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

March 7, 2024

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

RE: **Notice of Exempt Modification for T-Mobile: CTHA162A**
Crown Site ID# 846295
30 Higley Road, West Granby, CT 06090
Latitude: 41° 57′ 56.8″ / Longitude: -72° 51′ 19.34″

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 107-foot mount on the existing 120-foot monopole tower located at 30 Higley Road, West Granby, CT. The property is owned by Pease Martha C & Dalton Sarah P Co-Trust and the tower is owned by Crown Castle. T-Mobile now intends to replace three (3) antennas, add three (3) new antennas and ancillary equipment at the 107ft level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:

Tower:

Install New:
(3) Ericsson – Air 6419 B41Antennas
(3) Commscope – APXVLL19P_43-C-A20 (Quad) Antennas
(3) Ericsson – 4460 B25+B66 Radios
(3) RF/CELLWAVE – HB158-21U6S24-50M- Hybrid Cables

Remove:
(3) RFS – APX16DWV-16DWV-S-E-A20 (Quad) Antennas
(3) Ericsson – KY112 489/2 TMAs
(12) 1-1/4" Coxial Cables.
(1) Ericsson 6x12 Hybrid Cable

Ground:

Install New:
(1.) RP 6651 and (1) CSR IXRc V2 (GEN2)
(1,) Ericsson – B160 Enclosure
(1,) Ericsson – 6160 Enclosure AC V1 Enclosure

The facility was approved by the Connecticut Siting Council in Docket No. 263 on December 22, 2003.

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 Mike Walsh – Town Manager, Town of Granby, Joel Skilton – Building Official & ZEO, Town of Granby. Pease Martha C & Dalton Sarah P Co-Trust, 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, T-Mobile 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: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Permitting Specialist
1800 W. Park Drive
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Attachments
cc:

Mike Walsh – Town Manager
Town of Granby
15 North Granby Road
Granby, CT 06035
(860) 844-5300

Joel Skilton – Building Official & ZEO
Town of Granby
15 North Granby Road
Granby, CT 06035
(860) 844-5318

Pease Martha C & Dalton Sarah P Co-Trust
C/O AT&T Network Services Inc
Tower Property Tax Team
754 Peachtree ST NE
Atlanta, GA 30308

Crown Castle - Tower Owner

DOCKET NO. 263 – AT&T Wireless PCS, LLC d/b/a AT&T Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of two telecommunications facilities in the West Granby section of the Town of Granby, Connecticut.	}	Connecticut Siting Council

December 22, 2003

Decision and Order:
Granby Site CT-812

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the proposed Site A located at 8 Upper Meadow Road, Granby, Connecticut. The Council denies certification of proposed Site B located at 10 Day Street South, Granby, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level.

2. The tower and facility compound shall be moved in a southerly or southeasterly direction within the lease area to minimize the area of the adjacent property to the north that is encompassed within the tower's setback radius; and the tower shall be designed with a yield point to effectively reduce the radius of said setback area.

3. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include:
   a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, fencing without razor wire on top, access road, utility line, and landscaping (including a screen of evergreen plantings around the facility compound); and
   b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

4. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

5. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

7. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.

8. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

9. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.

10. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
AT&T Wireless PCS, LLC d/b/a AT&T Wireless	Christopher B. Fisher, Esq. Cuddy & Feder LLP 90 Maple Avenue White Plains, New York 10601

30R HIGLEY RD

Location	30R HIGLEY RD	**Mblu**	F-20/ 23/ 66/ /
Acct#	07600030R	**Owner**	PEASE MARTHA C & DALTON SARAH P CO-TRUST
Assessment	$222,950	**Appraisal**	$318,500
PID	101658	**Building Count**	1

Current Value

Appraisal

Valuation Year	Improvements	Land	Total
2022	$131,500	$187,000	$318,500

Assessment

Valuation Year	Improvements	Land	Total
2022	$92,050	$130,900	$222,950

Owner of Record

Owner	PEASE MARTHA C & DALTON SARAH P CO-TRUST	**Sale Price**	$0
Co-Owner	C/O AT&T NETWORK SERVICES INC	**Certificate**	
Address	TOWER PROPERTY TAX TEAM 754 PEACHTREE ST NE ATLANTA , GA 30308	**Book & Page**	0399/0205
		Sale Date	12/30/2013

Ownership History

Ownership History

Owner	Sale Price	Certificate	Book & Page	Sale Date
PEASE MARTHA C & DALTON SARAH P CO-TRUST	$0		0399/0205	12/30/2013
PEASE WILLIAM EST OF & JANET H EST OF	$0		0398/1172	12/16/2013
PEASE WILLIAM & JANET H EST OF	$0		0397/1023	10/11/2013
PEASE WILLIAM & JANET H	$0		0078/0719	08/26/1969
	$0		/0	

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0
Replacement Cost: $0
Building Percent Good:
Replacement Cost
Less Depreciation: $0

Building Attributes	
Field	**Description**
Style:	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Solar Panels	
Num Park	
Fireplaces	
Fndtn Cndtn	
Basement	

Building Photo

(https://images.vgsi.com/photos2/GranbyCTPhotos/\00\01\13\32.jpg)

Building Layout

Building Layout (ParcelSketch.ashx?pid=101658&bid=101551)

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	4310
Description	TEL REL TW
Zone	R2A
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.23
Frontage	
Depth	
Assessed Value	$130,900
Appraised Value	$187,000

Outbuildings

Outbuildings — Legend

Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FN4	FENCE-8' CHAIN			220.00 L.F.	$2,800	1
SHP5	W/IMPROV GOOD			240.00 S.F.	$6,500	1
CELL	CELL TOWER			1.00 UNITS	$112,500	1
SHP5	W/IMPROV GOOD			360.00 S.F.	$9,700	1

Valuation History

Appraisal

Valuation Year	Improvements	Land	Total
2022	$131,500	$187,000	$318,500
2021	$131,500	$187,000	$318,500
2020	$131,500	$187,000	$318,500

Assessment

Valuation Year	Improvements	Land	Total
2022	$92,050	$130,900	$222,950
2021	$92,050	$130,900	$222,950
2020	$92,050	$130,900	$222,950

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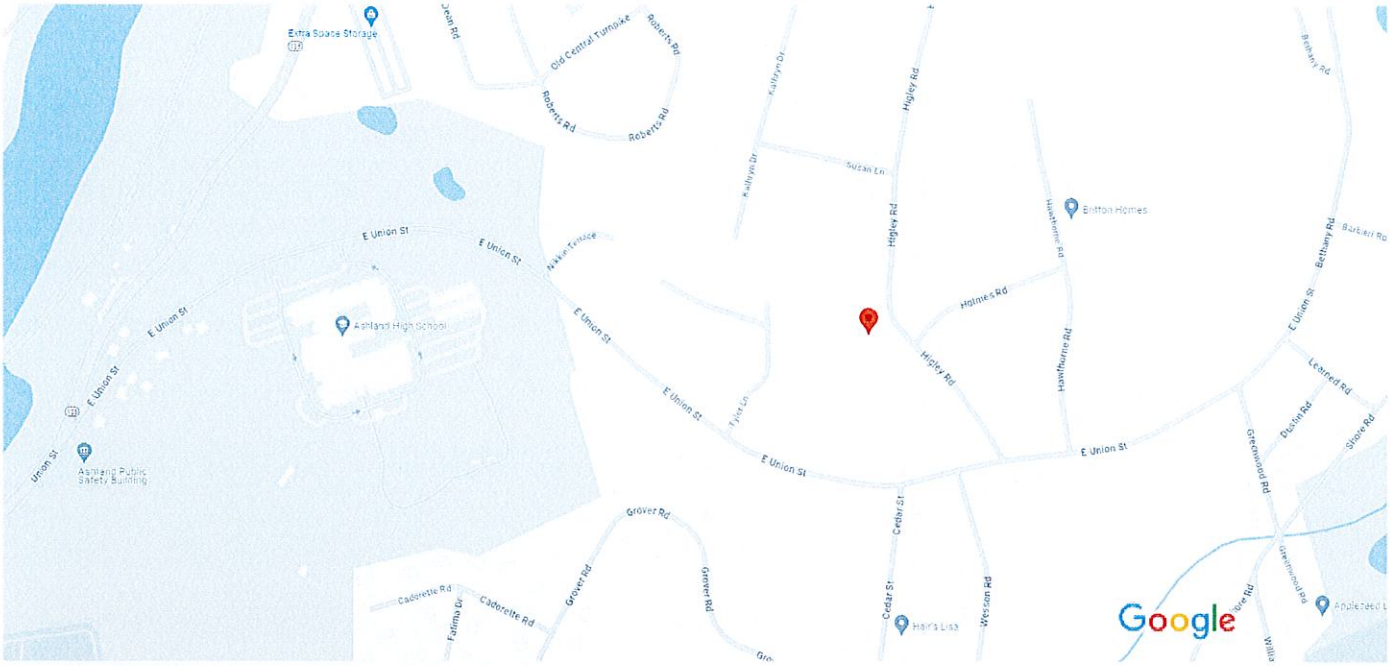
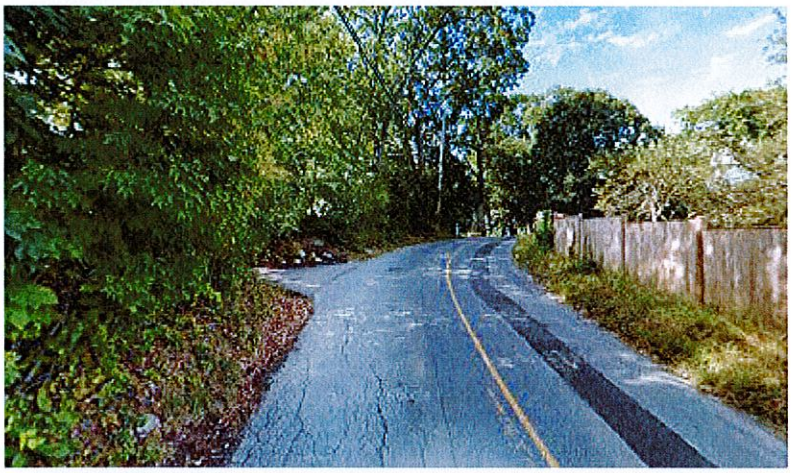
30 Higley Rd



Map data ©2024 Google 200 ft



30 Higley Rd

Directions Save Nearby Send to phone Share

30 Higley Rd, Ashland, MA 01721

Confirm or fix this location
The location shown is not precise

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, March 8, 2024 11:09 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775455881158: Your package has been delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi. Your package was delivered Fri, 03/08/2024 at 11:00am.

Delivered to 15 N GRANDBY RD, GRANBY, CT 06035
Received by L.RUSSETTI

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	775455881158
FROM	Crown Castle 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Granby Mike Walsh Town Manager 15 North Grandby Road GRANBY, CT, US, 06035
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 3/07/2024 06:19 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	GRANBY, CT, US, 06035
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	SOS

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, March 8, 2024 11:09 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775455939694: Your package has been delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi. Your package was delivered Fri, 03/08/2024 at 11:00am.

Delivered to 15 N GRANDBY RD, GRANBY, CT 06035
Received by L.RUSSETTI

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	775455939694
FROM	Crown Castle 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Granby Joel Skilton, Building & ZEO 15 North Granby Road GRANBY, CT, US, 06035
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 3/07/2024 06:19 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	GRANBY, CT, US, 06035
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	SOS

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, March 8, 2024 11:06 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775456022337: Your package has been delivered

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

FedEx

Hi. Your package was delivered Fri, 03/08/2024 at 10:53am.

Delivered to 754 PEACHTREE ST NE, ATLANTA, GA 30308
Received by W.SHAW

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	775456022337
FROM	Crown Castle 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	ATT Network Services Inc Pease & Dalton Trust 754 Peachtree ST NE ATLANTA, GA, US, 30308
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 3/07/2024 06:19 PM
DELIVERED TO	Mailroom
PACKAGING TYPE	FedEx Envelope
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DESTINATION	ATLANTA, GA, US, 30308
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	SOS

Date: **January 24, 2024**

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

Subject:	**Mount Analysis Report**	
Carrier Designation:	**T-Mobile Equipment Change-Out**	
	Carrier Site Number:	CTHA162A
	Carrier Site Name:	CTHA162/CINGATT Permit_FT
Crown Castle Designation:	**BU Number:**	846295
	Site Name:	GRANBY – HIGLEY ROAD
	JDE Job Number:	2107089
	Order Number:	662148 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	235622
Site Data:	**30 Higley Road, West Granby, Hartford County, CT, 06090** **Latitude 41°57'56.80" Longitude -72°51'19.34"**	
Structure Information:	**Tower Height & Type:**	**119.0 ft Monopole**
	Mount Elevation:	**110.0 ft**
	Mount Width & Type:	**14.5 ft Platform**

Trylon is pleased to submit this **"Mount Analysis Report"** to determine the structural integrity of T-Mobile'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**

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

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

Respectfully Submitted by:
Cliff Abernathy, P.E.

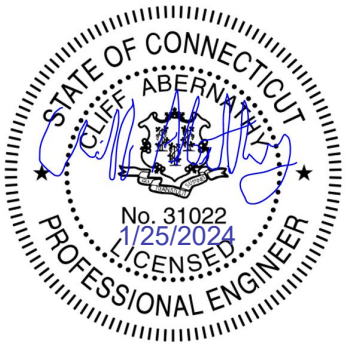


TABLE OF CONTENTS

1) INTRODUCTION

This is an existing four sector 14.5 ft Platform**,** mapped by P-SEC.

The mount has been modified per reinforcement drawings prepared by MasTec, in June of 2019. Reinforcement consists of kickers and a handrail kit.

2) ANALYSIS CRITERIA

Building Code:	2021 IBC / 2022 CTBC
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:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.169
Seismic S_1:	0.054
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
110.0	107.0	3	ERICSSON	AIR 6419 B41_TMO_CCIV2	14.5 ft Platform
		3	RFS/CELWAVE	APXVAARR24_43-U-NA20	
		3	RFS/CELWAVE	APXVLL19P_43-C-A20_TMO	
		3	ERICSSON	RADIO 4449 B71/B85A	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	662148 Rev. 0	CCI Sites
Mount Modification Report	MasTec	8469591	CCI Sites
Mount Mapping	P-SEC	8353031	CCI Sites

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

Table 3(a) - Mount Component Stresses vs. Capacity (Platform, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3, 4	Mount Pipe(s)	MP3	110.0	55.7	Pass
	Horizontal(s)	H3		42.1	Pass
	Standoff(s)	M1		17.3	Pass
	Bracing(s)	M7		61.3	Pass
	Handrail(s)	M113		18.2	Pass
	Kicker(s)	M197		36.1	Pass
	Mount Connection(s)	-		14.5	Pass

Structure Rating (max from all components) =	**61.3%**

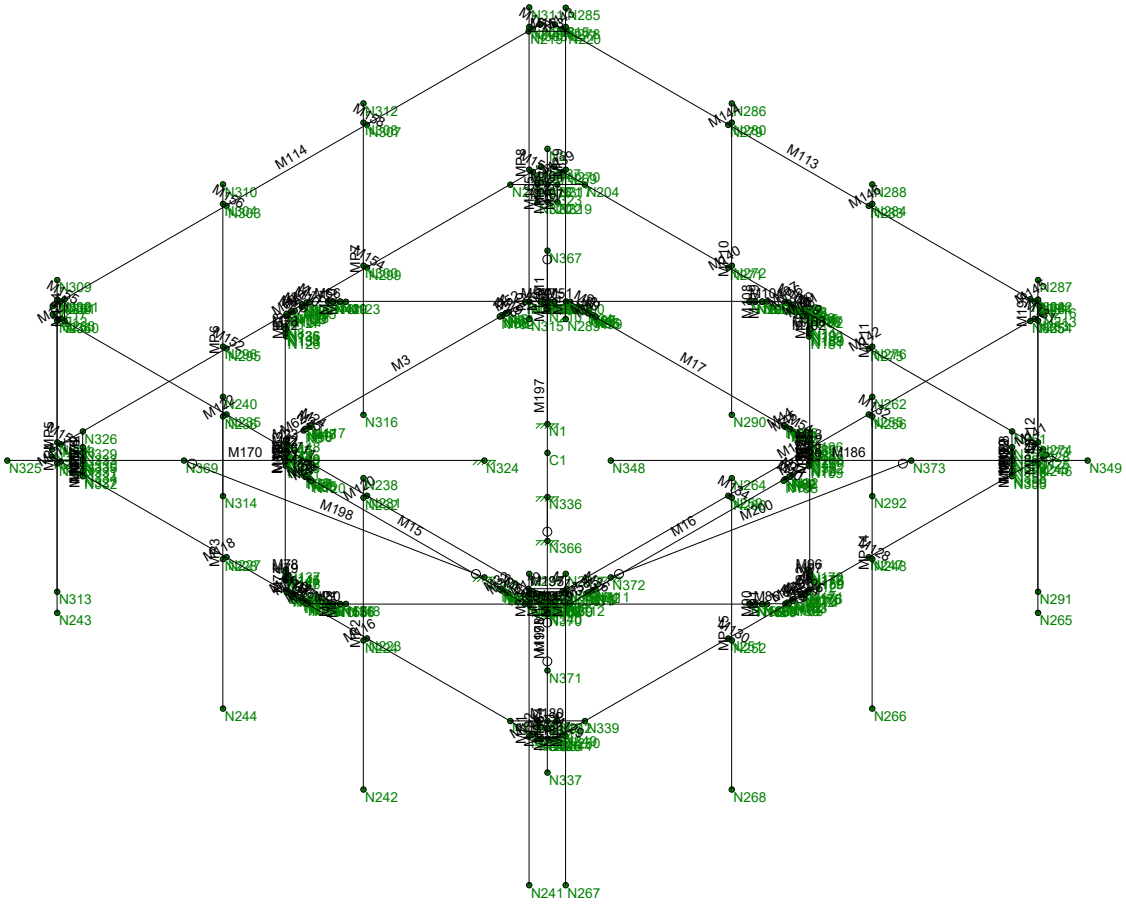
Notes:
1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
2) See additional documentation in "Appendix D – Additional Calculations" for detailed mount connection calculations.
3) All sectors are typical
4) Rating per TIA-222-H,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

4.1) Recommendations

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

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

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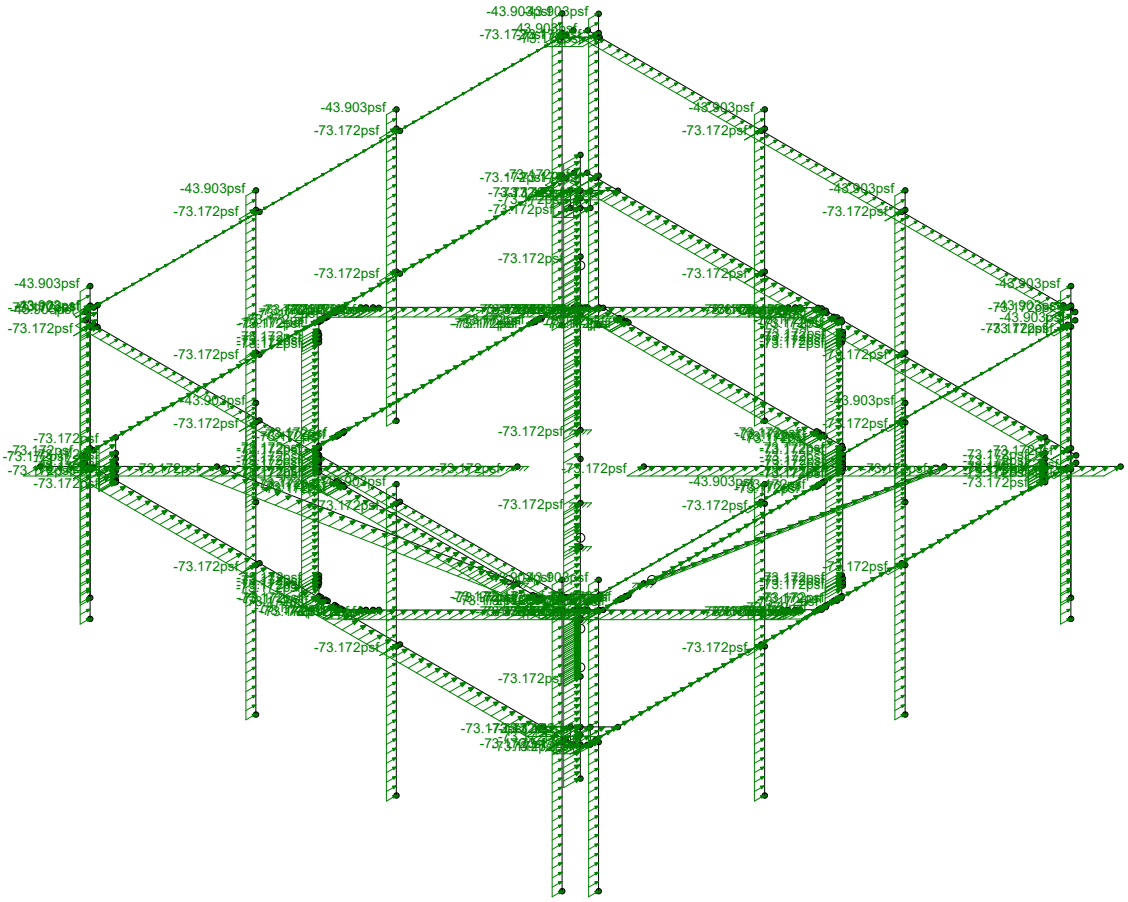

Loads: BLC 2, Structure Wind Z
Envelope Only Solution

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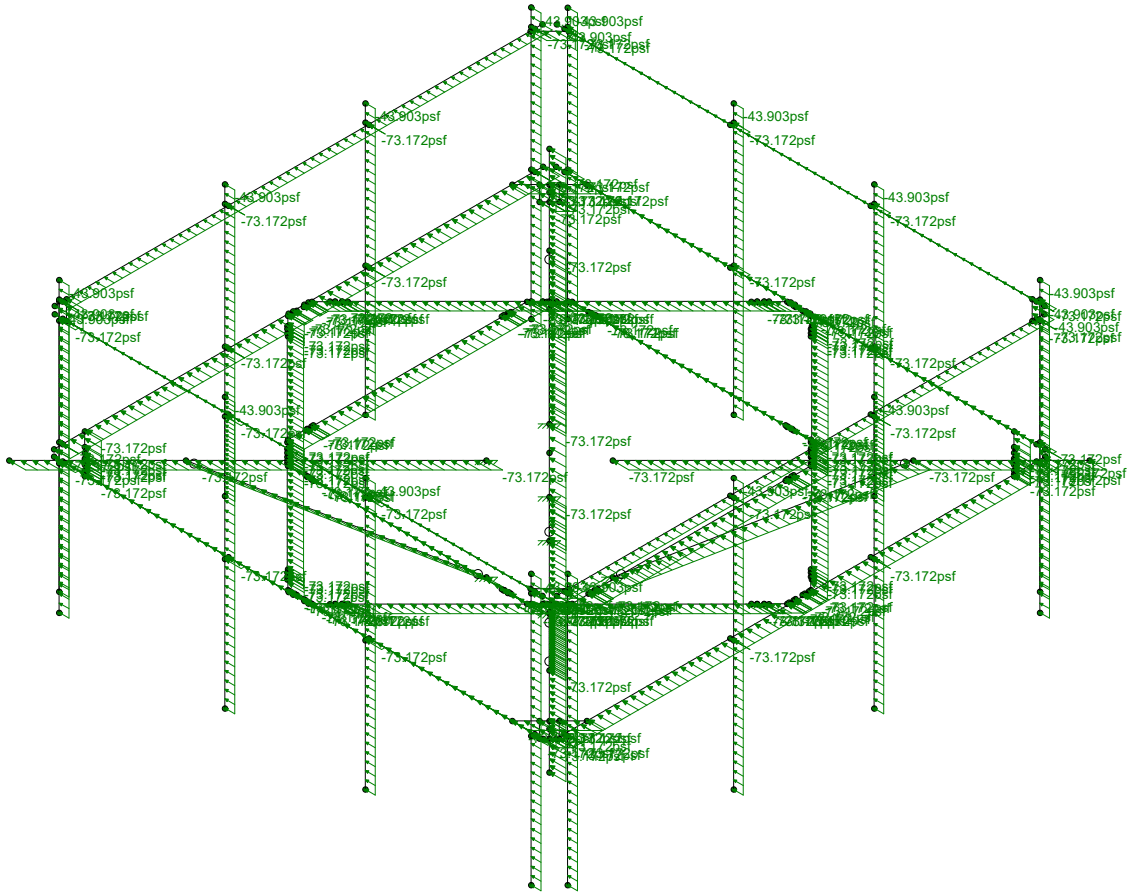

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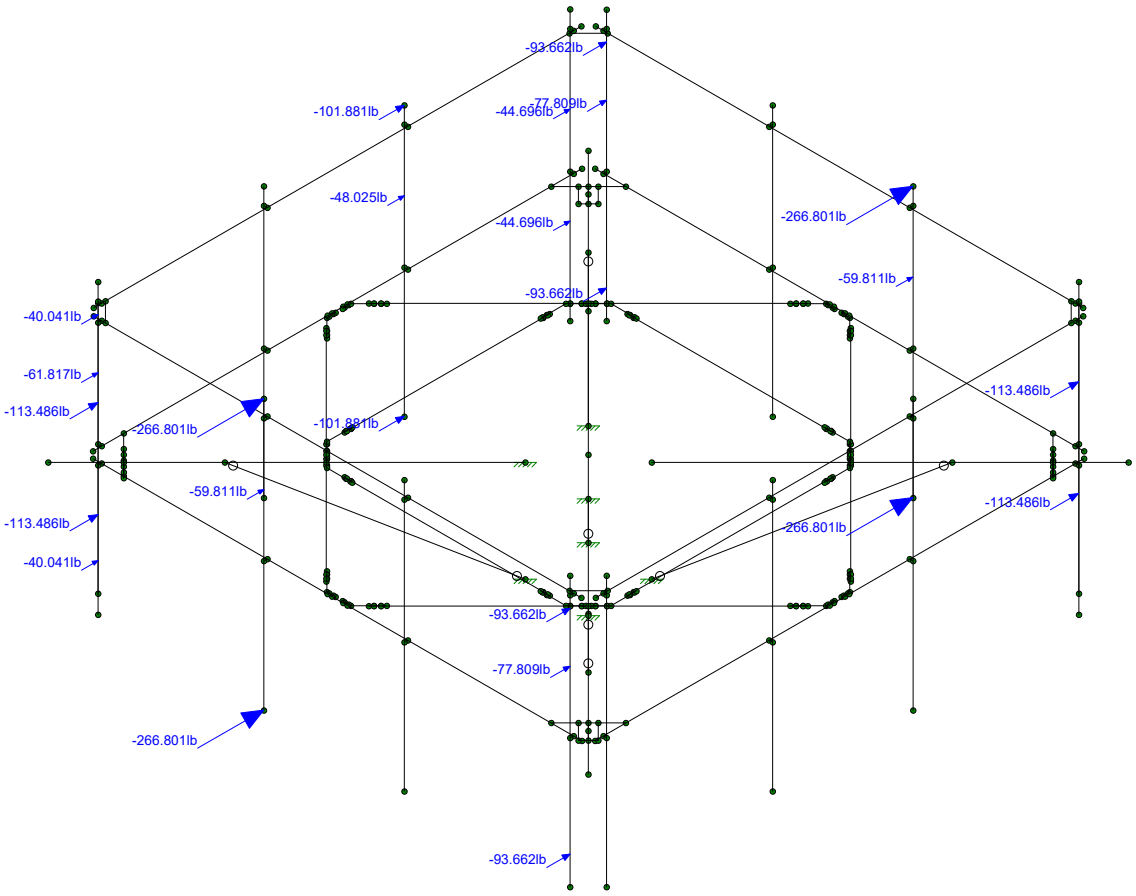

Loads: BLC 4, Wind Load 0 AZI
Envelope Only Solution

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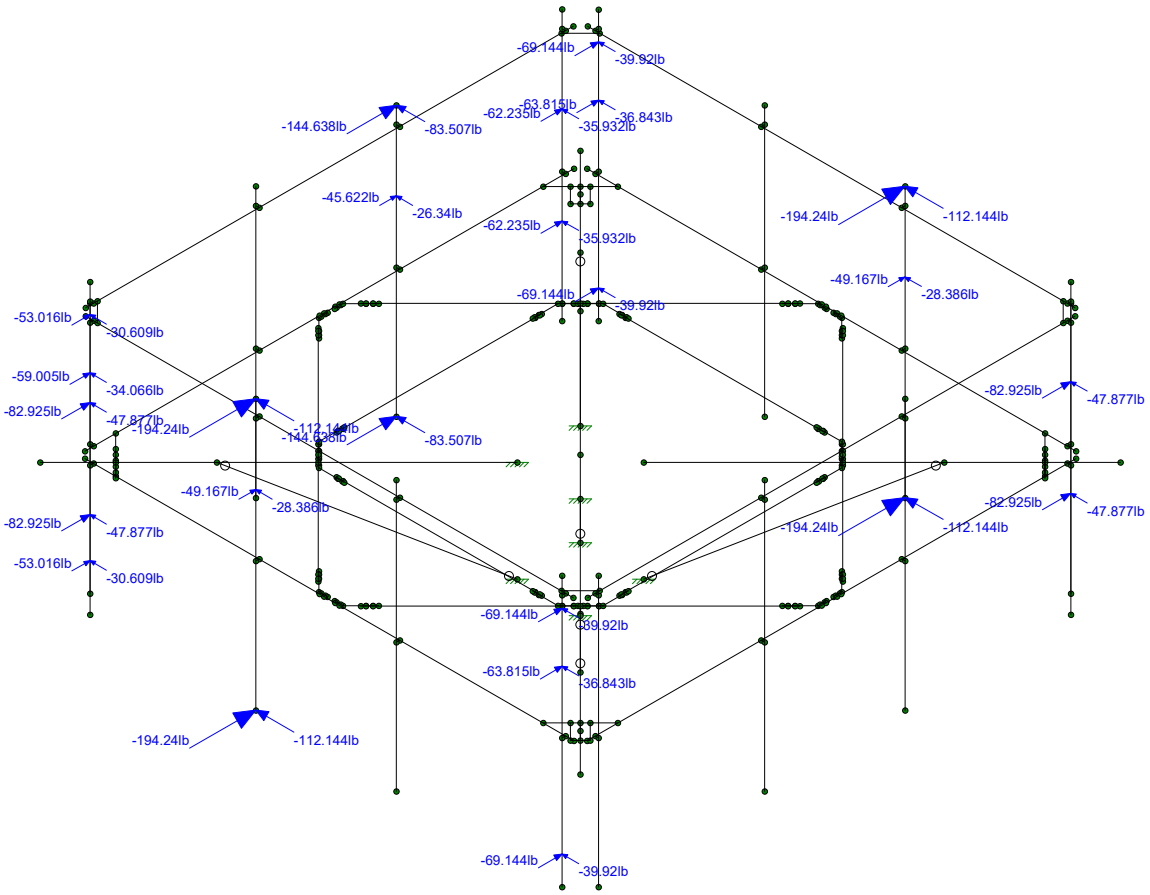

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Envelope Only Solution

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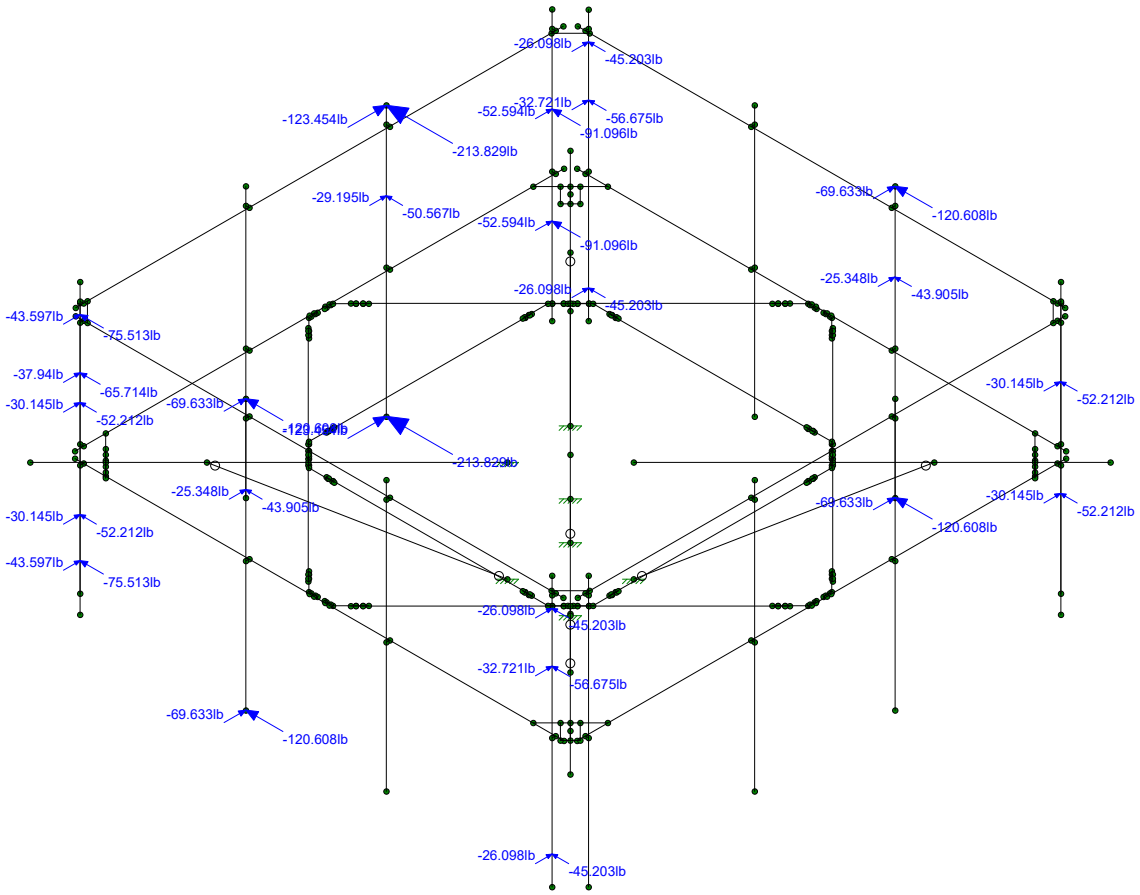

Loads: BLC 7, Wind Load 60 AZI
Envelope Only Solution

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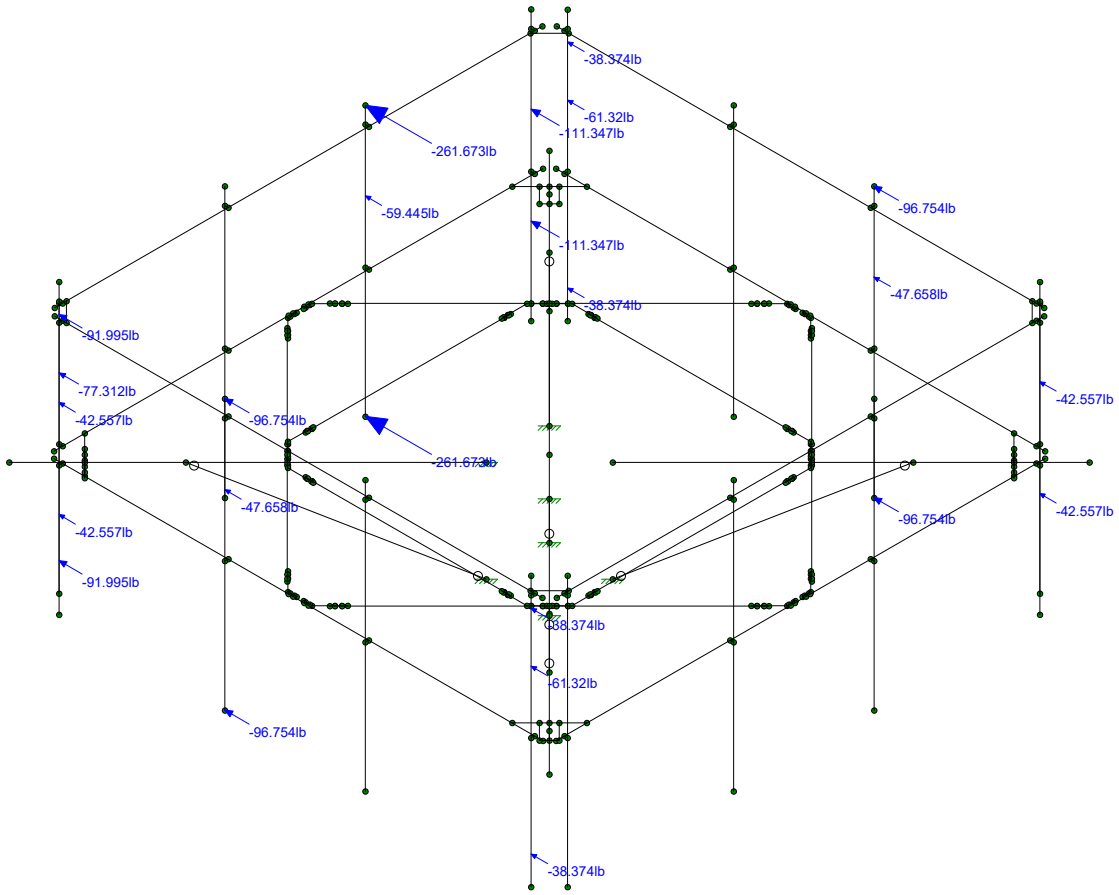

Loads: BLC 8, Wind Load 90 AZI
Envelope Only Solution

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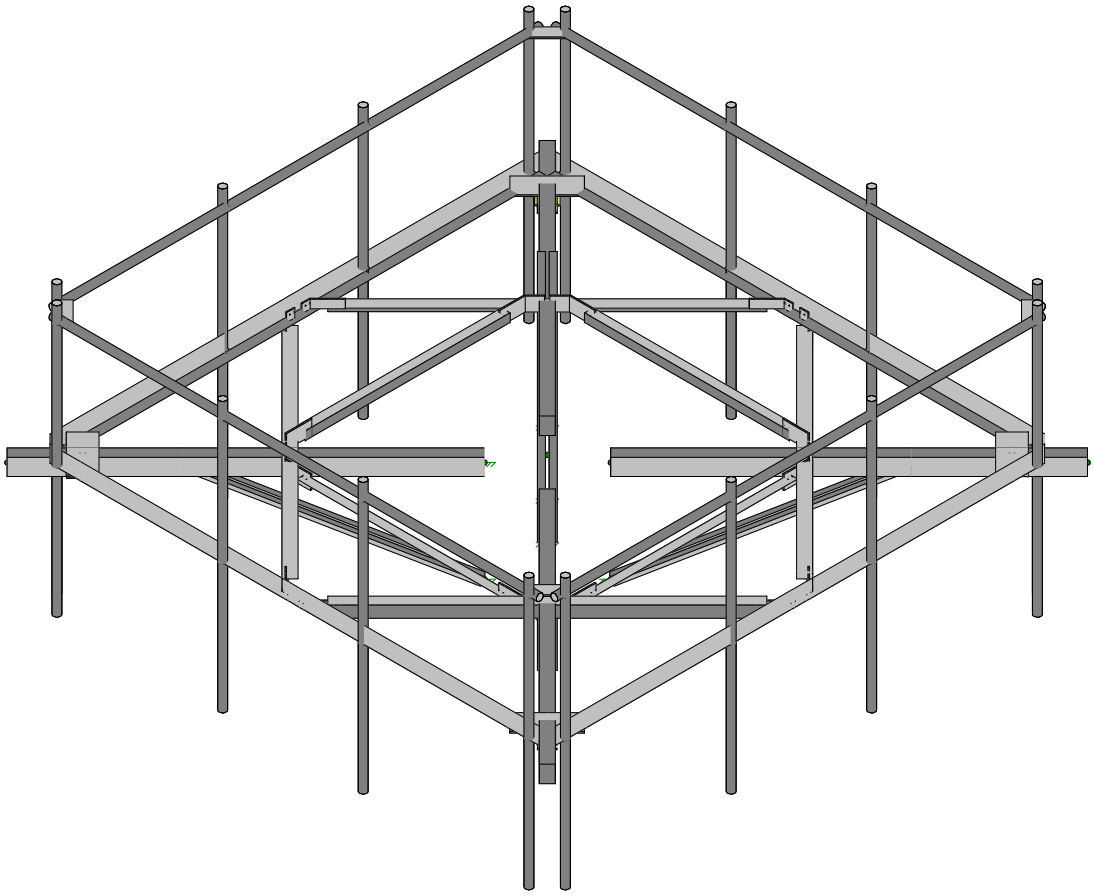
SMM		Jan 24, 2024 at 4:12 PM
235622		846295_loaded.r3d



Envelope Only Solution

Trylon	846295	Render
SMM		Jan 24, 2024 at 4:12 PM
235622		846295_loaded.r3d

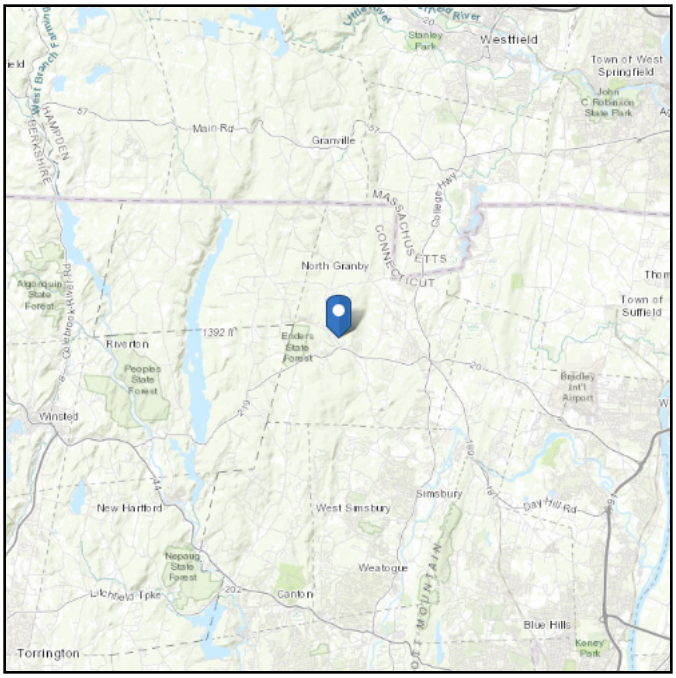
APPENDIX B

SOFTWARE INPUT CALCULATIONS

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.965778
Risk Category:	II	**Longitude:**	-72.855372
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	591.7647944089138 ft (NAVD 88)



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	89 Vmph
100-year MRI	95 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 Jan 24 2024

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 not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

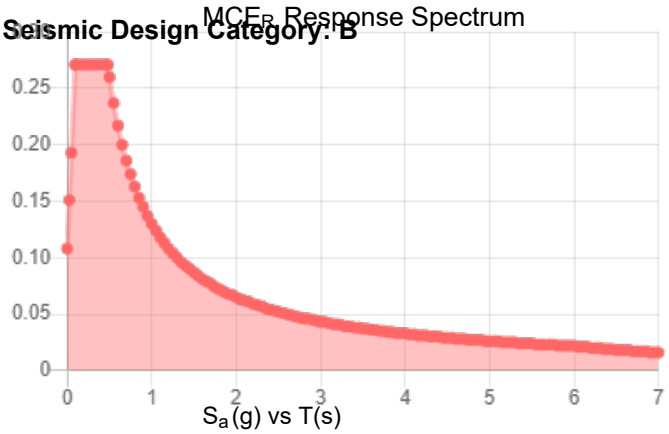
Seismic

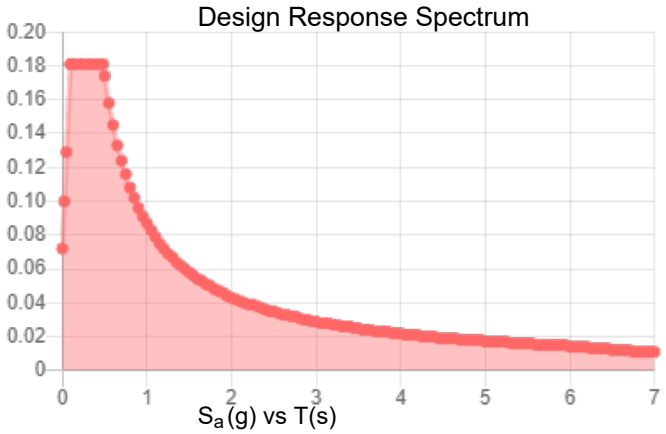
Site Soil Class: D - Default (see Section 11.4.3)

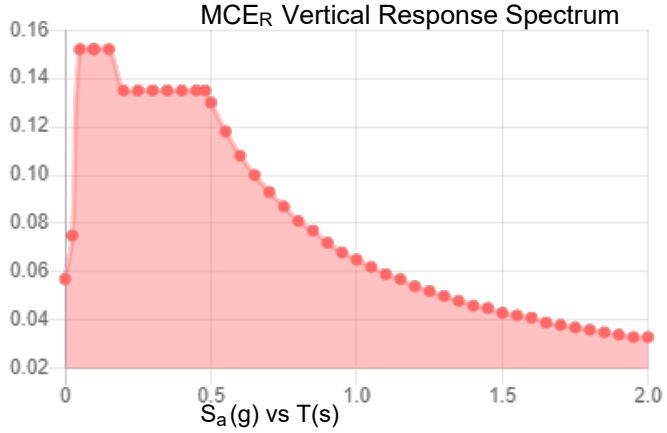
Results:

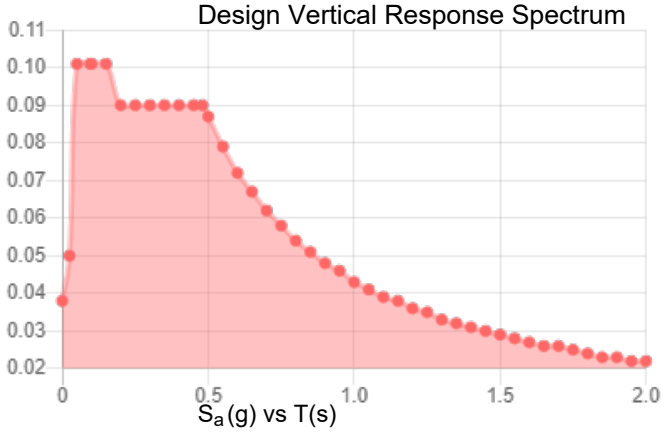
S_S :	0.169	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.088
F_v :	2.4	PGA_M :	0.141
S_{MS} :	0.271	F_{PGA} :	1.6
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.181	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Wed Jan 24 2024**

Date Source:

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

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Wed Jan 24 2024

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.

The ASCE Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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

TIA LOAD CALCULATOR 2.2

PROJECT DATA	
Job Code:	235622
Carrier Site ID:	BU 846295
Carrier Site Name:	GRANBY - HIGLEY ROAD

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

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	110.0	ft.
Number of Sectors:	4	--
Structure Type:	Monopole	--
Structure Height:	119.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Default	--
Ground Elevation:	591.8	ft.

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

WIND PARAMETERS		
Design Wind Speed:	115	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.29	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	40.65	psf
Ground Elevation Factor (K_e):	0.98	--

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	6.71	psf
Mount Ice Thickness (t_{iz}):	1.69	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	73.17	psf
Round Member Pressure:	43.90	psf
Ice Wind Pressure:	7.25	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.17	g
1 Second Accel (S_1):	0.05	g
Short Period Des. (S_{DS}):	0.18	g
1 Second Des. (S_{D1}):	0.09	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.09	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

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

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

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

EQUIPMENT LOADING

Appurtenance Name	*Qty.*	*Elevation [ft]*	*--*	*EPA_N (ft2)*	*EPA_T (ft2)*	*Weight (lbs)*
APXVLL19P_43-C-A20_TMO	3	107	No Ice	5.15	2.11	48.39
--	--	--	w/ Ice	6.80	3.64	172.57
APXVAARR24_43-U-NA20	3	107	No Ice	14.67	5.32	128.00
--	--	--	w/ Ice	17.04	7.41	414.48
AIR 6419 B41_TMO_CCIV2	3	107	No Ice	6.24	2.34	81.84
--	--	--	w/ Ice	7.85	3.62	146.95
RADIO 4460 B2/B25 B66_TMO	3	107	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.57	2.08	87.33
RADIO 4449 B71/B85A	3	107	No Ice	1.64	1.31	74.95
--	--	--	w/ Ice	2.03	1.66	69.45
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
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			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

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

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
PXVLL19P_43-C-A20_TM	3	107	1.00	1.28	0.95	1.69	40.42	7.64
APXVAARR24_43-U-NA20	3	107	1.00	1.28	0.95	1.69	40.42	7.64
IR 6419 B41_TMO_CCIV2	3	107	1.00	1.28	0.95	1.69	40.42	7.64
DIO 4460 B2/B25 B66_TM	3	107	1.00	1.28	0.95	1.69	40.42	7.64
RADIO 4449 B71/B85A	3	107	1.00	1.28	0.95	1.69	40.42	7.64

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	*Qty.*	*--*	*0° 180°*	*30° 210°*	*60° 240°*	*90° 270°*	*120° 300°*	*150° 330°*
APXVLL19P_43-C-A20_TMO	3	No Ice	187.32	104.39	159.68	76.75	159.68	104.39
--	--	w/ Ice	46.77	30.47	41.34	25.03	41.34	30.47
APXVAARR24_43-U-NA20	3	No Ice	533.60	278.53	448.58	193.51	448.58	278.53
--	--	w/ Ice	117.15	67.48	100.59	50.92	100.59	67.48
AIR 6419 B41_TMO_CCIV2	3	No Ice	226.97	120.58	191.51	85.11	191.51	120.58
--	--	w/ Ice	53.97	32.15	46.69	24.87	46.69	32.15
RADIO 4460 B2/B25 B66_TMO	3	No Ice	77.81	65.44	73.69	61.32	73.69	65.44
--	--	w/ Ice	17.67	15.14	16.82	14.29	16.82	15.14
RADIO 4449 B71/B85A	3	No Ice	59.81	50.70	56.77	47.66	56.77	50.70
--	--	w/ Ice	13.94	12.05	13.31	11.42	13.31	12.05
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
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		No Ice						
--	--	w/ Ice						

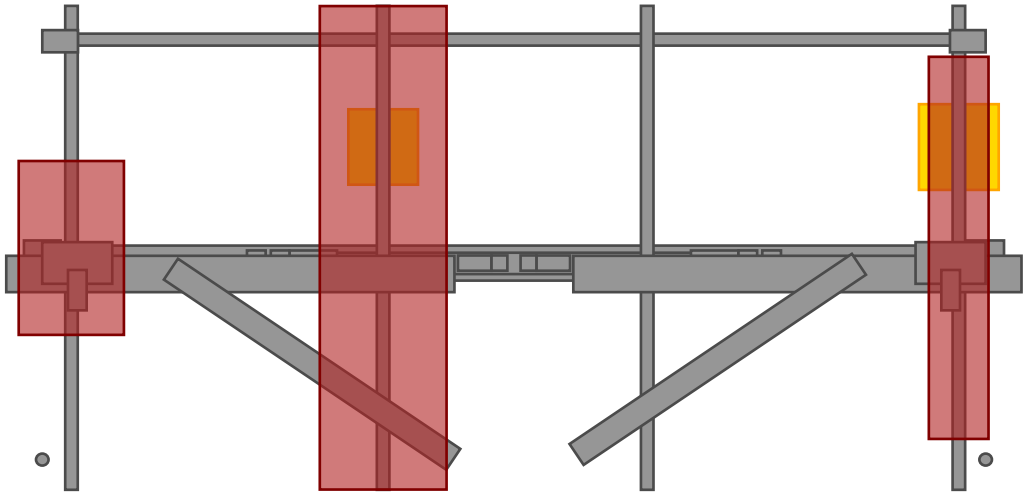
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	*Qty.*	*Elevation [ft]*	*Weight [lbs]*	F_p [lbs]
APXVLL19P_43-C-A20_TMO	3	107	48.39	5.23
APXVAARR24_43-U-NA20	3	107	128	13.84
AIR 6419 B41_TMO_CCIV2	3	107	81.84	8.85
RADIO 4460 B2/B25 B66_TMO	3	107	109	11.79
RADIO 4449 B71/B85A	3	107	74.95	8.11

ELEVATION VIEW

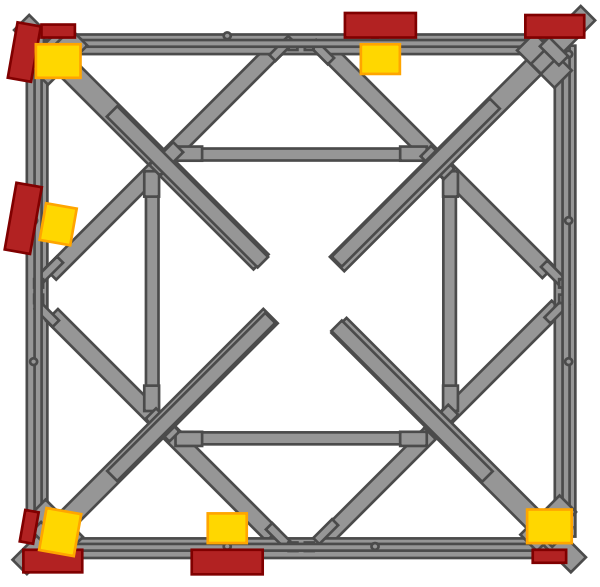


MP4 MP3 MP2 MP1

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

**Elevation View Shows Only One Sector

PLAN VIEW



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

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
APXVLL19P_43-C-A20_TMO	3	107	MP1/MP5/MP9	120/220/300
APXVAARR24_43-U-NA20	3	107	MP3/MP7/MP11	120/220/300
AIR 6419 B41_TMO_CCIV2	3	107	MP4/MP8/MP12	120/220/300
RADIO 4460 B2/B25 B66_TMO	3	107	MP1/MP5/MP9	120/220/300
RADIO 4449 B71/B85A	3	107	MP3/MP7/MP11	120/220/300

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	AWC NDS-15: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-14
Masonry Code	ACI 530-13: Strength
Aluminum Code	AA ADM1-10: LRFD - Building
Stainless Steel Code	AISC 14th(360-10): ASD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

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

Cold Formed Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Boom Angle	L6x3.5x5/16	Beam	None	A36 Gr.36	Typical	2.871	2.851	10.894	.089
2	Support Angle 1	L3X3X3	Beam	None	A36 Gr.36	Typical	1.09	.948	.948	.014
3	Support Angle 2	L4X4X4	Beam	None	A36 Gr.36	Typical	1.93	3	3	.044
4	HSS Support	HSS6X4X4	Beam	None	A500 Gr.B Rect	Typical	4.3	11.1	20.9	23.6
5	Angle Connection	PL3x3/8	Beam	None	A36 Gr.36	Typical	1.125	.013	.844	.049
6	Handrail	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
7	Mount Pipe	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
8	Handrail Plate	PL4.375x1/2	Beam	None	A36 Gr.36	Typical	2.188	.046	3.489	.169
9	Corner Plate	PL8X3/8	Beam	None	A36 Gr.36	Typical	3	.035	16	.136
10	Top Corner Plate	PL8.25x1/2	Beam	None	A36 Gr.36	Typical	4.125	.086	23.396	.331
11	Angle Connection 2	PL5X3/8	Beam	None	A36 Gr.36	Typical	1.875	.022	3.906	.084
12	MOD Reinf	LL2.5x2.5x3x0	Beam	None	A36 Gr.36	Typical	1.8	1.91	1.07	.023

Cold Formed Steel Section Sets

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

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N324	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N336	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N368	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N370	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
6	N372	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N366	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Self Weight	DL		-1			24		8	
2	Structure Wind Z	WLZ						200		
3	Structure Wind X	WLX						200		
4	Wind Load 0 AZI	WLZ					48			
5	Wind Load 30 AZI	None					48			
6	Wind Load 45 AZI	None					48			
7	Wind Load 60 AZI	None					48			
8	Wind Load 90 AZI	WLX					48			
9	Wind Load 120 AZI	None					48			
10	Wind Load 135 AZI	None					48			
11	Wind Load 150 AZI	None					48			
12	Ice Weight	OL1					24	200	8	
13	Ice Structure Wind Z	OL2						200		
14	Ice Structure Wind X	OL3						200		
15	Ice Wind Load 0 AZI	OL2					48			
16	Ice Wind Load 30 AZI	None					48			
17	Ice Wind Load 45 AZI	None					48			
18	Ice Wind Load 60 AZI	None					48			
19	Ice Wind Load 90 AZI	OL3					48			
20	Ice Wind Load 120 AZI	None					48			
21	Ice Wind Load 135 AZI	None					48			
22	Ice Wind Load 150 AZI	None					48			
23	Seismic Load Z	ELZ			-.108		24			
24	Seismic Load X	ELX	-.108				24			
25	Live Load 1 (Lv)	None					1			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Live Load 10 (Lv)	None					1			
35	Live Load 11 (Lv)	None					1			
36	Live Load 12 (Lv)	None					1			
37	Maintenance Load 1 (Lm)	None					1			
38	Maintenance Load 2 (Lm)	None					1			
39	Maintenance Load 3 (Lm)	None					1			
40	Maintenance Load 4 (Lm)	None					1			
41	Maintenance Load 5 (Lm)	None					1			
42	Maintenance Load 6 (Lm)	None					1			
43	Maintenance Load 7 (Lm)	None					1			
44	Maintenance Load 8 (Lm)	None					1			
45	Maintenance Load 9 (Lm)	None					1			
46	Maintenance Load 10 (Lm)	None					1			
47	Maintenance Load 11 (Lm)	None					1			
48	Maintenance Load 12 (Lm)	None					1			
49	Maintenance Load 13 (Lm)	None					1			
50	Maintenance Load 14 (Lm)	None					1			
51	Maintenance Load 15 (Lm)	None					1			
52	Maintenance Load 16 (Lm)	None					1			
53	BLC 1 Transient Area Loads	None						356		
54	BLC 12 Transient Area Loads	None						368		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1														

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1														
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1DLi + 1W Li 0 ...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1												
35	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1												
36	1.2DL + 1DLi + 1W Li 4...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1												
37	1.2DL + 1DLi + 1W Li 6...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1DLi + 1W Li 9...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1DLi + 1W Li 1...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1DLi + 1W Li 2...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1DLi + 1W Li 3...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2Sds)DL + 1E 0 ...	Yes	Y		DL	1.2...	23	1	24																	
51	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.866	24	.5																
52	(1.2+0.2Sds)DL + 1E 4...	Yes	Y		DL	1.2...	23	.707	24	.707																
53	(1.2+0.2Sds)DL + 1E 6...	Yes	Y		DL	1.2...	23	.5	24	.866																
54	(1.2+0.2Sds)DL + 1E 9...	Yes	Y		DL	1.2...	23		24	1																
55	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.5	24	.866																
56	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.707	24	.707																
57	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-.866	24	.5																
58	(1.2+0.2Sds)DL + 1E 1...	Yes	Y		DL	1.2...	23	-1	24																	
59	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.866	24	-.5																
60	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.707	24	-.707																
61	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23	-.5	24	-.866																
62	(1.2+0.2Sds)DL + 1E 2...	Yes	Y		DL	1.2...	23		24	-1																
63	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.5	24	-.866																
64	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.707	24	-.707																
65	(1.2+0.2Sds)DL + 1E 3...	Yes	Y		DL	1.2...	23	.866	24	-.5																
66	(0.9-0.2Sds)DL + 1E 0 ...	Yes	Y		DL	.864	23	1	24																	
67	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.864	23	.866	24	.5																
68	(0.9-0.2Sds)DL + 1E 4...	Yes	Y		DL	.864	23	.707	24	.707																
69	(0.9-0.2Sds)DL + 1E 6...	Yes	Y		DL	.864	23	.5	24	.866																
70	(0.9-0.2Sds)DL + 1E 9...	Yes	Y		DL	.864	23		24	1																

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
71	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.864	23	-.5	24	.866																
72	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.864	23	-.707	24	.707																
73	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.864	23	-.866	24	.5																
74	(0.9-0.2Sds)DL + 1E 1...	Yes	Y		DL	.864	23	-1	24																	
75	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.864	23	-.866	24	-.5																
76	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.864	23	-.707	24	-.707																
77	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.864	23	-.5	24	-.866																
78	(0.9-0.2Sds)DL + 1E 2...	Yes	Y		DL	.864	23		24	-1																
79	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.864	23	.5	24	-.866																
80	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.864	23	.707	24	-.707																
81	(0.9-0.2Sds)DL + 1E 3...	Yes	Y		DL	.864	23	.866	24	-.5																
82	1.2DL + 1Lv1	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1Lv2	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1Lv3	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1Lv4	Yes	Y		DL	1.2	28	1.5																		
86	1.2DL + 1Lv5	Yes	Y		DL	1.2	29	1.5																		
87	1.2DL + 1Lv6	Yes	Y		DL	1.2	30	1.5																		
88	1.2DL + 1Lv7	Yes	Y		DL	1.2	31	1.5																		
89	1.2DL + 1Lv8	Yes	Y		DL	1.2	32	1.5																		
90	1.2DL + 1Lv9	Yes	Y		DL	1.2	33	1.5																		
91	1.2DL + 1Lv10	Yes	Y		DL	1.2	34	1.5																		
92	1.2DL + 1Lv11	Yes	Y		DL	1.2	35	1.5																		
93	1.2DL + 1Lv12	Yes	Y		DL	1.2	36	1.5																		
94	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.068	3		4	.068												
95	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.059	3	.034	5	.068												
96	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.048	3	.048	6	.068												
97	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.034	3	.059	7	.068												
98	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2		3	.068	8	.068												
99	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.034	3	.059	9	.068												
100	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.048	3	.048	10	.068												
101	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.059	3	.034	11	.068												
102	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.068	3		4	-.068												
103	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.059	3	-.034	5	-.068												
104	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.048	3	-.048	6	-.068												
105	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	-.034	3	-.059	7	-.068												
106	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2		3	-.068	8	-.068												
107	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.034	3	-.059	9	-.068												
108	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.048	3	-.048	10	-.068												
109	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	37	1.5	2	.059	3	-.034	11	-.068												
110	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.068	3		4	.068												
111	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.059	3	.034	5	.068												
112	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.048	3	.048	6	.068												
113	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.034	3	.059	7	.068												
114	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2		3	.068	8	.068												
115	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.034	3	.059	9	.068												
116	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.048	3	.048	10	.068												
117	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.059	3	.034	11	.068												
118	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.068	3		4	-.068												
119	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.059	3	-.034	5	-.068												
120	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.048	3	-.048	6	-.068												
121	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	-.034	3	-.059	7	-.068												
122	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2		3	-.068	8	-.068												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
123	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.034	3	-.059	9	-.068												
124	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.048	3	-.048	10	-.068												
125	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	38	1.5	2	.059	3	-.034	11	-.068												
126	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.068	3		4	.068												
127	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.059	3	.034	5	.068												
128	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.048	3	.048	6	.068												
129	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.034	3	.059	7	.068												
130	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2		3	.068	8	.068												
131	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.034	3	.059	9	.068												
132	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.048	3	.048	10	.068												
133	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.059	3	.034	11	.068												
134	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.068	3		4	-.068												
135	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.059	3	-.034	5	-.068												
136	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.048	3	-.048	6	-.068												
137	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	-.034	3	-.059	7	-.068												
138	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2		3	-.068	8	-.068												
139	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.034	3	-.059	9	-.068												
140	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.048	3	-.048	10	-.068												
141	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	39	1.5	2	.059	3	-.034	11	-.068												
142	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.068	3		4	.068												
143	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.059	3	.034	5	.068												
144	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.048	3	.048	6	.068												
145	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.034	3	.059	7	.068												
146	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2		3	.068	8	.068												
147	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.034	3	.059	9	.068												
148	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.048	3	.048	10	.068												
149	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.059	3	.034	11	.068												
150	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.068	3		4	-.068												
151	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.059	3	-.034	5	-.068												
152	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.048	3	-.048	6	-.068												
153	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	-.034	3	-.059	7	-.068												
154	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2		3	-.068	8	-.068												
155	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.034	3	-.059	9	-.068												
156	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.048	3	-.048	10	-.068												
157	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	40	1.5	2	.059	3	-.034	11	-.068												
158	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.068	3		4	.068												
159	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.059	3	.034	5	.068												
160	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.048	3	.048	6	.068												
161	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.034	3	.059	7	.068												
162	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2		3	.068	8	.068												
163	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.034	3	.059	9	.068												
164	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.048	3	.048	10	.068												
165	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.059	3	.034	11	.068												
166	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.068	3		4	-.068												
167	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.059	3	-.034	5	-.068												
168	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.048	3	-.048	6	-.068												
169	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	-.034	3	-.059	7	-.068												
170	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2		3	-.068	8	-.068												
171	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.034	3	-.059	9	-.068												
172	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.048	3	-.048	10	-.068												
173	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	41	1.5	2	.059	3	-.034	11	-.068												
174	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.068	3		4	.068												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
175	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.059	3	.034	5	.068												
176	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.048	3	.048	6	.068												
177	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.034	3	.059	7	.068												
178	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2		3	.068	8	.068												
179	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.034	3	.059	9	.068												
180	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.048	3	.048	10	.068												
181	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.059	3	.034	11	.068												
182	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.068	3		4	-.068												
183	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.059	3	-.034	5	-.068												
184	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.048	3	-.048	6	-.068												
185	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	-.034	3	-.059	7	-.068												
186	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2		3	-.068	8	-.068												
187	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.034	3	-.059	9	-.068												
188	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.048	3	-.048	10	-.068												
189	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	42	1.5	2	.059	3	-.034	11	-.068												
190	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.068	3		4	.068												
191	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.059	3	.034	5	.068												
192	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.048	3	.048	6	.068												
193	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.034	3	.059	7	.068												
194	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2		3	.068	8	.068												
195	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.034	3	.059	9	.068												
196	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.048	3	.048	10	.068												
197	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.059	3	.034	11	.068												
198	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.068	3		4	-.068												
199	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.059	3	-.034	5	-.068												
200	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.048	3	-.048	6	-.068												
201	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	-.034	3	-.059	7	-.068												
202	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2		3	-.068	8	-.068												
203	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.034	3	-.059	9	-.068												
204	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.048	3	-.048	10	-.068												
205	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	43	1.5	2	.059	3	-.034	11	-.068												
206	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.068	3		4	.068												
207	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.059	3	.034	5	.068												
208	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.048	3	.048	6	.068												
209	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.034	3	.059	7	.068												
210	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2		3	.068	8	.068												
211	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.034	3	.059	9	.068												
212	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.048	3	.048	10	.068												
213	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.059	3	.034	11	.068												
214	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.068	3		4	-.068												
215	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.059	3	-.034	5	-.068												
216	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.048	3	-.048	6	-.068												
217	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	-.034	3	-.059	7	-.068												
218	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2		3	-.068	8	-.068												
219	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.034	3	-.059	9	-.068												
220	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.048	3	-.048	10	-.068												
221	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	44	1.5	2	.059	3	-.034	11	-.068												
222	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.068	3		4	.068												
223	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.059	3	.034	5	.068												
224	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.048	3	.048	6	.068												
225	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.034	3	.059	7	.068												
226	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2		3	.068	8	.068												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
227	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.034	3	.059	9	.068												
228	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.048	3	.048	10	.068												
229	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.059	3	.034	11	.068												
230	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.068	3		4	-.068												
231	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.059	3	-.034	5	-.068												
232	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.048	3	-.048	6	-.068												
233	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	-.034	3	-.059	7	-.068												
234	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2		3	-.068	8	-.068												
235	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.034	3	-.059	9	-.068												
236	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.048	3	-.048	10	-.068												
237	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	45	1.5	2	.059	3	-.034	11	-.068												
238	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	.068	3		4	.068												
239	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	.059	3	.034	5	.068												
240	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	.048	3	.048	6	.068												
241	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	.034	3	.059	7	.068												
242	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2		3	.068	8	.068												
243	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	-.034	3	.059	9	.068												
244	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	-.048	3	.048	10	.068												
245	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	-.059	3	.034	11	.068												
246	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	-.068	3		4	-.068												
247	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	-.059	3	-.034	5	-.068												
248	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	-.048	3	-.048	6	-.068												
249	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	-.034	3	-.059	7	-.068												
250	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2		3	-.068	8	-.068												
251	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	.034	3	-.059	9	-.068												
252	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	.048	3	-.048	10	-.068												
253	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	46	1.5	2	.059	3	-.034	11	-.068												
254	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	.068	3		4	.068												
255	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	.059	3	.034	5	.068												
256	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	.048	3	.048	6	.068												
257	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	.034	3	.059	7	.068												
258	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2		3	.068	8	.068												
259	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	-.034	3	.059	9	.068												
260	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	-.048	3	.048	10	.068												
261	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	-.059	3	.034	11	.068												
262	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	-.068	3		4	-.068												
263	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	-.059	3	-.034	5	-.068												
264	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	-.048	3	-.048	6	-.068												
265	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	-.034	3	-.059	7	-.068												
266	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2		3	-.068	8	-.068												
267	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	.034	3	-.059	9	-.068												
268	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	.048	3	-.048	10	-.068												
269	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	47	1.5	2	.059	3	-.034	11	-.068												
270	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	.068	3		4	.068												
271	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	.059	3	.034	5	.068												
272	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	.048	3	.048	6	.068												
273	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	.034	3	.059	7	.068												
274	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2		3	.068	8	.068												
275	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	-.034	3	.059	9	.068												
276	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	-.048	3	.048	10	.068												
277	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	-.059	3	.034	11	.068												
278	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	-.068	3		4	-.068												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
279	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	-.059	3	-.034	5	-.068												
280	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	-.048	3	-.048	6	-.068												
281	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	-.034	3	-.059	7	-.068												
282	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2		3	-.068	8	-.068												
283	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	.034	3	-.059	9	-.068												
284	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	.048	3	-.048	10	-.068												
285	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	48	1.5	2	.059	3	-.034	11	-.068												
286	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	.068	3		4	.068												
287	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	.059	3	.034	5	.068												
288	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	.048	3	.048	6	.068												
289	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	.034	3	.059	7	.068												
290	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2		3	.068	8	.068												
291	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	-.034	3	.059	9	.068												
292	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	-.048	3	.048	10	.068												
293	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	-.059	3	.034	11	.068												
294	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	-.068	3		4	-.068												
295	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	-.059	3	-.034	5	-.068												
296	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	-.048	3	-.048	6	-.068												
297	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	-.034	3	-.059	7	-.068												
298	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2		3	-.068	8	-.068												
299	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	.034	3	-.059	9	-.068												
300	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	.048	3	-.048	10	-.068												
301	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	49	1.5	2	.059	3	-.034	11	-.068												
302	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	.068	3		4	.068												
303	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	.059	3	.034	5	.068												
304	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	.048	3	.048	6	.068												
305	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	.034	3	.059	7	.068												
306	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2		3	.068	8	.068												
307	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	-.034	3	.059	9	.068												
308	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	-.048	3	.048	10	.068												
309	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	-.059	3	.034	11	.068												
310	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	-.068	3		4	-.068												
311	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	-.059	3	-.034	5	-.068												
312	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	-.048	3	-.048	6	-.068												
313	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	-.034	3	-.059	7	-.068												
314	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2		3	-.068	8	-.068												
315	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	.034	3	-.059	9	-.068												
316	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	.048	3	-.048	10	-.068												
317	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	50	1.5	2	.059	3	-.034	11	-.068												
318	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	.068	3		4	.068												
319	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	.059	3	.034	5	.068												
320	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	.048	3	.048	6	.068												
321	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	.034	3	.059	7	.068												
322	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2		3	.068	8	.068												
323	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	-.034	3	.059	9	.068												
324	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	-.048	3	.048	10	.068												
325	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	-.059	3	.034	11	.068												
326	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	-.068	3		4	-.068												
327	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	-.059	3	-.034	5	-.068												
328	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	-.048	3	-.048	6	-.068												
329	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2	-.034	3	-.059	7	-.068												
330	1.2DL + 1.5Lm + 1Wm ...	Yes	Y		DL	1.2	51	1.5	2		3	-.068	8	-.068												

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..
331	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	51	1.5	2	.034	3	-.059	9	-.068										
332	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	51	1.5	2	.048	3	-.048	10	-.068										
333	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	51	1.5	2	.059	3	-.034	11	-.068										
334	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	.068	3		4	.068										
335	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	.059	3	.034	5	.068										
336	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	.048	3	.048	6	.068										
337	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	.034	3	.059	7	.068										
338	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2		3	.068	8	.068										
339	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	-.034	3	.059	9	.068										
340	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	-.048	3	.048	10	.068										
341	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	-.059	3	.034	11	.068										
342	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	-.068	3		4	-.068										
343	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	-.059	3	-.034	5	-.068										
344	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	-.048	3	-.048	6	-.068										
345	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	-.034	3	-.059	7	-.068										
346	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2		3	-.068	8	-.068										
347	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	.034	3	-.059	9	-.068										
348	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	.048	3	-.048	10	-.068										
349	1.2DL + 1.5Lm + 1Wm ..	Yes	Y		DL	1.2	52	1.5	2	.059	3	-.034	11	-.068										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N1	max	4368.821	6	145.223	29	4112.863	5	361.062	267	1564.758	16	281.597	222
2		min	-3281.821	30	-337.367	337	-3015.924	29	-294.398	339	-1531.823	24	-303.321	42
3	N324	max	5566.689	8	225.181	32	5079.266	32	279.875	290	1295.431	3	301.198	149
4		min	-4628.266	32	-344.854	148	-6015.612	8	-331.485	46	-1276.356	27	-309.423	17
5	N336	max	3333.281	18	218.784	2	3295.089	18	143.033	216	883.86	20	330.782	174
6		min	-3436.025	10	-262.703	102	-3378.734	10	-687.783	36	-942.785	12	-314.269	102
7	N368	max	-1251.206	33	4478.075	40	6542.582	40	.134	306	.097	138	.144	138
8		min	-6541.332	41	835.626	32	1260.938	32	-.144	138	-.09	306	-.134	306
9	N370	max	5015.108	43	3450.721	43	5008.62	43	.1	204	.067	204	.1	204
10		min	1016.634	19	680.637	19	1043.199	19	-.196	116	-.132	116	-.196	116
11	N372	max	5102.429	49	3506.652	48	-1260.589	22	.305	255	.206	255	.131	183
12		min	1264.795	26	846.957	24	-5100.935	47	-.131	183	-.088	183	-.305	255
13	N366	max	-1437.728	28	4525.173	37	-1414.859	29	.149	250	.096	322	.149	250
14		min	-6609.294	37	948.67	29	-6614.821	37	-.142	322	-.101	250	-.142	322
15	Totals:	max	7154.168	22	15751.716	49	7812.856	18						
16		min	-7154.193	14	4132.341	73	-7812.881	10						

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

	Member	Shape	Cod...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [...	phi*Pnt [l...	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M7	L4X4X4	.644	55.25	47	.244	55.25	z	35	21892.538	62532	3137.597	5381.245	1....	H2-1
2	M4	L4X4X4	.624	55.25	35	.202	55.25	z	39	21892.538	62532	3137.597	5396.303	1....	H2-1
3	MP3	PIPE_2.0	.585	50	2	.074	50		10	14916.096	32130	1871.625	1871.625	1....	H1-1b
4	MP11	PIPE_2.0	.584	50	10	.077	50		2	14916.096	32130	1871.625	1871.625	1....	H1-1b
5	MP7	PIPE_2.0	.574	50	14	.073	50		6	14916.096	32130	1871.625	1871.625	1....	H1-1b
6	M5	L4X4X4	.530	55.25	49	.249	55.25	y	34	21892.538	62532	3137.597	5403.277	1....	H2-1
7	M172	PL8.25x1/2	.482	11.914	48	.119	6.836	y	301	54973.44	133650	1392.188	22971.094	1....	H1-1b
8	M164	PL8.25x1/2	.479	11.914	46	.120	6.836	y	235	54973.44	133650	1392.188	22971.094	1....	H1-1b

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Cod...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [..	phi*Pnt [l..	phi*Mn y...	phi*Mn z...	Cb	Eqn
9	M6	L4X4X4	.452	55.25	34	.233	56.401	y	285	21892.538	62532	3137.597	5470.452	1....	H2-1
10	H3	L6x3.5x5/16	.442	112....	34	.161	10.875	y	34	12757.317	93023.438	2900.605	7737.507	1....	H2-1
11	H1	L6x3.5x5/16	.411	112....	43	.155	163....	y	41	12757.317	93023.438	2900.605	7830.742	1....	H2-1
12	M180	PL8.25x1/2	.405	6.836	41	.121	6.836	y	95	54973.44	133650	1392.188	22971.094	1....	H1-1b
13	M188	PL8.25x1/2	.401	11.914	47	.112	11.914	y	37	54973.44	133650	1392.188	22971.094	1....	H1-1b
14	H2	L6x3.5x5/16	.380	112....	38	.150	10.875	y	38	12757.317	93023.438	2900.605	7946.002	1....	H2-1
15	M197	LL2.5x2.5x3x0	.379	41.867	37	.005	83.734	z	15	31343.718	58320	3300.48	2493.916	1....	H1-1a
16	M198	LL2.5x2.5x3x0	.375	41.867	39	.005	83.734	z	13	31343.718	58320	3300.48	2493.916	1....	H1-1a
17	M65	PL5X3/8	.325	1.042	2	.176	1.042	y	41	54296.469	60750	474.609	6328.125	1....	H1-1b
18	M61	PL5X3/8	.321	1.042	2	.151	1.042	y	43	54296.469	60750	474.609	6328.125	1....	H1-1b
19	M53	PL5X3/8	.310	1.042	14	.174	1.042	y	36	54296.469	60750	474.609	6328.125	1....	H1-1b
20	M63	PL5X3/8	.309	1.042	14	.176	1.042	y	39	54296.469	60750	474.609	6328.125	1....	H1-1b
21	M200	LL2.5x2.5x3x0	.304	41.867	45	.006	83.734	y	48	31343.718	58320	3300.48	2493.916	1....	H1-1a
22	M199	LL2.5x2.5x3x0	.298	41.867	45	.006	0	z	7	31343.718	58320	3300.48	2493.916	1....	H1-1a
23	H4	L6x3.5x5/16	.293	61.625	187	.112	10.875	y	161	12757.317	93023.438	2900.605	8122.518	1....	H2-1
24	M75	PL3x3/8	.278	.75	10	.220	0	y	42	35005.731	36450	284.766	2278.125	1....	H1-1b
25	MP4	PIPE_2.0	.257	50	37	.048	50		4	14916.096	32130	1871.625	1871.625	1....	H1-1b
26	MP12	PIPE_2.0	.250	50	45	.046	50		3	14916.096	32130	1871.625	1871.625	1....	H1-1b
27	MP9	PIPE_2.0	.243	50	40	.049	50		9	14916.096	32130	1871.625	1871.625	1....	H1-1b
28	M67	PL3x3/8	.241	.75	38	.176	0	y	37	35005.731	36450	284.766	2278.125	1....	H1-1b
29	MP8	PIPE_2.0	.230	50	34	.045	50		16	14916.096	32130	1871.625	1871.625	1....	H1-1b
30	M105	PL3x3/8	.229	.75	49	.231	.75	y	41	35005.731	36450	284.766	2278.125	1....	H1-1b
31	MP5	PIPE_2.0	.223	50	13	.051	50		13	14916.096	32130	1871.625	1871.625	1....	H1-1b
32	MP1	PIPE_2.0	.212	50	17	.046	50		9	14916.096	32130	1871.625	1871.625	1....	H1-1b
33	M81	PL3x3/8	.207	.75	34	.099	0	y	125	35005.731	36450	284.766	2278.125	1....	H1-1b
34	M104	PL3x3/8	.206	3.281	48	.066	3.281	y	37	25332.153	36450	284.766	2278.125	2....	H1-1b
35	M68	PL3x3/8	.205	3.281	48	.061	3.281	y	41	25332.153	36450	284.766	2278.125	1....	H1-1b
36	M59	PL5X3/8	.201	1.042	3	.213	1.042	y	46	54296.449	60750	474.609	6328.125	1....	H1-1b
37	MP6	PIPE_2.0	.200	50	11	.043	50		7	14916.096	32130	1871.625	1871.625	1....	H1-1b
38	MP10	PIPE_2.0	.198	50	38	.040	50		3	14916.096	32130	1871.625	1871.625	1....	H1-1b
39	M57	PL5X3/8	.195	1.042	3	.208	1.042	y	282	54296.449	60750	474.609	6328.125	1....	H1-1b
40	M66	PL3x3/8	.192	3.281	45	.068	3.281	y	37	25332.153	36450	284.766	2278.125	2....	H1-1b
41	M113	PIPE_2.0	.191	169....	46	.086	168....		2	4705.529	32130	1871.625	1871.625	2....	H1-1b
42	M74	PL3x3/8	.186	9	48	.068	3.281	y	41	25332.153	36450	284.766	2278.125	2....	H1-1b
43	M1	HSS6X4X4	.182	76.25	38	.047	76.25	y	39	122321....	178020	22252.5	29428.5	2....	H1-1b
44	M17	L3X3X3	.181	34.219	46	.014	70.719	z	38	15601.579	35316	1320.097	2263.463	1....	H2-1
45	M170	HSS6X4X4	.181	76.25	42	.047	76.25	y	43	122321....	178020	22252.5	29428.5	2....	H1-1b
46	M87	PL3x3/8	.180	.75	47	.227	.75	y	283	35005.731	36450	284.766	2278.125	1....	H1-1b
47	M15	L3X3X3	.179	36.5	26	.011	2.281	z	36	15601.579	35316	1320.097	2277.127	1....	H2-1
48	M69	PL3x3/8	.179	.75	36	.118	0	y	313	35005.731	36450	284.766	2278.125	1....	H1-1b
49	MP2	PIPE_2.0	.178	50	14	.046	50		12	14916.096	32130	1871.625	1871.625	1....	H1-1b
50	M111	PIPE_2.0	.178	169....	38	.087	168....		10	4705.529	32130	1871.625	1871.625	2....	H1-1b
51	M3	L3X3X3	.176	36.5	22	.010	70.719	z	41	15601.579	35316	1320.097	2271.534	1....	H2-1
52	M16	L3X3X3	.174	38.021	34	.010	2.281	z	39	15601.579	35316	1320.097	2281.188	1....	H2-1
53	M99	PL3x3/8	.170	.75	34	.317	.75	y	158	35005.731	36450	284.766	2278.125	1....	H1-1b
54	M51	PL5X3/8	.168	1.042	11	.216	1.042	y	35	54296.449	60750	474.609	6328.125	1....	H1-1b
55	M80	PL3x3/8	.168	3.281	36	.048	3.281	y	44	25332.153	36450	284.766	2278.125	1....	H1-1b
56	MP16	PIPE_2.0	.160	50	198	.037	50		9	14916.096	32130	1871.625	1871.625	1....	H1-1b
57	M92	PL3x3/8	.160	9	275	.050	3.281	y	282	25332.153	36450	284.766	2278.125	2....	H1-1b
58	M55	PL5X3/8	.157	1.042	11	.181	1.042	y	173	54296.449	60750	474.609	6328.125	1....	H1-1b
59	M98	PL3x3/8	.157	9	158	.049	3.281	y	173	25332.153	36450	284.766	2278.125	2....	H1-1b
60	M114	PIPE_2.0	.154	169....	34	.086	168....		6	4705.529	32130	1871.625	1871.625	2....	H1-1b

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Cod...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [..	phi*Pnt [l..	phi*Mn y...	phi*Mn z...	Cb	Eqn
61	M196	PL4.375x1/2	.152	9.553	278	.048	0	y	3	56277.956	70875	738.281	6459.961	1....	H1-1b
62	MP13	PIPE_2.0	.152	50	174	.036	50		3	14916.096	32130	1871.625	1871.625	1....	H1-1b
63	M93	PL3x3/8	.146	0	275	.318	.75	y	272	35005.731	36450	284.766	2278.125	1....	H1-1b
64	M195	PL4.375x1/2	.140	0	94	.042	9.553	y	9	56277.956	70875	738.281	6459.961	1....	H1-1b
65	M178	HSS6X4X4	.135	76.25	45	.043	76.25	y	42	122321....	178020	22252.5	29428.5	2....	H1-1b
66	M186	HSS6X4X4	.135	76.25	34	.043	76.25	y	35	122321....	178020	22252.5	29428.5	2....	H1-1b
67	M86	PL3x3/8	.134	3.281	49	.045	3.281	y	45	25332.153	36450	284.766	2278.125	2....	H1-1b
68	M175	PL8X3/8	.126	2.5	48	.009	2.5	z	48	86874.318	97200	759.375	15575.26	1....	H1-1b
69	MP15	PIPE_2.0	.124	50	10	.030	50		12	14916.096	32130	1871.625	1871.625	1....	H1-1b
70	MP14	PIPE_2.0	.123	50	2	.028	50		16	14916.096	32130	1871.625	1871.625	1....	H1-1b
71	M163	PL4.375x1/2	.123	0	230	.053	0	y	15	56277.956	70875	738.281	6459.961	1....	H1-1b
72	M167	PL8X3/8	.122	2.5	46	.009	2.5	z	47	86874.318	97200	759.375	15454.582	1....	H1-1b
73	M112	PIPE_2.0	.118	169....	198	.058	3.615		279	4705.529	32130	1871.625	1871.625	2....	H1-1b
74	M194	PL4.375x1/2	.111	0	298	.057	0	y	4	56277.956	70875	738.281	6459.961	2....	H1-1b
75	M183	PL8X3/8	.108	2.5	35	.008	2.5	z	40	86874.318	97200	759.375	15665.115	1....	H1-1b
76	M191	PL8X3/8	.106	2.5	35	.008	2.5	z	35	86874.318	97200	759.375	15780.672	1....	H1-1b
77	M60	PL5X3/8	.084	2.25	2	.012	9	y	41	42219.777	60750	474.609	6328.125	1....	H1-1b
78	M64	PL5X3/8	.080	2.25	2	.011	9	y	42	42219.777	60750	474.609	6328.125	2....	H1-1b
79	M62	PL5X3/8	.079	2.25	14	.011	9	y	36	42219.777	60750	474.609	6328.125	1....	H1-1b
80	M52	PL5X3/8	.078	2.25	14	.012	9	y	39	42219.777	60750	474.609	6328.125	2....	H1-1b
81	M58	PL5X3/8	.077	9	15	.012	9	y	40	42219.777	60750	474.609	6328.125	1....	H1-1b
82	M50	PL5X3/8	.076	9	17	.011	9	y	40	42219.777	60750	474.609	6328.125	1....	H1-1b
83	M56	PL5X3/8	.072	9	15	.011	9	y	46	42219.777	60750	474.609	6328.125	1....	H1-1b
84	M54	PL5X3/8	.063	9	17	.012	9	y	34	42219.777	60750	474.609	6328.125	1....	H1-1b

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

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

APPENDIX D

ADDITIONAL CALCULATIONS

Trylon

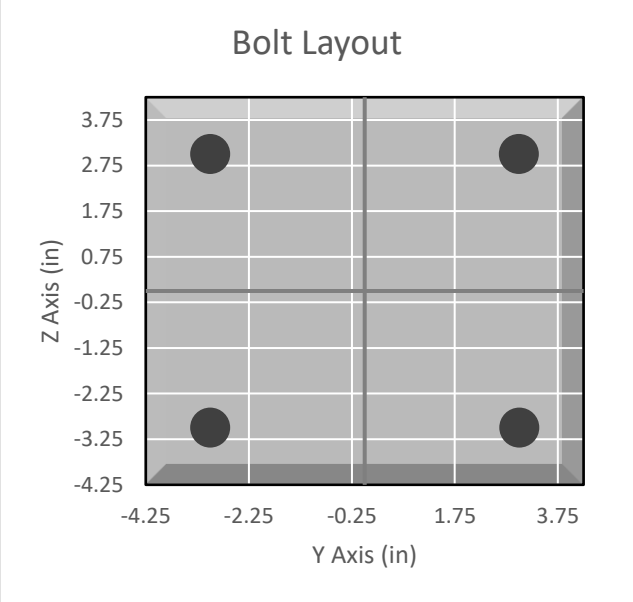
Analysis date: 1/24/2024

BOLT TOOL 1.5.3

Project Data	
Job Code:	235622
Carrier Site ID:	BU 846295
Carrier Site Name:	GRANBY - HIGLEY ROAD

Code	
Design Standard:	TIA-222-H
Slip Check:	No
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in



Connection Description
Standoff to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	3094.6	lbs
Shear Force (V_u):	165.0	lbs
Tension Usage:	14.5%	--
Shear Usage:	1.1%	--
Interaction:	14.5%	Pass
Controlling Member:	M170	--
Controlling LC:	8	--

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

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

Date: **January 31, 2024**

Black & Veatch Corp.
11401 Lamar Avenue
Overland Park, KS 66211
(913) 458-6963

Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CTHA162A
	Site Name:	CTHA162/CINGATT Permit_FT
Crown Castle Designation:	**BU Number:**	846295
	Site Name:	GRANBY - HIGLEY ROAD
	JDE Job Number:	2107089
	Work Order Number:	2279375
	Order Number:	662148 Rev. 0
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	406642
Site Data:	**30 Higley Road, West Granby, Hartford County, CT**	
	Latitude *41° 57' 56.8"*, Longitude *-72° 51' 19.34"*	
	118.82 Foot - Monopole Tower	

Black & Veatch Corp. 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 – 50.1%**

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Wuttipat Thonphothong / Danuwat Maoleethong

Respectfully submitted by:

Feb 01, 2024

Digitally signed by Ping Jiang
DN: CN=Ping Jiang, dnQualifier=A01410D0000018BD4B59DC30001EECF, O=Kansas, C=US
Date: 2024.02.01 20:32:41-06'00'

Ping Jiang, P.E.
Professional Engineer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 118.82 ft Monopole tower designed by Engineered Endeavors, Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	115 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic Ss:	0.169
Seismic S1:	0.054
Service Wind Speed:	60 mph
Seismic Loading:	Does not control per engineering judgment

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)
110.0	110.0	1	cci tower mounts (v2.1)	Platform Mount [14.5' LP 701-1]	3	1-5/8
		1	sitepro1	F4P-HRK14		
		1	sitepro1	PQ-1245L		
	107.0	3	ericsson	AIR 6419 B41_TMO_CCIV2 w/ Mount Pipe		
		3	ericsson	RADIO 4449 B71/B85A		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	rfs celwave	APXVLL19P_43-C-A20_TMO w/ Mount Pipe		

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)
119.0	121.0	3	kmw communications	AM-X-CD-17-65-00T-RET w/ Mount Pipe	12 2 1 1	1-5/8 3/4 3/8 Conduit
		6	powerwave technologies	7770.00 w/ Mount Pipe		
	119.0	1	cci tower mounts (v2.1)	Platform Mount [LP 712-1]		
		3	ericsson	RRUS 11		
		6	powerwave technologies	LGP13519		
		6	powerwave technologies	LGP21401		
		1	raycap	DC6-48-60-18-8F		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
97.0	97.0	6	antel	LPA-80080/6CF w/ Mount Pipe	11 1	1-5/8 1/2
		1	cci tower mounts (v2.1)	Platform Mount [LP 303-1]		
		6	commscope	NHH-65B-R2B w/ Mount Pipe		
		1	raycap	RVZDC-6627-PF-48		
		3	samsung telecommunications	MT6407-77A w/ Mount Pipe		
		3	samsung telecommunications	RF4439D-25A		
		3	samsung telecommunications	RF4440D-13A		
81.0	82.0	1	symmetricom	58532A	1	1/2
	81.0	1	cci tower mounts (v2.1)	Side Arm Mount [SO 201-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	4705357	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	4525021	CCISITES
4-TOWER MANUFACTURER DRAWINGS	4525086	CCISITES

3.1) Analysis Method

tnxTower (version 8.2.2.0), 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. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary) (Monopole Tower)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	118.82 - 94.98	Pole	TP25.4375x19x0.1875	1	-10.21	886.70	25.3	Pass
L2	94.98 - 47.2	Pole	TP37.8438x24.0688x0.25	2	-20.14	1764.12	49.5	Pass
L3	47.2 - 0	Pole	TP50x35.9438x0.3125	3	-32.10	3027.25	46.0	Pass
							Summary	
						Pole (L2)	49.5	Pass
						Rating =	49.5	Pass

Table 5 - Tower Component Stresses vs. Capacity (Monopole Tower) - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	38.2	Pass
	Base Plate		31.0	Pass
1	Base Foundation (Structure)	0	38.0	Pass
	Base Foundation (Soil Interaction)		33.0	Pass

Structure Rating (max from all components) =	49.5%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity. Rating per TIA-222-H Section 15.5.

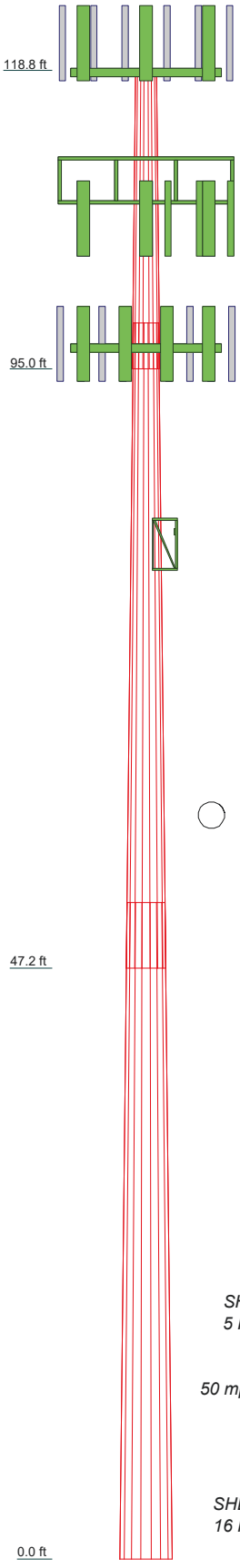
4.1) Recommendations

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	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	23.84	18	0.1875	3.68	19.0000	25.4375	A572-65	1.1
2	51.46	18	0.2500	5.23	24.0688	37.8438		4.3
3	52.43	18	0.3125		35.9438	50.0000		7.5
								12.9



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 49.5%

ALL REACTIONS ARE FACTORED

AXIAL 57 K
SHEAR 5 K
MOMENT 452 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.5000 in ICE

AXIAL 32 K
SHEAR 16 K
MOMENT 1484 kip-ft
TORQUE 2 kip-ft
REACTIONS - 115 mph WIND

BLACK & VEATCH
Black & Veatch Corp.
11401 Lamar Avenue
Overland Park, KS 66211
Phone: (913)-458-6963
FAX:

Job: ***GRANBY - HIGLEY ROAD (BU# 846295)***			
Project: ***406642 (846295.2279375)***			
Client: Crown Castle USA	Drawn by: Danuwat Maoleethong	App'd:	
Code: TIA-222-H	Date: 01/31/24	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 Hartford County, Connecticut.
- Tower base elevation above sea level: 592.00 ft.
- Basic wind speed of 115 mph.
- Risk Category II.
- Exposure Category B.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 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		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Horizontals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Consider Moments - Diagonals	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
	Use Moment Magnification		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Stress Ratios		Retension Guys To Initial Tension		Offset Girt At Foundation
√	Use Code Safety Factors - Guys	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Escalate Ice	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Always Use Max Kz	√	Project Wind Area of Appurtenances		Use TIA-222-H Bracing Resist. Exemption
	Use Special Wind Profile	√	Alternative Appurt. EPA Calculation		Use TIA-222-H Tension Splice Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination	√	Include Shear-Torsion Interaction
	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder	√	Pole Without Linear Attachments
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs		Pole With Shroud Or No Appurtenances
	Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules		Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	118.82-94.98	23.84	3.68	18	19.0000	25.4375	0.1875	0.7500	A572-65 (65 ksi)
L2	94.98-47.20	51.46	5.23	18	24.0688	37.8438	0.2500	1.0000	A572-65 (65 ksi)
L3	47.20-0.00	52.43		18	35.9438	50.0000	0.3125	1.2500	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	19.2642	11.1958	500.5935	6.6784	9.6520	51.8642	1001.8456	5.5990	3.0140	16.075
	25.8010	15.0269	1210.4024	8.9637	12.9223	93.6681	2422.3976	7.5149	4.1470	22.117
L2	25.4018	18.9002	1354.7014	8.4557	12.2269	110.7964	2711.1853	9.4519	3.7961	15.184
	38.3890	29.8306	5326.3700	13.3458	19.2246	277.0598	10659.7485	14.9182	6.2205	24.882
L3	37.8738	35.3418	5668.7624	12.6491	18.2594	310.4566	11344.9840	17.6742	5.7761	18.484
	50.7231	49.2838	15372.1931	17.6391	25.4000	605.2045	30764.6134	24.6466	8.2500	26.4

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 118.82-94.98				1	1	1			
L2 94.98-47.20				1	1	1			
L3 47.20-0.00				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
***											

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
***									
LDF2-50(3/8)	C	No	No	Inside Pole	118.82 - 0.00	1	No Ice	0.00	0.08
							1/2" Ice	0.00	0.08
							1" Ice	0.00	0.08
							2" Ice	0.00	0.08
LDF7-50A(1-5/8)	C	No	No	Inside Pole	118.82 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
85013663(3/4)	C	No	No	Inside Pole	118.82 - 0.00	2	No Ice	0.00	0.56
							1/2" Ice	0.00	0.56
							1" Ice	0.00	0.56
							2" Ice	0.00	0.56
2" innerduct conduit	C	No	No	Inside Pole	118.82 - 0.00	1	No Ice	0.00	0.20
							1/2" Ice	0.00	0.20
							1" Ice	0.00	0.20
							2" Ice	0.00	0.20
***									
HB158-21U6S24-xxM_TMO(1-5/8)	C	No	No	Inside Pole	110.00 - 0.00	3	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							2" Ice	0.00	2.50
***									
LDF4-50A(1/2)	C	No	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF7-50A(1-5/8)	C	No	No	Inside Pole	97.00 - 0.00	10	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
HB158-U12S24-XXX-LI(1-5/8)	C	No	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	3.20
							1/2" Ice	0.00	3.20
							1" Ice	0.00	3.20
							2" Ice	0.00	3.20
***									
LDF4-50A(1/2)	C	No	No	Inside Pole	81.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
***									

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	118.82-94.98	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.40
L2	94.98-47.20	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.45
L3	47.20-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	1.44

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	118.82-94.98	A	1.433	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.40
L2	94.98-47.20	A	1.375	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.45
L3	47.20-0.00	A	1.228	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	1.44

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	118.82-94.98	0.0000	0.0000	0.0000	0.0000
L2	94.98-47.20	0.0000	0.0000	0.0000	0.0000
L3	47.20-0.00	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 ft	Vert ft	ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [LP 712-1]	C	None				0.00	119.00	No Ice	24.56	24.56	1.33
								1/2" Ice	27.92	27.92	1.91
								1" Ice	31.27	31.27	2.55
								2" Ice	37.98	37.98	3.97
8'x2" Mount Pipe	A	From Face	4.00	0.00	0.00	0.00	119.00	No Ice	1.90	1.90	0.03
								1/2" Ice	2.73	2.73	0.04
								1" Ice	3.40	3.40	0.06
								2" Ice	4.40	4.40	0.12
8'x2" Mount Pipe	B	From Face	4.00	0.00	0.00	0.00	119.00	No Ice	1.90	1.90	0.03
								1/2" Ice	2.73	2.73	0.04
								1" Ice	3.40	3.40	0.06
								2" Ice	4.40	4.40	0.12
8'x2" Mount Pipe	C	From Face	4.00	0.00	0.00	0.00	119.00	No Ice	1.90	1.90	0.03
								1/2" Ice	2.73	2.73	0.04
								1" Ice	3.40	3.40	0.06
								2" Ice	4.40	4.40	0.12
5'x2" Mount Pipe	A	From Face	4.00	0.00	0.00	0.00	119.00	No Ice	1.19	1.19	0.02
								1/2" Ice	1.50	1.50	0.03
								1" Ice	1.81	1.81	0.04
								2" Ice	2.46	2.46	0.08
5'x2" Mount Pipe	B	From Face	4.00	0.00	0.00	0.00	119.00	No Ice	1.19	1.19	0.02
								1/2" Ice	1.50	1.50	0.03
								1" Ice	1.81	1.81	0.04
								2" Ice	2.46	2.46	0.08
5'x2" Mount Pipe	C	From Face	4.00	0.00	0.00	0.00	119.00	No Ice	1.19	1.19	0.02
								1/2" Ice	1.50	1.50	0.03
								1" Ice	1.81	1.81	0.04
								2" Ice	2.46	2.46	0.08
(2) 7770.00 w/ Mount Pipe	A	From Face	4.00	0.00	2.00	0.00	119.00	No Ice	3.39	2.32	0.06
								1/2" Ice	3.75	2.66	0.10
								1" Ice	4.12	3.02	0.15
								2" Ice	4.89	3.75	0.28
(2) 7770.00 w/ Mount Pipe	B	From Face	4.00	0.00	2.00	0.00	119.00	No Ice	3.39	2.32	0.06
								1/2" Ice	3.75	2.66	0.10
								1" Ice	4.12	3.02	0.15
								2" Ice	4.89	3.75	0.28
(2) 7770.00 w/ Mount Pipe	C	From Face	4.00	0.00	2.00	0.00	119.00	No Ice	3.39	2.32	0.06
								1/2" Ice	3.75	2.66	0.10
								1" Ice	4.12	3.02	0.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	4.89	3.75	0.28
						2" Ice			
AM-X-CD-17-65-00T-RET w/ Mount Pipe	A	From Face	4.00 0.00 2.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.09 6.66 7.24 8.43	4.31 4.86 5.42 6.57	0.09 0.17 0.26 0.48
AM-X-CD-17-65-00T-RET w/ Mount Pipe	B	From Face	4.00 0.00 2.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.09 6.66 7.24 8.43	4.31 4.86 5.42 6.57	0.09 0.17 0.26 0.48
AM-X-CD-17-65-00T-RET w/ Mount Pipe	C	From Face	4.00 0.00 2.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.09 6.66 7.24 8.43	4.31 4.86 5.42 6.57	0.09 0.17 0.26 0.48
(2) LGP21401	A	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) LGP21401	B	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
(2) LGP21401	C	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.10 1.24 1.38 1.69	0.35 0.44 0.54 0.77	0.01 0.02 0.03 0.05
RRUS 11	A	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.10 0.15
RRUS 11	B	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.10 0.15
RRUS 11	C	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.78 2.99 3.21 3.66	1.19 1.33 1.49 1.83	0.05 0.07 0.10 0.15
(2) LGP13519	A	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.29 0.36 0.44 0.62	0.18 0.24 0.31 0.47	0.01 0.01 0.01 0.02
(2) LGP13519	B	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.29 0.36 0.44 0.62	0.18 0.24 0.31 0.47	0.01 0.01 0.01 0.02
(2) LGP13519	C	From Face	4.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.29 0.36 0.44 0.62	0.18 0.24 0.31 0.47	0.01 0.01 0.01 0.02
DC6-48-60-18-8F	C	From Face	1.00 0.00 0.00	0.00	119.00	No Ice 1/2" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice 2" Ice	2.04	2.04	0.11
***									
Platform Mount [14.5' LP 701-1_KCKR-HR-1]	C	None		0.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	74.91 86.65 98.49 122.60	74.91 86.65 98.49 122.60	3.57 5.02 6.71 10.80
sitepro1 PQ-1245L	C	None		0.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
sitepro1 F4P-HRK14	C	None		0.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00
(4) 6'x2" Mount Pipe	A	From Face	4.00 0.00 0.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	A	From Leg	4.00 0.00 0.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
6'x2" Mount Pipe	C	From Face	4.00 0.00 0.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
3'x2" Mount Pipe	A	From Leg	4.00 0.00 0.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.58 0.77 0.97 1.39	0.58 0.77 0.97 1.39	0.01 0.02 0.02 0.05
3'x2" Mount Pipe	B	From Leg	4.00 0.00 0.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.58 0.77 0.97 1.39	0.58 0.77 0.97 1.39	0.01 0.02 0.02 0.05
3'x2" Mount Pipe	C	From Face	4.00 0.00 0.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.58 0.77 0.97 1.39	0.58 0.77 0.97 1.39	0.01 0.02 0.02 0.05
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.19 0.31 0.46 0.79
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Face	4.00 0.00	15.00	110.00	No Ice 1/2"	14.69 15.46	6.87 7.55	0.19 0.31

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
			-3.00			Ice	16.23	8.25	0.46
						1" Ice	17.82	9.67	0.79
						2" Ice			
APXVLL19P_43-C-A20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.08 5.59 6.10 7.17	3.20 3.68 4.17 5.19	0.08 0.13 0.20 0.37
APXVLL19P_43-C-A20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.08 5.59 6.10 7.17	3.20 3.68 4.17 5.19	0.08 0.13 0.20 0.37
APXVLL19P_43-C-A20_TMO w/ Mount Pipe	C	From Face	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.08 5.59 6.10 7.17	3.20 3.68 4.17 5.19	0.08 0.13 0.20 0.37
AIR 6419 B41_TMO_CCIV2 w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.79 6.24 6.71 7.71	2.97 3.34 3.73 4.56	0.10 0.14 0.19 0.32
AIR 6419 B41_TMO_CCIV2 w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.79 6.24 6.71 7.71	2.97 3.34 3.73 4.56	0.10 0.14 0.19 0.32
AIR 6419 B41_TMO_CCIV2 w/ Mount Pipe	C	From Face	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.79 6.24 6.71 7.71	2.97 3.34 3.73 4.56	0.10 0.14 0.19 0.32
RADIO 4449 B71/B85A	A	From Leg	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.31 1.46 1.61 1.94	0.07 0.09 0.11 0.16
RADIO 4449 B71/B85A	B	From Leg	4.00 0.00 -3.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.31 1.46 1.61 1.94	0.07 0.09 0.11 0.16
RADIO 4449 B71/B85A	C	From Face	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.64 1.80 1.97 2.33	1.31 1.46 1.61 1.94	0.07 0.09 0.11 0.16
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 -3.00	-15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
RADIO 4460 B2/B25 B66_TMO	C	From Face	4.00 0.00 -3.00	15.00	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.14 2.32 2.51 2.91	1.69 1.85 2.02 2.39	0.11 0.13 0.16 0.22
***									
Platform Mount [LP 303-1]	C	None		0.00	97.00	No Ice	14.69	14.69	1.25

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1/2" Ice	18.01	18.01	1.57
						1" Ice	21.34	21.34	1.94
						2" Ice	28.08	28.08	2.85
3'x2" Mount Pipe	A	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.58 0.77 0.97 1.39	0.58 0.77 0.97 1.39	0.01 0.02 0.02 0.05
3'x2" Mount Pipe	B	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.58 0.77 0.97 1.39	0.58 0.77 0.97 1.39	0.01 0.02 0.02 0.05
3'x2" Mount Pipe	C	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.58 0.77 0.97 1.39	0.58 0.77 0.97 1.39	0.01 0.02 0.02 0.05
(2) LPA-80080/6CF w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.02 3.57 4.14 5.32	7.80 8.42 9.06 10.37	0.06 0.12 0.19 0.37
(2) LPA-80080/6CF w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.02 3.57 4.14 5.32	7.80 8.42 9.06 10.37	0.06 0.12 0.19 0.37
(2) LPA-80080/6CF w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.02 3.57 4.14 5.32	7.80 8.42 9.06 10.37	0.06 0.12 0.19 0.37
(2) NHH-65B-R2B w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.70	3.29 3.67 4.06 4.86	0.07 0.13 0.21 0.39
(2) NHH-65B-R2B w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.70	3.29 3.67 4.06 4.86	0.07 0.13 0.21 0.39
(2) NHH-65B-R2B w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.09 4.48 4.88 5.70	3.29 3.67 4.06 4.86	0.07 0.13 0.21 0.39
MT6407-77A w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.94 6.47 7.02 8.17	3.10 3.55 4.02 5.01	0.10 0.13 0.18 0.28
MT6407-77A w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.94 6.47 7.02 8.17	3.10 3.55 4.02 5.01	0.10 0.13 0.18 0.28
MT6407-77A w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.00	97.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.94 6.47 7.02 8.17	3.10 3.55 4.02 5.01	0.10 0.13 0.18 0.28
RVZDC-6627-PF-48	A	From Face	4.00	0.00	97.00	No Ice	3.79	2.51	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"	4.04	2.73	0.06
			0.00			Ice	4.30	2.95	0.10
						1" Ice	4.84	3.42	0.18
						2" Ice			
RF4440D-13A	A	From Face	4.00	0.00	97.00	No Ice	1.87	1.13	0.07
			0.00			1/2"	2.03	1.27	0.09
			0.00			Ice	2.21	1.41	0.11
						1" Ice	2.59	1.72	0.16
						2" Ice			
RF4440D-13A	B	From Face	4.00	0.00	97.00	No Ice	1.87	1.13	0.07
			0.00			1/2"	2.03	1.27	0.09
			0.00			Ice	2.21	1.41	0.11
						1" Ice	2.59	1.72	0.16
						2" Ice			
RF4440D-13A	C	From Face	4.00	0.00	97.00	No Ice	1.87	1.13	0.07
			0.00			1/2"	2.03	1.27	0.09
			0.00			Ice	2.21	1.41	0.11
						1" Ice	2.59	1.72	0.16
						2" Ice			
RF4439D-25A	A	From Face	4.00	0.00	97.00	No Ice	1.87	1.25	0.07
			0.00			1/2"	2.03	1.39	0.09
			0.00			Ice	2.21	1.54	0.11
						1" Ice	2.59	1.87	0.17
						2" Ice			
RF4439D-25A	B	From Face	4.00	0.00	97.00	No Ice	1.87	1.25	0.07
			0.00			1/2"	2.03	1.39	0.09
			0.00			Ice	2.21	1.54	0.11
						1" Ice	2.59	1.87	0.17
						2" Ice			
RF4439D-25A	C	From Face	4.00	0.00	97.00	No Ice	1.87	1.25	0.07
			0.00			1/2"	2.03	1.39	0.09
			0.00			Ice	2.21	1.54	0.11
						1" Ice	2.59	1.87	0.17
						2" Ice			
***									
Side Arm Mount [SO 201-1]	B	From Leg	0.50	0.00	81.00	No Ice	1.78	2.61	0.10
			0.00			1/2"	2.24	3.15	0.12
			0.00			Ice	2.75	3.73	0.14
						1" Ice	3.89	4.99	0.22
						2" Ice			
58532A	B	From Leg	1.50	0.00	81.00	No Ice	0.19	0.19	0.00
			0.00			1/2"	0.25	0.25	0.00
			1.00			Ice	0.31	0.31	0.01
						1" Ice	0.47	0.47	0.02
						2" Ice			
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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

Comb. No.	Description
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	118.82 - 94.98	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-23.98	-6.12	-3.69
			Max. Mx	8	-10.24	-121.50	-0.66
			Max. My	14	-10.21	-1.68	-123.23
			Max. Vy	8	8.55	-121.50	-0.66
			Max. Vx	14	8.87	-1.68	-123.23
			Max. Torque	19			1.72
L2	94.98 - 47.2	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.10	-6.46	-3.90
			Max. Mx	8	-20.15	-688.82	3.20
			Max. My	14	-20.14	2.12	-705.02
			Max. Vy	8	13.39	-688.82	3.20
			Max. Vx	14	13.71	2.12	-705.02
			Max. Torque	19			1.57
L3	47.2 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.56	-6.59	-3.98

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	-32.10	-1451.66	7.74
			Max. My	14	-32.10	6.64	-1484.07
			Max. Vy	8	15.72	-1451.66	7.74
			Max. Vx	14	16.02	6.64	-1484.07
			Max. Torque	19			1.57

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	56.56	0.02	-4.79
	Max. H_x	20	32.11	15.70	-0.08
	Max. H_z	2	32.11	-0.08	16.00
	Max. M_x	2	1480.86	-0.08	16.00
	Max. M_z	8	1451.66	-15.70	0.08
	Max. Torsion	19	1.57	13.64	-8.07
	Min. Vert	23	24.09	13.55	7.93
	Min. H_x	8	32.11	-15.70	0.08
	Min. H_z	14	32.11	0.08	-16.00
	Min. M_x	14	-1484.07	0.08	-16.00
	Min. M_z	20	-1446.27	15.70	-0.08
	Min. Torsion	7	-1.56	-13.64	8.07

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	26.76	0.00	0.00	1.30	-2.18	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	32.11	0.08	-16.00	-1480.86	-12.03	1.08
0.9 Dead+1.0 Wind 0 deg - No Ice	24.09	0.08	-16.00	-1465.57	-11.21	1.09
1.2 Dead+1.0 Wind 30 deg - No Ice	32.11	7.92	-13.90	-1286.92	-735.24	1.51
0.9 Dead+1.0 Wind 30 deg - No Ice	24.09	7.92	-13.90	-1273.68	-726.77	1.52
1.2 Dead+1.0 Wind 60 deg - No Ice	32.11	13.64	-8.07	-747.73	-1262.18	1.55
0.9 Dead+1.0 Wind 60 deg - No Ice	24.09	13.64	-8.07	-740.21	-1248.13	1.56
1.2 Dead+1.0 Wind 90 deg - No Ice	32.11	15.70	-0.08	-7.74	-1451.66	1.17
0.9 Dead+1.0 Wind 90 deg - No Ice	24.09	15.70	-0.08	-8.06	-1435.60	1.18
1.2 Dead+1.0 Wind 120 deg - No Ice	32.11	13.55	7.93	734.77	-1252.87	0.48
0.9 Dead+1.0 Wind 120 deg - No Ice	24.09	13.55	7.93	726.57	-1238.91	0.48
1.2 Dead+1.0 Wind 150 deg - No Ice	32.11	7.78	13.82	1280.81	-719.08	-0.34
0.9 Dead+1.0 Wind 150 deg - No Ice	24.09	7.78	13.82	1266.82	-710.78	-0.34
1.2 Dead+1.0 Wind 180 deg - No Ice	32.11	-0.08	16.00	1484.07	6.64	-1.07
0.9 Dead+1.0 Wind 180 deg - No Ice	24.09	-0.08	16.00	1467.93	7.25	-1.08
1.2 Dead+1.0 Wind 210 deg - No Ice	32.11	-7.92	13.90	1290.13	729.85	-1.52
0.9 Dead+1.0 Wind 210 deg	24.09	-7.92	13.90	1276.04	722.81	-1.53

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
- No Ice 1.2 Dead+1.0 Wind 240 deg	32.11	-13.64	8.07	750.93	1256.79	-1.56
- No Ice 0.9 Dead+1.0 Wind 240 deg	24.09	-13.64	8.07	742.56	1244.17	-1.57
- No Ice 1.2 Dead+1.0 Wind 270 deg	32.11	-15.70	0.08	10.94	1446.27	-1.18
- No Ice 0.9 Dead+1.0 Wind 270 deg	24.09	-15.70	0.08	10.41	1431.64	-1.18
- No Ice 1.2 Dead+1.0 Wind 300 deg	32.11	-13.55	-7.93	-731.57	1247.47	-0.48
- No Ice 0.9 Dead+1.0 Wind 300 deg	24.09	-13.55	-7.93	-724.22	1234.95	-0.48
- No Ice 1.2 Dead+1.0 Wind 330 deg	32.11	-7.78	-13.82	-1277.60	713.68	0.35
- No Ice 0.9 Dead+1.0 Wind 330 deg	24.09	-7.78	-13.82	-1264.47	706.82	0.35
- No Ice 1.2 Dead+1.0 Ice+1.0 Temp	56.56	0.00	0.00	3.98	-6.59	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	56.56	0.02	-4.79	-443.79	-8.62	0.24
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	56.56	2.38	-4.15	-384.78	-228.74	0.34
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	56.56	4.10	-2.41	-221.59	-389.36	0.34
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	56.56	4.73	-0.02	2.04	-447.42	0.26
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	56.56	4.08	2.38	226.21	-387.39	0.11
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	56.56	2.35	4.14	390.84	-225.33	-0.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	56.56	-0.02	4.79	451.82	-4.68	-0.24
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	56.56	-2.38	4.15	392.81	215.45	-0.34
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	56.56	-4.10	2.41	229.63	376.06	-0.34
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	56.56	-4.73	0.02	5.99	434.13	-0.26
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	56.56	-4.08	-2.38	-218.18	374.09	-0.11
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	56.56	-2.35	-4.14	-382.81	212.03	0.08
Dead+Wind 0 deg - Service	26.76	0.02	-4.10	-376.44	-4.60	0.28
Dead+Wind 30 deg - Service	26.76	2.03	-3.57	-327.02	-188.90	0.39
Dead+Wind 60 deg - Service	26.76	3.50	-2.07	-189.62	-323.17	0.40
Dead+Wind 90 deg - Service	26.76	4.03	-0.02	-1.05	-371.45	0.31
Dead+Wind 120 deg - Service	26.76	3.48	2.03	188.15	-320.79	0.13
Dead+Wind 150 deg - Service	26.76	1.99	3.54	327.29	-184.78	-0.09
Dead+Wind 180 deg - Service	26.76	-0.02	4.10	379.09	0.15	-0.28
Dead+Wind 210 deg - Service	26.76	-2.03	3.57	329.66	184.44	-0.39
Dead+Wind 240 deg - Service	26.76	-3.50	2.07	192.26	318.72	-0.40
Dead+Wind 270 deg - Service	26.76	-4.03	0.02	3.70	367.00	-0.31
Dead+Wind 300 deg - Service	26.76	-3.48	-2.03	-185.50	316.34	-0.13
Dead+Wind 330 deg - Service	26.76	-1.99	-3.54	-324.64	180.33	0.09

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	-26.76	0.00	0.00	26.76	0.00	0.000%
2	0.08	-32.11	-16.00	-0.08	32.11	16.00	0.000%
3	0.08	-24.09	-16.00	-0.08	24.09	16.00	0.000%
4	7.92	-32.11	-13.90	-7.92	32.11	13.90	0.000%
5	7.92	-24.09	-13.90	-7.92	24.09	13.90	0.000%
6	13.64	-32.11	-8.07	-13.64	32.11	8.07	0.000%
7	13.64	-24.09	-8.07	-13.64	24.09	8.07	0.000%
8	15.70	-32.11	-0.08	-15.70	32.11	0.08	0.000%
9	15.70	-24.09	-0.08	-15.70	24.09	0.08	0.000%
10	13.55	-32.11	7.93	-13.55	32.11	-7.93	0.000%
11	13.55	-24.09	7.93	-13.55	24.09	-7.93	0.000%
12	7.78	-32.11	13.82	-7.78	32.11	-13.82	0.000%
13	7.78	-24.09	13.82	-7.78	24.09	-13.82	0.000%
14	-0.08	-32.11	16.00	0.08	32.11	-16.00	0.000%
15	-0.08	-24.09	16.00	0.08	24.09	-16.00	0.000%
16	-7.92	-32.11	13.90	7.92	32.11	-13.90	0.000%
17	-7.92	-24.09	13.90	7.92	24.09	-13.90	0.000%
18	-13.64	-32.11	8.07	13.64	32.11	-8.07	0.000%
19	-13.64	-24.09	8.07	13.64	24.09	-8.07	0.000%
20	-15.70	-32.11	0.08	15.70	32.11	-0.08	0.000%
21	-15.70	-24.09	0.08	15.70	24.09	-0.08	0.000%
22	-13.55	-32.11	-7.93	13.55	32.11	7.93	0.000%
23	-13.55	-24.09	-7.93	13.55	24.09	7.93	0.000%
24	-7.78	-32.11	-13.82	7.78	32.11	13.82	0.000%
25	-7.78	-24.09	-13.82	7.78	24.09	13.82	0.000%
26	0.00	-56.56	0.00	-0.00	56.56	-0.00	0.000%
27	0.02	-56.56	-4.79	-0.02	56.56	4.79	0.000%
28	2.38	-56.56	-4.15	-2.38	56.56	4.15	0.000%
29	4.10	-56.56	-2.41	-4.10	56.56	2.41	0.000%
30	4.73	-56.56	-0.02	-4.73	56.56	0.02	0.000%
31	4.08	-56.56	2.38	-4.08	56.56	-2.38	0.000%
32	2.35	-56.56	4.14	-2.35	56.56	-4.14	0.000%
33	-0.02	-56.56	4.79	0.02	56.56	-4.79	0.000%
34	-2.38	-56.56	4.15	2.38	56.56	-4.15	0.000%
35	-4.10	-56.56	2.41	4.10	56.56	-2.41	0.000%
36	-4.73	-56.56	0.02	4.73	56.56	-0.02	0.000%
37	-4.08	-56.56	-2.38	4.08	56.56	2.38	0.000%
38	-2.35	-56.56	-4.14	2.35	56.56	4.14	0.000%
39	0.02	-26.76	-4.10	-0.02	26.76	4.10	0.000%
40	2.03	-26.76	-3.57	-2.03	26.76	3.57	0.000%
41	3.50	-26.76	-2.07	-3.50	26.76	2.07	0.000%
42	4.03	-26.76	-0.02	-4.03	26.76	0.02	0.000%
43	3.48	-26.76	2.03	-3.48	26.76	-2.03	0.000%
44	1.99	-26.76	3.54	-1.99	26.76	-3.54	0.000%
45	-0.02	-26.76	4.10	0.02	26.76	-4.10	0.000%
46	-2.03	-26.76	3.57	2.03	26.76	-3.57	0.000%
47	-3.50	-26.76	2.07	3.50	26.76	-2.07	0.000%
48	-4.03	-26.76	0.02	4.03	26.76	-0.02	0.000%
49	-3.48	-26.76	-2.03	3.48	26.76	2.03	0.000%
50	-1.99	-26.76	-3.54	1.99	26.76	3.54	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00011121
3	Yes	5	0.00000001	0.00005582
4	Yes	5	0.00000001	0.00077818
5	Yes	5	0.00000001	0.00037881
6	Yes	5	0.00000001	0.00064044
7	Yes	5	0.00000001	0.00030805
8	Yes	5	0.00000001	0.00009455
9	Yes	5	0.00000001	0.00004794
10	Yes	5	0.00000001	0.00070243

11	Yes	5	0.00000001	0.00033986
12	Yes	5	0.00000001	0.00070133
13	Yes	5	0.00000001	0.00033877
14	Yes	5	0.00000001	0.00008910
15	Yes	5	0.00000001	0.00004488
16	Yes	5	0.00000001	0.00063502
17	Yes	5	0.00000001	0.00030552
18	Yes	5	0.00000001	0.00076441
19	Yes	5	0.00000001	0.00037350
20	Yes	5	0.00000001	0.00011556
21	Yes	5	0.00000001	0.00005843
22	Yes	5	0.00000001	0.00063741
23	Yes	5	0.00000001	0.00031014
24	Yes	5	0.00000001	0.00064655
25	Yes	5	0.00000001	0.00031404
26	Yes	4	0.00000001	0.00009987
27	Yes	5	0.00000001	0.00030645
28	Yes	5	0.00000001	0.00042595
29	Yes	5	0.00000001	0.00040651
30	Yes	5	0.00000001	0.00031724
31	Yes	5	0.00000001	0.00043223
32	Yes	5	0.00000001	0.00043425
33	Yes	5	0.00000001	0.00031865
34	Yes	5	0.00000001	0.00039465
35	Yes	5	0.00000001	0.00040906
36	Yes	5	0.00000001	0.00029641
37	Yes	5	0.00000001	0.00037196
38	Yes	5	0.00000001	0.00037378
39	Yes	4	0.00000001	0.00012621
40	Yes	4	0.00000001	0.00034586
41	Yes	4	0.00000001	0.00022283
42	Yes	4	0.00000001	0.00012843
43	Yes	4	0.00000001	0.00027128
44	Yes	4	0.00000001	0.00026524
45	Yes	4	0.00000001	0.00012182
46	Yes	4	0.00000001	0.00021193
47	Yes	4	0.00000001	0.00033480
48	Yes	4	0.00000001	0.00013084
49	Yes	4	0.00000001	0.00020144
50	Yes	4	0.00000001	0.00020505

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	118.82 - 94.98	12.3277	45	0.94	0.01
L2	98.66 - 47.2	8.4727	45	0.86	0.00
L3	52.43 - 0	2.2074	45	0.40	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
119.00	Platform Mount [LP 712-1]	45	12.3277	0.94	0.01	28664
110.00	Platform Mount [14.5' LP 701-1_KCKR-HR-1]	45	10.6012	0.91	0.00	16250
97.00	Platform Mount [LP 303-1]	45	8.1761	0.85	0.00	7068
81.00	Side Arm Mount [SO 201-1]	45	5.5681	0.71	0.00	6089

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	118.82 - 94.98	48.1879	14	3.67	0.02
L2	98.66 - 47.2	33.1590	14	3.35	0.01
L3	52.43 - 0	8.6454	14	1.57	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	Platform Mount [LP 712-1]	14	48.1879	3.67	0.02	7632
110.00	Platform Mount [14.5' LP 701-1_KCKR-HR-1]	14	41.4599	3.56	0.02	4326
97.00	Platform Mount [LP 303-1]	14	32.0015	3.30	0.01	1875
81.00	Side Arm Mount [SO 201-1]	14	21.8096	2.77	0.01	1581

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	118.82 - 94.98 (1)	TP25.4375x19x0.1875	23.84	0.00	0.0	14.4355	-10.21	844.48	0.012
L2	94.98 - 47.2 (2)	TP37.8438x24.0688x0.25	51.46	0.00	0.0	28.7198	-20.14	1680.11	0.012
L3	47.2 - 0 (3)	TP50x35.9438x0.3125	52.43	0.00	0.0	49.2838	-32.10	2883.10	0.011

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	118.82 - 94.98 (1)	TP25.4375x19x0.1875	123.24	488.99	0.252	0.00	488.99	0.000
L2	94.98 - 47.2 (2)	TP37.8438x24.0688x0.25	705.03	1391.41	0.507	0.00	1391.41	0.000
L3	47.2 - 0 (3)	TP50x35.9438x0.3125	1484.08	3146.22	0.472	0.00	3146.22	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	118.82 - 94.98 (1)	TP25.4375x19x0.1875	8.87	253.34	0.035	1.22	538.16	0.002

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 $\frac{T_u}{\phi T_n}$
L2	94.98 - 47.2 (2)	TP37.8438x24.0688x0.25	13.71	504.03	0.027	1.07	1597.62	0.001
L3	47.2 - 0 (3)	TP50x35.9438x0.3125	16.02	864.93	0.019	1.07	3763.64	0.000

Pole Interaction Design Data

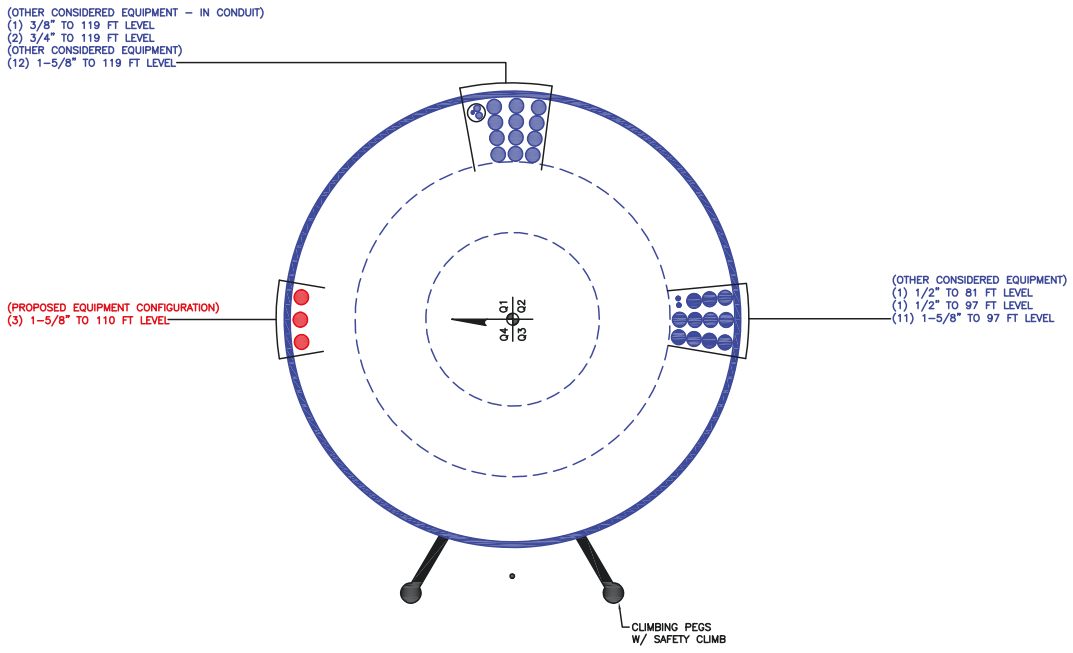
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	118.82 - 94.98 (1)	0.012	0.252	0.000	0.035	0.002	0.266	1.050	
L2	94.98 - 47.2 (2)	0.012	0.507	0.000	0.027	0.001	0.519	1.050	
L3	47.2 - 0 (3)	0.011	0.472	0.000	0.019	0.000	0.483	1.050	

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	118.82 - 94.98	Pole	TP25.4375x19x0.1875	1	-10.21	886.70	25.3	Pass
L2	94.98 - 47.2	Pole	TP37.8438x24.0688x0.25	2	-20.14	1764.12	49.5	Pass
L3	47.2 - 0	Pole	TP50x35.9438x0.3125	3	-32.10	3027.25	46.0	Pass
							Summary	
						Pole (L2)	49.5	Pass
						RATING =	**49.5**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 846295 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

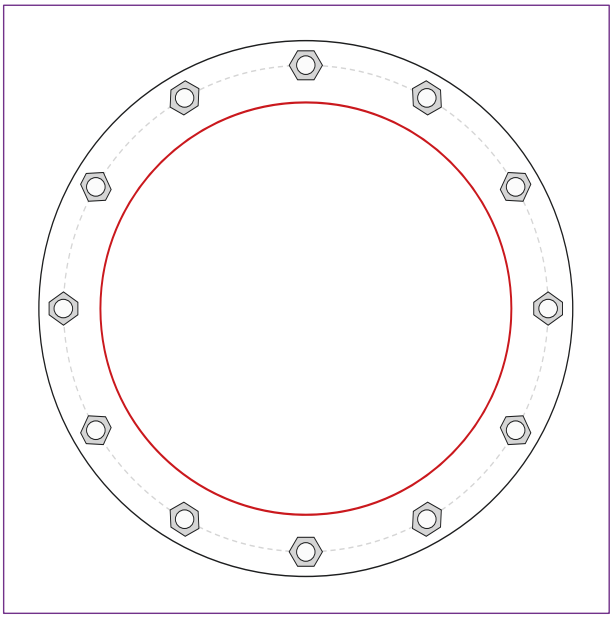
Monopole Base Plate Connection

Site Info	
BU #	846295
Site Name	GRANBY - HIGLEY ROAD
Order #	662148 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.8125

Applied Loads	
Moment (kip-ft)	1484.09
Axial Force (kips)	32.10
Shear Force (kips)	16.02

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 59" BC

Base Plate Data

65" OD x 2.25" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

50" x 0.3125" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

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

Pu_t = 97.88	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.34	ϕVn = 149.1	**38.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	17.6	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**31.0%**	**Pass**

Pier and Pad Foundation

BU # :	846295
Site Name:	GRANBY - HIGLEY
App. Number:	662148 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	32.11	kips
Base Shear, Vu_comp:	16	kips
Moment, M_u:	1484.08	ft-kips
Tower Height, **H**:	118.82	ft
BP Dist. Above Fdn, bp_{dist}:	6.25	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	7	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	10	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	5	in

Pad Properties		
Depth, **D**:	7	ft
Pad Width, W_1:	22	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	24	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60	ksi
Concrete Compressive Strength, **F'c**:	4	ksi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	110	pcf
Ultimate Net Bearing, Qnet:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	28	
Base Friction, μ:	0.4	
Neglected Depth, **N**:	3.50	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	8	ft

<--Toggle between Gross and Net

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	220.72	16.00	**6.9%**	**Pass**
Bearing Pressure (ksf)	23.08	1.81	**7.5%**	**Pass**
*Overturning (kip*ft)*	4903.74	1620.41	**33.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3923.63	1564.08	**38.0%**	**Pass**
Pier Compression (kip)	31187.52	76.21	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	2633.51	500.92	**18.1%**	**Pass**
Pad Shear - 1-way (kips)	788.93	87.38	**10.5%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.018	**9.0%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	3772.15	938.45	**23.7%**	**Pass**

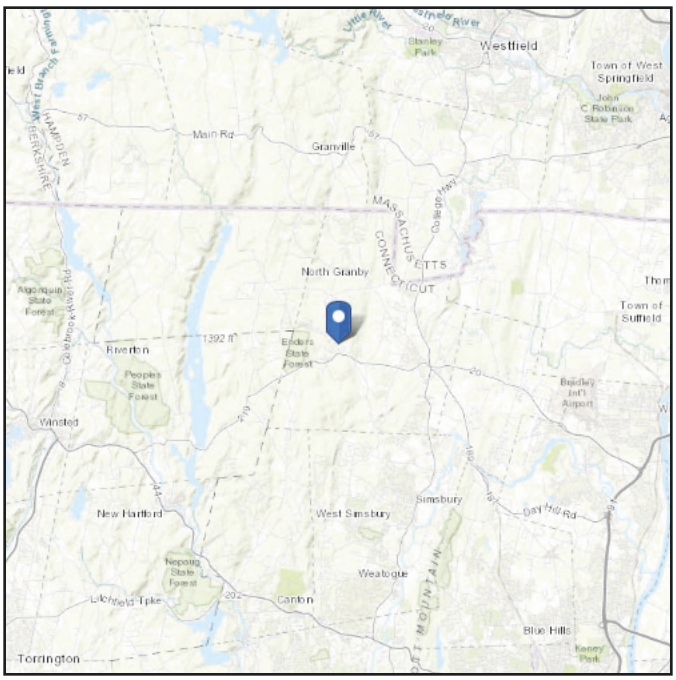
**Rating per TIA-222-H Section 15.5*

Structural Rating*:	**38.0%**
Soil Rating*:	**33.0%**

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.965778
Risk Category:	II	**Longitude:**	-72.855372
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	591.7647944089138 ft (NAVD 88)



Wind

Results:

Wind Speed	115 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	89 Vmph
100-year MRI	95 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:	Mon Jan 29 2024

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 not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Seismic

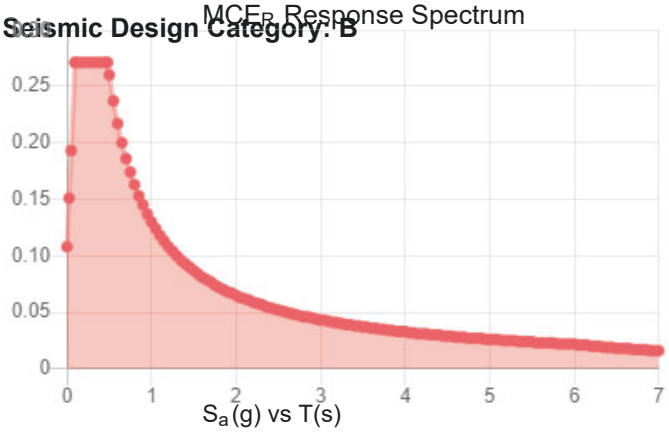
Site Soil Class: D - Default (see Section 11.4.3)

Results:

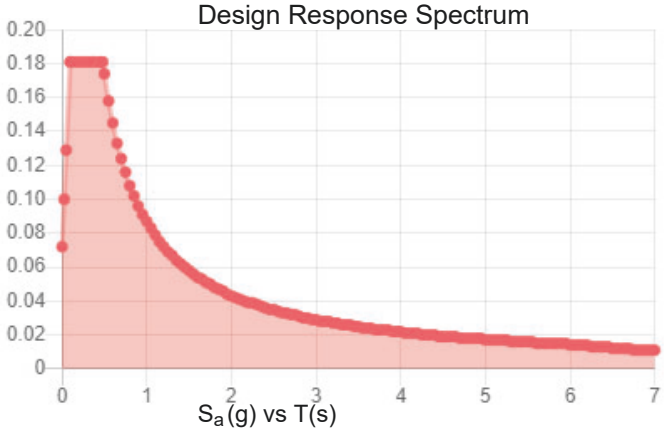
S_S :	0.169	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.088
F_v :	2.4	PGA_M :	0.141
S_{MS} :	0.271	F_{PGA} :	1.6
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.181	C_v :	0.7

Seismic Design Category: B

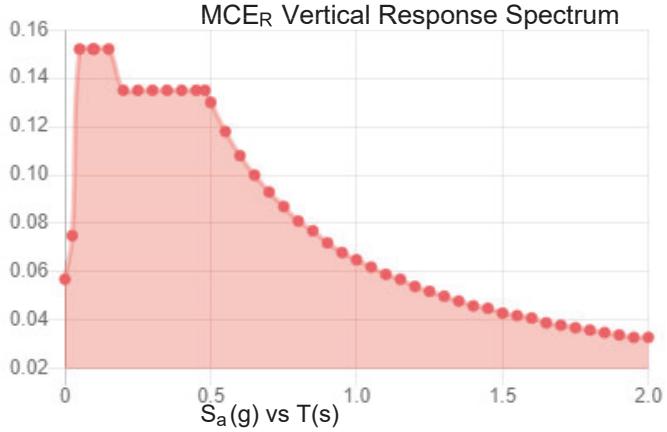
MCE_R Response Spectrum



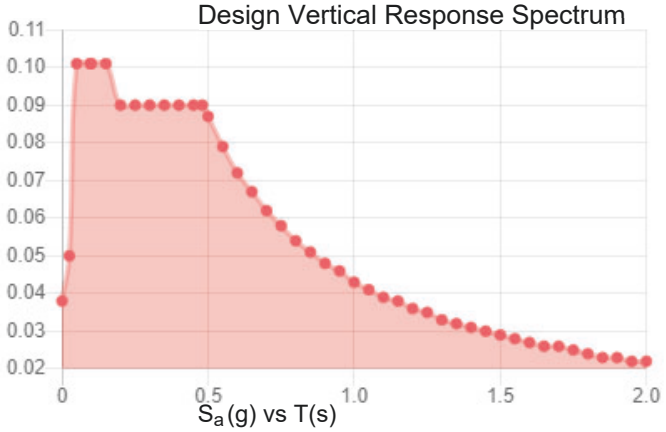
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: Mon Jan 29 2024

Date Source:

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

Ice

Results:

Ice Thickness:	1.50 in.
Concurrent Temperature:	5 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Mon Jan 29 2024

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.

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FOX HILL TELECOM

Radio Frequency Emissions Analysis Report

T-Mobile

Site ID: CTHA162A

CTHA162/CINGATT Permit_FT
30 Higley Road
West Granby, CT 06090

February 27, 2024

Fox Hill Telecom Project Number: 230998

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	19.08 %

FOX HILL TELECOM

February 27, 2024

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CTHA162A – CTHA162/CINGATT Permit_FT**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **30 Higley Road, West Granby, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **30 Higley Road, West Granby, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, plane wave power densities in the Far Field of an antenna are calculated by considering antenna gain and reflective waves that would contribute to exposure.

Since the radiation pattern of an antenna has developed in the **Far Field** region the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced significantly at ground level, resulting in a more realistic estimate of the actual exposure levels. To determine a worst-case scenario at each point along the calculation radials, each point was calculated using the antenna gain value at each angle of incident and compared against the result using an isotropic radiator at the antenna height with the greater of the two used to yield the more pessimistic far field value for each point along the calculation radial.

Additionally, to model a truly "worst case" prediction of exposure levels at or near a surface, such as at ground-level or on a rooftop, reflection off the surface of antenna radiation power can be assumed, resulting in a potential 1.6 times increase in power density in calculating far field power density values.

With these factors Considered, the worst case **Far Field prediction model** utilized in this analysis is determined by the following equation:

Equation 9 per FCC OET65 for Far Field Modeling

$$S = \frac{33.4\ ERP}{R^2}$$

S = Power Density (in μw/cm^2)
ERP = Effective Radiated Power from antenna (watts)
R = Distance from the antenna (meters)

Predicted far field power density values for all carriers identified in this report were calculated 6 feet above the ground level and are displayed as a percentage of the applicable FCC standards. All emissions values for other carriers were calculated using the same Far Field model outlined above, using industry standard radio configurations and frequency band selection based upon available licenses in this geographic area for emissions contribution estimates.

For each T-Mobile sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20
LTE / 5G NR	1900 MHz (PCS)	4	40
GSM	1900 MHz (PCS)	1	15
LTE	2100 MHz (AWS)	4	40
LTE / 5G NR	2500 MHz (BRS)	8	20

Table 1: Channel Data Table

The following T-Mobile antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAARR24_43-U-NA20	107
A	2	RFS APXVLL19P_43-C-A20_TMO	107
A	3	Ericsson AIR6419 B41	107
B	1	RFS APXVAARR24_43-U-NA20	107
B	2	RFS APXVLL19P_43-C-A20_TMO	107
B	3	Ericsson AIR6419 B41	107
C	1	RFS APXVAARR24_43-U-NA20	107
C	2	RFS APXVLL19P_43-C-A20_TMO	107
C	3	Ericsson AIR6419 B41	107

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	160	3,231.99	1.36
Antenna A2	RFS APXVLL19P_43-C-A20_TMO	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	16,208.28	0.86
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	2.24
						Sector A Composite MPE%	**4.46**
Antenna B1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	160	3,231.99	1.36
Antenna B2	RFS APXVLL19P_43-C-A20_TMO	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	16,208.28	0.86
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	2.24
						Sector B Composite MPE%	**4.46**
Antenna C1	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	160	3,231.99	1.36
Antenna C2	RFS APXVLL19P_43-C-A20_TMO	1900 MHz (PCS) / 2100 MHz (AWS)	15.55 / 16.05	9	335	16,208.28	0.86
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	2.24
						Sector C Composite MPE%	**4.46**

Table 3: T-MOBILE Emissions Levels

The Following table (*table 4*) shows all additional identified carriers on site and their emissions contribution estimates, along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three T-Mobile sectors have the same configuration yielding the same results for all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite estimated MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**4.46 %**
AT&T	7.07 %
Verizon Wireless	7.55 %
Site Total MPE %:	**19.08 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	4.46 %
T-MOBILE Sector B Total:	4.46 %
T-MOBILE Sector C Total:	4.46 %
Site Total:	19.08 %

Table 5: Site MPE Summary

Table 6 below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three T-Mobile sectors have the same configuration yielding the same results for all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	1,183.45	107	4.24	600 MHz	400	1.06%
T-Mobile 700 MHz LTE	2	432.54	107	1.40	700 MHz	467	0.30%
T-Mobile 1900 MHz (PCS) LTE / 5G NR	4	1,807.42	107	5.60	1900 MHz (PCS)	1000	0.56%
T-Mobile 1900 MHz (PCS) GSM	1	677.78	107	0.50	1900 MHz (PCS)	1000	0.05%
T-Mobile 2100 MHz (AWS) LTE	4	2,075.20	107	2.50	2100 MHz (AWS)	1000	0.25%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	107	22.40	2500 MHz (BRS)	1000	2.24%
						Total:	**4.46 %**

Table 6: T-MOBILE Maximum Sector MPE Power Values

Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	4.46 %
Sector B:	4.46 %
Sector C:	4.46 %
T-MOBILE Maximum Total (per sector):	4.46 %
Site Total:	19.08 %
Site Compliance Status:	**COMPLIANT**

The estimated composite MPE value for this site assuming all carriers present is **19.08 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

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 estimated values calculated were well within the allowable 100% threshold standard per the federal government.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Worcester, MA 01609
(978)660-3998

THE COMPOUND AUDIT WAS COMPLETED ON 09/08/2023. THE CONSTRUCTION DRAWING REFLECT CONDITIONS AT TIME OF AUDIT.

T-Mobile

T-MOBILE SITE NUMBER: CTHA162A
T-MOBILE SITE NAME: CTHA162/CINGATT PERMIT_FT
T-MOBILE PROJECT: ANCHOR

BUSINESS UNIT #: 846295
SITE ADDRESS: 30 HIGLEY ROAD
WEST GRANBY, CT 06090
COUNTY: HARTFORD
SITE TYPE: MONOPOLE
TOWER HEIGHT: 119'-0"

SITE INFORMATION

CROWN CASTLE USA INC.	
SITE NAME:	GRANBY - HIGLEY ROAD
BU NUMBER:	846295
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 100 FILLEY ST BLOOMFIELD CT, 06002
SITE ADDRESS:	30 HIGLEY ROAD WEST GRANBY, CT 06090
COUNTY:	HARTFORD
LATITUDE:	41° 57' 56.8" / 41.9658°
LONGITUDE:	-72° 51' 19.34" / -72.8554°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	590'+/- AMSL
AREA OF CONSTRUCTION:	EXISTING
CURRENT ZONING:	R2A - RURAL ZONE
MAP/PARCEL #:	GRAN-000020F-000023-000059
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	PEASE, MARTHA C & DALTON, SARAH P 15634 SNEE OOSH RD LACONNER, WA 98257
JURISDICTION:	CT-TOWN OF GRANBY (HARTFORD) 15 NORTH GRANBY ROAD GRANBY, CT 06035
ELECTRIC PROVIDER:	NORTHEAST UTILITIES (800) 286-2000
TELCO PROVIDER:	AT&T (866) 620-6900

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 WALTER SMITH WSMITH@BTGRP.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	8020 KATY FREEWAY HOUSTON, TX 77024 TRICIA PELON - PROJECT MANAGER (518) 373-3507 ISRAEL CAREY - CONSTRUCTION MANAGER ISRAEL.CAREY@CROWNCASTLE.COM SUSAN PALM - AES SUSAN.PALM@CROWNCASTLE.COM

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	COMPOUND PLAN
C-1.2	EXISTING EQUIPMENT PLAN
C-1.3	FINAL EQUIPMENT PLAN
C-2	TOWER ELEVATIONS
C-3	ANTENNA PLANS
C-4	FINAL EQUIPMENT SCHEDULE
C-5	TOWER EQUIPMENT DETAILS & SPECIFICATIONS
C-6.1	SITE SUPPORT CABINET SPECIFICATIONS
C-6.2	BATTERY CABINET SPECIFICATIONS
E-1	PANEL SCHEDULES & ONE-LINE DIAGRAM
G-1	TYPICAL GROUNDING SCHEMATIC
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	RFDS

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!

PROJECT DESCRIPTION

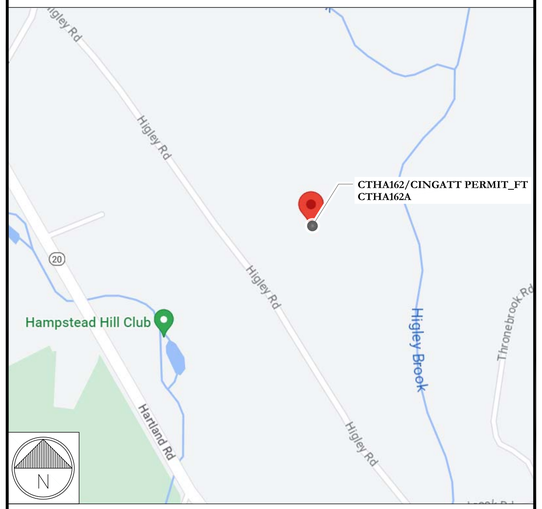
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- REMOVE (1) ERICSSON - 6x12 HYBRID CABLE
- REMOVE (12) 1-1/4" COAX CABLES
- REMOVE (3) RFS - APX16DWV-16DWV-S-E-A20 (QUAD) ANTENNAS
- REMOVE (3) ERICSSON - KRY 112 489/2 TMAs
- INSTALL (3) COMMSCOPE - APXVLL19P_43-C-A20(QUAD) ANTENNAS
- INSTALL (3) ERICSSON - AIR 6419 B41 (ACTIVE ANTENNA - MASSIVE MIMO) ANTENNAS
- INSTALL (3) ERICSSON - RADIO 4460 B25+B66 RADIOS
- INSTALL (3) RFS/CELWAVE - HB158-21U6S24-50M HYBRID CABLES

GROUND SCOPE OF WORK:
- REMOVE EXISTING 6201 CABINET
- REMOVE (3) ERICSSON - RRUS01 B2 RRUs
- RELOCATE (2) BB 6630 AND (1) DUG20
- INSTALL (1) ERICSSON - ENCLOSURE 6160 AC V1 ENCLOSURE
- INSTALL (1) ERICSSON - B160 ENCLOSURE
- INSTALL (1) RP 6651 AND (1) CSR IXRe V2 (GEN2)

EXISTING T-MOBILE ELECTRIC SERVICE:
METER AND DISCONNECT: 200A 120/240V~1PH
PPC: NORTHERN TECHNOLOGIES, INC. 200A 120/240V~1PH,
200A GENERATOR PLUG, 125A MAXIMUM BRANCH CIRCUIT SIZE & 24 AC BREAKER POSITIONS.

LOCATION MAP



NO SCALE

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	2022 CONNECTICUT SBC/2021 IBC
MECHANICAL	2022 CONNECTICUT SBC/2021 IMC
ELECTRICAL	2022 CONNECTICUT SBC/2020 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BLACK & VEATCH CORP.
DATED:	1/31/24
MOUNT ANALYSIS:	TRYLON
DATED:	1/24/24
RFDS REVISION:	4
DATED:	11/16/2023
ORDER ID:	662148
REVISION:	0

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

T-MOBILE SITE NUMBER:
CTHA162A

BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/29/23	GLS	PRELIMINARY	LR
B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

STATE OF CONNECTICUT
CHRISTOPHER
No. 23924
LICENSED
PROFESSIONAL ENGINEER
3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

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: T–MOBILE
   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. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC ON STRAIGHTS AND SCHEDULE 80 PVC UNDER ALL TRAFFIC EASEMENTS AND ALL ELBOWS/90s. ABOVE GRADE CONDUIT TO BE SCH 80 PVC OR IMC/RMC CONDUIT. EMT IS ALLOWED AT STUB UP LOCATIONS AND INDOORS ONLY.
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 "T–MOBILE".
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**

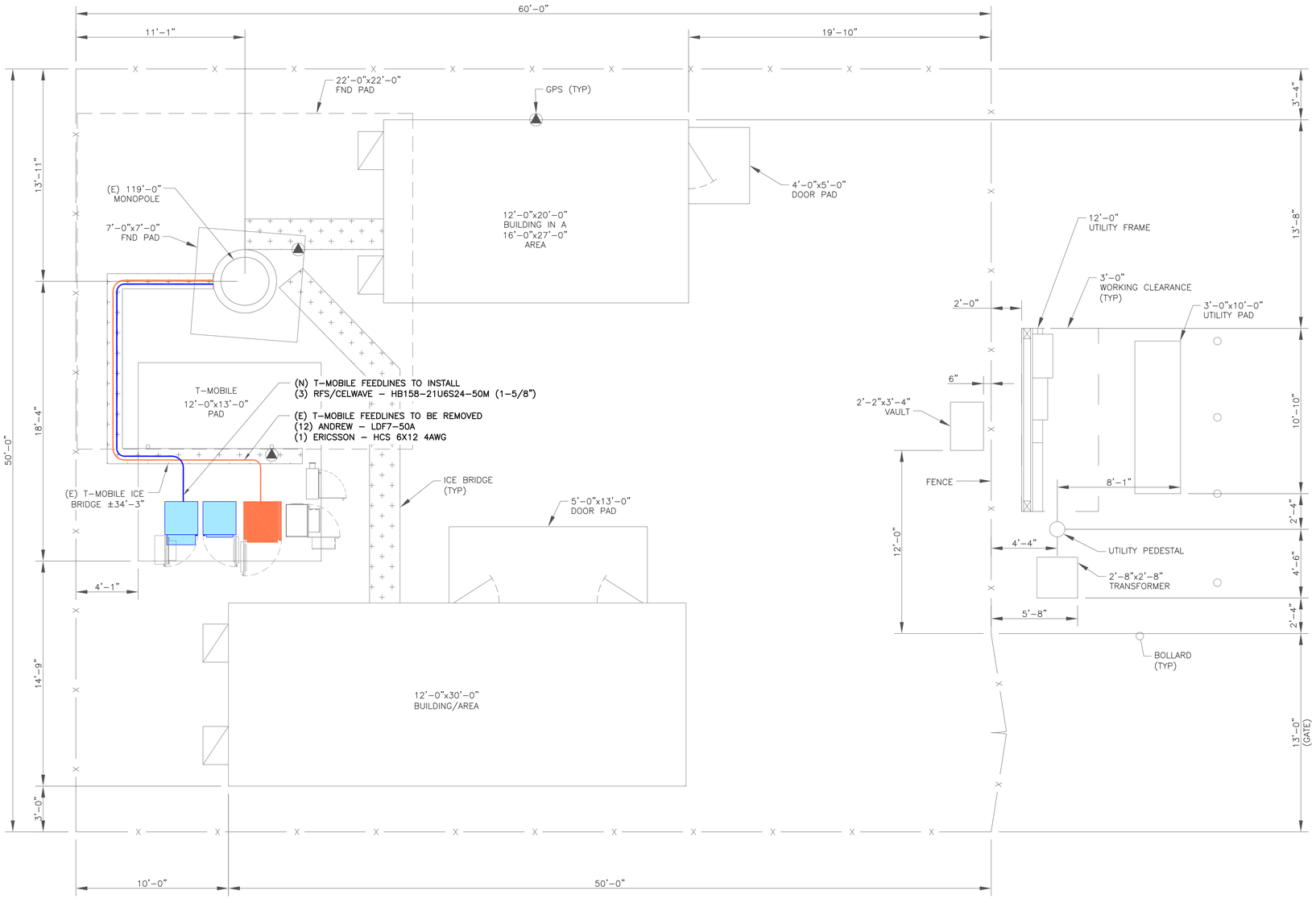
* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK

EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW/RELOCATED



1 COMPOUND PLAN

SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

N

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP

MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

T-MOBILE SITE NUMBER:
CTHA162A

BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/29/23	GLS	PRELIMINARY	LR
B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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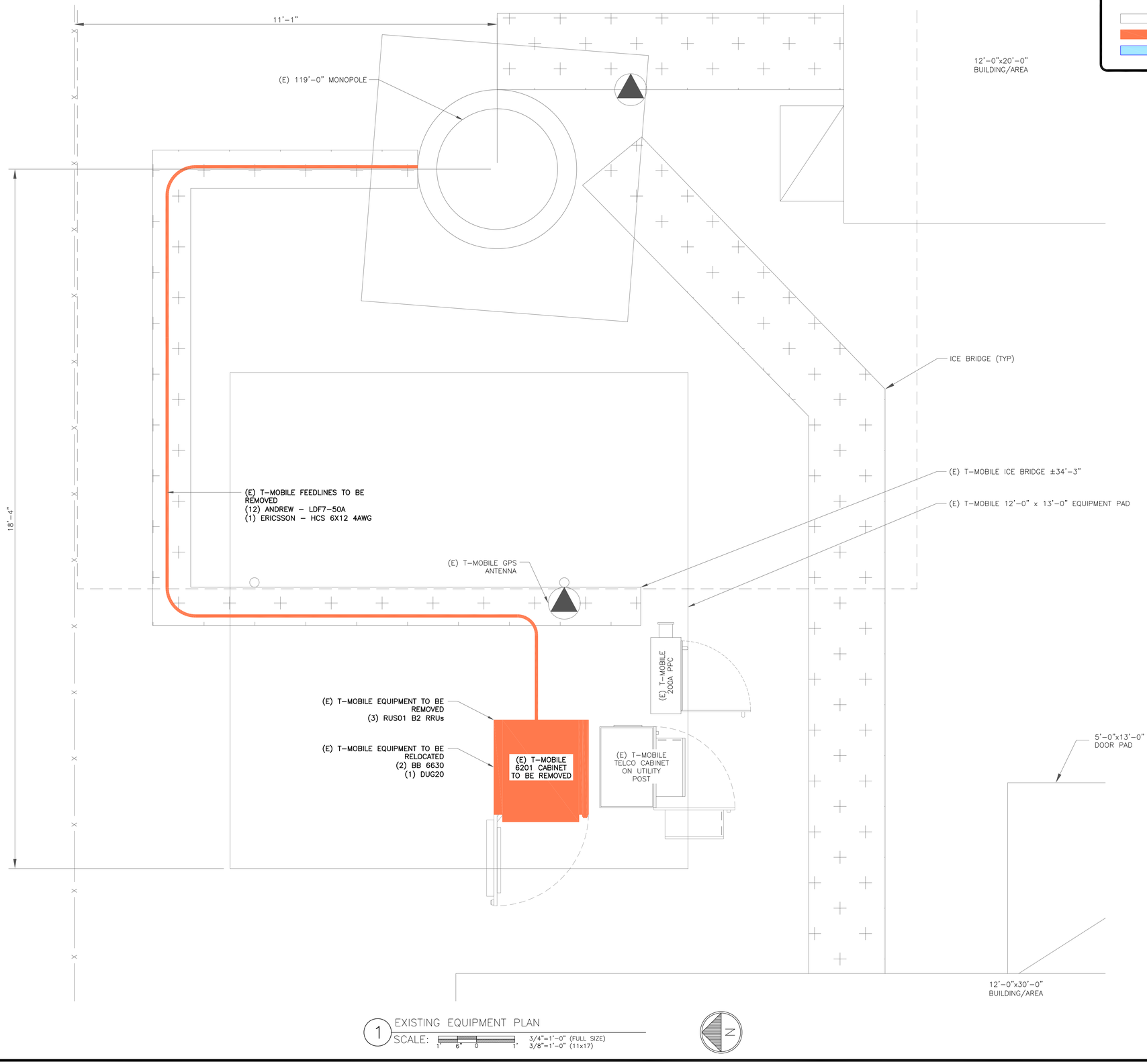
SHEET NUMBER: C-1.1

REVISION: 0



1 EXISTING EQUIPMENT PLAN

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

EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW/RELOCATED

T-Mobile

CROWN CASTLE

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EXISTING 119'-0"
MONOPOLE

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0	3/4/24	YX	CONSTRUCTION	RMC

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BER:2386985
Expires 3/31/24

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SHEET NUMBER: C-1.2

REVISION: 0

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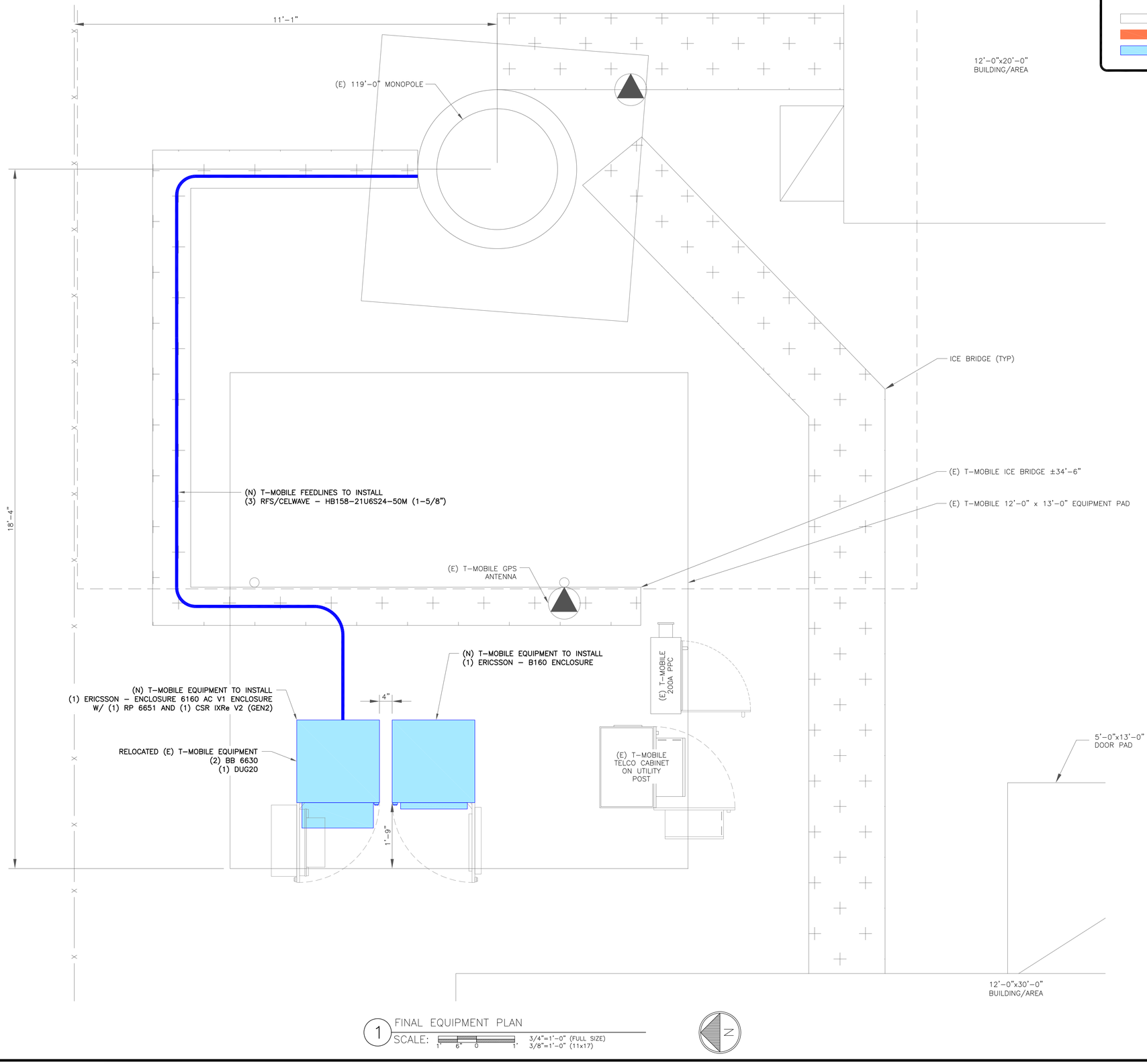

1 FINAL EQUIPMENT PLAN

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

N

EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW/RELOCATED

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CROWN CASTLE

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T-MOBILE SITE NUMBER:
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BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/29/23	GLS	PRELIMINARY	LR
B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

CT DEPARTMENT OF CONSUMER PROTECTION
No. 23924
LICENSED
PROFESSIONAL ENGINEER
3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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SHEET NUMBER: C-1.3

REVISION: 0

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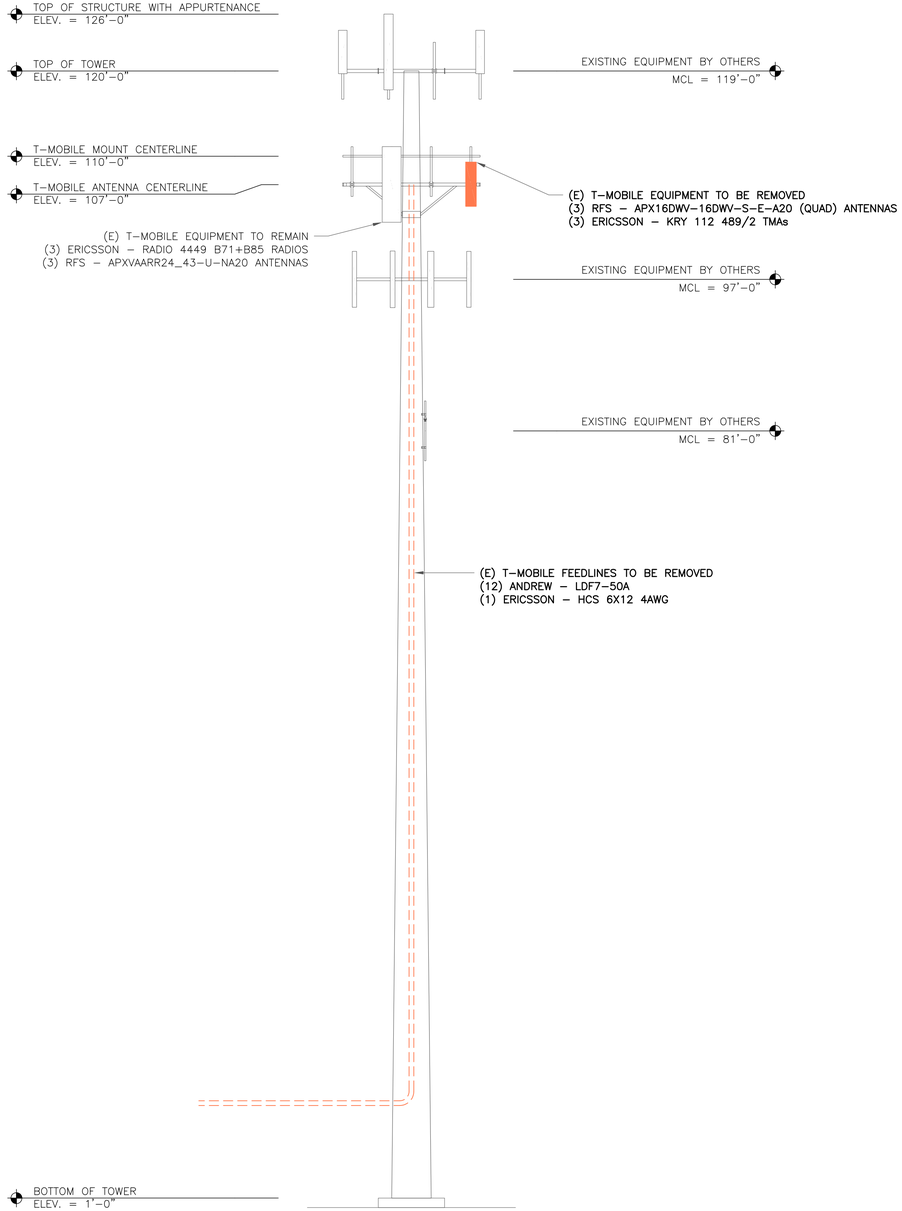
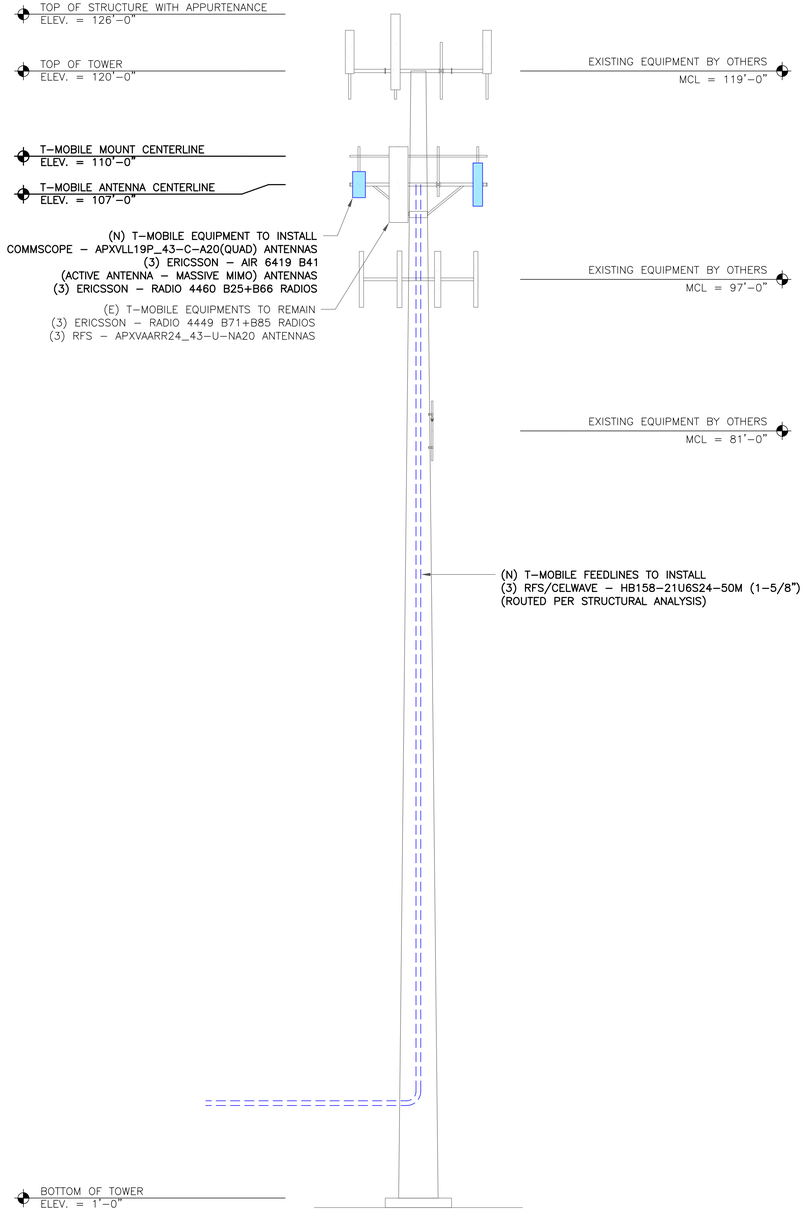


1 EXISTING TOWER ELEVATION
SCALE: 8' 6' 4' 2' 0 8' 1/8"=1'-0" (FULL SIZE) 1/16"=1'-0" (11x17)



2 FINAL TOWER ELEVATION
SCALE: 8' 6' 4' 2' 0 8' 1/8"=1'-0" (FULL SIZE) 1/16"=1'-0" (11x17)

EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW/RELOCATED

T-Mobile

CROWN CASTLE

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T-MOBILE SITE NUMBER:
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BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/29/23	GLS	PRELIMINARY	LR
B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

STATE OF CONNECTICUT
CHRISTOPHER
No. 23924
LICENSED
PROFESSIONAL ENGINEER
3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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SHEET NUMBER: C-2

REVISION: 0

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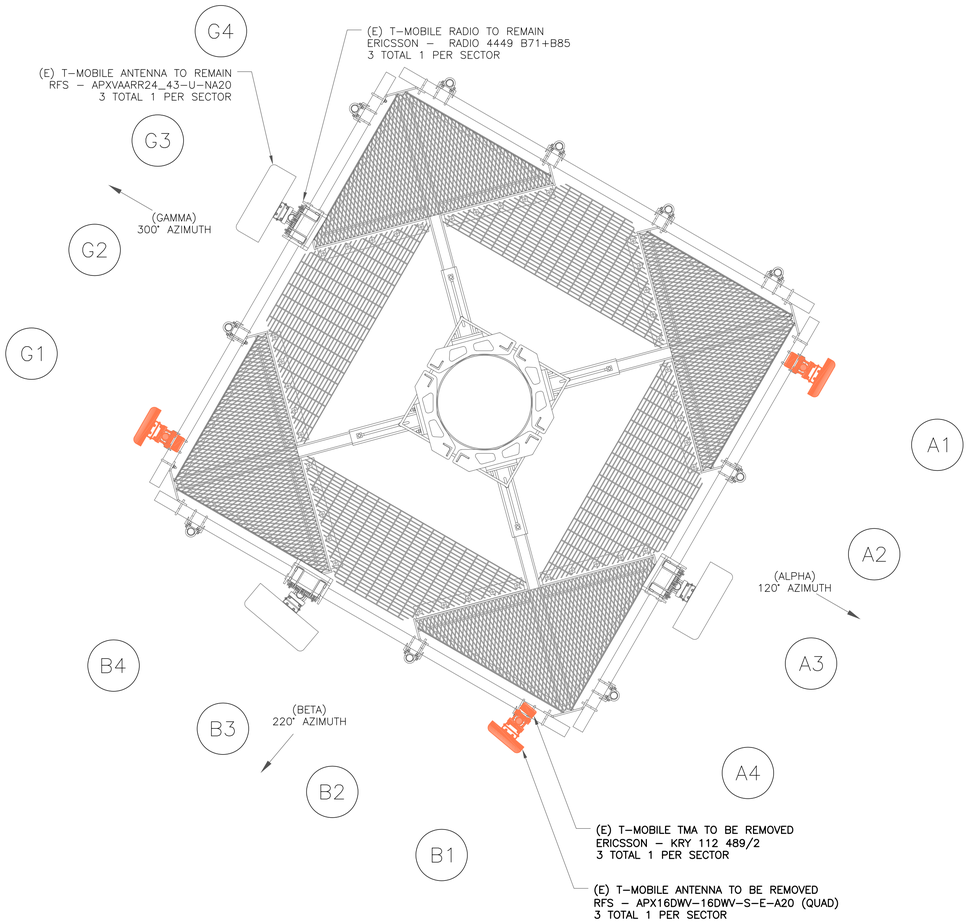
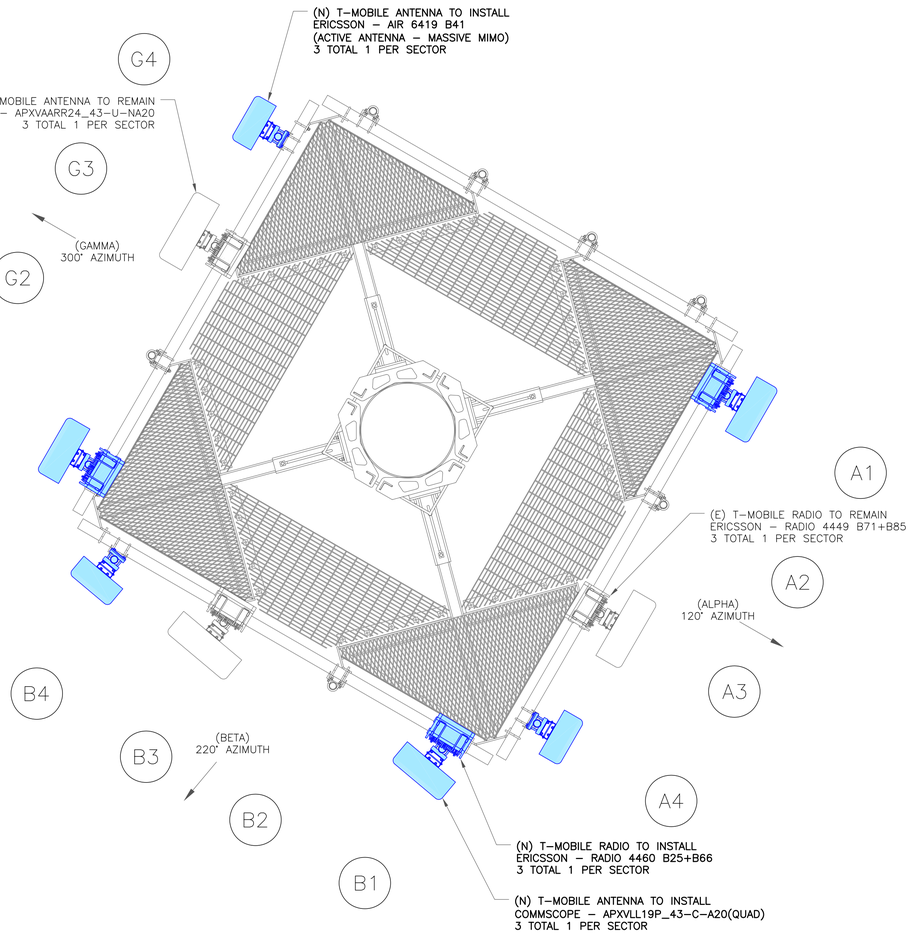


1 EXISTING ANTENNA PLAN

SCALE: 4' 2' 0 4' — 3/16"=1'–0" (FULL SIZE) 3/32"=1'–0" (11x17)



2 FINAL ANTENNA PLAN

SCALE: 8' 6' 4' 2' 0 8' — 1/8"=1'–0" (FULL SIZE) 1/16"=1'–0" (11x17)

EQUIPMENT LEGEND:

- EXISTING
- TO BE RELOCATED/REMOVED
- NEW/RELOCATED

T-Mobile

CROWN CASTLE

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EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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SHEET NUMBER: C-3

REVISION: 0

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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	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
ALPHA																		
A1	L1900/ G1900/ N1900/ L2100	(N) COMMSCOPE – APXVLL19P_43-C-A20(QUAD)	120°	107'-0"	1	(N) ERICSSON RADIO 4460 B25+B66	TOWER	–	–	–	–	–	–	–	1	(N) HYBRID	1-5/8"	50M
A3	N600/ L700/ L600	(E) RFS – APXVAARR24_43-U-NA20 (OCTO)	120°	107'-0"	1	(E) ERICSSON RADIO 4449 B71+B85	TOWER	–	–	–	–	–	–	–	–	–	–	–
A4	N2500	(N) ERICSSON – AIR 6419 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	120°	107'-0"	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BETA																		
B1	L1900/ G1900/ N1900/ L2100	(N) COMMSCOPE – APXVLL19P_43-C-A20(QUAD)	220°	107'-0"	1	(N) ERICSSON RADIO 4460 B25+B66	TOWER	–	–	–	–	–	–	–	1	(N) HYBRID	1-5/8"	50M
B3	N600/ L700/ L600	(E) RFS – APXVAARR24_43-U-NA20 (OCTO)	220°	107'-0"	1	(E) ERICSSON RADIO 4449 B71+B85	TOWER	–	–	–	–	–	–	–	–	–	–	–
B4	N2500	(N) ERICSSON – AIR 6419 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	220°	107'-0"	–	–	–	–	–	–	–	–	–	–	–	–	–	–
GAMMA																		
G1	L1900/ G1900/ N1900/ L2100	(N) COMMSCOPE – APXVLL19P_43-C-A20(QUAD)	300°	107'-0"	1	(N) ERICSSON RADIO 4460 B25+B66	TOWER	–	–	–	–	–	–	–	1	(N) HYBRID	1-5/8"	50M
G3	N600/ L700/ L600	(E) RFS – APXVAARR24_43-U-NA20 (OCTO)	300°	107'-0"	1	(E) ERICSSON RADIO 4449 B71+B85	TOWER	–	–	–	–	–	–	–	–	–	–	–
G4	N2500	(N) ERICSSON – AIR 6419 B41 (ACTIVE ANTENNA – MASSIVE MIMO)	300°	107'-0"	–	–	–	–	–	–	–	–	–	–	–	–	–	–
														UNUSED FEEDLINES	–	–	–	–
															–	–	–	–

1 FINAL EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

T-Mobile

CROWN CASTLE

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

T-MOBILE SITE NUMBER:
CTHA162A

BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/29/23	GLS	PRELIMINARY	LR
B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

STATE OF CONNECTICUT
CHRISTOPHER M. LEVESQUE
No. 23824
LICENSED
PROFESSIONAL ENGINEER
3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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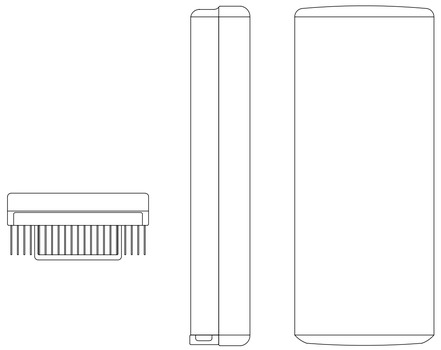
SHEET NUMBER: C-4

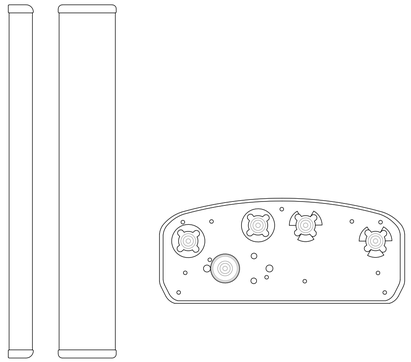
REVISION: 0

TMOBILE_NATIONAL_ANCHOR



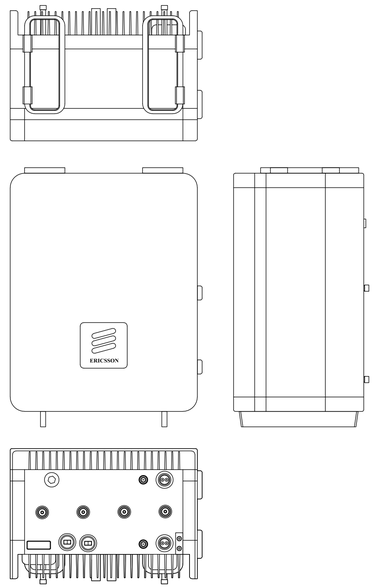
ERICSSON – AIR 6419 B41
WEIGHT (WITHOUT MOUNTING HARDWARE): 81.84 LBS
SIZE (HxWxD): 34.49x19.92x7.99 IN.

1 ANTENNA SPECS
SCALE: NOT TO SCALE



COMMSCOPE – APXVLL19P_43-C-A20
WEIGHT (WITHOUT MOUNTING HARDWARE): 42.0 LBS
SIZE (HxWxD): 75.8x11.3x4.6 IN.
MOUNTING HARDWARE P/N: APM40-2
RATED WIND VELOCITY: 93.0 MPH
RF CONNECTOR INTERFACE: 4.3-10 FEMALE

2 ANTENNA SPECS
SCALE: NOT TO SCALE

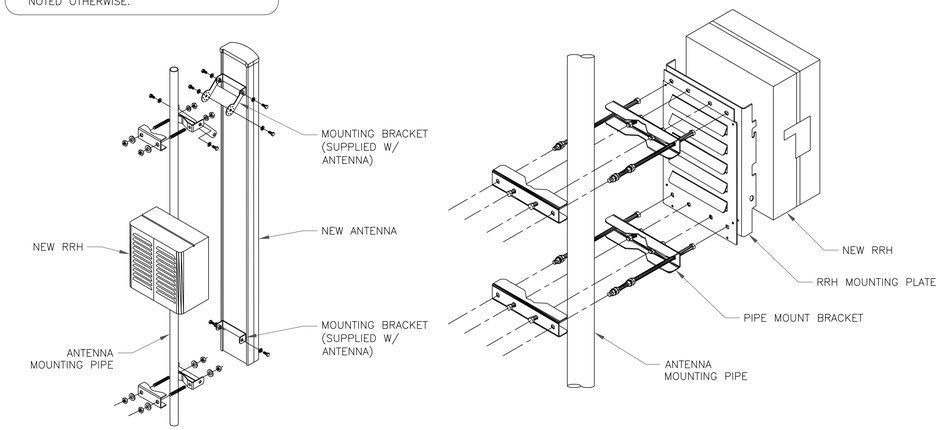


ERICSSON – RADIO 4460
WEIGHT: 109.0 LBS
SIZE (HxWxD): 17.0x15.1x11.9 IN.

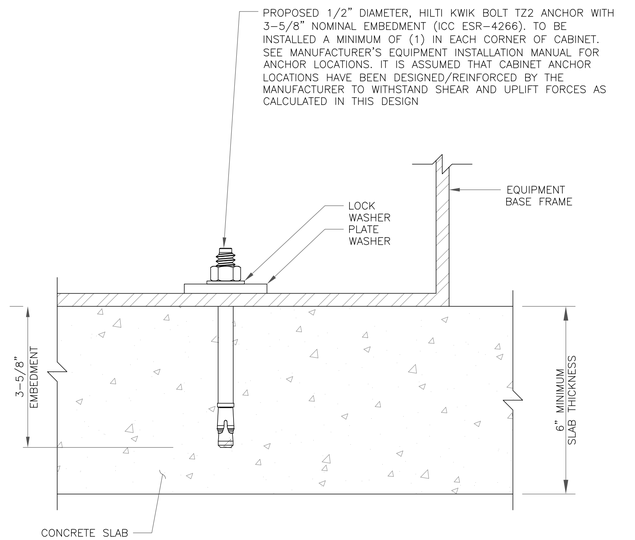
3 RADIO SPECS
SCALE: NOT TO SCALE

INSTALLER NOTES:

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 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



5 TYPICAL ANCHOR BOLT DETAIL
SCALE: NOT TO SCALE

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

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BU #: **846295**
CROWN CASTLE SITE NAME:
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30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

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B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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SHEET NUMBER: C-5

REVISION: 0

MANUFACTURER:	ERICSSON
MODEL:	(UT6160_ENCL_AC) V1 CABINET
DIMENSIONS (HxWxD):	63"x25.6"x33.6"
WEIGHT:	373 LBS
SKU #:	T.B.D.

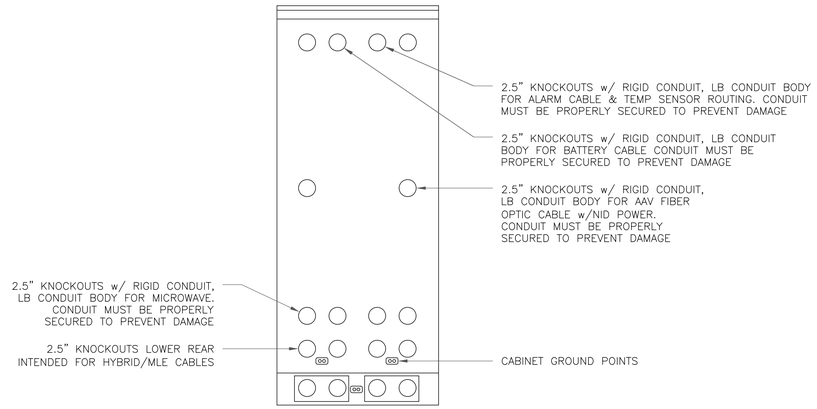
NOTE:

CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS

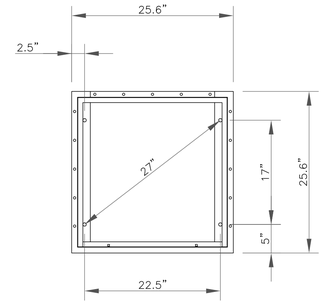
CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

GROUNDING NOTE:

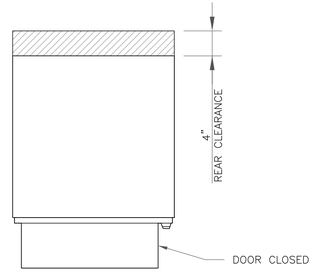
CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED.



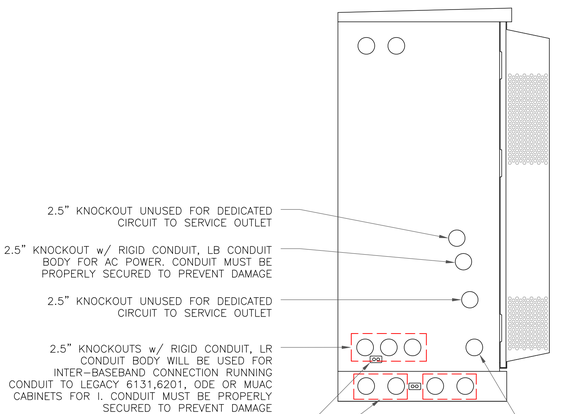
REAR VIEW



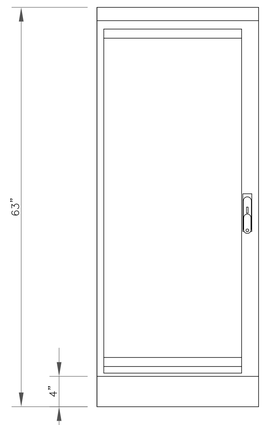
BOLT DOWN PATTERN



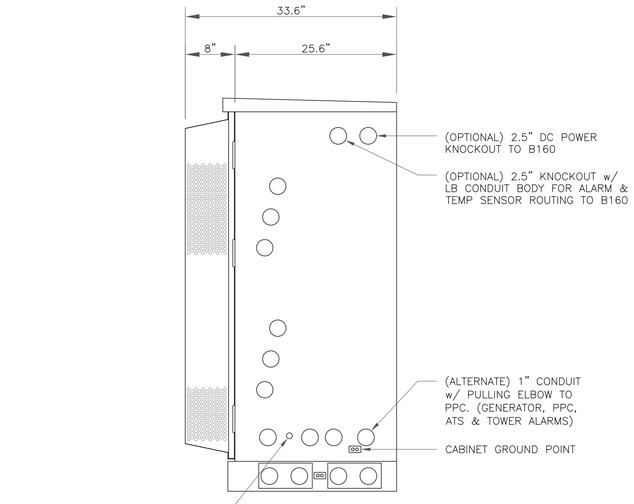
PLAN VIEW



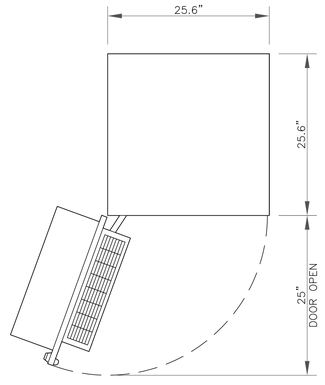
LEFT VIEW



FRONT VIEW



RIGHT VIEW



DOOR SWING

1 6160 ERICSSON SITE SUPPORT CABINET

SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP

MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

T-MOBILE SITE NUMBER:
CTHA162A

BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

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3/4/24

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BER:2386985
Expires 3/31/24

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SHEET NUMBER: C-6.1

REVISION: 0

MANUFACTURER:	ERICSSON
MODEL:	B160 BATTERY CABINET
DIMENSIONS (HxWxD):	63"x25.6"x29.5"
WEIGHT:	295 LBS
SKU #:	T.B.D.

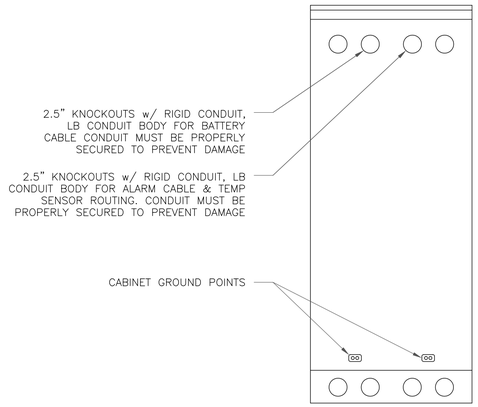
NOTE:

CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL THROUGH KNOCKOUTS

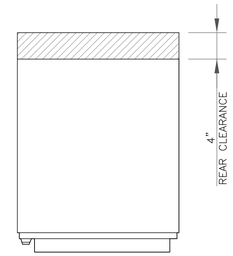
CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND OR CABLING

GROUNDING NOTE:

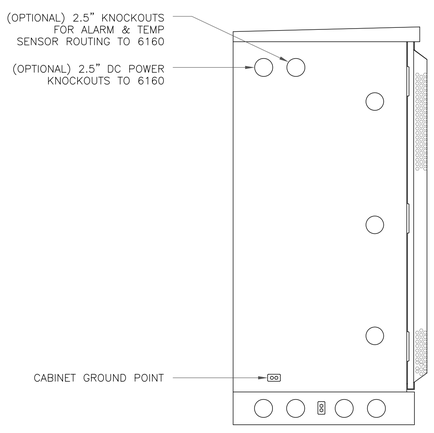
CABINET GROUNDING TO USE A SINGLE, #2 BTCW CONDUCTOR, W/ 2-HOLE, 1" C-C, LONG BARREL, WINDOW LUG, IN 3/4" LFNC TO GROUND RING. PLINTH GROUNDING IS NOT REQUIRED.



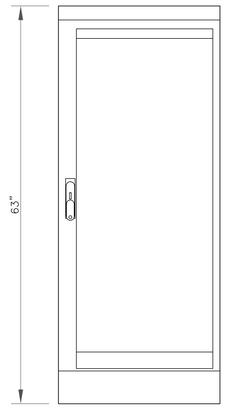
REAR VIEW



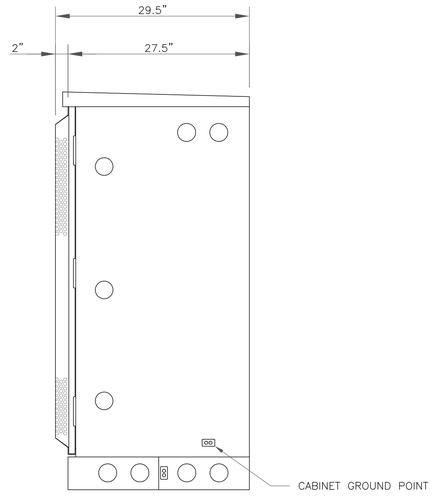
PLAN VIEW



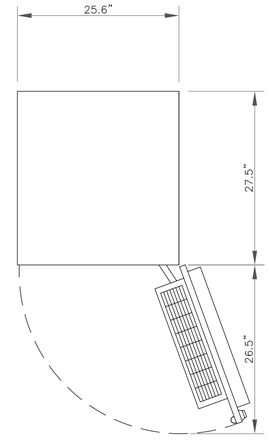
LEFT VIEW



FRONT VIEW



RIGHT VIEW



DOOR SWING

1 ERICSSON B160 BATTERY CABINET

SCALE: 4' 2' 0 4' 3/16"=1'-0" (FULL SIZE) 3/32"=1'-0" (11x17)

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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T-MOBILE SITE NUMBER:
CTHA162A

BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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0	3/4/24	YX	CONSTRUCTION	RMC

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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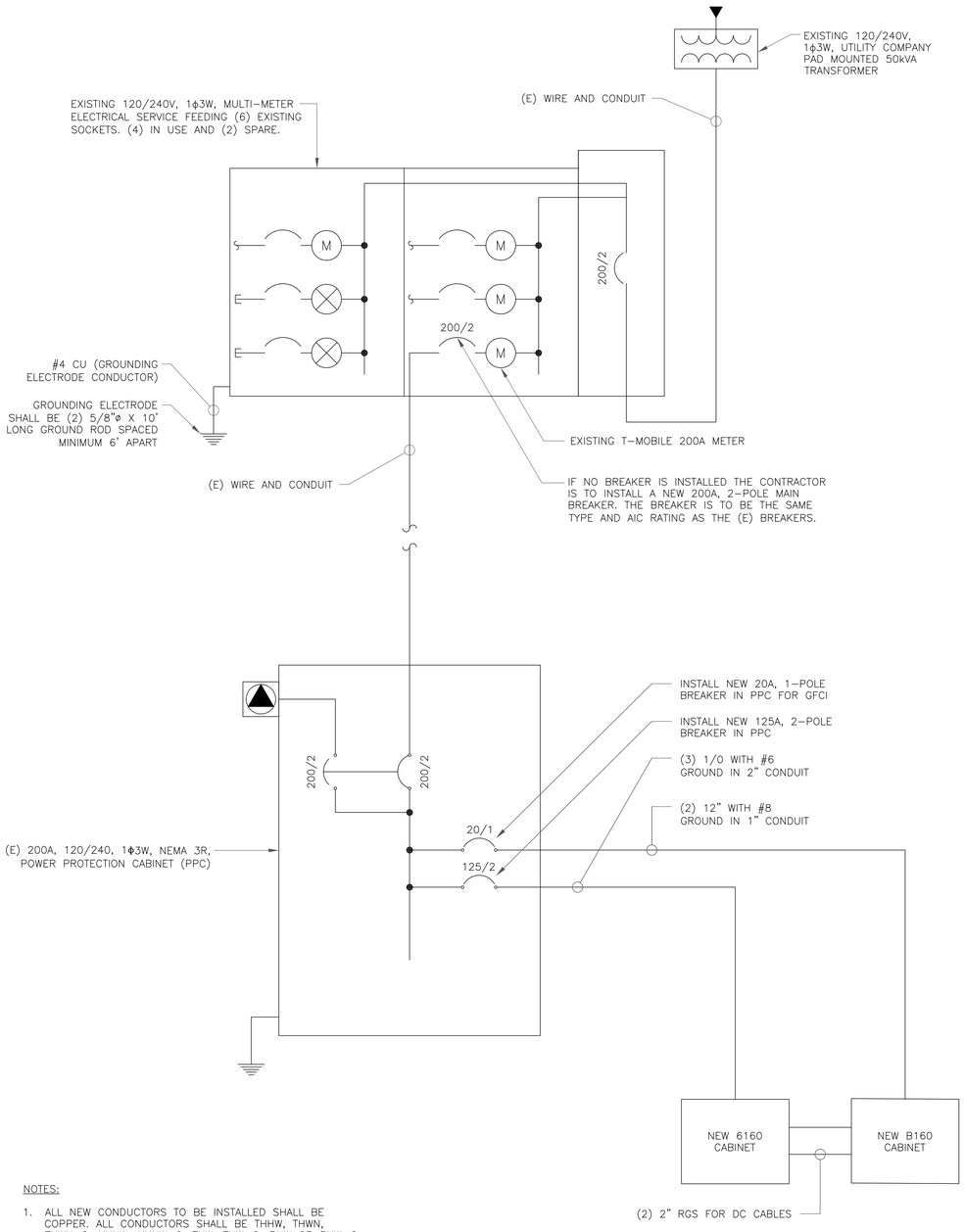
SHEET NUMBER: C-6.2

REVISION: 0



NOTES:

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW OR RHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR I TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF AND DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.

1 ONE-LINE DIAGRAM
SCALE: NOT TO SCALE

NOTE:

PANEL SCHEDULE TO BE VERIFIED BY GENERAL CONTRACTOR.

EXISTING PANEL SCHEDULE

LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
TVSS	2	60A	1	2	20A	1	TELCO GFI
			3	4	15A	1	SPOTLIGHT
RBS 6201 ODE	2	100A	5	6			
			7	8			
			9	10			
			11	12			
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □_____,	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY / MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS / GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL		

2 EXISTING PANEL SCHEDULE
SCALE: NOT TO SCALE

FINAL PANEL SCHEDULE

LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
TVSS	2	60A	1	2	20A	1	TELCO GFI
			3	4	15A	1	SPOTLIGHT
			5	6	**20A**	**1**	**GFCI**
			7	8	**125A**	**2**	**6160 CABINET**
			9	10			
			11	12			
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

RATED VOLTAGE: ■120/240 □_____, 1 PHASE, 3 WIRE	BRANCH POLES: □12 ■24 □30 □42	APPROVED MF'RS
RATED AMPS: □100 ■200 □400 □_____,	CABINET: ■SURFACE □FLUSH	NEMA □1 ■3R □4X
□MAIN LUGS ONLY / MAIN 200 AMPS ■BREAKER □FUSED SWITCH	■HINGED DOOR	■KEYED DOOR LATCH
□FUSED ■CIRCUIT BREAKER BRANCH DEVICES	□_____ TO BE GFCI BREAKERS	FULL NEUTRAL BUS / GROUND BAR
ALL BREAKERS MUST BE RATED TO INTERRUPT A SHORT CIRCUIT ISC OF 10,000 AMPS SYMMETRICAL		

INSTALL NEW 1P 20A BREAKER IN POSITION 6
INSTALL NEW 2P 125A BREAKER IN POSITIONS 8 AND 10
IF 125A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO130M150PRB (OR APPROVED EQUAL).
UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING DOCUMENTS AND PHOTOS

3 FINAL PANEL SCHEDULE
SCALE: NOT TO SCALE

T-Mobile

CROWN CASTLE

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STATE OF CONNECTICUT * CHRISTOPHER No. 23924 LICENSED PROFESSIONAL ENGINEER *
3/4/24

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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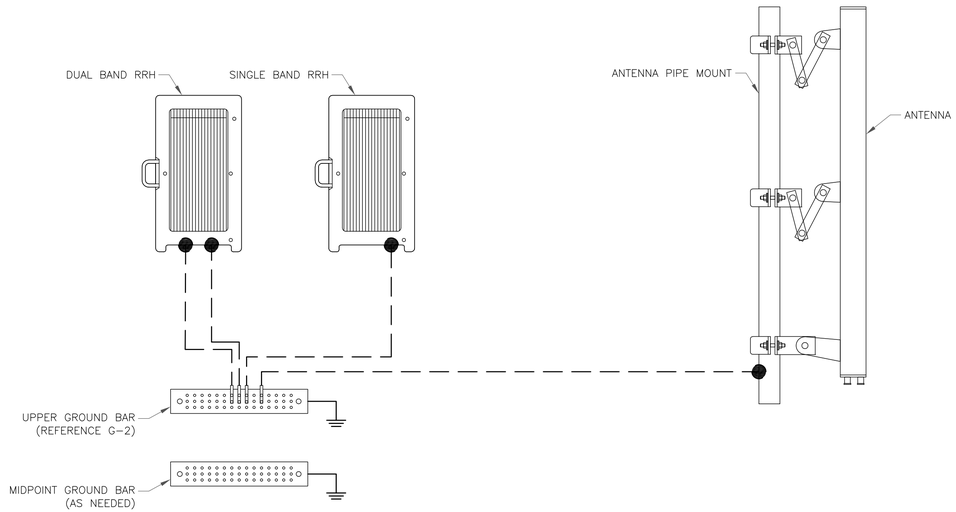
SHEET NUMBER: E-1

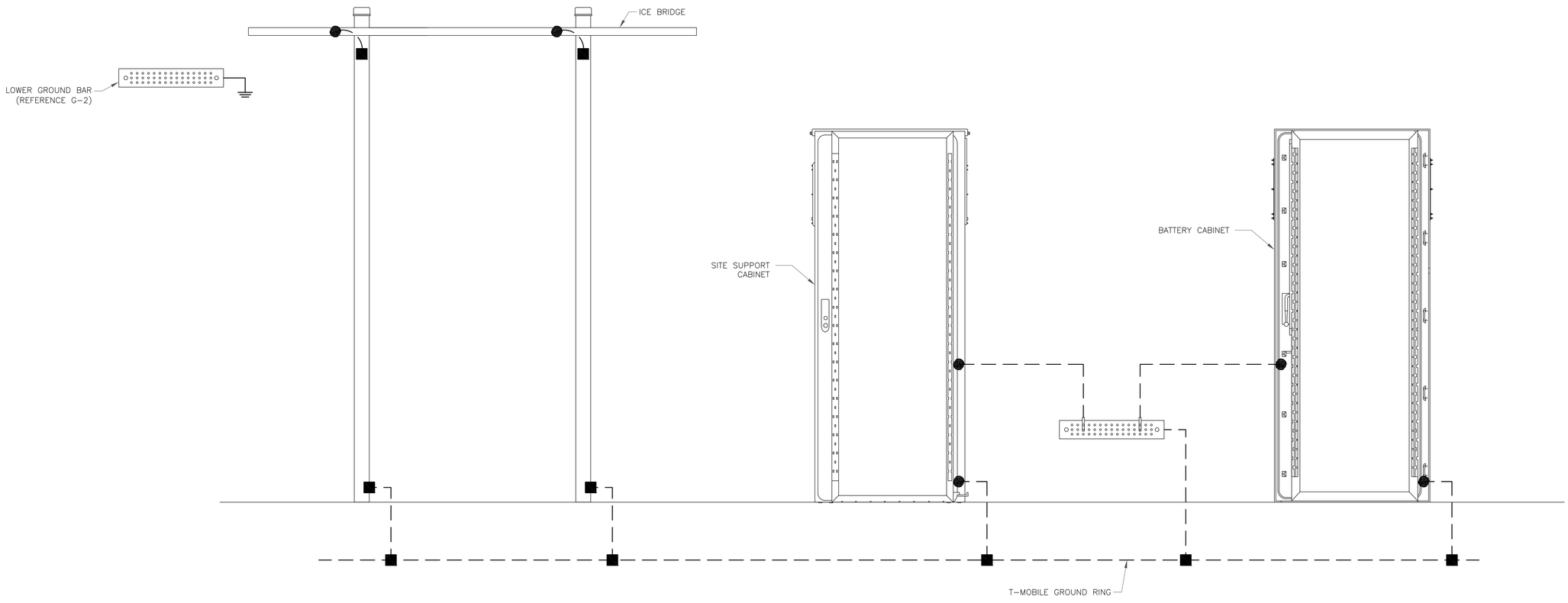
REVISION: 0

T-MOBILE_NATIONAL_ANCHOR



ANTENNA LEVEL

GROUND LEVEL



1 TYPICAL FINAL GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

GROUNDING PLAN LEGEND:

- #6 STRANDED COPPER WITH GREEN INSULATION GROUND WIRE
- #2 STRANDED COPPER WITH GREEN INSULATION GROUND WIRE
- #2 BARE, SOLID, TINNED COPPER GROUND WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- COPPER GROUND ROD
- GROUND ROD W/ TEST WELL

NOTE:

SEE FINAL EQUIPMENT PLAN FOR NEW EQUIPMENT REQUIRING GROUNDING. CONTRACTOR TO VERIFY EXISTING EQUIPMENT GROUNDING IN FIELD. CONTRACTOR TO VERIFY IN FIELD AND INSTALL ANY MISSING T-MOBILE GROUND BARS ON SITE.

T-Mobile

CROWN CASTLE

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3/4/24

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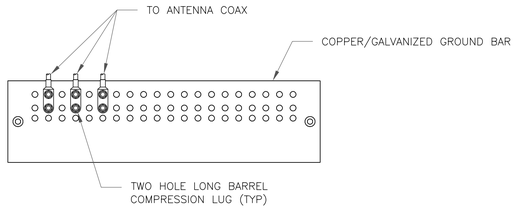
SHEET NUMBER: G-1

REVISION: 0

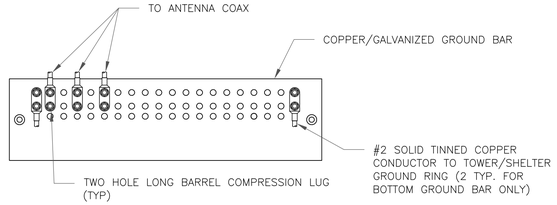
T-MOBILE_NATIONAL_ANCHOR



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.

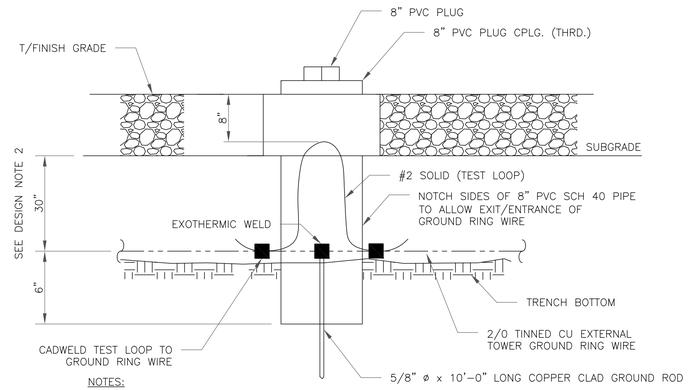
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

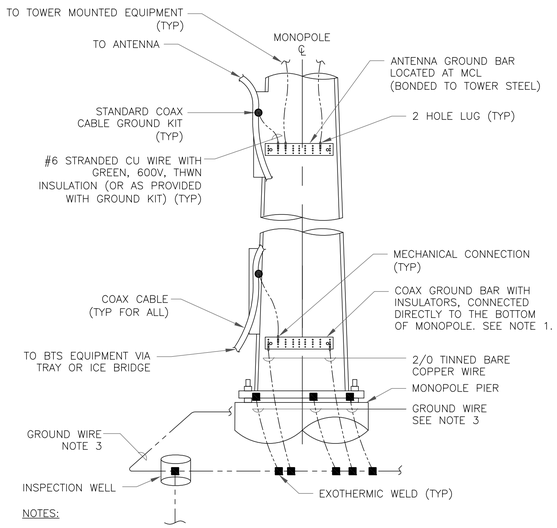
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

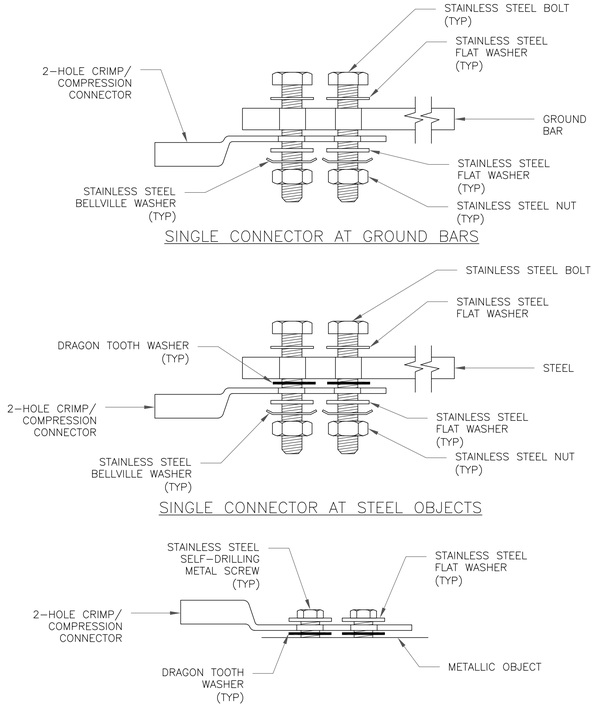
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



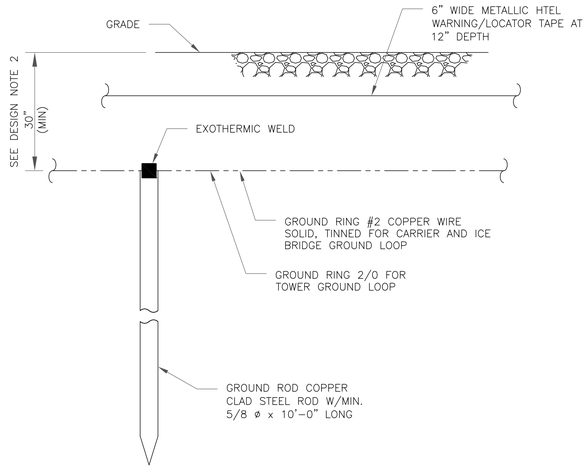
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

T-MOBILE SITE NUMBER:
CTHA162A

BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

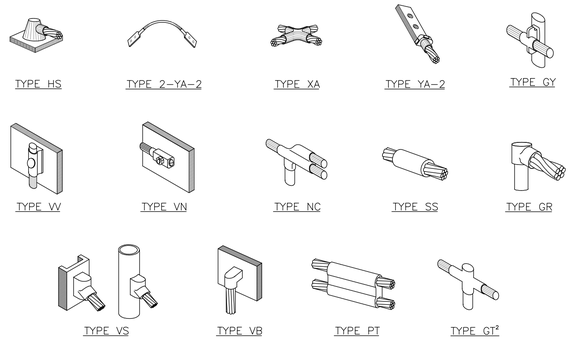
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/29/23	GLS	PRELIMINARY	LR
B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: G-2

REVISION: 0

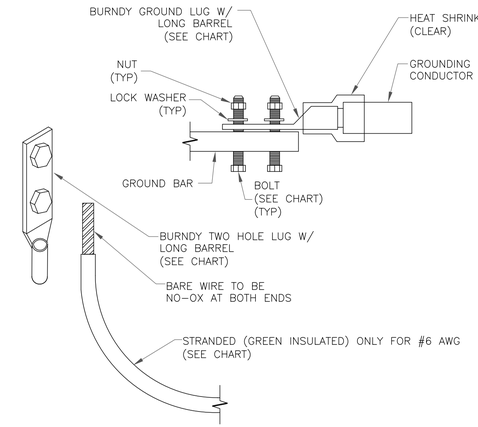


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

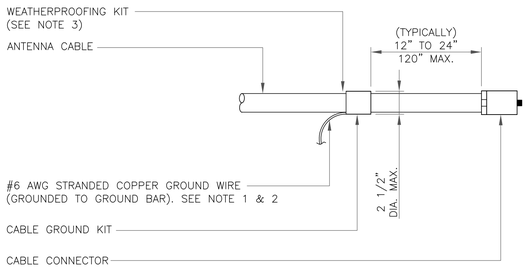
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. 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.

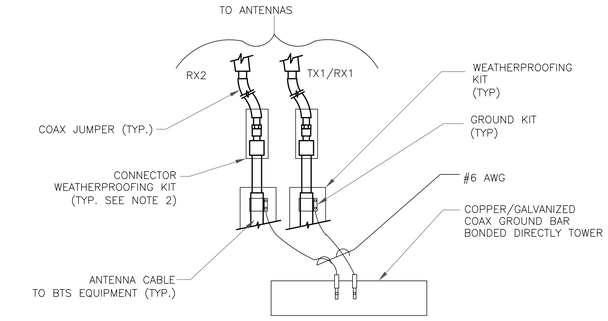
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

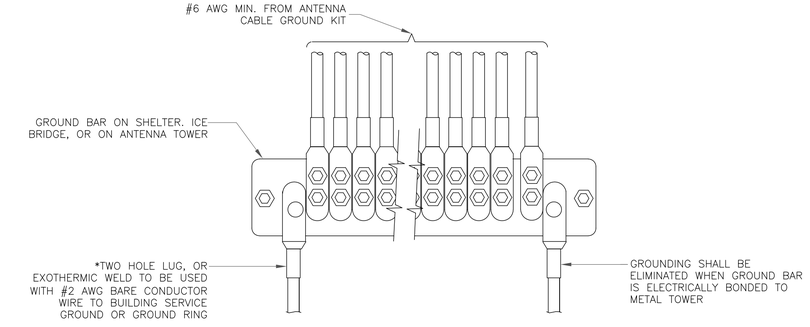
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



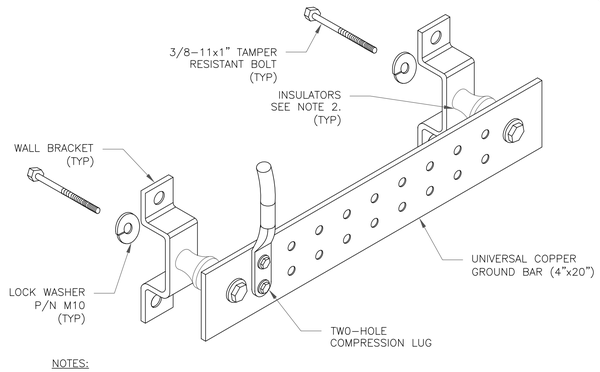
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



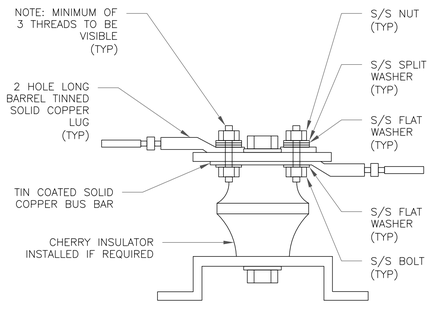
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



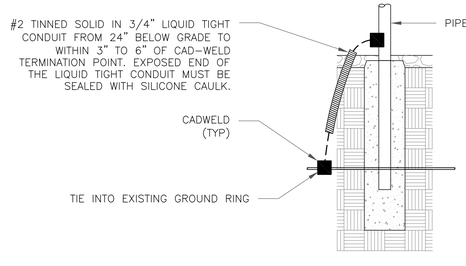
NOTES:

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.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-MOBILE_NATIONAL_ANCHOR

T-Mobile

CROWN CASTLE

B+T GRP
MTS ENGINEERING, P.L.L.C.
1717 S. BOULDER,
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
btwo@btgrp.com

T-MOBILE SITE NUMBER:
CTHA162A

BU #: **846295**
CROWN CASTLE SITE NAME:
GRANBY - HIGLEY ROAD

30 HIGLEY ROAD
WEST GRANBY, CT 06090

EXISTING 119'-0"
MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/29/23	GLS	PRELIMINARY	LR
B	2/8/24	YX	PRELIMINARY	LR
0	3/4/24	YX	CONSTRUCTION	RMC

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/24

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SHEET NUMBER: G-3

REVISION: 0

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Section 1 - Site Information

Site ID: CTHA162A
Status: Final
Version: 4
Project Type: Anchor
Approved: 11/16/2023 10:39:34 AM
Approved By: SHERAZ.SOOFI1@T-MOBILE.COM
Last Modified: 11/16/2023 10:59:37 AM
Last Modified By: SHERAZ.SOOFI1@T-MOBILE.COM

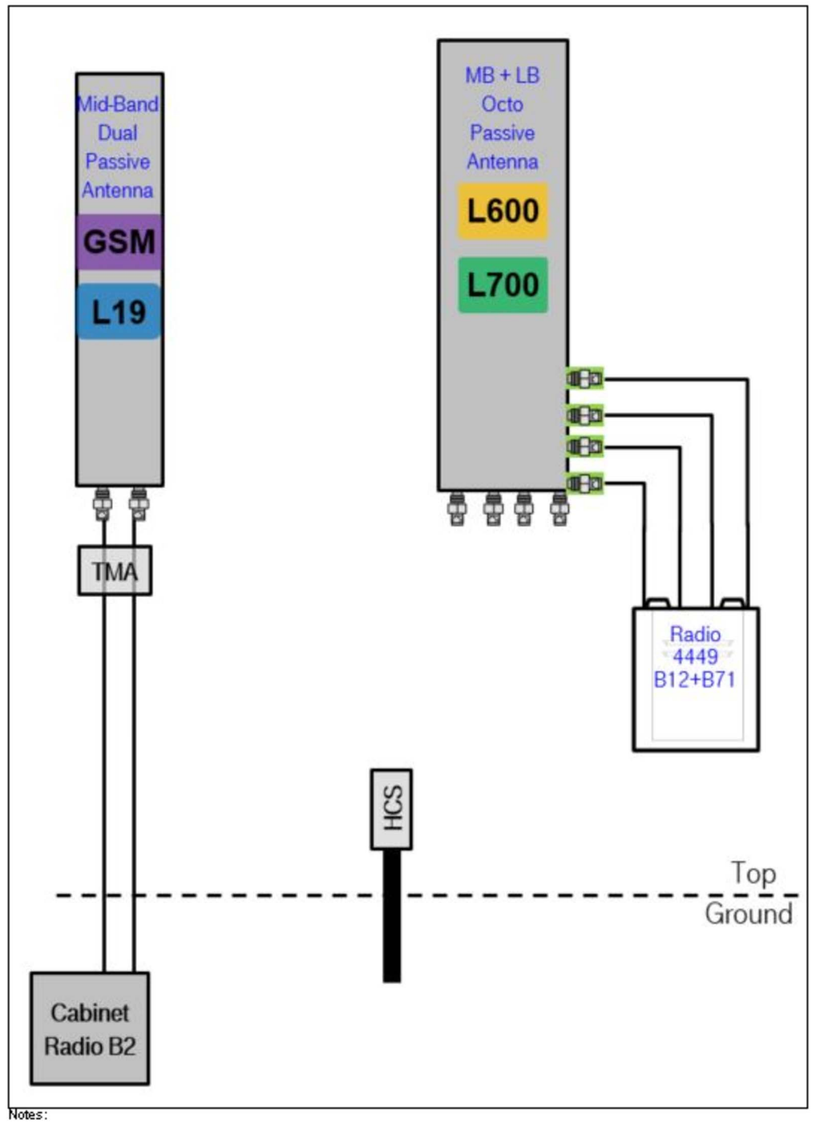
Site Name: CTHA162/CINGATT Permit_FT
Site Class: Monopole
Site Type: Structure Non Building
Plan Year: 2023
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: Crown Castle ATT

Latitude: 41.96582338
Longitude: -72.8553314
Address: 30 Higley Road
City, State: West Granby, CT
Region: NORTHEAST

RAN Template: 67D5D998E 6160			**AL Template:** 67D5998E_1xAIR+1OP+1QP	
Sector Count: 3	**Antenna Count:** 9	**Coax Line Count:** 0	**TMA Count:** 0	**RRU Count:** 6

Section 2 - Existing Template Images

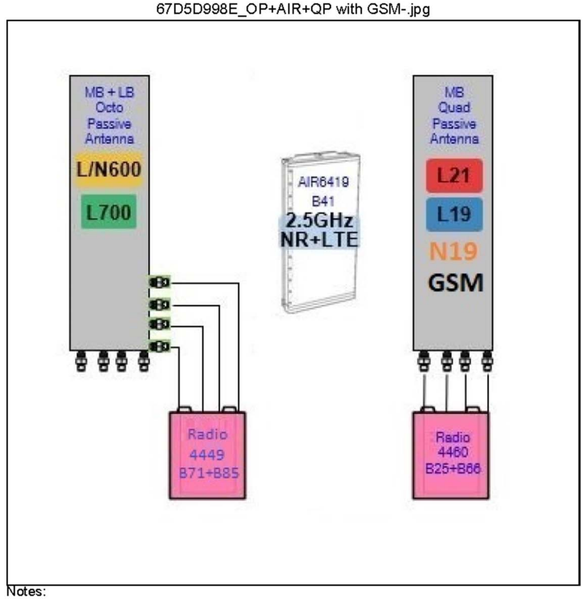
Capture.JPG



Notes:

Section 3 - Proposed Template Images

67D5D998E_OP+AIR+QP with GSM-.jpg



Notes:

Section 4 - Siteplan Images

----- This section is intentionally blank. -----

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D04G

Enclosure	1
Enclosure Type	RBS 6201 ODE
Radio	RUS01 B2 (x3): L1900, G1900
Baseband	BB 6630: L1900; BB 6630: N600, L600, L700; DUG20: G1900
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG*

Proposed RAN Equipment

Template: 67D5D998E 6160

	1	2
Enclosure		
Enclosure Type	Enclosure 6160 AC V1	B160
Baseband	BB 6630: N600, L600, L700; BB 6630: N1900, L1900, L2100; DUG20: G1900; RP 6651: N2500	
Transport System	CSR IXRe V2 (Gen2)	
Hybrid Cable System	Hybrid Trunk 6/24 4AWG 50m (x3)	

RAN Scope of Work:

Remove all unused equipment's from cabinet.
Add (1) 6160 and (1) B160 cabinets.
Add (1) RP6651 for NR2500
Add (1) IXRe router to 6160.
replace existing HCS with (3) Hybrid Trunk 6/24 4AWG 50M confirmed.

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Section 6 - A&L Equipment

Existing Template: 67D04G_1DP+1OP
Proposed Template: 67D5998E_1xAIR+1OP+1QP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2	3		4		
Antenna Model	RFS - APX16DWW-16DWW-S-E-A20 (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)		Empty Antenna Mount (Empty mount)		
Azimuth	120			120				
M. Tilt	0			0				
Height (ft)	107			107				
Ports	P1	P2		P3	P4	P5	P6	
Active Tech	L1900, G1900			L700, L600, N600	L700, L600, N600			
Dark Tech								
Restricted Tech								
Decomm. Tech								
E. Tilt	2			2				
Cables	1-1/4" Coax - 160 ft. (x2)			Coax Jumper (x2)	Coax Jumper (x2)			
TMAs	Generic Twin Style 1A - PCS (At Antenna)							
Diplexer / Combiners								
Radio				Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)			
Sector Equipment								

Unconnected Equipment:

Cable: 1-1/4" Coax - 160 ft. (x2)

Scope of Work:

Add (1) LB/MB Octo to Position 3.
Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1		2	3				4	
Antenna Model	RFS_APXVLL19P_43-C-A20 (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)				AIR 6419 B41 (Active Antenna - Massive MIMO)	
Azimuth	120			120				120	
M. Tilt	0			0				0	
Height (ft)	107			107				107	
Ports	P1	P2		P3	P4	P5	P6	P7	P8
Active Tech	L1900 G1900 N1900 L2100	L1900 G1900 N1900 L2100		N600 L700 L600	N600 L700 L600			N2500	N2500
Dark Tech									
Restricted Tech									
Decomm. Tech									
E. Tilt	2	2		2	2				
Cables	Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)		Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)			Fiber Jumper (x4)	Fiber Jumper (x4)
TMAs									
Diplexer / Combiners									
Radio	Radio 4460 B25+B66 (At Antenna)	Radio 4460 B25+B66 (At Antenna)		Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)				
Sector Equipment									

Unconnected Equipment:

Scope of Work:

11/16/2023- swapped the VV-65A-R1 for a APXVLL19P_43-C-A2.
Replace APX16DWV-16DWV-S-E-A20 with VV-65A-R1 at P1.
Add AIR6419 at P4
Add (1) 4460 Radio and connect it to quad antenna at P3.
Remove all unused material.
Scoping Notes:
P2 empty

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Sector 2 (Existing) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2	3				4
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)				Empty Antenna Mount (Empty mount)
Azimuth	220			220				
M. Tilt	0			0				
Height (ft)	107			107				
Ports	P1	P2		P3	P4	P5	P6	
Active Tech	L1900 G1900			L700 L600 N600	L700 L600 N600			
Dark Tech								
Restricted Tech								
Decomm. Tech								
E. Tilt	2			2				
Cables	1-1/4" Coax - 160 ft. (x2)			Coax Jumper (x2)	Coax Jumper (x2)			
TMAs	Generic Twin Style 1A - PCS (At Antenna)							
Diplexer / Combiners								
Radio				Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)			
Sector Equipment								

Unconnected Equipment:

Cable: 1-1/4" Coax - 160 ft. (x2)

Scope of Work:

Add (1) LB/MB Octo to Position 3.
Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1		2	3				4	
Antenna Model	RFS_APXVLL19P_43-C-A20 (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)				AIR 6419 B41 (Active Antenna - Massive MIMO)	
Azimuth	220			220				220	
M. Tilt	0			0				0	
Height (ft)	107			107				107	
Ports	P1	P2		P3	P4	P5	P6	P7	P8
Active Tech	L2100 N1900 L1900 G1900	L2100 N1900 L1900 G1900		N600 L600 L700	N600 L600 L700			N2500	N2500
Dark Tech									
Restricted Tech									
Decomm. Tech									
E. Tilt	2	2		2	2				
Cables	Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)		Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)			Fiber Jumper (x4)	Fiber Jumper (x4)
TMAs									
Diplexer / Combiners									
Radio	Radio 4460 B25+B66 (At Antenna)	Radio 4460 B25+B66 (At Antenna)		Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)				
Sector Equipment									

Unconnected Equipment:

Scope of Work:

11/16/2023- swapped the VV-65A-R1 for a APXVLL19P_43-C-A2.
Replace APX16DWV-16DWV-S-E-A20 with VV-65A-R1 at P1.
Add AIR6419 at P4
Add (1) 4460 Radio and connect it to quad antenna at P3.
Remove all unused material.
Scoping Notes:
P2 empty

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Sector 3 (Existing) view from behind

Coverage Type	A - Outdoor Macro							
Antenna	1		2	3				4
Antenna Model	RFS - APX16DWV-16DWV-S-E-A20 (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)				Empty Antenna Mount (Empty mount)
Azimuth	300			300				
M. Tilt	0			0				
Height (ft)	107			107				
Ports	P1	P2		P3	P4	P5	P6	
Active Tech	L1900 G1900			L700 L600 N600	L700 L600 N600			
Dark Tech								
Restricted Tech								
Decomm. Tech								
E. Tilt	2			2				
Cables	1-1/4" Coax - 160 ft. (x2)			Coax Jumper (x2)	Coax Jumper (x2)			
TMAs	Generic Twin Style 1A - PCS (At Antenna)							
Diplexer / Combiners								
Radio				Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)			
Sector Equipment								

Unconnected Equipment:

Cable: 1-1/4" Coax - 160 ft. (x2)

Scope of Work:

Add (1) LB/MB Octo to Position 3.
Add (1) Radio 4449 B71+B12 to Position 3 for L600 and L700.

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.

RAN Template:	A&L Template:
67D5D998E 6160	67D5998E_1xAIR+1OP+1QP

CTHA162A_Anchor_4

Print Name: Standard
PORs: Anchor_Phase 3

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro								
Antenna	1		2	3			4		
Antenna Model	RFS_APXVLL19P_43-C-A20 (Quad)		Empty Antenna Mount (Empty mount)	RFS - APXVAARR24_43-U-NA20 (Octo)			AIR 6419 B41 (Active Antenna - Massive MIMO)		
Azimuth	300			300			300		
M. Tilt	0			0			0		
Height (ft)	107			107			107		
Ports	P1	P2		P3	P4	P5	P6	P7	P8
Active Tech	L2100 L1900 G1900 N1900	L2100 L1900 G1900 N1900		L700 L600 N600	L700 L600 N600			N2500	N2500
Dark Tech									
Restricted Tech									
Decomm. Tech									
E. Tilt	2	2		2	2				
Cables	Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)		Coax Jumper (x2) Fiber Jumper (x2)	Fiber Jumper (x2) Coax Jumper (x2)			Fiber Jumper (x4)	Fiber Jumper (x4)
TMAs									
Diplexer / Combiners									
Radio	Radio 4460 B25+B66 (At Antenna)	Radio 4460 B25+B66 (At Antenna)		Radio 4449 B71+B85 (At Antenna)	Radio 4449 B71+B85 (At Antenna)				
Sector Equipment									

Unconnected Equipment:

Scope of Work:

11/16/2023- swapped the VV-65A-R1 for a APXVLL19P_43-C-A2.
Replace APX16DWV-16DWV-S-E-A20 with VV-65A-R1 at P1.
Add AIR6419 at P4
Add (1) 4460 Radio and connect it to quad antenna at P3.
Remove all unused material.
Scoping Notes:
P2 empty

*A dashed border indicates shared connected equipment. Any shared equipment, besides the first, is denoted with the SHARED keyword.