Michael Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@clinellc.com

April 4, 2016

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

RE: Notice of Exempt Modification // Site Number: CT1047
497 Old Post Road, Tolland, CT 06084 (Site Name: Tolland West)
N 41.85972 // W -72.40472

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains five (5) antennas at the 126 foot level of the existing 150 foot guyed tower at 497 Old Post Road, Tolland, CT 06084.The tower is owned by Paul Flynn, an individual. The property is also owned by Paul Flynn. AT&T now intends to replace three (3) existing antennas with three (3) updated models for its LTE upgrade. These antennas would be installed at the 126 foot level of the tower. AT&T also intends to install three (3) remote radio units and three (3) remote radio unit modules.

The current proposal involves an antenna swap only (three for three); no antennas will be added. AT&T was originally approved for six (6) antennas on 6/5/2002.

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 Steven Werbner, Tollan Town Manager, as well as the tower owner, Paul Flynn and the ground owner, also, Paul Flynn.

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

Attached to accommodate this filing are construction drawings dated February 23, 2016 by ComEx Consultants, a structural analysis dated March 24, 2016 by Desktek Engineering/ComEx Consultants and an Emissions Analysis Report dated February 2, 2016 by EBI Consulting.

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.

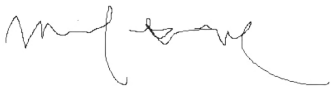
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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 as shown in the attached structural analysis by Desktek Engineering dated March 24, 2016.

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,



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Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@centerlincommunications.com

Attachments

cc: Steven Werbner, Town Manager - as elected official
Paul Flynn, an individual - as tower owner
Paul Flynn, an individual - as property owner

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

AT&T Existing Facility

Site ID: CT1047

Tolland West
497 Old Post Road
Tolland, CT 06084

February 2, 2016

EBI Project Number: 6216000449

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.99 %

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

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February 2, 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: **CT1047 – Tolland West**

EBI Consulting was directed to analyze the proposed AT&T facility located at **497 Old Post Road, Tolland, 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 **497 Old Post Road, Tolland, 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 UMTS 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 GSM 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 GSM 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.

5) 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.

6) 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

7) 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.

8) 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.

9) The antennas used in this modeling are the **CCI HPA-65R-BUU-H6, CCI HPA-65R-BUU-H8 and the Commscope SBNH-1D6565C** 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.

10) The antenna mounting height centerline of the proposed antennas is **126 feet** above ground level (AGL).

11) 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.

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope SBNH-1D6565C	Make / Model:	Commscope SBNH-1D6565C	Make / Model:	Commscope SBNH-1D6565C
Gain:	14.45 / 15.85 dBd	Gain:	14.45 / 15.85 dBd	Gain:	14.45 / 15.85 dBd
Height (AGL):	126 feet	Height (AGL):	126 feet	Height (AGL):	126 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	7,958.45	ERP (W):	7,958.45	ERP (W):	7,958.45
Antenna A1 MPE%	**2.62**	Antenna B1 MPE%	**2.62**	Antenna C1 MPE%	**2.62**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	13.15 / 14.95 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	126 feet	Height (AGL):	126 feet	Height (AGL):	126 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):	5,462.56	ERP (W):	6,229.75	ERP (W):	5,462.56
Antenna A2 MPE%	**1.90**	Antenna B2 MPE%	**2.26**	Antenna C2 MPE%	**1.90**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**4.89 %**
NE Paging	0.06 %
Hamden CmmCns	0.36 %
Conn Rocky Hill Radio	0.53 %
Airtouch	0.07 %
Verizon Wireless	4.58 %
Sprint	0.50 %
Site Total MPE %:	**10.99 %**

AT&T Sector 1 Total:	4.52 %
AT&T Sector 2 Total:	4.89 %
AT&T Sector 3 Total:	4.52 %
Site Total:	10.99 %

AT&T _ Max Sector (Sector B)	# 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 UMTS	2	835.84	126	4.17	850	567	0.74 %
AT&T 1900 MHz (PCS) UMTS	2	1153.78	126	5.76	1900	1000	0.58 %
AT&T 850 MHz GSM	2	835.84	126	4.17	850	567	0.74 %
AT&T 1900 MHz (PCS) GSM	2	1153.78	126	5.76	1900	1000	0.58 %
AT&T 700 MHz LTE	2	1239.23	126	6.19	700	467	1.32 %
AT&T 1900 MHz (PCS) LTE	2	1875.65	126	9.37	1900	1000	0.94 %
						Total:	4.89 %

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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:	4.52%
Sector 2:	4.89%
Sector 3 :	4.52%
AT&T Maximum Total (per sector):	4.89%
Site Total:	10.99 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.99%** 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.

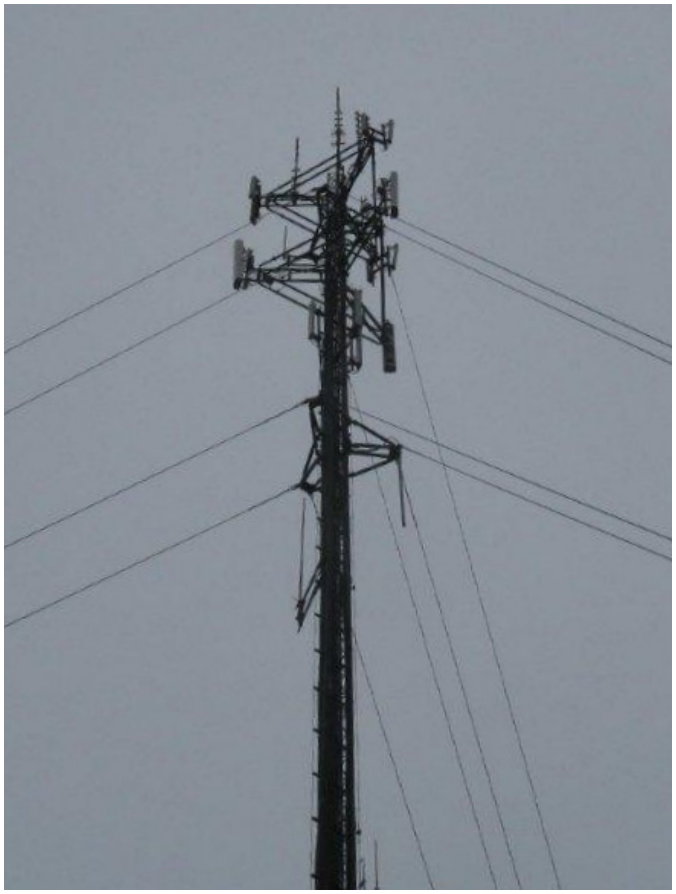
Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

STRUCTURAL ANALYSIS REPORT – REV.1
GUYED TOWER

Prepared For:

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



Structure Rating:	
Guyed Tower:	**80.2% (Pass)**
Foundation:	**86.0% (Pass)**

Sincerely,
Destek Engineering, LLC

03-24-2016

STATE OF CONNECTICUT
AHMET COLAKOGLU
PEN. 27057
LICENSED
PROFESSIONAL ENGINEER

Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

AT&T Site ID: CT1047
FA Number: 10035268
Site Name: TOLLAND WEST
497 Old Post Road
Tolland, CT 06084

Destek Job No: 1629004 March 24, 2016

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 telecommunication installation on the guyed tower at 497 Old Post Road, Tolland, CT 06084 for the additions and alterations proposed by AT&T.

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

- Construction Drawings prepared by Com-Ex Consultants, dated 10/09/2015.
- Structural Analysis Report prepared by Hudson Design Group LLC, dated 05/15/2012.
- Structural Analysis Report prepared by Hudson Design Group LLC, dated 03/11/2014.
- Structural Analysis Report prepared by Tectonic Engineering, dated 05/15/2002
- RFDS prepared by AT&T, dated 09/22/2015.

1.1 STRUCTURE

The structure is a 150'-0" tall guyed, structural steel lattice tower with a section width of 1'-6". Solid rod legs are X-braced with solid rod diagonals throughout the height of the tower. It is guyed at three (3) elevations above grade; 50.0 feet, 96.75 feet and 137.67 feet, terminated approximately at 37 feet, 58 feet and 78.25 feet away from the centerline of the structure. Please refer to the software output in Appendix A, for tower geometry, member sizes, and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

Existing Configuration of AT&T Appurtenances:

Rad. Center (ft)	Antenna & TMA	Mount	Feedlines
126.0	(4) SBNH-1D6565C (1) AM-X-CD-16-65-00T-RET (4) 860-10025 (2) DTMABP7819VG12A (3) DC6 (3) RRUS-11	(3) T-Arms	(9) 7/8" (2) 1-1/4" (1) Fiber Cable (2) DC Power Cable

Proposed and Final Configuration of AT&T Appurtenances:

Rad. Center (ft)	Antenna & TMA	Mount	Feedlines
126.0	(2) SBNH-1D6565C (1) HPA-65R-BUU-H6 (2) HPA-65R-BUU-H8 (4) 860-10025 (2) DTMABP7819VG12A (3) DC6 (3) RRUS-11 (3) RRUS-11 + RRUS-A2	(3) T-Arms	(9) 7/8" (2) 1-1/4" (1) Fiber Cable (2) DC Power Cable

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Existing Appurtenances by Others

Rad. Center (ft) Carrier	Antenna & TMA	Mount	Feedlines
167.5	(1) 15’ Dipole	(1) Leg Mount	-
155.0	(1) 10’ Dipole	(1) Leg Mount	-
150.5	(1) 15’ Dipole	(1) 3’ Side Mount Standoff	(1) 1-5/8”
148.0	(1) 10’ Dipole	(1) 5’ Side Mount Standoff	-
144.0	(6) 6’ Panel Antennas	12’ T-Frame	(6) 1-5/8” (2) 7/8”
134.0	(1) 6’ Omni	(1) 3’ Side Mount Standoff	(2) 7/8”
122.0	(1) 4’ Yagi	(1) Leg Mount	(1) 3/8”
116.0	(3) APXV18-206517	(1) 1’ Side Mount Standoff	(6) 1-1/4”
92.0	(1) 10’ Omni	(1) Leg Mount	(1) 1-1/4”
88.5	(1) 15’ Omni	(1) 4’ Side Mount Standoff	(1) 1/2”
53.0	(1) 8’ Dipole	(1) 2’ Side Mount Standoff	(1) 1/4”
52.0	(1) GPS	(1) 2’ Side Mount Standoff	(1) 1/2”
34.0	(1) 2’ DIsh	(1) 2’ Side Mount Standoff	(1) 1/4”

3.0 CODES AND LOADING

This analysis has been performed in accordance with the TIA-222-G Standard and 2009 International Building Code based upon the following loading criteria:

- Basic wind speed of 100 mph without ice (V)
- Basic wind speed of 50 mph concurrent with the design ice thickness of ¾” (Vi and ti)
- Exposure Category C, Topographic Category 1, Structure Class II (Iw=1.0)

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:

- 1.2D + 1.6Wo
- 0.9D + 1.6Wo
- 1.2D + 1.0Di + 1.0Wi

D: Dead load of structure and appurtenances
W_o: Wind load without ice (based upon V)
W_i: Concurrent wind load with factored ice thickness (based upon V_i)
D_i: Weight of ice due to factored ice thickness (based upon t_i)

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

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 lifespan. 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 antenna 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 placement, etc., will require Destek to generate an additional structural analysis. Additionally, the proposed linear appurtenances should be placed per recommendations of this report.

5.0 ANALYSIS AND ASSUMPTIONS

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

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

6.0 RESULTS AND CONCLUSION

Based on an analysis per ANSI/TIA-222-G, the existing tower is found to have **adequate** structural capacity for the proposed changes. For the aforementioned load combinations and as maximum, the diagonals are stressed to **80.2%** of its capacity. The tower legs and guy wires are stressed to 70.9% and 64.3% respectively.

Tower foundation is considered to have **adequate** capacity given the reactions comparison below.

Reaction Comparison:

Maximums	Destek Analysis	Original Analysis*	Comparison
Base Compression (kips)	137.04	118.0*1.35=159.3	86.0%
Base Shear (kips)	0.90	2.6*1.35=3.5	25.7%
Anchor Shear (kips)	22.5	37.6*1.35=50.7	44.3%
Anchor Uplift (kips)	57.3	71.8*1.35=96.9	59.1%

*Original Reactions from Report by Tectonic Engineering, dated 05/15/2002 and the reactions are multiplied by 1.35 to compare service level reactions with factored loading.

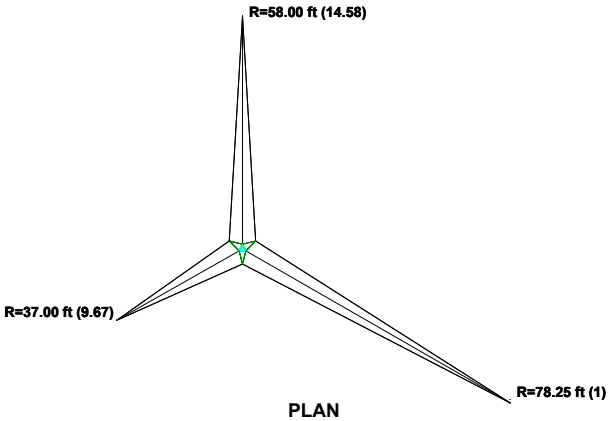
Based on analysis per TIA/EIA-222-F, which is the adopted version of the standard by 2005 Connecticut State Building Code with all the adopted Addendums and Supplements, the tower also has **adequate** structural capacity for the proposed additions.

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

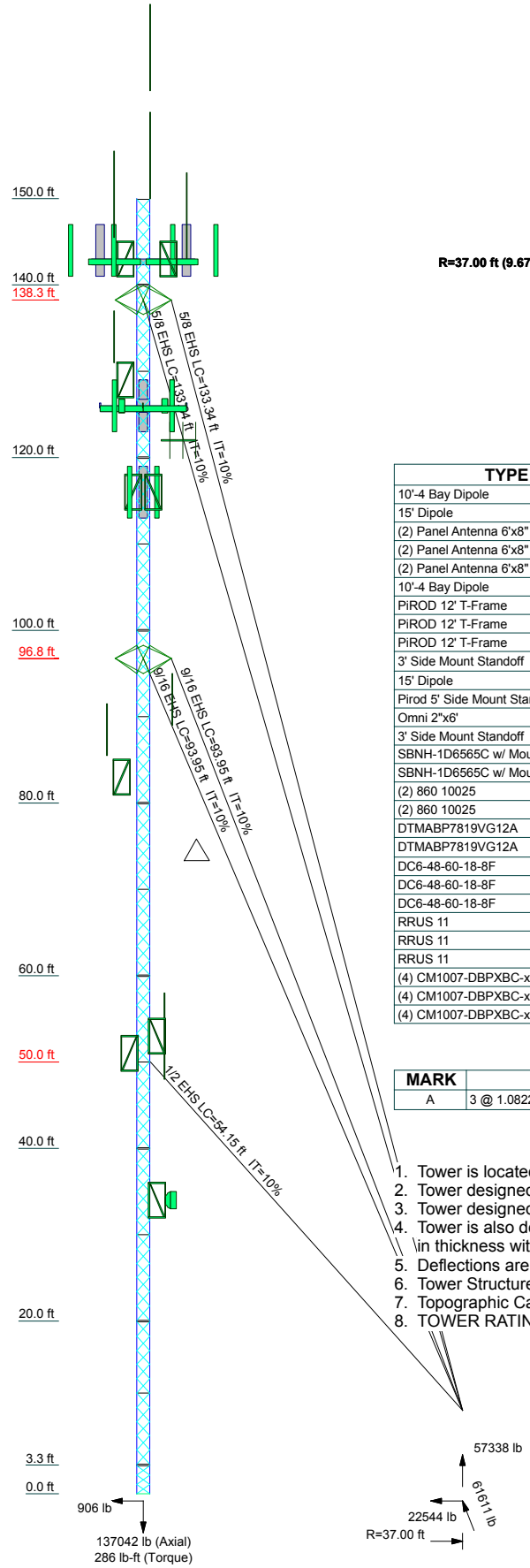
Should you have any questions about this report, please contact Ahmet Colakoglu at (770) 693-0835 or acolakoglu@destekengineering.com.

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

APPENDIX A
CALCULATIONS



PLAN



Section	T1	T2	T3	T4	T5	T6	T7	T8	T9
Legs	SR 1 3/4								
Leg Grade	A572-50								
Diagonals	SR 5/8								
Diagonal Grade	A572-50								
Top Girts	SR 3/4								
Mid Girts	SR 3/4								N.A.
Bottom Girts	SR 3/4								N.A.
Face Width (ft)	1.5								
# Panels @ (ft)	72 @ 1.65278							10 @ 1.65033	A
Weight (lb) 5442.1	6 @ 1.63889	342.6	845.2	679.1	845.2	679.1	679.1	679.1	569.3	123.3

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10'-4 Bay Dipole	150	CCDP-665-1W	126
15' Dipole	150	CCDP-665-1W	126
(2) Panel Antenna 6'x8"	144	CCDP-665-1W	126
(2) Panel Antenna 6'x8"	144	Site Pro CWT01	126
(2) Panel Antenna 6'x8"	144	Site Pro CWT01	126
10'-4 Bay Dipole	143	Site Pro CWT01	126
PiROD 12' T-Frame	143	HPA-65R-BUU-H6 w/ Mount Pipe	126
PiROD 12' T-Frame	143	HPA-65R-BUU-H8 w/ Mount Pipe	126
PiROD 12' T-Frame	143	HPA-65R-BUU-H8 w/ Mount Pipe	126
3' Side Mount Standoff	143	RRUS 11 with A2 Module	126
15' Dipole	143	RRUS 11 with A2 Module	126
Pirod 5' Side Mount Standoff	143	RRUS 11 with A2 Module	126
Omni 2"x6'	134	4' Yagi antenna	122
3' Side Mount Standoff	129	APXV18-206517-C	116
SBNH-1D6565C w/ Mount Pipe	126	1' Side Mount Standoff	116
SBNH-1D6565C w/ Mount Pipe	126	1' Side Mount Standoff	116
(2) 860 10025	126	1' Side Mount Standoff	116
(2) 860 10025	126	APXV18-206517-C	116
DTMABP7819VG12A	126	APXV18-206517-C	116
DTMABP7819VG12A	126	Omni 3"x10'	92
DC6-48-60-18-8F	126	Omni 2 1/2"x15'	88.5
DC6-48-60-18-8F	126	Pirod 4' Side Mount Standoff (1)	83
DC6-48-60-18-8F	126	2' Side Mount Standoff	53
RRUS 11	126	8'-4 Bay Dipole	53
RRUS 11	126	GPS	52
RRUS 11	126	2' Side Mount Standoff	51
(4) CM1007-DBPXBC-xxx	126	2' Side Mount Standoff	34
(4) CM1007-DBPXBC-xxx	126	VHPL2-180	34
(4) CM1007-DBPXBC-xxx	126		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	3 @ 1.08222		

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 80.2%

ALL REACTIONS ARE FACTORED

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

Job: CT1047 - TOLLAND WEST			
Project: 1629004			
Client: Com-Ex	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA-222-G	Date: 03/24/16	Scale: NTS	
Path: Z:\Projects\2016\29 - Com-Ex\004 - CT1047 - 15096\tnxTower\CT1047_G code_WB.eri		Dwg No. E-1	

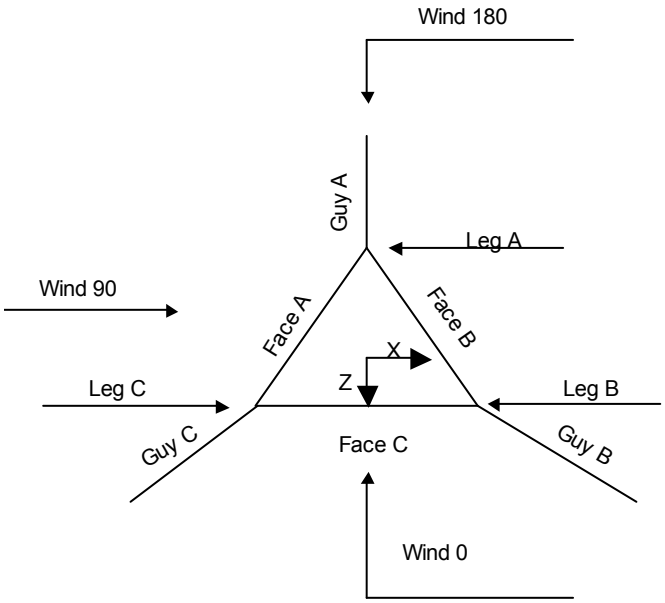
Tower Input Data

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

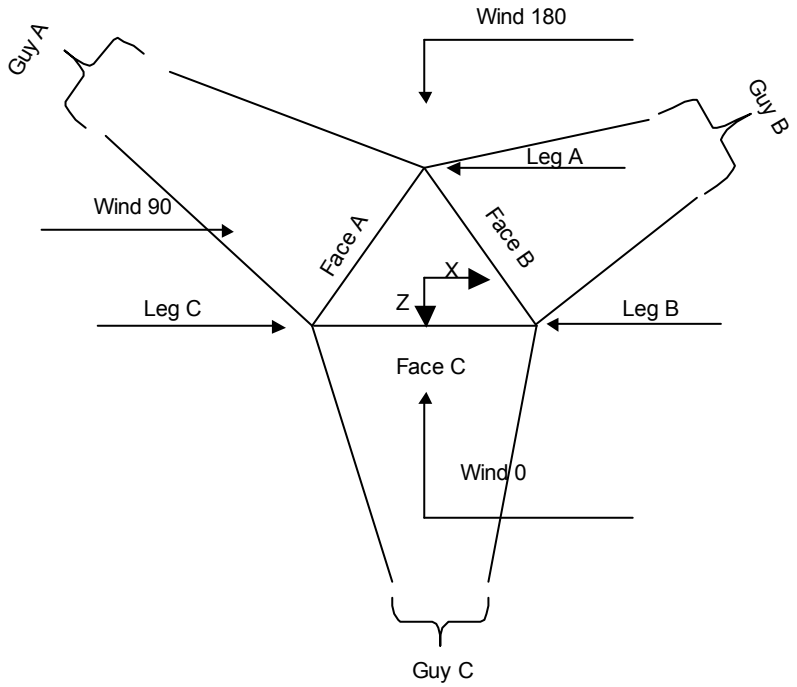
Tower is located in Tolland County, Connecticut.
Basic wind speed of 100 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

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		



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

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

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	150.00-140.00	1.64	CX Brace	No	No	1.0000	1.0000
T2	140.00-120.00	1.65	CX Brace	No	No	1.0000	1.0000
T3	120.00-100.00	1.65	CX Brace	No	No	1.0000	1.0000
T4	100.00-80.00	1.65	CX Brace	No	No	1.0000	1.0000
T5	80.00-60.00	1.65	CX Brace	No	No	1.0000	1.0000
T6	60.00-40.00	1.65	CX Brace	No	No	1.0000	1.0000
T7	40.00-20.00	1.65	CX Brace	No	No	1.0000	1.0000
T8	20.00-3.33	1.65	CX Brace	No	No	1.0000	1.0000
T9	3.33-0.00	1.08	CX Brace	No	No	1.0000	0.0000

Tower Section Geometry *(cont'd)*

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 150.00-140.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 140.00-120.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T3 120.00-100.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T4 100.00-80.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T5 80.00-60.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T6 60.00-40.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T7 40.00-20.00	Solid Round	3/4	A572-50	Solid Round	3/4	A572-50

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T8 20.00-3.33	Solid Round	3/4	(50 ksi) A572-50 (50 ksi)	Solid Round	3/4	(50 ksi) A572-50 (50 ksi)
T9 3.33-0.00	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T2 140.00-120.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T3 120.00-100.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T4 100.00-80.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T5 80.00-60.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T6 60.00-40.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T7 40.00-20.00	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T8 20.00-3.33	1	Solid Round	3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 150.00-140.00	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 140.00-120.00	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 120.00-100.00	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 100.00-80.00	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 80.00-60.00	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 60.00-40.00	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 40.00-20.00	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 20.00-3.33	0.00	0.6250	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 3.33-0.00	0.00	0.6250	A36	1	1	1	36.0000	36.0000

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft^2	in					in	in
			(36 ksi)					

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
150.00-140.00				0.5	1	1	1	1	1	1	1	1	1	1	1
T2	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
140.00-120.00				0.5	1	1	1	1	1	1	1	1	1	1	1
T3	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
120.00-100.00				0.5	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
100.00-80.00				0.5	1	1	1	1	1	1	1	1	1	1	1
T5	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
80.00-60.00				0.5	1	1	1	1	1	1	1	1	1	1	1
T6	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
60.00-40.00				0.5	1	1	1	1	1	1	1	1	1	1	1
T7	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
40.00-20.00				0.5	1	1	1	1	1	1	1	1	1	1	1
T8 20.00-3.33	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
				0.5	1	1	1	1	1	1	1	1	1	1	1
T9 3.33-0.00	Yes	Yes	1	0.5	1	1	1	1	1	1	1	1	1	1	1
				0.5	1	1	1	1	1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 150.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

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
T8 20.00-3.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 3.33-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
50	EHS	A	1/2	2690.00	10%	21000	0.517	67.17	58.00	0.0000	14.58	100%
		B	1/2	2690.00	10%	21000	0.517	91.52	78.25	0.0000	1.00	100%
		C	1/2	2690.00	10%	21000	0.517	54.10	37.00	0.0000	9.67	100%
96.75	EHS	A	9/16	3500.00	10%	21000	0.671	99.48	58.00	0.0000	14.58	100%
		B	9/16	3500.00	10%	21000	0.671	122.42	78.25	0.0000	1.00	100%
		C	9/16	3500.00	10%	21000	0.671	93.87	37.00	0.0000	9.67	100%
138.264	EHS	A	5/8	4240.00	10%	21000	0.813	135.74	58.00	0.0000	14.58	100%
		B	5/8	4240.00	10%	21000	0.813	156.98	78.25	0.0000	1.00	100%
		C	5/8	4240.00	10%	21000	0.813	133.23	37.00	0.0000	9.67	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
50	Corner						
96.75	Torque Arm	6.50	14.0000	Wing	A53-B-35 (35 ksi)	Pipe	P2x.154
138.264	Torque Arm	6.50	14.0000	Wing	A53-B-35 (35 ksi)	Pipe	P2x.154

Guy Data *(cont'd)*

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

Guy Data *(cont'd)*

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

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
50	No	No			1	1	1	1
96.75	No	No	1	1	1	1	1	1
138.264	No	No	1	1	1	1	1	1

Guy Data *(cont'd)*

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

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
50	A	32.29	22	5	1.9957
	B	25.50	21	5	1.9491
	C	29.84	21	5	1.9799
96.75	A	55.67	24	6	2.1074
	B	48.88	24	6	2.0801
	C	53.21	24	6	2.0979
138.264	A	76.42	26	7	2.1752

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	B	69.63	26	6	2.1551
	C	73.97	26	6	2.1681

Guy-Tensioning Information

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

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
LDF6-50A(1-1/4")	A	No	Ar (CaAa)	115.00 - 6.00	0.0000	0.4	6	6	1.5500	1.5500		0.66
LDF7-50A(1-5/8")	A	No	Ar (CaAa)	145.00 - 6.00	0.0000	0.42	6	1	1.9800	1.9800		1.04
LDF4-50A(1/2")	A	No	Ar (CaAa)	51.00 - 6.00	0.0000	0.45	1	1	0.6300	0.6300		0.25
LDF1-50A(1/4")	A	No	Ar (CaAa)	34.00 - 6.00	0.0000	0.45	1	1	0.3450	0.3450		0.06
LDF7-50A(1-5/8")	B	No	Ar (CaAa)	150.00 - 6.00	0.0000	0	1	1	0.0000	0.0000		1.04
LDF6-50A(1-1/4")	B	No	Ar (CaAa)	97.00 - 6.00	0.0000	0	1	1	0.0000	0.0000		0.66
LDF5-50A(7/8")	B	No	Ar (CaAa)	143.00 - 6.00	0.0000	0	2	2	1.0900	1.0900		0.54
LDF5-50A(7/8")	B	No	Ar (CaAa)	129.00 - 6.00	0.0000	0	1	1	0.0000	0.0000		0.54
LDF5-50A(7/8")	B	No	Ar (CaAa)	127.00 - 6.00	0.0000	0	1	1	0.0000	0.0000		0.54
LDF4-50A(1/2")	B	No	Ar (CaAa)	83.00 - 6.00	0.0000	0	1	1	0.0000	0.0000		0.25
LDF2-50A(3/8")	B	No	Ar (CaAa)	121.00 - 6.00	0.0000	0	1	1	0.4400	0.4400		0.08
LDF1-50A(1/4")	B	No	Ar (CaAa)	53.00 - 6.00	0.0000	0	1	1	0.3450	0.3450		0.06
LDF5-50A(7/8")	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.45	9	9	0.0000	0.0000		0.54
LDF6-50A(1-1/4")	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.4	2	2	1.5500	1.5500		0.66
FB-L98B-002-XXX(3/8")	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.41	1	1	0.3937	0.3937		0.25
WR-VG122S	C	No	Ar (CaAa)	126.00 - 6.00	0.0000	0.42	2	2	0.4600	0.4600		0.25

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
T-BRDA(7/16)												

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	150.00-140.00	A	0.000	0.000	5.940	0.000	31.20
		B	0.000	0.000	0.654	0.000	13.64
		C	0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	0.000	0.000	23.760	0.000	124.80
		B	0.000	0.000	4.404	0.000	51.12
		C	0.000	0.000	2.648	0.000	41.58
T3	120.00-100.00	A	0.000	0.000	37.710	0.000	184.20
		B	0.000	0.000	5.240	0.000	65.60
		C	0.000	0.000	8.827	0.000	138.60
T4	100.00-80.00	A	0.000	0.000	42.360	0.000	204.00
		B	0.000	0.000	5.240	0.000	77.57
		C	0.000	0.000	8.827	0.000	138.60
T5	80.00-60.00	A	0.000	0.000	42.360	0.000	204.00
		B	0.000	0.000	5.240	0.000	83.80
		C	0.000	0.000	8.827	0.000	138.60
T6	60.00-40.00	A	0.000	0.000	43.053	0.000	206.75
		B	0.000	0.000	5.689	0.000	84.58
		C	0.000	0.000	8.827	0.000	138.60
T7	40.00-20.00	A	0.000	0.000	44.103	0.000	209.84
		B	0.000	0.000	5.930	0.000	85.00
		C	0.000	0.000	8.827	0.000	138.60
T8	20.00-3.33	A	0.000	0.000	31.017	0.000	147.14
		B	0.000	0.000	4.151	0.000	59.50
		C	0.000	0.000	6.179	0.000	97.02
T9	3.33-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	150.00-140.00	A	2.319	0.000	0.000	17.022	0.000	396.62
		B		0.000	0.000	8.300	0.000	121.80
		C		0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	A	2.294	0.000	0.000	67.934	0.000	1562.12
		B		0.000	0.000	41.255	0.000	568.89
		C		0.000	0.000	22.035	0.000	286.73
T3	120.00-100.00	A	2.256	0.000	0.000	109.699	0.000	2235.53
		B		0.000	0.000	60.945	0.000	859.40
		C		0.000	0.000	72.499	0.000	934.25
T4	100.00-80.00	A	2.211	0.000	0.000	123.150	0.000	2412.37
		B		0.000	0.000	68.760	0.000	963.18
		C		0.000	0.000	71.377	0.000	909.25
T5	80.00-60.00	A	2.156	0.000	0.000	122.481	0.000	2340.14

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		0.000	0.000	75.904	0.000	1043.96
		C		0.000	0.000	70.003	0.000	879.17
T6	60.00-40.00	A	2.085	0.000	0.000	126.893	0.000	2326.59
		B		0.000	0.000	79.564	0.000	1068.36
		C		0.000	0.000	68.217	0.000	840.95
T7	40.00-20.00	A	1.981	0.000	0.000	135.569	0.000	2327.51
		B		0.000	0.000	79.094	0.000	1021.31
		C		0.000	0.000	65.619	0.000	787.10
T8	20.00-3.33	A	1.802	0.000	0.000	94.200	0.000	1475.02
		B		0.000	0.000	50.996	0.000	612.51
		C		0.000	0.000	42.808	0.000	489.59
T9	3.33-0.00	A	1.484	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	150.00-140.00	-1.1866	-1.8418	0.0000	0.0000
T2	140.00-120.00	-1.4350	-2.0684	0.0000	0.0000
T3	120.00-100.00	-1.2060	-1.7548	0.0000	0.0000
T4	100.00-80.00	-1.1497	-1.7929	0.0000	0.0000
T5	80.00-60.00	-1.1497	-1.7929	0.0000	0.0000
T6	60.00-40.00	-1.1247	-1.7921	0.0000	0.0000
T7	40.00-20.00	-1.1023	-1.7979	-0.0454	-0.1188
T8	20.00-3.33	-1.0670	-1.7467	-0.1802	-0.4607
T9	3.33-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	LDF7-50A(1-5/8")	140.00 - 145.00	0.6000	0.0000
T1	5	LDF7-50A(1-5/8")	140.00 - 150.00	0.6000	0.0000
T1	7	LDF5-50A(7/8")	140.00 - 143.00	0.6000	0.0000
T2	2	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.0000
T2	5	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.0000
T2	7	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.0000
T2	8	LDF5-50A(7/8")	120.00 - 129.00	0.6000	0.0000
T2	9	LDF5-50A(7/8")	120.00 - 127.00	0.6000	0.0000
T2	11	LDF2-50A(3/8")	120.00 -	0.6000	0.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			121.00		
T2	13	LDF5-50A(7/8")	120.00 - 126.00	0.6000	0.0000
T2	14	LDF6-50A(1-1/4")	120.00 - 126.00	0.6000	0.0000
T2	15	FB-L98B-002-XXX(3/8")	120.00 - 126.00	0.6000	0.0000
T2	16	WR-VG122ST-BRDA(7/16)	120.00 - 126.00	0.6000	0.0000
T3	1	LDF6-50A(1-1/4")	100.00 - 115.00	0.6000	0.0000
T3	2	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.0000
T3	5	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.0000
T3	7	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.0000
T3	8	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.0000
T3	9	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.0000
T3	11	LDF2-50A(3/8")	100.00 - 120.00	0.6000	0.0000
T3	13	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.0000
T3	14	LDF6-50A(1-1/4")	100.00 - 120.00	0.6000	0.0000
T3	15	FB-L98B-002-XXX(3/8")	100.00 - 120.00	0.6000	0.0000
T3	16	WR-VG122ST-BRDA(7/16)	100.00 - 120.00	0.6000	0.0000
T4	1	LDF6-50A(1-1/4")	80.00 - 100.00	0.6000	0.0000
T4	2	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.0000
T4	5	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.0000
T4	6	LDF6-50A(1-1/4")	80.00 - 97.00	0.6000	0.0000
T4	7	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.0000
T4	8	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.0000
T4	9	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.0000
T4	10	LDF4-50A(1/2")	80.00 - 83.00	0.6000	0.0000
T4	11	LDF2-50A(3/8")	80.00 - 100.00	0.6000	0.0000
T4	13	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.0000
T4	14	LDF6-50A(1-1/4")	80.00 - 100.00	0.6000	0.0000
T4	15	FB-L98B-002-XXX(3/8")	80.00 - 100.00	0.6000	0.0000
T4	16	WR-VG122ST-BRDA(7/16)	80.00 - 100.00	0.6000	0.0000
T5	1	LDF6-50A(1-1/4")	60.00 - 80.00	0.6000	0.0000
T5	2	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.0000
T5	5	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.0000
T5	6	LDF6-50A(1-1/4")	60.00 - 80.00	0.6000	0.0000
T5	7	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.0000
T5	8	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.0000
T5	9	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.0000
T5	10	LDF4-50A(1/2")	60.00 - 80.00	0.6000	0.0000
T5	11	LDF2-50A(3/8")	60.00 - 80.00	0.6000	0.0000
T5	13	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.0000
T5	14	LDF6-50A(1-1/4")	60.00 - 80.00	0.6000	0.0000
T5	15	FB-L98B-002-XXX(3/8")	60.00 - 80.00	0.6000	0.0000
T5	16	WR-VG122ST-BRDA(7/16)	60.00 - 80.00	0.6000	0.0000
T6	1	LDF6-50A(1-1/4")	40.00 - 60.00	0.6000	0.0000
T6	2	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.0000
T6	3	LDF4-50A(1/2")	40.00 - 51.00	0.6000	0.0000
T6	5	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.0000
T6	6	LDF6-50A(1-1/4")	40.00 - 60.00	0.6000	0.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	7	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.0000
T6	8	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.0000
T6	9	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.0000
T6	10	LDF4-50A(1/2")	40.00 - 60.00	0.6000	0.0000
T6	11	LDF2-50A(3/8")	40.00 - 60.00	0.6000	0.0000
T6	12	LDF1-50A(1/4")	40.00 - 53.00	0.6000	0.0000
T6	13	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.0000
T6	14	LDF6-50A(1-1/4")	40.00 - 60.00	0.6000	0.0000
T6	15	FB-L98B-002-XXX(3/8")	40.00 - 60.00	0.6000	0.0000
T6	16	WR-VG122ST-BRDA(7/16)	40.00 - 60.00	0.6000	0.0000
T7	1	LDF6-50A(1-1/4")	20.00 - 40.00	0.6000	0.0101
T7	2	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.0101
T7	3	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.0101
T7	4	LDF1-50A(1/4")	20.00 - 34.00	0.6000	0.0101
T7	5	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.0101
T7	6	LDF6-50A(1-1/4")	20.00 - 40.00	0.6000	0.0101
T7	7	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.0101
T7	8	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.0101
T7	9	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.0101
T7	10	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.0101
T7	11	LDF2-50A(3/8")	20.00 - 40.00	0.6000	0.0101
T7	12	LDF1-50A(1/4")	20.00 - 40.00	0.6000	0.0101
T7	13	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.0101
T7	14	LDF6-50A(1-1/4")	20.00 - 40.00	0.6000	0.0101
T7	15	FB-L98B-002-XXX(3/8")	20.00 - 40.00	0.6000	0.0101
T7	16	WR-VG122ST-BRDA(7/16)	20.00 - 40.00	0.6000	0.0101
T8	1	LDF6-50A(1-1/4")	6.00 - 20.00	0.6000	0.0585
T8	2	LDF7-50A(1-5/8")	6.00 - 20.00	0.6000	0.0585
T8	3	LDF4-50A(1/2")	6.00 - 20.00	0.6000	0.0585
T8	4	LDF1-50A(1/4")	6.00 - 20.00	0.6000	0.0585
T8	5	LDF7-50A(1-5/8")	6.00 - 20.00	0.6000	0.0585
T8	6	LDF6-50A(1-1/4")	6.00 - 20.00	0.6000	0.0585
T8	7	LDF5-50A(7/8")	6.00 - 20.00	0.6000	0.0585
T8	8	LDF5-50A(7/8")	6.00 - 20.00	0.6000	0.0585
T8	9	LDF5-50A(7/8")	6.00 - 20.00	0.6000	0.0585
T8	10	LDF4-50A(1/2")	6.00 - 20.00	0.6000	0.0585
T8	11	LDF2-50A(3/8")	6.00 - 20.00	0.6000	0.0585
T8	12	LDF1-50A(1/4")	6.00 - 20.00	0.6000	0.0585
T8	13	LDF5-50A(7/8")	6.00 - 20.00	0.6000	0.0585
T8	14	LDF6-50A(1-1/4")	6.00 - 20.00	0.6000	0.0585
T8	15	FB-L98B-002-XXX(3/8")	6.00 - 20.00	0.6000	0.0585
T8	16	WR-VG122ST-BRDA(7/16)	6.00 - 20.00	0.6000	0.0585

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
10'-4 Bay Dipole	B	From Leg	0.00 0.00 5.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.75 3.50 4.25	2.75 3.50 4.25	25.00 40.00 55.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
15' Dipole	B	From Leg	0.00	0.0000	150.00	No Ice	6.00	6.00	40.00
			0.00			1/2" Ice	7.54	7.54	81.87
			17.50			1" Ice	9.08	9.08	123.74
3' Side Mount Standoff	C	From Leg	1.50	0.0000	143.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00			1" Ice	4.70	4.70	100.00
15' Dipole	C	From Leg	3.00	0.0000	143.00	No Ice	6.00	6.00	40.00
			0.00			1/2" Ice	7.54	7.54	81.87
			7.50			1" Ice	9.08	9.08	123.74
Pirod 5' Side Mount Standoff	B	From Leg	2.50	0.0000	143.00	No Ice	3.85	3.85	60.00
			0.00			1/2" Ice	5.20	5.20	110.00
			0.00			1" Ice	6.55	6.55	160.00
10'-4 Bay Dipole	B	From Leg	5.00	0.0000	143.00	No Ice	2.75	2.75	25.00
			0.00			1/2" Ice	3.50	3.50	40.00
			5.00			1" Ice	4.25	4.25	55.00
***									
PiROD 12' T-Frame	A	From Leg	3.00	0.0000	143.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	B	From Leg	3.00	0.0000	143.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
PiROD 12' T-Frame	C	From Leg	3.00	0.0000	143.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00			1" Ice	23.00	23.00	620.00
(2) Panel Antenna 6'x8"	A	From Leg	6.00	0.0000	144.00	No Ice	5.87	3.53	35.00
			0.00			1/2" Ice	6.32	3.97	66.79
			0.00			1" Ice	6.77	4.41	98.58
(2) Panel Antenna 6'x8"	B	From Leg	6.00	0.0000	144.00	No Ice	5.87	3.53	35.00
			0.00			1/2" Ice	6.32	3.97	66.79
			0.00			1" Ice	6.77	4.41	98.58
(2) Panel Antenna 6'x8"	C	From Leg	6.00	0.0000	144.00	No Ice	5.87	3.53	35.00
			0.00			1/2" Ice	6.32	3.97	66.79
			0.00			1" Ice	6.77	4.41	98.58
***									
3' Side Mount Standoff	C	From Leg	1.50	0.0000	129.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00			1" Ice	4.70	4.70	100.00
Omni 2"x6'	C	From Leg	3.00	0.0000	134.00	No Ice	1.20	1.20	25.00
			0.00			1/2" Ice	1.80	1.80	34.39
			0.00			1" Ice	2.40	2.40	43.78
***									
SBNH-1D6565C w/ Mount Pipe	A	From Leg	3.00	0.0000	126.00	No Ice	11.68	10.29	113.11
			0.00			1/2" Ice	12.40	11.81	203.89
			0.00			1" Ice	13.14	13.33	294.67
SBNH-1D6565C w/ Mount Pipe	B	From Leg	3.00	0.0000	126.00	No Ice	11.68	10.29	113.11
			0.00			1/2" Ice	12.40	11.81	203.89
			0.00			1" Ice	13.14	13.33	294.67
(2) 860 10025	A	From Leg	2.00	0.0000	126.00	No Ice	0.16	0.13	1.16
			0.00			1/2" Ice	0.22	0.19	2.65
			0.00			1" Ice	0.29	0.26	5.06
(2) 860 10025	B	From Leg	2.00	0.0000	126.00	No Ice	0.16	0.13	1.16
			0.00			1/2" Ice	0.22	0.19	2.65
			0.00			1" Ice	0.29	0.26	5.06
DTMABP7819VG12A	A	From Leg	2.00	0.0000	126.00	No Ice	1.14	0.39	19.18
			0.00			1/2" Ice	1.28	0.49	26.48
			0.00			1" Ice	1.44	0.59	35.63

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
DTMABP7819VG12A	B	From Leg	2.00	0.0000	126.00	No Ice	1.14	0.39	19.18
			0.00			1/2" Ice	1.28	0.49	26.48
			0.00			1" Ice	1.44	0.59	35.63
DC6-48-60-18-8F	A	From Leg	3.00	0.0000	126.00	No Ice	2.45	2.45	38.25
			0.00			1/2" Ice	2.95	2.95	64.62
			0.00			1" Ice	3.45	3.45	90.99
DC6-48-60-18-8F	B	From Leg	3.00	0.0000	126.00	No Ice	2.45	2.45	38.25
			0.00			1/2" Ice	2.95	2.95	64.62
			0.00			1" Ice	3.45	3.45	90.99
DC6-48-60-18-8F	C	From Leg	3.00	0.0000	126.00	No Ice	2.45	2.45	38.25
			0.00			1/2" Ice	2.95	2.95	64.62
			0.00			1" Ice	3.45	3.45	90.99
RRUS 11	A	From Leg	2.00	0.0000	126.00	No Ice	3.25	1.37	50.70
			0.00			1/2" Ice	3.49	1.55	71.50
			0.00			1" Ice	3.74	1.74	95.33
RRUS 11	B	From Leg	2.00	0.0000	126.00	No Ice	3.25	1.37	50.70
			0.00			1/2" Ice	3.49	1.55	71.50
			0.00			1" Ice	3.74	1.74	95.33
RRUS 11	C	From Leg	2.00	0.0000	126.00	No Ice	3.25	1.37	50.70
			0.00			1/2" Ice	3.49	1.55	71.50
			0.00			1" Ice	3.74	1.74	95.33
(4) CM1007-DBPXBC-xxx	A	From Leg	2.00	0.0000	126.00	No Ice	0.43	0.28	6.50
			0.00			1/2" Ice	0.52	0.37	9.99
			0.00			1" Ice	0.63	0.46	14.78
(4) CM1007-DBPXBC-xxx	B	From Leg	2.00	0.0000	126.00	No Ice	0.43	0.28	6.50
			0.00			1/2" Ice	0.52	0.37	9.99
			0.00			1" Ice	0.63	0.46	14.78
(4) CM1007-DBPXBC-xxx	C	From Leg	2.00	0.0000	126.00	No Ice	0.43	0.28	6.50
			0.00			1/2" Ice	0.52	0.37	9.99
			0.00			1" Ice	0.63	0.46	14.78
CCDP-665-1W	A	From Leg	2.00	0.0000	126.00	No Ice	0.92	0.31	5.00
			0.00			1/2" Ice	1.05	0.41	10.84
			0.00			1" Ice	1.18	0.51	16.68
CCDP-665-1W	B	From Leg	2.00	0.0000	126.00	No Ice	0.92	0.31	5.00
			0.00			1/2" Ice	1.05	0.41	10.84
			0.00			1" Ice	1.18	0.51	16.68
CCDP-665-1W	C	From Leg	2.00	0.0000	126.00	No Ice	0.92	0.31	5.00
			0.00			1/2" Ice	1.05	0.41	10.84
			0.00			1" Ice	1.18	0.51	16.68
Site Pro CWT01	A	From Leg	2.00	0.0000	126.00	No Ice	1.63	0.56	123.00
			0.00			1/2" Ice	1.97	0.70	158.00
			0.00			1" Ice	2.31	0.84	193.00
Site Pro CWT01	B	From Leg	2.00	0.0000	126.00	No Ice	1.63	0.56	123.00
			0.00			1/2" Ice	1.97	0.70	158.00
			0.00			1" Ice	2.31	0.84	193.00
Site Pro CWT01	C	From Leg	2.00	0.0000	126.00	No Ice	1.63	0.56	123.00
			0.00			1/2" Ice	1.97	0.70	158.00
			0.00			1" Ice	2.31	0.84	193.00
***									
4' Yagi antenna	B	From Leg	1.50	0.0000	122.00	No Ice	0.93	0.47	10.00
			0.00			1/2" Ice	1.26	0.64	54.43
			0.00			1" Ice	1.59	0.81	98.86
***									
1' Side Mount Standoff	A	From Leg	0.50	0.0000	116.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
1' Side Mount Standoff	B	From Leg	0.50	0.0000	116.00	No Ice	1.00	1.00	30.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
1' Side Mount Standoff	C	From Leg	0.50	0.0000	116.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
APXV18-206517-C	A	From Leg	1.00	0.0000	116.00	No Ice	5.17	3.04	26.40
			0.00			1/2" Ice	5.62	3.47	53.00
			0.00			1" Ice	6.08	3.91	85.10
APXV18-206517-C	B	From Leg	1.00	0.0000	116.00	No Ice	5.17	3.04	26.40
			0.00			1/2" Ice	5.62	3.47	53.00
			0.00			1" Ice	6.08	3.91	85.10
APXV18-206517-C	C	From Leg	1.00	0.0000	116.00	No Ice	5.17	3.04	26.40
			0.00			1/2" Ice	5.62	3.47	53.00
			0.00			1" Ice	6.08	3.91	85.10
***									
Omni 3"x10'	B	From Leg	3.00	0.0000	92.00	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.03	4.03	41.79
			0.00			1" Ice	5.06	5.06	63.58
Pirod 4' Side Mount Standoff (1)	C	From Leg	2.00	0.0000	83.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
Omni 2 1/2"x15'	C	From Leg	4.00	0.0000	88.50	No Ice	3.75	3.75	30.00
			0.00			1/2" Ice	5.28	5.28	57.80
			0.00			1" Ice	6.81	6.81	85.60
2' Side Mount Standoff	B	From Leg	1.00	0.0000	53.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
8'-4 Bay Dipole	B	From Leg	2.00	0.0000	53.00	No Ice	1.60	1.60	25.00
			0.00			1/2" Ice	2.42	2.42	37.45
			0.00			1" Ice	3.24	3.24	49.90
2' Side Mount Standoff	C	From Leg	1.00	0.0000	51.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
GPS	C	From Leg	2.50	0.0000	52.00	No Ice	0.21	0.21	5.00
			0.00			1/2" Ice	0.32	0.32	7.52
			0.00			1" Ice	0.43	0.43	10.04
2' Side Mount Standoff	B	From Leg	1.00	0.0000	34.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00			1" Ice	2.00	2.00	70.00
PROPOSED									
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	3.00	0.0000	126.00	No Ice	10.60	8.11	76.55
			0.00			1/2" Ice	11.27	9.30	158.03
			0.00			1" Ice	11.91	10.21	247.79
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	3.00	0.0000	126.00	No Ice	13.53	9.58	99.76
			0.00			1/2" Ice	14.34	11.05	196.45
			0.00			1" Ice	15.14	12.50	302.99
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	3.00	0.0000	126.00	No Ice	13.53	9.58	99.76
			0.00			1/2" Ice	14.34	11.05	196.45
			0.00			1" Ice	15.14	12.50	302.99
RRUS 11 with A2 Module	A	From Leg	2.00	0.0000	126.00	No Ice	2.94	1.83	75.00
			0.00			1/2" Ice	3.17	2.02	98.26
			0.00			1" Ice	3.41	2.22	124.67
RRUS 11 with A2 Module	B	From Leg	2.00	0.0000	126.00	No Ice	2.94	1.83	75.00
			0.00			1/2" Ice	3.17	2.02	98.26
			0.00			1" Ice	3.41	2.22	124.67
RRUS 11 with A2 Module	C	From Leg	2.00	0.0000	126.00	No Ice	2.94	1.83	75.00
			0.00			1/2" Ice	3.17	2.02	98.26

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	3.41	2.22	124.67

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
VHPL2-180	B	Paraboloid w/Shroud (HP)	From Leg	2.00 0.00 0.00	0.0000		34.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	25.00 42.49 59.98

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy

Comb. No.	Description
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	150 - 140	Leg	Max Tension	8	16170.04	0.54	-47.91
			Max. Compression	6	-17660.55	-171.48	-74.42
			Max. Mx	6	-15415.22	-211.14	-127.75
			Max. My	2	-17175.75	-18.10	234.30
			Max. Vy	11	-2317.33	150.84	52.00
			Max. Vx	3	-2791.14	-174.05	124.26
		Diagonal	Max Tension	11	2419.62	0.00	0.00
			Max. Compression	11	-2522.97	0.00	0.00
			Max. Mx	17	128.17	4.03	0.00
			Max. My	17	-72.81	0.00	-0.03
			Max. Vy	17	-7.25	0.00	0.00
			Max. Vx	17	0.06	0.00	0.00
		Top Girt	Max Tension	5	63.85	0.00	0.00
			Max. Compression	4	-49.45	0.00	0.00
			Max. Mx	23	-2.64	2.95	0.00
			Max. My	17	21.50	0.00	0.00
			Max. Vy	23	-7.87	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	12	2886.27	0.00	0.00
			Max. Compression	10	-2315.44	0.00	0.00
			Max. Mx	23	755.61	2.95	0.00
			Max. My	17	-278.57	0.00	0.00
			Max. Vy	23	-7.87	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
T2	140 - 120	Leg	Max Tension	8	16168.91	-8.21	-27.27
			Max. Compression	5	-42197.05	-21.72	-5.46
			Max. Mx	2	-30142.74	427.74	-85.65
			Max. My	2	-21744.20	23.74	-429.49
			Max. Vy	11	-2318.01	343.98	24.16
			Max. Vx	3	-2791.10	-276.82	356.84
		Diagonal	Max Tension	5	6032.41	0.00	0.00
			Max. Compression	5	-6519.62	0.00	0.00
			Max. Mx	17	451.76	3.99	0.00
			Max. My	17	-265.23	0.00	-0.04
			Max. Vy	17	-7.15	0.00	0.00
			Max. Vx	17	0.07	0.00	0.00
		Top Girt	Max Tension	4	5440.80	0.00	0.00
			Max. Compression	10	-2214.87	0.00	0.00
			Max. Mx	23	2274.30	2.91	0.00
			Max. My	17	755.50	0.00	0.00
			Max. Vy	23	-7.75	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	15	223.35	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	15	190.45	2.91	0.00
			Max. My	17	217.84	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vy	15	7.75	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Mid Girt	Max Tension	6	664.89	0.00	0.00
			Max. Compression	4	-316.14	0.00	0.00
			Max. Mx	24	196.61	2.91	0.00
			Max. My	17	380.47	0.00	0.00
			Max. Vy	24	7.75	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Guy A	Bottom Tension	9	11696.81		
			Top Tension	9	11796.03		
			Top Cable Vert	9	10776.73		
			Top Cable Norm	9	4796.49		
			Top Cable Tan	9	47.29		
			Bot Cable Vert	9	-10577.71		
			Bot Cable Norm	9	4991.58		
			Bot Cable Tan	9	107.42		
		Guy B	Bottom Tension	11	9966.90		
			Top Tension	11	10077.39		
			Top Cable Vert	11	8864.55		
			Top Cable Norm	11	4792.70		
			Top Cable Tan	11	59.38		
			Bot Cable Vert	11	-8625.59		
			Bot Cable Norm	11	4992.68		
			Bot Cable Tan	11	107.12		
		Guy C	Bottom Tension	3	16245.32		
			Top Tension	3	16346.70		
			Top Cable Vert	3	15762.96		
			Top Cable Norm	3	4329.39		
			Top Cable Tan	3	14.84		
			Bot Cable Vert	3	-15595.17		
			Bot Cable Norm	3	4546.30		
			Bot Cable Tan	3	179.89		
		Torque Arm Top	Max Tension	6	16091.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	8339.88	28.18	0.00
			Max. My	17	9685.49	0.00	0.08
			Max. Vy	17	29.80	0.00	0.00
			Max. Vx	17	0.08	0.00	0.00
		Torque Arm Bottom	Max Tension	2	779.76	0.00	0.00
			Max. Compression	5	-16235.58	0.00	0.00
			Max. Mx	17	-3693.20	28.21	0.00
			Max. My	17	-4371.13	0.00	-0.08
			Max. Vy	17	-29.82	0.00	0.00
			Max. Vx	17	0.08	0.00	0.00
T3	120 - 100	Leg	Max Tension	4	23947.22	149.56	-71.01
			Max. Compression	6	-56974.86	63.36	0.87
			Max. Mx	5	-17041.60	303.94	120.47
			Max. My	4	-33980.17	-18.93	-337.29
			Max. Vy	6	3509.60	-229.09	-175.18
			Max. Vx	2	-3952.16	44.77	274.58
		Diagonal	Max Tension	4	2448.50	0.00	0.00
			Max. Compression	5	-2848.11	0.00	0.00
			Max. Mx	17	1007.15	3.89	0.00
			Max. My	17	36.24	0.00	-0.04
			Max. Vy	17	6.97	0.00	0.00
			Max. Vx	17	0.07	0.00	0.00
		Top Girt	Max Tension	6	428.31	0.00	0.00
			Max. Compression	4	-127.26	0.00	0.00
			Max. Mx	15	115.14	2.84	0.00
			Max. My	17	272.78	0.00	0.00
			Max. Vy	15	7.57	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	10	585.87	0.00	0.00
			Max. Compression	4	-1153.66	0.00	0.00
			Max. Mx	24	-386.52	2.84	0.00
			Max. My	17	44.62	0.00	0.00
			Max. Vy	24	7.57	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Mid Girt	Max Tension	17	507.40	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	409.51	2.84	0.00
			Max. My	17	417.20	0.00	0.00
			Max. Vy	25	-7.57	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
T4	100 - 80	Leg	Max Tension	4	27850.45	-285.91	155.18
			Max. Compression	6	-66001.64	196.80	242.66
			Max. Mx	5	-23883.56	-868.39	-162.47
			Max. My	3	-20163.83	-297.77	827.17
			Max. Vy	6	3498.16	-520.56	-350.52
			Max. Vx	2	-3939.37	58.27	602.83
		Diagonal	Max Tension	3	5424.96	0.00	0.00
			Max. Compression	5	-5034.84	0.00	0.00
			Max. Mx	17	1155.02	3.76	0.00
			Max. My	17	2663.44	0.00	-0.03
			Max. Vy	17	-6.75	0.00	0.00
			Max. Vx	17	0.05	0.00	0.00
		Top Girt	Max Tension	10	55.79	0.00	0.00
			Max. Compression	4	-621.63	0.00	0.00
			Max. Mx	24	-269.35	2.76	0.00
			Max. My	17	-158.87	0.00	0.00
			Max. Vy	24	7.35	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	17	388.96	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	345.11	2.76	0.00
			Max. My	19	361.94	0.00	0.00
			Max. Vy	25	7.35	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Mid Girt	Max Tension	5	937.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	22	828.70	2.76	0.00
			Max. My	18	857.22	0.00	0.00
			Max. Vy	22	7.35	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Guy A	Bottom Tension	9	7986.62		
			Top Tension	9	8041.37		
			Top Cable Vert	9	6672.30		
			Top Cable Norm	9	4488.08		
			Top Cable Tan	9	35.71		
			Bot Cable Vert	9	-6541.97		
			Bot Cable Norm	9	4581.04		
			Bot Cable Tan	9	53.98		
		Guy B	Bottom Tension	11	6999.53		
			Top Tension	11	7063.43		
			Top Cable Vert	11	5570.03		
			Top Cable Norm	11	4343.37		
			Top Cable Tan	11	43.14		
			Bot Cable Vert	11	-5410.31		
			Bot Cable Norm	11	4440.56		
			Bot Cable Tan	11	57.99		
		Guy C	Bottom Tension	5	12648.20		
			Top Tension	5	12705.49		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Top Cable Vert	5	11781.51		
			Top Cable Norm	5	4756.64		
			Top Cable Tan	5	2.82		
			Bot Cable Vert	5	-11671.73		
			Bot Cable Norm	5	4872.20		
			Bot Cable Tan	5	98.02		
		Torque Arm Top	Max Tension	6	11423.52	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	17	6822.29	26.65	0.00
			Max. My	17	7774.14	0.00	0.06
			Max. Vy	17	28.62	0.00	0.00
			Max. Vx	17	-0.06	0.00	0.00
		Torque Arm Bottom	Max Tension	6	3076.13	0.00	0.00
			Max. Compression	5	-14462.36	0.00	0.00
			Max. Mx	17	-2859.16	27.56	0.00
			Max. My	17	-9978.24	0.00	-0.05
			Max. Vy	17	-28.66	0.00	0.00
			Max. Vx	17	0.05	0.00	0.00
T5	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-43073.01	-79.19	-53.63
			Max. Mx	17	-36949.45	-120.61	-70.64
			Max. My	17	-35686.95	1.82	135.86
			Max. Vy	4	415.24	45.46	-24.99
			Max. Vx	2	-400.36	1.86	119.71
		Diagonal	Max Tension	6	594.57	0.00	0.00
			Max. Compression	6	-897.44	0.00	0.00
			Max. Mx	17	373.34	3.62	0.00
			Max. My	17	351.37	0.00	-0.02
			Max. Vy	17	-6.48	0.00	0.00
			Max. Vx	17	0.04	0.00	0.00
		Top Girt	Max Tension	25	390.85	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	314.01	2.66	0.00
			Max. My	19	372.01	0.00	0.00
			Max. Vy	25	7.09	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Bottom Girt	Max Tension	17	472.26	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	389.93	2.66	0.00
			Max. My	17	369.14	0.00	0.00
			Max. Vy	25	7.09	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Mid Girt	Max Tension	17	807.86	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	710.63	2.66	0.00
			Max. My	18	733.91	0.00	0.00
			Max. Vy	25	7.09	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
T6	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	6	-50601.18	47.16	48.53
			Max. Mx	6	-50585.36	-158.37	-92.99
			Max. My	2	-46965.15	0.01	173.03
			Max. Vy	6	-641.60	-156.95	-93.93
			Max. Vx	2	732.19	4.95	172.14
		Diagonal	Max Tension	7	1173.72	0.00	0.00
			Max. Compression	6	-1397.98	0.00	0.00
			Max. Mx	17	-198.93	3.43	0.00
			Max. My	17	400.38	0.00	-0.02
			Max. Vy	17	-6.15	0.00	0.00
			Max. Vx	17	0.03	0.00	0.00
		Top Girt	Max Tension	17	422.31	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	377.46	2.54	0.00
			Max. My	17	377.75	0.00	0.00
			Max. Vy	25	-6.77	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	22	477.16	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	20	460.49	2.54	0.00
			Max. My	17	453.67	0.00	0.00
			Max. Vy	20	-6.77	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Mid Girt	Max Tension	19	2788.47	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	2566.64	2.54	0.00
			Max. My	17	2654.79	0.00	0.00
			Max. Vy	25	-6.77	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Guy A	Bottom Tension	8	5875.13		
			Top Tension	8	5893.37		
			Top Cable Vert	8	3125.19		
			Top Cable Norm	8	4996.50		
			Top Cable Tan	8	2.18		
			Bot Cable Vert	8	-3067.08		
			Bot Cable Norm	8	5011.00		
			Bot Cable Tan	8	2.18		
		Guy B	Bottom Tension	12	5503.03		
			Top Tension	12	5528.28		
			Top Cable Vert	12	2986.52		
			Top Cable Norm	12	4652.16		
			Top Cable Tan	12	0.76		
			Bot Cable Vert	12	-2908.13		
			Bot Cable Norm	12	4671.84		
			Bot Cable Tan	12	0.76		
		Guy C	Bottom Tension	4	7346.03		
			Top Tension	4	7366.74		
			Top Cable Vert	4	5498.07		
			Top Cable Norm	4	4903.07		
			Top Cable Tan	4	2.36		
			Bot Cable Vert	4	-5441.04		
			Bot Cable Norm	4	4935.51		
			Bot Cable Tan	4	2.36		
T7	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-48602.68	-98.50	-55.60
			Max. Mx	16	-45719.12	-148.50	-84.42
			Max. My	20	-45118.09	0.64	169.05
			Max. Vy	6	-644.87	-103.49	-62.31
			Max. Vx	2	735.25	2.01	111.14
		Diagonal	Max Tension	5	957.89	0.00	0.00
			Max. Compression	5	-1250.32	0.00	0.00
			Max. Mx	16	-606.30	3.17	0.00
			Max. My	17	321.51	0.00	-0.01
			Max. Vy	16	5.69	0.00	0.00
			Max. Vx	17	-0.01	0.00	0.00
		Top Girt	Max Tension	17	513.52	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	20	467.26	2.37	0.00
			Max. My	17	423.58	0.00	0.00
			Max. Vy	20	-6.31	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	22	528.47	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	23	453.08	2.37	0.00
			Max. My	17	519.96	0.00	0.00
			Max. Vy	23	-6.31	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Mid Girt	Max Tension	22	964.20	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	936.92	2.37	0.00
			Max. My	17	912.94	0.00	0.00
			Max. Vy	25	-6.31	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
T8	20 - 3.33	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-48710.23	-1.22	49.07
			Max. Mx	26	-45928.73	-131.21	-75.00
			Max. My	20	-46757.14	-0.54	153.63
			Max. Vy	12	-559.84	-46.97	-26.73
			Max. Vx	8	633.99	1.55	58.43
		Diagonal	Max Tension	10	826.65	0.00	0.00
			Max. Compression	10	-1025.82	0.00	0.00
			Max. Mx	20	661.95	2.77	0.00
			Max. My	19	-494.50	0.00	-0.01
			Max. Vy	20	-4.97	0.00	0.00
			Max. Vx	19	0.01	0.00	0.00
		Top Girt	Max Tension	22	506.24	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	23	416.75	2.09	0.00
			Max. My	17	469.60	0.00	0.00
			Max. Vy	25	-5.57	0.00	0.00
			Max. Vx	17	-0.00	0.00	0.00
		Bottom Girt	Max Tension	18	623.21	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	19	602.70	2.09	0.00
			Max. My	10	368.53	0.00	-0.00
			Max. Vy	19	5.57	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Mid Girt	Max Tension	22	1048.50	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	24	907.61	2.09	0.00
			Max. My	10	527.32	0.00	-0.00
			Max. Vy	24	5.57	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
T9	3.33 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	17	-46492.16	-51.99	30.97
			Max. Mx	24	-41973.07	101.10	-49.53
			Max. My	17	-45404.98	-0.29	112.36
			Max. Vy	12	-561.18	-0.22	1.63
			Max. Vx	8	635.71	7.94	5.47
		Diagonal	Max Tension	10	857.06	0.00	0.00
			Max. Compression	10	-952.15	0.00	0.00
			Max. Mx	20	716.06	1.76	0.00
			Max. My	19	-457.93	0.00	-0.00
			Max. Vy	20	3.81	0.00	0.00
			Max. Vx	19	-0.00	0.00	0.00
		Top Girt	Max Tension	19	473.07	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	19	473.07	1.65	0.00
			Max. My	10	225.62	0.00	-0.00
			Max. Vy	19	4.39	0.00	0.00
			Max. Vx	10	0.00	0.00	0.00
		Base Beam	Max Tension	23	1283.36	-37879.97	21.33
			Max. Compression	12	-81.60	-19.08	-0.17
			Max. Mx	17	-45692.90	-39666.21	-37.61

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	11	-24164.93	-20980.48	-275.61
			Max. Vy	17	-45692.90	-39666.21	-37.61
			Max. Vx	11	-320.83	-20980.48	-275.61

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 37 ft Elev 9.67 ft Azimuth 240 deg	Max. Vert	10	-5213.71	-1169.06	674.79
	Max. H_x	10	-5213.71	-1169.06	674.79
	Max. H_z	3	-56707.89	-19060.48	11468.30
	Min. Vert	5	-57338.37	-19753.65	10873.12
	Min. H_x	5	-57338.37	-19753.65	10873.12
	Min. H_z	10	-5213.71	-1169.06	674.79
Guy B @ 78.25 ft Elev 1 ft Azimuth 120 deg	Max. Vert	6	-1722.70	663.22	387.41
	Max. H_x	12	-30528.74	20125.06	11630.80
	Max. H_z	12	-30528.74	20125.06	11630.80
	Min. Vert	12	-30528.74	20125.06	11630.80
	Min. H_x	6	-1722.70	663.22	387.41
	Min. H_z	6	-1722.70	663.22	387.41
Guy A @ 58 ft Elev 14.58 ft Azimuth 0 deg	Max. Vert	2	-1910.79	-5.19	-670.93
	Max. H_x	24	-16739.43	642.24	-12448.84
	Max. H_z	2	-1910.79	-5.19	-670.93
	Min. Vert	8	-36352.45	-39.84	-23680.09
	Min. H_x	18	-15143.94	-746.69	-11729.41
	Min. H_z	8	-36352.45	-39.84	-23680.09
Mast	Max. Vert	17	137041.76	53.60	-19.89
	Max. H_x	11	72511.82	844.78	11.19
	Max. H_z	13	78833.11	508.68	587.32
	Max. M_x	1	0.00	50.56	-25.64
	Max. M_z	1	0.00	50.56	-25.64
	Max. Torsion	5	265.54	-466.12	-6.97
	Min. Vert	28	57142.47	-32.87	135.74
	Min. H_x	4	81769.93	-510.50	327.58
	Min. H_z	8	73123.27	45.49	-866.57
	Min. M_x	1	0.00	50.56	-25.64
	Min. M_z	1	0.00	50.56	-25.64
	Min. Torsion	10	-286.35	721.47	-397.38

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	57666.08	-50.56	25.64	0.00	0.00	3.99
1.2 Dead+1.6 Wind 0 deg - No	91526.76	-153.56	-566.54	0.00	0.00	-131.91

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Ice+1.0 Guy						
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	89631.47	228.16	-444.56	0.00	0.00	-112.41
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	81769.93	510.50	-327.58	0.00	0.00	-239.73
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	93412.46	466.12	6.97	0.00	0.00	-265.54
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	96060.95	396.24	395.78	0.00	0.00	-103.99
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	85048.37	229.56	700.45	0.00	0.00	54.01
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	73123.27	-45.49	866.57	0.00	0.00	186.68
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	74840.60	-420.33	712.97	0.00	0.00	152.12
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	77853.38	-721.47	397.38	0.00	0.00	286.35
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	72511.82	-844.78	-11.19	0.00	0.00	229.69
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	67874.47	-799.57	-426.19	0.00	0.00	44.83
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	78833.11	-508.68	-587.32	0.00	0.00	-50.89
1.2 Dead+1.0 Ice+1.0 Temp+Guy	130247.75	-204.92	124.85	0.00	0.00	0.68
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	131829.24	-242.69	-108.59	0.00	0.00	11.32
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	135050.73	-141.55	-72.76	0.00	0.00	85.89
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	137041.76	-53.60	19.89	0.00	0.00	95.03
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	136695.76	-14.04	141.10	0.00	0.00	78.21
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	135211.02	-32.35	253.64	0.00	0.00	75.42
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	134185.81	-93.56	333.74	0.00	0.00	61.59
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	133602.97	-199.79	355.40	0.00	0.00	2.27
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	132447.89	-314.81	318.14	0.00	0.00	-61.70
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	130938.79	-394.29	232.53	0.00	0.00	-75.46
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	130415.42	-420.81	120.98	0.00	0.00	-80.66
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	130449.08	-393.37	-0.68	0.00	0.00	-88.79
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	130656.13	-332.45	-91.53	0.00	0.00	-69.19
Dead+Wind 0 deg - Service+Guy	57219.77	-64.34	-173.21	0.00	0.00	-34.02
Dead+Wind 30 deg - Service+Guy	57142.47	32.87	-135.74	0.00	0.00	-30.62
Dead+Wind 60 deg - Service+Guy	57208.88	110.45	-63.78	0.00	0.00	-55.72
Dead+Wind 90 deg - Service+Guy	57310.63	135.34	36.31	0.00	0.00	-45.88
Dead+Wind 120 deg - Service+Guy	57612.97	119.82	134.28	0.00	0.00	-12.00
Dead+Wind 150 deg - Service+Guy	58118.30	50.56	197.79	0.00	0.00	13.06

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead+Wind 180 deg - Service+Guy	58613.47	-40.88	223.81	0.00	0.00	37.12
Dead+Wind 210 deg - Service+Guy	58848.33	-135.99	187.16	0.00	0.00	38.94
Dead+Wind 240 deg - Service+Guy	58784.08	-214.53	114.36	0.00	0.00	68.71
Dead+Wind 270 deg - Service+Guy	58484.27	-238.65	15.26	0.00	0.00	53.45
Dead+Wind 300 deg - Service+Guy	58027.91	-224.13	-82.17	0.00	0.00	19.93
Dead+Wind 330 deg - Service+Guy	57562.52	-154.84	-145.64	0.00	0.00	-4.60

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-12840.92	0.00	0.56	12841.14	-0.39	0.006%
2	25.04	-15212.45	-20031.13	-26.16	15212.74	20049.71	0.074%
3	9953.67	-15076.27	-17124.35	-9945.95	15076.28	17134.15	0.050%
4	17468.85	-14965.52	-10073.21	-17470.26	14965.51	10069.19	0.017%
5	19746.72	-14996.18	-35.64	-19748.89	14996.18	28.38	0.031%
6	17327.91	-15075.06	9937.15	-17337.20	15075.20	-9944.15	0.046%
7	9807.35	-15083.79	16962.70	-9814.84	15083.85	-16964.73	0.031%
8	-47.36	-15115.31	20025.85	41.84	15115.31	-20026.06	0.022%
9	-9935.92	-15251.48	17134.60	9943.62	15251.56	-17136.47	0.032%
10	-17484.57	-15362.24	10056.52	17489.07	15362.33	-10060.16	0.023%
11	-19770.07	-15331.57	28.50	19772.79	15331.61	-32.90	0.021%
12	-17347.88	-15252.70	-9948.68	17346.32	15252.76	9956.26	0.031%
13	-9825.21	-15243.97	-16979.35	9820.62	15244.08	16990.54	0.049%
14	0.00	-76079.57	0.00	-0.29	76079.56	-2.73	0.004%
15	143.97	-76140.50	-9318.23	-131.88	76140.45	9315.32	0.016%
16	4830.65	-75966.96	-8203.04	-4823.53	75966.87	8194.52	0.015%
17	8225.54	-75826.28	-4812.26	-8225.95	75826.25	4806.03	0.008%
18	9364.58	-75869.42	-125.92	-9367.76	75869.45	121.04	0.008%
19	7992.92	-75973.24	4506.29	-8000.61	75973.32	-4513.08	0.013%
20	4526.80	-75982.03	7932.90	-4536.37	75982.12	-7938.17	0.014%
21	-148.66	-76018.64	9317.12	139.56	76018.68	-9319.06	0.012%
22	-4826.92	-76192.18	8205.19	4820.12	76192.16	-8203.69	0.009%
23	-8228.84	-76332.86	4808.75	8225.32	76332.82	-4803.71	0.008%
24	-9369.49	-76289.72	124.42	9370.05	76289.72	-118.81	0.007%
25	-7997.12	-76185.90	-4508.72	8001.27	76185.94	4515.57	0.010%
26	-4530.55	-76177.11	-7936.40	4542.14	76177.17	7942.28	0.017%
27	5.63	-12851.85	-4507.00	-4.11	12851.85	4506.68	0.011%
28	2239.58	-12821.21	-3852.98	-2237.94	12821.20	3852.04	0.014%
29	3930.49	-12796.29	-2266.47	-3928.96	12796.28	2265.18	0.015%
30	4443.01	-12803.19	-8.02	-4442.06	12803.19	7.03	0.010%
31	3898.78	-12820.93	2235.86	-3896.81	12820.94	-2237.76	0.020%
32	2206.65	-12822.90	3816.61	-2205.96	12822.91	-3819.16	0.019%
33	-10.66	-12829.99	4505.82	10.08	12829.99	-4506.59	0.007%
34	-2235.58	-12860.63	3855.28	2234.57	12860.63	-3855.25	0.007%
35	-3934.03	-12885.55	2262.72	3933.17	12885.54	-2261.72	0.010%
36	-4448.27	-12878.65	6.41	4448.25	12878.65	-5.01	0.010%
37	-3903.27	-12860.90	-2238.45	3904.19	12860.91	2239.67	0.011%
38	-2210.67	-12858.94	-3820.35	2212.08	12858.95	3820.81	0.011%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	12	0.00000001	0.00007258
2	Yes	22	0.00008306	0.00009576
3	Yes	22	0.00008398	0.00009529
4	Yes	22	0.00000001	0.00004523
5	Yes	23	0.00000001	0.00006019
6	Yes	23	0.00006258	0.00007138
7	Yes	21	0.00000001	0.00007084
8	Yes	16	0.00000001	0.00006596
9	Yes	15	0.00000001	0.00009134
10	Yes	16	0.00000001	0.00006037
11	Yes	15	0.00000001	0.00006684
12	Yes	14	0.00000001	0.00008767
13	Yes	20	0.00000001	0.00009078
14	Yes	16	0.00000001	0.00006351
15	Yes	16	0.00000001	0.00007706
16	Yes	17	0.00000001	0.00007215
17	Yes	19	0.00000001	0.00004180
18	Yes	20	0.00000001	0.00003577
19	Yes	19	0.00000001	0.00005738
20	Yes	18	0.00000001	0.00006120
21	Yes	17	0.00000001	0.00005892
22	Yes	16	0.00000001	0.00005885
23	Yes	15	0.00000001	0.00006999
24	Yes	15	0.00000001	0.00005984
25	Yes	15	0.00000001	0.00006846
26	Yes	15	0.00000001	0.00009819
27	Yes	11	0.00000001	0.00004744
28	Yes	11	0.00000001	0.00007318
29	Yes	11	0.00000001	0.00008422
30	Yes	11	0.00000001	0.00005655
31	Yes	10	0.00000001	0.00007941
32	Yes	10	0.00000001	0.00008754
33	Yes	11	0.00000001	0.00003775
34	Yes	11	0.00000001	0.00004008
35	Yes	11	0.00000001	0.00004250
36	Yes	11	0.00000001	0.00004140
37	Yes	11	0.00000001	0.00004098
38	Yes	11	0.00000001	0.00004164

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	3.131	29	0.0795	0.0659
T2	140 - 120	2.972	29	0.0637	0.0457
T3	120 - 100	2.493	29	0.1858	0.0379
T4	100 - 80	1.645	29	0.1614	0.0097
T5	80 - 60	1.137	29	0.1191	0.0346
T6	60 - 40	0.643	29	0.1046	0.0294
T7	40 - 20	0.362	29	0.0353	0.0266
T8	20 - 3.33	0.236	31	0.0418	0.0189

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T9	3.33 - 0	0.046	37	0.0640	0.0035

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	10'-4 Bay Dipole	29	3.131	0.0795	0.0659	69443
144.00	(2) Panel Antenna 6'x8"	29	3.037	0.0634	0.0525	57954
143.00	3' Side Mount Standoff	29	3.021	0.0622	0.0504	50109
138.26	Guy	29	2.943	0.0686	0.0440	31333
134.00	Omni 2"x6'	29	2.867	0.0907	0.0417	17423
129.00	3' Side Mount Standoff	29	2.760	0.1272	0.0409	11034
126.00	SBNH-1D6565C w/ Mount Pipe	29	2.684	0.1501	0.0405	9044
122.00	4' Yagi antenna	29	2.563	0.1763	0.0391	7509
116.00	1' Side Mount Standoff	29	2.334	0.1957	0.0335	11274
96.75	Guy	29	1.537	0.1511	0.0109	8173
92.00	Omni 3"x10'	29	1.408	0.1382	0.0172	13654
88.50	Omni 2 1/2"x15'	29	1.325	0.1305	0.0229	27499
83.00	Pirod 4' Side Mount Standoff (1)	29	1.205	0.1218	0.0314	30759
53.00	2' Side Mount Standoff	29	0.514	0.0811	0.0291	16963
52.00	GPS	29	0.499	0.0771	0.0289	17480
51.00	2' Side Mount Standoff	29	0.484	0.0730	0.0288	18031
50.00	Guy	29	0.470	0.0690	0.0286	18617
34.00	VHPL2-180	30	0.320	0.0290	0.0251	23495

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	19.700	5	0.9776	0.4831
T2	140 - 120	17.700	5	0.9082	0.3902
T3	120 - 100	13.367	5	1.2617	0.2174
T4	100 - 80	8.002	5	1.0645	0.0843
T5	80 - 60	4.669	5	0.6636	0.1834
T6	60 - 40	2.323	2	0.4437	0.1440
T7	40 - 20	1.402	2	0.1358	0.1051
T8	20 - 3.33	1.082	12	0.1655	0.0780
T9	3.33 - 0	0.217	12	0.3013	0.0146

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	10'-4 Bay Dipole	5	19.700	0.9776	0.4831	9166
144.00	(2) Panel Antenna 6'x8"	5	18.497	0.9141	0.4267	7660
143.00	3' Side Mount Standoff	5	18.298	0.9087	0.4174	6674

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
138.26	Guy	5	17.356	0.9207	0.3748	6709
134.00	Omni 2"x6'	5	16.504	0.9848	0.3381	7173
129.00	3' Side Mount Standoff	5	15.467	1.0937	0.2958	3485
126.00	SBNH-1D6565C w/ Mount Pipe	5	14.808	1.1612	0.2702	2664
122.00	4' Yagi antenna	5	13.869	1.2362	0.2354	2097
116.00	1' Side Mount Standoff	5	12.298	1.2807	0.1951	3304
96.75	Guy	5	7.305	0.9937	0.0918	1572
92.00	Omni 3"x10'	5	6.428	0.8892	0.1108	2145
88.50	Omni 2 1/2"x15'	5	5.866	0.8150	0.1356	2955
83.00	Pirod 4' Side Mount Standoff (1)	5	5.075	0.7107	0.1707	7131
53.00	2' Side Mount Standoff	2	1.874	0.3241	0.1202	3551
52.00	GPS	2	1.823	0.3054	0.1172	3665
51.00	2' Side Mount Standoff	2	1.775	0.2868	0.1144	3786
50.00	Guy	2	1.729	0.2683	0.1124	3916
34.00	VHPL2-180	13	1.308	0.1121	0.1009	9348

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T2	138.26 (A) (679)	5/8 EHS	4240.00	42399.99	11796.00	25440.00	1.000	2.157 ✔
	138.26 (A) (680)	5/8 EHS	4240.00	42399.99	11372.40	25440.00	1.000	2.237 ✔
	138.26 (B) (673)	5/8 EHS	4240.00	42399.99	10053.80	25440.00	1.000	2.530 ✔
	138.26 (B) (674)	5/8 EHS	4240.00	42399.99	10077.40	25440.00	1.000	2.524 ✔
	138.26 (C) (667)	5/8 EHS	4240.00	42399.99	16241.60	25440.00	1.000	1.566 ✔
	138.26 (C) (668)	5/8 EHS	4240.00	42399.99	16346.70	25440.00	1.000	1.556 ✔
T4	96.75 (A) (661)	9/16 EHS	3500.00	35000.04	8041.37	21000.00	1.000	2.611 ✔
	96.75 (A) (662)	9/16 EHS	3500.00	35000.04	7944.54	21000.00	1.000	2.643 ✔
	96.75 (B) (655)	9/16 EHS	3500.00	35000.04	6868.91	21000.00	1.000	3.057 ✔
	96.75 (B) (656)	9/16 EHS	3500.00	35000.04	7063.43	21000.00	1.000	2.973 ✔
	96.75 (C) (649)	9/16 EHS	3500.00	35000.04	12705.50	21000.00	1.000	1.653 ✔
	96.75 (C) (650)	9/16 EHS	3500.00	35000.04	12519.40	21000.00	1.000	1.677 ✔
T6	50.00 (A) (648)	1/2 EHS	2690.00	26900.04	5893.37	16140.00	1.000	2.739 ✔
	50.00 (B) (647)	1/2 EHS	2690.00	26900.04	5528.28	16140.00	1.000	2.920 ✔
	50.00 (C) (646)	1/2 EHS	2690.00	26900.04	7366.74	16140.00	1.000	2.191 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	1 3/4	10.00	1.64	45.0 K=1.00	2.4053	-17660.60	93371.00	0.189 [1] ✔
T2	140 - 120	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	-42197.00	93136.40	0.453 [1] ✔
T3	120 - 100	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	-56974.80	93136.40	0.612 [1] ✔
T4	100 - 80	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	-66001.60	93136.40	0.709 [1] ✔
T5	80 - 60	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	-43072.90	93136.40	0.462 [1] ✔
T6	60 - 40	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	-50601.20	93136.40	0.543 [1] ✔
T7	40 - 20	1 3/4	20.00	1.65	45.3 K=1.00	2.4053	-48602.70	93136.40	0.522 [1] ✔
T8	20 - 3.33	1 3/4	16.67	1.65	45.3 K=1.00	2.4053	-48710.20	93177.80	0.523 [1] ✔
T9	3.33 - 0	1 3/4	3.33	1.08	29.7 K=1.00	2.4053	-46492.20	101484.00	0.458 [1] ✔

[1] $P_u / \phi P_n$ controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	5/8	2.22	2.01	84.7 K=0.55	0.3068	-2522.97	8168.48	0.309 [1] ✔
T2	140 - 120	5/8	2.23	2.01	85.1 K=0.55	0.3068	-6519.62	8128.87	0.802 [1] ✔
T3	120 - 100	5/8	2.23	2.01	85.1 K=0.55	0.3068	-2848.11	8128.87	0.350 [1] ✔
T4	100 - 80	5/8	2.23	2.01	85.1 K=0.55	0.3068	-5034.84	8128.87	0.619 [1] ✔
T5	80 - 60	5/8	2.23	2.01	85.1 K=0.55	0.3068	-897.44	8128.87	0.110 [1] ✔
T6	60 - 40	5/8	2.23	2.01	85.1 K=0.55	0.3068	-1397.98	8128.87	0.172 [1] ✔
T7	40 - 20	5/8	2.23	2.01	85.1 K=0.55	0.3068	-1250.32	8128.87	0.154 [1] ✔
T8	20 - 3.33	5/8	2.23	2.01	85.0 K=0.55	0.3068	-1025.82	8135.85	0.126 [1] ✔
T9	3.33 - 0	5/8	1.85	1.67	70.5 K=0.55	0.3068	-952.15	9595.90	0.099 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation (ft)	Size	L (ft)	L_u (ft)	Kl/r	A (in^2)	P_u (lb)	ϕP_n (lb)	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	3/4	1.50	1.35	89.6 K=1.03	0.4418	-49.45	11059.80	0.004 [1] ✔
T2	140 - 120	3/4	1.50	1.35	89.6 K=1.03	0.4418	-2214.87	11059.80	0.200 [1] ✔
T3	120 - 100	3/4	1.50	1.35	89.6 K=1.03	0.4418	-127.26	11059.80	0.012 [1] ✔
T4	100 - 80	3/4	1.50	1.35	89.6 K=1.03	0.4418	-621.63	11059.80	0.056 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation (ft)	Size	L (ft)	L_u (ft)	Kl/r	A (in^2)	P_u (lb)	ϕP_n (lb)	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	3/4	1.50	1.35	89.6 K=1.03	0.4418	-2315.44	11059.80	0.209 [1] ✔
T3	120 - 100	3/4	1.50	1.35	89.6 K=1.03	0.4418	-1153.66	11059.80	0.104 [1] ✔

[1] P_u / ϕP_n controls

Mid Girt Design Data (Compression)

Section No.	Elevation (ft)	Size	L (ft)	L_u (ft)	Kl/r	A (in^2)	P_u (lb)	ϕP_n (lb)	Ratio $\frac{P_u}{\phi P_n}$
T2	140 - 120	3/4	1.50	1.35	89.6 K=1.03	0.4418	-316.14	11059.80	0.029 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation (ft)	Size	L (ft)	L_u (ft)	Kl/r	A (in^2)	P_u (lb)	ϕP_n (lb)	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	140 - 120 (671)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-16235.60	28754.60	0.565 [1] ✔
T2	140 - 120 (672)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-11998.10	28754.60	0.417 [1] ✔
T2	140 - 120 (677)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-10370.40	28754.60	0.361 [1] ✔
T2	140 - 120 (678)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-15890.40	28754.60	0.553 [1] ✔
T2	140 - 120 (683)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-10159.10	28754.60	0.353 [1] ✔
T2	140 - 120 (684)	P2x.154	3.78	3.70	56.4 K=1.00	1.0745	-11543.90	28754.60	0.401 [1] ✔
T4	100 - 80 (653)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-14266.00	28598.50	0.499 [1] ✔
T4	100 - 80 (654)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-9781.09	28598.50	0.342 [1] ✔
T4	100 - 80 (659)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-8568.03	28598.50	0.300 [1] ✔
T4	100 - 80 (660)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-14462.40	28598.50	0.506 [1] ✔
T4	100 - 80 (665)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-8158.52	28598.50	0.285 [1] ✔
T4	100 - 80 (666)	P2x.154	3.85	3.76	57.4 K=1.00	1.0745	-9333.10	28598.50	0.326 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	1 3/4	10.00	0.08	2.3	2.4053	16170.00	108238.00	0.149 [1] ✔
T2	140 - 120	1 3/4	20.00	1.65	45.3	2.4053	16168.90	108238.00	0.149 [1] ✔
T3	120 - 100	1 3/4	20.00	0.08	2.3	2.4053	23947.20	108238.00	0.221 [1] ✔
T4	100 - 80	1 3/4	20.00	1.65	45.3	2.4053	27850.40	108238.00	0.257 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	5/8	2.22	2.01	154.0	0.3068	2419.62	13805.80	0.175 [1] ✔
T2	140 - 120	5/8	2.23	2.01	154.8	0.3068	6032.41	13805.80	0.437 [1] ✔
T3	120 - 100	5/8	2.23	2.01	154.8	0.3068	2448.50	13805.80	0.177 [1] ✔
T4	100 - 80	5/8	2.23	2.01	154.8	0.3068	5424.96	13805.80	0.393 [1] ✔
T5	80 - 60	5/8	2.23	2.01	154.8	0.3068	594.57	13805.80	0.043 [1] ✔
T6	60 - 40	5/8	2.23	2.01	154.8	0.3068	1173.72	13805.80	0.085 [1] ✔
T7	40 - 20	5/8	2.23	2.01	154.8	0.3068	957.89	13805.80	0.069 [1] ✔
T8	20 - 3.33	5/8	2.23	2.01	154.6	0.3068	826.65	13805.80	0.060 [1] ✔
T9	3.33 - 0	5/8	1.85	1.67	128.2	0.3068	857.06	13805.80	0.062 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	3/4	1.50	1.35	86.7	0.4418	63.85	19880.40	0.003 [1] ✔
T2	140 - 120	3/4	1.50	1.35	86.7	0.4418	5440.80	19880.40	0.274 [1] ✔
T3	120 - 100	3/4	1.50	1.35	86.7	0.4418	428.31	19880.40	0.022 [1] ✔
T4	100 - 80	3/4	1.50	1.35	86.7	0.4418	55.79	19880.40	0.003 [1] ✔
T5	80 - 60	3/4	1.50	1.35	86.7	0.4418	390.85	19880.40	0.020 [1] ✔
T6	60 - 40	3/4	1.50	1.35	86.7	0.4418	422.31	19880.40	0.021 [1] ✔
T7	40 - 20	3/4	1.50	1.35	86.7	0.4418	513.52	19880.40	0.026 [1] ✔
T8	20 - 3.33	3/4	1.50	1.35	86.7	0.4418	506.24	19880.40	0.025 [1] ✔
T9	3.33 - 0	3/4	1.50	1.35	86.7	0.4418	473.07	19880.40	0.024 [1] ✔

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	150 - 140	3/4	1.50	1.35	86.7	0.4418	2886.27	19880.40	0.145 [1] ✔
T2	140 - 120	3/4	1.50	1.35	86.7	0.4418	223.35	19880.40	0.011 [1] ✔
T3	120 - 100	3/4	1.50	1.35	86.7	0.4418	585.87	19880.40	0.029 [1] ✔
T4	100 - 80	3/4	1.50	1.35	86.7	0.4418	388.96	19880.40	0.020 [1] ✔
T5	80 - 60	3/4	1.50	1.35	86.7	0.4418	472.26	19880.40	0.024 [1] ✔
T6	60 - 40	3/4	1.50	1.35	86.7	0.4418	477.16	19880.40	0.024 [1] ✔
T7	40 - 20	3/4	1.50	1.35	86.7	0.4418	528.47	19880.40	0.027 [1] ✔
T8	20 - 3.33	3/4	1.50	1.35	86.7	0.4418	623.21	19880.40	0.031 [1] ✔

[1] $P_u / \phi P_n$ controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	140 - 120	3/4	1.50	1.35	86.7	0.4418	664.89	19880.40	0.033 [1] ✔
T3	120 - 100	3/4	1.50	1.35	86.7	0.4418	507.40	19880.40	0.026 [1] ✔
T4	100 - 80	3/4	1.50	1.35	86.7	0.4418	937.80	19880.40	0.047 [1] ✔
T5	80 - 60	3/4	1.50	1.35	86.7	0.4418	807.86	19880.40	0.041 [1] ✔
T6	60 - 40	3/4	1.50	1.35	86.7	0.4418	2788.47	19880.40	0.140 [1] ✔
T7	40 - 20	3/4	1.50	1.35	86.7	0.4418	964.20	19880.40	0.048 [1] ✔
T8	20 - 3.33	3/4	1.50	1.35	86.7	0.4418	1048.50	19880.40	0.053 [1] ✔

[1] $P_u / \phi P_n$ controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	140 - 120 (669)	P2x.154	3.78	3.70	56.4	1.0745	16091.80	33847.70	0.475 [1] ✔
T2	140 - 120 (670)	P2x.154	3.78	3.70	56.4	1.0745	11990.10	33847.70	0.354 [1] ✔
T2	140 - 120 (675)	P2x.154	3.78	3.70	56.4	1.0745	15336.50	33847.70	0.453 [1] ✔
T2	140 - 120 (676)	P2x.154	3.78	3.70	56.4	1.0745	11706.90	33847.70	0.346 [1] ✔
T2	140 - 120 (681)	P2x.154	3.78	3.70	56.4	1.0745	11445.70	33847.70	0.338 [1] ✔
T2	140 - 120 (682)	P2x.154	3.78	3.70	56.4	1.0745	11489.30	33847.70	0.339 [1] ✔
T4	100 - 80 (651)	P2x.154	3.72	3.65	55.6	1.0745	11423.50	33847.70	0.337 [1] ✔
T4	100 - 80 (652)	P2x.154	3.72	3.65	55.6	1.0745	9442.65	33847.70	0.279 [1] ✔
T4	100 - 80 (657)	P2x.154	3.72	3.65	55.6	1.0745	8931.48	33847.70	0.264 [1] ✔
T4	100 - 80 (658)	P2x.154	3.72	3.65	55.6	1.0745	10873.20	33847.70	0.321 [1] ✔
T4	100 - 80 (663)	P2x.154	3.72	3.65	55.6	1.0745	7577.69	33847.70	0.224 [1] ✔
T4	100 - 80 (664)	P2x.154	3.72	3.65	55.6	1.0745	7589.59	33847.70	0.224 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	140 - 120 (683)	P2x.154	3.78	3.70	56.4	1.0745	698.60	33847.70	0.021 [1] ✔
T2	140 - 120 (684)	P2x.154	3.78	3.70	56.4	1.0745	779.76	33847.70	0.023 [1] ✔
T4	100 - 80 (653)	P2x.154	3.85	3.76	57.4	1.0745	2101.67	33847.70	0.062 [1] ✔
T4	100 - 80 (654)	P2x.154	3.85	3.76	57.4	1.0745	2729.66	33847.70	0.081 [1] ✔
T4	100 - 80 (659)	P2x.154	3.85	3.76	57.4	1.0745	2804.33	33847.70	0.083 [1] ✔
T4	100 - 80 (660)	P2x.154	3.85	3.76	57.4	1.0745	2130.71	33847.70	0.063 [1] ✔
T4	100 - 80 (665)	P2x.154	3.85	3.76	57.4	1.0745	3076.13	33847.70	0.091 [1] ✔
T4	100 - 80 (666)	P2x.154	3.85	3.76	57.4	1.0745	2958.56	33847.70	0.087 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	150 - 140	Leg	1 3/4	2	-17660.60	93371.00	18.9	Pass
T2	140 - 120	Leg	1 3/4	46	-42197.00	93136.40	45.3	Pass
T3	120 - 100	Leg	1 3/4	131	-56974.80	93136.40	61.2	Pass
T4	100 - 80	Leg	1 3/4	215	-66001.60	93136.40	70.9	Pass
T5	80 - 60	Leg	1 3/4	299	-43072.90	93136.40	46.2	Pass
T6	60 - 40	Leg	1 3/4	383	-50601.20	93136.40	54.3	Pass
T7	40 - 20	Leg	1 3/4	467	-48602.70	93136.40	52.2	Pass
T8	20 - 3.33	Leg	1 3/4	552	-48710.20	93177.80	52.3	Pass
T9	3.33 - 0	Leg	1 3/4	622	-46492.20	101484.00	45.8	Pass
T1	150 - 140	Diagonal	5/8	10	-2522.97	8168.48	30.9	Pass
T2	140 - 120	Diagonal	5/8	118	-6519.62	8128.87	80.2	Pass
T3	120 - 100	Diagonal	5/8	143	-2848.11	8128.87	35.0	Pass
T4	100 - 80	Diagonal	5/8	280	-5034.84	8128.87	61.9	Pass
T5	80 - 60	Diagonal	5/8	311	-897.44	8128.87	11.0	Pass
T6	60 - 40	Diagonal	5/8	427	-1397.98	8128.87	17.2	Pass
T7	40 - 20	Diagonal	5/8	544	-1250.32	8128.87	15.4	Pass
T8	20 - 3.33	Diagonal	5/8	567	-1025.82	8135.85	12.6	Pass
T9	3.33 - 0	Diagonal	5/8	645	-952.15	9595.90	9.9	Pass
T1	150 - 140	Top Girt	3/4	5	-49.45	11059.80	0.4	Pass
T2	140 - 120	Top Girt	3/4	50	5440.80	19880.40	27.4	Pass
T3	120 - 100	Top Girt	3/4	135	428.31	19880.40	2.2	Pass
T4	100 - 80	Top Girt	3/4	218	-621.63	11059.80	5.6	Pass
T5	80 - 60	Top Girt	3/4	303	390.85	19880.40	2.0	Pass
T6	60 - 40	Top Girt	3/4	386	422.31	19880.40	2.1	Pass
T7	40 - 20	Top Girt	3/4	470	513.52	19880.40	2.6	Pass
T8	20 - 3.33	Top Girt	3/4	554	506.24	19880.40	2.5	Pass
T9	3.33 - 0	Top Girt	3/4	627	473.07	19880.40	2.4	Pass
T1	150 - 140	Bottom Girt	3/4	8	-2315.44	11059.80	20.9	Pass
T2	140 - 120	Bottom Girt	3/4	52	223.35	19880.40	1.1	Pass
T3	120 - 100	Bottom Girt	3/4	137	-1153.66	11059.80	10.4	Pass
T4	100 - 80	Bottom Girt	3/4	221	388.96	19880.40	2.0	Pass
T5	80 - 60	Bottom Girt	3/4	305	472.26	19880.40	2.4	Pass
T6	60 - 40	Bottom Girt	3/4	389	477.16	19880.40	2.4	Pass
T7	40 - 20	Bottom Girt	3/4	473	528.47	19880.40	2.7	Pass
T8	20 - 3.33	Bottom Girt	3/4	556	623.21	19880.40	3.1	Pass
T2	140 - 120	Mid Girt	3/4	57	664.89	19880.40	3.3	Pass
T3	120 - 100	Mid Girt	3/4	140	507.40	19880.40	2.6	Pass
T4	100 - 80	Mid Girt	3/4	224	937.80	19880.40	4.7	Pass
T5	80 - 60	Mid Girt	3/4	308	807.86	19880.40	4.1	Pass
T6	60 - 40	Mid Girt	3/4	393	2788.47	19880.40	14.0	Pass
T7	40 - 20	Mid Girt	3/4	476	964.20	19880.40	4.8	Pass
T8	20 - 3.33	Mid Girt	3/4	560	1048.50	19880.40	5.3	Pass
T2	140 - 120	Guy A@138.264	5/8	679	11796.00	25440.00	46.4	Pass
T4	100 - 80	Guy A@96.75	9/16	661	8041.37	21000.00	38.3	Pass
T6	60 - 40	Guy A@50	1/2	648	5893.37	16140.00	36.5	Pass
T2	140 - 120	Guy B@138.264	5/8	674	10077.40	25440.00	39.6	Pass
T4	100 - 80	Guy B@96.75	9/16	656	7063.43	21000.00	33.6	Pass
T6	60 - 40	Guy B@50	1/2	647	5528.28	16140.00	34.3	Pass
T2	140 - 120	Guy C@138.264	5/8	668	16346.70	25440.00	64.3	Pass
T4	100 - 80	Guy C@96.75	9/16	649	12705.50	21000.00	60.5	Pass
T6	60 - 40	Guy C@50	1/2	646	7366.74	16140.00	45.6	Pass
T2	140 - 120	Torque Arm Top@138.264	P2x.154	669	16091.80	33847.70	47.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T4	100 - 80	Torque Arm Top@96.75	P2x.154	651	11423.50	33847.70	33.7	Pass
T2	140 - 120	Torque Arm Bottom@138.264	P2x.154	671	-16235.60	28754.60	56.5	Pass
T4	100 - 80	Torque Arm Bottom@96.75	P2x.154	660	-14462.40	28598.50	50.6	Pass
							Summary	
						Leg (T4)	70.9	Pass
						Diagonal (T2)	80.2	Pass
						Top Girt (T2)	27.4	Pass
						Bottom Girt (T1)	20.9	Pass
						Mid Girt (T6)	14.0	Pass
						Guy A (T2)	46.4	Pass
						Guy B (T2)	39.6	Pass
						Guy C (T2)	64.3	Pass
						Torque Arm Top (T2)	47.5	Pass
						Torque Arm Bottom (T2)	56.5	Pass
						RATING =	**80.2**	**Pass**

PROJECT INFORMATION

SCOPE OF WORK: LTE 2C

- REMOVE (1) ANTENNA PER SECTOR (TOTAL OF 3 ANTENNAS)
- INSTALL (1) ANTENNA PER SECTOR (TOTAL OF 3 NEW ANTENNAS)
- ADD (1) RRH PER SECTOR (TOTAL OF 3 NEW RRHs)
- ADD (1) A-2 MODULE PER SECTOR (TOTAL OF 3 NEW A-2 MODULES)

SITE ADDRESS:	497 OLD POST ROAD TOLLAND, CT 06084
LATITUDE: LONGITUDE:	41.8607419 41° 51' 38.67"N -72.403319 72° 24' 11.99"W
USID:	25952
TOWER OWNER:	TBD
TYPE OF SITE:	GUYED TOWER/INDOOR EQUIPMENT
TOWER HEIGHT:	150'-0"±
RAD CENTER:	126'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

at&t MOBILITY

FA CODE: 10035268
SITE NUMBER: CT1047
SITE NAME: TOLLAND WEST

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
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ZONING:

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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
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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

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A-1	COMPOUND LAYOUTS	0
A-2	EQUIPMENT LAYOUTS	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
A-5	ANTENNA MOUNTING DETAILS	0
G-1	GROUNDING DETAILS	0

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 N. TAKE EXIT 29 TO MERGE ONTO CT-15 N. CONTINUE ONTO CT-15 N. MERGE ONTO 1-84 E TOWARD BOSTON. TAKE EXIT 67 FOR CONNECTICUT 31. TURN RIGHT ONTO RESERVOIR RD. CONTINUE ONTO MILE HILL RD. TURN LEFT ONTO LOEHR RD. TURN LEFT ONTO MOUNTAIN SPRING RD/REED RD. TURN LEFT ONTO OLD POST RD. SITE WILL BE ON LEFT.

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.

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

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:		

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: CTV1047
SITE NAME: TOLLAND WEST
497 OLD POST ROAD
TOLLAND, CT 06084
TOLLAND COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/23/16	ISSUED AS FINAL	JW	NDB	NDB

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

SEAL: NICHOLAS D. BARILE, PROFESSIONAL ENGINEER, CT LIC. NO. 28643

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15096-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 HUDSON DESIGN GROUP FOR A RECENT UPGRADE DATED 04/18/2012. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CTV1047

SITE NAME: TOLLAND WEST

497 OLD POST ROAD
TOLLAND, CT 06084
TOLLAND COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/23/16	ISSUED AS FINAL	JW	NDB	NDB

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

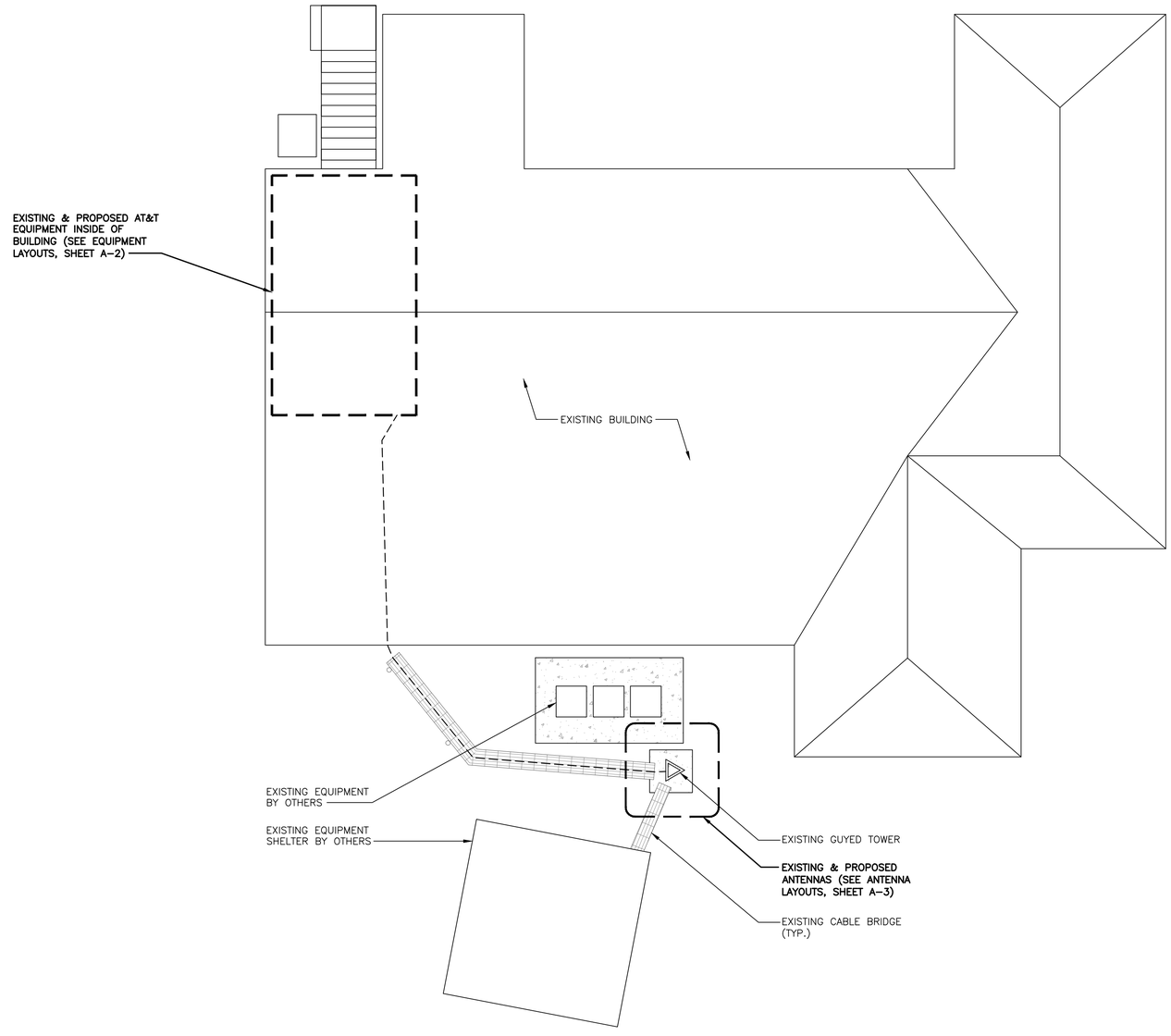
SEAL:

STATE OF CONNECTICUT
DOUGLAS G. BALL
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 23643

AT&T

DRAWING TITLE:
GROUNDING NOTES & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15096-EMP	GN-1	0



COMPOUND LAYOUT

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

GRAPHIC SCALE

4 0 2 4 8 16

(IN FEET)
3/16 Inch = 1 Foot

NORTH

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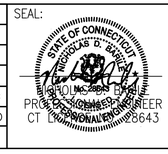
SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:



AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
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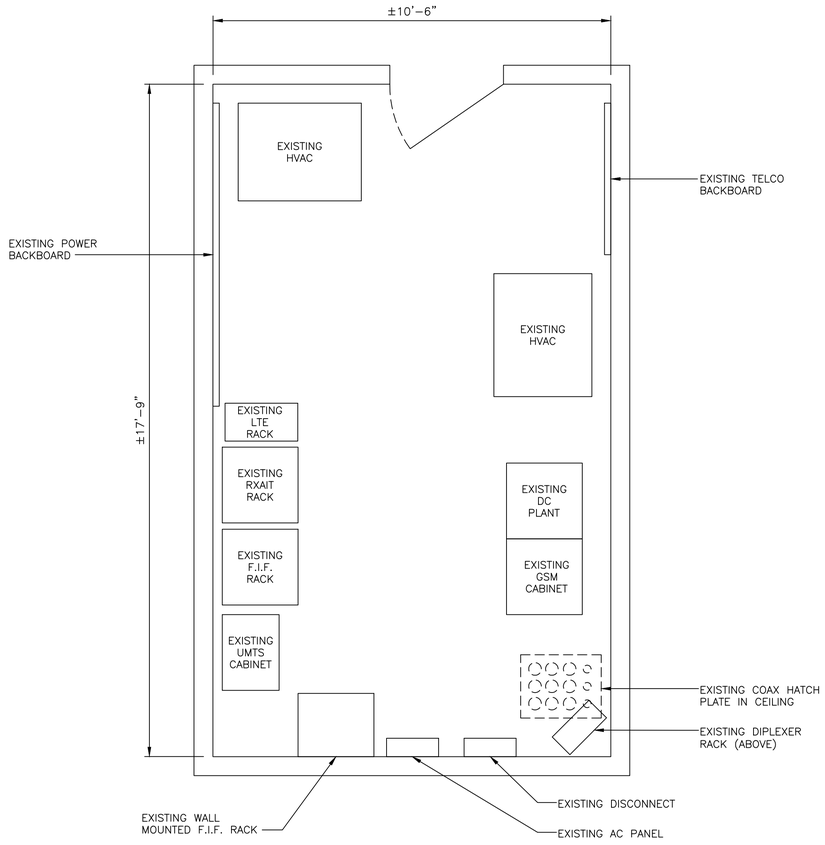


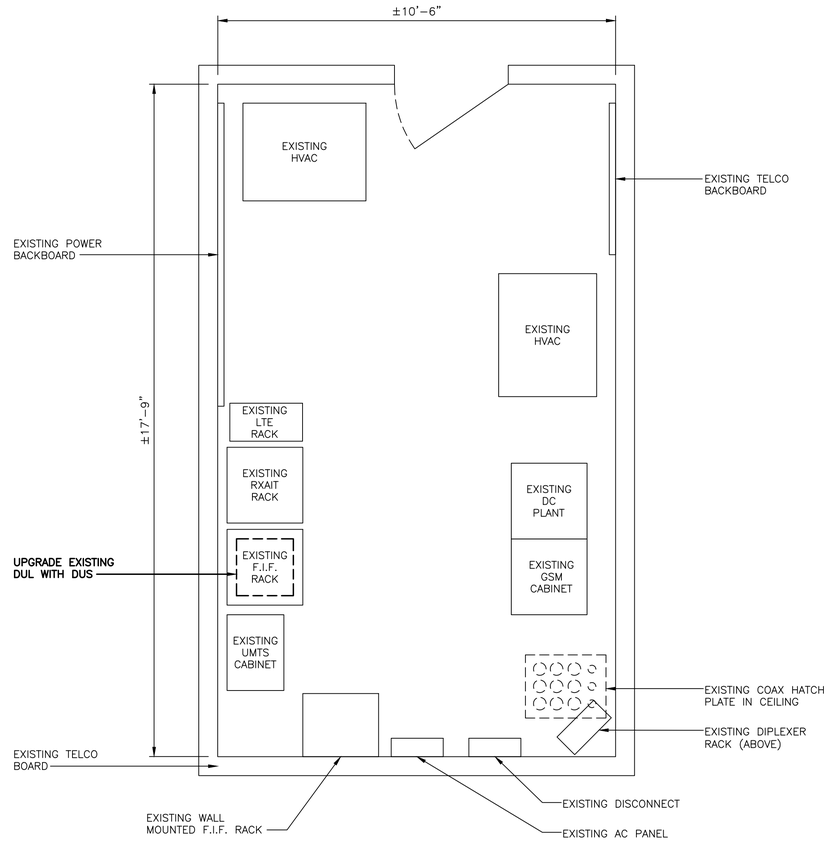
NORTH

EXISTING EQUIPMENT LAYOUT

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

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot



NORTH

PROPOSED EQUIPMENT LAYOUT

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

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

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0	02/23/16	ISSUED AS FINAL	JW	NDB	NDB

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

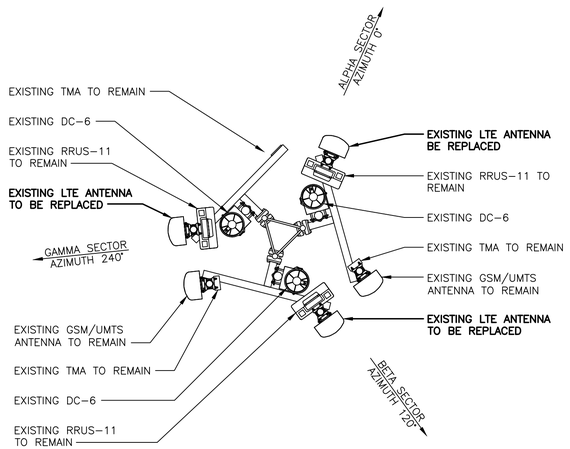
SEAL: STATE OF CONNECTICUT — NICHOLAS D. BARBER — LICENSED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
EQUIPMENT LAYOUTS

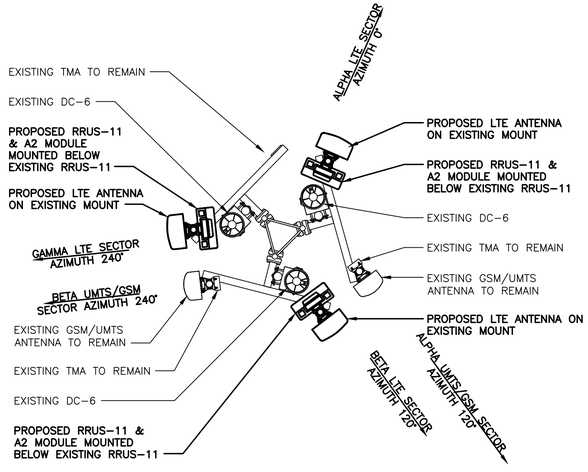
JOB NUMBER	DRAWING NUMBER	REV
15096-EMP	A-2	0



NORTH

EXISTING ANTENNA LAYOUT

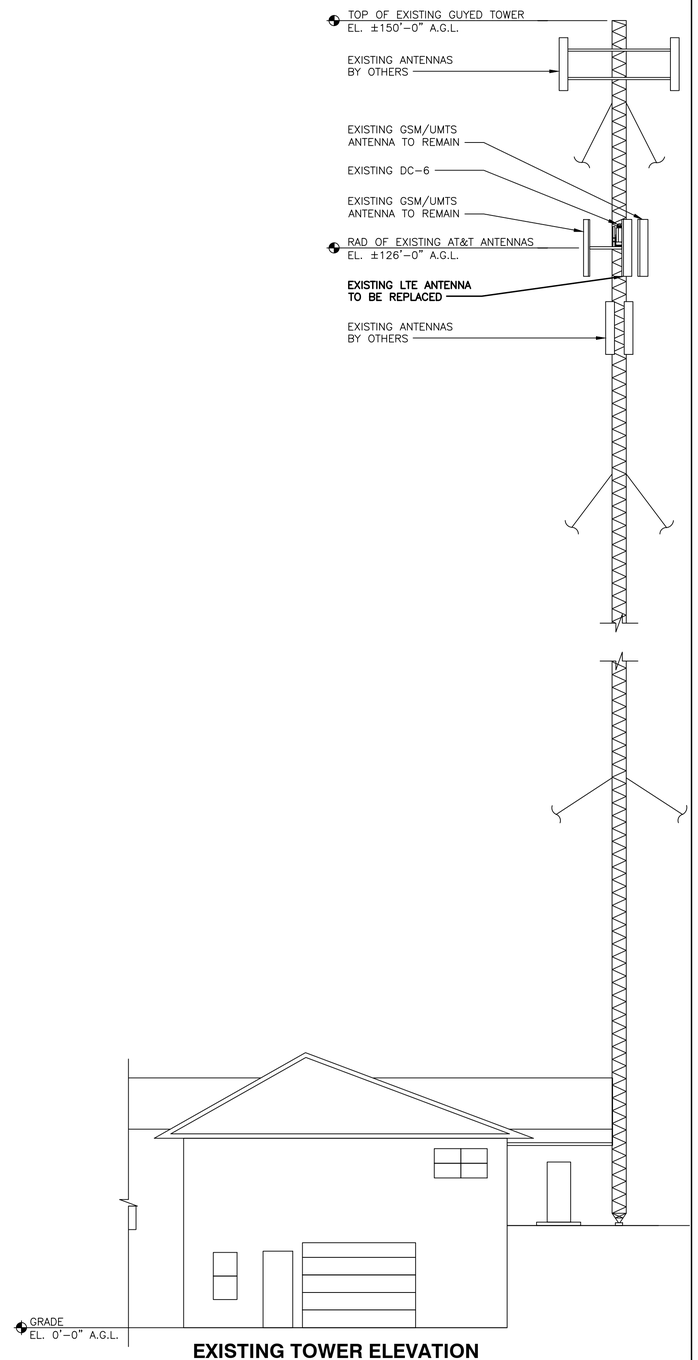
SCALE: N.T.S.



NORTH

PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.

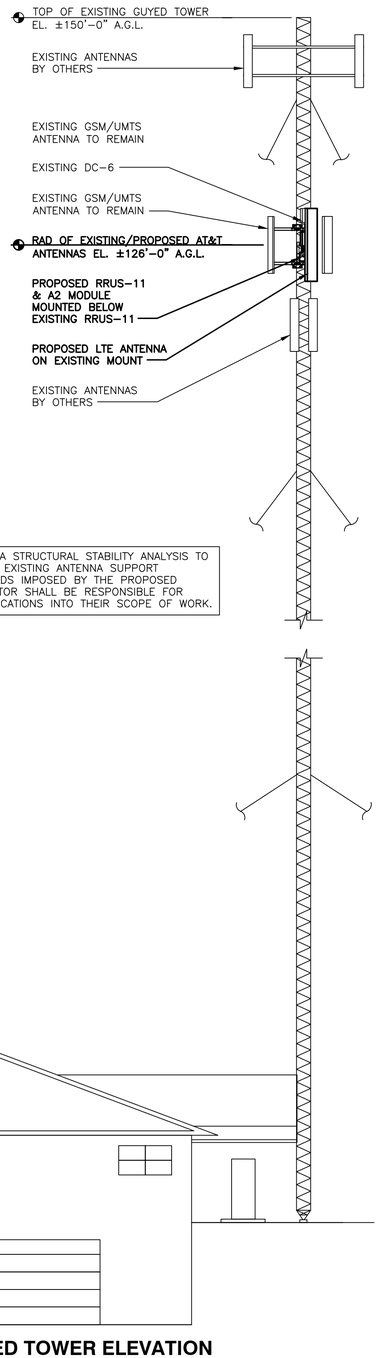


EXISTING TOWER ELEVATION

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

0 4 8 16

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

0 4 8 16

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

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

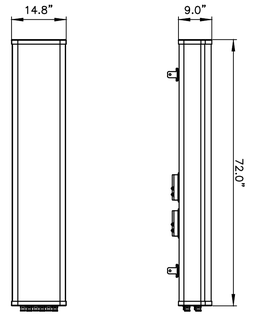
SEAL: STATE OF CONNECTICUT · NICHOLAS D. BOWDEN · 28643 · REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15096-EMP	A-3	0



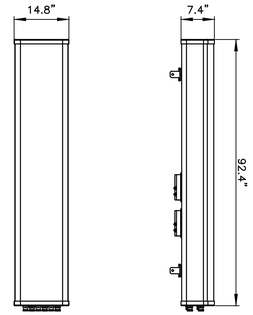
FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	51.0 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.



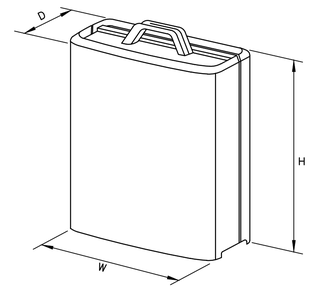
FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H8
WEIGHT	68.0 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
* RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-32	29.9" x 13.3" x 9.5"	77 LBS

* DENOTES EXISTING

RRUS DETAIL

SCALE: N.T.S.

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550 COCHITUATE ROAD
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0	02/23/16	ISSUED AS FINAL	JW	NDB	NDB

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

SEAL:

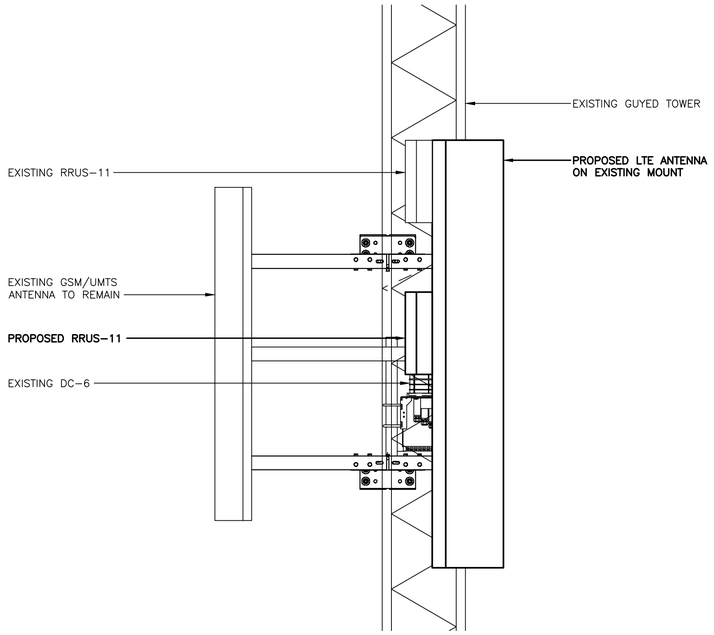
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:

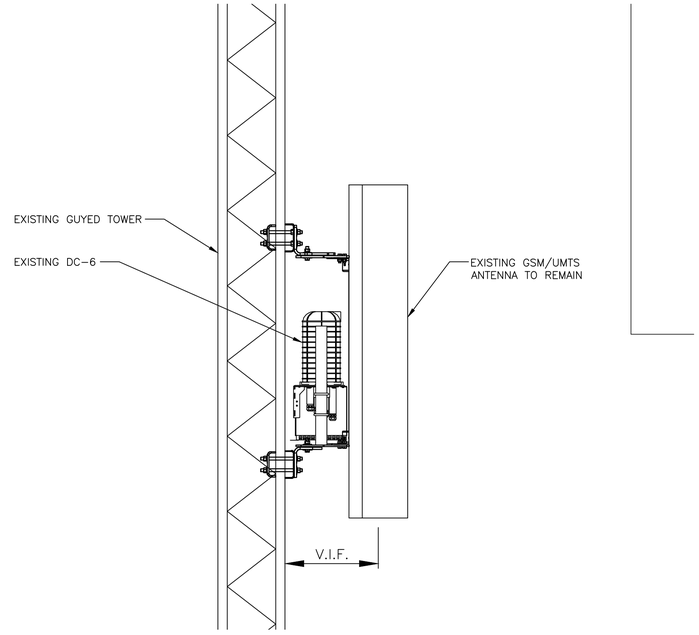
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15096-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	ANDREW	SBNH–1D6565C	96.4"X11.9"x7.1"
	A2	KMW	AM–X–CD–16–65–00T–RET	72"x11.8"x5.9"
BETA	B1	ANDREW	SBNH–1D6565C	96.4"X11.9"x7.1"
	B2	ANDREW	SBNH–1D6565C	96.4"X11.9"x7.1"
GAMMA	G1	ANDREW	SBNH–1D6565C	96.4"X11.9"x7.1"
	G2	ANDREW	SBNH–1D6565C	96.4"X11.9"x7.1"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KATHREIN	800 10121	54.5"x10.3"x5.9"
	A2	**CCI**	**HPA–65R–BUU–H6**	**72"x14.8"x9"**
BETA	B1	KATHREIN	800 10121	54.5"x10.3"x5.9"
	B2	**CCI**	**HPA–65R–BUU–H8**	**92.4"x14.8"x7.4"**
GAMMA	G1	KATHREIN	800 10121	54.5"x10.3"x5.9"
	G2	**CCI**	**HPA–65R–BUU–H8**	**92.4"x14.8"x7.4"**

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"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
BETA	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS–11**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
GAMMA	ERICSSON	RRUS–11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS–11**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**

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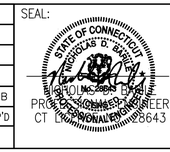
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/23/16	ISSUED AS FINAL	JW	NDB	NDB

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

SEAL:

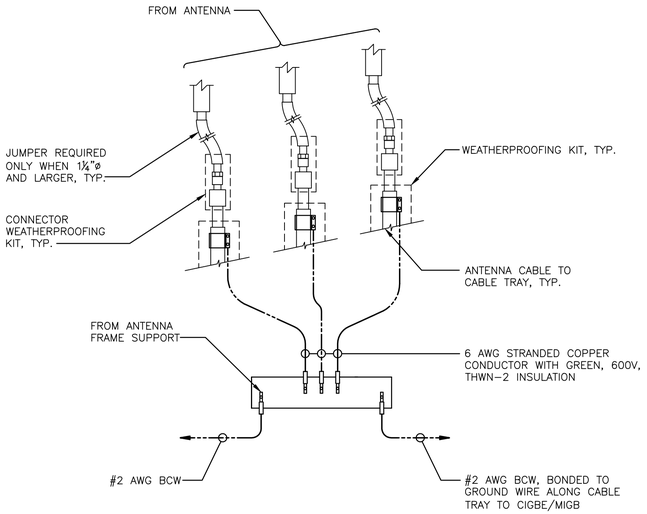


PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

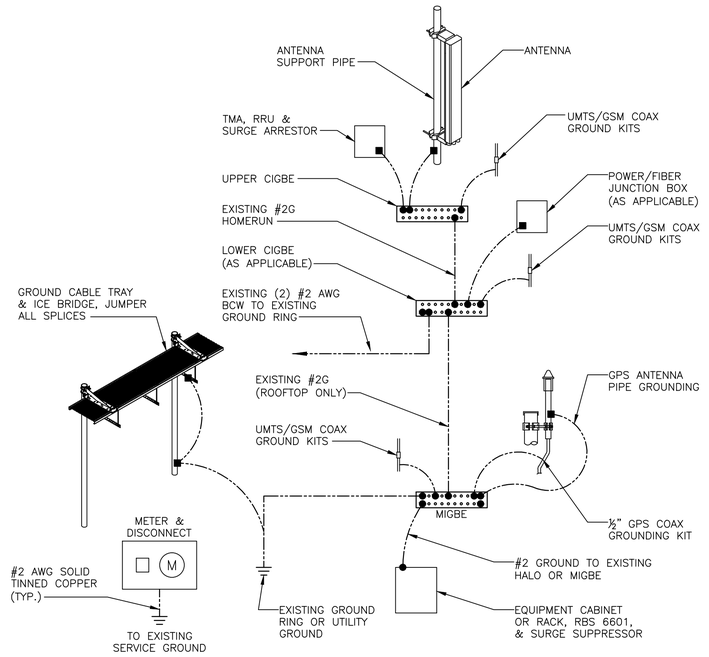
DRAWING TITLE:
ANTENNA MOUNTING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15096–EMP	A–5	0



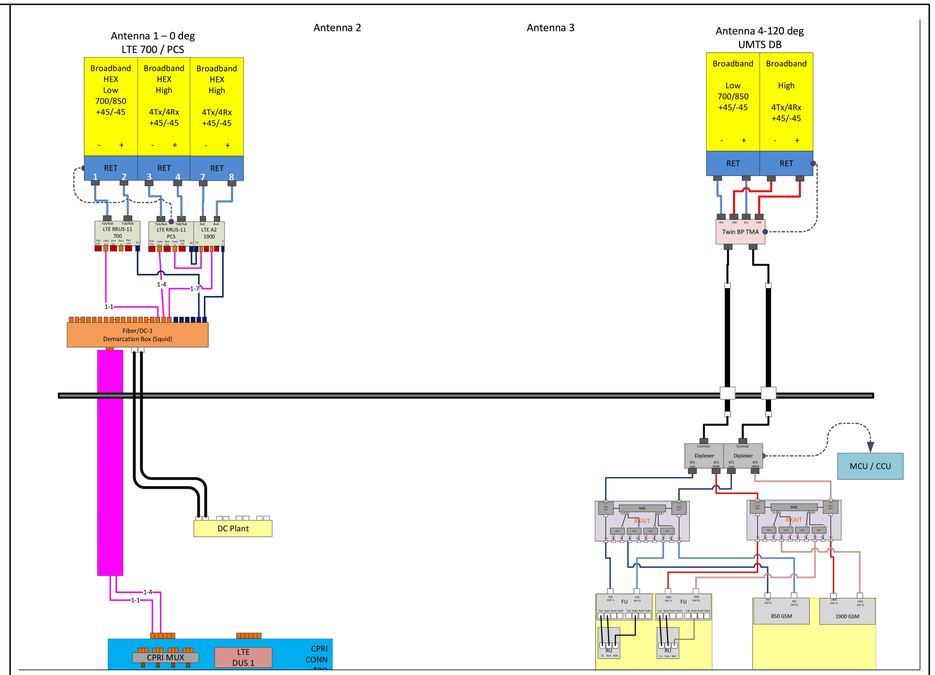
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



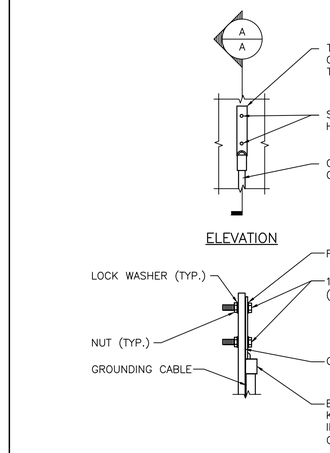
GROUNDING RISER DIAGRAM

SCALE: N.T.S.



TYPICAL PLUMBING DIAGRAM (ALPHA/BETA SECTOR)

SCALE: N.T.S.



ELEVATION

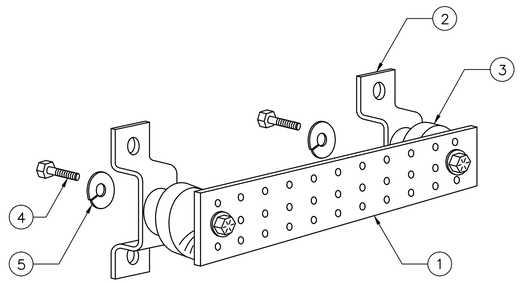
SECTION "A–A"

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

GROUND BAR DETAIL

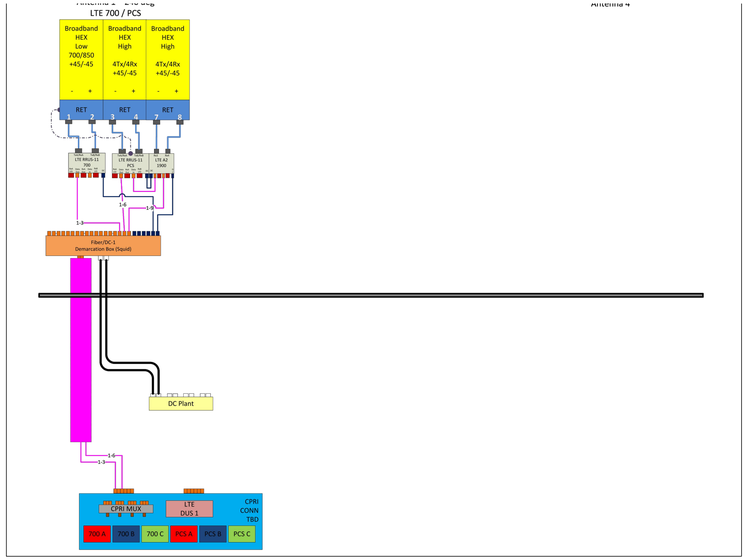
SCALE: N.T.S.

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)



TYPICAL PLUMBING DIAGRAM (GAMMA SECTOR)

SCALE: N.T.S.

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BILLERICA, MA 01821

SITE NUMBER: CTV1047

SITE NAME: TOLLAND WEST

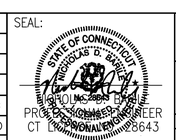
497 OLD POST ROAD
TOLLAND, CT 06084
TOLLAND COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/23/16	ISSUED AS FINAL	JW	NDB	NDB

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

SEAL:



SHEET(S) SIGNED BY PROFESSIONAL ENGINEER
CT LICENSE NO. 25643

AT&T

DRAWING TITLE: GROUNDING DETAILS

JOB NUMBER	DRAWING NUMBER	REV.
15096-EMP	G-1	0