August 21, 2018

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

Re: **"Change" Notice of Exempt Modification – Antenna**
Add Property Address: **497 Old Post Road Tolland, CT 06084**
Applicant: **AT&T Mobility, LLC**

Dear Ms. Bachman:

On behalf of AT&T, please accept this change to the original application as notification pursuant to R.C.S.A.§16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16- 50j-72(b) (2).

During pre-construction, a situation arose regarding installing the new required mounts at the existing rad center. The guyed wires would not allow access to install properly and posed potential interference issues. The solution was to lower the rad center (6') six feet to (120') one hundred and twenty feet. This adjustment was approved by AT&T RF and we are informing the council of this change as required.

Sincerely,

David Barbagallo

Enclosures
CC w/enclosures:
Steven Werbner, Town Manager - as elected official
Heidi Samokar, AICP Director of Planning & Development
Paul Flynn, an individual - as tower and property owner

STRUCTURAL CALCULATIONS

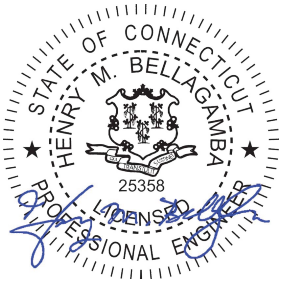
Prepared for: Smartlink / AT&T LTE 3C/4C Retrofit

New Antenna and Equipment Installation on Existing Guyed Tower

Site No: CTL01047
FA No: 10035268
PTN No: 2051A0DAYH/2051A0DB6D/2051A0DB2G
Pace No: MRCTB025508/MRCTB025569/MRCTB025612
Site Name: Tolland West
497 Old Post Rd.
Tolland, CT 06084

February 12, 2018

Revision 1



Henry M. Bellagamba, P.E.

FULLERTON
ENGINEERING · DESIGN

Fullerton Engineering Consultants, Inc.
1100 E. Woodfield Road, Suite 500
Schaumburg, IL 60173
Tel: 847.908.8400
www.fullertonengineering.com

Project Number: 2017.0278.0002

Summary

A rigorous structural analysis was performed by Fullerton, as requested by the client, to determine the conformance of existing structure with the governing building code, 2016 Connecticut State Building Code, 2012 International Building Code and the industry standard, ANSI/TIA-222-G (Structural Standard for Steel Antenna Supporting Structures and Antennas). The analysis considers the tower properties, existing and proposed appurtenances and the required loading criteria.

Conclusion

- The tower member stresses are in conformance for the loading considered.
- The tower base foundation is in conformance for the loading considered.
  Note:
  The foundation capacity used for the reaction comparison has been based on the original tower and foundation design referenced in the Structural Analysis Report by Destek Engineering, LLC., job No.1629004, dated 09/29/2016.

Analysis Data

The following is based on information provided by the client, field investigation, and other determination by Fullerton Engineering Consultants or third parties.

Configuration	150 ft. guyed tower with a 1.5' face width.
References	Structural Analysis Report by Fullerton Engineering Consultants., job No.2017.0278.0002, dated 12/05/2017.
	Sprint RF Design Loading by Ramaker & Associates, Inc., project No.23002, dated 12/07/2017.
	RF Design Sheet (final revision) by AT&T, dated 09/14/2017.
	Structural Analysis Report (rev.3) by Destek Engineering, LLC., job No.1629004, dated 09/29/2016.

Appurtenance Loading Schedule

ELEV. (FT.=AGL)	APPURTENANCE	TRANSMISSION LINES
	Proposed AT&T	
120’	(2) CCI HPA-65R-BUU-H8 antennas (1) CCI HPA-65R-BUU-H6 antenna (6) RRUS-32 B30 units (2) RRUS-4478 B14 units (1) Raycap DC6-48-60-0-8F unit Mounted on new (3) SF-SU12-3-96 Sector Frames	(1) 3/8” Fiber (2) 3/4" DC Power
	Existing AT&T (to be Relocated)	
120’	(1) CCI HPA-65R-BUU-H6 antenna (2) CCI HPA-65R-BUU-H8 antennas (2) SBNH-1D6565C antennas (3) RRUS-11 units (2) CCI DTMABP7819VG12A TMA units (1) Raycap DC6-48-60-18-8F unit Mounted relocated on proposed (3) Sector Frames	(1) 3/8” Fiber (2) 3/4" DC Power (4) 1-1/4” Coax
	Existing AT&T (to be Removed)	
126’	(3) RRUS-12 units with A2 modules Mounted on proposed (3) Pipe Frames	
	Proposed Sprint	
147’	(3) Commscope DT465B-2XR antennas (3) ALU 800 MHz RRH2x50 units (3) ALU TD-RRH8x20-25 units Mounted on (3) Sector Frames	(1) 1-1/4” Hybrid
	Existing Sprint (to Remain)	
147’	(3) RFS APXVSPP18-C-A20 antennas (3) ALU 1900 MHz RRH units (3) ALU 800 MHz RRH units Mounted on (3) Sector Frames	(3) 1-1/4” Hybrid
	Existing (to Remain)	
167.5’	(1) 15' DiPole antenna Mounted on tower leg	
155’	(1) 10' DiPole antenna Mounted on tower leg	
150.5’	(1) 15' DiPole antenna Mounted on (1) stand-off mount to tower leg	(1) 1-5/8” Coax
148’	(1) 10' DiPole antenna Mounted on (1) stand-off mount to tower leg	
134’	(1) 6' Omni antenna Mounted on (1) stand-off mount to tower leg	(2) 7/8” Coax
122’	(1) 4' Yagi antenna Mounted on tower leg	(1) 3/8” Coax

116’	(3) RFS APXV18-206517 antennas Mounted on (1) stand-off mount to tower leg	(6) 1-1/4” Coax
92’	(1) 10' Omni antenna Mounted on tower leg	(1) 1-1/4” Coax
88.5’	(1) 15' Omni antenna Mounted on (1) stand-off mount to tower leg	(1) 1/2” Coax
53’	(1) 8' DiPole antenna Mounted on (1) stand-off mount to tower leg	(1) 1/4” Coax
52’	(1) GPS antenna Mounted on existing (1) stand-off mount frame	(1) 1/2” Coax
34’	(1) 6' Whip Mounted on existing (1) stand-off mount frame	(1) 1/4” Coax

Results

The results of the structural analysis are summarized as follows:

Tower mast

The tower leg members are **adequate** for new loads, with a maximum stress ratio of 95.1% @ Elev. 80'-100' AGL

The tower main diagonal members are **adequate** for new loads, with a maximum stress ratio of 90.8% @ Elev. 120'-140' AGL.

The tower top girt members are **adequate** for new loads, with a maximum stress ratio of 33.2% @ Elev. 140' AGL.

The tower middle girt members are **adequate** for new loads, with a maximum stress ratio of 14.5% @ Elev. 50' AGL.

The tower bottom girt members are **adequate** for new loads, with a maximum stress ratio 25.3% @ Elev. 140' AGL.

Guy Wires

The tower guy wires are **adequate** for new loads, with a maximum stress ratio of 76.2% @ Elev. 138.264' AGL.
**All existing guy wires shall be tensioned to correspond with an initial tension of 10% of the manufacturer's breaking strength of the strand at an ambient temperature of 60°F.*

The tower top guy torque arm is **adequate** for new loads, with a maximum stress ratio of 55.7% @ Elev. 138.264' AGL.

The tower bottom guy torque arm is **adequate** for new loads, with a maximum stress ratio of 67.1% @ Elev. 138.264' AGL.

Foundation

The tower foundations are **adequate** for new loads.

	Forces	Original Design Reactions		Current Analysis Reactions (Factored)	Result
		(Un-	(Factored)		
Tower base	**Download**	118.0 kip	159.3 kip	142.93 kip	89.72% Pass ✔
	Shear	2.6 kip	3.51 kip	1.24 kip	35.33% Pass ✔
Guy Anchors (max. Guy C)	**Uplift**	71.8 kip	96.93 kip	69.19 kip	71.38% Pass ✔
	Shear	35.5 kip	47.93 kip	27.34 kip	57.04% Pass ✔

Notes:

1. Original Design Reactions have been multiplied by a factor of 1.35 per ANSI/TIA-222-G Section 15.5.
2. The analysis reactions are less than the design reactions. According to ANSI/TIA-222-G Section 15.4 **no foundation modifications are required**.

Assumptions

This analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. The analysis is based solely on the information supplied, and the results, in turn, are only as accurate as data extracted from this information. Fullerton has been instructed by the client to assume the information supplied is accurate, and Fullerton has made no independent determination of its accuracy. The exception to the previous statement is if Fullerton has been contracted by the client to provide an independent structural mapping report of the tower and related appurtenances, in which case Fullerton has made an independent determination of the accuracy of the information resulting from the mapping report.

- The tower member sizes and geometry are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and stated in the materials section.
- The existing tower is assumed to have been properly maintained in accordance with the TIA/EIA standard and/or its original manufacturer's recommendations. The existing tower is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The antenna configuration is as supplied and/or stated in the analysis section. It is assumed to be complete and accurate. All antennas, mounts, remote radios, cables and cable supports are assumed to be properly installed and supported as per the manufacturer's requirements.
- The antennas, mounts, remote radios, cables and cable supports and lines stated in the appurtenance loading schedule represent Fullerton's understanding of the overall antenna configuration. If the actual configuration is different than above, then this analysis is invalid. Please refer to this report for the projected wind areas used in the calculations for antennas and mounts. If variations or discrepancies are identified, please inform Fullerton.
- Some assumptions are made regarding antenna and mount sizes and their projected areas based on a best interpretation of the data supplied and a best knowledge of antenna type and industry practice.
- The existing foundation is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The soil parameters are as per data supplied, or as assumed, and stated in the calculations.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are assumed to be as per date supplied/ available, to be properly installed and to be fully effective.

Scope and Limitations

The engineering services rendered by Fullerton Engineering Consultants, Inc. (Fullerton) in connection with this structural analysis are limited to an analysis of the structure, size and capacity of its members. Fullerton does not analyze the fabrication, including welding and connection capacities, except as included in this report.

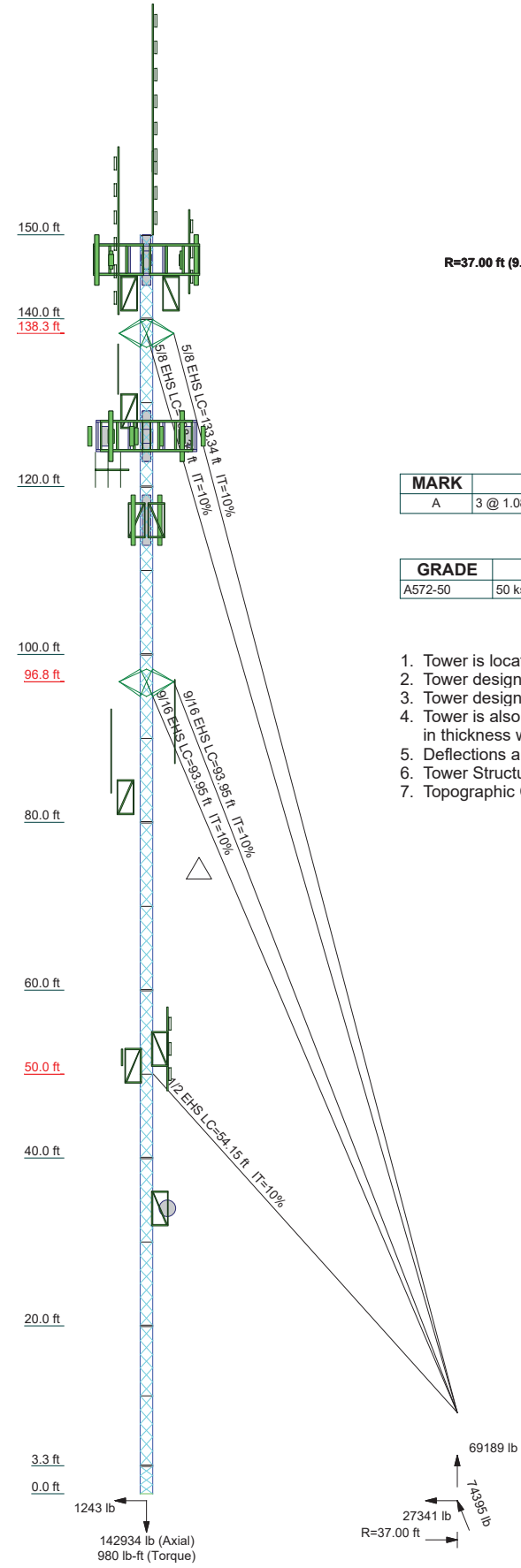
The information and conclusions contained in this report were determined by application of the current engineering standards and analysis procedures and formulae, and Fullerton assumes no obligation to revise any of the information or conclusions contained in this report in the event such engineering and analysis procedures and formulae are hereafter modified or revised.

Fullerton makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies or the “as-built” condition of this tower. Fullerton will not be responsible whatsoever for or on account of consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report.

Installation procedures and loading are not within the scope of this report and should be performed and evaluated by a competent tower erection contractor.

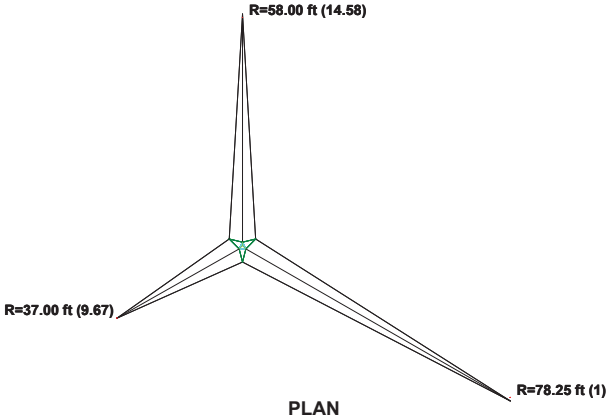
Section 1

Structural Calculations



Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Mid Girts	Bottom Girts	Face Width (ft)	# Panels @ (ft)	Weight (lb)
T1	SR 1 3/4	A572-50	SR 5/8	A572-50	SR 3/4	SR 3/4	SR 3/4	1.5	72 @ 1.65278	6 @ 1.63889
T2										887.4
T3										713.1
T4										887.5
T5										713.1
T6										713.1
T7										713.1
T8									10 @ 1.65033	597.8
T9						N.A.	N.A.		A	129.5
						N.A.				359.7
										5714.2

ALL REACTIONS ARE FACTORED



PLAN

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	3 @ 1.08222		

MATERIAL STRENGTH

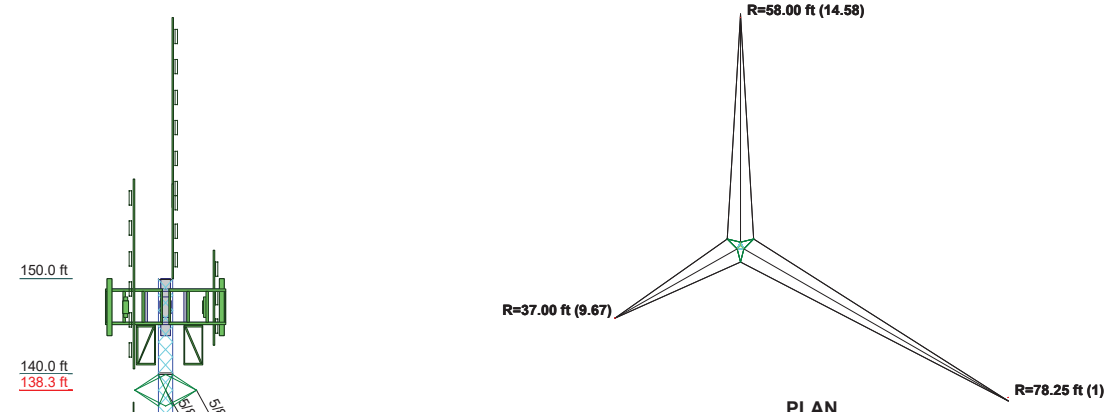
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

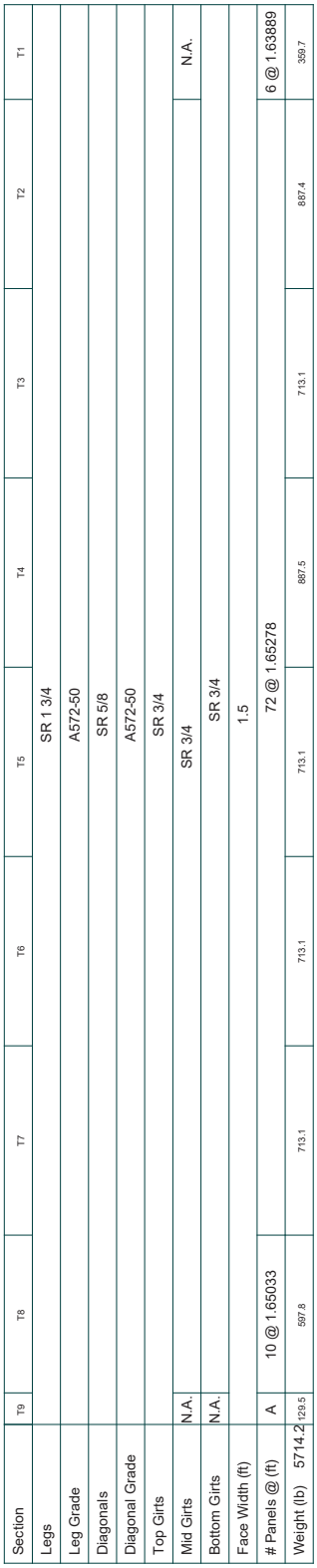
TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G 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 Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

Fullerton Engineering Consultants
1100 E. Woodfield Road, Suite 500
Schaumburg, IL 60173
Phone: (847) 908-8400
FAX: fax@fullertonengineering.com

Job: ***CTL01047***			
Project: ***150 ft. Guyed Tower***			
Client: Smartlink / AT&T	Drawn by: VY		App'd:
Code: TIA-222-G	Date: 12/12/18		Scale: NTS
Path:			Dwg No. E-1





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
15' - 4 Element DiPole	167.5	RRUS-11	120
10' DiPole	155	RRUS-11	120
15' - 4 Element DiPole	150.5	RRUS-11	120
10' DiPole	148	CCI DTMABP7819VG12A TMA	120
PiROD 12' T-Frame	147	CCI DTMABP7819VG12A TMA	120
PiROD 12' T-Frame	147	Raycap DC6-48-60-18-8F	120
PiROD 12' T-Frame	147	SM1303-1	120
RFS APXVSPP18-C-A20	147	SM1303-1	120
RFS APXVSPP18-C-A20	147	SM1303-1	120
RFS APXVSPP18-C-A20	147	CCI HPA-65R-BUU-H6	120
Commscope DT465B-2XR	147	CCI HPA-65R-BUU-H8	120
Commscope DT465B-2XR	147	CCI HPA-65R-BUU-H8	120
Commscope DT465B-2XR	147	(2) RRUS-32 B30	120
ALU RRH2x50-800	147	(2) RRUS-32 B30	120
ALU RRH2x50-800	147	(2) RRUS-32 B30	120
ALU RRH2x50-800	147	RRUS-4478 B14	120
ALU 800 MHz RRH	147	RRUS-4478 B14	120
ALU 800 MHz RRH	147	Raycap DC6-48-60-0-8F	120
ALU 800 MHz RRH	147	Yagi (4 ft)	122
ALU TD-RRH8x20-25	147	RFS APXV18-206517S	116
ALU TD-RRH8x20-25	147	RFS APXV18-206517S	116
ALU TD-RRH8x20-25	147	RFS APXV18-206517S	116
ALU 1900 MHz RRH	147	SO309-1	116
ALU 1900 MHz RRH	147	SO309-1	116
ALU 1900 MHz RRH	147	SO309-1	116
SO307-1	143	10' Omni	92
SO311-1	143	15' Omni	88.5
6' Omni	134	SO312-1	83
SO311-1	129	8' Omni	53
CCI HPA-65R-BUU-H6	120	SO310-1	53
CCI HPA-65R-BUU-H8	120	GPS	52
CCI HPA-65R-BUU-H8	120	SO310-1	51
Commscope SBNH-1D6565C	120	SO310-1	34
Commscope SBNH-1D6565C	120	Commscope VHLP2-180	34

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	3 @ 1.08222		

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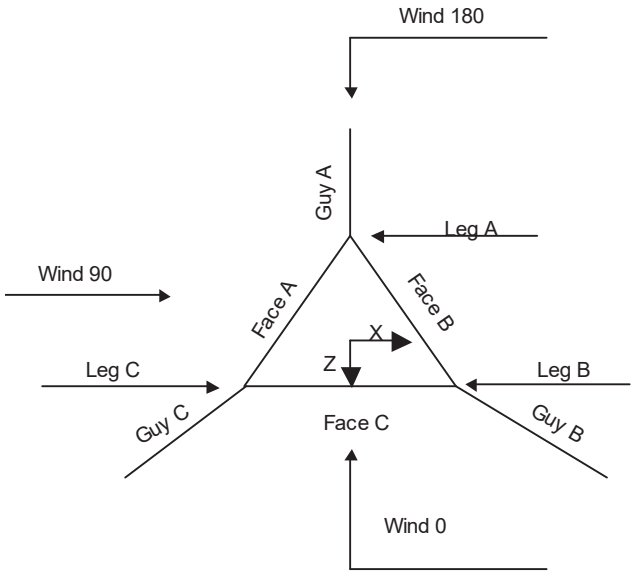
Job: ***CTL01047***			
Project: ***150 ft. Guyed Tower***			
Client: Smartlink / AT&T	Drawn by: VY		App'd:
Code: TIA-222-G	Date: 12/12/18		Scale: NTS
Path:			Dwg No. E-1

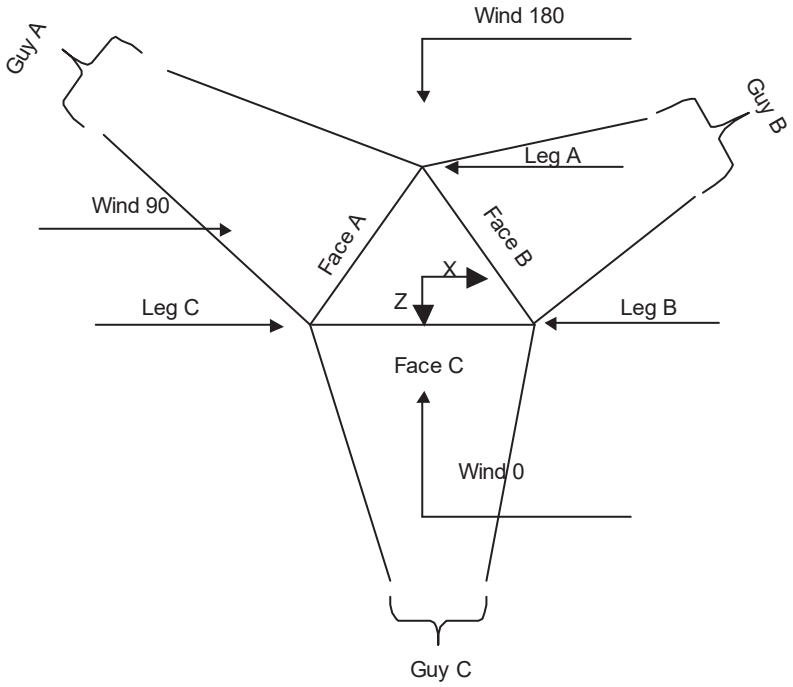
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 150.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 1.50 ft at the top and 1.50 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Tolland County, Connecticut.
Basic wind speed of 105 mph.
Structure Class II.
Exposure Category B.
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.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	150.00-140.00			1.50	1	10.00
T2	140.00-120.00			1.50	1	20.00
T3	120.00-100.00			1.50	1	20.00
T4	100.00-80.00			1.50	1	20.00
T5	80.00-60.00			1.50	1	20.00
T6	60.00-40.00			1.50	1	20.00
T7	40.00-20.00			1.50	1	20.00
T8	20.00-3.33			1.50	1	16.67
T9	3.33-0.00			1.50	1	3.33

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	150.00-140.00	1.64	CX Brace	No	No	1.0000	1.0000
T2	140.00-120.00	1.65	CX Brace	No	No	1.0000	1.0000
T3	120.00-100.00	1.65	CX Brace	No	No	1.0000	1.0000
T4	100.00-80.00	1.65	CX Brace	No	No	1.0000	1.0000
T5	80.00-60.00	1.65	CX Brace	No	No	1.0000	1.0000
T6	60.00-40.00	1.65	CX Brace	No	No	1.0000	1.0000
T7	40.00-20.00	1.65	CX Brace	No	No	1.0000	1.0000
T8	20.00-3.33	1.65	CX Brace	No	No	1.0000	1.0000
T9	3.33-0.00	1.08	CX Brace	No	No	1.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 150.00-140.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T2 140.00-120.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T3 120.00-100.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T4 100.00-80.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T5 80.00-60.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T6 60.00-40.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T7 40.00-20.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T8 20.00-3.33	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 ksi)
T9 3.33-0.00	Solid Round	1 3/4	A572-50 (50 ksi)	Solid Round	5/8	A572-50 (50 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 150.00-140.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 140.00-120.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T3 120.00-100.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T4 100.00-80.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T5 80.00-60.00	Solid Round	3/4	A572-50	Solid Round	3/4	A572-50

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 60.00-40.00	Solid Round	3/4	(50 ksi) A572-50 (50 ksi)	Solid Round	3/4	(50 ksi) A572-50 (50 ksi)
T7 40.00-20.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T8 20.00-3.33	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T9 3.33-0.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		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
T2 140.00-120.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T3 120.00-100.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T4 100.00-80.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T5 80.00-60.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T6 60.00-40.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T7 40.00-20.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)
T8 20.00-3.33	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 150.00-140.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 140.00-120.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 120.00-100.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 100.00-80.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 80.00-60.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 60.00-40.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 40.00-20.00	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T8 20.00-3.33	0.00	0.6250	(36 ksi) A36	1	1	1.05	36.0000	36.0000	36.0000
T9 3.33-0.00	0.00	0.6250	(36 ksi) A36	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	0.5	1	1	1	1	0.5	1
150.00-140.00				0.5	1	1	1	1	0.5	1
T2	No	No	1	0.5	1	1	1	1	0.5	1
140.00-120.00				0.5	1	1	1	1	0.5	1
T3	No	No	1	0.5	1	1	1	1	0.5	1
120.00-100.00				0.5	1	1	1	1	0.5	1
T4	No	No	1	0.5	1	1	1	1	0.5	1
100.00-80.00				0.5	1	1	1	1	0.5	1
T5	No	No	1	0.5	1	1	1	1	0.5	1
80.00-60.00				0.5	1	1	1	1	0.5	1
T6	No	No	1	0.5	1	1	1	1	0.5	1
60.00-40.00				0.5	1	1	1	1	0.5	1
T7	No	No	1	0.5	1	1	1	1	0.5	1
40.00-20.00				0.5	1	1	1	1	0.5	1
T8 20.00-3.33	No	No	1	0.5	1	1	1	1	0.5	1
				0.5	1	1	1	1	0.5	1
T9 3.33-0.00	No	No	1	0.5	1	1	1	1	0.5	1
				0.5	1	1	1	1	0.5	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
150.00-140.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
140.00-120.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
120.00-100.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T4 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-3.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 3.33-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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 %
138.264	EHS	A	5/8	4240.00	10%	21000	0.813	135.74	58.00	0.0000	14.58	100%
		B	5/8	4240.00	10%	21000	0.813	156.98	78.25	0.0000	1.00	100%
		C	5/8	4240.00	10%	21000	0.813	133.23	37.00	0.0000	9.67	100%
96.75	EHS	A	9/16	3500.00	10%	21000	0.671	99.48	58.00	0.0000	14.58	100%
		B	9/16	3500.00	10%	21000	0.671	122.42	78.25	0.0000	1.00	100%
		C	9/16	3500.00	10%	21000	0.671	93.87	37.00	0.0000	9.67	100%
50	EHS	A	1/2	2690.00	10%	21000	0.517	67.17	58.00	0.0000	14.58	100%
		B	1/2	2690.00	10%	21000	0.517	91.52	78.25	0.0000	1.00	100%
		C	1/2	2690.00	10%	21000	0.517	54.10	37.00	0.0000	9.67	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
138.264	Torque Arm	6.50	14.0000	Wing	A53-B-35 (35 ksi)	Pipe	P2x.154
96.75	Torque Arm	6.50	14.0000	Wing	A53-B-35 (35 ksi)	Pipe	P2x.154
50	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
138.26	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
96.75	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
50.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Channel	

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
138.264	110.36	127.62	108.31		1.75 2.3 sec/pulse	2.33 2.6 sec/pulse	1.68 2.2 sec/pulse	
96.75	66.75	82.14	62.99		0.94 1.7 sec/pulse	1.42 2.1 sec/pulse	0.84 1.6 sec/pulse	
50	34.72	47.31	27.97		0.43 1.1 sec/pulse	0.80 1.5 sec/pulse	0.28 0.9 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
138.264	Yes	Yes	1	1	1	1	1	1
96.75	Yes	Yes	1	1	1	1	1	1
50	Yes	Yes			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
138.264	0.5000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
96.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
50	0.5000 A325N	3	0.0000	1	0.7500 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
138.264	A	76.42	22	5	2.1752
	B	69.63	21	5	2.1551
	C	73.97	22	5	2.1681
96.75	A	55.67	20	5	2.1074
	B	48.88	19	4	2.0801
	C	53.21	20	4	2.0979
50	A	32.29	17	4	1.9957
	B	25.50	17	4	1.9491
	C	29.84	17	4	1.9799

Guy-Tensioning Information

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning: 0 F Initial Tension lb	0 F Intercept ft	20 F Initial Tension lb	20 F Intercept ft	40 F Initial Tension lb	40 F Intercept ft	60 F Initial Tension lb	60 F Intercept ft	80 F Initial Tension lb	80 F Intercept ft	100 F Initial Tension lb	100 F Intercept ft	120 F Initial Tension lb	120 F Intercept ft
138.264	A	56.22	123.68	4568	1.62	4458	1.66	4349	1.70	4240	1.75	4131	1.79	4022	1.84	3914	1.89
	B	76.44	137.26	4690	2.11	4539	2.18	4390	2.26	4240	2.33	4091	2.42	3942	2.51	3794	2.61
	C	35.27	128.59	4375	1.63	4330	1.65	4285	1.66	4240	1.68	4195	1.70	4150	1.72	4106	1.74
96.75	A	56.22	82.17	4004	0.82	3835	0.86	3668	0.90	3500	0.94	3333	0.99	3166	1.04	2999	1.10
	B	76.44	95.75	4111	1.21	3906	1.28	3703	1.35	3500	1.42	3298	1.51	3097	1.61	2897	1.72
	C	35.27	87.08	3724	0.79	3649	0.80	3575	0.82	3500	0.84	3426	0.86	3351	0.88	3277	0.90
50	A	57.13	35.42	3570	0.33	3276	0.36	2983	0.39	2690	0.43	2399	0.48	2109	0.55	1822	0.64
	B	77.38	49.00	3554	0.61	3265	0.66	2977	0.72	2690	0.80	2405	0.90	2123	1.01	1846	1.17
	C	36.13	40.33	3235	0.23	3053	0.25	2871	0.26	2690	0.28	2509	0.30	2328	0.32	2147	0.35

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	150.00 - 6.00	0.0000	0	1	1	1.9800	1.9800		0.82
1-1/4" Hybriflex	A	No	Ar (CaAa)	145.00 - 6.00	0.0000	0.42	4	4	1.2500	1.2500		1.05
LDF5-50A (7/8 FOAM)	B	No	Ar (CaAa)	129.00 - 6.00	0.0000	0	2	2	0.5000	1.0900		0.33
LDF6-50A (1-1/4 FOAM)	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.45	4	4	1.5500	1.5500		0.66
3/4" DC power cable	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.42	2	2	0.5000	0.7500		0.40
3/8" Fiber	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.41	1	1	0.4000	0.4000		0.08
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	122.00 - 6.00	0.0000	0	1	1	0.4400	0.4400		0.08
LDF6-50A (1-1/4 FOAM)	A	No	Ar (CaAa)	115.00 - 6.00	0.0000	0.4	6	6	1.5500	1.5500		0.66
LDF6-50A (1-1/4 FOAM)	A	No	Ar (CaAa)	97.00 - 6.00	0.0000	0	1	1	1.5500	1.5500		0.66
LDF4-50A (1/2 FOAM)	B	No	Ar (CaAa)	83.00 - 6.00	0.0000	0	1	1	0.6300	0.6300		0.15
LDF1-50A (1/4 FOAM)	B	No	Ar (CaAa)	53.00 - 6.00	0.0000	0	1	1	0.3500	0.3500		0.06
LDF4-50A (1/2 FOAM)	A	No	Ar (CaAa)	51.00 - 6.00	0.0000	0.45	1	1	0.6300	0.6300		0.15
LDF1-50A	A	No	Ar (CaAa)	34.00 - 6.00	0.0000	0.45	1	1	0.3500	0.3500		0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(1/4 FOAM) *Proposed***												
3/4" DC power cable	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.42	2	2	0.5000	0.7500		0.40
3/8" Fiber	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.41	1	1	0.4000	0.4000		0.08

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	150.00-140.00	A	0.000	0.000	2.500	0.000	21.00
		B	0.000	0.000	1.980	0.000	8.20
		C	0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	0.000	0.000	10.000	0.000	84.00
		B	0.000	0.000	6.010	0.000	22.50
		C	0.000	0.000	6.000	0.000	26.40
T3	120.00-100.00	A	0.000	0.000	23.950	0.000	143.40
		B	0.000	0.000	9.200	0.000	31.20
		C	0.000	0.000	20.000	0.000	88.00
T4	100.00-80.00	A	0.000	0.000	31.235	0.000	174.42
		B	0.000	0.000	9.389	0.000	31.65
		C	0.000	0.000	20.000	0.000	88.00
T5	80.00-60.00	A	0.000	0.000	31.700	0.000	176.40
		B	0.000	0.000	10.460	0.000	34.20
		C	0.000	0.000	20.000	0.000	88.00
T6	60.00-40.00	A	0.000	0.000	32.393	0.000	178.05
		B	0.000	0.000	10.915	0.000	34.98
		C	0.000	0.000	20.000	0.000	88.00
T7	40.00-20.00	A	0.000	0.000	33.450	0.000	180.24
		B	0.000	0.000	11.160	0.000	35.40
		C	0.000	0.000	20.000	0.000	88.00
T8	20.00-3.33	A	0.000	0.000	23.562	0.000	126.42
		B	0.000	0.000	7.812	0.000	24.78
		C	0.000	0.000	14.000	0.000	61.60
T9	3.33-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	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	150.00-140.00	A	2.319	0.000	0.000	9.141	0.000	150.27
		B		0.000	0.000	6.618	0.000	130.01
		C		0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	2.294	0.000	0.000	36.399	0.000	594.54
		B		0.000	0.000	24.517	0.000	391.06
		C		0.000	0.000	31.163	0.000	433.06
T3	120.00-100.00	A	2.256	0.000	0.000	78.144	0.000	1294.51
		B		0.000	0.000	45.677	0.000	659.74
		C		0.000	0.000	102.793	0.000	1411.84
T4	100.00-80.00	A	2.211	0.000	0.000	101.724	0.000	1686.16

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
		B		0.000	0.000	46.520	0.000	663.59
		C		0.000	0.000	101.514	0.000	1374.94
T5	80.00-60.00	A	2.156	0.000	0.000	102.599	0.000	1675.59
		B		0.000	0.000	54.065	0.000	766.28
		C		0.000	0.000	99.948	0.000	1330.43
T6	60.00-40.00	A	2.085	0.000	0.000	106.688	0.000	1698.02
		B		0.000	0.000	58.584	0.000	809.13
		C		0.000	0.000	97.914	0.000	1273.65
T7	40.00-20.00	A	1.981	0.000	0.000	114.900	0.000	1750.39
		B		0.000	0.000	59.359	0.000	787.43
		C		0.000	0.000	94.956	0.000	1193.26
T8	20.00-3.33	A	1.802	0.000	0.000	79.168	0.000	1130.44
		B		0.000	0.000	38.676	0.000	476.62
		C		0.000	0.000	62.913	0.000	742.80
T9	3.33-0.00	A	1.484	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 ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	150.00-140.00	0.7031	-2.8080	0.4760	-1.0441
T2	140.00-120.00	-0.8344	-2.2787	-0.3108	-0.8064
T3	120.00-100.00	-2.2220	-2.0556	-1.0608	-0.8242
T4	100.00-80.00	-2.2690	-2.5489	-1.1763	-1.1605
T5	80.00-60.00	-2.1857	-2.5546	-1.0542	-1.2295
T6	60.00-40.00	-2.1310	-2.6216	-0.9621	-1.4153
T7	40.00-20.00	-2.0892	-2.7198	-0.9281	-1.7161
T8	20.00-3.33	-2.0225	-2.6566	-0.9396	-1.7625
T9	3.33-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	9	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	1.0000	1.0000
T1	10	1-1/4" Hybriflex	140.00 - 145.00	1.0000	1.0000
T2	9	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	1.0000	1.0000
T2	10	1-1/4" Hybriflex	120.00 - 140.00	1.0000	1.0000
T2	12	LDF5-50A (7/8 FOAM)	120.00 - 129.00	1.0000	1.0000
T2	13	LDF6-50A (1-1/4 FOAM)	120.00 - 126.00	1.0000	1.0000
T2	14	3/4" DC power cable	120.00 - 126.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	15	3/8" Fiber	120.00 - 126.00	1.0000	1.0000
T2	16	LDF2-50A (3/8 FOAM)	120.00 - 122.00	1.0000	1.0000
T2	24	3/4" DC power cable	120.00 - 126.00	1.0000	1.0000
T2	25	3/8" Fiber	120.00 - 126.00	1.0000	1.0000
T3	9	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	1.0000	1.0000
T3	10	1-1/4" Hybriflex	100.00 - 120.00	1.0000	1.0000
T3	12	LDF5-50A (7/8 FOAM)	100.00 - 120.00	1.0000	1.0000
T3	13	LDF6-50A (1-1/4 FOAM)	100.00 - 120.00	1.0000	1.0000
T3	14	3/4" DC power cable	100.00 - 120.00	1.0000	1.0000
T3	15	3/8" Fiber	100.00 - 120.00	1.0000	1.0000
T3	16	LDF2-50A (3/8 FOAM)	100.00 - 120.00	1.0000	1.0000
T3	17	LDF6-50A (1-1/4 FOAM)	100.00 - 115.00	1.0000	1.0000
T3	24	3/4" DC power cable	100.00 - 120.00	1.0000	1.0000
T3	25	3/8" Fiber	100.00 - 120.00	1.0000	1.0000
T4	9	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	1.0000	1.0000
T4	10	1-1/4" Hybriflex	80.00 - 100.00	1.0000	1.0000
T4	12	LDF5-50A (7/8 FOAM)	80.00 - 100.00	1.0000	1.0000
T4	13	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	1.0000	1.0000
T4	14	3/4" DC power cable	80.00 - 100.00	1.0000	1.0000
T4	15	3/8" Fiber	80.00 - 100.00	1.0000	1.0000
T4	16	LDF2-50A (3/8 FOAM)	80.00 - 100.00	1.0000	1.0000
T4	17	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	1.0000	1.0000
T4	18	LDF6-50A (1-1/4 FOAM)	80.00 - 97.00	1.0000	1.0000
T4	19	LDF4-50A (1/2 FOAM)	80.00 - 83.00	1.0000	1.0000
T4	24	3/4" DC power cable	80.00 - 100.00	1.0000	1.0000
T4	25	3/8" Fiber	80.00 - 100.00	1.0000	1.0000
T5	9	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	1.0000	1.0000
T5	10	1-1/4" Hybriflex	60.00 - 80.00	1.0000	1.0000
T5	12	LDF5-50A (7/8 FOAM)	60.00 - 80.00	1.0000	1.0000
T5	13	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	1.0000	1.0000
T5	14	3/4" DC power cable	60.00 - 80.00	1.0000	1.0000
T5	15	3/8" Fiber	60.00 - 80.00	1.0000	1.0000
T5	16	LDF2-50A (3/8 FOAM)	60.00 - 80.00	1.0000	1.0000
T5	17	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	1.0000	1.0000
T5	18	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	1.0000	1.0000
T5	19	LDF4-50A (1/2 FOAM)	60.00 - 80.00	1.0000	1.0000
T5	24	3/4" DC power cable	60.00 - 80.00	1.0000	1.0000
T5	25	3/8" Fiber	60.00 - 80.00	1.0000	1.0000
T6	9	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T6	10	1-1/4" Hybriflex	40.00 - 60.00	1.0000	1.0000
T6	12	LDF5-50A (7/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T6	13	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	1.0000	1.0000
T6	14	3/4" DC power cable	40.00 - 60.00	1.0000	1.0000
T6	15	3/8" Fiber	40.00 - 60.00	1.0000	1.0000
T6	16	LDF2-50A (3/8 FOAM)	40.00 - 60.00	1.0000	1.0000
T6	17	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	1.0000	1.0000
T6	18	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	1.0000	1.0000
T6	19	LDF4-50A (1/2 FOAM)	40.00 - 60.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	20	LDF1-50A (1/4 FOAM)	40.00 - 53.00	1.0000	1.0000
T6	21	LDF4-50A (1/2 FOAM)	40.00 - 51.00	1.0000	1.0000
T6	24	3/4" DC power cable	40.00 - 60.00	1.0000	1.0000
T6	25	3/8" Fiber	40.00 - 60.00	1.0000	1.0000
T7	9	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	10	1-1/4" Hybriflex	20.00 - 40.00	1.0000	1.0000
T7	12	LDF5-50A (7/8 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	13	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	14	3/4" DC power cable	20.00 - 40.00	1.0000	1.0000
T7	15	3/8" Fiber	20.00 - 40.00	1.0000	1.0000
T7	16	LDF2-50A (3/8 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	17	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	18	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	19	LDF4-50A (1/2 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	20	LDF1-50A (1/4 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	21	LDF4-50A (1/2 FOAM)	20.00 - 40.00	1.0000	1.0000
T7	22	LDF1-50A (1/4 FOAM)	20.00 - 34.00	1.0000	1.0000
T7	24	3/4" DC power cable	20.00 - 40.00	1.0000	1.0000
T7	25	3/8" Fiber	20.00 - 40.00	1.0000	1.0000
T8	9	LDF7-50A (1-5/8 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	10	1-1/4" Hybriflex	6.00 - 20.00	1.0000	1.0000
T8	12	LDF5-50A (7/8 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	13	LDF6-50A (1-1/4 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	14	3/4" DC power cable	6.00 - 20.00	1.0000	1.0000
T8	15	3/8" Fiber	6.00 - 20.00	1.0000	1.0000
T8	16	LDF2-50A (3/8 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	17	LDF6-50A (1-1/4 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	18	LDF6-50A (1-1/4 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	19	LDF4-50A (1/2 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	20	LDF1-50A (1/4 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	21	LDF4-50A (1/2 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	22	LDF1-50A (1/4 FOAM)	6.00 - 20.00	1.0000	1.0000
T8	24	3/4" DC power cable	6.00 - 20.00	1.0000	1.0000
T8	25	3/8" Fiber	6.00 - 20.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
15' - 4 Element DiPole	B	From Leg	0.00 0.00 0.00	0.0000	167.50	No Ice 1/2" Ice 1" Ice	4.50 6.03 7.58	4.50 6.03 7.58	50.00 82.48 124.58
10' DiPole	B	From Leg	0.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice 1" Ice	3.00 4.03 5.03	3.00 4.03 5.03	30.00 51.79 80.14
15' - 4 Element DiPole	C	From Leg	3.00 0.00 0.00	0.0000	150.50	No Ice 1/2" Ice 1" Ice	4.50 6.03 7.58	4.50 6.03 7.58	50.00 82.48 124.58
SO311-1	C	From Leg	1.50 0.00	0.0000	143.00	No Ice 1/2" Ice	2.97 4.39	3.51 5.33	62.00 94.35

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	5.81	7.15	126.70
10' DiPole	B	From Leg	5.00	0.0000	148.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.03	4.03	51.79
			0.00			1" Ice	5.03	5.03	80.14
SO307-1	B	From Leg	2.50	0.0000	143.00	No Ice	0.98	2.60	48.00
			0.00			1/2" Ice	1.70	4.50	70.36
			0.00			1" Ice	2.42	6.40	92.72
PiROD 12' T-Frame	A	From Leg	3.00	0.0000	147.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	B	From Leg	3.00	0.0000	147.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	C	From Leg	3.00	0.0000	147.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
RFS APXVSPP18-C-A20	A	From Leg	6.00	0.0000	147.00	No Ice	8.02	5.28	64.50
			0.00			1/2" Ice	8.48	5.74	114.02
			0.00			1" Ice	8.94	6.20	169.62
RFS APXVSPP18-C-A20	B	From Leg	6.00	0.0000	147.00	No Ice	8.02	5.28	64.50
			0.00			1/2" Ice	8.48	5.74	114.02
			0.00			1" Ice	8.94	6.20	169.62
RFS APXVSPP18-C-A20	C	From Leg	6.00	0.0000	147.00	No Ice	8.02	5.28	64.50
			0.00			1/2" Ice	8.48	5.74	114.02
			0.00			1" Ice	8.94	6.20	169.62
Commscope DT465B-2XR	A	From Leg	6.00	0.0000	147.00	No Ice	9.10	7.40	87.20
			0.00			1/2" Ice	9.57	8.36	161.09
			0.00			1" Ice	10.04	9.19	242.94
Commscope DT465B-2XR	B	From Leg	6.00	0.0000	147.00	No Ice	9.10	7.40	87.20
			0.00			1/2" Ice	9.57	8.36	161.09
			0.00			1" Ice	10.04	9.19	242.94
Commscope DT465B-2XR	C	From Leg	6.00	0.0000	147.00	No Ice	9.10	7.40	87.20
			0.00			1/2" Ice	9.57	8.36	161.09
			0.00			1" Ice	10.04	9.19	242.94
ALU RRH2x50-800	A	From Leg	4.00	0.0000	147.00	No Ice	1.71	1.29	53.00
			0.00			1/2" Ice	1.87	1.44	70.10
			0.00			1" Ice	2.04	1.59	89.89
ALU RRH2x50-800	B	From Leg	4.00	0.0000	147.00	No Ice	1.71	1.29	53.00
			0.00			1/2" Ice	1.87	1.44	70.10
			0.00			1" Ice	2.04	1.59	89.89
ALU RRH2x50-800	C	From Leg	4.00	0.0000	147.00	No Ice	1.71	1.29	53.00
			0.00			1/2" Ice	1.87	1.44	70.10
			0.00			1" Ice	2.04	1.59	89.89
ALU 800 MHz RRH	A	From Leg	4.00	0.0000	147.00	No Ice	1.70	1.28	53.00
			0.00			1/2" Ice	1.86	1.43	70.01
			0.00			1" Ice	2.03	1.58	89.71
ALU 800 MHz RRH	B	From Leg	4.00	0.0000	147.00	No Ice	1.70	1.28	53.00
			0.00			1/2" Ice	1.86	1.43	70.01
			0.00			1" Ice	2.03	1.58	89.71
ALU 800 MHz RRH	C	From Leg	4.00	0.0000	147.00	No Ice	1.70	1.28	53.00
			0.00			1/2" Ice	1.86	1.43	70.01
			0.00			1" Ice	2.03	1.58	89.71
ALU TD-RRH8x20-25	A	From Leg	4.00	0.0000	147.00	No Ice	4.72	1.70	70.00
			0.00			1/2" Ice	5.01	1.92	97.15
			0.00			1" Ice	5.30	2.14	124.30
ALU TD-RRH8x20-25	B	From Leg	4.00	0.0000	147.00	No Ice	4.72	1.70	70.00
			0.00			1/2" Ice	5.01	1.92	97.15

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" Ice	5.30	2.14	124.30
ALU TD-RRH8x20-25	C	From Leg	4.00	0.0000	147.00	No Ice	4.72	1.70	70.00
			0.00			1/2" Ice	5.01	1.92	97.15
			0.00			1" Ice	5.30	2.14	124.30
ALU 1900 MHz RRH	A	From Leg	4.00	0.0000	147.00	No Ice	2.32	2.58	67.30
			0.00			1/2" Ice	2.53	2.91	95.90
			0.00			1" Ice	2.74	3.26	128.60
ALU 1900 MHz RRH	B	From Leg	4.00	0.0000	147.00	No Ice	2.32	2.58	67.30
			0.00			1/2" Ice	2.53	2.91	95.90
			0.00			1" Ice	2.74	3.26	128.60
ALU 1900 MHz RRH	C	From Leg	4.00	0.0000	147.00	No Ice	2.32	2.58	67.30
			0.00			1/2" Ice	2.53	2.91	95.90
			0.00			1" Ice	2.74	3.26	128.60
6' Omni	C	From Leg	3.00	0.0000	134.00	No Ice	1.20	1.20	25.00
			0.00			1/2" Ice	1.80	1.80	34.39
			0.00			1" Ice	2.17	2.17	43.78
SO311-1	C	From Leg	1.50	0.0000	129.00	No Ice	2.97	3.51	62.00
			0.00			1/2" Ice	4.39	5.33	94.35
			0.00			1" Ice	5.81	7.15	126.70
CCI HPA-65R-BUU-H6	A	From Leg	4.00	0.0000	126.00	No Ice	9.90	8.11	86.55
			0.00			1/2" Ice	10.47	9.30	168.03
			0.00			1" Ice	11.01	10.21	257.79
CCI HPA-65R-BUU-H8	B	From Leg	4.00	0.0000	126.00	No Ice	13.05	9.42	107.20
			0.00			1/2" Ice	13.66	10.82	202.07
			0.00			1" Ice	14.27	12.07	306.65
CCI HPA-65R-BUU-H8	C	From Leg	4.00	0.0000	126.00	No Ice	13.05	9.42	107.20
			0.00			1/2" Ice	13.66	10.82	202.07
			0.00			1" Ice	14.27	12.07	306.65
Commscope SBNH-1D6565C	A	From Leg	4.00	0.0000	126.00	No Ice	11.41	9.60	90.05
			0.00			1/2" Ice	12.03	11.02	176.86
			0.00			1" Ice	12.65	12.29	273.42
Commscope SBNH-1D6565C	B	From Leg	4.00	0.0000	126.00	No Ice	11.41	9.60	90.05
			0.00			1/2" Ice	12.03	11.02	176.86
			0.00			1" Ice	12.65	12.29	273.42
RRUS-11	A	From Leg	4.00	0.0000	126.00	No Ice	2.79	1.19	50.00
			0.00			1/2" Ice	3.00	1.34	70.87
			0.00			1" Ice	3.21	1.50	94.78
RRUS-11	B	From Leg	4.00	0.0000	126.00	No Ice	2.79	1.19	50.00
			0.00			1/2" Ice	3.00	1.34	70.87
			0.00			1" Ice	3.21	1.50	94.78
RRUS-11	C	From Leg	4.00	0.0000	126.00	No Ice	2.79	1.19	50.00
			0.00			1/2" Ice	3.00	1.34	70.87
			0.00			1" Ice	3.21	1.50	94.78
CCI DTMABP7819VG12A TMA	A	From Leg	4.00	0.0000	126.00	No Ice	0.98	0.34	25.00
			0.00			1/2" Ice	1.10	0.42	32.30
			0.00			1" Ice	1.23	0.51	41.45
CCI DTMABP7819VG12A TMA	B	From Leg	4.00	0.0000	126.00	No Ice	0.98	0.34	25.00
			0.00			1/2" Ice	1.10	0.42	32.30
			0.00			1" Ice	1.23	0.51	41.45
Raycap DC6-48-60-18-8F	A	From Leg	0.50	0.0000	126.00	No Ice	0.83	0.83	22.00
			0.00			1/2" Ice	1.34	1.34	37.91
			0.00			1" Ice	1.52	1.52	56.21
Yagi (4 ft)	C	From Leg	1.50	0.0000	122.00	No Ice	0.47	0.93	10.00
			0.00			1/2" Ice	0.64	1.26	54.43
			0.00			1" Ice	0.81	1.59	98.86
RFS APXV18-206517S	A	From Leg	1.00	0.0000	116.00	No Ice	5.17	4.46	56.90
			0.00			1/2" Ice	5.62	5.39	99.39

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	6.08	6.20	149.06
RFS APXV18-206517S	B	From Leg	1.00	0.0000	116.00	No Ice	5.17	4.46	56.90
			0.00			1/2" Ice	5.62	5.39	99.39
			0.00			1" Ice	6.08	6.20	149.06
RFS APXV18-206517S	C	From Leg	1.00	0.0000	116.00	No Ice	5.17	4.46	56.90
			0.00			1/2" Ice	5.62	5.39	99.39
			0.00			1" Ice	6.08	6.20	149.06
SO309-1	A	From Leg	0.50	0.0000	116.00	No Ice	2.82	2.20	40.00
			0.00			1/2" Ice	4.07	3.16	61.95
			0.00			1" Ice	5.32	4.12	83.90
SO309-1	B	From Leg	0.50	0.0000	116.00	No Ice	2.82	2.20	40.00
			0.00			1/2" Ice	4.07	3.16	61.95
			0.00			1" Ice	5.32	4.12	83.90
SO309-1	C	From Leg	0.50	0.0000	116.00	No Ice	2.82	2.20	40.00
			0.00			1/2" Ice	4.07	3.16	61.95
			0.00			1" Ice	5.32	4.12	83.90
10' Omni	B	From Leg	3.00	0.0000	92.00	No Ice	3.19	3.19	53.25
			0.00			1/2" Ice	4.52	4.52	82.03
			0.00			1" Ice	5.87	5.87	118.76
15' Omni	C	From Leg	4.00	0.0000	88.50	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.53	4.53	53.14
			0.00			1" Ice	6.07	6.07	85.79
SO312-1	C	From Leg	2.00	0.0000	83.00	No Ice	2.97	4.03	70.00
			0.00			1/2" Ice	4.39	6.12	106.38
			0.00			1" Ice	5.81	8.21	142.76
8' Omni	B	From Leg	2.00	0.0000	53.00	No Ice	1.60	1.60	15.00
			0.00			1/2" Ice	2.42	2.42	27.45
			0.00			1" Ice	3.24	3.24	45.14
SO310-1	B	From Leg	1.00	0.0000	53.00	No Ice	2.97	2.99	55.00
			0.00			1/2" Ice	4.40	4.58	83.41
			0.00			1" Ice	5.83	6.17	111.82
GPS	C	From Leg	2.50	0.0000	52.00	No Ice	0.76	0.76	17.30
			0.00			1/2" Ice	1.02	1.02	27.45
			0.00			1" Ice	1.30	1.30	40.15
SO310-1	C	From Leg	1.00	0.0000	51.00	No Ice	2.97	2.99	55.00
			0.00			1/2" Ice	4.40	4.58	83.41
			0.00			1" Ice	5.83	6.17	111.82
SO310-1	B	From Leg	1.00	0.0000	34.00	No Ice	2.97	2.99	55.00
			0.00			1/2" Ice	4.40	4.58	83.41
			0.00			1" Ice	5.83	6.17	111.82
Proposed									
SM1303-1	A	From Leg	2.00	0.0000	126.00	No Ice	18.20	17.30	368.00
			0.00			1/2" Ice	23.60	23.80	589.00
			0.00			1" Ice	29.00	30.30	810.00
SM1303-1	B	From Leg	2.00	0.0000	126.00	No Ice	18.20	17.30	368.00
			0.00			1/2" Ice	23.60	23.80	589.00
			0.00			1" Ice	29.00	30.30	810.00
SM1303-1	C	From Leg	2.00	0.0000	126.00	No Ice	18.20	17.30	368.00
			0.00			1/2" Ice	23.60	23.80	589.00
			0.00			1" Ice	29.00	30.30	810.00
CCI HPA-65R-BUU-H6	A	From Leg	4.00	0.0000	126.00	No Ice	9.90	8.11	86.55
			0.00			1/2" Ice	10.47	9.30	168.03
			0.00			1" Ice	11.01	10.21	257.79
CCI HPA-65R-BUU-H8	B	From Leg	4.00	0.0000	126.00	No Ice	13.05	9.42	107.20
			0.00			1/2" Ice	13.66	10.82	202.07
			0.00			1" Ice	14.27	12.07	306.65
CCI HPA-65R-BUU-H8	C	From Leg	4.00	0.0000	126.00	No Ice	13.05	9.42	107.20

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	13.66	10.82	202.07
			0.00			1" Ice	14.27	12.07	306.65
(2) RRUS-32 B30	A	From Leg	4.00	0.0000	126.00	No Ice	2.74	1.67	60.00
			0.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
(2) RRUS-32 B30	B	From Leg	4.00	0.0000	126.00	No Ice	2.74	1.67	60.00
			0.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
(2) RRUS-32 B30	C	From Leg	4.00	0.0000	126.00	No Ice	2.74	1.67	60.00
			0.00			1/2" Ice	2.96	1.86	81.11
			0.00			1" Ice	3.19	2.05	105.42
RRUS-4478 B14	A	From Leg	4.00	0.0000	126.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
RRUS-4478 B14	B	From Leg	4.00	0.0000	126.00	No Ice	1.84	1.06	60.00
			0.00			1/2" Ice	2.01	1.20	75.88
			0.00			1" Ice	2.19	1.34	94.39
Raycap DC6-48-60-0-8F	C	From Leg	0.50	0.0000	126.00	No Ice	0.83	0.83	32.80
			0.00			1/2" Ice	1.34	1.34	48.71
			0.00			1" Ice	1.52	1.52	67.01

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
Commscope VHLP2-180	B	Paraboloid w/Shroud (HP)	From Face	2.50	0.0000		34.00	2.00	No Ice	3.14	25.00
				0.00					1/2" Ice	3.41	42.50
				0.00					1" Ice	3.68	60.01

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1	145.00	1.099	26	16.458	A	0.000	4.340	2.917	67.21	2.500	0.000
150.00-140.00					B	0.000	4.340		67.21	1.980	0.000
					C	0.000	4.340		67.21	0.000	0.000
T2	130.00	1.065	26	32.917	A	0.000	8.606	5.833	67.78	10.000	0.000
140.00-120.00					B	0.000	8.606		67.78	6.010	0.000
					C	0.000	8.606		67.78	6.000	0.000
T3	110.00	1.016	24	32.917	A	0.000	8.606	5.833	67.78	23.950	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
120.00-100.00					B	0.000	8.606		67.78	9.200	0.000
					C	0.000	8.606		67.78	20.000	0.000
T4	90.00	0.959	23	32.917	A	0.000	8.606	5.833	67.78	31.235	0.000
100.00-80.00					B	0.000	8.606		67.78	9.389	0.000
					C	0.000	8.606		67.78	20.000	0.000
T5 80.00-60.00	70.00	0.892	21	32.917	A	0.000	8.606	5.833	67.78	31.700	0.000
					B	0.000	8.606		67.78	10.460	0.000
					C	0.000	8.606		67.78	20.000	0.000
T6 60.00-40.00	50.00	0.811	19	32.917	A	0.000	8.606	5.833	67.78	32.393	0.000
					B	0.000	8.606		67.78	10.915	0.000
					C	0.000	8.606		67.78	20.000	0.000
T7 40.00-20.00	30.00	0.701	17	32.917	A	0.000	8.606	5.833	67.78	33.450	0.000
					B	0.000	8.606		67.78	11.160	0.000
					C	0.000	8.606		67.78	20.000	0.000
T8 20.00-3.33	11.67	0.7	17	27.436	A	0.000	7.213	4.862	67.41	23.562	0.000
					B	0.000	7.213		67.41	7.812	0.000
					C	0.000	7.213		67.41	14.000	0.000
T9 3.33-0.00	1.67	0.7	17	5.481	A	0.000	1.578	0.971	61.56	0.000	0.000
					B	0.000	1.578		61.56	0.000	0.000
					C	0.000	1.578		61.56	0.000	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	145.00	1.099	6	2.3191	20.323	A	0.000	22.419	10.647	47.49	9.141	0.000
150.00-140.00						B	0.000	22.419		47.49	6.618	0.000
						C	0.000	22.419		47.49	0.000	0.000
T2	130.00	1.065	6	2.2939	40.563	A	0.000	43.940	21.126	48.08	36.399	0.000
140.00-120.00						B	0.000	43.940		48.08	24.517	0.000
						C	0.000	43.940		48.08	31.163	0.000
T3	110.00	1.016	6	2.2559	40.436	A	0.000	43.355	20.873	48.14	78.144	0.000
120.00-100.00						B	0.000	43.355		48.14	45.677	0.000
						C	0.000	43.355		48.14	102.793	0.000
T4 100.00-80.00	90.00	0.959	5	2.2111	40.287	A	0.000	42.664	20.574	48.22	101.724	0.000
						B	0.000	42.664		48.22	46.520	0.000
						C	0.000	42.664		48.22	101.514	0.000
T5 80.00-60.00	70.00	0.892	5	2.1562	40.104	A	0.000	41.819	20.208	48.32	102.599	0.000
						B	0.000	41.819		48.32	54.065	0.000
						C	0.000	41.819		48.32	99.948	0.000
T6 60.00-40.00	50.00	0.811	4	2.0849	39.866	A	0.000	40.720	19.732	48.46	106.688	0.000
						B	0.000	40.720		48.46	58.584	0.000
						C	0.000	40.720		48.46	97.914	0.000
T7 40.00-20.00	30.00	0.701	4	1.9810	39.520	A	0.000	39.121	19.040	48.67	114.900	0.000
						B	0.000	39.121		48.67	59.359	0.000
						C	0.000	39.121		48.67	94.956	0.000
T8 20.00-3.33	11.67	0.7	4	1.8025	32.444	A	0.000	30.546	14.878	48.71	79.168	0.000
						B	0.000	30.546		48.71	38.676	0.000
						C	0.000	30.546		48.71	62.913	0.000
T9 3.33-0.00	1.67	0.7	4	1.4836	6.304	A	0.000	6.037	2.618	43.37	0.000	0.000
						B	0.000	6.037		43.37	0.000	0.000
						C	0.000	6.037		43.37	0.000	0.000

Tower Pressure - Service

G_H = 0.850

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	145.00	1.099	9	16.458	A	0.000	4.340	2.917	67.21	2.500	0.000
150.00-140.00					B	0.000	4.340		67.21	1.980	0.000
					C	0.000	4.340		67.21	0.000	0.000
T2	130.00	1.065	8	32.917	A	0.000	8.606	5.833	67.78	10.000	0.000
140.00-120.00					B	0.000	8.606		67.78	6.010	0.000
					C	0.000	8.606		67.78	6.000	0.000
T3	110.00	1.016	8	32.917	A	0.000	8.606	5.833	67.78	23.950	0.000
120.00-100.00					B	0.000	8.606		67.78	9.200	0.000
					C	0.000	8.606		67.78	20.000	0.000
T4	90.00	0.959	8	32.917	A	0.000	8.606	5.833	67.78	31.235	0.000
100.00-80.00					B	0.000	8.606		67.78	9.389	0.000
					C	0.000	8.606		67.78	20.000	0.000
T5 80.00-60.00	70.00	0.892	7	32.917	A	0.000	8.606	5.833	67.78	31.700	0.000
					B	0.000	8.606		67.78	10.460	0.000
					C	0.000	8.606		67.78	20.000	0.000
T6 60.00-40.00	50.00	0.811	6	32.917	A	0.000	8.606	5.833	67.78	32.393	0.000
					B	0.000	8.606		67.78	10.915	0.000
					C	0.000	8.606		67.78	20.000	0.000
T7 40.00-20.00	30.00	0.701	5	32.917	A	0.000	8.606	5.833	67.78	33.450	0.000
					B	0.000	8.606		67.78	11.160	0.000
					C	0.000	8.606		67.78	20.000	0.000
T8 20.00-3.33	11.67	0.7	5	27.436	A	0.000	7.213	4.862	67.41	23.562	0.000
					B	0.000	7.213		67.41	7.812	0.000
					C	0.000	7.213		67.41	14.000	0.000
T9 3.33-0.00	1.67	0.7	5	5.481	A	0.000	1.578	0.971	61.56	0.000	0.000
					B	0.000	1.578		61.56	0.000	0.000
					C	0.000	1.578		61.56	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	29.20	359.70	A	0.264	2.397	26	1	1	2.554	237.57	23.76	C
150.00-140.00			B	0.264	2.397		1	1	2.554			
			C	0.264	2.397		1	1	2.554			
T2	132.90	713.10	A	0.261	2.404	26	1	1	5.059	742.21	37.11	C
140.00-120.00		TA 174.31	B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T3	262.60	713.10	A	0.261	2.404	24	1	1	5.059	1352.47	67.62	C
120.00-100.00			B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T4	294.07	713.10	A	0.261	2.404	23	1	1	5.059	1351.69*	67.58	C
100.00-80.00		TA 174.40	B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T5	298.60	713.10	A	0.261	2.404	21	1	1	5.059	1258.03*	62.90	C
80.00-60.00			B	0.261	2.404		1	1	5.059			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.261	2.404		1	1	5.059			
T6	301.03	713.10	A	0.261	2.404	19	1	1	5.059	1142.72*	57.14	C
60.00-40.00			B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T7	303.64	713.10	A	0.261	2.404	17	1	1	5.059	987.54*	49.38	C
40.00-20.00			B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T8 20.00-3.33	212.80	597.77	A	0.263	2.399	17	1	1	4.243	793.01	47.57	C
			B	0.263	2.399		1	1	4.243			
			C	0.263	2.399		1	1	4.243			
T9 3.33-0.00	0.00	129.45	A	0.288	2.329	17	1	1	0.939	31.22	9.37	C
			B	0.288	2.329		1	1	0.939			
			C	0.288	2.329		1	1	0.939			
Sum Weight:	1834.84	5714.22			*2.1A_g limit					7896.46		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	29.20	359.70	A	0.264	2.397	26	0.8	1	2.554	237.57	23.76	C
150.00-140.00			B	0.264	2.397		0.8	1	2.554			
			C	0.264	2.397		0.8	1	2.554			
T2	132.90	713.10	A	0.261	2.404	26	0.8	1	5.059	742.21	37.11	C
140.00-120.00		TA 174.31	B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T3	262.60	713.10	A	0.261	2.404	24	0.8	1	5.059	1352.47	67.62	C
120.00-100.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T4	294.07	713.10	A	0.261	2.404	23	0.8	1	5.059	1351.69*	67.58	C
100.00-80.00		TA 174.40	B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T5	298.60	713.10	A	0.261	2.404	21	0.8	1	5.059	1258.03*	62.90	C
80.00-60.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T6	301.03	713.10	A	0.261	2.404	19	0.8	1	5.059	1142.72*	57.14	C
60.00-40.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T7	303.64	713.10	A	0.261	2.404	17	0.8	1	5.059	987.54*	49.38	C
40.00-20.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T8 20.00-3.33	212.80	597.77	A	0.263	2.399	17	0.8	1	4.243	793.01	47.57	C
			B	0.263	2.399		0.8	1	4.243			
			C	0.263	2.399		0.8	1	4.243			
T9 3.33-0.00	0.00	129.45	A	0.288	2.329	17	0.8	1	0.939	31.22	9.37	C
			B	0.288	2.329		0.8	1	0.939			
			C	0.288	2.329		0.8	1	0.939			
Sum Weight:	1834.84	5714.22			*2.1A_g limit					7896.46		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	29.20	359.70	A	0.264	2.397	26	0.85	1	2.554	237.57	23.76	C
150.00-140.00			B	0.264	2.397		0.85	1	2.554			
			C	0.264	2.397		0.85	1	2.554			
T2	132.90	713.10	A	0.261	2.404	26	0.85	1	5.059	742.21	37.11	C
140.00-120.00		TA 174.31	B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T3	262.60	713.10	A	0.261	2.404	24	0.85	1	5.059	1352.47	67.62	C
120.00-100.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T4	294.07	713.10	A	0.261	2.404	23	0.85	1	5.059	1351.69*	67.58	C
100.00-80.00		TA 174.40	B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T5	298.60	713.10	A	0.261	2.404	21	0.85	1	5.059	1258.03*	62.90	C
80.00-60.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T6	301.03	713.10	A	0.261	2.404	19	0.85	1	5.059	1142.72*	57.14	C
60.00-40.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T7	303.64	713.10	A	0.261	2.404	17	0.85	1	5.059	987.54*	49.38	C
40.00-20.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T8 20.00-3.33	212.80	597.77	A	0.263	2.399	17	0.85	1	4.243	793.01	47.57	C
			B	0.263	2.399		0.85	1	4.243			
			C	0.263	2.399		0.85	1	4.243			
T9 3.33-0.00	0.00	129.45	A	0.288	2.329	17	0.85	1	0.939	31.22	9.37	C
			B	0.288	2.329		0.85	1	0.939			
			C	0.288	2.329		0.85	1	0.939			
Sum Weight:	1834.84	5714.22			*2.1A_g limit					7896.46		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	280.28	1450.98	A	1	2.1	6	1	1	22.419	216.87*	21.69	C
150.00-140.00			B	1	2.1		1	1	22.419			
			C	1	2.1		1	1	22.419			
T2	1418.65	2822.82	A	1	2.1	6	1	1	43.940	419.55*	20.98	C
140.00-120.00		TA 768.38	B	1	2.1		1	1	43.940			
			C	1	2.1		1	1	43.940			
T3	3366.10	2763.34	A	1	2.1	6	1	1	43.355	398.74*	19.94	C
120.00-100.00			B	1	2.1		1	1	43.355			
			C	1	2.1		1	1	43.355			
T4	3724.69	2694.26	A	1	2.1	5	1	1	42.664	375.13*	18.76	C
100.00-80.00		TA 737.18	B	1	2.1		1	1	42.664			
			C	1	2.1		1	1	42.664			
T5	3772.29	2611.23	A	1	2.1	5	1	1	41.819	347.56*	17.38	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
80.00-60.00			B	1	2.1		1	1	41.819			
			C	1	2.1		1	1	41.819			
T6	3780.80	2505.87	A	1	2.1	4	1	1	40.720	313.83*	15.69	C
60.00-40.00			B	1	2.1		1	1	40.720			
			C	1	2.1		1	1	40.720			
T7	3731.07	2357.74	A	0.99	2.079	4	1	1	39.121	268.86*	13.44	C
40.00-20.00			B	0.99	2.079		1	1	39.121			
			C	0.99	2.079		1	1	39.121			
T8 20.00-3.33	2349.86	1780.17	A	0.941	1.989	4	1	1	30.546	220.53*	13.23	C
			B	0.941	1.989		1	1	30.546			
			C	0.941	1.989		1	1	30.546			
T9 3.33-0.00	0.00	333.47	A	0.958	2.017	4	1	1	6.037	39.41	11.84	C
			B	0.958	2.017		1	1	6.037			
			C	0.958	2.017		1	1	6.037			
Sum Weight:	22423.73	20825.44			*2.1A_g limit					2600.48		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	280.28	1450.98	A	1	2.1	6	0.8	1	22.419	216.87*	21.69	C
150.00-140.00			B	1	2.1		0.8	1	22.419			
			C	1	2.1		0.8	1	22.419			
T2	1418.65	2822.82	A	1	2.1	6	0.8	1	43.940	419.55*	20.98	C
140.00-120.00		TA 768.38	B	1	2.1		0.8	1	43.940			
			C	1	2.1		0.8	1	43.940			
T3	3366.10	2763.34	A	1	2.1	6	0.8	1	43.355	398.74*	19.94	C
120.00-100.00			B	1	2.1		0.8	1	43.355			
			C	1	2.1		0.8	1	43.355			
T4	3724.69	2694.26	A	1	2.1	5	0.8	1	42.664	375.13*	18.76	C
100.00-80.00		TA 737.18	B	1	2.1		0.8	1	42.664			
			C	1	2.1		0.8	1	42.664			
T5	3772.29	2611.23	A	1	2.1	5	0.8	1	41.819	347.56*	17.38	C
80.00-60.00			B	1	2.1		0.8	1	41.819			
			C	1	2.1		0.8	1	41.819			
T6	3780.80	2505.87	A	1	2.1	4	0.8	1	40.720	313.83*	15.69	C
60.00-40.00			B	1	2.1		0.8	1	40.720			
			C	1	2.1		0.8	1	40.720			
T7	3731.07	2357.74	A	0.99	2.079	4	0.8	1	39.121	268.86*	13.44	C
40.00-20.00			B	0.99	2.079		0.8	1	39.121			
			C	0.99	2.079		0.8	1	39.121			
T8 20.00-3.33	2349.86	1780.17	A	0.941	1.989	4	0.8	1	30.546	220.53*	13.23	C
			B	0.941	1.989		0.8	1	30.546			
			C	0.941	1.989		0.8	1	30.546			
T9 3.33-0.00	0.00	333.47	A	0.958	2.017	4	0.8	1	6.037	39.41	11.84	C
			B	0.958	2.017		0.8	1	6.037			
			C	0.958	2.017		0.8	1	6.037			
Sum Weight:	22423.73	20825.44			*2.1A_g limit					2600.48		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	280.28	1450.98	A	1	2.1	6	0.85	1	22.419	216.87*	21.69	C
150.00-140.00			B	1	2.1		0.85	1	22.419			
			C	1	2.1		0.85	1	22.419			
T2	1418.65	2822.82	A	1	2.1	6	0.85	1	43.940	419.55*	20.98	C
140.00-120.00		TA 768.38	B	1	2.1		0.85	1	43.940			
			C	1	2.1		0.85	1	43.940			
T3	3366.10	2763.34	A	1	2.1	6	0.85	1	43.355	398.74*	19.94	C
120.00-100.00			B	1	2.1		0.85	1	43.355			
			C	1	2.1		0.85	1	43.355			
T4	3724.69	2694.26	A	1	2.1	5	0.85	1	42.664	375.13*	18.76	C
100.00-80.00		TA 737.18	B	1	2.1		0.85	1	42.664			
			C	1	2.1		0.85	1	42.664			
T5	3772.29	2611.23	A	1	2.1	5	0.85	1	41.819	347.56*	17.38	C
80.00-60.00			B	1	2.1		0.85	1	41.819			
			C	1	2.1		0.85	1	41.819			
T6	3780.80	2505.87	A	1	2.1	4	0.85	1	40.720	313.83*	15.69	C
60.00-40.00			B	1	2.1		0.85	1	40.720			
			C	1	2.1		0.85	1	40.720			
T7	3731.07	2357.74	A	0.99	2.079	4	0.85	1	39.121	268.86*	13.44	C
40.00-20.00			B	0.99	2.079		0.85	1	39.121			
			C	0.99	2.079		0.85	1	39.121			
T8 20.00-3.33	2349.86	1780.17	A	0.941	1.989	4	0.85	1	30.546	220.53*	13.23	C
			B	0.941	1.989		0.85	1	30.546			
			C	0.941	1.989		0.85	1	30.546			
T9 3.33-0.00	0.00	333.47	A	0.958	2.017	4	0.85	1	6.037	39.41	11.84	C
			B	0.958	2.017		0.85	1	6.037			
			C	0.958	2.017		0.85	1	6.037			
Sum Weight:	22423.73	20825.44			*2.1A_g limit					2600.48		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	29.20	359.70	A	0.264	2.397	9	1	1	2.554	77.57	7.76	C
150.00-140.00			B	0.264	2.397		1	1	2.554			
			C	0.264	2.397		1	1	2.554			
T2	132.90	713.10	A	0.261	2.404	8	1	1	5.059	242.35	12.12	C
140.00-120.00		TA 174.31	B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T3	262.60	713.10	A	0.261	2.404	8	1	1	5.059	441.62	22.08	C
120.00-100.00			B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T4	294.07	713.10	A	0.261	2.404	8	1	1	5.059	441.37*	22.07	C
100.00-80.00		TA 174.40	B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T5	298.60	713.10	A	0.261	2.404	7	1	1	5.059	410.79*	20.54	C

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
80.00-60.00			B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T6	301.03	713.10	A	0.261	2.404	6	1	1	5.059	373.13*	18.66	C
60.00-40.00			B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T7	303.64	713.10	A	0.261	2.404	5	1	1	5.059	322.46*	16.12	C
40.00-20.00			B	0.261	2.404		1	1	5.059			
			C	0.261	2.404		1	1	5.059			
T8 20.00-3.33	212.80	597.77	A	0.263	2.399	5	1	1	4.243	258.94	15.53	C
			B	0.263	2.399		1	1	4.243			
			C	0.263	2.399		1	1	4.243			
T9 3.33-0.00	0.00	129.45	A	0.288	2.329	5	1	1	0.939	10.19	3.06	C
			B	0.288	2.329		1	1	0.939			
			C	0.288	2.329		1	1	0.939			
Sum Weight:	1834.84	5714.22			*2.1A_g limit					2578.44		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	29.20	359.70	A	0.264	2.397	9	0.8	1	2.554	77.57	7.76	C
150.00-140.00			B	0.264	2.397		0.8	1	2.554			
			C	0.264	2.397		0.8	1	2.554			
T2	132.90	713.10	A	0.261	2.404	8	0.8	1	5.059	242.35	12.12	C
140.00-120.00		TA 174.31	B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T3	262.60	713.10	A	0.261	2.404	8	0.8	1	5.059	441.62	22.08	C
120.00-100.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T4	294.07	713.10	A	0.261	2.404	8	0.8	1	5.059	441.37*	22.07	C
100.00-80.00		TA 174.40	B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T5	298.60	713.10	A	0.261	2.404	7	0.8	1	5.059	410.79*	20.54	C
80.00-60.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T6	301.03	713.10	A	0.261	2.404	6	0.8	1	5.059	373.13*	18.66	C
60.00-40.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T7	303.64	713.10	A	0.261	2.404	5	0.8	1	5.059	322.46*	16.12	C
40.00-20.00			B	0.261	2.404		0.8	1	5.059			
			C	0.261	2.404		0.8	1	5.059			
T8 20.00-3.33	212.80	597.77	A	0.263	2.399	5	0.8	1	4.243	258.94	15.53	C
			B	0.263	2.399		0.8	1	4.243			
			C	0.263	2.399		0.8	1	4.243			
T9 3.33-0.00	0.00	129.45	A	0.288	2.329	5	0.8	1	0.939	10.19	3.06	C
			B	0.288	2.329		0.8	1	0.939			
			C	0.288	2.329		0.8	1	0.939			
Sum Weight:	1834.84	5714.22			*2.1A_g limit					2578.44		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	29.20	359.70	A	0.264	2.397	9	0.85	1	2.554	77.57	7.76	C
150.00-140.00			B	0.264	2.397		0.85	1	2.554			
			C	0.264	2.397		0.85	1	2.554			
T2	132.90	713.10	A	0.261	2.404	8	0.85	1	5.059	242.35	12.12	C
140.00-120.00		TA 174.31	B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T3	262.60	713.10	A	0.261	2.404	8	0.85	1	5.059	441.62	22.08	C
120.00-100.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T4	294.07	713.10	A	0.261	2.404	8	0.85	1	5.059	441.37*	22.07	C
100.00-80.00		TA 174.40	B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T5	298.60	713.10	A	0.261	2.404	7	0.85	1	5.059	410.79*	20.54	C
80.00-60.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T6	301.03	713.10	A	0.261	2.404	6	0.85	1	5.059	373.13*	18.66	C
60.00-40.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T7	303.64	713.10	A	0.261	2.404	5	0.85	1	5.059	322.46*	16.12	C
40.00-20.00			B	0.261	2.404		0.85	1	5.059			
			C	0.261	2.404		0.85	1	5.059			
T8 20.00-3.33	212.80	597.77	A	0.263	2.399	5	0.85	1	4.243	258.94	15.53	C
			B	0.263	2.399		0.85	1	4.243			
			C	0.263	2.399		0.85	1	4.243			
T9 3.33-0.00	0.00	129.45	A	0.288	2.329	5	0.85	1	0.939	10.19	3.06	C
			B	0.288	2.329		0.85	1	0.939			
			C	0.288	2.329		0.85	1	0.939			
Sum Weight:	1834.84	5714.22			*2.1A_g limit					2578.44		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	3867.26			
Bracing Weight	1846.96			
Total Member Self-Weight	5714.22			
Guy Weight	1226.36			
Total Weight	14694.47			
Wind 0 deg - No Ice		-11.66	-13943.47	-645.52
Wind 30 deg - No Ice		6962.76	-12060.10	-974.22
Wind 60 deg - No Ice		12071.20	-6952.19	-1024.02
Wind 90 deg - No Ice		13951.40	14.95	-799.43
Wind 120 deg - No Ice		12099.21	6981.83	-378.49
Wind 150 deg - No Ice		6999.41	12083.51	139.87
Wind 180 deg - No Ice		0.59	13946.09	665.57
Wind 210 deg - No Ice		-6971.62	12068.36	976.80

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Wind 240 deg - No Ice		-12081.10	6957.91	1024.02
Wind 270 deg - No Ice		-13962.99	-11.40	796.85
Wind 300 deg - No Ice		-12107.02	-6973.55	358.45
Wind 330 deg - No Ice		-6990.60	-12088.60	-139.87
Member Ice	15111.22			
Guy Ice	11848.66			
Total Weight Ice	80202.32			
Wind 0 deg - Ice		1.16	-5357.75	-45.64
Wind 30 deg - Ice		2665.73	-4637.64	153.73
Wind 60 deg - Ice		4615.93	-2677.00	317.35
Wind 90 deg - Ice		5331.19	-0.16	395.93
Wind 120 deg - Ice		4619.74	2677.87	362.99
Wind 150 deg - Ice		2668.73	4640.06	231.57
Wind 180 deg - Ice		-4.53	5358.54	51.74
Wind 210 deg - Ice		-2668.43	4640.16	-152.95
Wind 240 deg - Ice		-4618.94	2678.74	-317.35
Wind 270 deg - Ice		-5334.71	1.24	-396.71
Wind 300 deg - Ice		-4622.12	-2675.35	-369.09
Wind 330 deg - Ice		-2666.05	-4641.61	-231.57
Total Weight	14694.47			
Wind 0 deg - Service		-3.81	-4552.97	-210.78
Wind 30 deg - Service		2273.55	-3937.99	-318.11
Wind 60 deg - Service		3941.61	-2270.10	-334.37
Wind 90 deg - Service		4555.56	4.88	-261.04
Wind 120 deg - Service		3950.76	2279.78	-123.59
Wind 150 deg - Service		2285.52	3945.64	45.67
Wind 180 deg - Service		0.19	4553.82	217.33
Wind 210 deg - Service		-2276.45	3940.69	318.96
Wind 240 deg - Service		-3944.85	2271.97	334.37
Wind 270 deg - Service		-4559.34	-3.72	260.19
Wind 300 deg - Service		-3953.31	-2277.08	117.04
Wind 330 deg - Service		-2282.64	-3947.30	-45.67

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 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
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

Comb. No.	Description
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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	150 - 140	Leg	Max Tension	8	22450.58	-0.28	-92.77
			Max. Compression	6	-24775.37	-211.21	-100.29
			Max. Mx	6	-22166.22	-278.56	-155.35
			Max. My	2	-24294.54	-19.84	302.65
			Max. Vy	11	-3096.68	211.26	55.88
			Max. Vx	3	-3233.63	-216.89	163.10
		Diagonal	Max Tension	5	2339.70	0.00	0.00
			Max. Compression	5	-2447.04	0.00	0.00
			Max. Mx	18	693.26	4.06	0.00
			Max. My	17	-29.41	0.00	-0.03
			Max. Vy	18	7.30	0.00	0.00
			Max. Vx	17	0.06	0.00	0.00
		Top Girt	Max Tension	4	48.20	0.00	0.00
			Max. Compression	4	-52.53	0.00	0.00
			Max. Mx	24	16.67	2.98	0.00
			Max. My	17	20.58	0.00	0.00
			Max. Vy	24	7.94	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	3522.83	0.00	0.00
			Max. Compression	10	-2904.78	0.00	0.00
			Max. Mx	24	-638.32	2.98	0.00
			Max. My	17	-246.73	0.00	0.00
			Max. Vy	24	7.94	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
T2	140 - 120	Leg	Max Tension	8	22449.60	-6.90	-53.12
			Max. Compression	5	-54845.91	-125.83	34.72
			Max. Mx	6	-30155.98	560.12	-30.19
			Max. My	2	-28363.67	32.78	-622.59
			Max. Vy	11	-3097.31	469.33	24.57
			Max. Vx	3	-3233.54	-336.76	432.56
		Diagonal	Max Tension	5	7478.70	0.00	0.00
			Max. Compression	5	-8094.13	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	18	422.13	4.02	0.00
			Max. My	17	-318.89	0.00	-0.04
			Max. Vy	18	-7.21	0.00	0.00
			Max. Vx	17	0.07	0.00	0.00
		Top Girt	Max Tension	4	6595.29	0.00	0.00
			Max. Compression	10	-3023.65	0.00	0.00
			Max. Mx	24	137.15	2.93	0.00
			Max. My	17	770.42	0.00	0.00
			Max. Vy	24	7.82	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	6	257.56	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	236.86	2.93	0.00
			Max. My	17	247.65	0.00	0.00
			Max. Vy	25	-7.82	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Mid Girt	Max Tension	6	849.42	0.00	0.00
			Max. Compression	4	-446.42	0.00	0.00
			Max. Mx	15	72.70	2.93	0.00
			Max. My	17	415.87	0.00	0.00
			Max. Vy	15	7.82	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Guy A	Bottom Tension	9	13405.37		
			Top Tension	9	13504.42		
			Top Cable Vert	9	12318.63		
			Top Cable Norm	9	5533.58		
			Top Cable Tan	9	14.85		
			Bot Cable Vert	9	-12133.49		
			Bot Cable Norm	9	5698.16		
			Bot Cable Tan	9	115.67		
		Guy B	Bottom Tension	11	11520.31		
			Top Tension	11	11630.66		
			Top Cable Vert	11	10207.91		
			Top Cable Norm	11	5574.02		
			Top Cable Tan	11	31.76		
			Bot Cable Vert	11	-9987.02		
			Bot Cable Norm	11	5741.55		
			Bot Cable Tan	11	107.73		
		Guy C	Bottom Tension	5	19291.76		
			Top Tension	5	19392.64		
			Top Cable Vert	5	18677.69		
			Top Cable Norm	5	5215.92		
			Top Cable Tan	5	112.28		
			Bot Cable Vert	5	-18519.33		
			Bot Cable Norm	5	5398.46		
			Bot Cable Tan	5	251.18		
		Torque Arm Top	Max Tension	6	18846.35	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	8578.58	28.56	0.00
			Max. My	17	9486.31	0.00	0.07
			Max. Vy	18	30.19	0.00	0.00
			Max. Vx	17	0.07	0.00	0.00
		Torque Arm Bottom	Max Tension	2	1325.04	0.00	0.00
			Max. Compression	5	-19282.58	0.00	0.00
			Max. Mx	17	-3770.38	28.57	0.00
			Max. My	17	-4109.07	0.00	-0.07
			Max. Vy	17	-30.20	0.00	0.00
			Max. Vx	17	0.08	0.00	0.00
T3	120 - 100	Leg	Max Tension	4	30521.99	185.73	-97.53
			Max. Compression	6	-70584.42	-286.12	-215.91
			Max. Mx	5	-20036.62	387.99	145.43

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	4	-39733.40	-8.31	-416.95
			Max. Vy	6	4492.42	-286.12	-215.91
			Max. Vx	2	-5077.91	52.17	342.11
		Diagonal	Max Tension	5	3132.64	0.00	0.00
			Max. Compression	5	-3687.54	0.00	0.00
			Max. Mx	18	1053.07	3.92	0.00
			Max. My	17	-130.65	0.00	-0.04
			Max. Vy	18	7.03	0.00	0.00
			Max. Vx	17	0.07	0.00	0.00
		Top Girt	Max Tension	6	546.90	0.00	0.00
			Max. Compression	4	-196.81	0.00	0.00
			Max. Mx	25	278.71	2.86	0.00
			Max. My	17	311.86	0.00	0.00
			Max. Vy	25	-7.63	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	10	773.32	0.00	0.00
			Max. Compression	4	-1441.03	0.00	0.00
			Max. Mx	25	38.05	2.86	0.00
			Max. My	5	-88.03	0.00	-0.00
			Max. Vy	25	-7.63	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Mid Girt	Max Tension	17	561.84	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	542.34	2.86	0.00
			Max. My	5	459.84	0.00	-0.00
			Max. Vy	16	7.63	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T4	100 - 80	Leg	Max Tension	4	35881.82	-384.00	213.86
			Max. Compression	6	-82003.09	-354.21	-274.07
			Max. Mx	5	-28394.52	-1114.77	-200.59
			Max. My	3	-24029.69	-388.81	1045.47
			Max. Vy	6	4475.91	-658.97	-440.13
			Max. Vx	2	-5059.54	60.49	763.63
		Diagonal	Max Tension	5	6812.69	0.00	0.00
			Max. Compression	5	-6161.76	0.00	0.00
			Max. Mx	18	1708.13	3.80	0.00
			Max. My	17	2401.22	0.00	-0.03
			Max. Vy	18	-6.80	0.00	0.00
			Max. Vx	17	0.05	0.00	0.00
		Top Girt	Max Tension	10	121.61	0.00	0.00
			Max. Compression	5	-783.10	0.00	0.00
			Max. Mx	25	-105.29	2.78	0.00
			Max. My	5	-313.11	0.00	-0.00
			Max. Vy	25	-7.42	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	6	429.36	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	361.19	2.78	0.00
			Max. My	5	366.47	0.00	-0.00
			Max. Vy	25	7.42	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Mid Girt	Max Tension	5	1125.04	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	21	828.98	2.78	0.00
			Max. My	5	923.25	0.00	-0.00
			Max. Vy	21	7.42	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Guy A	Bottom Tension	7	9634.53		
			Top Tension	7	9689.00		
			Top Cable Vert	7	8023.19		
			Top Cable Norm	7	5431.86		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Cable Tan	7	10.30		
			Bot Cable Vert	7	-7904.07		
			Bot Cable Norm	7	5508.43		
			Bot Cable Tan	7	84.18		
		Guy B	Bottom Tension	11	8505.79		
			Top Tension	11	8569.60		
			Top Cable Vert	11	6736.75		
			Top Cable Norm	11	5296.56		
			Top Cable Tan	11	26.32		
			Bot Cable Vert	11	-6591.34		
			Bot Cable Norm	11	5375.83		
			Bot Cable Tan	11	56.18		
		Guy C	Bottom Tension	5	15608.02		
			Top Tension	5	15665.15		
			Top Cable Vert	5	14506.14		
			Top Cable Norm	5	5913.25		
			Top Cable Tan	5	50.16		
			Bot Cable Vert	5	-14404.74		
			Bot Cable Norm	5	6008.12		
			Bot Cable Tan	5	128.32		
		Torque Arm Top	Max Tension	6	13836.05	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	6831.34	27.01	0.00
			Max. My	20	5124.66	0.00	0.05
			Max. Vy	18	29.01	0.00	0.00
			Max. Vx	20	-0.06	0.00	0.00
		Torque Arm Bottom	Max Tension	6	4195.91	0.00	0.00
			Max. Compression	3	-17871.78	0.00	0.00
			Max. Mx	17	-2995.58	27.93	0.00
			Max. My	19	-1796.31	0.00	-0.05
			Max. Vy	17	-29.04	0.00	0.00
			Max. Vx	19	-0.05	0.00	0.00
T5	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-52467.81	-137.38	-83.69
			Max. Mx	6	-45817.10	-138.35	-84.09
			Max. My	2	-41313.93	1.30	148.23
			Max. Vy	4	535.11	44.91	-23.48
			Max. Vx	8	530.58	1.43	59.25
		Diagonal	Max Tension	10	779.06	0.00	0.00
			Max. Compression	10	-1129.02	0.00	0.00
			Max. Mx	18	-386.06	3.64	0.00
			Max. My	18	242.99	0.00	-0.02
			Max. Vy	18	-6.53	0.00	0.00
			Max. Vx	18	0.04	0.00	0.00
		Top Girt	Max Tension	5	439.53	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	327.65	2.69	0.00
			Max. My	5	374.38	0.00	-0.00
			Max. Vy	25	7.16	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	5	551.96	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	413.78	2.69	0.00
			Max. My	5	354.23	0.00	-0.00
			Max. Vy	25	7.16	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Mid Girt	Max Tension	17	875.31	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	741.90	2.69	0.00
			Max. My	5	723.15	0.00	-0.00
			Max. Vy	25	7.16	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	5	0.00	0.00	0.00
T6	60 - 40	Leg	Max Tension	4	554.15	-72.15	34.12
			Max. Compression	6	-61687.20	49.49	57.02
			Max. Mx	5	-45564.91	-197.88	-87.28
			Max. My	2	-57172.52	-2.25	215.58
			Max. Vy	5	-893.67	13.69	-33.96
			Max. Vx	2	961.06	7.77	214.65
		Diagonal	Max Tension	7	1567.14	0.00	0.00
			Max. Compression	7	-1783.19	0.00	0.00
			Max. Mx	18	-341.54	3.46	0.00
			Max. My	19	345.50	0.00	-0.01
			Max. Vy	18	6.20	0.00	0.00
			Max. Vx	19	0.02	0.00	0.00
		Top Girt	Max Tension	17	455.27	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	391.37	2.56	0.00
			Max. My	5	365.37	0.00	-0.00
			Max. Vy	25	-6.84	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	22	491.73	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	20	486.46	2.56	0.00
			Max. My	5	394.14	0.00	-0.00
			Max. Vy	20	-6.84	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Mid Girt	Max Tension	10	2881.12	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	24	2634.60	2.56	0.00
			Max. My	5	2211.03	0.00	-0.00
			Max. Vy	24	-6.84	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Guy A	Bottom Tension	8	6854.80		
			Top Tension	8	6873.04		
			Top Cable Vert	8	3637.03		
			Top Cable Norm	8	5831.87		
			Top Cable Tan	8	2.12		
			Bot Cable Vert	8	-3583.82		
			Bot Cable Norm	8	5843.34		
			Bot Cable Tan	8	2.12		
		Guy B	Bottom Tension	13	6694.90		
			Top Tension	13	6720.08		
			Top Cable Vert	13	3620.03		
			Top Cable Norm	13	5661.70		
			Top Cable Tan	13	7.79		
			Bot Cable Vert	13	-3544.84		
			Bot Cable Norm	13	5679.35		
			Bot Cable Tan	13	27.82		
		Guy C	Bottom Tension	4	8537.26		
			Top Tension	4	8557.97		
			Top Cable Vert	4	6378.07		
			Top Cable Norm	4	5706.05		
			Top Cable Tan	4	2.65		
			Bot Cable Vert	4	-6327.24		
			Bot Cable Norm	4	5731.57		
			Bot Cable Tan	4	2.65		
T7	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49661.52	-101.38	-58.04
			Max. Mx	5	-28117.38	162.23	-62.08
			Max. My	19	-46091.66	0.90	176.04
			Max. Vy	5	-890.09	88.10	-48.09
			Max. Vx	2	964.25	1.58	134.63

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Diagonal	Max Tension	5	1334.58	0.00	0.00
			Max. Compression	5	-1692.78	0.00	0.00
			Max. Mx	16	234.73	3.20	0.00
			Max. My	20	115.98	0.00	-0.01
			Max. Vy	16	-5.73	0.00	0.00
			Max. Vx	20	0.01	0.00	0.00
		Top Girt	Max Tension	5	549.05	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	20	490.97	2.39	0.00
			Max. My	5	395.27	0.00	-0.00
			Max. Vy	20	-6.38	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
		Bottom Girt	Max Tension	22	543.24	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	513.55	2.39	0.00
			Max. My	10	275.28	0.00	-0.00
			Max. Vy	16	-6.38	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Mid Girt	Max Tension	22	994.85	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	968.10	2.39	0.00
			Max. My	5	785.27	0.00	-0.00
			Max. Vy	25	-6.38	0.00	0.00
			Max. Vx	5	0.00	0.00	0.00
T8	20 - 3.33	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49769.46	94.85	54.98
			Max. Mx	16	-46706.32	-136.07	-77.13
			Max. My	20	-47936.93	0.00	158.93
			Max. Vy	12	-704.24	-49.29	-25.78
			Max. Vx	8	860.45	5.27	60.62
		Diagonal	Max Tension	9	1456.17	0.00	0.00
			Max. Compression	9	-1733.67	0.00	0.00
			Max. Mx	20	605.24	2.79	0.00
			Max. My	20	-504.00	0.00	-0.00
			Max. Vy	20	-5.01	0.00	0.00
			Max. Vx	20	0.01	0.00	0.00
		Top Girt	Max Tension	22	518.83	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	490.67	2.11	0.00
			Max. My	10	247.83	0.00	-0.00
			Max. Vy	16	5.64	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Bottom Girt	Max Tension	19	649.47	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	643.39	2.11	0.00
			Max. My	10	422.53	0.00	-0.00
			Max. Vy	17	5.64	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Mid Girt	Max Tension	22	1078.55	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	24	951.45	2.11	0.00
			Max. My	10	571.07	0.00	-0.00
			Max. Vy	24	5.64	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
T9	3.33 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-48415.40	0.24	-62.43
			Max. Mx	6	-34414.38	-103.46	-84.97
			Max. My	2	-32447.88	-14.65	133.02
			Max. Vy	12	-705.70	9.51	19.20
			Max. Vx	8	862.33	27.34	-11.23
		Diagonal	Max Tension	9	1429.16	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	9	-1592.21	0.00	0.00
			Max. Mx	20	668.11	1.78	0.00
			Max. My	10	102.99	0.00	-0.00
			Max. Vy	20	3.86	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Top Girt	Max Tension	19	483.58	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	461.68	1.67	0.00
			Max. My	10	241.32	0.00	-0.00
			Max. Vy	17	4.46	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Base Beam	Max Tension	10	1558.81	-25545.61	-288.08
			Max. Compression	12	-283.87	-9.83	-0.02
			Max. Mx	18	-47650.69	-41368.66	-24.89
			Max. My	10	-29511.63	-25600.16	-547.41
			Max. Vy	18	-47650.69	-41368.66	-24.89
			Max. Vx	10	-633.51	-25600.16	-547.41

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 37 ft Elev 9.67 ft Azimuth 240 deg	Max. Vert	10	-3324.85	-652.33	375.49
	Max. H_x	10	-3324.85	-652.33	375.49
	Max. H_z	3	-68801.52	-23282.47	14076.60
	Min. Vert	5	-69188.97	-23969.44	13166.08
	Min. H_x	5	-69188.97	-23969.44	13166.08
	Min. H_z	10	-3324.85	-652.33	375.49
Guy B @ 78.25 ft Elev 1 ft Azimuth 120 deg	Max. Vert	6	-1090.29	396.04	232.19
	Max. H_x	11	-35990.52	23847.09	13414.31
	Max. H_z	13	-35387.38	23151.51	13834.03
	Min. Vert	11	-35990.52	23847.09	13414.31
	Min. H_x	6	-1090.29	396.04	232.19
	Min. H_z	6	-1090.29	396.04	232.19
Guy A @ 58 ft Elev 14.58 ft Azimuth 0 deg	Max. Vert	2	-1244.39	-4.41	-399.14
	Max. H_x	11	-22570.40	529.61	-14268.35
	Max. H_z	2	-1244.39	-4.41	-399.14
	Min. Vert	9	-42381.10	303.94	-27382.26
	Min. H_x	6	-35816.42	-734.14	-22911.32
	Min. H_z	9	-42381.10	303.94	-27382.26
Mast	Max. Vert	18	142933.94	68.12	-85.63
	Max. H_x	11	80411.96	1159.13	35.85
	Max. H_z	13	91083.69	683.98	775.10
	Max. M_x	1	0.00	54.46	-24.93
	Max. M_z	1	0.00	54.46	-24.93
	Max. Torsion	4	979.90	-731.85	491.38
	Min. Vert	28	58747.34	-58.09	189.07
	Min. H_x	4	89493.31	-731.85	491.38
	Min. H_z	8	76188.99	65.28	-1201.70
	Min. M_x	1	0.00	54.46	-24.93

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. M_z	1	0.00	54.46	-24.93
	Min. Torsion	10	-902.90	938.37	-534.85

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	59514.22	-54.46	24.93	0.00	0.00	4.99
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	108434.94	-166.05	-696.83	0.00	0.00	-509.31
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	105866.08	348.08	-569.09	0.00	0.00	-796.37
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	89493.31	731.85	-491.38	0.00	0.00	-979.90
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	109759.35	629.85	-41.25	0.00	0.00	-826.42
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	113670.67	502.73	491.16	0.00	0.00	-402.57
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	97908.52	298.84	956.47	0.00	0.00	144.73
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	76188.99	-65.28	1201.70	0.00	0.00	648.27
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	83074.50	-572.05	999.82	0.00	0.00	843.41
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	88421.28	-938.37	534.85	0.00	0.00	902.90
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	80411.96	-1159.13	-35.85	0.00	0.00	732.91
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	70164.89	-1093.61	-590.41	0.00	0.00	302.47
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	91083.69	-683.98	-775.10	0.00	0.00	-121.81
1.2 Dead+1.0 Ice+1.0 Temp+Guy	136595.43	-234.20	78.20	0.00	0.00	8.91
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	137965.23	-253.53	-118.03	0.00	0.00	-36.99
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	140338.19	-167.39	-88.10	0.00	0.00	-21.26
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	142170.18	-95.03	-13.95	0.00	0.00	-11.28
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	142933.94	-68.12	85.63	0.00	0.00	0.29
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	142416.76	-91.56	178.41	0.00	0.00	26.79
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	140693.90	-147.08	247.41	0.00	0.00	53.54
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	138986.86	-231.28	270.62	0.00	0.00	66.66
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	137400.11	-324.03	241.13	0.00	0.00	52.91
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	135927.89	-388.03	170.13	0.00	0.00	40.23
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	135393.02	-411.14	76.24	0.00	0.00	17.63
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	135550.52	-388.50	-24.02	0.00	0.00	-22.75

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 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	136310.53	-329.01	-96.75	0.00	0.00	-40.95
Dead+Wind 0 deg - Service+Guy	58853.63	-64.81	-227.52	0.00	0.00	-111.49
Dead+Wind 30 deg - Service+Guy	58747.34	58.09	-189.07	0.00	0.00	-171.57
Dead+Wind 60 deg - Service+Guy	58854.37	150.39	-94.07	0.00	0.00	-183.04
Dead+Wind 90 deg - Service+Guy	59060.47	187.91	31.80	0.00	0.00	-144.00
Dead+Wind 120 deg - Service+Guy	59436.90	158.53	156.84	0.00	0.00	-65.44
Dead+Wind 150 deg - Service+Guy	59962.35	73.22	247.20	0.00	0.00	30.18
Dead+Wind 180 deg - Service+Guy	60420.03	-48.74	274.47	0.00	0.00	124.35
Dead+Wind 210 deg - Service+Guy	60633.04	-170.60	236.08	0.00	0.00	179.97
Dead+Wind 240 deg - Service+Guy	60549.65	-262.43	140.72	0.00	0.00	190.20
Dead+Wind 270 deg - Service+Guy	60219.62	-300.28	14.58	0.00	0.00	150.70
Dead+Wind 300 deg - Service+Guy	59735.12	-273.11	-108.87	0.00	0.00	70.28
Dead+Wind 330 deg - Service+Guy	59227.11	-186.15	-198.62	0.00	0.00	-20.20

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-14694.23	0.00	-0.37	14694.46	-2.08	0.014%
2	82.31	-17425.87	-24584.24	-84.18	17426.66	24614.56	0.101%
3	12383.93	-17313.85	-21354.34	-12372.18	17314.13	21376.17	0.082%
4	21373.81	-17223.22	-12364.39	-21377.89	17223.21	12355.58	0.032%
5	24614.63	-17249.09	-61.98	-24623.63	17249.25	39.36	0.081%
6	21267.48	-17314.83	12207.96	-21293.50	17315.52	-12227.07	0.108%
7	12241.89	-17323.09	21215.99	-12264.93	17323.47	-21221.89	0.079%
8	-100.02	-17349.83	24588.43	92.96	17349.83	-24588.22	0.023%
9	-12398.11	-17461.85	21367.56	12407.93	17462.02	-21370.47	0.034%
10	-21389.66	-17552.47	12373.54	21393.10	17552.54	-12375.39	0.013%
11	-24633.17	-17526.60	67.65	24632.73	17526.55	-60.54	0.024%
12	-21279.97	-17460.87	-12194.71	21278.67	17460.94	12201.12	0.022%
13	-12227.80	-17452.60	-21224.13	12221.29	17452.97	21242.36	0.064%
14	0.00	-82893.33	0.00	0.47	82893.31	-3.16	0.004%
15	118.92	-82936.51	-7986.81	-109.89	82936.48	7985.99	0.011%
16	4105.25	-82807.08	-7017.56	-4099.32	82807.01	7010.87	0.011%
17	7000.75	-82702.72	-4112.41	-7000.29	82702.69	4106.81	0.007%
18	7985.26	-82735.61	-99.93	-7987.37	82735.60	95.15	0.006%
19	6828.97	-82814.00	3875.91	-6833.00	82814.01	-3879.74	0.007%
20	3874.67	-82821.86	6814.95	-3879.83	82821.88	-6817.55	0.007%
21	-122.29	-82850.16	7987.61	114.15	82850.17	-7989.13	0.010%
22	-4107.95	-82979.58	7020.07	4101.91	82979.56	-7018.88	0.007%
23	-7003.76	-83083.95	4114.15	7000.59	83083.92	-4110.01	0.006%
24	-7988.78	-83051.06	101.01	7989.68	83051.06	-96.24	0.006%
25	-6831.34	-82972.67	-3873.39	6835.55	82972.69	3878.94	0.008%
26	-3871.99	-82964.81	-6816.50	3876.87	82964.82	6819.13	0.007%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
27	16.80	-14701.98	-5017.19	-15.01	14701.98	5016.62	0.012%
28	2527.33	-14679.12	-4358.03	-2525.70	14679.12	4356.88	0.013%
29	4362.00	-14660.63	-2523.34	-4360.51	14660.62	2521.99	0.013%
30	5023.39	-14665.91	-12.65	-5022.30	14665.91	11.63	0.010%
31	4340.30	-14679.32	2491.42	-4337.48	14679.32	-2493.61	0.023%
32	2498.34	-14681.01	4329.79	-2497.15	14681.03	-4333.34	0.024%
33	-20.41	-14686.47	5018.05	19.54	14686.47	-5019.12	0.009%
34	-2530.23	-14709.33	4360.73	2528.63	14709.32	-4360.69	0.010%
35	-4365.24	-14727.82	2525.21	4363.91	14727.81	-2523.86	0.012%
36	-5027.18	-14722.54	13.81	5027.04	14722.54	-11.76	0.013%
37	-4342.85	-14709.13	-2488.72	4344.04	14709.14	2490.38	0.013%
38	-2495.47	-14707.44	-4331.46	2497.38	14707.45	4331.96	0.013%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	12	0.00000001	0.00007505
2	Yes	24	0.00005128	0.00007138
3	Yes	24	0.00005227	0.00007347
4	Yes	27	0.00009593	0.00005616
5	Yes	24	0.00006152	0.00008220
6	Yes	24	0.00007233	0.00009346
7	Yes	22	0.00008959	0.00009635
8	Yes	17	0.00000001	0.00005950
9	Yes	16	0.00000001	0.00008223
10	Yes	17	0.00000001	0.00005110
11	Yes	16	0.00000001	0.00006416
12	Yes	15	0.00000001	0.00005185
13	Yes	22	0.00000001	0.00006842
14	Yes	16	0.00000001	0.00007800
15	Yes	16	0.00000001	0.00008421
16	Yes	17	0.00000001	0.00006622
17	Yes	19	0.00000001	0.00005099
18	Yes	20	0.00000001	0.00005377
19	Yes	20	0.00000001	0.00005253
20	Yes	19	0.00000001	0.00004849
21	Yes	17	0.00000001	0.00007103
22	Yes	16	0.00000001	0.00006840
23	Yes	15	0.00000001	0.00008494
24	Yes	15	0.00000001	0.00006968
25	Yes	15	0.00000001	0.00007586
26	Yes	16	0.00000001	0.00005565
27	Yes	11	0.00000001	0.00004814
28	Yes	11	0.00000001	0.00006592
29	Yes	11	0.00000001	0.00007753
30	Yes	11	0.00000001	0.00005572
31	Yes	10	0.00000001	0.00009213
32	Yes	10	0.00000001	0.00009896
33	Yes	11	0.00000001	0.00004097
34	Yes	11	0.00000001	0.00004486
35	Yes	11	0.00000001	0.00004698
36	Yes	11	0.00000001	0.00004565
37	Yes	11	0.00000001	0.00004409
38	Yes	11	0.00000001	0.00004450

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	3.293	29	0.0803	0.0461
T2	140 - 120	3.129	29	0.0619	0.0303
T3	120 - 100	2.655	29	0.1944	0.0268
T4	100 - 80	1.745	29	0.1746	0.0233
T5	80 - 60	1.209	29	0.1234	0.0692
T6	60 - 40	0.695	29	0.1090	0.0882
T7	40 - 20	0.421	30	0.0343	0.0824
T8	20 - 3.33	0.280	30	0.0488	0.0548
T9	3.33 - 0	0.055	37	0.0760	0.0096

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
167.50	15' - 4 Element DiPole	29	3.293	0.0803	0.0461	27371
155.00	10' DiPole	29	3.293	0.0803	0.0461	27371
150.50	15' - 4 Element DiPole	29	3.293	0.0803	0.0461	27371
148.00	10' DiPole	29	3.261	0.0730	0.0421	27371
147.00	PiROD 12' T-Frame	29	3.244	0.0696	0.0400	27371
143.00	SO311-1	29	3.179	0.0606	0.0337	19819
138.26	Guy	29	3.101	0.0669	0.0287	16609
134.00	6' Omni	29	3.026	0.0904	0.0256	18281
129.00	SO311-1	29	2.924	0.1297	0.0265	10073
126.00	CCI HPA-65R-BUU-H6	29	2.849	0.1546	0.0270	7935
122.00	Yagi (4 ft)	29	2.727	0.1836	0.0272	6374
116.00	RFS APXV18-206517S	29	2.487	0.2066	0.0269	9232
96.75	Guy	29	1.630	0.1632	0.0292	7304
92.00	10' Omni	29	1.492	0.1480	0.0409	12054
88.50	15' Omni	29	1.405	0.1384	0.0498	23566
83.00	SO312-1	29	1.279	0.1272	0.0630	44946
53.00	8' Omni	30	0.565	0.0836	0.0880	15959
52.00	GPS	30	0.551	0.0793	0.0879	16462
51.00	SO310-1	30	0.537	0.0749	0.0877	16997
50.00	Guy	30	0.523	0.0704	0.0875	17568
34.00	Commscope VHLP2-180	30	0.380	0.0297	0.0771	26835

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	25.681	5	1.2385	0.2564
T2	140 - 120	23.143	5	1.1441	0.1951
T3	120 - 100	17.763	5	1.5899	0.1885
T4	100 - 80	10.882	5	1.3897	0.2364
T5	80 - 60	6.477	5	0.8811	0.3753

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T6	60 - 40	3.584	2	0.5977	0.4713
T7	40 - 20	2.308	2	0.1733	0.4337
T8	20 - 3.33	1.706	10	0.2711	0.2838
T9	3.33 - 0	0.337	10	0.4686	0.0494

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
167.50	15' - 4 Element DiPole	5	25.681	1.2385	0.2564	6017
155.00	10' DiPole	5	25.681	1.2385	0.2564	6017
150.50	15' - 4 Element DiPole	5	25.681	1.2385	0.2564	6017
148.00	10' DiPole	5	25.169	1.2067	0.2378	6017
147.00	PiROD 12' T-Frame	5	24.913	1.1918	0.2284	6017
143.00	SO311-1	5	23.896	1.1484	0.1967	4379
138.26	Guy	5	22.712	1.1568	0.1958	4346
134.00	6' Omni	5	21.655	1.2314	0.2010	7028
129.00	SO311-1	5	20.375	1.3689	0.2068	2747
126.00	CCI HPA-65R-BUU-H6	5	19.561	1.4556	0.2065	2012
122.00	Yagi (4 ft)	5	18.392	1.5545	0.1978	1534
116.00	RFS APXV18-206517S	5	16.411	1.6229	0.1898	2287
96.75	Guy	5	9.971	1.3037	0.2522	1258
92.00	10' Omni	5	8.817	1.1726	0.2754	1709
88.50	15' Omni	5	8.072	1.0776	0.3006	2343
83.00	SO312-1	5	7.019	0.9424	0.3508	5180
53.00	8' Omni	2	2.984	0.4410	0.4717	2718
52.00	GPS	2	2.914	0.4165	0.4705	2802
51.00	SO310-1	2	2.848	0.3920	0.4689	2890
50.00	Guy	2	2.785	0.3677	0.4670	2985
34.00	Commscope VHLP2-180	13	2.135	0.1572	0.4030	8027

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	138.26 (A) (658)	5/8 EHS	4240.00	42399.99	13504.40	25440.00	1.000	1.884 ✔
	138.26 (A) (659)	5/8 EHS	4240.00	42399.99	13262.80	25440.00	1.000	1.918 ✔
	138.26 (B) (652)	5/8 EHS	4240.00	42399.99	11534.50	25440.00	1.000	2.206 ✔
	138.26 (B) (653)	5/8 EHS	4240.00	42399.99	11630.70	25440.00	1.000	2.187 ✔
	138.26 (C) (646)	5/8 EHS	4240.00	42399.99	19392.60	25440.00	1.000	1.312 ✔
	138.26 (C) (647)	5/8 EHS	4240.00	42399.99	19361.20	25440.00	1.000	1.314 ✔
T4	96.75 (A) (676)	9/16 EHS	3500.00	35000.04	9514.62	21000.00	1.000	2.207 ✔
	96.75 (A)	9/16 EHS	3500.00	35000.04	9689.00	21000.00	1.000	2.167 ✔

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.
	(677) 96.75 (B) (670)	9/16 EHS	3500.00	35000.04	8428.00	21000.00	1.000	2.492 ✔
	96.75 (B) (671)	9/16 EHS	3500.00	35000.04	8569.60	21000.00	1.000	2.451 ✔
	96.75 (C) (664)	9/16 EHS	3500.00	35000.04	15665.20	21000.00	1.000	1.341 ✔
	96.75 (C) (665)	9/16 EHS	3500.00	35000.04	15304.30	21000.00	1.000	1.372 ✔
T6	50.00 (A) (684)	1/2 EHS	2690.00	26900.04	6873.04	16140.00	1.000	2.348 ✔
	50.00 (B) (683)	1/2 EHS	2690.00	26900.04	6720.08	16140.00	1.000	2.402 ✔
	50.00 (C) (682)	1/2 EHS	2690.00	26900.04	8557.97	16140.00	1.000	1.886 ✔

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	150 - 140	1 3/4	10.00	1.64	45.0 K=1.00	2.4053	1.00	-24775.40	93371.00	0.265 [1] ✔
T2	140 - 120	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	0.94	-54845.90	87723.20	0.625 [1] ✔
T3	120 - 100	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	0.96	-70584.40	89059.80	0.793 [1] ✔
T4	100 - 80	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	0.93	-82003.10	86216.50	0.951 [1] ✔
T5	80 - 60	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	0.88	-52467.80	81579.50	0.643 [1] ✔
T6	60 - 40	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	0.86	-61155.40	79670.80	0.768 [1] ✔
T7	40 - 20	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	0.71	-49661.50	66148.10	0.751 [1] ✔
T8	20 - 3.33	1 3/4	16.67	1.65	45.3 K=1.00	2.4053	0.71	-49769.50	66098.40	0.753 [1] ✔
T9	3.33 - 0	1 3/4	3.33	1.08	29.7 K=1.00	2.4053	0.65	-48415.40	66007.70	0.733 [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	150 - 140	5/8	2.22	2.01	77.0 K=0.50	0.3068	-2447.04	8947.42	0.273 [1]
T2	140 - 120	5/8	2.23	2.01	77.4 K=0.50	0.3068	-8094.13	8911.54	0.908 [1]
T3	120 - 100	5/8	2.23	2.01	77.4 K=0.50	0.3068	-3687.54	8911.54	0.414 [1]
T4	100 - 80	5/8	2.23	2.01	77.4 K=0.50	0.3068	-6161.76	8911.54	0.691 [1]
T5	80 - 60	5/8	2.23	2.01	77.4 K=0.50	0.3068	-1129.02	8911.54	0.127 [1]
T6	60 - 40	5/8	2.23	2.01	77.4 K=0.50	0.3068	-1783.19	8911.54	0.200 [1]
T7	40 - 20	5/8	2.23	2.01	77.4 K=0.50	0.3068	-1692.78	8911.54	0.190 [1]
T8	20 - 3.33	5/8	2.23	2.01	77.3 K=0.50	0.3068	-1733.67	8917.87	0.194 [1]
T9	3.33 - 0	5/8	1.85	1.67	64.1 K=0.50	0.3068	-1592.21	10221.20	0.156 [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	150 - 140	3/4	1.50	1.35	86.7 K=1.00	0.4418	-52.53	11479.30	0.005 [1]
T2	140 - 120	3/4	1.50	1.35	86.7 K=1.00	0.4418	-3023.65	11479.30	0.263 [1]
T3	120 - 100	3/4	1.50	1.35	86.7 K=1.00	0.4418	-196.81	11479.30	0.017 [1]
T4	100 - 80	3/4	1.50	1.35	86.7 K=1.00	0.4418	-783.10	11479.30	0.068 [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	150 - 140	3/4	1.50	1.35	86.7 K=1.00	0.4418	-2904.78	11479.30	0.253 [1]
T3	120 - 100	3/4	1.50	1.35	86.7 K=1.00	0.4418	-1441.03	11479.30	0.126 [1]

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	

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

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	140 - 120	3/4	1.50	1.35	86.7 K=1.00	0.4418	-446.42	11479.30	0.039 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Bottom 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	140 - 120 (650)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-19282.60	28754.60	0.671 [1] ✔
T2	140 - 120 (651)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-14060.80	28754.60	0.489 [1] ✔
T2	140 - 120 (656)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-12096.20	28754.60	0.421 [1] ✔
T2	140 - 120 (657)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-19012.60	28754.60	0.661 [1] ✔
T2	140 - 120 (662)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-11787.40	28754.60	0.410 [1] ✔
T2	140 - 120 (663)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-13665.20	28754.60	0.475 [1] ✔
T4	100 - 80 (668)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-17871.80	28598.50	0.625 [1] ✔
T4	100 - 80 (669)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-12035.60	28598.50	0.421 [1] ✔
T4	100 - 80 (674)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-10362.60	28598.50	0.362 [1] ✔
T4	100 - 80 (675)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-17595.20	28598.50	0.615 [1] ✔
T4	100 - 80 (680)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-10283.10	28598.50	0.360 [1] ✔
T4	100 - 80 (681)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-11644.70	28598.50	0.407 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	1 3/4	10.00	1.64	45.0	2.4053	22450.60	108238.00	0.207 [1] ✔
T2	140 - 120	1 3/4	20.00	1.65	45.3	2.4053	22449.60	108238.00	0.207 [1] ✔
T3	120 - 100	1 3/4	20.00	1.65	45.3	2.4053	30522.00	108238.00	0.282 [1] ✔
T4	100 - 80	1 3/4	20.00	1.65	45.3	2.4053	35881.80	108238.00	0.332 [1] ✔
T6	60 - 40	1 3/4	20.00	1.65	45.3	2.4053	554.15	108238.00	0.005 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	5/8	2.22	2.01	154.0	0.3068	2339.70	13805.80	0.169 [1] ✔
T2	140 - 120	5/8	2.23	2.01	154.8	0.3068	7478.70	13805.80	0.542 [1] ✔
T3	120 - 100	5/8	2.23	2.01	154.8	0.3068	3132.64	13805.80	0.227 [1] ✔
T4	100 - 80	5/8	2.23	2.01	154.8	0.3068	6812.69	13805.80	0.493 [1] ✔
T5	80 - 60	5/8	2.23	2.01	154.8	0.3068	779.06	13805.80	0.056 [1] ✔
T6	60 - 40	5/8	2.23	2.01	154.8	0.3068	1567.14	13805.80	0.114 [1] ✔
T7	40 - 20	5/8	2.23	2.01	154.8	0.3068	1334.58	13805.80	0.097 [1] ✔
T8	20 - 3.33	5/8	2.23	2.01	154.6	0.3068	1456.17	13805.80	0.105 [1] ✔
T9	3.33 - 0	5/8	1.85	1.67	128.2	0.3068	1429.16	13805.80	0.104 [1] ✔

[1] $P_u / \phi P_n$ 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	150 - 140	3/4	1.50	1.35	86.7	0.4418	48.20	19880.40	0.002 [1] ✔
T2	140 - 120	3/4	1.50	1.35	86.7	0.4418	6595.29	19880.40	0.332 [1] ✔
T3	120 - 100	3/4	1.50	1.35	86.7	0.4418	546.90	19880.40	0.028 [1] ✔
T4	100 - 80	3/4	1.50	1.35	86.7	0.4418	121.61	19880.40	0.006 [1] ✔
T5	80 - 60	3/4	1.50	1.35	86.7	0.4418	439.53	19880.40	0.022 [1] ✔
T6	60 - 40	3/4	1.50	1.35	86.7	0.4418	455.27	19880.40	0.023 [1] ✔
T7	40 - 20	3/4	1.50	1.35	86.7	0.4418	549.05	19880.40	0.028 [1] ✔
T8	20 - 3.33	3/4	1.50	1.35	86.7	0.4418	518.83	19880.40	0.026 [1] ✔
T9	3.33 - 0	3/4	1.50	1.35	86.7	0.4418	483.58	19880.40	0.024 [1] ✔

[1] P_u / ϕP_n controls

Bottom 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	150 - 140	3/4	1.50	1.35	86.7	0.4418	3522.83	19880.40	0.177 [1] ✔
T2	140 - 120	3/4	1.50	1.35	86.7	0.4418	257.56	19880.40	0.013 [1] ✔
T3	120 - 100	3/4	1.50	1.35	86.7	0.4418	773.33	19880.40	0.039 [1] ✔
T4	100 - 80	3/4	1.50	1.35	86.7	0.4418	429.36	19880.40	0.022 [1] ✔
T5	80 - 60	3/4	1.50	1.35	86.7	0.4418	551.96	19880.40	0.028 [1] ✔
T6	60 - 40	3/4	1.50	1.35	86.7	0.4418	491.73	19880.40	0.025 [1] ✔
T7	40 - 20	3/4	1.50	1.35	86.7	0.4418	543.24	19880.40	0.027 [1] ✔
T8	20 - 3.33	3/4	1.50	1.35	86.7	0.4418	649.47	19880.40	0.033 [1] ✔

[1] P_u / ϕP_n controls

Mid 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	
T2	140 - 120	3/4	1.50	1.35	86.7	0.4418	849.42	19880.40	0.043 [1] ✔
T3	120 - 100	3/4	1.50	1.35	86.7	0.4418	561.84	19880.40	0.028 [1] ✔
T4	100 - 80	3/4	1.50	1.35	86.7	0.4418	1125.04	19880.40	0.057 [1] ✔
T5	80 - 60	3/4	1.50	1.35	86.7	0.4418	875.31	19880.40	0.044 [1] ✔
T6	60 - 40	3/4	1.50	1.35	86.7	0.4418	2881.12	19880.40	0.145 [1] ✔
T7	40 - 20	3/4	1.50	1.35	86.7	0.4418	994.85	19880.40	0.050 [1] ✔
T8	20 - 3.33	3/4	1.50	1.35	86.7	0.4418	1078.55	19880.40	0.054 [1] ✔

[1] $P_u / \phi P_n$ 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	140 - 120 (648)	P2x.154	3.78	3.70	56.4	1.0745	18846.30	33847.70	0.557 [1] ✔
T2	140 - 120 (649)	P2x.154	3.78	3.70	56.4	1.0745	14527.10	33847.70	0.429 [1] ✔
T2	140 - 120 (654)	P2x.154	3.78	3.70	56.4	1.0745	18234.20	33847.70	0.539 [1] ✔
T2	140 - 120 (655)	P2x.154	3.78	3.70	56.4	1.0745	13807.90	33847.70	0.408 [1] ✔
T2	140 - 120 (660)	P2x.154	3.78	3.70	56.4	1.0745	13057.30	33847.70	0.386 [1] ✔
T2	140 - 120 (661)	P2x.154	3.78	3.70	56.4	1.0745	13394.50	33847.70	0.396 [1] ✔
T4	100 - 80 (666)	P2x.154	3.72	3.65	55.6	1.0745	13836.10	33847.70	0.409 [1] ✔
T4	100 - 80 (667)	P2x.154	3.72	3.65	55.6	1.0745	11707.90	33847.70	0.346 [1] ✔
T4	100 - 80 (672)	P2x.154	3.72	3.65	55.6	1.0745	10815.50	33847.70	0.320 [1] ✔
T4	100 - 80 (673)	P2x.154	3.72	3.65	55.6	1.0745	13420.20	33847.70	0.396 [1] ✔
T4	100 - 80 (678)	P2x.154	3.72	3.65	55.6	1.0745	8932.09	33847.70	0.264 [1] ✔
T4	100 - 80 (679)	P2x.154	3.72	3.65	55.6	1.0745	9229.93	33847.70	0.273 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Bottom 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	140 - 120 (650)	P2x.154	3.78	3.70	56.4	1.0745	111.07	33847.70	0.003 [1] ✔
T2	140 - 120 (657)	P2x.154	3.78	3.70	56.4	1.0745	348.86	33847.70	0.010 [1] ✔
T2	140 - 120 (662)	P2x.154	3.78	3.70	56.4	1.0745	1166.76	33847.70	0.034 [1] ✔
T2	140 - 120 (663)	P2x.154	3.78	3.70	56.4	1.0745	1325.04	33847.70	0.039 [1] ✔
T4	100 - 80 (668)	P2x.154	3.85	3.76	57.4	1.0745	3744.36	33847.70	0.111 [1] ✔
T4	100 - 80 (669)	P2x.154	3.85	3.76	57.4	1.0745	3895.34	33847.70	0.115 [1] ✔
T4	100 - 80 (674)	P2x.154	3.85	3.76	57.4	1.0745	3786.88	33847.70	0.112 [1] ✔
T4	100 - 80 (675)	P2x.154	3.85	3.76	57.4	1.0745	3539.29	33847.70	0.105 [1] ✔
T4	100 - 80 (680)	P2x.154	3.85	3.76	57.4	1.0745	4195.91	33847.70	0.124 [1] ✔
T4	100 - 80 (681)	P2x.154	3.85	3.76	57.4	1.0745	4119.43	33847.70	0.122 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	150 - 140	Leg	1 3/4	2	-24775.40	93371.00	26.5	Pass
T2	140 - 120	Leg	1 3/4	46	-54845.90	87723.20	62.5	Pass
T3	120 - 100	Leg	1 3/4	131	-70584.40	89059.80	79.3	Pass
T4	100 - 80	Leg	1 3/4	215	-82003.10	86216.50	95.1	Pass
T5	80 - 60	Leg	1 3/4	299	-52467.80	81579.50	64.3	Pass
T6	60 - 40	Leg	1 3/4	383	-61155.40	79670.80	76.8	Pass
T7	40 - 20	Leg	1 3/4	467	-49661.50	66148.10	75.1	Pass
T8	20 - 3.33	Leg	1 3/4	551	-49769.50	66098.40	75.3	Pass
T9	3.33 - 0	Leg	1 3/4	624	-48415.40	66007.70	73.3	Pass
T1	150 - 140	Diagonal	5/8	11	-2447.04	8947.42	27.3	Pass
T2	140 - 120	Diagonal	5/8	118	-8094.13	8911.54	90.8	Pass
T3	120 - 100	Diagonal	5/8	143	-3687.54	8911.54	41.4	Pass
T4	100 - 80	Diagonal	5/8	280	-6161.76	8911.54	69.1	Pass
T5	80 - 60	Diagonal	5/8	380	-1129.02	8911.54	12.7	Pass
T6	60 - 40	Diagonal	5/8	427	-1783.19	8911.54	20.0	Pass
T7	40 - 20	Diagonal	5/8	544	-1692.78	8911.54	19.0	Pass
T8	20 - 3.33	Diagonal	5/8	567	-1733.67	8917.87	19.4	Pass
T9	3.33 - 0	Diagonal	5/8	645	-1592.21	10221.20	15.6	Pass
T1	150 - 140	Top Girt	3/4	5	-52.53	11479.30	0.5	Pass
T2	140 - 120	Top Girt	3/4	50	6595.29	19880.40	33.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T3	120 - 100	Top Girt	3/4	135	546.90	19880.40	2.8	Pass
T4	100 - 80	Top Girt	3/4	218	-783.10	11479.30	6.8	Pass
T5	80 - 60	Top Girt	3/4	302	439.53	19880.40	2.2	Pass
T6	60 - 40	Top Girt	3/4	386	455.27	19880.40	2.3	Pass
T7	40 - 20	Top Girt	3/4	470	549.05	19880.40	2.8	Pass
T8	20 - 3.33	Top Girt	3/4	554	518.83	19880.40	2.6	Pass
T9	3.33 - 0	Top Girt	3/4	627	483.58	19880.40	2.4	Pass
T1	150 - 140	Bottom Girt	3/4	8	-2904.78	11479.30	25.3	Pass
T2	140 - 120	Bottom Girt	3/4	54	257.56	19880.40	1.3	Pass
T3	120 - 100	Bottom Girt	3/4	137	-1441.03	11479.30	12.6	Pass
T4	100 - 80	Bottom Girt	3/4	221	429.36	19880.40	2.2	Pass
T5	80 - 60	Bottom Girt	3/4	305	551.96	19880.40	2.8	Pass
T6	60 - 40	Bottom Girt	3/4	389	491.73	19880.40	2.5	Pass
T7	40 - 20	Bottom Girt	3/4	473	543.24	19880.40	2.7	Pass
T8	20 - 3.33	Bottom Girt	3/4	556	649.47	19880.40	3.3	Pass
T2	140 - 120	Mid Girt	3/4	57	849.42	19880.40	4.3	Pass
T3	120 - 100	Mid Girt	3/4	140	561.84	19880.40	2.8	Pass
T4	100 - 80	Mid Girt	3/4	224	1125.04	19880.40	5.7	Pass
T5	80 - 60	Mid Girt	3/4	308	875.31	19880.40	4.4	Pass
T6	60 - 40	Mid Girt	3/4	392	2881.12	19880.40	14.5	Pass
T7	40 - 20	Mid Girt	3/4	476	994.85	19880.40	5.0	Pass
T8	20 - 3.33	Mid Girt	3/4	560	1078.55	19880.40	5.4	Pass
T2	140 - 120	Guy A@138.264	5/8	658	13504.40	25440.00	53.1	Pass
T4	100 - 80	Guy A@96.75	9/16	677	9689.00	21000.00	46.1	Pass
T6	60 - 40	Guy A@50	1/2	684	6873.04	16140.00	42.6	Pass
T2	140 - 120	Guy B@138.264	5/8	653	11630.70	25440.00	45.7	Pass
T4	100 - 80	Guy B@96.75	9/16	671	8569.60	21000.00	40.8	Pass
T6	60 - 40	Guy B@50	1/2	683	6720.08	16140.00	41.6	Pass
T2	140 - 120	Guy C@138.264	5/8	646	19392.60	25440.00	76.2	Pass
T4	100 - 80	Guy C@96.75	9/16	664	15665.20	21000.00	74.6	Pass
T6	60 - 40	Guy C@50	1/2	682	8557.97	16140.00	53.0	Pass
T2	140 - 120	Torque Arm Top@138.264	P2x.154	648	18846.30	33847.70	55.7	Pass
T4	100 - 80	Torque Arm Top@96.75	P2x.154	666	13836.10	33847.70	40.9	Pass
T2	140 - 120	Torque Arm Bottom@138.264	P2x.154	650	-19282.60	28754.60	67.1	Pass
T4	100 - 80	Torque Arm Bottom@96.75	P2x.154	668	-17871.80	28598.50	62.5	Pass

	Summary	
Leg (T4)	95.1	Pass
Diagonal (T2)	90.8	Pass
Top Girt (T2)	33.2	Pass
Bottom Girt (T1)	25.3	Pass
Mid Girt (T6)	14.5	Pass
Guy A (T2)	53.1	Pass
Guy B (T2)	45.7	Pass
Guy C (T2)	76.2	Pass
Torque Arm Top (T2)	55.7	Pass
Torque Arm Bottom (T2)	67.1	Pass
RATING =	**95.1**	**Pass**

at&t

PROJECT:	LTE 3C/4C/RETROFIT
SITE NUMBER:	CTL01047
FA NUMBER:	10035268
PTN NUMBER:	2051A0DAYH/2051A0DB6D/2051A0DB2G
PACE NUMBER:	MRCTB025508/MRCTB025569/MRCTB025612
SITE NAME:	TOLLAND WEST
SITE ADDRESS:	497 OLD POST RD. TOLLAND, CT 06084

PROJECT INFORMATION

SITE NAME:	TOLLAND WEST
SITE NUMBER:	CTL01047
SITE ADDRESS:	497 OLD POST RD. TOLLAND, CT 06084
FA NUMBER:	10035268
PTN NUMBER:	2051A0DAYH/2051A0DB6D/2051A0DB2G
PACE NUMBER:	MRCTB025508/MRCTB025569/MRCTB025612
USID NUMBER:	25952
APPLICANT:	AT&T WIRELESS 550 COCHITUATE ROAD SUITE 550 13 AND 14 FRAMINGHAM, MA 01701
OWNER:	CONNECTICUT COMMUNICATION 201 STATE ST. NORTH HAVEN, CT 06473
JURISDICTION:	TOLLAND COUNTY
COUNTY:	TOLLAND
SITE COORDINATES FROM	(RFDS)
LATITUDE:	41.8607419°
LONGITUDE:	−72.4033319°
GROUND ELEV.:	927'
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
AT&T RF MANAGER:	DEEPAK RATHORE
PHONE:	(860) 965−3068
EMAIL:	dr701e@att.com

PROJECT CONSULTANTS

PROJECT MANAGER:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	EDWARD WEISSMAN (917) 528−1857
EMAIL:	Edward.Weissman@smartlinkllc.com
SITE AQUISITION:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	SHARON KEEFE (978) 930−3918
EMAIL:	Sharon.Keefe@smartlinkllc.com
ENGINEER/ARCHITECT:	FULLERTON ENGINEERING
ADDRESS:	1100 E. WOODFIELD ROAD, SUITE 500 SCHAUMBURG, IL 60173
CONTACT:	MILEN DIMITROV (847) 908−8439
EMAIL:	MDimitrov@FullertonEngineering.com
CONSTRUCTION:	SMARTLINK
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CONTACT:	MARK DONNELLY (617) 515−2080
EMAIL:	mark.donnelly@smartlinkllc.com

SCOPE OF WORK

LTE WILL BE 3C/4C RETROFIT AT THE SITE WITH BRONZE CONFIGURATION.
PROPOSED 3C/4C RETROFIT PROJECT SCOPE HEREIN BASED ON RFDS ID # 1830453, VERSION 2.00 LAST UPDATED 09/14/17.

- (3) NEW ANTENNAS ON POS. 2 ALL SECTORS
- (3) NEW ANTENNA MOUNTING FRAMES SABRE W/ PART# C10152269
- (3) EXISTING RRUS−12 UNITS W/ A2 MODULES, TO BE REMOVED
- (3) NEW RRUS−32 B2 UNITS, (3) NEW RRUS−32 UNITS, (2) NEW RRUS−B14 4478 UNITS
- (1) NEW RAYCAP UNIT W/ (1) FIBER CABLE AND (2) DC POWER CABLES
- (6) NEW 25A BREAKERS, (1) NEW XMU CARD, (1) UPGRADE DUS TO 5216 & (1) DUS 41 EXPANSION

- CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF AT&T SUPPLIED MATERIAL.
- ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.

SITE LOCATION MAP

DIRECTIONS

SCAN QR CODE FOR LINK
TO SITE LOCATION MAP

APPLICABLE BUILDING CODES AND STANDARDS

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE: 2012 INTERNATIONAL BUILDING CODE
2016 CONNECTICUT STATE BUILDING CODE SUPPLEMENT

ELECTRICAL CODE: 2014 NATIONAL ELECTRIC CODE

- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- ADA ACCESS REQUIREMENTS ARE NOT REQUIRED.
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE

DRAWING INDEX

T1	TITLE SHEET
SP1	NOTES AND SPECIFICATIONS
SP2	NOTES AND SPECIFICATIONS
A1	COMPOUND PLAN
A2	EQUIPMENT PLAN
A3	ELEVATIONS
A4	ANTENNA PLANS
A5	EQUIPMENT DETAILS
A6	ANTENNA & CABLE CONFIGURATION
A7	CABLE NOTES AND COLOR CODING
A8	GROUNDING DETAILS
A9	PLUMBING DIAGRAMS

NOTE: DRAWING SCALES ARE FOR 11"x17" SHEETS UNLESS OTHERWISE NOTED

at&t
550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701

smartlink
1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076

FULLERTON
ENGINEERING · DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
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COA# PEC.0001444
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
0	09/25/17	90% REVIEW	NM
1	12/18/17	FOR PERMIT	KC
2	04/24/18	FOR CONSTRUCTION	EB
3	08/15/18	REVISED RAD	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

SITE NAME
TOLLAND WEST

SITE NUMBER:
CTL01047

SITE ADDRESS
497 OLD POST RD.
TOLLAND, CT 06084

SHEET NAME
TITLE SHEET

SHEET NUMBER
T1

PROJECT# 2017.0278.0002

GENERAL CONSTRUCTION

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR/CM – SMARTLINK
   OWNER – AT&T WIRELESS
2. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND AT&T PROJECT SPECIFICATIONS.
3. GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
4. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
5. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFIRM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
11. GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
12. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMAN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
13. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.
14. WORK PREVIOUSLY COMPLETED IS REPRESENTED BY LIGHT SHADED LINES AND NOTES. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
15. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
16. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
17. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
18. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.
19. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
20. THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.
21. THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2–A OT 2–A:10–B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.
22. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.
23. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
24. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
25. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.
26. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
27. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE–APPROVED BY THE LOCAL JURISDICTION.
28. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
29. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.
30. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS–BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.
31. CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
32. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS REQUIRED).
33. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.
34. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
35. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION AT&T MOBILITY GROUNDING STANDARD "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM/GPRS WIRELESS SITES" AND "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING". IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.
36. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.
37. CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
38. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
39. NO WHITE STROBE LIGHTS ARE PERMITTED. LIGHTING IF REQUIRED, WILL MEET FAA STANDARDS AND REQUIREMENTS.

ANTENNA MOUNTING

40. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA–222 OR APPLICABLE LOCAL CODES.
41. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT–DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
42. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC–COATING (HOT–DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
43. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
44. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
45. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
46. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50–OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.
47. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/– 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/– 0.5% AS DEFINED BY THE RFDS. REFER TO ND–00246.
48. JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.
49. CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.
50. TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.

TORQUE REQUIREMENTS

51. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
52. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
    A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
    B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.

FIBER & POWER CABLE MOUNTING

53. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.
54. THE TYPE TC–ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC–ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.
55. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC–ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

62. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO

    ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
63. CONTRACTOR SHALL VERIFY THE DOWN–TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
64. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION.
65. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'–0".
66. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'–0" OC.
67. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
68. CONTRACTOR SHALL GROUND ALL EQUIPMENT. INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES, AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED WIREMEN IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATION AND RECOMMENDATION.
69. CONTRACTOR SHALL PROVIDE STRAIN–RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES, COAX CABLES, AND RET CONTROL CABLES. CABLE STRAIN–RELIEFS AND CABLE SUPPORTS SHALL BE APPROVED FOR THE PURPOSE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
70. CONTRACTOR TO VERIFY THAT EXISTING COAX HANGERS ARE STACKABLE SNAP IN HANGERS. IF EXISTING HANGERS ARE NOT STACKABLE SNAP IN HANGERS THE CONTRACTOR SHALL REPLACE EXISTING HANGERS WITH NEW SNAP IN HANGERS IF APPLICABLE.

GENERAL CABLE AND EQUIPMENT NOTES

71. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
72. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.
73. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
74. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE–HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
75. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
    A. TEMPERATURE SHALL BE ABOVE 50° F.
    B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
    C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
    D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS
76. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
    A. GROUNDING AT THE ANTENNA LEVEL.
    B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'–0", ADDITIONAL CABLE GROUNDING REQUIRED.
    C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
    D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
    E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
77. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'–0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NAME
TOLLAND WEST

SITE NUMBER:
CTL01047

SITE ADDRESS
497 OLD POST RD.
TOLLAND, CT 06084

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP1

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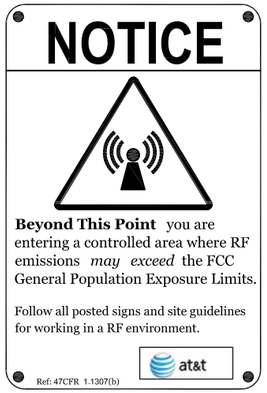
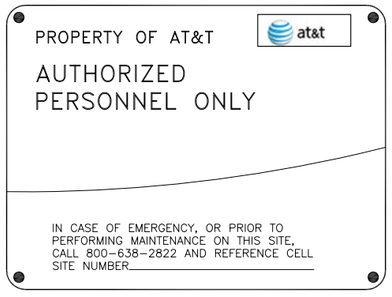


ALERTING SIGNS

ALERTING SIGN



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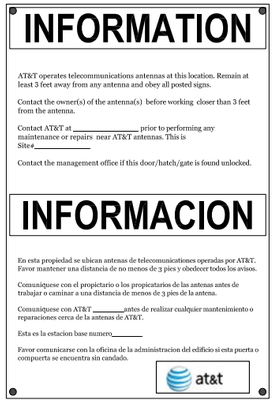
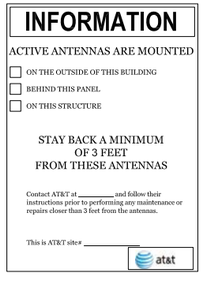


INFO SIGN #1



INFO SIGN #2

ALERTING SIGN
(FOR CELL SITE BATTERIES)

ALERTING SIGN
(FOR DIESEL FUEL)

ALERTING SIGN
(FOR PROPANE)

INFO SIGN #3

GENERAL SIGNAGE GUIDELINES

STRUCTURE TYPE	INFO SIGN #1	INFO SIGN #2	INFO SIGN #3	INFO SIGN #4	STRIPING	NOTICE SIGN	CAUTION SIGN
TOWERS							
MONOPOLE/MONOPINE/MONOPALM	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	CLIMBING SIDE OF THE TOWER	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			AT THE HEIGHT OF THE FIRST CLIMBING STEP, MIN 9 FT ABOVE GROUND
SEC TOWERS/TOWERS WITH HIGH VOLTAGE	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	CLIMBING SIDE OF THE TOWER	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			
LIGHT POLES/FLAG POLES	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			
UTILITY WOOD POLES (JPA)	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS		IF GP MAX VALUE OF MPE AT ANTENNA LEVEL IS: 0-99%; NOTICE SIGN; OVER 99%: CAUTION SIGN AT NO LESS THAN 3FT BELOW ANTENNA AND 9FT ABOVE GROUND	
MICROCELLS MOUNTED ON NON-JPA POLES	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS		NOTICE OR CAUTION SIGN AT NO LESS THAN 9FT ABOVE GROUND: ONLY IF THE EXPOSURE EXCEEDS 90% OF THE GENERAL PUBLIC EXPOSURE AT EXPOSURE AT 6FT ABOVE GROUND OR AT OUTSIDE OF SURFACE OF ADJACENT BUILDING	
TOWERS							
AT ALL ACCESS POINTS TO THE ROOF	X			X			
ON ANTENNAS	X		X	X			
CONCEALED ANTENNAS	X	X		X			
ANTENNAS MOUNTED FACING OUTSIDE THE BUILDING	X	X		X			
ANTENNAS ON SUPPORT STRUCTURE	X	X		X			
ROOFVIEW GRAPH							
RADIATION AREA IS WITHIN 3FT FROM ANTENNA	X	ADJACENT TO EACH ANTENNA		X		EITHER NOTICE OR CAUTION SIGN (BASED ON ROOFVIEW RESULTS) AT ANTENNA /BARRIER	
RADIATION AREA IS BEYOND 3FT FROM ANTENNA	X	ADJACENT TO EACH ANTENNA		X	DIAGONAL, YELLOW STRIPING AS TO ROOFVIEW GRAPH		
CHURCH STEEPLES	ACCESS TO STEEPLE	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO STEEPLE			CAUTION SIGN AT THE ANTENNAS
WATER STATIONS	ACCESS TO LADDER	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO LADDER			CAUTION SIGN BESIDE INFO SIGN #1, MIN. 9FT ABOVE GROUND

NOTES FOR ROOFTOP SITES:

1. EITHER NOTICE OR CAUTION SIGNS NEED TO BE POSTED AT EACH SECTOR AS CLOSE AS POSSIBLE TO: THE OUTER EDGE OF THE STRIPED OFF AREA OR THE OUTER ANTENNAS OF THE SECTOR
2. IF ROOFVIEWS SHOWS: ONLY BLUE = NOTICE SIGN, BLUE AND YELLOW = CAUTION SIGN, ONLY YELLOW = CAUTION SIGN TO BE INSTALLED
3. SHOULD THE REQUIRED STRIPING AREAS INTERFERE WITH ANY STRUCTURE OR EQUIPMENT (A/C, VENTS, ROOF HATCH, DOORS, OTHER ANTENNAS, DISHES, ETC.). PLEASE NOTIFY AT&T TO MODIFY THE STRIPING AREA, PRIOR TO STARTING THE WORK.

SIGNAGE GUIDELINES CHART

at&t
550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701

smartlink
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SITE NAME
TOLLAND WEST

SITE NUMBER:
CTL01047

SITE ADDRESS
497 OLD POST RD.
TOLLAND, CT 06084

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP2

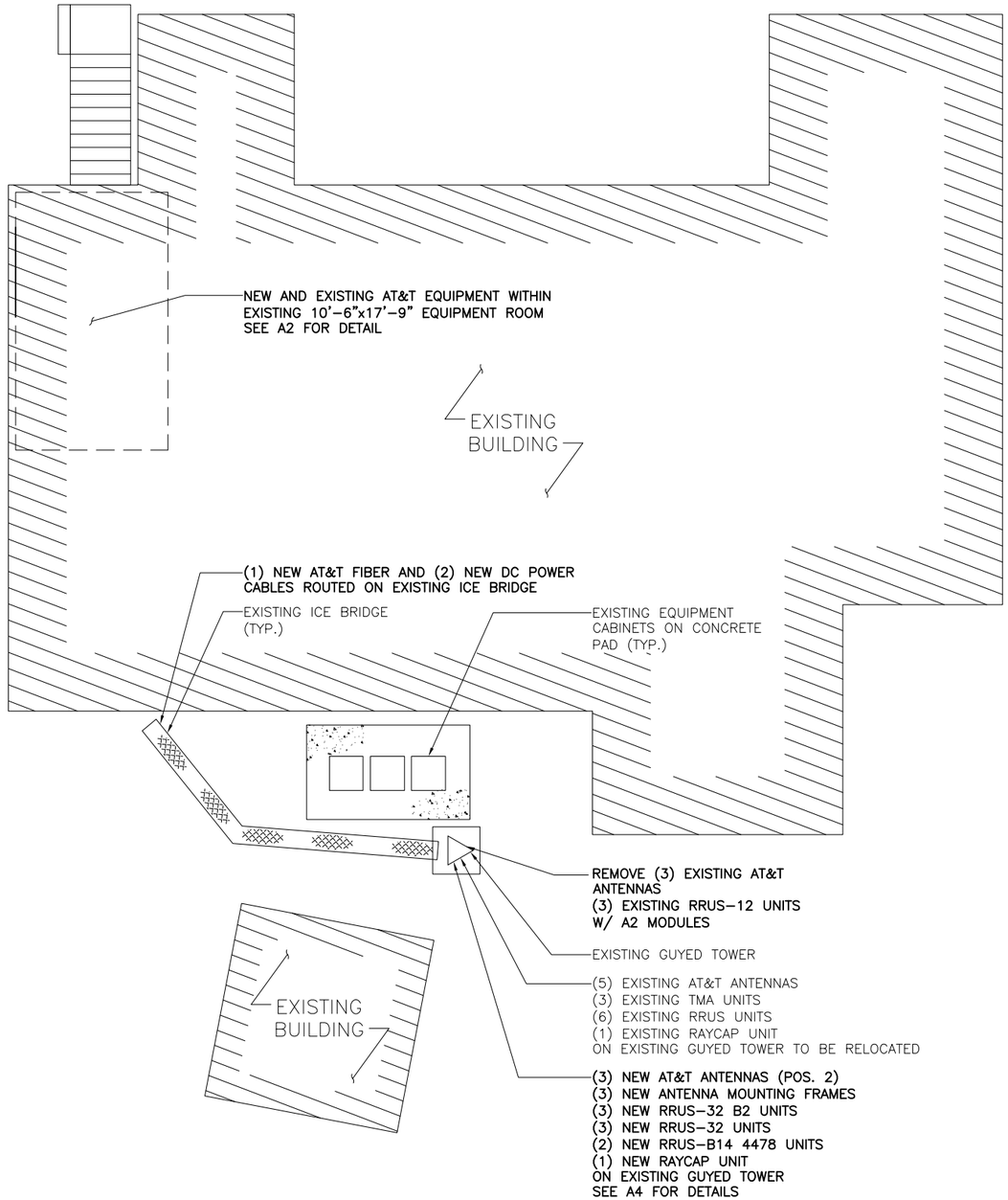
PROJECT# 2017.0278.0002

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
BTS	BASE TRANSMISSION STATION
℄	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DWG	DRAWING
FT	FOOT(FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
(E)	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
FIF	FACILITY INTERFACE FRAME
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE COMMUNICATION
LTE	LONG TERM EVOLUTION
MAX	MAXIMUM
MCPA	MULTI-CARRIER POWER AMPLIFIER
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTS	MANUAL TRANSFER SWITCH
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
PPC	POWER PROTECTION CABINET
PL	PROPERY LINE
RBS	RADIO BASED STATION
RET	REMOTE ELECTRIC TILT
RRU	REMOTE RADIO UNIT
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S), #	POUND(S)
SF	SQUARE FOOT
STL	STEEL
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELE-COMMUNICATION SYSTEM
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

SYMBOLS

- REVISION
- WORK POINT
- UTILITY POLE
- COMPRESSED STONE
- BRICK
- CONCRETE
- EARTH
- GRAVEL
- MASONRY
- STEEL
- CENTERLINE
- PROPERTY LINE
- LEASE LINE
- EASEMENT LINE
- CHAIN LINK FENCE
- WOOD FENCE
- UE — BELOW GRADE ELECTRIC
- UT — BELOW GRADE TELEPHONE
- OE/OT — OVERHEAD ELECTRIC/TELEPHONE
- SECTION REFERENCE (A / S-1 / A)



COMPOUND PLAN — SCALE 1" = 10'-0" | 1

SITE PHOTO 1 — SCALE: N.T.S. | 2

SITE PHOTO 2 — SCALE: N.T.S. | 3

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SITE NAME
TOLLAND WEST

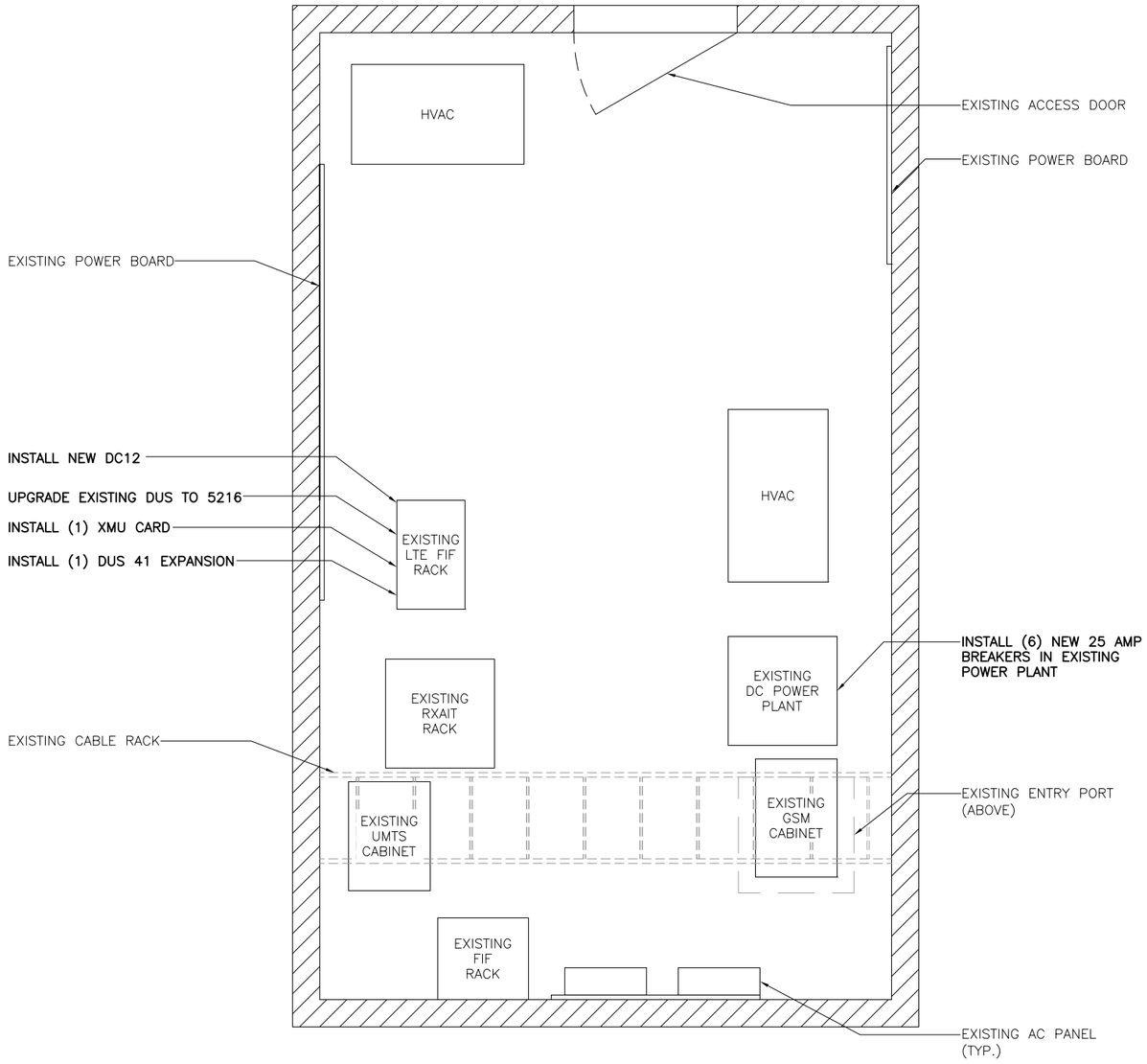
SITE NUMBER:
CTL01047

SITE ADDRESS
497 OLD POST RD.
TOLLAND, CT 06084

SHEET NAME
COMPOUND PLAN

SHEET NUMBER
A1

PROJECT# 2017.0278.0002



EQUIPMENT PLAN

SCALE: 3/8" = 1'-0"

1

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497 OLD POST RD.
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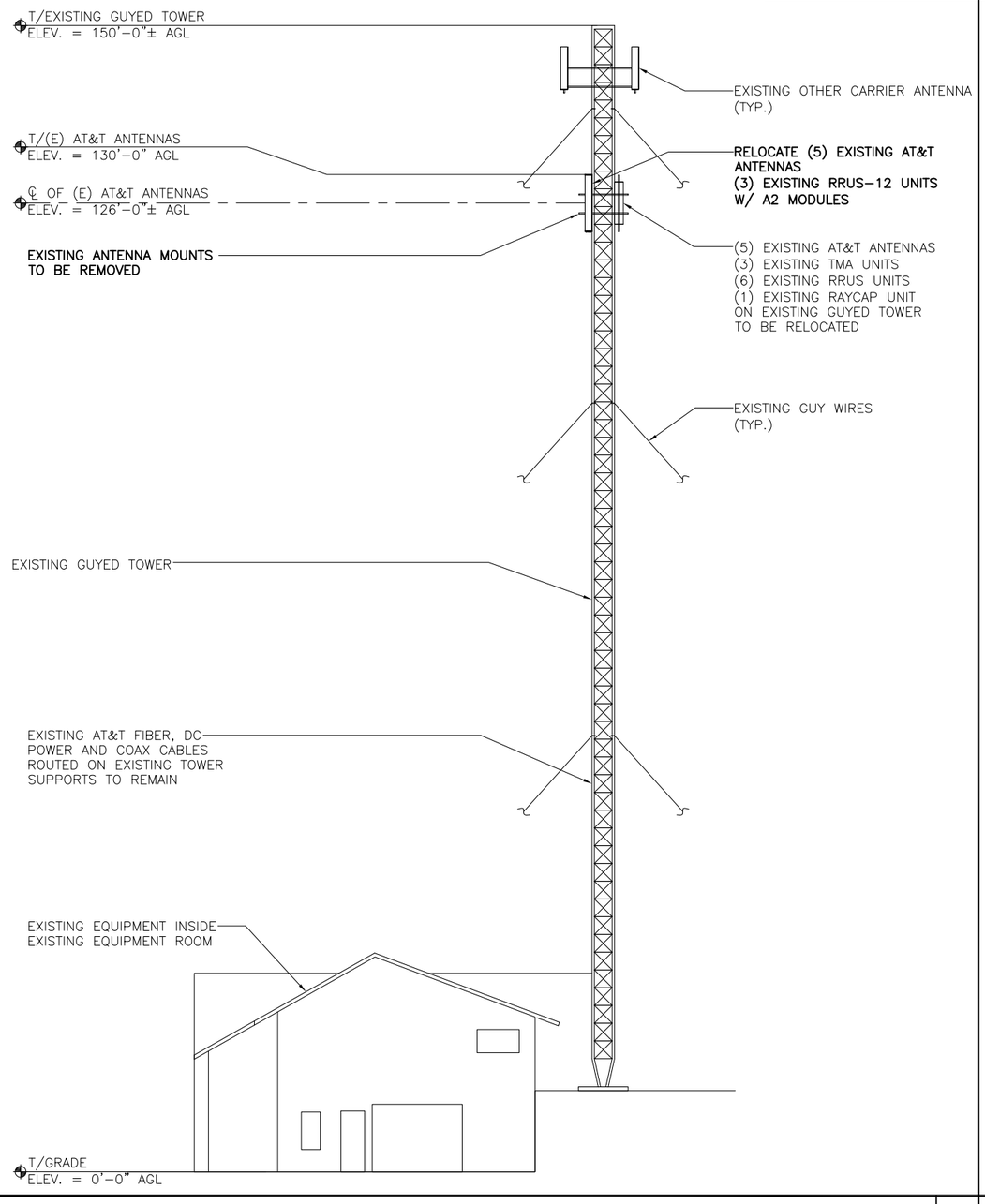
SHEET NAME
EQUIPMENT PLAN

SHEET NUMBER
A2

PROJECT# 2017.0278.0002

NOTES:

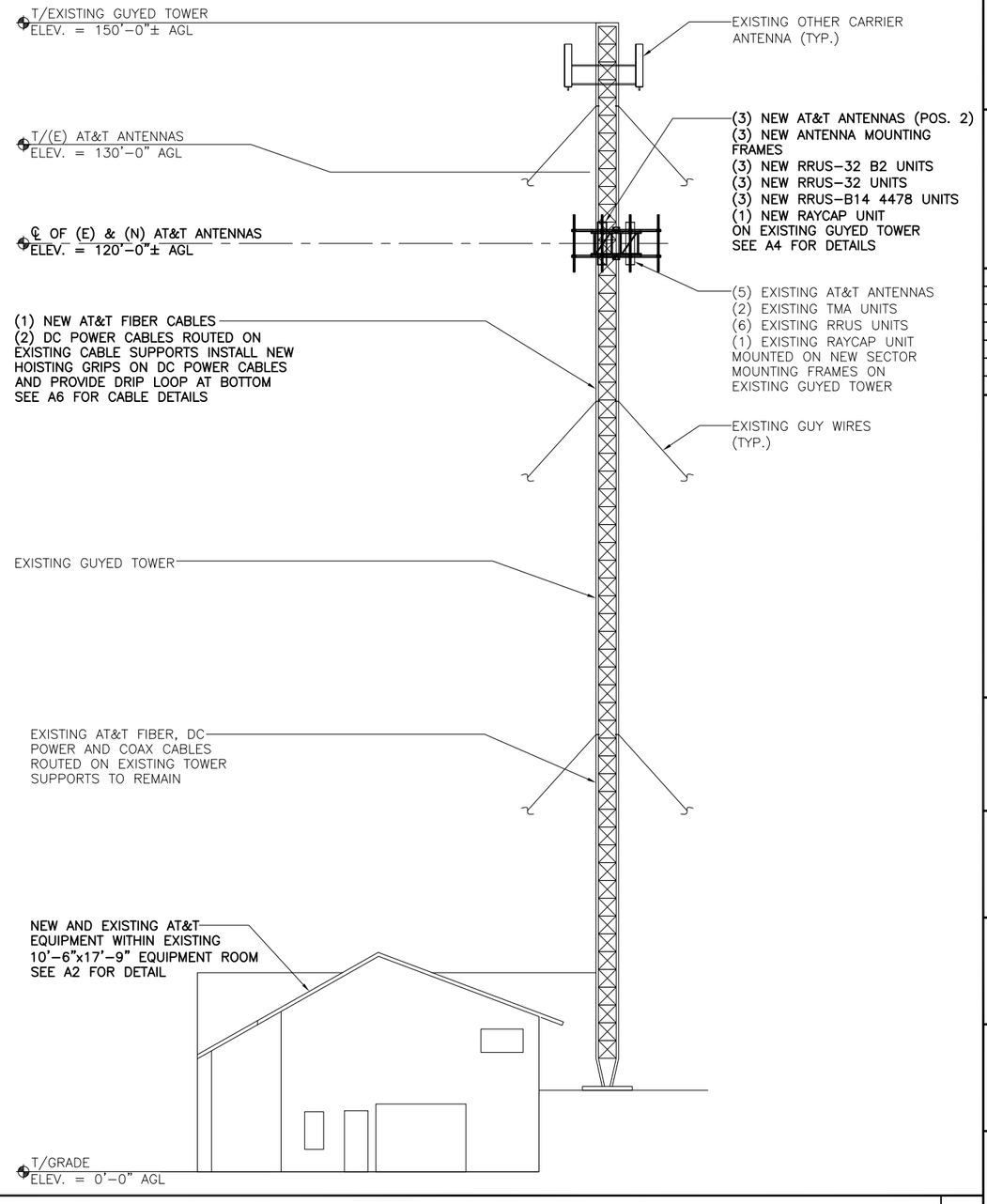
1. CALCULATIONS FOR THE STRUCTURE AND ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CABLES NOT SHOWN FOR CLARITY
3. ANTENNAS, PIPE SUPPORTS, HARDWARE, CABLE TRAYS AND ANY OTHER NEW EXPOSED EQUIPMENT SHALL BE PAINTED TO MATCH EXISTING BUILDING. EXACT COLOR TO BE APPROVED BY OWNER.



EXISTING ELEVATION — SCALE: N.T.S. — 1

NOTES:

1. 3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNAS
2. 6 FEET MINIMUM SEPARATION BETWEEN 700DE & 700BC



NEW ELEVATION — SCALE: N.T.S. — 2

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SITE NAME
TOLLAND WEST

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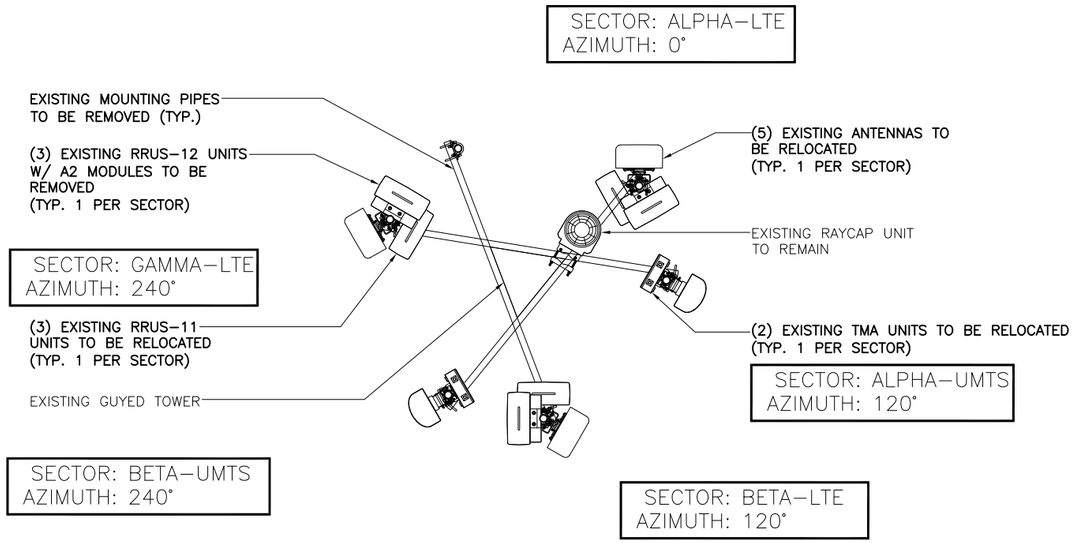
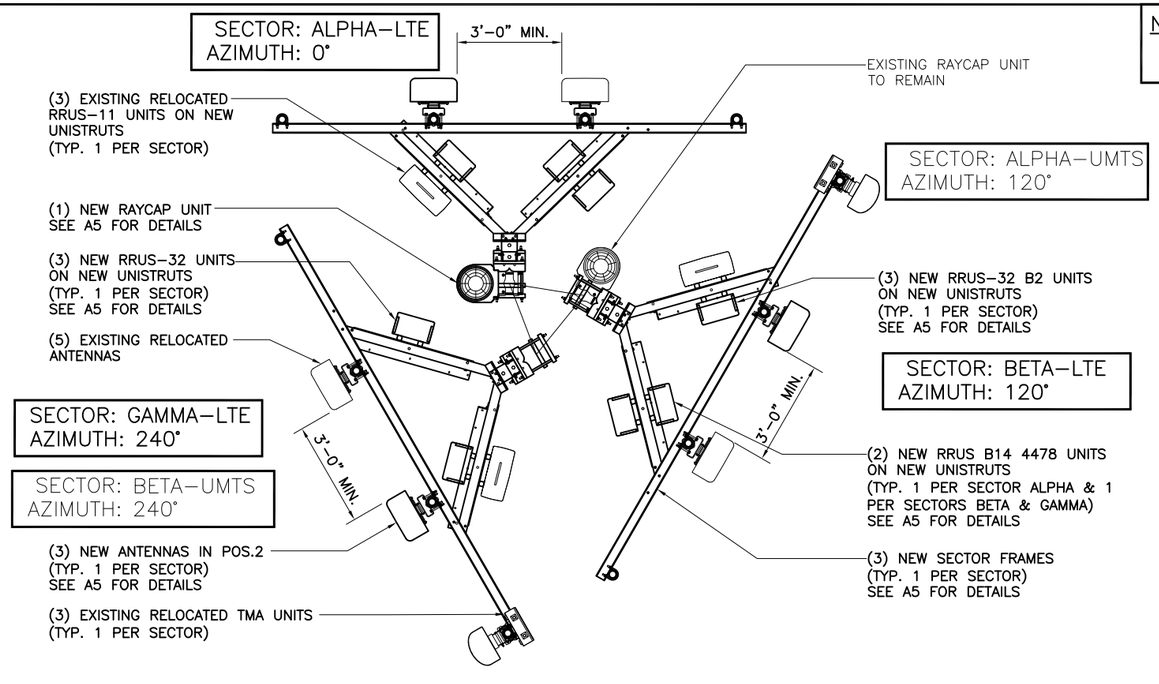
SHEET NAME
ELEVATIONS

SHEET NUMBER
A3

PROJECT# 2017.0278.0002



EXISTING ANTENNA PLAN — SCALE: 1/4" = 1'–0" | 1



NOTES:
1. 3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNAS
2. 6 FEET MINIMUM SEPARATION BETWEEN 700DE & 700BC

FINAL ANTENNA PLAN — SCALE: 1/4" = 1'–0" | 2

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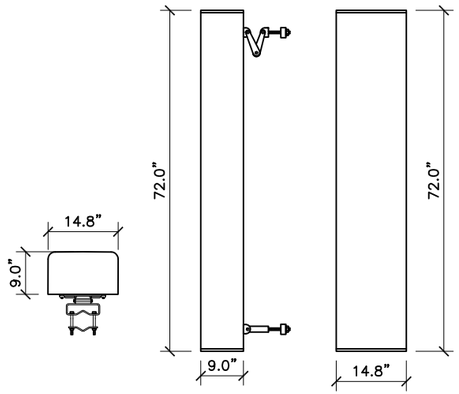
SHEET NAME
ANTENNA PLANS

SHEET NUMBER
A4

PROJECT# 2017.0278.0002



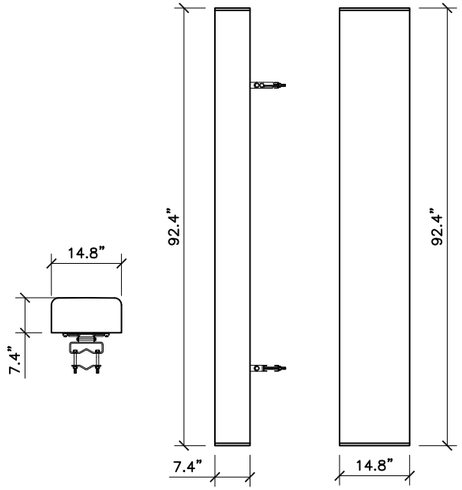
PLAN VIEW SIDE VIEW FRONT VIEW

CCI – HPA–65R–BUU–H6

HEXPORT MULTI–BAND ANTENNA

FREQUENCY RANGE	698–806 MHz
	824–894 MHz
	1850–1990 MHz
	1710–1755/2110–2170 MHz
	2305–2360 MHz
ANTENNA	51 Lbs
WITH BRACKET	61 Lbs

ANTENNA SPEC (ALPHA SECTOR) SCALE: N.T.S. 1



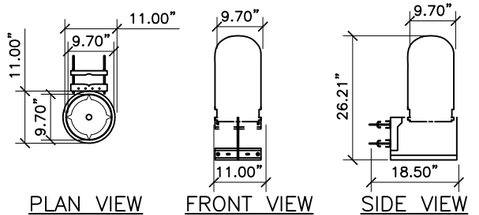
PLAN VIEW SIDE VIEW FRONT VIEW

CCI – HPA–65R–BUU–H8

HEXPORT MULTI–BAND ANTENNA

FREQUENCY RANGE	698–806 MHz
	824–894 MHz
	1850–1990 MHz
	1710–1755/2110–2170 MHz
	2305–2360 MHz
ANTENNA	68 Lbs
WITH BRACKET	78 Lbs

ANTENNA SPEC (BETA AND GAMMA SECTORS) SCALE: N.T.S. 2



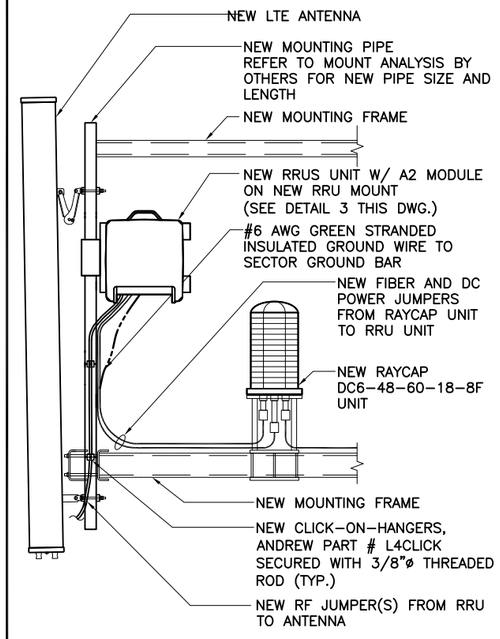
PLAN VIEW FRONT VIEW SIDE VIEW

RAYCAP – DC6–48–60–18–8F

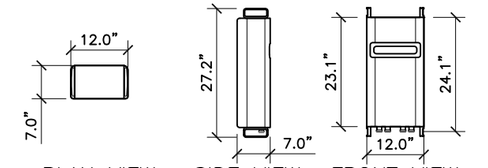
TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION

UNIT WEIGHT 32.8 Lbs

RAYCAP SPEC SCALE: N.T.S. 3



ANTENNA SCHEMATIC SCALE: N.T.S. 4

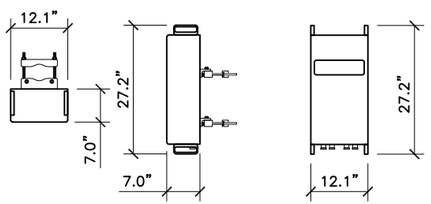


PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON – RRUS 32 B2

TECHNOLOGIES: FDD, LTE, GSM & WCDMA

FREQUENCY RANGE:	UPLINK	1850–1910 MHz
	DOWNLINK	1930–1990 MHz
WEIGHT w/SOLAR SHIELD & HANDLE		53 Lbs

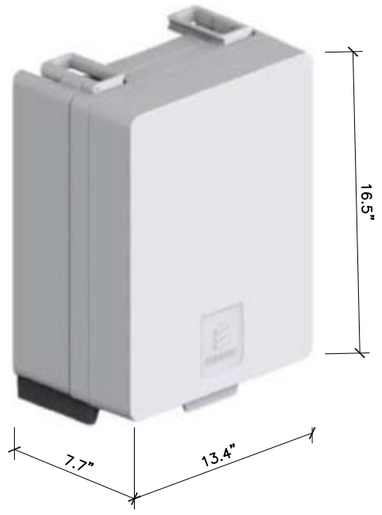


PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON – RRUS 32

UNIT WEIGHT 60 Lbs

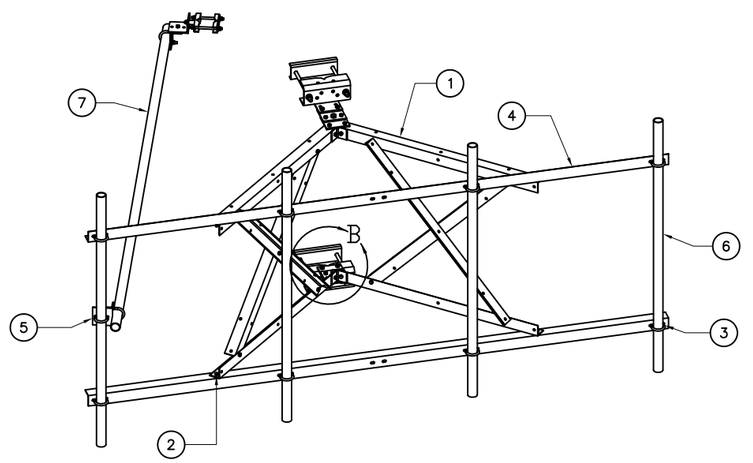
RRU SPEC SCALE: N.T.S. 5



ERICSSON – RRUS 4478 B14

FREQUENCY RANGE	TX	758–768 MHz
	RX	788–798 MHz
TOTAL WEIGHT		59.9 Lbs

RRU SPEC SCALE: N.T.S. 6



ITEM	PART NO.	DESCRIPTION
1	SFSU.01	FRAME ANGLE
2	GB–04145	1/2" X 1–1/2" GALV BOLT KIT
3	SFSU.06	SF–SU TAPER PLATE
4	SFSU.12	FACE ANGLE
5	XA2020.01	CROSS OVER ANGLE
6	MT–651	PLAIN END PIPE
7	MT–651–150	2–3/8" O.D. X 150" STIFF ARM PIPE

12'–6" STAND–OFF SECTOR FRAME W/ STIFF ARM

(COMMSCOPE – SF–SU12–3–96)

TOTAL WEIGHT: 459 lbs

(WITHOUT PIPES)

ANTENNA MOUNTING FRAME SCALE: N.T.S. 7

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SITE NAME

TOLLAND WEST

SITE NUMBER:

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SITE ADDRESS

497 OLD POST RD.
TOLLAND, CT 06084

SHEET NAME

EQUIPMENT DETAILS

SHEET NUMBER

A5

PROJECT# 2017.0278.0002

FINAL ANTENNA CONFIGURATION AND CABLE SCHEDULE
SUPPLIED BY AT&T WIRELESS, FROM RF CONFIG. DATED (09/14/17)

SECTOR	ANTENNA NUMBER	ANTENNA STATUS & TYPE	ANTENNA MODEL NUMBER	ANTENNA VENDOR	TMA/RRU UNIT	AZIMUTH	ANTENNA CL FROM GROUND	CABLE FEEDER TYPE	CABLE FEEDER LENGTH	RAYCAP UNIT
ALPHA	A-1	(E) LTE1C/2C ANTENNA	HPA-65R-BUU-H6	CCI	(1) EXISTING RRUS-11 UNIT **(1) NEW RRUS-32 B2 UNIT**	0°	**120'-0"**	(1) EXISTING FIBER CABLE	190'-0"	(1) (E) DC6-48-60-18-8F UNIT **(1) (N) DC6-48-60-18-8F UNIT**
								(2) EXISTING DC POWER CABLES	190'-0"	
	A-2	**(N) LTE3C/4C ANTENNA**	**HPA-65R-BUU-H6**	**CCI**	**(1) NEW RRUS-32 UNIT** **(1) NEW RRUS-B14 4478 UNIT**	**0°**	**120'-0"**	**(1) NEW FIBER CABLE**	**190'-0"**	
								(2) NEW DC POWER CABLES	**190'-0"**	
	A-3	-	-	-	-	-	-	-		
	A-4	(E) UMTS ANTENNA	SBNH-1D6565C	COMMSCOPE	(1) EXISTING CCI DTMABP7819VG12A TMA UNIT (2) EXISTING POWERWAVE CM1007-DBPXBC-003 DIPLEXER UNITS	120°	**120'-0"**	1-1/4"ø LDF6-50A	190'-0"	
								1-1/4"ø LDF6-50A	190'-0"	
BETA	B-1	(E) LTE1C/2C ANTENNA	HPA-65R-BUU-H8	CCI	(1) EXISTING RRUS-11 UNIT **(1) NEW RRUS-32 B2 UNIT**	120°	**120'-0"**	**SEE ANTENNA A-1 FOR CABLE TYPE AND LENGTH**		
	B-2	**(N) LTE3C/4C ANTENNA**	**HPA-65R-BUU-H8**	**CCI**	**(1) NEW RRUS-32 UNIT** **(1) NEW RRUS-B14 4478 UNIT**	**120°**	**120'-0"**	**SEE ANTENNA A-2 FOR CABLE TYPE AND LENGTH**		
	B-3	-	-	-	-	-	-	-		
	B-4	(E) UMTS ANTENNA	SBNH-1D6565C	COMMSCOPE	(1) EXISTING CCI DTMABP7819VG12A TMA UNIT (2) EXISTING POWERWAVE CM1007-DBPXBC-003 DIPLEXER UNITS	240°	**120'-0"**	1-1/4"ø LDF6-50A	190'-0"	
								1-1/4"ø LDF6-50A	190'-0"	
GAMMA	C-1	(E) LTE1C/2C ANTENNA	HPA-65R-BUU-H8	CCI	(1) EXISTING RRUS-11 UNIT **(1) NEW RRUS-32 B2 UNIT**	240°	**120'-0"**	**SEE ANTENNA A-1 FOR CABLE TYPE AND LENGTH**		
	C-2	**(N) LTE3C/4C ANTENNA**	**HPA-65R-BUU-H8**	**CCI**	**(1) NEW RRUS-32 UNIT**	**240°**	**120'-0"**	**SEE ANTENNA A-2 FOR CABLE TYPE AND LENGTH**		
	C-3	-	-	-	-	-	-	-		
	C-4	-	-	-	-	-	-	-		

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SITE NAME
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SHEET NAME
ANTENNA & CABLE CONFIGURATION

SHEET NUMBER
A6

PROJECT# 2017.0278.0002

1. CONTRACTOR IS TO REFER TO AT&T'S MOST CURRENT RADIO FREQUENCY DATA SHEET (RFDS) PRIOR TO CONSTRUCTION.
2. THE SIZE, HEIGHT, AND DIRECTION OF THE ANTENNAS SHALL BE ADJUSTED TO ACHIEVE THE AZIMUTHS SPECIFIED AND LIMIT SHADOWING AND TO MEET THE SYSTEM REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY THE HEIGHT OF THE ANTENNA WITH THE AT&T WIRELESS PROJECT MANAGER.
4. VERIFY TYPE AND SIZE OF TOWER LEG PRIOR TO ORDERING ANY ANTENNA MOUNT.
5. UNLESS NOTED OTHERWISE THE CONTRACTOR MUST PROVIDE ALL MATERIAL NECESSARY.
6. ANTENNA AZIMUTHS ARE DEGREES OFF OF TRUE NORTH, BEARING CLOCKWISE, IN WHICH ANTENNA FACE IS DIRECTED. ALL ANTENNAS (AND SUPPORTING STRUCTURES AS PRACTICAL) SHALL BE ACCURATELY ORIENTED IN THE SPECIFIED DIRECTION.
7. CONTRACTOR SHALL VERIFY ALL RF INFORMATION PRIOR TO CONSTRUCTION.
8. SWEEP TEST SHALL BE PERFORMED BY GENERAL CONTRACTOR AND SUBMITTED TO AT&T WIRELESS CONSTRUCTION SPECIALIST. TEST SHALL BE PERFORMED PER AT&T WIRELESS STANDARDS.
9. CABLE LENGTHS WERE DETERMINED BASED ON THE DESIGN DRAWING. CONTRACTOR TO VERIFY ACTUAL LENGTH DURING PRE-CONSTRUCTION WALK.
10. CONTRACTOR TO USE ROSENBERGER FIBER LINE HANGER COMPONENTS (OR ENGINEER APPROVED EQUAL).

ANTENNA AND CABLING NOTES

SCALE: N.T.S. | 1

RF, DC, & COAX CABLE MARKING LOCATIONS TABLE

NO	LOCATIONS
1	EACH TOP-JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
2	EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH (1) SET OF 3/4" WIDE COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
3	CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER.
4	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER.
5	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER.

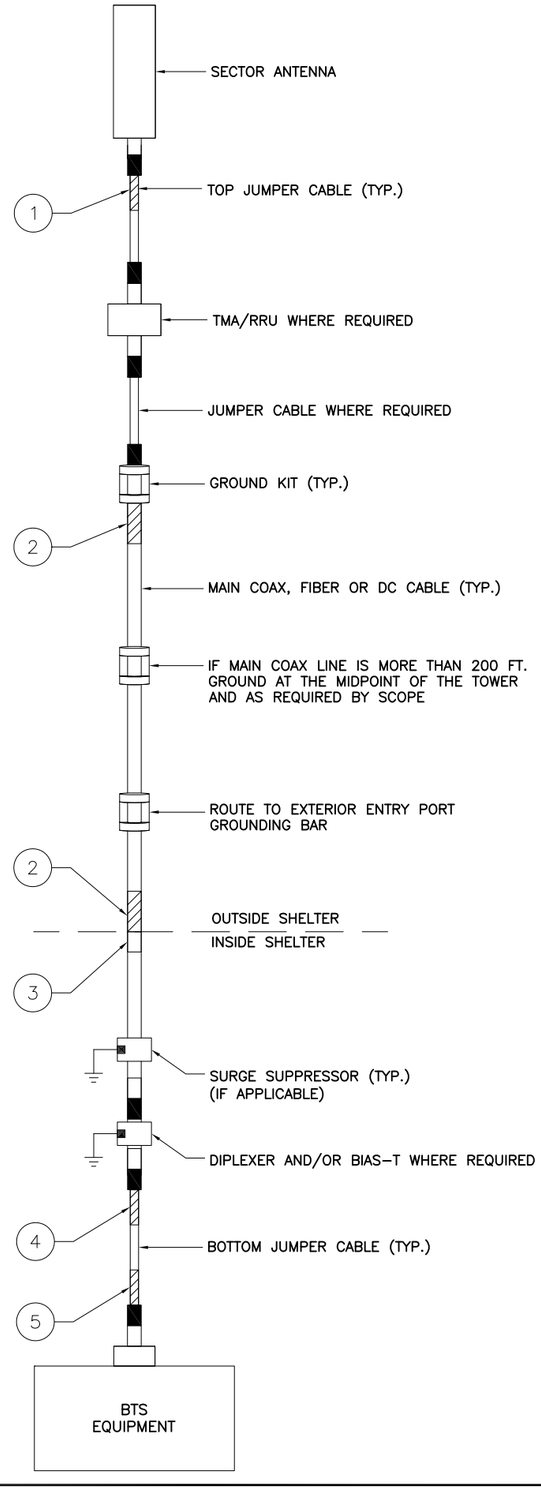
CABLE MARKING DIAGRAM

SCALE: N.T.S. | 2

1. THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE.
2. THE STANDARD IS BASED ON EIGHT COLORED TAPES-RED, BLUE, GREEN, YELLOW, ORANGE, BROWN, WHITE, AND VIOLET. THESE TAPES MUST BE 3/4" WIDE & UV RESISTANT SUCH AS SCOTCH 35 VINYL ELECTRICAL COLOR CODING TAPE AND SHOULD BE READILY AVAILABLE TO THE ELECTRICIAN OR CONTRACTOR ON SITE.
3. USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE COLOR CHART".
4. WHEN AN EXISTING COAXIAL LINE THAT IS INTENDED TO BE A SHARED LINE BETWEEN TECHNOLOGIES IS ENCOUNTERED, THE CONTRACTOR SHALL REMOVE THE EXISTING COLOR CODING SCHEME AND REPLACE IT WITH THE COLOR CODING STANDARD. IN THE ABSENCE OF AN EXISTING COLOR CODING AND TAGGING SCHEME, OR WHEN INSTALLING PROPOSED COAXIAL CABLES, THIS GUIDELINE SHALL BE IMPLEMENTED AT THAT SITE REGARDLESS OF TECHNOLOGY.
5. ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) THREE WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID UNRAVELING.
6. ALL COLOR BANDS INSTALLED AT THE TOP OF THE TOWER SHALL BE A MINIMUM OF 3" WIDE, AND SHALL HAVE A MINIMUM OF 3/4" OF SPACE BETWEEN EACH COLOR.
7. ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
8. IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE NEW TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

CABLE MARKING NOTES

SCALE: N.T.S. | 3



CABLE COLOR CODING DIAGRAM

SCALE: N.T.S. | 4

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REV	DATE	DESCRIPTION	BY
0	09/25/17	90% REVIEW	NM
1	12/18/17	FOR PERMIT	KC
2	04/24/18	FOR CONSTRUCTION	EB
3	08/15/18	REVISED RAD	EB

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NAME
TOLLAND WEST

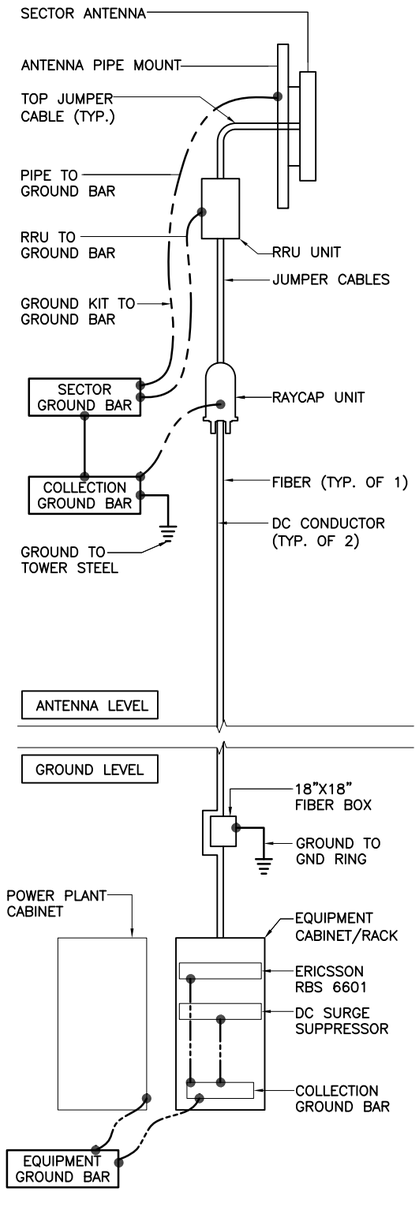
SITE NUMBER:
CTL01047

SITE ADDRESS
497 OLD POST RD.
TOLLAND, CT 06084

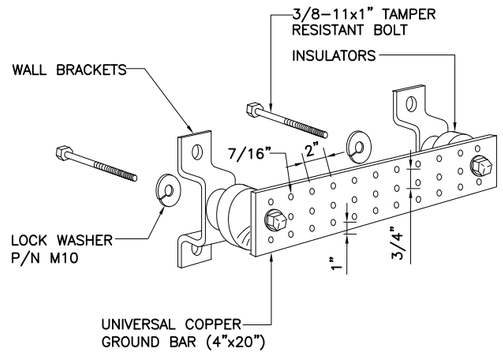
SHEET NAME
CABLE NOTES AND COLOR CODING

SHEET NUMBER
A7

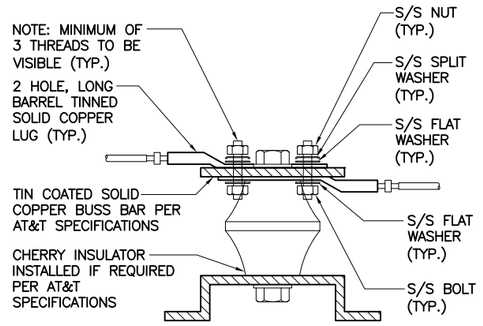
PROJECT# 2017.0278.0002



GROUNDING SCHEMATIC SCALE: N.T.S. 1



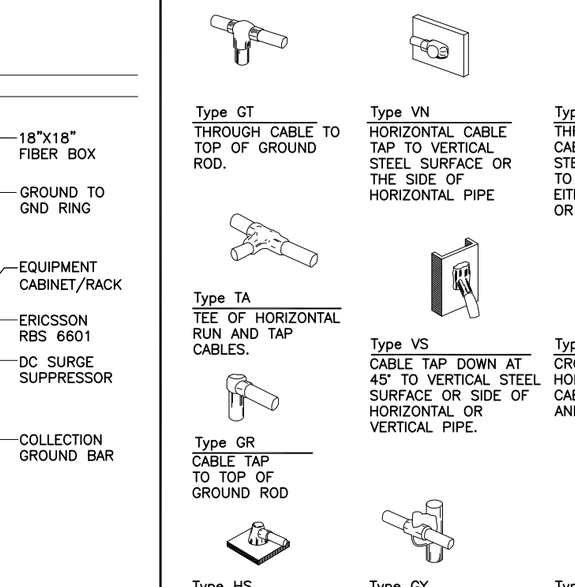
GROUND BAR DETAIL SCALE: N.T.S. 2



NOTES:

1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

LUG DETAIL SCALE: N.T.S. 3



Type GT
THROUGH CABLE TO TOP OF GROUND ROD.

Type VN
HORIZONTAL CABLE TAP TO VERTICAL STEEL SURFACE OR THE SIDE OF HORIZONTAL PIPE

Type VV
THROUGH VERTICAL CABLE TO VERTICAL STEEL SURFACE OR TO THE SIDE OF EITHER HORIZONTAL OR VERTICAL PIPE

Type TA
TEE OF HORIZONTAL RUN AND TAP CABLES.

Type VS
CABLE TAP DOWN AT 45° TO VERTICAL STEEL SURFACE OR SIDE OF HORIZONTAL OR VERTICAL PIPE.

Type XB
CROSS OF HORIZONTAL CABLES. LAPPED AND NOT CUT

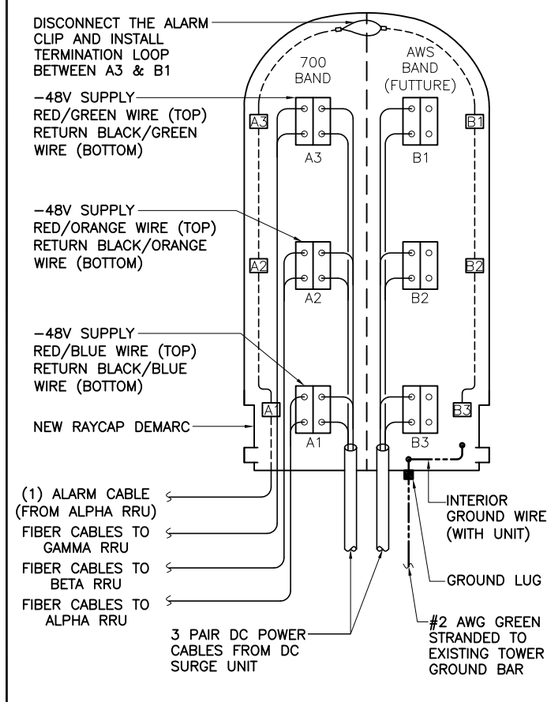
Type GR
CABLE TAP TO TOP OF GROUND ROD

Type HS
HORIZONTAL CABLE TAP TO HORIZONTAL STEEL SURFACE OR PIPE. CABLE OFF SURFACE.

Type GY
THROUGH CABLE TO SIDE OF GROUND ROD

Type NC
THROUGH AND TAP CABLES TO GROUND ROD

EXOTHERMIC WELD DETAILS SCALE: N.T.S. 4



RAYCAP DC POWER AND ALARM DET. SCALE: N.T.S. 5

NOT USED SCALE: N.T.S. 6

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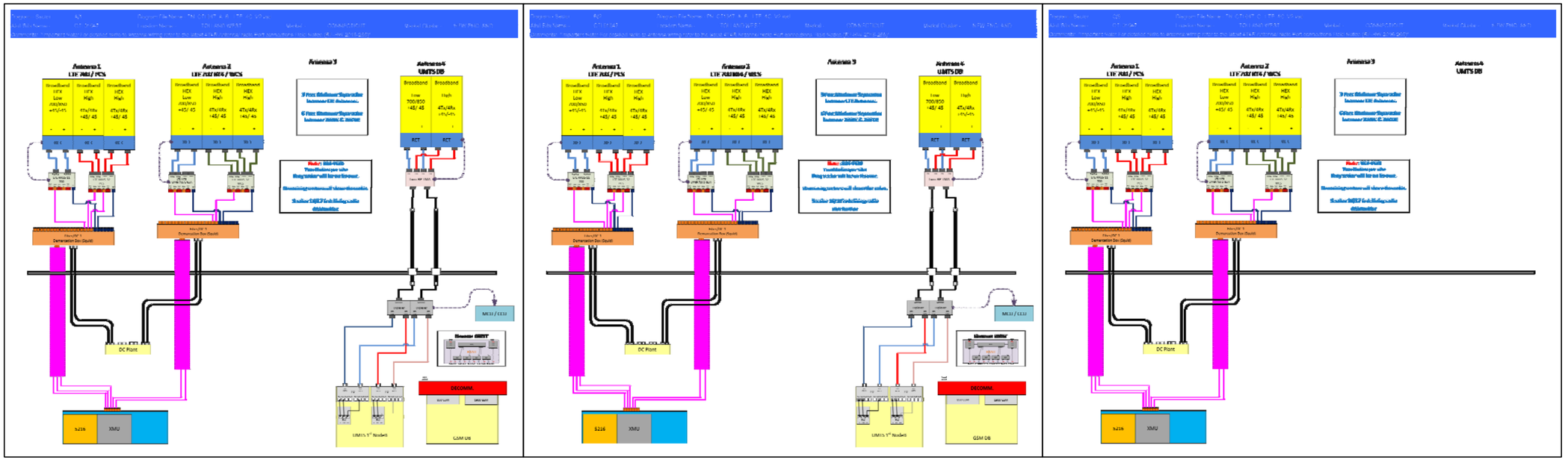
497 OLD POST RD.
TOLLAND, CT 06084

SHEET NAME
GROUNDING DETAILS

SHEET NUMBER
A8

PROJECT# 2017.0278.0002



*BASED ON RFDS V2.0, DATED (09/14/17)

PLUMBING DIAGRAMS

SCALE: N.T.S.

1

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