Alex Murshteyn, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 821-0159
AMurshteyn@centerlincommunications.com

January 21, 2016

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

RE: Notice of Exempt Modification
88 Parsonage Hill Rd, North Branford, CT 06472
N 41.3691694444444,
W 72.8104861111111

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains 6 antennas at the 173-foot level of the existing 195-foot self-supporting lattice tower at 88 Parsonage Hill Rd, North Branford, CT. The tower is owned by Ochenkowski Towers, LLC. The property is owned by K.W. and J.J. Ochenkowski, Jr. & Jean Szwabowski. AT&T now intends to install 3 remote radio units, which were originally covered under the acknowledgement issued on May 18, 2012 pursuant to AT&T's prior Exempt Modification filing EM-CING-099-120430. Although other modifications intended at that time have been completed, just 3 of the 6 remote radios were installed before expiration of one year from said action date. Therefore, AT&T seeks to extend the time necessary to complete those LTE updates in order to install the remaining remote radios.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Michael T. Paulhus, Town Manager for the Town of North Branford, as well as the property owner and the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Alex Murshteyn, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 821-0159
AMurshteyn@centerlincommunications.com

Attachments

cc: Michael T. Paulhus, Town Manager, Town of North Branford - as elected official
Ochenkowski Towers, L.L.C. - as tower owner
K.W. and J.J. Ochenkowski, Jr. & Jean Szwabowski - as property owners

STRUCTURAL ANALYSIS REPORT – Rev.1
SELF SUPPORT TOWER

Prepared For:

Com-Ex Consultants, LLC
115 Route 46 – Suite E39
Mountain Lakes, NJ 07046

Structure Rating:

Tower: **80.3% (Pass)**

Sincerely,
Destek Engineering, LLC
Firm PEC No: 0001429

1-21-2016

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED
PROFESSIONAL ENGINEER

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

Site ID: CT5638
Site Name: Northford-Totoket
FA Code: 10071180
88 Parsonage Hill Road
Northford, CT 06472

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 195 feet tall self-support tower located at 88 Parsonage Hill Road, Northford, CT 06472 for the additions and alterations proposed by AT&T.

The structural analysis is based on the following information provided to Destek Engineering, LLC (Destek):

- Structural Analysis Report prepared by Centek Engineering Inc, project No14048.001, dated 02/25/2014.
- RFDS provided by Com-Ex Consultants, dated 09/08/2015.
- Construction Drawings prepared by Com-Ex Consultants, dated 11/17/2015.

1.1 STRUCTURE

The subject structure is a 3-sided, 195'-0" tall self-support tower formed by nine 20'-0" sections and one 15'-0" section. Solid rod legs are X-braced at all sections with single angle diagonals. The tower is 5' wide at the top and 23.5' wide at the base, with a slope change at 175'-0" level. The tower is supported on a mat foundation. Please refer to the software output in Appendix A for tower geometry, member sizes, and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

The analysis is based on the following existing and proposed appurtenances:

Existing AT&T Appurtenance Configuration:

RAD CENTER (FT)	ANTENNA & TMA	MOUNT	FEED LINES
173	(3) Kathrein 800-10121 (3) KMW AM-X-CD-16-65-00T-RET (6) Powerwave LGP21401 – TMAs (3) RRUS-11 (1) Surge Arrestors	(3) Sector Mounts	(6) 1-5/8" (1) Fiber Cable (2) DC Cables

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Proposed and Final AT&T Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	MOUNT	FEED LINES
173	(3) Kathrein 800-10121 (3) KMW AM-X-CD-16-65-00T-RET (6) Powerwave LGP21401 – TMAs (6) RRUS-11 (1) Surge Arrestors	(3) Sector Mounts	(6) 1-5/8” (1) Fiber Cable (2) DC Cables

Existing Appurtenances by Others:

RAD CENTER (FT) CARRIER	ANTENNA & TMA	MOUNT	FEED LINES
190 Sprint	(3) APXVSPP18-C-A20 (3) RRH 2x50 800Mhz (3) RRH 4x45 1900Mhz	(3) 15’ Triangular Mount	(3) 1-1/4”
180 T-Mobile	(6) Ericsson AIR 21 (3) TMAs	(3) Pirod 15’ T-Frame Sector Mounts	(12) 1-5/8” (1) Fiber
160 Nextel	(12) Andrew DB844H90E-XY	(3) Pirod 15’ T-Frame Sector Mounts	(12) 1-5/8”
145 Verizon	(6) LPA-80080-4CF (3) BXA-70063/6CF (3) BXA-171085-8CF (6) FD9R6004/2C-3L Diplexers	(3) Pirod 15’ T-Frame Sector Mounts	(12) 1-5/8”
80	(2) GPS	(2) 2’ Stand Off	(2) 1/2"

3.0 CODES AND LOADING

The tower was analyzed per *TIA/EIA-222-F* as referenced by *2005 Connecticut State Building Code* with all of the adopted Addendums and Supplements. The following wind loading was used in compliance with these standards:

- Basic wind speed 90 mph (W) without ice
- Basic wind speed 78 mph (W_i) with 1/2” radial ice.

The following load combinations were used with wind blowing at 0^o, 60^o and 90^o, measured from a line normal to the face of the tower.

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- $D + W_o$
- $D + W_i + I$

D: Dead Load
W_o: Wind Load, without ice
W_i: Wind Load with ice
I: Ice Gravity Load

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless otherwise noted, the structure is assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed appurtenances. Any deviation of the appurtenances and appurtenance placement will require Destek to generate an additional structural analysis. Additionally, the proposed linear appurtenances should be placed per recommendations of this report.

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5.0 ANALYSIS AND ASSUMPTIONS

The tower was analyzed by utilizing tnxTower, a non-linear 3-Dimensional finite element software, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix-A of this report.

6.0 RESULTS AND CONCLUSION

Based on an analysis per TIA/EIA-222-F, the existing tower is found to have **adequate** structural capacity for the proposed changes by AT&T. For the aforementioned load combinations and as a maximum, tower diagonal bolts between 155 feet and 175 feet are stressed to **80.3%** of their capacity. The legs are stressed to **57.5%** of their structural capacity, as a maximum.

The tower foundation is also found to have **adequate** structural capacity to support the proposed installation by AT&T, with a maximum usage of 64.9%.

Reactions Comparison:

	Destek Analysis
Leg Compression (kips)	328
Leg Uplift (kips)	273
Leg Shear (kips)	34
Tower Overturning (kip-ft)	6207

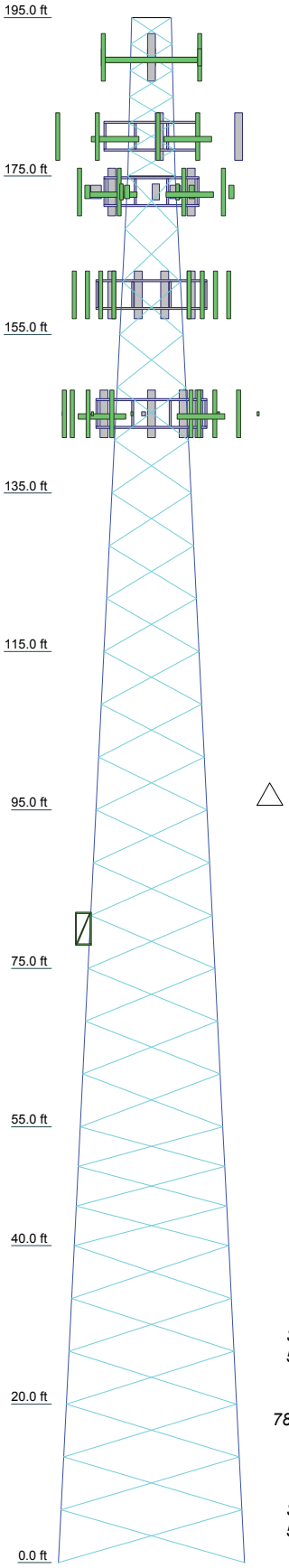
Therefore, the additions and alterations proposed by AT&T can be implemented as intended with the conditions and recommendations outlined in this report.

Should you have any questions about this report, please contact Ahmet Colakoglu at (770) 693-0835 or acolakoglu@destekengineering.com.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

APPENDIX A
SOFTWARE OUTPUT

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	SR 5	SR 4 3/4			SR 4 1/2	SR 4 1/4		SR 4	SR 3 3/4	SR 3
Leg Grade	A529-50									
Diagonals	L4x4x3/8	L4x4x5/16		L4x4x1/4		L3 1/2x3 1/2x5/16	L3x3x1/4	L2 1/2x2 1/2x5/16	L2 1/2x2 1/2x3/16	SR 1 1/4
Diagonal Grade	A36					L3x3x3/8				
Top Girts	N.A.									SR 1 1/4
Bottom Girts	N.A.									SR 1 1/4
Face Width (ft)	23.5	21.5	19.5	18	16	14	12	10	8	6
# Panels @ (ft)	48.8	6 @ 6.66667		3 @ 5		18 @ 6.66667			6 @ 3.33333	
Weight (K)	8.1	6.8	5.0	5.8	5.4	4.8	4.0	3.6	2.8	2.5



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
15ft Triangular Mount	190	DC6-48-60-18-8F	173
APXVSPP18-C-A20	190	DC6-48-60-18-8F	173
APXVSPP18-C-A20	190	DC6-48-60-18-8F	173
APXVSPP18-C-A20	190	Pirod 15' T-Frame Sector Mount	160
800MHZ 2X50W RRH	190	Pirod 15' T-Frame Sector Mount	160
800MHZ 2X50W RRH	190	Pirod 15' T-Frame Sector Mount	160
800MHZ 2X50W RRH	190	(4) DB844H90E-XY	160
PCS 1900MHz 4x45W-65MHz	190	(4) DB844H90E-XY	160
PCS 1900MHz 4x45W-65MHz	190	(4) DB844H90E-XY	160
PCS 1900MHz 4x45W-65MHz	190	Pirod 15' T-Frame Sector Mount	145
Pirod 15' T-Frame Sector Mount	180	Pirod 15' T-Frame Sector Mount	145
Pirod 15' T-Frame Sector Mount	180	Pirod 15' T-Frame Sector Mount	145
Pirod 15' T-Frame Sector Mount	180	LPA-80080/4CF	145
(2) AIR21 B2A/B4P	180	LPA-80080/4CF	145
(2) AIR21 B2A/B4P	180	BXA-171085-8BF	145
(2) AIR21 B2A/B4P	180	BXA-70063/6CF	145
TMA	180	LPA-80080/4CF	145
TMA	180	LPA-80080/4CF	145
TMA	180	BXA-171085-8BF	145
Pirod 12' T-Frame Sector Mount (1)	173	BXA-70063/6CF	145
Pirod 12' T-Frame Sector Mount (1)	173	LPA-80080/4CF	145
Pirod 12' T-Frame Sector Mount (1)	173	LPA-80080/4CF	145
800 10121	173	BXA-171085-8BF	145
800 10121	173	BXA-70063/6CF	145
800 10121	173	(2) FD9R6004/2C-3L	145
AM-X-CD-16-65-00T-RET	173	(2) FD9R6004/2C-3L	145
AM-X-CD-16-65-00T-RET	173	(2) FD9R6004/2C-3L	145
AM-X-CD-16-65-00T-RET	173	GPS	80
(2) RRUS 11	173	GPS	80
(2) RRUS 11	173	2ft Stand Off	80
(2) RRUS 11	173	2ft Stand Off	80

MATERIAL STRENGTH

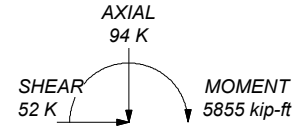
GRADE	Fy	Fu	GRADE	Fy	Fu
A529-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

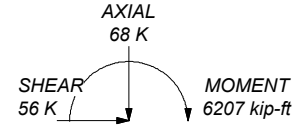
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 78 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 80.3%

MAX. CORNER REACTIONS AT BASE:
DOWN: 328 K
SHEAR: 34 K

UPLIFT: -273 K
SHEAR: 29 K



TORQUE 58 kip-ft
78 mph WIND - 0.5000 in ICE



TORQUE 58 kip-ft
REACTIONS - 90 mph WIND

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693 0835
FAX:

Job: **CT5638**			
Project: **1529189**			
Client: Com-Ex Consultants	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA/EIA-222-F	Date: 01/21/16	Scale: NTS	
Path: \\FILESERVER\Users\admin\Documents\2015\29 - Com-Ex Consultants\1529189 - CT5638 - 15170\Tnxtower\CT5638 Rev 1.eri		Dwg No. E-1	

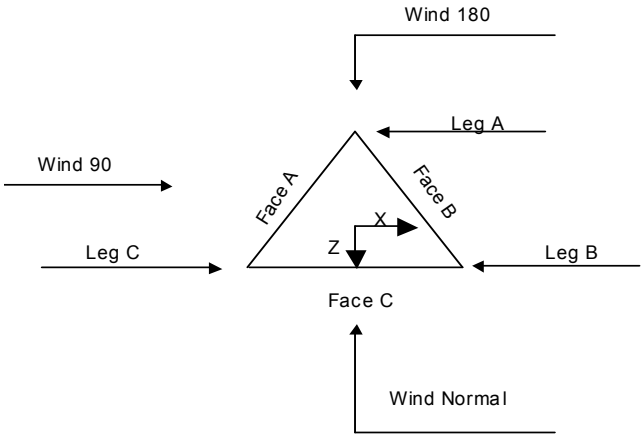
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 195.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 23.50 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 78 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	√ Include Angle Block Shear Check
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination	Use TIA-222-G Tension Splice Capacity Exemption	



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	195.00-175.00			5.00	1	20.00
T2	175.00-155.00			6.00	1	20.00
T3	155.00-135.00			8.00	1	20.00
T4	135.00-115.00			10.00	1	20.00
T5	115.00-95.00			12.00	1	20.00
T6	95.00-75.00			14.00	1	20.00
T7	75.00-55.00			16.00	1	20.00
T8	55.00-40.00			18.00	1	15.00
T9	40.00-20.00			19.50	1	20.00
T10	20.00-0.00			21.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	195.00-175.00	3.33	X Brace	No	Yes	0.0000	0.0000
T2	175.00-155.00	6.67	X Brace	No	No	0.0000	0.0000
T3	155.00-135.00	6.67	X Brace	No	No	0.0000	0.0000
T4	135.00-115.00	6.67	X Brace	No	No	0.0000	0.0000
T5	115.00-95.00	6.67	X Brace	No	No	0.0000	0.0000

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
T6	95.00-75.00	6.67	X Brace	No	No	0.0000	0.0000
T7	75.00-55.00	6.67	X Brace	No	No	0.0000	0.0000
T8	55.00-40.00	5.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	6.67	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	6.67	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 195.00-175.00	Solid Round	3	A529-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T2 175.00-155.00	Solid Round	3 3/4	A529-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 155.00-135.00	Solid Round	4	A529-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x5/16	A36 (36 ksi)
T4 135.00-115.00	Solid Round	4 1/4	A529-50 (50 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T5 115.00-95.00	Solid Round	4 1/4	A529-50 (50 ksi)	Single Angle	L3x3x3/8	A36 (36 ksi)
T6 95.00-75.00	Solid Round	4 1/2	A529-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T7 75.00-55.00	Solid Round	4 3/4	A529-50 (50 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T8 55.00-40.00	Solid Round	4 3/4	A529-50 (50 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T9 40.00-20.00	Solid Round	4 3/4	A529-50 (50 ksi)	Single Angle	L4x4x5/16	A36 (36 ksi)
T10 20.00-0.00	Solid Round	5	A529-50 (50 ksi)	Single Angle	L4x4x3/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 195.00-175.00	Solid Round	1 1/4	A36 (36 ksi)	Solid Round	1 1/4	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

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
T1 195.00-175.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 175.00-155.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 155.00-135.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 135.00-115.00	0.00	0.5000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 115.00-95.00	0.00	0.5000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 95.00-75.00	0.00	0.5000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 75.00-55.00	0.00	0.5000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 55.00-40.00	0.00	0.5000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 40.00-20.00	0.00	0.5000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 20.00-0.00	0.00	0.5000	A36 (36 ksi)	1	1	1	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	Yes	Yes	1	1	1	1	1	1	1	1
195.00-175.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
175.00-155.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
155.00-135.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
135.00-115.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
115.00-95.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
95.00-75.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
75.00-55.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
55.00-40.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 195.00-175.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 175.00-155.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 155.00-135.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 135.00-115.00	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 115.00-95.00	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 95.00-75.00	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 75.00-55.00	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 55.00-40.00	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
T9 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
T10 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 195.00-175.00	Flange	1.1250 A325N	4	0.7500 A325N	0	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.6250 A325N	0
T2 175.00-155.00	Flange	1.1250 A325N	6	0.8750 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.6250 A325N	0
T3 155.00-135.00	Flange	1.1250 A325N	6	0.8750 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	0
T4 135.00-115.00	Flange	1.1250 A325N	6	0.8750 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	0
T5 115.00-95.00	Flange	1.1250 A325N	8	1.0000 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	0
T6 95.00-75.00	Flange	1.1250 A325N	8	1.0000 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	0
T7 75.00-55.00	Flange	1.2500 A325N	8	1.0000 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	2
T8 55.00-40.00	Flange	1.2500 A325N	8	1.0000 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	2
T9 40.00-20.00	Flange	1.2500 A325N	8	1.0000 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	2
T10 20.00-0.00	Flange	1.3750 A449	8	1.0000 A325N	1	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.7500 A325N	0	0.7500 A325N	2

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
ATT												
LDF7-50A(1-5/8")	A	No	Ar (Leg)	173.00 - 0.00	0.0000	0.05	6	3	1.9800	1.9800		1.04
Fiber Cable	A	No	Ar (Leg)	173.00 - 0.00	0.0000	0.07	1	1	0.5000	0.5000		1.00
DC Cable	A	No	Ar (Leg)	173.00 - 0.00	0.0000	0.07	2	2	0.2500	0.1285		0.05
***												
LDF6-50A(1-1/4")	A	Yes	Ar (CfAe)	190.00 - 0.00	0.0000	-0.42	3	3	1.5400	1.5400		1.30
LDF7-50A(1-5/8")	C	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.45	1	1	1.9800	1.9800		1.90
LDF7-50A(1-5/8")	C	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.4	12	6	1.9800	1.9800		1.04
LDF7-50A(1-5/8")	A	Yes	Ar (CfAe)	160.00 - 0.00	0.0000	0.42	12	6	1.9800	1.9800		1.04
LDF7-50A(1-5/8")	B	Yes	Ar (CfAe)	145.00 - 0.00	0.0000	-0.38	12	12	1.9800	1.9800		1.04
LDF4-50A(1/2")	A	Yes	Ar (CfAe)	80.00 - 0.00	0.0000	-0.39	1	1	0.5800	0.5800		0.25

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	195.00-175.00	A	5.775	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	5.775	0.000	0.000	0.000	0.07
T2	175.00-155.00	A	22.695	0.000	0.000	0.000	0.27
		B	10.046	0.000	0.000	0.000	0.00
		C	23.100	0.000	0.000	0.000	0.29
T3	155.00-135.00	A	38.662	0.000	0.000	0.000	0.47
		B	30.962	0.000	0.000	0.000	0.12
		C	23.100	0.000	0.000	0.000	0.29
T4	135.00-115.00	A	38.662	0.000	0.000	0.000	0.47
		B	50.762	0.000	0.000	0.000	0.25
		C	23.100	0.000	0.000	0.000	0.29
T5	115.00-95.00	A	38.662	0.000	0.000	0.000	0.47
		B	50.762	0.000	0.000	0.000	0.25
		C	23.100	0.000	0.000	0.000	0.29
T6	95.00-75.00	A	38.903	0.000	0.000	0.000	0.48
		B	50.762	0.000	0.000	0.000	0.25
		C	23.100	0.000	0.000	0.000	0.29
T7	75.00-55.00	A	39.628	0.000	0.000	0.000	0.48
		B	50.762	0.000	0.000	0.000	0.25
		C	23.100	0.000	0.000	0.000	0.29
T8	55.00-40.00	A	29.721	0.000	0.000	0.000	0.36
		B	38.071	0.000	0.000	0.000	0.19
		C	17.325	0.000	0.000	0.000	0.22
T9	40.00-20.00	A	39.628	0.000	0.000	0.000	0.48
		B	50.762	0.000	0.000	0.000	0.25
		C	23.100	0.000	0.000	0.000	0.29
T10	20.00-0.00	A	39.628	0.000	0.000	0.000	0.48
		B	50.762	0.000	0.000	0.000	0.25
		C	23.100	0.000	0.000	0.000	0.29

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	195.00-175.00	A	0.500	9.525	0.000	0.000	0.000	0.11
		B		0.000	0.000	0.000	0.000	0.00
		C		8.692	0.000	0.000	0.000	0.17
T2	175.00-155.00	A	0.500	37.503	0.568	0.000	0.000	0.62
		B		17.353	0.568	0.000	0.000	0.00
		C		34.767	0.000	0.000	0.000	0.68
T3	155.00-135.00	A	0.500	61.781	0.631	0.000	0.000	1.12
		B		49.081	0.631	0.000	0.000	0.31
		C		34.767	0.000	0.000	0.000	0.68
T4	135.00-115.00	A	0.500	61.781	0.631	0.000	0.000	1.12
		B		78.881	0.631	0.000	0.000	0.61
		C		34.767	0.000	0.000	0.000	0.68
T5	115.00-95.00	A	0.500	61.781	0.631	0.000	0.000	1.12
		B		78.881	0.631	0.000	0.000	0.61
		C		34.767	0.000	0.000	0.000	0.68
T6	95.00-75.00	A	0.500	62.439	0.631	0.000	0.000	1.12
		B		78.881	0.631	0.000	0.000	0.61
		C		34.767	0.000	0.000	0.000	0.68
T7	75.00-55.00	A	0.500	64.414	0.631	0.000	0.000	1.14
		B		78.881	0.631	0.000	0.000	0.61
		C		34.767	0.000	0.000	0.000	0.68
T8	55.00-40.00	A	0.500	48.311	0.473	0.000	0.000	0.85
		B		59.161	0.473	0.000	0.000	0.46
		C		26.075	0.000	0.000	0.000	0.51
T9	40.00-20.00	A	0.500	64.414	0.631	0.000	0.000	1.14
		B		78.881	0.631	0.000	0.000	0.61
		C		34.767	0.000	0.000	0.000	0.68
T10	20.00-0.00	A	0.500	64.414	0.631	0.000	0.000	1.14
		B		78.881	0.631	0.000	0.000	0.61
		C		34.767	0.000	0.000	0.000	0.68

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	195.00-175.00	A	0.483	1.433	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.483	1.307	0.000	0.000
T2	175.00-155.00	A	0.000	0.698	1.096	1.745
		B	0.000	0.000	0.000	0.000
		C	0.000	1.204	2.001	3.011
T3	155.00-135.00	A	0.000	1.324	2.142	3.311
		B	0.000	0.929	1.543	2.322
		C	0.000	1.083	1.800	2.709
T4	135.00-115.00	A	0.000	1.243	2.414	3.730
		B	0.000	1.744	3.476	5.231
		C	0.000	1.017	2.028	3.052
T5	115.00-95.00	A	0.000	1.195	2.319	3.584
		B	0.000	1.675	3.339	5.026
		C	0.000	0.977	1.948	2.932
T6	95.00-75.00	A	0.000	1.181	2.657	4.134
		B	0.000	1.631	3.793	5.709
		C	0.000	0.951	2.213	3.330

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T7	75.00-55.00	A	0.000	1.212	3.058	4.849
		B	0.000	1.601	4.254	6.403
		C	0.000	0.934	2.482	3.735
T8	55.00-40.00	A	0.000	1.168	2.946	4.671
		B	0.000	1.542	4.099	6.169
		C	0.000	0.900	2.391	3.598
T9	40.00-20.00	A	0.000	1.187	2.994	4.746
		B	0.000	1.567	4.165	6.268
		C	0.000	0.914	2.429	3.656
T10	20.00-0.00	A	0.000	1.177	2.969	4.708
		B	0.000	1.554	4.130	6.217
		C	0.000	0.907	2.409	3.626

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	195.00-175.00	-4.7794	2.9634	-4.5564	2.7890
T2	175.00-155.00	-8.2103	0.2038	-8.4573	-0.1058
T3	155.00-135.00	-7.6249	-10.5459	-7.8947	-10.9508
T4	135.00-115.00	-6.8318	-15.8777	-7.2322	-16.6411
T5	115.00-95.00	-7.7718	-18.0946	-8.2522	-19.0128
T6	95.00-75.00	-8.0943	-18.7205	-8.8339	-20.0435
T7	75.00-55.00	-8.3899	-18.8767	-9.5101	-20.5033
T8	55.00-40.00	-7.6768	-17.4402	-8.7538	-19.1244
T9	40.00-20.00	-9.3989	-21.1735	-10.7219	-23.1379
T10	20.00-0.00	-9.8261	-22.1488	-11.2706	-24.3332

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
190ft									
15ft Triangular Mount	C	From Leg	2.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	75.30 86.60	75.30 86.60	2.50 2.88
APXVSPP18-C-A20	A	From Leg	4.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	8.26 8.81	5.28 5.74	0.06 0.11
APXVSPP18-C-A20	B	From Leg	4.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	8.26 8.81	5.28 5.74	0.06 0.11
APXVSPP18-C-A20	C	From Leg	4.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice	8.26 8.81	5.28 5.74	0.06 0.11
800MHZ 2X50W RRH	A	From Leg	4.00	0.0000	190.00	No Ice	2.49	2.07	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.71	2.27	0.09
			0.00						
800MHZ 2X50W RRH	B	From Leg	4.00	0.0000	190.00	No Ice	2.49	2.07	0.06
			0.00			1/2" Ice	2.71	2.27	0.09
			0.00						
800MHZ 2X50W RRH	C	From Leg	4.00	0.0000	190.00	No Ice	2.49	2.07	0.06
			0.00			1/2" Ice	2.71	2.27	0.09
			0.00						
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.00	0.0000	190.00	No Ice	2.71	2.61	0.06
			0.00			1/2" Ice	2.95	2.85	0.08
			0.00						
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00	0.0000	190.00	No Ice	2.71	2.61	0.06
			0.00			1/2" Ice	2.95	2.85	0.08
			0.00						
PCS 1900MHz 4x45W-65MHz	C	From Leg	4.00	0.0000	190.00	No Ice	2.71	2.61	0.06
			0.00			1/2" Ice	2.95	2.85	0.08
			0.00						
180ft									
Pirod 15' T-Frame Sector Mount	A	From Leg	2.00	0.0000	180.00	No Ice	15.00	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
			0.00						
Pirod 15' T-Frame Sector Mount	B	From Leg	2.00	0.0000	180.00	No Ice	15.00	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
			0.00						
Pirod 15' T-Frame Sector Mount	C	From Leg	2.00	0.0000	180.00	No Ice	15.00	15.00	0.50
			0.00			1/2" Ice	20.60	20.60	0.65
			0.00						
(2) AIR21 B2A/B4P	A	From Leg	4.00	0.0000	180.00	No Ice	6.53	4.36	0.08
			6.00			1/2" Ice	6.98	4.77	0.12
			0.00						
(2) AIR21 B2A/B4P	B	From Leg	4.00	0.0000	180.00	No Ice	6.53	4.36	0.08
			6.00			1/2" Ice	6.98	4.77	0.12
			0.00						
(2) AIR21 B2A/B4P	C	From Leg	4.00	0.0000	180.00	No Ice	6.53	4.36	0.08
			6.00			1/2" Ice	6.98	4.77	0.12
			0.00						
TMA	A	From Leg	4.00	0.0000	180.00	No Ice	1.17	0.39	0.01
			0.00			1/2" Ice	1.31	0.48	0.02
			0.00						
TMA	B	From Leg	4.00	0.0000	180.00	No Ice	1.17	0.39	0.01
			0.00			1/2" Ice	1.31	0.48	0.02
			0.00						
TMA	C	From Leg	4.00	0.0000	180.00	No Ice	1.17	0.39	0.01
			0.00			1/2" Ice	1.31	0.48	0.02
			0.00						
173ft									
Pirod 12' T-Frame Sector Mount (1)	A	From Leg	2.00	0.0000	173.00	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00						
Pirod 12' T-Frame Sector Mount (1)	B	From Leg	2.00	0.0000	173.00	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00						
Pirod 12' T-Frame Sector Mount (1)	C	From Leg	2.00	0.0000	173.00	No Ice	13.60	13.60	0.47
			0.00			1/2" Ice	18.40	18.40	0.60
			0.00						
800 10121	A	From Leg	4.00	0.0000	173.00	No Ice	5.45	3.29	0.05
			5.00			1/2" Ice	5.87	3.63	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
800 10121	B	From Leg	4.00 5.00 0.00	0.0000	173.00	No Ice 1/2" Ice	5.45 5.87	3.29 3.63	0.05 0.08
800 10121	C	From Leg	4.00 5.00 0.00	0.0000	173.00	No Ice 1/2" Ice	5.45 5.87	3.29 3.63	0.05 0.08
AM-X-CD-16-65-00T-RET	A	From Leg	4.00 -5.00 0.00	0.0000	173.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.09
AM-X-CD-16-65-00T-RET	B	From Leg	4.00 -5.00 0.00	0.0000	173.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.09
AM-X-CD-16-65-00T-RET	C	From Leg	4.00 -5.00 0.00	0.0000	173.00	No Ice 1/2" Ice	8.26 8.81	4.64 5.09	0.05 0.09
(2) RRUS 11	A	From Leg	4.00 -2.00 0.00	0.0000	173.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	0.05 0.07
(2) RRUS 11	B	From Leg	4.00 -2.00 0.00	0.0000	173.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	0.05 0.07
(2) RRUS 11	C	From Leg	4.00 -2.00 0.00	0.0000	173.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	0.05 0.07
DC6-48-60-18-8F	A	From Leg	0.50 0.50 0.00	0.0000	173.00	No Ice 1/2" Ice	2.57 2.80	2.57 2.80	0.02 0.04
DC6-48-60-18-8F	B	From Leg	0.50 0.50 0.00	0.0000	173.00	No Ice 1/2" Ice	2.57 2.80	2.57 2.80	0.02 0.04
DC6-48-60-18-8F	C	From Leg	0.50 0.50 0.00	0.0000	173.00	No Ice 1/2" Ice	2.57 2.80	2.57 2.80	0.02 0.04
160ft									
Pirod 15' T-Frame Sector Mount	A	From Leg	2.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
Pirod 15' T-Frame Sector Mount	B	From Leg	2.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
Pirod 15' T-Frame Sector Mount	C	From Leg	2.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
(4) DB844H90E-XY	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	3.06 3.39	3.73 4.10	0.01 0.04
(4) DB844H90E-XY	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	3.06 3.39	3.73 4.10	0.01 0.04
(4) DB844H90E-XY	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	3.06 3.39	3.73 4.10	0.01 0.04
145ft									
Pirod 15' T-Frame Sector Mount	A	From Leg	2.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Pirod 15' T-Frame Sector Mount	B	From Leg	2.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
Pirod 15' T-Frame Sector Mount	C	From Leg	2.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
LPA-80080/4CF	A	From Leg	4.00 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
LPA-80080/4CF	A	From Leg	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
BXA-171085-8BF	A	From Leg	4.00 4.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.92 3.23	2.14 2.44	0.01 0.03
BXA-70063/6CF	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	7.74 8.28	3.76 4.20	0.02 0.06
LPA-80080/4CF	B	From Leg	4.00 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
LPA-80080/4CF	B	From Leg	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
BXA-171085-8BF	B	From Leg	4.00 4.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.92 3.23	2.14 2.44	0.01 0.03
BXA-70063/6CF	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	7.74 8.28	3.76 4.20	0.02 0.06
LPA-80080/4CF	C	From Leg	4.00 6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
LPA-80080/4CF	C	From Leg	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
BXA-171085-8BF	C	From Leg	4.00 4.00 0.00	0.0000	145.00	No Ice 1/2" Ice	2.92 3.23	2.14 2.44	0.01 0.03
BXA-70063/6CF	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	7.74 8.28	3.76 4.20	0.02 0.06
(2) FD9R6004/2C-3L	A	From Leg	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	0.00 0.01
(2) FD9R6004/2C-3L	B	From Leg	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	0.00 0.01
(2) FD9R6004/2C-3L	C	From Leg	4.00 -6.00 0.00	0.0000	145.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	0.00 0.01
80ft GPS	C	From Leg	2.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.01
GPS	A	From Leg	2.00 0.00	0.0000	80.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
2ft Stand Off	C	From Leg	0.00 1.00 0.00	0.0000	80.00	No Ice 1/2" Ice	1.07 1.62	1.07 1.62	0.02 0.03
2ft Stand Off	A	From Leg	0.00 1.00 0.00 0.00	0.0000	80.00	No Ice 1/2" Ice	1.07 1.62	1.07 1.62	0.02 0.03

Tower Pressures - No Ice

$G_H = 1.116$

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 195.00-175.00	185.00	1.636	34	115.002	A	0.000	24.066	10.004	41.57	0.000	0.000
					B	0.000	18.774		53.29	0.000	0.000
					C	0.000	24.066		41.57	0.000	0.000
T2 175.00-155.00	165.00	1.584	33	146.258	A	10.477	35.216	12.521	27.40	0.000	0.000
					B	11.572	22.566		36.68	0.000	0.000
					C	9.572	35.621		27.71	0.000	0.000
T3 155.00-135.00	145.00	1.526	32	186.675	A	11.352	52.017	13.356	21.08	0.000	0.000
					B	11.952	44.317		23.74	0.000	0.000
					C	11.695	36.456		27.74	0.000	0.000
T4 135.00-115.00	125.00	1.463	30	227.092	A	16.271	52.852	14.190	20.53	0.000	0.000
					B	15.209	64.952		17.70	0.000	0.000
					C	16.657	37.290		26.30	0.000	0.000
T5 115.00-95.00	105.00	1.392	29	267.092	A	19.003	52.852	14.190	19.75	0.000	0.000
					B	17.983	64.952		17.11	0.000	0.000
					C	19.374	37.290		25.04	0.000	0.000
T6 95.00-75.00	85.00	1.31	27	307.509	A	25.362	53.928	15.025	18.95	0.000	0.000
					B	24.226	65.787		16.69	0.000	0.000
					C	25.806	38.125		23.50	0.000	0.000
T7 75.00-55.00	65.00	1.214	25	347.927	A	32.624	55.488	15.860	18.00	0.000	0.000
					B	31.428	66.621		16.18	0.000	0.000
					C	33.200	38.960		21.98	0.000	0.000
T8 55.00-40.00	47.50	1.11	23	287.195	A	35.046	41.616	11.895	15.52	0.000	0.000
					B	33.894	49.966		14.18	0.000	0.000
					C	35.602	29.220		18.35	0.000	0.000
T9 40.00-20.00	30.00	1	21	417.927	A	39.290	55.488	15.860	16.73	0.000	0.000
					B	38.119	66.621		15.14	0.000	0.000
					C	39.855	38.960		20.12	0.000	0.000
T10 20.00-0.00	10.00	1	21	458.344	A	43.105	56.323	16.694	16.79	0.000	0.000
					B	41.944	67.456		15.26	0.000	0.000
					C	43.665	39.794		20.00	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.116$

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	185.00	1.636	25	0.5000	116.669	A	0.000	37.216	13.339	35.84	0.000	0.000
195.00-175.00						B	0.000	29.124		45.80	0.000	0.000
						C	0.000	36.508		36.54	0.000	0.000
T2	165.00	1.584	25	0.5000	147.927	A	10.395	57.293	15.860	23.43	0.000	0.000
175.00-155.00						B	12.140	37.841		31.73	0.000	0.000
						C	8.561	54.051		25.33	0.000	0.000
T3	145.00	1.526	24	0.5000	188.344	A	10.814	82.549	16.694	17.88	0.000	0.000
155.00-135.00						B	11.804	70.244		20.35	0.000	0.000
						C	10.786	55.775		25.08	0.000	0.000
T4	125.00	1.463	23	0.5000	228.761	A	15.585	84.295	17.529	17.55	0.000	0.000
135.00-115.00						B	14.085	100.895		15.25	0.000	0.000
						C	15.633	57.507		23.97	0.000	0.000
T5 115.00-95.00	105.00	1.392	22	0.5000	268.761	A	18.369	85.223	17.529	16.92	0.000	0.000
						B	16.927	101.842		14.76	0.000	0.000
						C	18.391	58.426		22.82	0.000	0.000
T6 95.00-75.00	85.00	1.31	20	0.5000	309.178	A	24.516	87.627	18.364	16.38	0.000	0.000
						B	22.941	103.619		14.51	0.000	0.000
						C	24.689	60.184		21.64	0.000	0.000
T7 75.00-55.00	65.00	1.214	19	0.5000	349.595	A	31.464	91.321	19.199	15.64	0.000	0.000
						B	29.910	105.399		14.19	0.000	0.000
						C	31.947	61.952		20.45	0.000	0.000
T8 55.00-40.00	47.50	1.11	17	0.5000	288.446	A	33.795	71.040	14.399	13.73	0.000	0.000
						B	32.297	81.516		12.65	0.000	0.000
						C	34.394	49.073		17.25	0.000	0.000
T9 40.00-20.00	30.00	1	16	0.5000	419.595	A	38.168	92.997	19.199	14.64	0.000	0.000
						B	36.647	107.083		13.36	0.000	0.000
						C	38.628	63.622		18.78	0.000	0.000
T10 20.00-0.00	10.00	1	16	0.5000	460.012	A	41.998	94.789	20.033	14.65	0.000	0.000
						B	40.489	108.879		13.41	0.000	0.000
						C	42.448	65.412		18.57	0.000	0.000

Tower Pressure - Service

$G_H = 1.116$

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	185.00	1.636	10	115.002	A	0.000	24.066	10.004	41.57	0.000	0.000
195.00-175.00					B	0.000	18.774		53.29	0.000	0.000
					C	0.000	24.066		41.57	0.000	0.000
T2	165.00	1.584	10	146.258	A	10.477	35.216	12.521	27.40	0.000	0.000
175.00-155.00					B	11.572	22.566		36.68	0.000	0.000
					C	9.572	35.621		27.71	0.000	0.000
T3	145.00	1.526	10	186.675	A	11.352	52.017	13.356	21.08	0.000	0.000
155.00-135.00					B	11.952	44.317		23.74	0.000	0.000
					C	11.695	36.456		27.74	0.000	0.000
T4	125.00	1.463	9	227.092	A	16.271	52.852	14.190	20.53	0.000	0.000
135.00-115.00					B	15.209	64.952		17.70	0.000	0.000
					C	16.657	37.290		26.30	0.000	0.000
T5	105.00	1.392	9	267.092	A	19.003	52.852	14.190	19.75	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
115.00-95.00					B	17.983	64.952		17.11	0.000	0.000
					C	19.374	37.290		25.04	0.000	0.000
T6 95.00-75.00	85.00	1.31	8	307.509	A	25.362	53.928	15.025	18.95	0.000	0.000
					B	24.226	65.787		16.69	0.000	0.000
					C	25.806	38.125		23.50	0.000	0.000
T7 75.00-55.00	65.00	1.214	8	347.927	A	32.624	55.488	15.860	18.00	0.000	0.000
					B	31.428	66.621		16.18	0.000	0.000
					C	33.200	38.960		21.98	0.000	0.000
T8 55.00-40.00	47.50	1.11	7	287.195	A	35.046	41.616	11.895	15.52	0.000	0.000
					B	33.894	49.966		14.18	0.000	0.000
					C	35.602	29.220		18.35	0.000	0.000
T9 40.00-20.00	30.00	1	6	417.927	A	39.290	55.488	15.860	16.73	0.000	0.000
					B	38.119	66.621		15.14	0.000	0.000
					C	39.855	38.960		20.12	0.000	0.000
T10 20.00-0.00	10.00	1	6	458.344	A	43.105	56.323	16.694	16.79	0.000	0.000
					B	41.944	67.456		15.26	0.000	0.000
					C	43.665	39.794		20.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.13	2.55	A	0.209	2.565	0.592	1	1	14.255	1.38	69.21	C
195.00-175.00			B	0.163	2.723	0.584	1	1	10.956			
			C	0.209	2.565	0.592	1	1	14.255			
T2	0.56	2.79	A	0.312	2.263	0.62	1	1	32.303	2.68	133.94	A
175.00-155.00			B	0.233	2.488	0.598	1	1	25.062			
			C	0.309	2.272	0.619	1	1	31.610			
T3	0.89	3.57	A	0.339	2.196	0.629	1	1	44.059	3.42	170.83	A
155.00-135.00			B	0.301	2.292	0.616	1	1	39.266			
			C	0.258	2.414	0.604	1	1	33.711			
T4	1.01	4.04	A	0.304	2.284	0.617	1	1	48.894	4.13	206.43	B
135.00-115.00			B	0.353	2.165	0.634	1	1	56.359			
			C	0.238	2.475	0.599	1	1	38.986			
T5	1.01	4.79	A	0.269	2.382	0.607	1	1	51.080	4.25	212.54	B
115.00-95.00			B	0.311	2.268	0.619	1	1	58.199			
			C	0.212	2.556	0.593	1	1	41.486			
T6	1.01	5.35	A	0.258	2.414	0.604	1	1	57.929	4.53	226.70	B
95.00-75.00			B	0.293	2.316	0.614	1	1	64.599			
			C	0.208	2.57	0.592	1	1	48.378			
T7	1.02	5.79	A	0.253	2.428	0.603	1	1	66.067	4.75	237.39	B
75.00-55.00			B	0.282	2.346	0.611	1	1	72.100			
			C	0.207	2.571	0.592	1	1	56.262			
T8	0.76	5.02	A	0.267	2.388	0.606	1	1	60.280	3.84	255.98	B
55.00-40.00			B	0.292	2.318	0.613	1	1	64.548			
			C	0.226	2.512	0.596	1	1	53.016			
T9	1.02	6.79	A	0.227	2.509	0.596	1	1	72.374	4.41	220.37	B
40.00-20.00			B	0.251	2.436	0.602	1	1	78.228			
			C	0.189	2.635	0.588	1	1	62.768			
T10	1.02	8.13	A	0.217	2.54	0.594	1	1	76.561	4.71	235.44	B
20.00-0.00			B	0.239	2.472	0.599	1	1	82.354			
			C	0.182	2.657	0.587	1	1	67.021			
Sum Weight:	8.43	48.83						OTM	3211.58 kip-ft	38.10		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.13	2.55	A	0.209	2.565	0.592	0.8	1	14.255	1.38	69.21	C
195.00-175.00			B	0.163	2.723	0.584	0.8	1	10.956			
			C	0.209	2.565	0.592	0.8	1	14.255			
T2	0.56	2.79	A	0.312	2.263	0.62	0.8	1	30.208	2.50	125.25	A
175.00-155.00			B	0.233	2.488	0.598	0.8	1	22.748			
			C	0.309	2.272	0.619	0.8	1	29.696			
T3	0.89	3.57	A	0.339	2.196	0.629	0.8	1	41.788	3.24	162.03	A
155.00-135.00			B	0.301	2.292	0.616	0.8	1	36.876			
			C	0.258	2.414	0.604	0.8	1	31.372			
T4	1.01	4.04	A	0.304	2.284	0.617	0.8	1	45.640	3.91	195.29	B
135.00-115.00			B	0.353	2.165	0.634	0.8	1	53.317			
			C	0.238	2.475	0.599	0.8	1	35.655			
T5	1.01	4.79	A	0.269	2.382	0.607	0.8	1	47.279	3.99	199.40	B
115.00-95.00			B	0.311	2.268	0.619	0.8	1	54.603			
			C	0.212	2.556	0.593	0.8	1	37.611			
T6	1.01	5.35	A	0.258	2.414	0.604	0.8	1	52.857	4.19	209.70	B
95.00-75.00			B	0.293	2.316	0.614	0.8	1	59.754			
			C	0.208	2.57	0.592	0.8	1	43.217			
T7	1.02	5.79	A	0.253	2.428	0.603	0.8	1	59.542	4.33	216.69	B
75.00-55.00			B	0.282	2.346	0.611	0.8	1	65.815			
			C	0.207	2.571	0.592	0.8	1	49.622			
T8	0.76	5.02	A	0.267	2.388	0.606	0.8	1	53.271	3.44	229.10	B
55.00-40.00			B	0.292	2.318	0.613	0.8	1	57.769			
			C	0.226	2.512	0.596	0.8	1	45.896			
T9	1.02	6.79	A	0.227	2.509	0.596	0.8	1	64.516	3.98	198.89	B
40.00-20.00			B	0.251	2.436	0.602	0.8	1	70.604			
			C	0.189	2.635	0.588	0.8	1	54.797			
T10	1.02	8.13	A	0.217	2.54	0.594	0.8	1	67.940	4.23	211.46	B
20.00-0.00			B	0.239	2.472	0.599	0.8	1	73.965			
			C	0.182	2.657	0.587	0.8	1	58.288			
Sum Weight:	8.43	48.83						OTM	3009.30 kip-ft	35.19		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.13	2.55	A	0.209	2.565	0.592	0.85	1	14.255	1.38	69.21	C
195.00-175.00			B	0.163	2.723	0.584	0.85	1	10.956			
			C	0.209	2.565	0.592	0.85	1	14.255			
T2	0.56	2.79	A	0.312	2.263	0.62	0.85	1	30.732	2.55	127.42	A
175.00-155.00			B	0.233	2.488	0.598	0.85	1	23.326			
			C	0.309	2.272	0.619	0.85	1	30.174			
T3	0.89	3.57	A	0.339	2.196	0.629	0.85	1	42.356	3.28	164.23	A
155.00-135.00			B	0.301	2.292	0.616	0.85	1	37.473			
			C	0.258	2.414	0.604	0.85	1	31.957			
T4	1.01	4.04	A	0.304	2.284	0.617	0.85	1	46.453	3.96	198.07	B

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
135.00-115.00			B	0.353	2.165	0.634	0.85	1	54.078			
			C	0.238	2.475	0.599	0.85	1	36.488			
T5	1.01	4.79	A	0.269	2.382	0.607	0.85	1	48.229	4.05	202.69	B
115.00-95.00			B	0.311	2.268	0.619	0.85	1	55.502			
			C	0.212	2.556	0.593	0.85	1	38.580			
T6	1.01	5.35	A	0.258	2.414	0.604	0.85	1	54.125	4.28	213.95	B
95.00-75.00			B	0.293	2.316	0.614	0.85	1	60.965			
			C	0.208	2.57	0.592	0.85	1	44.507			
T7	1.02	5.79	A	0.253	2.428	0.603	0.85	1	61.173	4.44	221.87	B
75.00-55.00			B	0.282	2.346	0.611	0.85	1	67.386			
			C	0.207	2.571	0.592	0.85	1	51.282			
T8	0.76	5.02	A	0.267	2.388	0.606	0.85	1	55.023	3.54	235.82	B
55.00-40.00			B	0.292	2.318	0.613	0.85	1	59.463			
			C	0.226	2.512	0.596	0.85	1	47.676			
T9	1.02	6.79	A	0.227	2.509	0.596	0.85	1	66.480	4.09	204.26	B
40.00-20.00			B	0.251	2.436	0.602	0.85	1	72.510			
			C	0.189	2.635	0.588	0.85	1	56.790			
T10	1.02	8.13	A	0.217	2.54	0.594	0.85	1	70.095	4.35	217.45	B
20.00-0.00			B	0.239	2.472	0.599	0.85	1	76.062			
			C	0.182	2.657	0.587	0.85	1	60.471			
Sum Weight:	8.43	48.83						OTM	3059.87 kip-ft	35.92		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.28	2.96	A	0.319	2.247	0.622	1	1	23.144	1.48	73.81	A
195.00-175.00			B	0.25	2.439	0.602	1	1	17.526			
			C	0.313	2.262	0.62	1	1	22.633			
T2	1.30	3.35	A	0.458	1.961	0.677	1	1	49.170	2.65	132.49	A
175.00-155.00			B	0.338	2.2	0.628	1	1	35.913			
			C	0.423	2.02	0.661	1	1	44.309			
T3	2.11	4.21	A	0.496	1.906	0.695	1	1	68.212	3.44	172.11	A
155.00-135.00			B	0.436	1.998	0.667	1	1	58.641			
			C	0.353	2.164	0.634	1	1	46.130			
T4	2.41	4.84	A	0.437	1.996	0.667	1	1	71.829	4.07	203.61	B
135.00-115.00			B	0.503	1.897	0.699	1	1	84.593			
			C	0.32	2.245	0.622	1	1	51.410			
T5	2.41	5.68	A	0.385	2.094	0.646	1	1	73.403	4.08	204.21	B
115.00-95.00			B	0.442	1.987	0.67	1	1	85.120			
			C	0.286	2.334	0.612	1	1	54.128			
T6	2.42	6.46	A	0.363	2.143	0.637	1	1	80.343	4.23	211.28	B
95.00-75.00			B	0.409	2.046	0.655	1	1	90.859			
			C	0.275	2.366	0.608	1	1	61.307			
T7	2.43	7.13	A	0.351	2.169	0.633	1	1	89.262	4.31	215.75	B
75.00-55.00			B	0.387	2.09	0.646	1	1	98.040			
			C	0.269	2.383	0.607	1	1	69.539			
T8	1.82	6.39	A	0.363	2.141	0.637	1	1	79.073	3.40	226.97	B
55.00-40.00			B	0.395	2.075	0.649	1	1	85.234			
			C	0.289	2.325	0.613	1	1	64.461			
T9	2.43	8.34	A	0.313	2.263	0.62	1	1	95.811	3.95	197.65	B
40.00-20.00			B	0.343	2.189	0.63	1	1	104.093			
			C	0.244	2.457	0.6	1	1	76.819			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T10	2.43	9.80	A	0.297	2.303	0.615	1	1	100.302	4.20	209.91	B
20.00-0.00			B	0.325	2.232	0.624	1	1	108.404			
			C	0.234	2.485	0.598	1	1	81.567			
Sum Weight:	20.05	59.16						OTM	3109.25 kip-ft	35.82		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.28	2.96	A	0.319	2.247	0.622	0.8	1	23.144	1.48	73.81	A
195.00-175.00			B	0.25	2.439	0.602	0.8	1	17.526			
			C	0.313	2.262	0.62	0.8	1	22.633			
T2	1.30	3.35	A	0.458	1.961	0.677	0.8	1	47.091	2.54	126.89	A
175.00-155.00			B	0.338	2.2	0.628	0.8	1	33.485			
			C	0.423	2.02	0.661	0.8	1	42.597			
T3	2.11	4.21	A	0.496	1.906	0.695	0.8	1	66.049	3.33	166.65	A
155.00-135.00			B	0.436	1.998	0.667	0.8	1	56.281			
			C	0.353	2.164	0.634	0.8	1	43.973			
T4	2.41	4.84	A	0.437	1.996	0.667	0.8	1	68.712	3.94	196.83	B
135.00-115.00			B	0.503	1.897	0.699	0.8	1	81.777			
			C	0.32	2.245	0.622	0.8	1	48.284			
T5	2.41	5.68	A	0.385	2.094	0.646	0.8	1	69.730	3.92	196.09	B
115.00-95.00			B	0.442	1.987	0.67	0.8	1	81.735			
			C	0.286	2.334	0.612	0.8	1	50.449			
T6	2.42	6.46	A	0.363	2.143	0.637	0.8	1	75.440	4.01	200.61	B
95.00-75.00			B	0.409	2.046	0.655	0.8	1	86.271			
			C	0.275	2.366	0.608	0.8	1	56.369			
T7	2.43	7.13	A	0.351	2.169	0.633	0.8	1	82.969	4.05	202.58	B
75.00-55.00			B	0.387	2.09	0.646	0.8	1	92.058			
			C	0.269	2.383	0.607	0.8	1	63.150			
T8	1.82	6.39	A	0.363	2.141	0.637	0.8	1	72.314	3.15	209.77	B
55.00-40.00			B	0.395	2.075	0.649	0.8	1	78.774			
			C	0.289	2.325	0.613	0.8	1	57.582			
T9	2.43	8.34	A	0.313	2.263	0.62	0.8	1	88.178	3.67	183.73	B
40.00-20.00			B	0.343	2.189	0.63	0.8	1	96.763			
			C	0.244	2.457	0.6	0.8	1	69.094			
T10	2.43	9.80	A	0.297	2.303	0.615	0.8	1	91.902	3.88	194.23	B
20.00-0.00			B	0.325	2.232	0.624	0.8	1	100.306			
			C	0.234	2.485	0.598	0.8	1	73.077			
Sum Weight:	20.05	59.16						OTM	2981.93 kip-ft	33.98		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.28	2.96	A	0.319	2.247	0.622	0.85	1	23.144	1.48	73.81	A
195.00-175.00			B	0.25	2.439	0.602	0.85	1	17.526			
			C	0.313	2.262	0.62	0.85	1	22.633			
T2	1.30	3.35	A	0.458	1.961	0.677	0.85	1	47.611	2.57	128.29	A
175.00-155.00			B	0.338	2.2	0.628	0.85	1	34.092			
			C	0.423	2.02	0.661	0.85	1	43.025			
T3	2.11	4.21	A	0.496	1.906	0.695	0.85	1	66.590	3.36	168.02	A
155.00-135.00			B	0.436	1.998	0.667	0.85	1	56.871			
			C	0.353	2.164	0.634	0.85	1	44.513			
T4	2.41	4.84	A	0.437	1.996	0.667	0.85	1	69.491	3.97	198.53	B
135.00-115.00			B	0.503	1.897	0.699	0.85	1	82.481			
			C	0.32	2.245	0.622	0.85	1	49.065			
T5	2.41	5.68	A	0.385	2.094	0.646	0.85	1	70.648	3.96	198.12	B
115.00-95.00			B	0.442	1.987	0.67	0.85	1	82.581			
			C	0.286	2.334	0.612	0.85	1	51.369			
T6	2.42	6.46	A	0.363	2.143	0.637	0.85	1	76.666	4.07	203.28	B
95.00-75.00			B	0.409	2.046	0.655	0.85	1	87.418			
			C	0.275	2.366	0.608	0.85	1	57.604			
T7	2.43	7.13	A	0.351	2.169	0.633	0.85	1	84.543	4.12	205.87	B
75.00-55.00			B	0.387	2.09	0.646	0.85	1	93.553			
			C	0.269	2.383	0.607	0.85	1	64.747			
T8	1.82	6.39	A	0.363	2.141	0.637	0.85	1	74.004	3.21	214.07	B
55.00-40.00			B	0.395	2.075	0.649	0.85	1	80.389			
			C	0.289	2.325	0.613	0.85	1	59.302			
T9	2.43	8.34	A	0.313	2.263	0.62	0.85	1	90.086	3.74	187.21	B
40.00-20.00			B	0.343	2.189	0.63	0.85	1	98.596			
			C	0.244	2.457	0.6	0.85	1	71.025			
T10	2.43	9.80	A	0.297	2.303	0.615	0.85	1	94.002	3.96	198.15	B
20.00-0.00			B	0.325	2.232	0.624	0.85	1	102.331			
			C	0.234	2.485	0.598	0.85	1	75.200			
Sum Weight:	20.05	59.16						OTM	3013.76 kip-ft	34.44		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.13	2.55	A	0.209	2.565	0.592	1	1	14.255	0.43	21.36	C
195.00-175.00			B	0.163	2.723	0.584	1	1	10.956			
			C	0.209	2.565	0.592	1	1	14.255			
T2	0.56	2.79	A	0.312	2.263	0.62	1	1	32.303	0.83	41.34	A
175.00-155.00			B	0.233	2.488	0.598	1	1	25.062			
			C	0.309	2.272	0.619	1	1	31.610			
T3	0.89	3.57	A	0.339	2.196	0.629	1	1	44.059	1.05	52.73	A
155.00-135.00			B	0.301	2.292	0.616	1	1	39.266			
			C	0.258	2.414	0.604	1	1	33.711			
T4	1.01	4.04	A	0.304	2.284	0.617	1	1	48.894	1.27	63.71	B
135.00-115.00			B	0.353	2.165	0.634	1	1	56.359			
			C	0.238	2.475	0.599	1	1	38.986			
T5	1.01	4.79	A	0.269	2.382	0.607	1	1	51.080	1.31	65.60	B
115.00-95.00			B	0.311	2.268	0.619	1	1	58.199			
			C	0.212	2.556	0.593	1	1	41.486			
T6	1.01	5.35	A	0.258	2.414	0.604	1	1	57.929	1.40	69.97	B
95.00-75.00			B	0.293	2.316	0.614	1	1	64.599			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.208	2.57	0.592	1	1	48.378			
T7	1.02	5.79	A	0.253	2.428	0.603	1	1	66.067	1.47	73.27	B
75.00-55.00			B	0.282	2.346	0.611	1	1	72.100			
			C	0.207	2.571	0.592	1	1	56.262			
T8	0.76	5.02	A	0.267	2.388	0.606	1	1	60.280	1.19	79.01	B
55.00-40.00			B	0.292	2.318	0.613	1	1	64.548			
			C	0.226	2.512	0.596	1	1	53.016			
T9	1.02	6.79	A	0.227	2.509	0.596	1	1	72.374	1.36	68.01	B
40.00-20.00			B	0.251	2.436	0.602	1	1	78.228			
			C	0.189	2.635	0.588	1	1	62.768			
T10	1.02	8.13	A	0.217	2.54	0.594	1	1	76.561	1.45	72.67	B
20.00-0.00			B	0.239	2.472	0.599	1	1	82.354			
			C	0.182	2.657	0.587	1	1	67.021			
Sum Weight:	8.43	48.83						OTM	991.23 kip-ft	11.76		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.13	2.55	A	0.209	2.565	0.592	0.8	1	14.255	0.43	21.36	C
195.00-175.00			B	0.163	2.723	0.584	0.8	1	10.956			
			C	0.209	2.565	0.592	0.8	1	14.255			
T2	0.56	2.79	A	0.312	2.263	0.62	0.8	1	30.208	0.77	38.66	A
175.00-155.00			B	0.233	2.488	0.598	0.8	1	22.748			
			C	0.309	2.272	0.619	0.8	1	29.696			
T3	0.89	3.57	A	0.339	2.196	0.629	0.8	1	41.788	1.00	50.01	A
155.00-135.00			B	0.301	2.292	0.616	0.8	1	36.876			
			C	0.258	2.414	0.604	0.8	1	31.372			
T4	1.01	4.04	A	0.304	2.284	0.617	0.8	1	45.640	1.21	60.27	B
135.00-115.00			B	0.353	2.165	0.634	0.8	1	53.317			
			C	0.238	2.475	0.599	0.8	1	35.655			
T5	1.01	4.79	A	0.269	2.382	0.607	0.8	1	47.279	1.23	61.54	B
115.00-95.00			B	0.311	2.268	0.619	0.8	1	54.603			
			C	0.212	2.556	0.593	0.8	1	37.611			
T6	1.01	5.35	A	0.258	2.414	0.604	0.8	1	52.857	1.29	64.72	B
95.00-75.00			B	0.293	2.316	0.614	0.8	1	59.754			
			C	0.208	2.57	0.592	0.8	1	43.217			
T7	1.02	5.79	A	0.253	2.428	0.603	0.8	1	59.542	1.34	66.88	B
75.00-55.00			B	0.282	2.346	0.611	0.8	1	65.815			
			C	0.207	2.571	0.592	0.8	1	49.622			
T8	0.76	5.02	A	0.267	2.388	0.606	0.8	1	53.271	1.06	70.71	B
55.00-40.00			B	0.292	2.318	0.613	0.8	1	57.769			
			C	0.226	2.512	0.596	0.8	1	45.896			
T9	1.02	6.79	A	0.227	2.509	0.596	0.8	1	64.516	1.23	61.39	B
40.00-20.00			B	0.251	2.436	0.602	0.8	1	70.604			
			C	0.189	2.635	0.588	0.8	1	54.797			
T10	1.02	8.13	A	0.217	2.54	0.594	0.8	1	67.940	1.31	65.26	B
20.00-0.00			B	0.239	2.472	0.599	0.8	1	73.965			
			C	0.182	2.657	0.587	0.8	1	58.288			
Sum Weight:	8.43	48.83						OTM	928.80 kip-ft	10.86		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.13	2.55	A	0.209	2.565	0.592	0.85	1	14.255	0.43	21.36	C
195.00-175.00			B	0.163	2.723	0.584	0.85	1	10.956			
			C	0.209	2.565	0.592	0.85	1	14.255			
T2	0.56	2.79	A	0.312	2.263	0.62	0.85	1	30.732	0.79	39.33	A
175.00-155.00			B	0.233	2.488	0.598	0.85	1	23.326			
			C	0.309	2.272	0.619	0.85	1	30.174			
T3	0.89	3.57	A	0.339	2.196	0.629	0.85	1	42.356	1.01	50.69	A
155.00-135.00			B	0.301	2.292	0.616	0.85	1	37.473			
			C	0.258	2.414	0.604	0.85	1	31.957			
T4	1.01	4.04	A	0.304	2.284	0.617	0.85	1	46.453	1.22	61.13	B
135.00-115.00			B	0.353	2.165	0.634	0.85	1	54.078			
			C	0.238	2.475	0.599	0.85	1	36.488			
T5	1.01	4.79	A	0.269	2.382	0.607	0.85	1	48.229	1.25	62.56	B
115.00-95.00			B	0.311	2.268	0.619	0.85	1	55.502			
			C	0.212	2.556	0.593	0.85	1	38.580			
T6	1.01	5.35	A	0.258	2.414	0.604	0.85	1	54.125	1.32	66.03	B
95.00-75.00			B	0.293	2.316	0.614	0.85	1	60.965			
			C	0.208	2.57	0.592	0.85	1	44.507			
T7	1.02	5.79	A	0.253	2.428	0.603	0.85	1	61.173	1.37	68.48	B
75.00-55.00			B	0.282	2.346	0.611	0.85	1	67.386			
			C	0.207	2.571	0.592	0.85	1	51.282			
T8	0.76	5.02	A	0.267	2.388	0.606	0.85	1	55.023	1.09	72.78	B
55.00-40.00			B	0.292	2.318	0.613	0.85	1	59.463			
			C	0.226	2.512	0.596	0.85	1	47.676			
T9	1.02	6.79	A	0.227	2.509	0.596	0.85	1	66.480	1.26	63.04	B
40.00-20.00			B	0.251	2.436	0.602	0.85	1	72.510			
			C	0.189	2.635	0.588	0.85	1	56.790			
T10	1.02	8.13	A	0.217	2.54	0.594	0.85	1	70.095	1.34	67.12	B
20.00-0.00			B	0.239	2.472	0.599	0.85	1	76.062			
			C	0.182	2.657	0.587	0.85	1	60.471			
Sum Weight:	8.43	48.83						OTM	944.40 kip-ft	11.09		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	29.31					
Bracing Weight	19.52					
Total Member Self-Weight	48.83			-19.97	31.19	
Total Weight	67.71			-19.97	31.19	
Wind 0 deg - No Ice		0.00	-55.51	-6187.85	31.19	-38.87
Wind 30 deg - No Ice		26.66	-46.18	-5230.12	-2976.89	-52.83
Wind 60 deg - No Ice		45.56	-26.30	-3002.77	-5135.17	-52.99
Wind 90 deg - No Ice		53.33	0.00	-19.97	-5984.98	-40.98
Wind 120 deg - No Ice		48.07	27.75	3063.97	-5310.35	-18.82
Wind 150 deg - No Ice		26.66	46.18	5190.19	-2976.89	11.85
Wind 180 deg - No Ice		0.00	52.60	5945.63	31.19	36.84

Load Case	*Vertical Forces* K	*Sum of Forces X* K	*Sum of Forces Z* K	*Sum of Overturning Moments, M_x* kip-ft	*Sum of Overturning Moments, M_z* kip-ft	*Sum of Torques* kip-ft
Wind 210 deg - No Ice		-26.66	46.18	5190.19	3039.28	52.83
Wind 240 deg - No Ice		-48.07	27.75	3063.97	5372.73	57.69
Wind 270 deg - No Ice		-53.33	0.00	-19.97	6047.36	40.98
Wind 300 deg - No Ice		-45.56	-26.30	-3002.77	5197.55	16.15
Wind 330 deg - No Ice		-26.66	-46.18	-5230.12	3039.28	-11.85
Member Ice	10.33					
Total Weight Ice	93.56			-58.50	58.45	
Wind 0 deg - Ice		0.00	-51.56	-5831.89	58.45	-37.87
Wind 30 deg - Ice		25.09	-43.45	-4975.71	-2780.50	-53.29
Wind 60 deg - Ice		43.05	-24.86	-2881.54	-4831.20	-54.70
Wind 90 deg - Ice		50.18	0.00	-58.50	-5619.46	-42.86
Wind 120 deg - Ice		44.65	25.78	2828.20	-4941.45	-20.09
Wind 150 deg - Ice		25.09	43.45	4858.71	-2780.50	10.43
Wind 180 deg - Ice		0.00	49.71	5587.58	58.45	36.43
Wind 210 deg - Ice		-25.09	43.45	4858.71	2897.40	53.29
Wind 240 deg - Ice		-44.65	25.78	2828.20	5058.35	57.96
Wind 270 deg - Ice		-50.18	0.00	-58.50	5736.36	42.86
Wind 300 deg - Ice		-43.05	-24.86	-2881.54	4948.10	18.27
Wind 330 deg - Ice		-25.09	-43.45	-4975.71	2897.40	-10.43
Total Weight	67.71			-19.97	31.19	
Wind 0 deg - Service		0.00	-17.13	-1897.53	11.16	-12.00
Wind 30 deg - Service		8.23	-14.25	-1601.94	-917.26	-16.31
Wind 60 deg - Service		14.06	-8.12	-914.48	-1583.40	-16.36
Wind 90 deg - Service		16.46	0.00	6.13	-1845.68	-12.65
Wind 120 deg - Service		14.84	8.57	957.97	-1637.46	-5.81
Wind 150 deg - Service		8.23	14.25	1614.21	-917.26	3.66
Wind 180 deg - Service		0.00	16.24	1847.37	11.16	11.37
Wind 210 deg - Service		-8.23	14.25	1614.21	939.58	16.31
Wind 240 deg - Service		-14.84	8.57	957.97	1659.78	17.81
Wind 270 deg - Service		-16.46	0.00	6.13	1868.00	12.65
Wind 300 deg - Service		-14.06	-8.12	-914.48	1605.72	4.99
Wind 330 deg - Service		-8.23	-14.25	-1601.94	939.58	-3.66

Load Combinations

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	195 - 175	Leg	Max Tension	8	13.88	-0.10	-0.00
			Max. Compression	10	-20.04	0.54	-0.02
			Max. Mx	4	-3.55	0.90	-0.00
			Max. My	13	-0.16	-0.03	-1.84
			Max. Vy	4	0.81	-0.44	-0.00
			Max. Vx	13	1.54	-0.03	0.72
		Diagonal	Max Tension	12	4.02	0.00	0.00
			Max. Compression	6	-4.12	0.00	0.00
			Max. Mx	22	0.46	-0.01	0.00
			Max. My	13	-3.00	-0.01	-0.00
			Max. Vy	23	-0.01	-0.01	-0.00
			Max. Vx	8	-0.00	-0.00	0.00
		Top Girt	Max Tension	12	0.09	0.00	0.00
			Max. Compression	10	-0.12	0.00	0.00
			Max. Mx	14	-0.02	0.02	0.00
			Max. My	26	-0.02	0.00	-0.00
			Max. Vy	14	0.01	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Bottom Girt	Max Tension	2	0.42	0.00	0.00
			Max. Compression	4	-0.46	0.00	0.00
			Max. Mx	14	-0.03	0.02	0.00
			Max. My	15	-0.23	0.00	-0.00
			Max. Vy	14	-0.02	0.00	0.00
			Max. Vx	15	0.00	0.00	0.00
T2	175 - 155	Leg	Max Tension	12	43.76	-0.52	0.01
			Max. Compression	10	-53.80	0.39	-0.03
			Max. Mx	4	18.25	1.27	0.02
			Max. My	13	-5.95	-0.03	-1.29
			Max. Vy	8	-0.92	-0.56	-0.01
			Max. Vx	13	0.87	-0.00	0.41
		Diagonal	Max Tension	3	6.48	0.00	0.00
			Max. Compression	2	-6.64	0.00	0.00
			Max. Mx	24	2.22	0.02	0.00
			Max. My	13	-4.12	0.01	0.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	25	0.01	0.02	0.01
			Max. Vx	13	-0.00	0.00	0.00
T3	155 - 135	Leg	Max Tension	12	79.46	-0.79	-0.01
			Max. Compression	10	-94.15	-0.07	-0.04
			Max. Mx	4	63.48	1.34	0.04
			Max. My	5	-5.61	-0.03	-1.36
			Max. Vy	8	0.66	-0.80	-0.03
			Max. Vx	11	0.66	-0.03	-0.74
		Diagonal	Max Tension	3	7.82	0.00	0.00
			Max. Compression	3	-7.86	0.00	0.00
			Max. Mx	25	4.85	0.04	0.01
			Max. My	21	-6.63	0.02	-0.01
			Max. Vy	25	0.02	0.04	0.01
			Max. Vx	21	0.00	0.00	0.00
T4	135 - 115	Leg	Max Tension	12	114.75	-0.12	-0.03
			Max. Compression	10	-133.11	0.29	-0.07
			Max. Mx	6	-130.46	0.30	0.02
			Max. My	11	-8.30	-0.00	-0.28
			Max. Vy	8	0.10	-0.26	-0.02
			Max. Vx	10	0.10	-0.13	-0.17
		Diagonal	Max Tension	3	7.61	0.00	0.00
			Max. Compression	3	-7.68	0.00	0.00
			Max. Mx	23	4.92	0.05	-0.01
			Max. My	21	-6.42	0.03	-0.01
			Max. Vy	25	0.03	0.05	0.01
			Max. Vx	21	0.00	0.00	0.00
T5	115 - 95	Leg	Max Tension	12	145.50	-0.20	-0.03
			Max. Compression	10	-168.27	0.17	-0.05
			Max. Mx	6	-142.21	0.30	0.02
			Max. My	11	-8.59	-0.00	-0.28
			Max. Vy	8	-0.07	-0.29	-0.05
			Max. Vx	10	-0.10	-0.15	-0.28
		Diagonal	Max Tension	3	7.95	0.00	0.00
			Max. Compression	3	-8.05	0.00	0.00
			Max. Mx	25	5.43	0.09	0.01
			Max. My	21	-6.69	0.05	-0.01
			Max. Vy	25	0.05	0.09	0.01
			Max. Vx	21	0.00	0.00	0.00
T6	95 - 75	Leg	Max Tension	12	173.79	-0.23	-0.03
			Max. Compression	10	-201.70	0.17	-0.04
			Max. Mx	8	172.31	-0.24	-0.03
			Max. My	11	-12.06	-0.01	-0.29
			Max. Vy	21	-0.09	-0.22	-0.03
			Max. Vx	10	-0.14	-0.13	-0.27
		Diagonal	Max Tension	3	8.55	0.00	0.00
			Max. Compression	3	-8.61	0.00	0.00
			Max. Mx	25	5.92	0.11	-0.01
			Max. My	16	-8.08	0.06	0.02
			Max. Vy	25	0.05	0.11	-0.01
			Max. Vx	16	-0.00	0.00	0.00
T7	75 - 55	Leg	Max Tension	12	200.78	-0.27	-0.03
			Max. Compression	10	-234.29	0.06	0.02
			Max. Mx	21	180.69	-0.30	-0.03
			Max. My	11	-14.55	-0.04	-0.35
			Max. Vy	21	-0.10	-0.30	-0.03
			Max. Vx	10	-0.12	-0.16	-0.32
		Diagonal	Max Tension	3	9.20	0.00	0.00
			Max. Compression	3	-9.30	0.00	0.00
			Max. Mx	23	5.43	0.13	-0.02
			Max. My	16	-8.41	0.07	0.02
			Max. Vy	25	0.06	0.13	-0.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	16	-0.00	0.00	0.00
T8	55 - 40	Leg	Max Tension	12	221.37	-0.10	-0.01
			Max. Compression	10	-259.98	0.55	-0.12
			Max. Mx	21	198.38	-1.00	-0.07
			Max. My	24	-25.54	-0.51	-0.52
			Max. Vy	21	0.28	-1.00	-0.07
			Max. Vx	10	0.13	-0.29	-0.50
		Diagonal	Max Tension	3	9.46	0.00	0.00
			Max. Compression	3	-9.54	0.00	0.00
			Max. Mx	25	5.97	0.14	-0.01
			Max. My	16	-8.41	0.09	0.03
			Max. Vy	25	0.06	0.14	-0.01
			Max. Vx	22	0.00	0.00	0.00
T9	40 - 20	Leg	Max Tension	12	245.65	-0.26	-0.02
			Max. Compression	10	-290.76	0.29	-0.06
			Max. Mx	19	-276.29	2.26	0.03
			Max. My	24	-25.70	-0.51	-0.52
			Max. Vy	19	-0.51	2.26	0.03
			Max. Vx	11	0.12	-0.03	-0.50
		Diagonal	Max Tension	22	10.52	0.00	0.00
			Max. Compression	22	-11.31	0.00	0.00
			Max. Mx	25	5.34	0.25	-0.02
			Max. My	22	-11.27	0.20	-0.03
			Max. Vy	25	0.09	0.25	-0.02
			Max. Vx	22	0.00	0.00	0.00
T10	20 - 0	Leg	Max Tension	12	269.82	-0.27	-0.02
			Max. Compression	2	-322.76	0.00	-0.00
			Max. Mx	19	-295.88	3.53	0.02
			Max. My	11	-22.26	-0.05	-0.59
			Max. Vy	21	-0.98	-3.20	-0.00
			Max. Vx	11	-0.16	-0.05	-0.59
		Diagonal	Max Tension	22	14.14	0.00	0.00
			Max. Compression	22	-13.48	0.00	0.00
			Max. Mx	25	3.72	0.39	-0.03
			Max. My	22	-13.44	0.33	-0.04
			Max. Vy	25	0.11	0.39	-0.03
			Max. Vx	22	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	10	327.39	28.90	-18.32
	Max. H_x	10	327.39	28.90	-18.32
	Max. H_z	17	-246.25	-28.53	17.98
	Min. Vert	4	-270.61	-24.58	15.70
	Min. H_x	17	-246.25	-28.53	17.98
	Min. H_z	10	327.39	28.90	-18.32
Leg B	Max. Vert	6	324.73	-29.35	-17.47
	Max. H_x	25	-251.25	29.03	17.27
	Max. H_z	25	-251.25	29.03	17.27
	Min. Vert	12	-273.27	25.07	14.94
	Min. H_x	6	324.73	-29.35	-17.47
	Min. H_z	6	324.73	-29.35	-17.47
Leg A	Max. Vert	2	327.53	-0.96	34.19
	Max. H_x	10	-128.44	5.38	-14.46

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Max. H_z	2	327.53	-0.96	34.19
	Min. Vert	8	-270.47	0.90	-29.14
	Min. H_x	5	23.55	-5.31	1.80
	Min. H_z	21	-244.43	0.88	-33.66

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	67.71	0.00	-0.00	-19.97	31.20	0.00
Dead+Wind 0 deg - No Ice	67.71	0.00	-55.50	-6206.50	31.40	-39.01
Dead+Wind 30 deg - No Ice	67.71	26.66	-46.18	-5246.00	-2985.79	-52.96
Dead+Wind 60 deg - No Ice	67.71	45.55	-26.30	-3011.92	-5150.68	-53.07
Dead+Wind 90 deg - No Ice	67.71	53.33	0.00	-20.02	-6003.08	-40.99
Dead+Wind 120 deg - No Ice	67.71	48.07	27.75	3073.27	-5326.32	-18.78
Dead+Wind 150 deg - No Ice	67.71	26.66	46.18	5206.00	-2985.85	11.95
Dead+Wind 180 deg - No Ice	67.71	0.00	52.60	5963.74	31.38	36.97
Dead+Wind 210 deg - No Ice	67.71	-26.66	46.18	5205.93	3048.57	52.96
Dead+Wind 240 deg - No Ice	67.71	-48.07	27.75	3073.20	5388.97	57.79
Dead+Wind 270 deg - No Ice	67.71	-53.33	0.00	-20.02	6065.70	40.99
Dead+Wind 300 deg - No Ice	67.71	-45.55	-26.30	-3011.85	5213.35	16.11
Dead+Wind 330 deg - No Ice	67.71	-26.66	-46.18	-5245.93	3048.55	-11.95
Dead+Ice+Temp	93.56	0.00	0.00	-58.51	58.48	-0.00
Dead+Wind 0 deg+Ice+Temp	93.56	0.00	-51.56	-5854.23	58.76	-38.06
Dead+Wind 30 deg+Ice+Temp	93.56	25.09	-43.45	-4994.88	-2791.13	-53.50
Dead+Wind 60 deg+Ice+Temp	93.56	43.05	-24.86	-2892.66	-4849.79	-54.87
Dead+Wind 90 deg+Ice+Temp	93.56	50.18	0.00	-58.69	-5641.09	-42.96
Dead+Wind 120 deg+Ice+Temp	93.56	44.65	25.78	2839.15	-4960.39	-20.08
Dead+Wind 150 deg+Ice+Temp	93.56	25.09	43.45	4877.58	-2791.15	10.55
Dead+Wind 180 deg+Ice+Temp	93.56	0.00	49.71	5609.23	58.91	36.61
Dead+Wind 210 deg+Ice+Temp	93.56	-25.09	43.45	4877.54	2908.67	53.50
Dead+Wind 240 deg+Ice+Temp	93.56	-44.65	25.78	2839.12	5077.83	58.13
Dead+Wind 270 deg+Ice+Temp	93.56	-50.18	0.00	-58.66	5758.48	42.96
Dead+Wind 300 deg+Ice+Temp	93.56	-43.05	-24.86	-2892.60	4967.13	18.25
Dead+Wind 330 deg+Ice+Temp	93.56	-25.09	-43.45	-4994.81	2908.62	-10.55
Dead+Wind 0 deg - Service	67.71	0.00	-17.13	-1929.42	31.32	-12.04
Dead+Wind 30 deg - Service	67.71	8.23	-14.25	-1632.96	-899.91	-16.34
Dead+Wind 60 deg - Service	67.71	14.06	-8.12	-943.42	-1568.09	-16.38
Dead+Wind 90 deg - Service	67.71	16.46	0.00	-20.00	-1831.16	-12.66
Dead+Wind 120 deg - Service	67.71	14.84	8.57	934.72	-1622.29	-5.80
Dead+Wind 150 deg - Service	67.71	8.23	14.25	1592.98	-899.92	3.69
Dead+Wind 180 deg - Service	67.71	0.00	16.24	1826.85	31.31	11.41
Dead+Wind 210 deg - Service	67.71	-8.23	14.25	1592.97	962.55	16.34
Dead+Wind 240 deg - Service	67.71	-14.84	8.57	934.72	1684.91	17.84
Dead+Wind 270 deg - Service	67.71	-16.46	0.00	-20.00	1893.79	12.66
Dead+Wind 300 deg - Service	67.71	-14.06	-8.12	-943.41	1630.72	4.97
Dead+Wind 330 deg - Service	67.71	-8.23	-14.25	-1632.95	962.56	-3.69

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-67.71	0.00	-0.00	67.71	0.00	0.000%
2	-0.00	-67.71	-55.51	-0.00	67.71	55.50	0.002%
3	26.66	-67.71	-46.18	-26.66	67.71	46.18	0.002%
4	45.56	-67.71	-26.30	-45.55	67.71	26.30	0.002%
5	53.33	-67.71	0.00	-53.33	67.71	-0.00	0.002%
6	48.07	-67.71	27.75	-48.07	67.71	-27.75	0.002%
7	26.66	-67.71	46.18	-26.66	67.71	-46.18	0.002%
8	0.00	-67.71	52.60	-0.00	67.71	-52.60	0.002%
9	-26.66	-67.71	46.18	26.66	67.71	-46.18	0.002%
10	-48.07	-67.71	27.75	48.07	67.71	-27.75	0.002%
11	-53.33	-67.71	0.00	53.33	67.71	-0.00	0.002%
12	-45.56	-67.71	-26.30	45.55	67.71	26.30	0.002%
13	-26.66	-67.71	-46.18	26.66	67.71	46.18	0.002%
14	0.00	-93.56	0.00	-0.00	93.56	-0.00	0.000%
15	0.00	-93.56	-51.56	-0.00	93.56	51.56	0.000%
16	25.09	-93.56	-43.45	-25.09	93.56	43.45	0.000%
17	43.05	-93.56	-24.86	-43.05	93.56	24.86	0.000%
18	50.18	-93.56	0.00	-50.18	93.56	-0.00	0.000%
19	44.65	-93.56	25.78	-44.65	93.56	-25.78	0.000%
20	25.09	-93.56	43.45	-25.09	93.56	-43.45	0.000%
21	0.00	-93.56	49.71	-0.00	93.56	-49.71	0.000%
22	-25.09	-93.56	43.45	25.09	93.56	-43.45	0.000%
23	-44.65	-93.56	25.78	44.65	93.56	-25.78	0.000%
24	-50.18	-93.56	0.00	50.18	93.56	-0.00	0.000%
25	-43.05	-93.56	-24.86	43.05	93.56	24.86	0.000%
26	-25.09	-93.56	-43.45	25.09	93.56	43.45	0.000%
27	0.00	-67.71	-17.13	-0.00	67.71	17.13	0.001%
28	8.23	-67.71	-14.25	-8.23	67.71	14.25	0.001%
29	14.06	-67.71	-8.12	-14.06	67.71	8.12	0.001%
30	16.46	-67.71	0.00	-16.46	67.71	-0.00	0.001%
31	14.84	-67.71	8.57	-14.84	67.71	-8.57	0.001%
32	8.23	-67.71	14.25	-8.23	67.71	-14.25	0.001%
33	0.00	-67.71	16.24	-0.00	67.71	-16.24	0.001%
34	-8.23	-67.71	14.25	8.23	67.71	-14.25	0.001%
35	-14.84	-67.71	8.57	14.84	67.71	-8.57	0.001%
36	-16.46	-67.71	0.00	16.46	67.71	-0.00	0.001%
37	-14.06	-67.71	-8.12	14.06	67.71	8.12	0.001%
38	-8.23	-67.71	-14.25	8.23	67.71	14.25	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000811
2	Yes	8	0.00000001	0.00012266
3	Yes	8	0.00000001	0.00012599
4	Yes	8	0.00000001	0.00012914
5	Yes	8	0.00000001	0.00012581
6	Yes	8	0.00000001	0.00012239
7	Yes	8	0.00000001	0.00012647
8	Yes	8	0.00000001	0.00012996
9	Yes	8	0.00000001	0.00012629
10	Yes	8	0.00000001	0.00012234
11	Yes	8	0.00000001	0.00012604
12	Yes	8	0.00000001	0.00012960
13	Yes	8	0.00000001	0.00012639

14	Yes	6	0.00000001	0.00003509
15	Yes	9	0.00000001	0.00004216
16	Yes	9	0.00000001	0.00004297
17	Yes	9	0.00000001	0.00004375
18	Yes	9	0.00000001	0.00004290
19	Yes	9	0.00000001	0.00004205
20	Yes	9	0.00000001	0.00004310
21	Yes	9	0.00000001	0.00004401
22	Yes	9	0.00000001	0.00004311
23	Yes	9	0.00000001	0.00004214
24	Yes	9	0.00000001	0.00004301
25	Yes	9	0.00000001	0.00004385
26	Yes	9	0.00000001	0.00004307
27	Yes	8	0.00000001	0.00011964
28	Yes	8	0.00000001	0.00012010
29	Yes	8	0.00000001	0.00012071
30	Yes	8	0.00000001	0.00011975
31	Yes	8	0.00000001	0.00011919
32	Yes	8	0.00000001	0.00012089
33	Yes	8	0.00000001	0.00012219
34	Yes	8	0.00000001	0.00012113
35	Yes	8	0.00000001	0.00011996
36	Yes	8	0.00000001	0.00012095
37	Yes	8	0.00000001	0.00012201
38	Yes	8	0.00000001	0.00012102

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	195	Leg	A325N	1.1250	4	3.47	43.74	0.079 ✔	1.333	Bolt Tension
T2	175	Leg	A325N	1.1250	6	7.29	43.74	0.167 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.8750	1	6.48	6.05	1.071 ✔	1.333	Member Block Shear
T3	155	Leg	A325N	1.1250	6	13.24	43.74	0.303 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.8750	1	7.82	10.08	0.775 ✔	1.333	Member Block Shear
T4	135	Leg	A325N	1.1250	6	19.12	43.74	0.437 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.8750	1	7.61	8.97	0.848 ✔	1.333	Member Block Shear
T5	115	Leg	A325N	1.1250	8	18.19	43.74	0.416 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	7.95	13.59	0.585 ✔	1.333	Member Block Shear
T6	95	Leg	A325N	1.1250	8	21.72	43.74	0.497 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	8.55	13.59	0.629 ✔	1.333	Member Bearing
T7	75	Leg	A325N	1.2500	8	25.10	54.00	0.465 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	9.20	10.88	0.846 ✔	1.333	Member Bearing
T8	55	Leg	A325N	1.2500	8	27.67	54.00	0.512 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	9.46	10.88	0.870 ✔	1.333	Member Bearing
T9	40	Leg	A325N	1.2500	8	30.71	54.00	0.569 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	10.52	13.59	0.774 ✔	1.333	Member Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T10	20	Leg	A449	1.3750	8	33.73	51.45	0.656 ✔	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	14.14	16.31	0.867 ✔	1.333	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	3	20.01	3.33	53.4 K=1.00	23.819	7.0686	-20.04	168.37	0.119 ✔
T2	175 - 155	3 3/4	20.03	6.68	85.5 K=1.00	17.895	11.0447	-53.80	197.65	0.272 ✔
T3	155 - 135	4	20.03	6.68	80.1 K=1.00	18.986	12.5664	-94.15	238.58	0.395 ✔
T4	135 - 115	4 1/4	20.03	6.68	75.4 K=1.00	19.913	14.1863	-133.12	282.48	0.471 ✔
T5	115 - 95	4 1/4	20.03	6.68	75.4 K=1.00	19.913	14.1863	-168.27	282.48	0.596 ✔
T6	95 - 75	4 1/2	20.03	6.68	71.2 K=1.00	20.709	15.9043	-201.70	329.36	0.612 ✔
T7	75 - 55	4 3/4	20.03	6.68	67.5 K=1.00	21.400	17.7205	-234.29	379.22	0.618 ✔
T8	55 - 40	4 3/4	15.03	5.01	50.6 K=1.00	24.255	17.7205	-259.98	429.82	0.605 ✔
T9	40 - 20	4 3/4	20.03	6.68	67.5 K=1.00	21.400	17.7205	-290.76	379.22	0.767 ✔
T10	20 - 0	5	20.03	6.68	64.1 K=1.00	22.004	19.6350	-322.76	432.05	0.747 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	1 1/4	6.79	3.30	114.0 K=0.90	11.120	1.2272	-4.12	13.65	0.302 ✔
T2	175 - 155	L2 1/2x2 1/2x3/16	10.16	4.94	119.9 K=1.00	10.299	0.9020	-6.64	9.29	0.715 ✔
T3	155 - 135	L2 1/2x2 1/2x5/16	11.74	5.72	140.4 K=1.00	7.576	1.4600	-7.86	11.06	0.711 ✔
T4	135 - 115	L3x3x1/4	13.44	6.56	132.9	8.455	1.4400	-7.68	12.18	0.631

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T5	115 - 95	L3x3x3/8	15.21	7.43	151.8 K=1.00	6.481	2.1100	-8.05	13.67	0.589 ✔
T6	95 - 75	L3 1/2x3 1/2x5/16	17.03	8.32	144.8 K=1.00	7.125	2.0900	-8.61	14.89	0.578 ✔
T7	75 - 55	L4x4x1/4	18.88	9.24	139.5 K=1.00	7.674	1.9400	-9.30	14.89	0.625 ✔
T8	55 - 40	L4x4x1/4	19.89	9.70	146.5 K=1.00	6.962	1.9400	-9.54	13.51	0.706 ✔
T9	40 - 20	L4x4x5/16	22.19	10.90	165.3 K=1.00	5.464	2.4000	-11.31	13.11	0.863 ✔
T10	20 - 0	L4x4x3/8	23.47	11.52	175.5 K=1.00	4.849	2.8600	-13.48	13.87	0.972 ✔

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	1 1/4	5.00	4.75	127.7 K=0.70	9.160	1.2272	-0.12	11.24	0.011 ✔

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	1 1/4	6.00	5.75	154.6 K=0.70	6.251	1.2272	-0.46	7.67	0.060 ✔

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	3	20.01	3.33	53.4	30.000	7.0686	13.88	212.06	0.065 ✔
T2	175 - 155	3 3/4	20.03	6.68	85.5	30.000	11.0447	43.76	331.34	0.132 ✔
T3	155 - 135	4	20.03	6.68	80.1	30.000	12.5664	79.46	376.99	0.211

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T4	135 - 115	4 1/4	20.03	6.68	75.4	30.000	14.1863	114.75	425.59	0.270 ✔
T5	115 - 95	4 1/4	20.03	6.68	75.4	30.000	14.1863	145.50	425.59	0.342 ✔
T6	95 - 75	4 1/2	20.03	6.68	71.2	30.000	15.9043	173.79	477.13	0.364 ✔
T7	75 - 55	4 3/4	20.03	6.68	67.5	30.000	17.7205	200.78	531.62	0.378 ✔
T8	55 - 40	4 3/4	15.03	5.01	50.6	30.000	17.7205	221.37	531.62	0.416 ✔
T9	40 - 20	4 3/4	20.03	6.68	67.5	30.000	17.7205	245.65	531.62	0.462 ✔
T10	20 - 0	5	20.03	6.68	64.1	30.000	19.6350	269.82	589.05	0.458 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	1 1/4	6.79	3.30	126.7	21.600	1.2272	4.02	26.51	0.152 ✔
T2	175 - 155	L2 1/2x2 1/2x3/16	10.16	4.94	78.6	29.000	0.5359	6.48	15.54	0.417 ✔
T3	155 - 135	L2 1/2x2 1/2x5/16	11.74	5.72	92.6	29.000	0.8606	7.82	24.96	0.313 ✔
T4	135 - 115	L3x3x1/4	12.86	6.27	82.9	29.000	0.8925	7.61	25.88	0.294 ✔
T5	115 - 95	L3x3x3/8	15.21	7.43	99.8	29.000	1.2661	7.95	36.72	0.217 ✔
T6	95 - 75	L3 1/2x3 1/2x5/16	17.03	8.32	94.3	29.000	1.3038	8.55	37.81	0.226 ✔
T7	75 - 55	L4x4x1/4	18.88	9.24	90.3	29.000	1.2441	9.20	36.08	0.255 ✔
T8	55 - 40	L4x4x1/4	19.89	9.70	94.7	29.000	1.2441	9.46	36.08	0.262 ✔
T9	40 - 20	L4x4x5/16	21.56	10.58	104.0	29.000	1.5363	10.52	44.55	0.236 ✔
T10	20 - 0	L4x4x3/8	24.11	11.84	117.2	29.000	1.8286	14.14	53.03	0.267 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	1 1/4	5.00	4.75	182.4	21.600	1.2272	0.09	26.51	0.004 ✔

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	195 - 175	1 1/4	6.00	5.75	220.8	21.600	1.2272	0.42	26.51	0.016 ✔

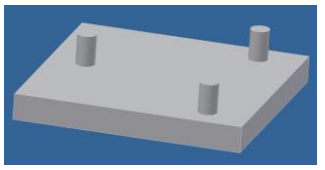
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	195 - 175	Leg	3	1	-20.04	224.43	8.9	Pass
T2	175 - 155	Leg	3 3/4	46	-53.80	263.47	20.4	Pass
T3	155 - 135	Leg	4	67	-94.15	318.03	29.6	Pass
T4	135 - 115	Leg	4 1/4	88	-133.12	376.55	35.4	Pass
T5	115 - 95	Leg	4 1/4	109	-168.27	376.55	44.7	Pass
T6	95 - 75	Leg	4 1/2	130	-201.70	439.04	45.9	Pass
T7	75 - 55	Leg	4 3/4	151	-234.29	505.50	46.3	Pass
T8	55 - 40	Leg	4 3/4	172	-259.98	572.94	45.4	Pass
T9	40 - 20	Leg	4 3/4	193	-290.76	505.50	57.5	Pass
T10	20 - 0	Leg	5	216	-322.76	575.93	56.0	Pass
T1	195 - 175	Diagonal	1 1/4	11	-4.12	18.19	22.7	Pass
T2	175 - 155	Diagonal	L2 1/2x2 1/2x3/16	53	-6.64	12.38	53.6 80.3 (b)	Pass
T3	155 - 135	Diagonal	L2 1/2x2 1/2x5/16	74	-7.86	14.74	53.3 58.2 (b)	Pass
T4	135 - 115	Diagonal	L3x3x1/4	95	-7.68	16.23	47.3 63.6 (b)	Pass
T5	115 - 95	Diagonal	L3x3x3/8	116	-8.05	18.23	44.2	Pass
T6	95 - 75	Diagonal	L3 1/2x3 1/2x5/16	137	-8.61	19.85	43.4 47.2 (b)	Pass
T7	75 - 55	Diagonal	L4x4x1/4	158	-9.30	19.84	46.9 63.5 (b)	Pass
T8	55 - 40	Diagonal	L4x4x1/4	179	-9.54	18.00	53.0 65.3 (b)	Pass
T9	40 - 20	Diagonal	L4x4x5/16	201	-11.31	17.48	64.7	Pass
T10	20 - 0	Diagonal	L4x4x3/8	228	-13.48	18.48	72.9	Pass
T1	195 - 175	Top Girt	1 1/4	5	-0.12	14.98	0.8	Pass
T1	195 - 175	Bottom Girt	1 1/4	8	-0.46	10.23	4.5	Pass
							Summary	
						Leg (T9)	57.5	Pass
						Diagonal (T2)	80.3	Pass
						Top Girt (T1)	0.8	Pass
						Bottom Girt (T1)	4.5	Pass
						Bolt Checks	80.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
						RATING =	**80.3**	**Pass**

Unit Base Foundation

Checks capacity of square mat foundation with raised piers for a self-supporting tower



BU#:
Site Name: CT5638
App Number:
TIA-222 Revision: F

Design Reactions		
Shear, **S**:	34.00	kips
Moment, **M**:	6207.00	ft-kips
Compression/leg, **Ca**:	328.00	kips
Uplift/leg, **Ua**:	273.00	kips
Tower Weight, **Wt**:	68.00	kips
Tower Height, **H**:	195	ft
Base Face Width, **w'**:	24	ft

Pad Properties		
Depth, **D**:	6.0	ft
Pad Width, **W**:	34.0	ft
Pad Thickness, **T**:	2.5	ft
Ext. Above Grade, **E**:	0.5	ft
Neglected Depth, **N**:	3.3	ft
Pad Rebar Size, **Sp**:	8	
Pad Rebar Quantity, **mp**:	34	22

Pier Properties		
Pier Shape:	Circular	
Pier Width, di:	3.0	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	20	7
Pier Tie Size, **St**:	3	
Tie Quantity, **mt**:	6	8

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	5000	psi
Concrete Density, δ**c**:	150	pcf
Clear Cover, **cc**:	3	in

Soil Properties		
Soil Unit Weight, γ:	120	pcf
Ultimate Bearing: **Bc**:	12.000	ksf
Cohesion, **Co**:	0.000	ksf
Friction Angle, φ:	30	degrees
Base Sliding, **μ**:	0.5	

Design Checks	***Capacity/ Availability***	***Demand/ Limits***	***Check***
Base Sliding (kips):	349.45	34.00	**9.7%**
Overturning (k-ft):	10662.46	6207.00	**58.2%**
Bearing (ksf):	9.00	2.11	**23.4%**
1-way Shear (kips):	1103.51	82.66	**7.5%**
2-way Shear (kips):	1045.13	426.40	**40.8%**
Pier concrete stress (ksf):	2646.48	426.40	**16.1%**
Pier moment capacity (k-ft):	462.41	68.00	**14.7%**
Pad moment capacity(k-ft):	3022.51	1961.13	**64.9%**

☐ Tower centroid is offset from foundation centroid

Maximum Allowable Moment of a Circular Pier

Axial Load (Negative for Compression) = 273.00 kips

Pier Properties

Concrete:

Pier Diameter = 3.0 ft

Concrete Area = 1017.9 in^2

Reinforcement:

Clear Cover = 3.00 in

Cage Diameter = 2.42 ft

Bar Size = 8

Bar Diameter = 1.00 in

Bar Area = 0.79 in^2

Number of Bars = 20

Material Properties

Concrete compressive strength = 5000 psi

Reinforcement yield strength = 60000 psi

Modulus of elasticity = 29000 ksi

Reinforcement yield strain = 0.00207

Limiting compressive strain = 0.003

Seismic Properties

Seismic Zone = 1

Minimum Area of Steel

Required area of steel = 5.09 in^2

Provided area of steel = 15.80 in^2 **OK**

Axial Loading

Load factor = 1.3

Reduction factor = 0.9

Factored axial load = 394.3333 kips

Neutral Axis

Distance from extreme edge to neutral axis =	5.40	in
Equivalent compression zone factor =	0.8	
Distance from extreme edge to equivalent compression zone factor =	4.32	in
Distance from centroid to neutral axis =	12.60	in

Compression Zone

Area of steel in compression zone =	2.37	in^2
Angle from centroid of pier to intersection of equivalent compression zone and edge of pier =	40.55	deg
Area of concrete in compression =	69.23	in^2
Force in concrete = 0.85 * f`c * Acc =	294.24	kips
Total reinforcement forces =	-688.58	kips
Factored axial load =	394.33	kips
Force in concrete =	-294.24	kips
Sum of the forces in concrete =	0.00	kips **OK**

Maximum Moment

First moment of the concrete area in compression about the centoid =	1067.99	in^3
Distance between centroid of concrete in compression and centroid of pier =	15.43	in
Moment of concrete in compression =	4538.96	in-kips
Total reinforcement moment =	3476.16	in-kips
Nominal moment strength of column =	8015.12	in-kips
Factored moment strength of column =	5548.93	in-kips

Maximum Allowable Moment = 462.41 ft-kips

Individual Bars

Bar #	Angle from first bar (deg)	Distance to centroid (in)	Distance to neutral axis (in)	Distance to equivalent comp. zone (in)	Strain	Area of steel in compression (in^2)	Stress (ksi)	Axial force (kips)
1	0.00	0.00	-12.60	-13.68	-0.0069955	0.00	-60.00	-47.40
2	18.00	4.48	-8.12	-9.20	-0.0045073	0.00	-60.00	-47.40
3	36.00	8.52	-4.07	-5.16	-0.0022627	0.00	-60.00	-47.40
4	54.00	11.73	-0.87	-1.95	-0.0004813	0.00	-13.96	-11.03
5	72.00	13.79	1.19	0.11	0.0006624	0.79	19.21	11.82
6	90.00	14.50	1.90	0.82	0.0010564	0.79	30.64	20.85
7	108.00	13.79	1.19	0.11	0.0006624	0.79	19.21	11.82
8	126.00	11.73	-0.87	-1.95	-0.0004813	0.00	-13.96	-11.03
9	144.00	8.52	-4.07	-5.16	-0.0022627	0.00	-60.00	-47.40
10	162.00	4.48	-8.12	-9.20	-0.0045073	0.00	-60.00	-47.40
11	180.00	0.00	-12.60	-13.68	-0.0069955	0.00	-60.00	-47.40
12	198.00	-4.48	-17.08	-18.16	-0.0094836	0.00	-60.00	-47.40
13	216.00	-8.52	-21.12	-22.20	-0.0117282	0.00	-60.00	-47.40
14	234.00	-11.73	-24.33	-25.41	-0.0135096	0.00	-60.00	-47.40
15	252.00	-13.79	-26.39	-27.47	-0.0146533	0.00	-60.00	-47.40
16	270.00	-14.50	-27.10	-28.18	-0.0150474	0.00	-60.00	-47.40
17	288.00	-13.79	-26.39	-27.47	-0.0146533	0.00	-60.00	-47.40
18	306.00	-11.73	-24.33	-25.41	-0.0135096	0.00	-60.00	-47.40
19	324.00	-8.52	-21.12	-22.20	-0.0117282	0.00	-60.00	-47.40
20	342.00	-4.48	-17.08	-18.16	-0.0094836	0.00	-60.00	-47.40

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

AT&T Existing Facility

Site ID: CT5638

Northford- Totoket
88 Parsonage Hill Road
Northford, CT 06472

January 14, 2016

EBI Project Number: 6616000231

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	6.55 %

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

EBI Consulting
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January 14, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5638 – Northford- Totoket**

EBI Consulting was directed to analyze the proposed AT&T facility located at **88 Parsonage Hill Road, Northford, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **88 Parsonage Hill Road, Northford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the **Kathrein 800-10121 and the KMW AMX-CD-16-65-00T-RET** for transmission in the 700 MHz, 850 MHz and1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is **170 feet** above ground level (AGL).

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.25 / 14.35 dBd	Gain:	11.25 / 14.35 dBd	Gain:	11.25 / 14.35 dBd
Height (AGL):	170 feet	Height (AGL):	170 feet	Height (AGL):	170 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	3,233.85	ERP (W):	3,233.85	ERP (W):	3,233.85
Antenna A1 MPE%	**0.51**	Antenna B1 MPE%	**0.51**	Antenna C1 MPE%	**0.51**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	KMA AM-X-CD-16-65-00T-RET	Make / Model:	KMA AM-X-CD-16-65-00T-RET	Make / Model:	KMA AM-X-CD-16-65-00T-RET
Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	170 feet	Height (AGL):	170 feet	Height (AGL):	170 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	6,614.85	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A2 MPE%	**1.28**	Antenna B2 MPE%	**1.28**	Antenna C2 MPE%	**1.28**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**1.79 %**
Nextel	0.24 %
Motient	0.54 %
Sprint	0.51 %
T-Mobile	1.27 %
Verizon Wireless	2.06 %
Clearwire (adjacent tower)	0.12 %
UI (Adjacent Tower)	0.02 %
Site Total MPE %:	**6.55 %**

AT&T Sector 1 Total:	1.79 %
AT&T Sector 2 Total:	1.79 %
AT&T Sector 3 Total:	1.79 %
Site Total:	6.55 %

AT&T _ Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz GSM	2	400.06	170	1.07	850	567	0.19 %
AT&T 1900 MHz (PCS) UMTS	2	816.81	170	2.18	1900	1000	0.22 %
AT&T 850 MHz UMTS	2	400.06	170	1.07	850	567	0.11 %
AT&T 700 MHz LTE	2	1297.63	170	3.47	700	467	0.74 %
AT&T 1900 MHz (PCS) LTE	2	2009.79	170	5.37	1900	1000	0.54 %
						Total:	1.79 %

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Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector 1:	1.79 %
Sector 2:	1.79 %
Sector 3 :	1.79 %
AT&T Maximum Total (per sector):	1.79 %
Site Total:	6.55 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.55%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

PROJECT INFORMATION

SCOPE OF WORK:
LTE 2C

- ADD (1) RRH PER SECTOR (TOTAL OF 3 NEW RRHs)
- UPGRADE DUL WITH NEW DUS

SITE ADDRESS:	88 PARSONAGE HILL ROAD NORTHFORD, CT 06472
LATITUDE:	41.3690919 41° 22' 08.73"N
LONGITUDE:	−72.8104989 72° 48' 37.79"W
USID:	26043
TOWER OWNER:	TBD
TYPE OF SITE:	SELF−SUPPORT TOWER/OUTDOOR EQUIPMENT
TOWER HEIGHT:	195−0"±
RAD CENTER:	173'−0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

at&t MOBILITY

FA CODE: 10071180
SITE NUMBER: CT5638
SITE NAME: NORTHFORD - TOTOKET

PROJECT TEAM

CLIENT REPRESENTATIVE
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

SITE ACQUISITION:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

ZONING:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: DAVID COOPER
PHONE: 617−639−4908
EMAIL: dcooper@empiretelecomm.com

ENGINEERING:
COMPANY: COM−EX CONSULTANTS, LLC
ADDRESS: 115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
CONTACT: NICHOLAS D. BARILE, P.E.
PHONE: 862−209−4300
EMAIL: nbarile@comexconsultants.com

RF ENGINEER:
COMPANY: AT&T MOBILITY − NEW ENGLAND
ADDRESS: 550 COCHITUATE ROAD
SUITE 550 13 & 14
FRAMINGHAM, MA 01701
CONTACT: CAMERON SYME
PHONE: 508−596−7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484−683−1750
EMAIL: gdorman@empiretelecomm.com

DRAWING INDEX

VICINITY MAP

FROM ROCKY HILL, HEAD SOUTHWEST ON CONCRIB LN. TURN LEFT ONTO SOLO DR. TURN RIGHT ONTO GILBERT AVE. TURN RIGHT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I−91 S. TAKE EXIT 14 FOR E CENTER ST TOWARD CT−150. TURN LEFT ONTO E CENTER ST. TURN RIGHT ONTO NORTHFORD RD. CONTINUE ONTO WOODS HILL RD. TURN RIGHT ONTO CT−17 S. TURN LEFT ONTO VILLAGE ST. SLIGHT RIGHT ONTO PARSONAGE HILL RD. SITE WILL BE ON RIGHT.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY, AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP - CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES
TWO WORKING DAYS NOTICE PRIOR TO
ANY EARTH MOVING ACTIVITIES BY
CALLING 800−922−4455 OR DIAL 811

COM−EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5638
SITE NAME: NORTHFORD-TOTOKET
88 PARSONAGE HILL ROAD
NORTHFORD, CT 06472
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	01/21/16	ISSUED AS FINAL	JW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:
STATE OF CONNECTICUT
DOUGLAS D. BARILE
LICENSED PROFESSIONAL ENGINEER
PRINCIPAL ENGINEER
CT PROFESSIONAL ENGINEER LIC. NO. 23643

AT&T

DRAWING TITLE:
TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15170−EMP	T−1	0

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – EMPIRE TELECOM
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
   - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
   - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CENTEK FOR A RECENT UPGRADE DATED 05/21/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT5638
SITE NAME: NORTHFORD-TOTOKET

88 PARSONAGE HILL ROAD
NORTHFORD, CT 06472
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	01/21/16	ISSUED AS FINAL	JW	NDB	NDB

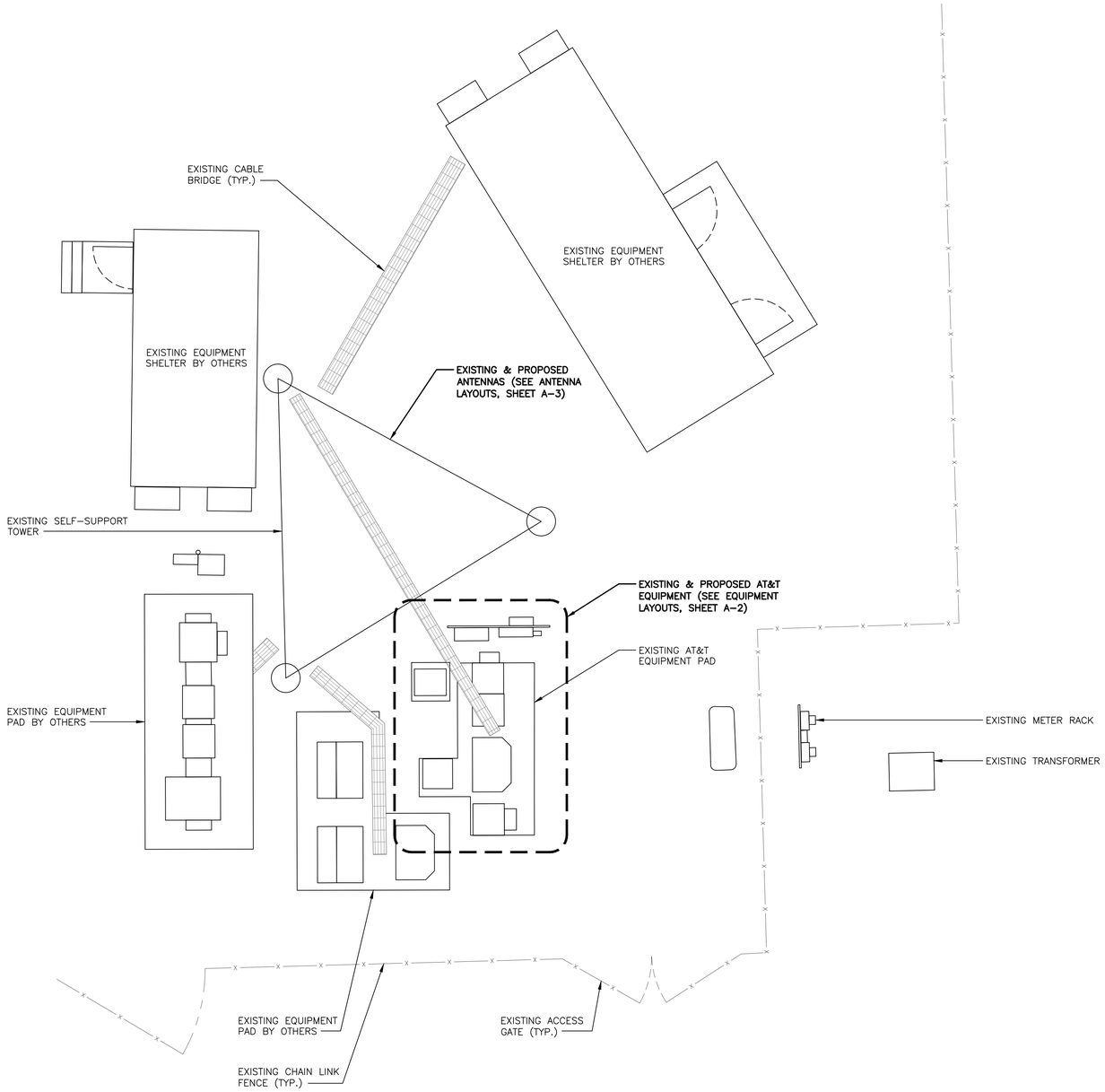
SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:
STATE OF CONNECTICUT
DOUGLAS G. BASIL
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643
SHEET NUMBER: GN-1

AT&T

DRAWING TITLE:
GROUNDING NOTES & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15170-EMP	GN-1	0



NORTH

COMPOUND LAYOUT

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

0 2'-8" 5'-4" 10'-8"

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

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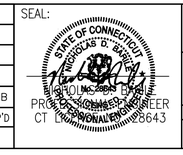
SEAL:



AT&T

DRAWING TITLE: COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
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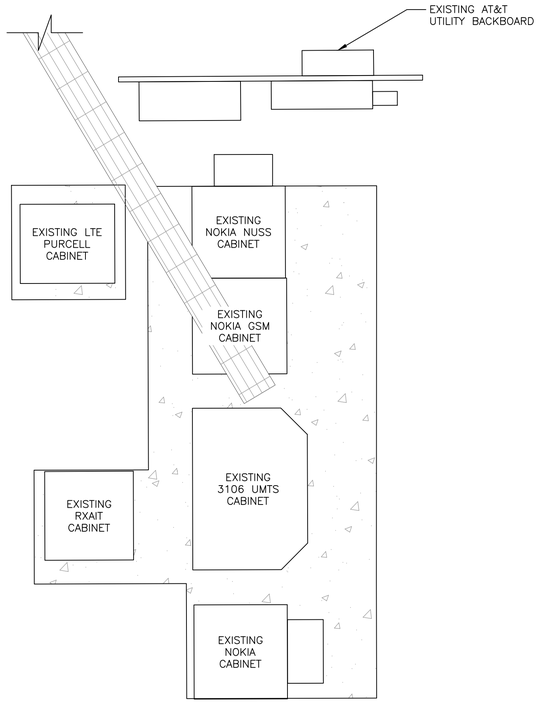
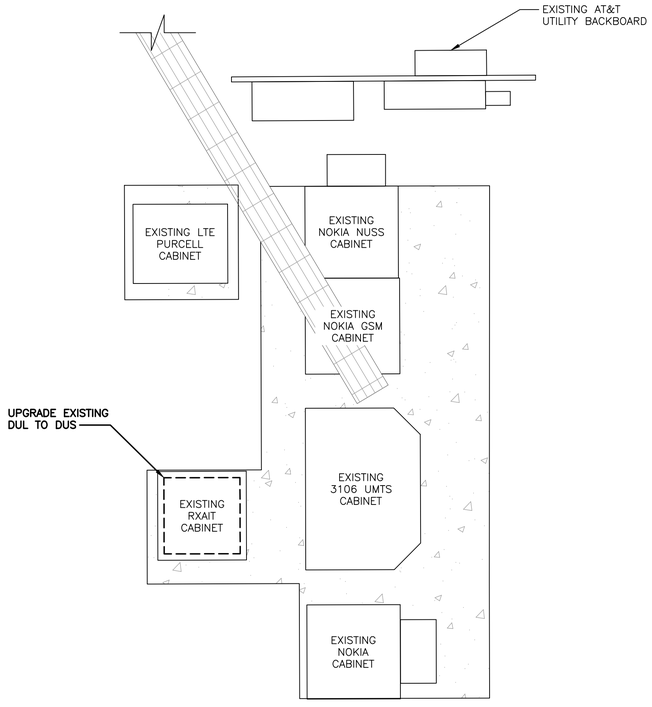


NORTH

EXISTING EQUIPMENT LAYOUT

SCALE: 1/2" = 2'-0"

GRAPHIC SCALE: 1/2"=1'-0"



NORTH

PROPOSED EQUIPMENT LAYOUT

SCALE: 1/2" = 2'-0"

GRAPHIC SCALE: 1/2"=1'-0"

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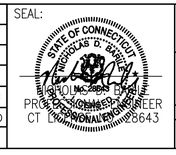
SEAL:

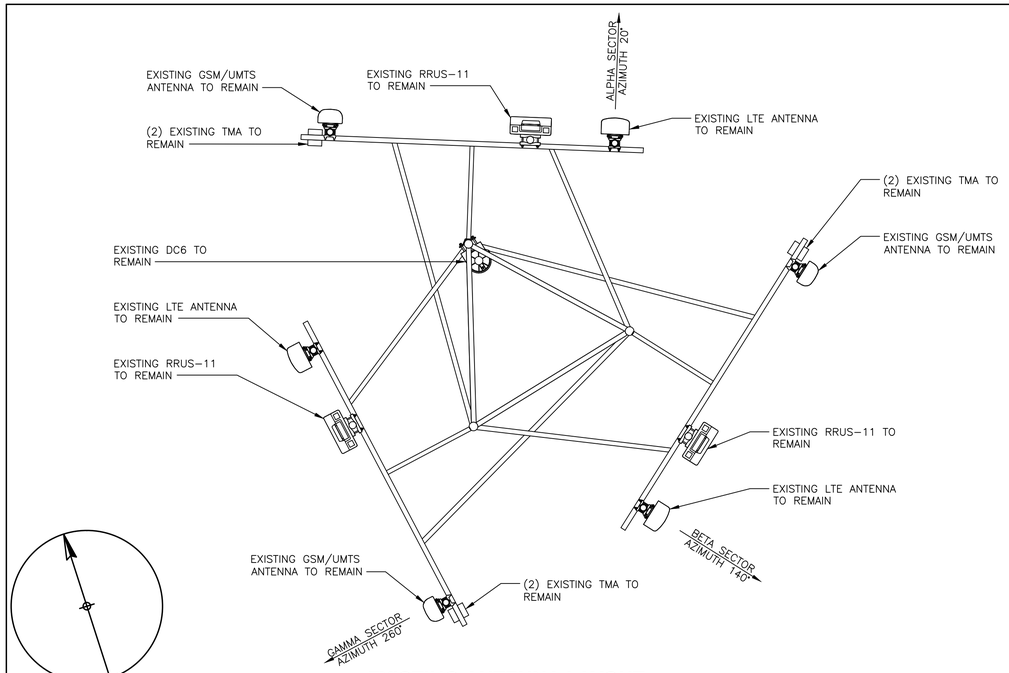


PRELIMINARY NOT FOR CONSTRUCTION
NICHOLAS G. BUSH
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

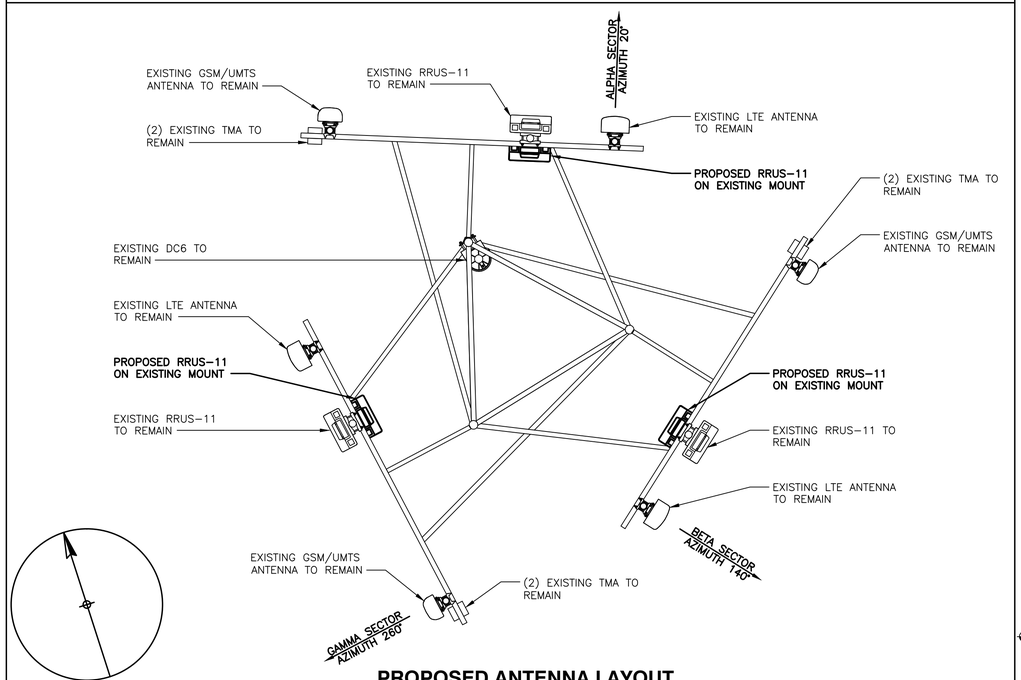
DRAWING TITLE:
EQUIPMENT LAYOUTS

JOB NUMBER	DRAWING NUMBER	REV
15170-EMP	A-2	0



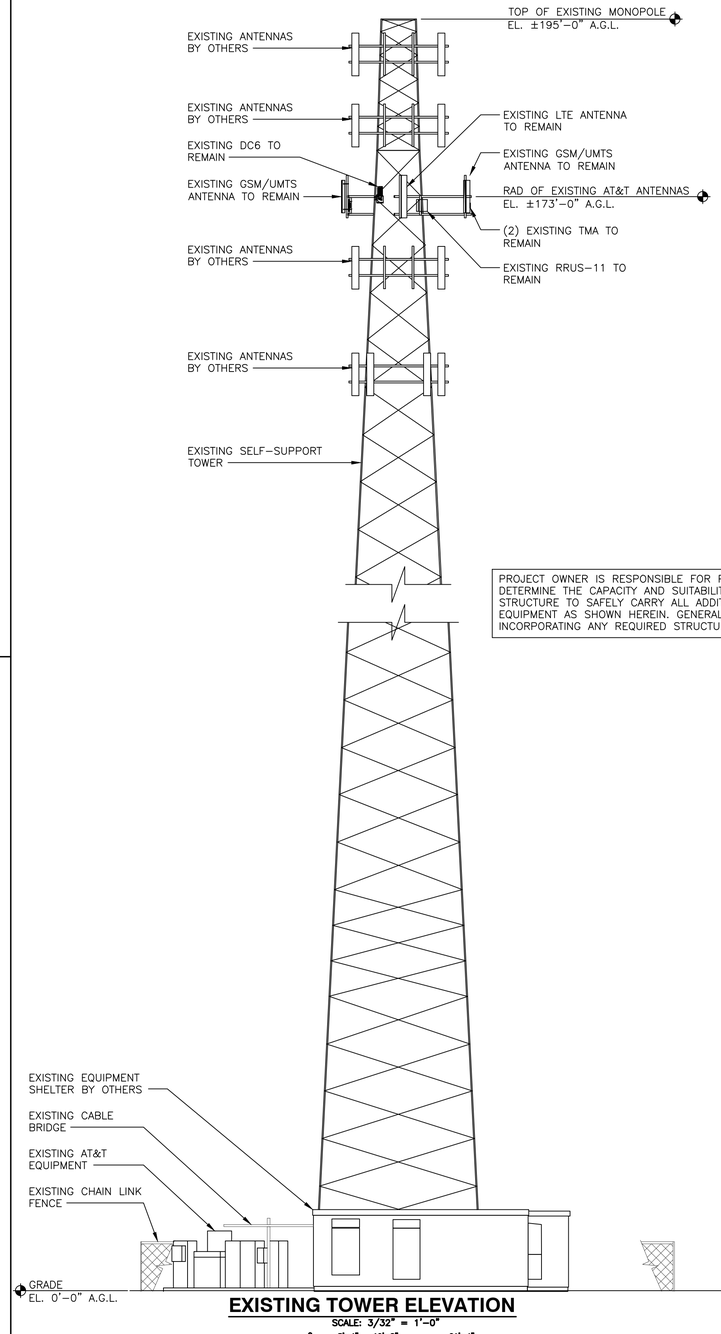
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



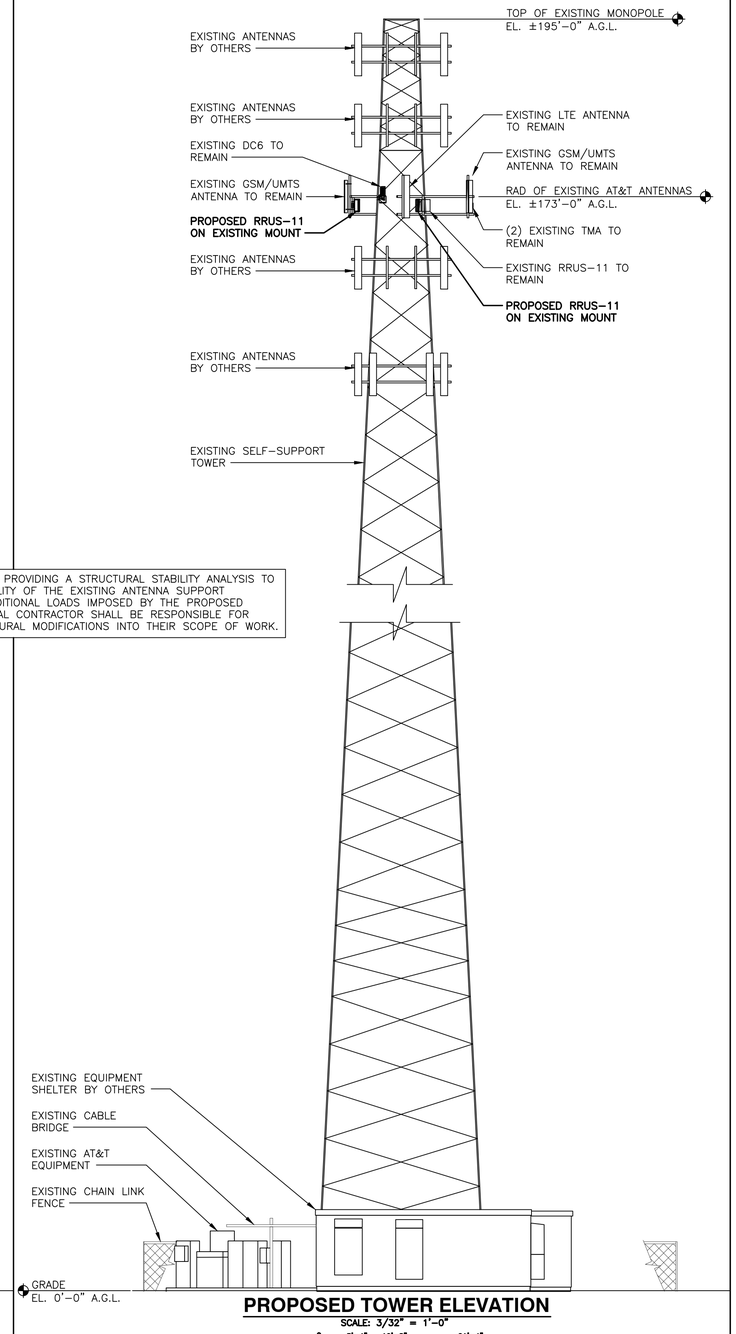
EXISTING TOWER ELEVATION

SCALE: 3/32" = 1'-0"

0 5'-4" 10'-8" 21'-4"

GRAPHIC SCALE: 3/32"=1'-0"

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.



PROPOSED TOWER ELEVATION

SCALE: 3/32" = 1'-0"

0 5'-4" 10'-8" 21'-4"

GRAPHIC SCALE: 3/32"=1'-0"

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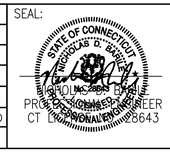
SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:

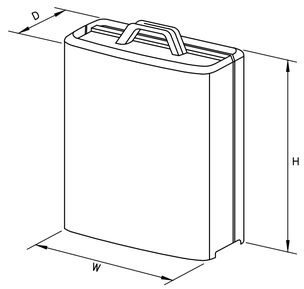


PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15170-EMP	A-3	0



MODEL	L x W x H	WEIGHT
* RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS

* DENOTES EXISTING

RRUS DETAIL

SCALE: N.T.S.

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SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:

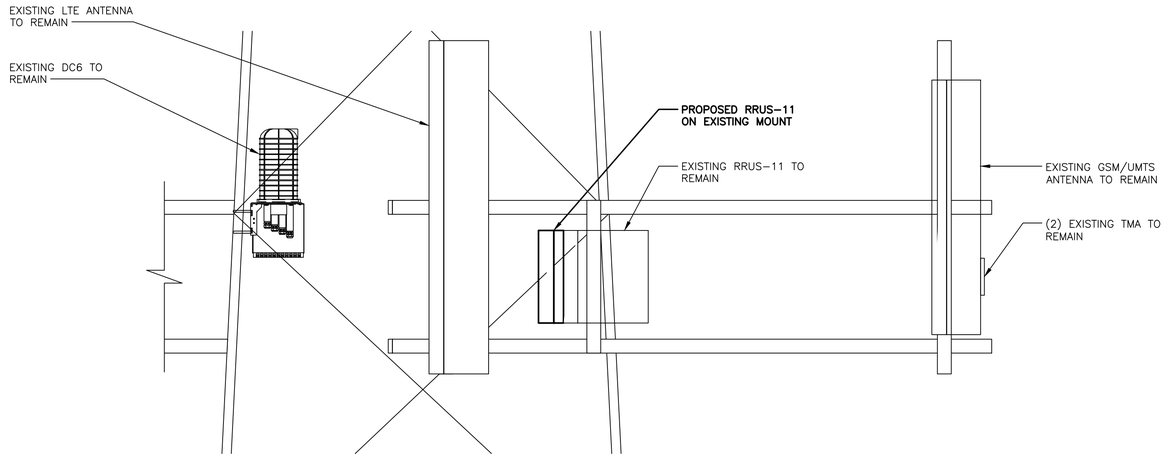
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:

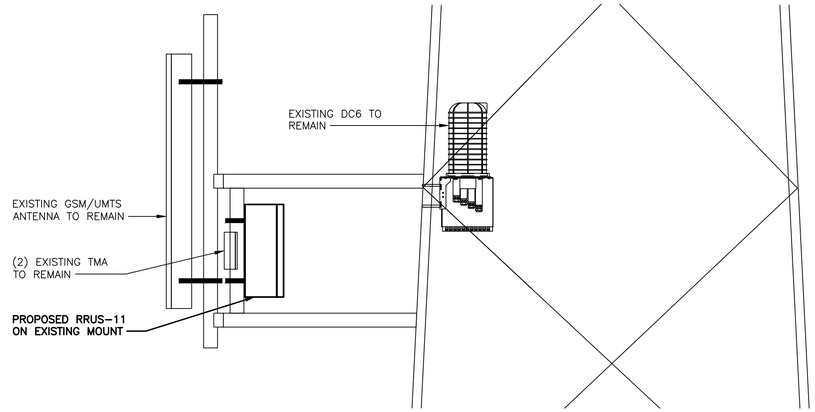
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15170-EMP	A-4	0



PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)

SCALE: N.T.S.



PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KATHREIN	800-10121	54.5"x10.3"x5.9"
	A2	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"
BETA	B1	KATHREIN	800-10121	54.5"x10.3"x5.9"
	B2	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"
GAMMA	C1	KATHREIN	800-10121	54.5"x10.3"x5.9"
	C2	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"

EXISTING ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KATHREIN	800-10121	54.5"x10.3"x5.9"
	A2	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"
BETA	B1	KATHREIN	800-10121	54.5"x10.3"x5.9"
	B2	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"
GAMMA	C1	KATHREIN	800-10121	54.5"x10.3"x5.9"
	C2	KMW	AM-X-CD-65-00T-RET	72"x11.8"x5.9"

PROPOSED RRU SCHEDULE					
SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS-11**	**19.7"x16.9"x7.2"**		
BETA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS-11**	**19.7"x16.9"x7.2"**		
GAMMA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS-11**	**19.7"x16.9"x7.2"**		

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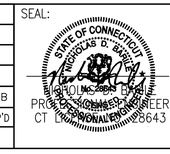
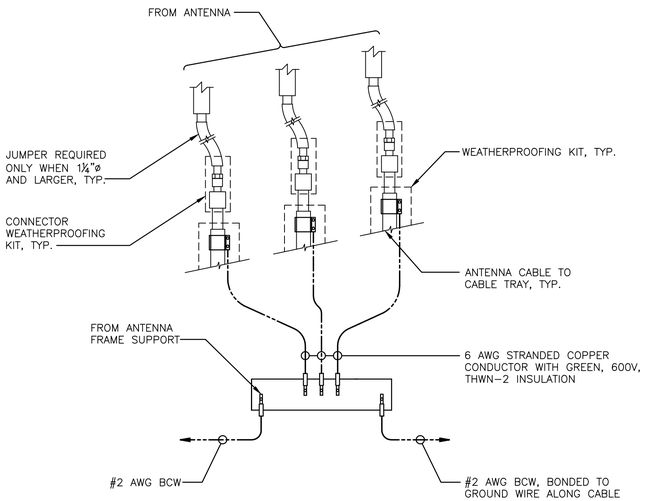


PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

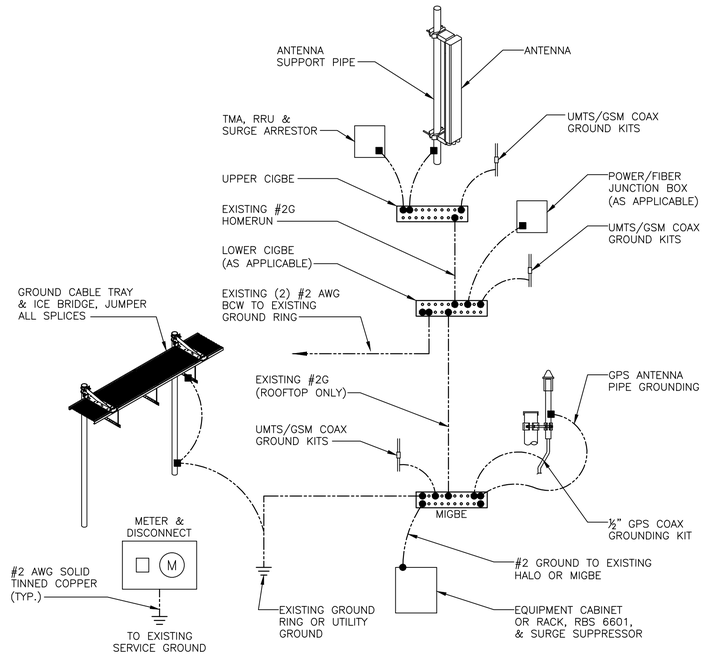
DRAWING TITLE:
ANTENNA MOUNTING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15170-EMP	A-5	0



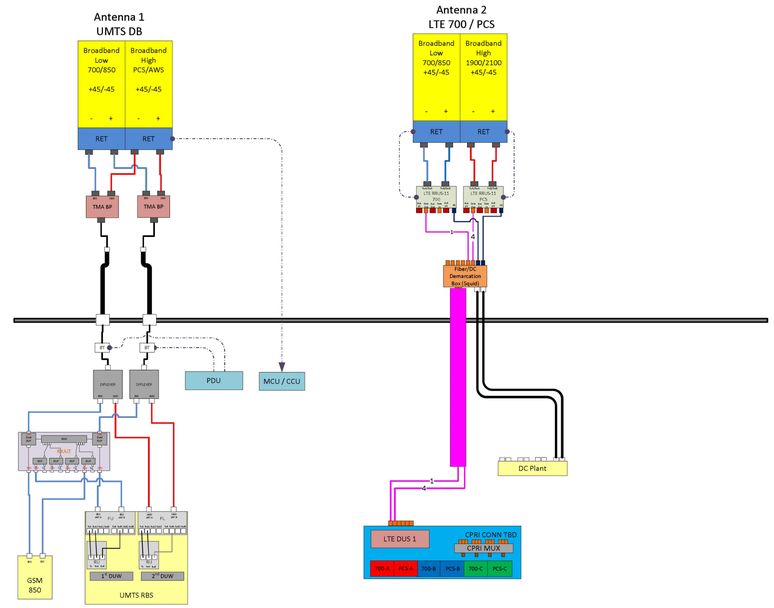
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



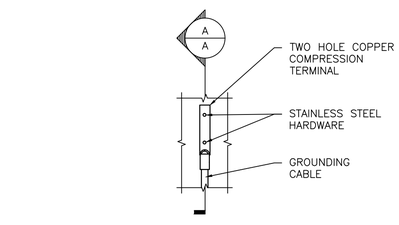
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

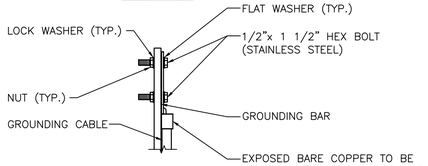


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



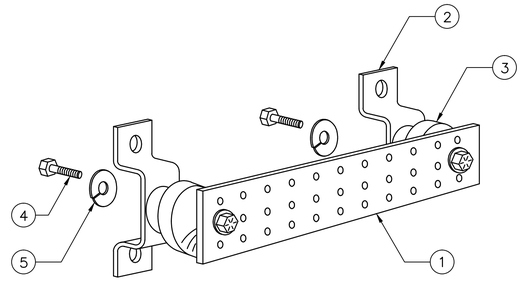
SECTION "A–A"

NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" – SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- –48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAIL

SCALE: N.T.S.

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SEAL:

AT&T

DRAWING TITLE: GROUNDING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15170–EMP	G–1	0