EMPIRE telecom

October 25, 2018

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

RE: EM-AT&T-100-160915 – 38 Lower Rd., North Canaan, CT
AT&T Site CT1134

COMPLETION OF CONSTRUCTION ACTIVITY

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced decisions has been completed.

The Council acknowledged the above referenced notice of exempt modification on October 3, 2016. The Council imposed the following condition in its acknowledgement:

- 1. Prior to commencement of installation, AT&T shall provide one copy of the Structural Analysis Report to the Council referencing Revision G of the *Structural Standards for Steel Antenna Tower and Antenna Supporting Structures* as adopted by the Connecticut State Building Code effective October 1, 2016.

The enclosed partial Tower Analysis Report, dated January 13, 2017 provides evidence of compliance with the condition enumerated by the Council. The section entitled "Codes, Standards and Loading" found on page 2, references Revision G of the Code. The entire 43-page Structural Report has been emailed to the Council this afternoon.

Please accept my apologies for the tardiness of these materials. If you have any questions or need any additional information regarding this facility, please do not hesitate to contact me.

Very truly yours,

Jack Andrews
Zoning Manager

Enclosures

Jack Andrews • Empire Telecom USA, LLC • 10130 Donleigh Drive, Columbia, MD 21046 • 443-677-0144 • jandrews@empiretelecomm.com

MASER CONSULTING
— CONNECTICUT —

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EMPiRE telecom

16 Esquire Road
Billerica, MA 01862

LTE 2C

Revision 0

Tower Structural Analysis

Site Name: *North Canaan-Lower County RD*
FA #: *10035410*
Site Number: *CT1134*
Site Address: *38 Lower Road*
North Canaan, CT 06018
Litchfield County
Maser Project Number: *16963032A*

January 13, 2017

Analysis Type	*Tower Feasibility*
Pass/Fail	*Pass*
Mount Utilization	*64.6 %*

STATE OF CONNECTICUT
FRANK E. PAZDEN
No. 28188
LICENSED
PROFESSIONAL ENGINEER

Frank E. Pazden, P.E.
Connecticut Professional Engineer
PE License # 28188

Objective:

The objective of this report is to determine the capacity of the existing 195' lattice tower structure at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

Introduction:

Maser Consulting Connecticut has performed limited field observations on July 26, 2016 to visually verify the existing condition of the structure from grade and to locate and quantify the existing wireless appurtenances where possible. Maser Consulting P.A. has reviewed the following documents in completing this report:

- RFDS 1129378 provided by Empire Telecom, dated November 07, 2016 for LTE 2C scope of work.
- Rev A Construction Drawings prepared by Maser Consulting Connecticut for LTE 2C Scope of Work
- Limited Visual Site Visit photos and notes prepared by Maser Consulting Connecticut on July 26, 2016.
- Tower Mapping Report prepared by Tower Engineering Professionals TEP#72508_94731 dated, September 08, 2016.
- Previous structural Analysis and evaluation report prepared by Maser Consulting P.A dated, October 6, 2016.

This site has an inner tower carrying the feedline cables and an outer tower supporting the existing **AT&T** equipment. The outer tower is a 195' lattice tower structure. The primary tower structure is constructed of pirod lattice legs and diagonals, horizontals are constructed of angle members. The proposed **AT&T** antenna support pipes supported by pipes at a centerline of approximately **140'-0"** above ground level on the outer tower. This analysis is for the outer tower structure only and is based upon this information, as well as the information obtained in the field.

Discrete and Linear Appurtenances:

Maser Consulting Connecticut understands the existing & proposed **AT&T** loading to be as follows:

- **(1) Andrew SBNHH-1D65A Antennas (Replacement per RFDS)**
- *(6) Powerwave 7770 Antennas (Existing per Mount Mapping)*
- **(2) CCI HPA-65R-BUU-H6 Antennas (Replacement per RFDS)**
- *(3) Ericsson RRUS-11 B12 (Existing per Mount Mapping)*
- **(3) Ericsson RRUS-32 B2 (***Proposed per RFDS***)**
- **(1) Raycap DC6 (Proposed mounted to the tower leg)**
- *(6) Powerwave TMAs (Existing)*

The overall antenna loading is found in the Appendix A of this report.

Codes, Standards and Loading:

Maser Consulting Connecticut utilized the following codes and standards:

- 2016 CT State Building Code And All Subsequent Amendments
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-222-G
    - Basic Wind Speed – 100 mph, Ice thickness of 1in.
    - Exposure Category – C
    - Structure Class – II
    - Topographic Category - 1

Note: The maximum basic wind speed and maximum design ice thickness were used as the tower structure carries emergency state police antennas.

Analysis Approach & Assumptions:

The analysis approach used in this structural analysis is based on the premise that if the existing lattice structure is structurally adequate to support the existing and proposed equipment per the aforementioned codes and standards, or if the increase in the forces in the structure are deemed to be negligible or acceptable, then the proposed equipment can be installed as intended. Risa-3D, a 3D finite element modeling and analysis program, was used to determine the capacity and usage of the existing antenna support frame.

The following assumptions were utilized in this report:

- Structural Steel Main Legs are constructed of A572-50 Grade Steel.
- Structural Steel Angles members are constructed of A36 Grade.
- Structural Bolts are assumed to be A325N grade.
- Tower is installed to plumb and is maintained properly without any structural deficiencies or deteriorations to the original design.
- It is assumed that the telecommunication equipment supports, antenna supports, and existing structure have been designed by a registered licensed professional engineer for the existing loads acting on the structure, as required by all applicable codes, prior to the proposed modifications listed within this report.
- It is assumed that information provided by the client regarding the structure itself, the antenna models, feed lines, and other relevant information is current and correct.
- It is assumed all other existing appurtenances, antennas, cables, etc. belonging to others have been installed and supported per code and per specifications so as not to damage any existing structural support members, and that any contributing loads from adjacent equipment has been taken into consideration for their design.
- Proposed equipment and locations should not deviate from the proposed locations noted herein and shown on the associated Maser Consulting Connecticut final Construction Drawings.

Calculations:

The calculations are found in Appendix A of this report.

Conclusion:

The existing lattice tower was analyzed for the loading in the applicable codes and standards. The tower has been determined to be structurally **ADEQUATE** to support the proposed and existing antennas, based upon the aforementioned assumptions.

The lattice tower has been determined to be stressed to a maximum of **64.6%** of its structural capacity with the maximum usage occurring at the diagonal bolts at elevation 110'-120'. The tower main legs and diagonals were stressed to a maximum of **63.9%** and **57.9.9%** of their capacity. The foundation was not evaluated as a part of this analysis. Therefore, the proposed **AT&T** installation **CAN** be placed as intended in all sectors pending a passing foundation analysis of the existing tower with proposed and existing configuration.

Prior to the installation of the proposed equipment, the contractor shall verify that all bolted connections are

properly fastened from the original installation. Additionally, the contractor shall inspect all existing hardware and verify that it is in its original condition and free of rust and deterioration. If any deficiencies are noted the contractor shall notify the engineer of the conditions prior to installation of any equipment for additional evaluation.

The conclusions reached by Maser Consulting Connecticut in this evaluation are only applicable for the existing structural members supporting the proposed **AT&T** telecommunications installation described herein. Further, no structural qualifications are made or implied by this document for the existing structure.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

Sincerely,
Maser Consulting Connecticut

Frank Pazden, P.E.
Telecommunications Department Manager

Gowtham Penumatsa E.I.T
Structural Design Engineer

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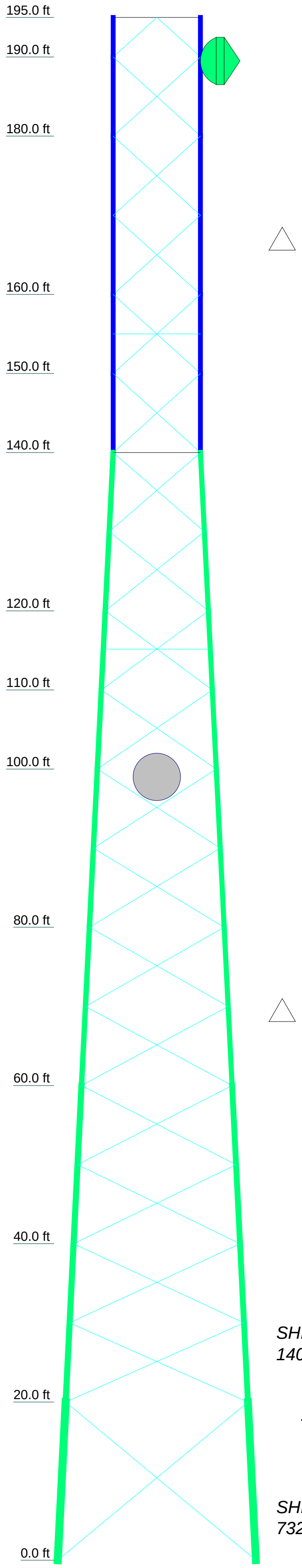
APPENDIX A

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Sec. Horizontals	Face Width (ft)	# Panels @ (ft)	Weight (lb)
L1	Pirod 105244	A572-50	A	A36	A	N.A.		1 @ 5	921.1
L2	Pirod 105244	A572-50	B	A36	N.A.	N.A.		5 @ 10	1131.6
L3	Pirod 105216	A572-50	L3x3x3/16	A36	N.A.	N.A.	11	5 @ 10	2210.5
L4	Pirod 105217	A572-50	L3x3x5/16	A36	N.A.	L3x3x5/16		5 @ 10	1706.2
L5	Pirod 105217	A572-50	L3x3x5/16	A36	N.A.	N.A.	11	5 @ 10	1496.3
T1	Pirod 105218	A572-50	L3x3x5/16	A36	L3 1/2x3 1/2x3/8	N.A.		12 @ 10	3752.3
T2	Pirod 105218	A572-50	L3 1/2x3 1/2x5/16	A36	N.A.	L3x3x5/16	13	12 @ 10	2143.7
T3	Pirod 105218	A572-50	L3 1/2x3 1/2x5/16	A36	N.A.	N.A.	14	12 @ 10	1922.9
T4	Pirod 105219	A572-50	L4x4x1/4	A36	N.A.	N.A.	15	12 @ 10	4407.2
T5	Pirod 105219	A572-50	L4x4x3/8	A36	N.A.	N.A.	17	12 @ 10	5362.9
T6	Pirod 105220	A572-50	L5x5x3/8	A36	N.A.	N.A.	19	12 @ 10	6830.5
T7	Pirod 105220	A572-50	L5x5x3/8	A36	N.A.	N.A.	21	12 @ 10	7109.9
T8	Pirod 112738	A572-50	2L3 1/2x3 1/2x3/8	A36	N.A.	N.A.	23	1 @ 20	8405.6
							25		47400.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Andrew 6' w/Radome	189.5	Powerwave 7770 W/Mount Pipe	140
ATN 150F2	186	Powerwave 7770 W/Mount Pipe	140
ANT150D3	184.167	RRUS-11	140
Super station C21 6004569	184.167	RRUS-11	140
OGT9-840N	184	Powerwave 7770 W/Mount Pipe	140
OGT9-840N	184	CCI HPA-65R-H6 W/Mount Pipe	140
Pirod 7' Side arm mount	183.717	Powerwave 7770 W/Mount Pipe	140
Pirod 7' Side arm Mount	183.167	SBNHH-1D65A W/ MOUNT PIPE	140
Pirod 7' Side arm Mount	183.167	Powerwave 7770 W/Mount Pipe	140
DB222-A	172 - 171	DC6-48-06-18-8F	140
Amphenol LPA-80080-4CF-EDIN-4	169	Powerwave TT19-08BP111 Tma	140
Amphenol LPA-80080-4CF-EDIN-4	169	Powerwave TT19-08BP111 Tma	140
Amphenol BXA-70063-6CF-EDIN-4	169	Powerwave TT19-08BP111 Tma	140
BXA-171085-8BF-EDIN-4	169	PiROD 12' T-Frame	137 - 125
Amphenol LPA-80080-4CF-EDIN-4	169	PiROD 12' T-Frame	137
Amphenol LPA-80080-4CF-EDIN-4	169	PiROD 12' T-Frame	137
Amphenol BXA-70063-6CF-EDIN-4	169	PiROD 12' Universal T-Frame Sector Mount	125
BXA-171085-8BF-EDIN-4	169	PiROD 12' Universal T-Frame Sector Mount	125
Amphenol LPA-80080-4CF-EDIN-4	169	PiROD 12' Universal T-Frame Sector Mount	125
Amphenol LPA-80080-4CF-EDIN-4	169	PiROD 6' side arm mount	120
Amphenol BXA-70063-6CF-EDIN-4	169	ANT150D3	109
Amphenol BXA-70063-6CF-EDIN-4	169	PiROD 6' side arm mount	106
Diplexers	169	PiROD 6' side arm mount	99
Diplexers	169	PiROD 6' side arm mount	99
Diplexers	169	PD-458-2	99
APXV9ERR18	157.417	Andrew 6' w/Radome	99
APXV9ERR18	157.417	2-element dipole	84
APXV9ERR18	157.417	Amphenol BCD-80609	79.6
RRH 2x50 800	157.417	PD-1142-2C	79.6
RRH 2x50 800	157.417	Yagi Antenna	79.6
RRH 2x50 800	157.417	PD-1142-2C	79.6
PiROD 13' Lightweight T-Frame	154	PiROD 7' side arm mount	79.6
PiROD 13' Lightweight T-Frame	154	1- Element Dipole	79.6
PiROD 13' Lightweight T-Frame	154	PiROD 7' side arm mount	79.5
RRUS-11	140	PiROD 7' side arm mount	79
RRUS 32 B2	140	GPS Antenna 18"x3" Dia	36.25
RRUS 32 B2	140	4' Side Arm Mount	32.9167
RRUS 32 B2	140		
Powerwave 7770 W/Mount Pipe	140		
CCI HPA-65R-H6 W/Mount Pipe	140		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2L2 1/2x2 1/2x3/16	B	L2 1/2x2 1/2x3/16

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

ALL RE
ARE FA

MAX. C
DOW
SHEAR: 50771 lb

UPLIFT: -320882 lb
SHEAR: 43432 lb

AXIAL 228001 lb
SHEAR 14007 lb
MOMENT 1587645 lb-ft
TORQUE 3524 lb-ft
40 mph WIND - 1.0000 in ICE

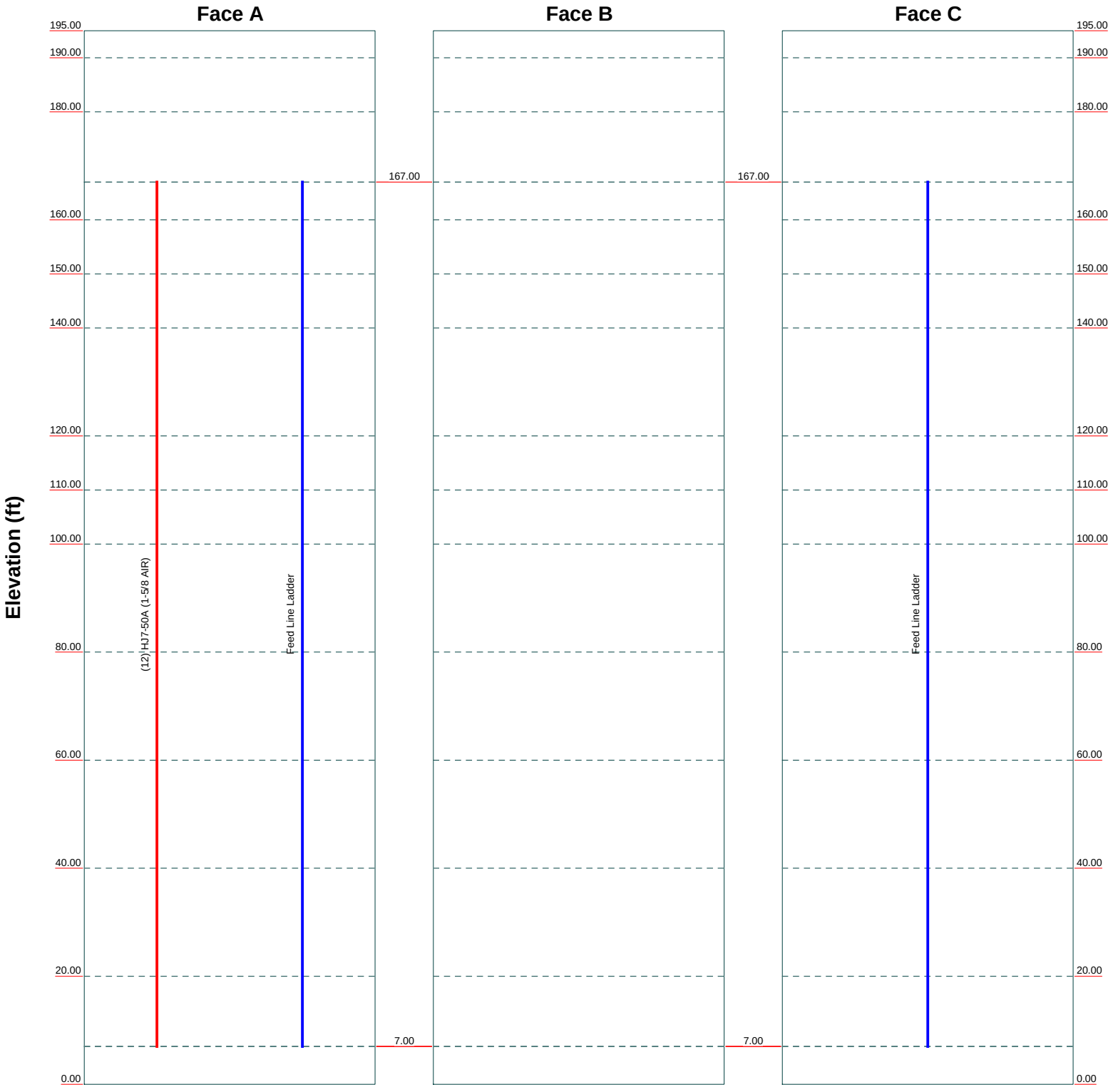
AXIAL 71127 lb
SHEAR 73231 lb
MOMENT 7731776 lb-ft
TORQUE 28295 lb-ft
REACTIONS - 100 mph WIND

Maser Consulting P.A.
400 Valley Road
Mt Arlington, NJ
Phone: 973.398.3110
FAX: 973.398.3199

Job: **16963008**			
Project: **Tower Analysis**			
Client: Empire Telecom	Drawn by: gpenumatsa	App'd:	
Code: TIA-222-G	Date: 01/13/17	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Distribution Chart
0' - 195'

Round | Flat | App In Face | App Out Face | Truss Leg



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Job: ***16963008***			
Project: ***Tower Analysis***			
Client: Empire Telecom	Drawn by: gpenumatsa	App'd:	
Code: TIA-222-G	Date: 01/13/17	Scale: NTS	
Path:		Dwg No. E-7	

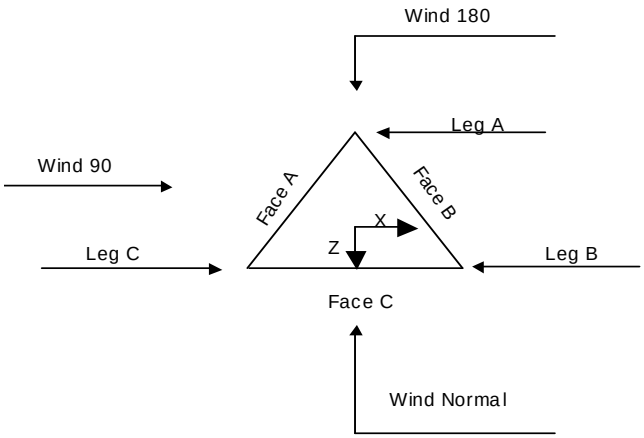
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 195.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 11.00 ft at the top and 25.00 ft at the base.
There is a 3 sided latticed pole with a face width of 11.00 ft.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Litchfield County, Connecticut.
Basic wind speed of 100 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in latticed pole member design is 1.
Stress ratio used in tower member 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		



Triangular Tower

3 Sided Latticed Pole Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
L1	195.00-190.00			11.00	1	5.00
L2	190.00-180.00			11.00	1	10.00
L3	180.00-160.00			11.00	1	20.00
L4	160.00-150.00			11.00	1	10.00
L5	150.00-140.00			11.00	1	10.00

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
L1	195.00-190.00	5.00	K Brace Down	No	Yes	0.0000	0.0000
L2	190.00-180.00	10.00	X Brace	No	No	0.0000	0.0000
L3	180.00-160.00	10.00	X Brace	No	No	0.0000	0.0000
L4	160.00-150.00	10.00	X Brace	No	Yes	0.0000	0.0000
L5	150.00-140.00	10.00	X Brace	No	No	0.0000	0.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
L1 195.00-190.00	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16	A36 (36 ksi)
L2 190.00-180.00	Truss Leg	Pirod 105244	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
L3 180.00-160.00	Truss Leg	Pirod 105216	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
L4 160.00-150.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
L5 150.00-140.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
L1 195.00-190.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2 1/2x2 1/2x3/16	A572-50 (50 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
L4 160.00-150.00	Equal Angle	L3x3x5/16	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 195.00-190.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
L2 190.00-180.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
L3 180.00-160.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
L4 160.00-150.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

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
L5 150.00-140.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
L1 195.00-190.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
L2 190.00-180.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
L3 180.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
L4 160.00-150.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
L5 150.00-140.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Truss-Leg K Factors Truss-Legs Used As Leg Members Leg Panels	X Brace Diagonals	Z Brace Diagonals	Truss-Legs Used As Inner Members Leg Panels	X Brace Diagonals	Z Brace Diagonals
L1 195.00-190.00	1	0.5	0.85	1	0.5	0.85
L2 190.00-180.00	1	0.5	0.85	1	0.5	0.85
L3 180.00-160.00	1	0.5	0.85	1	0.5	0.85
L4 160.00-150.00	1	0.5	0.85	1	0.5	0.85
L5 150.00-140.00	1	0.5	0.85	1	0.5	0.85

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 195.00-190.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L2 190.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L3 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L4 160.00-150.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L5 150.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

3 Sided Latticed Pole Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
L1 195.00-190.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
L2 190.00-180.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
L3 180.00-160.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
L4 160.00-150.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	2
L5 150.00-140.00	Flange	1.0000 A325N	0	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	140.00-120.00			11.00	1	20.00
T2	120.00-110.00			13.00	1	10.00
T3	110.00-100.00			14.00	1	10.00
T4	100.00-80.00			15.00	1	20.00
T5	80.00-60.00			17.00	1	20.00
T6	60.00-40.00			19.00	1	20.00
T7	40.00-20.00			21.00	1	20.00
T8	20.00-0.00			23.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T2	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T3	110.00-100.00	10.00	X Brace	No	No	0.0000	0.0000
T4	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T5	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T6	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T7	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T8	20.00-0.00	20.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 140.00-120.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3x3x5/16	A36 (36 ksi)
T2 120.00-110.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T3 110.00-100.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T4 100.00-80.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T5 80.00-60.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Equal Angle	L4x4x3/8	A36 (36 ksi)
T6 60.00-40.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A36 (36 ksi)
T7 40.00-20.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Equal Angle	L5x5x3/8	A36 (36 ksi)
T8 20.00-0.00	Truss Leg	Pirod 112738	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 140.00-120.00	Equal Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T2 120.00-110.00	Equal Angle	L3x3x5/16	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 140.00-120.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	0.0000	Mid-Pt	36.0000
T2 120.00-110.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 110.00-100.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 100.00-80.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 80.00-60.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 60.00-40.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 40.00-20.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 20.00-0.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 140.00-120.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 120.00-110.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 110.00-100.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 100.00-80.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 80.00-60.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 60.00-40.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 40.00-20.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 20.00-0.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
Tower Elevation ft	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T1 140.00-120.00	1	0.5	0.85	1	0.5	0.85
T2 120.00-110.00	1	0.5	0.85	1	0.5	0.85
T3 110.00-100.00	1	0.5	0.85	1	0.5	0.85
T4 100.00-80.00	1	0.5	0.85	1	0.5	0.85
T5 80.00-60.00	1	0.5	0.85	1	0.5	0.85
T6 60.00-40.00	1	0.5	0.85	1	0.5	0.85
T7 40.00-20.00	1	0.5	0.85	1	0.5	0.85
T8 20.00-0.00	1	0.5	0.85	1	0.5	0.85

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 120.00-110.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 110.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 140.00-120.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 120.00-110.00	Flange	1.0000 A325N	6	1.0000 A325N	1	1.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1
T3 110.00-100.00	Flange	1.0000 A325N	0	1.0000 A325N	1	1.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 100.00-80.00	Flange	1.2500 A325N	6	1.2500 A325N	1	1.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 80.00-60.00	Flange	1.2500 A325N	6	1.2500 A325N	1	1.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 60.00-40.00	Flange	1.2500 A325N	6	1.2500 A325N	1	1.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 40.00-20.00	Flange	1.2500 A325N	6	1.2500 A325N	1	1.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 20.00-0.00	Flange	2.0000 A325N	6	1.0000 A325N	2	1.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
HJ7-50A (1-5/8 AIR)	A	No	Ar (CaAa)	167.00 - 7.00	-10.0000	0	12	6	1.9800	1.9800		1.04

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
Feed Line Ladder	A	No	CaAa (In Face)	167.00 - 7.00	-10.0000	0	1	No Ice	0.50	7.90
								1/2" Ice	0.75	10.60
								1" Ice	0.81	13.30
Feed Line Ladder	C	No	CaAa (In Face)	167.00 - 7.00	-10.0000	0	1	No Ice	0.50	7.90
								1/2" Ice	0.75	10.60
								1" Ice	0.81	13.30

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	195.00-190.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	190.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C	0.000	0.000	0.000	0.000	0.00
L3	180.00-160.00	A	0.000	0.000	20.132	0.000	142.66
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.500	0.000	55.30
L4	160.00-150.00	A	0.000	0.000	28.760	0.000	203.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.000	0.000	79.00
L5	150.00-140.00	A	0.000	0.000	28.760	0.000	203.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.000	0.000	79.00
T1	140.00-120.00	A	0.000	0.000	57.520	0.000	407.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.000	0.000	158.00
T2	120.00-110.00	A	0.000	0.000	28.760	0.000	203.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.000	0.000	79.00
T3	110.00-100.00	A	0.000	0.000	28.760	0.000	203.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	5.000	0.000	79.00
T4	100.00-80.00	A	0.000	0.000	57.520	0.000	407.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.000	0.000	158.00
T5	80.00-60.00	A	0.000	0.000	57.520	0.000	407.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.000	0.000	158.00
T6	60.00-40.00	A	0.000	0.000	57.520	0.000	407.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.000	0.000	158.00
T7	40.00-20.00	A	0.000	0.000	57.520	0.000	407.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	10.000	0.000	158.00
T8	20.00-0.00	A	0.000	0.000	37.388	0.000	264.94
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	6.500	0.000	102.70

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	195.00-190.00	A	2.386	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	0.000	0.00
L2	190.00-180.00	A	2.376	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	180.00-160.00	A	2.356	0.000	0.000	35.592	0.000	873.22
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	11.747	0.000	144.37
L4	160.00-150.00	A	2.335	0.000	0.000	50.662	0.000	1240.52
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	16.673	0.000	205.07
L5	150.00-140.00	A	2.319	0.000	0.000	50.531	0.000	1235.56
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	16.595	0.000	204.23
T1	140.00-120.00	A	2.294	0.000	0.000	100.636	0.000	2455.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	32.939	0.000	405.74

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T2	120.00-110.00	A	2.266	0.000	0.000	50.082	0.000	1218.61
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	16.330	0.000	201.36
T3	110.00-100.00	A	2.245	0.000	0.000	49.908	0.000	1212.08
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	16.227	0.000	200.25
T4	100.00-80.00	A	2.211	0.000	0.000	99.237	0.000	2402.35
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	32.110	0.000	396.80
T5	80.00-60.00	A	2.156	0.000	0.000	98.310	0.000	2367.63
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	31.562	0.000	390.87
T6	60.00-40.00	A	2.085	0.000	0.000	97.106	0.000	2322.71
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	30.848	0.000	383.16
T7	40.00-20.00	A	1.981	0.000	0.000	95.355	0.000	2257.79
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.738	0.000	371.95
T8	20.00-0.00	A	1.775	0.000	0.000	59.723	0.000	1384.80
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	17.481	0.000	227.30

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	195.00-190.00	0.0000	0.0000	0.0000	0.0000
L2	190.00-180.00	0.0000	0.0000	0.0000	0.0000
L3	180.00-160.00	-2.4665	-0.9429	-1.3213	-0.1426
L4	160.00-150.00	-3.6054	-1.3783	-2.2010	-0.2415
L5	150.00-140.00	-3.7461	-1.4320	-2.2998	-0.2552
T1	140.00-120.00	-4.0280	-1.5374	-2.4964	-0.2794
T2	120.00-110.00	-4.4366	-1.6902	-2.7673	-0.3126
T3	110.00-100.00	-5.0337	-1.9158	-3.1634	-0.3606
T4	100.00-80.00	-5.4102	-2.0567	-3.4877	-0.4047
T5	80.00-60.00	-6.1197	-2.3236	-3.9601	-0.4746
T6	60.00-40.00	-6.4245	-2.4370	-4.3123	-0.5405
T7	40.00-20.00	-7.0275	-2.6638	-4.7555	-0.6423
T8	20.00-0.00	-6.7693	-2.5646	-4.2590	-0.7056

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L3	1	HJ7-50A (1-5/8 AIR)	160.00 - 167.00	1.0000	1.0000
L3	2	Feed Line Ladder	160.00 - 167.00	1.0000	1.0000
L3	3	Feed Line Ladder	160.00 - 167.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L4	1	HJ7-50A (1-5/8 AIR)	150.00 - 160.00	1.0000	1.0000
L4	2	Feed Line Ladder	150.00 - 160.00	1.0000	1.0000
L4	3	Feed Line Ladder	150.00 - 160.00	1.0000	1.0000
L5	1	HJ7-50A (1-5/8 AIR)	140.00 - 150.00	1.0000	1.0000
L5	2	Feed Line Ladder	140.00 - 150.00	1.0000	1.0000
L5	3	Feed Line Ladder	140.00 - 150.00	1.0000	1.0000
T1	1	HJ7-50A (1-5/8 AIR)	120.00 - 140.00	1.0000	1.0000
T1	2	Feed Line Ladder	120.00 - 140.00	1.0000	1.0000
T1	3	Feed Line Ladder	120.00 - 140.00	1.0000	1.0000
T2	1	HJ7-50A (1-5/8 AIR)	110.00 - 120.00	1.0000	1.0000
T2	2	Feed Line Ladder	110.00 - 120.00	1.0000	1.0000
T2	3	Feed Line Ladder	110.00 - 120.00	1.0000	1.0000
T3	1	HJ7-50A (1-5/8 AIR)	100.00 - 110.00	1.0000	1.0000
T3	2	Feed Line Ladder	100.00 - 110.00	1.0000	1.0000
T3	3	Feed Line Ladder	100.00 - 110.00	1.0000	1.0000
T4	1	HJ7-50A (1-5/8 AIR)	80.00 - 100.00	1.0000	1.0000
T4	2	Feed Line Ladder	80.00 - 100.00	1.0000	1.0000
T4	3	Feed Line Ladder	80.00 - 100.00	1.0000	1.0000
T5	1	HJ7-50A (1-5/8 AIR)	60.00 - 80.00	1.0000	1.0000
T5	2	Feed Line Ladder	60.00 - 80.00	1.0000	1.0000
T5	3	Feed Line Ladder	60.00 - 80.00	1.0000	1.0000
T6	1	HJ7-50A (1-5/8 AIR)	40.00 - 60.00	1.0000	1.0000
T6	2	Feed Line Ladder	40.00 - 60.00	1.0000	1.0000
T6	3	Feed Line Ladder	40.00 - 60.00	1.0000	1.0000
T7	1	HJ7-50A (1-5/8 AIR)	20.00 - 40.00	1.0000	1.0000
T7	2	Feed Line Ladder	20.00 - 40.00	1.0000	1.0000
T7	3	Feed Line Ladder	20.00 - 40.00	1.0000	1.0000
T8	1	HJ7-50A (1-5/8 AIR)	7.00 - 20.00	1.0000	1.0000
T8	2	Feed Line Ladder	7.00 - 20.00	1.0000	1.0000
T8	3	Feed Line Ladder	7.00 - 20.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C_AA_A Front	C_AA_A Side	Weight
			ft ft ft	°	ft	ft^2	ft^2	lb

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 lb
GPS Antenna 18"x3" Dia	C	From Leg	2.50 0.00 0.00	0.0000	36.25	No Ice 1/2" Ice 1" Ice	0.30 0.42 0.56	0.30 0.42 0.56	10.00 13.61 18.60
4' Side Arm Mount	C	From Leg	0.00 0.00 0.00	0.0000	32.92	No Ice 1/2" Ice 1" Ice	4.25 5.85 7.45	4.25 5.85 7.45	120.00 160.00 200.00
2-element dipole	A	From Leg	7.00 0.00 0.00	0.0000	84.00	No Ice 1/2" Ice 1" Ice	1.60 2.88 4.16	1.60 2.88 4.16	20.00 26.00 32.00
PiROD 7' side arm mount	A	From Leg	3.50 0.00 0.00	0.0000	79.00	No Ice 1/2" Ice 1" Ice	9.63 11.56 13.49	9.63 11.56 13.49	160.00 190.00 220.00
PiROD 7' side arm mount	B	From Leg	3.50 0.00 0.00	0.0000	79.50	No Ice 1/2" Ice 1" Ice	9.63 11.56 13.49	9.63 11.56 13.49	160.00 190.00 220.00
Amphenol BCD-80609	B	From Leg	7.00 -4.00 0.00	0.0000	79.60	No Ice 1/2" Ice 1" Ice	2.43 3.39 4.35	2.43 3.39 4.35	27.00 45.00 69.13
1- Element Dipole	B	From Leg	7.00 0.00 0.00	0.0000	79.60	No Ice 1/2" Ice 1" Ice	1.00 1.50 2.00	1.00 1.50 2.00	8.00 12.00 16.00
PD-1142-2C	B	From Leg	7.00 0.00 10.00	0.0000	79.60	No Ice 1/2" Ice 1" Ice	2.08 3.35 4.64	2.08 3.35 4.64	25.00 41.67 66.30
Yagi Antenna	C	From Leg	7.00 1.50 1.50	0.0000	79.60	No Ice 1/2" Ice 1" Ice	1.60 2.88 4.16	2.75 1.60 2.88	11.84 30.00 50.00
PD-1142-2C	C	From Leg	7.00 0.00 6.00	0.0000	79.60	No Ice 1/2" Ice 1" Ice	2.08 3.35 4.64	2.08 3.35 4.64	25.00 41.67 66.30
PiROD 7' side arm mount	C	From Leg	3.50 0.00 0.00	0.0000	79.60	No Ice 1/2" Ice 1" Ice	9.63 11.56 13.49	9.63 11.56 13.49	160.00 190.00 220.00
PiROD 6' side arm mount	B	From Leg	3.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice	9.63 11.56 13.49	9.63 11.56 13.49	160.00 190.00 220.00
PiROD 6' side arm mount	C	From Leg	3.00 0.00 0.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice	9.63 11.56 13.49	9.63 11.56 13.49	160.00 190.00 220.00
PD-458-2	C	From Leg	6.00 0.00 10.00	0.0000	99.00	No Ice 1/2" Ice 1" Ice	3.66 5.02 6.40	3.66 5.02 6.40	50.00 76.76 112.08
ANT150D3	A	From Leg	6.00 0.00 10.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice	1.60 2.88 4.16	1.60 2.88 4.16	18.00 23.40 28.80
PiROD 6' side arm mount	B	From Leg	3.00 0.00 1.50	0.0000	106.00	No Ice 1/2" Ice 1" Ice	9.63 11.56 13.49	9.63 11.56 13.49	160.00 190.00 220.00
PiROD 6' side arm mount	B	From Leg	3.00 0.00 1.50	0.0000	120.00	No Ice 1/2" Ice 1" Ice	9.63 11.56 13.46	9.63 11.56 13.49	160.00 190.00 220.00
PiROD 12' Universal T-Frame Sector Mount	A	From Leg	1.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
PiROD 12' Universal T-Frame Sector Mount	B	From Leg	1.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00

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 lb
PiROD 12' Universal T-Frame Sector Mount	C	From Leg	1.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
PiROD 12' T-Frame	A	From Leg	2.00 0.00 0.00	0.0000	125.00 - 137.00	No Ice 1/2" Ice 1" Ice	12.20 17.60 23.00	12.20 17.60 23.00	360.00 490.00 620.00
PiROD 12' T-Frame	B	From Leg	2.00 0.00 1.50	0.0000	137.00	No Ice 1/2" Ice 1" Ice	12.20 17.60 23.00	12.20 17.60 23.00	360.00 490.00 620.00
PiROD 12' T-Frame	C	From Leg	2.00 0.00 1.50	0.0000	137.00	No Ice 1/2" Ice 1" Ice	12.20 17.60 23.00	12.20 17.60 23.00	360.00 490.00 620.00
SBNHH-1D65A W/ MOUNT PIPE	A	From Leg	2.00 -5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	6.43 6.87 7.32	3.91 4.27 4.67	40.90 80.32 124.78
Powerwave 7770 W/Mount Pipe	B	From Leg	2.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.88 6.31 6.75	2.93 3.27 3.63	35.00 67.63 105.06
Powerwave 7770 W/Mount Pipe	C	From Leg	2.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.88 6.31 6.75	2.93 3.27 3.63	35.00 67.63 105.06
CCI HPA-65R-H6 W/Mount Pipe	A	From Leg	2.00 -5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	10.08 10.64 11.22	6.45 6.91 7.38	51.00 112.92 181.23
Powerwave 7770 W/Mount Pipe	B	From Leg	2.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.88 6.31 6.75	2.93 3.27 3.63	35.00 67.63 105.06
Powerwave 7770 W/Mount Pipe	C	From Leg	2.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.88 6.31 6.75	2.93 3.27 3.63	35.00 67.63 105.06
CCI HPA-65R-H6 W/Mount Pipe	A	From Leg	2.00 -5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	10.08 10.64 11.22	6.45 6.91 7.38	51.00 112.92 181.23
Powerwave 7770 W/Mount Pipe	B	From Leg	2.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.88 6.31 6.75	2.93 3.27 3.63	35.00 67.63 105.06
Powerwave 7770 W/Mount Pipe	C	From Leg	2.00 5.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	5.88 6.31 6.75	2.93 3.27 3.63	35.00 67.63 105.06
RRUS-11	A	From Leg	2.00 -4.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.52 2.72 2.92	1.02 1.16 1.30	55.00 74.32 96.56
RRUS-11	B	From Leg	2.00 -4.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.52 2.72 2.92	1.02 1.16 1.30	55.00 74.32 96.56
RRUS-11	C	From Leg	2.00 -4.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.52 2.72 2.92	1.02 1.16 1.30	55.00 74.32 96.56
RRUS 32 B2	A	From Leg	2.00 -4.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	67.90 95.83 127.37
RRUS 32 B2	B	From Leg	2.00 -4.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	67.90 95.83 127.37
RRUS 32 B2	C	From Leg	2.00 -4.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	3.31 3.56 3.81	2.42 2.64 2.86	67.90 95.83 127.37

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
APXV9ERR18	A	From Leg	4.00 2.00 0.00	0.0000	157.42	No Ice 1/2" Ice 1" Ice	8.26 8.81 9.36	7.23 8.19 9.02	83.90 151.78 227.47
APXV9ERR18	B	From Leg	4.00 2.00 0.00	0.0000	157.42	No Ice 1/2" Ice 1" Ice	8.26 8.81 9.36	7.23 8.19 9.02	83.90 151.78 227.47
APXV9ERR18	C	From Leg	4.00 2.00 0.00	0.0000	157.42	No Ice 1/2" Ice 1" Ice	8.26 8.81 9.36	7.23 8.19 9.02	83.90 151.78 227.47
PiROD 13' Lightweight T-Frame	A	From Leg	2.00 2.00 0.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice	10.60 16.80 23.00	10.60 16.80 23.00	255.00 359.00 463.00
PiROD 13' Lightweight T-Frame	B	From Leg	2.00 2.00 0.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice	10.60 16.80 23.00	10.60 16.80 23.00	255.00 359.00 463.00
PiROD 13' Lightweight T-Frame	C	From Leg	2.00 2.00 0.00	0.0000	154.00	No Ice 1/2" Ice 1" Ice	10.60 16.80 23.00	10.60 16.80 23.00	255.00 359.00 463.00
RRH 2x50 800	A	From Leg	0.00 0.00 0.00	0.0000	157.42	No Ice 1/2" Ice 1" Ice	2.63 2.84 3.07	2.63 2.84 3.07	35.00 61.38 91.06
RRH 2x50 800	B	From Leg	0.00 0.00 0.00	0.0000	157.42	No Ice 1/2" Ice 1" Ice	2.63 2.84 3.07	2.63 2.84 3.07	35.00 61.38 91.06
RRH 2x50 800	C	From Leg	0.00 0.00 0.00	0.0000	157.42	No Ice 1/2" Ice 1" Ice	2.63 2.84 3.07	2.63 2.84 3.07	35.00 61.38 91.06
Amphenol LPA-80080-4CF-EDIN-4	A	From Leg	2.50 -4.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	6.06 6.45 6.86	12.00 45.12 82.72
Amphenol LPA-80080-4CF-EDIN-4	A	From Leg	2.50 4.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	6.06 6.45 6.86	12.00 45.12 82.72
Amphenol BXA-70063-6CF-EDIN-4	A	From Leg	2.50 -1.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	7.75 8.29 8.85	5.58 6.52 7.33	38.90 97.27 163.19
BXA-171085-8BF-EDIN-4	A	From Leg	2.50 1.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	3.39 3.87 4.34	3.56 4.36 5.04	31.10 65.66 105.87
Amphenol LPA-80080-4CF-EDIN-4	B	From Leg	2.50 -4.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	6.06 6.45 6.86	12.00 45.12 82.72
Amphenol LPA-80080-4CF-EDIN-4	B	From Leg	2.50 4.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	6.06 6.45 6.86	12.00 45.12 82.72
Amphenol BXA-70063-6CF-EDIN-4	B	From Leg	2.50 -1.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	7.75 8.29 8.85	5.58 6.52 7.33	38.90 97.27 163.19
BXA-171085-8BF-EDIN-4	B	From Leg	2.50 1.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	3.39 3.87 4.34	3.56 4.36 5.04	31.10 65.66 105.87
Amphenol LPA-80080-4CF-EDIN-4	C	From Leg	2.50 -4.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	6.06 6.45 6.86	12.00 45.12 82.72
Amphenol LPA-80080-4CF-EDIN-4	C	From Leg	2.50 4.00 0.00	0.0000	169.00	No Ice 1/2" Ice 1" Ice	2.62 2.92 3.23	6.06 6.45 6.86	12.00 45.12 82.72

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 lb
Amphenol	C	From Leg	2.50	0.0000	169.00	No Ice	7.75	5.58	38.90
BXA-70063-6CF-EDIN-4			-1.00			1/2" Ice	8.29	6.52	97.27
			0.00			1" Ice	8.85	7.33	163.19
Amphenol	C	From Leg	2.50	0.0000	169.00	No Ice	7.75	5.58	38.90
BXA-70063-6CF-EDIN-4			1.00			1/2" Ice	8.29	6.52	97.27
			0.00			1" Ice	8.85	7.33	163.19
DB222-A	C	From Leg	2.50	0.0000	172.00 - 171.00	No Ice	6.00	6.00	25.00
			1.00			1/2" Ice	8.03	8.03	40.00
			0.00			1" Ice	9.90	9.90	80.00
Diplexers	A	From Leg	2.50	0.0000	169.00	No Ice	0.23	0.17	10.00
			0.00			1/2" Ice	0.30	0.24	10.00
			0.00			1" Ice	0.37	0.31	10.00
Diplexers	B	From Leg	2.50	0.0000	169.00	No Ice	0.23	0.17	10.00
			0.00			1/2" Ice	0.30	0.24	10.00
			0.00			1" Ice	0.37	0.31	10.00
Diplexers	C	From Leg	2.50	0.0000	169.00	No Ice	0.23	0.17	10.00
			0.00			1/2" Ice	0.30	0.25	10.00
			0.00			1" Ice	0.37	0.33	10.00
ANT150D3	A	From Leg	7.00	0.0000	184.17	No Ice	1.60	1.60	18.00
			0.00			1/2" Ice	2.88	2.88	23.40
			-5.00			1" Ice	4.16	4.16	28.80
Super station C21 6004569	A	From Leg	7.00	0.0000	184.17	No Ice	1.29	1.29	10.00
			0.00			1/2" Ice	1.60	1.60	20.28
			5.00			1" Ice	1.91	1.91	34.06
Pirod 7' Side arm mount	A	From Leg	3.50	0.0000	183.72	No Ice	9.63	9.63	160.00
			0.00			1/2" Ice	11.56	11.56	190.00
			0.00			1" Ice	13.49	13.49	220.00
OGT9-840N	B	From Leg	7.00	0.0000	184.00	No Ice	2.27	2.27	18.50
			0.00			1/2" Ice	3.44	3.44	36.09
			5.00			1" Ice	4.61	4.61	60.98
OGT9-840N	B	From Leg	7.00	0.0000	184.00	No Ice	2.27	2.27	18.50
			0.00			1/2" Ice	3.44	3.44	36.09
			5.00			1" Ice	4.61	4.61	60.98
Pirod 7' Side arm Mount	C	From Leg	3.50	0.0000	183.17	No Ice	9.63	9.63	160.00
			0.00			1/2" Ice	11.56	11.56	190.00
			0.00			1" Ice	13.49	13.49	220.00
ATN 150F2	C	From Leg	2.00	0.0000	186.00	No Ice	1.29	1.29	12.00
			1.00			1/2" Ice	1.60	1.60	22.28
			0.00			1" Ice	1.91	1.91	36.06
Pirod 7' Side arm Mount	C	From Leg	3.50	0.0000	183.17	No Ice	9.63	9.63	12.00
			0.00			1/2" Ice	11.56	11.56	22.84
			0.00			1" Ice	13.49	13.49	36.06
DC6-48-06-18-8F	A	From Leg	2.00	0.0000	140.00	No Ice	1.20	1.20	32.00
			4.00			1/2" Ice	1.88	1.88	53.81
			0.00			1" Ice	2.09	2.09	78.48
Powerwave TT19-08BP111	A	From Face	4.00	0.0000	140.00	No Ice	0.55	0.45	16.00
Tma			-4.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22
Powerwave TT19-08BP111	B	From Leg	4.00	0.0000	140.00	No Ice	0.55	0.45	16.00
Tma			-4.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22
Powerwave TT19-08BP111	C	From Leg	4.00	0.0000	140.00	No Ice	0.55	0.45	16.00
Tma			-4.00			1/2" Ice	0.65	0.53	21.80
			0.00			1" Ice	0.75	0.63	29.22

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
Andrew 6' w/Radome	A	Paraboloid w/Radome	From Leg	3.32 0.00 0.00	Worst		99.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	380.00 450.00 520.00
Andrew 6' w/Radome	B	Paraboloid w/Radome	From Leg	0.00 0.00 0.00	Worst		189.50	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	380.00 450.00 520.00

Truss-Leg Properties

Section Designation	Area in^2	Area Ice in^2	Self Weight lb	Ice Weight lb	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in^2
Pirod 105244	1026.8606	3441.5361	562.76	1224.98	7.1310	23.8996	3.6816
Pirod 105244	1026.8606	3437.3803	562.76	1222.56	7.1310	23.8707	3.6816
Pirod 105216	1998.0891	7043.9803	505.25	2521.58	6.9378	24.4583	3.6816
Pirod 105217	2130.7479	7096.8281	619.35	2557.90	7.3984	24.6418	5.3014
Pirod 105217	2130.7479	7083.1102	619.35	2549.32	7.3984	24.5941	5.3014
Pirod 105218	2263.4687	7132.8454	754.52	2581.83	7.8593	24.7668	7.2158
Pirod 105218	2263.4687	7108.1359	754.52	2566.26	7.8593	24.6810	7.2158
Pirod 105218	2263.4687	7089.9961	754.52	2554.86	7.8593	24.6180	7.2158
Pirod 105219	2441.8688	7131.6326	944.27	2580.20	8.4787	24.7626	9.4248
Pirod 105219	2441.8688	7083.1231	944.27	2549.57	8.4787	24.5942	9.4248
Pirod 105220	2578.8005	7092.0558	1121.16	2552.05	8.9542	24.6252	11.9282
Pirod 105220	2578.8005	7000.2743	1121.16	2494.23	8.9542	24.3065	11.9282
Pirod 112738	3466.5160	8985.6471	1689.34	4341.03	12.0365	31.2002	14.7262

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	26664.28					
Bracing Weight	20736.46					
Total Member Self-Weight	47400.74			-1660.82	10150.74	
Total Weight	59272.48			-1660.82	10150.74	
Wind 0 deg - No Ice		14.18	-45758.17	-4810067.25	6740.54	-17612.54
Wind 30 deg - No Ice		21899.51	-37918.02	-4012251.36	-2308065.82	-17665.24
Wind 60 deg - No Ice		37344.62	-21569.76	-2289254.51	-3949935.70	-13592.99
Wind 90 deg - No Ice		43774.47	-14.18	-5071.01	-4620375.74	-6280.94
Wind 120 deg - No Ice		39619.52	22866.80	2399589.09	-4153614.41	3090.14
Wind 150 deg - No Ice		21874.96	37903.84	4005519.53	-2302159.19	11384.30
Wind 180 deg - No Ice		-14.18	43114.97	4567619.95	13560.93	16491.50
Wind 210 deg - No Ice		-21899.51	37918.02	4008929.72	2328367.29	17665.24
Wind 240 deg - No Ice		-39633.70	22891.36	2405495.71	4177326.07	14522.40
Wind 270 deg - No Ice		-43774.47	14.18	1749.37	4640677.22	6280.94

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 300 deg - No Ice		-37330.45	-21545.21	-2283347.89	3966826.98	-2898.52
Wind 330 deg - No Ice		-21874.96	-37903.84	-4008841.17	2322460.66	-11384.30
Member Ice	122609.33					
Total Weight Ice	216146.98			-24248.08	69722.85	
Wind 0 deg - Ice		7.69	-13994.37	-1542289.48	68798.25	-3458.50
Wind 30 deg - Ice		6887.21	-11914.71	-1321076.87	-679981.50	-2908.54
Wind 60 deg - Ice		11851.77	-6843.25	-769985.30	-1221779.92	-1632.86
Wind 90 deg - Ice		13761.10	-7.69	-25172.68	-1428084.38	56.70
Wind 120 deg - Ice		12122.23	6990.53	733971.89	-1245249.89	1771.03
Wind 150 deg - Ice		6873.89	11907.02	1271656.11	-678380.04	2965.25
Wind 180 deg - Ice		-7.69	13673.18	1465624.90	70647.45	3368.81
Wind 210 deg - Ice		-6887.21	11914.71	1272580.71	819427.19	2908.54
Wind 240 deg - Ice		-12129.92	7003.84	735573.35	1385620.19	1687.47
Wind 270 deg - Ice		-13761.10	7.69	-23323.47	1567530.08	-56.70
Wind 300 deg - Ice		-11844.08	-6829.94	-768383.84	1360301.01	-1735.95
Wind 330 deg - Ice		-6873.89	-11907.02	-1320152.26	817825.73	-2965.25
Total Weight	59272.48			-1660.82	10150.74	
Wind 0 deg - Service		5.10	-16472.94	-1731161.94	-2339.79	-6340.51
Wind 30 deg - Service		7883.82	-13650.49	-1443948.22	-835670.08	-6359.49
Wind 60 deg - Service		13444.06	-7765.11	-823669.36	-1426743.24	-4893.47
Wind 90 deg - Service		15758.81	-5.10	-1363.29	-1668101.66	-2261.14
Wind 120 deg - Service		14263.03	8232.05	864314.34	-1500067.58	1112.45
Wind 150 deg - Service		7874.98	13645.38	1442449.30	-833543.70	4098.35
Wind 180 deg - Service		-5.10	15521.39	1644805.45	115.55	5936.94
Wind 210 deg - Service		-7883.82	13650.49	1443676.97	833445.84	6359.49
Wind 240 deg - Service		-14268.13	8240.89	866440.72	1499071.00	5228.06
Wind 270 deg - Service		-15758.81	5.10	1092.04	1665877.41	2261.14
Wind 300 deg - Service		-13438.96	-7756.27	-821542.97	1423291.32	-1043.47
Wind 330 deg - Service		-7874.98	-13645.38	-1442720.55	831319.45	-4098.35

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

Comb. No.	Description
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 lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	195 - 190	Latticed Pole Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	37	-598.89	-665.73	3.65
			Max. Mx	29	-598.85	-677.62	14.50
			Max. My	16	-200.09	-164.48	-333.37
			Max. Vy	6	210.47	-665.36	186.26
			Max. Vx	16	146.03	0.00	0.00
		Latticed Pole Diagonal	Max Tension	3	72.24	0.00	0.00
			Max. Compression	27	-402.33	0.00	0.00
			Max. Mx	36	-218.73	149.74	0.00
			Max. My	2	-123.84	0.00	0.25
			Max. Vy	36	-80.58	0.00	0.00
			Max. Vx	2	-0.13	0.00	0.00
		Latticed Pole Top Girt	Max Tension	16	166.20	-20.83	-2.40
			Max. Compression	5	-132.44	-25.78	1.89
			Max. Mx	37	50.57	-103.67	2.10
			Max. My	6	-107.70	-33.25	2.86
			Max. Vy	37	99.27	-103.67	2.10
			Max. Vx	18	0.69	0.00	0.00
L2	190 - 180	Latticed Pole Leg	Max Tension	23	865.87	-615.50	40.58
			Max. Compression	31	-3940.85	687.30	-13.96
			Max. Mx	10	-2566.96	978.63	-79.66
			Max. My	24	-993.40	127.59	-1335.42
			Max. Vy	22	-678.06	-655.36	40.55

Section No.	*Elevation ft*	*Component Type*	*Condition*	*Gov. Load Comb.*	*Axial lb*	*Major Axis Moment lb-ft*	*Minor Axis Moment lb-ft*
			Max. Vx	16	825.68	-164.48	-330.35
		Latticed Pole Diagonal	Max Tension	6	1764.60	0.00	0.00
			Max. Compression	18	-1837.71	0.00	0.00
			Max. Mx	28	345.04	110.29	0.96
			Max. My	4	-441.10	20.71	-2.64
			Max. Vy	30	-72.76	110.18	-0.10
			Max. Vx	4	-0.41	0.00	0.00
L3	180 - 160	Latticed Pole Leg	Max Tension	7	13096.75	0.00	0.00
			Max. Compression	10	-17199.44	1330.15	-77.99
			Max. Mx	18	-17140.47	1335.89	7.21
			Max. My	12	-2055.30	64.14	-1106.60
			Max. Vy	6	-804.12	0.00	0.00
			Max. Vx	24	826.28	0.00	0.00
		Latticed Pole Diagonal	Max Tension	8	4802.03	0.00	0.00
			Max. Compression	20	-4882.78	0.00	0.00
			Max. Mx	31	703.37	132.43	-0.71
			Max. My	10	-4087.30	21.13	-5.34
			Max. Vy	35	-83.02	132.40	0.47
			Max. Vx	10	0.75	0.00	0.00
L4	160 - 150	Latticed Pole Leg	Max Tension	7	24917.41	-1166.08	-13.45
			Max. Compression	18	-31267.17	-1157.57	-44.52
			Max. Mx	18	-30759.85	2763.99	9.30
			Max. My	20	-3084.57	-429.18	-2926.25
			Max. Vy	18	1220.49	2763.99	9.30
			Max. Vx	20	794.39	-429.18	-2926.25
		Latticed Pole Diagonal	Max Tension	21	7264.79	35.93	7.97
			Max. Compression	8	-7465.91	0.00	0.00
			Max. Mx	36	1311.86	139.05	-0.57
			Max. My	20	-7424.99	24.70	11.60
			Max. Vy	36	-91.42	139.05	-0.57
			Max. Vx	10	-1.61	17.36	-11.49
		Latticed Pole Secondary Horizontal	Max Tension	18	1051.08	0.00	0.00
			Max. Compression	7	-824.54	34.97	6.16
			Max. Mx	38	-148.10	91.58	0.13
			Max. My	12	-731.46	42.60	7.22
			Max. Vy	38	-89.23	91.58	0.13
			Max. Vx	24	-1.41	0.00	0.00
L5	150 - 140	Latticed Pole Leg	Max Tension	7	41001.68	386.21	45.35
			Max. Compression	18	-49635.43	3770.55	95.65
			Max. Mx	18	-49635.43	3770.55	95.65
			Max. My	20	-3300.24	-429.18	-2926.25
			Max. Vy	18	-659.46	3770.55	95.65
			Max. Vx	20	-416.75	-429.18	-2926.25
		Latticed Pole Diagonal	Max Tension	9	8448.74	0.00	0.00
			Max. Compression	10	-8790.66	0.00	0.00
			Max. Mx	35	920.67	158.83	-0.10
			Max. My	12	-7951.37	15.56	-11.20
			Max. Vy	35	-93.61	158.83	-0.15
			Max. Vx	10	1.55	0.00	0.00
T1	140 - 120	Leg	Max Tension	7	79158.41	0.00	0.00
			Max. Compression	18	-94772.51	2300.49	-169.11
			Max. Mx	18	-71076.12	3770.55	95.36
			Max. My	20	-6911.96	-87.64	-2547.40
			Max. Vy	3	1643.18	3683.53	16.25
			Max. Vx	24	1587.32	277.28	568.74

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Diagonal	Max Tension	4	9854.37	0.00	0.00
			Max. Compression	4	-9917.88	0.00	0.00
			Max. Mx	36	1754.07	178.06	-25.02
			Max. My	16	-9627.44	14.99	-27.21
			Max. Vy	36	105.81	178.06	-25.02
			Max. Vx	34	-6.33	0.00	0.00
		Top Girt	Max Tension	33	189.78	0.00	0.00
			Max. Compression	19	-23.32	0.00	0.00
			Max. Mx	26	170.89	-467.67	0.00
			Max. My	33	160.35	0.00	13.50
			Max. Vy	26	170.06	0.00	0.00
			Max. Vx	33	-4.91	0.00	0.00
T2	120 - 110	Leg	Max Tension	7	97250.82	-2384.07	175.93
			Max. Compression	18	-115203.08	-546.43	70.33
			Max. Mx	18	-114935.73	7261.92	13.38
			Max. My	16	-7419.06	-393.48	4678.75
			Max. Vy	18	1588.19	7261.92	13.38
			Max. Vx	24	-844.46	-388.13	4552.63
		Diagonal	Max Tension	5	10958.20	93.47	5.29
			Max. Compression	4	-11497.00	0.00	0.00
			Max. Mx	35	1200.31	212.01	-25.19
			Max. My	34	-3222.80	186.13	-28.76
			Max. Vy	37	125.49	210.36	23.73
			Max. Vx	33	-6.94	0.00	0.00
		Secondary Horizontal	Max Tension	18	1997.87	0.00	0.00
			Max. Compression	18	-1997.87	26.20	-1.25
			Max. Mx	33	374.21	142.38	26.38
			Max. My	36	264.87	141.99	27.64
			Max. Vy	33	107.54	142.38	26.38
			Max. Vx	38	-6.69	0.00	0.00
T3	110 - 100	Leg	Max Tension	7	117693.51	-102.47	-68.17
			Max. Compression	18	-138755.21	4460.85	82.49
			Max. Mx	18	-138755.21	4460.85	82.49
			Max. My	16	-8092.83	-393.50	4678.75
			Max. Vy	18	-710.28	4460.85	82.49
			Max. Vx	16	581.09	-393.50	4678.75
		Diagonal	Max Tension	4	10957.52	0.00	0.00
			Max. Compression	4	-11030.07	0.00	0.00
			Max. Mx	35	1949.56	250.85	31.58
			Max. My	27	278.59	225.55	34.08
			Max. Vy	37	134.55	244.96	-33.26
			Max. Vx	27	7.59	0.00	0.00
T4	100 - 80	Leg	Max Tension	7	158563.11	0.00	0.00
			Max. Compression	18	-185383.26	6460.77	-185.74
			Max. Mx	19	-182321.90	6478.74	-186.09
			Max. My	20	-11186.92	-80.07	-3539.77
			Max. Vy	14	-1145.91	-4138.49	68.43
			Max. Vx	20	-1090.93	78.00	-1818.78
		Diagonal	Max Tension	16	12439.60	0.00	0.00
			Max. Compression	16	-12575.31	0.00	0.00
			Max. Mx	35	1941.74	313.11	40.31
			Max. My	34	1244.09	291.91	-42.80
			Max. Vy	37	157.16	312.72	-42.17
			Max. Vx	34	-8.60	0.00	0.00
T5	80 - 60	Leg	Max Tension	7	199445.60	0.00	0.00
			Max. Compression	18	-233111.78	5923.23	-73.71
			Max. Mx	19	-204881.89	6478.74	-186.08
			Max. My	24	-13987.68	-338.92	4264.12
			Max. Vy	22	-1252.63	-6338.42	-55.73
			Max. Vx	24	999.40	-74.17	3415.83

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Diagonal	Max Tension	16	13786.73	0.00	0.00
			Max. Compression	4	-14119.79	0.00	0.00
			Max. Mx	35	2234.79	439.91	53.49
			Max. My	34	1226.11	407.91	-56.18
			Max. Vy	37	195.90	430.87	-55.64
			Max. Vx	34	-10.37	0.00	0.00
T6	60 - 40	Leg	Max Tension	7	238936.49	0.00	0.00
			Max. Compression	18	-280292.60	3553.49	-19.89
			Max. Mx	6	215363.25	-6260.50	70.87
			Max. My	24	-17070.34	-1016.29	8533.18
			Max. Vy	6	-801.00	-6260.50	70.87
			Max. Vx	24	-1029.92	-1016.29	8533.18
		Diagonal	Max Tension	4	14461.13	0.00	0.00
			Max. Compression	4	-14972.16	0.00	0.00
			Max. Mx	35	2232.61	640.91	-70.87
			Max. My	38	-1515.20	577.63	78.01
			Max. Vy	37	257.40	628.00	73.40
			Max. Vx	38	13.26	0.00	0.00
T7	40 - 20	Leg	Max Tension	23	277631.25	0.00	0.00
			Max. Compression	18	-327449.11	6026.11	-139.70
			Max. Mx	6	272048.11	-8334.44	163.43
			Max. My	24	-20488.29	-1475.77	20333.32
			Max. Vy	6	993.83	-8334.44	163.43
			Max. Vx	24	-2192.64	-1475.77	20333.32
		Diagonal	Max Tension	2	15451.53	0.00	0.00
			Max. Compression	2	-16420.46	0.00	0.00
			Max. Mx	36	-1448.23	765.74	81.62
			Max. My	16	-13466.81	98.92	-136.91
			Max. Vy	36	275.72	765.74	81.62
			Max. Vx	37	-14.88	0.00	0.00
T8	20 - 0	Leg	Max Tension	23	298579.90	-7973.60	47.69
			Max. Compression	18	-352115.06	0.00	-0.62
			Max. Mx	6	293528.54	-8334.44	163.43
			Max. My	24	-20493.10	-1475.83	20333.32
			Max. Vy	6	-789.03	-8334.44	163.43
			Max. Vx	24	1352.97	-1475.83	20333.32
		Diagonal	Max Tension	15	20460.03	0.00	0.00
			Max. Compression	2	-23569.87	0.00	0.00
			Max. Mx	36	4684.74	-969.41	140.64
			Max. My	34	1258.43	-954.64	146.92
			Max. Vy	36	-311.65	-969.41	140.64
			Max. Vx	34	18.58	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	380824.33	43693.83	-25856.85
	Max. H_x	18	380824.33	43693.83	-25856.85
	Max. H_z	7	-320587.48	-37374.29	22151.36
	Min. Vert	7	-320587.48	-37374.29	22151.36
	Min. H_x	7	-320587.48	-37374.29	22151.36
	Min. H_z	18	380824.33	43693.83	-25856.85
Leg B	Max. Vert	10	379409.03	-43967.92	-25251.30
	Max. H_x	23	-320881.62	37662.71	21630.83
	Max. H_z	23	-320881.62	37662.71	21630.83

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Leg A	Min. Vert	23	-320881.62	37662.71	21630.83
	Min. H_x	10	379409.03	-43967.92	-25251.30
	Min. H_z	10	379409.03	-43967.92	-25251.30
	Max. Vert	2	380173.79	-661.49	50738.50
	Max. H_x	19	-160415.57	1105.89	-22162.87
	Max. H_z	2	380173.79	-661.49	50738.50
	Min. Vert	15	-320549.23	595.02	-43431.95
	Min. H_x	6	193352.39	-1055.40	25307.04
	Min. H_z	15	-320549.23	595.02	-43431.95

Tower Mast Reaction Summary

Load Combination	*Vertical lb*	*Shear$_x$ lb*	*Shear$_z$ lb*	*Overturning Moment, M_x lb-ft*	*Overturning Moment, M_z lb-ft*	*Torque lb-ft*
Dead Only	59272.48	0.00	0.00	-1660.73	10150.71	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	71126.97	22.68	-73212.93	-7717689.26	6806.93	-28222.92
0.9 Dead+1.6 Wind 0 deg - No Ice	53345.22	22.68	-73212.95	-7711294.51	3754.63	-28211.52
1.2 Dead+1.6 Wind 30 deg - No Ice	71126.98	35039.21	-60668.76	-6437672.26	-3707686.10	-28295.13
0.9 Dead+1.6 Wind 30 deg - No Ice	53345.22	35039.26	-60668.77	-6432248.67	-3707905.08	-28278.74
1.2 Dead+1.6 Wind 60 deg - No Ice	71127.08	59751.39	-34511.61	-3672886.50	-6342399.37	-21774.60
0.9 Dead+1.6 Wind 60 deg - No Ice	53345.22	59751.48	-34511.67	-3669577.84	-6340598.86	-21767.86
1.2 Dead+1.6 Wind 90 deg - No Ice	71126.98	70039.09	-22.71	-7509.85	-7418210.89	-10066.52
0.9 Dead+1.6 Wind 90 deg - No Ice	53345.22	70039.14	-22.74	-7006.48	-7415590.78	-10069.22
1.2 Dead+1.6 Wind 120 deg - No Ice	71126.97	63391.12	36586.82	3851108.26	-6669062.76	4955.55
0.9 Dead+1.6 Wind 120 deg - No Ice	53345.22	63391.14	36586.83	3848669.20	-6667018.11	4952.72
1.2 Dead+1.6 Wind 150 deg - No Ice	71126.98	34999.88	60646.10	6428177.23	-3698210.62	18250.48
0.9 Dead+1.6 Wind 150 deg - No Ice	53345.22	34999.87	60646.16	6423769.75	-3698431.09	18248.49
1.2 Dead+1.6 Wind 180 deg - No Ice	71127.08	-22.68	68983.94	7330181.76	17757.39	26422.94
0.9 Dead+1.6 Wind 180 deg - No Ice	53345.22	-22.68	68984.05	7325080.30	14693.75	26413.83
1.2 Dead+1.6 Wind 210 deg - No Ice	71126.98	-35039.16	60668.79	6433598.49	3732228.93	28295.10
0.9 Dead+1.6 Wind 210 deg - No Ice	53345.22	-35039.16	60668.83	6429185.26	3726320.54	28278.72
1.2 Dead+1.6 Wind 240 deg - No Ice	71126.96	-63413.80	36626.11	3860534.70	6699002.73	23266.63
0.9 Dead+1.6 Wind 240 deg - No Ice	53345.22	-63413.82	36626.12	3858085.07	6690835.47	23258.06
1.2 Dead+1.6 Wind 270 deg - No Ice	71126.98	-70039.09	22.66	3453.83	7442630.31	10066.63
0.9 Dead+1.6 Wind 270 deg - No Ice	53345.22	-70039.14	22.62	3944.29	7433894.28	10069.30
1.2 Dead+1.6 Wind 300 deg -	71127.08	-59728.70	-34472.32	-3663334.44	6361370.79	-4647.69

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
No Ice 0.9 Dead+1.6 Wind 300 deg - No Ice	53345.22	-59728.80	-34472.38	-3660036.37	6353461.05	-4645.32
1.2 Dead+1.6 Wind 330 deg - No Ice	71126.98	-34999.92	-60646.07	-6432129.87	3722716.05	-18250.55
0.9 Dead+1.6 Wind 330 deg - No Ice	53345.22	-34999.98	-60646.10	-6426714.05	3716828.56	-18248.55
1.2 Dead+1.0 Ice+1.0 Temp	228001.48	0.00	0.00	-24741.21	72196.08	0.05
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	228001.48	7.69	-13994.36	-1559597.83	71646.85	-3523.71
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	228001.48	6887.20	-11914.70	-1335984.54	-685362.15	-2974.68
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	228001.48	11851.76	-6843.25	-778841.45	-1233122.33	-1686.84
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	228001.48	13761.09	-7.69	-25837.04	-1441685.38	30.01
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	228001.48	12122.23	6990.52	741637.68	-1256814.24	1781.78
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	228001.48	6873.89	11907.02	1285251.29	-683735.14	3011.56
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	228001.48	-7.69	13673.18	1481360.54	73522.65	3433.25
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	228001.48	-6887.20	11914.70	1286185.32	830529.67	2974.71
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	228001.48	-12129.91	7003.83	743261.20	1402918.06	1742.10
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	228001.48	-13761.09	7.68	-23966.42	1586852.01	-28.78
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	228001.48	-11844.08	-6829.93	-777217.99	1377353.59	-1746.32
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	228001.48	-6873.89	-11907.01	-1335045.43	828910.28	-3011.02
Dead+Wind 0 deg - Service	59272.48	5.10	-16472.94	-1736841.81	8942.24	-6347.68
Dead+Wind 30 deg - Service	59272.48	7883.82	-13650.48	-1448965.29	-826399.60	-6366.44
Dead+Wind 60 deg - Service	59272.48	13444.07	-7765.11	-827195.56	-1418907.52	-4898.58
Dead+Wind 90 deg - Service	59272.48	15758.81	-5.10	-2900.17	-1660841.52	-2262.76
Dead+Wind 120 deg - Service	59272.48	14263.03	8232.05	864854.37	-1492376.76	1114.41
Dead+Wind 150 deg - Service	59272.48	7874.98	13645.38	1444399.22	-824266.08	4103.44
Dead+Wind 180 deg - Service	59272.48	-5.10	15521.39	1647251.93	11406.66	5943.92
Dead+Wind 210 deg - Service	59272.48	-7883.82	13650.48	1445628.79	846747.35	6366.44
Dead+Wind 240 deg - Service	59272.48	-14268.13	8240.89	866985.80	1513952.84	5233.20
Dead+Wind 270 deg - Service	59272.48	-15758.81	5.10	-435.27	1681183.34	2262.77
Dead+Wind 300 deg - Service	59272.48	-13438.96	-7756.27	-825057.76	1438018.76	-1045.47
Dead+Wind 330 deg - Service	59272.48	-7874.98	-13645.38	-1447730.04	844611.81	-4103.45

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-59272.48	0.00	-0.00	59272.48	-0.00	0.000%
2	22.68	-71126.97	-73213.05	-22.68	71126.97	73212.93	0.000%
3	22.68	-53345.23	-73213.05	-22.68	53345.22	73212.95	0.000%
4	35039.22	-71126.97	-60668.82	-35039.21	71126.98	60668.76	0.000%
5	35039.22	-53345.23	-60668.82	-35039.26	53345.22	60668.77	0.000%
6	59751.39	-71126.97	-34511.61	-59751.39	71127.08	34511.61	0.000%
7	59751.39	-53345.23	-34511.61	-59751.48	53345.22	34511.67	0.000%
8	70039.14	-71126.97	-22.68	-70039.09	71126.98	22.71	0.000%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
9	70039.14	-53345.23	-22.68	-70039.14	53345.22	22.74	0.000%
10	63391.22	-71126.97	36586.88	-63391.12	71126.97	-36586.82	0.000%
11	63391.22	-53345.23	36586.88	-63391.14	53345.22	-36586.83	0.000%
12	34999.93	-71126.97	60646.13	-34999.88	71126.98	-60646.10	0.000%
13	34999.93	-53345.23	60646.13	-34999.87	53345.22	-60646.16	0.000%
14	-22.68	-71126.97	68983.94	22.68	71127.08	-68983.94	0.000%
15	-22.68	-53345.23	68983.94	22.68	53345.22	-68984.05	0.000%
16	-35039.22	-71126.97	60668.82	35039.16	71126.98	-60668.79	0.000%
17	-35039.22	-53345.23	60668.82	35039.16	53345.22	-60668.83	0.000%
18	-63413.91	-71126.97	36626.17	63413.80	71126.96	-36626.11	0.000%
19	-63413.91	-53345.23	36626.17	63413.82	53345.22	-36626.12	0.000%
20	-70039.14	-71126.97	22.68	70039.09	71126.98	-22.66	0.000%
21	-70039.14	-53345.23	22.68	70039.14	53345.22	-22.62	0.000%
22	-59728.71	-71126.97	-34472.33	59728.70	71127.08	34472.32	0.000%
23	-59728.71	-53345.23	-34472.33	59728.80	53345.22	34472.38	0.000%
24	-34999.93	-71126.97	-60646.13	34999.92	71126.98	60646.07	0.000%
25	-34999.93	-53345.23	-60646.13	34999.98	53345.22	60646.10	0.000%
26	0.00	-228001.48	0.00	-0.00	228001.48	-0.00	0.000%
27	7.69	-228001.48	-13994.36	-7.69	228001.48	13994.36	0.000%
28	6887.20	-228001.48	-11914.70	-6887.20	228001.48	11914.70	0.000%
29	11851.77	-228001.48	-6843.25	-11851.76	228001.48	6843.25	0.000%
30	13761.10	-228001.48	-7.69	-13761.09	228001.48	7.69	0.000%
31	12122.23	-228001.48	6990.53	-12122.23	228001.48	-6990.52	0.000%
32	6873.89	-228001.48	11907.02	-6873.89	228001.48	-11907.02	0.000%
33	-7.69	-228001.48	13673.18	7.69	228001.48	-13673.18	0.000%
34	-6887.20	-228001.48	11914.70	6887.20	228001.48	-11914.70	0.000%
35	-12129.92	-228001.48	7003.84	12129.91	228001.48	-7003.83	0.000%
36	-13761.10	-228001.48	7.69	13761.09	228001.48	-7.68	0.000%
37	-11844.08	-228001.48	-6829.93	11844.08	228001.48	6829.93	0.000%
38	-6873.89	-228001.48	-11907.02	6873.89	228001.48	11907.01	0.000%
39	5.10	-59272.48	-16472.94	-5.10	59272.48	16472.94	0.000%
40	7883.82	-59272.48	-13650.48	-7883.82	59272.48	13650.48	0.000%
41	13444.06	-59272.48	-7765.11	-13444.07	59272.48	7765.11	0.000%
42	15758.81	-59272.48	-5.10	-15758.81	59272.48	5.10	0.000%
43	14263.03	-59272.48	8232.05	-14263.03	59272.48	-8232.05	0.000%
44	7874.98	-59272.48	13645.38	-7874.98	59272.48	-13645.38	0.000%
45	-5.10	-59272.48	15521.39	5.10	59272.48	-15521.39	0.000%
46	-7883.82	-59272.48	13650.48	7883.82	59272.48	-13650.48	0.000%
47	-14268.13	-59272.48	8240.89	14268.13	59272.48	-8240.89	0.000%
48	-15758.81	-59272.48	5.10	15758.81	59272.48	-5.10	0.000%
49	-13438.96	-59272.48	-7756.27	13438.96	59272.48	7756.27	0.000%
50	-7874.98	-59272.48	-13645.38	7874.98	59272.48	13645.38	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000079
4	Yes	4	0.00000001	0.00000180
5	Yes	4	0.00000001	0.00000143
6	Yes	4	0.00000001	0.00000287
7	Yes	4	0.00000001	0.00000140
8	Yes	4	0.00000001	0.00000192
9	Yes	4	0.00000001	0.00000149

10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000078
12	Yes	4	0.00000001	0.00000194
13	Yes	4	0.00000001	0.00000151
14	Yes	4	0.00000001	0.00000287
15	Yes	4	0.00000001	0.00000140
16	Yes	4	0.00000001	0.00000180
17	Yes	4	0.00000001	0.00000143
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000079
20	Yes	4	0.00000001	0.00000192
21	Yes	4	0.00000001	0.00000150
22	Yes	4	0.00000001	0.00000287
23	Yes	4	0.00000001	0.00000140
24	Yes	4	0.00000001	0.00000195
25	Yes	4	0.00000001	0.00000151
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000248
28	Yes	4	0.00000001	0.00000244
29	Yes	4	0.00000001	0.00000241
30	Yes	4	0.00000001	0.00000236
31	Yes	4	0.00000001	0.00000234
32	Yes	4	0.00000001	0.00000237
33	Yes	4	0.00000001	0.00000244
34	Yes	4	0.00000001	0.00000247
35	Yes	4	0.00000001	0.00000251
36	Yes	4	0.00000001	0.00000255
37	Yes	4	0.00000001	0.00000257
38	Yes	4	0.00000001	0.00000253
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	*Elevation* *ft*	*Horz. Deflection* *in*	*Gov. Load Comb.*	*Tilt* °	*Twist* °
L1	195 - 190	3.232	47	0.1261	0.0079
L2	190 - 180	3.100	47	0.1261	0.0080
L3	180 - 160	2.833	47	0.1259	0.0088
L4	160 - 150	2.299	47	0.1219	0.0083
L5	150 - 140	2.040	47	0.1182	0.0079
T1	140 - 120	1.791	47	0.1121	0.0074
T2	120 - 110	1.328	47	0.0990	0.0052
T3	110 - 100	1.119	47	0.0907	0.0045
T4	100 - 80	0.929	47	0.0815	0.0040
T5	80 - 60	0.595	47	0.0655	0.0027
T6	60 - 40	0.339	47	0.0471	0.0018
T7	40 - 20	0.156	47	0.0312	0.0012
T8	20 - 0	0.037	47	0.0141	0.0005

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
189.50	Andrew 6' w/Radome	47	3.087	0.1261	0.0080	211359
186.00	ATN 150F2	47	2.994	0.1261	0.0083	263017
184.17	ANT150D3	47	2.945	0.1261	0.0084	361866
184.00	OGT9-840N	47	2.941	0.1261	0.0084	374707
183.72	Pirod 7' Side arm mount	47	2.933	0.1261	0.0085	398618
183.17	Pirod 7' Side arm Mount	47	2.918	0.1261	0.0085	452321
172.00	DB222-A	47	2.619	0.1249	0.0089	556488
171.50	DB222-A	47	2.605	0.1248	0.0089	523620
171.00	DB222-A	47	2.592	0.1247	0.0088	494416
169.00	Amphenol LPA-80080-4CF-EDIN-4	47	2.538	0.1242	0.0088	404236
157.42	APXV9ERR18	47	2.232	0.1211	0.0081	168385
154.00	PiROD 13' Lightweight T-Frame	47	2.143	0.1199	0.0080	128751
140.00	SBNHH-1D65A W/ MOUNT PIPE	47	1.791	0.1121	0.0074	110021
137.00	PiROD 12' T-Frame	47	1.718	0.1102	0.0071	106376
131.00	PiROD 12' T-Frame	47	1.576	0.1064	0.0064	95545
125.00	PiROD 12' Universal T-Frame Sector Mount	47	1.439	0.1025	0.0057	86597
120.00	PiROD 6' side arm mount	47	1.328	0.0990	0.0052	78103
109.00	ANT150D3	47	1.099	0.0898	0.0044	58419
106.00	PiROD 6' side arm mount	47	1.040	0.0870	0.0043	65246
99.00	Andrew 6' w/Radome	47	0.911	0.0806	0.0039	87739
84.00	2-element dipole	47	0.657	0.0688	0.0029	62816
79.60	Amphenol BCD-80609	47	0.590	0.0652	0.0027	58899
79.50	PiROD 7' side arm mount	47	0.588	0.0651	0.0026	58864
79.00	PiROD 7' side arm mount	47	0.581	0.0647	0.0026	58721
36.25	GPS Antenna 18"x3" Dia	47	0.128	0.0280	0.0010	78071
32.92	4' Side Arm Mount	47	0.105	0.0251	0.0009	67475

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 190	14.335	18	0.5596	0.0351
L2	190 - 180	13.751	18	0.5596	0.0354
L3	180 - 160	12.566	18	0.5586	0.0390
L4	160 - 150	10.199	18	0.5404	0.0368
L5	150 - 140	9.047	18	0.5239	0.0350
T1	140 - 120	7.943	18	0.4970	0.0327
T2	120 - 110	5.889	18	0.4391	0.0229
T3	110 - 100	4.961	18	0.4026	0.0200
T4	100 - 80	4.118	18	0.3615	0.0177
T5	80 - 60	2.640	18	0.2906	0.0119
T6	60 - 40	1.502	18	0.2088	0.0081
T7	40 - 20	0.691	18	0.1381	0.0051
T8	20 - 0	0.167	18	0.0624	0.0020

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
189.50	Andrew 6' w/Radome	18	13.692	0.5596	0.0355	48426
186.00	ATN 150F2	18	13.279	0.5596	0.0367	60717
184.17	ANT150D3	18	13.062	0.5595	0.0375	84354
184.00	OGT9-840N	18	13.042	0.5595	0.0375	87458
183.72	Pirod 7' Side arm mount	18	13.008	0.5594	0.0376	93259
183.17	Pirod 7' Side arm Mount	18	12.943	0.5594	0.0379	106824
172.00	DB222-A	18	11.614	0.5537	0.0394	133246
171.50	DB222-A	18	11.555	0.5533	0.0394	124661
171.00	DB222-A	18	11.495	0.5528	0.0393	117115
169.00	Amphenol LPA-80080-4CF-EDIN-4	18	11.258	0.5509	0.0389	94287
157.42	APXV9ERR18	18	9.898	0.5369	0.0362	38030
154.00	PiROD 13' Lightweight T-Frame	18	9.503	0.5316	0.0356	28995
140.00	SBNHH-1D65A W/ MOUNT PIPE	18	7.943	0.4970	0.0327	25009
137.00	PiROD 12' T-Frame	18	7.621	0.4886	0.0315	24166
131.00	PiROD 12' T-Frame	18	6.991	0.4720	0.0286	21633
125.00	PiROD 12' Universal T-Frame Sector Mount	18	6.381	0.4547	0.0254	19553
120.00	PiROD 6' side arm mount	18	5.889	0.4391	0.0229	17610
109.00	ANT150D3	18	4.873	0.3985	0.0197	13183
106.00	PiROD 6' side arm mount	18	4.614	0.3861	0.0191	14713
99.00	Andrew 6' w/Radome	18	4.038	0.3576	0.0175	19740
84.00	2-element dipole	18	2.911	0.3051	0.0130	14140
79.60	Amphenol BCD-80609	18	2.614	0.2891	0.0118	13261
79.50	PiROD 7' side arm mount	18	2.608	0.2887	0.0118	13253
79.00	PiROD 7' side arm mount	18	2.575	0.2868	0.0117	13221
36.25	GPS Antenna 18"x3" Dia	18	0.568	0.1241	0.0045	17607
32.92	4' Side Arm Mount	18	0.467	0.1113	0.0040	15232

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
L1	195	Latticed Pole Leg	A325N	1.0000	6	33.27	53014.40	0.001 ✔	1	Bolt Tension
		Latticed Pole Diagonal	A325N	1.0000	1	402.33	20880.00	0.019 ✔	1	Gusset Bearing
		Latticed Pole Top Girt	A325N	1.0000	1	166.20	12723.80	0.013 ✔	1	Gusset Bearing
L2	190	Latticed Pole Leg	A325N	1.0000	6	218.94	53014.40	0.004 ✔	1	Bolt Tension
		Latticed Pole Diagonal	A325N	1.0000	1	1764.60	12723.80	0.139 ✔	1	Member Bearing
L3	180	Latticed Pole Leg	A325N	1.0000	6	2182.79	53014.40	0.041 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Latticed Pole Diagonal	A325N	1.0000	1	4802.03	12723.80	0.377 ✔	1	Member Bearing
L4	160	Latticed Pole Leg	A325N	1.0000	6	4106.91	53014.40	0.077 ✔	1	Bolt Tension
		Latticed Pole Diagonal	A325N	1.0000	1	7264.79	12723.80	0.571 ✔	1	Gusset Bearing
		Latticed Pole Secondary Horizontal	A325N	0.5000	2	525.54	7952.16	0.066 ✔	1	Bolt Shear
L5	150	Latticed Pole Diagonal	A325N	1.0000	1	8448.74	16965.00	0.498 ✔	1	Gusset Bearing
T1	140	Leg	A325N	1.0000	6	13193.10	53014.40	0.249 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	9854.37	16965.00	0.581 ✔	1	Gusset Bearing
		Top Girt	A325N	1.0000	1	189.78	16965.00	0.011 ✔	1	Gusset Bearing
T2	120	Leg	A325N	1.0000	6	16168.30	53014.40	0.305 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	1	10958.20	16965.00	0.646 ✔	1	Gusset Bearing
		Secondary Horizontal	A325N	0.5000	1	1997.87	7952.16	0.251 ✔	1	Bolt Shear
T3	110	Diagonal	A325N	1.0000	1	10957.50	16965.00	0.646 ✔	1	Gusset Bearing
T4	100	Leg	A325N	1.2500	6	26427.20	82835.00	0.319 ✔	1	Bolt Tension
		Diagonal	A325N	1.2500	1	12439.60	21315.00	0.584 ✔	1	Member Bearing
T5	80	Leg	A325N	1.2500	6	33240.90	82835.00	0.401 ✔	1	Bolt Tension
		Diagonal	A325N	1.2500	1	13786.70	31972.50	0.431 ✔	1	Gusset Bearing
T6	60	Leg	A325N	1.2500	6	39822.80	82835.00	0.481 ✔	1	Bolt Tension
		Diagonal	A325N	1.2500	1	14461.10	31972.50	0.452 ✔	1	Gusset Bearing
T7	40	Leg	A325N	1.2500	6	46271.90	82835.00	0.559 ✔	1	Bolt Tension
		Diagonal	A325N	1.2500	1	15451.50	31972.50	0.483 ✔	1	Gusset Bearing
T8	20	Leg	A325N	2.0000	6	49763.30	212058.00	0.235 ✔	1	Bolt Tension
		Diagonal	A325N	1.0000	2	10230.00	33603.80	0.304 ✔	1	Gusset Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 190	Pirod 105244	5.00	5.00	45.4 K=1.00	3.6816	1.00	-598.89	142493.00	0.004 [1] ✔
L2	190 - 180	Pirod 105244	10.00	10.00	45.4 K=1.00	3.6816	1.00	-3940.85	142493.00	0.028 [1] ✔
L3	180 - 160	Pirod 105216	20.00	10.00	45.4 K=1.00	3.6816	1.00	-17199.40	142493.00	0.121 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L4	160 - 150	Pirod 105217	10.00	5.00	37.8 K=1.00	5.3014	1.00	-31267.20	214859.00	0.146 [1] ✔
L5	150 - 140	Pirod 105217	10.00	10.00	37.8 K=1.00	5.3014	1.00	-49635.40	214859.00	0.231 [1] ✔
T1	140 - 120	Pirod 105218	20.03	10.02	32.4 K=1.00	7.2158	1.00	-94772.50	300681.00	0.315 [1] ✔
T2	120 - 110	Pirod 105218	10.02	5.19	32.4 K=1.00	7.2158	1.00	-115203.00	300681.00	0.383 [1] ✔
T3	110 - 100	Pirod 105218	10.02	10.02	32.4 K=1.00	7.2158	1.00	-138755.00	300681.00	0.461 [1] ✔
T4	100 - 80	Pirod 105219	20.03	10.02	28.4 K=1.00	9.4248	1.00	-185383.00	399868.00	0.464 [1] ✔
T5	80 - 60	Pirod 105219	20.03	10.02	28.4 K=1.00	9.4248	1.00	-233112.00	399868.00	0.583 [1] ✔
T6	60 - 40	Pirod 105220	20.03	10.02	25.2 K=1.00	11.9282	1.00	-280293.00	512375.00	0.547 [1] ✔
T7	40 - 20	Pirod 105220	20.03	10.02	25.2 K=1.00	11.9282	1.00	-327449.00	512375.00	0.639 [1] ✔
T8	20 - 0	Pirod 112738	20.03	20.03	32.6 K=1.00	14.7262	1.00	-352115.00	613145.00	0.574 [1] ✔

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n lb	A in^2	V_u lb	ϕV_n lb	Stress Ratio
L1	195 - 190	0.5	1.48	121.0	165670.00	0.1963	214.74	3388.58	0.063 ✔
L2	190 - 180	0.5	1.48	121.0	165670.00	0.1963	825.97	3388.58	0.244 ✔
L3	180 - 160	0.5	1.48	121.0	165670.00	0.1963	841.77	3292.47	0.256 ✔
L4	160 - 150	0.5	1.47	120.0	238565.00	0.1963	1220.67	3335.33	0.366 ✔
L5	150 - 140	0.5	1.47	120.0	238565.00	0.1963	660.32	3335.33	0.198 ✔
T1	140 - 120	0.5	1.46	119.0	324713.00	0.1963	1816.28	3377.71	0.538 ✔
T2	120 - 110	0.5	1.46	119.0	324713.00	0.1963	1588.34	3377.71	0.470 ✔
T3	110 - 100	0.5	1.46	119.0	324713.00	0.1963	712.50	3377.71	0.211 ✔
T4	100 - 80	0.625	1.45	94.4	424115.00	0.3068	1180.71	6957.62	0.170 ✔
T5	80 - 60	0.625	1.45	94.4	424115.00	0.3068	1254.64	6957.62	0.180 ✔
T6	60 - 40	0.625	1.43	93.6	536771.00	0.3068	1037.16	7011.35	0.148 ✔
T7	40 - 20	0.625	1.43	93.6	536771.00	0.3068	2199.08	7011.35	0.314 ✔

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n lb	A in^2	V_u lb	ϕV_n lb	Stress Ratio
T8	20 - 0	0.75	1.73	93.9	662680.00	0.4418	1359.58	14363.90	0.095

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 190	2L2 1/2x2 1/2x3/16	7.43	6.42	99.1 K=1.00	1.8000	-402.33	34781.90	0.012 [1]
L2	190 - 180	L2 1/2x2 1/2x3/16	14.87	6.59	159.8 K=1.00	0.9020	-1837.71	7982.51	0.230 [1]
L3	180 - 160	L3x3x3/16	14.87	6.59	132.7 K=1.00	1.0900	-4882.78	13933.30	0.350 [1]
L4	160 - 150	L3x3x5/16	14.87	6.59	134.3 K=1.00	1.7800	-7465.91	22303.50	0.335 [1]
L5	150 - 140	L3x3x5/16	14.87	6.59	134.3 K=1.00	1.7800	-8790.66	22303.50	0.394 [1]
T1	140 - 120	L3x3x5/16	16.01	7.52	153.2 K=1.00	1.7800	-9917.88	17138.20	0.579 [1]
T2	120 - 110	L3 1/2x3 1/2x5/16	16.80	7.92	137.8 K=1.00	2.0900	-11497.00	24863.70	0.462 [1]
T3	110 - 100	L3 1/2x3 1/2x5/16	17.62	8.34	145.0 K=1.00	2.0900	-11030.10	22455.00	0.491 [1]
T4	100 - 80	L4x4x1/4	19.30	9.16	138.2 K=1.00	1.9400	-12058.10	22936.80	0.526 [1]
T5	80 - 60	L4x4x3/8	21.03	10.03	152.8 K=1.00	2.8600	-13155.30	27673.60	0.475 [1]
T6	60 - 40	L5x5x3/8	21.92	10.48	127.1 K=1.00	3.6100	-14972.20	49976.20	0.300 [1]
T7	40 - 20	L5x5x3/8	23.71	11.39	138.0 K=1.00	3.6100	-16420.50	42805.70	0.384 [1]
T8	20 - 0	2L3 1/2x3 1/2x3/8	31.25	15.01	156.8 K=0.93	4.9700	-23569.90	45643.40	0.516 [1]

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L4	160 - 150	L3x3x5/16	11.00	9.67	123.6 K=0.98	1.7800	-824.54	26332.80	0.031 [1]
T2	120 - 110	L3x3x5/16	13.48	12.27	159.7 K=1.00	1.7800	-1997.87	15759.70	0.127 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 190	2L2 1/2x2 1/2x3/16	11.00	7.33	84.6 K=1.00	1.8000	-132.44	47960.90	0.003 [1] ✔
T1	140 - 120	L3 1/2x3 1/2x3/8	11.00	9.67	168.9 K=1.00	2.4800	-23.32	19651.20	0.001 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L2	190 - 180	Pirod 105244	10.00	10.00	45.4	3.6816	865.87	165670.00	0.005 [1] ✔
L3	180 - 160	Pirod 105216	20.00	10.00	45.4	3.6816	13096.80	165670.00	0.079 [1] ✔
L4	160 - 150	Pirod 105217	10.00	5.00	37.8	5.3014	24917.40	238565.00	0.104 [1] ✔
L5	150 - 140	Pirod 105217	10.00	10.00	37.8	5.3014	41001.70	238565.00	0.172 [1] ✔
T1	140 - 120	Pirod 105218	20.03	10.02	32.4	7.2158	79158.40	324713.00	0.244 [1] ✔
T2	120 - 110	Pirod 105218	10.02	4.82	32.4	7.2158	97250.80	324713.00	0.299 [1] ✔
T3	110 - 100	Pirod 105218	10.02	10.02	32.4	7.2158	117694.00	324713.00	0.362 [1] ✔
T4	100 - 80	Pirod 105219	20.03	10.02	28.4	9.4248	158563.00	424115.00	0.374 [1] ✔
T5	80 - 60	Pirod 105219	20.03	10.02	28.4	9.4248	199446.00	424115.00	0.470 [1] ✔
T6	60 - 40	Pirod 105220	20.03	10.02	25.2	11.9282	238937.00	536771.00	0.445 [1] ✔
T7	40 - 20	Pirod 105220	20.03	10.02	25.2	11.9282	277631.00	536771.00	0.517 [1] ✔
T8	20 - 0	Pirod 112738	20.03	20.03	32.6	14.7262	298580.00	662680.00	0.451 [1] ✔

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n lb	A in^2	V_u lb	ϕV_n lb	Stress Ratio
L1	195 - 190	0.5	1.48	121.0	165670.00	0.1963	214.74	3388.58	0.063 ✔
L2	190 - 180	0.5	1.48	121.0	165670.00	0.1963	825.97	3388.58	0.244 ✔
L3	180 - 160	0.5	1.48	121.0	165670.00	0.1963	841.77	3292.47	0.256 ✔
L4	160 - 150	0.5	1.47	120.0	238565.00	0.1963	1220.67	3335.33	0.366 ✔
L5	150 - 140	0.5	1.47	120.0	238565.00	0.1963	660.32	3335.33	0.198 ✔
T1	140 - 120	0.5	1.46	119.0	324713.00	0.1963	1816.28	3377.71	0.538 ✔
T2	120 - 110	0.5	1.46	119.0	324713.00	0.1963	1588.34	3377.71	0.470 ✔
T3	110 - 100	0.5	1.46	119.0	324713.00	0.1963	712.50	3377.71	0.211 ✔
T4	100 - 80	0.625	1.45	94.4	424115.00	0.3068	1180.71	6957.62	0.170 ✔
T5	80 - 60	0.625	1.45	94.4	424115.00	0.3068	1254.64	6957.62	0.180 ✔
T6	60 - 40	0.625	1.43	93.6	536771.00	0.3068	1037.16	7011.35	0.148 ✔
T7	40 - 20	0.625	1.43	93.6	536771.00	0.3068	2199.08	7011.35	0.314 ✔
T8	20 - 0	0.75	1.73	93.9	662680.00	0.4418	1359.58	14363.90	0.095 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 190	2L2 1/2x2 1/2x3/16	7.43	6.42	104.2	1.0336	72.24	44961.30	0.002 [1] ✔
L2	190 - 180	L2 1/2x2 1/2x3/16	14.87	6.59	104.2	0.5183	1764.60	22545.90	0.078 [1] ✔
L3	180 - 160	L3x3x3/16	14.87	6.59	86.4	0.6593	4802.03	28679.40	0.167 [1] ✔
L4	160 - 150	L3x3x5/16	14.87	6.59	87.9	1.0713	7264.79	46602.80	0.156 [1] ✔
L5	150 - 140	L3x3x5/16	14.87	6.59	87.9	1.0713	8448.74	46602.80	0.181 [1] ✔
T1	140 - 120	L3x3x5/16	16.01	7.52	100.0	1.0713	9854.37	46602.80	0.211 [1] ✔
T2	120 - 110	L3 1/2x3 1/2x5/16	16.80	7.92	89.9	1.3038	10958.20	56716.50	0.193 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	110 - 100	L3 1/2x3 1/2x5/16	17.62	8.34	94.5	1.3038	10957.50	56716.50	0.193 [1] ✔
T4	100 - 80	L4x4x1/4	18.45	8.74	85.8	1.1972	12439.60	52077.70	0.239 [1] ✔
T5	80 - 60	L4x4x3/8	20.16	9.60	95.6	1.7583	13786.70	76485.20	0.180 [1] ✔
T6	60 - 40	L5x5x3/8	21.92	10.48	82.2	2.3208	14461.10	100954.00	0.143 [1] ✔
T7	40 - 20	L5x5x3/8	24.62	11.84	92.6	2.3208	15451.50	100954.00	0.153 [1] ✔
T8	20 - 0	2L3 1/2x3 1/2x3/8	31.25	15.01	171.6	3.0947	20460.00	134619.00	0.152 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L4	160 - 150	L3x3x5/16	11.00	9.67	130.2	1.1885	1051.08	57940.10	0.018 [1] ✔
T2	120 - 110	L3x3x5/16	13.48	12.27	162.4	1.1885	1997.87	57940.10	0.034 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	195 - 190	2L2 1/2x2 1/2x3/16	11.00	7.33	86.5	1.0336	166.20	50387.70	0.003 [1] ✔
T1	140 - 120	L3 1/2x3 1/2x3/8	11.00	9.67	112.2	1.5436	189.78	67146.30	0.003 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	195 - 190	Latticed Pole Leg	Pirod 105244	3	-598.85	142493.00	6.3	Pass
L2	190 - 180	Latticed Pole Leg	Pirod 105244	14	-3940.85	142493.00	24.4	Pass
L3	180 - 160	Latticed Pole Leg	Pirod 105216	24	-17069.70	142493.00	25.6	Pass
L4	160 - 150	Latticed Pole Leg	Pirod 105217	37	-31267.20	214859.00	36.6	Pass
L5	150 - 140	Latticed Pole Leg	Pirod 105217	49	-49635.40	214859.00	23.1	Pass
L1	195 - 190	Latticed Pole Diagonal	2L2 1/2x2 1/2x3/16	10	-402.33	34781.90	1.2	Pass
L2	190 - 180	Latticed Pole Diagonal	L2 1/2x2 1/2x3/16	16	-1837.71	7982.51	23.0	Pass
L3	180 - 160	Latticed Pole Diagonal	L3x3x3/16	25	-4882.78	13933.30	35.0	Pass
L4	160 - 150	Latticed Pole Diagonal	L3x3x5/16	41	-7465.91	22303.50	33.5	Pass
L5	150 - 140	Latticed Pole Diagonal	L3x3x5/16	53	-8790.66	22303.50	39.4	Pass
L4	160 - 150	Latticed Pole Secondary Horizontal	L3x3x5/16	48	-824.54	26332.80	3.1	Pass
L1	195 - 190	Latticed Pole Top Girt	2L2 1/2x2 1/2x3/16	6	121.11	50387.70	0.4	Pass
T1	140 - 120	Leg	Pirod 105218	58	-72618.50	300681.00	53.8	Pass
T2	120 - 110	Leg	Pirod 105218	76	-115203.00	300681.00	47.0	Pass
T3	110 - 100	Leg	Pirod 105218	88	-138755.00	300681.00	46.1	Pass
T4	100 - 80	Leg	Pirod 105219	97	-185383.00	399868.00	46.4	Pass
T5	80 - 60	Leg	Pirod 105219	112	-233112.00	399868.00	58.3	Pass
T6	60 - 40	Leg	Pirod 105220	127	-280293.00	512375.00	54.7	Pass
T7	40 - 20	Leg	Pirod 105220	142	-327449.00	512375.00	63.9	Pass
T8	20 - 0	Leg	Pirod 112738	157	-352115.00	613145.00	57.4	Pass
T1	140 - 120	Diagonal	L3x3x5/16	68	-9917.88	17138.20	57.9	Pass
T2	120 - 110	Diagonal	L3 1/2x3 1/2x5/16	83	-11497.00	24863.70	46.2	Pass
T3	110 - 100	Diagonal	L3 1/2x3 1/2x5/16	95	-11030.10	22455.00	49.1	Pass
T4	100 - 80	Diagonal	L4x4x1/4	105	-12058.10	22936.80	52.6	Pass
T5	80 - 60	Diagonal	L4x4x3/8	120	-13155.30	27673.60	47.5	Pass
T6	60 - 40	Diagonal	L5x5x3/8	140	-14972.20	49976.20	30.0	Pass
T7	40 - 20	Diagonal	L5x5x3/8	155	-16420.50	42805.70	38.4	Pass
T8	20 - 0	Diagonal	2L3 1/2x3 1/2x3/8	164	-23569.90	45643.40	51.6	Pass
T2	120 - 110	Secondary Horizontal	L3x3x5/16	85	-1997.87	15759.70	12.7	Pass
T1	140 - 120	Top Girt	L3 1/2x3 1/2x3/8	61	189.78	67146.30	0.7	Pass
						Summary		
						Latticed Pole Leg (L4)	36.6	Pass
						Latticed Pole Diagonal (L5)	39.4	Pass
						Latticed Pole Secondary Horizontal (L4)	3.1	Pass
						Latticed Pole Top Girt (L1)	0.4	Pass
						Leg (T7)	63.9	Pass
						Diagonal (T1)	57.9	Pass
						Secondary Horizontal (T2)	12.7	Pass
						Top Girt (T1)	0.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
						Bolt Checks	64.6	Pass
						RATING =	**64.6**	**Pass**