Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055

May 25, 2017

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

Notice of Exempt Modification
3114 Albany Ave., West Hartford, CT 06117
Latitude- 41.79639564
Longitude- -72.79667000

Dear Ms. Bachman,

T-Mobile currently maintains (2) existing antennas at the 160' level of the existing 346' guyed tower at 3114 Albany Ave. in West Hartford. The tower is owned by SBA. The property is owned by Educational Media Foundation. T-Mobile intends to maintain the existing antenna configuration, and add (2) new TMAs and (4) new diplexers. This equipment will be installed at the same 160' level of the tower.

This facility was approved by the Town of West Hartford on July 5, 2000. This approval did not come with conditions that could be violated by the modification. This modification fully complies with the original approval.

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 The Honorable Shari Cantor, Mayor of the Town of West Hartford, as well as the property owner and tower owner.

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

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

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

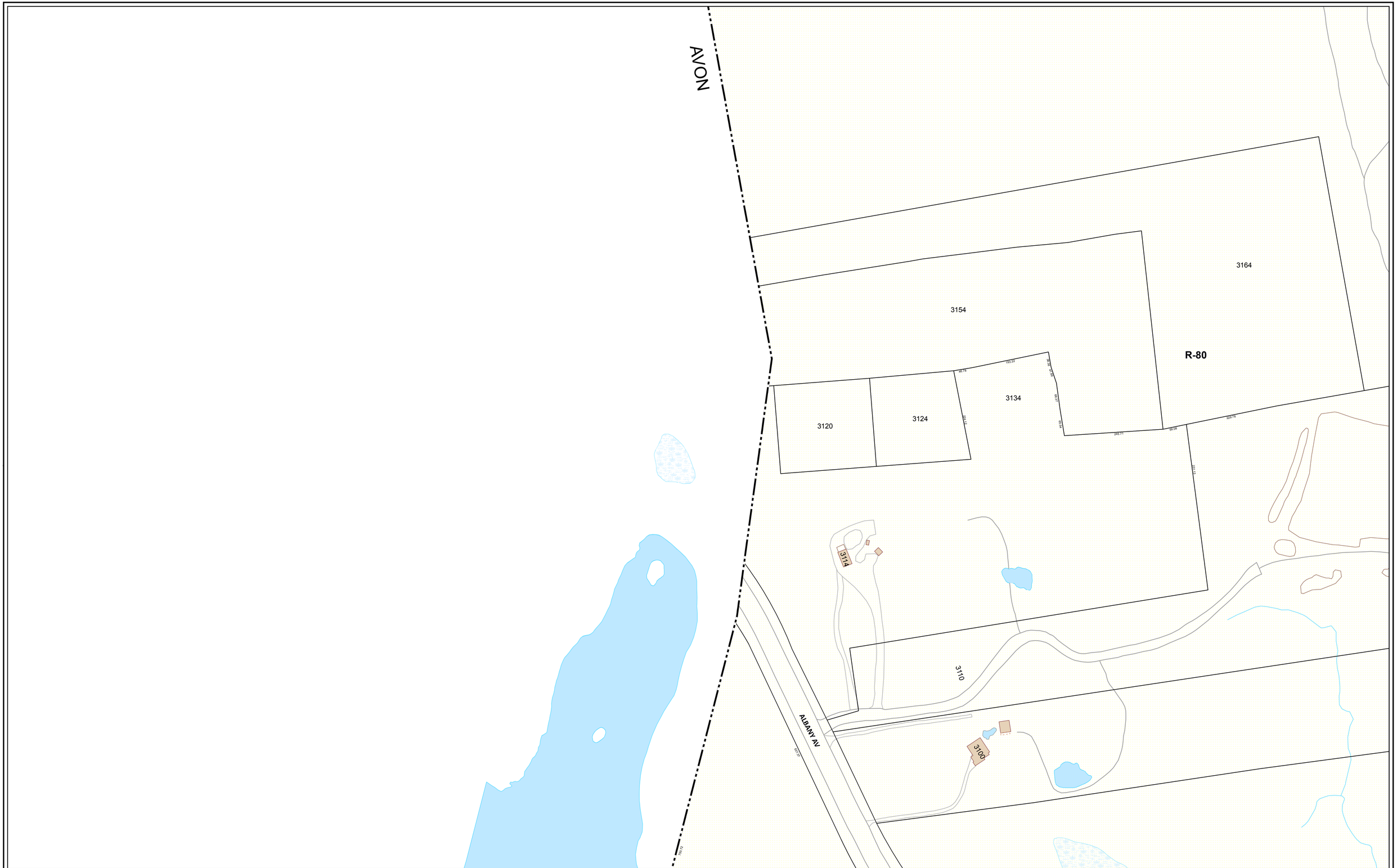
For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitute an exempt modification under R.C.S.A. 16-50j-72(b)(2).

Sincerely,

Kyle Richers

Kyle Richers
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
908-447-4716
krichers@transcendwireless.com

cc: Shari Cantor- as elected official
Catherine Dorau- as zoning official
SBA- as tower owner
Educational Media Foundation- as property owner



Map Revised May 2016

AppGeo

CT State Plane Feet (NAD 83)

- Zone District Boundary
- SDD Special Development District Overlay
- TND Traditional Neighborhood Design District Overlay
- Historic District

Structures
- Building
- Deck
- Pool
- Other

Parcels

Hydrography (MDC)
- Swamp
- Water
- Rivers/Streams

- Railroad (MDC)
- ROW
- Private Road
- Road Edge
- Driveways & Walkways

Town of West Hartford, CT
Zoning Map

N

Scale:

0 50 100 200 300 Feet

1 inch = 100 feet

A1 B1 A2 B2 A3 B3

Map No.

A2

3114 ALBANY AVENUE

Location	3114 ALBANY AVENUE	**Mblu**	A2/ 0031/ 3114/ /
Parcel ID	0031 2 3114 0001	**Owner**	EDUCATIONAL MEDIA FOUNDATION
Assessment	$392,490	**Appraisal**	$560,700
Vision Id #	402	**Building Count**	6

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$217,700	$343,000	$560,700
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$152,390	$240,100	$392,490

Owner of Record

Owner	EDUCATIONAL MEDIA FOUNDATION	**Sale Price**	$600,000
Co-Owner		**Certificate**	
Address	5700 WEST OAKS BOULEVARD ROCKLIN, CA 95765	**Book & Page**	4884/ 163
		Sale Date	11/04/2014
		Instrument	Q

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
EDUCATIONAL MEDIA FOUNDATION	$600,000		4884/ 163	Q	11/04/2014
MARLIN TOWER LLC	$0	1	2810/ 50	U	12/19/2001
MARLIN BROADCASTING LLC	$107,500	1	2580/ 300	U	08/03/2000
MARLIN BROADCASTING INC	$130,000	1	2309/ 253	U	05/26/1998
GREATER HARTFORD	$0	1	472/ 900	U	

Building Information

Building 1 : Section 1

Year Built:	1960
Living Area:	208
Replacement Cost:	$28,140

Building Percent Good: 61

Replacement Cost Less Depreciation: $17,200

Building Attributes	
Field	**Description**
STYLE	Telephone Exchange
MODEL	Comm/Ind
Grade	C 1.00
Stories:	1
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Comp - Shingle
Interior Wall 1	Typical
Interior Wall 2	
Floor Type	Concrete Slab
Floor Cover	None
Heating Fuel	Typical
Heating Type	None
AC Type	None
As Built Use	PHON
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	01
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	Class D
Frame Type	Conc Reinf
Plumbing	LIGHT
Ceiling	Not Applicable
Group	IND
Wall Height	8
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//\00\00

Building Layout

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PHN	TELEPHONE EXCHANGE	208	208
		208	208

Building 2 : Section 1

Year Built: 2002

Living Area: 800

Replacement Cost: $108,272

Building Percent Good: 86

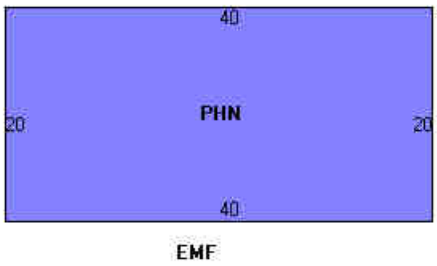
Replacement Cost Less Depreciation: $93,100

Building Attributes : Bldg 2 of 6	
Field	**Description**
STYLE	Telephone Exchange
MODEL	Comm/Ind
Grade	C 1.00
Stories:	1
Occupancy	1
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Floor Type	
Floor Cover	
Heating Fuel	
Heating Type	
AC Type	
As Built Use	
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	
Frame Type	
Plumbing	
Ceiling	
Group	
Wall Height	
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PHN	TELEPHONE EXCHANGE	800	800
		800	800

Building 3 : Section 1

Year Built: 2002

Living Area: 240

Replacement Cost: $32,428

Building Percent Good: 86

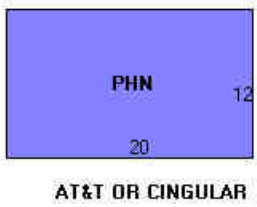
Replacement Cost Less Depreciation: $27,900

Building Attributes : Bldg 3 of 6	
Field	**Description**
STYLE	Telephone Exchange
MODEL	Comm/Ind
Grade	C 1.00
Stories:	1
Occupancy	1
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Floor Type	
Floor Cover	
Heating Fuel	
Heating Type	
AC Type	
As Built Use	
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	
Frame Type	
Plumbing	
Ceiling	
Group	
Wall Height	
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PHN	TELEPHONE EXCHANGE	240	240
		240	240

Building 4 : Section 1

Year Built: 2002

Living Area: 360

Replacement Cost: $48,776

Building Percent Good: 86

Replacement Cost Less Depreciation: $41,900

Building Attributes : Bldg 4 of 6	
Field	**Description**
STYLE	Telephone Exchange
MODEL	Comm/Ind
Grade	C 1.00
Stories:	1
Occupancy	1
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Floor Type	
Floor Cover	
Heating Fuel	
Heating Type	
AC Type	
As Built Use	
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	
Frame Type	
Plumbing	
Ceiling	
Group	
Wall Height	
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default

Building Layout

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PHN	TELEPHONE EXCHANGE	360	360
		360	360

Building 5 : Section 1

Year Built: 2002

Living Area: 165

Replacement Cost: $22,378

Building Percent Good: 86

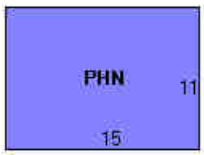
Replacement Cost Less Depreciation: $19,200

Building Attributes : Bldg 5 of 6	
Field	**Description**
STYLE	Telephone Exchange
MODEL	Comm/Ind
Grade	C 1.00
Stories:	1
Occupancy	1
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Floor Type	
Floor Cover	
Heating Fuel	
Heating Type	
AC Type	
As Built Use	
Bldg Use	Commercial
# of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	
Frame Type	
Plumbing	
Ceiling	
Group	
Wall Height	
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default

Building Layout



this building has backup generator power

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PHN	TELEPHONE EXCHANGE	165	165
		165	165

Building 6 : Section 1

Year Built: 1980

Living Area: 192

Replacement Cost: $25,996

Building Percent Good: 68

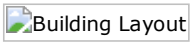
Replacement Cost Less Depreciation: $17,700

Building Attributes : Bldg 6 of 6	
Field	**Description**
STYLE	Telephone Exchange
MODEL	Comm/Ind
Grade	C 1.00
Stories:	1
Occupancy	
Exterior Wall 1	Concrete Block
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Floor Type	
Floor Cover	
Heating Fuel	
Heating Type	
AC Type	
As Built Use	
Bldg Use	Exempt Commercial
# of Bedrooms	
Total Baths	
Type	
Wet Sprinkler	
Dry Sprinkler	
1st Floor Use:	
Class	
Frame Type	
Plumbing	
Ceiling	
Group	
Wall Height	
Adjustment	

Building Photo

(http://images.vgsi.com/photos/WestHartfordCTPhotos//default

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
PHN	TELEPHONE EXCHANGE	192	192
		192	192

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code	902
Description	Exempt Commercial
Zone	R-20
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	11.7
Frontage	
Depth	
Assessed Value	$240,100
Appraised Value	$343,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
CP16	Chn Link Fence 6' hght			100 LF	$700	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$217,700	$343,000	$560,700
2015	$165,500	$313,100	$478,600
2014	$165,500	$313,100	$478,600

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$152,390	$240,100	$392,490
2015	$115,850	$219,170	$335,020
2014	$115,850	$219,170	$335,020

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11765A

CT765/Marlin Guyed Tower
3114 Albany Avenue
West Hartford, CT 06117

May 10, 2017

EBI Project Number: 6217002018

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	20.16 %

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

EBI Consulting
environmental | engineering | due diligence

May 10, 2017

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11765A – CT765/Marlin Guyed Tower**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **3114 Albany Avenue, West Hartford, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile 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 limit for the 1900 MHz (PCS) and 2100 MHz (AWS) 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 T-Mobile Wireless antenna facility located at **3114 Albany Avenue, West Hartford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 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 (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel

4) Since all radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 2.06 dB of additional cable loss for all ground mounted 1900 MHz channels and 2.12 dB of additional cable loss for all ground mounted 2100 MHz channels were factored into the calculations used for this analysis. This is based on manufacturers Specifications for 200 feet of 1-5/8” coax cable on each path.

5) 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.

6) For the following calculations, the sample point was the top of a 6-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.

7) The antennas used in this modeling are the **RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe at 1900 MHz and 2100 MHz. 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.

8) The antenna mounting height centerline of the proposed antennas is **160 feet** above ground level (AGL).

9) 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.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20	Make / Model:	RFS APX16DWV-16DWVS-E-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	160	Height (AGL):	160	Height (AGL):	160
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	6,305.49	ERP (W):	6,305.49	ERP (W):	6,305.49
Antenna A1 MPE%	0.96	Antenna B1 MPE%	0.96	Antenna C1 MPE%	0.96

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**0.96 %**
VHF	0.08 %
WCCC	2.41 %
WMNR	0.01 %
Verizon Wireless	3.45 %
Rinkers Paging	0.03 %
LPTV, Ch. 38	5.64 %
WHfd Fire Dept	0.01 %
AT&T	7.57 %
Site Total MPE %:	**20.16 %**

T-Mobile Sector A Total:	0.96 %
T-Mobile Sector B Total:	0.96 %
T-Mobile Sector C Total:	0.96 %
Site Total:	20.16 %

T-Mobile _Max Values per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	1,570.91	160	4.76	AWS - 2100 MHz	1000	0.48%
T-Mobile AWS - 2100 MHz UMTS	2	785.45	160	2.38	AWS - 2100 MHz	1000	0.24%
T-Mobile PCS - 1900 MHz GSM	2	796.38	160	2.41	PCS - 1900 MHz	1000	0.24%
						Total:	**0.96**

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 T-Mobile 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:

T-Mobile Sector	Power Density Value (%)
Sector A:	0.96 %
Sector B:	0.96 %
Sector C:	0.96 %
T-Mobile Per Sector Maximum:	0.96 %
Site Total:	20.16 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **20.16%** 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.

FDH VELOCITEL
ENGINEERING INNOVATION

Structural Analysis for
SBA Network Services, Inc.

345.2' Guyed Tower (346.4' AGL)

SBA Site Name: West Hartford
SBA Site ID: CT15879-A-07
T-Mobile Site Name: Marlin Guyed Tower
T-Mobile Site ID: CT11765A/ CT765
Site Address: 3114 Albany Avenue, West Hartford, CT 6117

FDH Velocitel Project Number 17QDIY1400

Analysis Results

Tower Components	58.8%	Sufficient
Foundation	97.9%	Sufficient

Prepared By:

Aditya Chingale, EI
Project Engineer I

Reviewed By:

Dennis D. Abel, PE
Director
CT License No. 23247

Velocitel, Inc., d.b.a. FDH Velocitel
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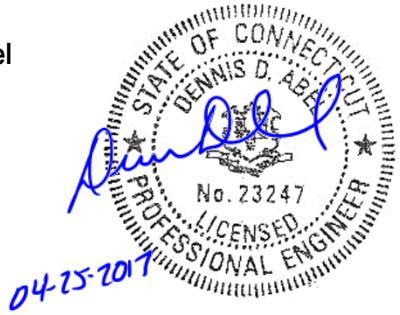
Structural@fdhvelocitel.com



April 25, 2017

Prepared pursuant to the ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2016 Connecticut State Building Code

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Velocitel performed a structural analysis of the existing Guyed Tower located in West Hartford, CT to determine whether the tower is structurally adequate to support the antenna configuration in place per **Table 1** pursuant to the *ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2016 Connecticut State Building Code*. Information pertaining to the antenna loading, current tower geometry, member sizes, and below grade parameters was obtained from:

Source	Document Type	Reference	Date
Clarence Welti Associates, Inc.	Geotechnical Report	Site Location: West Hartford, CT	May 22, 2000
Tower Engineering Professionals	Tower Mapping	Project No. 112343	July 12, 2011
FDH, Inc.	TIA Inspection	Job No. 1308391800	December 03, 2013
FDH, Inc.	Tower Mapping	Job No.14629H1500	May 09, 2014
FDH Engineering, Inc.	Foundation Mapping	Project No. 14620E1500	May 22, 2014
SBA Network Services, Inc.	-	-	-

The *ultimate design wind speed* per the *2016 Connecticut State Building Code* is 125 mph without ice and 50 mph with 1" radial ice. This is converted to a basic design wind speed of 97 mph per *Section 1609.3* and *Appendix N* as required for use in the *TIA-222-G Standard* per *Exception #5 of Section 1609.1.1*. Ice is considered to increase with height. Furthermore, this structure was analyzed as a Risk Category II structure in Exposure C using Topographic Category 1 and Spectral Response Accelerations of $S_s = 0.181$ and $S_1 = 0.064$

Note: Per *Section 2.7.3* of the *ANSI/TIA-222-G* Standard, the seismic/earthquake loading effects can be ignored if the spectral response acceleration at short periods (S_S) is less than or equal to 1.00. The tower's location mandates a design S_S of less than 1.00, thus seismic loading was not considered as part of the analysis of this structure.

Conclusions

With the antenna configuration in place per **Table 1** we have determined the tower stress level to be sufficient and the foundation(s) to be sufficient pursuant to the requirements stipulated by *ANSI/TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas and the 2016 Connecticut State Building Code* provided the **Recommendations** listed below are satisfied. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Velocitel is accurate (i.e., the structure member information, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the current analysis standards are met with the antenna configuration in place per **Table 1**, we have the following recommendations:

1. Feed lines to be installed as shown in **Figure 1** in the **Appendix**.

APPURTENANCE LISTING

The antennas and equipment, with their corresponding feed lines, considered for this analysis are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Velocitel should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

Antenna Elevation (ft.)	Description	Feed Lines	Carrier	Mount Elevation (ft.)	Mount Type
332	(1) ERI 3 Bay FM	(1) 3"	WCCC	332	Direct
308.3	(1) Scala SCA 4DR-8S	(1) 3"	ZGS Hartford	308.3	(1) Pipe Mount
265	(1) SCA CA-2-FM-CP	(1) 1/2"	WSDK	265	(1) Pipe Mount
261	(1) Decibel DB420-B	(1) 7/8"	Master Combiner	251	(1) Standoff
251.8	(1) Antenna Concepts ACB16A	(1) 1-5/8" (1) 3/8"	WRDM	251.8	(1) Pipe Mount
243	(1) Antel WPA-800120 (1) 18" x 6" x 6" TMA	(2) 7/8"	Town of West Hartford	243	Direct
235	(1) Scala 6-ft x 3-ft Grid Dish	(1) 7/8"	WCCC	235	Direct
232	(1) Radiowaves SP2-4.7NS (1) 12" x 2" x 2" TMA	(2) 1/4" (1) 3/8"	Town of West Hartford	232	Direct
225.5	(2) Unknown Panel 34" x 7" x 2"	(2) 3/8"	SNEW ISP	225.5	(2) Pipe Mount
220	(1) Antel WPA-800120	(1) 1-5/8"	Town of West Hartford	220	Direct
213	(1) Decibel DB420-B	(1) 1/2"	Master Combiner	203	(1) Standoff
196	(1) T.S. 3" x 3" x 6.5' (1) Cablewave PA6-112	(1) EW71	WRDM	196	(1) Standoff
191.5 (Tip) 180 168.5 (Base)	(1) Micronetixx LP-1900-B-12	(1) 1-5/8"	WRNT (R&C) Tyche Media	180	(1) Pipe Mount
165	(1) Antel BCD-80010	(1) 1-5/8"	Town of West Hartford	165	(1) Standoff
164.5	(1) 6810 1 Bay FM	(1) 1/2"	91.9 FM	164.5	(1) Pipe Mount
160	(4) RFS APX16DWV_16DWVS (4) Ericsson KRY 112 71	(12) 1-5/8"	T-Mobile	160	(3) T-Frames
146.5	(1) 12" x 4.5" x 6.25" TMA (1) 2-ft MW Dish	(1) 3/8"	SNEW ISP	146.5	(1) Pipe Mount
145	(1) 12-ft x 1" Omni	(1) 1-5/8"	Ham Radio	145	(1) Standoff
---	---	(1) 1-5/8"	---	142.5	---
---	---	(1) 1-5/8"	---	140.5	---
136.5	(1) 5' x 10" Detuner	(1) 1/4"	Ham Radio	136.5	Direct
130	(2) Andrew HBX-6517DS (2) Andrew LNX-6514DS (2) Swedcom SLCP 2x6015 (2) Swedcom SACP 2x5516 (4) RFS FD9R6004/2C (2) Alcatel Lucent RRH2x40-AWS (1) RFS DB-T1-6Z-8AB-0Z	(8) 1-5/8" (1) 1-5/8" Fiber	Verizon	129.5	(3) T-Frames
120.5	(3) RFS APXV18-206517S	(6) 1-5/8"	Metro PCS	120.5	(1) Pipe Mount
112	(6) Kathrein 800 10121 (2) CCI HPA-65R-BUU-H8 (1) CCI HPA-65R-BUU-H6 (3) Ericsson RRUS-11 (3) Ericsson RRUS-12 (3) Ericsson RRUS A2 (6) CCI DTMABP7819VG12A (12) Kathrein 860 10025 (1) Raycap DC6-48-60-18-8F	(12) 1-5/8" (4) 3/4" DC (2) 3/8" Fiber	AT&T	111.5	(3) T-Frames
48	(1) GPS	(1) 3/8"	Metro PCS	48	Direct
21	(1) 14-Element 4.5 ft Yagi	(1) 1/2"	Ham Radio	21	(1) Standoff

Proposed Carrier Final Loading:

Antenna Elevation (ft.)	Description	Feed Lines	Carrier	Mount Elevation (ft.)	Mount Type
160	(2) RFS APX16DWV_16DWVS-E-A20 (2) Commscope TMAT1921B78-21A (2) Ericsson KRY 112 71 (4) RFS FDAP5002-1A20	(8) 1-5/8”	T-Mobile	158.8	(3) T-Frames

RESULTS

The following material grades for individual members were used for analysis:

Table 2 - Material Grade

Member Type	Material Grade
Legs	A572-50 (Assumed)
Bracing	A572-50 (Assumed)
Bolts	A325 (Assumed)

Table 3 and **Table 4** display the summary of capacities for the analyzed structure and its additional components. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 5** displays the maximum dish rotations at service winds speeds.

If the assumptions outlined in this report differ from actual field conditions, FDH Velocitel should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

Table 3 - Structure Member Capacities

Section No.	Elevation (ft.)	Component Type	Size	% Capacity	Pass / Fail
L1	346.351 - 329.351	Pole	P10x.365 (10.75 OD)	12.5	Pass
L2	329.351 - 311.351	Pole	P10x.365 (10.75 OD)	47.2	Pass
T1	311.351 - 310.351	Leg	2 3/4	12.0	Pass
T2	310.351 - 299.182	Leg	2 3/4	9.3	Pass
T3	299.182 - 279.182	Leg	2 3/4	10.6	Pass
T4	279.182 - 259.182	Leg	2 3/4	11.5	Pass
T5	259.182 - 239.182	Leg	2 3/4	14.4 14.7 (b)	Pass
T6	239.182 - 219.182	Leg	2 3/4	20.1	Pass
T7	219.182 - 199.182	Leg	2 3/4	23.4	Pass
T8	199.182 - 179.182	Leg	2 3/4	26.3	Pass
T9	179.182 - 159.182	Leg	2 3/4	28.6	Pass
T10	159.182 - 139.182	Leg	3	28.8	Pass
T11	139.182 - 119.182	Leg	3	33.2 39.4 (b)	Pass
T12	119.182 - 99.1822	Leg	3	35.2	Pass
T13	99.1822 - 79.1822	Leg	3	39.5 45.3 (b)	Pass
T14	79.1822 - 59.1822	Leg	3	43.1	Pass
T15	59.1822 - 39.1822	Leg	3	44.7 50.8 (b)	Pass
T16	39.1822 - 19.1822	Leg	3	44.6	Pass
T17	19.1822 - 14.4112	Leg	3	43.2 48.7 (b)	Pass
T18	14.4112 - 11.8302	Leg	3	42.2	Pass
T19	11.8302 - 9.49947	Leg	3	42.3 48.2 (b)	Pass
T20	9.49947 - 7.16874	Leg	3	40.6 46.2 (b)	Pass
T21	7.16874 - 1.2	Leg	3	45.9	Pass
T2	310.351 - 299.182	Diagonal	7/8	20.1	Pass
T3	299.182 - 279.182	Diagonal	7/8	14.3	Pass
T4	279.182 - 259.182	Diagonal	7/8	12.8	Pass

Section No.	Elevation (ft.)	Component Type	Size	% Capacity	Pass / Fail
T5	259.182 - 239.182	Diagonal	7/8	29.3	Pass
T6	239.182 - 219.182	Diagonal	7/8	31.1	Pass
T7	219.182 - 199.182	Diagonal	7/8	29.1	Pass
T8	199.182 - 179.182	Diagonal	7/8	22.3	Pass
T9	179.182 - 159.182	Diagonal	7/8	30.0	Pass
T10	159.182 - 139.182	Diagonal	1	31.7	Pass
T11	139.182 - 119.182	Diagonal	7/8	47.9	Pass
T12	119.182 - 99.1822	Diagonal	7/8	34.4	Pass
T13	99.1822 - 79.1822	Diagonal	7/8	37.9	Pass
T14	79.1822 - 59.1822	Diagonal	7/8	36.1	Pass
T15	59.1822 - 39.1822	Diagonal	7/8	20.3	Pass
T16	39.1822 - 19.1822	Diagonal	7/8	30.6	Pass
T17	19.1822 - 14.4112	Diagonal	1	22.2	Pass
T18	14.4112 - 11.8302	Diagonal	1	21.5	Pass
T19	11.8302 - 9.49947	Diagonal	1 1/4	13.1	Pass
T20	9.49947 - 7.16874	Diagonal	1 1/4	15.1	Pass
T21	7.16874 - 1.2	Diagonal	1 1/4	50.4	Pass
T1	311.351 - 310.351	Horizontal	6 x 1	3.1	Pass
T19	11.8302 - 9.49947	Horizontal	6 x 3/4	8.8	Pass
T20	9.49947 - 7.16874	Horizontal	6 x 3/4	16.6	Pass
T21	7.16874 - 1.2	Horizontal	6 x 3/4	8.4	Pass
T2	310.351 - 299.182	Top Girt	1 1/4	2.4	Pass
T3	299.182 - 279.182	Top Girt	1	2.4	Pass
T4	279.182 - 259.182	Top Girt	1	2.1	Pass
T5	259.182 - 239.182	Top Girt	1	1.9	Pass
T6	239.182 - 219.182	Top Girt	1	7.7	Pass
T7	219.182 - 199.182	Top Girt	1	11.8	Pass
T8	199.182 - 179.182	Top Girt	1	7.0	Pass
T9	179.182 - 159.182	Top Girt	1	5.0	Pass
T10	159.182 - 139.182	Top Girt	1 1/4	6.0	Pass
T11	139.182 - 119.182	Top Girt	1	18.5	Pass
T12	119.182 - 99.1822	Top Girt	1	2.4	Pass
T13	99.1822 - 79.1822	Top Girt	1	11.5	Pass
T14	79.1822 - 59.1822	Top Girt	1	8.6	Pass
T15	59.1822 - 39.1822	Top Girt	1	1.3	Pass
T16	39.1822 - 19.1822	Top Girt	1	5.7	Pass
T17	19.1822 - 14.4112	Top Girt	1 1/4	2.9	Pass
T18	14.4112 - 11.8302	Top Girt	7/8	6.3	Pass
T2	310.351 - 299.182	Bottom Girt	1 1/4	11.4	Pass
T3	299.182 - 279.182	Bottom Girt	1	2.1	Pass
T4	279.182 - 259.182	Bottom Girt	1	2.4	Pass
T5	259.182 - 239.182	Bottom Girt	1	10.5	Pass
T6	239.182 - 219.182	Bottom Girt	1	9.7	Pass
T7	219.182 - 199.182	Bottom Girt	1	5.5	Pass
T8	199.182 - 179.182	Bottom Girt	1	1.6	Pass
T9	179.182 - 159.182	Bottom Girt	1	7.6	Pass
T10	159.182 - 139.182	Bottom Girt	1 1/4	8.3	Pass
T11	139.182 - 119.182	Bottom Girt	1	6.0	Pass
T12	119.182 - 99.1822	Bottom Girt	1	7.7	Pass
T13	99.1822 - 79.1822	Bottom Girt	1	12.6	Pass
T14	79.1822 - 59.1822	Bottom Girt	1	4.6	Pass
T15	59.1822 - 39.1822	Bottom Girt	1	2.3	Pass
T16	39.1822 - 19.1822	Bottom Girt	1	5.3	Pass
T21	7.16874 - 1.2	Bottom Girt	6 x 3/4	7.4	Pass
T3	299.182 - 279.182	Mid Girt	1	0.5	Pass
T4	279.182 - 259.182	Mid Girt	1	0.6	Pass
T5	259.182 - 239.182	Mid Girt	1	0.6	Pass
T6	239.182 - 219.182	Mid Girt	1	19.9	Pass

Section No.	Elevation (ft.)	Component Type	Size	% Capacity	Pass / Fail
T7	219.182 - 199.182	Mid Girt	1	1.1	Pass
T8	199.182 - 179.182	Mid Girt	1	1.3	Pass
T9	179.182 - 159.182	Mid Girt	1	1.3	Pass
T10	159.182 - 139.182	Mid Girt	1 1/4	16.3	Pass
T11	139.182 - 119.182	Mid Girt	1	3.5	Pass
T12	119.182 - 99.1822	Mid Girt	1	2.0	Pass
T13	99.1822 - 79.1822	Mid Girt	1	22.7	Pass
T14	79.1822 - 59.1822	Mid Girt	1	2.4	Pass
T15	59.1822 - 39.1822	Mid Girt	1	2.5	Pass
T16	39.1822 - 19.1822	Mid Girt	1	2.5	Pass
T17	19.1822 - 14.4112	Mid Girt	7/8	5.6	Pass
T19	11.8302 - 9.49947	Redund Horz 1 Bracing	7/8	9.9	Pass
T20	9.49947 - 7.16874	Redund Horz 1 Bracing	7/8	12.0	Pass
T20	9.49947 - 7.16874	Redund Diag 1 Bracing	7/8	13.6	Pass
T3	299.182 - 279.182	Guy A@299.182	13/16	46.4	Pass
T6	239.182 - 219.182	Guy A@229.182	7/8	44.3	Pass
T10	159.182 - 139.182	Guy A@149.182	13/16	51.5	Pass
T13	99.1822 - 79.1822	Guy A@89.1822	3/4	53.1	Pass
T3	299.182 - 279.182	Guy B@299.182	3/4	58.8	Pass
T6	239.182 - 219.182	Guy B@229.182	13/16	53.4	Pass
T10	159.182 - 139.182	Guy B@149.182	7/8	50.5	Pass
T13	99.1822 - 79.1822	Guy B@89.1822	13/16	49.0	Pass
T3	299.182 - 279.182	Guy C@299.182	3/4	54.6	Pass
T6	239.182 - 219.182	Guy C@229.182	13/16	49.2	Pass
T10	159.182 - 139.182	Guy C@149.182	7/8	47.2	Pass
T13	99.1822 - 79.1822	Guy C@89.1822	13/16	46.4	Pass

Table 4 – Additional Structure Component Capacities

Elevation (ft.)	Component	% Capacity	Pass / Fail	Notes
0	Base Foundation (Soil Interaction)	21.5	Pass	-
0	Base Foundation (Structural)	97.9	Pass	-
0	Guy Foundation (Soil Interaction)	30.9	Pass	-
0	Guy Foundation (Structural)	40.2	Pass	-

Table 5 - Maximum Dish Rotations at Service Wind Speeds

Centerline Elevation (ft.)	Dish	Tilt (deg)*	Twist (deg)*
233.8	(1) Scala 6-ft x 3-ft Grid Dish	0.0482	0.5238
230.8	(1) Radiowaves SP2-4.7NS	0.0482	0.5191
194.8	(1) Cablewave PA6-112	0.0484	0.4620
145.3	(1) 2-ft MW Dish	0.0282	0.3557

*Allowable tilt and twist to be reviewed by the carrier.

GENERAL COMMENTS

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Velocitel should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Velocitel.

APPENDIX

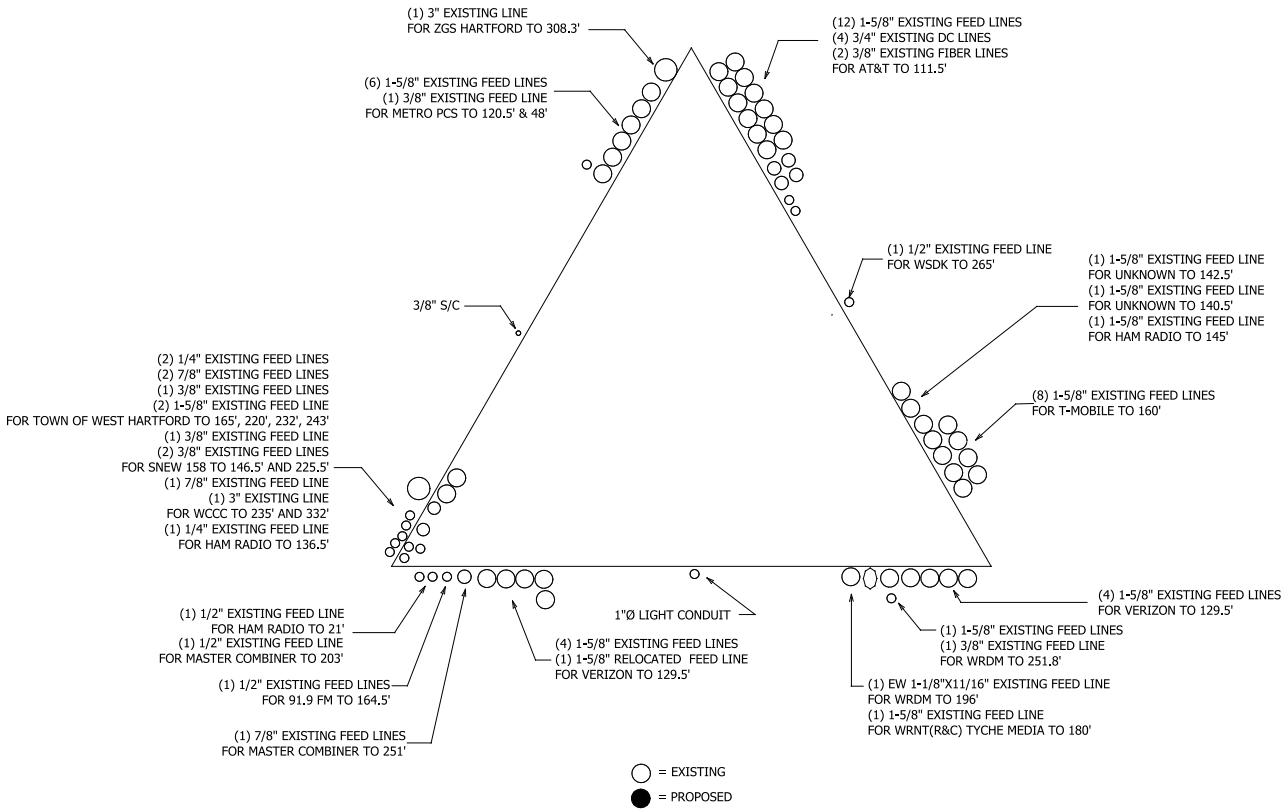
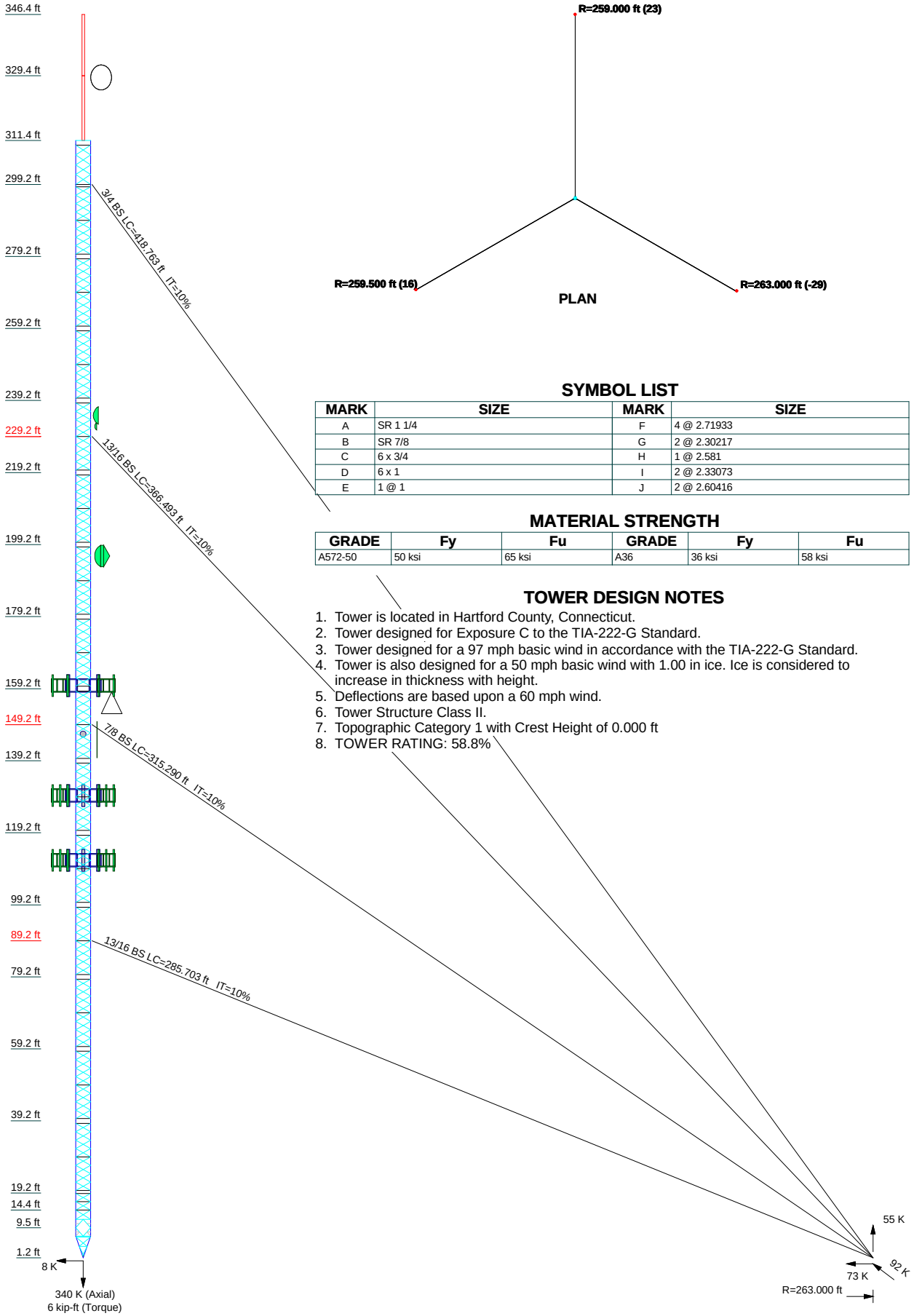


Figure 1: Feed Line Layout

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20	T21	T22	T23	T24	T25	T26	T27	T28	T29	L1	L2
Legs							SR 2 3/4				A572-50			SR 3																	P10x.365 (10.75 OD)	
Leg Grade																															A53-B-35	
Diagonals	A	SR 1						SR 7/8			SR 1			SR 7/8																	N.A.	
Diagonal Grade											A572-50																				N.A.	
Top Girts	N.A.	B	A				SR 1				SR 1 1/4			SR 1																A	N.A.	
Mid Girts	N.A.	B					SR 1				SR 1 1/4			SR 1																	N.A.	
Bottom Girts	C	N.A.					SR 1				SR 1 1/4			SR 1																A	N.A.	
Horizontals	6 x 3/4									N.A.																				D	N.A.	
Red. Horizontals	N.A.	B								N.A.																						
Red. Diagonals	N.A.	B								N.A.																						
Face Width (ft)																														5	0.895833	
# Panels @ (ft)	J	I	H	G										126 @ 2.33333																F	E	N.A.
Weight (K)	33.9	1.0	0.3	0.6						1.9	2.3	2.1	2.1	2.1	2.1	2.1	2.1		1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.1	0.4	0.7	0.7



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/4	F	4 @ 2.71933
B	SR 7/8	G	2 @ 2.30217
C	6 x 3/4	H	1 @ 2.581
D	6 x 1	I	2 @ 2.33073
E	1 @ 1	J	2 @ 2.60416

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 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 0.000 ft
8. TOWER RATING: 58.8%

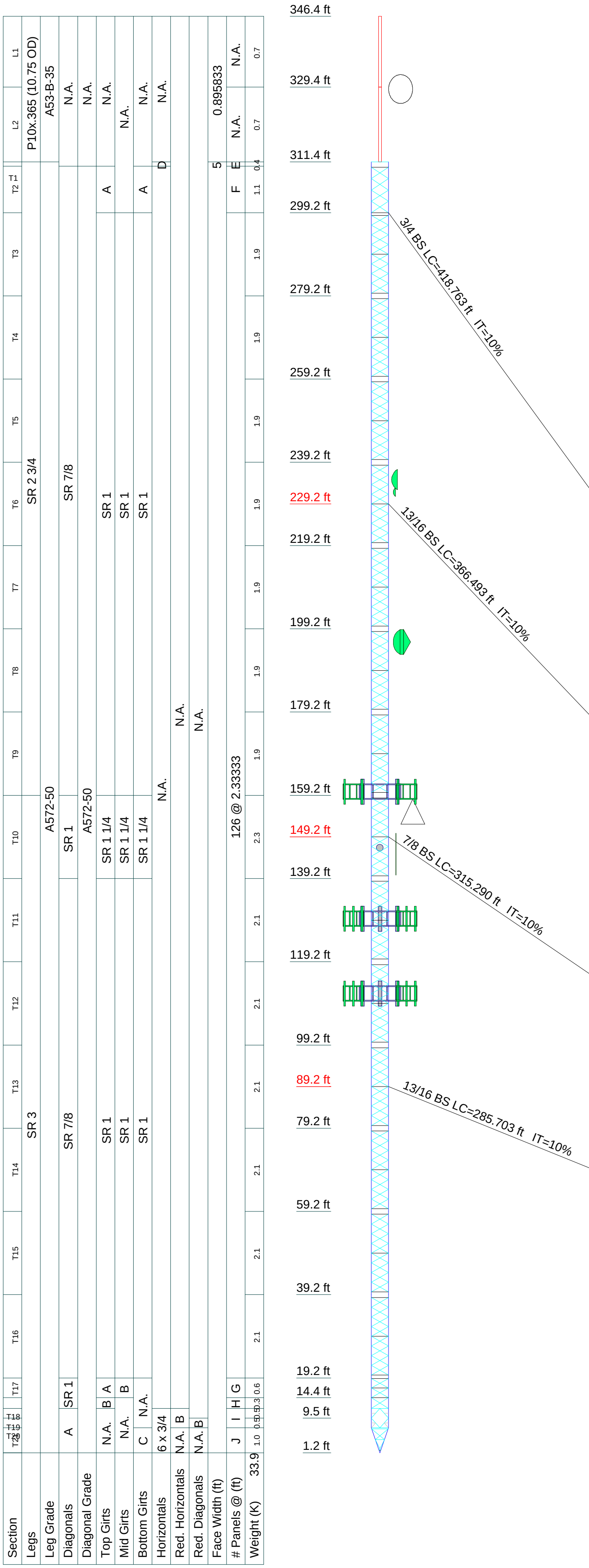
ALL REACTIONS ARE FACTORED

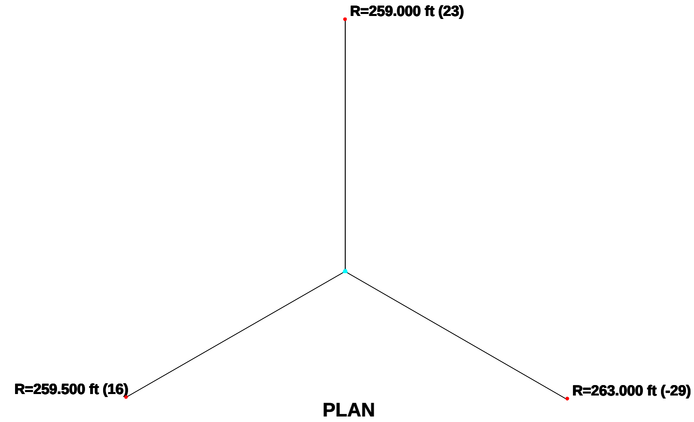
FDH VELOCITEL ENGINEERING INNOVATION

Tower Analysis

FDH Velocitel
6521 Meridien Drive
Raleigh, NC 27616
Phone: 919.755.1012
FAX: 919.755.1031

Job: ***West Hartford, CT15879-A***			
Project: ***17QDIY1400***			
Client: SBA Network Services, Inc.	Drawn by: Aditya Chingale	App'd:	
Code: TIA-222-G	Date: 04/25/17	Scale: NTS	
Path:		Dwg No. E-1	





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
30" x 18" Dia	346.3	12-ft x 1" Omni	145
ERI 3 Bay FM	332	Control Box 12" x 13.5" x 6.5"	141.5
2.4" Dia x 18" Pipe	332	Detuner	136.5
L2.5x2.5x0.25, 10-ft Length	309.5	(3) T-Frames	129.5
Scala SCA 4DR-8S	308.3	SLCP 2x6015 w/ Mount Pipe	129.5
2.9" x 22-ft Mt. Pipe	297	SLCP 2x6015 w/ Mount Pipe	129.5
CA-2-FM-CP	265	SACP 2x5516 w/ Mount Pipe	129.5
Pipe Mount	265	SACP 2x5516 w/ Mount Pipe	129.5
2.4" x 25' Mount Pipe	251.8	(2) Andrew HBX-6517DS w/ Mount Pipe	129.5
Antenna Concepts ACB16A w/ Mount	251.8	(2) Andrew LNX-6514DS w/ Mount Pipe	129.5
(1) Side Arm Mount	251	FD9R6004/2C Diplexer	129.5
DB420-B	251	FD9R6004/2C Diplexer	129.5
TMA 18" x 6" x 6"	243	(2) FD9R6004/2C Diplexer	129.5
Antel WPA-800120	243	RRH2x40-AWS	129.5
6-ft x 3-ft Grid	235	RRH2x40-AWS	129.5
TMA 12" x 12" x 2"	232	DB-T1-6Z-8AB-0Z	129.5
SP2-4.7NS	232	APXV18-206517S w/Mount Pipe	120.5
2'10" x 7" x 2" Panel w/ 48" Mount Pipe	225.5	APXV18-206517S w/Mount Pipe	120.5
2'10" x 7" x 2" Panel w/ 48" Mount Pipe	225.5	APXV18-206517S w/Mount Pipe	120.5
(2) 1" x 8" Pipe	225.5	HPA-65R-BUU-H6 w/ Mount Pipe	111.5
(2) 1" x 8" Pipe	225.5	(2) 800 10121 w/ Mount Pipe	111.5
Antel WPA-800120	221.2	HPA-65R-BUU-H8 w/ Mount Pipe	111.5
36"x36"x12" TMA	221.2	2.4" Dia x 5-ft Pipe	111.5
(1) Side Arm Mount	203	2.4" Dia x 5-ft Pipe	111.5
DB420-B	203	RRUS A2	111.5
4.5" Dia x 6' Dish Mount	196	RRUS A2	111.5
T.S. 3" x 3" x 6.5'	196	RRUS A2	111.5
2.4" Dia x 6.5' Mount Pipe	196	RRUS-11	111.5
Cablewave PA6-112	196	HPA-65R-BUU-H8 w/ Mount Pipe	111.5
2.4" x 25' Mount Pipe	180	(2) 800 10121 w/ Mount Pipe	111.5
Micronetixx LP-1900-B-12 Antennas	180	(2) 800 10121 w/ Mount Pipe	111.5
36" Standoff	165	(2) DTMABP7819VG12A	111.5
BCD-80010	165	(4) 860 10025	111.5
2.4" Dia x 10-ft Mount Pipe	164.5	(4) 860 10025	111.5
6810 1 Bay FM	164.5	(2) DTMABP7819VG12A	111.5
(3) T-Frames	160	(2) DTMABP7819VG12A	111.5
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	160	RRUS-12	111.5
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	160	RRUS-12	111.5
TMAT1921B78-21A	160	RRUS-12	111.5
TMAT1921B78-21A	160	2.4" Dia x 5-ft Pipe	111.5
KRY 112 71	160	(3) T-Frames	111.5
KRY 112 71	160	DC6-48-60-18-8F	111.5
(2) FDAP5002-1A20	160	(4) 860 10025	111.5
(2) FDAP5002-1A20	160	RRUS-11	111.5
(2) 2.4" x 7-ft Pipe	160	RRUS-11	111.5
(2) 2.4" x 7-ft Pipe	160	GPS	48
2.4" x 7-ft Pipe	160	1" dia x 16" Pipe	48
2.4" Dia x 4-ft Mount Pipe	146.5	1-ft Side Arm	21
12" x 4.5" x 6.25" TMA	146.5	14-Element 4.5 ft Yagi	21
2-ft Dish w/o Radome	146.5	Detuning Box 29" x 24" x 12"	10.5
30" Sidearm Mount	145	Control Box 12" x 13.5" x 6.5"	5.7

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 1 1/4	F	4 @ 2.71933
B	SR 7/8	G	2 @ 2.30217
C	6 x 3/4	H	1 @ 2.581
D	6 x 1	I	2 @ 2.33073
E	1 @ 1	J	2 @ 2.60416

MATERIAL STRENGTH

FDH VELOCITEL
ENGINEERING INNOVATION
Tower Analysis
FDH Velocitel
6521 Meridien Drive
Raleigh, NC 27616
Phone: 919.755.1012
FAX: 919.755.1031

Job: ***West Hartford, CT15879-A***		
Project: ***17QDIY1400***		
Client: SBA Network Services, Inc.	Drawn by: Aditya Chingale	App'd:
Code: TIA-222-G	Date: 04/25/17	Scale: NTS
Path:		Dwg No. E-1

FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

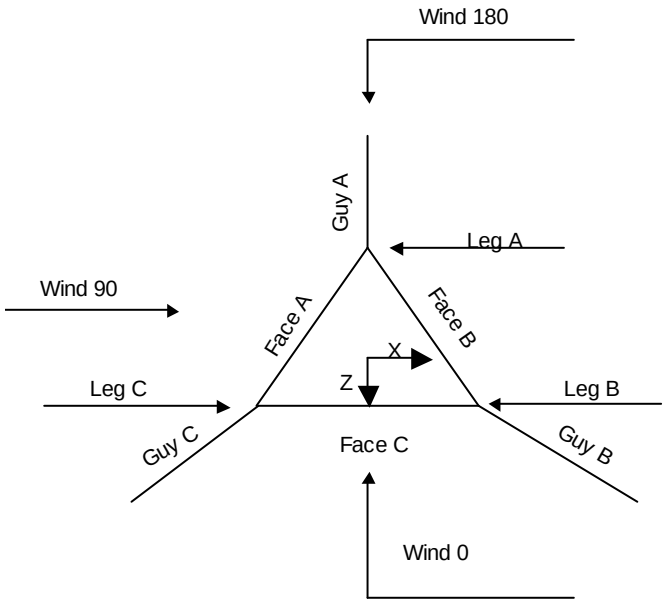
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 346.351 ft above the ground line.
The base of the tower is set at an elevation of 1.200 ft above the ground line.
The face width of the tower is 5.000 ft at the top and tapered at the base.
An index plate is provided at the 3x guyed -tower connection.
There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
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		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice		Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-G Bracing Resist. Exemption
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-G Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
√	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
√	SR Members Are Concentric				



Corner & Starmount Guyed Tower

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	346.351-329.351	17.000	P10x.365 (10.75 OD)	A53-B-35 (35 ksi)	
L2	329.351-311.351	18.000	P10x.365 (10.75 OD)	A53-B-35 (35 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 346.351-329.351				1	1	1			
L2 329.351-311.351				1	1	1			

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	311.351-310.351			5.000	1	1.000
T2	310.351-299.182			5.000	1	11.169
T3	299.182-279.182			5.000	1	20.000
T4	279.182-259.182			5.000	1	20.000
T5	259.182-239.182			5.000	1	20.000
T6	239.182-219.182			5.000	1	20.000
T7	219.182-199.182			5.000	1	20.000
T8	199.182-179.182			5.000	1	20.000
T9	179.182-159.182			5.000	1	20.000
T10	159.182-139.182			5.000	1	20.000
T11	139.182-119.182			5.000	1	20.000
T12	119.182-99.182			5.000	1	20.000
T13	99.182-79.182			5.000	1	20.000
T14	79.182-59.182			5.000	1	20.000
T15	59.182-39.182			5.000	1	20.000
T16	39.182-19.182			5.000	1	20.000
T17	19.182-14.411			5.000	1	4.771
T18	14.411-11.830			5.000	1	2.581
T19	11.830-9.499			5.000	1	2.331
T20	9.499-7.169			5.000	1	2.331
T21	7.169-1.200			5.000	1	5.969

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	311.351-310.351	1.000	X Brace	No	Yes	0.0000	0.0000
T2	310.351-299.182	2.719	X Brace	No	No	3.5000	0.0000
T3	299.182-279.182	2.333	X Brace	No	No	8.0000	8.0000
T4	279.182-259.182	2.333	X Brace	No	No	8.0000	8.0000
T5	259.182-239.182	2.333	X Brace	No	No	8.0000	8.0000
T6	239.182-219.182	2.333	X Brace	No	No	8.0000	8.0000
T7	219.182-199.182	2.333	X Brace	No	No	8.0000	8.0000
T8	199.182-179.182	2.333	X Brace	No	No	8.0000	8.0000
T9	179.182-159.182	2.333	X Brace	No	No	8.0000	8.0000
T10	159.182-139.182	2.333	X Brace	No	No	8.0000	8.0000
T11	139.182-119.182	2.333	X Brace	No	No	8.0000	8.0000
T12	119.182-99.182	2.333	X Brace	No	No	8.0000	8.0000
T13	99.182-79.182	2.333	X Brace	No	No	8.0000	8.0000
T14	79.182-59.182	2.333	X Brace	No	No	8.0000	8.0000
T15	59.182-39.182	2.333	X Brace	No	No	8.0000	8.0000
T16	39.182-19.182	2.333	X Brace	No	No	8.0000	8.0000
T17	19.182-14.411	2.302	X Brace	No	No	2.0000	0.0000
T18	14.411-11.830	2.581	X Brace	No	No	0.0000	0.0000
T19	11.830-9.499	2.331	K1 Down	No	Yes	0.0000	0.0000
T20	9.499-7.169	2.331	K1 Up	No	Yes	0.0000	0.0000
T21	7.169-1.200	2.604	X Brace	No	Yes	3.0000	6.1250

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 311.351-310.351	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T2 310.351-299.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 299.182-279.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 279.182-259.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T5 259.182-239.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T6 239.182-219.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T7 219.182-199.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T8 199.182-179.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T9 179.182-159.182	Solid Round	2 3/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T10 159.182-139.182	Solid Round	3	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T11 139.182-119.182	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T12 119.182-99.182	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T13 99.182-79.182	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T14 79.182-59.182	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T15 59.182-39.182	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T16 39.182-19.182	Solid Round	3	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T17 19.182-14.411	Solid Round	3	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T18 14.411-11.830	Solid Round	3	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T19 11.830-9.499	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/4	A572-50 (50 ksi)
T20 9.499-7.169	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/4	A572-50 (50 ksi)
T21 7.169-1.200	Solid Round	3	A572-50 (50 ksi)	Solid Round	1 1/4	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*
T2 310.351-299.182	Solid Round	1 1/4	A570-50 (50 ksi)	Solid Round	1 1/4	A570-50 (50 ksi)
T3 299.182-279.182	Solid Round	1	A570-50 (50 ksi)	Solid Round	1	A570-50 (50 ksi)
T4	Solid Round	1	A570-50	Solid Round	1	A570-50

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
279.182-259.182			(50 ksi)			(50 ksi)
T5	Solid Round	1	A570-50	Solid Round	1	A570-50
259.182-239.182			(50 ksi)			(50 ksi)
T6	Solid Round	1	A570-50	Solid Round	1	A570-50
239.182-219.182			(50 ksi)			(50 ksi)
T7	Solid Round	1	A570-50	Solid Round	1	A570-50
219.182-199.182			(50 ksi)			(50 ksi)
T8	Solid Round	1	A570-50	Solid Round	1	A570-50
199.182-179.182			(50 ksi)			(50 ksi)
T9	Solid Round	1	A570-50	Solid Round	1	A570-50
179.182-159.182			(50 ksi)			(50 ksi)
T10	Solid Round	1 1/4	A570-50	Solid Round	1 1/4	A570-50
159.182-139.182			(50 ksi)			(50 ksi)
T11	Solid Round	1	A570-50	Solid Round	1	A570-50
139.182-119.182			(50 ksi)			(50 ksi)
T12	Solid Round	1	A570-50	Solid Round	1	A570-50
119.182-99.182			(50 ksi)			(50 ksi)
T13	Solid Round	1	A570-50	Solid Round	1	A570-50
99.182-79.182			(50 ksi)			(50 ksi)
T14	Solid Round	1	A570-50	Solid Round	1	A570-50
79.182-59.182			(50 ksi)			(50 ksi)
T15	Solid Round	1	A570-50	Solid Round	1	A570-50
59.182-39.182			(50 ksi)			(50 ksi)
T16	Solid Round	1	A570-50	Solid Round	1	A570-50
39.182-19.182			(50 ksi)			(50 ksi)
T17	Solid Round	1 1/4	A570-50	Solid Round		A570-50
19.182-14.411			(50 ksi)			(50 ksi)
T18	Solid Round	7/8	A570-50	Solid Round		A570-50
14.411-11.830			(50 ksi)			(50 ksi)
T21 7.169-1.200	Solid Round		A570-50	Flat Bar	6 x 3/4	A36
			(50 ksi)			(36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1	None	Flat Bar		A570-50	Flat Bar	6 x 1	A36
311.351-310.351				(50 ksi)			(36 ksi)
T3	1	Solid Round	1	A570-50	Solid Round		A572-50
299.182-279.182				(50 ksi)			(50 ksi)
T4	1	Solid Round	1	A570-50	Solid Round		A572-50
279.182-259.182				(50 ksi)			(50 ksi)
T5	1	Solid Round	1	A570-50	Solid Round		A572-50
259.182-239.182				(50 ksi)			(50 ksi)
T6	1	Solid Round	1	A570-50	Solid Round		A572-50
239.182-219.182				(50 ksi)			(50 ksi)
T7	1	Solid Round	1	A570-50	Solid Round		A572-50
219.182-199.182				(50 ksi)			(50 ksi)
T8	1	Solid Round	1	A570-50	Solid Round		A572-50
199.182-179.182				(50 ksi)			(50 ksi)
T9	1	Solid Round	1	A570-50	Solid Round		A572-50
179.182-159.182				(50 ksi)			(50 ksi)
T10	1	Solid Round	1 1/4	A570-50	Solid Round		A572-50
159.182-139.182				(50 ksi)			(50 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T11 139.182-119.182	1	Solid Round	1	A570-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T12 119.182-99.182	1	Solid Round	1	A570-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T13 99.182-79.182	1	Solid Round	1	A570-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T14 79.182-59.182	1	Solid Round	1	A570-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T15 59.182-39.182	1	Solid Round	1	A570-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T16 39.182-19.182	1	Solid Round	1	A570-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T17 19.182-14.411	1	Solid Round	7/8	A570-50 (50 ksi)	Solid Round		A572-50 (50 ksi)
T19 11.830-9.499	None	Flat Bar		A570-50 (50 ksi)	Flat Bar	6 x 3/4	A36 (36 ksi)
T20 9.499-7.169	None	Flat Bar		A570-50 (50 ksi)	Flat Bar	6 x 3/4	A36 (36 ksi)
T21 7.169-1.200	None	Flat Bar		A570-50 (50 ksi)	Flat Bar	6 x 3/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T19 11.830-9.499	A572-50 (50 ksi)	Horizontal (1)	Solid Round	7/8	1
T20 9.499-7.169	A572-50 (50 ksi)	Horizontal (1)	Solid Round	7/8	1
		Diagonal (1)	Solid Round	7/8	1

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 311.351-310.351	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 310.351-299.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 299.182-279.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T4 279.182-259.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T5	0.000	0.0000	A36	1	1	1	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
259.182-239.182			(36 ksi)						
T6 239.182-219.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T7 219.182-199.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T8 199.182-179.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T9 179.182-159.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T10 159.182-139.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T11 139.182-119.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T12 119.182-99.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T13 99.182-79.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T14 79.182-59.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T15 59.182-39.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T16 39.182-19.182	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T17 19.182-14.411	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T18 14.411-11.830	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T19 11.830-9.499	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T20 9.499-7.169	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T21 7.169-1.200	0.000	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 311.351-310.351	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 310.351-299.1	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
82										
T3	No	Yes	1	1	1	1	1	1	1	1
299.182-279.1				1	1	1	1	1	1	1
82										
T4	No	Yes	1	1	1	1	1	1	1	1
279.182-259.1				1	1	1	1	1	1	1
82										
T5	No	Yes	1	1	1	1	1	1	1	1
259.182-239.1				1	1	1	1	1	1	1
82										
T6	No	Yes	1	1	1	1	1	1	1	1
239.182-219.1				1	1	1	1	1	1	1
82										
T7	No	Yes	1	1	1	1	1	1	1	1
219.182-199.1				1	1	1	1	1	1	1
82										
T8	No	Yes	1	1	1	1	1	1	1	1
199.182-179.1				1	1	1	1	1	1	1
82										
T9	No	Yes	1	1	1	1	1	1	1	1
179.182-159.1				1	1	1	1	1	1	1
82										
T10	No	Yes	1	1	1	1	1	1	1	1
159.182-139.1				1	1	1	1	1	1	1
82										
T11	No	Yes	1	1	1	1	1	1	1	1
139.182-119.1				1	1	1	1	1	1	1
82										
T12	No	Yes	1	1	1	1	1	1	1	1
119.182-99.18				1	1	1	1	1	1	1
2										
T13	No	Yes	1	1	1	1	1	1	1	1
99.182-79.182				1	1	1	1	1	1	1
T14	No	Yes	1	1	1	1	1	1	1	1
79.182-59.182				1	1	1	1	1	1	1
T15	No	Yes	1	1	1	1	1	1	1	1
59.182-39.182				1	1	1	1	1	1	1
T16	No	Yes	1	1	1	1	1	1	1	1
39.182-19.182				1	1	1	1	1	1	1
T17	No	Yes	1	1	1	1	1	1	1	1
19.182-14.411				1	1	1	1	1	1	1
T18	No	Yes	1	1	1	1	1	1	1	1
14.411-11.830				1	1	1	1	1	1	1
T19	No	Yes	1	1	1	1	1	1	1	1
11.830-9.499				1	1	1	1	1	1	1
T20	No	Yes	1	1	1	1	1	1	1	1
9.499-7.169				1	1	1	1	1	1	1
T21	No	Yes	1	1	1	1	1	1	1	1
7.169-1.200				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 311.351-310.351	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 310.351-299.182	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 299.182-279.182	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 279.182-259.182	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 259.182-239.182	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 239.182-219.182	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 219.182-199.182	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 199.182-179.182	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 179.182-159.182	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 159.182-139.182	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
T11 139.182-119.182	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
T12 119.182-99.182	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
T13 99.182-79.182	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
T14 79.182-59.182	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
T15 59.182-39.182	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
T16 39.182-19.182	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
T17 19.182-14.411	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
T18 14.411-11.830	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
T19 11.830-9.499	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
T20 9.499-7.169	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
T21 7.169-1.200	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 311.351-310.351	Flange	1.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 310.351-299.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 299.182-279.182	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 279.182-259.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 259.182-239.182	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 239.182-219.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 219.182-199.182	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 199.182-179.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 179.182-159.182	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 159.182-139.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 139.182-119.182	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 119.182-99.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 99.182-79.182	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 79.182-59.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 59.182-39.182	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T16 39.182-19.182	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T17 19.182-14.411	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T18 14.411-11.830	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T19 11.830-9.499	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T20 9.499-7.169	Sleeve DS	0.8750 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T21 7.169-1.200	Sleeve DS	0.8750 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
299.182	BS	A	13/16	8.00	10%	24000	1.390	376.362	259.000	0.0000	23.000	100%
		B	3/4	6.80	10%	24000	1.180	418.436	263.000	0.0000	-29.000	100%
		C	3/4	6.80	10%	24000	1.180	381.857	259.500	0.0000	16.000	100%
229.182	BS	A	7/8	9.20	10%	24000	1.610	328.541	259.000	0.0000	23.000	100%
		B	13/16	8.00	10%	24000	1.390	366.207	263.000	0.0000	-29.000	100%
		C	13/16	8.00	10%	24000	1.390	333.353	259.500	0.0000	16.000	100%
149.182	BS	A	13/16	8.00	10%	24000	1.390	285.290	259.000	0.0000	23.000	100%
		B	7/8	9.20	10%	24000	1.610	315.049	263.000	0.0000	-29.000	100%
		C	7/8	9.20	10%	24000	1.610	288.895	259.500	0.0000	16.000	100%
89.1822	BS	A	3/4	6.80	10%	24000	1.180	264.325	259.000	0.0000	23.000	100%
		B	13/16	8.00	10%	24000	1.390	285.484	263.000	0.0000	-29.000	100%
		C	13/16	8.00	10%	24000	1.390	266.640	259.500	0.0000	16.000	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
299.182	Corner						
229.182	Corner						
149.182	Corner						
89.1822	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
299.182	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
229.182	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
149.182	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
89.182	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
299.182	0.52	0.49	0.45		12.030 6.0 sec/pulse	14.786 6.6 sec/pulse	12.361 6.1 sec/pulse	
229.182	0.53	0.51	0.46		9.287 5.3 sec/pulse	11.407 5.8 sec/pulse	9.488 5.3 sec/pulse	
149.182	0.40	0.51	0.47		7.001 4.6 sec/pulse	8.560 5.1 sec/pulse	7.226 4.6 sec/pulse	
89.1822	0.31	0.40	0.37		6.034 4.2 sec/pulse	7.016 4.6 sec/pulse	6.144 4.3 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
299.182	No	No			1	1	1	1
229.182	No	No			1	1	1	1
149.182	No	No			1	1	1	1
89.1822	No	No			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
299.182	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
229.182	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
149.182	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
89.1822	0.6250 A325N	0	0.0000	0.75	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
299.182	A	161.091	29	8	2.3436
	B	135.091	28	7	2.3027
	C	157.591	29	8	2.3385
229.182	A	126.091	27	7	2.2869
	B	100.091	26	7	2.2347
	C	122.591	27	7	2.2805
149.182	A	86.091	25	7	2.2013

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	B	60.091	23	6	2.1235
	C	82.591	25	7	2.1922
89.1822	A	56.091	23	6	2.1090
	B	30.091	20	5	1.9816
	C	52.591	23	6	2.0954

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top / Bottom K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft
299.182	A	47.1592	8.38 / 8.00	0.00	6.27	-5.57	-18.09	0.00	0.00
	B	51.6001	7.19 / 6.80	3.76	5.73	2.17	8.27	0.00	-14.32
	C	47.8178	7.13 / 6.80	-4.05	5.39	2.34	7.78	-0.00	13.47
			Sum:	**-0.29**	17.38	**-1.06**	**-2.05**	0.00	**-0.85**
229.182	A	38.8356	9.53 / 9.20	0.00	6.14	-7.29	-17.72	0.00	0.00
	B	44.7865	8.36 / 8.00	5.03	6.02	2.90	8.68	0.00	-15.04
	C	39.7182	8.30 / 8.00	-5.43	5.44	3.13	7.85	-0.00	13.59
			Sum:	**-0.40**	17.59	**-1.26**	**-1.18**	0.00	**-1.45**
149.182	A	26.2286	8.18 / 8.00	0.00	3.77	-7.25	-10.89	0.00	0.00
	B	34.4118	9.49 / 9.20	6.67	5.53	3.85	7.99	0.00	-13.83
	C	27.4293	9.41 / 9.20	-7.15	4.52	4.13	6.52	-0.00	11.30
			Sum:	**-0.48**	13.83	**0.73**	**3.62**	0.00	**-2.53**
89.1822	A	14.4888	6.88 / 6.80	0.00	1.87	-6.62	-5.39	0.00	0.00
	B	24.4346	8.16 / 8.00	6.37	3.54	3.68	5.11	0.00	-8.85
	C	15.9173	8.10 / 8.00	-6.70	2.39	3.87	3.45	-0.00	5.98
			Sum:	**-0.33**	7.80	**0.93**	**3.18**	0.00	**-2.87**

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top / Bottom K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft
299.182	A	47.1592	20.14 / 17.27	0.00	15.67	-12.66	-45.22	0.00	0.00
	B	51.6001	18.41 / 15.21	8.99	15.20	5.19	21.95	0.00	-38.01

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
	C	47.8178	18.28	-9.76	14.40	5.63	20.78	-0.00	36.00
			15.46						
			Sum:	**-0.77**	45.27	**-1.84**	**-2.50**	0.00	**-2.02**
229.182	A	38.8356	21.26	0.00	14.36	-15.67	-41.47	0.00	0.00
			19.11						
	B	44.7865	19.46	11.14	14.59	6.43	21.06	0.00	-36.48
			16.95						
	C	39.7182	19.39	-12.17	13.37	7.02	19.30	-0.00	33.43
			17.26						
			Sum:	**-1.02**	42.33	**-2.22**	**-1.11**	0.00	**-3.05**
149.182	A	26.2286	18.42	0.00	9.22	-15.94	-26.63	0.00	0.00
			17.22						
	B	34.4118	20.19	13.79	12.41	7.96	17.91	0.00	-31.02
			18.52						
	C	27.4293	20.25	-15.03	10.44	8.68	15.07	-0.00	26.10
			18.95						
			Sum:	**-1.24**	32.07	**0.70**	**6.35**	0.00	**-4.92**
89.1822	A	14.4888	15.82	0.00	5.01	-15.01	-14.47	0.00	0.00
			15.26						
	B	24.4346	17.22	13.17	8.08	7.60	11.67	0.00	-20.21
			16.26						
	C	15.9173	17.54	-14.30	5.90	8.26	8.51	-0.00	14.74
			16.89						
			Sum:	**-1.14**	18.99	**0.86**	**5.70**	0.00	**-5.47**

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
299.182	A	47.1592	8.38	0.00	6.27	-5.57	-18.09	0.00	0.00
			8.00						
	B	51.6001	7.19	3.76	5.73	2.17	8.27	0.00	-14.32
			6.80						
	C	47.8178	7.13	-4.05	5.39	2.34	7.78	-0.00	13.47
			6.80						
			Sum:	**-0.29**	17.38	**-1.06**	**-2.05**	0.00	**-0.85**
229.182	A	38.8356	9.53	0.00	6.14	-7.29	-17.72	0.00	0.00
			9.20						
	B	44.7865	8.36	5.03	6.02	2.90	8.68	0.00	-15.04
			8.00						
	C	39.7182	8.30	-5.43	5.44	3.13	7.85	-0.00	13.59
			8.00						
			Sum:	**-0.40**	17.59	**-1.26**	**-1.18**	0.00	**-1.45**
149.182	A	26.2286	8.18	0.00	3.77	-7.25	-10.89	0.00	0.00
			8.00						
	B	34.4118	9.49	6.67	5.53	3.85	7.99	0.00	-13.83
			9.20						
	C	27.4293	9.41	-7.15	4.52	4.13	6.52	-0.00	11.30
			9.20						
			Sum:	**-0.48**	13.83	**0.73**	**3.62**	0.00	**-2.53**
89.1822	A	14.4888	6.88	0.00	1.87	-6.62	-5.39	0.00	0.00

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
	B	24.4346	6.80 8.16	6.37	3.54	3.68	5.11	0.00	-8.85
	C	15.9173	8.00 8.10	-6.70	2.39	3.87	3.45	-0.00	5.98
			8.00 Sum:	**-0.33**	7.80	**0.93**	**3.18**	0.00	**-2.87**

Guy-Tensioning Information

Guy Elevation		H	V	Temperature At Time Of Tensioning: 0 F Initial Tension	0 F Intercept	20 F Initial Tension	20 F Intercept	40 F Initial Tension	40 F Intercept	60 F Initial Tension	60 F Intercept	80 F Initial Tension	80 F Intercept	100 F Initial Tension	100 F Intercept	120 F Initial Tension	120 F Intercept
ft		ft	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft
299.182	A	256.11	276.18	9.503	10.16	8.992	10.73	8.490	11.35	8.000	12.03	7.523	12.78	7.062	13.59	6.619	14.48
	B	260.11	328.18	7.862	12.83	7.502	13.43	7.147	14.08	6.800	14.79	6.461	15.54	6.131	16.36	5.811	17.23
	C	256.61	283.18	8.050	10.48	7.625	11.05	7.208	11.68	6.800	12.36	6.403	13.11	6.019	13.93	5.650	14.81
229.182	A	256.11	206.18	11.494	7.46	10.710	8.00	9.944	8.60	9.200	9.29	8.484	10.06	7.801	10.92	7.138	11.91
	B	260.11	258.18	9.636	9.50	9.078	10.08	8.532	10.71	8.000	11.41	7.484	12.18	6.987	13.02	6.513	13.95
	C	256.61	213.18	9.933	7.67	9.272	8.20	8.627	8.81	8.000	9.49	7.395	10.25	6.817	11.10	6.256	12.08
149.182	A	256.11	126.18	10.654	5.27	9.743	5.76	8.855	6.33	8.000	7.00	7.186	7.79	6.426	8.70	5.731	9.74
	B	260.11	178.18	11.772	6.71	10.891	7.25	10.031	7.86	9.200	8.56	8.404	9.36	7.652	10.26	6.952	11.28
	C	256.61	133.18	12.201	5.46	11.170	5.96	10.167	6.54	9.200	7.23	8.280	8.02	7.421	8.94	6.634	9.98
89.1822	A	256.11	66.18	9.452	4.35	8.539	4.81	7.652	5.36	6.800	6.03	5.998	6.84	5.261	7.79	4.605	8.89
	B	260.11	118.18	10.727	5.24	9.789	5.74	8.877	6.33	8.000	7.02	7.168	7.82	6.393	8.76	5.689	9.83
	C	256.61	73.18	11.063	4.45	10.009	4.92	8.984	5.47	8.000	6.14	7.072	6.95	6.218	7.89	5.455	8.99

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
1-5/8" ***	B	No	Ar (CaAa)	112.700 - 14.200	0.0000	-0.38	12	6	0.5000	1.9800		0.82
1-5/8"	B	No	Ar (CaAa)	145.000 - 14.200	0.0000	0.32	11	7	0.5000	1.9800		0.82
1-5/8" ***	B	No	Ar (CaAa)	161.200 - 145.000	0.0000	0.32	8	4	0.5000	1.9800		0.82
1-5/8"	C	No	Ar (CaAa)	128.049 - 14.200	0.0000	-0.4	4	4	0.5000	1.9800		0.82
3/8"	C	No	Ar (CaAa)	251.799 - 14.200	1.7000	-0.4	1	1	0.3750	0.3750		0.18
EW71	C	No	Ar (CaAa)	196.049 - 14.200	0.0000	-0.3	1	1	0.5000	1.1313		0.45
1-5/8"	C	No	Ar (CaAa)	180.049 - 14.200	0.0000	-0.25	1	1	0.5000	1.9800		0.82
1"	C	No	Ar (CaAa)	311.340 - 12.200	0.0000	0	1	1	0.5000	1.0000		1.13
1-5/8"	C	No	Ar (CaAa)	128.049 - 14.200	0.0000	0.25	5	4	0.5000	1.9800		0.82
7/8"	C	No	Ar (CaAa)	261.049 - 14.200	0.0000	0.35	1	1	0.5000	1.1100		0.54
1/2"	C	No	Ar (CaAa)	21.049 - 14.200	0.0000	0.45	3	3	0.5000 5.0000	0.5800		0.15
1/2"	C	No	Ar (CaAa)	164.549 - 21.049	0.0000	0.45	2	2	0.5000	0.5800		0.15
1/2" ***	C	No	Ar (CaAa)	213.049 - 165.700	0.0000	0.45	1	1	0.5000	0.5800		0.15
1/4"	A	No	Ar (CaAa)	136.549 - 14.200	0.0000	-0.47	1	1	0.2500	0.2500		0.25
7/8"	A	No	Ar (CaAa)	235.049 - 14.200	1.0000	-0.45	1	1	0.5000	1.1100		0.54
3/8"	A	No	Ar (CaAa)	146.549 - 14.200	0.0000	-0.42	3	3	0.3750	0.3750		0.18
3/8"	A	No	Ar (CaAa)	220.049 - 146.549	0.0000	-0.42	2	2	0.3750	0.3750		0.18

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
3"	A	No	Ar (CaAa)	311.340 - 14.200	0.0000	-0.35	1	1	0.5000	3.0100		1.78
***												
1-5/8"	A	No	Ar (CaAa)	120.549 - 14.200	0.0000	0.3	6	6	0.5000	1.9800		0.82
3/8"	A	No	Ar (CaAa)	48.049 - 14.200	2.0000	0.2	1	1	0.3750	0.3750		0.18
3"	A	No	Ar (CaAa)	308.049 - 14.200	0.0000	0.45	1	1	0.5000	3.0100		1.78
***												
7/8"	A	No	Ar (CaAa)	243.049 - 14.200	-1.5000	-0.35	2	2	0.5000	1.1100		0.54
1/4"	A	No	Ar (CaAa)	233.049 - 14.200	-1.5000	-0.4	2	2	0.2500	0.2500		0.25
3/8"	A	No	Ar (CaAa)	232.049 - 14.200	-1.5000	-0.45	1	1	0.3750	0.3750		0.18
1-5/8"	A	No	Ar (CaAa)	165.049 - 14.200	-1.5000	-0.3	2	2	0.5000	1.9800		0.82
***												
Safety Line 3/8	A	No	Ar (CaAa)	311.340 - 1.200	0.0000	0	1	1	0.3750	0.3750		0.22
***												
3/4"	B	No	Ar (CaAa)	112.700 - 14.200	0.0000	-0.23	4	2	0.5000	0.9950		0.47
3/8"	B	No	Ar (CaAa)	112.700 - 14.200	0.0000	-0.19	2	2	0.3750	0.3750		0.18
***												
1/2"	B	No	Ar (CaAa)	265.000 - 14.200	0.0000	0	1	1	0.5000 5.0000	0.5800		0.15

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
3"	A	No	Inside Pole	346.351 - 311.360	1	No Ice	0.000	1.78
						1/2" Ice	0.000	1.78
						1" Ice	0.000	1.78
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	346.351-329.351	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L2	329.351-311.351	A	0.000	0.000	0.000	0.000	0.03
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T1	311.351-310.351	A	0.000	0.000	0.335	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.099	0.000	0.00
T2	310.351-299.182	A	0.000	0.000	6.450	0.000	0.04
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	1.117	0.000	0.01
T3	299.182-279.182	A	0.000	0.000	12.790	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.000	0.000	0.02
T4	279.182-259.182	A	0.000	0.000	12.790	0.000	0.08
		B	0.000	0.000	0.337	0.000	0.00
		C	0.000	0.000	2.207	0.000	0.02

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T5	259.182-239.182	A	0.000	0.000	13.648	0.000	0.08
		B	0.000	0.000	1.160	0.000	0.00
		C	0.000	0.000	4.693	0.000	0.04
T6	239.182-219.182	A	0.000	0.000	20.232	0.000	0.12
		B	0.000	0.000	1.160	0.000	0.00
		C	0.000	0.000	4.970	0.000	0.04
T7	219.182-199.182	A	0.000	0.000	22.700	0.000	0.13
		B	0.000	0.000	1.160	0.000	0.00
		C	0.000	0.000	5.774	0.000	0.04
T8	199.182-179.182	A	0.000	0.000	22.700	0.000	0.13
		B	0.000	0.000	1.160	0.000	0.00
		C	0.000	0.000	8.210	0.000	0.05
T9	179.182-159.182	A	0.000	0.000	25.023	0.000	0.14
		B	0.000	0.000	4.356	0.000	0.02
		C	0.000	0.000	12.597	0.000	0.07
T10	159.182-139.182	A	0.000	0.000	30.896	0.000	0.16
		B	0.000	0.000	36.296	0.000	0.15
		C	0.000	0.000	13.513	0.000	0.07
T11	139.182-119.182	A	0.000	0.000	33.428	0.000	0.18
		B	0.000	0.000	44.720	0.000	0.18
		C	0.000	0.000	29.313	0.000	0.13
T12	119.182-99.182	A	0.000	0.000	55.630	0.000	0.27
		B	0.000	0.000	83.232	0.000	0.35
		C	0.000	0.000	49.153	0.000	0.22
T13	99.182-79.182	A	0.000	0.000	55.630	0.000	0.27
		B	0.000	0.000	101.700	0.000	0.42
		C	0.000	0.000	49.153	0.000	0.22
T14	79.182-59.182	A	0.000	0.000	55.630	0.000	0.27
		B	0.000	0.000	101.700	0.000	0.42
		C	0.000	0.000	49.153	0.000	0.22
T15	59.182-39.182	A	0.000	0.000	55.962	0.000	0.27
		B	0.000	0.000	101.700	0.000	0.42
		C	0.000	0.000	49.153	0.000	0.22
T16	39.182-19.182	A	0.000	0.000	56.380	0.000	0.27
		B	0.000	0.000	101.700	0.000	0.42
		C	0.000	0.000	49.261	0.000	0.22
T17	19.182-14.411	A	0.000	0.000	13.449	0.000	0.06
		B	0.000	0.000	24.261	0.000	0.10
		C	0.000	0.000	12.002	0.000	0.05
T18	14.411-11.830	A	0.000	0.000	0.684	0.000	0.00
		B	0.000	0.000	1.074	0.000	0.00
		C	0.000	0.000	0.731	0.000	0.00
T19	11.830-9.499	A	0.000	0.000	0.087	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
T20	9.499-7.169	A	0.000	0.000	0.087	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
T21	7.169-1.200	A	0.000	0.000	0.224	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 K
L1	346.351-329.351	A	2.524	0.000	0.000	0.000	0.000	0.03

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L2	329.351-311.351	A	2.510	0.000	0.000	0.000	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T1	311.351-310.351	A	2.503	0.000	0.000	1.325	0.000	0.03
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.594	0.000	0.01
T2	310.351-299.182	A	2.498	0.000	0.000	22.039	0.000	0.47
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	6.697	0.000	0.13
T3	299.182-279.182	A	2.485	0.000	0.000	42.608	0.000	0.92
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	11.939	0.000	0.23
T4	279.182-259.182	A	2.467	0.000	0.000	42.395	0.000	0.91
		B		0.000	0.000	3.208	0.000	0.05
		C		0.000	0.000	12.997	0.000	0.25
T5	259.182-239.182	A	2.448	0.000	0.000	46.855	0.000	0.96
		B		0.000	0.000	10.952	0.000	0.18
		C		0.000	0.000	30.455	0.000	0.56
T6	239.182-219.182	A	2.428	0.000	0.000	96.226	0.000	1.61
		B		0.000	0.000	10.871	0.000	0.18
		C		0.000	0.000	34.103	0.000	0.62
T7	219.182-199.182	A	2.406	0.000	0.000	126.329	0.000	1.94
		B		0.000	0.000	10.783	0.000	0.18
		C		0.000	0.000	41.314	0.000	0.73
T8	199.182-179.182	A	2.382	0.000	0.000	125.340	0.000	1.91
		B		0.000	0.000	10.686	0.000	0.18
		C		0.000	0.000	54.762	0.000	0.96
T9	179.182-159.182	A	2.355	0.000	0.000	132.575	0.000	1.99
		B		0.000	0.000	14.829	0.000	0.26
		C		0.000	0.000	70.982	0.000	1.24
T10	159.182-139.182	A	2.326	0.000	0.000	151.747	0.000	2.24
		B		0.000	0.000	57.170	0.000	1.13
		C		0.000	0.000	78.200	0.000	1.25
T11	139.182-119.182	A	2.292	0.000	0.000	162.891	0.000	2.40
		B		0.000	0.000	68.516	0.000	1.36
		C		0.000	0.000	112.922	0.000	1.81
T12	119.182-99.182	A	2.254	0.000	0.000	208.674	0.000	3.14
		B		0.000	0.000	132.765	0.000	2.47
		C		0.000	0.000	156.097	0.000	2.50
T13	99.182-79.182	A	2.209	0.000	0.000	206.037	0.000	3.06
		B		0.000	0.000	162.353	0.000	2.96
		C		0.000	0.000	154.264	0.000	2.44
T14	79.182-59.182	A	2.154	0.000	0.000	202.802	0.000	2.96
		B		0.000	0.000	160.619	0.000	2.89
		C		0.000	0.000	152.016	0.000	2.36
T15	59.182-39.182	A	2.081	0.000	0.000	202.608	0.000	2.89
		B		0.000	0.000	158.358	0.000	2.80
		C		0.000	0.000	149.086	0.000	2.26
T16	39.182-19.182	A	1.976	0.000	0.000	201.060	0.000	2.77
		B		0.000	0.000	155.047	0.000	2.68
		C		0.000	0.000	144.997	0.000	2.13
T17	19.182-14.411	A	1.869	0.000	0.000	46.385	0.000	0.62
		B		0.000	0.000	36.195	0.000	0.61
		C		0.000	0.000	34.035	0.000	0.48
T18	14.411-11.830	A	1.824	0.000	0.000	2.977	0.000	0.04
		B		0.000	0.000	1.587	0.000	0.03
		C		0.000	0.000	2.417	0.000	0.04
T19	11.830-9.499	A	1.786	0.000	0.000	0.920	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	0.000	0.00
T20	9.499-7.169	A	1.743	0.000	0.000	0.900	0.000	0.01
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T21	7.169-1.200	A	1.627	0.000	0.000	2.166	0.000	0.03
		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
L1	346.351-329.351	0.0000	0.0000	0.0000	0.0000
L2	329.351-311.351	0.0000	0.0000	0.0000	0.0000
T1	311.351-310.351	-0.4179	0.1981	0.0000	0.0000
T2	310.351-299.182	-1.3557	-0.5451	-0.7654	-0.1911
T3	299.182-279.182	-1.3384	-0.8155	-0.7380	-0.3072
T4	279.182-259.182	-1.3126	-0.7981	-0.6996	-0.3130
T5	259.182-239.182	-1.4176	-0.4231	-0.5891	-0.0080
T6	239.182-219.182	-2.0803	0.0909	-0.9136	0.3061
T7	219.182-199.182	-2.3942	0.3210	-1.1727	0.4767
T8	199.182-179.182	-2.1540	0.5127	-1.0537	0.6491
T9	179.182-159.182	-1.5450	0.9051	-0.7558	0.7832
T10	159.182-139.182	0.4783	1.2106	-0.2475	0.7249
T11	139.182-119.182	1.0316	1.6341	-0.1555	0.9270
T12	119.182-99.182	0.7654	-0.2383	-0.1098	0.2730
T13	99.182-79.182	0.8207	-0.6991	-0.0682	0.1124
T14	79.182-59.182	0.8207	-0.6991	-0.0620	0.1057
T15	59.182-39.182	0.8153	-0.7058	-0.0722	0.0607
T16	39.182-19.182	0.8047	-0.7115	-0.0848	0.0050
T17	19.182-14.411	0.7530	-0.6732	-0.0903	0.0094
T18	14.411-11.830	0.2592	-0.1602	-0.1759	0.0882
T19	11.830-9.499	-0.0595	-0.0344	-0.1121	-0.0647
T20	9.499-7.169	-0.0567	-0.0327	-0.0687	-0.0397
T21	7.169-1.200	-0.0338	-0.0195	-0.0131	-0.0076

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	11	1"	310.35 - 311.34	0.4562	0.0000
T1	22	3"	310.35 - 311.34	0.4562	0.0000
T1	34	Safety Line 3/8	310.35 - 311.34	0.4562	0.0000
T2	11	1"	299.18 - 310.35	0.6000	0.3555
T2	22	3"	299.18 - 310.35	0.6000	0.3555

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	26	3"	299.18 - 308.05	0.6000	0.3555
T2	34	Safety Line 3/8	299.18 - 310.35	0.6000	0.3555
T3	11	1"	279.18 - 299.18	0.6000	0.3454
T3	22	3"	279.18 - 299.18	0.6000	0.3454
T3	26	3"	279.18 - 299.18	0.6000	0.3454
T3	34	Safety Line 3/8	279.18 - 299.18	0.6000	0.3454
T4	11	1"	259.18 - 279.18	0.6000	0.3487
T4	13	7/8"	259.18 - 261.05	0.6000	0.3487
T4	22	3"	259.18 - 279.18	0.6000	0.3487
T4	26	3"	259.18 - 279.18	0.6000	0.3487
T4	34	Safety Line 3/8	259.18 - 279.18	0.6000	0.3487
T4	45	1/2"	259.18 - 265.00	0.6000	0.3487
T5	8	3/8"	239.18 - 251.80	0.6000	0.3522
T5	11	1"	239.18 - 259.18	0.6000	0.3522
T5	13	7/8"	239.18 - 259.18	0.6000	0.3522
T5	22	3"	239.18 - 259.18	0.6000	0.3522
T5	26	3"	239.18 - 259.18	0.6000	0.3522
T5	28	7/8"	239.18 - 243.05	0.6000	0.3522
T5	34	Safety Line 3/8	239.18 - 259.18	0.6000	0.3522
T5	45	1/2"	239.18 - 259.18	0.6000	0.3522
T6	8	3/8"	219.18 - 239.18	0.6000	0.3560
T6	11	1"	219.18 - 239.18	0.6000	0.3560
T6	13	7/8"	219.18 - 239.18	0.6000	0.3560
T6	19	7/8"	219.18 - 235.05	0.6000	0.3560
T6	21	3/8"	219.18 - 220.05	0.6000	0.3560
T6	22	3"	219.18 - 239.18	0.6000	0.3560
T6	26	3"	219.18 - 239.18	0.6000	0.3560
T6	28	7/8"	219.18 - 239.18	0.6000	0.3560
T6	29	1/4"	219.18 - 233.05	0.6000	0.3560
T6	30	3/8"	219.18 - 232.05	0.6000	0.3560
T6	34	Safety Line 3/8	219.18 - 239.18	0.6000	0.3560

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	45	1/2"	219.18 - 239.18	0.6000	0.3560
T7	8	3/8"	199.18 - 219.18	0.6000	0.3601
T7	11	1"	199.18 - 219.18	0.6000	0.3601
T7	13	7/8"	199.18 - 219.18	0.6000	0.3601
T7	16	1/2"	199.18 - 213.05	0.6000	0.3601
T7	19	7/8"	199.18 - 219.18	0.6000	0.3601
T7	21	3/8"	199.18 - 219.18	0.6000	0.3601
T7	22	3"	199.18 - 219.18	0.6000	0.3601
T7	26	3"	199.18 - 219.18	0.6000	0.3601
T7	28	7/8"	199.18 - 219.18	0.6000	0.3601
T7	29	1/4"	199.18 - 219.18	0.6000	0.3601
T7	30	3/8"	199.18 - 219.18	0.6000	0.3601
T7	34	Safety Line 3/8	199.18 - 219.18	0.6000	0.3601
T7	45	1/2"	199.18 - 219.18	0.6000	0.3601
T8	8	3/8"	179.18 - 199.18	0.6000	0.3646
T8	9	EW71	179.18 - 196.05	0.6000	0.3646
T8	10	1-5/8"	179.18 - 180.05	0.6000	0.3646
T8	11	1"	179.18 - 199.18	0.6000	0.3646
T8	13	7/8"	179.18 - 199.18	0.6000	0.3646
T8	16	1/2"	179.18 - 199.18	0.6000	0.3646
T8	19	7/8"	179.18 - 199.18	0.6000	0.3646
T8	21	3/8"	179.18 - 199.18	0.6000	0.3646
T8	22	3"	179.18 - 199.18	0.6000	0.3646
T8	26	3"	179.18 - 199.18	0.6000	0.3646
T8	28	7/8"	179.18 - 199.18	0.6000	0.3646
T8	29	1/4"	179.18 - 199.18	0.6000	0.3646
T8	30	3/8"	179.18 - 199.18	0.6000	0.3646
T8	34	Safety Line 3/8	179.18 - 199.18	0.6000	0.3646
T8	45	1/2"	179.18 - 199.18	0.6000	0.3646
T9	4	1-5/8"	159.18 - 161.20	0.6000	0.3695
T9	8	3/8"	159.18 - 179.18	0.6000	0.3695

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	9	EW71	159.18 - 179.18	0.6000	0.3695
T9	10	1-5/8"	159.18 - 179.18	0.6000	0.3695
T9	11	1"	159.18 - 179.18	0.6000	0.3695
T9	13	7/8"	159.18 - 179.18	0.6000	0.3695
T9	15	1/2"	159.18 - 164.55	0.6000	0.3695
T9	16	1/2"	165.70 - 179.18	0.6000	0.3695
T9	19	7/8"	159.18 - 179.18	0.6000	0.3695
T9	21	3/8"	159.18 - 179.18	0.6000	0.3695
T9	22	3"	159.18 - 179.18	0.6000	0.3695
T9	26	3"	159.18 - 179.18	0.6000	0.3695
T9	28	7/8"	159.18 - 179.18	0.6000	0.3695
T9	29	1/4"	159.18 - 179.18	0.6000	0.3695
T9	30	3/8"	159.18 - 179.18	0.6000	0.3695
T9	31	1-5/8"	159.18 - 165.05	0.6000	0.3695
T9	34	Safety Line 3/8	159.18 - 179.18	0.6000	0.3695
T9	45	1/2"	159.18 - 179.18	0.6000	0.3695
T10	3	1-5/8"	139.18 - 145.00	0.6000	0.3613
T10	4	1-5/8"	145.00 - 159.18	0.6000	0.3613
T10	8	3/8"	139.18 - 159.18	0.6000	0.3613
T10	9	EW71	139.18 - 159.18	0.6000	0.3613
T10	10	1-5/8"	139.18 - 159.18	0.6000	0.3613
T10	11	1"	139.18 - 159.18	0.6000	0.3613
T10	13	7/8"	139.18 - 159.18	0.6000	0.3613
T10	15	1/2"	139.18 - 159.18	0.6000	0.3613
T10	19	7/8"	139.18 - 159.18	0.6000	0.3613
T10	20	3/8"	139.18 - 146.55	0.6000	0.3613
T10	21	3/8"	146.55 - 159.18	0.6000	0.3613
T10	22	3"	139.18 - 159.18	0.6000	0.3613
T10	26	3"	139.18 - 159.18	0.6000	0.3613
T10	28	7/8"	139.18 - 159.18	0.6000	0.3613
T10	29	1/4"	139.18 - 159.18	0.6000	0.3613

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	30	3/8"	139.18 - 159.18	0.6000	0.3613
T10	31	1-5/8"	139.18 - 159.18	0.6000	0.3613
T10	34	Safety Line 3/8	139.18 - 159.18	0.6000	0.3613
T10	45	1/2"	139.18 - 159.18	0.6000	0.3613
T11	3	1-5/8"	119.18 - 139.18	0.6000	0.3779
T11	6	1-5/8"	119.18 - 128.05	0.6000	0.3779
T11	8	3/8"	119.18 - 139.18	0.6000	0.3779
T11	9	EW71	119.18 - 139.18	0.6000	0.3779
T11	10	1-5/8"	119.18 - 139.18	0.6000	0.3779
T11	11	1"	119.18 - 139.18	0.6000	0.3779
T11	12	1-5/8"	119.18 - 128.05	0.6000	0.3779
T11	13	7/8"	119.18 - 139.18	0.6000	0.3779
T11	15	1/2"	119.18 - 139.18	0.6000	0.3779
T11	18	1/4"	119.18 - 136.55	0.6000	0.3779
T11	19	7/8"	119.18 - 139.18	0.6000	0.3779
T11	20	3/8"	119.18 - 139.18	0.6000	0.3779
T11	22	3"	119.18 - 139.18	0.6000	0.3779
T11	24	1-5/8"	119.18 - 120.55	0.6000	0.3779
T11	26	3"	119.18 - 139.18	0.6000	0.3779
T11	28	7/8"	119.18 - 139.18	0.6000	0.3779
T11	29	1/4"	119.18 - 139.18	0.6000	0.3779
T11	30	3/8"	119.18 - 139.18	0.6000	0.3779
T11	31	1-5/8"	119.18 - 139.18	0.6000	0.3779
T11	34	Safety Line 3/8	119.18 - 139.18	0.6000	0.3779
T11	45	1/2"	119.18 - 139.18	0.6000	0.3779
T12	1	1-5/8"	99.18 - 112.70	0.6000	0.3850
T12	3	1-5/8"	99.18 - 119.18	0.6000	0.3850
T12	6	1-5/8"	99.18 - 119.18	0.6000	0.3850
T12	8	3/8"	99.18 - 119.18	0.6000	0.3850
T12	9	EW71	99.18 - 119.18	0.6000	0.3850
T12	10	1-5/8"	99.18 - 119.18	0.6000	0.3850
T12	11	1"	99.18 - 119.18	0.6000	0.3850
T12	12	1-5/8"	99.18 - 119.18	0.6000	0.3850
T12	13	7/8"	99.18 - 119.18	0.6000	0.3850
T12	15	1/2"	99.18 - 119.18	0.6000	0.3850
T12	18	1/4"	99.18 - 119.18	0.6000	0.3850
T12	19	7/8"	99.18 - 119.18	0.6000	0.3850

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	20	3/8"	99.18 - 119.18	0.6000	0.3850
T12	22	3"	99.18 - 119.18	0.6000	0.3850
T12	24	1-5/8"	99.18 - 119.18	0.6000	0.3850
T12	26	3"	99.18 - 119.18	0.6000	0.3850
T12	28	7/8"	99.18 - 119.18	0.6000	0.3850
T12	29	1/4"	99.18 - 119.18	0.6000	0.3850
T12	30	3/8"	99.18 - 119.18	0.6000	0.3850
T12	31	1-5/8"	99.18 - 119.18	0.6000	0.3850
T12	34	Safety Line 3/8	99.18 - 119.18	0.6000	0.3850
T12	42	3/4"	99.18 - 112.70	0.6000	0.3850
T12	43	3/8"	99.18 - 112.70	0.6000	0.3850
T12	45	1/2"	99.18 - 119.18	0.6000	0.3850
T13	1	1-5/8"	79.18 - 99.18	0.6000	0.3934
T13	3	1-5/8"	79.18 - 99.18	0.6000	0.3934
T13	6	1-5/8"	79.18 - 99.18	0.6000	0.3934
T13	8	3/8"	79.18 - 99.18	0.6000	0.3934
T13	9	EW71	79.18 - 99.18	0.6000	0.3934
T13	10	1-5/8"	79.18 - 99.18	0.6000	0.3934
T13	11	1"	79.18 - 99.18	0.6000	0.3934
T13	12	1-5/8"	79.18 - 99.18	0.6000	0.3934
T13	13	7/8"	79.18 - 99.18	0.6000	0.3934
T13	15	1/2"	79.18 - 99.18	0.6000	0.3934
T13	18	1/4"	79.18 - 99.18	0.6000	0.3934
T13	19	7/8"	79.18 - 99.18	0.6000	0.3934
T13	20	3/8"	79.18 - 99.18	0.6000	0.3934
T13	22	3"	79.18 - 99.18	0.6000	0.3934
T13	24	1-5/8"	79.18 - 99.18	0.6000	0.3934
T13	26	3"	79.18 - 99.18	0.6000	0.3934
T13	28	7/8"	79.18 - 99.18	0.6000	0.3934
T13	29	1/4"	79.18 - 99.18	0.6000	0.3934
T13	30	3/8"	79.18 - 99.18	0.6000	0.3934
T13	31	1-5/8"	79.18 - 99.18	0.6000	0.3934
T13	34	Safety Line 3/8	79.18 - 99.18	0.6000	0.3934
T13	42	3/4"	79.18 - 99.18	0.6000	0.3934
T13	43	3/8"	79.18 - 99.18	0.6000	0.3934
T13	45	1/2"	79.18 - 99.18	0.6000	0.3934
T14	1	1-5/8"	59.18 - 79.18	0.6000	0.4038
T14	3	1-5/8"	59.18 - 79.18	0.6000	0.4038
T14	6	1-5/8"	59.18 - 79.18	0.6000	0.4038
T14	8	3/8"	59.18 - 79.18	0.6000	0.4038
T14	9	EW71	59.18 - 79.18	0.6000	0.4038
T14	10	1-5/8"	59.18 - 79.18	0.6000	0.4038
T14	11	1"	59.18 - 79.18	0.6000	0.4038
T14	12	1-5/8"	59.18 - 79.18	0.6000	0.4038
T14	13	7/8"	59.18 - 79.18	0.6000	0.4038
T14	15	1/2"	59.18 - 79.18	0.6000	0.4038
T14	18	1/4"	59.18 - 79.18	0.6000	0.4038
T14	19	7/8"	59.18 - 79.18	0.6000	0.4038
T14	20	3/8"	59.18 - 79.18	0.6000	0.4038
T14	22	3"	59.18 - 79.18	0.6000	0.4038
T14	24	1-5/8"	59.18 - 79.18	0.6000	0.4038
T14	26	3"	59.18 - 79.18	0.6000	0.4038
T14	28	7/8"	59.18 - 79.18	0.6000	0.4038
T14	29	1/4"	59.18 - 79.18	0.6000	0.4038
T14	30	3/8"	59.18 - 79.18	0.6000	0.4038
T14	31	1-5/8"	59.18 - 79.18	0.6000	0.4038
T14	34	Safety Line 3/8	59.18 - 79.18	0.6000	0.4038
T14	42	3/4"	59.18 - 79.18	0.6000	0.4038
T14	43	3/8"	59.18 - 79.18	0.6000	0.4038
T14	45	1/2"	59.18 - 79.18	0.6000	0.4038
T15	1	1-5/8"	39.18 - 59.18	0.6000	0.4174
T15	3	1-5/8"	39.18 - 59.18	0.6000	0.4174

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	6	1-5/8"	39.18 - 59.18	0.6000	0.4174
T15	8	3/8"	39.18 - 59.18	0.6000	0.4174
T15	9	EW71	39.18 - 59.18	0.6000	0.4174
T15	10	1-5/8"	39.18 - 59.18	0.6000	0.4174
T15	11	1"	39.18 - 59.18	0.6000	0.4174
T15	12	1-5/8"	39.18 - 59.18	0.6000	0.4174
T15	13	7/8"	39.18 - 59.18	0.6000	0.4174
T15	15	1/2"	39.18 - 59.18	0.6000	0.4174
T15	18	1/4"	39.18 - 59.18	0.6000	0.4174
T15	19	7/8"	39.18 - 59.18	0.6000	0.4174
T15	20	3/8"	39.18 - 59.18	0.6000	0.4174
T15	22	3"	39.18 - 59.18	0.6000	0.4174
T15	24	1-5/8"	39.18 - 59.18	0.6000	0.4174
T15	25	3/8"	39.18 - 48.05	0.6000	0.4174
T15	26	3"	39.18 - 59.18	0.6000	0.4174
T15	28	7/8"	39.18 - 59.18	0.6000	0.4174
T15	29	1/4"	39.18 - 59.18	0.6000	0.4174
T15	30	3/8"	39.18 - 59.18	0.6000	0.4174
T15	31	1-5/8"	39.18 - 59.18	0.6000	0.4174
T15	34	Safety Line 3/8	39.18 - 59.18	0.6000	0.4174
T15	42	3/4"	39.18 - 59.18	0.6000	0.4174
T15	43	3/8"	39.18 - 59.18	0.6000	0.4174
T15	45	1/2"	39.18 - 59.18	0.6000	0.4174
T16	1	1-5/8"	19.18 - 39.18	0.6000	0.4374
T16	3	1-5/8"	19.18 - 39.18	0.6000	0.4374
T16	6	1-5/8"	19.18 - 39.18	0.6000	0.4374
T16	8	3/8"	19.18 - 39.18	0.6000	0.4374
T16	9	EW71	19.18 - 39.18	0.6000	0.4374
T16	10	1-5/8"	19.18 - 39.18	0.6000	0.4374
T16	11	1"	19.18 - 39.18	0.6000	0.4374
T16	12	1-5/8"	19.18 - 39.18	0.6000	0.4374
T16	13	7/8"	19.18 - 39.18	0.6000	0.4374
T16	14	1/2"	19.18 - 21.05	0.6000	0.4374
T16	15	1/2"	21.05 - 39.18	0.6000	0.4374
T16	18	1/4"	19.18 - 39.18	0.6000	0.4374
T16	19	7/8"	19.18 - 39.18	0.6000	0.4374
T16	20	3/8"	19.18 - 39.18	0.6000	0.4374
T16	22	3"	19.18 - 39.18	0.6000	0.4374
T16	24	1-5/8"	19.18 - 39.18	0.6000	0.4374
T16	25	3/8"	19.18 - 39.18	0.6000	0.4374
T16	26	3"	19.18 - 39.18	0.6000	0.4374
T16	28	7/8"	19.18 - 39.18	0.6000	0.4374
T16	29	1/4"	19.18 - 39.18	0.6000	0.4374
T16	30	3/8"	19.18 - 39.18	0.6000	0.4374
T16	31	1-5/8"	19.18 - 39.18	0.6000	0.4374
T16	34	Safety Line 3/8	19.18 - 39.18	0.6000	0.4374
T16	42	3/4"	19.18 - 39.18	0.6000	0.4374
T16	43	3/8"	19.18 - 39.18	0.6000	0.4374
T16	45	1/2"	19.18 - 39.18	0.6000	0.4374
T17	1	1-5/8"	14.41 - 19.18	0.6000	0.3435
T17	3	1-5/8"	14.41 - 19.18	0.6000	0.3435
T17	6	1-5/8"	14.41 - 19.18	0.6000	0.3435
T17	8	3/8"	14.41 - 19.18	0.6000	0.3435
T17	9	EW71	14.41 - 19.18	0.6000	0.3435
T17	10	1-5/8"	14.41 - 19.18	0.6000	0.3435
T17	11	1"	14.41 - 19.18	0.6000	0.3435
T17	12	1-5/8"	14.41 - 19.18	0.6000	0.3435
T17	13	7/8"	14.41 - 19.18	0.6000	0.3435
T17	14	1/2"	14.41 - 19.18	0.6000	0.3435
T17	18	1/4"	14.41 - 19.18	0.6000	0.3435
T17	19	7/8"	14.41 - 19.18	0.6000	0.3435
T17	20	3/8"	14.41 - 19.18	0.6000	0.3435

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	22	3"	14.41 - 19.18	0.6000	0.3435
T17	24	1-5/8"	14.41 - 19.18	0.6000	0.3435
T17	25	3/8"	14.41 - 19.18	0.6000	0.3435
T17	26	3"	14.41 - 19.18	0.6000	0.3435
T17	28	7/8"	14.41 - 19.18	0.6000	0.3435
T17	29	1/4"	14.41 - 19.18	0.6000	0.3435
T17	30	3/8"	14.41 - 19.18	0.6000	0.3435
T17	31	1-5/8"	14.41 - 19.18	0.6000	0.3435
T17	34	Safety Line 3/8	14.41 - 19.18	0.6000	0.3435
T17	42	3/4"	14.41 - 19.18	0.6000	0.3435
T17	43	3/8"	14.41 - 19.18	0.6000	0.3435
T17	45	1/2"	14.41 - 19.18	0.6000	0.3435
T18	1	1-5/8"	14.20 - 14.41	0.6000	0.3868
T18	3	1-5/8"	14.20 - 14.41	0.6000	0.3868
T18	6	1-5/8"	14.20 - 14.41	0.6000	0.3868
T18	8	3/8"	14.20 - 14.41	0.6000	0.3868
T18	9	EW71	14.20 - 14.41	0.6000	0.3868
T18	10	1-5/8"	14.20 - 14.41	0.6000	0.3868
T18	11	1"	12.20 - 14.41	0.6000	0.3868
T18	12	1-5/8"	14.20 - 14.41	0.6000	0.3868
T18	13	7/8"	14.20 - 14.41	0.6000	0.3868
T18	14	1/2"	14.20 - 14.41	0.6000	0.3868
T18	18	1/4"	14.20 - 14.41	0.6000	0.3868
T18	19	7/8"	14.20 - 14.41	0.6000	0.3868
T18	20	3/8"	14.20 - 14.41	0.6000	0.3868
T18	22	3"	14.20 - 14.41	0.6000	0.3868
T18	24	1-5/8"	14.20 - 14.41	0.6000	0.3868
T18	25	3/8"	14.20 - 14.41	0.6000	0.3868
T18	26	3"	14.20 - 14.41	0.6000	0.3868
T18	28	7/8"	14.20 - 14.41	0.6000	0.3868
T18	29	1/4"	14.20 - 14.41	0.6000	0.3868
T18	30	3/8"	14.20 - 14.41	0.6000	0.3868
T18	31	1-5/8"	14.20 - 14.41	0.6000	0.3868
T18	34	Safety Line 3/8	11.83 - 14.41	0.6000	0.3868
T18	42	3/4"	14.20 - 14.41	0.6000	0.3868
T18	43	3/8"	14.20 - 14.41	0.6000	0.3868
T18	45	1/2"	14.20 - 14.41	0.6000	0.3868
T19	34	Safety Line 3/8	9.50 - 11.83	0.6000	0.2431
T20	34	Safety Line 3/8	7.17 - 9.50	0.6000	0.1658
T21	34	Safety Line 3/8	1.20 - 7.17	0.4990	0.0419

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 K
1-ft Side Arm	C	From Leg	5.000 0.000 0.000	-90.0000	21.000	No Ice 1/2" Ice 1" Ice	0.080 0.120 0.160	0.350 0.530 0.710	0.01 0.01 0.02
14-Element 4.5 ft Yagi	C	From Leg	1.000 0.000	-90.0000	21.000	No Ice 1/2" Ice	1.500 2.200	1.500 2.200	0.04 0.04

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 K
			0.000			1" Ice	2.900	2.900	0.05
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1" dia x 16" Pipe	C	From Leg	1.000	30.0000	48.000	No Ice	0.110	0.110	0.00
			0.000			1/2" Ice	0.200	0.200	0.00
			0.000			1" Ice	0.290	0.290	0.00
GPS	C	From Leg	1.000	0.0000	48.000	No Ice	0.620	0.620	0.01
			0.000			1/2" Ice	0.730	0.730	0.02
			0.000			1" Ice	0.840	0.840	0.03
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2.4" Dia x 5-ft Pipe	A	From Leg	4.000	0.0000	111.500	No Ice	1.200	1.200	0.02
			0.000			1/2" Ice	1.500	1.500	0.03
			0.500			1" Ice	1.800	1.800	0.04
2.4" Dia x 5-ft Pipe	B	From Leg	4.000	0.0000	111.500	No Ice	1.200	1.200	0.02
			0.000			1/2" Ice	1.500	1.500	0.03
			0.500			1" Ice	1.800	1.800	0.04
2.4" Dia x 5-ft Pipe	C	From Leg	4.000	0.0000	111.500	No Ice	1.200	1.200	0.02
			0.000			1/2" Ice	1.500	1.500	0.03
			0.500			1" Ice	1.800	1.800	0.04
(3) T-Frames	C	None		0.0000	111.500	No Ice	22.470	22.470	1.03
						1/2" Ice	31.990	31.990	1.50
						1" Ice	41.510	41.510	1.97
(2) 800 10121 w/ Mount Pipe	A	From Leg	4.000	0.0000	111.500	No Ice	5.388	4.600	0.07
			0.000			1/2" Ice	5.813	5.351	0.11
			0.500			1" Ice	6.234	6.046	0.17
(2) 800 10121 w/ Mount Pipe	B	From Leg	4.000	0.0000	111.500	No Ice	5.388	4.600	0.07
			0.000			1/2" Ice	5.813	5.351	0.11
			0.500			1" Ice	6.234	6.046	0.17
(2) 800 10121 w/ Mount Pipe	C	From Leg	4.000	0.0000	111.500	No Ice	5.388	4.600	0.07
			0.000			1/2" Ice	5.813	5.351	0.11
			0.500			1" Ice	6.234	6.046	0.17
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.000	0.0000	111.500	No Ice	12.976	9.179	0.09
			0.000			1/2" Ice	13.558	10.478	0.19
			0.500			1" Ice	14.147	11.491	0.29
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.000	0.0000	111.500	No Ice	12.976	9.179	0.09
			0.000			1/2" Ice	13.558	10.478	0.19
			0.500			1" Ice	14.147	11.491	0.29
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.000	0.0000	111.500	No Ice	12.073	8.113	0.08
			0.000			1/2" Ice	12.668	9.304	0.17
			0.500			1" Ice	13.228	10.209	0.27
RRUS-11	A	From Leg	4.000	0.0000	111.500	No Ice	2.522	1.068	0.06
			0.000			1/2" Ice	2.719	1.211	0.07
			0.500			1" Ice	2.923	1.361	0.10
RRUS-11	B	From Leg	4.000	0.0000	111.500	No Ice	2.522	1.068	0.06
			0.000			1/2" Ice	2.719	1.211	0.07
			0.500			1" Ice	2.923	1.361	0.10
RRUS-11	C	From Leg	4.000	0.0000	111.500	No Ice	2.522	1.068	0.06
			0.000			1/2" Ice	2.719	1.211	0.07
			0.500			1" Ice	2.923	1.361	0.10
RRUS-12	A	From Leg	4.000	0.0000	111.500	No Ice	2.700	1.213	0.06
			0.000			1/2" Ice	2.903	1.363	0.08
			0.500			1" Ice	3.114	1.519	0.11
RRUS-12	B	From Leg	4.000	0.0000	111.500	No Ice	2.700	1.213	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000				1/2" Ice	2.903	1.363	0.08
			0.500				1" Ice	3.114	1.519	0.11
RRUS-12	C	From Leg	4.000	0.0000		111.500	No Ice	2.700	1.213	0.06
			0.000				1/2" Ice	2.903	1.363	0.08
			0.500				1" Ice	3.114	1.519	0.11
RRUS A2	A	From Leg	4.000	0.0000		111.500	No Ice	2.066	0.498	0.02
			0.000				1/2" Ice	2.245	0.607	0.03
			0.500				1" Ice	2.431	0.724	0.05
RRUS A2	B	From Leg	4.000	0.0000		111.500	No Ice	2.066	0.498	0.02
			0.000				1/2" Ice	2.245	0.607	0.03
			0.500				1" Ice	2.431	0.724	0.05
RRUS A2	C	From Leg	4.000	0.0000		111.500	No Ice	2.066	0.498	0.02
			0.000				1/2" Ice	2.245	0.607	0.03
			0.500				1" Ice	2.431	0.724	0.05
(2) DTMABP7819VG12A	A	From Leg	4.000	0.0000		111.500	No Ice	0.710	0.710	0.01
			0.000				1/2" Ice	0.830	0.830	0.02
			0.500				1" Ice	0.950	0.950	0.02
(2) DTMABP7819VG12A	B	From Leg	4.000	0.0000		111.500	No Ice	0.710	0.710	0.01
			0.000				1/2" Ice	0.830	0.830	0.02
			0.500				1" Ice	0.950	0.950	0.02
(2) DTMABP7819VG12A	C	From Leg	4.000	0.0000		111.500	No Ice	0.710	0.710	0.01
			0.000				1/2" Ice	0.830	0.830	0.02
			0.500				1" Ice	0.950	0.950	0.02
(4) 860 10025	A	From Leg	4.000	0.0000		111.500	No Ice	0.142	0.121	0.00
			0.000				1/2" Ice	0.196	0.173	0.00
			0.500				1" Ice	0.259	0.231	0.01
(4) 860 10025	B	From Leg	4.000	0.0000		111.500	No Ice	0.142	0.121	0.00
			0.000				1/2" Ice	0.196	0.173	0.00
			0.500				1" Ice	0.259	0.231	0.01
(4) 860 10025	C	From Leg	4.000	0.0000		111.500	No Ice	0.142	0.121	0.00
			0.000				1/2" Ice	0.196	0.173	0.00
			0.500				1" Ice	0.259	0.231	0.01
DC6-48-60-18-8F	C	From Leg	4.000	0.0000		111.500	No Ice	1.212	1.212	0.03
			0.000				1/2" Ice	1.892	1.892	0.05
			0.500				1" Ice	2.105	2.105	0.08
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APXV18-206517S w/Mount Pipe	A	From Leg	0.500	0.0000		120.500	No Ice	5.404	4.700	0.06
			0.000				1/2" Ice	5.960	5.860	0.10
			0.000				1" Ice	6.481	6.734	0.15
APXV18-206517S w/Mount Pipe	B	From Leg	0.500	0.0000		120.500	No Ice	5.404	4.700	0.06
			0.000				1/2" Ice	5.960	5.860	0.10
			0.000				1" Ice	6.481	6.734	0.15
APXV18-206517S w/Mount Pipe	C	From Leg	0.500	0.0000		120.500	No Ice	5.404	4.700	0.06
			0.000				1/2" Ice	5.960	5.860	0.10
			0.000				1" Ice	6.481	6.734	0.15
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30" Sidearm Mount	B	From Leg	1.250	0.0000		145.000	No Ice	0.350	0.350	0.02
			0.000				1/2" Ice	0.480	0.480	0.03
			0.000				1" Ice	0.610	0.610	0.04
12-ft x 1" Omni	B	From Leg	2.500	0.0000		145.000	No Ice	1.200	1.200	0.01
			0.000				1/2" Ice	2.420	2.420	0.03
			0.000				1" Ice	3.640	3.640	0.04
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2.4" Dia x 4-ft Mount Pipe	A	From Leg	0.500	0.0000		146.500	No Ice	0.870	0.870	0.01
			0.000				1/2" Ice	1.120	1.120	0.02
			0.000				1" Ice	1.370	1.370	0.03
12" x 4.5" x 6.25" TMA	A	From Leg	0.250	0.0000		146.500	No Ice	0.530	0.730	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	0.640	0.850	0.02
			0.000			1" Ice	0.750	0.970	0.03
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(3) T-Frames	C	None		0.0000	160.000	No Ice	22.450	22.450	1.02
						1/2" Ice	33.500	33.500	1.47
						1" Ice	44.550	44.550	1.93
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	A	From Leg	2.500	0.0000	160.000	No Ice	6.461	3.229	0.06
			0.000			1/2" Ice	6.836	3.852	0.10
			0.000			1" Ice	7.217	4.492	0.15
APX16DWV-16DWVS-E-A20 w/ Mount Pipe	B	From Leg	2.500	0.0000	160.000	No Ice	6.461	3.229	0.06
			0.000			1/2" Ice	6.836	3.852	0.10
			0.000			1" Ice	7.217	4.492	0.15
TMAT1921B78-21A	A	From Leg	2.250	0.0000	160.000	No Ice	0.652	0.300	0.02
			0.000			1/2" Ice	0.755	0.376	0.02
			0.000			1" Ice	0.864	0.459	0.03
TMAT1921B78-21A	B	From Leg	2.250	0.0000	160.000	No Ice	0.652	0.300	0.02
			0.000			1/2" Ice	0.755	0.376	0.02
			0.000			1" Ice	0.864	0.459	0.03
KRY 112 71	A	From Leg	2.250	0.0000	160.000	No Ice	1.500	0.500	0.02
			0.000			1/2" Ice	1.654	0.605	0.03
			0.000			1" Ice	1.815	0.716	0.04
KRY 112 71	B	From Leg	2.250	0.0000	160.000	No Ice	1.500	0.500	0.02
			0.000			1/2" Ice	1.654	0.605	0.03
			0.000			1" Ice	1.815	0.716	0.04
(2) FDAP5002-1A20	A	From Leg	2.250	0.0000	160.000	No Ice	0.450	0.179	0.01
			0.000			1/2" Ice	0.536	0.237	0.01
			0.000			1" Ice	0.629	0.302	0.02
(2) FDAP5002-1A20	B	From Leg	2.250	0.0000	160.000	No Ice	0.450	0.179	0.01
			0.000			1/2" Ice	0.536	0.237	0.01
			0.000			1" Ice	0.629	0.302	0.02
(2) 2.4" x 7-ft Pipe	A	From Leg	2.250	0.0000	160.000	No Ice	1.660	1.660	0.04
			0.000			1/2" Ice	2.390	2.390	0.06
			0.000			1" Ice	3.120	3.120	0.07
(2) 2.4" x 7-ft Pipe	B	From Leg	2.250	0.0000	160.000	No Ice	1.660	1.660	0.04
			0.000			1/2" Ice	2.390	2.390	0.06
			0.000			1" Ice	3.120	3.120	0.07
2.4" x 7-ft Pipe	C	From Leg	2.250	0.0000	160.000	No Ice	1.660	1.660	0.04
			0.000			1/2" Ice	2.390	2.390	0.06
			0.000			1" Ice	3.120	3.120	0.07
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2.4" x 25' Mount Pipe	B	From Leg	0.500	0.0000	180.000	No Ice	5.950	5.950	0.09
			0.000			1/2" Ice	8.480	8.480	0.14
			0.000			1" Ice	11.010	11.010	0.18
Micronetixx LP-1900-B-12 Antennas	B	From Leg	1.000	35.0000	180.000	No Ice	7.300	2.650	0.05
			0.000			1/2" Ice	7.680	2.970	0.09
			0.000			1" Ice	8.060	3.290	0.13
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2.4" Dia x 10-ft Mount Pipe	C	From Leg	0.500	0.0000	164.500	No Ice	2.380	2.380	0.04
			0.000			1/2" Ice	3.400	3.400	0.05
			0.000			1" Ice	4.420	4.420	0.07

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 K
6810 1 Bay FM	C	From Leg	1.000 0.000 0.000	0.0000	164.500	No Ice 1/2" Ice 1" Ice	0.200 0.360 0.520	0.200 0.360 0.520	0.00 0.00 0.00
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Antel WPA-800120	B	From Leg	0.000 0.000 0.000	30.0000	221.200	No Ice 1/2" Ice 1" Ice	6.450 7.020 7.590	6.450 7.020 7.590	0.02 0.06 0.10
36"x36"x12" TMA	C	None		0.0000	221.200	No Ice 1/2" Ice 1" Ice	10.800 11.204 11.615	3.667 3.927 4.194	0.10 0.17 0.25
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36" Standoff	A	From Leg	1.500 0.000 0.000	15.0000	165.000	No Ice 1/2" Ice 1" Ice	0.720 0.940 1.160	2.080 2.880 3.680	0.04 0.06 0.08
BCD-80010	A	From Leg	3.000 0.000 6.000	0.0000	165.000	No Ice 1/2" Ice 1" Ice	2.947 4.110 5.290	2.947 4.110 5.290	0.03 0.05 0.08
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2.4" x 25' Mount Pipe	C	From Leg	0.500 0.000 0.000	0.0000	251.800	No Ice 1/2" Ice 1" Ice	5.950 8.480 11.010	5.950 8.480 11.010	0.09 0.14 0.18
Antenna Concepts ACB16A w/ Mount	C	From Leg	2.500 0.000 0.000	0.0000	251.800	No Ice 1/2" Ice 1" Ice	19.290 24.180 29.070	14.110 18.330 22.550	0.20 0.30 0.40
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4.5" Dia x 6' Dish Mount	B	From Leg	1.000 0.000 0.000	0.0000	196.000	No Ice 1/2" Ice 1" Ice	2.250 2.620 2.990	2.250 2.620 2.990	0.06 0.08 0.10
T.S. 3" x 3" x 6.5'	B	From Face	0.000 0.000 0.000	0.0000	196.000	No Ice 1/2" Ice 1" Ice	3.250 3.770 4.290	3.250 3.770 4.290	0.06 0.08 0.09
2.4" Dia x 6.5' Mount Pipe	B	From Face	0.000 0.000 0.000	0.0000	196.000	No Ice 1/2" Ice 1" Ice	1.540 2.160 2.780	1.540 2.160 2.780	0.02 0.04 0.05
***									
(1) Side Arm Mount	C	From Leg	2.000 0.000 0.000	0.0000	203.000	No Ice 1/2" Ice 1" Ice	0.980 1.700 2.420	2.180 3.800 5.420	0.04 0.06 0.08
DB420-B	C	From Leg	4.000 0.000 10.000	0.0000	203.000	No Ice 1/2" Ice 1" Ice	3.330 5.994 8.658	3.330 5.994 8.658	0.03 0.04 0.05
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2'10" x 7" x 2" Panel w/ 48" Mount Pipe	A	From Leg	1.000 0.000 0.000	15.0000	225.500	No Ice 1/2" Ice 1" Ice	2.600 2.940 3.280	1.790 2.250 2.710	0.04 0.07 0.09
2'10" x 7" x 2" Panel w/ 48" Mount Pipe	B	From Leg	1.000 0.000 0.000	15.0000	225.500	No Ice 1/2" Ice 1" Ice	2.600 2.940 3.280	1.790 2.250 2.710	0.04 0.07 0.09
(2) 1" x 8" Pipe	A	From Leg	0.330 0.000 0.000	15.0000	225.500	No Ice 1/2" Ice 1" Ice	0.050 0.100 0.150	0.050 0.100 0.150	0.00 0.00 0.00
(2) 1" x 8" Pipe	B	From Leg	0.330 0.000	15.0000	225.500	No Ice 1/2" Ice	0.050 0.100	0.050 0.100	0.00 0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	0.150	0.150	0.00
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TMA 12" x 12" x 2"	B	From Leg	1.000	0.0000	232.000	No Ice	1.400	0.230	0.01
			0.000			1/2" Ice	1.560	0.330	0.02
			0.000			1" Ice	1.720	0.430	0.03
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TMA 18" x 6" x 6"	B	From Leg	1.000	0.0000	243.000	No Ice	1.050	1.050	0.00
			0.000			1/2" Ice	1.210	1.210	0.02
			0.000			1" Ice	1.370	1.370	0.03
Antel WPA-800120	B	From Leg	1.000	0.0000	243.000	No Ice	6.450	6.450	0.02
			0.000			1/2" Ice	7.020	7.020	0.06
			0.000			1" Ice	7.590	7.590	0.10
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(1) Side Arm Mount	C	From Leg	1.500	0.0000	251.000	No Ice	0.940	1.410	0.03
			0.000			1/2" Ice	1.480	2.170	0.04
			0.000			1" Ice	2.020	2.930	0.06
DB420-B	C	From Leg	3.000	0.0000	251.000	No Ice	3.330	3.330	0.03
			0.000			1/2" Ice	5.994	5.994	0.04
			10.000			1" Ice	8.658	8.658	0.05
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L2.5x2.5x0.25, 10-ft Length	B	Stand-Off Right	2.500	0.0000	309.500	No Ice	4.170	4.170	0.04
			0.000			1/2" Ice	5.310	5.310	0.06
			0.000			1" Ice	6.450	6.450	0.09
2.9" x 22-ft Mt. Pipe	B	Stand-Off Right	7.500	0.0000	297.000	No Ice	6.380	6.380	0.13
			0.000			1/2" Ice	8.610	8.610	0.17
			0.000			1" Ice	10.840	10.840	0.22
Scala SCA 4DR-8S	B	Stand-Off Right	8.000	0.0000	308.300	No Ice	16.980	9.250	0.05
			0.000			1/2" Ice	17.720	9.860	0.15
			0.000			1" Ice	18.460	10.470	0.24
***									
Control Box 12" x 13.5" x 6.5"	C	From Face	0.250	0.0000	5.700	No Ice	1.580	0.760	0.05
			0.000			1/2" Ice	1.740	0.880	0.06
			0.000			1" Ice	1.900	1.000	0.07
Detuning Box 29" x 24" x 12"	C	From Face	0.500	0.0000	10.500	No Ice	6.770	3.380	0.05
			0.000			1/2" Ice	7.110	3.650	0.10
			0.000			1" Ice	7.450	3.920	0.14
Detuner	C	From Leg	0.000	30.0000	136.500	No Ice	1.250	3.080	0.03
			0.000			1/2" Ice	2.100	5.260	0.05
			0.000			1" Ice	2.950	7.440	0.07
Control Box 12" x 13.5" x 6.5"	B	From Leg	0.250	0.0000	141.500	No Ice	1.580	0.760	0.05
			0.000			1/2" Ice	1.740	0.880	0.06
			0.000			1" Ice	1.900	1.000	0.07
***									
ACTIVE LEVEL									
(3) T-Frames	C	None		0.0000	129.500	No Ice	21.880	21.880	1.07
						1/2" Ice	30.680	30.680	1.48
						1" Ice	39.480	39.480	1.90
SLCP 2x6015 w/ Mount Pipe	A	From Leg	2.250	40.0000	129.500	No Ice	10.219	9.996	0.06
			0.000			1/2" Ice	10.817	11.245	0.15
			2.000			1" Ice	11.389	12.259	0.25
SLCP 2x6015 w/ Mount Pipe	B	From Leg	2.250	40.0000	129.500	No Ice	10.219	9.996	0.06
			0.000			1/2" Ice	10.817	11.245	0.15
			2.000			1" Ice	11.389	12.259	0.25
SACP 2x5516 w/ Mount Pipe	A	From Leg	2.250	40.0000	129.500	No Ice	5.313	5.021	0.04
			0.000			1/2" Ice	5.747	5.810	0.09
			2.000			1" Ice	6.173	6.526	0.14

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 K
SACP 2x5516 w/ Mount Pipe	B	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	5.313 5.747 6.173	5.021 5.810 6.526	0.04 0.09 0.14
(2) Andrew HBX-6517DS w/ Mount Pipe	C	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	5.503 6.073 6.644	5.019 6.221 7.422	0.04 0.09 0.13
(2) Andrew LNX-6514DS w/ Mount Pipe	C	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	8.568 9.220 9.872	7.004 8.185 9.367	0.06 0.13 0.19
FD9R6004/2C Diplexer	A	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	0.367 0.451 0.543	0.085 0.136 0.196	0.00 0.01 0.01
FD9R6004/2C Diplexer	B	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	0.367 0.451 0.543	0.085 0.136 0.196	0.00 0.01 0.01
(2) FD9R6004/2C Diplexer	C	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	0.367 0.451 0.543	0.085 0.136 0.196	0.00 0.01 0.01
RRH2x40-AWS	A	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	2.519 2.729 2.947	1.769 1.952 2.141	0.04 0.06 0.09
RRH2x40-AWS	B	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	2.519 2.729 2.947	1.769 1.952 2.141	0.04 0.06 0.09
DB-T1-6Z-8AB-0Z	C	From Leg	2.250 0.000 2.000	40.0000	129.500	No Ice 1/2" Ice 1" Ice	4.800 5.070 5.348	2.000 2.193 2.393	0.04 0.08 0.12
***									
30" x 18" Dia	C	None		0.0000	346.300	No Ice 1/2" Ice 1" Ice	3.000 3.270 3.540	3.000 3.270 3.540	0.06 0.09 0.13
ERI 3 Bay FM	C	From Leg	1.500 0.000 0.000	0.0000	332.000	No Ice 1/2" Ice 1" Ice	9.800 10.400 11.000	9.800 10.400 11.000	0.32 0.42 0.52
2.4" Dia x 18" Pipe	C	From Leg	0.750 0.000 0.000	0.0000	332.000	No Ice 1/2" Ice 1" Ice	0.240 0.360 0.480	0.240 0.360 0.480	0.01 0.01 0.01
***									
CA-2-FM-CP	C	From Leg	1.000 0.000 0.000	0.0000	265.000	No Ice 1/2" Ice 1" Ice	2.019 2.944 3.314	2.019 2.944 3.314	0.01 0.03 0.06
Pipe Mount	C	From Leg	0.500 0.000 0.000	0.0000	265.000	No Ice 1/2" Ice 1" Ice	1.200 1.502 1.814	1.200 1.502 1.814	0.02 0.03 0.04
***									
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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
2-ft Dish w/o Radome	A	Paraboloid w/o Radome	From Leg	1.500 0.000 0.000	70.0000		146.500	2.000	No Ice 1/2" Ice 1" Ice	3.140 3.410 3.680	0.04 0.06 0.08
***											
Cablewave PA6-112	B	Paraboloid w/Radome	From Leg	1.500 0.000 0.000	0.0000		196.000	6.000	No Ice 1/2" Ice 1" Ice	28.270 29.070 29.870	0.59 0.74 0.89
***											
SP2-4.7NS	B	Paraboloid w/o Radome	From Leg	1.500 0.000 0.000	60.0000		232.000	2.000	No Ice 1/2" Ice 1" Ice	3.140 3.410 3.680	0.02 0.04 0.06
***											
6-ft x 3-ft Grid	B	Grid	From Leg	1.000 0.000 0.000	30.0000		235.000	4.790	No Ice 1/2" Ice 1" Ice	19.630 20.290 20.950	0.13 0.23 0.33
***											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2D+1.6W (pattern 1) 0 deg - No Ice+1.0 Guy
4	1.2D+1.6W (pattern 2) 0 deg - No Ice+1.0 Guy
5	1.2D+1.6W (pattern 3) 0 deg - No Ice+1.0 Guy
6	1.2D+1.6W (pattern 4) 0 deg - No Ice+1.0 Guy
7	1.2D+1.6W (pattern 5) 0 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
9	1.2D+1.6W (pattern 1) 30 deg - No Ice+1.0 Guy
10	1.2D+1.6W (pattern 2) 30 deg - No Ice+1.0 Guy
11	1.2D+1.6W (pattern 3) 30 deg - No Ice+1.0 Guy
12	1.2D+1.6W (pattern 4) 30 deg - No Ice+1.0 Guy
13	1.2D+1.6W (pattern 5) 30 deg - No Ice+1.0 Guy
14	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
15	1.2D+1.6W (pattern 1) 60 deg - No Ice+1.0 Guy
16	1.2D+1.6W (pattern 2) 60 deg - No Ice+1.0 Guy
17	1.2D+1.6W (pattern 3) 60 deg - No Ice+1.0 Guy
18	1.2D+1.6W (pattern 4) 60 deg - No Ice+1.0 Guy
19	1.2D+1.6W (pattern 5) 60 deg - No Ice+1.0 Guy
20	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
21	1.2D+1.6W (pattern 1) 90 deg - No Ice+1.0 Guy
22	1.2D+1.6W (pattern 2) 90 deg - No Ice+1.0 Guy
23	1.2D+1.6W (pattern 3) 90 deg - No Ice+1.0 Guy
24	1.2D+1.6W (pattern 4) 90 deg - No Ice+1.0 Guy
25	1.2D+1.6W (pattern 5) 90 deg - No Ice+1.0 Guy
26	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
27	1.2D+1.6W (pattern 1) 120 deg - No Ice+1.0 Guy
28	1.2D+1.6W (pattern 2) 120 deg - No Ice+1.0 Guy
29	1.2D+1.6W (pattern 3) 120 deg - No Ice+1.0 Guy
30	1.2D+1.6W (pattern 4) 120 deg - No Ice+1.0 Guy
31	1.2D+1.6W (pattern 5) 120 deg - No Ice+1.0 Guy
32	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
33	1.2D+1.6W (pattern 1) 150 deg - No Ice+1.0 Guy
34	1.2D+1.6W (pattern 2) 150 deg - No Ice+1.0 Guy

Comb. No.	Description
35	1.2D+1.6W (pattern 3) 150 deg - No Ice+1.0 Guy
36	1.2D+1.6W (pattern 4) 150 deg - No Ice+1.0 Guy
37	1.2D+1.6W (pattern 5) 150 deg - No Ice+1.0 Guy
38	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
39	1.2D+1.6W (pattern 1) 180 deg - No Ice+1.0 Guy
40	1.2D+1.6W (pattern 2) 180 deg - No Ice+1.0 Guy
41	1.2D+1.6W (pattern 3) 180 deg - No Ice+1.0 Guy
42	1.2D+1.6W (pattern 4) 180 deg - No Ice+1.0 Guy
43	1.2D+1.6W (pattern 5) 180 deg - No Ice+1.0 Guy
44	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
45	1.2D+1.6W (pattern 1) 210 deg - No Ice+1.0 Guy
46	1.2D+1.6W (pattern 2) 210 deg - No Ice+1.0 Guy
47	1.2D+1.6W (pattern 3) 210 deg - No Ice+1.0 Guy
48	1.2D+1.6W (pattern 4) 210 deg - No Ice+1.0 Guy
49	1.2D+1.6W (pattern 5) 210 deg - No Ice+1.0 Guy
50	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
51	1.2D+1.6W (pattern 1) 240 deg - No Ice+1.0 Guy
52	1.2D+1.6W (pattern 2) 240 deg - No Ice+1.0 Guy
53	1.2D+1.6W (pattern 3) 240 deg - No Ice+1.0 Guy
54	1.2D+1.6W (pattern 4) 240 deg - No Ice+1.0 Guy
55	1.2D+1.6W (pattern 5) 240 deg - No Ice+1.0 Guy
56	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
57	1.2D+1.6W (pattern 1) 270 deg - No Ice+1.0 Guy
58	1.2D+1.6W (pattern 2) 270 deg - No Ice+1.0 Guy
59	1.2D+1.6W (pattern 3) 270 deg - No Ice+1.0 Guy
60	1.2D+1.6W (pattern 4) 270 deg - No Ice+1.0 Guy
61	1.2D+1.6W (pattern 5) 270 deg - No Ice+1.0 Guy
62	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
63	1.2D+1.6W (pattern 1) 300 deg - No Ice+1.0 Guy
64	1.2D+1.6W (pattern 2) 300 deg - No Ice+1.0 Guy
65	1.2D+1.6W (pattern 3) 300 deg - No Ice+1.0 Guy
66	1.2D+1.6W (pattern 4) 300 deg - No Ice+1.0 Guy
67	1.2D+1.6W (pattern 5) 300 deg - No Ice+1.0 Guy
68	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
69	1.2D+1.6W (pattern 1) 330 deg - No Ice+1.0 Guy
70	1.2D+1.6W (pattern 2) 330 deg - No Ice+1.0 Guy
71	1.2D+1.6W (pattern 3) 330 deg - No Ice+1.0 Guy
72	1.2D+1.6W (pattern 4) 330 deg - No Ice+1.0 Guy
73	1.2D+1.6W (pattern 5) 330 deg - No Ice+1.0 Guy
74	1.2 Dead+1.0 Ice+1.0 Temp+Guy
75	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
76	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
77	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
78	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
79	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
80	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
81	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
82	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
83	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
84	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
85	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
86	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
87	Dead+Wind 0 deg - Service+Guy
88	Dead+Wind 30 deg - Service+Guy
89	Dead+Wind 60 deg - Service+Guy
90	Dead+Wind 90 deg - Service+Guy
91	Dead+Wind 120 deg - Service+Guy
92	Dead+Wind 150 deg - Service+Guy
93	Dead+Wind 180 deg - Service+Guy
94	Dead+Wind 210 deg - Service+Guy
95	Dead+Wind 240 deg - Service+Guy
96	Dead+Wind 270 deg - Service+Guy

Comb. No.	Description
97	Dead+Wind 300 deg - Service+Guy
98	Dead+Wind 330 deg - Service+Guy

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	346.351 - 329.351	4.556	97	0.3007	0.6162
L2	329.351 - 311.351	3.530	97	0.2711	0.6162
T1	311.351 - 310.351	2.851	97	0.0524	0.6163
T2	310.351 - 299.182	2.839	97	0.0521	0.6166
T3	299.182 - 279.182	2.719	97	0.0481	0.6087
T4	279.182 - 259.182	2.541	97	0.0472	0.5846
T5	259.182 - 239.182	2.364	97	0.0481	0.5577
T6	239.182 - 219.182	2.183	97	0.0481	0.5302
T7	219.182 - 199.182	2.043	97	0.0509	0.4988
T8	199.182 - 179.182	1.933	97	0.0492	0.4678
T9	179.182 - 159.182	1.807	97	0.0429	0.4252
T10	159.182 - 139.182	1.670	97	0.0350	0.3771
T11	139.182 - 119.182	1.637	95	0.0250	0.3442
T12	119.182 - 99.1822	1.670	95	0.0270	0.3059
T13	99.1822 - 79.1822	1.584	95	0.0363	0.2657
T14	79.1822 - 59.1822	1.438	95	0.0423	0.2284
T15	59.1822 - 39.1822	1.235	93	0.0654	0.1939
T16	39.1822 - 19.1822	0.902	93	0.0915	0.1597
T17	19.1822 - 14.4112	0.452	93	0.1122	0.1274
T18	14.4112 - 11.8302	0.334	93	0.1154	0.1217
T19	11.8302 - 9.49947	0.268	93	0.1167	0.1191
T20	9.49947 - 7.16874	0.210	93	0.1178	0.1175
T21	7.16874 - 1.2	0.151	93	0.1184	0.1155

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
346.300	30" x 18" Dia	97	4.553	0.3009	0.6162	27096
332.000	ERI 3 Bay FM	97	3.678	0.2940	0.6164	9464
309.500	L2.5x2.5x0.25, 10-ft Length	97	2.829	0.0522	0.6168	12125
308.300	Scala SCA 4DR-8S	97	2.816	0.0521	0.6166	24270
299.182	Guy	97	2.719	0.0481	0.6087	59327
297.000	2.9" x 22-ft Mt. Pipe	97	2.697	0.0472	0.6061	59924
265.000	CA-2-FM-CP	97	2.416	0.0480	0.5656	252879
251.800	2.4" x 25' Mount Pipe	97	2.295	0.0481	0.5479	129972
251.000	(1) Side Arm Mount	97	2.288	0.0481	0.5468	121064
243.000	TMA 18" x 6" x 6"	97	2.216	0.0481	0.5358	71872
235.000	6-ft x 3-ft Grid	97	2.150	0.0482	0.5238	60152
232.000	SP2-4.7NS	97	2.128	0.0482	0.5191	60133
229.182	Guy	97	2.108	0.0483	0.5146	60123
225.500	2'10" x 7" x 2" Panel w/ 48" Mount Pipe	97	2.083	0.0494	0.5087	60111
221.200	Antel WPA-800120	97	2.055	0.0505	0.5019	60820
203.000	(1) Side Arm Mount	97	1.954	0.0501	0.4743	151359
196.000	Cablewave PA6-112	97	1.915	0.0484	0.4620	87990

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
180.000	2.4" x 25' Mount Pipe	97	1.812	0.0432	0.4272	73569
165.000	36" Standoff	97	1.707	0.0378	0.3898	93624
164.500	2.4" Dia x 10-ft Mount Pipe	97	1.703	0.0376	0.3887	89777
160.000	(3) T-Frames	97	1.675	0.0355	0.3787	66514
149.182	Guy	97	1.621	0.0296	0.3598	68426
146.500	2-ft Dish w/o Radome	95	1.616	0.0282	0.3557	70906
145.000	30" Sidearm Mount	95	1.620	0.0275	0.3534	72373
141.500	Control Box 12" x 13.5" x 6.5"	95	1.630	0.0259	0.3480	77282
136.500	Detuner	95	1.645	0.0242	0.3397	124600
129.500	(3) T-Frames	95	1.663	0.0232	0.3267	50021
120.500	APXV18-206517S w/Mount Pipe	95	1.671	0.0264	0.3086	28967
111.500	2.4" Dia x 5-ft Pipe	95	1.650	0.0310	0.2903	36473
89.182	Guy	95	1.516	0.0382	0.2466	94510
48.000	1" dia x 16" Pipe	93	1.066	0.0802	0.1749	35448
21.000	1-ft Side Arm	93	0.497	0.1108	0.1298	71191
10.500	Detuning Box 29" x 24" x 12"	93	0.235	0.1174	0.1182	447145
5.700	Control Box 12" x 13.5" x 6.5"	93	0.113	0.1188	0.1142	636727

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	346.351 - 329.351	21.065	64	1.3156	2.2294
L2	329.351 - 311.351	16.691	70	1.1955	2.2295
T1	311.351 - 310.351	13.720	70	0.2881	2.2305
T2	310.351 - 299.182	13.664	70	0.2868	2.2319
T3	299.182 - 279.182	13.088	70	0.2670	2.1990
T4	279.182 - 259.182	12.324	69	0.2463	2.1086
T5	259.182 - 239.182	11.661	69	0.2314	2.0074
T6	239.182 - 219.182	11.018	68	0.2023	1.9035
T7	219.182 - 199.182	10.581	68	0.1814	1.7870
T8	199.182 - 179.182	10.275	68	0.1688	1.6763
T9	179.182 - 159.182	9.989	50	0.1614	1.5169
T10	159.182 - 139.182	10.040	55	0.1491	1.3339
T11	139.182 - 119.182	10.154	55	0.1225	1.2121
T12	119.182 - 99.1822	10.077	55	0.1591	1.0735
T13	99.1822 - 79.1822	9.400	55	0.2186	0.9277
T14	79.1822 - 59.1822	8.363	55	0.2889	0.7944
T15	59.1822 - 39.1822	6.977	55	0.4050	0.6740
T16	39.1822 - 19.1822	4.992	55	0.5285	0.5550
T17	19.1822 - 14.4112	2.475	55	0.6220	0.4428
T18	14.4112 - 11.8302	1.823	55	0.6361	0.4229
T19	11.8302 - 9.49947	1.468	55	0.6420	0.4142
T20	9.49947 - 7.16874	1.146	55	0.6468	0.4086
T21	7.16874 - 1.2	0.823	55	0.6495	0.4016

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
346.300	30" x 18" Dia	64	21.051	1.3162	2.2294	9611
332.000	ERI 3 Bay FM	70	17.326	1.2903	2.2303	3322
309.500	L2.5x2.5x0.25, 10-ft Length	70	13.618	0.2869	2.2324	2826
308.300	Scala SCA 4DR-8S	70	13.554	0.2862	2.2319	5583
299.182	Guy	70	13.088	0.2670	2.1990	15862
297.000	2.9" x 22-ft Mt. Pipe	70	12.984	0.2625	2.1887	16254
265.000	CA-2-FM-CP	69	11.858	0.2366	2.0374	37852
251.800	2.4" x 25' Mount Pipe	69	11.409	0.2234	1.9700	28588
251.000	(1) Side Arm Mount	69	11.382	0.2224	1.9660	26735
243.000	TMA 18" x 6" x 6"	68	11.129	0.2101	1.9245	16234
235.000	6-ft x 3-ft Grid	68	10.908	0.1923	1.8795	14708
232.000	SP2-4.7NS	68	10.836	0.1844	1.8618	14883
229.182	Guy	68	10.772	0.1768	1.8450	15054
225.500	2'10" x 7" x 2" Panel w/ 48" Mount Pipe	68	10.696	0.1784	1.8232	15284
221.200	Antel WPA-800120	68	10.616	0.1810	1.7983	15702
203.000	(1) Side Arm Mount	68	10.336	0.1738	1.6997	21833
196.000	Cablewave PA6-112	68	10.219	0.1638	1.6551	16420
180.000	2.4" x 25' Mount Pipe	50	9.984	0.1613	1.5245	14571
165.000	36" Standoff	50	10.029	0.1552	1.3823	22398
164.500	2.4" Dia x 10-ft Mount Pipe	50	10.029	0.1547	1.3779	21572
160.000	(3) T-Frames	55	10.035	0.1500	1.3402	16874
149.182	Guy	55	10.103	0.1338	1.2691	19820
146.500	2-ft Dish w/o Radome	55	10.118	0.1297	1.2540	20444
145.000	30" Sidearm Mount	55	10.126	0.1276	1.2456	20697
141.500	Control Box 12" x 13.5" x 6.5"	55	10.144	0.1239	1.2258	21627
136.500	Detuner	55	10.165	0.1221	1.1955	23788
129.500	(3) T-Frames	55	10.172	0.1284	1.1485	10605
120.500	APXV18-206517S w/Mount Pipe	55	10.099	0.1547	1.0832	6335
111.500	2.4" Dia x 5-ft Pipe	55	9.883	0.1845	1.0167	7719
89.182	Guy	55	8.916	0.2492	0.8591	15817
48.000	1" dia x 16" Pipe	55	5.944	0.4758	0.6079	7632
21.000	1-ft Side Arm	55	2.719	0.6156	0.4513	15917
10.500	Detuning Box 29" x 24" x 12"	55	1.284	0.6449	0.4110	102844
5.700	Control Box 12" x 13.5" x 6.5"	55	0.620	0.6511	0.3971	137871

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	311.351	Leg	A325N	1.7500	2	5.27	162.36	0.032 ✔	1	Bolt Tension
T3	299.182	Leg	A325N	0.8750	5	4.91	48.71	0.101 ✔	1	Bolt DS
T5	259.182	Leg	A325N	0.8750	5	7.14	48.71	0.147 ✔	1	Bolt DS
T7	219.182	Leg	A325N	0.8750	5	11.27	48.71	0.231 ✔	1	Bolt DS
T9	179.182	Leg	A325N	0.8750	5	13.58	48.71	0.279 ✔	1	Bolt DS
T11	139.182	Leg	A325N	0.8750	5	19.21	48.71	0.394 ✔	1	Bolt DS
T13	99.1822	Leg	A325N	0.8750	5	22.04	48.71	0.453 ✔	1	Bolt DS
T15	59.1822	Leg	A325N	0.8750	5	24.73	48.71	0.508 ✔	1	Bolt DS
T17	19.1822	Leg	A325N	0.8750	5	23.73	48.71	0.487 ✔	1	Bolt DS

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T19	11.8302	Leg	A325N	0.8750	5	23.48	48.71	0.482 ✔	1	Bolt DS
T20	9.49947	Leg	A325N	0.8750	5	22.51	48.71	0.462 ✔	1	Bolt DS

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T3	299.182 (A) (983)	13/16 BS	8.00	80.00	22.26	48.00	1.000	2.156 ✔
	299.182 (B) (982)	3/4 BS	6.80	68.00	23.98	40.80	1.000	1.702 ✔
	299.182 (C) (981)	3/4 BS	6.80	68.00	22.28	40.80	1.000	1.832 ✔
T6	229.182 (A) (986)	7/8 BS	9.20	92.00	24.43	55.20	1.000	2.259 ✔
	229.182 (B) (985)	13/16 BS	8.00	80.00	25.65	48.00	1.000	1.871 ✔
	229.182 (C) (984)	13/16 BS	8.00	80.00	23.60	48.00	1.000	2.034 ✔
T10	149.182 (A) (989)	13/16 BS	8.00	80.00	24.72	48.00	1.000	1.942 ✔
	149.182 (B) (988)	7/8 BS	9.20	92.00	27.86	55.20	1.000	1.981 ✔
	149.182 (C) (987)	7/8 BS	9.20	92.00	26.04	55.20	1.000	2.120 ✔
T13	89.182 (A) (992)	3/4 BS	6.80	68.00	21.65	40.80	1.000	1.884 ✔
	89.182 (B) (991)	13/16 BS	8.00	80.00	23.50	48.00	1.000	2.043 ✔
	89.182 (C) (990)	13/16 BS	8.00	80.00	22.27	48.00	1.000	2.155 ✔

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	346.351 - 329.351 (1)	P10x.365 (10.75 OD)	17.000	35.000	114.3	11.9083	-1.30	192.16	0.007
L2	329.351 - 311.351 (2)	P10x.365 (10.75 OD)	18.000	35.000	114.3	11.9083	-2.23	192.16	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	346.351 - 329.351 (1)	P10x.365 (10.75 OD)	12.17	103.38	0.118	0.00	103.38	0.000
L2	329.351 - 311.351 (2)	P10x.365 (10.75 OD)	47.58	103.38	0.460	0.00	103.38	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	346.351 - 329.351 (1)	P10x.365 (10.75 OD)	1.63	187.56	0.009	0.00	157.00	0.000
L2	329.351 - 311.351 (2)	P10x.365 (10.75 OD)	2.30	187.56	0.012	0.03	157.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	346.351 - 329.351 (1)	0.007	0.118	0.000	0.009	0.000	0.125 ✔	1.000	4.8.2 ✔
L2	329.351 - 311.351 (2)	0.012	0.460	0.000	0.012	0.000	0.472 ✔	1.000	4.8.2 ✔

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	311.351 - 310.351	2 3/4	1.000	1.000	17.5 K=1.00	5.9396	1.00	-6.28	261.39	0.024
T2	310.351 - 299.182	2 3/4	11.169	2.719	47.5 K=1.00	5.9396	1.00	-21.06	226.69	0.093 [1]
T3	299.182 - 279.182	2 3/4	20.000	2.333	40.7 K=1.00	5.9396	1.00	-25.08	236.75	0.106 [1]
T4	279.182 -	2 3/4	20.000	2.333	40.7	5.9396	1.00	-27.15	236.75	0.115 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	259.182				K=1.00					
T5	259.182 - 239.182	2 3/4	20.000	2.333	40.7 K=1.00	5.9396	1.00	-34.07	236.75	0.144 [1]
T6	239.182 - 219.182	2 3/4	20.000	2.333	40.7 K=1.00	5.9396	1.00	-47.56	236.75	0.201 [1]
T7	219.182 - 199.182	2 3/4	20.000	2.333	40.7 K=1.00	5.9396	1.00	-55.43	236.75	0.234 [1]
T8	199.182 - 179.182	2 3/4	20.000	2.333	40.7 K=1.00	5.9396	1.00	-62.22	236.75	0.263 [1]
T9	179.182 - 159.182	2 3/4	20.000	2.333	40.7 K=1.00	5.9396	1.00	-67.64	236.75	0.286 [1]
T10	159.182 - 139.182	3	20.000	2.333	37.3 K=1.00	7.0686	1.00	-82.85	287.27	0.288 [1]
T11	139.182 - 119.182	3	20.000	2.333	37.3 K=1.00	7.0686	1.00	-95.35	287.27	0.332 [1]
T12	119.182 - 99.1822	3	20.000	2.333	37.3 K=1.00	7.0686	1.00	-101.04	287.27	0.352 [1]
T13	99.1822 - 79.1822	3	20.000	0.667	10.7 K=1.00	7.0686	0.88	-110.20	278.92	0.395 [1]
T14	79.1822 - 59.1822	3	20.000	2.333	37.3 K=1.00	7.0686	0.97	-119.61	277.26	0.431 [1]
T15	59.1822 - 39.1822	3	20.000	2.333	37.3 K=1.00	7.0686	0.97	-123.83	277.28	0.447 [1]
T16	39.1822 - 19.1822	3	20.000	2.333	37.3 K=1.00	7.0686	0.96	-123.54	277.16	0.446 [1]
T17	19.1822 - 14.4112	3	4.771	0.167	2.7 K=1.00	7.0686	0.88	-120.40	278.93	0.432 [1]
T18	14.4112 - 11.8302	3	2.581	2.581	41.3 K=1.00	7.0686	0.98	-116.58	276.05	0.422 [1]
T19	11.8302 - 9.49947	3	2.331	1.165	18.6 K=1.00	7.0686	0.89	-117.40	277.45	0.423 [1]
T20	9.49947 - 7.16874	3	2.331	1.165	18.6 K=1.00	7.0686	0.89	-112.54	276.89	0.406 [1]
T21	7.16874 - 1.2	3	6.630	0.567	9.1 K=1.00	7.0686	0.88	-127.33	277.15	0.459 [1]

[1] $P_u / \phi P_n$ controls

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	311.351 - 310.351	2 3/4	1.41	13.00	0.108	0.00	13.00	0.000
T2	310.351 - 299.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T3	299.182 - 279.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T4	279.182 - 259.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T5	259.182 - 239.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T6	239.182 - 219.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T7	219.182 -	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T8	199.182 199.182 - 179.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T9	179.182 - 159.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T10	159.182 - 139.182	3	0.00	16.88	0.000	0.00	16.88	0.000
T11	139.182 - 119.182	3	0.00	16.88	0.000	0.00	16.88	0.000
T12	119.182 - 99.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T13	99.1822 - 79.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T14	79.1822 - 59.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T15	59.1822 - 39.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T16	39.1822 - 19.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T17	19.1822 - 14.4112	3	0.00	16.88	0.000	0.00	16.88	0.000
T18	14.4112 - 11.8302	3	0.00	16.88	0.000	0.00	16.88	0.000
T19	11.8302 - 9.49947	3	0.00	16.88	0.000	0.00	16.88	0.000
T20	9.49947 - 7.16874	3	0.00	16.88	0.000	0.00	16.88	0.000
T21	7.16874 - 1.2	3	0.00	16.88	0.000	0.00	16.88	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	311.351 - 310.351	2 3/4	0.024	0.108	0.000	0.120 ✔	1.000	4.8.1 ✔
T2	310.351 - 299.182	2 3/4	0.093	0.000	0.000	0.093 [1] ✔	1.000	4.8.1 ✔
T3	299.182 - 279.182	2 3/4	0.106	0.000	0.000	0.106 [1] ✔	1.000	4.8.1 ✔
T4	279.182 - 259.182	2 3/4	0.115	0.000	0.000	0.115 [1] ✔	1.000	4.8.1 ✔
T5	259.182 - 239.182	2 3/4	0.144	0.000	0.000	0.144 [1] ✔	1.000	4.8.1 ✔
T6	239.182 - 219.182	2 3/4	0.201	0.000	0.000	0.201 [1] ✔	1.000	4.8.1 ✔
T7	219.182 - 199.182	2 3/4	0.234	0.000	0.000	0.234 [1] ✔	1.000	4.8.1 ✔
T8	199.182 - 179.182	2 3/4	0.263	0.000	0.000	0.263 [1] ✔	1.000	4.8.1 ✔
T9	179.182 - 159.182	2 3/4	0.286	0.000	0.000	0.286 [1] ✔	1.000	4.8.1 ✔
T10	159.182 - 139.182	3	0.288	0.000	0.000	0.288 [1] ✔	1.000	4.8.1 ✔

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T11	139.182 - 119.182	3	0.332	0.000	0.000	0.332 [1]	1.000	4.8.1
T12	119.182 - 99.1822	3	0.352	0.000	0.000	0.352 [1]	1.000	4.8.1
T13	99.1822 - 79.1822	3	0.395	0.000	0.000	0.395 [1]	1.000	4.8.1
T14	79.1822 - 59.1822	3	0.431	0.000	0.000	0.431 [1]	1.000	4.8.1
T15	59.1822 - 39.1822	3	0.447	0.000	0.000	0.447 [1]	1.000	4.8.1
T16	39.1822 - 19.1822	3	0.446	0.000	0.000	0.446 [1]	1.000	4.8.1
T17	19.1822 - 14.4112	3	0.432	0.000	0.000	0.432 [1]	1.000	4.8.1
T18	14.4112 - 11.8302	3	0.422	0.000	0.000	0.422 [1]	1.000	4.8.1
T19	11.8302 - 9.49947	3	0.423	0.000	0.000	0.423 [1]	1.000	4.8.1
T20	9.49947 - 7.16874	3	0.406	0.000	0.000	0.406 [1]	1.000	4.8.1
T21	7.16874 - 1.2	3	0.459	0.000	0.000	0.459 [1]	1.000	4.8.1

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	310.351 - 299.182	7/8	5.692	2.715	111.7 K=0.75	0.6013	-2.19	10.86	0.201 [1]
T3	299.182 - 279.182	7/8	5.518	2.632	108.3 K=0.75	0.6013	-1.64	11.48	0.143 [1]
T4	279.182 - 259.182	7/8	5.518	2.632	108.3 K=0.75	0.6013	-1.47	11.48	0.128 [1]
T5	259.182 - 239.182	7/8	5.518	2.632	108.3 K=0.75	0.6013	-3.36	11.48	0.293 [1]
T6	239.182 - 219.182	7/8	5.518	2.632	108.3 K=0.75	0.6013	-3.57	11.48	0.311 [1]
T7	219.182 - 199.182	7/8	5.518	2.632	108.3 K=0.75	0.6013	-3.33	11.48	0.291 [1]
T8	199.182 - 179.182	7/8	5.518	2.632	108.3 K=0.75	0.6013	-2.56	11.48	0.223 [1]
T9	179.182 - 159.182	7/8	5.518	2.632	108.3 K=0.75	0.6013	-3.45	11.48	0.300 [1]
T10	159.182 - 139.182	1	5.518	2.621	94.4 K=0.75	0.7854	-5.84	18.43	0.317 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	139.182 - 119.182	7/8	5.518	2.621	107.8 K=0.75	0.6013	-5.53	11.56	0.479 [1] ✔
T12	119.182 - 99.1822	7/8	5.518	2.621	107.8 K=0.75	0.6013	-3.98	11.56	0.344 [1] ✔
T13	99.1822 - 79.1822	7/8	5.518	2.621	107.8 K=0.75	0.6013	-4.39	11.56	0.379 [1] ✔
T14	79.1822 - 59.1822	7/8	5.518	2.621	107.8 K=0.75	0.6013	-4.17	11.56	0.361 [1] ✔
T15	59.1822 - 39.1822	7/8	5.518	2.621	107.8 K=0.75	0.6013	-2.35	11.56	0.203 [1] ✔
T16	39.1822 - 19.1822	7/8	5.518	2.621	107.8 K=0.75	0.6013	-3.54	11.56	0.306 [1] ✔
T17	19.1822 - 14.4112	1	5.505	2.615	94.1 K=0.75	0.7854	-4.11	18.49	0.222 [1] ✔
T18	14.4112 - 11.8302	1	5.627	2.673	96.2 K=0.75	0.7854	-3.87	17.96	0.215 [1] ✔
T19	11.8302 - 9.49947	1 1/4	3.418	3.247	87.3 K=0.70	1.2272	-4.15	31.64	0.131 [1] ✔
T20	9.49947 - 7.16874	1 1/4	3.418	3.247	87.3 K=0.70	1.2272	-4.76	31.64	0.151 [1] ✔
T21	7.16874 - 1.2	1 1/4	3.080	2.412	85.3 K=0.92	1.2272	-16.35	32.43	0.504 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	311.351 - 310.351	6 x 1	5.000	4.771	198.3 K=1.00	6.0000	0.00	34.46	0.000
T19	11.8302 - 9.49947	6 x 3/4	5.000	3.563	197.5 K=1.00	4.5000	-2.30	26.07	0.088 [1]
T20	9.49947 - 7.16874	6 x 3/4	5.000	3.563	197.5 K=1.00	4.5000	-2.26	26.07	0.087 [1]

[1] P_u / ϕP_n controls

Horizontal Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	311.351 - 310.351	6 x 1	-0.74	24.30	0.030	-0.00	4.05	0.000
T19	11.8302 - 9.49947	6 x 3/4	0.00	18.23	0.000	0.00	2.28	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T20	9.49947 - 7.16874	6 x 3/4	0.00	18.23	0.000	0.00	2.28	0.000

Horizontal Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	311.351 - 310.351	6 x 1	0.000	0.030	0.000	0.031 ✔	1.000	4.8.1 ✔
T19	11.8302 - 9.49947	6 x 3/4	0.088	0.000	0.000	0.088 [1] ✔	1.000	4.8.1 ✔
T20	9.49947 - 7.16874	6 x 3/4	0.087	0.000	0.000	0.087 [1] ✔	1.000	4.8.1 ✔

[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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	310.351 - 299.182	1 1/4	5.000	4.771	128.2 K=0.70	1.2272	-0.41	16.86	0.024 [1] ✔
T4	279.182 - 259.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.15	6.90	0.021 [1] ✔
T5	259.182 - 239.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.13	6.90	0.019 [1] ✔
T6	239.182 - 219.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.53	6.90	0.077 [1] ✔
T7	219.182 - 199.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.81	6.90	0.118 [1] ✔
T8	199.182 - 179.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.48	6.90	0.070 [1] ✔
T9	179.182 - 159.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.35	6.90	0.050 [1] ✔
T10	159.182 - 139.182	1 1/4	5.000	4.750	127.7 K=0.70	1.2272	-1.01	17.01	0.060 [1] ✔
T11	139.182 - 119.182	1	5.000	4.750	159.6 K=0.70	0.7854	-1.29	6.97	0.185 [1] ✔
T12	119.182 - 99.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.16	6.97	0.024 [1] ✔
T13	99.1822 - 79.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.80	6.97	0.115 [1] ✔
T14	79.1822 - 59.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.60	6.97	0.086 [1] ✔
T16	39.1822 -	1	5.000	4.750	159.6	0.7854	-0.40	6.97	0.057 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	19.1822				K=0.70				✔
T17	19.1822 - 14.4112	1 1/4	5.000	4.750	127.7 K=0.70	1.2272	-0.49	17.01	0.029 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	299.182 - 279.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.14	6.90	0.021 [1] ✔
T4	279.182 - 259.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.17	6.90	0.024 [1] ✔
T5	259.182 - 239.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.73	6.90	0.105 [1] ✔
T6	239.182 - 219.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.67	6.90	0.097 [1] ✔
T7	219.182 - 199.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.38	6.90	0.055 [1] ✔
T8	199.182 - 179.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.11	6.90	0.016 [1] ✔
T9	179.182 - 159.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.53	6.90	0.076 [1] ✔
T10	159.182 - 139.182	1 1/4	5.000	4.750	127.7 K=0.70	1.2272	-1.41	17.01	0.083 [1] ✔
T11	139.182 - 119.182	1	5.000	4.750	159.6 K=0.70	0.7854	-0.42	6.97	0.060 [1] ✔
T12	119.182 - 99.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.54	6.97	0.077 [1] ✔
T13	99.1822 - 79.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.88	6.97	0.126 [1] ✔
T14	79.1822 - 59.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.32	6.97	0.046 [1] ✔
T15	59.1822 - 39.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.16	6.97	0.023 [1] ✔
T16	39.1822 - 19.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.37	6.97	0.053 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T5	259.182 - 239.182	1	5.000	4.771	160.3 K=0.70	0.7854	-0.01	6.90	0.001 [1]
T11	139.182 - 119.182	1	5.000	4.750	159.6 K=0.70	0.7854	-0.24	6.97	0.035 [1]
T15	59.1822 - 39.1822	1	5.000	4.750	159.6 K=0.70	0.7854	-0.01	6.97	0.001 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	11.8302 - 9.49947	7/8	1.250	1.125	61.7 K=1.00	0.6013	-2.03	20.48	0.099 [1]
T20	9.49947 - 7.16874	7/8	1.250	1.125	61.7 K=1.00	0.6013	-1.95	20.48	0.095 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T20	9.49947 - 7.16874	7/8	1.709	1.538	81.6 K=0.97	0.6013	-2.26	16.63	0.136 [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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	311.351 - 310.351	2 3/4	1.000	1.000	17.5	5.9396	9.19	267.28	0.034
T2	310.351 - 299.182	2 3/4	11.169	2.719	47.5	5.9396	17.91	267.28	0.067 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	299.182 - 279.182	2 3/4	20.000	0.667	11.6	5.9396	6.12	267.28	0.023 [1 #]
T4	279.182 - 259.182	2 3/4	20.000	0.667	11.6	5.9396	2.69	267.28	0.010 [1]
T5	259.182 - 239.182	2 3/4	20.000	0.667	11.6	3.4123	11.06	166.35	0.066 [1 #]
T6	239.182 - 219.182	2 3/4	20.000	2.333	40.7	5.9396	18.12	267.28	0.068 [1]
T8	199.182 - 179.182	2 3/4	20.000	2.333	40.7	5.9396	2.74	267.28	0.010 [1]
T9	179.182 - 159.182	2 3/4	20.000	0.667	11.6	5.9396	2.41	267.28	0.009 [1 #]
T10	159.182 - 139.182	3	20.000	0.667	10.7	7.0686	3.60	318.09	0.011 [1]
T11	139.182 - 119.182	3	20.000	0.667	10.7	4.3026	27.38	209.75	0.131 [1 #]
T12	119.182 - 99.1822	3	20.000	2.333	37.3	7.0686	29.56	318.09	0.093 [1]
T13	99.1822 - 79.1822	3	20.000	0.667	10.7	4.3026	12.76	209.75	0.061 [1 #]
T14	79.1822 - 59.1822	3	20.000	0.667	10.7	7.0686	24.78	318.09	0.078 [1]
T15	59.1822 - 39.1822	3	20.000	0.667	10.7	4.3026	16.74	209.75	0.080 [1 #]
T16	39.1822 - 19.1822	3	20.000	0.667	10.7	7.0686	16.72	318.09	0.053 [1]

[1] P_u / ϕP_n controls

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	311.351 - 310.351	2 3/4	0.85	13.00	0.065	0.00	13.00	0.000
T2	310.351 - 299.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T3	299.182 - 279.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T4	279.182 - 259.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T5	259.182 - 239.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T6	239.182 - 219.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T8	199.182 - 179.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T9	179.182 - 159.182	2 3/4	0.00	13.00	0.000	0.00	13.00	0.000
T10	159.182 - 139.182	3	0.00	16.88	0.000	0.00	16.88	0.000
T11	139.182 - 119.182	3	0.00	16.88	0.000	0.00	16.88	0.000
T12	119.182 - 99.1822	3	0.00	16.88	0.000	0.00	16.88	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T13	99.1822 - 79.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T14	79.1822 - 59.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T15	59.1822 - 39.1822	3	0.00	16.88	0.000	0.00	16.88	0.000
T16	39.1822 - 19.1822	3	0.00	16.88	0.000	0.00	16.88	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	311.351 - 310.351	2 3/4	0.034	0.065	0.000	0.082 ✔	1.000	4.8.1 ✔
T2	310.351 - 299.182	2 3/4	0.067	0.000	0.000	0.067 [1] ✔	1.000	4.8.1 ✔
T3	299.182 - 279.182	2 3/4	0.023	0.000	0.000	0.023 [1 #] ✔	1.000	4.8.1 ✔
T4	279.182 - 259.182	2 3/4	0.010	0.000	0.000	0.010 [1] ✔	1.000	4.8.1 ✔
T5	259.182 - 239.182	2 3/4	0.066	0.000	0.000	0.066 [1 #] ✔	1.000	4.8.1 ✔
T6	239.182 - 219.182	2 3/4	0.068	0.000	0.000	0.068 [1] ✔	1.000	4.8.1 ✔
T8	199.182 - 179.182	2 3/4	0.010	0.000	0.000	0.010 [1] ✔	1.000	4.8.1 ✔
T9	179.182 - 159.182	2 3/4	0.009	0.000	0.000	0.009 [1 #] ✔	1.000	4.8.1 ✔
T10	159.182 - 139.182	3	0.011	0.000	0.000	0.011 [1] ✔	1.000	4.8.1 ✔
T11	139.182 - 119.182	3	0.131	0.000	0.000	0.131 [1 #] ✔	1.000	4.8.1 ✔
T12	119.182 - 99.1822	3	0.093	0.000	0.000	0.093 [1] ✔	1.000	4.8.1 ✔
T13	99.1822 - 79.1822	3	0.061	0.000	0.000	0.061 [1 #] ✔	1.000	4.8.1 ✔
T14	79.1822 - 59.1822	3	0.078	0.000	0.000	0.078 [1] ✔	1.000	4.8.1 ✔
T15	59.1822 - 39.1822	3	0.080	0.000	0.000	0.080 [1 #] ✔	1.000	4.8.1 ✔
T16	39.1822 - 19.1822	3	0.053	0.000	0.000	0.053 [1] ✔	1.000	4.8.1 ✔

[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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	310.351 - 299.182	7/8	5.692	2.715	149.0	0.6013	2.35	27.06	0.087 [1]
T3	299.182 - 279.182	7/8	5.518	2.632	144.4	0.6013	1.59	27.06	0.059 [1]
T4	279.182 - 259.182	7/8	5.518	2.632	144.4	0.6013	1.36	27.06	0.050 [1]
T5	259.182 - 239.182	7/8	5.518	2.632	144.4	0.6013	3.30	27.06	0.122 [1]
T6	239.182 - 219.182	7/8	5.518	2.632	144.4	0.6013	3.47	27.06	0.128 [1]
T7	219.182 - 199.182	7/8	5.518	2.632	144.4	0.6013	3.17	27.06	0.117 [1]
T8	199.182 - 179.182	7/8	5.518	2.632	144.4	0.6013	2.32	27.06	0.086 [1]
T9	179.182 - 159.182	7/8	5.518	2.632	144.4	0.6013	3.34	27.06	0.123 [1]
T10	159.182 - 139.182	1	5.518	2.621	125.8	0.7854	5.50	35.34	0.156 [1]
T11	139.182 - 119.182	7/8	5.518	2.621	143.8	0.6013	5.33	27.06	0.197 [1]
T12	119.182 - 99.1822	7/8	5.518	2.621	143.8	0.6013	3.77	27.06	0.139 [1]
T13	99.1822 - 79.1822	7/8	5.518	2.621	143.8	0.6013	4.23	27.06	0.156 [1]
T14	79.1822 - 59.1822	7/8	5.518	2.621	143.8	0.6013	3.89	27.06	0.144 [1]
T15	59.1822 - 39.1822	7/8	5.518	2.621	143.8	0.6013	2.15	27.06	0.079 [1]
T16	39.1822 - 19.1822	7/8	5.518	2.621	143.8	0.6013	3.35	27.06	0.124 [1]
T17	19.1822 - 14.4112	1	5.505	2.615	125.5	0.7854	3.27	35.34	0.092 [1]
T18	14.4112 - 11.8302	1	5.627	2.673	128.3	0.7854	2.70	35.34	0.076 [1]
T19	11.8302 - 9.49947	1 1/4	3.418	3.247	124.7	1.2272	4.00	55.22	0.072 [1]
T20	9.49947 - 7.16874	1 1/4	3.418	3.247	124.7	1.2272	4.51	55.22	0.082 [1]
T21	7.16874 - 1.2	1 1/4	3.080	2.412	92.6	1.2272	0.06	55.22	0.001 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	311.351 -	6 x 1	5.000	4.771	198.3	6.0000	0.00	194.40	0.000

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	310.351 11.8302 - 9.49947	6 x 3/4	5.000	3.563	197.5	4.5000	3.74	145.80	0.026 [1]
T20	9.49947 - 7.16874	6 x 3/4	5.000	3.563	197.5	4.5000	24.13	145.80	0.166 [1]
T21	7.16874 - 1.2	6 x 3/4	4.791	4.541	251.7	4.5000	12.21	145.80	0.084 [1]

[1] P_u / ϕP_n controls

Horizontal Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
T1	311.351 - 310.351	6 x 1	-0.74	24.30	0.030	-0.00	4.05	0.000
T19	11.8302 - 9.49947	6 x 3/4	0.00	18.23	0.000	0.00	2.28	0.000
T20	9.49947 - 7.16874	6 x 3/4	0.00	18.23	0.000	0.00	2.28	0.000
T21	7.16874 - 1.2	6 x 3/4	0.00	18.23	0.000	0.00	2.28	0.000

Horizontal Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	311.351 - 310.351	6 x 1	0.000	0.030	0.000	0.031 ✔	1.000	4.8.1 ✔
T19	11.8302 - 9.49947	6 x 3/4	0.026	0.000	0.000	0.026 [1] ✔	1.000	4.8.1 ✔
T20	9.49947 - 7.16874	6 x 3/4	0.166	0.000	0.000	0.166 [1] ✔	1.000	4.8.1 ✔
T21	7.16874 - 1.2	6 x 3/4	0.084	0.000	0.000	0.084 [1] ✔	1.000	4.8.1 ✔

[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 K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	310.351 - 299.182	1 1/4	5.000	4.771	183.2	1.2272	1.03	55.22	0.019 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	299.182 - 279.182	1	5.000	4.771	229.0	0.7854	0.84	35.34	0.024 [1]
T4	279.182 - 259.182	1	5.000	4.771	229.0	0.7854	0.22	35.34	0.006 [1]
T5	259.182 - 239.182	1	5.000	4.771	229.0	0.7854	0.22	35.34	0.006 [1]
T6	239.182 - 219.182	1	5.000	4.771	229.0	0.7854	0.70	35.34	0.020 [1]
T7	219.182 - 199.182	1	5.000	4.771	229.0	0.7854	0.91	35.34	0.026 [1]
T8	199.182 - 179.182	1	5.000	4.771	229.0	0.7854	0.55	35.34	0.015 [1]
T9	179.182 - 159.182	1	5.000	4.771	229.0	0.7854	0.44	35.34	0.013 [1]
T10	159.182 - 139.182	1 1/4	5.000	4.750	182.4	1.2272	1.12	55.22	0.020 [1]
T11	139.182 - 119.182	1	5.000	4.750	228.0	0.7854	1.50	35.34	0.042 [1]
T12	119.182 - 99.1822	1	5.000	4.750	228.0	0.7854	0.41	35.34	0.011 [1]
T13	99.1822 - 79.1822	1	5.000	4.750	228.0	0.7854	1.08	35.34	0.031 [1]
T14	79.1822 - 59.1822	1	5.000	4.750	228.0	0.7854	1.05	35.34	0.030 [1]
T15	59.1822 - 39.1822	1	5.000	4.750	228.0	0.7854	0.46	35.34	0.013 [1]
T16	39.1822 - 19.1822	1	5.000	4.750	228.0	0.7854	0.86	35.34	0.024 [1]
T17	19.1822 - 14.4112	1 1/4	5.000	4.750	182.4	1.2272	1.28	55.22	0.023 [1]
T18	14.4112 - 11.8302	7/8	5.000	4.750	260.6	0.6013	1.70	27.06	0.063 [1]

[1] $P_u / \phi P_n$ controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	310.351 - 299.182	1 1/4	5.000	4.771	183.2	1.2272	6.31	55.22	0.114 [1]
T3	299.182 - 279.182	1	5.000	4.771	229.0	0.7854	0.28	35.34	0.008 [1]
T4	279.182 - 259.182	1	5.000	4.771	229.0	0.7854	0.24	35.34	0.007 [1]
T5	259.182 - 239.182	1	5.000	4.771	229.0	0.7854	0.80	35.34	0.023 [1]
T6	239.182 - 219.182	1	5.000	4.771	229.0	0.7854	0.98	35.34	0.028 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	219.182 - 199.182	1	5.000	4.771	229.0	0.7854	0.67	35.34	0.019 [1]
T8	199.182 - 179.182	1	5.000	4.771	229.0	0.7854	0.42	35.34	0.012 [1]
T9	179.182 - 159.182	1	5.000	4.771	229.0	0.7854	0.91	35.34	0.026 [1]
T10	159.182 - 139.182	1 1/4	5.000	4.750	182.4	1.2272	1.86	55.22	0.034 [1]
T11	139.182 - 119.182	1	5.000	4.750	228.0	0.7854	0.78	35.34	0.022 [1]
T12	119.182 - 99.1822	1	5.000	4.750	228.0	0.7854	0.94	35.34	0.027 [1]
T13	99.1822 - 79.1822	1	5.000	4.750	228.0	0.7854	1.12	35.34	0.032 [1]
T14	79.1822 - 59.1822	1	5.000	4.750	228.0	0.7854	0.58	35.34	0.017 [1]
T15	59.1822 - 39.1822	1	5.000	4.750	228.0	0.7854	0.52	35.34	0.015 [1]
T16	39.1822 - 19.1822	1	5.000	4.750	228.0	0.7854	0.75	35.34	0.021 [1]
T21	7.16874 - 1.2	6 x 3/4	0.428	0.178	9.8	4.5000	10.80	145.80	0.074 [1]

[1] P_u / ϕP_n controls

Mid Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	299.182 - 279.182	1	5.000	4.771	229.0	0.7854	0.19	35.34	0.005 [1]
T4	279.182 - 259.182	1	5.000	4.771	229.0	0.7854	0.20	35.34	0.006 [1]
T5	259.182 - 239.182	1	5.000	4.771	229.0	0.7854	0.21	35.34	0.006 [1]
T6	239.182 - 219.182	1	5.000	4.771	229.0	0.7854	7.03	35.34	0.199 [1]
T7	219.182 - 199.182	1	5.000	4.771	229.0	0.7854	0.40	35.34	0.011 [1]
T8	199.182 - 179.182	1	5.000	4.771	229.0	0.7854	0.45	35.34	0.013 [1]
T9	179.182 - 159.182	1	5.000	4.771	229.0	0.7854	0.47	35.34	0.013 [1]
T10	159.182 - 139.182	1 1/4	5.000	4.750	182.4	1.2272	9.00	55.22	0.163 [1]
T11	139.182 - 119.182	1	5.000	4.750	228.0	0.7854	0.83	35.34	0.023 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T12	119.182 - 99.1822	1	5.000	4.750	228.0	0.7854	0.71	35.34	0.020 [1]
T13	99.1822 - 79.1822	1	5.000	4.750	228.0	0.7854	8.02	35.34	0.227 [1]
T14	79.1822 - 59.1822	1	5.000	4.750	228.0	0.7854	0.84	35.34	0.024 [1]
T15	59.1822 - 39.1822	1	5.000	4.750	228.0	0.7854	0.88	35.34	0.025 [1]
T16	39.1822 - 19.1822	1	5.000	4.750	228.0	0.7854	0.88	35.34	0.025 [1]
T17	19.1822 - 14.4112	7/8	5.000	4.750	260.6	0.6013	1.51	27.06	0.056 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	11.8302 - 9.49947	7/8	1.250	1.125	61.7	0.6013	2.03	27.06	0.075 [1]
T20	9.49947 - 7.16874	7/8	1.250	1.125	61.7	0.6013	3.25	27.06	0.120 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T20	9.49947 - 7.16874	7/8	1.709	1.538	84.4	0.6013	1.33	27.06	0.049 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	346.351 - 329.351	Pole	P10x.365 (10.75 OD)	1	-1.30	192.16	12.5	Pass
L2	329.351 -	Pole	P10x.365 (10.75 OD)	2	-2.23	192.16	47.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
	311.351							
T1	311.351 - 310.351	Leg	2 3/4	3	8.95	267.28	12.0	Pass
T2	310.351 - 299.182	Leg	2 3/4	10	-21.06	226.69	9.3	Pass
T3	299.182 - 279.182	Leg	2 3/4	43	-25.08	236.75	10.6	Pass
T4	279.182 - 259.182	Leg	2 3/4	103	-27.15	236.75	11.5	Pass
T5	259.182 - 239.182	Leg	2 3/4	163	-34.07	236.75	14.4 14.7 (b)	Pass
T6	239.182 - 219.182	Leg	2 3/4	223	-47.56	236.75	20.1	Pass
T7	219.182 - 199.182	Leg	2 3/4	284	-55.43	236.75	23.4	Pass
T8	199.182 - 179.182	Leg	2 3/4	344	-62.22	236.75	26.3	Pass
T9	179.182 - 159.182	Leg	2 3/4	404	-67.64	236.75	28.6	Pass
T10	159.182 - 139.182	Leg	3	464	-82.85	287.27	28.8	Pass
T11	139.182 - 119.182	Leg	3	524	-95.35	287.27	33.2 39.4 (b)	Pass
T12	119.182 - 99.1822	Leg	3	584	-101.04	287.27	35.2	Pass
T13	99.1822 - 79.1822	Leg	3	644	-110.20	278.92	39.5 45.3 (b)	Pass
T14	79.1822 - 59.1822	Leg	3	704	-119.61	277.26	43.1	Pass
T15	59.1822 - 39.1822	Leg	3	764	-123.83	277.28	44.7 50.8 (b)	Pass
T16	39.1822 - 19.1822	Leg	3	824	-123.54	277.16	44.6	Pass
T17	19.1822 - 14.4112	Leg	3	884	-120.40	278.93	43.2 48.7 (b)	Pass
T18	14.4112 - 11.8302	Leg	3	905	-116.58	276.05	42.2	Pass
T19	11.8302 - 9.49947	Leg	3	917	-117.40	277.45	42.3 48.2 (b)	Pass
T20	9.49947 - 7.16874	Leg	3	935	-112.54	276.89	40.6 46.2 (b)	Pass
T21	7.16874 - 1.2	Leg	3	958	-127.33	277.15	45.9	Pass
T2	310.351 - 299.182	Diagonal	7/8	25	-2.19	10.86	20.1	Pass
T3	299.182 - 279.182	Diagonal	7/8	101	-1.64	11.48	14.3	Pass
T4	279.182 - 259.182	Diagonal	7/8	114	-1.47	11.48	12.8	Pass
T5	259.182 - 239.182	Diagonal	7/8	174	-3.36	11.48	29.3	Pass
T6	239.182 - 219.182	Diagonal	7/8	238	-3.57	11.48	31.1	Pass
T7	219.182 - 199.182	Diagonal	7/8	340	-3.33	11.48	29.1	Pass
T8	199.182 - 179.182	Diagonal	7/8	399	-2.56	11.48	22.3	Pass
T9	179.182 - 159.182	Diagonal	7/8	414	-3.45	11.48	30.0	Pass
T10	159.182 - 139.182	Diagonal	1	479	-5.84	18.43	31.7	Pass
T11	139.182 -	Diagonal	7/8	581	-5.53	11.56	47.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
	119.182							
T12	119.182 - 99.1822	Diagonal	7/8	594	-3.98	11.56	34.4	Pass
T13	99.1822 - 79.1822	Diagonal	7/8	659	-4.39	11.56	37.9	Pass
T14	79.1822 - 59.1822	Diagonal	7/8	761	-4.17	11.56	36.1	Pass
T15	59.1822 - 39.1822	Diagonal	7/8	774	-2.35	11.56	20.3	Pass
T16	39.1822 - 19.1822	Diagonal	7/8	834	-3.54	11.56	30.6	Pass
T17	19.1822 - 14.4112	Diagonal	1	897	-4.11	18.49	22.2	Pass
T18	14.4112 - 11.8302	Diagonal	1	909	-3.87	17.96	21.5	Pass
T19	11.8302 - 9.49947	Diagonal	1 1/4	919	-4.15	31.64	13.1	Pass
T20	9.49947 - 7.16874	Diagonal	1 1/4	940	-4.76	31.64	15.1	Pass
T21	7.16874 - 1.2	Diagonal	1 1/4	966	-16.35	32.43	50.4	Pass
T1	311.351 - 310.351	Horizontal	6 x 1	7	0.00	194.40	3.1	Pass
T19	11.8302 - 9.49947	Horizontal	6 x 3/4	918	-2.30	26.07	8.8	Pass
T20	9.49947 - 7.16874	Horizontal	6 x 3/4	936	24.13	145.80	16.6	Pass
T21	7.16874 - 1.2	Horizontal	6 x 3/4	961	12.21	145.80	8.4	Pass
T2	310.351 - 299.182	Top Girt	1 1/4	12	-0.41	16.86	2.4	Pass
T3	299.182 - 279.182	Top Girt	1	45	0.84	35.34	2.4	Pass
T4	279.182 - 259.182	Top Girt	1	105	-0.15	6.90	2.1	Pass
T5	259.182 - 239.182	Top Girt	1	167	-0.13	6.90	1.9	Pass
T6	239.182 - 219.182	Top Girt	1	226	-0.53	6.90	7.7	Pass
T7	219.182 - 199.182	Top Girt	1	286	-0.81	6.90	11.8	Pass
T8	199.182 - 179.182	Top Girt	1	346	-0.48	6.90	7.0	Pass
T9	179.182 - 159.182	Top Girt	1	407	-0.35	6.90	5.0	Pass
T10	159.182 - 139.182	Top Girt	1 1/4	467	-1.01	17.01	6.0	Pass
T11	139.182 - 119.182	Top Girt	1	527	-1.29	6.97	18.5	Pass
T12	119.182 - 99.1822	Top Girt	1	587	-0.16	6.97	2.4	Pass
T13	99.1822 - 79.1822	Top Girt	1	645	-0.80	6.97	11.5	Pass
T14	79.1822 - 59.1822	Top Girt	1	705	-0.60	6.97	8.6	Pass
T15	59.1822 - 39.1822	Top Girt	1	766	0.46	35.34	1.3	Pass
T16	39.1822 - 19.1822	Top Girt	1	825	-0.40	6.97	5.7	Pass
T17	19.1822 - 14.4112	Top Girt	1 1/4	885	-0.49	17.01	2.9	Pass
T18	14.4112 - 11.8302	Top Girt	7/8	907	1.70	27.06	6.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T2	310.351 - 299.182	Bottom Girt	1 1/4	17	6.31	55.22	11.4	Pass
T3	299.182 - 279.182	Bottom Girt	1	49	-0.14	6.90	2.1	Pass
T4	279.182 - 259.182	Bottom Girt	1	108	-0.17	6.90	2.4	Pass
T5	259.182 - 239.182	Bottom Girt	1	169	-0.73	6.90	10.5	Pass
T6	239.182 - 219.182	Bottom Girt	1	228	-0.67	6.90	9.7	Pass
T7	219.182 - 199.182	Bottom Girt	1	288	-0.38	6.90	5.5	Pass
T8	199.182 - 179.182	Bottom Girt	1	348	-0.11	6.90	1.6	Pass
T9	179.182 - 159.182	Bottom Girt	1	408	-0.53	6.90	7.6	Pass
T10	159.182 - 139.182	Bottom Girt	1 1/4	468	-1.41	17.01	8.3	Pass
T11	139.182 - 119.182	Bottom Girt	1	528	-0.42	6.97	6.0	Pass
T12	119.182 - 99.1822	Bottom Girt	1	588	-0.54	6.97	7.7	Pass
T13	99.1822 - 79.1822	Bottom Girt	1	649	-0.88	6.97	12.6	Pass
T14	79.1822 - 59.1822	Bottom Girt	1	709	-0.32	6.97	4.6	Pass
T15	59.1822 - 39.1822	Bottom Girt	1	769	-0.16	6.97	2.3	Pass
T16	39.1822 - 19.1822	Bottom Girt	1	829	-0.37	6.97	5.3	Pass
T21	7.16874 - 1.2	Bottom Girt	6 x 3/4	964	10.80	145.80	7.4	Pass
T3	299.182 - 279.182	Mid Girt	1	51	0.19	35.34	0.5	Pass
T4	279.182 - 259.182	Mid Girt	1	111	0.20	35.34	0.6	Pass
T5	259.182 - 239.182	Mid Girt	1	171	0.21	35.34	0.6	Pass
T6	239.182 - 219.182	Mid Girt	1	233	7.03	35.34	19.9	Pass
T7	219.182 - 199.182	Mid Girt	1	292	0.40	35.34	1.1	Pass
T8	199.182 - 179.182	Mid Girt	1	352	0.45	35.34	1.3	Pass
T9	179.182 - 159.182	Mid Girt	1	412	0.47	35.34	1.3	Pass
T10	159.182 - 139.182	Mid Girt	1 1/4	471	9.00	55.22	16.3	Pass
T11	139.182 - 119.182	Mid Girt	1	531	-0.24	6.97	3.5	Pass
T12	119.182 - 99.1822	Mid Girt	1	592	0.71	35.34	2.0	Pass
T13	99.1822 - 79.1822	Mid Girt	1	651	8.02	35.34	22.7	Pass
T14	79.1822 - 59.1822	Mid Girt	1	712	0.84	35.34	2.4	Pass
T15	59.1822 - 39.1822	Mid Girt	1	772	0.88	35.34	2.5	Pass
T16	39.1822 - 19.1822	Mid Girt	1	832	0.88	35.34	2.5	Pass
T17	19.1822 - 14.4112	Mid Girt	7/8	888	1.51	27.06	5.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T19	11.8302 - 9.49947	Redund Horz 1 Bracing	7/8	927	-2.03	20.48	9.9	Pass
T20	9.49947 - 7.16874	Redund Horz 1 Bracing	7/8	938	3.25	27.06	12.0	Pass
T20	9.49947 - 7.16874	Redund Diag 1 Bracing	7/8	939	-2.26	16.63	13.6	Pass
T3	299.182 - 279.182	Guy A@299.182	13/16	983	22.26	48.00	46.4	Pass
T6	239.182 - 219.182	Guy A@229.182	7/8	986	24.43	55.20	44.3	Pass
T10	159.182 - 139.182	Guy A@149.182	13/16	989	24.72	48.00	51.5	Pass
T13	99.1822 - 79.1822	Guy A@89.1822	3/4	992	21.65	40.80	53.1	Pass
T3	299.182 - 279.182	Guy B@299.182	3/4	982	23.98	40.80	58.8	Pass
T6	239.182 - 219.182	Guy B@229.182	13/16	985	25.65	48.00	53.4	Pass
T10	159.182 - 139.182	Guy B@149.182	7/8	988	27.86	55.20	50.5	Pass
T13	99.1822 - 79.1822	Guy B@89.1822	13/16	991	23.50	48.00	49.0	Pass
T3	299.182 - 279.182	Guy C@299.182	3/4	981	22.28	40.80	54.6	Pass
T6	239.182 - 219.182	Guy C@229.182	13/16	984	23.60	48.00	49.2	Pass
T10	159.182 - 139.182	Guy C@149.182	7/8	987	26.04	55.20	47.2	Pass
T13	99.1822 - 79.1822	Guy C@89.1822	13/16	990	22.27	48.00	46.4	Pass

Summary		
Pole (L2)	47.2	Pass
Leg (T15)	50.8	Pass
Diagonal (T21)	50.4	Pass
Horizontal (T20)	16.6	Pass
Top Girt (T11)	18.5	Pass
Bottom Girt (T13)	12.6	Pass
Mid Girt (T13)	22.7	Pass
Redund Horz 1 Bracing (T20)	12.0	Pass
Redund Diag 1 Bracing (T20)	13.6	Pass
Guy A (T13)	53.1	Pass
Guy B (T3)	58.8	Pass
Guy C (T3)	54.6	Pass
Bolt Checks	50.8	Pass
RATING =	**58.8**	**Pass**

FDH Velocitel
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FDH VELOCITEL
ENGINEERING INNOVATION

Version: 3.8
Version Date: 11/11/2016

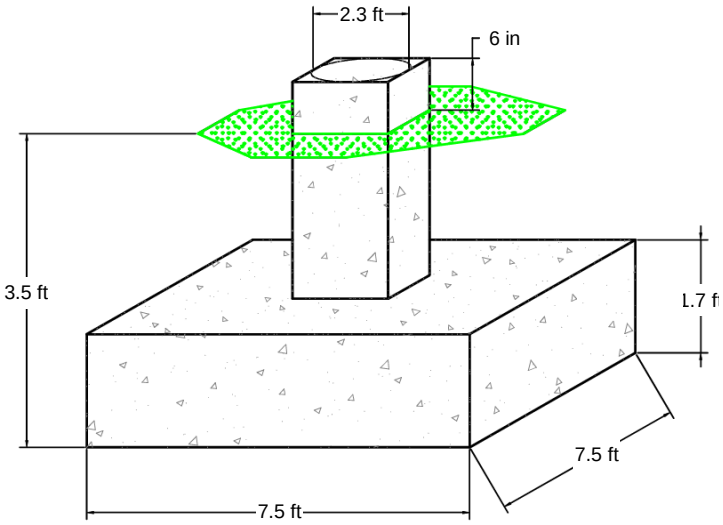
FDH Velocitel -- 3070 Bristol Street, Suite 450, Costa Mesa, CA 92626 -- Ph. 714.884.4815

Guyed Tower Pad & Pier Calculator

Project & Site Details			
Project No.	17QDIY1400.	Rev.	0
Project Name	West Hartford		
Site ID	CT15879-A		
Date	Tuesday, April 25, 2017		
Code	ANSI/TIA-222-G		
Overstress Capacity, Soil	110%		
Overstress Capacity, Steel	105%		

Tower Reactions		
Shear Load, V_{TNX}	8	k
Axial Load, P_{TNX}	340	k

Foundation Information		
Density Concrete	0.15	kcf
Pier Shape	Round	-
Pier Diameter, d	2.3	ft
Pier Height Above Grade, ext	0.5	ft
Pad Width, W	7.5	ft
Pad Thickness, T	1.7	ft
Pad Bearing Depth, D	3.5	ft
Has is been Modified?	No	-



Soil Information			
Ultimate Bearing Capacity, Net	50	ksf	Boring Log
# of Layers Above Pad	1	-	1
Average Soil Unit Weight	170	pcf	
Soil Layer stop at Top of Pad	TRUE	Depth	1.8'

Layer	Depth at Bottom (ft)	Unit Weight (pcf)	Layer Thickness (ft)
1	1.8	170	1.8

Soil Bearing Capacity		
Weight of Concrete	15.8	k
Axial Force, P_u	337.5	k
Axial Bearing Stress, q_u	6.5	ksf
Allowable Bearing Stress, Φq_n	30.0	ksf
Bearing Capacity	**21.5%**	**PASS**

Pad Steel Information		
Horizontal Bar Size	#8	-
Pad Bar Diameter, d_b	1	in
Number of Horizontal Bars, n	4	-
Strength of Concrete, f_c'	3000	psi
Clear Cover, cc_{pad}	3	in
Yield Strength of Steel, F_y	60	ksi

Pad Steel Capacities		
One-Way Critical Shear, V_{crit}	61.2	k
Nominal Shear Strength, ΦV_n	117.6	k
One-Way Shear Capacity	**52.0%**	**PASS**
Two-Way Critical Shear, V_{crit}	23.2	k
Nominal Shear Strength, ΦV_n	23.7	k
Two-Way Shear Capacity	**97.9%**	**PASS**
Moment at Edge of Pier, M_u	161.4	k-ft
Nominal Flexural Strength, ΦM_n	219.0	k-ft
Steel Yielding?	**OK**	
Pad Flexural Capacity	**73.7%**	**PASS**

Pier Steel Information		
Vertical Bar Size	#7	-
Pier Bar Diameter, d_v	0.875	in
Number of Vertical Bars, n_v	5	-
Tie Size	#3	-
Tie Bar Diameter, d_t	0.375	in
Clear Cover, cc_{pier}	3	in

Pier Steel Capacities		
Axial Compressive Load, P_u	340.0	k
Nominal Compressive Strength, ΦP_n	883.1	k
Compressive Capacity	**38.5%**	**PASS**
Reinforcement Stress, f_t	14.7	ksi
Allowable Stress, F_t	54.0	ksi
Bending Capacity	**27.3%**	**PASS**

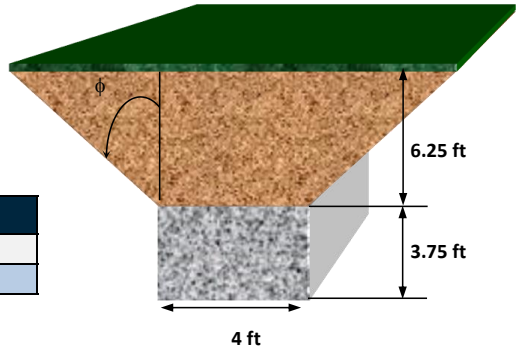
FDH VELOCITEL
ENGINEERING INNOVATION

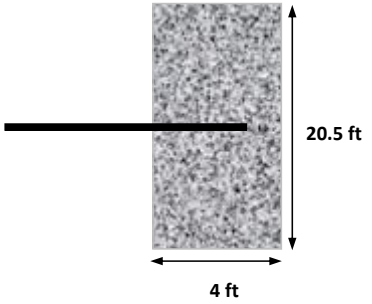
Version:	2.1
Version Date:	9/21/2016

FDH Velocitel -- 6521 Meridien Drive, Raleigh, NC 27616 -- Ph. 919.755.1012 -- Fax 919.755.1031

Guy Anchor Block Foundation Calculator

Project & Site Details	
Project No.	17QDIY1400
Project Name	West Hartford
Site ID	CT15879-A
Date	Tuesday, April 25, 2017
Code	ANSI/TIA-222-G





Anchor Block Information			
Density Concrete	150	pcf	Anchor
Length	20.5	ft	Outer
Width	4	ft	
Thickness	3.75	ft	
Depth to Top of Block	6.25	ft	
Anchor Angle from Grade	37	º	

Soil Information				
Frost Depth	3.33	ft	Boring Log	
Water Table Depth	99	ft	B-2/3/4	
Consider Lateral Passive Pressure within the Frost Depth?	Partial			
# of Layers Above Anchor:	2	Must Be Int. >=1,<=7		
# of Layers Adjacent Anchor:	1	Must Be Int. >=1,<=7	Soil Layers OK?	
Total # of Layers:	3	Must Be Int. >=2,<=8	Yes	

Layer	Depth at Bottom (ft)	Soil Type (C/S)	Unit Weight (pcf)	Thickness (ft)	Friction Angle (°)	Cohesion (psf)
1	3.33	S	135	3.33	30	0
2	6.25	S	135	2.92	30	0
3	10	S	135	3.75	30	0

Uplift Capacity		
Anchor Uplift	55	k
Allowable Uplift Load	255.2	k
Capacity	21.6%	Pass

Lateral Capacity		
Anchor Lateral	73	k
Allowable Lateral Load	236.36	k
Capacity	30.9%	Pass

Anchor Shaft Capacity		
Anchor Tension	92	k
No. of Anchors	2	-
Anchor Type	Solid Rod	-
Cross Sectional Area	3.976	in^2
Yield Strength, F_y	36	ksi
Factor (LRFD)	0.8	-
Allowable Tension	229.0	k
Capacity	40.2%	Pass

··T··Mobile·

WIRELESS COMMUNICATIONS FACILITY

CT765/MARLIN GUYED TOWER
SITE ID: CT11765A-U1900
3114 ALBANY AVENUE
WEST HARTFORD, CT 06117

T-MOBILE RF CONFIGURATION

4E-GU21_2DP

PROJECT SUMMARY

THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:

a. REMOVE (2) EXISTING T-MOBILE TWIN TMA PCS (2) TO REMAIN.

b. INSTALL (2) NEW PCS/AWS DIPLEXERS AT GRADE ON EACH SECTOR, (4) TOTAL.

c. INSTALL (2) NEW PCS/AWS TWIN TMA'S.

PROJECT INFORMATION

SITE NAME:	CT765/MARLIN GUYED TOWER
SITE ID:	CT11765A
SITE ADDRESS:	3114 ALBANY AVENUE WEST HARTFORD, CT 06117
APPLICANT:	T-MOBILE NORTHEAST, LLC 35 GRIFFIN ROAD SOUTH BLOOMFIELD, CT 06002
CONTACT PERSON:	BRIAN PAUL (PROJECT MANAGER) (860) 550-5971 TRANSCEND WIRELESS, LLC
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-47'-48.52" N LONGITUDE: 72°-47'-48.63" W GROUND ELEVATION: 690'± AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2016 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
8. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
9. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
10. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
12. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
14. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
15. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
16. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
17. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
18. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
19. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

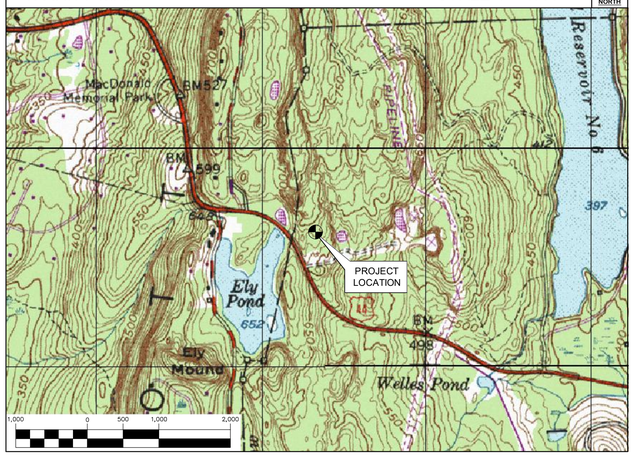
FROM: 35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

TO: 3114 ALBANY AVENUE
WEST HARTFORD, CT 06117

1.	HEAD NORTHEAST ON GRIFFIN RD S TOWARD W NEWBERRY RD.	0.60 MI.
2.	TURN RIGHT ONTO DAY HILL RD.	0.60 MI.
3.	TURN LEFT ONTO CT-189 S.	2.50 MI.
4.	SLIGHT RIGHT ONTO BROWN ST.	0.90 MI.
5.	CONTINUE ONTO MAPLE AVE.	0.60 MI.
6.	TURN RIGHT ONTO BURR RD.	0.90 MI.
7.	TURN LEFT ONTO ONTO CT-185 E	338 FT.
8.	TURN RIGHT ONTO MOUNTAIN RD.	2.00 MI.
9.	SHARP RIGHT ONTO ALBANY AVE.	1.80 MI.

VICINITY MAP

SCALE: 1" = 1000'



PROFESSIONAL ENGINEER SEAL

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
B	02/23/17	CAG	TJL	CONSTRUCTION DRAWINGS - REVISED PER CLIENT
A	02/15/17	LGL	CAG	CONSTRUCTION DRAWINGS - ISSUED FOR CLIENT REVIEW

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CT765/MARLIN GUYED TOWER
SITE ID: CT11765A
3114 ALBANY AVENUE
WEST HARTFORD, CT 06117

DATE: 02/07/17
SCALE: AS NOTED
JOB NO. 17012.15

TITLE SHEET

T-1

Sheet No. 1 of 6

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90–105 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)–––ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)–––ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)–––ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)–––ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. WELDING ELECTRODE–––ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON–GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT–DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

ELECTRIC NOTES

1. ALL NEW ANTENNAS SHALL BE BONDED TO EXISTING GROUNDING SYSTEM PER MANUFACTURERS AND NEC SPECIFICATIONS. COORDINATE WITH CONSTRUCTION MANAGER FOR REQUIREMENTS.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
B	02/23/17	CAG	TJL	CONSTRUCTION DRAWINGS – REVISED PER CLIENT
A	02/15/17	LGL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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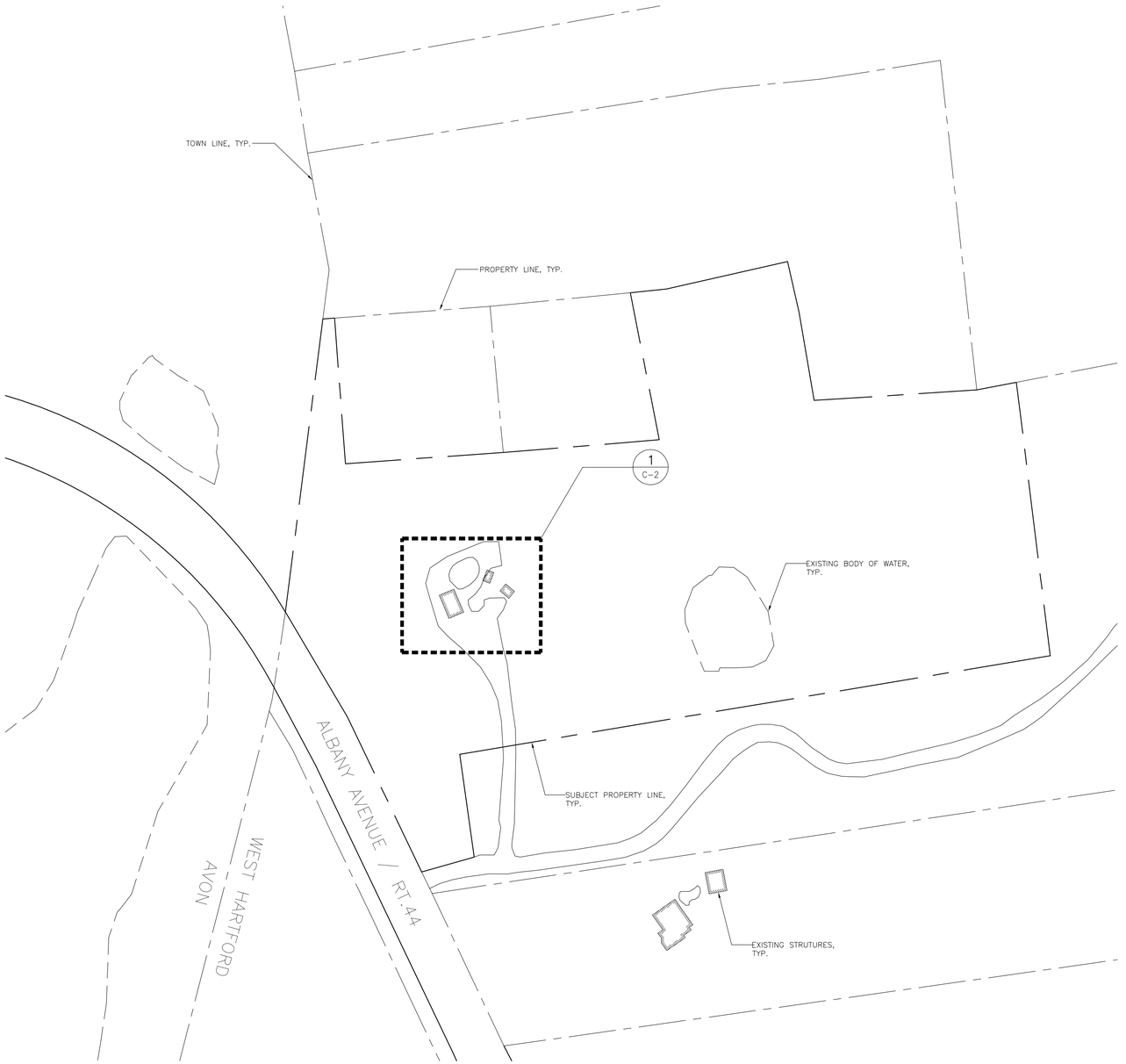
DESIGN BASIS AND SITE NOTES

N-1



1 / C-1 **SITE LOCATION PLAN**
SCALE: 1" = 100'

TRUE NORTH

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

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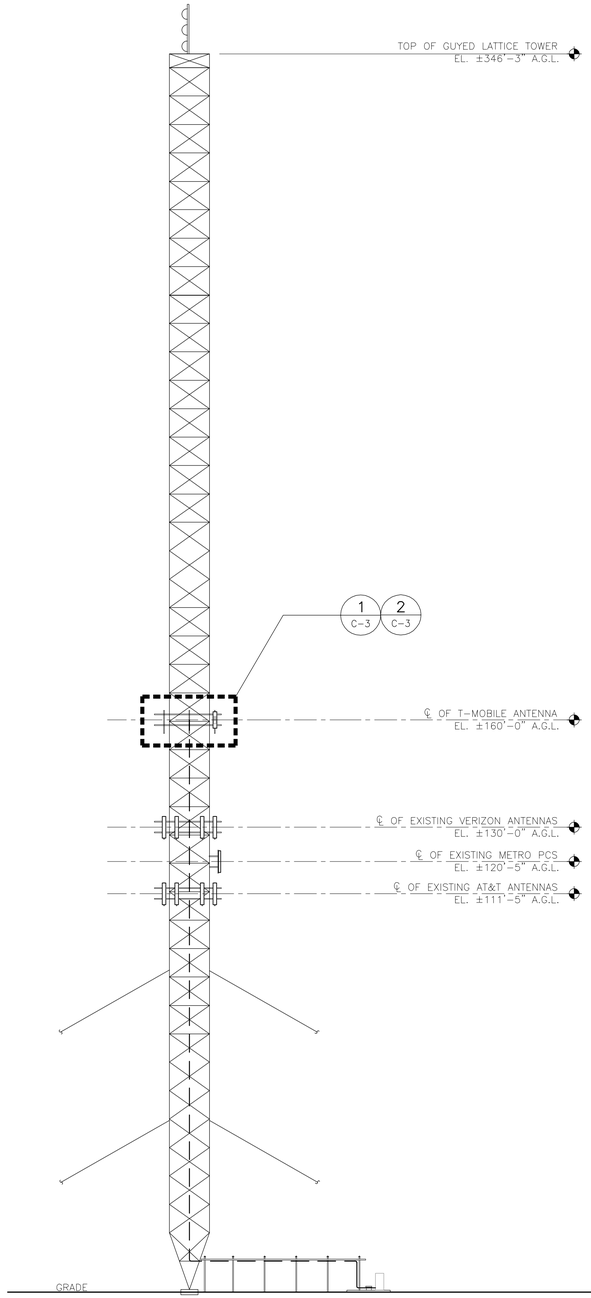
SITE LOCATION PLAN

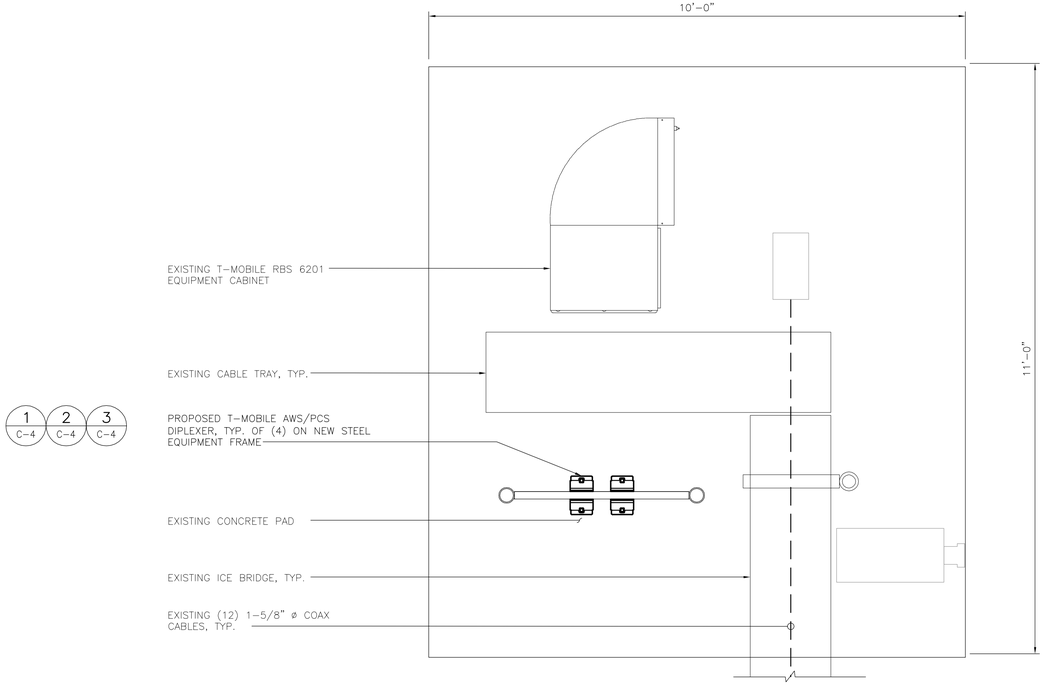
C-1

Sheet No. 3 of 6



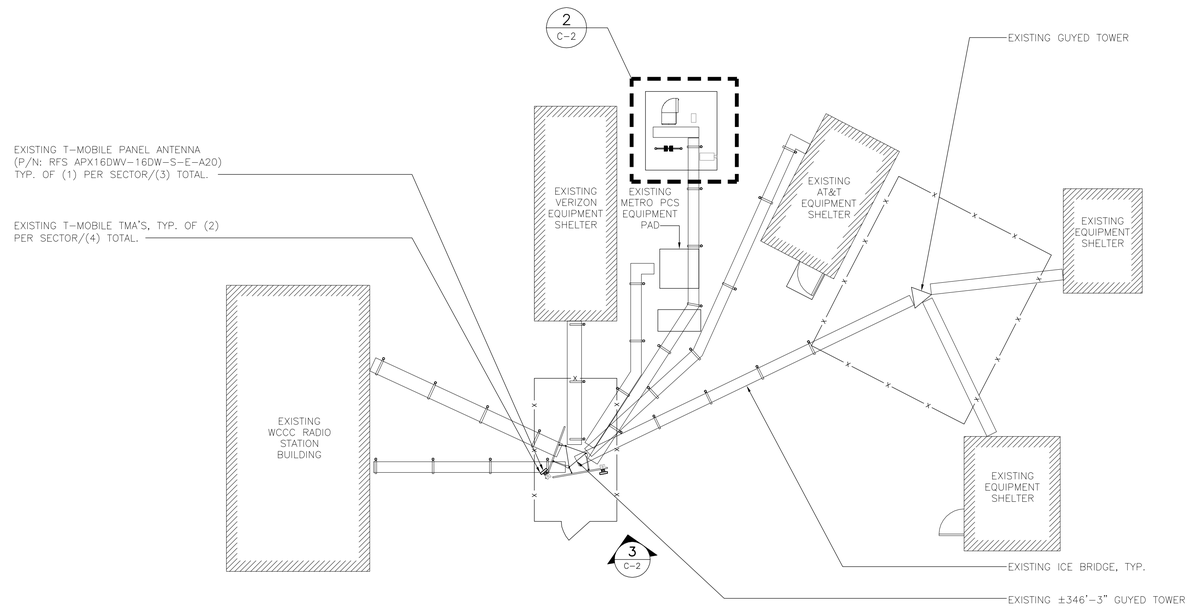
3 C-2 **NORTHWEST ELEVATION**
SCALE: 1" = 20'

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



2 C-2 **EQUIPMENT PLAN**
SCALE: 3/4" = 1'

TRUE NORTH



1 C-2 **COMPOUND PLAN**
SCALE: 1" = 10'

TRUE NORTH

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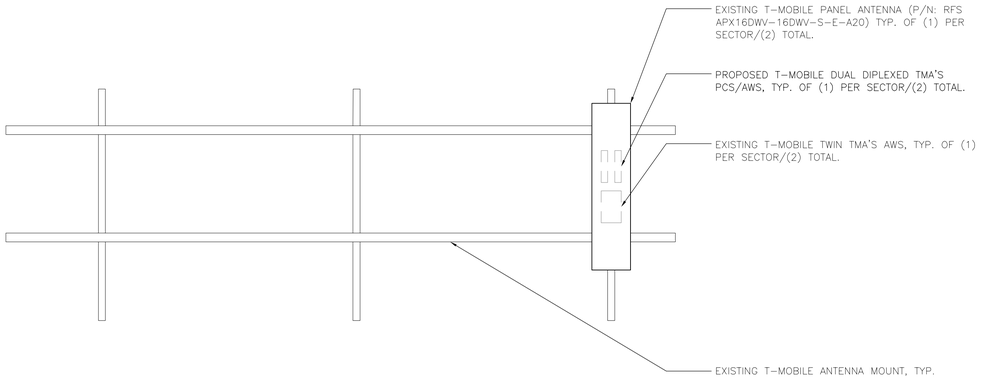
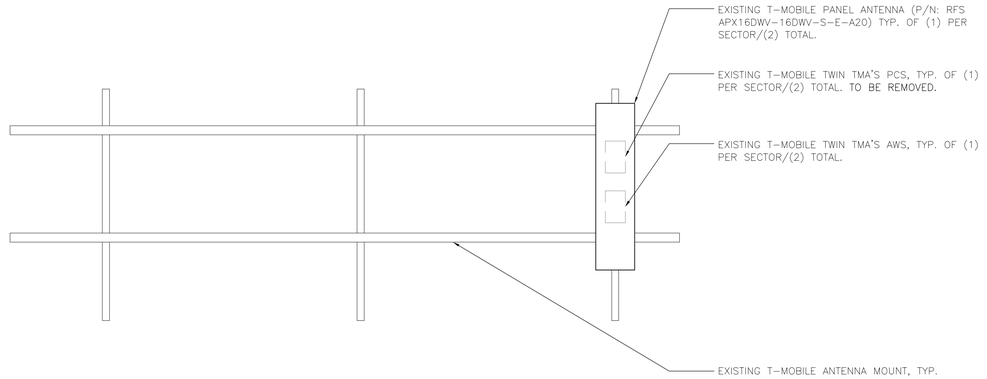
EQUIPMENT PLAN, ELEVATION AND COMPOUND PLAN

C-2

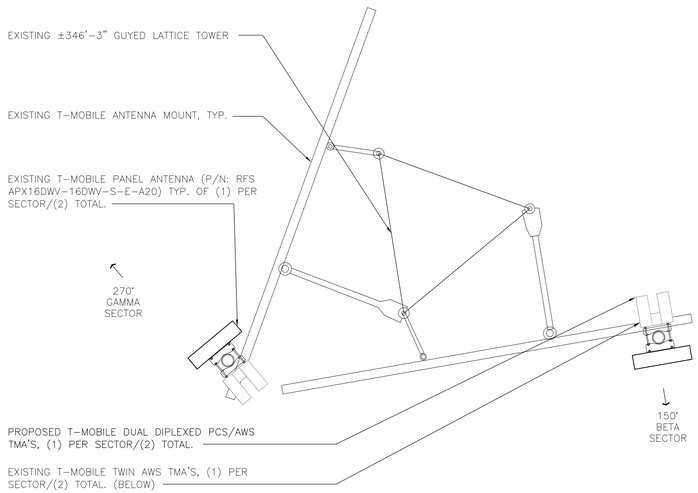


2 C-3 **PROPOSED ANTENNA MOUNTING CONFIGURATION**
SCALE: 1/2" = 1'

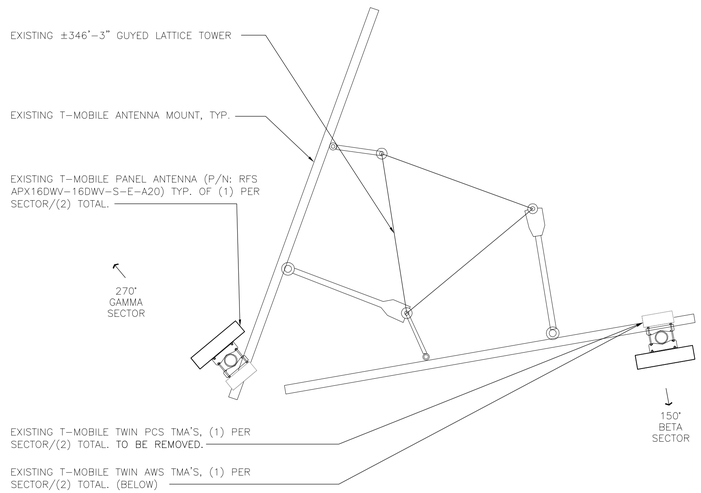


1 C-3 **EXISTING ANTENNA MOUNTING CONFIGURATION**
SCALE: 1/2" = 1'

T-MOBILE RAN TEMPLATE: 4E-GU21
T-MOBILE RF CONFIGURATION: 4E-GU21_2DP



4 C-3 **PROPOSED ANTENNA MOUNTING PLAN**
SCALE: 3/4" = 1'



3 C-3 **EXISTING ANTENNA MOUNTING PLAN**
SCALE: 3/4" = 1'

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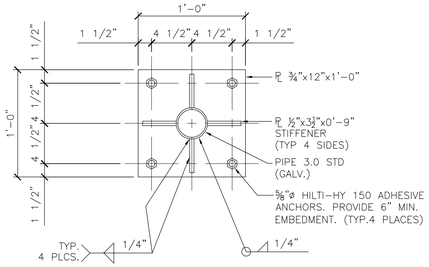
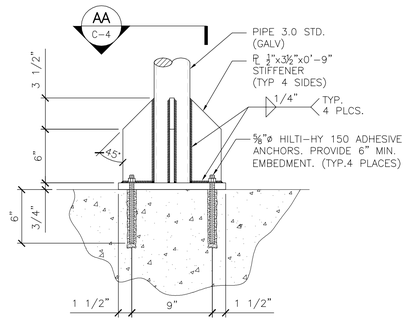
ANTENNA MOUNTING CONFIG.

C-3

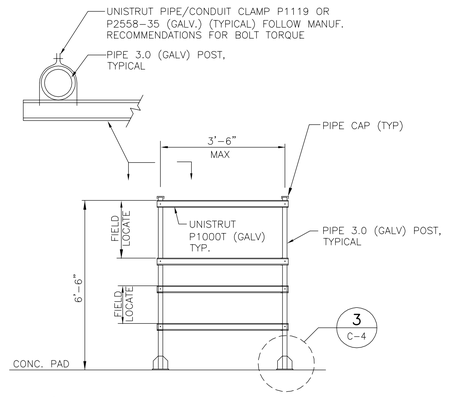
Sheet No. 5 of 6



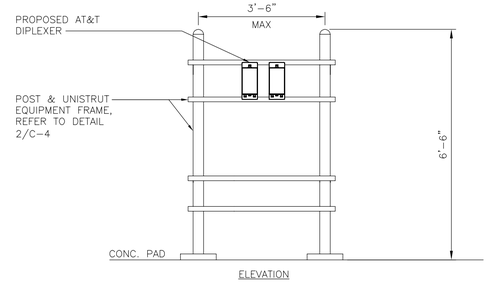
AA C-4 FRAME BASE PLATE PLAN DETAIL
NOT TO SCALE



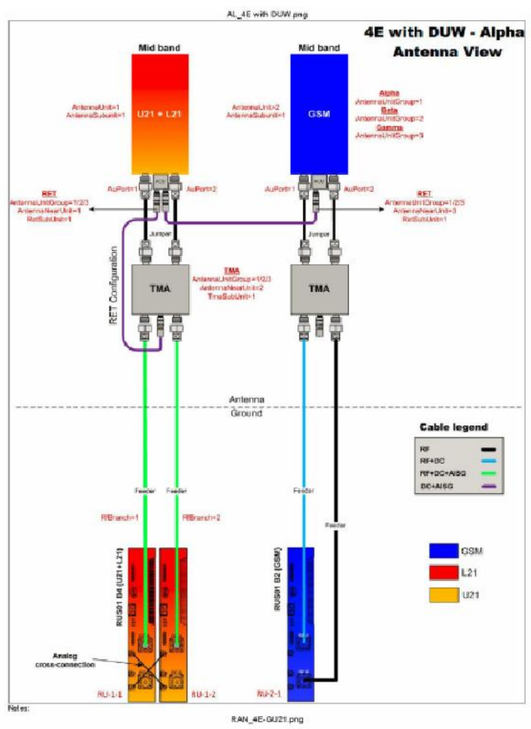
3 C-4 FRAME TO CONCRETE CONNECTION DETAIL
NOT TO SCALE



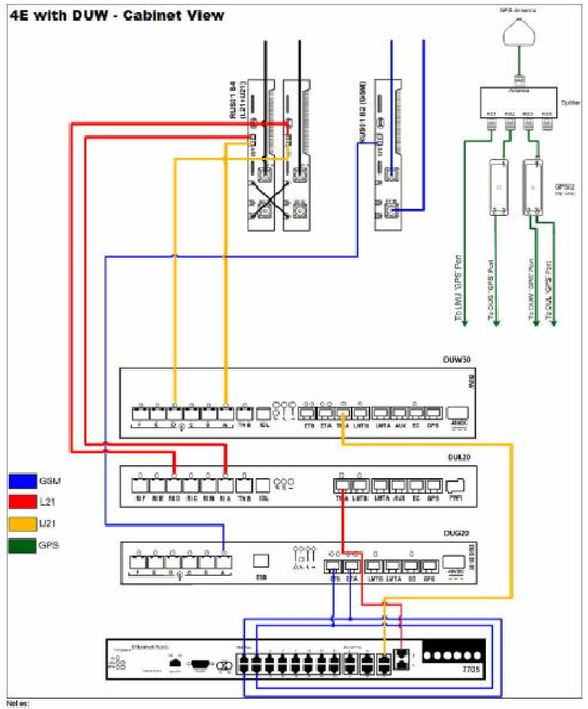
2 C-4 EQUIPMENT MOUNTING FRAME DETAIL
NOT TO SCALE



1 C-4 EQUIPMENT MOUNTING FRAME DETAIL
NOT TO SCALE



2 C-4 PROPOSED PLUMBING DIAGRAM
SCALE: NOT TO SCALE



1 C-4 PROPOSED PLUMBING DIAGRAM (CABINET VIEW)
SCALE: NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
B	02/23/17	CAC	TJL	CONSTRUCTION DRAWINGS – REVISED PER CLIENT
A	02/15/17	LGL	CAG	CONSTRUCTION DRAWINGS – ISSUED FOR CLIENT REVIEW

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DATE: 02/07/17
SCALE: AS NOTED
JOB NO. 17012.15

PLUMBING DIAGRAM

C-4
Sheet No. 6 of 6