



1280 Route 46 West, Suite 9, Parsippany NJ, 07054

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

Re: Notice of Exempt Modification Application
35 Old Route 44, Eastford CT 06242

April 13, 2018

Dear Ms. Bachman:

Sprint Spectrum Realty Company, L.P. ("Sprint"), is submitting to the Connecticut Siting Council for a Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site. Sprint currently maintains 3 panel antennas and 6 Remote Radio at the 165' level of the Tower. Sprint proposes to add 3 new panel antennas (1 per sector) and 6 new Remote Radio Heads (2 per sector) and further proposes to add 1 new hybrid cable.

The earliest CT Siting Council submission I could find was issued to Sprint on May 30, 2014. The original Building permit for the actual tower construction issued by the Town was unavailable. The attached construction and structural documents enclosed reflect the current reality of all the installations on the Tower.

If you have any questions, please feel free to contact me.

Thank you,

By: *Paul F. Sagristano*

Paul F. Sagristano
Cherundolo Consulting
917.841.0247
psagristano@lrvassoc.com



4 Davis Road West, Suite 5 – Old Lyme, CT 06371

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

Re: Notice of Exempt Modification Application
35 Old Route 44, Eastford, CT 06242

Lat: N 41.8714
Long: W72.0644

April 13, 2018

Dear Ms. Bachman:

Sprint currently maintains 3 panel antennas and 6 Remote Radio Heads at the 165' level of the above noted wireless tower. Sprint proposes to add 3 panel antennas (1 per sector) and add 6 remote radio heads (2 per sector) at the 165' tower level as well as 1 new hybrid cable. Sprint is performing a new high-performance upgrade for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

The earliest CT Siting Council application available was submitted on May 30, 2014. The earliest building permit for the Tower construction was not available.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower with proposed modifications to accommodate the revised antenna configuration.

Existing Facility

The Eastford facility is located at 35 Old Route 44, the Site coordinates are: N41.8714, W72.0644. The existing facility consists of a 190' Guyed Tower. Sprint currently operates wireless communications equipment on a platform on a concrete slab at the facility and has 3 antennas and 6 remote radio heads at a centerline of 165' feet on the tower. Please accept this letter as notification to the Council, pursuant to R.C.S.A. Section 16-50j-73, for construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter is being sent to:

Jacqueline Dubois – First Selectman, Town of Eastford – Via Fed Ex
Susan Welshman – Land Use Clerk – Via Fed Ex
Cordless Data Transfer, Inc., the tower owner – Via Fed Ex
Priscilla Armitage – Land Owner – Via Fed Ex

Statutory Considerations

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

1. The height of the overall structure will be unaffected.
2. The proposed changes will not require an extension of the property boundaries.
3. The proposed additions will not increase the noise level at the existing facility by six decibels or more, or to levels that exceed state and/or local criteria
4. The changes will not increase the calculated “worst case” power density for the combined operations at the site to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A Section §16-50j-72(b)(2).

Respectfully submitted,

Paul F. Sagristano

Paul F. Sagristano
Charles Cherundolo Consulting
917-841-0247
psagristano@lrvassoc.com

PFS/mtf

Additional Recipients:

Jacqueline Dubois – First Selectman, Town of Eastford – Via Fed Ex
Susan Welshman, Land Use Clerk - Eastford – Via Fed Ex
Cordless Data Transfer, Inc., the tower owner – Via Fed Ex
Priscilla Armitage – Land Owner – Via Fed Ex



May 7, 2018

Dear Customer:

The following is the proof-of-delivery for tracking number **772132741142**.

Delivery Information:

Status:	Delivered	Delivered to:	Receptionist/Front Desk
Signed for by:	B.WILLIS	Delivery location:	16 WESTFORD ROAD EASTFORD, CT 06242
Service type:	FedEx Express Saver	Delivery date:	May 7, 2018 14:04
Special Handling:	Deliver Weekday Direct Signature Required		



Shipping Information:

Tracking number:	772132741142	Ship date:	May 2, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Jacqueline Dubois, 1st Selectman
Town of Eastford
16 Westford Road
EASTFORD, CT 06242 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US
CT33XC016 - CSC to Selectman

Reference

Thank you for choosing FedEx.



May 7, 2018

Dear Customer:

The following is the proof-of-delivery for tracking number **772132764382**.

Delivery Information:

Status:	Delivered	Delivered to:	Receptionist/Front Desk
Signed for by:	B.WILLIS	Delivery location:	16 WESTFORD ROAD EASTFORD, CT 06242
Service type:	FedEx Express Saver	Delivery date:	May 7, 2018 14:04
Special Handling:	Deliver Weekday Direct Signature Required		



Shipping Information:

Tracking number:	772132764382	Ship date:	May 2, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Susan Welshman, Land use clerk
Town of Eastford
16 Westford Road
EASTFORD, CT 06242 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US
CT33XC016 - CSC to Land Use

Reference

Thank you for choosing FedEx.



May 7, 2018

Dear Customer:

The following is the proof-of-delivery for tracking number **772132696764**.

Delivery Information:

Status:	Delivered	Delivered to:	Residence
Signed for by:	V.LEGALT	Delivery location:	600 OLD HARTFORD ROAD COLCHESTER, CT 06415
Service type:	FedEx Express Saver	Delivery date:	May 7, 2018 14:46
Special Handling:	Deliver Weekday Residential Delivery Direct Signature Required		



Shipping Information:

Tracking number:	772132696764	Ship date:	May 2, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Mark Legault
CDT, Inc
600 Old Hartford Road
COLCHESTER, CT 06415 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US
CT33XC016 CSC Sub

Reference

Thank you for choosing FedEx.



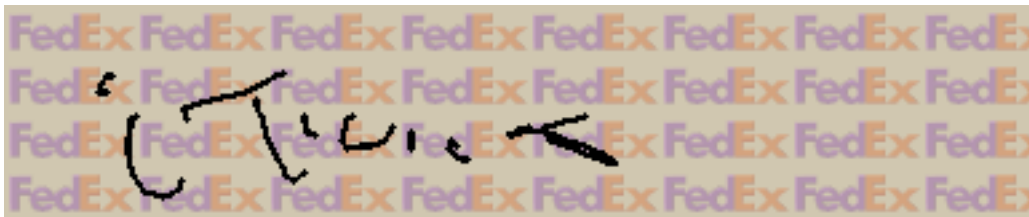
May 7, 2018

Dear Customer:

The following is the proof-of-delivery for tracking number **772132814542**.

Delivery Information:

Status:	Delivered	Delivered to:	Residence
Signed for by:	P.ARMITAGE	Delivery location:	35 OLD KIMBALL RD BROOKLYN, CT 06234
Service type:	FedEx Express Saver	Delivery date:	May 7, 2018 13:39
Special Handling:	Deliver Weekday Residential Delivery Direct Signature Required		



Shipping Information:

Tracking number:	772132814542	Ship date:	May 2, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Priscilla Armitage
35 Old Kimball Road
BROOKLYN, CT 06234 US

Shipper:
Steve Sofman
Charles Cherundolo Consulting
1280 Route 46 West
Suite 9
PARSIPPANY, NJ 07054 US
CT33XC016 CSC to LL

Reference

Thank you for choosing FedEx.

Google Maps 35 Old Rte 44



Map data ©2018 Google 200 ft

CURRENT OWNER		TOPO.	UTILITIES	STRT./ROAD	LOCATION	CURRENT ASSESSMENT			
PRISCILLA D ARMITAGE REVOC TRU		Level	5 Well	1 Paved	3 Rural	Description	Code	Appraised Value	Assessed Value
35 OLD ROUTE 44			6 Septic			RES LAND	1-1	36,000	25,200
EASTFORD, CT 06242						DWELLING	1-3	139,800	97,860
Additional Owners:						RES OUTBL	1-4	83,700	58,590
						VAC IN LN	5-3	100,000	70,000
						OPN SPACE	6-3	92,100	6,810
						Total		451,600	258,460

6039
EASTFORD, CT

VISION

RECORD OF OWNERSHIP		BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.	PREVIOUS ASSESSMENTS (HISTORY)								
PRISCILLA D ARMITAGE REVOC TRUST		67/ 650	06/24/2015	U	I	180,000	29	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
ARMITAGE PRISCILLA D		37/ 634	01/22/1997	U	I	0	28	2015	1-1	25,200	2014	1-1	25,200	2013	1-1	25,200
NEWTON ROBERT G+FRANCES		19/ 389	11/27/1970	U				2015	1-3	97,860	2014	1-3	97,860	2013	1-3	97,860
								2015	1-4	58,590	2014	1-4	58,590	2013	1-4	58,590
								2015	5-3	70,000	2014	5-3	70,000	2013	5-3	70,000
								2015	6-3	6,810	2014	6-3	6,810	2013	6-3	6,810
								Total:		258,460	Total:		258,460	Total:		258,460

EXEMPTIONS				OTHER ASSESSMENTS				APPRAISED VALUE SUMMARY					
Year	Type	Description	Amount	Code	Description	Number	Amount	Comm. Int.	This signature acknowledges a visit by a Data Collector or Assessor				
									Appraised Bldg. Value (Card)				135,700
Total:									Appraised XF (B) Value (Bldg)				4,100
									Appraised OB (L) Value (Bldg)				83,700
									Appraised Land Value (Bldg)				136,000
									Special Land Value				92,100
									Total Appraised Parcel Value				451,600
									Valuation Method:				C
									Adjustment:				0
									Net Total Appraised Parcel Value				451,600

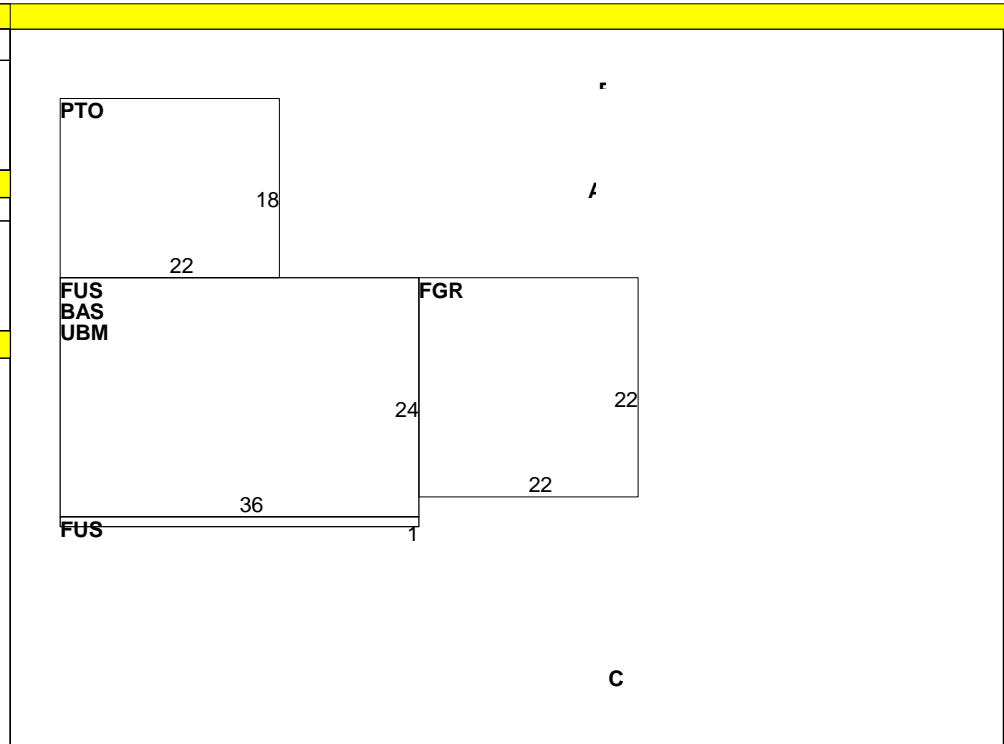
NBHD/ SUB		NBHD Name	Street Index Name	Tracing	Batch
0001/A					

NOTES					
WHITE & BRICK	IA	SUMP PUMP IN UBM			
INSERT IN FPL		PTO = 30% REMOVE?			
CDT RADIO TOWER		EXT WOOD FURNACE			
RADIO TOWER=FN3, SHD2					
OPEN SPACE		INCREASED TOWER SITE BASED ON INC 2013			
WOOD STOVE					

BUILDING PERMIT RECORD										VISIT/ CHANGE HISTORY					
Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments	Date	Type	IS	ID	Cd.	Purpose/Result	
14-0561	06/10/2014		COMM TOWER	15,000		100	08/20/2013	REPLC ANTNAS & AD	09/21/2012			SS	01	Measur+1 Visit	
13-0481	11/13/2012		ANTENNA	25,000		100	08/20/2013	LANDOWNER PRISCI	04/20/2007			JS	00	Measur+Listed	
09-0179	03/13/2009		POCKET WIRELESS	3,400	09/21/2012	100		WIRE CELL TOWER B	10/25/2004			NC	07	Measur/Inf/Dr Info taken	
08-0158	11/24/2008		INSTALL OF ANTEN	50,000	09/21/2012	100		647-9883	12/31/2002			KS	46	Change Value Chang	
00-048	03/13/2001		TOWER ADDN	40,000	04/25/2001	100	04/18/2001		04/23/1996			KS	00	Measur+Listed	
00-09	09/09/2000	CM	Commercial	3,500	04/18/2001	100		CORDLESS DATE TRS							
98-049	05/13/1999		TELE EQ PAD	30,000	09/20/1999	100	09/20/1999	201512476							

LAND LINE VALUATION SECTION															
B #	Use Code	Use Description	Zone	D	Front	Depth	Units	Unit Price	I. Factor	S.A.	C. Factor	ST. Idx	Adj.	Notes- Adj	Land Value
1	1010	SINGLE FAMILY					1.50 AC	33,597.00	0.7143	4	1.00		0.00		36,000
1	2010	SFR OPEN					51.19 AC	2,000.00	0.9000	0	1.00		0.00		92,100
1	304	COMM TOWER					0.11 AC	125,000.00	7.2700	0	1.00		0.00	TOWER SITE	100,000

CONSTRUCTION DETAIL				CONSTRUCTION DETAIL (CONTINUED)			
Element	Cd.	Ch.	Description	Element	Cd.	Ch.	Description
Style	03		Colonial				
Model	01		Residential				
Grade	04		Average +10				
Stories	2		2 Stories				
Occupancy	1			MIXED USE			
Exterior Wall 1	25		Vinyl Siding	Code	Description		Percentage
Exterior Wall 2	19		Brick Veneer	1010	SINGLE FAMILY		100
Roof Structure	03		Gable/Hip	COST/MARKET VALUATION			
Roof Cover	03		Asph/F Gls/Cmp	Adj. Base Rate:			84.32
Interior Wall 1	05		Drywall/Sheet	Replace Cost			180,944
Interior Wall 2				AYB			1965
Interior Flr 1	12		Hardwood	Dep Code			A
Interior Flr 2	14		Carpet	Remodel Rating			
Heat Fuel	02		Oil	Year Remodeled			
Heat Type	05		Hot Water	Dep %			25
AC Type	01		None	Functional Obslnc			0
Total Bedrooms	03		3 Bedrooms	External Obslnc			0
Total Bthrms	1			Cost Trend Factor			1
Total Half Baths	1			Condition			
Total Xtra Fixtrs				% Complete			
Total Rooms	7		7 Rooms	Overall % Cond			75
Bath Style	02		Average	Apprais Val			135,700
Kitchen Style	02		Modern	Dep % Ovr			0
				Dep Ovr Comment			
				Misc Imp Ovr			0
				Misc Imp Ovr Comment			
				Cost to Cure Ovr			0
				Cost to Cure Ovr Comment			



OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
FGR5	W/LOFT GOO			L	925	38.00	1998		0		50	17,600
FN3	FENCE-6' CH/			L	72	18.50	1998		0		80	1,100
SHD4	SHED UNDER			L	64	0.00	1998		0		0	0
	CELL TWR			L	1	150,000.00	1998		0		40	60,000
SHD2	W/LIGHTS ET			L	240	21.00	2009		0		100	5,000
FPL3	2 STORY CHI			B	1	5,500.00	1988		1		100	4,100

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
BAS	First Floor	864	864		84.32	72,850
FGR	Garage	0	484		29.44	14,250
FUS	Upper Story, Finished	900	900		84.32	75,885
PTO	Patio	0	396		8.52	3,373
UBM	Basement, Unfinished	0	864		16.88	14,587
Ttl. Gross Liv/Lease Area:		1,764	3,508			180,944





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

SPRINT Existing Facility

Site ID: CT33XC016

34 Old Route 44
34 Old Route 44
Eastford, CT 06242

January 22, 2018

EBI Project Number: 6218000299

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	4.78 %



January 22, 2018

SPRINT

Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT33XC016 – 34 Old Route 44**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **34 Old Route 44, Eastford, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 population 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 population 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.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately $567 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is $1000 \mu\text{W}/\text{cm}^2$. 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 SPRINT Wireless antenna facility located at **34 Old Route 44, Eastford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT 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) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 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.
- 8) The antennas used in this modeling are the **RFS APXV9ERR18-C-A20 and the Commscope DT465B-2XR** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **165 feet** above ground level (AGL) for **Sector A**, **165 feet** above ground level (AGL) for **Sector B** and **165 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXV9ERR18-C-A20	Make / Model:	RFS APXV9ERR18-C-A20	Make / Model:	RFS APXV9ERR18-C-A20
Gain:	11.9 / 14.9 dBd	Gain:	11.9 / 14.9 dBd	Gain:	11.9 / 14.9 dBd
Height (AGL):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	5,873.76	ERP (W):	5,873.76	ERP (W):	5,873.76
Antenna A1 MPE%	0.94 %	Antenna B1 MPE%	0.94%	Antenna C1 MPE%	0.94 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	0.73 %	Antenna B2 MPE%	0.73 %	Antenna C2 MPE%	0.73 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	1.66 %
Verizon Wireless	1.35 %
AT&T	1.77 %
Site Total MPE %:	4.78 %

SPRINT Sector A Total:	1.66 %
SPRINT Sector B Total:	1.66 %
SPRINT Sector C Total:	1.66 %
Site Total:	4.78 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	309.76	165	0.44	850 MHz	567	0.08%
Sprint 850 MHz LTE	2	309.76	165	0.88	850 MHz	567	0.16%
Sprint 1900 MHz (PCS) CDMA	5	494.45	165	3.52	1900 MHz (PCS)	1000	0.35%
Sprint 1900 MHz (PCS) LTE	2	1,236.12	165	3.52	1900 MHz (PCS)	1000	0.35%
Sprint 2500 MHz (BRS) LTE	8	639.78	165	7.28	2500 MHz (BRS)	1000	0.73%
						Total*:	1.66%

*NOTE: Totals may vary by 0.01% due to summing of remainders



Summary

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

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	1.66 %
Sector B:	1.66 %
Sector C:	1.66 %
SPRINT Maximum Total (per sector):	1.66 %
Site Total:	4.78 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **4.78 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

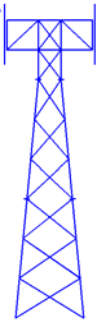
FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100%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



FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577
ONTARIO, NY 14519
(315) 524-2531 FAX (315) 524-4249

www.nuddtowers.com



Mark LeGault
Cordless Data Transfer, Inc.
600 Old Hartford Road
Colchester, CT 06415
December 28, 2017

Nudd Job Number: 117-23243.5

Site Location: 35 Old Route 44, Eastford, CT 06242, Windham County

Subject: Structural Analysis of an existing 190 ft Guyed Tower

Fred A. Nudd Corporation has completed a structural analysis of an existing 190 ft guyed tower. The tower was originally designed by Fred A. Nudd Corporation in March of 1998. The design loading criteria and strength design are per the ANSI/TIA-222-G standard, which is the recommended design standard per the 2012 International Building Code (Sec. 1609 & 3108), , and the 2016 Connecticut State Building Code. Tower and foundation dimensions have been taken from drawings by Fred A. Nudd, project number 98-5874, dated March 1998. The tower was later extended and re-guyed by Fred A. Nudd Corporation, drawing number 00-5874A-1, dated July 31, 2000. Geotechnical information was taken from a subsurface exploration report by Tower Engineering Professionals, Inc., project number 090004.14, dated September 22, 2009. Design criteria per each analysis are noted on the following page. The tower is assumed to be in good, undamaged and equivalent as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new Sprint equipment installed at a rad center of 165 ft above ground level (AGL). The new equipment to be installed, which includes antennas, duplexers, and associated hardware are listed on the following page in the appurtenance loading table.

Results of the analysis indicate the tower will be able to support the design loads noted in the appurtenance loading table on the following page. Specific section design loads, capacities and stress ratios are provided on the following pages. Maximum member usage was found to be 96%.

The tower base foundation and anchors were analyzed considering onsite soil information from the aforementioned geotechnical report. Based on this analysis, the foundation and anchors will be able support the proposed appurtenance loading, in addition to the existing wireless equipment and tower superstructure. Specific design loads, capacities and stress ratios are provided on the following pages.

In conclusion, the tower superstructure and substructure can support the listed existing and proposed appurtenance loading.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,

Fred. A. Nudd Corporation

Code Design Criteria

ANSI/TIA-222-G

Windspeed = 100 mph, 3-second gust, V_{asd} / 127 mph, 3-second gust, V_{ult}

Exposure = B

Radial Ice = 0.875 inch

Ice Windspeed = 50 mph, 3-second gust

Structure Class = II

Topographic Category = 1

$S_s < 1.0$, thus seismic loading does not need to be considered

Appurtenance Loading – Existing and To Remain on Tower

Height (ft)	Carrier	Antenna	Mount	Coax (in)
190	Verizon	(3) Antel BXA-70063-6CF (6) Andrew HBXX-6517DS-A2M (3) Andrew LNX-8513DS-A1M (3) Alcatel Lucent RH2x60AWS (1) Junction Box	Sector Frame	(12) 1-5/8 (1) 5/8 Fiber
180	--	--	Sector Frame	--
150	AT&T	(6) Powerwave P90-14-XLH-RR (3) KMW AM-X-CD-17-65-00T-RET (6) Ericsson RRUS-11 (6) Powerwave TT08-DB111-001 (1) Raycap DC6-48-60-18-8F	Sector Frame	(12) 1-5/8 (2) 19.7 mm DC (1) 10 mm Fiber

- Note elevation is measured from grade to center of antenna

Appurtenance Loading – Final Configuration for Sprint

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
165	Sprint	(3) RFS APXV9ERR18-C-A20 (3) Alcatel Lucent 4x45W, 1900 MHz (3) Alcatel Lucent TD-RRH8x200-25 (6) Alcatel Lucent RRH 2x50, 800 Mhz (3) Commscope DT465B-2XR	(3) 12 ft Boom / Frame	(4) 1-1/4 Hybrid

- Height measurement taken as distance from top of base foundation to center of appurtenance.
- The additional coax may be installed at any location on the tower.

Maximum Member Usage Results

Member	Usage (%)
Leg	96
Diagonal	87
Horizontal	59
Guy Wires	59
Bolts	36
Anchor Rod	74

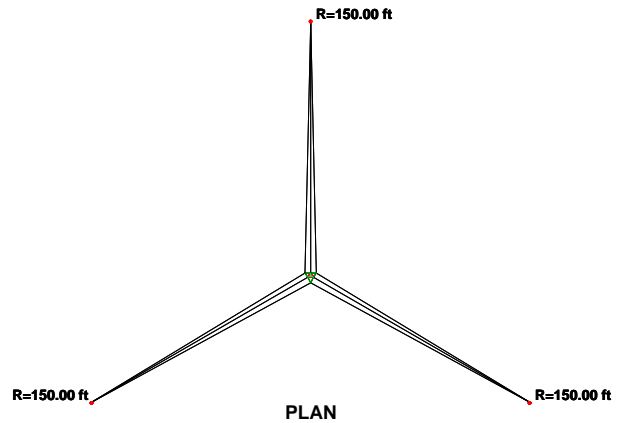
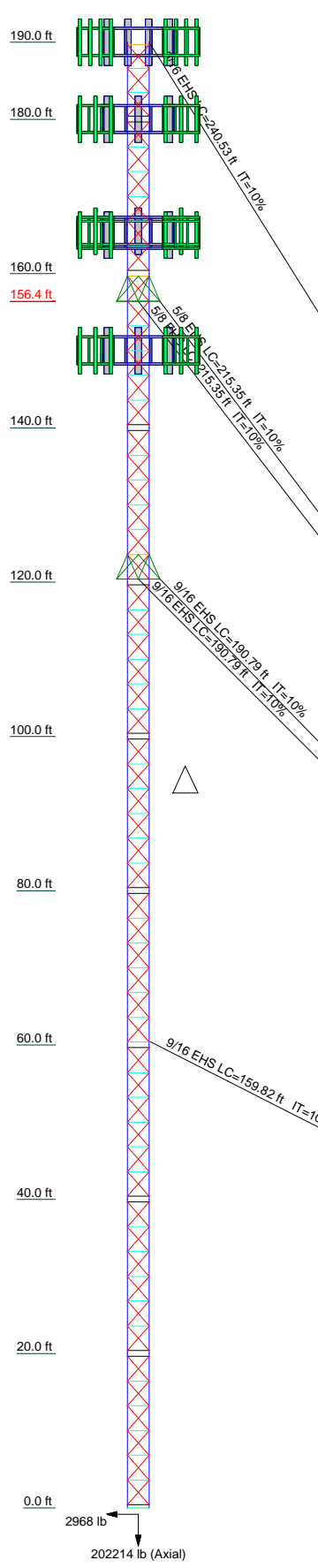
- Usage above 100% indicates the applied design load exceeds the member strength capacity and requires strengthening.

Maximum Member Usage Results

Member	Capacity (kips)	Analysis (kips)	Usage (%)
Base Axial	217.8	204.8	94
Anchor Uplift	91.7	44.8	49
Anchor Shear	66.3	51.9	78

- Usage above 100% indicates the applied design load exceeds the member strength capacity and requires strengthening.

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	
Legs											
Leg Grade											
Diagonals											
Diagonal Grade											
Bottom Girts											
Horizontal											
Top Guy Pull-Offs											
Face Width (ft)											
# Panels @ (ft)											
Weight (lb)											



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Antel BXA-70063-6CF (Verizon)	190	Alcatel Lucent 4x45	165
Antel BXA-70063-6CF (Verizon)	190	Alcatel Lucent 4x45	165
Antel BXA-70063-6CF (Verizon)	190	Alcatel Lucent 8x200-25	165
Sector Frame	190	Alcatel Lucent 8x200-25	165
Sector Frame	190	Alcatel Lucent 8x200-25	165
Sector Frame	190	RFS APXV9ERR18-C-A20	165
(2) Andrew HBXX-6517DS-A2M (Verizon)	190	RFS APXV9ERR18-C-A20	165
(2) Andrew HBXX-6517DS-A2M (Verizon)	190	(2) Alcatel Lucent RRH2x50	165
(2) Andrew HBXX-6517DS-A2M (Verizon)	190	(2) Alcatel Lucent RRH2x50	165
Andrew LNX-8513DS-VTM (Verizon)	190	KMW AM-X-CD-17-65-00T-RET (ATI Mobility)	150
Andrew LNX-8513DS-VTM (Verizon)	190	KMW AM-X-CD-17-65-00T-RET (ATI Mobility)	150
Andrew LNX-8513DS-VTM (Verizon)	190	KMW AM-X-CD-17-65-00T-RET (ATI Mobility)	150
Alcatel Lucent RRH2x60-AWS (Verizon)	190	(2) Ericsson RRUS-11 (ATI Mobility)	150
Alcatel Lucent RRH2x60-AWS (Verizon)	190	(2) Ericsson RRUS-11 (ATI Mobility)	150
Lightning Rod 5/8x4'	190	(2) Powerwave TT08-DB111-001 (ATI Mobility)	150
Junction Box (Verizon)	190	(2) Powerwave TT08-DB111-001 (ATI Mobility)	150
Sector Frame	180	(2) Powerwave TT08-DB111-001 (ATI Mobility)	150
Sector Frame	180	Raycap DC6-48-60-18-8F (ATI Mobility)	150
Sector Frame	180	Sector Frame	150
Sector Frame	165.5	Sector Frame	150
Sector Frame	165.5	(2) Powerwave P90-14-XLH-RR (ATI Mobility)	150
Sector Frame	165.5	(2) Powerwave P90-14-XLH-RR (ATI Mobility)	150
Sector Frame	165	(2) Powerwave P90-14-XLH-RR (ATI Mobility)	150
Commscope DT465B-2XR	165	(2) Powerwave P90-14-XLH-RR (ATI Mobility)	150
Commscope DT465B-2XR	165	Alcatel Lucent 4x45	165
Commscope DT465B-2XR	165		
Alcatel Lucent 4x45	165		

117-23243-5

Project: Eastford, CT		
Client: CDT	Drawn by: FAN	App'd:
Code: TIA-222-G	Date: 12/28/17	Scale: NTS
Phone:	Path:	Dwg No. E-1

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Tower Input Data

The main tower is a 3x guyed tower with an overall height of 190.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 3.50 ft at the top and 3.50 ft at the base.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Windham County, Connecticut.

Basic wind speed of 110 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.8750 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.

Weld together tower sections have flange connections..

Tension only take-up is 0.0313 in.

Pressures are calculated at each section.

Safety factor used in guy design is 1.

Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

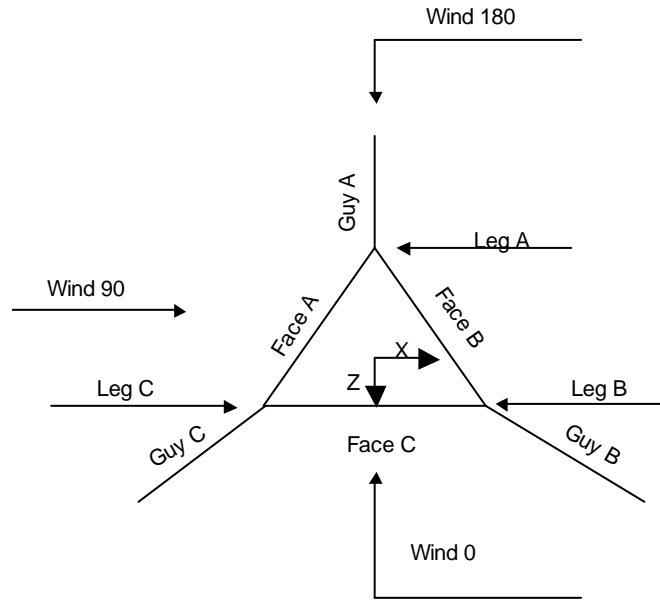
Options

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity √ Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r √ Retension Guys To Initial Tension Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. √ Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component √ Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

RISATower

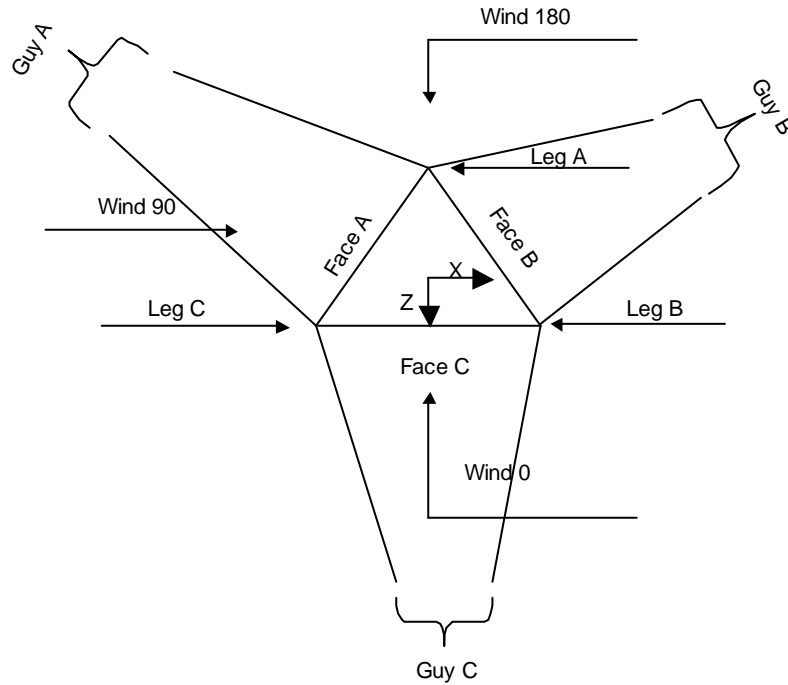
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Corner & Starmount Guyed Tower

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Face Guyed

Tower Section Geometry

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	190.00-180.00			3.50	1	10.00
T2	180.00-160.00			3.50	1	20.00
T3	160.00-140.00			3.50	1	20.00
T4	140.00-120.00			3.50	1	20.00
T5	120.00-100.00			3.50	1	20.00
T6	100.00-80.00			3.50	1	20.00
T7	80.00-60.00			3.50	1	20.00
T8	60.00-40.00			3.50	1	20.00
T9	40.00-20.00			3.50	1	20.00
T10	20.00-0.00			3.50	1	20.00

Tower Section Geometry (cont'd)

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<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Diagonal Spacing</i>	<i>Bracing Type</i>	<i>Has K Brace End Panels</i>	<i>Has Horizontals</i>	<i>Top Girt Offset</i>	<i>Bottom Girt Offset</i>
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	190.00-180.00	3.08	TX Brace	No	Yes	4.5000	4.5000
T2	180.00-160.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T3	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5	120.00-100.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T6	100.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T8	60.00-40.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T9	40.00-20.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T10	20.00-0.00	3.21	TX Brace	No	Yes	4.5000	4.5000

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
<i>ft</i>						
T1 190.00-180.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-160.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 160.00-140.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 140.00-120.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T5 120.00-100.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T6 100.00-80.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 80.00-60.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T8 60.00-40.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T9 40.00-20.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 20.00-0.00	Pipe	P2.5x.203	A572-55 (55 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
<i>ft</i>						
T1 190.00-180.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 180.00-160.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 160.00-140.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 140.00-120.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	Equal Angle	L1 1/2x1 1/2x3/16	A36	Equal Angle	L1 1/2x1 1/2x3/16	A36

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<i>Tower Elevation</i> <i>ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
T6 100.00-80.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T7 80.00-60.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T8 60.00-40.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T9 40.00-20.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T10 20.00-0.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1 190.00-180.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>Gusset Area</i> <i>(per face)</i> <i>ft²</i>	<i>Gusset Thickness</i> <i>in</i>	<i>Gusset Grade</i>	<i>Adjust. Factor</i> <i>A_f</i>	<i>Adjust. Factor</i> <i>A_r</i>	<i>Weight Mult.</i>	<i>Double Angle</i> <i>Stitch Bolt</i> <i>Spacing</i> <i>Diagonals</i> <i>in</i>	<i>Double Angle</i> <i>Stitch Bolt</i> <i>Spacing</i> <i>Horizontals</i> <i>in</i>
T1 190.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
ft	ft ²	in						
160.00-140.00			(36 ksi)					
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000
140.00-120.00			(36 ksi)					
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000
120.00-100.00			(36 ksi)					
T6	0.00	0.0000	A36	1	1	1	36.0000	36.0000
100.00-80.00			(36 ksi)					
T7	0.00	0.0000	A36	1	1	1	36.0000	36.0000
80.00-60.00			(36 ksi)					
T8	0.00	0.0000	A36	1	1	1	36.0000	36.0000
60.00-40.00			(36 ksi)					
T9	0.00	0.0000	A36	1	1	1	36.0000	36.0000
40.00-20.00			(36 ksi)					
T10	0.00	0.0000	A36	1	1	1	36.0000	36.0000
20.00-0.00			(36 ksi)					

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹							
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
											X
ft				Y	Y	Y	Y	Y	Y	Y	
T1	No	No	1	1	1	1	0.65	0.65	1	1	
190.00-180.00				1	1	1	0.65	0.65	1	1	
T2	No	No	1	1	1	1	0.65	0.65	1	1	
180.00-160.00				1	1	1	0.65	0.65	1	1	
T3	No	No	1	1	1	1	0.65	0.65	1	1	
160.00-140.00				1	1	1	0.65	0.65	1	1	
T4	No	No	1	1	1	1	0.65	0.65	1	1	
140.00-120.00				1	1	1	0.65	0.65	1	1	
T5	No	No	1	1	1	1	0.65	0.65	1	1	
120.00-100.00				1	1	1	0.65	0.65	1	1	
T6	No	No	1	1	1	1	0.65	0.65	1	1	
100.00-80.00				1	1	1	0.65	0.65	1	1	
T7	No	No	1	1	1	1	0.65	0.65	1	1	
80.00-60.00				1	1	1	0.65	0.65	1	1	
T8	No	No	1	1	1	1	0.65	0.65	1	1	
60.00-40.00				1	1	1	0.65	0.65	1	1	
T9	No	No	1	1	1	1	0.65	0.65	1	1	
40.00-20.00				1	1	1	0.65	0.65	1	1	
T10	No	No	1	1	1	1	0.65	0.65	1	1	
20.00-0.00				1	1	1	0.65	0.65	1	1	

¹Note: 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)

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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 190.00-180.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T5 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T6 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	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 190.00-180.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 180.00-160.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T3 160.00-140.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T4 140.00-120.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T5 120.00-100.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T6 100.00-80.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T7 80.00-60.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T8 60.00-40.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T9 40.00-20.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T10 20.00-0.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0

Guy Data

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Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
156.417	174.93	174.93	174.93		4.38	4.38	4.38	
120.375	127.91	127.91	127.91		3.6 sec/pulse 3.45	3.6 sec/pulse 3.45	3.6 sec/pulse 3.45	
60.375	107.15	107.15	107.15		3.2 sec/pulse 2.43	3.2 sec/pulse 2.43	3.2 sec/pulse 2.43	
189.625	161.26	161.26	161.26		2.7 sec/pulse 5.44	2.7 sec/pulse 5.44	2.7 sec/pulse 5.44	
					4.0 sec/pulse	4.0 sec/pulse	4.0 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
156.417	No	No	1	1	1	1	1	1
120.375	No	No	1	1	1	1	1	1
60.375	No	No			1	1	1	1
189.625	No	No			1	1	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
156.417	0.7500 A325N	2	0.0000	0.75	0.7500 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
120.375	0.7500 A325N	2	0.0000	0.75	0.7500 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
60.375	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
189.625	0.6250 A325N	0	0.0000	0.75	0.0000 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
156.417	A	78.21	24	5	1.9077
	B	78.21	24	5	1.9077
	C	78.21	24	5	1.9077
120.375	A	60.19	23	5	1.8584
	B	60.19	23	5	1.8584
	C	60.19	23	5	1.8584
60.375	A	30.19	18	4	1.7345
	B	30.19	18	4	1.7345

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Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
189.625	C	30.19	18	4	1.7345
	A	94.81	26	5	1.9448
	B	94.81	26	5	1.9448
	C	94.81	26	5	1.9448

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F _x lb	F _y lb	F _z lb	M _x lb-ft	M _y lb-ft	M _z lb-ft
156.417	A	46.5797	4367.06 4240.00	-69.93	3213.15	-2956.68	-6492.90	10489.68	-11246.04
	A	46.5797	4367.06 4240.00	69.93	3213.15	-2956.68	-6492.90	-10489.68	11246.04
	B	46.5797	4367.06 4240.00	2595.52	3213.15	1417.78	12985.81	10489.68	0.00
	B	46.5797	4367.06 4240.00	2525.59	3213.15	1538.90	-6492.90	-10489.68	-11246.04
	C	46.5797	4367.06 4240.00	-2525.59	3213.15	1538.90	-6492.90	10489.68	11246.04
	C	46.5797	4367.06 4240.00	-2595.52	3213.15	1417.78	12985.81	-10489.68	0.00
120.375			Sum:	0.00	19278.93	0.00	-0.00	0.00	0.00
	A	39.1191	3580.70 3500.00	-64.94	2297.61	-2745.58	-4642.84	9740.74	-8041.64
	A	39.1191	3580.70 3500.00	64.94	2297.61	-2745.58	-4642.84	-9740.74	8041.64
	B	39.1191	3580.70 3500.00	2410.21	2297.61	1316.55	9285.68	9740.74	0.00
	B	39.1191	3580.70 3500.00	2345.27	2297.61	1429.03	-4642.84	-9740.74	-8041.64
	C	39.1191	3580.70 3500.00	-2345.27	2297.61	1429.03	-4642.84	9740.74	8041.64
60.375			Sum:	0.00	13785.67	0.00	-0.00	0.00	0.00
	A	22.1953	3540.48 3500.00	0.00	1383.35	-3259.04	-2795.37	0.00	0.00
	B	22.1953	3540.48 3500.00	2822.41	1383.35	1629.52	1397.68	0.00	-2420.86
	C	22.1953	3540.48 3500.00	-2822.41	1383.35	1629.52	1397.68	-0.00	2420.86
			Sum:	0.00	4150.04	0.00	0.00	0.00	0.00
	A	52.0323	3627.13 3500.00	0.00	2889.89	-2191.94	-5839.67	0.00	0.00
189.625	B	52.0323	3627.13 3500.00	1898.28	2889.89	1095.97	2919.83	0.00	-5057.30
	C	52.0323	3627.13 3500.00	-1898.28	2889.89	1095.97	2919.83	-0.00	5057.30
			Sum:	0.00	8669.66	-0.00	0.00	0.00	0.00

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Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
156.417	A	46.5797	9081.33 8032.31	-138.66	6934.11	-5862.55	-14011.94	20799.10	-24269.40
	A	46.5797	9081.33 8032.31	138.66	6934.11	-5862.55	-14011.94	-20799.10	24269.40
	B	46.5797	9081.33 8032.31	5146.44	6934.11	2811.19	28023.89	20799.10	0.00
	B	46.5797	9081.33 8032.31	5007.78	6934.11	3051.36	-14011.94	-20799.10	-24269.40
	C	46.5797	9081.33 8032.31	-5007.78	6934.11	3051.36	-14011.94	20799.10	24269.40
	C	46.5797	9081.33 8032.31	-5146.44	6934.11	2811.19	28023.89	-20799.10	0.00
120.375			Sum:	0.00	41604.68	0.00	-0.00	0.00	0.00
	A	39.1191	7735.15 6993.83	-134.73	5231.36	-5696.25	-10571.15	20209.12	-18309.76
	A	39.1191	7735.15 6993.83	134.73	5231.36	-5696.25	-10571.15	-20209.12	18309.76
	B	39.1191	7735.15 6993.83	5000.46	5231.36	2731.45	21142.29	20209.12	0.00
	B	39.1191	7735.15 6993.83	4865.73	5231.36	2964.80	-10571.15	-20209.12	-18309.76
	C	39.1191	7735.15 6993.83	-4865.73	5231.36	2964.80	-10571.15	20209.12	18309.76
60.375			Sum:	0.00	31388.17	0.00	-0.00	0.00	0.00
	A	22.1953	7201.08 6867.16	0.00	3097.95	-6500.64	-6260.10	0.00	0.00
	B	22.1953	7201.08 6867.16	5629.72	3097.95	3250.32	3130.05	0.00	-5421.41
	C	22.1953	7201.08 6867.16	-5629.72	3097.95	3250.32	3130.05	-0.00	5421.41
			Sum:	0.00	9293.85	-0.00	0.00	0.00	0.00
	A	52.0323	8241.54 6986.58	0.00	6794.91	-4663.94	-13730.64	0.00	0.00
189.625	B	52.0323	8241.54 6986.58	4039.09	6794.91	2331.97	6865.32	0.00	-11891.08
	C	52.0323	8241.54 6986.58	-4039.09	6794.91	2331.97	6865.32	-0.00	11891.08
			Sum:	0.00	20384.72	-0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
156.417	A	46.5797	4367.06 4240.00	-69.93	3213.15	-2956.68	-6492.90	10489.68	-11246.04
	A	46.5797	4367.06	69.93	3213.15	-2956.68	-6492.90	-10489.68	11246.04

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Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
	B	46.5797	4240.00 4367.06 4240.00	2595.52	3213.15	1417.78	12985.81	10489.68	0.00
	B	46.5797	4367.06 4240.00	2525.59	3213.15	1538.90	-6492.90	-10489.68	-11246.04
	C	46.5797	4367.06 4240.00	-2525.59	3213.15	1538.90	-6492.90	10489.68	11246.04
	C	46.5797	4367.06 4240.00	-2595.52	3213.15	1417.78	12985.81	-10489.68	0.00
120.375	A	39.1191	Sum: 3580.70 3500.00	0.00 -64.94	19278.93 2297.61	0.00 -2745.58	-0.00 -4642.84	0.00 9740.74	0.00 -8041.64
	A	39.1191	3580.70 3500.00	64.94	2297.61	-2745.58	-4642.84	-9740.74	8041.64
	B	39.1191	3580.70 3500.00	2410.21	2297.61	1316.55	9285.68	9740.74	0.00
	B	39.1191	3580.70 3500.00	2345.27	2297.61	1429.03	-4642.84	-9740.74	-8041.64
	C	39.1191	3580.70 3500.00	-2345.27	2297.61	1429.03	-4642.84	9740.74	8041.64
	C	39.1191	3580.70 3500.00	-2410.21	2297.61	1316.55	9285.68	-9740.74	0.00
60.375	A	22.1953	Sum: 3540.48 3500.00	0.00 0.00	13785.67 1383.35	0.00 -3259.04	-0.00 -2795.37	0.00 0.00	0.00 0.00
	B	22.1953	3540.48 3500.00	2822.41	1383.35	1629.52	1397.68	0.00	-2420.86
	C	22.1953	3540.48 3500.00	-2822.41	1383.35	1629.52	1397.68	-0.00	2420.86
189.625	A	52.0323	Sum: 3627.13 3500.00	0.00 0.00	4150.04 2889.89	0.00 -2191.94	0.00 -5839.67	0.00 0.00	0.00 0.00
	B	52.0323	3627.13 3500.00	1898.28	2889.89	1095.97	2919.83	0.00	-5057.30
	C	52.0323	3627.13 3500.00	-1898.28	2889.89	1095.97	2919.83	-0.00	5057.30
			Sum:	0.00	8669.66	-0.00	0.00	0.00	0.00

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM) (Verizon)	A	No	Ar (CaAa)	190.00 - 0.00	1.5000	0.15	12	8	1.9800	1.9800		0.82
1 1/4 (Sprint)	C	No	Ar (CaAa)	165.50 - 0.00	1.5000	0	4	4	1.5500	1.5500		0.66
LDF7-50A (1-5/8 FOAM) (AT&T)	B	No	Ar (CaAa)	150.00 - 0.00	1.5000	0.25	12	6	1.9800	1.9800		0.82
Safety Line 3/8	A	No	Ar (CaAa)	190.00 - 0.00	0.0000	0.1	1	1	0.3750	0.3750		0.22
1 1/4" Rigid	A	No	Ar (CaAa)	190.00 - 0.00	0.0000	0.4	1	1	1.2500	1.2500		0.70

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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
Conduit												
19.7 mm DC (AT&T)	B	No	Ar (CaAa)	150.00 - 0.00	0.0000	0.25	2	2	0.8800	0.8800		0.40
10 mm Fiber (AT&T)	B	No	Ar (CaAa)	150.00 - 0.00	0.0000	0.25	1	1	0.4000 0.8800	0.8800		0.20
1 5/8 Fiber (Verizon)	A	No	Ar (CaAa)	190.00 - 0.00	1.5000	0.15	1	1	1.0000	1.9800		0.82

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	190.00-180.00	A	0.000	0.000	27.365	0.000	115.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	180.00-160.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.410	0.000	14.52
T3	160.00-140.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	26.400	0.000	108.40
		C	0.000	0.000	12.400	0.000	52.80
T4	140.00-120.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	52.800	0.000	216.80
		C	0.000	0.000	12.400	0.000	52.80
T5	120.00-100.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	52.800	0.000	216.80
		C	0.000	0.000	12.400	0.000	52.80
T6	100.00-80.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	52.800	0.000	216.80
		C	0.000	0.000	12.400	0.000	52.80
T7	80.00-60.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	52.800	0.000	216.80
		C	0.000	0.000	12.400	0.000	52.80
T8	60.00-40.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	52.800	0.000	216.80
		C	0.000	0.000	12.400	0.000	52.80
T9	40.00-20.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	52.800	0.000	216.80
		C	0.000	0.000	12.400	0.000	52.80
T10	20.00-0.00	A	0.000	0.000	54.730	0.000	231.60
		B	0.000	0.000	52.800	0.000	216.80
		C	0.000	0.000	12.400	0.000	52.80

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	190.00-180.00	A	2.079	0.000	0.000	60.246	0.000	1268.58
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	180.00-160.00	A	2.062	0.000	0.000	120.173	0.000	2519.24
		B		0.000	0.000	0.000	0.000	0.00

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T3	160.00-140.00	C		0.000	0.000	11.008	0.000	165.30
		A	2.036	0.000	0.000	119.706	0.000	2493.09
		B		0.000	0.000	50.033	0.000	1117.33
T4	140.00-120.00	C		0.000	0.000	39.865	0.000	593.85
		A	2.007	0.000	0.000	119.179	0.000	2463.74
		B		0.000	0.000	99.561	0.000	2211.97
T5	120.00-100.00	C		0.000	0.000	39.679	0.000	585.71
		A	1.974	0.000	0.000	118.573	0.000	2430.21
		B		0.000	0.000	98.980	0.000	2186.02
T6	100.00-80.00	C		0.000	0.000	39.465	0.000	576.41
		A	1.935	0.000	0.000	117.859	0.000	2390.94
		B		0.000	0.000	98.296	0.000	2155.64
T7	80.00-60.00	C		0.000	0.000	39.213	0.000	565.51
		A	1.887	0.000	0.000	116.986	0.000	2343.26
		B		0.000	0.000	97.459	0.000	2118.74
T8	60.00-40.00	C		0.000	0.000	38.905	0.000	552.26
		A	1.824	0.000	0.000	115.850	0.000	2281.93
		B		0.000	0.000	96.371	0.000	2071.27
T9	40.00-20.00	C		0.000	0.000	38.506	0.000	535.20
		A	1.733	0.000	0.000	114.198	0.000	2194.01
		B		0.000	0.000	94.789	0.000	2003.21
T10	20.00-0.00	C		0.000	0.000	37.926	0.000	510.72
		A	1.553	0.000	0.000	110.923	0.000	2024.18
		B		0.000	0.000	91.654	0.000	1871.69
		C		0.000	0.000	36.781	0.000	463.32

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
T1	190.00-180.00	-1.9634	-2.5681	-0.9844	-1.4003
T2	180.00-160.00	-1.8923	-2.3160	-0.9910	-1.3183
T3	160.00-140.00	-0.1666	-1.2397	-0.3037	-0.8105
T4	140.00-120.00	0.7794	-0.9571	0.1481	-0.6877
T5	120.00-100.00	0.7804	-0.9582	0.1510	-0.6953
T6	100.00-80.00	0.7804	-0.9582	0.1539	-0.7021
T7	80.00-60.00	0.7799	-0.9577	0.1574	-0.7093
T8	60.00-40.00	0.7804	-0.9582	0.1623	-0.7202
T9	40.00-20.00	0.7804	-0.9582	0.1693	-0.7343
T10	20.00-0.00	0.7804	-0.9582	0.1834	-0.7601

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	LDF7-50A (1-5/8 FOAM)	180.00 - 190.00	0.6000	0.3066
T1	4	Safety Line 3/8	180.00 - 190.00	0.6000	0.3066
T1	5	1 1/4" Rigid Conduit	180.00 -	0.6000	0.3066

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			190.00		
T1	8	1 5/8 Fiber	180.00 - 190.00	0.6000	0.3066
T2	1	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.3262
T2	2	1 1/4	160.00 - 165.50	0.6000	0.3262
T2	4	Safety Line 3/8	160.00 - 180.00	0.6000	0.3262
T2	5	1 1/4" Rigid Conduit	160.00 - 180.00	0.6000	0.3262
T2	8	1 5/8 Fiber	160.00 - 180.00	0.6000	0.3262
T3	1	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6000	0.3299
T3	2	1 1/4	140.00 - 160.00	0.6000	0.3299
T3	3	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.3299
T3	4	Safety Line 3/8	140.00 - 160.00	0.6000	0.3299
T3	5	1 1/4" Rigid Conduit	140.00 - 160.00	0.6000	0.3299
T3	6	19.7 mm DC	140.00 - 150.00	0.6000	0.3299
T3	7	10 mm Fiber	140.00 - 150.00	0.6000	0.3299
T3	8	1 5/8 Fiber	140.00 - 160.00	0.6000	0.3299
T4	1	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.3360
T4	2	1 1/4	120.00 - 140.00	0.6000	0.3360
T4	3	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.3360
T4	4	Safety Line 3/8	120.00 - 140.00	0.6000	0.3360
T4	5	1 1/4" Rigid Conduit	120.00 - 140.00	0.6000	0.3360
T4	6	19.7 mm DC	120.00 - 140.00	0.6000	0.3360
T4	7	10 mm Fiber	120.00 - 140.00	0.6000	0.3360
T4	8	1 5/8 Fiber	120.00 - 140.00	0.6000	0.3360
T5	1	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.3446
T5	2	1 1/4	100.00 - 120.00	0.6000	0.3446
T5	3	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.3446
T5	4	Safety Line 3/8	100.00 - 120.00	0.6000	0.3446
T5	5	1 1/4" Rigid Conduit	100.00 - 120.00	0.6000	0.3446
T5	6	19.7 mm DC	100.00 - 120.00	0.6000	0.3446
T5	7	10 mm Fiber	100.00 - 120.00	0.6000	0.3446
T5	8	1 5/8 Fiber	100.00 - 120.00	0.6000	0.3446
T6	1	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.3529

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T6	2	1 1/4	80.00 - 100.00	0.6000	0.3529
T6	3	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.3529
T6	4	Safety Line 3/8	80.00 - 100.00	0.6000	0.3529
T6	5	1 1/4" Rigid Conduit	80.00 - 100.00	0.6000	0.3529
T6	6	19.7 mm DC	80.00 - 100.00	0.6000	0.3529
T6	7	10 mm Fiber	80.00 - 100.00	0.6000	0.3529
T6	8	1 5/8 Fiber	80.00 - 100.00	0.6000	0.3529
T7	1	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.3622
T7	2	1 1/4	60.00 - 80.00	0.6000	0.3622
T7	3	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.3622
T7	4	Safety Line 3/8	60.00 - 80.00	0.6000	0.3622
T7	5	1 1/4" Rigid Conduit	60.00 - 80.00	0.6000	0.3622
T7	6	19.7 mm DC	60.00 - 80.00	0.6000	0.3622
T7	7	10 mm Fiber	60.00 - 80.00	0.6000	0.3622
T7	8	1 5/8 Fiber	60.00 - 80.00	0.6000	0.3622
T8	1	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.3763
T8	2	1 1/4	40.00 - 60.00	0.6000	0.3763
T8	3	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.3763
T8	4	Safety Line 3/8	40.00 - 60.00	0.6000	0.3763
T8	5	1 1/4" Rigid Conduit	40.00 - 60.00	0.6000	0.3763
T8	6	19.7 mm DC	40.00 - 60.00	0.6000	0.3763
T8	7	10 mm Fiber	40.00 - 60.00	0.6000	0.3763
T8	8	1 5/8 Fiber	40.00 - 60.00	0.6000	0.3763
T9	1	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.3958
T9	2	1 1/4	20.00 - 40.00	0.6000	0.3958
T9	3	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.3958
T9	4	Safety Line 3/8	20.00 - 40.00	0.6000	0.3958
T9	5	1 1/4" Rigid Conduit	20.00 - 40.00	0.6000	0.3958
T9	6	19.7 mm DC	20.00 - 40.00	0.6000	0.3958
T9	7	10 mm Fiber	20.00 - 40.00	0.6000	0.3958
T9	8	1 5/8 Fiber	20.00 - 40.00	0.6000	0.3958
T10	1	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.4348
T10	2	1 1/4	0.00 - 20.00	0.6000	0.4348
T10	3	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.4348
T10	4	Safety Line 3/8	0.00 - 20.00	0.6000	0.4348
T10	5	1 1/4" Rigid Conduit	0.00 - 20.00	0.6000	0.4348
T10	6	19.7 mm DC	0.00 - 20.00	0.6000	0.4348
T10	7	10 mm Fiber	0.00 - 20.00	0.6000	0.4348
T10	8	1 5/8 Fiber	0.00 - 20.00	0.6000	0.4348

Discrete Tower Loads

<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert</i>	<i>Azimuth Adjustment</i>	<i>Placement</i>	<i>C_AA_A Front</i>	<i>C_AA_A Side</i>	<i>Weight</i>
			<i>ft</i> <i>ft</i> <i>ft</i>	<i>°</i>	<i>ft</i>	<i>ft²</i>	<i>ft²</i>	<i>lb</i>
Antel BXA-70063-6CF (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	7.57 8.02 8.47	17.00 57.60 104.00
Antel BXA-70063-6CF (Verizon)	B	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	7.57 8.02 8.47	17.00 57.60 104.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
Antel BXA-70063-6CF (Verizon)	C	From Leg	3.00	0.0000	190.00	No Ice	7.57	2.21	17.00
			0.00			1/2" Ice	8.02	2.70	57.60
			0.00			1" Ice	8.47	3.17	104.00
Sector Frame	A	From Leg	0.00	0.0000	190.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	B	From Leg	0.00	0.0000	190.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	C	From Leg	0.00	0.0000	190.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
(2) Andrew HBXX-6517DS-A2M (Verizon)	A	From Leg	3.00	0.0000	190.00	No Ice	8.53	5.24	43.00
			0.00			1/2" Ice	9.00	5.74	93.50
			0.00			1" Ice	9.47	6.22	150.20
(2) Andrew HBXX-6517DS-A2M (Verizon)	B	From Leg	3.00	0.0000	190.00	No Ice	8.53	5.24	43.00
			0.00			1/2" Ice	9.00	5.74	93.50
			0.00			1" Ice	9.47	6.22	150.20
(2) Andrew HBXX-6517DS-A2M (Verizon)	C	From Leg	3.00	0.0000	190.00	No Ice	8.53	5.24	43.00
			0.00			1/2" Ice	9.00	5.74	93.50
			0.00			1" Ice	9.47	6.22	150.20
Andrew LNX-8513DS-VTM (Verizon)	A	From Leg	3.00	0.0000	190.00	No Ice	6.04	5.46	26.50
			0.00			1/2" Ice	6.50	5.93	67.70
			0.00			1" Ice	6.96	6.39	114.80
Andrew LNX-8513DS-VTM (Verizon)	B	From Leg	3.00	0.0000	190.00	No Ice	6.04	5.46	26.50
			0.00			1/2" Ice	6.50	5.93	67.70
			0.00			1" Ice	6.96	6.39	114.80
Andrew LNX-8513DS-VTM (Verizon)	C	From Leg	3.00	0.0000	190.00	No Ice	6.04	5.46	26.50
			0.00			1/2" Ice	6.50	5.93	67.70
			0.00			1" Ice	6.96	6.39	114.80
Alcatel Lucent RRH2x60-AWS (Verizon)	A	From Leg	3.00	0.0000	190.00	No Ice	1.88	1.24	44.00
			0.00			1/2" Ice	2.03	1.37	60.00
			0.00			1" Ice	2.20	1.52	78.70
Alcatel Lucent RRH2x60-AWS (Verizon)	B	From Leg	3.00	0.0000	190.00	No Ice	1.88	1.24	44.00
			0.00			1/2" Ice	2.03	1.37	60.00
			0.00			1" Ice	2.20	1.52	78.70
Alcatel Lucent RRH2x60-AWS (Verizon)	C	From Leg	3.00	0.0000	190.00	No Ice	1.88	1.24	44.00
			0.00			1/2" Ice	2.03	1.37	60.00
			0.00			1" Ice	2.20	1.52	78.70
Lightning Rod 5/8x4'	C	None		0.0000	190.00	No Ice	0.25	0.25	31.00
						1/2" Ice	0.66	0.66	33.82
						1" Ice	0.97	0.97	39.29
Sector Frame	A	From Leg	0.00	0.0000	180.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	B	From Leg	0.00	0.0000	180.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	C	From Leg	0.00	0.0000	180.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	A	From Leg	0.00	0.0000	150.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	B	From Leg	0.00	0.0000	150.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
Sector Frame	C	From Leg	0.00	0.0000	150.00	No Ice	13.60	13.60	465.00
			0.00			1/2" Ice	18.40	18.40	600.00
			0.00			1" Ice	23.20	23.20	735.00
(2) Powerwave P90-14-XLH-RR (AT&T Mobility)	A	From Leg	3.00	0.0000	150.00	No Ice	5.56	2.05	41.00
			0.00			1/2" Ice	5.89	2.38	76.10
			0.00			1" Ice	6.23	2.71	116.00
(2) Powerwave P90-14-XLH-RR (AT&T Mobility)	B	From Leg	3.00	0.0000	150.00	No Ice	5.56	2.05	41.00
			0.00			1/2" Ice	5.89	2.38	76.10
			0.00			1" Ice	6.23	2.71	116.00
(2) Powerwave P90-14-XLH-RR (AT&T Mobility)	C	From Leg	3.00	0.0000	150.00	No Ice	5.56	2.05	41.00
			0.00			1/2" Ice	5.89	2.38	76.10
			0.00			1" Ice	6.23	2.71	116.00
KMW	A	From Leg	3.00	0.0000	150.00	No Ice	11.31	6.80	59.50
AM-X-CD-17-65-00T-RET (AT&T Mobility)			0.00			1/2" Ice	11.93	7.48	120.90
			0.00			1" Ice	12.53	8.12	189.90
KMW	B	From Leg	3.00	0.0000	150.00	No Ice	11.31	6.80	59.50
AM-X-CD-17-65-00T-RET (AT&T Mobility)			0.00			1/2" Ice	11.93	7.48	120.90
			0.00			1" Ice	12.53	8.12	189.90
KMW	C	From Leg	3.00	0.0000	150.00	No Ice	11.31	6.80	59.50
AM-X-CD-17-65-00T-RET (AT&T Mobility)			0.00			1/2" Ice	11.93	7.48	120.90
			0.00			1" Ice	12.53	8.12	189.90
(2) Ericsson RRUS-11 (AT&T Mobility)	A	From Leg	3.00	0.0000	150.00	No Ice	2.94	1.25	50.00
			0.00			1/2" Ice	3.12	1.37	69.30
			0.00			1" Ice	3.30	1.51	91.60
(2) Ericsson RRUS-11 (AT&T Mobility)	B	From Leg	3.00	0.0000	150.00	No Ice	2.94	1.25	50.00
			0.00			1/2" Ice	3.12	1.37	69.30
			0.00			1" Ice	3.30	1.51	91.60
(2) Ericsson RRUS-11 (AT&T Mobility)	C	From Leg	3.00	0.0000	150.00	No Ice	2.94	1.25	50.00
			0.00			1/2" Ice	3.12	1.37	69.30
			0.00			1" Ice	3.30	1.51	91.60
(2) Powerwave TT08-DB111-001 (AT&T Mobility)	A	From Leg	3.00	0.0000	150.00	No Ice	0.92	0.75	22.00
			0.00			1/2" Ice	1.03	0.85	29.60
			0.00			1" Ice	1.15	0.96	39.20
(2) Powerwave TT08-DB111-001 (AT&T Mobility)	B	From Leg	3.00	0.0000	150.00	No Ice	0.92	0.75	22.00
			0.00			1/2" Ice	1.03	0.85	29.60
			0.00			1" Ice	1.15	0.96	39.20
(2) Powerwave TT08-DB111-001 (AT&T Mobility)	C	From Leg	3.00	0.0000	150.00	No Ice	0.92	0.75	22.00
			0.00			1/2" Ice	1.03	0.85	29.60
			0.00			1" Ice	1.15	0.96	39.20
Raycap DC6-48-60-18-8F (AT&T Mobility)	A	From Leg	3.00	0.0000	150.00	No Ice	2.57	2.57	31.80
			0.00			1/2" Ice	2.74	2.74	54.40
			0.00			1" Ice	2.93	2.93	80.10
Sector Frame	A	From Leg	0.00	0.0000	165.50	No Ice	13.60	7.00	465.00
			0.00			1/2" Ice	18.40	9.00	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	B	From Leg	0.00	0.0000	165.50	No Ice	13.60	7.00	465.00
			0.00			1/2" Ice	18.40	9.00	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	C	From Leg	0.00	0.0000	165.50	No Ice	13.60	7.00	465.00
			0.00			1/2" Ice	18.40	9.00	600.00
			0.00			1" Ice	23.20	23.20	735.00
Junction Box (Verizon)	C	From Leg	3.00	0.0000	190.00	No Ice	1.88	1.24	44.00
			0.00			1/2" Ice	2.03	1.37	60.00
			0.00			1" Ice	2.20	1.52	78.70
Sector Frame	A	From Leg	1.50	0.0000	165.00	No Ice	13.60	7.00	465.00
			0.00			1/2" Ice	18.40	9.00	600.00
			0.00			1" Ice	23.20	23.20	735.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A		Weight
			Horz Lateral	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	lb
Sector Frame	B	From Leg	1.50	0.0000	165.00	No Ice	13.60	7.00	465.00
			0.00			1/2" Ice	18.40	9.00	600.00
			0.00			1" Ice	23.20	23.20	735.00
Sector Frame	C	From Leg	1.50	0.0000	165.00	No Ice	13.60	7.00	465.00
			0.00			1/2" Ice	18.40	9.00	600.00
			0.00			1" Ice	23.20	23.20	735.00
Commscope DT465B-2XR	A	From Leg	3.00	0.0000	165.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	10.14	6.79	172.40
			0.00			1" Ice	11.07	7.70	320.70
Commscope DT465B-2XR	B	From Leg	3.00	0.0000	165.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	10.14	6.79	172.40
			0.00			1" Ice	11.07	7.70	320.70
Commscope DT465B-2XR	C	From Leg	3.00	0.0000	165.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	10.14	6.79	172.40
			0.00			1" Ice	11.07	7.70	320.70
Alcatel Lucent 4x45	A	From Leg	3.00	0.0000	165.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.92	1.96	94.30
			0.00			1" Ice	3.35	2.33	150.90
Alcatel Lucent 4x45	B	From Leg	3.00	0.0000	165.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.92	1.96	94.30
			0.00			1" Ice	3.35	2.33	150.90
Alcatel Lucent 4x45	C	From Leg	3.00	0.0000	165.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.92	1.96	94.30
			0.00			1" Ice	3.35	2.33	150.90
Alcatel Lucent 8x200-25	A	From Leg	3.00	0.0000	165.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.50	1.88	127.80
			0.00			1" Ice	4.99	2.26	200.50
Alcatel Lucent 8x200-25	B	From Leg	3.00	0.0000	165.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.50	1.88	127.80
			0.00			1" Ice	4.99	2.26	200.50
Alcatel Lucent 8x200-25	C	From Leg	3.00	0.0000	165.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.50	1.88	127.80
			0.00			1" Ice	4.99	2.26	200.50
RFS APXV9ERR18-C-A20	A	From Leg	3.00	0.0000	165.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.93	6.73	172.10
			0.00			1" Ice	9.86	7.64	307.60
RFS APXV9ERR18-C-A20	B	From Leg	3.00	0.0000	165.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.93	6.73	172.10
			0.00			1" Ice	9.86	7.64	307.60
RFS APXV9ERR18-C-A20	C	From Leg	3.00	0.0000	165.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.93	6.73	172.10
			0.00			1" Ice	9.86	7.64	307.60
(2) Alcatel Lucent RRH2x50	A	From Leg	3.00	0.0000	165.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.64	1.68	79.60
			0.00			1" Ice	3.05	2.04	129.60
(2) Alcatel Lucent RRH2x50	B	From Leg	3.00	0.0000	165.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.64	1.68	79.60
			0.00			1" Ice	3.05	2.04	129.60
(2) Alcatel Lucent RRH2x50	C	From Leg	3.00	0.0000	165.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.64	1.68	79.60
			0.00			1" Ice	3.05	2.04	129.60

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Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²
T1 190.00-180.00	185.00	1.178	31	37.396	A	1.698	6.150	4.792	61.06	27.365	0.000
					B	1.698	6.150		61.06	0.000	0.000
					C	1.698	6.150		61.06	0.000	0.000
T2 180.00-160.00	170.00	1.15	30	74.792	A	2.853	12.348	9.583	63.05	54.730	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	3.410	0.000
T3 160.00-140.00	150.00	1.11	29	74.792	A	2.989	12.348	9.583	62.49	54.730	0.000
					B	2.989	12.348		62.49	26.400	0.000
					C	2.989	12.348		62.49	12.400	0.000
T4 140.00-120.00	130.00	1.065	28	74.792	A	2.989	12.348	9.583	62.49	54.730	0.000
					B	2.989	12.348		62.49	52.800	0.000
					C	2.989	12.348		62.49	12.400	0.000
T5 120.00-100.00	110.00	1.016	27	74.792	A	2.853	12.348	9.583	63.05	54.730	0.000
					B	2.853	12.348		63.05	52.800	0.000
					C	2.853	12.348		63.05	12.400	0.000
T6 100.00-80.00	90.00	0.959	25	74.792	A	2.853	12.348	9.583	63.05	54.730	0.000
					B	2.853	12.348		63.05	52.800	0.000
					C	2.853	12.348		63.05	12.400	0.000
T7 80.00-60.00	70.00	0.892	23	74.792	A	2.921	12.348	9.583	62.77	54.730	0.000
					B	2.921	12.348		62.77	52.800	0.000
					C	2.921	12.348		62.77	12.400	0.000
T8 60.00-40.00	50.00	0.811	21	74.792	A	2.853	12.348	9.583	63.05	54.730	0.000
					B	2.853	12.348		63.05	52.800	0.000
					C	2.853	12.348		63.05	12.400	0.000
T9 40.00-20.00	30.00	0.701	18	74.792	A	2.853	12.348	9.583	63.05	54.730	0.000
					B	2.853	12.348		63.05	52.800	0.000
					C	2.853	12.348		63.05	12.400	0.000
T10 20.00-0.00	10.00	0.7	18	74.792	A	2.853	12.348	9.583	63.05	54.730	0.000
					B	2.853	12.348		63.05	52.800	0.000
					C	2.853	12.348		63.05	12.400	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_z in	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²
T1 190.00-180.00	185.00	1.178	6	2.0792	40.861	A	1.698	26.634	11.722	41.37	60.246	0.000
						B	1.698	26.634		41.37	0.000	0.000
						C	1.698	26.634		41.37	0.000	0.000
T2 180.00-160.00	170.00	1.15	6	2.0617	81.664	A	2.853	52.173	23.328	42.39	120.173	0.000
						B	2.853	52.173		42.39	0.000	0.000
						C	2.853	52.173		42.39	11.008	0.000
T3 160.00-140.00	150.00	1.11	6	2.0361	81.579	A	2.989	51.678	23.157	42.36	119.706	0.000
						B	2.989	51.678		42.36	50.033	0.000
						C	2.989	51.678		42.36	39.865	0.000
T4 140.00-120.00	130.00	1.065	6	2.0072	81.482	A	2.989	51.119	22.964	42.44	119.179	0.000
						B	2.989	51.119		42.44	99.561	0.000
						C	2.989	51.119		42.44	39.679	0.000

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Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T5 120.00-100.00	110.00	1.016	6	1.9739	81.371	A B C	2.853 2.853 2.853	50.476 50.476 50.476	22.743	42.65 42.65 42.65	118.573 98.980 39.465	0.000 0.000 0.000
T6 100.00-80.00	90.00	0.959	5	1.9347	81.241	A B C	2.853 2.853 2.853	49.719 49.719 49.719	22.481	42.76 42.76 42.76	117.859 98.296 39.213	0.000 0.000 0.000
T7 80.00-60.00	70.00	0.892	5	1.8867	81.081	A B C	2.921 2.921 2.921	48.791 48.791 48.791	22.161	42.85 42.85 42.85	116.986 97.459 38.905	0.000 0.000 0.000
T8 60.00-40.00	50.00	0.811	4	1.8242	80.872	A B C	2.853 2.853 2.853	47.586 47.586 47.586	21.745	43.11 43.11 43.11	115.850 96.371 38.506	0.000 0.000 0.000
T9 40.00-20.00	30.00	0.701	4	1.7334	80.570	A B C	2.853 2.853 2.853	45.831 45.831 45.831	21.139	43.42 43.42 43.42	114.198 94.789 37.926	0.000 0.000 0.000
T10 20.00-0.00	10.00	0.7	4	1.5531	79.969	A B C	2.853 2.853 2.853	42.347 42.347 42.347	19.937	44.11 44.11 44.11	110.923 91.654 36.781	0.000 0.000 0.000

Tower Pressure - Service

$$G_H = 0.850$$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T1 190.00-180.00	185.00	1.178	9	37.396	A B C	1.698 1.698 1.698	6.150 6.150 6.150	4.792	61.06 61.06 61.06	27.365 0.000 0.000	0.000 0.000 0.000
T2 180.00-160.00	170.00	1.15	9	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05 63.05 63.05	54.730 0.000 3.410	0.000 0.000 0.000
T3 160.00-140.00	150.00	1.11	9	74.792	A B C	2.989 2.989 2.989	12.348 12.348 12.348	9.583	62.49 62.49 62.49	54.730 26.400 12.400	0.000 0.000 0.000
T4 140.00-120.00	130.00	1.065	8	74.792	A B C	2.989 2.989 2.989	12.348 12.348 12.348	9.583	62.49 62.49 62.49	54.730 52.800 12.400	0.000 0.000 0.000
T5 120.00-100.00	110.00	1.016	8	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05 63.05 63.05	54.730 52.800 12.400	0.000 0.000 0.000
T6 100.00-80.00	90.00	0.959	8	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05 63.05 63.05	54.730 52.800 12.400	0.000 0.000 0.000
T7 80.00-60.00	70.00	0.892	7	74.792	A B C	2.921 2.921 2.921	12.348 12.348 12.348	9.583	62.77 62.77 62.77	54.730 52.800 12.400	0.000 0.000 0.000
T8 60.00-40.00	50.00	0.811	6	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05 63.05 63.05	54.730 52.800 12.400	0.000 0.000 0.000
T9 40.00-20.00	30.00	0.701	5	74.792	A B C	2.853 2.853 2.853	12.348 12.348 12.348	9.583	63.05 63.05 63.05	54.730 52.800 12.400	0.000 0.000 0.000
T10 20.00-0.00	10.00	0.7	5	74.792	A	2.853	12.348	9.583	63.05	54.730	0.000

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Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
					B	2.853	12.348		63.05	52.800	0.000
					C	2.853	12.348		63.05	12.400	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F _a	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb	c			psf			ft ²	lb	plf	
T1 190.00-180.00	115.80	340.32	A	0.21	2.563	31	1	1	5.242	787.21	78.72	C
			B	0.21	2.563		1	1	5.242			
			C	0.21	2.563		1	1	5.242			
T2 180.00-160.00	246.12	658.24	A	0.203	2.585	30	1	1	9.953	1560.09	78.00	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T3 160.00-140.00	392.80	680.49	A	0.205	2.579	29	1	1	10.093	2040.07	102.00	C
		TA 242.49	B	0.205	2.579		1	1	10.093			
			C	0.205	2.579		1	1	10.093			
T4 140.00-120.00	501.20	680.49	A	0.205	2.579	28	1	1	10.093	2335.95	116.80	C
		TA 242.49	B	0.205	2.579		1	1	10.093			
			C	0.205	2.579		1	1	10.093			
T5 120.00-100.00	501.20	658.24	A	0.203	2.585	27	1	1	9.953	2220.23	111.01	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T6 100.00-80.00	501.20	658.24	A	0.203	2.585	25	1	1	9.953	2096.51	104.83	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T7 80.00-60.00	501.20	661.59	A	0.204	2.582	23	1	1	10.023	1954.26	97.71	C
			B	0.204	2.582		1	1	10.023			
			C	0.204	2.582		1	1	10.023			
T8 60.00-40.00	501.20	658.24	A	0.203	2.585	21	1	1	9.953	1772.40	88.62	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T9 40.00-20.00	501.20	658.24	A	0.203	2.585	18	1	1	9.953	1531.71	76.59	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T10 20.00-0.00	501.20	658.24	A	0.203	2.585	18	1	1	9.953	1530.42	76.52	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
Sum Weight:	4263.12	6797.35								17828.87		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F _a	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb	c			psf			ft ²	lb	plf	
T1 190.00-180.00	115.80	340.32	A	0.21	2.563	31	0.8	1	4.902	764.26	76.43	C
			B	0.21	2.563		0.8	1	4.902			
			C	0.21	2.563		0.8	1	4.902			
T2	246.12	658.24	A	0.203	2.585	30	0.8	1	9.383	1522.13	76.11	C

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Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
180.00-160.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3	392.80	680.49	A	0.205	2.579	29	0.8	1	9.496	2001.79	100.09	C
160.00-140.00		TA 242.49	B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T4	501.20	680.49	A	0.205	2.579	28	0.8	1	9.496	2299.19	114.96	C
140.00-120.00		TA 242.49	B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T5	501.20	658.24	A	0.203	2.585	27	0.8	1	9.383	2186.71	109.34	C
120.00-100.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6	501.20	658.24	A	0.203	2.585	25	0.8	1	9.383	2064.86	103.24	C
100.00-80.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T7	501.20	661.59	A	0.204	2.582	23	0.8	1	9.439	1924.13	96.21	C
80.00-60.00			B	0.204	2.582		0.8	1	9.439			
			C	0.204	2.582		0.8	1	9.439			
T8	501.20	658.24	A	0.203	2.585	21	0.8	1	9.383	1745.64	87.28	C
60.00-40.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9	501.20	658.24	A	0.203	2.585	18	0.8	1	9.383	1508.59	75.43	C
40.00-20.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T10	501.20	658.24	A	0.203	2.585	18	0.8	1	9.383	1507.31	75.37	C
20.00-0.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
Sum Weight:	4263.12	6797.35								17524.61		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1	115.80	340.32	A	0.21	2.563	31	0.85	1	4.987	770.00	77.00	C
190.00-180.00			B	0.21	2.563		0.85	1	4.987			
			C	0.21	2.563		0.85	1	4.987			
T2	246.12	658.24	A	0.203	2.585	30	0.85	1	9.526	1531.62	76.58	C
180.00-160.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T3	392.80	680.49	A	0.205	2.579	29	0.85	1	9.645	2011.36	100.57	C
160.00-140.00		TA 242.49	B	0.205	2.579		0.85	1	9.645			
			C	0.205	2.579		0.85	1	9.645			
T4	501.20	680.49	A	0.205	2.579	28	0.85	1	9.645	2308.38	115.42	C
140.00-120.00		TA 242.49	B	0.205	2.579		0.85	1	9.645			
			C	0.205	2.579		0.85	1	9.645			
T5	501.20	658.24	A	0.203	2.585	27	0.85	1	9.526	2195.09	109.75	C
120.00-100.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T6	501.20	658.24	A	0.203	2.585	25	0.85	1	9.526	2072.77	103.64	C
100.00-80.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T7	501.20	661.59	A	0.204	2.582	23	0.85	1	9.585	1931.67	96.58	C
80.00-60.00			B	0.204	2.582		0.85	1	9.585			
			C	0.204	2.582		0.85	1	9.585			

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Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T8 60.00-40.00	501.20	658.24	C	0.204	2.582	21	0.85	1	9.585	1752.33	87.62	C
			A	0.203	2.585		0.85	1	9.526			
			B	0.203	2.585		0.85	1	9.526			
T9 40.00-20.00	501.20	658.24	C	0.203	2.585	18	0.85	1	9.526	1514.37	75.72	C
			A	0.203	2.585		0.85	1	9.526			
			B	0.203	2.585		0.85	1	9.526			
T10 20.00-0.00	501.20	658.24	C	0.203	2.585	18	0.85	1	9.526	1513.09	75.65	C
			A	0.203	2.585		0.85	1	9.526			
			B	0.203	2.585		0.85	1	9.526			
Sum Weight:	4263.12	6797.35								17600.67		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 190.00-180.00	1268.58	1752.23	A	0.693	1.776	6	1	1	23.176	324.83	32.48	C
			B	0.693	1.776		1	1	23.176			
			C	0.693	1.776		1	1	23.176			
T2 180.00-160.00	2684.54	3335.54	A	0.674	1.777	6	1	1	44.210	645.25	32.26	C
			B	0.674	1.777		1	1	44.210			
			C	0.674	1.777		1	1	44.210			
T3 160.00-140.00	4204.28	3323.54	A	0.67	1.777	6	1	1	43.821	754.38	37.72	C
			TA	0.67	1.777		1	1	43.821			
			B	0.67	1.777		1	1	43.821			
T4 140.00-120.00	5261.42	3264.39	A	0.664	1.778	6	1	1	43.167	805.67	40.28	C
			TA	0.664	1.778		1	1	43.167			
			C	0.664	1.778		1	1	43.167			
T5 120.00-100.00	5192.64	3157.02	A	0.655	1.78	6	1	1	42.228	768.90	38.44	C
			B	0.655	1.78		1	1	42.228			
			C	0.655	1.78		1	1	42.228			
T6 100.00-80.00	5112.08	3079.16	A	0.647	1.782	5	1	1	41.360	726.45	36.32	C
			B	0.647	1.782		1	1	41.360			
			C	0.647	1.782		1	1	41.360			
T7 80.00-60.00	5014.25	2997.29	A	0.638	1.785	5	1	1	40.406	676.42	33.82	C
			B	0.638	1.785		1	1	40.406			
			C	0.638	1.785		1	1	40.406			
T8 60.00-40.00	4888.40	2866.03	A	0.624	1.791	4	1	1	38.969	615.36	30.77	C
			B	0.624	1.791		1	1	38.969			
			C	0.624	1.791		1	1	38.969			
T9 40.00-20.00	4707.94	2697.51	A	0.604	1.801	4	1	1	37.063	532.85	26.64	C
			B	0.604	1.801		1	1	37.063			
			C	0.604	1.801		1	1	37.063			
T10 20.00-0.00	4359.19	2381.17	A	0.565	1.83	4	1	1	33.439	534.88	26.74	C
			B	0.565	1.83		1	1	33.439			
			C	0.565	1.83		1	1	33.439			
Sum Weight:	42693.32	30870.23								6385.00		

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Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 190.00-180.00	1268.58	1752.23	A	0.693	1.776	6	0.8	1	22.836	321.54	32.15	C
			B	0.693	1.776		0.8	1	22.836			
			C	0.693	1.776		0.8	1	22.836			
T2 180.00-160.00	2684.54	3335.54	A	0.674	1.777	6	0.8	1	43.640	639.86	31.99	C
			B	0.674	1.777		0.8	1	43.640			
			C	0.674	1.777		0.8	1	43.640			
T3 160.00-140.00	4204.28	3323.54	A	0.67	1.777	6	0.8	1	43.224	748.93	37.45	C
			TA	0.67	1.777		0.8	1	43.224			
			C	0.67	1.777		0.8	1	43.224			
T4 140.00-120.00	5261.42	3264.39	A	0.664	1.778	6	0.8	1	42.569	800.44	40.02	C
			TA	0.664	1.778		0.8	1	42.569			
			C	0.664	1.778		0.8	1	42.569			
T5 120.00-100.00	5192.64	3157.02	A	0.655	1.78	6	0.8	1	41.658	764.13	38.21	C
			B	0.655	1.78		0.8	1	41.658			
			C	0.655	1.78		0.8	1	41.658			
T6 100.00-80.00	5112.08	3079.16	A	0.647	1.782	5	0.8	1	40.790	721.94	36.10	C
			B	0.647	1.782		0.8	1	40.790			
			C	0.647	1.782		0.8	1	40.790			
T7 80.00-60.00	5014.25	2997.29	A	0.638	1.785	5	0.8	1	39.822	672.12	33.61	C
			B	0.638	1.785		0.8	1	39.822			
			C	0.638	1.785		0.8	1	39.822			
T8 60.00-40.00	4888.40	2866.03	A	0.624	1.791	4	0.8	1	38.399	611.52	30.58	C
			B	0.624	1.791		0.8	1	38.399			
			C	0.624	1.791		0.8	1	38.399			
T9 40.00-20.00	4707.94	2697.51	A	0.604	1.801	4	0.8	1	36.493	529.52	26.48	C
			B	0.604	1.801		0.8	1	36.493			
			C	0.604	1.801		0.8	1	36.493			
T10 20.00-0.00	4359.19	2381.17	A	0.565	1.83	4	0.8	1	32.869	531.50	26.58	C
			B	0.565	1.83		0.8	1	32.869			
			C	0.565	1.83		0.8	1	32.869			
Sum Weight:	42693.32	30870.23								6341.51		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 190.00-180.00	1268.58	1752.23	A	0.693	1.776	6	0.85	1	22.921	322.36	32.24	C
			B	0.693	1.776		0.85	1	22.921			
			C	0.693	1.776		0.85	1	22.921			
T2 180.00-160.00	2684.54	3335.54	A	0.674	1.777	6	0.85	1	43.782	641.21	32.06	C
			B	0.674	1.777		0.85	1	43.782			
			C	0.674	1.777		0.85	1	43.782			
T3 160.00-140.00	4204.28	3323.54	A	0.67	1.777	6	0.85	1	43.373	750.29	37.51	C
			TA	0.67	1.777		0.85	1	43.373			
			C	0.67	1.777		0.85	1	43.373			
T4 140.00-120.00	5261.42	3264.39	A	0.664	1.778	6	0.85	1	42.719	801.75	40.09	C
			TA	0.664	1.778		0.85	1	42.719			
			C	0.664	1.778		0.85	1	42.719			
T5 20.00-0.00	5192.64	3157.02	A	0.655	1.78	6	0.85	1	41.801	765.32	38.27	C

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Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
120.00-100.00			B	0.655	1.78		0.85	1	41.801			
			C	0.655	1.78		0.85	1	41.801			
T6 100.00-80.00	5112.08	3079.16	A	0.647	1.782	5	0.85	1	40.932	723.07	36.15	C
			B	0.647	1.782		0.85	1	40.932			
			C	0.647	1.782		0.85	1	40.932			
T7 80.00-60.00	5014.25	2997.29	A	0.638	1.785	5	0.85	1	39.968	673.19	33.66	C
			B	0.638	1.785		0.85	1	39.968			
			C	0.638	1.785		0.85	1	39.968			
T8 60.00-40.00	4888.40	2866.03	A	0.624	1.791	4	0.85	1	38.542	612.48	30.62	C
			B	0.624	1.791		0.85	1	38.542			
			C	0.624	1.791		0.85	1	38.542			
T9 40.00-20.00	4707.94	2697.51	A	0.604	1.801	4	0.85	1	36.635	530.36	26.52	C
			B	0.604	1.801		0.85	1	36.635			
			C	0.604	1.801		0.85	1	36.635			
T10 20.00-0.00	4359.19	2381.17	A	0.565	1.83	4	0.85	1	33.011	532.35	26.62	C
			B	0.565	1.83		0.85	1	33.011			
			C	0.565	1.83		0.85	1	33.011			
Sum Weight:	42693.32	30870.23								6352.38		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 190.00-180.00	115.80	340.32	A	0.21	2.563	9	1	1	5.242	234.21	23.42	C
			B	0.21	2.563		1	1	5.242			
			C	0.21	2.563		1	1	5.242			
T2 180.00-160.00	246.12	658.24	A	0.203	2.585	9	1	1	9.953	464.16	23.21	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T3 160.00-140.00	392.80	680.49	A	0.205	2.579	9	1	1	10.093	606.96	30.35	C
		TA 242.49	B	0.205	2.579		1	1	10.093			
			C	0.205	2.579		1	1	10.093			
T4 140.00-120.00	501.20	680.49	A	0.205	2.579	8	1	1	10.093	694.99	34.75	C
		TA 242.49	B	0.205	2.579		1	1	10.093			
			C	0.205	2.579		1	1	10.093			
T5 120.00-100.00	501.20	658.24	A	0.203	2.585	8	1	1	9.953	660.56	33.03	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T6 100.00-80.00	501.20	658.24	A	0.203	2.585	8	1	1	9.953	623.76	31.19	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T7 80.00-60.00	501.20	661.59	A	0.204	2.582	7	1	1	10.023	581.43	29.07	C
			B	0.204	2.582		1	1	10.023			
			C	0.204	2.582		1	1	10.023			
T8 60.00-40.00	501.20	658.24	A	0.203	2.585	6	1	1	9.953	527.33	26.37	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T9 40.00-20.00	501.20	658.24	A	0.203	2.585	5	1	1	9.953	455.72	22.79	C
			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T10 20.00-0.00	501.20	658.24	A	0.203	2.585	5	1	1	9.953	455.33	22.77	C
			B	0.203	2.585		1	1	9.953			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
ft	lb	lb	C	0.203	2.585		1	1	9.953	5304.46		
Sum Weight:	4263.12	6797.35										

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 190.00-180.00	115.80	340.32	A	0.21	2.563	9	0.8	1	4.902	227.38	22.74	C
			B	0.21	2.563		0.8	1	4.902			
			C	0.21	2.563		0.8	1	4.902			
T2 180.00-160.00	246.12	658.24	A	0.203	2.585	9	0.8	1	9.383	452.87	22.64	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3 160.00-140.00	392.80	680.49	A	0.205	2.579	9	0.8	1	9.496	595.57	29.78	C
		TA 242.49	B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T4 140.00-120.00	501.20	680.49	A	0.205	2.579	8	0.8	1	9.496	684.06	34.20	C
		TA 242.49	B	0.205	2.579		0.8	1	9.496			
			C	0.205	2.579		0.8	1	9.496			
T5 120.00-100.00	501.20	658.24	A	0.203	2.585	8	0.8	1	9.383	650.59	32.53	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6 100.00-80.00	501.20	658.24	A	0.203	2.585	8	0.8	1	9.383	614.34	30.72	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T7 80.00-60.00	501.20	661.59	A	0.204	2.582	7	0.8	1	9.439	572.47	28.62	C
			B	0.204	2.582		0.8	1	9.439			
			C	0.204	2.582		0.8	1	9.439			
T8 60.00-40.00	501.20	658.24	A	0.203	2.585	6	0.8	1	9.383	519.36	25.97	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9 40.00-20.00	501.20	658.24	A	0.203	2.585	5	0.8	1	9.383	448.84	22.44	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T10 20.00-0.00	501.20	658.24	A	0.203	2.585	5	0.8	1	9.383	448.46	22.42	C
			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
Sum Weight:	4263.12	6797.35								5213.93		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 190.00-180.00	115.80	340.32	A	0.21	2.563	9	0.85	1	4.987	229.09	22.91	C
			B	0.21	2.563		0.85	1	4.987			

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Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T2 180.00-160.00	246.12	658.24	C	0.21	2.563	9	0.85	1	4.987	455.69	22.78	C
			A	0.203	2.585		0.85	1	9.526			
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T3 160.00-140.00	392.80	680.49 TA 242.49	A	0.205	2.579	9	0.85	1	9.645	598.42	29.92	C
			B	0.205	2.579		0.85	1	9.645			
			C	0.205	2.579		0.85	1	9.645			
			A	0.205	2.579		0.85	1	9.645			
T4 140.00-120.00	501.20	680.49 TA 242.49	A	0.205	2.579	8	0.85	1	9.645	686.79	34.34	C
			B	0.205	2.579		0.85	1	9.645			
			C	0.205	2.579		0.85	1	9.645			
			A	0.203	2.585		0.85	1	9.526			
T5 120.00-100.00	501.20	658.24	A	0.203	2.585	8	0.85	1	9.526	653.08	32.65	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
			A	0.203	2.585		0.85	1	9.526			
T6 100.00-80.00	501.20	658.24	A	0.203	2.585	8	0.85	1	9.526	616.69	30.83	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
			A	0.204	2.582		0.85	1	9.585			
T7 80.00-60.00	501.20	661.59	A	0.204	2.582	7	0.85	1	9.585	574.71	28.74	C
			B	0.204	2.582		0.85	1	9.585			
			C	0.204	2.582		0.85	1	9.585			
			A	0.203	2.585		0.85	1	9.526			
T8 60.00-40.00	501.20	658.24	A	0.203	2.585	6	0.85	1	9.526	521.36	26.07	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
			A	0.203	2.585		0.85	1	9.526			
T9 40.00-20.00	501.20	658.24	A	0.203	2.585	5	0.85	1	9.526	450.56	22.53	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
			A	0.203	2.585		0.85	1	9.526			
T10 20.00-0.00	501.20	658.24	A	0.203	2.585	5	0.85	1	9.526	450.18	22.51	C
			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
			A	0.203	2.585		0.85	1	9.526			
Sum Weight:	4263.12	6797.35								5236.56		

Discrete Appurtenance Pressures - No Ice *G_H* = 0.850

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Torque Arm Face C	180.0000	0.00	0.00	2.53	157.41	1.125	30	4.25	6.25
Torque Arm Face B	60.0000	0.00	2.19	-1.26	157.41	1.125	30	4.25	6.25
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	157.41	1.125	30	4.25	6.25
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.37	1.044	28	4.25	6.25
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.37	1.044	28	4.25	6.25
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.37	1.044	28	4.25	6.25
Antel BXA-70063-6CF	0.0000	17.00	0.00	-5.02	190.00	1.187	31	7.57	2.21
Antel BXA-70063-6CF	120.0000	17.00	4.35	2.51	190.00	1.187	31	7.57	2.21
Antel BXA-70063-6CF	240.0000	17.00	-4.35	2.51	190.00	1.187	31	7.57	2.21
Sector Frame	0.0000	465.00	0.00	-2.02	190.00	1.187	31	13.60	13.60
Sector Frame	120.0000	465.00	1.75	1.01	190.00	1.187	31	13.60	13.60
Sector Frame	240.0000	465.00	-1.75	1.01	190.00	1.187	31	13.60	13.60
Andrew	0.0000	86.00	0.00	-5.02	190.00	1.187	31	17.06	10.48
HBXX-6517DS-A2M									
Andrew	120.0000	86.00	4.35	2.51	190.00	1.187	31	17.06	10.48
HBXX-6517DS-A2M									
Andrew	240.0000	86.00	-4.35	2.51	190.00	1.187	31	17.06	10.48
HBXX-6517DS-A2M									
Andrew	0.0000	26.50	0.00	-5.02	190.00	1.187	31	6.04	5.46

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _A A _C Front ft ²	C _A A _C Side ft ²
LNX-8513DS-VTM Andrew	120.0000	26.50	4.35	2.51	190.00	1.187	31	6.04	5.46
LNX-8513DS-VTM Andrew	240.0000	26.50	-4.35	2.51	190.00	1.187	31	6.04	5.46
LNX-8513DS-VTM Alcatel Lucent RRH2x60-AWS	0.0000	44.00	0.00	-5.02	190.00	1.187	31	1.88	1.24
Alcatel Lucent RRH2x60-AWS	120.0000	44.00	4.35	2.51	190.00	1.187	31	1.88	1.24
Alcatel Lucent RRH2x60-AWS	240.0000	44.00	-4.35	2.51	190.00	1.187	31	1.88	1.24
Lightning Rod 5/8x4'	0.0000	31.00	0.00	0.00	190.00	1.187	31	0.25	0.25
Sector Frame	0.0000	465.00	0.00	-2.02	180.00	1.169	31	13.60	13.60
Sector Frame	120.0000	465.00	1.75	1.01	180.00	1.169	31	13.60	13.60
Sector Frame	240.0000	465.00	-1.75	1.01	180.00	1.169	31	13.60	13.60
Sector Frame	0.0000	465.00	0.00	-2.02	150.00	1.110	29	13.60	13.60
Sector Frame	120.0000	465.00	1.75	1.01	150.00	1.110	29	13.60	13.60
Sector Frame	240.0000	465.00	-1.75	1.01	150.00	1.110	29	13.60	13.60
Powerwave	0.0000	82.00	0.00	-5.02	150.00	1.110	29	11.12	4.10
P90-14-XLH-RR Powerwave	120.0000	82.00	4.35	2.51	150.00	1.110	29	11.12	4.10
P90-14-XLH-RR Powerwave	240.0000	82.00	-4.35	2.51	150.00	1.110	29	11.12	4.10
P90-14-XLH-RR KMW	0.0000	59.50	0.00	-5.02	150.00	1.110	29	11.31	6.80
AM-X-CD-17-65-00T-RET	120.0000	59.50	4.35	2.51	150.00	1.110	29	11.31	6.80
AM-X-CD-17-65-00T-RET	240.0000	59.50	-4.35	2.51	150.00	1.110	29	11.31	6.80
Ericsson RRUS-11	0.0000	100.00	0.00	-5.02	150.00	1.110	29	5.88	2.50
Ericsson RRUS-11	120.0000	100.00	4.35	2.51	150.00	1.110	29	5.88	2.50
Ericsson RRUS-11	240.0000	100.00	-4.35	2.51	150.00	1.110	29	5.88	2.50
Powerwave	0.0000	44.00	0.00	-5.02	150.00	1.110	29	1.84	1.50
TT08-DB111-001 Powerwave	120.0000	44.00	4.35	2.51	150.00	1.110	29	1.84	1.50
TT08-DB111-001 Powerwave	240.0000	44.00	-4.35	2.51	150.00	1.110	29	1.84	1.50
TT08-DB111-001 Raycap	0.0000	31.80	0.00	-5.02	150.00	1.110	29	2.57	2.57
DC6-48-60-18-8F Sector Frame	0.0000	465.00	0.00	-2.02	165.50	1.141	30	13.60	7.00
Sector Frame	120.0000	465.00	1.75	1.01	165.50	1.141	30	13.60	7.00
Sector Frame	240.0000	465.00	-1.75	1.01	165.50	1.141	30	13.60	7.00
Junction Box	240.0000	44.00	-4.35	2.51	190.00	1.187	31	1.88	1.24
Sector Frame	0.0000	465.00	0.00	-3.52	165.00	1.140	30	13.60	7.00
Sector Frame	120.0000	465.00	3.05	1.76	165.00	1.140	30	13.60	7.00
Sector Frame	240.0000	465.00	-3.05	1.76	165.00	1.140	30	13.60	7.00
Commscope	0.0000	50.00	0.00	-5.02	165.00	1.140	30	9.22	5.87
DT465B-2XR Commscope	120.0000	50.00	4.35	2.51	165.00	1.140	30	9.22	5.87
DT465B-2XR Commscope	240.0000	50.00	-4.35	2.51	165.00	1.140	30	9.22	5.87
DT465B-2XR Alcatel Lucent 4x45	0.0000	51.00	0.00	-5.02	165.00	1.140	30	2.54	1.61
Alcatel Lucent 4x45	120.0000	51.00	4.35	2.51	165.00	1.140	30	2.54	1.61
Alcatel Lucent 4x45	240.0000	51.00	-4.35	2.51	165.00	1.140	30	2.54	1.61
Alcatel Lucent 8x200-25	0.0000	70.00	0.00	-5.02	165.00	1.140	30	4.05	1.53

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Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²	t _z in
Powerwave P90-14-XLH-RR	120.0000	290.16	4.35	2.51	150.00	1.110	6	8.60	11.06	2.0361
Powerwave P90-14-XLH-RR	240.0000	290.16	-4.35	2.51	150.00	1.110	6	8.60	11.06	2.0361
KMW AM-X-CD-17-65-00T-R ET	0.0000	145.08	0.00	-5.02	150.00	1.110	6	4.30	5.53	2.0361
KMW AM-X-CD-17-65-00T-R ET	120.0000	145.08	4.35	2.51	150.00	1.110	6	4.30	5.53	2.0361
KMW AM-X-CD-17-65-00T-R ET	240.0000	145.08	-4.35	2.51	150.00	1.110	6	4.30	5.53	2.0361
Ericsson RRUS-11	0.0000	290.16	0.00	-5.02	150.00	1.110	6	8.60	11.06	2.0361
Ericsson RRUS-11	120.0000	290.16	4.35	2.51	150.00	1.110	6	8.60	11.06	2.0361
Ericsson RRUS-11	240.0000	290.16	-4.35	2.51	150.00	1.110	6	8.60	11.06	2.0361
Powerwave TT08-DB111-001	0.0000	290.16	0.00	-5.02	150.00	1.110	6	8.60	11.06	2.0361
Powerwave TT08-DB111-001	120.0000	290.16	4.35	2.51	150.00	1.110	6	8.60	11.06	2.0361
Powerwave TT08-DB111-001	240.0000	290.16	-4.35	2.51	150.00	1.110	6	8.60	11.06	2.0361
Powerwave TT08-DB111-001	0.0000	290.16	0.00	-5.02	150.00	1.110	6	8.60	11.06	2.0361
Raycap DC6-48-60-18-8F	0.0000	145.08	0.00	-5.02	150.00	1.110	6	4.30	5.53	2.0361
Sector Frame	0.0000	1020.18	0.00	-2.02	165.50	1.141	6	33.34	33.34	2.0562
Sector Frame	120.0000	1020.18	1.75	1.01	165.50	1.141	6	33.34	33.34	2.0562
Sector Frame	240.0000	1020.18	-1.75	1.01	165.50	1.141	6	33.34	33.34	2.0562
Junction Box	240.0000	253.56	-4.35	2.51	190.00	1.187	6	5.48	7.32	2.0848
Sector Frame	0.0000	1020.01	0.00	-3.52	165.00	1.140	6	33.33	33.33	2.0556
Sector Frame	120.0000	1020.01	3.05	1.76	165.00	1.140	6	33.33	33.33	2.0556
Sector Frame	240.0000	1020.01	-3.05	1.76	165.00	1.140	6	33.33	33.33	2.0556
Commscope DT465B-2XR	0.0000	553.21	0.00	-5.02	165.00	1.140	6	13.00	9.65	2.0556
Commscope DT465B-2XR	120.0000	553.21	4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
Commscope DT465B-2XR	240.0000	553.21	-4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
Commscope DT465B-2XR	0.0000	553.21	0.00	-5.02	165.00	1.140	6	13.00	9.65	2.0556
Alcatel Lucent 4x45	120.0000	553.21	4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
Alcatel Lucent 4x45	240.0000	553.21	-4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
Alcatel Lucent 8x200-25	0.0000	553.21	0.00	-5.02	165.00	1.140	6	13.00	9.65	2.0556
Alcatel Lucent 8x200-25	120.0000	553.21	4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
Alcatel Lucent 8x200-25	240.0000	553.21	-4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
RFS APXV9ERR18-C-A20	0.0000	553.21	0.00	-5.02	165.00	1.140	6	13.00	9.65	2.0556
RFS APXV9ERR18-C-A20	120.0000	553.21	4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
RFS APXV9ERR18-C-A20	240.0000	553.21	-4.35	2.51	165.00	1.140	6	13.00	9.65	2.0556
RFS APXV9ERR18-C-A20	0.0000	1106.41	0.00	-5.02	165.00	1.140	6	26.00	19.30	2.0556
Alcatel Lucent RRH2x50	120.0000	1106.41	4.35	2.51	165.00	1.140	6	26.00	19.30	2.0556
Alcatel Lucent RRH2x50	240.0000	1106.41	-4.35	2.51	165.00	1.140	6	26.00	19.30	2.0556
Sum Weight:		32281.39								

Discrete Appurtenance Pressures - Service $G_H = 0.850$

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	Client	CDT	Designed by	FAN

Description	Aiming Azimuth °	Weight lb	Offset _x ft	Offset _z ft	z ft	K _z	q _z psf	C _{AAC} Front ft ²	C _{AAC} Side ft ²
Raycap	0.0000	31.80	0.00	-5.02	150.00	1.110	9	2.57	2.57
DC6-48-60-18-8F									
Sector Frame	0.0000	465.00	0.00	-2.02	165.50	1.141	9	13.60	7.00
Sector Frame	120.0000	465.00	1.75	1.01	165.50	1.141	9	13.60	7.00
Sector Frame	240.0000	465.00	-1.75	1.01	165.50	1.141	9	13.60	7.00
Junction Box	240.0000	44.00	-4.35	2.51	190.00	1.187	9	1.88	1.24
Sector Frame	0.0000	465.00	0.00	-3.52	165.00	1.140	9	13.60	7.00
Sector Frame	120.0000	465.00	3.05	1.76	165.00	1.140	9	13.60	7.00
Sector Frame	240.0000	465.00	-3.05	1.76	165.00	1.140	9	13.60	7.00
Commscope	0.0000	50.00	0.00	-5.02	165.00	1.140	9	9.22	5.87
DT465B-2XR									
Commscope	120.0000	50.00	4.35	2.51	165.00	1.140	9	9.22	5.87
DT465B-2XR									
Commscope	240.0000	50.00	-4.35	2.51	165.00	1.140	9	9.22	5.87
DT465B-2XR									
Alcatel Lucent 4x45	0.0000	51.00	0.00	-5.02	165.00	1.140	9	2.54	1.61
Alcatel Lucent 4x45	120.0000	51.00	4.35	2.51	165.00	1.140	9	2.54	1.61
Alcatel Lucent 4x45	240.0000	51.00	-4.35	2.51	165.00	1.140	9	2.54	1.61
Alcatel Lucent 8x200-25	0.0000	70.00	0.00	-5.02	165.00	1.140	9	4.05	1.53
Alcatel Lucent 8x200-25	120.0000	70.00	4.35	2.51	165.00	1.140	9	4.05	1.53
Alcatel Lucent 8x200-25	240.0000	70.00	-4.35	2.51	165.00	1.140	9	4.05	1.53
RFS	0.0000	62.00	0.00	-5.02	165.00	1.140	9	8.02	5.81
APXV9ERR18-C-A20									
RFS	120.0000	62.00	4.35	2.51	165.00	1.140	9	8.02	5.81
APXV9ERR18-C-A20									
RFS	240.0000	62.00	-4.35	2.51	165.00	1.140	9	8.02	5.81
APXV9ERR18-C-A20									
Alcatel Lucent RRH2x50	0.0000	84.00	0.00	-5.02	165.00	1.140	9	4.54	2.70
Alcatel Lucent RRH2x50	120.0000	84.00	4.35	2.51	165.00	1.140	9	4.54	2.70
Alcatel Lucent RRH2x50	240.0000	84.00	-4.35	2.51	165.00	1.140	9	4.54	2.70
Sum		9409.80							
Weight:									

Load Combinations

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

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

Maximum Reactions

<i>Location</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Vertical lb</i>	<i>Horizontal, X lb</i>	<i>Horizontal, Z lb</i>	
Guy C @ 150 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-1526.45	-1096.58	632.92	
	Max. H _x	10	-1526.45	-1096.58	632.92	
	Max. H _z	3	-44435.47	-44351.78	26282.12	
	Min. Vert	4	-44761.36	-44935.89	25955.64	
	Min. H _x	4	-44761.36	-44935.89	25955.64	
	Min. H _z	10	-1526.45	-1096.58	632.92	
Guy B @ 150 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-1528.35	1097.64	633.52	
	Max. H _x	12	-44733.88	44908.53	25942.28	
	Max. H _z	13	-44403.25	44324.80	26270.23	
	Min. Vert	12	-44733.88	44908.53	25942.28	
	Min. H _x	6	-1528.35	1097.64	633.52	
	Min. H _z	6	-1528.35	1097.64	633.52	
Guy A @ 150 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-1526.60	0.01	-1266.12	
	Max. H _x	11	-23814.99	1245.94	-27167.32	
	Max. H _z	2	-1526.60	0.01	-1266.12	
	Min. Vert	8	-44713.91	-2.12	-51852.95	
	Min. H _x	5	-23791.16	-1245.98	-27156.33	
	Min. H _z	8	-44713.91	-2.12	-51852.95	
	Mast	Max. Vert	15	202213.85	76.44	411.28
		Max. H _x	11	98626.39	2905.32	11.17
		Max. H _z	2	103963.53	5.71	2878.96
		Max. M _x	1	0.00	7.13	-9.51
		Max. M _z	1	0.00	7.13	-9.51
		Max. Torsion	1	0.00	7.13	-9.51
		Min. Vert	1	66274.53	7.13	-9.51
		Min. H _x	5	98614.75	-2885.68	12.34
Min. H _z	8	89981.05	9.77	-2968.17		
Min. M _x	1	0.00	7.13	-9.51		
Min. M _z	1	0.00	7.13	-9.51		
Min. Torsion	1	0.00	7.13	-9.51		

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	Client	CDT	Designed by	FAN

<i>Location</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Vertical lb</i>	<i>Horizontal, X lb</i>	<i>Horizontal, Z lb</i>
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Tower Mast Reaction Summary

<i>Load Combination</i>	<i>Vertical lb</i>	<i>Shear_x lb</i>	<i>Shear_z lb</i>	<i>Overtuning Moment, M_x lb-ft</i>	<i>Overtuning Moment, M_z lb-ft</i>	<i>Torque lb-ft</i>
Dead Only	66274.53	-7.13	9.51	0.00	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	103963.53	-5.71	-2878.96	0.00	0.00	0.00
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	98646.22	1453.57	-2485.85	0.00	0.00	0.00
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	90017.54	2549.66	-1470.98	0.00	0.00	0.00
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	98614.75	2885.68	-12.34	0.00	0.00	0.00
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	103928.18	2496.45	1449.40	0.00	0.00	0.00
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	98587.49	1422.94	2522.41	0.00	0.00	0.00
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	89981.05	-9.77	2968.17	0.00	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	98625.28	-1441.22	2526.55	0.00	0.00	0.00
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	103960.78	-2514.86	1453.47	0.00	0.00	0.00
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	98626.39	-2905.32	-11.17	0.00	0.00	0.00
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	90000.46	-2568.49	-1470.49	0.00	0.00	0.00
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	98620.09	-1467.95	-2485.52	0.00	0.00	0.00
1.2 Dead+1.0 Ice+1.0 Temp+Guy	199760.70	-62.72	87.47	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	202213.85	-76.44	-411.28	0.00	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	201597.21	159.54	-350.97	0.00	0.00	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	201064.04	342.06	-164.58	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	201578.83	411.57	87.96	0.00	0.00	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	202175.88	345.85	324.39	0.00	0.00	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	201549.45	174.42	499.82	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	201032.61	-78.37	564.28	0.00	0.00	0.00
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	201541.19	-331.09	500.54	0.00	0.00	0.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	202163.21	-501.21	325.98	0.00	0.00	0.00
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	201569.29	-565.62	90.22	0.00	0.00	0.00
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	201059.74	-495.18	-162.17	0.00	0.00	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	201596.01	-312.55	-349.42	0.00	0.00	0.00

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead+Wind 0 deg - Service+Guy	66665.14	-7.77	-577.01	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	66625.32	280.20	-491.63	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	66601.13	489.83	-278.19	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	66626.25	570.26	10.19	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	66666.14	499.86	302.22	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	66625.62	282.15	509.24	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	66600.43	-7.87	583.81	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	66625.03	-297.61	509.01	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	66665.25	-515.57	302.31	0.00	0.00	0.00
Dead+Wind 270 deg - Service+Guy	66625.54	-585.55	10.19	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	66600.86	-505.45	-278.12	0.00	0.00	0.00
Dead+Wind 330 deg - Service+Guy	66625.22	-295.77	-491.60	0.00	0.00	0.00

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-23092.05	0.00	2.52	23011.39	-6.58	0.351%
2	11.78	-27450.68	-47006.90	-11.91	27447.99	46938.86	0.125%
3	23333.10	-27186.10	-40390.56	-23340.13	27184.04	40330.37	0.112%
4	40305.24	-26921.51	-23270.24	-40256.93	26920.00	23246.02	0.101%
5	46645.80	-27186.10	-11.78	-46597.40	27184.05	47.94	0.112%
6	40715.06	-27450.68	23493.25	-40656.21	27447.98	-23458.99	0.125%
7	23312.70	-27186.10	40378.78	-23256.79	27184.03	-40354.48	0.113%
8	-11.78	-26921.51	46520.08	12.23	26920.01	-46466.18	0.100%
9	-23333.10	-27186.10	40390.56	23277.53	27184.05	-40366.58	0.112%
10	-40726.84	-27450.68	23513.65	40668.00	27447.99	-23479.57	0.125%
11	-46645.80	-27186.10	11.78	46597.55	27184.06	24.26	0.112%
12	-40293.46	-26921.51	-23249.84	40245.41	26920.00	23225.13	0.101%
13	-23312.70	-27186.10	-40378.78	23319.59	27184.03	40318.32	0.113%
14	0.00	-133091.30	0.00	38.70	132964.25	-69.94	0.113%
15	-4.39	-133344.31	-14653.07	5.21	133343.28	14517.80	0.101%
16	7301.90	-133091.30	-12651.64	-7258.36	133090.23	12520.11	0.103%
17	12650.08	-132838.28	-7301.00	-12521.29	132836.99	7229.70	0.110%
18	14611.39	-133091.30	4.39	-14472.43	133090.25	27.38	0.106%
19	12692.12	-133344.31	7330.33	-12578.02	133343.35	-7264.47	0.098%
20	7309.49	-133091.30	12656.03	-7211.46	133090.24	-12551.62	0.107%
21	4.39	-132838.28	14609.59	-1.94	132837.89	-14563.36	0.035%
22	-7301.90	-133091.30	12651.64	7206.85	133090.22	-12541.76	0.109%
23	-12687.74	-133344.31	7322.74	12572.34	133343.31	-7255.20	0.100%
24	-14611.39	-133091.30	-4.39	14469.33	133090.20	34.13	0.108%
25	-12654.46	-132838.28	-7308.59	12530.58	132836.99	7234.41	0.108%
26	-7309.49	-133091.30	-12656.03	7268.81	133090.21	12522.98	0.104%
27	2.19	-23141.24	-8740.95	-2.10	23141.10	8670.70	0.284%
28	4338.80	-23092.05	-7510.64	-4303.56	23091.88	7443.89	0.306%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
29	7494.78	-23042.85	-4327.11	-7432.39	23042.66	4291.24	0.292%
30	8673.81	-23092.05	-2.19	-8603.92	23091.89	5.17	0.284%
31	7570.98	-23141.24	4368.58	-7509.94	23141.09	-4333.36	0.285%
32	4335.01	-23092.05	7508.45	-4297.46	23091.89	-7449.46	0.283%
33	-2.19	-23042.85	8650.43	2.35	23042.66	-8578.54	0.292%
34	-4338.80	-23092.05	7510.64	4298.64	23091.88	-7446.81	0.306%
35	-7573.17	-23141.24	4372.37	7512.43	23141.10	-4337.22	0.284%
36	-8673.81	-23092.05	2.19	8598.52	23091.88	0.82	0.305%
37	-7492.59	-23042.85	-4323.32	7430.46	23042.66	4287.41	0.292%
38	-4335.01	-23092.05	-7508.45	4299.99	23091.88	7441.67	0.306%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	121	0.00000001	0.00000000
2	Yes	306	0.00014316	0.00015000
3	Yes	302	0.00014813	0.00015000
4	Yes	250	0.00014618	0.00007652
5	Yes	302	0.00014781	0.00015000
6	Yes	306	0.00014333	0.00015000
7	Yes	302	0.00014896	0.00015000
8	Yes	250	0.00014538	0.00007615
9	Yes	302	0.00014802	0.00015000
10	Yes	306	0.00014310	0.00015000
11	Yes	302	0.00014737	0.00015000
12	Yes	250	0.00014559	0.00007611
13	Yes	302	0.00014865	0.00015000
14	Yes	122	0.00000001	0.00000000
15	Yes	250	0.00015000	0.00004704
16	Yes	245	0.00015000	0.00004690
17	Yes	240	0.00015000	0.00005171
18	Yes	245	0.00015000	0.00005500
19	Yes	251	0.00015000	0.00015000
20	Yes	245	0.00015000	0.00005439
21	Yes	256	0.00000001	0.00015000
22	Yes	244	0.00015000	0.00005178
23	Yes	250	0.00015000	0.00005071
24	Yes	244	0.00015000	0.00005202
25	Yes	240	0.00015000	0.00004805
26	Yes	245	0.00015000	0.00004647
27	Yes	219	0.00000001	0.00008512
28	Yes	217	0.00000001	0.00008702
29	Yes	217	0.00000001	0.00008172
30	Yes	218	0.00000001	0.00008244
31	Yes	219	0.00000001	0.00008591
32	Yes	218	0.00000001	0.00008252
33	Yes	217	0.00000001	0.00008183
34	Yes	217	0.00000001	0.00008705
35	Yes	219	0.00000001	0.00008532
36	Yes	217	0.00000001	0.00008675
37	Yes	217	0.00000001	0.00008133
38	Yes	217	0.00000001	0.00008675

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Maximum Tower Deflections - Service Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	1.400	37	0.0512	0.0258
T2	180 - 160	1.287	37	0.0575	0.0256
T3	160 - 140	1.016	29	0.0579	0.0208
T4	140 - 120	0.823	29	0.0402	0.0227
T5	120 - 100	0.698	29	0.0088	0.0220
T6	100 - 80	0.734	31	0.0079	0.0392
T7	80 - 60	0.728	31	0.0149	0.0532
T8	60 - 40	0.639	31	0.0190	0.0633
T9	40 - 20	0.562	31	0.0328	0.0710
T10	20 - 0	0.352	35	0.0685	0.0755

Critical Deflections and Radius of Curvature - Service Wind

Elevation <i>ft</i>	Appurtenance	Gov. Load Comb.	Deflection <i>in</i>	Tilt °	Twist °	Radius of Curvature <i>ft</i>
190.00	Antel BXA-70063-6CF	37	1.400	0.0512	0.0258	63050
189.63	Guy	37	1.396	0.0515	0.0259	63050
180.00	Sector Frame	37	1.287	0.0575	0.0256	37624
165.50	Sector Frame	29	1.087	0.0595	0.0217	70630
165.00	Sector Frame	29	1.080	0.0594	0.0216	63801
156.42	Guy	29	0.975	0.0563	0.0208	39105
150.00	Sector Frame	29	0.910	0.0518	0.0216	60988
120.38	Guy	29	0.699	0.0092	0.0219	20574
60.38	Guy	31	0.641	0.0189	0.0631	62850

Maximum Tower Deflections - Design Wind

Section No.	Elevation <i>ft</i>	Horz. Deflection <i>in</i>	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	15.437	10	0.6212	0.1883
T2	180 - 160	14.098	10	0.6511	0.1871
T3	160 - 140	11.234	2	0.6198	0.1735
T4	140 - 120	8.994	6	0.4633	0.1813
T5	120 - 100	7.480	6	0.2009	0.1742
T6	100 - 80	7.211	6	0.0644	0.2751
T7	80 - 60	6.818	6	0.1585	0.3439
T8	60 - 40	5.930	6	0.2235	0.3920
T9	40 - 20	4.881	6	0.3552	0.4346
T10	20 - 0	2.893	6	0.5927	0.4597

Critical Deflections and Radius of Curvature - Design Wind

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Antel BXA-70063-6CF	10	15.437	0.6212	0.1883	12567
189.63	Guy	10	15.388	0.6225	0.1883	12567
180.00	Sector Frame	10	14.098	0.6511	0.1871	7597
165.50	Sector Frame	10	11.992	0.6409	0.1758	8849
165.00	Sector Frame	10	11.921	0.6393	0.1754	8192
156.42	Guy	2	10.777	0.6015	0.1742	5339
150.00	Sector Frame	2	10.028	0.5588	0.1781	6991
120.38	Guy	6	7.495	0.2055	0.1737	2741
60.38	Guy	6	5.947	0.2222	0.3911	12019

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	190	Leg	A325N	0.7500	4	239.54	29820.60	0.008 ✓	1	Bolt Tension
T2	180	Leg	A325N	0.7500	4	1165.32	29820.60	0.039 ✓	1	Bolt Tension
T3	160	Leg	A325N	0.7500	4	2346.62	29820.60	0.079 ✓	1	Bolt Tension
		Top Guy Pull-Off@156.41	A325N	0.7500	2	3025.23	17892.40	0.169 ✓	1	Bolt Shear
		Torque Arm Top@156.41	A325N	0.7500	2	6326.19	17617.50	0.359 ✓	1	Member Bearing
		Torque Arm Bottom@156.41	A325N	0.7500	2	4521.94	17892.40	0.253 ✓	1	Bolt Shear
T4	140	Leg	A325N	0.7500	4	3226.85	29820.60	0.108 ✓	1	Bolt Tension
		Top Guy Pull-Off@120.37	A325N	0.7500	2	3785.36	17892.40	0.212 ✓	1	Bolt Shear
		Torque Arm Top@120.37	A325N	0.7500	2	4069.91	17617.50	0.231 ✓	1	Member Bearing
		Torque Arm Bottom@120.37	A325N	0.7500	2	4039.26	17892.40	0.226 ✓	1	Bolt Shear
T5	120	Leg	A325N	0.7500	4	4925.14	29820.60	0.165 ✓	1	Bolt Tension
T6	100	Leg	A325N	0.7500	4	4316.09	29820.60	0.145 ✓	1	Bolt Tension
T7	80	Leg	A325N	0.7500	4	4635.19	29820.60	0.155 ✓	1	Bolt Tension
T8	60	Leg	A325N	0.7500	4	5016.52	29820.60	0.168 ✓	1	Bolt Tension
T9	40	Leg	A325N	0.7500	4	5568.54	29820.60	0.187 ✓	1	Bolt Tension
T10	20	Leg	A325N	0.7500	4	5783.34	29820.60	0.194 ✓	1	Bolt Tension

Guy Design Data

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Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	189.63 (A) (615)	9/16 EHS	3500.00	35000.04	12287.00	21000.00	1.000	1.709 ✓
	189.63 (B) (614)	9/16 EHS	3500.00	35000.04	12315.20	21000.00	1.000	1.705 ✓
	189.63 (C) (613)	9/16 EHS	3500.00	35000.04	12312.50	21000.00	1.000	1.706 ✓
T3	156.42 (A) (586)	5/8 EHS	4240.00	42399.99	13364.80	25440.00	1.000	1.904 ✓
	156.42 (A) (587)	5/8 EHS	4240.00	42399.99	13372.00	25440.00	1.000	1.902 ✓
	156.42 (B) (580)	5/8 EHS	4240.00	42399.99	13385.40	25440.00	1.000	1.901 ✓
	156.42 (B) (581)	5/8 EHS	4240.00	42399.99	13568.20	25440.00	1.000	1.875 ✓
	156.42 (C) (574)	5/8 EHS	4240.00	42399.99	13567.90	25440.00	1.000	1.875 ✓
	156.42 (C) (575)	5/8 EHS	4240.00	42399.99	13377.80	25440.00	1.000	1.902 ✓
	T4	120.38 (A) (604)	9/16 EHS	3500.00	35000.04	10046.30	21000.00	1.000
120.38 (A) (605)		9/16 EHS	3500.00	35000.04	9951.30	21000.00	1.000	2.110 ✓
120.38 (B) (598)		9/16 EHS	3500.00	35000.04	9857.60	21000.00	1.000	2.130 ✓
120.38 (B) (599)		9/16 EHS	3500.00	35000.04	10127.10	21000.00	1.000	2.074 ✓
120.38 (C) (592)		9/16 EHS	3500.00	35000.04	10112.90	21000.00	1.000	2.077 ✓
120.38 (C) (593)		9/16 EHS	3500.00	35000.04	9955.00	21000.00	1.000	2.109 ✓
T7		60.38 (A) (612)	9/16 EHS	3500.00	35000.04	11063.30	21000.00	1.000
	60.38 (B) (611)	9/16 EHS	3500.00	35000.04	11059.10	21000.00	1.000	1.899 ✓
	60.38 (C) (610)	9/16 EHS	3500.00	35000.04	11059.60	21000.00	1.000	1.899 ✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	P2.5x.203	10.00	3.08	39.1 K=1.00	1.7040	1.00	-17240.20	74612.80	0.231 ¹ ✓
T2	180 - 160	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-28157.10	73859.50	0.381 ¹ ✓
T3	160 - 140	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-42516.40	73859.50	0.576 ¹ ✓
T4	140 - 120	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-62298.70	73859.50	0.843 ¹ ✓
T5	120 - 100	P2.5x.203	20.00	3.21	40.6	1.7040	0.99	-59145.40	73341.00	0.806 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	Mast Stability Index	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T6	100 - 80	P2.5x.203	20.00	3.21	K=1.00 40.6	1.7040	0.98	-56762.20	72731.70	0.780 ¹
T7	80 - 60	P2.5x.203	20.00	3.21	K=1.00 40.6	1.7040	0.98	-60190.30	72707.10	0.828 ¹
T8	60 - 40	P2.5x.203	20.00	3.21	K=1.00 40.6	1.7040	0.98	-66971.10	72641.30	0.922 ¹
T9	40 - 20	P2.5x.203	20.00	3.21	K=1.00 40.6	1.7040	0.98	-69813.40	72645.50	0.961 ¹
T10	20 - 0	P2.5x.203	20.00	3.21	K=1.00 40.6	1.7040	0.98	-69809.90	72637.80	0.961 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5742.27	11503.00	0.499 ¹
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5529.91	11503.00	0.481 ¹
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-6741.47	11503.00	0.586 ¹
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4910.12	11503.00	0.427 ¹
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4416.74	11503.00	0.384 ¹
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4096.57	11503.00	0.356 ¹
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3914.36	11503.00	0.340 ¹
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3932.28	11503.00	0.342 ¹
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4166.33	11503.00	0.362 ¹
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3961.01	11503.00	0.344 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3093.20	11503.00	0.269 ¹
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2243.05	11503.00	0.195 ¹
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3782.64	11503.00	0.329 ¹
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2070.39	11503.00	0.180 ¹
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2255.56	11503.00	0.196 ¹
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1865.36	11503.00	0.162 ¹
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1925.45	11503.00	0.167 ¹
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2311.20	11503.00	0.201 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3039.82	11503.00	0.264 ¹
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4384.51	11503.00	0.381 ¹
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2620.45	11503.00	0.228 ¹
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4949.38	11503.00	0.430 ¹
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2368.53	11503.00	0.206 ¹
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1983.06	11503.00	0.172 ¹
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2360.65	11503.00	0.205 ¹
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1990.02	11503.00	0.173 ¹
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-484.78	11503.00	0.042 ¹

¹ P_u / φP_n controls

Top Guy Pull-Off Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 3/4x1 3/4x3/16	3.50	3.26	113.9 K=1.00	0.6211	-3161.97	10162.50	0.311 ¹ ✓
T3	160 - 140	L2x2x5/16	3.50	3.26	100.3 K=1.00	1.1500	-6050.47	21935.30	0.276 ¹ ✓
T4	140 - 120	L2x2x5/16	3.50	3.26	100.3 K=1.00	1.1500	-7570.72	21935.30	0.345 ¹ ✓
T7	80 - 60	L1 3/4x1 3/4x3/16	3.50	3.26	113.9 K=1.00	0.6211	-1741.87	10162.50	0.171 ¹ ✓

¹ P_u / φP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	160 - 140 (578)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8943.86	36439.50	0.245 ¹ ✓
T3	160 - 140 (579)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8931.87	36439.50	0.245 ¹ ✓
T3	160 - 140 (584)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8869.41	36439.50	0.243 ¹ ✓
T3	160 - 140 (585)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8861.07	36439.50	0.243 ¹ ✓
T3	160 - 140 (590)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-9043.88	36439.50	0.248 ¹ ✓
T3	160 - 140 (591)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-9023.52	36439.50	0.248 ¹ ✓
T4	140 - 120 (596)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-7895.68	36439.50	0.217 ¹ ✓
T4	140 - 120 (597)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-7884.48	36439.50	0.216 ¹ ✓
T4	140 - 120 (602)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-7763.82	36439.50	0.213 ¹ ✓
T4	140 - 120 (603)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-7757.12	36439.50	0.213 ¹ ✓
T4	140 - 120 (608)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8078.51	36439.50	0.222 ¹ ✓
T4	140 - 120 (609)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8074.10	36439.50	0.222 ¹ ✓

¹ P_u / φP_n controls

Tension Checks

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Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$ ¹
T1	190 - 180	P2.5x.203	10.00	3.08	39.1	1.7040	0.99	84350.50	0.000 ¹
T2	180 - 160	P2.5x.203	20.00	3.21	40.6	1.7040	8227.64	84350.50	0.098 ¹
T3	160 - 140	P2.5x.203	20.00	3.21	40.6	1.7040	8226.82	84350.50	0.098 ¹
T4	140 - 120	P2.5x.203	20.00	3.21	40.6	1.7040	28.67	84350.50	0.000 ¹

* DL controls

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$ ¹
T1	190 - 180	5/8	4.66	4.35	333.7	0.3068	4367.87	9940.20	0.439 ¹
T2	180 - 160	5/8	4.75	4.42	339.7	0.3068	8651.36	9940.20	0.870 ¹
T3	160 - 140	5/8	4.75	4.42	339.7	0.3068	4768.97	9940.20	0.480 ¹
T4	140 - 120	5/8	4.75	4.42	339.7	0.3068	5079.66	9940.20	0.511 ¹
T5	120 - 100	5/8	4.75	4.42	339.7	0.3068	6695.57	9940.20	0.674 ¹
T6	100 - 80	5/8	4.75	4.42	339.7	0.3068	3982.44	9940.20	0.401 ¹
T7	80 - 60	5/8	4.75	4.42	339.7	0.3068	4403.52	9940.20	0.443 ¹
T8	60 - 40	5/8	4.75	4.42	339.7	0.3068	4711.65	9940.20	0.474 ¹
T9	40 - 20	5/8	4.75	4.42	339.7	0.3068	3091.33	9940.20	0.311 ¹
T10	20 - 0	5/8	4.75	4.42	339.7	0.3068	4041.99	9940.20	0.407 ¹

¹ P_u / φP_n controls

Horizontal Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	298.61	17085.90	0.017 ¹
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	487.70	17085.90	0.029 ¹
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	736.41	17085.90	0.043 ¹
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1079.04	17085.90	0.063 ¹
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1024.43	17085.90	0.060 ¹
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	983.15	17085.90	0.058 ¹
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1042.53	17085.90	0.061 ¹
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1159.97	17085.90	0.068 ¹
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1209.20	17085.90	0.071 ¹
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1209.14	17085.90	0.071 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	657.30	17085.90	0.038 ¹
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	889.84	17085.90	0.052 ¹

¹ P_u / φP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 3/4x1 3/4x3/16	3.50	3.26	72.9	0.6211	1587.47	20123.40	0.079 ¹
T3	160 - 140	L2x2x5/16	3.50	3.26	65.1	0.6574	1083.94	28597.90	0.038 ¹
T7	80 - 60	L1 3/4x1 3/4x3/16	3.50	3.26	72.9	0.6211	3186.83	20123.40	0.158 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
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¹ P_u / φP_n controls

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	160 - 140 (576)	L3x3x1/4	4.75	4.59	59.2	0.9159	12389.30	39843.30	0.311 ¹ ✓
T3	160 - 140 (577)	L3x3x1/4	4.75	4.59	59.2	0.9159	12532.80	39843.30	0.315 ¹ ✓
T3	160 - 140 (582)	L3x3x1/4	4.75	4.59	59.2	0.9159	12579.90	39843.30	0.316 ¹ ✓
T3	160 - 140 (583)	L3x3x1/4	4.75	4.59	59.2	0.9159	12368.90	39843.30	0.310 ¹ ✓
T3	160 - 140 (588)	L3x3x1/4	4.75	4.59	59.2	0.9159	12297.80	39843.30	0.309 ¹ ✓
T3	160 - 140 (589)	L3x3x1/4	4.75	4.59	59.2	0.9159	12652.40	39843.30	0.318 ¹ ✓
T4	140 - 120 (594)	L3x3x1/4	4.75	4.59	59.2	0.9159	8039.64	39843.30	0.202 ¹ ✓
T4	140 - 120 (595)	L3x3x1/4	4.75	4.59	59.2	0.9159	8101.29	39843.30	0.203 ¹ ✓
T4	140 - 120 (600)	L3x3x1/4	4.75	4.59	59.2	0.9159	8017.93	39843.30	0.201 ¹ ✓
T4	140 - 120 (601)	L3x3x1/4	4.75	4.59	59.2	0.9159	8112.31	39843.30	0.204 ¹ ✓
T4	140 - 120 (606)	L3x3x1/4	4.75	4.59	59.2	0.9159	7983.94	39843.30	0.200 ¹ ✓
T4	140 - 120 (607)	L3x3x1/4	4.75	4.59	59.2	0.9159	8139.83	39843.30	0.204 ¹ ✓

¹ P_u / φP_n controls

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	160 - 140 (578)	L3x3x1/4	3.50	3.38	43.6	0.9159	2894.71	39843.30	0.073 ¹ ✓
T3	160 - 140 (579)	L3x3x1/4	3.50	3.38	43.6	0.9159	2900.20	39843.30	0.073 ¹ ✓
T3	160 - 140 (584)	L3x3x1/4	3.50	3.38	43.6	0.9159	2922.05	39843.30	0.073 ¹ ✓
T3	160 - 140 (585)	L3x3x1/4	3.50	3.38	43.6	0.9159	2934.18	39843.30	0.074 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio P _u / φP _n
T3	160 - 140 (590)	L3x3x1/4	3.50	3.38	43.6	0.9159	3000.56	39843.30	0.075 ¹ ✓
T3	160 - 140 (591)	L3x3x1/4	3.50	3.38	43.6	0.9159	3018.22	39843.30	0.076 ¹ ✓
T4	140 - 120 (596)	L3x3x1/4	3.50	3.38	43.6	0.9159	4960.74	39843.30	0.125 ¹ ✓
T4	140 - 120 (597)	L3x3x1/4	3.50	3.38	43.6	0.9159	4971.22	39843.30	0.125 ¹ ✓
T4	140 - 120 (602)	L3x3x1/4	3.50	3.38	43.6	0.9159	4896.29	39843.30	0.123 ¹ ✓
T4	140 - 120 (603)	L3x3x1/4	3.50	3.38	43.6	0.9159	4899.14	39843.30	0.123 ¹ ✓
T4	140 - 120 (608)	L3x3x1/4	3.50	3.38	43.6	0.9159	5116.38	39843.30	0.128 ¹ ✓
T4	140 - 120 (609)	L3x3x1/4	3.50	3.38	43.6	0.9159	5124.00	39843.30	0.129 ¹ ✓

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP _{allow} lb	% Capacity	Pass Fail
T1	190 - 180	Leg	P2.5x.203	1	-17240.20	74612.80	23.1	Pass
		Diagonal	5/8	31	4367.87	9940.20	43.9	Pass
		Horizontal	L1 1/2x1 1/2x3/16	17	-5742.27	11503.00	49.9	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	9	-3039.82	11503.00	26.4	Pass
		Guy A@189.625	9/16	615	12287.00	21000.00	58.5	Pass
		Guy B@189.625	9/16	614	12315.20	21000.00	58.6	Pass
		Guy C@189.625	9/16	613	12312.50	21000.00	58.6	Pass
		Top Guy Pull-Off@189.625	L1 3/4x1 3/4x3/16	5	-3161.97	10162.50	31.1	Pass
T2	180 - 160	Leg	P2.5x.203	34	-28157.10	73859.50	38.1	Pass
		Diagonal	5/8	47	8651.36	9940.20	87.0	Pass
		Horizontal	L1 1/2x1 1/2x3/16	51	-5529.91	11503.00	48.1	Pass
		Top Girt	L1 1/2x1 1/2x3/16	38	-3093.20	11503.00	26.9	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	41	-4384.51	11503.00	38.1	Pass
		Leg	P2.5x.203	94	-42516.40	73859.50	57.6	Pass
T3	160 - 140	Diagonal	5/8	142	4768.97	9940.20	48.0	Pass
		Horizontal	L1 1/2x1 1/2x3/16	146	-6741.47	11503.00	58.6	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	101	-2620.45	11503.00	22.8	Pass
		Guy A@156.417	5/8	587	13372.00	25440.00	52.6	Pass
		Guy B@156.417	5/8	581	13568.20	25440.00	53.3	Pass
		Guy C@156.417	5/8	574	13567.90	25440.00	53.3	Pass
		Top Guy Pull-Off@156.417	L2x2x5/16	97	-6050.47	21935.30	27.6	Pass
		Torque Arm Top@156.417	L3x3x1/4	589	12652.40	39843.30	31.8	Pass
		Torque Arm Bottom@156.417	L3x3x1/4	590	-9043.88	36439.50	24.8	Pass
		Leg	P2.5x.203	154	-62298.70	73859.50	84.3	Pass
		Diagonal	5/8	176	5079.66	9940.20	51.1	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail	
		Horizontal	L1 1/2x1 1/2x3/16	179	-4910.12	11503.00	42.7	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	157	-2243.05	11503.00	19.5	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	161	-4949.38	11503.00	43.0	Pass	
		Guy A@120.375	9/16	604	10046.30	21000.00	47.8	Pass	
		Guy B@120.375	9/16	599	10127.10	21000.00	48.2	Pass	
		Guy C@120.375	9/16	592	10112.90	21000.00	48.2	Pass	
		Top Guy	L2x2x5/16	171	-7570.72	21935.30	34.5	Pass	
		Pull-Off@120.375							
		Torque Arm	L3x3x1/4	607	8139.83	39843.30	20.4	Pass	
		Top@120.375					23.1 (b)		
		Torque Arm	L3x3x1/4	608	-8078.51	36439.50	22.2	Pass	
		Bottom@120.375					22.6 (b)		
T5	120 - 100	Leg	P2.5x.203	216	-59145.40	73341.00	80.6	Pass	
		Diagonal	5/8	271	6695.57	9940.20	67.4	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	266	-4416.74	11503.00	38.4	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	217	-3782.64	11503.00	32.9	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	221	-2368.53	11503.00	20.6	Pass	
T6	100 - 80	Leg	P2.5x.203	276	-56762.20	72731.70	78.0	Pass	
		Diagonal	5/8	331	3982.44	9940.20	40.1	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	289	-4096.57	11503.00	35.6	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	277	-2070.39	11503.00	18.0	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	281	-1983.06	11503.00	17.2	Pass	
T7	80 - 60	Leg	P2.5x.203	335	-60190.30	72707.10	82.8	Pass	
		Diagonal	5/8	344	4403.52	9940.20	44.3	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	385	-3914.36	11503.00	34.0	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	337	-2255.56	11503.00	19.6	Pass	
		Guy A@60.375	9/16	612	11063.30	21000.00	52.7	Pass	
		Guy B@60.375	9/16	611	11059.10	21000.00	52.7	Pass	
		Guy C@60.375	9/16	610	11059.60	21000.00	52.7	Pass	
		Top Guy	L1 3/4x1 3/4x3/16	341	-1741.87	10162.50	17.1	Pass	
		Pull-Off@60.375							
T8	60 - 40	Leg	P2.5x.203	395	-66971.10	72641.30	92.2	Pass	
		Diagonal	5/8	451	4711.65	9940.20	47.4	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	409	-3932.28	11503.00	34.2	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	397	-1865.36	11503.00	16.2	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	401	-2360.65	11503.00	20.5	Pass	
T9	40 - 20	Leg	P2.5x.203	456	-69813.40	72645.50	96.1	Pass	
		Diagonal	5/8	463	3091.33	9940.20	31.1	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	507	-4166.33	11503.00	36.2	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	457	-1925.45	11503.00	16.7	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	461	-1990.02	11503.00	17.3	Pass	
T10	20 - 0	Leg	P2.5x.203	516	-69809.90	72637.80	96.1	Pass	
		Diagonal	5/8	524	4041.99	9940.20	40.7	Pass	
		Horizontal	L1 1/2x1 1/2x3/16	565	-3961.01	11503.00	34.4	Pass	
		Top Girt	L1 1/2x1 1/2x3/16	517	-2311.20	11503.00	20.1	Pass	
		Bottom Girt	L1 1/2x1 1/2x3/16	520	889.84	17085.90	5.2	Pass	
							Summary		
							Leg (T10)	96.1	Pass
							Diagonal (T2)	87.0	Pass
							Horizontal (T3)	58.6	Pass
							Top Girt (T5)	32.9	Pass
							Bottom Girt (T4)	43.0	Pass
							Guy A (T1)	58.5	Pass
							Guy B (T1)	58.6	Pass
							Guy C (T1)	58.6	Pass
							Top Guy	34.5	Pass
							Pull-Off		

RISATower

Phone:
FAX:

Job	117-23243.5	Page	49 of 49
Project	Eastford, CT	Date	21:49:26 12/28/17
Client	CDT	Designed by	FAN

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P lb</i>	ϕP_{allow} <i>lb</i>	<i>% Capacity</i>	<i>Pass Fail</i>
						(T4)		
						Torque Arm Top (T3)	35.9	Pass
						Torque Arm Bottom (T3)	25.3	Pass
						Bolt Checks	35.9	Pass
						RATING =	96.1	Pass

Site Name: **Eastford, CT**
 Engineering Number: **117-23243.5**
 Date: **12/28/17**

Design Base Loads (Factored) per TIA-222-G

Foundation Mapped:	N			
Moment (M_u):	0.0	k-ft	Concrete Compressive Strength (f'_c):	3000 psi
Shear/Leg (V_u):	3.0	k	Vertical Steel Rebar Size #:	5
Compression/Leg (P_u):	202.2	k	Vertical Steel Rebar Area:	0.31 in ²
Uplift/Leg (T_u):	0.0	k	# of Vertical Steel Rebars:	8
Tower Type (GT / SST):	GT		Vertical Steel Rebar Yield Strength (F_y):	60 ksi
Diameter of Prismatic Portion of Pier (d):	2.0	ft	Tie / Stirrup Size #:	4
Depth to Base of Foundation:	4.5	ft	Tie / Stirrup Area:	0.20 in ²
Pier Height Above Ground (h):	1.00	ft	Tie / Stirrup Spacing:	10.0 in
Length / Width of Pad (w):	5.5	ft	Tie / Stirrup Steel Yield Strength (F_y):	40 ksi
Thickness of Pad (t):	1.5	ft	Rebar Cage Diameter:	16.0 in
Depth Below Ground Surface to Water Table (w):	20.0	ft	Bending/Tension Reduction Factor (ϕ_B):	0.90
Unit Weight of Concrete:	150.0	pcf	Shear Reduction Factor (ϕ_V):	0.75
Unit Weight of Water:	62.4	pcf	Compression Reduction Factor (ϕ_V):	0.65
Unit Weight of Soil Above Water Table:	120.0	pcf	Steel Elastic Modulus:	29000 ksi
Unit Weight of Soil Below Water Table:	65.0	pcf	Pad Steel Rebar Size #:	5
Friction Angle of Uplift from Top of Pad:	33	Degrees	Pad Steel Rebar Area:	0.31 in ²
Friction Angle of Uplift from Base of Pad:	33	Degrees	Pad Steel Rebar Yield Strength (F_y):	60 ksi
Uplift Angle Started at Top or Base of Pad (T/B):	T		# of Rebar in Top of Pad:	0
Ultimate Skin Friction:	0	psf	# of Rebar in Base of Pad:	10
Ultimate Compressive Bearing Pressure:	12000	psf	Pad Clear Cover:	3 in
Capacity Increase (Due to Transient Loads):	1.00			
Bearing Strength Reduction Factor (ϕ_s):	0.60			
Uplift Strength Reduction Factor (ϕ_s):	0.75			

Axial Capacities and Design Moment

Weight of Concrete (Bouyancy Considered):	8.7 k
Weight of Soil (Bouyancy Considered):	19.3 k
Ultimate Skin Friction Resistance:	0.0 k
Controlling Failure Mode (Top / Base):	Top

Nominal Uplift Capacity per Leg ($\phi_s T_n$):	21.0 k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	217.8 k
P_u :	204.8 k
$T_u / \phi_s T_n$:	0.00 Result: OK
$P_u / \phi_s P_n$:	0.94 Result: OK

Depth (ft)		Ultimate Lateral Bearing Pressure (psf)	Increment (psf/ft)	γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)
Top	Bottom					
0.0	0.5	0.0	115.0	115	0	0
0.5	3.0	179.6	359.3	115	0	31

Inflection Point (Below Ground Surface):	2.9 ft
Factored Design Moment At Inflection Point (M_u):	7.0 k-ft

Pad Strength Capacity

β :	0.85 ACI318-05 - 10.2.7.3
Lower Pad Flexural Reinforcement Ratio:	0.0033 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0000 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Flexural Reinforcement Spacing:	7 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Flexural Reinforcement Spacing:	0 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
One Way Design Shear (V_u):	19.5 k
One Way Shear Capacity (ϕV_c):	81.2 k - ACI318-05 - 11.3.1.1
$V_u / \phi V_c$:	0.24 Result: OK
Punching Design Shear (V_u):	147.1 k
Nominal Punching Shear Capacity ($\phi_c V_n$):	293.3 k - ACI318-05 - 11.12.2.1
$V_u / \phi V_c$:	0.50 Result: OK
Flexural Loading Due to Soil Pressure (M_u):	56.9 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	197.2 k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.29 Result: OK
Flexural Loading Due to Uplift (M_u):	0.0 k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	0.0 k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.00 Result: OK

Pier Strength Capacity

Design Moment (M_u):	7.0 k-ft
Nominal Moment Capacity ($\phi_B M_n$):	88.9 k-ft - ACI318-05 - 10.2
$M_u / \phi_B M_n$:	0.08 Result: OK
Design Shear (V_u):	3.0 k
Nominal Shear Capacity ($\phi_V V_n$):	67.9 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u / \phi_V V_n$:	0.04 Result: OK
Design Tension (T_u):	0.0 k
Nominal Tension Capacity ($\phi_T T_n$):	133.9 k - ACI318-05 - 10.2
$T_u / \phi_T T_n$:	0.00 Result: OK
Design Compression (P_u):	202.2 k
Nominal Compression Capacity ($\phi_P P_n$):	596.6 k - ACI318-05 - 10.3.6.2
$P_u / \phi_P P_n$:	0.34 Result: OK
Pier Reinforcement Ratio:	0.005 Reinforcement Ratio is Satisfactory - ACI318-05 - 10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$:	0.08 Result: OK

Site Name: **Eastford, CT**
 Engineering Number: **117-23243.5**
 Date: **12/28/17**

Program Last Updated: 8/8/2011

Design Standard per TIA-222-G

Anchor Radius:	150.0	ft		
Uplift (Factored - P_u):	44.8	k		
Shear (Factored - V_u):	51.9	k		
Berm Present:	N			
Design Anchor Rod:	Y			
Mapped Foundation:	N			
Anchor Base Depth (d):	8.0	ft		
Width of Anchor (W):	5.5	ft		
Length of Anchor (L):	11.5	ft		
Thickness of Anchor (t):	2.0	ft		
Depth Below Ground Surface to Water Table (w):	20.0	ft		
Soil Uplift at Base / Top of Anchor (B/T):	T		Anchor Angle:	40.8 Degrees
Unit Weight of Concrete:	150.0	pcf	Anchor Shaft Length:	15.0 ft
Unit Weight of Soil Above Water Table:	120.0	pcf	Min. Anchor Depth:	8.3 ft
Unit Weight of Water:	62.4	pcf	Max. Anchor Depth:	9.8 ft
Submerged Soil Unit Weight:	65.0	pcf		
Internal Angle of Friction:	36	Degrees		
Cohesion:	0	psf		
Ultimate Skin Friction of Pad Sides to Soil:	0	psf		
Ultimate Coefficient of Shear Friction:	0.45			
Maximum Top Conical Failure Angle:	31	Degrees		
Maximum Base Conical Failure Angle:	31	Degrees		
Uplift Strength Reduction Factor (ϕ_u):	0.75			
Shear Strength Reduction Factor (ϕ_v):	0.75			
Concrete Uplift Strength Reduction Factor (ϕ_c):	0.90			

Uplift

Weight of Concrete (Buoyancy Effect Considered):	19.0	k
Weight of Soil (Buoyancy Effect Considered):	99.5	k
Ultimate Uplift Resistance from Skin Friction:	0.0	k
Nominal Factored Uplift Resistance ($\phi_u P_n$):	91.7	k
$P_u / \phi_u P_n$:	0.49	Result: OK

Shear

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	13.9	k
Passive Pressure:	3236	psf
Ultimate Passive Pressure Resistance:	74.4	k
Nominal Shear Resistance ($\phi_v V_n$):	66.3	k
$V_u / \phi_v V_n$:	0.78	Result: OK

Anchor Rod Capacity

Anchor Rod Type:	Solid Rod	Rod F_y :	48	ksi
Anchor Rod Gross Area:	2.41	in ²	Rod F_u :	62
Anchor Rod Net Area:	2.41	in ²	# of A.R.:	1
Resultant Tensile Load (T_u):	68.5	k	ϕ_y :	0.80
Anchor Rod Tensile Resistance (ϕT_n):	92.4	k	ϕ_t :	0.65
$T_u / \phi T_n$:	0.74	Result: OK		

Strength Analysis of Reinforced Concrete

Concrete Compressive Strength (f'_c):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	6
# Longitudinal Rebar (1 Side):	5
Rebar Size:	4
Strength Reduction Factor for Shear (ϕ_v):	0.75
Strength Reduction Factor for Flexure (ϕ_b):	0.9
Compression Zone Factor (β_1):	0.85
Area of Single Rebar:	0.20 in ²
One Way Shear due to Shear Load (V_u):	14.3 k
Nominal One Way Shear Capacity for Shear Load ($\phi_c V_n$):	122.3 k
$V_u/\phi_v V_n$:	0.12 Result: OK
One Way Shear due to Uplift (V_u):	19.1 k
Nominal One Way Shear Capacity for Uplift ($\phi_c V_n$):	108.4 k
$V_u/\phi_v V_n$:	0.18 Result: OK
Pad Flexure due to Shear Load (M_u):	74.6 k-ft
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	279.0 k-ft
Pad Flexure due to Uplift (M_u):	64.3 k-ft
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	107.9 k-ft
$M_u/\phi_b M_n$ (Max.):	0.60 Result: OK

PROJECT INFORMATION:

TOWER INFORMATION

LAT: 41.871400°
 LONG: -72.064400°
 SITE TYPE: 190' GUYED TOWER
 COUNTY: WINDHAM

APPLICANT

SPRINT
 6580 SPRINT PARKWAY
 OVERLAND PARK, KANSAS 66251
 CONTACT: TBD
 PHONE:
 EMAIL:

LANDLORD

CORDLESS DATA TRANSFER, INC.
 PO BOX 363
 MORLBOROUGH, CT 06647

A&E FIRM

RAMAKER & ASSOCIATES, INC.
 CONTACT: KEITH BOHSACK
 PROJECT MANAGER
 PHONE: (608) 643-4100
 EMAIL: KBOHSACK@RAMAKER.COM

SHEET INDEX:

SHEET #	SHEET DESCRIPTION	REVISION
T-1	COVER SHEET & SITE PLAN	2
A-1	ANTENNA LAYOUTS & EQUIPMENT LAYOUT	2
A-2	TOWER ELEVATION	2
A-3	ANTENNA DETAILS	-
A-4	ANTENNA SCHEDULE & DETAILS	2
A-5	FIBER PLUMBING DIAGRAM	-
A-6	CABLE COLOR CODING	-
E-1	DC POWER & FIBER DISTRIBUTION DETAIL	-

CODE COMPLIANCE:

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

- INTERNATIONAL BUILDING CODE
- ANSI/TIA-222 STRUCTURAL STANDARD FOR ANTENNA STRUCTURES
- NFPA 780 - LIGHTNING PROTECTION CODE
- NATIONAL ELECTRIC CODE



DO MACRO UPGRADE

**SITE CASCADE:
 CT33XC016**



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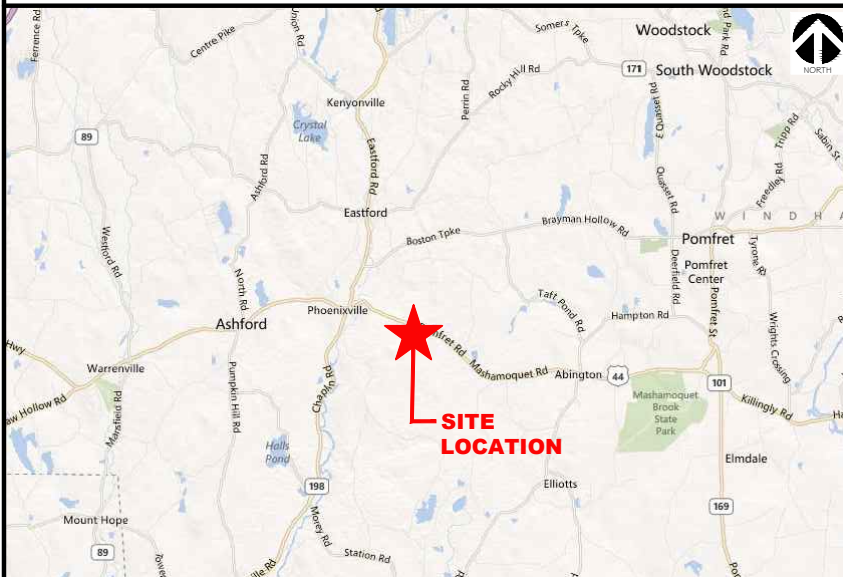
1280 RT. 46 WEST
 PARSIPPANY, NJ 07054
 Phone: 973-794-3633 Fax: 570-842-5592

Certification & Seal:
 I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.

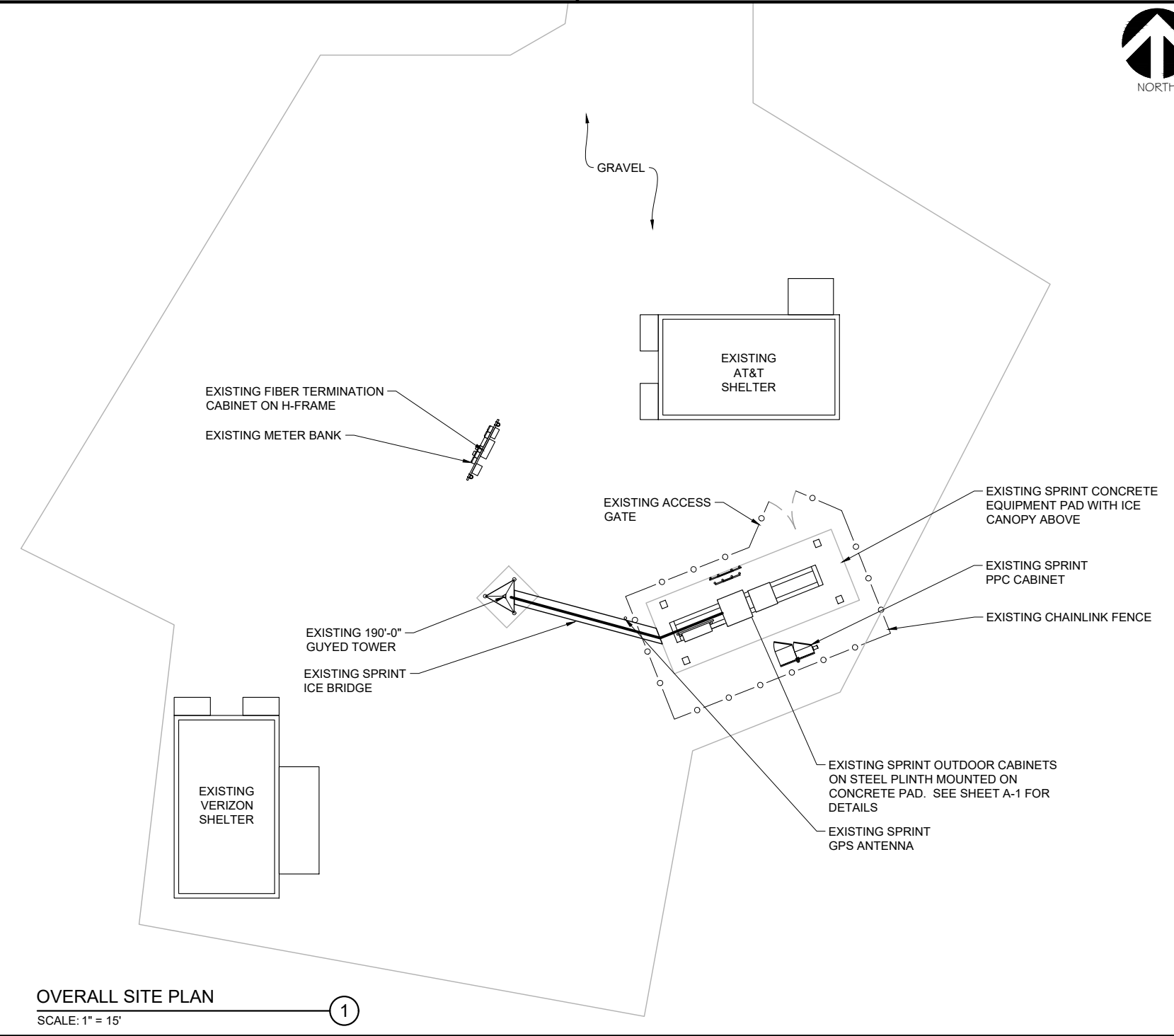
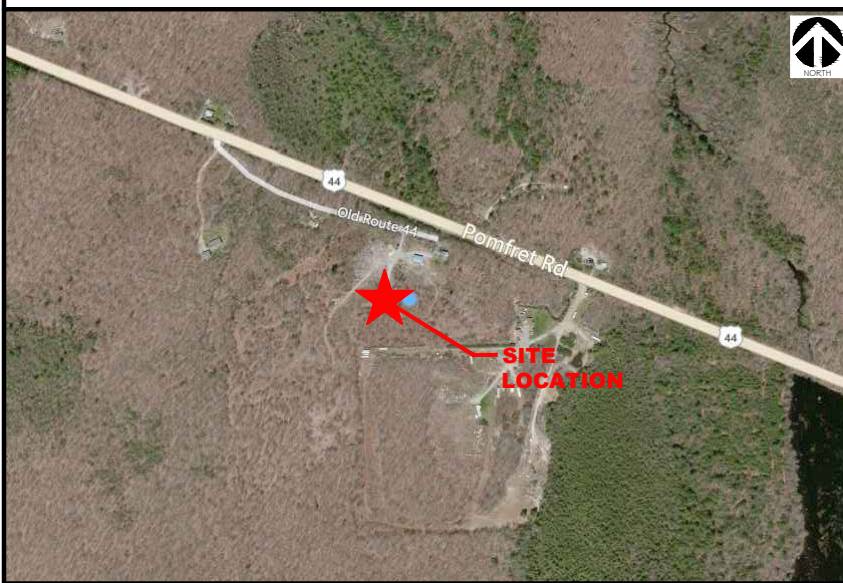


Signature: *James R. Skowronski* Date: 5/01/2018

VICINITY MAP:



AERIAL MAP:



OVERALL SITE PLAN
 SCALE: 1" = 15'

1

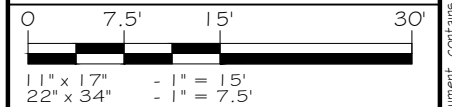


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2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

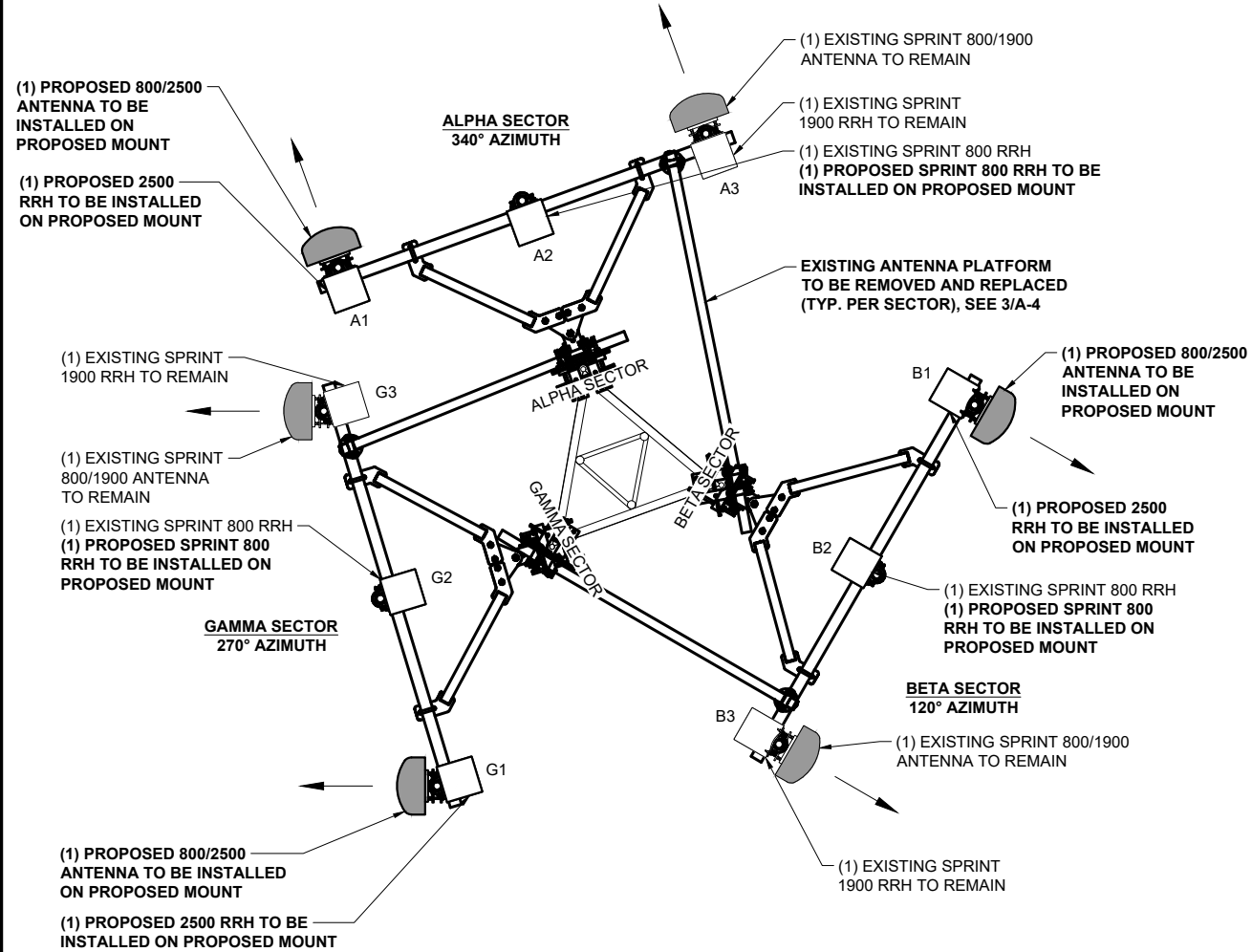
ISSUE PHASE: FINAL DATE ISSUED: 01/12/2018
 PROJECT TITLE:
CT33XC016

PROJECT INFORMATION:
 35 OLD ROUTE 44
 EASTFORD, CT 06242
 WINDHAM COUNTY

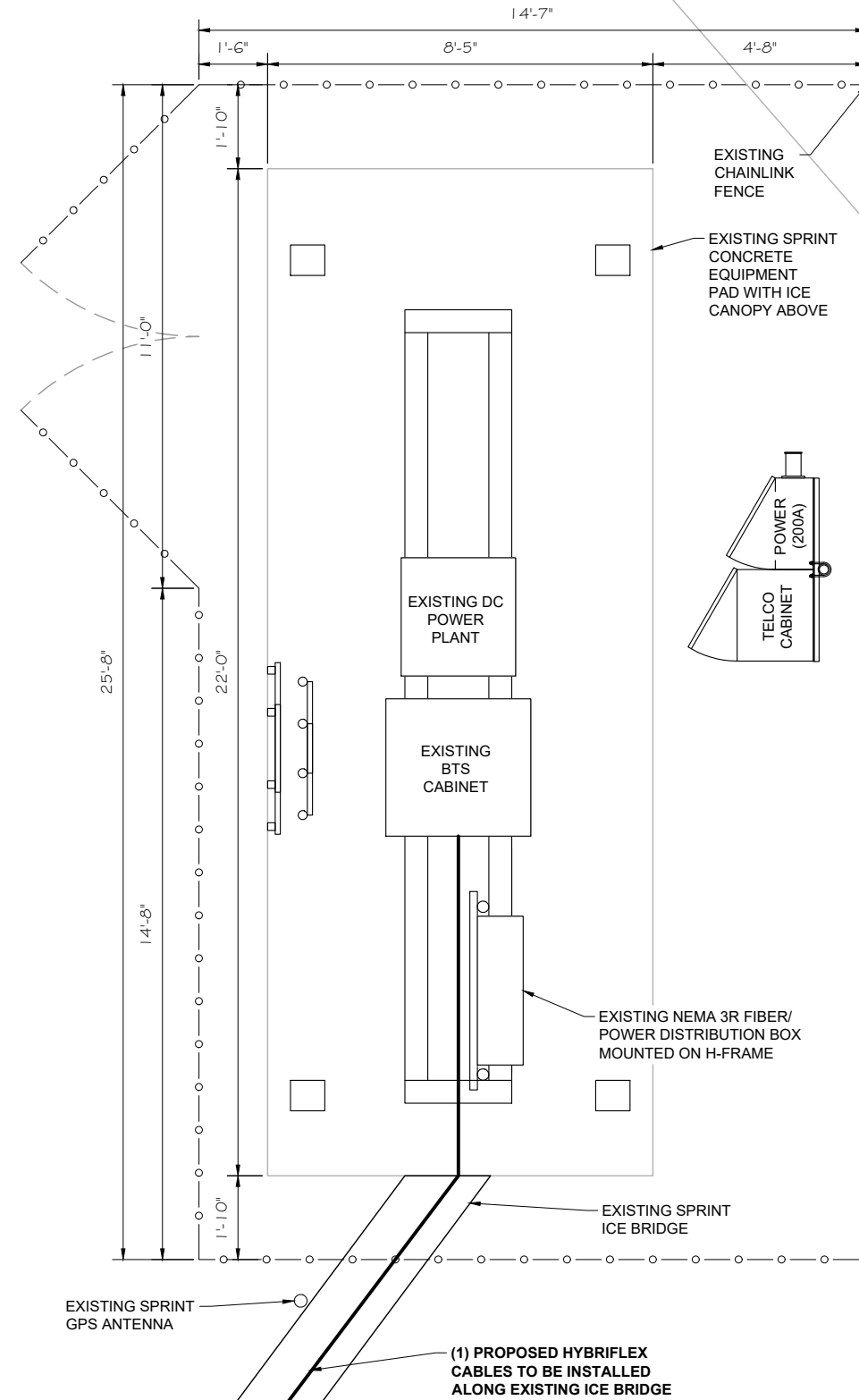
SHEET TITLE:
TITLE SHEET



PROJECT NUMBER: 22974
 SHEET NUMBER: T-1



ANTENNA PLAN
 SCALE: 1" = 3.75' 1



EQUIPMENT PLAN
 SCALE: 1" = 3.75' 2



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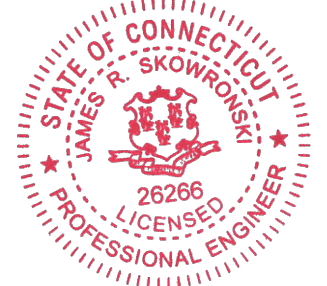


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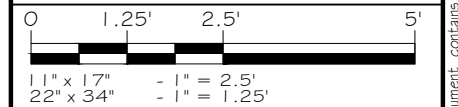
James R. Skowronski
 Signature: _____ Date: 5/01/2018

2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS
MARK	DATE	DESCRIPTION
ISSUE	FINAL	DATE ISSUED 01/12/2018

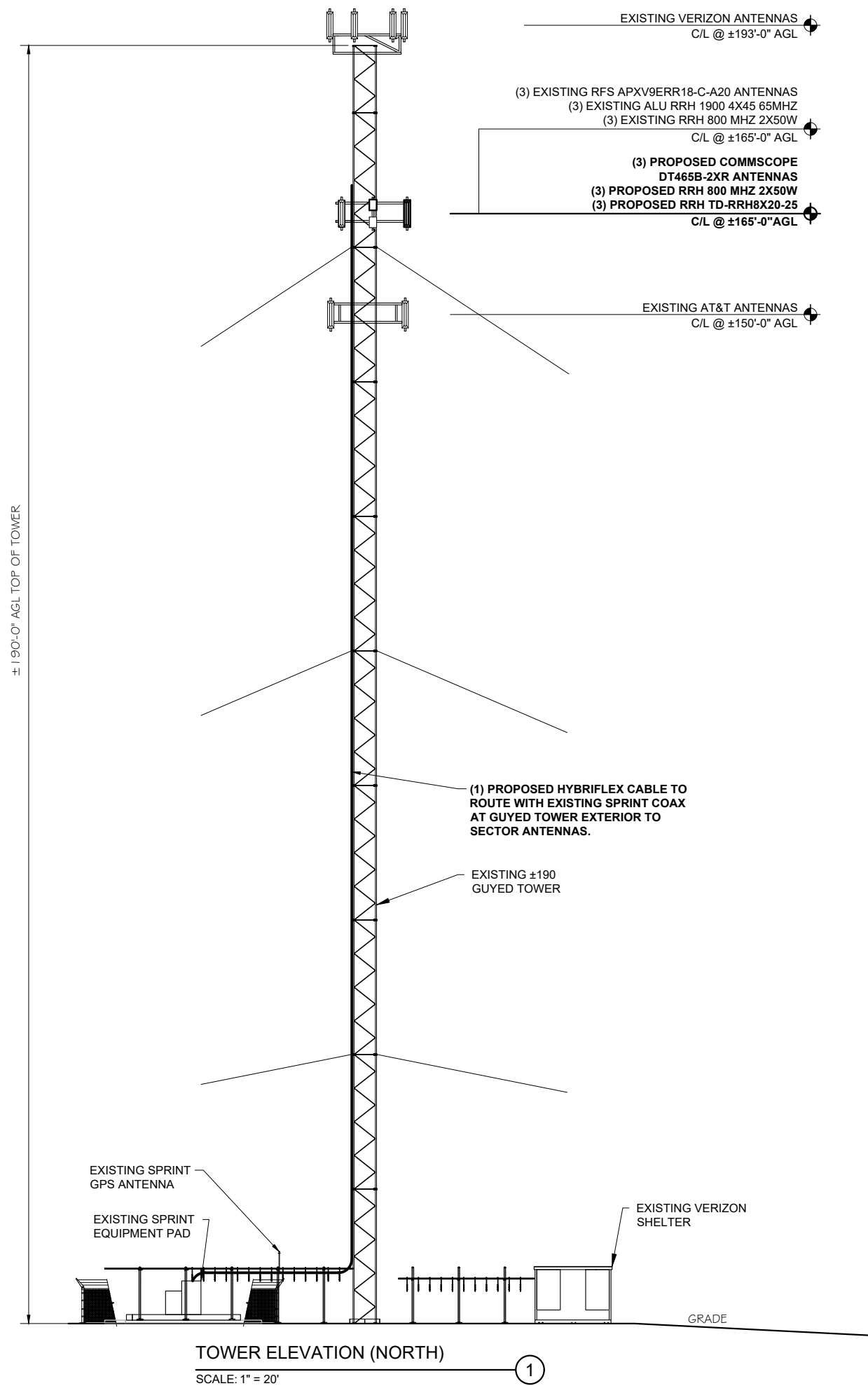
PROJECT TITLE:
CT33XC016

PROJECT INFORMATION:
 35 OLD ROUTE 44
 EASTFORD, CT 06242
 WINDHAM COUNTY

SHEET TITLE:
PROPOSED ANTENNA LAYOUT & EQUIPMENT LAYOUT



PROJECT NUMBER: 22974
 SHEET NUMBER: A-1



TOWER ELEVATION (NORTH)

SCALE: 1" = 20'

1



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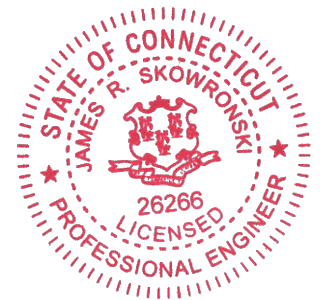


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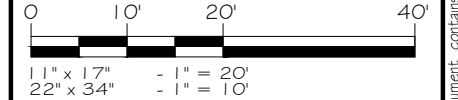
James R. Skowronski Signature: _____ Date: 5/01/2018

MARK	DATE	DESCRIPTION
2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS
ISSUE PHASE FINAL DATE ISSUED 01/12/2018		

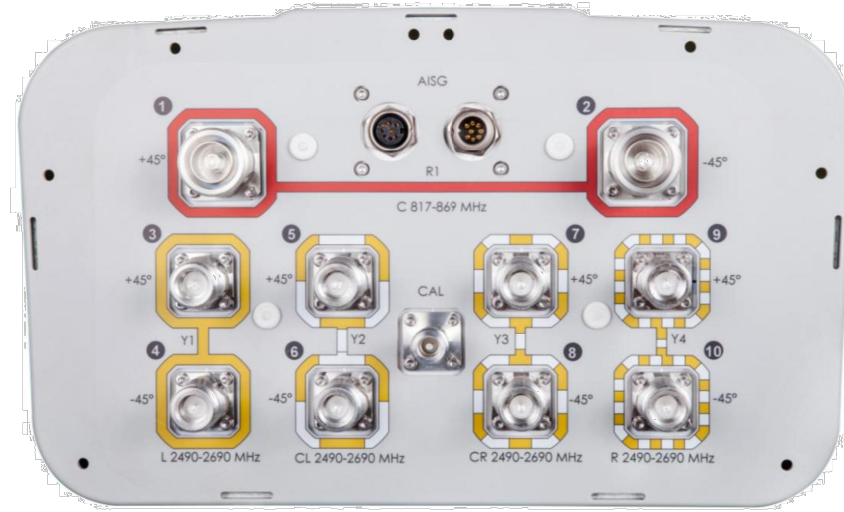
PROJECT TITLE:
CT33XCO16

PROJECT INFORMATION:
 35 OLD ROUTE 44
 EASTFORD, CT 06242
 WINDHAM COUNTY

SHEET TITLE:
TOWER ELEVATION



PROJECT NUMBER: 22974
 SHEET NUMBER: A-2



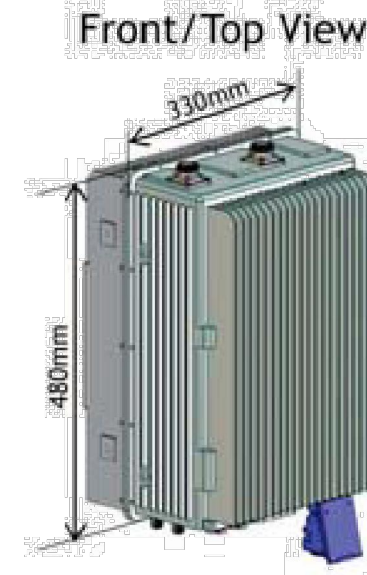
MECHANICAL	
DIMENSION (HxWxD)	72" x 13.8" x 8.2"
WEIGHT	58 lbs

COMMSCOPE ANTENNA MODEL # DT465B-2XR - ANTENNA SPECS



MECHANICAL	
DIMENSION (HxWxD)	26"x18.6"x6.7"
WEIGHT	76.2 lbs

ALU- TD-RRH8X20-25 - RADIO SPECS



MECHANICAL	
DIMENSION (HxWxD)	9" x 9" x 4"
WEIGHT	11 lbs

ALU- 800 MHz 2x50W - RADIO SPECS



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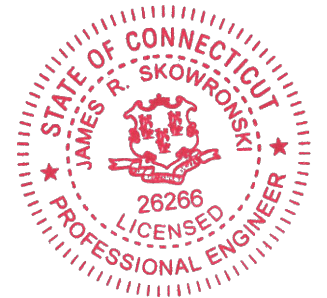


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James R. Skowronski Signature: _____ Date: 5/01/2018

MARK	DATE	DESCRIPTION
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1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL DATE ISSUED: 01/12/2018
 PROJECT TITLE:
CT33XC016

PROJECT INFORMATION:
 35 OLD ROUTE 44
 EASTFORD, CT 06242
 WINDHAM COUNTY

SHEET TITLE:
ANTENNA DETAILS

SCALE: NONE

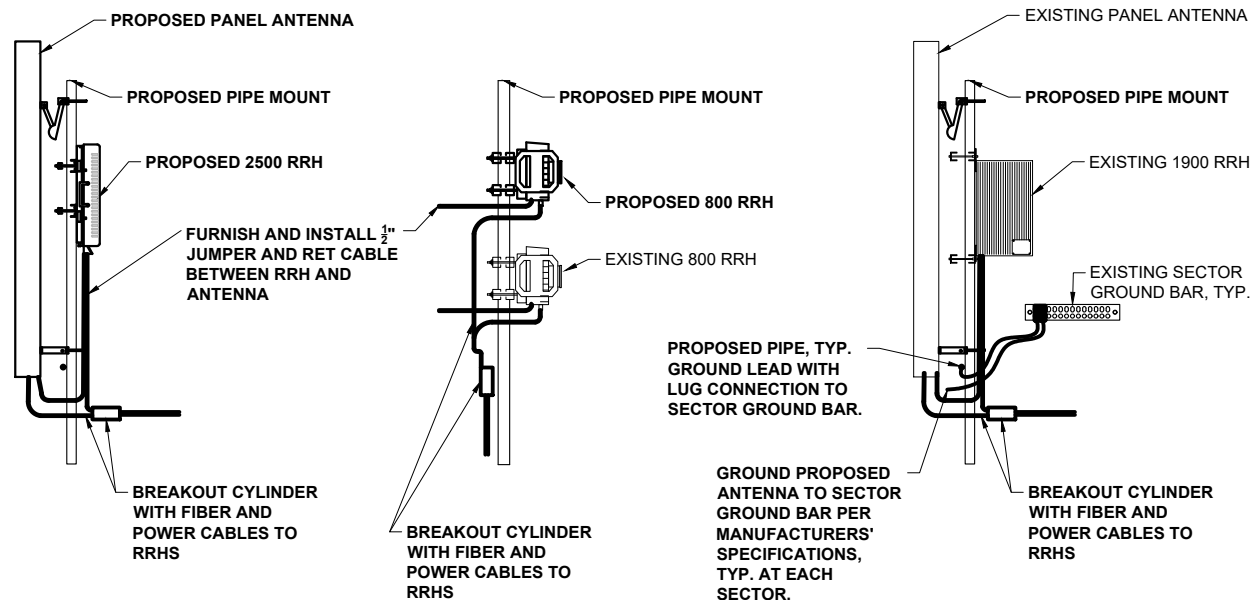
PROJECT NUMBER: 22974
 SHEET NUMBER: A-3

800/1900/2500 EQUIPMENT SCHEDULE								
SECTOR	POSITION	ANTENNA MAKE/MODEL	AZIMUTH	CENTERLINE	RRH	CABLE TYPE	CABLE LENGTH	JUMPER TYPE
ALPHA	1	PROPOSED COMMSCOPE DT465B-2XR	340°	165'-0"	(1) PROPOSED 2500 (TD-RRH8x20-25)	(1) PROPOSED HYBRIFLEX	215'-0"	8' HYBRID
	2	-	-	165'-0"	(1) PROPOSED RRH 800 MHz 2x50W	EXISTING HYBRIFLEX	215'-0"	EXISTING
					(1) EXISTING RRH 800 MHz 2x50W			
3	EXISTING RFS APXV9ERR18-C-A20	340°	165'-0"	(1) EXISTING RRH 1900 4X45 65 MHz				
BETA	1	PROPOSED COMMSCOPE DT465B-2XR	120°	165'-0"	(1) PROPOSED 2500 (TD-RRH8x20-25)	(1) PROPOSED HYBRIFLEX	215'-0"	8' HYBRID
	2	-	-	165'-0"	(1) PROPOSED RRH 800 MHz 2x50W	EXISTING HYBRIFLEX	215'-0"	EXISTING
					(1) EXISTING RRH 800 MHz 2x50W			
3	EXISTING RFS APXV9ERR18-C-A20	120°	165'-0"	(1) EXISTING RRH 1900 4X45 65 MHz				
GAMMA	1	PROPOSED COMMSCOPE DT465B-2XR	270°	165'-0"	(1) PROPOSED 2500 (TD-RRH8x20-25)	(1) PROPOSED HYBRIFLEX	215'-0"	8' HYBRID
	2	-	-	165'-0"	(1) PROPOSED RRH 800 MHz 2x50W	EXISTING HYBRIFLEX	215'-0"	EXISTING
					(1) EXISTING RRH 800 MHz 2x50W			
3	EXISTING RFS APXV9ERR18-C-A20	270°	165'-0"	(1) EXISTING RRH 1900 4X45 65 MHz				

EQUIPMENT & CABLE SCHEDULE

SCALE: NTS

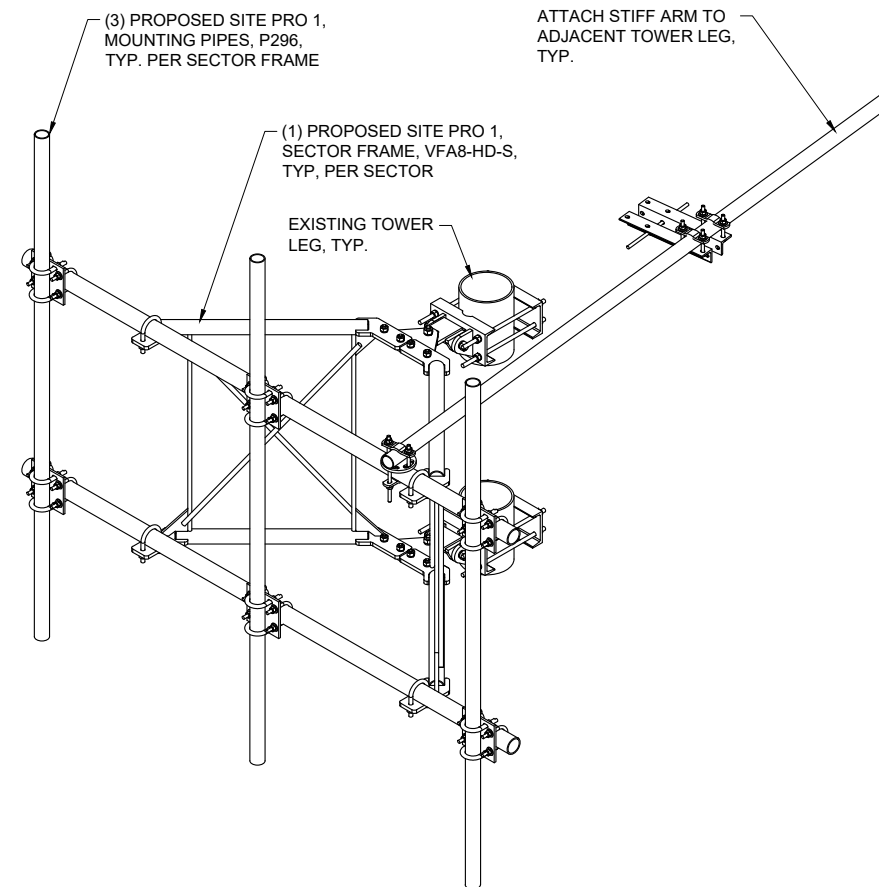
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ANTENNA & RRH MOUNTING DETAIL

SCALE: NTS

2



PROPOSED SECTOR FRAME DETAIL

SCALE: NTS

3



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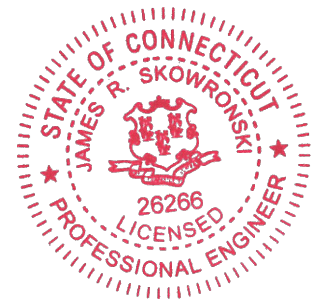


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Signature: *James R. Skowronski* Date: 5/01/2018

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1	04/11/18	REVISE SITE ADDRESS
MARK	DATE	DESCRIPTION
ISSUE	FINAL	DATE ISSUED 01/12/2018

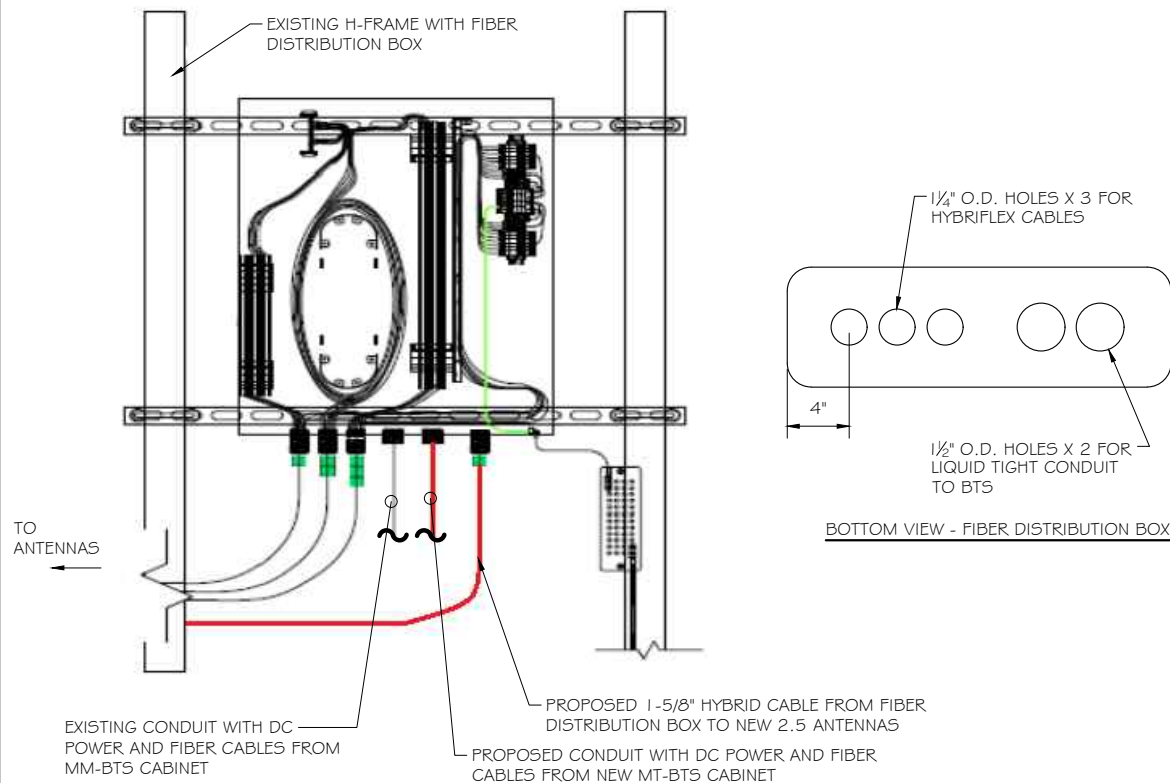
PROJECT TITLE:
 CT33XC016

PROJECT INFORMATION:
 35 OLD ROUTE 44
 EASTFORD, CT 06242
 WINDHAM COUNTY

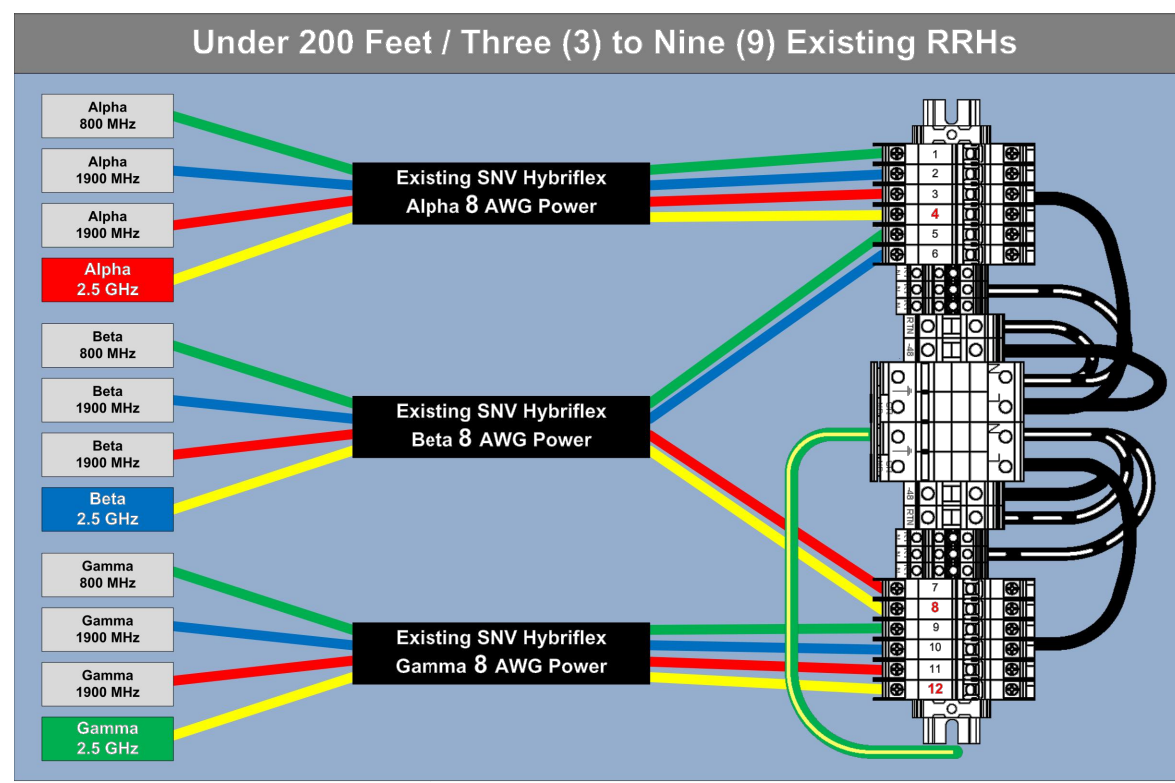
SHEET TITLE:
 ANTENNA SCHEDULE
 & DETAIL

SCALE: NONE

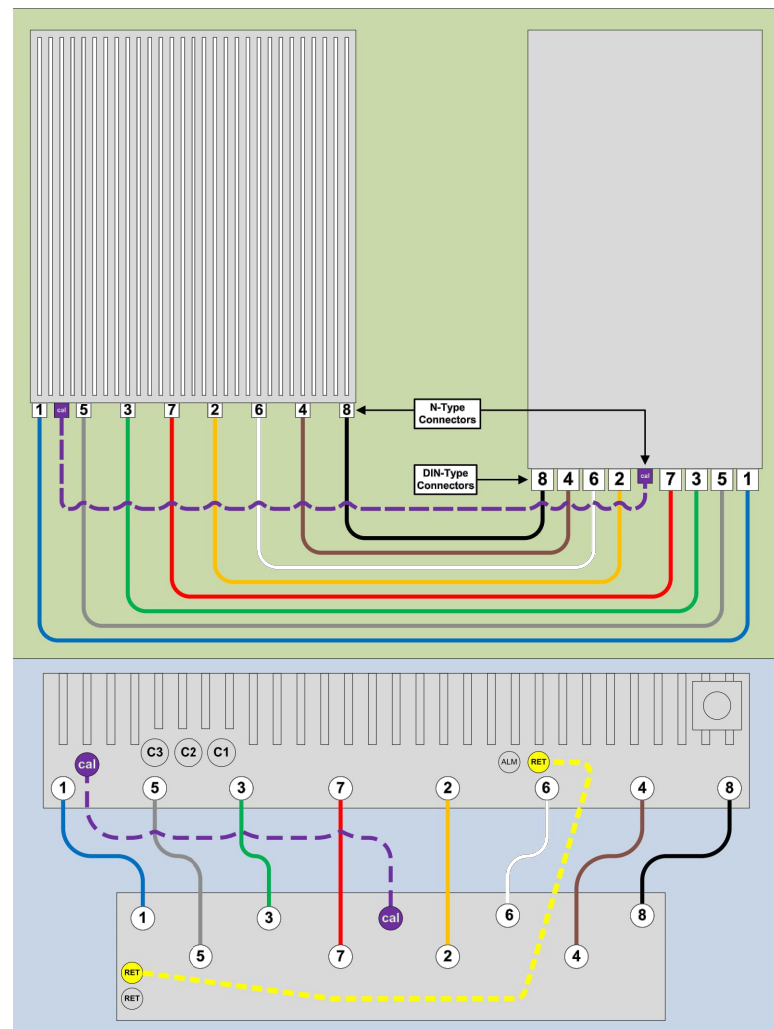
PROJECT NUMBER 22974
 SHEET NUMBER A-4



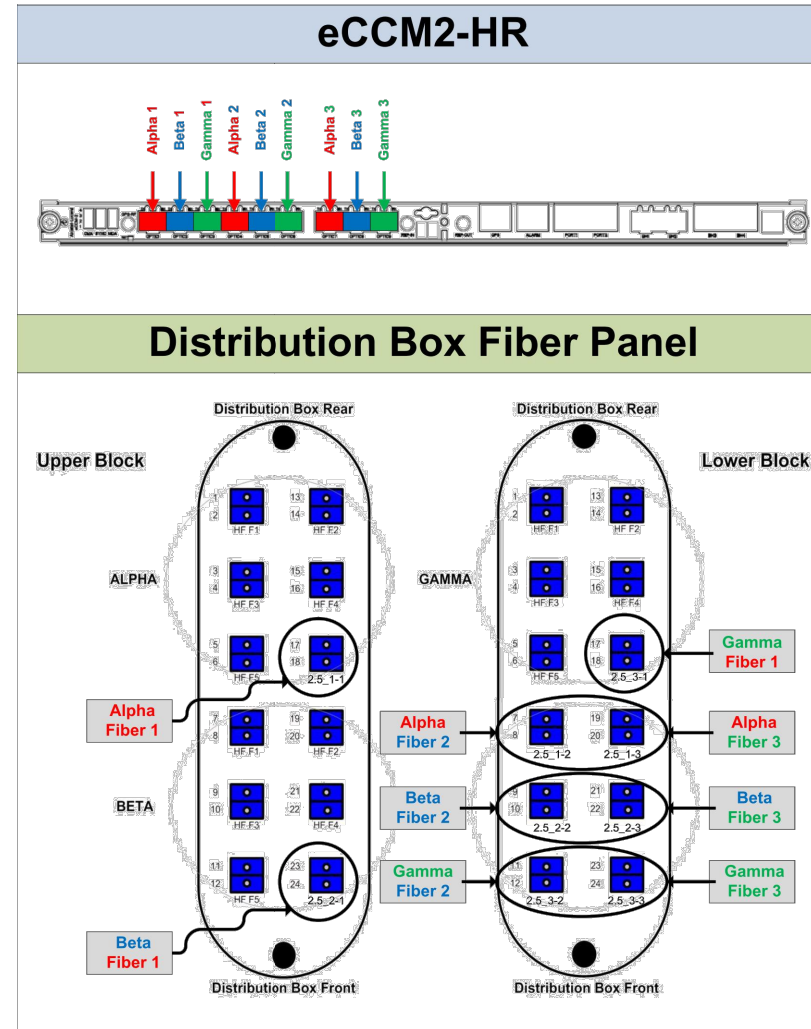
TYPICAL FIBER DISTRIBUTION BOX DETAIL
 SCALE: NTS



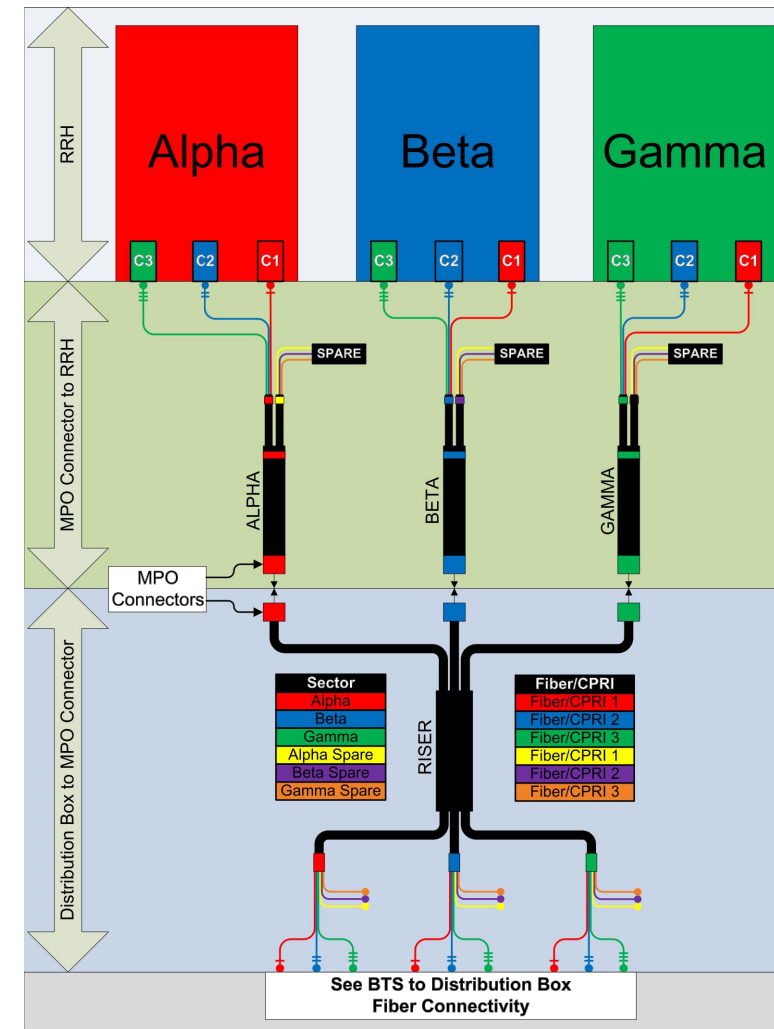
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY DETAIL
 SCALE: NTS



8T8R DETAIL
 SCALE: NTS



BTS TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL
 SCALE: NTS



RRH TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL
 SCALE: NTS



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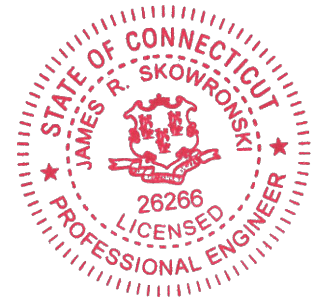


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MARK	DATE	DESCRIPTION
ISSUE PHASE	FINAL	DATE ISSUED 01/12/2018

PROJECT TITLE:
 CT33XCO16

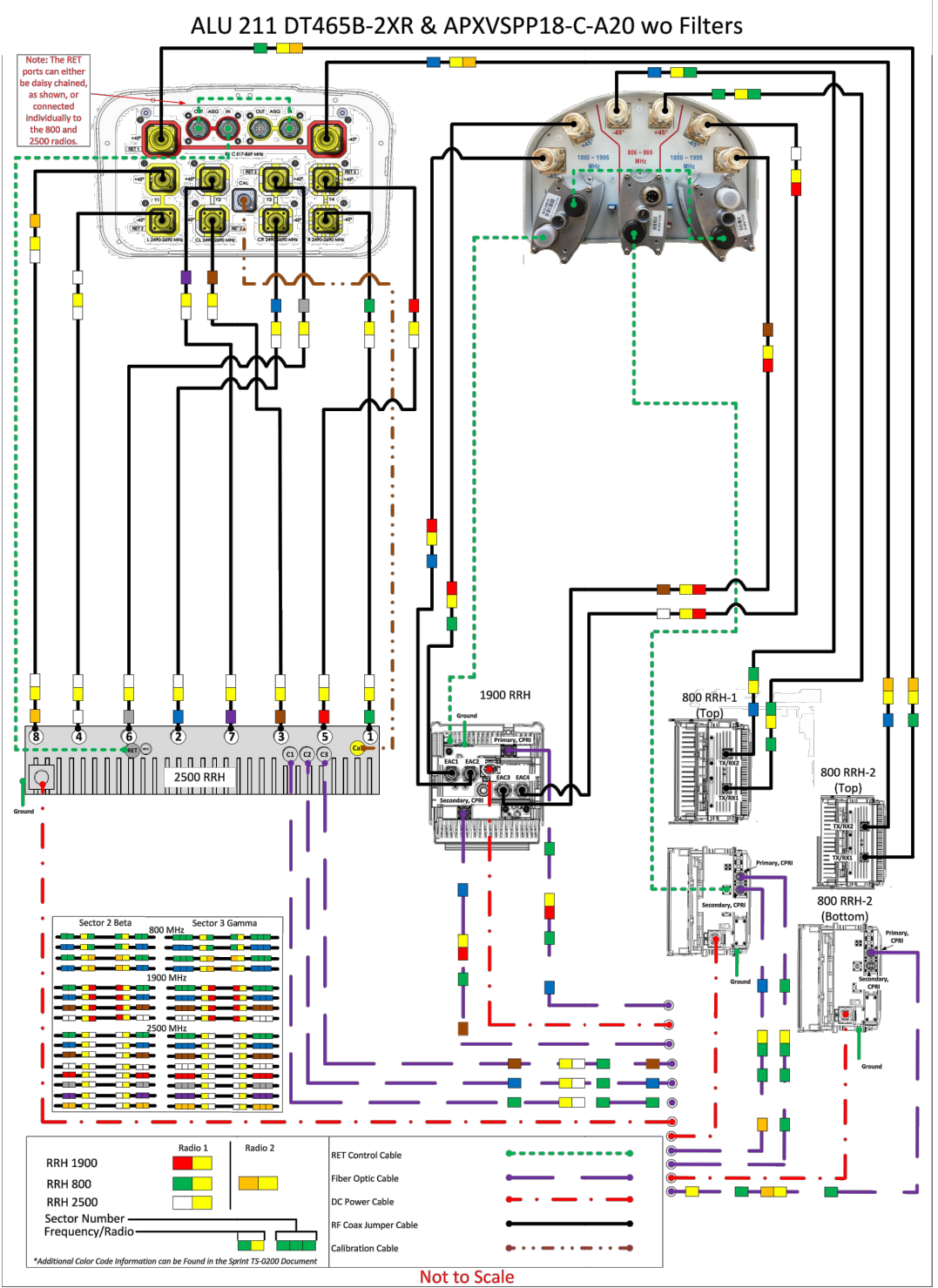
PROJECT INFORMATION:
 35 OLD ROUTE 44
 EASTFORD, CT 06242
 WINDHAM COUNTY

SHEET TITLE:
 FIBER PLUMBING DIAGRAM

SCALE: NONE

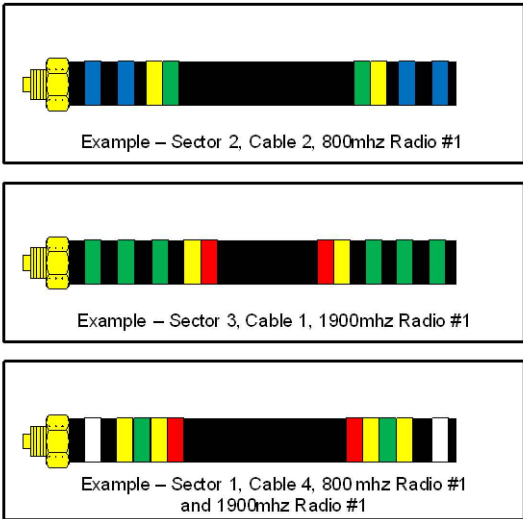
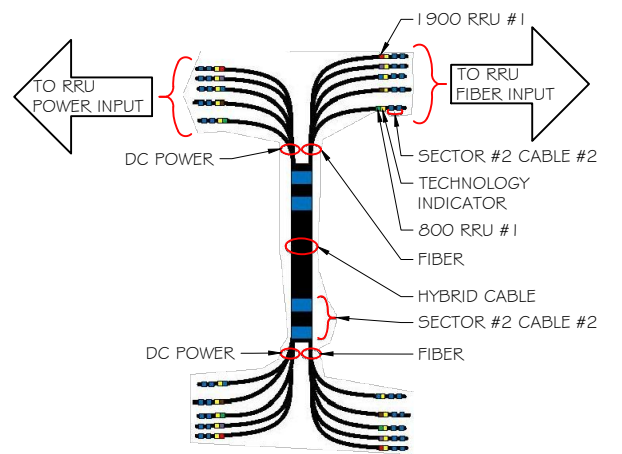
PROJECT NUMBER: 22974
 SHEET NUMBER: A-5

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ANTENNA COLOR CODING CHART
SCALE: NTS

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange



COLOR CODING CHARTS
SCALE: NTS

2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL

CABLE MARKING NOTES

- ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
- THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
- A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
- THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
- SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE.
- HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
- HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
- INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.



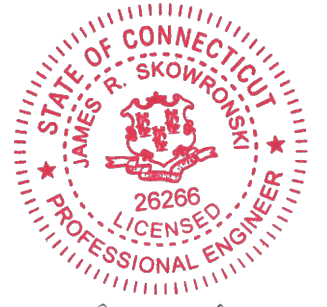
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ISSUE PHASE: FINAL DATE ISSUED: 01/12/2018
PROJECT TITLE:

CT33XCO16

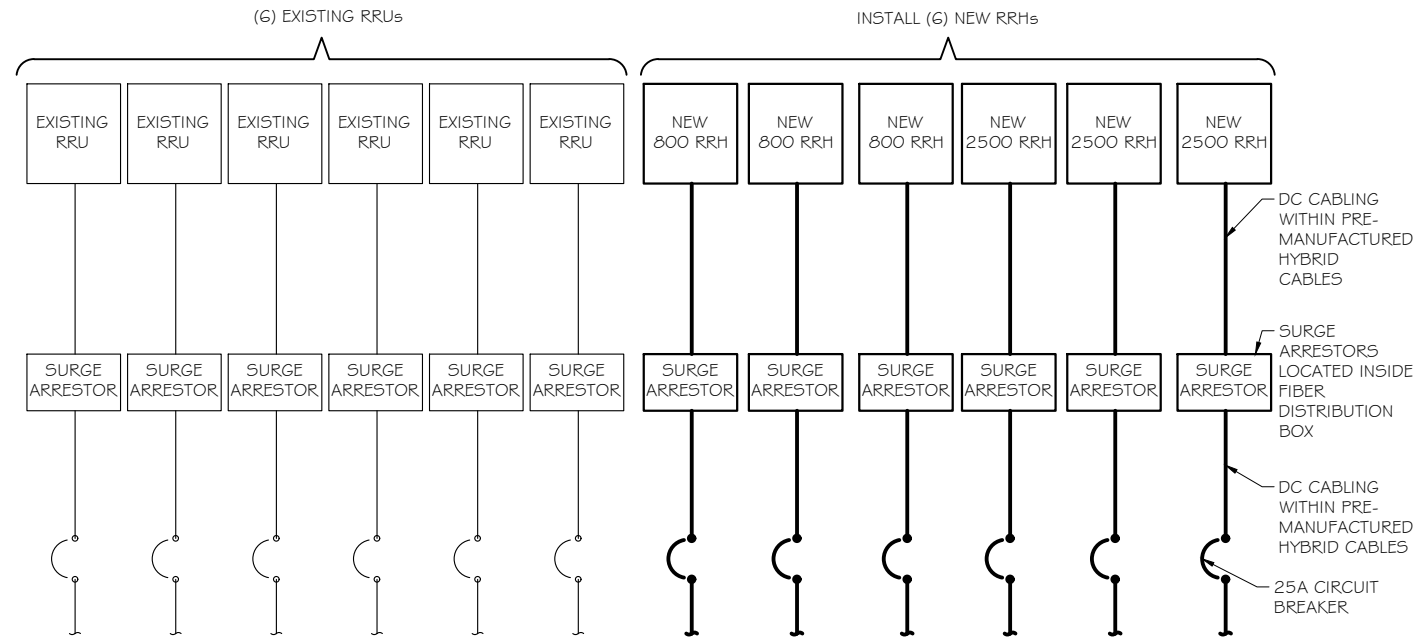
PROJECT INFORMATION:
35 OLD ROUTE 44
EASTFORD, CT 06242
WINDHAM COUNTY

SHEET TITLE:
CABLE COLOR CODING

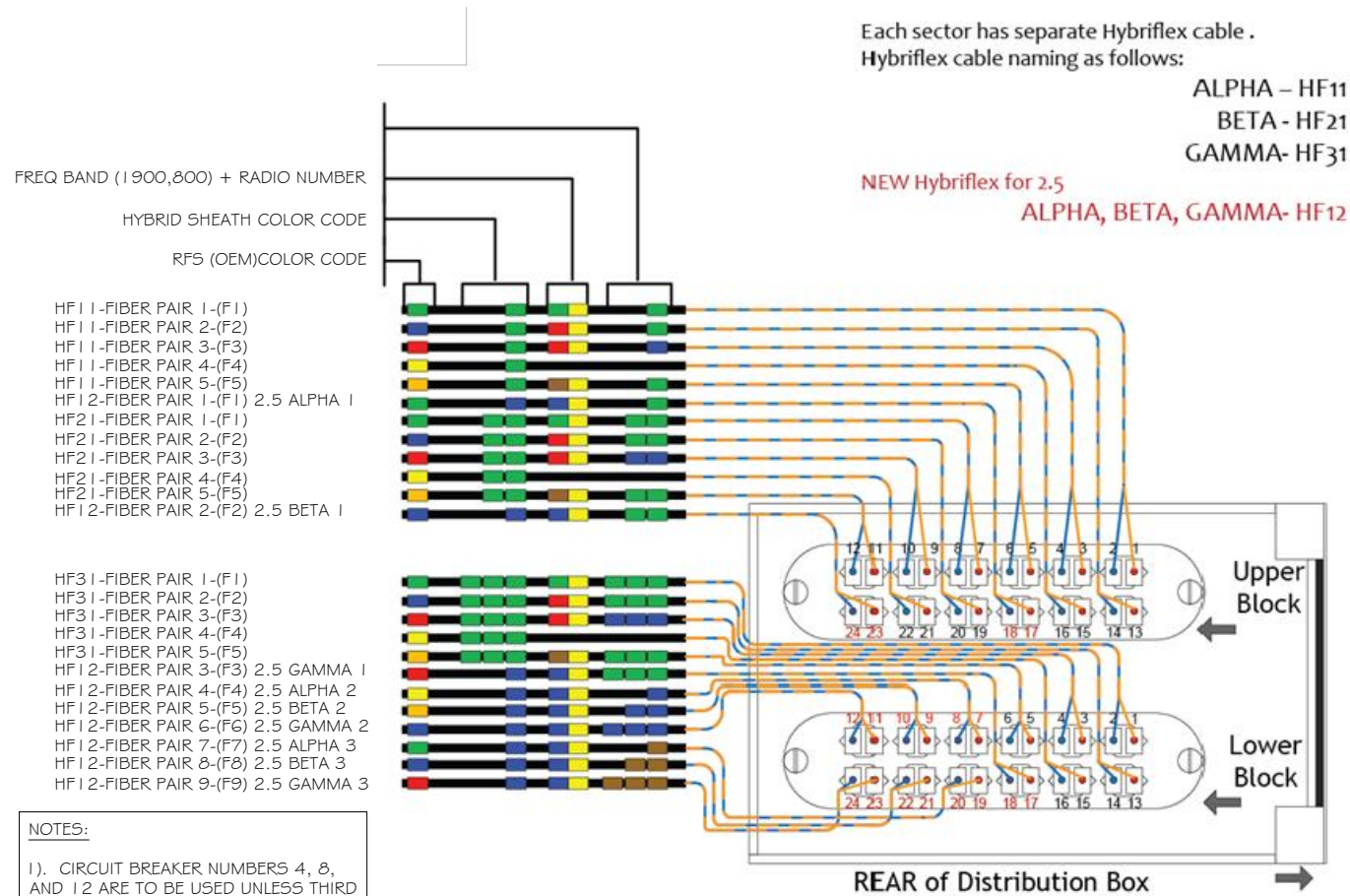
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PROJECT NUMBER: 22974
SHEET NUMBER: A-6

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DC ONE-LINE DIAGRAM
 SCALE: NTS



- NOTES:
- 1). CIRCUIT BREAKER NUMBERS 4, 8, AND 12 ARE TO BE USED UNLESS THIRD DC RAIL IS REQUIRED FOR MICROWAVE.
 - 2). USE DC POWER LOOP.
 - 3). ALL UNUSED DC FEEDERS TO BE TERMINATED WITH WIRE NUTS AND TAPED.
 - 4). REMOVE ALL DEBRIS FROM INTERIOR OF FIBER DISTRIBUTION BOX WHEN COMPLETE.

TYPICAL FIBER DISTRIBUTION
 SCALE: NTS



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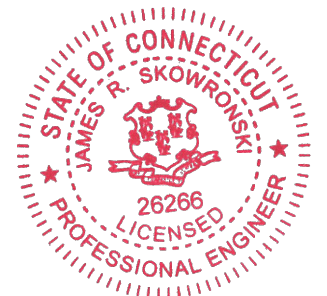


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PROJECT INFORMATION:
 35 OLD ROUTE 44
 EASTFORD, CT 06242
 WINDHAM COUNTY

SHEET TITLE:
 DC POWER & FIBER DISTRIBUTION DETAIL

SCALE: NONE

PROJECT NUMBER: 22974
 SHEET NUMBER: E-1