From: Carolyn Seeley <carolyn.seeley@smartlinkgroup.com>
Sent: Wednesday, January 24, 2024 10:00 AM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: Council Incomplete Letter - EM-ATT-086-240104- (Cook Drive) Montville

Hi Lisa,

I apologize, I submitted the old version of the Structural. I have attached the correct Structural Analysis and Mount Analysis.

I will put a copy of each in the mail.

Please let me know if you need anything else.

smartlink
10 Church Circle
Annapolis, MD, 21401

Carolyn Seeley
Real Estate Specialist
Carolyn.Seeley@smartlinkgroup.com
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www.smartlinkgroup.com

(REVISED)
STRUCTURAL ANALYSIS REPORT

For

AT&T SITE NUMBER: CT2171 (C-BAND)

SITE NAME: MONTVILLE EAST

TEP PROJECT NUMBER: 354218

57 Cook Drive
Uncasville, CT 06382

Antennas Mounted on the Tower

Prepared for:

smartlink at&t

Dated: April 12, 2023 (Rev.2)
May 6, 2022 (Rev.1)
May 2, 2022

Prepared by:

TEP NORTHEAST

(TEP OPCO, LLC)
45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553
www.tepgroup.net

SCOPE OF WORK:

TEP Northeast (TEP NE) has been authorized by AT&T to conduct a structural evaluation of the 193' guyed tower supporting the proposed AT&T's antennas located at elevation 180' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

This office conducted an on-site visual survey of the above site on April 18, 2022.

The following documents were used for our reference:

- Previous Structural Analysis Report prepared by Hudson Design Group LLC dated March 14, 2013.
- Tower Mapping Report prepared by ProVertic LLC dated April 28, 2022.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **90.6 %** - (Bolts at Diagonals at Tower Section T10 from EL.5.3' to EL.20.6' Controlling).

FOUNDATION SUMMARY:

Based on our evaluation, we have determined that the existing foundation **is in conformance** with the ANSI/TIA-222-H Standard for the loading considered under the criteria listed in this report. The foundation is rated at **55.7 %** - (Bearing at Pier and Pad Foundation Controlling).

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(3) AIR6449 B41 Antennas	191'	Boom Gate
	(3) AIR 32 Antennas	191'	Boom Gate
	(3) APXVAARR24_43-U-NA20 Antennas	191'	Boom Gate
	(3) 4449 Radios	191'	Boom Gate
	(3) 4415 Radios	191'	Boom Gate
	(1) 20' Omni Antenna	190'	Boom Gate
	(2) 6' Omni Antennas	182'	Boom Gate
AT&T	(2) DC6 Surge Arrestors	180'	Tower Leg
AT&T	(2) 4478 B14 RRH's	180'	Boom Gate
AT&T	(3) 4426 B66 RRH's	180'	Boom Gate
AT&T	(3) RRUS-32 B30 RRH's	180'	Boom Gate
AT&T	**(2) TPA65R-BU8DA-K Antennas**	180'	Sector Frame
AT&T	**(1) TPA65R-BU6DA-K Antenna**	180'	Sector Frame
AT&T	**(3) AIR6419 Antennas**	180'	Sector Frame
AT&T	**(3) AIR6449 Antennas**	180'	Sector Frame
AT&T	**(2) DMP65R-BU8DA-K Antennas**	180'	Sector Frame
AT&T	**(1) DMP65R-BU6DA-K Antenna**	180'	Sector Frame
AT&T	**(1) 4478 B14 RRH**	180'	Sector Frame
AT&T	**(3) 4415 B25 RRH's**	180'	Sector Frame
AT&T	**(3) 4449 B5/B12 RRH's**	180'	Sector Frame
AT&T	**(1) DC9-48-60-24-8C-EV Surge Arrestors**	180'	Sector Frame
	(6) LPA-80080-4CF Antennas	169'	Sector Frame
	(6) SBNHH-1D65B Antennas	169'	Sector Frame
	(3) RRH2x60 700 RRH's	169'	Sector Frame
	(3) RRH2x60 PCS RRH's	169'	Sector Frame
	(3) RRH4x45 RRH's	169'	Sector Frame
	(3) UBFIX RRH's	169'	Sector Frame
	(2) OVP Boxes	169'	Sector Frame
	(6) APXVTM14 Antennas	150'	Boom Gate
	(3) FD-RRH-4X40 1900 RRH's	150'	Boom Gate
	(3) FD-RRH-2X50 800 RRH's	150'	Boom Gate
	(3) FZHN RRH's	150'	Boom Gate
	(1) 10' Dipole	123'	Side Mount
	(1) 20' Omni	118'	Side Mount
	(1) 20' Omni	117'	Side Mount
	(1) Dipole	113'	Side Mount
	(1) 20' Omni	98'	Side Mount

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(6) 1-1/4" Cables	180'	Tower Face
AT&T	(4) DC Power Cables	180'	Tower Face
AT&T	(2) Fiber Cables	180'	Tower Face
AT&T	***(2) DC Power Cables***	180'	Tower Face
AT&T	***(1) Fiber Cable***	180'	Tower Face

Proposed AT&T Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	65.3%	120.6 – 140.6	PASS	
Diagonals	33.8%	160.6 – 180.6	**PASS**	**Controlling**
Sec. Horizontals	28.4%	160.6 – 180.6	PASS	
Top Girt	11.4%	140.6 – 160.6	PASS	
Bottom Girt	39.7%	5.3 – 20.6	PASS	
Mid Girt	1.3%	0.6 – 5.3	PASS	
Guy	56.2%	160.6 – 180.6	PASS	
Torque Arm	55.6%	160.6 – 180.6	PASS	
Bolt Checks	**90.6%**	5.3 – 20.6	**PASS**	**Controlling**

TOWER BASE FOUNDATION RESULTS SUMMARY:

	Max. Stress Ratio	Pass/Fail	Comments
Sliding	1.2%	PASS	
Bearing	**55.7%**	**PASS**	**Controlling**
Overturning	1.7%	PASS	

TOWER ANCHOR FOUNDATION RESULTS SUMMARY:

	Max. Stress Ratio	Pass/Fail	Comments
Shear	**45.0%**	**PASS**	**Controlling**
Uplift	34.3%	PASS	

DESIGN CRITERIA:

1. EIA/TIA-222-H Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: New London
   Ultimate Wind Speed: 125 mph (3 second gust)
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Nominal Ice Thickness: 1.0 inch

2. Approximate height above grade to proposed antennas: 180'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

2. The tower and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

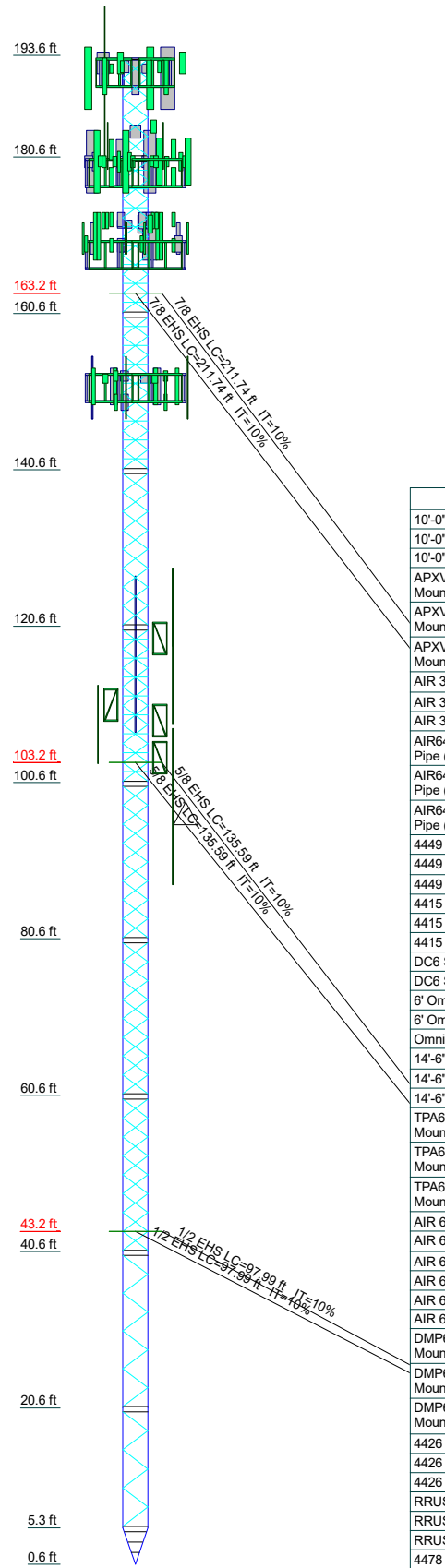
SUPPORT RECOMMENDATIONS:

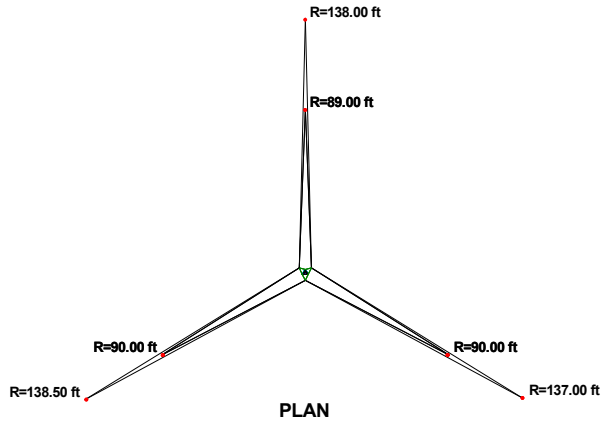
TEP NE recommends that the proposed antennas, RRHs, and surge arrestors be mounted on the existing sector frames supported by the tower.

FIELD PHOTOS:

CALCULATIONS

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11
Legs		P2.5x.276	P2.5x0.276 (CT2171)		P2.5x.276		P3x0.299					
Leg Grade		A572-50										
Diagonals	N.A.		L2x2x1/4		P1.5x.120	L2x2x1/4	P1.5x.120	L1 3/4x1 3/4x3/16	P1.5x.120	P1.5x.120		
Diagonal Grade	N.A.		A36		A53-B-42	A36	A53-B-42	A36		A53-B-42		
Top Girts	A		L2x2x1/4		P1.5x.120	L2x2x1/4		P1.5x.120				
Mid Girts	A				N.A.							
Bottom Girts	N.A.		L2x2x1/4		P1.5x.120	L2x2x1/4		P1.5x.120				
Sec. Horizontals		N.A.			N.A.	L2x2x1/4		N.A.				
Face Width (ft)		3.42					64 @ 2.41667				6 @ 2.44389	
# Panels @ (ft)	B	5 @ 2.46667										
Weight (lb) 13432.1		768.3	2436.1	1661.1	852.3	2328.8	1006.1	1075.0	1566.5	828.1	640.8	279.0





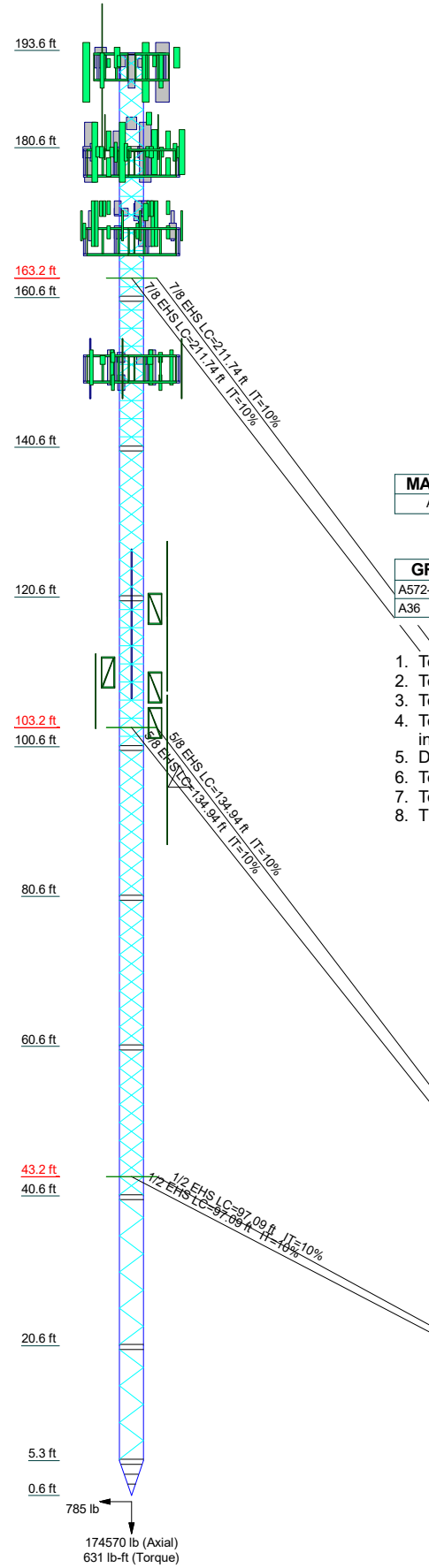
DESIGNED APPURTENANCE LOADING

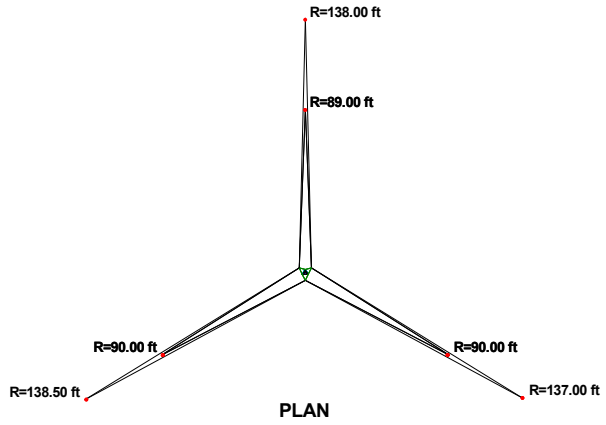
TYPE	ELEVATION	TYPE	ELEVATION
10'-0" Boom Gate	191.4	14'-6" Sector Frame	168
10'-0" Boom Gate	191.4	14'-6" Sector Frame	168
10'-0" Boom Gate	191.4	14'-6" Sector Frame	168
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	191.4	LPA-80080/4CF Antenna w/ Mounting Pipe	168
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	191.4	LPA-80080/4CF Antenna w/ Mounting Pipe	168
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	191.4	LPA-80080/4CF Antenna w/ Mounting Pipe	168
AIR 32 Antenna w/ Mounting Pipe	191.4	LPA-80080/4CF Antenna w/ Mounting Pipe	168
AIR 32 Antenna w/ Mounting Pipe	191.4	LPA-80080/4CF Antenna w/ Mounting Pipe	168
AIR 32 Antenna w/ Mounting Pipe	191.4	LPA-80080/4CF Antenna w/ Mounting Pipe	168
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	191.4	SBNHH-1D65B Antenna w/ Mounting Pipe	168
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	191.4	SBNHH-1D65B Antenna w/ Mounting Pipe	168
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	191.4	SBNHH-1D65B Antenna w/ Mounting Pipe	168
4449 RRH	191.4	SBNHH-1D65B Antenna w/ Mounting Pipe	168
4449 RRH	191.4	SBNHH-1D65B Antenna w/ Mounting Pipe	168
4449 RRH	191.4	SBNHH-1D65B Antenna w/ Mounting Pipe	168
4415 RRH	191.4	B13 RRH4X30-4R RRH	168
4415 RRH	191.4	B13 RRH4X30-4R RRH	168
4415 RRH	191.4	B13 RRH4X30-4R RRH	168
DC6 Surge Arrestor	183.5	B25 RRH4X30-4R RRH	168
DC6 Surge Arrestor	182.83	B25 RRH4X30-4R RRH	168
6' Omni	178.5	B25 RRH4X30-4R RRH	168
6' Omni	178.5	RRH4x45-1900 RRH	168
Omni 3"x20'	178.5	RRH4x45-1900 RRH	168
14'-6" Sector Frame	178.5	RRH4x45-1900 RRH	168
14'-6" Sector Frame	178.5	UBFIX RRH	168
14'-6" Sector Frame	178.5	UBFIX RRH	168
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	178.5	UBFIX RRH	168
TPA65R-BU6DA-K Antenna w/ Mounting Pipe	178.5	UBFIX RRH	168
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	178.5	UBFIX RRH	168
AIR 6419 Antenna w/ Mounting Pipe	178.5	UBFIX RRH	168
AIR 6419 Antenna w/ Mounting Pipe	178.5	OVP	168
AIR 6419 Antenna w/ Mounting Pipe	178.5	OVP	168
AIR 6449 Antenna w/ Mounting Pipe	178.5	Ubiqam Filter	168
AIR 6449 Antenna w/ Mounting Pipe	178.5	Ubiqam Filter	168
AIR 6449 Antenna w/ Mounting Pipe	178.5	14'-6" Sector Frame	151.08
DMP65R-BU8DA-K Antenna w/ Mounting Pipe	178.5	14'-6" Sector Frame	151.08
DMP65R-BU6DA-K Antenna w/ Mounting Pipe	178.5	14'-6" Sector Frame	151.08
DMP65R-BU8DA-K Antenna w/ Mounting Pipe	178.5	APXVTM14-ALU-120 Antenna w/ Mounting Pipe	151.08
4426 B66 RRH	178.5	APXVTM14-ALU-120 Antenna w/ Mounting Pipe	151.08
4426 B66 RRH	178.5	APXVTM14-ALU-120 Antenna w/ Mounting Pipe	151.08
4426 B66 RRH	178.5	APXVTM14-ALU-120 Antenna w/ Mounting Pipe	151.08
RRUS-32 RRH	178.5	APXVTM14-ALU-120 Antenna w/ Mounting Pipe	151.08
RRUS-32 RRH	178.5	APXVTM14-ALU-120 Antenna w/ Mounting Pipe	151.08
RRUS-32 RRH	178.5	RRH2x50-800 RRH	151.08
4478 RRH	178.5	RRH2x50-800 RRH	151.08
4478 RRH	178.5	RRH2x50-800 RRH	151.08
4478 RRH	178.5	RRH4x45-1900 RRH	151.08
4415 B25 RRH	178.5	RRH4x45-1900 RRH	151.08
4415 B25 RRH	178.5	RRH4x45-1900 RRH	151.08
4415 B25 RRH	178.5		
4449 B5/B12 RRH	178.5		
4449 B5/B12 RRH	178.5		
4449 B5/B12 RRH	178.5		
DC9-48-60-0-8C-EV Surge Arrestor w/ Mounting Pipe	178.5		

TEP Northeast
45 Beechwood Drive
North Andover, MA
Phone: (978) 557-5553
FAX:

Job: *CT2171*			
Project: ***193 ft Guyed Tower***			
Client: AT&T	Drawn by: CL	App'd:	
Code: TIA-222-H	Date: 04/12/23	Scale: NTS	
Path:		Dwg No. E-1	

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11
Legs	P2.5x.276	P2.5x0.276 (CT2171)		P2.5x.276		P3x0.299					
Leg Grade						A572-50					
Diagonals		L2x2x1/4		P1.5x.120	L2x2x1/4	P1.5x.120	L1 3/4x1 3/4x3/16	P1.5x.120	P1.5x.120	6 @ 2.44389	N.A.
Diagonal Grade		A36		A53-B-42	A36	A53-B-42	A36		A53-B-42		N.A.
Top Girts		L2x2x1/4		P1.5x.120	L2x2x1/4			P1.5x.120			A
Mid Girts					N.A.						A
Bottom Girts		L2x2x1/4		P1.5x.120	L2x2x1/4			P1.5x.120			N.A.
Sec. Horizontals	N.A.				L2x2x1/4			N.A.			
Face Width (ft)	3.42				64 @ 2.41667						
# Panels @ (ft)	5 @ 2.46667										B
Weight (lb) 13432.1	768.3	2436.1	1661.1	852.3	2328.8	1006.1	1075.0	1566.5	828.1	640.8	279.0





PLAN

SYMBOL LIST

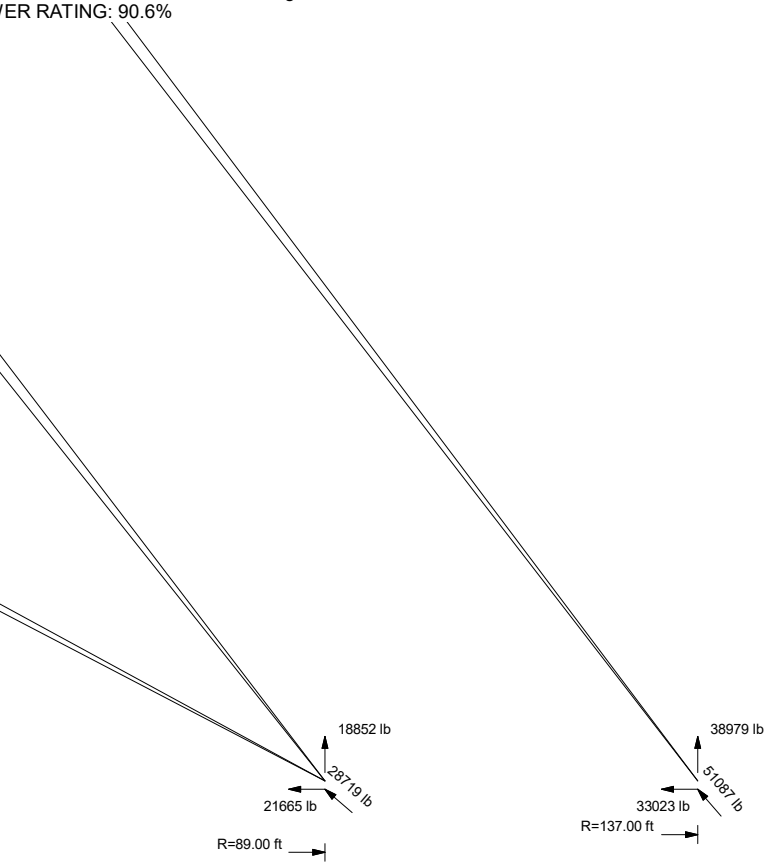
MARK	SIZE	MARK	SIZE
A	L4x4x1/4	B	3 @ 1.33444

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A53-B-42	42 ksi	63 ksi
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 90.6%



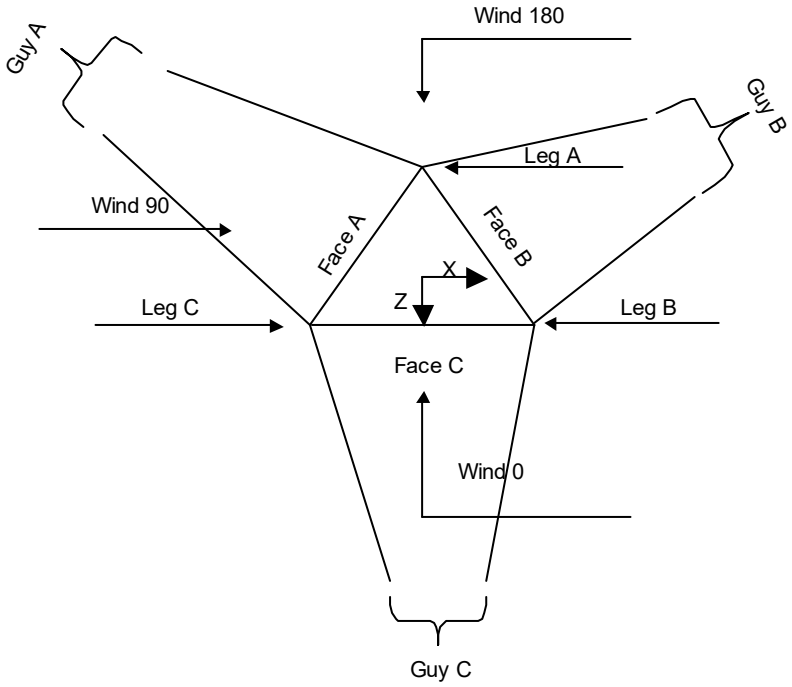
ALL REACTIONS ARE FACTORED

TEP Northeast 45 Beechwood Drive North Andover, MA Phone: (978) 557-5553 FAX:	Job: ***CT2171***		
	Project: ***193 ft Guyed Tower***		
	Client: AT&T	Drawn by: CL	App'd:
	Code: TIA-222-H	Date: 04/12/23	Scale: NTS
	Path:		Dwg No. E-1

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 193.60 ft above the ground line.
The base of the tower is set at an elevation of 0.60 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

Tower is located in New London County, Connecticut.
Tower base elevation above sea level: 365.60 ft.
Basic wind speed of 125 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
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 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Safety factor used in guy design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Face Guyed

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	193.60-180.60			3.42	1	13.00
T2	180.60-160.60			3.42	1	20.00
T3	160.60-140.60			3.42	1	20.00
T4	140.60-120.60			3.42	1	20.00
T5	120.60-100.60			3.42	1	20.00
T6	100.60-80.60			3.42	1	20.00
T7	80.60-60.60			3.42	1	20.00
T8	60.60-40.60			3.42	1	20.00
T9	40.60-20.60			3.42	1	20.00
T10	20.60-5.27			3.42	1	15.33
T11	5.27-0.60			3.42	1	4.67

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	193.60-180.60	2.47	X Brace	No	Yes	6.0000	2.0000
T2	180.60-160.60	2.42	X Brace	No	Yes	6.0000	2.0000
T3	160.60-140.60	2.42	X Brace	No	Yes	6.0000	2.0000
T4	140.60-120.60	2.42	CX Brace	No	No	6.0000	2.0000
T5	120.60-100.60	2.42	X Brace	No	Yes	6.0000	2.0000
T6	100.60-80.60	2.42	CX Brace	No	No	6.0000	2.0000
T7	80.60-60.60	2.42	CX Brace	No	No	6.0000	2.0000
T8	60.60-40.60	2.42	CX Brace	No	No	6.0000	2.0000
T9	40.60-20.60	2.42	K Brace Left	No	No	6.0000	2.0000
T10	20.60-5.27	2.44	K Brace Left	No	No	6.0000	2.0000
T11	5.27-0.60	1.33	X Brace	No	Yes	6.0000	2.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 193.60-180.60	Pipe	P2.5x.276	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T2 180.60-160.60	Pipe	P2.5x0.276 (CT2171)	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 160.60-140.60	Pipe	P2.5x0.276 (CT2171)	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T4 140.60-120.60	Pipe	P2.5x.276	A572-50 (50 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T5 120.60-100.60	Pipe	P3x0.299	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T6 100.60-80.60	Pipe	P3x0.299	A572-50 (50 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T7 80.60-60.60	Pipe	P3x0.299	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T8 60.60-40.60	Pipe	P3x0.299	A572-50 (50 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T9 40.60-20.60	Pipe	P3x0.299	A572-50 (50 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T10 20.60-5.27	Pipe	P3x0.299	A572-50 (50 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T11 5.27-0.60	Pipe	P3x0.299	A572-50 (50 ksi)	Solid Round		A53-B-42 (42 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 193.60-180.60	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T2 180.60-160.60	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T3 160.60-140.60	Pipe	P1.5x.120	A53-B-42 (42 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T4 140.60-120.60	Pipe	P1.5x.120	A53-B-42 (42 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T5 120.60-100.60	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T6 100.60-80.60	Pipe	P1.5x.120	A53-B-42 (42 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T7 80.60-60.60	Pipe	P1.5x.120	A53-B-42 (42 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T8 60.60-40.60	Pipe	P1.5x.120	A53-B-42 (42 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T9 40.60-20.60	Pipe	P1.5x.120	A53-B-42 (42 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T10 20.60-5.27	Pipe	P1.5x.120	A53-B-42 (42 ksi)	Pipe	P1.5x.120	A53-B-42 (42 ksi)
T11 5.27-0.60	Equal Angle	L4x4x1/4	A36 (36 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)

Tower 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
T11 5.27-0.60	2	Equal Angle	L4x4x1/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 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 180.60-160.60	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 160.60-140.60	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T5 120.60-100.60	Equal Angle	L2x2x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

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
T1 193.60-180.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 180.60-160.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 160.60-140.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 140.60-120.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5 120.60-100.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T6 100.60-80.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 80.60-60.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 60.60-40.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 40.60-20.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 20.60-5.27	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T11 5.27-0.60	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

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 193.60-180.60	Flange	0.8750 A325N	4	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T2 180.60-160.60	Flange	0.8750 A325N	4	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T3 160.60-140.60	Flange	0.8750 A325N	4	0.6250 A325N	1	0.6250 A325N	1	0.6250 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T4 140.60-120.60	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T5 120.60-100.60	Flange	0.8750 A325N	4	0.6250 A325N	2	0.6250 A325N	2	0.6250 A325N	2	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	1
T6 100.60-80.60	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T7 80.60-60.60	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T8 60.60-40.60	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T9 40.60-20.60	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T10 20.60-5.27	Flange	0.8750 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0
T11 5.27-0.60	Flange	0.8750 A325N	4	0.5000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
163.183	EHS	A	7/8	7970.00	10%	19000	1.581	212.19	138.00	0.0000	0.00	100%
		B	7/8	7970.00	10%	19000	1.581	211.55	137.00	0.0000	0.00	100%
		C	7/8	7970.00	10%	19000	1.581	212.51	138.50	0.0000	0.00	100%
103.183	EHS	A	5/8	4240.00	10%	21000	0.813	134.83	89.00	0.0000	0.00	100%
		B	5/8	4240.00	10%	21000	0.813	135.47	90.00	0.0000	0.00	100%
		C	5/8	4240.00	10%	21000	0.813	135.47	90.00	0.0000	0.00	100%
43.1833	EHS	A	1/2	2690.00	10%	21000	0.517	97.01	89.00	0.0000	0.00	100%
		B	1/2	2690.00	10%	21000	0.517	97.91	90.00	0.0000	0.00	100%
		C	1/2	2690.00	10%	21000	0.517	97.91	90.00	0.0000	0.00	100%

Guy Data*(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
163.183	Torque Arm	7.33	0.0000	Channel	A36 (36 ksi)	Channel	C15x33.9
103.183	Torque Arm	7.33	0.0000	Channel	A36 (36 ksi)	Channel	C15x33.9
43.1833	Torque Arm	7.33	0.0000	Channel	A36 (36 ksi)	Channel	C12x25

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
163.183	A	81.59	31	5	1.0947
	B	81.59	31	5	1.0947
	C	81.59	31	5	1.0947
103.183	A	51.59	27	4	1.0457
	B	51.59	27	4	1.0457
	C	51.59	27	4	1.0457
43.1833	A	21.59	23	4	0.9585
	B	21.59	23	4	0.9585
	C	21.59	23	4	0.9585

Guy-Tensioning Information

				Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
Guy Elevation		H	V	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept
ft		ft	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft
163.183	A	135.93	163.18	9299	3.78	8853	3.97	8410	4.17	7970	4.40	7535	4.65	7104	4.93	6680	5.23
	B	134.93	163.18	9288	3.76	8846	3.94	8406	4.15	7970	4.37	7538	4.62	7111	4.89	6690	5.20
	C	136.43	163.18	9305	3.79	8856	3.98	8411	4.18	7970	4.41	7533	4.66	7101	4.94	6675	5.25
103.183	A	86.96	103.18	5026	1.46	4763	1.54	4501	1.63	4240	1.73	3980	1.84	3722	1.97	3466	2.11
	B	87.96	103.18	5037	1.47	4770	1.55	4504	1.64	4240	1.74	3977	1.86	3715	1.99	3456	2.14
	C	87.96	103.18	5037	1.47	4770	1.55	4504	1.64	4240	1.74	3977	1.86	3715	1.99	3456	2.14
43.1833	A	86.96	43.18	3658	0.66	3334	0.73	3011	0.81	2690	0.90	2372	1.02	2059	1.18	1753	1.38
	B	87.96	43.18	3662	0.67	3337	0.74	3012	0.82	2690	0.92	2371	1.04	2056	1.20	1750	1.41
	C	87.96	43.18	3662	0.67	3337	0.74	3012	0.82	2690	0.92	2371	1.04	2056	1.20	1750	1.41

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
*****													
6X12 Hybrid Cables	A	No	No	Ar (CaAa)	193.00 - 8.60	0.3000	0	4	4	0.1250	1.5400		1.70
*****													
LCF78-50J (7/8 FOAM)	C	No	No	Ar (CaAa)	183.50 - 8.60	-0.3000	0.36	3	3	0.1250	1.1000		0.53
*****													
DC Cable	C	No	No	Ar (CaAa)	182.00 - 8.60	2.0000	0.38	2	2	0.1250	0.9570		0.88
Fiber Cable (1-1/4")	C	No	No	Ar (CaAa)	182.00 - 8.60	2.0000	0.33	1	1	0.1250	1.2500		0.48
DC Cable	C	No	No	Ar (CaAa)	182.00 - 8.60	2.0000	0.28	2	2	0.1250	0.9570		0.88
Fiber Cable (1-1/4")	C	No	No	Ar (CaAa)	182.00 - 8.60	2.0000	0.23	1	1	0.1250	1.2500		0.48
DC Cable	C	No	No	Ar (CaAa)	182.00 - 8.60	2.0000	0.18	2	2	0.1250	0.9570		0.88
Fiber Cable (1-1/4")	C	No	No	Ar (CaAa)	182.00 - 8.60	2.0000	0.13	1	1	0.1250	1.2500		0.48
6X12 Hybrid Cables	C	No	No	Ar (CaAa)	193.00 - 8.60	0.3000	0.28	6	6	0.1250	1.5400		1.70
*****													
Hybrid Cable (1-5/8")	B	No	No	Ar (CaAa)	169.50 - 8.60	-0.3000	0	12	12	0.1250	1.6250		2.38
Hybrid Cable (1-1/4")	B	No	No	Ar (CaAa)	169.50 - 8.60	-2.0000	0	2	2	0.1250	1.2500		1.70
*****													
Hybrid Cable (1-1/4")	C	No	No	Ar (CaAa)	152.58 - 8.60	0.3000	-0.38	4	4	0.1250	1.2500		1.70
*****													
Fiber Cable (1-1/4")	C	No	No	Ar (CaAa)	121.00 - 8.60	0.3000	-0.29	1	1	0.1250	1.2500		0.48
Fiber Cable (1-1/4")	C	No	No	Ar (CaAa)	112.50 - 8.60	0.3000	-0.25	1	1	0.1250	1.2500		0.48

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Fiber Cable (1-1/4")	C	No	No	Ar (CaAa)	110.50 - 8.60	0.3000	-0.21	1	1	0.1250	1.2500		0.48
LCF78-50J (7/8 FOAM)	C	No	No	Ar (CaAa)	107.00 - 8.60	0.3000	-0.17	1	1	0.1250	1.1000		0.53
*****													

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
*****								

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
T1	193.60-180.60	A	0.000	0.000	7.638	0.000	84.32
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	13.743	0.000	140.49
T2	180.60-160.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	19.580	0.000	284.44
		C	0.000	0.000	44.064	0.000	370.08
T3	160.60-140.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	44.000	0.000	639.20
		C	0.000	0.000	50.054	0.000	451.54
T4	140.60-120.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	44.000	0.000	639.20
		C	0.000	0.000	54.114	0.000	506.27
T5	120.60-100.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	44.000	0.000	639.20
		C	0.000	0.000	59.993	0.000	529.70
T6	100.60-80.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	44.000	0.000	639.20
		C	0.000	0.000	63.764	0.000	545.72
T7	80.60-60.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	44.000	0.000	639.20
		C	0.000	0.000	63.764	0.000	545.72
T8	60.60-40.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	44.000	0.000	639.20
		C	0.000	0.000	63.764	0.000	545.72
T9	40.60-20.60	A	0.000	0.000	12.320	0.000	136.00
		B	0.000	0.000	44.000	0.000	639.20
		C	0.000	0.000	63.764	0.000	545.72

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
T10	20.60-5.27	A	0.000	0.000	7.392	0.000	81.60
		B	0.000	0.000	26.400	0.000	383.52
		C	0.000	0.000	38.258	0.000	327.43
T11	5.27-0.60	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

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
T1	193.60-180.60	A	1.189	0.000	0.000	15.093	0.000	200.95
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	26.849	0.000	351.92
T2	180.60-160.60	A	1.179	0.000	0.000	24.271	0.000	322.23
		B		0.000	0.000	33.065	0.000	550.76
		C		0.000	0.000	112.114	0.000	1206.16
T3	160.60-140.60	A	1.164	0.000	0.000	24.175	0.000	319.71
		B		0.000	0.000	74.118	0.000	1230.29
		C		0.000	0.000	124.159	0.000	1367.18
T4	140.60-120.60	A	1.147	0.000	0.000	24.067	0.000	316.88
		B		0.000	0.000	73.908	0.000	1221.99
		C		0.000	0.000	131.947	0.000	1468.09
T5	120.60-100.60	A	1.129	0.000	0.000	23.943	0.000	313.64
		B		0.000	0.000	73.667	0.000	1212.49
		C		0.000	0.000	147.616	0.000	1627.26
T6	100.60-80.60	A	1.106	0.000	0.000	23.796	0.000	309.86
		B		0.000	0.000	73.383	0.000	1201.34
		C		0.000	0.000	157.033	0.000	1714.27
T7	80.60-60.60	A	1.079	0.000	0.000	23.617	0.000	305.26
		B		0.000	0.000	73.037	0.000	1187.77
		C		0.000	0.000	155.161	0.000	1677.43
T8	60.60-40.60	A	1.044	0.000	0.000	23.386	0.000	299.35
		B		0.000	0.000	72.587	0.000	1170.28
		C		0.000	0.000	152.735	0.000	1630.35
T9	40.60-20.60	A	0.992	0.000	0.000	23.051	0.000	290.90
		B		0.000	0.000	71.937	0.000	1145.16
		C		0.000	0.000	149.223	0.000	1563.58
T10	20.60-5.27	A	0.911	0.000	0.000	13.510	0.000	166.59
		B		0.000	0.000	42.540	0.000	663.31
		C		0.000	0.000	86.167	0.000	876.14
T11	5.27-0.60	A	0.785	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

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	193.60-180.60	-3.7683	2.1129	-4.3838	2.3556
T2	180.60-160.60	-3.0501	2.7494	-4.2424	4.0189
T3	160.60-140.60	-0.8439	1.9924	-1.9835	3.2489
T4	140.60-120.60	-0.5948	2.6079	-1.7635	3.8748
T5	120.60-100.60	-0.1593	2.5191	-1.0035	3.8417
T6	100.60-80.60	0.0018	3.1348	-0.8237	4.5194
T7	80.60-60.60	0.0017	2.9377	-0.7866	4.4062
T8	60.60-40.60	0.0018	3.1348	-0.7992	4.4762
T9	40.60-20.60	0.0019	3.2779	-0.8239	4.6996
T10	20.60-5.27	0.0018	3.0588	-0.7397	4.3579
T11	5.27-0.60	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
*****									
10'-0" Boom Gate	A	From Leg	1.50	0.0000	191.40	No Ice	12.10	9.50	633.00
			0.00			1/2" Ice	18.30	14.60	770.00
			0.00			1" Ice	23.80	19.50	970.00
10'-0" Boom Gate	B	From Leg	1.50	0.0000	191.40	No Ice	12.10	9.50	633.00
			0.00			1/2" Ice	18.30	14.60	770.00
			0.00			1" Ice	23.80	19.50	970.00
10'-0" Boom Gate	C	From Leg	1.50	0.0000	191.40	No Ice	12.10	9.50	633.00
			0.00			1/2" Ice	18.30	14.60	770.00
			0.00			1" Ice	23.80	19.50	970.00
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	A	From Leg	3.00	0.0000	191.40	No Ice	20.24	10.79	157.20
			4.50			1/2" Ice	20.89	12.21	290.89
			-0.73			1" Ice	21.55	13.49	435.20
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	B	From Leg	3.00	0.0000	191.40	No Ice	20.24	10.79	157.20
			4.50			1/2" Ice	20.89	12.21	290.89
			-0.73			1" Ice	21.55	13.49	435.20
APXVAARR24_43-U-NA20 Antenna w/ Mounting Pipe	C	From Leg	3.00	0.0000	191.40	No Ice	20.24	10.79	157.20
			4.50			1/2" Ice	20.89	12.21	290.89
			-0.73			1" Ice	21.55	13.49	435.20
AIR 32 Antenna w/ Mounting Pipe	A	From Leg	3.00	0.0000	191.40	No Ice	6.81	6.14	154.90
			0.00			1/2" Ice	7.30	6.99	216.61
			-0.48			1" Ice	7.76	7.73	285.26
AIR 32 Antenna w/ Mounting Pipe	B	From Leg	3.00	0.0000	191.40	No Ice	6.81	6.14	154.90
			0.00			1/2" Ice	7.30	6.99	216.61
			-0.48			1" Ice	7.76	7.73	285.26
AIR 32 Antenna w/ Mounting Pipe	C	From Leg	3.00	0.0000	191.40	No Ice	6.81	6.14	154.90
			0.00			1/2" Ice	7.30	6.99	216.61
			-0.48			1" Ice	7.76	7.73	285.26
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	A	From Leg	3.00	0.0000	191.40	No Ice	6.42	3.89	124.90
			-4.50			1/2" Ice	7.00	4.62	179.59

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			1.20			1" Ice	7.50	5.22	240.17
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	B	From Leg	3.00	0.0000	191.40	No Ice	6.42	3.89	124.90
			-4.50			1/2" Ice	7.00	4.62	179.59
			1.20			1" Ice	7.50	5.22	240.17
AIR6449 B41 Antenna w/ Mounting Pipe (T-Mobile)	C	From Leg	3.00	0.0000	191.40	No Ice	6.42	3.89	124.90
			-4.50			1/2" Ice	7.00	4.62	179.59
			1.20			1" Ice	7.50	5.22	240.17
4449 RRH	A	From Leg	1.00	0.0000	191.40	No Ice	1.97	1.40	74.00
			-1.50			1/2" Ice	2.15	1.56	92.48
			0.77			1" Ice	2.33	1.72	113.77
4449 RRH	B	From Leg	1.00	0.0000	191.40	No Ice	1.97	1.40	74.00
			-1.50			1/2" Ice	2.15	1.56	92.48
			0.77			1" Ice	2.33	1.72	113.77
4449 RRH	C	From Leg	1.00	0.0000	191.40	No Ice	1.97	1.40	74.00
			-1.50			1/2" Ice	2.15	1.56	92.48
			0.77			1" Ice	2.33	1.72	113.77
4415 RRH	A	From Leg	1.00	0.0000	191.40	No Ice	1.64	0.68	44.00
			1.50			1/2" Ice	1.80	0.79	56.41
			0.52			1" Ice	1.97	0.91	71.18
4415 RRH	B	From Leg	1.00	0.0000	191.40	No Ice	1.64	0.68	44.00
			1.50			1/2" Ice	1.80	0.79	56.41
			0.52			1" Ice	1.97	0.91	71.18
4415 RRH	C	From Leg	1.00	0.0000	191.40	No Ice	1.64	0.68	44.00
			1.50			1/2" Ice	1.80	0.79	56.41
			0.52			1" Ice	1.97	0.91	71.18
*****									
DC6 Surge Arrestor	B	From Leg	1.00	0.0000	183.50	No Ice	3.05	1.10	44.00
			0.00			1/2" Ice	3.26	1.24	65.28
			1.00			1" Ice	3.49	1.40	89.65
*****									
Omni 3"x20'	C	From Leg	3.00	0.0000	178.50	No Ice	6.00	6.00	30.00
			0.00			1/2" Ice	8.03	8.03	73.17
			11.33			1" Ice	10.08	10.08	129.01
6' Omni	C	From Leg	2.50	0.0000	178.50	No Ice	1.50	1.50	25.00
			0.00			1/2" Ice	1.97	1.97	36.31
			3.50			1" Ice	2.34	2.34	51.69
6' Omni	B	From Leg	2.50	0.0000	178.50	No Ice	1.50	1.50	25.00
			0.00			1/2" Ice	1.97	1.97	36.31
			3.50			1" Ice	2.34	2.34	51.69
*****									
DC6 Surge Arrestor	A	From Leg	1.00	0.0000	182.83	No Ice	3.05	1.10	44.00
			0.00			1/2" Ice	3.26	1.24	65.28
			1.00			1" Ice	3.49	1.40	89.65
*****									
14'-6" Sector Frame	A	From Leg	1.50	0.0000	178.50	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
14'-6" Sector Frame	B	From Leg	1.50	0.0000	178.50	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
14'-6" Sector Frame	C	From Leg	1.50	0.0000	178.50	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00

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 lb
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	A	From Leg	3.00 -6.00 1.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	116.20 234.88 363.91
TPA65R-BU6DA-K Antenna w/ Mounting Pipe	B	From Leg	3.00 -6.00 1.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	13.68 14.59 15.52	7.99 9.47 10.97	105.50 205.77 315.17
TPA65R-BU8DA-K Antenna w/ Mounting Pipe	C	From Leg	3.00 -6.00 1.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	116.20 234.88 363.91
AIR 6419 Antenna w/ Mounting Pipe	A	From Leg	3.00 -2.00 3.00	0.0000	178.50	No Ice 1/2" Ice 1" Ice	4.97 5.52 6.00	3.43 4.14 4.73	87.90 132.90 183.30
AIR 6419 Antenna w/ Mounting Pipe	B	From Leg	3.00 -2.00 3.00	0.0000	178.50	No Ice 1/2" Ice 1" Ice	4.97 5.52 6.00	3.43 4.14 4.73	87.90 132.90 183.30
AIR 6419 Antenna w/ Mounting Pipe	C	From Leg	3.00 -2.00 3.00	0.0000	178.50	No Ice 1/2" Ice 1" Ice	4.97 5.52 6.00	3.43 4.14 4.73	87.90 132.90 183.30
AIR 6449 Antenna w/ Mounting Pipe	A	From Leg	3.00 -2.00 -0.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	4.87 5.42 5.90	4.17 4.89 5.49	103.90 153.41 208.50
AIR 6449 Antenna w/ Mounting Pipe	B	From Leg	3.00 -2.00 -0.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	4.87 5.42 5.90	4.17 4.89 5.49	103.90 153.41 208.50
AIR 6449 Antenna w/ Mounting Pipe	C	From Leg	3.00 -2.00 -0.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	4.87 5.42 5.90	4.17 4.89 5.49	103.90 153.41 208.50
DMP65R-BU8DA-K Antenna w/ Mounting Pipe	A	From Leg	3.00 2.00 1.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	125.20 243.88 372.91
DMP65R-BU6DA-K Antenna w/ Mounting Pipe	B	From Leg	3.00 2.00 1.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	13.68 14.59 15.52	7.99 9.47 10.97	132.50 232.77 342.17
DMP65R-BU8DA-K Antenna w/ Mounting Pipe	C	From Leg	3.00 2.00 1.50	0.0000	178.50	No Ice 1/2" Ice 1" Ice	17.87 18.50 19.14	10.02 11.44 12.72	125.20 243.88 372.91
4426 B66 RRH	A	From Leg	2.50 2.50 1.50	90.0000	178.50	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	104.00 126.16 151.36
4426 B66 RRH	B	From Leg	2.20 2.50 1.50	90.0000	178.50	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	104.00 126.16 151.36
4426 B66 RRH	C	From Leg	2.20 2.50 1.50	90.0000	178.50	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	104.00 126.16 151.36
RRUS-32 RRH	A	From Leg	2.20 -5.50 1.50	90.0000	178.50	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
RRUS-32 RRH	B	From Leg	2.20 -5.50 1.50	90.0000	178.50	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.19	1.67 1.86 2.05	60.00 81.11 105.42
RRUS-32 RRH	C	From Leg	2.20 -5.50	90.0000	178.50	No Ice 1/2" Ice	2.74 2.96	1.67 1.86	60.00 81.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			1.50			1" Ice	3.19	2.05	105.42
4478 RRH	A	From Leg	2.20	90.0000	178.50	No Ice	2.02	1.25	60.00
			1.50			1/2" Ice	2.20	1.40	77.66
			1.50			1" Ice	2.39	1.56	98.08
4478 RRH	B	From Leg	2.20	90.0000	178.50	No Ice	2.02	1.25	60.00
			1.50			1/2" Ice	2.20	1.40	77.66
			1.50			1" Ice	2.39	1.56	98.08
4478 RRH	C	From Leg	2.20	90.0000	178.50	No Ice	2.02	1.25	60.00
			1.50			1/2" Ice	2.20	1.40	77.66
			1.50			1" Ice	2.39	1.56	98.08
4415 B25 RRH	A	From Leg	2.20	90.0000	178.50	No Ice	1.84	0.82	46.00
			-1.50			1/2" Ice	2.01	0.94	60.07
			1.50			1" Ice	2.19	1.07	76.66
4415 B25 RRH	B	From Leg	2.20	90.0000	178.50	No Ice	1.84	0.82	46.00
			-1.50			1/2" Ice	2.01	0.94	60.07
			1.50			1" Ice	2.19	1.07	76.66
4415 B25 RRH	C	From Leg	2.20	90.0000	178.50	No Ice	1.84	0.82	46.00
			-1.50			1/2" Ice	2.01	0.94	60.07
			1.50			1" Ice	2.19	1.07	76.66
4449 B5/B12 RRH	A	From Leg	2.20	90.0000	178.50	No Ice	1.97	1.40	73.00
			-6.50			1/2" Ice	2.15	1.56	91.48
			1.50			1" Ice	2.33	1.72	112.77
4449 B5/B12 RRH	B	From Leg	2.20	90.0000	178.50	No Ice	1.97	1.40	73.00
			-6.50			1/2" Ice	2.15	1.56	91.48
			1.50			1" Ice	2.33	1.72	112.77
4449 B5/B12 RRH	C	From Leg	2.20	90.0000	178.50	No Ice	1.97	1.40	73.00
			-6.50			1/2" Ice	2.15	1.56	91.48
			1.50			1" Ice	2.33	1.72	112.77
DC9-48-60-0-8C-EV Surge Arrestor w/ Mounting Pipe	C	From Leg	1.25	0.0000	178.50	No Ice	2.33	2.33	51.25
			-1.00			1/2" Ice	3.28	3.28	84.83
			1.50			1" Ice	3.80	3.80	122.67
*****									
14'-6" Sector Frame	A	From Leg	1.50	0.0000	168.00	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
14'-6" Sector Frame	B	From Leg	1.50	0.0000	168.00	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
14'-6" Sector Frame	C	From Leg	1.50	0.0000	168.00	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
LPA-80080/4CF Antenna w/ Mounting Pipe	A	From Leg	3.00	0.0000	168.00	No Ice	3.11	6.82	33.90
			-6.00			1/2" Ice	3.58	7.65	82.91
			2.17			1" Ice	4.02	8.35	138.07
LPA-80080/4CF Antenna w/ Mounting Pipe	A	From Leg	3.00	0.0000	168.00	No Ice	3.11	6.82	33.90
			6.00			1/2" Ice	3.58	7.65	82.91
			2.17			1" Ice	4.02	8.35	138.07
LPA-80080/4CF Antenna w/ Mounting Pipe	B	From Leg	3.00	0.0000	168.00	No Ice	3.11	6.82	33.90
			-6.00			1/2" Ice	3.58	7.65	82.91
			2.17			1" Ice	4.02	8.35	138.07
LPA-80080/4CF Antenna w/ Mounting Pipe	B	From Leg	3.00	0.0000	168.00	No Ice	3.11	6.82	33.90
			6.00			1/2" Ice	3.58	7.65	82.91
			2.17			1" Ice	4.02	8.35	138.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
LPA-80080/4CF Antenna w/ Mounting Pipe	C	From Leg	3.00 -6.00 2.17	0.0000	168.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
LPA-80080/4CF Antenna w/ Mounting Pipe	C	From Leg	3.00 6.00 2.17	0.0000	168.00	No Ice 1/2" Ice 1" Ice	3.11 3.58 4.02	6.82 7.65 8.35	33.90 82.91 138.07
SBNHH-1D65B Antenna w/ Mounting Pipe	A	From Leg	3.00 2.50 2.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	8.20 8.66 9.13	6.85 7.81 8.64	62.90 129.42 203.78
SBNHH-1D65B Antenna w/ Mounting Pipe	A	From Leg	3.00 1.50 2.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	8.20 8.66 9.13	6.85 7.81 8.64	62.90 129.42 203.78
SBNHH-1D65B Antenna w/ Mounting Pipe	B	From Leg	3.00 2.50 2.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	8.20 8.66 9.13	6.85 7.81 8.64	62.90 129.42 203.78
SBNHH-1D65B Antenna w/ Mounting Pipe	B	From Leg	3.00 1.50 2.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	8.20 8.66 9.13	6.85 7.81 8.64	62.90 129.42 203.78
SBNHH-1D65B Antenna w/ Mounting Pipe	C	From Leg	3.00 2.50 2.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	8.20 8.66 9.13	6.85 7.81 8.64	62.90 129.42 203.78
SBNHH-1D65B Antenna w/ Mounting Pipe	C	From Leg	3.00 1.50 2.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	8.20 8.66 9.13	6.85 7.81 8.64	62.90 129.42 203.78
B13 RRH4X30-4R RRH	A	From Leg	3.00 -2.00 4.60	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	58.00 77.61 100.18
B13 RRH4X30-4R RRH	B	From Leg	3.00 -2.00 4.60	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	58.00 77.61 100.18
B13 RRH4X30-4R RRH	C	From Leg	3.00 -2.00 4.60	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.16 2.35 2.55	1.62 1.79 1.97	58.00 77.61 100.18
B25 RRH4X30-4R RRH	A	From Leg	3.00 -2.00 1.27	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.14 2.33 2.53	1.31 1.46 1.63	51.00 68.46 88.75
B25 RRH4X30-4R RRH	B	From Leg	3.00 -2.00 1.27	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.14 2.33 2.53	1.31 1.46 1.63	51.00 68.46 88.75
B25 RRH4X30-4R RRH	C	From Leg	3.00 -2.00 1.27	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.14 2.33 2.53	1.31 1.46 1.63	51.00 68.46 88.75
RRH4x45-1900 RRH	A	From Leg	2.50 6.00 1.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	60.00 83.90 111.08
RRH4x45-1900 RRH	B	From Leg	2.50 6.00 1.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	60.00 83.90 111.08
RRH4x45-1900 RRH	C	From Leg	2.50 6.00 1.45	0.0000	168.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	60.00 83.90 111.08
UBFIX RRH	A	From Leg	2.00 1.00	90.0000	168.00	No Ice 1/2" Ice	2.31 2.52	2.38 2.58	60.00 83.90

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			4.43			1" Ice	2.73	2.79	111.08
UBFIX RRH	A	From Leg	2.00	90.0000	168.00	No Ice	2.31	2.38	60.00
			2.00			1/2" Ice	2.52	2.58	83.90
			4.43			1" Ice	2.73	2.79	111.08
UBFIX RRH	B	From Leg	2.00	90.0000	168.00	No Ice	2.31	2.38	60.00
			1.00			1/2" Ice	2.52	2.58	83.90
			4.43			1" Ice	2.73	2.79	111.08
UBFIX RRH	B	From Leg	2.00	90.0000	168.00	No Ice	2.31	2.38	60.00
			2.00			1/2" Ice	2.52	2.58	83.90
			4.43			1" Ice	2.73	2.79	111.08
UBFIX RRH	C	From Leg	2.00	90.0000	168.00	No Ice	2.31	2.38	60.00
			1.00			1/2" Ice	2.52	2.58	83.90
			4.43			1" Ice	2.73	2.79	111.08
UBFIX RRH	C	From Leg	2.00	90.0000	168.00	No Ice	2.31	2.38	60.00
			2.00			1/2" Ice	2.52	2.58	83.90
			4.43			1" Ice	2.73	2.79	111.08
OVP	A	From Leg	1.00	0.0000	168.00	No Ice	3.78	2.51	32.00
			1.00			1/2" Ice	4.03	2.72	63.40
			4.00			1" Ice	4.29	2.94	98.56
OVP	B	From Leg	1.00	0.0000	168.00	No Ice	3.78	2.51	32.00
			1.00			1/2" Ice	4.03	2.72	63.40
			4.00			1" Ice	4.29	2.94	98.56
Ubiqam Filter	A	From Leg	2.00	90.0000	168.00	No Ice	1.20	0.60	25.00
			-1.00			1/2" Ice	1.34	0.70	35.34
			4.00			1" Ice	1.48	0.81	47.81
Ubiqam Filter	A	From Leg	2.00	90.0000	168.00	No Ice	1.20	0.60	25.00
			-2.00			1/2" Ice	1.34	0.70	35.34
			4.00			1" Ice	1.48	0.81	47.81
*****									
14'-6" Sector Frame	A	From Leg	1.50	0.0000	151.08	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
14'-6" Sector Frame	B	From Leg	1.50	0.0000	151.08	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
14'-6" Sector Frame	C	From Leg	1.50	0.0000	151.08	No Ice	14.40	9.20	672.00
			0.00			1/2" Ice	21.40	14.60	826.00
			0.00			1" Ice	27.70	19.50	1048.00
APXVTM14-ALU-120	A	From Leg	3.00	0.0000	151.08	No Ice	6.65	5.03	78.90
Antenna w/ Mounting Pipe			-3.00			1/2" Ice	7.14	5.89	134.31
			0.17			1" Ice	7.60	6.63	196.47
APXVTM14-ALU-120	A	From Leg	3.00	0.0000	151.08	No Ice	6.65	5.03	78.90
Antenna w/ Mounting Pipe			3.00			1/2" Ice	7.14	5.89	134.31
			0.17			1" Ice	7.60	6.63	196.47
APXVTM14-ALU-120	B	From Leg	3.00	0.0000	151.08	No Ice	6.65	5.03	78.90
Antenna w/ Mounting Pipe			-3.00			1/2" Ice	7.14	5.89	134.31
			0.17			1" Ice	7.60	6.63	196.47
APXVTM14-ALU-120	B	From Leg	3.00	0.0000	151.08	No Ice	6.65	5.03	78.90
Antenna w/ Mounting Pipe			3.00			1/2" Ice	7.14	5.89	134.31
			0.17			1" Ice	7.60	6.63	196.47
APXVTM14-ALU-120	C	From Leg	3.00	0.0000	151.08	No Ice	6.65	5.03	78.90
Antenna w/ Mounting Pipe			-3.00			1/2" Ice	7.14	5.89	134.31
			0.17			1" Ice	7.60	6.63	196.47

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
APXVTM14-ALU-120	C	From Leg	3.00	0.0000	151.08	No Ice	6.65	5.03	78.90
Antenna w/ Mounting Pipe			3.00			1/2" Ice	7.14	5.89	134.31
			0.17			1" Ice	7.60	6.63	196.47
RRH2x50-800 RRH	A	From Leg	2.00	0.0000	151.08	No Ice	1.71	1.84	64.00
			-1.50			1/2" Ice	1.88	2.01	85.14
			1.51			1" Ice	2.05	2.19	109.25
RRH2x50-800 RRH	B	From Leg	2.00	0.0000	151.08	No Ice	1.71	1.84	64.00
			-1.50			1/2" Ice	1.88	2.01	85.14
			1.51			1" Ice	2.05	2.19	109.25
RRH2x50-800 RRH	C	From Leg	2.00	0.0000	151.08	No Ice	1.71	1.84	64.00
			-1.50			1/2" Ice	1.88	2.01	85.14
			1.51			1" Ice	2.05	2.19	109.25
RRH4x45-1900 RRH	A	From Leg	2.00	0.0000	151.08	No Ice	2.31	2.38	60.00
			-1.50			1/2" Ice	2.52	2.58	83.90
			-1.88			1" Ice	2.73	2.79	111.08
RRH4x45-1900 RRH	B	From Leg	2.00	0.0000	151.08	No Ice	2.31	2.38	60.00
			-1.50			1/2" Ice	2.52	2.58	83.90
			-1.88			1" Ice	2.73	2.79	111.08
RRH4x45-1900 RRH	C	From Leg	2.00	0.0000	151.08	No Ice	2.31	2.38	60.00
			-1.50			1/2" Ice	2.52	2.58	83.90
			-1.88			1" Ice	2.73	2.79	111.08
FZHN RRH	A	From Leg	2.00	0.0000	151.08	No Ice	2.02	0.93	51.80
			1.50			1/2" Ice	2.20	1.06	69.08
			1.17			1" Ice	2.38	1.19	89.10
FZHN RRH	B	From Leg	2.00	0.0000	151.08	No Ice	2.02	0.93	51.80
			1.50			1/2" Ice	2.20	1.06	69.08
			1.17			1" Ice	2.38	1.19	89.10
FZHN RRH	C	From Leg	2.00	0.0000	151.08	No Ice	2.02	0.93	51.80
			1.50			1/2" Ice	2.20	1.06	69.08
			1.17			1" Ice	2.38	1.19	89.10
Empty Pipe Mast	A	From Leg	3.00	0.0000	151.08	No Ice	1.90	1.90	29.20
			-6.00			1/2" Ice	2.73	2.73	43.57
			0.00			1" Ice	3.40	3.40	63.21
Empty Pipe Mast	B	From Leg	3.00	0.0000	151.08	No Ice	1.90	1.90	29.20
			-6.00			1/2" Ice	2.73	2.73	43.57
			0.00			1" Ice	3.40	3.40	63.21
Empty Pipe Mast	C	From Leg	3.00	0.0000	151.08	No Ice	1.90	1.90	29.20
			-6.00			1/2" Ice	2.73	2.73	43.57
			0.00			1" Ice	3.40	3.40	63.21
Empty Pipe Mast	A	From Leg	3.00	0.0000	151.08	No Ice	1.90	1.90	29.20
			-6.00			1/2" Ice	2.73	2.73	43.57
			0.00			1" Ice	3.40	3.40	63.21
Empty Pipe Mast	B	From Leg	3.00	0.0000	151.08	No Ice	1.90	1.90	29.20
			-6.00			1/2" Ice	2.73	2.73	43.57
			0.00			1" Ice	3.40	3.40	63.21
Empty Pipe Mast	C	From Leg	3.00	0.0000	151.08	No Ice	1.90	1.90	29.20
			-6.00			1/2" Ice	2.73	2.73	43.57
			0.00			1" Ice	3.40	3.40	63.21
*****									
48" Sidearm	B	From Leg	2.00	0.0000	119.00	No Ice	2.43	1.22	50.00
			0.00			1/2" Ice	3.50	1.75	100.00
			0.00			1" Ice	4.50	2.25	175.00
10' Omni	B	From Leg	4.00	0.0000	119.00	No Ice	2.50	2.50	80.00

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 lb
			0.00			1/2" Ice	3.53	3.53	98.64
			4.00			1" Ice	4.58	4.58	123.79
*****									
48" Sidearm	C	From Leg	2.00	0.0000	110.50	No Ice	2.43	1.22	50.00
			0.00			1/2" Ice	3.50	1.75	100.00
			0.00			1" Ice	4.50	2.25	175.00
10' Omni	C	From Leg	4.00	0.0000	110.50	No Ice	2.50	2.50	80.00
			0.00			1/2" Ice	3.53	3.53	98.64
			-2.50			1" Ice	4.58	4.58	123.79
*****									
48" Sidearm	B	From Leg	2.00	0.0000	108.50	No Ice	2.43	1.22	50.00
			0.00			1/2" Ice	3.50	1.75	100.00
			0.00			1" Ice	4.50	2.25	175.00
Omni 3"x20'	B	From Leg	4.00	0.0000	108.50	No Ice	6.00	6.00	30.00
			0.00			1/2" Ice	8.03	8.03	73.17
			9.50			1" Ice	10.08	10.08	129.01
*****									
48" Sidearm	B	From Leg	2.00	0.0000	103.75	No Ice	2.43	1.22	50.00
			0.00			1/2" Ice	3.50	1.75	100.00
			0.00			1" Ice	4.50	2.25	175.00
Omni 3"x20'	B	From Leg	4.00	0.0000	103.75	No Ice	6.00	6.00	30.00
			0.00			1/2" Ice	8.03	8.03	73.17
			-6.25			1" Ice	10.08	10.08	129.01
*****									
48" Sidearm	A	From Leg	2.00	0.0000	105.00	No Ice	2.43	1.22	50.00
			0.00			1/2" Ice	3.50	1.75	100.00
			0.00			1" Ice	4.50	2.25	175.00
Omni 3"x20'	A	From Leg	4.00	0.0000	105.00	No Ice	6.00	6.00	30.00
			0.00			1/2" Ice	8.03	8.03	73.17
			12.00			1" Ice	10.08	10.08	129.01

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy

Comb. No.	Description
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

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	105301.45	-8.53	-10.17	0.00	0.00	137.87
1.2 Dead+1.0 Wind 0 deg - No Ice+1.0 Guy	149461.27	-7.59	-335.66	0.00	0.00	200.76
1.2 Dead+1.0 Wind 30 deg - No Ice+1.0 Guy	140755.15	391.45	-394.59	0.00	0.00	451.26
1.2 Dead+1.0 Wind 60 deg - No Ice+1.0 Guy	127011.74	661.61	-401.27	0.00	0.00	575.45
1.2 Dead+1.0 Wind 90 deg - No Ice+1.0 Guy	140734.15	511.70	-170.82	0.00	0.00	631.44
1.2 Dead+1.0 Wind 120 deg - No Ice+1.0 Guy	149441.67	262.96	144.59	0.00	0.00	613.75
1.2 Dead+1.0 Wind 150 deg - No Ice+1.0 Guy	140947.37	107.88	517.18	0.00	0.00	442.50
1.2 Dead+1.0 Wind 180 deg - No Ice+1.0 Guy	127287.59	-18.00	758.80	0.00	0.00	164.82
1.2 Dead+1.0 Wind 210 deg - No Ice+1.0 Guy	141037.45	-141.69	520.25	0.00	0.00	-83.30
1.2 Dead+1.0 Wind 240 deg - No Ice+1.0 Guy	149624.57	-291.67	149.09	0.00	0.00	-230.60
1.2 Dead+1.0 Wind 270 deg - No Ice+1.0 Guy	141058.14	-533.15	-165.17	0.00	0.00	-264.66
1.2 Dead+1.0 Wind 300 deg - No Ice+1.0 Guy	127311.56	-679.45	-392.99	0.00	0.00	-245.01
1.2 Dead+1.0 Wind 330 deg - No Ice+1.0 Guy	140991.15	-407.35	-387.11	0.00	0.00	-74.27

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
1.2 Dead+1.0 Ice+1.0 Temp+Guy	173392.31	-9.27	-42.92	0.00	0.00	226.92
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	174483.21	-8.27	-293.53	0.00	0.00	201.60
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	174281.00	101.24	-254.39	0.00	0.00	293.23
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	174139.24	187.17	-156.88	0.00	0.00	361.27
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	174281.96	228.04	-33.39	0.00	0.00	393.84
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	174486.95	206.69	81.42	0.00	0.00	388.19
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	174328.62	116.95	156.83	0.00	0.00	340.02
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	174217.27	-11.08	183.01	0.00	0.00	255.18
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	174373.64	-138.62	157.59	0.00	0.00	163.27
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	174569.82	-227.15	82.96	0.00	0.00	93.70
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	174368.79	-246.92	-31.40	0.00	0.00	62.53
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	174210.07	-204.79	-155.00	0.00	0.00	67.90
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	174322.66	-118.07	-253.24	0.00	0.00	116.43
Dead+Wind 0 deg - Service+Guy	105539.46	-7.74	-210.07	0.00	0.00	140.09
Dead+Wind 30 deg - Service+Guy	105492.60	91.63	-184.58	0.00	0.00	189.49
Dead+Wind 60 deg - Service+Guy	105465.40	165.31	-110.59	0.00	0.00	222.35
Dead+Wind 90 deg - Service+Guy	105491.65	192.27	-9.60	0.00	0.00	232.81
Dead+Wind 120 deg - Service+Guy	105538.20	164.51	89.34	0.00	0.00	220.58
Dead+Wind 150 deg - Service+Guy	105510.92	92.08	162.62	0.00	0.00	186.17
Dead+Wind 180 deg - Service+Guy	105497.15	-9.38	189.73	0.00	0.00	136.25
Dead+Wind 210 deg - Service+Guy	105528.73	-110.61	163.14	0.00	0.00	86.88
Dead+Wind 240 deg - Service+Guy	105571.45	-182.42	90.27	0.00	0.00	53.43
Dead+Wind 270 deg - Service+Guy	105526.92	-209.34	-8.49	0.00	0.00	43.58
Dead+Wind 300 deg - Service+Guy	105494.87	-181.56	-109.62	0.00	0.00	55.36
Dead+Wind 330 deg - Service+Guy	105510.05	-107.30	-184.01	0.00	0.00	90.22

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	-42704.79	0.00	0.04	42704.34	-0.08	0.001%
2	-26.04	-50807.72	-46440.92	26.04	50807.62	46439.06	0.003%
3	22852.44	-50651.84	-39644.29	-22852.49	50651.73	39641.97	0.003%
4	39424.63	-50495.55	-22768.93	-39424.28	50495.52	22768.28	0.001%
5	45748.56	-50652.24	25.39	-45746.61	50652.14	-24.22	0.003%
6	40193.96	-50808.47	23243.17	-40192.39	50808.38	-23242.26	0.003%
7	22897.99	-50651.36	39672.38	-22895.98	50651.25	-39671.27	0.003%
8	26.04	-50494.22	45583.79	-26.36	50494.19	-45583.14	0.001%
9	-22852.45	-50650.08	39644.29	22850.38	50649.97	-39643.15	0.003%
10	-40166.92	-50806.38	23197.49	40165.29	50806.28	-23196.55	0.003%
11	-45748.56	-50649.69	-25.39	45746.53	50649.57	26.60	0.003%
12	-39451.66	-50493.46	-22814.61	39451.12	50493.43	22814.21	0.001%
13	-22897.99	-50650.56	-39672.38	22898.02	50650.45	39670.04	0.003%
14	-0.00	-102811.79	0.00	-1.78	102811.79	1.42	0.002%
15	-11.74	-102911.85	-12674.91	11.73	102911.84	12673.82	0.001%
16	6318.53	-102812.34	-10956.44	-6318.40	102812.34	10955.67	0.001%
17	10953.82	-102712.55	-6318.50	-10952.58	102712.53	6317.78	0.001%
18	12656.18	-102812.51	11.38	-12655.44	102812.50	-11.10	0.001%
19	10980.90	-102912.20	6347.68	-10979.96	102912.19	-6347.14	0.001%
20	6339.11	-102811.96	10969.33	-6338.52	102811.95	-10968.82	0.001%
21	11.74	-102711.73	12657.85	-11.85	102711.71	-12656.35	0.001%
22	-6318.53	-102811.24	10956.44	6317.85	102811.23	-10955.91	0.001%
23	-10968.60	-102911.03	6327.03	10967.56	102911.02	-6326.43	0.001%
24	-12656.18	-102811.08	-11.38	12655.36	102811.07	11.69	0.001%
25	-10966.12	-102711.38	-6339.15	10964.75	102711.36	6338.49	0.001%
26	-6339.11	-102811.63	-10969.33	6338.95	102811.62	10968.56	0.001%
27	-6.00	-42740.91	-10701.60	5.99	42740.90	10700.69	0.002%
28	5266.01	-42704.99	-9135.44	-5265.88	42704.99	9134.78	0.002%
29	9084.83	-42668.98	-5246.77	-9084.46	42668.98	5246.54	0.001%
30	10542.08	-42705.08	5.85	-10541.46	42705.08	-5.64	0.002%
31	9262.09	-42741.08	5356.03	-9261.32	42741.08	-5355.59	0.002%
32	5276.50	-42704.88	9141.92	-5276.01	42704.88	-9141.47	0.002%
33	6.00	-42668.67	10504.12	-6.01	42668.67	-10503.67	0.001%
34	-5266.01	-42704.59	9135.44	5265.49	42704.58	-9134.99	0.002%
35	-9255.86	-42740.60	5345.51	9255.05	42740.60	-5345.05	0.002%
36	-10542.08	-42704.50	-5.85	10541.42	42704.49	6.07	0.002%
37	-9091.06	-42668.50	-5257.29	9090.66	42668.50	5257.07	0.001%
38	-5276.50	-42704.70	-9141.92	5276.35	42704.70	9141.25	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	8	0.00000001	0.00003066
2	Yes	20	0.00005487	0.00006606
3	Yes	19	0.00007791	0.00008394
4	Yes	14	0.00000001	0.00004408
5	Yes	19	0.00007645	0.00008245
6	Yes	20	0.00005356	0.00006446
7	Yes	19	0.00007687	0.00008287
8	Yes	14	0.00000001	0.00004488
9	Yes	19	0.00007892	0.00008495
10	Yes	20	0.00005546	0.00006658
11	Yes	19	0.00007903	0.00008526
12	Yes	14	0.00000001	0.00004506
13	Yes	19	0.00007844	0.00008478
14	Yes	8	0.00000001	0.00008980
15	Yes	13	0.00000001	0.00005610
16	Yes	13	0.00000001	0.00004240
17	Yes	12	0.00000001	0.00007500
18	Yes	13	0.00000001	0.00004177
19	Yes	13	0.00000001	0.00005516
20	Yes	13	0.00000001	0.00004168
21	Yes	12	0.00000001	0.00007901
22	Yes	13	0.00000001	0.00004647
23	Yes	13	0.00000001	0.00006145
24	Yes	13	0.00000001	0.00004671
25	Yes	12	0.00000001	0.00008078
26	Yes	13	0.00000001	0.00004256
27	Yes	11	0.00000001	0.00007397
28	Yes	11	0.00000001	0.00005762
29	Yes	11	0.00000001	0.00004121
30	Yes	11	0.00000001	0.00005568
31	Yes	11	0.00000001	0.00007140
32	Yes	11	0.00000001	0.00005604
33	Yes	11	0.00000001	0.00004202
34	Yes	11	0.00000001	0.00005888
35	Yes	11	0.00000001	0.00007542
36	Yes	11	0.00000001	0.00005898
37	Yes	11	0.00000001	0.00004303
38	Yes	11	0.00000001	0.00005807

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	193.6	Leg	A325N	0.8750	4	3819.51	41556.00	0.092 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	2	1212.61	8224.22	0.147 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	2	91.91	8224.22	0.011 ✔	1	Member Block Shear
		Bottom Girt	A325N	0.6250	2	478.52	8224.22	0.058 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T2	180.6	Leg	A325N	0.8750	4	9320.69	41556.00	0.224 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	2	4132.04	8224.22	0.502 ✔	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	6945.25	9107.81	0.763 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	2	826.98	8224.22	0.101 ✔	1	Member Block Shear
		Bottom Girt	A325N	0.6250	2	2596.82	8224.22	0.316 ✔	1	Member Block Shear
		Torque Arm Top@163.183	A325N	0.6250	6	3121.22	13805.80	0.226 ✔	1	Bolt Shear
T3	160.6	Leg	A325N	0.8750	4	5095.97	41556.00	0.123 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4382.32	9107.81	0.481 ✔	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	2263.38	9107.81	0.249 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	1	1543.79	10886.40	0.142 ✔	1	Member Bearing
		Bottom Girt	A325N	0.6250	1	1543.79	10886.40	0.142 ✔	1	Member Bearing
T4	140.6	Leg	A325N	0.8750	4	4943.98	41556.00	0.119 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1657.04	8835.73	0.188 ✔	1	Bolt Shear
		Top Girt	A325N	0.5000	1	1059.22	8618.40	0.123 ✔	1	Member Bearing
		Bottom Girt	A325N	0.5000	1	1059.22	8618.40	0.123 ✔	1	Member Bearing
T5	120.6	Leg	A325N	0.8750	4	5864.31	41556.00	0.141 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	2	2075.99	13805.80	0.150 ✔	1	Bolt Shear
		Secondary Horizontal	A325N	0.6250	1	3828.81	9107.81	0.420 ✔	1	Member Block Shear
		Top Girt	A325N	0.6250	2	637.38	8224.22	0.077 ✔	1	Member Block Shear
		Bottom Girt	A325N	0.6250	2	1104.86	8224.22	0.134 ✔	1	Member Block Shear
		Torque Arm Top@103.183	A325N	0.6250	6	1164.02	13805.80	0.084 ✔	1	Bolt Shear
T6	100.6	Leg	A325N	0.8750	4	4233.86	41556.00	0.102 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2575.39	8835.73	0.291 ✔	1	Bolt Shear
		Top Girt	A325N	0.5000	1	1218.93	8618.40	0.141 ✔	1	Member Bearing
		Bottom Girt	A325N	0.5000	1	1218.93	8618.40	0.141 ✔	1	Member Bearing
T7	80.6	Leg	A325N	0.8750	4	4223.11	41556.00	0.102 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1454.53	8835.73	0.165 ✔	1	Bolt Shear
		Top Girt	A325N	0.5000	1	885.91	8618.40	0.103 ✔	1	Member Bearing
		Bottom Girt	A325N	0.5000	1	885.91	8618.40	0.103 ✔	1	Member Bearing
T8	60.6	Leg	A325N	0.8750	4	4961.73	41556.00	0.119 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2605.01	8835.73	0.295 ✔	1	Bolt Shear
		Top Girt	A325N	0.5000	1	1067.64	8618.40	0.124 ✔	1	Member Bearing
		Bottom Girt	A325N	0.5000	1	1067.64	8618.40	0.124 ✔	1	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Torque Arm Top@43.1833	A325N	0.6250	6	820.18	13805.80	0.059 ✔	1	Bolt Shear
T9	40.6	Leg	A325N	0.8750	4	4839.16	41556.00	0.116 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2557.52	8835.73	0.289 ✔	1	Bolt Shear
		Top Girt	A325N	0.5000	1	1127.31	8618.40	0.131 ✔	1	Member Bearing
		Bottom Girt	A325N	0.5000	1	1031.43	8618.40	0.120 ✔	1	Member Bearing
T10	20.6	Leg	A325N	0.8750	4	4875.32	41556.00	0.117 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1075.53	8618.40	0.125 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	1017.65	8618.40	0.118 ✔	1	Member Bearing
		Bottom Girt	A325N	0.5000	1	7806.32	8618.40	0.906 ✔	1	Member Bearing
T11	5.27	Leg	A325N	0.8750	4	5294.28	41556.00	0.127 ✔	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T2	163.18 (A) (591)	7/8 EHS	7970.00	79699.84	26539.40	47820.00	1.000	1.802 ✔
	163.18 (A) (592)	7/8 EHS	7970.00	79699.84	26797.90	47820.00	1.000	1.784 ✔
	163.18 (B) (587)	7/8 EHS	7970.00	79699.84	26859.10	47820.00	1.000	1.780 ✔
	163.18 (B) (588)	7/8 EHS	7970.00	79699.84	26330.00	47820.00	1.000	1.816 ✔
	163.18 (C) (583)	7/8 EHS	7970.00	79699.84	26182.40	47820.00	1.000	1.826 ✔
	163.18 (C) (584)	7/8 EHS	7970.00	79699.84	26445.50	47820.00	1.000	1.808 ✔
T5	103.18 (A) (603)	5/8 EHS	4240.00	42399.99	9775.56	25440.00	1.000	2.602 ✔
	103.18 (A) (604)	5/8 EHS	4240.00	42399.99	9767.70	25440.00	1.000	2.604 ✔
	103.18 (B) (599)	5/8 EHS	4240.00	42399.99	9759.65	25440.00	1.000	2.607 ✔
	103.18 (B) (600)	5/8 EHS	4240.00	42399.99	9496.27	25440.00	1.000	2.679 ✔
	103.18 (C) (595)	5/8 EHS	4240.00	42399.99	9483.57	25440.00	1.000	2.683 ✔
	103.18 (C) (596)	5/8 EHS	4240.00	42399.99	9742.44	25440.00	1.000	2.611 ✔
T8	43.18 (A) (615)	1/2 EHS	2690.00	26900.04	5246.93	16140.00	1.000	3.076 ✔
	43.18 (A) (616)	1/2 EHS	2690.00	26900.04	5230.01	16140.00	1.000	3.086 ✔

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
	43.18 (B) (611)	1/2 EHS	2690.00	26900.04	5334.55	16140.00	1.000	3.026 ✔
	43.18 (B) (612)	1/2 EHS	2690.00	26900.04	5106.08	16140.00	1.000	3.161 ✔
	43.18 (C) (607)	1/2 EHS	2690.00	26900.04	5118.52	16140.00	1.000	3.153 ✔
	43.18 (C) (608)	1/2 EHS	2690.00	26900.04	5314.51	16140.00	1.000	3.037 ✔

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 $\frac{P_u}{\phi P_n}$
T1	193.6 - 180.6	P2.5x.276	13.00	0.17	2.2 K=1.00	2.2535	1.00	-19237.80	101375.00	0.190 [1] ✔
T2	180.6 - 160.6	P2.5x0.276 (CT2171)	20.00	1.21	16.5 K=1.00	3.5323	1.00	-95491.90	155814.00	0.613 [1] ✔
T3	160.6 - 140.6	P2.5x0.276 (CT2171)	20.00	0.50	6.8 K=1.00	3.5323	0.96	-89130.70	152832.00	0.583 [1] ✔
T4	140.6 - 120.6	P2.5x.276	20.00	2.42	31.4 K=1.00	2.2535	0.97	-59871.70	91721.60	0.653 [1] ✔
T5	120.6 - 100.6	P3x0.299	20.00	1.21	12.8 K=1.00	3.0068	0.95	-73597.70	127509.00	0.577 [1] ✔
T6	100.6 - 80.6	P3x0.299	20.00	0.50	5.3 K=1.00	3.0068	0.93	-70375.10	125768.00	0.560 [1] ✔
T7	80.6 - 60.6	P3x0.299	20.00	2.42	25.5 K=1.00	3.0068	0.91	-51147.70	117810.00	0.434 [1] ✔
T8	60.6 - 40.6	P3x0.299	20.00	2.42	25.5 K=1.00	3.0068	0.94	-61640.30	121686.00	0.507 [1] ✔
T9	40.6 - 20.6	P3x0.299	20.00	2.42	51.0 K=2.00	3.0068	1.00	-58387.50	111851.00	0.522 [1] ✔
T10	20.6 - 5.27	P3x0.299	15.33	2.44	51.6 K=2.00	3.0068	1.00	-58754.00	111369.00	0.528 [1] ✔
T11	5.27 - 0.6	P3x0.299	5.07	1.45	15.3 K=1.00	3.0068	0.95	-64116.60	126090.00	0.508 [1] ✔

[1] P_u / ϕP_n controls

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 $\frac{P_u}{\phi P_n}$
T1	193.6 - 180.6	L2x2x1/4	4.22	1.76	70.6 K=1.30	0.9380	-2504.68	28479.30	0.088 [1] ✔
T2	180.6 - 160.6	L2x2x1/4	4.19	1.75	70.2 K=1.31	0.9380	-9161.07	28530.20	0.321 [1] ✔
T3	160.6 - 140.6	L2x2x1/4	4.19	1.83	72.0 K=1.29	0.9380	-5437.33	28258.50	0.192 [1] ✔
T4	140.6 - 120.6	P1.5x.120	4.19	3.89	95.4 K=1.00	0.5202	-1657.04	11241.80	0.147 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	4.19	1.72	69.5 K=1.32	0.9380	-4151.98	28634.70	0.145 [1] ✔
T6	100.6 - 80.6	P1.5x.120	4.19	3.83	93.9 K=1.00	0.5202	-2575.39	11447.80	0.225 [1] ✔
T7	80.6 - 60.6	L1 3/4x1 3/4x3/16	4.19	3.62	126.6 K=1.00	0.6211	-1454.53	11098.60	0.131 [1] ✔
T8	60.6 - 40.6	P1.5x.120	4.19	3.83	93.9 K=1.00	0.5202	-2605.01	11447.80	0.228 [1] ✔
T9	40.6 - 20.6	P1.5x.120	4.19	3.83	93.9 K=1.00	0.5202	-2557.52	11447.80	0.223 [1] ✔
T10	20.6 - 5.27	P1.5x.120	4.20	3.84	94.2 K=1.00	0.5202	-954.17	11401.20	0.084 [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 $\frac{P_u}{\phi P_n}$
T2	180.6 - 160.6	L2x2x1/4	3.42	2.94	89.0 K=1.54	0.9380	-4561.75	25366.20	0.180 [1] ✔
T3	160.6 - 140.6	L2x2x1/4	3.42	2.94	89.0 K=1.54	0.9380	-1543.79	25366.20	0.061 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	3.42	2.89	88.5 K=1.55	0.9380	-1274.75	25459.00	0.050 [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 $\frac{P_u}{\phi P_n}$
T1	193.6 - 180.6	L2x2x1/4	3.42	2.78	102.7 K=1.20	0.9380	-192.08	22562.10	0.009 [1] ✔
T2	180.6 - 160.6	L2x2x1/4	3.42	2.78	102.7 K=1.20	0.9380	-1653.97	22569.10	0.073 [1] ✔
T3	160.6 - 140.6	P1.5x.120	3.42	3.18	77.9 K=1.00	0.5202	-1543.79	13549.70	0.114 [1] ✔
T4	140.6 - 120.6	P1.5x.120	3.42	3.18	77.9 K=1.00	0.5202	-1059.22	13543.10	0.078 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	3.42	2.73	101.9 K=1.22	0.9380	-1274.75	22735.80	0.056 [1] ✔
T6	100.6 - 80.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1218.93	13708.20	0.089 [1] ✔
T7	80.6 - 60.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-885.91	13708.20	0.065 [1] ✔
T8	60.6 - 40.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1067.64	13708.20	0.078 [1] ✔
T9	40.6 - 20.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1031.43	13708.20	0.075 [1] ✔
T10	20.6 - 5.27	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1017.65	13708.20	0.074 [1] ✔
T11	5.27 - 0.6	L4x4x1/4	3.05	2.76	80.8 K=1.94	1.9400	-1179.65	54077.30	0.022 [1] ✔

[1] P_u / ϕP_n controls

Bottom 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 $\frac{P_u}{\phi P_n}$
T1	193.6 - 180.6	L2x2x1/4	3.42	2.78	102.7 K=1.20	0.9380	-904.83	22562.10	0.040 [1] ✔
T2	180.6 - 160.6	L2x2x1/4	3.42	2.78	102.7 K=1.20	0.9380	-4085.95	22569.10	0.181 [1] ✔
T3	160.6 - 140.6	P1.5x.120	3.42	3.18	77.9 K=1.00	0.5202	-1543.79	13549.70	0.114 [1] ✔
T4	140.6 - 120.6	P1.5x.120	3.42	3.18	77.9 K=1.00	0.5202	-1059.22	13543.10	0.078 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	3.42	2.73	101.9 K=1.22	0.9380	-1274.75	22735.80	0.056 [1] ✔
T6	100.6 - 80.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1218.93	13708.20	0.089 [1] ✔
T7	80.6 - 60.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-885.91	13708.20	0.065 [1] ✔
T8	60.6 - 40.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1067.64	13708.20	0.078 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	40.6 - 20.6	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1031.43	13708.20	0.075 [1] ✔
T10	20.6 - 5.27	P1.5x.120	3.42	3.13	76.7 K=1.00	0.5202	-1017.65	13708.20	0.074 [1] ✔

[1] P_u / ϕP_n controls

Mid 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 $\frac{P_u}{\phi P_n}$
T11	5.27 - 0.6	L4x4x1/4	2.08	1.78	73.5 K=2.73	1.9400	-867.10	65301.20	0.013 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	180.6 - 160.6 (585)	C15x33.9	3.67	3.55	47.1 K=1.00	9.9600	-370.24	287159.00	0.001
T2	180.6 - 160.6 (586)	C15x33.9	3.67	3.55	47.1 K=1.00	9.9600	-9527.11	287159.00	0.033
T2	180.6 - 160.6 (589)	C15x33.9	3.67	3.55	47.1 K=1.00	9.9600	-9616.80	287159.00	0.033
T2	180.6 - 160.6 (590)	C15x33.9	3.67	3.55	47.1 K=1.00	9.9600	-9628.93	287159.00	0.034
T2	180.6 - 160.6 (593)	C15x33.9	3.67	3.55	47.1 K=1.00	9.9600	-364.90	287159.00	0.001
T2	180.6 - 160.6 (594)	C15x33.9	3.67	3.55	47.1 K=1.00	9.9600	-723.13	287159.00	0.003
T5	120.6 - 100.6 (597)	C15x33.9	3.67	3.52	46.8 K=1.00	9.9600	-2194.29	287630.00	0.008
T5	120.6 - 100.6 (598)	C15x33.9	3.67	3.52	46.8 K=1.00	9.9600	-2329.87	287630.00	0.008
T5	120.6 - 100.6 (601)	C15x33.9	3.67	3.52	46.8 K=1.00	9.9600	-3570.57	287630.00	0.012
T5	120.6 - 100.6 (602)	C15x33.9	3.67	3.52	46.8 K=1.00	9.9600	-3562.45	287630.00	0.012
T5	120.6 - 100.6 (605)	C15x33.9	3.67	3.52	46.8 K=1.00	9.9600	-2229.23	287630.00	0.008
T5	120.6 - 100.6 (606)	C15x33.9	3.67	3.52	46.8 K=1.00	9.9600	-2365.68	287630.00	0.008

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	60.6 - 40.6 (609)	C12x25	3.67	3.52	54.2 K=1.00	7.3500	-1309.98	204038.00	0.006
T8	60.6 - 40.6 (610)	C12x25	3.67	3.52	54.2 K=1.00	7.3500	-1439.29	204038.00	0.007
T8	60.6 - 40.6 (613)	C12x25	3.67	3.52	54.2 K=1.00	7.3500	-1616.49	204038.00	0.008
T8	60.6 - 40.6 (614)	C12x25	3.67	3.52	54.2 K=1.00	7.3500	-1592.56	204038.00	0.008
T8	60.6 - 40.6 (617)	C12x25	3.67	3.52	54.2 K=1.00	7.3500	-1294.52	204038.00	0.006
T8	60.6 - 40.6 (618)	C12x25	3.67	3.52	54.2 K=1.00	7.3500	-1472.49	204038.00	0.007

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	180.6 - 160.6 (585)	C15x33.9	-74913.33	136080.00	0.551	-0.00	12595.50	0.000
T2	180.6 - 160.6 (586)	C15x33.9	-72650.83	136080.00	0.534	-0.00	12595.50	0.000
T2	180.6 - 160.6 (589)	C15x33.9	-73372.50	136080.00	0.539	-0.00	12595.50	0.000
T2	180.6 - 160.6 (590)	C15x33.9	-72676.67	136080.00	0.534	0.00	12595.50	0.000
T2	180.6 - 160.6 (593)	C15x33.9	-75615.33	136080.00	0.556	0.00	12595.50	0.000
T2	180.6 - 160.6 (594)	C15x33.9	-74955.00	136080.00	0.551	0.00	12595.50	0.000
T5	120.6 - 100.6 (597)	C15x33.9	-25787.58	136080.00	0.190	0.00	12595.50	0.000
T5	120.6 - 100.6 (598)	C15x33.9	-25948.50	136080.00	0.191	-0.00	12595.50	0.000
T5	120.6 - 100.6 (601)	C15x33.9	-26083.67	136080.00	0.192	-0.00	12595.50	0.000
T5	120.6 - 100.6 (602)	C15x33.9	-26025.92	136080.00	0.191	0.00	12595.50	0.000
T5	120.6 - 100.6 (605)	C15x33.9	-25848.50	136080.00	0.190	-0.00	12595.50	0.000
T5	120.6 - 100.6 (606)	C15x33.9	-25930.42	136080.00	0.191	0.00	12595.50	0.000
T8	60.6 - 40.6 (609)	C12x25	-8211.43	77959.25	0.105	0.00	7614.00	0.000
T8	60.6 - 40.6 (610)	C12x25	-8219.92	77959.25	0.105	-0.00	7614.00	0.000
T8	60.6 - 40.6 (613)	C12x25	-8158.26	77959.25	0.105	-0.00	7614.00	0.000
T8	60.6 - 40.6 (614)	C12x25	-8087.73	77959.25	0.104	0.00	7614.00	0.000
T8	60.6 - 40.6 (617)	C12x25	-8150.52	77959.25	0.105	-0.00	7614.00	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T8	60.6 - 40.6 (618)	C12x25	-8284.18	77959.25	0.106	0.00	7614.00	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	180.6 - 160.6 (585)	C15x33.9	0.001	0.551	0.000	0.551 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (586)	C15x33.9	0.033	0.534	0.000	0.550 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (589)	C15x33.9	0.033	0.539	0.000	0.556 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (590)	C15x33.9	0.034	0.534	0.000	0.551 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (593)	C15x33.9	0.001	0.556	0.000	0.556 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (594)	C15x33.9	0.003	0.551	0.000	0.552 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (597)	C15x33.9	0.008	0.190	0.000	0.193 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (598)	C15x33.9	0.008	0.191	0.000	0.195 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (601)	C15x33.9	0.012	0.192	0.000	0.198 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (602)	C15x33.9	0.012	0.191	0.000	0.197 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (605)	C15x33.9	0.008	0.190	0.000	0.194 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (606)	C15x33.9	0.008	0.191	0.000	0.195 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (609)	C12x25	0.006	0.105	0.000	0.109 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (610)	C12x25	0.007	0.105	0.000	0.109 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (613)	C12x25	0.008	0.105	0.000	0.109 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (614)	C12x25	0.008	0.104	0.000	0.108 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (617)	C12x25	0.006	0.105	0.000	0.108 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (618)	C12x25	0.007	0.106	0.000	0.110 ✔	1.000	4.8.1 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	193.6 - 180.6	P2.5x.276	13.00	0.17	2.2	2.2535	15278.00	101409.00	0.151 [1] ✔
T2	180.6 - 160.6	P2.5x0.276 (CT2171)	20.00	1.21	16.5	3.5323	81848.20	158955.00	0.515 [1] ✔
T3	160.6 - 140.6	P2.5x0.276 (CT2171)	20.00	0.50	6.8	3.5323	37281.80	158955.00	0.235 [1] ✔
T5	120.6 - 100.6	P3x0.299	20.00	1.21	12.8	3.0068	434.02	135307.00	0.003 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	193.6 - 180.6	L2x2x1/4	4.22	1.76	38.6	0.5629	2425.22	24485.10	0.099 [1] ✔
T2	180.6 - 160.6	L2x2x1/4	4.19	1.75	38.3	0.5629	8264.09	24485.10	0.338 [1] ✔
T3	160.6 - 140.6	L2x2x1/4	4.19	1.83	38.3	0.5629	4382.32	24485.10	0.179 [1] ✔
T4	140.6 - 120.6	P1.5x.120	4.19	3.89	95.4	0.5202	1163.48	19665.40	0.059 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	4.19	1.72	37.7	0.5629	1474.73	24485.10	0.060 [1] ✔
T6	100.6 - 80.6	P1.5x.120	4.19	3.83	93.9	0.5202	1810.45	19665.40	0.092 [1] ✔
T7	80.6 - 60.6	L1 3/4x1 3/4x3/16	4.19	3.62	85.6	0.3779	875.77	16439.90	0.053 [1] ✔
T8	60.6 - 40.6	P1.5x.120	4.19	3.83	93.9	0.5202	2323.70	19665.40	0.118 [1] ✔
T9	40.6 - 20.6	P1.5x.120	4.19	3.83	93.9	0.5202	2034.10	19665.40	0.103 [1] ✔
T10	20.6 - 5.27	P1.5x.120	4.20	3.84	94.2	0.5202	1075.53	19665.40	0.055 [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 $\frac{P_u}{\phi P_n}$
T2	180.6 - 160.6	L2x2x1/4	3.42	2.94	62.6	0.5629	6945.25	24485.10	0.284 [1] ✔
T3	160.6 - 140.6	L2x2x1/4	3.42	2.94	62.6	0.5629	2263.38	24485.10	0.092 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	3.42	2.89	61.6	0.5629	3828.81	24485.10	0.156 [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 $\frac{P_u}{\phi P_n}$
T1	193.6 - 180.6	L2x2x1/4	3.42	2.78	62.7	0.5629	183.81	24485.10	0.008 [1] ✔
T2	180.6 - 160.6	L2x2x1/4	3.42	2.78	62.6	0.5629	1653.97	24485.10	0.068 [1] ✔
T3	160.6 - 140.6	P1.5x.120	3.42	3.18	77.9	0.5202	1543.79	19665.40	0.079 [1] ✔
T4	140.6 - 120.6	P1.5x.120	3.42	3.18	77.9	0.5202	1059.22	19665.40	0.054 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	3.42	2.73	61.6	0.5629	1274.75	24485.10	0.052 [1] ✔
T6	100.6 - 80.6	P1.5x.120	3.42	3.13	76.7	0.5202	1218.93	19665.40	0.062 [1] ✔
T7	80.6 - 60.6	P1.5x.120	3.42	3.13	76.7	0.5202	885.91	19665.40	0.045 [1] ✔
T8	60.6 - 40.6	P1.5x.120	3.42	3.13	76.7	0.5202	1067.64	19665.40	0.054 [1] ✔
T9	40.6 - 20.6	P1.5x.120	3.42	3.13	76.7	0.5202	1127.31	19665.40	0.057 [1] ✔
T10	20.6 - 5.27	P1.5x.120	3.42	3.13	76.7	0.5202	1017.65	19665.40	0.052 [1] ✔
T11	5.27 - 0.6	L4x4x1/4	3.05	2.76	26.5	1.9400	6985.25	62856.00	0.111 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	193.6 - 180.6	L2x2x1/4	3.42	2.78	62.7	0.5629	957.03	24485.10	0.039 [1] ✔
T2	180.6 - 160.6	L2x2x1/4	3.42	2.78	62.6	0.5629	5193.64	24485.10	0.212 [1] ✔
T3	160.6 - 140.6	P1.5x.120	3.42	3.18	77.9	0.5202	1543.79	19665.40	0.079 [1] ✔
T4	140.6 - 120.6	P1.5x.120	3.42	3.18	77.9	0.5202	1059.22	19665.40	0.054 [1] ✔
T5	120.6 - 100.6	L2x2x1/4	3.42	2.73	61.6	0.5629	2209.72	24485.10	0.090 [1] ✔
T6	100.6 - 80.6	P1.5x.120	3.42	3.13	76.7	0.5202	1218.93	19665.40	0.062 [1] ✔
T7	80.6 - 60.6	P1.5x.120	3.42	3.13	76.7	0.5202	885.91	19665.40	0.045 [1] ✔
T8	60.6 - 40.6	P1.5x.120	3.42	3.13	76.7	0.5202	1067.64	19665.40	0.054 [1] ✔
T9	40.6 - 20.6	P1.5x.120	3.42	3.13	76.7	0.5202	1031.43	19665.40	0.052 [1] ✔
T10	20.6 - 5.27	P1.5x.120	3.42	3.13	76.7	0.5202	7806.32	19665.40	0.397 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T2	180.6 - 160.6 (585)	C15x33.9	3.67	3.55	47.1	9.9600	7937.40	322704.00	0.025
T2	180.6 - 160.6 (586)	C15x33.9	3.67	3.55	47.1	9.9600	7127.75	322704.00	0.022
T2	180.6 - 160.6 (589)	C15x33.9	3.67	3.55	47.1	9.9600	7336.53	322704.00	0.023
T2	180.6 - 160.6 (590)	C15x33.9	3.67	3.55	47.1	9.9600	7730.10	322704.00	0.024
T2	180.6 - 160.6 (593)	C15x33.9	3.67	3.55	47.1	9.9600	7736.13	322704.00	0.024
T2	180.6 - 160.6 (594)	C15x33.9	3.67	3.55	47.1	9.9600	7309.28	322704.00	0.023
T5	120.6 - 100.6 (597)	C15x33.9	3.67	3.52	46.8	9.9600	196.17	322704.00	0.001
T5	120.6 - 100.6 (598)	C15x33.9	3.67	3.52	46.8	9.9600	2560.42	322704.00	0.008

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	120.6 - 100.6 (601)	C15x33.9	3.67	3.52	46.8	9.9600	2733.69	322704.00	0.008
T5	120.6 - 100.6 (602)	C15x33.9	3.67	3.52	46.8	9.9600	2726.70	322704.00	0.008
T5	120.6 - 100.6 (605)	C15x33.9	3.67	3.52	46.8	9.9600	169.64	322704.00	0.001
T5	120.6 - 100.6 (606)	C15x33.9	3.67	3.52	46.8	9.9600	2541.22	322704.00	0.008
T8	60.6 - 40.6 (609)	C12x25	3.67	3.52	54.2	7.3500	121.37	238140.00	0.001
T8	60.6 - 40.6 (610)	C12x25	3.67	3.52	54.2	7.3500	1370.48	238140.00	0.006
T8	60.6 - 40.6 (613)	C12x25	3.67	3.52	54.2	7.3500	1329.01	238140.00	0.006
T8	60.6 - 40.6 (614)	C12x25	3.67	3.52	54.2	7.3500	1391.34	238140.00	0.006
T8	60.6 - 40.6 (617)	C12x25	3.67	3.52	54.2	7.3500	145.35	238140.00	0.001
T8	60.6 - 40.6 (618)	C12x25	3.67	3.52	54.2	7.3500	1360.78	238140.00	0.006

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T2	180.6 - 160.6 (585)	C15x33.9	-66436.00	136080.00	0.488	-0.00	12595.50	0.000
T2	180.6 - 160.6 (586)	C15x33.9	-65300.58	136080.00	0.480	-0.00	12595.50	0.000
T2	180.6 - 160.6 (589)	C15x33.9	-65998.42	136080.00	0.485	0.00	12595.50	0.000
T2	180.6 - 160.6 (590)	C15x33.9	-66307.00	136080.00	0.487	0.00	12595.50	0.000
T2	180.6 - 160.6 (593)	C15x33.9	-66578.92	136080.00	0.489	0.00	12595.50	0.000
T2	180.6 - 160.6 (594)	C15x33.9	-65781.50	136080.00	0.483	0.00	12595.50	0.000
T5	120.6 - 100.6 (597)	C15x33.9	-26940.33	136080.00	0.198	-0.00	12595.50	0.000
T5	120.6 - 100.6 (598)	C15x33.9	-23653.92	136080.00	0.174	-0.00	12595.50	0.000
T5	120.6 - 100.6 (601)	C15x33.9	-23935.50	136080.00	0.176	-0.00	12595.50	0.000
T5	120.6 - 100.6 (602)	C15x33.9	-23832.83	136080.00	0.175	-0.00	12595.50	0.000
T5	120.6 - 100.6 (605)	C15x33.9	-26985.42	136080.00	0.198	0.00	12595.50	0.000
T5	120.6 - 100.6 (606)	C15x33.9	-23536.58	136080.00	0.173	0.00	12595.50	0.000
T8	60.6 - 40.6 (609)	C12x25	-7944.92	77959.25	0.102	-0.00	7614.00	0.000

Section No.	Elevation ft	Size	M_{ux} lb-ft	ϕM_{nx} lb-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} lb-ft	ϕM_{ny} lb-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T8	60.6 - 40.6 (610)	C12x25	-7574.13	77959.25	0.097	0.00	7614.00	0.000
T8	60.6 - 40.6 (613)	C12x25	-7584.46	77959.25	0.097	-0.00	7614.00	0.000
T8	60.6 - 40.6 (614)	C12x25	-7511.77	77959.25	0.096	0.00	7614.00	0.000
T8	60.6 - 40.6 (617)	C12x25	-7856.76	77959.25	0.101	0.00	7614.00	0.000
T8	60.6 - 40.6 (618)	C12x25	-7642.34	77959.25	0.098	-0.00	7614.00	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T2	180.6 - 160.6 (585)	C15x33.9	0.025	0.488	0.000	0.501 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (586)	C15x33.9	0.022	0.480	0.000	0.491 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (589)	C15x33.9	0.023	0.485	0.000	0.496 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (590)	C15x33.9	0.024	0.487	0.000	0.499 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (593)	C15x33.9	0.024	0.489	0.000	0.501 ✔	1.000	4.8.1 ✔
T2	180.6 - 160.6 (594)	C15x33.9	0.023	0.483	0.000	0.495 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (597)	C15x33.9	0.001	0.198	0.000	0.198 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (598)	C15x33.9	0.008	0.174	0.000	0.178 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (601)	C15x33.9	0.008	0.176	0.000	0.180 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (602)	C15x33.9	0.008	0.175	0.000	0.179 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (605)	C15x33.9	0.001	0.198	0.000	0.199 ✔	1.000	4.8.1 ✔
T5	120.6 - 100.6 (606)	C15x33.9	0.008	0.173	0.000	0.177 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (609)	C12x25	0.001	0.102	0.000	0.102 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (610)	C12x25	0.006	0.097	0.000	0.100 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (613)	C12x25	0.006	0.097	0.000	0.100 ✔	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T8	60.6 - 40.6 (614)	C12x25	0.006	0.096	0.000	0.099 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (617)	C12x25	0.001	0.101	0.000	0.101 ✔	1.000	4.8.1 ✔
T8	60.6 - 40.6 (618)	C12x25	0.006	0.098	0.000	0.101 ✔	1.000	4.8.1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	193.6 - 180.6	Leg	P2.5x.276	1	-19237.80	101375.00	19.0	Pass
T2	180.6 - 160.6	Leg	P2.5x0.276 (CT2171)	40	-95491.90	155814.00	61.3	Pass
T3	160.6 - 140.6	Leg	P2.5x0.276 (CT2171)	121	-89130.70	152832.00	58.3	Pass
T4	140.6 - 120.6	Leg	P2.5x.276	204	-59871.70	91721.60	65.3	Pass
T5	120.6 - 100.6	Leg	P3x0.299	261	-73597.70	127509.00	57.7	Pass
T6	100.6 - 80.6	Leg	P3x0.299	342	-70375.10	125768.00	56.0	Pass
T7	80.6 - 60.6	Leg	P3x0.299	398	-51147.70	117810.00	43.4	Pass
T8	60.6 - 40.6	Leg	P3x0.299	455	-61640.30	121686.00	50.7	Pass
T9	40.6 - 20.6	Leg	P3x0.299	512	-58387.50	111851.00	52.2	Pass
T10	20.6 - 5.27	Leg	P3x0.299	544	-58754.00	111369.00	52.8	Pass
T11	5.27 - 0.6	Leg	P3x0.299	572	-64116.60	126090.00	50.8	Pass
T1	193.6 - 180.6	Diagonal	L2x2x1/4	11	2425.22	24485.10	9.9	Pass
T2	180.6 - 160.6	Diagonal	L2x2x1/4	71	8264.09	24485.10	33.8	Pass
T3	160.6 - 140.6	Diagonal	L2x2x1/4	193	-5437.33	28258.50	19.2	Pass
T4	140.6 - 120.6	Diagonal	P1.5x.120	256	-1657.04	11241.80	14.7	Pass
T5	120.6 - 100.6	Diagonal	L2x2x1/4	269	-4151.98	28634.70	14.5	Pass
T6	100.6 - 80.6	Diagonal	P1.5x.120	392	-2575.39	11447.80	22.5	Pass
T7	80.6 - 60.6	Diagonal	L1 3/4x1 3/4x3/16	453	-1454.53	11098.60	13.1	Pass
T8	60.6 - 40.6	Diagonal	P1.5x.120	467	-2605.01	11447.80	22.8	Pass
T9	40.6 - 20.6	Diagonal	P1.5x.120	541	-2557.52	11447.80	22.3	Pass
T10	20.6 - 5.27	Diagonal	P1.5x.120	569	-954.17	11401.20	8.4	Pass
T2	180.6 - 160.6	Secondary Horizontal	L2x2x1/4	64	6945.25	24485.10	28.4	Pass
T3	160.6 - 140.6	Secondary Horizontal	L2x2x1/4	199	2263.38	24485.10	9.2	Pass
T5	120.6 - 100.6	Secondary Horizontal	L2x2x1/4	285	3828.81	24485.10	15.6	Pass
T1	193.6 - 180.6	Top Girt	L2x2x1/4	5	-192.08	22562.10	0.9	Pass
T2	180.6 - 160.6	Top Girt	L2x2x1/4	45	-1653.97	22569.10	7.3	Pass
T3	160.6 - 140.6	Top Girt	P1.5x.120	126	-1543.79	13549.70	11.4	Pass
T4	140.6 - 120.6	Top Girt	P1.5x.120	206	-1059.22	13543.10	7.8	Pass
T5	120.6 - 100.6	Top Girt	L2x2x1/4	263	-1274.75	22735.80	5.6	Pass
T6	100.6 - 80.6	Top Girt	P1.5x.120	344	-1218.93	13708.20	8.9	Pass
T7	80.6 - 60.6	Top Girt	P1.5x.120	400	-885.91	13708.20	6.5	Pass
T8	60.6 - 40.6	Top Girt	P1.5x.120	457	-1067.64	13708.20	7.8	Pass
T9	40.6 - 20.6	Top Girt	P1.5x.120	514	-1031.43	13708.20	7.5	Pass
T10	20.6 - 5.27	Top Girt	P1.5x.120	549	-1017.65	13708.20	7.4	Pass
T11	5.27 - 0.6	Top Girt	L4x4x1/4	574	6985.25	62856.00	11.1	Pass
T1	193.6 - 180.6	Bottom Girt	L2x2x1/4	9	-904.83	22562.10	4.0	Pass
T2	180.6 - 160.6	Bottom Girt	L2x2x1/4	48	5193.64	24485.10	21.2	Pass
T3	160.6 - 140.6	Bottom Girt	P1.5x.120	129	-1543.79	13549.70	11.4	Pass
T4	140.6 - 120.6	Bottom Girt	P1.5x.120	209	-1059.22	13543.10	7.8	Pass
T5	120.6 - 100.6	Bottom Girt	L2x2x1/4	267	2209.72	24485.10	9.0	Pass
T6	100.6 - 80.6	Bottom Girt	P1.5x.120	347	-1218.93	13708.20	8.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T7	80.6 - 60.6	Bottom Girt	P1.5x.120	403	-885.91	13708.20	6.5	Pass
T8	60.6 - 40.6	Bottom Girt	P1.5x.120	460	-1067.64	13708.20	7.8	Pass
T9	40.6 - 20.6	Bottom Girt	P1.5x.120	517	-1031.43	13708.20	7.5	Pass
T10	20.6 - 5.27	Bottom Girt	P1.5x.120	550	7806.32	19665.40	39.7	Pass
T11	5.27 - 0.6	Mid Girt	L4x4x1/4	580	-867.10	65301.20	1.3	Pass
T2	180.6 - 160.6	Guy A@163.183	7/8	592	26797.90	47820.00	56.0	Pass
T5	120.6 - 100.6	Guy A@103.183	5/8	603	9775.56	25440.00	38.4	Pass
T8	60.6 - 40.6	Guy A@43.1833	1/2	615	5246.93	16140.00	32.5	Pass
T2	180.6 - 160.6	Guy B@163.183	7/8	587	26859.10	47820.00	56.2	Pass
T5	120.6 - 100.6	Guy B@103.183	5/8	599	9759.65	25440.00	38.4	Pass
T8	60.6 - 40.6	Guy B@43.1833	1/2	611	5334.55	16140.00	33.1	Pass
T2	180.6 - 160.6	Guy C@163.183	7/8	584	26445.50	47820.00	55.3	Pass
T5	120.6 - 100.6	Guy C@103.183	5/8	596	9742.44	25440.00	38.3	Pass
T8	60.6 - 40.6	Guy C@43.1833	1/2	608	5314.51	16140.00	32.9	Pass
T2	180.6 - 160.6	Torque Arm Top@163.183	C15x33.9	593	7736.13	322704.00	55.6	Pass
T5	120.6 - 100.6	Torque Arm Top@103.183	C15x33.9	605	-2229.23	287630.00	19.9	Pass
T8	60.6 - 40.6	Torque Arm Top@43.1833	C12x25	618	-1472.49	204038.00	11.0	Pass
							Summary	
						Leg (T4)	65.3	Pass
						Diagonal (T2)	33.8	Pass
						Secondary Horizontal (T2)	28.4	Pass
						Top Girt (T3)	11.4	Pass
						Bottom Girt (T10)	39.7	Pass
						Mid Girt (T11)	1.3	Pass
						Guy A (T2)	56.0	Pass
						Guy B (T2)	56.2	Pass
						Guy C (T2)	55.3	Pass
						Torque Arm Top (T2)	55.6	Pass
						Bolt Checks	90.6	Pass
						RATING =	**90.6**	**Pass**

Pier and Pad Foundation

Site Number:	CT2171
Site Name:	MONTVILLE EAST
TEP Site Number:	354218

TIA-222 Revision:	H
Tower Type:	Guyed

Top & Bot. Pad Rein. Different?:	☐
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions

Compression, P_{comp}:	174.57	kips
Base Shear, Vu_comp:	0.785	kips
Moment, M_u:	0.631	ft-kips
Tower Height, **H**:	193.6	ft
BP Dist. Above Fdn, bp_{dist}:	0	in
Bolt Circle / Bearing Plate Width, **BC**:	16	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	2.5	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	7	
Pier Rebar Quantity, **mc**:	6	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	6	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	5	ft
Pad Width, W_1:	7	ft
Pad Thickness, **T**:	1.75	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	7	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	3	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	125	pcf
Ultimate Net Bearing, Qnet:	12.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	35	degrees
SPT Blow Count, N_{blows}:	30	
Base Friction, μ:	0.45	
Neglected Depth, **N**:	0.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	61.19	0.79	**1.2%**	**Pass**
Bearing Pressure (ksf)	7.58	4.43	**55.7%**	**Pass**
*Overturning (kip*ft)*	286.54	4.95	**1.7%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	308.27	3.57	**1.1%**	**Pass**
Pier Compression (kip)	2983.50	178.79	**5.7%**	**Pass**
*Pad Flexure (kip*ft)*	133.13	64.75	**46.3%**	**Pass**
Pad Shear - 1-way (kips)	115.17	22.03	**18.2%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.031	**17.8%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	266.25	2.14	**0.8%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**46.3%**
Soil Rating*:	**55.7%**

Anchor Block Foundation

Checks capacity of anchor blocks with or without a berm for a guyed tower

AT&T Site Number: CT2171
TEP Site Number: 354218
Site Name: MONTVILLE EAST

Design Reactions		
Shear, **S**:	21.67	kips
Uplift, **Ua**:	18.85	kips
Resultant Force, **Rf**:	28.72	kips
Tower Height, **H**:	193.00	ft
Guy Anchor Radius, **R**:	89.00	ft

Guyed Anchor Properties		
Depth to Bottom of Deadman, **Da**:	8.0	ft
Anchor Width, **Wa**:	6.0	ft
Anchor Thickness, **Ta**:	4.0	ft
Anchor Length, **La**:	12.0	ft
Concrete Volume, **Vc**:	10.7	yd^3
Frost Depth, **Fd**:	4	ft

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δx**:	0.150	kcf
Clear Cover, **cc**:	3	in
Strength Reduction Factor, **φ**:	0.9	

Skin Friction		
Ultimate Soil Friction, f_s =	0.45	ksf

Design Checks				
	Capacity/ Availability	***Demand/ Limits***	***Check***	***%***
Shear (kips):	178.32	21.67	**OK**	**12.1%**
Uplift Capacity (kips):	106.28	18.85	**OK**	**17.7%**

Warning: Maximum soil depth is not equal to bottom of deadman.

Soil Properties	No. of Soil Layers? 1			
Layer	**φ, deg**	**c, ksf**	**δ, kcf**	**d, ft**
Berm	0	0.000	0.000	0.00
1	30	0.000	0.110	12.00
Backfill	30	0.500	0.110	☐ use

*key: φ = *Internal Angle of Friction*
δ = *Soil Unit Weight*
d = Depth to Bottom of Layer

Anchor Block Foundation

Checks capacity of anchor blocks with or without a berm for a guyed tower

AT&T Site Number: CT2171
TEP Site Number: 354218
Site Name: MONTVILLE EAST

Design Reactions		
Shear, **S**:	33.02	kips
Uplift, **Ua**:	38.98	kips
Resultant Force, **Rf**:	51.09	kips
Tower Height, **H**:	193.00	ft
Guy Anchor Radius, **R**:	137.00	ft

Guyed Anchor Properties		
Depth to Bottom of Deadman, **Da**:	10.0	ft
Anchor Width, **Wa**:	5.0	ft
Anchor Thickness, **Ta**:	2.0	ft
Anchor Length, **La**:	9.0	ft
Concrete Volume, **Vc**:	3.3	yd^3
Frost Depth, **Fd**:	4	ft

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δx**:	0.150	kcf
Clear Cover, **cc**:	3	in
Strength Reduction Factor, **φ**:	0.9	

Skin Friction		
Ultimate Soil Friction, f_s =	0.45	ksf

Design Checks				
	Capacity/ Availability	***Demand/ Limits***	***Check***	***%***
Shear (kips):	73.42	33.02	**OK**	**45.0%**
Uplift Capacity (kips):	113.79	38.98	**OK**	**34.3%**

Warning: Maximum soil depth is not equal to bottom of deadman.

Soil Properties	No. of Soil Layers? 1			
Layer	**φ, deg**	**c, ksf**	**δ, kcf**	**d, ft**
Berm	0	0.000	0.000	0.00
1	30	0.000	0.110	12.00
Backfill	30	0.500	0.110	☐ use

*key: φ = *Internal Angle of Friction*
δ = *Soil Unit Weight*
d = Depth to Bottom of Layer

April 4, 2023 (Rev.2)
June 22, 2022 (Rev.1)
March 23, 2022

Smartlink, LLC
1997 Annapolis Exchange Pkwy, Suite 200
Annapolis, MD 21401

RE:	AT&T Site Number:	CT2171 (C-BAND)
	FA Number:	10035116
	PACE Number:	MRCTB056267
	PT Number:	2051A11L84
	TEP Project Number:	
	AT&T Site Name:	MONTVILLE EAST
	Site Address:	57 Cook Drive Uncasville, CT 06382

To Whom It May Concern:

TEP Northeast (TEP NE) has been authorized by Smartlink to perform a mount analysis on the existing AT&T antenna/RRH mounts to determine their capability of supporting the following additional loading (based on RFDS V3.0 dated 02/09/2022):

- (2) 4478 B14 RRH's (18.1"x13.4"x8.3" – Wt. = 60 lbs. /each)
- (3) 4426 B66 RRH's (14.9"x13.2"x5.8" – Wt. = 49 lbs. /each)
- (3) RRUS-32 B30 RRH's (27.2"x12.1"x7.0" – Wt. = 60 lbs. /each)
- (2) DC6-48-60-18-8F Surge Arrestors (31.4"x10.2"Ø – Wt. = 29 lbs. /each)
- **(3) AIR6419 Antennas (31.1"x16.1"x7.3" – Wt. = 66 lbs. /each)**
- **(3) AIR6449 Antennas (30.6"x15.9"x10.6" – Wt. 82 lbs. /each)**
- **(2) TPA65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 87 lbs. /each)**
- **(2) DMP65R-BU8DA Antennas (96.0"x20.7"x7.7" – Wt. = 119 lbs. /each)**
- **(1) TPA65R-BU6DA Antenna (71.2"x20.7"x7.7" – Wt. = 69 lbs.)**
- **(1) DMP65R-BU6DA Antenna (71.2"x20.7"x7.7" – Wt. = 96 lbs.)**
- **(3) 4449 B5/B12 RRH's (17.9"x13.2"x9.4" – Wt. = 73 lbs. /each)**
- **(3) 4415 B25 RRH's (16.5"x13.4"x5.9" – Wt. = 46 lbs. /each)**
- **(1) 4478 B14 RRH (18.1"x13.4"x8.3" – Wt. = 60 lbs.)**
- **(1) DC9-48-60-24-8C-EV Surge Arrestor (31.4"x10.2"Ø – Wt. = 29 lbs.)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. ProVertic LLC conducted a survey climb and mapping of the existing AT&T antenna mounts on March 9, 2022.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-H, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2021 with 2022 Connecticut State Building Code, and AT&T Mount Technical Directive – R22.
- TEP NE considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-H and Appendix P of the Connecticut State Building Code, the max basic wind speed for this site is equal to 125 mph with a max basic wind speed with ice of 50 mph and a max ice thickness of 1.0 in. An escalated ice thickness of 1.18 in was used for this analysis.
- TEP NE considers this site to be exposure category B; tower is located in an urban/suburban or wooded area with numerous closely spaced obstructions.
- TEP NE considers this site to be topographic category 1; tower is located on flat terrain or the bottom of a hill or ridge.
- TEP NE considers this site to have a spectral response acceleration parameter at short periods, S_S, of 0.198 and a spectral response acceleration parameter at a period of 1 second, S_1, of 0.054.
- The mount has been analyzed with load combinations consisting of 500 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 4.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The existing mount is secured to the existing guyed tower with threaded rods and steel plates tightened around the tower leg. TEP NE considers the threaded rods as the governing connection members.

Based on our evaluation, we have determined that the existing mounts **ARE CAPABLE** of supporting the proposed installation.

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing (C-BAND) Mount Rating	32	LC9	96%	**PASS**

Reference Documents:

- Mount mapping report prepared by ProVertic LLC dated March 28, 2022.

This determination was based on the following limitations and assumptions:

1. TEP NE is not responsible for any modifications completed prior to and hereafter which TEP NE was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. TEP NE performed a localized analysis on the mount itself and not on the supporting tower structure.

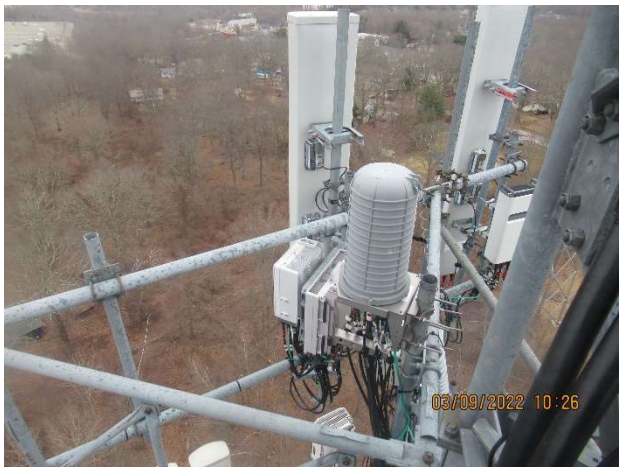
Please feel free to contact our office should you have any questions.

Respectfully Submitted,
TEP Northeast

Michael Cabral
Director

Daniel P. Hamm, PE
Vice President

FIELD PHOTOS:



FIELD PHOTOS (CONT.):

TEP NORTHEAST

Wind & Ice Calculations

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL **Checked By:** MSC

TEP NORTHEAST

2.6.5.2 Velocity Pressure Coeff:

$K_z = 2.01\ (z/z_g)^{2/\alpha}$

z=	180	(ft)
z_g=	1200	(ft)
α=	7.0	
K_z=	**1.169**	

Kzmin ≤ Kz ≤ 2.01

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_c
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.2 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$K_{zt} = [1+(K_c\ K_t/K_h)]^2$

$K_h = e^{(f*z/H)}$

K_{zt}=	**1**	
K_h=	1	
K_c=	0.9	(from Table 2-4)
K_t=	0	(from Table 2-5)
f=	0	(from Table 2-5)
Category=	1	
z=	180	
z_s=	360	(Mean elevation of base of structure above sea level)
H=	0	(Ht. of the crest above surrounding terrain)
K_{zt}=	1.00	(from 2.6.6.2.1)
K_e=	0.99	(from 2.6.8)

(If Category 1 then K_{zt} =1.0)

2.6.10 Design Ice Thickness

Max Ice Thickness =	t_i = 1.00	in
Importance Factor =	I= 1.00	(from Table 2-3)
	K_{iz} = 1.18	(from Sec. 2.6.10)

$t_{iz} = t_i * I * K_{iz} * (K_{zt})^{0.35}$

t_{iz} = 1.18 in

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL Checked By: MSC

2.6.9 Gust Effect Factor

2.6.9.1 Self Supporting Lattice Structures

G_h = 1.0 Latticed Structures > 600 ft

G_h = 0.85 Latticed Structures 450 ft or less

G_h = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h=	190	G_h=	0.85

2.6.9.2 Guyed Masts G_h= 0.85

2.6.9.3 Pole Structures G_h= 1.1

2.6.9 Appurtenances G_h= 1.0

2.6.9.4 Structures Supported on Other Structures

(Cantilivered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

G_h=	1.35	**Gh=**	**1.00**

2.6.11.2 Design Wind Force on Appurtenances

F= $q_z * G_h * (EPA)_A$

q_z= $0.00256 * K_z * K_{zt} * K_s * K_e * K_d * V_{max}^2$

		K_z=	1.169	(from 2.6.5.2)
		K_{zt}=	1.0	(from 2.6.6.2.1)
		K_s=	1.0	(from 2.6.7)
q_z=	**43.84**	K_e=	0.99	(from 2.6.8)
$q_{z\,(ice)}$=	**7.02**	K_d=	0.95	(from Table 2-2)
$q_{z\,(30)}$=	**2.53**	V_{max}=	125	mph (Ultimate Wind Speed)
		$V_{max\,(ice)}$=	50	mph
		V_{30}=	30	mph

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95
Tubular pole structures supporting antennas enclosed within a cylindrical shroud	1.00

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL Checked By: MSC

Determine Ca:

Table 2-9

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Square/Rectangular HSS		1.2 - 2.8(r_s) ≥ 0.85	1.4 - 4.0(r_s) ≥ 0.90	2.0 - 6.0(r_s) ≥ 1.25
Round	C < 39 (Subcritical)	0.7	0.8	1.2
	39 ≤ C ≤ 78 (Transitional)	$4.14/(C^{0.485})$	$3.66/(C^{0.415})$	$46.8/(C^{-1.0})$
	C > 78 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
(Aspect ratio is independent of the spacing between support points of a linear appurtenance,

Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.18** in | **Angle =** **0 (deg)** | **Equivalent Angle =** **180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.93	1.20	183	36	11
AIR6449 Antenna	30.6	15.9	10.6	3.38	1.92	1.20	178	35	10
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	784	143	45
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	4.64	1.30	784	143	45
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	557	103	32
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.44	1.24	557	103	32
4478 B14 RRH	18.1	13.4	8.3	1.68	1.35	1.20	89	19	5
4426 B66 RRH	14.9	5.8	13.2	0.60	2.57	1.20	32	8	2
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	3.89	1.26	73	17	4
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.90	1.20	61	14	4
4415 B25 RRH	16.5	5.9	13.4	0.68	2.80	1.21	36	9	2
DC9-48-60-24-8C-EV Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	68	14	4
DC6-48-60-18 Surge Arrestor	31.4	10.2	10.2	2.22	3.08	0.70	68	14	4
1-1/2" Pipe	1.9	12.0		0.16	0.16	1.20	8		
2" Pipe	2.4	12.0		0.20	0.20	1.20	10		
2-1/2" Pipe	2.9	12.0		0.24	0.24	1.20	13		

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	30	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	210	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	183	88	159
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	178	120	163
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	677
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	677
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	479
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	479
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	89	55	80
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	32	72	42
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	120	85
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	68
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	47

WIND LOADS WITH ICE:

AIR6419 Antenna	33.5	18.5	9.7	4.29	2.25	1.81	3.46	1.20	1.24	36	20	32
AIR6449 Antenna	33.0	18.3	13.0	4.18	2.97	1.80	2.54	1.20	1.20	35	25	33
TPA65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	124
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	124
TPA65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	89
DMP65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	89
4478 B14 RRH	20.5	15.8	10.7	2.24	1.52	1.30	1.92	1.20	1.20	19	13	17
4426 B66 RRH	17.3	8.2	15.6	0.98	1.87	2.11	1.11	1.20	1.20	8	16	10
RRUS-32 B30 RRH	29.6	9.4	14.5	1.92	2.97	3.16	2.04	1.23	1.20	17	25	19
4449 B5/B12 RRH	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	14	18	15
4415 B25 RRH	18.9	8.3	15.8	1.08	2.07	2.28	1.20	1.20	1.20	9	17	11

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	9
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	9
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	39
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	39
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	28
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	28
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	4	2
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	5
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	3

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	60	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	240	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	183	88	112
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	178	120	135
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	463
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	463
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	324
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	324
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	89	55	63
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	32	72	62
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	120	108
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	80
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	70

WIND LOADS WITH ICE:

AIR6419 Antenna	33.5	18.5	9.7	4.29	2.25	1.81	3.46	1.20	1.24	36	20	24
AIR6449 Antenna	33.0	18.3	13.0	4.18	2.97	1.80	2.54	1.20	1.20	35	25	28
TPA65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	89
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	89
TPA65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	64
DMP65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	64
4478 B14 RRH	20.5	15.8	10.7	2.24	1.52	1.30	1.92	1.20	1.20	19	13	14
4426 B66 RRH	17.3	8.2	15.6	0.98	1.87	2.11	1.11	1.20	1.20	8	16	14
RRUS-32 B30 RRH	29.6	9.4	14.5	1.92	2.97	3.16	2.04	1.23	1.20	17	25	23
4449 B5/B12 RRH	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	14	18	17
4415 B25 RRH	18.9	8.3	15.8	1.08	2.07	2.28	1.20	1.20	1.20	9	17	15

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	8
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	27
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	27
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	19
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	19
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	4	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	4

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	90	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	270	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	183	88	88
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	178	120	120
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	356
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	356
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	246
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	246
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	89	55	55
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	32	72	72
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	120	120
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	86
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	81

WIND LOADS WITH ICE:

AIR6419 Antenna	33.5	18.5	9.7	4.29	2.25	1.81	3.46	1.20	1.24	36	20	20
AIR6449 Antenna	33.0	18.3	13.0	4.18	2.97	1.80	2.54	1.20	1.20	35	25	25
TPA65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	72
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	72
TPA65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	51
DMP65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	51
4478 B14 RRH	20.5	15.8	10.7	2.24	1.52	1.30	1.92	1.20	1.20	19	13	13
4426 B66 RRH	17.3	8.2	15.6	0.98	1.87	2.11	1.11	1.20	1.20	8	16	16
RRUS-32 B30 RRH	29.6	9.4	14.5	1.92	2.97	3.16	2.04	1.23	1.20	17	25	25
4449 B5/B12 RRH	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	14	18	18
4415 B25 RRH	18.9	8.3	15.8	1.08	2.07	2.28	1.20	1.20	1.20	9	17	17

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	5
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	7
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	21
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	21
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	14
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	14
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	3
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	4	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	7
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	5

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL Checked By: MSC

WIND LOADS

Angle =	120	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	300	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	183	88	112
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	178	120	135
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	463
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	463
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	324
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	324
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	89	55	63
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	32	72	62
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	120	108
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	80
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	70

WIND LOADS WITH ICE:

AIR6419 Antenna	33.5	18.5	9.7	4.29	2.25	1.81	3.46	1.20	1.24	36	20	24
AIR6449 Antenna	33.0	18.3	13.0	4.18	2.97	1.80	2.54	1.20	1.20	35	25	28
TPA65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	89
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	89
TPA65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	64
DMP65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	64
4478 B14 RRH	20.5	15.8	10.7	2.24	1.52	1.30	1.92	1.20	1.20	19	13	14
4426 B66 RRH	17.3	8.2	15.6	0.98	1.87	2.11	1.11	1.20	1.20	8	16	14
RRUS-32 B30 RRH	29.6	9.4	14.5	1.92	2.97	3.16	2.04	1.23	1.20	17	25	23
4449 B5/B12 RRH	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	14	18	17
4415 B25 RRH	18.9	8.3	15.8	1.08	2.07	2.28	1.20	1.20	1.20	9	17	15

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	6
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	8
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	27
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	27
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	19
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	19
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	4
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	4	4
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	6
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	5
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	4

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL Checked By: MSC

TEP NORTHEAST

WIND LOADS

Angle =	150	(deg)	Ice Thickness =	1.18	in.	Equivalent Angle =	330	(deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs)	Force (lbs)	Force (lbs)
AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	183	88	159
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	178	120	163
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	677
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	784	356	677
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	479
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	557	246	479
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	89	55	80
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	32	72	42
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	73	120	85
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	61	86	68
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	36	81	47

WIND LOADS WITH ICE:

AIR6419 Antenna	33.5	18.5	9.7	4.29	2.25	1.81	3.46	1.20	1.24	36	20	32
AIR6449 Antenna	33.0	18.3	13.0	4.18	2.97	1.80	2.54	1.20	1.20	35	25	33
TPA65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	124
DMP65R-BU8DA Antenna	98.4	23.1	10.1	15.76	6.88	4.26	9.77	1.28	1.49	141	72	124
TPA65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	89
DMP65R-BU6DA Antenna	73.6	23.1	10.1	11.79	5.14	3.19	7.31	1.23	1.41	102	51	89
4478 B14 RRH	20.5	15.8	10.7	2.24	1.52	1.30	1.92	1.20	1.20	19	13	17
4426 B66 RRH	17.3	8.2	15.6	0.98	1.87	2.11	1.11	1.20	1.20	8	16	10
RRUS-32 B30 RRH	29.6	9.4	14.5	1.92	2.97	3.16	2.04	1.23	1.20	17	25	19
4449 B5/B12 RRH	20.3	11.8	15.6	1.66	2.19	1.72	1.30	1.20	1.20	14	18	15
4415 B25 RRH	18.9	8.3	15.8	1.08	2.07	2.28	1.20	1.20	1.20	9	17	11

WIND LOADS AT 30 MPH:

AIR6419 Antenna	31.1	16.1	7.3	3.48	1.58	1.93	4.26	1.20	1.28	11	5	9
AIR6449 Antenna	30.6	15.9	10.6	3.38	2.25	1.92	2.89	1.20	1.22	10	7	9
TPA65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	39
DMP65R-BU8DA Antenna	96.0	20.7	7.7	13.80	5.13	4.64	12.47	1.30	1.58	45	21	39
TPA65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	28
DMP65R-BU6DA Antenna	71.2	20.7	7.7	10.24	3.81	3.44	9.25	1.24	1.47	32	14	28
4478 B14 RRH	18.1	13.4	8.3	1.68	1.04	1.35	2.18	1.20	1.20	5	3	5
4426 B66 RRH	14.9	5.8	13.2	0.60	1.37	2.57	1.13	1.20	1.20	2	4	2
RRUS-32 B30 RRH	27.2	7.0	12.1	1.32	2.29	3.89	2.25	1.26	1.20	4	7	5
4449 B5/B12 RRH	17.9	9.4	13.2	1.17	1.64	1.90	1.36	1.20	1.20	4	5	4
4415 B25 RRH	16.5	5.9	13.4	0.68	1.54	2.80	1.23	1.21	1.20	2	5	3

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL **Checked By:** MSC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.18 in.
Density of ice: 56 pcf

AIR6419 Antenna

Weight of ice based on total radial SF area:

Height (in):	31.1	
Width (in):	16.1	
Depth (in):	7.3	
Total weight of ice on object:		70 lbs
Weight of object:	66.0	lbs
Combined weight of ice and object:		136 lbs

AIR6449 Antenna

Weight of ice based on total radial SF area:

Height (in):	30.6	
Width (in):	15.9	
Depth (in):	10.6	
Total weight of ice on object:		75 lbs
Weight of object:	82.0	lbs
Combined weight of ice and object:		157 lbs

TPA65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		268 lbs
Weight of object:	87.0	lbs
Combined weight of ice and object:		355 lbs

DMP65R-BU8DA Antenna

Weight of ice based on total radial SF area:

Height (in):	96.0	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		268 lbs
Weight of object:	119.0	lbs
Combined weight of ice and object:		387 lbs

TPA65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		199 lbs
Weight of object:	69.0	lbs
Combined weight of ice and object:		268 lbs

DMP65R-BU6DA Antenna

Weight of ice based on total radial SF area:

Height (in):	71.2	
Width (in):	20.7	
Depth (in):	7.7	
Total weight of ice on object:		199 lbs
Weight of object:	96.0	lbs
Combined weight of ice and object:		295 lbs

4478 B14 RRH

Weight of ice based on total radial SF area:

Height (in):	18.1	
Width (in):	13.4	
Depth (in):	8.3	
Total weight of ice on object:		37 lbs
Weight of object:	60.0	lbs
Combined weight of ice and object:		97 lbs

4426 B66 RRH

Weight of ice based on total radial SF area:

Height (in):	14.9	
Width (in):	13.2	
Depth (in):	5.8	
Total weight of ice on object:		28 lbs
Weight of object:	49.0	lbs
Combined weight of ice and object:		77 lbs

RRUS-32 B30 RRH

Weight of ice based on total radial SF area:

Height (in):	27.2	
Width (in):	12.1	
Depth (in):	7.0	
Total weight of ice on object:		50 lbs
Weight of object:	60.0	lbs
Combined weight of ice and object:		110 lbs

4449 B5/B12 RRH

Weight of ice based on total radial SF area:

Height (in):	17.9	
Width (in):	13.2	
Depth (in):	9.4	
Total weight of ice on object:		37 lbs
Weight of object:	73.0	lbs
Combined weight of ice and object:		110 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:

Height (in):	16.5	
Width (in):	13.4	
Depth (in):	5.9	
Total weight of ice on object:		31 lbs
Weight of object:	46.0	lbs
Combined weight of ice and object:		77 lbs

DC9-48-60-24-8C-EV Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		43 lbs
Weight of object:	29	lbs
Combined weight of ice and object:		72 lbs

DC6-48-60-18 Surge Arrestor

Weight of ice based on total radial SF area:

Depth (in):	31.4	
Diameter(in):	10.2	
Total weight of ice on object:		43 lbs
Weight of object:	29	lbs
Combined weight of ice and object:		72 lbs

1-1/2" Pipe

Per foot weight of ice:

diameter (in):	1.9	
Per foot weight of ice on object:		4 plf

2" Pipe

Per foot weight of ice:

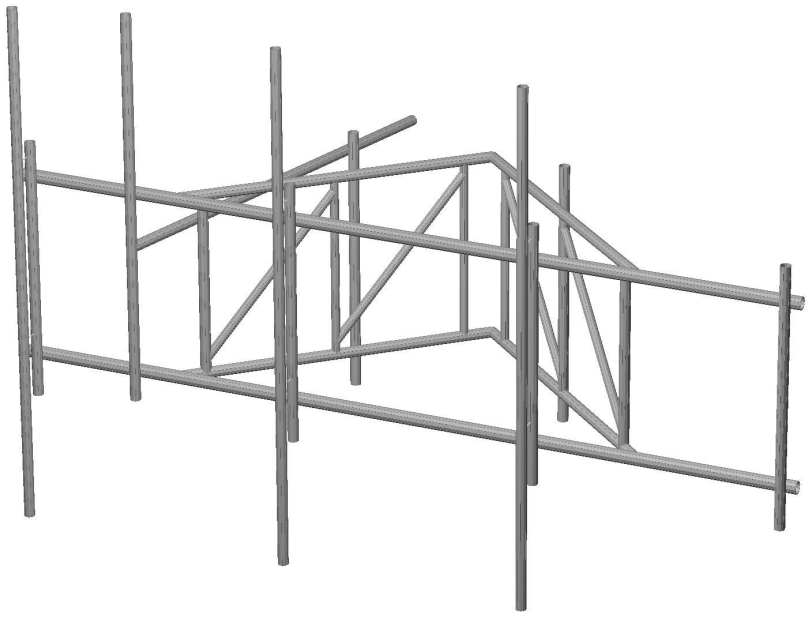
diameter (in):	2.38	
Per foot weight of ice on object:		5 plf

2-1/2" Pipe

Per foot weight of ice:

diameter (in):	2.88	
Per foot weight of ice on object:		6 plf

Mount Calculations
(Existing Conditions)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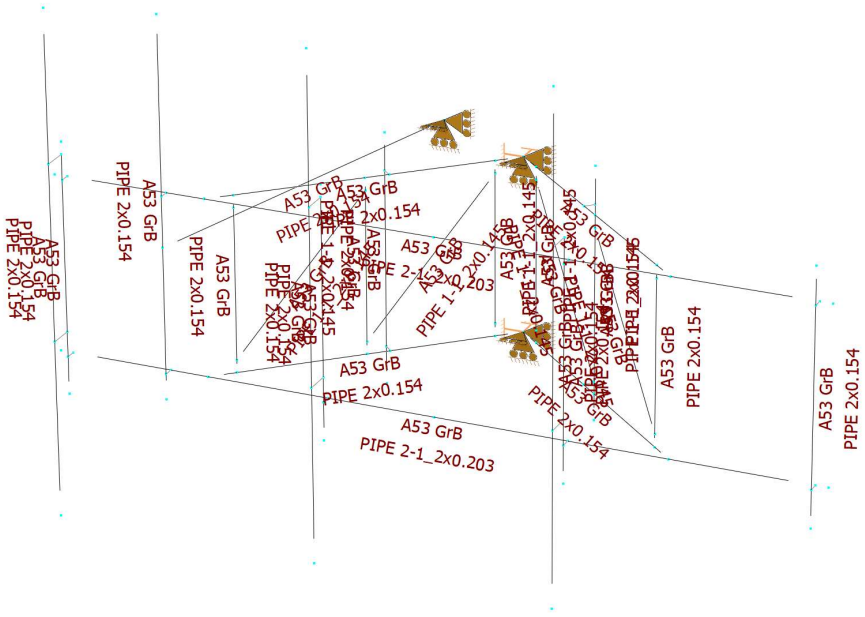
Current Date: 6/22/2022 4:09 PM
Units system: English



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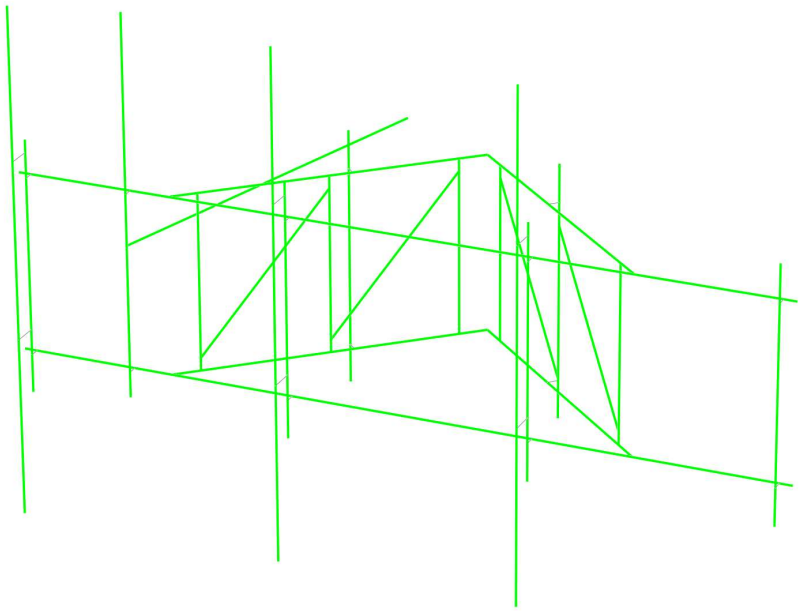
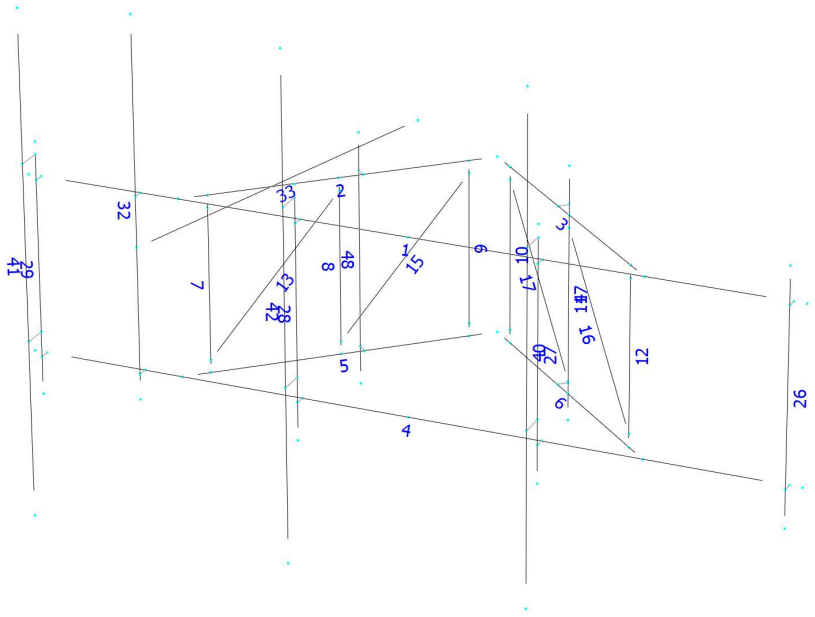
- Not designed
- Error on design
- Design O.K.
- With warnings

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X

RAM® Elements
CONNECT Edition

Current Date: 6/22/2022 4:10 PM
Units system: English

Load data

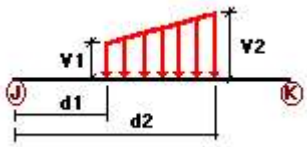
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load Center of Mount	No	LL
LL2	250 lb Live Load Right End of Mount	No	LL
LL3	250 lb Live Load Left End of Mount	No	LL
LLa1	500 lb Live Load Antenna 1	No	LL
LLa2	500 lb Live Load Antenna 2	No	LL
LLa3	500 lb Live Load Antenna 3	No	LL
LLa4	500 lb Live Load Antenna 4	No	LL

Distributed force on members

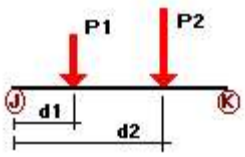


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.015	-0.015	0.00	No	100.00	Yes
	2	z	-0.012	-0.012	0.00	No	100.00	Yes
	3	z	-0.012	-0.012	0.00	No	100.00	Yes
	4	z	-0.015	-0.015	0.00	No	100.00	Yes
	5	z	-0.012	-0.012	0.00	No	100.00	Yes
	6	z	-0.012	-0.012	0.00	No	100.00	Yes
	7	z	-0.012	-0.012	0.00	No	100.00	Yes
	8	z	-0.01	-0.01	0.00	No	100.00	Yes
	9	z	-0.01	-0.01	0.00	No	100.00	Yes
	10	z	-0.01	-0.01	0.00	No	100.00	Yes
	11	z	-0.01	-0.01	0.00	No	100.00	Yes
	12	z	-0.012	-0.012	0.00	No	100.00	Yes
	13	z	-0.01	-0.01	0.00	No	100.00	Yes
	15	z	-0.01	-0.01	0.00	No	100.00	Yes
	16	z	-0.01	-0.01	0.00	No	100.00	Yes
	17	z	-0.01	-0.01	0.00	No	100.00	Yes
	26	z	-0.012	-0.012	0.00	No	100.00	Yes
	32	z	-0.012	-0.012	0.00	No	100.00	Yes
	33	z	-0.012	-0.012	0.00	No	100.00	Yes
	47	z	-0.012	-0.012	0.00	No	100.00	Yes
	48	z	-0.012	-0.012	0.00	No	100.00	Yes
W30	1	z	-0.015	-0.015	0.00	No	100.00	Yes
	2	z	-0.012	-0.012	0.00	No	100.00	Yes
	3	z	-0.012	-0.012	0.00	No	100.00	Yes
	4	z	-0.015	-0.015	0.00	No	100.00	Yes
	5	z	-0.012	-0.012	0.00	No	100.00	Yes
	6	z	-0.012	-0.012	0.00	No	100.00	Yes
	7	z	-0.012	-0.012	0.00	No	100.00	Yes
	8	z	-0.01	-0.01	0.00	No	100.00	Yes
	9	z	-0.01	-0.01	0.00	No	100.00	Yes
	10	z	-0.01	-0.01	0.00	No	100.00	Yes
	11	z	-0.01	-0.01	0.00	No	100.00	Yes
	12	z	-0.012	-0.012	0.00	No	100.00	Yes
	13	z	-0.01	-0.01	0.00	No	100.00	Yes
	15	z	-0.01	-0.01	0.00	No	100.00	Yes
	16	z	-0.01	-0.01	0.00	No	100.00	Yes
	17	z	-0.01	-0.01	0.00	No	100.00	Yes
	26	z	-0.012	-0.012	0.00	No	100.00	Yes
	32	z	-0.012	-0.012	0.00	No	100.00	Yes
	33	z	-0.012	-0.012	0.00	No	100.00	Yes
	47	z	-0.012	-0.012	0.00	No	100.00	Yes
	48	z	-0.012	-0.012	0.00	No	100.00	Yes
W60	2	x	-0.012	-0.012	0.00	No	100.00	Yes
	3	x	-0.012	-0.012	0.00	No	100.00	Yes
	5	x	-0.012	-0.012	0.00	No	100.00	Yes
	6	x	-0.012	-0.012	0.00	No	100.00	Yes
	7	x	-0.012	-0.012	0.00	No	100.00	Yes
	8	x	-0.01	-0.01	0.00	No	100.00	Yes
	9	x	-0.01	-0.01	0.00	No	100.00	Yes
	10	x	-0.01	-0.01	0.00	No	100.00	Yes
	11	x	-0.01	-0.01	0.00	No	100.00	Yes
	12	x	-0.012	-0.012	0.00	No	100.00	Yes
	13	x	-0.01	-0.01	0.00	No	100.00	Yes
	15	x	-0.01	-0.01	0.00	No	100.00	Yes
	16	x	-0.01	-0.01	0.00	No	100.00	Yes
	17	x	-0.01	-0.01	0.00	No	100.00	Yes
	26	x	-0.012	-0.012	0.00	No	100.00	Yes
	27	x	-0.012	-0.012	0.00	No	100.00	Yes
	28	x	-0.012	-0.012	0.00	No	100.00	Yes
	29	x	-0.012	-0.012	0.00	No	100.00	Yes

	32	x	-0.012	-0.012	0.00	No	100.00	Yes
	33	x	-0.012	-0.012	0.00	No	100.00	Yes
	40	x	-0.012	-0.012	0.00	No	100.00	Yes
	41	x	-0.012	-0.012	0.00	No	100.00	Yes
	42	x	-0.012	-0.012	0.00	No	100.00	Yes
	47	x	-0.012	-0.012	0.00	No	100.00	Yes
	48	x	-0.012	-0.012	0.00	No	100.00	Yes
W90	2	x	-0.012	-0.012	0.00	No	100.00	Yes
	3	x	-0.012	-0.012	0.00	No	100.00	Yes
	5	x	-0.012	-0.012	0.00	No	100.00	Yes
	6	x	-0.012	-0.012	0.00	No	100.00	Yes
	7	x	-0.012	-0.012	0.00	No	100.00	Yes
	8	x	-0.01	-0.01	0.00	No	100.00	Yes
	9	x	-0.01	-0.01	0.00	No	100.00	Yes
	10	x	-0.01	-0.01	0.00	No	100.00	Yes
	11	x	-0.01	-0.01	0.00	No	100.00	Yes
	12	x	-0.012	-0.012	0.00	No	100.00	Yes
	13	x	-0.01	-0.01	0.00	No	100.00	Yes
	15	x	-0.01	-0.01	0.00	No	100.00	Yes
	16	x	-0.01	-0.01	0.00	No	100.00	Yes
	17	x	-0.01	-0.01	0.00	No	100.00	Yes
	26	x	-0.012	-0.012	0.00	No	100.00	Yes
	27	x	-0.012	-0.012	0.00	No	100.00	Yes
	28	x	-0.012	-0.012	0.00	No	100.00	Yes
	29	x	-0.012	-0.012	0.00	No	100.00	Yes
	32	x	-0.012	-0.012	0.00	No	100.00	Yes
	33	x	-0.012	-0.012	0.00	No	100.00	Yes
	40	x	-0.012	-0.012	0.00	No	100.00	Yes
	41	x	-0.012	-0.012	0.00	No	100.00	Yes
	42	x	-0.012	-0.012	0.00	No	100.00	Yes
	47	x	-0.012	-0.012	0.00	No	100.00	Yes
	48	x	-0.012	-0.012	0.00	No	100.00	Yes
W120	2	x	-0.012	-0.012	0.00	No	100.00	Yes
	3	x	-0.012	-0.012	0.00	No	100.00	Yes
	5	x	-0.012	-0.012	0.00	No	100.00	Yes
	6	x	-0.012	-0.012	0.00	No	100.00	Yes
	7	x	-0.012	-0.012	0.00	No	100.00	Yes
	8	x	-0.01	-0.01	0.00	No	100.00	Yes
	9	x	-0.01	-0.01	0.00	No	100.00	Yes
	10	x	-0.01	-0.01	0.00	No	100.00	Yes
	11	x	-0.01	-0.01	0.00	No	100.00	Yes
	12	x	-0.012	-0.012	0.00	No	100.00	Yes
	13	x	-0.01	-0.01	0.00	No	100.00	Yes
	15	x	-0.01	-0.01	0.00	No	100.00	Yes
	16	x	-0.01	-0.01	0.00	No	100.00	Yes
	17	x	-0.01	-0.01	0.00	No	100.00	Yes
	26	x	-0.012	-0.012	0.00	No	100.00	Yes
	27	x	-0.012	-0.012	0.00	No	100.00	Yes
	28	x	-0.012	-0.012	0.00	No	100.00	Yes
	29	x	-0.012	-0.012	0.00	No	100.00	Yes
	32	x	-0.012	-0.012	0.00	No	100.00	Yes
	33	x	-0.012	-0.012	0.00	No	100.00	Yes
	40	x	-0.012	-0.012	0.00	No	100.00	Yes
	41	x	-0.012	-0.012	0.00	No	100.00	Yes
	42	x	-0.012	-0.012	0.00	No	100.00	Yes
	47	x	-0.012	-0.012	0.00	No	100.00	Yes
	48	x	-0.012	-0.012	0.00	No	100.00	Yes
W150	1	z	0.015	0.015	0.00	No	100.00	Yes
	2	z	0.012	0.012	0.00	No	100.00	Yes
	3	z	0.012	0.012	0.00	No	100.00	Yes

	4	z	0.015	0.015	0.00	No	100.00	Yes
	5	z	0.012	0.012	0.00	No	100.00	Yes
	6	z	0.012	0.012	0.00	No	100.00	Yes
	7	z	0.012	0.012	0.00	No	100.00	Yes
	8	z	0.01	0.01	0.00	No	100.00	Yes
	9	z	0.01	0.01	0.00	No	100.00	Yes
	10	z	0.01	0.01	0.00	No	100.00	Yes
	11	z	0.01	0.01	0.00	No	100.00	Yes
	12	z	0.012	0.012	0.00	No	100.00	Yes
	13	z	0.01	0.01	0.00	No	100.00	Yes
	15	z	0.01	0.01	0.00	No	100.00	Yes
	16	z	0.01	0.01	0.00	No	100.00	Yes
	17	z	0.01	0.01	0.00	No	100.00	Yes
	26	z	0.012	0.012	0.00	No	100.00	Yes
	27	z	0.012	0.012	0.00	No	100.00	Yes
	28	z	0.012	0.012	0.00	No	100.00	Yes
	29	z	0.012	0.012	0.00	No	100.00	Yes
	32	z	0.012	0.012	0.00	No	100.00	Yes
	33	z	0.012	0.012	0.00	No	100.00	Yes
	40	z	0.012	0.012	0.00	No	100.00	Yes
	41	z	0.012	0.012	0.00	No	100.00	Yes
	42	z	0.012	0.012	0.00	No	100.00	Yes
	47	z	0.012	0.012	0.00	No	100.00	Yes
	48	z	0.012	0.012	0.00	No	100.00	Yes
Di	1	y	-0.006	-0.006	0.00	No	100.00	Yes
	2	y	-0.005	-0.005	0.00	No	100.00	Yes
	3	y	-0.005	-0.005	0.00	No	100.00	Yes
	4	y	-0.006	-0.006	0.00	No	100.00	Yes
	5	y	-0.005	-0.005	0.00	No	100.00	Yes
	6	y	-0.005	-0.005	0.00	No	100.00	Yes
	7	y	-0.005	-0.005	0.00	No	100.00	Yes
	8	y	-0.004	-0.004	0.00	No	100.00	Yes
	9	y	-0.004	-0.004	0.00	No	100.00	Yes
	10	y	-0.004	-0.004	0.00	No	100.00	Yes
	11	y	-0.004	-0.004	0.00	No	100.00	Yes
	12	y	-0.005	-0.005	0.00	No	100.00	Yes
	13	y	-0.004	-0.004	0.00	No	100.00	Yes
	15	y	-0.004	-0.004	0.00	No	100.00	Yes
	16	y	-0.004	-0.004	0.00	No	100.00	Yes
	17	y	-0.004	-0.004	0.00	No	100.00	Yes
	26	y	-0.005	-0.005	0.00	No	100.00	Yes
	27	y	-0.005	-0.005	0.00	No	100.00	Yes
	28	y	-0.005	-0.005	0.00	No	100.00	Yes
	29	y	-0.005	-0.005	0.00	No	100.00	Yes
	32	y	-0.005	-0.005	0.00	No	100.00	Yes
	33	y	-0.005	-0.005	0.00	No	100.00	Yes
	40	y	-0.005	-0.005	0.00	No	100.00	Yes
	41	y	-0.005	-0.005	0.00	No	100.00	Yes
	42	y	-0.005	-0.005	0.00	No	100.00	Yes
	47	y	-0.005	-0.005	0.00	No	100.00	Yes
	48	y	-0.005	-0.005	0.00	No	100.00	Yes

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%
D	40	y	-0.044	1.50	No
		y	-0.044	8.50	No
	41	y	-0.06	1.50	No
		y	-0.06	8.50	No
	42	y	-0.033	2.00	No
		y	-0.033	4.50	No
		y	-0.041	5.50	No
		y	-0.041	8.00	No
	47	y	-0.06	1.50	No
		y	-0.046	3.50	No
		y	-0.049	3.50	No
	48	y	-0.029	1.50	No
		y	-0.06	3.50	No
		y	-0.073	3.50	No
Wo	40	z	-0.457	1.50	No
		z	-0.457	8.50	No
	41	z	-0.457	1.50	No
		z	-0.457	8.50	No
	42	z	-0.157	2.00	No
		z	-0.157	4.50	No
		z	-0.154	5.50	No
		z	-0.154	8.00	No
	47	z	-0.103	1.50	No
		z	-0.042	3.50	No
		z	-0.037	3.50	No
	48	z	-0.08	1.50	No
		z	-0.085	3.50	No
		z	-0.072	3.50	No
W30	40	3	-0.395	1.50	No
		3	-0.395	8.50	No
	41	3	-0.395	1.50	No
		3	-0.395	8.50	No
	42	3	-0.093	2.00	No
		3	-0.093	4.50	No
		3	-0.096	5.50	No
		3	-0.096	8.00	No
	47	3	-0.094	1.50	No
		3	-0.055	3.50	No
	48	3	-0.08	1.50	No
		3	-0.099	3.50	No
W60	40	3	-0.27	1.50	No
		3	-0.27	8.50	No
	41	3	-0.27	1.50	No
		3	-0.27	8.50	No
	42	3	-0.062	2.00	No
		3	-0.062	4.50	No
		3	-0.079	5.50	No
		3	-0.079	8.00	No
	47	3	-0.074	1.50	No
		3	-0.081	3.50	No
	48	3	-0.08	1.50	No
		3	-0.127	3.50	No
W90	40	x	-0.208	1.50	No
		x	-0.208	8.50	No

	41	x	-0.208	1.50	No
		x	-0.208	8.50	No
	42	x	-0.051	2.00	No
		x	-0.051	4.50	No
		x	-0.07	5.50	No
		x	-0.07	8.00	No
	47	x	-0.064	1.50	No
		x	-0.094	3.50	No
	48	x	-0.08	1.50	No
		x	-0.14	3.50	No
W120	40	2	-0.27	1.50	No
		2	-0.27	8.50	No
	41	2	-0.27	1.50	No
		2	-0.27	8.50	No
	42	2	-0.062	2.00	No
		2	-0.062	4.50	No
		2	-0.079	5.50	No
		2	-0.079	8.00	No
	47	2	-0.074	1.50	No
		2	-0.081	3.50	No
	48	2	-0.08	1.50	No
		2	-0.127	3.50	No
W150	40	2	-0.395	1.50	No
		2	-0.395	8.50	No
	41	2	-0.395	1.50	No
		2	-0.395	8.50	No
	42	2	-0.093	2.00	No
		2	-0.093	4.50	No
		2	-0.096	5.50	No
		2	-0.096	8.00	No
	47	2	-0.094	1.50	No
		2	-0.055	3.50	No
	48	2	-0.08	1.50	No
		2	-0.099	3.50	No
Di	40	y	-0.134	1.50	No
		y	-0.134	8.50	No
	41	y	-0.134	1.50	No
		y	-0.134	8.50	No
	42	y	-0.035	2.00	No
		y	-0.035	4.50	No
		y	-0.038	5.50	No
		y	-0.038	8.00	No
	47	y	-0.037	1.50	No
		y	-0.031	3.50	No
		y	-0.028	3.50	No
	48	y	-0.043	1.50	No
		y	-0.05	3.50	No
		y	-0.037	3.50	No
WI0	40	z	-0.072	1.50	No
		z	-0.072	8.50	No
	41	z	-0.072	1.50	No
		z	-0.072	8.50	No
	42	z	-0.018	2.00	No
		z	-0.018	4.50	No
		z	-0.018	5.50	No
		z	-0.018	8.00	No
	47	z	-0.019	1.50	No
		z	-0.009	3.50	No
		z	-0.008	3.50	No
	48	z	-0.014	1.50	No

		z	-0.017	3.50	No
		z	-0.014	3.50	No
WI30	40	3	-0.062	1.50	No
		3	-0.062	8.50	No
	41	3	-0.062	1.50	No
		3	-0.062	8.50	No
	42	3	-0.016	2.00	No
		3	-0.016	4.50	No
		3	-0.017	5.50	No
		3	-0.017	8.00	No
	47	3	-0.017	1.50	No
		3	-0.011	3.50	No
	48	3	-0.014	1.50	No
		3	-0.019	3.50	No
WI60	40	3	-0.045	1.50	No
		3	-0.045	8.50	No
	41	3	-0.045	1.50	No
		3	-0.045	8.50	No
	42	3	-0.012	2.00	No
		3	-0.012	4.50	No
		3	-0.014	5.50	No
		3	-0.014	8.00	No
	47	3	-0.014	1.50	No
		3	-0.015	3.50	No
	48	3	-0.014	1.50	No
		3	-0.023	3.50	No
WI90	40	x	-0.036	1.50	No
		x	-0.036	8.50	No
	41	x	-0.036	1.50	No
		x	-0.036	8.50	No
	42	x	-0.01	2.00	No
		x	-0.01	4.50	No
		x	-0.013	5.50	No
		x	-0.013	8.00	No
	47	x	-0.013	1.50	No
		x	-0.017	3.50	No
	48	x	-0.014	1.50	No
		x	-0.025	3.50	No
WI120	40	2	-0.045	1.50	No
		2	-0.045	8.50	No
	41	2	-0.045	1.50	No
		2	-0.045	8.50	No
	42	2	-0.012	2.00	No
		2	-0.012	4.50	No
		2	-0.014	5.50	No
		2	-0.014	8.00	No
	47	2	-0.014	1.50	No
		2	-0.015	3.50	No
	48	2	-0.014	1.50	No
		2	-0.023	3.50	No
WI150	40	2	-0.062	1.50	No
		2	-0.062	8.50	No
	41	2	-0.062	1.50	No
		2	-0.062	8.50	No
	42	2	-0.016	2.00	No
		2	-0.016	4.50	No
		2	-0.017	5.50	No
		2	-0.017	8.00	No
	47	2	-0.017	1.50	No
		2	-0.011	3.50	No

	48	2	-0.014	1.50	No
		2	-0.019	3.50	No
WL0	40	z	-0.023	1.50	No
		z	-0.023	8.50	No
	41	z	-0.023	1.50	No
		z	-0.023	8.50	No
	42	z	-0.006	2.00	No
		z	-0.006	4.50	No
		z	-0.005	5.50	No
		z	-0.005	8.00	No
	47	z	-0.005	1.50	No
		z	-0.002	3.50	No
		z	-0.002	3.50	No
	48	z	-0.004	1.50	No
		z	-0.004	3.50	No
		z	-0.004	3.50	No
WL30	40	3	-0.02	1.50	No
		3	-0.02	8.50	No
	41	3	-0.02	1.50	No
		3	-0.02	8.50	No
	42	3	-0.005	2.00	No
		3	-0.005	4.50	No
		3	-0.005	5.50	No
		3	-0.005	8.00	No
	47	3	-0.005	1.50	No
		3	-0.003	3.50	No
	48	3	-0.004	1.50	No
		3	-0.005	3.50	No
WL60	40	3	-0.014	1.50	No
		3	-0.014	8.50	No
	41	3	-0.014	1.50	No
		3	-0.014	8.50	No
	42	3	-0.003	2.00	No
		3	-0.003	4.50	No
		3	-0.004	5.50	No
		3	-0.004	8.00	No
	47	3	-0.004	1.50	No
		3	-0.004	3.50	No
	48	3	-0.004	1.50	No
		3	-0.006	3.50	No
WL90	40	x	-0.011	1.50	No
		x	-0.011	8.50	No
	41	x	-0.011	1.50	No
		x	-0.011	8.50	No
	42	x	-0.003	2.00	No
		x	-0.003	4.50	No
		x	-0.004	5.50	No
		x	-0.004	8.00	No
	47	x	-0.003	1.50	No
		x	-0.005	3.50	No
	48	x	-0.004	1.50	No
		x	-0.007	3.50	No
WL120	40	2	-0.014	1.50	No
		2	-0.014	8.50	No
	41	2	-0.014	1.50	No
		2	-0.014	8.50	No
	42	2	-0.003	2.00	No
		2	-0.003	4.50	No
		2	-0.004	5.50	No
		2	-0.004	8.00	No

	47	2	-0.004	1.50	No
		2	-0.004	3.50	No
	48	2	-0.004	1.50	No
		2	-0.006	3.50	No
WL150	40	2	-0.02	1.50	No
		2	-0.02	8.50	No
	41	2	-0.02	1.50	No
		2	-0.02	8.50	No
	42	2	-0.005	2.00	No
		2	-0.005	4.50	No
		2	-0.005	5.50	No
		2	-0.005	8.00	No
	47	2	-0.005	1.50	No
		2	-0.003	3.50	No
	48	2	-0.004	1.50	No
		2	-0.005	3.50	No
LL1	4	y	-0.25	50.00	Yes
LL2	4	y	-0.25	100.00	Yes
LL3	4	y	-0.25	0.00	Yes
LLa1	26	y	-0.50	50.00	Yes
LLa2	40	y	-0.50	50.00	Yes
LLa3	42	y	-0.50	50.00	Yes
LLa4	41	y	-0.50	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WI0	WL ICE 0deg	No	0.00	0.00	0.00
WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load Center of Mount	No	0.00	0.00	0.00
LL2	250 lb Live Load Right End of Mount	No	0.00	0.00	0.00
LL3	250 lb Live Load Left End of Mount	No	0.00	0.00	0.00
LLa1	500 lb Live Load Antenna 1	No	0.00	0.00	0.00
LLa2	500 lb Live Load Antenna 2	No	0.00	0.00	0.00
LLa3	500 lb Live Load Antenna 3	No	0.00	0.00	0.00
LLa4	500 lb Live Load Antenna 4	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00
LLa4	0.00	0.00	0.00

RAM® Elements
CONNECT Edition

Current Date: 6/22/2022 4:10 PM
Units system: English

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120
LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2

LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 1-1_2x0.145	**8**	LC77 at 0.00%	0.28	OK	
		9	LC83 at 100.00%	**0.47**	**OK**	
		10	LC41 at 100.00%	0.40	OK	
		11	LC41 at 0.00%	0.24	OK	
		13	LC83 at 100.00%	0.09	OK	
		15	LC83 at 100.00%	0.09	OK	
		16	LC41 at 100.00%	0.07	OK	
		17	LC41 at 100.00%	0.08	OK	
	PIPE 2-1_2x0.203	**1**	LC8 at 15.28%	**0.48**	**OK**	
		4	LC12 at 20.14%	0.39	OK	
	PIPE 2x0.154	**2**	LC77 at 100.00%	0.30	OK	
		3	LC40 at 0.00%	0.26	OK	
		5	LC9 at 8.75%	0.28	OK	
		6	LC46 at 0.00%	0.22	OK	
		7	LC83 at 0.00%	0.38	OK	
		12	LC41 at 0.00%	0.31	OK	
		26	LC47 at 16.67%	0.30	OK	
		27	LC6 at 85.00%	0.22	OK	
		28	LC9 at 83.75%	0.18	OK	
		29	LC82 at 83.75%	0.26	OK	
		32	LC9 at 39.06%	**0.96**	**OK**	
		33	LC3 at 50.00%	0.27	OK	
		40	LC7 at 66.67%	0.63	OK	
		41	LC7 at 66.67%	0.63	OK	
		42	LC7 at 66.67%	0.16	OK	
		47	LC7 at 83.33%	0.04	OK	
		48	LC1 at 68.75%	0.05	OK	

RAM® Elements
CONNECT Edition

Current Date: 6/22/2022 4:11 PM
Units system: English

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
1	0.00	0.00	0.00	0
2	-7.50	0.00	0.00	0
3	7.50	0.00	0.00	0
4	7.25	0.00	0.00	0
5	2.58	0.00	0.00	0
6	-2.09	0.00	0.00	0
7	-7.25	0.00	0.00	0
8	-4.50	0.00	0.00	0
9	4.50	0.00	0.00	0
10	0.00	0.00	-4.10	0
11	0.00	-3.50	0.00	0
12	-7.50	-3.50	0.00	0
13	7.50	-3.50	0.00	0
14	7.25	-3.50	0.00	0
15	2.58	-3.50	0.00	0
16	-2.09	-3.50	0.00	0
17	-7.25	-3.50	0.00	0
18	-4.50	-3.50	0.00	0
19	4.50	-3.50	0.00	0
20	0.00	-3.50	-4.10	0
21	-2.25	0.00	-2.05	0
22	-0.4091	0.00	-3.7273	0
23	-4.0909	0.00	-0.3727	0

24	-4.0909	-3.50	-0.3727	0
25	-2.25	-3.50	-2.05	0
26	-0.4091	-3.50	-3.7273	0
27	2.25	0.00	-2.05	0
28	0.4091	0.00	-3.7273	0
29	4.0909	0.00	-0.3727	0
30	2.25	-3.50	-2.05	0
31	0.4091	-3.50	-3.7273	0
32	4.0909	-3.50	-0.3727	0
33	-4.0909	-0.25	-0.3727	0
34	-2.25	-0.25	-2.05	0
35	-0.4091	-0.25	-3.7273	0
36	0.4091	-0.25	-3.7273	0
37	2.25	-0.25	-2.05	0
38	4.0909	-0.25	-0.3727	0
39	-4.0909	-3.25	-0.3727	0
40	-2.25	-3.25	-2.05	0
41	-0.4091	-3.25	-3.7273	0
42	0.4091	-3.25	-3.7273	0
43	2.25	-3.25	-2.05	0
44	4.0909	-3.25	-0.3727	0
45	7.25	0.00	0.20	0
46	2.58	0.00	0.20	0
47	-2.09	0.00	0.20	0
48	-7.25	0.00	0.20	0
49	-7.25	-3.50	0.20	0
50	-2.09	-3.50	0.20	0
51	2.58	-3.50	0.20	0
52	7.25	-3.50	0.20	0
53	7.25	0.75	0.20	0
54	2.58	0.75	0.20	0
55	-2.09	0.75	0.20	0
56	-7.25	0.75	0.20	0
57	7.25	-4.25	0.20	0
58	2.58	-4.25	0.20	0
59	-2.09	-4.25	0.20	0
60	-7.25	-4.25	0.20	0
61	-5.25	0.00	0.00	0
62	-5.25	0.00	0.20	0
63	-5.25	-3.50	0.00	0
64	-5.25	-3.50	0.20	0
65	-5.25	3.50	0.20	0
66	-5.25	-4.00	0.20	0
67	-5.25	-1.00	0.20	0
68	-3.08	-1.00	-7.50	0
69	-7.25	0.50	0.20	0
70	-2.09	0.50	0.20	0
71	2.58	0.50	0.20	0
72	-7.25	-3.00	0.20	0
73	-2.09	-3.00	0.20	0
74	2.58	-3.00	0.20	0
75	2.58	0.50	0.70	0
76	2.58	-3.00	0.70	0
77	-2.09	0.50	0.70	0
78	-2.09	-3.00	0.70	0
79	-7.25	0.50	0.70	0
80	-7.25	-3.00	0.70	0
81	2.58	3.50	0.70	0
82	-2.09	3.50	0.70	0
83	-7.25	3.50	0.70	0

84	2.58	-6.50	0.70	0
85	-7.25	-6.50	0.70	0
86	-2.09	-6.50	0.70	0
87	-1.9153	0.00	-2.355	0
88	1.9153	0.00	-2.355	0
89	-2.0653	0.00	-2.505	0
90	2.0653	0.00	-2.505	0
91	-1.9153	-3.50	-2.355	0
92	-2.0653	-3.50	-2.505	0
93	1.9153	-3.50	-2.355	0
94	2.0653	-3.50	-2.505	0
95	-2.0653	0.75	-2.505	0
96	2.0653	0.75	-2.505	0
97	-2.0653	-4.25	-2.505	0
98	2.0653	-4.25	-2.505	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
10	1	1	1	1	0	1
20	1	1	1	1	0	1
68	1	1	1	0	0	0

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	lg factor
1	2	3		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
2	8	10		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
3	10	9		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
4	12	13		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
5	18	20		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
6	20	19		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	24	23		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
8	25	21		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
9	26	22		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
10	31	28		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
11	30	27		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
12	32	29		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
13	39	34		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
15	40	35		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
16	44	37		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
17	43	36		PIPE 1-1_2x0.145	A53 GrB	0.00	0.00	0.00
26	57	53		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
27	58	54		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
28	59	55		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
29	60	56		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
32	66	65		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
33	68	67		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
40	81	84		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
41	83	85		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

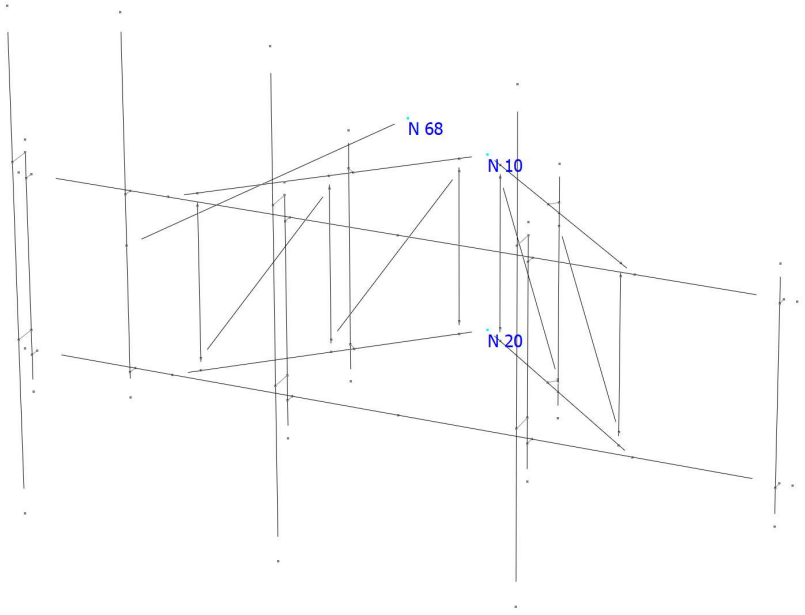
42	82	86	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
47	96	98	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
48	95	97	PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
40	315.00	0	0.00	0.00	0.00
41	315.00	0	0.00	0.00	0.00
42	315.00	0	0.00	0.00	0.00
47	315.00	0	0.00	0.00	0.00
48	315.00	0	0.00	0.00	0.00

Hinges

	Node-J				Node-K						
Member	M33	M22	V3	V2	M33	M22	V3	V2	TOR	AXL	Axial rigidity
2	1	1	0	0	0	0	0	0	0	0	Full
3	0	0	0	0	1	1	0	0	0	0	Full
5	1	1	0	0	0	0	0	0	0	0	Full
6	0	0	0	0	1	1	0	0	0	0	Full
13	1	1	0	0	1	1	0	0	0	0	Tension only
15	1	1	0	0	1	1	0	0	0	0	Tension only
16	1	1	0	0	1	1	0	0	0	0	Tension only
17	1	1	0	0	1	1	0	0	0	0	Tension only
33	0	0	0	0	1	1	0	0	0	0	Full


N 68
N 10
N 20

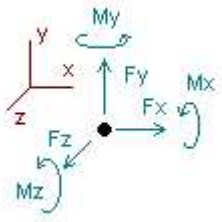

Y
X
Z

RAM® Elements
CONNECT Edition

Current Date: 6/22/2022 4:11 PM
Units system: English

Analysis result

Reactions



Direction of positive forces and moments

	Forces [Kip]			Moments [Kip*ft]		
Node	**FX**	**FY**	**FZ**	**MX**	**MY**	**MZ**
Condition **LC1=1.2D+Wo**						
10	0.77326	1.01716	-0.11047	-0.27625	0.00000	-0.02958
20	-0.36674	0.53400	2.85516	-0.17236	0.00000	-0.01782
68	-0.40653	0.01589	1.45114	0.00000	0.00000	0.00000
SUM	0.00000	1.56704	4.19583	-0.44861	0.00000	-0.04740
Condition **LC2=1.2D+W30**						
10	1.92730	1.02384	-1.60114	-0.26972	0.00000	-0.00018
20	0.41540	0.52752	1.97149	-0.17279	0.00000	0.00295
68	-0.72626	0.01568	2.57292	0.00000	0.00000	0.00000
SUM	1.61645	1.56704	2.94328	-0.44252	0.00000	0.00277
Condition **LC3=1.2D+W60**						
10	2.55571	1.05062	-2.84724	-0.25542	0.00000	0.04148
20	0.92210	0.50079	1.09592	-0.18196	0.00000	0.01495
68	-0.79807	0.01564	2.97037	0.00000	0.00000	0.00000
SUM	2.67973	1.56704	1.21905	-0.43738	0.00000	0.05642
Condition **LC4=1.2D+W90**						
10	2.57559	1.05469	-3.22738	-0.25074	0.00000	0.03663
20	1.02492	0.49665	0.64352	-0.18391	0.00000	0.00664
68	-0.68783	0.01570	2.58386	0.00000	0.00000	0.00000
SUM	2.91268	1.56704	0.00000	-0.43465	0.00000	0.04327
Condition **LC5=1.2D+W120**						
10	2.30538	1.06219	-3.35268	-0.24566	0.00000	0.00613
20	0.85017	0.48904	0.29306	-0.18712	0.00000	-0.01592
68	-0.47582	0.01581	1.84057	0.00000	0.00000	0.00000
SUM	2.67973	1.56704	-1.21905	-0.43278	0.00000	-0.00980

Condition **LC6=1.2D+W150**

10	1.50800	1.08950	-3.72280	-0.23362	0.00000	-0.03961
20	0.28113	0.46146	-0.35833	-0.19766	0.00000	-0.03458
68	-0.17268	0.01608	0.59785	0.00000	0.00000	0.00000
SUM	1.61645	1.56704	-3.48328	-0.43128	0.00000	-0.07420

Condition **LC7=1.2D-Wo**

10	0.15548	1.09172	-2.65994	-0.23183	0.00000	-0.09762
20	-0.55688	0.45868	-0.09417	-0.19975	0.00000	-0.08013
68	0.40140	0.01665	-1.44172	0.00000	0.00000	0.00000
SUM	0.00000	1.56704	-4.19583	-0.43158	0.00000	-0.17775

Condition **LC8=1.2D-W30**

10	-0.99464	1.08519	-1.16364	-0.23848	0.00000	-0.12703
20	-1.33794	0.46483	0.79172	-0.19960	0.00000	-0.10069
68	0.71614	0.01702	-2.57135	0.00000	0.00000	0.00000
SUM	-1.61645	1.56704	-2.94328	-0.43808	0.00000	-0.22772

Condition **LC9=1.2D-W60**

10	-1.62155	1.05860	0.09036	-0.25278	0.00000	-0.16864
20	-1.84455	0.49124	1.67054	-0.19069	0.00000	-0.11215
68	0.78637	0.01720	-2.97995	0.00000	0.00000	0.00000
SUM	-2.67973	1.56704	-1.21905	-0.44347	0.00000	-0.28080

Condition **LC10=1.2D-W90**

10	-1.64472	1.05464	0.47493	-0.25736	0.00000	-0.16446
20	-1.94838	0.49534	2.12445	-0.18862	0.00000	-0.10428
68	0.68042	0.01706	-2.59937	0.00000	0.00000	0.00000
SUM	-2.91268	1.56704	0.00000	-0.44598	0.00000	-0.26874

Condition **LC11=1.2D-W120**

10	-1.37834	1.04704	0.59972	-0.26240	0.00000	-0.13439
20	-1.77463	0.50321	2.47448	-0.18520	0.00000	-0.08231
68	0.47324	0.01679	-1.85514	0.00000	0.00000	0.00000
SUM	-2.67973	1.56704	1.21905	-0.44760	0.00000	-0.21670

Condition **LC12=1.2D-W150**

10	-0.58401	1.01950	0.96498	-0.27434	0.00000	-0.08881
20	-1.20630	0.53114	3.12414	-0.17432	0.00000	-0.06430
68	0.17387	0.01640	-0.60584	0.00000	0.00000	0.00000
SUM	-1.61645	1.56704	3.48328	-0.44866	0.00000	-0.15311

Condition **LC13=0.9D+Wo**

10	0.65716	0.75326	0.23480	-0.21260	0.00000	-0.01369
20	-0.25064	0.41009	2.50992	-0.12576	0.00000	-0.00555
68	-0.40652	0.01193	1.45111	0.00000	0.00000	0.00000
SUM	0.00000	1.17528	4.19583	-0.33836	0.00000	-0.01924

Condition **LC14=0.9D+W30**

10	1.81057	0.75990	-1.25598	-0.20611	0.00000	0.01552
20	0.53211	0.40359	1.62642	-0.12623	0.00000	0.01510
68	-0.72623	0.01179	2.57284	0.00000	0.00000	0.00000
SUM	1.61645	1.17528	2.94328	-0.33234	0.00000	0.03062

Condition **LC15=0.9D+W60**

10	2.43861	0.78667	-2.50217	-0.19185	0.00000	0.05690
20	1.03916	0.37684	0.75098	-0.13542	0.00000	0.02690
68	-0.79804	0.01177	2.97025	0.00000	0.00000	0.00000
SUM	2.67973	1.17528	1.21905	-0.32727	0.00000	0.08380

Condition **LC16=0.9D+W90**

10	2.45855	0.79078	-2.88226	-0.18720	0.00000	0.05203
20	1.14193	0.37269	0.29851	-0.13740	0.00000	0.01856
68	-0.68779	0.01181	2.58375	0.00000	0.00000	0.00000
SUM	2.91268	1.17528	0.00000	-0.32460	0.00000	0.07060

Condition **LC17=0.9D+W120**

10	2.18864	0.79833	-3.00746	-0.18216	0.00000	0.02165
20	0.96689	0.36507	-0.05208	-0.14063	0.00000	-0.00392
68	-0.47580	0.01188	1.84049	0.00000	0.00000	0.00000
SUM	2.67973	1.17528	-1.21905	-0.32280	0.00000	0.01774

Condition **LC18=0.9D+W150**

10	1.39182	0.82573	-3.37746	-0.17021	0.00000	-0.02378
20	0.39730	0.33749	-0.70362	-0.15122	0.00000	-0.02236
68	-0.17267	0.01206	0.59781	0.00000	0.00000	0.00000
SUM	1.61645	1.17528	-3.48328	-0.32143	0.00000	-0.04614

Condition **LC19=0.9D-Wo**

10	0.04036	0.82806	-2.31433	-0.16846	0.00000	-0.08150
20	-0.44175	0.33473	-0.43983	-0.15331	0.00000	-0.06773
68	0.40138	0.01249	-1.44167	0.00000	0.00000	0.00000
SUM	0.00000	1.17528	-4.19583	-0.32177	0.00000	-0.14923

Condition **LC20=0.9D-W30**

10	-1.10912	0.82159	-0.81791	-0.17507	0.00000	-0.11070
20	-1.22344	0.34090	0.44588	-0.15313	0.00000	-0.08817
68	0.71611	0.01280	-2.57124	0.00000	0.00000	0.00000
SUM	-1.61645	1.17528	-2.94328	-0.32821	0.00000	-0.19887

Condition **LC21=0.9D-W60**

10	-1.73565	0.79500	0.43619	-0.18934	0.00000	-0.15203
20	-1.73042	0.36734	1.32457	-0.14420	0.00000	-0.09941
68	0.78633	0.01295	-2.97980	0.00000	0.00000	0.00000
SUM	-2.67973	1.17528	-1.21905	-0.33354	0.00000	-0.25144

Condition **LC22=0.9D-W90**

10	-1.75886	0.79100	0.82070	-0.19389	0.00000	-0.14781
20	-1.83420	0.37145	1.77853	-0.14210	0.00000	-0.09150
68	0.68038	0.01283	-2.59923	0.00000	0.00000	0.00000
SUM	-2.91268	1.17528	0.00000	-0.33600	0.00000	-0.23932

Condition **LC23=0.9D-W120**

10	-1.49279	0.78336	0.94538	-0.19889	0.00000	-0.11788
20	-1.66014	0.37932	2.12870	-0.13866	0.00000	-0.06963
68	0.47321	0.01261	-1.85503	0.00000	0.00000	0.00000
SUM	-2.67973	1.17528	1.21905	-0.33754	0.00000	-0.18750

Condition **LC24=0.9D-W150**

10	-0.69903	0.75573	1.31054	-0.21073	0.00000	-0.07261
20	-1.09126	0.40725	2.77852	-0.12773	0.00000	-0.05185
68	0.17385	0.01230	-0.60577	0.00000	0.00000	0.00000
SUM	-1.61645	1.17528	3.48328	-0.33846	0.00000	-0.12446

Condition **LC25=1.2D+Di+WI0**

10	0.96706	1.91872	-2.55325	-0.46509	0.00000	-0.12804
20	-0.90833	0.90180	2.78591	-0.33731	0.00000	-0.09929
68	-0.05874	0.03612	0.20834	0.00000	0.00000	0.00000
SUM	0.00000	2.85664	0.44100	-0.80240	0.00000	-0.22733

Condition **LC26=1.2D+Di+WI30**

10	1.15886	1.92002	-2.79020	-0.46378	0.00000	-0.12255
20	-0.77853	0.90061	2.64713	-0.33737	0.00000	-0.09554
68	-0.11517	0.03601	0.40823	0.00000	0.00000	0.00000
SUM	0.26517	2.85664	0.26517	-0.80115	0.00000	-0.21809

Condition **LC27=1.2D+Di+WI60**

10	1.10324	1.91955	-2.75349	-0.46418	0.00000	-0.12415
20	-0.80541	0.90103	2.65536	-0.33743	0.00000	-0.09737
68	-0.08711	0.03607	0.30885	0.00000	0.00000	0.00000
SUM	0.21072	2.85664	0.21072	-0.80162	0.00000	-0.22152

Condition **LC28=1.2D+Di+WI90**

10	1.11360	1.92039	-2.82745	-0.46329	0.00000	-0.12458
20	-0.78327	0.90016	2.57451	-0.33783	0.00000	-0.09852
68	-0.07134	0.03610	0.25294	0.00000	0.00000	0.00000
SUM	0.25900	2.85664	0.00000	-0.80111	0.00000	-0.22310

Condition **LC29=1.2D+Di+WI120**

10	1.06113	1.92160	-2.84482	-0.46235	0.00000	-0.13005
20	-0.81722	0.89888	2.51637	-0.33838	0.00000	-0.10256
68	-0.03319	0.03617	0.11773	0.00000	0.00000	0.00000
SUM	0.21072	2.85664	-0.21072	-0.80073	0.00000	-0.23261

Condition **LC30=1.2D+Di+WI150**

10	1.10290	1.92184	-2.90449	-0.46245	0.00000	-0.12997
20	-0.79448	0.89866	2.48593	-0.33853	0.00000	-0.10237
68	-0.04326	0.03615	0.15340	0.00000	0.00000	0.00000
SUM	0.26517	2.85664	-0.26517	-0.80099	0.00000	-0.23234

Condition **LC31=1.2D+Di-WI0**

10	0.87527	1.92232	-2.74046	-0.46187	0.00000	-0.14097
20	-0.93403	0.89798	2.50804	-0.33882	0.00000	-0.11096
68	0.05876	0.03634	-0.20858	0.00000	0.00000	0.00000
SUM	0.00000	2.85664	-0.44100	-0.80069	0.00000	-0.25193

Condition **LC32=1.2D+Di-WI30**

10	0.68357	1.92103	-2.50334	-0.46318	0.00000	-0.14646
20	-1.06380	0.89916	2.64689	-0.33876	0.00000	-0.11471
68	0.11506	0.03645	-0.40872	0.00000	0.00000	0.00000
SUM	-0.26517	2.85664	-0.26517	-0.80194	0.00000	-0.26117

Condition **LC33=1.2D+Di-WI60**

10	0.73913	1.92150	-2.54007	-0.46277	0.00000	-0.14486
20	-1.03694	0.89875	2.63865	-0.33870	0.00000	-0.11288
68	0.08709	0.03640	-0.30930	0.00000	0.00000	0.00000
SUM	-0.21072	2.85664	-0.21072	-0.80147	0.00000	-0.25774

Condition **LC34=1.2D+Di-WI90**

10	0.72872	1.92066	-2.46604	-0.46367	0.00000	-0.14444
20	-1.05910	0.89962	2.71953	-0.33830	0.00000	-0.11174
68	0.07138	0.03637	-0.25349	0.00000	0.00000	0.00000
SUM	-0.25900	2.85664	0.00000	-0.80197	0.00000	-0.25618

Condition **LC35=1.2D+Di-WI120**

10	0.78113	1.91945	-2.44870	-0.46460	0.00000	-0.13897
20	-1.02516	0.90090	2.77765	-0.33775	0.00000	-0.10771
68	0.03330	0.03629	-0.11823	0.00000	0.00000	0.00000
SUM	-0.21072	2.85664	0.21072	-0.80235	0.00000	-0.24668

Condition **LC36=1.2D+Di-WI150**

10	0.73937	1.91921	-2.38898	-0.46450	0.00000	-0.13906
20	-1.04790	0.90112	2.80811	-0.33759	0.00000	-0.10789
68	0.04336	0.03631	-0.15396	0.00000	0.00000	0.00000
SUM	-0.26517	2.85664	0.26517	-0.80210	0.00000	-0.24695

Condition **LC37=1.2D+1.6LL1**

10	0.46256	1.32758	-1.81682	-0.32307	0.00000	-0.06416
20	-0.46256	0.62323	1.81682	-0.23414	0.00000	-0.04889
68	0.00000	0.01623	-0.00001	0.00000	0.00000	0.00000
SUM	0.00000	1.96704	0.00000	-0.55721	0.00000	-0.11304

Condition **LC38=1.2D+1.6LL2**

10	-0.32999	1.32821	-1.82025	-0.31745	0.00000	0.06169
20	0.33008	0.62261	1.81993	-0.22935	0.00000	0.05043
68	-0.00009	0.01623	0.00032	0.00000	0.00000	0.00000
SUM	0.00000	1.96704	0.00000	-0.54680	0.00000	0.11212

Condition **LC39=1.2D+1.6LL3**

10	1.25424	1.32954	-1.81936	-0.31776	0.00000	-0.19005
20	-1.25440	0.62127	1.81992	-0.23042	0.00000	-0.15037
68	0.00016	0.01623	-0.00056	0.00000	0.00000	0.00000
SUM	0.00000	1.96704	0.00000	-0.54817	0.00000	-0.34042

Condition **LC40=1.2D+WL0+1.6LLa1**

10	-1.06062	1.60323	-2.27501	-0.38183	0.00000	0.17191
20	1.07945	0.74760	2.34322	-0.27420	0.00000	0.13567
68	-0.01882	0.01622	0.06679	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	0.13500	-0.65603	0.00000	0.30758

Condition **LC41=1.2D+WL30+1.6LLa1**

10	-1.00020	1.60359	-2.34943	-0.38147	0.00000	0.17361
20	1.11955	0.74726	2.30228	-0.27421	0.00000	0.13691
68	-0.03661	0.01620	0.12988	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	0.08273	-0.65569	0.00000	0.31053

Condition **LC42=1.2D+WL60+1.6LLa1**

10	-1.02108	1.60345	-2.33629	-0.38160	0.00000	0.17307
20	1.10960	0.74739	2.30523	-0.27423	0.00000	0.13630
68	-0.02629	0.01621	0.09328	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	0.06223	-0.65583	0.00000	0.30938

Condition **LC43=1.2D+WL90+1.6LLa1**

10	-1.01777	1.60362	-2.35831	-0.38137	0.00000	0.17299
20	1.11651	0.74721	2.28120	-0.27432	0.00000	0.13601
68	-0.02173	0.01621	0.07711	0.00000	0.00000	0.00000
SUM	0.07700	2.36704	0.00000	-0.65569	0.00000	0.30900

Condition **LC44=1.2D+WL120+1.6LLa1**

10	-1.03371	1.60401	-2.36229	-0.38114	0.00000	0.17131
20	1.10601	0.74681	2.26431	-0.27451	0.00000	0.13473
68	-0.01008	0.01622	0.03575	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	-0.06223	-0.65565	0.00000	0.30604

Condition **LC45=1.2D+WL150+1.6LLa1**

10	-1.01784	1.60411	-2.38487	-0.38115	0.00000	0.17138
20	1.11440	0.74672	2.25309	-0.27456	0.00000	0.13482
68	-0.01382	0.01622	0.04904	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	-0.08273	-0.65571	0.00000	0.30619

Condition **LC46=1.2D-WL0+1.6LLa1**

10	-1.08951	1.60418	-2.33208	-0.38110	0.00000	0.16813
20	1.07105	0.74662	2.26260	-0.27464	0.00000	0.13226
68	0.01846	0.01625	-0.06552	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	-0.13500	-0.65573	0.00000	0.30038

Condition **LC47=1.2D-WL30+1.6LLa1**

10	-1.14992	1.60381	-2.25764	-0.38145	0.00000	0.16643
20	1.03095	0.74697	2.30354	-0.27462	0.00000	0.13101
68	0.03623	0.01626	-0.12863	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	-0.08273	-0.65608	0.00000	0.29744

Condition **LC48=1.2D-WL60+1.6LLa1**

10	-1.12905	1.60396	-2.27078	-0.38133	0.00000	0.16697
20	1.04090	0.74683	2.30059	-0.27460	0.00000	0.13162
68	0.02593	0.01625	-0.09203	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	-0.06223	-0.65593	0.00000	0.29859

Condition **LC49=1.2D-WL90+1.6LLa1**

10	-1.13236	1.60378	-2.24876	-0.38156	0.00000	0.16705
20	1.03399	0.74701	2.32463	-0.27451	0.00000	0.13191
68	0.02137	0.01625	-0.07587	0.00000	0.00000	0.00000
SUM	-0.07700	2.36704	0.00000	-0.65607	0.00000	0.29896

Condition **LC50=1.2D-WL120+1.6LLa1**

10	-1.11643	1.60339	-2.24478	-0.38179	0.00000	0.16873
20	1.04448	0.74742	2.34152	-0.27432	0.00000	0.13319
68	0.00972	0.01624	-0.03451	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	0.06223	-0.65611	0.00000	0.30193

Condition **LC51=1.2D-WL150+1.6LLa1**

10	-1.13230	1.60329	-2.22220	-0.38178	0.00000	0.16866
20	1.03610	0.74751	2.35274	-0.27427	0.00000	0.13311
68	0.01347	0.01624	-0.04781	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	0.08273	-0.65605	0.00000	0.30177

Condition **LC52=1.2D+WL0+1.6LLa2**

10	-0.08367	1.60310	-2.38300	-0.39194	0.00000	-0.00134
20	0.10224	0.74773	2.45211	-0.28362	0.00000	-0.00603
68	-0.01857	0.01621	0.06589	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	0.13500	-0.67556	0.00000	-0.00737

Condition **LC53=1.2D+WL30+1.6LLa2**

10	-0.02333	1.60346	-2.45731	-0.39159	0.00000	0.00036
20	0.14243	0.74738	2.41107	-0.28363	0.00000	-0.00478
68	-0.03636	0.01620	0.12897	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	0.08273	-0.67522	0.00000	-0.00442

Condition **LC54=1.2D+WL60+1.6LLa2**

10	-0.04418	1.60332	-2.44422	-0.39172	0.00000	-0.00017
20	0.13245	0.74752	2.41406	-0.28365	0.00000	-0.00539
68	-0.02604	0.01621	0.09238	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	0.06223	-0.67537	0.00000	-0.00556

Condition **LC55=1.2D+WL90+1.6LLa2**

10	-0.04088	1.60349	-2.46625	-0.39149	0.00000	-0.00026
20	0.13937	0.74734	2.39003	-0.28375	0.00000	-0.00568
68	-0.02149	0.01621	0.07622	0.00000	0.00000	0.00000
SUM	0.07700	2.36704	0.00000	-0.67523	0.00000	-0.00593

Condition **LC56=1.2D+WL120+1.6LLa2**

10	-0.05680	1.60389	-2.47027	-0.39125	0.00000	-0.00194
20	0.12886	0.74693	2.37316	-0.28393	0.00000	-0.00696
68	-0.00983	0.01622	0.03489	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	-0.06223	-0.67518	0.00000	-0.00890

Condition **LC57=1.2D+WL150+1.6LLa2**

10	-0.04096	1.60398	-2.49283	-0.39126	0.00000	-0.00187
20	0.13727	0.74684	2.36192	-0.28398	0.00000	-0.00687
68	-0.01358	0.01622	0.04818	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	-0.08273	-0.67524	0.00000	-0.00874

Condition **LC58=1.2D-WL0+1.6LLa2**

10	-0.11254	1.60405	-2.44018	-0.39119	0.00000	-0.00512
20	0.09384	0.74674	2.37154	-0.28406	0.00000	-0.00943
68	0.01870	0.01625	-0.06636	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	-0.13500	-0.67525	0.00000	-0.01454

Condition **LC59=1.2D-WL30+1.6LLa2**

10	-0.17286	1.60369	-2.36585	-0.39154	0.00000	-0.00682
20	0.05365	0.74709	2.41259	-0.28404	0.00000	-0.01067
68	0.03647	0.01627	-0.12946	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	-0.08273	-0.67559	0.00000	-0.01749

Condition **LC60=1.2D-WL60+1.6LLa2**

10	-0.15202	1.60383	-2.37895	-0.39142	0.00000	-0.00628
20	0.06363	0.74696	2.40960	-0.28402	0.00000	-0.01007
68	0.02617	0.01626	-0.09287	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	-0.06223	-0.67544	0.00000	-0.01635

Condition **LC61=1.2D-WL90+1.6LLa2**

10	-0.15532	1.60366	-2.35692	-0.39165	0.00000	-0.00620
20	0.05671	0.74713	2.43364	-0.28393	0.00000	-0.00978
68	0.02162	0.01625	-0.07672	0.00000	0.00000	0.00000
SUM	-0.07700	2.36704	0.00000	-0.67558	0.00000	-0.01598

Condition **LC62=1.2D-WL120+1.6LLa2**

10	-0.13941	1.60327	-2.35290	-0.39188	0.00000	-0.00452
20	0.06721	0.74754	2.45050	-0.28374	0.00000	-0.00850
68	0.00997	0.01624	-0.03538	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	0.06223	-0.67563	0.00000	-0.01301

Condition **LC63=1.2D-WL150+1.6LLa2**

10	-0.15525	1.60317	-2.33034	-0.39187	0.00000	-0.00459
20	0.05880	0.74763	2.46174	-0.28369	0.00000	-0.00858
68	0.01372	0.01624	-0.04867	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	0.08273	-0.67557	0.00000	-0.01317

Condition **LC64=1.2D+WL0+1.6LLa3**

10	0.93196	1.60357	-2.38284	-0.39254	0.00000	-0.11038
20	-0.91328	0.74726	2.45157	-0.28434	0.00000	-0.07905
68	-0.01868	0.01621	0.06628	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	0.13500	-0.67688	0.00000	-0.18944

Condition **LC65=1.2D+WL30+1.6LLa3**

10	0.99230	1.60393	-2.45703	-0.39220	0.00000	-0.10870
20	-0.87311	0.74692	2.41042	-0.28436	0.00000	-0.07782
68	-0.03647	0.01620	0.12934	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	0.08273	-0.67655	0.00000	-0.18652

Condition **LC66=1.2D+WL60+1.6LLa3**

10	0.97145	1.60379	-2.44398	-0.39232	0.00000	-0.10923
20	-0.88307	0.74705	2.41345	-0.28438	0.00000	-0.07842
68	-0.02615	0.01621	0.09276	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	0.06223	-0.67670	0.00000	-0.18765

Condition **LC67=1.2D+WL90+1.6LLa3**

10	0.97474	1.60396	-2.46600	-0.39209	0.00000	-0.10932
20	-0.87615	0.74688	2.38941	-0.28447	0.00000	-0.07871
68	-0.02159	0.01621	0.07658	0.00000	0.00000	0.00000
SUM	0.07700	2.36704	0.00000	-0.67656	0.00000	-0.18804

Condition **LC68=1.2D+WL120+1.6LLa3**

10	0.95881	1.60435	-2.47006	-0.39185	0.00000	-0.11101
20	-0.88665	0.74647	2.37259	-0.28466	0.00000	-0.08001
68	-0.00994	0.01622	0.03525	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	-0.06223	-0.67651	0.00000	-0.19101

Condition **LC69=1.2D+WL150+1.6LLa3**

10	0.97466	1.60445	-2.49258	-0.39186	0.00000	-0.11094
20	-0.87825	0.74638	2.36132	-0.28470	0.00000	-0.07992
68	-0.01368	0.01622	0.04853	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	-0.08273	-0.67657	0.00000	-0.19086

Condition **LC70=1.2D-WL0+1.6LLa3**

10	0.90306	1.60452	-2.44008	-0.39178	0.00000	-0.11419
20	-0.92166	0.74627	2.37108	-0.28478	0.00000	-0.08247
68	0.01860	0.01625	-0.06600	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	-0.13500	-0.67656	0.00000	-0.19666

Condition **LC71=1.2D-WL30+1.6LLa3**

10	0.84272	1.60416	-2.36587	-0.39212	0.00000	-0.11587
20	-0.96182	0.74662	2.41224	-0.28477	0.00000	-0.08371
68	0.03637	0.01627	-0.12909	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	-0.08273	-0.67689	0.00000	-0.19958

Condition **LC72=1.2D-WL60+1.6LLa3**

10	0.86357	1.60430	-2.37893	-0.39200	0.00000	-0.11534
20	-0.95186	0.74648	2.40921	-0.28474	0.00000	-0.08311
68	0.02606	0.01626	-0.09250	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	-0.06223	-0.67674	0.00000	-0.19845

Condition **LC73=1.2D-WL90+1.6LLa3**

10	0.86027	1.60413	-2.35691	-0.39223	0.00000	-0.11525
20	-0.95878	0.74666	2.43325	-0.28465	0.00000	-0.08281
68	0.02151	0.01625	-0.07634	0.00000	0.00000	0.00000
SUM	-0.07700	2.36704	0.00000	-0.67688	0.00000	-0.19806

Condition **LC74=1.2D-WL120+1.6LLa3**

10	0.87620	1.60374	-2.35285	-0.39247	0.00000	-0.11356
20	-0.94828	0.74707	2.45007	-0.28446	0.00000	-0.08152
68	0.00986	0.01624	-0.03500	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	0.06223	-0.67693	0.00000	-0.19508

Condition **LC75=1.2D-WL150+1.6LLa3**

10	0.86035	1.60364	-2.33032	-0.39246	0.00000	-0.11363
20	-0.95669	0.74716	2.46134	-0.28442	0.00000	-0.08161
68	0.01361	0.01624	-0.04829	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	0.08273	-0.67687	0.00000	-0.19524

Condition **LC76=1.2D+WL0+1.6LLa4**

10	2.02676	1.60469	-2.38743	-0.38384	0.00000	-0.27290
20	-2.00823	0.74619	2.45666	-0.27657	0.00000	-0.21233
68	-0.01854	0.01617	0.06577	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	0.13500	-0.66040	0.00000	-0.48523

Condition **LC77=1.2D+WL30+1.6LLa4**

10	2.08710	1.60507	-2.46160	-0.38351	0.00000	-0.27119
20	-1.96804	0.74586	2.41544	-0.27658	0.00000	-0.21107
68	-0.03633	0.01611	0.12889	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	0.08273	-0.66010	0.00000	-0.48225

Condition **LC78=1.2D+WL60+1.6LLa4**

10	2.06624	1.60491	-2.44855	-0.38363	0.00000	-0.27173
20	-1.97800	0.74598	2.41848	-0.27661	0.00000	-0.21168
68	-0.02601	0.01615	0.09229	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	0.06223	-0.66024	0.00000	-0.48341

Condition **LC79=1.2D+WL90+1.6LLa4**

10	2.06952	1.60508	-2.47056	-0.38340	0.00000	-0.27182
20	-1.97107	0.74581	2.39443	-0.27670	0.00000	-0.21197
68	-0.02145	0.01616	0.07612	0.00000	0.00000	0.00000
SUM	0.07700	2.36704	0.00000	-0.66010	0.00000	-0.48380

Condition **LC80=1.2D+WL120+1.6LLa4**

10	2.05356	1.60546	-2.47461	-0.38315	0.00000	-0.27352
20	-1.98154	0.74539	2.37761	-0.27688	0.00000	-0.21328
68	-0.00980	0.01620	0.03477	0.00000	0.00000	0.00000
SUM	0.06223	2.36704	-0.06223	-0.66003	0.00000	-0.48680

Condition **LC81=1.2D+WL150+1.6LLa4**

10	2.06940	1.60556	-2.49712	-0.38316	0.00000	-0.27344
20	-1.97312	0.74530	2.36632	-0.27693	0.00000	-0.21318
68	-0.01355	0.01619	0.04807	0.00000	0.00000	0.00000
SUM	0.08273	2.36704	-0.08273	-0.66009	0.00000	-0.48662

Condition **LC82=1.2D-WL0+1.6LLa4**

10	1.99778	1.60558	-2.44463	-0.38305	0.00000	-0.27673
20	-2.01652	0.74517	2.37615	-0.27699	0.00000	-0.21577
68	0.01874	0.01629	-0.06652	0.00000	0.00000	0.00000
SUM	0.00000	2.36704	-0.13500	-0.66004	0.00000	-0.49251

Condition **LC83=1.2D-WL30+1.6LLa4**

10	1.93745	1.60520	-2.37045	-0.38338	0.00000	-0.27845
20	-2.05670	0.74550	2.41738	-0.27697	0.00000	-0.21704
68	0.03652	0.01635	-0.12966	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	-0.08273	-0.66035	0.00000	-0.49549

Condition **LC84=1.2D-WL60+1.6LLa4**

10	1.95830	1.60536	-2.38351	-0.38326	0.00000	-0.27791
20	-2.04674	0.74537	2.41433	-0.27695	0.00000	-0.21643
68	0.02621	0.01632	-0.09305	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	-0.06223	-0.66021	0.00000	-0.49433

Condition **LC85=1.2D-WL90+1.6LLa4**

10	1.95501	1.60519	-2.36149	-0.38349	0.00000	-0.27781
20	-2.05368	0.74555	2.43839	-0.27686	0.00000	-0.21613
68	0.02166	0.01630	-0.07690	0.00000	0.00000	0.00000
SUM	-0.07700	2.36704	0.00000	-0.66035	0.00000	-0.49394

Condition **LC86=1.2D-WL120+1.6LLa4**

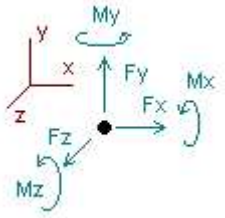
10	1.97097	1.60481	-2.35744	-0.38374	0.00000	-0.27611
20	-2.04321	0.74597	2.45521	-0.27668	0.00000	-0.21483
68	0.01001	0.01626	-0.03555	0.00000	0.00000	0.00000
SUM	-0.06223	2.36704	0.06223	-0.66042	0.00000	-0.49094

Condition **LC87=1.2D-WL150+1.6LLa4**

10	1.95513	1.60471	-2.33492	-0.38373	0.00000	-0.27619
20	-2.05162	0.74606	2.46650	-0.27663	0.00000	-0.21492
68	0.01376	0.01628	-0.04885	0.00000	0.00000	0.00000
SUM	-0.08273	2.36704	0.08273	-0.66036	0.00000	-0.49112

Envelope for nodal reactions

Note.- **Ic** is the controlling load condition



Direction of positive forces and moments

Envelope of nodal reactions for :

LC1=1.2D+Wo
LC2=1.2D+W30
LC3=1.2D+W60
LC4=1.2D+W90
LC5=1.2D+W120
LC6=1.2D+W150
LC7=1.2D-Wo
LC8=1.2D-W30
LC9=1.2D-W60
LC10=1.2D-W90
LC11=1.2D-W120
LC12=1.2D-W150
LC13=0.9D+Wo
LC14=0.9D+W30
LC15=0.9D+W60
LC16=0.9D+W90
LC17=0.9D+W120
LC18=0.9D+W150
LC19=0.9D-Wo
LC20=0.9D-W30
LC21=0.9D-W60
LC22=0.9D-W90
LC23=0.9D-W120
LC24=0.9D-W150
LC25=1.2D+Di+WI0
LC26=1.2D+Di+WI30
LC27=1.2D+Di+WI60
LC28=1.2D+Di+WI90
LC29=1.2D+Di+WI120

LC30=1.2D+Di+WI150
LC31=1.2D+Di-WI0
LC32=1.2D+Di-WI30
LC33=1.2D+Di-WI60
LC34=1.2D+Di-WI90
LC35=1.2D+Di-WI120
LC36=1.2D+Di-WI150
LC37=1.2D+1.6LL1
LC38=1.2D+1.6LL2
LC39=1.2D+1.6LL3
LC40=1.2D+WL0+1.6LLa1
LC41=1.2D+WL30+1.6LLa1
LC42=1.2D+WL60+1.6LLa1
LC43=1.2D+WL90+1.6LLa1
LC44=1.2D+WL120+1.6LLa1
LC45=1.2D+WL150+1.6LLa1
LC46=1.2D-WL0+1.6LLa1
LC47=1.2D-WL30+1.6LLa1
LC48=1.2D-WL60+1.6LLa1
LC49=1.2D-WL90+1.6LLa1
LC50=1.2D-WL120+1.6LLa1
LC51=1.2D-WL150+1.6LLa1
LC52=1.2D+WL0+1.6LLa2
LC53=1.2D+WL30+1.6LLa2
LC54=1.2D+WL60+1.6LLa2
LC55=1.2D+WL90+1.6LLa2
LC56=1.2D+WL120+1.6LLa2
LC57=1.2D+WL150+1.6LLa2
LC58=1.2D-WL0+1.6LLa2
LC59=1.2D-WL30+1.6LLa2
LC60=1.2D-WL60+1.6LLa2
LC61=1.2D-WL90+1.6LLa2
LC62=1.2D-WL120+1.6LLa2
LC63=1.2D-WL150+1.6LLa2
LC64=1.2D+WL0+1.6LLa3
LC65=1.2D+WL30+1.6LLa3
LC66=1.2D+WL60+1.6LLa3
LC67=1.2D+WL90+1.6LLa3
LC68=1.2D+WL120+1.6LLa3
LC69=1.2D+WL150+1.6LLa3
LC70=1.2D-WL0+1.6LLa3
LC71=1.2D-WL30+1.6LLa3
LC72=1.2D-WL60+1.6LLa3
LC73=1.2D-WL90+1.6LLa3
LC74=1.2D-WL120+1.6LLa3
LC75=1.2D-WL150+1.6LLa3
LC76=1.2D+WL0+1.6LLa4
LC77=1.2D+WL30+1.6LLa4
LC78=1.2D+WL60+1.6LLa4
LC79=1.2D+WL90+1.6LLa4
LC80=1.2D+WL120+1.6LLa4
LC81=1.2D+WL150+1.6LLa4
LC82=1.2D-WL0+1.6LLa4
LC83=1.2D-WL30+1.6LLa4
LC84=1.2D-WL60+1.6LLa4
LC85=1.2D-WL90+1.6LLa4
LC86=1.2D-WL120+1.6LLa4
LC87=1.2D-WL150+1.6LLa4

Node		Forces						Moments					
		Fx [Kip]	**lc**	**Fy** [Kip]	**lc**	**Fz** [Kip]	**lc**	**Mx** [Kip*ft]	**lc**	**My** [Kip*ft]	**lc**	**Mz** [Kip*ft]	**lc**
10	Max	2.576	LC4	1.922	LC31	1.311	LC24	-0.16846	LC19	0.00000	LC1	0.17361	LC41
	Min	-1.759	LC22	0.753	LC13	-3.723	LC6	-0.46509	LC25	0.00000	LC1	-0.27845	LC83
20	Max	1.142	LC16	0.902	LC25	3.124	LC12	-0.12576	LC13	0.00000	LC1	0.13691	LC41
	Min	-2.057	LC83	0.335	LC19	-0.704	LC18	-0.33882	LC31	0.00000	LC1	-0.21704	LC83
68	Max	0.786	LC9	0.036	LC32	2.970	LC3	0.00000	LC1	0.00000	LC1	0.00000	LC1
	Min	-0.798	LC3	0.012	LC15	-2.980	LC9	0.00000	LC1	0.00000	LC1	0.00000	LC1

Connection Check

Date: 4/4/2023
Project Name: MONTVILLE EAST
Project No.: CT2171
Designed By: CL **Checked By:** MSC

CHECK CONNECTION CAPACITY (Worst Case)

Reference: AISC Steel Construction Manual 14th Edition (ASD)

Bolt Type = A36 1/2" Threaded Rod

Allowable Tensile Load =

F_{Tall} = 4271 lbs.

Allowable Shear Load =

F_{Vall}= 2562 lbs.

TENSILE FORCES

Reaction **F =** 3723 lbs. (See Bentley Output)

SHEAR FORCES

Reactions in X direction: 2576 lbs. (See Bentley Output)
Reactions in Y direction: 1922 lbs. (See Bentley Output)

Resultant: 3214 lbs.

No. of Supports = 1
No. of Bolts / Support = 4

Tension Design Load /Bolts =

f_t= 930.75 lbs. < 4271 lbs. **Therefore, OK !**

Shear Design Load / Bolts=

f_v= 803.50 lbs. < 2562 lbs. **Therefore, OK !**

CHECK COMBINED TENSION AND SHEAR

f_t / F_T	+	f_v / F_V	≤	1.0			
0.218	+	0.314	=	0.532	<	1.0	**Therefore, OK !**