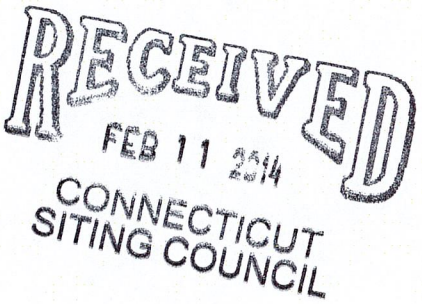
EM-T-MOBILE-027-140211

HPC Wireless Services
22 Shelter Rock Lane
Danbury, CT, 06810
P.: 203.797.1112

HPC WIRELESS SERVICES

February 10, 2014

VIA OVERNIGHT COURIER



Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Melanie Bachman, Acting Executive Director

Re: T-Mobile Northeast LLC – exempt modification
48 Cow Hill Road, Clinton, Connecticut

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC ("T-Mobile"). T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the First Selectman of the Town of Clinton.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at Cow Hill Road in the Town of Clinton (coordinates 41°-17'-20.0" N, 72°-32'-18.5" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to T-Mobile's operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. T-Mobile will replace six (6) of its six (6) existing panel antennas with new antennas at a center line of approximately 143'. Three (3) of six (6) TMAs will be

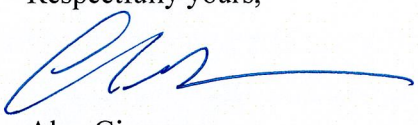
removed. A hybrid cable will be run from the equipment to the antenna along the existing coaxial cable run. The proposed modifications will not extend the height of the approximately 212.625' structure.

2. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

3. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by EBI Consulting, T-Mobile's operations at the site will result in a power density of approximately 0.581%; the combined site operations will result in a total power density of approximately 34.771%.

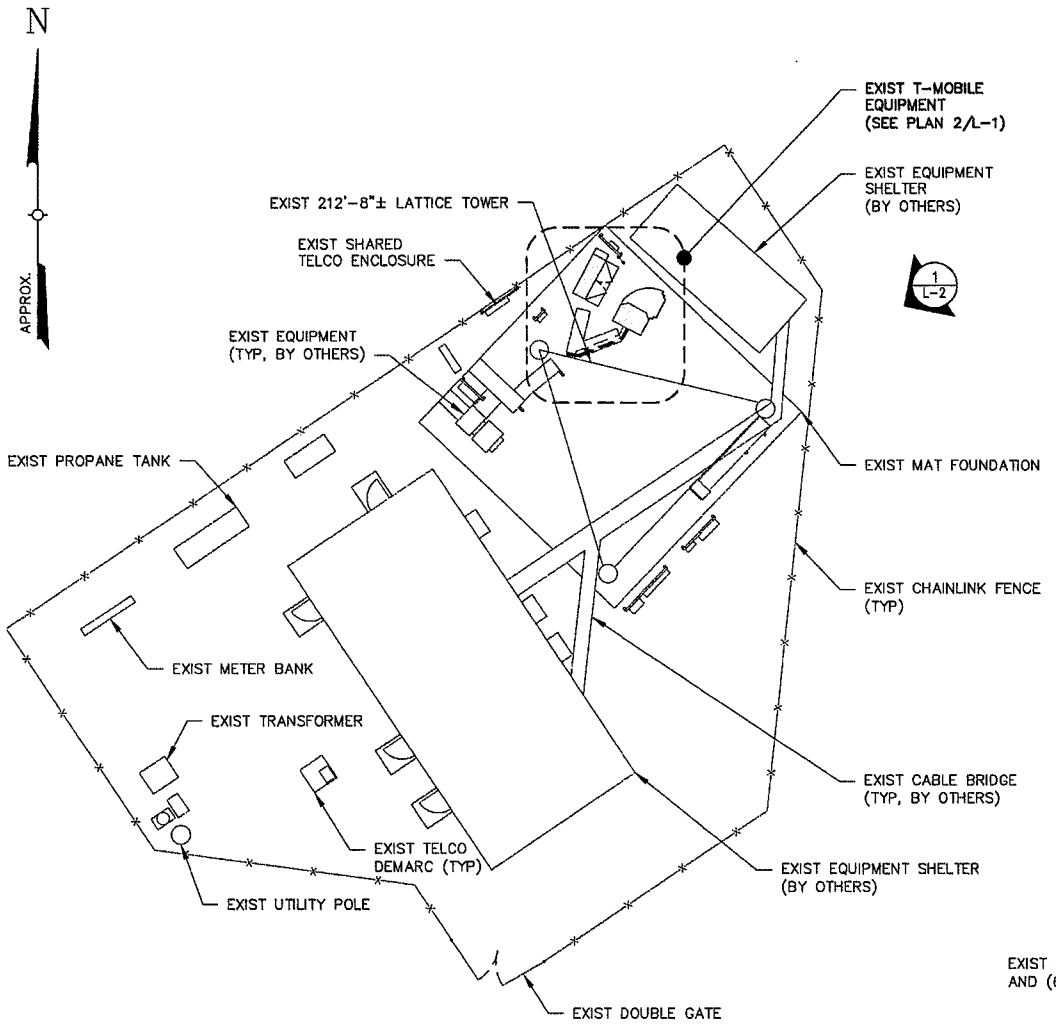
Please feel free to contact me by phone at (617) 281-0084 or by e-mail at agiannaras@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,



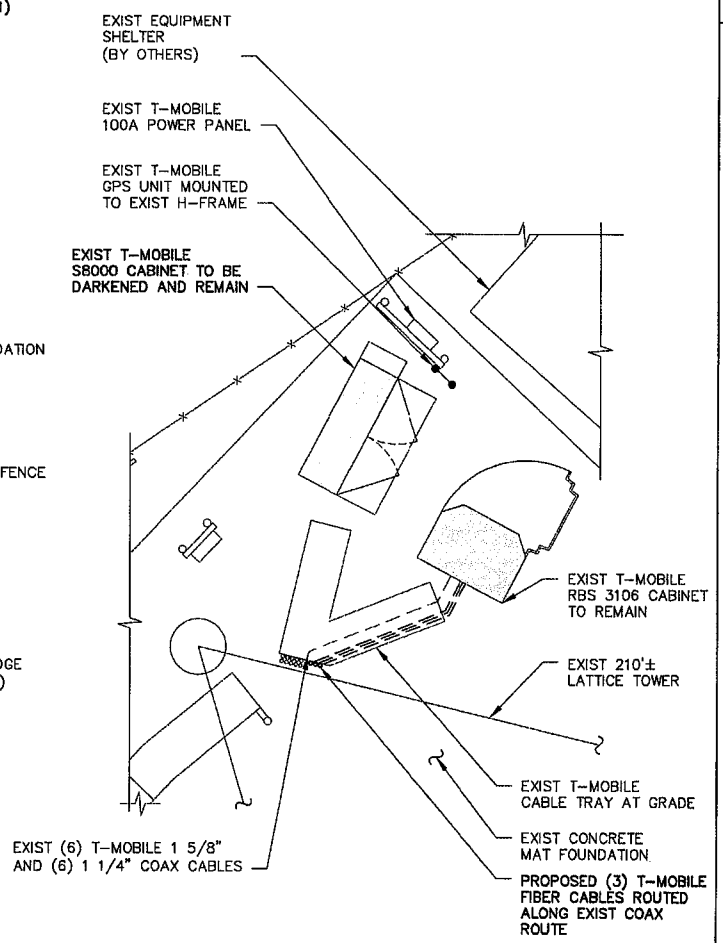
Alex Giannaras

cc: Honorable William W. Fritz, First Selectman, Town of Clinton
Crown Castle (underlying property owner)



1 L-1 SITE PLAN

SCALE: 1/16" = 1'-0"



2 L-1 EQUIPMENT PLAN

SCALE: 3/16" = 1'-0"

CONFIGURATION

2C

STRUCTUAL NOTE:
EXIST MOUNTS AND TOWER STRUCTURE TO BE VERIFIED FOR STRUCTURAL SUITABILITY OF PROPOSED INSTALLATION BY A STATE LICENSED P.E.

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0856
Fax: (845) 567-8703

T-Mobile
NORTHEAST LLC.

T-MOBILE NORTHEAST, LLC.
4 SYLVAN DRIVE
PARSIPPANY, NJ 07054
PHONE: (973) 898-8500

APPROVALS

T-MOBILE _____
LANDLORD _____
RF _____
CONSTRUCTION _____

PROJECT NUMBER	DESIGNED BY
8644.CT11030H	TN

REV.	DATE	REVISION	DRAWN BY
0	12/17/13	FOR COMMENT	MJR
1	2/3/14	PER COMMENT	BW

ISSUED BY _____ DATE _____

SITE INFORMATION

CT11030H
CLINTON/I-95/X62/RIVE1
48 COW HILL ROAD,
CLINTON, CT

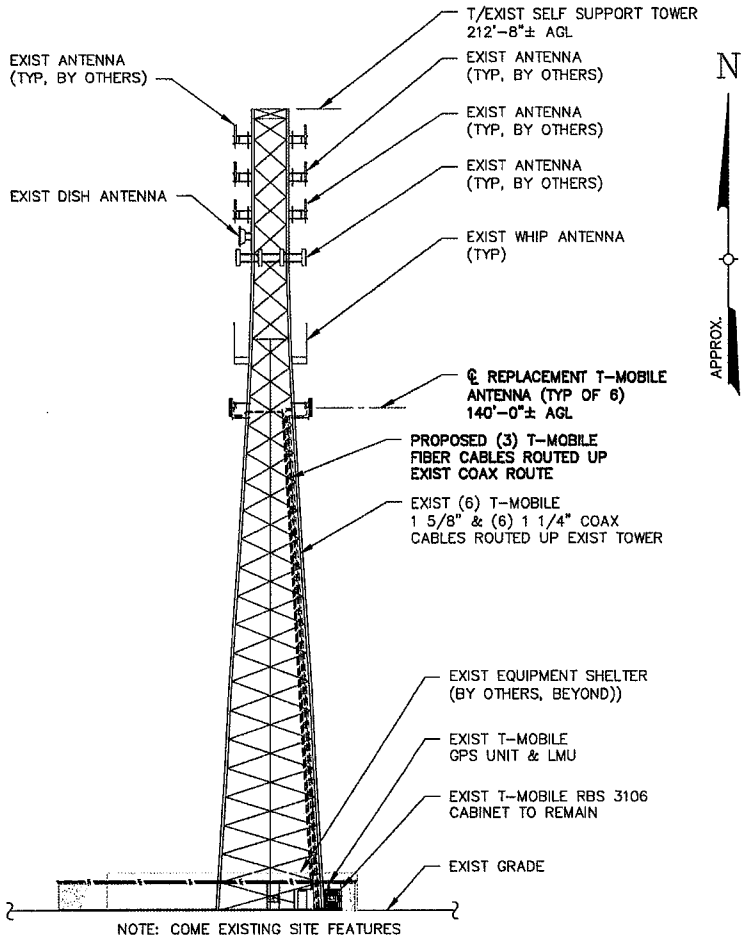
SHEET TITLE

SITE PLAN & EQUIPMENT PLAN

SHEET NUMBER

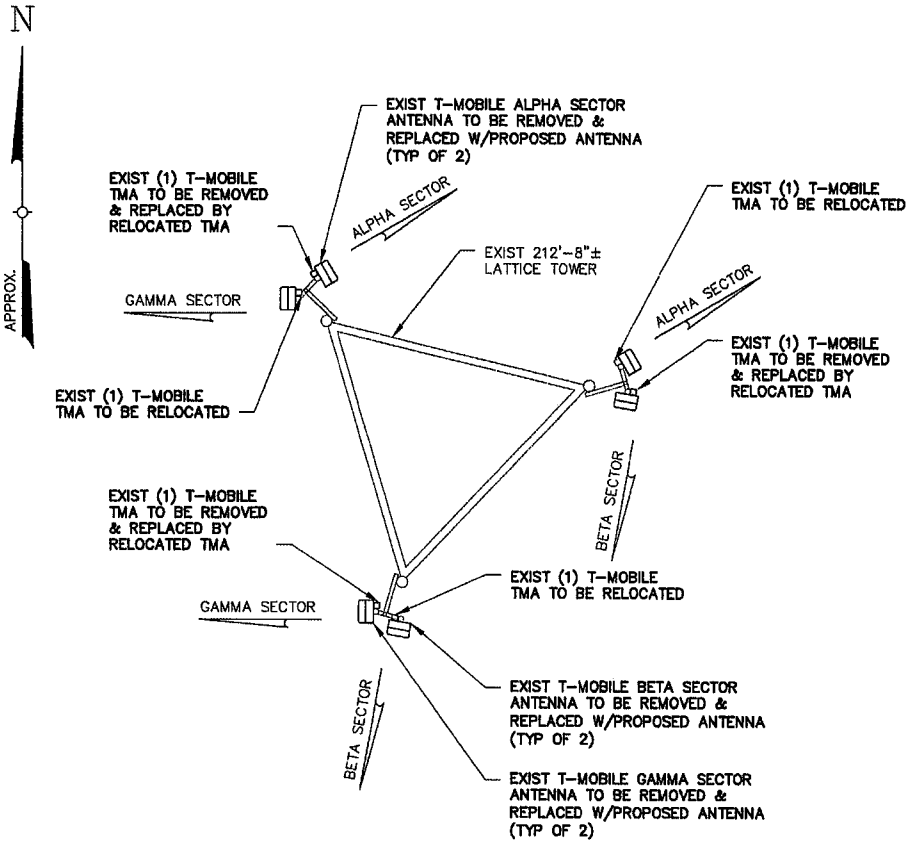
L-1

STRUCTUAL NOTE:
EXIST MOUNTS AND TOWER STRUCTURE TO BE VERIFIED FOR STRUCTURAL SUITABILITY OF PROPOSED INSTALLATION BY A STATE LICENSED P.E.



NOTE: COME EXISTING SITE FEATURES BY OTHERS NOT SHOWN FOR CLARITY.

1 / L-2 ELEVATION
SCALE: 1/32" = 1'-0"



2 / L-2 ANTENNA PLAN
SCALE: 3/16" = 1'-0"

CONFIGURATION
2C

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT
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1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0658
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T-Mobile NORTHEAST LLC.

T-MOBILE NORTHEAST, LLC.
4 SYLVAN DRIVE
PARSIPPANY, NJ 07054
PHONE (973) 656-5500

APPROVALS
T-MOBILE
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
6844.CT11030H	TN

REV	DATE	REVISION	DRAWN BY
1	12/17/13	FOR COMMENT	MJR
2	2/3/14	PER COMMENT	BW

ISSUED BY | DATE

SITE INFORMATION
CT11030H
CLINTON/I-95/X62/RIVE1
48 COW HILL ROAD,
CLINTON, CT

SHEET TITLE
ELEVATION &
ANTENNA PLAN

SHEET NUMBER
L-2

Date: **January 28, 2014**

Patrick Byrum
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Dr.
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate** **Carrier Site Number:**	 CT11030H
Crown Castle Designation:	**Crown Castle BU Number:** **Crown Castle Site Name:** **Crown Castle JDE Job Number:** **Crown Castle Work Order Number:** **Crown Castle Application Number:**	806363 HRT 105 943201 252702 703683 207068 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	703683
Site Data:	**48 COW HILL ROAD, CLINTON, Middlesex County, CT** **Latitude *41° 17' 20.2"*, Longitude *-72° 32' 18.5"*** **212.625 Foot - Self Support Tower**	

Dear Patrick Byrum,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 703683, in accordance with application 207068, revision 1.

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

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

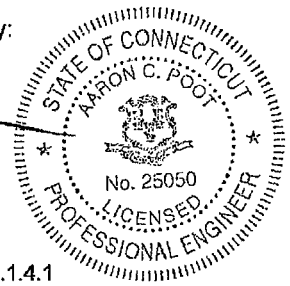
This analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code with 2009 amendment based upon a wind speed of 85 mph fastest mile.

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

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

Structural analysis prepared by: Randall Ashworth, Associate Design Engineer / MBC

Respectfully submitted by:



Aaron C. Poot, P.E.
Manager Engineering

tnxTower Report - version 6.1.4.1

1/28/14

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 212.625 ft Self Support tower designed by ROHN in June of 1992. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-E. The tower has been modified per reinforcement drawings prepared by Vertical Structures, in June of 2007. Reinforcement consists of the replacement of redundant diagonals from 10 to 20 and 30 to 40 ft.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
139.0	140.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	3	7/8	-
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
208.0	209.0	3	antel	BXA-70063/6CF-EDIN w/ Mount Pipe	-	-	2
		6	antel	LPA-171080/8CFx2 w/ Mount Pipe	15	1-5/8	1
		6	antel	LPA-80080/6CF w/ Mount Pipe			
	208.0	1	tower mounts	Sector Mount [SM 510-3]			
199.0	199.0	1	tower mounts	Sector Mount [SM 505-3]	3	1-1/4	1
	198.0	3	alcatel lucent	1900MHz RRH (65MHz)			
		3	alcatel lucent	800MHz 2X50W RRH W/FILTER			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
189.0	190.0	1	raycap	DC6-48-60-18-8F	1 2	1/4 7/8	2
		6	ericsson	RRUS-11			
		3	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe	12	1-5/8	1
		6	powerwave technologies	LGP13519			
		6	adc	DUAL BAND 800/1900 FULL BAND MASTHEAD			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	189.0	1	tower mounts	Sector Mount [SM 602-3]			
183.0	183.0	3	rfs celwave	APXV18-206517LS w/ Mount Pipe	6	1-5/8	1
175.0	179.0	2	radiowaves	HPD2-23	12 5	1-1/4 3/8	1
	176.0	12	decibel	DB844H90E-XY w/ Mount Pipe			
	175.0	1	tower mounts	Sector Mount [SM 510-3]			
167.0	173.0	1	rfs celwave	1151-3	1	7/8	1
	167.0	1	tower mounts	Side Arm Mount [SO 308-1]			
164.0	173.0	1	rfs celwave	1151-3	1	7/8	1
	164.0	1	tower mounts	Side Arm Mount [SO 308-1]			
162.0	162.0	1	tower mounts	Side Arm Mount [SO 308-1]	1	1/4	1
	160.0	1	sinclair	SD310-HL			
147.0	153.0	1	rfs celwave	1151-3	1	7/8	1
	147.0	1	tower mounts	Side Arm Mount [SO 308-1]			
145.0	148.0	1	sinclair	SD310-HL	1	7/8	1
	145.0	1	tower mounts	Side Arm Mount [SO 308-1]			
139.0	140.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	-	-	3
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
		3	rfs celwave	ATMPP1412D-1CWA			
	139.0	1	tower mounts	Side Arm Mount [SO 201-3]	6 6	1-1/4 1-5/8	1
128.0	132.0	1	rfs celwave	1142-2C	1	7/8	1
	128.0	1	tower mounts	Side Arm Mount [SO 308-1]			
51.0	51.0	1	gps	GPS_A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment to be Removed, Not Considered in this Analysis.

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
212	212	12	sinclair	SRL410C4	-	-
		4	rfs celwave	PD10017		
200	200	2	generic	6' Grid Dish	-	-
190	190	9	swedcom	ALP9212N	-	-
100	100	1	decibel	DB222	-	-
90	90	1	decibel	DB225	-	-
80	80	2	decibel	DB225-2	-	-
60	60	1	decibel	DB212-2	-	-
		1	decibel	DB225		
		1	decibel	DB225		
50	50	1	decibel	DB212-2	-	-
40	40	1	decibel	DB212	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Assoc., Inc.	262276	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	ROHN	262273	CCISITES
4-TOWER MANUFACTURER DRAWINGS	ROHN	262274	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Structures, Inc.	2169576	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	212.625 - 202.458	Leg	ROHN 2.5 STD	1	-2.13	37.41	8.4	Pass
T2	202.458 - 182.292	Leg	ROHN 3 EH	28	-23.75	83.44	28.5	Pass
T3	182.292 - 162.104	Leg	ROHN 4 EH	67	-62.87	138.58	45.4	Pass
T4	162.104 - 141.896	Leg	ROHN 5 EH	108	-109.36	205.75	53.2	Pass
T5	141.896 - 121.688	Leg	ROHN 6 EHS	146	-138.25	211.35	65.4	Pass
T6	121.688 - 101.479	Leg	ROHN 6 EH	173	-170.63	263.18	64.8	Pass
T7	101.479 - 81.2708	Leg	ROHN 6 EH	200	-200.27	263.18	76.1	Pass
T8	81.2708 - 61	Leg	ROHN 8 EHS	227	-228.57	331.42	69.0	Pass
T9	61 - 40.6667	Leg	ROHN 8 EHS	254	-256.43	331.21	77.4	Pass
T10	40.6667 - 20.3333	Leg	ROHN 8 EH	281	-268.89	433.40	62.0	Pass
T11	20.3333 - 0	Leg	ROHN 8 EH	314	-326.43	433.92	75.2	Pass
T1	212.625 - 202.458	Diagonal	ROHN 2 STD	9	-2.81	21.60	13.0	Pass
T2	202.458 - 182.292	Diagonal	ROHN 2 STD	33	-9.09	15.46	58.8	Pass
T3	182.292 - 162.104	Diagonal	ROHN 2 STD	72	-9.81	13.36	73.5	Pass
T4	162.104 - 141.896	Diagonal	ROHN 2 STD	110	-9.75	11.48	85.0	Pass
T5	141.896 - 121.688	Diagonal	ROHN 2.5 STD	149	-12.87	14.35	89.7	Pass
T6	121.688 - 101.479	Diagonal	ROHN 2.5 STD	176	-11.74	12.58	93.3	Pass
T7	101.479 - 81.2708	Diagonal	ROHN 3 STD	203	-11.89	21.76	54.7	Pass
T8	81.2708 - 61	Diagonal	ROHN 3 STD	230	-11.82	19.22	61.5	Pass
T9	61 - 40.6667	Diagonal	ROHN 3 STD	257	-12.83	16.87	76.0	Pass
T10	40.6667 - 20.3333	Diagonal	ROHN 3 STD	284	-18.09	27.45	65.9	Pass
T11	20.3333 - 0	Diagonal	ROHN 3 STD	317	-21.04	26.23	80.2	Pass
T1	212.625 - 202.458	Horizontal	ROHN 1.5 STD	7	-2.03	20.30	10.0 11.8 (b)	Pass
T2	202.458 - 182.292	Horizontal	ROHN 1.5 STD	31	-4.95	20.25	24.4 28.8 (b)	Pass
T3	182.292 - 162.104	Horizontal	ROHN 1.5 STD	70	-6.17	17.38	35.5 35.9 (b)	Pass
T4	162.104 - 141.896	Horizontal	ROHN 2 STD	109	-6.85	24.67	27.8 39.9 (b)	Pass
T5	141.896 - 121.688	Horizontal	ROHN 2 STD	148	-7.73	20.44	37.8 45.0 (b)	Pass
T6	121.688 - 101.479	Horizontal	ROHN 2 STD	175	-7.75	14.86	52.2	Pass
T7	101.479 - 81.2708	Horizontal	ROHN 2.5 STD	202	-8.43	25.42	33.1 49.1 (b)	Pass
T8	81.2708 - 61	Horizontal	ROHN 2.5 STD	229	-8.87	19.85	44.7 51.6 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T9	61 - 40.6667	Horizontal	ROHN 2.5 STD	256	-10.07	15.70	64.1	Pass
T10	40.6667 - 20.3333	Horizontal	ROHN 3 STD	283	-9.97	27.89	35.7 40.3 (b)	Pass
T11	20.3333 - 0	Horizontal	ROHN 3 STD	316	-12.28	22.69	54.1	Pass
T1	212.625 - 202.458	Top Girt	ROHN 1.5 STD	4	-0.18	20.34	0.9	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	ROHN 1.5 STD	288	-4.67	11.80	39.6	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	325	-5.66	9.84	57.6	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	ROHN 2 STD	289	-4.31	7.76	55.6	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	ROHN 2 STD	322	-4.88	7.19	67.9	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	ROHN 1.5 STD	308	-0.02	10.76	0.2	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	ROHN 1.5 STD	341	-0.02	8.85	0.3	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	ROHN 2.5 STD	307	-0.05	6.86	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	340	-0.05	6.20	0.8	Pass
T1	212.625 - 202.458	Inner Bracing	L2x2x1/8	16	-0.00	5.83	0.3	Pass
T2	202.458 - 182.292	Inner Bracing	L2x2x1/8	42	-0.01	5.73	0.3	Pass
T3	182.292 - 162.104	Inner Bracing	L2x2x1/8	79	-0.01	4.22	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L2x2x1/8	118	-0.01	2.89	0.4	Pass
T5	141.896 - 121.688	Inner Bracing	L2x2x1/8	157	-0.01	2.19	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L2 1/2x2 1/2x3/16	184	-0.01	3.45	0.5	Pass
T7	101.479 - 81.2708	Inner Bracing	L3x3x3/16	211	-0.01	4.55	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L3 1/2x3 1/2x1/4	238	-0.01	7.40	0.4	Pass
T9	61 - 40.6667	Inner Bracing	L3 1/2x3 1/2x1/4	265	-0.01	5.90	0.4	Pass
T10	40.6667 - 20.3333	Inner Bracing	ROHN 3 STD	311	-0.01	19.74	0.4	Pass
T11	20.3333 - 0	Inner Bracing	ROHN 3 STD	345	-0.01	16.16	0.4	Pass
							Summary	
						Leg (T9)	77.4	Pass
						Diagonal (T6)	93.3	Pass
						Horizontal (T9)	64.1	Pass
						Top Girt (T1)	0.9	Pass
						Redund Horz 1 Bracing (T11)	57.6	Pass
						Redund Diag 1 Bracing (T11)	67.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Redund Hip 1 Bracing (T11)	0.3	Pass
						Redund Hip Diagonal Bracing (T11)	0.8	Pass
						Inner Bracing (T7)	0.5	Pass
						Bolt Checks	62.1	Pass
						Rating =	93.3	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
-	Anchor Rods	0	62.1	Pass
1	Base Foundation	0	55.8	Pass

Structure Rating (max from all components) =	93.3%

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

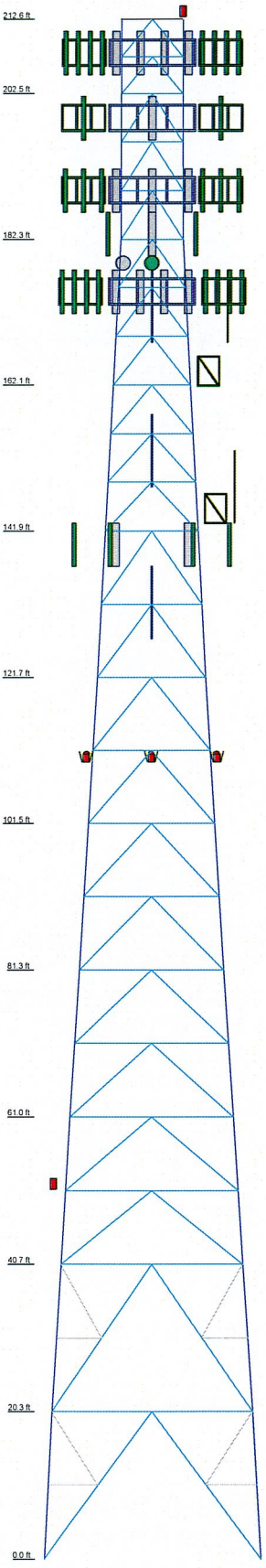
4.1) Recommendations

The tower and its foundation have sufficient capacity to support the existing, reserved and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	11	10	9	8	7	6	5	4	3	2	1
Legs	ROHN 8 EHS		ROHN 8 EHS		ROHN 8 EH	L2 1/2x2 1/2x3/16	ROHN 8 EHS	ROHN 5 EH	ROHN 4 EH	ROHN 3 EH	ROHN 2.5 STD
Leg Grade	A572-50										
Diagonals	ROHN 3 STD										
Diagonal Grade	A572-50										
Top Girts	ROHN 1.5 STD				N.A.						
Horizontals	ROHN 3 STD			ROHN 2.5 STD		L3x3x3/16	ROHN 2 STD		L2x2x1/8		
Red. Horizontals	ROHN 1.5 STD				N.A.						
Red. Diagonals	ROHN 2 STD				N.A.						
Red. Hips	ROHN 1.5 STD				N.A.						
Inner Bracing	ROHN 3 STD		L3 1/2x3 1/2x1/4								
Face Width (ft)	30.0417	25.1771	22.6771	20.0417	17.5417	15.0417	12.7917	10.7083	8.625	8.5416	8.5
# Panels @ (ft)	1 @ 20.25	1 @ 20.3333	2 @ 10.1667	2 @ 10.1354	6 @ 10.1042		3 @ 6.73611	3 @ 6.72917		2 @ 5.08333	
Weight (K)	37.5	5.6	4.9	4.7	4.0	3.3	2.7	2.4	1.8	1.5	0.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Flash Beacon Lighting	212	(2) RRUS-11	189
(2) LPA-80080/6CF w/ Mount Pipe	208	DC6-48-60-18-8F	189
(2) LPA-80080/6CF w/ Mount Pipe	208	Sector Mount [SM 602-3]	189
(2) LPA-80080/6CF w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	APXV18-206517LS w/ Mount Pipe	183
(2) LPA-171080/8CFx2 w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
BXA-70063/6CF-EDIN w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
BXA-70063/6CF-EDIN w/ Mount Pipe	208	(4) DB844H90E-XY w/ Mount Pipe	175
BXA-70063/6CF-EDIN w/ Mount Pipe	208	Sector Mount [SM 510-3]	175
Sector Mount [SM 510-3]	208	6' x 2" Mount Pipe	175
APXVSPP18-C-A20 w/ Mount Pipe	199	6' x 2" Mount Pipe	175
APXVSPP18-C-A20 w/ Mount Pipe	199	HPD2-23	175
APXVSPP18-C-A20 w/ Mount Pipe	199	HPD2-23	175
800MHz 2X50W RRH W/FILTER	199	1151-3	167
800MHz 2X50W RRH W/FILTER	199	Side Arm Mount [SO 308-1]	167
800MHz 2X50W RRH W/FILTER	199	1151-3	164
1900MHz RRH (65MHz)	199	Side Arm Mount [SO 308-1]	164
1900MHz RRH (65MHz)	199	SD310-HL	162
1900MHz RRH (65MHz)	199	1151-3	147
Sector Mount [SM 505-3]	199	Side Arm Mount [SO 308-1]	147
(4) 4' x 2" Pipe Mount	199	SD310-HL	145
(4) 4' x 2" Pipe Mount	199	Side Arm Mount [SO 308-1]	145
(4) 4' x 2" Pipe Mount	199	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	139
(2) 7770.00 w/ Mount Pipe	189	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	139
(2) 7770.00 w/ Mount Pipe	189	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	139
(2) 7770.00 w/ Mount Pipe	189	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	139
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	139
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	139
AM-X-CD-14-65-00T-RET w/ Mount Pipe	189	KRY 112 144/1	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	KRY 112 144/1	139
		KRY 112 144/1	139
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	Side Arm Mount [SO 201-3]	139
		1142-2C	128
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	189	Side Arm Mount [SO 308-1]	128
		Side Lighting	110
(2) LGP13519	189	Side Lighting	110
(2) LGP13519	189	Side Lighting	110
(2) LGP13519	189	GPS_A	51
(2) RRUS-11	189	Side Arm Mount [SO 701-1]	51
(2) RRUS-11	189		

MATERIAL STRENGTH

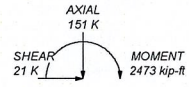
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

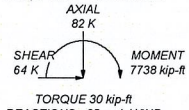
1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 93.3%

MAX. CORNER REACTIONS AT BASE:
DOWN: 325 K
SHEAR: 38 K

UPLIFT: -267 K
SHEAR: 34 K



TORQUE 10 kip-ft
38 mph WIND - 0.7500 in ICE



TORQUE 30 kip-ft
REACTIONS - 85 mph WIND

CROWN CASTLE
We Are Solutions
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-2254

Job: *BU# 806363*			
Project:			
Client: Crown Castle	Drawn by: MCarll	App'd:	
Code: TIA/EIA-222-F	Date: 01/28/14	Scale: NTS	
Path: R:\SA Models - Letters\Work Area\RAshworth\806363\806363.eri		Dwg No: E-1	

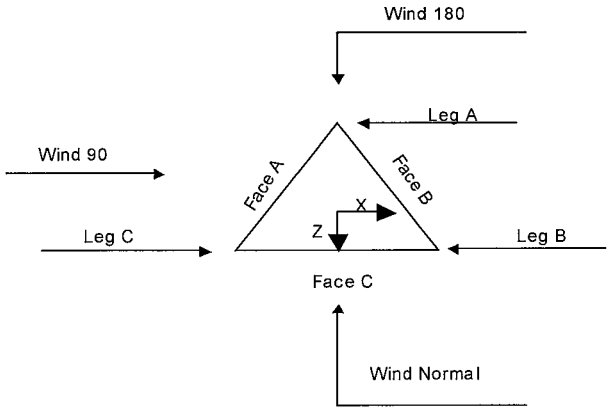
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 212'7-1/2" above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 8'6" at the top and 30'1/2" at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

4) Tower is located in Middlesex County, Connecticut.
5) Basic wind speed of 85 mph.
6) Nominal ice thickness of 0.7500 in.
7) Ice thickness is considered to increase with height.
8) Ice density of 56 pcf.
9) A wind speed of 38 mph is used in combination with ice.
10) Temperature drop of 50 °F.
11) Deflections calculated using a wind speed of 50 mph.
12) Pressures are calculated at each section.
13) Stress ratio used in tower member design is 1.333.
14) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	√ All Leg Panels Have Same Allowable
√ Escalate Ice	√ Bypass Mast Stability Checks	√ Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	√ Include Angle Block Shear Check
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination	Use TIA-222-G Tension Splice	
	Capacity Exemption	



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	212'7-9/16"-202'5-17/32"			8'6"	1	10'2-1/32"
T2	202'5-17/32"-182'3-15/32"			8'6-15/32"	1	20'2-1/32"
T3	182'3-15/32"-162'1-3/16"			8'7-9/16"	1	20'2-9/32"
T4	162'1-3/16"-141'10-13/16"			10'8-17/32"	1	20'2-17/32"
T5	141'10-13/16"-121'8-9/32"			12'9-15/32"	1	20'2-17/32"
T6	121'8-9/32"-101'5-3/4"			15'15/32"	1	20'2-17/32"
T7	101'5-3/4"-81'3-1/4"			17'6-15/32"	1	20'2-17/32"
T8	81'3-1/4"-61'			20'15/32"	1	20'3-1/4"
T9	61'-40'8-1/32"			22'8-5/32"	1	20'3-31/32"
T10	40'8-1/32"-20'3-31/32"			25'2-5/32"	1	20'3-31/32"
T11	20'3-31/32"-0'			27'9-31/32"	1	20'3-31/32"

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	212'7-9/16"-202'5-17/32"	5'31/32"	K Brace Down	No	Yes	0.0000	0.0000
T2	202'5-17/32"-182'3-15/32"	6'8-5/8"	K Brace Down	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T3	182'3-15/32"-162'1-3/16"	6'8-3/4"	K Brace Down	No	Yes	0.0000	0.0000
T4	162'1-3/16"-141'10-13/16"	6'8-7/8"	K Brace Down	No	Yes	0.0000	0.0000
T5	141'10-13/16"-121'8-9/32"	10'1-3/16"	K Brace Down	No	Yes	0.0000	0.0000
T6	121'8-9/32"-101'5-3/4"	10'1-3/16"	K Brace Down	No	Yes	0.0000	0.0000
T7	101'5-3/4"-81'3-1/4"	10'1-3/16"	K Brace Down	No	Yes	0.0000	0.0000
T8	81'3-1/4"-61'	10'1-11/16"	K Brace Down	No	Yes	0.0000	0.0000
T9	61'-40'8-1/32"	10'2-1/32"	K Brace Down	No	Yes	0.0000	0.0000
T10	40'8-1/32"-20'3-31/32"	20'3-31/32"	K1 Down	No	Yes	0.0000	0.0000
T11	20'3-31/32"-0'	20'3"	K1 Down	No	Yes	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 212'7-9/16"-202'5-17/32"	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 202'5-17/32"-182'3-15/32"	Pipe	ROHN 3 EH	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 182'3-15/32"-162'1-3/16"	Pipe	ROHN 4 EH	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 162'1-3/16"-141'10-13/16"	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 141'10-13/16"-121'8-9/32"	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T6 121'8-9/32"-101'5-3/4"	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 101'5-3/4"-81'3-1/4"	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T8 81'3-1/4"-61'	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T9 61'-40'8-1/32"	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T10 40'8-1/32"-20'3-31/32"	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T11 20'3-31/32"-0'	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 212'7-9/16"-202'5-17/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T2 202'5-17/32"-182'3-15/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)
T3 182'3-15/32"-162'1-	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 1.5 STD	A572-50 (50 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
3/16"							
T4 162'1-3/16"-141'10-13/16"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 141'10-13/16"-121'8-9/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 121'8-9/32"-101'5-3/4"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T7 101'5-3/4"-81'3-1/4"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T8 81'3-1/4"-61'	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T9 61'-40'8-1/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T10 40'8-1/32"-20'3-31/32"	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T11 20'3-31/32"-0'	None	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 212'7-9/16"-202'5-17/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 202'5-17/32"-182'3-15/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T3 182'3-15/32"-162'1-3/16"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T4 162'1-3/16"-141'10-13/16"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T5 141'10-13/16"-121'8-9/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T6 121'8-9/32"-101'5-3/4"	Single Angle		A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 101'5-3/4"-81'3-1/4"	Single Angle		A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 81'3-1/4"-61'	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T9 61'-40'8-1/32"	Single Angle		A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T10 40'8-1/32"-20'3-31/32"	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T11 20'3-31/32"-0'	Single Angle		A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T10 40'8-1/32"-20'3-	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 2 STD	1

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
31/32"		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal		ROHN 2.5 STD	1
T11 20'3-31/32"-0'	A36 (36 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	1
		Diagonal (1)	Pipe	ROHN 2 STD	1
		Hip (1)	Pipe	ROHN 1.5 STD	1
		Hip Diagonal		ROHN 2.5 STD	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 212'7-9/16"-202'5-17/32"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T2 202'5-17/32"-182'3-15/32"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T3 182'3-15/32"-162'1-3/16"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T4 162'1-3/16"-141'10-13/16"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T5 141'10-13/16"-121'8-9/32"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T6 121'8-9/32"-101'5-3/4"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T7 101'5-3/4"-81'3-1/4"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T8 81'3-1/4"-61'	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T9 61'-40'8-1/32"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T10 40'8-1/32"-20'3-31/32"	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000
T11 20'3-31/32"-0'	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	30.0000	30.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 212'7-9/16"-202'5-17/32"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 202'5-17/32"-182'3-15/32"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 182'3-15/32"-162'1-3/16"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T4 162'1-3/16"-141'10-13/16"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 141'10-13/16"-121'8-9/32"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 121'8-9/32"-101'5-3/4"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 101'5-3/4"-81'3-1/4"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 81'3-1/4"-61'	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 61'-40'8-1/32"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 40'8-1/32"-20'3-31/32"	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T11 20'3-31/32"-0'	No	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

[1]Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 212'7-9/16"-202'5-17/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T2 202'5-17/32"-182'3-15/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T3 182'3-15/32"-162'1-3/16"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T4 162'1-3/16"-141'10-13/16"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T5 141'10-13/16"-121'8-9/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T6 121'8-9/32"-101'5-3/4"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T7 101'5-3/4"-81'3-1/4"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T8 81'3-1/4"-61'	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T9 61'-40'8-1/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75
T10 40'8-1/32"-20'3-31/32"	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T11 20'3-31/32"-0'	0.0000	1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 212'7-9/16"-202'5-17/32"	Flange	0.7500 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T2 202'5-17/32"-182'3-15/32"	Flange	0.8750 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T3 182'3-15/32"-162'1-3/16"	Flange	1.0000 A325N	4	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T4 162'1-3/16"-141'10-13/16"	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T5 141'10-13/16"-121'8-9/32"	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T6 121'8-9/32"-101'5-3/4"	Flange	1.0000 A325N	6	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T7 101'5-3/4"-81'3-1/4"	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T8 81'3-1/4"-61'	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T9 61'-40'8-1/32"	Flange	1.0000 A325N	8	0.6250 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325N	2	0.6250 A325X	0
T10 40'8-1/32"-20'3-31/32"	Flange	1.0000 A325N	8	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	2	0.6250 A325X	0
T11 20'3-31/32"-0'	Flange	1.0000 A354-BC	10	0.7500 A325N	3	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.7500 A325N	2	0.6250 A325X	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF4-50A(1/2")	A	Yes	Ar (CfAe)	51' - 0'	0.0000	0.48	1	1	0.6300	0.6300		0.15
HB114-1-08U4-M5J(1 1/4")	A	Yes	Ar (CfAe)	199' - 0'	0.0000	0.45	3	3	1.0000 1.5400	1.5400		1.08
Feedline Ladder (Af)	A	Yes	Af (CfAe)	199' - 0'	0.0000	0.46	1	1	3.0000	3.0000	12.0000	8.40
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	128' - 0'	0.0000	-0.36	5	5	1.0900	1.0900		0.33
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	145' - 128'	0.0000	-0.36	4	4	1.0900	1.0900		0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	147' - 145'	0.0000	-0.36	3	3	1.0900	1.0900		0.33
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	164' - 147'	0.0000	-0.36	2	2	1.0900	1.0900		0.33
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	167' - 164'	0.0000	-0.36	1	1	1.0900	1.0900		0.33
LDF1-50A(1/4")	A	Yes	Ar (CfAe)	162' - 0'	0.0000	-0.38	1	1	0.3450	0.3450		0.06
CR 50 1873(1-5/8")	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.44	12	6	1.0000	1.9800		0.83
6-8AWG 3 PAIR(7/8")	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.4	2	2	0.9000	0.0000		0.68
A-DQZNB2Yn1 750 N(1/4")	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.4	1	1	0.2756	0.0000		0.03
3" Conduit	A	Yes	Ar (CfAe)	189' - 0'	0.0000	-0.4	1	1	3.0000	3.0000		2.80
FSJ2-50(3/8")	A	Yes	Ar (CfAe)	175' - 0'	0.0000	-0.48	5	2	0.4250	0.4250		0.08
Feedline Ladder (Af) ***	A	Yes	Af (CfAe)	189' - 0'	0.0000	-0.4	1	1	3.0000	3.0000	12.0000	8.40
LDF6-50A(1-1/4")	B	Yes	Ar (CfAe)	139' - 0'	2.0000	-0.45	6	6	1.0000	1.5500		0.66
LDF7-50A(1-5/8")	B	Yes	Ar (CfAe)	139' - 0'	0.0000	-0.45	6	6	1.0000	1.9800		0.82
Hybrid cable (7/8")	B	Yes	Ar (CfAe)	139' - 0'	0.0000	-0.43	3	3	1.0000	1.2600		0.68
Feedline Ladder (Af)	B	Yes	Af (CfAe)	139' - 0'	0.0000	-0.45	1	1	3.0000	3.0000	12.0000	8.40
LDF6-50A(1-1/4")	B	Yes	Ar (CfAe)	175' - 0'	0.0000	0.45	12	12	1.0000 1.5500	1.5500		0.66
Feedline Ladder (Af) ***	B	Yes	Af (CfAe)	175' - 0'	0.0000	0.45	1	1	3.0000	3.0000	12.0000	8.40
AVA7-50(1-5/8)	C	Yes	Ar (CfAe)	208' - 0'	0.0000	0.43	15	12	1.0000	2.0100		0.70
Feedline Ladder (Af)	C	Yes	Af (CfAe)	208' - 0'	0.0000	0.43	1	1	3.0000	3.0000	12.0000	8.40
AVA7-50(1-5/8)	C	Yes	Ar (CfAe)	183' - 0'	0.0000	-0.45	6	6	1.0000 2.0100	2.0100		0.70
Feedline Ladder (Af) ***	C	Yes	Af (CfAe)	183' - 0'	0.0000	-0.45	1	1	3.0000	3.0000	12.0000	8.40

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
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Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	212'7-9/16"-	A	0.000	0.000	0.000	0.000	0.00
	202'5-17/32"	B	0.000	0.000	0.000	0.000	0.00
		C	11.139	1.385	0.000	0.000	0.10
T2	202'5-17/32"-	A	14.751	5.854	0.000	0.000	0.35
	182'3-15/32"	B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	41.247	5.219	0.000	0.000	0.39
T3	182'3-15/32"-162'1-3/16"	A	34.335	10.094	0.000	0.000	0.70
		B	19.989	3.224	0.000	0.000	0.21
		C	60.865	10.094	0.000	0.000	0.64
T4	162'1-3/16"-141'10-13/16"	A	39.265	10.104	0.000	0.000	0.72
		B	31.323	5.052	0.000	0.000	0.33
		C	60.928	10.104	0.000	0.000	0.64
T5	141'10-13/16"-121'8-9/32"	A	42.767	10.104	0.000	0.000	0.73
		B	67.333	9.380	0.000	0.000	0.66
		C	60.928	10.104	0.000	0.000	0.64
T6	121'8-9/32"-101'5-3/4"	A	44.029	10.104	0.000	0.000	0.73
		B	73.356	10.104	0.000	0.000	0.72
		C	60.928	10.104	0.000	0.000	0.64
T7	101'5-3/4"-81'3-1/4"	A	44.029	10.104	0.000	0.000	0.73
		B	73.356	10.104	0.000	0.000	0.72
		C	60.928	10.104	0.000	0.000	0.64
T8	81'3-1/4"-61'	A	44.165	10.135	0.000	0.000	0.74
		B	73.583	10.135	0.000	0.000	0.72
		C	61.117	10.135	0.000	0.000	0.64
T9	61'-40'8-1/32"	A	44.844	10.167	0.000	0.000	0.74
		B	73.810	10.167	0.000	0.000	0.72
		C	61.305	10.167	0.000	0.000	0.64
T10	40'8-1/32"-20'3-31/32"	A	45.369	10.167	0.000	0.000	0.74
		B	73.810	10.167	0.000	0.000	0.72
		C	61.305	10.167	0.000	0.000	0.64
T11	20'3-31/32"-0'	A	45.369	10.167	0.000	0.000	0.74
		B	73.810	10.167	0.000	0.000	0.72
		C	61.305	10.167	0.000	0.000	0.64

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	212'7-9/16"-202'5-17/32"	A	0.935	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		1.792	17.252	0.000	0.000	0.40
T2	202'5-17/32"-182'3-15/32"	A	0.927	11.653	24.171	0.000	0.000	0.89
		B		0.000	0.000	0.000	0.000	0.00
		C		6.721	63.900	0.000	0.000	1.47
T3	182'3-15/32"-162'1-3/16"	A	0.914	29.965	50.580	0.000	0.000	1.97
		B		3.631	34.678	0.000	0.000	0.69
		C		12.916	95.215	0.000	0.000	2.19
T4	162'1-3/16"-141'10-13/16"	A	0.901	38.367	55.906	0.000	0.000	2.11
		B		5.644	54.312	0.000	0.000	1.07
		C		12.838	95.253	0.000	0.000	2.18
T5	141'10-13/16"-121'8-9/32"	A	0.886	37.974	62.835	0.000	0.000	2.19
		B		20.169	106.721	0.000	0.000	2.19
		C		12.735	95.184	0.000	0.000	2.16
T6	121'8-9/32"-101'5-3/4"	A	0.868	37.502	65.281	0.000	0.000	2.20
		B		22.371	115.415	0.000	0.000	2.36
		C		12.617	95.105	0.000	0.000	2.14
T7	101'5-3/4"-81'3-1/4"	A	0.847	36.948	65.189	0.000	0.000	2.17
		B		22.094	115.322	0.000	0.000	2.32
		C		12.479	95.013	0.000	0.000	2.11
T8	81'3-1/4"-61'	A	0.822	36.384	65.277	0.000	0.000	2.14
		B		21.824	115.566	0.000	0.000	2.29
		C		12.348	95.194	0.000	0.000	2.09
T9	61'-40'8-1/32"	A	0.790	37.518	65.332	0.000	0.000	2.12
		B		21.450	115.775	0.000	0.000	2.25
		C		12.165	95.340	0.000	0.000	2.05
T10	40'8-1/32"-20'3-31/32"	A	0.750	38.142	65.151	0.000	0.000	2.08
		B		20.909	115.595	0.000	0.000	2.19
		C		11.895	95.160	0.000	0.000	2.00
T11	20'3-31/32"-0'	A	0.750	38.142	65.151	0.000	0.000	2.08
		B		20.909	115.595	0.000	0.000	2.19

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		11.895	95.160	0.000	0.000	2.00

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	212'7-9/16"-202'5-17/32"	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	1.149	3.288	0.000	0.000
T2	202'5-17/32"-182'3-15/32"	A	1.611	5.326	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	3.634	10.312	0.000	0.000
T3	182'3-15/32"-162'1-3/16"	A	3.239	11.031	0.000	0.000
		B	1.692	5.204	0.000	0.000
		C	5.172	14.716	0.000	0.000
T4	162'1-3/16"-141'10-13/16"	A	3.624	12.432	0.000	0.000
		B	2.670	7.871	0.000	0.000
		C	5.214	14.216	0.000	0.000
T5	141'10-13/16"-121'8-9/32"	A	3.189	10.282	0.000	0.000
		B	4.627	12.876	0.000	0.000
		C	4.285	10.993	0.000	0.000
T6	121'8-9/32"-101'5-3/4"	A	3.061	9.759	0.000	0.000
		B	4.719	13.020	0.000	0.000
		C	4.016	10.219	0.000	0.000
T7	101'5-3/4"-81'3-1/4"	A	3.540	10.357	0.000	0.000
		B	5.457	13.869	0.000	0.000
		C	4.645	10.890	0.000	0.000
T8	81'3-1/4"-61'	A	3.408	9.800	0.000	0.000
		B	5.254	13.183	0.000	0.000
		C	4.472	10.357	0.000	0.000
T9	61'-40'8-1/32"	A	3.346	9.478	0.000	0.000
		B	5.108	12.593	0.000	0.000
		C	4.347	9.900	0.000	0.000
T10	40'8-1/32"-20'3-31/32"	A	3.752	10.855	0.000	0.000
		B	5.673	14.289	0.000	0.000
		C	4.828	11.244	0.000	0.000
T11	20'3-31/32"-0'	A	3.576	10.339	0.000	0.000
		B	5.407	13.610	0.000	0.000
		C	4.602	10.709	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	212'7-9/16"-202'5-17/32"	-10.1842	7.3919	-7.4186	5.3842
T2	202'5-17/32"-182'3-15/32"	-16.9576	7.5710	-13.4924	6.5097
T3	182'3-15/32"-162'1-3/16"	-6.0807	13.6727	-5.1424	11.5303
T4	162'1-3/16"-141'10-13/16"	-4.3424	16.1275	-3.6767	13.8318
T5	141'10-13/16"-121'8-9/32"	-4.3347	4.9998	-4.1873	5.6975
T6	121'8-9/32"-101'5-3/4"	-5.0718	3.7759	-5.0096	5.0017
T7	101'5-3/4"-81'3-1/4"	-5.5174	4.0839	-5.5018	5.5101
T8	81'3-1/4"-61'	-5.8246	4.2916	-5.9280	5.9176

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T9	61'-40'8-1/32"	-6.4123	4.4784	-6.5216	5.9740
T10	40'8-1/32"-20'3-31/32"	-6.9064	4.5827	-6.9051	5.9170
T11	20'3-31/32"-0'	-7.4527	4.9332	-7.4679	6.3645

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Flash Beacon Lighting	B	From Leg	0.00 0' 1'	0.0000	212'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 3.10 3.50 4.30 5.90	2.70 3.10 3.50 4.30 5.90	0.05 0.07 0.09 0.13 0.21
Side Lighting	A	From Leg	1.00 0' 0'	0.0000	110'	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	0.13 0.19 0.27 0.44 0.93	0.13 0.19 0.27 0.44 0.93	0.01 0.01 0.01 0.02 0.05
Side Lighting	B	From Leg	1.00 0' 0'	0.0000	110'	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	0.13 0.19 0.27 0.44 0.93	0.13 0.19 0.27 0.44 0.93	0.01 0.01 0.01 0.02 0.05
Side Lighting	C	From Leg	1.00 0' 0'	0.0000	110'	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	0.13 0.19 0.27 0.44 0.93	0.13 0.19 0.27 0.44 0.93	0.01 0.01 0.01 0.02 0.05
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(2) LPA-80080/6CF w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
(2) LPA-80080/6CF w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
(2) LPA-80080/6CF w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	4.56 5.11 5.61 6.65 8.83	10.73 11.99 12.97 14.98 19.22	0.05 0.11 0.19 0.36 0.86
(2) LPA-171080/8CFx2 w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice Ice 1" Ice 2" Ice 4" Ice	2.49 2.85 3.22 3.99 5.84	4.41 5.07 5.74 7.15 10.23	0.03 0.06 0.10 0.20 0.50
(2) LPA-171080/8CFx2 w/ Mount Pipe	B	From Face	4.00 0'	0.0000	208'	No Ice 1/2"	2.49 2.85	4.41 5.07	0.03 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			1'			Ice	3.22	5.74	0.10
						1" Ice	3.99	7.15	0.20
						2" Ice	5.84	10.23	0.50
						4" Ice			
(2) LPA-171080/8CFx2 w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.49 2.85 3.22 3.99 5.84	4.41 5.07 5.74 7.15 10.23	0.03 0.06 0.10 0.20 0.50
BXA-70063/6CF-EDIN w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
BXA-70063/6CF-EDIN w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
BXA-70063/6CF-EDIN w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.40 6.55 7.41 9.18 12.93	0.04 0.10 0.17 0.33 0.79
Sector Mount [SM 510-3]	C	None		0.0000	208'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	40.10 57.33 74.56 109.02 177.94	40.10 57.33 74.56 109.02 177.94	2.40 3.09 3.78 5.17 7.94
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APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.95 8.13 9.02 10.84 14.85	0.08 0.15 0.23 0.41 0.91
800MHz 2X50W RRH W/FILTER	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
800MHz 2X50W RRH W/FILTER	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
1900MHz RRH (65MHz)	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
1900MHz RRH (65MHz)	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
1900MHz RRH (65MHz)	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.70 2.94 3.18 3.70 4.85	2.77 3.01 3.26 3.78 4.93	0.06 0.08 0.11 0.18 0.35
Sector Mount [SM 505-3]	C	None		0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	34.86 49.79 64.72 94.58 154.30	34.86 49.79 64.72 94.58 154.30	1.73 2.32 2.91 4.09 6.46
(4) 4' x 2" Pipe Mount	A	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	0.03 0.04 0.04 0.07 0.17
(4) 4' x 2" Pipe Mount	B	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	0.03 0.04 0.04 0.07 0.17
(4) 4' x 2" Pipe Mount	C	From Leg	4.00 0' -1'	0.0000	199'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.79 1.03 1.28 1.81 3.11	0.79 1.03 1.28 1.81 3.11	0.03 0.04 0.04 0.07 0.17
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(2) 7770.00 w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	189'	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13 8.16	4.25 5.01 5.71 7.16	0.06 0.10 0.16 0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							2" Ice	10.36	10.41	0.66
							4" Ice			
AM-X-CD-14-65-00T-RET w/ Mount Pipe	A	From Face	4.00	0'	0.0000	189'	No Ice	5.74	4.02	0.03
				1'			1/2" Ice	6.20	4.63	0.08
							1" Ice	6.66	5.28	0.13
							2" Ice	7.62	6.68	0.25
							4" Ice	9.67	9.74	0.61
AM-X-CD-14-65-00T-RET w/ Mount Pipe	B	From Face	4.00	0'	0.0000	189'	No Ice	5.74	4.02	0.03
				1'			1/2" Ice	6.20	4.63	0.08
							1" Ice	6.66	5.28	0.13
							2" Ice	7.62	6.68	0.25
							4" Ice	9.67	9.74	0.61
AM-X-CD-14-65-00T-RET w/ Mount Pipe	C	From Face	4.00	0'	0.0000	189'	No Ice	5.74	4.02	0.03
				1'			1/2" Ice	6.20	4.63	0.08
							1" Ice	6.66	5.28	0.13
							2" Ice	7.62	6.68	0.25
							4" Ice	9.67	9.74	0.61
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	A	From Face	4.00	0'	0.0000	189'	No Ice	1.55	0.81	0.03
				1'			1/2" Ice	1.72	0.94	0.04
							1" Ice	1.90	1.09	0.05
							2" Ice	2.28	1.40	0.09
							4" Ice	3.14	2.12	0.19
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	B	From Face	4.00	0'	0.0000	189'	No Ice	1.55	0.81	0.03
				1'			1/2" Ice	1.72	0.94	0.04
							1" Ice	1.90	1.09	0.05
							2" Ice	2.28	1.40	0.09
							4" Ice	3.14	2.12	0.19
(2) DUAL BAND 800/1900 FULL BAND MASTHEAD	C	From Face	4.00	0'	0.0000	189'	No Ice	1.55	0.81	0.03
				1'			1/2" Ice	1.72	0.94	0.04
							1" Ice	1.90	1.09	0.05
							2" Ice	2.28	1.40	0.09
							4" Ice	3.14	2.12	0.19
(2) LGP13519	A	From Face	4.00	0'	0.0000	189'	No Ice	0.34	0.21	0.01
				1'			1/2" Ice	0.42	0.28	0.01
							1" Ice	0.51	0.36	0.01
							2" Ice	0.73	0.55	0.02
							4" Ice	1.25	1.03	0.07
(2) LGP13519	B	From Face	4.00	0'	0.0000	189'	No Ice	0.34	0.21	0.01
				1'			1/2" Ice	0.42	0.28	0.01
							1" Ice	0.51	0.36	0.01
							2" Ice	0.73	0.55	0.02
							4" Ice	1.25	1.03	0.07
(2) LGP13519	C	From Face	4.00	0'	0.0000	189'	No Ice	0.34	0.21	0.01
				1'			1/2" Ice	0.42	0.28	0.01
							1" Ice	0.51	0.36	0.01
							2" Ice	0.73	0.55	0.02
							4" Ice	1.25	1.03	0.07
(2) RRUS-11	A	From Face	4.00	0'	0.0000	189'	No Ice	3.25	1.37	0.05
				1'			1/2" Ice	3.49	1.55	0.07
							1" Ice	3.74	1.74	0.09
							2" Ice	4.27	2.14	0.15
							4" Ice	5.43	3.04	0.31
(2) RRUS-11	B	From Face	4.00	0'	0.0000	189'	No Ice	3.25	1.37	0.05
				1'			1/2" Ice	3.49	1.55	0.07
							1" Ice	3.74	1.74	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	4.27	2.14	0.15
						2" Ice	5.43	3.04	0.31
						4" Ice			
(2) RRUS-11	C	From Face	4.00 0' 1'	0.0000	189'	No Ice	3.25	1.37	0.05
						1/2" Ice	3.49	1.55	0.07
						1" Ice	3.74	1.74	0.09
						2" Ice	4.27	2.14	0.15
						4" Ice	5.43	3.04	0.31
DC6-48-60-18-8F	C	From Face	4.00 0' 1'	0.0000	189'	No Ice	1.27	1.27	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.66	1.66	0.05
						2" Ice	2.09	2.09	0.10
						4" Ice	3.10	3.10	0.21
Sector Mount [SM 602-3]	C	None		0.0000	189'	No Ice	33.11	33.11	1.54
						1/2" Ice	44.90	44.90	2.16
						1" Ice	56.69	56.69	2.78
						2" Ice	80.27	80.27	4.01
						4" Ice	127.43	127.43	6.49
***									
APXV18-206517LS w/ Mount Pipe	A	From Leg	2.00 0' 0'	0.0000	183'	No Ice	5.29	4.67	0.05
						1/2" Ice	5.84	5.82	0.10
						1" Ice	6.36	6.69	0.15
						2" Ice	7.42	8.46	0.28
						4" Ice	9.77	12.21	0.67
APXV18-206517LS w/ Mount Pipe	B	From Leg	2.00 0' 0'	0.0000	183'	No Ice	5.29	4.67	0.05
						1/2" Ice	5.84	5.82	0.10
						1" Ice	6.36	6.69	0.15
						2" Ice	7.42	8.46	0.28
						4" Ice	9.77	12.21	0.67
APXV18-206517LS w/ Mount Pipe	C	From Leg	2.00 0' 0'	0.0000	183'	No Ice	5.29	4.67	0.05
						1/2" Ice	5.84	5.82	0.10
						1" Ice	6.36	6.69	0.15
						2" Ice	7.42	8.46	0.28
						4" Ice	9.77	12.21	0.67
***									
(4) DB844H90E-XY w/ Mount Pipe	A	From Face	4.00 0' 1'	0.0000	175'	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						1" Ice	4.12	6.28	0.12
						2" Ice	5.01	7.71	0.23
						4" Ice	6.92	10.83	0.56
(4) DB844H90E-XY w/ Mount Pipe	B	From Face	4.00 0' 1'	0.0000	175'	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						1" Ice	4.12	6.28	0.12
						2" Ice	5.01	7.71	0.23
						4" Ice	6.92	10.83	0.56
(4) DB844H90E-XY w/ Mount Pipe	C	From Face	4.00 0' 1'	0.0000	175'	No Ice	3.30	4.92	0.03
						1/2" Ice	3.69	5.60	0.07
						1" Ice	4.12	6.28	0.12
						2" Ice	5.01	7.71	0.23
						4" Ice	6.92	10.83	0.56
Sector Mount [SM 510-3]	C	None		0.0000	175'	No Ice	40.10	40.10	2.40
						1/2" Ice	57.33	57.33	3.09
						1" Ice	74.56	74.56	3.78
						2" Ice	109.02	109.02	5.17
						4" Ice	177.94	177.94	7.94

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
6' x 2" Mount Pipe	A	From Face	0.50 3' 4'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
6' x 2" Mount Pipe	C	From Face	0.50 -3' 4'	0.0000	175'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.43 1.92 2.29 3.06 4.70	1.43 1.92 2.29 3.06 4.70	0.02 0.03 0.05 0.09 0.23
***									
1151-3	A	From Leg	6.00 0' 6'	0.0000	167'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.18 5.73 7.30 10.48 14.75	4.18 5.73 7.30 10.48 14.75	0.02 0.05 0.09 0.20 0.54
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0' 0'	0.0000	167'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	0.05 0.08 0.10 0.16 0.26
***									
1151-3	B	From Leg	6.00 0' 9'	0.0000	164'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.18 5.73 7.30 10.48 14.75	4.18 5.73 7.30 10.48 14.75	0.02 0.05 0.09 0.20 0.54
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0' 0'	0.0000	164'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	0.05 0.08 0.10 0.16 0.26
***									
SD310-HL	A	From Leg	6.00 0' -2'	0.0000	162'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.11 1.36 1.62 2.17 3.58	1.11 1.36 1.62 2.17 3.58	6.50 6.51 6.52 6.56 6.67
***									
1151-3	A	From Leg	6.00 0' 6'	0.0000	147'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.18 5.73 7.30 10.48 14.75	4.18 5.73 7.30 10.48 14.75	0.02 0.05 0.09 0.20 0.54
Side Arm Mount [SO 308-1]	A	From Leg	3.00 0' 0'	0.0000	147'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	0.05 0.08 0.10 0.16 0.26
***									
SD310-HL	B	From Leg	6.00 0' 3'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.11 1.36 1.62 2.17 3.58	1.11 1.36 1.62 2.17 3.58	6.50 6.51 6.52 6.56 6.67

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Side Arm Mount [SO 308-1]	B	From Leg	3.00 0' 0'	0.0000	145'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.98 1.70 2.42 3.86 6.74	3.03 5.22 7.41 11.79 20.55	0.05 0.08 0.10 0.16 0.26
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	A	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	B	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	C	From Leg	2.00 0' 1'	0.0000	139'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.59 0.81 1.36	0.20 0.27 0.35 0.53 1.00	0.01 0.01 0.02 0.03 0.08
Side Arm Mount [SO 201-3]	C	None		0.0000	139'	No Ice 1/2" Ice 1" Ice	5.71 7.91 10.11 14.51	5.71 7.91 10.11 14.51	0.29 0.35 0.41 0.54

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	23.31	23.31	0.79
						4" Ice			
***									
1142-2C	A	From Leg	6.00	0.0000	128'	No Ice	2.09	2.09	0.02
			0'			1/2" Ice	3.37	3.37	0.04
			4'				4.67	4.67	0.07
						1" Ice	7.32	7.32	0.14
						2" Ice	10.79	10.79	0.39
						4" Ice			
Side Arm Mount [SO 308-1]	A	From Leg	3.00	0.0000	128'	No Ice	0.98	3.03	0.05
			0'			1/2" Ice	1.70	5.22	0.08
			0'				2.42	7.41	0.10
						1" Ice	3.86	11.79	0.16
						2" Ice	6.74	20.55	0.26
						4" Ice			
***									
GPS_A	C	From Leg	2.00	0.0000	51'	No Ice	0.30	0.30	0.00
			0'			1/2" Ice	0.37	0.37	0.00
			0'				0.46	0.46	0.01
						1" Ice	0.65	0.65	0.02
						2" Ice	1.15	1.15	0.08
						4" Ice			
Side Arm Mount [SO 701-1]	C	From Leg	1.00	0.0000	51'	No Ice	0.85	1.67	0.07
			0'			1/2" Ice	1.14	2.34	0.08
			0'				1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			
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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
HPD2-23	A	Paraboloid w/Shroud (HP)	From Face	2.00	14.0000		175'	2.00	No Ice	3.14	0.03
				0'					1/2" Ice	3.41	0.03
				4'					1" Ice	3.68	0.04
									2" Ice	4.21	0.62
									4" Ice	5.28	0.18
HPD2-23	C	Paraboloid w/Shroud (HP)	From Face	2.00	-36.0000		175'	2.00	No Ice	3.14	0.03
				0'					1/2" Ice	3.41	0.03
				4'					1" Ice	3.68	0.04
									2" Ice	4.21	0.62
									4" Ice	5.28	0.18
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Load Combinations

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

Comb. No.	Description
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	212.625 - 202.458	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-2.73	0.07	-0.00
			Max. Mx	4	-0.65	0.40	-0.01
			Max. My	11	-1.02	-0.00	0.42
			Max. Vy	4	1.41	-0.25	-0.01
			Max. Vx	7	1.43	-0.00	-0.25
		Diagonal	Max Tension	5	2.74	0.00	0.00
			Max. Compression	5	-2.81	0.00	0.00
			Max. Mx	14	-0.05	0.03	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Horizontal	Max Tension	12	2.03	-0.01	0.00
			Max. Compression	6	-2.03	0.00	0.00
			Max. Mx	21	0.05	-0.02	-0.00
			Max. My	4	-0.90	-0.01	-0.01
			Max. Vy	21	-0.02	-0.02	-0.00
			Max. Vx	4	-0.00	-0.01	-0.01
		Top Girt	Max Tension	4	0.18	0.00	0.00
			Max. Compression	10	-0.18	-0.01	-0.00
			Max. Mx	21	-0.02	-0.01	-0.00
			Max. My	10	0.05	-0.00	0.00
			Max. Vy	21	0.02	-0.01	-0.00
			Max. Vx	2	-0.00	-0.00	0.00
		Inner Bracing	Max Tension	10	0.00	0.00	0.00
			Max. Compression	10	-0.00	0.00	0.00
			Max. Mx	14	-0.00	-0.01	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	14	0.01	0.00	0.00
T2	202.458 - 182.292	Leg	Max Tension	12	16.86	0.11	0.04
			Max. Compression	10	-23.75	0.25	0.02
			Max. Mx	4	1.64	1.20	0.00
			Max. My	7	-2.39	-0.00	1.24
			Max. Vy	4	-1.15	0.11	0.01
			Max. Vx	7	-1.21	-0.00	0.07
		Diagonal	Max Tension	5	9.02	0.00	0.00
			Max. Compression	5	-9.09	0.00	0.00
			Max. Mx	14	-0.05	0.03	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Horizontal	Max Tension	11	4.95	-0.01	-0.00
			Max. Compression	5	-4.95	0.00	0.00
			Max. Mx	25	-0.44	-0.02	-0.00
			Max. My	10	0.71	-0.00	0.01
			Max. Vy	25	0.02	-0.02	-0.00
			Max. Vx	10	-0.00	-0.00	0.01
		Inner Bracing	Max Tension	10	0.01	0.00	0.00
			Max. Compression	4	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.01	0.00
			Max. Vy	14	0.01	0.00	0.00
T3	182.292 - 162.104	Leg	Max Tension	8	51.08	-0.19	0.04
			Max. Compression	10	-62.87	0.22	0.09
			Max. Mx	12	28.70	-0.34	0.06
			Max. My	13	-4.38	-0.02	0.37
			Max. Vy	12	-1.01	-0.34	0.06
			Max. Vx	13	1.02	-0.02	0.37
		Diagonal	Max Tension	5	9.75	0.00	0.00
			Max. Compression	5	-9.83	0.00	0.00
			Max. Mx	14	-0.06	0.04	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Horizontal	Max Tension	11	6.16	-0.01	0.00
			Max. Compression	5	-6.17	0.00	0.00
			Max. Mx	25	-0.46	-0.03	-0.00
			Max. My	6	1.28	0.00	0.01
			Max. Vy	25	0.02	-0.03	-0.00
			Max. Vx	6	0.00	0.00	0.00
		Inner Bracing	Max Tension	6	0.00	0.00	0.00
			Max. Compression	12	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.02	0.00
			Max. Vy	14	0.01	0.00	0.00
T4	162.104 - 141.896	Leg	Max Tension	4	88.25	-1.09	-0.06
			Max. Compression	2	-109.36	0.26	0.00
			Max. Mx	12	77.22	-1.40	0.03
			Max. My	3	-15.28	-0.33	-1.08
			Max. Vy	8	-0.66	-0.19	0.04
			Max. Vx	3	0.23	-0.33	-1.08
		Diagonal	Max Tension	5	9.79	0.00	0.00
			Max. Compression	5	-9.89	0.00	0.00
			Max. Mx	14	-0.19	0.06	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Horizontal	Max Tension	5	6.86	0.00	0.00
			Max. Compression	11	-6.85	-0.02	-0.00
			Max. Mx	17	-0.62	-0.05	-0.00
			Max. My	6	0.71	-0.00	0.02
			Max. Vy	17	0.03	-0.05	-0.00
			Max. Vx	6	-0.00	0.00	0.00
		Inner Bracing	Max Tension	6	0.01	0.00	0.00
			Max. Compression	8	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
T5	141.896 - 121.688	Leg	Max Tension	4	113.61	-0.90	0.03
			Max. Compression	6	-138.25	0.58	-0.02
			Max. Mx	12	87.98	-1.40	0.03
			Max. My	3	-15.62	-0.33	-1.08

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	12	-0.48	-1.40	0.03
			Max. Vx	7	-0.45	-0.00	-1.07
		Diagonal	Max Tension	11	12.82	0.00	0.00
			Max. Compression	11	-12.96	0.00	0.00
			Max. Mx	14	-0.03	0.12	0.00
			Max. Vy	14	-0.04	0.00	0.00
		Horizontal	Max Tension	5	7.73	0.00	0.00
			Max. Compression	11	-7.73	-0.03	-0.00
			Max. Mx	17	0.75	-0.06	-0.00
			Max. My	10	0.14	-0.00	0.02
			Max. Vy	17	-0.03	-0.06	-0.00
			Max. Vx	10	-0.00	-0.00	0.02
		Inner Bracing	Max Tension	10	0.00	0.00	0.00
			Max. Compression	8	-0.01	0.00	0.00
			Max. Mx	14	-0.00	-0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
T6	121.688 - 101.479	Leg	Max Tension	4	141.64	-0.61	-0.01
			Max. Compression	6	-170.63	0.88	-0.07
			Max. Mx	4	141.28	-0.91	-0.02
			Max. My	7	-9.54	-0.03	-0.94
			Max. Vy	4	0.12	-0.91	-0.02
			Max. Vx	13	-0.13	-0.03	0.94
		Diagonal	Max Tension	11	11.67	0.00	0.00
			Max. Compression	11	-11.85	0.00	0.00
			Max. Mx	14	-0.07	0.15	0.00
			Max. Vy	14	-0.04	0.00	0.00
		Horizontal	Max Tension	5	7.75	0.00	0.00
			Max. Compression	11	-7.75	-0.04	-0.00
			Max. Mx	17	0.88	-0.07	-0.00
			Max. My	10	1.24	-0.01	0.01
			Max. Vy	17	-0.04	-0.07	-0.00
			Max. Vx	10	0.00	0.00	0.00
		Inner Bracing	Max Tension	10	0.00	0.00	0.00
			Max. Compression	12	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.06	0.00
			Max. Vy	14	0.03	0.00	0.00
T7	101.479 - 81.2708	Leg	Max Tension	4	166.58	-0.59	-0.00
			Max. Compression	6	-200.27	0.75	-0.04
			Max. Mx	4	154.24	-0.91	-0.02
			Max. My	7	-10.50	-0.03	-0.94
			Max. Vy	4	-0.12	-0.91	-0.02
			Max. Vx	13	0.13	-0.03	0.94
		Diagonal	Max Tension	11	11.61	0.00	0.00
			Max. Compression	11	-11.90	0.00	0.00
			Max. Mx	14	-0.16	0.22	0.00
			Max. Vy	14	-0.06	0.00	0.00
		Horizontal	Max Tension	5	8.43	0.00	0.00
			Max. Compression	11	-8.43	-0.07	-0.00
			Max. Mx	17	1.01	-0.13	-0.00
			Max. My	10	-0.00	-0.02	0.02
			Max. Vy	17	0.06	-0.13	-0.00
			Max. Vx	10	-0.00	-0.02	0.02
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.10	0.00
			Max. Vy	14	0.04	0.00	0.00
T8	81.2708 - 61	Leg	Max Tension	4	189.73	-1.23	-0.01
			Max. Compression	6	-228.57	0.72	-0.04
			Max. Mx	4	178.21	-1.23	-0.01
			Max. My	7	-13.68	-0.04	-1.13
			Max. Vy	4	0.15	-1.23	-0.01
			Max. Vx	7	0.15	-0.04	-1.13
		Diagonal	Max Tension	11	11.41	0.00	0.00
			Max. Compression	11	-11.82	0.00	0.00
			Max. Mx	14	-0.23	0.27	0.00
			Max. Vy	14	-0.07	0.00	0.00
		Horizontal	Max Tension	5	8.87	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	11	-8.87	-0.09	-0.00
			Max. Mx	17	1.14	-0.16	-0.00
			Max. My	10	1.22	-0.05	0.02
			Max. Vy	17	-0.07	-0.16	-0.00
			Max. Vx	10	0.00	-0.05	0.02
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.16	0.00
			Max. Vy	14	-0.06	0.00	0.00
T9	61 - 40.6667	Leg	Max Tension	4	212.19	-1.72	0.00
			Max. Compression	6	-256.43	-2.42	-0.15
			Max. Mx	6	-256.43	-2.42	-0.15
			Max. My	13	-18.51	-0.49	3.21
			Max. Vy	6	0.50	1.93	-0.00
			Max. Vx	13	-0.36	-0.49	3.21
		Diagonal	Max Tension	11	12.36	0.00	0.00
			Max. Compression	11	-12.83	0.00	0.00
			Max. Mx	14	-0.29	0.31	0.00
			Max. Vy	14	0.08	0.00	0.00
		Horizontal	Max Tension	5	10.07	0.00	0.00
			Max. Compression	11	-10.06	-0.11	-0.00
			Max. Mx	21	1.26	-0.19	-0.00
			Max. My	10	0.86	-0.07	0.02
			Max. Vy	21	-0.07	-0.19	-0.00
			Max. Vx	10	-0.00	-0.07	0.02
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-0.01	0.00	0.00
			Max. Mx	14	-0.01	-0.20	0.00
			Max. Vy	14	0.07	0.00	0.00
T10	40.6667 - 20.3333	Leg	Max Tension	4	221.60	1.36	-0.03
			Max. Compression	6	-268.89	-7.25	-0.31
			Max. Mx	6	-268.65	8.35	0.24
			Max. My	13	-20.60	-1.03	5.14
			Max. Vy	6	1.59	8.35	0.24
			Max. Vx	13	-0.87	-1.03	5.14
		Diagonal	Max Tension	11	17.16	-0.15	-0.03
			Max. Compression	11	-18.09	0.00	0.00
			Max. Mx	12	13.84	-0.18	0.06
			Max. My	11	-18.01	0.01	-0.10
			Max. Vy	25	-0.05	-0.13	0.01
			Max. Vx	11	0.01	0.00	0.00
		Horizontal	Max Tension	5	9.97	0.00	0.00
			Max. Compression	11	-9.97	-0.17	-0.00
			Max. Mx	21	-1.37	-0.28	-0.01
			Max. My	10	1.57	-0.10	0.02
			Max. Vy	21	0.10	-0.28	-0.01
			Max. Vx	10	0.00	-0.10	0.02
		Redund Horz 1 Bracing	Max Tension	6	4.67	0.00	0.00
			Max. Compression	6	-4.67	0.00	0.00
			Max. Mx	14	0.74	0.03	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	6	4.31	0.00	0.00
			Max. Compression	6	-4.31	0.00	0.00
			Max. Mx	14	0.73	0.05	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	11	0.01	0.00	0.00
			Max. Compression	5	-0.02	0.00	0.00
			Max. Mx	14	-0.01	0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
		Redund Hip Diagonal Bracing	Max Tension	6	0.06	0.00	0.00
			Max. Compression	12	-0.06	0.00	0.00
			Max. Mx	14	0.04	0.20	0.00
			Max. Vy	14	-0.05	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	19	-0.01	0.00	0.00
			Max. Mx	14	-0.01	0.23	0.00
			Max. Vy	14	-0.07	0.00	0.00
T11	20.3333 - 0	Leg	Max Tension	4	268.14	1.40	0.01
			Max. Compression	6	-326.43	0.00	0.00
			Max. Mx	6	-294.48	7.88	0.20
			Max. My	13	-22.59	-1.03	5.14
			Max. Vy	10	-17.95	0.00	0.00
			Max. Vx	13	-6.90	0.00	0.00
		Diagonal	Max Tension	11	20.13	-0.14	-0.02
			Max. Compression	11	-21.04	0.00	0.00
			Max. Mx	3	10.04	-0.18	0.03
			Max. My	11	-20.96	-0.02	-0.10
			Max. Vy	24	0.06	-0.14	-0.00
			Max. Vx	11	-0.01	0.00	0.00
		Horizontal	Max Tension	5	12.28	0.00	0.00
			Max. Compression	11	-12.28	-0.21	-0.00
			Max. Mx	21	1.69	-0.30	-0.01
			Max. My	10	-0.36	-0.14	0.02
			Max. Vy	21	-0.10	-0.30	-0.01
			Max. Vx	10	0.00	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	6	5.66	0.00	0.00
			Max. Compression	6	-5.66	0.00	0.00
			Max. Mx	14	0.87	0.03	0.00
			Max. Vy	14	-0.02	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	6	4.88	0.00	0.00
			Max. Compression	6	-4.88	0.00	0.00
			Max. Mx	14	0.80	0.06	0.00
			Max. Vy	14	0.02	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	11	0.01	0.00	0.00
			Max. Compression	5	-0.02	0.00	0.00
			Max. Mx	14	-0.01	0.03	0.00
			Max. Vy	14	0.02	0.00	0.00
		Redund Hip Diagonal Bracing	Max Tension	6	0.06	0.00	0.00
			Max. Compression	12	-0.06	0.00	0.00
			Max. Mx	14	0.04	0.23	0.00
			Max. Vy	14	-0.06	0.00	0.00
		Inner Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-0.01	0.00	0.00
			Max. Mx	14	-0.01	0.29	0.00
			Max. Vy	14	0.08	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	321.12	33.09	-18.93
	Max. H_x	10	321.12	33.09	-18.93
	Max. H_z	3	-228.16	-23.35	17.33
	Min. Vert	4	-266.56	-29.11	16.65
	Min. H_x	4	-266.56	-29.11	16.65
	Min. H_z	9	278.29	26.78	-19.30
Leg B	Max. Vert	6	324.68	-33.35	-18.61
	Max. H_x	12	-263.23	29.30	16.22
	Max. H_z	13	-224.99	23.72	16.63
	Min. Vert	12	-263.23	29.30	16.22
	Min. H_x	6	324.68	-33.35	-18.61
	Min. H_z	7	281.99	-27.21	-18.71
Leg A	Max. Vert	2	324.01	-0.41	38.14
	Max. H_x	11	28.72	5.94	2.07

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_z	2	324.01	-0.41	38.14
	Min. Vert	8	-262.99	0.46	-33.44
	Min. H_x	5	27.86	-5.87	1.99
	Min. H_z	8	-262.99	0.46	-33.44

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	81.80	0.00	0.00	-25.83	-51.69	0.00
Dead+Wind 0 deg - No Ice	81.80	-0.05	-63.79	-7720.22	-42.72	-23.18
Dead+Wind 30 deg - No Ice	81.80	31.46	-54.50	-6616.74	-3853.30	-9.13
Dead+Wind 60 deg - No Ice	81.80	54.33	-31.27	-3807.46	-6628.89	7.14
Dead+Wind 90 deg - No Ice	81.80	63.02	0.06	-15.30	-7674.23	21.38
Dead+Wind 120 deg - No Ice	81.80	55.32	31.91	3823.60	-6727.05	30.41
Dead+Wind 150 deg - No Ice	81.80	31.51	54.48	6561.04	-3864.27	30.20
Dead+Wind 180 deg - No Ice	81.80	0.05	62.62	7551.49	-61.71	22.48
Dead+Wind 210 deg - No Ice	81.80	-31.47	54.49	6562.81	3752.17	9.01
Dead+Wind 240 deg - No Ice	81.80	-55.33	31.87	3816.87	6624.25	-7.33
Dead+Wind 270 deg - No Ice	81.80	-63.01	-0.06	-37.65	7569.52	-21.37
Dead+Wind 300 deg - No Ice	81.80	-54.31	-31.32	-3817.49	6522.95	-29.53
Dead+Wind 330 deg - No Ice	81.80	-31.51	-54.48	-6612.84	3760.28	-30.25
Dead+Ice+Temp	150.98	0.00	0.00	26.54	22.23	0.00
Dead+Wind 0 deg+Ice+Temp	150.98	0.00	-20.70	-2406.93	22.36	-7.11
Dead+Wind 30 deg+Ice+Temp	150.98	9.55	-16.51	-1942.88	-1117.10	-2.12
Dead+Wind 60 deg+Ice+Temp	150.98	16.08	-9.25	-1082.67	-1906.73	2.51
Dead+Wind 90 deg+Ice+Temp	150.98	19.10	0.00	27.03	-2257.51	6.67
Dead+Wind 120 deg+Ice+Temp	150.98	17.97	10.34	1242.14	-2090.43	10.15
Dead+Wind 150 deg+Ice+Temp	150.98	9.54	16.49	1993.15	-1116.29	8.72
Dead+Wind 180 deg+Ice+Temp	150.98	0.00	18.50	2244.86	21.86	5.96
Dead+Wind 210 deg+Ice+Temp	150.98	-9.55	16.51	1995.45	1162.06	2.10
Dead+Wind 240 deg+Ice+Temp	150.98	-17.98	10.36	1243.91	2136.92	-3.06
Dead+Wind 270 deg+Ice+Temp	150.98	-19.10	-0.00	25.77	2301.66	-6.67
Dead+Wind 300 deg+Ice+Temp	150.98	-16.06	-9.25	-1081.65	1948.70	-8.45
Dead+Wind 330 deg+Ice+Temp	150.98	-9.54	-16.49	-1940.09	1160.61	-8.73
Dead+Wind 0 deg - Service	81.80	-0.02	-22.07	-2688.25	-48.58	-8.02
Dead+Wind 30 deg - Service	81.80	10.88	-18.86	-2306.42	-1367.12	-3.16
Dead+Wind 60 deg - Service	81.80	18.80	-10.82	-1334.36	-2327.54	2.47
Dead+Wind 90 deg - Service	81.80	21.81	0.02	-22.19	-2689.24	7.40
Dead+Wind 120 deg - Service	81.80	19.14	11.04	1306.15	-2361.50	10.52
Dead+Wind 150 deg - Service	81.80	10.90	18.85	2253.36	-1370.92	10.45
Dead+Wind 180 deg - Service	81.80	0.02	21.67	2596.08	-55.15	7.78
Dead+Wind 210 deg - Service	81.80	-10.89	18.85	2253.97	1264.53	3.12
Dead+Wind 240 deg - Service	81.80	-19.14	11.03	1303.82	2258.33	-2.54
Dead+Wind 270 deg - Service	81.80	-21.80	-0.02	-29.92	2585.41	-7.39
Dead+Wind 300 deg -	81.80	-18.79	-10.84	-1337.83	2223.27	-10.22

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
Service Dead+Wind 330 deg - Service	81.80	-10.90	-18.85	-2305.08	1267.33	-10.47

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-81.80	0.00	0.00	81.80	0.00	0.000%
2	-0.05	-81.80	-63.79	0.05	81.80	63.79	0.000%
3	31.46	-81.80	-54.50	-31.46	81.80	54.50	0.000%
4	54.33	-81.80	-31.27	-54.33	81.80	31.27	0.000%
5	63.02	-81.80	0.06	-63.02	81.80	-0.06	0.000%
6	55.32	-81.80	31.91	-55.32	81.80	-31.91	0.000%
7	31.51	-81.80	54.48	-31.51	81.80	-54.48	0.000%
8	0.05	-81.80	62.62	-0.05	81.80	-62.62	0.000%
9	-31.47	-81.80	54.49	31.47	81.80	-54.49	0.000%
10	-55.33	-81.80	31.87	55.33	81.80	-31.87	0.000%
11	-63.01	-81.80	-0.06	63.01	81.80	0.06	0.000%
12	-54.31	-81.80	-31.32	54.31	81.80	31.32	0.000%
13	-31.51	-81.80	-54.48	31.51	81.80	54.48	0.000%
14	0.00	-150.98	0.00	0.00	150.98	0.00	0.000%
15	0.00	-150.98	-20.70	-0.00	150.98	20.70	0.000%
16	9.55	-150.98	-16.51	-9.55	150.98	16.51	0.000%
17	16.08	-150.98	-9.25	-16.08	150.98	9.25	0.000%
18	19.10	-150.98	0.00	-19.10	150.98	-0.00	0.000%
19	17.97	-150.98	10.34	-17.97	150.98	-10.34	0.000%
20	9.54	-150.98	16.49	-9.54	150.98	-16.49	0.000%
21	0.00	-150.98	18.50	-0.00	150.98	-18.50	0.000%
22	-9.55	-150.98	16.51	9.55	150.98	-16.51	0.000%
23	-17.98	-150.98	10.36	17.98	150.98	-10.36	0.000%
24	-19.10	-150.98	-0.00	19.10	150.98	0.00	0.000%
25	-16.06	-150.98	-9.25	16.06	150.98	9.25	0.000%
26	-9.54	-150.98	-16.49	9.54	150.98	16.49	0.000%
27	-0.02	-81.80	-22.07	0.02	81.80	22.07	0.000%
28	10.88	-81.80	-18.86	-10.88	81.80	18.86	0.000%
29	18.80	-81.80	-10.82	-18.80	81.80	10.82	0.000%
30	21.81	-81.80	0.02	-21.81	81.80	-0.02	0.000%
31	19.14	-81.80	11.04	-19.14	81.80	-11.04	0.000%
32	10.90	-81.80	18.85	-10.90	81.80	-18.85	0.000%
33	0.02	-81.80	21.67	-0.02	81.80	-21.67	0.000%
34	-10.89	-81.80	18.85	10.89	81.80	-18.85	0.000%
35	-19.14	-81.80	11.03	19.14	81.80	-11.03	0.000%
36	-21.80	-81.80	-0.02	21.80	81.80	0.02	0.000%
37	-18.79	-81.80	-10.84	18.79	81.80	10.84	0.000%
38	-10.90	-81.80	-18.85	10.90	81.80	18.85	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 - 202.458	5.617	29	0.2323	0.0460
T2	202.458 - 182.292	5.118	29	0.2321	0.0455
T3	182.292 - 162.104	4.116	29	0.2220	0.0399
T4	162.104 - 141.896	3.173	29	0.2004	0.0295
T5	141.896 -	2.349	30	0.1709	0.0211

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
	121.688				
T6	121.688 - 101.479	1.683	31	0.1378	0.0154
T7	101.479 - 81.2708	1.142	31	0.1104	0.0112
T8	81.2708 - 61	0.727	31	0.0825	0.0086
T9	61 - 40.6667	0.413	31	0.0585	0.0063
T10	40.6667 - 20.3333	0.192	35	0.0348	0.0042
T11	20.3333 - 0	0.066	35	0.0173	0.0020

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212'	Flash Beacon Lighting	29	5.586	0.2323	0.0460	181094
208'	(2) LPA-80080/6CF w/ Mount Pipe	29	5.391	0.2324	0.0459	181094
199'	APXVSPP18-C-A20 w/ Mount Pipe	29	4.946	0.2313	0.0451	165068
189'	(2) 7770.00 w/ Mount Pipe	29	4.447	0.2268	0.0425	103707
183'	APXV18-206517LS w/ Mount Pipe	29	4.151	0.2226	0.0402	55953
179'	HPD2-23	29	3.956	0.2193	0.0384	53530
175'	(4) DB844H90E-XY w/ Mount Pipe	29	3.765	0.2155	0.0363	50609
167'	1151-3	29	3.393	0.2067	0.0320	39573
164'	1151-3	29	3.258	0.2030	0.0305	36602
162'	SD310-HL	29	3.169	0.2003	0.0294	35217
147'	1151-3	30	2.543	0.1790	0.0229	29647
145'	SD310-HL	30	2.466	0.1759	0.0222	28495
139'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	30	2.244	0.1662	0.0201	28260
128'	1142-2C	30	1.876	0.1478	0.0170	37913
110'	Side Lighting	31	1.355	0.1217	0.0128	38896
51'	GPS_A	31	0.292	0.0465	0.0052	51494

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	212.625 - 202.458	15.631	2	0.6392	0.1330
T2	202.458 - 182.292	14.256	2	0.6384	0.1317
T3	182.292 - 162.104	11.495	6	0.6084	0.1155
T4	162.104 - 141.896	8.941	6	0.5446	0.0854
T5	141.896 - 121.688	6.672	6	0.4678	0.0611
T6	121.688 - 101.479	4.807	6	0.3826	0.0447
T7	101.479 - 81.2708	3.270	6	0.3097	0.0325
T8	81.2708 - 61	2.087	6	0.2331	0.0249
T9	61 - 40.6667	1.189	6	0.1662	0.0182
T10	40.6667 - 20.3333	0.554	10	0.0993	0.0119

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T11	20.3333 - 0	0.187	10	0.0495	0.0057

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
212'	Flash Beacon Lighting	2	15.547	0.6392	0.1330	65139
208'	(2) LPA-80080/6CF w/ Mount Pipe	2	15.008	0.6395	0.1327	65139
199'	APXVSPP18-C-A20 w/ Mount Pipe	2	13.782	0.6362	0.1304	58729
189'	(2) 7770.00 w/ Mount Pipe	2	12.405	0.6229	0.1231	40500
183'	APXV18-206517LS w/ Mount Pipe	6	11.589	0.6102	0.1164	21131
179'	HPD2-23	6	11.062	0.5998	0.1110	19256
175'	(4) DB844H90E-XY w/ Mount Pipe	6	10.544	0.5882	0.1052	18541
167'	1151-3	6	9.537	0.5620	0.0928	16250
164'	1151-3	6	9.170	0.5515	0.0882	15503
162'	SD310-HL	6	8.928	0.5442	0.0852	15004
147'	1151-3	6	7.209	0.4878	0.0663	11471
145'	SD310-HL	6	6.995	0.4800	0.0642	11039
139'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	6	6.381	0.4559	0.0584	10982
128'	1142-2C	6	5.351	0.4087	0.0492	14418
110'	Side Lighting	6	3.877	0.3399	0.0371	14166
51'	GPS_A	6	0.842	0.1322	0.0151	18212

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	212.625	Leg	A325N	0.7500	4	0.00	19.44	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	0.94	6.44	0.145 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	1.02	6.44	0.158 ✔	1.333	Bolt Shear
T2	202.458	Leg	A325N	0.8750	4	4.21	26.45	0.159 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.03	6.44	0.470 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	2.47	6.44	0.384 ✔	1.333	Bolt Shear
T3	182.292	Leg	A325N	1.0000	4	12.77	34.56	0.370 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.28	6.44	0.508 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.08	6.44	0.478 ✔	1.333	Bolt Shear
T4	162.104	Leg	A325N	1.0000	6	14.71	34.56	0.426 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.30	6.44	0.512 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.43	6.44	0.532 ✔	1.333	Bolt Shear
T5	141.896	Leg	A325N	1.0000	6	18.93	34.56	0.548 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	4.32	6.44	0.671 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	3.87	6.44	0.600 ✔	1.333	Bolt Shear
T6	121.688	Leg	A325N	1.0000	6	23.61	34.56	0.683 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.95	6.44	0.613 ✔	1.333	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Horizontal	A325N	0.6250	2	3.88	6.44	0.602 ✔	1.333	Bolt Shear
T7	101.479	Leg	A325N	1.0000	8	20.82	34.56	0.603 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.97	6.44	0.616 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	4.21	6.44	0.654 ✔	1.333	Bolt Shear
T8	81.2708	Leg	A325N	1.0000	8	23.72	34.56	0.686 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	3.94	6.44	0.611 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	4.43	6.44	0.688 ✔	1.333	Bolt Shear
T9	61	Leg	A325N	1.0000	8	26.52	34.56	0.768 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	3	4.28	6.44	0.664 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.6250	2	5.03	6.44	0.781 ✔	1.333	Bolt Shear
T10	40.6667	Leg	A325N	1.0000	8	27.61	34.56	0.799 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	6.03	9.28	0.650 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	4.98	9.28	0.537 ✔	1.333	Bolt Shear
T11	20.3333	Leg	A354-BC	1.0000	10	26.81	32.40	0.828 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	7.01	9.28	0.756 ✔	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	6.14	9.28	0.662 ✔	1.333	Bolt Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	212.625 - 202.458	ROHN 2.5 STD	10'2-1/32"	5'31/32"	64.4 K=1.00	21.955	1.7040	-2.55	37.41	0.068 ✔
T2	202.458 - 182.292	ROHN 3 EH	20'2-1/32"	6'8-5/8"	71.0 K=1.00	20.754	3.0159	-23.75	62.59	0.380 ✔
T3	182.292 - 162.104	ROHN 4 EH	20'2-5/8"	6'8-7/8"	54.8 K=1.00	23.588	4.4074	-62.87	103.96	0.605 ✔
T4	162.104 - 141.896	ROHN 5 EH	20'2-7/8"	6'9"	44.0 K=1.00	25.253	6.1120	-109.36	154.35	0.709 ✔
T5	141.896 - 121.688	ROHN 6 EHS	20'3"	10'1-9/16"	54.6 K=1.00	23.618	6.7133	-138.25	158.55	0.872 ✔
T6	121.688 - 101.479	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4 K=1.00	23.490	8.4049	-170.63	197.43	0.864 ✔
T7	101.479 - 81.2708	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4 K=1.00	23.490	8.4049	-200.27	197.43	1.014 ✔
T8	81.2708 - 61	ROHN 8 EHS	20'3-31/32"	10'1-29/32"	41.8 K=1.00	25.581	9.7193	-228.57	248.63	0.919 ✔
T9	61 - 40.6667	ROHN 8 EHS	20'4-9/16"	10'2-9/32"	41.9 K=1.00	25.564	9.7193	-256.43	248.47	1.032 ✔
T10	40.6667 - 20.3333	ROHN 8 EH	20'4-11/16"	10'2-13/32"	42.5 K=1.00	25.475	12.7627	-268.89	325.13	0.827 ✔
T11	20.3333 - 0	ROHN 8 EH	20'4-7/16"	10'1-11/16"	42.3 K=1.00	25.505	12.7627	-326.43	325.52	1.003 ✔

* DL controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 2 STD	6'7-11/16"	6'5-13/32"	98.4 K=1.00	15.079	1.0745	-2.81	16.20	0.173 ✓
T2	202.458 - 182.292	ROHN 2 STD	7'11-7/8"	7'8-5/8"	117.6 K=1.00	10.790	1.0745	-9.09	11.59	0.784 ✓
T3	182.292 - 162.104	ROHN 2 STD	8'7-3/16"	8'3-19/32"	126.5 K=1.00	9.325	1.0745	-9.81	10.02	0.980 ✓
T4	162.104 - 141.896	ROHN 2 STD	9'3-15/32"	8'11-13/32"	136.5 K=1.00	8.013	1.0745	-9.75	8.61	1.133 ✓
T5	141.896 - 121.688	ROHN 2.5 STD	12'7-3/16"	12'1-11/16"	153.7 K=1.00	6.318	1.7040	-12.87	10.77	1.196 ✓
T6	121.688 - 101.479	ROHN 2.5 STD	13'4-9/16"	12'11-17/32"	164.2 K=1.00	5.539	1.7040	-11.74	9.44	1.244 ✓
T7	101.479 - 81.2708	ROHN 3 STD	14'2-7/8"	13'10-3/32"	142.8 K=1.00	7.327	2.2285	-11.89	16.33	0.729 ✓
T8	81.2708 - 61	ROHN 3 STD	15'2-17/32"	14'8-3/4"	151.9 K=1.00	6.470	2.2285	-11.82	14.42	0.819 ✓
T9	61 - 40.6667	ROHN 3 STD	16'2-9/32"	15'8-5/8"	162.2 K=1.00	5.679	2.2285	-12.83	12.66	1.013 ✓
T10	40.6667 - 20.3333	ROHN 3 STD	24'7-13/16"	12'3-31/32"	127.1 K=1.00	9.242	2.2285	-18.09	20.59	0.878 ✓
T11	20.3333 - 0	ROHN 3 STD	25'2-5/8"	12'7-5/16"	130.0 K=1.00	8.831	2.2285	-21.04	19.68	1.069 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6-1/4"	4'1-11/16"	79.8 K=1.00	19.051	0.7995	-2.03	15.23	0.133 ✓
T2	202.458 - 182.292	ROHN 1.5 STD	8'7-3/16"	4'1-13/16"	80.0 K=1.00	19.004	0.7995	-4.95	15.19	0.326 ✓
T3	182.292 - 162.104	ROHN 1.5 STD	10'1/8"	4'9-27/32"	92.9 K=1.00	16.310	0.7995	-6.17	13.04	0.473 ✓
T4	162.104 - 141.896	ROHN 2 STD	12'1-3/16"	5'9-27/32"	88.7 K=1.00	17.221	1.0745	-6.85	18.50	0.370 ✓
T5	141.896 - 121.688	ROHN 2 STD	13'11-1/32"	6'8-5/32"	101.9 K=1.00	14.269	1.0745	-7.73	15.33	0.504 ✓
T6	121.688 - 101.479	ROHN 2 STD	16'3-15/32"	7'10-7/16"	120.0 K=1.00	10.374	1.0745	-7.75	11.15	0.695 ✓
T7	101.479 - 81.2708	ROHN 2.5 STD	18'9-15/32"	9'1-7/16"	115.5 K=1.00	11.192	1.7040	-8.43	19.07	0.442 ✓
T8	81.2708 - 61	ROHN 2.5 STD	21'4-5/16"	10'3-27/32"	130.7 K=1.00	8.739	1.7040	-8.87	14.89	0.595 ✓
T9	61 - 40.6667	ROHN 2.5 STD	23'11-5/32"	11'7-3/16"	147.0 K=1.00	6.913	1.7040	-10.07	11.78	0.854 ✓
T10	40.6667 - 20.3333	ROHN 3 STD	25'2-5/32"	12'2-3/4"	126.1 K=1.00	9.388	2.2285	-9.97	20.92	0.476 ✓
T11	20.3333 - 0	ROHN 3 STD	27'9-31/32"	13'6-23/32"	139.8 K=1.00	7.639	2.2285	-12.28	17.02	0.721 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6 K=1.00	19.091	0.7995	-0.18	15.26	0.012 ✔

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	5'11-5/32"	114.4 K=1.00	11.073	0.7995	-4.67	8.85	0.528 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-17/32"	6'7-3/16"	127.2 K=1.00	9.231	0.7995	-5.66	7.38	0.767 ✔

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2 STD	11'7-9/16"	10'10-11/16"	166.0 K=1.00	5.420	1.0745	-4.31	5.82	0.741 ✔
T11	20.3333 - 0	ROHN 2 STD	11'11-7/8"	11'3-27/32"	172.5 K=1.00	5.018	1.0745	-4.88	5.39	0.905 ✔

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	6'3-15/32"	121.3 K=1.00	10.093	0.7995	-0.02	8.07	0.003 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-17/32"	6'11-17/32"	134.1 K=1.00	8.302	0.7995	-0.02	6.64	0.003 ✔

Redundant Hip Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2.5 STD	15'2-13/32"	15'2-13/32"	192.6 K=1.00	4.027	1.7040	-0.05	6.86	0.008 ✔
T11	20.3333 - 0	ROHN 2.5 STD	15'11-7/8"	15'11-7/8"	202.6 K=1.00	3.639	1.7040	-0.05	6.20	0.008 ✔

* DL controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	L2x2x1/8	4'3"	4'3"	128.3 K=1.00	9.074	0.4844	-0.00	4.39	0.001 ✓
T2	202.458 - 182.292	L2x2x1/8	4'3-19/32"	4'3-19/32"	129.8 K=1.00	8.870	0.4844	-0.01	4.30	0.001 ✓
T3	182.292 - 162.104	L2x2x1/8	4'7-29/32"	4'7-29/32"	140.7 K=1.00	7.548	0.4844	-0.01	3.66	0.002 ✓
T4	162.104 - 141.896	L2x2x1/8	6'19/32"	6'19/32"	182.6 K=1.00	4.480	0.4844	-0.01	2.17	0.003 ✓
T5	141.896 - 121.688	L2x2x1/8	6'11-17/32"	6'11-17/32"	210.0 K=1.00	3.385	0.4844	-0.01	1.64	0.004 ✓
T6	121.688 - 101.479	L2 1/2x2 1/2x3/16	8'1-13/16"	8'1-13/16"	197.5 K=1.00	3.829	0.9020	-0.01	3.45	0.002* ✓
T7	101.479 - 81.2708	L3x3x3/16	9'4-13/16"	9'4-13/16"	189.2 K=1.00	4.173	1.0900	-0.01	4.55	0.002* ✓
T8	81.2708 - 61	L3 1/2x3 1/2x1/4	10'8-5/32"	10'8-5/32"	184.7 K=1.00	4.379	1.6900	-0.01	7.40	0.001* ✓
T9	61 - 40.6667	L3 1/2x3 1/2x1/4	11'11-17/32"	11'11-17/32"	206.9 K=1.00	3.490	1.6900	-0.01	5.90	0.002* ✓
T10	40.6667 - 20.3333	ROHN 3 STD	12'7-3/32"	12'7-3/32"	129.8 K=1.00	8.860	2.2285	-0.01	19.74	0.001* ✓
T11	20.3333 - 0	ROHN 3 STD	13'11-1/32"	13'11-1/32"	143.5 K=1.00	7.250	2.2285	-0.01	16.16	0.001* ✓

* DL controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T2	202.458 - 182.292	ROHN 3 EH	20'2-1/32"	6'8-5/8"	71.0	30.000	3.0159	16.86	90.48	0.186 ✓
T3	182.292 - 162.104	ROHN 4 EH	20'2-5/8"	6'8-7/8"	54.8	30.000	4.4074	51.08	132.22	0.386 ✓
T4	162.104 - 141.896	ROHN 5 EH	20'2-7/8"	6'9"	44.0	30.000	6.1120	88.25	183.36	0.481 ✓
T5	141.896 - 121.688	ROHN 6 EHS	20'3"	10'1-9/16"	54.6	30.000	6.7133	113.61	201.40	0.564 ✓
T6	121.688 - 101.479	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4	30.000	8.4049	141.64	252.15	0.562 ✓
T7	101.479 - 81.2708	ROHN 6 EH	20'3-1/8"	10'1-9/16"	55.4	30.000	8.4049	166.58	252.15	0.661 ✓
T8	81.2708 - 61	ROHN 8 EHS	20'3-31/32"	10'1-29/32"	41.8	30.000	9.7193	189.73	291.58	0.651 ✓
T9	61 - 40.6667	ROHN 8 EHS	20'4-9/16"	10'2-9/32"	41.9	30.000	9.7193	212.19	291.58	0.728 ✓
T10	40.6667 - 20.3333	ROHN 8 EH	20'4-11/16"	10'2-13/32"	42.5	30.000	12.7627	221.60	382.88	0.579

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T11	20.3333 - 0	ROHN 8 EH	20'4-7/16"	10'1-11/16"	42.3	30.000	12.7627	268.14	382.88	0.700 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 2 STD	6'7-11/16"	6'5-13/32"	98.4	30.000	1.0745	2.74	32.24	0.085 ✔
T2	202.458 - 182.292	ROHN 2 STD	7'11-7/8"	7'8-5/8"	117.6	30.000	1.0745	9.02	32.24	0.280 ✔
T3	182.292 - 162.104	ROHN 2 STD	8'4-11/16"	8'1-3/32"	123.3	30.000	1.0745	9.75	32.24	0.303 ✔
T4	162.104 - 141.896	ROHN 2 STD	9'23/32"	8'8-5/8"	132.9	30.000	1.0745	9.79	32.24	0.304 ✔
T5	141.896 - 121.688	ROHN 2.5 STD	12'3-1/4"	11'9-23/32"	149.6	30.000	1.7040	12.82	51.12	0.251 ✔
T6	121.688 - 101.479	ROHN 2.5 STD	12'11-3/4"	12'6-23/32"	159.1	30.000	1.7040	11.67	51.12	0.228 ✔
T7	101.479 - 81.2708	ROHN 3 STD	13'9-19/32"	13'4-29/32"	138.3	30.000	2.2285	11.61	66.85	0.174 ✔
T8	81.2708 - 61	ROHN 3 STD	15'2-17/32"	14'8-3/4"	151.9	30.000	2.2285	11.41	66.85	0.171 ✔
T9	61 - 40.6667	ROHN 3 STD	16'2-9/32"	15'8-5/8"	162.2	30.000	2.2285	12.36	66.85	0.185 ✔
T10	40.6667 - 20.3333	ROHN 3 STD	24'7-13/16"	12'3-31/32"	127.1	30.000	2.2285	17.16	66.85	0.257 ✔
T11	20.3333 - 0	ROHN 3 STD	25'2-5/8"	12'7-5/16"	130.0	30.000	2.2285	20.13	66.85	0.301 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6-1/4"	4'1-11/16"	79.8	30.000	0.7995	2.03	23.98	0.085 ✔
T2	202.458 - 182.292	ROHN 1.5 STD	8'7-3/16"	4'1-13/16"	80.0	30.000	0.7995	4.95	23.98	0.206 ✔
T3	182.292 - 162.104	ROHN 1.5 STD	10'1/8"	4'9-27/32"	92.9	30.000	0.7995	6.16	23.98	0.257 ✔
T4	162.104 - 141.896	ROHN 2 STD	12'1-3/16"	5'9-27/32"	88.7	30.000	1.0745	6.86	32.24	0.213 ✔
T5	141.896 - 121.688	ROHN 2 STD	13'11-1/32"	6'8-5/32"	101.9	30.000	1.0745	7.73	32.24	0.240 ✔
T6	121.688 - 101.479	ROHN 2 STD	16'3-15/32"	7'10-7/16"	120.0	30.000	1.0745	7.75	32.24	0.240 ✔
T7	101.479 - 81.2708	ROHN 2.5 STD	18'9-15/32"	9'1-7/16"	115.5	30.000	1.7040	8.43	51.12	0.165 ✔
T8	81.2708 - 61	ROHN 2.5 STD	21'4-5/16"	10'3-27/32"	130.7	30.000	1.7040	8.87	51.12	0.173 ✔
T9	61 - 40.6667	ROHN 2.5 STD	23'11-	11'7-	147.0	30.000	1.7040	10.07	51.12	0.197

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
			5/32"	3/16"						✔
T10	40.6667 - 20.3333	ROHN 3 STD	25'2-5/32"	12'2-3/4"	126.1	30.000	2.2285	9.97	66.85	0.149 ✔
T11	20.3333 - 0	ROHN 3 STD	27'9-31/32"	13'6-23/32"	139.8	30.000	2.2285	12.28	66.85	0.184 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	ROHN 1.5 STD	8'6"	4'1-9/16"	79.6	30.000	0.7995	0.18	23.98	0.007 ✔

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	5'11-5/32"	114.4	21.600	0.7995	4.67	17.27	0.270 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-17/32"	6'7-3/16"	127.2	21.600	0.7995	5.66	17.27	0.328 ✔

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2 STD	11'7-9/16"	10'10-11/16"	166.0	21.600	1.0745	4.31	23.21	0.186 ✔
T11	20.3333 - 0	ROHN 2 STD	11'11-7/8"	11'3-27/32"	172.5	21.600	1.0745	4.88	23.21	0.210 ✔

Redundant Hip (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 1.5 STD	6'3-15/32"	6'3-15/32"	121.3	21.600	0.7995	0.01	17.27	0.001 ✔
T11	20.3333 - 0	ROHN 1.5 STD	6'11-17/32"	6'11-17/32"	134.1	21.600	0.7995	0.01	17.27	0.001 ✔

Redundant Hip Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	40.6667 - 20.3333	ROHN 2.5 STD	15'2-13/32"	15'2-13/32"	192.6	21.600	1.7040	0.04	36.81	0.001* ✔
T11	20.3333 - 0	ROHN 2.5 STD	15'11-7/8"	15'11-7/8"	202.6	21.600	1.7040	0.04	36.81	0.001* ✔

* DL controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	212.625 - 202.458	L2x2x1/8	4'3"	4'3"	81.4	21.600	0.4844	0.00	10.46	0.000 ✔
T2	202.458 - 182.292	L2x2x1/8	4'3-19/32"	4'3-19/32"	82.4	21.600	0.4844	0.01	10.46	0.001 ✔
T3	182.292 - 162.104	L2x2x1/8	4'7-29/32"	4'7-29/32"	89.3	21.600	0.4844	0.00	10.46	0.000 ✔
T4	162.104 - 141.896	L2x2x1/8	5'4-3/16"	5'4-3/16"	102.6	21.600	0.4844	0.01	10.46	0.000 ✔
T5	141.896 - 121.688	L2x2x1/8	6'4-13/16"	6'4-13/16"	122.6	21.600	0.4844	0.00	10.46	0.000 ✔
T6	121.688 - 101.479	L2 1/2x2 1/2x3/16	7'6-1/4"	7'6-1/4"	116.0	21.600	0.9020	0.00	19.48	0.000 ✔

Section Capacity Table

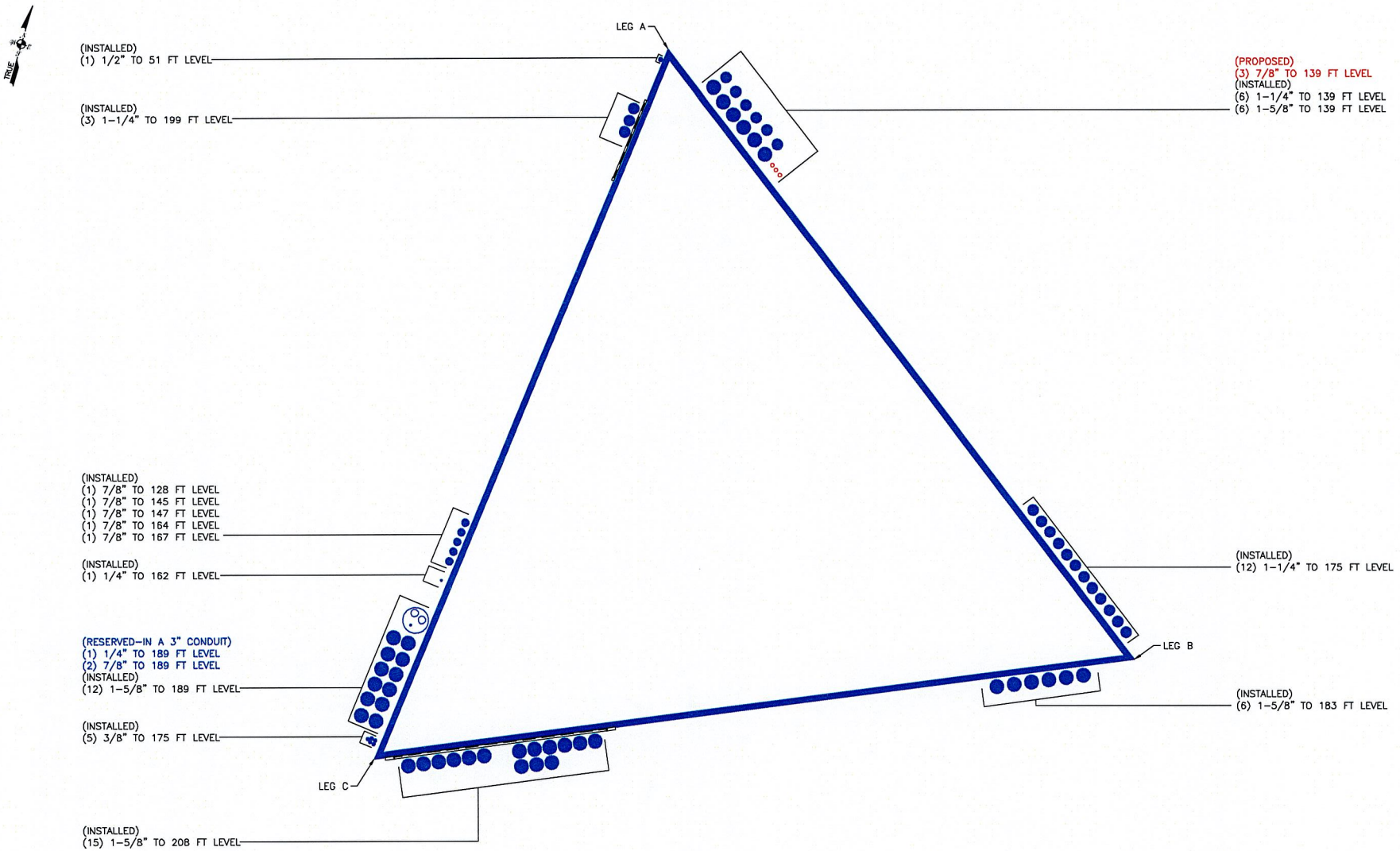
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	212.625 - 202.458	Leg	ROHN 2.5 STD	1	-2.13	37.41	8.4	Pass
T2	202.458 - 182.292	Leg	ROHN 3 EH	28	-23.75	83.44	28.5	Pass
T3	182.292 - 162.104	Leg	ROHN 4 EH	67	-62.87	138.58	45.4	Pass
T4	162.104 - 141.896	Leg	ROHN 5 EH	108	-109.36	205.75	53.2	Pass
T5	141.896 - 121.688	Leg	ROHN 6 EHS	146	-138.25	211.35	65.4	Pass
T6	121.688 - 101.479	Leg	ROHN 6 EH	173	-170.63	263.18	64.8	Pass
T7	101.479 - 81.2708	Leg	ROHN 6 EH	200	-200.27	263.18	76.1	Pass
T8	81.2708 - 61	Leg	ROHN 8 EHS	227	-228.57	331.42	69.0	Pass
T9	61 - 40.6667	Leg	ROHN 8 EHS	254	-256.43	331.21	77.4	Pass
T10	40.6667 - 20.3333	Leg	ROHN 8 EH	281	-268.89	433.40	62.0	Pass
T11	20.3333 - 0	Leg	ROHN 8 EH	314	-326.43	433.92	75.2	Pass
T1	212.625 - 202.458	Diagonal	ROHN 2 STD	9	-2.81	21.60	13.0	Pass
T2	202.458 - 182.292	Diagonal	ROHN 2 STD	33	-9.09	15.46	58.8	Pass
T3	182.292 - 162.104	Diagonal	ROHN 2 STD	72	-9.81	13.36	73.5	Pass
T4	162.104 - 141.896	Diagonal	ROHN 2 STD	110	-9.75	11.48	85.0	Pass
T5	141.896 - 121.688	Diagonal	ROHN 2.5 STD	149	-12.87	14.35	89.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T6	121.688 - 101.479	Diagonal	ROHN 2.5 STD	176	-11.74	12.58	93.3	Pass
T7	101.479 - 81.2708	Diagonal	ROHN 3 STD	203	-11.89	21.76	54.7	Pass
T8	81.2708 - 61	Diagonal	ROHN 3 STD	230	-11.82	19.22	61.5	Pass
T9	61 - 40.6667	Diagonal	ROHN 3 STD	257	-12.83	16.87	76.0	Pass
T10	40.6667 - 20.3333	Diagonal	ROHN 3 STD	284	-18.09	27.45	65.9	Pass
T11	20.3333 - 0	Diagonal	ROHN 3 STD	317	-21.04	26.23	80.2	Pass
T1	212.625 - 202.458	Horizontal	ROHN 1.5 STD	7	-2.03	20.30	10.0 11.8 (b)	Pass
T2	202.458 - 182.292	Horizontal	ROHN 1.5 STD	31	-4.95	20.25	24.4 28.8 (b)	Pass
T3	182.292 - 162.104	Horizontal	ROHN 1.5 STD	70	-6.17	17.38	35.5 35.9 (b)	Pass
T4	162.104 - 141.896	Horizontal	ROHN 2 STD	109	-6.85	24.67	27.8 39.9 (b)	Pass
T5	141.896 - 121.688	Horizontal	ROHN 2 STD	148	-7.73	20.44	37.8 45.0 (b)	Pass
T6	121.688 - 101.479	Horizontal	ROHN 2 STD	175	-7.75	14.86	52.2	Pass
T7	101.479 - 81.2708	Horizontal	ROHN 2.5 STD	202	-8.43	25.42	33.1 49.1 (b)	Pass
T8	81.2708 - 61	Horizontal	ROHN 2.5 STD	229	-8.87	19.85	44.7 51.6 (b)	Pass
T9	61 - 40.6667	Horizontal	ROHN 2.5 STD	256	-10.07	15.70	64.1	Pass
T10	40.6667 - 20.3333	Horizontal	ROHN 3 STD	283	-9.97	27.89	35.7 40.3 (b)	Pass
T11	20.3333 - 0	Horizontal	ROHN 3 STD	316	-12.28	22.69	54.1	Pass
T1	212.625 - 202.458	Top Girt	ROHN 1.5 STD	4	-0.18	20.34	0.9	Pass
T10	40.6667 - 20.3333	Redund Horz 1 Bracing	ROHN 1.5 STD	288	-4.67	11.80	39.6	Pass
T11	20.3333 - 0	Redund Horz 1 Bracing	ROHN 1.5 STD	325	-5.66	9.84	57.6	Pass
T10	40.6667 - 20.3333	Redund Diag 1 Bracing	ROHN 2 STD	289	-4.31	7.76	55.6	Pass
T11	20.3333 - 0	Redund Diag 1 Bracing	ROHN 2 STD	322	-4.88	7.19	67.9	Pass
T10	40.6667 - 20.3333	Redund Hip 1 Bracing	ROHN 1.5 STD	308	-0.02	10.76	0.2	Pass
T11	20.3333 - 0	Redund Hip 1 Bracing	ROHN 1.5 STD	341	-0.02	8.85	0.3	Pass
T10	40.6667 - 20.3333	Redund Hip Diagonal Bracing	ROHN 2.5 STD	307	-0.05	6.86	0.8	Pass
T11	20.3333 - 0	Redund Hip Diagonal Bracing	ROHN 2.5 STD	340	-0.05	6.20	0.8	Pass
T1	212.625 - 202.458	Inner Bracing	L2x2x1/8	16	-0.00	5.83	0.3	Pass
T2	202.458 - 182.292	Inner Bracing	L2x2x1/8	42	-0.01	5.73	0.3	Pass
T3	182.292 - 162.104	Inner Bracing	L2x2x1/8	79	-0.01	4.22	0.3	Pass
T4	162.104 - 141.896	Inner Bracing	L2x2x1/8	118	-0.01	2.89	0.4	Pass
T5	141.896 - 121.688	Inner Bracing	L2x2x1/8	157	-0.01	2.19	0.4	Pass
T6	121.688 - 101.479	Inner Bracing	L2 1/2x2 1/2x3/16	184	-0.01	3.45	0.5	Pass
T7	101.479 - 81.2708	Inner Bracing	L3x3x3/16	211	-0.01	4.55	0.5	Pass
T8	81.2708 - 61	Inner Bracing	L3 1/2x3 1/2x1/4	238	-0.01	7.40	0.4	Pass
T9	61 - 40.6667	Inner Bracing	L3 1/2x3 1/2x1/4	265	-0.01	5.90	0.4	Pass
T10	40.6667 - 20.3333	Inner Bracing	ROHN 3 STD	311	-0.01	19.74	0.4	Pass
T11	20.3333 - 0	Inner Bracing	ROHN 3 STD	345	-0.01	16.16	0.4	Pass
							Summary	
						Leg (T9)	77.4	Pass
						Diagonal (T6)	93.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
						Horizontal (T9)	64.1	Pass
						Top Girt (T1)	0.9	Pass
						Redund Horz 1 Bracing (T11)	57.6	Pass
						Redund Diag 1 Bracing (T11)	67.9	Pass
						Redund Hip 1 Bracing (T11)	0.3	Pass
						Redund Hip Diagonal Bracing (T11)	0.8	Pass
						Inner Bracing (T7)	0.5	Pass
						Bolt Checks	62.1	Pass
						RATING =	**93.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



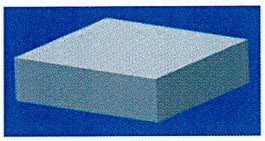
BUSINESS UNIT: 806363 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Unit Base Foundation

Checks capacity of square mat foundation with raised piers for a self-supporting tower



BU#: 806363
Site Name: HRT 105 943201
App Number: 207068 Rev. 1
TIA-222 Revision: F

Design Reactions		
Shear, **S**:	64.00	kips
Moment, **M**:	7738.00	ft-kips
Compression/leg, **Ca**:	325.00	kips
Uplift/leg, **Ua**:	267.00	kips
Tower Weight, **Wt**:	82.00	kips
Tower Height, **H**:	213	ft
Base Face Width, **w'**:	30	ft

Block Properties		
Depth, **D**:	4.0	ft
Pad Width, **W**:	40.25	ft
Ext. Above Grade, **E**:	0.5	ft
Neglected Depth, **N**:	3.3	ft
Pad Rebar Size, **Sp**:	7	
Pad Rebar Quantity, **mp**:	55	40

Base Plate Dimensions		
Base Plate Width, di:	12.0	in

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, δ**c**:	150	pcf
Clear Cover, **cc**:	3	in

Soil Properties		
Soil Unit Weight, γ:	105	pcf
Ultimate Bearing: **Bc**:	8.000	ksf
Cohesion, **Co**:	0.000	ksf
Friction Angle, φ:	35	degrees
Base Sliding, **μ**:	0.2	

Design Checks	*Capacity/ Availability*	*Demand/ Limits*	*Check*
Base Sliding (kips):	206.00	64.00	**31.1%**
Overturning (k-ft):	13863.21	7738.00	**55.8%**
Bearing (ksf):	6.00	1.62	**27.0%**
1-way Shear (kips):	1971.72	71.63	**3.6%**
2-way Shear (kips):	1582.25	422.50	**26.7%**
Pad moment capacity(k-ft):	7259.23	2236.89	**30.8%**

☐ Tower centroid is offset from foundation centroid

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

T-Mobile Existing Facility

Site ID: CT11030H

Clinton / I-95 / X62 / Rive1
48 Cow Hill Road
Clinton, CT 06413

February 4, 2014

EBI Project Number: 62140402

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

EBI Consulting
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February 4, 2014

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

Re: Emissions Values for Site: **CT11030H – Clinton / I-95 / X62 / Rive1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 48 Cow Hill Road, Clinton, CT, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter (µW/cm2). The general population exposure limit for the cellular band is 567 µW/cm2, and the general population exposure limit for the PCS band is 1000 µW/cm2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 48 Cow Hill Road, Clinton, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

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

1) 2 GSM channels (1935.000 MHz—to 1945.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

7) The antenna mounting height centerline of the proposed antennas is **140 feet** above ground level (AGL)
8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11030H - Clinton / I-95 / x62 / Rive 1
Site Addresss	48 Cow Hill Road, Clinton, CT 06313
Site Type	Self Support Tower

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	140	134	None	0	0	48.326044	0.967559	0.09676%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	140	134	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	140	134	1-5/8"	0	0	24.163022	0.48378	0.04838%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	140	134	1-5/8"	0	0	24.163022	0.48378	0.04838%
														Sector total Power Density Value:		0.194%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	140	134	None	0	0	48.326044	0.967559	0.09676%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	140	134	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	140	134	1-5/8"	0	0	24.163022	0.48378	0.04838%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	140	134	1-5/8"	0	0	24.163022	0.48378	0.04838%
														Sector total Power Density Value:		0.194%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	140	134	None	0	0	48.326044	0.967559	0.09676%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	140	134	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	140	134	1-5/8"	0	0	24.163022	0.48378	0.04838%
28	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	140	134	1-5/8"	0	0	24.163022	0.48378	0.04838%
														Sector total Power Density Value:		0.194%	

Site Composite MPE %

Carrier	MPE %
T-Mobile	0.581%
AT&T	6.510%
MetroPCS	2.050%
Nextel	1.860%
Verizon Wireless	7.700%
Town	6.900%
MediaFLO	6.630%
Sprint	2.540%
Total Site MPE %	**34.771%**

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Summary

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

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.581% (0.194% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **34.771%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

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