



Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

August 25, 2020

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

RE: **Notice of Exempt Modification for T-Mobile:
807132 - T-Mobile Site ID: CT11091A
1081 North Street, Greenwich, CT 06831
Latitude: 41° 8' 21.50" / Longitude: -73° 38' 30.54"**

Dear Ms. Bachman:

T-Mobile currently maintains three (3) antennas at the 144-foot mount on the existing 175-foot Monopole Tower, located at 1081 North Street, Greenwich, CT. The tower and property are owned by Crown Castle. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700 MHz antennas. The new antennas will be installed at the 144-ft level of the tower.

Planned Modifications:

Tower:

Remove and Replace:

(3) Andrew SBNHH-1D65A-SR Antenna (**REMOVE**) - (3) RFS-APXVAARR24_43-U-NA20 Antenna 600/700 MHz (**REPLACE**)

(3) RRUS11 B12 (**REMOVE**) – (3) Radio 4449 B71/B12 (**REPLACE**)

Install New:

(1) 1 5/8" Hybrid Fiber Line

Existing to Remain:

(3) RRUS 01 B2

(3) RRUS11 B4

(1) Fiber line

Ground:

Upgrade to existing ground cabinet. (Internally)

The facility was approved by the Connecticut Siting Council in Docket No. 86 on February 17, 1988. The approval was given with conditions which this exempt modification comply with.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with

R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Fred Camillo, First Selectman for the Town of Greenwich, Katie DeLuca, Director of Planning, and Crown Castle is both the tower owner and property owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification 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 Communication 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-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba
Site Acquisition Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(201) 236-9224
AnneMarie.Zsamba@crowncastle.com

Attachments

cc:

Fred Camillo, First Selectman (via email only to fred.camillo@greenwichct.org)
Town of Greenwich
Town Hall – Selectman’s Office
101 Field Point Road
Greenwich, CT 06830
203.622.7700

Kaite DeLuca, AICP, Director of Planning (via email only to katie.deluca@greenwichct.org)
Town of Greenwich
Town Hall – Planning & Zoning
101 Field Point Road

Melanie A. Bachman

Page 3

Greenwich, CT 06830
203.622.7700

Crown Castle, Tower Owner & Property Owner

From: [Zsamba, Anne Marie](#)
To: katie.deluca@greenwichct.org
Subject: Notice of Exempt Modification - 1081 North Street, Greenwich - T-Mobile
Date: Tuesday, August 25, 2020 10:27:00 AM
Attachments: [EM-T-MOBILE-1081 NORTH STREET GREENWICH-807132-CT11091A-notice.pdf](#)

Dear Planning Director DeLuca:

Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, August 25, 2020.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie Zsamba

ANNE MARIE ZSAMBA
Site Acquisition Specialist
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

From: [Zsamba, Anne Marie](#)
To: fred.camillo@greenwichct.org
Subject: Notice of Exempt Modification - 1081 North Street, Greenwich - T-Mobile
Date: Tuesday, August 25, 2020 10:27:00 AM
Attachments: [EM-T-MOBILE-1081 NORTH STREET GREENWICH-807132-CT11091A-notice.pdf](#)

Dear First Selectman Camillo:

Attached please find T-Mobile's exempt modification application that is being submitted to the Connecticut Siting Council today, August 25, 2020.

In light of the present circumstances with Covid-19, The Council has advised that electronic notification of this filing is acceptable. If you could kindly confirm receipt. Thank you.

Best,
Anne Marie Zsamba

ANNE MARIE ZSAMBA
Site Acquisition Specialist
T: (201) 236-9224
M: (518) 350-3639
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
CrownCastle.com

Exhibit A

Original Facility Approval

DOCKET NO. 86 - An application of Metro : Connecticut
Mobile CTS of Fairfield County, Inc., Siting
for a Certificate of Environmental Council
Compatibility and Public Need for
cellular telephone antennas and
associated equipment in the Towns of
Greenwich, and Fairfield, Connecticut. February 17, 1988

DECISION AND ORDER

Pursuant to the forgoing opinion, the Connecticut Siting Council hereby directs that a Certificate of Environmental Compatibility and Public Need, as provided by Section 16-50k of the General Statutes of Connecticut (CGS) be issued to Metro Mobile CTS of Fairfield County, Inc. (Metro Mobile) for the construction, operation, and maintenance of cellular telephone tower sites and associated equipment at the "Greenwich AC/A" site off of North Street in Greenwich, and "Fairfield DE/A" site off of Wood House Road in Fairfield.

The proposed "Greenwich A" Riversville site, "Greenwich AC" Rockwood Lake site, and "Fairfield DE" sites are hereby denied.

The facilities shall be constructed, operated, and maintained as specified in the Council's record in this matter, and subject to the following conditions:

1. The monopole tower at the "Greenwich AC/A" Banksville site shall be no taller than necessary to provide the proposed service, and in no event shall exceed a total height of 213 feet, including antennas and associated equipment.
2. The monopole tower at the "Fairfield DE/A" site shall be no taller than necessary to provide the proposed service, and in no event shall exceed a total height of 173 feet, including antennas.

3. The facilities shall be constructed in accordance with all applicable federal, state, and municipal laws and regulations.
4. Unless necessary to comply with condition number 3, above, no lights shall be installed on these towers.
5. The Certificate Holder shall prepare development and management (D&M) plans for the Greenwich and Fairfield sites in compliance with sections 16-50j-75 through 16-50j-77 of the Regulations of State Agencies. The D&M plans shall provide for evergreen screening around the outside perimeters of the eight-foot chain link fences which will surround the sites.
6. The Certificate Holder or its successor shall notify the Council if and when directional antennas or any equipment other than that listed in this application are added to these facilities.
7. The Certificate Holder or its successor shall permit public or private entities to share space on the Greenwich and Fairfield towers for due consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
8. If these facilities do not provide, or permanently cease to provide, cellular service following completion of construction, this Decision and Order

shall be void, and the towers and all associated equipment in this application shall be dismantled and removed or reapplication for any new use shall be made to the Council before any such new use is made.

9. The Certificate Holder shall comply with any future radio frequency (RF) standards promulgated by State or federal regulatory agencies. Upon the establishment of any new governmental RF Standards, the facilities granted in this Decision and Order shall be brought into compliance with such standards.
10. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the issuance of this Decision and Order, or within three years of the completion of any appeal taken in this Decision and Order.

Pursuant to CGS Section 16-50p, we hereby direct that a copy of this Decision and Order be served on each person listed below. A notice of issuance shall be published in the Greenwich Time, the Advocate, the Norwalk Hour, and Bridgeport Post.

By this Decision and Order the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of State Agencies.

The parties or intervenors to this proceeding are:

Metro Mobile CTS of Fairfield County, Inc. (Applicant)
50 Rockland Street
South Norwalk, CT 06854

ATTN: Peter Kelley, Vice President
Michael Riley, General Manager

Howard L. Slater, Esq. (Its Attorneys)
Jennifer Young Gaudet, Esq.
Byrne, Slater, Sandler,
Schulman & Rouse, P.C.
330 Main Street - PO Box 3216
Hartford, CT 06103

Fleischman and Walsh, P.C.
1725 N Street, N.W.
Washington, D.C. 20036

ATTN: Richard Rubin, Esq.

SNET Cellular, Inc. Intervenor

Peter J. Tyrrell, Esq. (Its Attorney)
Senior Attorney
SNET Cellular, Inc.
227 Church Street
New Haven, CT 06506

Joan Koloski (Intervenor)
11 Turner Lane
Wilton, CT 06897

Town of Wilton Party

Louis H. Reens (Its Representative)
Second Selectman
Town of Wilton
Town Hall
238 Danbury Road
Wilton, CT 06897

Joseph C. Lee, Esq. Alice A. Bruno, Esq. Tyler Cooper & Alcorn 205 Church Street PO Box 1936 New Haven, CT 06509	(Its Attorneys)
David A. Schorsch	Party
Holly K. Dustin, Esq. Albert, Pastore & Ward, P.C. Attorneys At Law 125 Mason Street PO Box 16668 Greenwich, CT 06636	(Its Attorney)
Ms. Rita Shannon	Party
Stephen J. Adams, Esq. Attorney At Law 23 Ash Street Fairfield, CT 06430	(Its Attorney)
Robert E. Sheriden, Jr. Irene T. Sheriden 49 Quail Ridge Road Wilton, CT 06897	Parties
John C. Parker Attorney At Law 16 Cricket Lane PO Box 548 Wilton, CT 06897	(Its Attorney)
Margaret A. Doheny Joseph A. Charles	Parties
Robert P. Scholl Attorney At Law 31 Imperial Avenue Westport, CT 06880	(Its Attorney)
Robert E. Tomasson 355 Riversville Road Greenwich, CT 06831	Party
The Hon. Fred H. Lovegrove, Jr. State Senator 431 Catamount Road Fairfield, CT 06430 (Service Waived)	Party

Ogden Bigelow 25 Hidden Lake Road Wilton, CT 06897	Party
William F. Brennan 41 Hunting Ridge Lane Wilton, CT 06897 (Service Waived)	Intervenor
John Cole 79 Warncke Road Wilton, CT 06897 (Service Waived)	Intervenor
Ms. Kyle Cahill 140 Catalpa Road Wilton, CT 06897 (Service Waived)	Intervenor
John B. Rust 2674 Congress Street Fairfield, CT 06430 (Service Waived)	Intervenor
Patrick Byrne 2525 Hillside Road Fairfield, CT 06430 (Service Waived)	Party
Town of Fairfield	Party
Paul Martin Tymniak Attorney At Law 1512 Post Road PO Box 1051 Fairfield, CT 06430	(Its Attorney)
PEACE, Inc.	Party
Ann M. Caggiano President PEACE, Inc. 33 Honey Hill Trail Wilton, CT 06897	(Its Representative)

Dr. Saud M.A. Shawwaf	Party
Charles K. Campbell, Jr. Linda Chiswick, Esq. Cummings and Lockwood Attorneys At Law Ten Stamford Forum PO Box 120 Stamford, CT 06904	(Its Attorneys)
Easton Construction Company, Inc.	Party
William J. Fitzpatrick, III Fitzpatrick & Fray Attorneys At Law 1238 Post Road PO Box 278 Fairfield, CT 06430	(Its Attorneys)
Town of Greenwich	Party
John Margenot First Selectman Town of Greenwich Town Hall 101 Field Point Road PO Box 1249 Greenwich, CT 06830	(Its Representative)
John Gerli 44 South Stanwich Road Greenwich, CT 06830 (Service Waived)	Party
Michael L. Tarnapol Lynn Tarnapol	(Parties)
Alan R. Spirer Spirer, Nasser & Marcus 253 Post Road West PO Box 5201 Westport, CT 06881	(Its Attorney)
Iona Drescher 65 Audubon Lane Fairfield, CT 06430 (Service Waived)	Intervenor

Robert N. Ettlenger
Rosemarie K. Ettlenger

Parties

Thomas F. Hartch
Hartch and Calhoun
Attorneys At Law
193 Field Point Road
Greenwich, CT 06830

(Its Attorney)

The Estate of Mathilde B. Vasileff

Party

Thor L. Crone
Avery & Crone
Attorneys and Counsellors At Law
25 Third Street
Stamford, CT 06905

(Its Attorney)

Joan Caldwell
Robert Tommasson

Parties

Robert Davidson
Davidson, Driscoll and Naylor
Attorneys At Law
544 Riverside Avenue
Box 191
Westport, CT 06881

(Its Attorney)

Rockwood Neighbors Association

Party

Stephan T. Vehslage
President
Rockwood Neighbors Association
40 South Stanwich Road
Greenwich, CT 06830

Daniel Karrell
2 Skyridge Road
Greenwich, CT 06830
(Service Waived)

0994E

CERTIFICATION

The undersigned members of the Connecticut Siting Council hereby certify that they have heard this case in Docket No. 86 or read the record thereof, and that we voted as follows:

Dated at New Britain, Connecticut the 17th day of February, 1988.

<u>Council Members</u>	<u>Vote Cast</u>
<u>Gloria Dibble Pond</u> Gloria Dibble Pond Chairperson	Yes
<u>Roland G. Miller</u> Commissioner Peter Boucher Designee: Roland Miller	Yes
<u>Commissioner Leslie Carothers</u> Designee: Brian Emerick	Absent
<u>Owen L. Clark</u>	Yes
<u>Fred J. Doocy</u>	Yes
<u>Mortimer A. Gelston</u>	Yes
<u>James G. Horsfall</u>	Yes
<u>William H. Smith</u>	Absent
<u>Colin C. Tait</u>	Absent

Exhibit B

Property Card

ADMINISTRATIVE INFORMATION

OWNERSHIP

Tax ID 187/017

Printed 12/17/2019 Card No. 1 of 1

PARCEL NUMBER
11-1794
Parent Parcel Number
Property Address
NORTH STREET 1081
Neighborhood
2900 BANKSVILLE
Property Class
270 Telecommunications
TAXING DISTRICT INFORMATION
Jurisdiction 57 Greenwich, CT
Area 001
Corporation 057
District 11
Section & Plat 399
Routing Number 5830W0113

CROWN ATLANTIC COMPANY LLC
PMB 353
4017 WASHINGTON ROAD
MCMURRAY, PA 15317
LOT NO 52B & 52C NORTH ST W 113

TRANSFER OF OWNERSHIP

Date		
04/19/1999	CELLCO PARTNERSHIP Bk/Pg: 3256, 203	\$875000
03/30/1998	METRO MOBILE CTS OF FFLD Bk/Pg: 3053, 308	\$816885
09/14/1990	PENCHO GOSPODINOFF Bk/Pg: 2068, 233	\$875000
10/14/1987	GOSPODINOFF NEDA, PENCHO & KALINKA G Bk/Pg: 1767, 253	\$0
04/21/1983	GOSPODINOFF NEDA Bk/Pg: 1306, 65&67	\$0

COMMERCIAL

VALUATION RECORD

Assessment Year	10/01/2010	10/01/2015	10/01/2015	10/01/2016	10/01/2017	10/01/2018	10/01/2019
Reason for Change	2010 Reval	2015 Prelim	2015 Final	2016 List	2017 List	2018 List	2019 List
VALUATION	I 2301600	2071800	2071800	2071800	2071800	2071800	2071800
Market	B 213200	610500	610500	556300	556300	556300	556300
	T 2514800	2682300	2682300	2628100	2628100	2628100	2628100
VALUATION	L 1611120	1450260	1450260	1450260	1450260	1450260	1450260
70% Assessed	B 149240	427350	427350	389410	389410	389410	389410
	T 1760360	1877610	1877610	1839670	1839670	1839670	1839670

LAND DATA AND CALCULATIONS

Rating	Measured	Table	Prod. Factor					Influence	
Soil ID	Acreage		-or-					Factor	
-or-	-or-		Depth Factor	Base	Adjusted	Extended			
Actual	Effective	Effective	-or-	Rate	Rate	Value		Value	
Frontage	Frontage	Depth	Square Feet						
Land Type									
Zoning:									
RA-4 Single Family 4	1 Primary Commercial		246549.60	14.01	14.01	3453000 B	-40%	2071800	
Legal Acres:									
5.6600									

BP14: 14-1010: \$29,000 demo house 2016 GL
 BP18: 18-1439; Add 6 Antennas \$26,000
 GEN: Boarded up dwlg depr @ 95% and telecommunications tower w/
 ancillary improvements. Real estate owner owns tower.
 LAND: V2068 P233 9/14/90 30k+- sf sold to 11-1240 reducing acreage
 to 5.66+-acres.

Permit Number FilingDate Est. Cost Field Visit
 Type Est. SqFt

Supplemental Cards
 TRUE TAX VALUE 2071800

Supplemental Cards
 TOTAL LAND VALUE 2071800

IMPROVEMENT DATA

PHYSICAL CHARACTERISTICS

ROOFING

Built-up

WALLS

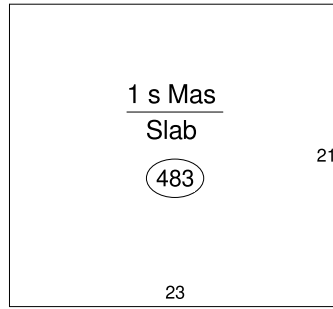
Frame	B	1	2	U
Brick		Yes		
Metal				
Guard				

FRAMING

F Prf	B	1	2	U
	0	483	0	0

HEATING AND AIR CONDITIONING

	B	1	2	U
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- 01
- 02
- 03
- 04

Item Description	Units	Cost	Total	Pct
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M & S Cost Database Date: 01/2015

Base Cost	483	204.17	98614	
Exterior Walls	483	46.14	22286	
Heating & Cooling	483	18.89	9124	
Basic Structure Cost	483	269.20	130024	
Physical	0	0.00	7801	6.00
Depreciated Cost	483	253.05	122223	
Rounded Total	0	0.00	122200	
Total Exterior Features Value				
Depreciated Ext Features				
Total Before Adjustments			122200	
Neighborhood Adjustment			61100	50.00
TOTAL VALUE			183300	

(LCM: 150.00)

SPECIAL FEATURES

SUMMARY OF IMPROVEMENTS

Description	Value	ID	Use	Stry Hgt	Const Type	Grade	Year Const	Eff Year	Cond	Base Rate	Feat-ures	Adj Rate	Size or Area	Computed Value	Phys Depr	Obsol Depr	Market Adj	% Comp	Value
		C	UTLSTOR	0.00		S2	1990	2005	VG	0.00	N	0.00	483	0	0	0	150	100	183300
01	COMCNPYA	0.00	1	Avg	1990	2000	GD	27.60	N	41.40	96	3970	0	0	100	100		4000	
02	PAVING	0.00	6	Avg	1990	2000	GD	6.30	N	9.45	96	910	0	0	100	100		900	
03	FENCECL	10.00	51E	Avg	1990	2000	GD	25.75	N	38.63	186	7180	0	0	100	100		7200	
04	TOWERMON	0.00	5PF	Good	2001	2001	GD	916.50	N	2062	175	360870	0	0	100	100		360900	

Data Collector/Date

Appraiser/Date

Neighborhood

Supplemental Cards

JLT 06/14/2000

TOG 10/01/2015

Neigh 2900 AV

TOTAL IMPROVEMENT VALUE

556300

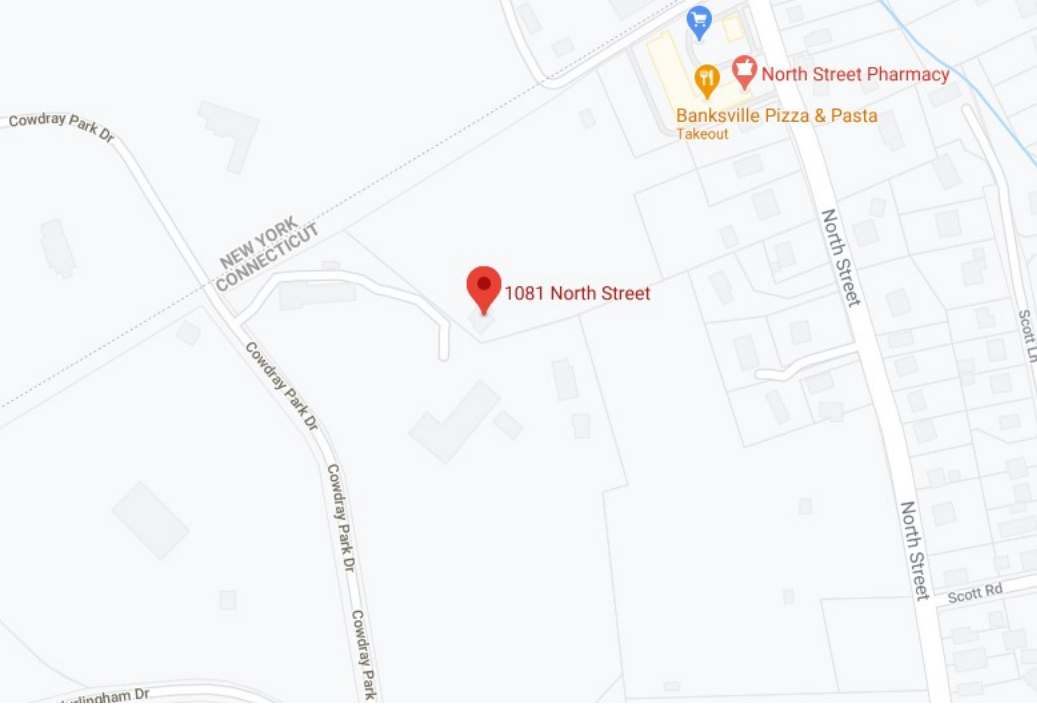


Exhibit C

Construction Drawings



T-MOBILE SITE NAME:
GREENWICH - NORTH_2

T-MOBILE SITE NUMBER:
 CT11091A

CROWN BU: 807132 / APP#: 479805
67D93B CONFIGURATION

1081 NORTH ST
 GREENWICH, CT 06831
 EXISTING 175'-0" MONOPOLE



CT11091A
 BU #: 807132
 GREENWICH - NORTH_2
 1081 NORTH ST
 GREENWICH, CT 06831
 EXISTING 175'-0" MONOPOLE

PROJECT NO: 137108.001.01
 CHECKED BY: RMC

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	7/29/19	MLC	CONSTRUCTION

B&T ENGINEERING, INC.
 PEC.0001564
 Expires 2/10/20

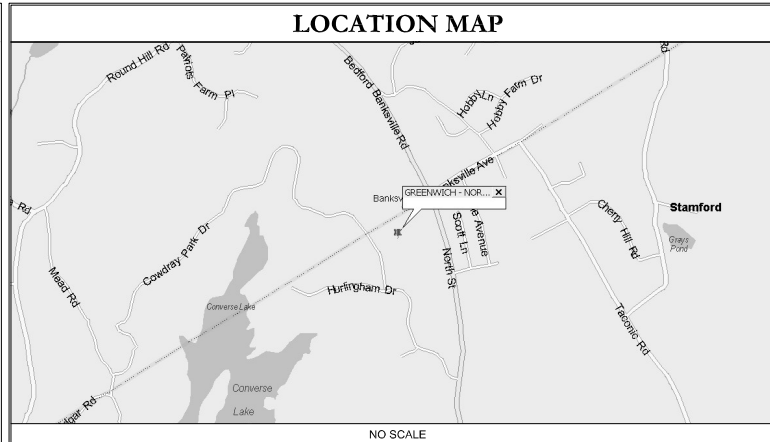


IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: **T-1** REVISION: **0**

PROJECT SUMMARY

SITE TYPE:	EXISTING EQUIPMENT UPGRADE
SITE ADDRESS:	1081 NORTH ST GREENWICH, CT 06831
JURISDICTION:	FAIRFIELD COUNTY
NAD83 LATITUDE:	41.139306° N
LONGITUDE:	73.641879° W
TOWER OWNER:	CROWN CASTLE 3200 HORIZON DRIVE, SUITE 150 KING OF PRUSSIA, PA 19406 JASON SMITH (610) 635-3225
CUSTOMER/APPLICANT:	T-MOBILE 4 SYLVAN WAY PARSIPPANY, NJ 07054 (973) 397-4800
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION



DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	0
A-1	OVERALL SITE PLAN	0
A-2	ANTENNA/CABLE SCHEDULE AND AZIMUTH PLANS	0
A-3	TOWER ELEVATION	0
A-4	ANTENNA AND RRU DETAILS	0
E-1	PANEL SCHEDULE AND ONE-LINE DIAGRAM	0

CONTACT INFORMATION

A&E FIRM: B+T GROUP 1717 S. BOULDER, STE. 300 TULSA, OK 74119 CONTACT: MIKE OAKES PHONE: (918) 587-4630	ELECTRIC PROVIDER: UNITED ILLUMINATING CO. (800) 722-5584 TELCO PROVIDER: VERIZON (800) 922-0204
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DRIVING DIRECTIONS

DEPART BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD, ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20 [BRADLEY FIELD CONNECTOR], TAKE RAMP (RIGHT) ONTO I-91 [RICHARD P HORAN MEMORIAL HWY]. AT EXIT 17, TURN RIGHT ONTO RAMP. TAKE RAMP (LEFT) ONTO CT-15 [WILBUR CROSS PKWY]. AT EXIT 31, KEEP RIGHT ONTO RAMP. TURN LEFT ONTO NORTH ST. TURN LEFT ONTO HURLINGHAM DR. TURN RIGHT ONTO COWDRY PARK DR. TURN RIGHT ONTO ACCESS ROAD AND ARRIVE AT GREENWICH - NORTH_2.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING/DWELLING	2018 BUILDING CODE OF CONNECTICUT
STRUCTURAL	2018 BUILDING CODE OF CONNECTICUT
MECHANICAL	2018 MECHANICAL CODE OF CONNECTICUT
ELECTRICAL	NEC 2017

- PROJECT DESCRIPTION**
- THE PROPOSED PROJECT INCLUDES:
- REMOVE (3) EXISTING ANTENNAS AT 145'-0".
 - REMOVE (3) EXISTING RRUS AT 145'-0".
 - REMOVE (1) XMU AND (1) DUS41 IN EXISTING CABINET.
 - INSTALL (3) NEW ANTENNAS AT 145'-0".
 - INSTALL (3) NEW RRUS AT 145'-0".
 - INSTALL (1) NEW 6x12 HCS FIBER.
 - INSTALL (2) NEW BB6630S IN EXISTING CABINET.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
T-MOBILE PROP:		
T-MOBILE R.F. MGR.:		
T-MOBILE NetOps:		
T-MOBILE CONST. MGR.:		
INTERCONNECT:		
T-MOBILE SITE DEV. MGR.:		
PROPERTY OWNER:		
PLANNING:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

CALL CONNECTICUT ONE CALL
 (800) 922-4455
 CALL 3 WORKING DAYS BEFORE YOU DIG!



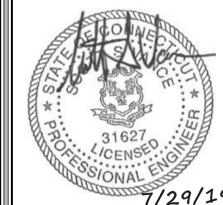
CT11091A
 BU #: 807132
 GREENWICH - NORTH_2
 1081 NORTH ST
 GREENWICH, CT 06831
 EXISTING 175'-0" MONOPOLE

PROJECT NO: 137108.001.01
 CHECKED BY: RMC

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	7/29/19	MLC	CONSTRUCTION

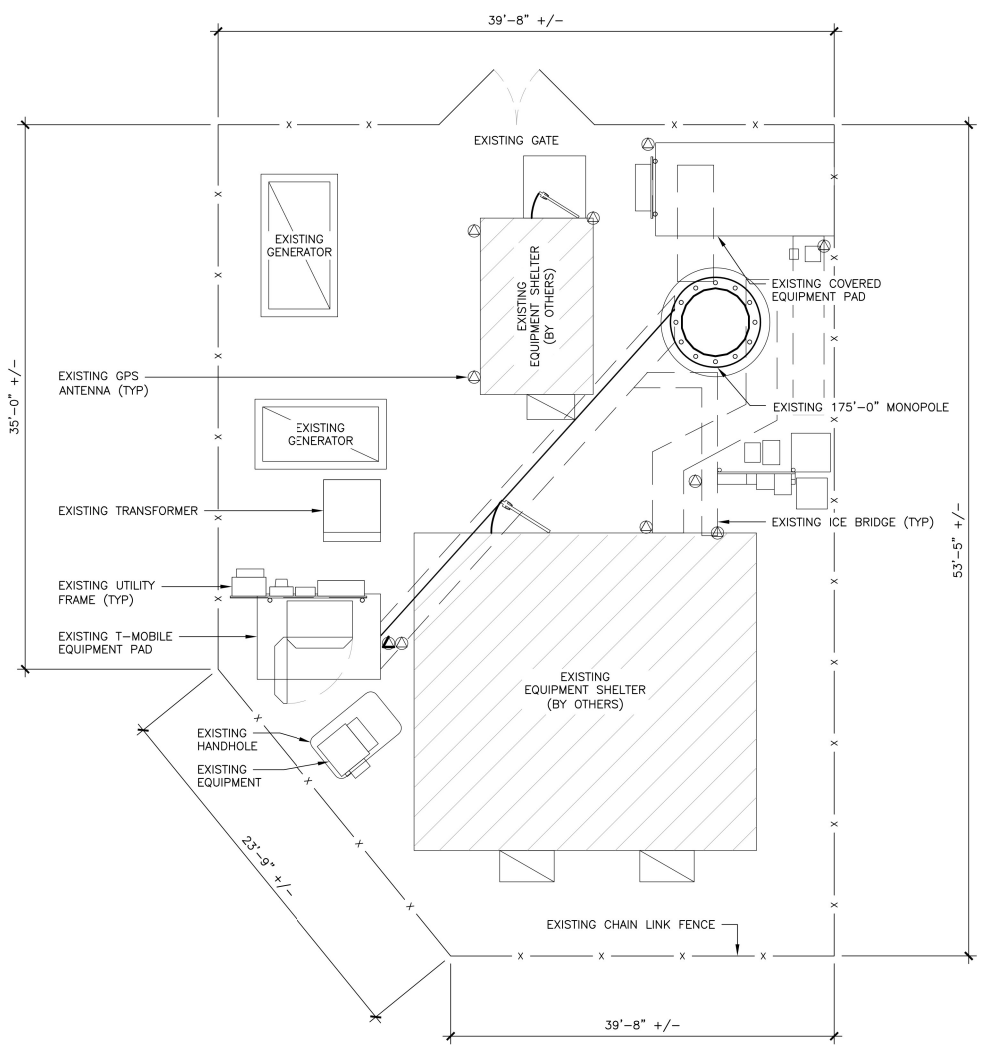
B&T ENGINEERING, INC.
 PEC.0001564
 Expires 2/10/20



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: A-1
 REVISION: 0

- GENERAL NOTES:**
- SUBJECT PROPERTY IS SITUATED AT 1081 NORTH ST, GREENWICH, CT 06831.
 - APPLICANT: T-MOBILE A DELAWARE LIMITED LIABILITY COMPANY
 4 SYLVAN WAY
 PARSIPPANY, NEW JERSEY 07054
 (973) 397-4800
 TOWER OWNER: CROWN CASTLE INTERNATIONAL
 - THE APPLICANT IS TO UPDATE THEIR NETWORK BY INSTALLING THREE (3) NEW PANEL ANTENNAS, THREE (3) RRUS, AND ONE (1) ADDITIONAL CABLE MOUNTED ON AN EXISTING MONOPOLE.
 - THIS FACILITY SHALL BE VISITED ON THE AVERAGE OF ONCE A MONTH FOR MAINTENANCE AND SHALL BE MONITORED FROM A REMOTE FACILITY.
 - THE EXISTING SITE IS LOCATED AT LATITUDE OF 41.139306° N± AND LONGITUDE OF 73.641879° W±. THE HORIZONTAL DATUM ARE IN TERMS OF NORTH AMERICAN DATUM OF 1983 (NAD 83).
 - THIS SET OF PLANS HAS BEEN PREPARED FOR THE PURPOSES OF MUNICIPAL AND AGENCY REVIEW AND APPROVAL. THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL CONDITIONS OF APPROVAL HAVE BEEN SATISFIED AND EACH OF THE DRAWINGS HAVE BEEN REVISED TO INDICATED "ISSUED FOR CONSTRUCTION"
 - ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION FOR THE SITE IMPROVEMENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH:
 - CURRENT PREVAILING MUNICIPAL AND/OR COUNTY SPECIFICATIONS, STANDARDS, AND REQUIREMENTS.
 - CURRENT PREVAILING UTILITY COMPANY AUTHORITY SPECIFICATIONS, STANDARDS AND REQUIREMENTS.
 - THE CONTRACTOR SHALL NOTIFY B+T GROUP, P.A. IMMEDIATELY IF ANY FIELD-CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON, AND/OR IF SUCH CONDITIONS WOULD OR COULD RENDER THE DESIGNS SHOWN HEREON INAPPROPRIATE AND/OR INEFFECTIVE.
 - THE CONTRACTOR IS RESPONSIBLE TO PROTECT, REPAIR AND/OR REPLACE ANY DAMAGED STRUCTURES, UTILITIES OR LANDSCAPED AREA WHICH MAY BE DISTURBED DURING THE CONSTRUCTION OF THIS FACILITY.
 - THE CONSTRUCTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL CONSTRUCTION MEANS AND METHODS. THE CONSTRUCTION CONTRACTOR IS ALSO RESPONSIBLE FOR ALL JOB SITE SAFETY.
 - SITE INFORMATION SHOWN TAKEN FROM CROWN CASTLE SITE PLANS AND FROM CROWN CASTLE INSPECTION PHOTOS.
 - NO GUARANTEE IS MADE NOR SHOULD BE ASSUMED AS TO THE COMPLETENESS OR ACCURACY OF THE HORIZONTAL OR VERTICAL LOCATIONS. ALL PARTIES UTILIZING THIS INFORMATION SHALL FIELD VERIFY THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN PRIOR TO CONSTRUCTION ACTIVITIES.
 - ALL IMPROVEMENTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE TOWNSHIP ENGINEER WHO WILL BE GIVEN PROPER NOTIFICATION PRIOR TO THE START OF ANY CONSTRUCTION.



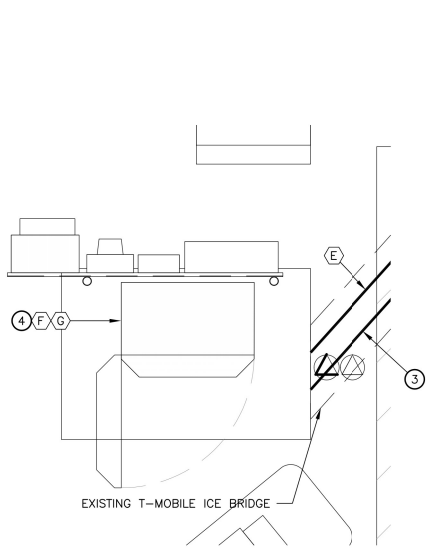
1 OVERALL SITE PLAN
 SCALE: 0' 4' 8' 16' 32'



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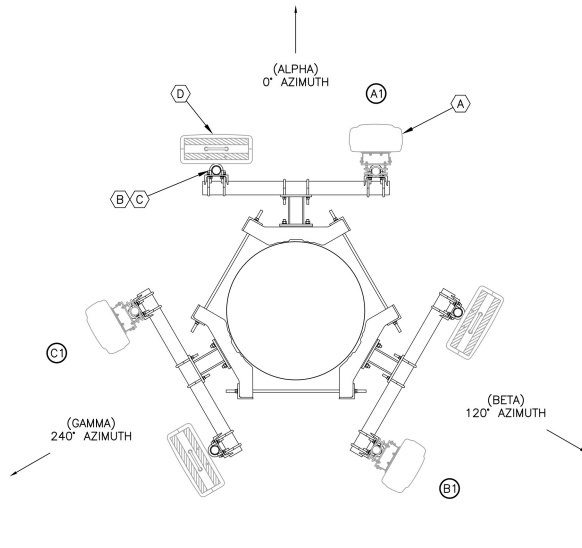
LEGEND	
EXISTING/DEMOLITION NOTES	INSTALLATION NOTES
(A) EXISTING ANDREW SBNHH-1D65A-SR ANTENNA TO BE REMOVED (TOTAL OF 3)	(1) INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(B) EXISTING RRUS01 B2 RADIOS TO REMAIN (TOTAL OF 3)	(2) INSTALL RADO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(C) EXISTING RRUS11 B4 RADIOS TO REMAIN (TOTAL OF 3)	(3) INSTALL (1) 6x12 HCS FIBER. RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
(D) EXISTING RRUS11 B12 RADIOS TO BE REMOVED (TOTAL OF 3)	(4) INSTALL (2) BB6630 IN EXISTING RBS 6131 CABINET.
(E) EXISTING ERICSSON 9X18 HCS CABLE TO REMAIN (TOTAL OF 1)	
(F) EXISTING XMU MULTIPLEXER TO BE REMOVED (TOTAL OF 1)	
(G) EXISTING DUS41 TO BE REMOVED (TOTAL OF 1)	

ANTENNA AND CABLE SCHEDULE										
SECTOR	POSITION	EXISTING ANTENNAS	PROPOSED ANTENNA CONFIGURATION	E-TILT	M-TILT	ANTENNA CENTERLINE	TMA/RRU	CABLES	JUMPER TYPE	CABLE LENGTH
0° - ALPHA	A1	RFS APXVAARR24_43-U-NA20	LTE UMTS GSM	B71 B12 B2 B4	2°/2° 2°/2° 2°	0°	145'-0"	0/3 (1) 9x18 HCS FIBER (1) 6x12 HCS FIBER	(8) COAX (5) FIBER	194'-0"
120° - BETA	B1	RFS APXVAARR24_43-U-NA20	LTE UMTS GSM	B71 B12 B2 B4	2°/2° 2°/2° 2°	0°	145'-0"	0/3 (1) 9x18 HCS FIBER (SHARED) (1) 6x12 HCS FIBER (SHARED)	(8) COAX (5) FIBER	194'-0"
240° - GAMMA	C1	RFS APXVAARR24_43-U-NA20	LTE UMTS GSM	B71 B12 B2 B4	2°/2° 2°/2° 2°	0°	145'-0"	0/3 (1) 9x18 HCS FIBER (SHARED) (1) 6x12 HCS FIBER (SHARED)	(8) COAX (5) FIBER	194'-0"



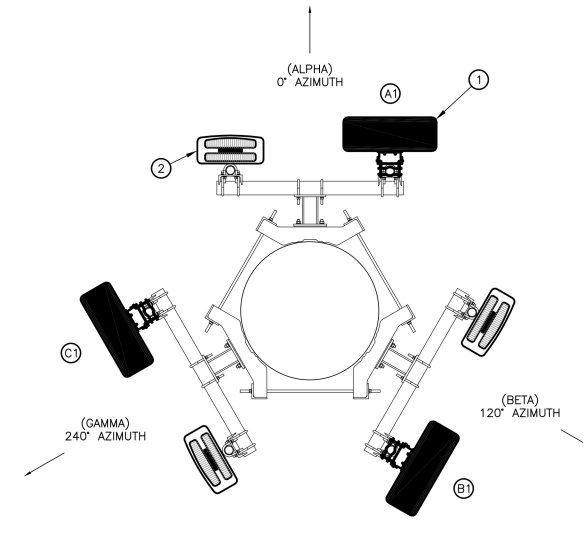
1 ENLARGED AREA PLAN

SCALE: 0' 1' 2' 4' 10'



2 EXISTING ANTENNA ORIENTATION

SCALE: 0' 1' 2' 4' 8'



3 PROPOSED ANTENNA ORIENTATION

SCALE: 0' 1' 2' 4' 8'



CT11091A
BU #: 807132
GREENWICH - NORTH_2
1081 NORTH ST
GREENWICH, CT 06831
EXISTING 175'-0" MONOPOLE

PROJECT NO: 137108.001.01
CHECKED BY: RMC

ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
0	7/29/19	MLC	CONSTRUCTION

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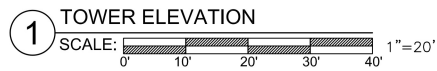
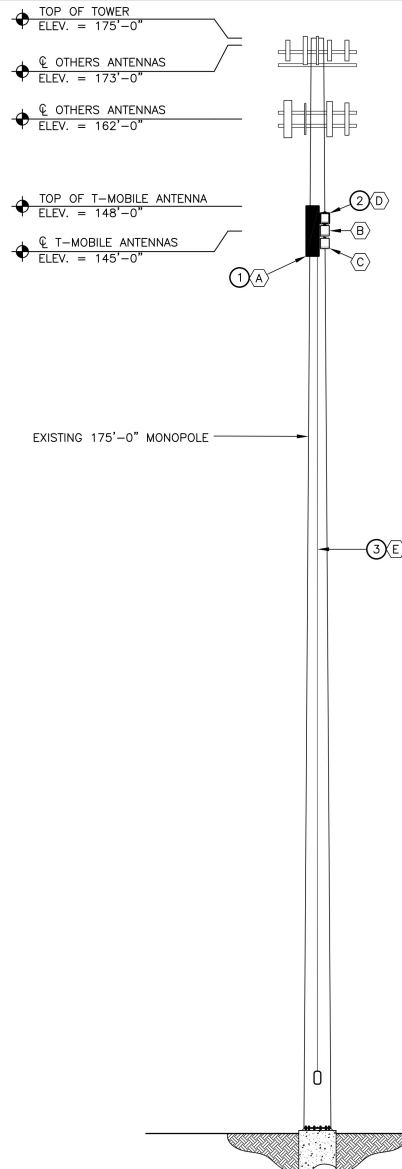
SHEET NUMBER: A-2
REVISION: 0

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LEGEND	
EXISTING/DEMOLITION NOTES	INSTALLATION NOTES
(A) EXISTING ANDREW SBNHH-1D65A-SR ANTENNA TO BE REMOVED (TOTAL OF 3)	① INSTALL RFS APXVAARR24_43-U-NA20 (8 FT) ANTENNAS ON EXISTING MOUNT. PROVIDE NEW 2 7/8" OD SCH.40 PIPE MAST (LENGTH TO BE V.I.F) (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(B) EXISTING RRUS01 B2 RADIOS TO REMAIN (TOTAL OF 3)	② INSTALL RADO 4449 B12/B71 (TYP. OF 1 PER SECTOR, TOTAL OF 3)
(C) EXISTING RRUS11 B4 RADIOS TO REMAIN (TOTAL OF 3)	③ INSTALL (1) 6x12 HCS FIBER RUN FROM EQUIPMENT TO ANTENNAS FOLLOWING EXISTING ROUTING
(D) EXISTING RRUS11 B12 RADIOS TO BE REMOVED (TOTAL OF 3)	
(E) EXISTING ERICSSON 9X18 HCS CABLE TO REMAIN (TOTAL OF 1)	

STRUCTURAL ANALYSIS NOTE:
REFER TO STRUCTURAL ANALYSIS OR STRUCTURAL LETTER FOR APPROVAL OF ADDITIONAL NEW APPURTENANCES.

LEGEND:
 **NEW**
 **EXISTING**
 **FUTURE**



CT11091A
 BU #: 807132
 GREENWICH - NORTH_2
 1081 NORTH ST
 GREENWICH, CT 06831
 EXISTING 175'-0" MONOPOLE

PROJECT NO: 137108.001.01
 CHECKED BY: RMC

ISSUED FOR:

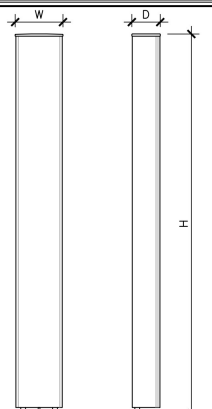
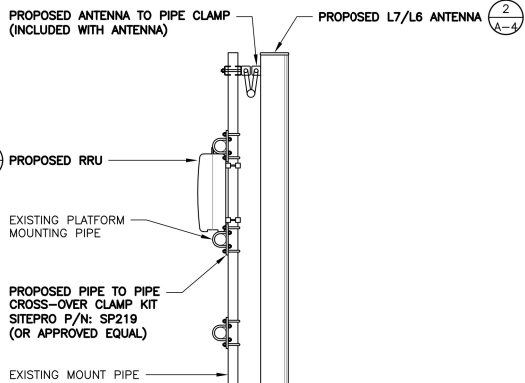
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0	7/29/19	MLC	CONSTRUCTION

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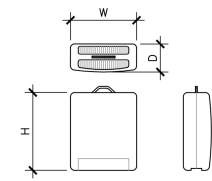


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SHEET NUMBER: **A-3** REVISION: **0**



ANTENNA SPECS	
MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24.0"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128.0 LBS



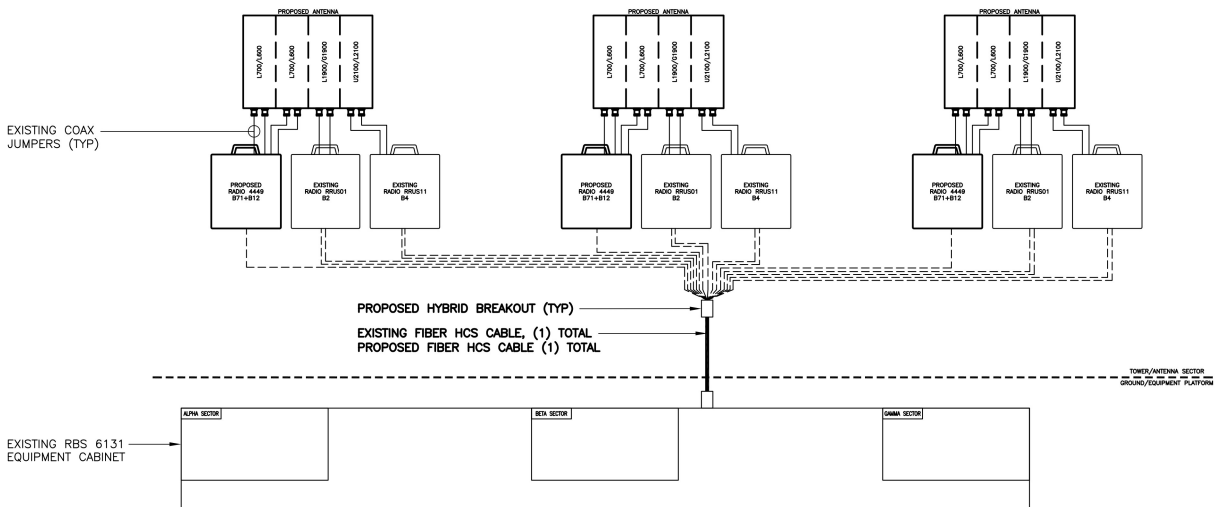
RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	4449
WIDTH	13.2"
DEPTH	10.4"
HEIGHT	14.9"
WEIGHT	74 LBS

1 PROPOSED L7/L6 ANTENNA & RRU MOUNTING DETAIL
SCALE: 3/8" = 1'-0"

2 L7/L6 ANTENNA DETAIL
SCALE: 3/8" = 1'-0"

3 REMOTE RADIO UNIT (RRU)
SCALE: 3/8" = 1'-0"

- NOTES:
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS.
 2. SEE RF SCHEDULE FOR CABLE AND JUMPER LENGTHS.
 3. REFER TO ANTENNA ORIENTATION ON SHEET A-2 FOR EXACT ANTENNA POSITIONING.



4 ANTENNA & CABLING SCHEMATIC
SCALE: N.T.S.



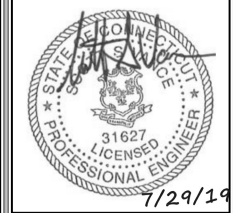
CT11091A
BU #: 807132

GREENWICH - NORTH_2
1081 NORTH ST
GREENWICH, CT 06831
EXISTING 175'-0" MONOPOLE

PROJECT NO: 137108.001.01
CHECKED BY: RMC

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REVISION: 0



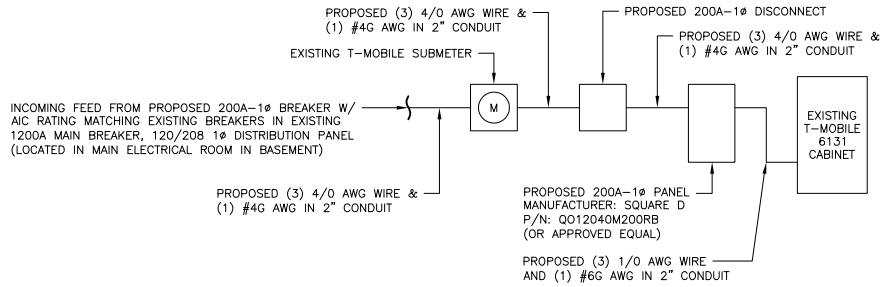
CT11091A
 BU #: 807132
 GREENWICH - NORTH_2
 1081 NORTH ST
 GREENWICH, CT 06831
 EXISTING 175'-0" MONOPOLE

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS		AMPS	POLES	LOAD
			L1	L2			
6131	2	100A	1	2	15A	1	GFCI
			3	4	30A	1	VERIZON CAB
			5	6	20A	1	FIBER
			7	8	20A	1	LED LIGHT

RATED VOLTAGE: 120/240 1 PHASE, 3 WIRE BRANCH POLES: 16 24 30 42 APPROVED MFR'S
 RATED AMPS: 100 200 400 CABINET: SURFACE FLUSH NEMA 1 3R 4X
 MAIN LUGS ONLY MAIN 200 AMPS BREAKER FUSED SWITCH HINGED DOOR KEYPED DOOR LATCH
 FUSED CIRCUIT BREAKER BRANCH DEVICES TO BE GFCI BREAKERS FULL NEUTRAL BUS GROUND BAR
 ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL

EXISTING 100A BREAKER PANEL TO BE REPLACED W/ NEW 200A BREAKER PANEL, SQUARE D P/N: Q012040M200RB (OR APPROVED EQUAL)
 REPLACE EXISTING BREAKERS W/ NEW BREAKERS OF SAME AMPERAGE INSIDE NEW PANEL
 REPLACE EXISTING WIRES FOR EXISTING 6131 CABINET WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG. MINIMUM CONDUIT SIZE TO BE 2"
 UPGRADE FEEDER WIRES TO MEET AMPACITY.
 FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

1 FINAL T-MOBILE PANEL DETAIL
 SCALE: N.T.S.



2 ONE-LINE DIAGRAM
 SCALE: N.T.S.

PROJECT NO: 137108.001.01
 CHECKED BY: RMC

ISSUED FOR:			
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SHEET NUMBER: E-1
 REVISION: 0

Exhibit D

Structural Analysis Report

Date: **June 27, 2019**

Denice Nicholson
Crown Castle
3 Corporate Dr
Clifton Park, NY 12065

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject: Structural Analysis Report

Carrier Designation: T-Mobile Co-Locate
Carrier Site Number: CT11091A
Carrier Site Name: Greenwich - North_2

Crown Castle Designation: Crown Castle BU Number: 807132
Crown Castle Site Name: BRG 133 943050
Crown Castle JDE Job Number: 559200
Crown Castle Work Order Number: 1747223
Crown Castle Order Number: 479805 Rev. 0

Engineering Firm Designation: Paul J. Ford and Company Project Number: 37519-2639.001.7805

Site Data: 1081 North Street, Greenwich, Fairfield County, CT
Latitude 41° 8' 22.91", Longitude -73° 38' 29.58"
175 Foot - Monopole Tower

Dear Denice Nicholson,

Paul J. Ford and Company is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above-mentioned tower.

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

LC7: Proposed Equipment Configuration

Sufficient Capacity 66.2%

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

Grant J. Austin
Structural Designer
gaustin@pauljford.com

C.J.P.

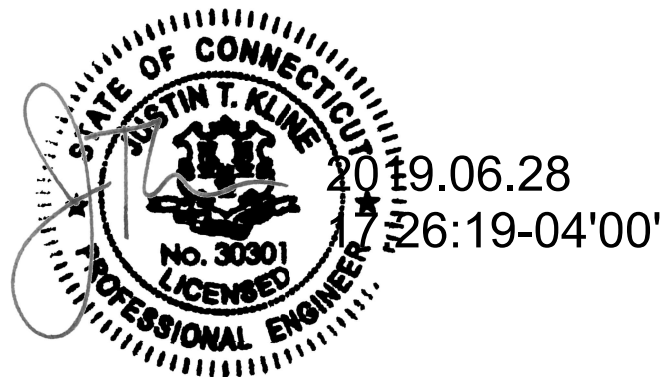


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1) INTRODUCTION

This tower is a 175 ft Monopole tower designed by SSI Services in October of 2000.

The tower has been modified per reinforcement drawings prepared by Aero Solutions, in July of 2012. Reinforcement consist of shaft reinforcement and post-installed anchors.

The tower has been modified per reinforcement drawings prepared by Paul J. Ford & Company, in April of 2014. Reinforcement consist of shaft reinforcement.

2) ANALYSIS CRITERIA

TIA-222 Revision: TIA-222-H
Risk Category: II
Wind Speed: 120 mph
Exposure Category: B
Topographic Factor: 1
Ice Thickness: 1.5 in
Wind Speed with Ice: 50 mph
Service Wind Speed: 60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
144.0	144.0	3	ericsson	RADIO 4449 B12/B71	2	1-5/8
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		1	tower mounts	Pipe Mount [PM 601-3]		
	143.0	3	ericsson	RRUS 01 W/SOLAR SHIELD		
	140.0	3	ericsson	RRUS 11 B4		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
173.0	175.0	3	alcatel lucent	B66A RRH4X45	6 1	1-1/4 1-5/8
		3	alcatel lucent	RRH2X60-700		
		2	antel	ADA-85408580CF w/ Mount Pipe		
		2	antel	BXA-80080/4CF w/ Mount Pipe		
		6	commscope	JAHH-65B-R3B w/ Mount Pipe		
	1	rfs celwave	DB-C1-12C-24AB-0Z			
	173.0	1	tower mounts	Miscellaneous [NA 507-2]		
1		tower mounts	Platform Mount [LP 601-1]			
162.0	162.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	1 2 4 4 1	3/8 5/8 1-1/4 1-5/8 2" Conduit
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS-32 B30		
		2	kaelus	DBC0061F1V51-2		
		1	kathrein	800 10121 w/ Mount Pipe		
		1	powerwave technologies	7770.00 w/ Mount Pipe		
		4	powerwave technologies	LGP2140X		
		3	quintel technology	QS66512-2 w/ Mount Pipe		
		1	raycap	DC6-48-60-18-8C		
		1	raycap	DC6-48-60-18-8F		
		4	tower mounts	6' x 2" Mount Pipe		
		1	tower mounts	Platform Mount [LP 303-1]		
		130.0	130.0	1		
1	tower mounts			Sector Mount [SM 301-1]		
120.0	120.0	1	telewave	ANT450Y5-WR	--	--
		1	tower mounts	Sector Mount [SM 301-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 14215O1600, 04/09/2014	4837566	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	SSI/PJF, 37600-0057, 10/26/2000	1057735	CCISITES
4-TOWER MANUFACTURER DRAWINGS	SSI/PJF, 37600-0057, 10/26/2000	1057736	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Aero Solutions, 07/13/2012	3279725	CCISITES
4-POST-MODIFICATION INSPECTION	B&T, 83626.003, 07/26/2012	3279736	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37513-2761 BP, 04/16/2014	4856181	CCISITES
4-POST-MODIFICATION INSPECTION	SGS, 145056, 11/18/2014	5456964	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) The existing base plate grout was not considered in this analysis.
- 5) Monopole was modified in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
175 - 170	Pole	TP23.025x22.125x0.2188	Pole	4.7%	Pass
170 - 165	Pole	TP23.925x23.025x0.2188	Pole	9.7%	Pass
165 - 160	Pole	TP24.825x23.925x0.2188	Pole	15.9%	Pass
160 - 155	Pole	TP25.725x24.825x0.2188	Pole	23.2%	Pass
155 - 150	Pole	TP27.435x25.725x0.2188	Pole	30.3%	Pass
150 - 145	Pole	TP27.087x26.188x0.3125	Pole	23.3%	Pass
145 - 140	Pole	TP27.987x27.087x0.3125	Pole	28.0%	Pass
140 - 135	Pole	TP28.887x27.987x0.3125	Pole	32.6%	Pass
135 - 130	Pole	TP29.787x28.887x0.3125	Pole	36.9%	Pass
130 - 125	Pole	TP30.687x29.787x0.3125	Pole	41.3%	Pass
125 - 120	Pole	TP31.587x30.687x0.3125	Pole	45.4%	Pass
120 - 115	Pole	TP32.487x31.587x0.3125	Pole	49.6%	Pass
115 - 110	Pole	TP33.387x32.487x0.3125	Pole	53.6%	Pass
110 - 105	Pole	TP34.287x33.387x0.3125	Pole	57.4%	Pass
105 - 101	Pole	TP35.997x34.287x0.3125	Pole	60.3%	Pass
101 - 94.5	Pole	TP35.552x34.382x0.375	Pole	51.9%	Pass
94.5 - 89.5	Pole	TP36.452x35.552x0.375	Pole	54.4%	Pass
89.5 - 84.5	Pole	TP37.352x36.452x0.375	Pole	56.9%	Pass
84.5 - 83.17	Pole	TP37.591x37.352x0.375	Pole	57.5%	Pass
83.17 - 82.92	Pole + Reinf.	TP37.636x37.591x0.5375	Reinf. 9 Tension Rupture	58.3%	Pass
82.92 - 77.92	Pole + Reinf.	TP38.536x37.636x0.5375	Reinf. 9 Tension Rupture	60.5%	Pass
77.92 - 72.92	Pole + Reinf.	TP39.436x38.536x0.5375	Reinf. 9 Tension Rupture	62.6%	Pass
72.92 - 67.92	Pole + Reinf.	TP40.336x39.436x0.525	Reinf. 9 Tension Rupture	64.7%	Pass
67.92 - 65.5	Pole + Reinf.	TP40.772x40.336x0.525	Reinf. 9 Tension Rupture	65.6%	Pass
65.5 - 65.25	Pole + Reinf.	TP40.817x40.772x0.525	Reinf. 8 Tension Rupture	65.7%	Pass
65.25 - 64	Pole + Reinf.	TP41.042x40.817x0.525	Reinf. 8 Tension Rupture	66.2%	Pass
64 - 63.75	Pole + Reinf.	TP41.087x41.042x0.625	Reinf. 8 Tension Rupture	55.6%	Pass
63.75 - 58.75	Pole + Reinf.	TP41.987x41.087x0.625	Reinf. 8 Tension Rupture	57.3%	Pass
58.75 - 53.75	Pole + Reinf.	TP42.886x41.987x0.625	Reinf. 8 Tension Rupture	59.0%	Pass
53.75 - 53	Pole + Reinf.	TP44.177x42.886x0.6125	Reinf. 8 Tension Rupture	59.2%	Pass
53 - 45.58	Pole + Reinf.	TP43.607x42.272x0.6438	Reinf. 8 Tension Rupture	60.3%	Pass
45.58 - 43	Pole + Reinf.	TP44.072x43.607x0.6438	Reinf. 8 Tension Rupture	61.1%	Pass
43 - 42.75	Pole + Reinf.	TP44.117x44.072x0.7063	Reinf. 8 Tension Rupture	59.0%	Pass
42.75 - 42.5	Pole + Reinf.	TP44.162x44.117x0.7063	Reinf. 8 Tension Rupture	59.1%	Pass
42.5 - 42.25	Pole + Reinf.	TP44.207x44.162x0.7813	Reinf. 8 Tension Rupture	50.9%	Pass
42.25 - 42	Pole + Reinf.	TP44.252x44.207x0.7813	Reinf. 8 Tension Rupture	51.0%	Pass
42 - 41.75	Pole + Reinf.	TP44.297x44.252x0.6813	Reinf. 8 Tension Rupture	58.1%	Pass
41.75 - 36.75	Pole + Reinf.	TP45.197x44.297x0.6813	Reinf. 8 Tension Rupture	59.5%	Pass
36.75 - 32	Pole + Reinf.	TP46.052x45.197x0.6688	Reinf. 8 Tension Rupture	60.8%	Pass
32 - 31.75	Pole + Reinf.	TP46.097x46.052x0.7188	Reinf. 7 Tension Rupture	55.9%	Pass
31.75 - 26.75	Pole + Reinf.	TP46.997x46.097x0.7063	Reinf. 7 Tension Rupture	57.2%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
26.75 - 21.75	Pole + Reinf.	TP47.897x46.997x0.7063	Reinf. 7 Tension Rupture	58.3%	Pass
21.75 - 18	Pole + Reinf.	TP48.572x47.897x0.7063	Reinf. 7 Tension Rupture	59.2%	Pass
18 - 17.75	Pole + Reinf.	TP48.617x48.572x0.7063	Reinf. 7 Tension Rupture	59.3%	Pass
17.75 - 17	Pole + Reinf.	TP50.027x48.617x0.7063	Reinf. 7 Tension Rupture	59.4%	Pass
17 - 8.92	Pole + Reinf.	TP49.394x47.94x0.6625	Reinf. 1 Tension Rupture	63.0%	Pass
8.92 - 3.92	Pole + Reinf.	TP50.294x49.394x0.6625	Reinf. 1 Tension Rupture	63.9%	Pass
3.92 - 2.75	Pole + Reinf.	TP50.505x50.294x0.6625	Reinf. 1 Tension Rupture	64.1%	Pass
2.75 - 2.5	Pole + Reinf.	TP50.55x50.505x0.7125	Reinf. 10 Connection	62.5%	Pass
2.5 - 0	Pole + Reinf.	TP51x50.55x0.7125	Reinf. 10 Connection	62.9%	Pass
				Summary	
			Pole	60.3%	Pass
			Reinforcement	66.2%	Pass
			Overall	66.2%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	64.6	Pass
1	Base Plate	0	39.0	Pass
1	Base Foundation	0	46.3	Pass

Structure Rating (max from all components) =	66.2%
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Notes:

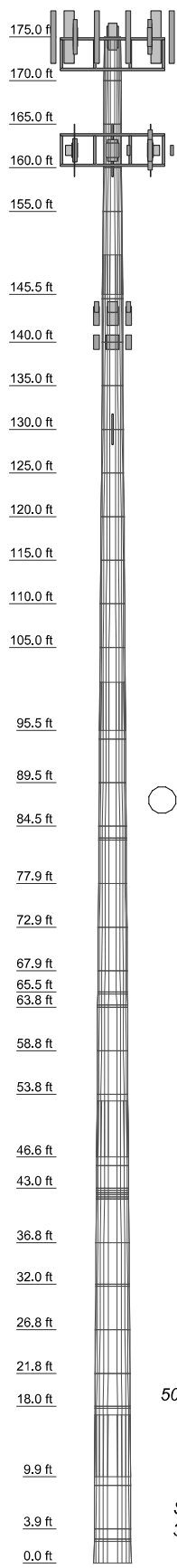
- All structural ratings are per TIA-222-H Section 15.5
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

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

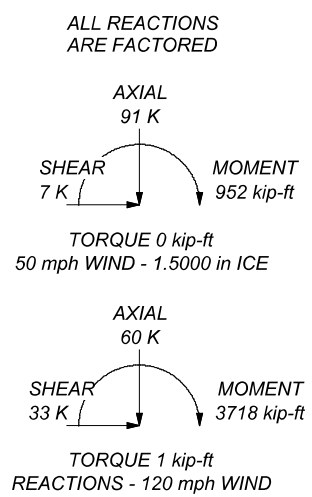
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	12	0.3125	4.50	24.825	23.925	0.3	0.3
2	5.00	12	0.3125	4.50	20.825	19.925	0.3	0.3
3	5.00	12	0.3125	4.50	16.825	15.925	0.3	0.3
4	5.00	12	0.3125	4.50	12.825	11.925	0.3	0.3
5	5.00	12	0.3125	4.50	8.825	7.925	0.3	0.3
6	5.00	12	0.3125	4.50	4.825	3.925	0.3	0.3
7	5.00	12	0.3125	4.50	0.825	-0.075	0.3	0.3
8	5.00	12	0.3125	4.50	-3.175	-4.075	0.3	0.3
9	5.00	12	0.3125	4.50	-7.175	-8.075	0.3	0.3
10	5.00	12	0.3125	4.50	-11.175	-12.075	0.3	0.3
11	5.00	12	0.3125	4.50	-15.175	-16.075	0.3	0.3
12	5.00	12	0.3125	4.50	-19.175	-20.075	0.3	0.3
13	5.00	12	0.3125	4.50	-23.175	-24.075	0.3	0.3
14	5.00	12	0.3125	4.50	-27.175	-28.075	0.3	0.3
15	5.00	12	0.3125	4.50	-31.175	-32.075	0.3	0.3
16	5.00	12	0.3125	4.50	-35.175	-36.075	0.3	0.3
17	5.00	12	0.3125	4.50	-39.175	-40.075	0.3	0.3
18	5.00	12	0.3125	4.50	-43.175	-44.075	0.3	0.3
19	5.00	12	0.3125	4.50	-47.175	-48.075	0.3	0.3
20	5.00	12	0.3125	4.50	-51.175	-52.075	0.3	0.3
21	5.00	12	0.3125	4.50	-55.175	-56.075	0.3	0.3
22	5.00	12	0.3125	4.50	-59.175	-60.075	0.3	0.3
23	5.00	12	0.3125	4.50	-63.175	-64.075	0.3	0.3
24	5.00	12	0.3125	4.50	-67.175	-68.075	0.3	0.3
25	5.00	12	0.3125	4.50	-71.175	-72.075	0.3	0.3
26	5.00	12	0.3125	4.50	-75.175	-76.075	0.3	0.3
27	5.00	12	0.3125	4.50	-79.175	-80.075	0.3	0.3
28	5.00	12	0.3125	4.50	-83.175	-84.075	0.3	0.3
29	5.00	12	0.3125	4.50	-87.175	-88.075	0.3	0.3
30	5.00	12	0.3125	4.50	-91.175	-92.075	0.3	0.3
31	5.00	12	0.3125	4.50	-95.175	-96.075	0.3	0.3
32	5.00	12	0.3125	4.50	-99.175	-100.075	0.3	0.3
33	5.00	12	0.3125	4.50	-103.175	-104.075	0.3	0.3
34	5.00	12	0.3125	4.50	-107.175	-108.075	0.3	0.3
35	5.00	12	0.3125	4.50	-111.175	-112.075	0.3	0.3
36	5.00	12	0.3125	4.50	-115.175	-116.075	0.3	0.3
37	5.00	12	0.3125	4.50	-119.175	-120.075	0.3	0.3
38	5.00	12	0.3125	4.50	-123.175	-124.075	0.3	0.3
39	5.00	12	0.3125	4.50	-127.175	-128.075	0.3	0.3
40	5.00	12	0.3125	4.50	-131.175	-132.075	0.3	0.3
41	5.00	12	0.3125	4.50	-135.175	-136.075	0.3	0.3
42	5.00	12	0.3125	4.50	-139.175	-140.075	0.3	0.3
43	5.00	12	0.3125	4.50	-143.175	-144.075	0.3	0.3
44	5.00	12	0.3125	4.50	-147.175	-148.075	0.3	0.3
45	5.00	12	0.3125	4.50	-151.175	-152.075	0.3	0.3
46	5.00	12	0.3125	4.50	-155.175	-156.075	0.3	0.3
47	5.00	12	0.3125	4.50	-159.175	-160.075	0.3	0.3
48	5.00	12	0.3125	4.50	-163.175	-164.075	0.3	0.3
49	5.00	12	0.3125	4.50	-167.175	-168.075	0.3	0.3
50	5.00	12	0.3125	4.50	-171.175	-172.075	0.3	0.3



MATERIAL STRENGTH					
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S
9. TOWER RATING: 60.6%



Paul J. Ford and Company 250 East Broad St., Suite 600 Columbus, OH 43215 Phone: 614-221-6679 FAX:	Job: 176-Ft Monopole / BRG 133 943050 Project: PJF 37519-2639.001.7805 / BU# 807132								
	<table border="1"> <tr> <td>Client: Crown Castle</td> <td>Drawn by: nmiller</td> <td>App'd:</td> </tr> <tr> <td>Code: TIA-222-H</td> <td>Date: 06/27/19</td> <td>Scale: NTS</td> </tr> <tr> <td>Path:</td> <td></td> <td>Dwg No. E-1</td> </tr> </table>	Client: Crown Castle	Drawn by: nmiller	App'd:	Code: TIA-222-H	Date: 06/27/19	Scale: NTS	Path:	
Client: Crown Castle	Drawn by: nmiller	App'd:							
Code: TIA-222-H	Date: 06/27/19	Scale: NTS							
Path:		Dwg No. E-1							

G:\TOWER\375_Crown_Castle\2019_37519-2639_807132_BRG_133_943050\37519-2639-001-7805_SA_174722\WFO_171223_BU_807132_CCL.dwg

Tower Input Data

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

The following design criteria apply:

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Tower base elevation above sea level: 465.19 ft.
- 3) Basic wind speed of 120 mph.
- 4) Risk Category II.
- 5) Exposure Category B.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0.00 ft.
- 9) Nominal ice thickness of 1.5000 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) TIA-222-H Annex S.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.05.
- 19) Tower analysis based on target reliabilities in accordance with Annex S.
- 20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 21) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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	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 Ignore KL/ry For 60 Deg. Angle Legs	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-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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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	175.00-170.00	5.00	0.00	12	22.1250	23.0250	0.2188	0.8750	A572-65 (65 ksi)
L2	170.00-165.00	5.00	0.00	12	23.0250	23.9250	0.2188	0.8750	A572-65 (65 ksi)
L3	165.00-160.00	5.00	0.00	12	23.9250	24.8250	0.2188	0.8750	A572-65 (65 ksi)
L4	160.00-155.00	5.00	0.00	12	24.8250	25.7250	0.2188	0.8750	A572-65 (65 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L5	155.00-145.50	9.50	4.50	12	25.7250	27.4350	0.2188	0.8750	A572-65 (65 ksi)
L6	145.50-145.00	5.00	0.00	12	26.1875	27.0875	0.3125	1.2500	A572-65 (65 ksi)
L7	145.00-140.00	5.00	0.00	12	27.0875	27.9874	0.3125	1.2500	A572-65 (65 ksi)
L8	140.00-135.00	5.00	0.00	12	27.9874	28.8874	0.3125	1.2500	A572-65 (65 ksi)
L9	135.00-130.00	5.00	0.00	12	28.8874	29.7873	0.3125	1.2500	A572-65 (65 ksi)
L10	130.00-125.00	5.00	0.00	12	29.7873	30.6873	0.3125	1.2500	A572-65 (65 ksi)
L11	125.00-120.00	5.00	0.00	12	30.6873	31.5872	0.3125	1.2500	A572-65 (65 ksi)
L12	120.00-115.00	5.00	0.00	12	31.5872	32.4872	0.3125	1.2500	A572-65 (65 ksi)
L13	115.00-110.00	5.00	0.00	12	32.4872	33.3871	0.3125	1.2500	A572-65 (65 ksi)
L14	110.00-105.00	5.00	0.00	12	33.3871	34.2871	0.3125	1.2500	A572-65 (65 ksi)
L15	105.00-95.50	9.50	5.50	12	34.2871	35.9970	0.3125	1.2500	A572-65 (65 ksi)
L16	95.50-94.50	6.50	0.00	12	34.3821	35.5520	0.3750	1.5000	A572-65 (65 ksi)
L17	94.50-89.50	5.00	0.00	12	35.5520	36.4519	0.3750	1.5000	A572-65 (65 ksi)
L18	89.50-84.50	5.00	0.00	12	36.4519	37.3519	0.3750	1.5000	A572-65 (65 ksi)
L19	84.50-83.17	1.33	0.00	12	37.3519	37.5912	0.3750	1.5000	A572-65 (65 ksi)
L20	83.17-82.92	0.25	0.00	12	37.5912	37.6362	0.5375	2.1500	A572-65 (65 ksi)
L21	82.92-77.92	5.00	0.00	12	37.6362	38.5362	0.5375	2.1500	A572-65 (65 ksi)
L22	77.92-72.92	5.00	0.00	12	38.5362	39.4361	0.5375	2.1500	A572-65 (65 ksi)
L23	72.92-67.92	5.00	0.00	12	39.4361	40.3361	0.5250	2.1000	A572-65 (65 ksi)
L24	67.92-65.50	2.42	0.00	12	40.3361	40.7716	0.5250	2.1000	A572-65 (65 ksi)
L25	65.50-65.25	0.25	0.00	12	40.7716	40.8166	0.5250	2.1000	A572-65 (65 ksi)
L26	65.25-64.00	1.25	0.00	12	40.8166	41.0416	0.5250	2.1000	A572-65 (65 ksi)
L27	64.00-63.75	0.25	0.00	12	41.0416	41.0866	0.6250	2.5000	A572-65 (65 ksi)
L28	63.75-58.75	5.00	0.00	12	41.0866	41.9865	0.6250	2.5000	A572-65 (65 ksi)
L29	58.75-53.75	5.00	0.00	12	41.9865	42.8865	0.6250	2.5000	A572-65 (65 ksi)
L30	53.75-46.58	7.17	6.42	12	42.8865	44.1770	0.6125	2.4500	A572-65 (65 ksi)
L31	46.58-45.58	7.42	0.00	12	42.2715	43.6073	0.6438	2.5752	A572-65 (65 ksi)
L32	45.58-43.00	2.58	0.00	12	43.6073	44.0718	0.6438	2.5752	A572-65 (65 ksi)
L33	43.00-42.75	0.25	0.00	12	44.0718	44.1168	0.7063	2.8252	A572-65 (65 ksi)
L34	42.75-42.50	0.25	0.00	12	44.1168	44.1618	0.7063	2.8252	A572-65 (65 ksi)
L35	42.50-42.25	0.25	0.00	12	44.1618	44.2068	0.7813	3.1252	A572-65 (65 ksi)
L36	42.25-42.00	0.25	0.00	12	44.2068	44.2518	0.7813	3.1252	A572-65 (65 ksi)
L37	42.00-41.75	0.25	0.00	12	44.2518	44.2968	0.6813	2.7252	A572-65 (65 ksi)
L38	41.75-36.75	5.00	0.00	12	44.2968	45.1969	0.6813	2.7252	A572-65 (65 ksi)
L39	36.75-32.00	4.75	0.00	12	45.1969	46.0520	0.6688	2.6752	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L40	32.00-31.75	0.25	0.00	12	46.0520	46.0970	0.7188	2.8752	(65 ksi) A572-65
L41	31.75-26.75	5.00	0.00	12	46.0970	46.9972	0.7063	2.8252	(65 ksi) A572-65
L42	26.75-21.75	5.00	0.00	12	46.9972	47.8973	0.7063	2.8252	(65 ksi) A572-65
L43	21.75-18.00	3.75	0.00	12	47.8973	48.5724	0.7063	2.8252	(65 ksi) A572-65
L44	18.00-17.75	0.25	0.00	12	48.5724	48.6174	0.7063	2.8252	(65 ksi) A572-65
L45	17.75-9.92	7.83	7.08	12	48.6174	50.0270	0.7063	2.8252	(65 ksi) A572-65
L46	9.92-8.92	8.08	0.00	12	47.9398	49.3943	0.6625	2.6500	(65 ksi) A572-65
L47	8.92-3.92	5.00	0.00	12	49.3943	50.2944	0.6625	2.6500	(65 ksi) A572-65
L48	3.92-2.75	1.17	0.00	12	50.2944	50.5050	0.6625	2.6500	(65 ksi) A572-65
L49	2.75-2.50	0.25	0.00	12	50.5050	50.5500	0.7125	2.8500	(65 ksi) A572-65
L50	2.50-0.00	2.50		12	50.5500	51.0000	0.7125	2.8500	(65 ksi) A572-65

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	22.8283	15.4302	945.1353	7.8424	11.4608	82.4671	1915.1004	7.5943	5.3433	24.426
	23.7601	16.0642	1066.4771	8.1646	11.9270	89.4174	2160.9717	7.9063	5.5845	25.529
L2	23.7601	16.0642	1066.4771	8.1646	11.9270	89.4174	2160.9717	7.9063	5.5845	25.529
	24.6918	16.6981	1197.7839	8.4868	12.3932	96.6489	2427.0349	8.2183	5.8257	26.632
L3	24.6918	16.6981	1197.7839	8.4868	12.3932	96.6489	2427.0349	8.2183	5.8257	26.632
	25.6236	17.3320	1339.4490	8.8090	12.8594	104.1615	2714.0868	8.5303	6.0669	27.734
L4	25.6236	17.3320	1339.4490	8.8090	12.8594	104.1615	2714.0868	8.5303	6.0669	27.734
	26.5553	17.9660	1491.8657	9.1312	13.3256	111.9553	3022.9243	8.8423	6.3080	28.837
L5	26.5553	17.9660	1491.8657	9.1312	13.3256	111.9553	3022.9243	8.8423	6.3080	28.837
	28.3256	19.1704	1812.4863	9.7434	14.2113	127.5381	3672.5887	9.4351	6.7663	30.932
L6	27.8396	26.0367	2225.0149	9.2632	13.5651	164.0246	4508.4834	12.8145	6.1807	19.778
	27.9328	26.9423	2465.3470	9.5854	14.0313	175.7034	4995.4613	13.2602	6.4219	20.55
L7	27.9328	26.9423	2465.3470	9.5854	14.0313	175.7034	4995.4613	13.2602	6.4219	20.55
	28.8645	27.8479	2722.3905	9.9076	14.4975	187.7837	5516.3011	13.7059	6.6631	21.322
L8	28.8645	27.8479	2722.3905	9.9076	14.4975	187.7837	5516.3011	13.7059	6.6631	21.322
	29.7962	28.7535	2996.7070	10.2298	14.9637	200.2657	6072.1409	14.1516	6.9043	22.094
L9	29.7962	28.7535	2996.7070	10.2298	14.9637	200.2657	6072.1409	14.1516	6.9043	22.094
	30.7279	29.6590	3288.8584	10.5520	15.4298	213.1494	6664.1188	14.5973	7.1455	22.866
L10	30.7279	29.6590	3288.8584	10.5520	15.4298	213.1494	6664.1188	14.5973	7.1455	22.866
	31.6596	30.5646	3599.4062	10.8742	15.8960	226.4346	7293.3729	15.0430	7.3867	23.637
L11	31.6596	30.5646	3599.4062	10.8742	15.8960	226.4346	7293.3729	15.0430	7.3867	23.637
	32.5913	31.4702	3928.9123	11.1964	16.3622	240.1215	7961.0415	15.4887	7.6279	24.409
L12	32.5913	31.4702	3928.9123	11.1964	16.3622	240.1215	7961.0415	15.4887	7.6279	24.409
	33.5230	32.3758	4277.9382	11.5185	16.8284	254.2101	8668.2626	15.9344	7.8691	25.181
L13	33.5230	32.3758	4277.9382	11.5185	16.8284	254.2101	8668.2626	15.9344	7.8691	25.181
	34.4547	33.2813	4647.0457	11.8407	17.2945	268.7002	9416.1745	16.3801	8.1103	25.953
L14	34.4547	33.2813	4647.0457	11.8407	17.2945	268.7002	9416.1745	16.3801	8.1103	25.953
	35.3864	34.1869	5036.7965	12.1629	17.7607	283.5921	10205.915	16.8258	8.3514	26.725
L15	35.3864	34.1869	5036.7965	12.1629	17.7607	283.5921	10205.915	16.8258	8.3514	26.725
	37.1566	35.9075	5836.2071	12.7751	18.6464	312.9930	11825.737	17.6726	8.8097	28.191
L16	36.4875	41.0635	6061.4983	12.1745	17.8099	340.3443	12282.238	20.2102	8.2094	21.892
	36.6738	42.4762	6708.8561	12.5934	18.4159	364.2965	13593.961	20.9055	8.5229	22.728
L17	36.6738	42.4762	6708.8561	12.5934	18.4159	364.2965	13593.961	20.9055	8.5229	22.728

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
	37.6055	43.5629	7237.0437	12.9155	18.8821	383.2755	14664.2127	21.4403	8.7641	23.371
L18	37.6055	43.5629	7237.0437	12.9155	18.8821	383.2755	14664.2127	21.4403	8.7641	23.371
	38.5372	44.6496	7792.2511	13.2377	19.3483	402.7365	15789.2133	21.9752	9.0053	24.014
L19	38.5372	44.6496	7792.2511	13.2377	19.3483	402.7365	15789.2133	21.9752	9.0053	24.014
	38.7850	44.9386	7944.5715	13.3234	19.4723	407.9943	16097.8557	22.1174	9.0695	24.185
L20	38.7277	64.1308	11238.7069	13.2652	19.4723	577.1650	22772.6672	31.5632	8.6340	16.063
	38.7743	64.2086	11279.7006	13.2813	19.4956	578.5776	22855.7315	31.6015	8.6460	16.086
L21	38.7743	64.2086	11279.7006	13.2813	19.4956	578.5776	22855.7315	31.6015	8.6460	16.086
	39.7060	65.7662	12120.6423	13.6035	19.9617	607.1937	24559.7074	32.3681	8.8872	16.534
L22	39.7060	65.7662	12120.6423	13.6035	19.9617	607.1937	24559.7074	32.3681	8.8872	16.534
	40.6377	67.3238	13002.3754	13.9257	20.4279	636.5006	26346.3376	33.1347	9.1284	16.983
L23	40.6421	65.7792	12712.2419	13.9302	20.4279	622.2978	25758.4485	32.3745	9.1619	17.451
	41.5738	67.3006	13614.8289	14.2524	20.8941	651.6119	27587.3345	33.1233	9.4031	17.911
L24	41.5738	67.3006	13614.8289	14.2524	20.8941	651.6119	27587.3345	33.1233	9.4031	17.911
	42.0247	68.0369	14066.6138	14.4083	21.1197	666.0422	28502.7732	33.4857	9.5198	18.133
L25	42.0247	68.0369	14066.6138	14.4083	21.1197	666.0422	28502.7732	33.4857	9.5198	18.133
	42.0713	68.1130	14113.8473	14.4244	21.1430	667.5420	28598.4811	33.5231	9.5319	18.156
L26	42.0713	68.1130	14113.8473	14.4244	21.1430	667.5420	28598.4811	33.5231	9.5319	18.156
	42.3042	68.4933	14351.6016	14.5049	21.2596	675.0660	29080.2358	33.7103	9.5922	18.271
L27	42.2689	81.3384	16959.0466	14.4691	21.2596	797.7142	34363.6262	40.0323	9.3242	14.919
	42.3155	81.4290	17015.7527	14.4853	21.2829	799.5049	34478.5281	40.0769	9.3362	14.938
L28	42.3155	81.4290	17015.7527	14.4853	21.2829	799.5049	34478.5281	40.0769	9.3362	14.938
	43.2472	83.2401	18176.5775	14.8074	21.7490	835.7420	36830.6739	40.9683	9.5774	15.324
L29	43.2472	83.2401	18176.5775	14.8074	21.7490	835.7420	36830.6739	40.9683	9.5774	15.324
	44.1789	85.0512	19389.0317	15.1296	22.2152	872.7822	39287.4349	41.8596	9.8186	15.71
L30	44.1833	83.3749	19018.1165	15.1341	22.2152	856.0858	38535.8601	41.0346	9.8521	16.085
	45.5193	85.9201	20813.5479	15.5961	22.8837	909.5365	42173.8909	42.2873	10.1979	16.65
L31	44.7321	86.2957	19087.1041	14.9027	21.8966	871.6911	38675.6477	42.4721	9.6034	14.917
	44.9185	89.0649	20984.1526	15.3809	22.5886	928.9719	42519.5822	43.8350	9.9614	15.473
L32	44.9185	89.0649	20984.1526	15.3809	22.5886	928.9719	42519.5822	43.8350	9.9614	15.473
	45.3993	90.0277	21672.0973	15.5472	22.8292	949.3161	43913.5447	44.3089	10.0858	15.666
L33	45.3773	98.6254	23673.5158	15.5248	22.8292	1036.9854	47968.9612	48.5404	9.9183	14.043
	45.4239	98.7278	23747.3003	15.5409	22.8525	1039.1563	48118.4685	48.5908	9.9304	14.06
L34	45.4239	98.7278	23747.3003	15.5409	22.8525	1039.1563	48118.4685	48.5908	9.9304	14.06
	45.4705	98.8302	23821.2379	15.5571	22.8758	1041.3294	48268.2862	48.6412	9.9425	14.077

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
L35	45.4440	109.1360	26214.5465	15.5302	22.8758	1145.9512	53117.7782	53.7134	9.7415	12.468
	45.4906	109.2492	26296.2224	15.5463	22.8991	1148.3513	53283.2758	53.7691	9.7535	12.484
L36	45.4906	109.2492	26296.2224	15.5463	22.8991	1148.3513	53283.2758	53.7691	9.7535	12.484
	45.5372	109.3624	26378.0678	15.5624	22.9224	1150.7539	53449.1167	53.8249	9.7656	12.499
L37	45.5725	95.5843	23160.9981	15.5982	22.9224	1010.4080	46930.4613	47.0437	10.0336	14.727
	45.6191	95.6830	23232.8451	15.6143	22.9457	1012.5125	47076.0429	47.0923	10.0457	14.745
L38	45.6191	95.6830	23232.8451	15.6143	22.9457	1012.5125	47076.0429	47.0923	10.0457	14.745
	46.5510	97.6577	24701.1596	15.9366	23.4120	1055.0640	50051.2462	48.0642	10.2869	15.099
L39	46.5554	95.8929	24268.3928	15.9411	23.4120	1036.5791	49174.3433	47.1956	10.3204	15.431
	47.4406	97.7344	25693.5711	16.2472	23.8550	1077.0748	52062.1410	48.1019	10.5496	15.774
L40	47.4230	104.9254	27523.2719	16.2293	23.8550	1153.7759	55769.6107	51.6411	10.4156	14.49
	47.4696	105.0296	27605.3278	16.2454	23.8783	1156.0858	55935.8782	51.6924	10.4276	14.507
L41	47.4740	103.2315	27147.6907	16.2499	23.8783	1136.9204	55008.5814	50.8074	10.4611	14.811
	48.4059	105.2787	28794.9988	16.5721	24.3445	1182.8117	58346.4743	51.8150	10.7024	15.153
L42	48.4059	105.2787	28794.9988	16.5721	24.3445	1182.8117	58346.4743	51.8150	10.7024	15.153
	49.3378	107.3258	30507.6329	16.8944	24.8108	1229.6110	61816.7353	52.8225	10.9436	15.494
L43	49.3378	107.3258	30507.6329	16.8944	24.8108	1229.6110	61816.7353	52.8225	10.9436	15.494
	50.0367	108.8612	31835.7428	17.1361	25.1605	1265.3064	64507.8460	53.5782	11.1245	15.75
L44	50.0367	108.8612	31835.7428	17.1361	25.1605	1265.3064	64507.8460	53.5782	11.1245	15.75
	50.0833	108.9635	31925.6285	17.1522	25.1838	1267.7043	64689.9789	53.6285	11.1366	15.767
L45	50.0833	108.9635	31925.6285	17.1522	25.1838	1267.7043	64689.9789	53.6285	11.1366	15.767
	51.5426	112.1694	34827.2131	17.6568	25.9140	1343.9543	70569.3759	55.2064	11.5144	16.302
L46	50.7167	100.8543	28773.0720	16.9253	24.8328	1158.6708	58302.0446	49.6374	11.0724	16.713
	50.9030	103.9571	31511.2188	17.4460	25.5863	1231.5685	63850.2724	51.1645	11.4622	17.301
L47	50.9030	103.9571	31511.2188	17.4460	25.5863	1231.5685	63850.2724	51.1645	11.4622	17.301
	51.8348	105.8772	33289.6565	17.7682	26.0525	1277.7923	67453.8693	52.1095	11.7034	17.665
L48	51.8348	105.8772	33289.6565	17.7682	26.0525	1277.7923	67453.8693	52.1095	11.7034	17.665
	52.0529	106.3265	33715.2506	17.8436	26.1616	1288.7317	68316.2385	52.3306	11.7598	17.751
L49	52.0353	114.2364	36150.7841	17.8257	26.1616	1381.8275	73251.2896	56.2237	11.6258	16.317
	52.0818	114.3396	36248.8924	17.8418	26.1849	1384.3441	73450.0837	56.2745	11.6379	16.334
L50	52.0818	114.3396	36248.8924	17.8418	26.1849	1384.3441	73450.0837	56.2745	11.6379	16.334
	52.5477	115.3721	37239.7560	18.0029	26.4180	1409.6357	75457.8419	56.7826	11.7585	16.503

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 175.00-170.00				1	1	1			
L2 170.00-165.00				1	1	1			
L3 165.00-160.00				1	1	1			
L4 160.00-155.00				1	1	1			
L5 155.00-145.50				1	1	1			
L6 145.50-145.00				1	1	1			
L7 145.00-140.00				1	1	1			
L8 140.00-135.00				1	1	1			
L9 135.00-130.00				1	1	1			
L10 130.00-125.00				1	1	1			
L11 125.00-120.00				1	1	1			
L12 120.00-115.00				1	1	1			
L13 115.00-110.00				1	1	1			
L14 110.00-105.00				1	1	1			
L15 105.00-95.50				1	1	1			
L16 95.50-94.50				1	1	1			
L17 94.50-89.50				1	1	1			
L18 89.50-84.50				1	1	1			
L19 84.50-83.17				1	1	1			
L20 83.17-82.92				1	1	0.981468			
L21 82.92-77.92				1	1	0.974747			
L22 77.92-72.92				1	1	0.968337			
L23 72.92-67.92				1	1	0.984817			
L24 67.92-65.50				1	1	0.981889			
L25 65.50-65.25				1	1	0.981591			
L26 65.25-64.00				1	1	0.980106			
L27 64.00-63.75				1	1	0.977451			
L28 63.75-58.75				1	1	0.969238			
L29 58.75-53.75				1	1	0.961376			
L30 53.75-46.58				1	1	0.979533			
L31 46.58-45.58				1	1	0.976286			
L32 45.58-43.00				1	1	0.972595			
L33 43.00-42.75				1	1	1.0021			
L34 42.75-				1	1	1.00166			

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	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
42.50									
L35 42.50-42.25				1	1	0.958464			
L36 42.25-42.00				1	1	0.95801			
L37 42.00-41.75				1	1	0.965912			
L38 41.75-36.75				1	1	0.95844			
L39 36.75-32.00				1	1	0.969134			
L40 32.00-31.75				1	1	0.963165			
L41 31.75-26.75				1	1	0.972072			
L42 26.75-21.75				1	1	0.964503			
L43 21.75-18.00				1	1	0.959013			
L44 18.00-17.75				1	1	0.958652			
L45 17.75-9.92				1	1	0.957575			
L46 9.92-8.92				1	1	1.06152			
L47 8.92-3.92				1	1	1.05424			
L48 3.92-2.75				1	1	1.05258			
L49 2.75-2.50				1	1	0.954075			
L50 2.50-0.00				1	1	0.951032			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
*****Surface ArAf***** LDF7-50A(1-5/8)	A	No	Surface Ar (CaAa)	162.00 - 0.00	4	3	-0.193 -0.106	1.9800		0.82

MP3-05	A	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05	C	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05	B	No	Surface Af (CaAa)	20.50 - 0.00	1	1	0.000 0.000	5.3300	14.8400	0.00
MP3-05	B	No	Surface Af (CaAa)	45.50 - 15.50	1	1	-0.500 -0.500	5.3300	14.8400	0.00
MP3-05	A	No	Surface Af (CaAa)	45.50 - 15.50	1	1	-0.500 -0.500	5.3300	14.8400	0.00
MP3-05	C	No	Surface Af (CaAa)	44.83 - 15.50	1	1	-0.500 -0.500	5.3300	14.8400	0.00
MP3-04	A	No	Surface Af (CaAa)	65.50 - 40.50	1	1	0.000 0.000	4.7800	12.7800	0.00
MP3-04	C	No	Surface Af (CaAa)	65.50 - 40.50	1	1	0.000 0.000	4.7800	12.7800	0.00
MP3-04	B	No	Surface Af (CaAa)	65.50 - 40.50	1	1	0.000 0.000	4.7800	12.7800	0.00

CCI-AFP-065125	A	No	Surface Af (CaAa)	15.50 - 0.00	1	1	-0.500 -0.500	6.5000	15.5000	0.00
CCI-AFP-065125	A	No	Surface Af (CaAa)	35.50 - 10.50	1	1	-0.250 -0.250	6.5000	15.5000	0.00
CCI-AFP-065125	C	No	Surface Af (CaAa)	35.50 - 0.00	1	1	-0.250 -0.250	6.5000	15.5000	0.00
CCI-AFP-065125	B	No	Surface Af (CaAa)	35.50 - 0.00	1	1	-0.250 -0.250	6.5000	15.5000	0.00

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
CCI-AFP-060100	A	No	Surface Af (CaAa)	85.67 - 35.50	1	1	-0.250 -0.250	6.0000	14.0000	0.00
CCI-AFP-060100	C	No	Surface Af (CaAa)	85.67 - 35.50	1	1	-0.250 -0.250	6.0000	14.0000	0.00
CCI-AFP-060100	B	No	Surface Af (CaAa)	85.67 - 35.50	1	1	-0.250 -0.250	6.0000	14.0000	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _{AA} ft ² /ft	Weight plf
LDF6-50A(1-1/4)	C	No	No	Inside Pole	173.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.60 0.60 0.60
LDF7-50A(1-5/8)	C	No	No	Inside Pole	173.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.82 0.82 0.82 0.82
*** 2" (Nominal) Conduit	C	No	No	Inside Pole	162.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.72 0.72 0.72 0.72
LDF6-50A(1-1/4)	C	No	No	Inside Pole	162.00 - 0.00	4	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.60 0.60 0.60 0.60
FB-L98B-034-XXX(3/8)	C	No	No	Inside Pole	162.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.06 0.06 0.06 0.06
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	162.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.31 0.31 0.31 0.31
*** MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	No	Inside Pole	144.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	1.07 1.07 1.07 1.07
HCS 6X12 4AWG(1-5/8)	C	No	No	Inside Pole	144.00 - 0.00	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	2.40 2.40 2.40 2.40
*** HCC 78-50J(7/8)	C	No	No	Inside Pole	130.00 - 0.00	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.53 0.53 0.53 0.53

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	175.00-170.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	170.00-165.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	165.00-160.00	A	0.000	0.000	1.188	0.000	0.01

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.03
L4	160.00-155.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.04
L5	155.00-145.50	A	0.000	0.000	5.643	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.08
L6	145.50-145.00	A	0.000	0.000	0.297	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L7	145.00-140.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.05
L8	140.00-135.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L9	135.00-130.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L10	130.00-125.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L11	125.00-120.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L12	120.00-115.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L13	115.00-110.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L14	110.00-105.00	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L15	105.00-95.50	A	0.000	0.000	5.643	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.12
L16	95.50-94.50	A	0.000	0.000	0.594	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L17	94.50-89.50	A	0.000	0.000	2.970	0.000	0.02
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.06
L18	89.50-84.50	A	0.000	0.000	4.140	0.000	0.02
		B	0.000	0.000	1.170	0.000	0.00
		C	0.000	0.000	1.170	0.000	0.06
L19	84.50-83.17	A	0.000	0.000	2.120	0.000	0.00
		B	0.000	0.000	1.330	0.000	0.00
		C	0.000	0.000	1.330	0.000	0.02
L20	83.17-82.92	A	0.000	0.000	0.399	0.000	0.00
		B	0.000	0.000	0.250	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L21	82.92-77.92	A	0.000	0.000	7.970	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.00
		C	0.000	0.000	5.000	0.000	0.06
L22	77.92-72.92	A	0.000	0.000	7.970	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.00
		C	0.000	0.000	5.000	0.000	0.06
L23	72.92-67.92	A	0.000	0.000	7.970	0.000	0.02
		B	0.000	0.000	5.000	0.000	0.00
		C	0.000	0.000	5.000	0.000	0.06
L24	67.92-65.50	A	0.000	0.000	3.857	0.000	0.01
		B	0.000	0.000	2.420	0.000	0.00
		C	0.000	0.000	2.420	0.000	0.03
L25	65.50-65.25	A	0.000	0.000	0.598	0.000	0.00
		B	0.000	0.000	0.449	0.000	0.00
		C	0.000	0.000	0.449	0.000	0.00
L26	65.25-64.00	A	0.000	0.000	2.988	0.000	0.00

Tower Section	Tower Elevation	Face	A _R	A _F	C _{AA} In Face	C _{AA} Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
		B	0.000	0.000	2.246	0.000	0.00
		C	0.000	0.000	2.246	0.000	0.02
L27	64.00-63.75	A	0.000	0.000	0.598	0.000	0.00
		B	0.000	0.000	0.449	0.000	0.00
		C	0.000	0.000	0.449	0.000	0.00
L28	63.75-58.75	A	0.000	0.000	11.953	0.000	0.02
		B	0.000	0.000	8.983	0.000	0.00
		C	0.000	0.000	8.983	0.000	0.06
L29	58.75-53.75	A	0.000	0.000	11.953	0.000	0.02
		B	0.000	0.000	8.983	0.000	0.00
		C	0.000	0.000	8.983	0.000	0.06
L30	53.75-46.58	A	0.000	0.000	17.141	0.000	0.02
		B	0.000	0.000	12.882	0.000	0.00
		C	0.000	0.000	12.882	0.000	0.09
L31	46.58-45.58	A	0.000	0.000	2.391	0.000	0.00
		B	0.000	0.000	1.797	0.000	0.00
		C	0.000	0.000	1.797	0.000	0.01
L32	45.58-43.00	A	0.000	0.000	8.389	0.000	0.01
		B	0.000	0.000	6.856	0.000	0.00
		C	0.000	0.000	6.261	0.000	0.03
L33	43.00-42.75	A	0.000	0.000	0.820	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.671	0.000	0.00
L34	42.75-42.50	A	0.000	0.000	0.820	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.671	0.000	0.00
L35	42.50-42.25	A	0.000	0.000	0.820	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.671	0.000	0.00
L36	42.25-42.00	A	0.000	0.000	0.820	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.671	0.000	0.00
L37	42.00-41.75	A	0.000	0.000	0.820	0.000	0.00
		B	0.000	0.000	0.671	0.000	0.00
		C	0.000	0.000	0.671	0.000	0.00
L38	41.75-36.75	A	0.000	0.000	13.408	0.000	0.02
		B	0.000	0.000	10.438	0.000	0.00
		C	0.000	0.000	10.438	0.000	0.06
L39	36.75-32.00	A	0.000	0.000	12.083	0.000	0.02
		B	0.000	0.000	9.261	0.000	0.00
		C	0.000	0.000	9.261	0.000	0.06
L40	32.00-31.75	A	0.000	0.000	0.641	0.000	0.00
		B	0.000	0.000	0.493	0.000	0.00
		C	0.000	0.000	0.493	0.000	0.00
L41	31.75-26.75	A	0.000	0.000	12.828	0.000	0.02
		B	0.000	0.000	9.858	0.000	0.00
		C	0.000	0.000	9.858	0.000	0.06
L42	26.75-21.75	A	0.000	0.000	12.828	0.000	0.02
		B	0.000	0.000	9.858	0.000	0.00
		C	0.000	0.000	9.858	0.000	0.06
L43	21.75-18.00	A	0.000	0.000	11.842	0.000	0.01
		B	0.000	0.000	9.615	0.000	0.00
		C	0.000	0.000	9.615	0.000	0.05
L44	18.00-17.75	A	0.000	0.000	0.864	0.000	0.00
		B	0.000	0.000	0.715	0.000	0.00
		C	0.000	0.000	0.715	0.000	0.00
L45	17.75-9.92	A	0.000	0.000	27.505	0.000	0.03
		B	0.000	0.000	17.437	0.000	0.00
		C	0.000	0.000	17.437	0.000	0.10
L46	9.92-8.92	A	0.000	0.000	2.566	0.000	0.00
		B	0.000	0.000	1.972	0.000	0.00
		C	0.000	0.000	1.972	0.000	0.01
L47	8.92-3.92	A	0.000	0.000	12.828	0.000	0.02
		B	0.000	0.000	9.858	0.000	0.00
		C	0.000	0.000	9.858	0.000	0.06
L48	3.92-2.75	A	0.000	0.000	3.002	0.000	0.00
		B	0.000	0.000	2.307	0.000	0.00
		C	0.000	0.000	2.307	0.000	0.01
L49	2.75-2.50	A	0.000	0.000	0.641	0.000	0.00

Tower Section	Tower Elevation	Face	A _R	A _F	C _A A _A	C _A A _A	Weight
n	ft		ft ²	ft ²	In Face	Out Face	K
					ft ²	ft ²	
L50	2.50-0.00	B	0.000	0.000	0.493	0.000	0.00
		C	0.000	0.000	0.493	0.000	0.00
		A	0.000	0.000	6.414	0.000	0.01
		B	0.000	0.000	4.929	0.000	0.00
		C	0.000	0.000	4.929	0.000	0.03

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A _R	A _F	C _A A _A	C _A A _A	Weight
n	ft		in	ft ²	ft ²	In Face	Out Face	K
						ft ²	ft ²	
L1	175.00-170.00	A	1.504	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L2	170.00-165.00	A	1.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.02
L3	165.00-160.00	A	1.495	0.000	0.000	2.233	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.03
L4	160.00-155.00	A	1.491	0.000	0.000	5.576	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.04
L5	155.00-145.50	A	1.484	0.000	0.000	10.577	0.000	0.20
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.08
L6	145.50-145.00	A	1.479	0.000	0.000	0.557	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L7	145.00-140.00	A	1.476	0.000	0.000	5.557	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.05
L8	140.00-135.00	A	1.471	0.000	0.000	5.551	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L9	135.00-130.00	A	1.465	0.000	0.000	5.544	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L10	130.00-125.00	A	1.460	0.000	0.000	5.537	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L11	125.00-120.00	A	1.454	0.000	0.000	5.530	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L12	120.00-115.00	A	1.448	0.000	0.000	5.522	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L13	115.00-110.00	A	1.441	0.000	0.000	5.514	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L14	110.00-105.00	A	1.435	0.000	0.000	5.506	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L15	105.00-95.50	A	1.425	0.000	0.000	10.438	0.000	0.19
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.12
L16	95.50-94.50	A	1.417	0.000	0.000	1.099	0.000	0.02
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L17	94.50-89.50	A	1.413	0.000	0.000	5.478	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.06
L18	89.50-84.50	A	1.405	0.000	0.000	6.967	0.000	0.11
		B		0.000	0.000	1.499	0.000	0.01
		C		0.000	0.000	1.499	0.000	0.08
L19	84.50-83.17	A	1.400	0.000	0.000	3.155	0.000	0.04
		B		0.000	0.000	1.702	0.000	0.01

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
L20	83.17-82.92	C		0.000	0.000	1.702	0.000	0.03
		A	1.398	0.000	0.000	0.593	0.000	0.01
		B		0.000	0.000	0.320	0.000	0.00
L21	82.92-77.92	C		0.000	0.000	0.320	0.000	0.01
		A	1.394	0.000	0.000	11.848	0.000	0.15
		B		0.000	0.000	6.394	0.000	0.05
L22	77.92-72.92	C		0.000	0.000	6.394	0.000	0.12
		A	1.385	0.000	0.000	11.828	0.000	0.15
		B		0.000	0.000	6.385	0.000	0.05
L23	72.92-67.92	C		0.000	0.000	6.385	0.000	0.12
		A	1.375	0.000	0.000	11.807	0.000	0.15
		B		0.000	0.000	6.375	0.000	0.05
L24	67.92-65.50	C		0.000	0.000	6.375	0.000	0.12
		A	1.368	0.000	0.000	5.707	0.000	0.07
		B		0.000	0.000	3.082	0.000	0.02
L25	65.50-65.25	C		0.000	0.000	3.082	0.000	0.06
		A	1.365	0.000	0.000	0.857	0.000	0.01
		B		0.000	0.000	0.586	0.000	0.00
L26	65.25-64.00	C		0.000	0.000	0.586	0.000	0.01
		A	1.364	0.000	0.000	4.282	0.000	0.05
		B		0.000	0.000	2.928	0.000	0.02
L27	64.00-63.75	C		0.000	0.000	2.928	0.000	0.04
		A	1.362	0.000	0.000	0.856	0.000	0.01
		B		0.000	0.000	0.585	0.000	0.00
L28	63.75-58.75	C		0.000	0.000	0.585	0.000	0.01
		A	1.356	0.000	0.000	17.104	0.000	0.19
		B		0.000	0.000	11.696	0.000	0.10
L29	58.75-53.75	C		0.000	0.000	11.696	0.000	0.16
		A	1.345	0.000	0.000	17.066	0.000	0.19
		B		0.000	0.000	11.673	0.000	0.10
L30	53.75-46.58	C		0.000	0.000	11.673	0.000	0.16
		A	1.329	0.000	0.000	24.402	0.000	0.27
		B		0.000	0.000	16.695	0.000	0.14
L31	46.58-45.58	C		0.000	0.000	16.695	0.000	0.23
		A	1.318	0.000	0.000	3.403	0.000	0.04
		B		0.000	0.000	2.328	0.000	0.02
L32	45.58-43.00	C		0.000	0.000	2.328	0.000	0.03
		A	1.313	0.000	0.000	11.630	0.000	0.12
		B		0.000	0.000	8.868	0.000	0.07
L33	43.00-42.75	C		0.000	0.000	8.097	0.000	0.10
		A	1.309	0.000	0.000	1.135	0.000	0.01
		B		0.000	0.000	0.868	0.000	0.01
L34	42.75-42.50	C		0.000	0.000	0.868	0.000	0.01
		A	1.308	0.000	0.000	1.135	0.000	0.01
		B		0.000	0.000	0.867	0.000	0.01
L35	42.50-42.25	C		0.000	0.000	0.867	0.000	0.01
		A	1.307	0.000	0.000	1.135	0.000	0.01
		B		0.000	0.000	0.867	0.000	0.01
L36	42.25-42.00	C		0.000	0.000	0.867	0.000	0.01
		A	1.307	0.000	0.000	1.135	0.000	0.01
		B		0.000	0.000	0.867	0.000	0.01
L37	42.00-41.75	C		0.000	0.000	0.867	0.000	0.01
		A	1.306	0.000	0.000	1.134	0.000	0.01
		B		0.000	0.000	0.867	0.000	0.01
L38	41.75-36.75	C		0.000	0.000	0.867	0.000	0.01
		A	1.297	0.000	0.000	18.690	0.000	0.20
		B		0.000	0.000	13.356	0.000	0.11
L39	36.75-32.00	C		0.000	0.000	13.356	0.000	0.17
		A	1.280	0.000	0.000	16.741	0.000	0.18
		B		0.000	0.000	11.694	0.000	0.09
L40	32.00-31.75	C		0.000	0.000	11.694	0.000	0.15
		A	1.271	0.000	0.000	0.885	0.000	0.01
		B		0.000	0.000	0.620	0.000	0.00
L41	31.75-26.75	C		0.000	0.000	0.620	0.000	0.01
		A	1.260	0.000	0.000	17.665	0.000	0.19
		B		0.000	0.000	12.378	0.000	0.10
L42	26.75-21.75	C		0.000	0.000	12.378	0.000	0.16
		A	1.236	0.000	0.000	17.589	0.000	0.18
		B		0.000	0.000	12.331	0.000	0.10

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
L43	21.75-18.00	C		0.000	0.000	12.331	0.000	0.16
		A	1.212	0.000	0.000	15.959	0.000	0.16
		B		0.000	0.000	12.038	0.000	0.09
L44	18.00-17.75	C		0.000	0.000	12.038	0.000	0.14
		A	1.199	0.000	0.000	1.155	0.000	0.01
		B		0.000	0.000	0.895	0.000	0.01
L45	17.75-9.92	C		0.000	0.000	0.895	0.000	0.01
		A	1.169	0.000	0.000	36.006	0.000	0.34
		B		0.000	0.000	21.623	0.000	0.16
L46	9.92-8.92	C		0.000	0.000	21.623	0.000	0.26
		A	1.125	0.000	0.000	3.423	0.000	0.03
		B		0.000	0.000	2.439	0.000	0.02
L47	8.92-3.92	C		0.000	0.000	2.439	0.000	0.03
		A	1.082	0.000	0.000	16.859	0.000	0.16
		B		0.000	0.000	12.023	0.000	0.08
L48	3.92-2.75	C		0.000	0.000	12.023	0.000	0.14
		A	1.014	0.000	0.000	3.901	0.000	0.04
		B		0.000	0.000	2.781	0.000	0.02
L49	2.75-2.50	C		0.000	0.000	2.781	0.000	0.03
		A	0.990	0.000	0.000	0.830	0.000	0.01
		B		0.000	0.000	0.592	0.000	0.00
L50	2.50-0.00	C		0.000	0.000	0.592	0.000	0.01
		A	0.919	0.000	0.000	8.204	0.000	0.07
		B		0.000	0.000	5.848	0.000	0.03
		C		0.000	0.000	5.848	0.000	0.07

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	175.00-170.00	0.0000	0.0000	0.0000	0.0000
L2	170.00-165.00	0.0000	0.0000	0.0000	0.0000
L3	165.00-160.00	-1.5942	-0.3394	-1.9029	-0.4051
L4	160.00-155.00	-2.8310	-0.6027	-3.6670	-0.7806
L5	155.00-145.50	-2.8300	-0.6025	-3.7102	-0.7898
L6	145.50-145.00	-2.8324	-0.6030	-3.7281	-0.7937
L7	145.00-140.00	-2.8321	-0.6029	-3.7419	-0.7966
L8	140.00-135.00	-2.8314	-0.6028	-3.7686	-0.8023
L9	135.00-130.00	-2.8307	-0.6026	-3.7940	-0.8077
L10	130.00-125.00	-2.8466	-0.6060	-3.8183	-0.8129
L11	125.00-120.00	-2.8772	-0.6125	-3.8415	-0.8178
L12	120.00-115.00	-2.9069	-0.6188	-3.8635	-0.8225
L13	115.00-110.00	-2.9358	-0.6250	-3.8845	-0.8269
L14	110.00-105.00	-2.9640	-0.6310	-3.9044	-0.8312
L15	105.00-95.50	-3.0036	-0.6394	-3.9316	-0.8370
L16	95.50-94.50	-3.0140	-0.6416	-3.9405	-0.8389
L17	94.50-89.50	-3.0298	-0.6450	-3.9477	-0.8404
L18	89.50-84.50	-2.5763	-0.5485	-3.4305	-0.7303
L19	84.50-83.17	-1.7173	-0.3656	-2.3969	-0.5103
L20	83.17-82.92	-1.7218	-0.3665	-2.4022	-0.5114
L21	82.92-77.92	-1.7341	-0.3692	-2.4151	-0.5141
L22	77.92-72.92	-1.7572	-0.3741	-2.4389	-0.5192
L23	72.92-67.92	-1.7800	-0.3789	-2.4620	-0.5241
L24	67.92-65.50	-1.7967	-0.3825	-2.4787	-0.5277
L25	65.50-65.25	-1.3228	-0.2816	-1.8684	-0.3978
L26	65.25-64.00	-1.3249	-0.2821	-1.8717	-0.3985
L27	64.00-63.75	-1.3275	-0.2826	-1.8754	-0.3993
L28	63.75-58.75	-1.3349	-0.2842	-1.8868	-0.4017
L29	58.75-53.75	-1.3488	-0.2871	-1.9082	-0.4062
L30	53.75-46.58	-1.3653	-0.2907	-1.9333	-0.4116
L31	46.58-45.58	-1.3653	-0.2906	-1.9331	-0.4115
L32	45.58-43.00	-1.6345	-0.1027	-2.0996	-0.1975
L33	43.00-42.75	-1.0707	-0.2279	-1.5160	-0.3227
L34	42.75-42.50	-1.0713	-0.2281	-1.5169	-0.3229
L35	42.50-42.25	-1.0721	-0.2282	-1.5180	-0.3232
L36	42.25-42.00	-1.0727	-0.2284	-1.5188	-0.3233

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L37	42.00-41.75	-1.0731	-0.2284	-1.5194	-0.3235
L38	41.75-36.75	-1.2547	-0.2671	-1.7861	-0.3802
L39	36.75-32.00	-1.3161	-0.2802	-1.8839	-0.4011
L40	32.00-31.75	-1.3147	-0.2799	-1.8837	-0.4010
L41	31.75-26.75	-1.3213	-0.2813	-1.8926	-0.4029
L42	26.75-21.75	-1.3338	-0.2840	-1.9088	-0.4063
L43	21.75-18.00	-1.1579	-0.2465	-1.6496	-0.3512
L44	18.00-17.75	-1.0873	-0.2315	-1.5458	-0.3291
L45	17.75-9.92	-1.6051	1.6443	-2.0947	1.4461
L46	9.92-8.92	0.0822	1.6927	-0.4696	1.4460
L47	8.92-3.92	0.0843	1.7037	-0.4574	1.4669
L48	3.92-2.75	0.0863	1.7150	-0.4496	1.4929
L49	2.75-2.50	0.0868	1.7178	-0.4466	1.5009
L50	2.50-0.00	0.0878	1.7228	-0.4374	1.5217

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L3	14	LDF7-50A(1-5/8)	160.00 - 162.00	1.0000	1.0000
L4	14	LDF7-50A(1-5/8)	155.00 - 160.00	1.0000	1.0000
L5	14	LDF7-50A(1-5/8)	145.50 - 155.00	1.0000	1.0000
L7	14	LDF7-50A(1-5/8)	140.00 - 145.00	1.0000	1.0000
L8	14	LDF7-50A(1-5/8)	135.00 - 140.00	1.0000	1.0000
L9	14	LDF7-50A(1-5/8)	130.00 - 135.00	1.0000	1.0000
L10	14	LDF7-50A(1-5/8)	125.00 - 130.00	1.0000	1.0000
L11	14	LDF7-50A(1-5/8)	120.00 - 125.00	1.0000	1.0000
L12	14	LDF7-50A(1-5/8)	115.00 - 120.00	1.0000	1.0000
L13	14	LDF7-50A(1-5/8)	110.00 - 115.00	1.0000	1.0000
L14	14	LDF7-50A(1-5/8)	105.00 - 110.00	1.0000	1.0000
L15	14	LDF7-50A(1-5/8)	95.50 - 105.00	1.0000	1.0000
L17	14	LDF7-50A(1-5/8)	89.50 - 94.50	1.0000	1.0000
L18	14	LDF7-50A(1-5/8)	84.50 - 89.50	1.0000	1.0000
L18	30	CCI-AFP-060100	84.50 - 85.67	1.0000	1.0000
L18	31	CCI-AFP-060100	84.50 - 85.67	1.0000	1.0000
L18	32	CCI-AFP-060100	84.50 - 85.67	1.0000	1.0000
L19	14	LDF7-50A(1-5/8)	83.17 - 84.50	1.0000	1.0000
L19	30	CCI-AFP-060100	83.17 - 84.50	1.0000	1.0000
L19	31	CCI-AFP-060100	83.17 - 84.50	1.0000	1.0000
L19	32	CCI-AFP-060100	83.17 - 84.50	1.0000	1.0000
L20	14	LDF7-50A(1-5/8)	82.92 - 83.17	1.0000	1.0000
L20	30	CCI-AFP-060100	82.92 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L20	31	CCI-AFP-060100	83.17 82.92 -	1.0000	1.0000
L20	32	CCI-AFP-060100	83.17 82.92 -	1.0000	1.0000
L21	14	LDF7-50A(1-5/8)	83.17 77.92 -	1.0000	1.0000
L21	30	CCI-AFP-060100	82.92 77.92 -	1.0000	1.0000
L21	31	CCI-AFP-060100	82.92 77.92 -	1.0000	1.0000
L21	32	CCI-AFP-060100	82.92 77.92 -	1.0000	1.0000
L22	14	LDF7-50A(1-5/8)	82.92 72.92 -	1.0000	1.0000
L22	30	CCI-AFP-060100	77.92 72.92 -	1.0000	1.0000
L22	31	CCI-AFP-060100	77.92 72.92 -	1.0000	1.0000
L22	32	CCI-AFP-060100	77.92 72.92 -	1.0000	1.0000
L23	14	LDF7-50A(1-5/8)	77.92 67.92 -	1.0000	1.0000
L23	30	CCI-AFP-060100	72.92 67.92 -	1.0000	1.0000
L23	31	CCI-AFP-060100	72.92 67.92 -	1.0000	1.0000
L23	32	CCI-AFP-060100	72.92 67.92 -	1.0000	1.0000
L24	14	LDF7-50A(1-5/8)	72.92 65.50 -	1.0000	1.0000
L24	30	CCI-AFP-060100	67.92 65.50 -	1.0000	1.0000
L24	31	CCI-AFP-060100	67.92 65.50 -	1.0000	1.0000
L24	32	CCI-AFP-060100	67.92 65.50 -	1.0000	1.0000
L25	14	LDF7-50A(1-5/8)	67.92 65.25 -	1.0000	1.0000
L25	22	MP3-04	65.50 65.25 -	1.0000	1.0000
L25	23	MP3-04	65.50 65.25 -	1.0000	1.0000
L25	24	MP3-04	65.50 65.25 -	1.0000	1.0000
L25	30	CCI-AFP-060100	65.50 65.25 -	1.0000	1.0000
L25	31	CCI-AFP-060100	65.50 65.25 -	1.0000	1.0000
L25	32	CCI-AFP-060100	65.50 65.25 -	1.0000	1.0000
L26	14	LDF7-50A(1-5/8)	65.50 64.00 -	1.0000	1.0000
L26	22	MP3-04	65.25 64.00 -	1.0000	1.0000
L26	23	MP3-04	65.25 64.00 -	1.0000	1.0000
L26	24	MP3-04	65.25 64.00 -	1.0000	1.0000
L26	30	CCI-AFP-060100	65.25 64.00 -	1.0000	1.0000
L26	31	CCI-AFP-060100	65.25 64.00 -	1.0000	1.0000
L26	32	CCI-AFP-060100	65.25 64.00 -	1.0000	1.0000
L27	14	LDF7-50A(1-5/8)	65.25 63.75 -	1.0000	1.0000
L27	22	MP3-04	64.00 63.75 -	1.0000	1.0000
			64.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L27	23	MP3-04	63.75 - 64.00	1.0000	1.0000
L27	24	MP3-04	63.75 - 64.00	1.0000	1.0000
L27	30	CCI-AFP-060100	63.75 - 64.00	1.0000	1.0000
L27	31	CCI-AFP-060100	63.75 - 64.00	1.0000	1.0000
L27	32	CCI-AFP-060100	63.75 - 64.00	1.0000	1.0000
L28	14	LDF7-50A(1-5/8)	58.75 - 63.75	1.0000	1.0000
L28	22	MP3-04	58.75 - 63.75	1.0000	1.0000
L28	23	MP3-04	58.75 - 63.75	1.0000	1.0000
L28	24	MP3-04	58.75 - 63.75	1.0000	1.0000
L28	30	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L28	31	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L28	32	CCI-AFP-060100	58.75 - 63.75	1.0000	1.0000
L29	14	LDF7-50A(1-5/8)	53.75 - 58.75	1.0000	1.0000
L29	22	MP3-04	53.75 - 58.75	1.0000	1.0000
L29	23	MP3-04	53.75 - 58.75	1.0000	1.0000
L29	24	MP3-04	53.75 - 58.75	1.0000	1.0000
L29	30	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L29	31	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L29	32	CCI-AFP-060100	53.75 - 58.75	1.0000	1.0000
L30	14	LDF7-50A(1-5/8)	46.58 - 53.75	1.0000	1.0000
L30	22	MP3-04	46.58 - 53.75	1.0000	1.0000
L30	23	MP3-04	46.58 - 53.75	1.0000	1.0000
L30	24	MP3-04	46.58 - 53.75	1.0000	1.0000
L30	30	CCI-AFP-060100	46.58 - 53.75	1.0000	1.0000
L30	31	CCI-AFP-060100	46.58 - 53.75	1.0000	1.0000
L30	32	CCI-AFP-060100	46.58 - 53.75	1.0000	1.0000
L32	14	LDF7-50A(1-5/8)	43.00 - 45.58	1.0000	1.0000
L32	19	MP3-05	43.00 - 45.50	1.0000	1.0000
L32	20	MP3-05	43.00 - 45.50	1.0000	1.0000
L32	21	MP3-05	43.00 - 44.83	1.0000	1.0000
L32	22	MP3-04	43.00 - 45.58	1.0000	1.0000
L32	23	MP3-04	43.00 - 45.58	1.0000	1.0000
L32	24	MP3-04	43.00 - 45.58	1.0000	1.0000
L32	30	CCI-AFP-060100	43.00 - 45.58	1.0000	1.0000
L32	31	CCI-AFP-060100	43.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L32	32	CCI-AFP-060100	45.58 43.00 - 45.58	1.0000	1.0000
L33	14	LDF7-50A(1-5/8)	42.75 - 43.00	1.0000	1.0000
L33	19	MP3-05	42.75 - 43.00	1.0000	1.0000
L33	20	MP3-05	42.75 - 43.00	1.0000	1.0000
L33	21	MP3-05	42.75 - 43.00	1.0000	1.0000
L33	22	MP3-04	42.75 - 43.00	1.0000	1.0000
L33	23	MP3-04	42.75 - 43.00	1.0000	1.0000
L33	24	MP3-04	42.75 - 43.00	1.0000	1.0000
L33	30	CCI-AFP-060100	42.75 - 43.00	1.0000	1.0000
L33	31	CCI-AFP-060100	42.75 - 43.00	1.0000	1.0000
L33	32	CCI-AFP-060100	42.75 - 43.00	1.0000	1.0000
L34	14	LDF7-50A(1-5/8)	42.50 - 42.75	1.0000	1.0000
L34	19	MP3-05	42.50 - 42.75	1.0000	1.0000
L34	20	MP3-05	42.50 - 42.75	1.0000	1.0000
L34	21	MP3-05	42.50 - 42.75	1.0000	1.0000
L34	22	MP3-04	42.50 - 42.75	1.0000	1.0000
L34	23	MP3-04	42.50 - 42.75	1.0000	1.0000
L34	24	MP3-04	42.50 - 42.75	1.0000	1.0000
L34	30	CCI-AFP-060100	42.50 - 42.75	1.0000	1.0000
L34	31	CCI-AFP-060100	42.50 - 42.75	1.0000	1.0000
L34	32	CCI-AFP-060100	42.50 - 42.75	1.0000	1.0000
L35	14	LDF7-50A(1-5/8)	42.25 - 42.50	1.0000	1.0000
L35	19	MP3-05	42.25 - 42.50	1.0000	1.0000
L35	20	MP3-05	42.25 - 42.50	1.0000	1.0000
L35	21	MP3-05	42.25 - 42.50	1.0000	1.0000
L35	22	MP3-04	42.25 - 42.50	1.0000	1.0000
L35	23	MP3-04	42.25 - 42.50	1.0000	1.0000
L35	24	MP3-04	42.25 - 42.50	1.0000	1.0000
L35	30	CCI-AFP-060100	42.25 - 42.50	1.0000	1.0000
L35	31	CCI-AFP-060100	42.25 - 42.50	1.0000	1.0000
L35	32	CCI-AFP-060100	42.25 - 42.50	1.0000	1.0000
L36	14	LDF7-50A(1-5/8)	42.00 - 42.25	1.0000	1.0000
L36	19	MP3-05	42.00 - 42.25	1.0000	1.0000
L36	20	MP3-05	42.00 - 42.25	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L36	21	MP3-05	42.00 - 42.25	1.0000	1.0000
L36	22	MP3-04	42.00 - 42.25	1.0000	1.0000
L36	23	MP3-04	42.00 - 42.25	1.0000	1.0000
L36	24	MP3-04	42.00 - 42.25	1.0000	1.0000
L36	30	CCI-AFP-060100	42.00 - 42.25	1.0000	1.0000
L36	31	CCI-AFP-060100	42.00 - 42.25	1.0000	1.0000
L36	32	CCI-AFP-060100	42.00 - 42.25	1.0000	1.0000
L37	14	LDF7-50A(1-5/8)	41.75 - 42.00	1.0000	1.0000
L37	19	MP3-05	41.75 - 42.00	1.0000	1.0000
L37	20	MP3-05	41.75 - 42.00	1.0000	1.0000
L37	21	MP3-05	41.75 - 42.00	1.0000	1.0000
L37	22	MP3-04	41.75 - 42.00	1.0000	1.0000
L37	23	MP3-04	41.75 - 42.00	1.0000	1.0000
L37	24	MP3-04	41.75 - 42.00	1.0000	1.0000
L37	30	CCI-AFP-060100	41.75 - 42.00	1.0000	1.0000
L37	31	CCI-AFP-060100	41.75 - 42.00	1.0000	1.0000
L37	32	CCI-AFP-060100	41.75 - 42.00	1.0000	1.0000
L38	14	LDF7-50A(1-5/8)	36.75 - 41.75	1.0000	1.0000
L38	19	MP3-05	36.75 - 41.75	1.0000	1.0000
L38	20	MP3-05	36.75 - 41.75	1.0000	1.0000
L38	21	MP3-05	36.75 - 41.75	1.0000	1.0000
L38	22	MP3-04	40.50 - 41.75	1.0000	1.0000
L38	23	MP3-04	40.50 - 41.75	1.0000	1.0000
L38	24	MP3-04	40.50 - 41.75	1.0000	1.0000
L38	30	CCI-AFP-060100	36.75 - 41.75	1.0000	1.0000
L38	31	CCI-AFP-060100	36.75 - 41.75	1.0000	1.0000
L38	32	CCI-AFP-060100	36.75 - 41.75	1.0000	1.0000
L39	14	LDF7-50A(1-5/8)	32.00 - 36.75	1.0000	1.0000
L39	19	MP3-05	32.00 - 36.75	1.0000	1.0000
L39	20	MP3-05	32.00 - 36.75	1.0000	1.0000
L39	21	MP3-05	32.00 - 36.75	1.0000	1.0000
L39	27	CCI-AFP-065125	32.00 - 35.50	1.0000	1.0000
L39	28	CCI-AFP-065125	32.00 - 35.50	1.0000	1.0000
L39	29	CCI-AFP-065125	32.00 - 35.50	1.0000	1.0000
L39	30	CCI-AFP-060100	35.50 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L39	31	CCI-AFP-060100	36.75 35.50 - 36.75	1.0000	1.0000
L39	32	CCI-AFP-060100	35.50 - 36.75	1.0000	1.0000
L40	14	LDF7-50A(1-5/8)	31.75 - 32.00	1.0000	1.0000
L40	19	MP3-05	31.75 - 32.00	1.0000	1.0000
L40	20	MP3-05	31.75 - 32.00	1.0000	1.0000
L40	21	MP3-05	31.75 - 32.00	1.0000	1.0000
L40	27	CCI-AFP-065125	31.75 - 32.00	1.0000	1.0000
L40	28	CCI-AFP-065125	31.75 - 32.00	1.0000	1.0000
L40	29	CCI-AFP-065125	31.75 - 32.00	1.0000	1.0000
L41	14	LDF7-50A(1-5/8)	26.75 - 31.75	1.0000	1.0000
L41	19	MP3-05	26.75 - 31.75	1.0000	1.0000
L41	20	MP3-05	26.75 - 31.75	1.0000	1.0000
L41	21	MP3-05	26.75 - 31.75	1.0000	1.0000
L41	27	CCI-AFP-065125	26.75 - 31.75	1.0000	1.0000
L41	28	CCI-AFP-065125	26.75 - 31.75	1.0000	1.0000
L41	29	CCI-AFP-065125	26.75 - 31.75	1.0000	1.0000
L42	14	LDF7-50A(1-5/8)	21.75 - 26.75	1.0000	1.0000
L42	19	MP3-05	21.75 - 26.75	1.0000	1.0000
L42	20	MP3-05	21.75 - 26.75	1.0000	1.0000
L42	21	MP3-05	21.75 - 26.75	1.0000	1.0000
L42	27	CCI-AFP-065125	21.75 - 26.75	1.0000	1.0000
L42	28	CCI-AFP-065125	21.75 - 26.75	1.0000	1.0000
L42	29	CCI-AFP-065125	21.75 - 26.75	1.0000	1.0000
L43	14	LDF7-50A(1-5/8)	18.00 - 21.75	1.0000	1.0000
L43	16	MP3-05	18.00 - 20.50	1.0000	1.0000
L43	17	MP3-05	18.00 - 20.50	1.0000	1.0000
L43	18	MP3-05	18.00 - 20.50	1.0000	1.0000
L43	19	MP3-05	18.00 - 21.75	1.0000	1.0000
L43	20	MP3-05	18.00 - 21.75	1.0000	1.0000
L43	21	MP3-05	18.00 - 21.75	1.0000	1.0000
L43	27	CCI-AFP-065125	18.00 - 21.75	1.0000	1.0000
L43	28	CCI-AFP-065125	18.00 - 21.75	1.0000	1.0000
L43	29	CCI-AFP-065125	18.00 - 21.75	1.0000	1.0000
L44	14	LDF7-50A(1-5/8)	17.75 - 18.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L44	16	MP3-05	17.75 - 18.00	1.0000	1.0000
L44	17	MP3-05	17.75 - 18.00	1.0000	1.0000
L44	18	MP3-05	17.75 - 18.00	1.0000	1.0000
L44	19	MP3-05	17.75 - 18.00	1.0000	1.0000
L44	20	MP3-05	17.75 - 18.00	1.0000	1.0000
L44	21	MP3-05	17.75 - 18.00	1.0000	1.0000
L44	27	CCI-AFP-065125	17.75 - 18.00	1.0000	1.0000
L44	28	CCI-AFP-065125	17.75 - 18.00	1.0000	1.0000
L44	29	CCI-AFP-065125	17.75 - 18.00	1.0000	1.0000
L45	14	LDF7-50A(1-5/8)	9.92 - 17.75	1.0000	1.0000
L45	16	MP3-05	9.92 - 17.75	1.0000	1.0000
L45	17	MP3-05	9.92 - 17.75	1.0000	1.0000
L45	18	MP3-05	9.92 - 17.75	1.0000	1.0000
L45	19	MP3-05	15.50 - 17.75	1.0000	1.0000
L45	20	MP3-05	15.50 - 17.75	1.0000	1.0000
L45	21	MP3-05	15.50 - 17.75	1.0000	1.0000
L45	26	CCI-AFP-065125	9.92 - 15.50	1.0000	1.0000
L45	27	CCI-AFP-065125	10.50 - 17.75	1.0000	1.0000
L45	28	CCI-AFP-065125	9.92 - 17.75	1.0000	1.0000
L45	29	CCI-AFP-065125	9.92 - 17.75	1.0000	1.0000
L47	14	LDF7-50A(1-5/8)	3.92 - 8.92	1.0000	1.0000
L47	16	MP3-05	3.92 - 8.92	1.0000	1.0000
L47	17	MP3-05	3.92 - 8.92	1.0000	1.0000
L47	18	MP3-05	3.92 - 8.92	1.0000	1.0000
L47	26	CCI-AFP-065125	3.92 - 8.92	1.0000	1.0000
L47	28	CCI-AFP-065125	3.92 - 8.92	1.0000	1.0000
L47	29	CCI-AFP-065125	3.92 - 8.92	1.0000	1.0000
L48	14	LDF7-50A(1-5/8)	2.75 - 3.92	1.0000	1.0000
L48	16	MP3-05	2.75 - 3.92	1.0000	1.0000
L48	17	MP3-05	2.75 - 3.92	1.0000	1.0000
L48	18	MP3-05	2.75 - 3.92	1.0000	1.0000
L48	26	CCI-AFP-065125	2.75 - 3.92	1.0000	1.0000
L48	28	CCI-AFP-065125	2.75 - 3.92	1.0000	1.0000
L48	29	CCI-AFP-065125	2.75 - 3.92	1.0000	1.0000
L49	14	LDF7-50A(1-5/8)	2.50 - 2.75	1.0000	1.0000
L49	16	MP3-05	2.50 - 2.75	1.0000	1.0000
L49	17	MP3-05	2.50 - 2.75	1.0000	1.0000
L49	18	MP3-05	2.50 - 2.75	1.0000	1.0000
L49	26	CCI-AFP-065125	2.50 - 2.75	1.0000	1.0000
L49	28	CCI-AFP-065125	2.50 - 2.75	1.0000	1.0000
L49	29	CCI-AFP-065125	2.50 - 2.75	1.0000	1.0000
L50	14	LDF7-50A(1-5/8)	0.00 - 2.50	1.0000	1.0000
L50	16	MP3-05	0.00 - 2.50	1.0000	1.0000
L50	17	MP3-05	0.00 - 2.50	1.0000	1.0000
L50	18	MP3-05	0.00 - 2.50	1.0000	1.0000
L50	26	CCI-AFP-065125	0.00 - 2.50	1.0000	1.0000
L50	28	CCI-AFP-065125	0.00 - 2.50	1.0000	1.0000
L50	29	CCI-AFP-065125	0.00 - 2.50	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) ADA-85408580CF w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	4.95	3.42	0.03
						1/2" Ice	5.32	4.02	0.07
						1" Ice	5.71	4.64	0.12
						2" Ice	6.51	5.92	0.23
BXA-80080/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	5.04	4.03	0.03
						1/2" Ice	5.42	4.65	0.08
						1" Ice	5.81	5.28	0.13
						2" Ice	6.62	6.56	0.25
BXA-80080/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	5.04	4.03	0.03
						1/2" Ice	5.42	4.65	0.08
						1" Ice	5.81	5.28	0.13
						2" Ice	6.62	6.56	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	9.47	7.76	0.09
						1/2" Ice	10.09	9.00	0.17
						1" Ice	10.67	10.02	0.25
						2" Ice	11.83	11.90	0.46
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	9.47	7.76	0.09
						1/2" Ice	10.09	9.00	0.17
						1" Ice	10.67	10.02	0.25
						2" Ice	11.83	11.90	0.46
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	9.47	7.76	0.09
						1/2" Ice	10.09	9.00	0.17
						1" Ice	10.67	10.02	0.25
						2" Ice	11.83	11.90	0.46
B66A RRH4X45	A	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	2.58	1.63	0.07
						1/2" Ice	2.79	1.81	0.09
						1" Ice	3.01	2.00	0.11
						2" Ice	3.48	2.40	0.17
B66A RRH4X45	B	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	2.58	1.63	0.07
						1/2" Ice	2.79	1.81	0.09
						1" Ice	3.01	2.00	0.11
						2" Ice	3.48	2.40	0.17
B66A RRH4X45	C	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	2.58	1.63	0.07
						1/2" Ice	2.79	1.81	0.09
						1" Ice	3.01	2.00	0.11
						2" Ice	3.48	2.40	0.17
RRH2X60-700	A	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	3.50	1.82	0.06
						1/2" Ice	3.76	2.05	0.08
						1" Ice	4.03	2.29	0.11
						2" Ice	4.58	2.79	0.17
RRH2X60-700	B	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	3.50	1.82	0.06
						1/2" Ice	3.76	2.05	0.08
						1" Ice	4.03	2.29	0.11
						2" Ice	4.58	2.79	0.17
RRH2X60-700	C	From Leg	4.00 0.00 2.00	0.0000	173.00	No Ice	3.50	1.82	0.06
						1/2" Ice	3.76	2.05	0.08
						1" Ice	4.03	2.29	0.11
						2" Ice	4.58	2.79	0.17
DB-C1-12C-24AB-0Z	A	From Leg	4.00 0.00	0.0000	173.00	No Ice	4.06	3.10	0.03
						1/2" Ice	4.32	3.34	0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			2.00			Ice	4.58	3.58	0.11
						1" Ice	5.14	4.09	0.20
						2" Ice			
Platform Mount [LP 601-1]	C	None		0.0000	173.00	No Ice	28.47	28.47	1.12
						1/2"	33.59	33.59	1.51
						Ice	38.71	38.71	1.91
						1" Ice	48.95	48.95	2.69
						2" Ice			
Miscellaneous [NA 507-2]	C	None		0.0000	173.00	No Ice	11.10	11.10	0.43
						1/2"	14.30	14.30	0.58
						Ice	17.50	17.50	0.74
						1" Ice	23.90	23.90	1.05
						2" Ice			

HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	9.22	6.25	0.07
						1/2"	9.98	6.96	0.14
						Ice	10.76	7.70	0.22
						1" Ice	12.36	9.22	0.42
						2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	9.22	6.25	0.07
						1/2"	9.98	6.96	0.14
						Ice	10.76	7.70	0.22
						1" Ice	12.36	9.22	0.42
						2" Ice			
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	9.22	6.25	0.07
						1/2"	9.98	6.96	0.14
						Ice	10.76	7.70	0.22
						1" Ice	12.36	9.22	0.42
						2" Ice			
QS66512-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	2.60	5.00	0.14
						1/2"	9.29	9.66	0.21
						Ice	9.91	10.62	0.30
						1" Ice	11.18	12.61	0.49
						2" Ice			
QS66512-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	2.60	5.00	0.14
						1/2"	9.29	9.66	0.21
						Ice	9.91	10.62	0.30
						1" Ice	11.18	12.61	0.49
						2" Ice			
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	2.60	5.00	0.14
						1/2"	9.29	9.66	0.21
						Ice	9.91	10.62	0.30
						1" Ice	11.18	12.61	0.49
						2" Ice			
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	3.60	2.95	0.07
						1/2"	4.00	3.34	0.11
						Ice	4.42	3.74	0.17
						1" Ice	5.29	4.59	0.30
						2" Ice			
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	5.75	4.25	0.06
						1/2"	6.18	5.01	0.10
						Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice			
RRUS 11	A	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	2.79	1.19	0.05
						1/2"	3.00	1.34	0.07
						Ice	3.21	1.50	0.10
						1" Ice	3.67	1.84	0.15
						2" Ice			
RRUS 11	B	From Leg	4.00 0.00 0.00	0.0000	162.00	No Ice	2.79	1.19	0.05
						1/2"	3.00	1.34	0.07
						Ice	3.21	1.50	0.10
						1" Ice	3.67	1.84	0.15
						2" Ice			
RRUS 11	C	From Leg	4.00	0.0000	162.00	No Ice	2.79	1.19	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	3.00	1.34	0.07
			0.00			Ice	3.21	1.50	0.10
						1" Ice	3.67	1.84	0.15
						2" Ice			
RRUS 32 B2	A	From Leg	4.00	0.0000	162.00	No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			0.00			Ice	3.19	2.05	0.10
						1" Ice	3.68	2.46	0.16
						2" Ice			
RRUS 32 B2	B	From Leg	4.00	0.0000	162.00	No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			0.00			Ice	3.19	2.05	0.10
						1" Ice	3.68	2.46	0.16
						2" Ice			
RRUS 32 B2	C	From Leg	4.00	0.0000	162.00	No Ice	2.74	1.67	0.05
			0.00			1/2"	2.96	1.86	0.07
			0.00			Ice	3.19	2.05	0.10
						1" Ice	3.68	2.46	0.16
						2" Ice			
RRUS-32 B30	A	From Leg	4.00	0.0000	162.00	No Ice	3.31	2.42	0.08
			0.00			1/2"	3.56	2.64	0.10
			0.00			Ice	3.81	2.86	0.14
						1" Ice	4.33	3.32	0.21
						2" Ice			
RRUS-32 B30	B	From Leg	4.00	0.0000	162.00	No Ice	3.31	2.42	0.08
			0.00			1/2"	3.56	2.64	0.10
			0.00			Ice	3.81	2.86	0.14
						1" Ice	4.33	3.32	0.21
						2" Ice			
RRUS-32 B30	C	From Leg	4.00	0.0000	162.00	No Ice	3.31	2.42	0.08
			0.00			1/2"	3.56	2.64	0.10
			0.00			Ice	3.81	2.86	0.14
						1" Ice	4.33	3.32	0.21
						2" Ice			
DBC0061F1V51-2	A	From Leg	4.00	0.0000	162.00	No Ice	0.21	0.41	0.01
			0.00			1/2"	0.28	0.50	0.02
			0.00			Ice	0.35	0.59	0.02
						1" Ice	0.52	0.79	0.04
						2" Ice			
DBC0061F1V51-2	B	From Leg	4.00	0.0000	162.00	No Ice	0.21	0.41	0.01
			0.00			1/2"	0.28	0.50	0.02
			0.00			Ice	0.35	0.59	0.02
						1" Ice	0.52	0.79	0.04
						2" Ice			
(2) LGP2140X	A	From Leg	4.00	0.0000	162.00	No Ice	1.08	0.36	0.01
			0.00			1/2"	1.21	0.45	0.02
			0.00			Ice	1.35	0.56	0.03
						1" Ice	1.66	0.78	0.05
						2" Ice			
(2) LGP2140X	B	From Leg	4.00	0.0000	162.00	No Ice	1.08	0.36	0.01
			0.00			1/2"	1.21	0.45	0.02
			0.00			Ice	1.35	0.56	0.03
						1" Ice	1.66	0.78	0.05
						2" Ice			
DC6-48-60-18-8C	C	From Leg	4.00	0.0000	162.00	No Ice	2.74	2.74	0.03
			0.00			1/2"	2.96	2.96	0.05
			0.00			Ice	3.20	3.20	0.08
						1" Ice	3.68	3.68	0.15
						2" Ice			
DC6-48-60-18-8F	C	From Leg	4.00	0.0000	162.00	No Ice	1.21	1.21	0.03
			0.00			1/2"	1.89	1.89	0.05
			0.00			Ice	2.11	2.11	0.08
						1" Ice	2.57	2.57	0.14
						2" Ice			
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	162.00	No Ice	1.43	1.43	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	162.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
(2) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	162.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice			
Platform Mount [LP 303-1]	C	None		0.0000	162.00	No Ice	14.66	14.66	1.25
						1/2"	18.87	18.87	1.48
						Ice	23.08	23.08	1.71
						1" Ice	31.50	31.50	2.18
						2" Ice			

RRUS 01 W/SOLAR SHIELD	A	From Leg	1.00	0.0000	144.00	No Ice	3.14	1.45	0.04
			0.00			1/2"	3.37	1.62	0.07
			-1.00			Ice	3.60	1.80	0.09
						1" Ice	4.09	2.19	0.15
						2" Ice			
RRUS 01 W/SOLAR SHIELD	B	From Leg	1.00	0.0000	144.00	No Ice	3.14	1.45	0.04
			0.00			1/2"	3.37	1.62	0.07
			-1.00			Ice	3.60	1.80	0.09
						1" Ice	4.09	2.19	0.15
						2" Ice			
RRUS 01 W/SOLAR SHIELD	C	From Leg	1.00	0.0000	144.00	No Ice	3.14	1.45	0.04
			0.00			1/2"	3.37	1.62	0.07
			-1.00			Ice	3.60	1.80	0.09
						1" Ice	4.09	2.19	0.15
						2" Ice			
RRUS 11 B4	A	From Leg	1.00	0.0000	144.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			-4.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS 11 B4	B	From Leg	1.00	0.0000	144.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			-4.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
RRUS 11 B4	C	From Leg	1.00	0.0000	144.00	No Ice	2.83	1.18	0.05
			0.00			1/2"	3.04	1.33	0.07
			-4.00			Ice	3.26	1.48	0.10
						1" Ice	3.71	1.83	0.15
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	1.00	0.0000	144.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	1.00	0.0000	144.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	1.00	0.0000	144.00	No Ice	14.69	6.87	0.19
			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
RADIO 4449 B12/B71	A	From Leg	1.00 0.00 0.00	0.0000	144.00	No Ice	1.65	1.16	0.07
						1/2" Ice	1.81	1.30	0.09
						Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
RADIO 4449 B12/B71	B	From Leg	1.00 0.00 0.00	0.0000	144.00	No Ice	1.65	1.16	0.07
						1/2" Ice	1.81	1.30	0.09
						Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
RADIO 4449 B12/B71	C	From Leg	1.00 0.00 0.00	0.0000	144.00	No Ice	1.65	1.16	0.07
						1/2" Ice	1.81	1.30	0.09
						Ice	1.98	1.45	0.11
						1" Ice	2.34	1.76	0.16
						2" Ice			
Pipe Mount [PM 601-3]	C	None		0.0000	144.00	No Ice	4.39	4.39	0.20
						1/2" Ice	5.48	5.48	0.24
						Ice	6.57	6.57	0.28
						1" Ice	8.75	8.75	0.36
						2" Ice			
*** ANT450F6	A	From Leg	1.00 0.00 0.00	0.0000	130.00	No Ice	0.79	0.79	0.01
1/2" Ice						1.01	1.01	0.02	
Ice						1.23	1.23	0.03	
1" Ice						1.72	1.72	0.05	
2" Ice									
Sector Mount [SM 301-1]	A	None		0.0000	130.00	No Ice	15.43	10.89	0.43
						1/2" Ice	20.15	15.23	0.61
						Ice	24.87	19.57	0.79
						1" Ice	34.31	28.25	1.15
						2" Ice			
*** ANT450Y5-WR	A	From Leg	1.00 0.00 0.00	0.0000	120.00	No Ice	0.12	0.20	0.01
1/2" Ice						0.20	0.34	0.01	
Ice						0.30	0.49	0.02	
1" Ice						0.51	0.81	0.04	
2" Ice									
Sector Mount [SM 301-1]	A	None		0.0000	120.00	No Ice	15.43	10.89	0.43
						1/2" Ice	20.15	15.23	0.61
						Ice	24.87	19.57	0.79
						1" Ice	34.31	28.25	1.15
						2" Ice			

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _z psf	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 175.00- 170.00	172.48	1.155	38	9.706	A	0.000	9.706	9.706	100.00	0.000	0.000
					B	0.000	9.706	100.00	0.000	0.000	
					C	0.000	9.706	100.00	0.000	0.000	
L2 170.00- 165.00	167.48	1.145	37	10.094	A	0.000	10.094	10.094	100.00	0.000	0.000
					B	0.000	10.094	100.00	0.000	0.000	
					C	0.000	10.094	100.00	0.000	0.000	
L3 165.00- 160.00	162.48	1.135	37	10.482	A	0.000	10.482	10.482	100.00	1.188	0.000
					B	0.000	10.482	100.00	0.000	0.000	
					C	0.000	10.482	100.00	0.000	0.000	
L4 160.00- 155.00	157.49	1.125	37	10.871	A	0.000	10.871	10.871	100.00	2.970	0.000
					B	0.000	10.871	100.00	0.000	0.000	
					C	0.000	10.871	100.00	0.000	0.000	
L5 155.00-	150.20	1.11	36	21.724	A	0.000	21.724	21.724	100.00	5.643	0.000

Section Elevation ft	z ft	K _Z	q _z psf	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
145.50					B	0.000	21.724		100.00	0.000	0.000
					C	0.000	21.724		100.00	0.000	0.000
L6 145.50- 145.00	145.25	1.099	36	1.162	A	0.000	1.162	1.162	100.00	0.297	0.000
					B	0.000	1.162		100.00	0.000	0.000
					C	0.000	1.162		100.00	0.000	0.000
L7 145.00- 140.00	142.49	1.093	36	11.833	A	0.000	11.833	11.833	100.00	2.970	0.000
					B	0.000	11.833		100.00	0.000	0.000
					C	0.000	11.833		100.00	0.000	0.000
L8 140.00- 135.00	137.49	1.082	35	12.221	A	0.000	12.221	12.221	100.00	2.970	0.000
					B	0.000	12.221		100.00	0.000	0.000
					C	0.000	12.221		100.00	0.000	0.000
L9 135.00- 130.00	132.49	1.071	35	12.609	A	0.000	12.609	12.609	100.00	2.970	0.000
					B	0.000	12.609		100.00	0.000	0.000
					C	0.000	12.609		100.00	0.000	0.000
L10 130.00- 125.00	127.49	1.059	35	12.997	A	0.000	12.997	12.997	100.00	2.970	0.000
					B	0.000	12.997		100.00	0.000	0.000
					C	0.000	12.997		100.00	0.000	0.000
L11 125.00- 120.00	122.49	1.047	34	13.386	A	0.000	13.386	13.386	100.00	2.970	0.000
					B	0.000	13.386		100.00	0.000	0.000
					C	0.000	13.386		100.00	0.000	0.000
L12 120.00- 115.00	117.49	1.035	34	13.774	A	0.000	13.774	13.774	100.00	2.970	0.000
					B	0.000	13.774		100.00	0.000	0.000
					C	0.000	13.774		100.00	0.000	0.000
L13 115.00- 110.00	112.49	1.022	33	14.162	A	0.000	14.162	14.162	100.00	2.970	0.000
					B	0.000	14.162		100.00	0.000	0.000
					C	0.000	14.162		100.00	0.000	0.000
L14 110.00- 105.00	107.49	1.009	33	14.550	A	0.000	14.550	14.550	100.00	2.970	0.000
					B	0.000	14.550		100.00	0.000	0.000
					C	0.000	14.550		100.00	0.000	0.000
L15 105.00- 95.50	100.21	0.989	32	28.715	A	0.000	28.715	28.715	100.00	5.643	0.000
					B	0.000	28.715		100.00	0.000	0.000
					C	0.000	28.715		100.00	0.000	0.000
L16 95.50- 94.50	95.00	0.974	32	3.048	A	0.000	3.048	3.048	100.00	0.594	0.000
					B	0.000	3.048		100.00	0.000	0.000
					C	0.000	3.048		100.00	0.000	0.000
L17 94.50- 89.50	91.99	0.965	32	15.475	A	0.000	15.475	15.475	100.00	2.970	0.000
					B	0.000	15.475		100.00	0.000	0.000
					C	0.000	15.475		100.00	0.000	0.000
L18 89.50- 84.50	86.99	0.95	31	15.863	A	0.000	15.863	15.863	100.00	4.140	0.000
					B	0.000	15.863		100.00	1.170	0.000
					C	0.000	15.863		100.00	1.170	0.000
L19 84.50- 83.17	83.83	0.94	31	4.285	A	0.000	4.285	4.285	100.00	2.120	0.000
					B	0.000	4.285		100.00	1.330	0.000
					C	0.000	4.285		100.00	1.330	0.000
L20 83.17- 82.92	83.04	0.937	31	0.807	A	0.000	0.807	0.807	100.00	0.399	0.000
					B	0.000	0.807		100.00	0.250	0.000
					C	0.000	0.807		100.00	0.250	0.000
L21 82.92- 77.92	80.41	0.929	30	16.350	A	0.000	16.350	16.350	100.00	7.970	0.000
					B	0.000	16.350		100.00	5.000	0.000
					C	0.000	16.350		100.00	5.000	0.000
L22 77.92- 72.92	75.41	0.912	30	16.738	A	0.000	16.738	16.738	100.00	7.970	0.000
					B	0.000	16.738		100.00	5.000	0.000
					C	0.000	16.738		100.00	5.000	0.000
L23 72.92- 67.92	70.41	0.894	29	17.128	A	0.000	17.128	17.128	100.00	7.970	0.000
					B	0.000	17.128		100.00	5.000	0.000
					C	0.000	17.128		100.00	5.000	0.000
L24 67.92- 65.50	66.71	0.88	29	8.430	A	0.000	8.430	8.430	100.00	3.857	0.000
					B	0.000	8.430		100.00	2.420	0.000
					C	0.000	8.430		100.00	2.420	0.000
L25 65.50- 65.25	65.37	0.875	29	0.876	A	0.000	0.876	0.876	100.00	0.598	0.000
					B	0.000	0.876		100.00	0.449	0.000
					C	0.000	0.876		100.00	0.449	0.000
L26 65.25- 64.00	64.62	0.872	29	4.395	A	0.000	4.395	4.395	100.00	2.988	0.000
					B	0.000	4.395		100.00	2.246	0.000
					C	0.000	4.395		100.00	2.246	0.000
L27 64.00- 63.75	63.87	0.869	28	0.881	A	0.000	0.881	0.881	100.00	0.598	0.000
					B	0.000	0.881		100.00	0.449	0.000
					C	0.000	0.881		100.00	0.449	0.000

Section Elevation ft	z ft	K _Z	q _z psf	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
L28 63.75- 58.75	61.24	0.859	28	17.826	A	0.000	17.826	17.826	100.00	11.953	0.000
					B	0.000	17.826				
					C	0.000	17.826				
L29 58.75- 53.75	56.24	0.838	27	18.214	A	0.000	18.214	18.214	100.00	11.953	0.000
					B	0.000	18.214				
					C	0.000	18.214				
L30 53.75- 46.58	50.15	0.811	27	26.799	A	0.000	26.799	26.799	100.00	17.141	0.000
					B	0.000	26.799				
					C	0.000	26.799				
L31 46.58- 45.58	46.08	0.792	26	3.735	A	0.000	3.735	3.735	100.00	2.391	0.000
					B	0.000	3.735				
					C	0.000	3.735				
L32 45.58- 43.00	44.29	0.783	26	9.709	A	0.000	9.709	9.709	100.00	8.389	0.000
					B	0.000	9.709				
					C	0.000	9.709				
L33 43.00- 42.75	42.87	0.776	25	0.946	A	0.000	0.946	0.946	100.00	0.820	0.000
					B	0.000	0.946				
					C	0.000	0.946				
L34 42.75- 42.50	42.62	0.775	25	0.947	A	0.000	0.947	0.947	100.00	0.820	0.000
					B	0.000	0.947				
					C	0.000	0.947				
L35 42.50- 42.25	42.37	0.773	25	0.947	A	0.000	0.947	0.947	100.00	0.820	0.000
					B	0.000	0.947				
					C	0.000	0.947				
L36 42.25- 42.00	42.12	0.772	25	0.948	A	0.000	0.948	0.948	100.00	0.820	0.000
					B	0.000	0.948				
					C	0.000	0.948				
L37 42.00- 41.75	41.87	0.771	25	0.950	A	0.000	0.950	0.950	100.00	0.820	0.000
					B	0.000	0.950				
					C	0.000	0.950				
L38 41.75- 36.75	39.24	0.756	25	19.202	A	0.000	19.202	19.202	100.00	13.408	0.000
					B	0.000	19.202				
					C	0.000	19.202				
L39 36.75- 32.00	34.37	0.728	24	18.603	A	0.000	18.603	18.603	100.00	12.083	0.000
					B	0.000	18.603				
					C	0.000	18.603				
L40 32.00- 31.75	31.87	0.713	23	0.988	A	0.000	0.988	0.988	100.00	0.641	0.000
					B	0.000	0.988				
					C	0.000	0.988				
L41 31.75- 26.75	29.24	0.7	23	19.975	A	0.000	19.975	19.975	100.00	12.828	0.000
					B	0.000	19.975				
					C	0.000	19.975				
L42 26.75- 21.75	24.24	0.7	23	20.363	A	0.000	20.363	20.363	100.00	12.828	0.000
					B	0.000	20.363				
					C	0.000	20.363				
L43 21.75- 18.00	19.87	0.7	23	15.527	A	0.000	15.527	15.527	100.00	11.842	0.000
					B	0.000	15.527				
					C	0.000	15.527				
L44 18.00- 17.75	17.87	0.7	23	1.043	A	0.000	1.043	1.043	100.00	0.864	0.000
					B	0.000	1.043				
					C	0.000	1.043				
L45 17.75- 9.92	13.82	0.7	23	33.155	A	0.000	33.155	33.155	100.00	27.505	0.000
					B	0.000	33.155				
					C	0.000	33.155				
L46 9.92-8.92	9.42	0.7	23	4.234	A	0.000	4.234	4.234	100.00	2.566	0.000
					B	0.000	4.234				
					C	0.000	4.234				
L47 8.92-3.92	6.41	0.7	23	21.404	A	0.000	21.404	21.404	100.00	12.828	0.000
					B	0.000	21.404				
					C	0.000	21.404				
L48 3.92-2.75	3.33	0.7	23	5.065	A	0.000	5.065	5.065	100.00	3.002	0.000
					B	0.000	5.065				
					C	0.000	5.065				
L49 2.75-2.50	2.62	0.7	23	1.085	A	0.000	1.085	1.085	100.00	0.641	0.000
					B	0.000	1.085				
					C	0.000	1.085				
L50 2.50-0.00	1.25	0.7	23	10.899	A	0.000	10.899	10.899	100.00	6.414	0.000
					B	0.000	10.899				
					C	0.000	10.899				

Section Elevation ft	z ft	K _Z	q _z psf	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
					C	0.000	10.899		100.00	4.929	0.000

Tower Pressure - With Ice

G_H = 1.100

Section Elevation ft	z ft	K _Z	q _z psf	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 _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 175.00-170.00	172.48	1.155	7	1.5043	10.959	A	0.000	10.959	10.959	100.00	0.000	0.000
						B	0.000	10.959		100.00	0.000	0.000
						C	0.000	10.959		100.00	0.000	0.000
L2 170.00-165.00	167.48	1.145	7	1.4999	11.344	A	0.000	11.344	11.344	100.00	0.000	0.000
						B	0.000	11.344		100.00	0.000	0.000
						C	0.000	11.344		100.00	0.000	0.000
L3 165.00-160.00	162.48	1.135	6	1.4953	11.728	A	0.000	11.728	11.728	100.00	2.233	0.000
						B	0.000	11.728		100.00	0.000	0.000
						C	0.000	11.728		100.00	0.000	0.000
L4 160.00-155.00	157.49	1.125	6	1.4907	12.113	A	0.000	12.113	12.113	100.00	5.576	0.000
						B	0.000	12.113		100.00	0.000	0.000
						C	0.000	12.113		100.00	0.000	0.000
L5 155.00-145.50	150.20	1.11	6	1.4836	24.073	A	0.000	24.073	24.073	100.00	10.577	0.000
						B	0.000	24.073		100.00	0.000	0.000
						C	0.000	24.073		100.00	0.000	0.000
L6 145.50-145.00	145.25	1.099	6	1.4787	1.286	A	0.000	1.286	1.286	100.00	0.557	0.000
						B	0.000	1.286		100.00	0.000	0.000
						C	0.000	1.286		100.00	0.000	0.000
L7 145.00-140.00	142.49	1.093	6	1.4758	13.063	A	0.000	13.063	13.063	100.00	5.557	0.000
						B	0.000	13.063		100.00	0.000	0.000
						C	0.000	13.063		100.00	0.000	0.000
L8 140.00-135.00	137.49	1.082	6	1.4706	13.446	A	0.000	13.446	13.446	100.00	5.551	0.000
						B	0.000	13.446		100.00	0.000	0.000
						C	0.000	13.446		100.00	0.000	0.000
L9 135.00-130.00	132.49	1.071	6	1.4651	13.830	A	0.000	13.830	13.830	100.00	5.544	0.000
						B	0.000	13.830		100.00	0.000	0.000
						C	0.000	13.830		100.00	0.000	0.000
L10 130.00-125.00	127.49	1.059	6	1.4595	14.214	A	0.000	14.214	14.214	100.00	5.537	0.000
						B	0.000	14.214		100.00	0.000	0.000
						C	0.000	14.214		100.00	0.000	0.000
L11 125.00-120.00	122.49	1.047	6	1.4537	14.597	A	0.000	14.597	14.597	100.00	5.530	0.000
						B	0.000	14.597		100.00	0.000	0.000
						C	0.000	14.597		100.00	0.000	0.000
L12 120.00-115.00	117.49	1.035	6	1.4476	14.980	A	0.000	14.980	14.980	100.00	5.522	0.000
						B	0.000	14.980		100.00	0.000	0.000
						C	0.000	14.980		100.00	0.000	0.000
L13 115.00-110.00	112.49	1.022	6	1.4414	15.363	A	0.000	15.363	15.363	100.00	5.514	0.000
						B	0.000	15.363		100.00	0.000	0.000
						C	0.000	15.363		100.00	0.000	0.000
L14 110.00-105.00	107.49	1.009	6	1.4348	15.746	A	0.000	15.746	15.746	100.00	5.506	0.000
						B	0.000	15.746		100.00	0.000	0.000
						C	0.000	15.746		100.00	0.000	0.000
L15 105.00-95.50	100.21	0.989	6	1.4248	30.971	A	0.000	30.971	30.971	100.00	10.438	0.000
						B	0.000	30.971		100.00	0.000	0.000
						C	0.000	30.971		100.00	0.000	0.000
L16 95.50-94.50	95.00	0.974	6	1.4172	3.286	A	0.000	3.286	3.286	100.00	1.099	0.000
						B	0.000	3.286		100.00	0.000	0.000
						C	0.000	3.286		100.00	0.000	0.000
L17 94.50-89.50	91.99	0.965	5	1.4126	16.652	A	0.000	16.652	16.652	100.00	5.478	0.000
						B	0.000	16.652		100.00	0.000	0.000
						C	0.000	16.652		100.00	0.000	0.000
L18 89.50-84.50	86.99	0.95	5	1.4048	17.034	A	0.000	17.034	17.034	100.00	6.967	0.000
						B	0.000	17.034		100.00	1.499	0.000
						C	0.000	17.034		100.00	1.499	0.000
L19 84.50-83.17	83.83	0.94	5	1.3996	4.595	A	0.000	4.595	4.595	100.00	3.155	0.000
						B	0.000	4.595		100.00	1.702	0.000
						C	0.000	4.595		100.00	1.702	0.000

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{reg} ft ²	Leg %	C _A A _{In} Face ft ²	C _A A _{Out} Face ft ²
L20 83.17-82.92	83.04	0.937	5	1.3983	0.866	A	0.000	0.866	0.866	100.00	0.593	0.000
						B	0.000	0.866	0.866	100.00	0.320	0.000
						C	0.000	0.866	0.866	100.00	0.320	0.000
L21 82.92-77.92	80.41	0.929	5	1.3938	17.512	A	0.000	17.512	17.512	100.00	11.848	0.000
						B	0.000	17.512	17.512	100.00	6.394	0.000
						C	0.000	17.512	17.512	100.00	6.394	0.000
L22 77.92-72.92	75.41	0.912	5	1.3848	17.892	A	0.000	17.892	17.892	100.00	11.828	0.000
						B	0.000	17.892	17.892	100.00	6.385	0.000
						C	0.000	17.892	17.892	100.00	6.385	0.000
L23 72.92-67.92	70.41	0.894	5	1.3754	18.274	A	0.000	18.274	18.274	100.00	11.807	0.000
						B	0.000	18.274	18.274	100.00	6.375	0.000
						C	0.000	18.274	18.274	100.00	6.375	0.000
L24 67.92-65.50	66.71	0.88	5	1.3680	8.981	A	0.000	8.981	8.981	100.00	5.707	0.000
						B	0.000	8.981	8.981	100.00	3.082	0.000
						C	0.000	8.981	8.981	100.00	3.082	0.000
L25 65.50-65.25	65.37	0.875	5	1.3652	0.933	A	0.000	0.933	0.933	100.00	0.857	0.000
						B	0.000	0.933	0.933	100.00	0.586	0.000
						C	0.000	0.933	0.933	100.00	0.586	0.000
L26 65.25-64.00	64.62	0.872	5	1.3636	4.679	A	0.000	4.679	4.679	100.00	4.282	0.000
						B	0.000	4.679	4.679	100.00	2.928	0.000
						C	0.000	4.679	4.679	100.00	2.928	0.000
L27 64.00-63.75	63.87	0.869	5	1.3620	0.938	A	0.000	0.938	0.938	100.00	0.856	0.000
						B	0.000	0.938	0.938	100.00	0.585	0.000
						C	0.000	0.938	0.938	100.00	0.585	0.000
L28 63.75-58.75	61.24	0.859	5	1.3563	18.956	A	0.000	18.956	18.956	100.00	17.104	0.000
						B	0.000	18.956	18.956	100.00	11.696	0.000
						C	0.000	18.956	18.956	100.00	11.696	0.000
L29 58.75-53.75	56.24	0.838	5	1.3448	19.334	A	0.000	19.334	19.334	100.00	17.066	0.000
						B	0.000	19.334	19.334	100.00	11.673	0.000
						C	0.000	19.334	19.334	100.00	11.673	0.000
L30 53.75-46.58	50.15	0.811	5	1.3295	28.387	A	0.000	28.387	28.387	100.00	24.402	0.000
						B	0.000	28.387	28.387	100.00	16.695	0.000
						C	0.000	28.387	28.387	100.00	16.695	0.000
L31 46.58-45.58	46.08	0.792	4	1.3183	3.957	A	0.000	3.957	3.957	100.00	3.403	0.000
						B	0.000	3.957	3.957	100.00	2.328	0.000
						C	0.000	3.957	3.957	100.00	2.328	0.000
L32 45.58-43.00	44.29	0.783	4	1.3131	10.274	A	0.000	10.274	10.274	100.00	11.630	0.000
						B	0.000	10.274	10.274	100.00	8.868	0.000
						C	0.000	10.274	10.274	100.00	8.097	0.000
L33 43.00-42.75	42.87	0.776	4	1.3088	1.000	A	0.000	1.000	1.000	100.00	1.135	0.000
						B	0.000	1.000	1.000	100.00	0.868	0.000
						C	0.000	1.000	1.000	100.00	0.868	0.000
L34 42.75-42.50	42.62	0.775	4	1.3081	1.001	A	0.000	1.001	1.001	100.00	1.135	0.000
						B	0.000	1.001	1.001	100.00	0.867	0.000
						C	0.000	1.001	1.001	100.00	0.867	0.000
L35 42.50-42.25	42.37	0.773	4	1.3073	1.002	A	0.000	1.002	1.002	100.00	1.135	0.000
						B	0.000	1.002	1.002	100.00	0.867	0.000
						C	0.000	1.002	1.002	100.00	0.867	0.000
L36 42.25-42.00	42.12	0.772	4	1.3065	1.003	A	0.000	1.003	1.003	100.00	1.135	0.000
						B	0.000	1.003	1.003	100.00	0.867	0.000
						C	0.000	1.003	1.003	100.00	0.867	0.000
L37 42.00-41.75	41.87	0.771	4	1.3057	1.004	A	0.000	1.004	1.004	100.00	1.134	0.000
						B	0.000	1.004	1.004	100.00	0.867	0.000
						C	0.000	1.004	1.004	100.00	0.867	0.000
L38 41.75-36.75	39.24	0.756	4	1.2973	20.283	A	0.000	20.283	20.283	100.00	18.690	0.000
						B	0.000	20.283	20.283	100.00	13.356	0.000
						C	0.000	20.283	20.283	100.00	13.356	0.000
L39 36.75-32.00	34.37	0.728	4	1.2802	19.617	A	0.000	19.617	19.617	100.00	16.741	0.000
						B	0.000	19.617	19.617	100.00	11.694	0.000
						C	0.000	19.617	19.617	100.00	11.694	0.000
L40 32.00-31.75	31.87	0.713	4	1.2706	1.041	A	0.000	1.041	1.041	100.00	0.885	0.000
						B	0.000	1.041	1.041	100.00	0.620	0.000
						C	0.000	1.041	1.041	100.00	0.620	0.000
L41 31.75-26.75	29.24	0.7	4	1.2597	21.025	A	0.000	21.025	21.025	100.00	17.665	0.000
						B	0.000	21.025	21.025	100.00	12.378	0.000
						C	0.000	21.025	21.025	100.00	12.378	0.000
L42 26.75-21.75	24.24	0.7	4	1.2363	21.393	A	0.000	21.393	21.393	100.00	17.589	0.000
						B	0.000	21.393	21.393	100.00	12.331	0.000
						C	0.000	21.393	21.393	100.00	12.331	0.000

Section Elevation ft	z ft	K _Z	q _z psf	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 _A A _A In Face ft ²	C _A A _A Out Face ft ²
L43 21.75-18.00	19.87	0.7	4	1.2119	16.285	C	0.000	21.393	16.285	100.00	12.331	0.000
						A	0.000	16.285		100.00	15.959	0.000
						B	0.000	16.285		100.00	12.038	0.000
L44 18.00-17.75	17.87	0.7	4	1.1992	1.093	C	0.000	16.285	1.093	100.00	12.038	0.000
						A	0.000	1.093		100.00	1.155	0.000
						B	0.000	1.093		100.00	0.895	0.000
L45 17.75-9.92	13.82	0.7	4	1.1687	34.681	C	0.000	1.093	34.681	100.00	0.895	0.000
						A	0.000	34.681		100.00	36.006	0.000
						B	0.000	34.681		100.00	21.623	0.000
L46 9.92-8.92	9.42	0.7	4	1.1248	4.429	C	0.000	34.681	4.429	100.00	21.623	0.000
						A	0.000	4.429		100.00	3.423	0.000
						B	0.000	4.429		100.00	2.439	0.000
L47 8.92-3.92	6.41	0.7	4	1.0823	22.306	C	0.000	4.429	22.306	100.00	2.439	0.000
						A	0.000	22.306		100.00	16.859	0.000
						B	0.000	22.306		100.00	12.023	0.000
L48 3.92-2.75	3.33	0.7	4	1.0138	5.262	C	0.000	22.306	5.262	100.00	12.023	0.000
						A	0.000	5.262		100.00	3.901	0.000
						B	0.000	5.262		100.00	2.781	0.000
L49 2.75-2.50	2.62	0.7	4	0.9899	1.126	C	0.000	5.262	1.126	100.00	2.781	0.000
						A	0.000	1.126		100.00	0.830	0.000
						B	0.000	1.126		100.00	0.592	0.000
L50 2.50-0.00	1.25	0.7	4	0.9189	11.282	C	0.000	1.126	11.282	100.00	0.592	0.000
						A	0.000	11.282		100.00	8.204	0.000
						B	0.000	11.282		100.00	5.848	0.000
						C	0.000	11.282		100.00	5.848	0.000

Tower Pressure - Service

G_H = 1.100

Section Elevation ft	z ft	K _Z	q _z psf	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
L1 175.00-170.00	172.48	1.155	9	9.706	A	0.000	9.706	9.706	100.00	0.000	0.000
					B	0.000	9.706		100.00	0.000	0.000
					C	0.000	9.706		100.00	0.000	0.000
L2 170.00-165.00	167.48	1.145	9	10.094	A	0.000	10.094	10.094	100.00	0.000	0.000
					B	0.000	10.094		100.00	0.000	0.000
					C	0.000	10.094		100.00	0.000	0.000
L3 165.00-160.00	162.48	1.135	9	10.482	A	0.000	10.482	10.482	100.00	1.188	0.000
					B	0.000	10.482		100.00	0.000	0.000
					C	0.000	10.482		100.00	0.000	0.000
L4 160.00-155.00	157.49	1.125	9	10.871	A	0.000	10.871	10.871	100.00	2.970	0.000
					B	0.000	10.871		100.00	0.000	0.000
					C	0.000	10.871		100.00	0.000	0.000
L5 155.00-145.50	150.20	1.11	9	21.724	A	0.000	21.724	21.724	100.00	5.643	0.000
					B	0.000	21.724		100.00	0.000	0.000
					C	0.000	21.724		100.00	0.000	0.000
L6 145.50-145.00	145.25	1.099	8	1.162	A	0.000	1.162	1.162	100.00	0.297	0.000
					B	0.000	1.162		100.00	0.000	0.000
					C	0.000	1.162		100.00	0.000	0.000
L7 145.00-140.00	142.49	1.093	8	11.833	A	0.000	11.833	11.833	100.00	2.970	0.000
					B	0.000	11.833		100.00	0.000	0.000
					C	0.000	11.833		100.00	0.000	0.000
L8 140.00-135.00	137.49	1.082	8	12.221	A	0.000	12.221	12.221	100.00	2.970	0.000
					B	0.000	12.221		100.00	0.000	0.000
					C	0.000	12.221		100.00	0.000	0.000
L9 135.00-130.00	132.49	1.071	8	12.609	A	0.000	12.609	12.609	100.00	2.970	0.000
					B	0.000	12.609		100.00	0.000	0.000
					C	0.000	12.609		100.00	0.000	0.000
L10 130.00-125.00	127.49	1.059	8	12.997	A	0.000	12.997	12.997	100.00	2.970	0.000
					B	0.000	12.997		100.00	0.000	0.000
					C	0.000	12.997		100.00	0.000	0.000
L11 125.00-120.00	122.49	1.047	8	13.386	A	0.000	13.386	13.386	100.00	2.970	0.000
					B	0.000	13.386		100.00	0.000	0.000
					C	0.000	13.386		100.00	0.000	0.000

Section Elevation ft	z ft	K _Z	q _z psf	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
L12 120.00- 115.00	117.49	1.035	8	13.774	A	0.000	13.774	13.774	100.00	2.970	0.000
					B	0.000	13.774		100.00	0.000	0.000
					C	0.000	13.774		100.00	0.000	0.000
L13 115.00- 110.00	112.49	1.022	8	14.162	A	0.000	14.162	14.162	100.00	2.970	0.000
					B	0.000	14.162		100.00	0.000	0.000
					C	0.000	14.162		100.00	0.000	0.000
L14 110.00- 105.00	107.49	1.009	8	14.550	A	0.000	14.550	14.550	100.00	2.970	0.000
					B	0.000	14.550		100.00	0.000	0.000
					C	0.000	14.550		100.00	0.000	0.000
L15 105.00- 95.50	100.21	0.989	8	28.715	A	0.000	28.715	28.715	100.00	5.643	0.000
					B	0.000	28.715		100.00	0.000	0.000
					C	0.000	28.715		100.00	0.000	0.000
L16 95.50- 94.50	95.00	0.974	8	3.048	A	0.000	3.048	3.048	100.00	0.594	0.000
					B	0.000	3.048		100.00	0.000	0.000
					C	0.000	3.048		100.00	0.000	0.000
L17 94.50- 89.50	91.99	0.965	7	15.475	A	0.000	15.475	15.475	100.00	2.970	0.000
					B	0.000	15.475		100.00	0.000	0.000
					C	0.000	15.475		100.00	0.000	0.000
L18 89.50- 84.50	86.99	0.95	7	15.863	A	0.000	15.863	15.863	100.00	4.140	0.000
					B	0.000	15.863		100.00	1.170	0.000
					C	0.000	15.863		100.00	1.170	0.000
L19 84.50- 83.17	83.83	0.94	7	4.285	A	0.000	4.285	4.285	100.00	2.120	0.000
					B	0.000	4.285		100.00	1.330	0.000
					C	0.000	4.285		100.00	1.330	0.000
L20 83.17- 82.92	83.04	0.937	7	0.807	A	0.000	0.807	0.807	100.00	0.399	0.000
					B	0.000	0.807		100.00	0.250	0.000
					C	0.000	0.807		100.00	0.250	0.000
L21 82.92- 77.92	80.41	0.929	7	16.350	A	0.000	16.350	16.350	100.00	7.970	0.000
					B	0.000	16.350		100.00	5.000	0.000
					C	0.000	16.350		100.00	5.000	0.000
L22 77.92- 72.92	75.41	0.912	7	16.738	A	0.000	16.738	16.738	100.00	7.970	0.000
					B	0.000	16.738		100.00	5.000	0.000
					C	0.000	16.738		100.00	5.000	0.000
L23 72.92- 67.92	70.41	0.894	7	17.128	A	0.000	17.128	17.128	100.00	7.970	0.000
					B	0.000	17.128		100.00	5.000	0.000
					C	0.000	17.128		100.00	5.000	0.000
L24 67.92- 65.50	66.71	0.88	7	8.430	A	0.000	8.430	8.430	100.00	3.857	0.000
					B	0.000	8.430		100.00	2.420	0.000
					C	0.000	8.430		100.00	2.420	0.000
L25 65.50- 65.25	65.37	0.875	7	0.876	A	0.000	0.876	0.876	100.00	0.598	0.000
					B	0.000	0.876		100.00	0.449	0.000
					C	0.000	0.876		100.00	0.449	0.000
L26 65.25- 64.00	64.62	0.872	7	4.395	A	0.000	4.395	4.395	100.00	2.988	0.000
					B	0.000	4.395		100.00	2.246	0.000
					C	0.000	4.395		100.00	2.246	0.000
L27 64.00- 63.75	63.87	0.869	7	0.881	A	0.000	0.881	0.881	100.00	0.598	0.000
					B	0.000	0.881		100.00	0.449	0.000
					C	0.000	0.881		100.00	0.449	0.000
L28 63.75- 58.75	61.24	0.859	7	17.826	A	0.000	17.826	17.826	100.00	11.953	0.000
					B	0.000	17.826		100.00	8.983	0.000
					C	0.000	17.826		100.00	8.983	0.000
L29 58.75- 53.75	56.24	0.838	6	18.214	A	0.000	18.214	18.214	100.00	11.953	0.000
					B	0.000	18.214		100.00	8.983	0.000
					C	0.000	18.214		100.00	8.983	0.000
L30 53.75- 46.58	50.15	0.811	6	26.799	A	0.000	26.799	26.799	100.00	17.141	0.000
					B	0.000	26.799		100.00	12.882	0.000
					C	0.000	26.799		100.00	12.882	0.000
L31 46.58- 45.58	46.08	0.792	6	3.735	A	0.000	3.735	3.735	100.00	2.391	0.000
					B	0.000	3.735		100.00	1.797	0.000
					C	0.000	3.735		100.00	1.797	0.000
L32 45.58- 43.00	44.29	0.783	6	9.709	A	0.000	9.709	9.709	100.00	8.389	0.000
					B	0.000	9.709		100.00	6.856	0.000
					C	0.000	9.709		100.00	6.261	0.000
L33 43.00- 42.75	42.87	0.776	6	0.946	A	0.000	0.946	0.946	100.00	0.820	0.000
					B	0.000	0.946		100.00	0.671	0.000
					C	0.000	0.946		100.00	0.671	0.000
L34 42.75- 42.50	42.62	0.775	6	0.947	A	0.000	0.947	0.947	100.00	0.820	0.000
					B	0.000	0.947		100.00	0.671	0.000
					C	0.000	0.947		100.00	0.671	0.000

Section Elevation ft	z ft	K _Z	q _z psf	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
L35 42.50-42.25	42.37	0.773	6	0.947	C	0.000	0.947	0.947	100.00	0.671	0.000
					A	0.000	0.947		100.00	0.820	0.000
					B	0.000	0.947		100.00	0.671	0.000
L36 42.25-42.00	42.12	0.772	6	0.948	C	0.000	0.947	0.948	100.00	0.671	0.000
					A	0.000	0.948		100.00	0.820	0.000
					B	0.000	0.948		100.00	0.671	0.000
L37 42.00-41.75	41.87	0.771	6	0.950	C	0.000	0.948	0.950	100.00	0.671	0.000
					A	0.000	0.950		100.00	0.820	0.000
					B	0.000	0.950		100.00	0.671	0.000
L38 41.75-36.75	39.24	0.756	6	19.202	C	0.000	0.950	19.202	100.00	0.671	0.000
					A	0.000	19.202		100.00	13.408	0.000
					B	0.000	19.202		100.00	10.438	0.000
L39 36.75-32.00	34.37	0.728	6	18.603	C	0.000	19.202	18.603	100.00	10.438	0.000
					A	0.000	18.603		100.00	12.083	0.000
					B	0.000	18.603		100.00	9.261	0.000
L40 32.00-31.75	31.87	0.713	5	0.988	C	0.000	18.603	0.988	100.00	9.261	0.000
					A	0.000	0.988		100.00	0.641	0.000
					B	0.000	0.988		100.00	0.493	0.000
L41 31.75-26.75	29.24	0.7	5	19.975	C	0.000	0.988	19.975	100.00	0.493	0.000
					A	0.000	19.975		100.00	12.828	0.000
					B	0.000	19.975		100.00	9.858	0.000
L42 26.75-21.75	24.24	0.7	5	20.363	C	0.000	19.975	20.363	100.00	9.858	0.000
					A	0.000	20.363		100.00	12.828	0.000
					B	0.000	20.363		100.00	9.858	0.000
L43 21.75-18.00	19.87	0.7	5	15.527	C	0.000	20.363	15.527	100.00	9.858	0.000
					A	0.000	15.527		100.00	11.842	0.000
					B	0.000	15.527		100.00	9.615	0.000
L44 18.00-17.75	17.87	0.7	5	1.043	C	0.000	15.527	1.043	100.00	9.615	0.000
					A	0.000	1.043		100.00	0.864	0.000
					B	0.000	1.043		100.00	0.715	0.000
L45 17.75-9.92	13.82	0.7	5	33.155	C	0.000	1.043	33.155	100.00	0.715	0.000
					A	0.000	33.155		100.00	27.505	0.000
					B	0.000	33.155		100.00	17.437	0.000
L46 9.92-8.92	9.42	0.7	5	4.234	C	0.000	33.155	4.234	100.00	17.437	0.000
					A	0.000	4.234		100.00	2.566	0.000
					B	0.000	4.234		100.00	1.972	0.000
L47 8.92-3.92	6.41	0.7	5	21.404	C	0.000	4.234	21.404	100.00	1.972	0.000
					A	0.000	21.404		100.00	12.828	0.000
					B	0.000	21.404		100.00	9.858	0.000
L48 3.92-2.75	3.33	0.7	5	5.065	C	0.000	21.404	5.065	100.00	9.858	0.000
					A	0.000	5.065		100.00	3.002	0.000
					B	0.000	5.065		100.00	2.307	0.000
L49 2.75-2.50	2.62	0.7	5	1.085	C	0.000	5.065	1.085	100.00	2.307	0.000
					A	0.000	1.085		100.00	0.641	0.000
					B	0.000	1.085		100.00	0.493	0.000
L50 2.50-0.00	1.25	0.7	5	10.899	C	0.000	1.085	10.899	100.00	0.493	0.000
					A	0.000	10.899		100.00	6.414	0.000
					B	0.000	10.899		100.00	4.929	0.000
					C	0.000	10.899		100.00	4.929	0.000

Load Combinations

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

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

Maximum 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	175 - 170	Pole	Max Tension	3	0.00	-0.00	0.00
			Max. Compression	26	-8.15	0.00	1.65
			Max. Mx	20	-3.01	22.81	0.26
			Max. My	2	-2.95	0.01	23.80
			Max. Vy	20	-5.53	22.81	0.26
			Max. Vx	2	-5.67	0.01	23.80
			Max. Torque	8			1.12
L2	170 - 165	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.75	0.01	1.66
			Max. Mx	20	-3.33	51.54	0.27
			Max. My	2	-3.28	0.01	53.20
			Max. Vy	20	-5.96	51.54	0.27
			Max. Vx	2	-6.09	0.01	53.20
			Max. Torque	8			1.12
L3	165 - 160	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.50	-0.12	1.88
			Max. Mx	8	-6.73	-89.22	0.31
			Max. My	2	-6.64	0.06	91.72
			Max. Vy	20	-9.79	89.15	0.49
			Max. Vx	2	-9.96	0.06	91.72
			Max. Torque	8			1.12
L4	160 - 155	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.27	0.01	1.98
			Max. Mx	8	-7.14	-139.21	0.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L5	155 - 145.5	Pole	Max. My	2	-7.02	0.27	143.29
			Max. Vy	20	-10.23	139.20	0.71
			Max. Vx	2	-10.66	0.27	143.29
			Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.06	0.15	2.08
			Max. Mx	20	-7.56	191.45	0.93
			Max. My	2	-7.43	0.48	198.34
			Max. Vy	20	-10.67	191.45	0.93
			Max. Vx	2	-11.36	0.48	198.34
L6	145.5 - 145	Pole	Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.60	0.29	2.18
			Max. Mx	20	-8.50	246.10	1.16
			Max. My	2	-8.34	0.70	257.10
			Max. Vy	20	-11.18	246.10	1.16
			Max. Vx	2	-12.14	0.70	257.10
			Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.14	0.43	2.28
L7	145 - 140	Pole	Max. Mx	20	-10.47	309.59	1.38
			Max. My	2	-10.28	0.91	326.05
			Max. Vy	20	-13.49	309.59	1.38
			Max. Vx	2	-14.72	0.91	326.05
			Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.17	0.58	2.39
			Max. Mx	20	-11.14	378.24	1.61
			Max. My	2	-10.94	1.14	401.14
			Max. Vy	20	-13.97	378.24	1.61
L8	140 - 135	Pole	Max. Vx	2	-15.32	1.14	401.14
			Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.17	0.58	2.39
			Max. Mx	20	-11.14	378.24	1.61
			Max. My	2	-10.94	1.14	401.14
			Max. Vy	20	-13.97	378.24	1.61
			Max. Vx	2	-15.32	1.14	401.14
			Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
L9	135 - 130	Pole	Max. Compression	26	-26.23	0.73	2.50
			Max. Mx	20	-11.84	449.26	1.84
			Max. My	2	-11.63	1.38	479.20
			Max. Vy	20	-14.44	449.26	1.84
			Max. Vx	2	-15.91	1.38	479.20
			Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.40	0.89	2.70
			Max. Mx	20	-13.05	525.95	2.08
			Max. My	2	-12.83	1.61	563.59
L10	130 - 125	Pole	Max. Vy	20	-15.58	525.95	2.08
			Max. Vx	2	-17.17	1.61	563.59
			Max. Torque	8			0.92
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.51	1.04	2.80
			Max. Mx	20	-13.80	605.03	2.31
			Max. My	2	-13.59	1.85	650.93
			Max. Vy	20	-16.05	605.03	2.31
			Max. Vx	2	-17.77	1.85	650.93
			Max. Torque	8			0.99
L11	125 - 120	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.72	1.20	2.98
			Max. Mx	20	-15.08	689.58	2.56
			Max. My	2	-14.86	2.09	744.34
			Max. Vy	20	-17.15	689.58	2.56
			Max. Vx	2	-18.97	2.09	744.34
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.89	1.36	3.09
			Max. Mx	20	-15.88	776.53	2.79
L12	120 - 115	Pole	Max. My	2	-15.67	2.32	840.63
			Max. Vy	20	-17.63	776.53	2.79
			Max. Vx	2	-19.55	2.32	840.63
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.07	1.53	3.20
			Max. Mx	20	-15.08	689.58	2.56
			Max. My	2	-14.86	2.09	744.34
			Max. Vy	20	-17.15	689.58	2.56
			Max. Vx	2	-18.97	2.09	744.34
L13	115 - 110	Pole	Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.89	1.36	3.09
			Max. Mx	20	-15.88	776.53	2.79
			Max. My	2	-15.67	2.32	840.63
			Max. Vy	20	-17.63	776.53	2.79
			Max. Vx	2	-19.55	2.32	840.63
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.07	1.53	3.20
L14	110 - 105	Pole	Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.07	1.53	3.20

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L15	105 - 95.5	Pole	Max. Mx	20	-16.71	865.85	3.02
			Max. My	2	-16.50	2.56	939.82
			Max. Vy	20	-18.11	865.85	3.02
			Max. Vx	2	-20.13	2.56	939.82
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.04	1.66	3.29
			Max. Mx	20	-17.39	939.02	3.20
			Max. My	2	-17.19	2.75	1021.20
			Max. Vy	20	-18.48	939.02	3.20
L16	95.5 - 94.5	Pole	Max. Vx	2	-20.58	2.75	1021.20
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.96	1.88	3.43
			Max. Mx	20	-19.45	1061.51	3.49
			Max. My	2	-19.25	3.05	1157.67
			Max. Vy	20	-19.20	1061.51	3.49
			Max. Vx	2	-21.41	3.05	1157.67
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
L17	94.5 - 89.5	Pole	Max. Compression	26	-39.35	2.05	3.54
			Max. Mx	20	-20.47	1158.66	3.72
			Max. My	2	-20.28	3.29	1266.09
			Max. Vy	20	-19.67	1158.66	3.72
			Max. Vx	2	-21.97	3.29	1266.09
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.80	2.22	3.65
			Max. Mx	20	-21.53	1258.18	3.94
			Max. My	2	-21.35	3.53	1377.29
L18	89.5 - 84.5	Pole	Max. Vy	20	-20.14	1258.18	3.94
			Max. Vx	2	-22.53	3.53	1377.29
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.23	2.27	3.68
			Max. Mx	20	-21.81	1285.08	4.00
			Max. My	2	-21.63	3.59	1407.34
			Max. Vy	20	-20.31	1285.08	4.00
			Max. Vx	2	-22.68	3.59	1407.34
			Max. Torque	8			1.01
L19	84.5 - 83.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.23	2.27	3.68
			Max. Mx	20	-21.81	1285.08	4.00
			Max. My	2	-21.63	3.59	1407.34
			Max. Vy	20	-20.31	1285.08	4.00
			Max. Vx	2	-22.68	3.59	1407.34
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.33	2.28	3.69
			Max. Mx	20	-21.89	1290.16	4.01
L20	83.17 - 82.92	Pole	Max. My	2	-21.72	3.60	1413.02
			Max. Vy	20	-20.35	1290.16	4.01
			Max. Vx	2	-22.72	3.60	1413.02
			Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.30	2.44	3.78
			Max. Mx	20	-23.30	1393.52	4.23
			Max. My	2	-23.14	3.84	1528.09
			Max. Vy	20	-21.01	1393.52	4.23
			Max. Vx	2	-23.33	3.84	1528.09
L21	82.92 - 77.92	Pole	Max. Torque	8			1.01
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.30	2.60	3.87
			Max. Mx	20	-24.75	1500.19	4.46
			Max. My	2	-24.61	4.07	1646.22
			Max. Vy	20	-21.66	1500.19	4.46
			Max. Vx	2	-23.93	4.07	1646.22
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.32	2.77	3.97
L22	77.92 - 72.92	Pole	Max. Mx	20	-26.23	1610.13	4.68
			Max. My	2	-26.10	4.31	1767.35
			Max. Vy	20	-26.10	1610.13	4.68
			Max. Vx	2	-26.10	4.31	1767.35
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.32	2.77	3.97
			Max. Mx	20	-26.23	1610.13	4.68
			Max. My	2	-26.10	4.31	1767.35
			Max. Vy	20	-26.10	1610.13	4.68
L23	72.92 - 67.92	Pole	Max. Vx	2	-26.10	1610.13	4.68
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.32	2.77	3.97
			Max. Mx	20	-26.23	1610.13	4.68
			Max. My	2	-26.10	4.31	1767.35
			Max. Vy	20	-26.10	1610.13	4.68
			Max. Vx	2	-26.10	4.31	1767.35
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L24	67.92 - 65.5	Pole	Max. Vy	20	-22.32	1610.13	4.68
			Max. Vx	2	-24.53	4.31	1767.35
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.31	2.85	4.01
			Max. Mx	20	-26.95	1664.50	4.79
			Max. My	2	-26.83	4.43	1827.03
			Max. Vy	20	-22.63	1664.50	4.79
			Max. Vx	2	-24.81	4.43	1827.03
L25	65.5 - 65.25	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.42	2.86	4.02
			Max. Mx	20	-27.03	1670.16	4.80
			Max. My	2	-26.91	4.44	1833.23
			Max. Vy	20	-22.67	1670.16	4.80
			Max. Vx	14	24.85	-3.45	-1831.54
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
L26	65.25 - 64	Pole	Max. Compression	26	-48.97	2.90	4.04
			Max. Mx	20	-27.40	1698.59	4.86
			Max. My	2	-27.28	4.50	1864.38
			Max. Vy	20	-22.83	1698.59	4.86
			Max. Vx	14	25.01	-3.49	-1862.67
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.09	2.91	4.05
			Max. Mx	20	-27.50	1704.30	4.87
L27	64 - 63.75	Pole	Max. My	2	-27.38	4.51	1870.63
			Max. Vy	20	-22.87	1704.30	4.87
			Max. Vx	14	25.04	-3.50	-1868.93
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.56	3.08	4.14
			Max. Mx	20	-29.26	1820.28	5.09
			Max. My	2	-29.15	4.75	1997.36
			Max. Vy	20	-23.54	1820.28	5.09
L28	63.75 - 58.75	Pole	Max. Vx	14	25.70	-3.67	-1995.72
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.04	3.25	4.24
			Max. Mx	20	-31.05	1939.60	5.31
			Max. My	2	-30.95	4.98	2127.28
			Max. Vy	20	-24.20	1939.60	5.31
			Max. Vx	14	26.36	-3.83	-2125.81
			Max. Torque	8			1.00
L29	58.75 - 53.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.42	3.28	4.26
			Max. Mx	20	-31.32	1957.79	5.35
			Max. My	2	-31.22	5.02	2147.04
			Max. Vy	20	-24.29	1957.79	5.35
			Max. Vx	14	26.45	-3.86	-2145.61
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.90	3.53	4.41
L30	53.75 - 46.58	Pole	Max. Mx	20	-36.26	2142.02	5.68
			Max. My	2	-36.17	5.37	2346.71
			Max. Vy	20	-25.35	2142.02	5.68
			Max. Vx	14	27.50	-4.10	-2345.76
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.31	3.64	4.47
			Max. Mx	20	-37.26	2207.83	5.79
			Max. My	2	-37.17	5.49	2417.84
L31	46.58 - 45.58	Pole	Max. Vy	20	-25.68	2207.83	5.79
			Max. Vx	14	27.83	-4.18	-2417.09
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.90	3.53	4.41
			Max. Mx	20	-36.26	2142.02	5.68
			Max. My	2	-36.17	5.37	2346.71
			Max. Vy	20	-25.35	2142.02	5.68
			Max. Vx	14	27.50	-4.10	-2345.76
L32	45.58 - 43	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.31	3.64	4.47
			Max. Mx	20	-37.26	2207.83	5.79
			Max. My	2	-37.17	5.49	2417.84
			Max. Vy	20	-25.68	2207.83	5.79
			Max. Vx	14	27.83	-4.18	-2417.09
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L33	43 - 42.75	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.46	3.65	4.48
			Max. Mx	20	-37.37	2214.25	5.81
			Max. My	2	-37.29	5.51	2424.77
			Max. Vy	20	-25.71	2214.25	5.81
			Max. Vx	14	27.86	-4.19	-2424.05
L34	42.75 - 42.5	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.61	3.66	4.48
			Max. Mx	20	-37.48	2220.68	5.82
			Max. My	2	-37.40	5.52	2431.72
			Max. Vy	20	-25.74	2220.68	5.82
			Max. Vx	14	27.89	-4.20	-2431.02
L35	42.5 - 42.25	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.77	3.66	4.49
			Max. Mx	20	-37.59	2227.12	5.83
			Max. My	2	-37.51	5.53	2438.67
			Max. Vy	20	-25.78	2227.12	5.83
			Max. Vx	14	27.93	-4.21	-2437.99
L36	42.25 - 42	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.92	3.67	4.49
			Max. Mx	20	-37.71	2233.57	5.84
			Max. My	2	-37.62	5.54	2445.63
			Max. Vy	20	-25.81	2233.57	5.84
			Max. Vx	14	27.96	-4.22	-2444.97
L37	42 - 41.75	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.06	3.68	4.50
			Max. Mx	20	-37.81	2240.02	5.85
			Max. My	2	-37.73	5.55	2452.60
			Max. Vy	20	-25.84	2240.02	5.85
			Max. Vx	14	27.99	-4.22	-2451.96
L38	41.75 - 36.75	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.83	3.85	4.59
			Max. Mx	20	-39.84	2370.70	6.07
			Max. My	2	-39.77	5.79	2593.53
			Max. Vy	20	-26.44	2370.70	6.07
			Max. Vx	14	28.57	-4.39	-2593.26
L39	36.75 - 32	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.45	4.02	4.69
			Max. Mx	20	-41.80	2497.60	6.28
			Max. My	2	-41.74	6.01	2730.12
			Max. Vy	20	-27.00	2497.60	6.28
			Max. Vx	14	29.09	-4.54	-2730.11
L40	32 - 31.75	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.60	4.03	4.70
			Max. Mx	20	-41.92	2504.35	6.29
			Max. My	14	-41.86	-4.55	-2737.39
			Max. Vy	20	-27.03	2504.35	6.29
			Max. Vx	14	29.12	-4.55	-2737.39
L41	31.75 - 26.75	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.50	4.21	4.80
			Max. Mx	20	-44.14	2640.87	6.51
			Max. My	14	-44.08	-4.71	-2884.22
			Max. Vy	20	-27.59	2640.87	6.51
			Max. Vx	14	29.65	-4.71	-2884.22
L42	26.75 - 21.75	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.43	4.39	4.90

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L43	21.75 - 18	Pole	Max. Mx	20	-46.38	2780.23	6.74
			Max. My	14	-46.34	-4.87	-3033.72
			Max. Vy	20	-28.16	2780.23	6.74
			Max. Vx	14	30.18	-4.87	-3033.72
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.70	4.52	4.98
			Max. Mx	20	-48.08	2886.63	6.90
			Max. My	14	-48.05	-4.99	-3147.65
			Max. Vy	20	-28.60	2886.63	6.90
L44	18 - 17.75	Pole	Max. Vx	14	30.61	-4.99	-3147.65
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.86	4.53	4.98
			Max. Mx	20	-48.20	2893.79	6.91
			Max. My	14	-48.17	-5.00	-3155.30
			Max. Vy	20	-28.63	2893.79	6.91
			Max. Vx	14	30.64	-5.00	-3155.30
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
L45	17.75 - 9.92	Pole	Max. Compression	26	-77.31	4.57	4.99
			Max. Mx	20	-48.54	2915.29	6.94
			Max. My	14	-48.51	-5.02	-3178.29
			Max. Vy	20	-28.71	2915.29	6.94
			Max. Vx	14	30.72	-5.02	-3178.29
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.85	4.98	5.11
			Max. Mx	20	-55.41	3151.45	7.30
			Max. My	14	-55.38	-5.27	-3430.53
L46	9.92 - 8.92	Pole	Max. Vy	20	-29.74	3151.45	7.30
			Max. Vx	2	-31.73	7.10	3430.38
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-88.86	5.17	5.17
			Max. Mx	20	-57.83	3301.46	7.52
			Max. My	14	-57.82	-5.43	-3590.40
			Max. Vy	20	-30.28	3301.46	7.52
			Max. Vx	2	-32.27	7.34	3590.32
			Max. Torque	8			1.00
L47	8.92 - 3.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.56	5.21	5.19
			Max. Mx	20	-58.40	3336.96	7.57
			Max. My	14	-58.40	-5.46	-3628.20
			Max. Vy	20	-30.41	3336.96	7.57
			Max. Vx	2	-32.39	7.39	3628.13
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.70	5.22	5.19
			Max. Mx	20	-58.53	3344.56	7.58
L48	3.92 - 2.75	Pole	Max. My	14	-58.53	-5.47	-3636.29
			Max. Vy	20	-30.43	3344.56	7.58
			Max. Vx	2	-32.41	7.40	3636.23
			Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.14	5.30	5.21
			Max. Mx	20	-59.72	3420.99	7.69
			Max. My	14	-59.72	-5.55	-3717.60
			Max. Vy	20	-30.72	3420.99	7.69
			Max. Vx	2	-32.69	7.52	3717.59
L49	2.75 - 2.5	Pole	Max. Torque	8			1.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.14	5.30	5.21
			Max. Mx	20	-59.72	3420.99	7.69
			Max. My	14	-59.72	-5.55	-3717.60
			Max. Vy	20	-30.72	3420.99	7.69
L50	2.5 - 0	Pole	Max. Vx	2	-32.69	7.52	3717.59
			Max. Torque	8			1.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	91.14	-0.00	-0.00
	Max. H _x	21	44.80	30.70	0.04
	Max. H _z	2	59.73	0.04	32.67
	Max. M _x	2	3717.59	0.04	32.67
	Max. M _z	8	3362.07	-29.79	-0.04
	Max. Torsion	8	1.00	-29.79	-0.04
	Min. Vert	3	44.80	0.04	32.67
	Min. H _x	8	59.73	-29.79	-0.04
	Min. H _z	14	59.73	-0.04	-32.67
	Min. M _x	14	-3717.60	-0.04	-32.67
	Min. M _z	20	-3420.99	30.70	0.04
	Min. Torsion	20	-1.00	30.70	0.04

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	49.78	-0.00	-0.00	-0.91	0.80	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	59.73	-0.04	-32.67	-3717.59	7.52	-0.74
0.9 Dead+1.0 Wind 0 deg - No Ice	44.80	-0.04	-32.67	-3682.63	7.20	-0.75
1.2 Dead+1.0 Wind 30 deg - No Ice	59.73	16.10	-28.03	-3157.19	-1805.80	-0.67
0.9 Dead+1.0 Wind 30 deg - No Ice	44.80	16.10	-28.03	-3127.61	-1789.33	-0.66
1.2 Dead+1.0 Wind 60 deg - No Ice	59.73	25.95	-15.02	-1692.13	-2914.35	-0.87
0.9 Dead+1.0 Wind 60 deg - No Ice	44.80	25.95	-15.02	-1675.99	-2887.34	-0.86
1.2 Dead+1.0 Wind 90 deg - No Ice	59.73	29.79	0.04	5.39	-3362.07	-1.00
0.9 Dead+1.0 Wind 90 deg - No Ice	44.80	29.78	0.04	5.62	-3330.76	-0.99
1.2 Dead+1.0 Wind 120 deg - No Ice	59.73	25.93	15.06	1699.72	-2918.41	-0.87
0.9 Dead+1.0 Wind 120 deg - No Ice	44.80	25.93	15.06	1684.06	-2891.34	-0.86
1.2 Dead+1.0 Wind 150 deg - No Ice	59.73	15.36	26.67	2983.97	-1714.67	-0.50
0.9 Dead+1.0 Wind 150 deg - No Ice	44.80	15.36	26.67	2956.50	-1698.98	-0.49
1.2 Dead+1.0 Wind 180 deg - No Ice	59.73	0.04	32.67	3717.60	-5.55	0.75
0.9 Dead+1.0 Wind 180 deg - No Ice	44.80	0.04	32.66	3683.23	-5.73	0.75
1.2 Dead+1.0 Wind 210 deg - No Ice	59.73	-15.71	27.36	3117.64	1786.28	0.65
0.9 Dead+1.0 Wind 210 deg - No Ice	44.80	-15.71	27.36	3088.83	1769.39	0.65
1.2 Dead+1.0 Wind 240 deg - No Ice	59.73	-25.86	14.97	1688.16	2913.45	0.86
0.9 Dead+1.0 Wind 240 deg - No Ice	44.80	-25.86	14.97	1672.63	2885.94	0.85
1.2 Dead+1.0 Wind 270 deg - No Ice	59.73	-30.70	-0.04	-7.69	3420.99	1.00
0.9 Dead+1.0 Wind 270 deg - No Ice	44.80	-30.70	-0.04	-7.31	3389.05	0.99
1.2 Dead+1.0 Wind 300 deg - No Ice	59.73	-25.96	-15.07	-1703.18	2922.42	0.88
0.9 Dead+1.0 Wind 300 deg - No Ice	44.80	-25.96	-15.07	-1686.92	2894.82	0.87

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 330 deg - No Ice	59.73	-14.91	-25.90	-2936.67	1688.02	0.51
0.9 Dead+1.0 Wind 330 deg - No Ice	44.80	-14.91	-25.90	-2908.81	1671.95	0.51
1.2 Dead+1.0 Ice+1.0 Temp	91.14	0.00	0.00	-5.21	5.30	0.00
1,2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	91.14	-0.01	-7.42	-951.61	6.55	-0.10
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	91.14	3.67	-6.38	-813.26	-458.08	-0.17
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	91.14	6.30	-3.64	-467.62	-792.36	-0.26
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	91.14	7.24	0.01	-4.29	-915.15	-0.30
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	91.14	6.29	3.65	458.48	-793.00	-0.27
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	91.14	3.66	6.35	799.06	-457.39	-0.16
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	91.14	0.01	7.42	941.26	4.34	0.10
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	91.14	-3.63	6.31	799.56	467.30	0.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	91.14	-6.28	3.64	456.52	802.71	0.26
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	91.14	-7.31	-0.01	-6.50	929.24	0.30
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	91.14	-6.30	-3.65	-469.49	804.28	0.27
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	91.14	-3.62	-6.29	-807.02	466.65	0.16
Dead+Wind 0 deg - Service	49.78	-0.01	-7.69	-871.38	2.35	-0.18
Dead+Wind 30 deg - Service	49.78	3.79	-6.60	-740.06	-422.31	-0.16
Dead+Wind 60 deg - Service	49.78	6.11	-3.54	-396.89	-681.80	-0.20
Dead+Wind 90 deg - Service	49.78	7.01	0.01	0.57	-786.68	-0.24
Dead+Wind 120 deg - Service	49.78	6.10	3.54	397.30	-682.76	-0.21
Dead+Wind 150 deg - Service	49.78	3.62	6.28	698.05	-400.92	-0.12
Dead+Wind 180 deg - Service	49.78	0.01	7.69	870.02	-0.71	0.18
Dead+Wind 210 deg - Service	49.78	-3.70	6.44	729.39	418.90	0.16
Dead+Wind 240 deg - Service	49.78	-6.09	3.53	394.59	682.77	0.20
Dead+Wind 270 deg - Service	49.78	-7.23	-0.01	-2.48	801.70	0.24
Dead+Wind 300 deg - Service	49.78	-6.11	-3.55	-399.48	684.88	0.21
Dead+Wind 330 deg - Service	49.78	-3.51	-6.10	-688.30	395.84	0.12

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	-49.78	0.00	0.00	49.78	0.00	0.000%
2	-0.04	-59.73	-32.68	0.04	59.73	32.67	0.003%
3	-0.04	-44.80	-32.68	0.04	44.80	32.67	0.004%
4	16.10	-59.73	-28.03	-16.10	59.73	28.03	0.000%
5	16.10	-44.80	-28.03	-16.10	44.80	28.03	0.000%
6	25.95	-59.73	-15.02	-25.95	59.73	15.02	0.000%
7	25.95	-44.80	-15.02	-25.95	44.80	15.02	0.000%
8	29.79	-59.73	0.04	-29.79	59.73	-0.04	0.002%
9	29.79	-44.80	0.04	-29.78	44.80	-0.04	0.004%
10	25.93	-59.73	15.06	-25.93	59.73	-15.06	0.000%
11	25.93	-44.80	15.06	-25.93	44.80	-15.06	0.000%
12	15.36	-59.73	26.67	-15.36	59.73	-26.67	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
13	15.36	-44.80	26.67	-15.36	44.80	-26.67	0.000%
14	0.04	-59.73	32.67	-0.04	59.73	-32.67	0.003%
15	0.04	-44.80	32.67	-0.04	44.80	-32.66	0.004%
16	-15.71	-59.73	27.36	15.71	59.73	-27.36	0.000%
17	-15.71	-44.80	27.36	15.71	44.80	-27.36	0.000%
18	-25.86	-59.73	14.97	25.86	59.73	-14.97	0.000%
19	-25.86	-44.80	14.97	25.86	44.80	-14.97	0.000%
20	-30.70	-59.73	-0.04	30.70	59.73	0.04	0.002%
21	-30.70	-44.80	-0.04	30.70	44.80	0.04	0.002%
22	-25.96	-59.73	-15.07	25.96	59.73	15.07	0.000%
23	-25.96	-44.80	-15.07	25.96	44.80	15.07	0.000%
24	-14.91	-59.73	-25.90	14.91	59.73	25.90	0.000%
25	-14.91	-44.80	-25.90	14.91	44.80	25.90	0.000%
26	0.00	-91.14	0.00	-0.00	91.14	-0.00	0.000%
27	-0.01	-91.14	-7.42	0.01	91.14	7.42	0.000%
28	3.67	-91.14	-6.38	-3.67	91.14	6.38	0.000%
29	6.30	-91.14	-3.64	-6.30	91.14	3.64	0.000%
30	7.24	-91.14	0.01	-7.24	91.14	-0.01	0.000%
31	6.29	-91.14	3.65	-6.29	91.14	-3.65	0.000%
32	3.66	-91.14	6.35	-3.66	91.14	-6.35	0.000%
33	0.01	-91.14	7.42	-0.01	91.14	-7.42	0.000%
34	-3.63	-91.14	6.31	3.63	91.14	-6.31	0.000%
35	-6.28	-91.14	3.64	6.28	91.14	-3.64	0.000%
36	-7.31	-91.14	-0.01	7.31	91.14	0.01	0.000%
37	-6.30	-91.14	-3.65	6.30	91.14	3.65	0.000%
38	-3.62	-91.14	-6.29	3.62	91.14	6.29	0.000%
39	-0.01	-49.78	-7.69	0.01	49.78	7.69	0.002%
40	3.79	-49.78	-6.60	-3.79	49.78	6.60	0.002%
41	6.11	-49.78	-3.54	-6.11	49.78	3.54	0.002%
42	7.01	-49.78	0.01	-7.01	49.78	-0.01	0.002%
43	6.10	-49.78	3.54	-6.10	49.78	-3.54	0.002%
44	3.62	-49.78	6.28	-3.62	49.78	-6.28	0.002%
45	0.01	-49.78	7.69	-0.01	49.78	-7.69	0.002%
46	-3.70	-49.78	6.44	3.70	49.78	-6.44	0.002%
47	-6.09	-49.78	3.53	6.09	49.78	-3.53	0.002%
48	-7.23	-49.78	-0.01	7.23	49.78	0.01	0.002%
49	-6.11	-49.78	-3.55	6.11	49.78	3.55	0.002%
50	-3.51	-49.78	-6.10	3.51	49.78	6.10	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	19	0.00003211	0.00010113
3	Yes	18	0.00003993	0.00013202
4	Yes	24	0.00000001	0.00011295
5	Yes	24	0.00000001	0.00008431
6	Yes	24	0.00000001	0.00009965
7	Yes	23	0.00000001	0.00014076
8	Yes	19	0.00003244	0.00009845
9	Yes	18	0.00004035	0.00013020
10	Yes	24	0.00000001	0.00009704
11	Yes	23	0.00000001	0.00013697
12	Yes	24	0.00000001	0.00010167
13	Yes	23	0.00000001	0.00014324
14	Yes	19	0.00003210	0.00008563
15	Yes	18	0.00003992	0.00010752
16	Yes	24	0.00000001	0.00011460
17	Yes	24	0.00000001	0.00008579
18	Yes	24	0.00000001	0.00009591
19	Yes	23	0.00000001	0.00013540
20	Yes	19	0.00003240	0.00011377
21	Yes	19	0.00002188	0.00008623
22	Yes	24	0.00000001	0.00010099
23	Yes	23	0.00000001	0.00014256
24	Yes	24	0.00000001	0.00009837

25	Yes	23	0.00000001	0.00013874
26	Yes	14	0.00000001	0.00011578
27	Yes	23	0.00000001	0.00011756
28	Yes	23	0.00000001	0.00012079
29	Yes	23	0.00000001	0.00011915
30	Yes	23	0.00000001	0.00011245
31	Yes	23	0.00000001	0.00011786
32	Yes	23	0.00000001	0.00011823
33	Yes	23	0.00000001	0.00011529
34	Yes	23	0.00000001	0.00011948
35	Yes	23	0.00000001	0.00011877
36	Yes	23	0.00000001	0.00011387
37	Yes	23	0.00000001	0.00012073
38	Yes	23	0.00000001	0.00012108
39	Yes	17	0.00008753	0.00005127
40	Yes	17	0.00008744	0.00013045
41	Yes	17	0.00008765	0.00012124
42	Yes	17	0.00008773	0.00004791
43	Yes	17	0.00008764	0.00011083
44	Yes	17	0.00008756	0.00012155
45	Yes	17	0.00008750	0.00005080
46	Yes	17	0.00008747	0.00013778
47	Yes	17	0.00008764	0.00010984
48	Yes	17	0.00008763	0.00004859
49	Yes	17	0.00008765	0.00012305
50	Yes	17	0.00008768	0.00011409

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 170	24.209	39	1.3169	0.0032
L2	170 - 165	22.831	39	1.3138	0.0029
L3	165 - 160	21.461	39	1.3023	0.0025
L4	160 - 155	20.106	39	1.2836	0.0021
L5	155 - 145.5	18.776	39	1.2559	0.0018
L6	150 - 145	17.479	39	1.2196	0.0016
L7	145 - 140	16.212	39	1.1995	0.0015
L8	140 - 135	14.975	39	1.1622	0.0014
L9	135 - 130	13.779	39	1.1198	0.0012
L10	130 - 125	12.631	39	1.0732	0.0011
L11	125 - 120	11.533	39	1.0227	0.0010
L12	120 - 115	10.490	39	0.9690	0.0009
L13	115 - 110	9.505	39	0.9124	0.0008
L14	110 - 105	8.580	39	0.8533	0.0007
L15	105 - 95.5	7.718	39	0.7921	0.0006
L16	101 - 94.5	7.076	39	0.7419	0.0005
L17	94.5 - 89.5	6.093	39	0.6973	0.0005
L18	89.5 - 84.5	5.393	39	0.6394	0.0004
L19	84.5 - 83.17	4.754	39	0.5809	0.0003
L20	83.17 - 82.92	4.594	39	0.5654	0.0003
L21	82.92 - 77.92	4.565	39	0.5633	0.0003
L22	77.92 - 72.92	3.997	39	0.5215	0.0003
L23	72.92 - 67.92	3.473	39	0.4794	0.0003
L24	67.92 - 65.5	2.993	39	0.4362	0.0002
L25	65.5 - 65.25	2.777	39	0.4153	0.0002
L26	65.25 - 64	2.756	39	0.4132	0.0002
L27	64 - 63.75	2.649	39	0.4024	0.0002
L28	63.75 - 58.75	2.628	39	0.4006	0.0002
L29	58.75 - 53.75	2.227	39	0.3640	0.0002
L30	53.75 - 46.58	1.865	39	0.3275	0.0001
L31	53 - 45.58	1.814	39	0.3219	0.0001
L32	45.58 - 43	1.336	39	0.2905	0.0001
L33	43 - 42.75	1.184	39	0.2713	0.0001
L34	42.75 - 42.5	1.170	39	0.2696	0.0001
L35	42.5 - 42.25	1.156	39	0.2679	0.0001
L36	42.25 - 42	1.142	39	0.2664	0.0001
L37	42 - 41.75	1.128	39	0.2648	0.0001
L38	41.75 - 36.75	1.114	39	0.2631	0.0001
L39	36.75 - 32	0.857	39	0.2280	0.0001

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L40	32 - 31.75	0.647	39	0.1943	0.0001
L41	31.75 - 26.75	0.637	39	0.1926	0.0001
L42	26.75 - 21.75	0.453	39	0.1591	0.0001
L43	21.75 - 18	0.303	39	0.1259	0.0000
L44	18 - 17.75	0.214	39	0.1011	0.0000
L45	17.75 - 9.92	0.209	39	0.0995	0.0000
L46	17 - 8.92	0.194	39	0.0945	0.0000
L47	8.92 - 3.92	0.058	39	0.0628	0.0000
L48	3.92 - 2.75	0.011	39	0.0267	0.0000
L49	2.75 - 2.5	0.005	39	0.0184	0.0000
L50	2.5 - 0	0.004	39	0.0167	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
173.00	(2) ADA-85408580CF w/ Mount Pipe	39	23.658	1.3163	0.0031	38239
162.00	HPA-65R-BUU-H6 w/ Mount Pipe	39	20.646	1.2919	0.0022	14757
144.00	RRUS 01 W/SOLAR SHIELD	39	15.961	1.1937	0.0015	9206
130.00	ANT450F6	39	12.631	1.0732	0.0011	5903
120.00	ANT450Y5-WR	39	10.490	0.9690	0.0009	5194

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 170	103.292	2	5.6190	0.0133
L2	170 - 165	97.420	2	5.6063	0.0122
L3	165 - 160	91.581	2	5.5584	0.0104
L4	160 - 155	85.808	2	5.4799	0.0089
L5	155 - 145.5	80.136	2	5.3624	0.0078
L6	150 - 145	74.606	2	5.2084	0.0067
L7	145 - 140	69.199	2	5.1230	0.0063
L8	140 - 135	63.922	2	4.9640	0.0057
L9	135 - 130	58.823	2	4.7833	0.0051
L10	130 - 125	53.922	2	4.5842	0.0046
L11	125 - 120	49.238	2	4.3689	0.0041
L12	120 - 115	44.786	2	4.1395	0.0036
L13	115 - 110	40.580	2	3.8977	0.0032
L14	110 - 105	36.633	2	3.6452	0.0028
L15	105 - 95.5	32.954	2	3.3836	0.0024
L16	101 - 94.5	30.210	2	3.1691	0.0021
L17	94.5 - 89.5	26.013	2	2.9786	0.0019
L18	89.5 - 84.5	23.024	2	2.7314	0.0017
L19	84.5 - 83.17	20.295	2	2.4812	0.0014
L20	83.17 - 82.92	19.614	2	2.4149	0.0014
L21	82.92 - 77.92	19.487	2	2.4060	0.0014
L22	77.92 - 72.92	17.062	2	2.2272	0.0012
L23	72.92 - 67.92	14.824	2	2.0474	0.0011
L24	67.92 - 65.5	12.777	2	1.8629	0.0009
L25	65.5 - 65.25	11.856	2	1.7735	0.0009
L26	65.25 - 64	11.763	2	1.7643	0.0009
L27	64 - 63.75	11.307	2	1.7185	0.0008
L28	63.75 - 58.75	11.218	2	1.7107	0.0008
L29	58.75 - 53.75	9.508	2	1.5543	0.0007
L30	53.75 - 46.58	7.963	14	1.3981	0.0006
L31	53 - 45.58	7.745	14	1.3743	0.0006
L32	45.58 - 43	5.702	14	1.2402	0.0005
L33	43 - 42.75	5.054	14	1.1582	0.0005
L34	42.75 - 42.5	4.994	14	1.1510	0.0005
L35	42.5 - 42.25	4.934	14	1.1437	0.0005

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L36	42.25 - 42	4.874	14	1.1372	0.0005
L37	42 - 41.75	4.815	14	1.1306	0.0005
L38	41.75 - 36.75	4.756	14	1.1231	0.0005
L39	36.75 - 32	3.658	14	0.9733	0.0004
L40	32 - 31.75	2.761	14	0.8293	0.0003
L41	31.75 - 26.75	2.718	14	0.8223	0.0003
L42	26.75 - 21.75	1.932	14	0.6793	0.0003
L43	21.75 - 18	1.295	14	0.5373	0.0002
L44	18 - 17.75	0.915	14	0.4315	0.0002
L45	17.75 - 9.92	0.892	14	0.4245	0.0002
L46	17 - 8.92	0.827	14	0.4034	0.0001
L47	8.92 - 3.92	0.246	14	0.2681	0.0001
L48	3.92 - 2.75	0.046	14	0.1139	0.0000
L49	2.75 - 2.5	0.023	14	0.0783	0.0000
L50	2.5 - 0	0.019	14	0.0712	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
173.00	(2) ADA-85408580CF w/ Mount Pipe	2	100.942	5.6165	0.0130	9453
162.00	HPA-65R-BUU-H6 w/ Mount Pipe	2	88.107	5.5147	0.0096	3564
144.00	RRUS 01 W/SOLAR SHIELD	2	68.132	5.0982	0.0063	2194
130.00	ANT450F6	2	53.922	4.5842	0.0047	1400
120.00	ANT450Y5-WR	2	44.786	4.1395	0.0037	1228

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K
L1	175 - 170 (1)	TP23.025x22.125x0.2188	5.00	0.00	0.0	16.064	-2.95
L2	170 - 165 (2)	TP23.925x23.025x0.2188	5.00	0.00	0.0	16.698	-3.28
L3	165 - 160 (3)	TP24.825x23.925x0.2188	5.00	0.00	0.0	17.332	-6.64
L4	160 - 155 (4)	TP25.725x24.825x0.2188	5.00	0.00	0.0	17.966	-7.02
L5	155 - 145.5 (5)	TP27.435x25.725x0.2188	9.50	0.00	0.0	18.599	-7.43
L6	145.5 - 145 (6)	TP27.0875x26.1875x0.3125	5.00	0.00	0.0	26.942	-8.34
L7	145 - 140 (7)	TP27.9874x27.0875x0.3125	5.00	0.00	0.0	27.847	-10.28
L8	140 - 135 (8)	TP28.8874x27.9874x0.3125	5.00	0.00	0.0	28.753	-10.94
L9	135 - 130 (9)	TP29.7873x28.8874x0.3125	5.00	0.00	0.0	29.659	-11.63
L10	130 - 125 (10)	TP30.6873x29.7873x0.3125	5.00	0.00	0.0	30.564	-12.83
L11	125 - 120 (11)	TP31.5872x30.6873x0.3125	5.00	0.00	0.0	31.470	-13.59
L12	120 - 115 (12)	TP32.4872x31.5872x0.3125	5.00	0.00	0.0	32.375	-14.86
L13	115 - 110 (13)	TP33.3871x32.4872x0.3125	5.00	0.00	0.0	33.281	-15.67
L14	110 - 105 (14)	TP34.2871x33.3871x0.3125	5.00	0.00	0.0	34.186	-16.50
L15	105 - 95.5	TP35.997x34.2871x0.312	9.50	0.00	0.0	34.911	-17.19

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u K
L16	95.5 - 94.5 (15)	TP35.552x34.3821x0.375 5	6.50	0.00	0.0	42.476 4	-19.25
L17	94.5 - 89.5 (16)	TP36.4519x35.552x0.375 2	5.00	0.00	0.0	43.562 9	-20.28
L18	89.5 - 84.5 (17)	TP37.3519x36.4519x0.37 5	5.00	0.00	0.0	44.649 6	-21.35
L19	84.5 - 83.17 (18)	TP37.5912x37.3519x0.37 5	1.33	0.00	0.0	44.938 6	-21.63
L20	83.17 - 82.92 (19)	TP37.6362x37.5912x0.53 75	0.25	0.00	0.0	64.208 6	-21.72
L21	82.92 - 77.92 (20)	TP38.5362x37.6362x0.53 75	5.00	0.00	0.0	65.766 2	-23.14
L22	77.92 - 72.92 (21)	TP39.4361x38.5362x0.53 75	5.00	0.00	0.0	67.323 8	-24.61
L23	72.92 - 67.92 (22)	TP40.3361x39.4361x0.52 5	5.00	0.00	0.0	67.300 6	-26.10
L24	67.92 - 65.5 (23)	TP40.7716x40.3361x0.52 5	2.42	0.00	0.0	68.036 9	-26.83
L25	65.5 - 65.25 (24)	TP40.8166x40.7716x0.52 5	0.25	0.00	0.0	68.113 0	-26.91
L26	65.25 - 64 (25)	TP41.0416x40.8166x0.52 5	1.25	0.00	0.0	68.493 3	-27.28
L27	64 - 63.75 (26)	TP41.0866x41.0416x0.62 5	0.25	0.00	0.0	81.429 0	-27.38
L28	63.75 - 58.75 (27)	TP41.9865x41.0866x0.62 5	5.00	0.00	0.0	83.240 1	-29.15
L29	58.75 - 53.75 (28)	TP42.8865x41.9865x0.62 5	5.00	0.00	0.0	85.051 2	-30.95
L30	53.75 - 46.58 (29)	TP44.177x42.8865x0.612 5	7.17	0.00	0.0	83.641 1	-31.22
L31	46.58 - 45.58 (30)	TP43.6073x42.2715x0.64 38	7.42	0.00	0.0	89.064 9	-36.17
L32	45.58 - 43 (31)	TP44.0718x43.6073x0.64 38	2.58	0.00	0.0	90.027 7	-37.17
L33	43 - 42.75 (32)	TP44.1168x44.0718x0.70 63	0.25	0.00	0.0	98.727 8	-37.29
L34	42.75 - 42.5 (33)	TP44.1618x44.1168x0.70 63	0.25	0.00	0.0	98.830 2	-37.40
L35	42.5 - 42.25 (34)	TP44.2068x44.1618x0.78 13	0.25	0.00	0.0	109.24 90	-37.51
L36	42.25 - 42 (35)	TP44.2518x44.2068x0.78 13	0.25	0.00	0.0	109.36 20	-37.62
L37	42 - 41.75 (36)	TP44.2968x44.2518x0.68 13	0.25	0.00	0.0	95.683 0	-37.73
L38	41.75 - 36.75 (37)	TP45.1969x44.2968x0.68 13	5.00	0.00	0.0	97.657 7	-39.77
L39	36.75 - 32 (38)	TP46.052x45.1969x0.668 8	4.75	0.00	0.0	97.734 4	-41.74
L40	32 - 31.75 (39)	TP46.097x46.052x0.7188 00	0.25	0.00	0.0	105.03 00	-41.86
L41	31.75 - 26.75 (40)	TP46.9972x46.097x0.706 3	5.00	0.00	0.0	105.27 90	-44.08
L42	26.75 - 21.75 (41)	TP47.8973x46.9972x0.70 63	5.00	0.00	0.0	107.32 60	-46.34
L43	21.75 - 18 (42)	TP48.5724x47.8973x0.70 63	3.75	0.00	0.0	108.86 10	-48.05
L44	18 - 17.75 (43)	TP48.6174x48.5724x0.70 63	0.25	0.00	0.0	108.96 40	-48.17
L45	17.75 - 9.92 (44)	TP50.027x48.6174x0.706 3	7.83	0.00	0.0	109.27 10	-48.51
L46	9.92 - 8.92 (45)	TP49.3943x47.9398x0.66 25	8.08	0.00	0.0	103.95 70	-55.38
L47	8.92 - 3.92 (46)	TP50.2944x49.3943x0.66 25	5.00	0.00	0.0	105.87 70	-57.82
L48	3.92 - 2.75 (47)	TP50.505x50.2944x0.662 5	1.17	0.00	0.0	106.32 60	-58.40
L49	2.75 - 2.5 (48)	TP50.55x50.505x0.7125 00	0.25	0.00	0.0	114.34 00	-58.53
L50	2.5 - 0 (49)	TP51x50.55x0.7125	2.50	0.00	0.0	115.37	-59.72

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K
						20	

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	M _{uy} kip-ft
L1	175 - 170 (1)	TP23.025x22.125x0.2188	23.80	0.00
L2	170 - 165 (2)	TP23.925x23.025x0.2188	53.20	0.00
L3	165 - 160 (3)	TP24.825x23.925x0.2188	91.72	0.00
L4	160 - 155 (4)	TP25.725x24.825x0.2188	143.29	0.00
L5	155 - 145.5 (5)	TP27.435x25.725x0.2188	198.34	0.00
L6	145.5 - 145 (6)	TP27.0875x26.1875x0.3125	257.10	0.00
L7	145 - 140 (7)	TP27.9874x27.0875x0.3125	326.05	0.00
L8	140 - 135 (8)	TP28.8874x27.9874x0.3125	401.14	0.00
L9	135 - 130 (9)	TP29.7873x28.8874x0.3125	479.20	0.00
L10	130 - 125 (10)	TP30.6873x29.7873x0.3125	563.59	0.00
L11	125 - 120 (11)	TP31.5872x30.6873x0.3125	650.93	0.00
L12	120 - 115 (12)	TP32.4872x31.5872x0.3125	744.34	0.00
L13	115 - 110 (13)	TP33.3871x32.4872x0.3125	840.63	0.00
L14	110 - 105 (14)	TP34.2871x33.3871x0.3125	939.82	0.00
L15	105 - 95.5 (15)	TP35.997x34.2871x0.3125	1021.21	0.00
L16	95.5 - 94.5 (16)	TP35.552x34.3821x0.375	1157.68	0.00
L17	94.5 - 89.5 (17)	TP36.4519x35.552x0.375	1266.09	0.00
L18	89.5 - 84.5 (18)	TP37.3519x36.4519x0.375	1377.29	0.00
L19	84.5 - 83.17 (19)	TP37.5912x37.3519x0.375	1407.35	0.00
L20	83.17 - 82.92 (20)	TP37.6362x37.5912x0.5375	1413.03	0.00
L21	82.92 - 77.92 (21)	TP38.5362x37.6362x0.5375	1528.09	0.00
L22	77.92 - 72.92 (22)	TP39.4361x38.5362x0.5375	1646.22	0.00
L23	72.92 - 67.92 (23)	TP40.3361x39.4361x0.525	1767.35	0.00
L24	67.92 - 65.5 (24)	TP40.7716x40.3361x0.525	1827.03	0.00
L25	65.5 - 65.25 (25)	TP40.8166x40.7716x0.525	1833.24	0.00
L26	65.25 - 64 (26)	TP41.0416x40.8166x0.525	1864.38	0.00
L27	64 - 63.75 (27)	TP41.0866x41.0416x0.625	1870.63	0.00
L28	63.75 - 58.75 (28)	TP41.9865x41.0866x0.625	1997.37	0.00
L29	58.75 - 53.75 (29)	TP42.8865x41.9865x0.625	2127.29	0.00
L30	53.75 - 46.58 (30)	TP44.177x42.8865x0.6125	2147.05	0.00
L31	46.58 - 45.58 (31)	TP43.6073x42.2715x0.6438	2346.72	0.00
L32	45.58 - 43 (32)	TP44.0718x43.6073x0.6438	2417.84	0.00
L33	43 - 42.75	TP44.1168x44.0718x0.70	2424.78	0.00

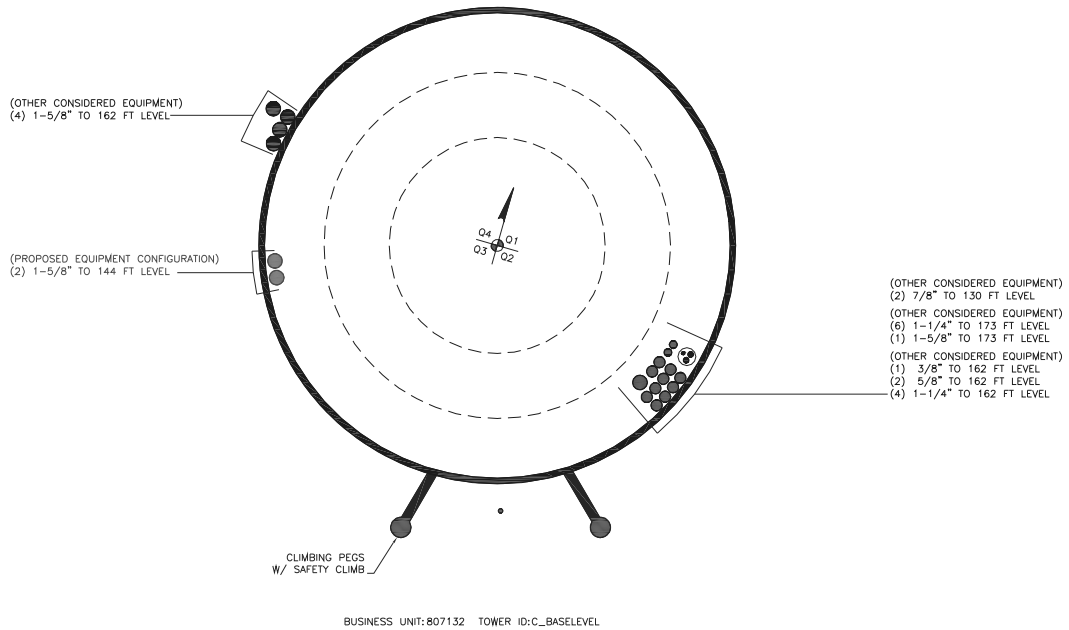
Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L34	(33) 42.75 - 42.5	63 TP44.1618x44.1168x0.70	2431.72	0.00
L35	(34) 42.5 - 42.25	63 TP44.2068x44.1618x0.78	2438.68	0.00
L36	(35) 42.25 - 42	13 TP44.2518x44.2068x0.78	2445.63	0.00
L37	(36) 42 - 41.75	13 TP44.2968x44.2518x0.68	2452.61	0.00
L38	(37) 41.75 - 36.75	13 TP45.1969x44.2968x0.68	2593.53	0.00
L39	(38) 36.75 - 32	13 TP46.052x45.1969x0.668	2730.13	0.00
L40	(39) 32 - 31.75	8 TP46.097x46.052x0.7188	2737.39	0.00
L41	(40) 31.75 - 26.75	8 TP46.9972x46.097x0.706	2884.22	0.00
L42	(41) 26.75 - 21.75	3 TP47.8973x46.9972x0.70	3033.72	0.00
L43	(42) 21.75 - 18	63 TP48.5724x47.8973x0.70	3147.65	0.00
L44	(43) 18 - 17.75	63 TP48.6174x48.5724x0.70	3155.30	0.00
L45	(44) 17.75 - 9.92	63 TP50.027x48.6174x0.706	3178.30	0.00
L46	(45) 9.92 - 8.92	3 TP49.3943x47.9398x0.66	3430.53	0.00
L47	(46) 8.92 - 3.92	25 TP50.2944x49.3943x0.66	3590.41	0.00
L48	(47) 3.92 - 2.75	25 TP50.505x50.2944x0.662	3628.20	0.00
L49	(48) 2.75 - 2.5 (49)	5 TP50.55x50.505x0.7125	3636.29	0.00
L50	(50) 2.5 - 0 (50)	5 TP51x50.55x0.7125	3717.61	0.00

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	175 - 170 (1)	TP23.025x22.125x0.2188	5.67	0.00
L2	170 - 165 (2)	TP23.925x23.025x0.2188	6.09	0.00
L3	165 - 160 (3)	TP24.825x23.925x0.2188	9.96	0.01
L4	160 - 155 (4)	TP25.725x24.825x0.2188	10.66	0.18
L5	155 - 145.5 (5)	TP27.435x25.725x0.2188	11.36	0.36
L6	145.5 - 145 (6)	TP27.0875x26.1875x0.31 25	12.14	0.56
L7	145 - 140 (7)	TP27.9874x27.0875x0.31 25	14.72	0.75
L8	140 - 135 (8)	TP28.8874x27.9874x0.31 25	15.32	0.75
L9	135 - 130 (9)	TP29.7873x28.8874x0.31 25	15.91	0.75
L10	130 - 125 (10)	TP30.6873x29.7873x0.31 25	17.17	0.75
L11	125 - 120 (11)	TP31.5872x30.6873x0.31 25	17.77	0.75
L12	120 - 115 (12)	TP32.4872x31.5872x0.31 25	18.97	0.75
L13	115 - 110 (13)	TP33.3871x32.4872x0.31 25	19.55	0.75
L14	110 - 105 (14)	TP34.2871x33.3871x0.31 25	20.13	0.75
L15	105 - 95.5 (15)	TP35.997x34.2871x0.312 5	20.58	0.75
L16	95.5 - 94.5 (16)	TP35.552x34.3821x0.375	21.41	0.75

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L17	94.5 - 89.5 (17)	TP36.4519x35.552x0.375	21.97	0.75
L18	89.5 - 84.5 (18)	TP37.3519x36.4519x0.375	22.53	0.75
L19	84.5 - 83.17 (19)	TP37.5912x37.3519x0.375	22.68	0.75
L20	83.17 - 82.92 (20)	TP37.6362x37.5912x0.5375	22.72	0.75
L21	82.92 - 77.92 (21)	TP38.5362x37.6362x0.5375	23.33	0.75
L22	77.92 - 72.92 (22)	TP39.4361x38.5362x0.5375	23.93	0.75
L23	72.92 - 67.92 (23)	TP40.3361x39.4361x0.525	24.53	0.75
L24	67.92 - 65.5 (24)	TP40.7716x40.3361x0.525	24.81	0.75
L25	65.5 - 65.25 (25)	TP40.8166x40.7716x0.525	24.85	0.75
L26	65.25 - 64 (26)	TP41.0416x40.8166x0.525	25.00	0.75
L27	64 - 63.75 (27)	TP41.0866x41.0416x0.625	25.04	0.75
L28	63.75 - 58.75 (28)	TP41.9865x41.0866x0.625	25.67	0.75
L29	58.75 - 53.75 (29)	TP42.8865x41.9865x0.625	26.31	0.75
L30	53.75 - 46.58 (30)	TP44.177x42.8865x0.6125	26.40	0.74
L31	46.58 - 45.58 (31)	TP43.6073x42.2715x0.6438	27.41	0.74
L32	45.58 - 43 (32)	TP44.0718x43.6073x0.6438	27.74	0.74
L33	43 - 42.75 (33)	TP44.1168x44.0718x0.7063	27.77	0.74
L34	42.75 - 42.5 (34)	TP44.1618x44.1168x0.7063	27.80	0.74
L35	42.5 - 42.25 (35)	TP44.2068x44.1618x0.7813	27.84	0.74
L36	42.25 - 42 (36)	TP44.2518x44.2068x0.7813	27.87	0.74
L37	42 - 41.75 (37)	TP44.2968x44.2518x0.6813	27.90	0.74
L38	41.75 - 36.75 (38)	TP45.1969x44.2968x0.6813	28.49	0.74
L39	36.75 - 32 (39)	TP46.052x45.1969x0.6688	29.04	0.74
L40	32 - 31.75 (40)	TP46.097x46.052x0.71883	29.12	0.75
L41	31.75 - 26.75 (41)	TP46.9972x46.097x0.7063	29.65	0.75
L42	26.75 - 21.75 (42)	TP47.8973x46.9972x0.7063	30.18	0.75
L43	21.75 - 18 (43)	TP48.5724x47.8973x0.7063	30.61	0.75
L44	18 - 17.75 (44)	TP48.6174x48.5724x0.7063	30.64	0.75
L45	17.75 - 9.92 (45)	TP50.027x48.6174x0.7063	30.72	0.75
L46	9.92 - 8.92 (46)	TP49.3943x47.9398x0.6625	31.73	0.75
L47	8.92 - 3.92 (47)	TP50.2944x49.3943x0.6625	32.26	0.75
L48	3.92 - 2.75 (48)	TP50.505x50.2944x0.6625	32.39	0.75
L49	2.75 - 2.5 (49)	TP50.55x50.505x0.7125	32.40	0.75
L50	2.5 - 0 (50)	TP51x50.55x0.7125	32.68	0.75

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

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	175	29.5	4.5	12	22.125	27.435	0.21875	Auto	A572-65
2	150	54.5	5.5	12	26.19	35.997	0.3125	Auto	A572-65
3	101	54.42	6.42	12	34.38	44.177	0.375	Auto	A572-65
4	53	43.08	7.08	12	42.27	50.027	0.4063	Auto	A572-65
5	17	17	0	12	47.94	51	0.4375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	2.75	18	channel	MP3-05 (1.1875")	3												
2	18	43	channel	MP3-05 (1.1875")	2												
3	18	42.5	channel	MP3-05 (1.1875")	1												
4	42	64	channel	MP3-04 (1.1875")	3												
5	2.75	32	plate	CCI-AFP-065125	2												
6	2.75	12	plate	CCI-AFP-065125	1												
7	14	32	plate	CCI-AFP-065125	1												
8	32	65.5	plate	CCI-AFP-060100	3												
9	65.5	83.17	plate	CCI-AFP-060100	3												
10	0	2.75	plate	FP 1.25 x 6.5_1	3												
11	0	2.75	plate	FP 1.25 x 3.75_1	3												
12																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _w (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	29,000	29,000	18,000	5.025	1.1875	A572-65
2	5.33	2.09	5.65	0.79	29,000	29,000	18,000	5.025	1.1875	A572-65
3	5.33	2.09	5.65	0.79	29,000	29,000	18,000	5.025	1.1875	A572-65
4	4.78	1.61	4.13	0.61	17,000	17,000	18,000	3.593	1.1875	A572-65
5	6.5	1.25	8.125	0.625	42,000	42,000	19,000	6.563	1.1875	A572-65
6	6.5	1.25	8.125	0.625	42,000	42,000	19,000	6.563	1.1875	A572-65
7	6.5	1.25	8.125	0.625	42,000	42,000	19,000	6.563	1.1875	A572-65
8	6	1	6	0.5	30,000	30,000	16,000	4.750	1.1875	A572-65
9	6	1	6	0.5	30,000	30,000	16,000	4.750	1.1875	A572-65
10	1.25	6.5	8.125	3.25	n/a	n/a	0.000	8.125	0.0000	A572-65
11	1.25	3.75	4.6875	1.875	n/a	n/a	0.000	4.688	0.0000	A572-65

TNX Geometry Input

Increment (ft):

	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	175 - 170	5		12	22.125	23.025	0.21875	A572-65	1.000
2	170 - 165	5		12	23.025	23.925	0.21875	A572-65	1.000
3	165 - 160	5		12	23.925	24.825	0.21875	A572-65	1.000
4	160 - 155	5		12	24.825	25.725	0.21875	A572-65	1.000
5	155 - 150	9.5	4.5	12	25.725	27.435	0.21875	A572-65	1.000
6	150 - 145	5		12	26.188	27.087	0.3125	A572-65	1.000
7	145 - 140	5		12	27.087	27.987	0.3125	A572-65	1.000
8	140 - 135	5		12	27.987	28.887	0.3125	A572-65	1.000
9	135 - 130	5		12	28.887	29.787	0.3125	A572-65	1.000
10	130 - 125	5		12	29.787	30.687	0.3125	A572-65	1.000
11	125 - 120	5		12	30.687	31.587	0.3125	A572-65	1.000
12	120 - 115	5		12	31.587	32.487	0.3125	A572-65	1.000
13	115 - 110	5		12	32.487	33.387	0.3125	A572-65	1.000
14	110 - 105	5		12	33.387	34.287	0.3125	A572-65	1.000
15	105 - 101	9.5	5.5	12	34.287	35.997	0.3125	A572-65	1.000
16	101 - 94.5	6.5		12	34.382	35.552	0.375	A572-65	1.000
17	94.5 - 89.5	5		12	35.552	36.452	0.375	A572-65	1.000
18	89.5 - 84.5	5		12	36.452	37.352	0.375	A572-65	1.000
19	84.5 - 83.17	1.33		12	37.352	37.591	0.375	A572-65	1.000
20	83.17 - 82.92	0.25		12	37.591	37.636	0.5375	A572-65	0.981
21	82.92 - 77.92	5		12	37.636	38.536	0.5375	A572-65	0.975
22	77.92 - 72.92	5		12	38.536	39.436	0.5375	A572-65	0.968
23	72.92 - 67.92	5		12	39.436	40.336	0.525	A572-65	0.985
24	67.92 - 65.5	2.42		12	40.336	40.772	0.525	A572-65	0.982
25	65.5 - 65.25	0.25		12	40.772	40.817	0.525	A572-65	0.982
26	65.25 - 64	1.25		12	40.817	41.042	0.525	A572-65	0.980
27	64 - 63.75	0.25		12	41.042	41.087	0.625	A572-65	0.977
28	63.75 - 58.75	5		12	41.087	41.987	0.625	A572-65	0.969
29	58.75 - 53.75	5		12	41.987	42.886	0.625	A572-65	0.961
30	53.75 - 53	7.17	6.42	12	42.886	44.177	0.6125	A572-65	0.980
31	53 - 45.58	7.42		12	42.272	43.607	0.6438	A572-65	0.976
32	45.58 - 43	2.58		12	43.607	44.072	0.6438	A572-65	0.973
33	43 - 42.75	0.25		12	44.072	44.117	0.7063	A572-65	1.002
34	42.75 - 42.5	0.25		12	44.117	44.162	0.7063	A572-65	1.002
35	42.5 - 42.25	0.25		12	44.162	44.207	0.7813	A572-65	0.958
36	42.25 - 42	0.25		12	44.207	44.252	0.7813	A572-65	0.958
37	42 - 41.75	0.25		12	44.252	44.297	0.6813	A572-65	0.966
38	41.75 - 36.75	5		12	44.297	45.197	0.6813	A572-65	0.958
39	36.75 - 32	4.75		12	45.197	46.052	0.6688	A572-65	0.969
40	32 - 31.75	0.25		12	46.052	46.097	0.7188	A572-65	0.963
41	31.75 - 26.75	5		12	46.097	46.997	0.7063	A572-65	0.972
42	26.75 - 21.75	5		12	46.997	47.897	0.7063	A572-65	0.965
43	21.75 - 18	3.75		12	47.897	48.572	0.7063	A572-65	0.959
44	18 - 17.75	0.25		12	48.572	48.617	0.7063	A572-65	0.959
45	17.75 - 17	7.83	7.08	12	48.617	50.027	0.7063	A572-65	0.958
46	17 - 8.92	8.08		12	47.940	49.394	0.6625	A572-65	1.062
47	8.92 - 3.92	5		12	49.394	50.294	0.6625	A572-65	1.054
48	3.92 - 2.75	1.17		12	50.294	50.505	0.6625	A572-65	1.053
49	2.75 - 2.5	0.25		12	50.505	50.550	0.7125	A572-65	0.954
50	2.5 - 0	2.5		12	50.550	51.000	0.7125	A572-65	0.951

TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	175 - 170		2.95	23.80	5.67
2	170 - 165		3.28	53.20	6.09
3	165 - 160		6.64	91.72	9.96
4	160 - 155		7.02	143.29	10.66
5	155 - 150		7.43	198.34	11.36
6	150 - 145		8.34	257.10	12.14
7	145 - 140		10.28	326.05	14.72
8	140 - 135		10.94	401.14	15.32
9	135 - 130		11.63	479.20	15.91
10	130 - 125		12.83	563.59	17.17
11	125 - 120		13.59	650.93	17.77
12	120 - 115		14.86	744.34	18.97
13	115 - 110		15.67	840.64	19.55
14	110 - 105		16.50	939.82	20.13
15	105 - 101		17.19	1021.21	20.58
16	101 - 94.5		19.25	1157.68	21.41
17	94.5 - 89.5		20.28	1266.09	21.97
18	89.5 - 84.5		21.35	1377.29	22.53
19	84.5 - 83.17		21.63	1407.35	22.68
20	83.17 - 82.92		21.72	1413.02	22.72
21	82.92 - 77.92		23.14	1528.09	23.33
22	77.92 - 72.92		24.61	1646.22	23.93
23	72.92 - 67.92		26.10	1767.35	24.53
24	67.92 - 65.5		26.83	1827.03	24.81
25	65.5 - 65.25		26.91	1833.24	24.85
26	65.25 - 64		27.28	1864.38	25.00
27	64 - 63.75		27.38	1870.63	25.04
28	63.75 - 58.75		29.15	1997.37	25.67
29	58.75 - 53.75		30.95	2127.29	26.31
30	53.75 - 53		31.22	2147.05	26.40
31	53 - 45.58		36.17	2346.72	27.41
32	45.58 - 43		37.17	2417.84	27.74
33	43 - 42.75		37.29	2424.78	27.77
34	42.75 - 42.5		37.40	2431.72	27.80
35	42.5 - 42.25		37.51	2438.68	27.84
36	42.25 - 42		37.62	2445.64	27.87
37	42 - 41.75		37.73	2452.60	27.90
38	41.75 - 36.75		39.77	2593.53	28.49
39	36.75 - 32		41.74	2730.13	29.04
40	32 - 31.75		41.86	2737.39	29.07
41	31.75 - 26.75		44.08	2884.22	29.65
42	26.75 - 21.75		46.34	3033.73	30.18
43	21.75 - 18		48.05	3147.65	30.61
44	18 - 17.75		48.17	3155.30	30.64
45	17.75 - 17		48.51	3178.30	30.72
46	17 - 8.92		55.38	3430.53	31.73
47	8.92 - 3.92		57.82	3590.41	32.26
48	3.92 - 2.75		58.40	3628.20	32.39
49	2.75 - 2.5		58.53	3636.30	32.40
50	2.5 - 0		59.72	3717.61	32.68

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
175 - 170	Pole	TP23.025x22.125x0.2188	Pole	4.7%	Pass
170 - 165	Pole	TP23.925x23.025x0.2188	Pole	9.7%	Pass
165 - 160	Pole	TP24.825x23.925x0.2188	Pole	15.9%	Pass
160 - 155	Pole	TP25.725x24.825x0.2188	Pole	23.2%	Pass
155 - 150	Pole	TP27.435x25.725x0.2188	Pole	30.3%	Pass
150 - 145	Pole	TP27.087x26.188x0.3125	Pole	23.3%	Pass
145 - 140	Pole	TP27.987x27.087x0.3125	Pole	28.0%	Pass
140 - 135	Pole	TP28.887x27.987x0.3125	Pole	32.6%	Pass
135 - 130	Pole	TP29.787x28.887x0.3125	Pole	36.9%	Pass
130 - 125	Pole	TP30.687x29.787x0.3125	Pole	41.3%	Pass
125 - 120	Pole	TP31.587x30.687x0.3125	Pole	45.4%	Pass
120 - 115	Pole	TP32.487x31.587x0.3125	Pole	49.6%	Pass
115 - 110	Pole	TP33.387x32.487x0.3125	Pole	53.6%	Pass
110 - 105	Pole	TP34.287x33.387x0.3125	Pole	57.4%	Pass
105 - 101	Pole	TP35.997x34.287x0.3125	Pole	60.3%	Pass
101 - 94.5	Pole	TP35.552x34.382x0.375	Pole	51.9%	Pass
94.5 - 89.5	Pole	TP36.452x35.552x0.375	Pole	54.4%	Pass
89.5 - 84.5	Pole	TP37.352x36.452x0.375	Pole	56.9%	Pass
84.5 - 83.17	Pole	TP37.591x37.352x0.375	Pole	57.5%	Pass
83.17 - 82.92	Pole + Reinf.	TP37.636x37.591x0.5375	Reinf. 9 Tension Rupture	58.3%	Pass
82.92 - 77.92	Pole + Reinf.	TP38.536x37.636x0.5375	Reinf. 9 Tension Rupture	60.5%	Pass
77.92 - 72.92	Pole + Reinf.	TP39.436x38.536x0.5375	Reinf. 9 Tension Rupture	62.6%	Pass
72.92 - 67.92	Pole + Reinf.	TP40.336x39.436x0.525	Reinf. 9 Tension Rupture	64.7%	Pass
67.92 - 65.5	Pole + Reinf.	TP40.772x40.336x0.525	Reinf. 9 Tension Rupture	65.6%	Pass
65.5 - 65.25	Pole + Reinf.	TP40.817x40.772x0.525	Reinf. 8 Tension Rupture	65.7%	Pass
65.25 - 64	Pole + Reinf.	TP41.042x40.817x0.525	Reinf. 8 Tension Rupture	66.2%	Pass
64 - 63.75	Pole + Reinf.	TP41.087x41.042x0.625	Reinf. 8 Tension Rupture	55.6%	Pass
63.75 - 58.75	Pole + Reinf.	TP41.987x41.087x0.625	Reinf. 8 Tension Rupture	57.3%	Pass
58.75 - 53.75	Pole + Reinf.	TP42.886x41.987x0.625	Reinf. 8 Tension Rupture	59.0%	Pass
53.75 - 53	Pole + Reinf.	TP44.177x42.886x0.6125	Reinf. 8 Tension Rupture	59.2%	Pass
53 - 45.58	Pole + Reinf.	TP43.607x42.272x0.6438	Reinf. 8 Tension Rupture	60.3%	Pass
45.58 - 43	Pole + Reinf.	TP44.072x43.607x0.6438	Reinf. 8 Tension Rupture	61.1%	Pass
43 - 42.75	Pole + Reinf.	TP44.117x44.072x0.7063	Reinf. 8 Tension Rupture	59.0%	Pass
42.75 - 42.5	Pole + Reinf.	TP44.162x44.117x0.7063	Reinf. 8 Tension Rupture	59.1%	Pass
42.5 - 42.25	Pole + Reinf.	TP44.207x44.162x0.7813	Reinf. 8 Tension Rupture	50.9%	Pass
42.25 - 42	Pole + Reinf.	TP44.252x44.207x0.7813	Reinf. 8 Tension Rupture	51.0%	Pass
42 - 41.75	Pole + Reinf.	TP44.297x44.252x0.6813	Reinf. 8 Tension Rupture	58.1%	Pass
41.75 - 36.75	Pole + Reinf.	TP45.197x44.297x0.6813	Reinf. 8 Tension Rupture	59.5%	Pass
36.75 - 32	Pole + Reinf.	TP46.052x45.197x0.6688	Reinf. 8 Tension Rupture	60.8%	Pass
32 - 31.75	Pole + Reinf.	TP46.097x46.052x0.7188	Reinf. 7 Tension Rupture	55.9%	Pass
31.75 - 26.75	Pole + Reinf.	TP46.997x46.097x0.7063	Reinf. 7 Tension Rupture	57.2%	Pass
26.75 - 21.75	Pole + Reinf.	TP47.897x46.997x0.7063	Reinf. 7 Tension Rupture	58.3%	Pass
21.75 - 18	Pole + Reinf.	TP48.572x47.897x0.7063	Reinf. 7 Tension Rupture	59.2%	Pass
18 - 17.75	Pole + Reinf.	TP48.617x48.572x0.7063	Reinf. 7 Tension Rupture	59.3%	Pass
17.75 - 17	Pole + Reinf.	TP50.027x48.617x0.7063	Reinf. 7 Tension Rupture	59.4%	Pass
17 - 8.92	Pole + Reinf.	TP49.394x47.94x0.6625	Reinf. 1 Tension Rupture	63.0%	Pass
8.92 - 3.92	Pole + Reinf.	TP50.294x49.394x0.6625	Reinf. 1 Tension Rupture	63.9%	Pass
3.92 - 2.75	Pole + Reinf.	TP50.505x50.294x0.6625	Reinf. 1 Tension Rupture	64.1%	Pass
2.75 - 2.5	Pole + Reinf.	TP50.55x50.505x0.7125	Reinf. 10 Connection	62.5%	Pass
2.5 - 0	Pole + Reinf.	TP51x50.55x0.7125	Reinf. 10 Connection	62.9%	Pass
				Summary	
			Pole	60.3%	Pass
			Reinforcement	66.2%	Pass
			Overall	66.2%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*											
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
175 - 170	1068	n/a	1068	16.04	n/a	16.04	4.7%											
170 - 165	1199	n/a	1199	16.67	n/a	16.67	9.7%											
165 - 160	1341	n/a	1341	17.31	n/a	17.31	15.9%											
160 - 155	1494	n/a	1494	17.94	n/a	17.94	23.2%											
155 - 150	1658	n/a	1658	18.57	n/a	18.57	30.3%											
150 - 145	2469	n/a	2469	26.90	n/a	26.90	23.3%											
145 - 140	2726	n/a	2726	27.81	n/a	27.81	28.0%											
140 - 135	3001	n/a	3001	28.71	n/a	28.71	32.6%											
135 - 130	3293	n/a	3293	29.62	n/a	29.62	36.9%											
130 - 125	3604	n/a	3604	30.52	n/a	30.52	41.3%											
125 - 120	3934	n/a	3934	31.43	n/a	31.43	45.4%											
120 - 115	4284	n/a	4284	32.33	n/a	32.33	49.6%											
115 - 110	4653	n/a	4653	33.23	n/a	33.23	53.6%											
110 - 105	5044	n/a	5044	34.14	n/a	34.14	57.4%											
105 - 101	5371	n/a	5371	34.86	n/a	34.86	60.3%											
101 - 94.5	6718	n/a	6718	42.42	n/a	42.42	51.9%											
94.5 - 89.5	7247	n/a	7247	43.50	n/a	43.50	54.4%											
89.5 - 84.5	7803	n/a	7803	44.59	n/a	44.59	56.9%											
84.5 - 83.17	7955	n/a	7955	44.87	n/a	44.87	57.5%											
83.17 - 82.92	7984	3386	11371	44.93	18.00	62.93	39.2%									58.3%		
82.92 - 77.92	8577	3545	12122	46.01	18.00	64.01	41.1%									60.5%		
77.92 - 72.92	9198	3707	12905	47.10	18.00	65.10	42.9%									62.6%		
72.92 - 67.92	9848	3872	13721	48.18	18.00	66.18	44.8%									64.7%		
67.92 - 65.5	10174	3954	14128	48.71	18.00	66.71	45.6%									65.6%		
65.5 - 65.25	10208	3962	14170	48.76	18.00	66.76	45.7%									65.7%		
65.25 - 64	10379	4005	14384	49.03	18.00	67.03	46.2%									66.2%		
64 - 63.75	10414	6792	17206	49.09	30.39	79.48	38.8%				53.0%				55.6%			
63.75 - 58.75	11120	7083	18203	50.17	30.39	80.56	40.4%				54.7%				57.3%			
58.75 - 53.75	11857	7381	19238	51.26	30.39	81.65	42.0%				56.3%				59.0%			
53.75 - 53	11970	7426	19396	51.42	30.39	81.81	42.2%				56.5%				59.2%			
53 - 45.58	13482	7624	21106	56.44	30.39	86.83	41.8%				57.5%				60.3%			
45.58 - 43	13922	7782	21704	57.05	30.39	87.44	42.5%				58.3%				61.1%			
43 - 42.75	14045	9589	23634	57.10	41.69	98.79	42.0%		47.4%		52.1%				59.0%			
42.75 - 42.5	14088	9608	23697	57.16	41.69	98.85	42.1%		47.5%		52.1%				59.1%			
42.5 - 42.25	14051	12281	26332	57.22	47.34	104.56	35.5%	47.4%	47.4%	48.6%				50.9%				
42.25 - 42	14094	12305	26400	57.28	47.34	104.62	35.6%	47.4%	47.4%	48.7%				51.0%				
42 - 41.75	14138	9114	23252	57.34	34.95	92.29	40.6%		54.0%	54.0%				58.1%				
41.75 - 36.75	15026	9476	24502	58.52	34.95	93.47	41.9%		55.3%	55.3%				59.5%				
36.75 - 32	15903	9827	25730	59.63	34.95	94.58	43.2%		56.5%	56.5%				60.8%				
32 - 31.75	15950	11702	27652	59.69	41.33	101.02	40.3%		52.7%	52.7%		55.9%		55.9%				
31.75 - 26.75	16911	12147	29059	60.87	41.33	102.19	41.6%		53.9%	53.9%		57.2%		57.2%				
26.75 - 21.75	17910	12602	30512	62.04	41.33	103.37	42.9%		55.0%	55.0%		58.3%		58.3%				
21.75 - 18	18685	12948	31633	62.92	41.33	104.25	43.8%		55.8%	55.8%		59.2%		59.2%				
18 - 17.75	18738	12971	31708	62.98	41.33	104.31	43.9%	55.9%				59.3%		59.3%				
17.75 - 17	18895	13041	31936	63.16	41.33	104.49	44.1%	56.0%				59.4%		59.4%				
17 - 8.92	21159	10701	31860	68.87	41.33	110.19	48.2%	63.0%				60.9%	58.3%					
8.92 - 3.92	22347	11081	33429	70.14	41.33	111.46	49.4%	63.9%				61.9%	59.3%					
3.92 - 2.75	22631	11171	33803	70.43	41.33	111.76	49.6%	64.1%				62.1%	59.5%					
2.75 - 2.5	22675	13755	36430	70.49	38.44	108.93	46.8%										62.4%	55.9%
2.5 - 0	23291	13977	37267	71.13	38.44	109.57	47.3%										62.9%	56.3%

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

Monopole Base Plate Connection

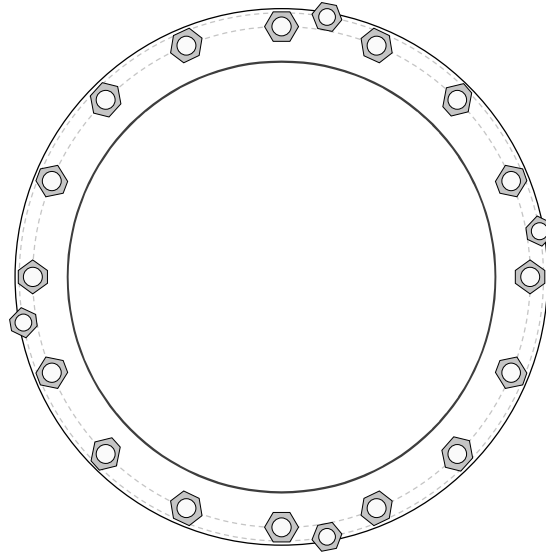


Site Info	
BU #	807132
Site Name	BRG 133 943050
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
I_{gr} (in)	1.5

Applied Loads	
Moment (kip-ft)	3717.61
Axial Force (kips)	59.72
Shear Force (kips)	32.68

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data
GROUP 1: (16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 59.3" BC
GROUP 2: (4) 2" ϕ bolts (A193 Gr. B7 N; $F_y=105$ ksi, $F_u=125$ ksi) on 62.5" BC
<i>pos. (deg): 10, 80, 190, 280</i>
Base Plate Data
63.5" OD x 2.75" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi)
Stiffener Data
N/A
Pole Data
51" x 0.4375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary			<i>(units of kips, kip-in)</i>
GROUP 1:			
$P_{u_c} = 165.12$	$\phi P_{n_c} = 243.75$	Stress Rating	
$V_u = 2.04$	$\phi V_n = 73.13$	64.6%	
$M_u = n/a$	$\phi M_n = n/a$	Pass	
GROUP 2:			
$P_{u_c} = 126.57$	$\phi P_{n_c} = 262.5$	Stress Rating	
$V_u = 0$	$\phi V_n = 78.75$	45.9%	
$M_u = n/a$	$\phi M_n = n/a$	Pass	
Base Plate Summary			
Max Stress (ksi):	22.1	(Flexural)	
Allowable Stress (ksi):	54		
Stress Rating:	39.0%	Pass	

DRILLED PIER STEEL ANALYSIS - STEEL CALCULATIONS - TIA-222-H

BASED ON ACI 318-14, SECTION 10 (ASSUMING TIE REINFORCEMENT)

Factored Internal Loads from Analysis

Reference Standard =	TIA-222-H
ACI Code =	ACI 318-14
Maximum Ratio =	100.0%
Axial Load, Pu =	60.6 kips, (+Comp, -Tension)
Moment, Mu =	4064.0 k-ft (Must be Positive)
Depth to Analysis Section =	10.00 ft, from Grade

Factored Internal Loads

Load Factor =	1.0
Axial Load, Pu = ΦP_n =	60.6 kips
Moment, Mu =	4064.0 k-ft

Drilled Pier Geometry and Concrete Specifications

Diameter =	84 in
f_c' =	4 ksi
ϵ_c =	0.003 in/in
β_1 =	0.85
Ag =	5541.8 in ²
Height Above Grade =	0.5 ft
Depth Below Grade =	10 ft

Nominal Axial Load and Moment

$\Phi P_n(\max)$ =	11387.2 kips
$\Phi P_n(\min)$ =	-2916.0 kips
ΦP_n =	60.6 kips
Φ =	0.900
ΦM_n (Resultant) =	8366.3 k-ft
at θ =	40.18 degrees
NA Depth =	15.18 in

Rebar Size and Specifications

Bar Size =	#14	Existing	Bar Circle 2
Override Bar Diameter =			
Bar Diameter =	1.6930		in
Bar Area =	2.2500		0.0000 in ²
Effective Bar Area =	2.2500		0.0000 in ²
Number Bars =	24		
Spacing =	Symmetric		
f_y =	60		ksi
E_s =	29000		ksi
ϵ_y =	0.00207		0.00000 in/in
Tie Size =	#6		
Clear Cover to Ties =	3		in
Bar Circle =	74.807		in
Adjust =	7.5000		
% of Area Effective =	100.0%		100.0%
Include in Calcs =	Yes		Yes
Bar Circle Valid =	Yes		No

AXIAL RATIO* = 0.5% OK

MOMENT RATIO* = 46.3% OK

*Rating per TIA-222-H Section 15.5

Minimum Required Steel

Seismic Design Category =	D
As(min) =	27.71 sq in
As =	54.00 sq in
Stl Area Reduction Factor =	1.00

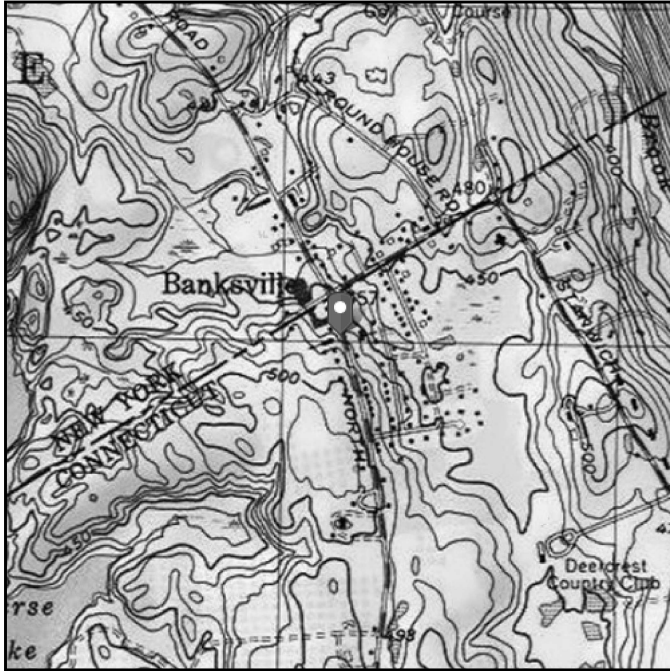
TIA-222-H, 9.4.1

ASCE 7 Hazards Report

Address:
1081 North St
Greenwich, Connecticut
06831

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

Elevation: 465.19 ft (NAVD 88)
Latitude: 41.140397
Longitude: -73.639253



Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Jun 18 2019

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

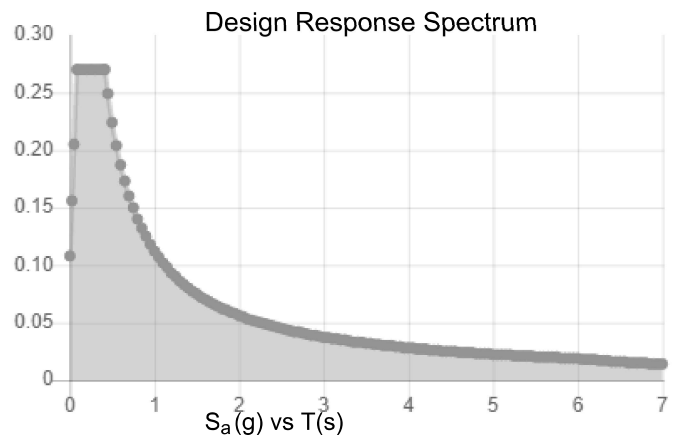
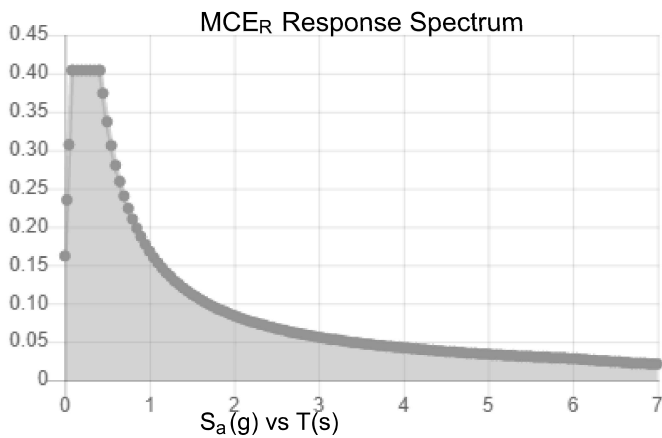
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.253	S_{DS} :	0.27
S_1 :	0.07	S_{D1} :	0.112
F_a :	1.598	T_L :	6
F_v :	2.4	PGA :	0.148
S_{MS} :	0.404	PGA_M :	0.223
S_{M1} :	0.168	F_{PGA} :	1.504
		I_e :	1

Seismic Design Category B



Data Accessed:

Tue Jun 18 2019

Date Source:

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

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Jun 18 2019

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Exhibit E

Mount Analysis



Date: **June 12, 2019**

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

MasTec Network Solutions
507 Airport Blvd, Suite 111
Morrisville, NC 27560
(919) 244-5207

Subject: **Mount Analysis**

Carrier Designation: **T-Mobile Equipment Change-Out**
Carrier Site Number: CT11091A
Carrier Site Name: Greenwich - North_2

Crown Castle Designation: **Crown Castle BU Number:** 807132
Crown Castle Site Name: BRG 133 943050
Crown Castle JDE Number: 559200
Crown Castle Order Number: 479805 Revision 0

Engineering Firm Designation: **MasTec Network Solutions Project Number:** 19075-MNT1

Site Data: **1081 North Street, Greenwich, Fairfield County, CT 06831**
Latitude: 41° 8' 22.91" Longitude: -73° 38' 29.58"

Structure Information **Tower Height & Type:** 175 ft Monopole
Mount Elevation: 144 ft
Mount Width & Type: Stand-Off Mount

Dear Charles McGuirt,

MasTec Network Solutions is pleased to submit this "**Mount Analysis Report**" to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Stand-Off Mount

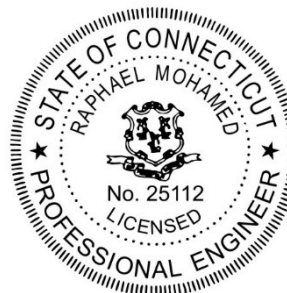
Sufficient

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Elisa Mathon, EI

Respectfully Submitted by:

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



Digitally signed by Raphael Mohamed
DN:
E=Raphael.Mohamed@mastec.com,
CN=Raphael Mohamed, OU=Users,
OU=MasTec Network Solutions,
OU=Service Lines, DC=mastec,
DC=local
Date: 2019.06.12 16:25:22-0400'

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Additional Calculations

1) INTRODUCTION

This is a Stand-Off Mount mapped by P-SEC.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category	II
Ultimate Wind Speed:	120 mph
Exposure Category:	C
Topographic Category:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.253
Seismic S1:	0.07
Live Loading Wind Speed:	30 mph
Live Loading at Mid/End-Points:	250 lb
Man Live Loading at Mount Pipes	500 lb

Table 1 - Proposed Loading Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
144.0	144.0	3	rfs/celwave	APXVAARR24_43-U-NA20	(6) Stand Off Mounts
		3	ericsson	RADIO 4449 B12/B71	
	143.0	3	ericsson	RRUS 01 W/ SOLAR SHIELD	
	140.0	3	ericsson	RRUS 11 B4	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
4-ORDER INFORMATION	CROWN CASTLE	Order No. 479805 Rev. 0	CCIsites
4-MOUNT MAPPING	P-SEC	8343452	CCIsites

3.1) Analysis Method

RISA-3D (Version No. 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C).

3.2) Assumptions

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR B-35)
Connection Bolts	ASTM A325

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

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Stand-Off Mount)

Notes	Component	Beam No.	Centerline (ft)	% Capacity	Pass / Fail
1	Mount Pipe	--	144	39.9	Pass

Structure Rating (max from all components) =	39.9%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) All sectors are typical

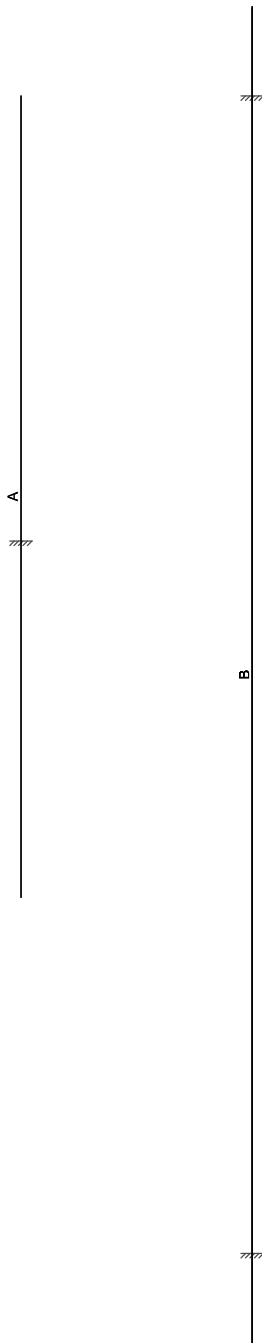
4.1) Recommendations

The mount has sufficient capacity to carry the proposed configuration. No modifications are required at this time.

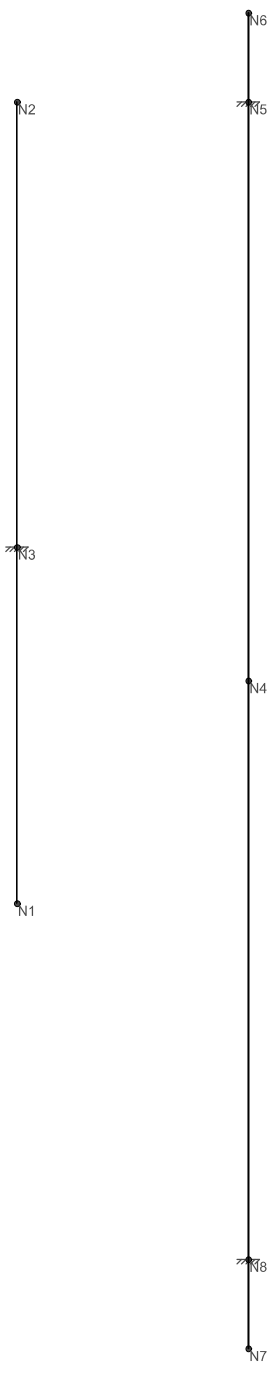
APPENDIX A
WIRE FRAME AND RENDERED MODELS



MasTec	807132-BRG 133 943050	Rendered View
EJM		June 12, 2019 at 11:20 AM
19075-MNT1		19075.r3d



MasTec	807132-BRG 133 943050	Member Labels
EJM		June 12, 2019 at 11:21 AM
19075-MNT1		19075.r3d



MasTec	807132-BRG 133 943050	Node Labels
EJM		June 12, 2019 at 11:21 AM
19075-MNT1		19075.r3d



PIPE 2.5

PIPE 2.5

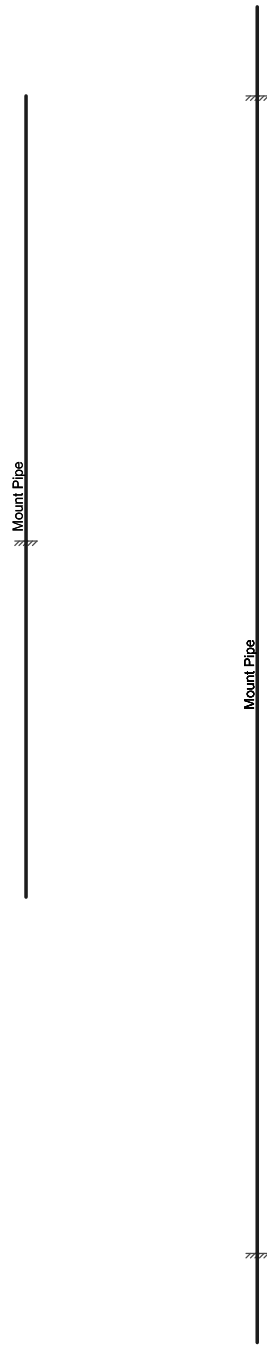
MasTec
EJM
19075-MNT1

807132-BRG 133 943050

Member Shapes
June 12, 2019 at 11:21 AM
19075.r3d



Section Sets
■ Mount Pipe



MasTec
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19075-MNT1

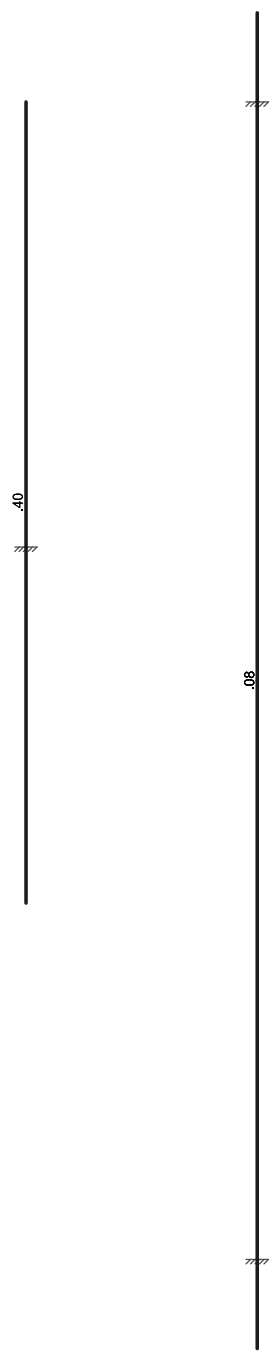
807132-BRG 133 943050

Section Sets
June 12, 2019 at 11:21 AM
19075.r3d



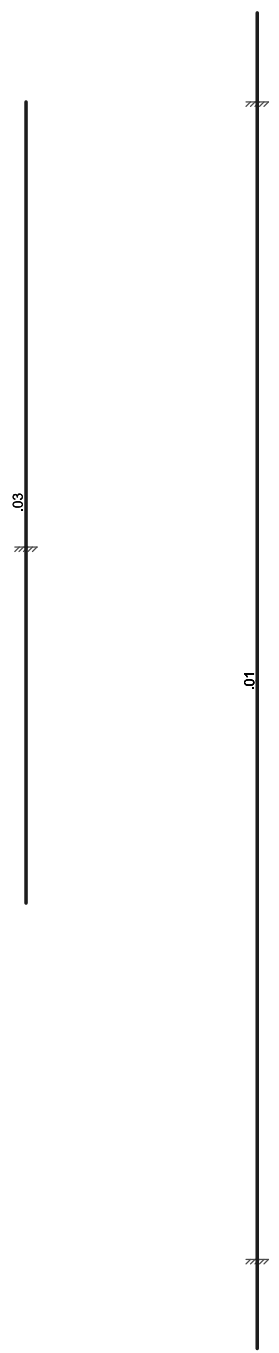
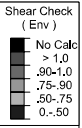
Code Check
(Env)

■	No Calc
■	> 1.0
■	.90-1.0
■	.75-.90
■	.50-.75
■	0-.50



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

MasTec	807132-BRG 133 943050	Unity Check
EJM		June 12, 2019 at 11:21 AM
19075-MNT1		19075.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

MasTec	807132-BRG 133 943050	Shear Check
EJM		June 12, 2019 at 11:21 AM
19075-MNT1		19075.r3d

APPENDIX B
SOFTWARE INPUT CALCULATIONS



Mount Analysis Tool

Site Name	BRG 133 943050	Mount Existing?	Crown
Site ID	807132	Risk Category	II
Job Number	19075-MINT1		
Code	H		

Legend	
Input	
Calculated	
Notes	

Controlling Capacity		Maximum Capacity	
		39.9%	
		PASS	

Analysis Parameters		ft	
Mount Height	144	(B,C, or D)	
Exposure Category	C	mph	
Ultimate Wind Speed	120	mph	
Ice Wind Speed	50	in	
Design Ice Thickness, t_i	1.5	mph	
Maintenance Wind Speed	30	ft, Google Earth	
Run Earthquake Analysis?	Yes	USGS	
Ground Elevation	489.68	2.7.5	
S_1	0.07	2.7.6	
S_{DS}	0.27	2.7.7.1.1	
Vertical Seismic Loads, E_v	0.054	2.7.7.1.1	
Seismic Response Coefficient, C_s	0.135	2.7.7.1.1	
C_s Min	0.030	2.7.7.1.1	

Wind Parameters		K _s		K _e	
Gust Effect Factor, G_h	1.000	2.6.9	1.000	2.6.7	2.6.7
K_z	1.367	2.6.5.2	K _e	0.982	2.6.8
K_{zt}	1.000	2.6.6	K _s	0.900	16.6
K_d	0.950	Table 2-2	*Note for Rooftop Structures greater than 50', unobstructed for 90 deg and protruding 50' above surrounding buildings K _s must be calculated.		
q_z	42.449	psf, 2.6.11.6			
C/D	140.282	Table 2-9			
t_z	1.738	in, 2.6.10			
q_{lz}	7.370	psf, 2.6.9.6	I, Ice	1.000	Table 2-3
C/D _{lz}	58.451	Table 2-9	I, EQ	1.000	Table 2-3
$q_{Maintenance}$	2.692	psf, 2.6.9.6	K _{es} (Wind)	1.000	Table S-1
C/D _{Maintenance}	35.071	Table 2-9	K _{es} (Ice)	1.000	Table S-1
Ice Dead, Grating	0.016222317	ksf			

Pipe Mounts (Orientation Drawn Top-Down)			
Risa 3D Label	Elevation (ft)	Length (in)	Diameter (in)
A	144	72	2.875
B	144	120	2.875

Appurtenances					
Model	Type	Height (in)	Width (in)	Depth (in)	Weight (lbs)
RFS APXVAARR24_43-U-NA20	Antenna	95.9	24	8.7	128
Ericsson RADIO 4449 B1Z/B71	RRU, TMA, Etc.	14.95	13.19	9.25	75
Ericsson RRUS 01 W/SOLAR SHIELD	Antenna	25.04	15.08	6.65	44.1
Ericsson RRUS 11 B4	Antenna	19.7	17	7.2	50.7

Pipe Mount	Antenna	Elevation (ft)	Quantity	Orientation (deg)	Front Exposed (%)	Side Exposed (%)	Type	Height (in)	Width (in)	Depth (in)	Weight (lbs)	Front CAaa (ft²)	Side CAaa (ft²)	Front F _w (kips)	Side F _w (kips)	Top %	Bottom %
A	RFS APXVAARR24_43-U-NA20	144	1	0	100.0%	100.0%	Antenna	85.900	24.000	8.700	128.000	20.243	8.889	0.859	0.377	0.0%	100.0%
A																	
A																	
A																	
A																	
A																	
B	Ericsson RRU5 01 W/SOLAR SHIELD	143	1	0	100.0%	100.0%	Antenna	25.040	15.080	6.660	44.100	3.147	1.453	0.134	0.062	49.6%	70.4%
B	Ericsson RRU5 11 B4	140	1	0	100.0%	100.0%	Antenna	19.700	17.000	7.200	50.700	2.791	1.192	0.118	0.051	81.8%	96.2%
B	Ericsson RADIO 4449 B12/B71	144	1	0	100.0%	100.0%	RRU, TMA, Etc.	14.950	13.190	9.250	75.000	1.643	1.152	0.070	0.049	43.8%	56.2%
B																	
B																	
B																	
B																	

Pipe Mount	Antenna	Elevation (ft)	Quantity	Orientation (deg)	Front-Exposed (%)	Side-Exposed (%)	Type	Height (in)	Width (in)	Depth (in)	Ice Weight (lb)	Front CaAa (ft²)	Side CaAa (ft²)	Front F _c (klips)	Side F _c (klips)	Top %	Bottom %
A	RFS APXVARR24_43-U-NA20	144	1	0	100.0%	100.0%	Antenna	95.900	24.000	8.700	462.717	23.685	12.089	0.175	0.089	0.0%	100.0%
A																	
A																	
A																	
A																	
A																	
A																	
A																	
B	Ericsson RRU5 01 W/SOLAR SHIELD	143	1	0	100.0%	100.0%	Antenna	25.040	15.080	6.650	80.730	4.410	2.435	0.032	0.018	49.6%	70.4%
B	Ericsson RRU5 11 B4	140	1	0	100.0%	100.0%	Antenna	19.700	17.000	7.200	70.419	3.955	2.062	0.029	0.015	81.8%	98.2%
B	Ericsson RADIO 4449 B12/B71	144	1	0	100.0%	100.0%	RRU, TMA, Etc.	14.950	13.190	9.250	47.218	2.559	1.954	0.019	0.014	43.9%	56.2%
B																	
B																	
B																	
B																	
B																	
B																	

APPENDIX C
SOFTWARE ANALYSIS OUTPUT



Company : MasTec
 Designer : EJM
 Job Number : 19075-MNT1
 Model Name : 807132-BRG 133 943050

June 12, 2019
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Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Mount Pipe	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	0	0	
2	N2	0	6	0	0	
3	N3	0	2.666667	0	0	
4	N4	2	2.666667	0	0	
5	N5	2	7	0	0	
6	N6	2	7.666667	0	0	
7	N7	2	-2.333333	0	0	
8	N8	2	-1.666667	0	0	

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design R...
1	A	N2	N1			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical
2	B	N6	N7			Mount Pipe	Beam	Pipe	A53 Gr.B	Typical

Joint Loads and Enforced Displacements (BLC 42 : Man 1 (500 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1	L	Y	0

Joint Loads and Enforced Displacements (BLC 43 : Man 2 (500 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1	L	Y	0

Joint Loads and Enforced Displacements (BLC 44 : Man 3 (500 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1	L	Y	0

Joint Loads and Enforced Displacements (BLC 45 : Man 4 (250 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1	L	Y	0

Joint Loads and Enforced Displacements (BLC 46 : Man 5 (250 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1	L	Y	0



Company : MasTec
 Designer : EJM
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Joint Loads and Enforced Displacements (BLC 47 : Man 6 (250 lbs))

	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft, k*s^2*ft)]
1	N1	L	Y	0

Member Point Loads (BLC 1 : Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Y	-.128	%50
2	B	Y	-.044	%60
3	B	Y	-.051	%90
4	B	Y	-.075	%50

Member Point Loads (BLC 2 : Ice Dead)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Y	-.463	%50
2	B	Y	-.081	%60
3	B	Y	-.07	%90
4	B	Y	-.047	%50

Member Point Loads (BLC 3 : Full Wind Antenna (0 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	-.43	0
2	B	Z	-.067	%49.6
3	B	Z	-.059	%81.8
4	B	Z	-.07	%50
5	A	Z	-.43	%100
6	B	Z	-.067	%70.4
7	B	Z	-.059	%98.2

Member Point Loads (BLC 4 : Full Wind Antenna (30 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	-.32	0
2	B	Z	-.05	%49.6
3	B	Z	-.044	%81.8
4	B	Z	-.056	%50
5	A	Z	-.32	%100
6	B	Z	-.05	%70.4
7	B	Z	-.044	%98.2
8	A	X	.185	0
9	B	X	.029	%49.6
10	B	X	.025	%81.8
11	B	X	.032	%50
12	A	X	.185	%100
13	B	X	.029	%70.4
14	B	X	.025	%98.2

Member Point Loads (BLC 5 : Full Wind Antenna (60 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	-.124	0
2	B	Z	-.02	%49.6
3	B	Z	-.017	%81.8
4	B	Z	-.027	%50
5	A	Z	-.124	%100
6	B	Z	-.02	%70.4
7	B	Z	-.017	%98.2
8	A	X	.216	0



Company : MasTec
 Designer : EJM
 Job Number : 19075-MNT1
 Model Name : 807132-BRG 133 943050

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Member Point Loads (BLC 5 : Full Wind Antenna (60 Deg)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft.%]
9	B	X	.034	%49.6
10	B	X	.029	%81.8
11	B	X	.047	%50
12	A	X	.216	%100
13	B	X	.034	%70.4
14	B	X	.029	%98.2

Member Point Loads (BLC 6 : Full Wind Antenna (90 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft.%]
1	A	Z	0	0
2	B	Z	0	%49.6
3	B	Z	0	%81.8
4	B	Z	0	%50
5	A	Z	0	%100
6	B	Z	0	%70.4
7	B	Z	0	%98.2
8	A	X	.189	0
9	B	X	.031	%49.6
10	B	X	.025	%81.8
11	B	X	.049	%50
12	A	X	.189	%100
13	B	X	.031	%70.4
14	B	X	.025	%98.2

Member Point Loads (BLC 7 : Full Wind Antenna (120 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft.%]
1	A	Z	.124	0
2	B	Z	.02	%49.6
3	B	Z	.017	%81.8
4	B	Z	.027	%50
5	A	Z	.124	%100
6	B	Z	.02	%70.4
7	B	Z	.017	%98.2
8	A	X	.216	0
9	B	X	.034	%49.6
10	B	X	.029	%81.8
11	B	X	.047	%50
12	A	X	.216	%100
13	B	X	.034	%70.4
14	B	X	.029	%98.2

Member Point Loads (BLC 8 : Full Wind Antenna (150 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft.%]
1	A	Z	.32	0
2	B	Z	.05	%49.6
3	B	Z	.044	%81.8
4	B	Z	.056	%50
5	A	Z	.32	%100
6	B	Z	.05	%70.4
7	B	Z	.044	%98.2
8	A	X	.185	0
9	B	X	.029	%49.6
10	B	X	.025	%81.8
11	B	X	.032	%50
12	A	X	.185	%100



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 Designer : EJM
 Job Number : 19075-MNT1
 Model Name : 807132-BRG 133 943050

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Member Point Loads (BLC 8 : Full Wind Antenna (150 Deg)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
13	B	X	.029	%70.4
14	B	X	.025	%98.2

Member Point Loads (BLC 15 : Ice Wind Antenna (0 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	-.087	0
2	B	Z	-.016	%49.6
3	B	Z	-.015	%81.8
4	B	Z	-.019	%50
5	A	Z	-.087	%100
6	B	Z	-.016	%70.4
7	B	Z	-.015	%98.2

Member Point Loads (BLC 16 : Ice Wind Antenna (30 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	-.066	0
2	B	Z	-.012	%49.6
3	B	Z	-.011	%81.8
4	B	Z	-.015	%50
5	A	Z	-.066	%100
6	B	Z	-.012	%70.4
7	B	Z	-.011	%98.2
8	A	X	.038	0
9	B	X	.007	%49.6
10	B	X	.006	%81.8
11	B	X	.009	%50
12	A	X	.038	%100
13	B	X	.007	%70.4
14	B	X	.006	%98.2

Member Point Loads (BLC 17 : Ice Wind Antenna (60 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	-.028	0
2	B	Z	-.005	%49.6
3	B	Z	-.005	%81.8
4	B	Z	-.008	%50
5	A	Z	-.028	%100
6	B	Z	-.005	%70.4
7	B	Z	-.005	%98.2
8	A	X	.048	0
9	B	X	.009	%49.6
10	B	X	.008	%81.8
11	B	X	.013	%50
12	A	X	.048	%100
13	B	X	.009	%70.4
14	B	X	.008	%98.2

Member Point Loads (BLC 18 : Ice Wind Antenna (90 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	0	0
2	B	Z	0	%49.6
3	B	Z	0	%81.8
4	B	Z	0	%50
5	A	Z	0	%100
6	B	Z	0	%70.4



Member Point Loads (BLC 18 : Ice Wind Antenna (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
7	B	Z	0	%98.2
8	A	X	.045	0
9	B	X	.009	%49.6
10	B	X	.008	%81.8
11	B	X	.014	%50
12	A	X	.045	%100
13	B	X	.009	%70.4
14	B	X	.008	%98.2

Member Point Loads (BLC 19 : Ice Wind Antenna (120 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	.028	0
2	B	Z	.005	%49.6
3	B	Z	.005	%81.8
4	B	Z	.008	%50
5	A	Z	.028	%100
6	B	Z	.005	%70.4
7	B	Z	.005	%98.2
8	A	X	.048	0
9	B	X	.009	%49.6
10	B	X	.008	%81.8
11	B	X	.013	%50
12	A	X	.048	%100
13	B	X	.009	%70.4
14	B	X	.008	%98.2

Member Point Loads (BLC 20 : Ice Wind Antenna (150 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	.066	0
2	B	Z	.005	%49.6
3	B	Z	.005	%81.8
4	B	Z	.008	%50
5	A	Z	.066	%100
6	B	Z	.005	%70.4
7	B	Z	.005	%98.2
8	A	X	.038	0
9	B	X	.009	%49.6
10	B	X	.008	%81.8
11	B	X	.013	%50
12	A	X	.038	%100
13	B	X	.009	%70.4
14	B	X	.008	%98.2

Member Point Loads (BLC 27 : Seismic Antenna (0 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	Z	-.017	%50
2	B	Z	-.006	%60
3	B	Z	-.007	%90
4	B	Z	-.01	%50

Member Point Loads (BLC 28 : Seismic Antenna (90 Deg))

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft. %]
1	A	X	.017	%50
2	B	X	.006	%60
3	B	X	.007	%90



Company : MasTec
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Member Point Loads (BLC 28 : Seismic Antenna (90 Deg)) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
4	B	X	.01	%50

Member Point Loads (BLC 41 : Seismic Vertical Antennas)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	A	Y	-.026	%50
2	B	Y	-.009	%60
3	B	Y	-.01	%90
4	B	Y	-.015	%50

Member Distributed Loads (BLC 2 : Ice Dead)

	Member Label	Direction	Start Magnitude[k/ft,...]	End Magnitude[k/ft,F...]	Start Location[ft,%]	End Location[ft,%]
1	A	Y	-.01	-.01	0	%100
2	B	Y	-.01	-.01	0	%100

Member Distributed Loads (BLC 9 : Full Wind Members (0 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...]	End Magnitude[k/ft,F...]	Start Location[ft,%]	End Location[ft,%]
1	B	Z	-.012	-.012	0	%43.8
2	B	Z	-.012	-.012	%98.2	%100
3	A	X	0	0	0	%100
4	B	X	0	0	0	%100

Member Distributed Loads (BLC 10 : Full Wind Members (30 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...]	End Magnitude[k/ft,F...]	Start Location[ft,%]	End Location[ft,%]
1	B	Z	-.011	-.011	0	%43.8
2	B	Z	-.011	-.011	%98.2	%100
3	A	X	.006	.006	0	%100
4	B	X	.006	.006	0	%100

Member Distributed Loads (BLC 11 : Full Wind Members (60 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...]	End Magnitude[k/ft,F...]	Start Location[ft,%]	End Location[ft,%]
1	B	Z	-.006	-.006	0	%43.8
2	B	Z	-.006	-.006	%98.2	%100
3	A	X	.011	.011	0	%100
4	B	X	.011	.011	0	%100

Member Distributed Loads (BLC 12 : Full Wind Members (90 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...]	End Magnitude[k/ft,F...]	Start Location[ft,%]	End Location[ft,%]
1	B	Z	0	0	0	%43.8
2	B	Z	0	0	%98.2	%100
3	A	X	.012	.012	0	%100
4	B	X	.012	.012	0	%100

Member Distributed Loads (BLC 13 : Full Wind Members (120 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...]	End Magnitude[k/ft,F...]	Start Location[ft,%]	End Location[ft,%]
1	B	Z	.006	.006	0	%43.8
2	B	Z	.006	.006	%98.2	%100
3	A	X	.011	.011	0	%100
4	B	X	.011	.011	0	%100

Member Distributed Loads (BLC 14 : Full Wind Members (150 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...]	End Magnitude[k/ft,F...]	Start Location[ft,%]	End Location[ft,%]
1	B	Z	.011	.011	0	%43.8



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Member Distributed Loads (BLC 14 : Full Wind Members (150 Deg)) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
2	B	Z	.011	.011	%98.2	%100
3	A	X	.006	.006	0	%100
4	B	X	.006	.006	0	%100

Member Distributed Loads (BLC 21 : Ice Wind Members (0 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	B	Z	-.005	-.005	0	%43.8
2	B	Z	-.005	-.005	%98.2	%100
3	A	X	0	0	0	%100
4	B	X	0	0	0	%100

Member Distributed Loads (BLC 22 : Ice Wind Members (30 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	B	Z	-.004	-.004	0	%43.8
2	B	Z	-.004	-.004	%98.2	%100
3	A	X	.003	.003	0	%100
4	B	X	.002	.002	0	%100

Member Distributed Loads (BLC 23 : Ice Wind Members (60 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	B	Z	-.002	-.002	0	%43.8
2	B	Z	-.002	-.002	%98.2	%100
3	A	X	.004	.004	0	%100
4	B	X	.004	.004	0	%100

Member Distributed Loads (BLC 24 : Ice Wind Members (90 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	B	Z	0	0	0	%43.8
2	B	Z	0	0	%98.2	%100
3	A	X	.005	.005	0	%100
4	B	X	.005	.005	0	%100

Member Distributed Loads (BLC 25 : Ice Wind Members (120 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	B	Z	.002	.002	0	%43.8
2	B	Z	.002	.002	%98.2	%100
3	A	X	.004	.004	0	%100
4	B	X	.004	.004	0	%100

Member Distributed Loads (BLC 26 : Ice Wind Members (150 Deg))

	Member Label	Direction	Start Magnitude[k/ft,...	End Magnitude[k/ft,F...	Start Location[ft, %]	End Location[ft, %]
1	B	Z	.004	.004	0	%43.8
2	B	Z	.004	.004	%98.2	%100
3	A	X	.003	.003	0	%100
4	B	X	.002	.002	0	%100

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead	None		-1			4			
2	Ice Dead	None					4	2		
3	Full Wind Antenna (0 Deg)	None					7			
4	Full Wind Antenna (30 Deg)	None					14			



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Basic Load Cases (Continued)

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
5 Full Wind Antenna (60 Deg)	None					14			
6 Full Wind Antenna (90 Deg)	None					14			
7 Full Wind Antenna (120 Deg)	None					14			
8 Full Wind Antenna (150 Deg)	None					14			
9 Full Wind Members (0 Deg)	None						4		
10 Full Wind Members (30 Deg)	None						4		
11 Full Wind Members (60 Deg)	None						4		
12 Full Wind Members (90 Deg)	None						4		
13 Full Wind Members (120 Deg)	None						4		
14 Full Wind Members (150 Deg)	None						4		
15 Ice Wind Antenna (0 Deg)	None					7			
16 Ice Wind Antenna (30 Deg)	None					14			
17 Ice Wind Antenna (60 Deg)	None					14			
18 Ice Wind Antenna (90 Deg)	None					14			
19 Ice Wind Antenna (120 Deg)	None					14			
20 Ice Wind Antenna (150 Deg)	None					14			
21 Ice Wind Members (0 Deg)	None						4		
22 Ice Wind Members (30 Deg)	None						4		
23 Ice Wind Members (60 Deg)	None						4		
24 Ice Wind Members (90 Deg)	None						4		
25 Ice Wind Members (120 Deg)	None						4		
26 Ice Wind Members (150 Deg)	None						4		
27 Seismic Antenna (0 Deg)	None					4			
28 Seismic Antenna (90 Deg)	None					4			
29 Seismic Members (0 Deg)	None		-.054	-.135					
30 Seismic Members (30 Deg)	None	.068	-.054	-.117					
31 Seismic Members (60 Deg)	None	.117	-.054	-.068					
32 Seismic Members (90 Deg)	None	.135	-.054	-8.27e-18					
33 Seismic Members (120 Deg)	None	.117	-.054	.068					
34 Seismic Members (150 Deg)	None	.068	-.054	.117					
35 Seismic Members (180 Deg)	None	1.654e-17	-.054	.135					
36 Seismic Members (210 Deg)	None	-.068	-.054	.117					
37 Seismic Members (240 Deg)	None	-.117	-.054	.068					
38 Seismic Members (270 Deg)	None	-.135	-.054	2.481e-17					
39 Seismic Members (300 Deg)	None	-.117	-.054	-.068					
40 Seismic Members (330 Deg)	None	-.068	-.054	-.117					
41 Seismic Vertical Antennas	None					4			
42 Man 1 (500 lbs)	None				1				
43 Man 2 (500 lbs)	None				1				
44 Man 3 (500 lbs)	None				1				
45 Man 4 (250 lbs)	None				1				
46 Man 5 (250 lbs)	None				1				
47 Man 6 (250 lbs)	None				1				

Load Combinations

Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1 1.4D	Yes	Y		1	1.4														
2 1.2D + 1.0W 0°	Yes	Y		1	1.2	3	1	9	1										
3 1.2D + 1.0W 30°	Yes	Y		1	1.2	4	1	10	1										
4 1.2D + 1.0W 60°	Yes	Y		1	1.2	5	1	11	1										
5 1.2D + 1.0W 90°	Yes	Y		1	1.2	6	1	12	1										
6 1.2D + 1.0W 120°	Yes	Y		1	1.2	7	1	13	1										
7 1.2D + 1.0W 150°	Yes	Y		1	1.2	8	1	14	1										
8 1.2D + 1.0W 180°	Yes	Y		1	1.2	3	-1	9	-1										
9 1.2D + 1.0W 210°	Yes	Y		1	1.2	4	-1	10	-1										

Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	
10	1.2D + 1.0W 240°	Yes	Y		1	1.2	5	-1	11	-1													
11	1.2D + 1.0W 270°	Yes	Y		1	1.2	6	-1	12	-1													
12	1.2D + 1.0W 300°	Yes	Y		1	1.2	7	-1	13	-1													
13	1.2D + 1.0W 330°	Yes	Y		1	1.2	8	-1	14	-1													
14	1.2D + 1.0Di + 1.0Wi 0°	Yes	Y		1	1.2	2	1	15	1	21	1											
15	1.2D + 1.0Di + 1.0Wi 30°	Yes	Y		1	1.2	2	1	16	1	22	1											
16	1.2D + 1.0Di + 1.0Wi 60°	Yes	Y		1	1.2	2	1	17	1	23	1											
17	1.2D + 1.0Di + 1.0Wi 90°	Yes	Y		1	1.2	2	1	18	1	24	1											
18	1.2D + 1.0Di + 1.0Wi 120°	Yes	Y		1	1.2	2	1	19	1	25	1											
19	1.2D + 1.0Di + 1.0Wi 150°	Yes	Y		1	1.2	2	1	20	1	26	1											
20	1.2D + 1.0Di + 1.0Wi 180°	Yes	Y		1	1.2	2	1	15	-1	21	-1											
21	1.2D + 1.0Di + 1.0Wi 210°	Yes	Y		1	1.2	2	1	16	-1	22	-1											
22	1.2D + 1.0Di + 1.0Wi 240°	Yes	Y		1	1.2	2	1	17	-1	23	-1											
23	1.2D + 1.0Di + 1.0Wi 270°	Yes	Y		1	1.2	2	1	18	-1	24	-1											
24	1.2D + 1.0Di + 1.0Wi 300°	Yes	Y		1	1.2	2	1	19	-1	25	-1											
25	1.2D + 1.0Di + 1.0Wi 330°	Yes	Y		1	1.2	2	1	20	-1	26	-1											
26	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	3	.063	9	.063	42	1.5											
27	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	4	.063	10	.063	42	1.5											
28	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	5	.063	11	.063	42	1.5											
29	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	6	.063	12	.063	42	1.5											
30	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	7	.063	13	.063	42	1.5											
31	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	8	.063	14	.063	42	1.5											
32	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	3	-0...	9	-0...	42	1.5											
33	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	4	-0...	10	-0...	42	1.5											
34	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	5	-0...	11	-0...	42	1.5											
35	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	6	-0...	12	-0...	42	1.5											
36	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	7	-0...	13	-0...	42	1.5											
37	1.2D + 1.5Lm_1 + 1.0W...	Yes	Y		1	1.2	8	-0...	14	-0...	42	1.5											
38	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	3	.063	9	.063	43	1.5											
39	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	4	.063	10	.063	43	1.5											
40	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	5	.063	11	.063	43	1.5											
41	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	6	.063	12	.063	43	1.5											
42	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	7	.063	13	.063	43	1.5											
43	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	8	.063	14	.063	43	1.5											
44	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	3	-0...	9	-0...	43	1.5											
45	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	4	-0...	10	-0...	43	1.5											
46	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	5	-0...	11	-0...	43	1.5											
47	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	6	-0...	12	-0...	43	1.5											
48	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	7	-0...	13	-0...	43	1.5											
49	1.2D + 1.5Lm_2 + 1.0W...	Yes	Y		1	1.2	8	-0...	14	-0...	43	1.5											
50	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	3	.063	9	.063	44	1.5											
51	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	4	.063	10	.063	44	1.5											
52	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	5	.063	11	.063	44	1.5											
53	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	6	.063	12	.063	44	1.5											
54	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	7	.063	13	.063	44	1.5											
55	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	8	.063	14	.063	44	1.5											
56	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	3	-0...	9	-0...	44	1.5											
57	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	4	-0...	10	-0...	44	1.5											
58	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	5	-0...	11	-0...	44	1.5											
59	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	6	-0...	12	-0...	44	1.5											
60	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	7	-0...	13	-0...	44	1.5											
61	1.2D + 1.5Lm_3 + 1.0W...	Yes	Y		1	1.2	8	-0...	14	-0...	44	1.5											
62	1.2D + 1.5Lv_1 0°	Yes	Y		1	1.2	45	1.5															
63	1.2D + 1.5Lv_1 30°	Yes	Y		1	1.2	45	1.5															
64	1.2D + 1.5Lv_1 60°	Yes	Y		1	1.2	45	1.5															
65	1.2D + 1.5Lv_1 90°	Yes	Y		1	1.2	45	1.5															
66	1.2D + 1.5Lv_1 120°	Yes	Y		1	1.2	45	1.5															



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Load Combinations (Continued)

	Description	S...	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	
67	1.2D + 1.5Lv 1 150°	Yes	Y		1	1.2	45	1.5																				
68	1.2D + 1.5Lv 1 180°	Yes	Y		1	1.2	45	1.5																				
69	1.2D + 1.5Lv 1 210°	Yes	Y		1	1.2	45	1.5																				
70	1.2D + 1.5Lv 1 240°	Yes	Y		1	1.2	45	1.5																				
71	1.2D + 1.5Lv 1 270°	Yes	Y		1	1.2	45	1.5																				
72	1.2D + 1.5Lv 1 300°	Yes	Y		1	1.2	45	1.5																				
73	1.2D + 1.5Lv 1 330°	Yes	Y		1	1.2	45	1.5																				
74	1.2D + 1.5Lv 2 0°	Yes	Y		1	1.2	46	1.5																				
75	1.2D + 1.5Lv 2 30°	Yes	Y		1	1.2	46	1.5																				
76	1.2D + 1.5Lv 2 60°	Yes	Y		1	1.2	46	1.5																				
77	1.2D + 1.5Lv 2 90°	Yes	Y		1	1.2	46	1.5																				
78	1.2D + 1.5Lv 2 120°	Yes	Y		1	1.2	46	1.5																				
79	1.2D + 1.5Lv 2 150°	Yes	Y		1	1.2	46	1.5																				
80	1.2D + 1.5Lv 2 180°	Yes	Y		1	1.2	46	1.5																				
81	1.2D + 1.5Lv 2 210°	Yes	Y		1	1.2	46	1.5																				
82	1.2D + 1.5Lv 2 240°	Yes	Y		1	1.2	46	1.5																				
83	1.2D + 1.5Lv 2 270°	Yes	Y		1	1.2	46	1.5																				
84	1.2D + 1.5Lv 2 300°	Yes	Y		1	1.2	46	1.5																				
85	1.2D + 1.5Lv 2 330°	Yes	Y		1	1.2	46	1.5																				
86	1.2D + 1.5Lv 3 0°	Yes	Y		1	1.2	47	1.5																				
87	1.2D + 1.5Lv 3 30°	Yes	Y		1	1.2	47	1.5																				
88	1.2D + 1.5Lv 3 60°	Yes	Y		1	1.2	47	1.5																				
89	1.2D + 1.5Lv 3 90°	Yes	Y		1	1.2	47	1.5																				
90	1.2D + 1.5Lv 3 120°	Yes	Y		1	1.2	47	1.5																				
91	1.2D + 1.5Lv 3 150°	Yes	Y		1	1.2	47	1.5																				
92	1.2D + 1.5Lv 3 180°	Yes	Y		1	1.2	47	1.5																				
93	1.2D + 1.5Lv 3 210°	Yes	Y		1	1.2	47	1.5																				
94	1.2D + 1.5Lv 3 240°	Yes	Y		1	1.2	47	1.5																				
95	1.2D + 1.5Lv 3 270°	Yes	Y		1	1.2	47	1.5																				
96	1.2D + 1.5Lv 3 300°	Yes	Y		1	1.2	47	1.5																				
97	1.2D + 1.5Lv 3 330°	Yes	Y		1	1.2	47	1.5																				
98	1.2D + 1.0EV +1.0 EH 0°	Yes	Y		1	1.2	27	1	28		29	1	40	1														
99	1.2D + 1.0EV +1.0 EH 30°	Yes	Y		1	1.2	27	.866	28	.5	30	1	40	1														
100	1.2D + 1.0EV +1.0 EH 60°	Yes	Y		1	1.2	27	.5	28	.866	31	1	40	1														
101	1.2D + 1.0EV +1.0 EH 90°	Yes	Y		1	1.2	27		28	1	32	1	40	1														
102	1.2D + 1.0EV +1.0 EH 120°	Yes	Y		1	1.2	27	-.5	28	.866	33	1	40	1														
103	1.2D + 1.0EV +1.0 EH 150°	Yes	Y		1	1.2	27	-.8...	28	.5	34	1	40	1														
104	1.2D + 1.0EV +1.0 EH 180°	Yes	Y		1	1.2	27	-1	28		35	1	40	1														
105	1.2D + 1.0EV +1.0 EH 210°	Yes	Y		1	1.2	27	-.8...	28	-.5	36	1	40	1														
106	1.2D + 1.0EV +1.0 EH 240°	Yes	Y		1	1.2	27	-.5	28	-.8...	37	1	40	1														
107	1.2D + 1.0EV +1.0 EH 270°	Yes	Y		1	1.2	27		28	-1	38	1	40	1														
108	1.2D + 1.0EV +1.0 EH 300°	Yes	Y		1	1.2	27	.5	28	-.8...	39	1	40	1														
109	1.2D + 1.0EV +1.0 EH 330°	Yes	Y		1	1.2	27	.866	28	-.5	40	1	40	1														

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N3	max	.498	12	.716	25	.86	2	.289	2	0	109	.167	6
2		min	-.498	4	.193	2	-.86	8	-.289	8	0	1	-.167	10
3	N5	max	.107	11	.208	25	.13	2	.227	8	0	109	.177	11
4		min	-.107	5	.101	2	-.13	8	-.227	2	0	1	-.177	5
5	N8	max	.18	12	.36	25	.247	2	.268	2	0	109	.207	6
6		min	-.18	4	.169	2	-.247	8	-.268	8	0	1	-.207	10
7	Totals:	max	.781	12	1.284	25	1.237	2						
8		min	-.781	4	.463	2	-1.237	8						



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 Designer : EJM
 Job Number : 19075-MNT1
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Envelope AISC 14th(360-10): LRFD Steel Code Checks

Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	A	PIPE 2.5	.399 3.313	8	.028	0		8	37.774	50.715	3.596	3.596	1	H1-1b
2	B	PIPE 2.5	.083 9.271	8	.012	8.229		8	22.373	50.715	3.596	3.596	1	H1-1b

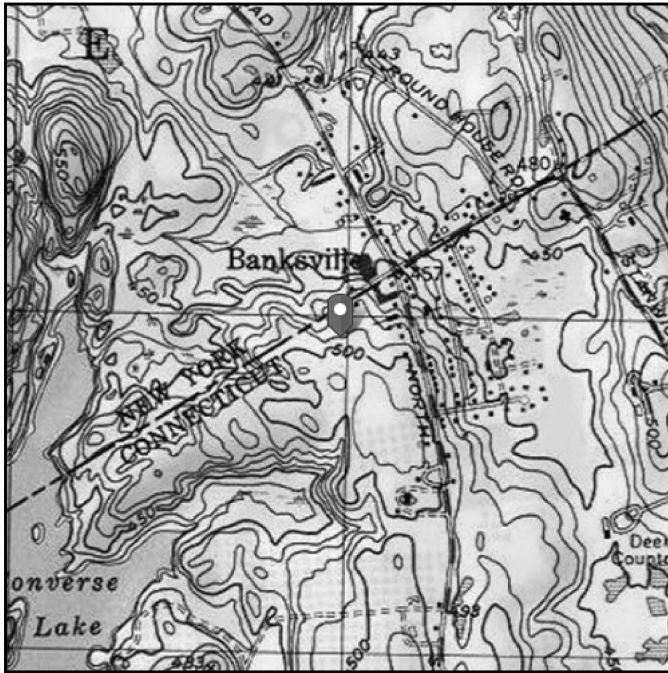
APPENDIX D
ADDITIONAL CALCUATIONS

ASCE 7 Hazards Report

Address:
No Address at This
Location

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

Elevation: 489.68 ft (NAVD 88)
Latitude: 41.139697
Longitude: -73.64155



Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

120mph in Greenwich City

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Wed Jun 12 2019

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

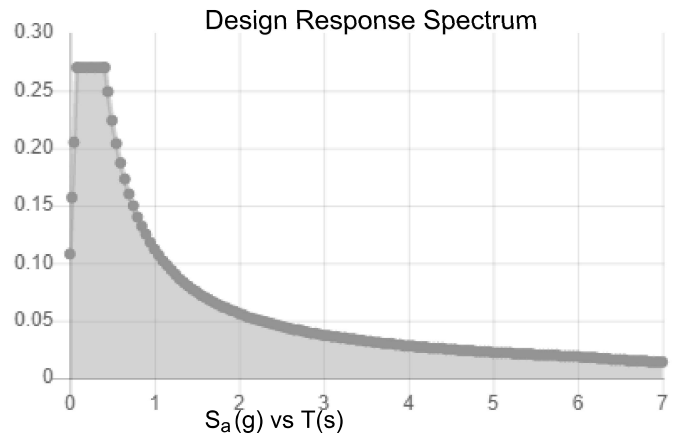
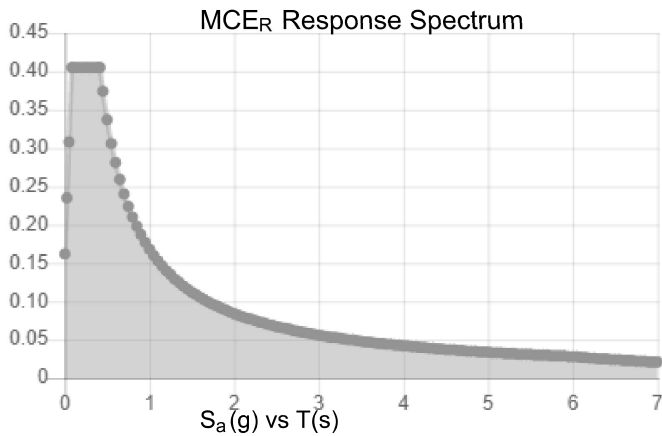
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.253	S_{DS} :	0.27
S_1 :	0.07	S_{D1} :	0.112
F_a :	1.597	T_L :	6
F_v :	2.4	PGA :	0.148
S_{MS} :	0.405	PGA _M :	0.223
S_{M1} :	0.168	F _{PGA} :	1.504
		I_e :	1

Seismic Design Category B



Data Accessed:

Wed Jun 12 2019

Date Source:

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

Results:

Ice Thickness: 0.75 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Wed Jun 12 2019

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

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

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Exhibit F

Power Density/RF Emissions Report

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11091A

Greenwich - North_2
1081 North Street
Greenwich, CT 06831

May 23, 2019

Transcom Engineering Project Number: 737001-0068

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	9.04 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

May 23, 2019

T-MOBILE

Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CT11091A – Greenwich - North_2**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **1081 North Street, Greenwich, 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.

Population 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 limits for the 600 & 700 MHz bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) 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.

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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.

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CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **1081 North Street, Greenwich, 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, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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

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

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	2	60
UMTS	2100 MHz (AWS)	1	40

Table 1: Channel Data Table

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The following antennas listed in *Table 2* were used in the modeling for transmission in the 600, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAARR24 43-U-NA20	145
B	1	RFS APXVAARR24 43-U-NA20	145
C	1	RFS APXVAARR24 43-U-NA20	145

Table 2: Antenna Data

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

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RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR24 43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	12	455	15,774.77	3.54
Sector A Composite MPE%							3.54
Antenna B1	RFS APXVAARR24 43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	12	455	15,774.77	3.54
Sector B Composite MPE%							3.54
Antenna C1	RFS APXVAARR24 43-U-NA20	600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.95 / 13.35 / 15.65 / 16.35	12	455	15,774.77	3.54
Sector C Composite MPE%							3.54

Table 3: T-MOBILE Emissions Levels

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

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	3.54 %
RAM Mobile	0.27 %
Verizon Wireless	1.68 %
Sprint	1.12 %
AT&T	2.43 %
Site Total MPE %:	9.04 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	3.54 %
T-MOBILE Sector B Total:	3.54 %
T-MOBILE Sector C Total:	3.54 %
Site Total:	
	9.04 %

Table 5: Site MPE Summary

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Wireless Network Design and Deployment

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

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# 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 600 MHz LTE / 5G NR	2	788.97	145	2.94	600 MHz	400	0.73%
T-Mobile 700 MHz LTE	2	432.54	145	1.61	700 MHz	467	0.34%
T-Mobile 1900 MHz (PCS) LTE	4	1,469.13	145	10.93	1900 MHz (PCS)	1000	1.09%
T-Mobile 1900 MHz (PCS) GSM	1	550.92	145	1.03	1900 MHz (PCS)	1000	0.10%
T-Mobile 2100 MHz (AWS) LTE	2	2,589.11	145	9.64	2100 MHz (AWS)	1000	0.96%
T-Mobile 2100 MHz (AWS) UMTS	1	1,726.08	145	3.21	2100 MHz (AWS)	1000	0.32%
						Total:	3.54%

Table 6: T-MOBILE Maximum Sector MPE Power Values

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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:	3.54 %
Sector B:	3.54 %
Sector C:	3.54 %
T-MOBILE Maximum Total (per sector):	3.54 %
Site Total:	9.04 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **9.04 %** 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.



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