Robinson+Cole

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April 9, 2019

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

Re: **EM-VER-014-171102 – Cellco Partnership d/b/a Verizon Wireless ("Cellco")**
21 Acorn Road, Branford, Connecticut

Dear Ms. Bachman:

On November 27, 2017, the Siting Council acknowledged receipt of Cellco's notice of intent to modify its existing telecommunications facility at 21 Acorn Road in Branford, Connecticut. Cellco's modifications involved the replacement of antennas and remote radio heads.

As a condition of its approval, Cellco was required to provide the Council with a letter stating that it had complied with the recommendations made in the September 29, 2017 structural report, which was attached to the EM-VER-014-171102 filing. In preparation for construction of the approved modifications it was discovered that Cellco's antenna platform needed to be replaced. (*See* February 7, 2018 Mount Structural Analysis Report prepared by Paul J. Ford & Company attached).

To avoid any confusion, Cellco had a new structural analysis completed on March 8, 2018, which took into account the approved modifications in EM-VER-014-171102, as well as the new low-profile platform. A copy of the March 8, 2018 updated structural is attached. Also attached is a Notice of Completion Certification from a professional engineer verifying that Cellco's facility modifications were completed in accordance with the March 8, 2018 Structural Analysis Report.

Robinson+Cole

If you have any questions please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Attachments
Copy to:
Tim Parks

PJF PAUL J. FORD & COMPANY

Report Date: February 7, 2018

Client: On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
Attn: David Weinpahl, P.E.
(201) 456-4624
dweinpahl@onaireng.com

Verizon Site Name: Branford 3 CT
Structure: Crown Castle #876316 – Existing 147 ft. Monopole
Site Address: 21 Acorn Rd.
City, County, State: Branford, New Haven County, CT
Latitude, Longitude: 41.293072, -72.762889

PJF Project: A42918-0006.002.7190

Paul J. Ford and Company is pleased to submit this "**Mount Structural Analysis Report**". The purpose of this analysis is to determine if the mount has sufficient capacity to support the proposed equipment described herein.

Analysis Criteria:

Reference Standard:	2016 CT Building Code with the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1.
Ultimate Wind Speed:	130 mph 3-second gust wind speed without ice, Risk Category II
Nominal Wind Speed:	101 mph 3-second gust wind speed without ice
Ice Wind Speed:	50 mph 3-second gust wind speed with 0.75" ice
TIA-222 Criteria:	Topographic Category 1, Exposure Category C

Proposed Appurtenance Loads:
The mount was analyzed with the addition of the proposed appurtenance loads shown in Table 1 combined with the existing loads shown in Table 2 of this report.

Summary of Analysis Results:
Proposed Antenna Mount: **Pass @ 79.9%***
***Sufficient upon installation of the proposed EEI low platform mount that is to replace the existing platform, see recommendations.**

We at Paul J. Ford and Company appreciate the opportunity of providing our continuing professional services to you and On Air Engineering, LLC. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully Submitted by:
Paul J. Ford and Company

Joshua Johnson, EI
Structural Designer RMD
jjohnson@pjfweb.com

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED PROFESSIONAL ENGINEER
2.9.18

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1) INTRODUCTION

This tower is a 147 ft monopole tower with a proposed mount at the 116-ft centerline.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1 were used in this analysis.

Table 1 – Final Loading Configuration

Mounting Level (feet)	Center Line Elevation (feet)	Number of Antennas	Antenna Manufacturer	Antenna Model	Note
116.0	119.0	1	Raycap	DB-T1-6Z-8AB-0Z	4
		1	Raycap	DB-T1-6Z-8AB-0Z	2
	118.0	3	Alcatel Lucent	RH_2x90-AWS	1
		3	Alcatel Lucent	RH_2x60-PCS	
		3	Alcatel Lucent	RH_2x60-700U	
	116.0	6	Commscope	SBNHH-1D65B	
		3	Commscope	HBXX-6517DS-A2M	
		2	Antel	LPA-80080-4CF	3
		2	Antel	LPA-80063-6CF	
		2	Rfs Celwave	APL868013	

Notes:
1) Proposed equipment
2) Proposed not installed on mount and not considered in this analysis.
3) Existing equipment to be relocated to the new low profile platform at the 116' CL
4) Existing not installed on mount and not considered in this analysis.

3) ANALYSIS PROCEDURE

Table 2 – Documents Provided

Document	Remarks	Reference	Source
Site Photos	-	-	On Air Engineering
Construction Drawings	On Air Engineering, 7/1/2017	-	
Radio Frequency Data Sheet	Verizon	0143	Verizon
Mount Manufacturer Drawings	EEI, 5/22/2015	K12443	EEI

3.1) Analysis Method

RISA-3D (version 15.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the mount and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) *The analysis of the existing monopole tower or the effect of the mount attachment to the tower is not within the current scope of work.*
2) *The antenna mounting system was properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications and all bolts are tightened as specified by the manufacturer and AISC requirements.*
3) *The configuration of antennas, mounts, and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.*
4) *All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.*
5) *This analysis will be required to be revised if the existing conditions in the field differ from those shown in the above referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.*
6) *Steel grades have been assumed as follows:*
   - *a) Channel, Solid Round, Angle, Plate, Unistrut* — *ASTM A36 (GR 36)*
   - *b) Pipe* — *ASTM A53 (GR 35)*
   - *c) HSS (Rectangular)* — *ASTM 500 (GR B-46)*
   - *d) HSS (Round)* — *ASTM 500 (GR B-42)*
   - *e) Connection Bolts* — *ASTM A325*
7) *This analysis was performed based on manufacturer's drawings only. If existing conditions differ from what is specified in the manufacturer's specifications, then this analysis is invalid.*

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

4) ANALYSIS RESULTS

Table 3 – Mount Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Mount Pipes	116.0	74.6	Pass
1	Face Horizontal		36.2	Pass
1	Standoff Members		79.9	Pass

Structural Rating (max from all components) =	79.9%

Notes:
1. See additional documentation in "Appendix A – RISA 3D Output" for calculations supporting the % capacity consumed.

4.1) Recommendations

The existing low profile platform should be removed and a new EEI low profile platform, shown in Appendix B: Manufacturer Drawings (For Reference Only), should be installed at the 116' elevation in order for the calculations to be valid.

5) CONCLUSION

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

This analysis is presented based upon the assumptions listed herein and information provided by the wireless carrier. If the existing conditions are different than those presented here, Paul J. Ford and Company should be contacted to verify the validity of the conclusions presented here.

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING

SERVICES ON EXISTING MOUNTS BY PAUL J. FORD AND COMPANY

1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.

2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.

3) The mount has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.

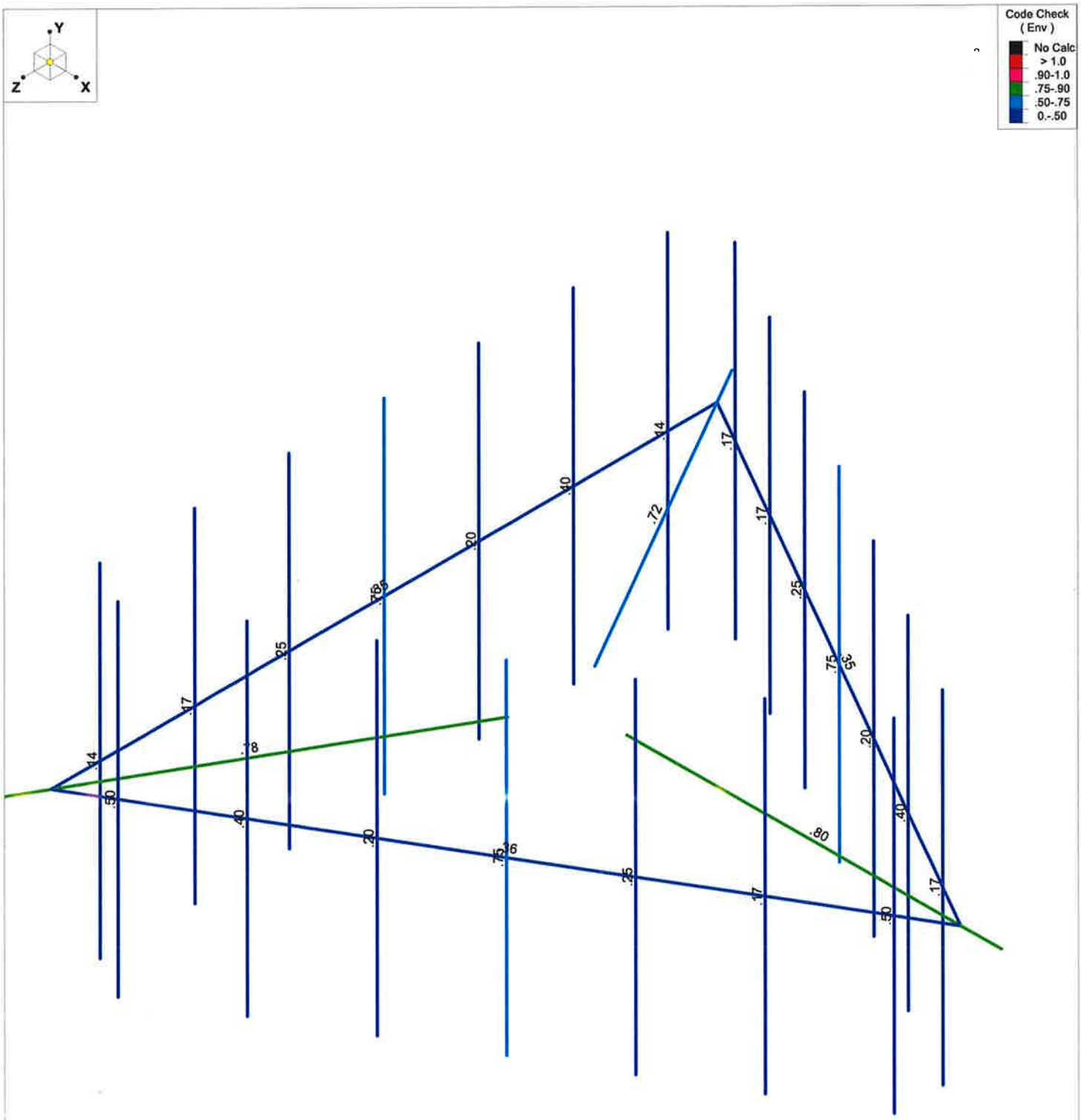
4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.

5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

****

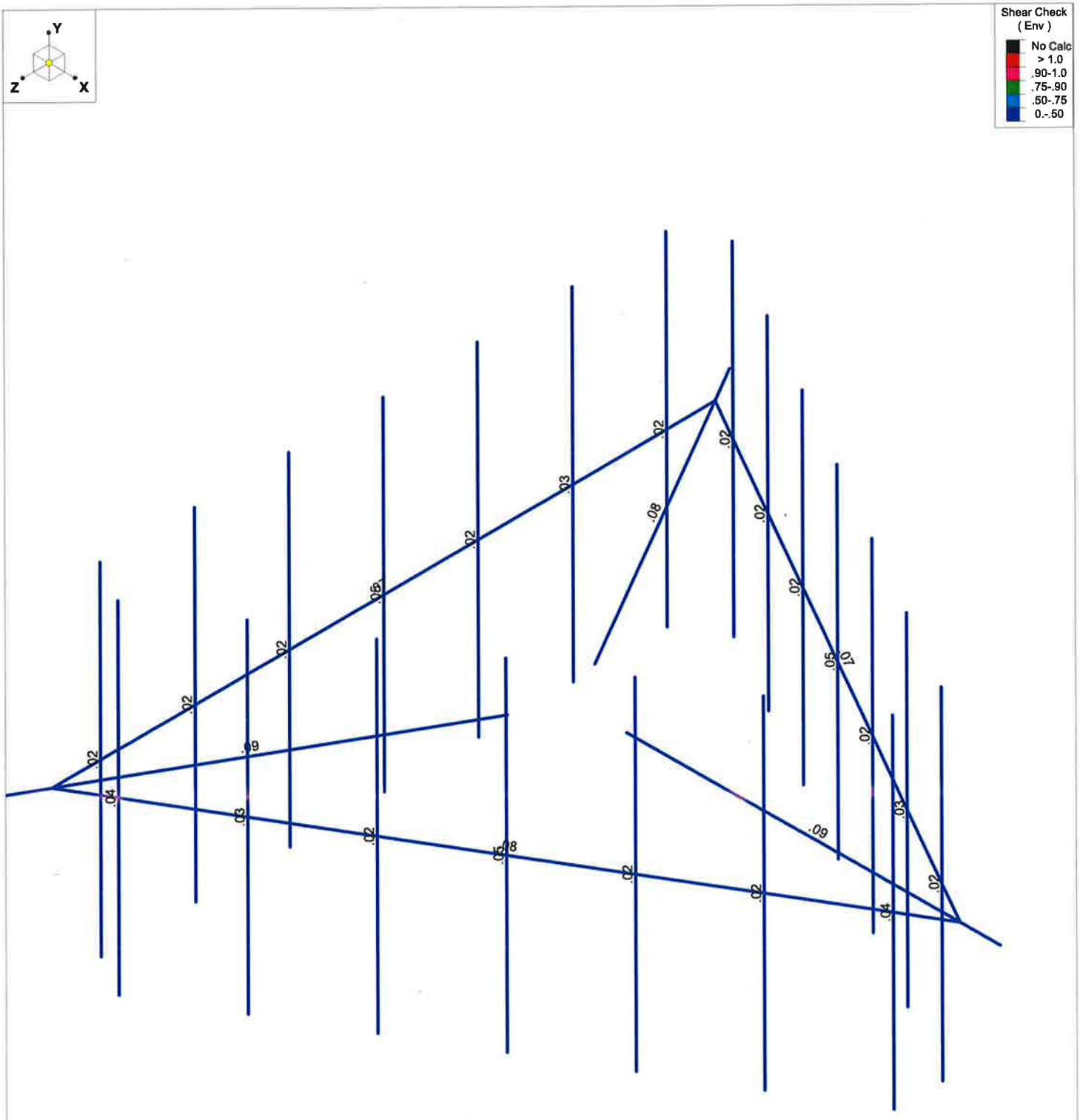
APPENDIX A

RISA 3D OUTPUT



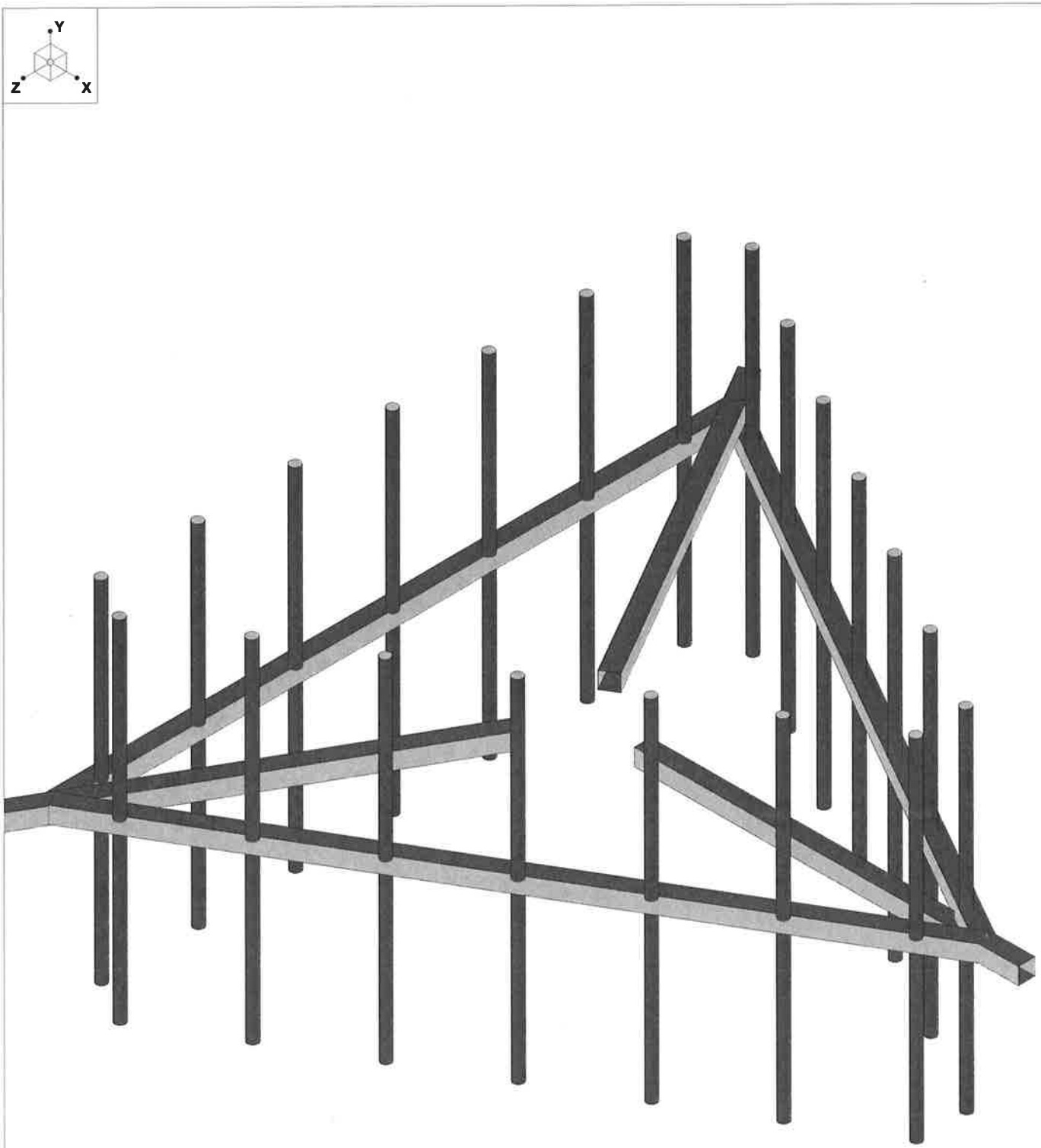
Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Paul J. Ford and Company	Branford 3 CT	SK - 1
JRJ		Feb 7, 2018 at 3:49 PM
42918-0006		42918-0006 - LP-135-0003 - final_...



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Paul J. Ford and Company	Branford 3 CT	SK - 2
JRJ		Feb 7, 2018 at 3:50 PM
42918-0006		42918-0006 - LP-135-0003 - final_...



Envelope Only Solution

Paul J. Ford and Company	Branford 3 CT	SK - 3
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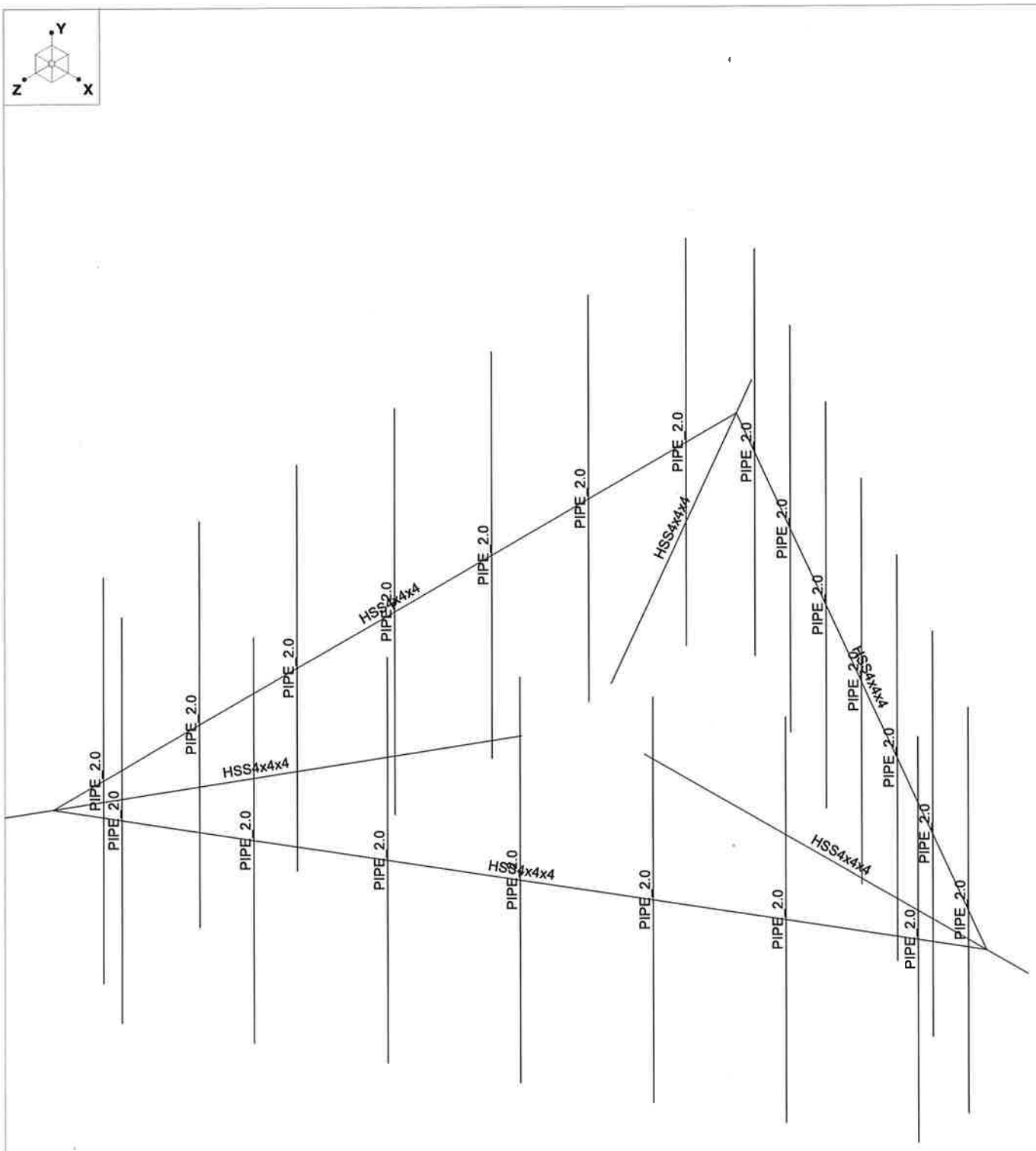

Envelope Only Solution

Paul J. Ford and Company	Branford 3 CT	SK - 4
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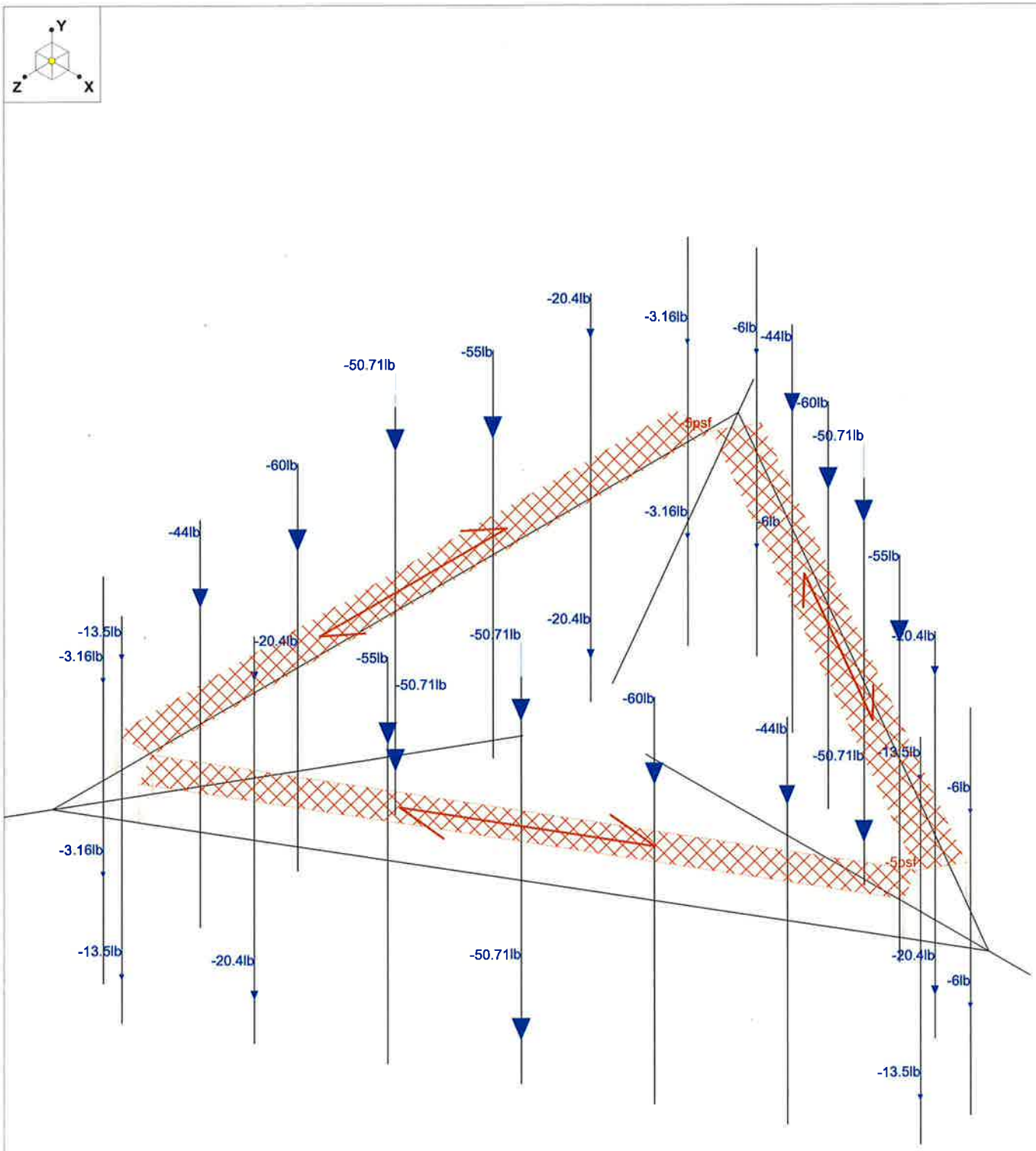


Loads: BLC 1, Dead
Envelope Only Solution

Paul J. Ford and Company	Branford 3 CT	SK - 5
JRJ		Feb 7, 2018 at 3:50 PM
42918-0006		42918-0006 - LP-135-0003 - final_...

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-05
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Occupancy Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1..	Density[k...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A53 Gr. B (35 ksi)	29000	11154	.3	.65	.49	35	1.5	60	1.2
2	A500 Gr. B (46ksi)	29000	11154	.3	.65	.49	46	1.5	58	1.2
3	A36 (36ksi)	29000	11154	.3	.65	.49	36	1.5	58	1.2

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	C7	A13	A15			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
2	M13	B1	B2			HSS4x4x4	None	None	A500 Gr. B (46ksi)	Typical
3	M14	B4	B1			HSS4x4x4	None	None	A500 Gr. B (46ksi)	Typical
4	M15	B2	B4			HSS4x4x4	None	None	A500 Gr. B (46ksi)	Typical
5	M16	N82	C10			HSS4x4x4	None	None	A500 Gr. B (46ksi)	Typical
6	M17	N83	C15			HSS4x4x4	None	None	A500 Gr. B (46ksi)	Typical
7	M18	C1	C5			HSS4x4x4	None	None	A500 Gr. B (46ksi)	Typical
8	C6	N22	N24			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
9	C5	N25	N27			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
10	C4	N28	N30			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
11	C3	N31	N33			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
12	C2	N34	N36			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
13	C1	N37	N39			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
14	B7	N40	N42			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
15	B6	N43	N45			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
16	B5	N46	N48A			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
17	B4	N49A	N51A			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
18	B3	N52	N54A			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
19	B2	N55A	N57			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
20	B1	N58	N60			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
21	A7	N61	N63			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
22	A6	N64	N66			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
23	A5	N67	N69			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
24	A4	N70	N72			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
25	A3	N73	N75			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
26	A2	N76	N78			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical
27	A1	N79	N81			PIPE_2.0	None	None	A53 Gr. B (35 ksi)	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	C7	BenPIN	BenPIN				Yes			None
2	M13						Yes			None
3	M14						Yes			None
4	M15						Yes			None
5	M16						Yes			None
6	M17						Yes			None
7	M18						Yes			None
8	C6	BenPIN	BenPIN				Yes			None
9	C5	BenPIN	BenPIN				Yes			None
10	C4	BenPIN	BenPIN				Yes			None
11	C3	BenPIN	BenPIN				Yes			None
12	C2	BenPIN	BenPIN				Yes			None
13	C1	BenPIN	BenPIN				Yes			None
14	B7	BenPIN	BenPIN				Yes			None
15	B6	BenPIN	BenPIN				Yes			None
16	B5	BenPIN	BenPIN				Yes			None
17	B4	BenPIN	BenPIN				Yes			None
18	B3	BenPIN	BenPIN				Yes			None
19	B2	BenPIN	BenPIN				Yes			None
20	B1	BenPIN	BenPIN				Yes			None
21	A7	BenPIN	BenPIN				Yes			None
22	A6	BenPIN	BenPIN				Yes			None
23	A5	BenPIN	BenPIN				Yes			None
24	A4	BenPIN	BenPIN				Yes			None
25	A3	BenPIN	BenPIN				Yes			None
26	A2	BenPIN	BenPIN				Yes			None
27	A1	BenPIN	BenPIN				Yes			None

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Member)	Surface(...
1	Dead	None		-1.1			42		3	
2	Live	None							3	
3	Wind 0	None					84	54		
4	Wind 30	None					84	54		
5	Wind 60	None					84	54		
6	Wind 90	None					84	54		
7	Wind 120	None					84	54		
8	Wind 150	None					84	54		
9	Ice Load	None					42	27	3	
10	Ice 0	None					84	54		
11	Ice 30	None					84	54		
12	Ice 60	None					84	54		
13	Ice 90	None					84	54		
14	Ice 120	None					84	54		
15	Ice 150	None					84	54		
16	BLC 1 Transient Area Loads	None						3		
17	BLC 2 Transient Area Loads	None						3		
18	BLC 9 Transient Area Loads	None						3		

Load Combinations

	Description	Solve	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 D	Yes	Y		1	1.4																		
2	1.2 D + 1.6 L	Yes	Y		1	1.2	2	1.6																
3	1.2 D + 1.6 Wo @ 0	Yes	Y		1	1.2	3	1.6																
4	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	4	1.6																
5	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	5	1.6																
6	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	6	1.6																
7	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	7	1.6																
8	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	8	1.6																
9	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	3	-1.6																

Load Combinations (Continued)

	Description	Solve	PDelta	SRSS	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
10	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	4	-1.6																
11	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	5	-1.6																
12	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	6	-1.6																
13	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	7	-1.6																
14	1.2 D + 1.6 Wo @ ...	Yes	Y		1	1.2	8	-1.6																
15	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	10	1														
16	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	11	1														
17	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	12	1														
18	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	13	1														
19	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	14	1														
20	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	15	1														
21	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	10	-1														
22	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	11	-1														
23	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	12	-1														
24	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	13	-1														
25	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	14	-1														
26	1.2 D + 1.0 Di + 1....	Yes	Y		1	1.2	9	1	15	-1														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	C1	max	5894.479	12	3100.482	18	1525.932	3	.306	3	4.451	9	12.109	18
2		min	-5904.859	6	789.605	12	-1525.815	9	-.324	9	-4.453	3	2.849	12
3	N82	max	2921.491	14	2868.764	26	4960.494	14	9.514	26	3.35	5	-1.318	7
4		min	-2914.437	8	760.548	8	-4952.286	8	2.341	8	-3.35	11	-5.501	25
5	N83	max	2983.977	10	3052.07	22	4957.914	4	-2.435	4	4.207	13	-1.335	5
6		min	-2972.316	4	781.448	4	-4963.021	10	-10.335	22	-4.206	7	-5.867	23
7	Totals:	max	10353.595	12	8870.07	24	10131.766	3						
8		min	-10353.595	6	2974.65	6	-10131.766	9						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shea..	Loc.....		LC	phi*Pn..	phi*Pn..	phi*M...	phi*M...	...	Eqn
1	M18	HSS4x4x4	.799	0	15	.089	0	y	21	10923..	139518	16.181	16.181	...	H1-1b
2	M17	HSS4x4x4	.782	0	25	.091	0	y	19	10923..	139518	16.181	16.181	...	H1-1b
3	B4	PIPE_2.0	.746	42	7	.054	42		7	17855..	32130	1.872	1.872	...	H1-1b
4	C4	PIPE_2.0	.746	42	11	.054	42		11	17855..	32130	1.872	1.872	...	H1-1b
5	A4	PIPE_2.0	.746	42	3	.054	42		3	17855..	32130	1.872	1.872	...	H1-1b
6	M16	HSS4x4x4	.717	0	23	.079	0	y	17	10923..	139518	16.181	16.181	...	H1-1b
7	B1	PIPE_2.0	.499	42	7	.037	42		7	17855..	32130	1.872	1.872	...	H1-1b
8	B7	PIPE_2.0	.499	42	9	.037	42		9	17855..	32130	1.872	1.872	...	H1-1b
9	B6	PIPE_2.0	.402	42	7	.030	42		7	17855..	32130	1.872	1.872	...	H1-1b
10	C6	PIPE_2.0	.402	42	11	.030	42		11	17855..	32130	1.872	1.872	...	H1-1b
11	A6	PIPE_2.0	.402	42	3	.030	42		3	17855..	32130	1.872	1.872	...	H1-1b
12	M14	HSS4x4x4	.362	163	9	.082	0	z	7	64458..	139518	16.181	16.181	...	H1-1b
13	M15	HSS4x4x4	.354	163	5	.074	0	z	3	64458..	139518	16.181	16.181	...	H1-1b
14	M13	HSS4x4x4	.346	163	13	.073	0	z	11	64458..	139518	16.181	16.181	...	H1-1b
15	B3	PIPE_2.0	.253	42	9	.025	42		9	17855..	32130	1.872	1.872	...	H1-1b
16	A3	PIPE_2.0	.253	42	5	.025	42		5	17855..	32130	1.872	1.872	...	H1-1b
17	C3	PIPE_2.0	.253	42	13	.025	42		13	17855..	32130	1.872	1.872	...	H1-1b
18	B5	PIPE_2.0	.196	42	7	.019	42		7	17855..	32130	1.872	1.872	...	H1-1b
19	C5	PIPE_2.0	.196	42	11	.019	42		11	17855..	32130	1.872	1.872	...	H1-1b
20	A5	PIPE_2.0	.196	42	3	.019	42		3	17855..	32130	1.872	1.872	...	H1-1b
21	A7	PIPE_2.0	.174	42	6	.020	42		6	17855..	32130	1.872	1.872	...	H1-1b
22	A1	PIPE_2.0	.174	42	14	.020	42		14	17855..	32130	1.872	1.872	...	H1-1b
23	B2	PIPE_2.0	.167	42	9	.017	42		9	17855..	32130	1.872	1.872	...	H1-1b
24	A2	PIPE_2.0	.167	42	5	.017	42		5	17855..	32130	1.872	1.872	...	H1-1b
25	C2	PIPE_2.0	.167	42	13	.017	42		13	17855..	32130	1.872	1.872	...	H1-1b
26	C1	PIPE_2.0	.141	42	10	.016	42		10	17855..	32130	1.872	1.872	...	H1-1b
27	C7	PIPE_2.0	.141	42	14	.016	42		14	17855..	32130	1.872	1.872	...	H1-1b

APPENDIX B

MANUFACTURER DRAWINGS (FOR REFERENCE ONLY)

12' [3657.6MM] LOW PROFILE ANTENNA PLATFORM "H"

TABLE OF CONTENTS

K12443-T1 - BILL OF MATERIAL & NOTES
K12443 - PLAN AND DETAILS

SYMBOL LEGEND

AGL = ABOVE GROUND LEVEL	LW = LOCK WASHER
BC = BOLT CIRCLE	OC = ON CENTER
CL = CENTERLINE	OD = OUTSIDE DIAMETER
ELEV = ELEVATION	(P) = PROPOSED
(E) = EXISTING	TBD = TO BE DETERMINED
FV = FIELD VERIFY	TOS = TOP OF STEEL
FW = FLAT WASHER	TYP = TYPICAL
HN = HEX NUT	NTS = NOT TO SCALE

DESIGN NOTES

1. DESIGNED BASED ON DRAWINGS AND SPECIFICATIONS PROVIDED BY EE.

COATING NOTES

1. ALL APPLICABLE MATERIALS SHALL BE HOT DIPPED GALVANIZED PER ASTM A123. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED PER ASTM A153, UNLESS OTHERWISE NOTED.

STRUCTURE NOTES

1. EE WILL NOT HONOR ANY BACKCHARGES WHICH HAVE NOT RECEIVED PRIOR WRITTEN AUTHORIZATION. CONTACT EE AT (440) 970.5004

2. THE INSTALLER SHALL THOROUGHLY REVIEW EE's STRUCTURAL ASSEMBLY & ERECTION PROCEDURES PRIOR TO INITIATING THE INSTALLATION OF THE MONOPOLE.

3. THE ORIENTATION OF THE MONOPOLE SHALL BE VERIFIED PRIOR TO INSTALLATION.

4. FOR MULTIPLE SECTION MONOPOLES:
   - 4.1. FOR PROPER SECTION TO SECTION ALIGNMENT A 2" HORIZONTAL WELD BEAD AND A MARK ARE POSITIONED ON EACH SECTION AT EACH SPLICE. THE 2" HORIZONTAL WELD BEAD ARE ON THE MATCHING CORNERS. THE MARK NUMBER IS ON THE ADJACENT FLAT. THE CORNERS WITH WELD BEADS SHALL BE ALIGNED FROM TOP TO BOTTOM OF THE MONOPOLE/ MARK NUMBERS SHALL BE MATCHED FOR EACH SIDE & THE DISTANCE BETWEEN TWO WELD BEADS SHOULD BE 18" (±4").
   - 4.2. ALL SECTIONS OF THE MONOPOLE SHALL BE JACKED TOGETHER WITH A MINIMUM JACKING FORCE OF 10,000 lbf APPLIED TO EACH SIDE. FOR MAXIMUM RECOMMENDED JACKING FORCE, SPLICE LENGTH TOLERANCE AND AIR GAP BETWEEN SECTIONS REFER TO EE's STRUCTURE ASSEMBLY & ERECTION PROCEDURES.
   - 4.3. 1" FIELD ASSEMBLY JACKING NUTS FOR JACKING SECTIONS TOGETHER ARE LOCATED ON OPPOSING SECTION FLATS ABOVE AND BELOW THE SPLICES. ALL JACKING EQUIPMENT SHALL BE SUPPLIED BY THE INSTALLER.
   - 4.4. ALL LONGITUDINAL SEAM WELDS WITHIN THE SLIP-JOINT AREA IN THE FEMALE SECTION SHALL BE 100% PENETRATION.

5. ALL BOLTED CONNECTIONS WITH A325 HIGH-STRENGTH BOLTS SHALL BE ASSEMBLED IN ACCORDANCE WITH SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS. HIGH STRENGTH BOLTS SHALL BE INSTALLED TO SNUG-TIGHT CONDITION PER ASTM A325/A490 AND THEN PRE-TENSION AS REQUIRED. TURN-OF-NUT METHOD IS RECOMMENDED BUT IS NOT LIMITED TO.

6. SHIMS WILL BE SUPPLIED BY EE, IF REQUIRED.

7. MONOPOLE BASE PLATE SHALL HAVE FULL PENETRATION WELD TO SHAFT.

8. ANCHOR RODS SHALL BE TIGHTENED AFTER THE MONOPOLE IS PLUMB. BOTH TOP & BOTTOM NUT SHALL BE TIGHTENED. FOR DETAIL OF ANCHOR ROD INSTALLATION INSTRUCTIONS, REFER TO EE's STRUCTURE ASSEMBLY & ERECTION PROCEDURES.

9. MATERIALS
   - 9.1. STRUCTURAL STEEL - REFER TO DRAWING.
   - 9.2. BOLTS
     - 9.2.1. STRUCTURAL STEEL: A325 HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.
     - 9.2.2. ANCHOR RODS: A615-GR75 UNLESS OTHERWISE NOTED.

10. WELDING
    - 10.1. ALL WELDING SHALL MEET AWS LATEST D.1.1 EDITION

11. ASSEMBLY MARKING PROCEDURE
    - 11.1. EACH INDIVIDUAL ASSEMBLY SHALL HAVE A METAL TAG WELDED TO IT WHICH WILL BE ENGRAVED WITH THE ASSEMBLY MARK NO. AS SHOWN IN THE MATERIAL BLOCK. (MINIMUM OF 5/8" HIGH LETTERS).

BILL OF MATERIALS K12443

Item	Part Number	Qty	Description	Weight Per	Wt Per Row
0	K12443	0	12' [3657mm] LOW PROFILE ANTENNA PLATFORM "H"	1128.68	1128.68
1	K12443-W01	3	PLATFORM FRAMING TUBE ASSEMBLY	196.17	588.51
2	K12443-W02	3	PLATFORM SUPPORT ARM ASSEMBLY	109.13	327.39
3	K12443-G36-01	3	PLATFORM BAR GRATING	43.99	131.97
4	K12443-P36-01	6	GRATING SUPPORT	1.85	11.10
5	K12443-P36-02	30	GRATING CLIP	0.08	2.40
6	K12443-P36-03	3	PLATFORM BRACE	0.70	2.10
7	K12443-T46-01	12	SPACER	0.11	1.32
30	BX-SS-0.375X3.50	30	3/8-16 x 3 1/2" HEX BOLT FULL THREAD (S.S.) w/ (1) HHN (18-8 S.S.), (2) S.S. FLAT WASHERS & (1) LW	0.10	3.00
31	BX-GR5-G-0.50X2.50	12	1/2" dia. x 2 1/2" LG. SAE-GR. 5 FULL-THREAD BOLT W/ (1) HHN A194-2H, (1) LW F436 & (2) FW	0.40	4.80
32	BX-A449-G-0.75X4.00	12	3/4" dia. x 4" LG. FULL-THREAD BOLT (A449T) W/ (1) HHN A194-2H, (1) LW F436 & (1) FW	0.80	9.60
33	BX-GR5-G-0.375X1.25	12	3/8" dia. x 1 1/4" LG. FULL-THREAD BOLT (GR. 5) W/ (1) HHN A194-2H, (1) LW F436 & (1) FW	0.10	1.20
41	K12443-INS	1	PLATFORM ASSEMBLY PROCEDURE		

STAMP

ENGINEERED ENDEAVORS
The Experienced Point of View
15175 Kinsman Road * Burton, OH 44062
Ph: (440) 970-5004
www.engend.com

FOR FABRICATION

REVISION HISTORY

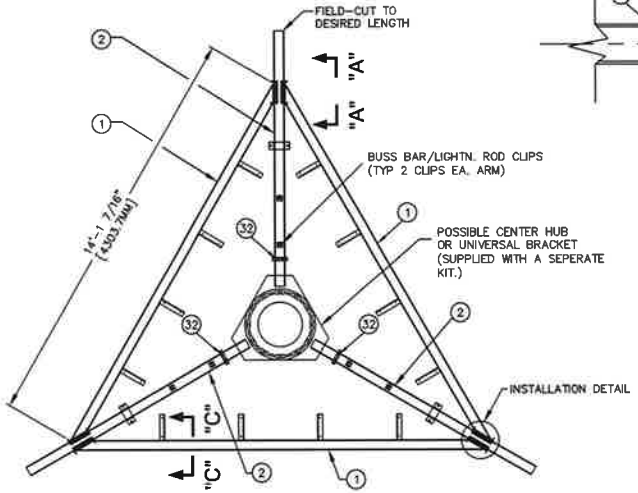
REV. #	DATE	BY	DESCRIPTION
0	5/22/15	TS	ISSUED FOR FABRICATION
1	10/1/15	TS	ISSUED FOR FABRICATION
2	11/22/16	RVH	ADDED METRIC & REVISED BOM
3	12/21/17	RPH	REVISED ADDRESS/ISSUED FOR FABRICATION

12' [3657.6MM] LOW PROFILE ANTENNA PLATFORM "H"

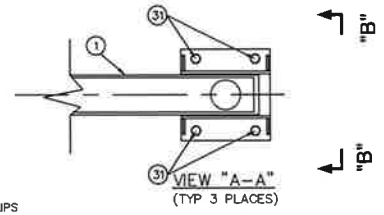
BILL OF MATERIALS & NOTES

DRAWN BY	CREATED	PROJECT NUMBER
TS	5/22/15	K12443

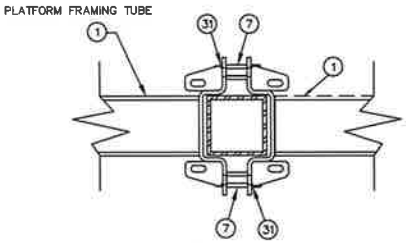
DRAWING NUMBER
K12443-T1



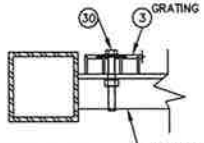
TOP VIEW
(GRATING NOT SHOWN FOR CLARITY)



VIEW "A-A"
(TYP 3 PLACES)



VIEW "B-B"
(TYP 3 PLACES)



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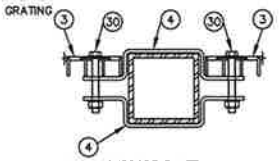
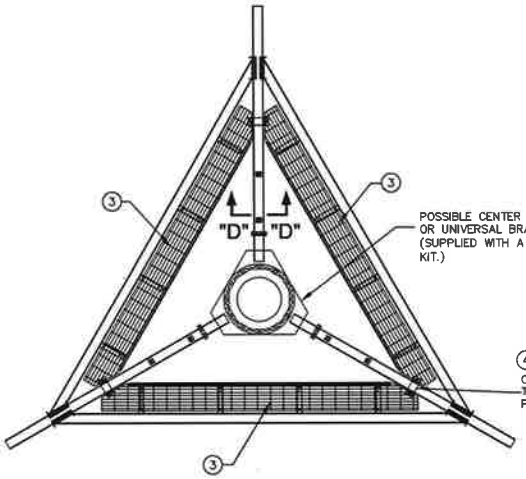
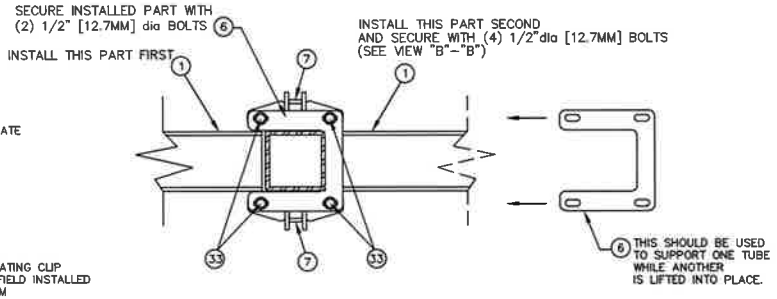
(TYP 12 PLACES)



VIEW "D-D"
(TYP 6 PLACES)



TOP VIEW
GRATING INSTALLATION VIEW



INSTALLATION DETAIL
(BRACE PLATE ITEM 9 MUST BE LEFT IN PLACE AFTER ALL SECTIONS OF THE PLATFORM ARE BOLTED TOGETHER)

STAMP

ENGINEERED ENDEAVORS
The Experienced Point of View
10975 Kinsman Road * Newbury, OH 44065-9787
Ph: (440) 564-5484 * Ph: (888) 270-3855
Fx: (440) 564-5489 * www.engend.com

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12' [3657.6MM] LOW PROFILE ANTENNA PLATFORM "H"

PLAN AND DETAILS

DRAWN BY	CREATED	PROJECT NUMBER
TS	5/22/15	K12443

DRAWING NUMBER
K12443

PJF PAUL J. FORD & COMPANY

Date: **March 08, 2018**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6607

Paul J. Ford & Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679
skadam@pjfweb.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	Branford 3, CT
Crown Castle Designation:	**Crown Castle BU Number:**	876316
	Crown Castle Site Name:	SECONDINO PROPERTY
	Crown Castle JDE Job Number:	337988
	Crown Castle Work Order Number:	1535249
	Crown Castle Application Number:	300679 Rev. 4
Engineering Firm Designation:	**Paul J. Ford & Company Project Number:**	37518-0474.002.7805
Site Data:	**21 Acorn Road, BRANFORD, New Haven County, CT** **Latitude *41° 17' 35.06"*, Longitude *-72° 45' 46.4"*** **147 Foot - Monopole**	

Dear Mr. McGuirt,

Paul J. Ford & Company 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 1150773, in accordance with application 300679, revision 4.

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

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

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

We at *Paul J. Ford & Company* 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:

Shardul Kadam
Project Engineer I

tnxTower Report - version 7.0.5.1

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

MAR 0 8 2018

PAUL J. FORD & COMPANY

Date: **March 08, 2018**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6607

Paul J. Ford & Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679
skadam@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:

***Verizon Wireless* Co-Locate**
Carrier Site Number: N/A
Carrier Site Name: Branford 3, CT

Crown Castle Designation:

Crown Castle BU Number: 876316
Crown Castle Site Name: SECONDINO PROPERTY
Crown Castle JDE Job Number: 337988
Crown Castle Work Order Number: 1535249
Crown Castle Application Number: 300679 Rev. 4

Engineering Firm Designation:

Paul J. Ford & Company Project Number: 37518-0474.002.7805

Site Data:

21 Acorn Road, BRANFORD, New Haven County, CT
Latitude *41° 17' 35.06"*, Longitude *-72° 45' 46.4"*
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1) INTRODUCTION

This tower is a 147 ft. Monopole tower designed by SUMMIT in September of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

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
116.0	116.0	3	alcatel lucent	RRH2X60-700	1	1-5/8	-
		3	alcatel lucent	RRH2X60-PCS			
		3	alcatel lucent	RRH4X45-AWS4 B66			
		3	commscope	HBXX-6517DS-A2M w/ Mount Pipe			
		6	commscope	SBNHH-1D65B w/ Mount Pipe			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		1	EEI	Low profile antenna platform "H"			

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
147.0	146.0	3	alcatel lucent	1900MHZ RRH (65MHZ)	3 1	1-1/4 5/8	1
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ RRH			
		3	alcatel lucent	TD-RRH8X20-25			
		9	rfs celwave	ACU-A20-N			
	147.0	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 1201-1]			
	143.0	1	tower mounts	Miscellaneous [NA 507-1]			
135.0	135.0	3	commscope	ATSBT-TOP-MF-4G	-	-	2
		3	commscope	LNX-6515DS-A1M w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1 6	1-3/16 1-5/8	1
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		1	tower mounts	T-Arm Mount [TA 602-3]			
116.0	116.0	6	rfs celwave	FD9R6004/2C-3L	6	1-5/8	3
		3	alcatel lucent	RRH2X40-AWS			
		3	antel	BXA-171063-12CF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-70063/6CF-2 w/ Mount Pipe			
		1	tower mounts	Platform Mount [LP 1201-1]			
		2	antel	LPA-80063/6CF w/ Mount Pipe	7	1-5/8	1
		2	antel	LPA-80080/4CF w/ Mount Pipe			
		2	rfs celwave	APL868013 w/ Mount Pipe			
		2	adc	CLEARGAIN DUAL BAND 800/1900 MHZ			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
106.0	106.0	3	cci antennas	TPA-65R-BU4AA-K w/ Mount Pipe	1 2	17/64 7/8	2
		3	ericsson	RADIO 4426			
		3	ericsson	RRUS 32			
		3	kaelus	DBC0061F1V51-2			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		6	powerwave technologies	7020.00			
		1	raycap	DC6-48-60-18-8F			
		3	andrew	SBNHH-1D65A w/ Mount Pipe	12 2 1 1	1-1/4 7/8 3/8 17/64	1
		3	ericsson	RRUS 11			
		3	ericsson	RRUS 12			
		3	ericsson	RRUS A2			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		9	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Miscellaneous [NA 507-2]			
		1	tower mounts	Miscellaneous [NA 509-3]			
		1	tower mounts	Platform Mount [LP 1201-1]			
76.0	77.0	1	kathrein	OG-860/1920/GPS-A	-	-	1
		1	lucent	KS24019-L112A			
	76.0	1	tower mounts	Side Arm Mount [SO 701-3]			

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)
-	-	-	-	-	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
GEOTECHNICAL REPORTS	TEP, 25581.34391, 07/30/2015	1529736	CCISITES
POST-MODIFICATION INSPECTION	JTec Enterprises, 3017636, 10/10/2005	2031904	CCISITES
POST-MODIFICATION INSPECTION	PJF, 41708-0180, 03/15/2009	2417887	CCISITES
POST-MODIFICATION INSPECTION	ETS, 171664, 10/23/2017	7151513	CCISITES
TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit, 2737, 09/29/1997	1632435	CCISITES
TOWER MANUFACTURER DRAWINGS	Summit, 2737-97, 09/291997	1632399	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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) For existing modifications: monopole was modified in conformance with the referenced modification drawings.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147 - 142	Pole	TP22.85x22x0.25	Pole	5.4%	Pass
142 - 137	Pole	TP23.7x22.85x0.25	Pole	10.4%	Pass
137 - 132	Pole	TP24.55x23.7x0.25	Pole	17.0%	Pass
132 - 127	Pole	TP25.4x24.55x0.25	Pole	24.2%	Pass
127 - 122	Pole	TP26.251x25.4x0.25	Pole	30.8%	Pass
122 - 117	Pole	TP27.101x26.251x0.25	Pole	37.1%	Pass
117 - 112	Pole	TP27.951x27.101x0.25	Pole	47.2%	Pass
112 - 108.75	Pole	TP29.141x27.951x0.25	Pole	53.8%	Pass
108.75 - 103.75	Pole	TP28.854x28.003x0.3125	Pole	52.8%	Pass
103.75 - 98.75	Pole	TP29.704x28.854x0.3125	Pole	62.1%	Pass
98.75 - 93.75	Pole	TP30.554x29.704x0.3125	Pole	70.5%	Pass
93.75 - 89.83	Pole	TP31.221x30.554x0.3125	Pole	76.6%	Pass
89.83 - 89.58	Pole + Reinf.	TP31.263x31.221x0.3188	Pole	77.8%	Pass
89.58 - 88.25	Pole + Reinf.	TP31.489x31.263x0.3188	Pole	79.7%	Pass
88.25 - 88	Pole + Reinf.	TP31.532x31.489x0.5125	Reinf. 2 Tension Rupture	67.1%	Pass
88 - 86	Pole + Reinf.	TP31.872x31.532x0.5125	Reinf. 2 Tension Rupture	69.8%	Pass
86 - 85.75	Pole + Reinf.	TP31.914x31.872x0.5125	Reinf. 2 Tension Rupture	70.7%	Pass
85.75 - 84.33	Pole + Reinf.	TP32.156x31.914x0.5125	Reinf. 2 Tension Rupture	72.6%	Pass
84.33 - 84.08	Pole + Reinf.	TP32.198x32.156x0.475	Reinf. 2 Tension Rupture	74.4%	Pass
84.08 - 79.08	Pole + Reinf.	TP33.049x32.198x0.4625	Reinf. 2 Tension Rupture	80.7%	Pass
79.08 - 78	Pole + Reinf.	TP33.955x33.049x0.4625	Reinf. 2 Tension Rupture	82.0%	Pass
78 - 72.75	Pole + Reinf.	TP33.5x32.607x0.5625	Reinf. 2 Tension Rupture	78.8%	Pass
72.75 - 67.75	Pole + Reinf.	TP34.35x33.5x0.5625	Reinf. 2 Tension Rupture	83.7%	Pass
67.75 - 63.08	Pole + Reinf.	TP35.144x34.35x0.55	Reinf. 2 Tension Rupture	87.9%	Pass
63.08 - 62.83	Pole + Reinf.	TP35.187x35.144x0.7125	Reinf. 7 Tension Rupture	72.6%	Pass
62.83 - 57.83	Pole + Reinf.	TP36.037x35.187x0.7	Reinf. 7 Tension Rupture	76.5%	Pass
57.83 - 52.83	Pole + Reinf.	TP36.887x36.037x0.6875	Reinf. 7 Tension Rupture	80.2%	Pass
52.83 - 47.83	Pole + Reinf.	TP37.737x36.887x0.6875	Reinf. 7 Tension Rupture	83.7%	Pass
47.83 - 47.5	Pole + Reinf.	TP38.601x37.737x0.675	Reinf. 7 Tension Rupture	83.9%	Pass
47.5 - 42.5	Pole + Reinf.	TP37.894x37.043x0.75	Reinf. 7 Tension Rupture	82.7%	Pass
42.5 - 37.5	Pole + Reinf.	TP38.744x37.894x0.7375	Reinf. 7 Tension Rupture	85.6%	Pass
37.5 - 32.75	Pole + Reinf.	TP39.551x38.744x0.7375	Reinf. 7 Tension Rupture	88.2%	Pass
32.75 - 32.5	Pole + Reinf.	TP39.594x39.551x0.7875	Reinf. 6 Tension Rupture	81.2%	Pass
32.5 - 27.5	Pole + Reinf.	TP40.444x39.594x0.775	Reinf. 6 Tension Rupture	83.7%	Pass
27.5 - 22.5	Pole + Reinf.	TP41.294x40.444x0.7625	Reinf. 6 Tension Rupture	86.0%	Pass
22.5 - 17.5	Pole + Reinf.	TP42.144x41.294x0.7625	Reinf. 6 Tension Rupture	88.3%	Pass

17.5 - 12.5	Pole + Reinf.	TP42.995x42.144x0.75	Reinf. 6 Tension Rupture	90.4%	Pass
12.5 - 8.25	Pole + Reinf.	TP43.717x42.995x0.7375	Reinf. 6 Tension Rupture	92.1%	Pass
8.25 - 8	Pole + Reinf.	TP43.76x43.717x0.8	Reinf. 2 Tension Rupture	89.2%	Pass
8 - 6.25	Pole + Reinf.	TP44.057x43.76x0.7875	Reinf. 2 Tension Rupture	89.9%	Pass
6.25 - 6	Pole + Reinf.	TP44.1x44.057x0.775	Reinf. 2 Tension Rupture	90.2%	Pass
6 - 3.25	Pole + Reinf.	TP44.567x44.1x0.7625	Reinf. 2 Tension Rupture	91.2%	Pass
3.25 - 3	Pole + Reinf.	TP44.61x44.567x0.7625	Reinf. 1 Tension Rupture	90.2%	Pass
3 - 0	Pole + Reinf.	TP45.12x44.61x0.75	Reinf. 1 Tension Rupture	91.3%	Pass
				Summary	
			Pole	79.7%	Pass
			Reinforcement	92.1%	Pass
			Overall	92.1%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	99.8	Pass
1	Base Plate	0	84.5	Pass
1	Base Foundation Structural Steel	0	60.5	Pass
1	Base Foundation Soil Interaction	0	63.5	Pass

Structure Rating (max from all components) =	**99.8%**

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

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 101.00 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.0000 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56.00 pcf.
A wind speed of 50.00 mph is used in combination with ice.
Temperature drop of 50.00 °F.
Deflections calculated using a wind speed of 60.00 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
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	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	147.0000-142.0000	5.0000	0.00	18	22.0000	22.8501	0.2500	1.0000	A607-60 (60 ksi)
L2	142.0000-137.0000	5.0000	0.00	18	22.8501	23.7002	0.2500	1.0000	A607-60 (60 ksi)
L3	137.0000-132.0000	5.0000	0.00	18	23.7002	24.5504	0.2500	1.0000	A607-60 (60 ksi)
L4	132.0000-127.0000	5.0000	0.00	18	24.5504	25.4005	0.2500	1.0000	A607-60 (60 ksi)
L5	127.0000-122.0000	5.0000	0.00	18	25.4005	26.2506	0.2500	1.0000	A607-60 (60 ksi)
L6	122.0000-117.0000	5.0000	0.00	18	26.2506	27.1007	0.2500	1.0000	A607-60 (60 ksi)

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L7	117.0000-112.0000	5.0000	0.00	18	27.1007	27.9508	0.2500	1.0000	A607-60 (60 ksi)
L8	112.0000-105.0000	7.0000	3.75	18	27.9508	29.1410	0.2500	1.0000	A607-60 (60 ksi)
L9	105.0000-103.7500	5.0000	0.00	18	28.0034	28.8536	0.3125	1.2500	A607-60 (60 ksi)
L10	103.7500-98.7500	5.0000	0.00	18	28.8536	29.7039	0.3125	1.2500	A607-60 (60 ksi)
L11	98.7500-93.7500	5.0000	0.00	18	29.7039	30.5541	0.3125	1.2500	A607-60 (60 ksi)
L12	93.7500-89.8300	3.9200	0.00	18	30.5541	31.2207	0.3125	1.2500	A607-60 (60 ksi)
L13	89.8300-89.5800	0.2500	0.00	18	31.2207	31.2632	0.3187	1.2750	A607-60 (60 ksi)
L14	89.5800-88.2500	1.3300	0.00	18	31.2632	31.4893	0.3187	1.2750	A607-60 (60 ksi)
L15	88.2500-88.0000	0.2500	0.00	18	31.4893	31.5319	0.5125	2.0500	A607-60 (60 ksi)
L16	88.0000-86.0000	2.0000	0.00	18	31.5319	31.8719	0.5125	2.0500	A607-60 (60 ksi)
L17	86.0000-85.7500	0.2500	0.00	18	31.8719	31.9145	0.5125	2.0500	A607-60 (60 ksi)
L18	85.7500-84.3300	1.4200	0.00	18	31.9145	32.1559	0.5125	2.0500	A607-60 (60 ksi)
L19	84.3300-84.0800	0.2500	0.00	18	32.1559	32.1984	0.4750	1.9000	A607-60 (60 ksi)
L20	84.0800-79.0800	5.0000	0.00	18	32.1984	33.0487	0.4625	1.8500	A607-60 (60 ksi)
L21	79.0800-73.7500	5.3300	4.25	18	33.0487	33.9550	0.4625	1.8500	A607-60 (60 ksi)
L22	73.7500-72.7500	5.2500	0.00	18	32.6073	33.5000	0.5625	2.2500	A607-60 (60 ksi)
L23	72.7500-67.7500	5.0000	0.00	18	33.5000	34.3502	0.5625	2.2500	A607-60 (60 ksi)
L24	67.7500-63.0800	4.6700	0.00	18	34.3502	35.1442	0.5500	2.2000	A607-60 (60 ksi)
L25	63.0800-62.8300	0.2500	0.00	18	35.1442	35.1867	0.7125	2.8500	A607-60 (60 ksi)
L26	62.8300-57.8300	5.0000	0.00	18	35.1867	36.0369	0.7000	2.8000	A607-60 (60 ksi)
L27	57.8300-52.8300	5.0000	0.00	18	36.0369	36.8871	0.6875	2.7500	A607-60 (60 ksi)
L28	52.8300-47.8300	5.0000	0.00	18	36.8871	37.7372	0.6875	2.7500	A607-60 (60 ksi)
L29	47.8300-42.7500	5.0800	4.75	18	37.7372	38.6010	0.6750	2.7000	A607-60 (60 ksi)
L30	42.7500-42.5000	5.0000	0.00	18	37.0433	37.8935	0.7500	3.0000	A607-60 (60 ksi)
L31	42.5000-37.5000	5.0000	0.00	18	37.8935	38.7437	0.7375	2.9500	A607-60 (60 ksi)
L32	37.5000-32.7500	4.7500	0.00	18	38.7437	39.5514	0.7375	2.9500	A607-60 (60 ksi)
L33	32.7500-32.5000	0.2500	0.00	18	39.5514	39.5939	0.7875	3.1500	A607-60 (60 ksi)
L34	32.5000-27.5000	5.0000	0.00	18	39.5939	40.4440	0.7750	3.1000	A607-60 (60 ksi)
L35	27.5000-22.5000	5.0000	0.00	18	40.4440	41.2942	0.7625	3.0500	A607-60 (60 ksi)
L36	22.5000-17.5000	5.0000	0.00	18	41.2942	42.1444	0.7625	3.0500	A607-60 (60 ksi)
L37	17.5000-12.5000	5.0000	0.00	18	42.1444	42.9946	0.7500	3.0000	A607-60 (60 ksi)
L38	12.5000-8.2500	4.2500	0.00	18	42.9946	43.7172	0.7375	2.9500	A607-60 (60 ksi)
L39	8.2500-8.0000	0.2500	0.00	18	43.7172	43.7597	0.8000	3.2000	A607-60 (60 ksi)
L40	8.0000-6.2500	1.7500	0.00	18	43.7597	44.0573	0.7875	3.1500	A607-60 (60 ksi)
L41	6.2500-6.0000	0.2500	0.00	18	44.0573	44.0998	0.7750	3.1000	A607-60

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L42	6.0000-3.2500	2.7500	0.00	18	44.0998	44.5674	0.7625	3.0500	(60 ksi) A607-60 (60 ksi)
L43	3.2500-3.0000	0.2500	0.00	18	44.5674	44.6099	0.7625	3.0500	A607-60 (60 ksi)
L44	3.0000-0.0000	3.0000		18	44.6099	45.1200	0.7500	3.0000	A607-60 (60 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	23.2026	17.9332	1157.2217	8.0230	11.6079	99.6929	2315.9660	8.9683	3.5816	14.326
L2	23.2026	17.9332	1157.2217	8.0230	11.6079	99.6929	2315.9660	8.9683	3.5816	14.326
	24.0659	18.6078	1292.7845	8.3248	12.0397	107.3766	2587.2701	9.3057	3.7312	14.925
L3	24.0659	18.6078	1292.7845	8.3248	12.0397	107.3766	2587.2701	9.3057	3.7312	14.925
	24.9291	19.2823	1438.5413	8.6266	12.4716	115.3455	2878.9755	9.6430	3.8809	15.523
L4	24.9291	19.2823	1438.5413	8.6266	12.4716	115.3455	2878.9755	9.6430	3.8809	15.523
	25.7923	19.9569	1594.8616	8.9284	12.9034	123.5997	3191.8218	9.9803	4.0305	16.122
L5	25.7923	19.9569	1594.8616	8.9284	12.9034	123.5997	3191.8218	9.9803	4.0305	16.122
	26.6556	20.6315	1762.1150	9.2302	13.3353	132.1391	3526.5486	10.3177	4.1801	16.72
L6	26.6556	20.6315	1762.1150	9.2302	13.3353	132.1391	3526.5486	10.3177	4.1801	16.72
	27.5188	21.3060	1940.6709	9.5320	13.7672	140.9638	3883.8954	10.6550	4.3297	17.319
L7	27.5188	21.3060	1940.6709	9.5320	13.7672	140.9638	3883.8954	10.6550	4.3297	17.319
	28.3820	21.9806	2130.8990	9.8338	14.1990	150.0736	4264.6019	10.9924	4.4793	17.917
L8	28.3820	21.9806	2130.8990	9.8338	14.1990	150.0736	4264.6019	10.9924	4.4793	17.917
	29.5905	22.9250	2417.5313	10.2563	14.8036	163.3067	4838.2436	11.4647	4.6888	18.755
L9	29.0829	27.4659	2660.7626	9.8303	14.2257	187.0387	5325.0263	13.7356	4.3786	14.012
	29.2988	28.3092	2913.4546	10.1321	14.6576	198.7669	5830.7427	14.1573	4.5282	14.49
L10	29.2988	28.3092	2913.4546	10.1321	14.6576	198.7669	5830.7427	14.1573	4.5282	14.49
	30.1621	29.1526	3181.6592	10.4339	15.0896	210.8516	6367.5050	14.5791	4.6779	14.969
L11	30.1621	29.1526	3181.6592	10.4339	15.0896	210.8516	6367.5050	14.5791	4.6779	14.969
	31.0254	29.9959	3465.8387	10.7358	15.5215	223.2931	6936.2378	15.0008	4.8275	15.448
L12	31.0254	29.9959	3465.8387	10.7358	15.5215	223.2931	6936.2378	15.0008	4.8275	15.448
	31.7023	30.6570	3700.1069	10.9724	15.8601	233.2966	7405.0825	15.3314	4.9448	15.823
L13	31.7023	31.2639	3771.8200	10.9702	15.8601	237.8182	7548.6030	15.6349	4.9338	15.479
	31.7455	31.3069	3787.4078	10.9853	15.8817	238.4763	7579.7992	15.6564	4.9413	15.502
L14	31.7455	31.3069	3787.4078	10.9853	15.8817	238.4763	7579.7992	15.6564	4.9413	15.502
	31.9751	31.5357	3871.0584	11.0656	15.9966	241.9928	7747.2103	15.7708	4.9811	15.627
L15	31.9751	50.3893	6108.7122	10.9968	15.9966	381.8760	12225.4624	25.1994	4.6401	9.054
	32.0183	50.4584	6133.8966	11.0119	16.0182	382.9334	12275.8643	25.2340	4.6476	9.068
L16	32.0183	50.4584	6133.8966	11.0119	16.0182	382.9334	12275.8643	25.2340	4.6476	9.068
	32.3636	51.0116	6337.8697	11.1326	16.1909	391.4453	12684.0789	25.5107	4.7075	9.185
L17	32.3636	51.0116	6337.8697	11.1326	16.1909	391.4453	12684.0789	25.5107	4.7075	9.185
	32.4068	51.0808	6363.6796	11.1477	16.2125	392.5158	12735.7326	25.5452	4.7149	9.2
L18	32.4068	51.0808	6363.6796	11.1477	16.2125	392.5158	12735.7326	25.5452	4.7149	9.2
	32.6520	51.4736	6511.6116	11.2334	16.3352	398.6244	13031.7914	25.7417	4.7574	9.283
L19	32.6520	47.7637	6056.6341	11.2467	16.3352	370.7718	12121.2377	23.8864	4.8234	10.155
	32.6951	47.8278	6081.0481	11.2618	16.3568	371.7749	12170.0978	23.9185	4.8309	10.17
L20	32.6951	46.5876	5928.0224	11.2663	16.3568	362.4194	11863.8451	23.2982	4.8529	10.493
	33.5585	47.8357	6417.3479	11.5681	16.7887	382.2417	12843.1400	23.9224	5.0026	10.816
L21	33.5585	47.8357	6417.3479	11.5681	16.7887	382.2417	12843.1400	23.9224	5.0026	10.816
	34.4788	49.1662	6967.8502	11.8898	17.2491	403.9535	13944.8690	24.5877	5.1621	11.161

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L22	33.8441	57.2120	7422.3235	11.3759	16.5645	448.0859	14854.4135	28.6114	4.7489	8.442
	34.0168	58.8058	8060.0587	11.6928	17.0180	473.6198	16130.7230	29.4085	4.9060	8.722
L23	34.0168	58.8058	8060.0587	11.6928	17.0180	473.6198	16130.7230	29.4085	4.9060	8.722
	34.8801	60.3236	8700.4359	11.9946	17.4499	498.5958	17412.3201	30.1675	5.0556	8.988
L24	34.8801	59.0049	8516.5382	11.9991	17.4499	488.0572	17044.2827	29.5081	5.0776	9.232
	35.6864	60.3911	9130.9800	12.2809	17.8533	511.4461	18273.9747	30.2013	5.2174	9.486
L25	35.6864	77.8665	11662.8608	12.2233	17.8533	653.2623	23341.0679	38.9406	4.9314	6.921
	35.7295	77.9626	11706.1096	12.2383	17.8749	654.8926	23427.6225	38.9887	4.9389	6.932
L26	35.7295	76.6226	11513.2540	12.2428	17.8749	644.1034	23041.6574	38.3186	4.9609	7.087
	36.5928	78.5115	12385.8948	12.5446	18.3067	676.5757	24788.0872	39.2632	5.1105	7.301
L27	36.5928	77.1368	12177.6320	12.5490	18.3067	665.1994	24371.2877	38.5757	5.1325	7.465
	37.4561	78.9920	13077.5658	12.8508	18.7386	697.8935	26172.3394	39.5035	5.2821	7.683
L28	37.4561	78.9920	13077.5658	12.8508	18.7386	697.8935	26172.3394	39.5035	5.2821	7.683
	38.3194	80.8471	14020.7791	13.1527	19.1705	731.3722	28060.0071	40.4313	5.4318	7.901
L29	38.3194	79.4040	13779.7937	13.1571	19.1705	718.8016	27577.7192	39.7095	5.4538	8.08
	39.1965	81.2546	14765.8777	13.4637	19.6093	753.0035	29551.1848	40.6350	5.6058	8.305
L30	38.4349	86.3963	14377.6005	12.8841	18.8180	764.0338	28774.1194	43.2064	5.1996	6.933
	38.4781	88.4201	15411.8439	13.1859	19.2499	800.6192	30843.9670	44.2185	5.3493	7.132
L31	38.4781	86.9757	15170.2854	13.1904	19.2499	788.0707	30360.5322	43.4961	5.3713	7.283
	39.3414	88.9658	16235.6383	13.4922	19.6818	824.9064	32492.6399	44.4914	5.5209	7.486
L32	39.3414	88.9658	16235.6383	13.4922	19.6818	824.9064	32492.6399	44.4914	5.5209	7.486
	40.1615	90.8564	17292.8564	13.7789	20.0921	860.6799	34608.4671	45.4369	5.6630	7.679
L33	40.1615	96.8912	18393.9845	13.7612	20.0921	915.4840	36812.1723	48.4548	5.5750	7.079
	40.2047	96.9975	18454.5642	13.7763	20.1137	917.5129	36933.4114	48.5080	5.5825	7.089
L34	40.2047	95.4886	18179.1905	13.7807	20.1137	903.8221	36382.3017	47.7534	5.6045	7.232
	41.0680	97.5799	19399.9725	14.0825	20.5456	944.2411	38825.4720	48.7992	5.7542	7.425
L35	41.0680	96.0363	19105.1188	14.0869	20.5456	929.8899	38235.3766	48.0273	5.7762	7.575
	41.9312	98.0938	20359.5932	14.3888	20.9775	970.5462	40745.9762	49.0562	5.9258	7.772
L36	41.9312	98.0938	20359.5932	14.3888	20.9775	970.5462	40745.9762	49.0562	5.9258	7.772
	42.7945	100.1514	21667.8152	14.6906	21.4093	1012.0726	43364.1415	50.0852	6.0754	7.968
L37	42.7945	98.5393	21331.9243	14.6950	21.4093	996.3836	42691.9177	49.2790	6.0974	8.13
	43.6578	100.5632	22673.4758	14.9968	21.8412	1038.1040	45376.7859	50.2911	6.2470	8.329
L38	43.6578	98.9164	22315.3819	15.0013	21.8412	1021.7087	44660.1270	49.4676	6.2690	8.5
	44.3916	100.6080	23479.9355	15.2578	22.2083	1057.2574	46990.7666	50.3136	6.3962	8.673
L39	44.3916	108.9754	25358.8097	15.2356	22.2083	1141.8596	50750.9871	54.4980	6.2862	7.858

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	44.4348	109.0833	25434.2354	15.2507	22.2299	1144.1433	50901.9378	54.5520	6.2937	7.867
L40	44.4348	107.4101	25058.6867	15.2551	22.2299	1127.2495	50150.3463	53.7153	6.3157	8.02
	44.7369	108.1539	25582.8560	15.3608	22.3811	1143.0563	51199.3746	54.0872	6.3681	8.086
L41	44.7369	106.4679	25198.6048	15.3652	22.3811	1125.8877	50430.3666	53.2441	6.3901	8.245
	44.7801	106.5725	25272.9230	15.3803	22.4027	1128.1198	50579.1008	53.2964	6.3976	8.255
L42	44.7801	104.8838	24886.8237	15.3847	22.4027	1110.8853	49806.3941	52.4519	6.4196	8.419
	45.2549	106.0155	25701.1102	15.5507	22.6402	1135.1964	51436.0386	53.0178	6.5019	8.527
L43	45.2549	106.0155	25701.1102	15.5507	22.6402	1135.1964	51436.0386	53.0178	6.5019	8.527
	45.2981	106.1184	25776.0052	15.5658	22.6618	1137.4196	51585.9272	53.0693	6.5093	8.537
L44	45.2981	104.4085	25375.1372	15.5703	22.6618	1119.7304	50783.6636	52.2142	6.5313	8.708
	45.8160	105.6228	26270.8377	15.7514	22.9210	1146.1491	52576.2433	52.8214	6.6211	8.828

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	Double Angle Stitch Bolt Spacing Redundants in
L1 147.0000-142.0000				1	1	1			
L2 142.0000-137.0000				1	1	1			
L3 137.0000-132.0000				1	1	1			
L4 132.0000-127.0000				1	1	1			
L5 127.0000-122.0000				1	1	1			
L6 122.0000-117.0000				1	1	1			
L7 117.0000-112.0000				1	1	1			
L8 112.0000-105.0000				1	1	1			
L9 105.0000-103.7500				1	1	1			
L10 103.7500-98.7500				1	1	1			
L11 98.7500-93.7500				1	1	1			
L12 93.7500-89.8300				1	1	1			
L13 89.8300-89.5800				1	1	1.16107			
L14 89.5800-88.2500				1	1	1.15976			
L15 88.2500-88.0000				1	1	0.94962			
L16 88.0000-86.0000				1	1	0.945934			
L17 86.0000-85.7500				1	1	1.05609			
L18 85.7500-84.3300				1	1	1.05269			
L19 84.3300-84.0800				1	1	1.01567			
L20 84.0800-79.0800				1	1	1.03314			

Tower Elevation ft	Gusset Area (per face) ft²	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	Double Angle Stitch Bolt Spacing Redundants in
L21 79.0800-73.7500				1	1	1.03113			
L22 73.7500-72.7500				1	1	0.958709			
L23 72.7500-67.7500				1	1	0.951361			
L24 67.7500-63.0800				1	1	0.965948			
L25 63.0800-62.8300				1	1	0.979776			
L26 62.8300-57.8300				1	1	0.985815			
L27 57.8300-52.8300				1	1	0.992629			
L28 52.8300-47.8300				1	1	0.982368			
L29 47.8300-42.7500				1	1	0.99955			
L30 42.7500-42.5000				1	1	0.983527			
L31 42.5000-37.5000				1	1	0.990764			
L32 37.5000-32.7500				1	1	0.982492			
L33 32.7500-32.5000				1	1	0.986624			
L34 32.5000-27.5000				1	1	0.992833			
L35 27.5000-22.5000				1	1	0.999667			
L36 22.5000-17.5000				1	1	0.990917			
L37 17.5000-12.5000				1	1	0.998599			
L38 12.5000-8.2500				1	1	1.00813			
L39 8.2500-8.0000				1	1	1.03394			
L40 8.0000-6.2500				1	1	1.04664			
L41 6.2500-6.0000				1	1	1.00971			
L42 6.0000-3.2500				1	1	1.02114			
L43 3.2500-3.0000				1	1	0.994201			
L44 3.0000-0.0000				1	1	1.00557			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
HB058-M12-XXXF(5/8)	C	No	CaAa (Out Of Face)	90.5000 - 0.0000	1	No Ice	0.0000	0.24
						1/2" Ice	0.0000	1.06
						1" Ice	0.0000	2.49
HB058-M12-XXXF(5/8)	C	No	CaAa (Out Of Face)	147.0000 - 90.5000	1	No Ice	0.0840	0.24
						1/2" Ice	0.1840	1.06
						1" Ice	0.2840	2.49
HB114-1-0813U4-M5J(1-1/4)	C	No	Inside Pole	147.0000 - 0.0000	3	No Ice	0.0000	1.20
						1/2" Ice	0.0000	1.20
						1" Ice	0.0000	1.20

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
AVA7-50(1-5/8)	C	No	CaAa (Out Of Face)	135.0000 - 0.0000	1	No Ice	0.2010	0.70
						1/2" Ice	0.3010	2.23
						1" Ice	0.4010	4.38
AVA7-50(1-5/8)	C	No	CaAa (Out Of Face)	135.0000 - 0.0000	5	No Ice	0.0000	0.70
						1/2" Ice	0.0000	2.23
						1" Ice	0.0000	4.38
1.2 MASTERLINE EXTREME HYBRID(1-3/16)	C	No	Inside Pole	135.0000 - 0.0000	1	No Ice	0.0000	0.95
						1/2" Ice	0.0000	0.95
						1" Ice	0.0000	0.95
***								
LDF7-50A(1-5/8)	C	No	Inside Pole	116.0000 - 0.0000	6	No Ice	0.0000	0.82
						1/2" Ice	0.0000	0.82
						1" Ice	0.0000	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	116.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	116.0000 - 0.0000	1	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
***								
LDF2-50A(3/8)	C	No	Inside Pole	106.0000 - 0.0000	1	No Ice	0.0000	0.08
						1/2" Ice	0.0000	0.08
						1" Ice	0.0000	0.08
LDF6-50A(1-1/4)	C	No	Inside Pole	106.0000 - 0.0000	12	No Ice	0.0000	0.60
						1/2" Ice	0.0000	0.60
						1" Ice	0.0000	0.60
6-8AWG 3 PAIR(7/8)	C	No	Inside Pole	106.0000 - 0.0000	2	No Ice	0.0000	0.68
						1/2" Ice	0.0000	0.68
						1" Ice	0.0000	0.68
A-DQZNB2YN1750N(17/64)	C	No	Inside Pole	106.0000 - 0.0000	1	No Ice	0.0000	0.03
						1/2" Ice	0.0000	0.03
						1" Ice	0.0000	0.03
6-8AWG 3 PAIR(7/8)	C	No	Inside Pole	106.0000 - 0.0000	2	No Ice	0.0000	0.68
						1/2" Ice	0.0000	0.68
						1" Ice	0.0000	0.68
A-DQZNB2YN1750N(17/64)	C	No	Inside Pole	106.0000 - 0.0000	1	No Ice	0.0000	0.03
						1/2" Ice	0.0000	0.03
						1" Ice	0.0000	0.03
***								
Aero MP3-05	C	No	CaAa (Out Of Face)	90.5000 - 0.0000	1	No Ice	0.3478	0.00
						1/2" Ice	0.4001	0.00
						1" Ice	0.6566	0.00
1 1/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	35.0000 - 0.0000	1	No Ice	0.2083	0.00
						1/2" Ice	0.3194	0.00
						1" Ice	0.4306	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	65.0000 - 35.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	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	147.0000-142.0000	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	0.420	0.02
L2	142.0000-137.0000	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	0.420	0.02
L3	137.0000-132.0000	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	1.023	0.03
L4	132.0000-127.0000	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	1.425	0.04

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
L5	127.0000-122.0000	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	1.425	0.04
L6	122.0000-117.0000	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	1.425	0.04
L7	117.0000-112.0000	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	1.425	0.08
L8	112.0000-105.0000	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	1.995	0.13
L9	105.0000-103.7500	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	0.356	0.03
L10	103.7500-98.7500	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	1.425	0.13
L11	98.7500-93.7500	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	1.425	0.13
L12	93.7500-89.8300	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	1.294	0.10
L13	89.8300-89.5800	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	0.137	0.01
L14	89.5800-88.2500	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	0.730	0.04
L15	88.2500-88.0000	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	0.137	0.01
L16	88.0000-86.0000	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	1.098	0.05
L17	86.0000-85.7500	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	0.137	0.01
L18	85.7500-84.3300	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	0.779	0.04
L19	84.3300-84.0800	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	0.137	0.01
L20	84.0800-79.0800	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	2.744	0.13
L21	79.0800-73.7500	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	2.925	0.14
L22	73.7500-72.7500	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	0.549	0.03
L23	72.7500-67.7500	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	2.744	0.13
L24	67.7500-63.0800	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	2.883	0.12
L25	63.0800-62.8300	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	0.179	0.01
L26	62.8300-57.8300	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	3.577	0.13
L27	57.8300-52.8300	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	3.577	0.13

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
L28	52.8300-47.8300	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	3.577	0.13
L29	47.8300-42.7500	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	3.635	0.13
L30	42.7500-42.5000	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	0.179	0.01
L31	42.5000-37.5000	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	3.577	0.13
L32	37.5000-32.7500	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	3.492	0.13
L33	32.7500-32.5000	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	0.189	0.01
L34	32.5000-27.5000	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	3.786	0.13
L35	27.5000-22.5000	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	3.786	0.13
L36	22.5000-17.5000	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	3.786	0.13
L37	17.5000-12.5000	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	3.786	0.13
L38	12.5000-8.2500	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	3.218	0.11
L39	8.2500-8.0000	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	0.189	0.01
L40	8.0000-6.2500	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	1.325	0.05
L41	6.2500-6.0000	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	0.189	0.01
L42	6.0000-3.2500	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	2.082	0.07
L43	3.2500-3.0000	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	0.189	0.01
L44	3.0000-0.0000	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	2.271	0.08

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	147.0000-142.0000	A	1.739	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	2.159	0.05
L2	142.0000-137.0000	A	1.733	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	2.153	0.05
L3	137.0000-132.0000	A	1.726	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	3.785	0.21

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L4	132.0000-127.0000	A	1.720	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	4.864	0.32
L5	127.0000-122.0000	A	1.713	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	4.851	0.31
L6	122.0000-117.0000	A	1.706	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	4.837	0.31
L7	117.0000-112.0000	A	1.699	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	4.822	0.34
L8	112.0000-105.0000	A	1.690	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	6.726	0.50
L9	105.0000-103.7500	A	1.683	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	1.201	0.10
L10	103.7500-98.7500	A	1.678	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	4.781	0.39
L11	98.7500-93.7500	A	1.669	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	4.764	0.39
L12	93.7500-89.8300	A	1.662	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	3.982	0.31
L13	89.8300-89.5800	A	1.658	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	0.334	0.02
L14	89.5800-88.2500	A	1.656	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	1.775	0.10
L15	88.2500-88.0000	A	1.655	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	0.334	0.02
L16	88.0000-86.0000	A	1.653	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	2.666	0.16
L17	86.0000-85.7500	A	1.651	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	0.333	0.02
L18	85.7500-84.3300	A	1.649	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	1.891	0.11
L19	84.3300-84.0800	A	1.647	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	0.333	0.02
L20	84.0800-79.0800	A	1.642	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	6.643	0.39
L21	79.0800-73.7500	A	1.631	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	7.058	0.41
L22	73.7500-72.7500	A	1.625	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	1.324	0.08
L23	72.7500-67.7500	A	1.618	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	6.592	0.38
L24	67.7500-63.0800	A	1.606	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	7.139	0.35
L25	63.0800-62.8300	A	1.600	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	0.458	0.02
L26	62.8300-57.8300	A	1.593	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	9.144	0.38

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L27	57.8300-52.8300	A	1.580	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	9.100	0.37
L28	52.8300-47.8300	A	1.565	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	9.052	0.37
L29	47.8300-42.7500	A	1.548	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	9.143	0.37
L30	42.7500-42.5000	A	1.539	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	0.450	0.02
L31	42.5000-37.5000	A	1.529	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	8.937	0.36
L32	37.5000-32.7500	A	1.509	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	8.524	0.34
L33	32.7500-32.5000	A	1.498	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	0.452	0.02
L34	32.5000-27.5000	A	1.486	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	9.006	0.35
L35	27.5000-22.5000	A	1.459	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	8.919	0.35
L36	22.5000-17.5000	A	1.427	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	8.815	0.34
L37	17.5000-12.5000	A	1.386	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	8.685	0.33
L38	12.5000-8.2500	A	1.336	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	7.245	0.28
L39	8.2500-8.0000	A	1.304	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	0.421	0.02
L40	8.0000-6.2500	A	1.287	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	2.928	0.11
L41	6.2500-6.0000	A	1.268	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	0.415	0.02
L42	6.0000-3.2500	A	1.232	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	4.504	0.17
L43	3.2500-3.0000	A	1.185	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	0.402	0.01
L44	3.0000-0.0000	A	1.101	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	4.660	0.17

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	147.0000-142.0000	-0.1029	0.0594	-0.4002	0.2310
L2	142.0000-137.0000	-0.1031	0.0595	-0.4034	0.2329
L3	137.0000-132.0000	-0.2389	0.1379	-0.6426	0.3710
L4	132.0000-127.0000	-0.3213	0.1855	-0.7799	0.4502

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L5	127.0000-122.0000	-0.3225	0.1862	-0.7882	0.4551
L6	122.0000-117.0000	-0.3237	0.1869	-0.7961	0.4596
L7	117.0000-112.0000	-0.3249	0.1876	-0.8035	0.4639
L8	112.0000-105.0000	-0.3261	0.1883	-0.8117	0.4686
L9	105.0000-103.7500	-0.3264	0.1884	-0.8136	0.4697
L10	103.7500-98.7500	-0.3270	0.1888	-0.8161	0.4712
L11	98.7500-93.7500	-0.3279	0.1893	-0.8220	0.4746
L12	93.7500-89.8300	-0.3754	0.2167	-0.8700	0.5023
L13	89.8300-89.5800	-0.5814	0.3357	-1.0613	0.6127
L14	89.5800-88.2500	-0.5818	0.3359	-1.0627	0.6136
L15	88.2500-88.0000	-0.5822	0.3362	-1.0641	0.6144
L16	88.0000-86.0000	-0.5828	0.3365	-1.0662	0.6156
L17	86.0000-85.7500	-0.5834	0.3368	-1.0682	0.6167
L18	85.7500-84.3300	-0.5839	0.3371	-1.0696	0.6175
L19	84.3300-84.0800	-0.5843	0.3373	-1.0711	0.6184
L20	84.0800-79.0800	-0.5857	0.3381	-1.0755	0.6209
L21	79.0800-73.7500	-0.5882	0.3396	-1.0838	0.6257
L22	73.7500-72.7500	-0.5880	0.3395	-1.0828	0.6251
L23	72.7500-67.7500	-0.5894	0.3403	-1.0859	0.6269
L24	67.7500-63.0800	-0.6532	0.3771	-1.2152	0.7016
L25	63.0800-62.8300	-0.7379	0.4260	-1.3749	0.7938
L26	62.8300-57.8300	-0.7397	0.4271	-1.3803	0.7969
L27	57.8300-52.8300	-0.7430	0.4290	-1.3898	0.8024
L28	52.8300-47.8300	-0.7462	0.4308	-1.3985	0.8075
L29	47.8300-42.7500	-0.7493	0.4326	-1.4064	0.8120
L30	42.7500-42.5000	-0.7482	0.4320	-1.4021	0.8095
L31	42.5000-37.5000	-0.7498	0.4329	-1.4030	0.8100
L32	37.5000-32.7500	-0.7698	0.4445	-1.4192	0.8194
L33	32.7500-32.5000	-0.7900	0.4561	-1.4333	0.8275
L34	32.5000-27.5000	-0.7916	0.4570	-1.4356	0.8289
L35	27.5000-22.5000	-0.7946	0.4588	-1.4388	0.8307
L36	22.5000-17.5000	-0.7975	0.4605	-1.4396	0.8311
L37	17.5000-12.5000	-0.8004	0.4621	-1.4370	0.8297
L38	12.5000-8.2500	-0.8029	0.4636	-1.4297	0.8254
L39	8.2500-8.0000	-0.8041	0.4642	-1.4232	0.8217
L40	8.0000-6.2500	-0.8046	0.4646	-1.4192	0.8194
L41	6.2500-6.0000	-0.8052	0.4649	-1.4145	0.8166
L42	6.0000-3.2500	-0.8059	0.4653	-1.4050	0.8112
L43	3.2500-3.0000	-0.8067	0.4658	-1.3909	0.8031
L44	3.0000-0.0000	-0.8075	0.4662	-1.3633	0.7871

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
***									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
800 EXTERNAL NOTCH FILTER	A	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	B	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	C	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	0.6601 0.7627 0.8727	0.3211 0.3983 0.4830	0.01 0.02 0.02
800MHZ RRH	A	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	B	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
800MHZ RRH	C	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	2.1342 2.3195 2.5123	1.7730 1.9461 2.1267	0.05 0.07 0.10
1900MHZ RRH (65MHZ)	A	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2360 2.4385 2.6485	0.06 0.08 0.11
1900MHZ RRH (65MHZ)	B	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2360 2.4385 2.6485	0.06 0.08 0.11
1900MHZ RRH (65MHZ)	C	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2360 2.4385 2.6485	0.06 0.08 0.11
(3) ACU-A20-N	A	From Leg	4.0000	0.0000	147.0000	No Ice	0.0667	0.1167	0.00

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 -1.00			1/2" Ice 1" Ice	0.1037 0.1481	0.1620 0.2148	0.00 0.00
(3) ACU-A20-N	B	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
(3) ACU-A20-N	C	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	0.0667 0.1037 0.1481	0.1167 0.1620 0.2148	0.00 0.00 0.00
TD-RRH8X20-25	A	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8X20-25	B	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
TD-RRH8X20-25	C	From Leg	4.0000 0.00 -1.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
(2) 2.375" OD x 6' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
(2) 2.375" OD x 6' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
(2) 2.375" OD x 6' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	1.4250 1.9250 2.2939	1.4250 1.9250 2.2939	0.03 0.04 0.05
Platform Mount [LP 1201-1]	C	None		0.0000	147.0000	No Ice 1/2" Ice 1" Ice	23.1000 26.8000 30.5000	23.1000 26.8000 30.5000	2.10 2.50 2.90
Miscellaneous [NA 507-1]	C	From Leg	0.0000 0.00 -4.00	0.0000	147.0000	No Ice 1/2" Ice 1" Ice	4.8000 6.7000 8.6000	4.8000 6.7000 8.6000	0.25 0.29 0.34
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	6.3292 6.7751 7.2137	5.6424 6.4259 7.1313	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23

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
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	6.3186 6.7646 7.2032	5.6334 6.4160 7.1208	0.11 0.17 0.23
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	11.6828 12.4043 13.1351	9.8418 11.3657 12.9138	0.08 0.17 0.27
ATSBT-TOP-MF-4G	A	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	0.1736 0.2291 0.2921	0.0949 0.1399 0.1934	0.00 0.00 0.01
ATSBT-TOP-MF-4G	B	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	0.1736 0.2291 0.2921	0.0949 0.1399 0.1934	0.00 0.00 0.01
ATSBT-TOP-MF-4G	C	From Leg	4.0000 0.00 0.00	0.0000	135.0000	No Ice 1/2" Ice 1" Ice	0.1736 0.2291 0.2921	0.0949 0.1399 0.1934	0.00 0.00 0.01
T-Arm Mount [TA 602-3]	C	None		0.0000	135.0000	No Ice 1/2" Ice 1" Ice	11.5900 15.4400 19.2900	11.5900 15.4400 19.2900	0.77 0.99 1.21
***									
(2) LPA-80080/4CF w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	2.8561 3.2195 3.5922	6.5689 7.1948 7.8369	0.03 0.08 0.13
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	9.8309 10.3998 10.9334	10.2155 11.3844 12.2686	0.05 0.14 0.25
(2) APL868013 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	3.1042 3.4760 3.8483	4.8023 5.4160 6.0401	0.02 0.06 0.11
DB-T1-6Z-8AB-0Z	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	4.8000 5.0704 5.3481	2.0000 2.1926 2.3926	0.04 0.08 0.12
(2) CLEARGAIN DUAL BAND 800/1900 MHZ	B	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	1.3234 1.4680 1.6199	0.6871 0.8014 0.9232	0.02 0.03 0.05
HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	8.7655 9.3417 9.8885	6.9629 8.1817 9.1436	0.07 0.14 0.21
HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	8.7655 9.3417 9.8885	6.9629 8.1817 9.1436	0.07 0.14 0.21
HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	8.7655 9.3417 9.8885	6.9629 8.1817 9.1436	0.07 0.14 0.21

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
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	8.3995 8.9639 9.4943	7.0730 8.2637 9.1753	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	8.3995 8.9639 9.4943	7.0730 8.2637 9.1753	0.07 0.14 0.21
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	8.3995 8.9639 9.4943	7.0730 8.2637 9.1753	0.07 0.14 0.21
RRH2X60-700	A	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	1.8157 2.0519 2.2894	0.06 0.08 0.11
RRH2X60-700	B	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	1.8157 2.0519 2.2894	0.06 0.08 0.11
RRH2X60-700	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	3.5002 3.7609 4.0285	1.8157 2.0519 2.2894	0.06 0.08 0.11
RRH2X60-PCS	A	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.7233 1.9015 2.0870	0.06 0.08 0.10
RRH2X60-PCS	B	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.7233 1.9015 2.0870	0.06 0.08 0.10
RRH2X60-PCS	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	2.2000 2.3926 2.5926	1.7233 1.9015 2.0870	0.06 0.08 0.10
RRH4X45-AWS4 B66	A	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	2.6600 2.8781 3.1037	1.5861 1.7690 1.9588	0.06 0.08 0.11
RRH4X45-AWS4 B66	B	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	2.6600 2.8781 3.1037	1.5861 1.7690 1.9588	0.06 0.08 0.11
RRH4X45-AWS4 B66	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	2.6600 2.8781 3.1037	1.5861 1.7690 1.9588	0.06 0.08 0.11
DB-T1-6Z-8AB-0Z	C	From Leg	4.0000 0.00 0.00	0.0000	116.0000	No Ice 1/2" Ice 1" Ice	4.8000 5.0704 5.3481	2.0000 2.1926 2.3926	0.04 0.08 0.12
Platform Mount [LP 1201-1]	C	None		0.0000	116.0000	No Ice 1/2" Ice 1" Ice	23.1000 26.8000 30.5000	23.1000 26.8000 30.5000	2.10 2.50 2.90
***									
7770.00 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16

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
7770.00 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.7460 6.1791 6.6067	4.2543 5.0137 5.7109	0.06 0.10 0.16
SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
SBNHH-1D65A w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
SBNHH-1D65A w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.8154 6.2024 6.5968	5.0515 5.7157 6.3790	0.06 0.11 0.17
(3) LGP21401	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
(3) LGP21401	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
(3) LGP21401	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	1.1040 1.2388 1.3810	0.3471 0.4422 0.5444	0.01 0.02 0.03
RRUS 11	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 11	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.7908 2.9984 3.2134	1.1923 1.3395 1.4957	0.05 0.07 0.10
RRUS 12	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	3.1450 3.3648 3.5920	1.2854 1.4379 1.5998	0.06 0.08 0.11
RRUS 12	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	3.1450 3.3648 3.5920	1.2854 1.4379 1.5998	0.06 0.08 0.11
RRUS 12	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	3.1450 3.3648 3.5920	1.2854 1.4379 1.5998	0.06 0.08 0.11
RRUS A2	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.0663 2.2451 2.4313	0.4988 0.6087 0.7255	0.02 0.03 0.05
RRUS A2	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.0663 2.2451 2.4313	0.4988 0.6087 0.7255	0.02 0.03 0.05
RRUS A2	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.0663 2.2451 2.4313	0.4988 0.6087 0.7255	0.02 0.03 0.05
DC6-48-60-18-8F	A	From Leg	4.0000	0.0000	106.0000	No Ice	0.9167	0.9167	0.02

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 0.00			1/2" Ice 1" Ice	1.4583 1.6431	1.4583 1.6431	0.04 0.06
TPA-65R-BU4AA-K w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	6.0727 6.7040 7.3457	0.10 0.16 0.22
TPA-65R-BU4AA-K w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	6.0727 6.7040 7.3457	0.10 0.16 0.22
TPA-65R-BU4AA-K w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	5.2316 5.6179 6.0119	6.0727 6.7040 7.3457	0.10 0.16 0.22
DBC0061F1V51-2	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	0.2133 0.2793 0.3526	0.4133 0.4959 0.5859	0.01 0.02 0.02
DBC0061F1V51-2	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	0.2133 0.2793 0.3526	0.4133 0.4959 0.5859	0.01 0.02 0.02
DBC0061F1V51-2	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	0.2133 0.2793 0.3526	0.4133 0.4959 0.5859	0.01 0.02 0.02
RADIO 4426	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	1.6444 1.8044 1.9719	0.7252 0.8421 0.9685	0.05 0.06 0.08
RADIO 4426	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	1.6444 1.8044 1.9719	0.7252 0.8421 0.9685	0.05 0.06 0.08
RADIO 4426	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	1.6444 1.8044 1.9719	0.7252 0.8421 0.9685	0.05 0.06 0.08
RRUS 32	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.8571 3.0830 3.3163	1.7766 1.9677 2.1658	0.06 0.08 0.10
RRUS 32	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.8571 3.0830 3.3163	1.7766 1.9677 2.1658	0.06 0.08 0.10
RRUS 32	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	2.8571 3.0830 3.3163	1.7766 1.9677 2.1658	0.06 0.08 0.10
(2) 7020.00	A	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	0.1021 0.1469 0.1991	0.1750 0.2393 0.3109	0.00 0.01 0.01
(2) 7020.00	B	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	0.1021 0.1469 0.1991	0.1750 0.2393 0.3109	0.00 0.01 0.01
(2) 7020.00	C	From Leg	4.0000 0.00 0.00	0.0000	106.0000	No Ice 1/2" Ice 1" Ice	0.1021 0.1469 0.1991	0.1750 0.2393 0.3109	0.00 0.01 0.01
DC6-48-60-18-8F	A	From Leg	4.0000 0.00	0.0000	106.0000	No Ice 1/2" Ice	0.9167 1.4583	0.9167 1.4583	0.02 0.04

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			1/2" Ice	1.6431	1.6431	0.06
						1" Ice			
Platform Mount [LP 1201-1]	C	None		0.0000	106.0000	No Ice	23.1000	23.1000	2.10
						1/2" Ice	26.8000	26.8000	2.50
						1" Ice	30.5000	30.5000	2.90
Miscellaneous [NA 507-2]	C	None		0.0000	106.0000	No Ice	11.1000	11.1000	0.43
						1/2" Ice	14.3000	14.3000	0.58
						1" Ice	17.5000	17.5000	0.74
Miscellaneous [NA 509-3]	C	None		0.0000	106.0000	No Ice	11.8400	11.8400	0.28
						1/2" Ice	16.9600	16.9600	0.30
						1" Ice	22.0800	22.0800	0.32
***									
OG-860/1920/GPS-A	B	From Leg	4.0000 / 0.00 / 1.00	0.0000	76.0000	No Ice	0.3077	0.3667	0.00
						1/2" Ice	0.3952	0.4572	0.01
						1" Ice	0.4897	0.5548	0.01
KS24019-L112A	C	From Leg	4.0000 / 0.00 / 1.00	0.0000	76.0000	No Ice	0.1407	0.1407	0.01
						1/2" Ice	0.1979	0.1979	0.01
						1" Ice	0.2621	0.2621	0.01
Side Arm Mount [SO 701-3]	C	None		0.0000	76.0000	No Ice	2.8300	2.8300	0.20
						1/2" Ice	3.9200	3.9200	0.24
						1" Ice	5.0100	5.0100	0.28

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 147.0000-142.0000	144.4842	1.368	33.93	9.488	A	0.000	9.488	9.488	100.00	0.000	0.000
					B	0.000	9.488		100.00	0.000	0.000
					C	0.000	9.488		100.00	0.000	0.420
L2 142.0000-137.0000	139.4848	1.357	33.68	9.848	A	0.000	9.848	9.848	100.00	0.000	0.000
					B	0.000	9.848		100.00	0.000	0.000
					C	0.000	9.848		100.00	0.000	0.420
L3 137.0000-132.0000	134.4853	1.347	33.42	10.207	A	0.000	10.207	10.207	100.00	0.000	0.000
					B	0.000	10.207		100.00	0.000	0.000
					C	0.000	10.207		100.00	0.000	1.023
L4 132.0000-127.0000	129.4858	1.336	33.15	10.567	A	0.000	10.567	10.567	100.00	0.000	0.000
					B	0.000	10.567		100.00	0.000	0.000
					C	0.000	10.567		100.00	0.000	1.425
L5 127.0000-122.0000	124.4863	1.325	32.88	10.927	A	0.000	10.927	10.927	100.00	0.000	0.000
					B	0.000	10.927		100.00	0.000	0.000
					C	0.000	10.927		100.00	0.000	1.425
L6 122.0000-117.0000	119.4867	1.314	32.60	11.286	A	0.000	11.286	11.286	100.00	0.000	0.000
					B	0.000	11.286		100.00	0.000	0.000
					C	0.000	11.286		100.00	0.000	1.425
L7 117.0000-112.0000	114.4871	1.302	32.31	11.646	A	0.000	11.646	11.646	100.00	0.000	0.000
					B	0.000	11.646		100.00	0.000	0.000
					C	0.000	11.646		100.00	0.000	1.425
L8 112.0000-105.0000	108.4757	1.287	31.94	16.909	A	0.000	16.909	16.909	100.00	0.000	0.000
					B	0.000	16.909		100.00	0.000	0.000
					C	0.000	16.909		100.00	0.000	1.995
L9 105.0000-103.7500	104.3742	1.277	31.68	3.041	A	0.000	3.041	3.041	100.00	0.000	0.000
					B	0.000	3.041		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	3.041		100.00	0.000	0.356
L10 103.7500-98.7500	101.2379	1.269	31.48	12.388	A	0.000	12.388	12.388	100.00	0.000	0.000
					B	0.000	12.388		100.00	0.000	0.000
					C	0.000	12.388		100.00	0.000	1.425
L11 98.7500-93.7500	96.2382	1.255	31.15	12.747	A	0.000	12.747	12.747	100.00	0.000	0.000
					B	0.000	12.747		100.00	0.000	0.000
					C	0.000	12.747		100.00	0.000	1.425
L12 93.7500-89.8300	91.7830	1.243	30.84	10.246	A	0.000	10.246	10.246	100.00	0.000	0.000
					B	0.000	10.246		100.00	0.000	0.000
					C	0.000	10.246		100.00	0.000	1.294
L13 89.8300-89.5800	89.7050	1.237	30.69	0.661	A	0.000	0.661	0.661	100.00	0.000	0.000
					B	0.000	0.661		100.00	0.000	0.000
					C	0.000	0.661		100.00	0.000	0.137
L14 89.5800-88.2500	88.9142	1.235	30.63	3.531	A	0.000	3.531	3.531	100.00	0.000	0.000
					B	0.000	3.531		100.00	0.000	0.000
					C	0.000	3.531		100.00	0.000	0.730
L15 88.2500-88.0000	88.1250	1.232	30.57	0.667	A	0.000	0.667	0.667	100.00	0.000	0.000
					B	0.000	0.667		100.00	0.000	0.000
					C	0.000	0.667		100.00	0.000	0.137
L16 88.0000-86.0000	86.9982	1.229	30.49	5.365	A	0.000	5.365	5.365	100.00	0.000	0.000
					B	0.000	5.365		100.00	0.000	0.000
					C	0.000	5.365		100.00	0.000	1.098
L17 86.0000-85.7500	85.8750	1.226	30.41	0.675	A	0.000	0.675	0.675	100.00	0.000	0.000
					B	0.000	0.675		100.00	0.000	0.000
					C	0.000	0.675		100.00	0.000	0.137
L18 85.7500-84.3300	85.0391	1.223	30.35	3.849	A	0.000	3.849	3.849	100.00	0.000	0.000
					B	0.000	3.849		100.00	0.000	0.000
					C	0.000	3.849		100.00	0.000	0.779
L19 84.3300-84.0800	84.2050	1.221	30.28	0.681	A	0.000	0.681	0.681	100.00	0.000	0.000
					B	0.000	0.681		100.00	0.000	0.000
					C	0.000	0.681		100.00	0.000	0.137
L20 84.0800-79.0800	81.5691	1.212	30.08	13.803	A	0.000	13.803	13.803	100.00	0.000	0.000
					B	0.000	13.803		100.00	0.000	0.000
					C	0.000	13.803		100.00	0.000	2.744
L21 79.0800-73.7500	76.4030	1.196	29.67	15.110	A	0.000	15.110	15.110	100.00	0.000	0.000
					B	0.000	15.110		100.00	0.000	0.000
					C	0.000	15.110		100.00	0.000	2.925
L22 73.7500-72.7500	73.2496	1.185	29.41	2.828	A	0.000	2.828	2.828	100.00	0.000	0.000
					B	0.000	2.828		100.00	0.000	0.000
					C	0.000	2.828		100.00	0.000	0.549
L23 72.7500-67.7500	70.2396	1.175	29.15	14.354	A	0.000	14.354	14.354	100.00	0.000	0.000
					B	0.000	14.354		100.00	0.000	0.000
					C	0.000	14.354		100.00	0.000	2.744
L24 67.7500-63.0800	65.4061	1.157	28.71	13.731	A	0.000	13.731	13.731	100.00	0.000	0.000
					B	0.000	13.731		100.00	0.000	0.000
					C	0.000	13.731		100.00	0.000	2.883
L25 63.0800-62.8300	62.9550	1.148	28.48	0.744	A	0.000	0.744	0.744	100.00	0.000	0.000
					B	0.000	0.744		100.00	0.000	0.000
					C	0.000	0.744		100.00	0.000	0.179
L26 62.8300-57.8300	60.3201	1.138	28.23	15.067	A	0.000	15.067	15.067	100.00	0.000	0.000
					B	0.000	15.067		100.00	0.000	0.000
					C	0.000	15.067		100.00	0.000	3.577
L27 57.8300-52.8300	55.3203	1.117	27.72	15.427	A	0.000	15.427	15.427	100.00	0.000	0.000
					B	0.000	15.427		100.00	0.000	0.000
					C	0.000	15.427		100.00	0.000	3.577
L28 52.8300-47.8300	50.3205	1.095	27.17	15.787	A	0.000	15.787	15.787	100.00	0.000	0.000
					B	0.000	15.787		100.00	0.000	0.000
					C	0.000	15.787		100.00	0.000	3.577
L29 47.8300-42.7500	45.2804	1.071	26.57	16.408	A	0.000	16.408	16.408	100.00	0.000	0.000
					B	0.000	16.408		100.00	0.000	0.000
					C	0.000	16.408		100.00	0.000	3.635
L30 42.7500-42.5000	42.6250	1.058	26.24	0.801	A	0.000	0.801	0.801	100.00	0.000	0.000
					B	0.000	0.801		100.00	0.000	0.000
					C	0.000	0.801		100.00	0.000	0.179
L31 42.5000-37.5000	39.9908	1.044	25.89	16.212	A	0.000	16.212	16.212	100.00	0.000	0.000
					B	0.000	16.212		100.00	0.000	0.000
					C	0.000	16.212		100.00	0.000	3.577

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L32 37.5000-32.7500	35.1168	1.015	25.19	15.735	A	0.000	15.735	15.735	100.00	0.000	0.000
					B	0.000	15.735		100.00	0.000	0.000
					C	0.000	15.735		100.00	0.000	3.492
L33 32.7500-32.5000	32.6250	1	24.80	0.837	A	0.000	0.837	0.837	100.00	0.000	0.000
					B	0.000	0.837		100.00	0.000	0.000
					C	0.000	0.837		100.00	0.000	0.189
L34 32.5000-27.5000	29.9911	0.982	24.37	16.932	A	0.000	16.932	16.932	100.00	0.000	0.000
					B	0.000	16.932		100.00	0.000	0.000
					C	0.000	16.932		100.00	0.000	3.786
L35 27.5000-22.5000	24.9913	0.945	23.45	17.291	A	0.000	17.291	17.291	100.00	0.000	0.000
					B	0.000	17.291		100.00	0.000	0.000
					C	0.000	17.291		100.00	0.000	3.786
L36 22.5000-17.5000	19.9915	0.902	22.37	17.651	A	0.000	17.651	17.651	100.00	0.000	0.000
					B	0.000	17.651		100.00	0.000	0.000
					C	0.000	17.651		100.00	0.000	3.786
L37 17.5000-12.5000	14.9917	0.85	21.09	18.011	A	0.000	18.011	18.011	100.00	0.000	0.000
					B	0.000	18.011		100.00	0.000	0.000
					C	0.000	18.011		100.00	0.000	3.786
L38 12.5000-8.2500	10.3691	0.85	21.09	15.592	A	0.000	15.592	15.592	100.00	0.000	0.000
					B	0.000	15.592		100.00	0.000	0.000
					C	0.000	15.592		100.00	0.000	3.218
L39 8.2500-8.0000	8.1250	0.85	21.09	0.925	A	0.000	0.925	0.925	100.00	0.000	0.000
					B	0.000	0.925		100.00	0.000	0.000
					C	0.000	0.925		100.00	0.000	0.189
L40 8.0000-6.2500	7.1240	0.85	21.09	6.502	A	0.000	6.502	6.502	100.00	0.000	0.000
					B	0.000	6.502		100.00	0.000	0.000
					C	0.000	6.502		100.00	0.000	1.325
L41 6.2500-6.0000	6.1250	0.85	21.09	0.932	A	0.000	0.932	0.932	100.00	0.000	0.000
					B	0.000	0.932		100.00	0.000	0.000
					C	0.000	0.932		100.00	0.000	0.189
L42 6.0000-3.2500	4.6226	0.85	21.09	10.317	A	0.000	10.317	10.317	100.00	0.000	0.000
					B	0.000	10.317		100.00	0.000	0.000
					C	0.000	10.317		100.00	0.000	2.082
L43 3.2500-3.0000	3.1250	0.85	21.09	0.943	A	0.000	0.943	0.943	100.00	0.000	0.000
					B	0.000	0.943		100.00	0.000	0.000
					C	0.000	0.943		100.00	0.000	0.189
L44 3.0000-0.0000	1.4972	0.85	21.09	11.389	A	0.000	11.389	11.389	100.00	0.000	0.000
					B	0.000	11.389		100.00	0.000	0.000
					C	0.000	11.389		100.00	0.000	2.271

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 147.0000-142.0000	144.4842	1.368	8.31	1.7387	10.937	A	0.000	10.937	10.937	100.00	0.000	0.000
						B	0.000	10.937		100.00	0.000	0.000
						C	0.000	10.937		100.00	0.000	2.159
L2 142.0000-137.0000	139.4848	1.357	8.25	1.7326	11.291	A	0.000	11.291	11.291	100.00	0.000	0.000
						B	0.000	11.291		100.00	0.000	0.000
						C	0.000	11.291		100.00	0.000	2.153
L3 137.0000-132.0000	134.4853	1.347	8.19	1.7263	11.646	A	0.000	11.646	11.646	100.00	0.000	0.000
						B	0.000	11.646		100.00	0.000	0.000
						C	0.000	11.646		100.00	0.000	3.785
L4 132.0000-127.0000	129.4858	1.336	8.13	1.7197	12.000	A	0.000	12.000	12.000	100.00	0.000	0.000
						B	0.000	12.000		100.00	0.000	0.000
						C	0.000	12.000		100.00	0.000	4.864
L5 127.0000-122.0000	124.4863	1.325	8.06	1.7130	12.354	A	0.000	12.354	12.354	100.00	0.000	0.000
						B	0.000	12.354		100.00	0.000	0.000
						C	0.000	12.354		100.00	0.000	4.851
L6 122.0000-117.0000	119.4867	1.314	7.99	1.7060	12.708	A	0.000	12.708	12.708	100.00	0.000	0.000
						B	0.000	12.708		100.00	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	12.708		100.00	0.000	4.837
L7 117.0000-112.0000	114.4871	1.302	7.92	1.6987	13.062	A	0.000	13.062	13.062	100.00	0.000	0.000
						B	0.000	13.062		100.00	0.000	0.000
						C	0.000	13.062		100.00	0.000	4.822
L8 112.0000-105.0000	108.4757	1.287	7.83	1.6896	18.880	A	0.000	18.880	18.880	100.00	0.000	0.000
						B	0.000	18.880		100.00	0.000	0.000
						C	0.000	18.880		100.00	0.000	6.726
L9 105.0000-103.7500	104.3742	1.277	7.76	1.6831	3.393	A	0.000	3.393	3.393	100.00	0.000	0.000
						B	0.000	3.393		100.00	0.000	0.000
						C	0.000	3.393		100.00	0.000	1.201
L10 103.7500-98.7500	101.2379	1.269	7.71	1.6779	13.786	A	0.000	13.786	13.786	100.00	0.000	0.000
						B	0.000	13.786		100.00	0.000	0.000
						C	0.000	13.786		100.00	0.000	4.781
L11 98.7500-93.7500	96.2382	1.255	7.63	1.6695	14.139	A	0.000	14.139	14.139	100.00	0.000	0.000
						B	0.000	14.139		100.00	0.000	0.000
						C	0.000	14.139		100.00	0.000	4.764
L12 93.7500-89.8300	91.7830	1.243	7.56	1.6616	11.331	A	0.000	11.331	11.331	100.00	0.000	0.000
						B	0.000	11.331		100.00	0.000	0.000
						C	0.000	11.331		100.00	0.000	3.982
L13 89.8300-89.5800	89.7050	1.237	7.52	1.6578	0.730	A	0.000	0.730	0.730	100.00	0.000	0.000
						B	0.000	0.730		100.00	0.000	0.000
						C	0.000	0.730		100.00	0.000	0.334
L14 89.5800-88.2500	88.9142	1.235	7.51	1.6563	3.898	A	0.000	3.898	3.898	100.00	0.000	0.000
						B	0.000	3.898		100.00	0.000	0.000
						C	0.000	3.898		100.00	0.000	1.775
L15 88.2500-88.0000	88.1250	1.232	7.49	1.6548	0.736	A	0.000	0.736	0.736	100.00	0.000	0.000
						B	0.000	0.736		100.00	0.000	0.000
						C	0.000	0.736		100.00	0.000	0.334
L16 88.0000-86.0000	86.9982	1.229	7.47	1.6527	5.916	A	0.000	5.916	5.916	100.00	0.000	0.000
						B	0.000	5.916		100.00	0.000	0.000
						C	0.000	5.916		100.00	0.000	2.666
L17 86.0000-85.7500	85.8750	1.226	7.45	1.6505	0.743	A	0.000	0.743	0.743	100.00	0.000	0.000
						B	0.000	0.743		100.00	0.000	0.000
						C	0.000	0.743		100.00	0.000	0.333
L18 85.7500-84.3300	85.0391	1.223	7.44	1.6489	4.240	A	0.000	4.240	4.240	100.00	0.000	0.000
						B	0.000	4.240		100.00	0.000	0.000
						C	0.000	4.240		100.00	0.000	1.891
L19 84.3300-84.0800	84.2050	1.221	7.42	1.6473	0.749	A	0.000	0.749	0.749	100.00	0.000	0.000
						B	0.000	0.749		100.00	0.000	0.000
						C	0.000	0.749		100.00	0.000	0.333
L20 84.0800-79.0800	81.5691	1.212	7.37	1.6421	15.171	A	0.000	15.171	15.171	100.00	0.000	0.000
						B	0.000	15.171		100.00	0.000	0.000
						C	0.000	15.171		100.00	0.000	6.643
L21 79.0800-73.7500	76.4030	1.196	7.27	1.6314	16.559	A	0.000	16.559	16.559	100.00	0.000	0.000
						B	0.000	16.559		100.00	0.000	0.000
						C	0.000	16.559		100.00	0.000	7.058
L22 73.7500-72.7500	73.2496	1.185	7.21	1.6245	3.099	A	0.000	3.099	3.099	100.00	0.000	0.000
						B	0.000	3.099		100.00	0.000	0.000
						C	0.000	3.099		100.00	0.000	1.324
L23 72.7500-67.7500	70.2396	1.175	7.14	1.6177	15.702	A	0.000	15.702	15.702	100.00	0.000	0.000
						B	0.000	15.702		100.00	0.000	0.000
						C	0.000	15.702		100.00	0.000	6.592
L24 67.7500-63.0800	65.4061	1.157	7.04	1.6062	14.981	A	0.000	14.981	14.981	100.00	0.000	0.000
						B	0.000	14.981		100.00	0.000	0.000
						C	0.000	14.981		100.00	0.000	7.139
L25 63.0800-62.8300	62.9550	1.148	6.98	1.6001	0.811	A	0.000	0.811	0.811	100.00	0.000	0.000
						B	0.000	0.811		100.00	0.000	0.000
						C	0.000	0.811		100.00	0.000	0.458
L26 62.8300-57.8300	60.3201	1.138	6.92	1.5933	16.395	A	0.000	16.395	16.395	100.00	0.000	0.000
						B	0.000	16.395		100.00	0.000	0.000
						C	0.000	16.395		100.00	0.000	9.144
L27 57.8300-52.8300	55.3203	1.117	6.79	1.5795	16.743	A	0.000	16.743	16.743	100.00	0.000	0.000
						B	0.000	16.743		100.00	0.000	0.000
						C	0.000	16.743		100.00	0.000	9.100
L28 52.8300-47.8300	50.3205	1.095	6.66	1.5646	17.090	A	0.000	17.090	17.090	100.00	0.000	0.000
						B	0.000	17.090		100.00	0.000	0.000
						C	0.000	17.090		100.00	0.000	9.052

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L29 47.8300-42.7500	45.2804	1.071	6.51	1.5482	17.718	A	0.000	17.718	17.718	100.00	0.000	0.000
						B	0.000	17.718		100.00	0.000	0.000
						C	0.000	17.718		100.00	0.000	9.143
L30 42.7500-42.5000	42.6250	1.058	6.43	1.5389	0.866	A	0.000	0.866	0.866	100.00	0.000	0.000
						B	0.000	0.866		100.00	0.000	0.000
						C	0.000	0.866		100.00	0.000	0.450
L31 42.5000-37.5000	39.9908	1.044	6.34	1.5291	17.487	A	0.000	17.487	17.487	100.00	0.000	0.000
						B	0.000	17.487		100.00	0.000	0.000
						C	0.000	17.487		100.00	0.000	8.937
L32 37.5000-32.7500	35.1168	1.015	6.17	1.5094	16.930	A	0.000	16.930	16.930	100.00	0.000	0.000
						B	0.000	16.930		100.00	0.000	0.000
						C	0.000	16.930		100.00	0.000	8.524
L33 32.7500-32.5000	32.6250	1	6.08	1.4983	0.900	A	0.000	0.900	0.900	100.00	0.000	0.000
						B	0.000	0.900		100.00	0.000	0.000
						C	0.000	0.900		100.00	0.000	0.452
L34 32.5000-27.5000	29.9911	0.982	5.97	1.4857	18.170	A	0.000	18.170	18.170	100.00	0.000	0.000
						B	0.000	18.170		100.00	0.000	0.000
						C	0.000	18.170		100.00	0.000	9.006
L35 27.5000-22.5000	24.9913	0.945	5.75	1.4589	18.507	A	0.000	18.507	18.507	100.00	0.000	0.000
						B	0.000	18.507		100.00	0.000	0.000
						C	0.000	18.507		100.00	0.000	8.919
L36 22.5000-17.5000	19.9915	0.902	5.48	1.4267	18.840	A	0.000	18.840	18.840	100.00	0.000	0.000
						B	0.000	18.840		100.00	0.000	0.000
						C	0.000	18.840		100.00	0.000	8.815
L37 17.5000-12.5000	14.9917	0.85	5.17	1.3862	19.166	A	0.000	19.166	19.166	100.00	0.000	0.000
						B	0.000	19.166		100.00	0.000	0.000
						C	0.000	19.166		100.00	0.000	8.685
L38 12.5000-8.2500	10.3691	0.85	5.17	1.3360	16.538	A	0.000	16.538	16.538	100.00	0.000	0.000
						B	0.000	16.538		100.00	0.000	0.000
						C	0.000	16.538		100.00	0.000	7.245
L39 8.2500-8.0000	8.1250	0.85	5.17	1.3038	0.980	A	0.000	0.980	0.980	100.00	0.000	0.000
						B	0.000	0.980		100.00	0.000	0.000
						C	0.000	0.980		100.00	0.000	0.421
L40 8.0000-6.2500	7.1240	0.85	5.17	1.2868	6.877	A	0.000	6.877	6.877	100.00	0.000	0.000
						B	0.000	6.877		100.00	0.000	0.000
						C	0.000	6.877		100.00	0.000	2.928
L41 6.2500-6.0000	6.1250	0.85	5.17	1.2675	0.985	A	0.000	0.985	0.985	100.00	0.000	0.000
						B	0.000	0.985		100.00	0.000	0.000
						C	0.000	0.985		100.00	0.000	0.415
L42 6.0000-3.2500	4.6226	0.85	5.17	1.2323	10.881	A	0.000	10.881	10.881	100.00	0.000	0.000
						B	0.000	10.881		100.00	0.000	0.000
						C	0.000	10.881		100.00	0.000	4.504
L43 3.2500-3.0000	3.1250	0.85	5.17	1.1850	0.993	A	0.000	0.993	0.993	100.00	0.000	0.000
						B	0.000	0.993		100.00	0.000	0.000
						C	0.000	0.993		100.00	0.000	0.402
L44 3.0000-0.0000	1.4972	0.85	5.17	1.1009	11.940	A	0.000	11.940	11.940	100.00	0.000	0.000
						B	0.000	11.940		100.00	0.000	0.000
						C	0.000	11.940		100.00	0.000	4.660

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 147.0000-142.0000	144.4842	1.368	10.71	9.488	A	0.000	9.488	9.488	100.00	0.000	0.000
					B	0.000	9.488		100.00	0.000	0.000
					C	0.000	9.488		100.00	0.000	0.420
L2 142.0000-137.0000	139.4848	1.357	10.63	9.848	A	0.000	9.848	9.848	100.00	0.000	0.000
					B	0.000	9.848		100.00	0.000	0.000
					C	0.000	9.848		100.00	0.000	0.420

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L3 137.0000-132.0000	134.4853	1.347	10.55	10.207	A	0.000	10.207	10.207	100.00	0.000	0.000
					B	0.000	10.207		100.00	0.000	0.000
					C	0.000	10.207		100.00	0.000	1.023
L4 132.0000-127.0000	129.4858	1.336	10.47	10.567	A	0.000	10.567	10.567	100.00	0.000	0.000
					B	0.000	10.567		100.00	0.000	0.000
					C	0.000	10.567		100.00	0.000	1.425
L5 127.0000-122.0000	124.4863	1.325	10.38	10.927	A	0.000	10.927	10.927	100.00	0.000	0.000
					B	0.000	10.927		100.00	0.000	0.000
					C	0.000	10.927		100.00	0.000	1.425
L6 122.0000-117.0000	119.4867	1.314	10.29	11.286	A	0.000	11.286	11.286	100.00	0.000	0.000
					B	0.000	11.286		100.00	0.000	0.000
					C	0.000	11.286		100.00	0.000	1.425
L7 117.0000-112.0000	114.4871	1.302	10.20	11.646	A	0.000	11.646	11.646	100.00	0.000	0.000
					B	0.000	11.646		100.00	0.000	0.000
					C	0.000	11.646		100.00	0.000	1.425
L8 112.0000-105.0000	108.4757	1.287	10.09	16.909	A	0.000	16.909	16.909	100.00	0.000	0.000
					B	0.000	16.909		100.00	0.000	0.000
					C	0.000	16.909		100.00	0.000	1.995
L9 105.0000-103.7500	104.3742	1.277	10.00	3.041	A	0.000	3.041	3.041	100.00	0.000	0.000
					B	0.000	3.041		100.00	0.000	0.000
					C	0.000	3.041		100.00	0.000	0.356
L10 103.7500-98.7500	101.2379	1.269	9.94	12.388	A	0.000	12.388	12.388	100.00	0.000	0.000
					B	0.000	12.388		100.00	0.000	0.000
					C	0.000	12.388		100.00	0.000	1.425
L11 98.7500-93.7500	96.2382	1.255	9.83	12.747	A	0.000	12.747	12.747	100.00	0.000	0.000
					B	0.000	12.747		100.00	0.000	0.000
					C	0.000	12.747		100.00	0.000	1.425
L12 93.7500-89.8300	91.7830	1.243	9.74	10.246	A	0.000	10.246	10.246	100.00	0.000	0.000
					B	0.000	10.246		100.00	0.000	0.000
					C	0.000	10.246		100.00	0.000	1.294
L13 89.8300-89.5800	89.7050	1.237	9.69	0.661	A	0.000	0.661	0.661	100.00	0.000	0.000
					B	0.000	0.661		100.00	0.000	0.000
					C	0.000	0.661		100.00	0.000	0.137
L14 89.5800-88.2500	88.9142	1.235	9.67	3.531	A	0.000	3.531	3.531	100.00	0.000	0.000
					B	0.000	3.531		100.00	0.000	0.000
					C	0.000	3.531		100.00	0.000	0.730
L15 88.2500-88.0000	88.1250	1.232	9.65	0.667	A	0.000	0.667	0.667	100.00	0.000	0.000
					B	0.000	0.667		100.00	0.000	0.000
					C	0.000	0.667		100.00	0.000	0.137
L16 88.0000-86.0000	86.9982	1.229	9.63	5.365	A	0.000	5.365	5.365	100.00	0.000	0.000
					B	0.000	5.365		100.00	0.000	0.000
					C	0.000	5.365		100.00	0.000	1.098
L17 86.0000-85.7500	85.8750	1.226	9.60	0.675	A	0.000	0.675	0.675	100.00	0.000	0.000
					B	0.000	0.675		100.00	0.000	0.000
					C	0.000	0.675		100.00	0.000	0.137
L18 85.7500-84.3300	85.0391	1.223	9.58	3.849	A	0.000	3.849	3.849	100.00	0.000	0.000
					B	0.000	3.849		100.00	0.000	0.000
					C	0.000	3.849		100.00	0.000	0.779
L19 84.3300-84.0800	84.2050	1.221	9.56	0.681	A	0.000	0.681	0.681	100.00	0.000	0.000
					B	0.000	0.681		100.00	0.000	0.000
					C	0.000	0.681		100.00	0.000	0.137
L20 84.0800-79.0800	81.5691	1.212	9.50	13.803	A	0.000	13.803	13.803	100.00	0.000	0.000
					B	0.000	13.803		100.00	0.000	0.000
					C	0.000	13.803		100.00	0.000	2.744
L21 79.0800-73.7500	76.4030	1.196	9.37	15.110	A	0.000	15.110	15.110	100.00	0.000	0.000
					B	0.000	15.110		100.00	0.000	0.000
					C	0.000	15.110		100.00	0.000	2.925
L22 73.7500-72.7500	73.2496	1.185	9.29	2.828	A	0.000	2.828	2.828	100.00	0.000	0.000
					B	0.000	2.828		100.00	0.000	0.000
					C	0.000	2.828		100.00	0.000	0.549
L23 72.7500-67.7500	70.2396	1.175	9.20	14.354	A	0.000	14.354	14.354	100.00	0.000	0.000
					B	0.000	14.354		100.00	0.000	0.000
					C	0.000	14.354		100.00	0.000	2.744
L24 67.7500-63.0800	65.4061	1.157	9.07	13.731	A	0.000	13.731	13.731	100.00	0.000	0.000
					B	0.000	13.731		100.00	0.000	0.000
					C	0.000	13.731		100.00	0.000	2.883
L25 63.0800-62.8300	62.9550	1.148	8.99	0.744	A	0.000	0.744	0.744	100.00	0.000	0.000
					B	0.000	0.744		100.00	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	0.000	0.744		100.00	0.000	0.179
L26 62.8300-57.8300	60.3201	1.138	8.91	15.067	A	0.000	15.067	15.067	100.00	0.000	0.000
					B	0.000	15.067		100.00	0.000	0.000
					C	0.000	15.067		100.00	0.000	3.577
L27 57.8300-52.8300	55.3203	1.117	8.75	15.427	A	0.000	15.427	15.427	100.00	0.000	0.000
					B	0.000	15.427		100.00	0.000	0.000
					C	0.000	15.427		100.00	0.000	3.577
L28 52.8300-47.8300	50.3205	1.095	8.58	15.787	A	0.000	15.787	15.787	100.00	0.000	0.000
					B	0.000	15.787		100.00	0.000	0.000
					C	0.000	15.787		100.00	0.000	3.577
L29 47.8300-42.7500	45.2804	1.071	8.39	16.408	A	0.000	16.408	16.408	100.00	0.000	0.000
					B	0.000	16.408		100.00	0.000	0.000
					C	0.000	16.408		100.00	0.000	3.635
L30 42.7500-42.5000	42.6250	1.058	8.29	0.801	A	0.000	0.801	0.801	100.00	0.000	0.000
					B	0.000	0.801		100.00	0.000	0.000
					C	0.000	0.801		100.00	0.000	0.179
L31 42.5000-37.5000	39.9908	1.044	8.17	16.212	A	0.000	16.212	16.212	100.00	0.000	0.000
					B	0.000	16.212		100.00	0.000	0.000
					C	0.000	16.212		100.00	0.000	3.577
L32 37.5000-32.7500	35.1168	1.015	7.95	15.735	A	0.000	15.735	15.735	100.00	0.000	0.000
					B	0.000	15.735		100.00	0.000	0.000
					C	0.000	15.735		100.00	0.000	3.492
L33 32.7500-32.5000	32.6250	1	7.83	0.837	A	0.000	0.837	0.837	100.00	0.000	0.000
					B	0.000	0.837		100.00	0.000	0.000
					C	0.000	0.837		100.00	0.000	0.189
L34 32.5000-27.5000	29.9911	0.982	7.69	16.932	A	0.000	16.932	16.932	100.00	0.000	0.000
					B	0.000	16.932		100.00	0.000	0.000
					C	0.000	16.932		100.00	0.000	3.786
L35 27.5000-22.5000	24.9913	0.945	7.40	17.291	A	0.000	17.291	17.291	100.00	0.000	0.000
					B	0.000	17.291		100.00	0.000	0.000
					C	0.000	17.291		100.00	0.000	3.786
L36 22.5000-17.5000	19.9915	0.902	7.06	17.651	A	0.000	17.651	17.651	100.00	0.000	0.000
					B	0.000	17.651		100.00	0.000	0.000
					C	0.000	17.651		100.00	0.000	3.786
L37 17.5000-12.5000	14.9917	0.85	6.66	18.011	A	0.000	18.011	18.011	100.00	0.000	0.000
					B	0.000	18.011		100.00	0.000	0.000
					C	0.000	18.011		100.00	0.000	3.786
L38 12.5000-8.2500	10.3691	0.85	6.66	15.592	A	0.000	15.592	15.592	100.00	0.000	0.000
					B	0.000	15.592		100.00	0.000	0.000
					C	0.000	15.592		100.00	0.000	3.218
L39 8.2500-8.0000	8.1250	0.85	6.66	0.925	A	0.000	0.925	0.925	100.00	0.000	0.000
					B	0.000	0.925		100.00	0.000	0.000
					C	0.000	0.925		100.00	0.000	0.189
L40 8.0000-6.2500	7.1240	0.85	6.66	6.502	A	0.000	6.502	6.502	100.00	0.000	0.000
					B	0.000	6.502		100.00	0.000	0.000
					C	0.000	6.502		100.00	0.000	1.325
L41 6.2500-6.0000	6.1250	0.85	6.66	0.932	A	0.000	0.932	0.932	100.00	0.000	0.000
					B	0.000	0.932		100.00	0.000	0.000
					C	0.000	0.932		100.00	0.000	0.189
L42 6.0000-3.2500	4.6226	0.85	6.66	10.317	A	0.000	10.317	10.317	100.00	0.000	0.000
					B	0.000	10.317		100.00	0.000	0.000
					C	0.000	10.317		100.00	0.000	2.082
L43 3.2500-3.0000	3.1250	0.85	6.66	0.943	A	0.000	0.943	0.943	100.00	0.000	0.000
					B	0.000	0.943		100.00	0.000	0.000
					C	0.000	0.943		100.00	0.000	0.189
L44 3.0000-0.0000	1.4972	0.85	6.66	11.389	A	0.000	11.389	11.389	100.00	0.000	0.000
					B	0.000	11.389		100.00	0.000	0.000
					C	0.000	11.389		100.00	0.000	2.271

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	147 - 142	Pole	Max Tension	26	0.00	-0.00	0.00
			Max. Compression	26	-9.42	0.41	-0.24
			Max. Mx	20	-3.99	28.64	-0.13
			Max. My	14	-4.00	0.21	-28.52
			Max. Vy	20	-6.35	28.64	-0.13
			Max. Vx	14	6.35	0.21	-28.52
			Max. Torque	24			0.32

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L2	142 - 137	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.11	0.45	-0.28
			Max. Mx	20	-4.34	61.50	-0.14
			Max. My	14	-4.35	0.21	-61.36
			Max. Vy	20	-6.79	61.50	-0.14
			Max. Vx	14	6.79	0.21	-61.36
			Max. Torque	24			0.34
L3	137 - 132	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.26	0.63	-0.40
			Max. Mx	20	-6.30	109.04	-0.15
			Max. My	14	-6.31	0.23	-108.86
			Max. Vy	20	-11.39	109.04	-0.15
			Max. Vx	14	11.39	0.23	-108.86
			Max. Torque	24			0.40
L4	132 - 127	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.27	0.92	-0.58
			Max. Mx	20	-6.72	167.35	-0.18
			Max. My	14	-6.73	0.25	-167.12
			Max. Vy	20	-11.93	167.35	-0.18
			Max. Vx	14	11.92	0.25	-167.12
			Max. Torque	24			0.49
L5	127 - 122	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.30	1.22	-0.77
			Max. Mx	20	-7.17	228.32	-0.20
			Max. My	14	-7.18	0.27	-228.05
			Max. Vy	20	-12.46	228.32	-0.20
			Max. Vx	14	12.45	0.27	-228.05
			Max. Torque	24			0.57
L6	122 - 117	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.35	1.53	-0.96
			Max. Mx	20	-7.64	291.95	-0.23
			Max. My	14	-7.65	0.29	-291.62
			Max. Vy	20	-12.99	291.95	-0.23
			Max. Vx	14	12.98	0.29	-291.62
			Max. Torque	24			0.66
L7	117 - 112	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.15	0.87	-3.37
			Max. Mx	20	-11.69	390.66	-0.71
			Max. My	14	-11.75	0.51	-389.20
			Max. Vy	20	-21.65	390.66	-0.71
			Max. Vx	14	21.24	0.51	-389.20
			Max. Torque	6			-1.79
L8	112 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.89	1.08	-3.51
			Max. Mx	20	-12.09	461.56	-0.84
			Max. My	14	-12.15	0.64	-458.76
			Max. Vy	20	-21.98	461.56	-0.84
			Max. Vx	14	21.57	0.64	-458.76
			Max. Torque	6			-1.79
L9	105 - 103.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.49	1.43	-2.75
			Max. Mx	20	-17.75	588.39	-0.84
			Max. My	14	-17.82	0.84	-583.26
			Max. Vy	20	-29.42	588.39	-0.84
			Max. Vx	14	29.00	0.84	-583.26
			Max. Torque	18			1.43
L10	103.75 - 98.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45.81	1.78	-2.98
			Max. Mx	20	-18.61	736.68	-1.04
			Max. My	14	-18.67	1.04	-729.45
			Max. Vy	20	-29.91	736.68	-1.04
			Max. Vx	14	29.49	1.04	-729.45
			Max. Torque	18			1.43
L11	98.75 - 93.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.17	2.13	-3.21
			Max. Mx	20	-19.50	887.40	-1.25
			Max. My	14	-19.56	1.24	-878.07

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-30.39	887.40	-1.25
			Max. Vx	14	29.97	1.24	-878.07
			Max. Torque	18			1.42
L12	93.75 - 89.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.24	2.41	-3.38
			Max. Mx	20	-20.23	1007.25	-1.41
			Max. My	14	-20.29	1.40	-996.27
			Max. Vy	20	-30.78	1007.25	-1.41
			Max. Vx	14	30.36	1.40	-996.27
			Max. Torque	18			1.42
L13	89.83 - 89.58	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.31	2.43	-3.40
			Max. Mx	20	-20.30	1014.95	-1.42
			Max. My	14	-20.36	1.41	-1003.86
			Max. Vy	20	-30.80	1014.95	-1.42
			Max. Vx	14	30.38	1.41	-1003.86
			Max. Torque	18			1.42
L14	89.58 - 88.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.71	2.53	-3.46
			Max. Mx	20	-20.56	1056.02	-1.47
			Max. My	14	-20.62	1.47	-1044.38
			Max. Vy	20	-30.98	1056.02	-1.47
			Max. Vx	14	30.56	1.47	-1044.38
			Max. Torque	18			1.42
L15	88.25 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.80	2.55	-3.47
			Max. Mx	20	-20.65	1063.76	-1.48
			Max. My	14	-20.70	1.48	-1052.02
			Max. Vy	20	-31.00	1063.76	-1.48
			Max. Vx	14	30.59	1.48	-1052.02
			Max. Torque	18			1.42
L16	88 - 86	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.49	2.69	-3.56
			Max. Mx	20	-21.12	1126.05	-1.56
			Max. My	14	-21.18	1.56	-1113.47
			Max. Vy	20	-31.29	1126.05	-1.56
			Max. Vx	14	30.87	1.56	-1113.47
			Max. Torque	18			1.42
L17	86 - 85.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.59	2.71	-3.57
			Max. Mx	20	-21.20	1133.88	-1.57
			Max. My	14	-21.25	1.57	-1121.19
			Max. Vy	20	-31.32	1133.88	-1.57
			Max. Vx	14	30.90	1.57	-1121.19
			Max. Torque	18			1.42
L18	85.75 - 84.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.12	2.81	-3.63
			Max. Mx	20	-21.57	1178.49	-1.63
			Max. My	14	-21.62	1.63	-1165.21
			Max. Vy	20	-31.53	1178.49	-1.63
			Max. Vx	14	31.11	1.63	-1165.21
			Max. Torque	18			1.42
L19	84.33 - 84.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.20	2.83	-3.65
			Max. Mx	20	-21.64	1186.38	-1.64
			Max. My	14	-21.70	1.64	-1172.99
			Max. Vy	20	-31.55	1186.38	-1.64
			Max. Vx	14	31.14	1.64	-1172.99
			Max. Torque	18			1.42
L20	84.08 - 79.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.96	3.20	-3.87
			Max. Mx	20	-22.90	1345.84	-1.83
			Max. My	14	-22.95	1.84	-1330.35

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-32.24	1345.84	-1.83
			Max. Vx	14	31.82	1.84	-1330.35
			Max. Torque	8			-1.49
L21	79.08 - 73.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.34	3.28	-3.92
			Max. Mx	20	-23.18	1380.73	-1.88
			Max. My	14	-23.23	1.88	-1364.79
			Max. Vy	20	-32.38	1380.73	-1.88
			Max. Vx	14	31.96	1.88	-1364.79
			Max. Torque	8			-1.51
L22	73.75 - 72.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.91	3.66	-4.26
			Max. Mx	20	-25.69	1553.53	-2.11
			Max. My	14	-25.74	2.13	-1535.39
			Max. Vy	20	-33.38	1553.53	-2.11
			Max. Vx	14	32.96	2.13	-1535.39
			Max. Torque	8			-1.68
L23	72.75 - 67.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.83	4.03	-4.49
			Max. Mx	20	-27.13	1722.01	-2.32
			Max. My	14	-27.17	2.34	-1701.77
			Max. Vy	20	-34.03	1722.01	-2.32
			Max. Vx	14	33.61	2.34	-1701.77
			Max. Torque	8			-1.78
L24	67.75 - 63.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.65	4.39	-4.70
			Max. Mx	20	-28.49	1882.37	-2.51
			Max. My	14	-28.53	2.54	-1860.18
			Max. Vy	20	-34.66	1882.37	-2.51
			Max. Vx	14	34.25	2.54	-1860.18
			Max. Torque	8			-1.89
L25	63.08 - 62.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.77	4.41	-4.72
			Max. Mx	20	-28.60	1891.04	-2.52
			Max. My	14	-28.64	2.55	-1868.74
			Max. Vy	20	-34.71	1891.04	-2.52
			Max. Vx	14	34.29	2.55	-1868.74
			Max. Torque	8			-1.89
L26	62.83 - 57.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.10	4.78	-4.95
			Max. Mx	20	-30.41	2066.49	-2.72
			Max. My	14	-30.45	2.76	-2042.11
			Max. Vy	20	-35.48	2066.49	-2.72
			Max. Vx	14	35.07	2.76	-2042.11
			Max. Torque	8			-2.02
L27	57.83 - 52.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.45	5.17	-5.18
			Max. Mx	20	-32.27	2245.73	-2.93
			Max. My	14	-32.30	2.97	-2219.25
			Max. Vy	20	-36.23	2245.73	-2.93
			Max. Vx	14	35.81	2.97	-2219.25
			Max. Torque	10			-2.23
L28	52.83 - 47.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.83	5.55	-5.41
			Max. Mx	20	-34.15	2428.63	-3.13
			Max. My	14	-34.19	3.19	-2400.07
			Max. Vy	20	-36.95	2428.63	-3.13
			Max. Vx	14	36.53	3.19	-2400.07
			Max. Torque	10			-2.45
L29	47.83 - 42.75	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-66.99	5.58	-5.43
			Max. Mx	20	-34.29	2440.83	-3.14
			Max. My	14	-34.32	3.20	-2412.13
			Max. Vy	20	-36.99	2440.83	-3.14
			Max. Vx	14	36.57	3.20	-2412.13
			Max. Torque	10			-2.47
L30	42.75 - 42.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.43	5.97	-5.66
			Max. Mx	20	-37.82	2627.85	-3.35
			Max. My	14	-37.85	3.42	-2597.06
			Max. Vy	20	-37.81	2627.85	-3.35
			Max. Vx	14	37.40	3.42	-2597.06
			Max. Torque	10			-2.70
L31	42.5 - 37.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-73.98	6.33	-5.87
			Max. Mx	20	-39.88	2818.57	-3.55
			Max. My	14	-39.91	3.63	-2785.70
			Max. Vy	20	-38.49	2818.57	-3.55
			Max. Vx	14	38.07	3.63	-2785.70
			Max. Torque	10			-2.92
L32	37.5 - 32.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.42	6.67	-6.06
			Max. Mx	20	-41.88	3002.78	-3.74
			Max. My	14	-41.90	3.84	-2967.93
			Max. Vy	20	-39.10	3002.78	-3.74
			Max. Vx	14	38.69	3.84	-2967.93
			Max. Torque	10			-3.14
L33	32.75 - 32.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-76.55	6.69	-6.07
			Max. Mx	20	-42.01	3012.55	-3.75
			Max. My	14	-42.03	3.85	-2977.60
			Max. Vy	20	-39.12	3012.55	-3.75
			Max. Vx	14	38.71	3.85	-2977.60
			Max. Torque	10			-3.15
L34	32.5 - 27.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.27	7.04	-6.28
			Max. Mx	20	-44.26	3209.73	-3.95
			Max. My	14	-44.28	4.06	-3172.70
			Max. Vy	20	-39.76	3209.73	-3.95
			Max. Vx	14	39.35	4.06	-3172.70
			Max. Torque	10			-3.39
L35	27.5 - 22.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-82.01	7.40	-6.49
			Max. Mx	20	-46.55	3409.95	-4.16
			Max. My	14	-46.56	4.28	-3370.86
			Max. Vy	20	-40.35	3409.95	-4.16
			Max. Vx	14	39.94	4.28	-3370.86
			Max. Torque	10			-3.62
L36	22.5 - 17.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-84.76	7.76	-6.69
			Max. Mx	20	-48.87	3613.02	-4.36
			Max. My	14	-48.88	4.50	-3571.87
			Max. Vy	20	-40.90	3613.02	-4.36
			Max. Vx	14	40.49	4.50	-3571.87
			Max. Torque	10			-3.84
L37	17.5 - 12.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.53	8.11	-6.89
			Max. Mx	20	-51.22	3818.67	-4.55
			Max. My	14	-51.23	4.71	-3775.48
			Max. Vy	20	-41.39	3818.67	-4.55
			Max. Vx	14	40.98	4.71	-3775.48
			Max. Torque	10			-4.05
L38	12.5 - 8.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-89.89	8.40	-7.06
			Max. Mx	20	-53.24	3995.38	-4.72
			Max. My	14	-53.25	4.90	-3950.45
			Max. Vy	20	-41.80	3995.38	-4.72
			Max. Vx	14	41.39	4.90	-3950.45
			Max. Torque	10			-4.24

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L39	8.25 - 8	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-90.04	8.41	-7.07
			Max. Mx	20	-53.39	4005.83	-4.73
			Max. My	14	-53.40	4.91	-3960.80
			Max. Vy	20	-41.80	4005.83	-4.73
			Max. Vx	14	41.40	4.91	-3960.80
			Max. Torque	10			-4.25
L40	8 - 6.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.09	8.53	-7.13
			Max. Mx	20	-54.28	4079.13	-4.80
			Max. My	14	-54.29	4.98	-4033.39
			Max. Vy	20	-42.00	4079.13	-4.80
			Max. Vx	14	41.60	4.98	-4033.39
			Max. Torque	10			-4.33
L41	6.25 - 6	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-91.23	8.55	-7.14
			Max. Mx	20	-54.43	4089.63	-4.81
			Max. My	14	-54.44	4.99	-4043.79
			Max. Vy	20	-42.00	4089.63	-4.81
			Max. Vx	14	41.60	4.99	-4043.79
			Max. Torque	10			-4.34
L42	6 - 3.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.81	8.72	-7.24
			Max. Mx	20	-55.80	4205.48	-4.92
			Max. My	14	-55.81	5.11	-4158.53
			Max. Vy	20	-42.28	4205.48	-4.92
			Max. Vx	14	41.88	5.11	-4158.53
			Max. Torque	10			-4.46
L43	3.25 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-92.95	8.73	-7.25
			Max. Mx	20	-55.95	4216.05	-4.93
			Max. My	14	-55.95	5.12	-4168.99
			Max. Vy	20	-42.28	4216.05	-4.93
			Max. Vx	14	41.88	5.12	-4168.99
			Max. Torque	10			-4.48
L44	3 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-94.62	8.90	-7.35
			Max. Mx	20	-57.43	4343.31	-5.05
			Max. My	14	-57.43	5.25	-4295.04
			Max. Vy	20	-42.57	4343.31	-5.05
			Max. Vx	14	42.17	5.25	-4295.04
			Max. Torque	10			-4.61

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	94.62	-0.00	0.00
	Max. H_x	20	57.45	42.55	-0.03
	Max. H_z	2	57.45	-0.03	42.15
	Max. M_x	2	4293.23	-0.03	42.15
	Max. M_z	8	4341.12	-42.55	0.03
	Max. Torsion	22	4.61	36.83	21.04
	Min. Vert	15	43.08	0.03	-42.15
	Min. H_x	8	57.45	-42.55	0.03
	Min. H_z	14	57.45	0.03	-42.15
	Min. M_x	14	-4295.04	0.03	-42.15
	Min. M_z	20	-4343.31	42.55	-0.03
	Min. Torsion	10	-4.61	-36.83	-21.04

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	47.87	-0.00	0.00	0.71	0.87	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	57.45	0.03	-42.15	-4293.23	-3.07	-3.11
0.9 Dead+1.6 Wind 0 deg - No Ice	43.08	0.03	-42.15	-4249.21	-3.31	-3.10
1.2 Dead+1.6 Wind 30 deg - No Ice	57.45	21.30	-36.52	-3720.02	-2173.68	-0.93
0.9 Dead+1.6 Wind 30 deg - No Ice	43.08	21.30	-36.52	-3681.94	-2151.57	-0.93
1.2 Dead+1.6 Wind 60 deg - No Ice	57.45	36.86	-21.10	-2149.74	-3761.50	1.50
0.9 Dead+1.6 Wind 60 deg - No Ice	43.08	36.86	-21.10	-2127.83	-3723.03	1.49
1.2 Dead+1.6 Wind 90 deg - No Ice	57.45	42.55	-0.03	-3.27	-4341.12	3.53
0.9 Dead+1.6 Wind 90 deg - No Ice	43.08	42.55	-0.03	-3.46	-4296.67	3.52
1.2 Dead+1.6 Wind 120 deg - No Ice	57.45	36.83	21.04	2144.34	-3757.38	4.61
0.9 Dead+1.6 Wind 120 deg - No Ice	43.08	36.83	21.04	2122.03	-3718.95	4.60
1.2 Dead+1.6 Wind 150 deg - No Ice	57.45	21.24	36.48	3717.69	-2166.51	4.46
0.9 Dead+1.6 Wind 150 deg - No Ice	43.08	21.24	36.48	3679.18	-2144.46	4.45
1.2 Dead+1.6 Wind 180 deg - No Ice	57.45	-0.03	42.15	4295.04	5.25	3.11
0.9 Dead+1.6 Wind 180 deg - No Ice	43.08	-0.03	42.15	4250.54	4.92	3.10
1.2 Dead+1.6 Wind 210 deg - No Ice	57.45	-21.30	36.52	3721.83	2175.88	0.93
0.9 Dead+1.6 Wind 210 deg - No Ice	43.08	-21.30	36.52	3683.27	2153.19	0.93
1.2 Dead+1.6 Wind 240 deg - No Ice	57.45	-36.86	21.10	2151.53	3763.70	-1.50
0.9 Dead+1.6 Wind 240 deg - No Ice	43.08	-36.86	21.10	2129.15	3724.66	-1.49
1.2 Dead+1.6 Wind 270 deg - No Ice	57.45	-42.55	0.03	5.05	4343.31	-3.53
0.9 Dead+1.6 Wind 270 deg - No Ice	43.08	-42.55	0.03	4.77	4298.29	-3.52
1.2 Dead+1.6 Wind 300 deg - No Ice	57.45	-36.83	-21.04	-2142.55	3759.55	-4.61
0.9 Dead+1.6 Wind 300 deg - No Ice	43.08	-36.83	-21.04	-2120.71	3720.56	-4.60
1.2 Dead+1.6 Wind 330 deg - No Ice	57.45	-21.24	-36.48	-3715.89	2168.68	-4.46
0.9 Dead+1.6 Wind 330 deg - No Ice	43.08	-21.24	-36.48	-3677.84	2146.07	-4.45
1.2 Dead+1.0 Ice+1.0 Temp	94.62	0.00	-0.00	7.35	8.90	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	94.62	0.01	-10.90	-1136.46	7.79	-1.56
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	94.62	5.49	-9.45	-983.83	-567.84	-0.70
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	94.62	9.50	-5.46	-565.58	-988.90	0.34
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	94.62	10.96	-0.01	6.22	-1142.55	1.29
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	94.62	9.49	5.44	578.35	-987.66	1.90
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	94.62	5.47	9.44	997.51	-565.70	2.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	94.62	-0.01	10.90	1151.38	10.27	1.56
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	94.62	-5.49	9.45	998.76	585.90	0.70
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	94.62	-9.50	5.46	580.50	1006.96	-0.34

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
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	94.62	-10.96	0.01	8.70	1160.61	-1.30
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	94.62	-9.49	-5.44	-563.43	1005.72	-1.90
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	94.62	-5.47	-9.44	-982.59	583.75	-2.00
Dead+Wind 0 deg - Service	47.87	0.01	-8.32	-842.08	0.09	0.29
Dead+Wind 30 deg - Service	47.87	4.20	-7.21	-729.66	-425.99	0.34
Dead+Wind 60 deg - Service	47.87	7.28	-4.16	-421.42	-737.69	0.30
Dead+Wind 90 deg - Service	47.87	8.40	-0.01	-0.07	-851.38	0.18
Dead+Wind 120 deg - Service	47.87	7.27	4.15	421.51	-736.88	0.01
Dead+Wind 150 deg - Service	47.87	4.19	7.20	730.34	-424.58	-0.16
Dead+Wind 180 deg - Service	47.87	-0.01	8.32	843.58	1.72	-0.29
Dead+Wind 210 deg - Service	47.87	-4.20	7.21	731.16	427.81	-0.34
Dead+Wind 240 deg - Service	47.87	-7.28	4.16	422.92	739.51	-0.30
Dead+Wind 270 deg - Service	47.87	-8.40	0.01	1.57	853.20	-0.18
Dead+Wind 300 deg - Service	47.87	-7.27	-4.15	-420.01	738.69	-0.01
Dead+Wind 330 deg - Service	47.87	-4.19	-7.20	-728.84	426.40	0.16

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	-47.87	0.00	0.00	47.87	-0.00	0.000%
2	0.03	-57.45	-42.15	-0.03	57.45	42.15	0.001%
3	0.03	-43.08	-42.15	-0.03	43.08	42.15	0.001%
4	21.30	-57.45	-36.52	-21.30	57.45	36.52	0.000%
5	21.30	-43.08	-36.52	-21.30	43.08	36.52	0.000%
6	36.86	-57.45	-21.10	-36.86	57.45	21.10	0.000%
7	36.86	-43.08	-21.10	-36.86	43.08	21.10	0.000%
8	42.55	-57.45	-0.03	-42.55	57.45	0.03	0.000%
9	42.55	-43.08	-0.03	-42.55	43.08	0.03	0.001%
10	36.83	-57.45	21.04	-36.83	57.45	-21.04	0.000%
11	36.83	-43.08	21.04	-36.83	43.08	-21.04	0.000%
12	21.24	-57.45	36.48	-21.24	57.45	-36.48	0.000%
13	21.24	-43.08	36.48	-21.24	43.08	-36.48	0.000%
14	-0.03	-57.45	42.15	0.03	57.45	-42.15	0.001%
15	-0.03	-43.08	42.15	0.03	43.08	-42.15	0.001%
16	-21.30	-57.45	36.52	21.30	57.45	-36.52	0.000%
17	-21.30	-43.08	36.52	21.30	43.08	-36.52	0.000%
18	-36.86	-57.45	21.10	36.86	57.45	-21.10	0.000%
19	-36.86	-43.08	21.10	36.86	43.08	-21.10	0.000%
20	-42.55	-57.45	0.03	42.55	57.45	-0.03	0.000%
21	-42.55	-43.08	0.03	42.55	43.08	-0.03	0.001%
22	-36.83	-57.45	-21.04	36.83	57.45	21.04	0.000%
23	-36.83	-43.08	-21.04	36.83	43.08	21.04	0.000%
24	-21.24	-57.45	-36.48	21.24	57.45	36.48	0.000%
25	-21.24	-43.08	-36.48	21.24	43.08	36.48	0.000%
26	0.00	-94.62	0.00	-0.00	94.62	0.00	0.000%
27	0.01	-94.62	-10.90	-0.01	94.62	10.90	0.000%
28	5.49	-94.62	-9.45	-5.49	94.62	9.45	0.000%
29	9.50	-94.62	-5.46	-9.50	94.62	5.46	0.000%
30	10.96	-94.62	-0.01	-10.96	94.62	0.01	0.000%
31	9.49	-94.62	5.44	-9.49	94.62	-5.44	0.000%
32	5.47	-94.62	9.44	-5.47	94.62	-9.44	0.000%
33	-0.01	-94.62	10.90	0.01	94.62	-10.90	0.000%
34	-5.49	-94.62	9.45	5.49	94.62	-9.45	0.000%
35	-9.50	-94.62	5.46	9.50	94.62	-5.46	0.000%
36	-10.96	-94.62	0.01	10.96	94.62	-0.01	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
37	-9.49	-94.62	-5.44	9.49	94.62	5.44	0.000%
38	-5.47	-94.62	-9.44	5.47	94.62	9.44	0.000%
39	0.01	-47.87	-8.32	-0.01	47.87	8.32	0.002%
40	4.20	-47.87	-7.21	-4.20	47.87	7.21	0.000%
41	7.28	-47.87	-4.16	-7.28	47.87	4.16	0.000%
42	8.40	-47.87	-0.01	-8.40	47.87	0.01	0.002%
43	7.27	-47.87	4.15	-7.27	47.87	-4.15	0.000%
44	4.19	-47.87	7.20	-4.19	47.87	-7.20	0.000%
45	-0.01	-47.87	8.32	0.01	47.87	-8.32	0.002%
46	-4.20	-47.87	7.21	4.20	47.87	-7.21	0.000%
47	-7.28	-47.87	4.16	7.28	47.87	-4.16	0.000%
48	-8.40	-47.87	0.01	8.40	47.87	-0.01	0.002%
49	-7.27	-47.87	-4.15	7.27	47.87	4.15	0.000%
50	-4.19	-47.87	-7.20	4.19	47.87	7.20	0.000%

Non-Linear Convergence Results

1	Yes	6	0.00000001	0.00000001
2	Yes	18	0.00000001	0.00007306
3	Yes	17	0.00000001	0.00011185
4	Yes	23	0.00000001	0.00007453
5	Yes	22	0.00000001	0.00011448
6	Yes	23	0.00000001	0.00007330
7	Yes	22	0.00000001	0.00011246
8	Yes	19	0.00000001	0.00007447
9	Yes	18	0.00000001	0.00011820
10	Yes	23	0.00000001	0.00007606
11	Yes	22	0.00000001	0.00011683
12	Yes	23	0.00000001	0.00007264
13	Yes	22	0.00000001	0.00011151
14	Yes	18	0.00000001	0.00008654
15	Yes	17	0.00000001	0.00013372
16	Yes	23	0.00000001	0.00007417
17	Yes	22	0.00000001	0.00011385
18	Yes	23	0.00000001	0.00007579
19	Yes	22	0.00000001	0.00011632
20	Yes	19	0.00000001	0.00008231
21	Yes	18	0.00000001	0.00013062
22	Yes	23	0.00000001	0.00007239
23	Yes	22	0.00000001	0.00011103
24	Yes	23	0.00000001	0.00007543
25	Yes	22	0.00000001	0.00011592
26	Yes	14	0.00000001	0.00008649
27	Yes	20	0.00000001	0.00014018
28	Yes	21	0.00000001	0.00008596
29	Yes	21	0.00000001	0.00008611
30	Yes	20	0.00000001	0.00014128
31	Yes	21	0.00000001	0.00008872
32	Yes	21	0.00000001	0.00008691
33	Yes	20	0.00000001	0.00014286
34	Yes	21	0.00000001	0.00008954
35	Yes	21	0.00000001	0.00008982
36	Yes	20	0.00000001	0.00014374
37	Yes	21	0.00000001	0.00008699
38	Yes	21	0.00000001	0.00008838
39	Yes	15	0.00000001	0.00007702
40	Yes	17	0.00000001	0.00009556
41	Yes	17	0.00000001	0.00008505
42	Yes	15	0.00000001	0.00006899
43	Yes	17	0.00000001	0.00008968
44	Yes	17	0.00000001	0.00009203
45	Yes	15	0.00000001	0.00007643
46	Yes	17	0.00000001	0.00008534
47	Yes	17	0.00000001	0.00009623
48	Yes	15	0.00000001	0.00006979
49	Yes	17	0.00000001	0.00008936
50	Yes	17	0.00000001	0.00008668

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 142	21.37	48	1.2803	0.0018
L2	142 - 137	20.03	48	1.2769	0.0018
L3	137 - 132	18.70	48	1.2665	0.0019
L4	132 - 127	17.38	48	1.2496	0.0019
L5	127 - 122	16.08	48	1.2242	0.0019
L6	122 - 117	14.82	48	1.1913	0.0020
L7	117 - 112	13.59	48	1.1520	0.0020
L8	112 - 105	12.41	48	1.1057	0.0017
L9	108.75 - 103.75	11.67	48	1.0705	0.0015
L10	103.75 - 98.75	10.56	48	1.0360	0.0014
L11	98.75 - 93.75	9.51	48	0.9753	0.0012
L12	93.75 - 89.83	8.52	48	0.9072	0.0010
L13	89.83 - 89.58	7.80	48	0.8493	0.0009
L14	89.58 - 88.25	7.75	48	0.8456	0.0009
L15	88.25 - 88	7.52	48	0.8258	0.0008
L16	88 - 86	7.48	48	0.8233	0.0008
L17	86 - 85.75	7.14	48	0.8037	0.0008
L18	85.75 - 84.33	7.09	48	0.8013	0.0008
L19	84.33 - 84.08	6.86	48	0.7872	0.0008
L20	84.08 - 79.08	6.82	48	0.7845	0.0008
L21	79.08 - 73.75	6.03	48	0.7272	0.0007
L22	78 - 72.75	5.86	48	0.7146	0.0006
L23	72.75 - 67.75	5.09	48	0.6800	0.0006
L24	67.75 - 63.08	4.41	48	0.6254	0.0005
L25	63.08 - 62.83	3.82	48	0.5722	0.0004
L26	62.83 - 57.83	3.79	48	0.5700	0.0004
L27	57.83 - 52.83	3.22	48	0.5237	0.0004
L28	52.83 - 47.83	2.70	48	0.4761	0.0003
L29	47.83 - 42.75	2.22	48	0.4280	0.0003
L30	47.5 - 42.5	2.20	48	0.4247	0.0003
L31	42.5 - 37.5	1.76	48	0.3993	0.0003
L32	37.5 - 32.75	1.37	48	0.3509	0.0002
L33	32.75 - 32.5	1.04	48	0.3049	0.0002
L34	32.5 - 27.5	1.03	48	0.3026	0.0002
L35	27.5 - 22.5	0.74	48	0.2564	0.0002
L36	22.5 - 17.5	0.49	48	0.2095	0.0001
L37	17.5 - 12.5	0.30	48	0.1629	0.0001
L38	12.5 - 8.25	0.15	48	0.1157	0.0001
L39	8.25 - 8	0.07	48	0.0752	0.0000
L40	8 - 6.25	0.06	48	0.0730	0.0000
L41	6.25 - 6	0.04	48	0.0575	0.0000
L42	6 - 3.25	0.03	48	0.0553	0.0000
L43	3.25 - 3	0.01	48	0.0301	0.0000
L44	3 - 0	0.01	48	0.0278	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	APXVTM14-C-120 w/ Mount Pipe	48	21.37	1.2803	0.0018	40877
135.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	48	18.17	1.2606	0.0019	17438
116.0000	(2) LPA-80080/4CF w/ Mount Pipe	48	13.35	1.1437	0.0020	6423
106.0000	7770.00 w/ Mount Pipe	48	11.05	1.0516	0.0014	6684
76.0000	OG-860/1920/GPS-A	48	5.56	0.6987	0.0006	7320

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	147 - 142	108.73	20	6.5207	0.0111
L2	142 - 137	101.92	20	6.5039	0.0109
L3	137 - 132	95.15	20	6.4521	0.0106
L4	132 - 127	88.45	20	6.3663	0.0104
L5	127 - 122	81.86	20	6.2372	0.0102
L6	122 - 117	75.42	20	6.0699	0.0099
L7	117 - 112	69.18	20	5.8703	0.0096
L8	112 - 105	63.16	20	5.6345	0.0086
L9	108.75 - 103.75	59.39	20	5.4552	0.0078
L10	103.75 - 98.75	53.77	20	5.2793	0.0072
L11	98.75 - 93.75	48.40	20	4.9703	0.0065
L12	93.75 - 89.83	43.38	20	4.6229	0.0059
L13	89.83 - 89.58	39.71	20	4.3281	0.0055
L14	89.58 - 88.25	39.49	20	4.3091	0.0055
L15	88.25 - 88	38.30	20	4.2079	0.0054
L16	88 - 86	38.08	20	4.1956	0.0053
L17	86 - 85.75	36.35	20	4.0957	0.0052
L18	85.75 - 84.33	36.13	20	4.0831	0.0052
L19	84.33 - 84.08	34.93	20	4.0114	0.0051
L20	84.08 - 79.08	34.72	20	3.9975	0.0051
L21	79.08 - 73.75	30.69	20	3.7058	0.0048
L22	78 - 72.75	29.86	20	3.6411	0.0047
L23	72.75 - 67.75	25.94	20	3.4649	0.0045
L24	67.75 - 63.08	22.46	20	3.1869	0.0042
L25	63.08 - 62.83	19.48	20	2.9155	0.0039
L26	62.83 - 57.83	19.32	20	2.9040	0.0039
L27	57.83 - 52.83	16.41	20	2.6685	0.0036
L28	52.83 - 47.83	13.74	20	2.4255	0.0033
L29	47.83 - 42.75	11.33	20	2.1801	0.0030
L30	47.5 - 42.5	11.18	20	2.1636	0.0029
L31	42.5 - 37.5	8.98	20	2.0343	0.0028
L32	37.5 - 32.75	6.98	20	1.7876	0.0024
L33	32.75 - 32.5	5.32	20	1.5529	0.0021
L34	32.5 - 27.5	5.23	20	1.5413	0.0021
L35	27.5 - 22.5	3.74	20	1.3057	0.0018
L36	22.5 - 17.5	2.50	20	1.0671	0.0015
L37	17.5 - 12.5	1.51	20	0.8294	0.0011
L38	12.5 - 8.25	0.77	20	0.5891	0.0008
L39	8.25 - 8	0.33	20	0.3827	0.0005
L40	8 - 6.25	0.31	20	0.3715	0.0005
L41	6.25 - 6	0.19	20	0.2929	0.0004
L42	6 - 3.25	0.18	20	0.2814	0.0004
L43	3.25 - 3	0.05	20	0.1531	0.0002
L44	3 - 0	0.04	20	0.1415	0.0002

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.0000	APXVTM14-C-120 w/ Mount Pipe	20	108.73	6.5207	0.0113	8457
135.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	20	92.46	6.4223	0.0107	3535
116.0000	(2) LPA-80080/4CF w/ Mount Pipe	20	67.96	5.8279	0.0096	1289
106.0000	7770.00 w/ Mount Pipe	20	56.27	5.3589	0.0074	1334
76.0000	OG-860/1920/GPS-A	20	28.34	3.5601	0.0047	1447

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	147 - 142 (1)	TP22.8501x22x0.25	5.0000	0.0000	0.0	17.9332	-3.99
L2	142 - 137 (2)	TP23.7002x22.8501x0.25	5.0000	0.0000	0.0	18.6078	-4.34
L3	137 - 132 (3)	TP24.5504x23.7002x0.25	5.0000	0.0000	0.0	19.2823	-6.30
L4	132 - 127 (4)	TP25.4005x24.5504x0.25	5.0000	0.0000	0.0	19.9569	-6.72
L5	127 - 122 (5)	TP26.2506x25.4005x0.25	5.0000	0.0000	0.0	20.6315	-7.17
L6	122 - 117 (6)	TP27.1007x26.2506x0.25	5.0000	0.0000	0.0	21.3060	-7.64
L7	117 - 112 (7)	TP27.9508x27.1007x0.25	5.0000	0.0000	0.0	21.9806	-11.69
L8	112 - 105 (8)	TP29.141x27.9508x0.25	7.0000	0.0000	0.0	22.4191	-12.09
L9	105 - 103.75 (9)	TP28.8536x28.0034x0.3125	5.0000	0.0000	0.0	28.3092	-17.75
L10	103.75 - 98.75 (10)	TP29.7039x28.8536x0.3125	5.0000	0.0000	0.0	29.1526	-18.61
L11	98.75 - 93.75 (11)	TP30.5541x29.7039x0.3125	5.0000	0.0000	0.0	29.9959	-19.50
L12	93.75 - 89.83 (12)	TP31.2207x30.5541x0.3125	3.9200	0.0000	0.0	30.6570	-20.23
L13	89.83 - 89.58 (13)	TP31.2632x31.2207x0.3188	0.2500	0.0000	0.0	31.3069	-20.30
L14	89.58 - 88.25 (14)	TP31.4893x31.2632x0.3188	1.3300	0.0000	0.0	31.5357	-20.56
L15	88.25 - 88 (15)	TP31.5319x31.4893x0.5125	0.2500	0.0000	0.0	50.4584	-20.65
L16	88 - 86 (16)	TP31.8719x31.5319x0.5125	2.0000	0.0000	0.0	51.0116	-21.12
L17	86 - 85.75 (17)	TP31.9145x31.8719x0.5125	0.2500	0.0000	0.0	51.0808	-21.20
L18	85.75 - 84.33 (18)	TP32.1559x31.9145x0.5125	1.4200	0.0000	0.0	51.4736	-21.57
L19	84.33 - 84.08 (19)	TP32.1984x32.1559x0.475	0.2500	0.0000	0.0	47.8278	-21.64
L20	84.08 - 79.08 (20)	TP33.0487x32.1984x0.4625	5.0000	0.0000	0.0	47.8357	-22.90
L21	79.08 - 73.75 (21)	TP33.955x33.0487x0.4625	5.3300	0.0000	0.0	48.1053	-23.18
L22	73.75 - 72.75 (22)	TP33.5x32.6073x0.5625	5.2500	0.0000	0.0	58.8058	-25.69
L23	72.75 - 67.75 (23)	TP34.3502x33.5x0.5625	5.0000	0.0000	0.0	60.3236	-27.13
L24	67.75 - 63.08 (24)	TP35.1442x34.3502x0.55	4.6700	0.0000	0.0	60.3911	-28.49
L25	63.08 - 62.83 (25)	TP35.1867x35.1442x0.7125	0.2500	0.0000	0.0	77.9626	-28.60
L26	62.83 - 57.83 (26)	TP36.0369x35.1867x0.7	5.0000	0.0000	0.0	78.5115	-30.41
L27	57.83 - 52.83 (27)	TP36.8871x36.0369x0.6875	5.0000	0.0000	0.0	78.9920	-32.27
L28	52.83 - 47.83 (28)	TP37.7372x36.8871x0.6875	5.0000	0.0000	0.0	80.8471	-34.15
L29	47.83 - 42.75 (29)	TP38.601x37.7372x0.675	5.0800	0.0000	0.0	79.5242	-34.29
L30	42.75 - 42.5 (30)	TP37.8935x37.0433x0.75	5.0000	0.0000	0.0	88.4201	-37.82
L31	42.5 - 37.5 (31)	TP38.7437x37.8935x0.7375	5.0000	0.0000	0.0	88.9658	-39.88

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L32	37.5 - 32.75 (32)	TP39.5514x38.7437x0.7375	4.7500	0.0000	0.0	90.8564	-41.88
L33	32.75 - 32.5 (33)	TP39.5939x39.5514x0.7875	0.2500	0.0000	0.0	96.9975	-42.01
L34	32.5 - 27.5 (34)	TP40.444x39.5939x0.775	5.0000	0.0000	0.0	97.5799	-44.26
L35	27.5 - 22.5 (35)	TP41.2942x40.444x0.7625	5.0000	0.0000	0.0	98.0938	-46.55
L36	22.5 - 17.5 (36)	TP42.1444x41.2942x0.7625	5.0000	0.0000	0.0	100.1510	-48.87
L37	17.5 - 12.5 (37)	TP42.9946x42.1444x0.75	5.0000	0.0000	0.0	100.5630	-51.22
L38	12.5 - 8.25 (38)	TP43.7172x42.9946x0.7375	4.2500	0.0000	0.0	100.6080	-53.24
L39	8.25 - 8 (39)	TP43.7597x43.7172x0.8	0.2500	0.0000	0.0	109.0830	-53.39
L40	8 - 6.25 (40)	TP44.0573x43.7597x0.7875	1.7500	0.0000	0.0	108.1540	-54.28
L41	6.25 - 6 (41)	TP44.0998x44.0573x0.775	0.2500	0.0000	0.0	106.5720	-54.43
L42	6 - 3.25 (42)	TP44.5674x44.0998x0.7625	2.7500	0.0000	0.0	106.0150	-55.80
L43	3.25 - 3 (43)	TP44.6099x44.5674x0.7625	0.2500	0.0000	0.0	106.1180	-55.95
L44	3 - 0 (44)	TP45.12x44.6099x0.75	3.0000	0.0000	0.0	105.6230	-57.43

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L1	147 - 142 (1)	TP22.8501x22x0.25	28.67	0.00
L2	142 - 137 (2)	TP23.7002x22.8501x0.25	61.53	0.00
L3	137 - 132 (3)	TP24.5504x23.7002x0.25	109.07	0.00
L4	132 - 127 (4)	TP25.4005x24.5504x0.25	167.38	0.00
L5	127 - 122 (5)	TP26.2506x25.4005x0.25	228.35	0.00
L6	122 - 117 (6)	TP27.1007x26.2506x0.25	291.97	0.00
L7	117 - 112 (7)	TP27.9508x27.1007x0.25	390.66	0.00
L8	112 - 105 (8)	TP29.141x27.9508x0.25	461.56	0.00
L9	105 - 103.75 (9)	TP28.8536x28.0034x0.3125	588.39	0.00
L10	103.75 - 98.75 (10)	TP29.7039x28.8536x0.3125	736.68	0.00
L11	98.75 - 93.75 (11)	TP30.5541x29.7039x0.3125	887.40	0.00
L12	93.75 - 89.83 (12)	TP31.2207x30.5541x0.3125	1007.25	0.00
L13	89.83 - 89.58 (13)	TP31.2632x31.2207x0.3188	1014.95	0.00
L14	89.58 - 88.25 (14)	TP31.4893x31.2632x0.3188	1056.02	0.00
L15	88.25 - 88 (15)	TP31.5319x31.4893x0.5125	1063.77	0.00
L16	88 - 86 (16)	TP31.8719x31.5319x0.5125	1126.05	0.00
L17	86 - 85.75 (17)	TP31.9145x31.8719x0.5125	1133.88	0.00
L18	85.75 - 84.33 (18)	TP32.1559x31.9145x0.5125	1178.49	0.00
L19	84.33 - 84.08 (19)	TP32.1984x32.1559x0.475	1186.38	0.00
L20	84.08 - 79.08 (20)	TP33.0487x32.1984x0.4625	1345.85	0.00
L21	79.08 - 73.75 (21)	TP33.955x33.0487x0.4625	1380.73	0.00

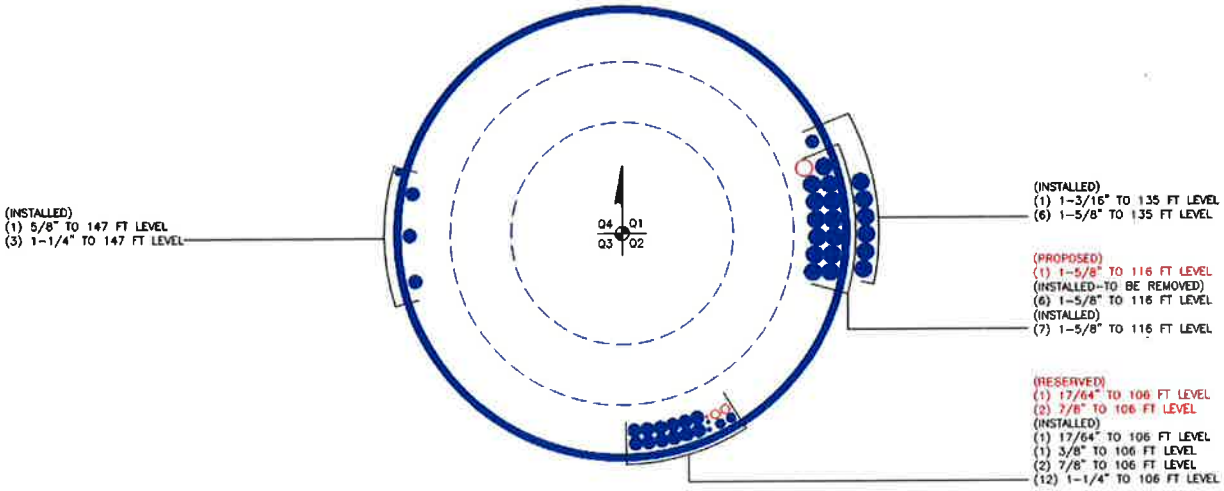
Section No.	Elevation ft	Size	M_{ux} kip-ft	M_{uy} kip-ft
L22	73.75 - 72.75 (22)	TP33.5x32.6073x0.5625	1553.53	0.00
L23	72.75 - 67.75 (23)	TP34.3502x33.5x0.5625	1722.02	0.00
L24	67.75 - 63.08 (24)	TP35.1442x34.3502x0.55	1882.38	0.00
L25	63.08 - 62.83 (25)	TP35.1867x35.1442x0.71 25	1891.04	0.00
L26	62.83 - 57.83 (26)	TP36.0369x35.1867x0.7	2066.50	0.00
L27	57.83 - 52.83 (27)	TP36.8871x36.0369x0.68 75	2245.73	0.00
L28	52.83 - 47.83 (28)	TP37.7372x36.8871x0.68 75	2428.63	0.00
L29	47.83 - 42.75 (29)	TP38.601x37.7372x0.675	2440.83	0.00
L30	42.75 - 42.5 (30)	TP37.8935x37.0433x0.75	2627.85	0.00
L31	42.5 - 37.5 (31)	TP38.7437x37.8935x0.73 75	2818.57	0.00
L32	37.5 - 32.75 (32)	TP39.5514x38.7437x0.73 75	3002.78	0.00
L33	32.75 - 32.5 (33)	TP39.5939x39.5514x0.78 75	3012.56	0.00
L34	32.5 - 27.5 (34)	TP40.444x39.5939x0.775	3209.72	0.00
L35	27.5 - 22.5 (35)	TP41.2942x40.444x0.762 5	3409.95	0.00
L36	22.5 - 17.5 (36)	TP42.1444x41.2942x0.76 25	3613.02	0.00
L37	17.5 - 12.5 (37)	TP42.9946x42.1444x0.75	3818.68	0.00
L38	12.5 - 8.25 (38)	TP43.7172x42.9946x0.73 75	3995.38	0.00
L39	8.25 - 8 (39)	TP43.7597x43.7172x0.8	4005.82	0.00
L40	8 - 6.25 (40)	TP44.0573x43.7597x0.78 75	4079.13	0.00
L41	6.25 - 6 (41)	TP44.0998x44.0573x0.77 5	4089.63	0.00
L42	6 - 3.25 (42)	TP44.5674x44.0998x0.76 25	4205.48	0.00
L43	3.25 - 3 (43)	TP44.6099x44.5674x0.76 25	4216.05	0.00
L44	3 - 0 (44)	TP45.12x44.6099x0.75	4343.31	0.00

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L1	147 - 142 (1)	TP22.8501x22x0.25	6.35	0.00
L2	142 - 137 (2)	TP23.7002x22.8501x0.25	6.79	0.00
L3	137 - 132 (3)	TP24.5504x23.7002x0.25	11.39	0.00
L4	132 - 127 (4)	TP25.4005x24.5504x0.25	11.93	0.00
L5	127 - 122 (5)	TP26.2506x25.4005x0.25	12.46	0.00
L6	122 - 117 (6)	TP27.1007x26.2506x0.25	12.99	0.00
L7	117 - 112 (7)	TP27.9508x27.1007x0.25	21.65	1.49
L8	112 - 105 (8)	TP29.141x27.9508x0.25	21.98	1.51
L9	105 - 103.75 (9)	TP28.8536x28.0034x0.31 25	29.42	1.14
L10	103.75 - 98.75 (10)	TP29.7039x28.8536x0.31 25	29.91	1.19
L11	98.75 - 93.75 (11)	TP30.5541x29.7039x0.31 25	30.39	1.24
L12	93.75 - 89.83 (12)	TP31.2207x30.5541x0.31 25	30.78	1.28

Section No.	Elevation ft	Size	Actual V_u K	Actual T_u kip-ft
L13	89.83 - 89.58 (13)	TP31.2632x31.2207x0.31 88	30.80	1.28
L14	89.58 - 88.25 (14)	TP31.4893x31.2632x0.31 88	30.98	1.31
L15	88.25 - 88 (15)	TP31.5319x31.4893x0.51 25	31.00	1.31
L16	88 - 86 (16)	TP31.8719x31.5319x0.51 25	31.29	1.35
L17	86 - 85.75 (17)	TP31.9145x31.8719x0.51 25	31.32	1.36
L18	85.75 - 84.33 (18)	TP32.1559x31.9145x0.51 25	31.53	1.39
L19	84.33 - 84.08 (19)	TP32.1984x32.1559x0.47 5	31.55	1.39
L20	84.08 - 79.08 (20)	TP33.0487x32.1984x0.46 25	32.24	1.49
L21	79.08 - 73.75 (21)	TP33.955x33.0487x0.462 5	32.38	1.51
L22	73.75 - 72.75 (22)	TP33.5x32.6073x0.5625	33.38	1.68
L23	72.75 - 67.75 (23)	TP34.3502x33.5x0.5625	34.03	1.78
L24	67.75 - 63.08 (24)	TP35.1442x34.3502x0.55	34.66	1.89
L25	63.08 - 62.83 (25)	TP35.1867x35.1442x0.71 25	34.71	1.89
L26	62.83 - 57.83 (26)	TP36.0369x35.1867x0.7	35.48	2.02
L27	57.83 - 52.83 (27)	TP36.8871x36.0369x0.68 75	36.23	2.15
L28	52.83 - 47.83 (28)	TP37.7372x36.8871x0.68 75	36.95	2.29
L29	47.83 - 42.75 (29)	TP38.601x37.7372x0.675	36.99	2.29
L30	42.75 - 42.5 (30)	TP37.8935x37.0433x0.75	37.81	2.43
L31	42.5 - 37.5 (31)	TP38.7437x37.8935x0.73 75	38.49	2.56
L32	37.5 - 32.75 (32)	TP39.5514x38.7437x0.73 75	39.10	2.68
L33	32.75 - 32.5 (33)	TP39.5939x39.5514x0.78 75	39.12	2.69
L34	32.5 - 27.5 (34)	TP40.444x39.5939x0.775	39.76	2.82
L35	27.5 - 22.5 (35)	TP41.2942x40.444x0.762 5	40.35	2.96
L36	22.5 - 17.5 (36)	TP42.1444x41.2942x0.76 25	40.90	3.08
L37	17.5 - 12.5 (37)	TP42.9946x42.1444x0.75	41.39	3.21
L38	12.5 - 8.25 (38)	TP43.7172x42.9946x0.73 75	41.80	3.32
L39	8.25 - 8 (39)	TP43.7597x43.7172x0.8	41.80	3.32
L40	8 - 6.25 (40)	TP44.0573x43.7597x0.78 75	42.00	3.37
L41	6.25 - 6 (41)	TP44.0998x44.0573x0.77 5	42.00	3.37
L42	6 - 3.25 (42)	TP44.5674x44.0998x0.76 25	42.28	3.45
L43	3.25 - 3 (43)	TP44.6099x44.5674x0.76 25	42.28	3.45
L44	3 - 0 (44)	TP45.12x44.6099x0.75	42.57	3.53

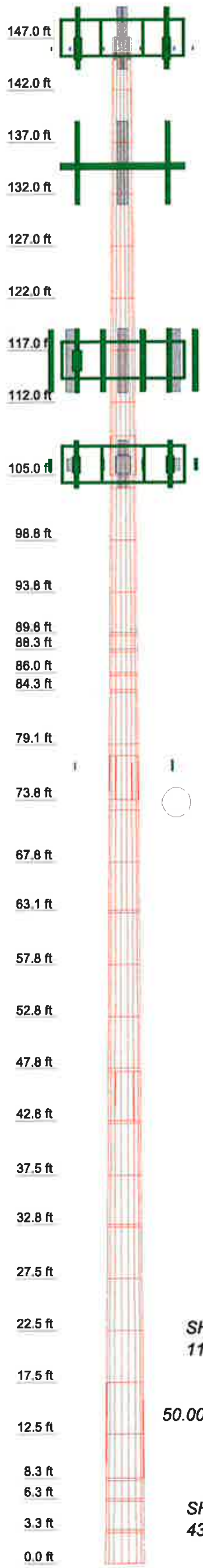
APPENDIX B
BASE LEVEL DRAWING



APPENDIX C

ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	18	0.2500		22.0000	22.8501		0.3
2	5.0000	18	0.2500		22.8501	23.7002		0.3
3	5.0000	18	0.2500		23.7002	24.5504		0.3
4	5.0000	18	0.2500		24.5504	25.4005		0.3
5	5.0000	18	0.2500		25.4005	26.2506		0.3
6	5.0000	18	0.2500		26.2506	27.1007		0.4
7	5.0000	18	0.2500		27.1007	27.9508		0.4
8	[illegible]	18	0.2500	3.7500	27.9508	[illegible]		0.5
9	[illegible]	18	[illegible]		[illegible]	[illegible]		0.5
10	5.0000	18	0.3125		28.8538	29.7028		0.5
11	5.0000	18	0.3125		29.7039	30.5541		0.5
12–19	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
20	[illegible]	18	[illegible]		[illegible]	[illegible]		0.8
21	[illegible]	18	0.4625	4.2500	33.0487	[illegible]		0.9
22	[illegible]	18	[illegible]		[illegible]	[illegible]	A607-60	1.0
23	5.0000	18	[illegible]		[illegible]	[illegible]		1.0
24	[illegible]	18	[illegible]		[illegible]	[illegible]		0.9
25	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
26	[illegible]	18	[illegible]		[illegible]	[illegible]		1.3
27	5.0000	18	0.6875		36.0369	36.8871		1.3
28	5.0000	18	0.6875		36.8871	37.7372		1.3
29	[illegible]	18	[illegible]	4.7500	[illegible]	[illegible]		1.4
30	[illegible]	18	[illegible]		[illegible]	[illegible]		1.5
31	5.0000	18	[illegible]		[illegible]	[illegible]		1.5
32	[illegible]	18	[illegible]		[illegible]	[illegible]		1.4
33	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
34	[illegible]	18	[illegible]		[illegible]	[illegible]		1.6
35	5.0000	18	0.7625		40.4440	41.2942		1.7
36	5.0000	18	0.7625		41.2942	42.1444		1.7
37	5.0000	18	0.7500		42.1444	42.9946		1.7
38–44	[illegible]	18	[illegible]		[illegible]	[illegible]		[illegible]
								31.3

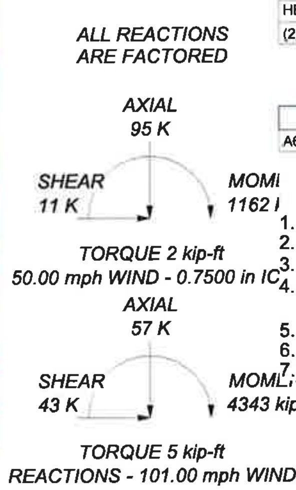


DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXVTM14-C-120 w/ Mount Pipe	147	(2) SBNHH-1D65B w/ Mount Pipe	116
APXVTM14-C-120 w/ Mount Pipe	147	(2) SBNHH-1D65B w/ Mount Pipe	116
APXVTM14-C-120 w/ Mount Pipe	147	RRH2X60-700	116
APXVSPP18-C-A20 w/ Mount Pipe	147	RRH2X60-700	116
APXVSPP18-C-A20 w/ Mount Pipe	147	RRH2X60-700	116
APXVSPP18-C-A20 w/ Mount Pipe	147	RRH2X60-PCS	116
800 EXTERNAL NOTCH FILTER	147	RRH2X60-PCS	116
800 EXTERNAL NOTCH FILTER	147	RRH2X60-PCS	116
800 EXTERNAL NOTCH FILTER	147	RRH4X45-AWS4 B66	116
800MHZ RRH	147	RRH4X45-AWS4 B66	116
800MHZ RRH	147	RRH4X45-AWS4 B66	116
800MHZ RRH	147	DB-T1-6Z-8AB-0Z	116
1900MHZ RRH (65MHZ)	147	Platform Mount [LP 1201-1]	116
1900MHZ RRH (65MHZ)	147	7770.00 w/ Mount Pipe	106
1900MHZ RRH (65MHZ)	147	7770.00 w/ Mount Pipe	106
(3) ACU-A20-N	147	7770.00 w/ Mount Pipe	106
(3) ACU-A20-N	147	SBNHH-1D65A w/ Mount Pipe	106
(3) ACU-A20-N	147	SBNHH-1D65A w/ Mount Pipe	106
TD-RRH8X20-25	147	SBNHH-1D65A w/ Mount Pipe	106
TD-RRH8X20-25	147	(3) LGP21401	106
TD-RRH8X20-25	147	(3) LGP21401	106
(2) 2.375" OD x 6' Mount Pipe	147	(3) LGP21401	106
(2) 2.375" OD x 6' Mount Pipe	147	RRUS 11	106
(2) 2.375" OD x 6' Mount Pipe	147	RRUS 11	106
Platform Mount [LP 1201-1]	147	RRUS 11	106
Miscellaneous [NA 507-1]	147	RRUS 12	106
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	135	RRUS 12	106
		RRUS 12	106
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	135	RRUS A2	106
		RRUS A2	106
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	135	RRUS A2	106
		DC6-48-60-18-8F	106
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	135	TPA-65R-BU4AA-K w/ Mount Pipe	106
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	135	TPA-65R-BU4AA-K w/ Mount Pipe	106
		TPA-65R-BU4AA-K w/ Mount Pipe	106
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	135	DBC0061F1V51-2	106
		DBC0061F1V51-2	106
LNX-6515DS-A1M w/ Mount Pipe	135	DBC0061F1V51-2	106
LNX-6515DS-A1M w/ Mount Pipe	135	RADIO 4426	106
LNX-6515DS-A1M w/ Mount Pipe	135	RADIO 4426	106
ATSBT-TOP-MF-4G	135	RADIO 4426	106
ATSBT-TOP-MF-4G	135	RRUS 32	106
ATSBT-TOP-MF-4G	135	RRUS 32	106
T-Arm Mount [TA 602-3]	135	RRUS 32	106
(2) LPA-80080/4CF w/ Mount Pipe	116	(2) 7020.00	106
(2) LPA-80063/6CF w/ Mount Pipe	116	(2) 7020.00	106
(2) APL868013 w/ Mount Pipe	116	(2) 7020.00	106
DB-T1-6Z-8AB-0Z	116	DC6-48-60-18-8F	106
(2) CLEARGAIN DUAL BAND 800/1900 MHZ	116	Platform Mount [LP 1201-1]	106
		Miscellaneous [NA 507-2]	106
HBXX-6517DS-A2M w/ Mount Pipe	116	Miscellaneous [NA 509-3]	106
HBXX-6517DS-A2M w/ Mount Pipe	116	OG-860/1920/GPS-A	76
HBXX-6517DS-A2M w/ Mount Pipe	116	KS24019-L112A	76
(2) SBNHH-1D65B w/ Mount Pipe	116	Side Arm Mount [SO 701-3]	76

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi			



TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 101.00 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.00 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.00 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft

PJF
Paul J. Ford & Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job:	147-Ft Monopole / Secondino Prope
Project:	PJF 37518-0474.002.7805 / BU# 876316
Client:	Crown Castle · Drawn by: skadam · App'd:
Code:	TIA-222-G · Date: 03/08/18 · Scale: NT
Path:	· Dwg No. E-

CCIpole

per TIA-222- G

Site BU: 876316

Work Order: _____

CROWN CASTLE

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	147	42	3.75	18	22	29.141	0.25	1	A607-60
2	108.75	35	4.25	18	28.00	33.955	0.3125	1.25	A607-60
3	78	35.25	4.75	18	32.61	38.601	0.375	1.5	A607-60
4	47.5	47.5	0	18	37.04	45.12	0.4375	1.75	A607-60

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	8.25	channel	MP3-05 (1.1875")	2					o		o											
2	0	88.25	channel	MP3-05 (1.1875")	2												o						o
3	6.25	76.75	channel	MP3-05 (1.1875")	1						o												
4	75.5	86	channel	MP3-05 (1.1875")	1							o											
5	84.33	89.83	channel	MP3-05 (1.1875")	1						o												
6	3.25	32.75	plate	CCI-SFP-065125	3			o						o					o				
7	32.75	63.08	plate	CCI-AFP-060100	3			o						o					o				
8	0	3.25	plate	FP 1.25 x 5.75_1	3	c									c				o				
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
2	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
3	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
4	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
5	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
6	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
7	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
8	1.25	5.75	7.1875	2.875	n/a	n/a	0.000	7.188	0.0000	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	147 - 142	5		18	22.000	22.850	0.25	A607-60	1.000
2	142 - 137	5		18	22.850	23.700	0.25	A607-60	1.000
3	137 - 132	5		18	23.700	24.550	0.25	A607-60	1.000
4	132 - 127	5		18	24.550	25.400	0.25	A607-60	1.000
5	127 - 122	5		18	25.400	26.251	0.25	A607-60	1.000
6	122 - 117	5		18	26.251	27.101	0.25	A607-60	1.000
7	117 - 112	5		18	27.101	27.951	0.25	A607-60	1.000
8	112 - 108.75	7	3.75	18	27.951	29.141	0.25	A607-60	1.000
9	108.75 - 103.75	5		18	28.003	28.854	0.3125	A607-60	1.000
10	103.75 - 98.75	5		18	28.854	29.704	0.3125	A607-60	1.000
11	98.75 - 93.75	5		18	29.704	30.554	0.3125	A607-60	1.000
12	93.75 - 89.83	3.92		18	30.554	31.221	0.3125	A607-60	1.000
13	89.83 - 89.58	0.25		18	31.221	31.263	0.31875	A607-60	1.161
14	89.58 - 88.25	1.33		18	31.263	31.489	0.31875	A607-60	1.160
15	88.25 - 88	0.25		18	31.489	31.532	0.5125	A607-60	0.950
16	88 - 86	2		18	31.532	31.872	0.5125	A607-60	0.946
17	86 - 85.75	0.25		18	31.872	31.914	0.5125	A607-60	1.056
18	85.75 - 84.33	1.42		18	31.914	32.156	0.5125	A607-60	1.053
19	84.33 - 84.08	0.25		18	32.156	32.198	0.475	A607-60	1.016
20	84.08 - 79.08	5		18	32.198	33.049	0.4625	A607-60	1.033
21	79.08 - 78	5.33	4.25	18	33.049	33.955	0.4625	A607-60	1.031
22	78 - 72.75	5.25		18	32.607	33.500	0.5625	A607-60	0.959
23	72.75 - 67.75	5		18	33.500	34.350	0.5625	A607-60	0.951
24	67.75 - 63.08	4.67		18	34.350	35.144	0.55	A607-60	0.966
25	63.08 - 62.83	0.25		18	35.144	35.187	0.7125	A607-60	0.980
26	62.83 - 57.83	5		18	35.187	36.037	0.7	A607-60	0.986
27	57.83 - 52.83	5		18	36.037	36.887	0.6875	A607-60	0.993
28	52.83 - 47.83	5		18	36.887	37.737	0.6875	A607-60	0.982
29	47.83 - 47.5	5.08	4.75	18	37.737	38.601	0.675	A607-60	1.000
30	47.5 - 42.5	5		18	37.043	37.894	0.75	A607-60	0.984
31	42.5 - 37.5	5		18	37.894	38.744	0.7375	A607-60	0.991
32	37.5 - 32.75	4.75		18	38.744	39.551	0.7375	A607-60	0.982
33	32.75 - 32.5	0.25		18	39.551	39.594	0.7875	A607-60	0.987
34	32.5 - 27.5	5		18	39.594	40.444	0.775	A607-60	0.993
35	27.5 - 22.5	5		18	40.444	41.294	0.7625	A607-60	1.000
36	22.5 - 17.5	5		18	41.294	42.144	0.7625	A607-60	0.991
37	17.5 - 12.5	5		18	42.144	42.995	0.75	A607-60	0.999
38	12.5 - 8.25	4.25		18	42.995	43.717	0.7375	A607-60	1.008
39	8.25 - 8	0.25		18	43.717	43.760	0.8	A607-60	1.034
40	8 - 6.25	1.75		18	43.760	44.057	0.7875	A607-60	1.047
41	6.25 - 6	0.25		18	44.057	44.100	0.775	A607-60	1.010
42	6 - 3.25	2.75		18	44.100	44.567	0.7625	A607-60	1.021
43	3.25 - 3	0.25		18	44.567	44.610	0.7625	A607-60	0.994
44	3 - 0	3		18	44.610	45.120	0.75	A607-60	1.006

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	147 - 142	3.99	28.67	6.35
2	142 - 137	4.34	61.53	6.79
3	137 - 132	6.30	109.06	11.39
4	132 - 127	6.72	167.38	11.93
5	127 - 122	7.17	228.35	12.46
6	122 - 117	7.64	291.97	12.99
7	117 - 112	11.69	390.66	21.65
8	112 - 108.75	12.09	461.56	21.98
9	108.75 - 103.75	17.75	588.39	29.42
10	103.75 - 98.75	18.61	736.68	29.91
11	98.75 - 93.75	19.50	887.40	30.39
12	93.75 - 89.83	20.23	1007.25	30.78
13	89.83 - 89.58	20.30	1014.95	30.80
14	89.58 - 88.25	20.56	1056.02	30.98
15	88.25 - 88	20.65	1063.77	31.00
16	88 - 86	21.12	1126.05	31.29
17	86 - 85.75	21.20	1133.88	31.32
18	85.75 - 84.33	21.57	1178.50	31.53
19	84.33 - 84.08	21.64	1186.38	31.55
20	84.08 - 79.08	22.90	1345.85	32.24
21	79.08 - 78	23.18	1380.73	32.38
22	78 - 72.75	25.69	1553.53	33.38
23	72.75 - 67.75	27.13	1722.01	34.03
24	67.75 - 63.08	28.49	1882.37	34.66
25	63.08 - 62.83	28.60	1891.04	34.71
26	62.83 - 57.83	30.41	2066.50	35.48
27	57.83 - 52.83	32.27	2245.73	36.23
28	52.83 - 47.83	34.15	2428.63	36.95
29	47.83 - 47.5	34.29	2440.83	36.99
30	47.5 - 42.5	37.82	2627.85	37.81
31	42.5 - 37.5	39.88	2818.57	38.49
32	37.5 - 32.75	41.88	3002.78	39.10
33	32.75 - 32.5	42.01	3012.56	39.12
34	32.5 - 27.5	44.26	3209.73	39.76
35	27.5 - 22.5	46.55	3409.95	40.35
36	22.5 - 17.5	48.87	3613.02	40.90
37	17.5 - 12.5	51.22	3818.67	41.39
38	12.5 - 8.25	53.24	3995.38	41.80
39	8.25 - 8	53.39	4005.83	41.80
40	8 - 6.25	54.28	4079.14	42.00
41	6.25 - 6	54.43	4089.63	42.00
42	6 - 3.25	55.80	4205.49	42.28
43	3.25 - 3	55.95	4216.05	42.28
44	3 - 0	57.43	4343.31	42.57

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
147 - 142	Pole	TP22.85x22x0.25	Pole	5.4%	Pass
142 - 137	Pole	TP23.7x22.85x0.25	Pole	10.4%	Pass
137 - 132	Pole	TP24.55x23.7x0.25	Pole	17.0%	Pass
132 - 127	Pole	TP25.4x24.55x0.25	Pole	24.2%	Pass
127 - 122	Pole	TP26.251x25.4x0.25	Pole	30.8%	Pass
122 - 117	Pole	TP27.101x26.251x0.25	Pole	37.1%	Pass
117 - 112	Pole	TP27.951x27.101x0.25	Pole	47.2%	Pass
112 - 108.75	Pole	TP29.141x27.951x0.25	Pole	53.8%	Pass
108.75 - 103.75	Pole	TP28.854x28.003x0.3125	Pole	52.8%	Pass
103.75 - 98.75	Pole	TP29.704x28.854x0.3125	Pole	62.1%	Pass
98.75 - 93.75	Pole	TP30.554x29.704x0.3125	Pole	70.5%	Pass
93.75 - 89.83	Pole	TP31.221x30.554x0.3125	Pole	76.6%	Pass
89.83 - 89.58	Pole + Reinf.	TP31.263x31.221x0.3188	Pole	77.8%	Pass
89.58 - 88.25	Pole + Reinf.	TP31.489x31.263x0.3188	Pole	79.7%	Pass
88.25 - 88	Pole + Reinf.	TP31.532x31.489x0.5125	Reinf. 2 Tension Rupture	67.1%	Pass
88 - 86	Pole + Reinf.	TP31.872x31.532x0.5125	Reinf. 2 Tension Rupture	69.8%	Pass
86 - 85.75	Pole + Reinf.	TP31.914x31.872x0.5125	Reinf. 2 Tension Rupture	70.7%	Pass
85.75 - 84.33	Pole + Reinf.	TP32.156x31.914x0.5125	Reinf. 2 Tension Rupture	72.6%	Pass
84.33 - 84.08	Pole + Reinf.	TP32.198x32.156x0.475	Reinf. 2 Tension Rupture	74.4%	Pass
84.08 - 79.08	Pole + Reinf.	TP33.049x32.198x0.4625	Reinf. 2 Tension Rupture	80.7%	Pass
79.08 - 78	Pole + Reinf.	TP33.955x33.049x0.4625	Reinf. 2 Tension Rupture	82.0%	Pass
78 - 72.75	Pole + Reinf.	TP33.5x32.607x0.5625	Reinf. 2 Tension Rupture	78.8%	Pass
72.75 - 67.75	Pole + Reinf.	TP34.35x33.5x0.5625	Reinf. 2 Tension Rupture	83.7%	Pass
67.75 - 63.08	Pole + Reinf.	TP35.144x34.35x0.55	Reinf. 2 Tension Rupture	87.9%	Pass
63.08 - 62.83	Pole + Reinf.	TP35.187x35.144x0.7125	Reinf. 7 Tension Rupture	72.6%	Pass
62.83 - 57.83	Pole + Reinf.	TP36.037x35.187x0.7	Reinf. 7 Tension Rupture	76.5%	Pass
57.83 - 52.83	Pole + Reinf.	TP36.887x36.037x0.6875	Reinf. 7 Tension Rupture	80.2%	Pass
52.83 - 47.83	Pole + Reinf.	TP37.737x36.887x0.6875	Reinf. 7 Tension Rupture	83.7%	Pass
47.83 - 47.5	Pole + Reinf.	TP38.601x37.737x0.675	Reinf. 7 Tension Rupture	83.9%	Pass
47.5 - 42.5	Pole + Reinf.	TP37.894x37.043x0.75	Reinf. 7 Tension Rupture	82.7%	Pass
42.5 - 37.5	Pole + Reinf.	TP38.744x37.894x0.7375	Reinf. 7 Tension Rupture	85.6%	Pass
37.5 - 32.75	Pole + Reinf.	TP39.551x38.744x0.7375	Reinf. 7 Tension Rupture	88.2%	Pass
32.75 - 32.5	Pole + Reinf.	TP39.594x39.551x0.7875	Reinf. 6 Tension Rupture	81.2%	Pass
32.5 - 27.5	Pole + Reinf.	TP40.444x39.594x0.775	Reinf. 6 Tension Rupture	83.7%	Pass
27.5 - 22.5	Pole + Reinf.	TP41.294x40.444x0.7625	Reinf. 6 Tension Rupture	86.0%	Pass
22.5 - 17.5	Pole + Reinf.	TP42.144x41.294x0.7625	Reinf. 6 Tension Rupture	88.3%	Pass
17.5 - 12.5	Pole + Reinf.	TP42.995x42.144x0.75	Reinf. 6 Tension Rupture	90.4%	Pass
12.5 - 8.25	Pole + Reinf.	TP43.717x42.995x0.7375	Reinf. 6 Tension Rupture	92.1%	Pass
8.25 - 8	Pole + Reinf.	TP43.76x43.717x0.8	Reinf. 2 Tension Rupture	89.2%	Pass
8 - 6.25	Pole + Reinf.	TP44.057x43.76x0.7875	Reinf. 2 Tension Rupture	89.9%	Pass
6.25 - 6	Pole + Reinf.	TP44.1x44.057x0.775	Reinf. 2 Tension Rupture	90.2%	Pass
6 - 3.25	Pole + Reinf.	TP44.567x44.1x0.7625	Reinf. 2 Tension Rupture	91.2%	Pass
3.25 - 3	Pole + Reinf.	TP44.61x44.567x0.7625	Reinf. 1 Tension Rupture	90.2%	Pass
3 - 0	Pole + Reinf.	TP45.12x44.61x0.75	Reinf. 1 Tension Rupture	91.3%	Pass
				Summary	
			Pole	79.7%	Pass
			Reinforcement	92.1%	Pass
			Overall	92.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity								
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8
147 - 142	1157	n/a	1157	17.93	n/a	17.93	5.4%								
142 - 137	1292	n/a	1292	18.61	n/a	18.61	10.4%								
137 - 132	1438	n/a	1438	19.28	n/a	19.28	17.0%								
132 - 127	1594	n/a	1594	19.96	n/a	19.96	24.2%								
127 - 122	1761	n/a	1761	20.63	n/a	20.63	30.8%								
122 - 117	1940	n/a	1940	21.31	n/a	21.31	37.1%								
117 - 112	2130	n/a	2130	21.98	n/a	21.98	47.2%								
112 - 108.75	2260	n/a	2260	22.42	n/a	22.42	53.8%								
108.75 - 103.75	2912	n/a	2912	28.31	n/a	28.31	52.8%								
103.75 - 98.75	3181	n/a	3181	29.15	n/a	29.15	62.1%								
98.75 - 93.75	3465	n/a	3465	29.99	n/a	29.99	70.5%								
93.75 - 89.83	3699	n/a	3699	30.66	n/a	30.66	76.6%								
89.83 - 89.58	3728	78	3806	30.70	5.65	36.35	77.8%					66.1%			
89.58 - 88.25	3810	80	3889	30.92	5.65	36.57	79.7%					67.9%			
88.25 - 88	3812	2334	6145	30.96	16.95	47.91	48.5%		67.1%			67.1%			
88 - 86	3938	2382	6319	31.30	16.95	48.25	50.4%		69.8%			69.8%			
86 - 85.75	3956	2434	6390	31.34	22.60	53.94	51.1%		70.7%		51.4%	53.8%			
85.75 - 84.33	4048	2469	6516	31.58	22.60	54.18	52.5%		72.6%		52.8%	55.2%			
84.33 - 84.08	4073	1977	6050	31.63	16.95	48.58	58.7%		74.4%		71.2%				
84.08 - 79.08	4407	2077	6484	32.47	16.95	49.42	63.9%		80.7%		77.3%				
79.08 - 78	4482	2099	6581	32.65	16.95	49.60	65.0%		82.0%		78.6%				
78 - 72.75	5464	2618	8082	39.43	16.95	56.38	57.1%		78.8%	78.8%					
72.75 - 67.75	5895	2746	8641	40.44	16.95	57.39	60.6%		83.7%	83.7%					
67.75 - 63.08	6318	2868	9187	41.38	16.95	58.33	63.8%		87.9%	87.9%					
63.08 - 62.83	6350	5315	11665	41.43	34.95	76.38	52.4%		71.1%	67.8%				72.6%	
62.83 - 57.83	6826	5564	12390	42.45	34.95	77.40	55.2%		74.8%	71.4%				76.5%	
57.83 - 52.83	7326	5818	13145	43.46	34.95	78.41	57.8%		78.3%	74.8%				80.2%	
52.83 - 47.83	7850	6079	13928	44.47	34.95	79.42	60.4%		81.7%	78.1%				83.7%	
47.83 - 47.5	7885	6096	13981	44.54	34.95	79.49	60.5%		81.9%	78.3%				83.9%	
47.5 - 42.5	9225	6129	15354	52.01	34.95	86.96	59.4%		80.3%	77.1%				82.7%	
42.5 - 37.5	9868	6396	16263	53.19	34.95	88.14	61.5%		83.1%	79.8%				85.6%	
37.5 - 32.75	10505	6655	17159	54.31	34.95	89.26	63.3%		85.6%	82.2%				88.2%	
32.75 - 32.5	10545	7805	18350	54.37	41.33	95.70	59.8%		80.8%	76.8%			81.2%		
32.5 - 27.5	11246	8130	19376	55.55	41.33	96.88	61.6%		83.2%	79.1%			83.7%		
27.5 - 22.5	11978	8461	20440	56.73	41.33	98.06	63.4%		85.5%	81.3%			86.0%		
22.5 - 17.5	12741	8799	21541	57.91	41.33	99.24	65.0%		87.6%	83.4%			88.3%		
17.5 - 12.5	13536	9144	22680	59.09	41.33	100.42	66.6%		89.6%	85.4%			90.4%		
12.5 - 8.25	14237	9443	23680	60.10	41.33	101.42	67.8%		91.3%	87.0%			92.1%		
8.25 - 8	14413	11045	25457	60.16	52.63	112.78	65.4%	70.1%	89.2%	66.6%			83.0%		
8 - 6.25	14711	11191	25901	60.57	52.63	113.19	65.9%	70.6%	89.9%	67.1%			83.7%		
6.25 - 6	14677	10645	25322	60.63	46.98	107.60	67.1%	79.6%	90.2%				87.1%		
6 - 3.25	15153	10864	26017	61.28	46.98	108.25	67.8%	80.5%	91.2%				88.1%		
3.25 - 3	15121	10428	25549	61.34	44.16	105.50	66.1%	90.2%	83.3%						79.5%
3 - 0	15651	10653	26303	62.05	44.16	106.21	66.9%	91.3%	84.3%						80.4%

Note: Section capacity checked in 5 degree increments.

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876316*
Site Name: *Secondino Property*
App #:

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	52	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	53	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	6	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
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:	45.12	in
Thick:	0.4375	in
Grade:	60	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	4343	ft-kips
Factored Axial, Pu:	57	kips
Factored Shear, Vu:	43	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	259.5 Kips
Axial Design Strength, Φ*Fu*Anet:	260.0 Kips
Anchor Rod Stress Ratio:	99.8% **Pass**

Base Plate Results Flexural Check

Base Plate Stress:	38.0 ksi
PL Design Bending Strength, Φ*Fy:	45.0 ksi
Base Plate Stress Ratio:	84.5% **Pass**

PL Ref. Data
Yield Line (in): 29.83
Max PL Length: 29.83

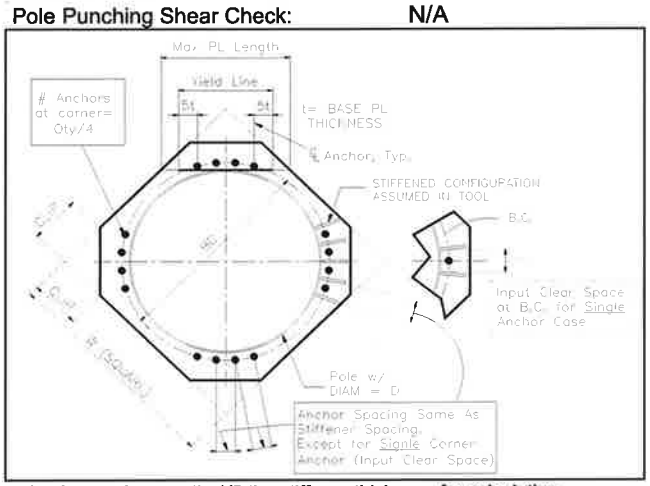
N/A - Unstiffened

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



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

Drilled Pier Foundation

BU # :	876316
Site Name:	Secondino Property
App. Number:	

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	4343	
Axial Force (kips)	57	
Shear Force (kips)	43	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	22.5	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 22.5' below grade		
Pier Diameter	7	ft
Rebar Quantity	32	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.92	-
Soil Safety Factor	2.09	-
Max Moment (kip-ft)	4562.98	-
Rating	*63.5%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	201.05	-
End Bearing (kips)	1676.96	-
Weight of Concrete (kips)	111.78	-
Total Capacity (kips)	1878.02	-
Axial (kips)	168.78	-
Rating	*9.0%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.73	-
Critical Moment (kip-ft)	4562.41	-
Critical Moment Capacity	7538.42	-
Rating	*60.5%*	-

Soil Interaction Rating	**63.5%**
Structural Foundation Rating	**60.5%**

Soil Profile

Groundwater Depth	6	ft	# of Layers	9

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3	3	116	150	0		0.000	0.000	0.00	0.00			Cohesionless
2	3	3.5	0.5	115	150	0		0.000	0.000	0.00	0.00			Cohesionless
3	3.5	5	1.5	115	150		38	0.000	0.000	0.18	0.18			Cohesionless
4	5	6	1	116	150		41	0.000	0.000	0.24	0.24			Cohesionless
5	6	7	1	54	87.6		41	0.000	0.000	0.24	0.24			Cohesionless
6	7	10	3	55	87.6		45	0.000	0.000	0.38	0.38			Cohesionless
7	10	15	5	55	87.6		45	0.00	0.00	0.48	0.48			Cohesionless
8	15	20	5	55	87.6	3.25		1.78	1.78	1.20	1.20			Cohesive
9	20	22.5	2.5	55	87.6		45	0.00	0.00	0.76	0.76	58.1		Cohesionless

On Air Engineering, LLC
88 Foundry Pond Road
Cold Spring, NY 10516
onair@optonline.net

April 5, 2019

Mr. James O'Donnell
Verizon Wireless
20 Alexander Drive
Wallingford, CT 06492

Re: Antenna Modification Certification
Verizon Site Name: Branford 3 CT

Location: Crown Castle #876316; 147' Monopole Tower
21 Acorn Rd., Branford, CT 06405

Engineers: On Air Engineering, LLC (OAE); 88 Foundry Pond Rd, Cold Spring, NY 10516
Paul J. Ford & Company (PJF); 250 E. Broad St. #600, Columbus, OH 43215

CSC Exempt Mod Reference #: EM-VER-014-171102

Dear Jim:

We are providing this "Antenna Modification Certification" with regards to the structural components of the above referenced project.

The following are the basis for substantiating compliance with this modification:

- Structural Analysis by PJF (project # 37518-0474.002.7805) dated March 8, 2018
- Mount Analysis by PJF (project # A42918-0006.002.7190) dated February 7, 2018
- Construction Drawings by OAE dated September 12, 2018
- Field observations by OAE personnel on December 10, 2018

Our office has determined that the Verizon Wireless modifications were installed in general compliance with the recommendations of the aforementioned structural and mount analyses. The structural analyses prepared by PJF demonstrates a structure rating of 99.8% and new antenna mount rating of 79.9%.

The work under this contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the referenced documents. This certification is not a review of the structural analysis and the results contained within.

Very truly yours,

David A. Weinpahl, P.E.
CT License No. 22144
Managing Partner
On Air Engineering, LLC

DW:dw