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

November 7, 2022

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

RE: **Notice of Exempt Modification for ATT**
Crown #842857; ATT Site ID CTV5069
66 Sugar Hollow Road, Danbury, CT 06810
Latitude: 41° 20′ 10.00″ / Longitude: -73° 28′ 14.40″

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 108-foot level of the existing 106-foot monopole tower at 66 Sugar Hollow Road, Danbury, CT. The tower is owned by Crown Castle USA Inc. and the property is owned by Sugar Hollow Holding LLC. AT&T now intends to replace nine (9) antennas and to install six (6) new antennas and ancillary equipment at the 108-foot level. 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:

Install Mount Modifications per Mount Analysis
(3) CCI-TPA65R-BU6DA-K Antennas
(3) CCI-OPA65R-BU6DA Antennas
(3) Ericsson-4478 B14 RRUs
(3) Ericsson-8843 B2/B66A RRUs
(1) Ericsson-4449 B5/B12 RRU
(1) RAYCAP-DC9-48-60-24-8C-EV Squid
(1) 24-Pair Fiber Cable (3/8")
(1) 6AWG DC Cable (7/8")
(6) Dual Radio Mounts
(6) Y-Cables for dual band radios

Remove:

(6) POWERWAVE-7770.00.850.02 Antennas
(3) POWERWAVE-P65-16-XLH-RR Antennas
(3) ERICSSON-RRUS-11 B12 RRUs
(6) POWERWAVE-LGP21401
(3) POWERWAVE-TT19-08BP111-001 TMAs
(1) RAYCAP-DC6-48-60-18 Squid
(6) COAX CABLES (1-5/8") & (1) 12-Pair Fiber Cable (3/8")

Ground:

Install New:
(1) XMU

Remove:
(3) ERICSSON-4415 B25 RRUs

The Connecticut Siting Council's telecommunications database states that the Council approved the tower on March 28, 2001, however, after a diligent search of the available online records, a copy of said decision was not easily available.

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 Mayor Dean Esposito, for the municipality, Sharon Calitro, Planning Director, Sugar Hollow Holding LLC c/o Lucille Peatt is 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, ATT 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:

Mayor Dean Esposito
City of Danbury
155 Deer Hill Avenue
Danbury, CT 06810
203-797-4511

Sharon Calitro, Planning Director
City of Danbury
155 Deer Hill Avenue
Danbury, CT 06810
203-797-4525

Sugar Hollow Holding LLC
c/o Lucille Peatt
202-3 Mamanasco Road
Ridgefield, CT 06877
561-743-0114

Crown Castle, Tower Owner

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 770352546327: Your package has been delivered
Date: Tuesday, November 8, 2022 9:34:55 AM

Hi. Your package was delivered Tue, 11/08/2022 at 9:28am.

Delivered to 155 DEER HILL AVE, DANBURY, CT 06810
Received by J.JOHN

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 770352546327

FROM Domenica Tatasciore
1800 West Park Drive

	Suite 200 WESTBOROUGH, MA, US, 01581
TO	City of Danbury Mayor Dean Esposito 155 Deer Hill Avenue DANBURY, CT, US, 06810
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 11/07/2022 08:35 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	DANBURY, CT, US, 06810
SPECIAL HANDLING	Deliver Weekday
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 770352559213: Your package has been delivered
Date: Tuesday, November 8, 2022 9:34:27 AM

Hi. Your package was delivered Tue, 11/08/2022 at 9:26am.

Delivered to 155 DEER HILL AVE, DANBURY, CT 06810
Received by M.MICHELLE

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 770352559213

FROM Domenica Tatasciore
1800 West Park Drive

	Suite 200 WESTBOROUGH, MA, US, 01581
TO	City of Danbury Sharon Calitro, Planning Director 155 Deer Hill Avenue DANBURY, CT, US, 06810
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 11/07/2022 08:35 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	DANBURY, CT, US, 06810
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 770352582895: Your package has been delivered
Date: Tuesday, November 8, 2022 9:52:38 AM

Hi. Your package was delivered Tue, 11/08/2022 at 9:46am.

Delivered to 202 MAMANASCO RD 3, RIDGEFIELD, CT 06877

OBTAIN PROOF OF DELIVERY

Delivery picture not showing? View in browser.

TRACKING NUMBER	770352582895
FROM	Domenica Tatasciore 1800 West Park Drive Suite 200 WESTBOROUGH, MA, US, 01581
TO	Sugar Hollow Holding LLC Lucille Peatt 202-3 Mamanasco Road RIDGEFIELD, CT, US, 06877
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 11/07/2022 08:35 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	RIDGEFIELD, CT, US, 06877
SPECIAL HANDLING	Deliver Weekday Residential Delivery
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.

DANBURY • CT

ASSESSOR'S OFFICE

Information on the Property Records for the Municipality of Danbury was last updated on 10/24/2022.

Property Summary Information

Parcel Data And Values | Building | Outbuildings | Sales | Permits

Parcel Information

Location:	66 SUGAR HOLLOW RD	Property Use:	Industrial	Primary Use:	Office Warehouse
Unique ID:	G25006	Map Block Lot:	G25 6	Acres:	7.7000
490 Acres:	0.00	Zone:	LCI4	Volume / Page:	0949/0773
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	Assessed Value
Land	2,616,700	1,831,700
Buildings	19,700	13,800

	Appraised Value	Assessed Value
Detached Outbuildings	1,200	800
Total	2,637,600	1,846,300

Owner's Information

Owner's Data

STATE OF CONNECTICUT
210 CAPITOL AVE STE 1
HARTFORD, CT 06106

Back To Search | Save Field Card | Print View

66 Sugar Hollow Road

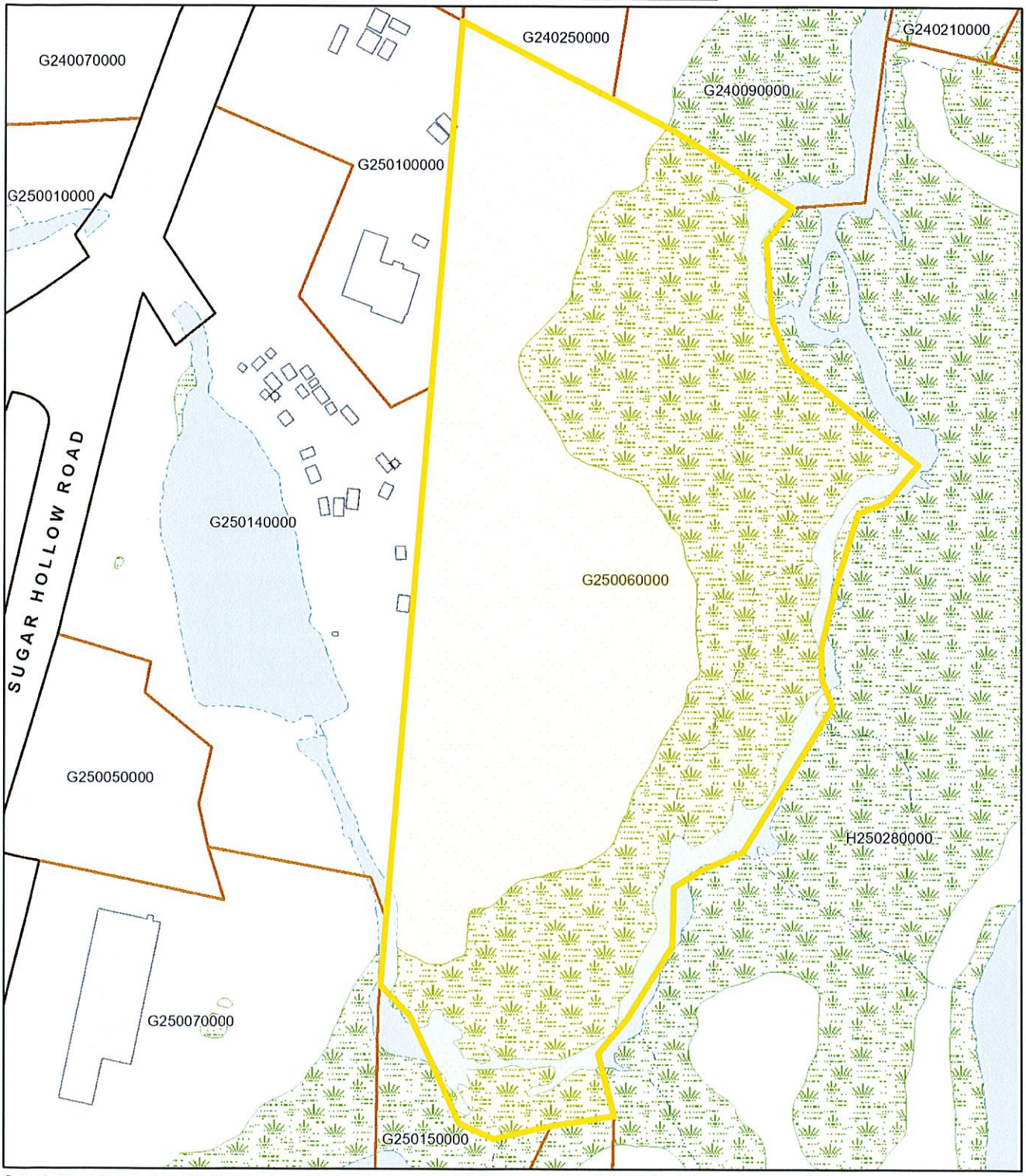
Danbury, CT

1 inch = 141 Feet

0 141 282 424

October 24, 2022

CAI Technologies
Precision Mapping Geospatial Solutions
www.cai-tech.com



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

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

Site Name:	BENNETT POND
Crown Castle Site#	842857
Site ID:	CTV5069
Project Name:	LTE 4C
Address:	66 SUGAR HOLLOW ROAD, DANBURY, CT 06810
County:	FAIRFIELD
Latitude:	41.3366919
Longitude:	-73.4710989
Structure Type:	MONOPOLE
Property Owner:	SUGAR HOLLOW HOLDING LLC
Property Contact:	VERONICA CHAPMAN

AT&T Existing Facility

Report Information

Report Writer: Sushil Dogra **Report Generated Date:** 11-03-2022

Site Compliance Statement

Compliance Status	Compliant
Cumulative General Population % MPE (Ground Level)	14.60%

November 03, 2022

Emissions Analysis for Site: **CTV5069– BENNETT POND**

MobileComm Professionals, Inc was directed to analyze the proposed AT&T facility located at **66 SUGAR HOLLOW ROAD, DANBURY, CT 06810**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the 700 and 850 MHz Bands are approximately 0.467 mW/cm^2 and 0.567 mW/cm^2 respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS), 2300 MHz (WCS), 3450 MHz (DoD Band) and 3840 MHz (C Band) bands is 1 mW/cm^2. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

1. Theoretical Calculations

Calculations were done for the proposed AT&T Wireless antenna facility located at **66 SUGAR HOLLOW ROAD, DANBURY, CT 06810** using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 4 LTE channels (700 MHz Band 14) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
2) 4 LTE/5G channels (1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
3) 4 LTE/5G channels (2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
4) 4 LTE channels (700 MHz Band 12) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
5) 4 5G channels (850 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the CCI TPA65R-BU6D for the 700 MHz(Band 14) / 1900 MHz / 2100 MHz channel(s), the CCI OPA65R-BU6D for the 700 MHz(B12) / 850 MHz channel(s) in Sector A, CCI TPA65R-BU6D for the 700 MHz(Band 14) / 1900 MHz / 2100 MHz channel(s), the CCI OPA65R-BU6D for the 700 MHz(B12) / 850 MHz channel(s) in Sector B, CCI TPA65R-BU6D for the 700 MHz(Band 14) / 1900 MHz / 2100 MHz channel(s), the CCI OPA65R-BU6D for the 700 MHz(B12) / 850 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
9) The antenna mounting height centerline of the proposed antennas is 108 feet above ground level (AGL).
10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
11) All calculations were done with respect to uncontrolled / general population threshold limits.

2. Antenna Inventory & Power Data

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (^{0})	H B W (^{0})	Antenna Gain (dBd)	Antenna Aperture (ft)	#of Channels	Transmitter Power (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Total Ant Transmitter Power (Watts)	Total Ant ERP(Watts)	Ant MPE%
A	1	AT&T	CCI	TPA65R-BU6D	Panel	700	LTE(B14)	0	73	12.35	6	4	160.00	2749.64	4509.41	480	15798.28	5.84%
A	1	AT&T	CCI	TPA65R-BU6D	Panel	1900	LTE/5G	0	66	15.95	6	4	160.00	6299.07	10330.47			
A	1	AT&T	CCI	TPA65R-BU6D	Panel	2100	LTE/5G	0	66	16.25	6	4	160.00	6749.57	11069.30			
A	2	AT&T	CCI	OPA65R-BU6D	Panel	700	LTE(B12)	0	73	12.15	6	4	160.00	2625.89	4306.46	320	5856.44	3.49%
A	2	AT&T	CCI	OPA65R-BU6D	Panel	850	5G	0	64	13.05	6	4	160.00	3230.55	5298.10			
B	3	AT&T	CCI	TPA65R-BU6D	Panel	700	LTE(B14)	120	73	12.35	6	4	160.00	2749.64	4509.41	480	15798.28	5.84%
B	3	AT&T	CCI	TPA65R-BU6D	Panel	1900	LTE/5G	120	66	15.95	6	4	160.00	6299.07	10330.47			
B	3	AT&T	CCI	TPA65R-BU6D	Panel	2100	LTE/5G	120	66	16.25	6	4	160.00	6749.57	11069.30			
B	4	AT&T	CCI	OPA65R-BU6D	Panel	700	LTE(B12)	120	73	12.15	6	4	160.00	2625.89	4306.46	320	5856.44	3.49%
B	4	AT&T	CCI	OPA65R-BU6D	Panel	850	5G	120	64	13.05	6	4	160.00	3230.55	5298.10			
C	5	AT&T	CCI	TPA65R-BU6D	Panel	700	LTE(B14)	240	73	12.35	6	4	160.00	2749.64	4509.41	480	15798.28	5.84%
C	5	AT&T	CCI	TPA65R-BU6D	Panel	1900	LTE/5G	240	66	15.95	6	4	160.00	6299.07	10330.47			
C	5	AT&T	CCI	TPA65R-BU6D	Panel	2100	LTE/5G	240	66	16.25	6	4	160.00	6749.57	11069.30			
C	6	AT&T	CCI	OPA65R-BU6D	Panel	700	LTE(B12)	240	73	12.15	6	4	160.00	2625.89	4306.46	320	5856.44	3.49%
C	6	AT&T	CCI	OPA65R-BU6D	Panel	850	5G	240	64	13.05	6	4	160.00	3230.55	5298.10			

Table 2.1: Antenna Inventory & Power Data

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Cumulative Site MPE%	
Carrier	**MPE%**
AT&T (Max MPE% at Sector A)	9.34%
Sprint	1.18%
Dish	4.08%
Site Total MPE%	**14.60%**

Table 2.2: Cumulative Site MPE%

AT&T Max MPE% Per Sector	
AT&T Sector A Total	9.34%
AT&T Sector B Total	9.34%
AT&T Sector C Total	9.34%
Site Total MPE%	**14.60%**

Table 2.3: AT&T MPE% Per Sector

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	FREQ. (MHz)	TECH.	#of Channels	Transmitter Power (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Height (ft)	Total Power Density (mW/cm^2)	Allowable MPE (mW/cm^2)	Calculated MPE%
A	1	AT&T	CCI	TPA65R-BU6D	700	LTE(B14)	4	160.00	2749.64	4509.41	108.00	0.008481	0.467	1.82%
A	1	AT&T	CCI	TPA65R-BU6D	1900	LTE/5G	4	160.00	6299.07	10330.47	108.00	0.019428	1.000	1.94%
A	1	AT&T	CCI	TPA65R-BU6D	2100	LTE/5G	4	160.00	6749.57	11069.30	108.00	0.020818	1.000	2.08%
A	2	AT&T	CCI	OPA65R-BU6D	700	LTE(B12)	4	160.00	2625.89	4306.46	108.00	0.008099	0.467	1.74%
A	2	AT&T	CCI	OPA65R-BU6D	850	5G	4	160.00	3230.55	5298.10	108.00	0.009964	0.567	1.76%
													Total	**9.34%**

Table 2.4: Detailed MPE% at AT&T Sector A

3. Compliance Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A	9.34%
Sector B	9.34%
Sector C	9.34%
AT&T Maximum Total (per sector)	9.34%
Site Total MPE%	**14.60%**
Site Compliance Status	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is 14.60% of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Date: **August 15, 2022**

Infinigy
500 West Office Center Drive, Suite 150
Fort Washington, PA 19034
(518) 690-0790
structural@infinigy.com

Subject:	**Mount Analysis Report**	
Carrier Designation:	**AT&T Mobility Equipment Change Out**	
	Carrier Site Number:	CTL05069
	Carrier Site Name:	BENNETT POND
	Carrier FA Number:	10070924
Crown Castle Designation:	**Crown Castle BU Number:**	842857
	Crown Castle Site Name:	BENNETT POND
	Crown Castle JDE Job Number:	715649
	Crown Castle Order Number:	614859 Rev. 0
Engineering Firm Designation:	**Infinigy Report Designation:**	1039-Z0001-B
Site Data:	**66 Sugar Hollow Road, Danbury, Fairfield Couny, CT, 06810** **Latitude 41°20'10.00" Longitude -73°28'14.40"**	
Structure Information:	**Tower Height & Type:**	**106.0 ft Monopole**
	Mount Elevation:	**106.0 ft**
	Mount Type:	**14.0 ft Platform**

Infinigy is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of AT&T Mobility'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:

Platform **Sufficient**

***See Section 4.1 of this report for the loading and structural modifications required in order for the mount to support the loading listed in Table 1.**

This analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 115 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Farhad Ahmadyar

Respectfully Submitted by: Emmanuel Poulin, P.E.

structural@infinigy.com

8/15/22

TABLE OF CONTENTS

1) INTRODUCTION

This is an existing 3-sector 14.0 ft Platform.

2) ANALYSIS CRITERIA

Building Code:	2018 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	115 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.234
Seismic S_1:	0.057
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
106.0	108.0	3	CCI ANTENNAS	OPA65R-BU6D	14.0 ft Platform
		3	CCI ANTENNAS	TPA65R-BU6DA-K	
		3	ERICSSON	RRUS 8843 B2/B66	
		3	ERICSSON	RRUS 4449 B5/B12	
		3	ERICSSON	RRUS 4478 B14	
		1	RAYCAP	DC9-48-60-24-8C-EV_CCIV2	
	106.0	1	RAYCAP	DC6-48-60-18-8F	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	AT&T Mobility Application	614859 Rev. 0	CCI Sites
Loading Document	AT&T Mobility	RFDS ID: 5109026	TSA
Tower Manufacturer Drawings	Paul J. Ford and Company	5110641	CCI Sites

3.1) Analysis Method

RISA-3D (Version 20.0.0), 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.

Infinigy Mount Analysis Tool V2.3.2, a tool internally developed by Infinigy, was used to calculate wind loading on all appurtenances, dishes and mount members for various loading cases. Selected output from the analysis is included in Appendix B “Software Input Calculations”.

This analysis was performed in accordance with Crown Castle’s ENG-SOW-10208 *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. Infinigy 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 (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2	Mount Pipe(s)	MP5	106.0	75.9	Pass
	Horizontal(s)	HOR1		99.1	Pass
	Standoff(s)	M61		57.0	Pass
	Handrail(s)	M30		51.0	Pass
	Mount Connection(s)	--		50.8	Pass

Structure Rating (max from all components) =	99.1%

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.

4.1) Recommendations

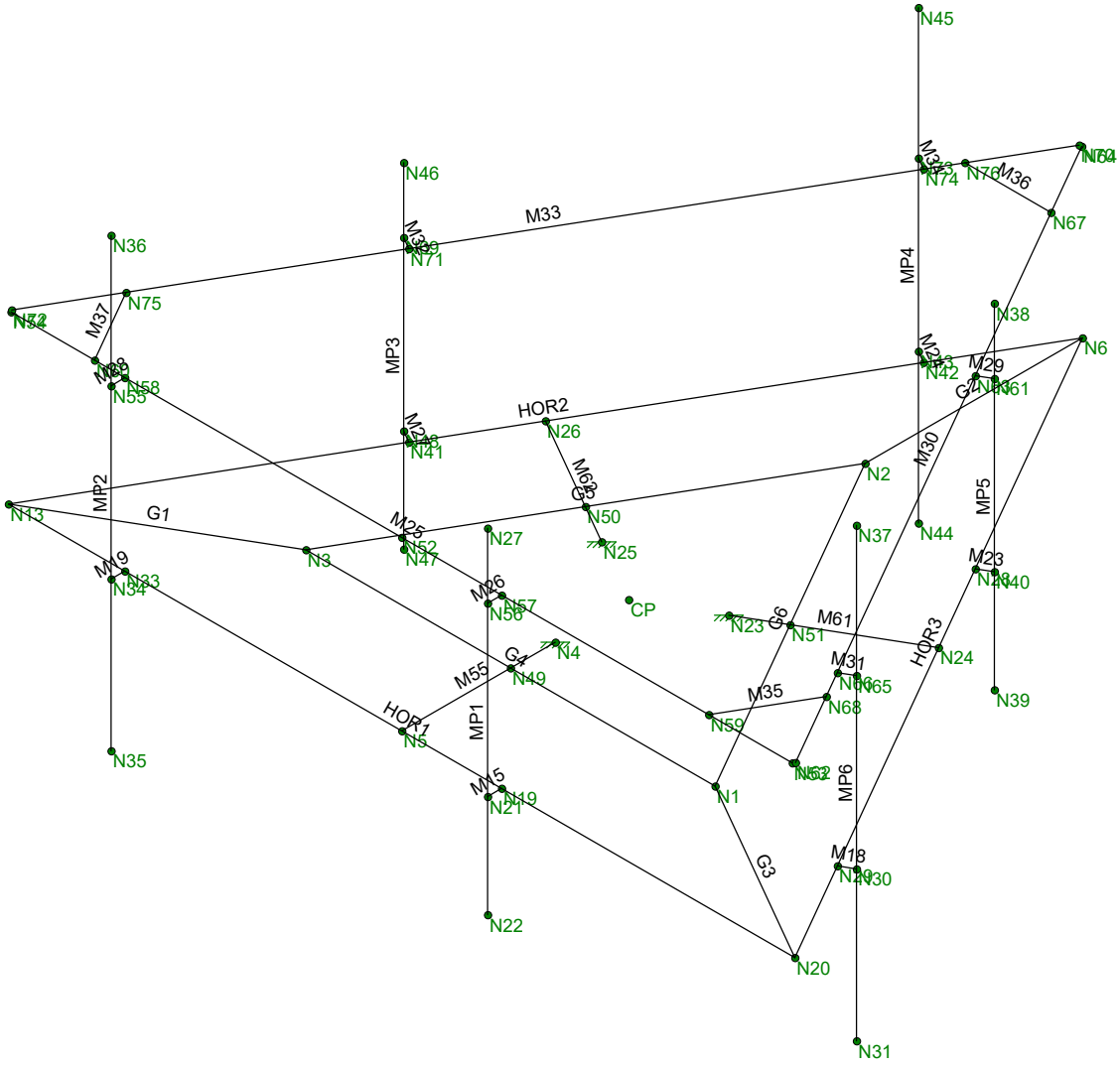
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

1. Installation of (1) Pipe 2.5 STD 14’ long horizontal pipe per sector installed 36” above existing face horizontal.
2. Installation of (1) Site Pro 1 AHCP handrail corner plate kit.

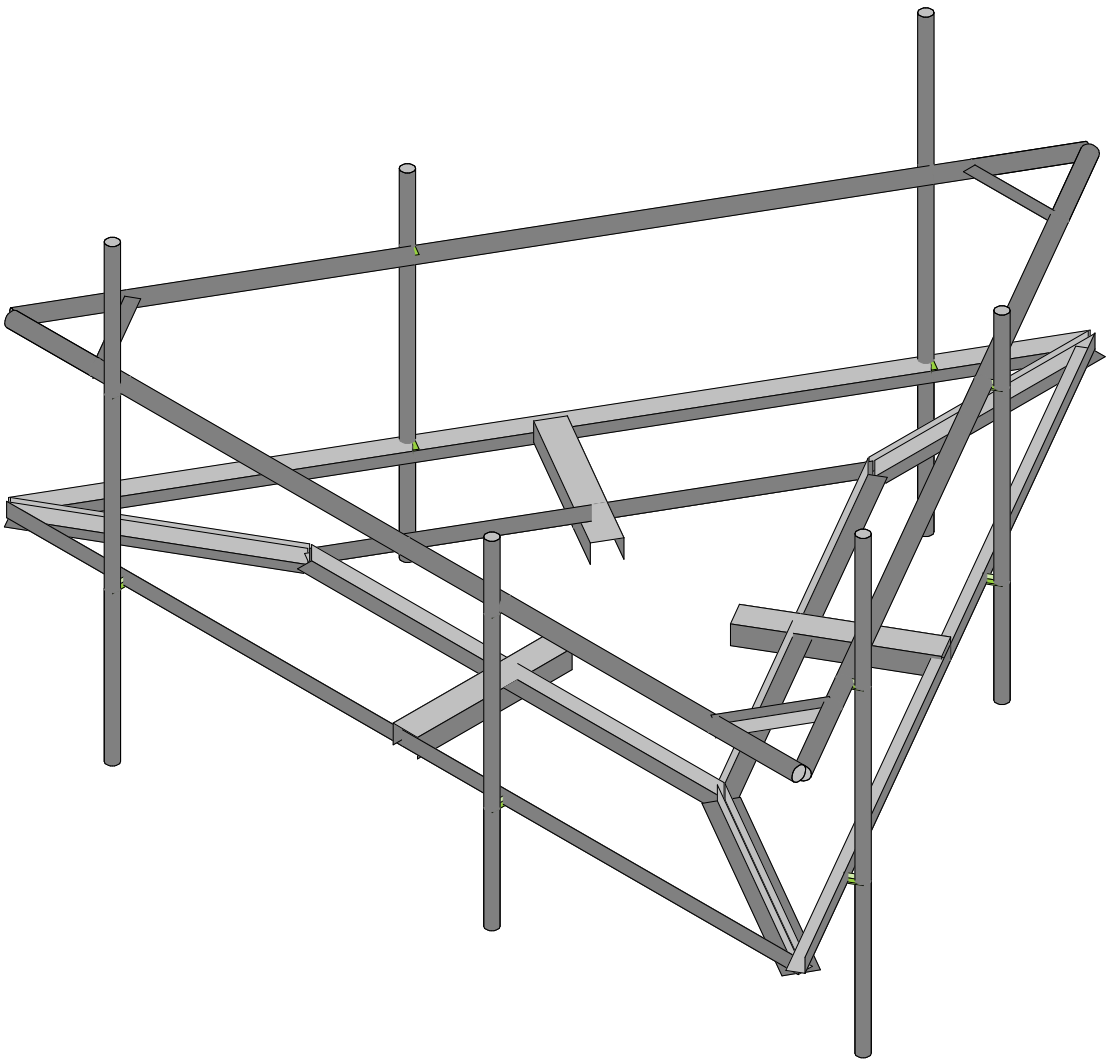
No structural modifications are required at this time, provided that the above-listed changes are implemented.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Infinigy	842857	Wireframe
FA		Aug 15, 2022 at 12:37 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Infinigy	842857	Render
FA		Aug 15, 2022 at 12:37 PM
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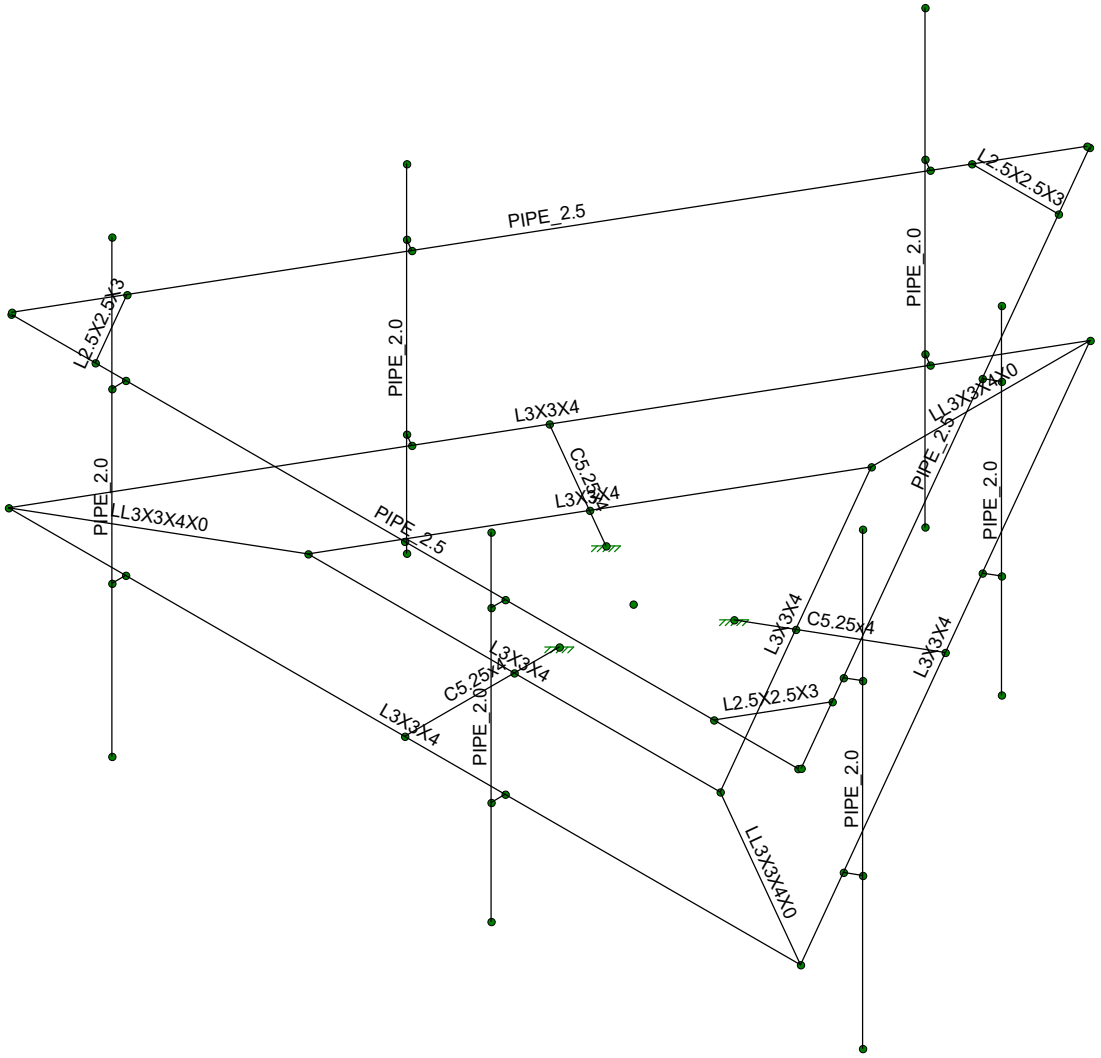

Infinigy	842857	Shape
FA		Aug 15, 2022 at 12:37 PM
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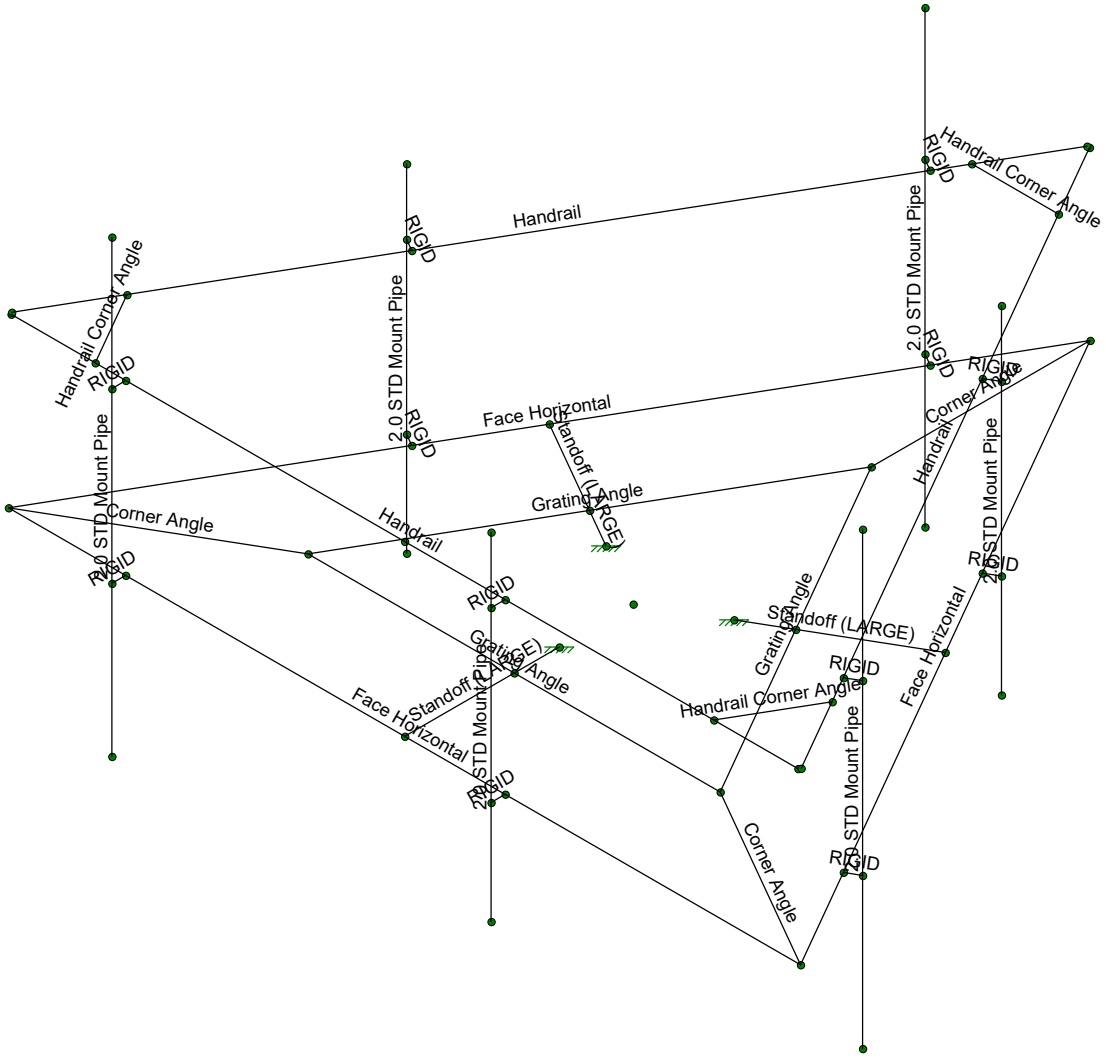
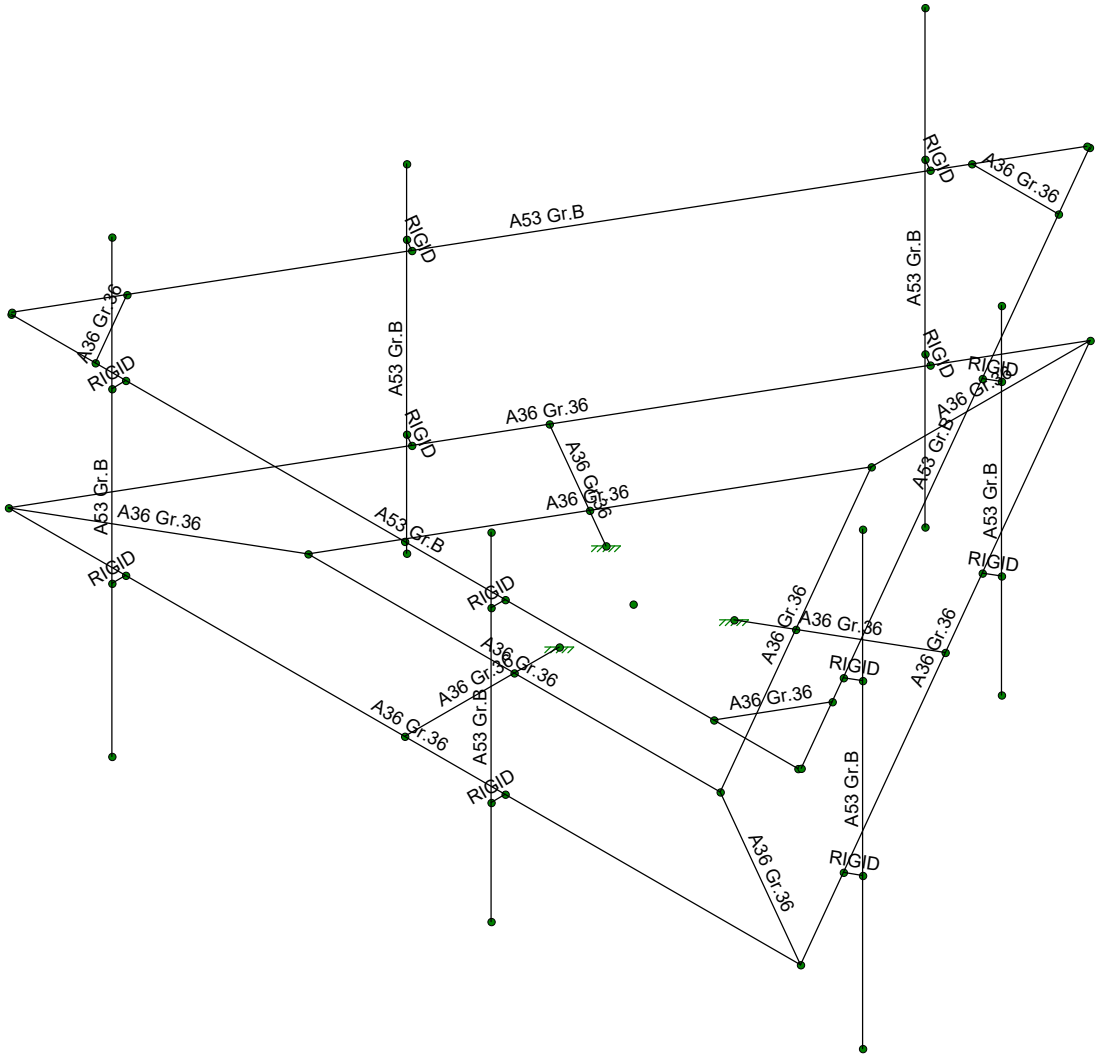


Infinigy	842857	Section Sets
FA		Aug 15, 2022 at 12:37 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Infinigy	842857	Grade
FA		Aug 15, 2022 at 12:38 PM
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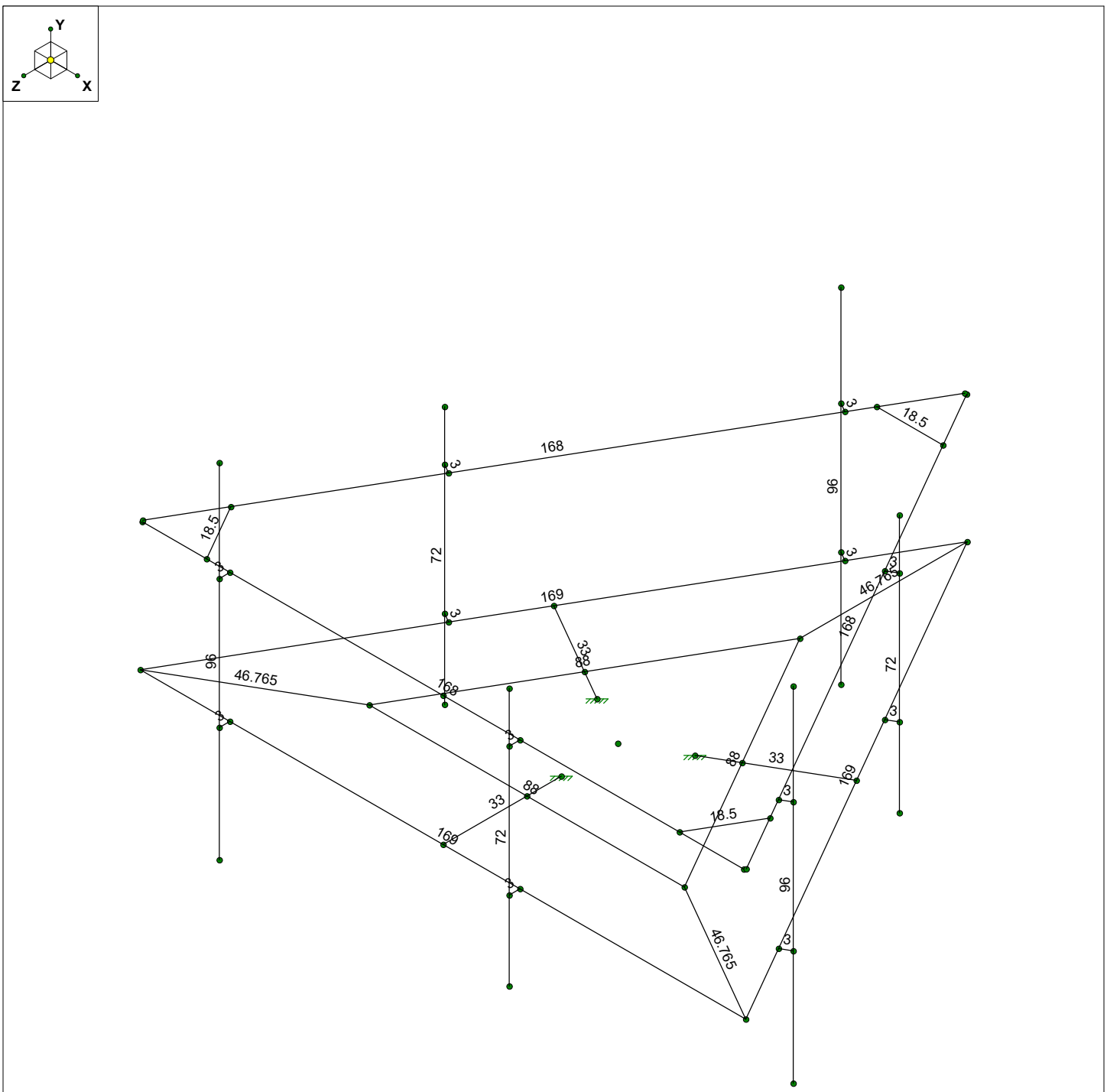

Member Length (in) Displayed

Infinigy	842857	Length
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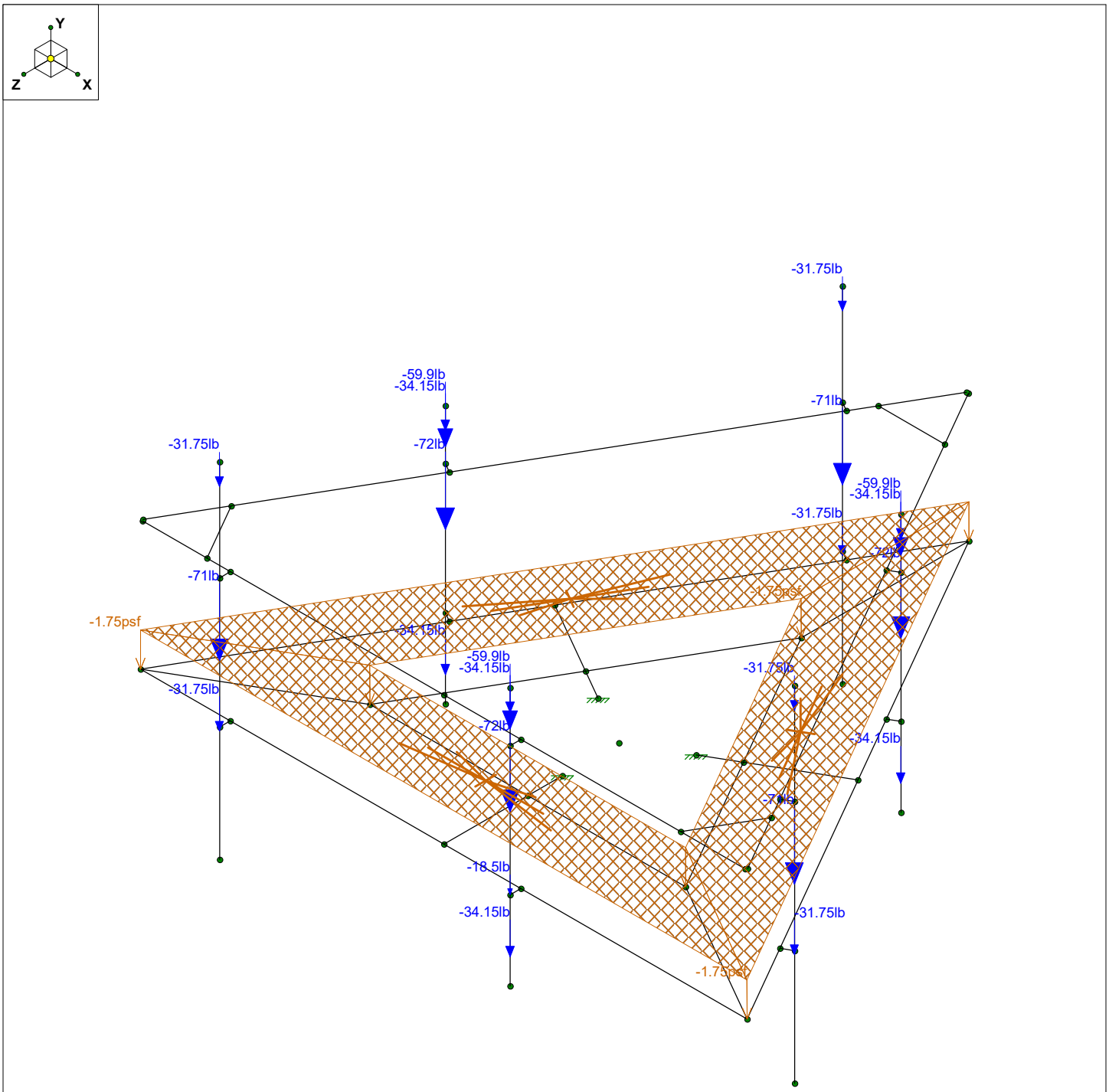

Loads: BLC 1, Self Weight

Infinigy	842857	Self Weight
FA		Aug 15, 2022 at 12:38 PM
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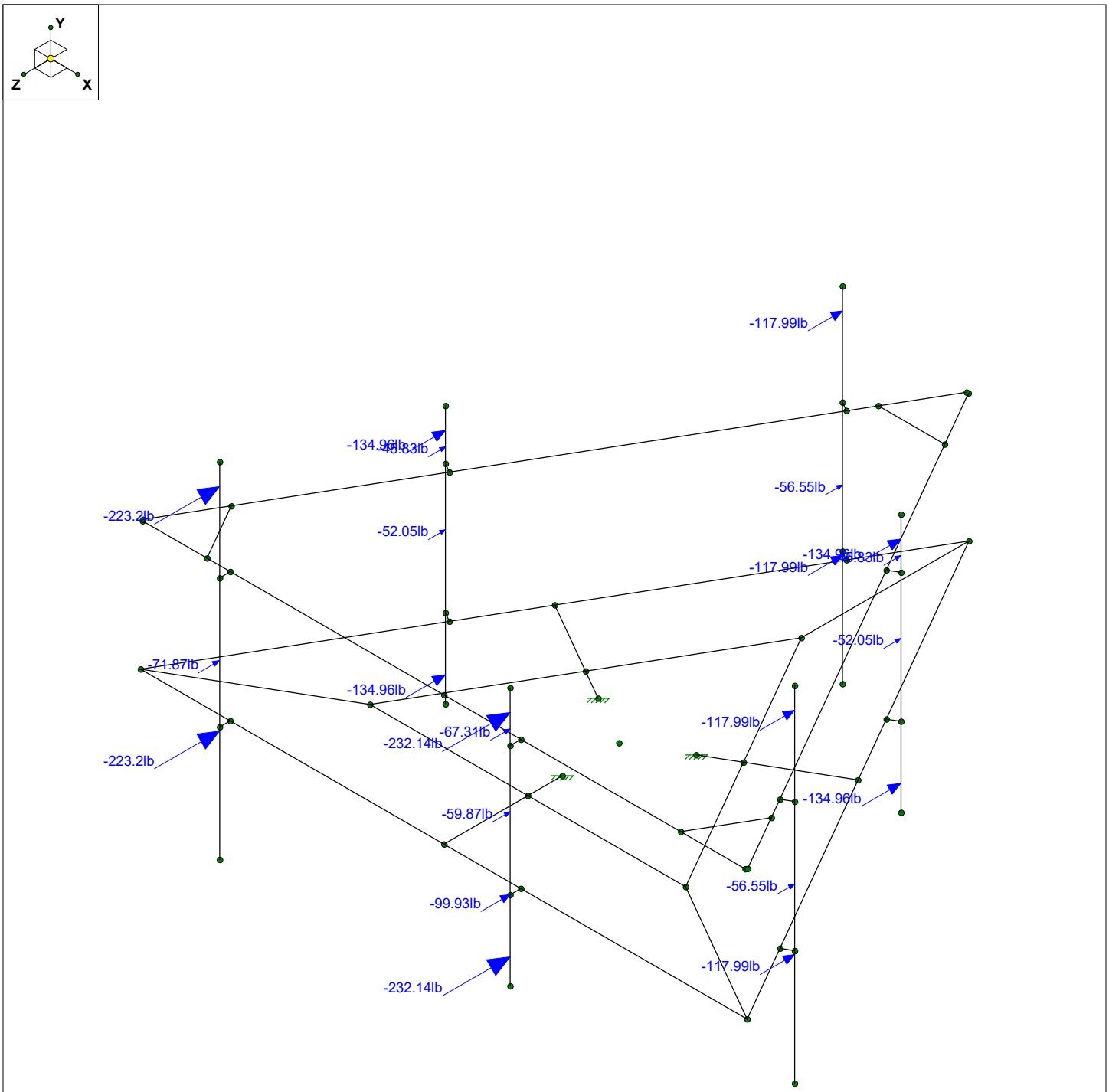

Loads: BLC 2, Wind Load AZI 0

Infinigy	842857	Wind Loading 0
FA		Aug 15, 2022 at 12:38 PM
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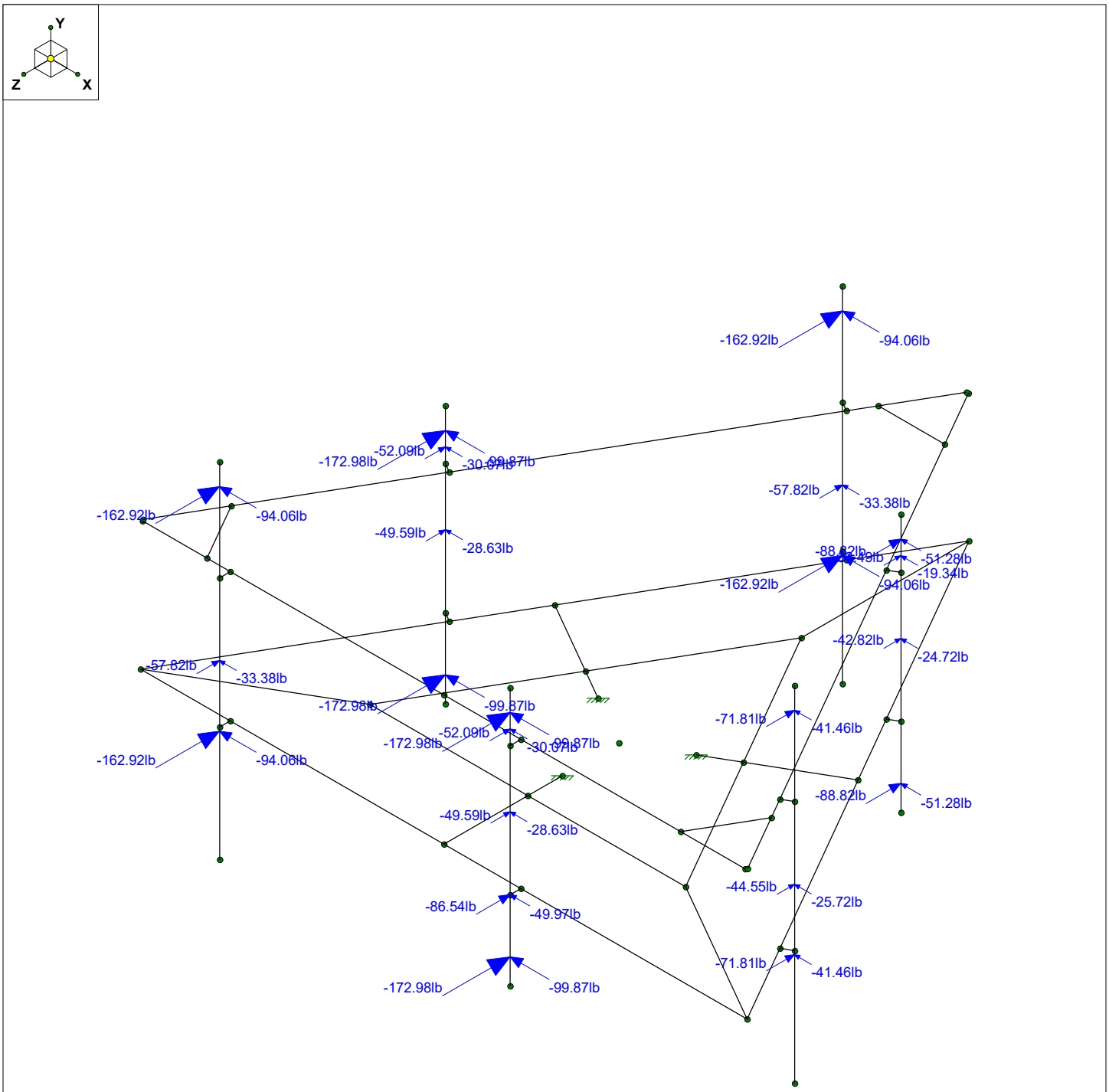

Loads: BLC 3, Wind Load AZI 30

Infinigy	842857	Wind Loading 30
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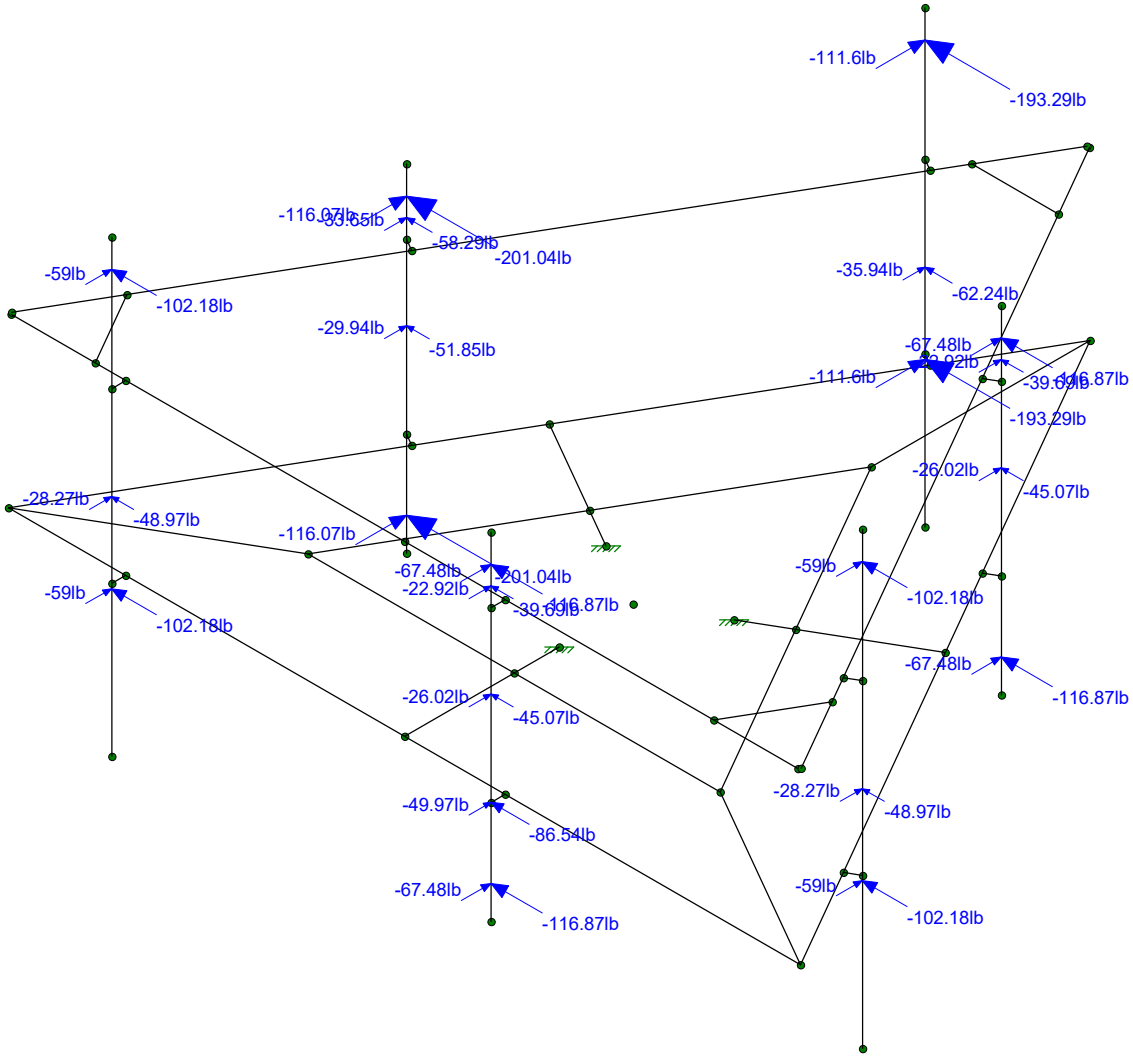
1039-Z0001-B		842857_loaded_loaded.r3d



Loads: BLC 4, Wind Load AZI 60

Infinigy	842857	Wind Loading 60
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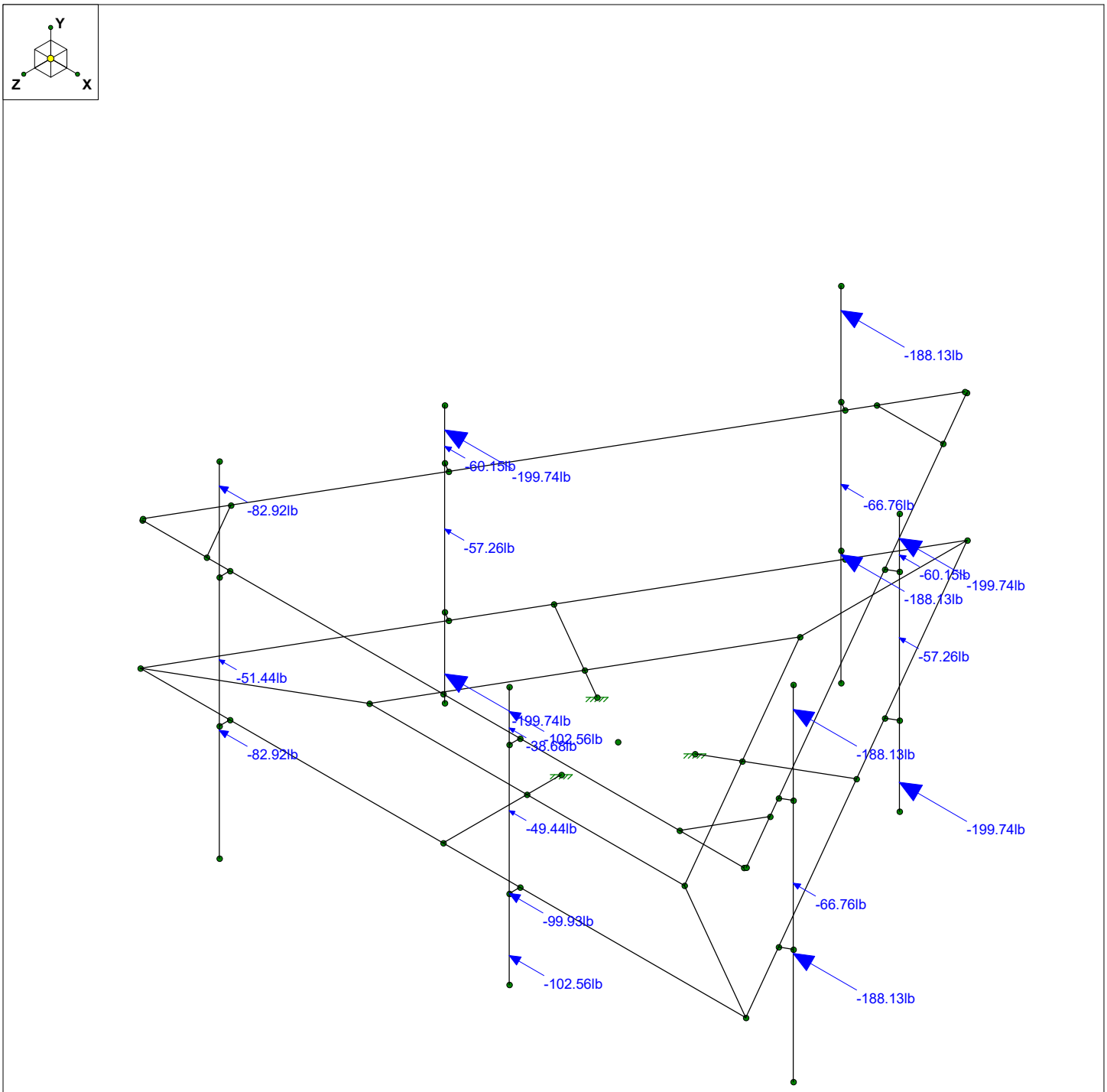

Loads: BLC 5, Wind Load AZI 90

Infinigy	842857	Wind Loading 90
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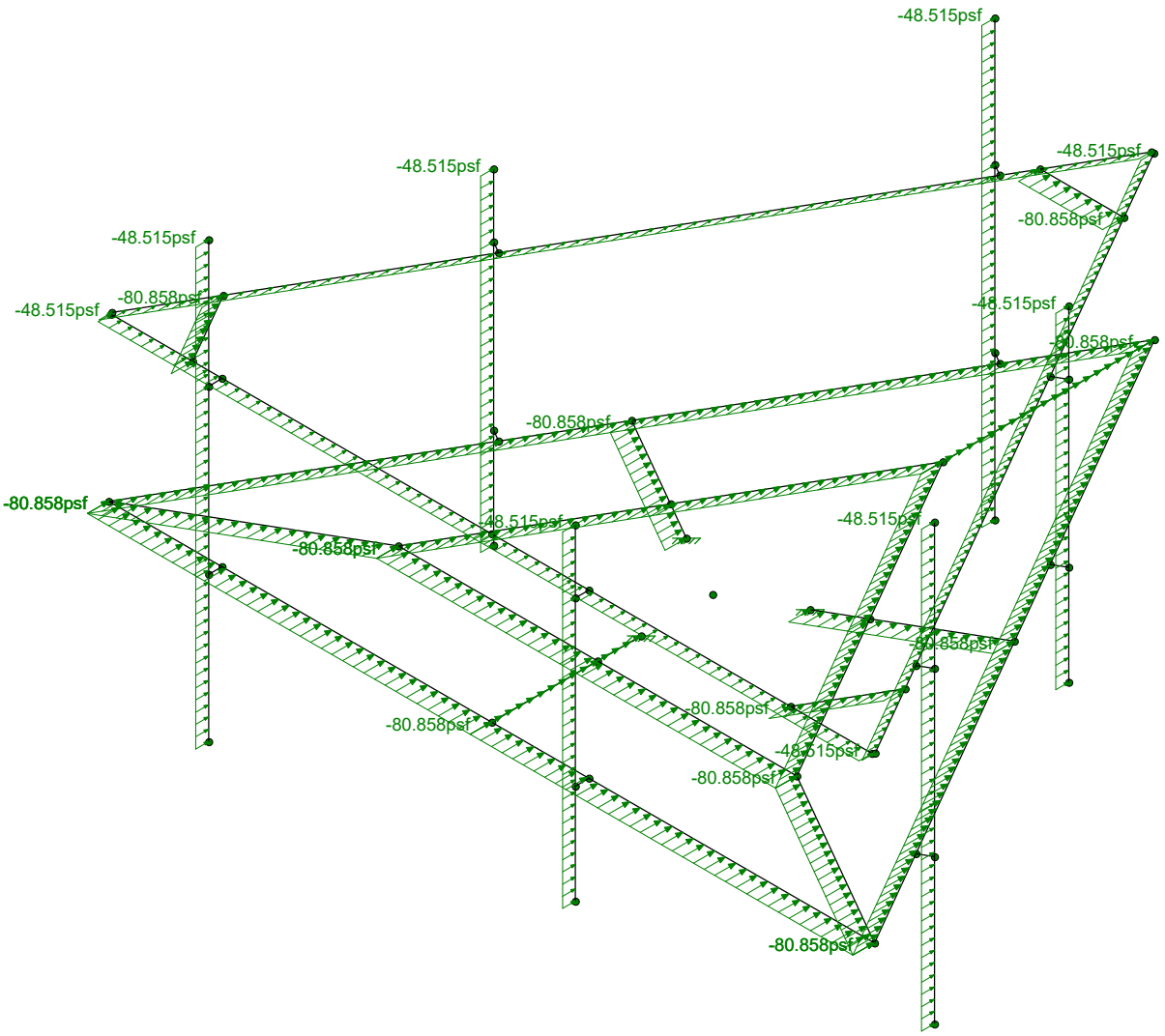
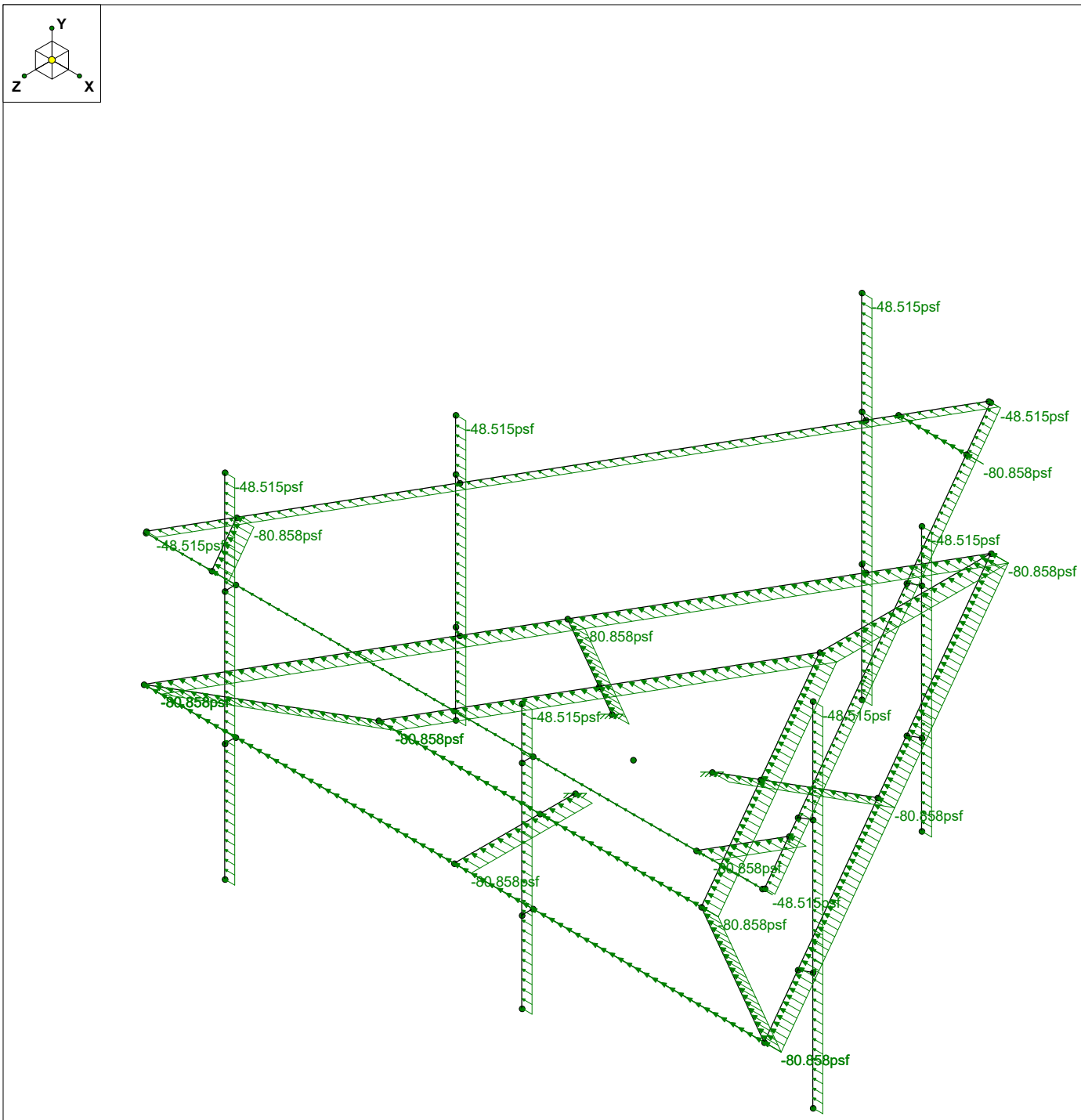
1039-Z0001-B		842857_loaded_loaded.r3d



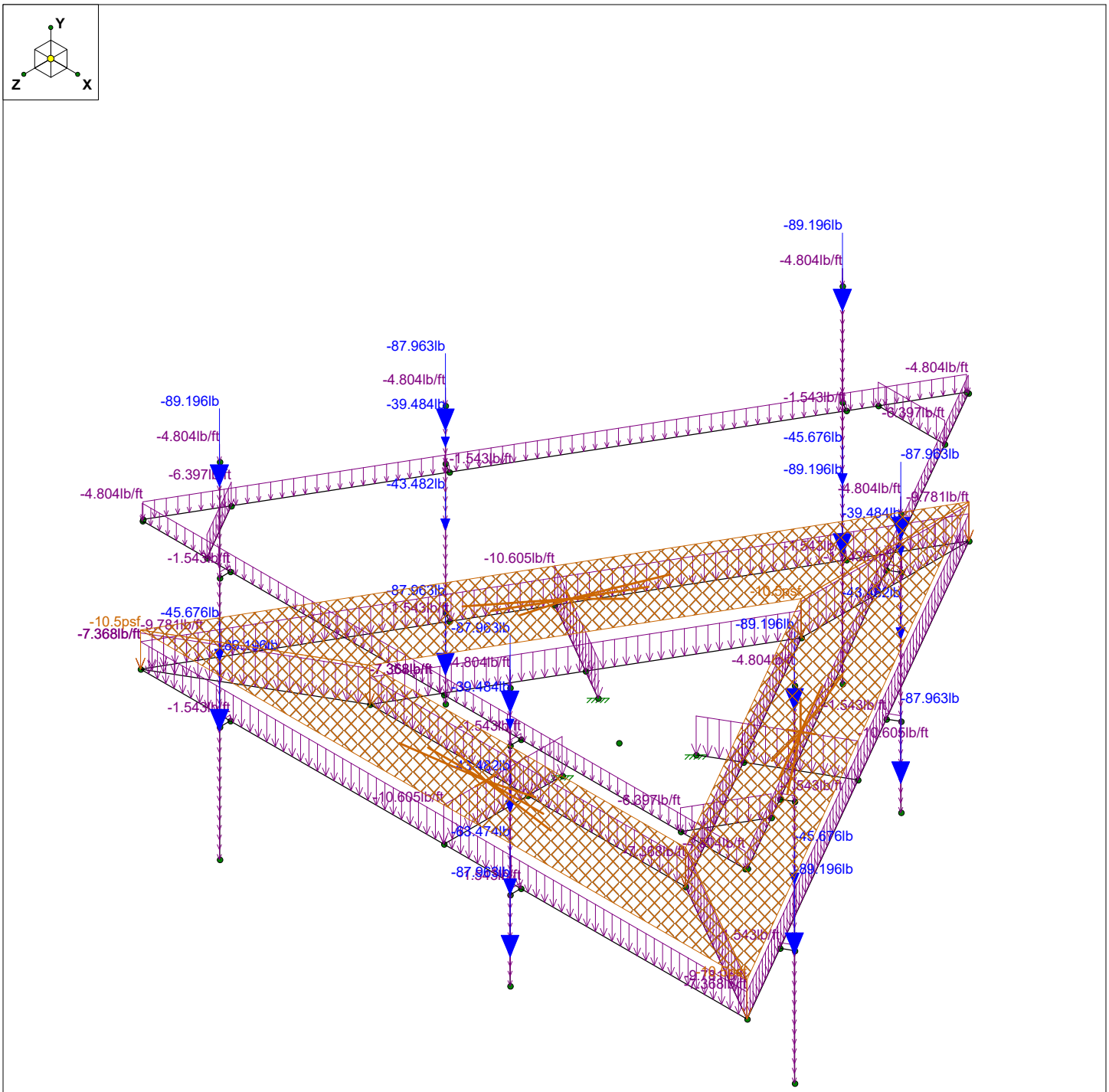
Loads: BLC 14, Distr. Wind Load Z

Infinigy	842857	Dist. Wind Loading 0
FA		Aug 15, 2022 at 12:38 PM
1039-Z0001-B		842857_loaded_loaded.r3d



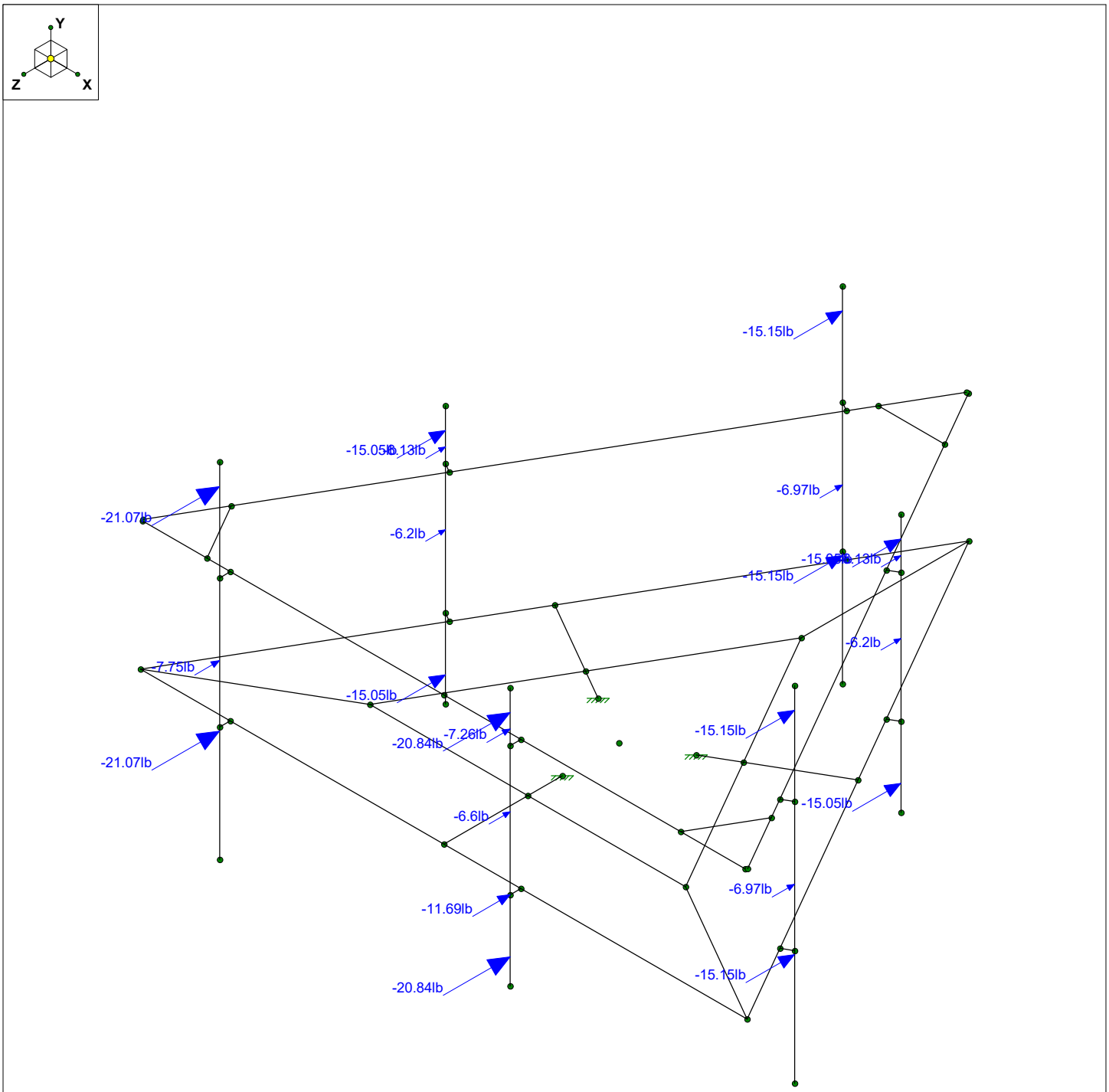
Loads: BLC 15, Distr. Wind Load X

Infinigy	842857	Dist. Wind Loading 90
FA		Aug 15, 2022 at 12:39 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Loads: BLC 16, Ice Weight

Infinigy	842857	Ice Weight
FA		Aug 15, 2022 at 12:39 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Loads: BLC 17, Ice Wind Load AZI 0

Infinigy	842857	Ice Wind Loading 0
FA		Aug 15, 2022 at 12:39 PM
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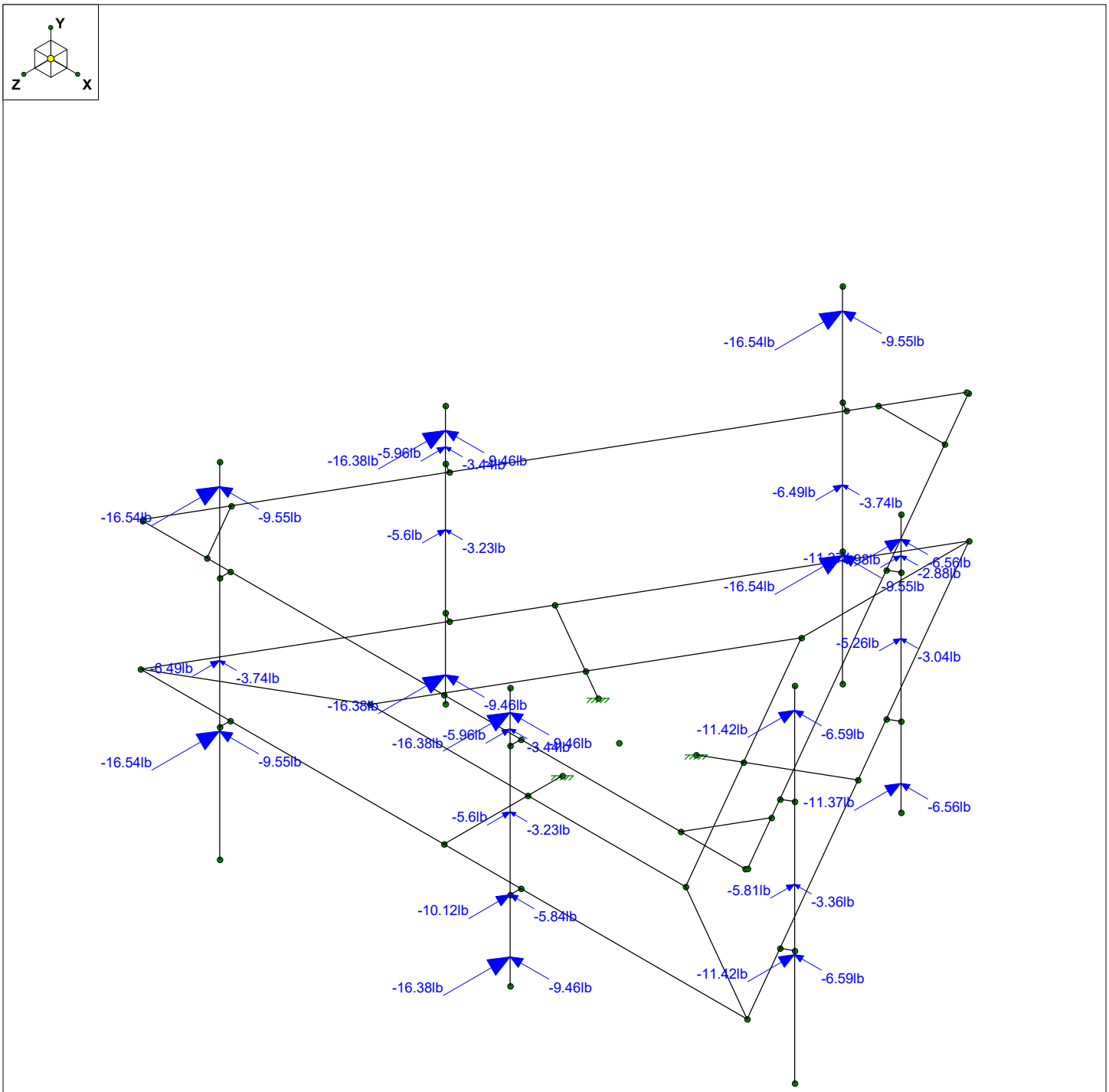

Loads: BLC 18, Ice Wind Load AZI 30

Infinigy	842857	Ice Wind Loading 30
FA		Aug 15, 2022 at 12:39 PM
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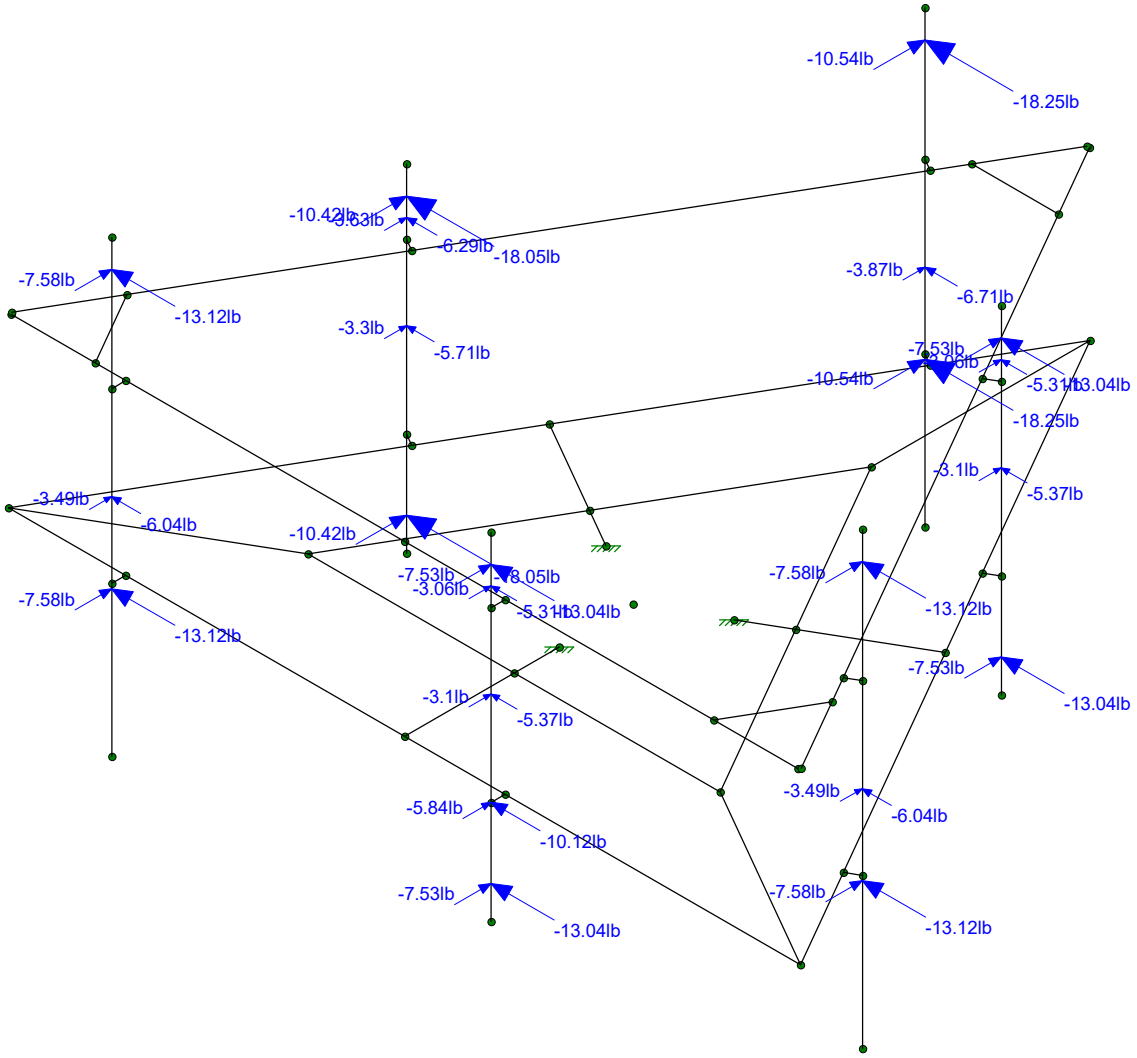
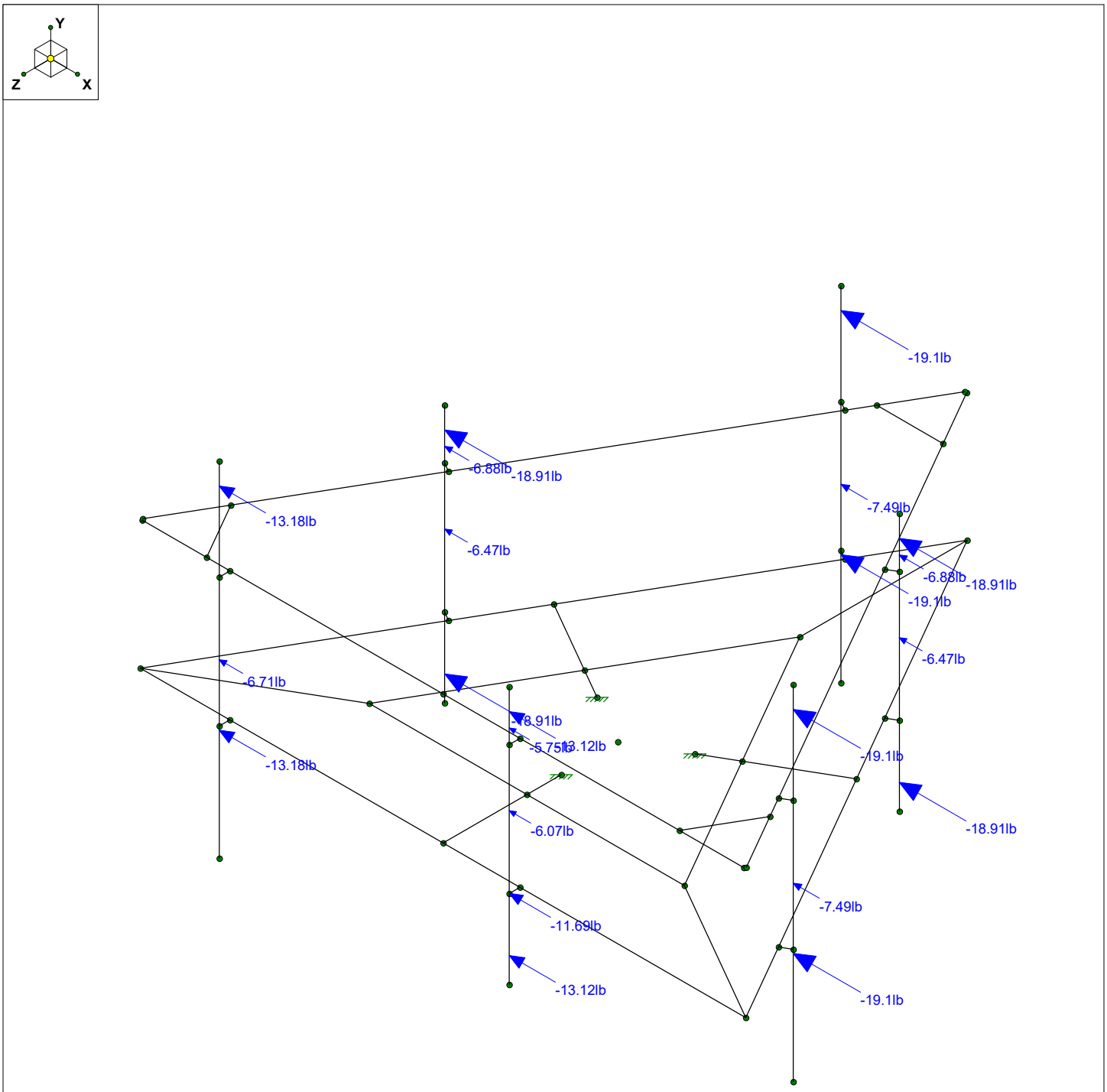


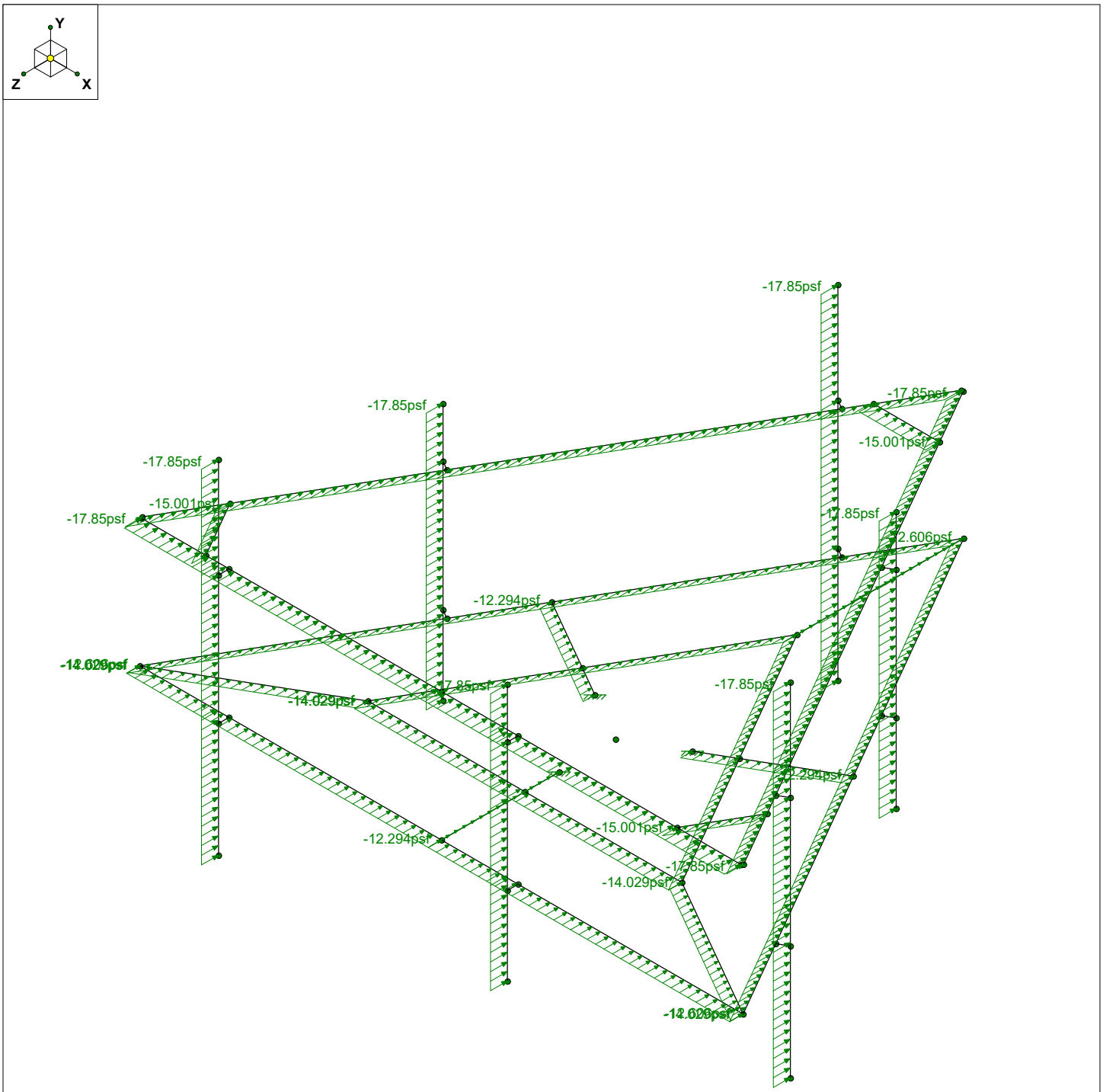
Loads: BLC 19, Ice Wind Load AZI 60

Infinigy	842857	Ice Wind Loading 60
FA		Aug 15, 2022 at 12:39 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Loads: BLC 20, Ice Wind Load AZI 90

Infinigy	842857	Ice Wind Loading 90
FA		Aug 15, 2022 at 12:39 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Loads: BLC 29, Distr. Ice Wind Load Z

Infinigy	842857	Dist. Ice Wind Loading 0
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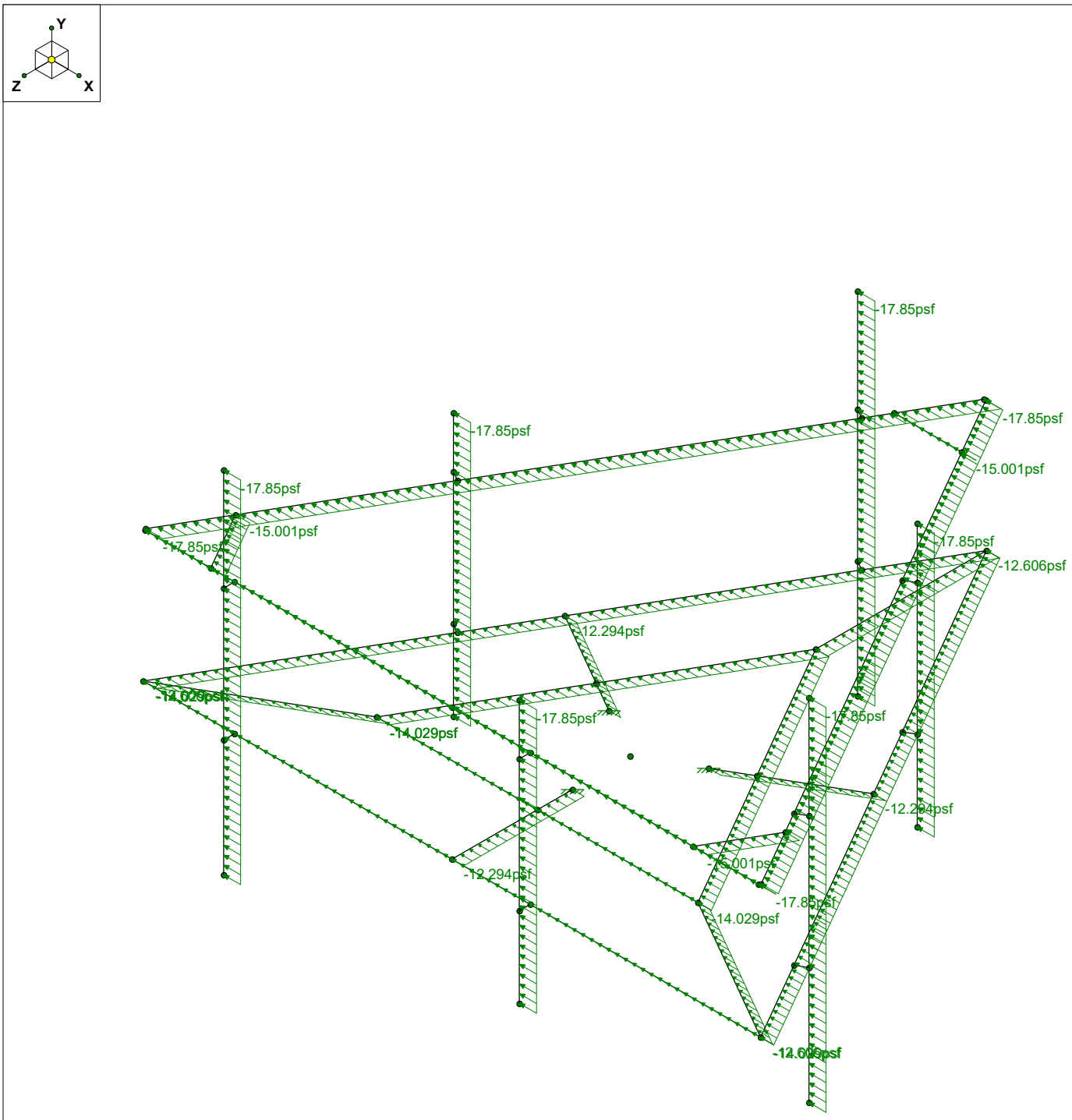

Loads: BLC 30, Distr. Ice Wind Load X

Infinigy	842857	Dist. Ice Wind Loading 90
FA		Aug 15, 2022 at 12:39 PM
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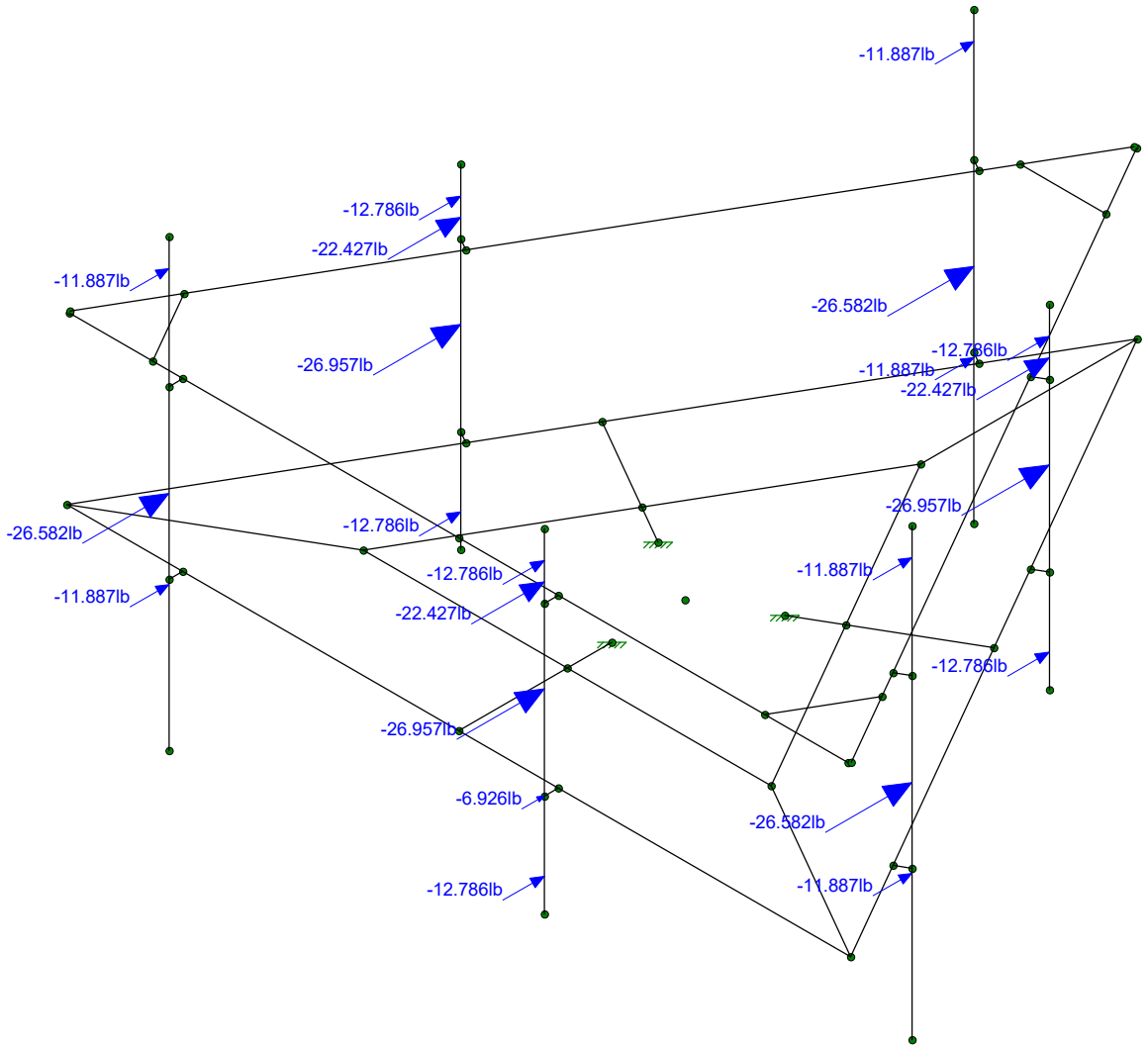
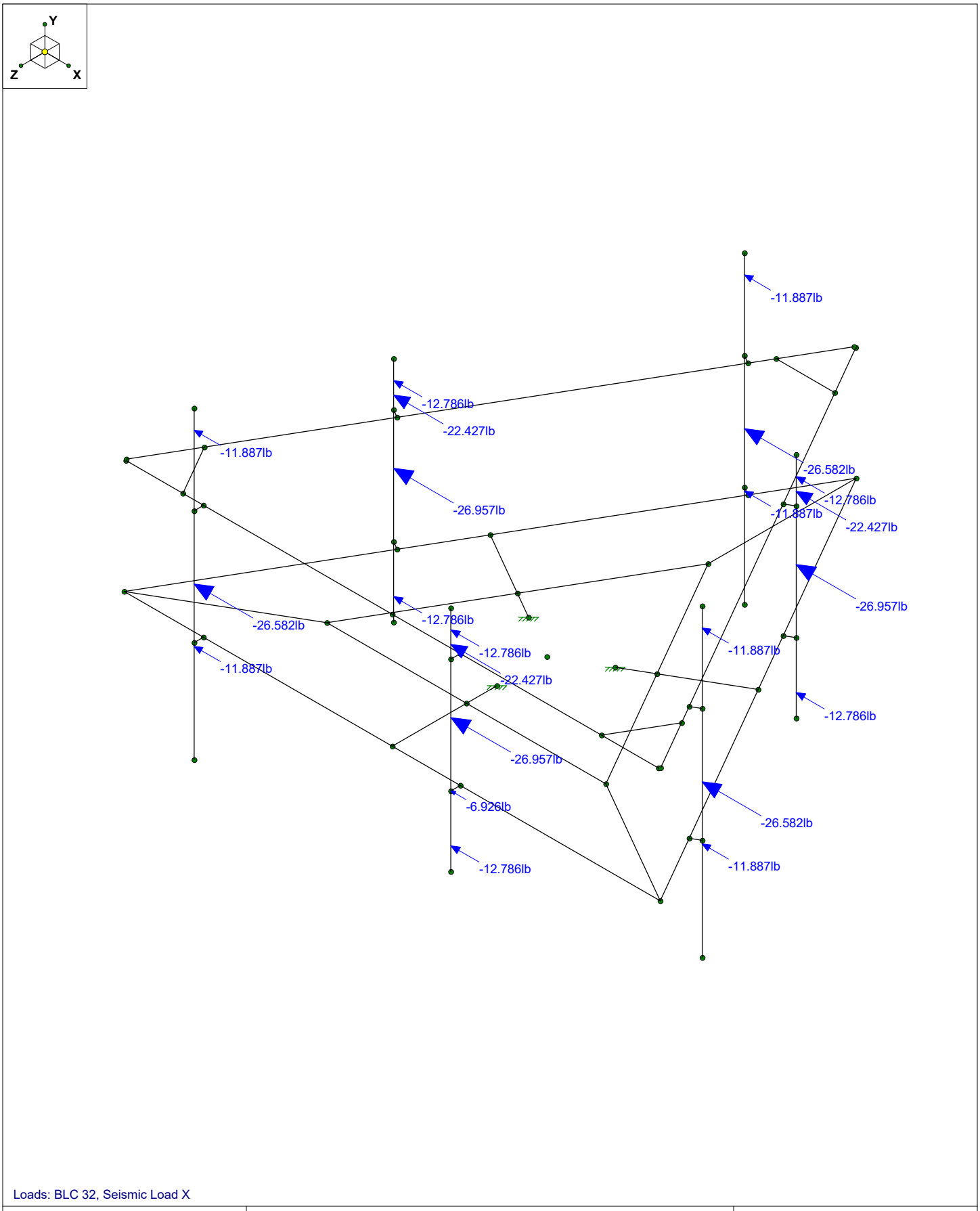


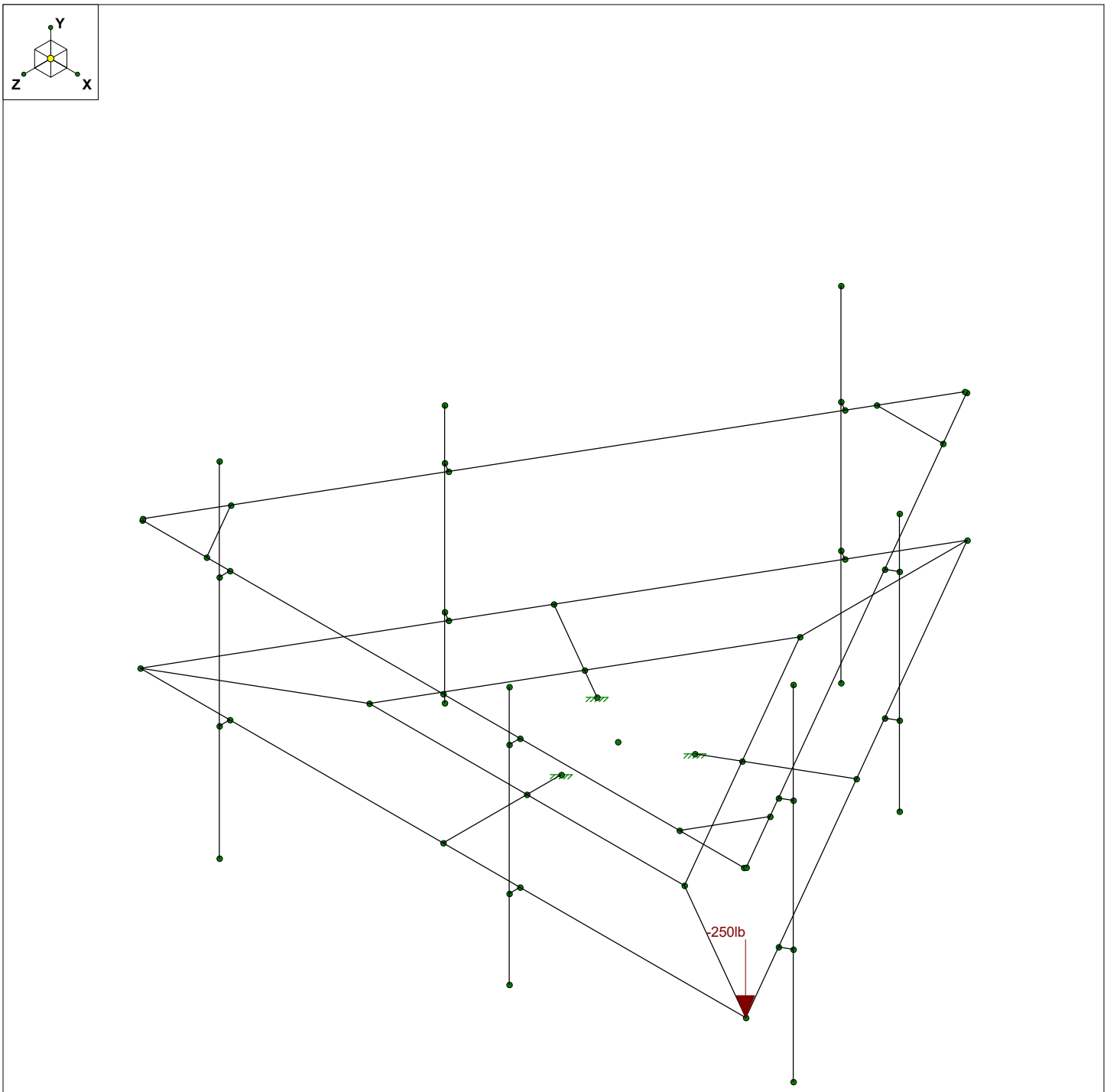
Loads: BLC 31, Seismic Load Z

Infinigy	842857	Seismic Loading 0
FA		Aug 15, 2022 at 12:39 PM
1039-Z0001-B		842857_loaded_loaded.r3d



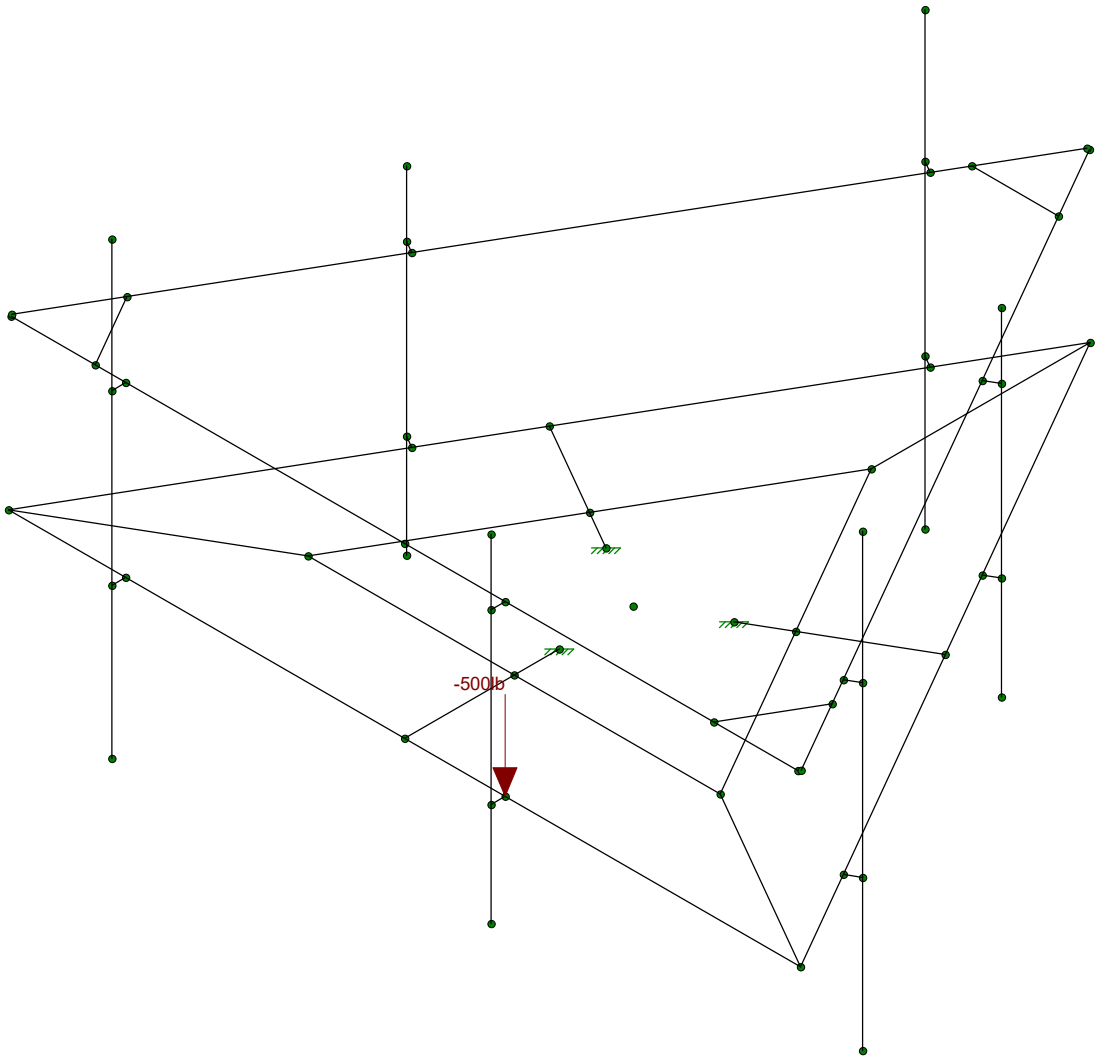
Loads: BLC 32, Seismic Load X

Infinigy	842857	Seismic Loading 90
FA		Aug 15, 2022 at 12:40 PM
1039-Z0001-B		842857_loaded_loaded.r3d



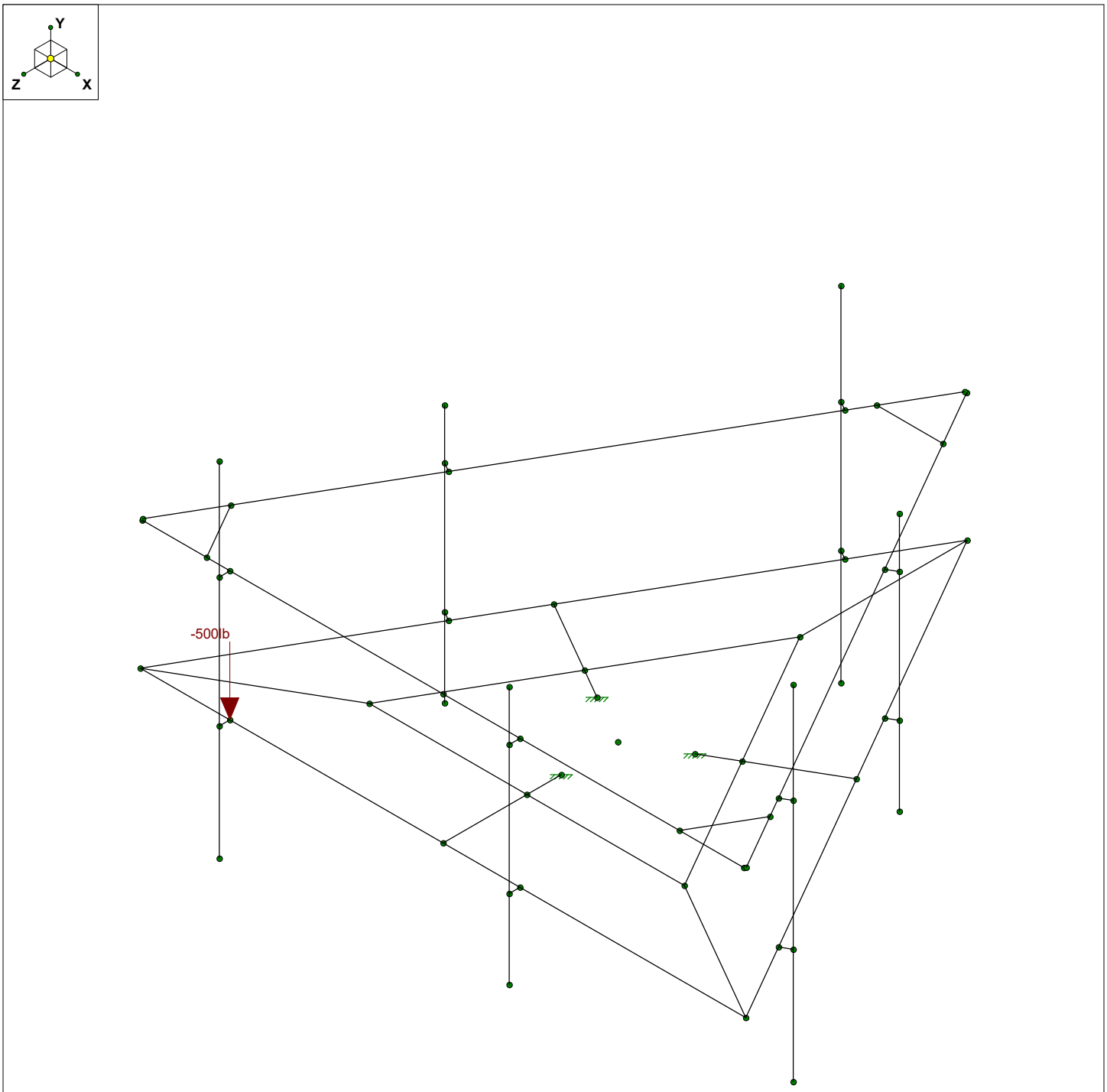
Loads: BLC 33, Service Live Loads

Infinigy	842857	Service
FA		Aug 15, 2022 at 12:40 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Loads: BLC 34, Maintenance Load Lm1

Infinigy	842857	Maintenance Load 1
FA		Aug 15, 2022 at 12:40 PM
1039-Z0001-B		842857_loaded_loaded.r3d



Loads: BLC 35, Maintenance Load Lm2

Infinigy	842857	Maintenance Load 2
FA		Aug 15, 2022 at 12:40 PM
1039-Z0001-B		842857_loaded_loaded.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS

Program Inputs

INFINIGY

Infinigy Load Calculator V2.3.2

PROJECT INFORMATION	
Site Name:	BENNETT POND
Carrier:	AT&T Mobility
Engineer:	Farhad Ahmadyar

SITE INFORMATION		
Risk Category:	II	
Exposure Category:	C	
Topo Factor Procedure:	Method 1, Category 1	
Site Class:	D - Stiff Soil (Assumed)	
Ground Elevation:	527.60	ft *Rev H

MOUNT INFORMATION		
Mount Type:	Platform	
Num Sectors:	3	
Centerline AGL:	106.00	ft
Tower Height AGL:	106.00	ft

TOPOGRAPHIC DATA		
Topo Feature:	N/A	
Slope Distance:	N/A	ft
Crest Distance:	N/A	ft
Crest Height:	N/A	ft

FACTORS		
Directionality Fact. (K_d):	0.950	
Ground Ele. Factor (K_e):	0.981	*Rev H Only
Rooftop Speed-Up (K_s):	1.000	*Rev H Only
Topographic Factor (K_{zt}):	1.000	
Height Esc. Fact. (K_{iz}):	1.124	
Gust Effect Factor (G_h):	1.000	
Shielding Factor (K_a):	0.900	
Velocity Pressure Co.(K_z):	1.281	(Mount Elev)

CODE STANDARDS		
Building Code:	2018 IBC	
TIA Standard:	TIA-222-H	
ASCE Standard:	ASCE 7-16	

WIND AND ICE DATA		
Ultimate Wind (V_{ult}):	115	mph
Design Wind (V):	N/A	mph
Ice Wind (V_{ice}):	50	mph
Base Ice Thickness (t_i):	1	in
Radial Ice Thickness (t_{iz}):	1.124	in
Flat Pressure:	80.858	psf
Round Pressure:	48.515	psf
Ice Wind Pressure:	9.171	psf

SEISMIC DATA		
Short-Period Accel. (S_s):	0.234	g
1-Second Accel. (S_1):	0.057	g
Short-Period Design (S_{DS}):	0.250	
1-Second Design (S_{D1}):	0.091	
Short-Period Coeff. (F_a):	1.600	
1-Second Coeff. (F_v):	2.400	
Amplification Factor (A_s):	3.000	
Response Mod. Coeff. (R):	2.000	
Seismic Importance (I_e):	1.000	
Seismic Response Co. (C_s):	0.125	
Total App. Weight:	372.100	lb
Total Shear Force (V_s):	46.438	lb
Hor. Seismic Load (E_h):	46.438	lb
Vert. Seismic Load (E_v):	18.575	lb *

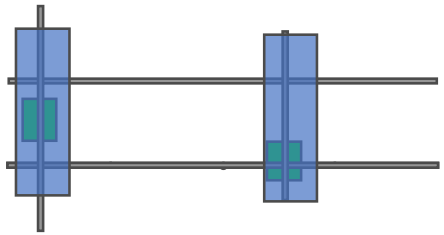
*For reference only. Per TIA rev H section 16.7, Ev is not applicable to mounts

Program Inputs

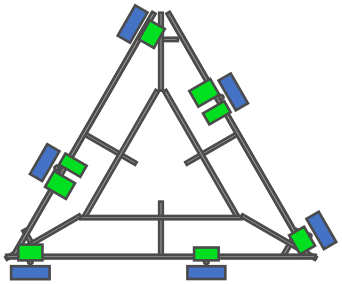
INFINIGY

Infinigy Load Calculator V2.3.2

ELEVATION VIEW



PLAN VIEW



APPURTENANCE INFORMATION

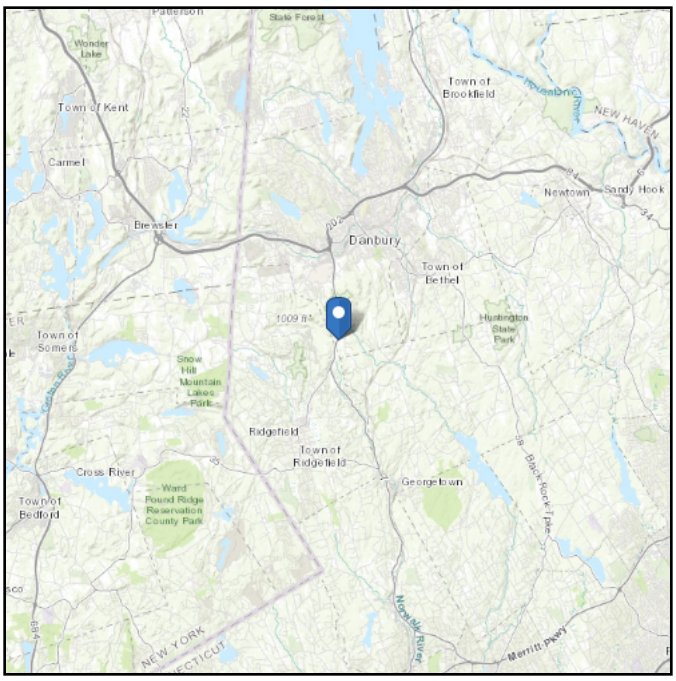
Appurtenance Name	Elevation	Qty.	Height (in)	Width (in)	Depth (in)	Weight (lbs)	EPA_N (ft^2)	EPA_T (ft^2)	Member (α sector)
CCI ANTENNAS OPA65R-BU6D	108.0	3	71.20	21.00	7.80	63.50	12.22	4.54	MP2
CCI ANTENNAS TPA65R-BU6DA-K	108.0	3	71.20	20.70	7.70	68.30	12.71	5.62	MP1
ERICSSON RRUS 4478 B14	108.0	3	16.50	13.40	7.70	59.90	1.84	1.06	MP1
ERICSSON RRUS 8843 B2/B66A	108.0	3	14.90	13.20	10.90	72.00	1.64	1.35	MP1
ERICSSON RRUS 4449 B5/B12	108.0	3	17.90	13.19	9.44	71.00	1.97	1.41	MP2
RAYCAP DC6-48-60-18-8F	106.0	1	22.25	11.00	11.00	18.90	2.04	2.04	Leg/Flush
RAYCAP DC9-48-60-24-8C-EV_CCIV2	108.0	1	31.40	10.24	10.24	18.50	2.74	2.74	MP1

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)

Elevation: 527.6 ft (NAVD 88)
Latitude: 41.336111
Longitude: -73.470667



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	96 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: Wed Aug 10 2022

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.

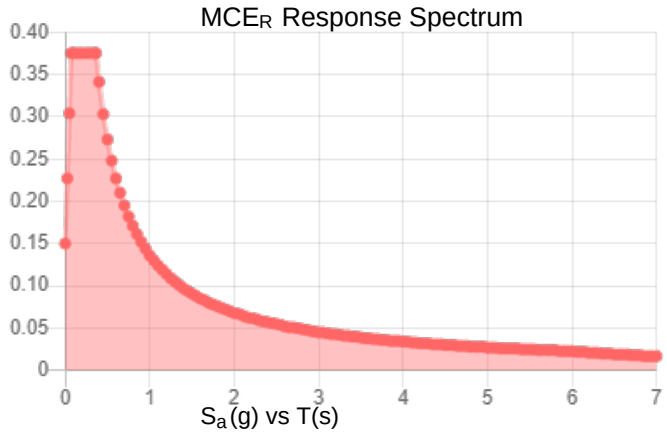
Seismic

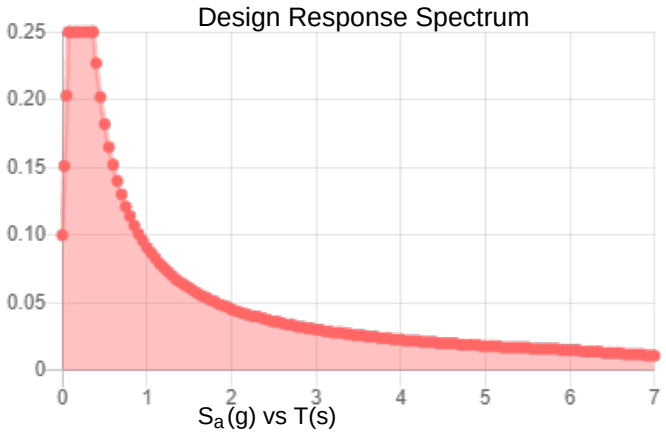
Site Soil Class: D - Default (see Section 11.4.3)

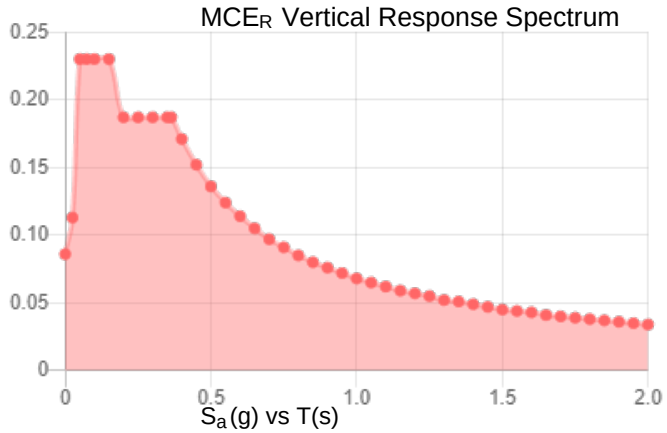
Results:

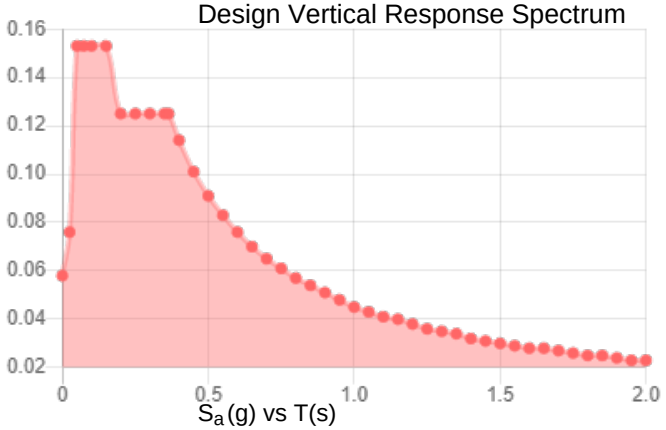
S_S :	0.234	S_{D1} :	0.091
S_1 :	0.057	T_L :	6
F_a :	1.6	PGA :	0.137
F_v :	2.4	PGA_M :	0.209
S_{MS} :	0.375	F_{PGA} :	1.527
S_{M1} :	0.136	I_e :	1
S_{DS} :	0.25	C_v :	0.768

Seismic Design Category B









Data Accessed: **Wed Aug 10 2022**

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:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Aug 10 2022

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.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

Member Primary Data

	Label	I Node	J Node	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rule
1	HOR1	N13	N20	270	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
2	HOR2	N13	N6		Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
3	HOR3	N20	N6	270	Face Horizontal	Beam	Single Angle	A36 Gr.36	Typical
4	G4	N3	N1		Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
5	G5	N3	N2	270	Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
6	G6	N1	N2		Grating Angle	Beam	Single Angle	A36 Gr.36	Typical
7	G3	N20	N1	180	Corner Angle	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
8	G2	N6	N2	180	Corner Angle	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
9	G1	N13	N3	180	Corner Angle	Beam	Double Angle (No Gap)	A36 Gr.36	Typical
10	M55	N5	N4	90	Standoff (LARGE)	Beam	Channel	A36 Gr.36	Typical
11	M61	N24	N23	90	Standoff (LARGE)	Beam	Channel	A36 Gr.36	Typical
12	M62	N26	N25	90	Standoff (LARGE)	Beam	Channel	A36 Gr.36	Typical
13	M15	N19	N21		RIGID	None	None	RIGID	Typical
14	MP1	N27	N22		2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
15	M19	N33	N34		RIGID	None	None	RIGID	Typical
16	MP2	N36	N35		2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
17	M18	N29	N30		RIGID	None	None	RIGID	Typical
18	MP6	N37	N31		2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
19	MP5	N38	N39		2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
20	M23	N28	N40		RIGID	None	None	RIGID	Typical
21	M24	N42	N43		RIGID	None	None	RIGID	Typical
22	MP4	N45	N44		2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
23	MP3	N46	N47		2.0 STD Mount Pipe	Column	Pipe	A53 Gr.B	Typical
24	M27	N41	N48		RIGID	None	None	RIGID	Typical
25	M25	N53	N54		Handrail	Beam	Pipe	A53 Gr.B	Typical
26	M26	N57	N56		RIGID	None	None	RIGID	Typical
27	M28	N58	N55		RIGID	None	None	RIGID	Typical
28	M29	N63	N61		RIGID	None	None	RIGID	Typical
29	M30	N64	N62		Handrail	Beam	Pipe	A53 Gr.B	Typical
30	M31	N66	N65		RIGID	None	None	RIGID	Typical
31	M32	N71	N69		RIGID	None	None	RIGID	Typical
32	M33	N72	N70		Handrail	Beam	Pipe	A53 Gr.B	Typical
33	M34	N74	N73		RIGID	None	None	RIGID	Typical
34	M35	N59	N68	180	Handrail Corner Angle	Beam	Single Angle	A36 Gr.36	Typical
35	M36	N67	N76	180	Handrail Corner Angle	Beam	Single Angle	A36 Gr.36	Typical
36	M37	N75	N60	180	Handrail Corner Angle	Beam	Single Angle	A36 Gr.36	Typical

Hot Rolled Steel Properties

	Label	E [psi]	G [psi]	Nu	Therm. Coeff. [1e^{5}°F^{-1}]	Density [k/ft^{3}]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A992	2.9e+07	1.115e+07	0.3	0.65	0.49	50	1.1	65	1.1
2	A36 Gr.36	2.9e+07	1.115e+07	0.3	0.65	0.49	36	1.5	58	1.2
3	A572 Gr.50	2.9e+07	1.115e+07	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	2.9e+07	1.115e+07	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B RECT	2.9e+07	1.115e+07	0.3	0.65	0.527	46	1.4	58	1.3
6	A500 Gr.C RND	2.9e+07	1.115e+07	0.3	0.65	0.527	46	1.4	62	1.3
7	A500 Gr.C RECT	2.9e+07	1.115e+07	0.3	0.65	0.527	50	1.4	62	1.3
8	A53 Gr.B	2.9e+07	1.115e+07	0.3	0.65	0.49	35	1.6	60	1.2
9	A1085	2.9e+07	1.115e+07	0.3	0.65	0.49	50	1.4	65	1.3
10	A913 Gr.65	2.9e+07	1.115e+07	0.3	0.65	0.49	65	1.1	80	1.1

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	Face Horizontal	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	0.031
2	Grating Angle	L3X3X4	Beam	Single Angle	A36 Gr.36	Typical	1.44	1.23	1.23	0.031
3	Standoff (LARGE)	C5.25X4	Beam	Channel	A36 Gr.36	Typical	4.688	7.568	20.707	0.207
4	Standoff (SMALL)	HSS4X4X4	Beam	Tube	A500 Gr.B RECT	Typical	3.37	7.8	7.8	12.8
5	2.0 STD Mount Pipe	PIPE_2.0	Column	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
6	2.5 STD Mount Pipe	PIPE_2.5	Column	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
7	Corner Plate	6X0.375	VBrace	RECT	A36 Gr.36	Typical	2.25	0.026	6.75	0.101
8	Corner Angle	LL3X3X4X0	Beam	Double Angle (No Gap)	A36 Gr.36	Typical	2.88	4.5	2.46	0.063
9	Top Support Pipe	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
10	Handrail	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
11	Handrail Corner Angle	L2.5X2.5X3	Beam	Single Angle	A36 Gr.36	Typical	0.901	0.535	0.535	0.011
12	Kicker	LL2.5X2.5X3X0	Beam	Double Angle (No Gap)	A36 Gr.36	Typical	1.8	1.91	1.07	0.023

Node Coordinates

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
1	N1	44.00005	-13	-23.382538	
2	N2	0.00005	-13	-99.592774	
3	N3	-43.99995	-13	-23.382538	
4	N4	0.00005	-13	-32.999838	
5	N5	0.00005	-13	0.000148	
6	N6	0.00005	-13	-146.358146	
7	N13	-84.49995	-13	0.000148	
8	N20	84.50005	-13	0.000147	
9	N23	13.671224	-13	-56.679006	
10	N24	42.25005	-13	-73.178999	
11	N25	-13.671124	-13	-56.679006	
12	N26	-42.24995	-13	-73.178999	
13	CP	0.00005	-13	-48.78595	
14	N19	21.50005	-13	0.000148	
15	N21	21.50005	-13	3.000147	
16	N22	21.50005	-35	3.000147	
17	N27	21.50005	37	3.000147	
18	N33	-59.49995	-13	0.000148	
19	N34	-59.49995	-13	3.000147	
20	N35	-59.49995	-45	3.000147	
21	N36	-59.49995	51	3.000147	
22	N28	31.50005	-13	-91.798545	
23	N29	72.00005	-13	-21.650487	
24	N30	74.598126	-13	-23.150487	
25	N31	74.598126	-45	-23.150487	
26	N37	74.598126	51	-23.150487	
27	N38	34.098126	37	-93.298545	
28	N39	34.098126	-35	-93.298545	
29	N40	34.098126	-13	-93.298545	
30	N41	-52.99995	-13	-54.559453	
31	N42	-12.49995	-13	-124.707511	
32	N43	-15.098026	-13	-126.20751	
33	N44	-15.098026	-45	-126.20751	
34	N45	-15.098026	51	-126.20751	
35	N46	-55.598026	37	-56.059453	
36	N47	-55.598026	-35	-56.059453	
37	N48	-55.598026	-13	-56.059453	
38	N49	0.00005	-13	-23.382538	
39	N50	-21.99995	-13	-61.487656	

Node Coordinates (Continued)

	Label	X [in]	Y [in]	Z [in]	Detach From Diaphragm
40	N51	22.00005	-13	-61.487656	
41	N52	0.00005	23	0.000148	
42	N53	84.00005	23	0.000148	
43	N54	-83.99995	23	0.000148	
44	N55	-59.49995	23	3.000147	
45	N56	21.50005	23	3.000147	
46	N57	21.50005	23	0.000148	
47	N58	-59.49995	23	0.000148	
48	N59	66.00005	23	0.000148	
49	N60	-65.99995	23	0.000148	
50	N61	34.098126	23	-93.298545	
51	N62	84.25005	23	-0.432865	
52	N63	31.50005	23	-91.798545	
53	N64	0.25005	23	-145.925133	
54	N65	74.598126	23	-23.150487	
55	N66	72.00005	23	-21.650487	
56	N67	9.25005	23	-130.336675	
57	N68	75.25005	23	-16.021322	
58	N69	-55.598026	23	-56.059453	
59	N70	-0.24995	23	-145.925133	
60	N71	-52.99995	23	-54.559453	
61	N72	-84.24995	23	-0.432865	
62	N73	-15.098026	23	-126.20751	
63	N74	-12.49995	23	-124.707511	
64	N75	-75.24995	23	-16.021322	
65	N76	-9.24995	23	-130.336676	

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb y-y [in]	Lb z-z [in]	Lcomp top [in]	Lcomp bot [in]	L-Torque [in]	Channel Conn.	a [in]	Function
1	HOR1	Face Horizontal	169	Segment	Segment	Segment	Segment	Segment	N/A	N/A	Lateral
2	HOR2	Face Horizontal	169	Segment	Segment	Segment	Segment	Segment	N/A	N/A	Lateral
3	HOR3	Face Horizontal	169	Segment	Segment	Segment	Segment	Segment	N/A	N/A	Lateral
4	G4	Grating Angle	88			Lbyy			N/A	N/A	Lateral
5	G5	Grating Angle	88			Lbyy			N/A	N/A	Lateral
6	G6	Grating Angle	88			Lbyy			N/A	N/A	Lateral
7	G3	Corner Angle	46.765			Lbyy			N/A	N/A	Lateral
8	G2	Corner Angle	46.765			Lbyy			N/A	N/A	Lateral
9	G1	Corner Angle	46.765			Lbyy			N/A	N/A	Lateral
10	M55	Standoff (LARGE)	33			Lbyy			N/A	N/A	Lateral
11	M61	Standoff (LARGE)	33			Lbyy			N/A	N/A	Lateral
12	M62	Standoff (LARGE)	33			Lbyy			N/A	N/A	Lateral
13	MP1	2.0 STD Mount Pipe	72						N/A	N/A	Lateral
14	MP2	2.0 STD Mount Pipe	96						N/A	N/A	Lateral
15	MP6	2.0 STD Mount Pipe	96						N/A	N/A	Lateral
16	MP5	2.0 STD Mount Pipe	72						N/A	N/A	Lateral
17	MP4	2.0 STD Mount Pipe	96						N/A	N/A	Lateral
18	MP3	2.0 STD Mount Pipe	72						N/A	N/A	Lateral
19	M25	Handrail	168			Lbyy			N/A	N/A	Lateral
20	M30	Handrail	168			Lbyy			N/A	N/A	Lateral
21	M33	Handrail	168			Lbyy			N/A	N/A	Lateral
22	M35	Handrail Corner Angle	18.5			Lbyy			N/A	N/A	Lateral
23	M36	Handrail Corner Angle	18.5			Lbyy			N/A	N/A	Lateral
24	M37	Handrail Corner Angle	18.5			Lbyy			N/A	N/A	Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Nodal	Point	Distributed	Area(Member)
1	Self Weight	DL		-1			22		3
2	Wind Load AZI 0	WLZ					44		
3	Wind Load AZI 30	None					44		
4	Wind Load AZI 60	None					44		
5	Wind Load AZI 90	WLX					44		
6	Wind Load AZI 120	None					44		
7	Wind Load AZI 150	None					44		
8	Wind Load AZI 180	None					44		
9	Wind Load AZI 210	None					44		
10	Wind Load AZI 240	None					44		
11	Wind Load AZI 270	None					44		
12	Wind Load AZI 300	None					44		
13	Wind Load AZI 330	None					44		
14	Distr. Wind Load Z	WLZ						36	
15	Distr. Wind Load X	WLX						36	
16	Ice Weight	OL1					22	36	3
17	Ice Wind Load AZI 0	OL2					44		
18	Ice Wind Load AZI 30	None					44		
19	Ice Wind Load AZI 60	None					44		
20	Ice Wind Load AZI 90	OL3					44		
21	Ice Wind Load AZI 120	None					44		
22	Ice Wind Load AZI 150	None					44		
23	Ice Wind Load AZI 180	None					44		
24	Ice Wind Load AZI 210	None					44		
25	Ice Wind Load AZI 240	None					44		
26	Ice Wind Load AZI 270	None					44		
27	Ice Wind Load AZI 300	None					44		
28	Ice Wind Load AZI 330	None					44		
29	Distr. Ice Wind Load Z	OL2						36	
30	Distr. Ice Wind Load X	OL3						36	
31	Seismic Load Z	ELZ			-0.374		22		
32	Seismic Load X	ELX	-0.374				22		
33	Service Live Loads	LL				1			
34	Maintenance Load Lm1	LL				1			
35	Maintenance Load Lm2	LL				1			
36	Maintenance Load Lm3	LL				1			
37	Maintenance Load Lm4	LL				1			
38	Maintenance Load Lm5	LL				1			
39	Maintenance Load Lm6	LL				1			
40	BLC 1 Transient Area Loads	None						99	
41	BLC 16 Transient Area Loads	None						99	

Load Combinations

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	1.4DL	Yes	Y	1	1.4								
2	1.2DL + 1WL AZI 0	Yes	Y	1	1.2	2	1	14	1	15			
3	1.2DL + 1WL AZI 30	Yes	Y	1	1.2	3	1	14	0.866	15	0.5		
4	1.2DL + 1WL AZI 60	Yes	Y	1	1.2	4	1	14	0.5	15	0.866		
5	1.2DL + 1WL AZI 90	Yes	Y	1	1.2	5	1	14		15	1		
6	1.2DL + 1WL AZI 120	Yes	Y	1	1.2	6	1	14	-0.5	15	0.866		
7	1.2DL + 1WL AZI 150	Yes	Y	1	1.2	7	1	14	-0.866	15	0.5		
8	1.2DL + 1WL AZI 180	Yes	Y	1	1.2	8	1	14	-1	15			
9	1.2DL + 1WL AZI 210	Yes	Y	1	1.2	9	1	14	-0.866	15	-0.5		
10	1.2DL + 1WL AZI 240	Yes	Y	1	1.2	10	1	14	-0.5	15	-0.866		

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
11	1.2DL + 1WL AZI 270	Yes	Y	1	1.2	11	1	14		15	-1		
12	1.2DL + 1WL AZI 300	Yes	Y	1	1.2	12	1	14	0.5	15	-0.866		
13	1.2DL + 1WL AZI 330	Yes	Y	1	1.2	13	1	14	0.866	15	-0.5		
14	0.9DL + 1WL AZI 0	Yes	Y	1	0.9	2	1	14	1	15			
15	0.9DL + 1WL AZI 30	Yes	Y	1	0.9	3	1	14	0.866	15	0.5		
16	0.9DL + 1WL AZI 60	Yes	Y	1	0.9	4	1	14	0.5	15	0.866		
17	0.9DL + 1WL AZI 90	Yes	Y	1	0.9	5	1	14		15	1		
18	0.9DL + 1WL AZI 120	Yes	Y	1	0.9	6	1	14	-0.5	15	0.866		
19	0.9DL + 1WL AZI 150	Yes	Y	1	0.9	7	1	14	-0.866	15	0.5		
20	0.9DL + 1WL AZI 180	Yes	Y	1	0.9	8	1	14	-1	15			
21	0.9DL + 1WL AZI 210	Yes	Y	1	0.9	9	1	14	-0.866	15	-0.5		
22	0.9DL + 1WL AZI 240	Yes	Y	1	0.9	10	1	14	-0.5	15	-0.866		
23	0.9DL + 1WL AZI 270	Yes	Y	1	0.9	11	1	14		15	-1		
24	0.9DL + 1WL AZI 300	Yes	Y	1	0.9	12	1	14	0.5	15	-0.866		
25	0.9DL + 1WL AZI 330	Yes	Y	1	0.9	13	1	14	0.866	15	-0.5		
26	1.2D + 1.0Di	Yes	Y	1	1.2	16	1						
27	1.2D + 1.0Di +1.0Wi AZI 0	Yes	Y	1	1.2	16	1	17	1	29	1	30	
28	1.2D + 1.0Di +1.0Wi AZI 30	Yes	Y	1	1.2	16	1	18	1	29	0.866	30	0.5
29	1.2D + 1.0Di +1.0Wi AZI 60	Yes	Y	1	1.2	16	1	19	1	29	0.5	30	0.866
30	1.2D + 1.0Di +1.0Wi AZI 90	Yes	Y	1	1.2	16	1	20	1	29		30	1
31	1.2D + 1.0Di +1.0Wi AZI 120	Yes	Y	1	1.2	16	1	21	1	29	-0.5	30	0.866
32	1.2D + 1.0Di +1.0Wi AZI 150	Yes	Y	1	1.2	16	1	22	1	29	-0.866	30	0.5
33	1.2D + 1.0Di +1.0Wi AZI 180	Yes	Y	1	1.2	16	1	23	1	29	-1	30	
34	1.2D + 1.0Di +1.0Wi AZI 210	Yes	Y	1	1.2	16	1	24	1	29	-0.866	30	-0.5
35	1.2D + 1.0Di +1.0Wi AZI 240	Yes	Y	1	1.2	16	1	25	1	29	-0.5	30	-0.866
36	1.2D + 1.0Di +1.0Wi AZI 270	Yes	Y	1	1.2	16	1	26	1	29		30	-1
37	1.2D + 1.0Di +1.0Wi AZI 300	Yes	Y	1	1.2	16	1	27	1	29	0.5	30	-0.866
38	1.2D + 1.0Di +1.0Wi AZI 330	Yes	Y	1	1.2	16	1	28	1	29	0.866	30	-0.5
39	(1.2 + 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	1.25	31	1	32					
40	(1.2 + 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	1.25	31	0.866	32	0.5				
41	(1.2 + 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	1.25	31	0.5	32	0.866				
42	(1.2 + 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	1.25	31		32	1				
43	(1.2 + 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	1.25	31	-0.5	32	0.866				
44	(1.2 + 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	1.25	31	-0.866	32	0.5				
45	(1.2 + 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	1.25	31	-1	32					
46	(1.2 + 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	1.25	31	-0.866	32	-0.5				
47	(1.2 + 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	1.25	31	-0.5	32	-0.866				
48	(1.2 + 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	1.25	31		32	-1				
49	(1.2 + 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	1.25	31	0.5	32	-0.866				
50	(1.2 + 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	1.25	31	0.866	32	-0.5				
51	(0.9 - 0.2Sds)DL + 1.0E AZI 0	Yes	Y	1	0.85	31	1	32					
52	(0.9 - 0.2Sds)DL + 1.0E AZI 30	Yes	Y	1	0.85	31	0.866	32	0.5				
53	(0.9 - 0.2Sds)DL + 1.0E AZI 60	Yes	Y	1	0.85	31	0.5	32	0.866				
54	(0.9 - 0.2Sds)DL + 1.0E AZI 90	Yes	Y	1	0.85	31		32	1				
55	(0.9 - 0.2Sds)DL + 1.0E AZI 120	Yes	Y	1	0.85	31	-0.5	32	0.866				
56	(0.9 - 0.2Sds)DL + 1.0E AZI 150	Yes	Y	1	0.85	31	-0.866	32	0.5				
57	(0.9 - 0.2Sds)DL + 1.0E AZI 180	Yes	Y	1	0.85	31	-1	32					
58	(0.9 - 0.2Sds)DL + 1.0E AZI 210	Yes	Y	1	0.85	31	-0.866	32	-0.5				
59	(0.9 - 0.2Sds)DL + 1.0E AZI 240	Yes	Y	1	0.85	31	-0.5	32	-0.866				
60	(0.9 - 0.2Sds)DL + 1.0E AZI 270	Yes	Y	1	0.85	31		32	-1				
61	(0.9 - 0.2Sds)DL + 1.0E AZI 300	Yes	Y	1	0.85	31	0.5	32	-0.866				
62	(0.9 - 0.2Sds)DL + 1.0E AZI 330	Yes	Y	1	0.85	31	0.866	32	-0.5				
63	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 0	Yes	Y	1	1	2	0.272	14	0.272	15		33	1.5
64	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 30	Yes	Y	1	1	3	0.272	14	0.236	15	0.136	33	1.5
65	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 60	Yes	Y	1	1	4	0.272	14	0.136	15	0.236	33	1.5

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
66	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 90	Yes	Y	1	1	5	0.272	14		15	0.272	33	1.5
67	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 120	Yes	Y	1	1	6	0.272	14	-0.136	15	0.236	33	1.5
68	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 150	Yes	Y	1	1	7	0.272	14	-0.236	15	0.136	33	1.5
69	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 180	Yes	Y	1	1	8	0.272	14	-0.272	15		33	1.5
70	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 210	Yes	Y	1	1	9	0.272	14	-0.236	15	-0.136	33	1.5
71	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 240	Yes	Y	1	1	10	0.272	14	-0.136	15	-0.236	33	1.5
72	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 270	Yes	Y	1	1	11	0.272	14		15	-0.272	33	1.5
73	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 300	Yes	Y	1	1	12	0.272	14	0.136	15	-0.236	33	1.5
74	1.0DL + 1.5LL + 1.0SWL (60 mph) AZI 330	Yes	Y	1	1	13	0.272	14	0.236	15	-0.136	33	1.5
75	1.2DL + 1.5LL	Yes	Y	1	1.2	33	1.5						
76	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	34	1.5	2	0.068	14	0.068	15	
77	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	34	1.5	3	0.068	14	0.059	15	0.034
78	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	34	1.5	4	0.068	14	0.034	15	0.059
79	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	34	1.5	5	0.068	14		15	0.068
80	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	34	1.5	6	0.068	14	-0.034	15	0.059
81	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	34	1.5	7	0.068	14	-0.059	15	0.034
82	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	34	1.5	8	0.068	14	-0.068	15	
83	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	34	1.5	9	0.068	14	-0.059	15	-0.034
84	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	34	1.5	10	0.068	14	-0.034	15	-0.059
85	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	34	1.5	11	0.068	14		15	-0.068
86	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	34	1.5	12	0.068	14	0.034	15	-0.059
87	1.2DL + 1.5LM-MP1 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	34	1.5	13	0.068	14	0.059	15	-0.034
88	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	35	1.5	2	0.068	14	0.068	15	
89	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	35	1.5	3	0.068	14	0.059	15	0.034
90	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	35	1.5	4	0.068	14	0.034	15	0.059
91	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	35	1.5	5	0.068	14		15	0.068
92	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	35	1.5	6	0.068	14	-0.034	15	0.059
93	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	35	1.5	7	0.068	14	-0.059	15	0.034
94	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	35	1.5	8	0.068	14	-0.068	15	
95	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	35	1.5	9	0.068	14	-0.059	15	-0.034
96	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	35	1.5	10	0.068	14	-0.034	15	-0.059
97	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	35	1.5	11	0.068	14		15	-0.068
98	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	35	1.5	12	0.068	14	0.034	15	-0.059
99	1.2DL + 1.5LM-MP2 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	35	1.5	13	0.068	14	0.059	15	-0.034
100	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	36	1.5	2	0.068	14	0.068	15	
101	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	36	1.5	3	0.068	14	0.059	15	0.034
102	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	36	1.5	4	0.068	14	0.034	15	0.059
103	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	36	1.5	5	0.068	14		15	0.068
104	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	36	1.5	6	0.068	14	-0.034	15	0.059
105	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	36	1.5	7	0.068	14	-0.059	15	0.034
106	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	36	1.5	8	0.068	14	-0.068	15	
107	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	36	1.5	9	0.068	14	-0.059	15	-0.034
108	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	36	1.5	10	0.068	14	-0.034	15	-0.059
109	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	36	1.5	11	0.068	14		15	-0.068
110	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	36	1.5	12	0.068	14	0.034	15	-0.059
111	1.2DL + 1.5LM-MP3 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	36	1.5	13	0.068	14	0.059	15	-0.034
112	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	37	1.5	2	0.068	14	0.068	15	
113	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	37	1.5	3	0.068	14	0.059	15	0.034
114	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	37	1.5	4	0.068	14	0.034	15	0.059
115	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	37	1.5	5	0.068	14		15	0.068
116	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	37	1.5	6	0.068	14	-0.034	15	0.059
117	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	37	1.5	7	0.068	14	-0.059	15	0.034
118	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	37	1.5	8	0.068	14	-0.068	15	
119	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	37	1.5	9	0.068	14	-0.059	15	-0.034
120	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	37	1.5	10	0.068	14	-0.034	15	-0.059

Load Combinations (Continued)

	Description	Solve	P-Delta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
121	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	37	1.5	11	0.068	14		15	-0.068
122	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	37	1.5	12	0.068	14	0.034	15	-0.059
123	1.2DL + 1.5LM-MP4 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	37	1.5	13	0.068	14	0.059	15	-0.034
124	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	38	1.5	2	0.068	14	0.068	15	
125	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	38	1.5	3	0.068	14	0.059	15	0.034
126	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	38	1.5	4	0.068	14	0.034	15	0.059
127	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	38	1.5	5	0.068	14		15	0.068
128	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	38	1.5	6	0.068	14	-0.034	15	0.059
129	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	38	1.5	7	0.068	14	-0.059	15	0.034
130	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	38	1.5	8	0.068	14	-0.068	15	
131	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	38	1.5	9	0.068	14	-0.059	15	-0.034
132	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	38	1.5	10	0.068	14	-0.034	15	-0.059
133	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	38	1.5	11	0.068	14		15	-0.068
134	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	38	1.5	12	0.068	14	0.034	15	-0.059
135	1.2DL + 1.5LM-MP5 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	38	1.5	13	0.068	14	0.059	15	-0.034
136	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 0	Yes	Y	1	1.2	39	1.5	2	0.068	14	0.068	15	
137	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 30	Yes	Y	1	1.2	39	1.5	3	0.068	14	0.059	15	0.034
138	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 60	Yes	Y	1	1.2	39	1.5	4	0.068	14	0.034	15	0.059
139	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 90	Yes	Y	1	1.2	39	1.5	5	0.068	14		15	0.068
140	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 120	Yes	Y	1	1.2	39	1.5	6	0.068	14	-0.034	15	0.059
141	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 150	Yes	Y	1	1.2	39	1.5	7	0.068	14	-0.059	15	0.034
142	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 180	Yes	Y	1	1.2	39	1.5	8	0.068	14	-0.068	15	
143	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 210	Yes	Y	1	1.2	39	1.5	9	0.068	14	-0.059	15	-0.034
144	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 240	Yes	Y	1	1.2	39	1.5	10	0.068	14	-0.034	15	-0.059
145	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 270	Yes	Y	1	1.2	39	1.5	11	0.068	14		15	-0.068
146	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 300	Yes	Y	1	1.2	39	1.5	12	0.068	14	0.034	15	-0.059
147	1.2DL + 1.5LM-MP6 + 1SWL (30 mph) AZI 330	Yes	Y	1	1.2	39	1.5	13	0.068	14	0.059	15	-0.034

Material Take-Off

	Material	Size	Pieces	Length[in]	Weight[K]
1	General Members				
2	RIGID		12	36	0
3	Total General		12	36	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	C5.25X4	3	99	0.132
7	A36 Gr.36	L2.5X2.5X3	3	55.5	0.014
8	A36 Gr.36	L3X3X4	6	771	0.315
9	A36 Gr.36	LL3X3X4X0	3	140.3	0.115
10	A53 Gr.B	PIPE_2.0	6	504	0.146
11	A53 Gr.B	PIPE_2.5	3	504	0.23
12	Total HR Steel		24	2073.8	0.951

Envelope Node Reactions

	Node Label		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N4	max	1816.395	18	2157.813	33	859.259	2	777.857	14	1366.973	6	543.682	11
2		min	-1861.298	12	-336.955	14	-798.644	20	-5006.37	33	-1333.595	24	-517.381	17
3	N23	max	1375.564	4	2083.264	37	1821.331	3	2424.46	38	1828.075	10	4159.183	37
4		min	-1313.897	22	-331.037	18	-1809.036	9	-472.711	19	-1796.656	16	-669.524	18
5	N25	max	1242.899	18	2041.568	29	1838.296	14	2359.869	28	1556.226	2	671.294	22
6		min	-1268.087	12	-338.555	22	-1903.377	8	-512.061	21	-1525.346	20	-4092.003	29
7	Totals:	max	4316.124	5	5782.37	30	4441.903	14						
8		min	-4316.126	11	1770.866	60	-4441.917	8						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn
1	HOR1	L3X3X4	0.991	84.5	8	0.209	84.5	z	8	43453.599	46656	1688.138	3755.745	1.5	H2-1
2	HOR3	L3X3X4	0.967	84.5	12	0.207	84.5	z	12	27064.022	46656	1688.138	3521.265	1.5	H2-1
3	HOR2	L3X3X4	0.932	84.5	4	0.205	84.5	y	4	43453.599	46656	1688.138	3755.745	1.5	H2-1
4	MP5	PIPE_2.0	0.759	49.5	10	0.17	49.5		12	20866.733	32130	1871.625	1871.625	1	H1-1b
5	MP3	PIPE_2.0	0.756	49.5	2	0.171	49.5		4	20866.733	32130	1871.625	1871.625	1	H1-1b
6	MP1	PIPE_2.0	0.745	49.5	6	0.18	49.5		8	20866.733	32130	1871.625	1871.625	1	H1-1b
7	M37	L2.5X2.5X3	0.716	18.5	2	0.173	0	y	3	26979.837	29192.4	872.574	1971.83	1.006	H2-1
8	M36	L2.5X2.5X3	0.713	18.5	10	0.173	0	y	11	26979.837	29192.4	872.574	1971.83	1.005	H2-1
9	M35	L2.5X2.5X3	0.708	18.5	6	0.172	0	y	7	26979.837	29192.4	872.574	1971.83	1.038	H2-1
10	MP6	PIPE_2.0	0.601	64	2	0.155	28		12	14916.096	32130	1871.625	1871.625	1	H1-1b
11	MP4	PIPE_2.0	0.592	64	5	0.151	28		4	14916.096	32130	1871.625	1871.625	1	H1-1b
12	MP2	PIPE_2.0	0.59	64	9	0.153	28		8	14916.096	32130	1871.625	1871.625	1	H1-1b
13	M61	C5.25X4	0.57	33	10	0.199	23.719	z	3	136909.686	151875	12325.223	24869.533	2.663	H1-1b
14	M62	C5.25X4	0.561	33	2	0.199	23.719	z	7	136909.686	151875	12325.223	24869.533	2.91	H1-1b
15	M55	C5.25X4	0.55	33	6	0.197	23.719	z	11	136909.686	151875	12325.223	24869.533	2.928	H1-1b
16	M30	PIPE_2.5	0.51	61.25	11	0.186	148.75		6	11606.18	50715	3596.25	3596.25	1	H1-1b
17	M25	PIPE_2.5	0.509	61.25	7	0.191	148.75		2	11606.18	50715	3596.25	3596.25	1	H1-1b
18	M33	PIPE_2.5	0.507	61.25	3	0.189	148.75		10	11606.18	50715	3596.25	3596.25	1	H1-1b
19	G4	L3X3X4	0.468	44	7	0.026	44	y	10	14376.353	46656	1688.138	3137.94	1.317	H2-1
20	G5	L3X3X4	0.464	44	3	0.025	44	z	92	14376.353	46656	1688.138	3136.118	1.314	H2-1
21	G6	L3X3X4	0.462	44	11	0.026	44	y	2	14376.353	46656	1688.138	3139.976	1.32	H2-1
22	G3	LL3X3X4X0	0.147	0	13	0.02	46.765	y	110	76393.472	93312	6480	4361.544	1	H1-1b
23	G2	LL3X3X4X0	0.147	0	4	0.02	46.765	y	126	76393.472	93312	6480	4361.544	1	H1-1b
24	G1	LL3X3X4X0	0.146	0	8	0.02	46.765	y	94	76393.472	93312	6480	4361.544	1	H1-1b

Envelope AISI S100-16: LRFD Member Cold Formed Steel Code Checks

No Data to Print...

APPENDIX D

ADDITIONAL CALCUATIONS

INFINIGY

Bolt Calculation Tool, V1.6.3

PROJECT DATA	
Site Name:	BENNETT POND
Site Number:	842857
Connection Description:	Mount to Tower

ENVELOPE BOLT LOADS		
(LC10 M61) Bolt Tension:	4724.44	lbs
(LC33 M55) Bolt Shear:	10105.26	lbs

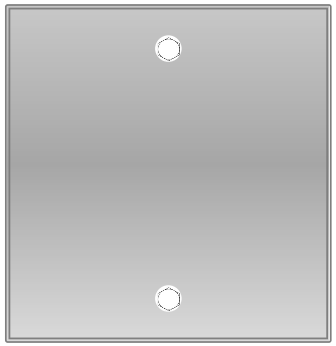
MAX BOLT USAGE LOADS[1]		
Bolt Tension:	0.00	lbs
Bolt Shear:	10105.26	lbs

BOLT PROPERTIES		
Bolt Type:	Bolt	-
Bolt Diameter:	0.75	in
Bolt Grade:	A325	-
# of Bolts:	2	-
Threads Excluded?	No	-

[1] *Max bolt usage loads correspond to Load combination #33 on member M55 in RISA-3D, which causes the maximum demand on the bolts.*

Member Information
J nodes of M55, M61, M62,

BOLT CHECK		
Tensile Strength	30101.39	
Shear Strength	19880.39	
Max Tensile Usage	15.7%	
Max Shear Usage	50.8%	
Interaction Check (Max Usage)	0.26	***≤1.05***
Result	Pass	



Date: **August 16, 2022**

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

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Site Number:	CTL05069
	Site Name:	BENNETT POND
	FA Number:	10070924
Crown Castle Designation:	**BU Number:**	842857
	Site Name:	BENNETT POND
	JDE Job Number:	715649
	Work Order Number:	2145275
	Order Number:	614859 Rev. 0
Engineering Firm Designation:	**Crown Castle Project Number:**	2145275
Site Data:	**66 SUGAR HOLLOW ROAD, DANBURY, FAIRFIELD County, CT** **Latitude *41° 20' 10"*, Longitude *-73° 28' 14.4"*** **106 Foot - Monopole 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:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - "Analysis Criteria".

Structural analysis prepared by: Didi Rossmiller

Respectfully submitted by:

Maribel Dentinger
Maribel Dentinger, P.E.
Senior Project Engineer

Maribel Dentinger

Digitally signed by Maribel Dentinger
Date: 2022.08.17 16:41:21 -04'00'

STATE OF CONNECTICUT
MARIBEL DENTINGER
23524
LICENSED
PROFESSIONAL ENGINEER

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 106 ft Monopole tower designed by Summit Manufacturing and mapped by Paul J. Ford and Company.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	115 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 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)
106.0	108.0	3	cci antennas	OPA65R-BU6D w/ Mount Pipe	1 2 1 6	3/8 13/16 7/8 1-5/8
		3	cci antennas	TPA65R-BU6DA-K		
		1	raycap	DC9-48-60-24-8C-EV_CCIV2		
	106.0	1	raycap	DC6-48-60-18-8F		
		1	tower mounts	Platform Mount [LP 1201-1_HR-1]		
		1	tower mounts	Mount modifications		

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)
88.0	90.0	3	alcatel lucent	1900MHz RRH	1 3	7/8 1-1/4
		3	alcatel lucent	800MHZ RRH		
		3	alcatel lucent	RRH2X50-800		
		3	alcatel lucent	TD-RRH8X20-25		
		3	commscope	DT465B-2XR w/ Mount Pipe		
		3	rfs celwave	APXVSPP18-C-A20		
	88.0	1	tower mounts	Platform Mount [LP 602-1]		
		1	tower mounts	Side Arm Mount [SO 102-3]		
75.0	75.0	1	gps	GPS_A	1	1/2
		1	tower mounts	Side Arm Mount [SO 701-1]		
59.0	59.0	3	fujitsu	TA08025-B604	1	1-3/8
		3	fujitsu	TA08025-B605		
		3	jma wireless	MX08FRO665-21 w/ Mount Pipe		
		1	raycap	RDIDC-9181-PF-48		
		1	tower mounts	Commscope MC-PK8-DSH		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, LLC / Paul J. Ford and company	5110642	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, LLC / Paul J. Ford and company	5110641	CCISITES
4-GEOTECHNICAL REPORTS	FDH Engineering, Inc.	5300808	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
L1	106 - 72.25	Pole	TP27.529x22.3x0.1875	1	-8.57	979.66	38.0	Pass
L2	72.25 - 35.75	Pole	TP32.809x26.6117x0.2188	2	-15.82	1362.14	70.3	Pass
L3	35.75 - 0	Pole	TP37.91x31.7129x0.25	3	-22.14	1835.58	87.1	Pass
							Summary	
						Pole (L3)	87.1	Pass
						Rating =	87.1	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	70.0	Pass
1	Base Plate	0	61.4	Pass
1	Base Foundation (Structure)	0	14.0	Pass
1	Base Foundation (Soil Interaction)	0	77.1	Pass

Structure Rating (max from all components) =	87.1%

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.

APPENDIX A

TNXTOWER OUTPUT

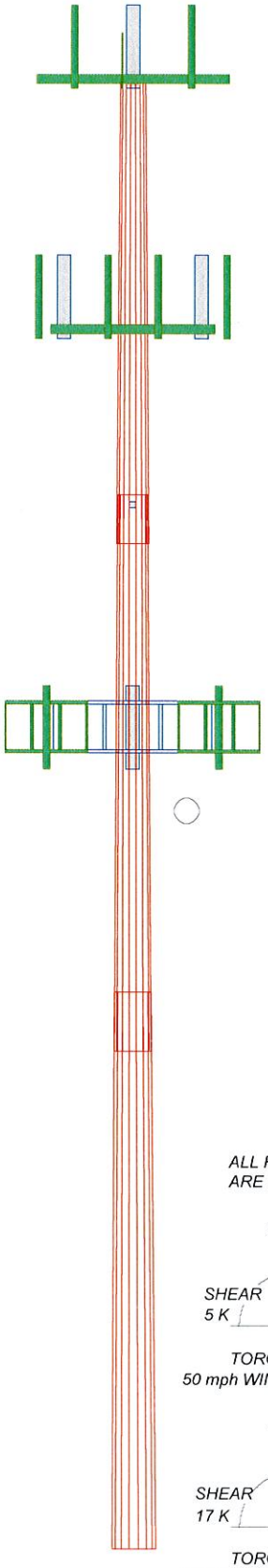
Section	1	2	3
Length (ft)	33.75	40.00	40.00
Number of Sides	18	18	18
Thickness (in)	0.1875	0.2188	0.2500
Socket Length (ft)	3.50	4.25	
Top Dia (in)	22.3000	26.6117	31.7129
Bot Dia (in)	27.5290	32.8090	37.9100
Grade		A572-65	
Weight (K)	1.7	2.8	3.7

106.0 ft

72.3 ft

35.8 ft

0.0 ft



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 87.1%

ALL REACTIONS ARE FACTORED

AXIAL 33 K

SHEAR 5 K *MOMENT 382 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 22 K

SHEAR 17 K *MOMENT 1335 kip-ft*

TORQUE 1 kip-ft
REACTIONS - 115 mph WIND

CROWN CASTLE
The Pathway to Possible

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

Job: *842857*			
Project:			
Client: Crown Castle	Drawn by: DRossmiller		App'd
Code: TIA-222-H	Date: 08/16/22		Scale: NTS
Path:			Dwg No. E-1

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Tower base elevation above sea level: 528.00 ft.
- Basic wind speed of 115 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole 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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	106.00-72.25	33.75	3.50	18	22.3000	27.5290	0.1875	0.7500	A572-65 (65 ksi)
L2	72.25-35.75	40.00	4.25	18	26.6117	32.8090	0.2188	0.8752	A572-65 (65 ksi)
L3	35.75-0.00	40.00		18	31.7129	37.9100	0.2500	1.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.6151	13.1597	812.9413	7.8499	11.3284	71.7614	1626.9523	6.5811	3.5948	19.172
	27.9248	16.2716	1536.7834	9.7062	13.9847	109.8901	3075.5889	8.1374	4.5151	24.081
L2	27.5391	18.3291	1613.0754	9.3695	13.5188	119.3212	3228.2732	9.1663	4.2986	19.646
	33.2814	22.6330	3037.0558	11.5695	16.6670	182.2200	6078.1078	11.3186	5.3893	24.631
L3	32.8322	24.9658	3122.3551	11.1693	16.1102	193.8126	6248.8186	12.4853	5.1415	20.566
	38.4563	29.8832	5354.5790	13.3693	19.2583	278.0404	10716.2036	14.9444	6.2322	24.929

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 106.00-72.25				1	1	1			
L2 72.25-35.75				1	1	1			
L3 35.75-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
** Safety Line ** ***											

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
** 106 **									
PWRT-606-S(7/8)	C	No	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	0.89
							1/2" Ice	0.00	0.89
							1" Ice	0.00	0.89
RFFT-48SM-001-XXX(3/8)	C	No	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
LDF7-50A(1-5/8)	C	No	No	Inside Pole	106.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
PWRT-608-S(13/16)	C	No	No	Inside Pole	106.00 - 0.00	2	No Ice	0.00	0.62
							1/2" Ice	0.00	0.62

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1" Ice	0.00	0.62
2" Rigid Conduit	A	No	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80
** 88 **									
HB114-1-08U4-M5F(1-1/4)	B	No	No	Inside Pole	88.00 - 0.00	3	No Ice	0.00	1.30
							1/2" Ice	0.00	1.30
							1" Ice	0.00	1.30
HB114-08U3M12-XXXF(7/8)	B	No	No	Inside Pole	88.00 - 0.00	1	No Ice	0.00	0.68
							1/2" Ice	0.00	0.68
							1" Ice	0.00	0.68
** 75 **									
LDF4-50A(1/2)	B	No	No	Inside Pole	75.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
*****									
CU12PSM9P8XXX (1-3/8)	B	No	No	Inside Pole	59.00 - 0.00	1	No Ice	0.00	1.66
							1/2" Ice	0.00	1.66
							1" Ice	0.00	1.66
***									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	106.00-72.25	A	0.000	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.07
		C	0.000	0.000	0.000	0.000	0.24
L2	72.25-35.75	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.21
		C	0.000	0.000	0.000	0.000	0.26
L3	35.75-0.00	A	0.000	0.000	0.000	0.000	0.10
		B	0.000	0.000	0.000	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.25

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	106.00-72.25	A	0.938	0.000	0.000	0.000	0.000	0.09
		B		0.000	0.000	0.000	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.24
L2	72.25-35.75	A	0.892	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.21
		C		0.000	0.000	0.000	0.000	0.26
L3	35.75-0.00	A	0.800	0.000	0.000	0.000	0.000	0.10
		B		0.000	0.000	0.000	0.000	0.23
		C		0.000	0.000	0.000	0.000	0.25

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	106.00-72.25	0.0000	0.0000	0.0000	0.0000
L2	72.25-35.75	0.0000	0.0000	0.0000	0.0000
L3	35.75-0.00	0.0000	0.0000	0.0000	0.0000

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
** Lightning Rod **									
Lighting Rod 5/8" x 4'	C	From Leg	0.00 0.00 0.00	0.0000	107.00	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	0.03 0.03 0.04
** 106 **									
OPA65R-BU6D w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	12.25 13.00 13.76	6.05 6.71 7.39	0.09 0.18 0.27
OPA65R-BU6D w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	12.25 13.00 13.76	6.05 6.71 7.39	0.09 0.18 0.27
OPA65R-BU6D w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	12.25 13.00 13.76	6.05 6.71 7.39	0.09 0.18 0.27
TPA65R-BU6DA-K w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	12.87 13.67 14.49	6.39 7.10 7.82	0.09 0.18 0.28
TPA65R-BU6DA-K w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	12.87 13.67 14.49	6.39 7.10 7.82	0.09 0.18 0.28
TPA65R-BU6DA-K w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	12.87 13.67 14.49	6.39 7.10 7.82	0.09 0.18 0.28
DC9-48-60-24-8C-EV_CCIV2	A	From Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.20	2.74 2.96 3.20	0.02 0.04 0.07
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.02 0.04 0.07
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	C	From Leg	4.00 0.00	0.0000	106.00	No Ice	1.43 1.92	1.43 1.92	0.02 0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.29	2.29	0.05
						1" Ice			
6' x 2" Mount Pipe	A	From Leg	2.00	0.0000	106.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
6' x 2" Mount Pipe	B	From Leg	2.00	0.0000	106.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
6' x 2" Mount Pipe	C	From Leg	2.00	0.0000	106.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
Top Hat 14" Diameter x 2' 3" Tall	C	None		0.0000	106.00	No Ice	3.67	3.67	0.10
						1/2"	3.95	3.95	0.13
						Ice	4.22	4.22	0.17
						1" Ice			
Side Arm Mount [SO 102-3]	C	None		0.0000	106.00	No Ice	3.60	3.60	0.07
						1/2"	4.18	4.18	0.11
						Ice	4.75	4.75	0.14
						1" Ice			
Platform Mount [LP 1201-1_HR-1]	C	None		0.0000	106.00	No Ice	26.39	26.39	2.36
						1/2"	31.40	31.40	3.06
						Ice	36.20	36.20	3.86
						1" Ice			
** 88 **									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	88.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			2.00			Ice	5.50	4.89	0.23
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	88.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			2.00			Ice	5.50	4.89	0.23
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	88.00	No Ice	4.60	4.01	0.10
			0.00			1/2"	5.05	4.45	0.16
			2.00			Ice	5.50	4.89	0.23
						1" Ice			
DT465B-2XR w/ Mount Pipe	A	From Leg	4.00	0.0000	88.00	No Ice	5.50	4.38	0.09
			0.00			1/2"	5.97	4.84	0.16
			2.00			Ice	6.45	5.30	0.25
						1" Ice			
DT465B-2XR w/ Mount Pipe	B	From Leg	4.00	0.0000	88.00	No Ice	5.50	4.38	0.09
			0.00			1/2"	5.97	4.84	0.16
			2.00			Ice	6.45	5.30	0.25
						1" Ice			
DT465B-2XR w/ Mount Pipe	C	From Leg	4.00	0.0000	88.00	No Ice	5.50	4.38	0.09
			0.00			1/2"	5.97	4.84	0.16
			2.00			Ice	6.45	5.30	0.25
						1" Ice			
1900MHz RRH	A	From Leg	4.00	0.0000	88.00	No Ice	2.49	3.26	0.04
			0.00			1/2"	2.70	3.48	0.08
			2.00			Ice	2.91	3.72	0.11
						1" Ice			
1900MHz RRH	B	From Leg	4.00	0.0000	88.00	No Ice	2.49	3.26	0.04
			0.00			1/2"	2.70	3.48	0.08
			2.00			Ice	2.91	3.72	0.11
						1" Ice			
1900MHz RRH	C	From Leg	4.00	0.0000	88.00	No Ice	2.49	3.26	0.04
			0.00			1/2"	2.70	3.48	0.08
			2.00			Ice	2.91	3.72	0.11
						1" Ice			
800MHZ RRH	A	From Leg	4.00	0.0000	88.00	No Ice	2.13	1.77	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2"	2.32	1.95	0.07
			2.00			Ice	2.51	2.13	0.10
						1" Ice			
800MHZ RRH	B	From Leg	4.00	0.0000	88.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			2.00			Ice	2.51	2.13	0.10
						1" Ice			
800MHZ RRH	C	From Leg	4.00	0.0000	88.00	No Ice	2.13	1.77	0.05
			0.00			1/2"	2.32	1.95	0.07
			2.00			Ice	2.51	2.13	0.10
						1" Ice			
TD-RRH8X20-25	A	From Leg	4.00	0.0000	88.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			2.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8X20-25	B	From Leg	4.00	0.0000	88.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			2.00			Ice	4.56	1.90	0.13
						1" Ice			
TD-RRH8X20-25	C	From Leg	4.00	0.0000	88.00	No Ice	4.05	1.53	0.07
			0.00			1/2"	4.30	1.71	0.10
			2.00			Ice	4.56	1.90	0.13
						1" Ice			
RRH2X50-800	A	From Leg	4.00	0.0000	88.00	No Ice	1.70	1.28	0.05
			0.00			1/2"	1.86	1.43	0.07
			2.00			Ice	2.03	1.58	0.09
						1" Ice			
RRH2X50-800	B	From Leg	4.00	0.0000	88.00	No Ice	1.70	1.28	0.05
			0.00			1/2"	1.86	1.43	0.07
			2.00			Ice	2.03	1.58	0.09
						1" Ice			
RRH2X50-800	C	From Leg	4.00	0.0000	88.00	No Ice	1.70	1.28	0.05
			0.00			1/2"	1.86	1.43	0.07
			2.00			Ice	2.03	1.58	0.09
						1" Ice			
6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	88.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	88.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	88.00	No Ice	1.43	1.43	0.02
			0.00			1/2"	1.92	1.92	0.03
			0.00			Ice	2.29	2.29	0.05
						1" Ice			
Side Arm Mount [SO 102-3]	C	None		0.0000	88.00	No Ice	3.60	3.60	0.07
						1/2"	4.18	4.18	0.11
						Ice	4.75	4.75	0.14
						1" Ice			
Platform Mount [LP 602-1]	C	None		0.0000	88.00	No Ice	31.07	31.07	1.34
						1/2"	34.82	34.82	1.97
						Ice	38.48	38.48	2.67
						1" Ice			
** 75 **									
GPS_A	A	From Leg	4.00	0.0000	75.00	No Ice	0.26	0.26	0.00
			0.00			1/2"	0.32	0.32	0.00
			0.00			Ice	0.39	0.39	0.01
						1" Ice			
Side Arm Mount [SO 701-1]	A	From Leg	2.00	0.0000	75.00	No Ice	0.85	1.67	0.07
			0.00			1/2"	1.14	2.34	0.08
			0.00			Ice	1.43	3.01	0.09
						1" Ice			
******									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	2.31 2.50 2.70	1.29 1.45 1.61	0.02 0.04 0.06
(2) 8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) 8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
(2) 8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	59.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Commscope MC-PK8-DSH	C	None		0.0000	59.00	No Ice 1/2" Ice 1" Ice	34.24 62.95 91.66	34.24 62.95 91.66	1.75 2.10 2.45
***									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

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
L1	106 - 72.25	Pole	Max Tension	39	0.00	0.00	-0.00
			Max. Compression	26	-15.96	-0.27	0.20
			Max. Mx	8	-8.57	-223.39	0.04
			Max. My	2	-8.57	-0.07	223.34
			Max. Vy	8	10.24	-223.39	0.04
			Max. Vx	2	-10.24	-0.07	223.34
			Max. Torque	22			-0.49
L2	72.25 - 35.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.00	-0.26	0.89

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	8	-15.82	-684.67	0.43
			Max. My	2	-15.82	-0.08	684.40
			Max. Vy	8	15.24	-684.67	0.43
			Max. Vx	2	-15.23	-0.08	684.40
			Max. Torque	21			-0.89
L3	35.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.21	-0.26	0.87
			Max. Mx	8	-22.14	-1334.49	0.44
			Max. My	2	-22.14	-0.08	1334.10
			Max. Vy	8	17.12	-1334.49	0.44
			Max. Vx	2	-17.11	-0.08	1334.10
			Max. Torque	21			-0.89

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	33.21	0.00	-0.00
	Max. H_x	20	22.16	17.09	0.00
	Max. H_z	3	16.62	-0.00	17.09
	Max. M_x	2	1334.10	-0.00	17.09
	Max. M_z	8	1334.49	-17.09	0.00
	Max. Torsion	9	0.89	-17.09	0.00
	Min. Vert	9	16.62	-17.09	0.00
	Min. H_x	8	22.16	-17.09	0.00
	Min. H_z	15	16.62	-0.00	-17.09
	Min. M_x	14	-1333.20	-0.00	-17.09
	Min. M_z	20	-1334.33	17.09	0.00
	Min. Torsion	21	-0.89	17.09	0.00

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	18.47	0.00	-0.00	-0.35	-0.06	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	22.16	0.00	-17.09	-1334.10	-0.08	0.21
0.9 Dead+1.0 Wind 0 deg - No Ice	16.62	0.00	-17.09	-1317.56	-0.06	0.21
1.2 Dead+1.0 Wind 30 deg - No Ice	22.16	8.55	-14.80	-1155.56	-667.32	-0.26
0.9 Dead+1.0 Wind 30 deg - No Ice	16.62	8.55	-14.80	-1141.17	-659.05	-0.26
1.2 Dead+1.0 Wind 60 deg - No Ice	22.16	14.80	-8.54	-667.34	-1155.76	-0.66
0.9 Dead+1.0 Wind 60 deg - No Ice	16.62	14.80	-8.54	-658.99	-1141.46	-0.67
1.2 Dead+1.0 Wind 90 deg - No Ice	22.16	17.09	-0.00	-0.44	-1334.49	-0.89
0.9 Dead+1.0 Wind 90 deg - No Ice	16.62	17.09	-0.00	-0.32	-1317.94	-0.89
1.2 Dead+1.0 Wind 120 deg - No Ice	22.16	14.80	8.54	666.46	-1155.76	-0.88
0.9 Dead+1.0 Wind 120 deg - No Ice	16.62	14.80	8.54	658.34	-1141.46	-0.88
1.2 Dead+1.0 Wind 150 deg - No Ice	22.16	8.55	14.80	1154.67	-667.31	-0.63
0.9 Dead+1.0 Wind 150 deg - No Ice	16.62	8.55	14.80	1140.51	-659.05	-0.63

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
1.2 Dead+1.0 Wind 180 deg - No Ice	22.16	0.00	17.09	1333.20	-0.08	-0.21
0.9 Dead+1.0 Wind 180 deg - No Ice	16.62	0.00	17.09	1316.91	-0.06	-0.21
1.2 Dead+1.0 Wind 210 deg - No Ice	22.16	-8.55	14.80	1154.66	667.15	0.26
0.9 Dead+1.0 Wind 210 deg - No Ice	16.62	-8.55	14.80	1140.51	658.93	0.26
1.2 Dead+1.0 Wind 240 deg - No Ice	22.16	-14.80	8.54	666.46	1155.60	0.66
0.9 Dead+1.0 Wind 240 deg - No Ice	16.62	-14.80	8.54	658.34	1141.34	0.66
1.2 Dead+1.0 Wind 270 deg - No Ice	22.16	-17.09	-0.00	-0.44	1334.33	0.89
0.9 Dead+1.0 Wind 270 deg - No Ice	16.62	-17.09	-0.00	-0.32	1317.82	0.89
1.2 Dead+1.0 Wind 300 deg - No Ice	22.16	-14.80	-8.54	-667.34	1155.61	0.88
0.9 Dead+1.0 Wind 300 deg - No Ice	16.62	-14.80	-8.54	-658.99	1141.35	0.88
1.2 Dead+1.0 Wind 330 deg - No Ice	22.16	-8.55	-14.80	-1155.55	667.16	0.63
0.9 Dead+1.0 Wind 330 deg - No Ice	16.62	-8.55	-14.80	-1141.17	658.93	0.63
1.2 Dead+1.0 Ice+1.0 Temp	33.21	-0.00	0.00	-0.87	-0.26	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	33.21	-0.00	-4.98	-381.97	-0.30	0.07
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	33.21	2.49	-4.31	-330.93	-191.05	-0.04
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	33.21	4.32	-2.49	-191.48	-330.70	-0.15
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	33.21	4.98	0.00	-0.99	-381.81	-0.21
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	33.21	4.32	2.49	189.50	-330.69	-0.22
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	33.21	2.49	4.31	328.95	-191.05	-0.17
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	33.21	-0.00	4.98	379.99	-0.30	-0.07
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	33.21	-2.49	4.31	328.95	190.46	0.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	33.21	-4.32	2.49	189.50	330.10	0.15
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	33.21	-4.98	0.00	-0.99	381.21	0.21
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	33.21	-4.32	-2.49	-191.48	330.10	0.22
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	33.21	-2.49	-4.31	-330.93	190.46	0.17
Dead+Wind 0 deg - Service	18.47	-0.00	-4.38	-340.06	-0.07	0.06
Dead+Wind 30 deg - Service	18.47	2.19	-3.79	-294.55	-169.99	-0.06
Dead+Wind 60 deg - Service	18.47	3.80	-2.19	-170.21	-294.39	-0.17
Dead+Wind 90 deg - Service	18.47	4.38	0.00	-0.37	-339.92	-0.23
Dead+Wind 120 deg - Service	18.47	3.80	2.19	169.47	-294.39	-0.23
Dead+Wind 150 deg - Service	18.47	2.19	3.79	293.81	-169.99	-0.17
Dead+Wind 180 deg - Service	18.47	-0.00	4.38	339.32	-0.07	-0.06
Dead+Wind 210 deg - Service	18.47	-2.19	3.79	293.81	169.86	0.06
Dead+Wind 240 deg - Service	18.47	-3.80	2.19	169.47	294.26	0.17
Dead+Wind 270 deg - Service	18.47	-4.38	0.00	-0.37	339.79	0.23
Dead+Wind 300 deg - Service	18.47	-3.80	-2.19	-170.21	294.26	0.23
Dead+Wind 330 deg - Service	18.47	-2.19	-3.79	-294.55	169.86	0.17

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-18.47	0.00	-0.00	18.47	0.00	0.000%
2	0.00	-22.16	-17.09	-0.00	22.16	17.09	0.006%
3	0.00	-16.62	-17.09	-0.00	16.62	17.09	0.005%
4	8.55	-22.16	-14.80	-8.55	22.16	14.80	0.000%
5	8.55	-16.62	-14.80	-8.55	16.62	14.80	0.000%
6	14.80	-22.16	-8.54	-14.80	22.16	8.54	0.000%
7	14.80	-16.62	-8.54	-14.80	16.62	8.54	0.000%
8	17.09	-22.16	0.00	-17.09	22.16	0.00	0.002%
9	17.09	-16.62	0.00	-17.09	16.62	0.00	0.005%
10	14.80	-22.16	8.54	-14.80	22.16	-8.54	0.000%
11	14.80	-16.62	8.54	-14.80	16.62	-8.54	0.000%
12	8.55	-22.16	14.80	-8.55	22.16	-14.80	0.000%
13	8.55	-16.62	14.80	-8.55	16.62	-14.80	0.000%
14	0.00	-22.16	17.09	-0.00	22.16	-17.09	0.006%
15	0.00	-16.62	17.09	-0.00	16.62	-17.09	0.005%
16	-8.55	-22.16	14.80	8.55	22.16	-14.80	0.000%
17	-8.55	-16.62	14.80	8.55	16.62	-14.80	0.000%
18	-14.80	-22.16	8.54	14.80	22.16	-8.54	0.000%
19	-14.80	-16.62	8.54	14.80	16.62	-8.54	0.000%
20	-17.09	-22.16	0.00	17.09	22.16	0.00	0.002%
21	-17.09	-16.62	0.00	17.09	16.62	0.00	0.005%
22	-14.80	-22.16	-8.54	14.80	22.16	8.54	0.000%
23	-14.80	-16.62	-8.54	14.80	16.62	8.54	0.000%
24	-8.55	-22.16	-14.80	8.55	22.16	14.80	0.000%
25	-8.55	-16.62	-14.80	8.55	16.62	14.80	0.000%
26	0.00	-33.21	0.00	0.00	33.21	-0.00	0.001%
27	0.00	-33.21	-4.98	0.00	33.21	4.98	0.001%
28	2.49	-33.21	-4.31	-2.49	33.21	4.31	0.001%
29	4.32	-33.21	-2.49	-4.32	33.21	2.49	0.001%
30	4.99	-33.21	0.00	-4.98	33.21	-0.00	0.001%
31	4.32	-33.21	2.49	-4.32	33.21	-2.49	0.001%
32	2.49	-33.21	4.31	-2.49	33.21	-4.31	0.001%
33	0.00	-33.21	4.98	0.00	33.21	-4.98	0.001%
34	-2.49	-33.21	4.31	2.49	33.21	-4.31	0.001%
35	-4.32	-33.21	2.49	4.32	33.21	-2.49	0.001%
36	-4.99	-33.21	0.00	4.98	33.21	-0.00	0.001%
37	-4.32	-33.21	-2.49	4.32	33.21	2.49	0.001%
38	-2.49	-33.21	-4.31	2.49	33.21	4.31	0.001%
39	0.00	-18.47	-4.38	0.00	18.47	4.38	0.005%
40	2.19	-18.47	-3.80	-2.19	18.47	3.79	0.005%
41	3.80	-18.47	-2.19	-3.80	18.47	2.19	0.005%
42	4.38	-18.47	0.00	-4.38	18.47	-0.00	0.005%
43	3.80	-18.47	2.19	-3.80	18.47	-2.19	0.005%
44	2.19	-18.47	3.80	-2.19	18.47	-3.79	0.005%
45	0.00	-18.47	4.38	0.00	18.47	-4.38	0.005%
46	-2.19	-18.47	3.80	2.19	18.47	-3.79	0.005%
47	-3.80	-18.47	2.19	3.80	18.47	-2.19	0.005%
48	-4.38	-18.47	0.00	4.38	18.47	-0.00	0.005%
49	-3.80	-18.47	-2.19	3.80	18.47	2.19	0.005%
50	-2.19	-18.47	-3.80	2.19	18.47	3.79	0.005%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	14	0.00007264	0.00010436
3	Yes	14	0.00004779	0.00008425
4	Yes	18	0.00000001	0.00007058
5	Yes	17	0.00000001	0.00012544
6	Yes	18	0.00000001	0.00007261
7	Yes	17	0.00000001	0.00012919
8	Yes	15	0.00000001	0.00006858
9	Yes	14	0.00004779	0.00012620
10	Yes	18	0.00000001	0.00006900
11	Yes	17	0.00000001	0.00012262
12	Yes	18	0.00000001	0.00007246
13	Yes	17	0.00000001	0.00012900
14	Yes	14	0.00007265	0.00010425
15	Yes	14	0.00004779	0.00008419
16	Yes	18	0.00000001	0.00007139
17	Yes	17	0.00000001	0.00012705
18	Yes	18	0.00000001	0.00006949
19	Yes	17	0.00000001	0.00012353
20	Yes	15	0.00000001	0.00006857
21	Yes	14	0.00004778	0.00012618
22	Yes	18	0.00000001	0.00007318
23	Yes	17	0.00000001	0.00013026
24	Yes	18	0.00000001	0.00006959
25	Yes	17	0.00000001	0.00012365
26	Yes	6	0.00000001	0.00000851
27	Yes	15	0.00000001	0.00005972
28	Yes	15	0.00000001	0.00009543
29	Yes	15	0.00000001	0.00009668
30	Yes	15	0.00000001	0.00005994
31	Yes	15	0.00000001	0.00009328
32	Yes	15	0.00000001	0.00009583
33	Yes	15	0.00000001	0.00005920
34	Yes	15	0.00000001	0.00009432
35	Yes	15	0.00000001	0.00009331
36	Yes	15	0.00000001	0.00005976
37	Yes	15	0.00000001	0.00009694
38	Yes	15	0.00000001	0.00009415
39	Yes	13	0.00000001	0.00007529
40	Yes	13	0.00000001	0.00009021
41	Yes	13	0.00000001	0.00010184
42	Yes	13	0.00000001	0.00007794
43	Yes	13	0.00000001	0.00008186
44	Yes	13	0.00000001	0.00010217
45	Yes	13	0.00000001	0.00007503
46	Yes	13	0.00000001	0.00009451
47	Yes	13	0.00000001	0.00008449
48	Yes	13	0.00000001	0.00007789
49	Yes	13	0.00000001	0.00010631
50	Yes	13	0.00000001	0.00008436

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	106 - 72.25	17.897	40	1.3183	0.0032
L2	75.75 - 35.75	9.928	40	1.1444	0.0019
L3	40 - 0	2.949	40	0.6605	0.0008

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.00	Lighting Rod 5/8" x 4'	40	17.897	1.3183	0.0032	37829
106.00	OPA65R-BU6D w/ Mount Pipe	40	17.897	1.3183	0.0032	37829
88.00	APXVSPP18-C-A20 w/ Mount Pipe	40	13.043	1.2350	0.0024	10507
75.00	GPS_A	40	9.746	1.1374	0.0019	6082
59.00	MX08FRO665-21 w/ Mount Pipe	40	6.163	0.9485	0.0013	3920

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	106 - 72.25	70.241	8	5.1783	0.0126
L2	75.75 - 35.75	38.974	8	4.4956	0.0075
L3	40 - 0	11.578	8	2.5945	0.0030

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
107.00	Lighting Rod 5/8" x 4'	8	70.241	5.1783	0.0126	9776
106.00	OPA65R-BU6D w/ Mount Pipe	8	70.241	5.1783	0.0126	9776
88.00	APXVSPP18-C-A20 w/ Mount Pipe	8	51.196	4.8514	0.0095	2713
75.00	GPS_A	8	38.258	4.4681	0.0074	1568
59.00	MX08FRO665-21 w/ Mount Pipe	8	24.195	3.7260	0.0052	1006

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	106 - 72.25 (1)	TP27.529x22.3x0.1875	33.75	0.00	0.0	15.9489	-8.57	933.01	0.009
L2	72.25 - 35.75 (2)	TP32.809x26.6117x0.2188	40.00	0.00	0.0	22.1757	-15.82	1297.28	0.012
L3	35.75 - 0 (3)	TP37.91x31.7129x0.25	40.00	0.00	0.0	29.8832	-22.14	1748.17	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	106 - 72.25 (1)	TP27.529x22.3x0.1875	223.41	575.10	0.388	0.00	575.10	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L2	72.25 - 35.75 (2)	TP32.809x26.6117x0.2188	684.77	944.73	0.725	0.00	944.73	0.000
L3	35.75 - 0 (3)	TP37.91x31.7129x0.25	1334.59	1481.51	0.901	0.00	1481.51	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	106 - 72.25 (1)	TP27.529x22.3x0.1875	10.25	279.90	0.037	0.28	656.92	0.000
L2	72.25 - 35.75 (2)	TP32.809x26.6117x0.2188	15.24	389.18	0.039	0.67	1088.32	0.001
L3	35.75 - 0 (3)	TP37.91x31.7129x0.25	17.12	524.45	0.033	0.66	1729.68	0.000

Pole Interaction Design Data

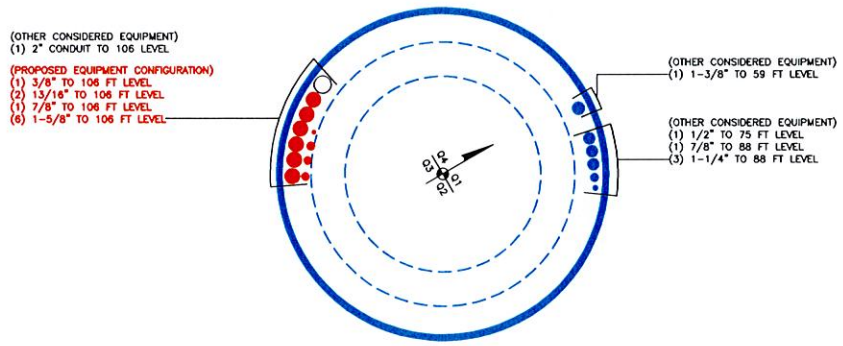
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	106 - 72.25 (1)	0.009	0.388	0.000	0.037	0.000	0.399	1.050	4.8.2
L2	72.25 - 35.75 (2)	0.012	0.725	0.000	0.039	0.001	0.739	1.050	4.8.2
L3	35.75 - 0 (3)	0.013	0.901	0.000	0.033	0.000	0.915	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	106 - 72.25	Pole	TP27.529x22.3x0.1875	1	-8.57	979.66	38.0	Pass
L2	72.25 - 35.75	Pole	TP32.809x26.6117x0.2188	2	-15.82	1362.14	70.3	Pass
L3	35.75 - 0	Pole	TP37.91x31.7129x0.25	3	-22.14	1835.58	87.1	Pass
							Summary	
						Pole (L3)	87.1	Pass
						RATING =	**87.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 2" CONDUIT TO 106 LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 3/8" TO 106 FT LEVEL
(2) 13/16" TO 106 FT LEVEL
(1) 7/8" TO 106 FT LEVEL
(6) 1-5/8" TO 106 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1-3/8" TO 59 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 75 FT LEVEL
(1) 7/8" TO 88 FT LEVEL
(3) 1-1/4" TO 88 FT LEVEL
A1
A2
A3

APPENDIX A

TNXTOWER OUTPUT

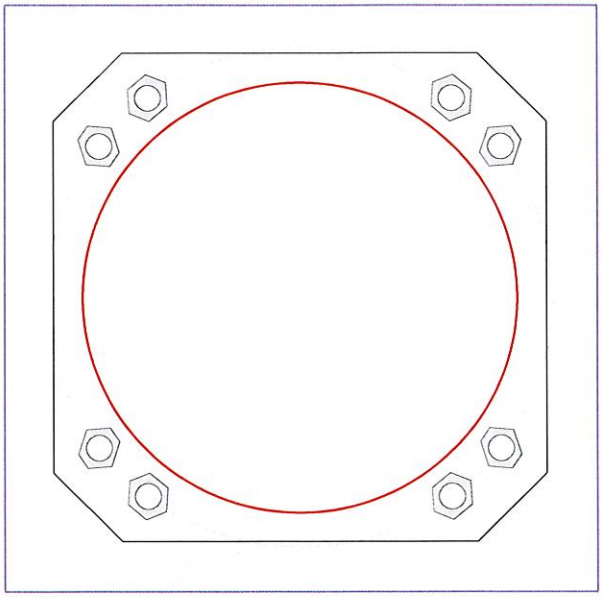
Monopole Base Plate Connection

Site Info	
BU #	842857
Site Name	Bennet Pond
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.75

Applied Loads	
Moment (kip-ft)	1334.59
Axial Force (kips)	22.14
Shear Force (kips)	17.12

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(8) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 44" BC

Anchor Spacing: 6 in

Base Plate Data

43" W x 2.5" Plate (A572-50; Fy=50 ksi, Fu=65 ksi); Clip: 6 in

Stiffener Data

N/A

Pole Data

37.91" x 0.25" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

Pu_t = 179.03	ϕPn_t = 243.75	**Stress Rating**
Vu = 2.14	ϕVn = 149.1	**70.0%**
Mu = n/a	ϕMn = n/a	Pass

Base Plate Summary

Max Stress (ksi):	29.02	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**61.4%**	Pass

Pier and Pad Foundation

BU # :	842857
Site Name:	Bennet Pond
App. Number:	

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	22.16	kips
Base Shear, Vu_comp:	17.09	kips
Moment, M_u:	1334.59	ft-kips
Tower Height, **H**:	106	ft
BP Dist. Above Fdn, bp_{dist}:	3	in
Bolt Circle / Bearing Plate Width, **BC**:	44	in

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	157.79	17.09	**10.3%**	**Pass**
Bearing Pressure (ksf)	23.04	5.59	**24.2%**	**Pass**
*Overturning (kip*ft)*	1870.56	1441.40	**77.1%**	**Pass**
*Pad Flexure (kip*ft)*	4965.62	731.50	**14.0%**	**Pass**
Pad Shear - 1-way (kips)	1098.05	43.55	**3.8%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.164	0.000	**0.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	9931.24	0.00	**0.0%**	**Pass**

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

Structural Rating*:	**14.0%**
Soil Rating*:	**77.1%**

Pad Properties		
Depth, **D**:	5.5	ft
Pad Width, W_1:	16.5	ft
Pad Thickness, **T**:	6	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	21	
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

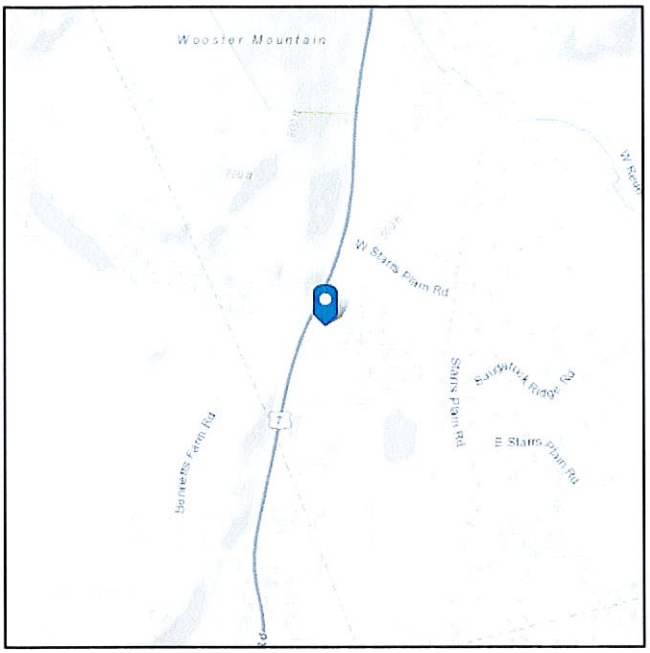
Soil Properties		
Total Soil Unit Weight, γ:	130	pcf
Ultimate Net Bearing, Qnet:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	42	degrees
SPT Blow Count, N_{blows}:	50	
Base Friction, μ:	0.45	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

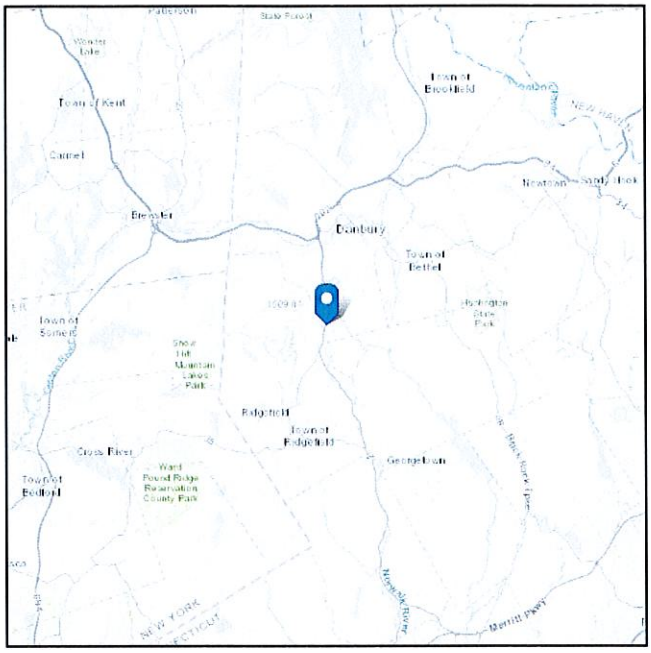
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 527.6 ft (NAVD 88)
Latitude: 41.336111
Longitude: -73.470667





Wind

Results:

Wind Speed	116 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

Date Accessed: Tue Aug 16 2022

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 7-10 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 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

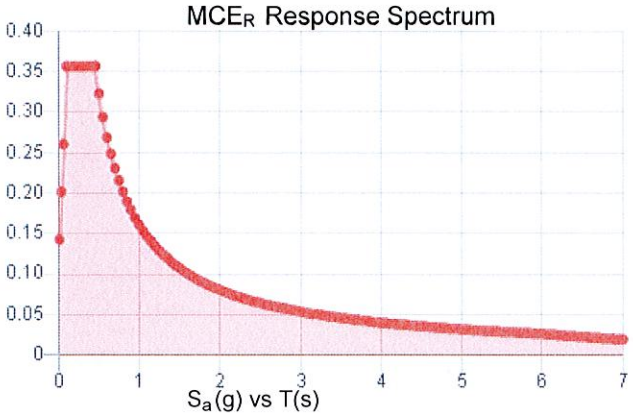
Seismic

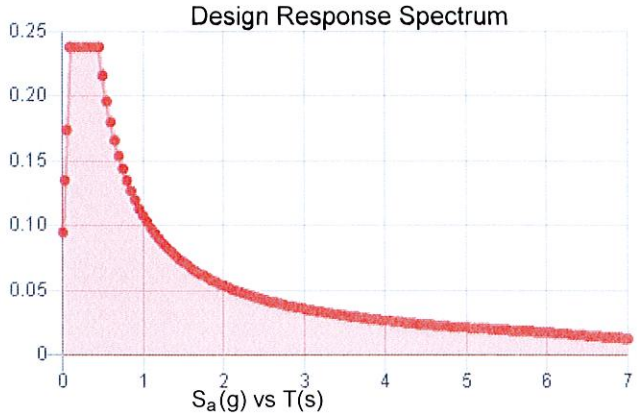
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.223	S_{DS} :	0.238
S_1 :	0.067	S_{D1} :	0.108
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.124
S_{MS} :	0.357	PGA_M :	0.192
S_{M1} :	0.162	F_{PGA} :	1.553
		I_e :	1

Seismic Design Category B





Data Accessed: **Tue Aug 16 2022**

Date Source:
USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Aug 16 2022

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 50-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.

AT&T

AT&T SITE NUMBER: CTV5069
AT&T SITE NAME: BENNETT POND
AT&T FA CODE: 10070924
AT&T PACE NUMBER: MRCTB062143, MRCTB062175, MRCTB066614, MRCTB066596
AT&T PROJECT: LTE 4C, LTE 3C

BUSINESS UNIT #: 842857
SITE ADDRESS: 66 SUGAR HOLLOW ROAD
DANBURY, CT 06810
COUNTY: FAIRFIELD
SITE TYPE: MONOPOLE
TOWER HEIGHT: 106'-0"

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	BENNETT POND
SITE ADDRESS:	66 SUGAR HOLLOW ROAD DANBURY, CT 06810
COUNTY:	FAIRFIELD
MAP/PARCEL #:	G250100000
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.336110
LONGITUDE:	-73.470710
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	534'
CURRENT ZONING:	LCI-40
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	SUGAR HOLLOW HOLDING LLC PEATT LUCILLE, 202-3 MAMANASCO RD RIDGEFIELD, CT 06877
TOWER OWNER:	CROWN CASTLE USA INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	AT&T TOWER ASSET GROUP 575 MOROSGO DRIVE ATLANTA, GA 30324-3300
ELECTRIC PROVIDER:	NORTHEAST UTILITIES 800-286-2000
TELCO PROVIDER:	LIGHTOWER 888-583-4237

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065 VERONICA CHAPMAN - PROJECT MANAGER VERONICA.CHAPMAN@CROWNCASTLE.COM JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCASTLE.COM HEATHER MILLER - AES HEATHER.MILLER@CROWNCASTLE.COM

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER.

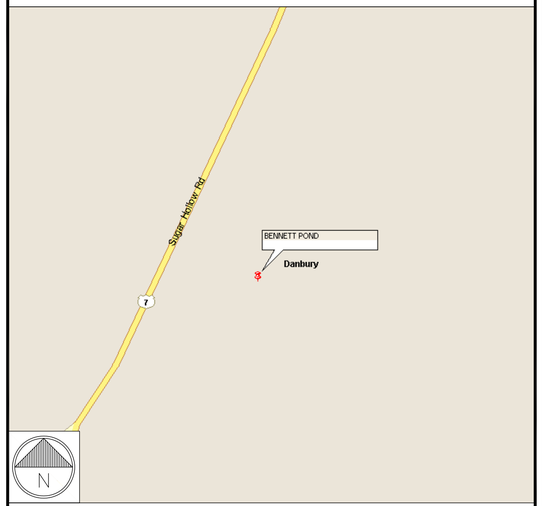
DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	SITE PLAN
C-1.2	EQUIPMENT PLANS
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	ANTENNA SCHEDULE
C-4	EQUIPMENT DETAILS
C-5	EQUIPMENT SPECS.
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS
ATTACHED	PLUMBING DIAGRAM
ATTACHED	AHCP CORNER PLATE KIT

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL CONNECTICUT ONE CALL
(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS
BEFORE YOU DIG!

LOCATION MAP



NO SCALE

SITE PHOTO

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.
TOWER SCOPE OF WORK:
- REMOVE (6) POWERWAVE - 7770.00.850.02 ANTENNAS
- REMOVE (3) POWERWAVE - P65-16-XLH-RR ANTENNAS
- REMOVE (3) ERICSSON - RRUS-11 B12 RRUs
- REMOVE (6) POWERWAVE - LGP21401
- REMOVE (3) POWERWAVE - TT19-08BP111-001 TMAs
- REMOVE (1) RAYCAP - DC6-48-60-18 SQUID
- REMOVE (6) COAX CABLES (1-5/8") & (1) 12-PAIR FIBER CABLE (3/8")
- RELOCATE (2) ERICSSON - 4449 B5/B12 FROM GROUND
- INSTALL MOUNT MODIFICATIONS PER MOUNT ANALYSIS BY INFINIGY DATED AUGUST 15, 2022
- INSTALL (3) CCI - TPA65R-BU6DA-K ANTENNAS
- INSTALL (3) CCI - OPA65R-BU6DA ANTENNAS
- INSTALL (3) ERICSSON - 4478 B14 RRUs
- INSTALL (3) ERICSSON - 8843 B2/B66A RRUs
- INSTALL (1) ERICSSON - 4449 B5/B12 RRU
- INSTALL (1) RAYCAP - DC9-48-60-24-8C-EV SQUID
- INSTALL (1) 24-PAIR FIBER CABLE (3/8")
- INSTALL (1) 6AWG DC CABLE (7/8")
- INSTALL (6) DUAL RADIO MOUNTS
- INSTALL (6) Y-CABLES FOR DUAL BAND RADIOS

GROUND SCOPE OF WORK:
- REMOVE (3) ERICSSON - 4415 B25 RRUs
- INSTALL (1) XMU

NOTE:
THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. AT&T IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

APPLICABLE CODES & REFERENCE DOCUMENTS

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	2018 CONNECTICUT SBC/2015 IBC
MECHANICAL	2018 CONNECTICUT SBC/2015 IMC
ELECTRICAL	2018 CONNECTICUT SBC/2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	CROWN CASTLE
DATED:	8/17/22
MOUNT ANALYSIS:	INFINIGY
DATED:	8/15/22
RFDS REVISION:	PRELIMINARY
DATED:	10/11/22
ORDER ID:	614859
REVISION:	0
AC ELECTRICAL POWER DESIGN:	BY OTHERS
DATED:	

575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

AT&T SITE NUMBER: **CTV5069**

BU #: **842857**
BENNETT POND

66 SUGAR HOLLOW ROAD
DANBURY, CT 06810

EXISTING
106'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	8/29/22	TDG	PRELIMINARY REVIEW	MTJ
0	10/17/22	MEH	CONSTRUCTION	MTJ

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: T-1
REVISION: 0

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. 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 CROWN CASTLE USA INC. 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 CROWN CASTLE USA INC. STANDARD CED–STD–10253, 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 QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," 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 CROWN CASTLE USA INC. 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 PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES 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 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 CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., 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 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: AT&T
   TOWER OWNER: CROWN CASTLE USA INC.
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 CROWN CASTLE.
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 CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS 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 CROWN CASTLE USA INC.
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.

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.

GREENFIELD 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).

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. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
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 3R (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 CROWN CASTLE USA INC. 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 "AT&T".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

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1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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AT&T SITE NUMBER: **CTV5069**

BU #: **842857**
BENNETT POND

66 SUGAR HOLLOW ROAD
DANBURY, CT 06810

EXISTING
106'-0" MONOPOLE

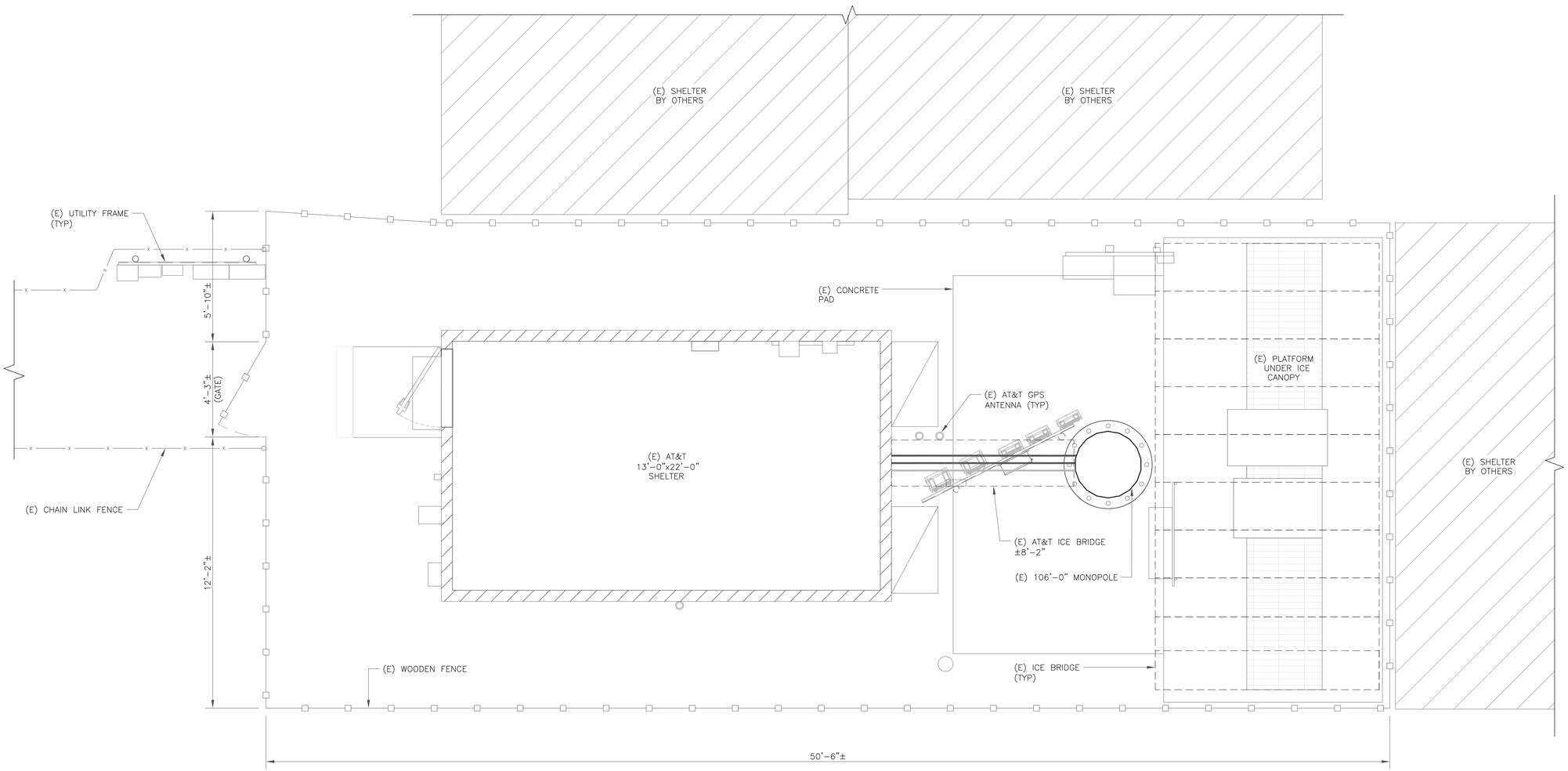
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	8/29/22	TDG	PRELIMINARY REVIEW	MTJ
0	10/17/22	MEH	CONSTRUCTION	MTJ

10/17/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: T-2
REVISION: 0



1 SITE PLAN
SCALE: 2' 1' 0 2'
3/8"=1'-0" (FULL SIZE)
3/16"=1'-0" (11x17)

N

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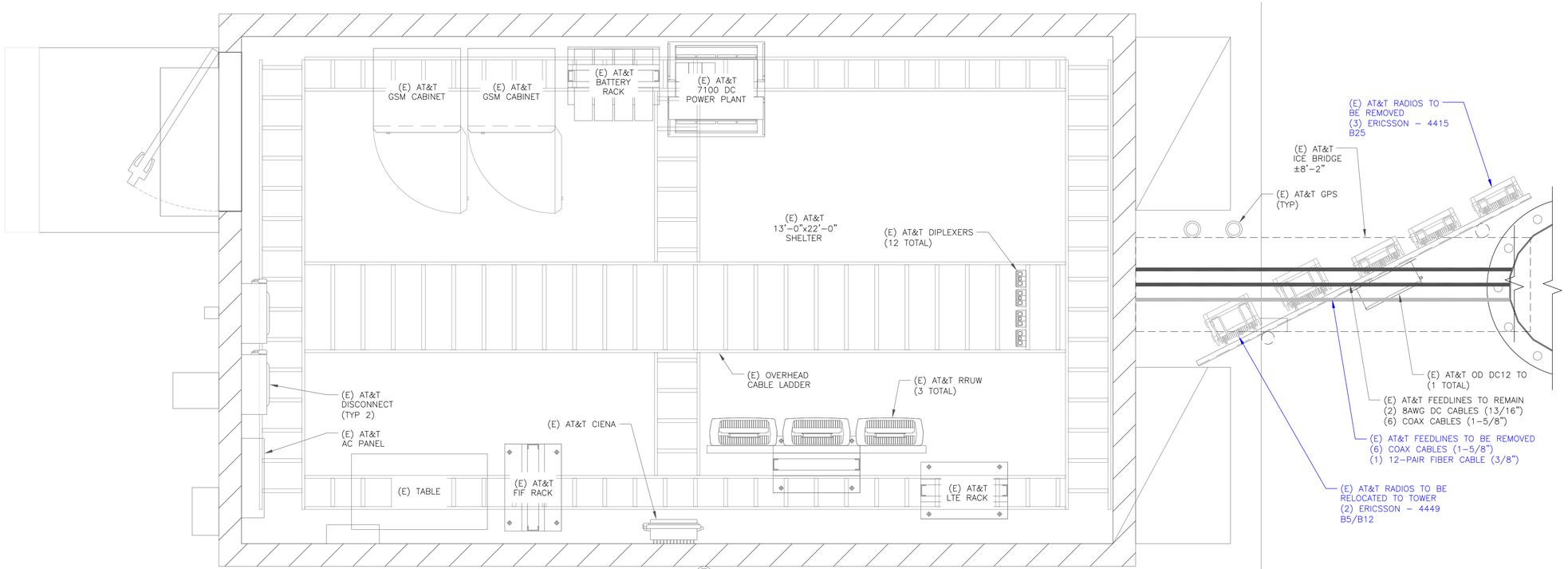
SHEET NUMBER: C-1.1

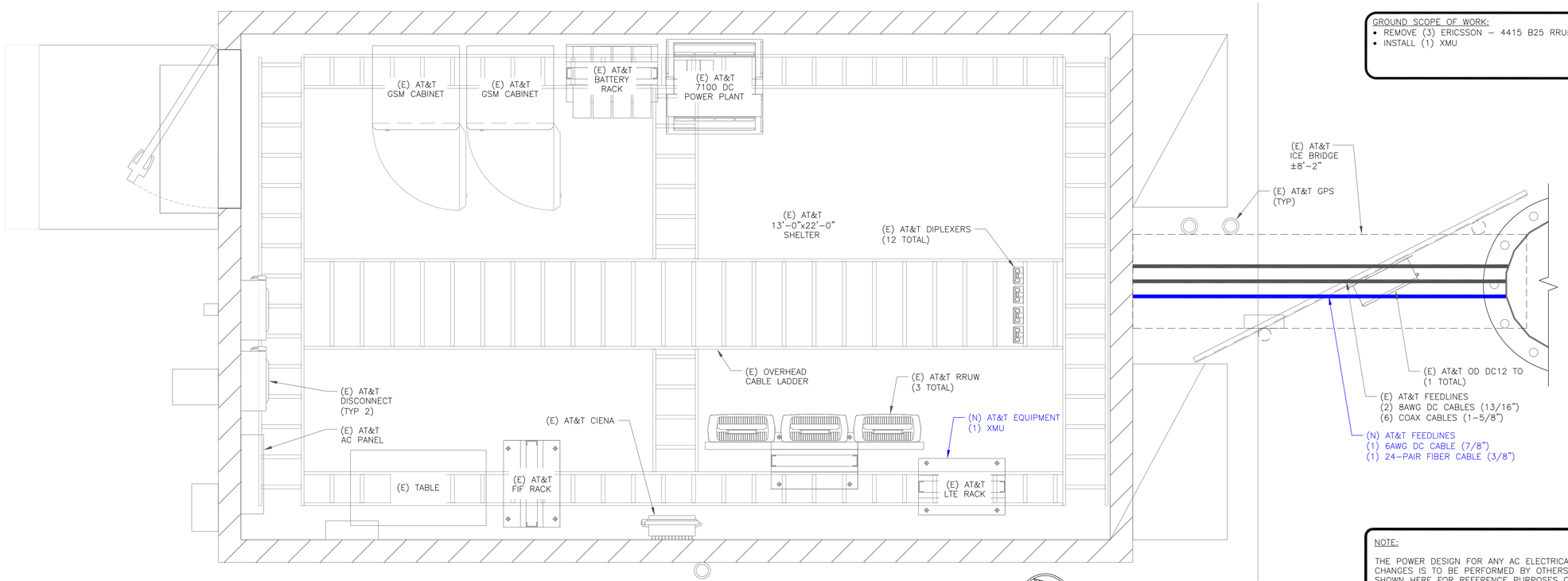
REVISION: 0



1 EXISTING EQUIPMENT PLAN

SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

N



2 FINAL EQUIPMENT PLAN

SCALE: 1' 6" 0 1' 3/4"=1'-0" (FULL SIZE) 3/8"=1'-0" (11x17)

N

GROUND SCOPE OF WORK:
- REMOVE (3) ERICSSON - 4415 B25 RRUs
- INSTALL (1) XMU

NOTE:

THE POWER DESIGN FOR ANY AC ELECTRICAL POWER CHANGES IS TO BE PERFORMED BY OTHERS AND IS SHOWN HERE FOR REFERENCE PURPOSES ONLY. AT&T IS SOLELY RESPONSIBLE FOR THE ELECTRICAL POWER DESIGN.

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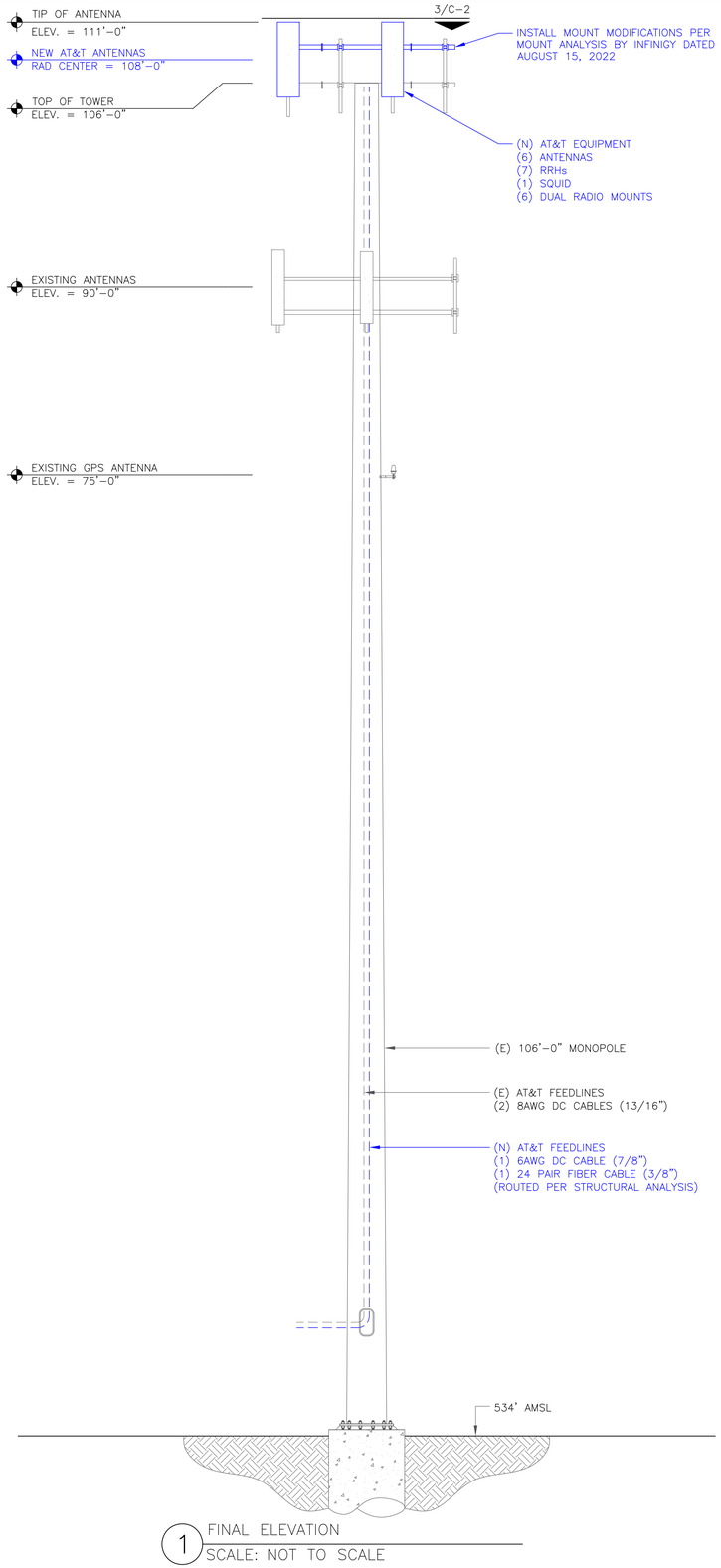
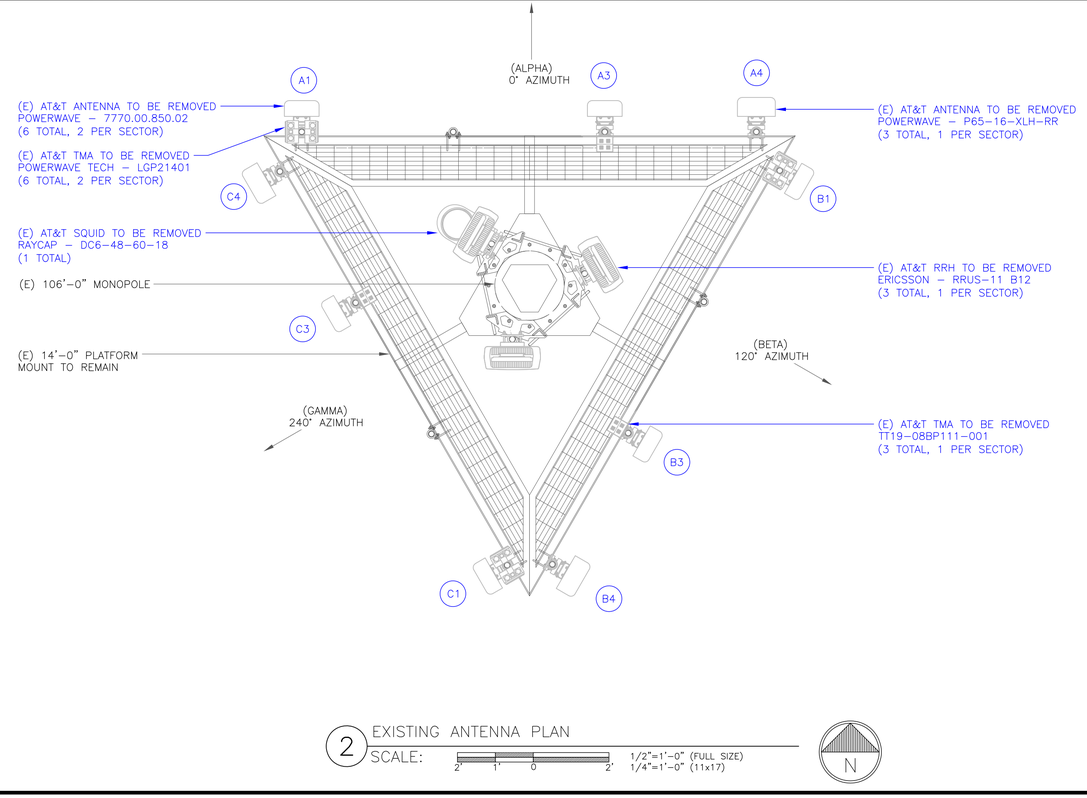
SHEET NUMBER: C-1.2

REVISION: 0

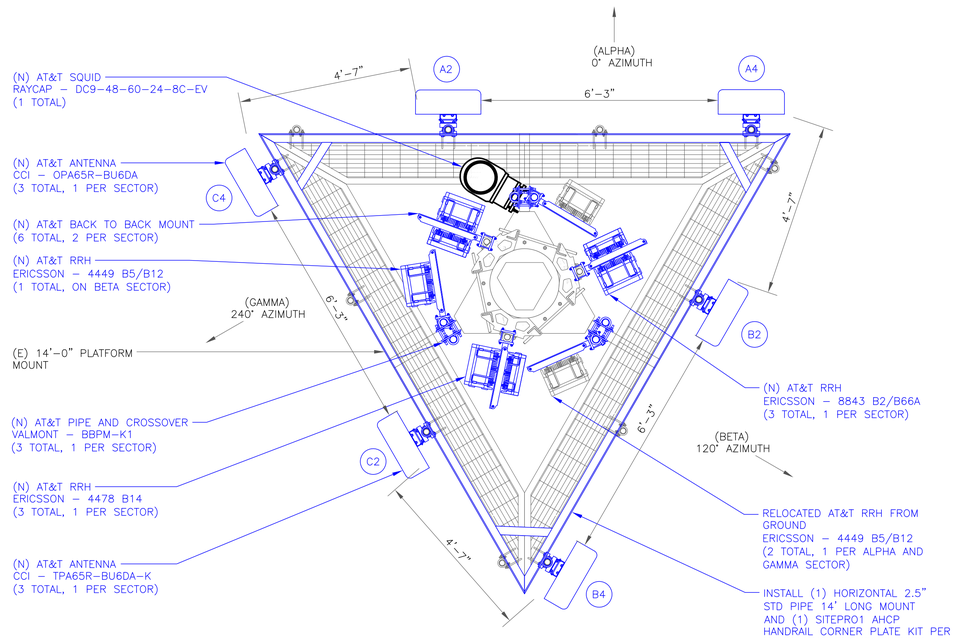


1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N



3 FINAL ANTENNA PLAN
SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N

"LOOK UP" – CROWN CASTLE USA INC.
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 CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.

INSTALLER NOTES:

1. REFERENCE C-3 FOR FINAL EQUIPMENT SCHEDULE.
2. REFERENCE C-4 FOR NEW EQUIPMENT SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL ANTENNA TIP HEIGHTS DO NOT EXCEED BEACON BASE HEIGHT.
4. 3'-0" MINIMUM DISTANCE REQUIRED BETWEEN LTE ANTENNAS ON SAME SECTOR.
5. 6'-0" MINIMUM DISTANCE REQUIRED BETWEEN 700BC & 700DE ANTENNAS ON SAME SECTOR.
6. 4'-0" MINIMUM DISTANCE REQUIRED BETWEEN LTE 700 ANTENNAS ON OPPOSING SECTORS.
7. ALL ANTENNA MEASUREMENT DISTANCES MUST BE EDGE TO EDGE (RELOCATE ANTENNAS AS NEEDED).
8. 8" MINIMUM DISTANCE REQUIRED BETWEEN ANTENNA & RADIO. SEE GENERIC EXAMPLE DETAIL ON SHEET C-4.

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AT&T SITE NUMBER: **CTV5069**

BU #: **842857**
BENNETT POND

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BER:2386985
Expires 3/31/23

SHEET NUMBER: C-2

REVISION: 0

FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)

POSITION	ANTENNA				RADIO			DIPLEXER			TMA		SURGE PROTECTION		CABLES			
	TECH.	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS/MANUFACTURER MODEL	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
ALPHA																		
A2	LTE/5G	(N) CCI – TPA65R–BU6DA–K	0°	108'–0"	1	(N) RADIO 4478 B14	TOWER	–	–	–	–	–	–	(N) DC9–48–60–24–8C–EV	2	(E) DC	13/16"	158'–0"
					1 1	(N) 8843 B2/B66A (N) Y CABLE	TOWER								1 1	(N) DC (N) FIBER	7/8" 3/8"	158'–0" 158'–0"
					–	–	–											
A4	LTE/5G	(N) CCI – OPA65R–BU6DA	0°	108'–0"	1 1	(E) RADIO 4449 B5/B12 (N) Y CABLE	TOWER	–	–	–	–	–	–	–	– –	– –	– –	– –
BETA																		
B2	LTE/5G	(N) CCI – TPA65R–BU6DA–K	120°	108'–0"	1	(N) RADIO 4478 B14	TOWER	–	–	–	–	–	–	–	–	–	–	–
					1 1	(N) 8843 B2/B66A (N) Y CABLE	TOWER											
					–	–	–											
B4	LTE/5G	(N) CCI – OPA65R–BU6DA	120°	108'–0"	1 1	(N) RADIO 4449 B5/B12 (N) Y CABLE	TOWER	–	–	–	–	–	–	–	– –	– –	– –	– –
GAMMA																		
C2	LTE/5G	(N) CCI – TPA65R–BU6DA–K	240°	108'–0"	1	(N) RADIO 4478 B14	TOWER	–	–	–	–	–	–	–	–	–	–	–
					1 1	(N) 8843 B2/B66A (N) Y CABLE	TOWER											
					–	–	–											
C4	LTE/5G	(N) CCI – OPA65R–BU6DA	240°	108'–0"	1 1	(E) RADIO 4449 B5/B12 (N) Y CABLE	TOWER	–	–	–	–	–	–	–	– –	– –	– –	– –
														UNUSED FEEDLINES:	6	COAX	1–5/8"	158'–0"

1 FINAL ANTENNA AND FEEDLINE SCHEDULE
SCALE: NOT TO SCALE

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CT PROFESSIONAL ENGINEER
No. 23924
LICENSED
10/17/22

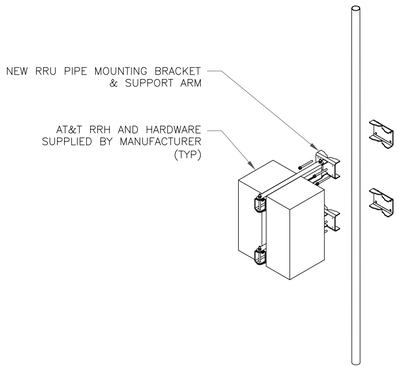
MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-3

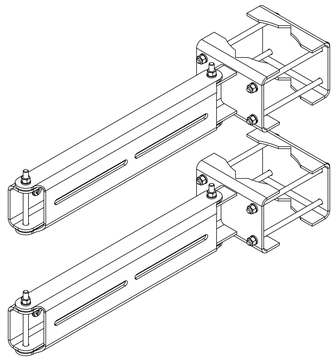
REVISION: 0

INSTALLER NOTE:

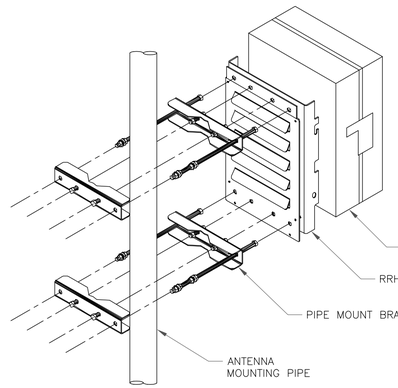
1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.
4. RRHs SHALL NOT BE INSTALLED CLOSER THAN 8" TO ANTENNAS.



1 DUAL RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



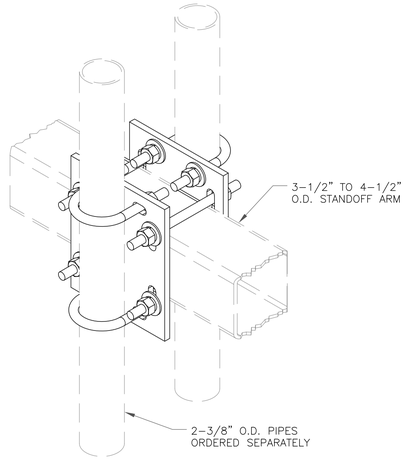
2 DUAL RADIO MOUNT
SCALE: NOT TO SCALE



NOTE:

ANTENNA NOT SHOWN FOR CLARITY

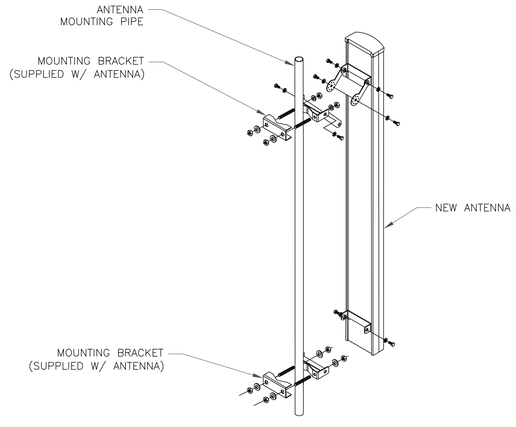
3 SINGLE RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



4 VALMONT – BBPM–K1
SCALE: NOT TO SCALE

INSTALLER NOTE:

ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.
MAINTAIN MINIMUM 8" SEPARATION BETWEEN ANTENNA AND EQUIPMENT.

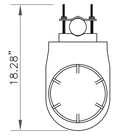


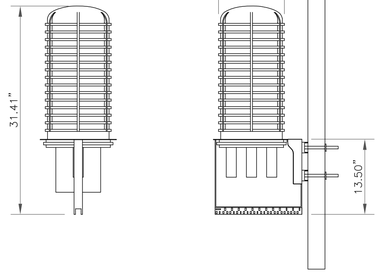
5 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

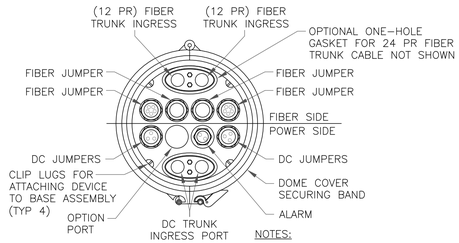
RAYCAP
DC9–48–60–24–8C–EV

RAYCAP – DC9–48–60–24–8C–EV
SIZE: 10.24x31.40 IN.
WEIGHT: 26.2 LBS
NOMINAL OPERATING VOLTAGE: 48 VDC
VOLTAGE PROTECTION RATING: 330 V
WIND LOADING: 150 MPH SUSTAINED (105.7 LBS)
WIND LOADING: 195 MPH GUST (213.6 LBS)

CONTRACTOR TO USE "THREAD LUBRICANT" ON MOUNTING BOLTS DURING INSTALLATION







NOTES:

1. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC–TO–1" NPT ADAPTER (COOPER CROUSE–HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

6 SQUID MOUNTING DETAIL
SCALE: NOT TO SCALE

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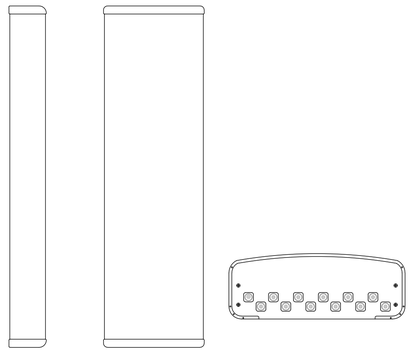
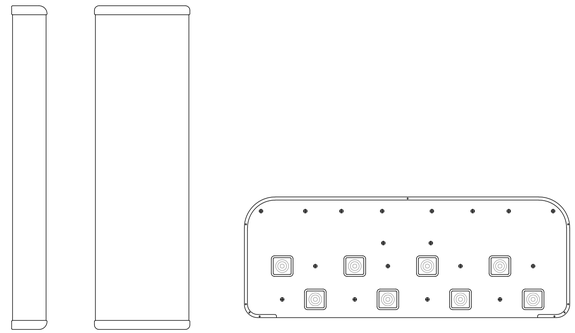
SHEET NUMBER: C-4

REVISION: 0



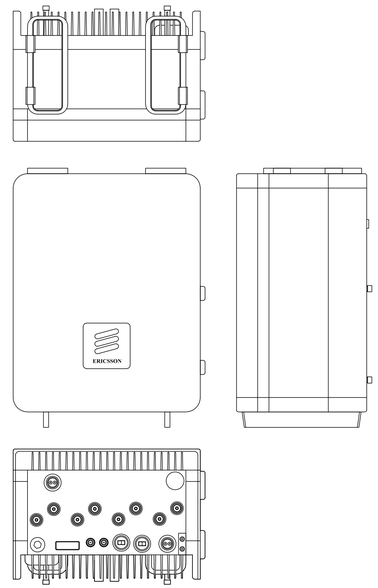
CCI ANTENNAS – TPA-65R-BU6DA-K
WEIGHT (WITHOUT MOUNTING HARDWARE): 72.5 LBS
SIZE (HXWXD): 71.2X21.0X7.8 IN.
MOUNTING HARDWARE P/N: BSA-M03
RATED WIND VELOCITY: 150.0 MPH

1 CCI ANTENNAS – TPA-65R-BU6DA-K
SCALE: NOT TO SCALE



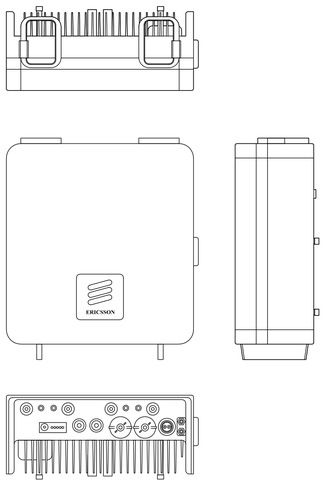
CCI ANTENNAS – OPA65R-BU6DA
WEIGHT (WITHOUT MOUNTING HARDWARE): 60.2 LBS
SIZE (HxWxD): 71.2x21.0x7.8 IN.
MOUNTING HARDWARE P/N: MBK-01
RATED WIND VELOCITY: 150.0 MPH

2 CCI ANTENNAS – OPA65R-BU6DA
SCALE: NOT TO SCALE



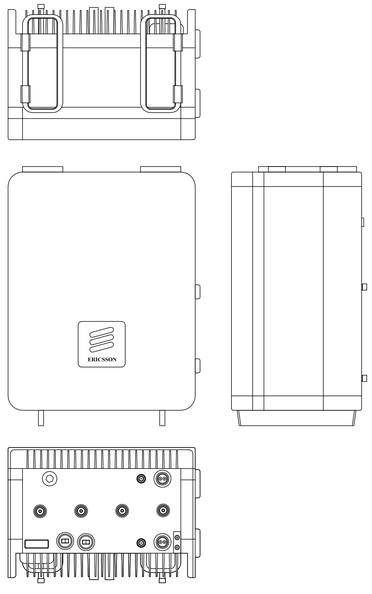
ERICSSON – RADIO 8843 B2/B66A
WEIGHT: 75.0 LBS
SIZE (HxWxD): 18.0x13.2x11.3 IN.

3 ERICSSON – RADIO 8843 B2/B66A
SCALE: NOT TO SCALE



ERICSSON – RADIO 4478 B14
WEIGHT: 60.0 LBS
SIZE (HxWxD): 15.0x13.0x8.0 IN.

4 ERICSSON – RADIO 4478 B14
SCALE: NOT TO SCALE



ERICSSON – RADIO 4449 B5/B12
WEIGHT: 70.0 LBS
SIZE (HxWxD): 18.0x13.2x9.4 IN.

5 ERICSSON – RADIO 4449 B5/B12
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

AT&T
575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

AT&T SITE NUMBER: **CTV5069**

BU #: **842857**
BENNETT POND

66 SUGAR HOLLOW ROAD
DANBURY, CT 06810

EXISTING
106'-0" MONOPOLE

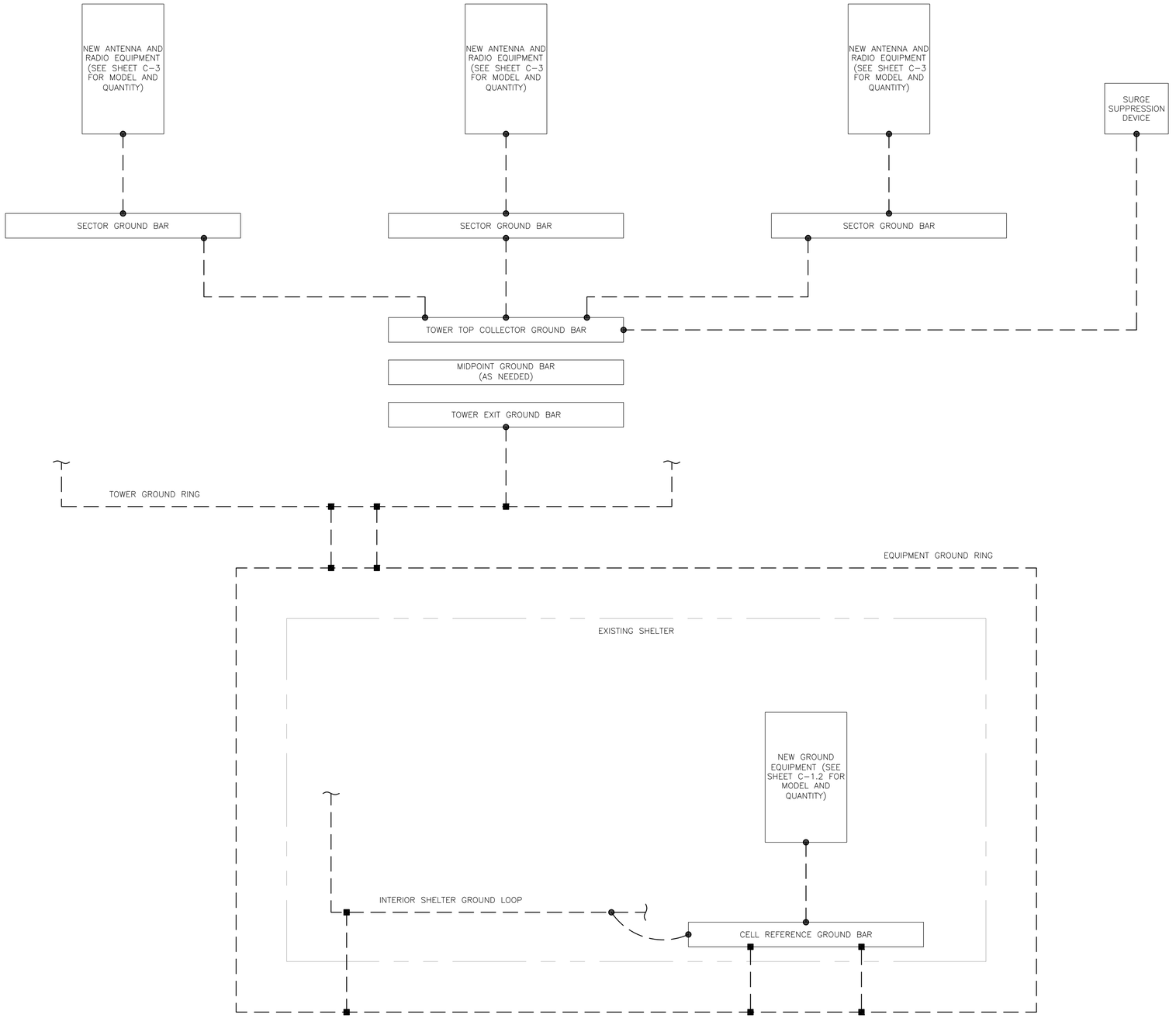
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	8/29/22	TDG	PRELIMINARY REVIEW	MTJ
0	10/17/22	MEH	CONSTRUCTION	MTJ

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-5

REVISION: 0



1 GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

GROUNDING PLAN LEGEND:

- GROUND WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- COPPER GROUND ROD
- GROUND ROD W/ TEST WELL

CELL REFERENCE GROUND BAR: POINT OF GROUND REFERENCE FOR ALL COMMUNICATIONS EQUIPMENT FRAMES. ALL BONDS ARE MADE WITH #2 STRANDED GREEN INSULATED COPPER CONDUCTORS. BOND TO GROUND RING WITH (2) #2 SOLID TINNED COPPER CONDUITS (ATT-TP-76416 7.6.7).

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

EXTERIOR CABLE ENTRY PORT GROUND BARS: LOCATED AT THE ENTRANCE TO THE CELL SITE BUILDING. BOND TO GROUND RING WITH A #2 SOLID TINNED COPPER CONDUCTORS WITH AN EXOTHERMIC WELD AND INSPECTION SLEEVE (ATT-TP-76416 7.6.7.2).

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 SERVICES CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR PER TP76300 SECTION H 6 AND TP76416 FIGURE 7-11 REQUIREMENTS.

AT&T
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ATLANTA, GA 30324-3300

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AT&T SITE NUMBER: **CTV5069**

BU #: **842857**
BENNETT POND

66 SUGAR HOLLOW ROAD
DANBURY, CT 06810

EXISTING
106'-0" MONOPOLE

ISSUED FOR:

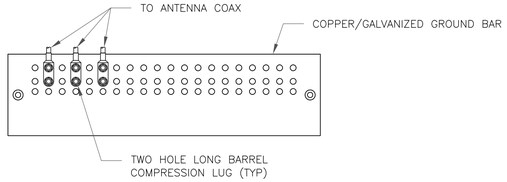
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	8/29/22	TDG	PRELIMINARY REVIEW	MTJ
0	10/17/22	MEH	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
MATTHEW T. JONES
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/17/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-1

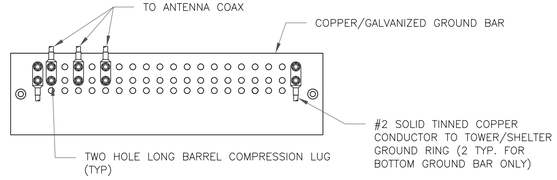
REVISION: 0



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE

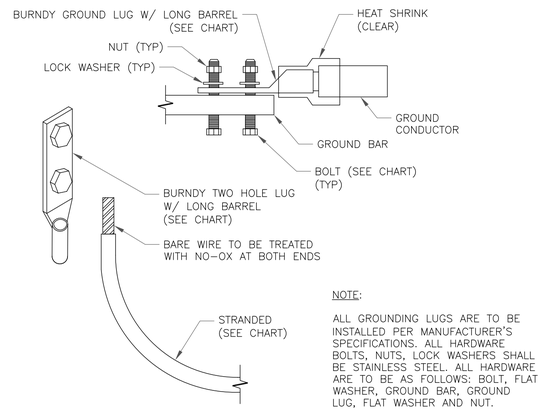


NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE

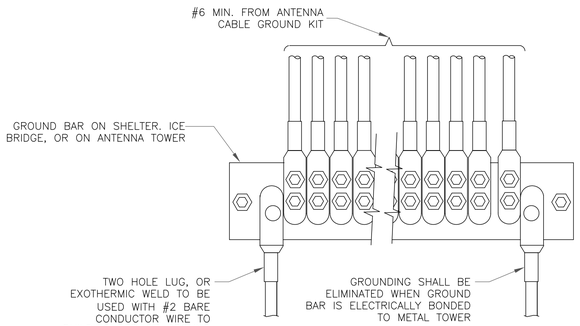
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



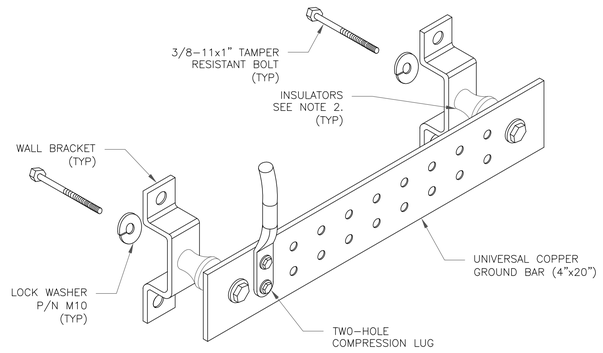
NOTE:

ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE

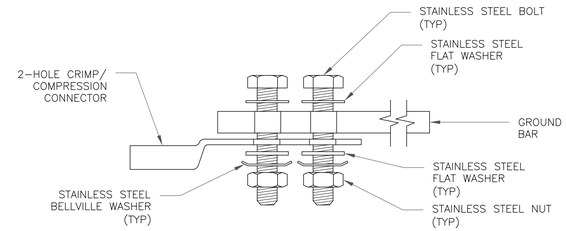


NOTES:

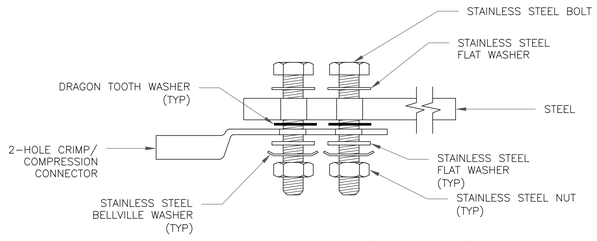
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.

2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

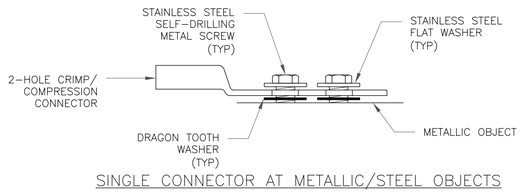
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

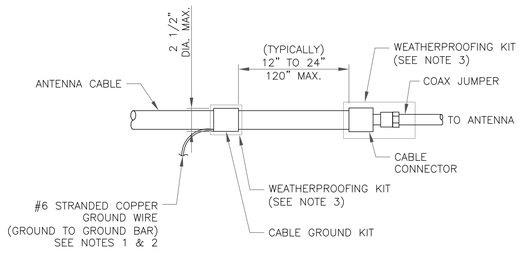


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

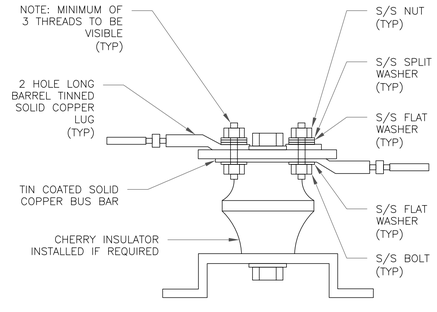
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

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BENNETT POND

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MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-2

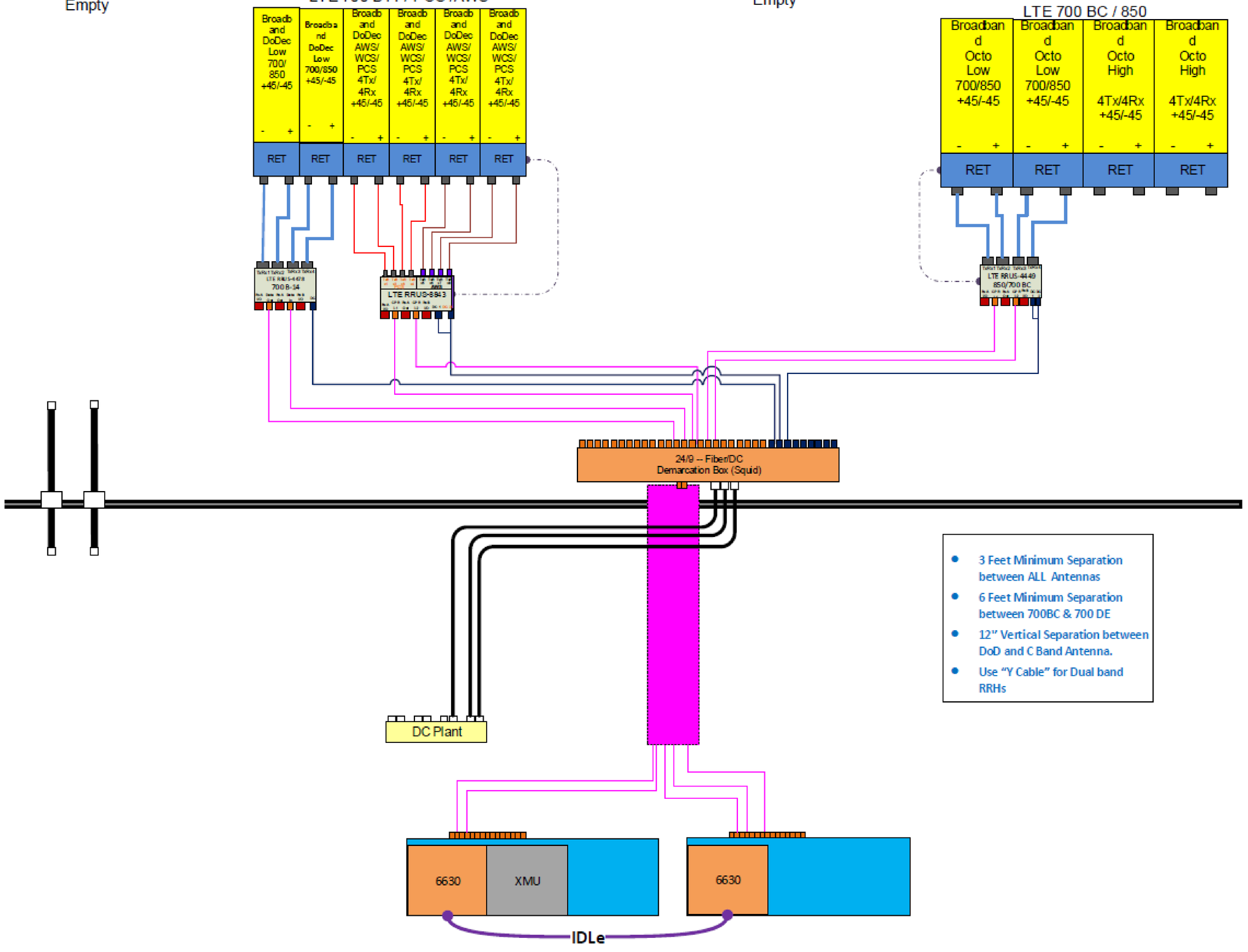
REVISION: 0

Antenna 1
Empty

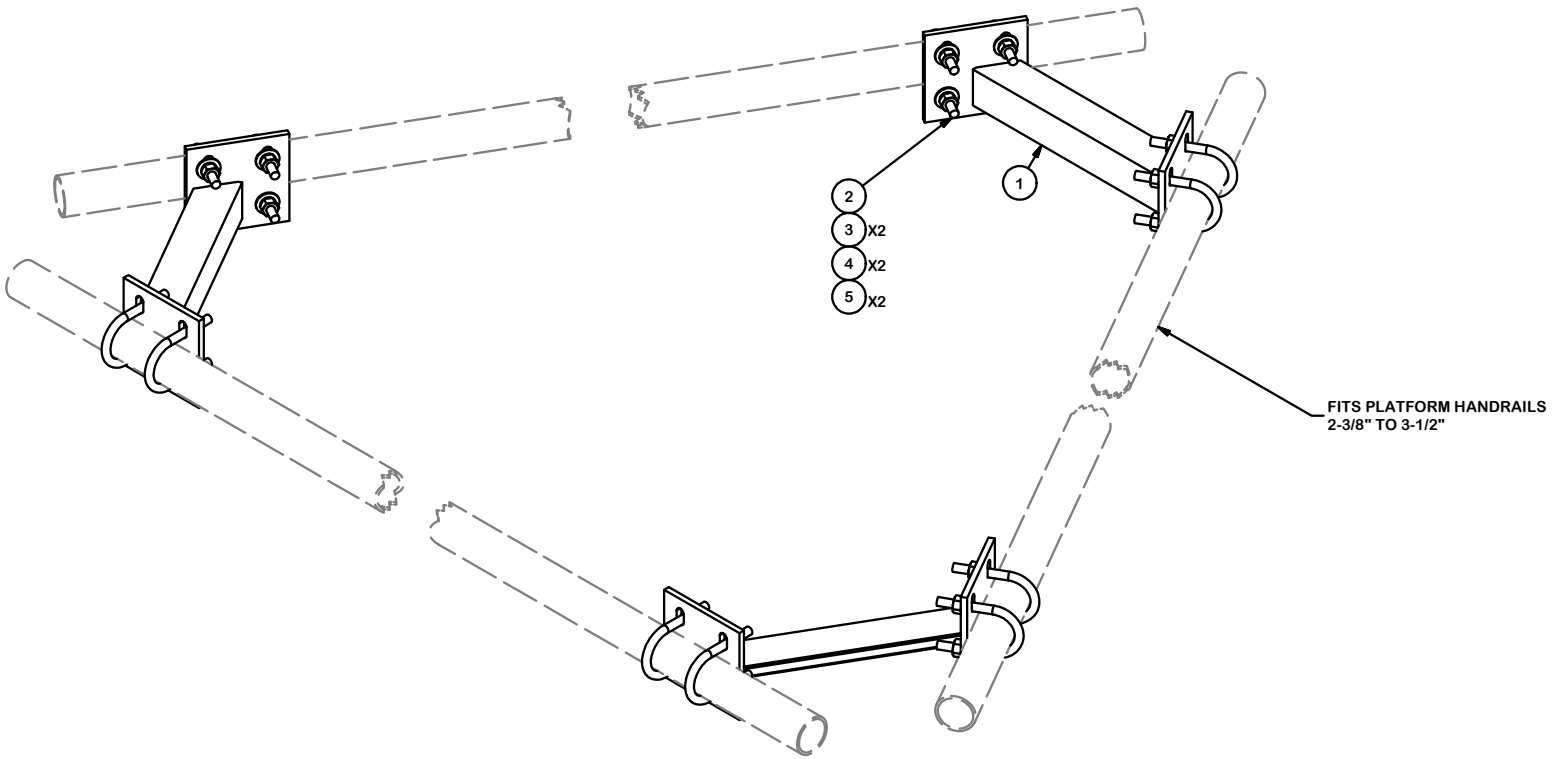
Antenna 2
LTE 700 B14 / PCS /AWS

Antenna 3
Empty

Antenna 4
LTE 700 BC / 850



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
2	12	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	8.78
2	12	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	8.78
2	12	X-UB1358	1/2" X 3-5/8" X 5-1/2" X 3" U-BOLT (HDG.)		0.73	8.78
3	24	G12FW	1/2" HDG USS FLATWASHER		0.03	0.82
4	24	G12LW	1/2" HDG LOCKWASHER		0.01	0.33
5	24	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.72
					TOTAL WT. #	66.76



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES *(± 0.030")*
DRILLED AND GAS CUT HOLES *(± 0.030")* - NO CONING OF HOLES
LASER CUT EDGES AND HOLES *(± 0.010")* - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: ANGLE HANDRAIL CORNER PLATE KIT

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 5/13/2014		AHCP

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 5/23/2014	AHCP