Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

September 26, 2023

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

RE: **Notice of Exempt Modification for DISH Wireless**
Crown #870800; DISH Site ID BOBDL00075A
376 Deercliff Road, Avon, CT 06001
Latitude: 41° 46′ 29.95″ / Longitude: -72° 48′ 2.07″

Dear Ms. Bachman:

DISH Wireless proposes to install one (1) microwave antenna and ancillary equipment at the 202-foot level of the existing 560-foot guyed tower at 376 Deercliff Road, Avon, CT 06001. The tower is owned by Crown Castle USA Inc. and the property is owned by Homeowners Finance Co. This modification may include B2, B5, B17, B14, B29, B30, B66 & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:

Tower:

Installed New:
(1) COMMSCOPE-VHLP2-11W/B Microwave Antenna
(1) ¼" Power Cable
(1) ¼" Coax Cable
(1) CERAGON IP-50C ODU
Proposed Jumper Cables

Ground:

Install New:
None – Existing equipment cabinet to be utilized by DISH Wireless LLC

The facility was approved by the Town of Avon by the Planning and Zoning Commission on November 20, 1985. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Town Manager Brandon Robertson and Planning Director Hiram Peck III for the municipality, Homeowners Finance Co as the property owner and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication 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, DISH Wireless respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Domenica Tatasciore.

Sincerely,

Domenica Tatasciore
Site Acquisition Specialist
1800 W. Park Drive
Westborough, MA 01581
(508) 621-9161/ Domenica.Tatasciore@crowncastle.com

Attachments
cc:

Town Manager Brandon Robertson
Town of Avon
60 West Main Street
Avon, CT 06001
860-409-4300

Planning Director Hiram Peck III
Town of Avon
60 West Main Street
Avon, CT 06001
860-409-4328

Homeowners Finance Co, Property Owner
530 Silas Deane Highway
Wethersfield, CT 06109
860-529-8628

Crown Castle, Tower Owner

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 773505149195: Your package has been delivered
Date: Tuesday, September 26, 2023 10:14:19 AM

Hi. Your package was delivered Tue, 09/26/2023 at 10:06am.

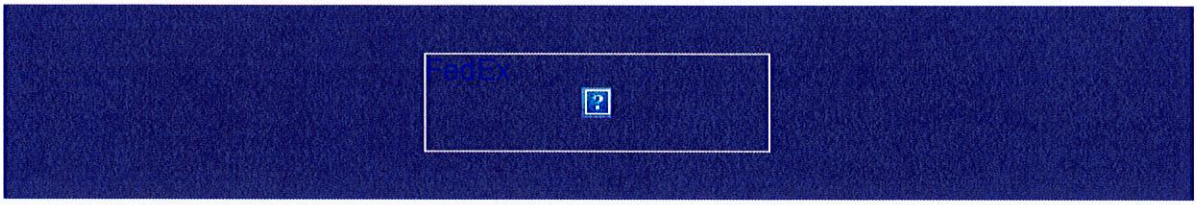
Delivered to 60 WEST. MAIN ST, AVON, CT 06001
Received by X.MANSON

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	773505149195
FROM	Crown Castle 1800 West Park Drive Suite 200 WESTBOROUGH, MA, US, 01581
TO	Town of Avon Town Manager Brandon Robertson 60 West Main Street AVON, CT, US, 06001
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 9/25/2023 05:36 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	AVON, CT, US, 06001
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 773505182492: Your package has been delivered
Date: Tuesday, September 26, 2023 10:14:13 AM



Hi. Your package was delivered Tue, 09/26/2023 at 10:06am.

Delivered to 60 WEST. MAIN ST, AVON, CT 06001
Received by X.MANSON

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	773505182492
FROM	Crown Castle 1800 West Park Drive Suite 200 WESTBOROUGH, MA, US, 01581
TO	Town of Avon Planning Director Hiram Peck III 60 West Main Street AVON, CT, US, 06001
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 9/25/2023 05:36 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	AVON, CT, US, 06001
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Wondering when a package will arrive?

Enter your tracking number to see your estimated delivery time within a 4-hour window.

TRACK A PACKAGE

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 773505210842: Your package has been delivered
Date: Tuesday, September 26, 2023 9:52:39 AM

Hi. Your package was delivered Tue, 09/26/2023 at 9:45am.

Delivered to 530 SILAS DEANE HWY, WETHERSFIELD, CT 06109

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	773505210842
FROM	Crown Castle 1800 West Park Drive Suite 200 WESTBOROUGH, MA, US, 01581
TO	Homeowners Finance Co 530 Silas Deane Highway WETHERSFIELD, CT, US, 06109
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 9/25/2023 05:36 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WETHERSFIELD, CT, US, 06109
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

TOWN OF AVON

P.O. BOX 578
60 WEST MAIN ST.
AVON, CT 06001
TEL. (203) 677-2634

November 20, 1985

CERTIFIED MAIL

Mr. Richard P. Ramirez, Managing General Partner
Astroline Communications Company Limited Partnership
18 Garden Street
Hartford, CT

Dear Mr. Ramirez:

At a Special Meeting held on Tuesday, November 19, 1985, the Planning and Zoning Commission of the Town of Avon voted as follows:

App. #1430 - Astroline Communications Company Limited Partnership, owner/applicant, request for Special Exception under Section IV.A.4.a. of the Avon Zoning Regulations, to permit communication transmission station and tower; and under Section III.B.2.a. for waiver of height provisions, 376 Deercliff Road, 30.343 acres, Parcel Nos. 24, 25, and 26 on Assessor's Map 15, in a RU-2A Zone - APPROVED WITH CONDITIONS.

App. #1431 - Astroline Communications Company Limited Partnership, owner/applicant, request for Special Exception under Section IV.A.4.a. of the Avon Zoning Regulations, to permit a satellite dish as part of a Communication Transmission Station, and under Section III.B.2.a. for a waiver of the height provisions, 376 Deercliff Road, 30.343 acres, Parcel Nos. 24, 25, and 26 on Assessor's Map 15, in a RU-2A Zone - APPROVED WITH CONDITIONS.

App. #1432 - Astroline Communications Company Limited Partnership, owner/applicant, request for Site Plan Approval, communication tower and building and residence, 376 Deercliff Road, 30.343 acres, Parcel Nos. 24, 25, and 26 on Assessor's Map 15, in a RU-2A Zone - APPROVED WITH CONDITIONS.

The Commission granted approval of App. #1430, #1431 and #1432 (above) subject to the following conditions:

1. No part or portion of any tower, antenna, or other structure shall exceed a height of 750 feet above ground; and no part or portion of any tower, antenna, or other structure shall exceed a height of 1425 feet above mean sea level.

2. As proposed by the applicant in a September 30, 1985 letter, the tower shall be restricted to the use of standard red lights only. No other color lights shall be installed or illuminated and no strobe lights shall be installed or illuminated.

COPY

As proposed by the applicant in a September 30, 1985 letter, should the FAA require any other type of lighting system on the tower, the tower shall not be built. If after the tower is constructed, the FAA requires the addition of any other type of lighting system, the owner shall decrease the height of the tower to a level which would be approved for red lighting or remove the tower completely.

3. As proposed by the applicant in a September 4, 1985 letter, the existing tower, all buildings, structures and transmission facilities presently located at 580 Deercliff Road will be completely dismantled and removed from the site within 90 days of the time when broadcasting operations begin from the new tower. Further, all pavement and debris will be removed from the 580 Deercliff Road site and the disturbed area will be loamed and seeded. Prior to the issuance of any building permit to construct any portion of the tower or building, a cash bond or letter of credit in a form acceptable to the Town Attorney and in an amount acceptable to the Town Engineer shall be submitted. The Town Engineer shall determine an amount sufficient to cover all costs associated with the work required by this condition. Failure of the owner to strictly adhere to this condition will be considered a violation of this permit, and will result in appropriate enforcement action by the Town to whatever degree is necessary to eliminate the violation. This condition shall be recorded on the land records with reference to 580 Deercliff Road.

4. The building will contain no living quarters or studio facilities. No employees shall be employed at the site on a daily basis. Except for unusual occasions, such as the construction period and periods of replacement, repair or maintenance of facilities and equipment, only occasional visits by employees shall be permitted.

5. Prior to the issuance of a building permit, construction plans for the tower shall be submitted to the Town Engineer by a structural engineer. Upon completion of the tower and prior to any broadcasting or transmission, the Town Engineer shall select an independent structural engineer who shall, at the expense of the owner, conduct an inspection and structural evaluation of the tower and submit a report to the Town Engineer.

6. Noise levels from the tower and equipment, as measured at any point on the property line of the nearest abutting residence, shall not exceed the maximum allowable noise level for commercial and industrial uses at residential zone boundaries as stated in Section V of the Avon Zoning Regulations. The owner shall provide to the Town Engineer a report showing acoustic readings taken at a time when the transmission equipment, cooling equipment and all other equipment operated during normal broadcasting is in full operation. Noise levels in excess of the prescribed standards shall be considered a violation of this permit and shall require zoning enforcement action by the Town, to whatever degree is necessary to elminate the violation.

7. As recommended by the Town Health Director, a maximum power density level is established at 0.01 mW (or 10μW) per square centimeter which cannot be exceeded at any frequency by any radiation source on the tower or building or equipment on the site, singly or in combination with other sources on the tower, as measured at the nearest part of the nearest abutting residential property.

   The owner shall submit reports of field measurements of this radiation level in order to verify compliance with this condition. An initial report is required within 30 days after the transmission facility begins operation, and subsequent reports shall be filed with the Town on a quarterly basis.

   Failure to file the required reports shall be considered a violation of this permit and shall require zoning enforcement action by the Town.

   Measurements in excess of the established level shall be considered a violation and shall require zoning enforcement action by the Town to whatever degree necessary to eliminate the violation.

8. The owner shall provide from beginning of construction forward a convenient means of access acceptable to the Chief of Police. That access shall allow police, fire, ambulance and other emergency vehicles to drive up to the building and tower base. It shall also allow police and fire personnel and other emergency personnel access to all parts of the building, tower base and guy anchors.

9. All deliveries to the site of materials and equipment associated with construction shall occur between 9:00 AM and 4:00 PM on Mondays through Fridays which are not legal holidays in order not to conflict with heavy traffic. All construction work shall occur between the hours of 7:00 AM and 5:00 PM on the same days, so as not to unduly inconvenience neighbors.

10. The owner shall provide reasonable space on the tower and in the building for such communications equipment that the Town determines is appropriate for the public safety of the residents.

11. These approvals shall take effect upon December 1, 1985, unless before that date the Town Attorney notifies the Commission that one of the above conditions is illegal or unenforceable.

Please note, additionally, that prior to your Special Exception Applications (App. #1430 and #1431) becoming effective, a certified copy must be filed with the Town Clerk. The filing fee is $5 per page. Please fill in the enclosed form and return it to this office for the Chairman's signature.

Upon compliance with the above conditions, the Chairman of the Planning and Zoning Commission has been authorized to sign the mylar maps for filing. The mylar maps must be signed and on file prior to the issuance of any building permits for the above construction.

Very truly yours,

Elizabeth P. Dennis, Clerk
Planning and Zoning Commiseion

cc: Mark Oland, Esq.
William Richter
Robert C. Hunt, Jr., Esq.

Enclosure

TOWN OF AVON

P.O. BOX 578
60 WEST MAIN ST.
AVON, CT 06001
TEL. (203) 677-2634

December 15, 1986

CERTIFIED MAIL

Mr. Richard P. Ramirez, Managing General Partner
Astroline Communications Company Limited Partnership
18 Garden Street
Hartford, CT

Dear Mr. Ramirez:

At a meeting held on Tuesday, December 9, 1986, the Planning and Zoning Commission of the Town of Avon voted as follows:

App. #1525 - Astroline Company, owner, Astroline Communications Company Limited Partnership, applicant, request for Special Exception under Sections IV.A.4.a. and III.B.2.a. of the Avon Zoning Regulations to permit modification of condition No. 1 of the approval of Applications #1430 and #1431 to provide: the total height of any tower, antenna, or other structure shall be no less than 625 feet above ground nor any higher than 750 feet above ground; the total height of any tower, antenna, or other structure shall be no less than 1300 feet above mean sea level nor any higher than 1425 feet above mean sea level, 376 Deercliff Road, 30.343 acres, in a RU-2A Zone - APPROVED.

App. #1526 - Astroline Company, owner, Astroline Communications Company, Limited Partnership, applicant, request for Modification to Site Plan Approval (App. #1432) communication tower, building and residence, 376 Deercliff Road, 30.343 acres, in a RU-2A Zone - APPROVED.

Please note that prior to your Special Exception becoming effective, a certified copy must be filed with the Town Clerk. The fee is $5. Please fill in the enclosed form and return it to this office for the Chairman's signature.

Very truly yours,

Elizabeth P. Dennis, Clerk
Planning and Zoning Commission

Enclosure

cc: Building Dept.
Assessor
M. Oland, Esq.

COPY

Card 01 of 01 card — Town of Avon Residential Property Card

Property at 00376 DEERCLIFF ROAD — LOT1 — Prop ID 2090376 — Printed 16-Aug-2021 5:20 PM — Design and Layout (C) Right/Angles

Administrative Information

Owner name: HOMEOWNERS FINANCE CO
Second name:
Address: 530 SILAS DEANE HIGHWAY
City/state: WETHERSFIELD CT Zip: 06109

Location Information

Map: 027 Clerk map: 16 016
Lot: 2090376 Neigh.: Zone: RU2A Vol: 763 Page: 084

Assessments

Assmt category	Qty	Amount
Resident Land	2.00	140,000
Resident Outbldg	2.00	2,570
Resident Excess	.22	1,140

Exemptions

Exempt	Cat	Amount

Last sale

Sale date: 20-Jul-2021
Sale price:
Sale valid: 14

Values

Mkt value :
Cost value: 205,300

Summary

Total assessments	143,710
Total exemptions	
Net assessment	143,710

Utilities

Water	Well
Sewer	Septic
Gas	None

Sales ratios

Cost/sale :
Mkt/sale :
Assmt/sale:

Land Information

Type	Use	Acres/SqFt	Rate	Total	Infl Fact	Value	70% Value
PRIM	11	2.000	200,000	200,000		200,000	140,000
Primary Site		87,120					
RES	12	.217	7,500	1,628		1,628	1,140
Residual		9,453					
		2.217 acres		Total land value		201,628	141,140

Residential Dwelling Information

Subject	Code	Description
Style	17	Old style
Exterior Walls	04	Vinyl Siding
Roof Material	01	Asphalt Shingles
Roof Type	01	Gable
Foundation	01	Poured Concrete
Interior Walls	01	Plaster
Floors		Unknown
Heating System	02	Forced Hot Air
Fuel	01	Oil
Attic	02	Unfinished
Grade	33	C+
Garage	32	Detached 2 car
Area Over Gar.	99	None
Basement	01	Full
Bsmt Fin Qual	01	Unfinished
Air Condition	01	Central Air
Interior Cond	05	Good
Exterior Cond	05	Good

Condominium

Story Height 2.0

Total Rooms	8	Garage cars	2
Bedrooms	4	Unfinished area	
Family Rooms		Dormer linear f	
Full Baths	2	Masonry trim sf	
Half Baths		Finish bsmt sz	
Addtn'l fixtures		Rec Room Size	
Whirlpools		Living area	1,630
Saunas		# Living Units	1
M/F stacks			
W/B stacks	1		
W/B openings	1		

Actual Year Built: 1807

Building Valuation Summary

			Area	
Dwelling	Frame	2 story w/bsmt	720	165,970
Basement	Full			
Heating	Yes	A/C Yes		5,030
Plumbing	2 F/B	H/B Add'l fix. Wh/p Saunas		3,600
Attic	Unfinished	Attic size: 720		9,184
Additions				23,368
Other Features		WB Stks		5,000
Sub-Total				212,152
Grade	C+	Factor 1.0800		229,124
CDU		C&D Factor 1.00		229,124
Depreciation		100 %		
		Computed cost value @ 70%		

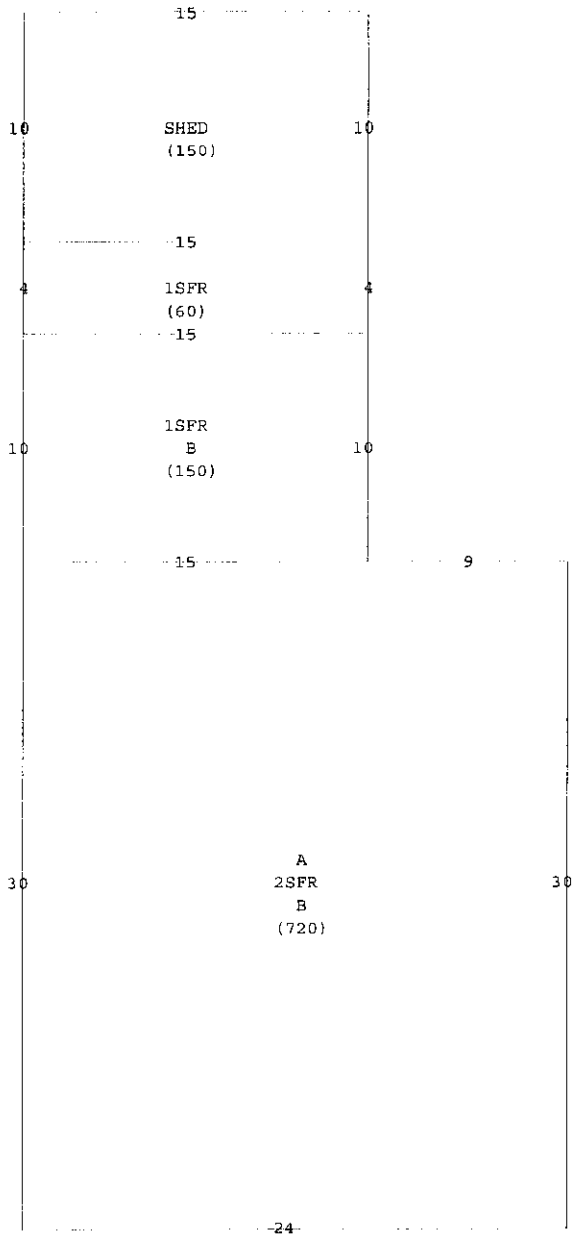
Building additions

	Category	Type		Area	Value
L	Living Area	FRFF	Frame first floor	150	12,720
L	Living Area	BSMT	Basement addition	150	2,048
L	Living Area	FRFF	Frame first floor	60	5,088
P	Porches, Patios, Decks	UTIL	Utility building	150	3,174
L	Living Area	AIR	Air conditioning	150	338
			Total additions		23,368

Outbuilding Information

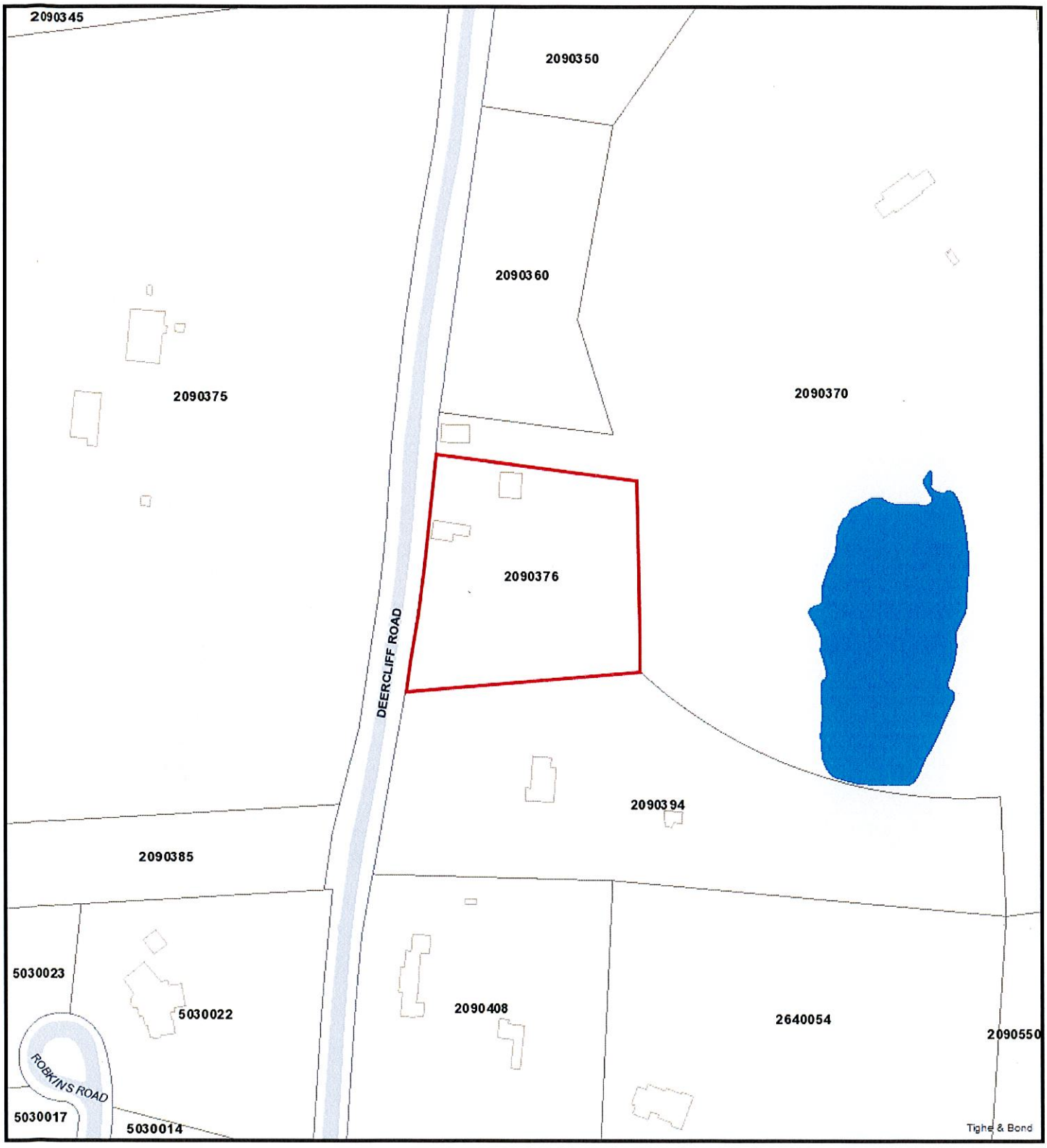
Description	Wid	Len	Area	Rate	Year	Cnd	RCN	Depr	Value
RG1 Frame or Con Block Detach Garage	24	40	960	29.01		C	27,850	90	2,790
RS1 Frame Utility Shed	20	22	440	20.00		C	8,800	90	880
			1						
Value at 70%			2,569			Value at 100%			3,670

Property at 00376 DEERCLIFF ROAD LOT1 Prop ID 2090376 Card 01 Scale: 1" = 8.14 feet



CERT FORECLOSURE 5-3-10 VOL 605 PG 986-988
SALE 9-23-16 $530,000 5 LOTS-340,350,360,370,376 DEERCLIFF ROAD

DEED IN LIEU OF FORECLOSURE V763 P84 7-20-21



376 Deercliff Road

9/22/2023 9:30:31 AM

Scale: 1"=200'

Scale is approximate

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

EMF/FCC Compliance Report

August 29, 2023

Crown BU:	870800
Crown Site Name:	Avon (Deercliff Rd.)
Site Location	376 Deercliff Rd Avon, CT 06001 Hartford County 41.775 N -72.8006 W
Multi-Licensee Facility	Yes
FCC Standard	OET Bulletin 65 Edition 97-01
ANSI/IEEE / OSHA Standard	Std C95.1 / 1910.97
Site Classification	Tower
Structure Type	Other
Statement of Compliance	Site will be compliant with FCC Rules and Regulations.

318 West Avenue, Saratoga Springs, NY 12866
Main Office / Fax: 518-306-1711
www.airosmithdevelopment.com

Table of Contents

1.0 Scope

Airosmith Engineering has been requested to perform an analysis on the proposed antenna installation at the specified Crown Castle facility as compared to the FCC limits on Maximum Permissible Exposure (MPE) as outlined in FCC's OET Bulletin 65. The theoretical RF Emissions were analyzed using IXUS analysis software. Selected output from the analysis is included in this report.

2.0 Introduction

Radio Frequency (RF) signals are electromagnetic waves and are characterized by their cycle time (wavelength) which is measured in meters. Frequency is defined as the number of complete cycles a wave can complete per second, which is called a Hertz. An illustration of the inverse relationship between wavelength and frequency of RF signals is shown in Figure 1 below[1]. The major wireless carriers operate within several different frequency spectrum bands including, but not limited to: 700MHz, 850MHz, 1900MHz, 2100MHz, 2300MHz, and 3.7GHz. When considering field strength of an RF signal note that the power decreases as the distance from the antenna decreases.

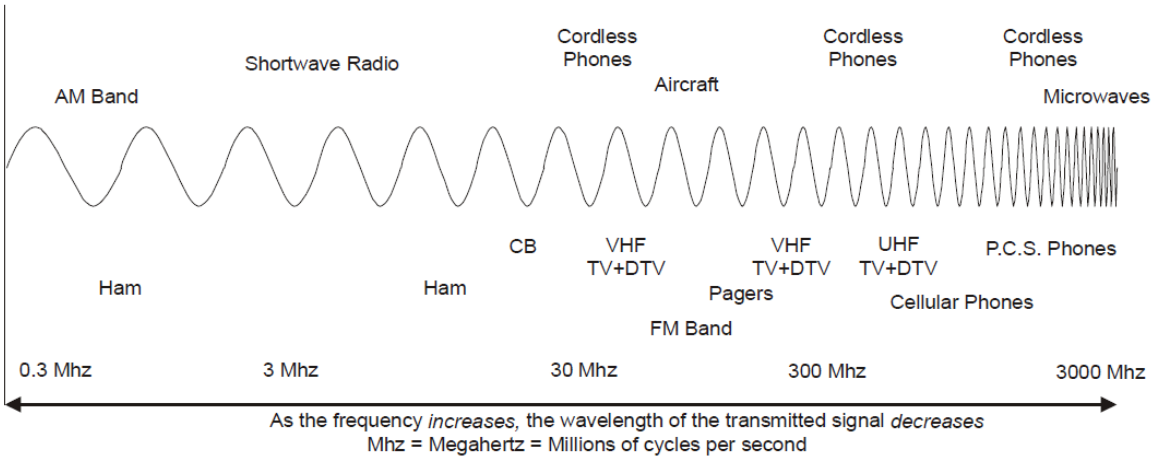


Figure 1: Radio Frequency Spectrum

The FCC exposure guidelines are applicable to radio frequency spectrum between 300kHZ and 100GHz. The FCC's exposure guidelines are further discussed in Section 3.0, but it is important to note that the exposure limits are conservative and incorporate a substantial margin for safety.

[1] Federal Communications Commission, *A Location Government Official's Guide to Transmitting Antenna RF Emissions Safety: Rules, Procedures, and Practical Guidance,* June 2, 2000.

3.0 Background on FCC MPE Limits

Since 1985, the FCC has had guidelines in place to evaluate human exposure to RF emissions. The most recent guidelines were adopted in 1996 and incorporate limits for the maximum permissible exposure (MPE) in terms of both electric and magnetic field strength and power density. Frequencies from 300kHz to 100GHz are considered as part of these guidelines. These FCC Guidelines are documented in OET Bulletin 65 and are based on the exposure limits recommended by the National Council on Radiation Protection and Measurements (NCRP), the Institute of Electrical and Electronics Engineers, Inc (IEEE), and the American National Standards Institute (ANSI).

For the purposes of determining exposure risk and the resulting compliance, the FCC Guidelines consider two tiers of exposure: occupational/controlled exposure, and general population/uncontrolled exposure.

> *Occupational/controlled*: these limits are to be considered when a person is exposed to RF emissions as a consequence of their employment. Additionally, this person must have been made fully aware of the potential exposure and has the ability to exercise control over their own exposure.
>
> *General population/uncontrolled*: these limits are to be considered in all other situations. Namely, when an individual may be exposed to RF emissions without being aware. This can happen as a consequence of their employment or not. Additionally, this person does not have the ability to exercise control over their exposure.

The FCC limits for maximum permissible exposure are derived from a whole-body averaged specific absorption rate (SAR). The limits incorporate safety factors in order to implement extra precautions when considering the protection of the population that may be at risk. Additionally, the limits set by the FCC are based on data that has determined there are certain ranges of frequencies where the human body absorbs RF energy more efficiently: this frequency range is 30-300MHz.

The specific MPE limit per frequency range is provided in the table below in terms of Electric Field Strength (V/m), Magnetic Field Strength (A/m), and Power Density (mW/cm2). It should be noted that the limits are more restrictive for the General Population/Uncontrolled exposure.

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) Limits for General Population/Uncontrolled Exposure

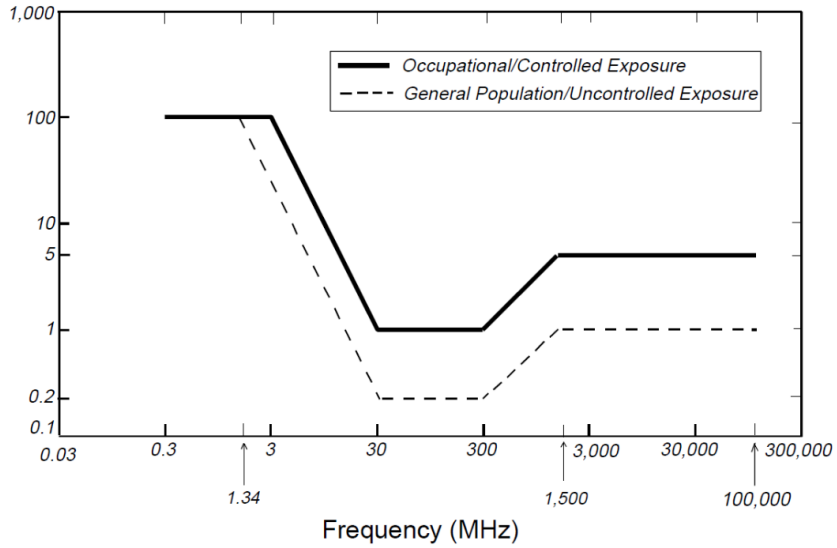
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $|E|^2$, $|H|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

The most common way to determine the compliance of a site is to compare the RF power density to the Maximum Permissible Exposure Limits outlined in the tables above, and to represent it as a percentage of the limit. This is shown graphically below in Figure 1.

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)

Plane-wave Equivalent Power Density



It is important to note that the FCC rules specifically state that compliance is the shared responsibility of all licensed transmitters on a site if their power density levels are equal to or greater than 5% of the exposure limit in an area. When conducting predictive modeling, applicants are expected to make a "good faith" effort in factoring in the other transmitters on site.

References:

47 CFR, FCC Rules and Regulations, Part 1 (Practice and Procedure), Section 1.1310 (Radiofrequency radiation exposure limits).

FCC Office of Engineering and Technology (OET) Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields", Edition 97-01, August 1997.

IEEE Std C95.1-2019, "IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz".

4.0 Results and Conclusions

Upon reviewing the results of this analysis, the calculated non-ionizing radiation for the installation at this Crown Castle facility is considered **COMPLIANT** when compared to General Population FCC exposure limitations. The analysis results are summarized below.

General Results	
All Sources Maximum General Population MPE %	3.63% at Ground Level

5.0 Appurtenance Configuration

Colocator Data: ☒Estimate ☐Actual Data ☐N/A

Operator	Ant ID	Z Mounting Height Elev. (ft)	Antenna Type, Manufacturer, & Model	Frequency Band	Total TPO (W)	Az (°)	E-Tilt Range (°)	Ant Horiz. BW (°)	Ant Gain (dBd)	Total ERP (W)
Dish	1	201	Parabolic reflector/Andrew/VHLP2-11W	11GHz	5	0	-	0	36.85	19229.59
Other	2	553	Panel/Generic/PentaBandPanel	LTE 1800	100	0	2 to 12	66	15.05	2540.97
Other	3	553	Panel/Generic/PentaBandPanel	LTE 1800	100	120	2 to 12	66	15.05	2540.97
Other	4	553	Panel/Generic/PentaBandPanel	LTE 1800	100	240	2 to 12	66	15.05	2540.97
Other	5	514	Omnidirectional/RF Industries/COL54-160	155MHz	20	0	0	360	5.95	62.52
Other	6	492	COMPROD/430-70	460MHz	20	0	-	62	10	158.87
Other	7	465	Omnidirectional/RF Industries/COL54-160	155MHz	20	0	0	360	5.95	62.52
Other	8	442	COMPROD/430-70	460MHz	20	0	-	62	10	158.87
Other	9	438	Omnidirectional/RF Industries/COL54-160	155MHz	20	0	0	360	5.95	62.52
Other	10	438	Omnidirectional/RF Industries/COL54-160	155MHz	20	0	0	360	5.95	62.52
Other	11	415	Omnidirectional/Amphenol Antel/BCD-7009-EDIN-X	LTE 700	100	0	0 to 5	0	7.45	441.57
Other	12	388	Omnidirectional/RF Industries/COL54-160	155MHz	100	0	0	360	5.95	312.61
Other	13	324	COMPROD/430-70	460MHz	100	0	-	62	10	794.33
Other	14	324	COMPROD/430-70	460MHz	100	0	-	62	10	794.33
Other	15	294	COMPROD/430-70	460MHz	100	0	-	62	10	794.33
Other	16	288	COMPROD/430-70	460MHz	100	0	-	62	10	794.33
Other	17	270	Omnidirectional/Amphenol Antel/BCD-7009-EDIN-X	Generic 850	100	0	0 to 5	0	8.95	623.73
Other	18	254	Omnidirectional/Amphenol Antel/BCD-7009-EDIN-X	Generic 850	100	0	0 to 5	0	8.95	623.73
Other	19	212	Omnidirectional/RF Industries/COL54-160	155MHz	20	0	0	360	5.95	62.52
Other	20	175	Omnidirectional/RF Industries/COL54-160	155MHz	20	0	0	360	5.95	62.52
Other	21	138	Parabolic reflector/Andrew/VHLP6-7W	7.125 - 8.5GHz	5	0	-	0	38.95	31186.74
Other	22	91	Omnidirectional/RF Industries/COL54-160	155MHz	20	0	0	360	5.95	62.52
Other	23	80	Parabolic reflector/Andrew/VHLP3-11W	11GHz	5	0	-	0	36.85	19229.59
Other	24	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 1900	120	0	2 to 12	66	16.95	4722.6
Other	24	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 2100	120	0	2 to 12	66	16.95	4722.6
Other	24	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 600	120	0	2 to 12	65	13.65	2208.93

Other	25	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 1900	120	120	2 to 12	66	16.95	4722.6
Other	25	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 2100	120	120	2 to 12	66	16.95	4722.6
Other	25	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 600	120	120	2 to 12	65	13.65	2208.93
Other	26	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 1900	120	240	2 to 12	66	16.95	4722.6
Other	26	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 2100	120	240	2 to 12	66	16.95	4722.6
Other	26	239	Panel/RFS/APXVAALL24_43-U-NA20	LTE 600	120	240	2 to 12	65	13.65	2208.93
Dish	27	201	Panel/JMA Wireless/MX08FRO665-21	LTE 600	160	0	2 to 14	68	11.45	1774.68
Dish	27	201	Panel/JMA Wireless/MX08FRO665-21	LTE 700	160	0	2 to 14	62	12.65	2339.48
Dish	27	201	Panel/JMA Wireless/MX08FRO665-21	LTE 2100	160	0	2 to 12	64	16.65	5876.52
Dish	28	201	Panel/JMA Wireless/MX08FRO665-21	LTE 600	160	120	2 to 14	68	11.45	1774.68
Dish	28	201	Panel/JMA Wireless/MX08FRO665-21	LTE 700	160	120	2 to 14	62	12.65	2339.48
Dish	28	201	Panel/JMA Wireless/MX08FRO665-21	LTE 2100	160	120	2 to 12	64	16.65	5876.52
Dish	29	201	Panel/JMA Wireless/MX08FRO665-21	LTE 600	160	240	2 to 14	68	11.45	1774.68
Dish	29	201	Panel/JMA Wireless/MX08FRO665-21	LTE 700	160	240	2 to 14	62	12.65	2339.48
Dish	29	201	Panel/JMA Wireless/MX08FRO665-21	LTE 2100	160	240	2 to 12	64	16.65	5876.52

6.0 Certifications

a. Preparer Certification

I, Emily McPherson, the preparer of this report, am familiar with the Rules and Regulations of both the Federal Communications Commission (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.

Emily McPherson

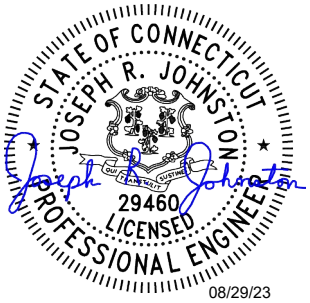
08/29/2023

b. Reviewer Certification

I, Joseph Johnston, the reviewer and approver of this report, am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commission (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.

Joseph Johnston

08/29/2023



7.0 APPENDIX A - Predictive Modeling Technique

Airosmith Engineering has performed worst case predictive modeling on the proposed AT&T antenna installation as compared to the FCC limits on Maximum Permissible Exposure (MPE) as outlined in FCC's OET Bulletin 65 using IXUS EMF Compliance Management Software, Version 4.8.0. IXUS is a commercially available software developed by Alphawave.

IXUS uses Ray-Tracing RF exposure modeling to calculate the power density and compares it with FCC Limits. The ray tracing method is an advanced computation method described by an international standards protocol: IEC 622321.

RF power density levels are calculated using the IXUS Modeler. IXUS employs a synthetic ray tracing method for panel and omnidirectional antennas and a cylindrical envelope method for microwave dish (parabolic reflector / aperture) antennas.

IXUS uses elemental sources, which are representative of how an antenna emits RF energy. These elemental sources are selected by an analysis of the antennas and their manufacturers' datasheets. All of the sources representing all of the antennas are summed to determine power density. Ray tracing algorithms typically overestimate RF power density because they do not take into account absorption of RF energy in the ground, building walls and other man-made structures.

The power density summation works as follows:
To calculate exposure and compliance boundaries, power density from each source (exposure value by frequency EV_f) is divided by the appropriate exposure limit (EL_f), creating an exposure ratio (ER_f).

$$ER_f = \frac{EV_f}{EL_f}$$

Ratios from each source are combined to determine a total exposure ratio TER. This ratio is used to determine exposure and compliance boundaries.

$$TER = \sum_{i=1}^{n} ER_i$$

IXUS uses the calculated TER to create graphical 3D compliance boundaries around all of the antennas combined and to determine the exposure at any location

Additionally, a conservative and verified modelling technique for 5G beamforming antennas in IXUS is also used. The simulation accuracy of the IXUS calculation module has been verified extensively with full-wave EM simulations using FEKO. All antenna models that are used in the IXUS modeler undergo a rigorous verification process, whereby manufacturer data obtained from datasheets or pattern information is compared to that of the IXUS antenna model, during the synthesis process.

[1] IEC 62232:2017, Determination of RF field strength and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure, International Electrotechnical Commission, Geneva.

Date: **August 25, 2023**

Trylon
1825 W. Walnut Hill Lane,
Suite 302
Irving, TX 75038
214-930-1730

Subject:	**Mount Analysis Report**	
Carrier Designation:	**Dish Network Equipment Change-Out**	
	Carrier Site Number:	BOBDL00075A
	Carrier Site Name:	CT-CCI-T-870800
Crown Castle Designation:	**BU Number:**	870800
	Site Name:	Avon (Deercliff Rd.)
	JDE Job Number:	752159
	Order Number:	655378 Rev. 4
Engineering Firm Designation:	**Trylon Report Designation:**	231130
Site Data:	**376 Deercliff Road, Avon, Hartford County, CT, 06001**	
	Latitude 41°46'29.95" Longitude -72°48'2.07"	
Structure Information:	**Tower Height & Type:**	**560.0 ft Guyed Tower**
	Mount Elevation:	**201.0 ft**
	Mount Width & Type:	**8.0 ft Sector Frames**

Trylon is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of Dish Network's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Sector Frames **Sufficient**

This analysis utilizes an ultimate 3-second gust wind speed of 117 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria

Mount analysis prepared by: Steve Mustaro, P.E.

Respectfully Submitted by:
Matthew Jamerson, P.E.

Matthew Jamerson

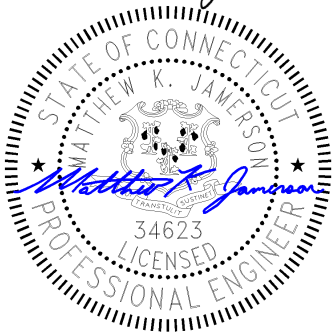


TABLE OF CONTENTS

1) INTRODUCTION

This is an existing three sector 8.0 ft Sector Frames, designed by Commscope.

2) ANALYSIS CRITERIA

Building Code:	2021 IBC / 2022 CTBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	117 mph
Exposure Category:	B
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.184
Seismic S_1:	0.055
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
201.0	202.0	1	COMMSCOPE	VHLP2-11W/B	8.0 ft Sector Frames
		1	CERAGON	IP-50C	
		3	JMA WIRELESS	MX08FRO665-21	
		3	FUJITSU	TA08025-B604	
		3	FUJITSU	TA08025-B605	
		1	RAYCAP	RDIDC-9181-PF-48	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	Dish Network Application	655378 Rev. 4	CCI Sites
Mount Manufacturer Drawings	Commscope	MTC3975083	Trylon

3.1) Analysis Method

RISA-3D (Version 17.0.4), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed, using Microsoft Excel, by Trylon was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision E).

3.2) Assumptions

1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
4) The analysis will be required to be revised if the existing conditions in the field differ from those shown in the above-referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.
5) Prior structural modifications to the tower mounting system are assumed to be installed as shown per available data.
6) Steel grades have been assumed as follows, unless noted otherwise:

Channel, Solid Round, Angle, Plate	ASTM A36 (GR 36)
HSS (Rectangular)	ASTM A500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. Trylon should be notified to determine the effect on the structural integrity of the antenna mounting system.

4) ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity (Sector Frames, Worst Case Sector)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3	Mount Pipe(s)	MP1	201.0	17.3	Pass
	Horizontal(s)	M5		15.8	Pass
	Standoff(s)	M4		19.8	Pass
	Bracing(s)	M24		36.6	Pass
	Tieback(s)	M31A		8.1	Pass
	Mount Connection(s)	-		17.8	Pass

Structure Rating (max from all components) =	36.6%

Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in “Appendix D – Additional Calculations” for detailed mount connection calculations.
3) Rating per TIA-222-H, Section 15.5

Table 4 - Tieback Connection Data Table

Tower Connection Node No.	Existing / Proposed	Resultant End Reaction (lb)	Connected Member Type	Connected Member Size	Member Compressive Capacity (lb)[3]	Notes
N52A	Existing	680.5	Leg	PIPE 5	33,954.5	1

Notes:

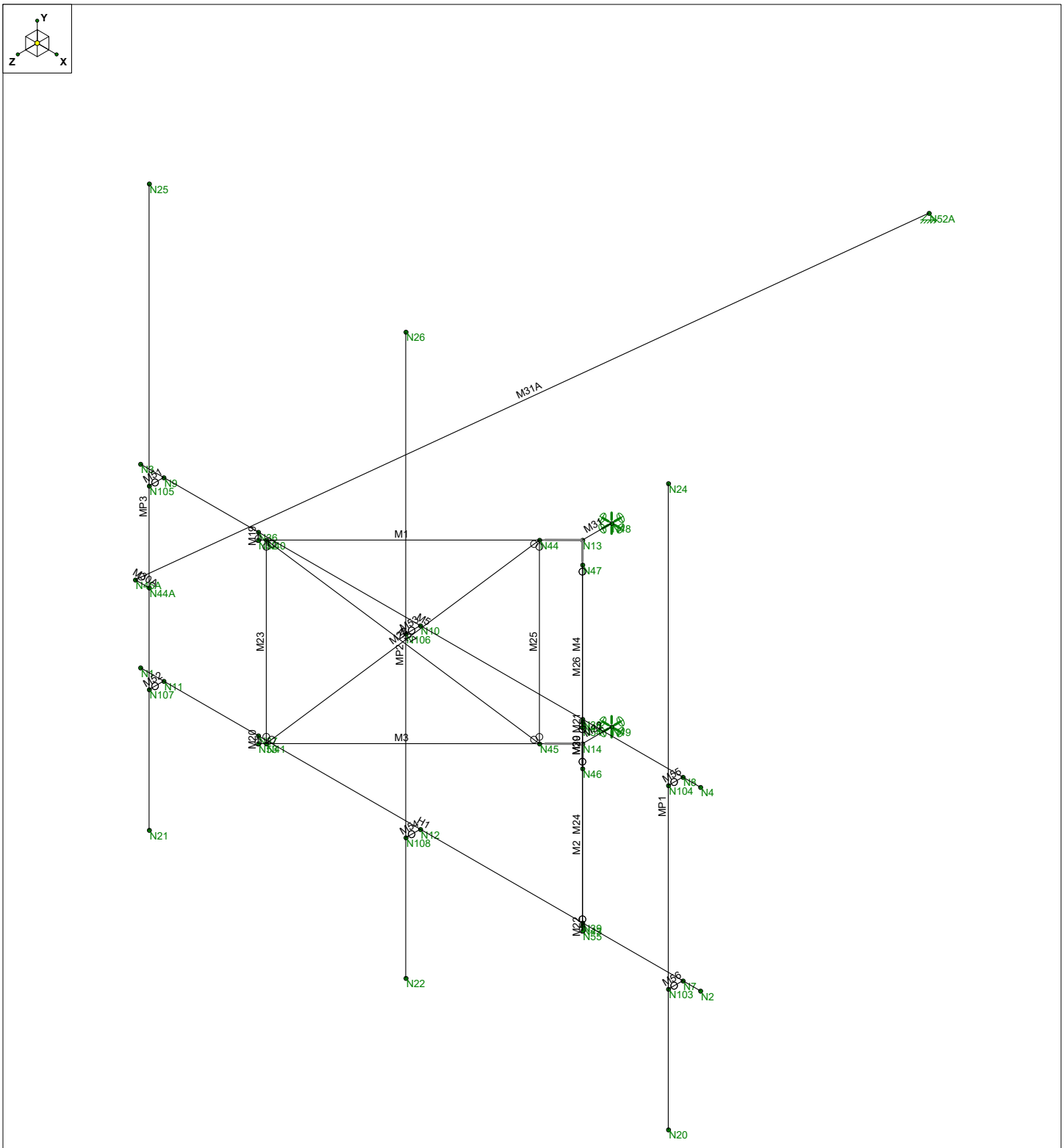
1) Tieback connection point is within 25% of either end of the connected tower member
2) Tieback connection point is NOT within 25% of either end of the connected tower member
3) Reduced member compressive capacity according to CED-STD-10294 *Standard for Installation of Mounts and Appurtenances*

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

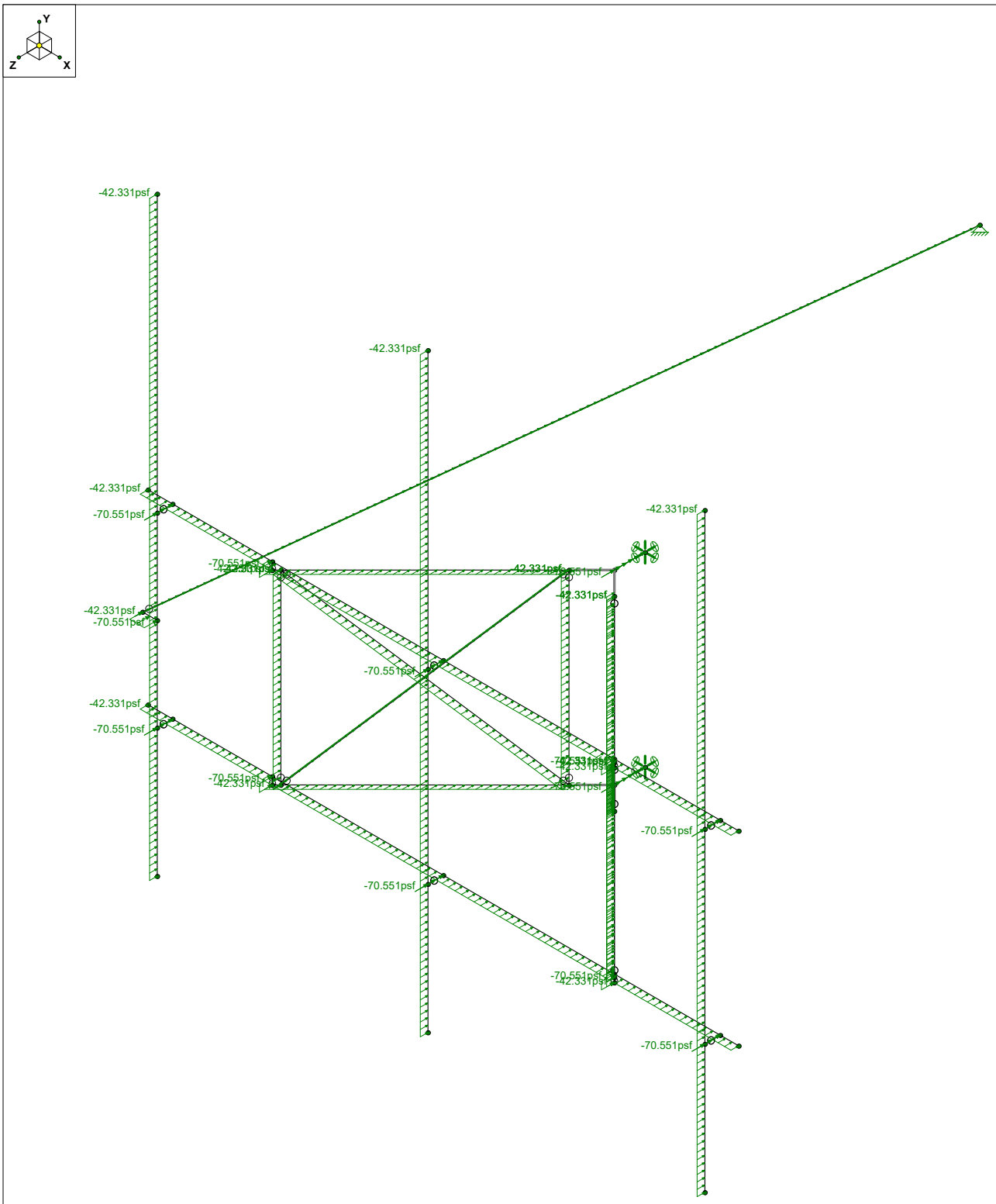
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	870800	Wireframe
SMM		Aug 25, 2023 at 9:57 AM
231130		870800_loaded.r3d



Loads: BLC 2, Structure Wind Z
Envelope Only Solution

Trylon	870800	Wind Loads
SMM		Aug 25, 2023 at 9:58 AM
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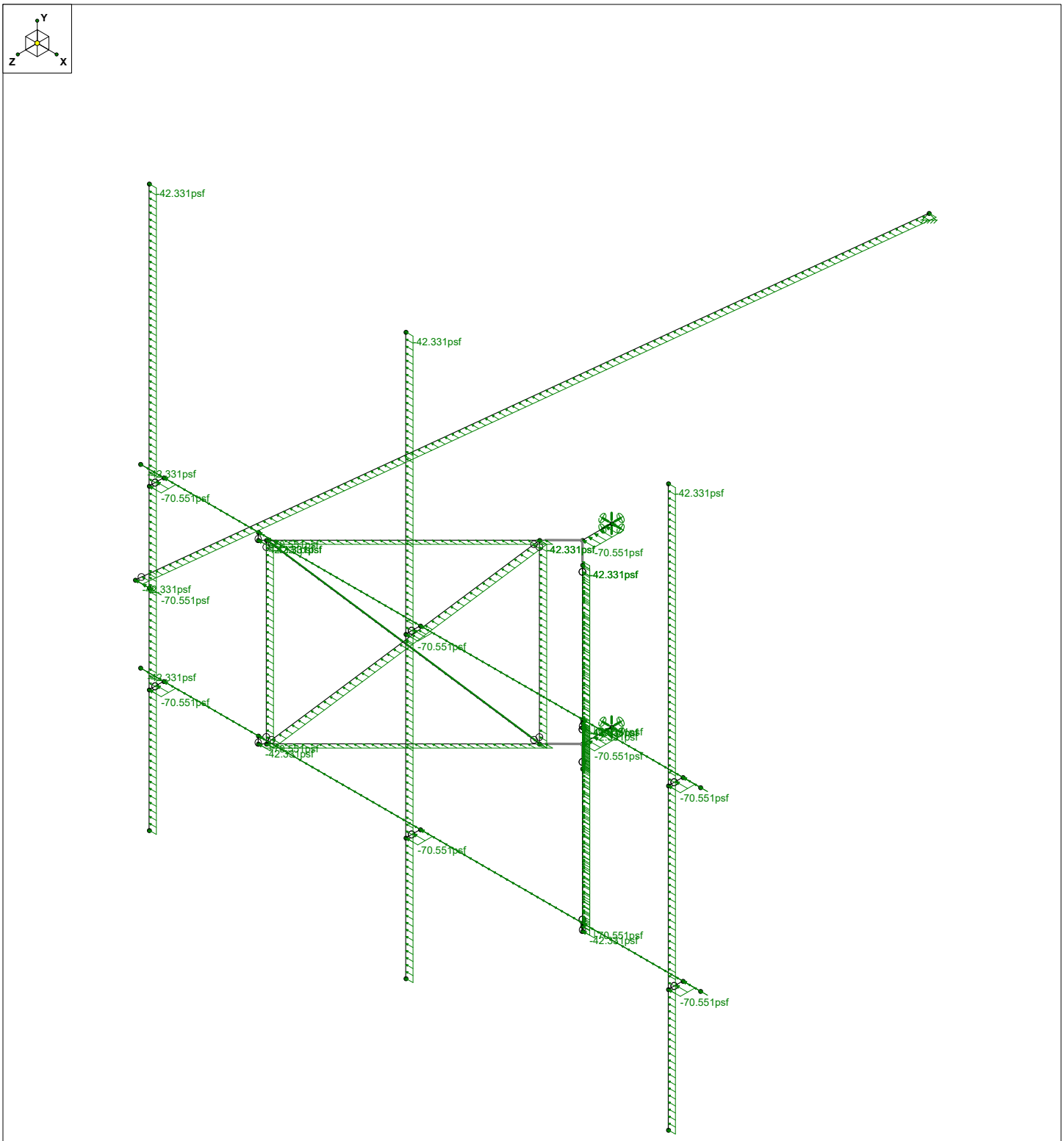

Loads: BLC 3, Structure Wind X
Envelope Only Solution

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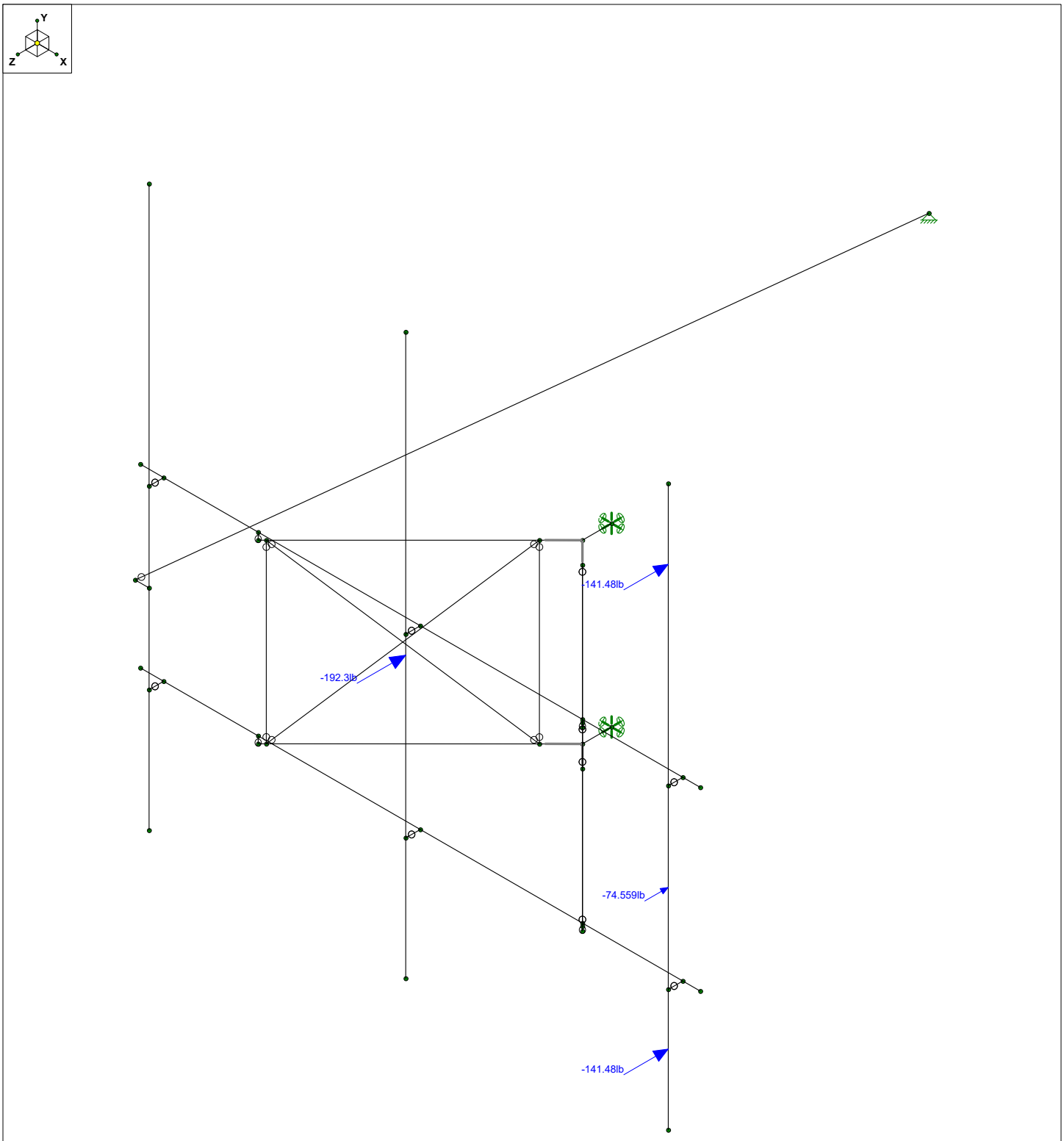

Loads: BLC 4, Wind Load 0 AZI
Envelope Only Solution

Trylon	870800	Wind Loads
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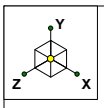
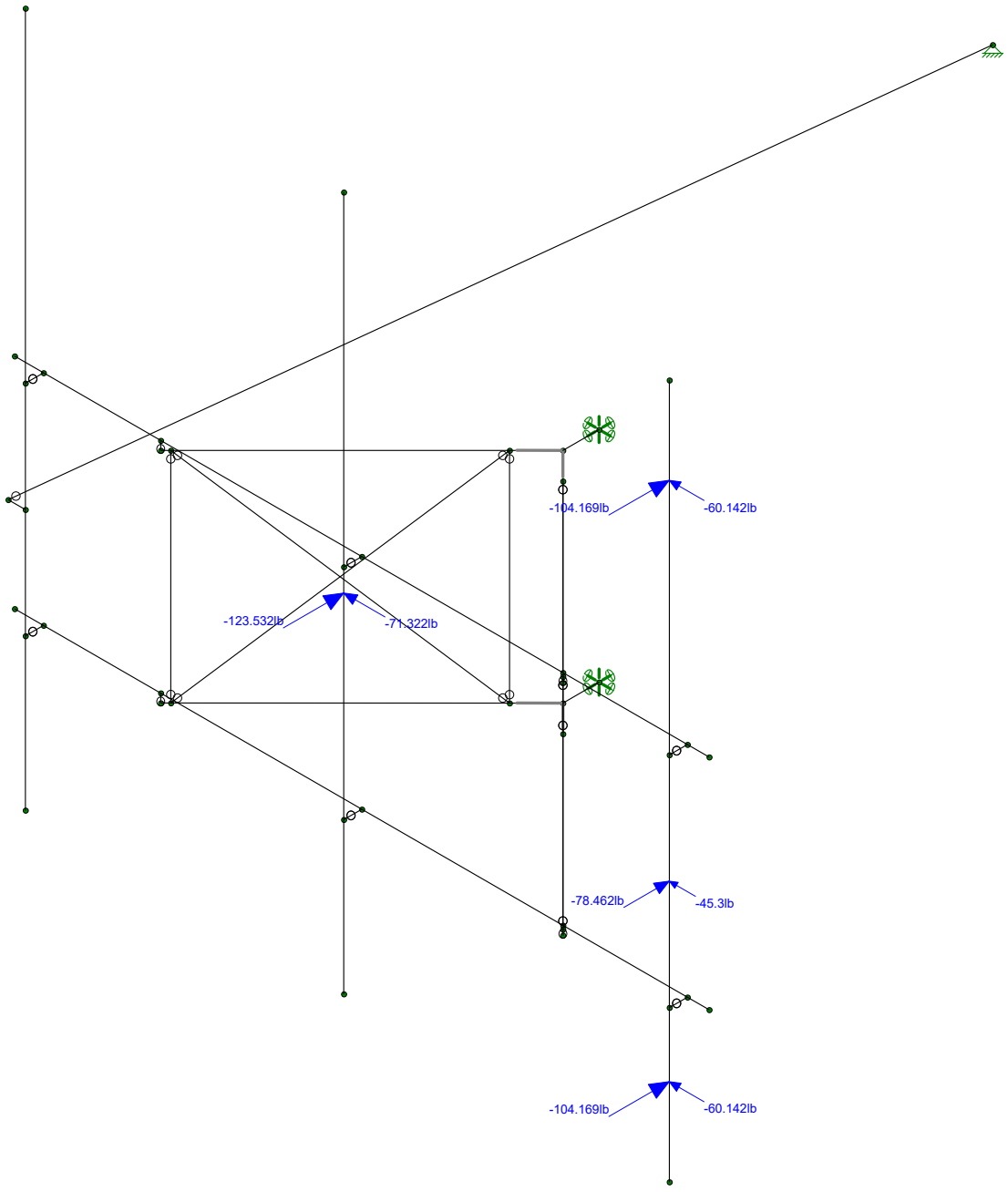
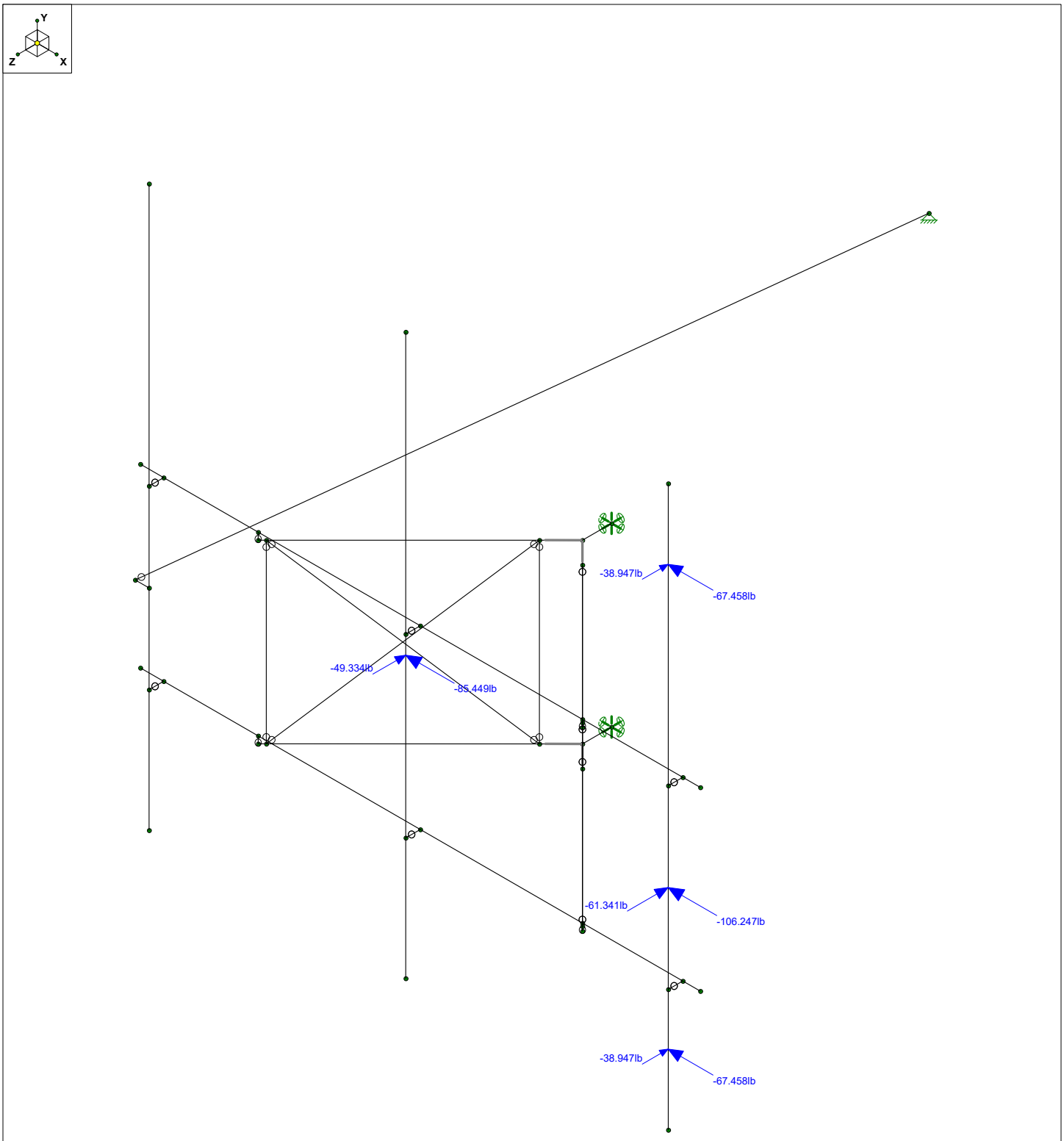




Loads: BLC 5, Wind Load 30 AZI
Envelope Only Solution

Trylon	870800	Wind Loads
SMM		Aug 25, 2023 at 9:58 AM
231130		870800_loaded.r3d



Loads: BLC 7, Wind Load 60 AZI
Envelope Only Solution

Trylon	870800	Wind Loads
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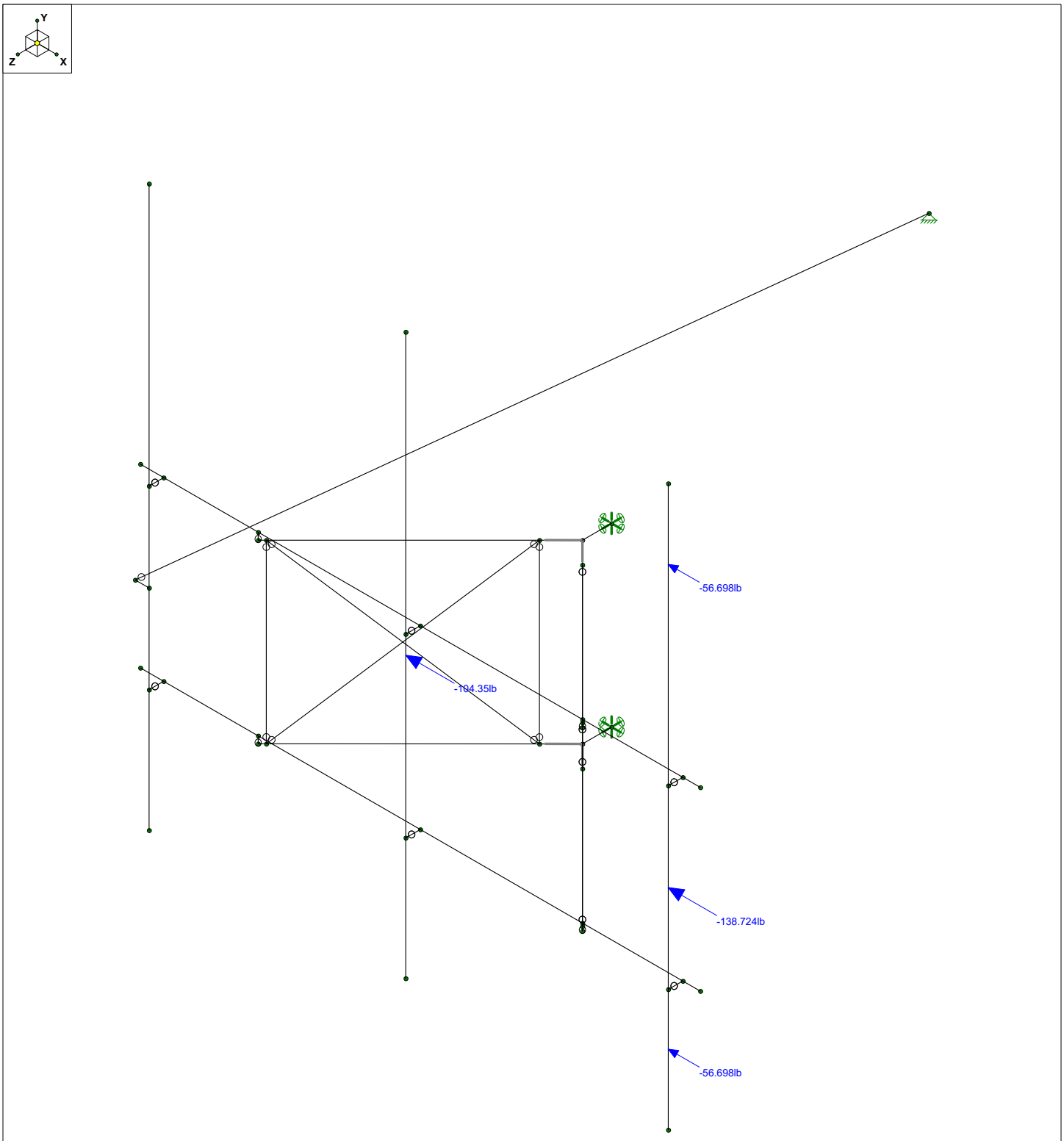

Loads: BLC 8, Wind Load 90 AZI
Envelope Only Solution

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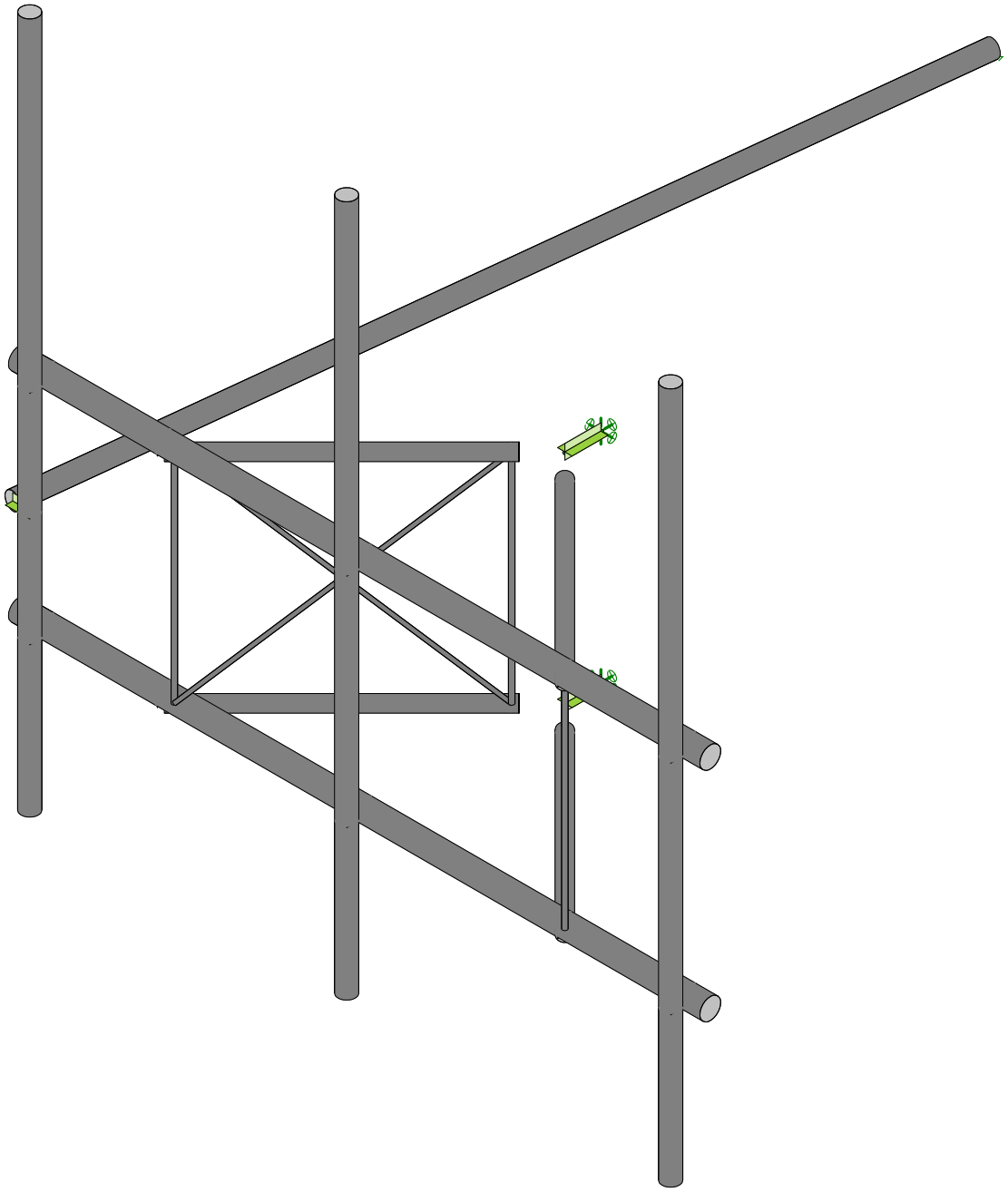


Envelope Only Solution

Trylon	870800	Render
SMM		Aug 25, 2023 at 9:58 AM
231130		870800_loaded.r3d

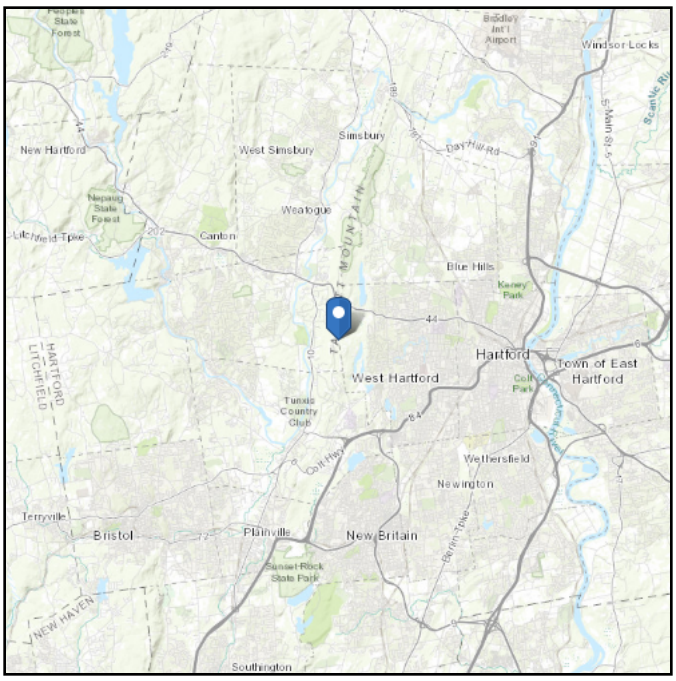
APPENDIX B

SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.774986
Risk Category:	II	**Longitude:**	-72.800575
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	673.4667014820361 ft (NAVD 88)



Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2

Date Accessed: Fri Aug 25 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Seismic

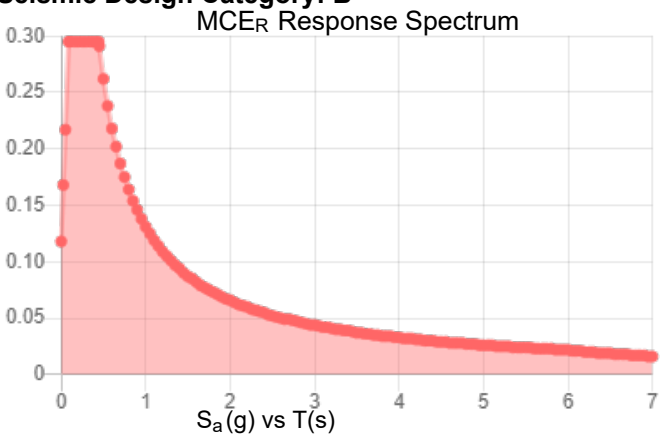
D - Default (see Section 11.4.3)

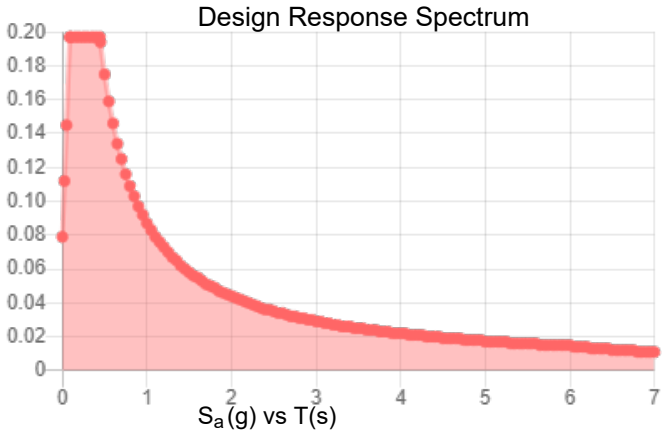
Site Soil Class:

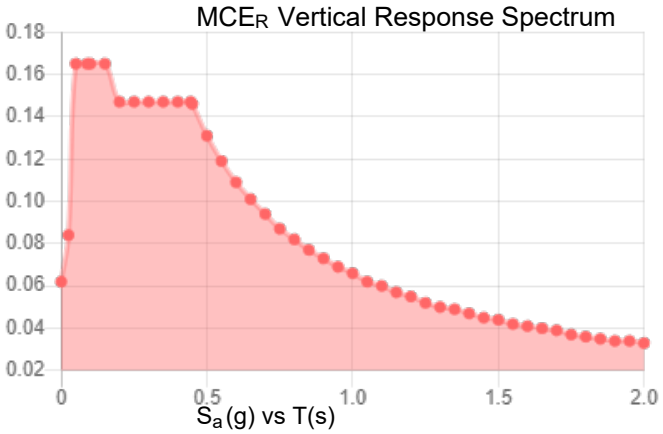
Results:

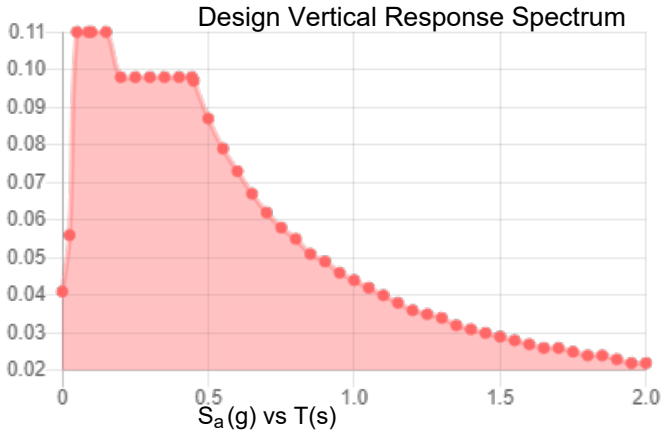
S_S :	0.184	S_{D1} :	0.087
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.099
F_v :	2.4	PGA_M :	0.158
S_{MS} :	0.295	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.197	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Fri Aug 25 2023**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Aug 25 2023

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Trylon
1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	231130
Carrier Site ID:	BU 870800
Carrier Site Name:	Avon (Deercliff Rd.)

CODES AND STANDARDS	
Building Code:	2021 IBC
Local Building Code:	2022 CTBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	201.0	ft.
Number of Sectors:	3	--
Structure Type:	Guyed Tower	--
Structure Height:	560.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	673.5	ft.

TOPOGRAPHIC DATA		
Topographic Category:	1.00	--
Topographic Feature:	N/A	--
Crest Point Elevation:	0.00	ft.
Base Point Elevation:	0.00	ft.
Crest to Mid-Height (L/2):	0.00	ft.
Distance from Crest (x):	0.00	ft.
Base Topo Factor (K_{zt}):	1.00	--
Mount Topo Factor (K_{zt}):	1.00	--

WIND PARAMETERS		
Design Wind Speed:	117	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.21	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	39.20	psf
Ground Elevation Factor (K_e):	0.98	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	7.11	psf
Mount Ice Thickness (t_{iz}):	1.80	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	70.55	psf
Round Member Pressure:	42.33	psf
Ice Wind Pressure:	7.68	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.18	g
1 Second Accel (S_1):	0.06	g
Short Period Des. (S_{DS}):	0.20	g
1 Second Des. (S_{D1}):	0.09	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
Amplification Factor (A_S):	3.00	--

LOAD COMBINATIONS [LRFD]

#	Description
1	1.4DL
2	1.2DL + 1WL 0 AZI
3	1.2DL + 1WL 30 AZI
4	1.2DL + 1WL 45 AZI
5	1.2DL + 1WL 60 AZI
6	1.2DL + 1WL 90 AZI
7	1.2DL + 1WL 120 AZI
8	1.2DL + 1WL 135 AZI
9	1.2DL + 1WL 150 AZI
10	1.2DL + 1WL 180 AZI
11	1.2DL + 1WL 210 AZI
12	1.2DL + 1WL 225 AZI
13	1.2DL + 1WL 240 AZI
14	1.2DL + 1WL 270 AZI
15	1.2DL + 1WL 300 AZI
16	1.2DL + 1WL 315 AZI
17	1.2DL + 1WL 330 AZI
18	0.9DL + 1WL 0 AZI
19	0.9DL + 1WL 30 AZI
20	0.9DL + 1WL 45 AZI
21	0.9DL + 1WL 60 AZI
22	0.9DL + 1WL 90 AZI
23	0.9DL + 1WL 120 AZI
24	0.9DL + 1WL 135 AZI
25	0.9DL + 1WL 150 AZI
26	0.9DL + 1WL 180 AZI
27	0.9DL + 1WL 210 AZI
28	0.9DL + 1WL 225 AZI
29	0.9DL + 1WL 240 AZI
30	0.9DL + 1WL 270 AZI
31	0.9DL + 1WL 300 AZI
32	0.9DL + 1WL 315 AZI
33	0.9DL + 1WL 330 AZI
34	1.2DL + 1DLi + 1WLi 0 AZI
35	1.2DL + 1DLi + 1WLi 30 AZI
36	1.2DL + 1DLi + 1WLi 45 AZI
37	1.2DL + 1DLi + 1WLi 60 AZI
38	1.2DL + 1DLi + 1WLi 90 AZI
39	1.2DL + 1DLi + 1WLi 120 AZI
40	1.2DL + 1DLi + 1WLi 135 AZI
41	1.2DL + 1DLi + 1WLi 150 AZI

#	Description
42	1.2DL + 1DLi + 1WLi 180 AZI
43	1.2DL + 1DLi + 1WLi 210 AZI
44	1.2DL + 1DLi + 1WLi 225 AZI
45	1.2DL + 1DLi + 1WLi 240 AZI
46	1.2DL + 1DLi + 1WLi 270 AZI
47	1.2DL + 1DLi + 1WLi 300 AZI
48	1.2DL + 1DLi + 1WLi 315 AZI
49	1.2DL + 1DLi + 1WLi 330 AZI
50	(1.2+0.2Sds) + 1.0E 0 AZI
51	(1.2+0.2Sds) + 1.0E 30 AZI
52	(1.2+0.2Sds) + 1.0E 45 AZI
53	(1.2+0.2Sds) + 1.0E 60 AZI
54	(1.2+0.2Sds) + 1.0E 90 AZI
55	(1.2+0.2Sds) + 1.0E 120 AZI
56	(1.2+0.2Sds) + 1.0E 135 AZI
57	(1.2+0.2Sds) + 1.0E 150 AZI
58	(1.2+0.2Sds) + 1.0E 180 AZI
59	(1.2+0.2Sds) + 1.0E 210 AZI
60	(1.2+0.2Sds) + 1.0E 225 AZI
61	(1.2+0.2Sds) + 1.0E 240 AZI
62	(1.2+0.2Sds) + 1.0E 270 AZI
63	(1.2+0.2Sds) + 1.0E 300 AZI
64	(1.2+0.2Sds) + 1.0E 315 AZI
65	(1.2+0.2Sds) + 1.0E 330 AZI
66	(0.9-0.2Sds) + 1.0E 0 AZI
67	(0.9-0.2Sds) + 1.0E 30 AZI
68	(0.9-0.2Sds) + 1.0E 45 AZI
69	(0.9-0.2Sds) + 1.0E 60 AZI
70	(0.9-0.2Sds) + 1.0E 90 AZI
71	(0.9-0.2Sds) + 1.0E 120 AZI
72	(0.9-0.2Sds) + 1.0E 135 AZI
73	(0.9-0.2Sds) + 1.0E 150 AZI
74	(0.9-0.2Sds) + 1.0E 180 AZI
75	(0.9-0.2Sds) + 1.0E 210 AZI
76	(0.9-0.2Sds) + 1.0E 225 AZI
77	(0.9-0.2Sds) + 1.0E 240 AZI
78	(0.9-0.2Sds) + 1.0E 270 AZI
79	(0.9-0.2Sds) + 1.0E 300 AZI
80	(0.9-0.2Sds) + 1.0E 315 AZI
81	(0.9-0.2Sds) + 1.0E 330 AZI
82-88	1.2D + 1.5 Lv1

#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2

#	Description
121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

*This page shows an example of maintenance loads for (4) pipes, the number of mount pipe LCs may vary per site

EQUIPMENT LOADING

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
MX08FRO665-21	1	202	No Ice	8.01	3.21	64.50
--	--	--	w/ Ice	9.62	4.62	296.99
TA08025-B604	1	202	No Ice	1.96	0.98	63.90
--	--	--	w/ Ice	2.41	1.33	73.30
TA08025-B605	1	202	No Ice	1.96	1.13	75.00
--	--	--	w/ Ice	2.41	1.49	78.05
VHLP2-11W/B	1	202	No Ice	5.59	1.95	12.68
--	--	--	w/ Ice	6.30	2.46	158.84
IP-50C	1	202	No Ice	1.12	0.37	13.20
--	--	--	w/ Ice	1.47	0.63	37.54
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
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			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
MX08FRO665-21	1	202	1.00	1.21	0.95	1.80	39.25	7.17
TA08025-B604	1	202	1.00	1.21	0.95	1.80	39.25	7.17
TA08025-B605	1	202	1.00	1.21	0.95	1.80	39.25	7.17
VHLP2-11W/B	1	202	1.00	1.21	0.95	1.80	39.25	7.17
IP-50C	1	202	1.00	1.21	0.95	1.80	39.25	7.17

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
MX08FRO665-21	1	No Ice	282.96	155.79	240.57	113.40	240.57	155.79
--	--	w/ Ice	62.07	37.89	54.01	29.83	54.01	37.89
TA08025-B604	1	No Ice	69.36	43.33	60.69	34.66	60.69	43.33
--	--	w/ Ice	15.52	10.29	13.78	8.55	13.78	10.29
TA08025-B605	1	No Ice	69.36	47.27	62.00	39.90	62.00	47.27
--	--	w/ Ice	15.52	11.08	14.04	9.60	14.04	11.08
VHLP2-11W/B	1	No Ice	163.07	101.35	142.50	80.78	142.50	101.35
--	--	w/ Ice	40.68	22.05	34.47	15.84	34.47	22.05
IP-50C	1	No Ice	39.61	19.79	33.01	13.19	33.01	19.79
--	--	w/ Ice	9.48	5.43	8.13	4.08	8.13	5.43
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

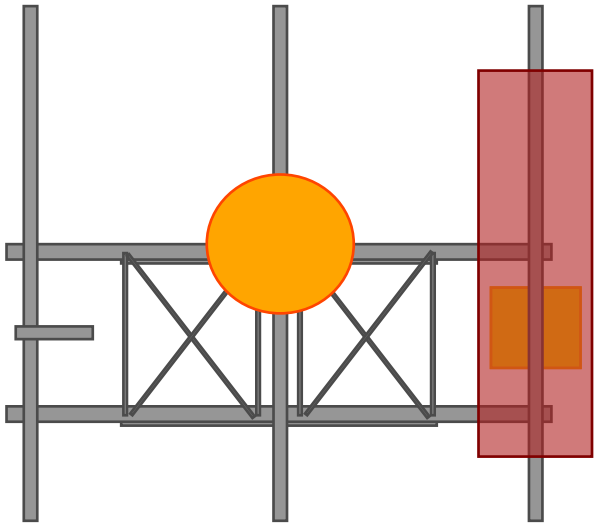
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
MX08FRO665-21	1	202	64.5	18.99
TA08025-B604	1	202	63.9	18.81
TA08025-B605	1	202	75	22.08
VHLP2-11W/B	1	202	12.68	3.73
IP-50C	1	202	13.2	3.89

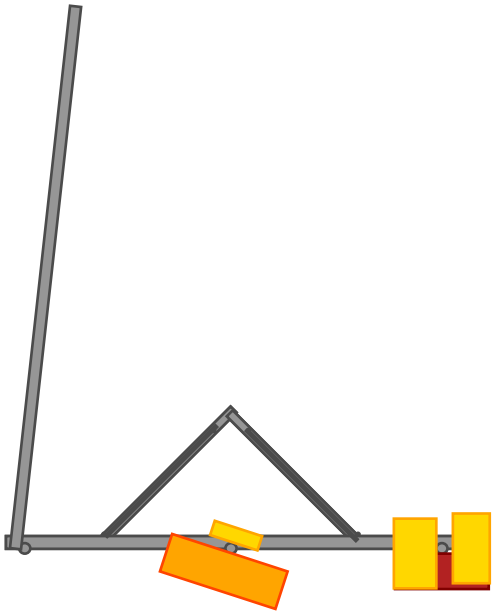
ELEVATION VIEW



MP3 MP2 MP1

*these drawings are intended to show approximate locations of equipment on the mount and should not be used to determine exact placement of equipment or additional hardware

PLAN VIEW



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Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
MX08FRO665-21	1	202	MP1	240
TA08025-B604	1	202	MP1	330
TA08025-B605	1	202	MP1	150
VHLP2-11W/B	1	202	MP2	258
IP-50C	1	202	MP2	258

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APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI S100-07: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	A500 Gr. C - 46	29000	11154	.3	.65	.49	46	1.3	62	1.4
9	A529 Gr. 50	29000	11154	.3	.65	.49	50	1.3	65	1.4

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A653 SS Gr33	29500	11346	.3	.65	.49	33	45
2	A653 SS Gr50/1	29500	11346	.3	.65	.49	50	65

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Horizontals	PIPE_2.5	Beam	None	A500 Gr. C - 46	Typical	1.61	1.45	1.45	2.89
2	Standoffs	PIPE_1.5	Beam	None	A500 Gr. C - 46	Typical	.749	.293	.293	.586
3	Tie Backs	PIPE_2.0	Beam	None	A500 Gr. C - 46	Typical	1.02	.627	.627	1.25
4	Mount Pipes	PIPE_2.0	Beam	None	A500 Gr. C - 46	Typical	1.02	.627	.627	1.25
5	Standoff Bracing (V...	SR 5/8_HRA...	Beam	None	A529 Gr. 50	Typical	.307	.007	.007	.015

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
6	Vertical pipes	PIPE_3.0	Beam	None	A500 Gr. C - 46	Typical	2.07	2.85	2.85	5.69
7	Standoff Bracing (D...	SR 1/2"	Beam	None	A529 Gr. 50	Typical	.196	.003	.003	.006

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	8CU1.25X0...	Beam	None	A653 SS Gr33	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N13						
2	N14						
3	N48	Reaction	Reaction	Reaction	Reaction		Reaction
4	N49	Reaction	Reaction	Reaction	Reaction		Reaction
5	N52A	Reaction	Reaction	Reaction			

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Self Weight	DL		-1			6			
2	Structure Wind Z	WLZ						31		
3	Structure Wind X	WLX						31		
4	Wind Load 0 AZI	WLZ					12			
5	Wind Load 30 AZI	None					12			
6	Wind Load 45 AZI	None					12			
7	Wind Load 60 AZI	None					12			
8	Wind Load 90 AZI	WLX					12			
9	Wind Load 120 AZI	None					12			
10	Wind Load 135 AZI	None					12			
11	Wind Load 150 AZI	None					12			
12	Ice Weight	OL1					6	31		
13	Ice Structure Wind Z	OL2						31		
14	Ice Structure Wind X	OL3						31		
15	Ice Wind Load 0 AZI	OL2					12			
16	Ice Wind Load 30 AZI	None					12			
17	Ice Wind Load 45 AZI	None					12			
18	Ice Wind Load 60 AZI	None					12			
19	Ice Wind Load 90 AZI	OL3					12			
20	Ice Wind Load 120 AZI	None					12			
21	Ice Wind Load 135 AZI	None					12			
22	Ice Wind Load 150 AZI	None					12			
23	Seismic Load Z	ELZ			-.294		6			
24	Seismic Load X	ELX	-.294				6			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Maintenance Load 1 (Lm)	None					1			
29	Maintenance Load 2 (Lm)	None					1			
30	Maintenance Load 3 (Lm)	None					1			

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1														
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1														
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1DLi + 1W Li 0 ...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1W Li 4...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1W Li 6...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1W Li 9...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E 0 ...	Yes	Y		DL	1.2...	23	1	24																	
51	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.866	24	.5																

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
52	(1.2+0.2Sds)DL + 1E 4...	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 6...	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 9...	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 ...	Yes	Y		DL	.861	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.861	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 4...	Yes	Y		DL	.861	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 6...	Yes	Y		DL	.861	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 9...	Yes	Y		DL	.861	23		24	1																
71	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.861	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.861	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.861	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.861	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.861	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.861	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.861	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.861	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.861	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.861	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.861	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	.066	3		4	.066												
86	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	.057	3	.033	5	.066												
87	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	.046	3	.046	6	.066												
88	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	.033	3	.057	7	.066												
89	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2		3	.066	8	.066												
90	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	-.033	3	.057	9	.066												
91	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	-.046	3	.046	10	.066												
92	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	-.057	3	.033	11	.066												
93	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	-.066	3		4	-.066												
94	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	-.057	3	-.033	5	-.066												
95	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	-.046	3	-.046	6	-.066												
96	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	-.033	3	-.057	7	-.066												
97	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2		3	-.066	8	-.066												
98	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	.033	3	-.057	9	-.066												
99	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	.046	3	-.046	10	-.066												
100	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	28	1.5	2	.057	3	-.033	11	-.066												
101	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	.066	3		4	.066												
102	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	.057	3	.033	5	.066												
103	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	.046	3	.046	6	.066												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
104	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	.033	3	.057	7	.066												
105	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2		3	.066	8	.066												
106	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	-.033	3	.057	9	.066												
107	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	-.046	3	.046	10	.066												
108	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	-.057	3	.033	11	.066												
109	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	-.066	3		4	-.066												
110	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	-.057	3	-.033	5	-.066												
111	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	-.046	3	-.046	6	-.066												
112	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	-.033	3	-.057	7	-.066												
113	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2		3	-.066	8	-.066												
114	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	.033	3	-.057	9	-.066												
115	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	.046	3	-.046	10	-.066												
116	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	29	1.5	2	.057	3	-.033	11	-.066												
117	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	.066	3		4	.066												
118	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	.057	3	.033	5	.066												
119	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	.046	3	.046	6	.066												
120	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	.033	3	.057	7	.066												
121	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2		3	.066	8	.066												
122	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	-.033	3	.057	9	.066												
123	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	-.046	3	.046	10	.066												
124	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	-.057	3	.033	11	.066												
125	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	-.066	3		4	-.066												
126	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	-.057	3	-.033	5	-.066												
127	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	-.046	3	-.046	6	-.066												
128	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	-.033	3	-.057	7	-.066												
129	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2		3	-.066	8	-.066												
130	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	.033	3	-.057	9	-.066												
131	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	.046	3	-.046	10	-.066												
132	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	30	1.5	2	.057	3	-.033	11	-.066												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N48	max	632.623	89	1620.876	40	684.331	33	-99.484	33	0	132	628.428	131
2		min	-1151.005	129	138.377	33	-1826.703	41	-1153.135	40	0	1	-208.589	91
3	N49	max	1133.15	121	660.778	116	1652.142	49	97.243	124	0	132	263.358	84
4		min	-614.226	97	-40.048	124	-107.772	25	-523.777	116	0	1	-210.638	91
5	N52A	max	49.402	17	68.455	38	673.573	8	0	132	0	132	0	132
6		min	-49.67	9	15.325	79	-678.706	16	0	1	0	1	0	1
7	Totals:	max	716.716	22	1929.103	47	1018.494	2						
8		min	-716.724	14	418.287	71	-1018.485	26						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code..	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...	phi*Pnt [l..	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M24	SR 5/8_HR...	.384	28.044	123	.030	0		17	1849.145	13805.82	143.808	143.808	1	H1-1a
2	M29	SR 1/2"	.360	22.427	37	.015	44.854		16	1400.283	8820	72	72	1	H1-1a
3	M4	PIPE_1.5	.208	34.81	129	.190	34.81		132	23485.28	31008.6	1452.45	1452.45	1	H1-1b
4	M2	PIPE_1.5	.184	34.81	120	.117	.725		131	23485.28	31008.6	1452.45	1452.45	1....	H1-1b
5	MP1	PIPE_2.0	.182	45	2	.127	45		17	15369.683	42228	2459.85	2459.85	1....	H1-1b
6	M3	PIPE_1.5	.173	34.81	122	.084	34.81		86	23485.28	31008.6	1452.45	1452.45	1	H1-1b

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code..	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...	phi*Pnt [l..	phi*Mn y...	phi*Mn z...	Cb	Eqn
7	MP3	PIPE_2.0	.169	60	16	.154	45		16	15369.683	42228	2459.85	2459.85	2....	H1-1b
8	M5	PIPE_2.5	.166	20	16	.050	76		117	45255.275	66654	4726.5	4726.5	1	H1-1b
9	M1	PIPE_1.5	.165	34.81	130	.083	34.81		89	23485.28	31008.6	1452.45	1452.45	1	H1-1b
10	H1	PIPE_2.5	.164	76	131	.054	76		125	45255.275	66654	4726.5	4726.5	2....	H1-1b
11	M28	SR 1/2"	.154	22.427	48	.016	0		16	1400.283	8820	72	72	1	H1-1b
12	M31A	PIPE_2.0	.085	61.625	39	.006	123.25		46	9324.69	42228	2459.85	2459.85	1....	H1-1b
13	M26	SR 5/8_HR...	.035	30.25	39	.055	0		131	1849.145	13805.82	143.808	143.808	1	H1-1b*
14	MP2	PIPE_2.0	.026	75	109	.161	45		16	15369.683	42228	2459.85	2459.85	1....	H1-1b*
15	M23	SR 5/8_HR...	.023	30.25	8	.030	0		17	1849.145	13805.82	143.808	143.808	1	H1-1b*
16	M25	SR 5/8_HR...	.015	16.385	42	.055	0		131	1849.145	13805.82	143.808	143.808	1	H1-1b
17	M27	SR 1/2"	.001	44.854	24	.011	0		17	1400.283	8820	72	72	1	H1-1b*
18	M30	SR 1/2"	.000	0	132	.009	44.854		17	1400.283	8820	72	72	1	H1-1a

Envelope AISI S100-07: LRFD Cold Formed Steel Code Checks

Member	Shape	Code ...	Loc[in]	LC	Shear ..	Loc[in]	Dir	LC	phi*Pn[lb]	phi*Tn[lb]	phi*Mny...	phi*Mnz...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

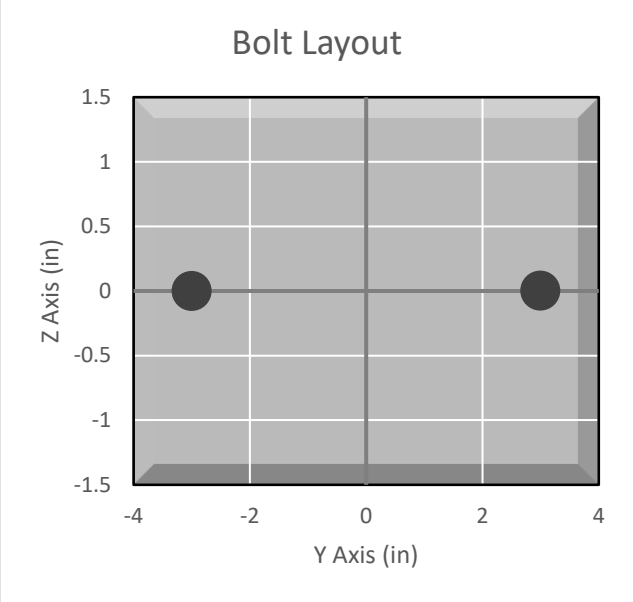
Analysis date: 8/25/2023

BOLT TOOL 1.5.3

Project Data	
Job Code:	231130
Carrier Site ID:	BU 870800
Carrier Site Name:	Avon (Deercliff Rd.)

Code	
Design Standard:	TIA-222-H
Slip Check:	Yes
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.75	in
Grade:	A529	--
Yield Strength (Fy):	50	ksi
Ultimate Strength (Fu):	65	ksi
Number of Bolts:	2	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	6	in



Connection Description
Mount to Tower Leg

Bolt Check*		
Tensile Capacity (ϕT_n):	16304.9	lbs
Shear Capacity (ϕV_n):	10768.5	lbs
Tension Force (T_u):	560.9	lbs
Shear Force (V_u):	2009.9	lbs
Tension Usage:	3.3%	--
Shear Usage:	17.8%	--
Interaction:	17.8%	Pass
Controlling Member:	M31	--
Controlling LC:	130	--

**Rating per TIA-222-H Section 15.5*

Slip Check*		
Sliding Capacity (ϕR_{ns}):	9506.9	lbs
Torsion Capacity (ϕR_{nr}):	2376.7	lb-ft
Sliding Force (V_{us}):	1620.2	lbs
Torsional Force (T_{ur}):	0.0	lb-ft
Sliding Usage:	16.2%	--
Torsion Usage:	0.0%	--
Interaction:	16.2%	Pass
Controlling Member:	M31	--
Controlling LC:	41	--

**Rating per TIA-222-H Section 15.5*

Date: **July 29, 2023**

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject:	**Structural Analysis Report**	
Carrier Designation:	***DISH Network* Co-Locate**	
	Site Number:	BOBDL00075A
	Site Name:	CT-CCI-T-870800
Crown Castle Designation:	**BU Number:**	870800
	Site Name:	Avon (Deercliff Rd.)
	JDE Job Number:	752159
	Work Order Number:	2248004
	Order Number:	655378 Rev. 4
Engineering Firm Designation:	**Crown Castle Project Number:**	2248004
Site Data:	**376 Deercliff Road, AVON, HARTFORD County, CT** **Latitude *41° 46' 29.95"*, Longitude *-72° 48' 2.07"*** **560 Foot - Guyed Tower**	

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

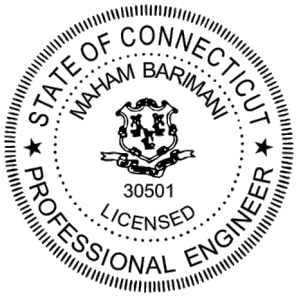
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2022 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 117 mph. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Brad Sparks

Respectfully submitted by:



Maham Barimani, P.E.
Senior Project Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 560 ft Guyed tower designed by STAINLESS INC. The tower has been modified to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
201.0	202.0	1	ceragon	IP-50C	2	1/4
		1	commscope	VHLP2-11W/B		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
553.0	553.0	3	kathrein	AP19-1670/090D/DT2	1	1-5/8
		1	rfs celwave	PDS3DE-698/2700		
		1	tower mounts	Pipe Mount [PM 601-3]		
514.0	528.0	1	telewave	ANT150F6	1 1	1-5/8 1-1/4
	519.0	1	andrew	PG1NOF-0093-8		
	514.0	2	tower mounts	Side Arm Mount [SO 312-1]		
505.0	505.0	1	mounts	Flush Mount	-	-
492.0	500.0	1	tx rx systems	101-68-10-0-03N	1	1-1/4
	492.0	1	tower mounts	Side Arm Mount [SO 308-1]		
465.0	475.0	1	telewave	ANT150F6	1	7/8
	465.0	1	tower mounts	Side Arm Mount [SO 312-1]		
442.0	450.0	1	tx rx systems	101-68-10-0-03N	1	1-1/4
	442.0	1	tower mounts	Side Arm Mount [SO 308-1]		
438.0	448.0	2	telewave	ANT150F6	2	7/8
	438.0	1	tower mounts	Side Arm Mount [SO 308-1]		
415.0	425.0	1	telewave	TPRD-1554	1 1	1/2 1-5/8
		1	tx rx systems	101D-90-06-0-03		
	415.0	1	tower mounts	Side Arm Mount [SO 308-1]		
388.0	402.0	1	sinclair	SC233	1	1-5/8
	388.0	1	tower mounts	Side Arm Mount [SO 306-1]		
324.0	329.0	2	decibel	DB636-C	2 1	1-5/8 1/2
	324.0	2	tower mounts	Side Arm Mount [SO 307-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
294.0	303.0	1	decibel	DB540K-E	1	1/2
	294.0	1	tower mounts	Side Arm Mount [SO 306-1]		
288.0	293.0	1	decibel	DB636-C	1	1-5/8
	288.0	1	andrew	P2F-52	1	1/2
		1	tower mounts	Side Arm Mount [SO 307-1]		
270.0	273.0	1	tx rx systems	CC806-06	1	1-5/8
	270.0	1	tower mounts	Side Arm Mount [SO 306-1]		
254.0	258.0	1	decibel	DB809KT6E-XT	-	-
	254.0	1	tower mounts	Side Arm Mount [SO 306-1]		
239.0	242.0	3	ericsson	AIR 6419 B41_TMO	4	1-5/8
		3	ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	rfs celwave	APXVAALL24_43-U-NA20		
	239.0	3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		1	tower mounts	Sector Mount [SM 201-3]		
214.0	214.0	3	kathrein	742 213 w/ Mount Pipe	6	1-5/8
212.0	222.0	1	telewave	ANT150F6	1	7/8
	212.0	1	tower mounts	Side Arm Mount [SO 306-1]		
201.0	206.0	1	raycap	RDIDC-9181-PF-48	1	1-3/4
	203.0	3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
	202.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
	201.0	1	tower mounts	Commscope MTC3975083 (3)		
175.0	185.0	1	telewave	ANT150F6	1	7/8
	175.0	1	tower mounts	6' x 2" Mount Pipe		
		1	tower mounts	Side Arm Mount [SO 602-1]		
145.0	146.0	1	tower mounts	Side Arm Mount [SO 202-1]	1	EW52
138.0	138.0	1	cci antennas	TMADB7821VG12A	1	1/2
		1	radiowaves	SPD2-5.8		
		1	tower mounts	Pipe Mount [PM 601-1]		
		1	tower mounts	Side Arm Mount [SO 201-1]		
134.0	134.0	1	cci antennas	TMADB7821VG12A	2	1/2
		1	radiowaves	SPD2-5.8		
112.0	116.0	1	rfs celwave	201-8	1	3/8
	112.0	1	tower mounts	Flush Mount		
91.0	94.0	1	telewave	ANT150F2	1	1/2
	91.0	1	tower mounts	Flush Mount		
80.0	81.0	1	dragonwave	A-ANT-11G-4-C	1	3/8
	80.0	1	tower mounts	Side Arm Mount [SO 301-1]		
76.0	76.0	1	tower mounts	Side Arm Mount [SO 301-1]	1	1/2
		1	trimble	Acutime 2000		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	1579662	CCISITES
4-POST-MODIFICATION INSPECTION	2236822	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	1341932	CCISITES
4-TOWER MANUFACTURER DRAWINGS	1579694	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	2124272	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) Tower and structures were maintained in accordance with the TIA-222 Standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	560 - 553.75	Leg	4	2	-0.714	393.544	0.2	Pass
T2	553.75 - 547.5	Leg	4	14	-2.280	393.544	0.6	Pass
T3	547.5 - 541.25	Leg	4	26	-6.734	393.544	1.7	Pass
T4	541.25 - 535	Leg	4	39	-10.729	393.544	2.7	Pass
T5	535 - 510	Leg	4	51	-33.678	393.544	8.6	Pass
T6	510 - 485	Leg	4 1/2	88	-73.688	542.982	13.6	Pass
T7	485 - 460	Leg	4 1/2	127	-84.015	542.982	15.5	Pass
T8	460 - 435	Leg	4 3/4	166	-100.595	625.480	16.1	Pass
T9	435 - 410	Leg	4 3/4	205	-104.759	625.480	16.7	Pass
T10	410 - 385	Leg	4 3/4	244	-104.455	625.480	16.7	Pass
T11	385 - 360	Leg	4 3/4	283	-95.575	625.480	15.3	Pass
T12	360 - 335	Leg	4 3/4	322	-109.624	625.480	17.5	Pass
T13	335 - 310	Leg	5 1/4	363	-149.889	805.605	18.6	Pass
T14	310 - 285	Leg	5	402	-144.353	713.043	20.2	Pass
T15	285 - 260	Leg	4 3/4	439	-149.324	625.480	23.9	Pass
T16	260 - 235	Leg	4 3/4	478	-159.892	625.480	25.6	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T17	235 - 210	Leg	4 3/4	517	-162.203	625.480	25.9	Pass
T18	210 - 185	Leg	5	556	-162.672	713.043	22.8	Pass
T19	185 - 160	Leg	5 1/4	595	-174.045	805.605	21.6	Pass
T20	160 - 135	Leg	5 1/2	634	-194.040	903.111	21.5	Pass
T21	135 - 110	Leg	5 1/4	673	-194.422	805.605	24.1	Pass
T22	110 - 85	Leg	5 1/4	712	-207.973	805.605	25.8	Pass
T23	85 - 60	Leg	5 1/4	751	-215.960	805.605	26.8	Pass
T24	60 - 35	Leg	5 1/4	790	-218.415	805.605	27.1	Pass
T25	35 - 10	Leg	5 1/4	829	-218.173	805.605	27.1	Pass
T26	10 - 0	Leg	5 1/4	868	-237.280	849.753	27.9	Pass
T1	560 - 553.75	Diagonal	2L3x3x1/4x3/8	7	-0.396	79.388	0.5	Pass
T2	553.75 - 547.5	Diagonal	2L2 1/2x2x3/16x3/8	17	-1.251	27.459	4.6	Pass
T3	547.5 - 541.25	Diagonal	1	32	2.435	26.719	9.1	Pass
T4	541.25 - 535	Diagonal	1	44	3.073	26.719	11.5	Pass
T5	535 - 510	Diagonal	1	59	5.553	26.719	20.8	Pass
T6	510 - 485	Diagonal	1 1/4	95	8.313	41.749	19.9	Pass
T7	485 - 460	Diagonal	1	161	8.015	26.719	30.0	Pass
T8	460 - 435	Diagonal	3/4	200	4.876	15.030	32.4	Pass
T9	435 - 410	Diagonal	5/8	239	1.688	10.437	16.2	Pass
T10	410 - 385	Diagonal	5/8	255	4.502	10.437	43.1	Pass
T11	385 - 360	Diagonal	3/4	294	7.093	15.030	47.2	Pass
T12	360 - 335	Diagonal	1	333	9.813	26.719	36.7	Pass
T13	335 - 310	Diagonal	1 1/4	368	11.772	41.749	28.2	Pass
T14	310 - 285	Diagonal	1	434	11.753	26.719	44.0	Pass
T15	285 - 260	Diagonal	3/4	473	8.370	15.030	55.7	Pass
T16	260 - 235	Diagonal	5/8	511	5.530	10.437	53.0	Pass
T17	235 - 210	Diagonal	5/8	528	4.258	10.437	40.8	Pass
T18	210 - 185	Diagonal	7/8	567	9.119	20.457	44.6	Pass
T19	185 - 160	Diagonal	1	601	13.382	26.719	50.1	Pass
T20	160 - 135	Diagonal	1 1/4	667	13.213	41.749	31.6	Pass
T21	135 - 110	Diagonal	1	710	8.250	26.719	30.9	Pass
T22	110 - 85	Diagonal	7/8	749	5.448	20.457	26.6	Pass
T23	85 - 60	Diagonal	7/8	757	3.039	20.457	14.9	Pass
T24	60 - 35	Diagonal	7/8	796	5.478	20.457	26.8	Pass
T25	35 - 10	Diagonal	7/8	835	7.837	20.457	38.3	Pass
T26	10 - 0	Diagonal	L3x3 1/2x5/16	882	-3.202	40.474	7.9	Pass
T2	553.75 - 547.5	Horizontal	2L3x2 1/2x1/4x3/8	16	0.751	72.966	1.0	Pass
T5	535 - 510	Horizontal	2L3x2 1/2x1/4x3/8	63	-3.957	57.169	6.9	Pass
T6	510 - 485	Horizontal	2L3x2 1/2x1/4x3/8	101	14.570	75.107	19.4	Pass
T7	485 - 460	Horizontal	2L3x2 1/2x1/4x3/8	157	-6.142	57.614	10.7	Pass
T8	460 - 435	Horizontal	2L2 1/2x2x3/16x3/8	196	-3.691	24.086	15.3	Pass
T9	435 - 410	Horizontal	2L2 1/2x2x3/16x3/8	219	-1.814	24.086	7.5	Pass
T10	410 - 385	Horizontal	2L2 1/2x2x3/16x3/8	258	-3.320	24.086	13.8	Pass
T11	385 - 360	Horizontal	2L2x2x1/4x3/8	297	-5.447	28.003	19.5	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T12	360 - 335	Horizontal	2L3x2 1/2x1/4x3/8	336	-7.577	57.835	13.1	Pass
T13	335 - 310	Horizontal	2L3x2 1/2x1/4x3/8	374	16.852	75.107	22.4	Pass
T14	310 - 285	Horizontal	2L3x2 1/2x1/4x3/8	430	-9.142	58.056	15.7	Pass
T15	285 - 260	Horizontal	2L2 1/2x2x3/16x3/8	469	-6.502	24.086	27.0	Pass
T16	260 - 235	Horizontal	2L2 1/2x2x3/16x3/8	508	-4.266	24.086	17.7	Pass
T17	235 - 210	Horizontal	2L2 1/2x2x3/16x3/8	531	-3.124	24.086	13.0	Pass
T18	210 - 185	Horizontal	2L2 1/2x2x3/16x3/8	570	-6.966	24.216	28.8	Pass
T19	185 - 160	Horizontal	2L3x2 1/2x1/4x3/8	607	-10.383	58.276	17.8	Pass
T20	160 - 135	Horizontal	2L3x2 1/2x1/4x3/8	665	18.435	75.107	24.5	Pass
T21	135 - 110	Horizontal	2L3x2 1/2x1/4x3/8	705	-6.337	58.276	10.9	Pass
T22	110 - 85	Horizontal	2L2 1/2x2x3/16x3/8	744	-4.104	24.347	16.9	Pass
T23	85 - 60	Horizontal	2L2 1/2x2x3/16x3/8	783	-3.741	24.347	15.4	Pass
T24	60 - 35	Horizontal	2L2 1/2x2x3/16x3/8	802	-4.122	24.347	16.9	Pass
T25	35 - 10	Horizontal	2L2 1/2x2x3/16x3/8	850	-5.698	24.347	23.4	Pass
T26	10 - 0	Horizontal	L3x5x1/2	880	-4.411	115.670	3.8	Pass
T1	560 - 553.75	Top Girt	C10x20	4	-0.116	118.522	0.1	Pass
T3	547.5 - 541.25	Top Girt	2C6x8.2x0.375	29	-0.992	92.005	1.1	Pass
T4	541.25 - 535	Top Girt	2L3x2 1/2x1/4x3/8	40	-2.158	57.169	3.8	Pass
T5	535 - 510	Top Girt	2L3x2 1/2x1/4x3/8	52	-2.628	57.169	4.6	Pass
T6	510 - 485	Top Girt	2L3x2 1/2x1/4x3/8	93	-4.803	57.614	8.3	Pass
T7	485 - 460	Top Girt	2L3x2 1/2x1/4x3/8	130	-6.327	57.614	11.0	Pass
T8	460 - 435	Top Girt	2L2 1/2x2x3/16x3/8	169	-4.262	24.086	17.7	Pass
T9	435 - 410	Top Girt	2L2 1/2x2x3/16x3/8	210	-1.814	24.086	7.5	Pass
T10	410 - 385	Top Girt	2L2 1/2x2x3/16x3/8	249	-1.809	24.086	7.5	Pass
T11	385 - 360	Top Girt	2L2x2x1/4x3/8	288	-3.986	28.003	14.2	Pass
T12	360 - 335	Top Girt	2L3x2 1/2x1/4x3/8	327	-6.085	57.835	10.5	Pass
T13	335 - 310	Top Girt	2L3x2 1/2x1/4x3/8	366	-8.154	58.276	14.0	Pass
T14	310 - 285	Top Girt	2L3x2 1/2x1/4x3/8	403	-9.097	58.056	15.7	Pass
T15	285 - 260	Top Girt	2L2 1/2x2x3/16x3/8	442	-7.109	24.086	29.5	Pass
T16	260 - 235	Top Girt	2L2 1/2x2x3/16x3/8	481	-4.887	24.086	20.3	Pass
T17	235 - 210	Top Girt	2L2 1/2x2x3/16x3/8	522	-2.809	24.086	11.7	Pass
T18	210 - 185	Top Girt	2L2 1/2x2x3/16x3/8	561	-3.943	24.216	16.3	Pass
T19	185 - 160	Top Girt	2L3x2 1/2x1/4x3/8	598	-7.695	58.276	13.2	Pass
T20	160 - 135	Top Girt	2L3x2 1/2x1/4x3/8	637	-10.266	58.496	17.6	Pass
T21	135 - 110	Top Girt	2L3x2 1/2x1/4x3/8	678	-6.987	58.276	12.0	Pass
T22	110 - 85	Top Girt	2L2 1/2x2x3/16x3/8	717	-4.643	24.347	19.1	Pass
T23	85 - 60	Top Girt	2L2 1/2x2x3/16x3/8	756	-3.741	24.347	15.4	Pass
T24	60 - 35	Top Girt	2L2 1/2x2x3/16x3/8	795	-3.783	24.347	15.5	Pass
T25	35 - 10	Top Girt	2L2 1/2x2x3/16x3/8	832	-4.588	24.347	18.8	Pass
T26	10 - 0	Top Girt	2L4x3x1/2	872	56.263	221.130	25.4	Pass
T6	510 - 485	Guy A@491.25	1 3/4 (ECP - 24000)	891	79.676	236.880	33.6	Pass
T13	335 - 310	Guy A@316.25	1 1/2 (ECP - 24000)	888	61.119	173.880	35.2	Pass
T20	160 - 135	Guy A@153.75	1 1/4 (ECP - 24000)	885	43.430	120.960	35.9	Pass
T6	510 - 485	Guy B@491.25	1 3/4 (ECP - 24000)	890	79.878	236.880	33.7	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T13	335 - 310	Guy B@316.25	1 1/2 (ECP - 24000)	887	61.204	173.880	35.2	Pass
T20	160 - 135	Guy B@153.75	1 1/4 (ECP - 24000)	884	43.275	120.960	35.8	Pass
T6	510 - 485	Guy C@491.25	1 3/4 (ECP - 24000)	889	79.558	236.880	33.6	Pass
T13	335 - 310	Guy C@316.25	1 1/2 (ECP - 24000)	886	63.165	173.880	36.3	Pass
T20	160 - 135	Guy C@153.75	1 1/4 (ECP - 24000)	883	45.236	120.960	37.4	Pass
							Summary	
						Leg (T26)	27.9	Pass
						Diagonal (T15)	55.7	Pass
						Horizontal (T18)	28.8	Pass
						Top Girt (T15)	29.5	Pass
						Guy A (T20)	35.9	Pass
						Guy B (T20)	35.8	Pass
						Guy C (T20)	37.4	Pass
						Bolt Checks	39.4	Pass
						Rating =	55.7	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Base Foundation (Structure)	0	37.5	Pass
1	Base Foundation (Soil Interaction)	0	35.0	Pass
1	Guy Anchor Foundation (Comp. w/ Design Loads)	0	30.6	Pass

Structure Rating (max from all components) =	**55.7%**

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

The results of the tilt and twist values for a 60 mph 3-second gust service wind speed per the TIA-222-H Standard are given below:

Critical Deflections and Radius of Curvature - Service Wind

Elevation *ft*	*Appurtenance*	*Gov. Load Comb.*	*Deflection* *in*	*Tilt* °	*Twist* °	*Radius of Curvature* *ft*
202'	VHLP2-11W/B	52	1.909	0.037	0.465	171970

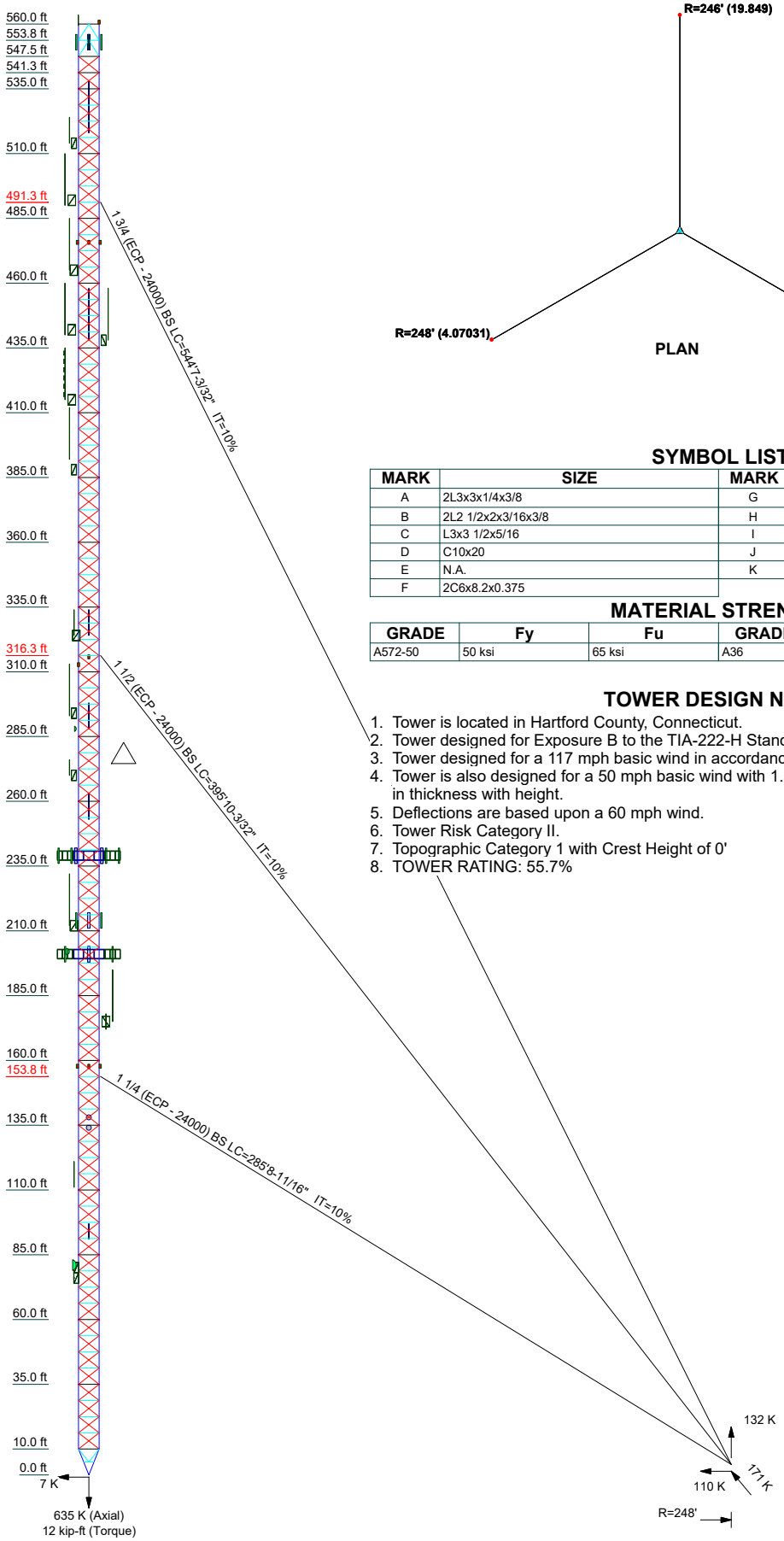
APPENDIX A

TNXTOWER OUTPUT

Section		T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20	T21	T22	T23	T24	T25	T26
Legs						SR 4																					
Leg Grade							SR 4 1/2				SR 4 3/4			SR 5 1/4	SR 5		SR 4 3/4		SR 5	SR 5 1/4	SR 5 1/2			SR 5 1/4			
Diagonals	B	A						SR 1	SR 3/4	SR 5/8		SR 3/4	SR 1	SR 1 1/4	SR 1	SR 3/4	SR 5/8		SR 7/8	SR 1	SR 1 1/4	SR 1	SR 7/8				C
Diagonal Grade								SR 1 1/4																			
Top Girts	E	D			F			2L3x2 1/2x1/4x3/8		2L2 1/2x2x3/16x3/8		G	2L3x2 1/2x1/4x3/8			2L2 1/2x2x3/16x3/8			2L2 1/2x2x3/16x3/8		2L3x2 1/2x1/4x3/8						H
Horizontals	I	E			N.A.			2L3x2 1/2x1/4x3/8		2L2 1/2x2x3/16x3/8		G	2L3x2 1/2x1/4x3/8			2L2 1/2x2x3/16x3/8			2L2 1/2x2x3/16x3/8		2L3x2 1/2x1/4x3/8						J
Face Width (ft)																		8									
# Panels @ (ft)																88 @ 6.25											K
Weight (K)	143.7	3.5	6.9	6.9	6.9	6.9	6.2	5.8	5.7	5.6	5.6	5.8	6.3	7.8	6.8	5.7	5.6	5.6	6.3	7.4	8.3	7.4	6.9	6.9	6.9	5.0	1.2	1.4	1.3	1.8

A572-50

A36



PLAN

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2L3x3x1/4x3/8	G	2L2x2x1/4x3/8
B	2L2 1/2x2x3/16x3/8	H	2L4x3x1/2
C	L3x3 1/2x5/16	I	2L3x2 1/2x1/4x3/8
D	C10x20	J	L3x5x1/2
E	N.A.	K	2 @ 5
F	2C6x8.2x0.375		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0'
8. TOWER RATING: 55.7%

ALL REACTIONS ARE FACTORED

CROWN CASTLE
The Pathway to Possible

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX:

Job: *870800*			
Project:			
Client: Crown Castle	Drawn by: BSparks	App'd:	
Code: TIA-222-H	Date: 07/29/23	Scale: NTS	
Path: C:\Work Area\870800\WO 2248004 - SA\Prod\870800.eri		Dwg No. E-1	

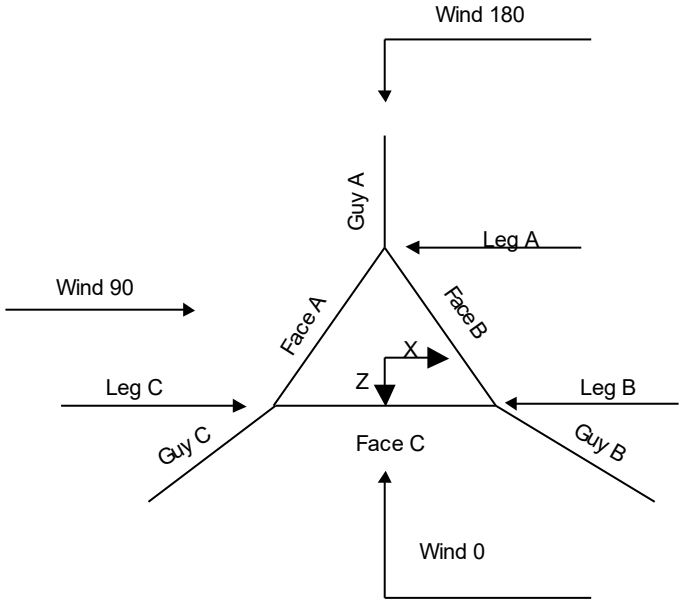
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 560' above the ground line.
The base of the tower is set at an elevation of 0' above the ground line.
The face width of the tower is 8' at the top and tapered at the base.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Tower base elevation above sea level: 686'.
- Basic wind speed of 117 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0'.
- Nominal ice thickness of 1.500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 60 mph.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Safety factor used in guy design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- Maximum demand-capacity ratio is: 1.05.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned	√	Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area	√	SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
√	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
√	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known



Corner & Starmount Guyed Tower

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	560'-553'9"			8'	1	6'3"
T2	553'9"-547'6"			8'	1	6'3"
T3	547'6"-541'3"			8'	1	6'3"
T4	541'3"-535'			8'	1	6'3"
T5	535'-510'			8'	1	25'
T6	510'-485'			8'	1	25'
T7	485'-460'			8'	1	25'
T8	460'-435'			8'	1	25'
T9	435'-410'			8'	1	25'
T10	410'-385'			8'	1	25'
T11	385'-360'			8'	1	25'
T12	360'-335'			8'	1	25'
T13	335'-310'			8'	1	25'
T14	310'-285'			8'	1	25'
T15	285'-260'			8'	1	25'
T16	260'-235'			8'	1	25'
T17	235'-210'			8'	1	25'
T18	210'-185'			8'	1	25'
T19	185'-160'			8'	1	25'
T20	160'-135'			8'	1	25'
T21	135'-110'			8'	1	25'
T22	110'-85'			8'	1	25'
T23	85'-60'			8'	1	25'
T24	60'-35'			8'	1	25'
T25	35'-10'			8'	1	25'
T26	10'-0'			8'	1	10'

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	560'-553'9"	6'3"	K Brace Down	No	Yes	0.000	0.000
T2	553'9"-547'6"	6'3"	K Brace Down	No	Yes	0.000	0.000
T3	547'6"-541'3"	6'3"	TX Brace	No	Yes	0.000	0.000
T4	541'3"-535'	6'3"	TX Brace	No	Yes	0.000	0.000
T5	535'-510'	6'3"	TX Brace	No	Yes	0.000	0.000
T6	510'-485'	6'3"	TX Brace	No	Yes	0.000	0.000
T7	485'-460'	6'3"	TX Brace	No	Yes	0.000	0.000
T8	460'-435'	6'3"	TX Brace	No	Yes	0.000	0.000
T9	435'-410'	6'3"	TX Brace	No	Yes	0.000	0.000
T10	410'-385'	6'3"	TX Brace	No	Yes	0.000	0.000
T11	385'-360'	6'3"	TX Brace	No	Yes	0.000	0.000
T12	360'-335'	6'3"	TX Brace	No	Yes	0.000	0.000
T13	335'-310'	6'3"	TX Brace	No	Yes	0.000	0.000
T14	310'-285'	6'3"	TX Brace	No	Yes	0.000	0.000
T15	285'-260'	6'3"	TX Brace	No	Yes	0.000	0.000
T16	260'-235'	6'3"	TX Brace	No	Yes	0.000	0.000
T17	235'-210'	6'3"	TX Brace	No	Yes	0.000	0.000
T18	210'-185'	6'3"	TX Brace	No	Yes	0.000	0.000
T19	185'-160'	6'3"	TX Brace	No	Yes	0.000	0.000
T20	160'-135'	6'3"	TX Brace	No	Yes	0.000	0.000
T21	135'-110'	6'3"	TX Brace	No	Yes	0.000	0.000
T22	110'-85'	6'3"	TX Brace	No	Yes	0.000	0.000
T23	85'-60'	6'3"	TX Brace	No	Yes	0.000	0.000
T24	60'-35'	6'3"	TX Brace	No	Yes	0.000	0.000
T25	35'-10'	6'3"	TX Brace	No	Yes	0.000	0.000
T26	10'-0'	5'	K Brace Up	No	Yes	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 560'-553'9"	Solid Round	4	A572-50 (50 ksi)	Double Angle	2L3x3x1/4x3/8	A36 (36 ksi)
T2 553'9"-547'6"	Solid Round	4	A572-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T3 547'6"-541'3"	Solid Round	4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T4 541'3"-535'	Solid Round	4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T5 535'-510'	Solid Round	4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T6 510'-485'	Solid Round	4 1/2	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T7 485'-460'	Solid Round	4 1/2	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T8 460'-435'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T9 435'-410'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 410'-385'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T11 385'-360'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)
T12 360'-335'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T13 335'-310'	Solid Round	5 1/4	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T14 310'-285'	Solid Round	5	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T15 285'-260'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	3/4	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T16 260'-235'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T17 235'-210'	Solid Round	4 3/4	A572-50 (50 ksi)	Solid Round	5/8	A36 (36 ksi)
T18 210'-185'	Solid Round	5	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T19 185'-160'	Solid Round	5 1/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T20 160'-135'	Solid Round	5 1/2	A572-50 (50 ksi)	Solid Round	1 1/4	A36 (36 ksi)
T21 135'-110'	Solid Round	5 1/4	A572-50 (50 ksi)	Solid Round	1	A36 (36 ksi)
T22 110'-85'	Solid Round	5 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T23 85'-60'	Solid Round	5 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T24 60'-35'	Solid Round	5 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T25 35'-10'	Solid Round	5 1/4	A572-50 (50 ksi)	Solid Round	7/8	A36 (36 ksi)
T26 10'-0'	Solid Round	5 1/4	A572-50 (50 ksi)	Single Angle	L3x3 1/2x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T3 547'6"-541'3"	Double Channel	2C6x8.2x0.375	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T4 541'3"-535'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T5 535'-510'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T6 510'-485'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T7 485'-460'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T8 460'-435'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T9 435'-410'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T10 410'-385'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T11 385'-360'	Double Angle	2L2x2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T12 360'-335'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T13 335'-310'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T14 310'-285'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T15 285'-260'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T16 260'-235'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T17 235'-210'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T18 210'-185'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T19 185'-160'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T20 160'-135'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T21 135'-110'	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T22 110'-85'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T23 85'-60'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T24 60'-35'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T25 35'-10'	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T26 10'-0'	Double Angle	2L4x3x1/2	A36 (36 ksi)	Flat Bar	12x1/2	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 560'-553'9''	None	Flat Bar		A36 (36 ksi)	Channel	C10x20	A36 (36 ksi)
T2 553'9''-547'6''	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T3 547'6''-541'3''	None	Flat Bar		A36 (36 ksi)	Double Channel	2C6x8.2x0.375	A36 (36 ksi)
T4 541'3''-535'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T5 535'-510'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T6 510'-485'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T7 485'-460'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T8 460'-435'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T9 435'-410'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T10 410'-385'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T11 385'-360'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2x2x1/4x3/8	A36 (36 ksi)
T12 360'-335'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T13 335'-310'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T14 310'-285'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T15 285'-260'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T16 260'-235'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T17 235'-210'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T18 210'-185'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T19 185'-160'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T20 160'-135'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T21 135'-110'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L3x2 1/2x1/4x3/8	A36 (36 ksi)
T22 110'-85'	None	Flat Bar		A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	A36 (36 ksi)
T23 85'-60'	None	Flat Bar		A36	Double Angle	2L2 1/2x2x3/16x3/8	A36

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T24 60'-35'	None	Flat Bar		(36 ksi) A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	(36 ksi) A36 (36 ksi)
T25 35'-10'	None	Flat Bar		(36 ksi) A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16x3/8	(36 ksi) A36 (36 ksi)
T26 10'-0'	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L3x5x1/2	(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 560'-553'9"	0.000	0.375	A36 (36 ksi)	1.15	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T2 553'9"-547'6"	0.000	0.375	A36 (36 ksi)	1.15	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T3 547'6"-541'3"	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T4 541'3"-535'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T5 535'-510'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T6 510'-485'	0.000	0.375	A36 (36 ksi)	1.3	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T7 485'-460'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T8 460'-435'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T9 435'-410'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T10 410'-385'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T11 385'-360'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T12 360'-335'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T13 335'-310'	0.000	0.375	A36 (36 ksi)	1.3	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T14 310'-285'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T15 285'-260'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T16 260'-235'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T17 235'-210'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T18 210'-185'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T19 185'-160'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T20 160'-135'	0.000	0.375	A36 (36 ksi)	1.3	1	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T21 135'-110'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T22 110'-85'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T23 85'-60'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T24 60'-35'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft^2	in					in	in	in
T25 35'-10'	0.000	0.375	A36 (36 ksi)	1	1.15	1.05	Mid-Pt	Mid-Pt	Mid-Pt
T26 10'-0'	0.000	0.000	A36 (36 ksi)	1	1	1.05	Mid-Pt	96.000	Mid-Pt

Tower Section Geometry *(cont'd)*

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1 560'-553'9"	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 553'9"-547'6"	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 547'6"-541'3"	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 541'3"-535'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 535'-510'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 510'-485'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 485'-460'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 460'-435'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 435'-410'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T10 410'-385'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T11 385'-360'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T12 360'-335'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T13 335'-310'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T14 310'-285'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T15 285'-260'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T16 260'-235'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T17 235'-210'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T18 210'-185'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T19 185'-160'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T20 160'-135'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T21 135'-110'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T22 110'-85'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T23 85'-60'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T24 60'-35'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T25 35'-10'	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T26 10'-0'	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		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 560'-553'9"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 553'9"-547'6"	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 547'6"-541'3"	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 541'3"-535'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T5 535'-510'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 510'-485'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 485'-460'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 460'-435'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 435'-410'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 410'-385'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 385'-360'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 360'-335'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 335'-310'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 310'-285'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 285'-260'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T16 260'-235'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T17 235'-210'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T18 210'-185'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T19 185'-160'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T20 160'-135'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T21 135'-110'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T22 110'-85'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T23 85'-60'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T24 60'-35'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T25 35'-10'	0.000	1	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T26 10'-0'	0.000	1	0.000	0.75	0.000	0.75	0.000	1	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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 560'-553'9"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T2 553'9"-547'6"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T3 547'6"-541'3"	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T4 541'3"-535'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	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
T5 535'-510'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T6 510'-485'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T7 485'-460'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 460'-435'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 435'-410'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 410'-385'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 385'-360'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 360'-335'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 335'-310'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 310'-285'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T15 285'-260'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T16 260'-235'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T17 235'-210'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T18 210'-185'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T19 185'-160'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T20 160'-135'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T21 135'-110'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T22 110'-85'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T23 85'-60'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T24 60'-35'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T25 35'-10'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T26 10'-0'	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	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 560'-553'9"	Flange	0.000 A325N	0	1.000 A325N	2	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T2 553'9"-547'6"	Flange	0.000 A325N	0	0.625 A325N	2	0.000 A325N	0	0.000 A325N	0	0.625 A325N	0	0.875 A325N	2	0.625 A325N	0
T3 547'6"-541'3"	Flange	0.000 A325N	0	0.875 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T4 541'3"-535'	Flange	0.000 A325N	0	0.875 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T5 535'-510'	Flange	0.750 A325N	6	0.875 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T6 510'-485'	Flange	0.750 A325N	6	1.000 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T7 485'-460'	Flange	0.750 A325N	6	0.875 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T8 460'-435'	Flange	0.750 A325N	6	0.625 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T9 435'-410'	Flange	0.750 A325N	6	0.625 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T10 410'-385'	Flange	0.750 A325N	6	0.625 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T11 385'-360'	Flange	0.750 A325N	6	0.625 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T12 360'-335'	Flange	0.750 A325N	6	0.875 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T13 335'-310'	Flange	1.000 A325N	6	1.000 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T14 310'-285'	Flange	1.000 A325N	6	0.875 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T15 285'-260'	Flange	0.750 A325N	6	0.625 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0

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.
T16 260'-235'	Flange	0.750 A325N	6	0.625 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T17 235'-210'	Flange	0.750 A325N	6	0.625 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T18 210'-185'	Flange	0.750 A325N	6	0.750 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T19 185'-160'	Flange	1.000 A325N	6	0.875 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T20 160'-135'	Flange	1.000 A325N	6	1.000 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T21 135'-110'	Flange	1.000 A325N	6	0.875 A325N	2	0.750 A325N	2	0.000 A325N	0	0.625 A325N	0	0.750 A325N	2	0.625 A325N	0
T22 110'-85'	Flange	1.000 A325N	6	0.750 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T23 85'-60'	Flange	1.000 A325N	6	0.750 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T24 60'-35'	Flange	1.000 A325N	6	0.750 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T25 35'-10'	Flange	1.000 A325N	6	0.750 A325N	2	0.625 A325N	2	0.000 A325N	0	0.625 A325N	0	0.625 A325N	2	0.625 A325N	0
T26 10'-0'	Flange	0.750 A325N	8	0.000 A325N	0 *	0.000 A325N	0 *	0.000 A325N	0 *	0.625 A325N	0	0.000 A325N	0 *	0.625 A325N	0

* Out-of-plane partial restraint assumed

Guy Data

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
153.75	BS	A 1 1/4 (ECP - 24000)	19.200	10%	24000.000	3.280	275'9-25/32"	246'	0.000	19'10-3/16"	100%
		B 1 1/4 (ECP - 24000)	19.200	10%	24000.000	3.280	262'11-27/32"	238'	0.000	32'27/32"	100%
		C 1 1/4 (ECP - 24000)	19.200	10%	24000.000	3.280	285'5-31/32"	248'	0.000	4'27/32"	100%
316.25	BS	A 1 1/2 (ECP - 24000)	27.600	10%	24000.000	4.730	381'11-3/8"	246'	0.000	19'10-3/16"	100%
		B 1 1/2 (ECP - 24000)	27.600	10%	24000.000	4.730	367'5-3/16"	238'	0.000	32'27/32"	100%
		C 1 1/2 (ECP - 24000)	27.600	10%	24000.000	4.730	395'6-9/32"	248'	0.000	4'27/32"	100%
491.25	BS	A 1 3/4 (ECP - 24000)	37.600	10%	24000.000	6.430	529'2-1/16"	246'	0.000	19'10-3/16"	100%
		B 1 3/4 (ECP - 24000)	37.600	10%	24000.000	6.430	514'7-15/16"	238'	0.000	32'27/32"	100%
		C 1 3/4 (ECP - 24000)	37.600	10%	24000.000	6.430	544'1-23/32"	248'	0.000	4'27/32"	100%

Guy Data*(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
153.75	Corner						
316.25	Corner						

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
491.25	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
153'9"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Equal Angle	
316'3"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Equal Angle	
491'3"	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Equal Angle	

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
153.75	0.905	0.863	0.936		6'5-3/16" 4.4 sec/pulse	5'10-1/4" 4.2 sec/pulse	6'10-9/16" 4.5 sec/pulse	
316.25	1.807	1.738	1.871		12'2-7/16" 6.0 sec/pulse	11'3-21/32" 5.8 sec/pulse	13'13/16" 6.2 sec/pulse	
491.25	3.403	3.309	3.499		23'15/32" 8.3 sec/pulse	21'9-25/32" 8.1 sec/pulse	24'3-31/32" 8.5 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
153.75	No	No			1	1	1	1
316.25	No	No			1	1	1	1
491.25	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
153.75	0.625 A325N	0	0.000	0.75	0.000 A325N	0	0.000	0.75	0.000 A325N	0	0.000	1
316.25	0.625 A325N	0	0.000	0.75	0.000 A325N	0	0.000	0.75	0.000 A325N	0	0.000	1

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
491.25	0.625 A325N	0	0.000	0.75	0.000 A325N	0	0.000	0.75	0.000 A325N	0	0.000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z ksf	q_z Ice ksf	Ice Thickness in
153.75	A	86'9-19/32"	0.026	0.005	1.404
	B	92'10-29/32"	0.027	0.005	1.414
	C	78'10-29/32"	0.025	0.005	1.391
316.25	A	168'19/32"	0.032	0.006	1.500
	B	174'1-29/32"	0.032	0.006	1.506
	C	160'1-29/32"	0.031	0.006	1.493
491.25	A	255'6-19/32"	0.036	0.007	1.565
	B	261'7-29/32"	0.036	0.007	1.568
	C	247'7-29/32"	0.035	0.006	1.560

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft
153.75	A	29.018	19.639 19.200	0.000	9.872	-16.977	-45.596	0.000	0.000
	B	27.537	19.599 19.200	14.894	9.399	8.599	21.707	0.000	-37.597
	C	31.592	19.691 19.200	-14.341	10.654	8.280	24.605	-0.000	42.616
			Sum:	**0.553**	29.925	**-0.099**	**0.715**	0.000	**5.019**
316.25	A	50.842	29.001 27.600	0.000	22.846	-17.864	-105.521	0.000	0.000
	B	50.606	28.943 27.600	15.533	22.716	8.968	52.459	0.000	-90.862
	C	52.059	29.075 27.600	-15.083	23.282	8.708	53.768	-0.000	93.129
			Sum:	**0.450**	68.844	**-0.188**	**0.707**	0.000	**2.267**
491.25	A	62.885	40.628 37.600	0.000	36.514	-17.815	-168.653	0.000	0.000
	B	63.058	40.550 37.600	15.323	36.486	8.846	84.262	0.000	-145.946
	C	63.455	40.730 37.600	-15.147	36.783	8.745	84.947	-0.000	147.133
			Sum:	**0.175**	109.784	**-0.223**	**0.556**	0.000	**1.187**

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft
153.75	A	29.018	29.659 28.611	0.000	15.211	-25.462	-70.257	0.000	0.000

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
	B	27.537	29.504	22.276	14.453	12.861	33.378	0.000	-57.812
			28.546						
	C	31.592	29.721	-21.482	16.372	12.403	37.809	-0.000	65.487
			28.560						
			Sum:	**0.794**	46.036	**-0.198**	**0.929**	0.000	**7.675**
316.25	A	50.842	42.968	0.000	34.092	-26.153	-157.464	0.000	0.000
			39.939						
	B	50.606	42.765	22.685	33.803	13.097	78.066	0.000	-135.214
			39.852						
	C	52.059	43.081	-22.073	34.733	12.744	80.213	-0.000	138.933
			39.903						
			Sum:	**0.613**	102.629	**-0.312**	**0.814**	0.000	**3.719**
491.25	A	62.885	59.151	0.000	53.346	-25.555	-246.392	0.000	0.000
			53.139						
	B	63.058	58.909	21.936	53.185	12.665	122.825	0.000	-212.739
			53.042						
	C	63.455	59.310	-21.725	53.743	12.543	124.115	-0.000	214.973
			53.110						
			Sum:	**0.211**	160.274	**-0.348**	**0.547**	0.000	**2.234**

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	K	K	K	K	kip-ft	kip-ft	kip-ft
153.75	A	29.018	19.639	0.000	9.872	-16.977	-45.596	0.000	0.000
			19.200						
	B	27.537	19.599	14.894	9.399	8.599	21.707	0.000	-37.597
			19.200						
	C	31.592	19.691	-14.341	10.654	8.280	24.605	-0.000	42.616
			19.200						
			Sum:	**0.553**	29.925	**-0.099**	**0.715**	0.000	**5.019**
316.25	A	50.842	29.001	0.000	22.846	-17.864	-105.521	0.000	0.000
			27.600						
	B	50.606	28.943	15.533	22.716	8.968	52.459	0.000	-90.862
			27.600						
	C	52.059	29.075	-15.083	23.282	8.708	53.768	-0.000	93.129
			27.600						
			Sum:	**0.450**	68.844	**-0.188**	**0.707**	0.000	**2.267**
491.25	A	62.885	40.628	0.000	36.514	-17.815	-168.653	0.000	0.000
			37.600						
	B	63.058	40.550	15.323	36.486	8.846	84.262	0.000	-145.946
			37.600						
	C	63.455	40.730	-15.147	36.783	8.745	84.947	-0.000	147.133
			37.600						
			Sum:	**0.175**	109.784	**-0.223**	**0.556**	0.000	**1.187**

Guy-Tensioning Information

Guy Elevation		H	V	Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
				Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept
ft		ft	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft	K	ft
153.75	A	241.38	133.90	25.268	4.90	23.194	5.33	21.167	5.84	19.200	6.43	17.314	7.12	15.532	7.93	13.881	8.86
	B	233.38	121.68	25.485	4.42	23.339	4.82	21.239	5.30	19.200	5.85	17.243	6.51	15.395	7.28	13.684	8.18
	C	243.38	149.68	24.940	5.31	22.979	5.76	21.061	6.28	19.200	6.88	17.412	7.58	15.716	8.39	14.136	9.31

Guy Elevation ft		H ft	V ft	Temperature At Time Of Tensioning 0 F Initial Tension K	0 F Intercept ft	20 F Initial Tension K	20 F Intercept ft	40 F Initial Tension K	40 F Intercept ft	60 F Initial Tension K	60 F Intercept ft	80 F Initial Tension K	80 F Intercept ft	100 F Initial Tension K	100 F Intercept ft	120 F Initial Tension K	120 F Intercept ft
316.25	A	241.38	296.40	32.087	10.53	30.567	11.04	29.070	11.60	27.600	12.20	26.160	12.86	24.756	13.57	23.392	14.34
	B	233.38	284.18	32.166	9.73	30.621	10.21	29.097	10.73	27.600	11.31	26.133	11.93	24.700	12.60	23.308	13.33
	C	243.38	312.18	31.842	11.36	30.406	11.89	28.991	12.46	27.600	13.07	26.237	13.73	24.906	14.45	23.610	15.22
491.25	A	241.38	471.40	40.766	21.31	39.701	21.86	38.645	22.44	37.600	23.04	36.566	23.67	35.544	24.33	34.534	25.01
	B	233.38	459.18	40.751	20.18	39.692	20.70	38.641	21.25	37.600	21.82	36.569	22.41	35.550	23.03	34.543	23.68
	C	243.38	487.18	40.637	22.57	39.616	23.13	38.603	23.72	37.600	24.33	36.607	24.97	35.625	25.63	34.656	26.32

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
Climbing Ladder (Round)	C	No	No	Af (CaAa)	560' - 8'	-10.000	0.3	1	1	0.500	2.340		0.005
Safety Line 3/8	C	No	No	Ar (CaAa)	560' - 8'	-10.000	0.3	1	1	0.375	0.375		0.000
8188(3/4")	B	No	No	Ar (CaAa)	560' - 8'	-7.000	0.16	2	1	1.500	0.750		0.000
1/2" Grouding wire	B	No	No	Ar (CaAa)	212' - 0'	0.000	0	1	1	0.630	0.630		0.000
Coax-Brackets (Af)	A	No	No	Af (CaAa)	465' - 8'	-1.000	0.35	1	1	1.000	1.000		0.008
8188(3/4")	A	No	No	Ar (CaAa)	557' - 8'	-1.500	0.1	1	1	0.750	0.750		0.000
8188(3/4")	C	No	No	Ar (CaAa)	475' - 8'	-1.000	0.4	1	1	0.750	0.750		0.000
8188(3/4") *	B	No	No	Ar (CaAa)	315' - 8'	-1.000	-0.09	1	1	0.750	0.750		0.000
D-Tuner	A	No	No	Ar (CaAa)	476' - 160'	12.000	0	1	1	0.000	0.500		0.000
D-Tuner	B	No	No	Ar (CaAa)	476' - 160'	12.000	0	1	1	0.000	0.500		0.000
D-Tuner *	C	No	No	Ar (CaAa)	476' - 160'	12.000	0	1	1	0.000	0.500		0.000
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	514' - 8'	-7.000	0.17	1	1	1.980	1.980		0.001
T-Brackets (Af) *	C	No	No	Af (CaAa)	514' - 8'	-10.000	-0.35	1	1	1.000	1.000		0.008
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	514' - 492'	-10.000	-0.4	1	1	0.500	1.550		0.001
LDF6-50A(1-1/4")	B	No	No	Ar (CaAa)	492' - 442'	-10.000	-0.4	2	2	0.500	1.550		0.001
LDF6-50A(1-1/4") * *	B	No	No	Ar (CaAa)	442' - 8'	-10.000	-0.4	3	3	0.500	1.550		0.001
FLC 78-50J(7/8")	B	No	No	Ar (CaAa)	465' - 175'	-1.000	0.4	1	1	1.112	1.112		0.000
LDF5-50A(7/8") *	C	No	No	Ar (CaAa)	175' - 8'	-1.000	0.4	2	2	1.090	1.090		0.000
LDF5-50A(7/8") *	C	No	No	Ar (CaAa)	438' - 8'	-15.000	0.18	1	1	1.090	1.090		0.000
LDF5-50A(7/8")	A	No	No	Ar (CaAa)	438' - 212'	-1.500	-0.46	1	1	0.500	1.090		0.000
FLC 78-50J(7/8") *	A	No	No	Ar (CaAa)	212' - 8'	-1.500	-0.46	2	2	1.112	1.112		0.000
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	415' - 388'	-13.000	0.3	2	2	0.500	1.980		0.001
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	388' - 324'	-13.000	0.3	3	3	0.500	1.980		0.001
LDF7-50A(1-5/8")	B	No	No	Ar (CaAa)	324' - 288'	-13.000	0.3	5	5	0.500	1.980		0.001
LDF7-50A(1-	B	No	No	Ar (CaAa)	288' - 270'	-	0.3	6	6	0.500	1.980		0.001

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
5/8")													
LDF7-50A(1-5/8") *	B	No	No	Ar (CaAa)	270' - 8'	13.000 - 13.000	0.3	7	7	0.500	1.980		0.001
LDF4P-50A(1/2")	C	No	No	Ar (CaAa)	415' - 294'	-1.500	0.4	1	1	0.630	0.630		0.000
LDF4-75A(1/2")	C	No	No	Ar (CaAa)	294' - 91'	-1.500	0.4	2	2	0.630	0.630		0.000
LDF4P-50A(1/2") *	C	No	No	Ar (CaAa)	91' - 8'	-1.500	0.4	3	3	0.630	0.630		0.000
LDF4P-50A(1/2")	A	No	No	Ar (CaAa)	138' - 134'	-7.500	0.43	1	1	0.500	0.630		0.000
LDF4-50A(1/2") *	A	No	No	Ar (CaAa)	134' - 8'	-7.500	0.43	3	1	0.500	0.630		0.000
LDF4-75A(1/2") *	C	No	No	Ar (CaAa)	324' - 8'	-1.500	0.32	1	1	0.630	0.630		0.000
T-Brackets (Af) *	A	No	No	Af (CaAa)	250' - 8'	-5.000	0.38	1	1	1.000	1.000		0.008
HCS 6X12 4AWG(1-5/8) *	A	No	No	Ar (CaAa)	239' - 8'	-1.500	-0.35	4	4	0.500	1.660		0.002
LDF7-50A(1-5/8") *	B	No	No	Ar (CaAa)	214' - 8'	-5.000	0.4	6	3	0.500	1.980		0.001
EW52(ELLIPTICAL) *	C	No	No	Ar (CaAa)	145' - 8'	-1.000	0.4	1	1	2.250	0.870		0.001
LDF2-50(3/8") *	C	No	No	Ar (CaAa)	112' - 8'	-1.000	0.4	1	1	0.440	0.440		0.000
FLC38-50J(3/8") *	A	No	No	Ar (CaAa)	80' - 8'	-1.500	-0.38	1	1	0.440	0.440		0.000
LCF12-50J(1/2")	A	No	No	Ar (CaAa)	288' - 76'	-1.500	-0.41	1	1	0.640	0.640		0.000
LCF12-50J(1/2") *	A	No	No	Ar (CaAa)	76' - 8'	-1.500	-0.41	2	2	0.640	0.640		0.000
LDF7-50A(1-5/8") *	B	No	No	Ar (CaAa)	553' - 415'	- 13.000	0.3	1	1	0.500	1.980		0.001
CU12PSM6P4XXX(1-3/4) *	C	No	No	Ar (CaAa)	201' - 0'	0.000	0.5	1	1	1.750	1.750		0.003
C45497-F6989-A2-C(1/4)	C	No	No	Ar (CaAa)	201' - 0'	-1.000	0.45	2	1	0.354	0.354		0.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	560'-553'9"	A	0.000	0.000	0.244	0.000	0.001
		B	0.000	0.000	0.938	0.000	0.004
		C	0.000	0.000	2.672	0.000	0.034
T2	553'9"-547'6"	A	0.000	0.000	0.469	0.000	0.002
		B	0.000	0.000	2.027	0.000	0.009
		C	0.000	0.000	2.672	0.000	0.034
T3	547'6"-541'3"	A	0.000	0.000	0.469	0.000	0.002

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	2.175	0.000	0.009
		C	0.000	0.000	2.672	0.000	0.034
T4	541'3"-535'	A	0.000	0.000	0.469	0.000	0.002
		B	0.000	0.000	2.175	0.000	0.009
		C	0.000	0.000	2.672	0.000	0.034
T5	535'-510'	A	0.000	0.000	1.875	0.000	0.009
		B	0.000	0.000	10.112	0.000	0.044
		C	0.000	0.000	11.354	0.000	0.171
T6	510'-485'	A	0.000	0.000	1.875	0.000	0.009
		B	0.000	0.000	18.610	0.000	0.080
		C	0.000	0.000	14.854	0.000	0.347
T7	485'-460'	A	0.000	0.000	3.508	0.000	0.054
		B	0.000	0.000	22.756	0.000	0.097
		C	0.000	0.000	16.779	0.000	0.356
T8	460'-435'	A	0.000	0.000	7.619	0.000	0.225
		B	0.000	0.000	26.515	0.000	0.112
		C	0.000	0.000	18.306	0.000	0.362
T9	435'-410'	A	0.000	0.000	10.017	0.000	0.233
		B	0.000	0.000	30.295	0.000	0.128
		C	0.000	0.000	21.019	0.000	0.370
T10	410'-385'	A	0.000	0.000	10.017	0.000	0.233
		B	0.000	0.000	34.849	0.000	0.146
		C	0.000	0.000	22.279	0.000	0.373
T11	385'-360'	A	0.000	0.000	10.017	0.000	0.233
		B	0.000	0.000	39.205	0.000	0.165
		C	0.000	0.000	22.279	0.000	0.373
T12	360'-335'	A	0.000	0.000	10.017	0.000	0.233
		B	0.000	0.000	39.205	0.000	0.165
		C	0.000	0.000	22.279	0.000	0.373
T13	335'-310'	A	0.000	0.000	10.017	0.000	0.233
		B	0.000	0.000	45.124	0.000	0.189
		C	0.000	0.000	23.161	0.000	0.375
T14	310'-285'	A	0.000	0.000	10.209	0.000	0.233
		B	0.000	0.000	51.574	0.000	0.217
		C	0.000	0.000	24.421	0.000	0.379
T15	285'-260'	A	0.000	0.000	11.617	0.000	0.236
		B	0.000	0.000	57.910	0.000	0.243
		C	0.000	0.000	25.429	0.000	0.382
T16	260'-235'	A	0.000	0.000	16.773	0.000	0.401
		B	0.000	0.000	60.880	0.000	0.255
		C	0.000	0.000	25.429	0.000	0.382
T17	235'-210'	A	0.000	0.000	32.610	0.000	0.687
		B	0.000	0.000	65.758	0.000	0.275
		C	0.000	0.000	25.429	0.000	0.382
T18	210'-185'	A	0.000	0.000	35.218	0.000	0.698
		B	0.000	0.000	92.155	0.000	0.382
		C	0.000	0.000	29.362	0.000	0.427
T19	185'-160'	A	0.000	0.000	35.218	0.000	0.698
		B	0.000	0.000	90.487	0.000	0.376
		C	0.000	0.000	34.844	0.000	0.463
T20	160'-135'	A	0.000	0.000	34.157	0.000	0.693
		B	0.000	0.000	88.125	0.000	0.366
		C	0.000	0.000	36.644	0.000	0.470
T21	135'-110'	A	0.000	0.000	38.567	0.000	0.703
		B	0.000	0.000	88.125	0.000	0.366
		C	0.000	0.000	38.037	0.000	0.479
T22	110'-85'	A	0.000	0.000	38.693	0.000	0.704
		B	0.000	0.000	88.125	0.000	0.366
		C	0.000	0.000	39.427	0.000	0.482
T23	85'-60'	A	0.000	0.000	40.597	0.000	0.708
		B	0.000	0.000	88.125	0.000	0.366
		C	0.000	0.000	40.624	0.000	0.484
T24	60'-35'	A	0.000	0.000	41.393	0.000	0.710
		B	0.000	0.000	88.125	0.000	0.366
		C	0.000	0.000	40.624	0.000	0.484
T25	35'-10'	A	0.000	0.000	41.393	0.000	0.710
		B	0.000	0.000	88.125	0.000	0.366
		C	0.000	0.000	40.624	0.000	0.484
T26	10'-0'	A	0.000	0.000	3.311	0.000	0.057

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	7.554	0.000	0.031
		C	0.000	0.000	5.216	0.000	0.062

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	560'-553'9"	A	1.691	0.000	0.000	1.343	0.000	0.018
		B		0.000	0.000	5.940	0.000	0.067
		C		0.000	0.000	6.900	0.000	0.117
T2	553'9"-547'6"	A	1.689	0.000	0.000	2.581	0.000	0.034
		B		0.000	0.000	8.884	0.000	0.113
		C		0.000	0.000	6.895	0.000	0.117
T3	547'6"-541'3"	A	1.688	0.000	0.000	2.578	0.000	0.034
		B		0.000	0.000	9.279	0.000	0.120
		C		0.000	0.000	6.891	0.000	0.117
T4	541'3"-535'	A	1.686	0.000	0.000	2.576	0.000	0.034
		B		0.000	0.000	9.272	0.000	0.119
		C		0.000	0.000	6.886	0.000	0.117
T5	535'-510'	A	1.681	0.000	0.000	10.278	0.000	0.134
		B		0.000	0.000	41.123	0.000	0.538
		C		0.000	0.000	29.505	0.000	0.527
T6	510'-485'	A	1.672	0.000	0.000	10.237	0.000	0.132
		B		0.000	0.000	66.467	0.000	0.887
		C		0.000	0.000	39.940	0.000	0.842
T7	485'-460'	A	1.664	0.000	0.000	18.815	0.000	0.281
		B		0.000	0.000	84.882	0.000	1.053
		C		0.000	0.000	52.052	0.000	0.991
T8	460'-435'	A	1.655	0.000	0.000	33.433	0.000	0.637
		B		0.000	0.000	98.396	0.000	1.233
		C		0.000	0.000	60.668	0.000	1.096
T9	435'-410'	A	1.645	0.000	0.000	42.922	0.000	0.762
		B		0.000	0.000	105.194	0.000	1.315
		C		0.000	0.000	72.023	0.000	1.241
T10	410'-385'	A	1.635	0.000	0.000	42.722	0.000	0.756
		B		0.000	0.000	118.478	0.000	1.413
		C		0.000	0.000	79.514	0.000	1.326
T11	385'-360'	A	1.625	0.000	0.000	42.511	0.000	0.751
		B		0.000	0.000	123.924	0.000	1.504
		C		0.000	0.000	79.143	0.000	1.316
T12	360'-335'	A	1.613	0.000	0.000	42.286	0.000	0.745
		B		0.000	0.000	123.468	0.000	1.491
		C		0.000	0.000	78.750	0.000	1.305
T13	335'-310'	A	1.601	0.000	0.000	42.046	0.000	0.739
		B		0.000	0.000	132.969	0.000	1.632
		C		0.000	0.000	83.696	0.000	1.357
T14	310'-285'	A	1.589	0.000	0.000	42.933	0.000	0.745
		B		0.000	0.000	147.475	0.000	1.829
		C		0.000	0.000	91.101	0.000	1.411
T15	285'-260'	A	1.575	0.000	0.000	50.984	0.000	0.835
		B		0.000	0.000	156.344	0.000	1.956
		C		0.000	0.000	97.078	0.000	1.427
T16	260'-235'	A	1.560	0.000	0.000	63.902	0.000	1.143
		B		0.000	0.000	160.155	0.000	2.004
		C		0.000	0.000	96.418	0.000	1.411
T17	235'-210'	A	1.543	0.000	0.000	101.247	0.000	1.807
		B		0.000	0.000	166.434	0.000	2.089
		C		0.000	0.000	95.696	0.000	1.393
T18	210'-185'	A	1.525	0.000	0.000	112.936	0.000	1.874
		B		0.000	0.000	206.854	0.000	2.679
		C		0.000	0.000	113.251	0.000	1.630
T19	185'-160'	A	1.504	0.000	0.000	112.079	0.000	1.852
		B		0.000	0.000	199.476	0.000	2.563
		C		0.000	0.000	136.454	0.000	1.873
T20	160'-135'	A	1.481	0.000	0.000	103.308	0.000	1.744

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
		B		0.000	0.000	185.453	0.000	2.377
		C		0.000	0.000	139.457	0.000	1.876
T21	135'-110'	A	1.454	0.000	0.000	122.102	0.000	1.987
		B		0.000	0.000	184.135	0.000	2.335
		C		0.000	0.000	144.071	0.000	1.913
T22	110'-85'	A	1.421	0.000	0.000	121.178	0.000	1.954
		B		0.000	0.000	182.550	0.000	2.285
		C		0.000	0.000	150.227	0.000	1.950
T23	85'-60'	A	1.379	0.000	0.000	131.822	0.000	1.993
		B		0.000	0.000	180.546	0.000	2.222
		C		0.000	0.000	149.792	0.000	1.916
T24	60'-35'	A	1.322	0.000	0.000	133.782	0.000	1.948
		B		0.000	0.000	177.789	0.000	2.137
		C		0.000	0.000	145.740	0.000	1.827
T25	35'-10'	A	1.227	0.000	0.000	128.642	0.000	1.826
		B		0.000	0.000	173.201	0.000	1.999
		C		0.000	0.000	138.990	0.000	1.684
T26	10'-0'	A	1.056	0.000	0.000	9.553	0.000	0.130
		B		0.000	0.000	15.390	0.000	0.159
		C		0.000	0.000	17.256	0.000	0.197

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	560'-553'9"	-0.695	0.392	-1.135	1.053
T2	553'9"-547'6"	-0.368	0.984	-0.662	1.775
T3	547'6"-541'3"	-0.283	1.085	-0.452	1.655
T4	541'3"-535'	-0.352	1.326	-0.513	1.862
T5	535'-510'	-0.066	1.180	-0.085	1.672
T6	510'-485'	1.197	0.114	1.872	0.496
T7	485'-460'	0.959	-0.649	1.138	0.021
T8	460'-435'	1.152	-1.187	1.241	-0.371
T9	435'-410'	0.097	-1.130	-0.483	0.427
T10	410'-385'	0.257	-0.311	-0.923	1.266
T11	385'-360'	0.560	0.216	-0.807	1.479
T12	360'-335'	0.511	0.199	-0.778	1.438
T13	335'-310'	0.693	0.841	-0.937	1.923
T14	310'-285'	0.854	1.293	-1.033	2.016
T15	285'-260'	0.683	2.147	-2.019	2.750
T16	260'-235'	0.468	2.173	-2.190	2.308
T17	235'-210'	-0.875	3.191	-3.102	2.781
T18	210'-185'	0.611	4.999	-2.389	4.353
T19	185'-160'	-0.718	5.125	-4.289	4.791
T20	160'-135'	-1.425	5.202	-5.677	5.253
T21	135'-110'	-1.606	4.666	-5.740	4.331
T22	110'-85'	-1.878	4.842	-6.283	4.656
T23	85'-60'	-2.374	4.943	-6.962	4.916
T24	60'-35'	-2.487	4.971	-7.060	5.010
T25	35'-10'	-2.475	4.949	-6.922	5.011
T26	10'-0'	-1.225	2.176	-2.834	2.541

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Climbing Ladder (Round)	553.75 -	0.6000	0.5302

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	Safety Line 3/8	560.00 553.75 - 560.00	0.6000	0.5302
T1	3	8188(3/4")	553.75 - 560.00	0.6000	0.5302
T1	6	8188(3/4")	553.75 - 557.00	0.6000	0.5302
T2	1	Climbing Ladder (Round)	547.50 - 553.75	0.6000	0.6000
T2	2	Safety Line 3/8	547.50 - 553.75	0.6000	0.6000
T2	3	8188(3/4")	547.50 - 553.75	0.6000	0.6000
T2	6	8188(3/4")	547.50 - 553.75	0.6000	0.6000
T2	62	LDF7-50A(1-5/8")	547.50 - 553.00	0.6000	0.6000
T3	1	Climbing Ladder (Round)	541.25 - 547.50	0.6000	0.5671
T3	2	Safety Line 3/8	541.25 - 547.50	0.6000	0.5671
T3	3	8188(3/4")	541.25 - 547.50	0.6000	0.5671
T3	6	8188(3/4")	541.25 - 547.50	0.6000	0.5671
T3	62	LDF7-50A(1-5/8")	541.25 - 547.50	0.6000	0.5671
T4	1	Climbing Ladder (Round)	535.00 - 541.25	0.6000	0.6000
T4	2	Safety Line 3/8	535.00 - 541.25	0.6000	0.6000
T4	3	8188(3/4")	535.00 - 541.25	0.6000	0.6000
T4	6	8188(3/4")	535.00 - 541.25	0.6000	0.6000
T4	62	LDF7-50A(1-5/8")	535.00 - 541.25	0.6000	0.6000
T5	1	Climbing Ladder (Round)	510.00 - 535.00	0.6000	0.6000
T5	2	Safety Line 3/8	510.00 - 535.00	0.6000	0.6000
T5	3	8188(3/4")	510.00 - 535.00	0.6000	0.6000
T5	6	8188(3/4")	510.00 - 535.00	0.6000	0.6000
T5	14	LDF7-50A(1-5/8")	510.00 - 514.00	0.6000	0.6000
T5	15	T-Brackets (Af)	510.00 - 514.00	0.6000	0.6000
T5	17	LDF6-50A(1-1/4")	510.00 - 514.00	0.6000	0.6000
T5	62	LDF7-50A(1-5/8")	510.00 - 535.00	0.6000	0.6000
T6	1	Climbing Ladder (Round)	485.00 - 510.00	0.6000	0.6000
T6	2	Safety Line 3/8	485.00 - 510.00	0.6000	0.6000
T6	3	8188(3/4")	485.00 - 510.00	0.6000	0.6000
T6	6	8188(3/4")	485.00 - 510.00	0.6000	0.6000
T6	14	LDF7-50A(1-5/8")	485.00 - 510.00	0.6000	0.6000
T6	15	T-Brackets (Af)	485.00 - 510.00	0.6000	0.6000
T6	17	LDF6-50A(1-1/4")	492.00 - 510.00	0.6000	0.6000
T6	18	LDF6-50A(1-1/4")	485.00 - 492.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	62	LDF7-50A(1-5/8")	485.00 - 510.00	0.6000	0.6000
T7	1	Climbing Ladder (Round)	460.00 - 485.00	0.6000	0.5980
T7	2	Safety Line 3/8	460.00 - 485.00	0.6000	0.5980
T7	3	8188(3/4")	460.00 - 485.00	0.6000	0.5980
T7	5	Coax-Brackets (Af)	460.00 - 465.00	0.6000	0.5980
T7	6	8188(3/4")	460.00 - 485.00	0.6000	0.5980
T7	7	8188(3/4")	460.00 - 475.00	0.6000	0.5980
T7	10	D-Tuner	460.00 - 476.00	0.6000	0.5980
T7	11	D-Tuner	460.00 - 476.00	0.6000	0.5980
T7	12	D-Tuner	460.00 - 476.00	0.6000	0.5980
T7	14	LDF7-50A(1-5/8")	460.00 - 485.00	0.6000	0.5980
T7	15	T-Brackets (Af)	460.00 - 485.00	0.6000	0.5980
T7	18	LDF6-50A(1-1/4")	460.00 - 485.00	0.6000	0.5980
T7	23	FLC 78-50J(7/8")	460.00 - 465.00	0.6000	0.5980
T7	62	LDF7-50A(1-5/8")	460.00 - 485.00	0.6000	0.5980
T8	1	Climbing Ladder (Round)	435.00 - 460.00	0.6000	0.6000
T8	2	Safety Line 3/8	435.00 - 460.00	0.6000	0.6000
T8	3	8188(3/4")	435.00 - 460.00	0.6000	0.6000
T8	5	Coax-Brackets (Af)	435.00 - 460.00	0.6000	0.6000
T8	6	8188(3/4")	435.00 - 460.00	0.6000	0.6000
T8	7	8188(3/4")	435.00 - 460.00	0.6000	0.6000
T8	10	D-Tuner	435.00 - 460.00	0.6000	0.6000
T8	11	D-Tuner	435.00 - 460.00	0.6000	0.6000
T8	12	D-Tuner	435.00 - 460.00	0.6000	0.6000
T8	14	LDF7-50A(1-5/8")	435.00 - 460.00	0.6000	0.6000
T8	15	T-Brackets (Af)	435.00 - 460.00	0.6000	0.6000
T8	18	LDF6-50A(1-1/4")	442.00 - 460.00	0.6000	0.6000
T8	19	LDF6-50A(1-1/4")	435.00 - 442.00	0.6000	0.6000
T8	23	FLC 78-50J(7/8")	435.00 - 460.00	0.6000	0.6000
T8	26	LDF5-50A(7/8")	435.00 - 438.00	0.6000	0.6000
T8	28	LDF5-50A(7/8")	435.00 - 438.00	0.6000	0.6000
T8	62	LDF7-50A(1-5/8")	435.00 - 460.00	0.6000	0.6000
T9	1	Climbing Ladder (Round)	410.00 - 435.00	0.6000	0.6000
T9	2	Safety Line 3/8	410.00 - 435.00	0.6000	0.6000
T9	3	8188(3/4")	410.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	5	Coax-Brackets (Af)	435.00 410.00 -	0.6000	0.6000
T9	6	8188(3/4")	435.00 410.00 -	0.6000	0.6000
T9	7	8188(3/4")	435.00 410.00 -	0.6000	0.6000
T9	10	D-Tuner	435.00 410.00 -	0.6000	0.6000
T9	11	D-Tuner	435.00 410.00 -	0.6000	0.6000
T9	12	D-Tuner	435.00 410.00 -	0.6000	0.6000
T9	14	LDF7-50A(1-5/8")	435.00 410.00 -	0.6000	0.6000
T9	15	T-Brackets (Af)	435.00 410.00 -	0.6000	0.6000
T9	19	LDF6-50A(1-1/4")	435.00 410.00 -	0.6000	0.6000
T9	23	FLC 78-50J(7/8")	435.00 410.00 -	0.6000	0.6000
T9	26	LDF5-50A(7/8")	435.00 410.00 -	0.6000	0.6000
T9	28	LDF5-50A(7/8")	435.00 410.00 -	0.6000	0.6000
T9	31	LDF7-50A(1-5/8")	435.00 410.00 -	0.6000	0.6000
T9	37	LDF4P-50A(1/2")	415.00 410.00 -	0.6000	0.6000
T9	62	LDF7-50A(1-5/8")	415.00 415.00 -	0.6000	0.6000
T10	1	Climbing Ladder (Round)	435.00 385.00 -	0.6000	0.6000
T10	2	Safety Line 3/8	410.00 385.00 -	0.6000	0.6000
T10	3	8188(3/4")	410.00 385.00 -	0.6000	0.6000
T10	5	Coax-Brackets (Af)	410.00 385.00 -	0.6000	0.6000
T10	6	8188(3/4")	410.00 385.00 -	0.6000	0.6000
T10	7	8188(3/4")	410.00 385.00 -	0.6000	0.6000
T10	10	D-Tuner	410.00 385.00 -	0.6000	0.6000
T10	11	D-Tuner	410.00 385.00 -	0.6000	0.6000
T10	12	D-Tuner	410.00 385.00 -	0.6000	0.6000
T10	14	LDF7-50A(1-5/8")	410.00 385.00 -	0.6000	0.6000
T10	15	T-Brackets (Af)	410.00 385.00 -	0.6000	0.6000
T10	19	LDF6-50A(1-1/4")	410.00 385.00 -	0.6000	0.6000
T10	23	FLC 78-50J(7/8")	410.00 385.00 -	0.6000	0.6000
T10	26	LDF5-50A(7/8")	410.00 385.00 -	0.6000	0.6000
T10	28	LDF5-50A(7/8")	410.00 385.00 -	0.6000	0.6000
T10	31	LDF7-50A(1-5/8")	410.00 388.00 -	0.6000	0.6000
T10	32	LDF7-50A(1-5/8")	410.00 385.00 -	0.6000	0.6000
T10	37	LDF4P-50A(1/2")	388.00 385.00 -	0.6000	0.6000
T11	1	Climbing Ladder (Round)	410.00 360.00 -	0.6000	0.6000
			385.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T11	2	Safety Line 3/8	360.00 - 385.00	0.6000	0.6000
T11	3	8188(3/4")	360.00 - 385.00	0.6000	0.6000
T11	5	Coax-Brackets (Af)	360.00 - 385.00	0.6000	0.6000
T11	6	8188(3/4")	360.00 - 385.00	0.6000	0.6000
T11	7	8188(3/4")	360.00 - 385.00	0.6000	0.6000
T11	10	D-Tuner	360.00 - 385.00	0.6000	0.6000
T11	11	D-Tuner	360.00 - 385.00	0.6000	0.6000
T11	12	D-Tuner	360.00 - 385.00	0.6000	0.6000
T11	14	LDF7-50A(1-5/8")	360.00 - 385.00	0.6000	0.6000
T11	15	T-Brackets (Af)	360.00 - 385.00	0.6000	0.6000
T11	19	LDF6-50A(1-1/4")	360.00 - 385.00	0.6000	0.6000
T11	23	FLC 78-50J(7/8")	360.00 - 385.00	0.6000	0.6000
T11	26	LDF5-50A(7/8")	360.00 - 385.00	0.6000	0.6000
T11	28	LDF5-50A(7/8")	360.00 - 385.00	0.6000	0.6000
T11	32	LDF7-50A(1-5/8")	360.00 - 385.00	0.6000	0.6000
T11	37	LDF4P-50A(1/2")	360.00 - 385.00	0.6000	0.6000
T12	1	Climbing Ladder (Round)	335.00 - 360.00	0.6000	0.6000
T12	2	Safety Line 3/8	335.00 - 360.00	0.6000	0.6000
T12	3	8188(3/4")	335.00 - 360.00	0.6000	0.6000
T12	5	Coax-Brackets (Af)	335.00 - 360.00	0.6000	0.6000
T12	6	8188(3/4")	335.00 - 360.00	0.6000	0.6000
T12	7	8188(3/4")	335.00 - 360.00	0.6000	0.6000
T12	10	D-Tuner	335.00 - 360.00	0.6000	0.6000
T12	11	D-Tuner	335.00 - 360.00	0.6000	0.6000
T12	12	D-Tuner	335.00 - 360.00	0.6000	0.6000
T12	14	LDF7-50A(1-5/8")	335.00 - 360.00	0.6000	0.6000
T12	15	T-Brackets (Af)	335.00 - 360.00	0.6000	0.6000
T12	19	LDF6-50A(1-1/4")	335.00 - 360.00	0.6000	0.6000
T12	23	FLC 78-50J(7/8")	335.00 - 360.00	0.6000	0.6000
T12	26	LDF5-50A(7/8")	335.00 - 360.00	0.6000	0.6000
T12	28	LDF5-50A(7/8")	335.00 - 360.00	0.6000	0.6000
T12	32	LDF7-50A(1-5/8")	335.00 - 360.00	0.6000	0.6000
T12	37	LDF4P-50A(1/2")	335.00 - 360.00	0.6000	0.6000
T13	1	Climbing Ladder (Round)	310.00 - 335.00	0.6000	0.6000
T13	2	Safety Line 3/8	310.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	3	8188(3/4")	335.00 310.00 -	0.6000	0.6000
T13	5	Coax-Brackets (Af)	335.00 310.00 -	0.6000	0.6000
T13	6	8188(3/4")	335.00 310.00 -	0.6000	0.6000
T13	7	8188(3/4")	335.00 310.00 -	0.6000	0.6000
T13	8	8188(3/4")	335.00 310.00 -	0.6000	0.6000
T13	10	D-Tuner	315.00 310.00 -	0.6000	0.6000
T13	11	D-Tuner	335.00 310.00 -	0.6000	0.6000
T13	12	D-Tuner	335.00 310.00 -	0.6000	0.6000
T13	14	LDF7-50A(1-5/8")	335.00 310.00 -	0.6000	0.6000
T13	15	T-Brackets (Af)	335.00 310.00 -	0.6000	0.6000
T13	19	LDF6-50A(1-1/4")	335.00 310.00 -	0.6000	0.6000
T13	23	FLC 78-50J(7/8")	335.00 310.00 -	0.6000	0.6000
T13	26	LDF5-50A(7/8")	335.00 310.00 -	0.6000	0.6000
T13	28	LDF5-50A(7/8")	335.00 310.00 -	0.6000	0.6000
T13	32	LDF7-50A(1-5/8")	335.00 324.00 -	0.6000	0.6000
T13	33	LDF7-50A(1-5/8")	335.00 310.00 -	0.6000	0.6000
T13	37	LDF4P-50A(1/2")	324.00 310.00 -	0.6000	0.6000
T13	44	LDF4-75A(1/2")	335.00 310.00 -	0.6000	0.6000
T14	1	Climbing Ladder (Round)	324.00 285.00 -	0.6000	0.6000
T14	2	Safety Line 3/8	310.00 285.00 -	0.6000	0.6000
T14	3	8188(3/4")	310.00 285.00 -	0.6000	0.6000
T14	5	Coax-Brackets (Af)	310.00 285.00 -	0.6000	0.6000
T14	6	8188(3/4")	310.00 285.00 -	0.6000	0.6000
T14	7	8188(3/4")	310.00 285.00 -	0.6000	0.6000
T14	8	8188(3/4")	310.00 285.00 -	0.6000	0.6000
T14	10	D-Tuner	310.00 285.00 -	0.6000	0.6000
T14	11	D-Tuner	310.00 285.00 -	0.6000	0.6000
T14	12	D-Tuner	310.00 285.00 -	0.6000	0.6000
T14	14	LDF7-50A(1-5/8")	310.00 285.00 -	0.6000	0.6000
T14	15	T-Brackets (Af)	310.00 285.00 -	0.6000	0.6000
T14	19	LDF6-50A(1-1/4")	310.00 285.00 -	0.6000	0.6000
T14	23	FLC 78-50J(7/8")	310.00 285.00 -	0.6000	0.6000
T14	26	LDF5-50A(7/8")	310.00 285.00 -	0.6000	0.6000
T14	28	LDF5-50A(7/8")	310.00 285.00 -	0.6000	0.6000
			310.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	33	LDF7-50A(1-5/8")	288.00 - 310.00	0.6000	0.6000
T14	34	LDF7-50A(1-5/8")	285.00 - 288.00	0.6000	0.6000
T14	37	LDF4P-50A(1/2")	294.00 - 310.00	0.6000	0.6000
T14	38	LDF4-75A(1/2")	285.00 - 294.00	0.6000	0.6000
T14	44	LDF4-75A(1/2")	285.00 - 310.00	0.6000	0.6000
T14	59	LCF12-50J(1/2")	285.00 - 288.00	0.6000	0.6000
T15	1	Climbing Ladder (Round)	260.00 - 285.00	0.6000	0.6000
T15	2	Safety Line 3/8	260.00 - 285.00	0.6000	0.6000
T15	3	8188(3/4")	260.00 - 285.00	0.6000	0.6000
T15	5	Coax-Brackets (Af)	260.00 - 285.00	0.6000	0.6000
T15	6	8188(3/4")	260.00 - 285.00	0.6000	0.6000
T15	7	8188(3/4")	260.00 - 285.00	0.6000	0.6000
T15	8	8188(3/4")	260.00 - 285.00	0.6000	0.6000
T15	10	D-Tuner	260.00 - 285.00	0.6000	0.6000
T15	11	D-Tuner	260.00 - 285.00	0.6000	0.6000
T15	12	D-Tuner	260.00 - 285.00	0.6000	0.6000
T15	14	LDF7-50A(1-5/8")	260.00 - 285.00	0.6000	0.6000
T15	15	T-Brackets (Af)	260.00 - 285.00	0.6000	0.6000
T15	19	LDF6-50A(1-1/4")	260.00 - 285.00	0.6000	0.6000
T15	23	FLC 78-50J(7/8")	260.00 - 285.00	0.6000	0.6000
T15	26	LDF5-50A(7/8")	260.00 - 285.00	0.6000	0.6000
T15	28	LDF5-50A(7/8")	260.00 - 285.00	0.6000	0.6000
T15	34	LDF7-50A(1-5/8")	270.00 - 285.00	0.6000	0.6000
T15	35	LDF7-50A(1-5/8")	260.00 - 270.00	0.6000	0.6000
T15	38	LDF4-75A(1/2")	260.00 - 285.00	0.6000	0.6000
T15	44	LDF4-75A(1/2")	260.00 - 285.00	0.6000	0.6000
T15	59	LCF12-50J(1/2")	260.00 - 285.00	0.6000	0.6000
T16	1	Climbing Ladder (Round)	235.00 - 260.00	0.6000	0.6000
T16	2	Safety Line 3/8	235.00 - 260.00	0.6000	0.6000
T16	3	8188(3/4")	235.00 - 260.00	0.6000	0.6000
T16	5	Coax-Brackets (Af)	235.00 - 260.00	0.6000	0.6000
T16	6	8188(3/4")	235.00 - 260.00	0.6000	0.6000
T16	7	8188(3/4")	235.00 - 260.00	0.6000	0.6000
T16	8	8188(3/4")	235.00 - 260.00	0.6000	0.6000
T16	10	D-Tuner	235.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T16	11	D-Tuner	260.00 235.00 - 260.00	0.6000	0.6000
T16	12	D-Tuner	235.00 - 260.00	0.6000	0.6000
T16	14	LDF7-50A(1-5/8")	235.00 - 260.00	0.6000	0.6000
T16	15	T-Brackets (Af)	235.00 - 260.00	0.6000	0.6000
T16	19	LDF6-50A(1-1/4")	235.00 - 260.00	0.6000	0.6000
T16	23	FLC 78-50J(7/8")	235.00 - 260.00	0.6000	0.6000
T16	26	LDF5-50A(7/8")	235.00 - 260.00	0.6000	0.6000
T16	28	LDF5-50A(7/8")	235.00 - 260.00	0.6000	0.6000
T16	35	LDF7-50A(1-5/8")	235.00 - 260.00	0.6000	0.6000
T16	38	LDF4-75A(1/2")	235.00 - 260.00	0.6000	0.6000
T16	44	LDF4-75A(1/2")	235.00 - 260.00	0.6000	0.6000
T16	46	T-Brackets (Af)	235.00 - 250.00	0.6000	0.6000
T16	49	HCS 6X12 4AWG(1-5/8)	235.00 - 239.00	0.6000	0.6000
T16	59	LCF12-50J(1/2")	235.00 - 260.00	0.6000	0.6000
T17	1	Climbing Ladder (Round)	210.00 - 235.00	0.6000	0.6000
T17	2	Safety Line 3/8	210.00 - 235.00	0.6000	0.6000
T17	3	8188(3/4")	210.00 - 235.00	0.6000	0.6000
T17	4	1/2" Grouding wire	210.00 - 212.00	0.6000	0.6000
T17	5	Coax-Brackets (Af)	210.00 - 235.00	0.6000	0.6000
T17	6	8188(3/4")	210.00 - 235.00	0.6000	0.6000
T17	7	8188(3/4")	210.00 - 235.00	0.6000	0.6000
T17	8	8188(3/4")	210.00 - 235.00	0.6000	0.6000
T17	10	D-Tuner	210.00 - 235.00	0.6000	0.6000
T17	11	D-Tuner	210.00 - 235.00	0.6000	0.6000
T17	12	D-Tuner	210.00 - 235.00	0.6000	0.6000
T17	14	LDF7-50A(1-5/8")	210.00 - 235.00	0.6000	0.6000
T17	15	T-Brackets (Af)	210.00 - 235.00	0.6000	0.6000
T17	19	LDF6-50A(1-1/4")	210.00 - 235.00	0.6000	0.6000
T17	23	FLC 78-50J(7/8")	210.00 - 235.00	0.6000	0.6000
T17	26	LDF5-50A(7/8")	210.00 - 235.00	0.6000	0.6000
T17	28	LDF5-50A(7/8")	212.00 - 235.00	0.6000	0.6000
T17	29	FLC 78-50J(7/8")	210.00 - 212.00	0.6000	0.6000
T17	35	LDF7-50A(1-5/8")	210.00 - 235.00	0.6000	0.6000
T17	38	LDF4-75A(1/2")	210.00 - 235.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	44	LDF4-75A(1/2")	210.00 - 235.00	0.6000	0.6000
T17	46	T-Brackets (Af)	210.00 - 235.00	0.6000	0.6000
T17	49	HCS 6X12 4AWG(1-5/8)	210.00 - 235.00	0.6000	0.6000
T17	51	LDF7-50A(1-5/8")	210.00 - 214.00	0.6000	0.6000
T17	59	LCF12-50J(1/2")	210.00 - 235.00	0.6000	0.6000
T18	1	Climbing Ladder (Round)	185.00 - 210.00	0.6000	0.6000
T18	2	Safety Line 3/8	185.00 - 210.00	0.6000	0.6000
T18	3	8188(3/4")	185.00 - 210.00	0.6000	0.6000
T18	4	1/2" Grouding wire	185.00 - 210.00	0.6000	0.6000
T18	5	Coax-Brackets (Af)	185.00 - 210.00	0.6000	0.6000
T18	6	8188(3/4")	185.00 - 210.00	0.6000	0.6000
T18	7	8188(3/4")	185.00 - 210.00	0.6000	0.6000
T18	8	8188(3/4")	185.00 - 210.00	0.6000	0.6000
T18	10	D-Tuner	185.00 - 210.00	0.6000	0.6000
T18	11	D-Tuner	185.00 - 210.00	0.6000	0.6000
T18	12	D-Tuner	185.00 - 210.00	0.6000	0.6000
T18	14	LDF7-50A(1-5/8")	185.00 - 210.00	0.6000	0.6000
T18	15	T-Brackets (Af)	185.00 - 210.00	0.6000	0.6000
T18	19	LDF6-50A(1-1/4")	185.00 - 210.00	0.6000	0.6000
T18	23	FLC 78-50J(7/8")	185.00 - 210.00	0.6000	0.6000
T18	26	LDF5-50A(7/8")	185.00 - 210.00	0.6000	0.6000
T18	29	FLC 78-50J(7/8")	185.00 - 210.00	0.6000	0.6000
T18	35	LDF7-50A(1-5/8")	185.00 - 210.00	0.6000	0.6000
T18	38	LDF4-75A(1/2")	185.00 - 210.00	0.6000	0.6000
T18	44	LDF4-75A(1/2")	185.00 - 210.00	0.6000	0.6000
T18	46	T-Brackets (Af)	185.00 - 210.00	0.6000	0.6000
T18	49	HCS 6X12 4AWG(1-5/8)	185.00 - 210.00	0.6000	0.6000
T18	51	LDF7-50A(1-5/8")	185.00 - 210.00	0.6000	0.6000
T18	59	LCF12-50J(1/2")	185.00 - 210.00	0.6000	0.6000
T18	64	CU12PSM6P4XXX(1-3/4)	185.00 - 201.00	0.6000	0.6000
T18	66	C45497-F6989-A2-C(1/4)	185.00 - 201.00	0.6000	0.6000
T19	1	Climbing Ladder (Round)	160.00 - 185.00	0.6000	0.6000
T19	2	Safety Line 3/8	160.00 - 185.00	0.6000	0.6000
T19	3	8188(3/4")	160.00 - 185.00	0.6000	0.6000
T19	4	1/2" Grouding wire	160.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T19	5	Coax-Brackets (Af)	185.00 160.00 - 185.00	0.6000	0.6000
T19	6	8188(3/4")	160.00 - 185.00	0.6000	0.6000
T19	7	8188(3/4")	160.00 - 185.00	0.6000	0.6000
T19	8	8188(3/4")	160.00 - 185.00	0.6000	0.6000
T19	10	D-Tuner	160.00 - 185.00	0.6000	0.6000
T19	11	D-Tuner	160.00 - 185.00	0.6000	0.6000
T19	12	D-Tuner	160.00 - 185.00	0.6000	0.6000
T19	14	LDF7-50A(1-5/8")	160.00 - 185.00	0.6000	0.6000
T19	15	T-Brackets (Af)	160.00 - 185.00	0.6000	0.6000
T19	19	LDF6-50A(1-1/4")	160.00 - 185.00	0.6000	0.6000
T19	23	FLC 78-50J(7/8")	175.00 - 185.00	0.6000	0.6000
T19	24	LDF5-50A(7/8")	160.00 - 175.00	0.6000	0.6000
T19	26	LDF5-50A(7/8")	160.00 - 185.00	0.6000	0.6000
T19	29	FLC 78-50J(7/8")	160.00 - 185.00	0.6000	0.6000
T19	35	LDF7-50A(1-5/8")	160.00 - 185.00	0.6000	0.6000
T19	38	LDF4-75A(1/2")	160.00 - 185.00	0.6000	0.6000
T19	44	LDF4-75A(1/2")	160.00 - 185.00	0.6000	0.6000
T19	46	T-Brackets (Af)	160.00 - 185.00	0.6000	0.6000
T19	49	HCS 6X12 4AWG(1-5/8)	160.00 - 185.00	0.6000	0.6000
T19	51	LDF7-50A(1-5/8")	160.00 - 185.00	0.6000	0.6000
T19	59	LCF12-50J(1/2")	160.00 - 185.00	0.6000	0.6000
T19	64	CU12PSM6P4XXX(1-3/4)	160.00 - 185.00	0.6000	0.6000
T19	66	C45497-F6989-A2-C(1/4)	160.00 - 185.00	0.6000	0.6000
T20	1	Climbing Ladder (Round)	135.00 - 160.00	0.6000	0.6000
T20	2	Safety Line 3/8	135.00 - 160.00	0.6000	0.6000
T20	3	8188(3/4")	135.00 - 160.00	0.6000	0.6000
T20	4	1/2" Grouding wire	135.00 - 160.00	0.6000	0.6000
T20	5	Coax-Brackets (Af)	135.00 - 160.00	0.6000	0.6000
T20	6	8188(3/4")	135.00 - 160.00	0.6000	0.6000
T20	7	8188(3/4")	135.00 - 160.00	0.6000	0.6000
T20	8	8188(3/4")	135.00 - 160.00	0.6000	0.6000
T20	14	LDF7-50A(1-5/8")	135.00 - 160.00	0.6000	0.6000
T20	15	T-Brackets (Af)	135.00 - 160.00	0.6000	0.6000
T20	19	LDF6-50A(1-1/4")	135.00 - 160.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T20	24	LDF5-50A(7/8")	135.00 - 160.00	0.6000	0.6000
T20	26	LDF5-50A(7/8")	135.00 - 160.00	0.6000	0.6000
T20	29	FLC 78-50J(7/8")	135.00 - 160.00	0.6000	0.6000
T20	35	LDF7-50A(1-5/8")	135.00 - 160.00	0.6000	0.6000
T20	38	LDF4-75A(1/2")	135.00 - 160.00	0.6000	0.6000
T20	41	LDF4P-50A(1/2")	135.00 - 138.00	0.6000	0.6000
T20	44	LDF4-75A(1/2")	135.00 - 160.00	0.6000	0.6000
T20	46	T-Brackets (Af)	135.00 - 160.00	0.6000	0.6000
T20	49	HCS 6X12 4AWG(1-5/8)	135.00 - 160.00	0.6000	0.6000
T20	51	LDF7-50A(1-5/8")	135.00 - 160.00	0.6000	0.6000
T20	53	EW52(ELLIPTICAL)	135.00 - 145.00	0.6000	0.6000
T20	59	LCF12-50J(1/2")	135.00 - 160.00	0.6000	0.6000
T20	64	CU12PSM6P4XXX(1-3/4)	135.00 - 160.00	0.6000	0.6000
T20	66	C45497-F6989-A2-C(1/4)	135.00 - 160.00	0.6000	0.6000
T21	1	Climbing Ladder (Round)	110.00 - 135.00	0.6000	0.6000
T21	2	Safety Line 3/8	110.00 - 135.00	0.6000	0.6000
T21	3	8188(3/4")	110.00 - 135.00	0.6000	0.6000
T21	4	1/2" Grouding wire	110.00 - 135.00	0.6000	0.6000
T21	5	Coax-Brackets (Af)	110.00 - 135.00	0.6000	0.6000
T21	6	8188(3/4")	110.00 - 135.00	0.6000	0.6000
T21	7	8188(3/4")	110.00 - 135.00	0.6000	0.6000
T21	8	8188(3/4")	110.00 - 135.00	0.6000	0.6000
T21	14	LDF7-50A(1-5/8")	110.00 - 135.00	0.6000	0.6000
T21	15	T-Brackets (Af)	110.00 - 135.00	0.6000	0.6000
T21	19	LDF6-50A(1-1/4")	110.00 - 135.00	0.6000	0.6000
T21	24	LDF5-50A(7/8")	110.00 - 135.00	0.6000	0.6000
T21	26	LDF5-50A(7/8")	110.00 - 135.00	0.6000	0.6000
T21	29	FLC 78-50J(7/8")	110.00 - 135.00	0.6000	0.6000
T21	35	LDF7-50A(1-5/8")	110.00 - 135.00	0.6000	0.6000
T21	38	LDF4-75A(1/2")	110.00 - 135.00	0.6000	0.6000
T21	41	LDF4P-50A(1/2")	134.00 - 135.00	0.6000	0.6000
T21	42	LDF4-50A(1/2")	110.00 - 134.00	0.6000	0.6000
T21	44	LDF4-75A(1/2")	110.00 - 135.00	0.6000	0.6000
T21	46	T-Brackets (Af)	110.00 - 135.00	0.6000	0.6000
T21	49	HCS 6X12 4AWG(1-5/8)	110.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T21	51	LDF7-50A(1-5/8")	135.00 110.00 -	0.6000	0.6000
T21	53	EW52(ELLIPTICAL)	135.00 110.00 -	0.6000	0.6000
T21	55	LDF2-50(3/8")	135.00 110.00 -	0.6000	0.6000
T21	59	LCF12-50J(1/2")	112.00 110.00 -	0.6000	0.6000
T21	64	CU12PSM6P4XXX(1-3/4)	135.00 110.00 -	0.6000	0.6000
T21	66	C45497-F6989-A2-C(1/4)	135.00 110.00 -	0.6000	0.6000
T22	1	Climbing Ladder (Round)	135.00 85.00 -	0.6000	0.6000
T22	2	Safety Line 3/8	110.00 85.00 -	0.6000	0.6000
T22	3	8188(3/4")	110.00 85.00 -	0.6000	0.6000
T22	4	1/2" Grouding wire	110.00 85.00 -	0.6000	0.6000
T22	5	Coax-Brackets (Af)	110.00 85.00 -	0.6000	0.6000
T22	6	8188(3/4")	110.00 85.00 -	0.6000	0.6000
T22	7	8188(3/4")	110.00 85.00 -	0.6000	0.6000
T22	8	8188(3/4")	110.00 85.00 -	0.6000	0.6000
T22	14	LDF7-50A(1-5/8")	110.00 85.00 -	0.6000	0.6000
T22	15	T-Brackets (Af)	110.00 85.00 -	0.6000	0.6000
T22	19	LDF6-50A(1-1/4")	110.00 85.00 -	0.6000	0.6000
T22	24	LDF5-50A(7/8")	110.00 85.00 -	0.6000	0.6000
T22	26	LDF5-50A(7/8")	110.00 85.00 -	0.6000	0.6000
T22	29	FLC 78-50J(7/8")	110.00 85.00 -	0.6000	0.6000
T22	35	LDF7-50A(1-5/8")	110.00 85.00 -	0.6000	0.6000
T22	38	LDF4-75A(1/2")	110.00 91.00 -	0.6000	0.6000
T22	39	LDF4P-50A(1/2")	110.00 85.00 -	0.6000	0.6000
T22	42	LDF4-50A(1/2")	91.00 85.00 -	0.6000	0.6000
T22	44	LDF4-75A(1/2")	110.00 85.00 -	0.6000	0.6000
T22	46	T-Brackets (Af)	110.00 85.00 -	0.6000	0.6000
T22	49	HCS 6X12 4AWG(1-5/8)	110.00 85.00 -	0.6000	0.6000
T22	51	LDF7-50A(1-5/8")	110.00 85.00 -	0.6000	0.6000
T22	53	EW52(ELLIPTICAL)	110.00 85.00 -	0.6000	0.6000
T22	55	LDF2-50(3/8")	110.00 85.00 -	0.6000	0.6000
T22	59	LCF12-50J(1/2")	110.00 85.00 -	0.6000	0.6000
T22	64	CU12PSM6P4XXX(1-3/4)	110.00 85.00 -	0.6000	0.6000
T22	66	C45497-F6989-A2-C(1/4)	110.00 85.00 -	0.6000	0.6000
T23	1	Climbing Ladder (Round)	110.00 60.00 -	0.6000	0.6000
			85.00		

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T23	2	Safety Line 3/8	60.00 - 85.00	0.6000	0.6000
T23	3	8188(3/4")	60.00 - 85.00	0.6000	0.6000
T23	4	1/2" Grouding wire	60.00 - 85.00	0.6000	0.6000
T23	5	Coax-Brackets (Af)	60.00 - 85.00	0.6000	0.6000
T23	6	8188(3/4")	60.00 - 85.00	0.6000	0.6000
T23	7	8188(3/4")	60.00 - 85.00	0.6000	0.6000
T23	8	8188(3/4")	60.00 - 85.00	0.6000	0.6000
T23	14	LDF7-50A(1-5/8")	60.00 - 85.00	0.6000	0.6000
T23	15	T-Brackets (Af)	60.00 - 85.00	0.6000	0.6000
T23	19	LDF6-50A(1-1/4")	60.00 - 85.00	0.6000	0.6000
T23	24	LDF5-50A(7/8")	60.00 - 85.00	0.6000	0.6000
T23	26	LDF5-50A(7/8")	60.00 - 85.00	0.6000	0.6000
T23	29	FLC 78-50J(7/8")	60.00 - 85.00	0.6000	0.6000
T23	35	LDF7-50A(1-5/8")	60.00 - 85.00	0.6000	0.6000
T23	39	LDF4P-50A(1/2")	60.00 - 85.00	0.6000	0.6000
T23	42	LDF4-50A(1/2")	60.00 - 85.00	0.6000	0.6000
T23	44	LDF4-75A(1/2")	60.00 - 85.00	0.6000	0.6000
T23	46	T-Brackets (Af)	60.00 - 85.00	0.6000	0.6000
T23	49	HCS 6X12 4AWG(1-5/8)	60.00 - 85.00	0.6000	0.6000
T23	51	LDF7-50A(1-5/8")	60.00 - 85.00	0.6000	0.6000
T23	53	EW52(ELLIPTICAL)	60.00 - 85.00	0.6000	0.6000
T23	55	LDF2-50(3/8")	60.00 - 85.00	0.6000	0.6000
T23	57	FLC38-50J(3/8")	60.00 - 80.00	0.6000	0.6000
T23	59	LCF12-50J(1/2")	76.00 - 85.00	0.6000	0.6000
T23	60	LCF12-50J(1/2")	60.00 - 76.00	0.6000	0.6000
T23	64	CU12PSM6P4XXX(1-3/4)	60.00 - 85.00	0.6000	0.6000
T23	66	C45497-F6989-A2-C(1/4)	60.00 - 85.00	0.6000	0.6000
T24	1	Climbing Ladder (Round)	35.00 - 60.00	0.6000	0.6000
T24	2	Safety Line 3/8	35.00 - 60.00	0.6000	0.6000
T24	3	8188(3/4")	35.00 - 60.00	0.6000	0.6000
T24	4	1/2" Grouding wire	35.00 - 60.00	0.6000	0.6000
T24	5	Coax-Brackets (Af)	35.00 - 60.00	0.6000	0.6000
T24	6	8188(3/4")	35.00 - 60.00	0.6000	0.6000
T24	7	8188(3/4")	35.00 - 60.00	0.6000	0.6000
T24	8	8188(3/4")	35.00 -	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T24	14	LDF7-50A(1-5/8")	60.00 35.00 - 60.00	0.6000	0.6000
T24	15	T-Brackets (Af)	35.00 - 60.00	0.6000	0.6000
T24	19	LDF6-50A(1-1/4")	35.00 - 60.00	0.6000	0.6000
T24	24	LDF5-50A(7/8")	35.00 - 60.00	0.6000	0.6000
T24	26	LDF5-50A(7/8")	35.00 - 60.00	0.6000	0.6000
T24	29	FLC 78-50J(7/8")	35.00 - 60.00	0.6000	0.6000
T24	35	LDF7-50A(1-5/8")	35.00 - 60.00	0.6000	0.6000
T24	39	LDF4P-50A(1/2")	35.00 - 60.00	0.6000	0.6000
T24	42	LDF4-50A(1/2")	35.00 - 60.00	0.6000	0.6000
T24	44	LDF4-75A(1/2")	35.00 - 60.00	0.6000	0.6000
T24	46	T-Brackets (Af)	35.00 - 60.00	0.6000	0.6000
T24	49	HCS 6X12 4AWG(1-5/8)	35.00 - 60.00	0.6000	0.6000
T24	51	LDF7-50A(1-5/8")	35.00 - 60.00	0.6000	0.6000
T24	53	EW52(ELLIPTICAL)	35.00 - 60.00	0.6000	0.6000
T24	55	LDF2-50(3/8")	35.00 - 60.00	0.6000	0.6000
T24	57	FLC38-50J(3/8")	35.00 - 60.00	0.6000	0.6000
T24	60	LCF12-50J(1/2")	35.00 - 60.00	0.6000	0.6000
T24	64	CU12PSM6P4XXX(1-3/4)	35.00 - 60.00	0.6000	0.6000
T24	66	C45497-F6989-A2-C(1/4)	35.00 - 60.00	0.6000	0.6000
T25	1	Climbing Ladder (Round)	10.00 - 35.00	0.6000	0.6000
T25	2	Safety Line 3/8	10.00 - 35.00	0.6000	0.6000
T25	3	8188(3/4")	10.00 - 35.00	0.6000	0.6000
T25	4	1/2" Grouding wire	10.00 - 35.00	0.6000	0.6000
T25	5	Coax-Brackets (Af)	10.00 - 35.00	0.6000	0.6000
T25	6	8188(3/4")	10.00 - 35.00	0.6000	0.6000
T25	7	8188(3/4")	10.00 - 35.00	0.6000	0.6000
T25	8	8188(3/4")	10.00 - 35.00	0.6000	0.6000
T25	14	LDF7-50A(1-5/8")	10.00 - 35.00	0.6000	0.6000
T25	15	T-Brackets (Af)	10.00 - 35.00	0.6000	0.6000
T25	19	LDF6-50A(1-1/4")	10.00 - 35.00	0.6000	0.6000
T25	24	LDF5-50A(7/8")	10.00 - 35.00	0.6000	0.6000
T25	26	LDF5-50A(7/8")	10.00 - 35.00	0.6000	0.6000
T25	29	FLC 78-50J(7/8")	10.00 - 35.00	0.6000	0.6000
T25	35	LDF7-50A(1-5/8")	10.00 - 35.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T25	39	LDF4P-50A(1/2")	10.00 - 35.00	0.6000	0.6000
T25	42	LDF4-50A(1/2")	10.00 - 35.00	0.6000	0.6000
T25	44	LDF4-75A(1/2")	10.00 - 35.00	0.6000	0.6000
T25	46	T-Brackets (Af)	10.00 - 35.00	0.6000	0.6000
T25	49	HCS 6X12 4AWG(1-5/8)	10.00 - 35.00	0.6000	0.6000
T25	51	LDF7-50A(1-5/8")	10.00 - 35.00	0.6000	0.6000
T25	53	EW52(ELLIPTICAL)	10.00 - 35.00	0.6000	0.6000
T25	55	LDF2-50(3/8")	10.00 - 35.00	0.6000	0.6000
T25	57	FLC38-50J(3/8")	10.00 - 35.00	0.6000	0.6000
T25	60	LCF12-50J(1/2")	10.00 - 35.00	0.6000	0.6000
T25	64	CU12PSM6P4XXX(1-3/4)	10.00 - 35.00	0.6000	0.6000
T25	66	C45497-F6989-A2-C(1/4)	10.00 - 35.00	0.6000	0.6000
T26	1	Climbing Ladder (Round)	8.00 - 10.00	0.6000	0.4822
T26	2	Safety Line 3/8	8.00 - 10.00	0.6000	0.4822
T26	3	8188(3/4")	8.00 - 10.00	0.6000	0.4822
T26	4	1/2" Grouding wire	0.00 - 10.00	0.6000	0.4822
T26	5	Coax-Brackets (Af)	8.00 - 10.00	0.6000	0.4822
T26	6	8188(3/4")	8.00 - 10.00	0.6000	0.4822
T26	7	8188(3/4")	8.00 - 10.00	0.6000	0.4822
T26	8	8188(3/4")	8.00 - 10.00	0.6000	0.4822
T26	14	LDF7-50A(1-5/8")	8.00 - 10.00	0.6000	0.4822
T26	15	T-Brackets (Af)	8.00 - 10.00	0.6000	0.4822
T26	19	LDF6-50A(1-1/4")	8.00 - 10.00	0.6000	0.4822
T26	24	LDF5-50A(7/8")	8.00 - 10.00	0.6000	0.4822
T26	26	LDF5-50A(7/8")	8.00 - 10.00	0.6000	0.4822
T26	29	FLC 78-50J(7/8")	8.00 - 10.00	0.6000	0.4822
T26	35	LDF7-50A(1-5/8")	8.00 - 10.00	0.6000	0.4822
T26	39	LDF4P-50A(1/2")	8.00 - 10.00	0.6000	0.4822
T26	42	LDF4-50A(1/2")	8.00 - 10.00	0.6000	0.4822
T26	44	LDF4-75A(1/2")	8.00 - 10.00	0.6000	0.4822
T26	46	T-Brackets (Af)	8.00 - 10.00	0.6000	0.4822
T26	49	HCS 6X12 4AWG(1-5/8)	8.00 - 10.00	0.6000	0.4822
T26	51	LDF7-50A(1-5/8")	8.00 - 10.00	0.6000	0.4822
T26	53	EW52(ELLIPTICAL)	8.00 - 10.00	0.6000	0.4822
T26	55	LDF2-50(3/8")	8.00 - 10.00	0.6000	0.4822
T26	57	FLC38-50J(3/8")	8.00 - 10.00	0.6000	0.4822
T26	60	LCF12-50J(1/2")	8.00 - 10.00	0.6000	0.4822
T26	64	CU12PSM6P4XXX(1-3/4)	0.00 - 10.00	0.6000	0.4822
T26	66	C45497-F6989-A2-C(1/4)	0.00 - 10.00	0.6000	0.4822

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Lightning Rod 5/8" x 3'	C	From Leg	0.000	0.000	560'

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Flash Beacon Lighting	B	From Leg	0' 1'6" 0.000 0' 0'	0.000	560'
Side Light	A	From Leg	0.500 0' 0'	0.000	475'
Side Light	B	From Leg	0.500 0' 0'	0.000	475'
Side Light	C	From Leg	0.500 0' 0'	0.000	475'
Flash Beacon Lighting	A	From Leg	0.000 0' 0'	0.000	315'
Flash Beacon Lighting	C	From Leg	0.000 0' 0'	0.000	312'
Side Light	A	From Leg	0.500 0' 0'	0.000	157'
Side Light	B	From Leg	0.500 0' 0'	0.000	157'
Side Light	C	From Leg	0.500 0' 0'	0.000	157'
* AP19-1670/090D/DT2	A	From Leg	1.000 0' 0'	0.000	553'
AP19-1670/090D/DT2	B	From Leg	1.000 0' 0'	0.000	553'
AP19-1670/090D/DT2	C	From Leg	1.000 0' 0'	0.000	553'
PDS3DE-698/2700	A	From Leg	1.000 0' 0'	0.000	553'
Pipe Mount [PM 601-3]	C	None		0.000	553'
* * ANT150F6	A	From Leg	4.000 0' 14'	0.000	514'
PG1NOF-0093-8	C	From Leg	4.000 0' 5'	0.000	514'
Side Arm Mount [SO 312-1]	A	From Leg	2.000 0' 0'	0.000	514'
Side Arm Mount [SO 312-1]	C	From Leg	2.000 0' 0'	0.000	514'
* Flush Mount	A	From Leg	2.000 0' 0'	0.000	505'
* 101-68-10-0-03N	C	From Leg	6.000 0' 8'	0.000	492'

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Side Arm Mount [SO 308-1]	C	From Leg	3.000 0' 0'	0.000	492'
*					
*					
ANT150F6	C	From Leg	4.000 0' 10'	0.000	465'
Side Arm Mount [SO 312-1]	C	From Leg	2.000 0' 0'	0.000	465'
*					
101-68-10-0-03N	C	From Leg	6.000 0' 8'	0.000	442'
Side Arm Mount [SO 308-1]	C	From Leg	3.000 0' 0'	0.000	442'
*					
ANT150F6	A	From Leg	4.000 0' 10'	0.000	438'
ANT150F6	B	From Leg	4.000 0' 10'	0.000	438'
13' x 2" Pipe Mount	A	From Face	0.500 0' 0'	0.000	438'
13' x 2" Pipe Mount	B	From Face	0.500 0' 0'	0.000	456'
Side Arm Mount [SO 308-1]	B	From Leg	2.000 0' 0'	0.000	438'
*					
101D-90-06-0-03	C	From Leg	6.000 0' 10'	0.000	415'
TPRD-1554	C	From Leg	6.000 0' 10'	0.000	415'
Side Arm Mount [SO 308-1]	C	From Leg	3.000 0' 0'	0.000	415'
*					
SC233	C	From Leg	4.000 0' 14'	0.000	388'
Side Arm Mount [SO 306-1]	C	From Leg	2.000 0' 0'	0.000	388'
*					
DB636-C	A	From Leg	2.000 0' 5'	0.000	324'
DB636-C	C	From Leg	2.000 0' 5'	0.000	324'
Side Arm Mount [SO 307-1]	A	From Leg	1.000 0' 0'	0.000	324'
Side Arm Mount [SO 307-1]	C	From Leg	1.000 0' 0'	0.000	324'
*					

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
DB540K-E	C	From Leg	4.000 0' 9'	0.000	294'
Side Arm Mount [SO 306-1]	C	From Leg	2.000 0' 0'	0.000	294'
*					
DB636-C	A	From Leg	3.000 0' 5'	0.000	288'
Side Arm Mount [SO 307-1]	A	From Leg	1.500 0' 0'	0.000	288'
*					
CC806-06	C	From Leg	4.000 0' 3'	0.000	270'
Side Arm Mount [SO 306-1]	C	From Leg	2.000 0' 0'	0.000	270'
*					
DB809KT6E-XT	A	From Leg	4.000 0' 4'	0.000	254'
Side Arm Mount [SO 306-1]	A	From Leg	2.000 0' 0'	0.000	254'
*					
*					
APXVAALL24_43-U-NA20	A	From Leg	4.000 0' 3'	0.000	239'
APXVAALL24_43-U-NA20	B	From Leg	4.000 0' 3'	0.000	239'
APXVAALL24_43-U-NA20	C	From Leg	4.000 0' 3'	0.000	239'
AIR 6419 B41_TMO	A	From Leg	4.000 0' 3'	0.000	239'
AIR 6419 B41_TMO	B	From Leg	4.000 0' 3'	0.000	239'
AIR 6419 B41_TMO	C	From Leg	4.000 0' 3'	0.000	239'
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.000 0' 3'	0.000	239'
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.000 0' 3'	0.000	239'
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.000 0' 3'	0.000	239'
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.000 0' 0'	0.000	239'
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.000 0' 0'	0.000	239'
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.000 0' 0'	0.000	239'

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft
Sector Mount [SM 201-3]	C	None		0.000	239'
*					
742 213 w/ Mount Pipe	A	From Leg	1.000 0' 0'	0.000	214'
742 213 w/ Mount Pipe	B	From Leg	1.000 0' 0'	0.000	214'
742 213 w/ Mount Pipe	C	From Leg	1.000 0' 0'	0.000	214'
*					
ANT150F6	C	From Leg	4.000 0' 10'	0.000	212'
Side Arm Mount [SO 306-1]	C	From Leg	2.000 0' 0'	0.000	212'
*					
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.000 0' 1'	0.000	201'
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.000 0' 1'	0.000	201'
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.000 0' 1'	0.000	201'
TA08025-B604	A	From Leg	4.000 0' 2'	0.000	201'
TA08025-B604	B	From Leg	4.000 0' 2'	0.000	201'
TA08025-B604	C	From Leg	4.000 0' 2'	0.000	201'
TA08025-B605	A	From Leg	4.000 0' 2'	0.000	201'
TA08025-B605	B	From Leg	4.000 0' 2'	0.000	201'
TA08025-B605	C	From Leg	4.000 0' 2'	0.000	201'
RDIDC-9181-PF-48	B	From Leg	4.000 0' 5'	0.000	201'
IP-50C	C	From Leg	4.000 0' 1'	0.000	201'
(2) 8' x 2" Mount Pipe	A	From Leg	4.000 0' 0'	0.000	201'
(2) 8' x 2" Mount Pipe	B	From Leg	4.000 0' 0'	0.000	201'
(2) 8' x 2" Mount Pipe	C	From Leg	4.000 0' 0'	0.000	201'
Commscope MTC3975083 (3)	C	None		0.000	201'
*					
ANT150F6	B	From Leg	6.000 0'	0.000	175'

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft
Side Arm Mount [SO 602-1]	B	From Leg	10' 3.000 0' 0'	0.000	175'
6' x 2" Mount Pipe	B	From Leg	3.000 0' 0'	0.000	175'
*					
Side Arm Mount [SO 202-1]	C	From Face	1.000 0' 1'	0.000	145'
*					
TMADB7821VG12A	A	From Leg	1.000 0' 0'	0.000	138'
Pipe Mount [PM 601-1]	B	From Leg	1.000 0' 0'	0.000	138'
Side Arm Mount [SO 201-1]	B	From Leg	1.000 0' 0'	0.000	138'
*					
TMADB7821VG12A	A	From Leg	0.000 0' 0'	0.000	134'
*					
201-8	C	From Leg	2.000 0' 4'	0.000	112'
Flush Mount	C	From Leg	1.000 0' 0'	0.000	112'
*					
ANT150F2	A	From Leg	2.000 0' 3'	0.000	91'
Flush Mount	A	From Leg	1.000 0' 0'	0.000	91'
*					
Side Arm Mount [SO 301-1]	C	From Leg	1.000 0' 0'	0.000	80'
*					
Acutime 2000	C	From Leg	2.000 0' 0'	0.000	76'
Side Arm Mount [SO 301-1]	C	From Leg	1.000 0' 0'	0.000	76'
*					

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft
P2F-52	C	Paraboloid w/o Radome	From Leg	1.000 0' 0'	0.000		288'	2.000
*								
SPD2-5.8	A	Paraboloid w/o Radome	From Leg	0.500 0' 0'	32.000		138'	2.000
*								
SPD2-5.8	A	Paraboloid w/o Radome	From Leg	0.500 0' 0'	-10.000		134'	2.000
*								
DRAGONWAVE A-ANT-11G-4-C	C	Paraboloid w/o Radome	From Leg	1.000 0' 1'	-50.000		80'	4.222
*								
VHLP2-11W/B	C	Paraboloid w/Shroud (HP)	From Leg	4.000 0' 1'	-12.000		201'	2.158

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy
3	1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy
4	1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy
5	1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy
6	1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy
7	1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy
8	1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy
9	1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy
10	1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy
11	1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy
12	1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy
13	1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy
14	1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy
15	1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy
16	1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy
17	1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy
18	1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy
19	1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy
20	1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy
21	1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy
22	1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy
23	1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy
24	1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy
25	1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy
26	1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy
27	1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy
28	1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy
29	1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy
30	1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy
31	1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy
32	1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy
33	1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy
34	1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy
35	1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy
36	1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy
37	1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy
38	1.2 Dead+1.0 Ice+1.0 Temp+Guy
39	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
40	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy

Comb. No.	Description
41	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
42	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
43	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
44	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
45	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
46	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
47	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
48	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
49	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
51	Dead+Wind 0 deg - Service+Guy
52	Dead+Wind 30 deg - Service+Guy
53	Dead+Wind 60 deg - Service+Guy
54	Dead+Wind 90 deg - Service+Guy
55	Dead+Wind 120 deg - Service+Guy
56	Dead+Wind 150 deg - Service+Guy
57	Dead+Wind 180 deg - Service+Guy
58	Dead+Wind 210 deg - Service+Guy
59	Dead+Wind 240 deg - Service+Guy
60	Dead+Wind 270 deg - Service+Guy
61	Dead+Wind 300 deg - Service+Guy
62	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	560 - 553.75	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	49	-0.714	0.029	0.015
			Max. Mx	12	-0.452	-0.100	0.001
			Max. My	3	-0.413	-0.003	0.106
			Max. Vy	26	0.079	0.000	0.000
			Max. Vx	2	0.096	-0.000	0.000
		Diagonal	Max Tension	26	0.089	0.000	0.000
			Max. Compression	47	-0.396	0.000	0.000
			Max. Mx	49	-0.127	0.108	0.000
			Max. My	44	-0.204	0.000	-0.001
			Max. Vy	49	-0.058	0.000	0.000
			Max. Vx	44	0.001	0.000	0.000
		Top Girt	Max Tension	8	0.108	-0.008	-0.000
			Max. Compression	26	-0.116	-0.036	0.000
			Max. Mx	43	0.015	0.091	0.000
			Max. My	32	-0.037	-0.046	0.001
			Max. Vy	45	-0.110	-0.038	0.000
			Max. Vx	2	0.000	0.000	0.000
T2	553.75 - 547.5	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	43	-2.280	0.021	0.011
			Max. Mx	29	-0.954	-0.111	-0.002
			Max. My	2	-0.964	-0.003	-0.120
			Max. Vy	29	0.199	0.097	-0.002
			Max. Vx	2	0.208	-0.003	0.106
		Diagonal	Max Tension	29	1.121	0.000	0.000
			Max. Compression	29	-1.251	0.000	0.000
			Max. Mx	49	0.179	0.080	0.000
			Max. My	50	-0.272	0.000	0.001
			Max. Vy	49	-0.043	0.000	0.000
			Max. Vx	50	-0.001	0.000	0.000
		Horizontal	Max Tension	8	0.751	-0.024	-0.000
			Max. Compression	2	-0.706	-0.025	0.000
			Max. Mx	47	0.258	-0.056	-0.000
			Max. My	2	0.394	-0.023	-0.001
			Max. Vy	43	0.070	-0.056	-0.000
			Max. Vx	2	0.000	0.000	0.000
T3	547.5 - 541.25	Leg	Max Tension	20	0.213	0.003	0.035

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-6.734	-0.043	-0.023
			Max. Mx	29	-5.405	-0.083	0.004
			Max. My	2	-6.385	-0.004	-0.092
			Max. Vy	29	-0.062	0.045	0.001
			Max. Vx	2	-0.066	0.000	0.049
		Diagonal	Max Tension	29	2.435	0.000	0.000
		Top Girt	Max Tension	2	0.242	0.000	0.000
			Max. Compression	2	-0.992	0.000	0.000
			Max. Mx	41	-0.105	0.393	0.000
			Max. My	35	-0.907	0.000	-0.000
			Max. Vy	41	-0.196	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T4	541.25 - 535	Leg	Max Tension	20	2.187	0.001	-0.026
			Max. Compression	2	-10.729	-0.000	0.030
			Max. Mx	11	-8.691	-0.045	0.001
			Max. My	2	-10.402	0.000	0.049
			Max. Vy	29	0.048	0.045	0.001
			Max. Vx	2	0.049	0.000	0.049
		Diagonal	Max Tension	29	3.073	0.000	0.000
		Top Girt	Max Tension	2	0.130	0.000	0.000
			Max. Compression	29	-2.158	0.000	0.000
			Max. Mx	44	-0.673	0.223	0.000
			Max. My	35	-2.127	0.000	-0.000
			Max. Vy	44	-0.112	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T5	535 - 510	Leg	Max Tension	20	16.186	0.036	-0.088
			Max. Compression	2	-33.678	-0.057	0.312
			Max. Mx	30	-6.153	0.362	0.020
			Max. My	3	6.191	0.056	0.361
			Max. Vy	26	0.215	0.136	-0.036
			Max. Vx	2	0.194	0.032	0.125
		Diagonal	Max Tension	23	5.553	0.000	0.000
		Horizontal	Max Tension	4	0.060	0.000	0.000
			Max. Compression	23	-3.957	0.000	0.000
			Max. Mx	42	-0.510	0.223	0.000
			Max. My	35	-3.011	0.000	-0.000
			Max. Vy	42	-0.111	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	2	0.081	0.000	0.000
			Max. Compression	29	-2.628	0.000	0.000
			Max. Mx	44	-0.858	0.223	0.000
			Max. My	35	-2.589	0.000	-0.000
			Max. Vy	44	-0.111	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T6	510 - 485	Leg	Max Tension	20	34.008	-0.002	0.181
			Max. Compression	27	-73.688	0.178	-0.074
			Max. Mx	29	-39.981	1.366	-0.007
			Max. My	20	-38.707	0.130	-1.335
			Max. Vy	14	0.419	-1.302	-0.320
			Max. Vx	2	-0.477	-0.376	1.306
		Diagonal	Max Tension	13	8.313	0.000	0.000
		Horizontal	Max Tension	26	14.570	0.000	0.000
			Max. Compression	6	-5.678	0.000	0.000
			Max. Mx	50	9.174	0.222	0.000
			Max. My	35	-5.154	0.000	-0.000
			Max. Vy	50	-0.111	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	43	0.085	0.000	0.000
			Max. Compression	23	-4.803	0.000	0.000
			Max. Mx	45	-1.341	0.222	0.000
			Max. My	35	-4.519	0.000	-0.000
			Max. Vy	45	-0.111	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Guy A	Bottom Tension	20	76.654		
			Top Tension	20	79.676		
			Top Cable Vert	20	71.706		
			Top Cable Norm	20	34.736		
			Top Cable Tan	20	0.017		
			Bot Cable Vert	20	-67.290		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Bot Cable Norm	20	36.715		
			Bot Cable Tan	20	0.017		
		Guy B	Bottom Tension	32	76.935		
			Top Tension	32	79.878		
			Top Cable Vert	32	71.969		
			Top Cable Norm	32	34.655		
			Top Cable Tan	32	0.013		
			Bot Cable Vert	32	-67.670		
			Bot Cable Norm	32	36.602		
			Bot Cable Tan	32	0.013		
		Guy C	Bottom Tension	8	76.435		
			Top Tension	8	79.558		
			Top Cable Vert	8	71.958		
			Top Cable Norm	8	33.934		
			Top Cable Tan	8	0.002		
			Bot Cable Vert	8	-67.436		
			Bot Cable Norm	8	35.982		
			Bot Cable Tan	8	0.002		
T7	485 - 460	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	10	-84.015	-0.250	0.106
			Max. Mx	35	-53.630	0.454	0.213
			Max. My	23	-51.195	-0.042	-0.506
			Max. Vy	13	0.155	-0.391	0.013
			Max. Vx	35	0.203	-0.033	-0.025
		Diagonal	Max Tension	13	8.015	0.000	0.000
		Horizontal	Max Tension	3	0.025	0.000	0.000
			Max. Compression	13	-6.142	0.000	0.000
			Max. Mx	50	-2.198	0.221	0.000
			Max. My	35	-3.864	0.000	-0.000
			Max. Vy	50	0.110	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	38	0.073	0.000	0.000
			Max. Compression	13	-6.327	0.000	0.000
			Max. Mx	50	-2.536	0.221	0.000
			Max. My	35	-5.055	0.000	-0.000
			Max. Vy	50	0.110	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T8	460 - 435	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	10	-100.595	0.112	-0.059
			Max. Mx	16	-76.861	0.453	0.076
			Max. My	4	-76.902	-0.105	-0.549
			Max. Vy	32	0.171	0.067	-0.083
			Max. Vx	35	-0.249	-0.098	-0.167
		Diagonal	Max Tension	13	4.876	0.000	0.000
		Horizontal	Max Tension	4	0.197	0.000	0.000
			Max. Compression	13	-3.691	0.000	0.000
			Max. Mx	38	-0.018	0.169	0.000
			Max. My	35	-1.799	0.000	-0.000
			Max. Vy	38	-0.085	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	2	0.126	0.000	0.000
			Max. Compression	13	-4.262	0.000	0.000
			Max. Mx	38	-0.017	0.169	0.000
			Max. My	35	-3.351	0.000	-0.000
			Max. Vy	38	-0.085	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T9	435 - 410	Leg	Max Tension	4	1.032	-0.003	-0.179
			Max. Compression	10	-104.759	0.143	-0.095
			Max. Mx	13	-7.575	0.573	0.001
			Max. My	4	-81.559	-0.115	-0.759
			Max. Vy	14	-0.182	0.164	0.389
			Max. Vx	2	0.246	-0.053	-0.243
		Diagonal	Max Tension	13	1.688	0.000	0.000
		Horizontal	Max Tension	4	0.183	0.000	0.000
			Max. Compression	28	-1.158	0.000	0.000
			Max. Mx	47	0.036	0.168	0.000
			Max. My	35	-0.469	0.000	-0.000
			Max. Vy	47	-0.084	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Top Girt	Max Tension	4	0.229	0.000	0.000
			Max. Compression	28	-1.777	0.000	0.000
			Max. Mx	40	-0.726	0.168	0.000
			Max. My	35	-1.062	0.000	-0.000
			Max. Vy	40	-0.084	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T10	410 - 385	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	10	-104.455	0.172	-0.096
			Max. Mx	13	-97.075	0.280	0.007
			Max. My	23	-56.555	-0.178	0.422
			Max. Vy	14	0.138	-0.246	-0.178
			Max. Vx	2	-0.180	0.048	0.333
		Diagonal	Max Tension	5	4.502	0.000	0.000
		Horizontal	Max Tension	43	0.067	0.000	0.000
			Max. Compression	5	-3.320	0.000	0.000
			Max. Mx	42	-0.315	0.168	0.000
			Max. My	35	-2.304	0.000	-0.000
			Max. Vy	42	-0.084	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	43	0.110	0.000	0.000
			Max. Compression	5	-1.685	0.000	0.000
			Max. Mx	50	-0.313	0.168	0.000
			Max. My	35	-0.899	0.000	-0.000
			Max. Vy	50	-0.084	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T11	385 - 360	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	10	-95.574	0.152	-0.089
			Max. Mx	29	-63.058	0.592	0.000
			Max. My	2	-61.366	0.051	0.705
			Max. Vy	11	0.164	-0.590	-0.008
			Max. Vx	2	-0.180	0.051	0.705
		Diagonal	Max Tension	5	7.093	0.000	0.000
		Horizontal	Max Tension	47	0.038	0.000	0.000
			Max. Compression	5	-5.447	0.000	0.000
			Max. Mx	38	-0.003	0.160	0.000
			Max. My	35	-3.293	0.000	-0.000
			Max. Vy	38	0.080	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	47	0.050	0.000	0.000
			Max. Compression	5	-3.986	0.000	0.000
			Max. Mx	47	0.050	0.160	0.000
			Max. My	35	-2.801	0.000	-0.000
			Max. Vy	47	0.080	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T12	360 - 335	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	27	-109.624	0.326	-0.212
			Max. Mx	29	-57.481	0.592	0.000
			Max. My	2	-58.299	0.051	0.705
			Max. Vy	11	-0.157	-0.590	-0.008
			Max. Vx	2	0.175	0.051	0.705
		Diagonal	Max Tension	5	9.813	0.000	0.000
		Horizontal	Max Tension	28	0.112	0.000	0.000
			Max. Compression	5	-7.577	0.000	0.000
			Max. Mx	38	-0.015	0.216	0.000
			Max. My	35	-5.205	0.000	-0.000
			Max. Vy	38	-0.108	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	28	0.153	0.000	0.000
			Max. Compression	5	-6.085	0.000	0.000
			Max. Mx	47	0.121	0.216	0.000
			Max. My	35	-4.684	0.000	-0.000
			Max. Vy	47	-0.108	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T13	335 - 310	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	2	-149.889	0.048	0.315
			Max. Mx	31	-75.137	3.398	0.172
			Max. My	22	-21.554	0.143	-3.259
			Max. Vy	31	-0.682	3.398	0.172
			Max. Vx	22	0.655	0.143	-3.259

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	12	11.772	0.000	0.000
		Horizontal	Max Tension	28	16.852	0.000	0.000
			Max. Compression	5	-8.918	0.000	0.000
			Max. Mx	47	15.284	0.215	0.000
			Max. My	35	-7.259	0.000	-0.000
			Max. Vy	47	-0.108	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	28	0.240	0.000	0.000
			Max. Compression	5	-8.154	0.000	0.000
			Max. Mx	47	0.108	0.215	0.000
			Max. My	35	-6.604	0.000	-0.000
			Max. Vy	47	-0.108	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Guy A	Bottom Tension	22	59.721		
			Top Tension	22	61.119		
			Top Cable Vert	22	47.989		
			Top Cable Norm	22	37.849		
			Top Cable Tan	22	0.012		
			Bot Cable Vert	22	-45.598		
			Bot Cable Norm	22	38.567		
			Bot Cable Tan	22	0.012		
		Guy B	Bottom Tension	34	59.864		
			Top Tension	34	61.204		
			Top Cable Vert	34	47.877		
			Top Cable Norm	34	38.128		
			Top Cable Tan	34	0.013		
			Bot Cable Vert	34	-45.572		
			Bot Cable Norm	34	38.819		
			Bot Cable Tan	34	0.013		
		Guy C	Bottom Tension	10	61.693		
			Top Tension	10	63.165		
			Top Cable Vert	10	50.410		
			Top Cable Norm	10	38.062		
			Top Cable Tan	10	0.004		
			Bot Cable Vert	10	-47.937		
			Bot Cable Norm	10	38.834		
			Bot Cable Tan	10	0.004		
T14	310 - 285	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	2	-144.353	0.000	0.056
			Max. Mx	30	-91.847	0.873	0.035
			Max. My	24	-97.985	0.053	-1.013
			Max. Vy	12	0.248	-0.658	0.019
			Max. Vx	3	-0.243	0.052	0.864
		Diagonal	Max Tension	12	11.753	0.000	0.000
		Horizontal	Max Tension	4	0.165	0.000	0.000
			Max. Compression	12	-9.142	0.000	0.000
			Max. Mx	47	-0.061	0.214	0.000
			Max. My	35	-4.210	0.000	-0.000
			Max. Vy	47	-0.107	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	38	0.106	0.000	0.000
			Max. Compression	12	-9.097	0.000	0.000
			Max. Mx	47	0.084	0.214	0.000
			Max. My	35	-4.033	0.000	-0.000
			Max. Vy	47	-0.107	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T15	285 - 260	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-149.324	-0.056	0.003
			Max. Mx	30	-83.321	0.873	0.035
			Max. My	3	-83.045	0.052	0.864
			Max. Vy	12	-0.226	-0.872	0.034
			Max. Vx	3	0.222	0.052	0.864
		Diagonal	Max Tension	12	8.370	0.000	0.000
		Horizontal	Max Tension	3	0.061	0.000	0.000
			Max. Compression	12	-6.502	0.000	0.000
			Max. Mx	43	-0.125	0.163	0.000
			Max. My	35	-3.155	0.000	-0.000
			Max. Vy	43	-0.081	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Top Girt	Max Tension	3	0.239	0.000	0.000
			Max. Compression	12	-7.109	0.000	0.000
			Max. Mx	47	-0.022	0.163	0.000
			Max. My	35	-3.422	0.000	-0.000
			Max. Vy	47	-0.081	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T16	260 - 235	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-159.892	0.495	0.206
			Max. Mx	13	-109.625	1.628	-0.083
			Max. My	22	-79.334	-0.025	1.445
			Max. Vy	13	-0.524	0.230	0.276
			Max. Vx	21	-0.541	0.016	0.135
		Diagonal	Max Tension	27	5.530	0.000	0.000
		Horizontal	Max Tension	16	0.201	0.000	0.000
			Max. Compression	27	-4.266	0.000	0.000
			Max. Mx	43	-0.142	0.161	0.000
			Max. My	35	-2.219	0.000	-0.000
			Max. Vy	43	-0.081	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
		Top Girt	Max Tension	16	0.077	0.000	0.000
			Max. Compression	27	-4.887	0.000	0.000
			Max. Mx	43	-0.071	0.161	0.000
			Max. My	35	-2.534	0.000	-0.000
			Max. Vy	43	-0.081	0.000	0.000
			Max. Vx	35	0.000	0.000	0.000
T17	235 - 210	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-162.203	-0.177	0.166
			Max. Mx	12	-46.486	0.594	-0.175
			Max. My	44	-140.946	0.129	0.680
			Max. Vy	13	0.237	-0.359	-0.053
			Max. Vx	22	0.295	-0.077	-0.525
		Diagonal	Max Tension	7	4.258	0.000	0.000
		Horizontal	Max Tension	16	0.157	0.000	0.000
			Max. Compression	7	-3.124	0.000	0.000
			Max. Mx	43	0.069	0.160	0.000
			Max. My	19	-1.820	0.000	-0.000
			Max. Vy	43	-0.080	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	36	0.116	0.000	0.000
			Max. Compression	27	-1.700	0.000	0.000
			Max. Mx	43	-0.099	0.160	0.000
			Max. My	17	-0.800	0.000	-0.000
			Max. Vy	43	-0.080	0.000	0.000
			Max. Vx	17	0.000	0.000	0.000
T18	210 - 185	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-162.672	0.010	0.004
			Max. Mx	13	-68.388	1.059	0.029
			Max. My	4	-131.050	0.003	-1.027
			Max. Vy	12	-0.363	0.151	0.020
			Max. Vx	3	0.361	-0.002	-0.137
		Diagonal	Max Tension	7	9.119	0.000	0.000
		Horizontal	Max Tension	28	0.362	0.000	0.000
			Max. Compression	7	-6.966	0.000	0.000
			Max. Mx	38	-0.089	0.158	0.000
			Max. My	19	-4.289	0.000	-0.000
			Max. Vy	38	-0.079	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	15	0.163	0.000	0.000
			Max. Compression	7	-3.943	0.000	0.000
			Max. Mx	43	0.027	0.158	0.000
			Max. My	19	-2.362	0.000	-0.000
			Max. Vy	43	-0.079	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
T19	185 - 160	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	47	-174.045	0.668	-0.361
			Max. Mx	7	-125.833	-1.059	0.616
			Max. My	25	-125.366	0.007	-1.211
			Max. Vy	10	0.227	-0.989	0.583
			Max. Vx	10	-0.299	-0.026	0.050

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	13	13.382	0.000	0.000
		Horizontal	Max Tension	3	0.209	0.000	0.000
			Max. Compression	13	-10.383	0.000	0.000
			Max. Mx	38	-0.091	0.206	0.000
			Max. My	19	-6.181	0.000	-0.000
			Max. Vy	38	0.103	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	27	0.201	0.000	0.000
			Max. Compression	13	-7.695	0.000	0.000
			Max. Mx	41	-0.162	0.206	0.000
			Max. My	19	-5.567	0.000	-0.000
			Max. Vy	41	0.103	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
T20	160 - 135	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	47	-194.040	0.326	-0.216
			Max. Mx	31	-100.661	4.379	0.267
			Max. My	22	-74.027	0.089	-4.136
			Max. Vy	31	0.875	4.379	0.267
			Max. Vx	22	-0.822	0.089	-4.136
		Diagonal	Max Tension	13	13.213	0.000	0.000
		Horizontal	Max Tension	28	18.435	0.000	0.000
			Max. Compression	7	-7.864	0.000	0.000
			Max. Mx	38	-0.177	0.204	0.000
			Max. My	19	3.716	0.000	-0.000
			Max. Vy	38	0.102	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	38	0.122	0.000	0.000
			Max. Compression	13	-10.266	0.000	0.000
			Max. Mx	41	-0.161	0.204	0.000
			Max. My	19	-7.450	0.000	-0.000
			Max. Vy	41	0.102	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Guy A	Bottom Tension	25	42.992		
			Top Tension	25	43.430		
			Top Cable Vert	25	21.479		
			Top Cable Norm	25	37.746		
			Top Cable Tan	25	0.094		
			Bot Cable Vert	25	-20.390		
			Bot Cable Norm	25	37.849		
			Bot Cable Tan	25	0.157		
		Guy B	Bottom Tension	31	42.878		
			Top Tension	31	43.275		
			Top Cable Vert	31	20.405		
			Top Cable Norm	31	38.163		
			Top Cable Tan	31	0.066		
			Bot Cable Vert	31	-19.373		
			Bot Cable Norm	31	38.251		
			Bot Cable Tan	31	0.173		
		Guy C	Bottom Tension	10	44.747		
			Top Tension	10	45.236		
			Top Cable Vert	10	24.097		
			Top Cable Norm	10	38.284		
			Top Cable Tan	10	0.008		
			Bot Cable Vert	10	-22.980		
			Bot Cable Norm	10	38.395		
			Bot Cable Tan	10	0.008		
T21	135 - 110	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-194.422	-0.022	0.041
			Max. Mx	14	-130.862	-0.642	-0.071
			Max. My	22	-135.569	-0.013	-0.570
			Max. Vy	13	-0.168	-0.561	0.076
			Max. Vx	22	-0.184	-0.013	-0.570
		Diagonal	Max Tension	7	8.250	0.000	0.000
		Horizontal	Max Tension	15	0.117	0.000	0.000
			Max. Compression	7	-6.337	0.000	0.000
			Max. Mx	47	0.076	0.201	0.000
			Max. My	19	-4.797	0.000	-0.000
			Max. Vy	47	0.101	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Top Girt	Max Tension	14	0.296	0.000	0.000
			Max. Compression	7	-6.987	0.000	0.000
			Max. Mx	47	-0.013	0.201	0.000
			Max. My	19	-6.154	0.000	-0.000
			Max. Vy	47	0.101	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
T22	110 - 85	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-207.973	0.053	-0.035
			Max. Mx	27	-76.607	-0.702	-0.146
			Max. My	24	-138.782	-0.036	0.806
			Max. Vy	27	0.127	-0.165	0.141
			Max. Vx	23	-0.142	-0.074	0.130
		Diagonal	Max Tension	7	5.448	0.000	0.000
		Horizontal	Max Tension	2	0.168	0.000	0.000
			Max. Compression	7	-4.104	0.000	0.000
			Max. Mx	47	0.011	0.150	0.000
			Max. My	19	-2.888	0.000	-0.000
			Max. Vy	47	-0.075	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	47	0.094	0.000	0.000
			Max. Compression	7	-4.643	0.000	0.000
			Max. Mx	47	0.094	0.150	0.000
			Max. My	19	-4.233	0.000	-0.000
			Max. Vy	47	-0.075	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
T23	85 - 60	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-215.960	0.085	-0.316
			Max. Mx	33	-118.914	-0.767	-0.427
			Max. My	4	-160.527	0.043	-1.054
			Max. Vy	32	0.182	-0.081	-0.054
			Max. Vx	35	-0.311	-0.083	-0.143
		Diagonal	Max Tension	15	3.039	0.000	0.000
		Horizontal	Max Tension	7	0.182	0.000	0.000
			Max. Compression	15	-2.155	0.000	0.000
			Max. Mx	47	-0.101	0.147	0.000
			Max. My	19	-2.051	0.000	-0.000
			Max. Vy	47	0.073	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	3	0.235	0.000	0.000
			Max. Compression	37	-2.618	0.000	0.000
			Max. Mx	47	-0.097	0.147	0.000
			Max. My	19	-2.555	0.000	-0.000
			Max. Vy	47	0.073	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
T24	60 - 35	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-218.415	0.054	-0.029
			Max. Mx	48	-201.659	-0.876	-0.022
			Max. My	25	-104.921	-0.147	0.784
			Max. Vy	48	0.119	-0.149	0.075
			Max. Vx	25	0.129	-0.077	0.095
		Diagonal	Max Tension	12	5.478	0.000	0.000
		Horizontal	Max Tension	30	0.094	0.000	0.000
			Max. Compression	15	-4.122	0.000	0.000
			Max. Mx	47	-0.188	0.142	0.000
			Max. My	19	-0.378	0.000	-0.000
			Max. Vy	47	-0.071	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	53	0.018	0.000	0.000
			Max. Compression	15	-2.725	0.000	0.000
			Max. Mx	47	-0.175	0.142	0.000
			Max. My	19	-0.892	0.000	-0.000
			Max. Vy	47	-0.071	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
T25	35 - 10	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-218.173	0.105	-0.056
			Max. Mx	12	-160.628	-2.162	1.650
			Max. My	36	-157.011	1.155	2.780
			Max. Vy	12	0.485	-2.162	1.650
			Max. Vx	21	0.562	-0.403	-2.647

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	12	7.837	0.000	0.000
		Horizontal	Max Tension	38	0.269	0.000	0.000
			Max. Compression	12	-5.698	0.000	0.000
			Max. Mx	47	0.149	0.135	0.000
			Max. My	19	-1.140	0.000	-0.000
			Max. Vy	47	0.067	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
		Top Girt	Max Tension	31	0.065	0.000	0.000
			Max. Compression	12	-4.588	0.000	0.000
			Max. Mx	47	-0.206	0.135	0.000
			Max. My	19	-0.805	0.000	-0.000
			Max. Vy	47	0.067	0.000	0.000
			Max. Vx	19	0.000	0.000	0.000
T26	10 - 0	Leg	Max Tension	1	0.000	0.000	0.000
			Max. Compression	41	-237.280	-0.381	0.533
			Max. Mx	9	-171.299	2.846	-0.704
			Max. My	35	-152.828	-0.222	-8.427
			Max. Vy	9	0.833	-1.242	-0.497
			Max. Vx	35	1.733	-0.235	-8.276
		Diagonal	Max Tension	35	2.754	0.000	0.000
			Max. Compression	35	-3.202	0.000	0.000
			Max. Mx	43	0.996	-0.050	0.000
			Max. My	44	-1.688	0.000	0.019
			Max. Vy	43	-0.030	0.000	0.000
			Max. Vx	44	0.012	0.000	0.000
		Horizontal	Max Tension	35	2.326	0.000	0.000
			Max. Compression	35	-1.311	0.000	0.000
			Max. Mx	50	1.481	-0.645	-0.034
			Max. My	47	0.459	-0.644	-0.035
			Max. Vy	50	0.347	0.000	0.000
			Max. Vx	47	-0.023	0.000	0.000
		Top Girt	Max Tension	47	56.263	0.000	0.000
			Max. Compression	1	0.000	0.000	0.000
			Max. Mx	43	55.866	0.308	0.000
			Max. My	43	54.180	0.000	0.071
			Max. Vy	43	0.154	0.000	0.000
			Max. Vx	43	-0.036	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	47	635.405	1.564	-0.800
	Max. H_x	30	440.584	6.362	-0.369
	Max. H_z	3	433.886	-0.105	6.613
	Max. M_x	1	0.000	-0.036	-0.001
	Max. M_z	1	0.000	-0.036	-0.001
	Max. Torsion	35	12.194	2.443	4.763
	Min. Vert	1	382.312	-0.036	-0.001
	Min. H_x	12	439.505	-6.570	-0.223
	Min. H_z	20	441.367	-0.062	-5.482
	Min. M_x	1	0.000	-0.036	-0.001
	Min. M_z	1	0.000	-0.036	-0.001
	Min. Torsion	17	-12.057	-2.736	-4.603
Guy C @ 248 ft Elev 4.07031 ft Azimuth 240 deg	Max. Vert	26	-12.638	-9.034	5.218
	Max. H_x	28	-14.821	-8.508	4.913
	Max. H_z	10	-131.610	-95.095	54.890
	Min. Vert	10	-131.610	-95.095	54.890
	Min. H_x	10	-131.610	-95.095	54.890
	Min. H_z	28	-14.821	-8.508	4.913
Guy B @ 238 ft Elev 32.0703 ft	Max. Vert	14	-11.110	8.824	5.100

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Azimuth 120 deg					
	Max. H_x	34	-125.225	94.690	54.626
	Max. H_z	34	-125.225	94.690	54.626
	Min. Vert	34	-125.225	94.690	54.626
	Min. H_x	16	-13.657	8.368	4.837
	Min. H_z	16	-13.657	8.368	4.837
Guy A @ 246 ft Elev 19.849 ft Azimuth 0 deg	Max. Vert	2	-11.295	-0.004	-10.400
	Max. H_x	31	-72.868	2.679	-61.694
	Max. H_z	4	-13.598	-0.004	-9.772
	Min. Vert	22	-125.868	0.030	-108.673
	Min. H_x	13	-71.092	-2.687	-59.857
	Min. H_z	22	-125.868	0.030	-108.673

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	382.312	0.036	0.001	0.000	0.000	-0.059
1.2D+1.0W (pattern 1) 0 deg - No Ice+1.0 Guy	435.348	0.071	-6.121	0.000	0.000	-4.346
1.2D+1.0W (pattern 2) 0 deg - No Ice+1.0 Guy	433.886	0.105	-6.613	0.000	0.000	-3.930
1.2D+1.0W (pattern 3) 0 deg - No Ice+1.0 Guy	442.354	0.085	-5.747	0.000	0.000	-4.069
1.2D+1.0W (pattern 1) 30 deg - No Ice+1.0 Guy	440.911	2.949	-5.349	0.000	0.000	4.965
1.2D+1.0W (pattern 2) 30 deg - No Ice+1.0 Guy	439.964	2.909	-5.735	0.000	0.000	5.359
1.2D+1.0W (pattern 3) 30 deg - No Ice+1.0 Guy	446.269	2.606	-5.020	0.000	0.000	5.197
1.2D+1.0W (pattern 1) 60 deg - No Ice+1.0 Guy	440.730	5.281	-3.137	0.000	0.000	6.146
1.2D+1.0W (pattern 2) 60 deg - No Ice+1.0 Guy	439.798	5.273	-3.167	0.000	0.000	6.546
1.2D+1.0W (pattern 3) 60 deg - No Ice+1.0 Guy	442.335	4.719	-2.845	0.000	0.000	6.561
1.2D+1.0W (pattern 1) 90 deg - No Ice+1.0 Guy	439.813	6.270	0.001	0.000	0.000	7.432
1.2D+1.0W (pattern 2) 90 deg - No Ice+1.0 Guy	439.505	6.570	0.223	0.000	0.000	7.476
1.2D+1.0W (pattern 3) 90 deg - No Ice+1.0 Guy	445.709	5.813	0.135	0.000	0.000	7.507
1.2D+1.0W (pattern 1) 120 deg - No Ice+1.0 Guy	434.069	5.298	3.054	0.000	0.000	9.638
1.2D+1.0W (pattern 2) 120 deg - No Ice+1.0 Guy	433.327	5.744	3.276	0.000	0.000	9.429
1.2D+1.0W (pattern 3) 120 deg - No Ice+1.0 Guy	441.985	4.990	2.851	0.000	0.000	9.501
1.2D+1.0W (pattern 1) 150 deg - No Ice+1.0 Guy	438.226	2.736	4.603	0.000	0.000	12.057
1.2D+1.0W (pattern 2) 150 deg - No Ice+1.0 Guy	436.677	2.990	4.693	0.000	0.000	11.616
1.2D+1.0W (pattern 3) 150 deg - No Ice+1.0 Guy	440.737	2.613	4.161	0.000	0.000	11.881
1.2D+1.0W (pattern 1) 180 deg - No Ice+1.0 Guy	441.367	0.062	5.482	0.000	0.000	3.745
1.2D+1.0W (pattern 2) 180 deg - No Ice+1.0 Guy	439.661	0.038	5.477	0.000	0.000	3.470
1.2D+1.0W (pattern 3) 180 deg - No Ice+1.0 Guy	441.844	0.036	4.871	0.000	0.000	3.658
1.2D+1.0W (pattern 1) 210 deg - No Ice+1.0 Guy	441.078	-3.017	5.223	0.000	0.000	-5.946

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2D+1.0W (pattern 2) 210 deg - No Ice+1.0 Guy	439.741	-3.323	5.322	0.000	0.000	-6.368
1.2D+1.0W (pattern 3) 210 deg - No Ice+1.0 Guy	445.240	-2.884	4.730	0.000	0.000	-6.153
1.2D+1.0W (pattern 1) 240 deg - No Ice+1.0 Guy	435.385	-5.808	3.346	0.000	0.000	-7.466
1.2D+1.0W (pattern 2) 240 deg - No Ice+1.0 Guy	435.077	-6.188	3.575	0.000	0.000	-7.738
1.2D+1.0W (pattern 3) 240 deg - No Ice+1.0 Guy	443.695	-5.438	3.129	0.000	0.000	-7.623
1.2D+1.0W (pattern 1) 270 deg - No Ice+1.0 Guy	441.770	-6.175	0.147	0.000	0.000	-7.542
1.2D+1.0W (pattern 2) 270 deg - No Ice+1.0 Guy	440.584	-6.362	0.369	0.000	0.000	-7.654
1.2D+1.0W (pattern 3) 270 deg - No Ice+1.0 Guy	445.813	-5.653	0.284	0.000	0.000	-7.649
1.2D+1.0W (pattern 1) 300 deg - No Ice+1.0 Guy	443.034	-4.660	-2.835	0.000	0.000	-9.999
1.2D+1.0W (pattern 2) 300 deg - No Ice+1.0 Guy	441.121	-4.613	-2.808	0.000	0.000	-9.816
1.2D+1.0W (pattern 3) 300 deg - No Ice+1.0 Guy	443.327	-4.101	-2.519	0.000	0.000	-10.034
1.2D+1.0W (pattern 1) 330 deg - No Ice+1.0 Guy	439.979	-2.443	-4.763	0.000	0.000	-12.194
1.2D+1.0W (pattern 2) 330 deg - No Ice+1.0 Guy	438.063	-2.364	-5.010	0.000	0.000	-11.769
1.2D+1.0W (pattern 3) 330 deg - No Ice+1.0 Guy	442.043	-2.102	-4.422	0.000	0.000	-12.011
1.2 Dead+1.0 Ice+1.0 Temp+Guy	630.713	0.098	-0.095	0.000	0.000	-0.086
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	635.201	0.160	-1.898	0.000	0.000	-3.373
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	634.280	1.003	-1.694	0.000	0.000	-0.718
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	633.524	1.741	-0.958	0.000	0.000	0.721
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	633.784	1.984	-0.069	0.000	0.000	2.501
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	634.306	1.737	0.786	0.000	0.000	4.544
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	633.870	1.021	1.373	0.000	0.000	5.512
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	633.728	0.125	1.601	0.000	0.000	2.880
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	634.444	-0.791	1.464	0.000	0.000	0.384
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	635.405	-1.564	0.800	0.000	0.000	-1.094
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	635.027	-1.707	-0.044	0.000	0.000	-2.283
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	634.687	-1.356	-0.935	0.000	0.000	-4.169
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	634.921	-0.650	-1.614	0.000	0.000	-5.524
Dead+Wind 0 deg - Service+Guy	383.632	0.039	-1.549	0.000	0.000	-1.059
Dead+Wind 30 deg -	383.133	0.796	-1.405	0.000	0.000	1.326

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Service+Guy						
Dead+Wind 60 deg - Service+Guy	382.771	1.446	-0.783	0.000	0.000	1.536
Dead+Wind 90 deg - Service+Guy	382.866	1.681	0.006	0.000	0.000	1.896
Dead+Wind 120 deg - Service+Guy	383.109	1.381	0.756	0.000	0.000	2.463
Dead+Wind 150 deg - Service+Guy	383.110	0.751	1.215	0.000	0.000	3.167
Dead+Wind 180 deg - Service+Guy	383.215	0.048	1.447	0.000	0.000	0.816
Dead+Wind 210 deg - Service+Guy	383.644	-0.773	1.371	0.000	0.000	-1.595
Dead+Wind 240 deg - Service+Guy	384.102	-1.462	0.810	0.000	0.000	-1.891
Dead+Wind 270 deg - Service+Guy	384.016	-1.596	0.053	0.000	0.000	-1.897
Dead+Wind 300 deg - Service+Guy	383.780	-1.203	-0.726	0.000	0.000	-2.595
Dead+Wind 330 deg - Service+Guy	383.704	-0.606	-1.254	0.000	0.000	-3.242

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-192.308	0.000	0.000	192.308	0.000	0.000%
2	0.001	-227.451	-79.510	-0.001	227.451	79.507	0.001%
3	0.154	-227.451	-80.169	-0.153	227.451	80.167	0.001%
4	0.141	-227.451	-86.107	-0.141	227.451	86.104	0.001%
5	39.903	-227.142	-69.725	-39.903	227.142	69.721	0.002%
6	40.649	-227.142	-70.814	-40.649	227.142	70.810	0.002%
7	43.717	-227.142	-76.209	-43.717	227.142	76.206	0.001%
8	68.525	-226.826	-40.001	-68.523	226.826	39.999	0.001%
9	69.906	-226.826	-40.819	-69.902	226.825	40.816	0.002%
10	75.130	-226.826	-43.868	-75.126	226.825	43.865	0.002%
11	80.267	-227.194	-0.027	-80.265	227.194	0.030	0.001%
12	81.845	-227.194	-0.155	-81.842	227.194	0.157	0.001%
13	87.921	-227.194	-0.143	-87.918	227.194	0.145	0.001%
14	68.252	-227.541	39.705	-68.249	227.541	-39.704	0.001%
15	69.030	-227.541	40.003	-69.028	227.541	-40.001	0.001%
16	74.038	-227.541	42.941	-74.035	227.541	-42.939	0.001%
17	37.373	-227.156	65.014	-37.370	227.156	-65.013	0.001%
18	37.586	-227.156	65.430	-37.583	227.156	-65.430	0.001%
19	40.328	-227.156	70.236	-40.324	227.156	-70.235	0.002%
20	0.118	-226.759	76.815	-0.117	226.759	-76.813	0.001%
21	0.023	-226.759	77.569	-0.022	226.759	-77.566	0.001%
22	0.035	-226.759	83.447	-0.035	226.759	-83.446	0.001%
23	-39.888	-227.067	69.596	39.885	227.067	-69.595	0.001%
24	-40.586	-227.067	70.674	40.584	227.067	-70.673	0.001%
25	-43.655	-227.067	76.070	43.652	227.067	-76.069	0.001%
26	-70.769	-227.384	41.026	70.766	227.384	-41.025	0.001%
27	-72.018	-227.384	41.766	72.015	227.384	-41.764	0.002%
28	-77.293	-227.384	44.845	77.288	227.384	-44.842	0.002%
29	-80.243	-227.016	-0.009	80.241	227.016	0.011	0.001%
30	-81.791	-227.016	0.080	81.789	227.016	-0.078	0.001%
31	-87.867	-227.016	0.068	87.863	227.016	-0.065	0.002%
32	-65.949	-226.668	-38.637	65.947	226.668	38.636	0.001%
33	-66.788	-226.668	-39.033	66.787	226.668	39.032	0.001%
34	-71.745	-226.668	-41.942	71.743	226.668	41.939	0.001%
35	-37.265	-227.053	-65.167	37.266	227.053	65.165	0.001%
36	-37.479	-227.053	-65.581	37.480	227.053	65.579	0.001%
37	-40.221	-227.053	-70.387	40.222	227.053	70.383	0.002%
38	0.000	-410.396	0.000	0.000	410.396	-0.000	0.000%
39	-0.066	-410.588	-40.112	0.066	410.588	40.110	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
40	20.131	-410.414	-35.117	-20.130	410.414	35.114	0.001%
41	35.275	-410.237	-20.436	-35.275	410.237	20.436	0.000%
42	40.550	-410.441	0.074	-40.547	410.441	-0.074	0.001%
43	34.750	-410.634	20.184	-34.749	410.634	-20.183	0.000%
44	19.720	-410.422	34.188	-19.718	410.422	-34.186	0.001%
45	0.105	-410.204	39.670	-0.105	410.204	-39.668	0.000%
46	-20.114	-410.378	35.091	20.112	410.378	-35.089	0.001%
47	-35.627	-410.555	20.587	35.627	410.555	-20.585	0.001%
48	-40.537	-410.351	-0.089	40.535	410.351	0.090	0.001%
49	-34.366	-410.158	-20.031	34.366	410.158	20.030	0.000%
50	-19.700	-410.370	-34.215	19.700	410.370	34.213	0.001%
51	0.027	-192.404	-25.722	-0.026	192.404	25.722	0.001%
52	12.996	-192.319	-22.656	-12.995	192.319	22.654	0.001%
53	22.316	-192.231	-13.013	-22.313	192.231	13.013	0.002%
54	26.128	-192.333	-0.027	-26.126	192.333	0.028	0.001%
55	22.119	-192.429	12.831	-22.118	192.429	-12.829	0.001%
56	12.078	-192.323	21.013	-12.077	192.323	-21.012	0.000%
57	0.022	-192.213	24.889	-0.022	192.213	-24.889	0.000%
58	-12.979	-192.298	22.618	12.977	192.298	-22.616	0.001%
59	-22.999	-192.386	13.331	22.996	192.386	-13.329	0.002%
60	-26.113	-192.284	0.007	26.111	192.284	-0.006	0.001%
61	-21.401	-192.188	-12.506	21.400	192.188	12.504	0.001%
62	-12.048	-192.294	-21.055	12.048	192.294	21.054	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	21	0.00000001	0.00003815
2	Yes	18	0.00007886	0.00003727
3	Yes	15	0.00000001	0.00001820
4	Yes	16	0.00000001	0.00001740
5	Yes	17	0.00009269	0.00004719
6	Yes	15	0.00008708	0.00003431
7	Yes	16	0.00000001	0.00002302
8	Yes	13	0.00000001	0.00003973
9	Yes	12	0.00009788	0.00004903
10	Yes	12	0.00009025	0.00004466
11	Yes	17	0.00008412	0.00004159
12	Yes	15	0.00000001	0.00002792
13	Yes	16	0.00000001	0.00001939
14	Yes	18	0.00000001	0.00003460
15	Yes	15	0.00000001	0.00001601
16	Yes	16	0.00000001	0.00001932
17	Yes	17	0.00000001	0.00003569
18	Yes	15	0.00000001	0.00003152
19	Yes	15	0.00009431	0.00003140
20	Yes	13	0.00000001	0.00003899
21	Yes	12	0.00009618	0.00004485
22	Yes	13	0.00000001	0.00002887
23	Yes	17	0.00000001	0.00003520
24	Yes	15	0.00000001	0.00003094
25	Yes	16	0.00000001	0.00001924
26	Yes	17	0.00008033	0.00003894
27	Yes	14	0.00000001	0.00002681
28	Yes	15	0.00009084	0.00003086
29	Yes	17	0.00000001	0.00003091
30	Yes	15	0.00000001	0.00002727
31	Yes	15	0.00009259	0.00003144
32	Yes	13	0.00000001	0.00003603
33	Yes	13	0.00000001	0.00002129
34	Yes	12	0.00000001	0.00007109
35	Yes	17	0.00000001	0.00003651
36	Yes	15	0.00000001	0.00003302
37	Yes	15	0.00009499	0.00003372

38	Yes	21	0.00000001	0.00005194
39	Yes	15	0.00000001	0.00002102
40	Yes	14	0.00000001	0.00002751
41	Yes	49	0.00000001	0.00002009
42	Yes	14	0.00000001	0.00002414
43	Yes	15	0.00000001	0.00001709
44	Yes	14	0.00000001	0.00002976
45	Yes	14	0.00000001	0.00002287
46	Yes	14	0.00000001	0.00002465
47	Yes	16	0.00000001	0.00009606
48	Yes	14	0.00000001	0.00002217
49	Yes	16	0.00000001	0.00002366
50	Yes	14	0.00000001	0.00003334
51	Yes	17	0.00000001	0.00006358
52	Yes	11	0.00000001	0.00003311
53	Yes	11	0.00000001	0.00008184
54	Yes	11	0.00000001	0.00003195
55	Yes	12	0.00000001	0.00004096
56	Yes	12	0.00000001	0.00001733
57	Yes	13	0.00000001	0.00003295
58	Yes	11	0.00000001	0.00003161
59	Yes	11	0.00000001	0.00005772
60	Yes	11	0.00000001	0.00003148
61	Yes	12	0.00000001	0.00004724
62	Yes	12	0.00000001	0.00001953

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	560 - 553.75	3.189	53	0.023	0.526
T2	553.75 - 547.5	3.172	53	0.023	0.526
T3	547.5 - 541.25	3.154	53	0.023	0.526
T4	541.25 - 535	3.132	53	0.022	0.526
T5	535 - 510	3.109	53	0.022	0.526
T6	510 - 485	3.013	53	0.018	0.523
T7	485 - 460	2.968	53	0.013	0.523
T8	460 - 435	3.030	53	0.014	0.551
T9	435 - 410	3.069	53	0.018	0.573
T10	410 - 385	3.018	52	0.023	0.580
T11	385 - 360	2.830	52	0.028	0.541
T12	360 - 335	2.587	52	0.029	0.501
T13	335 - 310	2.355	53	0.026	0.470
T14	310 - 285	2.211	53	0.020	0.458
T15	285 - 260	2.247	53	0.017	0.486
T16	260 - 235	2.297	52	0.021	0.513
T17	235 - 210	2.267	52	0.028	0.527
T18	210 - 185	2.009	52	0.035	0.482
T19	185 - 160	1.679	52	0.039	0.430
T20	160 - 135	1.334	53	0.037	0.386
T21	135 - 110	1.199	52	0.034	0.395
T22	110 - 85	1.138	52	0.036	0.416
T23	85 - 60	1.046	52	0.040	0.413
T24	60 - 35	0.829	52	0.046	0.285
T25	35 - 10	0.499	54	0.051	0.162
T26	10 - 0	0.115	54	0.054	0.078

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
560'	Lightning Rod 5/8" x 3'	53	3.189	0.023	0.526	812535

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
553'	AP19-1670/090D/DT2	53	3.170	0.023	0.526	312735
514'	ANT150F6	53	3.027	0.019	0.524	190122
505'	Flush Mount	53	2.997	0.017	0.522	95986
492'	101-68-10-0-03N	53	2.969	0.014	0.521	51549
491'3"	Guy	53	2.969	0.014	0.521	50194
475'	Side Light	53	2.985	0.012	0.533	84083
465'	ANT150F6	53	3.015	0.013	0.545	700048
456'	13' x 2" Pipe Mount	53	3.040	0.014	0.555	121044
442'	101-68-10-0-03N	53	3.066	0.016	0.568	90868
438'	ANT150F6	53	3.068	0.017	0.571	83746
415'	101D-90-06-0-03	52	3.039	0.022	0.582	46845
388'	SC233	52	2.858	0.027	0.546	132432
324'	DB636-C	53	2.272	0.024	0.460	46258
316'3"	Guy	53	2.230	0.021	0.457	31884
315'	Flash Beacon Lighting	53	2.225	0.021	0.457	30362
312'	Flash Beacon Lighting	53	2.215	0.020	0.457	27661
294'	DB540K-E	53	2.223	0.018	0.474	100532
288'	P2F-52	53	2.239	0.017	0.482	521001
270'	CC806-06	52	2.281	0.018	0.502	207385
254'	DB809KT6E-XT	52	2.304	0.022	0.519	73950
239'	APXVAALL24_43-U-NA20	52	2.286	0.027	0.529	23885
214'	742 213 w/ Mount Pipe	52	2.059	0.034	0.491	119828
212'	ANT150F6	52	2.034	0.035	0.486	185639
202'	VHLP2-11W/B	52	1.909	0.037	0.465	171970
201'	MX08FRO665-21 w/ Mount Pipe	52	1.896	0.037	0.463	157853
175'	ANT150F6	52	1.528	0.039	0.409	107231
157'	Side Light	53	1.306	0.037	0.384	24656
153'9"	Guy	53	1.281	0.036	0.384	28327
145'	Side Arm Mount [SO 202-1]	53	1.232	0.035	0.387	48174
138'	SPD2-5.8	52	1.207	0.034	0.392	108737
134'	SPD2-5.8	52	1.196	0.034	0.395	221008
112'	201-8	52	1.143	0.035	0.414	321914
91'	ANT150F2	52	1.077	0.039	0.423	63366
81'	DRAGONWAVE A-ANT-11G-4-C	52	1.021	0.041	0.401	51013
80'	Side Arm Mount [SO 301-1]	52	1.014	0.041	0.397	51320
76'	Acutime 2000	52	0.984	0.042	0.379	52649

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	560 - 553.75	15.017	5	0.166	1.586
T2	553.75 - 547.5	14.825	5	0.166	1.586
T3	547.5 - 541.25	14.629	5	0.166	1.586
T4	541.25 - 535	14.419	5	0.165	1.586
T5	535 - 510	14.204	5	0.163	1.585
T6	510 - 485	13.334	5	0.149	1.580
T7	485 - 460	12.645	5	0.128	1.584
T8	460 - 435	12.305	5	0.130	1.643
T9	435 - 410	11.895	5	0.143	1.681
T10	410 - 385	11.194	5	0.160	1.683
T11	385 - 360	10.690	7	0.173	1.581
T12	360 - 335	10.148	7	0.175	1.481
T13	335 - 310	9.574	7	0.160	1.411
T14	310 - 285	9.202	7	0.132	1.381
T15	285 - 260	9.321	7	0.114	1.417
T16	260 - 235	9.400	7	0.106	1.443
T17	235 - 210	9.160	7	0.105	1.450
T18	210 - 185	8.377	28	0.139	1.329
T19	185 - 160	7.327	28	0.158	1.228
T20	160 - 135	6.141	28	0.156	1.138
T21	135 - 110	5.484	28	0.147	1.132
T22	110 - 85	4.958	28	0.156	1.125
T23	85 - 60	4.274	28	0.177	1.054

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T24	60 - 35	3.275	28	0.202	0.797
T25	35 - 10	1.974	28	0.223	0.537
T26	10 - 0	0.498	28	0.235	0.291

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
560'	Lightning Rod 5/8" x 3'	5	15.017	0.166	1.586	215050
553'	AP19-1670/090D/DT2	5	14.802	0.166	1.586	87586
514'	ANT150F6	5	13.469	0.153	1.581	54582
505'	Flush Mount	5	13.171	0.145	1.578	29282
492'	101-68-10-0-03N	5	12.801	0.133	1.578	16774
491'3"	Guy	5	12.782	0.132	1.578	16371
475'	Side Light	5	12.485	0.126	1.604	28348
465'	ANT150F6	5	12.365	0.128	1.630	94632
456'	13' x 2" Pipe Mount	5	12.254	0.132	1.651	33518
442'	101-68-10-0-03N	5	12.033	0.139	1.673	24261
438'	ANT150F6	5	11.957	0.141	1.678	22204
415'	101D-90-06-0-03	5	11.365	0.157	1.690	15601
388'	SC233	7	10.744	0.172	1.596	29790
324'	DB636-C	7	9.358	0.148	1.390	16695
316'3"	Guy	7	9.249	0.139	1.382	11934
315'	Flash Beacon Lighting	7	9.236	0.137	1.381	11400
312'	Flash Beacon Lighting	7	9.212	0.134	1.380	10445
294'	DB540K-E	7	9.251	0.119	1.402	27875
288'	P2F-52	7	9.299	0.115	1.412	81342
270'	CC806-06	7	9.392	0.108	1.433	37189
254'	DB809KT6E-XT	7	9.387	0.105	1.451	20043
239'	APXVAALL24_43-U-NA20	7	9.241	0.105	1.457	9071
214'	742 213 w/ Mount Pipe	28	8.527	0.134	1.349	21784
212'	ANT150F6	28	8.452	0.137	1.339	24717
202'	VHLP2-11W/B	28	8.067	0.147	1.292	25514
201'	MX08FRO665-21 w/ Mount Pipe	28	8.027	0.148	1.287	25001
175'	ANT150F6	28	6.829	0.160	1.187	41947
157'	Side Light	28	6.033	0.155	1.133	8998
153'9"	Guy	28	5.928	0.153	1.130	10354
145'	Side Arm Mount [SO 202-1]	28	5.697	0.149	1.128	17941
138'	SPD2-5.8	28	5.545	0.147	1.131	41480
134'	SPD2-5.8	28	5.464	0.147	1.132	84829
112'	201-8	28	5.003	0.155	1.127	45081
91'	ANT150F2	28	4.463	0.171	1.084	20670
81'	DRAGONWAVE A-ANT-11G-4-C	28	4.137	0.182	1.025	19031
80'	Side Arm Mount [SO 301-1]	28	4.101	0.184	1.017	19359
76'	Acutime 2000	28	3.952	0.189	0.980	20821

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	560	Diagonal	A325N	1.000	2	0.198	41.760	0.005	1.05	Gusset Bearing
T2	553.75	Diagonal	A325N	0.625	2	0.561	14.375	0.039	1.05	Member Block Shear
		Horizontal	A325N	0.875	2	0.375	24.061	0.016	1.05	Member Block Shear
T3	547.5	Diagonal	A325N	0.875	2	1.218	27.059	0.045	1.05	Bolt Shear
		Top Girt	A325N	0.625	2	0.496	26.100	0.019	1.05	Gusset Bearing
T4	541.25	Diagonal	A325N	0.875	2	1.536	27.059	0.057	1.05	Bolt Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Top Girt	A325N	0.750	2	1.079	31.320	0.034	1.05	Gusset Bearing
T5	535	Leg	A325N	0.750	6	0.853	30.101	0.028	1.05	Bolt Tension
		Diagonal	A325N	0.875	2	2.777	27.059	0.103	1.05	Bolt Shear
		Horizontal	A325N	0.750	2	1.978	31.320	0.063	1.05	Gusset Bearing
		Top Girt	A325N	0.750	2	1.314	31.320	0.042	1.05	Gusset Bearing
T6	510	Leg	A325N	0.750	6	3.604	30.101	0.120	1.05	Bolt Tension
		Diagonal	A325N	1.000	2	4.156	33.604	0.124	1.05	Gusset Bearing
		Horizontal	A325N	0.750	2	7.285	22.294	0.327	1.05	Member Block Shear
		Top Girt	A325N	0.750	2	2.401	31.320	0.077	1.05	Gusset Bearing
T7	485	Leg	A325N	0.750	6	3.901	30.101	0.130	1.05	Bolt Tension
		Diagonal	A325N	0.875	2	4.007	27.059	0.148	1.05	Bolt Shear
		Horizontal	A325N	0.750	2	3.071	31.320	0.098	1.05	Gusset Bearing
		Top Girt	A325N	0.750	2	3.163	31.320	0.101	1.05	Gusset Bearing
T8	460	Leg	A325N	0.750	6	4.959	30.101	0.165	1.05	Bolt Tension
		Diagonal	A325N	0.625	2	2.438	13.806	0.177	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.845	26.100	0.071	1.05	Member Bearing
		Top Girt	A325N	0.625	2	2.131	26.100	0.082	1.05	Member Bearing
T9	435	Leg	A325N	0.750	6	5.694	30.101	0.189	1.05	Bolt Tension
		Diagonal	A325N	0.625	2	0.844	13.806	0.061	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	0.907	14.375	0.063	1.05	Member Block Shear
		Top Girt	A325N	0.625	2	0.907	14.375	0.063	1.05	Member Block Shear
T10	410	Leg	A325N	0.750	6	5.803	30.101	0.193	1.05	Bolt Tension
		Diagonal	A325N	0.625	2	2.251	13.806	0.163	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.660	26.100	0.064	1.05	Member Bearing
		Top Girt	A325N	0.625	2	0.905	14.375	0.063	1.05	Member Block Shear
T11	385	Leg	A325N	0.750	6	5.310	30.101	0.176	1.05	Bolt Tension
		Diagonal	A325N	0.625	2	3.547	13.806	0.257	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	2.723	26.100	0.104	1.05	Gusset Bearing
		Top Girt	A325N	0.625	2	1.993	26.100	0.076	1.05	Gusset Bearing
T12	360	Leg	A325N	0.750	6	5.098	30.101	0.169	1.05	Bolt Tension
		Diagonal	A325N	0.875	2	4.906	27.059	0.181	1.05	Bolt Shear
		Horizontal	A325N	0.750	2	3.788	31.320	0.121	1.05	Gusset Bearing
		Top Girt	A325N	0.750	2	3.042	31.320	0.097	1.05	Gusset Bearing
T13	335	Leg	A325N	1.000	6	6.707	54.517	0.123	1.05	Bolt Tension
		Diagonal	A325N	1.000	2	5.886	33.604	0.175	1.05	Gusset Bearing
		Horizontal	A325N	0.750	2	8.426	22.294	0.378	1.05	Member Block Shear
		Top Girt	A325N	0.750	2	4.077	31.320	0.130	1.05	Gusset Bearing
T14	310	Leg	A325N	1.000	6	8.020	54.517	0.147	1.05	Bolt Tension
		Diagonal	A325N	0.875	2	5.876	27.059	0.217	1.05	Bolt Shear
		Horizontal	A325N	0.750	2	4.571	31.320	0.146	1.05	Gusset Bearing
		Top Girt	A325N	0.750	2	4.548	31.320	0.145	1.05	Gusset Bearing
T15	285	Leg	A325N	0.750	6	7.659	30.101	0.254	1.05	Bolt Tension
		Diagonal	A325N	0.625	2	4.185	13.806	0.303	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	3.251	26.100	0.125	1.05	Gusset Bearing
		Top Girt	A325N	0.625	2	3.554	26.100	0.136	1.05	Gusset Bearing
T16	260	Leg	A325N	0.750	6	8.449	30.101	0.281	1.05	Bolt Tension
		Diagonal	A325N	0.625	2	2.765	13.806	0.200	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.385	14.375	0.096	1.05	Member Block Shear
		Top Girt	A325N	0.625	2	1.385	14.375	0.096	1.05	Member Block Shear
T17	235	Leg	A325N	0.750	6	8.951	30.101	0.297	1.05	Bolt Tension
		Diagonal	A325N	0.625	2	2.129	13.806	0.154	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.405	14.375	0.098	1.05	Member Block Shear
		Top Girt	A325N	0.625	2	1.405	14.375	0.098	1.05	Member Block Shear
T18	210	Leg	A325N	0.750	6	8.984	30.101	0.298	1.05	Bolt Tension
		Diagonal	A325N	0.750	2	4.559	19.880	0.229	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	3.483	26.100	0.133	1.05	Gusset Bearing

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load per Bolt K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Top Girt	A325N	0.625	2	1.409	14.375	0.098	1.05	Member Block Shear
T19	185	Leg	A325N	1.000	6	8.761	54.517	0.161	1.05	Bolt Tension
		Diagonal	A325N	0.875	2	6.691	27.059	0.247	1.05	Bolt Shear
		Horizontal	A325N	0.750	2	5.191	31.320	0.166	1.05	Gusset Bearing
		Top Girt	A325N	0.750	2	3.848	31.320	0.123	1.05	Gusset Bearing
T20	160	Leg	A325N	1.000	6	10.077	54.517	0.185	1.05	Bolt Tension
		Diagonal	A325N	1.000	2	6.607	33.604	0.197	1.05	Gusset Bearing
		Horizontal	A325N	0.750	2	9.217	22.294	0.413	1.05	Member Block Shear
		Top Girt	A325N	0.750	2	5.133	31.320	0.164	1.05	Gusset Bearing
T21	135	Leg	A325N	1.000	6	10.339	54.517	0.190	1.05	Bolt Tension
		Diagonal	A325N	0.875	2	4.125	27.059	0.152	1.05	Bolt Shear
		Horizontal	A325N	0.750	2	3.168	31.320	0.101	1.05	Gusset Bearing
		Top Girt	A325N	0.750	2	3.494	31.320	0.112	1.05	Gusset Bearing
T22	110	Leg	A325N	1.000	6	11.017	54.517	0.202	1.05	Bolt Tension
		Diagonal	A325N	0.750	2	2.724	19.880	0.137	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.801	14.375	0.125	1.05	Member Block Shear
		Top Girt	A325N	0.625	2	1.801	14.375	0.125	1.05	Member Block Shear
T23	85	Leg	A325N	1.000	6	11.706	54.517	0.215	1.05	Bolt Tension
		Diagonal	A325N	0.750	2	1.519	19.880	0.076	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.870	14.375	0.130	1.05	Member Block Shear
		Top Girt	A325N	0.625	2	1.870	14.375	0.130	1.05	Member Block Shear
T24	60	Leg	A325N	1.000	6	12.062	54.517	0.221	1.05	Bolt Tension
		Diagonal	A325N	0.750	2	2.739	19.880	0.138	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.892	14.375	0.132	1.05	Member Block Shear
		Top Girt	A325N	0.625	2	1.892	14.375	0.132	1.05	Member Block Shear
T25	35	Leg	A325N	1.000	6	12.121	54.517	0.222	1.05	Bolt Tension
		Diagonal	A325N	0.750	2	3.918	19.880	0.197	1.05	Bolt Shear
		Horizontal	A325N	0.625	2	1.889	14.375	0.131	1.05	Member Block Shear
		Top Girt	A325N	0.625	2	1.889	14.375	0.131	1.05	Member Block Shear
T26	10	Leg	A325N	0.750	8	9.813	30.101	0.326	1.05	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
T6	491'3" (A) (891)	1 3/4 (ECP - 24000) BS	37.600	376.000	79.676	236.880	0.952	2.831
	491'3" (B) (890)	1 3/4 (ECP - 24000) BS	37.600	376.000	79.878	236.880	0.952	2.824
	491'3" (C) (889)	1 3/4 (ECP - 24000) BS	37.600	376.000	79.558	236.880	0.952	2.836
T13	316'3" (A) (888)	1 1/2 (ECP - 24000) BS	27.600	275.999	61.119	173.880	0.952	2.709
	316'3" (B) (887)	1 1/2 (ECP - 24000) BS	27.600	275.999	61.204	173.880	0.952	2.706
	316'3" (C) (886)	1 1/2 (ECP - 24000) BS	27.600	275.999	63.165	173.880	0.952	2.622
T20	153'9" (A) (885)	1 1/4 (ECP - 24000) BS	19.200	192.000	43.430	120.960	0.952	2.653
	153'9" (B) (884)	1 1/4 (ECP - 24000) BS	19.200	192.000	43.275	120.960	0.952	2.662
	153'9" (C)	1 1/4 (ECP	19.200	192.000	45.236	120.960	0.952	2.547

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T_u K	Allowable ϕT_n K	Required S.F.	Actual S.F.
	(883)	- 24000) BS						

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	560 - 553.75	4	6'3"	6'3"	75.0 K=1.00	12.566	-0.714	374.804	0.002 [1]
T2	553.75 - 547.5	4	6'3"	6'3"	75.0 K=1.00	12.566	-2.280	374.804	0.006 [1]
T3	547.5 - 541.25	4	6'3"	6'3"	75.0 K=1.00	12.566	-6.734	374.804	0.018 [1]
T4	541.25 - 535	4	6'3"	6'3"	75.0 K=1.00	12.566	-10.729	374.804	0.029 [1]
T5	535 - 510	4	25'	6'3"	75.0 K=1.00	12.566	-33.678	374.804	0.090 [1]
T6	510 - 485	4 1/2	25'	6'3"	66.7 K=1.00	15.904	-73.688	517.126	0.142 [1]
T7	485 - 460	4 1/2	25'	6'3"	66.7 K=1.00	15.904	-84.015	517.126	0.162 [1]
T8	460 - 435	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-100.595	595.695	0.169 [1]
T9	435 - 410	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-104.759	595.695	0.176 [1]
T10	410 - 385	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-104.455	595.695	0.175 [1]
T11	385 - 360	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-95.575	595.695	0.160 [1]
T12	360 - 335	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-109.624	595.695	0.184 [1]
T13	335 - 310	5 1/4	25'	6'3"	57.1 K=1.00	21.647	-149.889	767.243	0.195 [1]
T14	310 - 285	5	25'	6'3"	60.0 K=1.00	19.635	-144.353	679.089	0.213 [1]
T15	285 - 260	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-149.324	595.695	0.251 [1]
T16	260 - 235	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-159.892	595.695	0.268 [1]
T17	235 - 210	4 3/4	25'	6'3"	63.2 K=1.00	17.721	-162.203	595.695	0.272 [1]
T18	210 - 185	5	25'	6'3"	60.0 K=1.00	19.635	-162.672	679.089	0.240 [1]
T19	185 - 160	5 1/4	25'	6'3"	57.1 K=1.00	21.647	-174.045	767.243	0.227 [1]
T20	160 - 135	5 1/2	25'	6'3"	54.5 K=1.00	23.758	-194.040	860.106	0.226 [1]
T21	135 - 110	5 1/4	25'	6'3"	57.1 K=1.00	21.647	-194.422	767.243	0.253 [1]
T22	110 - 85	5 1/4	25'	6'3"	57.1 K=1.00	21.647	-207.973	767.243	0.271 [1]
T23	85 - 60	5 1/4	25'	6'3"	57.1 K=1.00	21.647	-215.960	767.243	0.281 [1]
T24	60 - 35	5 1/4	25'	6'3"	57.1 K=1.00	21.647	-218.415	767.243	0.285 [1]
T25	35 - 10	5 1/4	25'	6'3"	57.1 K=1.00	21.647	-218.173	767.243	0.284 [1]
T26	10 - 0	5 1/4	11'3/16"	5'6-3/32"	50.4 K=1.00	21.647	-237.280	809.289	0.293 [1]

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

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	560 - 553.75	2L3x3x1/4x3/8	7'5-1/32"	6'6-11/32"	86.9 K=1.00	2.880	-0.396	75.608	0.005 [1]
T2	553.75 - 547.5	2L 'a' > 37.399 in - 7 2L2 1/2x2x3/16x3/8	7'5-1/32"	6'8-19/32"	128.6 K=1.00	1.620	-1.251	26.151	0.048 [1]
T26	10 - 0	2L 'a' > 32.544 in - 17 L3x3 1/2x5/16	6'6-1/16"	6'1-31/32"	119.0 K=1.01	1.930	-3.202	38.546	0.083 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	553.75 - 547.5	2L3x2 1/2x1/4x3/8	8'	5'5-7/8"	71.0 K=1.00	2.630	-0.706	75.761	0.009 [1]
T5	535 - 510	2L3x2 1/2x1/4x3/8	8'	7'2-1/2"	112.1 K=1.00	2.630	-3.957	54.447	0.073 [1]
T6	510 - 485	2L 'a' > 36.248 in - 63 2L3x2 1/2x1/4x3/8	8'	7'2"	111.5 K=1.00	2.630	-5.678	54.870	0.103 [1]
T7	485 - 460	2L 'a' > 36.038 in - 111 2L3x2 1/2x1/4x3/8	8'	7'2"	111.5 K=1.00	2.630	-6.142	54.870	0.112 [1]
T8	460 - 435	2L 'a' > 36.038 in - 157 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-3.691	22.939	0.161 [1]
T9	435 - 410	2L 'a' > 34.933 in - 196 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-1.814	22.939	0.079 [1]
T10	410 - 385	2L 'a' > 34.933 in - 219 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-3.320	22.939	0.145 [1]
T11	385 - 360	2L 'a' > 34.933 in - 258 2L2x2x1/4x3/8	8'	7'2-1/2"	141.0 K=1.00	1.880	-5.447	26.670	0.204 [1]
T12	360 - 335	2L 'a' > 39.164 in - 297 2L3x2 1/2x1/4x3/8	8'	7'1-3/4"	111.1 K=1.00	2.630	-7.577	55.081	0.138 [1]
T13	335 - 310	2L 'a' > 35.933 in - 336 2L3x2 1/2x1/4x3/8	8'	7'1-1/4"	110.5 K=1.00	2.630	-8.918	55.501	0.161 [1]
T14	310 - 285	2L 'a' > 35.724 in - 393 2L3x2 1/2x1/4x3/8	8'	7'1-1/2"	110.8 K=1.00	2.630	-9.142	55.292	0.165 [1]
T15	285 - 260	2L 'a' > 35.829 in - 430 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-6.502	22.939	0.283 [1]
T16	260 - 235	2L 'a' > 34.933 in - 469 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0	1.620	-4.266	22.939	0.186 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00				
T17	235 - 210	2L 'a' > 34.933 in - 508 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-3.124	22.939	0.136 [1]
T18	210 - 185	2L 'a' > 34.933 in - 531 2L2 1/2x2x3/16x3/8	8'	7'2-1/4"	137.6 K=1.00	1.620	-6.966	23.063	0.302 [1]
T19	185 - 160	2L 'a' > 34.832 in - 570 2L3x2 1/2x1/4x3/8	8'	7'1-1/4"	110.5 K=1.00	2.630	-10.383	55.501	0.187 [1]
T20	160 - 135	2L 'a' > 35.724 in - 607 2L3x2 1/2x1/4x3/8	8'	7'1"	110.2 K=1.00	2.630	-7.864	55.710	0.141 [1]
T21	135 - 110	2L 'a' > 35.619 in - 648 2L3x2 1/2x1/4x3/8	8'	7'1-1/4"	110.5 K=1.00	2.630	-6.337	55.501	0.114 [1]
T22	110 - 85	2L 'a' > 35.724 in - 705 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-4.104	23.188	0.177 [1]
T23	85 - 60	2L 'a' > 34.731 in - 744 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-3.741	23.188	0.161 [1]
T24	60 - 35	2L 'a' > 34.731 in - 765 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-4.122	23.188	0.178 [1]
T25	35 - 10	2L 'a' > 34.731 in - 802 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-5.698	23.188	0.246 [1]
T26	10 - 0	2L 'a' > 34.731 in - 850 L3x5x1/2	4'	1'9-3/8"	76.5 K=2.32	3.750	-4.411	110.162	0.040 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	560 - 553.75	C10x20	8'	5'9"	99.7 K=1.00	5.880	-0.116	112.878	0.001 [1]
T3	547.5 - 541.25	2C6x8.2x0.375	8'	7'8"	104.4 K=1.00	4.800	-0.992	87.624	0.011 [1]
T4	541.25 - 535	2L3x2 1/2x1/4x3/8	8'	7'2-1/2"	112.1 K=1.00	2.630	-2.158	54.447	0.040 [1]
T5	535 - 510	2L 'a' > 36.248 in - 40 2L3x2 1/2x1/4x3/8	8'	7'2-1/2"	112.1 K=1.00	2.630	-2.628	54.447	0.048 [1]
T6	510 - 485	2L 'a' > 36.248 in - 52 2L3x2 1/2x1/4x3/8	8'	7'2"	111.5 K=1.00	2.630	-4.803	54.870	0.088 [1]
T7	485 - 460	2L 'a' > 36.038 in - 93 2L3x2 1/2x1/4x3/8	8'	7'2"	111.5 K=1.00	2.630	-6.327	54.870	0.115 [1]
T8	460 - 435	2L 'a' > 36.038 in - 130 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-4.262	22.939	0.186 [1]
T9	435 - 410	2L 'a' > 34.933 in - 169 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-1.814	22.939	0.079 [1]
T10	410 - 385	2L 'a' > 34.933 in - 210 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-1.809	22.939	0.079 [1]
		2L 'a' > 34.933 in - 249							

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T11	385 - 360	2L2x2x1/4x3/8	8'	7'2-1/2"	141.0 K=1.00	1.880	-3.986	26.670	0.149 [1]
T12	360 - 335	2L 'a' > 39.164 in - 288 2L3x2 1/2x1/4x3/8	8'	7'1-3/4"	111.1 K=1.00	2.630	-6.085	55.081	0.110 [1]
T13	335 - 310	2L 'a' > 35.933 in - 327 2L3x2 1/2x1/4x3/8	8'	7'1-1/4"	110.5 K=1.00	2.630	-8.154	55.501	0.147 [1]
T14	310 - 285	2L 'a' > 35.724 in - 366 2L3x2 1/2x1/4x3/8	8'	7'1-1/2"	110.8 K=1.00	2.630	-9.097	55.292	0.165 [1]
T15	285 - 260	2L 'a' > 35.829 in - 403 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-7.109	22.939	0.310 [1]
T16	260 - 235	2L 'a' > 34.933 in - 442 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-4.887	22.939	0.213 [1]
T17	235 - 210	2L 'a' > 34.933 in - 481 2L2 1/2x2x3/16x3/8	8'	7'2-1/2"	138.0 K=1.00	1.620	-2.809	22.939	0.122 [1]
T18	210 - 185	2L 'a' > 34.933 in - 522 2L2 1/2x2x3/16x3/8	8'	7'2-1/4"	137.6 K=1.00	1.620	-3.943	23.063	0.171 [1]
T19	185 - 160	2L 'a' > 34.832 in - 561 2L3x2 1/2x1/4x3/8	8'	7'1-1/4"	110.5 K=1.00	2.630	-7.695	55.501	0.139 [1]
T20	160 - 135	2L 'a' > 35.724 in - 598 2L3x2 1/2x1/4x3/8	8'	7'1"	110.2 K=1.00	2.630	-10.266	55.710	0.184 [1]
T21	135 - 110	2L 'a' > 35.619 in - 637 2L3x2 1/2x1/4x3/8	8'	7'1-1/4"	110.5 K=1.00	2.630	-6.987	55.501	0.126 [1]
T22	110 - 85	2L 'a' > 35.724 in - 678 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-4.643	23.188	0.200 [1]
T23	85 - 60	2L 'a' > 34.731 in - 717 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-3.741	23.188	0.161 [1]
T24	60 - 35	2L 'a' > 34.731 in - 756 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-3.783	23.188	0.163 [1]
T25	35 - 10	2L 'a' > 34.731 in - 795 2L2 1/2x2x3/16x3/8	8'	7'2"	137.2 K=1.00	1.620	-4.588	23.188	0.198 [1]
T26	10 - 0	2L 'a' > 34.731 in - 832 2L4x3x1/2	8'	7'6-3/4"	72.6 K=1.00	6.500	-4.411	195.218	0.023 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	547.5 - 541.25	4	6'3"	6'3"	75.0	12.566	0.213	565.487	0.000 [1]
T4	541.25 - 535	4	6'3"	6'3"	75.0	12.566	2.187	565.487	0.004 [1]
T5	535 - 510	4	25'	6'3"	75.0	12.566	16.186	565.487	0.029 [1]
T6	510 - 485	4 1/2	25'	6'3"	66.7	15.904	34.008	715.694	0.048 [1]

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T9	435 - 410	4 3/4	25'	6'3"	63.2	17.721	1.032	797.425	0.001 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	560 - 553.75	2L3x3x1/4x3/8	7'5-1/32"	6'6-11/32"	91.8	1.738	0.089	75.608	0.001 [1]
T2	553.75 - 547.5	2L 'a' > 37.399 in - 8 2L2 1/2x2x3/16x3/8 2L 'a' > 32.544 in - 18	7'5-1/32"	6'8-19/32"	107.6	1.004	1.121	43.677	0.026 [1]
T3	547.5 - 541.25	1	10'1-13/16"	9'8-3/4"	467.0	0.785	2.435	25.447	0.096 [1]
T4	541.25 - 535	1	10'1-13/16"	9'8-3/4"	467.0	0.785	3.073	25.447	0.121 [1]
T5	535 - 510	1	10'1-13/16"	9'8-3/4"	467.0	0.785	5.553	25.447	0.218 [1]
T6	510 - 485	1 1/4	10'1-13/16"	9'8-1/8"	371.6	1.227	8.313	39.761	0.209 [1]
T7	485 - 460	1	10'1-13/16"	9'8-1/8"	464.5	0.785	8.015	25.447	0.315 [1]
T8	460 - 435	3/4	10'1-13/16"	9'7-13/16"	617.6	0.442	4.876	14.314	0.341 [1]
T9	435 - 410	5/8	10'1-13/16"	9'7-13/16"	741.1	0.307	1.688	9.940	0.170 [1]
T10	410 - 385	5/8	10'1-13/16"	9'7-13/16"	741.1	0.307	4.502	9.940	0.453 [1]
T11	385 - 360	3/4	10'1-13/16"	9'7-13/16"	617.6	0.442	7.093	14.314	0.496 [1]
T12	360 - 335	1	10'1-13/16"	9'7-13/16"	463.2	0.785	9.813	25.447	0.386 [1]
T13	335 - 310	1 1/4	10'1-13/16"	9'7-5/32"	368.5	1.227	11.772	39.761	0.296 [1]
T14	310 - 285	1	10'1-13/16"	9'7-15/32"	461.9	0.785	11.753	25.447	0.462 [1]
T15	285 - 260	3/4	10'1-13/16"	9'7-13/16"	617.6	0.442	8.370	14.314	0.585 [1]
T16	260 - 235	5/8	10'1-13/16"	9'7-13/16"	741.1	0.307	5.530	9.940	0.556 [1]
T17	235 - 210	5/8	10'1-13/16"	9'7-13/16"	741.1	0.307	4.258	9.940	0.428 [1]
T18	210 - 185	7/8	10'1-13/16"	9'7-15/32"	527.9	0.601	9.119	19.483	0.468 [1]
T19	185 - 160	1	10'1-13/16"	9'7-5/32"	460.6	0.785	13.382	25.447	0.526 [1]
T20	160 - 135	1 1/4	10'1-13/16"	9'6-27/32"	367.5	1.227	13.213	39.761	0.332 [1]
T21	135 - 110	1	10'1-13/16"	9'7-5/32"	460.6	0.785	8.250	25.447	0.324 [1]
T22	110 - 85	7/8	10'1-13/16"	9'7-5/32"	526.5	0.601	5.448	19.483	0.280 [1]
T23	85 - 60	7/8	10'1-13/16"	9'7-5/32"	526.5	0.601	3.039	19.483	0.156 [1]
T24	60 - 35	7/8	10'1-13/16"	9'7-5/32"	526.5	0.601	5.478	19.483	0.281 [1]
T25	35 - 10	7/8	10'1-13/16"	9'7-5/32"	526.5	0.601	7.837	19.483	0.402 [1]
T26	10 - 0	L3x3 1/2x5/16	6'6-1/16"	6'1-31/32"	81.8	1.930	2.754	62.532	0.044 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T2	553.75 - 547.5	2L3x2 1/2x1/4x3/8	8'	5'5-7/8"	61.1	1.597	0.751	69.491	0.011 [1]
T5	535 - 510	2L3x2 1/2x1/4x3/8 2L 'a' > 36.248 in - 62	8'	7'2-1/2"	97.4	1.644	0.583	71.530	0.008 [1]
T6	510 - 485	2L3x2 1/2x1/4x3/8 2L 'a' > 36.038 in - 101	8'	7'2"	96.8	1.644	14.570	71.530	0.204 [1]
T7	485 - 460	2L3x2 1/2x1/4x3/8 2L 'a' > 36.038 in - 141	8'	7'2"	96.8	1.644	1.455	71.530	0.020 [1]
T8	460 - 435	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 180	8'	7'2-1/2"	115.1	1.004	1.742	43.677	0.040 [1]
T9	435 - 410	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 228	8'	7'2-1/2"	115.1	1.004	1.814	43.677	0.042 [1]
T10	410 - 385	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 267	8'	7'2-1/2"	115.1	1.004	1.809	43.677	0.041 [1]
T11	385 - 360	2L2x2x1/4x3/8 2L 'a' > 39.164 in - 306	8'	7'2-1/2"	149.8	1.129	1.655	49.101	0.034 [1]
T12	360 - 335	2L3x2 1/2x1/4x3/8 2L 'a' > 35.933 in - 345	8'	7'1-3/4"	96.6	1.644	1.899	71.530	0.027 [1]
T13	335 - 310	2L3x2 1/2x1/4x3/8 2L 'a' > 35.724 in - 374	8'	7'1-1/4"	96.0	1.644	16.852	71.530	0.236 [1]
T14	310 - 285	2L3x2 1/2x1/4x3/8 2L 'a' > 35.829 in - 413	8'	7'1-1/2"	96.3	1.644	2.500	71.530	0.035 [1]
T15	285 - 260	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 453	8'	7'2-1/2"	115.1	1.004	2.586	43.677	0.059 [1]
T16	260 - 235	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 492	8'	7'2-1/2"	115.1	1.004	2.769	43.677	0.063 [1]
T17	235 - 210	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 540	8'	7'2-1/2"	115.1	1.004	2.809	43.677	0.064 [1]
T18	210 - 185	2L2 1/2x2x3/16x3/8 2L 'a' > 34.832 in - 570	8'	7'2-1/4"	114.8	1.004	2.818	43.677	0.065 [1]
T19	185 - 160	2L3x2 1/2x1/4x3/8 2L 'a' > 35.724 in - 609	8'	7'1-1/4"	96.0	1.644	3.015	71.530	0.042 [1]
T20	160 - 135	2L3x2 1/2x1/4x3/8 2L 'a' > 35.619 in - 665	8'	7'1"	95.8	1.644	18.435	71.530	0.258 [1]
T21	135 - 110	2L3x2 1/2x1/4x3/8 2L 'a' > 35.724 in - 705	8'	7'1-1/4"	96.0	1.644	3.367	71.530	0.047 [1]
T22	110 - 85	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 744	8'	7'2"	114.4	1.004	3.602	43.677	0.082 [1]
T23	85 - 60	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 774	8'	7'2"	114.4	1.004	3.741	43.677	0.086 [1]
T24	60 - 35	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 804	8'	7'2"	114.4	1.004	3.783	43.677	0.087 [1]
T25	35 - 10	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 843	8'	7'2"	114.4	1.004	3.779	43.677	0.087 [1]
T26	10 - 0	L3x5x1/2	4'	1'9-3/8"	25.8	3.750	4.411	121.500	0.036 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T1	560 - 553.75	C10x20	8'	5'9"	99.7	5.880	0.108	190.512	0.001 [1]
T3	547.5 - 541.25	2C6x8.2x0.375	8'	7'8"	104.4	3.375	0.242	146.813	0.002 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	541.25 - 535	2L3x2 1/2x1/4x3/8 2L 'a' > 36.248 in - 41	8'	7'2-1/2"	97.4	1.644	0.186	71.530	0.003 [1]
T5	535 - 510	2L3x2 1/2x1/4x3/8 2L 'a' > 36.248 in - 53	8'	7'2-1/2"	97.4	1.644	0.583	71.530	0.008 [1]
T6	510 - 485	2L3x2 1/2x1/4x3/8 2L 'a' > 36.038 in - 93	8'	7'2"	96.8	1.644	1.276	71.530	0.018 [1]
T7	485 - 460	2L3x2 1/2x1/4x3/8 2L 'a' > 36.038 in - 132	8'	7'2"	96.8	1.644	1.455	71.530	0.020 [1]
T8	460 - 435	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 171	8'	7'2-1/2"	115.1	1.004	1.742	43.677	0.040 [1]
T9	435 - 410	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 210	8'	7'2-1/2"	115.1	1.004	1.814	43.677	0.042 [1]
T10	410 - 385	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 249	8'	7'2-1/2"	115.1	1.004	1.809	43.677	0.041 [1]
T11	385 - 360	2L2x2x1/4x3/8 2L 'a' > 39.164 in - 288	8'	7'2-1/2"	149.8	1.129	1.655	49.101	0.034 [1]
T12	360 - 335	2L3x2 1/2x1/4x3/8 2L 'a' > 35.933 in - 327	8'	7'1-3/4"	96.6	1.644	1.899	71.530	0.027 [1]
T13	335 - 310	2L3x2 1/2x1/4x3/8 2L 'a' > 35.724 in - 365	8'	7'1-1/4"	96.0	1.644	2.596	71.530	0.036 [1]
T14	310 - 285	2L3x2 1/2x1/4x3/8 2L 'a' > 35.829 in - 404	8'	7'1-1/2"	96.3	1.644	2.500	71.530	0.035 [1]
T15	285 - 260	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 444	8'	7'2-1/2"	115.1	1.004	2.586	43.677	0.059 [1]
T16	260 - 235	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 483	8'	7'2-1/2"	115.1	1.004	2.769	43.677	0.063 [1]
T17	235 - 210	2L2 1/2x2x3/16x3/8 2L 'a' > 34.933 in - 522	8'	7'2-1/2"	115.1	1.004	2.809	43.677	0.064 [1]
T18	210 - 185	2L2 1/2x2x3/16x3/8 2L 'a' > 34.832 in - 561	8'	7'2-1/4"	114.8	1.004	2.818	43.677	0.065 [1]
T19	185 - 160	2L3x2 1/2x1/4x3/8 2L 'a' > 35.724 in - 600	8'	7'1-1/4"	96.0	1.644	3.015	71.530	0.042 [1]
T20	160 - 135	2L3x2 1/2x1/4x3/8 2L 'a' > 35.619 in - 639	8'	7'1"	95.8	1.644	3.361	71.530	0.047 [1]
T21	135 - 110	2L3x2 1/2x1/4x3/8 2L 'a' > 35.724 in - 678	8'	7'1-1/4"	96.0	1.644	3.367	71.530	0.047 [1]
T22	110 - 85	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 717	8'	7'2"	114.4	1.004	3.602	43.677	0.082 [1]
T23	85 - 60	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 756	8'	7'2"	114.4	1.004	3.741	43.677	0.086 [1]
T24	60 - 35	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 795	8'	7'2"	114.4	1.004	3.783	43.677	0.087 [1]
T25	35 - 10	2L2 1/2x2x3/16x3/8 2L 'a' > 34.731 in - 834	8'	7'2"	114.4	1.004	3.779	43.677	0.087 [1]
T26	10 - 0	2L4x3x1/2	8'	7'6-3/4"	72.6	6.500	56.263	210.600	0.267 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

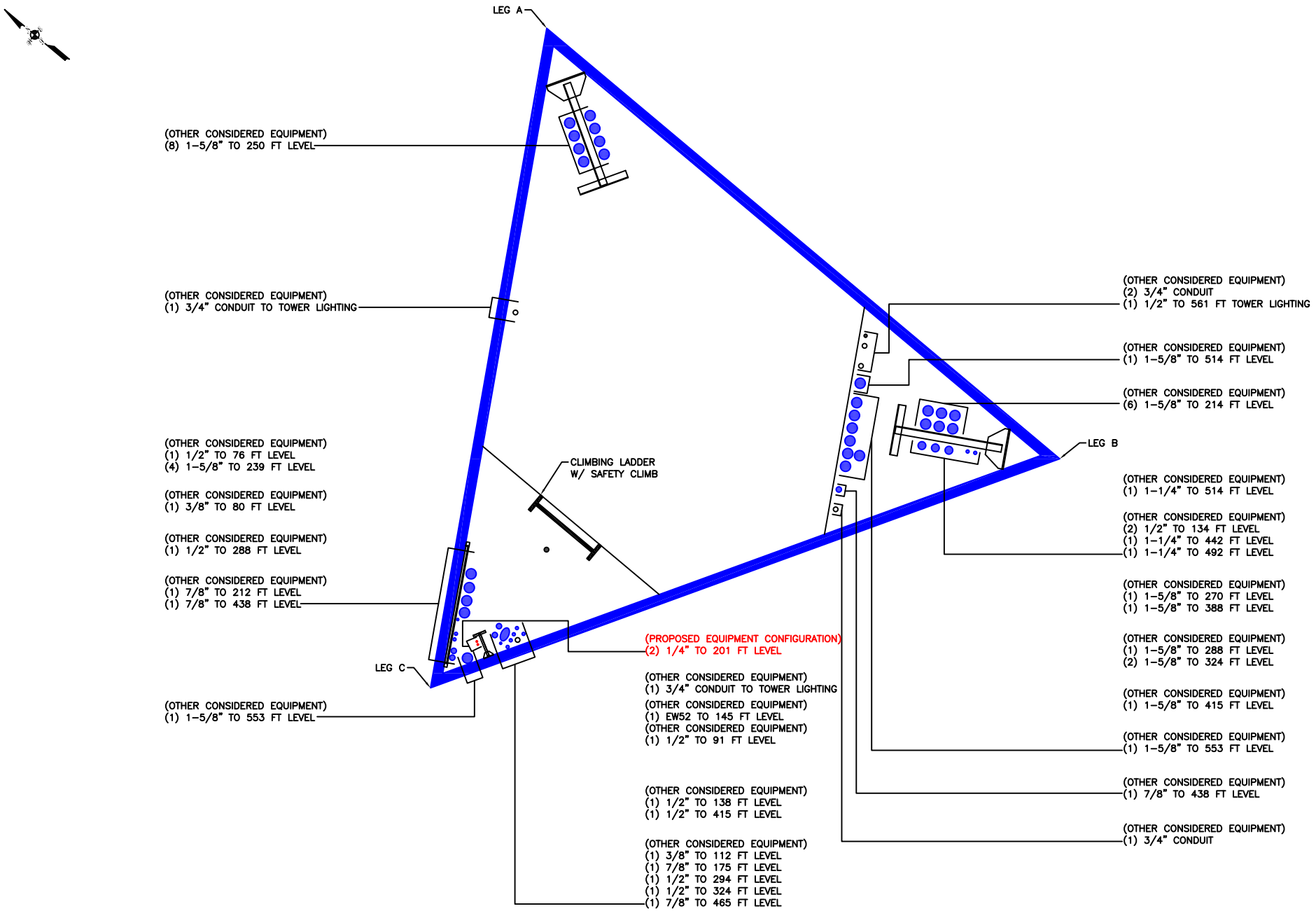
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	560 - 553.75	Leg	4	2	-0.714	393.544	0.2	Pass
T2	553.75 - 547.5	Leg	4	14	-2.280	393.544	0.6	Pass
T3	547.5 - 541.25	Leg	4	26	-6.734	393.544	1.7	Pass
T4	541.25 - 535	Leg	4	39	-10.729	393.544	2.7	Pass
T5	535 - 510	Leg	4	51	-33.678	393.544	8.6	Pass
T6	510 - 485	Leg	4 1/2	88	-73.688	542.982	13.6	Pass
T7	485 - 460	Leg	4 1/2	127	-84.015	542.982	15.5	Pass
T8	460 - 435	Leg	4 3/4	166	-100.595	625.480	16.1	Pass
T9	435 - 410	Leg	4 3/4	205	-104.759	625.480	16.7	Pass
T10	410 - 385	Leg	4 3/4	244	-104.455	625.480	16.7	Pass
T11	385 - 360	Leg	4 3/4	283	-95.575	625.480	15.3	Pass
T12	360 - 335	Leg	4 3/4	322	-109.624	625.480	17.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T13	335 - 310	Leg	5 1/4	363	-149.889	805.605	18.6	Pass
T14	310 - 285	Leg	5	402	-144.353	713.043	20.2	Pass
T15	285 - 260	Leg	4 3/4	439	-149.324	625.480	23.9	Pass
T16	260 - 235	Leg	4 3/4	478	-159.892	625.480	25.6	Pass
T17	235 - 210	Leg	4 3/4	517	-162.203	625.480	25.9	Pass
T18	210 - 185	Leg	5	556	-162.672	713.043	22.8	Pass
T19	185 - 160	Leg	5 1/4	595	-174.045	805.605	21.6	Pass
T20	160 - 135	Leg	5 1/2	634	-194.040	903.111	21.5	Pass
T21	135 - 110	Leg	5 1/4	673	-194.422	805.605	24.1	Pass
T22	110 - 85	Leg	5 1/4	712	-207.973	805.605	25.8	Pass
T23	85 - 60	Leg	5 1/4	751	-215.960	805.605	26.8	Pass
T24	60 - 35	Leg	5 1/4	790	-218.415	805.605	27.1	Pass
T25	35 - 10	Leg	5 1/4	829	-218.173	805.605	27.1	Pass
T26	10 - 0	Leg	5 1/4	868	-237.280	849.753	27.9	Pass
T1	560 - 553.75	Diagonal	2L3x3x1/4x3/8	7	-0.396	79.388	0.5	Pass
T2	553.75 - 547.5	Diagonal	2L2 1/2x2x3/16x3/8	17	-1.251	27.459	4.6	Pass
T3	547.5 - 541.25	Diagonal	1	32	2.435	26.719	9.1	Pass
T4	541.25 - 535	Diagonal	1	44	3.073	26.719	11.5	Pass
T5	535 - 510	Diagonal	1	59	5.553	26.719	20.8	Pass
T6	510 - 485	Diagonal	1 1/4	95	8.313	41.749	19.9	Pass
T7	485 - 460	Diagonal	1	161	8.015	26.719	30.0	Pass
T8	460 - 435	Diagonal	3/4	200	4.876	15.030	32.4	Pass
T9	435 - 410	Diagonal	5/8	239	1.688	10.437	16.2	Pass
T10	410 - 385	Diagonal	5/8	255	4.502	10.437	43.1	Pass
T11	385 - 360	Diagonal	3/4	294	7.093	15.030	47.2	Pass
T12	360 - 335	Diagonal	1	333	9.813	26.719	36.7	Pass
T13	335 - 310	Diagonal	1 1/4	368	11.772	41.749	28.2	Pass
T14	310 - 285	Diagonal	1	434	11.753	26.719	44.0	Pass
T15	285 - 260	Diagonal	3/4	473	8.370	15.030	55.7	Pass
T16	260 - 235	Diagonal	5/8	511	5.530	10.437	53.0	Pass
T17	235 - 210	Diagonal	5/8	528	4.258	10.437	40.8	Pass
T18	210 - 185	Diagonal	7/8	567	9.119	20.457	44.6	Pass
T19	185 - 160	Diagonal	1	601	13.382	26.719	50.1	Pass
T20	160 - 135	Diagonal	1 1/4	667	13.213	41.749	31.6	Pass
T21	135 - 110	Diagonal	1	710	8.250	26.719	30.9	Pass
T22	110 - 85	Diagonal	7/8	749	5.448	20.457	26.6	Pass
T23	85 - 60	Diagonal	7/8	757	3.039	20.457	14.9	Pass
T24	60 - 35	Diagonal	7/8	796	5.478	20.457	26.8	Pass
T25	35 - 10	Diagonal	7/8	835	7.837	20.457	38.3	Pass
T26	10 - 0	Diagonal	L3x3 1/2x5/16	882	-3.202	40.474	7.9	Pass
T2	553.75 - 547.5	Horizontal	2L3x2 1/2x1/4x3/8	16	0.751	72.966	1.0	Pass
T5	535 - 510	Horizontal	2L3x2 1/2x1/4x3/8	63	-3.957	57.169	6.9	Pass
T6	510 - 485	Horizontal	2L3x2 1/2x1/4x3/8	101	14.570	75.107	19.4	Pass
T7	485 - 460	Horizontal	2L3x2 1/2x1/4x3/8	157	-6.142	57.614	10.7	Pass
T8	460 - 435	Horizontal	2L2 1/2x2x3/16x3/8	196	-3.691	24.086	15.3	Pass
T9	435 - 410	Horizontal	2L2 1/2x2x3/16x3/8	219	-1.814	24.086	7.5	Pass
T10	410 - 385	Horizontal	2L2 1/2x2x3/16x3/8	258	-3.320	24.086	13.8	Pass
T11	385 - 360	Horizontal	2L2x2x1/4x3/8	297	-5.447	28.003	19.5	Pass
T12	360 - 335	Horizontal	2L3x2 1/2x1/4x3/8	336	-7.577	57.835	13.1	Pass
T13	335 - 310	Horizontal	2L3x2 1/2x1/4x3/8	374	16.852	75.107	22.4	Pass
T14	310 - 285	Horizontal	2L3x2 1/2x1/4x3/8	430	-9.142	58.056	15.7	Pass
T15	285 - 260	Horizontal	2L2 1/2x2x3/16x3/8	469	-6.502	24.086	27.0	Pass
T16	260 - 235	Horizontal	2L2 1/2x2x3/16x3/8	508	-4.266	24.086	17.7	Pass
T17	235 - 210	Horizontal	2L2 1/2x2x3/16x3/8	531	-3.124	24.086	13.0	Pass
T18	210 - 185	Horizontal	2L2 1/2x2x3/16x3/8	570	-6.966	24.216	28.8	Pass
T19	185 - 160	Horizontal	2L3x2 1/2x1/4x3/8	607	-10.383	58.276	17.8	Pass
T20	160 - 135	Horizontal	2L3x2 1/2x1/4x3/8	665	18.435	75.107	24.5	Pass
T21	135 - 110	Horizontal	2L3x2 1/2x1/4x3/8	705	-6.337	58.276	10.9	Pass
T22	110 - 85	Horizontal	2L2 1/2x2x3/16x3/8	744	-4.104	24.347	16.9	Pass
T23	85 - 60	Horizontal	2L2 1/2x2x3/16x3/8	783	-3.741	24.347	15.4	Pass
T24	60 - 35	Horizontal	2L2 1/2x2x3/16x3/8	802	-4.122	24.347	16.9	Pass
T25	35 - 10	Horizontal	2L2 1/2x2x3/16x3/8	850	-5.698	24.347	23.4	Pass
T26	10 - 0	Horizontal	L3x5x1/2	880	-4.411	115.670	3.8	Pass
T1	560 - 553.75	Top Girt	C10x20	4	-0.116	118.522	0.1	Pass
T3	547.5 - 541.25	Top Girt	2C6x8.2x0.375	29	-0.992	92.005	1.1	Pass
T4	541.25 - 535	Top Girt	2L3x2 1/2x1/4x3/8	40	-2.158	57.169	3.8	Pass
T5	535 - 510	Top Girt	2L3x2 1/2x1/4x3/8	52	-2.628	57.169	4.6	Pass
T6	510 - 485	Top Girt	2L3x2 1/2x1/4x3/8	93	-4.803	57.614	8.3	Pass
T7	485 - 460	Top Girt	2L3x2 1/2x1/4x3/8	130	-6.327	57.614	11.0	Pass
T8	460 - 435	Top Girt	2L2 1/2x2x3/16x3/8	169	-4.262	24.086	17.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T9	435 - 410	Top Girt	2L2 1/2x2x3/16x3/8	210	-1.814	24.086	7.5	Pass
T10	410 - 385	Top Girt	2L2 1/2x2x3/16x3/8	249	-1.809	24.086	7.5	Pass
T11	385 - 360	Top Girt	2L2x2x1/4x3/8	288	-3.986	28.003	14.2	Pass
T12	360 - 335	Top Girt	2L3x2 1/2x1/4x3/8	327	-6.085	57.835	10.5	Pass
T13	335 - 310	Top Girt	2L3x2 1/2x1/4x3/8	366	-8.154	58.276	14.0	Pass
T14	310 - 285	Top Girt	2L3x2 1/2x1/4x3/8	403	-9.097	58.056	15.7	Pass
T15	285 - 260	Top Girt	2L2 1/2x2x3/16x3/8	442	-7.109	24.086	29.5	Pass
T16	260 - 235	Top Girt	2L2 1/2x2x3/16x3/8	481	-4.887	24.086	20.3	Pass
T17	235 - 210	Top Girt	2L2 1/2x2x3/16x3/8	522	-2.809	24.086	11.7	Pass
T18	210 - 185	Top Girt	2L2 1/2x2x3/16x3/8	561	-3.943	24.216	16.3	Pass
T19	185 - 160	Top Girt	2L3x2 1/2x1/4x3/8	598	-7.695	58.276	13.2	Pass
T20	160 - 135	Top Girt	2L3x2 1/2x1/4x3/8	637	-10.266	58.496	17.6	Pass
T21	135 - 110	Top Girt	2L3x2 1/2x1/4x3/8	678	-6.987	58.276	12.0	Pass
T22	110 - 85	Top Girt	2L2 1/2x2x3/16x3/8	717	-4.643	24.347	19.1	Pass
T23	85 - 60	Top Girt	2L2 1/2x2x3/16x3/8	756	-3.741	24.347	15.4	Pass
T24	60 - 35	Top Girt	2L2 1/2x2x3/16x3/8	795	-3.783	24.347	15.5	Pass
T25	35 - 10	Top Girt	2L2 1/2x2x3/16x3/8	832	-4.588	24.347	18.8	Pass
T26	10 - 0	Top Girt	2L4x3x1/2	872	56.263	221.130	25.4	Pass
T6	510 - 485	Guy A@491.25	1 3/4 (ECP - 24000)	891	79.676	236.880	33.6	Pass
T13	335 - 310	Guy A@316.25	1 1/2 (ECP - 24000)	888	61.119	173.880	35.2	Pass
T20	160 - 135	Guy A@153.75	1 1/4 (ECP - 24000)	885	43.430	120.960	35.9	Pass
T6	510 - 485	Guy B@491.25	1 3/4 (ECP - 24000)	890	79.878	236.880	33.7	Pass
T13	335 - 310	Guy B@316.25	1 1/2 (ECP - 24000)	887	61.204	173.880	35.2	Pass
T20	160 - 135	Guy B@153.75	1 1/4 (ECP - 24000)	884	43.275	120.960	35.8	Pass
T6	510 - 485	Guy C@491.25	1 3/4 (ECP - 24000)	889	79.558	236.880	33.6	Pass
T13	335 - 310	Guy C@316.25	1 1/2 (ECP - 24000)	886	63.165	173.880	36.3	Pass
T20	160 - 135	Guy C@153.75	1 1/4 (ECP - 24000)	883	45.236	120.960	37.4	Pass
							Summary	
						Leg (T26)	27.9	Pass
						Diagonal (T15)	55.7	Pass
						Horizontal (T18)	28.8	Pass
						Top Girt (T15)	29.5	Pass
						Guy A (T20)	35.9	Pass
						Guy B (T20)	35.8	Pass
						Guy C (T20)	37.4	Pass
						Bolt Checks	39.4	Pass
						RATING =	**55.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


LEG A
(OTHER CONSIDERED EQUIPMENT)
(8) 1-5/8" TO 250 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/4" CONDUIT TO TOWER LIGHTING
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 76 FT LEVEL
(4) 1-5/8" TO 239 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 80 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 288 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 212 FT LEVEL
(1) 7/8" TO 438 FT LEVEL
CLIMBING LADDER
W/ SAFETY CLIMB
LEG C
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 553 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(2) 1/4" TO 201 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/4" CONDUIT TO TOWER LIGHTING
(OTHER CONSIDERED EQUIPMENT)
(1) EW52 TO 145 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 91 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 138 FT LEVEL
(1) 1/2" TO 415 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 112 FT LEVEL
(1) 7/8" TO 175 FT LEVEL
(1) 1/2" TO 294 FT LEVEL
(1) 1/2" TO 324 FT LEVEL
(1) 7/8" TO 465 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 3/4" CONDUIT
(1) 1/2" TO 561 FT TOWER LIGHTING
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 514 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 214 FT LEVEL
LEG B
(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 514 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 1/2" TO 134 FT LEVEL
(1) 1-1/4" TO 442 FT LEVEL
(1) 1-1/4" TO 492 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 270 FT LEVEL
(1) 1-5/8" TO 388 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 288 FT LEVEL
(2) 1-5/8" TO 324 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 415 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-5/8" TO 553 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 7/8" TO 438 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/4" CONDUIT

APPENDIX C

ADDITIONAL CALCULATIONS

Pier and Pad Foundation

BU # :	870800
Site Name:	Avon (Deercliff Rd.
App. Number:	655378 Rev. 4

TIA-222 Revision:	H
Tower Type:	Guyed

Top & Bot. Pad Rein. Different?:	☑
Block Foundation?:	☐
Rectangular Pad?:	☐

Superstructure Analysis Reactions		
Compression, P_{comp}:	635.4	kips
Base Shear, Vu_comp:	1.76	kips
Moment, M_u:	0	ft-kips
Tower Height, **H**:	560	ft
BP Dist. Above Fdn, bp_{dist}:		in
Bolt Circle / Bearing Plate Width, **BC**:		in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	4	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	12	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	6	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	5	ft
Pad Width, W_1:	15	ft
Pad Thickness, **T**:	2.5	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	9	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	0	
Pad Rebar Size (Bottom dir. 2), Sp_2:	9	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	23	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	3	ksi
Dry Concrete Density, δc:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	115	pcf
Ultimate Net Bearing, Qnet:	16.000	ksf
Cohesion, **Cu**:	0.900	ksf
Friction Angle, φ:	0	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.57	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	244.23	1.76	**0.7%**	**Pass**
Bearing Pressure (ksf)	9.95	3.65	**35.0%**	**Pass**
*Overturning (kip*ft)*	3102.19	10.56	**0.3%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	1677.20	6.16	**0.3%**	**Pass**
Pier Compression (kip)	7637.76	645.48	**8.0%**	**Pass**
*Pad Flexure (kip*ft)*	2463.79	648.51	**25.1%**	**Pass**
Pad Shear - 1-way (kips)	374.27	145.41	**37.0%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.065	**37.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	1881.76	3.70	**0.2%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**37.5%**
Soil Rating*:	**35.0%**

Guyed Tower Anchor Reaction Comparison Test

BU # :	870800
Site Name:	Avon (Deercliff Rd.)
Order Number:	655378 Rev. 4
Design TIA:	TIA-222-F
Current TIA:	TIA-222-H
Component:	Guyed Tower Anchor
Reference Doc ID:	StainlessInc., Report #3290 09/11/86

TIA-222-F Compared To TIA-222-H

GUYED TOWER OUTER ANCHOR FOUNDATION

REACTIONS PER ANCHOR	DESIGN REACTIONS	*MODIFIED DESIGN REACTIONS	CURRENT REACTIONS	% CAPACITY
UPLIFT (kips)	360.0	486.0	132.0	25.9%
SHEAR (kips)	254.0	342.9	110.0	30.6%

Deisgn loads from: CCIsites Doc #StainlessInc., Report #3290 09/11/86

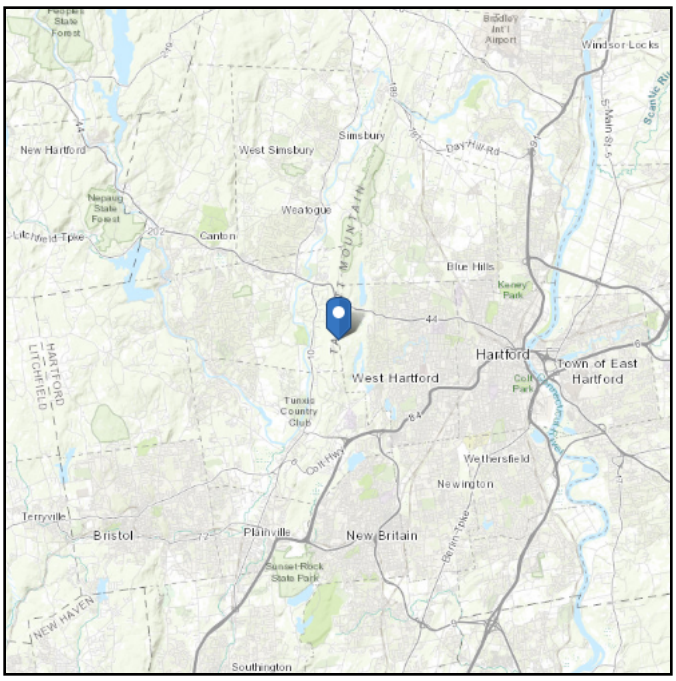
*Design loads were multiplied by 1.35 for comparison as allowed by TIA-222-H, Section 15.6.

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 41.774986
Longitude: -72.800575
Elevation: 0 ft (NAVD 88)



Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Jul 28 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Seismic

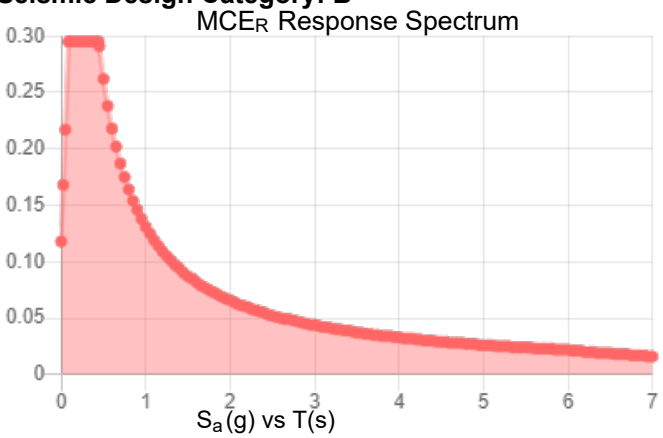
D - Default (see Section 11.4.3)

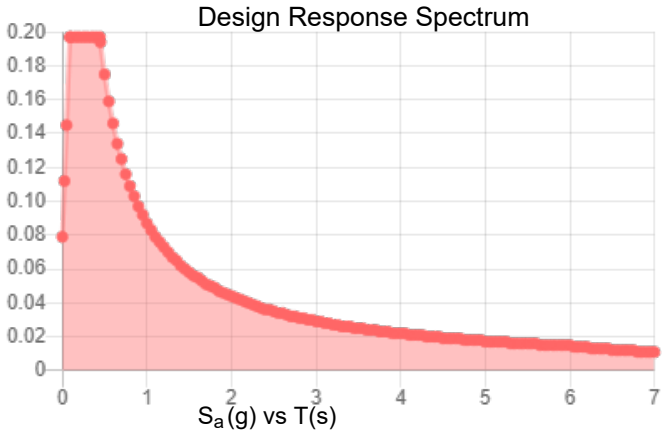
Site Soil Class:

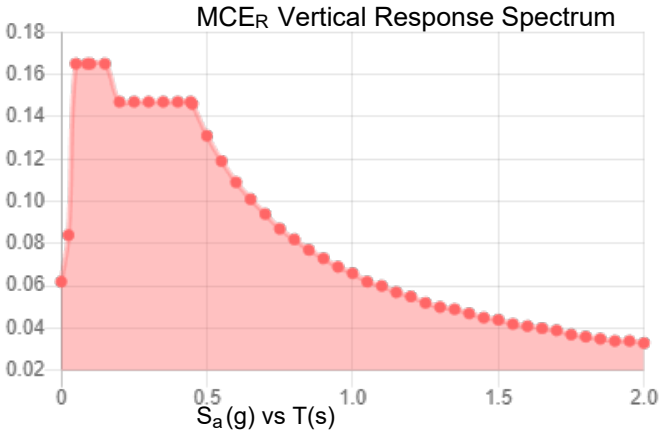
Results:

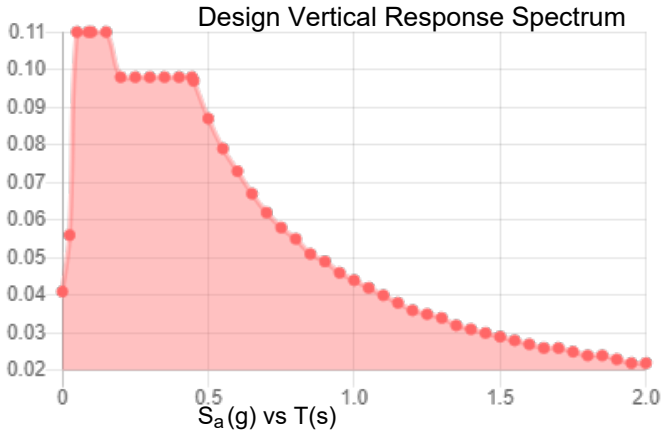
S_S :	0.184	S_{D1} :	0.087
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.099
F_v :	2.4	PGA_M :	0.158
S_{MS} :	0.295	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.197	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Fri Jul 28 2023**

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Fri Jul 28 2023

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

DISH WIRELESS L.L.C. SITE ID:

BOBDL00075A

DISH WIRELESS L.L.C. SITE ADDRESS:

376 DEERCLIFF ROAD
AVON, CT 06001

CONNECTICUT 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:

CODE TYPE	CODE
BUILDING	2022 CT STATE BUILDING CODE/2021 IBC W/ CT AMENDMENTS
MECHANICAL	2022 CT STATE BUILDING CODE/2021 IMC W/ CT AMENDMENTS
ELECTRICAL	2022 CT STATE BUILDING CODE/2020 NEC W/ CT AMENDMENTS

SHEET INDEX

SCOPE OF WORK

THIS IS NOT AN ALL INCLUSIVE LIST. CONTRACTOR SHALL UTILIZE SPECIFIED EQUIPMENT PART OR ENGINEER APPROVED EQUIVALENT. CONTRACTOR SHALL VERIFY ALL NEEDED EQUIPMENT TO PROVIDE A FUNCTIONAL SITE. THE PROJECT GENERALLY CONSISTS OF THE FOLLOWING:

TOWER SCOPE OF WORK:
- INSTALL (1) PROPOSED MICROWAVE ANTENNA
- INSTALL PROPOSED JUMPERS
- INSTALL (1) PROPOSED ODU
- EXISTING OVER VOLTAGE PROTECTION DEVICE (OVP) TO BE UTILIZED BY DISH WIRELESS L.L.C
- INSTALL (1) PROPOSED POWER CABLE
- INSTALL (1) PROPOSED COAX CABLE
- UTILIZED (1) EXISTING ANTENNA MOUNT

GROUND SCOPE OF WORK:
- EXISTING EQUIPMENT CABINET TO BE UTILIZED BY DISH WIRELESS L.L.C

SITE PHOTO

UNDERGROUND SERVICE ALERT CBYD 811
UTILITY NOTIFICATION CENTER OF CONNECTICUT
(800) 922-4455
WWW.CBYD.COM

CALL 2 WORKING DAYS UTILITY NOTIFICATION PRIOR TO CONSTRUCTION

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

11"x17" PLOT WILL BE HALF SCALE UNLESS OTHERWISE NOTED

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE, AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.

SITE INFORMATION

PROPERTY OWNER:	THREE SEVENTY SIX DEERCLIFF
ADDRESS:	1897 BERLIN TPKE BERLIN, CT 06037
TOWER TYPE:	GUY TOWER
TOWER CO SITE ID:	870800
TOWER APP NUMBER:	556618
COUNTY:	HARTFORD
LATITUDE (NAD 83):	41° 46' 29.95" N 41.77498611 N
LONGITUDE (NAD 83):	72° 48' 2.07" W 72.8005749999 W
ZONING JURISDICTION:	CONNECTICUT SITING COUNCIL
ZONING DISTRICT:	RU2A
PARCEL NUMBER:	2090376
OCCUPANCY GROUP:	U
CONSTRUCTION TYPE:	V-B
POWER COMPANY:	CONNECTICUT LIGHT & POWER
TELEPHONE COMPANY:	XFINITY

PROJECT DIRECTORY

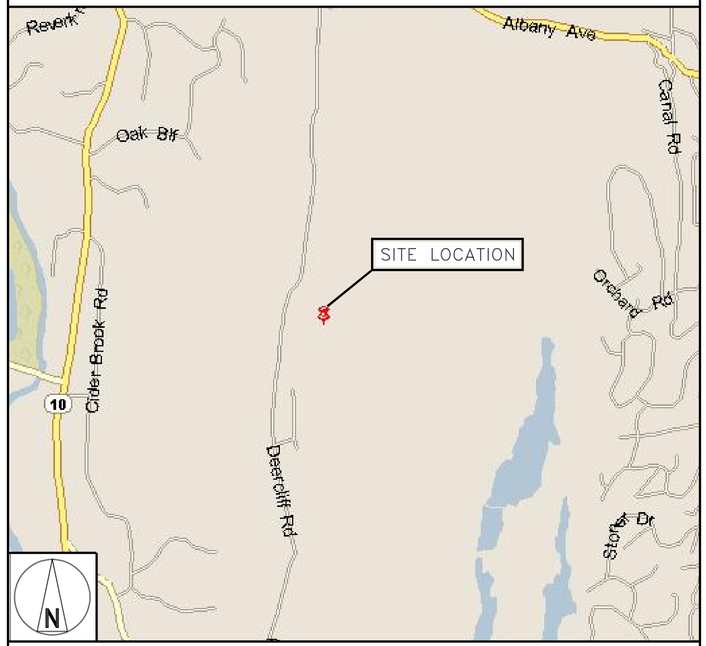
APPLICANT:	DISH WIRELESS L.L.C. 5701 SOUTH SANTA FE DRIVE LITTLETON, CO 80120
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317 (877) 486-9377
SITE DESIGNER:	NB+C ENGINEERING SERVICES, LLC 6095 MARSHALEE DRIVE, SUITE 300 ELKRIDGE, MD 21075 (410) 712-7092
SITE ACQUISITION:	NICHOLAS CURRY NICHOLAS.CURRY@CROWNCASTLE.COM
CONSTRUCTION MANAGER:	JAVIER SOTO JAVIER.SOTO@DISH.COM
RF ENGINEER:	BOSSENER CHARLES BOSSENER.CHARLES@DISH.COM

DIRECTIONS

DIRECTIONS FROM BRADLEY INTERNATIONAL AIRPORT:

DEPART BRADLEY INTERNATIONAL AIRPORT ON TERMINAL RD. ROAD NAME CHANGES TO BRADLEY FIELD CONNECTOR. ROAD NAME CHANGES TO CT-20 [BRADLEY FIELD CONNECTOR]. TAKE RAMP (RIGHT) ONTO I-91 [RICHARD P HORAN MEMORIAL HWY]. AT EXIT 35B, TURN LEFT ONTO RAMP. TURN RIGHT ONTO CT-218 [PUTNAM HWY]. KEEP STRAIGHT ONTO CT-218 [W WOLCOTT AVE]. KEEP STRAIGHT ONTO CT-218 [COTTAGE GROVE RD]. KEEP STRAIGHT ONTO CT-218 [HALL BLVD]. KEEP STRAIGHT ONTO CT-218 [N MAIN ST]. TURN RIGHT ONTO US-44 [ALBANY AVE]. TURN LEFT ONTO DEERCLIFF RD. ARRIVE 376 DEERCLIFF RD, AVON, CT 06001.

VICINITY MAP



NO SCALE

dish wireless™

5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

NB+C™ TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELKRIDGE, MD 21075
(410) 712-7092

STATE OF CONNECTICUT — KRUPAKARAN KOLANDAIVELU — PEN.0028997 — LICENSED PROFESSIONAL ENGINEER

08/28/2023

KRUPAKARAN KOLANDAIVELU, P.E.
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
TT	BRN	TA

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	07/25/2023	ISSUED FOR CONSTRUCTION
1	08/28/2023	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

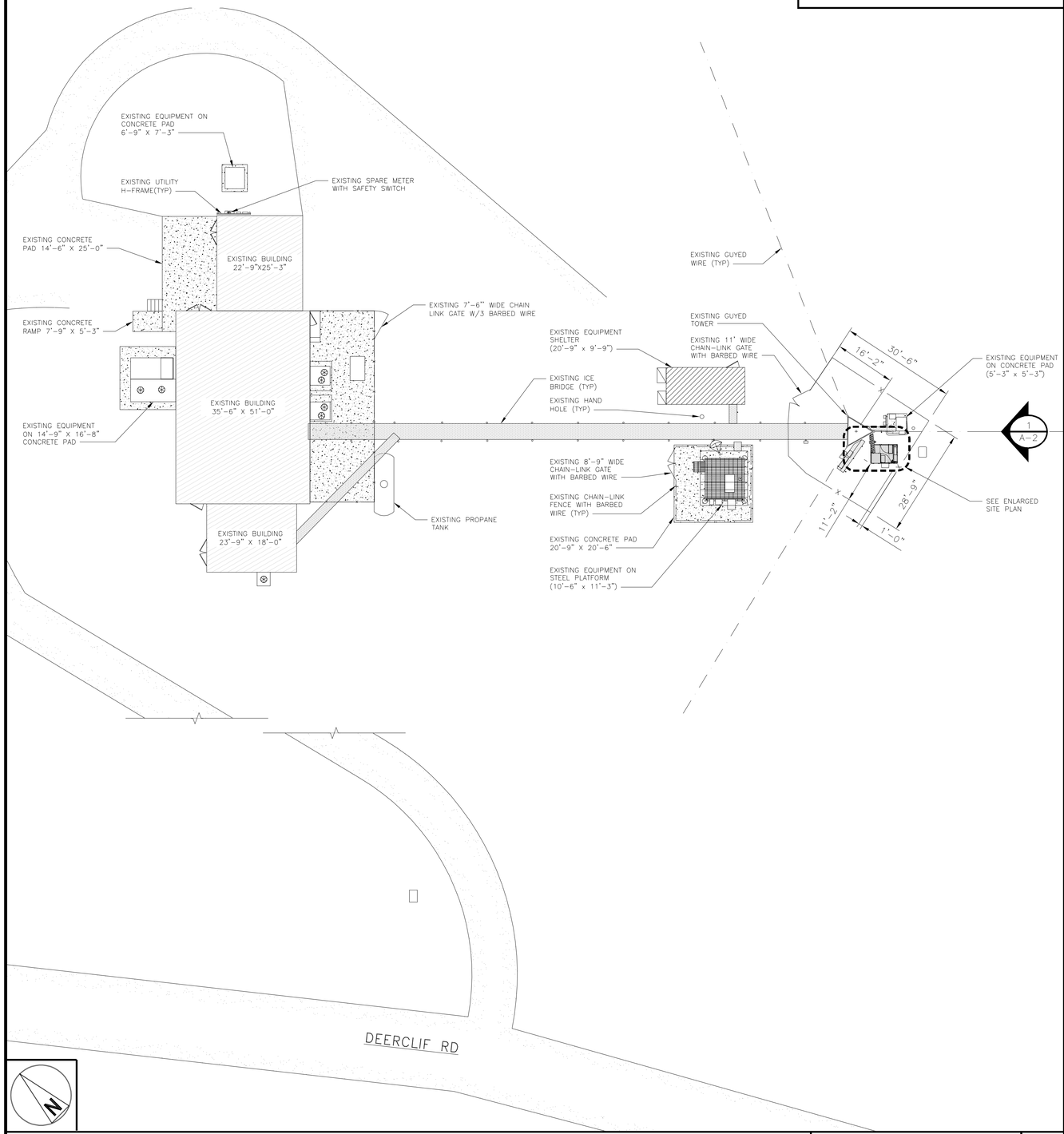
TITLE SHEET

SHEET NUMBER

T-1

NOTES

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



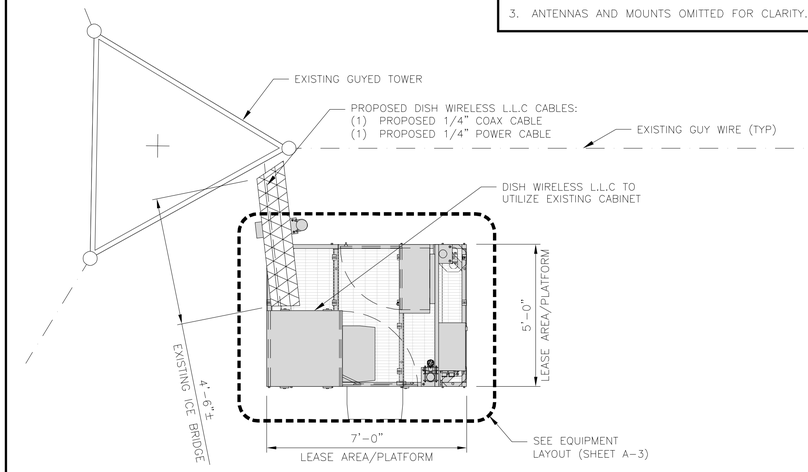
OVERALL SITE PLAN

16' 12' 8' 4' 0 16' 32'
1/16"=1'-0"

1

NOTES

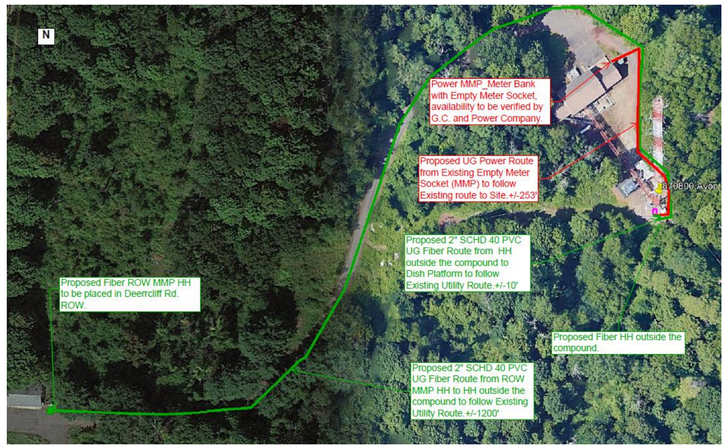
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. CONTRACTOR SHALL MAINTAIN A 10'-0" MINIMUM SEPARATION BETWEEN THE PROPOSED GPS UNIT, TRANSMITTING ANTENNAS AND EXISTING GPS UNITS.
3. ANTENNAS AND MOUNTS OMITTED FOR CLARITY.



ENLARGED SITE PLAN

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

2



NOT USED

3

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5701 SOUTH SANTA FE DRIVE
LITTLETON, CO 80120

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NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELKRIDGE, MD 21075
(410) 712-7092

STATE OF CONNECTICUT · KRUPAKARAN KOLANDAIVELU · PEN.0028997 · LICENSED PROFESSIONAL ENGINEER

08/28/2023

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RFDS REV #: ---

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A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

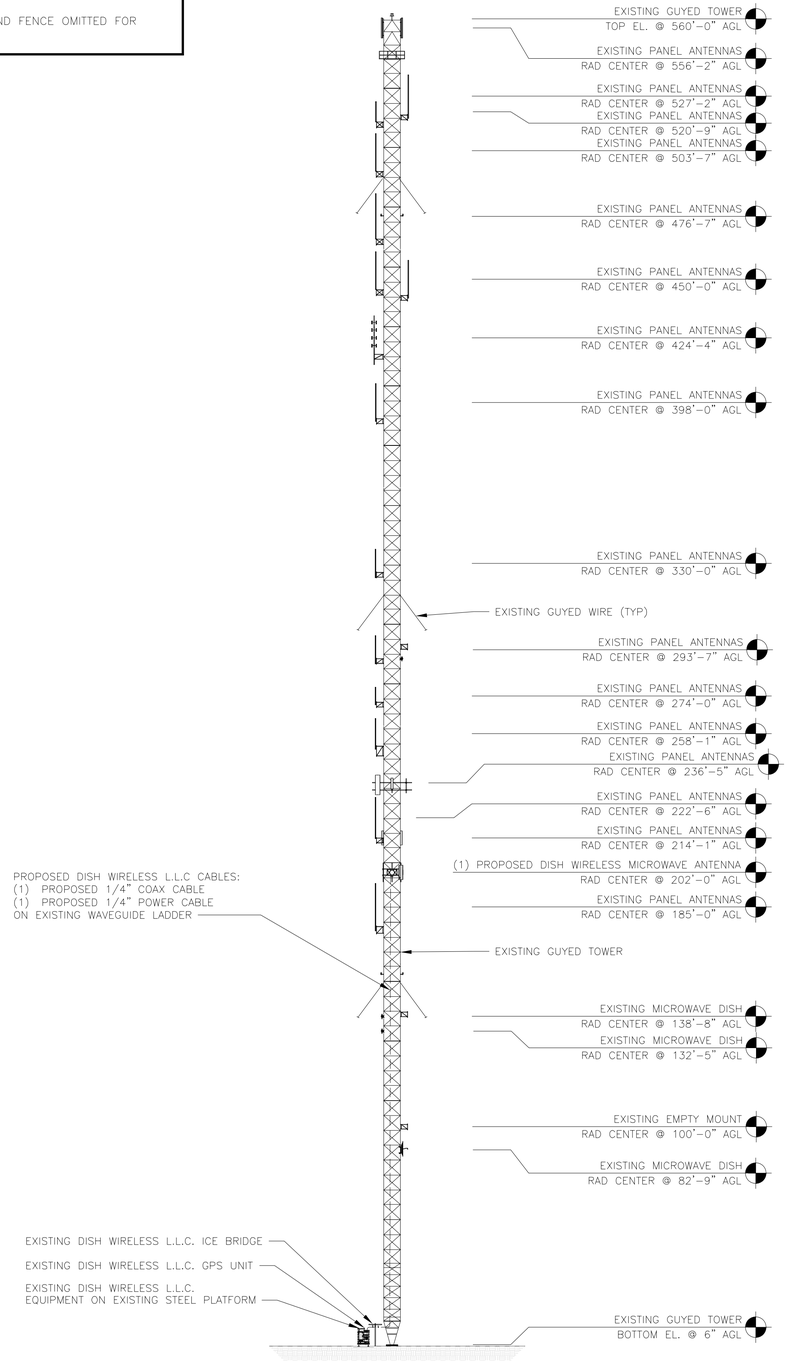
OVERALL AND ENLARGED SITE PLAN

SHEET NUMBER

A-1

NOTES

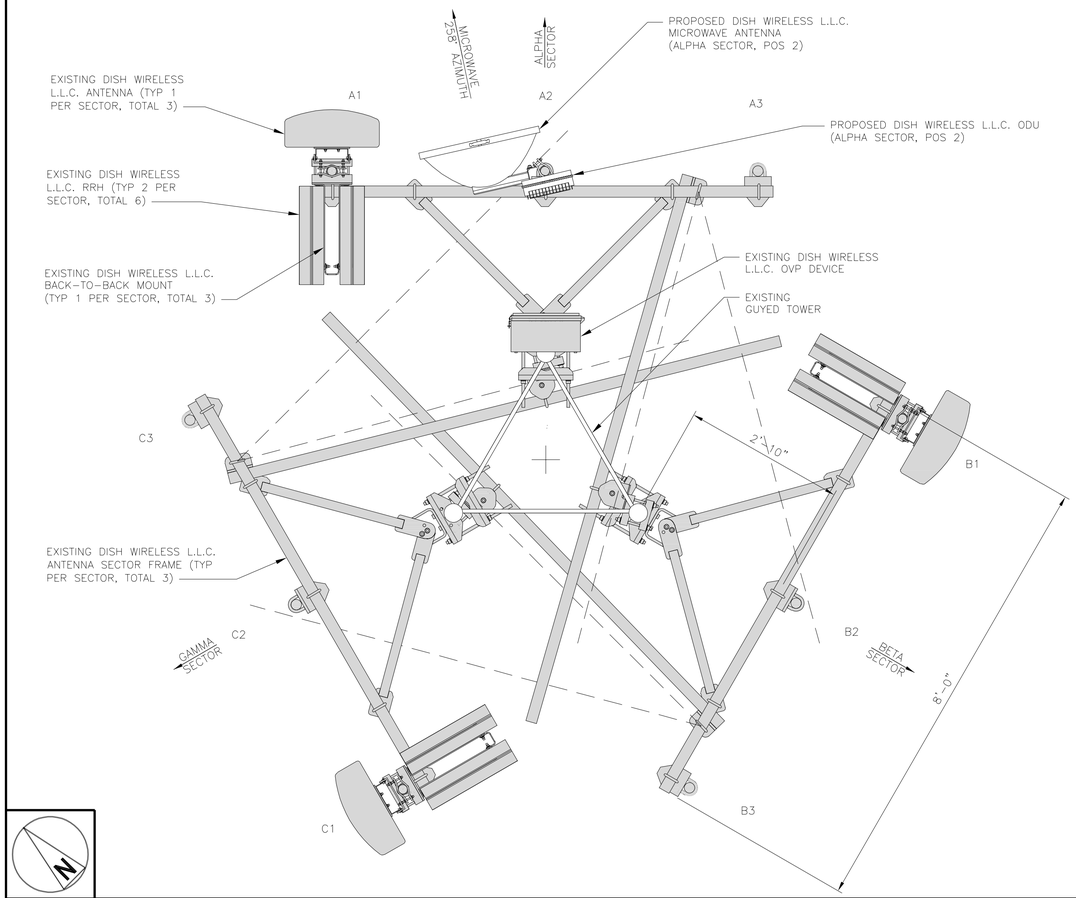
1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
2. ANTENNA AND MW DISH SPECIFICATIONS REFER TO ANTENNA SCHEDULE AND TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS
3. EXISTING EQUIPMENT AND FENCE OMITTED FOR CLARITY.



EXISTING SOUTHEAST ELEVATION

32' 24' 16' 8' 0 32' 64'
1/32"=1'-0"

1



ANTENNA LAYOUT

12" 6" 0 1' 2' 3'
3/4"=1'-0"

2

SECTOR POS.	ANTENNA					TRANSMISSION CABLE	RRH			OVP
	EXISTING OR PROPOSED	MANUFACTURER – MODEL NUMBER	TECH	AZIMUTH	RAD CENTER	FEED LINE TYPE AND LENGTH	MANUFACTURER – MODEL NUMBER	TECH	POS.	MANUFACTURER MODEL
A1	--	--	--	--	--	(1) 1/4" COAX CABLE (238')	CERAGON – IP-50C	5G	A2	RAYCAP – RDIDC-9181 -PF-48
A2	PROPOSED	COMMSCOPE – VHLP2-11W/B	5G	258°	202'-0"	(1) 1/4" POWER CABLE (238')				
A3	--	--	--	--	--					
B1	--	--	--	--	--	SHARED W/ALPHA	--	--	--	SHARED W/ALPHA
B2	--	--	--	--	--					
B3	--	--	--	--	--					
C1	--	--	--	--	--	SHARED W/ALPHA	--	--	--	SHARED W/ALPHA
C2	--	--	--	--	--					
C3	--	--	--	--	--					

NOTES

1. CONTRACTOR TO REFER TO FINAL CONSTRUCTION RFDS FOR ALL RF DETAILS.
2. ANTENNA AND RRH MODELS MAY CHANGE DUE TO EQUIPMENT AVAILABILITY. ALL EQUIPMENT CHANGES MUST BE APPROVED AND REMAIN IN COMPLIANCE WITH THE PROPOSED DESIGN AND STRUCTURAL ANALYSES.

ANTENNA SCHEDULE

NO SCALE

3

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STATE OF CONNECTICUT
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DISH Wireless L.L.C.
PROJECT INFORMATION

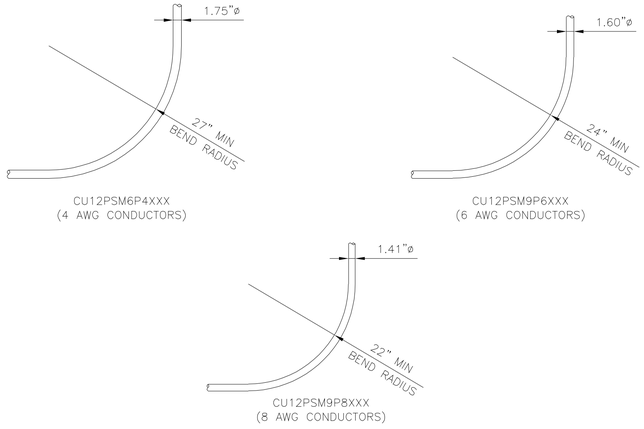
BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

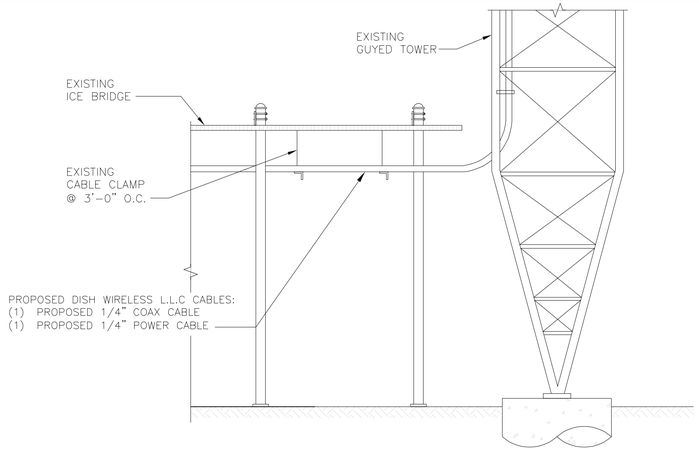
ELEVATION, ANTENNA LAYOUT AND SCHEDULE

SHEET NUMBER

A-2



CABLES UNLIMITED HYBRID CABLE MINIMUM BEND RADIUSES | NO SCALE | 1

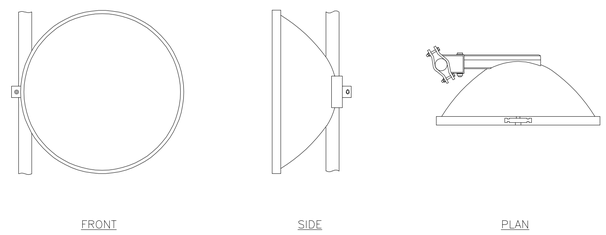


CABLE RUN | NO SCALE | 2

DESC	QTY	
SITE ID #:	BOBDL00107A	
TWR TYPE:	GUY	
HYBRID BEND RADIUS	30"	**The preparer must determine the lengths below.**
RAD CENTER (ft)	202.0	This is the RAD center for the antennas on towers. For a rooftop, this is the total length of all vertical sections of the hybrid.
ICE BRIDGE HEIGHT (ft)	10.0	This is the height of the bridge coverings.
ICE BRIDGE LENGTH (ft)	4.5	This is the length of the total ice bridge coverings, if more than one ice bridge is used or total horizontal lengths of hybrid if this is inside a building.
LENGTH ACROSS PLATFORM (ft)	6.0	This is the length from the cabinet to the first bend up the ice bridge or inside a radio room.
LENGTH FROM TOWER TOP TO OVP (ft)	6.0	This is the horizontal length from the tower to the OVP at the antenna level or the total horizontal lengths of hybrid on a building or large self supporting tower.
VERTICAL LENGTH OF HYBRID INTO TOWER TOP OVP (ft)	3.0	This is the vertical length of hybrid that comes out to the tower top OVP to the beginning of the first bend that is going into the monopole port.
	LENGTH (ft)	
Additional Excess Hybrid to be added (To be determined by preparer)	0	
Total Hybrid Length to Order (Rounded up to nearest whole number)	**238**	

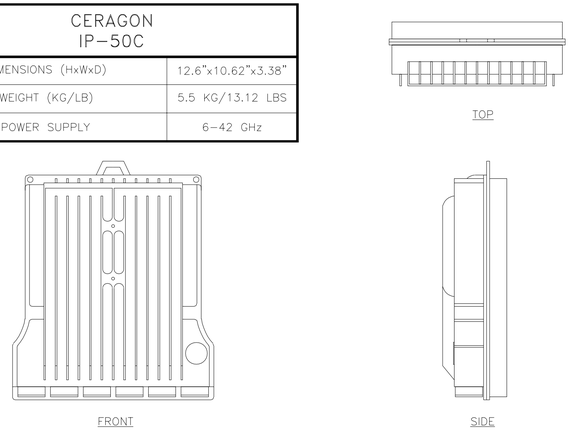
CABLE CALCULATOR | NO SCALE | 3

COMMSCOPE VHLP2-11W/B	
DIMENSIONS (HxWxD)	25.9"x25.9"x8.9"
TOTAL WEIGHT	14.771 LBS



MICROWAVE ANTENNA DETAIL | NO SCALE | 4

CERAGON IP-50C	
DIMENSIONS (HxWxD)	12.6"x10.62"x3.38"
WEIGHT (KG/LB)	5.5 KG/13.12 LBS
POWER SUPPLY	6-42 GHz



RRH DETAIL | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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08/28/2023

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DRAWN BY:	CHECKED BY:	APPROVED BY:
TT	BRN	TA

RFDS REV #: ---

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A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

B0BDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

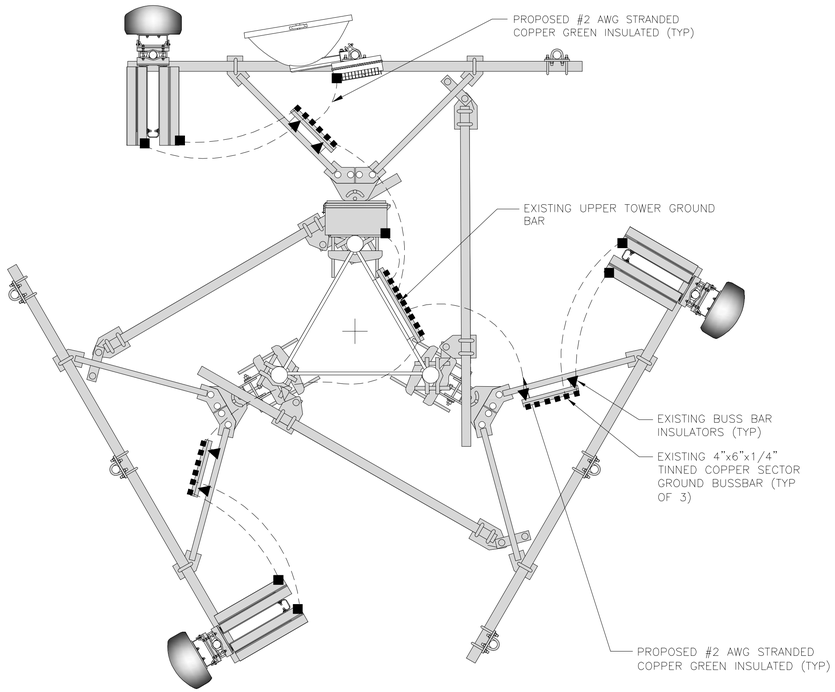
EQUIPMENT DETAILS

SHEET NUMBER

A-3

NOTES

1. ANTENNAS AND OVP SHOWN ARE GENERIC AND NOT REFERENCING TO A SPECIFIC MANUFACTURER. THIS LAYOUT IS FOR REFERENCE ONLY



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 1

EXOTHERMIC CONNECTION
MECHANICAL CONNECTION
GROUND BUS BAR
GROUND ROD
TEST GROUND ROD WITH INSPECTION SLEEVE
#6 AWG STRANDED & INSULATED
#2 AWG SOLID COPPER TINNED
BUSS BAR INSULATOR

GROUNDING LEGEND

1. GROUNDING IS SHOWN DIAGRAMMATICALLY ONLY.
2. CONTRACTOR SHALL GROUND ALL EQUIPMENT AS A COMPLETE SYSTEM. GROUNDING SHALL BE IN COMPLIANCE WITH NEC SECTION 250 AND DISH WIRELESS L.L.C. GROUNDING AND BONDING REQUIREMENTS AND MANUFACTURER'S SPECIFICATIONS.
3. ALL GROUND CONDUCTORS SHALL BE COPPER; NO ALUMINUM CONDUCTORS SHALL BE USED.

GROUNDING KEY NOTES

(A) EXTERIOR GROUND RING: #2 AWG SOLID COPPER, BURIED AT A DEPTH OF AT LEAST 30 INCHES BELOW GRADE, OR 6 INCHES BELOW THE FROST LINE AND APPROXIMATELY 24 INCHES FROM THE EXTERIOR WALL OR FOOTING.

(B) TOWER GROUND RING: THE GROUND RING SYSTEM SHALL BE INSTALLED AROUND AN ANTENNA TOWER'S LEGS, AND/OR GUY ANCHORS. WHERE SEPARATE SYSTEMS HAVE BEEN PROVIDED FOR THE TOWER AND THE BUILDING, AT LEAST TWO BONDS SHALL BE MADE BETWEEN THE TOWER RING GROUND SYSTEM AND THE BUILDING RING GROUND SYSTEM USING MINIMUM #2 AWG SOLID COPPER CONDUCTORS.

(C) INTERIOR GROUND RING: #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTOR EXTENDED AROUND THE PERIMETER OF THE EQUIPMENT AREA. ALL NON-TELECOMMUNICATIONS RELATED METALLIC OBJECTS FOUND WITHIN A SITE SHALL BE GROUNDED TO THE INTERIOR GROUND RING WITH #6 AWG STRANDED GREEN INSULATED CONDUCTOR.

(D) BOND TO INTERIOR GROUND RING: #2 AWG SOLID TINNED COPPER WIRE PRIMARY BONDS SHALL BE PROVIDED AT LEAST AT FOUR POINTS ON THE INTERIOR GROUND RING, LOCATED AT THE CORNERS OF THE BUILDING.

(E) GROUND ROD: UL LISTED COPPER CLAD STEEL. MINIMUM 1/2" DIAMETER BY EIGHT FEET LONG. GROUND RODS SHALL BE INSTALLED WITH INSPECTION SLEEVES. GROUND RODS SHALL BE DRIVEN TO THE DEPTH OF GROUND RING CONDUCTOR.

(F) CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 AWG UNLESS NOTED OTHERWISE STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUCTORS.

(G) HATCH PLATE GROUND BAR: BOND TO THE INTERIOR GROUND RING WITH TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS. WHEN A HATCH-PLATE AND A CELL REFERENCE GROUND BAR ARE BOTH PRESENT, THE CRGB MUST BE CONNECTED TO THE HATCH-PLATE AND TO THE INTERIOR GROUND RING USING (2) TWO #2 AWG STRANDED GREEN INSULATED COPPER CONDUCTORS EACH.

(H) EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE.

(I) TELCO GROUND BAR: BOND TO BOTH CELL REFERENCE GROUND BAR OR EXTERIOR GROUND RING.

(J) FRAME BONDING: THE BONDING POINT FOR TELECOM EQUIPMENT FRAMES SHALL BE THE GROUND BUS THAT IS NOT ISOLATED FROM THE EQUIPMENTS METAL FRAMEWORK.

(K) INTERIOR UNIT BONDS: METAL FRAMES, CABINETS AND INDIVIDUAL METALLIC UNITS LOCATED WITH THE AREA OF THE INTERIOR GROUND RING REQUIRE A #6 AWG STRANDED GREEN INSULATED COPPER BOND TO THE INTERIOR GROUND RING.

(L) FENCE AND GATE GROUNDING: METAL FENCES WITHIN 7 FEET OF THE EXTERIOR GROUND RING OR OBJECTS BONDED TO THE EXTERIOR GROUND RING SHALL BE BONDED TO THE GROUND RING WITH A #2 AWG SOLID TINNED COPPER CONDUCTOR AT AN INTERVAL NOT EXCEEDING 25 FEET. BONDS SHALL BE MADE AT EACH GATE POST AND ACROSS GATE OPENINGS.

(M) EXTERIOR UNIT BONDS: METALLIC OBJECTS, EXTERNAL TO OR MOUNTED TO THE BUILDING, SHALL BE BONDED TO THE EXTERIOR GROUND RING. USING #2 TINNED SOLID COPPER WIRE

(N) ICE BRIDGE SUPPORTS: EACH ICE BRIDGE LEG SHALL BE BONDED TO THE GROUND RING WITH #2 AWG BARE TINNED COPPER CONDUCTOR. PROVIDE EXOTHERMIC WELDS AT BOTH THE ICE BRIDGE LEG AND BURIED GROUND RING.

(O) DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICE CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH A MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR

(P) TOWER TOP COLLECTOR BUSS BAR IS TO BE MECHANICALLY BONDED TO TOWER STEEL.

REFER TO DISH WIRELESS L.L.C. GROUNDING NOTES.

GROUNDING KEY NOTES | NO SCALE | 2

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DRAWN BY:	CHECKED BY:	APPROVED BY:
BLJ	BLJ	JP

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
A	5/21/21	ISSUED FOR REVIEW
0	6/30/21	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

83041.008.01

DISH WIRELESS L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

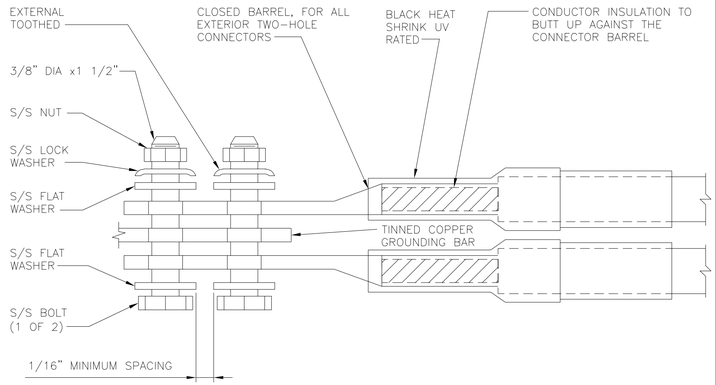
GROUNDING PLANS AND NOTES

SHEET NUMBER

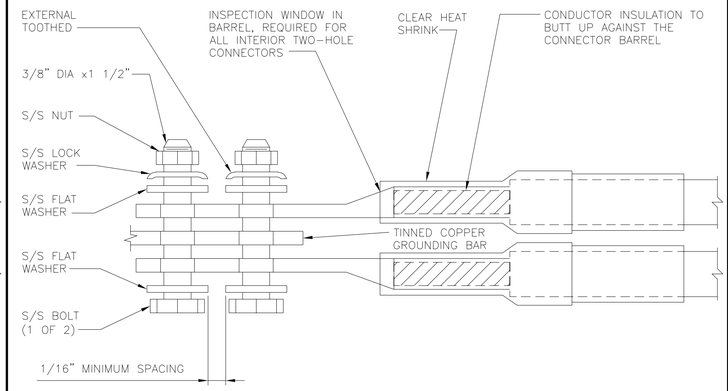
G-1

1. EXOTHERMIC WELD (2) TWO, #2 AWG BARE TINNED SOLID COPPER CONDUCTORS TO GROUND BAR, ROUTE CONDUCTORS TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL EXTERIOR GROUNDING HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING LOCK WASHERS, COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MATING.
4. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
5. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE.
6. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ADDITIONAL GROUND BAR AS REQUIRED.
8. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).

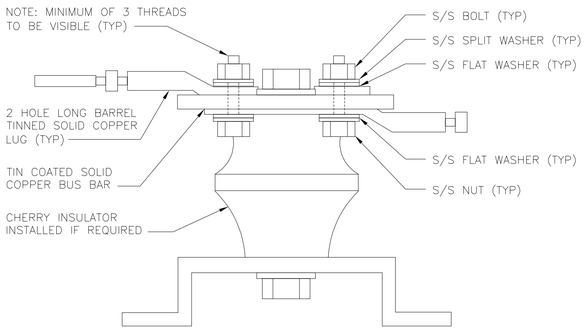
TYPICAL GROUNDING NOTES | NO SCALE | 1



TYPICAL EXTERIOR TWO HOLE LUG | NO SCALE | 2



TYPICAL INTERIOR TWO HOLE LUG | NO SCALE | 3



LUG DETAIL | NO SCALE | 4

NOT USED | NO SCALE | 5

NOT USED | NO SCALE | 6

NOT USED | NO SCALE | 7

NOT USED | NO SCALE | 8

NOT USED | NO SCALE | 9

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KRUPAKARAN KOLANDAIVELU
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LICENSED PROFESSIONAL ENGINEER

08/28/2023

KRUPAKARAN KOLANDAIVELU, P.E.
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CONSTRUCTION DOCUMENTS

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REV	DATE	DESCRIPTION
A	07/25/2023	ISSUED FOR CONSTRUCTION
0	08/28/2023	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

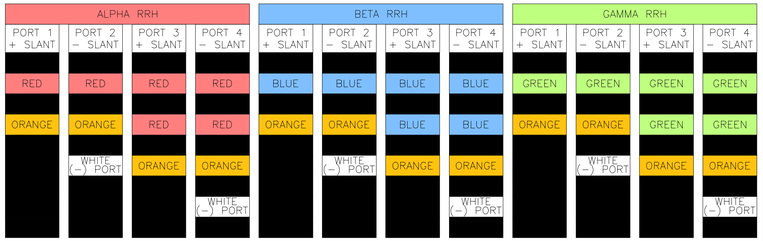
G-2

HYBRID/DISCREET CABLES

3/4" TAPE WIDTHS WITH 3/4" SPACING

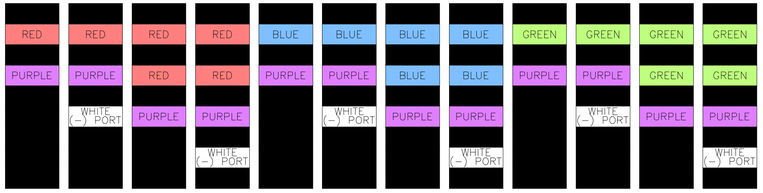
LOW-BAND RRH
(600 MHz N71 BASEBAND) +
(850 MHz N26 BAND) +
(700 MHz N29 BAND) – OPTIONAL PER MARKET

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BAND)



MID-BAND RRH
(AWS BANDS N66+N70)

ADD FREQUENCY COLOR TO SECTOR BAND
(CBRS WILL USE YELLOW BANDS)



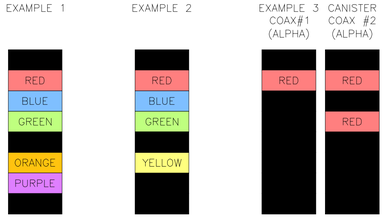
HYBRID/DISCREET CABLES

INCLUDE SECTOR BANDS BEING SUPPORTED ALONG WITH FREQUENCY BANDS.

EXAMPLE 1 – HYBRID, OR DISCREET, SUPPORTS ALL SECTORS, BOTH LOW-BANDS AND MID-BANDS.

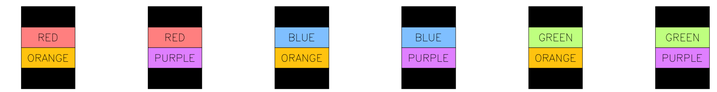
EXAMPLE 2 – HYBRID, OR DISCREET, SUPPORTS CBRS ONLY, ALL SECTORS.

EXAMPLE 3 – MAIN COAX WITH GROUND MOUNTED RRHs.



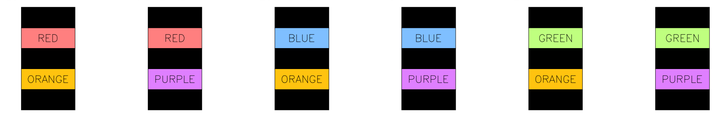
FIBER JUMPERS TO RRHs

LOW-BAND HHR FIBER CABLES HAVE SECTOR STRIPE ONLY.



POWER CABLES TO RRHs

LOW-BAND RRH POWER CABLES HAVE SECTOR STRIPE ONLY



RET MOTORS AT ANTENNAS

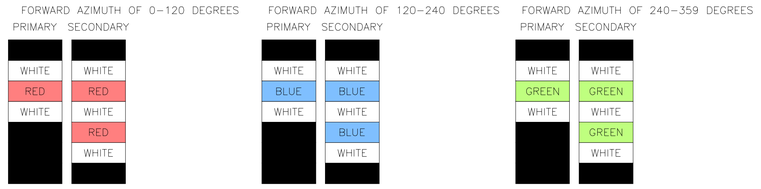
RET CONTROL IS HANDLED BY THE MID-BAND RRH WHEN ONE SET OF RET PORTS EXIST ON ANTENNA.

SEPARATE RET CABLES ARE USED WHEN ANTENNA PORTS PROVIDE INPUTS FOR BOTH LOW AND MID BANDS.

MICROWAVE RADIO LINKS

LINKS WILL HAVE A 1.5–2 INCH WHITE WRAP WITH THE AZIMUTH COLOR OVERLAPPING IN THE MIDDLE.
ADD ADDITIONAL SECTOR COLOR BANDS FOR EACH ADDITIONAL MW RADIO.

MICROWAVE CABLES WILL REQUIRE P-TOUCH LABELS INSIDE THE CABINET TO IDENTIFY THE LOCAL AND REMOTE SITE ID's.



LOW BANDS (N71+N26) OPTIONAL – (N29): ORANGE

AWS (N66+N70+H-BLOCK): PURPLE

CBRS TECH (3 GHz): YELLOW

NEGATIVE SLANT PORT ON ANT/RRH: WHITE

ALPHA SECTOR: RED

BETA SECTOR: BLUE

GAMMA SECTOR: GREEN

COLOR IDENTIFIER | 2

NOT USED | 3

RF CABLE COLOR CODES | 1

NOT USED | 4

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08/28/2023

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LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
TT	BRN	TA

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CONSTRUCTION DOCUMENTS

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A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

RF
CABLE COLOR CODES

SHEET NUMBER

RF-1

LEGEND

EXOTHERMIC CONNECTION

MECHANICAL CONNECTION

BUSS BAR INSULATOR

CHEMICAL ELECTROLYTIC GROUNDING SYSTEM

TEST CHEMICAL ELECTROLYTIC GROUNDING SYSTEM — T

EXOTHERMIC WITH INSPECTION SLEEVE

GROUNDING BAR

GROUND ROD

TEST GROUND ROD WITH INSPECTION SLEEVE — T

SINGLE POLE SWITCH

DUPLEX RECEPTACLE

DUPLEX GFCI RECEPTACLE — GFCI

FLUORESCENT LIGHTING FIXTURE
(2) TWO LAMPS 48–T8 — F

SMOKE DETECTION (DC) — SD

EMERGENCY LIGHTING (DC)

SECURITY LIGHT W/PHOTOCELL LITHONIA ALXW
LED–1–25A400/51K–SR4–120–PE–DDBTXD

CHAIN LINK FENCE — x — x — x — x

WOOD/WROUGHT IRON FENCE

WALL STRUCTURE

LEASE AREA

PROPERTY LINE (PL)

SETBACKS

ICE BRIDGE

CABLE TRAY

WATER LINE — W — W — W — W — W

UNDERGROUND POWER — UGP — UGP — UGP — UGP — UGP

UNDERGROUND TELCO — UGT — UGT — UGT — UGT — UGT

OVERHEAD POWER — OHP — OHP — OHP — OHP

OVERHEAD TELCO — OHT — OHT — OHT — OHT

UNDERGROUND TELCO/POWER — UGT/P — UGT/P — UGT/P — UGT/P

ABOVE GROUND POWER — AGP — AGP — AGP — AGP — AGP

ABOVE GROUND TELCO — AGT — AGT — AGT — AGT — AGT

ABOVE GROUND TELCO/POWER — AGT/P — AGT/P — AGT/P — AGT/P

WORKPOINT — W.P.

SECTION REFERENCE — XX / X–X

DETAIL REFERENCE — XX / X–X

ABBREVIATIONS

AB	ANCHOR BOLT
ABV	ABOVE
AC	ALTERNATING CURRENT
ADDL	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GROUND LEVEL
AIC	AMPERAGE INTERRUPTION CAPACITY
ALUM	ALUMINUM
ALT	ALTERNATE
ANT	ANTENNA
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BTC	BARE TINNED COPPER CONDUCTOR
BOF	BOTTOM OF FOOTING
CAB	CABINET
CANT	CANTILEVERED
CHG	CHARGING
CLG	CEILING
CLR	CLEAR
COL	COLUMN
COMM	COMMON
CONC	CONCRETE
CONSTR	CONSTRUCTION
DBL	DOUBLE
DC	DIRECT CURRENT
DEPT	DEPARTMENT
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
DWL	DOWEL
EA	EACH
EC	ELECTRICAL CONDUCTOR
EL.	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENG	ENGINEER
EQ	EQUAL
EXP	EXPANSION
EXT	EXTERIOR
EW	EACH WAY
FAB	FABRICATION
FF	FINISH FLOOR
FG	FINISH GRADE
FIF	FACILITY INTERFACE FRAME
FIN	FINISH(ED)
FLR	FLOOR
FDN	FOUNDATION
FOC	FACE OF CONCRETE
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FOW	FACE OF WALL
FS	FINISH SURFACE
FT	FOOT
FTG	FOOTING
GA	GAUGE
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GLB	GLUE LAMINATED BEAM
GLV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE
HDG	HOT DIPPED GALVANIZED
HDR	HEADER
HGR	HANGER
HVAC	HEAT/VENTILATION/AIR CONDITIONING
HT	HEIGHT
IGR	INTERIOR GROUND RING
IN	INCH
INT	INTERIOR
LB(S)	POUND(S)
LF	LINEAR FEET
LTE	LONG TERM EVOLUTION
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
MTS	MANUAL TRANSFER SWITCH
MW	MICROWAVE
NEC	NATIONAL ELECTRIC CODE
NM	NEWTON METERS
NO.	NUMBER
#	NUMBER
NTS	NOT TO SCALE
OC	ON–CENTER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
OPNG	OPENING
P/C	PRECAST CONCRETE
PCS	PERSONAL COMMUNICATION SERVICES
PCU	PRIMARY CONTROL UNIT
PRC	PRIMARY RADIO CABINET
PP	POLARIZING PRESERVING
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	PRESSURE TREATED
PWR	POWER CABINET
QTY	QUANTITY
RAD	RADIUS
RECT	RECTIFIER
REF	REFERENCE
REINF	REINFORCEMENT
REQ'D	REQUIRED
RET	REMOTE ELECTRIC TILT
RF	RADIO FREQUENCY
RMC	RIGID METALLIC CONDUIT
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
RWY	RACEWAY
SCH	SCHEDULE
SHT	SHEET
SIAD	SMART INTEGRATED ACCESS DEVICE
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
TEMP	TEMPORARY
THK	THICKNESS
TMA	TOWER MOUNTED AMPLIFIER
TN	TOE NAIL
TOA	TOP OF ANTENNA
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOP	TOP OF PLATE (PARAPET)
TOS	TOP OF STEEL
TOW	TOP OF WALL
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
UPS	UNITERRUPTIBLE POWER SYSTEM (DC POWER PLANT)
VIF	VERIFIED IN FIELD
W	WIDE
W/	WITH
WD	WOOD
WP	WEATHERPROOF
WT	WEIGHT

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STATE OF CONNECTICUT — KRUPAKARAN KOLANDAIVELU — PEN.0028997 — LICENSED PROFESSIONAL ENGINEER

08/28/2023

KRUPAKARAN KOLANDAIVELU, P.E.
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
LICENSE #PEN.0028997

DRAWN BY:	CHECKED BY:	APPROVED BY:
TT	BRN	TA

RFDS REV #: ---

CONSTRUCTION DOCUMENTS

SUBMITTALS

REV	DATE	DESCRIPTION
0	07/25/2023	ISSUED FOR CONSTRUCTION
1	08/28/2023	ISSUED FOR CONSTRUCTION

A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

LEGEND AND ABBREVIATIONS

SHEET NUMBER

GN-1

SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED – NO WORK SHALL COMMENCE PRIOR TO CONTRACTOR RECEIVING A WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE DISH WIRELESS L.L.C. AND TOWER OWNER NOC & THE DISH WIRELESS L.L.C. AND TOWER OWNER CONSTRUCTION MANAGER.

2. "LOOK UP" – DISH WIRELESS L.L.C. AND TOWER OWNER SAFETY CLIMB REQUIREMENT:

THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR DISH WIRELESS L.L.C. AND DISH WIRELESS L.L.C. AND TOWER OWNER POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.

4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND DISH WIRELESS L.L.C. AND TOWER OWNER STANDARDS, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).

5. ALL SITE WORK TO COMPLY WITH DISH WIRELESS L.L.C. AND TOWER OWNER INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON DISH WIRELESS L.L.C. AND TOWER OWNER TOWER SITE AND LATEST VERSION OF ANSI/TIA-1019-A-2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."

6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY DISH WIRELESS L.L.C. AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

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

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

9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES INCLUDING PRIVATE LOCATES SERVICES PRIOR TO THE START OF CONSTRUCTION.

10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER AUTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.

11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND DISH PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.

12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF DISH WIRELESS L.L.C. AND TOWER OWNER, AND/OR LOCAL UTILITIES.

14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.

15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.

16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.

18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

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

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

21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1.FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR:GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION

CARRIER:DISH WIRELESS L.L.C.

TOWER OWNER:TOWER OWNER

2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.

3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.

4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.

5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.

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

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

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

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

10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND TOWER OWNER PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION, BEFORE SUBMITTING BIDS, TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.

12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF DISH WIRELESS L.L.C. AND TOWER OWNER

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

14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

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STATE OF CONNECTICUT
KRUPAKARAN KOLANDAIVELU
PEN.0028997
LICENSED PROFESSIONAL ENGINEER

08/28/2023

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A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-2

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.

2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.

3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.

4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.

5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:

#4 BARS AND SMALLER 40 ksi

#5 BARS AND LARGER 60 ksi

6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

- CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"
- CONCRETE EXPOSED TO EARTH OR WEATHER:
- #6 BARS AND LARGER 2"
- #5 BARS AND SMALLER 1-1/2"
- CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
- SLAB AND WALLS 3/4"
- BEAMS AND COLUMNS 1-1/2"

7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.

2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.

3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.

4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.

4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.

4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.

5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.

6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).

7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.

8. TIE WRAPS ARE NOT ALLOWED.

9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.

12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).

14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.

18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.

20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.

21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).

22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).

23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3 (OR BETTER) FOR EXTERIOR LOCATIONS.

25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.

27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR DISH WIRELESS L.L.C. AND TOWER OWNER BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.

29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "DISH WIRELESS L.L.C.".

30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

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08/28/2023

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DRAWN BY:	CHECKED BY:	APPROVED BY:
TT	BRN	TA

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A&E PROJECT NUMBER

100569

DISH Wireless L.L.C.
PROJECT INFORMATION

BOBDL00075A
376 DEERCLIFF ROAD
AVON, CT 06001

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-3

GROUNDING NOTES:

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

2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.

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

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

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

7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.

8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.

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

10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.

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

12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.

13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.

14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.

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

18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.

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

20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY). DO NOT ATTACH GROUNDING TO FIRE SPRINKLER SYSTEM PIPES.

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SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-4