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

February 27, 2014

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

Re: Notice of Exempt Modification
Crown Castle/T-Mobile co-location
Site ID CT11025B
10 Sylvia Street, Branford

Dear Attorney Bachman:

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

In this case, Crown Castle owns the existing telecommunications tower and related facility at 10 Sylvia Street, Branford Connecticut (Coordinates: 41 17' 38.08"/ -72 47' 8.624"). T-Mobile intends to replace six existing antennas and related equipment at this existing telecommunications facility in Branford ("Branford Facility"). Please accept this letter as notification, pursuant to R.C.S.A. § 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the First Selectman James B. Cosgrove and the property owner, TKJ Sylvia Associates.

The existing Branford Facility consists of a 125 foot tall monopole tower.[1] T-Mobile plans to replace six existing antennas with six new antennas and replace three TMAs (tower mounted amplifiers) at a centerline of 122 feet. (See the plans revised to February 26, 2014 attached hereto as Exhibit A). T-Mobile will also install an equipment cabinet, install fiber and coax cable, and reuse existing coax cables. The existing Branford Facility is structurally capable of supporting T-Mobile's proposed modifications, as indicated in the structural analysis dated February 12, 2014 (stamped February 14, 2014) and attached hereto as Exhibit B.

[1] While the online docket for the Connecticut Siting Council does not provide a docket or petition number for the approval of this structure, it does reference this structure in connection with several exempt modification requests, the most recent being EM-CING-014-120621.

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

1. The proposed modification will not increase the height of the tower. T-Mobile's replacement antennas will be installed at a centerline of 122 feet, merely replacing existing antennas located at the same 122 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 area.

3. The proposed modification to the Branford 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 February 24, 2014, T-Mobile's operations would add 0.775% 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 40.655% of the FCC Standard as calculated for a mixed frequency site as evidenced by the engineering exhibit attached hereto as Exhibit C.

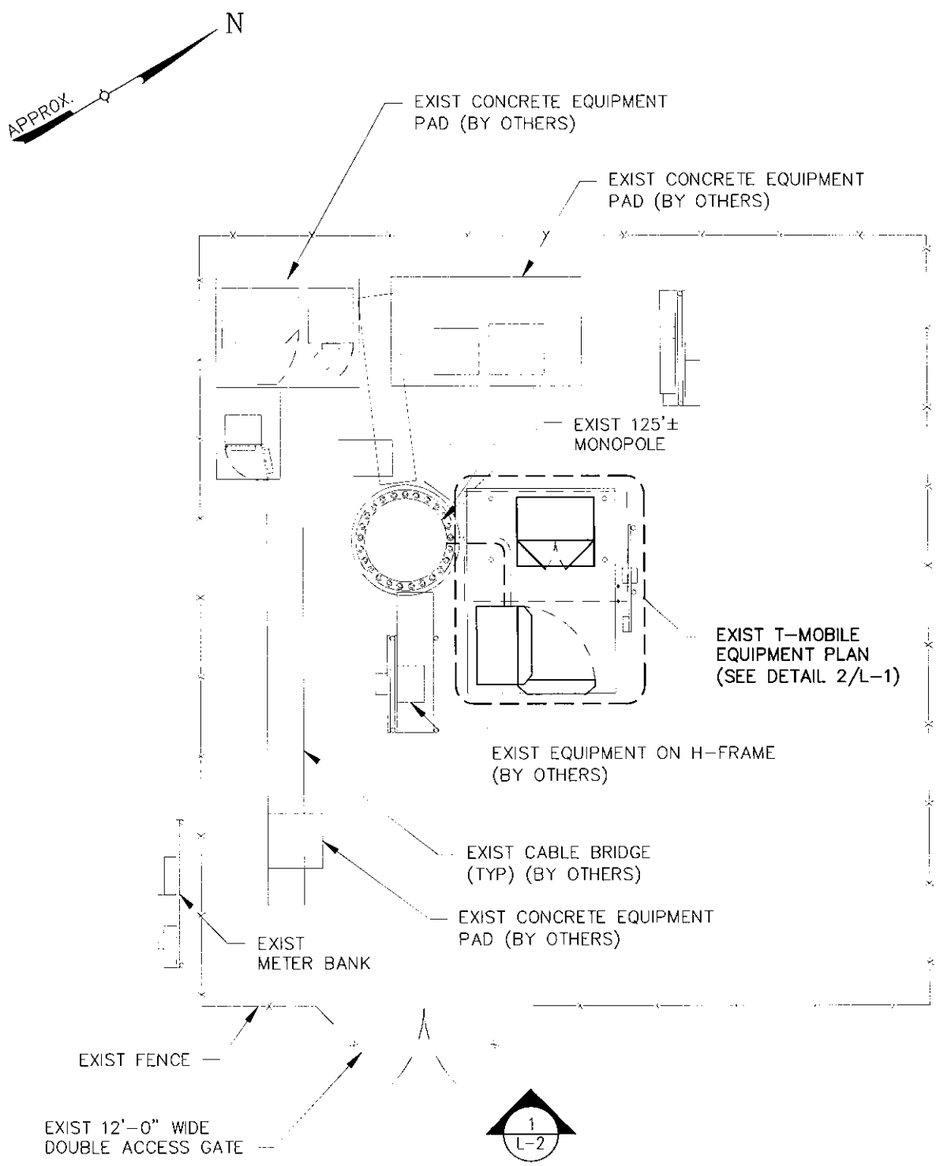
For the foregoing reasons, T-Mobile respectfully submits that the proposed replacement antennas and equipment at the Branford Facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Upon acknowledgement by the Council of this proposed exempt modification, T-Mobile shall commence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

Sincerely,

Julie D. Kohler, Esq.

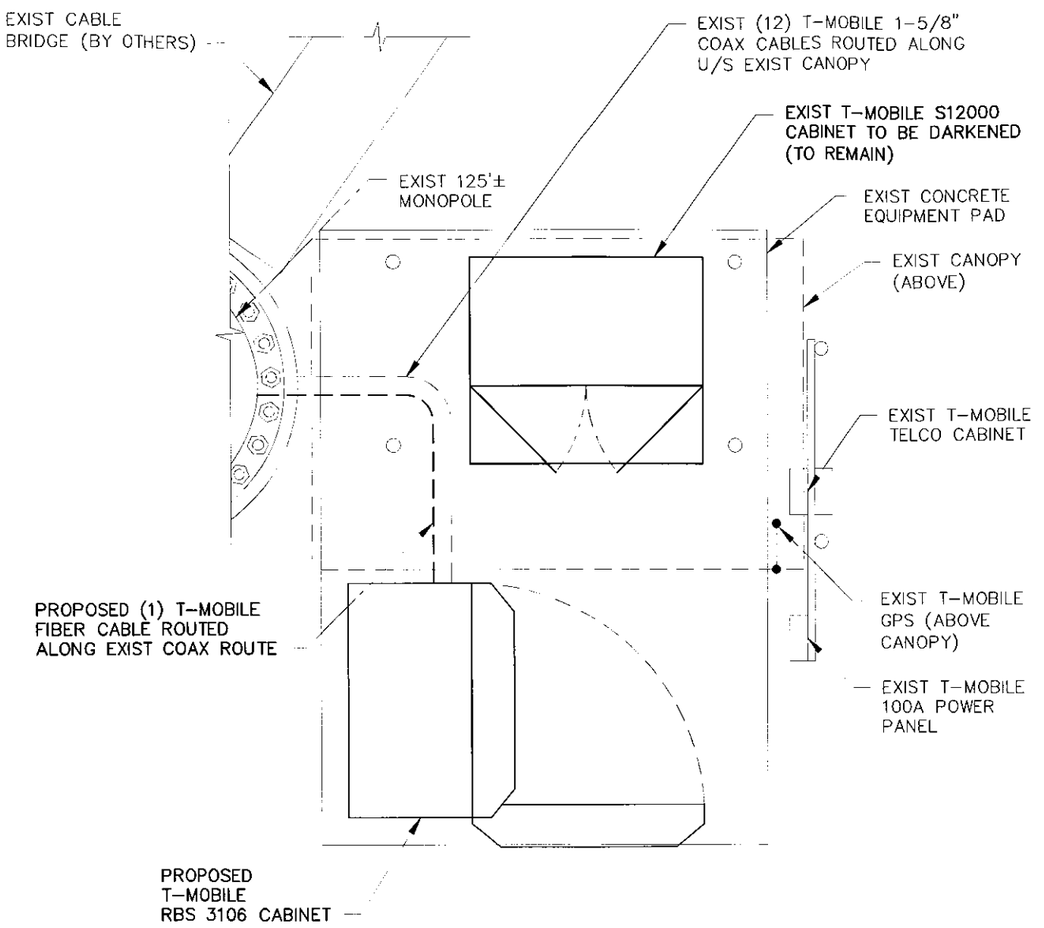
cc: Town of Branford, First Selectman James B. Cosgrove
Crown Castle
TKJ Sylvia Associates
Halene Fujimoto, HPC Wireless

EXHIBIT A



1 L-1 SITE PLAN

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



2 L-1 EQUIPMENT PLAN

SCALE: 1/4" = 1'-0"

STRUCTURAL NOTE:
EXIST MOUNTS AND MONOPOLE TO BE VERIFIED FOR STRUCTURAL SUITABILITY BY A STATE LICENSED P.E.

CONFIGURATION
2C

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6856
Fax: (845) 567-8703

T-Mobile
NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS

T-MOBILE	
LANDLORD	
RF	
CONSTRUCTION	

PROJECT NUMBER	DESIGNED BY
6644.CT11025B	JQ

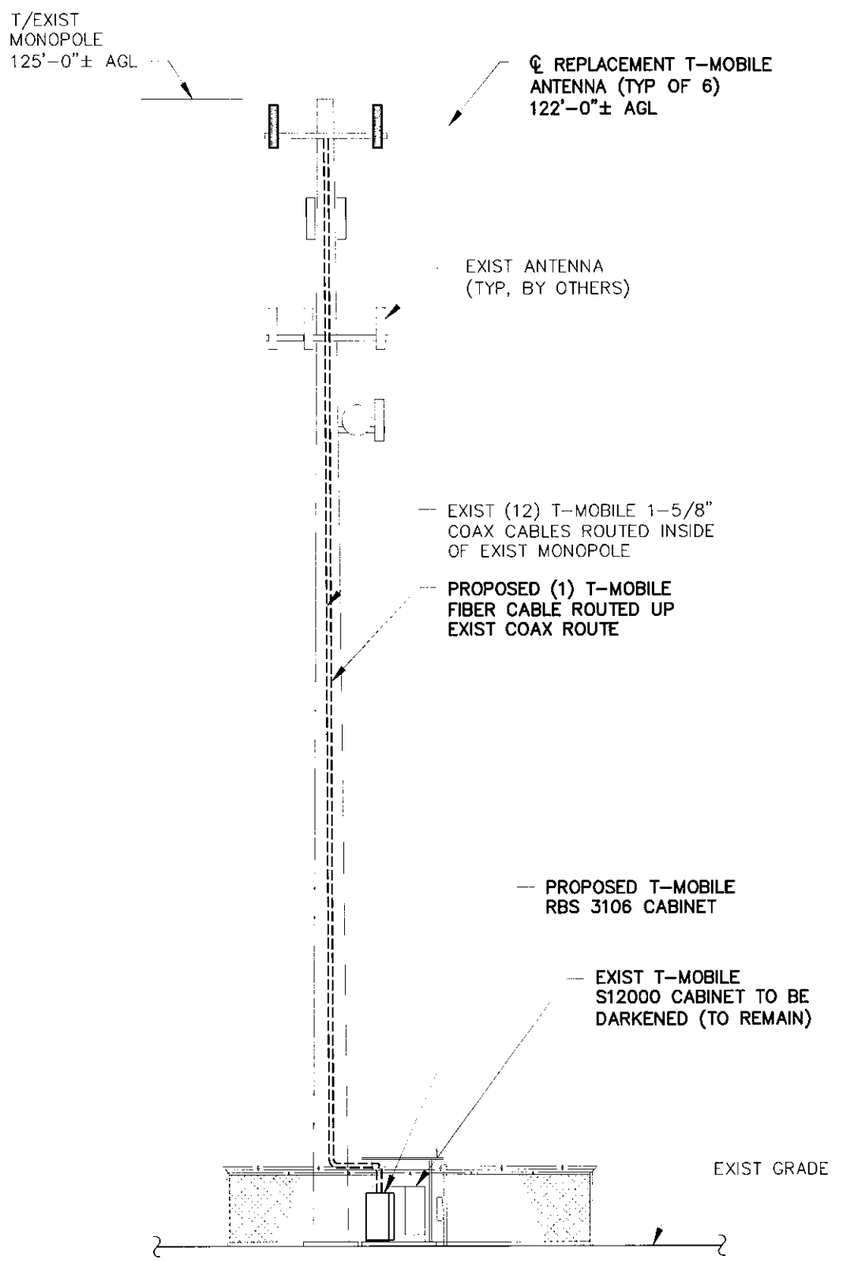
REV	DATE	REVISION	DRAWN BY
0	02/26/14	FOR COMMENT	SF

ISSUED BY	DATE

SITE INFORMATION
CT11025B
BRANFORD/I-95/X55/DTN1
10 SYLVIA STREET
BRANFORD, CT 06405

SHEET TITLE
SITE PLAN AND EQUIPMENT PLAN

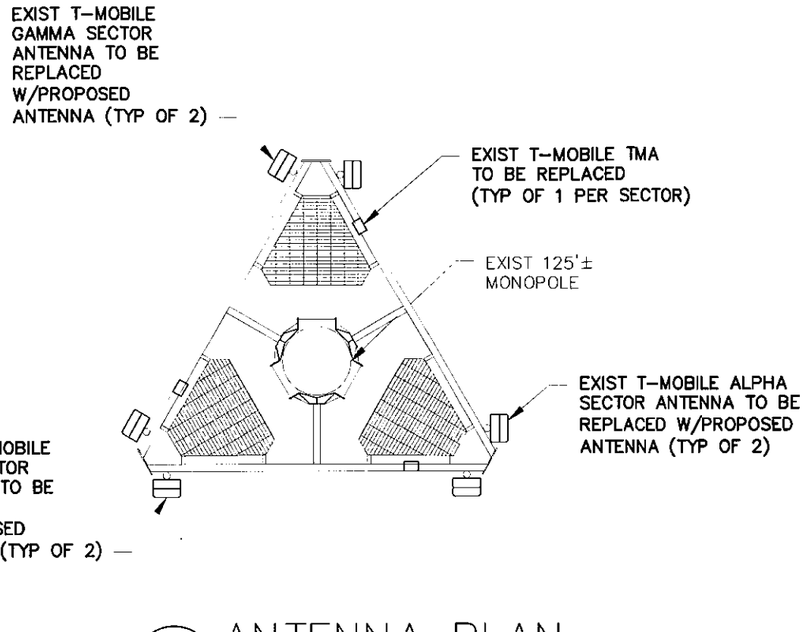
SHEET NUMBER
L-1



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

1/L-2 ELEVATION

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



2/L-2 ANTENNA PLAN

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

STRUCTURAL NOTE:
EXIST MOUNTS AND MONOPOLE TO BE VERIFIED FOR STRUCTURAL SUITABILITY BY A STATE LICENSED P.E.

CONFIGURATION
2C

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-6656
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T-Mobile
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APPROVALS
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RF
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PROJECT NUMBER	DESIGNED BY
6644.CT11025B	JQ

REV	DATE	REVISION	DRAWN BY
0	02/25/14	FOR COMMENT	SF

ISSUED BY | DATE

SITE INFORMATION
CT11025B
BRANFORD/I-95/X55/DTN1
10 SYLVIA STREET
BRANFORD, CT 06405

SHEET TITLE
ELEVATION &
ANTENNA PLAN

SHEET NUMBER
L-2

EXHIBIT B

Date: **February 12, 2014**

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

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11025B
	Carrier Site Name:	Brandford/I-95/X55/Dtn1
Crown Castle Designation:	**Crown Castle BU Number:**	822765
	Crown Castle Site Name:	Branford/ I-95/ X55/ Dtn1
	Crown Castle JDE Job Number:	259548
	Crown Castle Work Order Number:	709720
	Crown Castle Application Number:	216345 Rev. 2
Engineering Firm Designation:	**FDH Engineering, Inc. Project Number:**	1422T91400
Site Data:	**322 E. Main Street, Branford, New Haven County, CT**	
	Latitude *41° 17' 38.08"*, Longitude *-72° 47' 8.624"*	
	125 Foot - Monopole Tower	

Dear Patrick Byrum,

FDH Engineering, Inc. 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 615962, in accordance with application 216345, 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:

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

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

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

We at *FDH Engineering, Inc.* 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.

Respectfully submitted by:

Chip DeVoto, EI
Project Engineer

Reviewed by:

Bradley R. Newman, PE
Senior Project Engineer
CT PE License No. 29630

2/14/14

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 125 ft Monopole tower designed by PIROD MANUFACTURES INC. in January of 1999. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

122.0	122.0	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 Antenna and Cable Information

122.0	122.0	3	andrew	ETW190VS12UB	14	1-5/8	2
		1	andrew	HP2-102			
		1	raycap	DC4-48-60-8-20F			
		9	ericsson	AIR 21 w/ Mount Pipe			
		3	ericsson	AIR 33 w/ Mount Pipe			
		1	crown mounts	Platform Mount [LP 405-1]	12	1-5/8	1
112.0	112.0	1	crown mounts	Pipe Mount [PM 601-3]	6	1-5/8	1
		3	kathrein	742 213 w/ Mount Pipe			
100.0	100.0	1	crown mounts	T-Arm Mount [TA 602-3]	12 1 2	1-1/4 7/16 3/8	1
		6	ericsson	RRUS-11			
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		12	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
90.0	90.0	3	dragonwave	A-ANT-18G-2-C	3 3 3 3	1/2 5/8 5/16 1/4	1
		3	argus technologies	LLPX310R w/ Mount Pipe			
		1	crown mounts	Side Arm Mount [SO 103-3]			
		3	dragonwave	AIRPAIR ODU			
		3	samsung telecommunications	RRH-C2C			

Notes:
1) Existing Equipment
2) Equipment To Be Removed, was not considered in this analysis.

Table 3 - Design Antenna and Cable Information

125	125	12	allgon	ALP9212	3 12 24	1 1-5/8 1/2
		3	generic	S4000 Smart Antennas		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

4-GEOTECHNICAL REPORTS	French & Parrello Associates, P.A.	3552247	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PiROD	3910040	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PiROD	3552248	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) Base and flange plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

L1	125 - 100	Pole	P24x3/8	1	-5.44	934.94	12.3	Pass
L2	100 - 80	Pole	P30x3/8	2	-10.90	1166.57	28.9	Pass
L3	80 - 60	Pole	P36x3/8	3	-14.54	1325.68	39.6	Pass
L4	60 - 40	Pole	P42x3/8	4	-18.67	1484.55	46.5	Pass
L5	40 - 20	Pole	P48x3/8	5	-23.29	1643.28	51.2	Pass
L6	20 - 0	Pole	P54x3/8	6	-28.41	1801.92	54.5	Pass
							Summary	
						Pole (L6)	54.5	Pass
						Rating =	54.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

1	Anchor Rods	0	34.7	Pass
1	Base Plate	0	OK	Pass
1	Base Foundation	0	43.3	Pass
1	Base Foundation Soil Interaction	0	41.3	Pass
1	Controlling Flange Bolts	20	44.2	Pass

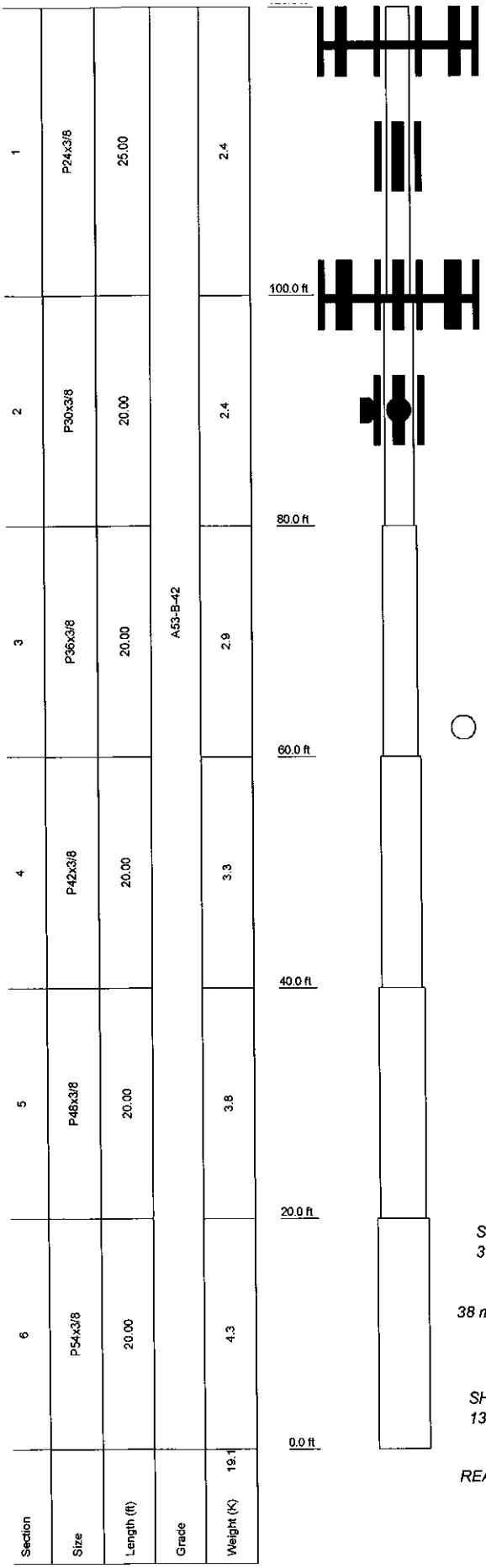
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

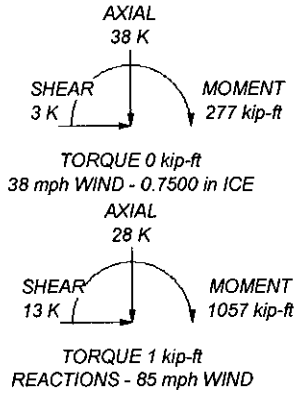
The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT



Section	Size	Length (ft)	Grade	Weight (K)
1	P24x3/8	25.00	A53-B-42	2.4
2	P30x3/8	20.00		2.4
3	P36x3/8	20.00		2.9
4	P42x3/8	20.00		3.3
5	P48x3/8	20.00		3.8
6	P54x3/8	20.00		4.3
				19.1



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122	(2) 7770.00 w/ Mount Pipe	100
		(2) 7770.00 w/ Mount Pipe	100
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122	(2) 7770.00 w/ Mount Pipe	100
		(4) LGP21401	100
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	122	(4) LGP21401	100
		(4) LGP21401	100
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122	(2) RRUS-11	100
		(2) RRUS-11	100
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122	(2) RRUS-11	100
		DC6-48-60-18-8F	100
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	122	T-Arm Mount [TA 602-3]	100
KRY 112 144/1	122	LLPX310R w/ Mount Pipe	90
KRY 112 144/1	122	LLPX310R w/ Mount Pipe	90
KRY 112 144/1	122	LLPX310R w/ Mount Pipe	90
Platform Mount [LP 405-1]	122	RRH-C2C	90
742 213 w/ Mount Pipe	112	RRH-C2C	90
742 213 w/ Mount Pipe	112	RRH-C2C	90
742 213 w/ Mount Pipe	112	AIRPAIR ODU	90
Pipe Mount [PM 601-3]	112	AIRPAIR ODU	90
AM-X-CD-16-65-00T-RET w/ Mount Pipe	100	AIRPAIR ODU	90
		Side Arm Mount [SO 103-3]	90
AM-X-CD-16-65-00T-RET w/ Mount Pipe	100	A-ANT-18G-2-C	90
		A-ANT-18G-2-C	90
AM-X-CD-16-65-00T-RET w/ Mount Pipe	100	A-ANT-18G-2-C	90

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 54.5%

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031
Tower Analysis

Job: 822765 Branford/I-95/X55/Dtn 1			
Project: 1422T91400			
Client: Crown Castle	Drawn by: Chip DeVoto, EI	App'd:	
Code: TIA/EIA-222-F	Date: 02/14/14	Scale: N	
Path:		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:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
User specified elevation for calculation of G_h is 220.00 ft.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios		Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		
	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	125.00-100.00	25.00	P24x3/8	A53-B-42 (42 ksi)	
L2	100.00-80.00	20.00	P30x3/8	A53-B-42 (42 ksi)	
L3	80.00-60.00	20.00	P36x3/8	A53-B-42 (42 ksi)	
L4	60.00-40.00	20.00	P42x3/8	A53-B-42 (42 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L5	40.00-20.00	20.00	P48x3/8	A53-B-42 (42 ksi)	
L6	20.00-0.00	20.00	P54x3/8	A53-B-42 (42 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 125.00-100.00				1	1	1		
L2 100.00-80.00				1	1	1		
L3 80.00-60.00				1	1	1		
L4 60.00-40.00				1	1	1		
L5 40.00-20.00				1	1	1		
L6 20.00-0.00				1	1	1		

Feed Line/Linear Appurtenances Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
**								
LDF7-50A(1-5/8")	C	No	Inside Pole	122.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	Inside Pole	122.00 - 0.00	1	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
						2" Ice	0.00	1.07
						4" Ice	0.00	1.07
**								
LDF7-50A(1-5/8")	C	No	Inside Pole	112.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
**								
LDF2-50(3/8")	C	No	Inside Pole	100.00 - 0.00	2	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
						2" Ice	0.00	0.08
						4" Ice	0.00	0.08
LDF6-50A(1-1/4")	C	No	Inside Pole	100.00 - 0.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
100266(7/16")	C	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						2" Ice	0.00	0.08
						4" Ice	0.00	0.08
2" Rigid Conduit	C	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
						2" Ice	0.00	2.80
						4" Ice	0.00	2.80
**								
LDF1-50A(1/4")	C	No	Inside Pole	90.00 - 0.00	3	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
						2" Ice	0.00	0.06
						4" Ice	0.00	0.06
LDF4-50A(1/2")	C	No	CaAa (Out Of Face)	90.00 - 0.00	3	No Ice	0.06	0.15
						1/2" Ice	0.16	0.84
						1" Ice	0.26	2.14
						2" Ice	0.46	6.58
						4" Ice	0.86	22.78
LDF4.5-50(5/8")	C	No	Inside Pole	90.00 - 0.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
9207(5/16")	C	No	Inside Pole	90.00 - 0.00	3	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
						2" Ice	0.00	0.60
						4" Ice	0.00	0.60
2" Rigid Conduit	C	No	CaAa (Out Of Face)	90.00 - 0.00	3	No Ice	0.20	2.80
						1/2" Ice	0.30	4.33
						1" Ice	0.40	6.47
						2" Ice	0.60	12.57
						4" Ice	1.00	32.12
**								
Safety Line 3/8	C	No	CaAa (Out Of Face)	125.00 - 0.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46

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	125.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.938	0.30
L2	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.640	0.65
L3	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	16.530	0.77
L4	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	16.530	0.77
L5	40.00-20.00	A	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	16.530	0.77
L6	20.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	16.530	0.77

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	125.00-100.00	A	0.869	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.282	0.33
L2	100.00-80.00	A	0.846	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	22.175	0.81
L3	80.00-60.00	A	0.821	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	39.513	1.05
L4	60.00-40.00	A	0.788	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	38.604	1.03
L5	40.00-20.00	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	37.530	1.02
L6	20.00-0.00	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	37.530	1.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	125.00-100.00	-0.0478	0.0276	-0.2330	0.1345
L2	100.00-80.00	-0.4785	0.2763	-0.9603	0.5544
L3	80.00-60.00	-0.8418	0.4860	-1.5060	0.8695
L4	60.00-40.00	-0.8686	0.5015	-1.5779	0.9110
L5	40.00-20.00	-0.8898	0.5137	-1.6247	0.9380
L6	20.00-0.00	-0.9071	0.5237	-1.6872	0.9741

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.83 7.35 7.86 8.93 11.18	5.64 6.48 7.26 8.86 12.29	0.11 0.17 0.23 0.38 0.81
KRY 112 144/1	A	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.60 0.82 1.36	0.19 0.26 0.33 0.51 0.97	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	B	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.60 0.82 1.36	0.19 0.26 0.33 0.51 0.97	0.01 0.01 0.02 0.03 0.08
KRY 112 144/1	C	From Leg	4.00 0.00 0.00			0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.41 0.50 0.60 0.82 1.36	0.19 0.26 0.33 0.51 0.97	0.01 0.01 0.02 0.03 0.08
Platform Mount [LP 405-1]	C	None				0.0000	122.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	20.80 28.10 35.40 50.00 79.20	20.80 28.10 35.40 50.00 79.20	1.80 2.07 2.33 2.86 3.93
***											
742 213 w/ Mount Pipe	A	From Leg	1.00 0.00 0.00			0.0000	112.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	0.05 0.09 0.15 0.28 0.68
742 213 w/ Mount Pipe	B	From Leg	1.00			0.0000	112.00	No Ice	5.37	4.62	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00				1/2" Ice	5.95	6.00	0.09
			0.00				1" Ice	6.50	6.98	0.15
							2" Ice	7.61	8.85	0.28
							4" Ice	9.93	12.79	0.68
742 213 w/ Mount Pipe	C	From Leg	1.00		0.0000	112.00	No Ice	5.37	4.62	0.05
			0.00				1/2" Ice	5.95	6.00	0.09
			0.00				1" Ice	6.50	6.98	0.15
							2" Ice	7.61	8.85	0.28
							4" Ice	9.93	12.79	0.68
Pipe Mount [PM 601-3]	C	None			0.0000	112.00	No Ice	4.39	4.39	0.20
							1/2" Ice	5.48	5.48	0.24
							1" Ice	6.57	6.57	0.28
							2" Ice	8.75	8.75	0.36
							4" Ice	13.11	13.11	0.53
***										
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.00		0.0000	100.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			0.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00		0.0000	100.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			0.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00		0.0000	100.00	No Ice	8.50	6.30	0.07
			0.00				1/2" Ice	9.15	7.48	0.14
			0.00				1" Ice	9.77	8.37	0.21
							2" Ice	11.03	10.18	0.38
							4" Ice	13.68	14.02	0.87
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00		0.0000	100.00	No Ice	6.12	4.25	0.06
			0.00				1/2" Ice	6.63	5.01	0.10
			0.00				1" Ice	7.13	5.71	0.16
							2" Ice	8.16	7.16	0.29
							4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00		0.0000	100.00	No Ice	6.12	4.25	0.06
			0.00				1/2" Ice	6.63	5.01	0.10
			0.00				1" Ice	7.13	5.71	0.16
							2" Ice	8.16	7.16	0.29
							4" Ice	10.36	10.41	0.66
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00		0.0000	100.00	No Ice	6.12	4.25	0.06
			0.00				1/2" Ice	6.63	5.01	0.10
			0.00				1" Ice	7.13	5.71	0.16
							2" Ice	8.16	7.16	0.29
							4" Ice	10.36	10.41	0.66
(4) LGP21401	A	From Leg	4.00		0.0000	100.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03
							2" Ice	1.97	0.61	0.05
							4" Ice	2.79	1.12	0.14
(4) LGP21401	B	From Leg	4.00		0.0000	100.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02
			0.00				1" Ice	1.61	0.40	0.03
							2" Ice	1.97	0.61	0.05
							4" Ice	2.79	1.12	0.14
(4) LGP21401	C	From Leg	4.00		0.0000	100.00	No Ice	1.29	0.23	0.01
			0.00				1/2" Ice	1.45	0.31	0.02

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
			0.00			1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) RRUS-11	A	From Leg	4.00	0.0000	100.00	No Ice	2.94	1.25	0.06
			0.00			1/2" Ice	3.17	1.41	0.07
			0.00			1" Ice	3.41	1.59	0.10
						2" Ice	3.91	1.96	0.15
						4" Ice	5.02	2.82	0.30
(2) RRUS-11	B	From Leg	4.00	0.0000	100.00	No Ice	2.94	1.25	0.06
			0.00			1/2" Ice	3.17	1.41	0.07
			0.00			1" Ice	3.41	1.59	0.10
						2" Ice	3.91	1.96	0.15
						4" Ice	5.02	2.82	0.30
(2) RRUS-11	C	From Leg	4.00	0.0000	100.00	No Ice	2.94	1.25	0.06
			0.00			1/2" Ice	3.17	1.41	0.07
			0.00			1" Ice	3.41	1.59	0.10
						2" Ice	3.91	1.96	0.15
						4" Ice	5.02	2.82	0.30
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	100.00	No Ice	2.57	4.32	0.03
			0.00			1/2" Ice	2.80	4.60	0.06
			0.00			1" Ice	3.04	4.88	0.10
						2" Ice	3.54	5.49	0.18
						4" Ice	4.66	6.80	0.40
T-Arm Mount [TA 602-3]	C	None		0.0000	100.00	No Ice	11.59	11.59	0.77
						1/2" Ice	15.44	15.44	0.99
						1" Ice	19.29	19.29	1.21
						2" Ice	26.99	26.99	1.64
						4" Ice	42.39	42.39	2.50
***									
LLPX310R w/ Mount Pipe	A	From Leg	1.00	0.0000	90.00	No Ice	5.07	2.98	0.05
			0.00			1/2" Ice	5.48	3.53	0.08
			0.00			1" Ice	5.91	4.09	0.13
						2" Ice	6.79	5.31	0.23
						4" Ice	8.70	8.13	0.54
LLPX310R w/ Mount Pipe	B	From Leg	1.00	0.0000	90.00	No Ice	5.07	2.98	0.05
			0.00			1/2" Ice	5.48	3.53	0.08
			0.00			1" Ice	5.91	4.09	0.13
						2" Ice	6.79	5.31	0.23
						4" Ice	8.70	8.13	0.54
LLPX310R w/ Mount Pipe	C	From Leg	1.00	0.0000	90.00	No Ice	5.07	2.98	0.05
			0.00			1/2" Ice	5.48	3.53	0.08
			0.00			1" Ice	5.91	4.09	0.13
						2" Ice	6.79	5.31	0.23
						4" Ice	8.70	8.13	0.54
RRH-C2C	A	From Leg	1.00	0.0000	90.00	No Ice	1.26	2.95	0.05
			0.00			1/2" Ice	1.44	3.18	0.07
			0.00			1" Ice	1.62	3.42	0.09
						2" Ice	2.01	3.92	0.14
						4" Ice	2.89	5.04	0.29
RRH-C2C	B	From Leg	1.00	0.0000	90.00	No Ice	1.26	2.95	0.05
			0.00			1/2" Ice	1.44	3.18	0.07
			0.00			1" Ice	1.62	3.42	0.09
						2" Ice	2.01	3.92	0.14
						4" Ice	2.89	5.04	0.29
RRH-C2C	C	From Leg	1.00	0.0000	90.00	No Ice	1.26	2.95	0.05
			0.00			1/2" Ice	1.44	3.18	0.07
			0.00			1" Ice	1.62	3.42	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							2" Ice	2.01	3.92	0.14
							4" Ice	2.89	5.04	0.29
AIRPAIR ODU	A	From Leg	1.00		0.0000	90.00	No Ice	1.18	0.49	0.01
			0.00				1/2" Ice	1.33	0.62	0.02
			0.00				1" Ice	1.50	0.75	0.03
							2" Ice	1.85	1.05	0.05
							4" Ice	2.67	1.74	0.13
AIRPAIR ODU	B	From Leg	1.00		0.0000	90.00	No Ice	1.18	0.49	0.01
			0.00				1/2" Ice	1.33	0.62	0.02
			0.00				1" Ice	1.50	0.75	0.03
							2" Ice	1.85	1.05	0.05
							4" Ice	2.67	1.74	0.13
AIRPAIR ODU	C	From Leg	1.00		0.0000	90.00	No Ice	1.18	0.49	0.01
			0.00				1/2" Ice	1.33	0.62	0.02
			0.00				1" Ice	1.50	0.75	0.03
							2" Ice	1.85	1.05	0.05
							4" Ice	2.67	1.74	0.13
Side Arm Mount [SO 103-3]	C	None			0.0000	90.00	No Ice	9.50	9.50	0.22
							1/2" Ice	11.80	11.80	0.32
							1" Ice	14.10	14.10	0.41
							2" Ice	18.70	18.70	0.60
							4" Ice	27.90	27.90	0.97
****										

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
**												
A-ANT-18G-2-C	A	Paraboloid w/Shroud (HP)	From Leg	1.00		0.0000		90.00	2.17	No Ice	3.72	0.03
				0.00						1/2" Ice	4.01	0.05
				0.00						1" Ice	4.30	0.07
										2" Ice	4.88	0.11
										4" Ice	6.04	0.19
A-ANT-18G-2-C	C	Paraboloid w/Shroud (HP)	From Leg	1.00		0.0000		90.00	2.17	No Ice	3.72	0.03
				0.00						1/2" Ice	4.01	0.05
				0.00						1" Ice	4.30	0.07
										2" Ice	4.88	0.11
										4" Ice	6.04	0.19
A-ANT-18G-2-C	C	Paraboloid w/Shroud (HP)	From Leg	1.00		0.0000		90.00	2.17	No Ice	3.72	0.03
				0.00						1/2" Ice	4.01	0.05
				0.00						1" Ice	4.30	0.07
										2" Ice	4.88	0.11
										4" Ice	6.04	0.19

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	125 - 100	Pole	Max Tension	5	0.00	-0.00	-0.00
			Max. Compression	14	-7.64	0.02	-0.01
			Max. Mx	11	-5.44	58.45	-0.01
			Max. My	8	-5.44	0.02	-58.44
			Max. Vy	5	3.32	-58.44	0.01
			Max. Vx	8	3.32	0.02	-58.44
			Max. Torque	20			-0.00
L2	100 - 80	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.22	0.54	0.28
			Max. Mx	5	-10.90	-198.61	1.05
			Max. My	2	-10.90	-1.11	197.54
			Max. Vy	5	8.12	-198.61	1.05

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	8	8.05	1.07	-197.50
			Max. Torque	5			0.67
L3	80 - 60	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-20.86	1.15	-0.07
			Max. Mx	5	-14.54	-374.04	2.80
			Max. My	8	-14.54	2.95	-371.84
			Max. Vy	5	9.44	-374.04	2.80
			Max. Vx	8	9.37	2.95	-371.84
			Max. Torque	5			0.66
L4	60 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26.06	1.83	-0.47
			Max. Mx	5	-18.67	-575.66	4.53
			Max. My	8	-18.67	4.86	-572.43
			Max. Vy	5	10.74	-575.66	4.53
			Max. Vx	8	10.67	4.86	-572.43
			Max. Torque	4			0.65
L5	40 - 20	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.79	2.58	-0.90
			Max. Mx	5	-23.29	-802.72	6.22
			Max. My	8	-23.29	6.81	-798.53
			Max. Vy	5	11.99	-802.72	6.22
			Max. Vx	8	11.92	6.81	-798.53
			Max. Torque	4			0.65
L6	20 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.11	3.42	-1.39
			Max. Mx	5	-28.41	-1055.50	7.88
			Max. My	8	-28.41	8.78	-1050.41
			Max. Vy	5	13.32	-1055.50	7.88
			Max. Vx	8	13.25	8.78	-1050.41
			Max. Torque	9			-0.71

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	38.11	0.00	-0.00
	Max. H_x	11	28.41	13.27	-0.06
	Max. H_z	2	28.41	-0.13	13.23
	Max. M_x	2	1047.98	-0.13	13.23
	Max. M_z	5	1055.50	-13.32	0.09
	Max. Torsion	3	0.70	-6.72	11.49
	Min. Vert	5	28.41	-13.32	0.09
	Min. H_x	5	28.41	-13.32	0.09
	Min. H_z	8	28.41	0.08	-13.24
	Min. M_x	8	-1050.41	0.08	-13.24
	Min. M_z	11	-1053.72	13.27	-0.06
	Min. Torsion	9	-0.71	6.68	-11.48

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	28.41	-0.00	0.00	0.59	1.40	0.00
Dead+Wind 0 deg - No Ice	28.41	0.13	-13.23	-1047.98	-10.36	-0.60
Dead+Wind 30 deg - No Ice	28.41	6.72	-11.49	-910.60	-532.29	-0.70
Dead+Wind 60 deg - No Ice	28.41	11.54	-6.68	-530.02	-914.60	-0.65
Dead+Wind 90 deg - No Ice	28.41	13.32	-0.09	-7.88	-1055.50	-0.44
Dead+Wind 120 deg - No Ice	28.41	11.51	6.55	518.80	-912.24	-0.01
Dead+Wind 150 deg - No Ice	28.41	6.58	11.47	910.21	-519.59	0.49
Dead+Wind 180 deg - No Ice	28.41	-0.08	13.24	1050.41	8.78	0.69
Dead+Wind 210 deg - No Ice	28.41	-6.68	11.48	910.89	532.16	0.71
Dead+Wind 240 deg - No Ice	28.41	-11.49	6.68	531.08	912.80	0.61
Dead+Wind 270 deg - No Ice	28.41	-13.27	0.06	5.63	1053.72	0.41
Dead+Wind 300 deg - No Ice	28.41	-11.49	-6.56	-518.75	912.65	-0.03
Dead+Wind 330 deg - No Ice	28.41	-6.61	-11.43	-904.67	525.43	-0.48
Dead+Ice+Temp	38.11	-0.00	0.00	1.39	3.42	0.00
Dead+Wind 0 deg+Ice+Temp	38.11	0.03	-3.44	-270.92	0.87	-0.26
Dead+Wind 30 deg+Ice+Temp	38.11	1.74	-2.99	-235.11	-134.71	-0.23
Dead+Wind 60 deg+Ice+Temp	38.11	3.00	-1.74	-136.15	-234.01	-0.14
Dead+Wind 90 deg+Ice+Temp	38.11	3.46	-0.02	-0.49	-270.60	-0.02
Dead+Wind 120 deg+Ice+Temp	38.11	2.99	1.71	136.20	-233.49	0.12
Dead+Wind 150 deg+Ice+Temp	38.11	1.71	2.99	237.56	-131.88	0.25
Dead+Wind 180 deg+Ice+Temp	38.11	-0.02	3.45	274.01	5.14	0.28
Dead+Wind 210 deg+Ice+Temp	38.11	-1.74	2.99	237.71	141.04	0.23
Dead+Wind 240 deg+Ice+Temp	38.11	-2.99	1.74	138.94	239.98	0.14
Dead+Wind 270 deg+Ice+Temp	38.11	-3.45	0.01	2.53	276.57	0.02
Dead+Wind 300 deg+Ice+Temp	38.11	-2.99	-1.71	-133.64	239.94	-0.13
Dead+Wind 330 deg+Ice+Temp	38.11	-1.72	-2.98	-233.78	139.54	-0.25
Dead+Wind 0 deg - Service	28.41	0.04	-4.58	-362.15	-2.65	-0.21
Dead+Wind 30 deg - Service	28.41	2.32	-3.98	-314.60	-183.19	-0.24
Dead+Wind 60 deg - Service	28.41	3.99	-2.31	-182.94	-315.43	-0.23
Dead+Wind 90 deg - Service	28.41	4.61	-0.03	-2.34	-364.22	-0.15
Dead+Wind 120 deg - Service	28.41	3.98	2.27	179.85	-314.62	-0.00
Dead+Wind 150 deg - Service	28.41	2.28	3.97	315.24	-178.80	0.17
Dead+Wind 180 deg - Service	28.41	-0.03	4.58	363.78	3.97	0.24
Dead+Wind 210 deg - Service	28.41	-2.31	3.97	315.47	185.00	0.25
Dead+Wind 240 deg - Service	28.41	-3.97	2.31	184.10	316.68	0.21
Dead+Wind 270 deg - Service	28.41	-4.59	0.02	2.34	365.46	0.14
Dead+Wind 300 deg - Service	28.41	-3.97	-2.27	-179.04	316.61	-0.01
Dead+Wind 330 deg - Service	28.41	-2.29	-3.95	-312.53	182.67	-0.17

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-28.41	0.00	0.00	28.41	-0.00	0.000%
2	0.13	-28.41	-13.23	-0.13	28.41	13.23	0.005%
3	6.72	-28.41	-11.49	-6.72	28.41	11.49	0.002%
4	11.54	-28.41	-6.68	-11.54	28.41	6.68	0.001%
5	13.32	-28.41	-0.09	-13.32	28.41	0.09	0.005%
6	11.51	-28.41	6.55	-11.51	28.41	-6.55	0.002%
7	6.58	-28.41	11.48	-6.58	28.41	-11.47	0.002%
8	-0.08	-28.41	13.25	0.08	28.41	-13.24	0.005%
9	-6.68	-28.41	11.48	6.68	28.41	-11.48	0.001%
10	-11.49	-28.41	6.68	11.49	28.41	-6.68	0.002%
11	-13.27	-28.41	0.06	13.27	28.41	-0.06	0.005%
12	-11.49	-28.41	-6.56	11.49	28.41	6.56	0.001%
13	-6.61	-28.41	-11.43	6.61	28.41	11.43	0.001%
14	0.00	-38.11	0.00	0.00	38.11	-0.00	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
15	0.03	-38.11	-3.44	-0.03	38.11	3.44	0.000%
16	1.74	-38.11	-2.99	-1.74	38.11	2.99	0.000%
17	3.00	-38.11	-1.74	-3.00	38.11	1.74	0.000%
18	3.46	-38.11	-0.02	-3.46	38.11	0.02	0.000%
19	2.99	-38.11	1.71	-2.99	38.11	-1.71	0.000%
20	1.71	-38.11	2.99	-1.71	38.11	-2.99	0.000%
21	-0.02	-38.11	3.45	0.02	38.11	-3.45	0.000%
22	-1.74	-38.11	2.99	1.74	38.11	-2.99	0.000%
23	-2.99	-38.11	1.74	2.99	38.11	-1.74	0.000%
24	-3.45	-38.11	0.01	3.45	38.11	-0.01	0.000%
25	-2.99	-38.11	-1.71	2.99	38.11	1.71	0.000%
26	-1.72	-38.11	-2.98	1.72	38.11	2.98	0.000%
27	0.04	-28.41	-4.58	-0.04	28.41	4.58	0.006%
28	2.32	-28.41	-3.98	-2.32	28.41	3.98	0.006%
29	3.99	-28.41	-2.31	-3.99	28.41	2.31	0.006%
30	4.61	-28.41	-0.03	-4.61	28.41	0.03	0.006%
31	3.98	-28.41	2.27	-3.98	28.41	-2.27	0.006%
32	2.28	-28.41	3.97	-2.28	28.41	-3.97	0.006%
33	-0.03	-28.41	4.58	0.03	28.41	-4.58	0.006%
34	-2.31	-28.41	3.97	2.31	28.41	-3.97	0.006%
35	-3.98	-28.41	2.31	3.97	28.41	-2.31	0.006%
36	-4.59	-28.41	0.02	4.59	28.41	-0.02	0.006%
37	-3.98	-28.41	-2.27	3.97	28.41	2.27	0.006%
38	-2.29	-28.41	-3.95	2.29	28.41	3.95	0.006%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	11	0.00000001	0.00009623
3	Yes	12	0.00000001	0.00013394
4	Yes	13	0.00000001	0.00006948
5	Yes	11	0.00000001	0.00012548
6	Yes	12	0.00000001	0.00013652
7	Yes	12	0.00000001	0.00013892
8	Yes	11	0.00000001	0.00011016
9	Yes	13	0.00000001	0.00006768
10	Yes	12	0.00000001	0.00013258
11	Yes	11	0.00000001	0.00011577
12	Yes	13	0.00000001	0.00006125
13	Yes	13	0.00000001	0.00006034
14	Yes	6	0.00000001	0.00000001
15	Yes	13	0.00000001	0.00007485
16	Yes	13	0.00000001	0.00007574
17	Yes	13	0.00000001	0.00007565
18	Yes	13	0.00000001	0.00007458
19	Yes	13	0.00000001	0.00007532
20	Yes	13	0.00000001	0.00007558
21	Yes	13	0.00000001	0.00007529
22	Yes	13	0.00000001	0.00007696
23	Yes	13	0.00000001	0.00007724
24	Yes	13	0.00000001	0.00007619
25	Yes	13	0.00000001	0.00007670
26	Yes	13	0.00000001	0.00007617
27	Yes	10	0.00000001	0.00009079

28	Yes	10	0.00000001	0.00007512
29	Yes	10	0.00000001	0.00008552
30	Yes	10	0.00000001	0.00009311
31	Yes	10	0.00000001	0.00007531
32	Yes	10	0.00000001	0.00007571
33	Yes	10	0.00000001	0.00009172
34	Yes	10	0.00000001	0.00008387
35	Yes	10	0.00000001	0.00007556
36	Yes	10	0.00000001	0.00009302
37	Yes	10	0.00000001	0.00007951
38	Yes	10	0.00000001	0.00007809

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	125 - 100	6.640	35	0.4310	0.0009
L2	100 - 80	4.426	35	0.4017	0.0009
L3	80 - 60	2.852	35	0.3379	0.0005
L4	60 - 40	1.595	35	0.2537	0.0003
L5	40 - 20	0.703	35	0.1659	0.0002
L6	20 - 0	0.177	35	0.0806	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation	*Appurtenance*	*Gov. Load Comb.*	*Deflection*	*Tilt*	*Twist*	*Radius of Curvature*
ft			*in*	°	°	*ft*
122.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	35	6.369	0.4290	0.0010	126933
112.00	742 213 w/ Mount Pipe	35	5.470	0.4206	0.0010	48820
100.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	35	4.426	0.4017	0.0010	25433
90.00	A-ANT-18G-2-C	35	3.606	0.3740	0.0008	18363

Maximum Tower Deflections - Design Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	125 - 100	19.166	4	1.2442	0.0027
L2	100 - 80	12.774	4	1.1596	0.0027
L3	80 - 60	8.230	4	0.9754	0.0016
L4	60 - 40	4.602	4	0.7323	0.0009
L5	40 - 20	2.027	4	0.4787	0.0005
L6	20 - 0	0.509	4	0.2326	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
122.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	18.382	1.2385	0.0029	44018
112.00	742 213 w/ Mount Pipe	4	15.788	1.2144	0.0030	16930
100.00	AM-X-CD-16-65-00T-RET w/ Mount Pipe	4	12.774	1.1596	0.0028	8817
90.00	A-ANT-18G-2-C	4	10.408	1.0797	0.0023	6369

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	125 - 100 (1)	P24x3/8	25.00	0.00	0.0	25.200	27.8325	-5.44	701.38	0.008
L2	100 - 80 (2)	P30x3/8	20.00	0.00	0.0	25.075	34.9011	-10.90	875.15	0.012
L3	80 - 60 (3)	P36x3/8	20.00	0.00	0.0	23.696	41.9697	-14.54	994.51	0.015
L4	60 - 40 (4)	P42x3/8	20.00	0.00	0.0	22.711	49.0383	-18.67	1113.69	0.017
L5	40 - 20 (5)	P48x3/8	20.00	0.00	0.0	21.972	56.1069	-23.29	1232.77	0.019
L6	20 - 0 (6)	P54x3/8	20.00	0.00	0.0	21.397	63.1755	-28.41	1351.78	0.021

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	125 - 100 (1)	P24x3/8	58.46	4.334	27.720	0.156	0.00	0.000	27.720	0.000
L2	100 - 80 (2)	P30x3/8	198.78	9.344	25.075	0.373	0.00	0.000	25.075	0.000
L3	80 - 60 (3)	P36x3/8	374.57	12.150	23.696	0.513	0.00	0.000	23.696	0.000
L4	60 - 40 (4)	P42x3/8	576.55	13.679	22.711	0.602	0.00	0.000	22.711	0.000
L5	40 - 20 (5)	P48x3/8	803.96	14.555	21.972	0.662	0.00	0.000	21.972	0.000
L6	20 - 0 (6)	P54x3/8	1057.08	15.081	21.397	0.705	0.00	0.000	21.397	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	125 - 100 (1)	P24x3/8	3.32	0.239	16.800	0.014	0.00	0.000	16.800	0.000
L2	100 - 80 (2)	P30x3/8	8.14	0.466	16.800	0.028	0.65	0.015	15.644	0.001
L3	80 - 60 (3)	P36x3/8	9.46	0.451	16.800	0.027	0.65	0.011	12.270	0.001
L4	60 - 40 (4)	P42x3/8	10.76	0.439	16.800	0.026	0.65	0.008	10.930	0.001
L5	40 - 20 (5)	P48x3/8	12.01	0.428	16.800	0.025	0.65	0.006	9.889	0.001

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 $\frac{f_{vt}}{F_{vt}}$
L6	20 - 0 (6)	P54x3/8	13.34	0.422	16.800	0.025	0.65	0.005	9.053	0.001

Pole Interaction Design Data

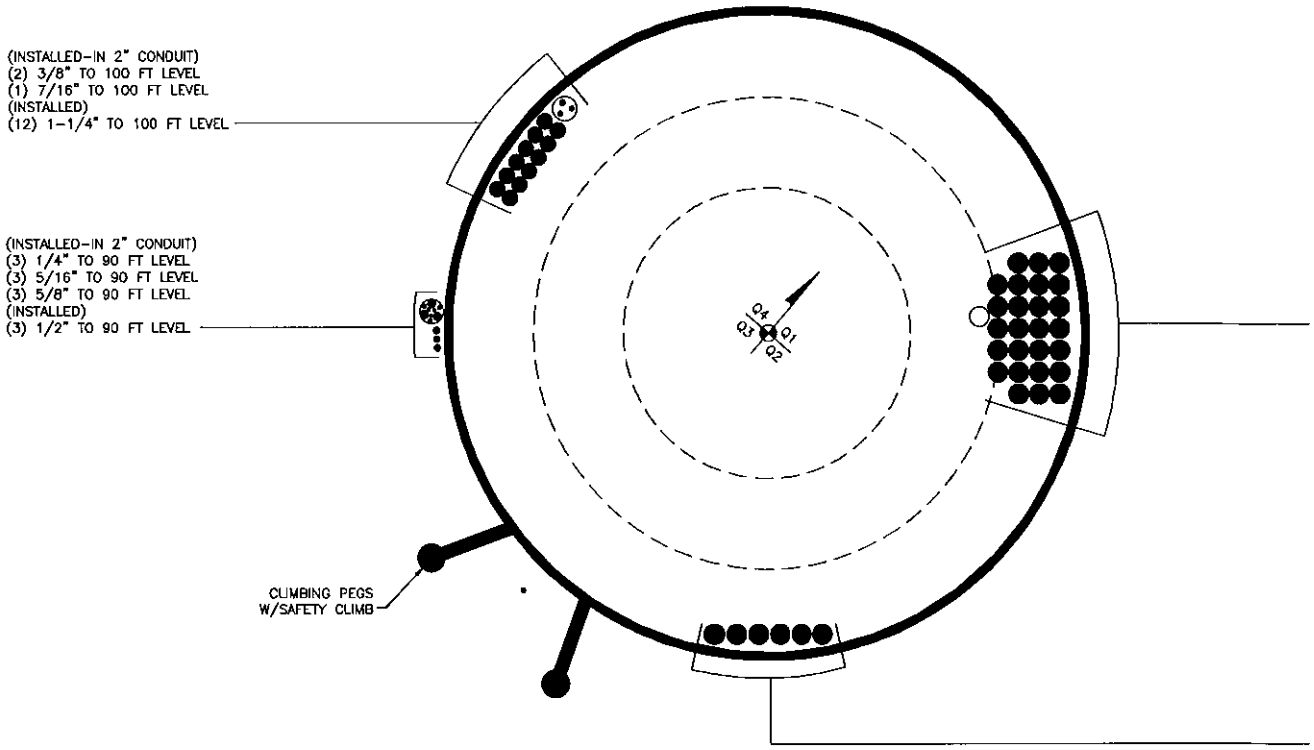
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	125 - 100 (1)	0.008	0.156	0.000	0.014	0.000	0.164 ✔	1.333	H1-3+VT ✔
L2	100 - 80 (2)	0.012	0.373	0.000	0.028	0.001	0.386 ✔	1.333	H1-3+VT ✔
L3	80 - 60 (3)	0.015	0.513	0.000	0.027	0.001	0.528 ✔	1.333	H1-3+VT ✔
L4	60 - 40 (4)	0.017	0.602	0.000	0.026	0.001	0.620 ✔	1.333	H1-3+VT ✔
L5	40 - 20 (5)	0.019	0.662	0.000	0.025	0.001	0.682 ✔	1.333	H1-3+VT ✔
L6	20 - 0 (6)	0.021	0.705	0.000	0.025	0.001	0.726 ✔	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	125 - 100	Pole	P24x3/8	1	-5.44	934.94	12.3	Pass
L2	100 - 80	Pole	P30x3/8	2	-10.90	1166.57	28.9	Pass
L3	80 - 60	Pole	P36x3/8	3	-14.54	1325.68	39.6	Pass
L4	60 - 40	Pole	P42x3/8	4	-18.67	1484.55	46.5	Pass
L5	40 - 20	Pole	P48x3/8	5	-23.29	1643.28	51.2	Pass
L6	20 - 0	Pole	P54x3/8	6	-28.41	1801.92	54.5	Pass
							Summary	
						Pole (L6)	54.5	Pass
						RATING =	**54.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 822765 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

Site Data

BU#: *822765*
Site Name: *Branford I95*
App #:

Pole Manufacturer:	Pirod

Bolt Data			
Qty:	20		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	1.75	<-- Disregard	Bolt Fty:
N/A:	1.65	<-- 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:	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:	24	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	58.6	ft-kips
Axial:	5.84	kips
Shear:	3.02	kips
Elevation:	124.00	feet

Unstiffened Criteria: AISC ASD <-Only Applcable to Unstiffened Cases

Flange Bolt Results

		Rigid
Bolt Tension Capacity, **B**:	46.07 kips	Service, ASD
Max Bolt directly applied T:	4.92 Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.427 in	
Min PL "treq" for actual **T w/ Pry**:	0.356 in	
Min PL "t1" for actual **T w/o Pry**:	0.467 in	
T allowable with Prying:	42.49 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	4.92 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	10.7% **Pass**	

Exterior Flange Plate Results — Flexural Check

		Rigid
Compression Side Plate Stress:	Rohn/Pirod, OK	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length:
No Prying		12.37
Tension Side Stress Ratio, (treq/t)^2:	8.1% **Pass**	

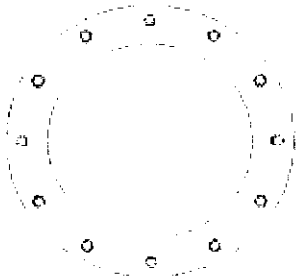
n/a

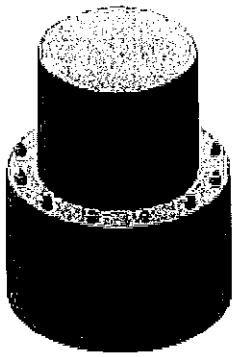
Stiffener Results — N/A for Rohn / Pirod

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#: *822765*
Site Name: *Branford I95*
App #:

Manufacturer:	Pirod

Reactions		
Moment:	68.46	ft-kips
Axial:	5.44	kips
Shear:	3.32	kips
Exterior Flange Run, T+Q:	1.92	kips

Elevation: 100 feet

Bolt Data			
Qty:	20		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	76	<-- Disregard	Bolt Fty:
N/A:	56	<-- Disregard	44.00
Circle:	27	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	4.9	Kips, Ext. T=Interior T
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	10.7%	**Pass**

Plate Data		
Plate Outer Diam:	29.25	in
Plate Inner Diam:	27.75	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.59	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	5.5	Kips, Ext. C= Interior C
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		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

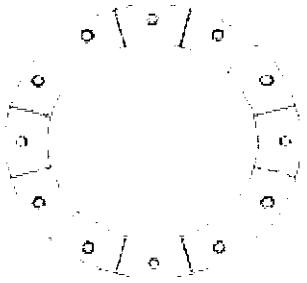
Stiffener Results N/A for Rohn / Pirod

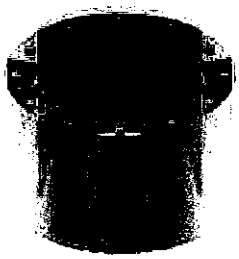
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

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	60	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 Rev F

Site Data

BU#: *822765*
Site Name: *Branford I95*
App #:

Reactions		
Moment:	1987.6	ft-kips
Axial:	10.9	kips
Shear:	6.11	kips
Elevation:	80	feet

Pole Manufacturer: Pirod

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty:
N/A:	65	<-- Disregard	44.00
Circle (in.):	38		

Plate Data		
Diam:	38	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	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:	0	<-- 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	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

No Stiffener (Flange) | AISC ASD <-Only Applcable to Unstiffened Cases

Flange Bolt Results

		Rigid
Bolt Tension Capacity, **B**:	46.07 kips	Service, ASD
Max Bolt directly applied T:	11.59 Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.398 in	
Min PL "treq" for actual **T w/ Pry:**	0.533 in	
Min PL "t1" for actual **T w/o Pry:**	0.702 in	
T allowable with Prying:	42.98 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	11.59 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	25.2% **Pass**	

Exterior Flange Plate Results — Flexural Check

		Rigid
Compression Side Plate Stress:	Rohn/Pirod, OK	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length:
No Prying		13.75
Tension Side Stress Ratio, (treq/t)^2:	18.2% **Pass**	

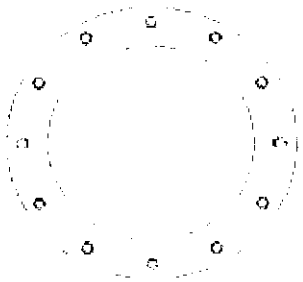
n/a

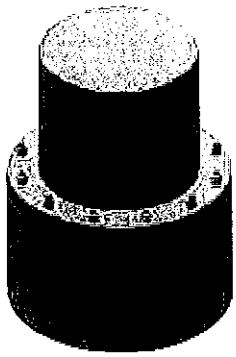
Stiffener Results — N/A for Rohn / Pirod

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#: *822765*
Site Name: *Branford I95*
App #:

Reactions		
Moment:	198.76	ft-kips
Axial:	10.9	kips
Shear:	8.31	kips
Exterior Flange Run, T+Q:	11.69	kips

Manufacturer: Pirod

Elevation: 80 feet

Bolt Data			
Qty:	24		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	100	<-- Disregard	Bolt Fty:
N/A:	65	<-- Disregard	44.00
Circle:	33	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	11.6	Kips, Ext. T=Interior T
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	25.2%	**Pass**

Plate Data		
Plate Outer Diam:	35.25	in
Plate Inner Diam:	33.5	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.61	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	12.5	Kips, Ext. C= Interior C
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		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

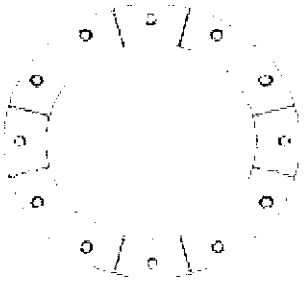
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

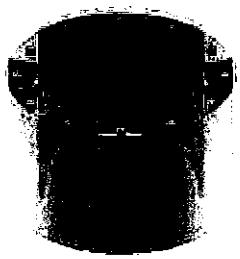
Pole Results

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	60	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 Rev F

Site Data

BU#: *822765*
Site Name: *Branford I95*
App #:

Pole Manufacturer:	Pirod

Bolt Data			
Qty:	28		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty:
N/A:	65	<-- 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:	4.04	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	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	374.67	ft-kips
Axial:	11.31	kips
Shear:	9.16	kips
Elevation:	60	feet

[redacted] AISC ASD <-Only Applcable to Unstiffened Cases

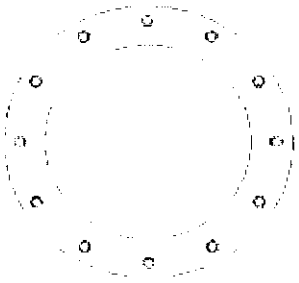
Flange Bolt Results

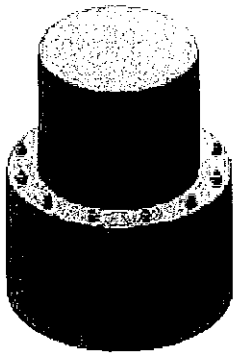
			Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	15.95	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.379	in	
Min PL "treq" for actual **T w/ Pry**:	0.616	in	
Min PL "t1" for actual **T w/o Pry**:	0.811	in	
T allowable with Prying:	43.33	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	15.95	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	34.6%	**Pass**	

Exterior Flange Plate Results	Flexural Check	Rigid
Compression Side Plate Stress:	Rohn/Pirod, OK	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length:
No Prying		15.00
Tension Side Stress Ratio, (treq/t)^2:	24.2% **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#: *822765*
Site Name: *Branford I95*
App #:

Manufacturer:	Pirod

Reactions		
Moment:	577.67	ft-kips
Axial:	121.51	kips
Shear:	9.46	kips
Exterior Flange Run, T+Q:	16.00	kips

Elevation: 60 feet

Bolt Data			
Qty:	28		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	76	<-- Disregard	Bolt Fty:
N/A:	66	<-- Disregard	44.00
Circle:	39	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	16.0	Kips, Ext. Flange T+Q
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	34.6%	**Pass**

Plate Data		
Plate Outer Diam:	41.25	in
Plate Inner Diam:	39.5	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	60	ksi
Effective Width:	4.63	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	17.0	Kips, Ext. C= Interior C
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		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

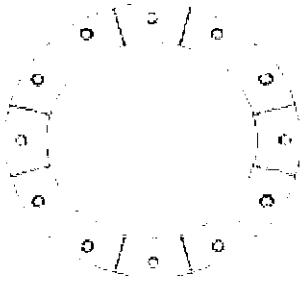
Stiffener Results N/A for Rohn / Pirod

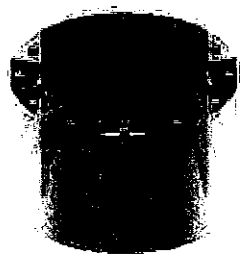
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	42	in
Thick:	0.375	in
Pole Inner Diam:	41.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	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 Rev F

Site Data

BU#: *822765*
Site Name: *Branford I95*
App #:

Pole Manufacturer:	Pirod

Reactions		
Moment:	5736.05	ft-kips
Axial:	18.67	kips
Shear:	10.76	kips
Elevation:	70	feet

No Uplift | AISC ASD <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	32		
Diameter (in.):	1.5	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty: 44.00
N/A:	55	<-- Disregard	
Circle (in.):	45		

Plate Data		
Diam:	48	in
Thick, t:	1.25	in
Grade (Fy):	55	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.12	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		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

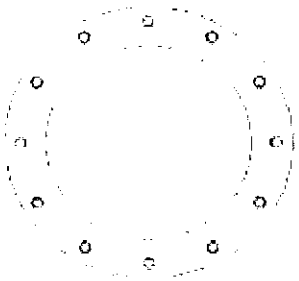
		Rigid
Bolt Tension Capacity, **B**:	46.07 kips	Service, ASD
Max Bolt directly applied T:	18.63 Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.365 in	
Min PL "treq" for actual **T w/ Pry**:	0.658 in	
Min PL "t1" for actual **T w/o Pry**:	0.868 in	
T allowable with Prying:	43.59 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	18.63 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	40.5% Pass	

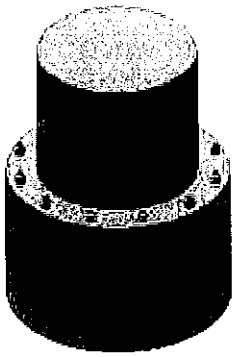
Exterior Flange Plate Results — Flexural Check

		Rigid
Compression Side Plate Stress:	Rohn/Pirod, OK	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length:
No Prying		16.16
Tension Side Stress Ratio, (treq/t)^2:	27.7% 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#: *822765*
Site Name: *Branford I95*
App #:

Manufacturer:	Pirod

Reactions		
Moment:	576.85	ft-kips
Axial:	13.67	kips
Shear:	10.73	kips
Exterior Flange Run, T+Q:	13.63	kips

Elevation: 40 feet

Bolt Data			
Qty:	32		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty: 44.00
N/A:	65	<-- Disregard	
Circle:	45	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	18.6 Kips, Ext. T=Interior T
Allowable Tension:	46.1 Kips
Bolt Stress Ratio:	40.5% **Pass**

Plate Data		
Plate Outer Diam:	47.25	in
Plate Inner Diam:	46.5	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.64	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	19.8 Kips, Ext. C= Interior C
Plate Stress:	Rohn/Pirod OK
Allowable Plate Stress:	36.0 ksi
Plate Stress Ratio:	Rohn/Pirod OK

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		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

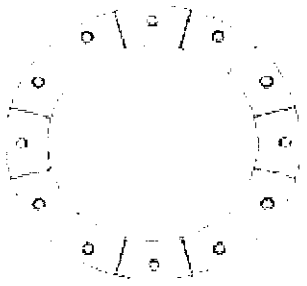
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

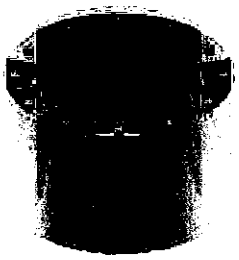
Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	48	in
Thick:	0.375	in
Pole Inner Diam:	47.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	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 Rev F

Site Data

BU#: *822765*
Site Name: *Branford I95*
App #:

Pole Manufacturer:	Pirod

Reactions		
Moment:	803.93	ft-kips
Axial:	23.91	kips
Shear:	12.01	kips
Elevation:	20	feet

AISC ASD <-Only Applcable to Unstiffened Cases

Bolt Data			
Qty:	36		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	6	<-- Disregard	Bolt Fty:
N/A:	55	<-- Disregard	44.00
Circle (in.):	61		

Plate Data		
Diam:	64	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.19	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	60	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

		Rigid
Bolt Tension Capacity, **B**:	46.07 kips	Service, ASD
Max Bolt directly applied T:	20.37 Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.354 in	
Min PL "treq" for actual **T w/ Pry**:	0.681 in	
Min PL "t1" for actual **T w/o Pry**:	0.900 in	
T allowable with Prying:	43.80 kips	0≤α'≤1 case
Prying Force, Q:	0.00 kips	
Total Bolt Tension=T+Q:	20.37 kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	44.2% **Pass**	

Exterior Flange Plate Results — Flexural Check

		Rigid
Compression Side Plate Stress:	Rohn/Pirod, OK	Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod, OK	Comp. Y.L. Length:
No Prying		17.23
Tension Side Stress Ratio, (treq/t)^2:	29.7% **Pass**	

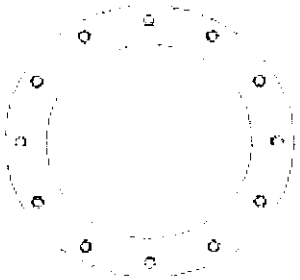
n/a

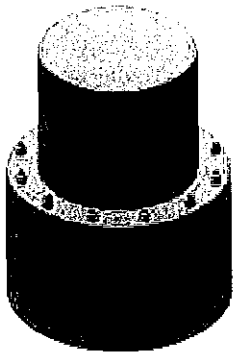
Stiffener Results — N/A for Rohn / Pirod

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#: *822765*
Site Name: *Branford I95*
App #:

Manufacturer:	Pirod

Reactions		
Moment:	803.96	ft-kips
Axial:	73.29	kips
Shear:	18.01	kips
Exterior Flange Run, T+Q:	20.37	kips

Elevation: 120 feet

Bolt Data			
Qty:	36		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	76	<-- Disregard	Bolt Fty:
N/A:	55	<-- Disregard	44.00
Circle:	61.5	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	20.4	Kips, Ext. T=Interior T
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	44.2%	**Pass**

Plate Data		
Plate Outer Diam:	53.25	in
Plate Inner Diam:	51.5	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.65	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	21.7	Kips, Ext. C= Interior C
Plate Stress:	Rohn/Pirod	OK
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	Rohn/Pirod	OK

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		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

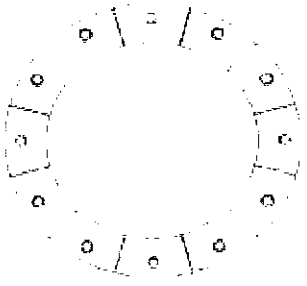
Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

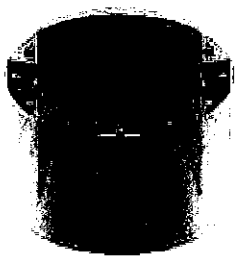
Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Pole OuterDiam:	54	in
Thick:	0.375	in
Pole Inner Diam:	53.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	60	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

Project No. *1422T91400*
Site Name: *Branford I95*
Site ID: *822765*
Pole Manufacturer: *Pirod*

Reactions		
Moment:	1067	ft-kips
Axial:	38	kips
Shear:	13	kips

Anchor Rod Data		
Qty:	18	
Diam:	1	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	67	in

Plate Data		
Diam:	80	in
Thick:	2	in
Grade:	36	ksi
Single-Rod B-eff:	3.53	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:	0.375	in
Grade:	65	ksi
# of Sides:	0	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

[redacted] AISC ASD <-Only Applcable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension:	18.0 Kips	Rigid
Allowable Tension:	51.8 Kips	Service, ASD
Anchor Rod Stress Ratio:	34.7% Pass	Fty*ASIF

Base Plate Results

Base Plate Stress:	Flexural Check Rohn/Pirod, OK	Rigid Service ASD
Allowable Plate Stress:	36.0 ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	Rohn/Pirod, OK	Y.L. Length: 18.25

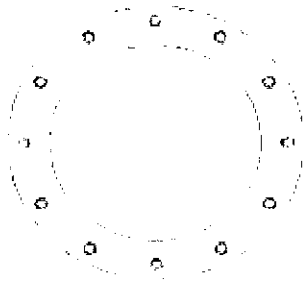
n/a

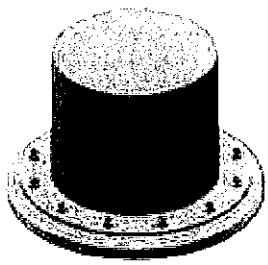
Stiffener Results N/A for Rohn / Pirod

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

```
*************************************************************************************************
*                                                                                               *
* CAISSON - Pier Foundations Analysis and Design -  Copyright Power Line Systems, Inc. 1993-2010 *
*                                                                                               *
*************************************************************************************************
```

Project Title: Branford I95
Project Notes: 1422T91400

Calculation Method: Full 8CD

******* I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
6.00	0.25	4.00	60.00

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	3.33	0.00	120.0			
2	Sand	7.67	3.33	120.0		3.537	34.00
3	Sand	10.00	11.00	130.0		3.392	33.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure	
1057.0	28.0	13.00	4.84	SOIL CAPACITY = 2.00/4.84 = 41.3%

******* R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	Pressure Due To Axial Load (psf)	Pressure Due To Weight (psf)	Total End-Bearing Pressure (psf)
21.000	89.064	990.3	3150.0	4140.3

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft^3)	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	0.25	3.33	120.0			0.00	1.92
Sand	3.58	7.67	120.0		3.537	419.86	8.10
Sand	11.25	4.16	130.0		3.392	403.44	13.45
Sand	15.41	5.59	130.0		3.392	-759.62	18.36

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)	
0.00	63.7	5118.2	13.2	1057.5	
2.10	63.7	5251.9	13.2	1085.1	
4.20	46.4	5380.4	9.6	1111.7	
6.30	-33.8	5399.6	-7.0	1115.6	MAX
8.40	-147.7	5214.9	-30.5	1077.5	
10.50	-295.3	4755.6	-61.0	982.6	
12.60	-472.2	3954.0	-97.6	816.9	
14.70	-681.5	2748.8	-140.8	567.9	
16.80	-593.5	1295.4	-122.6	267.6	
18.90	-314.3	336.1	-64.9	69.4	
21.00	0.0	-0.0	0.0	-0.0	

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#: *822765*
Site Name: *Branford I95*
App #:

Maximum Shaft Superimposed Forces		
TIA Revision:	F	
Max. Service Shaft M:	1113.6	ft-kips (* Note)
Max. Service Shaft P:	28	kips
Max Axial Force Type:	Comp	

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

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

Load Factor	Shaft Factored Loads		
1.30	Mu:	1450.28	ft-kips
1.30	Pu:	36.4	kips

Pier Properties

Concrete:

Pier Diameter = [redacted] ft
Concrete Area = 4071.5 in^2

Reinforcement:

Clear Cover to **Tie**= [redacted] in
Horiz. **Tie** Bar Size= [redacted]
Vert. Cage Diameter = 5.30 ft
Vert. Cage Diameter = 63.62 in
Vertical Bar Size = [redacted]
Bar Diameter = 1.13 in
Bar Area = 1 in^2
Number of Bars = [redacted]
As Total= 24 in^2
A s/ Aconc, Rho: 0.0059 0.59%

Material Properties

Concrete Comp. strength, f'c = [redacted] psi
Reinforcement yield strength, Fy = [redacted] ksi
Reinforcing Modulus of Elasticity, E = [redacted] ksi
Reinforcement yield strain = 0.00207
Limiting compressive strain = [redacted]

ACI 318 Code

Select Analysis ACI Code= [redacted]

Seismic Properties

Seismic Design Category = [redacted]
Seismic Risk = **Low**

[redacted] <-- Press Upon Completing All Input

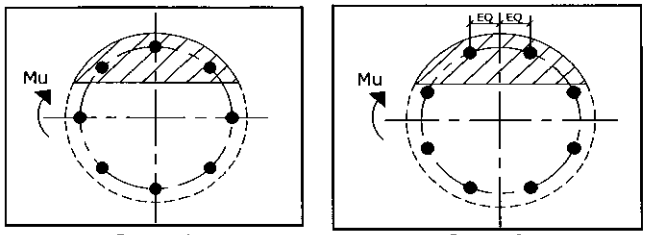
ACI 10.5 , ACI 21.10.4, and IBC 1810.

Min As for Flexural, Tension Controlled, Shafts:

(3)*(Sqrt(f'c)/Fy: 0.0032
200 / Fy: 0.0033

Results:

Governing Orientation Case: **1**



Case 1 Case 2

Dist. From Edge to Neutral Axis: **10.32** in
Extreme Steel Strain, ϵt: **0.0167**
ϵt > 0.0050, Tension Controlled
Reduction Factor,φ: **0.900**

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.59%	OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	7904.79	kips
at Mu=(ϕ=0.65)Mn=	4129.80	ft-kips
Max Tu, (φ=0.9) Tn =	1296	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	36.40	kips
Drilled Shaft Moment Capacity, φMn:	**3348.42**	ft-kips
Drilled Shaft Superimposed Mu:	**1450.28**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**43.3%**

EXHIBIT C

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11025B

Branford / I-95 / X55 / Dtn1
10 Sylvia Street
Branford, CT 06405

February 24, 2014

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

EBI Consulting
environmental | engineering | due diligence

February 24, 2014

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

Re: Emissions Values for Site: **CT11025B - Branford / I-95 / X55 / Dtn1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 10 Sylvia Street, Branford, 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 10 Sylvia Street, Branford, 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 / 1980.000 MHz—to 1985.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 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 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 **122 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

Branford / I-95 / X55 / Dtn1
Street, Branford, CT 06405
Monopole

Sector 1

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
Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	122	116	None	0	0	48.326044	1.291134	0.12911%
Not Used	-	-			0	-3.95	122	116	None	0	0	0	0	0.00000%
Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
											Sector total Power Density Value:		0.258%	

Sector 2

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
Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	122	116	None	0	0	48.326044	1.291134	0.12911%
Not Used	-	-			0	-3.95	122	116	None	0	0	0	0	0.00000%
Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
											Sector total Power Density Value:		0.258%	

Sector 3

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
Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	122	116	None	0	0	48.326044	1.291134	0.12911%
Not Used	-	-			0	-3.95	122	116	None	0	0	0	0	0.00000%
Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	122	116	1-5/8"	0	0	24.163022	0.645567	0.06456%
											Sector total Power Density Value:		0.258%	

Site Composite MPE %

Carrier	MPE %
T-Mobile	0.775%
AT&T	32.150%
Pocket	5.430%
Clearwire	2.300%
Total Site MPE %	**40.655%**

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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 **0.775% (0.258% 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 **40.655%** 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 within the allowable 100% threshold standard per the federal government.

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