COHEN and WOLF P.C.
ATTORNEYS AT LAW

JULIE D. KOHLER

PLEASE REPLY TO: Bridgeport
WRITER'S DIRECT DIAL: (203) 337-4157
E-Mail Address: jkohler@cohenandwolf.com

March 11, 2014

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Re: Notice of Exempt Modification
CCTMO LLC/ T-Mobile co-location
Site ID CT11058C
699 Old Main St., Rocky Hill

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, CCTMO, LLC (Crown Castle) owns the existing monopole telecommunications tower and related facility at 699 Old Main St., Rocky Hill, Connecticut (Latitude: 41.6682 Longitude: -72.6381). T-Mobile intends to replace six antennas and related equipment at this existing telecommunications facility in Rocky Hill ("Rocky Hill 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 Town Manager Barbara R. Gilbert. The Town of Rocky Hill is also the property owner.

The existing Rocky Hill Facility consists of a 147.5 foot tall monopole tower.[1] T-Mobile plans to replace six antennas and three TMAs (tower mounted amplifiers) at a centerline of 149 feet. (See the plans revised to March 6, 2014 attached hereto as Exhibit A). T-Mobile will also upgrade one of its equipment cabinets, install fiber cable and reuse existing coax cable. The existing Rocky Hill Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated February 11, 2014 and attached hereto as Exhibit B.

The planned modifications to the Rocky Hill Facility fall squarely within those activities

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for the approval of this structure, it does reference this structure in connection with notices of intent captioned TS-SCLP-119-991105, TS-SPRINT-119-991209, and EM-NEXTEL-119-040615.

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 replacement antennas will be installed at a centerline of 149 feet, merely replacing existing antennas located at the same 149 foot elevation. 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 of the site boundaries. T-Mobile's equipment will be located entirely within the existing compound and leased area as shown on Page 1 of Exhibit A.

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

4. The operation of the replacement antennas 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 March 11, 2014, T-Mobile's operations would add 0.510% 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 be 84.843% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

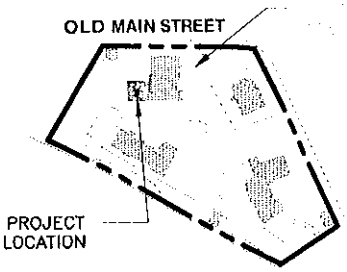
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Rocky Hill Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence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

Sincerely,

Julie D. Kohler, Esq.

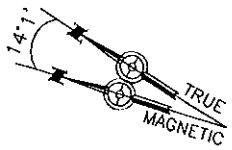
cc: Town of Rocky Hill, Town Manager Barbara R. Gilbert
CCTMO LLC (Crown Castle)
Northeast Site Solutions, Sheldon J. Freincle

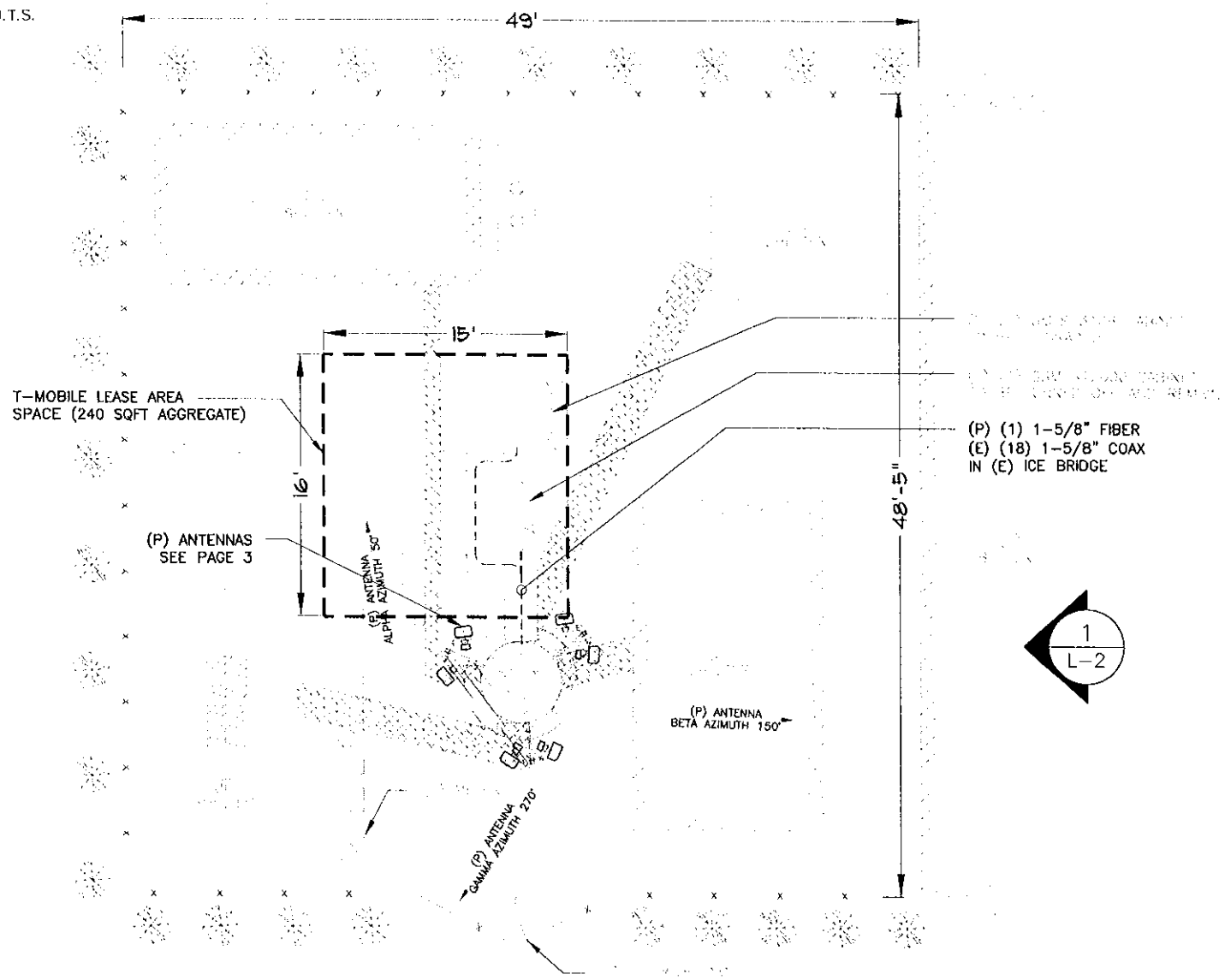
EXHIBIT A



KEY PLAN

N.T.S.





1 / L-2

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

N.T.S.

1 / LE-1

CONFIGURATION

2C

SUBMITTALS	
LE REV A	01.22.14
LE REV 0	01.28.14
LE REV 1	03.06.14

ATLANTIS GROUP
1340 Centre Street
Suite 214
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11058C

SITE NAME:
ROCKY HILL/ RTE 160_1

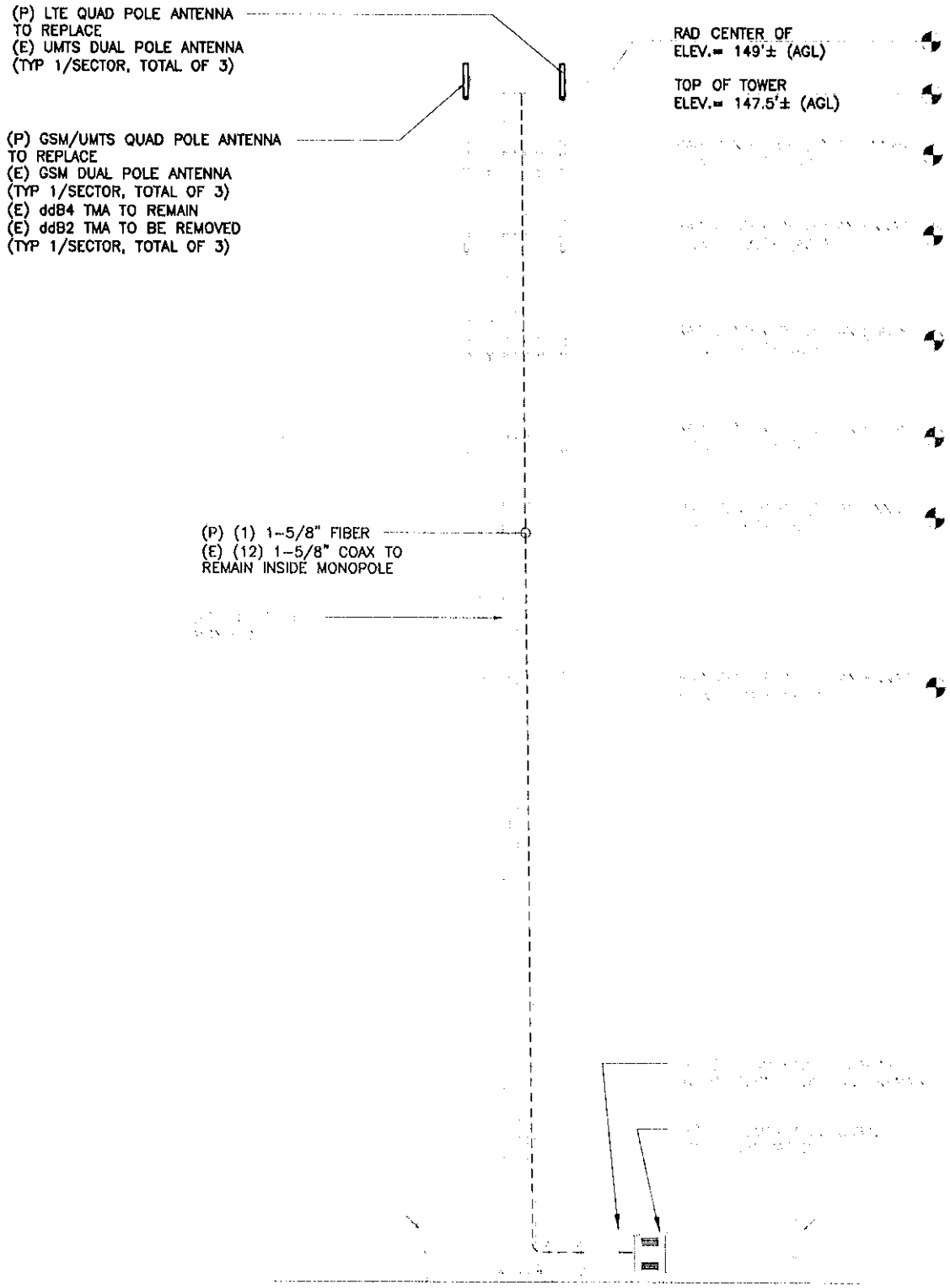
SITE ADDRESS:
699 OLD MAIN ST
ROCKY HILL, CT 06067

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: E.B | CHECKED BY: SM



ELEVATION

N.T.S.

1
LE-2

CONFIGURATION

2C

SUBMITTALS	
LE REV A	01.22.14
LE REV 0	01.28.14
LE REV 1	03.06.14

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1340 Centre Street
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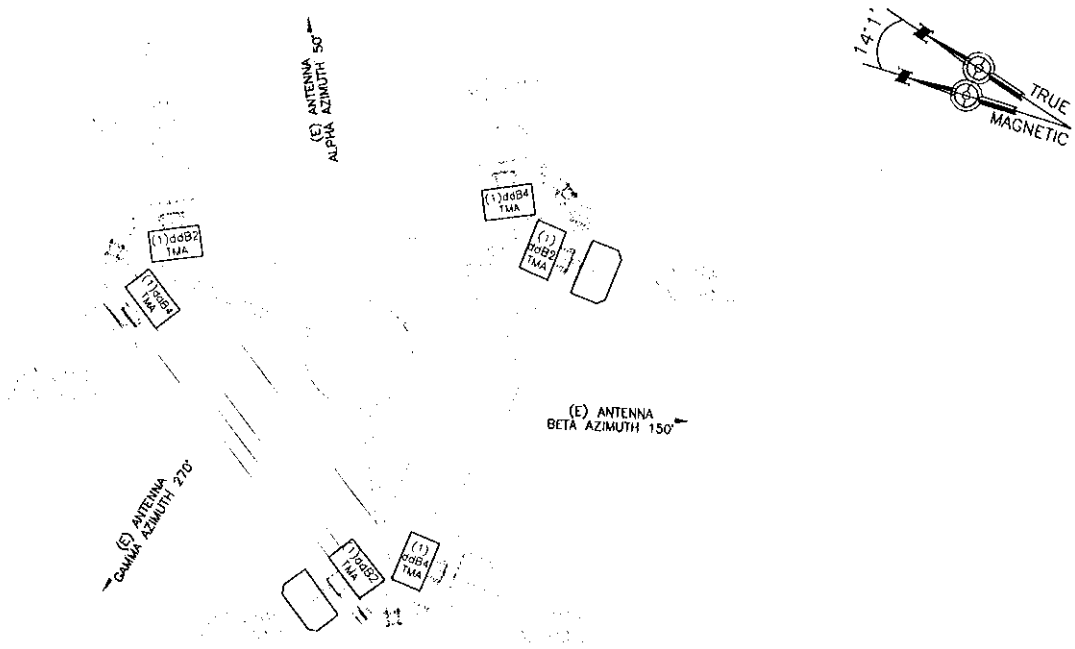
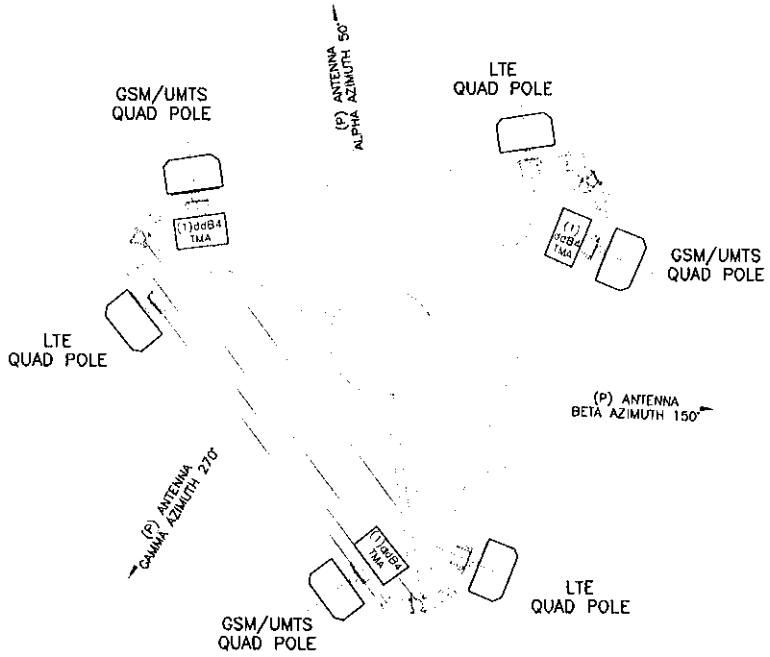


EXISTING ANTENNA CONFIGURATION



PROPOSED ANTENNA CONFIGURATION

CONFIGURATION

2C

SUBMITTALS	
LE REV A	01.22.14
LE REV 0	01.28.14
LE REV 1	03.06.14

ATLANTIS GROUP
1340 Centre Street
Suite 214
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11058C

SITE NAME:
ROCKY HILL/ RTE 160_1

SITE ADDRESS:
699 OLD MAIN ST
ROCKY HILL, CT 06067

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: E.B | CHECKED BY: SM

EXHIBIT B

Date: **February 11, 2014**

AeroSolutions LLC
Optimizing Your Tower Infrastructure

Cheryl Schultz
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Aero Solutions LLC
5500 Flatiron Parkway, Suite 100
Boulder, CO 80301
(720) 304-6882

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11058C
	Carrier Site Name:	Rocky Hill/Rte 160_1
Crown Castle Designation:	**Crown Castle BU Number:**	827050
	Crown Castle Site Name:	Rocky Hill/ Rte 160_1
	Crown Castle JDE Job Number:	259551
	Crown Castle Work Order Number:	709765
	Crown Castle Application Number:	216342 Rev. 2
Engineering Firm Designation:	**Aero Solutions LLC Project Number:**	003-14-0111
Site Data:	**699 Old Main St., Rocky Hill, Hartford County, CT** **Latitude *41° 40' 5.77"*, Longitude *-72° 38' 16.93"*** **147.5 Foot - Monopole Tower**	

Dear Cheryl Schultz,

Aero Solutions LLC 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 615819, in accordance with application 216342, revision 2.

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

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

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

We at *Aero Solutions LLC* 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: Shawn D. Cook, P.E.

Respectfully submitted by:

Shraddha Dharia, P.E.
Structural Engineer
CT PE#: PEN0028187
Expires: 1/31/2015

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 147.5 ft Monopole tower designed by PIROD MANUFACTURES INC. in July of 1999. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

The tower has been modified per reinforcement drawings prepared by TEP, in July of 2010. Reinforcement consists of bridge stiffeners at elevations 20' and 40'. The tower was later reinforced per reinforcement drawings prepared by TEP, in September of 2012. Reinforcement consists of installing bridge stiffeners at the 60' elevation. The tower was modified again in May 2013, by PJF. The reinforcement consists of additional anchor rods, flange connection reinforcement at 20', 40', 60', and 80', and shaft reinforcement from 0' to 95'.

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 80 mph with no ice, 37.6 mph with 1 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
148.0	149.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8"	
		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
148.0	158.0	3	rfs celwave	PD220	3 12	7/8" 1-5/8"	1
	149.0	1	andrew	ATJB200-A01-007	15	1-5/8"	3
		3	andrew	ETW190VS12UB			
		9	ericsson	AIR 21 w/ Mount Pipe			3
		3	ericsson	AIR 33 w/ Mount Pipe			
	148.0	1	tower mounts	Platform Mount [LP 405-1]			1
140.0	140.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8"	2
		3	antel	BXA-171063-12BF-EDIN-X w/ Mount Pipe			
		3	antel	BXA-171063-12CF-EDIN-X w/ Mount Pipe	12	1-5/8"	1
		3	antel	BXA-70063-6BF-EDIN-0 w/ Mount Pipe			2
		1	antel	BXA-70063/4CF w/ Mount Pipe			1
		1	rfs celwave	DB-T1-6Z-8AB-0Z			2
		6	rfs celwave	FD9R6004/2C-3L			1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		2	swedcom	SLCP 2x6014 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 304-1]			
130.0	130.0	9	decibel	DB980H65E-M w/ Mount Pipe	9	1-5/8"	1
		1	tower mounts	Platform Mount [LP 405-1]			
115.0	117.0	8	andrew	844G65VTZASX w/ Mount Pipe	12	1-1/4"	1
		4	andrew	DB844H90E-XY w/ Mount Pipe			
	115.0	1	tower mounts	Platform Mount [LP-1201]			
107.0	110.0	6	ericsson	RRUS-11			1
		1	raycap	DC6-48-60-18-8F			
	107.0	1	tower mounts	Side Arm Mount [SO 101-3]			
105.0	107.0	6	powerwave technologies	7770.00 w/ Mount Pipe	12 0 2 1	1-5/8" 3/8" 7/16"	1
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21903			
	105.0	1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 304-1]			
95.0	95.0	3	rfs celwave	APXV18-206516S-C w/ Mount Pipe	6	1-5/8"	1
89.0	95.0	1	decibel	ASPD952	1	1/2"	1
	89.0	1	tower mounts	Side Arm Mount [SO 702-1]			
72.0	74.0	1	gps	GPS_A	1	1/2"	1
	72.0	1	tower mounts	Side Arm Mount [SO 701-1]			
54.0	64.0	2	rfs celwave	PD220			1
	54.0	2	tower mounts	Side Arm Mount [SO 702-1]			
49.0	49.0	1	decibel	DB432-A	1	7/8"	1
44.0	44.0	1	decibel	DB432-A	1	7/8"	1
40.0	40.0	1	decibel	DB432-A	1	7/8"	1
37.0	37.0	1	decibel	DB432-A	1	7/8"	1

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

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
151	161	3	rfs celwave	PD201		-
147.5	147.5	12	EMS	RR90-17		-
138	138	12	EMS	RR90-17		-
128	128	12	EMS	RR90-17		-
90	90	1	rfs celwave	PD1142-30		-
55	55	1	rfs celwave	PD2220		-
50	50	1	Unknown	YAGI		-
45	45	1	Unknown	YAGI		-
40	40	1	Unknown	YAGI		-
35	35	1	Unknown	YAGI		-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	French And Parrello	3464587	CCISITES
4-POST-MODIFICATION INSPECTION	ETS	4047725	CCISITES
4-POST-MODIFICATION INSPECTION	TEP	4047808	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PiRod	3674483	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PiRod	3464619	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF	3846506	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	PJF	4424846	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.
5) The flange connection and base plate geometry and material grades were obtained from the previous analysis.
6) Reinforcement was installed per referenced drawings and PMI's.

This analysis may be affected if any assumptions are not valid or have been made in error. Aero Solutions LLC 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
L1	147.5 - 125	Pole	P24x3/8	1	-8.78	**	35.2	Pass
L2	125 - 100	Pole	P30x3/8	2	-17.92	**	79.6	Pass
L3	100 - 94.083	Pole	P36x3/8	3	-19.19	**	71.1	Pass
L4	94.083 - 80	Pole	P36x3/8 [0.494089]	4	-22.63	**	79.8	Pass
L5	80 - 60	Pole	P42x3/8 [0.573839]	5	-28.72	**	78.1	Pass
L6	60 - 40	Pole	P48x3/8 [0.635836]	6	-36.11	**	75.7	Pass
L7	40 - 20	Pole	P54x3/4 [0.987339]	7	-48.11	**	39.9	Pass
L8	20 - 0	Pole	P60x3/8 [0.621881]	8	-56.60	**	81.9	Pass
							Summary	
						Pole (L8)	81.9	Pass
						Rating =	81.9	Pass

**See additional calculations in Appendix D for $SF*P_{allow}$ and capacities listed above.

Table 6 - Tower Component Stresses vs. Capacity – LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	86.4	Pass
1	Base Plate	0	89.4	Pass
1	Base Foundation	0	37.7	Pass
1	Base Foundation Soil Interaction	0	75.3	Pass
1	Flange Connection	20	36.4	Pass
1	Flange Connection	40	45.5	Pass
1	Flange Connection	60	59.6	Pass
1	Flange Connection	80	76.6	Pass
1	Flange Connection	100	81.6	Pass
1	Flange Connection	125	37.6	Pass

Structure Rating (maximum of all components)	89.4%

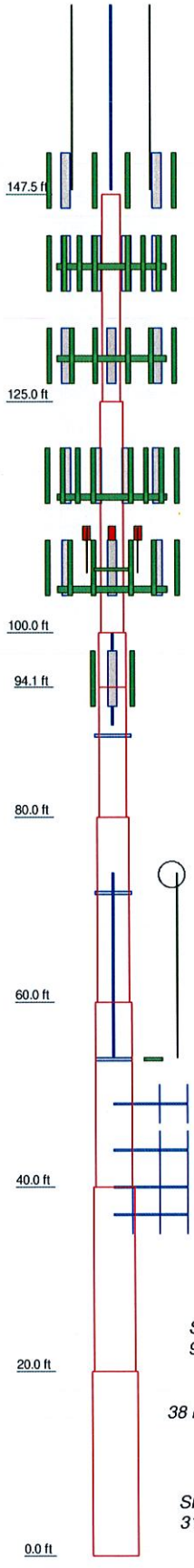
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
2)

4.1) Recommendations

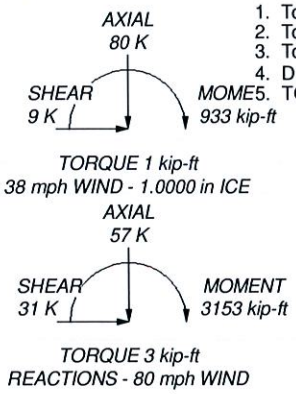
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT



Section	Size	Length (ft)	Grade	Weight (K)
1	P24x3/8	22.50	A53-B-42	2.1
2	P30x3/8	25.00		3.0
3	P36x3/8	5.92		0.8
4	P36x3/8 [0.494089]	14.08	35.902778ksi	2.6
5	P42x3/8 [0.573839]	20.00	34.410173ksi	4.9
6	P48x3/8 [0.635836]	20.00	33.29072ksi	6.1
7	P54x3/4 [0.987339]	20.00	A53-B-42	10.9
8	P60x3/8 [0.621881]	20.00	37.164922ksi	7.6
				38.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
KRY 112 144/1	148	DB-T1-6Z-8AB-0Z	140
KRY 112 144/1	148	Platform Mount [LP 304-1]	140
KRY 112 144/1	148	(3) DB980H65E-M w/ Mount Pipe	130
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	(3) DB980H65E-M w/ Mount Pipe	130
		(3) DB980H65E-M w/ Mount Pipe	130
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	Platform Mount [LP 405-1]	130
		(4) 844G65VTZASX w/ Mount Pipe	115
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	148	(4) 844G65VTZASX w/ Mount Pipe	115
		(4) DB844H90E-XY w/ Mount Pipe	115
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	Platform Mount [LP-1201]	115
		(2) RRUS-11	107
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	(2) RRUS-11	107
		(2) RRUS-11	107
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	148	DC6-48-60-18-8F	107
		Pipe Mount 2 x 5'	107
PD220	148	Pipe Mount 2 x 5'	107
PD220	148	Pipe Mount 2 x 5'	107
PD220	148	Side Arm Mount [SO 101-3]	107
Pipe Mount 2 x 5'	148	Side Arm Mount [SO 101-3]	107
Pipe Mount 2 x 5'	148	(2) LGP21903	105
Pipe Mount 2 x 5'	148	(2) LGP21903	105
Platform Mount [LP 405-1]	148	(2) LGP21903	105
BXA-171063-12CF-EDIN-X w/ Mount Pipe	140	Platform Mount [LP 304-1]	105
		(2) 7770.00 w/ Mount Pipe	105
BXA-171063-12CF-EDIN-X w/ Mount Pipe	140	(2) 7770.00 w/ Mount Pipe	105
		(2) 7770.00 w/ Mount Pipe	105
BXA-171063-12CF-EDIN-X w/ Mount Pipe	140	P65-17-XLH-RR w/ Mount Pipe	105
		P65-17-XLH-RR w/ Mount Pipe	105
BXA-70063/4CF w/ Mount Pipe	140	AM-X-CD-16-65-00T-RET w/ Mount Pipe	105
SLCP 2x6014 w/ Mount Pipe	140		
SLCP 2x6014 w/ Mount Pipe	140	(2) LGP21401	105
(2) FD9R6004/2C-3L	140	(2) LGP21401	105
(2) FD9R6004/2C-3L	140	(2) LGP21401	105
(2) FD9R6004/2C-3L	140	APXV18-206516S-C w/ Mount Pipe	95
BXA-171063-12BF-EDIN-X w/ Mount Pipe	140	APXV18-206516S-C w/ Mount Pipe	95
		APXV18-206516S-C w/ Mount Pipe	95
BXA-171063-12BF-EDIN-X w/ Mount Pipe	140	ASPD952	89
		Side Arm Mount [SO 702-1]	89
BXA-70063-6BF-EDIN-0 w/ Mount Pipe	140	Side Arm Mount [SO 701-1]	72
		GPS_A	72
BXA-70063-6BF-EDIN-0 w/ Mount Pipe	140	Side Arm Mount [SO 702-1]	54
		Side Arm Mount [SO 702-1]	54
BXA-70063-6BF-EDIN-0 w/ Mount Pipe	140	PD220	54
		PD220	54
RRH2X40-AWS	140	DB432-A	49
RRH2X40-AWS	140	DB432-A	44
RRH2X40-AWS	140	DB432-A	40
		DB432-A	37

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-42	42 ksi	63 ksi	33.29072ksi	33 ksi	48 ksi
35.902778ksi	36 ksi	51 ksi	37.164922ksi	37 ksi	52 ksi
34.410173ksi	34 ksi	49 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 80%

Aero Solutions LLC
5500 Flatiron Parkway, Suite 100
Boulder, CO 80301
Phone: (720) 304-6882
FAX: (720) 304-6883

Job: ***BU 827050 / Rocky Hill- Rte 160_1***		
Project: ***Existing 148' Monopole***		
Client: CCI	Drawn by: Shawn D. Cook, P.E.	App'd:
Code: TIA/EIA-222-F	Date: 02/11/14	Scale: N
Path: C:\CCI\827050 Rocky Hill- Rte 160_1\003-14-0111\Engineering\Aero Calculations\Working\RISA\827050 Rocky Hill- Rte 160_1.eri		Dwg No.

Tower Input Data

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

4) Tower is located in Hartford County, Connecticut.
5) Basic wind speed of 80 mph.
6) Nominal ice thickness of 1.0000 in.
7) Ice density of 56 pcf.
8) A wind speed of 38 mph is used in combination with ice.
9) Temperature drop of 50 °F.
10) Deflections calculated using a wind speed of 50 mph.
11) A non-linear (P-delta) analysis was used.
12) Pressures are calculated at each section.
13) Stress ratio used in pole 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	[redacted]
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	147.50-125.00	22.50	P24x3/8	A53-B-42 (42 ksi)	
L2	125.00-100.00	25.00	P30x3/8	A53-B-42 (42 ksi)	
L3	100.00-94.08	5.92	P36x3/8	A53-B-42 (42 ksi)	
L4	94.08-80.00	14.08	P36x3/8 [0.494089]	35.902778ksi (36 ksi)	
L5	80.00-60.00	20.00	P42x3/8 [0.573839]	34.410173ksi (34 ksi)	
L6	60.00-40.00	20.00	P48x3/8 [0.635836]	33.29072ksi (33 ksi)	
L7	40.00-20.00	20.00	P54x3/4 [0.987339]	A53-B-42 (42 ksi)	
L8	20.00-0.00	20.00	P60x3/8 [0.621881]	37.164922ksi (37 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 147.50-125.00				1	1	1		
L2 125.00-100.00				1	1	1		
L3 100.00-94.08				1	1	1		
L4 94.08-80.00				1	1	0.97394		
L5 80.00-60.00				1	1	0.959734		
L6 60.00-40.00				1	1	0.9516		
L7 40.00-20.00				1	1	0.969548		
L8 20.00-0.00				1	1	0.961845		

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")	B	No	Inside Pole	147.50 - 6.00	3	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF7-50A(1-5/8")	C	No	Inside Pole	147.50 - 6.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF7-50A(1-5/8")	B	No	CaAa (Out Of Face)	147.50 - 6.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	140.00 - 6.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
LDF7-50A(1-5/8")	C	No	Inside Pole	140.00 - 6.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	105.00 - 6.00	2	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	105.00 - 6.00	10	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
						1" Ice	0.00	4.46
LDF7-50A(1-5/8")	C	No	Inside Pole	130.00 - 6.00	9	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FXL-1480(1 1/4")	C	No	Inside Pole	115.00 - 6.00	12	No Ice	0.00	0.45
						1/2" Ice	0.00	0.45
						1" Ice	0.00	0.45
LDF2-50(3/8")	C	No	CaAa (Out Of Face)	105.00 - 6.00	2	No Ice	0.00	0.08
						1/2" Ice	0.00	0.65
						1" Ice	0.00	1.84
100266(7/16")	C	No	CaAa (Out Of Face)	105.00 - 6.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.66
						1" Ice	0.00	1.84
LDF7-50A(1-5/8")	A	No	CaAa (Out Of Face)	95.00 - 6.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF5-50A(7/8")	B	No	Inside Pole	54.00 - 6.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF5-50A(7/8")	B	No	Inside Pole	49.00 - 6.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF5-50A(7/8")	B	No	Inside Pole	44.00 - 6.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF5-50A(7/8")	B	No	Inside Pole	40.00 - 6.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF5-50A(7/8")	B	No	Inside Pole	37.00 - 6.00	1	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
LDF4P-50A(1/2")	B	No	Inside Pole	72.00 - 6.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF4P-50A(1/2")	B	No	Inside Pole	89.00 - 6.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
***								
2" Solid Rod Reinforcing	C	No	CaAa (Out Of Face)	42.50 - 37.50	1	No Ice	0.20	0.00
						1/2" Ice	0.30	0.00
						1" Ice	0.40	0.00
2" Solid Rod Reinforcing	C	No	CaAa (Out Of Face)	22.50 - 17.50	1	No Ice	0.20	0.00
						1/2" Ice	0.30	0.00
						1" Ice	0.40	0.00
(4)MP308	C	No	CaAa (Out Of Face)	25.00 - 0.00	1	No Ice	0.47	0.00
						1/2" Ice	0.47	0.00
						1" Ice	0.47	0.00
(4)MP306	C	No	CaAa (Out Of Face)	60.00 - 20.00	1	No Ice	0.43	0.00
						1/2" Ice	0.43	0.00
						1" Ice	0.43	0.00
(4)MP305	C	No	CaAa (Out Of Face)	80.00 - 60.00	1	No Ice	0.35	0.00
						1/2" Ice	0.35	0.00
						1" Ice	0.35	0.00
(4)MP303	C	No	CaAa (Out Of Face)	95.25 - 80.00	1	No Ice	0.26	0.00
						1/2" Ice	0.26	0.00
						1" Ice	0.26	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.50-125.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	0.000	0.42
L2	125.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.05
		C	0.000	0.000	0.000	1.980	0.83
L3	100.00-94.08	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	2.649	0.26
L4	94.08-80.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.03
		C	0.000	0.000	0.000	9.267	0.61
L5	80.00-60.00	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.04
		C	0.000	0.000	0.000	14.880	0.87
L6	60.00-40.00	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.06
		C	0.000	0.000	0.000	17.120	0.87
L7	40.00-20.00	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	19.955	0.87
L8	20.00-0.00	A	0.000	0.000	0.000	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.06

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	0.000	0.000	0.000	15.384	0.61

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	147.50-125.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.12
		C		0.000	0.000	0.000	0.000	0.47
L2	125.00-100.00	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.14
		C		0.000	0.000	0.000	3.980	1.16
L3	100.00-94.08	A	1.000	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.03
		C		0.000	0.000	0.000	5.016	0.57
L4	94.08-80.00	A	1.000	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	14.900	1.35
L5	80.00-60.00	A	1.000	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.11
		C		0.000	0.000	0.000	22.880	1.92
L6	60.00-40.00	A	1.000	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.13
		C		0.000	0.000	0.000	25.620	1.92
L7	40.00-20.00	A	1.000	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.15
		C		0.000	0.000	0.000	28.955	1.92
L8	20.00-0.00	A	1.000	0.000	0.000	0.000	0.000	0.07
		B		0.000	0.000	0.000	0.000	0.11
		C		0.000	0.000	0.000	21.484	1.34

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.50-125.00	0.0000	0.0000	0.0000	0.0000
L2	125.00-100.00	-0.0997	0.0576	-0.1830	0.1056
L3	100.00-94.08	-0.5060	0.2922	-0.8229	0.4751
L4	94.08-80.00	-0.7010	0.4047	-0.9760	0.5635
L5	80.00-60.00	-0.7971	0.4602	-1.0812	0.6242
L6	60.00-40.00	-0.9160	0.5288	-1.2219	0.7054
L7	40.00-20.00	-1.0609	0.6125	-1.3841	0.7991
L8	20.00-0.00	-0.8660	0.5000	-1.1180	0.6455

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 K
***									
KRY 112 144/1	A	From Leg	4.00 0.00	0.0000	148.00	No Ice 1/2"	0.41 0.50	0.17 0.24	0.01 0.01

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
			1.00			Ice	0.59	0.31	0.02
						1" Ice			
KRY 112 144/1	B	From Leg	4.00	0.0000	148.00	No Ice	0.41	0.17	0.01
			0.00			1/2"	0.50	0.24	0.01
			1.00			Ice	0.59	0.31	0.02
						1" Ice			
KRY 112 144/1	C	From Leg	4.00	0.0000	148.00	No Ice	0.41	0.17	0.01
			0.00			1/2"	0.50	0.24	0.01
			1.00			Ice	0.59	0.31	0.02
						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00	0.0000	148.00	No Ice	6.83	5.64	0.11
			0.00			1/2"	7.35	6.48	0.17
			1.00			Ice	7.86	7.26	0.23
						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00	0.0000	148.00	No Ice	6.83	5.64	0.11
			0.00			1/2"	7.35	6.48	0.17
			1.00			Ice	7.86	7.26	0.23
						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00	0.0000	148.00	No Ice	6.83	5.64	0.11
			0.00			1/2"	7.35	6.48	0.17
			1.00			Ice	7.86	7.26	0.23
						1" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.0000	148.00	No Ice	6.83	5.64	0.11
			0.00			1/2"	7.35	6.48	0.17
			1.00			Ice	7.86	7.26	0.23
						1" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0.0000	148.00	No Ice	6.83	5.64	0.11
			0.00			1/2"	7.35	6.48	0.17
			1.00			Ice	7.86	7.26	0.23
						1" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00	0.0000	148.00	No Ice	6.83	5.64	0.11
			0.00			1/2"	7.35	6.48	0.17
			1.00			Ice	7.86	7.26	0.23
						1" Ice			
PD220	A	From Leg	4.00	0.0000	148.00	No Ice	3.08	3.08	0.02
			0.00			1/2"	5.30	5.30	0.05
			10.00			Ice	7.54	7.54	0.09
						1" Ice			
PD220	B	From Leg	4.00	0.0000	148.00	No Ice	3.08	3.08	0.02
			0.00			1/2"	5.30	5.30	0.05
			10.00			Ice	7.54	7.54	0.09
						1" Ice			
PD220	C	From Leg	4.00	0.0000	148.00	No Ice	3.08	3.08	0.02
			0.00			1/2"	5.30	5.30	0.05
			10.00			Ice	7.54	7.54	0.09
						1" Ice			
Pipe Mount 2 x 5'	A	From Leg	4.00	0.0000	148.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice			
Pipe Mount 2 x 5'	B	From Leg	4.00	0.0000	148.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice			
Pipe Mount 2 x 5'	C	From Leg	4.00	0.0000	148.00	No Ice	1.19	1.19	0.02
			0.00			1/2"	1.50	1.50	0.03
			0.00			Ice	1.81	1.81	0.04
						1" Ice			
Platform Mount [LP 405-1]	C	None		0.0000	148.00	No Ice	20.80	20.80	1.80
						1/2"	28.10	28.10	2.07
						Ice	35.40	35.40	2.33
						1" Ice			
***									
BXA-171063-12CF-EDIN-X w/ Mount Pipe	A	From Leg	4.00	60.0000	140.00	No Ice	5.03	5.29	0.04
			0.00			1/2"	5.58	6.46	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
			0.00			Ice	6.10	7.35	0.14
						1" Ice			
BXA-171063-12CF-EDIN-X w/ Mount Pipe	B	From Leg	4.00	20.0000	140.00	No Ice	5.03	5.29	0.04
			0.00			1/2"	5.58	6.46	0.09
			0.00			Ice	6.10	7.35	0.14
						1" Ice			
BXA-171063-12CF-EDIN-X w/ Mount Pipe	C	From Leg	4.00	20.0000	140.00	No Ice	5.03	5.29	0.04
			0.00			1/2"	5.58	6.46	0.09
			0.00			Ice	6.10	7.35	0.14
						1" Ice			
BXA-70063/4CF w/ Mount Pipe	C	From Leg	4.00	20.0000	140.00	No Ice	5.40	3.62	0.03
			0.00			1/2"	5.84	4.22	0.07
			0.00			Ice	6.30	4.83	0.12
						1" Ice			
SLCP 2x6014 w/ Mount Pipe	A	From Leg	4.00	60.0000	140.00	No Ice	7.45	6.95	0.04
			0.00			1/2"	7.96	7.76	0.10
			0.00			Ice	8.47	8.52	0.18
						1" Ice			
SLCP 2x6014 w/ Mount Pipe	B	From Leg	4.00	20.0000	140.00	No Ice	7.45	6.95	0.04
			0.00			1/2"	7.96	7.76	0.10
			0.00			Ice	8.47	8.52	0.18
						1" Ice			
(2) FD9R6004/2C-3L	A	From Leg	4.00	60.0000	140.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.00	20.0000	140.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.00	20.0000	140.00	No Ice	0.37	0.08	0.00
			0.00			1/2"	0.45	0.14	0.01
			0.00			Ice	0.54	0.20	0.01
						1" Ice			
BXA-171063-12BF-EDIN-X w/ Mount Pipe	A	From Leg	4.00	60.0000	140.00	No Ice	5.04	5.30	0.04
			0.00			1/2"	5.59	6.47	0.08
			0.00			Ice	6.11	7.36	0.14
						1" Ice			
BXA-171063-12BF-EDIN-X w/ Mount Pipe	B	From Leg	4.00	20.0000	140.00	No Ice	5.04	5.30	0.04
			0.00			1/2"	5.59	6.47	0.08
			0.00			Ice	6.11	7.36	0.14
						1" Ice			
BXA-171063-12BF-EDIN-X w/ Mount Pipe	C	From Leg	4.00	20.0000	140.00	No Ice	5.04	5.30	0.04
			0.00			1/2"	5.59	6.47	0.08
			0.00			Ice	6.11	7.36	0.14
						1" Ice			
BXA-70063-6BF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00	60.0000	140.00	No Ice	7.71	5.63	0.04
			0.00			1/2"	8.33	6.72	0.10
			0.00			Ice	8.92	7.56	0.17
						1" Ice			
BXA-70063-6BF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00	20.0000	140.00	No Ice	7.71	5.63	0.04
			0.00			1/2"	8.33	6.72	0.10
			0.00			Ice	8.92	7.56	0.17
						1" Ice			
BXA-70063-6BF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00	20.0000	140.00	No Ice	7.71	5.63	0.04
			0.00			1/2"	8.33	6.72	0.10
			0.00			Ice	8.92	7.56	0.17
						1" Ice			
RRH2X40-AWS	A	From Leg	4.00	60.0000	140.00	No Ice	2.52	1.59	0.04
			0.00			1/2"	2.75	1.80	0.06
			0.00			Ice	2.99	2.01	0.08
						1" Ice			
RRH2X40-AWS	B	From Leg	4.00	20.0000	140.00	No Ice	2.52	1.59	0.04
			0.00			1/2"	2.75	1.80	0.06
			0.00			Ice	2.99	2.01	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
RRH2X40-AWS	C	From Leg	4.00 0.00 0.00	20.0000	140.00	No Ice 1/2" Ice 1" Ice	2.52 2.75 2.99	1.59 1.80 2.01	0.04 0.06 0.08
DB-T1-6Z-8AB-0Z	C	From Leg	4.00 0.00 0.00	20.0000	140.00	No Ice 1/2" Ice 1" Ice	5.60 5.92 6.24	2.33 2.56 2.79	0.04 0.08 0.12
Platform Mount [LP 304-1]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	17.46 22.44 27.42	17.46 22.44 27.42	1.35 1.62 1.90
***									
(3) DB980H65E-M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	50.0000	130.00	No Ice 1/2" Ice 1" Ice	4.04 4.50 4.95	3.62 4.48 5.22	0.03 0.07 0.11
(3) DB980H65E-M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	30.0000	130.00	No Ice 1/2" Ice 1" Ice	4.04 4.50 4.95	3.62 4.48 5.22	0.03 0.07 0.11
(3) DB980H65E-M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	10.0000	130.00	No Ice 1/2" Ice 1" Ice	4.04 4.50 4.95	3.62 4.48 5.22	0.03 0.07 0.11
Platform Mount [LP 405-1]	C	None		0.0000	130.00	No Ice 1/2" Ice 1" Ice	20.80 28.10 35.40	20.80 28.10 35.40	1.80 2.07 2.33
****									
(4) 844G65VTZASX w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice	6.13 6.59 7.06	5.21 5.89 6.59	0.03 0.09 0.14
(4) 844G65VTZASX w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice	6.13 6.59 7.06	5.21 5.89 6.59	0.03 0.09 0.14
(4) DB844H90E-XY w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	115.00	No Ice 1/2" Ice 1" Ice	3.30 3.69 4.12	4.92 5.60 6.28	0.03 0.07 0.12
Platform Mount [LP-1201]	C	None		0.0000	115.00	No Ice 1/2" Ice 1" Ice	23.10 26.80 30.50	23.10 26.80 30.50	2.10 2.50 2.90
****									
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	11.70 12.42 13.15	8.94 10.45 11.99	0.09 0.18 0.27
P65-17-XLH-RR w/ Mount	B	From Leg	4.00	0.0000	105.00	No Ice	11.70	8.94	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
Pipe			0.00 0.00			1/2" Ice 1" Ice	12.42 13.15	10.45 11.99	0.18 0.27
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	8.50 9.15 9.77	6.30 7.48 8.37	0.07 0.14 0.21
(2) LGP21401	A	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.29 1.45 1.61	0.23 0.31 0.40	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.29 1.45 1.61	0.23 0.31 0.40	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	1.29 1.45 1.61	0.23 0.31 0.40	0.01 0.02 0.03
(2) LGP21903	A	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	0.27 0.34 0.43	0.18 0.25 0.32	0.01 0.01 0.02
(2) LGP21903	B	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	0.27 0.34 0.43	0.18 0.25 0.32	0.01 0.01 0.02
(2) LGP21903	C	From Leg	4.00 0.00 2.00	0.0000	105.00	No Ice 1/2" Ice 1" Ice	0.27 0.34 0.43	0.18 0.25 0.32	0.01 0.01 0.02
Platform Mount [LP 304-1]	C	None		0.0000	105.00	No Ice 1/2" Ice 1" Ice	17.46 22.44 27.42	17.46 22.44 27.42	1.35 1.62 1.90
**									
(2) RRUS-11	A	From Leg	2.00 0.00 3.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	2.94 3.17 3.41	1.25 1.41 1.59	0.06 0.07 0.10
(2) RRUS-11	B	From Leg	2.00 0.00 3.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	2.94 3.17 3.41	1.25 1.41 1.59	0.06 0.07 0.10
(2) RRUS-11	C	From Leg	2.00 0.00 3.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	2.94 3.17 3.41	1.25 1.41 1.59	0.06 0.07 0.10
DC6-48-60-18-8F	A	From Leg	2.00 0.00 3.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	2.57 2.80 3.04	2.57 2.80 3.04	0.03 0.06 0.08
Pipe Mount 2 x 5'	A	From Leg	2.00 0.00 2.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
Pipe Mount 2 x 5'	B	From Leg	2.00 0.00 2.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
Pipe Mount 2 x 5'	C	From Leg	2.00 0.00 2.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	1.19 1.50 1.81	1.19 1.50 1.81	0.02 0.03 0.04
Side Arm Mount [SO 101-	C	None		0.0000	107.00	No Ice	7.50	7.50	0.25

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
3]						1/2" Ice	8.90 10.30	8.90 10.30	0.33 0.41
						1" Ice			
Side Arm Mount [SO 101-3]	C	None		0.0000	107.00	No Ice	7.50	7.50	0.25
						1/2" Ice	8.90 10.30	8.90 10.30	0.33 0.41
						1" Ice			
Side Arm Mount [SO 702-1]	A	From Leg	3.00 0.00 0.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice	1.00 1.00 1.00	1.43 2.05 2.67	0.03 0.04 0.05
ASPD952	A	From Leg	6.00 0.00 6.00	0.0000	89.00	No Ice 1/2" Ice 1" Ice	2.75 3.88 5.03	2.75 3.88 5.03	0.02 0.04 0.07
****									
APXV18-206516S-C w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	3.86 4.27 4.73	3.30 4.00 4.67	0.04 0.07 0.11
APXV18-206516S-C w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	3.86 4.27 4.73	3.30 4.00 4.67	0.04 0.07 0.11
APXV18-206516S-C w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	3.86 4.27 4.73	3.30 4.00 4.67	0.04 0.07 0.11
***									
Side Arm Mount [SO 701-1]	A	From Leg	1.50 0.00 0.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
GPS_A	A	From Leg	3.00 0.00 2.00	0.0000	72.00	No Ice 1/2" Ice 1" Ice	0.30 0.37 0.46	0.30 0.37 0.46	0.00 0.00 0.01
***									
Side Arm Mount [SO 702-1]	A	From Leg	3.00 0.00 0.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	1.00 1.00 1.00	1.43 2.05 2.67	0.03 0.04 0.05
Side Arm Mount [SO 702-1]	B	From Leg	3.00 0.00 0.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	1.00 1.00 1.00	1.43 2.05 2.67	0.03 0.04 0.05
PD220	A	From Leg	6.00 0.00 10.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	3.08 5.30 7.54	3.08 5.30 7.54	0.02 0.05 0.09
PD220	B	From Leg	6.00 0.00 10.00	0.0000	54.00	No Ice 1/2" Ice 1" Ice	3.08 5.30 7.54	3.08 5.30 7.54	0.02 0.05 0.09
***									
DB432-A	A	From Leg	0.50 0.00 0.00	0.0000	49.00	No Ice 1/2" Ice 1" Ice	0.30 0.54 0.78	0.30 0.54 0.78	0.01 0.01 0.01
***									
DB432-A	A	From Leg	0.50 0.00 0.00	0.0000	44.00	No Ice 1/2" Ice 1" Ice	0.30 0.54 0.78	0.30 0.54 0.78	0.01 0.01 0.01
***									

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
DB432-A	A	From Leg	0.50	0.0000	0.0000	40.00	No Ice	0.30	0.30	0.01
			0.00				1/2" Ice	0.54	0.54	0.01
			0.00				1" Ice	0.78	0.78	0.01
***										
DB432-A	A	From Leg	0.50	0.0000	0.0000	37.00	No Ice	0.30	0.30	0.01
			0.00				1/2" Ice	0.54	0.54	0.01
			0.00				1" Ice	0.78	0.78	0.01

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
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
L1	147.5 - 125	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-15.02	0.24	-0.24
			Max. Mx	11	-8.78	170.62	-0.92
			Max. My	8	-8.81	0.95	-164.85
			Max. Vy	11	-11.16	170.62	-0.92
			Max. Vx	2	-10.76	-0.70	164.67
			Max. Torque	12			-0.45
L2	125 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30.26	-0.23	0.15
			Max. Mx	11	-17.92	555.13	0.53
			Max. My	2	-17.94	0.63	542.84
			Max. Vy	11	-20.66	555.13	0.53
			Max. Vx	2	-20.48	0.63	542.84
			Max. Torque	12			-1.41
L3	100 - 94.083	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.31	0.23	-0.14
			Max. Mx	11	-19.19	679.22	1.19
			Max. My	8	-19.21	-1.04	-665.78
			Max. Vy	11	-21.55	679.22	1.19
			Max. Vx	2	-21.36	1.40	665.70
			Max. Torque	12			-1.40
L4	94.083 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-37.14	1.31	-0.05
			Max. Mx	11	-22.63	993.31	3.09
			Max. My	2	-22.64	3.25	977.10
			Max. Vy	11	-22.90	993.31	3.09
			Max. Vx	2	-22.70	3.25	977.10
			Max. Torque	12			-2.23
L5	80 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-45.30	3.10	-0.72
			Max. Mx	11	-28.72	1471.07	5.65
			Max. My	2	-28.73	5.92	1450.39
			Max. Vy	11	-24.82	1471.07	5.65
			Max. Vx	2	-24.59	5.92	1450.39
			Max. Torque	12			-2.34
L6	60 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-55.06	4.32	-1.36
			Max. Mx	11	-36.11	1992.70	8.06
			Max. My	2	-36.12	8.30	1967.41
			Max. Vy	11	-27.01	1992.70	8.06
			Max. Vx	2	-26.78	8.30	1967.41
			Max. Torque	12			-3.13
L7	40 - 20	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-69.44	6.62	-2.63
			Max. Mx	11	-48.11	2553.17	10.28
			Max. My	2	-48.12	10.93	2522.80
			Max. Vy	11	-28.97	2553.17	10.28
			Max. Vx	2	-28.74	10.93	2522.80
			Max. Torque	12			-3.08
L8	20 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-80.05	8.41	-3.65
			Max. Mx	11	-56.60	3151.01	12.47
			Max. My	2	-56.60	13.46	3115.68
			Max. Vy	11	-30.77	3151.01	12.47
			Max. Vx	2	-30.54	13.46	3115.68
			Max. Torque	12			-2.93

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	80.05	0.00	-0.00
	Max. H_x	11	56.60	30.76	0.11
	Max. H_z	2	56.60	0.11	30.53

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. M_x	2	3115.68	0.11	30.53
	Max. M_z	5	3148.07	-30.76	-0.11
	Max. Torsion	6	2.75	-26.70	-15.36
	Min. Vert	2	56.60	0.11	30.53
	Min. H_x	5	56.60	-30.76	-0.11
	Min. H_z	8	56.60	-0.11	-30.53
	Min. M_x	8	-3114.71	-0.11	-30.53
	Min. M_z	11	-3151.01	30.76	0.11
	Min. Torsion	12	-2.78	26.70	15.36

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	56.60	-0.00	-0.00	-0.48	1.45	0.00
Dead+Wind 0 deg - No Ice	56.60	-0.11	-30.53	-3115.68	13.46	1.01
Dead+Wind 30 deg - No Ice	56.60	15.29	-26.39	-2692.70	-1563.00	-0.43
Dead+Wind 60 deg - No Ice	56.60	26.59	-15.17	-1547.91	-2720.24	-1.74
Dead+Wind 90 deg - No Ice	56.60	30.76	0.11	11.50	-3148.07	-2.59
Dead+Wind 120 deg - No Ice	56.60	26.70	15.36	1567.69	-2732.21	-2.75
Dead+Wind 150 deg - No Ice	56.60	15.48	26.50	2703.70	-1583.75	-2.18
Dead+Wind 180 deg - No Ice	56.60	0.11	30.53	3114.71	-10.51	-1.04
Dead+Wind 210 deg - No Ice	56.60	-15.29	26.39	2691.72	1565.94	0.39
Dead+Wind 240 deg - No Ice	56.60	-26.59	15.17	1546.94	2723.18	1.73
Dead+Wind 270 deg - No Ice	56.60	-30.76	-0.11	-12.47	3151.01	2.61
Dead+Wind 300 deg - No Ice	56.60	-26.70	-15.36	-1568.66	2735.16	2.78
Dead+Wind 330 deg - No Ice	56.60	-15.48	-26.50	-2704.68	1586.70	2.19
Dead+Ice+Temp	80.05	-0.00	0.00	3.65	8.41	0.00
Dead+Wind 0 deg+Ice+Temp	80.05	-0.03	-8.68	-917.07	12.23	0.47
Dead+Wind 30 deg+Ice+Temp	80.05	4.33	-7.50	-791.90	-450.45	-0.00
Dead+Wind 60 deg+Ice+Temp	80.05	7.53	-4.31	-453.54	-790.14	-0.48
Dead+Wind 90 deg+Ice+Temp	80.05	8.71	0.03	7.34	-915.80	-0.82
Dead+Wind 120 deg+Ice+Temp	80.05	7.56	4.36	467.25	-793.77	-0.95
Dead+Wind 150 deg+Ice+Temp	80.05	4.38	7.53	802.95	-456.74	-0.82
Dead+Wind 180 deg+Ice+Temp	80.05	0.03	8.68	924.49	4.97	-0.47
Dead+Wind 210 deg+Ice+Temp	80.05	-4.33	7.50	799.32	467.66	0.00
Dead+Wind 240 deg+Ice+Temp	80.05	-7.53	4.31	460.96	807.34	0.48
Dead+Wind 270 deg+Ice+Temp	80.05	-8.71	-0.03	0.08	933.00	0.82
Dead+Wind 300 deg+Ice+Temp	80.05	-7.56	-4.36	-459.83	810.97	0.95
Dead+Wind 330 deg+Ice+Temp	80.05	-4.38	-7.53	-795.53	473.95	0.82
Dead+Wind 0 deg - Service	56.60	-0.04	-11.93	-1217.61	6.15	0.40
Dead+Wind 30 deg - Service	56.60	5.97	-10.31	-1052.21	-609.69	-0.16
Dead+Wind 60 deg - Service	56.60	10.38	-5.93	-604.99	-1061.77	-0.68
Dead+Wind 90 deg - Service	56.60	12.01	0.04	4.19	-1228.96	-1.01
Dead+Wind 120 deg - Service	56.60	10.43	6.00	612.13	-1066.45	-1.08
Dead+Wind 150 deg - Service	56.60	6.04	10.35	1055.91	-617.80	-0.86
Dead+Wind 180 deg - Service	56.60	0.04	11.93	1216.63	-3.21	-0.40
Dead+Wind 210 deg - Service	56.60	-5.97	10.31	1051.23	612.64	0.16

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 240 deg - Service	56.60	-10.38	5.93	604.02	1064.72	0.68
Dead+Wind 270 deg - Service	56.60	-12.01	-0.04	-5.17	1231.90	1.02
Dead+Wind 300 deg - Service	56.60	-10.43	-6.00	-613.10	1069.40	1.08
Dead+Wind 330 deg - Service	56.60	-6.04	-10.35	-1056.89	620.74	0.86

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-56.60	0.00	0.00	56.60	0.00	0.000%
2	-0.11	-56.60	-30.53	0.11	56.60	30.53	0.006%
3	15.29	-56.60	-26.39	-15.29	56.60	26.39	0.000%
4	26.59	-56.60	-15.17	-26.59	56.60	15.17	0.000%
5	30.76	-56.60	0.11	-30.76	56.60	-0.11	0.002%
6	26.70	-56.60	15.36	-26.70	56.60	-15.36	0.000%
7	15.48	-56.60	26.50	-15.48	56.60	-26.50	0.000%
8	0.11	-56.60	30.53	-0.11	56.60	-30.53	0.006%
9	-15.29	-56.60	26.39	15.29	56.60	-26.39	0.000%
10	-26.59	-56.60	15.17	26.59	56.60	-15.17	0.000%
11	-30.76	-56.60	-0.11	30.76	56.60	0.11	0.002%
12	-26.70	-56.60	-15.36	26.70	56.60	15.36	0.000%
13	-15.48	-56.60	-26.50	15.48	56.60	26.50	0.000%
14	0.00	-80.05	0.00	0.00	80.05	-0.00	0.000%
15	-0.03	-80.05	-8.68	0.03	80.05	8.68	0.000%
16	4.33	-80.05	-7.50	-4.33	80.05	7.50	0.000%
17	7.53	-80.05	-4.31	-7.53	80.05	4.31	0.000%
18	8.71	-80.05	0.03	-8.71	80.05	-0.03	0.000%
19	7.56	-80.05	4.36	-7.56	80.05	-4.36	0.000%
20	4.38	-80.05	7.53	-4.38	80.05	-7.53	0.000%
21	0.03	-80.05	8.68	-0.03	80.05	-8.68	0.000%
22	-4.33	-80.05	7.50	4.33	80.05	-7.50	0.000%
23	-7.53	-80.05	4.31	7.53	80.05	-4.31	0.000%
24	-8.71	-80.05	-0.03	8.71	80.05	0.03	0.000%
25	-7.56	-80.05	-4.36	7.56	80.05	4.36	0.000%
26	-4.38	-80.05	-7.53	4.38	80.05	7.53	0.000%
27	-0.04	-56.60	-11.93	0.04	56.60	11.93	0.002%
28	5.97	-56.60	-10.31	-5.97	56.60	10.31	0.002%
29	10.38	-56.60	-5.93	-10.38	56.60	5.93	0.003%
30	12.02	-56.60	0.04	-12.01	56.60	-0.04	0.003%
31	10.43	-56.60	6.00	-10.43	56.60	-6.00	0.003%
32	6.05	-56.60	10.35	-6.04	56.60	-10.35	0.002%
33	0.04	-56.60	11.93	-0.04	56.60	-11.93	0.002%
34	-5.97	-56.60	10.31	5.97	56.60	-10.31	0.002%
35	-10.38	-56.60	5.93	10.38	56.60	-5.93	0.003%
36	-12.02	-56.60	-0.04	12.01	56.60	0.04	0.003%
37	-10.43	-56.60	-6.00	10.43	56.60	6.00	0.003%
38	-6.05	-56.60	-10.35	6.04	56.60	10.35	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	11	0.00009813	0.00011655
3	Yes	14	0.00000001	0.00006761
4	Yes	14	0.00000001	0.00007297
5	Yes	12	0.00000001	0.00008995

6	Yes	14	0.00000001	0.00006481
7	Yes	14	0.00000001	0.00007460
8	Yes	11	0.00009813	0.00013380
9	Yes	14	0.00000001	0.00006911
10	Yes	14	0.00000001	0.00006559
11	Yes	12	0.00000001	0.00009972
12	Yes	14	0.00000001	0.00007716
13	Yes	14	0.00000001	0.00006552
14	Yes	6	0.00000001	0.00000001
15	Yes	14	0.00000001	0.00005383
16	Yes	14	0.00000001	0.00005508
17	Yes	14	0.00000001	0.00005515
18	Yes	14	0.00000001	0.00005386
19	Yes	14	0.00000001	0.00005562
20	Yes	14	0.00000001	0.00005569
21	Yes	14	0.00000001	0.00005403
22	Yes	14	0.00000001	0.00005567
23	Yes	14	0.00000001	0.00005585
24	Yes	14	0.00000001	0.00005452
25	Yes	14	0.00000001	0.00005617
26	Yes	14	0.00000001	0.00005584
27	Yes	11	0.00000001	0.00004267
28	Yes	11	0.00000001	0.00007843
29	Yes	11	0.00000001	0.00010004
30	Yes	11	0.00000001	0.00005629
31	Yes	11	0.00000001	0.00006861
32	Yes	11	0.00000001	0.00010575
33	Yes	11	0.00000001	0.00004329
34	Yes	11	0.00000001	0.00008446
35	Yes	11	0.00000001	0.00007081
36	Yes	11	0.00000001	0.00005764
37	Yes	11	0.00000001	0.00011524
38	Yes	11	0.00000001	0.00007023

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.5 - 125	16.296	36	1.0764	0.0028
L2	125 - 100	11.356	36	0.9847	0.0024
L3	100 - 94.083	6.725	37	0.7385	0.0016
L4	94.083 - 80	5.847	37	0.6775	0.0015
L5	80 - 60	4.057	37	0.5270	0.0010
L6	60 - 40	2.184	37	0.3564	0.0006
L7	40 - 20	0.979	37	0.2115	0.0003
L8	20 - 0	0.269	37	0.1240	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	KRY 112 144/1	36	16.296	1.0764	0.0028	37724
140.00	BXA-171063-12CF-EDIN-X w/ Mount Pipe	36	14.613	1.0558	0.0027	25149
130.00	(3) DB980H65E-M w/ Mount Pipe	36	12.416	1.0154	0.0025	10778
115.00	(4) 844G65VTZASX w/ Mount Pipe	36	9.348	0.8975	0.0021	6079
107.00	(2) RRUS-11	36	7.882	0.8134	0.0019	4983
105.00	(2) 7770.00 w/ Mount Pipe	36	7.538	0.7917	0.0018	4768
95.00	APXV18-206516S-C w/ Mount Pipe	37	5.978	0.6871	0.0015	5341
89.00	Side Arm Mount [SO 702-1]	37	5.154	0.6227	0.0013	5833

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
72.00	Side Arm Mount [SO 701-1]	37	3.218	0.4535	0.0008	6322
54.00	Side Arm Mount [SO 702-1]	37	1.761	0.3086	0.0005	7797
49.00	DB432-A	37	1.452	0.2704	0.0004	8743
44.00	DB432-A	37	1.177	0.2356	0.0004	9948
40.00	DB432-A	37	0.979	0.2115	0.0003	10777
37.00	DB432-A	37	0.842	0.1960	0.0003	10691

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147.5 - 125	41.665	11	2.7521	0.0073
L2	125 - 100	29.038	11	2.5180	0.0063
L3	100 - 94.083	17.196	11	1.8886	0.0043
L4	94.083 - 80	14.951	12	1.7327	0.0038
L5	80 - 60	10.375	12	1.3476	0.0026
L6	60 - 40	5.585	12	0.9115	0.0016
L7	40 - 20	2.504	12	0.5408	0.0008
L8	20 - 0	0.688	12	0.3172	0.0004

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	KRY 112 144/1	11	41.665	2.7521	0.0073	14829
140.00	BXA-171063-12CF-EDIN-X w/ Mount Pipe	11	37.364	2.6996	0.0070	9886
130.00	(3) DB980H65E-M w/ Mount Pipe	11	31.749	2.5965	0.0066	4236
115.00	(4) 844G65VTZASX w/ Mount Pipe	11	23.906	2.2953	0.0055	2385
107.00	(2) RRUS-11	11	20.156	2.0801	0.0049	1953
105.00	(2) 7770.00 w/ Mount Pipe	11	19.278	2.0248	0.0047	1869
95.00	APXV18-206516S-C w/ Mount Pipe	12	15.285	1.7571	0.0039	2092
89.00	Side Arm Mount [SO 702-1]	12	13.180	1.5926	0.0034	2284
72.00	Side Arm Mount [SO 701-1]	12	8.228	1.1598	0.0021	2474
54.00	Side Arm Mount [SO 702-1]	12	4.505	0.7894	0.0013	3050
49.00	DB432-A	12	3.714	0.6915	0.0011	3420
44.00	DB432-A	12	3.011	0.6025	0.0009	3891
40.00	DB432-A	12	2.504	0.5408	0.0008	4215
37.00	DB432-A	12	2.154	0.5014	0.0007	4181

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	147.5 - 125 (1)	P24x3/8	22.50	0.00	0.0	25.200	27.8325	-8.78	701.38	0.013
L2	125 - 100 (2)	P30x3/8	25.00	0.00	0.0	25.075	34.9011	-17.92	875.15	0.020
L3	100 - 94.083	P36x3/8	5.92	0.00	0.0	23.696	41.9697	-19.19	994.51	0.019

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 $\frac{P}{P_a}$
	(3)									
L4	94.083 - 80 (4)	P36x3/8 [0.494089]	14.08	0.00	0.0	21.542	55.1132	-22.63	1187.23	0.019
L5	80 - 60 (5)	P42x3/8 [0.573839]	20.00	0.00	0.0	20.646	74.6818	-28.72	1541.89	0.019
L6	60 - 40 (6)	P48x3/8 [0.635836]	20.00	0.00	0.0	19.974	94.6117	-36.11	1889.82	0.019
L7	40 - 20 (7)	P54x3/4 [0.987339]	20.00	0.00	0.0	25.200	164.436 0	-48.11	4143.78	0.012
L8	20 - 0 (8)	P60x3/8 [0.621881]	20.00	0.00	0.0	21.727	116.007 0	-56.60	2520.53	0.022

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	147.5 - 125 (1)	P24x3/8	170.62	12.650	27.720	0.456	0.00	0.000	27.720	0.000
L2	125 - 100 (2)	P30x3/8	555.13	26.094	25.075	1.041	0.00	0.000	25.075	0.000
L3	100 - 94.083 (3)	P36x3/8	679.22	22.032	23.696	0.930	0.00	0.000	23.696	0.000
L4	94.083 - 80 (4)	P36x3/8 [0.494089]	993.32	24.700	23.696	1.042	0.00	0.000	23.696	0.000
L5	80 - 60 (5)	P42x3/8 [0.573839]	1471.0 8	23.136	22.711	1.019	0.00	0.000	22.711	0.000
L6	60 - 40 (6)	P48x3/8 [0.635836]	1993.2 7	21.633	21.972	0.985	0.00	0.000	21.972	0.000
L7	40 - 20 (7)	P54x3/4 [0.987339]	2554.4 7	14.323	27.720	0.517	0.00	0.000	27.720	0.000
L8	20 - 0 (8)	P60x3/8 [0.621881]	3153.0 7	22.199	21.727	1.022	0.00	0.000	21.727	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	147.5 - 125 (1)	P24x3/8	11.16	0.802	16.800	0.048	0.43	0.016	16.800	0.001
L2	125 - 100 (2)	P30x3/8	20.66	1.184	16.800	0.070	1.14	0.027	15.644	0.002
L3	100 - 94.083 (3)	P36x3/8	21.55	1.027	16.800	0.061	1.13	0.018	11.901	0.002
L4	94.083 - 80 (4)	P36x3/8 [0.494089]	22.90	0.831	14.361	0.058	2.11	0.026	14.361	0.002
L5	80 - 60 (5)	P42x3/8 [0.573839]	24.82	0.665	13.764	0.048	2.27	0.018	13.764	0.001
L6	60 - 40 (6)	P48x3/8 [0.635836]	27.05	0.572	13.316	0.043	3.08	0.017	13.316	0.001
L7	40 - 20 (7)	P54x3/4 [0.987339]	29.01	0.353	16.800	0.021	2.94	0.008	16.800	0.000
L8	20 - 0 (8)	P60x3/8 [0.621881]	30.81	0.531	14.866	0.036	2.79	0.010	14.491	0.001

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	147.5 - 125 (1)	0.013	0.456	0.000	0.048	0.001	0.471 ✔	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
L2	125 - 100 (2)	0.020	1.041	0.000	0.070	0.002	1.066 ✔	1.333	H1-3+VT ✔
L3	100 - 94.083 (3)	0.019	0.930	0.000	0.061	0.002	0.953 ✔	1.333	H1-3+VT ✔
L4	94.083 - 80 (4)	0.019	1.042	0.000	0.058	0.002	1.065 ✔	1.333	H1-3+VT ✔
L5	80 - 60 (5)	0.019	1.019	0.000	0.048	0.001	1.040 ✔	1.333	H1-3+VT ✔
L6	60 - 40 (6)	0.019	0.985	0.000	0.043	0.001	1.006 ✔	1.333	H1-3+VT ✔
L7	40 - 20 (7)	0.012	0.517	0.000	0.021	0.000	0.529 ✔	1.333	H1-3+VT ✔
L8	20 - 0 (8)	0.022	1.022	0.000	0.036	0.001	1.046 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	147.5 - 125	Pole	P24x3/8	1	-8.78	**	35.2	Pass
L2	125 - 100	Pole	P30x3/8	2	-17.92	**	79.6	Pass
L3	100 - 94.083	Pole	P36x3/8	3	-19.19	**	71.1	Pass
L4	94.083 - 80	Pole	P36x3/8 [0.494089]	4	-22.63	**	79.8	Pass
L5	80 - 60	Pole	P42x3/8 [0.573839]	5	-28.72	**	78.1	Pass
L6	60 - 40	Pole	P48x3/8 [0.635836]	6	-36.11	**	75.7	Pass
L7	40 - 20	Pole	P54x3/4 [0.987339]	7	-48.11	**	39.9	Pass
L8	20 - 0	Pole	P60x3/8 [0.621881]	8	-56.60	**	81.9	Pass
							Summary	
						Pole (L8)	81.9	Pass
						Rating =	81.9	**Pass**

**See additional calculations in Appendix D for $SF*P_{allow}$ and capacities listed above.

APPENDIX B

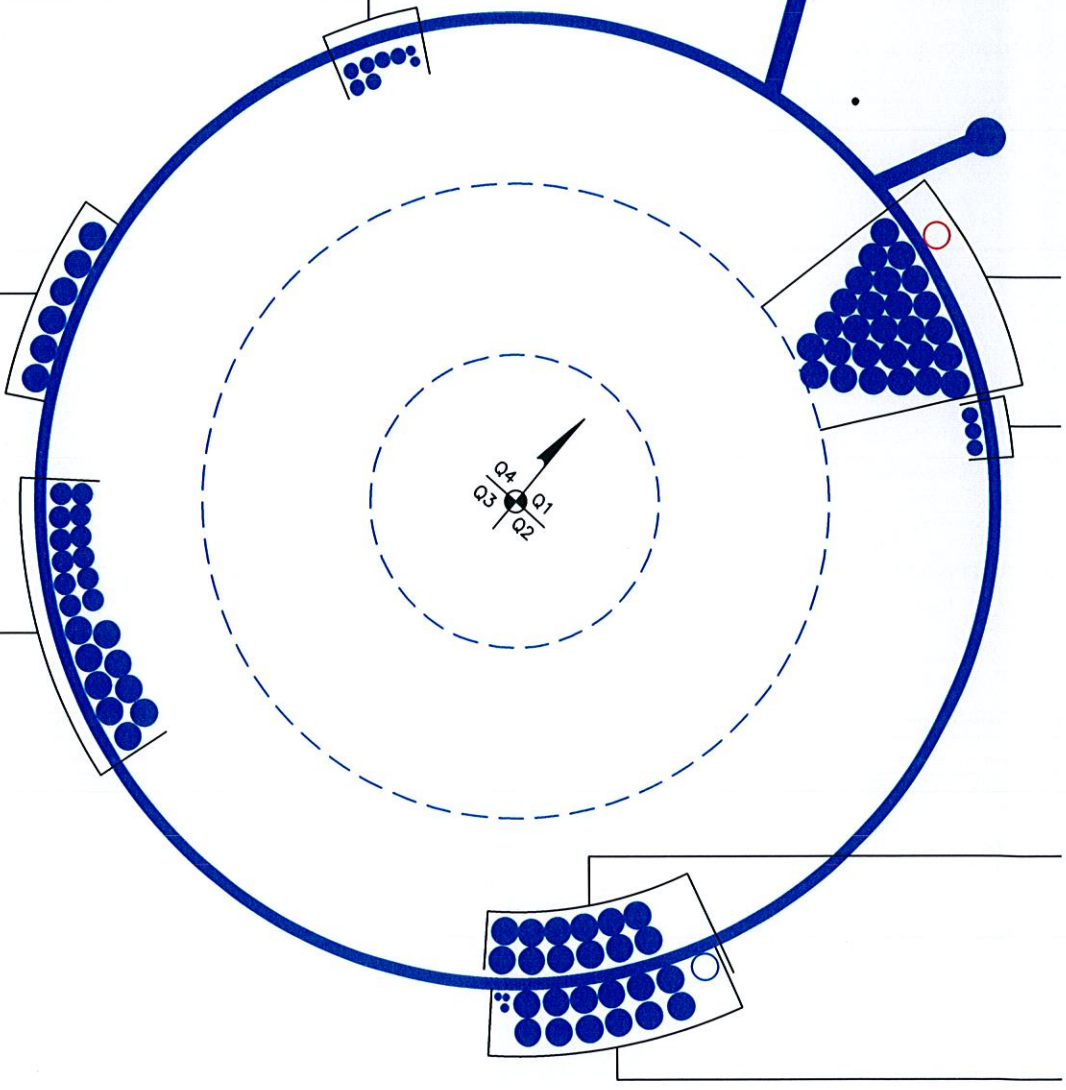
BASE LEVEL DRAWING

(INSTALLED)
(1) 7/8" TO 37 FT LEVEL
(1) 7/8" TO 40 FT LEVEL
(1) 7/8" TO 44 FT LEVEL
(1) 7/8" TO 49 FT LEVEL
(2) 7/8" TO 54 FT LEVEL
(1) 1/2" TO 72 FT LEVEL
(1) 1/2" TO 89 FT LEVEL

(INSTALLED)
(6) 1-5/8" TO 95 FT LEVEL

(INSTALLED)
(12) 1-1/4" TO 115 FT LEVEL
(9) 1-5/8" TO 130 FT LEVEL

CLIMBING PEGS
W/SAFETY CLIMB



APPENDIX C

ADDITIONAL CALCULATIONS

Reinforced Pole Stress and Effective Thickness Check

Section		Loads				Pole				
Section	Elevation (ft)	Moment (ft-kip)	Compression (kip)	Shear (kip)	Torsion (kip-ft)	Number of Sides	OD (in)	Thickness (in)	Yield Strength (ksi)	Fla Width
1	147.5	7.2	2.6	3.1	0.0	Round	24.0000	0.5000	42	0.0
2	125	170.6	8.8	11.2	0.4	Round	24.0000	0.3750	42	0.0
3	100	555.1	17.9	20.7	1.1	Round	30.0000	0.3750	42	0.0
4	94.083	679.2	19.2	21.5	1.1	Round	36.0000	0.3750	42	0.0
5	80	993.3	22.6	22.9	2.1	Round	36.0000	0.3750	42	0.0
6	60	1471.1	28.7	24.8	2.3	Round	42.0000	0.3750	42	0.0
7	40	1993.3	36.1	27.0	3.1	Round	48.0000	0.3750	42	0.0
8	20	2554.5	48.1	29.0	2.9	Round	54.0000	0.7500	42	0.0
9	0	3153.1	56.6	30.8	2.8	Round	60.0000	0.3750	42	0.0

Reinforcement Capacity

Dimensions and Properties							
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	We Thick (in
MP303	9.9	2.92	0.66	6.57	0.59	0	0.3
MP304	14.1	4.13	0.91	11.86	0.61	0	0.4
MP305	19.2	5.65	2.15	20.79	0.79	0	0.
MP306	28.8	8.47	4.95	52.50	0.93	0	0.6
MP308	35.1	10.32	6.48	82.29	0.95	0	0.7

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

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Pole Manufacturer:	Pirod

Bolt Data			
Qty:	17		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	27		

Plate Data		
Diam:	30	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.44	in

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

Pole Data		
Diam:	24	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	170.61827	ft-kips
Axial:	8.7831	kips
Shear:	11.16159	kips
Elevation:	125	feet

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

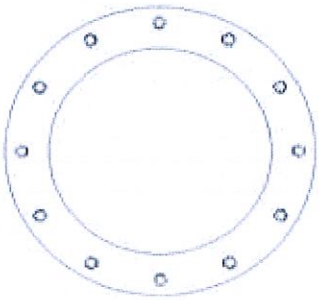
Flange Bolt Results

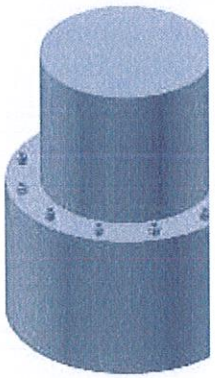
Bolt Tension Capacity, **B**:	46.07 kips
Max Bolt directly applied T:	17.33 Kips
Min. PL "tc" for **B** cap. **w/o** Pry:	1.316 in
Min PL "treq" for actual **T w/ Pry**:	0.608 in
Min PL "t1" for actual **T w/o Pry**:	0.807 in
T allowable with Prying:	44.57 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	17.33 kips
Prying Bolt Stress Ratio=(T+Q)/(B):	37.6% **Pass**

Exterior Flange Plate Results	Flexural Check
Compression Side Plate Stress:	Rohn/Pirod, OK
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	Rohn/Pirod, OK
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	23.7% **Pass**

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

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

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Manufacturer:	Pirod

Reactions		
Moment:	170.61827	ft-kips
Axial:	8.7831	kips
Shear:	11.16159	kips
Exterior Flange Run, T+Q:	17.32578	kips

Elevation: 125 feet

Bolt Data				
Qty:	17			
Diam:	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:		<-- Disregard	Bolt Fty:	
N/A:		<-- Disregard	44.00	
Circle:	27	in		

Interior Flange Bolt Results

Maximum Bolt Tension:	17.3 Kips, Ext. T=Interio
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	37.6% **Pass**

Plate Data		
Plate Outer Diam:	29.25	in
Plate Inner Diam:	23.25	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.41	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	18.4 Kips, Ext. C= Interi
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:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

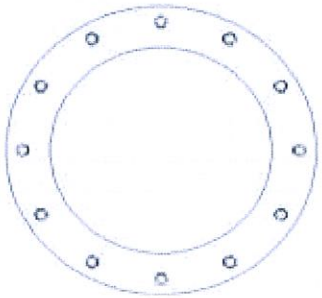
Stiffener Results N/A for Rohn / Pirod

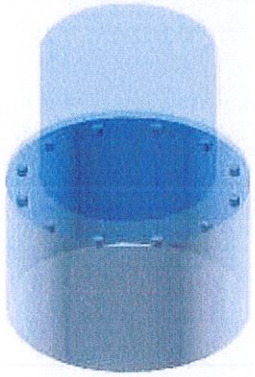
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	30	in
Thick:	0.375	in
Pole Inner Diam:	29.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	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, Exterior Flange Plate - Any Bolt Material TIA Re

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Pole Manufacturer:	Pirod

Reactions		
Moment:	555.13355	ft-kips
Axial:	17.9231	kips
Shear:	20.663355	kips
Elevation:	100	feet

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

Bolt Data			
Qty:	21		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	33		

Plate Data		
Diam:	36	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.49	in

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

Pole Data		
Diam:	30	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

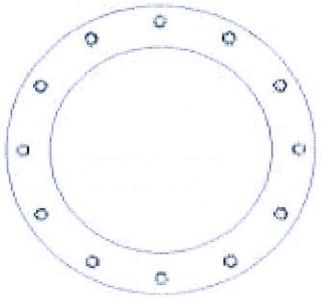
Flange Bolt Results

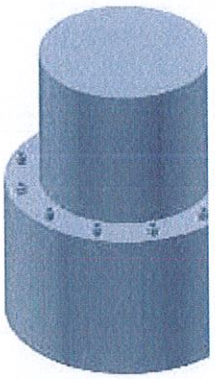
Bolt Tension Capacity, **B**:	46.07 kips
Max Bolt directly applied T:	37.60 Kips
Min. PL "tc" for **B** cap. **w/o** Pry:	1.308 in
Min PL "treq" for actual **T w/ Pry**:	0.890 in
Min PL "t1" for actual **T w/o Pry**:	1.182 in
T allowable with Prying:	44.73 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	37.60 kips
Prying Bolt Stress Ratio=(T+Q)/(B):	81.6% **Pass**

Exterior Flange Plate Results	Flexural Check
Compression Side Plate Stress:	Rohn/Pirod, OK
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	Rohn/Pirod, OK
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	50.7% **Pass**

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

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

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Manufacturer:	Pirod

Reactions		
Moment:	555.13355	ft-kips
Axial:	17.9231	kips
Shear:	20.663355	kips
Exterior Flange Run, T+Q:	37.597328	kips

Elevation: 100 feet

Bolt Data				
Qty:	21			
Diam:	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:		<-- Disregard	Bolt Fty:	44.00
N/A:		<-- Disregard		
Circle:	33	in		

Interior Flange Bolt Results

Maximum Bolt Tension:	37.6	Kips, Ext. T=Interio
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	81.6%	**Pass**

Plate Data		
Plate Outer Diam:	35.25	in
Plate Inner Diam:	29.25	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.27	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	39.3	Kips, Ext. C= Interi
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:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

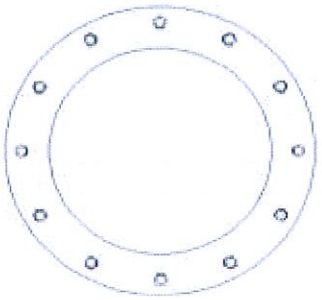
Stiffener Results N/A for Rohn / Pirod

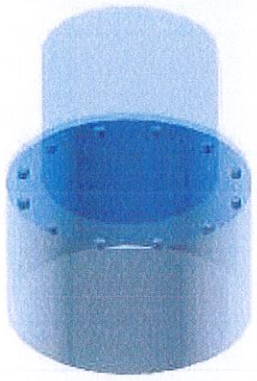
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	36	in
Thick:	0.375	in
Pole Inner Diam:	35.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	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

Flange Bolt Information for TIA/EIA-222-F and TIA-222-G-2

Solutions LLC
Your Tower Infrastructure

Flange Height:	80	ft

System Reactions

Moment:	993.3	kip-ft
Axial:	22.6	kip
Shear:	22.9	kip

Design Information

TIA Code:	F
ASIF:	1.33
Failure At:	105%

Inner Bolt Group Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Inner Bolt Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Inner Bolt Capacity Check

Max Tension:	0.0	kip
Allowable Tension:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

Bridge Stiffener #1 Data

Quantity:	4	
Type:	MP304BS	
Circle:	43.72	in
Individual Area:	4.13	in^2
BS #1 Group Area:	16.52	in^2
BS #1 Group MOIx:	3947	in^4

Reactions Seen by BS #1 Group

Moment:	510.5	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #1 Capacity Check

Max Tension:	140.1	kip
Max Compression:	140.1	kip
Allowable Axial:	183.0	kip
Max Shear:	0.0	kip
Allowable Shear:	107.4	kip
Bolt Capacity	76.6%	Pass

BS #1 Upper Weld Capacity

Eccentricity (ex):	3.860	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #1 Lower Weld Capacity

Eccentricity (ex):	0.860	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #2 Data

Quantity:		
Type:		
Circle:	0.00	in
Individual Area:	0.00	in^2
BS #2 Group Area:	0.00	in^2
BS #2 Group MOIx:	0	in^4

Reactions Seen by BS #2 Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #2 Capacity Check

Max Tension:	0.0	kip
Max Compression:	0.0	kip
Allowable Axial:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

BS #2 Upper Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #2 Lower Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #3 Data

Quantity:		
Type:		
Circle:	0.00	in
Individual Area:	0.00	in^2
BS #3 Group Area:	0.00	in^2
BS #3 Group MOIx:	0	in^4

Reactions Seen by BS #3 Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #3 Capacity Check

Max Tension:	0.0	kip
Max Compression:	0.0	kip
Allowable Axial:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

BS #3 Upper Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #3 Lower Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Rev.4.1

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

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Pole Manufacturer:	Other

Reactions		
Moment:	482.81681	ft-kips
Axial:	22.6275	kips
Shear:	22.899523	kips
Elevation:	80	feet

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

Bolt Data			
Qty:	25		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	39		

Plate Data		
Diam:	42	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.52	in

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

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

Bolt Tension Capacity, **B**:	46.07 kips
Max Bolt directly applied T:	22.86 Kips
Min. PL "tc" for **B** cap. **w/o** Pry:	1.303 in
Min PL "treq" for actual **T w/ Pry**:	0.691 in
Min PL "t1" for actual **T w/o Pry**:	0.918 in
T allowable with Prying:	44.84 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	22.86 kips
Prying Bolt Stress Ratio=(T+Q)/(B):	49.6% **Pass**

Exterior Flange Plate Results	Flexural Check
Compression Side Plate Stress:	20.3 ksi
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	56.5% **Pass**
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	30.5% **Pass**

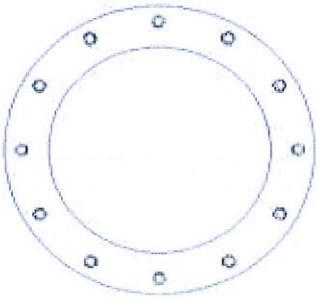
n/a

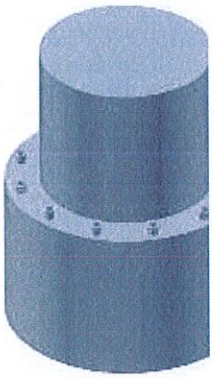
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 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#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Manufacturer:	Other

Reactions		
Moment:	482.81681	ft-kips
Axial:	22.6275	kips
Shear:	22.899523	kips
Exterior Flange Run, T+Q:	22.864343	kips

Elevation: 80 feet

Bolt Data				
Qty:	25			
Diam:	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:		<-- Disregard	Bolt Fty:	
N/A:		<-- Disregard	44.00	
Circle:	39	in		

Plate Data		
Plate Outer Diam:	41.25	in
Plate Inner Diam:	35.25	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.18	in

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

Pole Data		
Pole OuterDiam:	42	in
Thick:	0.375	in
Pole Inner Diam:	41.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi

Stress Increase Factor		
ASIF:	1.333	

Interior Flange Bolt Results

Maximum Bolt Tension:	22.9 Kips, Ext. T=Interio
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	49.6% **Pass**

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	24.7 Kips, Ext. C= Interi
Plate Stress:	20.6 ksi
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	57.1% **Pass**

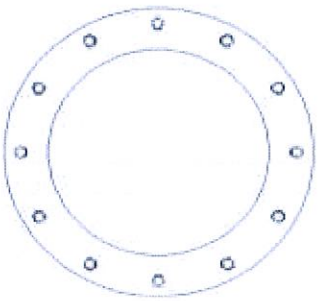
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



* 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

Flange Bolt Information for TIA/EIA-222-F and TIA-222-G-2

Solutions LLC
Your Tower Infrastructure

Flange Height:	60	ft

System Reactions

Moment:	1471.1	kip-ft
Axial:	28.7	kip
Shear:	24.8	kip

Design Information

TIA Code:	F
ASIF:	1.33
Failure At:	105%

Inner Bolt Group Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Inner Bolt Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Inner Bolt Capacity Check

Max Tension:	0.0	kip
Allowable Tension:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

Bridge Stiffener #1 Data

Quantity:	3	
Type:	Write In	
Circle:	49.25	in
Individual Area:	5.94	in^2
BS #1 Group Area:	17.81	in^2
BS #1 Group MOIx:	5401	in^4

Reactions Seen by BS #1 Group

Moment:	435.3	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #1 Capacity Check

Max Tension:	141.4	kip
Max Compression:	70.7	kip
Allowable Axial:	237.4	kip
Max Shear:	0.0	kip
Allowable Shear:	118.7	kip
Bolt Capacity	59.6%	Pass

BS #1 Upper Weld Capacity

Eccentricity (ex):	3.625	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #1 Lower Weld Capacity

Eccentricity (ex):	0.625	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #2 Data

Quantity:	4	
Type:	MP305BS	
Circle:	50.08	in
Individual Area:	5.65	in^2
BS #2 Group Area:	22.60	in^2
BS #2 Group MOIx:	7085	in^4

Reactions Seen by BS #2 Group

Moment:	571.1	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #2 Capacity Check

Max Tension:	136.8	kip
Max Compression:	136.8	kip
Allowable Axial:	259.3	kip
Max Shear:	0.0	kip
Allowable Shear:	146.9	kip
Bolt Capacity	52.8%	Pass

BS #2 Upper Weld Capacity

Eccentricity (ex):	4.040	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #2 Lower Weld Capacity

Eccentricity (ex):	1.040	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #3 Data

Quantity:		
Type:		
Circle:	0.00	in
Individual Area:	0.00	in^2
BS #3 Group Area:	0.00	in^2
BS #3 Group MOIx:	0	in^4

Reactions Seen by BS #3 Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #3 Capacity Check

Max Tension:	0.0	kip
Max Compression:	0.0	kip
Allowable Axial:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

BS #3 Upper Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #3 Lower Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Rev.4.1

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

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Pole Manufacturer:	Other

Reactions		
Moment:	464.69868	ft-kips
Axial:	28.72	kips
Shear:	24.817493	kips
Elevation:	60	feet

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

Bolt Data			
Qty:	29		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	45		

Plate Data		
Diam:	48	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.55	in

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

Pole Data		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

Bolt Tension Capacity, **B**:	46.07 kips
Max Bolt directly applied T:	16.10 Kips
Min. PL "tc" for **B** cap. **w/o** Pry:	1.299 in
Min PL "treq" for actual **T w/ Pry**:	0.578 in
Min PL "t1" for actual **T w/o Pry**:	0.768 in
T allowable with Prying:	44.92 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	16.10 kips
Prying Bolt Stress Ratio=(T+Q)/(B):	35.0% **Pass**

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	14.6 ksi
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	40.7% **Pass**
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	21.4% **Pass**

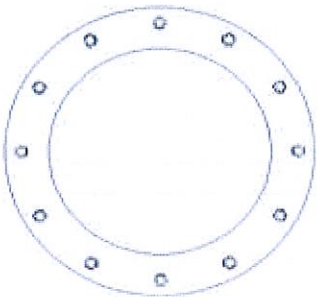
n/a

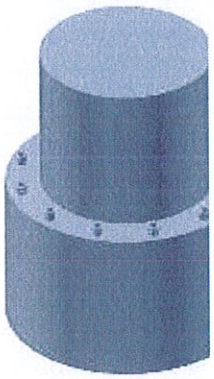
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 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#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Manufacturer:	Other

Reactions		
Moment:	464.69868	ft-kips
Axial:	28.72	kips
Shear:	24.817493	kips
Exterior Flange Run, T+Q:	16.102021	kips

Elevation: 60 feet

Bolt Data			
Qty:	29		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle:	45	in	

Plate Data		
Plate Outer Diam:	47.25	in
Plate Inner Diam:	41.25	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.12	in

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

Pole Data		
Pole OuterDiam:	48	in
Thick:	0.375	in
Pole Inner Diam:	47.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi

Stress Increase Factor		
ASIF:	1.333	

Interior Flange Bolt Results

Maximum Bolt Tension:	16.1 Kips, Ext. T=Interio
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	35.0% **Pass**

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	18.1 Kips, Ext. C= Interi
Plate Stress:	15.3 ksi
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	42.4% **Pass**

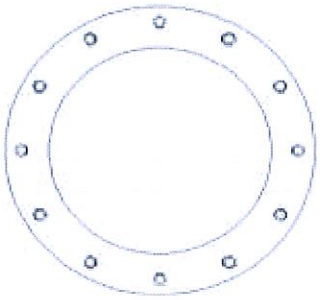
n/a

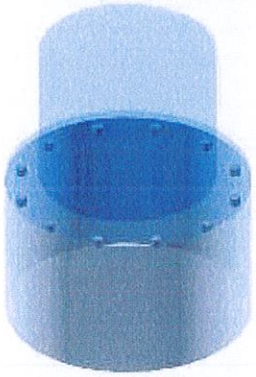
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 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

Flange Bolt Information for TIA/EIA-222-F and TIA-222-G-2

Solutions LLC
Your Tower Infrastructure

Flange Height:	40	ft

System Reactions

Moment:	1993.3	kip-ft
Axial:	36.1	kip
Shear:	27.0	kip

Design Information

TIA Code:	F
ASIF:	1.33
Failure At:	105%

Inner Bolt Group Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Inner Bolt Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Inner Bolt Capacity Check

Max Tension:	0.0	kip
Allowable Tension:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

Bridge Stiffener #1 Data

Quantity:	3	
Type:	Write In	
Circle:	60.50	in
Individual Area:	2.41	in^2
BS #1 Group Area:	7.22	in^2
BS #1 Group MOIx:	3301	in^4

Reactions Seen by BS #1 Group

Moment:	261.3	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #1 Capacity Check

Max Tension:	69.1	kip
Max Compression:	34.6	kip
Allowable Axial:	245.3	kip
Max Shear:	0.0	kip
Allowable Shear:	122.6	kip
Bolt Capacity	28.2%	Pass

BS #1 Upper Weld Capacity

Eccentricity (ex):	6.250	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #1 Lower Weld Capacity

Eccentricity (ex):	3.250	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #2 Data

Quantity:	4	
Type:	MP306BS	
Circle:	56.36	in
Individual Area:	8.47	in^2
BS #2 Group Area:	33.88	in^2
BS #2 Group MOIx:	13452	in^4

Reactions Seen by BS #2 Group

Moment:	1064.9	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #2 Capacity Check

Max Tension:	226.7	kip
Max Compression:	226.7	kip
Allowable Axial:	398.2	kip
Max Shear:	0.0	kip
Allowable Shear:	220.2	kip
Bolt Capacity	56.9%	Pass

BS #2 Upper Weld Capacity

Eccentricity (ex):	4.180	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #2 Lower Weld Capacity

Eccentricity (ex):	1.180	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #3 Data

Quantity:		
Type:		
Circle:	0.00	in
Individual Area:	0.00	in^2
BS #3 Group Area:	0.00	in^2
BS #3 Group MOIx:	0	in^4

Reactions Seen by BS #3 Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #3 Capacity Check

Max Tension:	0.0	kip
Max Compression:	0.0	kip
Allowable Axial:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

BS #3 Upper Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #3 Lower Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Rev.4.1

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

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Pole Manufacturer:	Other

Reactions		
Moment:	667.0491	ft-kips
Axial:	36.1104	kips
Shear:	27.049716	kips
Elevation:	40	feet

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

Bolt Data			
Qty:	33		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	51		

Plate Data		
Diam:	54	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.57	in

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

Pole Data		
Diam:	48	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

Bolt Tension Capacity, **B**:	46.07 kips
Max Bolt directly applied T:	17.93 Kips
Min. PL "tc" for **B** cap. **w/o** Pry:	1.296 in
Min PL "treq" for actual **T w/ Pry**:	0.608 in
Min PL "t1" for actual **T w/o Pry**:	0.809 in
T allowable with Prying:	44.99 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	17.93 kips
Prying Bolt Stress Ratio=(T+Q)/(B):	38.9% **Pass**

Exterior Flange Plate Results Flexural Check

Compression Side Plate Stress:	16.4 ksi
Allowable Plate Stress:	36.0 ksi
Compression Plate Stress Ratio:	45.5% **Pass**
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	23.7% **Pass**

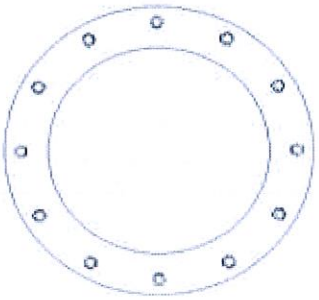
n/a

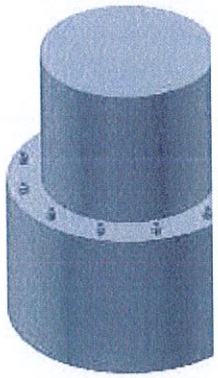
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 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#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Manufacturer:	Other

Reactions		
Moment:	667.0491	ft-kips
Axial:	36.1104	kips
Shear:	27.049716	kips
Exterior Flange Run, T+Q:	17.930319	kips

Elevation: 40 feet

Bolt Data				
Qty:	33			
Diam:	1	Bolt Fu:	120	
Bolt Material:	A325	Bolt Fy:	92	
N/A:		<-- Disregard	Bolt Fty:	
N/A:		<-- Disregard	44.00	
Circle:	51	in		

Interior Flange Bolt Results

Maximum Bolt Tension:	17.9 Kips, Ext. T=Interio
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	38.9% **Pass**

Plate Data		
Plate Outer Diam:	52.5	in
Plate Inner Diam:	46.5	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.00	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	20.1 Kips, Ext. C= Interi
Plate Stress:	14.5 ksi
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	40.2% **Pass**

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

n/a

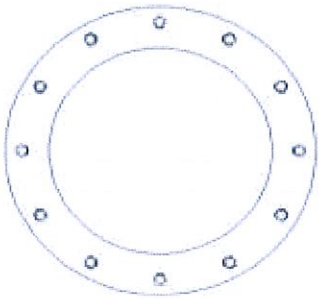
Stiffener Results

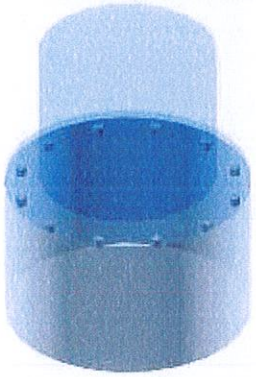
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Pole OuterDiam:	54	in
Thick:	0.75	in
Pole Inner Diam:	52.5	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	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

Flange Bolt Information for TIA/EIA-222-F and TIA-222-G-2

Solutions LLC
Your Tower Infrastructure

Flange Height:	20	ft

System Reactions

Moment:	2554.5	kip-ft
Axial:	48.1	kip
Shear:	29.0	kip

Design Information

TIA Code:	F	
ASIF:	1.33	
Failure At:	105%	

Inner Bolt Group Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Inner Bolt Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Inner Bolt Capacity Check

Max Tension:	0.0	kip
Allowable Tension:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

Bridge Stiffener #1 Data

Quantity:	3	
Type:	Write In	
Circle:	66.50	in
Individual Area:	2.41	in^2
BS #1 Group Area:	7.22	in^2
BS #1 Group MOIx:	3989	in^4

Reactions Seen by BS #1 Group

Moment:	265.1	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #1 Capacity Check

Max Tension:	63.8	kip
Max Compression:	31.9	kip
Allowable Axial:	245.3	kip
Max Shear:	0.0	kip
Allowable Shear:	122.6	kip
Bolt Capacity	26.0%	Pass

BS #1 Upper Weld Capacity

Eccentricity (ex):	6.250	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #1 Lower Weld Capacity

Eccentricity (ex):	3.250	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #2 Data

Quantity:	4	
Type:	MP308BS	
Circle:	62.40	in
Individual Area:	10.32	in^2
BS #2 Group Area:	41.28	in^2
BS #2 Group MOIx:	20092	in^4

Reactions Seen by BS #2 Group

Moment:	1335.4	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #2 Capacity Check

Max Tension:	256.8	kip
Max Compression:	256.8	kip
Allowable Axial:	487.9	kip
Max Shear:	0.0	kip
Allowable Shear:	268.3	kip
Bolt Capacity	52.6%	Pass

BS #2 Upper Weld Capacity

Eccentricity (ex):	4.200	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #2 Lower Weld Capacity

Eccentricity (ex):	1.200	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Bridge Stiffener #3 Data

Quantity:		
Type:		
Circle:	0.00	in
Individual Area:	0.00	in^2
BS #3 Group Area:	0.00	in^2
BS #3 Group MOIx:	0	in^4

Reactions Seen by BS #3 Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

BS #3 Capacity Check

Max Tension:	0.0	kip
Max Compression:	0.0	kip
Allowable Axial:	0.0	kip
Max Shear:	0.0	kip
Allowable Shear:	0.0	kip
Bolt Capacity	0.0%	

BS #3 Upper Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

BS #3 Lower Weld Capacity

Eccentricity (ex):	N/A	in
Weld Length (l):	N/A	in
Weld Factor (a):	N/A	
Weld Size (D):	N/A	16TH
Weld Coef. (C):	N/A	
Electrode Coef. (C_1):	N/A	
Weld Capacity:	N/A	

Rev.4.1

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

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Pole Manufacturer:	Other

Reactions		
Moment:	953.99475	ft-kips
Axial:	48.1126	kips
Shear:	29.013153	kips
Elevation:	20	feet

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

Bolt Data			
Qty:	45		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	57		

Plate Data		
Diam:	60	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.77	in

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

Pole Data		
Diam:	54	in
Thick:	0.75	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

Bolt Tension Capacity, **B**:	46.07	kips
Max Bolt directly applied T:	16.78	Kips
Min. PL "tc" for **B** cap. **w/o** Pry:	1.427	in
Min PL "treq" for actual **T w/ Pry**:	0.657	in
Min PL "t1" for actual **T w/o Pry**:	0.861	in
T allowable with Prying:	42.49	kips
Prying Force, Q:	0.00	kips
Total Bolt Tension=T+Q:	16.78	kips
Prying Bolt Stress Ratio=(T+Q)/(B):	36.4%	**Pass**

Exterior Flange Plate Results	Flexural Check	
Compression Side Plate Stress:	18.7	ksi
Allowable Plate Stress:	36.0	ksi
Compression Plate Stress Ratio:	51.8%	**Pass**
No Prying		
Tension Side Stress Ratio, (treq/t)^2:	27.6%	**Pass**

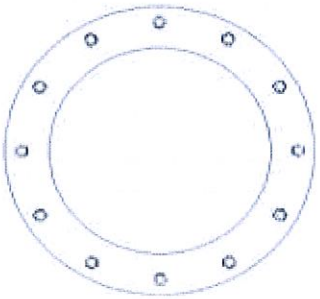
n/a

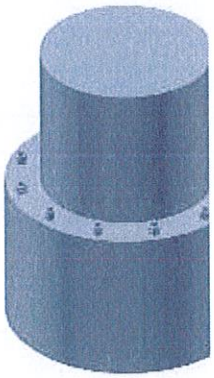
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 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#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Manufacturer:	Other

Reactions		
Moment:	953.99475	ft-kips
Axial:	48.1126	kips
Shear:	29.013153	kips
Exterior Flange Run, T+Q:	16.783364	kips

Elevation: 20 feet

Bolt Data			
Qty:	45		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty: 44.00
N/A:		<-- Disregard	
Circle:	57	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	16.8	Kips, Ext. T=Interio
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	36.4%	**Pass**

Plate Data		
Plate Outer Diam:	59.25	in
Plate Inner Diam:	53.25	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.14	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	18.9	Kips, Ext. C= Interi
Plate Stress:	19.8	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	54.9%	**Pass**

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

n/a

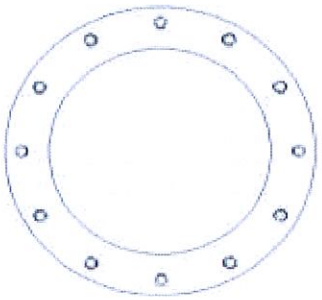
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Pole OuterDiam:	60	in
Thick:	0.375	in
Pole Inner Diam:	59.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	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#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Pole Manufacturer:	*Other*

Reactions		
Moment:	2053.0156	ft-kips
Axial:	56.5978	kips
Shear:	30.809107	kips

Anchor Rod Data		
Qty:	48	
Diam:	1	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	63	in

Plate Data		
Diam:	66	in
Thick:	1.25	in
Grade:	36	ksi
Single-Rod B-eff:	3.93	in

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

Pole Data		
Diam:	60	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	57	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

Maximum Rod Tension:	31.4 Kips	Rigid
Allowable Tension:	36.4 Kips	Service, ASD
Anchor Rod Stress Ratio:	86.4% **Pass**	Fty*ASIF

Base Plate Results

	Flexural Check	Rigid
Base Plate Stress:	32.2 ksi	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	89.4% **Pass**	Y.L. Length: 19.21

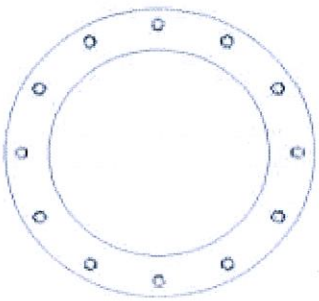
n/a

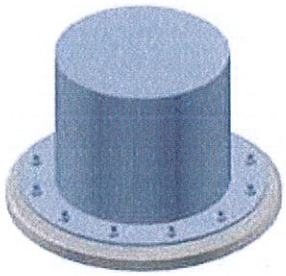
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





* 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

Anchor Rod Information for TIA

Site Information	
ID:	827050
Name:	Rocky Hill- Rte 160_1
App. #:	216342

AeroSolutions LLC
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Original Anchor Rod Data		
Quantity:	48	
Diameter:	1.00	in
Material:	A615 GR 75	
Bolt Circle:	63.0	in
Bolt Spacing:		in
Bolt Group Area:	37.70	in^2
Bolt Group MOIx:	18703	in^4

Reactions Seen by Original AR Group		
Moment:	2053.0	kip-ft
Axial:	56.6	kip
Shear:	30.8	kip

Original AR Capacity Check		
Tension Load:	31.4	kip
Allowable load:	36.3	kip
AR Capacity:	86.4%	Pass

First Added Anchor Rod Data		
Quantity:	4	
Diameter:	2.25	in
Material:	A772	
Bolt Circle:	71.0	in
Bolt Group Area:	15.90	in^2
Bolt Group MOIx:	10022	in^4

Reactions Seen by First Added AR Group		
Moment:	1100.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

First Added AR Capacity Check		
Tension Load:	185.9	kip
Allowable load:	262.4	kip
AR Capacity:	70.9%	Pass

Anchor Rod Embedment (v1.2)

Analysis Standard					
TIA Code:	*TIACode*	F			
Allowable Stress Increase:	*ASIF*	1.333			
Dimensions and Properties					
Pier Diameter:	*PierDia*	84	in		
Concrete Strength:	*Fc*	3000	psi		
Clear Cover, Side:	*cc.side*	3	in		
Clear Cover, Top:	*cc.top*	3	in		
Rebar Yield Strength:	*BarFy*	60	ksi		
Rebar Tie Size:	*TieSize*	5			
Rebar Tie Diameter:	*TieDia*	0.63	in		
Vertical Bar Quantity:	*BarQty*	28			
Vertical Bar Size:	*BarSize*	9			
Vertical Bar Diameter:	*BarDia*	1.128	in		
Vertical Bar Area:	*BarArea*	1.00	in		
Vertical Bar Circle Diameter:	*BarBC*	75.6	in		
Vertical Bar Spacing:	*BarSp*	8.5	in		
Vertical Bar Radial Angle Between:	*BarAngle*	12.9	deg		
Anchor Rod Type:	*RodType*	A772			
Anchor Rod Diameter:	*RodDia*	2.25	in		
Anchor Rod Threads per Inch:	*RodThreads*	4.5			
Anchor Rod Net Area Through Threads:	*RodArea*	3.25	sq in		
Anchor Rod Circle Diameter:	*RodBC*	71	in		
Anchor Rod Material:	*RodMatl*	A722			
Anchor Rod Yield Strength:	*RodFy*	120	ksi		
Anchor Rod Ultimate Strength:	*RodFu*	150	ksi		
Anchor Rod Loading					
Anchor Rod Tensile Requirement:	*RodP*	262.4	kip		
Anchor Rod Design Criteria:	*DesCrit*	Analysis			
Development Length of Vertical Rebar					
Reinforcement Location Factor[1]:	*Alpha*	1.0		ACI 12.2.4	
Coating Factor[1]:	*Beta*	1.0		ACI 12.2.4	
Lightweight Aggregate Concrete Factor[1]:	*Lambda*	1.0		ACI 12.2.4	
Reinforcement Size Factor[1]:	*Gamma*	1.0		ACI 12.2.4	
Transverse Reinforcement Ratio[2]:	*Ktr*	0.0	in	ACI 12.2.4	
Maximum Spacing or Cover Dimension:	*Cover*	4.19	in	ACI 12.2.4	
Development Length:	*Ld*	37.1	in	ACI 12.2.3	
Reinforcment Stress Ratio[3]:	*SR*				
Reduced Development Length:	*Ld.red*	37.1	in	ACI 12.2.5	Used only if Des

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Site Number	827050
Site Name	Rocky Hill- Rte 160_1

Caisson Analysis

Pier Properties		
Moment	3153	kip-ft
Shear	31	kip
Pier Diameter	7.0	ft
Height Above Grade	0.50	ft
Depth Below Grade	36.00	ft
Donut Diameter		ft
Donut Depth		ft

Analysis Properties		
TIA Code	F	
Soil Safety Factor	2.00	
Water Table Depth	10.0	ft
Ignored Soil Depth	3.5	ft
Cohesion Based on	PLS Caisson	
Max Soil Capacity	110%	

Soil Properties

Layer	Top of Soil Layer (ft)	Layer Thickness (ft)	Bottom of Soil Layer (ft)	Soil Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Soil.Layer	*Soil.Top*	*Soil.Thick*	*Soil.Bottom*	*Soil.Weight*	*Soil.Cohesion*	*Soil.Phi*
1	0.00	12	12.00	125	1000	
2	12.00	24	36.00	110	500	
3						
4						
5						
6						
7						
8						
9						
10						

Critical Depths Below Grade		
Rotation Axis	16.96	ft
Zero Shear	36.00	ft

Results		
Soil Capacity	75.3%	OK
Max Pier Moment	0	kip-ft

Moment At User Defined Depths Below Grade		
Moment @ 20.1'	1341	kip-ft
		kip-ft

	kip-ft
	kip-ft

V1.0

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties

Concrete:

Pier Diameter =	7.0	ft
Concrete Area =	5541.8	in^2

Reinforcement:

Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	5	
Vert. Cage Diameter =	6.30	ft
Vert. Cage Diameter =	75.62	in
Vertical Bar Size =	9	
Bar Diameter =	1.13	in
Bar Area =	1	in^2
Number of Bars =	28	
As Total=	28	in^2
A s/ Aconc, Rho:	0.0051	0.51%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.51%	OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	8184.86	kips
at Mu=(ϕ=0.65)Mn=	5002.55	ft-kips
Max Tu, (φ=0.9) Tn =	1512	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	1340.798	ft-kips **(* Note)**
Max. Service Shaft P:	56.5978	kips
Max Axial Force Type:	Comp.	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	Shaft Factored Loads		
1.30	Mu:	1743.038	ft-kips
1.30	Pu:	73.57714	kips

Material Properties

Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code= 2002

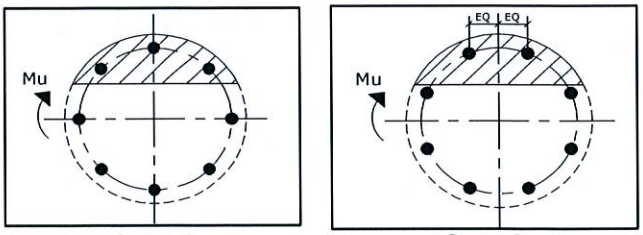
Seismic Properties

Seismic Design Category = D
Seismic Risk = **High**

Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **1**



Case 1 Case 2

Dist. From Edge to Neutral Axis: **12.82** in
Extreme Steel Strain, εt: **0.0157**
εt > 0.0050, Tension Controlled
Reduction Factor,φ: **0.900**

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	73.58	kips
Drilled Shaft Moment Capacity, φMn:	**4619.82**	ft-kips
Drilled Shaft Superimposed Mu:	**1743.04**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**37.7%**

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *827050*
Site Name: *Rocky Hill- Rte 160_1*
App #: *216342*

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties

Concrete:

Pier Diameter =	7.0	ft
Concrete Area =	5541.8	in^2

Reinforcement:

Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	5	
Vert. Cage Diameter =		ft
Vert. Cage Diameter =		in
Vertical Bar Size =	0	
Bar Diameter =	#N/A	in
Bar Area =	#N/A	in^2
Number of Bars =	0	
As Total=	0	in^2
A s/ Aconc, Rho:	0.0000	0.00%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Compression
Provided Rho:	0.00%	
Adjusted Rho:	0.00%	**ACI 318, section 10.5.3 Check Applied**

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	7348.39	kips
at Mu=(ϕ=0.65)Mn=	4502.92	ft-kips
Max Tu, (φ=0.9) Tn =	0	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	0.047556	ft-kips **(* Note)**
Max. Service Shaft P:	56.5978	kips
Max Axial Force Type:	Comp.	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	**Shaft Factored Loads**		
1.30	Mu:	0.061823	ft-kips
1.30	Pu:	73.57714	kips

Material Properties

Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code= 2002

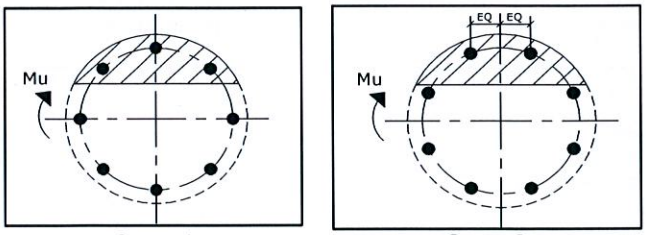
Seismic Properties

Seismic Design Category = D
Seismic Risk = **High**

Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **1**



Case 1 Case 2

Dist. From Edge to Neutral Axis: **2.80** in
Extreme Steel Strain, εt: **0.0000**
εt < 0.0020, Compression Controlled
Reduction Factor,φ: **0.650**

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	73.58	kips
Drilled Shaft Moment Capacity, φMn:	**248.79**	ft-kips
Drilled Shaft Superimposed Mu:	**0.06**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**0.0%**

EXHIBIT C

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

T-Mobile Existing Facility

Site ID: CT11058C

Rocky Hill / Route 160_1
699 Old Main Street
Rocky Hill, CT 06067

March 11, 2014

EBI Project Number: 62141023

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

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March 11, 2014

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

Re: Emissions Values for Site: **CT11058C - Rocky Hill / Route 160_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 699 Old Main Street, Rocky Hill, 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 and AWS bands 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 699 Old Main Street, Rocky Hill, 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 **149 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	CT11058C - Rocky Hill / Route 160_1
Site Addresss	699 Old Main Street, Rocky Hill, CT 06067
Site Type	Monopole

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	149	143	None	0	0	48.326044	0.849601	0.08496%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	149	143	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	149	143	1-5/8"	0	0	24.163022	0.424801	0.04248%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	149	143	1-5/8"	0	0	24.163022	0.424801	0.04248%
														Sector total Power Density Value:		0.170%	

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	149	143	None	0	0	48.326044	0.849601	0.08496%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	149	143	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	149	143	1-5/8"	0	0	24.163022	0.424801	0.04248%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	149	143	1-5/8"	0	0	24.163022	0.424801	0.04248%
														Sector total Power Density Value:		0.170%	

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	149	143	None	0	0	48.326044	0.849601	0.08496%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	149	143	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	149	143	1-5/8"	0	0	24.163022	0.424801	0.04248%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	149	143	1-5/8"	0	0	24.163022	0.424801	0.04248%
														Sector total Power Density Value:		0.170%	

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.510%
Rocky Hill PD	0.186%
Rocky Hill FD	0.189%
Rocky Hill PW	0.805%
Rocky Hill Hotline	3.620%
Rocky Hill Intercity	3.865%
RAFS	3.006%
Rocky Hill PD	3.635%
Rocky Hill PD	5.786%
Wethersfield	7.371%
Sprint	12.500%
MetroPCS	13.470%
AT&T	3.970%
Verizon Wireles	20.180%
Nextel	5.750%
Total Site MPE %	84.843%

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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 **0.510% (0.170% 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 **84.843%** 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

EBI Consulting
21 B Street
Burlington, MA 01803