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	101
APXVTM14-C-120 w/ Mount Pipe	119	KRY 112 144/1	101
APXVTM14-C-120 w/ Mount Pipe	119	KRY 112 144/1	101
TD-RRH8x20-25	119	KRY 112 144/1	101
TD-RRH8x20-25	119	Platform Mount [LP 713-1]	101
TD-RRH8x20-25	119	Platform Mount [LP 713-1]	101
Platform Mount [LP 1201-1]	119	APXV18-206517S-ACU	95
6' x 3" Mount Pipe	119	APXV18-206517S-ACU	95
6' x 3" Mount Pipe	119	APXV18-206517S-ACU	95
6' x 3" Mount Pipe	119	Pipe Mount [PM 601-3]	95
6' x 3" Mount Pipe	119	Pipe Mount [PM 601-3]	95
800MHz 2X50W RRR W/FILTER	117	58532A	60
800MHz 2X50W RRR W/FILTER	117	Side Arm Mount [SO 304-1]	60
800MHz 2X50W RRR W/FILTER	117	Side Arm Mount [SO 304-1]	60
800MHz 2X50W RRR W/FILTER	117	KS24019-L112A	50
PCS 1900MHz 4x45W-65MHz	117	KS24019-L112A	50
PCS 1900MHz 4x45W-65MHz	117	Side Arm Mount [SO 701-1]	50
PCS 1900MHz 4x45W-65MHz	117	Side Arm Mount [SO 701-1]	50

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A607-65	65 ksi	80 ksi
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft



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 Phone: (919) 674-5866
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Job: 876340 - COE HILL
 Project: 12941-SAR
 Client: Crown Castle
 Code: TIA-222-G
 Path:
 Drawn by: phicks
 Date: 05/08/18
 App'd:
 Scale: NTS
 Dwg No. E-1

tnxTower Mastec Network Solutions 1000 Centergreen Way, Suite 300 Cary, NC 27513 Phone: (919) 674-5866 FAX:	Job 876340 - COE HILL	Page 1 of 37
	Project 12941-SAR	Date 15:12:38 05/08/18
	Client Crown Castle	Designed by pvhicks

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Middlesex County, Connecticut.

Basic wind speed of 97 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56.00 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="background-color: #e0e0e0;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	--

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	133.50-128.50	5.00	0.00	Round	10.7500	10.7500	0.3650		A53-B-35 (35 ksi)
L2	128.50-123.50	5.00	0.00	Round	10.7500	10.7500	0.3650		A53-B-35 (35 ksi)

tnxTower

Mastec Network Solutions
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 FAX:

Job	876340 - COE HILL	Page	2 of 37
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Client	Crown Castle	Designed by	pvhicks

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
L3	123.50-121.50	2.00	0.00	Round	10.7500	10.7500	0.3650		A53-B-35 (35 ksi)
L4	121.50-119.00	2.50	0.00	Round	22.0000	22.0000	0.2500		A572-65 (65 ksi)
L5	119.00-114.00	5.00	0.00	12	22.0000	22.9500	0.2500	1.0000	A607-65 (65 ksi)
L6	114.00-109.00	5.00	0.00	12	22.9500	23.9000	0.2500	1.0000	A607-65 (65 ksi)
L7	109.00-104.00	5.00	0.00	12	23.9000	24.8500	0.2500	1.0000	A607-65 (65 ksi)
L8	104.00-99.00	5.00	0.00	12	24.8500	25.8000	0.2500	1.0000	A607-65 (65 ksi)
L9	99.00-94.00	5.00	0.00	12	25.8000	26.7500	0.2500	1.0000	A607-65 (65 ksi)
L10	94.00-89.00	5.00	0.00	12	26.7500	27.7000	0.2500	1.0000	A607-65 (65 ksi)
L11	89.00-84.00	5.00	0.00	12	27.7000	28.6500	0.2500	1.0000	A607-65 (65 ksi)
L12	84.00-79.00	5.00	0.00	12	28.6500	29.6000	0.2500	1.0000	A607-65 (65 ksi)
L13	79.00-75.00	4.00	3.75	12	29.6000	30.3600	0.2500	1.0000	A607-65 (65 ksi)
L14	75.00-73.75	5.00	0.00	12	29.1475	30.0978	0.3125	1.2500	A607-65 (65 ksi)
L15	73.75-68.75	5.00	0.00	12	30.0978	31.0481	0.3125	1.2500	A607-65 (65 ksi)
L16	68.75-68.08	0.67	0.00	12	31.0481	31.1755	0.3125	1.2500	A607-65 (65 ksi)
L17	68.08-67.83	0.25	0.00	12	31.1755	31.2230	0.5750	2.3000	A607-65 (65 ksi)
L18	67.83-62.83	5.00	0.00	12	31.2230	32.1733	0.5687	2.2750	A607-65 (65 ksi)
L19	62.83-57.83	5.00	0.00	12	32.1733	33.1236	0.5625	2.2500	A607-65 (65 ksi)
L20	57.83-52.83	5.00	0.00	12	33.1236	34.0739	0.5500	2.2000	A607-65 (65 ksi)
L21	52.83-47.83	5.00	0.00	12	34.0739	35.0242	0.5437	2.1750	A607-65 (65 ksi)
L22	47.83-42.83	5.00	0.00	12	35.0242	35.9745	0.5375	2.1500	A607-65 (65 ksi)
L23	42.83-37.75	5.08	4.75	12	35.9745	36.9400	0.5375	2.1500	A607-65 (65 ksi)
L24	37.75-37.50	5.00	0.00	12	35.4122	36.3625	0.6000	2.4000	A607-65 (65 ksi)
L25	37.50-32.50	5.00	0.00	12	36.3625	37.3129	0.5875	2.3500	A607-65 (65 ksi)
L26	32.50-27.50	5.00	0.00	12	37.3129	38.2632	0.5875	2.3500	A607-65 (65 ksi)
L27	27.50-22.50	5.00	0.00	12	38.2632	39.2135	0.5750	2.3000	A607-65 (65 ksi)
L28	22.50-17.50	5.00	0.00	12	39.2135	40.1639	0.5750	2.3000	A607-65 (65 ksi)
L29	17.50-12.50	5.00	0.00	12	40.1639	41.1142	0.5687	2.2750	A607-65 (65 ksi)
L30	12.50-7.50	5.00	0.00	12	41.1142	42.0645	0.5625	2.2500	A607-65 (65 ksi)
L31	7.50-2.50	5.00	0.00	12	42.0645	43.0148	0.5625	2.2500	A607-65 (65 ksi)
L32	2.50-0.00	2.50		12	43.0148	43.4900	0.5563	2.2250	A607-65 (65 ksi)

<i>tnxTower</i> Mastec Network Solutions 1000 Centergreen Way, Suite 300 Cary, NC 27513 Phone: (919) 674-5866 FAX:	Job	876340 - COE HILL	Page	3 of 37
	Project	12941-SAR	Date	15:12:38 05/08/18
	Client	Crown Castle	Designed by	pvhicks

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	Iu/Q in ²	w in	w/t
L1	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
L2	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
L3	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
	10.7500	11.9083	160.7342	3.6739	5.3750	29.9040	321.4685	5.9506	0.0000	0
L4	22.0000	17.0824	1010.2644	7.6903	11.0000	91.8422	2020.5288	8.5361	0.0000	0
	22.0000	17.0824	1010.2644	7.6903	11.0000	91.8422	2020.5288	8.5361	0.0000	0
L5	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	23.7596	18.2735	1201.8753	8.1266	11.8881	101.0990	2435.3252	8.9937	5.4806	21.922
L6	23.7596	18.2735	1201.8753	8.1266	11.8881	101.0990	2435.3252	8.9937	5.4806	21.922
	24.7431	19.0383	1359.1746	8.4667	12.3802	109.7862	2754.0563	9.3700	5.7352	22.941
L7	24.7431	19.0383	1359.1746	8.4667	12.3802	109.7862	2754.0563	9.3700	5.7352	22.941
	25.7266	19.8030	1529.6327	8.8068	12.8723	118.8313	3099.4505	9.7464	5.9898	23.959
L8	25.7266	19.8030	1529.6327	8.8068	12.8723	118.8313	3099.4505	9.7464	5.9898	23.959
	26.7101	20.5678	1713.7779	9.1469	13.3644	128.2346	3472.5787	10.1228	6.2444	24.978
L9	26.7101	20.5678	1713.7779	9.1469	13.3644	128.2346	3472.5787	10.1228	6.2444	24.978
	27.6936	21.3325	1912.1390	9.4870	13.8565	137.9958	3874.5120	10.4992	6.4990	25.996
L10	27.6936	21.3325	1912.1390	9.4870	13.8565	137.9958	3874.5120	10.4992	6.4990	25.996
	28.6772	22.0972	2125.2444	9.8271	14.3486	148.1151	4306.3213	10.8756	6.7536	27.014
L11	28.6772	22.0972	2125.2444	9.8271	14.3486	148.1151	4306.3213	10.8756	6.7536	27.014
	29.6607	22.8620	2353.6227	10.1672	14.8407	158.5924	4769.0778	11.2520	7.0082	28.033
L12	29.6607	22.8620	2353.6227	10.1672	14.8407	158.5924	4769.0778	11.2520	7.0082	28.033
	30.6442	23.6268	2597.8026	10.5073	15.3328	169.4278	5263.8524	11.6284	7.2628	29.051
L13	30.6442	23.6268	2597.8026	10.5073	15.3328	169.4278	5263.8524	11.6284	7.2628	29.051
	31.4310	24.2386	2804.8788	10.7794	15.7265	178.3539	5683.4449	11.9295	7.4665	29.866
L14	31.4310	24.2386	2804.8788	10.7794	15.7265	178.3539	5683.4449	11.9295	7.4665	29.866
	30.9136	29.0152	3079.2979	10.3229	15.0984	203.9486	6239.4925	14.2804	6.9740	22.317
L15	31.1595	29.9715	3393.8918	10.6631	15.5907	217.6875	6876.9450	14.7510	7.2287	23.132
	31.1595	29.9715	3393.8918	10.6631	15.5907	217.6875	6876.9450	14.7510	7.2287	23.132
	32.1434	30.9277	3729.2144	11.0033	16.0829	231.8742	7556.3994	15.2217	7.4834	23.947
L16	32.1434	30.9277	3729.2144	11.0033	16.0829	231.8742	7556.3994	15.2217	7.4834	23.947
	32.2752	31.0558	3775.7584	11.0489	16.1489	233.8092	7650.7101	15.2847	7.5175	24.056
L17	32.2752	31.0558	3775.7584	11.0489	16.1489	233.8092	7650.7101	15.2847	7.5175	24.056
	32.3244	56.7447	6803.2219	10.9720	16.1735	420.6401	13785.1721	27.9280	6.8268	11.873
L18	32.3244	56.7447	6803.2219	10.9720	16.1735	420.6401	13785.1721	27.9280	6.8268	11.873
	33.3082	57.8797	7379.2270	11.3144	16.6658	442.7779	14952.3145	28.4866	7.0982	12.48
L19	33.3082	57.8797	7379.2270	11.3144	16.6658	442.7779	14952.3145	28.4866	7.0982	12.48
	34.2920	58.9762	7981.0603	11.6569	17.1580	465.1506	16171.7920	29.0263	7.3696	13.102
L20	34.2920	58.9762	7981.0603	11.6569	17.1580	465.1506	16171.7920	29.0263	7.3696	13.102
	35.2759	59.3708	8516.6214	12.0015	17.6503	482.5208	17256.9840	29.2205	7.6578	13.923
L21	35.2759	59.3708	8516.6214	12.0015	17.6503	482.5208	17256.9840	29.2205	7.6578	13.923
	36.2597	60.3709	9161.3463	12.3440	18.1425	504.9653	18563.3714	29.7127	7.9292	14.582
L22	36.2597	60.3709	9161.3463	12.3440	18.1425	504.9653	18563.3714	29.7127	7.9292	14.582
	37.2435	61.3326	9830.8432	12.6864	18.6348	527.5533	19919.9536	30.1860	8.2007	15.257
L23	37.2435	61.3326	9830.8432	12.6864	18.6348	527.5533	19919.9536	30.1860	8.2007	15.257
	38.2431	63.0036	10656.4836	13.0321	19.1349	556.9129	21592.9249	31.0085	8.4594	15.738
L24	38.2431	63.0036	10656.4836	13.0321	19.1349	556.9129	21592.9249	31.0085	8.4594	15.738
	37.5961	67.2572	10403.7009	12.4628	18.3435	567.1593	21080.7185	33.1019	7.8825	13.137
L25	37.5961	67.2572	10403.7009	12.4628	18.3435	567.1593	21080.7185	33.1019	7.8825	13.137
	37.6453	69.0932	11279.1950	12.8030	18.8358	598.8170	22854.7070	34.0056	8.1372	13.562
L26	37.6453	69.0932	11279.1950	12.8030	18.8358	598.8170	22854.7070	34.0056	8.1372	13.562
	38.6291	69.4752	11960.4667	13.1477	19.3281	618.8135	24235.1482	34.1936	8.4253	14.341
L27	38.6291	69.4752	11960.4667	13.1477	19.3281	618.8135	24235.1482	34.1936	8.4253	14.341
	39.6130	71.2730	12913.1891	13.4879	19.8203	651.5122	26165.6220	35.0784	8.6800	14.775
L28	39.6130	71.2730	12913.1891	13.4879	19.8203	651.5122	26165.6220	35.0784	8.6800	14.775
	40.5968	71.5392	13632.3653	13.8326	20.3126	671.1284	27622.8681	35.2094	8.9682	15.597
L29	40.5968	71.5392	13632.3653	13.8326	20.3126	671.1284	27622.8681	35.2094	8.9682	15.597

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Mastec Network Solutions 1000 Centergreen Way, Suite 300 Cary, NC 27513 Phone: (919) 674-5866 FAX:</p>	<p>Job</p> <p style="text-align: center;">876340 - COE HILL</p>	<p>Page</p> <p style="text-align: center;">4 of 37</p>
	<p>Project</p> <p style="text-align: center;">12941-SAR</p>	<p>Date</p> <p style="text-align: center;">15:12:38 05/08/18</p>
	<p>Client</p> <p style="text-align: center;">Crown Castle</p>	<p>Designed by</p> <p style="text-align: center;">pvhicks</p>

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
L29	41.5807	73.2988	14663.1865	14.1728	20.8049	704.7957	29711.5912	36.0754	9.2229	16.04
	41.5807	72.5135	14510.6744	14.1750	20.8049	697.4651	29402.5603	35.6889	9.2397	16.246
L30	42.5645	74.2539	15580.7717	14.5153	21.2971	731.5897	31570.8676	36.5455	9.4944	16.693
	42.5645	73.4492	15416.6816	14.5175	21.2971	723.8849	31238.3765	36.1495	9.5111	16.909
L31	43.5484	75.1705	16526.1495	14.8577	21.7894	758.4485	33486.4594	36.9966	9.7658	17.361
	43.5484	75.1705	16526.1495	14.8577	21.7894	758.4485	33486.4594	36.9966	9.7658	17.361
L32	44.5322	76.8918	17687.6089	15.1979	22.2817	793.8183	35839.8910	37.8438	10.0205	17.814
	44.5322	76.0486	17498.8064	15.2002	22.2817	785.3448	35457.3259	37.4288	10.0372	18.044
	45.0242	76.8997	18092.9055	15.3703	22.5278	803.1361	36661.1318	37.8477	10.1646	18.273

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
L1				1	1	1			
133.50-128.50									
L2				1	1	1			
128.50-123.50									
L3				1	1	1			
123.50-121.50									
L4				1	1	1			
121.50-119.00									
L5				1	1	1			
119.00-114.00									
L6				1	1	1			
114.00-109.00									
L7				1	1	1			
109.00-104.00									
L8				1	1	1			
104.00-99.00									
L9 99.00-94.00				1	1	1			
L10				1	1	1			
94.00-89.00									
L11				1	1	1			
89.00-84.00									
L12				1	1	1			
84.00-79.00									
L13				1	1	1			
79.00-75.00									
L14				1	1	1			
75.00-73.75									
L15				1	1	1			
73.75-68.75									
L16				1	1	1			
68.75-68.08									
L17				1	1	0.946979			
68.08-67.83									
L18				1	1	0.94493			
67.83-62.83									
L19				1	1	0.943576			
62.83-57.83									
L20				1	1	0.953411			
57.83-52.83									
L21				1	1	0.953456			
52.83-47.83									
L22				1	1	0.954098			
47.83-42.83									
L23				1	1	0.953439			
42.83-37.75									
L24				1	1	0.956495			

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	Client Crown Castle	Designed by pvhicks

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
37.75-37.50 L25				1	1	0.967753			
37.50-32.50 L26				1	1	0.959443			
32.50-27.50 L27				1	1	0.971913			
27.50-22.50 L28				1	1	0.964238			
22.50-17.50 L29				1	1	0.967289			
17.50-12.50 L30				1	1	0.970759			
12.50-7.50 L31				1	1	0.963952			
7.50-2.50 L32				1	1	0.971314			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	klf
**									
*									
MP3-08	C	Surface Af (CaAa)	87.00 - 77.00	1	1	0.000 0.000	7.9300	21.4600	0.04
MP3-08	B	Surface Af (CaAa)	87.00 - 77.00	1	1	0.000 0.000	7.9300	21.4600	0.04
MP3-08	B	Surface Af (CaAa)	87.00 - 77.00	1	1	-0.500 -0.500	7.9300	21.4600	0.04
MP3-08	A	Surface Af (CaAa)	87.00 - 77.00	1	1	0.000 0.000	7.9300	21.4600	0.04
*									
MP3-05	C	Surface Af (CaAa)	70.50 - 0.50	1	1	-0.500 -0.500	5.3300	14.8400	0.00
MP3-05	B	Surface Af (CaAa)	70.50 - 0.50	1	1	-0.250 -0.250	5.3300	14.8400	0.00
MP3-05	A	Surface Af (CaAa)	70.50 - 0.50	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05	C	Surface Af (CaAa)	70.50 - 0.50	1	1	0.500 0.500	5.3300	14.8400	0.00
*									
Safety Line 3/8	C	Surface Ar (CaAa)	133.50 - 0.00	1	1	0.000 0.000	0.3750		0.00
OSP6U(1/4)	C	Surface Ar (CaAa)	101.00 - 0.00	3	3	0.000 0.000	0.2510		0.00
*									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	$C_A A_A$	Weight
				ft		ft ² /ft	klf
**							

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight klf
*								
LCF114-50J(1-1/4)	C	No	Inside Pole	131.00 - 0.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
FB-L98B-002-50000(3/8)	C	No	Inside Pole	131.00 - 0.00	1	No Ice	0.00	0.00
)						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	131.00 - 0.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
2" Flex Conduit	C	No	Inside Pole	131.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*								
LDF5-50A(7/8)	C	No	Inside Pole	119.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
HB114-1-08U4-M5J(1-1/4)	C	No	Inside Pole	119.00 - 0.00	3	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*								
LDF6-50A(1-1/4)	C	No	Inside Pole	101.00 - 0.00	12	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	Inside Pole	101.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*								
AVA7-50(1-5/8)	C	No	Inside Pole	95.00 - 0.00	6	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*								
LDF4-50A(1/2)	C	No	Inside Pole	60.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*								
LDF4-50A(1/2)	C	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
						1" Ice	0.00	0.00
*								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	133.50-128.50	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	0.188	0.000	0.03
L2	128.50-123.50	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	0.188	0.000	0.05
L3	123.50-121.50	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	0.075	0.000	0.02
L4	121.50-119.00	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	0.094	0.000	0.03

tnxTower

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Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L5	119.00-114.00	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	0.188	0.000	0.07
L6	114.00-109.00	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	0.188	0.000	0.07
L7	109.00-104.00	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	0.188	0.000	0.07
L8	104.00-99.00	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	0.338	0.000	0.09
L9	99.00-94.00	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	0.564	0.000	0.11
L10	94.00-89.00	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	0.564	0.000	0.13
L11	89.00-84.00	A	0.000	0.000	3.965	0.000	0.11
		B	0.000	0.000	7.930	0.000	0.21
		C	0.000	0.000	4.529	0.000	0.24
L12	84.00-79.00	A	0.000	0.000	6.608	0.000	0.17
		B	0.000	0.000	13.217	0.000	0.35
		C	0.000	0.000	7.172	0.000	0.31
L13	79.00-75.00	A	0.000	0.000	2.643	0.000	0.07
		B	0.000	0.000	5.287	0.000	0.14
		C	0.000	0.000	3.095	0.000	0.18
L14	75.00-73.75	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	0.141	0.000	0.03
L15	73.75-68.75	A	0.000	0.000	1.555	0.000	0.00
		B	0.000	0.000	1.555	0.000	0.00
		C	0.000	0.000	3.673	0.000	0.13
L16	68.75-68.08	A	0.000	0.000	0.595	0.000	0.00
		B	0.000	0.000	0.595	0.000	0.00
		C	0.000	0.000	1.266	0.000	0.02
L17	68.08-67.83	A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.222	0.000	0.00
		C	0.000	0.000	0.472	0.000	0.01
L18	67.83-62.83	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
L19	62.83-57.83	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
L20	57.83-52.83	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
L21	52.83-47.83	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
L22	47.83-42.83	A	0.000	0.000	4.442	0.000	0.00
		B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
L23	42.83-37.75	A	0.000	0.000	4.513	0.000	0.00
		B	0.000	0.000	4.513	0.000	0.00
		C	0.000	0.000	9.598	0.000	0.14
L24	37.75-37.50	A	0.000	0.000	0.222	0.000	0.00
		B	0.000	0.000	0.222	0.000	0.00
		C	0.000	0.000	0.472	0.000	0.01
L25	37.50-32.50	A	0.000	0.000	4.442	0.000	0.00

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	Client	Crown Castle	Designed by	pvhicks

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L26	32.50-27.50	B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
		A	0.000	0.000	4.442	0.000	0.00
L27	27.50-22.50	B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
		A	0.000	0.000	4.442	0.000	0.00
L28	22.50-17.50	B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
		A	0.000	0.000	4.442	0.000	0.00
L29	17.50-12.50	B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
		A	0.000	0.000	4.442	0.000	0.00
L30	12.50-7.50	B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
		A	0.000	0.000	4.442	0.000	0.00
L31	7.50-2.50	B	0.000	0.000	4.442	0.000	0.00
		C	0.000	0.000	9.447	0.000	0.13
		A	0.000	0.000	4.442	0.000	0.00
L32	2.50-0.00	B	0.000	0.000	1.777	0.000	0.00
		C	0.000	0.000	3.835	0.000	0.07
		A	0.000	0.000	1.777	0.000	0.00

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} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	133.50-128.50	A	1.722	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	1.909	0.000	0.05
L2	128.50-123.50	A	1.715	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	1.903	0.000	0.07
L3	123.50-121.50	A	1.710	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	0.759	0.000	0.03
L4	121.50-119.00	A	1.707	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	0.947	0.000	0.04
L5	119.00-114.00	A	1.702	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	1.889	0.000	0.09
L6	114.00-109.00	A	1.694	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	1.882	0.000	0.09
L7	109.00-104.00	A	1.686	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	1.874	0.000	0.09
L8	104.00-99.00	A	1.678	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	2.893	0.000	0.12
L9	99.00-94.00	A	1.670	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	4.415	0.000	0.16
L10	94.00-89.00	A	1.661	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

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	Client	Crown Castle	Designed by	phicks

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L11	89.00-84.00	C		0.000	0.000	4.395	0.000	0.18
		A	1.652	0.000	0.000	3.844	0.000	0.16
		B		0.000	0.000	7.687	0.000	0.32
		C		0.000	0.000	8.218	0.000	0.33
L12	84.00-79.00	A	1.642	0.000	0.000	6.401	0.000	0.26
		B		0.000	0.000	12.802	0.000	0.53
		C		0.000	0.000	10.753	0.000	0.44
L13	79.00-75.00	A	1.633	0.000	0.000	2.558	0.000	0.11
		B		0.000	0.000	5.117	0.000	0.21
		C		0.000	0.000	6.024	0.000	0.24
L14	75.00-73.75	A	1.627	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	1.083	0.000	0.04
L15	73.75-68.75	A	1.620	0.000	0.000	2.122	0.000	0.02
		B		0.000	0.000	2.122	0.000	0.02
		C		0.000	0.000	8.546	0.000	0.22
L16	68.75-68.08	A	1.613	0.000	0.000	0.811	0.000	0.01
		B		0.000	0.000	0.811	0.000	0.01
		C		0.000	0.000	2.197	0.000	0.04
L17	68.08-67.83	A	1.612	0.000	0.000	0.303	0.000	0.00
		B		0.000	0.000	0.303	0.000	0.00
		C		0.000	0.000	0.820	0.000	0.02
L18	67.83-62.83	A	1.606	0.000	0.000	6.048	0.000	0.07
		B		0.000	0.000	6.048	0.000	0.07
		C		0.000	0.000	16.367	0.000	0.30
L19	62.83-57.83	A	1.593	0.000	0.000	6.035	0.000	0.06
		B		0.000	0.000	6.035	0.000	0.06
		C		0.000	0.000	16.313	0.000	0.30
L20	57.83-52.83	A	1.580	0.000	0.000	6.021	0.000	0.06
		B		0.000	0.000	6.021	0.000	0.06
		C		0.000	0.000	16.254	0.000	0.30
L21	52.83-47.83	A	1.565	0.000	0.000	6.006	0.000	0.06
		B		0.000	0.000	6.006	0.000	0.06
		C		0.000	0.000	16.191	0.000	0.30
L22	47.83-42.83	A	1.548	0.000	0.000	5.990	0.000	0.06
		B		0.000	0.000	5.990	0.000	0.06
		C		0.000	0.000	16.122	0.000	0.30
L23	42.83-37.75	A	1.530	0.000	0.000	6.067	0.000	0.06
		B		0.000	0.000	6.067	0.000	0.06
		C		0.000	0.000	16.302	0.000	0.30
L24	37.75-37.50	A	1.520	0.000	0.000	0.299	0.000	0.00
		B		0.000	0.000	0.299	0.000	0.00
		C		0.000	0.000	0.802	0.000	0.01
L25	37.50-32.50	A	1.509	0.000	0.000	5.950	0.000	0.06
		B		0.000	0.000	5.950	0.000	0.06
		C		0.000	0.000	15.954	0.000	0.29
L26	32.50-27.50	A	1.486	0.000	0.000	5.927	0.000	0.06
		B		0.000	0.000	5.927	0.000	0.06
		C		0.000	0.000	15.856	0.000	0.29
L27	27.50-22.50	A	1.459	0.000	0.000	5.901	0.000	0.06
		B		0.000	0.000	5.901	0.000	0.06
		C		0.000	0.000	15.742	0.000	0.28
L28	22.50-17.50	A	1.427	0.000	0.000	5.868	0.000	0.06
		B		0.000	0.000	5.868	0.000	0.06
		C		0.000	0.000	15.605	0.000	0.28
L29	17.50-12.50	A	1.386	0.000	0.000	5.828	0.000	0.05
		B		0.000	0.000	5.828	0.000	0.05
		C		0.000	0.000	15.433	0.000	0.27
L30	12.50-7.50	A	1.331	0.000	0.000	5.773	0.000	0.05
		B		0.000	0.000	5.773	0.000	0.05
		C		0.000	0.000	15.198	0.000	0.27

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L31	7.50-2.50	A	1.242	0.000	0.000	5.683	0.000	0.05
		B		0.000	0.000	5.683	0.000	0.05
		C		0.000	0.000	14.819	0.000	0.25
L32	2.50-0.00	A	1.081	0.000	0.000	2.209	0.000	0.02
		B		0.000	0.000	2.209	0.000	0.02
		C		0.000	0.000	5.963	0.000	0.11

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	133.50-128.50	0.0000	0.0559	0.0000	0.3394
L2	128.50-123.50	0.0000	0.0559	0.0000	0.3387
L3	123.50-121.50	0.0000	0.0559	0.0000	0.3382
L4	121.50-119.00	0.0000	0.0561	0.0000	0.4245
L5	119.00-114.00	0.0000	0.0542	0.0000	0.4150
L6	114.00-109.00	0.0000	0.0542	0.0000	0.4178
L7	109.00-104.00	0.0000	0.0542	0.0000	0.4203
L8	104.00-99.00	0.0000	0.0967	0.0000	0.5779
L9	99.00-94.00	0.0000	0.1574	0.0000	0.7567
L10	94.00-89.00	0.0000	0.1576	0.0000	0.7656
L11	89.00-84.00	-0.4919	-0.4703	-0.3839	0.0169
L12	84.00-79.00	-0.6081	-0.6142	-0.5055	-0.2068
L13	79.00-75.00	-0.4606	-0.4240	-0.3543	0.1002
L14	75.00-73.75	0.0000	0.1581	0.0000	0.7874
L15	73.75-68.75	-0.2476	-0.6041	-0.2286	-0.0957
L16	68.75-68.08	-0.4481	-1.2211	-0.4268	-0.8588
L17	68.08-67.83	-0.4488	-1.2230	-0.4276	-0.8607
L18	67.83-62.83	-0.4527	-1.2340	-0.4322	-0.8711
L19	62.83-57.83	-0.4599	-1.2546	-0.4409	-0.8909
L20	57.83-52.83	-0.4670	-1.2746	-0.4495	-0.9106
L21	52.83-47.83	-0.4740	-1.2941	-0.4578	-0.9302
L22	47.83-42.83	-0.4807	-1.3132	-0.4661	-0.9498
L23	42.83-37.75	-0.4874	-1.3319	-0.4742	-0.9696
L24	37.75-37.50	-0.4866	-1.3297	-0.4732	-0.9675
L25	37.50-32.50	-0.4900	-1.3393	-0.4775	-0.9797
L26	32.50-27.50	-0.4963	-1.3573	-0.4853	-0.9999
L27	27.50-22.50	-0.5026	-1.3748	-0.4930	-1.0205
L28	22.50-17.50	-0.5086	-1.3920	-0.5006	-1.0419
L29	17.50-12.50	-0.5146	-1.4087	-0.5080	-1.0646
L30	12.50-7.50	-0.5204	-1.4251	-0.5152	-1.0898
L31	7.50-2.50	-0.5261	-1.4412	-0.5222	-1.1214
L32	2.50-0.00	-0.4688	-1.2660	-0.4659	-0.9473

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	13	Safety Line 3/8	128.50 - 133.50	1.0000	1.0000

tnxTower

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L2	13	Safety Line 3/8	123.50 - 128.50	1.0000	1.0000
L3	13	Safety Line 3/8	121.50 - 123.50	1.0000	1.0000
L4	13	Safety Line 3/8	119.00 - 121.50	1.0000	1.0000
L5	13	Safety Line 3/8	114.00 - 119.00	1.0000	1.0000
L6	13	Safety Line 3/8	109.00 - 114.00	1.0000	1.0000
L7	13	Safety Line 3/8	104.00 - 109.00	1.0000	1.0000
L8	13	Safety Line 3/8	99.00 - 104.00	1.0000	1.0000
L8	25	OSP6U(1/4)	99.00 - 101.00	1.0000	1.0000
L9	13	Safety Line 3/8	94.00 - 99.00	1.0000	1.0000
L9	25	OSP6U(1/4)	94.00 - 99.00	1.0000	1.0000
L10	13	Safety Line 3/8	89.00 - 94.00	1.0000	1.0000
L10	25	OSP6U(1/4)	89.00 - 94.00	1.0000	1.0000
L11	3	MP3-08	84.00 - 87.00	1.0000	1.0000
L11	4	MP3-08	84.00 - 87.00	1.0000	1.0000
L11	5	MP3-08	84.00 - 87.00	1.0000	1.0000
L11	6	MP3-08	84.00 - 87.00	1.0000	1.0000
L11	13	Safety Line 3/8	84.00 - 89.00	1.0000	1.0000
L11	25	OSP6U(1/4)	84.00 - 89.00	1.0000	1.0000
L12	3	MP3-08	79.00 - 84.00	1.0000	1.0000
L12	4	MP3-08	79.00 - 84.00	1.0000	1.0000
L12	5	MP3-08	79.00 - 84.00	1.0000	1.0000
L12	6	MP3-08	79.00 - 84.00	1.0000	1.0000
L12	13	Safety Line 3/8	79.00 - 84.00	1.0000	1.0000
L12	25	OSP6U(1/4)	79.00 - 84.00	1.0000	1.0000
L13	3	MP3-08	77.00 - 79.00	1.0000	1.0000
L13	4	MP3-08	77.00 - 79.00	1.0000	1.0000
L13	5	MP3-08	77.00 - 79.00	1.0000	1.0000
L13	6	MP3-08	77.00 - 79.00	1.0000	1.0000
L13	13	Safety Line 3/8	75.00 - 79.00	1.0000	1.0000
L13	25	OSP6U(1/4)	75.00 - 79.00	1.0000	1.0000
L15	8	MP3-05	68.75 - 70.50	1.0000	1.0000
L15	9	MP3-05	68.75 - 70.50	1.0000	1.0000
L15	10	MP3-05	68.75 - 70.50	1.0000	1.0000
L15	11	MP3-05	68.75 - 70.50	1.0000	1.0000
L15	13	Safety Line 3/8	68.75 - 73.75	1.0000	1.0000
L15	25	OSP6U(1/4)	68.75 - 73.75	1.0000	1.0000
L16	8	MP3-05	68.08 - 68.75	1.0000	1.0000
L16	9	MP3-05	68.08 - 68.75	1.0000	1.0000
L16	10	MP3-05	68.08 - 68.75	1.0000	1.0000
L16	11	MP3-05	68.08 - 68.75	1.0000	1.0000
L16	13	Safety Line 3/8	68.08 - 68.75	1.0000	1.0000
L16	25	OSP6U(1/4)	68.08 - 68.75	1.0000	1.0000
L17	8	MP3-05	67.83 - 68.08	1.0000	1.0000
L17	9	MP3-05	67.83 - 68.08	1.0000	1.0000
L17	10	MP3-05	67.83 - 68.08	1.0000	1.0000
L17	11	MP3-05	67.83 - 68.08	1.0000	1.0000
L17	13	Safety Line 3/8	67.83 - 68.08	1.0000	1.0000
L17	25	OSP6U(1/4)	67.83 - 68.08	1.0000	1.0000
L18	8	MP3-05	62.83 - 67.83	1.0000	1.0000
L18	9	MP3-05	62.83 - 67.83	1.0000	1.0000
L18	10	MP3-05	62.83 - 67.83	1.0000	1.0000
L18	11	MP3-05	62.83 - 67.83	1.0000	1.0000
L18	13	Safety Line 3/8	62.83 - 67.83	1.0000	1.0000
L18	25	OSP6U(1/4)	62.83 - 67.83	1.0000	1.0000
L19	8	MP3-05	57.83 - 62.83	1.0000	1.0000
L19	9	MP3-05	57.83 - 62.83	1.0000	1.0000

tnxTower

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L19	10	MP3-05	57.83 - 62.83	1.0000	1.0000
L19	11	MP3-05	57.83 - 62.83	1.0000	1.0000
L19	13	Safety Line 3/8	57.83 - 62.83	1.0000	1.0000
L19	25	OSP6U(1/4)	57.83 - 62.83	1.0000	1.0000
L20	8	MP3-05	52.83 - 57.83	1.0000	1.0000
L20	9	MP3-05	52.83 - 57.83	1.0000	1.0000
L20	10	MP3-05	52.83 - 57.83	1.0000	1.0000
L20	11	MP3-05	52.83 - 57.83	1.0000	1.0000
L20	13	Safety Line 3/8	52.83 - 57.83	1.0000	1.0000
L20	25	OSP6U(1/4)	52.83 - 57.83	1.0000	1.0000
L21	8	MP3-05	47.83 - 52.83	1.0000	1.0000
L21	9	MP3-05	47.83 - 52.83	1.0000	1.0000
L21	10	MP3-05	47.83 - 52.83	1.0000	1.0000
L21	11	MP3-05	47.83 - 52.83	1.0000	1.0000
L21	13	Safety Line 3/8	47.83 - 52.83	1.0000	1.0000
L21	25	OSP6U(1/4)	47.83 - 52.83	1.0000	1.0000
L22	8	MP3-05	42.83 - 47.83	1.0000	1.0000
L22	9	MP3-05	42.83 - 47.83	1.0000	1.0000
L22	10	MP3-05	42.83 - 47.83	1.0000	1.0000
L22	11	MP3-05	42.83 - 47.83	1.0000	1.0000
L22	13	Safety Line 3/8	42.83 - 47.83	1.0000	1.0000
L22	25	OSP6U(1/4)	42.83 - 47.83	1.0000	1.0000
L23	8	MP3-05	37.75 - 42.83	1.0000	1.0000
L23	9	MP3-05	37.75 - 42.83	1.0000	1.0000
L23	10	MP3-05	37.75 - 42.83	1.0000	1.0000
L23	11	MP3-05	37.75 - 42.83	1.0000	1.0000
L23	13	Safety Line 3/8	37.75 - 42.83	1.0000	1.0000
L23	25	OSP6U(1/4)	37.75 - 42.83	1.0000	1.0000
L25	8	MP3-05	32.50 - 37.50	1.0000	1.0000
L25	9	MP3-05	32.50 - 37.50	1.0000	1.0000
L25	10	MP3-05	32.50 - 37.50	1.0000	1.0000
L25	11	MP3-05	32.50 - 37.50	1.0000	1.0000
L25	13	Safety Line 3/8	32.50 - 37.50	1.0000	1.0000
L25	25	OSP6U(1/4)	32.50 - 37.50	1.0000	1.0000
L26	8	MP3-05	27.50 - 32.50	1.0000	1.0000
L26	9	MP3-05	27.50 - 32.50	1.0000	1.0000
L26	10	MP3-05	27.50 - 32.50	1.0000	1.0000
L26	11	MP3-05	27.50 - 32.50	1.0000	1.0000
L26	13	Safety Line 3/8	27.50 - 32.50	1.0000	1.0000
L26	25	OSP6U(1/4)	27.50 - 32.50	1.0000	1.0000
L27	8	MP3-05	22.50 - 27.50	1.0000	1.0000
L27	9	MP3-05	22.50 - 27.50	1.0000	1.0000
L27	10	MP3-05	22.50 - 27.50	1.0000	1.0000
L27	11	MP3-05	22.50 - 27.50	1.0000	1.0000
L27	13	Safety Line 3/8	22.50 - 27.50	1.0000	1.0000
L27	25	OSP6U(1/4)	22.50 - 27.50	1.0000	1.0000
L28	8	MP3-05	17.50 - 22.50	1.0000	1.0000
L28	9	MP3-05	17.50 - 22.50	1.0000	1.0000
L28	10	MP3-05	17.50 - 22.50	1.0000	1.0000
L28	11	MP3-05	17.50 - 22.50	1.0000	1.0000
L28	13	Safety Line 3/8	17.50 - 22.50	1.0000	1.0000
L28	25	OSP6U(1/4)	17.50 - 22.50	1.0000	1.0000
L29	8	MP3-05	12.50 - 17.50	1.0000	1.0000
L29	9	MP3-05	12.50 - 17.50	1.0000	1.0000
L29	10	MP3-05	12.50 - 17.50	1.0000	1.0000
L29	11	MP3-05	12.50 - 17.50	1.0000	1.0000
L29	13	Safety Line 3/8	12.50 - 17.50	1.0000	1.0000
L29	25	OSP6U(1/4)	12.50 - 17.50	1.0000	1.0000
L30	8	MP3-05	7.50 - 12.50	1.0000	1.0000
L30	9	MP3-05	7.50 - 12.50	1.0000	1.0000
L30	10	MP3-05	7.50 - 12.50	1.0000	1.0000
L30	11	MP3-05	7.50 - 12.50	1.0000	1.0000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L30	13	Safety Line 3/8	7.50 - 12.50	1.0000	1.0000
L30	25	OSP6U(1/4)	7.50 - 12.50	1.0000	1.0000
L31	8	MP3-05	2.50 - 7.50	1.0000	1.0000
L31	9	MP3-05	2.50 - 7.50	1.0000	1.0000
L31	10	MP3-05	2.50 - 7.50	1.0000	1.0000
L31	11	MP3-05	2.50 - 7.50	1.0000	1.0000
L31	13	Safety Line 3/8	2.50 - 7.50	1.0000	1.0000
L31	25	OSP6U(1/4)	2.50 - 7.50	1.0000	1.0000
L32	8	MP3-05	0.50 - 2.50	1.0000	1.0000
L32	9	MP3-05	0.50 - 2.50	1.0000	1.0000
L32	10	MP3-05	0.50 - 2.50	1.0000	1.0000
L32	11	MP3-05	0.50 - 2.50	1.0000	1.0000
L32	13	Safety Line 3/8	0.00 - 2.50	1.0000	1.0000
L32	25	OSP6U(1/4)	0.00 - 2.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _a A _a Front	C _a A _a Side	Weight	
			Horz	Vert						
			Lateral	ft	°	ft	ft ²	ft ²	K	
(2) P65-15-XLH-RR w/ Mount Pipe	A	From Face		4.00	0.00	131.00	No Ice	5.30	3.67	0.05
				0.00			1/2" Ice	5.69	4.28	0.09
				1.00			1" Ice	6.09	4.90	0.14
(2) P65-15-XLH-RR w/ Mount Pipe	B	From Face		4.00	0.00	131.00	No Ice	5.30	3.67	0.05
				0.00			1/2" Ice	5.69	4.28	0.09
				1.00			1" Ice	6.09	4.90	0.14
(3) P65-15-XLH-RR w/ Mount Pipe	C	From Face		4.00	0.00	131.00	No Ice	5.30	3.67	0.05
				0.00			1/2" Ice	5.69	4.28	0.09
				1.00			1" Ice	6.09	4.90	0.14
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Face		4.00	0.00	131.00	No Ice	8.26	6.30	0.07
				0.00			1/2" Ice	8.82	7.48	0.14
				1.00			1" Ice	9.35	8.37	0.21
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Face		4.00	0.00	131.00	No Ice	8.26	6.30	0.07
				0.00			1/2" Ice	8.82	7.48	0.14
				1.00			1" Ice	9.35	8.37	0.21
(2) TT19-08BP111-001	A	From Face		4.00	0.00	131.00	No Ice	0.55	0.44	0.02
				0.00			1/2" Ice	0.64	0.53	0.02
				1.00			1" Ice	0.74	0.63	0.03
(2) TT19-08BP111-001	B	From Face		4.00	0.00	131.00	No Ice	0.55	0.44	0.02
				0.00			1/2" Ice	0.64	0.53	0.02
				1.00			1" Ice	0.74	0.63	0.03
(2) TT19-08BP111-001	C	From Face		4.00	0.00	131.00	No Ice	0.55	0.44	0.02
				0.00			1/2" Ice	0.64	0.53	0.02
				1.00			1" Ice	0.74	0.63	0.03
(2) RRUS-11	A	From Face		4.00	0.00	131.00	No Ice	2.78	1.19	0.05
				0.00			1/2" Ice	2.99	1.33	0.07
				1.00			1" Ice	3.21	1.49	0.09
(2) RRUS-11	B	From Face		4.00	0.00	131.00	No Ice	2.78	1.19	0.05
				0.00			1/2" Ice	2.99	1.33	0.07
				1.00			1" Ice	3.21	1.49	0.09
(2) RRUS-11	C	From Face		4.00	0.00	131.00	No Ice	2.78	1.19	0.05

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
				0.00					
				1.00					
DC6-48-60-18-8F	A	From Face	4.00	0.00	131.00	No Ice	0.79	0.79	0.02
			0.00			1/2" Ice	1.27	1.27	0.04
			1.00			1" Ice	1.45	1.45	0.05
Platform Mount [LP 601-1]	C	None		0.00	131.00	No Ice	28.47	28.47	1.12
						1/2" Ice	33.59	33.59	1.51
						1" Ice	38.71	38.71	1.91
**									
APXVSP18-C-A20 w/ Mount Pipe	A	From Face	4.00	0.00	119.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			2.00			1" Ice	9.35	9.02	0.23
APXVSP18-C-A20 w/ Mount Pipe	B	From Face	4.00	0.00	119.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			2.00			1" Ice	9.35	9.02	0.23
APXVSP18-C-A20 w/ Mount Pipe	C	From Face	4.00	0.00	119.00	No Ice	8.26	6.95	0.08
			0.00			1/2" Ice	8.82	8.13	0.15
			2.00			1" Ice	9.35	9.02	0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Face	4.00	0.00	119.00	No Ice	6.58	4.96	0.07
			0.00			1/2" Ice	7.03	5.75	0.13
			2.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Face	4.00	0.00	119.00	No Ice	6.58	4.96	0.07
			0.00			1/2" Ice	7.03	5.75	0.13
			2.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Face	4.00	0.00	119.00	No Ice	6.58	4.96	0.07
			0.00			1/2" Ice	7.03	5.75	0.13
			2.00			1" Ice	7.47	6.47	0.19
TD-RRH8x20-25	A	From Face	4.00	0.00	119.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			2.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	B	From Face	4.00	0.00	119.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			2.00			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Face	4.00	0.00	119.00	No Ice	4.05	1.53	0.07
			0.00			1/2" Ice	4.30	1.71	0.10
			2.00			1" Ice	4.56	1.90	0.13
Platform Mount [LP 1201-1]	C	None		0.00	119.00	No Ice	23.10	23.10	2.10
						1/2" Ice	26.80	26.80	2.50
						1" Ice	30.50	30.50	2.90
6' x 3" Mount Pipe	A	From Leg	4.00	0.00	119.00	No Ice	1.77	1.77	0.03
			0.00			1/2" Ice	2.13	2.13	0.04
			0.00			1" Ice	2.50	2.50	0.06
6' x 3" Mount Pipe	B	From Leg	4.00	0.00	119.00	No Ice	1.77	1.77	0.03
			0.00			1/2" Ice	2.13	2.13	0.04
			0.00			1" Ice	2.50	2.50	0.06
6' x 3" Mount Pipe	C	From Leg	4.00	0.00	119.00	No Ice	1.77	1.77	0.03
			0.00			1/2" Ice	2.13	2.13	0.04
			0.00			1" Ice	2.50	2.50	0.06

800MHz 2X50W RRH W/FILTER	A	From Face	4.00	0.00	117.00	No Ice	2.06	1.93	0.06
			0.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
800MHz 2X50W RRH W/FILTER	B	From Face	4.00	0.00	117.00	No Ice	2.06	1.93	0.06
			0.00			1/2" Ice	2.24	2.11	0.09
			0.00			1" Ice	2.43	2.29	0.11
800MHz 2X50W RRH W/FILTER	C	From Face	4.00	0.00	117.00	No Ice	2.06	1.93	0.06
			0.00			1/2" Ice	2.24	2.11	0.09

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						°
PCS 1900MHz 4x45W-65MHz	A	From Face	0.00	4.00	0.00	117.00	1" Ice	2.43	2.29	0.11
			0.00	0.00			No Ice	2.32	2.24	0.06
			0.00	0.00			1/2" Ice	2.53	2.44	0.08
PCS 1900MHz 4x45W-65MHz	B	From Face	0.00	4.00	0.00	117.00	1" Ice	2.74	2.65	0.11
			0.00	0.00			No Ice	2.32	2.24	0.06
			0.00	0.00			1/2" Ice	2.53	2.44	0.08
PCS 1900MHz 4x45W-65MHz	C	From Face	0.00	4.00	0.00	117.00	1" Ice	2.74	2.65	0.11
			0.00	0.00			No Ice	2.32	2.24	0.06
			0.00	0.00			1/2" Ice	2.53	2.44	0.08
Side Arm Mount [SO 102-3]	C	None	0.00	4.00	0.00	117.00	1" Ice	2.74	2.65	0.11
			0.00	0.00			No Ice	3.00	3.00	0.08
			0.00	0.00			1/2" Ice	3.48	3.48	0.11
**										
Platform Mount [LP 1201-1]	C	None	0.00	4.00	0.00	111.00	1" Ice	3.96	3.96	0.14
			0.00	0.00			No Ice	23.10	23.10	2.10
			0.00	0.00			1/2" Ice	26.80	26.80	2.50
(3) 6' x 3" Mount Pipe	A	From Leg	0.00	4.00	0.00	111.00	1" Ice	30.50	30.50	2.90
			0.00	0.00			No Ice	1.77	1.77	0.03
			0.00	0.00			1/2" Ice	2.13	2.13	0.04
(3) 6' x 3" Mount Pipe	B	From Leg	0.00	4.00	0.00	111.00	1" Ice	2.50	2.50	0.06
			0.00	0.00			No Ice	1.77	1.77	0.03
			0.00	0.00			1/2" Ice	2.13	2.13	0.04
(3) 6' x 3" Mount Pipe	C	From Leg	0.00	4.00	0.00	111.00	1" Ice	2.50	2.50	0.06
			0.00	0.00			No Ice	1.77	1.77	0.03
			0.00	0.00			1/2" Ice	2.13	2.13	0.04
**										
IBR 1300_CCIV2 w/ Mount Pipe	C	From Face	0.00	4.00	0.00	101.00	1" Ice	7.21	7.13	0.23
			0.00	0.00			No Ice	0.84	0.62	0.02
			0.00	0.00			1/2" Ice	1.01	0.82	0.03
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	0.00	4.00	0.00	101.00	1" Ice	1.19	1.04	0.04
			0.00	0.00			No Ice	6.33	5.64	0.11
			0.00	0.00			1/2" Ice	6.78	6.43	0.17
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	0.00	4.00	0.00	101.00	1" Ice	7.21	7.13	0.23
			0.00	0.00			No Ice	6.33	5.64	0.11
			0.00	0.00			1/2" Ice	6.78	6.43	0.17
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	0.00	4.00	0.00	101.00	1" Ice	7.21	7.13	0.23
			0.00	0.00			No Ice	6.33	5.64	0.11
			0.00	0.00			1/2" Ice	6.78	6.43	0.17
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Face	0.00	4.00	0.00	101.00	1" Ice	7.21	7.13	0.23
			0.00	0.00			No Ice	6.33	5.64	0.11
			0.00	0.00			1/2" Ice	6.78	6.43	0.17
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Face	0.00	4.00	0.00	101.00	1" Ice	7.21	7.13	0.23
			0.00	0.00			No Ice	6.33	5.64	0.11
			0.00	0.00			1/2" Ice	6.78	6.43	0.17
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Face	0.00	4.00	0.00	101.00	1" Ice	7.21	7.13	0.23
			0.00	0.00			No Ice	6.33	5.64	0.11
			0.00	0.00			1/2" Ice	6.78	6.43	0.17
KRY 112 144/1	A	From Face	0.00	4.00	0.00	101.00	1" Ice	7.21	7.13	0.23
			0.00	0.00			No Ice	0.35	0.17	0.01
			0.00	0.00			1/2" Ice	0.43	0.23	0.01
KRY 112 144/1	B	From Face	0.00	4.00	0.00	101.00	1" Ice	0.51	0.30	0.02
			0.00	0.00			No Ice	0.35	0.17	0.01
			0.00	0.00			1/2" Ice	0.43	0.23	0.01
KRY 112 144/1	C	From Face	0.00	4.00	0.00	101.00	1" Ice	0.51	0.30	0.02
			0.00	0.00			No Ice	0.35	0.17	0.01
			0.00	0.00			1/2" Ice	0.43	0.23	0.01

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	K
Platform Mount [LP 713-1]	C	None		0.00	101.00	No Ice 31.27 1/2" Ice 39.68 1" Ice 48.09	31.27 39.68 48.09	1.51 1.93 2.35

APXV18-206517S-ACU	A	From Face	4.00 0.00 0.00	0.00	95.00	No Ice 5.17 1/2" Ice 5.62 1" Ice 6.08	3.04 3.47 3.91	0.03 0.05 0.09
APXV18-206517S-ACU	B	From Face	4.00 0.00 0.00	0.00	95.00	No Ice 5.17 1/2" Ice 5.62 1" Ice 6.08	3.04 3.47 3.91	0.03 0.05 0.09
APXV18-206517S-ACU	C	From Face	4.00 0.00 0.00	0.00	95.00	No Ice 5.17 1/2" Ice 5.62 1" Ice 6.08	3.04 3.47 3.91	0.03 0.05 0.09
Pipe Mount [PM 601-3]	C	None		0.00	95.00	No Ice 4.39 1/2" Ice 5.48 1" Ice 6.57	4.39 5.48 6.57	0.20 0.24 0.28

58532A	C	From Face	4.00 0.00 1.00	0.00	60.00	No Ice 0.19 1/2" Ice 0.25 1" Ice 0.31	0.19 0.25 0.31	0.00 0.00 0.01
Side Arm Mount [SO 304-1]	C	None		0.00	60.00	No Ice 0.63 1/2" Ice 1.00 1" Ice 1.37	0.94 1.45 1.96	0.02 0.03 0.04

KS24019-L112A	C	From Face	4.00 0.00 1.00	0.00	50.00	No Ice 0.10 1/2" Ice 0.18 1" Ice 0.26	0.10 0.18 0.26	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	C	None		0.00	50.00	No Ice 0.85 1/2" Ice 1.14 1" Ice 1.43	1.67 2.34 3.01	0.07 0.08 0.09
*								

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		ksf	ft ²	c	ft ²	ft ²	ft ²	%	ft ²	ft ²
L1 133.50-128.50	131.00	1.34	0.03	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.188	0.000
L2 128.50-123.50	126.00	1.329	0.03	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.188	0.000
L3 123.50-121.50	122.50	1.321	0.03	1.792	A	0.000	1.792	1.792	100.00	0.000	0.000
					B	0.000	1.792		100.00	0.000	0.000
					C	0.000	1.792		100.00	0.075	0.000
L4	120.25	1.316	0.03	4.583	A	0.000	4.583	4.583	100.00	0.000	0.000

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Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
121.50-119.00					B	0.000	4.583		100.00	0.000	0.000
					C	0.000	4.583		100.00	0.094	0.000
L5	116.48	1.307	0.03	9.695	A	0.000	9.695	9.695	100.00	0.000	0.000
119.00-114.00					B	0.000	9.695		100.00	0.000	0.000
					C	0.000	9.695		100.00	0.188	0.000
L6	111.48	1.295	0.03	10.105	A	0.000	10.105	10.105	100.00	0.000	0.000
114.00-109.00					B	0.000	10.105		100.00	0.000	0.000
					C	0.000	10.105		100.00	0.188	0.000
L7	106.48	1.282	0.03	10.515	A	0.000	10.515	10.515	100.00	0.000	0.000
109.00-104.00					B	0.000	10.515		100.00	0.000	0.000
					C	0.000	10.515		100.00	0.188	0.000
L8	101.48	1.27	0.03	10.924	A	0.000	10.924	10.924	100.00	0.000	0.000
104.00-99.00					B	0.000	10.924		100.00	0.000	0.000
					C	0.000	10.924		100.00	0.338	0.000
L9	99.00-94.00	96.48	1.256	0.03	11.334	A	0.000	11.334	11.334	100.00	0.000
					B	0.000	11.334		100.00	0.000	0.000
					C	0.000	11.334		100.00	0.564	0.000
L10	91.49	1.242	0.03	11.744	A	0.000	11.744	11.744	100.00	0.000	0.000
94.00-89.00					B	0.000	11.744		100.00	0.000	0.000
					C	0.000	11.744		100.00	0.564	0.000
L11	86.49	1.228	0.03	12.154	A	0.000	12.154	12.154	100.00	3.965	0.000
89.00-84.00					B	0.000	12.154		100.00	7.930	0.000
					C	0.000	12.154		100.00	4.529	0.000
L12	81.49	1.212	0.03	12.564	A	0.000	12.564	12.564	100.00	6.608	0.000
84.00-79.00					B	0.000	12.564		100.00	13.217	0.000
					C	0.000	12.564		100.00	7.172	0.000
L13	76.99	1.198	0.03	10.346	A	0.000	10.346	10.346	100.00	2.643	0.000
79.00-75.00					B	0.000	10.346		100.00	5.287	0.000
					C	0.000	10.346		100.00	3.095	0.000
L14	74.37	1.189	0.03	3.233	A	0.000	3.233	3.233	100.00	0.000	0.000
75.00-73.75					B	0.000	3.233		100.00	0.000	0.000
					C	0.000	3.233		100.00	0.141	0.000
L15	71.24	1.178	0.03	13.188	A	0.000	13.188	13.188	100.00	1.555	0.000
73.75-68.75					B	0.000	13.188		100.00	1.555	0.000
					C	0.000	13.188		100.00	3.673	0.000
L16	68.41	1.168	0.03	1.798	A	0.000	1.798	1.798	100.00	0.595	0.000
68.75-68.08					B	0.000	1.798		100.00	0.595	0.000
					C	0.000	1.798		100.00	1.266	0.000
L17	67.95	1.167	0.03	0.673	A	0.000	0.673	0.673	100.00	0.222	0.000
68.08-67.83					B	0.000	0.673		100.00	0.222	0.000
					C	0.000	0.673		100.00	0.472	0.000
L18	65.32	1.157	0.03	13.673	A	0.000	13.673	13.673	100.00	4.442	0.000
67.83-62.83					B	0.000	13.673		100.00	4.442	0.000
					C	0.000	13.673		100.00	9.447	0.000
L19	60.32	1.138	0.03	14.083	A	0.000	14.083	14.083	100.00	4.442	0.000
62.83-57.83					B	0.000	14.083		100.00	4.442	0.000
					C	0.000	14.083		100.00	9.447	0.000
L20	55.32	1.117	0.03	14.493	A	0.000	14.493	14.493	100.00	4.442	0.000
57.83-52.83					B	0.000	14.493		100.00	4.442	0.000
					C	0.000	14.493		100.00	9.447	0.000
L21	50.32	1.095	0.03	14.903	A	0.000	14.903	14.903	100.00	4.442	0.000
52.83-47.83					B	0.000	14.903		100.00	4.442	0.000
					C	0.000	14.903		100.00	9.447	0.000
L22	45.32	1.071	0.02	15.313	A	0.000	15.313	15.313	100.00	4.442	0.000
47.83-42.83					B	0.000	15.313		100.00	4.442	0.000
					C	0.000	15.313		100.00	9.447	0.000
L23	40.28	1.045	0.02	15.978	A	0.000	15.978	15.978	100.00	4.513	0.000
42.83-37.75					B	0.000	15.978		100.00	4.513	0.000
					C	0.000	15.978		100.00	9.598	0.000
L24	37.62	1.03	0.02	0.784	A	0.000	0.784	0.784	100.00	0.222	0.000

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	Client	Crown Castle	Designed by	pvhicks

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
37.75-37.50					B	0.000	0.784		100.00	0.222	0.000
					C	0.000	0.784		100.00	0.472	0.000
L25	34.99	1.015	0.02	15.890	A	0.000	15.890	15.890	100.00	4.442	0.000
37.50-32.50					B	0.000	15.890		100.00	4.442	0.000
					C	0.000	15.890		100.00	9.447	0.000
L26	29.99	0.982	0.02	16.300	A	0.000	16.300	16.300	100.00	4.442	0.000
32.50-27.50					B	0.000	16.300		100.00	4.442	0.000
					C	0.000	16.300		100.00	9.447	0.000
L27	24.99	0.945	0.02	16.710	A	0.000	16.710	16.710	100.00	4.442	0.000
27.50-22.50					B	0.000	16.710		100.00	4.442	0.000
					C	0.000	16.710		100.00	9.447	0.000
L28	19.99	0.902	0.02	17.120	A	0.000	17.120	17.120	100.00	4.442	0.000
22.50-17.50					B	0.000	17.120		100.00	4.442	0.000
					C	0.000	17.120		100.00	9.447	0.000
L29	14.99	0.85	0.02	17.530	A	0.000	17.530	17.530	100.00	4.442	0.000
17.50-12.50					B	0.000	17.530		100.00	4.442	0.000
					C	0.000	17.530		100.00	9.447	0.000
L30	9.99	0.85	0.02	17.940	A	0.000	17.940	17.940	100.00	4.442	0.000
12.50-7.50					B	0.000	17.940		100.00	4.442	0.000
					C	0.000	17.940		100.00	9.447	0.000
L31	4.99	0.85	0.02	18.350	A	0.000	18.350	18.350	100.00	4.442	0.000
7.50-2.50					B	0.000	18.350		100.00	4.442	0.000
					C	0.000	18.350		100.00	9.447	0.000
L32	1.25	0.85	0.02	9.329	A	0.000	9.329	9.329	100.00	1.777	0.000
2.50-0.00					B	0.000	9.329		100.00	1.777	0.000
					C	0.000	9.329		100.00	3.835	0.000

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _z ksf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1	131.00	1.34	0.01	1.7217	5.914	A	0.000	5.914	5.914	100.00	0.000	0.000
133.50-128.50						B	0.000	5.914		100.00	0.000	0.000
						C	0.000	5.914		100.00	1.909	0.000
L2	126.00	1.329	0.01	1.7151	5.908	A	0.000	5.908	5.908	100.00	0.000	0.000
128.50-123.50						B	0.000	5.908		100.00	0.000	0.000
						C	0.000	5.908		100.00	1.903	0.000
L3	122.50	1.321	0.01	1.7102	2.362	A	0.000	2.362	2.362	100.00	0.000	0.000
123.50-121.50						B	0.000	2.362		100.00	0.000	0.000
						C	0.000	2.362		100.00	0.759	0.000
L4	120.25	1.316	0.01	1.7071	5.295	A	0.000	5.295	5.295	100.00	0.000	0.000
121.50-119.00						B	0.000	5.295		100.00	0.000	0.000
						C	0.000	5.295		100.00	0.947	0.000
L5	116.48	1.307	0.01	1.7016	11.113	A	0.000	11.113	11.113	100.00	0.000	0.000
119.00-114.00						B	0.000	11.113		100.00	0.000	0.000
						C	0.000	11.113		100.00	1.889	0.000
L6	111.48	1.295	0.01	1.6942	11.517	A	0.000	11.517	11.517	100.00	0.000	0.000
114.00-109.00						B	0.000	11.517		100.00	0.000	0.000
						C	0.000	11.517		100.00	1.882	0.000
L7	106.48	1.282	0.01	1.6864	11.920	A	0.000	11.920	11.920	100.00	0.000	0.000
109.00-104.00						B	0.000	11.920		100.00	0.000	0.000
						C	0.000	11.920		100.00	1.874	0.000

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	Client	Crown Castle	Designed by	p hhicks

Section Elevation ft	z ft	K _Z	q _z ksf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L8 104.00-99.00	101.48	1.27	0.01	1.6783	12.323	A	0.000	12.323	12.323	100.00	0.000	0.000
						B	0.000	12.323		100.00	0.000	0.000
						C	0.000	12.323		100.00	2.893	0.000
L9 99.00-94.00	96.48	1.256	0.01	1.6699	12.726	A	0.000	12.726	12.726	100.00	0.000	0.000
						B	0.000	12.726		100.00	0.000	0.000
						C	0.000	12.726		100.00	4.415	0.000
L10 94.00-89.00	91.49	1.242	0.01	1.6610	13.128	A	0.000	13.128	13.128	100.00	0.000	0.000
						B	0.000	13.128		100.00	0.000	0.000
						C	0.000	13.128		100.00	4.395	0.000
L11 89.00-84.00	86.49	1.228	0.01	1.6517	13.530	A	0.000	13.530	13.530	100.00	3.844	0.000
						B	0.000	13.530		100.00	7.687	0.000
						C	0.000	13.530		100.00	8.218	0.000
L12 84.00-79.00	81.49	1.212	0.01	1.6419	13.932	A	0.000	13.932	13.932	100.00	6.401	0.000
						B	0.000	13.932		100.00	12.802	0.000
						C	0.000	13.932		100.00	10.753	0.000
L13 79.00-75.00	76.99	1.198	0.01	1.6326	11.434	A	0.000	11.434	11.434	100.00	2.558	0.000
						B	0.000	11.434		100.00	5.117	0.000
						C	0.000	11.434		100.00	6.024	0.000
L14 75.00-73.75	74.37	1.189	0.01	1.6270	3.573	A	0.000	3.573	3.573	100.00	0.000	0.000
						B	0.000	3.573		100.00	0.000	0.000
						C	0.000	3.573		100.00	1.083	0.000
L15 73.75-68.75	71.24	1.178	0.01	1.6200	14.538	A	0.000	14.538	14.538	100.00	2.122	0.000
						B	0.000	14.538		100.00	2.122	0.000
						C	0.000	14.538		100.00	8.546	0.000
L16 68.75-68.08	68.41	1.168	0.01	1.6134	1.979	A	0.000	1.979	1.979	100.00	0.811	0.000
						B	0.000	1.979		100.00	0.811	0.000
						C	0.000	1.979		100.00	2.197	0.000
L17 68.08-67.83	67.95	1.167	0.01	1.6124	0.740	A	0.000	0.740	0.740	100.00	0.303	0.000
						B	0.000	0.740		100.00	0.303	0.000
						C	0.000	0.740		100.00	0.820	0.000
L18 67.83-62.83	65.32	1.157	0.01	1.6060	15.012	A	0.000	15.012	15.012	100.00	6.048	0.000
						B	0.000	15.012		100.00	6.048	0.000
						C	0.000	15.012		100.00	16.367	0.000
L19 62.83-57.83	60.32	1.138	0.01	1.5933	15.411	A	0.000	15.411	15.411	100.00	6.035	0.000
						B	0.000	15.411		100.00	6.035	0.000
						C	0.000	15.411		100.00	16.313	0.000
L20 57.83-52.83	55.32	1.117	0.01	1.5795	15.810	A	0.000	15.810	15.810	100.00	6.021	0.000
						B	0.000	15.810		100.00	6.021	0.000
						C	0.000	15.810		100.00	16.254	0.000
L21 52.83-47.83	50.32	1.095	0.01	1.5646	16.207	A	0.000	16.207	16.207	100.00	6.006	0.000
						B	0.000	16.207		100.00	6.006	0.000
						C	0.000	16.207		100.00	16.191	0.000
L22 47.83-42.83	45.32	1.071	0.01	1.5483	16.603	A	0.000	16.603	16.603	100.00	5.990	0.000
						B	0.000	16.603		100.00	5.990	0.000
						C	0.000	16.603		100.00	16.122	0.000
L23 42.83-37.75	40.28	1.045	0.01	1.5302	17.274	A	0.000	17.274	17.274	100.00	6.067	0.000
						B	0.000	17.274		100.00	6.067	0.000
						C	0.000	17.274		100.00	16.302	0.000
L24 37.75-37.50	37.62	1.03	0.01	1.5198	0.848	A	0.000	0.848	0.848	100.00	0.299	0.000
						B	0.000	0.848		100.00	0.299	0.000
						C	0.000	0.848		100.00	0.802	0.000
L25 37.50-32.50	34.99	1.015	0.01	1.5088	17.148	A	0.000	17.148	17.148	100.00	5.950	0.000
						B	0.000	17.148		100.00	5.950	0.000
						C	0.000	17.148		100.00	15.954	0.000
L26 32.50-27.50	29.99	0.982	0.01	1.4857	17.539	A	0.000	17.539	17.539	100.00	5.927	0.000
						B	0.000	17.539		100.00	5.927	0.000
						C	0.000	17.539		100.00	15.856	0.000
L27 27.50-22.50	24.99	0.945	0.01	1.4589	17.926	A	0.000	17.926	17.926	100.00	5.901	0.000
						B	0.000	17.926		100.00	5.901	0.000
						C	0.000	17.926		100.00	15.742	0.000

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	Project 12941-SAR	Date 15:12:38 05/08/18
	Client Crown Castle	Designed by pvhicks

Section Elevation ft	z ft	K _Z	q _z ksf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L28 22.50-17.50	19.99	0.902	0.01	1.4267	18.309	A	0.000	18.309	18.309	100.00	5.868	0.000
						B	0.000	18.309		100.00	5.868	0.000
						C	0.000	18.309		100.00	15.605	0.000
L29 17.50-12.50	14.99	0.85	0.01	1.3862	18.685	A	0.000	18.685	18.685	100.00	5.828	0.000
						B	0.000	18.685		100.00	5.828	0.000
						C	0.000	18.685		100.00	15.433	0.000
L30 12.50-7.50	9.99	0.85	0.01	1.3311	19.049	A	0.000	19.049	19.049	100.00	5.773	0.000
						B	0.000	19.049		100.00	5.773	0.000
						C	0.000	19.049		100.00	15.198	0.000
L31 7.50-2.50	4.99	0.85	0.01	1.2418	19.385	A	0.000	19.385	19.385	100.00	5.683	0.000
						B	0.000	19.385		100.00	5.683	0.000
						C	0.000	19.385		100.00	14.819	0.000
L32 2.50-0.00	1.25	0.85	0.01	1.0811	9.779	A	0.000	9.779	9.779	100.00	2.209	0.000
						B	0.000	9.779		100.00	2.209	0.000
						C	0.000	9.779		100.00	5.963	0.000

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 133.50-128.50	131.00	1.34	0.01	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.188	0.000
L2 128.50-123.50	126.00	1.329	0.01	4.479	A	0.000	4.479	4.479	100.00	0.000	0.000
					B	0.000	4.479		100.00	0.000	0.000
					C	0.000	4.479		100.00	0.188	0.000
L3 123.50-121.50	122.50	1.321	0.01	1.792	A	0.000	1.792	1.792	100.00	0.000	0.000
					B	0.000	1.792		100.00	0.000	0.000
					C	0.000	1.792		100.00	0.075	0.000
L4 121.50-119.00	120.25	1.316	0.01	4.583	A	0.000	4.583	4.583	100.00	0.000	0.000
					B	0.000	4.583		100.00	0.000	0.000
					C	0.000	4.583		100.00	0.094	0.000
L5 119.00-114.00	116.48	1.307	0.01	9.695	A	0.000	9.695	9.695	100.00	0.000	0.000
					B	0.000	9.695		100.00	0.000	0.000
					C	0.000	9.695		100.00	0.188	0.000
L6 114.00-109.00	111.48	1.295	0.01	10.105	A	0.000	10.105	10.105	100.00	0.000	0.000
					B	0.000	10.105		100.00	0.000	0.000
					C	0.000	10.105		100.00	0.188	0.000
L7 109.00-104.00	106.48	1.282	0.01	10.515	A	0.000	10.515	10.515	100.00	0.000	0.000
					B	0.000	10.515		100.00	0.000	0.000
					C	0.000	10.515		100.00	0.188	0.000
L8 104.00-99.00	101.48	1.27	0.01	10.924	A	0.000	10.924	10.924	100.00	0.000	0.000
					B	0.000	10.924		100.00	0.000	0.000
					C	0.000	10.924		100.00	0.338	0.000
L9 99.00-94.00	96.48	1.256	0.01	11.334	A	0.000	11.334	11.334	100.00	0.000	0.000
					B	0.000	11.334		100.00	0.000	0.000
					C	0.000	11.334		100.00	0.564	0.000
L10 94.00-89.00	91.49	1.242	0.01	11.744	A	0.000	11.744	11.744	100.00	0.000	0.000
					B	0.000	11.744		100.00	0.000	0.000
					C	0.000	11.744		100.00	0.564	0.000
L11	86.49	1.228	0.01	12.154	A	0.000	12.154	12.154	100.00	3.965	0.000

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Section Elevation ft	z ft	K _Z	q _z ksf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg % %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
89.00-84.00					B	0.000	12.154		100.00	7.930	0.000
					C	0.000	12.154		100.00	4.529	0.000
L12	81.49	1.212	0.01	12.564	A	0.000	12.564	12.564	100.00	6.608	0.000
84.00-79.00					B	0.000	12.564		100.00	13.217	0.000
					C	0.000	12.564		100.00	7.172	0.000
L13	76.99	1.198	0.01	10.346	A	0.000	10.346	10.346	100.00	2.643	0.000
79.00-75.00					B	0.000	10.346		100.00	5.287	0.000
					C	0.000	10.346		100.00	3.095	0.000
L14	74.37	1.189	0.01	3.233	A	0.000	3.233	3.233	100.00	0.000	0.000
75.00-73.75					B	0.000	3.233		100.00	0.000	0.000
					C	0.000	3.233		100.00	0.141	0.000
L15	71.24	1.178	0.01	13.188	A	0.000	13.188	13.188	100.00	1.555	0.000
73.75-68.75					B	0.000	13.188		100.00	1.555	0.000
					C	0.000	13.188		100.00	3.673	0.000
L16	68.41	1.168	0.01	1.798	A	0.000	1.798	1.798	100.00	0.595	0.000
68.75-68.08					B	0.000	1.798		100.00	0.595	0.000
					C	0.000	1.798		100.00	1.266	0.000
L17	67.95	1.167	0.01	0.673	A	0.000	0.673	0.673	100.00	0.222	0.000
68.08-67.83					B	0.000	0.673		100.00	0.222	0.000
					C	0.000	0.673		100.00	0.472	0.000
L18	65.32	1.157	0.01	13.673	A	0.000	13.673	13.673	100.00	4.442	0.000
67.83-62.83					B	0.000	13.673		100.00	4.442	0.000
					C	0.000	13.673		100.00	9.447	0.000
L19	60.32	1.138	0.01	14.083	A	0.000	14.083	14.083	100.00	4.442	0.000
62.83-57.83					B	0.000	14.083		100.00	4.442	0.000
					C	0.000	14.083		100.00	9.447	0.000
L20	55.32	1.117	0.01	14.493	A	0.000	14.493	14.493	100.00	4.442	0.000
57.83-52.83					B	0.000	14.493		100.00	4.442	0.000
					C	0.000	14.493		100.00	9.447	0.000
L21	50.32	1.095	0.01	14.903	A	0.000	14.903	14.903	100.00	4.442	0.000
52.83-47.83					B	0.000	14.903		100.00	4.442	0.000
					C	0.000	14.903		100.00	9.447	0.000
L22	45.32	1.071	0.01	15.313	A	0.000	15.313	15.313	100.00	4.442	0.000
47.83-42.83					B	0.000	15.313		100.00	4.442	0.000
					C	0.000	15.313		100.00	9.447	0.000
L23	40.28	1.045	0.01	15.978	A	0.000	15.978	15.978	100.00	4.513	0.000
42.83-37.75					B	0.000	15.978		100.00	4.513	0.000
					C	0.000	15.978		100.00	9.598	0.000
L24	37.62	1.03	0.01	0.784	A	0.000	0.784	0.784	100.00	0.222	0.000
37.75-37.50					B	0.000	0.784		100.00	0.222	0.000
					C	0.000	0.784		100.00	0.472	0.000
L25	34.99	1.015	0.01	15.890	A	0.000	15.890	15.890	100.00	4.442	0.000
37.50-32.50					B	0.000	15.890		100.00	4.442	0.000
					C	0.000	15.890		100.00	9.447	0.000
L26	29.99	0.982	0.01	16.300	A	0.000	16.300	16.300	100.00	4.442	0.000
32.50-27.50					B	0.000	16.300		100.00	4.442	0.000
					C	0.000	16.300		100.00	9.447	0.000
L27	24.99	0.945	0.01	16.710	A	0.000	16.710	16.710	100.00	4.442	0.000
27.50-22.50					B	0.000	16.710		100.00	4.442	0.000
					C	0.000	16.710		100.00	9.447	0.000
L28	19.99	0.902	0.01	17.120	A	0.000	17.120	17.120	100.00	4.442	0.000
22.50-17.50					B	0.000	17.120		100.00	4.442	0.000
					C	0.000	17.120		100.00	9.447	0.000
L29	14.99	0.85	0.01	17.530	A	0.000	17.530	17.530	100.00	4.442	0.000
17.50-12.50					B	0.000	17.530		100.00	4.442	0.000
					C	0.000	17.530		100.00	9.447	0.000
L30	12.50-7.50	9.99	0.85	0.01	17.940	A	0.000	17.940	17.940	4.442	0.000
					B	0.000	17.940		100.00	4.442	0.000
					C	0.000	17.940		100.00	9.447	0.000
L31	7.50-2.50	4.99	0.85	0.01	18.350	A	0.000	18.350	18.350	4.442	0.000

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Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		ksf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
L32 2.50-0.00	1.25	0.85	0.01	9.329	B	0.000	18.350	9.329	100.00	4.442	0.000
					C	0.000	18.350			9.447	0.000
					A	0.000	9.329			1.777	0.000
					B	0.000	9.329			1.777	0.000
					C	0.000	9.329			3.835	0.000

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
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

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Comb. No.	Description
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	133.5 - 128.5	Pole	Max Tension	15	0.00	-0.00	0.00
			Max. Compression	26	-6.73	0.34	0.69
			Max. Mx	20	-2.24	15.14	0.10
			Max. My	2	-2.25	0.08	15.15
			Max. Vy	20	-4.86	15.14	0.10
			Max. Vx	2	-4.84	0.08	15.15
L2	128.5 - 123.5	Pole	Max. Torque	9			0.64
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.19	0.35	0.69
			Max. Mx	20	-2.55	39.86	0.10
			Max. My	2	-2.56	0.08	39.78
			Max. Vy	20	-5.03	39.86	0.10
L3	123.5 - 121.5	Pole	Max. Vx	2	-5.01	0.08	39.78
			Max. Torque	9			0.64
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.37	0.35	0.68
			Max. Mx	20	-2.68	49.97	0.10
			Max. My	2	-2.68	0.08	49.86
L4	121.5 - 119	Pole	Max. Vy	20	-5.09	49.97	0.10
			Max. Vx	2	-5.07	0.08	49.86
			Max. Torque	9			0.64
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.71	0.35	0.68
			Max. Mx	20	-2.88	62.89	0.10
L5	119 - 114	Pole	Max. My	2	-2.88	0.08	62.73
			Max. Vy	20	-5.25	62.89	0.10
			Max. Vx	2	-5.23	0.08	62.73
			Max. Torque	9			0.64
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.42	0.36	0.66
L6	114 - 109	Pole	Max. Mx	20	-6.82	115.91	0.11
			Max. My	2	-6.83	0.09	115.65
			Max. Vy	20	-10.35	115.91	0.11
			Max. Vx	2	-10.33	0.09	115.65
			Max. Torque	9			0.64
			Max Tension	1	0.00	0.00	0.00
L7	109 - 104	Pole	Max. Compression	26	-21.95	0.37	0.65
			Max. Mx	20	-9.92	173.25	0.11
			Max. My	2	-9.93	0.09	172.89
			Max. Vy	20	-13.02	173.25	0.11
			Max. Vx	2	-13.00	0.09	172.89
			Max. Torque	9			0.64
L8	104 - 99	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-22.72	0.38	0.64
			Max. Mx	20	-10.40	239.70	0.12
			Max. My	2	-10.41	0.09	239.22
			Max. Vy	20	-13.57	239.70	0.12
			Max. Vx	2	-13.54	0.09	239.22

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L9	99 - 94	Pole	Max. Compression	26	-29.07	0.39	0.27
			Max. Mx	20	-13.31	320.09	0.01
			Max. My	2	-13.32	0.09	319.43
			Max. Vy	20	-17.47	320.09	0.01
			Max. Vx	2	-17.45	0.09	319.43
			Max. Torque	9			0.64
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.78	0.40	0.23
			Max. Mx	20	-14.20	409.52	0.02
			Max. My	2	-14.21	0.10	408.77
L10	94 - 89	Pole	Max. Vy	20	-18.76	409.52	0.02
			Max. Vx	2	-18.75	0.10	408.77
			Max. Torque	9			0.50
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.72	0.41	0.19
			Max. Mx	20	-14.86	504.66	0.02
			Max. My	2	-14.87	0.10	503.83
			Max. Vy	20	-19.31	504.66	0.02
			Max. Vx	2	-19.30	0.10	503.83
			Max. Torque	9			0.50
L11	89 - 84	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.41	0.63	0.38
			Max. Mx	20	-16.05	602.94	0.19
			Max. My	2	-16.07	0.25	601.88
			Max. Vy	20	-19.96	602.94	0.19
			Max. Vx	2	-19.88	0.25	601.88
			Max. Torque	9			0.50
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.59	1.00	0.72
			Max. Mx	20	-17.59	705.23	0.46
L12	84 - 79	Pole	Max. My	2	-17.63	0.51	703.00
			Max. Vy	20	-20.87	705.23	0.46
			Max. Vx	2	-20.48	0.51	703.00
			Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.67	1.01	0.73
			Max. Mx	20	-17.66	710.45	0.47
			Max. My	2	-17.70	0.52	708.13
			Max. Vy	20	-20.89	710.45	0.47
			Max. Vx	2	-20.50	0.52	708.13
L13	79 - 75	Pole	Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.85	1.14	0.83
			Max. Mx	20	-19.13	816.68	0.58
			Max. My	2	-19.17	0.62	812.33
			Max. Vy	20	-21.55	816.68	0.58
			Max. Vx	2	-21.14	0.62	812.33
			Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.09	1.17	0.84
L14	75 - 73.75	Pole	Max. Mx	20	-20.01	925.74	0.58
			Max. My	2	-20.04	0.62	919.33
			Max. Vy	20	-22.10	925.74	0.58
			Max. Vx	2	-21.69	0.62	919.33
			Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.29	1.18	0.86
			Max. Mx	20	-20.14	940.56	0.58
			Max. My	2	-20.17	0.62	933.88
			Max. Vy	20	-22.17	940.56	0.58
L15	73.75 - 68.75	Pole	Max. Vx	2	-21.76	0.62	933.88
			Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.29	1.18	0.86
L16	68.75 - 68.08	Pole	Max. Mx	20	-20.14	940.56	0.58
			Max. My	2	-20.17	0.62	933.88
			Max. Vy	20	-22.17	940.56	0.58
			Max. Vx	2	-21.76	0.62	933.88
			Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.29	1.18	0.86
			Max. Mx	20	-20.14	940.56	0.58
			Max. My	2	-20.17	0.62	933.88
			Max. Vy	20	-22.17	940.56	0.58

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L17	68.08 - 67.83	Pole	Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.38	1.18	0.87
			Max. Mx	20	-20.21	946.11	0.58
			Max. My	2	-20.24	0.62	939.32
			Max. Vy	20	-22.19	946.11	0.58
			Max. Vx	2	-21.78	0.62	939.32
L18	67.83 - 62.83	Pole	Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.28	1.25	1.02
			Max. Mx	20	-21.51	1058.61	0.58
			Max. My	2	-21.54	0.62	1049.76
			Max. Vy	20	-22.82	1058.61	0.58
			Max. Vx	2	-22.41	0.62	1049.76
L19	62.83 - 57.83	Pole	Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.26	1.33	1.10
			Max. Mx	20	-22.87	1174.34	0.58
			Max. My	2	-22.89	0.63	1163.44
			Max. Vy	20	-23.49	1174.34	0.58
			Max. Vx	2	-23.08	0.63	1163.44
L20	57.83 - 52.83	Pole	Max. Torque	9			0.56
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.20	1.40	1.25
			Max. Mx	20	-24.23	1293.31	0.58
			Max. My	2	-24.25	0.63	1280.34
			Max. Vy	20	-24.11	1293.31	0.58
			Max. Vx	2	-23.70	0.63	1280.34
L21	52.83 - 47.83	Pole	Max. Torque	9			0.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.30	1.47	1.35
			Max. Mx	20	-25.69	1415.52	0.55
			Max. My	2	-25.72	0.63	1400.46
			Max. Vy	20	-24.80	1415.52	0.55
			Max. Vx	2	-24.39	0.63	1400.46
L22	47.83 - 42.83	Pole	Max. Torque	9			0.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.29	1.55	1.51
			Max. Mx	20	-27.11	1540.97	0.55
			Max. My	2	-27.13	0.63	1523.86
			Max. Vy	20	-25.40	1540.97	0.55
			Max. Vx	2	-24.99	0.63	1523.86
L23	42.83 - 37.75	Pole	Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.42	1.55	1.52
			Max. Mx	20	-27.21	1549.36	0.55
			Max. My	2	-27.23	0.63	1532.11
			Max. Vy	20	-25.44	1549.36	0.55
			Max. Vx	2	-25.03	0.63	1532.11
L24	37.75 - 37.5	Pole	Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-53.05	1.63	1.68
			Max. Mx	20	-29.88	1678.24	0.55
			Max. My	2	-29.90	0.63	1658.93
			Max. Vy	20	-26.12	1678.24	0.55
			Max. Vx	2	-25.71	0.63	1658.93
L25	37.5 - 32.5	Pole	Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.20	1.71	1.84
			Max. Mx	20	-31.47	1810.24	0.54
			Max. My	2	-31.49	0.63	1788.87

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L26	32.5 - 27.5	Pole	Max. Vy	20	-26.70	1810.24	0.54
			Max. Vx	2	-26.29	0.63	1788.87
			Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.38	1.78	2.00
			Max. Mx	20	-33.09	1945.07	0.54
			Max. My	2	-33.11	0.64	1921.66
			Max. Vy	20	-27.26	1945.07	0.54
			Max. Vx	2	-26.85	0.64	1921.66
L27	27.5 - 22.5	Pole	Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.57	1.86	2.16
			Max. Mx	20	-34.75	2082.64	0.54
			Max. My	2	-34.76	0.64	2057.18
			Max. Vy	20	-27.80	2082.64	0.54
			Max. Vx	2	-27.39	0.64	2057.18
			Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
L28	22.5 - 17.5	Pole	Max. Compression	26	-61.78	1.93	2.32
			Max. Mx	20	-36.43	2222.83	0.54
			Max. My	2	-36.44	0.64	2195.33
			Max. Vy	20	-28.31	2222.83	0.54
			Max. Vx	2	-27.90	0.64	2195.33
			Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.01	2.01	2.48
			Max. Mx	20	-38.14	2365.49	0.54
L29	17.5 - 12.5	Pole	Max. My	2	-38.15	0.64	2335.95
			Max. Vy	20	-28.79	2365.49	0.54
			Max. Vx	2	-28.38	0.64	2335.95
			Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.23	2.08	2.64
			Max. Mx	20	-39.88	2510.54	0.53
			Max. My	2	-39.88	0.64	2478.98
			Max. Vy	20	-29.26	2510.54	0.53
L30	12.5 - 7.5	Pole	Max. Vx	2	-28.86	0.64	2478.98
			Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.44	2.15	2.79
			Max. Mx	20	-41.64	2657.99	0.53
			Max. My	2	-41.64	0.64	2624.41
			Max. Vy	20	-29.75	2657.99	0.53
			Max. Vx	2	-29.34	0.64	2624.41
			Max. Torque	9			0.48
L31	7.5 - 2.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.51	2.17	2.83
			Max. Mx	20	-42.53	2732.61	0.53
			Max. My	2	-42.53	0.64	2698.03
			Max. Vy	20	-29.99	2732.61	0.53
			Max. Vx	2	-29.59	0.64	2698.03
			Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.51	2.17	2.83
L32	2.5 - 0	Pole	Max. Mx	20	-42.53	2732.61	0.53
			Max. My	2	-42.53	0.64	2698.03
			Max. Vy	20	-29.99	2732.61	0.53
			Max. Vx	2	-29.59	0.64	2698.03
			Max. Torque	9			0.48
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.51	2.17	2.83
			Max. Mx	20	-42.53	2732.61	0.53
			Max. My	2	-42.53	0.64	2698.03

Maximum Reactions

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	69.51	7.20	0.00
	Max. H _x	20	42.55	29.97	0.00
	Max. H _z	3	31.91	0.00	29.57
	Max. M _x	2	2698.03	0.00	29.57
	Max. M _z	8	2731.34	-29.97	0.00
	Max. Torsion	9	0.48	-29.97	0.00
	Min. Vert	25	31.91	14.79	25.61
	Min. H _x	8	42.55	-29.97	0.00
	Min. H _z	15	31.91	0.00	-29.57
	Min. M _x	14	-2696.97	0.00	-29.57
	Min. M _z	20	-2732.61	29.97	0.00
	Min. Torsion	21	-0.48	29.97	0.00

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	35.46	0.00	0.00	-0.42	0.50	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	42.55	0.00	-29.57	-2698.03	0.64	-0.13
0.9 Dead+1.6 Wind 0 deg - No Ice	31.91	-0.00	-29.57	-2670.88	0.47	-0.13
1.2 Dead+1.6 Wind 30 deg - No Ice	42.55	14.93	-25.85	-2349.19	-1355.94	-0.32
0.9 Dead+1.6 Wind 30 deg - No Ice	31.91	14.93	-25.85	-2325.59	-1342.56	-0.32
1.2 Dead+1.6 Wind 60 deg - No Ice	42.55	25.61	-14.79	-1349.28	-2336.48	-0.43
0.9 Dead+1.6 Wind 60 deg - No Ice	31.91	25.61	-14.79	-1335.63	-2313.23	-0.43
1.2 Dead+1.6 Wind 90 deg - No Ice	42.55	29.97	0.00	-0.53	-2731.34	-0.48
0.9 Dead+1.6 Wind 90 deg - No Ice	31.91	29.97	0.00	-0.39	-2704.22	-0.48
1.2 Dead+1.6 Wind 120 deg - No Ice	42.55	25.61	14.79	1348.22	-2336.47	-0.30
0.9 Dead+1.6 Wind 120 deg - No Ice	31.91	25.61	14.79	1334.85	-2313.23	-0.30
1.2 Dead+1.6 Wind 150 deg - No Ice	42.55	14.79	25.61	2335.58	-1348.69	-0.10
0.9 Dead+1.6 Wind 150 deg - No Ice	31.91	14.79	25.61	2312.32	-1335.35	-0.10
1.2 Dead+1.6 Wind 180 deg - No Ice	42.55	0.00	29.57	2696.97	0.64	0.13
0.9 Dead+1.6 Wind 180 deg - No Ice	31.91	-0.00	29.57	2670.09	0.47	0.13
1.2 Dead+1.6 Wind 210 deg - No Ice	42.55	-14.93	25.85	2348.13	1357.22	0.32
0.9 Dead+1.6 Wind 210 deg - No Ice	31.91	-14.93	25.85	2324.80	1343.49	0.32
1.2 Dead+1.6 Wind 240 deg - No Ice	42.55	-25.61	14.79	1348.22	2337.75	0.43
0.9 Dead+1.6 Wind 240 deg - No Ice	31.91	-25.61	14.79	1334.85	2314.17	0.43
1.2 Dead+1.6 Wind 270 deg - No Ice	42.55	-29.97	0.00	-0.53	2732.61	0.48

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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
0.9 Dead+1.6 Wind 270 deg - No Ice	31.91	-29.97	0.00	-0.39	2705.16	0.48
1.2 Dead+1.6 Wind 300 deg - No Ice	42.55	-25.61	-14.79	-1349.28	2337.75	0.30
0.9 Dead+1.6 Wind 300 deg - No Ice	31.91	-25.61	-14.79	-1335.63	2314.17	0.31
1.2 Dead+1.6 Wind 330 deg - No Ice	42.55	-14.79	-25.61	-2336.63	1349.97	0.10
0.9 Dead+1.6 Wind 330 deg - No Ice	31.91	-14.79	-25.61	-2313.10	1336.29	0.11
1.2 Dead+1.0 Ice+1.0 Temp	69.51	-0.00	-0.00	-2.83	2.17	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	69.51	-0.00	-7.05	-691.27	2.30	-0.04
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	69.51	3.55	-6.15	-601.59	-343.04	-0.07
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	69.51	6.11	-3.53	-347.12	-593.32	-0.08
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	69.51	7.20	-0.00	-2.97	-698.15	-0.08
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	69.51	6.11	3.53	341.18	-593.32	-0.04
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	69.51	3.53	6.11	593.12	-341.58	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	69.51	-0.00	7.05	685.34	2.30	0.04
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	69.51	-3.55	6.15	595.65	347.64	0.07
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	69.51	-6.11	3.53	341.18	597.91	0.08
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	69.51	-7.20	-0.00	-2.97	702.74	0.08
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	69.51	-6.11	-3.53	-347.12	597.91	0.04
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	69.51	-3.53	-6.11	-599.06	346.18	-0.00
Dead+Wind 0 deg - Service	35.46	0.00	-6.33	-574.71	0.53	-0.03
Dead+Wind 30 deg - Service	35.46	3.19	-5.53	-500.45	-288.28	-0.07
Dead+Wind 60 deg - Service	35.46	5.48	-3.16	-287.58	-497.02	-0.09
Dead+Wind 90 deg - Service	35.46	6.42	0.00	-0.44	-581.10	-0.09
Dead+Wind 120 deg - Service	35.46	5.48	3.16	286.69	-497.02	-0.07
Dead+Wind 150 deg - Service	35.46	3.17	5.48	496.89	-286.73	-0.02
Dead+Wind 180 deg - Service	35.46	0.00	6.33	573.83	0.53	0.03
Dead+Wind 210 deg - Service	35.46	-3.19	5.53	499.57	289.33	0.07
Dead+Wind 240 deg - Service	35.46	-5.48	3.16	286.69	498.07	0.09
Dead+Wind 270 deg - Service	35.46	-6.42	0.00	-0.44	582.15	0.09
Dead+Wind 300 deg - Service	35.46	-5.48	-3.16	-287.58	498.07	0.07
Dead+Wind 330 deg - Service	35.46	-3.17	-5.48	-497.77	287.79	0.02

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-35.46	0.00	0.00	35.46	0.00	0.000%
2	0.00	-42.55	-29.57	0.00	42.55	29.57	0.000%
3	0.00	-31.91	-29.57	0.00	31.91	29.57	0.000%
4	14.93	-42.55	-25.85	-14.93	42.55	25.85	0.000%
5	14.93	-31.91	-25.85	-14.93	31.91	25.85	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
6	25.61	-42.55	-14.79	-25.61	42.55	14.79	0.000%
7	25.61	-31.91	-14.79	-25.61	31.91	14.79	0.000%
8	29.97	-42.55	0.00	-29.97	42.55	0.00	0.000%
9	29.97	-31.91	0.00	-29.97	31.91	0.00	0.000%
10	25.61	-42.55	14.79	-25.61	42.55	-14.79	0.000%
11	25.61	-31.91	14.79	-25.61	31.91	-14.79	0.000%
12	14.79	-42.55	25.61	-14.79	42.55	-25.61	0.000%
13	14.79	-31.91	25.61	-14.79	31.91	-25.61	0.000%
14	0.00	-42.55	29.57	0.00	42.55	-29.57	0.000%
15	0.00	-31.91	29.57	0.00	31.91	-29.57	0.000%
16	-14.93	-42.55	25.85	14.93	42.55	-25.85	0.000%
17	-14.93	-31.91	25.85	14.93	31.91	-25.85	0.000%
18	-25.61	-42.55	14.79	25.61	42.55	-14.79	0.000%
19	-25.61	-31.91	14.79	25.61	31.91	-14.79	0.000%
20	-29.97	-42.55	0.00	29.97	42.55	0.00	0.000%
21	-29.97	-31.91	0.00	29.97	31.91	0.00	0.000%
22	-25.61	-42.55	-14.79	25.61	42.55	14.79	0.000%
23	-25.61	-31.91	-14.79	25.61	31.91	14.79	0.000%
24	-14.79	-42.55	-25.61	14.79	42.55	25.61	0.000%
25	-14.79	-31.91	-25.61	14.79	31.91	25.61	0.000%
26	0.00	-69.51	0.00	0.00	69.51	0.00	0.000%
27	0.00	-69.51	-7.05	0.00	69.51	7.05	0.000%
28	3.55	-69.51	-6.15	-3.55	69.51	6.15	0.000%
29	6.11	-69.51	-3.53	-6.11	69.51	3.53	0.000%
30	7.20	-69.51	0.00	-7.20	69.51	0.00	0.000%
31	6.11	-69.51	3.53	-6.11	69.51	-3.53	0.000%
32	3.53	-69.51	6.11	-3.53	69.51	-6.11	0.000%
33	0.00	-69.51	7.05	0.00	69.51	-7.05	0.000%
34	-3.55	-69.51	6.15	3.55	69.51	-6.15	0.000%
35	-6.11	-69.51	3.53	6.11	69.51	-3.53	0.000%
36	-7.20	-69.51	0.00	7.20	69.51	0.00	0.000%
37	-6.11	-69.51	-3.53	6.11	69.51	3.53	0.000%
38	-3.53	-69.51	-6.11	3.53	69.51	6.11	0.000%
39	0.00	-35.46	-6.33	0.00	35.46	6.33	0.000%
40	3.19	-35.46	-5.53	-3.19	35.46	5.53	0.000%
41	5.48	-35.46	-3.16	-5.48	35.46	3.16	0.000%
42	6.42	-35.46	0.00	-6.42	35.46	0.00	0.000%
43	5.48	-35.46	3.16	-5.48	35.46	-3.16	0.000%
44	3.17	-35.46	5.48	-3.17	35.46	-5.48	0.000%
45	0.00	-35.46	6.33	0.00	35.46	-6.33	0.000%
46	-3.19	-35.46	5.53	3.19	35.46	-5.53	0.000%
47	-5.48	-35.46	3.16	5.48	35.46	-3.16	0.000%
48	-6.42	-35.46	0.00	6.42	35.46	0.00	0.000%
49	-5.48	-35.46	-3.16	5.48	35.46	3.16	0.000%
50	-3.17	-35.46	-5.48	3.17	35.46	5.48	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00009555
3	Yes	4	0.00000001	0.00095634
4	Yes	6	0.00000001	0.00025044
5	Yes	6	0.00000001	0.00008003
6	Yes	6	0.00000001	0.00025417

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7	Yes	6	0.00000001	0.00008152
8	Yes	5	0.00000001	0.00014394
9	Yes	5	0.00000001	0.00006102
10	Yes	6	0.00000001	0.00024931
11	Yes	6	0.00000001	0.00007980
12	Yes	6	0.00000001	0.00025184
13	Yes	6	0.00000001	0.00008072
14	Yes	5	0.00000001	0.00009553
15	Yes	4	0.00000001	0.00095609
16	Yes	6	0.00000001	0.00025443
17	Yes	6	0.00000001	0.00008147
18	Yes	6	0.00000001	0.00024890
19	Yes	6	0.00000001	0.00007960
20	Yes	5	0.00000001	0.00014399
21	Yes	5	0.00000001	0.00006103
22	Yes	6	0.00000001	0.00025371
23	Yes	6	0.00000001	0.00008130
24	Yes	6	0.00000001	0.00025102
25	Yes	6	0.00000001	0.00008033
26	Yes	4	0.00000001	0.00014505
27	Yes	6	0.00000001	0.00033065
28	Yes	6	0.00000001	0.00037725
29	Yes	6	0.00000001	0.00037624
30	Yes	6	0.00000001	0.00033150
31	Yes	6	0.00000001	0.00037313
32	Yes	6	0.00000001	0.00037343
33	Yes	6	0.00000001	0.00032789
34	Yes	6	0.00000001	0.00037737
35	Yes	6	0.00000001	0.00037601
36	Yes	6	0.00000001	0.00033426
37	Yes	6	0.00000001	0.00037912
38	Yes	6	0.00000001	0.00037910
39	Yes	4	0.00000001	0.00039726
40	Yes	5	0.00000001	0.00006981
41	Yes	5	0.00000001	0.00007284
42	Yes	4	0.00000001	0.00041364
43	Yes	5	0.00000001	0.00006908
44	Yes	5	0.00000001	0.00007086
45	Yes	4	0.00000001	0.00039611
46	Yes	5	0.00000001	0.00007274
47	Yes	5	0.00000001	0.00006900
48	Yes	4	0.00000001	0.00041474
49	Yes	5	0.00000001	0.00007266
50	Yes	5	0.00000001	0.00007071

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133.5 - 128.5	18.02	48	1.28	0.00
L2	128.5 - 123.5	16.68	48	1.27	0.00
L3	123.5 - 121.5	15.38	48	1.22	0.00
L4	121.5 - 119	14.87	48	1.18	0.00
L5	119 - 114	14.26	48	1.17	0.00
L6	114 - 109	13.04	48	1.15	0.00
L7	109 - 104	11.85	48	1.12	0.00
L8	104 - 99	10.71	48	1.07	0.00
L9	99 - 94	9.61	48	1.02	0.00
L10	94 - 89	8.57	48	0.96	0.00

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L11	89 - 84	7.60	48	0.89	0.00
L12	84 - 79	6.71	48	0.82	0.00
L13	79 - 75	5.89	48	0.74	0.00
L14	78.75 - 73.75	5.86	48	0.73	0.00
L15	73.75 - 68.75	5.11	48	0.69	0.00
L16	68.75 - 68.08	4.43	48	0.61	0.00
L17	68.08 - 67.83	4.35	48	0.60	0.00
L18	67.83 - 62.83	4.31	48	0.60	0.00
L19	62.83 - 57.83	3.71	48	0.56	0.00
L20	57.83 - 52.83	3.15	48	0.51	0.00
L21	52.83 - 47.83	2.64	48	0.47	0.00
L22	47.83 - 42.83	2.17	48	0.42	0.00
L23	42.83 - 37.75	1.76	48	0.37	0.00
L24	42.5 - 37.5	1.73	48	0.37	0.00
L25	37.5 - 32.5	1.36	48	0.35	0.00
L26	32.5 - 27.5	1.02	48	0.30	0.00
L27	27.5 - 22.5	0.73	48	0.25	0.00
L28	22.5 - 17.5	0.49	48	0.21	0.00
L29	17.5 - 12.5	0.29	48	0.16	0.00
L30	12.5 - 7.5	0.15	48	0.11	0.00
L31	7.5 - 2.5	0.05	48	0.07	0.00
L32	2.5 - 0	0.01	48	0.02	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.00	(2) P65-15-XLH-RR w/ Mount Pipe	48	17.35	1.28	0.00	9584
119.00	APXVSPP18-C-A20 w/ Mount Pipe	48	14.26	1.17	0.00	10025
117.00	800MHz 2X50W RRH W/FILTER	48	13.77	1.17	0.00	12278
111.00	Platform Mount [LP 1201-1]	48	12.32	1.13	0.00	8121
101.00	IBR 1300_CCIV2 w/ Mount Pipe	48	10.04	1.04	0.00	5432
95.00	APXV18-206517S-ACU	48	8.78	0.97	0.00	4545
60.00	58532A	48	3.39	0.53	0.00	6448
50.00	KS24019-L112A	48	2.37	0.44	0.00	6145

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133.5 - 128.5	84.57	20	6.00	0.02
L2	128.5 - 123.5	78.31	20	5.96	0.02
L3	123.5 - 121.5	72.19	20	5.71	0.01
L4	121.5 - 119	69.83	20	5.55	0.01
L5	119 - 114	66.94	20	5.52	0.01
L6	114 - 109	61.23	20	5.40	0.01
L7	109 - 104	55.66	20	5.24	0.00
L8	104 - 99	50.28	20	5.04	0.00
L9	99 - 94	45.13	20	4.80	0.00
L10	94 - 89	40.26	20	4.51	0.00

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L11	89 - 84	35.71	20	4.19	0.00
L12	84 - 79	31.50	20	3.84	0.00
L13	79 - 75	27.68	20	3.46	0.00
L14	78.75 - 73.75	27.50	20	3.44	0.00
L15	73.75 - 68.75	24.00	20	3.22	0.00
L16	68.75 - 68.08	20.81	20	2.87	0.00
L17	68.08 - 67.83	20.41	20	2.83	0.00
L18	67.83 - 62.83	20.26	20	2.82	0.00
L19	62.83 - 57.83	17.42	20	2.61	0.00
L20	57.83 - 52.83	14.79	20	2.41	0.00
L21	52.83 - 47.83	12.38	20	2.19	0.00
L22	47.83 - 42.83	10.20	20	1.97	0.00
L23	42.83 - 37.75	8.25	20	1.75	0.00
L24	42.5 - 37.5	8.13	20	1.74	0.00
L25	37.5 - 32.5	6.37	20	1.62	0.00
L26	32.5 - 27.5	4.78	20	1.41	0.00
L27	27.5 - 22.5	3.42	20	1.19	0.00
L28	22.5 - 17.5	2.29	20	0.97	0.00
L29	17.5 - 12.5	1.38	20	0.76	0.00
L30	12.5 - 7.5	0.70	20	0.54	0.00
L31	7.5 - 2.5	0.25	20	0.32	0.00
L32	2.5 - 0	0.03	20	0.11	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
131.00	(2) P65-15-XLH-RR w/ Mount Pipe	20	81.43	5.99	0.02	2156
119.00	APXVSPP18-C-A20 w/ Mount Pipe	20	66.94	5.52	0.01	2192
117.00	800MHz 2X50W RRH W/FILTER	20	64.64	5.49	0.01	2675
111.00	Platform Mount [LP 1201-1]	20	57.87	5.31	0.01	1761
101.00	IBR 1300_CCIV2 w/ Mount Pipe	20	47.16	4.90	0.00	1172
95.00	APXV18-206517S-ACU	20	41.21	4.57	0.00	978
60.00	58532A	20	15.90	2.50	0.00	1377
50.00	KS24019-L112A	20	11.12	2.07	0.00	1311

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	133.5 - 128.5 (1)	TP10.75x10.75x0.365	5.00	0.00	0.0	11.9083	-2.25	375.11	0.006
L2	128.5 - 123.5 (2)	TP10.75x10.75x0.365	5.00	0.00	0.0	11.9083	-2.55	375.11	0.007
L3	123.5 - 121.5 (3)	TP10.75x10.75x0.365	2.00	0.00	0.0	11.9083	-2.68	375.11	0.007

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio P _u φP _n
L4	121.5 - 119 (4)	TP22x22x0.25	2.50	0.00	0.0	17.0824	-2.88	860.44	0.003
L5	119 - 114 (5)	TP22.95x22x0.25	5.00	0.00	0.0	18.2735	-6.82	1328.93	0.005
L6	114 - 109 (6)	TP23.9x22.95x0.25	5.00	0.00	0.0	19.0382	-9.92	1365.52	0.007
L7	109 - 104 (7)	TP24.85x23.9x0.25	5.00	0.00	0.0	19.8030	-10.40	1400.57	0.007
L8	104 - 99 (8)	TP25.8x24.85x0.25	5.00	0.00	0.0	20.5678	-13.31	1434.10	0.009
L9	99 - 94 (9)	TP26.75x25.8x0.25	5.00	0.00	0.0	21.3325	-14.20	1466.10	0.010
L10	94 - 89 (10)	TP27.7x26.75x0.25	5.00	0.00	0.0	22.0972	-14.86	1496.57	0.010
L11	89 - 84 (11)	TP28.65x27.7x0.25	5.00	0.00	0.0	22.8620	-16.05	1525.51	0.011
L12	84 - 79 (12)	TP29.6x28.65x0.25	5.00	0.00	0.0	23.6268	-17.59	1552.92	0.011
L13	79 - 75 (13)	TP30.36x29.6x0.25	4.00	0.00	0.0	23.6650	-17.66	1554.25	0.011
L14	75 - 73.75 (14)	TP30.0978x29.1475x0.3125	5.00	0.00	0.0	29.9715	-19.13	2144.08	0.009
L15	73.75 - 68.75 (15)	TP31.0481x30.0978x0.3125	5.00	0.00	0.0	30.9277	-20.01	2187.75	0.009
L16	68.75 - 68.08 (16)	TP31.1755x31.0481x0.3125	0.67	0.00	0.0	31.0558	-20.14	2193.48	0.009
L17	68.08 - 67.83 (17)	TP31.223x31.1755x0.575	0.25	0.00	0.0	56.7447	-20.21	4182.65	0.005
L18	67.83 - 62.83 (18)	TP32.1733x31.223x0.5688	5.00	0.00	0.0	57.8797	-21.51	4266.32	0.005
L19	62.83 - 57.83 (19)	TP33.1236x32.1733x0.5625	5.00	0.00	0.0	58.9762	-22.87	4347.14	0.005
L20	57.83 - 52.83 (20)	TP34.0739x33.1236x0.55	5.00	0.00	0.0	59.3708	-24.23	4376.22	0.006
L21	52.83 - 47.83 (21)	TP35.0242x34.0739x0.5438	5.00	0.00	0.0	60.3709	-25.69	4449.94	0.006
L22	47.83 - 42.83 (22)	TP35.9745x35.0242x0.5375	5.00	0.00	0.0	61.3326	-27.11	4520.82	0.006
L23	42.83 - 37.75 (23)	TP36.94x35.9745x0.5375	5.08	0.00	0.0	61.4411	-27.21	4528.83	0.006
L24	37.75 - 37.5 (24)	TP36.3625x35.4122x0.6	5.00	0.00	0.0	69.0932	-29.88	5092.86	0.006
L25	37.5 - 32.5 (25)	TP37.3129x36.3625x0.5875	5.00	0.00	0.0	69.4752	-31.47	5121.02	0.006
L26	32.5 - 27.5 (26)	TP38.2632x37.3129x0.5875	5.00	0.00	0.0	71.2730	-33.09	5253.53	0.006
L27	27.5 - 22.5 (27)	TP39.2135x38.2632x0.575	5.00	0.00	0.0	71.5392	-34.75	5273.16	0.007
L28	22.5 - 17.5 (28)	TP40.1639x39.2135x0.575	5.00	0.00	0.0	73.2988	-36.43	5402.85	0.007
L29	17.5 - 12.5 (29)	TP41.1142x40.1639x0.5688	5.00	0.00	0.0	74.2539	-38.14	5473.25	0.007
L30	12.5 - 7.5 (30)	TP42.0645x41.1142x0.5625	5.00	0.00	0.0	75.1705	-39.88	5540.82	0.007
L31	7.5 - 2.5 (31)	TP43.0148x42.0645x0.5625	5.00	0.00	0.0	76.8918	-41.64	5667.69	0.007
L32	2.5 - 0 (32)	TP43.49x43.0148x0.5563	2.50	0.00	0.0	76.8997	-42.53	5668.28	0.008

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{ux} kip-ft	Ratio M _{ux} φM _{ux}	M _{uy} kip-ft	φM _{uy} kip-ft	Ratio M _{uy} φM _{uy}
L1	133.5 - 128.5 (1)	TP10.75x10.75x0.365	15.19	103.38	0.147	0.00	103.38	0.000
L2	128.5 - 123.5 (2)	TP10.75x10.75x0.365	39.88	103.38	0.386	0.00	103.38	0.000
L3	123.5 - 121.5 (3)	TP10.75x10.75x0.365	49.98	103.38	0.484	0.00	103.38	0.000
L4	121.5 - 119 (4)	TP22x22x0.25	62.89	494.72	0.127	0.00	494.72	0.000
L5	119 - 114 (5)	TP22.95x22x0.25	115.91	612.70	0.189	0.00	612.70	0.000
L6	114 - 109 (6)	TP23.9x22.95x0.25	173.25	656.20	0.264	0.00	656.20	0.000
L7	109 - 104 (7)	TP24.85x23.9x0.25	239.70	700.37	0.342	0.00	700.37	0.000
L8	104 - 99 (8)	TP25.8x24.85x0.25	320.09	745.10	0.430	0.00	745.10	0.000

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Section No.	Elevation ft	Size	M_{ux}	ϕM_{rx}	Ratio	M_{uy}	ϕM_{ry}	Ratio
			kip-ft	kip-ft	$\frac{M_{ux}}{\phi M_{rx}}$	kip-ft	kip-ft	$\frac{M_{uy}}{\phi M_{ry}}$
L9	99 - 94 (9)	TP26.75x25.8x0.25	409.52	790.33	0.518	0.00	790.33	0.000
L10	94 - 89 (10)	TP27.7x26.75x0.25	504.66	835.94	0.604	0.00	835.94	0.000
L11	89 - 84 (11)	TP28.65x27.7x0.25	602.95	881.86	0.684	0.00	881.86	0.000
L12	84 - 79 (12)	TP29.6x28.65x0.25	705.23	928.00	0.760	0.00	928.00	0.000
L13	79 - 75 (13)	TP30.36x29.6x0.25	710.45	930.31	0.764	0.00	930.31	0.000
L14	75 - 73.75 (14)	TP30.0978x29.1475x0.3125	816.68	1297.73	0.629	0.00	1297.73	0.000
L15	73.75 - 68.75 (15)	TP31.0481x30.0978x0.3125	925.74	1366.85	0.677	0.00	1366.85	0.000
L16	68.75 - 68.08 (16)	TP31.1755x31.0481x0.3125	940.56	1376.17	0.683	0.00	1376.17	0.000
L17	68.08 - 67.83 (17)	TP31.223x31.1755x0.575	946.11	2583.78	0.366	0.00	2583.78	0.000
L18	67.83 - 62.83 (18)	TP32.1733x31.223x0.5688	1058.61	2719.77	0.389	0.00	2719.77	0.000
L19	62.83 - 57.83 (19)	TP33.1236x32.1733x0.5625	1174.34	2857.19	0.411	0.00	2857.19	0.000
L20	57.83 - 52.83 (20)	TP34.0739x33.1236x0.55	1293.31	2963.88	0.436	0.00	2963.88	0.000
L21	52.83 - 47.83 (21)	TP35.0242x34.0739x0.5438	1415.52	3101.75	0.456	0.00	3101.75	0.000
L22	47.83 - 42.83 (22)	TP35.9745x35.0242x0.5375	1540.97	3240.50	0.476	0.00	3240.50	0.000
L23	42.83 - 37.75 (23)	TP36.94x35.9745x0.5375	1549.36	3252.07	0.476	0.00	3252.07	0.000
L24	37.75 - 37.5 (24)	TP36.3625x35.4122x0.6	1678.23	3678.23	0.456	0.00	3678.23	0.000
L25	37.5 - 32.5 (25)	TP37.3129x36.3625x0.5875	1810.24	3801.06	0.476	0.00	3801.06	0.000
L26	32.5 - 27.5 (26)	TP38.2632x37.3129x0.5875	1945.08	4001.92	0.486	0.00	4001.92	0.000
L27	27.5 - 22.5 (27)	TP39.2135x38.2632x0.575	2082.64	4122.41	0.505	0.00	4122.41	0.000
L28	22.5 - 17.5 (28)	TP40.1639x39.2135x0.575	2222.83	4329.21	0.513	0.00	4329.21	0.000
L29	17.5 - 12.5 (29)	TP41.1142x40.1639x0.5688	2365.49	4493.79	0.526	0.00	4493.79	0.000
L30	12.5 - 7.5 (30)	TP42.0645x41.1142x0.5625	2510.54	4658.77	0.539	0.00	4658.77	0.000
L31	7.5 - 2.5 (31)	TP43.0148x42.0645x0.5625	2657.98	4876.02	0.545	0.00	4876.02	0.000
L32	2.5 - 0 (32)	TP43.49x43.0148x0.5563	2732.62	4933.27	0.554	0.00	4933.27	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual	ϕV_n	Ratio	Actual	ϕT_n	Ratio
			V_u K	K	$\frac{V_u}{\phi V_n}$	T_u kip-ft	kip-ft	$\frac{T_u}{\phi T_n}$
L1	133.5 - 128.5 (1)	TP10.75x10.75x0.365	4.86	187.56	0.026	0.49	157.00	0.003
L2	128.5 - 123.5 (2)	TP10.75x10.75x0.365	5.02	187.56	0.027	0.49	157.00	0.003
L3	123.5 - 121.5 (3)	TP10.75x10.75x0.365	5.08	187.56	0.027	0.49	157.00	0.003
L4	121.5 - 119 (4)	TP22x22x0.25	5.25	429.12	0.012	0.63	769.04	0.001
L5	119 - 114 (5)	TP22.95x22x0.25	10.35	664.47	0.016	0.63	1242.36	0.001
L6	114 - 109 (6)	TP23.9x22.95x0.25	13.02	682.76	0.019	0.63	1330.57	0.000
L7	109 - 104 (7)	TP24.85x23.9x0.25	13.57	700.29	0.019	0.63	1420.13	0.000
L8	104 - 99 (8)	TP25.8x24.85x0.25	17.47	717.05	0.024	0.50	1510.83	0.000
L9	99 - 94 (9)	TP26.75x25.8x0.25	18.76	733.05	0.026	0.49	1602.53	0.000
L10	94 - 89 (10)	TP27.7x26.75x0.25	19.31	748.28	0.026	0.49	1695.03	0.000
L11	89 - 84 (11)	TP28.65x27.7x0.25	19.96	762.75	0.026	0.49	1788.14	0.000
L12	84 - 79 (12)	TP29.6x28.65x0.25	20.87	776.46	0.027	0.55	1881.69	0.000
L13	79 - 75 (13)	TP30.36x29.6x0.25	20.89	777.12	0.027	0.55	1886.38	0.000

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Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L14	75 - 73.75 (14)	TP30.0978x29.1475x0.3125	21.55	1072.04	0.020	0.55	2631.40	0.000
L15	73.75 - 68.75 (15)	TP31.0481x30.0978x0.3125	22.10	1093.87	0.020	0.55	2771.54	0.000
L16	68.75 - 68.08 (16)	TP31.1755x31.0481x0.3125	22.17	1096.74	0.020	0.55	2790.43	0.000
L17	68.08 - 67.83 (17)	TP31.223x31.1755x0.575	22.19	2091.33	0.011	0.55	5239.10	0.000
L18	67.83 - 62.83 (18)	TP32.1733x31.223x0.5688	22.82	2133.16	0.011	0.55	5514.83	0.000
L19	62.83 - 57.83 (19)	TP33.1236x32.1733x0.5625	23.49	2173.57	0.011	0.50	5793.48	0.000
L20	57.83 - 52.83 (20)	TP34.0739x33.1236x0.55	24.11	2188.11	0.011	0.50	6009.83	0.000
L21	52.83 - 47.83 (21)	TP35.0242x34.0739x0.5438	24.80	2224.97	0.011	0.48	6289.37	0.000
L22	47.83 - 42.83 (22)	TP35.9745x35.0242x0.5375	25.40	2260.41	0.011	0.48	6570.72	0.000
L23	42.83 - 37.75 (23)	TP36.94x35.9745x0.5375	25.44	2264.41	0.011	0.48	6594.17	0.000
L24	37.75 - 37.5 (24)	TP36.3625x35.4122x0.6	26.12	2546.43	0.010	0.48	7458.31	0.000
L25	37.5 - 32.5 (25)	TP37.3129x36.3625x0.5875	26.70	2560.51	0.010	0.48	7707.37	0.000
L26	32.5 - 27.5 (26)	TP38.2632x37.3129x0.5875	27.26	2626.77	0.010	0.48	8114.63	0.000
L27	27.5 - 22.5 (27)	TP39.2135x38.2632x0.575	27.80	2636.58	0.011	0.48	8358.92	0.000
L28	22.5 - 17.5 (28)	TP40.1639x39.2135x0.575	28.31	2701.43	0.010	0.48	8778.25	0.000
L29	17.5 - 12.5 (29)	TP41.1142x40.1639x0.5688	28.79	2736.63	0.011	0.48	9112.00	0.000
L30	12.5 - 7.5 (30)	TP42.0645x41.1142x0.5625	29.26	2770.41	0.011	0.48	9446.50	0.000
L31	7.5 - 2.5 (31)	TP43.0148x42.0645x0.5625	29.75	2833.85	0.010	0.48	9887.08	0.000
L32	2.5 - 0 (32)	TP43.49x43.0148x0.5563	29.99	2834.14	0.011	0.48	10003.08	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	133.5 - 128.5 (1)	0.006	0.147	0.000	0.026	0.003	0.154	1.000	4.8.2
L2	128.5 - 123.5 (2)	0.007	0.386	0.000	0.027	0.003	0.394	1.000	4.8.2
L3	123.5 - 121.5 (3)	0.007	0.484	0.000	0.027	0.003	0.492	1.000	4.8.2
L4	121.5 - 119 (4)	0.003	0.127	0.000	0.012	0.001	0.131	1.000	4.8.2
L5	119 - 114 (5)	0.005	0.189	0.000	0.016	0.001	0.195	1.000	4.8.2
L6	114 - 109 (6)	0.007	0.264	0.000	0.019	0.000	0.272	1.000	4.8.2
L7	109 - 104 (7)	0.007	0.342	0.000	0.019	0.000	0.350	1.000	4.8.2
L8	104 - 99 (8)	0.009	0.430	0.000	0.024	0.000	0.439	1.000	4.8.2
L9	99 - 94 (9)	0.010	0.518	0.000	0.026	0.000	0.529	1.000	4.8.2
L10	94 - 89 (10)	0.010	0.604	0.000	0.026	0.000	0.614	1.000	4.8.2
L11	89 - 84 (11)	0.011	0.684	0.000	0.026	0.000	0.695	1.000	4.8.2
L12	84 - 79 (12)	0.011	0.760	0.000	0.027	0.000	0.772	1.000	4.8.2
L13	79 - 75 (13)	0.011	0.764	0.000	0.027	0.000	0.776	1.000	4.8.2
L14	75 - 73.75 (14)	0.009	0.629	0.000	0.020	0.000	0.639	1.000	4.8.2
L15	73.75 - 68.75 (15)	0.009	0.677	0.000	0.020	0.000	0.687	1.000	4.8.2
L16	68.75 - 68.08	0.009	0.683	0.000	0.020	0.000	0.693	1.000	4.8.2

tnxTower Mastec Network Solutions 1000 Centergreen Way, Suite 300 Cary, NC 27513 Phone: (919) 674-5866 FAX:	Job	876340 - COE HILL	Page	36 of 37
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Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L17	(16) 68.08 - 67.83	0.005	0.366	0.000	0.011	0.000	0.371	1.000	4.8.2
L18	(17) 67.83 - 62.83	0.005	0.389	0.000	0.011	0.000	0.394	1.000	4.8.2
L19	(18) 62.83 - 57.83	0.005	0.411	0.000	0.011	0.000	0.416	1.000	4.8.2
L20	(19) 57.83 - 52.83	0.006	0.436	0.000	0.011	0.000	0.442	1.000	4.8.2
L21	(20) 52.83 - 47.83	0.006	0.456	0.000	0.011	0.000	0.462	1.000	4.8.2
L22	(21) 47.83 - 42.83	0.006	0.476	0.000	0.011	0.000	0.482	1.000	4.8.2
L23	(22) 42.83 - 37.75	0.006	0.476	0.000	0.011	0.000	0.483	1.000	4.8.2
L24	(23) 37.75 - 37.5	0.006	0.456	0.000	0.010	0.000	0.462	1.000	4.8.2
L25	(24) 37.5 - 32.5 (25)	0.006	0.476	0.000	0.010	0.000	0.483	1.000	4.8.2
L26	32.5 - 27.5 (26)	0.006	0.486	0.000	0.010	0.000	0.492	1.000	4.8.2
L27	27.5 - 22.5 (27)	0.007	0.505	0.000	0.011	0.000	0.512	1.000	4.8.2
L28	22.5 - 17.5 (28)	0.007	0.513	0.000	0.010	0.000	0.520	1.000	4.8.2
L29	17.5 - 12.5 (29)	0.007	0.526	0.000	0.011	0.000	0.533	1.000	4.8.2
L30	12.5 - 7.5 (30)	0.007	0.539	0.000	0.011	0.000	0.546	1.000	4.8.2
L31	7.5 - 2.5 (31)	0.007	0.545	0.000	0.010	0.000	0.553	1.000	4.8.2
L32	2.5 - 0 (32)	0.008	0.554	0.000	0.011	0.000	0.562	1.000	4.8.2

Section Capacity Table

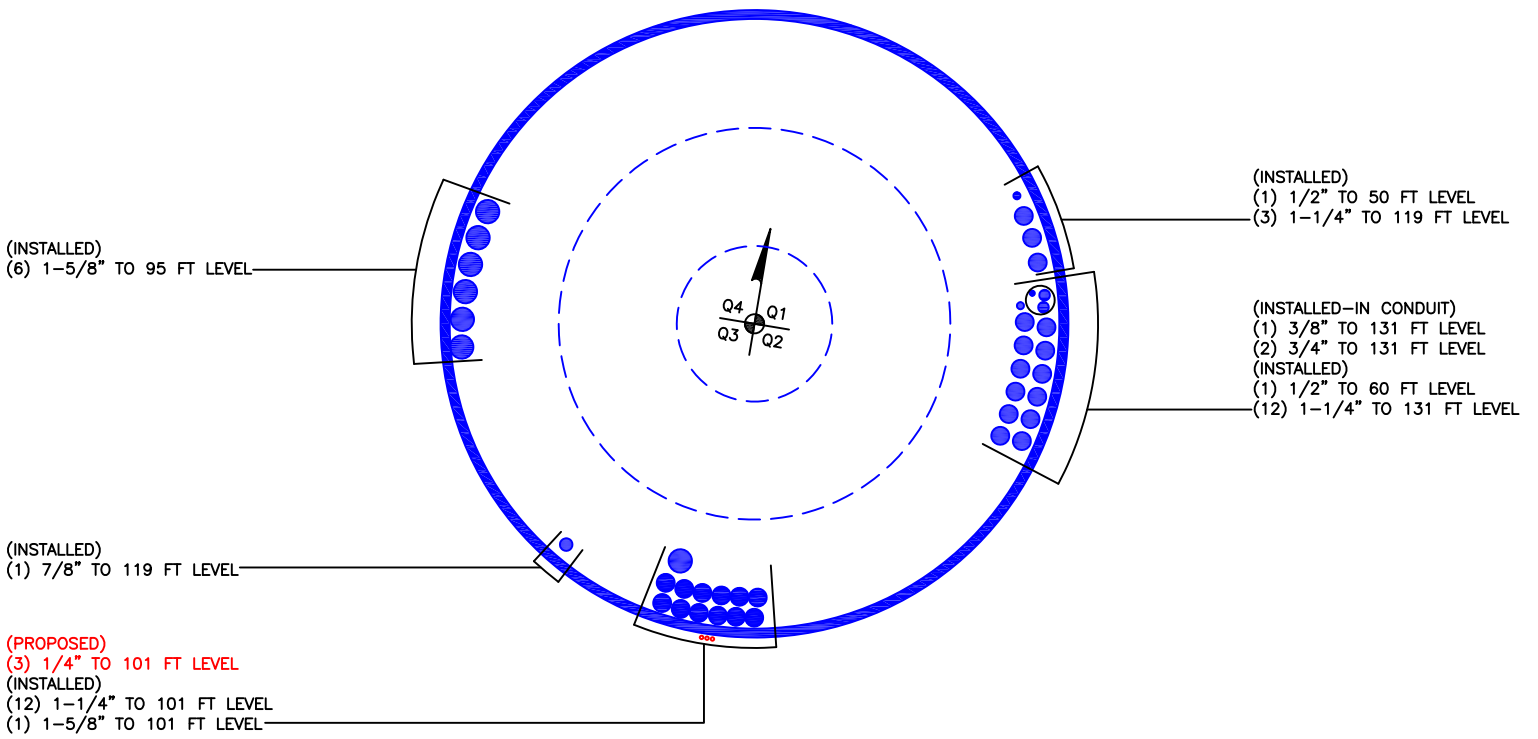
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	133.5 - 128.5	Pole	TP10.75x10.75x0.365	1	-2.25	375.11	15.4	Pass
L2	128.5 - 123.5	Pole	TP10.75x10.75x0.365	2	-2.55	375.11	39.4	Pass
L3	123.5 - 121.5	Pole	TP10.75x10.75x0.365	3	-2.68	375.11	49.2	Pass
L4	121.5 - 119	Pole	TP22x22x0.25	4	-2.88	860.44	13.1	Pass
L5	119 - 114	Pole	TP22.95x22x0.25	5	-6.82	1328.93	19.5	Pass
L6	114 - 109	Pole	TP23.9x22.95x0.25	6	-9.92	1365.52	27.2	Pass
L7	109 - 104	Pole	TP24.85x23.9x0.25	7	-10.40	1400.57	35.0	Pass
L8	104 - 99	Pole	TP25.8x24.85x0.25	8	-13.31	1434.10	43.9	Pass
L9	99 - 94	Pole	TP26.75x25.8x0.25	9	-14.20	1466.10	52.9	Pass
L10	94 - 89	Pole	TP27.7x26.75x0.25	10	-14.86	1496.57	61.4	Pass
L11	89 - 84	Pole	TP28.65x27.7x0.25	11	-16.05	1525.51	69.5	Pass
L12	84 - 79	Pole	TP29.6x28.65x0.25	12	-17.59	1552.92	77.2	Pass
L13	79 - 75	Pole	TP30.36x29.6x0.25	13	-17.66	1554.25	77.6	Pass
L14	75 - 73.75	Pole	TP30.0978x29.1475x0.3125	14	-19.13	2144.08	63.9	Pass
L15	73.75 - 68.75	Pole	TP31.0481x30.0978x0.3125	15	-20.01	2187.75	68.7	Pass
L16	68.75 - 68.08	Pole	TP31.1755x31.0481x0.3125	16	-20.14	2193.48	69.3	Pass
L17	68.08 - 67.83	Pole	TP31.223x31.1755x0.575	17	-20.21	4182.65	37.1	Pass
L18	67.83 - 62.83	Pole	TP32.1733x31.223x0.5688	18	-21.51	4266.32	39.4	Pass
L19	62.83 - 57.83	Pole	TP33.1236x32.1733x0.5625	19	-22.87	4347.14	41.6	Pass
L20	57.83 - 52.83	Pole	TP34.0739x33.1236x0.55	20	-24.23	4376.22	44.2	Pass
L21	52.83 - 47.83	Pole	TP35.0242x34.0739x0.5438	21	-25.69	4449.94	46.2	Pass
L22	47.83 - 42.83	Pole	TP35.9745x35.0242x0.5375	22	-27.11	4520.82	48.2	Pass
L23	42.83 - 37.75	Pole	TP36.94x35.9745x0.5375	23	-27.21	4528.83	48.3	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L24	37.75 - 37.5	Pole	TP36.3625x35.4122x0.6	24	-29.88	5092.86	46.2	Pass	
L25	37.5 - 32.5	Pole	TP37.3129x36.3625x0.5875	25	-31.47	5121.02	48.3	Pass	
L26	32.5 - 27.5	Pole	TP38.2632x37.3129x0.5875	26	-33.09	5253.53	49.2	Pass	
L27	27.5 - 22.5	Pole	TP39.2135x38.2632x0.575	27	-34.75	5273.16	51.2	Pass	
L28	22.5 - 17.5	Pole	TP40.1639x39.2135x0.575	28	-36.43	5402.85	52.0	Pass	
L29	17.5 - 12.5	Pole	TP41.1142x40.1639x0.5688	29	-38.14	5473.25	53.3	Pass	
L30	12.5 - 7.5	Pole	TP42.0645x41.1142x0.5625	30	-39.88	5540.82	54.6	Pass	
L31	7.5 - 2.5	Pole	TP43.0148x42.0645x0.5625	31	-41.64	5667.69	55.3	Pass	
L32	2.5 - 0	Pole	TP43.49x43.0148x0.5563	32	-42.53	5668.28	56.2	Pass	
							Summary		
							Pole (L13)	77.6	Pass
							RATING =	77.6	Pass

Program Version 7.0.5.1 - 2/1/2016 File://U036-01DC00664/Data/Engineering/Structural/MasTec-Production/StructuralAnalysis/12941 - 876340 - COE HILL -SAR/Analysis/Twr/USE-mods between 77 and 87 not considered/eqthk.eri

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Site BU: 876340
Work Order: 1563708



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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	133.5	12	0	0	10.75	10.75	0.365	n/a	A53-B-35
2	121.5	2.5	0	0	22.00	22	0.25	n/a	A572-65
3	119	44	3.75	12	22.00	30.36	0.25	1	A607-65
4	78.75	41	4.75	12	29.15	36.94	0.3125	1.25	A607-65
5	42.5	42.5	0	12	35.41	43.49	0.375	1.5	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number												
						1	2	3	4	5	6	7	8	9	10	11	12
1																	
2	0	68.08	channel	MP3-05 (1.25")	4			E			E			E			E
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _u (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
2	5.33	2.09	5.65	0.79	29.000	29.000	18.000	4.994	1.2500	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	133.5 - 128.5	5		0	10.750	10.750	0.365	A53-B-35	1.000
2	128.5 - 123.5	5		0	10.750	10.750	0.365	A53-B-35	1.000
3	123.5 - 121.5	2	0	0	10.750	10.750	0.365	A53-B-35	1.000
4	121.5 - 119	2.5	0	0	22.000	22.000	0.25	A572-65	1.000
5	119 - 114	5		12	22.000	22.950	0.25	A607-65	1.000
6	114 - 109	5		12	22.950	23.900	0.25	A607-65	1.000
7	109 - 104	5		12	23.900	24.850	0.25	A607-65	1.000
8	104 - 99	5		12	24.850	25.800	0.25	A607-65	1.000
9	99 - 94	5		12	25.800	26.750	0.25	A607-65	1.000
10	94 - 89	5		12	26.750	27.700	0.25	A607-65	1.000
11	89 - 84	5		12	27.700	28.650	0.25	A607-65	1.000
12	84 - 79	5		12	28.650	29.600	0.25	A607-65	1.000
13	79 - 78.75	4	3.75	12	29.600	30.360	0.25	A607-65	1.000
14	78.75 - 73.75	5		12	29.148	30.098	0.3125	A607-65	1.000
15	73.75 - 68.75	5		12	30.098	31.048	0.3125	A607-65	1.000
16	68.75 - 68.08	0.67		12	31.048	31.175	0.3125	A607-65	1.000
17	68.08 - 67.83	0.25		12	31.175	31.223	0.575	A607-65	0.947
18	67.83 - 62.83	5		12	31.223	32.173	0.56875	A607-65	0.945
19	62.83 - 57.83	5		12	32.173	33.124	0.5625	A607-65	0.944
20	57.83 - 52.83	5		12	33.124	34.074	0.55	A607-65	0.953
21	52.83 - 47.83	5		12	34.074	35.024	0.54375	A607-65	0.953
22	47.83 - 42.83	5		12	35.024	35.974	0.5375	A607-65	0.954
23	42.83 - 42.5	5.08	4.75	12	35.974	36.940	0.5375	A607-65	0.953
24	42.5 - 37.5	5		12	35.412	36.363	0.6	A607-65	0.956
25	37.5 - 32.5	5		12	36.363	37.313	0.5875	A607-65	0.968
26	32.5 - 27.5	5		12	37.313	38.263	0.5875	A607-65	0.959
27	27.5 - 22.5	5		12	38.263	39.214	0.575	A607-65	0.972
28	22.5 - 17.5	5		12	39.214	40.164	0.575	A607-65	0.964
29	17.5 - 12.5	5		12	40.164	41.114	0.56875	A607-65	0.967
30	12.5 - 7.5	5		12	41.114	42.065	0.5625	A607-65	0.971
31	7.5 - 2.5	5		12	42.065	43.015	0.5625	A607-65	0.964
32	2.5 - 0	2.5		12	43.015	43.490	0.55625	A607-65	0.971

TNX Section Forces

Increment (ft):		TNX Output				
	5	Section Height (ft)		P _u (K)	M _{ux} (kip-ft)	V _u (K)
1		133.5 - 128.5	2.25	15.19	4.86	
2		128.5 - 123.5	2.55	39.88	5.02	
3		123.5 - 121.5	2.68	49.98	5.08	
4		121.5 - 119	2.88	62.89	5.25	
5		119 - 114	6.82	115.91	10.35	
6		114 - 109	9.92	173.25	13.02	
7		109 - 104	10.40	239.70	13.57	
8		104 - 99	13.31	320.09	17.47	
9		99 - 94	14.20	409.52	18.76	
10		94 - 89	14.86	504.66	19.31	
11		89 - 84	16.05	602.94	19.96	
12		84 - 79	17.59	705.23	20.87	
13		79 - 78.75	17.66	710.45	20.89	
14		78.75 - 73.75	19.13	816.68	21.55	
15		73.75 - 68.75	20.01	925.74	22.10	
16		68.75 - 68.08	20.14	940.56	22.17	
17		68.08 - 67.83	20.21	946.11	22.19	
18		67.83 - 62.83	21.51	1058.61	22.82	
19		62.83 - 57.83	22.87	1174.34	23.49	
20		57.83 - 52.83	24.23	1293.31	24.11	
21		52.83 - 47.83	25.69	1415.52	24.80	
22		47.83 - 42.83	27.11	1540.97	25.40	
23		42.83 - 42.5	27.21	1549.36	25.44	
24		42.5 - 37.5	29.88	1678.24	26.12	
25		37.5 - 32.5	31.47	1810.24	26.70	
26		32.5 - 27.5	33.09	1945.07	27.26	
27		27.5 - 22.5	34.75	2082.64	27.80	
28		22.5 - 17.5	36.43	2222.83	28.31	
29		17.5 - 12.5	38.14	2365.49	28.79	
30		12.5 - 7.5	39.88	2510.54	29.26	
31		7.5 - 2.5	41.64	2657.99	29.75	
32		2.5 - 0	42.53	2732.61	29.99	

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133.5 - 128.5	Pole	TP10.75x10.75x0.365	Pole	15.4%	Pass
128.5 - 123.5	Pole	TP10.75x10.75x0.365	Pole	39.3%	Pass
123.5 - 121.5	Pole	TP10.75x10.75x0.365	Pole	49.1%	Pass
121.5 - 119	Pole	TP22x22x0.25	Pole	13.1%	Pass
119 - 114	Pole	TP22.95x22x0.25	Pole	19.4%	Pass
114 - 109	Pole	TP23.9x22.95x0.25	Pole	27.1%	Pass
109 - 104	Pole	TP24.85x23.9x0.25	Pole	34.9%	Pass
104 - 99	Pole	TP25.8x24.85x0.25	Pole	43.8%	Pass
99 - 94	Pole	TP26.75x25.8x0.25	Pole	52.7%	Pass
94 - 89	Pole	TP27.7x26.75x0.25	Pole	61.3%	Pass
89 - 84	Pole	TP28.65x27.7x0.25	Pole	69.3%	Pass
84 - 79	Pole	TP29.6x28.65x0.25	Pole	77.0%	Pass
79 - 78.75	Pole	TP30.36x29.6x0.25	Pole	77.4%	Pass
78.75 - 73.75	Pole	TP30.098x29.148x0.3125	Pole	63.7%	Pass
73.75 - 68.75	Pole	TP31.048x30.098x0.3125	Pole	68.5%	Pass
68.75 - 68.08	Pole	TP31.175x31.048x0.3125	Pole	69.1%	Pass
68.08 - 67.83	Pole + Reinf.	TP31.223x31.175x0.575	Reinf. 2 Tension Rupture	53.4%	Pass
67.83 - 62.83	Pole + Reinf.	TP32.173x31.223x0.5688	Reinf. 2 Tension Rupture	57.0%	Pass
62.83 - 57.83	Pole + Reinf.	TP33.124x32.173x0.5625	Reinf. 2 Tension Rupture	60.3%	Pass
57.83 - 52.83	Pole + Reinf.	TP34.074x33.124x0.55	Reinf. 2 Tension Rupture	63.5%	Pass
52.83 - 47.83	Pole + Reinf.	TP35.024x34.074x0.5438	Reinf. 2 Tension Rupture	66.5%	Pass
47.83 - 42.83	Pole + Reinf.	TP35.974x35.024x0.5375	Reinf. 2 Tension Rupture	69.4%	Pass
42.83 - 42.5	Pole + Reinf.	TP36.94x35.974x0.5375	Reinf. 2 Tension Rupture	69.5%	Pass
42.5 - 37.5	Pole + Reinf.	TP36.363x35.412x0.6	Reinf. 2 Tension Rupture	66.5%	Pass
37.5 - 32.5	Pole + Reinf.	TP37.313x36.363x0.5875	Reinf. 2 Tension Rupture	68.7%	Pass
32.5 - 27.5	Pole + Reinf.	TP38.263x37.313x0.5875	Reinf. 2 Tension Rupture	70.8%	Pass
27.5 - 22.5	Pole + Reinf.	TP39.214x38.263x0.575	Reinf. 2 Tension Rupture	72.8%	Pass
22.5 - 17.5	Pole + Reinf.	TP40.164x39.214x0.575	Reinf. 2 Tension Rupture	74.6%	Pass
17.5 - 12.5	Pole + Reinf.	TP41.114x40.164x0.5688	Reinf. 2 Tension Rupture	76.3%	Pass
12.5 - 7.5	Pole + Reinf.	TP42.065x41.114x0.5625	Reinf. 2 Tension Rupture	77.9%	Pass
7.5 - 2.5	Pole + Reinf.	TP43.015x42.065x0.5625	Reinf. 2 Tension Rupture	79.4%	Pass
2.5 - 0	Pole + Reinf.	TP43.49x43.015x0.5563	Reinf. 2 Tension Rupture	80.1%	Pass
				Summary	
			Pole	77.4%	Pass
			Reinforcement	80.1%	Pass
			Overall	80.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity	
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R2
133.5 - 128.5	161	n/a	161	11.91	n/a	11.91	15.4%	
128.5 - 123.5	161	n/a	161	11.91	n/a	11.91	39.3%	
123.5 - 121.5	161	n/a	161	11.91	n/a	11.91	49.1%	
121.5 - 119	1010	n/a	1010	17.08	n/a	17.08	13.1%	
119 - 114	1204	n/a	1204	18.25	n/a	18.25	19.4%	
114 - 109	1361	n/a	1361	19.01	n/a	19.01	27.1%	
109 - 104	1532	n/a	1532	19.77	n/a	19.77	34.9%	
104 - 99	1716	n/a	1716	20.54	n/a	20.54	43.8%	
99 - 94	1915	n/a	1915	21.30	n/a	21.30	52.7%	
94 - 89	2128	n/a	2128	22.07	n/a	22.07	61.3%	
89 - 84	2357	n/a	2357	22.83	n/a	22.83	69.3%	
84 - 79	2601	n/a	2601	23.59	n/a	23.59	77.0%	
79 - 78.75	2614	n/a	2614	23.63	n/a	23.63	77.4%	
78.75 - 73.75	3398	n/a	3398	29.93	n/a	29.93	63.7%	
73.75 - 68.75	3734	n/a	3734	30.88	n/a	30.88	68.5%	
68.75 - 68.08	3781	n/a	3781	31.01	n/a	31.01	69.1%	
68.08 - 67.83	3798	3054	6853	31.06	22.60	53.66	37.2%	53.4%
67.83 - 62.83	4160	3233	7392	32.01	22.60	54.61	40.2%	57.0%
62.83 - 57.83	4543	3417	7960	32.97	22.60	55.57	43.2%	60.3%
57.83 - 52.83	4949	3606	8555	33.92	22.60	56.52	46.0%	63.5%
52.83 - 47.83	5379	3800	9179	34.88	22.60	57.48	48.8%	66.5%
47.83 - 42.83	5833	3999	9832	35.83	22.60	58.43	51.6%	69.4%
42.83 - 42.5	5864	4012	9876	35.90	22.60	58.50	51.7%	69.5%
42.5 - 37.5	7193	4081	11274	43.39	22.60	65.99	46.2%	66.5%
37.5 - 32.5	7778	4288	12066	44.54	22.60	67.14	48.2%	68.7%
32.5 - 27.5	8394	4499	12893	45.68	22.60	68.28	50.2%	70.8%
27.5 - 22.5	9042	4716	13757	46.83	22.60	69.43	52.1%	72.8%
22.5 - 17.5	9722	4937	14659	47.98	22.60	70.58	54.0%	74.6%
17.5 - 12.5	10435	5164	15599	49.12	22.60	71.72	55.8%	76.3%
12.5 - 7.5	11182	5396	16578	50.27	22.60	72.87	57.6%	77.9%
7.5 - 2.5	11965	5632	17597	51.41	22.60	74.01	59.3%	79.4%
2.5 - 0	12369	5753	18122	51.99	22.60	74.59	60.2%	80.1%

Note: Section capacity checked in 5 degree increments.

Flange Bypass Modification

Project Name	COE HILL
Site ID	876340
Code	G

Moment, M_u	62.89	(kip-ft) tnx Output
Axial, P_u	2.88	(kips) tnx Output
Shear, V_u	5.25	(kips) tnx Output

Tube Bypasses		
Number of Bypasses	3	(in)
Tube Orientation Diameter	39.25	(in)
Tube Grade	A500 Gr.B (Rect)	
Tube Size	HSS6x6x1/2	(in)
Unbraced Length	108	(in)
y	19.625	Extreme Fiber, (in)
I	5626.905	Moment of Intertia, (in ⁴)
F_y	46	Yield Strength, (ksi)
F_u	58	Tensile Strength, (ksi)
A_g	9.740	Gross Area, (in ²)
A_n	8.615	Net Area, (in ²)

I_{TOTAL}	5626.905	Total Moment of Intertia, (in4)
-------------	----------	---------------------------------

P	26.597	Max Compression Force, (kip)
T	24.677	Max Tension Force, (kip)
V	1.750	Max Shear Force, (kip)
M	189.000	Max Bending Force, (kip-in)

Tension		
Tension Yielding, ϕT_n	403.236	(kip) 4.6.3
Tension Rupture, ϕT_n	374.753	(kip) 4.6.3
Percentage	6.1%	

Compression		
Effective Yield Stress, F_y	46.000	(ksi) 4.5.4.1
λ_c	1.289	4.5.4.2
Critical Stress, F_{cr}	22.939	(ksi) 4.5.4.2
Axial Strength, ϕP_n	201.084	(kip) 4.5.4.2
Percentage	13.2%	

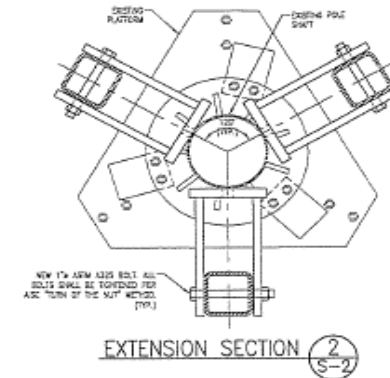
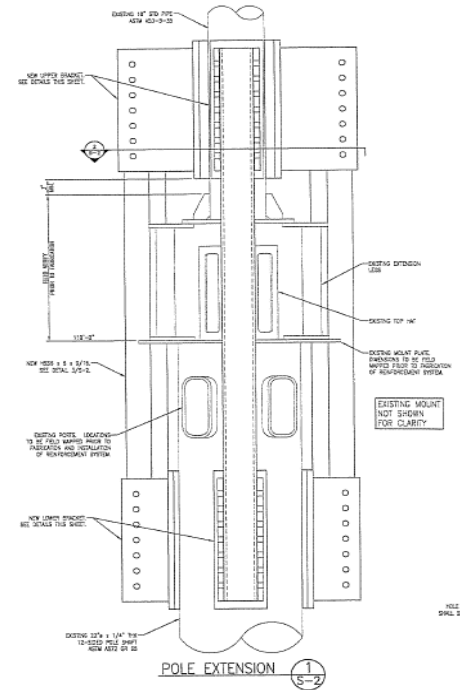
Flexure		
Plastic Section Modulus, Z	19.800	(in ³) 4.7.1
Flexural Strength, ϕM_n	819.720	(kip-in) 4.7.2
Percentage	23.1%	

Combined Bending		
B_1	0.943	4.8.1
Percentage	48.2%	4.8.1.1

Legend
Input
Calculated
Notes

Tube Bolts		
Number of Bolts	7	(in)
Bolt Grade	A325N	
Bolt Diameter	1	(in)
Shear Strength, ϕr_n	63.6	(kip) Table 7-1
Percentage	6.0%	

Ajax Bolts		
Number of Bolts	6	(in)
Type of Bolts	Ajax M20	
Single Shear Capacity	40	(kN)
Tension Capacity	25	(kN)
Ajax Shear Capacity, ϕr_n	33.721	(kip)
Ajax Tension Capacity, ϕr_n	21.076	(kip)
Bolt Spacing	3	(in)
Bolts Above Neutral Axis, n'	3	
Eccentricity, ecc	14.25	(in)
Max Shear In Bolt, r_v	4.433	Max Compression Force, (kip)
Max Tension In Bolt, r_t	14.037	Max Tension Force, (kip)
Shear Percentage	13.1%	
Tension Percentage	66.6%	



Anchor Rod Modification

Project Name	COE HILL
Site ID	876340
Code	G

Legend
Input
Calculated
Notes

Moment, M_u	2732	(kip-ft) tnx Output
Axial, P_u	43	(kips) tnx Output
Shear, V_u	30	(kips) tnx Output

Existing Rods		
Number of Bolts	12	(in)
Bolt Circle	51	(in)
Bolt Grade	A615-75	
Bolt Diameter	2.25	(in)
γ	25.500	Extreme Fiber, (in)
I	15527.970	Moment of Intertia, (in ⁴)
F_y	75	Yeild Strength, (ksi)
F_u	100	Tensile Strength, (ksi)
A_g	3.980	Gross Area, (in ²)
A_n	3.250	Net Area, (in ²)

New Rods		
Number of Bolts	4	(in)
Bolt Circle	59.5	(in)
Bolt Grade	A193 B7	
Bolt Diameter	2.25	(in)
γ	29.750	Extreme Fiber, (in)
I	7045.098	Moment of Intertia, (in ⁴)
F_y	105	Yeild Strength, (ksi)
F_u	125	Tensile Strength, (ksi)
A_g	3.980	Gross Area, (in ²)
A_n	3.250	Net Area, (in ²)

I_{TOTAL}	22573.068	Total Moment of Intertia, (in ⁴)
-------------	-----------	--

Distribute Axial/Shear?	Yes	("No" Unless through BP)
-------------------------	-----	--------------------------

P	150.087	Max Compression Force, (kip)
T	144.712	Max Tension Force, (kip)
V	1.875	Max Shear Force, (kip)

P	174.653	Max Compression Force, (kip)
T	169.278	Max Tension Force, (kip)
V	1.875	Max Shear Force, (kip)

Calculations		
Detail Type	d	
η	0.50	Eta Factor
I_{ar} (Detail d Only)	3.5	Top of Concrete to Bottom of Leveling Nut, (in)
ϕt	0.80	Tension Factor
ϕR_{nt}	260.000	Tensile Strength, (k)
$P + V/\eta$	153.837	Max Force per Bolt
Percentage	59.2%	OK
ϕ_v	0.75	Shear Factor
ϕR_{nv}	134.325	Shear Strength, (k)
ϕ_m	0.90	Flexure Factor
ϕR_{nm}	128.145	Flexure Strength, (k-in)
M_u	4.266	Shear Induced Moment, (k-in)
Interaction Percentage	37.3%	OK

Calculations		
Detail Type	d	
η	0.50	Eta Factor
I_{ar} (Detail d Only)	3.5	Top of Concrete to Bottom of Leveling Nut, (in)
ϕt	0.80	Tension Factor
ϕR_{nt}	325.000	Tensile Strength, (k)
$P + V/\eta$	178.403	Max Force per Bolt
Percentage	54.9%	OK
ϕ_v	0.75	Shear Factor
ϕR_{nv}	167.906	Shear Strength, (k)
ϕ_m	0.90	Flexure Factor
ϕR_{nm}	179.402	Flexure Strength, (k-in)
M_u	4.266	Shear Induced Moment, (k-in)
Interaction Percentage	31.5%	OK

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

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

Site Data

BU#: 876340
 Site Name: COE HILL
 App #: 439477 Rev. 0

Anchor Rod Data

Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	51	in
Anchor Spacing:	6	in

Plate Data

W=Side:	49.5	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	9	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
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

Pole Data

Diam:	43.49	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, Mu:	1851.98425	ft-kips
Factored Axial, Pu:	43	kips
Factored Shear, Vu:	30	kips

Anchor Rod Results

TIA G --> Max Rod $(C_u + V_u/\eta)$: 153.8 Kips
 Axial Design Strength, $\Phi * F_u * A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 59.2% **Pass**

Base Plate Results

Base Plate Stress: 24.2 ksi
 PL Design Bending Strength, $\Phi * F_y$: 45.0 ksi
 Base Plate Stress Ratio: 53.7% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	26.51
Max PL Length:	26.51

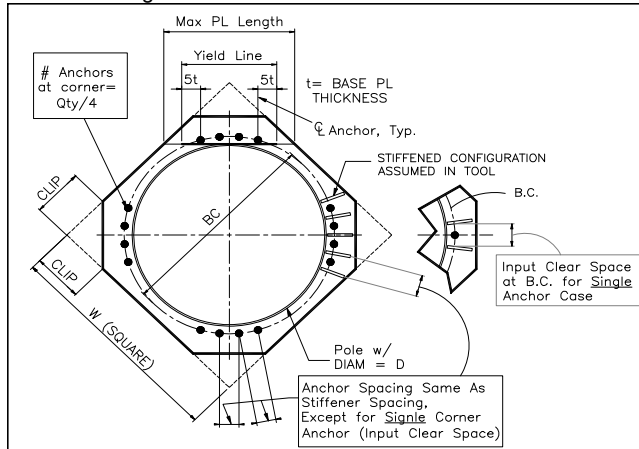
N/A - Unstiffened

Stiffener Results

Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

Pole Punching Shear Check: N/A



** 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 #:	876340
Site Name:	COE HILL
App. Number:	439477 Rev. 0

TIA-222 Revison:	G
Tower Type:	Monopole



Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2733	
Axial Force (kips)	43	
Shear Force (kips)	30	

Material Properties		
Concrete Strength, f_c :	3	ksi
Rebar Strength, F_y :	60	ksi

Pier Design Data		
Depth	21	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
<i>From 0.5' above grade to 21' below grade</i>		
Pier Diameter	7.5	ft
Rebar Quantity	24	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity		
$D_{v=0}$ (ft from TOC)	6.07	-
Soil Safety Factor	2.54	-
Max Moment (kip-ft)	2897.07	-
Rating	52.4%	-
Soil Vertical Capacity		
Skin Friction (kips)	402.03	-
End Bearing (kips)	583.16	-
Weight of Concrete (kips)	170.97	-
Total Capacity (kips)	985.18	-
Axial (kips)	213.97	-
Rating	21.7%	-
Reinforced Concrete Capacity		
Critical Depth (ft from TOC)	6.01	-
Critical Moment (kip-ft)	2897.04	-
Critical Moment Capacity	6368.87	-
Rating	45.5%	-
Soil Interaction Rating		52.4%
Structural Foundation Rating		45.5%

Soil Profile			
Groundwater Depth	n/a	ft	# of Layers
			3

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	120	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	6	2.5	120	150	0	30	0.000	0.000	1.30	1.30			Cohesionless
3	6	21	15	125	150	0	35	0.000	0.000	1.30	1.30	17.6		Cohesionless

Exhibit E



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

T-Mobile Existing Facility

Site ID: CT11309A

CT11309A_Middlefield_RT66
238 Meriden Road
Middlefield, CT 06455

May 17, 2018

EBI Project Number: 6218003837

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.122 %



May 17, 2018

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

Emissions Analysis for Site: **CT11309A – CT11309A_Middlefield_RT66**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **238 Meriden Road, Middlefield, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 5 GHz Microwave bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **238 Meriden Road, Middlefield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas for broadcast and microwave backhaul, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel
- 6) 1 microwave backhaul channel (5 GHz) was considered for the proposed facility. This channel has a transmit power of 1 Watt.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas for broadcast and microwave backhaul, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **RFS AIR21 B4A/B2P** & **RFS AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Fastback IBR1300** for the proposed 5 GHz microwave backhaul. This is based on feedback from the carrier with regard to anticipated antenna selection. The **RFS AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **RFS AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Fastback IBR1300** has a maximum gain of **10 dBd** at its main lobe at 5 GHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas for broadcast and microwave backhaul, 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.
- 10) The antenna mounting height centerline of the proposed antennas (both panel antennas and microwave antenna) is **100 feet** above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 12) All calculations were done with respect to uncontrolled / general population threshold limits.



T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	3.799	Antenna B1 MPE%	3.799	Antenna C1 MPE%	3.799
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	100	Height (AGL):	100	Height (AGL):	100
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	2.849	Antenna B2 MPE%	2.849	Antenna C2 MPE%	2.849

Microwave Backhaul Data

Make / Model:	Gain	Height (AGL):	Frequency Band	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Fastback IBR1300	10 dBd	100	5 GHz	1	1	10	0.004	B

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Sector B)	6.652 %
AT&T	2.460 %
MetroPCS	1.540 %
Sprint	0.940 %
Nextel	0.530 %
Site Total MPE %:	12.122 %

T-Mobile Sector A Total:	6.648 %
T-Mobile Sector B Total:	6.652 %
T-Mobile Sector C Total:	6.648 %
Site Total:	12.122 %



T-Mobile Max Power Values (Sector B)

T-Mobile_Max Power Values (Sector B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	100	18.99	AWS - 2100 MHz	1000	1.899 %
T-Mobile PCS - 1900 MHz LTE	2	2,334.27	100	18.99	PCS - 1900 MHz	1000	1.899 %
T-Mobile AWS - 2100 MHz UMTS	2	1,167.14	100	9.50	AWS - 2100 MHz	1000	0.950 %
T-Mobile PCS - 1900 MHz UMTS	2	1,167.14	100	9.50	PCS - 1900 MHz	1000	0.950 %
T-Mobile PCS - 1900 MHz GSM	2	1,167.14	100	9.50	PCS - 1900 MHz	1000	0.950 %
T-Mobile 5 GHz Microwave	1	10	100	0.04	5 GHz	1000	0.004 %
						Total:	6.652 %



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 T-Mobile 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:

T-Mobile Sector	Power Density Value (%)
Sector A:	6.648 %
Sector B:	6.652 %
Sector C:	6.648 %
T-Mobile Per Sector Maximum (Sector B):	6.652 %
Site Total:	12.122 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **12.122%** 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.

Exhibit F




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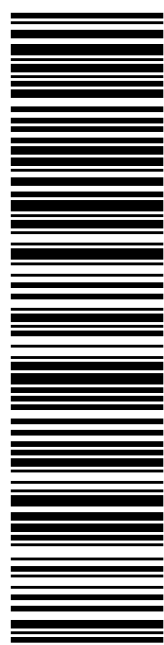
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Instructions

1. Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
2. Place your label so it does not wrap around the edge of the package.
3. Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
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5. Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :
9405 5036 9930 0251 8148 68

<p>Trans. #: 437534292 Print Date: 06/18/2018 Ship Date: 06/19/2018 Expected Delivery Date: 06/22/2018</p>	<p>Priority Mail® Postage: \$6.70 Total: \$6.70</p>
---	--

From: DEBORAH CHASE
T-MOBILE USA- NSS
35 GRIFFIN RD S
BLOOMFIELD CT 06002-1351


Ref#: 309-ZAP-MW

To: CINDY WIDMER
CROWN CASTLE
2000 CORPORATE DR
CANONSBURG PA 15317-8564

* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.



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Click-N-Ship®

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usps.com
US POSTAGE
 Flat Rate Env
 \$6.70

9405 5036 9930 0251 8148 82 0067 0000 0010 6455

06/19/2018

Mailed from 06002 062S00000001310

PRIORITY MAIL 1-DAY™

Expected Delivery Date: 06/20/18
 Ref#: 309-ZAP-MW
0024


DEBORAH CHASE
 T-MOBILE USA- NSS
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

Carrier -- Leave if No Response

R002

SHIP TO: JERRY RUSS
 MIDDLEFIELD-ZONING ENFORCEMENT OFFICER
 393 JACKSON HILL RD
 MIDDLEFIELD CT 06455-1240

USPS TRACKING #



9405 5036 9930 0251 8148 82

Electronic Rate Approved #038555749



Cut on dotted line.

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Print Date: 06/18/2018	Total: \$6.70
Ship Date: 06/19/2018	
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 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351


Ref#: 309-ZAP-MW

To: JERRY RUSS
 MIDDLEFIELD-ZONING ENFORCEMENT OFFICER
 393 JACKSON HILL RD
 MIDDLEFIELD CT 06455-1240

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06/19/2018

Mailed from 06002 062S0000001310

9405 5036 9930 0251 8148 99 0067 0000 0010 6455



PRIORITY MAIL 1-DAY™

Expected Delivery Date: 06/20/18

Ref#: 309-ZAP-MW **0024**

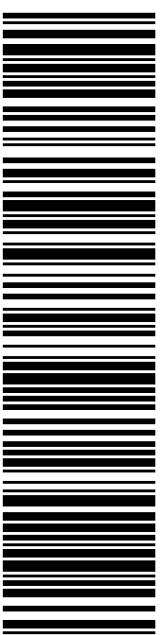
DEBORAH CHASE
T-MOBILE USA- NSS
35 GRIFFIN RD S
BLOOMFIELD CT 06002-1351

Carrier -- Leave if No Response

R002

SHIP TO: EDWARD P BAILEY
FIRST SELECTMAN- TOWN OF MIDDLEFIELD
393 JACKSON HILL RD
MIDDLEFIELD CT 06455-1240

USPS TRACKING #



9405 5036 9930 0251 8148 99

Electronic Rate Approved #038555749



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35 GRIFFIN RD S
BLOOMFIELD CT 06002-1351


Ref#: 309-ZAP-MW

To: EDWARD P BAILEY
FIRST SELECTMAN- TOWN OF MIDDLEFIELD
393 JACKSON HILL RD
MIDDLEFIELD CT 06455-1240

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Flat Rate Env

06/18/2018

Mailed from 06002 062S00000001310

9405 5036 9930 0251 8149 05 0067 0000 0010 6455



Expected Delivery Date: 06/19/18
 Ref#: 309-ZAP-MW
0024

PRIORITY MAIL 1-DAY™

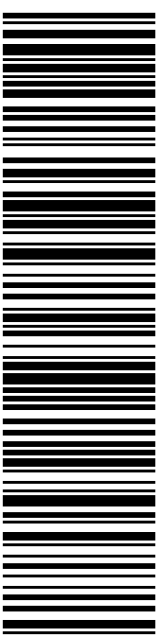
DEBORAH CHASE
 T-MOBILE USA- NSS
 35 GRIFFIN RD S
 BLOOMFIELD CT 06002-1351

Carrier -- Leave if No Response

R002

SHIP TO:
 JAMES KOLMAN
 15 HIGBY RD
 MIDDLEFIELD CT 06455-2065

USPS TRACKING #



9405 5036 9930 0251 8149 05

Electronic Rate Approved #038555749



Cut on dotted line.

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