COHEN and WOLF P.C.
ATTORNEYS AT LAW

RACHEL A. SCHWARTZMAN

Please Reply To: Bridgeport
Writer's Direct Dial: (203) 337-4110
E-Mail: rschwartzman@cohenandwolf.com

October 24, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: Notice of Exempt Modification
Crown/T-Mobile co-location
Site ID CT11112H
845 Ethan Allan Highway, Ridgefield, CT

Dear Attorney Bachman:

This office represents T-Mobile Northeast LLC ("T-Mobile") and has been retained to file exempt modification filings with the Connecticut Siting Council on its behalf.

In this case, Crown owns the existing monopole flagpole telecommunications tower and related facility at 845 Ethan Allan Highway, Ridgefield, CT (41.31309197/-73.3724442). T-Mobile intends to replace three (3) existing antennas at the 97-foot centerline, replace three (3) existing antennas at the 87-foot centerline, and install/remove related equipment at this existing telecommunications facility in Ridgefield ("Ridgefield Facility"). Please accept this letter as notification, pursuant to R.C.S.A. §16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R. C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman, Rudy Marconi, and the property owner, the Siena Company.

The existing Ridgefield Facility consists of a 100-foot monopole flagpole tower.[1] T-Mobile plans to replace three (3) existing antennas on mounting pipes at the 97-foot centerline, replace three (3) existing antennas on mounting pipes at the 87-foot centerline, and install six (6) tower-mounted amplifiers (TMAs) to the cabinet. T-Mobile will also install a new equipment cabinet to replace the existing cabinet, reuse existing coax cable in the existing flagpole, and reuse existing coax cable in the existing ice bridge. (See the plans revised to October 23, 2014 attached hereto as **Exhibit A**). The existing Ridgefield Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated August 20, 2014, and attached hereto as **Exhibit B**.

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for approval of this structure, it does reference this structure in connection with a notices of intent captioned EM-SPRINT-118-010427, EM-CING-118-080730, EM-CING-118-111107, EM-AT&T-118-131030

COHEN and WOLF P.C.
ATTORNEYS AT LAW

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

1. The proposed modification will not increase the height of the tower. T-Mobile's existing antennas are at a centerline of 87 feet and 97 feet; the replacement antennas will be installed at the same 97-foot and 87-foot level. The enclosed tower drawing confirms that the proposed modification will not increase the height of the tower.

2. The proposed modifications will not require an extension on the site boundaries or lease area, as depicted on Sheet 2 of Exhibit A. T-Mobile's equipment will be located entirely within the existing compound area.

3. The proposed modification to the Facility will not increase the noise levels at the existing facility by six decibels or more.

4. The operation of the replacement antennas and equipment will not increase the total radio frequency (RF) power density, measured at the base of the tower, to a level at or above the applicable standard. According to a Radio Frequency Emissions Analysis Report prepared by EBI dated October 20, 2014, T-Mobile's operations would add16.54% of the FCC Standard. Therefore, the calculated "worst case" power density for the planned combined operation at the site including all of the proposed antennas would 19.74% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as **Exhibit C.**

For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Ridgefield Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement of this exempt modification, T-Mobile shall commence construction approximately sixty days from the receipt of the Council's decision.

Sincerely,

Rachel Schwartzman, Esq.

cc: Town of Ridgefield, First Selectman Rudy Marconi
Crown
The Siena Company
Sheldon Freincle, Northeast Site Solutions

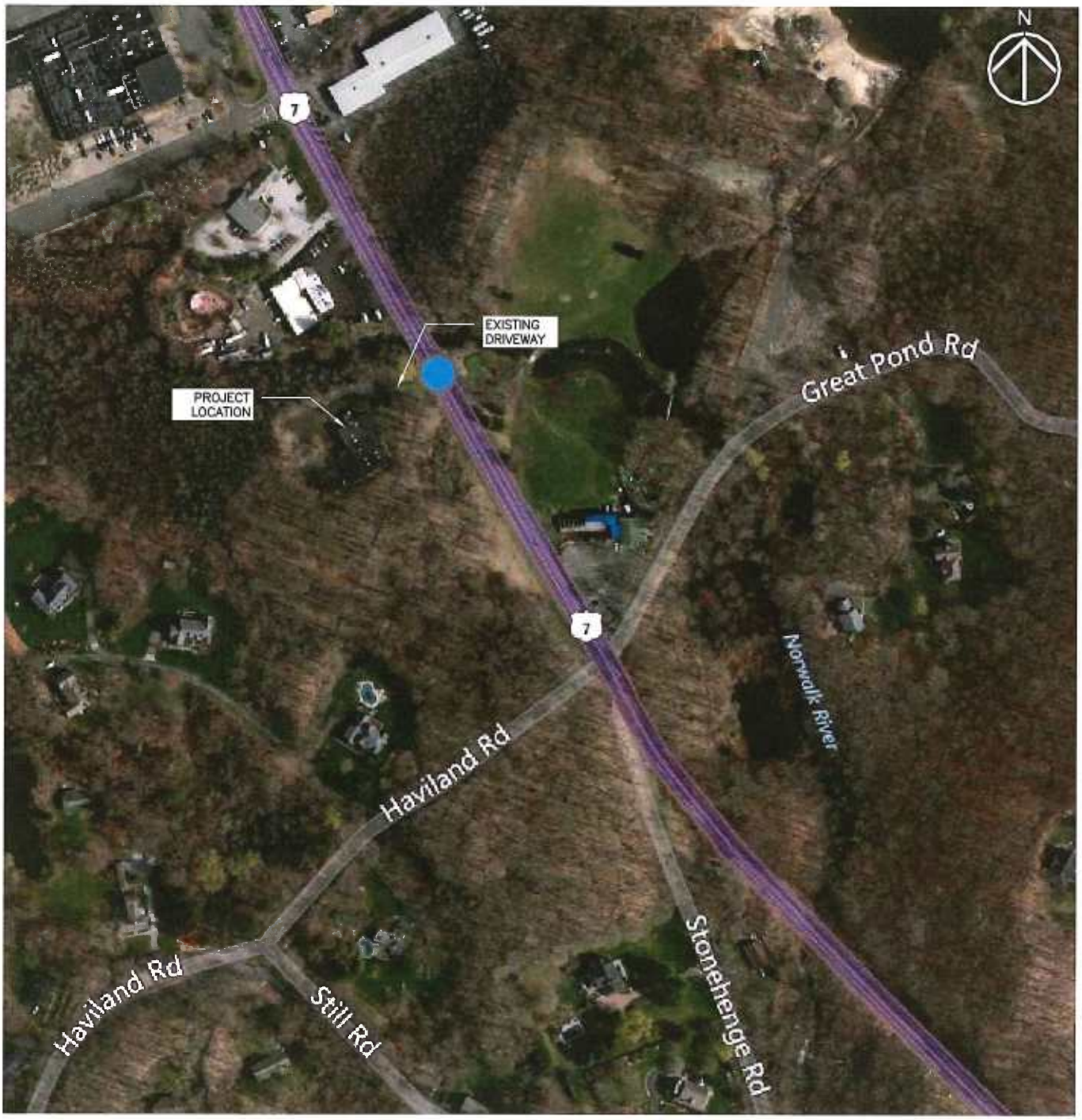
1115 Broad Street
P.O. Box 1821
Bridgeport, CT 06601-1821
Tel: (203) 368-0211
Fax: (203) 394-9901

158 Deer Hill Avenue
Danbury, CT 06810
Tel: (203) 792-2771
Fax: (203) 791-8149

320 Post Road West
Westport, CT 06880
Tel: (203) 222-1034
Fax: (203) 227-1373

657 Orange Center Road
Orange, CT 06477
Tel: (203) 298-4066
Fax: (203) 298-4068

EXHIBIT A



KEY PLAN

N.T.S.

MODERNIZATION
CONFIGURATION
4B

SUBMITTALS	
LE REV A	08.12.14
LE REV 0	10.23.14

ATLANTIS GROUP
1340 Centre Street
Suite 212
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11112H

SITE NAME:
REDDING/RT7

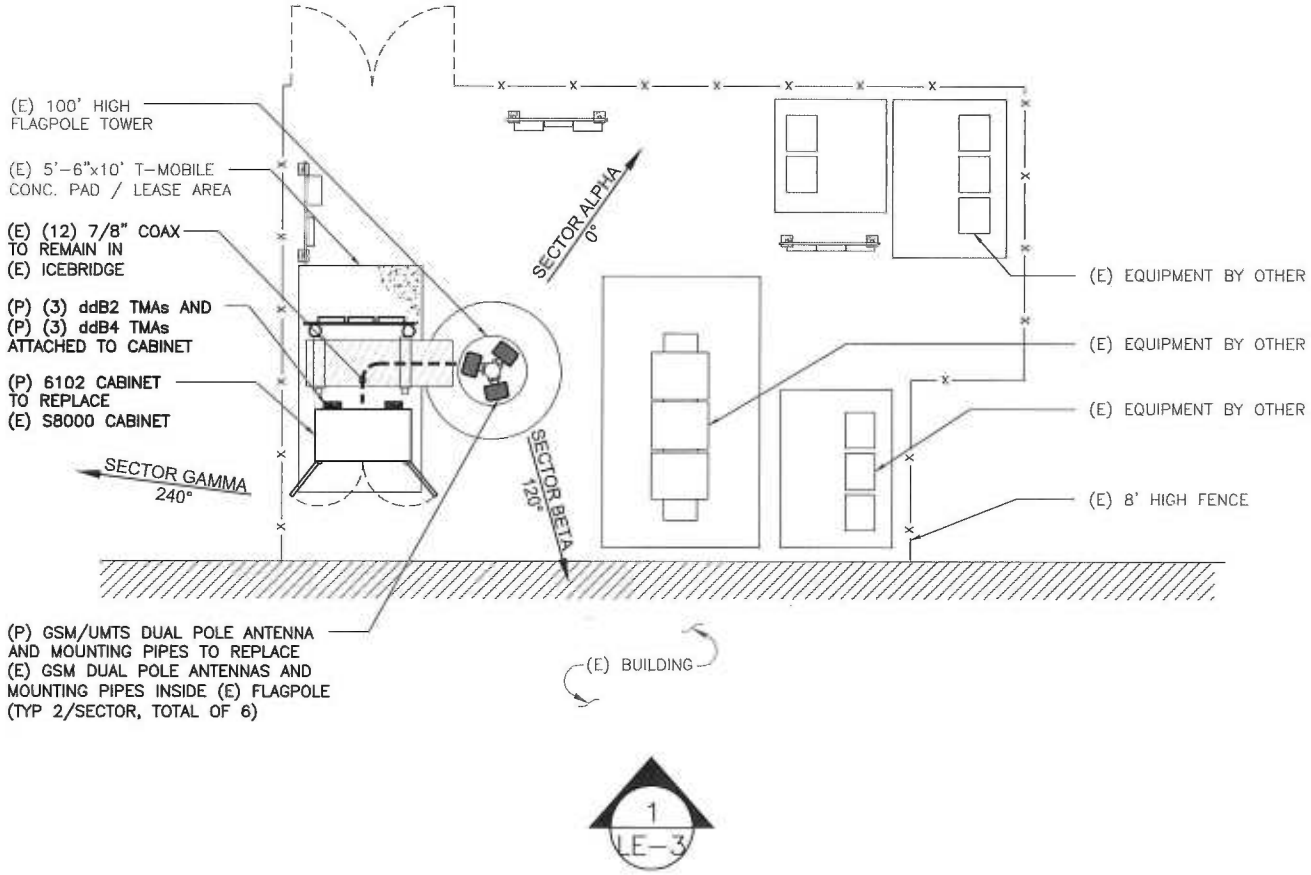
SITE ADDRESS:
845 ETHAN ALLEN HIGHWAY
RIDGEFIELD, CT 06877

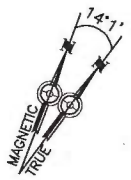
NORTHEAST SITE SOLUTIONS
54 MAIN STREET, UNIT 3
STURBRIDGE, MA 01566
(508) 434-5237

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: EB | CHECKED BY: SM





ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

SITE PLAN (1 / LE-2)
N.T.S.

MODERNIZATION
CONFIGURATION
4B

SUBMITTALS	
LE REV A	08.12.14
LE REV 0	10.23.14

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1340 Centre Street
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Newton, MA 02459
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Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11112H

SITE NAME:
REDDING/RT7

SITE ADDRESS:
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NORTHEAST SITE SOLUTIONS
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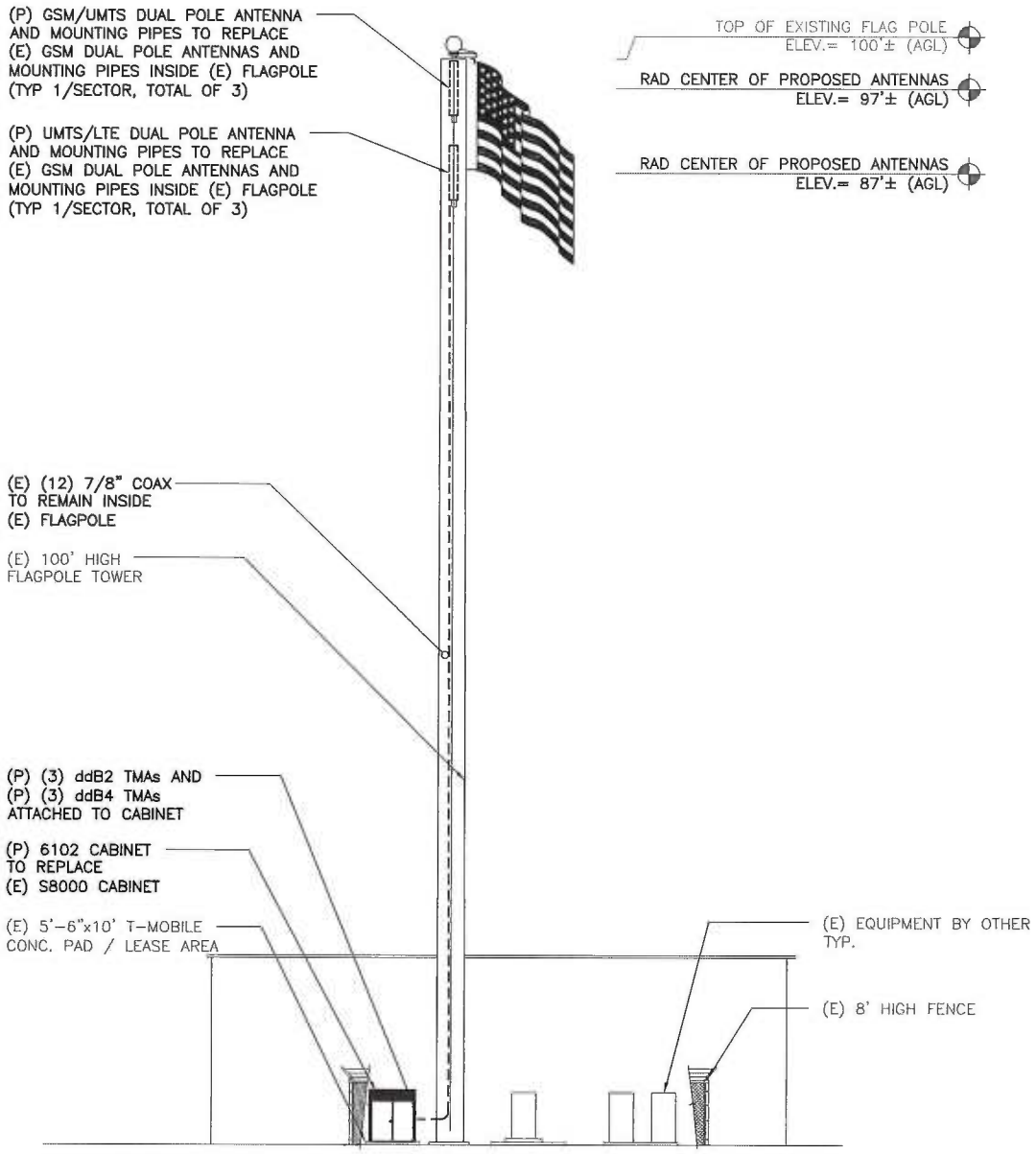

ELEVATION 1 / LE-3

N.T.S.

MODERNIZATION

CONFIGURATION

4B

SUBMITTALS	
LE REV A	08.12.14
LE REV 0	10.23.14

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LEASE EXHIBIT

SITE NUMBER:
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FAX: (860) 692-7159

DRAWN BY: EB | CHECKED BY: SM

EXHIBIT B

Date: **August 20, 2014**

Sean Dempsey
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
(704) 405-6565

Tower Engineering Professionals
326 Tryon Rd.
Raleigh, NC 27603-5263
(919) 661-6351
crown@tepgroup.net

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11112H
	Carrier Site Name:	Redding/Rt7
Crown Castle Designation:	**Crown Castle BU Number:**	826927
	Crown Castle Site Name:	Redding/Rt7
	Crown Castle JDE Job Number:	301100
	Crown Castle Work Order Number:	903227
	Crown Castle Application Number:	259683 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	56520.22767
Site Data:	**845 Ethan Allen Highway, Ridgefield, Fairfield County, CT 06877** **Latitude *41° 18' 46.86"*, Longitude *-73° 28' 20.48"*** **100 Foot - Monopole Tower**	

Dear Sean Dempsey,

Tower Engineering Professionals 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 675722, in accordance with application 259683, revision 0.

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

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 Connecticut State Building Code with 2009 Amendments based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Tables 1 and 2 and the attached drawing for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* 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: Rachel N. Gallagher, E.I. / TLI

Respectfully submitted by:

Graham M. Andres, P.E.

STATE OF CONNECTICUT GRAHAM M. ANDRES 29538 LICENSED PROFESSIONAL ENGINEER 8/20/14

Electronic Copy

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Table 1 - Proposed Antenna and Cable Information
Table 2 - Existing Antenna and Cable Information
Table 3 - Design Antenna and Cable Information

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Table 4 - Documents Provided
3.1) Analysis Method
3.2) Assumptions

4) ANALYSIS RESULTS
Table 5 - Section Capacity (Summary)
Table 6 - Tower Component Stresses vs. Capacity
Table 7 - Spine Deflection for 50 mph Service Wind Speed
4.1) Recommendations

5) APPENDIX A
tnxTower Output

6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 100-ft monopole tower designed by Pirod in February of 2001. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F for the appurtenances listed in Table 3. TEP did not visit the site. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

The analysis has been performed in accordance with the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and ASCE 7-05 Minimum Design Loads for Buildings and Other Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 0.75 inch escalating 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
97.0	97.0	3	Ericsson	KRY 112 71	-	-	1
		3	RFS Celwave	APX18-206517-CT2 w/ Mount Pipe			
87.0	87.0	3	Ericsson	KRY 112 71	-	-	1
		3	RFS Celwave	APX18-206517-CT2 w/ Mount Pipe			

Notes:
1) See "Appendix B – Base Level Drawing" for assumed feed line configuration.

Table 2 - Existing 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
97.0	97.0	3	Andrew	TMBXX-6516-R2M w/ Mount Pipe	-	-	1
		6	Andrew	ETW190VS12UB			
		-	-	-	6	7/8	2
87.0	87.0	3	Andrew	TMBXX-6516-R2M w/ Mount Pipe	-	-	1
		6	Andrew	ETW190VS12UB			
		-	-	-	6	7/8	2
79.0	79.0	3	EMS Wireless	FR65-17-00DP w/ Mount Pipe	6	1-1/4	1
70.0	70.0	3	Communication Components.	DTMABP7819VG12A	6	1-1/4	1
		6	Kaelus	TBC0020FxVx			
		3	KMW Communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			

Notes:
1) Existing equipment; to be removed
2) Existing equipment

Table 3 - Design Antenna and Cable Information

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

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Manufacturer Drawings	Pirod	5237965	CCISites
Geotechnical Report	Dr. Clarence Welti	3493879	CCISites
Tower Foundation Drawings	Pirod	3848258	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) The tower and foundation were built in accordance with the manufacturer's specifications.
2) The tower and foundation 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 "Appendix B – Base Level Drawing".
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by the standard.
5) All tower components are in sufficient condition to carry their full design capacity.
6) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
7) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.
8) TEP did not have information on the fiberglass canisters. Diameters and lengths were assumed based on recent photos.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals 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 (lb)	SF*P_{allow} (lb)	% Capacity	Pass / Fail
L1	100 - 82	Pole	P6.63x0.432	1	-937.60	282564.00	23.6	Pass
L2	82 - 62	Pole	P6.75x0.75	2	-2533.46	474890.56	62.7	Pass
L3	62 - 30	Pole	P24x0.375	3	-5936.34	934939.50	24.4	Pass
L4	30 - 0	Pole	P24x0.375	4	-9173.13	934939.50	46.3	Pass
							Summary	
						Pole (L2)	62.7	Pass
						Rating =	**62.7**	**Pass**

Table 6 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Connection	82.0	10.4	Pass
1,2	Flange Connection	62.0	62.7	Pass
1,2	Flange Connection	30.0	35.9	Pass
1	Anchor Rods	-	37.8	Pass
1,2	Base Plate	-	46.3	Pass
1	Base Foundation Soil Interaction	-	17.2	Pass
1	Base Foundation Structural	-	57.2	Pass

Structure Rating (max from all components) =	**62.7%**

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Base and flange plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft. Plates have the same capacity as their respective splice bolts or shaft.

Table 7 - Spine Deflection for 50 mph Service Wind Speed

Spine Length (ft)	Allowable (3%) Horizontal Spine Deflection (in)	Spine Deflection (in)			Percent Spine Deflection	Sufficient/ Insufficient
		Top of Spine	Base of Spine	Actual		
18.0	13.680	12.116	7.184	4.932	2.283	**Sufficient**

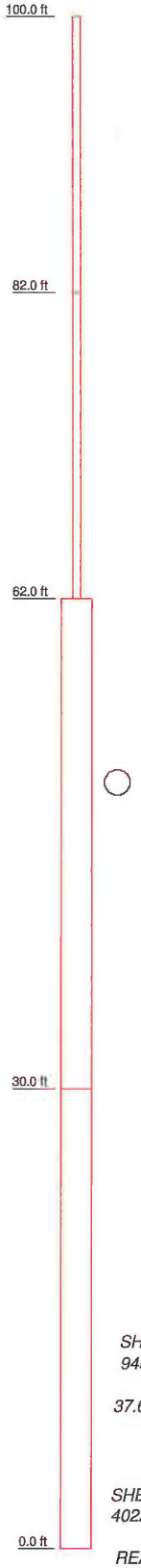
4.1) Recommendations

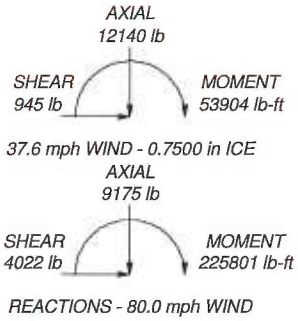
1) If the load differs from that described in Tables 1 and 2 of this report, "Appendix B – Base Level Drawing" or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
2) The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Size	Length (ft)	Grade	Weight (lb)
1	P6.63x0.432	18.00	A53-B-42	515.2
2	P6.75x0.75	20.00		962.1
3	P24x0.375	32.00		3030.7
4	P24x0.375	30.00		2841.2
				7349.3





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Truck Ball	100.75	FR65-17-00DP w/ Mount Pipe	79
Canister Load1	100	FR65-17-00DP w/ Mount Pipe	79
APX18-206517-CT2 w/ Mount Pipe	97	Canister Load3	74
KRY 112 71	97	DTMABP7819VG12A	70
KRY 112 71	97	(2) TBC0020FxVx	70
KRY 112 71	97	(2) TBC0020FxVx	70
APX18-206517-CT2 w/ Mount Pipe	97	(2) TBC0020FxVx	70
APX18-206517-CT2 w/ Mount Pipe	97	AM-X-CD-16-65-00T-RET w/ Mount Pipe	70
Flag	94		
KRY 112 71	87	AM-X-CD-16-65-00T-RET w/ Mount Pipe	70
KRY 112 71	87		
KRY 112 71	87	DTMABP7819VG12A	70
APX18-206517-CT2 w/ Mount Pipe	87	AM-X-CD-16-65-00T-RET w/ Mount Pipe	70
APX18-206517-CT2 w/ Mount Pipe	87		
APX18-206517-CT2 w/ Mount Pipe	87	DTMABP7819VG12A	70
Canister Load2	82	Canister Load4	62
FR65-17-00DP w/ Mount Pipe	79		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 80.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 37.6 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50.0 mph wind.
5. TOWER RATING: 62.7%

Tower Engineering Professionals, Inc.
326 Tryon Rd.
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: *Redding / Rt7 (BU 826927)*			
Project: *TEP No. 56520.22767*			
Client: Crown Castle	Drawn by: KFO	App'd:	
Code: TIA/EIA-222-F	Date: 08/20/14	Scale: NTS	
Path: C:\Users\kolson\Desktop\Redding\826927_LC5 80mph.er		Dwg No. E-1	

tnxTower	Job	Page
	Redding / Rt7 (BU 826927)	1 of 18
Tower Engineering Professionals, Inc. 326 Tryon Rd. Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	**Project** TEP No. 56520.22767	**Date** 15:01:13 08/20/14
	Client Crown Castle	**Designed by** KFO

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 80.0 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 37.6 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
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		

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	100.00-82.00	18.00	P6.63x0.432	A53-B-42 (42 ksi)	
L2	82.00-62.00	20.00	P6.75x0.75	A53-B-42 (42 ksi)	
L3	62.00-30.00	32.00	P24x0.375	A53-B-42 (42 ksi)	
L4	30.00-0.00	30.00	P24x0.375	A53-B-42 (42 ksi)	

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
L1				1	0	1		
100.00-82.00								
L2 82.00-62.00				1	0	1		
L3 62.00-30.00				1	1	1		
L4 30.00-0.00				1	1	1		

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
LDF5-50A(7/8")	C	No	Inside Pole	97.00 - 0.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
LDF5-50A(7/8")	C	No	Inside Pole	87.00 - 0.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
LDF6-50A(1-1/4")	B	No	Inside Pole	79.00 - 0.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
LDF6-50A(1-1/4")	A	No	Inside Pole	70.00 - 0.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66

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 lb
L1	100.00-82.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	39.60
L2	82.00-62.00	A	0.000	0.000	0.000	0.000	31.68
		B	0.000	0.000	0.000	0.000	67.32
		C	0.000	0.000	0.000	0.000	79.20
L3	62.00-30.00	A	0.000	0.000	0.000	0.000	126.72
		B	0.000	0.000	0.000	0.000	126.72
		C	0.000	0.000	0.000	0.000	126.72
L4	30.00-0.00	A	0.000	0.000	0.000	0.000	118.80
		B	0.000	0.000	0.000	0.000	118.80
		C	0.000	0.000	0.000	0.000	118.80

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 lb
L1	100.00-82.00	A	0.847	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	39.60
L2	82.00-62.00	A	0.824	0.000	0.000	0.000	0.000	31.68
		B		0.000	0.000	0.000	0.000	67.32
		C		0.000	0.000	0.000	0.000	79.20
L3	62.00-30.00	A	0.781	0.000	0.000	0.000	0.000	126.72
		B		0.000	0.000	0.000	0.000	126.72
		C		0.000	0.000	0.000	0.000	126.72
L4	30.00-0.00	A	0.750	0.000	0.000	0.000	0.000	118.80
		B		0.000	0.000	0.000	0.000	118.80
		C		0.000	0.000	0.000	0.000	118.80

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	100.00-82.00	0.0000	0.0000	0.0000	0.0000
L2	82.00-62.00	0.0000	0.0000	0.0000	0.0000
L3	62.00-30.00	0.0000	0.0000	0.0000	0.0000
L4	30.00-0.00	0.0000	0.0000	0.0000	0.0000

User Defined Loads

Description	Elevation ft	Offset From Centroid ft	Azimuth Angle °		Weight lb	F_x lb	F_z lb	Wind Force lb	C_AA_C ft^2
Flag	94.00	0.00	0.0000	No Ice	0.29	0.00	0.00	0.28	**0.01**
				Ice	0.46	0.00	0.00	0.08	**0.01**
				Service	0.29	0.00	0.00	0.12	**0.01**

Discrete Tower Loads

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 lb
97									
APX18-206517-CT2 w/	A	From Leg	1.00	0.0000	97.00	No Ice	0.00	0.00	49.88

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 lb
Mount Pipe			0.00			1/2" Ice	0.00	0.00	94.86
			0.00			1" Ice	0.00	0.00	147.24
						2" Ice	0.00	0.00	277.89
						4" Ice	0.00	0.00	676.85
APX18-206517-CT2 w/	B	From Leg	1.00	0.0000	97.00	No Ice	0.00	0.00	49.88
Mount Pipe			0.00			1/2" Ice	0.00	0.00	94.86
			0.00			1" Ice	0.00	0.00	147.24
						2" Ice	0.00	0.00	277.89
						4" Ice	0.00	0.00	676.85
APX18-206517-CT2 w/	C	From Leg	1.00	0.0000	97.00	No Ice	0.00	0.00	49.88
Mount Pipe			0.00			1/2" Ice	0.00	0.00	94.86
			0.00			1" Ice	0.00	0.00	147.24
						2" Ice	0.00	0.00	277.89
						4" Ice	0.00	0.00	676.85
KRY 112 71	A	From Leg	1.00	0.0000	97.00	No Ice	0.00	0.00	18.07
			0.00			1/2" Ice	0.00	0.00	26.97
			0.00			1" Ice	0.00	0.00	38.22
						2" Ice	0.00	0.00	69.33
						4" Ice	0.00	0.00	180.58
KRY 112 71	B	From Leg	1.00	0.0000	97.00	No Ice	0.00	0.00	18.07
			0.00			1/2" Ice	0.00	0.00	26.97
			0.00			1" Ice	0.00	0.00	38.22
						2" Ice	0.00	0.00	69.33
						4" Ice	0.00	0.00	180.58
KRY 112 71	C	From Leg	1.00	0.0000	97.00	No Ice	0.00	0.00	18.07
			0.00			1/2" Ice	0.00	0.00	26.97
			0.00			1" Ice	0.00	0.00	38.22
						2" Ice	0.00	0.00	69.33
						4" Ice	0.00	0.00	180.58
87									
APX18-206517-CT2 w/	A	From Leg	1.00	0.0000	87.00	No Ice	0.00	0.00	49.88
Mount Pipe			0.00			1/2" Ice	0.00	0.00	94.86
			0.00			1" Ice	0.00	0.00	147.24
						2" Ice	0.00	0.00	277.89
						4" Ice	0.00	0.00	676.85
APX18-206517-CT2 w/	B	From Leg	1.00	0.0000	87.00	No Ice	0.00	0.00	49.88
Mount Pipe			0.00			1/2" Ice	0.00	0.00	94.86
			0.00			1" Ice	0.00	0.00	147.24
						2" Ice	0.00	0.00	277.89
						4" Ice	0.00	0.00	676.85
APX18-206517-CT2 w/	C	From Leg	1.00	0.0000	87.00	No Ice	0.00	0.00	49.88
Mount Pipe			0.00			1/2" Ice	0.00	0.00	94.86
			0.00			1" Ice	0.00	0.00	147.24
						2" Ice	0.00	0.00	277.89
						4" Ice	0.00	0.00	676.85
KRY 112 71	A	From Leg	1.00	0.0000	87.00	No Ice	0.00	0.00	18.07
			0.00			1/2" Ice	0.00	0.00	26.97
			0.00			1" Ice	0.00	0.00	38.22
						2" Ice	0.00	0.00	69.33
						4" Ice	0.00	0.00	180.58
KRY 112 71	B	From Leg	1.00	0.0000	87.00	No Ice	0.00	0.00	18.07
			0.00			1/2" Ice	0.00	0.00	26.97
			0.00			1" Ice	0.00	0.00	38.22
						2" Ice	0.00	0.00	69.33
						4" Ice	0.00	0.00	180.58
KRY 112 71	C	From Leg	1.00	0.0000	87.00	No Ice	0.00	0.00	18.07
			0.00			1/2" Ice	0.00	0.00	26.97

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 lb
			0.00			1" Ice	0.00	0.00	38.22
						2" Ice	0.00	0.00	69.33
						4" Ice	0.00	0.00	180.58
79									
FR65-17-00DP w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	38.68 76.12 119.69 228.37 561.35
FR65-17-00DP w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	38.68 76.12 119.69 228.37 561.35
FR65-17-00DP w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	38.68 76.12 119.69 228.37 561.35
70									
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	74.05 139.04 211.91 384.96 874.27
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	74.05 139.04 211.91 384.96 874.27
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	74.05 139.04 211.91 384.96 874.27
DTMABP7819VG12A	A	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	19.18 26.48 35.63 60.23 140.10
DTMABP7819VG12A	B	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	19.18 26.48 35.63 60.23 140.10
DTMABP7819VG12A	C	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	19.18 26.48 35.63 60.23 140.10
(2) TBC0020FxVx	A	From Leg	1.00 0.00 0.00	0.0000	70.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	11.00 17.65 26.04 48.79 123.65
(2) TBC0020FxVx	B	From Leg	1.00 0.00	0.0000	70.00	No Ice 1/2" Ice	0.00 0.00	0.00 0.00	11.00 17.65

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 lb
			0.00			1" Ice	0.00	0.00	26.04
						2" Ice	0.00	0.00	48.79
						4" Ice	0.00	0.00	123.65
(2) TBC0020FxVx	C	From Leg	1.00	0.0000	70.00	No Ice	0.00	0.00	11.00
			0.00			1/2" Ice	0.00	0.00	17.65
			0.00			1" Ice	0.00	0.00	26.04
						2" Ice	0.00	0.00	48.79
						4" Ice	0.00	0.00	123.65
Shrouds									
Canister Load1	C	None		0.0000	100.00	No Ice	10.62	10.62	0.11
						1/2" Ice	11.06	11.06	0.25
						1" Ice	11.51	11.51	0.39
						2" Ice	12.39	12.39	0.68
						4" Ice	14.16	14.16	1.34
Canister Load2	C	None		0.0000	82.00	No Ice	15.34	15.34	0.45
						1/2" Ice	15.98	15.98	0.64
						1" Ice	16.62	16.62	0.84
						2" Ice	17.90	17.90	1.27
						4" Ice	20.45	20.45	2.22
Canister Load3	C	None		0.0000	74.00	No Ice	15.34	15.34	0.16
						1/2" Ice	15.83	15.83	0.36
						1" Ice	16.32	16.32	0.56
						2" Ice	17.31	17.31	0.97
						4" Ice	19.27	19.27	1.88
Canister Load4	C	None		0.0000	62.00	No Ice	10.62	10.62	0.75
						1/2" Ice	10.91	10.91	0.88
						1" Ice	11.21	11.21	1.02
						2" Ice	11.80	11.80	1.31
						4" Ice	12.98	12.98	1.92
Truck Ball	C	None		0.0000	100.75	No Ice	1.41	1.41	0.05
						1/2" Ice	1.58	1.58	0.07
						1" Ice	1.75	1.75	0.09
						2" Ice	2.11	2.11	0.13
						4" Ice	2.95	2.95	0.25

Load Combinations

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

Comb. No.	Description
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 lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	100 - 82	Pole	Max Tension	21	0.00	0.00	0.09
			Max. Compression	14	-1691.72	0.00	-0.00
			Max. Mx	5	-937.60	-8780.42	0.00
			Max. My	2	-937.60	0.00	8780.42
			Max. Vy	5	507.71	-8780.42	0.00
			Max. Vx	2	-507.71	0.00	8780.42
			Max. Torque	3			-0.00
L2	82 - 62	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-4093.73	0.00	-0.00
			Max. Mx	5	-2533.46	-36647.75	0.00
			Max. My	2	-2533.46	0.00	36647.75
			Max. Vy	5	1622.21	-25387.41	0.00
			Max. Vx	2	-1622.21	0.00	25387.41
			Max. Torque	3			-0.00
L3	62 - 30	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-8262.49	0.00	-0.00
			Max. Mx	5	-5936.34	-118314.72	0.00
			Max. My	2	-5936.34	0.00	118314.72
			Max. Vy	5	3120.78	-118314.72	0.00
			Max. Vx	2	-3120.78	0.00	118314.72
			Max. Torque	3			-0.00
L4	30 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-12140.49	0.00	0.00
			Max. Mx	5	-9173.13	-225800.26	0.00
			Max. My	2	-9173.13	0.00	225800.26
			Max. Vy	5	4025.91	-225800.26	0.00
			Max. Vx	2	-4025.91	0.00	225800.26

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Torque	3			-0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	15	12140.49	0.00	945.48
	Max. H_x	11	9174.85	4021.97	0.00
	Max. H_z	2	9174.85	0.00	4021.97
	Max. M_x	2	225800.26	0.00	4021.97
	Max. M_z	5	225800.26	-4021.97	0.00
	Max. Torsion	7	0.00	-2010.99	-3483.13
	Min. Vert	1	9174.85	0.00	0.00
	Min. H_x	5	9174.85	-4021.97	0.00
	Min. H_z	8	9174.85	0.00	-4021.97
	Min. M_x	8	-225800.26	0.00	-4021.97
	Min. M_z	11	-225800.26	4021.97	0.00
	Min. Torsion	3	-0.00	-2010.99	3483.13

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	9174.85	0.00	0.00	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice	9174.85	0.00	-4021.97	-225800.26	0.00	0.00
Dead+Wind 30 deg - No Ice	9174.85	2010.99	-3483.13	-195548.97	-112900.25	0.00
Dead+Wind 60 deg - No Ice	9174.85	3483.13	-2010.99	-112900.25	-195548.97	-0.00
Dead+Wind 90 deg - No Ice	9174.85	4021.97	0.00	0.00	-225800.26	0.00
Dead+Wind 120 deg - No Ice	9174.85	3483.13	2010.99	112900.25	-195548.97	0.00
Dead+Wind 150 deg - No Ice	9174.85	2010.99	3483.13	195548.97	-112900.25	-0.00
Dead+Wind 180 deg - No Ice	9174.85	0.00	4021.97	225800.26	0.00	0.00
Dead+Wind 210 deg - No Ice	9174.85	-2010.99	3483.13	195548.97	112900.25	0.00
Dead+Wind 240 deg - No Ice	9174.85	-3483.13	2010.99	112900.25	195548.97	-0.00
Dead+Wind 270 deg - No Ice	9174.85	-4021.97	0.00	0.00	225800.26	0.00
Dead+Wind 300 deg - No Ice	9174.85	-3483.13	-2010.99	-112900.25	195548.97	0.00
Dead+Wind 330 deg - No Ice	9174.85	-2010.99	-3483.13	-195548.97	112900.25	-0.00
Dead+Ice+Temp	12140.49	0.00	0.00	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp	12140.49	0.00	-945.48	-53903.71	0.00	0.00
Dead+Wind 30 deg+Ice+Temp	12140.49	472.74	-818.81	-46681.98	-26951.86	0.00
Dead+Wind 60 deg+Ice+Temp	12140.49	818.81	-472.74	-26951.86	-46681.98	-0.00
Dead+Wind 90 deg+Ice+Temp	12140.49	945.48	0.00	0.00	-53903.71	0.00
Dead+Wind 120 deg+Ice+Temp	12140.49	818.81	472.74	26951.86	-46681.98	0.00
Dead+Wind 150 deg+Ice+Temp	12140.49	472.74	818.81	46681.98	-26951.86	-0.00
Dead+Wind 180 deg+Ice+Temp	12140.49	0.00	945.48	53903.71	0.00	0.00
Dead+Wind 210 deg+Ice+Temp	12140.49	-472.74	818.81	46681.98	26951.86	0.00
Dead+Wind 240 deg+Ice+Temp	12140.49	-818.81	472.74	26951.86	46681.98	-0.00
Dead+Wind 270 deg+Ice+Temp	12140.49	-945.48	0.00	0.00	53903.71	0.00
Dead+Wind 300 deg+Ice+Temp	12140.49	-818.81	-472.74	-26951.86	46681.98	0.00
Dead+Wind 330 deg+Ice+Temp	12140.49	-472.74	-818.81	-46681.98	26951.86	-0.00
Dead+Wind 0 deg - Service	9174.85	0.00	-1571.10	-88221.75	0.00	0.00
Dead+Wind 30 deg - Service	9174.85	785.55	-1360.61	-76402.28	-44110.88	0.00

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead+Wind 60 deg - Service	9174.85	1360.61	-785.55	-44110.88	-76402.28	-0.00
Dead+Wind 90 deg - Service	9174.85	1571.10	0.00	0.00	-88221.75	0.00
Dead+Wind 120 deg - Service	9174.85	1360.61	785.55	44110.88	-76402.28	0.00
Dead+Wind 150 deg - Service	9174.85	785.55	1360.61	76402.28	-44110.88	-0.00
Dead+Wind 180 deg - Service	9174.85	0.00	1571.10	88221.75	0.00	0.00
Dead+Wind 210 deg - Service	9174.85	-785.55	1360.61	76402.28	44110.88	0.00
Dead+Wind 240 deg - Service	9174.85	-1360.61	785.55	44110.88	76402.28	-0.00
Dead+Wind 270 deg - Service	9174.85	-1571.10	0.00	0.00	88221.75	0.00
Dead+Wind 300 deg - Service	9174.85	-1360.61	-785.55	-44110.88	76402.28	0.00
Dead+Wind 330 deg - Service	9174.85	-785.55	-1360.61	-76402.28	44110.88	-0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-9174.85	0.00	0.00	9174.85	0.00	0.000%
2	0.00	-9174.85	-4021.97	0.00	9174.85	4021.97	0.000%
3	2010.99	-9174.85	-3483.13	-2010.99	9174.85	3483.13	0.000%
4	3483.13	-9174.85	-2010.99	-3483.13	9174.85	2010.99	0.000%
5	4021.97	-9174.85	0.00	-4021.97	9174.85	0.00	0.000%
6	3483.13	-9174.85	2010.99	-3483.13	9174.85	-2010.99	0.000%
7	2010.99	-9174.85	3483.13	-2010.99	9174.85	-3483.13	0.000%
8	0.00	-9174.85	4021.97	0.00	9174.85	-4021.97	0.000%
9	-2010.99	-9174.85	3483.13	2010.99	9174.85	-3483.13	0.000%
10	-3483.13	-9174.85	2010.99	3483.13	9174.85	-2010.99	0.000%
11	-4021.97	-9174.85	0.00	4021.97	9174.85	0.00	0.000%
12	-3483.13	-9174.85	-2010.99	3483.13	9174.85	2010.99	0.000%
13	-2010.99	-9174.85	-3483.13	2010.99	9174.85	3483.13	0.000%
14	0.00	-12140.49	0.00	0.00	12140.49	-0.00	0.000%
15	0.00	-12140.49	-945.47	0.00	12140.49	945.48	0.000%
16	472.74	-12140.49	-818.80	-472.74	12140.49	818.81	0.000%
17	818.80	-12140.49	-472.74	-818.81	12140.49	472.74	0.000%
18	945.47	-12140.49	0.00	-945.48	12140.49	-0.00	0.000%
19	818.80	-12140.49	472.74	-818.81	12140.49	-472.74	0.000%
20	472.74	-12140.49	818.80	-472.74	12140.49	-818.81	0.000%
21	0.00	-12140.49	945.47	0.00	12140.49	-945.48	0.000%
22	-472.74	-12140.49	818.80	472.74	12140.49	-818.81	0.000%
23	-818.80	-12140.49	472.74	818.81	12140.49	-472.74	0.000%
24	-945.47	-12140.49	0.00	945.48	12140.49	-0.00	0.000%
25	-818.80	-12140.49	-472.74	818.81	12140.49	472.74	0.000%
26	-472.74	-12140.49	-818.80	472.74	12140.49	818.81	0.000%
27	0.00	-9174.85	-1571.10	0.00	9174.85	1571.10	0.000%
28	785.55	-9174.85	-1360.61	-785.55	9174.85	1360.61	0.000%
29	1360.61	-9174.85	-785.55	-1360.61	9174.85	785.55	0.000%
30	1571.10	-9174.85	0.00	-1571.10	9174.85	0.00	0.000%
31	1360.61	-9174.85	785.55	-1360.61	9174.85	-785.55	0.000%
32	785.55	-9174.85	1360.61	-785.55	9174.85	-1360.61	0.000%
33	0.00	-9174.85	1571.10	0.00	9174.85	-1571.10	0.000%
34	-785.55	-9174.85	1360.61	785.55	9174.85	-1360.61	0.000%
35	-1360.61	-9174.85	785.55	1360.61	9174.85	-785.55	0.000%
36	-1571.10	-9174.85	0.00	1571.10	9174.85	0.00	0.000%
37	-1360.61	-9174.85	-785.55	1360.61	9174.85	785.55	0.000%
38	-785.55	-9174.85	-1360.61	785.55	9174.85	1360.61	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00015687
3	Yes	5	0.00000001	0.00006447
4	Yes	5	0.00000001	0.00006447
5	Yes	4	0.00000001	0.00015687
6	Yes	5	0.00000001	0.00006447
7	Yes	5	0.00000001	0.00006447
8	Yes	4	0.00000001	0.00015687
9	Yes	5	0.00000001	0.00006447
10	Yes	5	0.00000001	0.00006447
11	Yes	4	0.00000001	0.00015687
12	Yes	5	0.00000001	0.00006447
13	Yes	5	0.00000001	0.00006447
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00057846
16	Yes	4	0.00000001	0.00060670
17	Yes	4	0.00000001	0.00060670
18	Yes	4	0.00000001	0.00057846
19	Yes	4	0.00000001	0.00060670
20	Yes	4	0.00000001	0.00060670
21	Yes	4	0.00000001	0.00057846
22	Yes	4	0.00000001	0.00060670
23	Yes	4	0.00000001	0.00060670
24	Yes	4	0.00000001	0.00057846
25	Yes	4	0.00000001	0.00060670
26	Yes	4	0.00000001	0.00060670
27	Yes	4	0.00000001	0.00002902
28	Yes	4	0.00000001	0.00011776
29	Yes	4	0.00000001	0.00011776
30	Yes	4	0.00000001	0.00002902
31	Yes	4	0.00000001	0.00011776
32	Yes	4	0.00000001	0.00011776
33	Yes	4	0.00000001	0.00002902
34	Yes	4	0.00000001	0.00011776
35	Yes	4	0.00000001	0.00011776
36	Yes	4	0.00000001	0.00002902
37	Yes	4	0.00000001	0.00011776
38	Yes	4	0.00000001	0.00011776

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	100 - 99	P6.63x0.432	18.00	0.00	0.0	25.200	8.4117	-2.79	211976.00	0.000
	99 - 98					25.200	8.4117	-33.58	211976.00	0.000
	98 - 97					25.200	8.4117	-64.40	211976.00	0.000
	97 - 96					25.200	8.4117	-298.71	211976.00	0.001
	96 - 95					25.200	8.4117	-329.59	211976.00	0.002
	95 - 94					25.200	8.4117	-360.50	211976.00	0.002

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
	94 - 93					25.200	8.4117	-391.70	211976.00	0.002
	93 - 92					25.200	8.4117	-422.67	211976.00	0.002
	92 - 91					25.200	8.4117	-453.66	211976.00	0.002
	91 - 90					25.200	8.4117	-484.69	211976.00	0.002
	90 - 89					25.200	8.4117	-515.74	211976.00	0.002
	89 - 88					25.200	8.4117	-546.83	211976.00	0.003
	88 - 87					25.200	8.4117	-577.95	211976.00	0.003
	87 - 86					25.200	8.4117	-812.63	211976.00	0.004
	86 - 85					25.200	8.4117	-843.82	211976.00	0.004
	85 - 84					25.200	8.4117	-875.05	211976.00	0.004
	84 - 83					25.200	8.4117	-906.31	211976.00	0.004
	83 - 82					25.200	8.4117	-937.60	211976.00	0.004
L2	82 - 81	P6.75x0.75	20.00	0.00	0.0	25.200	14.1372	-966.98	356257.00	0.003
	81 - 80					25.200	14.1372	-1024.72	356257.00	0.003
	80 - 79					25.200	14.1372	-1082.56	356257.00	0.003
	79 - 78					25.200	14.1372	-1256.38	356257.00	0.004
	78 - 77					25.200	14.1372	-1314.40	356257.00	0.004
	77 - 76					25.200	14.1372	-1372.52	356257.00	0.004
	76 - 75					25.200	14.1372	-1430.73	356257.00	0.004
	75 - 74					25.200	14.1372	-1489.03	356257.00	0.004
	74 - 73					25.200	14.1372	-1524.42	356257.00	0.004
	73 - 72					25.200	14.1372	-1583.73	356257.00	0.004
	72 - 71					25.200	14.1372	-1643.25	356257.00	0.005
	71 - 70					25.200	14.1372	-1702.96	356257.00	0.005
	70 - 69					25.200	14.1372	-2108.33	356257.00	0.006
	69 - 68					25.200	14.1372	-2168.48	356257.00	0.006
	68 - 67					25.200	14.1372	-2228.82	356257.00	0.006
	67 - 66					25.200	14.1372	-2289.36	356257.00	0.006
	66 - 65					25.200	14.1372	-2350.10	356257.00	0.007
	65 - 64					25.200	14.1372	-2411.03	356257.00	0.007
	64 - 63					25.200	14.1372	-2472.15	356257.00	0.007
	63 - 62					25.200	14.1372	-2533.46	356257.00	0.007
L3	62 - 60.4	P24x0.375	32.00	0.00	0.0	25.200	27.8325	-2699.19	701380.00	0.004
	60.4 - 58.8					25.200	27.8325	-2868.87	701380.00	0.004
	58.8 - 57.2					25.200	27.8325	-3038.62	701380.00	0.004
	57.2 - 55.6					25.200	27.8325	-3208.43	701380.00	0.005
	55.6 - 54					25.200	27.8325	-3378.30	701380.00	0.005
	54 - 52.4					25.200	27.8325	-3548.23	701380.00	0.005
	52.4 - 50.8					25.200	27.8325	-3718.24	701380.00	0.005
	50.8 - 49.2					25.200	27.8325	-3888.32	701380.00	0.006
	49.2 - 47.6					25.200	27.8325	-4058.48	701380.00	0.006
	47.6 - 46					25.200	27.8325	-4228.72	701380.00	0.006
	46 - 44.4					25.200	27.8325	-4399.05	701380.00	0.006
	44.4 - 42.8					25.200	27.8325	-4569.46	701380.00	0.007
	42.8 - 41.2					25.200	27.8325	-4739.96	701380.00	0.007
	41.2 - 39.6					25.200	27.8325	-4910.56	701380.00	0.007
	39.6 - 38					25.200	27.8325	-5081.26	701380.00	0.007
	38 - 36.4					25.200	27.8325	-5252.05	701380.00	0.007
	36.4 - 34.8					25.200	27.8325	-5422.96	701380.00	0.008
	34.8 - 33.2					25.200	27.8325	-5593.97	701380.00	0.008
	33.2 - 31.6					25.200	27.8325	-5765.10	701380.00	0.008
	31.6 - 30					25.200	27.8325	-5936.34	701380.00	0.008
L4	30 - 28.5	P24x0.375	30.00	0.00	0.0	25.200	27.8325	-6097.05	701380.00	0.009
	28.5 - 27					25.200	27.8325	-6257.81	701380.00	0.009
	27 - 25.5					25.200	27.8325	-6418.67	701380.00	0.009
	25.5 - 24					25.200	27.8325	-6579.65	701380.00	0.009
	24 - 22.5					25.200	27.8325	-6740.74	701380.00	0.010
	22.5 - 21					25.200	27.8325	-6901.95	701380.00	0.010
	21 - 19.5					25.200	27.8325	-7063.28	701380.00	0.010
	19.5 - 18					25.200	27.8325	-7224.73	701380.00	0.010

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
	18 - 16.5					25.200	27.8325	-7386.31	701380.00	0.011
	16.5 - 15					25.200	27.8325	-7548.03	701380.00	0.011
	15 - 13.5					25.200	27.8325	-7709.87	701380.00	0.011
	13.5 - 12					25.200	27.8325	-7871.86	701380.00	0.011
	12 - 10.5					25.200	27.8325	-8033.98	701380.00	0.011
	10.5 - 9					25.200	27.8325	-8196.25	701380.00	0.012
	9 - 7.5					25.200	27.8325	-8358.67	701380.00	0.012
	7.5 - 6					25.200	27.8325	-8521.25	701380.00	0.012
	6 - 4.5					25.200	27.8325	-8683.97	701380.00	0.012
	4.5 - 3					25.200	27.8325	-8846.86	701380.00	0.013
	3 - 1.5					25.200	27.8325	-9009.91	701380.00	0.013
	1.5 - 0					25.200	27.8325	-9173.13	701380.00	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	100 - 99	P6.63x0.432	497.98	0.488	27.720	0.018	0.00	0.000	27.720	0.000
	99 - 98		957.45	0.938	27.720	0.034	0.00	0.000	27.720	0.000
	98 - 97		1418.82	1.391	27.720	0.050	0.00	0.000	27.720	0.000
	97 - 96		1894.53	1.857	27.720	0.067	0.00	0.000	27.720	0.000
	96 - 95		2372.05	2.325	27.720	0.084	0.00	0.000	27.720	0.000
	95 - 94		2851.36	2.795	27.720	0.101	0.00	0.000	27.720	0.000
	94 - 93		3332.68	3.266	27.720	0.118	0.00	0.000	27.720	0.000
	93 - 92		3815.71	3.740	27.720	0.135	0.00	0.000	27.720	0.000
	92 - 91		4300.38	4.215	27.720	0.152	0.00	0.000	27.720	0.000
	91 - 90		4786.63	4.691	27.720	0.169	0.00	0.000	27.720	0.000
	90 - 89		5274.40	5.169	27.720	0.186	0.00	0.000	27.720	0.000
	89 - 88		5763.63	5.649	27.720	0.204	0.00	0.000	27.720	0.000
	88 - 87		6254.23	6.130	27.720	0.221	0.00	0.000	27.720	0.000
	87 - 86		6757.60	6.623	27.720	0.239	0.00	0.000	27.720	0.000
	86 - 85		7262.01	7.117	27.720	0.257	0.00	0.000	27.720	0.000
	85 - 84		7767.37	7.613	27.720	0.275	0.00	0.000	27.720	0.000
	84 - 83		8273.55	8.109	27.720	0.293	0.00	0.000	27.720	0.000
	83 - 82		8780.42	8.606	27.720	0.310	0.00	0.000	27.720	0.000
L2	82 - 81	P6.75x0.75	9839.00	6.167	27.720	0.222	0.00	0.000	27.720	0.000
	81 - 80		10899.75	6.832	27.720	0.246	0.00	0.000	27.720	0.000
	80 - 79		11962.50	7.498	27.720	0.271	0.00	0.000	27.720	0.000
	79 - 78		13032.83	8.169	27.720	0.295	0.00	0.000	27.720	0.000
	78 - 77		14104.67	8.841	27.720	0.319	0.00	0.000	27.720	0.000
	77 - 76		15177.75	9.514	27.720	0.343	0.00	0.000	27.720	0.000
	76 - 75		16251.92	10.187	27.720	0.368	0.00	0.000	27.720	0.000
	75 - 74		17326.83	10.861	27.720	0.392	0.00	0.000	27.720	0.000
	74 - 73		18936.75	11.870	27.720	0.428	0.00	0.000	27.720	0.000
	73 - 72		20546.92	12.879	27.720	0.465	0.00	0.000	27.720	0.000
	72 - 71		22156.9	13.889	27.720	0.501	0.00	0.000	27.720	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	71 - 70		23766.32	14.897	27.720	0.537	0.00	0.000	27.720	0.000
	70 - 69		25387.53	15.914	27.720	0.574	0.00	0.000	27.720	0.000
	69 - 68		27006.50	16.928	27.720	0.611	0.00	0.000	27.720	0.000
	68 - 67		28623.08	17.942	27.720	0.647	0.00	0.000	27.720	0.000
	67 - 66		30236.50	18.953	27.720	0.684	0.00	0.000	27.720	0.000
	66 - 65		31846.25	19.962	27.720	0.720	0.00	0.000	27.720	0.000
	65 - 64		33451.83	20.968	27.720	0.756	0.00	0.000	27.720	0.000
	64 - 63		35052.58	21.972	27.720	0.793	0.00	0.000	27.720	0.000
	63 - 62		36647.83	22.972	27.720	0.829	0.00	0.000	27.720	0.000
L3	62 - 60.4	P24x0.375	39810.42	2.952	27.720	0.106	0.00	0.000	27.720	0.000
	60.4 - 58.8		43075.33	3.194	27.720	0.115	0.00	0.000	27.720	0.000
	58.8 - 57.2		46441.75	3.443	27.720	0.124	0.00	0.000	27.720	0.000
	57.2 - 55.6		49908.75	3.700	27.720	0.133	0.00	0.000	27.720	0.000
	55.6 - 54		53475.58	3.965	27.720	0.143	0.00	0.000	27.720	0.000
	54 - 52.4		57141.25	4.236	27.720	0.153	0.00	0.000	27.720	0.000
	52.4 - 50.8		60905.00	4.515	27.720	0.163	0.00	0.000	27.720	0.000
	50.8 - 49.2		64765.75	4.802	27.720	0.173	0.00	0.000	27.720	0.000
	49.2 - 47.6		68722.75	5.095	27.720	0.184	0.00	0.000	27.720	0.000
	47.6 - 46		72774.92	5.395	27.720	0.195	0.00	0.000	27.720	0.000
	46 - 44.4		76921.33	5.703	27.720	0.206	0.00	0.000	27.720	0.000
	44.4 - 42.8		81161.08	6.017	27.720	0.217	0.00	0.000	27.720	0.000
	42.8 - 41.2		85493.33	6.338	27.720	0.229	0.00	0.000	27.720	0.000
	41.2 - 39.6		89916.67	6.666	27.720	0.240	0.00	0.000	27.720	0.000
	39.6 - 38		94430.00	7.001	27.720	0.253	0.00	0.000	27.720	0.000
	38 - 36.4		99032.50	7.342	27.720	0.265	0.00	0.000	27.720	0.000
	36.4 - 34.8		103724.17	7.690	27.720	0.277	0.00	0.000	27.720	0.000
	34.8 - 33.2		108501.67	8.044	27.720	0.290	0.00	0.000	27.720	0.000
	33.2 - 31.6		113365.83	8.405	27.720	0.303	0.00	0.000	27.720	0.000
	31.6 - 30		118315.00	8.772	27.720	0.316	0.00	0.000	27.720	0.000
L4	30 - 28.5	P24x0.375	123030.	9.121	27.720	0.329	0.00	0.000	27.720	0.000

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
			00							
	28.5 - 27		127817.50	9.476	27.720	0.342	0.00	0.000	27.720	0.000
	27 - 25.5		132676.67	9.837	27.720	0.355	0.00	0.000	27.720	0.000
	25.5 - 24		137607.50	10.202	27.720	0.368	0.00	0.000	27.720	0.000
	24 - 22.5		142609.17	10.573	27.720	0.381	0.00	0.000	27.720	0.000
	22.5 - 21		147681.67	10.949	27.720	0.395	0.00	0.000	27.720	0.000
	21 - 19.5		152823.33	11.330	27.720	0.409	0.00	0.000	27.720	0.000
	19.5 - 18		158035.00	11.717	27.720	0.423	0.00	0.000	27.720	0.000
	18 - 16.5		163315.83	12.108	27.720	0.437	0.00	0.000	27.720	0.000
	16.5 - 15		168665.00	12.505	27.720	0.451	0.00	0.000	27.720	0.000
	15 - 13.5		174082.50	12.906	27.720	0.466	0.00	0.000	27.720	0.000
	13.5 - 12		179567.50	13.313	27.720	0.480	0.00	0.000	27.720	0.000
	12 - 10.5		185119.17	13.725	27.720	0.495	0.00	0.000	27.720	0.000
	10.5 - 9		190736.67	14.141	27.720	0.510	0.00	0.000	27.720	0.000
	9 - 7.5		196420.83	14.562	27.720	0.525	0.00	0.000	27.720	0.000
	7.5 - 6		202169.17	14.989	27.720	0.541	0.00	0.000	27.720	0.000
	6 - 4.5		207981.67	15.420	27.720	0.556	0.00	0.000	27.720	0.000
	4.5 - 3		213858.33	15.855	27.720	0.572	0.00	0.000	27.720	0.000
	3 - 1.5		219798.33	16.296	27.720	0.588	0.00	0.000	27.720	0.000
	1.5 - 0		225800.83	16.741	27.720	0.604	0.00	0.000	27.720	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	100 - 99	P6.63x0.432	458.55	0.109	16.800	0.006	0.00	0.000	16.800	0.000
	99 - 98		460.45	0.109	16.800	0.007	0.00	0.000	16.800	0.000
	98 - 97		462.33	0.110	16.800	0.007	0.00	0.000	16.800	0.000
	97 - 96		476.67	0.113	16.800	0.007	0.00	0.000	16.800	0.000
	96 - 95		478.48	0.114	16.800	0.007	0.00	0.000	16.800	0.000
	95 - 94		480.26	0.114	16.800	0.007	0.00	0.000	16.800	0.000
	94 - 93		482.28	0.115	16.800	0.007	0.00	0.000	16.800	0.000
	93 - 92		483.97	0.115	16.800	0.007	0.00	0.000	16.800	0.000
	92 - 91		485.60	0.115	16.800	0.007	0.00	0.000	16.800	0.000
	91 - 90		487.18	0.116	16.800	0.007	0.00	0.000	16.800	0.000
	90 - 89		488.69	0.116	16.800	0.007	0.00	0.000	16.800	0.000

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	89 - 88		490.13	0.117	16.800	0.007	0.00	0.000	16.800	0.000
	88 - 87		491.50	0.117	16.800	0.007	0.00	0.000	16.800	0.000
	87 - 86		504.25	0.120	16.800	0.007	0.00	0.000	16.800	0.000
	86 - 85		505.28	0.120	16.800	0.007	0.00	0.000	16.800	0.000
	85 - 84		506.21	0.120	16.800	0.007	0.00	0.000	16.800	0.000
	84 - 83		507.03	0.121	16.800	0.007	0.00	0.000	16.800	0.000
	83 - 82		507.73	0.121	16.800	0.007	0.00	0.000	16.800	0.000
L2	82 - 81	P6.75x0.75	1060.05	0.150	16.800	0.009	0.00	0.000	16.800	0.000
	81 - 80		1062.22	0.150	16.800	0.009	0.00	0.000	16.800	0.000
	80 - 79		1064.21	0.151	16.800	0.009	0.00	0.000	16.800	0.000
	79 - 78		1071.72	0.152	16.800	0.009	0.00	0.000	16.800	0.000
	78 - 77		1073.20	0.152	16.800	0.009	0.00	0.000	16.800	0.000
	77 - 76		1074.46	0.152	16.800	0.009	0.00	0.000	16.800	0.000
	76 - 75		1075.47	0.152	16.800	0.009	0.00	0.000	16.800	0.000
	75 - 74		1076.23	0.152	16.800	0.009	0.00	0.000	16.800	0.000
	74 - 73		1611.19	0.228	16.800	0.014	0.00	0.000	16.800	0.000
	73 - 72		1611.35	0.228	16.800	0.014	0.00	0.000	16.800	0.000
	72 - 71		1611.14	0.228	16.800	0.014	0.00	0.000	16.800	0.000
	71 - 70		1610.54	0.228	16.800	0.014	0.00	0.000	16.800	0.000
	70 - 69		1622.22	0.229	16.800	0.014	0.00	0.000	16.800	0.000
	69 - 68		1620.09	0.229	16.800	0.014	0.00	0.000	16.800	0.000
	68 - 67		1617.45	0.229	16.800	0.014	0.00	0.000	16.800	0.000
	67 - 66		1614.28	0.228	16.800	0.014	0.00	0.000	16.800	0.000
	66 - 65		1610.57	0.228	16.800	0.014	0.00	0.000	16.800	0.000
	65 - 64		1606.28	0.227	16.800	0.014	0.00	0.000	16.800	0.000
	64 - 63		1601.40	0.227	16.800	0.013	0.00	0.000	16.800	0.000
	63 - 62		1595.90	0.226	16.800	0.013	0.00	0.000	16.800	0.000
L3	62 - 60.4	P24x0.375	2008.89	0.144	16.800	0.009	0.00	0.000	16.800	0.000
	60.4 - 58.8		2072.62	0.149	16.800	0.009	0.00	0.000	16.800	0.000
	58.8 - 57.2		2135.82	0.153	16.800	0.009	0.00	0.000	16.800	0.000
	57.2 - 55.6		2198.49	0.158	16.800	0.009	0.00	0.000	16.800	0.000
	55.6 - 54		2260.62	0.162	16.800	0.010	0.00	0.000	16.800	0.000
	54 - 52.4		2322.19	0.167	16.800	0.010	0.00	0.000	16.800	0.000
	52.4 - 50.8		2383.21	0.171	16.800	0.010	0.00	0.000	16.800	0.000
	50.8 - 49.2		2443.65	0.176	16.800	0.010	0.00	0.000	16.800	0.000
	49.2 - 47.6		2503.51	0.180	16.800	0.011	0.00	0.000	16.800	0.000
	47.6 - 46		2562.79	0.184	16.800	0.011	0.00	0.000	16.800	0.000
	46 - 44.4		2621.46	0.188	16.800	0.011	0.00	0.000	16.800	0.000
	44.4 - 42.8		2679.53	0.193	16.800	0.011	0.00	0.000	16.800	0.000
	42.8 - 41.2		2736.97	0.197	16.800	0.012	0.00	0.000	16.800	0.000
	41.2 - 39.6		2793.78	0.201	16.800	0.012	0.00	0.000	16.800	0.000
	39.6 - 38		2849.95	0.205	16.800	0.012	0.00	0.000	16.800	0.000
	38 - 36.4		2905.47	0.209	16.800	0.012	0.00	0.000	16.800	0.000
	36.4 - 34.8		2960.33	0.213	16.800	0.013	0.00	0.000	16.800	0.000
	34.8 - 33.2		3014.50	0.217	16.800	0.013	0.00	0.000	16.800	0.000
	33.2 - 31.6		3067.99	0.220	16.800	0.013	0.00	0.000	16.800	0.000
	31.6 - 30		3120.78	0.224	16.800	0.013	0.00	0.000	16.800	0.000
L4	30 - 28.5	P24x0.375	3169.05	0.228	16.800	0.014	0.00	0.000	16.800	0.000
	28.5 - 27		3217.15	0.231	16.800	0.014	0.00	0.000	16.800	0.000
	27 - 25.5		3264.98	0.235	16.800	0.014	0.00	0.000	16.800	0.000
	25.5 - 24		3312.53	0.238	16.800	0.014	0.00	0.000	16.800	0.000
	24 - 22.5		3359.79	0.241	16.800	0.014	0.00	0.000	16.800	0.000
	22.5 - 21		3406.75	0.245	16.800	0.015	0.00	0.000	16.800	0.000
	21 - 19.5		3453.39	0.248	16.800	0.015	0.00	0.000	16.800	0.000
	19.5 - 18		3499.71	0.251	16.800	0.015	0.00	0.000	16.800	0.000
	18 - 16.5		3545.70	0.255	16.800	0.015	0.00	0.000	16.800	0.000
	16.5 - 15		3591.34	0.258	16.800	0.015	0.00	0.000	16.800	0.000
	15 - 13.5		3636.61	0.261	16.800	0.016	0.00	0.000	16.800	0.000
	13.5 - 12		3681.52	0.265	16.800	0.016	0.00	0.000	16.800	0.000
	12 - 10.5		3726.05	0.268	16.800	0.016	0.00	0.000	16.800	0.000

Section No.	Elevation ft	Size	Actual V lb	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	10.5 - 9		3770.17	0.271	16.800	0.016	0.00	0.000	16.800	0.000
	9 - 7.5		3813.89	0.274	16.800	0.016	0.00	0.000	16.800	0.000
	7.5 - 6		3857.19	0.277	16.800	0.016	0.00	0.000	16.800	0.000
	6 - 4.5		3900.05	0.280	16.800	0.017	0.00	0.000	16.800	0.000
	4.5 - 3		3942.47	0.283	16.800	0.017	0.00	0.000	16.800	0.000
	3 - 1.5		3984.43	0.286	16.800	0.017	0.00	0.000	16.800	0.000
	1.5 - 0		4025.91	0.289	16.800	0.017	0.00	0.000	16.800	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 99	0.000	0.018	0.000	0.006	0.000	0.018	1.333	H1-3+VT
	99 - 98	0.000	0.034	0.000	0.007	0.000	0.034	1.333	H1-3+VT
	98 - 97	0.000	0.050	0.000	0.007	0.000	0.051	1.333	H1-3+VT
	97 - 96	0.001	0.067	0.000	0.007	0.000	0.068	1.333	H1-3+VT
	96 - 95	0.002	0.084	0.000	0.007	0.000	0.085	1.333	H1-3+VT
	95 - 94	0.002	0.101	0.000	0.007	0.000	0.103	1.333	H1-3+VT
	94 - 93	0.002	0.118	0.000	0.007	0.000	0.120	1.333	H1-3+VT
	93 - 92	0.002	0.135	0.000	0.007	0.000	0.137	1.333	H1-3+VT
	92 - 91	0.002	0.152	0.000	0.007	0.000	0.154	1.333	H1-3+VT
	91 - 90	0.002	0.169	0.000	0.007	0.000	0.172	1.333	H1-3+VT
	90 - 89	0.002	0.186	0.000	0.007	0.000	0.189	1.333	H1-3+VT
	89 - 88	0.003	0.204	0.000	0.007	0.000	0.206	1.333	H1-3+VT
	88 - 87	0.003	0.221	0.000	0.007	0.000	0.224	1.333	H1-3+VT
	87 - 86	0.004	0.239	0.000	0.007	0.000	0.243	1.333	H1-3+VT
	86 - 85	0.004	0.257	0.000	0.007	0.000	0.261	1.333	H1-3+VT
	85 - 84	0.004	0.275	0.000	0.007	0.000	0.279	1.333	H1-3+VT
	84 - 83	0.004	0.293	0.000	0.007	0.000	0.297	1.333	H1-3+VT
	83 - 82	0.004	0.310	0.000	0.007	0.000	0.315	1.333	H1-3+VT
L2	82 - 81	0.003	0.222	0.000	0.009	0.000	0.225	1.333	H1-3+VT
	81 - 80	0.003	0.246	0.000	0.009	0.000	0.249	1.333	H1-3+VT
	80 - 79	0.003	0.271	0.000	0.009	0.000	0.274	1.333	H1-3+VT
	79 - 78	0.004	0.295	0.000	0.009	0.000	0.298	1.333	H1-3+VT
	78 - 77	0.004	0.319	0.000	0.009	0.000	0.323	1.333	H1-3+VT
	77 - 76	0.004	0.343	0.000	0.009	0.000	0.347	1.333	H1-3+VT
	76 - 75	0.004	0.368	0.000	0.009	0.000	0.372	1.333	H1-3+VT
	75 - 74	0.004	0.392	0.000	0.009	0.000	0.396	1.333	H1-3+VT
	74 - 73	0.004	0.428	0.000	0.014	0.000	0.433	1.333	H1-3+VT
	73 - 72	0.004	0.465	0.000	0.014	0.000	0.469	1.333	H1-3+VT
	72 - 71	0.005	0.501	0.000	0.014	0.000	0.506	1.333	H1-3+VT
	71 - 70	0.005	0.537	0.000	0.014	0.000	0.542	1.333	H1-3+VT
	70 - 69	0.006	0.574	0.000	0.014	0.000	0.580	1.333	H1-3+VT
	69 - 68	0.006	0.611	0.000	0.014	0.000	0.617	1.333	H1-3+VT
	68 - 67	0.006	0.647	0.000	0.014	0.000	0.654	1.333	H1-3+VT
	67 - 66	0.006	0.684	0.000	0.014	0.000	0.690	1.333	H1-3+VT
	66 - 65	0.007	0.720	0.000	0.014	0.000	0.727	1.333	H1-3+VT
	65 - 64	0.007	0.756	0.000	0.014	0.000	0.763	1.333	H1-3+VT
	64 - 63	0.007	0.793	0.000	0.013	0.000	0.800	1.333	H1-3+VT
	63 - 62	0.007	0.829	0.000	0.013	0.000	0.836	1.333	H1-3+VT
L3	62 - 60.4	0.004	0.106	0.000	0.009	0.000	0.110	1.333	H1-3+VT
	60.4 - 58.8	0.004	0.115	0.000	0.009	0.000	0.119	1.333	H1-3+VT
	58.8 - 57.2	0.004	0.124	0.000	0.009	0.000	0.129	1.333	H1-3+VT
	57.2 - 55.6	0.005	0.133	0.000	0.009	0.000	0.138	1.333	H1-3+VT

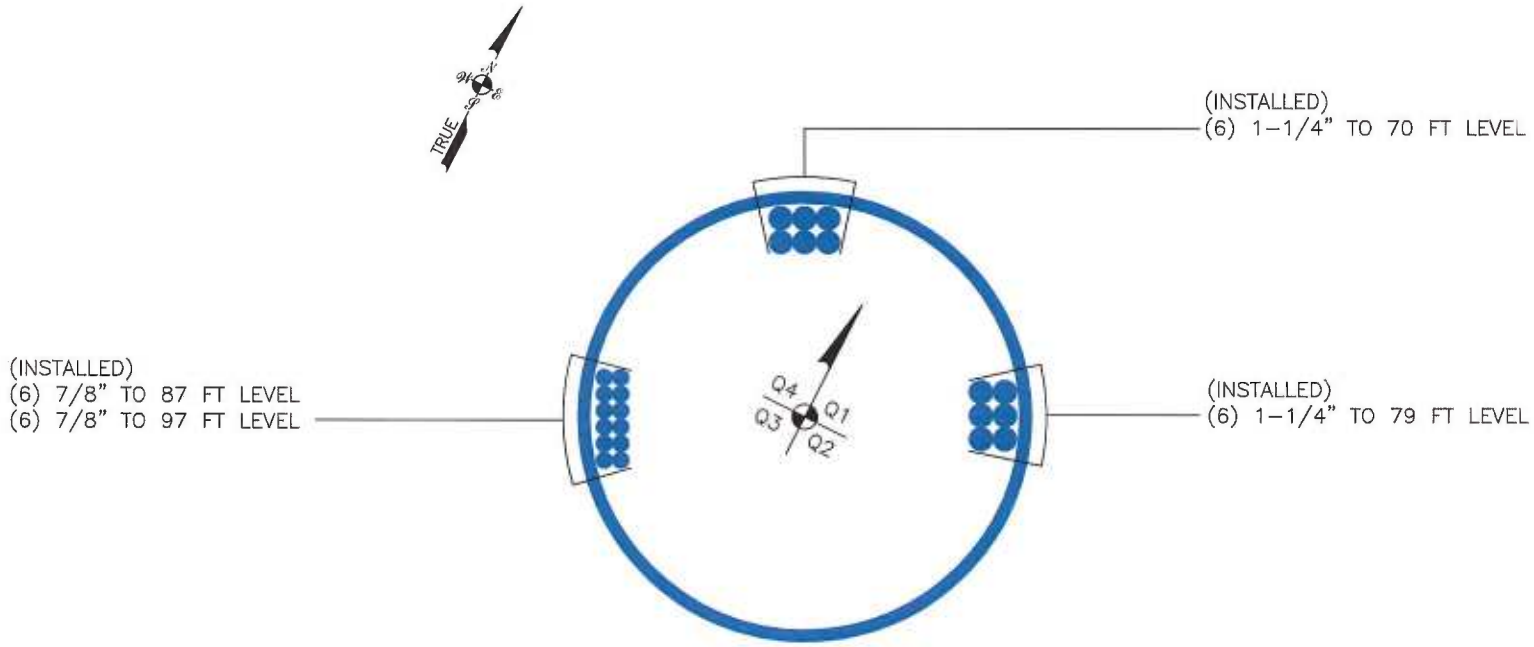
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	55.6 - 54	0.005	0.143	0.000	0.010	0.000	0.148	1.333	H1-3+VT
	54 - 52.4	0.005	0.153	0.000	0.010	0.000	0.158	1.333	H1-3+VT
	52.4 - 50.8	0.005	0.163	0.000	0.010	0.000	0.168	1.333	H1-3+VT
	50.8 - 49.2	0.006	0.173	0.000	0.010	0.000	0.179	1.333	H1-3+VT
	49.2 - 47.6	0.006	0.184	0.000	0.011	0.000	0.190	1.333	H1-3+VT
	47.6 - 46	0.006	0.195	0.000	0.011	0.000	0.201	1.333	H1-3+VT
	46 - 44.4	0.006	0.206	0.000	0.011	0.000	0.212	1.333	H1-3+VT
	44.4 - 42.8	0.007	0.217	0.000	0.011	0.000	0.224	1.333	H1-3+VT
	42.8 - 41.2	0.007	0.229	0.000	0.012	0.000	0.236	1.333	H1-3+VT
	41.2 - 39.6	0.007	0.240	0.000	0.012	0.000	0.248	1.333	H1-3+VT
	39.6 - 38	0.007	0.253	0.000	0.012	0.000	0.260	1.333	H1-3+VT
	38 - 36.4	0.007	0.265	0.000	0.012	0.000	0.273	1.333	H1-3+VT
	36.4 - 34.8	0.008	0.277	0.000	0.013	0.000	0.285	1.333	H1-3+VT
	34.8 - 33.2	0.008	0.290	0.000	0.013	0.000	0.298	1.333	H1-3+VT
	33.2 - 31.6	0.008	0.303	0.000	0.013	0.000	0.312	1.333	H1-3+VT
	31.6 - 30	0.008	0.316	0.000	0.013	0.000	0.325	1.333	H1-3+VT
L4	30 - 28.5	0.009	0.329	0.000	0.014	0.000	0.338	1.333	H1-3+VT
	28.5 - 27	0.009	0.342	0.000	0.014	0.000	0.351	1.333	H1-3+VT
	27 - 25.5	0.009	0.355	0.000	0.014	0.000	0.364	1.333	H1-3+VT
	25.5 - 24	0.009	0.368	0.000	0.014	0.000	0.378	1.333	H1-3+VT
	24 - 22.5	0.010	0.381	0.000	0.014	0.000	0.391	1.333	H1-3+VT
	22.5 - 21	0.010	0.395	0.000	0.015	0.000	0.405	1.333	H1-3+VT
	21 - 19.5	0.010	0.409	0.000	0.015	0.000	0.419	1.333	H1-3+VT
	19.5 - 18	0.010	0.423	0.000	0.015	0.000	0.433	1.333	H1-3+VT
	18 - 16.5	0.011	0.437	0.000	0.015	0.000	0.448	1.333	H1-3+VT
	16.5 - 15	0.011	0.451	0.000	0.015	0.000	0.462	1.333	H1-3+VT
	15 - 13.5	0.011	0.466	0.000	0.016	0.000	0.477	1.333	H1-3+VT
	13.5 - 12	0.011	0.480	0.000	0.016	0.000	0.492	1.333	H1-3+VT
	12 - 10.5	0.011	0.495	0.000	0.016	0.000	0.507	1.333	H1-3+VT
	10.5 - 9	0.012	0.510	0.000	0.016	0.000	0.522	1.333	H1-3+VT
	9 - 7.5	0.012	0.525	0.000	0.016	0.000	0.538	1.333	H1-3+VT
	7.5 - 6	0.012	0.541	0.000	0.016	0.000	0.553	1.333	H1-3+VT
	6 - 4.5	0.012	0.556	0.000	0.017	0.000	0.569	1.333	H1-3+VT
	4.5 - 3	0.013	0.572	0.000	0.017	0.000	0.585	1.333	H1-3+VT
	3 - 1.5	0.013	0.588	0.000	0.017	0.000	0.601	1.333	H1-3+VT
	1.5 - 0	0.013	0.604	0.000	0.017	0.000	0.617	1.333	H1-3+VT

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	100 - 82	Pole	P6.63x0.432	1	-937.60	282564.00	23.6	Pass
L2	82 - 62	Pole	P6.75x0.75	2	-2533.46	474890.56	62.7	Pass
L3	62 - 30	Pole	P24x0.375	3	-5936.34	934939.50	24.4	Pass
L4	30 - 0	Pole	P24x0.375	4	-9173.13	934939.50	46.3	Pass
							Summary	
						Pole (L2)	62.7	Pass
						RATING =	**62.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 826927 TOWER ID: C_BASELEVEL_A

APPENDIX C

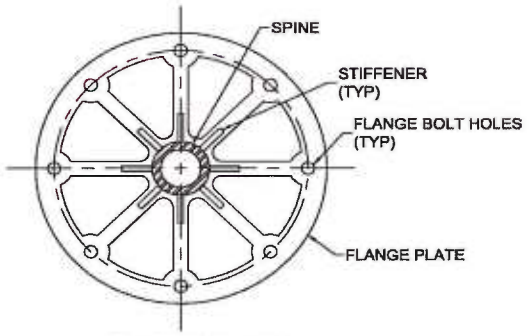
ADDITIONAL CALCULATIONS

CCI Flagpole Tool

Site Data	
BU#:	826927
Site Name:	Redding/Rt7
App #:	259683 Rev 0

Code		
Code:	TIA/EIA 222-F	
Ice Thickness:	0.75	in
Windspeed (V):	80	mph
Ice Wind Speed (V):	37.6	mph

Tower Information		
Total Tower Height:	100	ft
Base Tower Height:	62	ft
Total Canister Length:	38	ft
Number of Canister Assembly Sections:	3	



FLANGE PLATE
(TYPE 4: SOLIDITY RATIO 0.55)

Canister Section Number *:	Canister Assembly Length (ft):	Canister Assembly Diameter (in):	Number of Sides Canister Section	Plate Type:	Mating Flange Plate Thickness (in)**:	Mating Flange Plate Diameter (in):	Solidity Ratio	Plate Weight (Kip):	Canister Weight (Kip)
1	18	24	Round	4	2.00	24	0.55	0.282	0.226
2	8	24	Round	4	0.00	24	0.55	0.000	0.101
3	12	36	Round	4	2.00	36	0.55	0.635	0.226

* Sections are numbered from the top of the tower down ** Mating Flange Plate Thickness at the bottom of canister section

Flag on Tower:	Yes	
Flag Width:	20	ft
Flag Height:	12	ft
Flag Elevation(z):	94	ft

Truck Ball on Tower:	Yes	
Diameter of Ball:	18	in

Geometry : Base Tower + Spine 826927_LC5__8.15.eri *(last saved 08/15 12:28 pm)*

Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material	Delete
100	18		0	6.63	6.63	0.432	n/a	A53-B-42	[x]
82	20		0	6.75	6.75	0.75	n/a	A53-B-42	[x]
62	32		0	24	24	0.375	n/a	A53-B-42	[x]
30	30		0	24	24	0.375	n/a	A53-B-42	[x]

Discrete Loads: Truck Ball	Apply C_aA_A at Elevation(z) (ft)	C_aA_A No Ice (ft^2)	C_aA_A 1/2" Ice (ft^2)	C_aA_A 1" Ice (ft^2)	C_aA_A 2" Ice (ft^2)	C_aA_A 4" Ice (ft^2)	Weight No Ice (Kip)	Weight 1/2" Ice (Kip)

	100.75	1.414	1.575	1.745	2.112	2.950	0.05	0.067

Discrete Loads : C_FA_F for Canister Assembly								
Canister Loading	Apply C_FA_F at Elevation(z) (ft)	C_FA_F No Ice (ft^2)	C_FA_F 1/2" Ice (ft^2)	C_FA_F 1" Ice (ft^2)	C_FA_F 2" Ice (ft^2)	C_FA_F 4" Ice (ft^2)	Canister Assembly Weight No Ice (Kip)	Canister Assembly Weight 1/2" Ice (Kip)
Canister Load 1	100	10.620	11.063	11.505	12.390	14.160	0.113	0.248
Canister Load 2	82	15.340	15.979	16.618	17.897	20.453	0.446	0.640
Canister Load 3	74	15.340	15.832	16.323	17.307	19.273	0.163	0.357
Canister Load 4	62	10.620	10.915	11.210	11.800	12.980	0.748	0.882

User Forces: Flag Force Calculation Per ANSI/NAAMM FP 1001-07	
$Wind_{FORCE}$=	0.276 Kip
Weight=	0.291 Kip
$Wind_{FORCE, ICE}$=	0.078 Kip
$Weight_{ICE}$=	0.459 Kip
$W_{FORCE, SERVICE WIND}$=	0.123 Kip
Weight=	0.291 Kip

←Flag force should be included at the top of the flag attachment elevation. If the attachment of the flag to the halyard distributes forces equally to the pole, apply flag forces accordingly in tnx file.

Deflection Check Required:	**Yes**	Import Deflection Results
3% Spine Deflection Check		
Allowable (3%) Horizontal Spine Deflection (inches)	Actual Deflection ***(inches)	Sufficient/ Insufficient
13.680	4.932	Sufficient

*** Relative deflection under service level wind speed

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *826927*
Site Name: *Redding/Rt7*
App #: *259683 Rev. 0*

Pole Manufacturer:	Pirod

Reactions		
Moment:	8.78	ft-kips
Axial:	0.94	kips
Shear:	0.51	kips
Elevation:	82	feet

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

Bolt Data			
Qty:	8		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	75	<-- Disregard	44.00
Circle (in.):	21		

Plate Data		
Diam:	23.25	in
Thick, t:	2	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	2.60	in

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

Pole Data		
Diam:	6.63	in
Thick:	0.432	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

		Non-Rigid
		Service, ASD
		Fty*ASIF
Bolt Tension Capacity, **B**:	46.07 kips	
Max Bolt directly applied T:	2.39 Kips	
Min. PL "tc" for **B** cap. **w/o** Pry:	4.440 in	
Min PL "treq" for actual **T w/ Pry:**	0.802 in	
Min PL "t1" for actual **T w/o Pry:**	1.012 in	
T allowable with Prying:	14.88 kips	α'>1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	2.39 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	5.2% **Pass**	

Exterior Flange Plate Results

	Flexural Check	Non-Rigid
		Service ASD
		0.75*Fy*ASIF
Compression Side Plate Stress:	Rohn/Piroc OK	Comp. Y.L. Length:
Allowable Plate Stress:	36.0 ksi	19.93
Compression Plate Stress Ratio:	Rohn/Piroc OK	

No Prying

Tension Side Stress Ratio, (treq/t)^2: Rohn/Pirod OK

n/a

Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A

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

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

EXT. SPOKED FLANGE PLATE CHECK - 82-FT

Configuration 1						
BC Width (in)	21			B_eff (in)	0.75	
L [Bolt to bolt] (in)	8.25			Z (in^3)	0.750	
Thickness (in)	2.00					
	1-Existing Bolt	2-Existing Bolt	3-Existing Bolt	1-Proposed Bolt	2-Proposed Bolt	3-Proposed Bolt
No. of Bolts	1					
Moment Arm (in)	1.625					
Bolt Force (kips)	2.39					
Moment (K-in)	3.88			Allowable Stress (Ksi)	50	
Stress (Ksi)	5.18			% Capacity	10.36%	

EXT. SPOKED FLANGE PLATE CHECK - 62-FT

Configuration 1						
BC Width (in)	21			B_eff (in)	0.75	
L [Bolt to bolt] (in)	8.25			Z (in^3)	0.750	
Thickness (in)	2.00					
	1-Existing Bolt	2-Existing Bolt	3-Existing Bolt	1-Proposed Bolt	2-Proposed Bolt	3-Proposed Bolt
No. of Bolts	1					
Moment Arm (in)	1.625					
Bolt Force (kips)	12.41					
Moment (K-in)	20.17			Allowable Stress (Ksi)	50	
Stress (Ksi)	26.89			% Capacity	53.78%	

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *826927*
Site Name: *Redding/Rt7*
App #: *259683 Rev. 0*

Manufacturer:	Pirod

Reactions		
Moment:	36.65	ft-kips
Axial:	2.53	kips
Shear:	1.60	kips
Exterior Flange Run, T+Q:	12.41	kips

Elevation: 62 feet

Bolt Data				
Qty:	8			
Diam:	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:	100	<-- Disregard	Bolt Fty:	44.00
N/A:	75	<-- Disregard		
Circle:	21	in		

Interior Flange Bolt Results

Maximum Bolt Tension:	12.4 Kips, Ext. Flange T+Q
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	26.9% **Pass**

Plate Data		
Plate Outer Diam:	23.24999	in
Plate Inner Diam:	18.125	in (Hole @ Ctr)
Thick:	1	in
Grade:	36	ksi
Effective Width:	5.50	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	12.4 Kips, Ext. Flange T+Q
Plate Stress:	Rohn/Pirod OK
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	Rohn/Pirod OK

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

n/a

Stiffener Results N/A for Rohn / Pirod

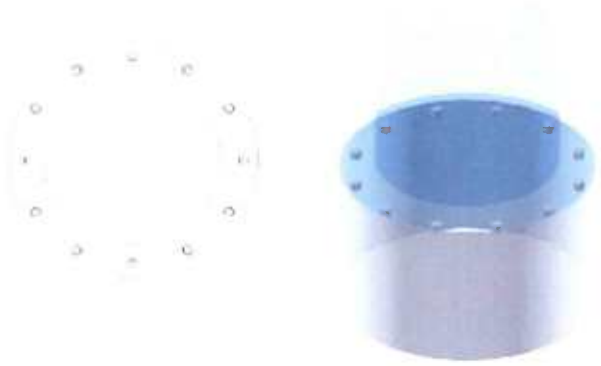
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A

Pole Data		
Pole OuterDiam:	23.99999	in
Thick:	0.375	in
Pole Inner Diam:	23.24999	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Stress Increase Factor	
ASIF:	1.333



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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *826927*
Site Name: *Redding/Rt7*
App #: *259683 Rev. 0*

Manufacturer:	Pirod

Reactions		
Moment:	118.31	ft-kips
Axial:	5.94	kips
Shear:	3.12	kips
Exterior Flange Run, T+Q:	0.00	kips

Elevation: 30 feet

Bolt Data				
Qty:	16			
Diam:	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:	100	<-- Disregard	Bolt Fty:	
N/A:	75	<-- Disregard	44.00	
Circle:	21	in		

Interior Flange Bolt Results

Maximum Bolt Tension:	16.5 Kips, Ext. T=Interior T
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	35.9% **Pass**

Plate Data		
Plate Outer Diam:	23.24999	in
Plate Inner Diam:	18.125	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.57	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	17.3 Kips, Ext. C= Interior C
Plate Stress:	Rohn/Pirod OK
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	Rohn/Pirod OK

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

n/a

Stiffener Results N/A for Rohn / Pirod

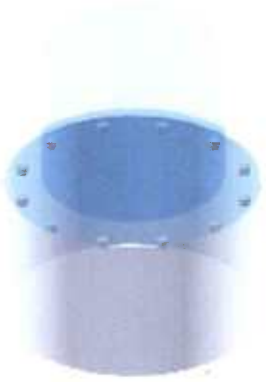
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	23.99999	in
Thick:	0.375	in
Pole Inner Diam:	23.24999	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Stress Increase Factor		
ASIF:	1.333	



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

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

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

TIA Rev F

Site Data

BU#: *826927*
Site Name: *Redding/Rt7*
App #: *259683 Rev. 0*

Pole Manufacturer:	*Pirod*

Reactions		
Moment:	226	ft-kips
Axial:	9	kips
Shear:	4	kips

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

Anchor Rod Data		
Qty:	20	
Diam:	1	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	27	in

Anchor Rod Results

		Rigid
Maximum Rod Tension:	19.6 Kips	Service, ASD
Allowable Tension:	51.8 Kips	Fty*ASIF
Anchor Rod Stress Ratio:	37.8% Pass	

Plate Data		
Diam:	30.125	in
Thick:	1	in
Grade:	36	ksi
Single-Rod B-eff:	3.77	in

Base Plate Results Flexural Check

		Rigid
Base Plate Stress:	Rohn/Pirod, OK	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	Rohn/Pirod, OK	Y.L. Length: 12.37

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

n/a

Stiffener Results N/A for Rohn / Pirod

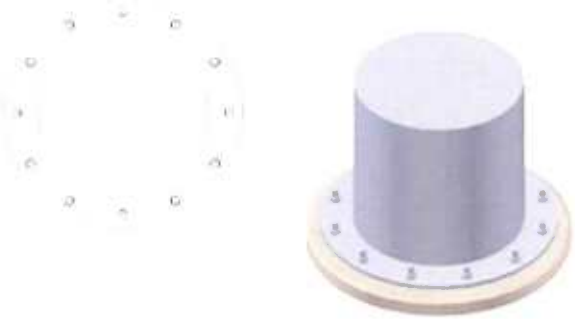
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Diam:	23.999988	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	



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

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

		PASS	PASS			
	Results Summary:	LC1	LC2		Redding / Rt7 (BU 823927)	
	Soil Interaction:	17.2%	4.1%	TEP #:	48075.22864	
Drilled Caisson Tool - Input	Foundation Structural:	57.2%	13.5%	Analysis:	RNG	8/20/2014
				Check:	TLI	8/20/2014

Code Revisions: TIA-222-F ACI 318-05

Tower Type: Monopole

	LC1	LC2	
Moment:	225.80	53.90	kip-ft
Axial (download):	9.18	12.14	kip
Shear:	4.02	0.95	kip
Axial (uplift):			kip

Shaft Information		
Diameter:	3.50	ft
Projection:	0.50	ft
Caisson Length:	20.00	ft
f'c:	3.000	ksi
Max εc:	0.003	in/in

Cage 1 Reinforcement		
Tie Bar Size:	5	*(fy = 60.0 ksi)*
Clear Cover to Tie:	3.00	*in (Cage Ø = 33.88in)*
Tie Bar Spacing:	14.00	in
Vertical Bar Size:	7	
Vertical Bar Quantity:	12	*(ρ =0.520%)*
fy:	60.0	ksi
E:	29,000	ksi

Design Parameters								
Soil Layer	Soil Type	Depth (ft)		Eff. Unit Weight (pcf)	Cohesion (psf)	Friction Angle ϕ (°)	All. Skin Friction (psf)	
		from	to				Download	Uplift
1	Clay	0.00	3.50	135.0	0			
2	Sand	3.50	7.00	135.0		38.0		
3	Sand	7.00	28.00	75.0		38.0		

Notes: 1) Neglect lateral soil strength to a depth of:

i) ~~1/2 Pier Ø = 3.50ft / 2 = 1.75ft~~

ii) **Frost Depth = 42.0in / (12in/ft) = 3.50ft**

iii) ~~Geotech Recommendation = none~~

2) Groundwater = 7.00ft

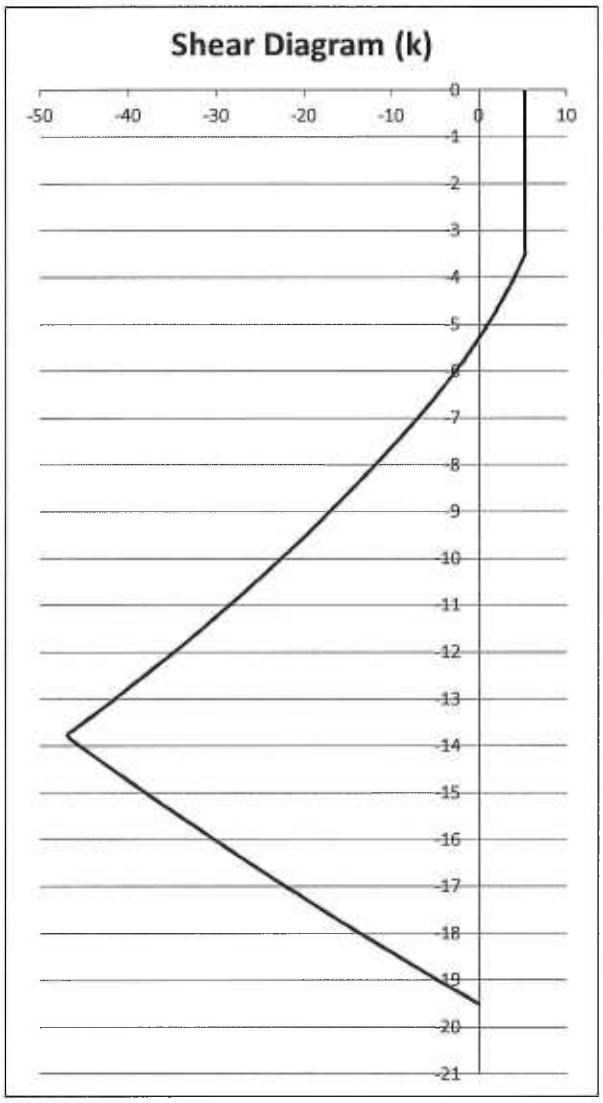
Redding / Rt7 (BU 823927)

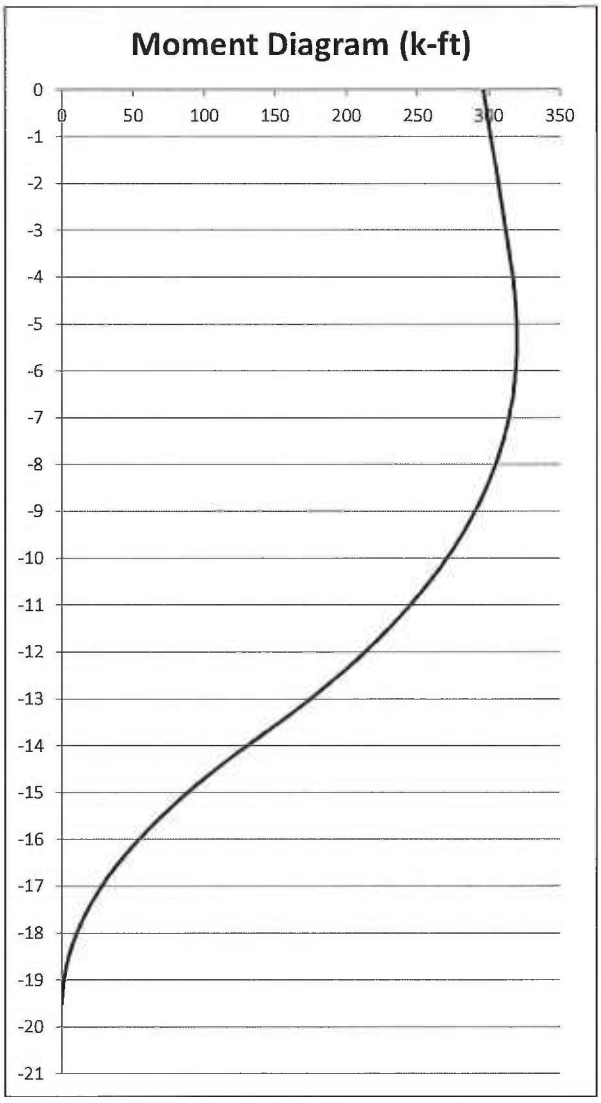
TEP #: 48075.22864

Analysis: RNG 8/20/2014

Check: TLI 8/20/2014

Soil Interaction: LC1





Max Unfactored Moment: 319.5 kip-ft

@ 5.29 ft below grade

Additional Factor of Safety: 11.65

Capacity = 17.2% **PASS**

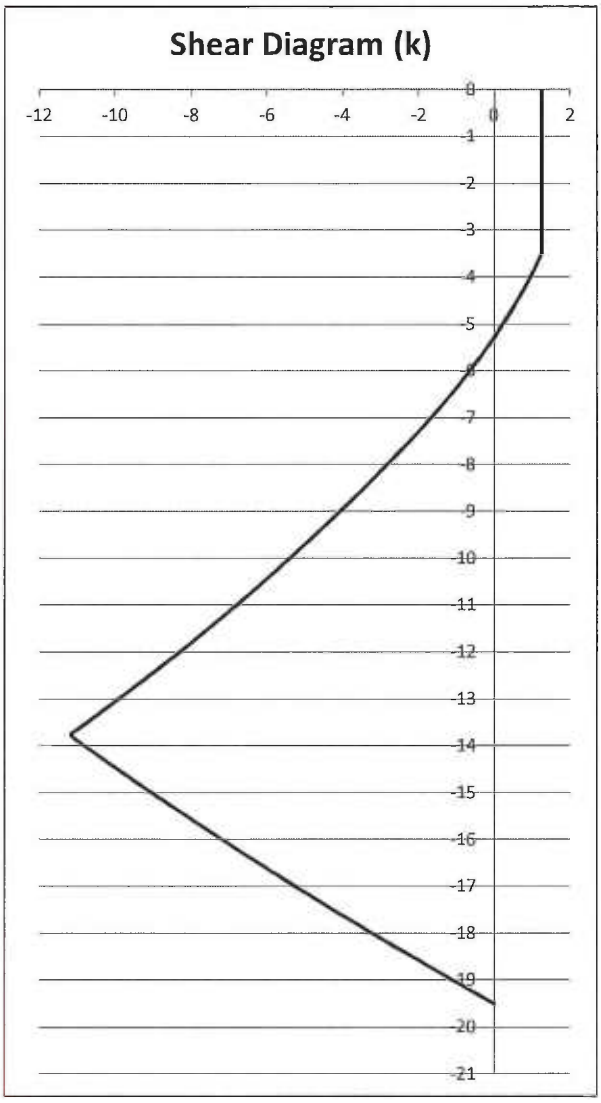
Redding / Rt7 (BU 823927)

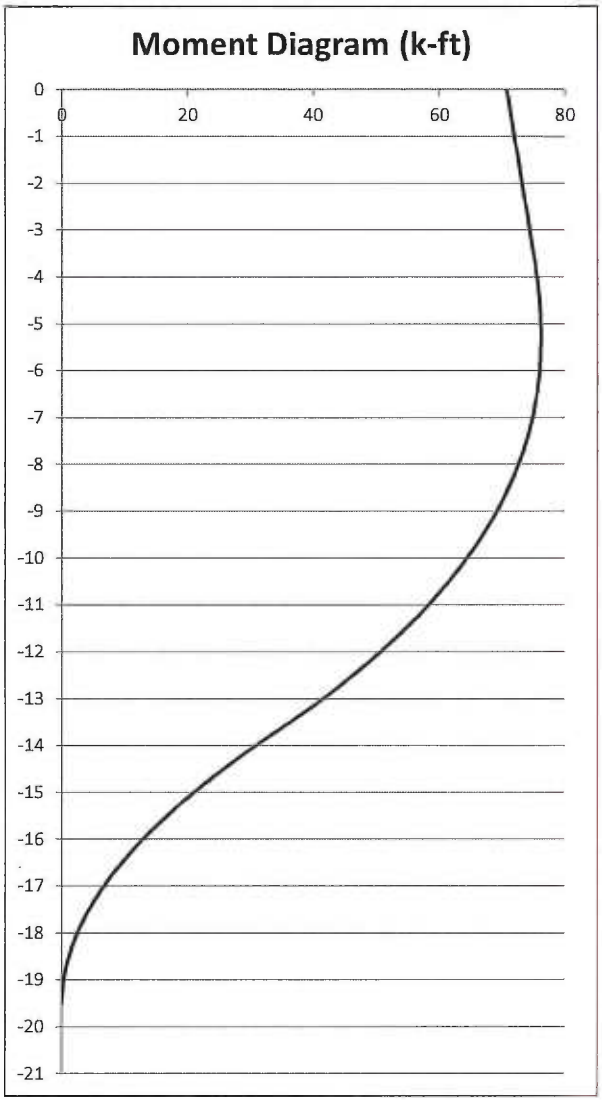
TEP #: 48075.22864

Analysis: RNG 8/20/2014

Check: TLI 8/20/2014

Soil Interaction: LC2





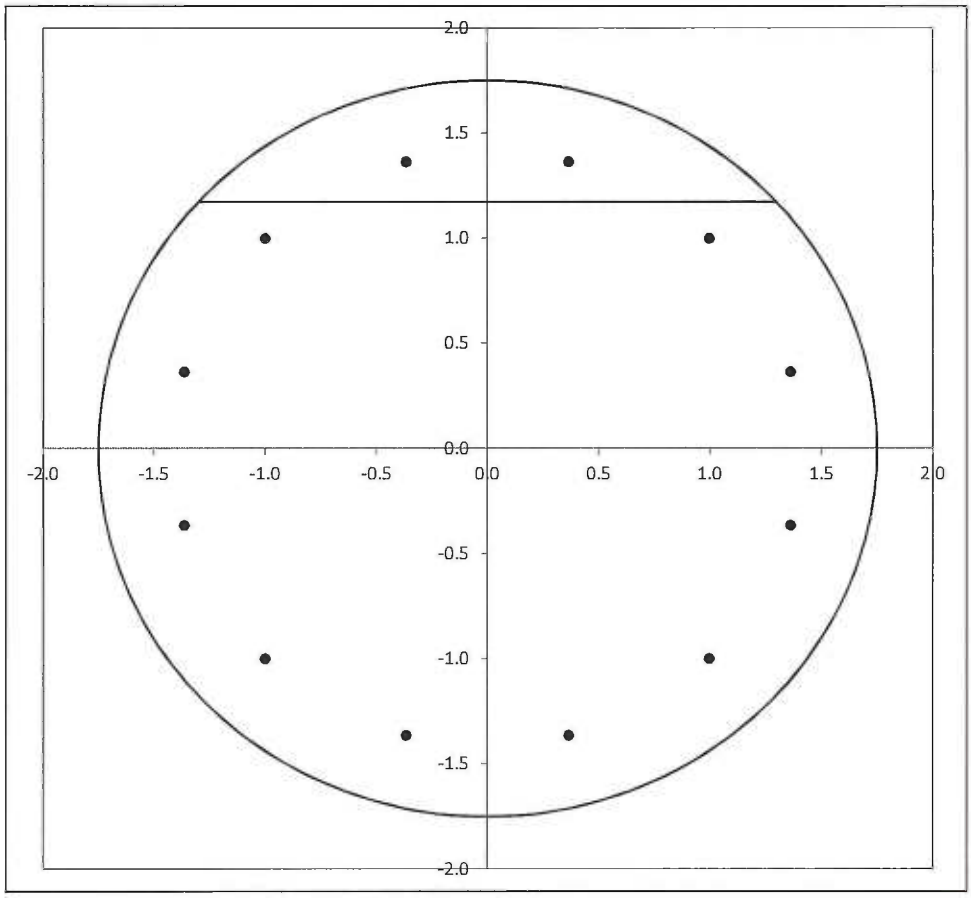
Max Unfactored Moment: 76.1 kip-ft

@ 5.27 ft below grade

Additional Factor of Safety: 48.95

Capacity = 4.1% PASS

Reinforcement Capacity



		LC1	LC2	
	Vu =	47.0	11.2	kip
	Vc =	152.3	152.4	kip
fy,tie = 60.0	Vs =	99.3	99.3	kip
	ϕVn =	188.7	188.8	kip
	Capacity =	24.9%	5.9%	
		PASS	PASS	

	LC1	LC2	
Mu =	319.5	76.1	kip-ft
ϕMn =	558.7	563.4	kip-ft
Capacity =	57.2%	13.5%	
	PASS	PASS	

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11112H

Redding / Rt 7
845 Ethan Allen Highway
Ridgefield, CT 06877

October 20, 2014

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	19.74 %

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

EBI Consulting
environmental | engineering | due diligence

October 20, 2014

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

Emissions Analysis for Site: **CT11112H – Redding / Rt 7**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **845 Ethan Allen Highway, Ridgefield, 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. For this analysis power density measurements were taken on site to determine the existing radio frequency (RF) emissions values present in the area. Theoretical calculations were then performed to determine the additional contribution to this composite value from the proposed T-Mobile proposed upgrades to the existing facility.

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

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

General population/uncontrolled exposure limits apply to situations in which the general 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 ($\mu W/cm^2$). The general population exposure limit for both the PCS and AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

MEASUREMENT METHODOLOGY

Frequencies from 300 KHz to 50 GHz were measured using the Narda EA5091 probe in conjunction with the NBM 550 survey meter. The EA5091 probe is "shaped" such that in a mixed signal environment (i.e.: more than one frequency band is used in a particular location) it accurately measures the percent of MPE.

FCC OET Bulletin No. 65 - Edition 97-01 states "A useful characteristic of broadband probes used in multiple-frequency RF environments is a frequency-dependent response that corresponds to the variation in MPE limits with frequency. Broadband probes having such a "shaped" response permit direct assessment of compliance at sites where RF fields result from antennas transmitting over a wide range of frequencies. Such probes can express the composite RF field as a percentage of the applicable MPEs".

Probe Description – As suggested in FCC OET Bulletin No. 65 - Edition 97-01, the response of the measurement instrument should be essentially isotropic, (i.e., independent of orientation or rotation angle of the probe). For this reason, the Narda EA5091 Isotropic probe was used for these measurements.

Sampling Method: At each measurement location, a spatially averaged measurement is collected over the height of an average human body. The NBM 550 survey meter performs a time average measurement while the user slowly moves the probe over a distance range of 0 cm to 200 cm (about 6 feet) above ground level. The results recorded at each measurement location include both average and peak values over the spatial distance.

A summary of equipment specifications for the probe and meter are listed in Table 1below.

Manufacturer:	NARDA Microwave
Probe Model:	NARDA EA5091
Probe Calibration date:	February 27, 2013
Survey Meter Model:	NARDA NBM 550
Survey Meter calibration Date:	February 17, 2014
Calibration Interval:	24 Months
Probe Specifics	
Frequency Range:	300 KHz to 50 GHz
Field(s) Measured:	E Field
Measurement Range (% of Controlled Environment standard):	0.3 to 600%
Specification Standards:	FCC 1997

Table 1: Measurement Equipment Information

Instrument Measurement Uncertainty: The total measurement uncertainty of the NARDA measurement probe and meter is no greater than ±3 dB. The factors which contribute to this include the probe's frequency response deviation, calibration uncertainty, ellipse ratio, and isotropic response. Every effort is taken to reduce the overall uncertainty during measurement collection including rotating the probe about the axis of the handle and pointing the probe directly at the likely highest source of emissions.

A summary of all sample points taken on site are displayed in Appendix A

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **845 Ethan Allen Highway, Ridgefield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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 maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

6) The antennas used in this modeling are the **RFS APXV18-206517-C-ACU** for 1900 MHz (PCS) and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APXV18-206517-C-ACU** has a maximum gain of **16.7 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

7) The antenna mounting height centerlines of the proposed antennas are **97 and 87 feet** above ground level (AGL).

8) Composite emissions value measurements were taken on site to determine existing RF emissions levels. The largest calculated theoretical emissions value for the T-Mobile proposed facility was then added to the largest power density value measured on site to determine the anticipated largest onsite composite value with the contribution of the proposed T-Mobile facility upgrades.

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXV18-206517-C-ACU	Make / Model:	RFS APXV18-206517-C-ACU	Make / Model:	RFS APXV18-206517-C-ACU
Gain:	16.7 dBd	Gain:	16.7 dBd	Gain:	16.7 dBd
Height (AGL):	97	Height (AGL):	97	Height (AGL):	97
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2	Channel Count	2	# PCS Channels:	2
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	1,911.82	ERP (W):	1,911.82	ERP (W):	1,911.82
Antenna A1 MPE%	2.44	Antenna B1 MPE%	2.44	Antenna C1 MPE%	2.44
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXV18-206517-C-ACU	Make / Model:	RFS APXV18-206517-C-ACU	Make / Model:	RFS APXV18-206517-C-ACU
Gain:	16.7 dBd	Gain:	16.7 dBd	Gain:	16.7 dBd
Height (AGL):	87	Height (AGL):	97	Height (AGL):	97
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power:	120	Total TX Power:	120	Total TX Power:	120
ERP (W):	1,911.82	ERP (W):	1,911.82	ERP (W):	1,911.82
Antenna A2 MPE%	3.08	Antenna B2 MPE%	3.08	Antenna C2 MPE%	3.08

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	**16.54**
On Site Field Measurements	3.21 %
Site Total MPE %:	**19.74 %**

T-Mobile Sector 1 Total:	5.51 %
T-Mobile Sector 2 Total:	5.51 %
T-Mobile Sector 3 Total:	5.51 %
Site Total:	19.74 %

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Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	5.51 %
Sector 2:	5.51 %
Sector 3 :	5.51 %
T-Mobile Total:	16.54 %
Site Total:	19.74 %
Site Compliance Status:	**COMPLIANT**

The largest value observed while conducting the on-site measurements was **3.205** % of the allowable limits for general public exposure to RF Emissions.

The anticipated composite MPE value for this site assuming all carriers present is **19.74%** 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 not within the allowable 100% threshold standard per the federal government as shown in this document.

Scott Heffernan
RF Engineering Director

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21 B Street
Burlington, MA 01803

♦ 0.0410 @ 60'

♦ 0.695 @ 50'

Sector A

♦ 1.0395 @ 40'

♦ 1.195 @ 30'

♦ 2.020 @ 60'

♦ 1.060 @ 50'

♦ 1.020 @ 40'

♦ 1.010 @ 30'

Sector C

♦ 2.540 @20'

♦ 0.370

Access Gate

Storm Damage

♦ 2.350

♦ 3.205 @ 20'

♦ 0.155

♦ 0.700

♦ 1.090 @ 10'

♦ 2.055 @ 10'

♦ 0.550

♦ 0.635

♦ 0.490 @ 8'

Sector B

LEGEND

T-Mobile Antennas

♦ Blue numbers are Spatially-Averaged Measurements

% FCC Occupational Limit

♦ Green numbers are Spatially-Averaged Measurements

% FCC General Population Limit

0 10 20 30

Site Plan with Monitoring Results

Facility Operator: T-Mobile

Site Number: CT11112H

Site Name: Redding/ Rt 7

Site Visit Date: 10-15-14

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