



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

February 25, 2022

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

RE: **Notice of Exempt Modification for ATT
Crown#881541; ATT Site ID CTL03159
700 Grassy Hill Road, Orange, CT 06477
Latitude: 41° 17' 7.75" / Longitude: -72° 2' 33.27"**

Dear Ms. Bachman:

ATT currently maintains six (6) antennas at the 140-foot mount on the existing 140-foot monopole tower located at 700 Grassy Hill Road, Orange, CT. The property is owned by Town of Orange, and the tower is owned by Crown Castle. ATT now intends to add three (6) new antennas, replace six (6) antennas and ancillary equipment at the 140ft 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:

Installed New:

- (3) CCI-TPA65R-BU6DA-K Antenna
- (3) CCI-DMP65R-BU6DA Antennas
- (6) Ericsson - AIR6449 N77D + AIR 6419 N77G Stacked Antennas
- (3) Ericsson - 4415 B24 RRU
- (3) Ericsson - 4449 B5/B12 RRU
- (3) Ericsson 4478 B14 RRU
- (1) Raycap-DC9-48-60-24-8C-EV SQUID
- (3) 2-3/8"X10' long pipes
- (3) DC Cables (7/8")
- (1) Fiber Cable (3/8")
- (6) Y Cables

Remove:

- (3) Katherein-800-10121 Antennas
- (3) CCI-HPA-65R-BUU-H6 Antennas
- (6) Powerwave - LGP21401 TMAs
- (3) Ericsson 11-B12 RRU
- (3) Ericsson 12 B2+A2 B25 RRU

The Foundation for a Wireless World.
CrownCastle.com

Ground:

Install New:

- (8) Batteries
- (1.) 48V Battery Cabinet
- (1.) 6601 Module
- (1.) 5216 Module
- (1.) 6648 W/XCEDE Cable
- (5.) Rectifies

Remove:

- (6) Powerwave-LGP 13519 Diplexer
- (1) GSM Cabinet

The facility was approved by the Connecticut Siting Council in Docket No. 262 on January 12, 2004. The approval was given with conditions which this exempt modification comply with.

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 James M. Zeoli – First Selectman, Town of Orange, Jack Demirjian – ZEO, Town of Orange. Town of Orange is the property owner and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, ATT respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Melanie A. Bachman

Page 3

Sincerely,



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

Attachments

cc:

James M. Zeoli – First Selectman
Town of Orange
617 Orange Center Road
Orange, CT 06477
203.891.4737

Jack Demirjian – ZEO
Town of Orange
617 Orange Center Road
Orange, CT 06477
203.891.4746

Town of Orang, Property Owner

Crown Castle, Tower Owner

Connecticut Siting Council

Decisions

DOCKET NO. 262 - Sprint Spectrum, L.P. d/b/a Sprint	}	Connecticut
PCS application for a Certificate of Environmental	}	
Compatibility and Public Need for the construction,	}	Siting
maintenance and operation of a wireless telecommunications	}	
facility at 707 Cranberry Lane or off of Grassy Hill Road,	}	Council
Orange, Connecticut.	}	
	}	January 12, 2004

Decision and Order

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 wireless 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 application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Sprint Spectrum, L.P. d/b/a Sprint PCS (Sprint) for the construction, maintenance and operation of a wireless telecommunications facility at Site C off of Grassy Hill Road, Orange, Connecticut. The Council denies certification of Site A located at 707 Cranberry Lane and Site B located off of Grassy Hill Road, Orange, 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 as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Sprint and other entities, both public and private, but such tower shall not exceed a height of 140 feet above ground level, with a total overall height of 143 feet above ground level including appurtenances. Antennas to be installed on the tower shall be on a T-bar antenna platform or flush mounted.
2. The Certificate Holder shall prepare a 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 location, tower foundation, antennas, equipment building, access road, provisions for underground utilities, utility line, and landscaping; 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.
3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power densities 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 provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. 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.
5. 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. 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.
6. 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.
7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antenna becomes obsolete and ceases to function.
8. 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 New Haven Register, the Amity Observer and The Bulletin (Orange).

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

Sprint Spectrum, L.P. d/b/a Sprint PCS

-

Intervenor

AT&T Wireless PCS, LLC d/b/a AT&T Wireless

Its Representative

Thomas J. Regan, Esquire
Brown Rudnick Berlack Israels LLP
CityPlace I, 38th Floor
185 Asylum Street
Hartford, CT 06103-3402

Its Representative

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
90 Maple Avenue
White Plains, NY 10601

Intervenor

Cellco Partnership d/b/a Verizon Wireless

Its Representative

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

Content Last Modified on 1/15/2004 8:25:11 AM

700 GRASSY HILL RD

Location 700 GRASSY HILL RD

Mblu 60/ 6/ 1A/ I

Acct# 00182505

Owner TOWN OF ORANGE

Assessment \$119,300

Appraisal \$170,400

PID 5703

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$13,500	\$156,900	\$170,400
Assessment			
Valuation Year	Improvements	Land	Total
2017	\$9,500	\$109,800	\$119,300

Owner of Record

Owner TOWN OF ORANGE

Co-Owner

Address 617 ORANGE CENTER ROAD
ORANGE, CT 06477

Sale Price \$25,000

Certificate

Book & Page 0520/0156

Sale Date 05/28/2004

Instrument 00

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
TOWN OF ORANGE	\$25,000		0520/0156	00	05/28/2004
SCHEN JULIA ROGERS & SAYLOR ELLEN &	\$0		0/0		

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0

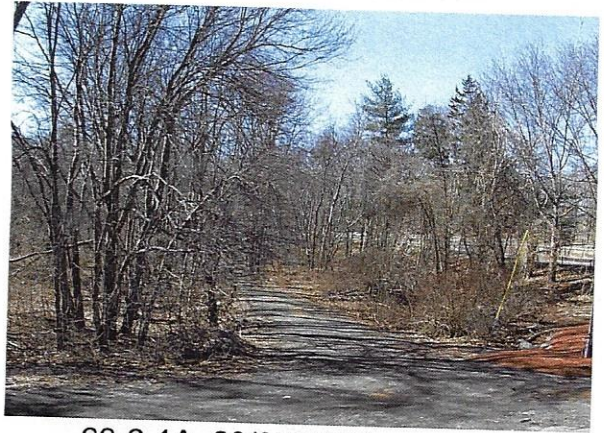
Replacement Cost

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 Floor 1	
Interior Floor 2	
Heat Fuel	
Heat Type	
AC Type	
Bedrooms	
Full Baths	
Half Baths	
Extra Fixtures	
Total Rooms	
Bathrm Style	
Kitchen Style	
Stacks	
Fireplace(S)	
Gas Fireplace(s)	
Attic	
Frame	
Traffic	
Bsmt Gar(s)	
Fireplaces	
SF FBM	
SF Rec Rm	
Basement_2	
Bsmt Floor	
Fndtn Cndtn	
Basement	

Building Photo



60-6-1A 03/05/2017

(<http://images.vgsi.com/photos/OrangeCTPhotos/A00\01\70\98.JPG>)

Building Layout

 Building Layout

(http://images.vgsi.com/photos/OrangeCTPhotos/Sketches/5703_5703.jpg)

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 510E
Description Exempt Vac
Zone RES
Neighborhood 010
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 0.62
Frontage
Depth
Assessed Value \$109,800
Appraised Value \$156,900

Outbuildings

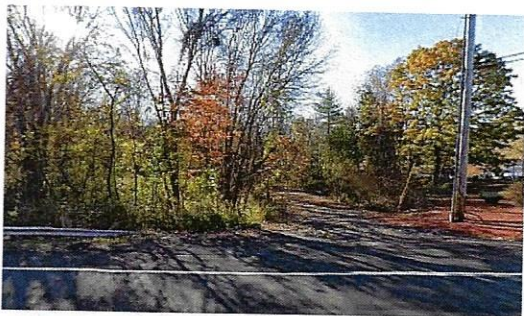
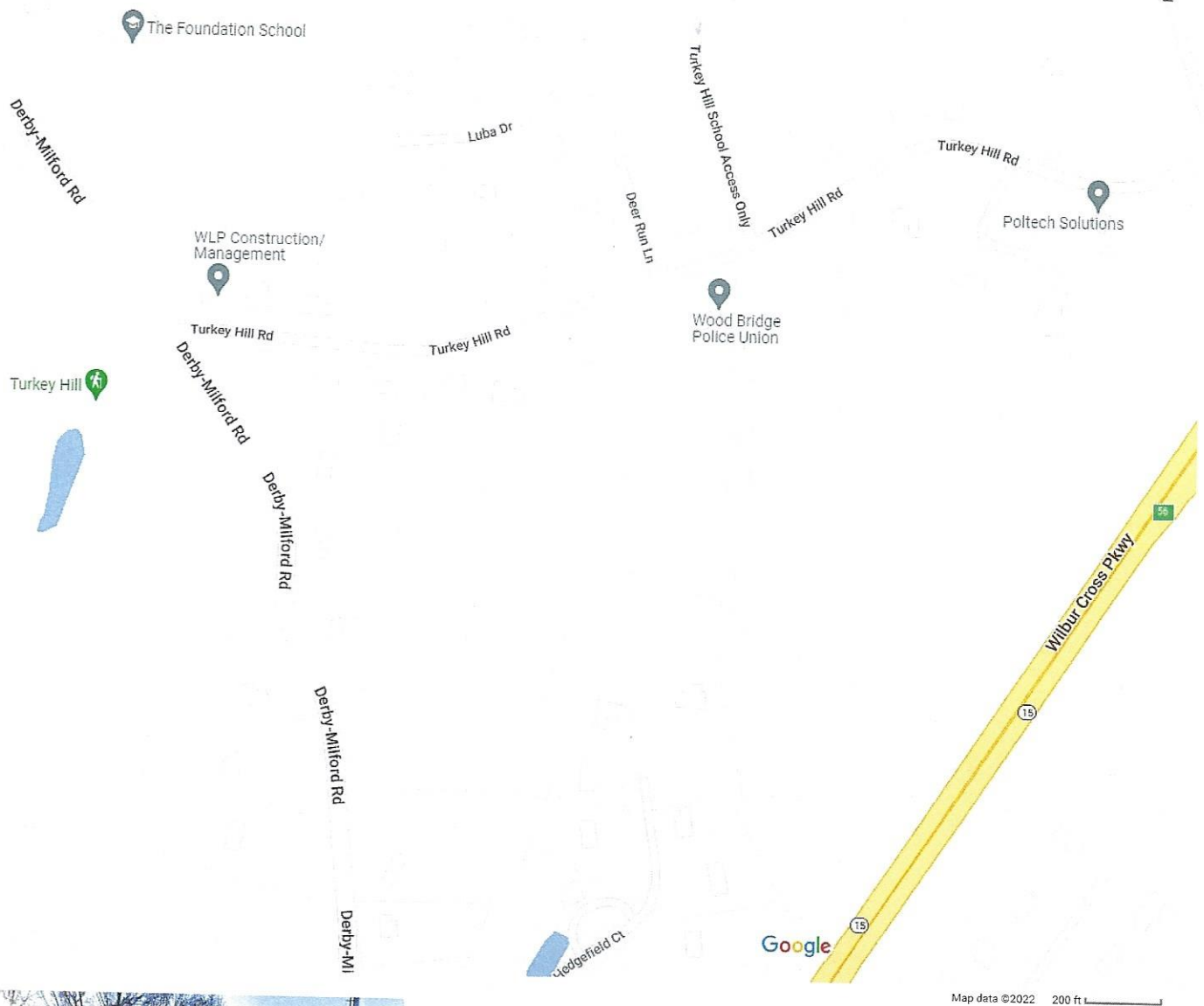
Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD7	Cell Shed			240.00 UNITS	\$13,500	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2020	\$13,500	\$156,900	\$170,400
2019	\$13,500	\$156,900	\$170,400
2018	\$13,500	\$156,900	\$170,400

Assessment			
Valuation Year	Improvements	Land	Total
2020	\$9,500	\$109,800	\$119,300
2019	\$9,500	\$109,800	\$119,300
2018	\$9,500	\$109,800	\$119,300

700 Grassy Hill Rd



700 Grassy Hill Rd

Orange, CT 06477

Building



Photos

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Tuesday, March 1, 2022 10:32 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 776147842860: Your package has been delivered

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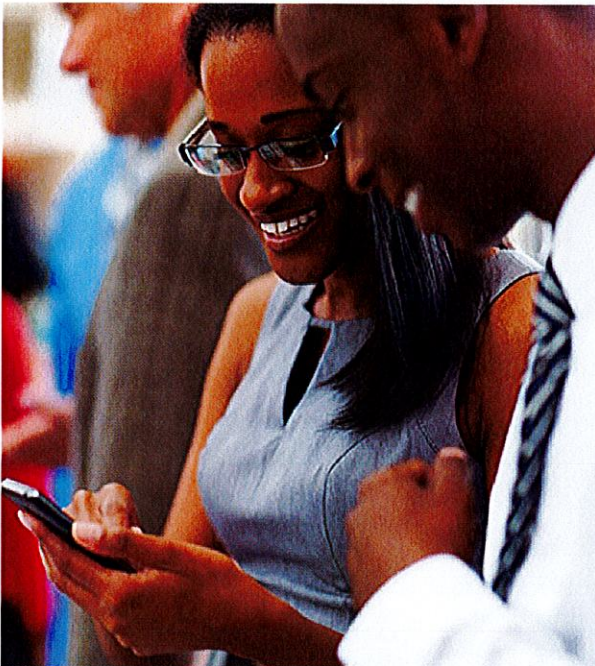


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Received by A.SHEA

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TRACKING NUMBER [776147842860](https://www.fedex.com/track/776147842860)

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Orange James Zeoli - First Selectman 617 Orange Center Road ORANGE, CT, US, 06477
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 2/28/2022 07:25 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Pak
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	ORANGE, CT, US, 06477
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight



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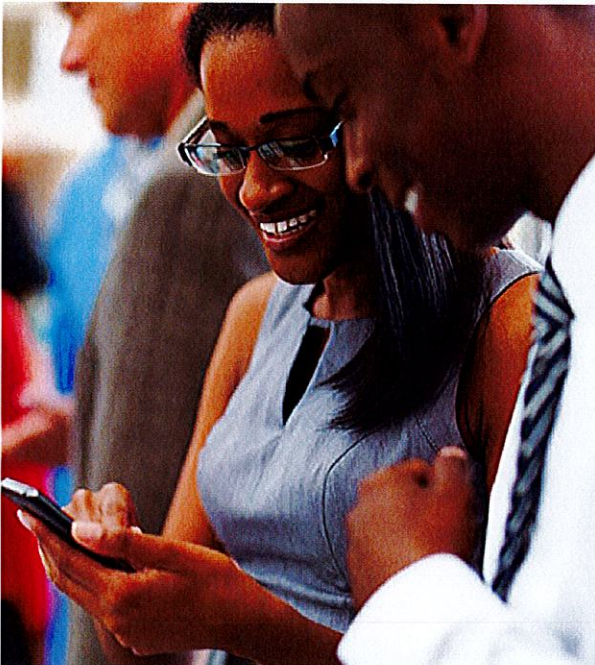


Delivered to 617 ORANGE CENTER RD, ORANGE, CT 06477
Received by A.SHEA

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER [776147865644](#)

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Orange Jack Demirjian - ZEO 617 Orange Center Road ORANGE, CT, US, 06477
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Mon 2/28/2022 07:25 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Pak
ORIGIN	WESTBOROUGH, MA, US, 01581
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SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight



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Date: **January 06, 2022**



Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
(770) 379-8500

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Site Number: CTL03159
Site Name: Orange NW
FA Number: 10091761

Crown Castle Designation: **BU Number:** 881541
Site Name: Rogers Property
JDE Job Number: 686304
Work Order Number: 2054305
Order Number: 586311 Rev. 1

Engineering Firm Designation: **Morrison Hershfield Project Number:** CN9-494R2 / 2200039

Site Data: **700 Grassy Hill Road, Orange, New Haven County, CT 06477**
Latitude 41° 17' 7.75", Longitude -73° 2' 33.27"
139.5 Foot – EEI Monopole Tower

Morrison Hershfield 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:

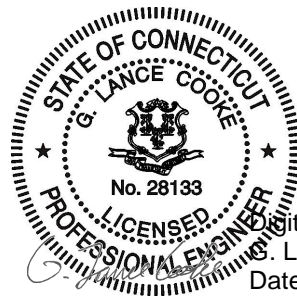
LC7: Proposed Equipment Configuration

Sufficient Capacity – 98.5%

This analysis utilizes an ultimate 3-second gust wind speed of 119 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:

G. Lance Cooke, P.E. (CT License No. PEN.0028133)
Senior Engineer



Digitally signed by
G. Lance Cooke
Date: 2022.01.07
09:15:04-08'00'

This submission contains confidential, proprietary, or trade secret information that is exempt from disclosure under applicable laws. Please make sure these pages are not disclosed. If any request is made for this information, please contact the sender in addition to any legal notice requirements under applicable law.

Disclaimer provided by AT&T. This statement does not constitute engineering analysis or design

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1) INTRODUCTION

This tower is a 139.5 ft Monopole tower designed by Engineered Endeavors, Inc.

The tower was modified per reinforcement drawing prepared by B+T Group, in October of 2013. Reinforcement consisted of adding base plate stiffeners.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	119 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
136.0	142.0	3	ericsson	AIR 6419 B77G w/ Mount Pipe	6 3 2 2 1	1-5/8 7/8 13/16 3/8 2C
	140.0	3	cci antennas	DMP65R-BU6D w/ Mount Pipe		
		3	cci antennas	TPA65R-BU6D_CCIV2 w/ Mount Pipe		
		3	ericsson	RRUS 4449 B5/B12		
		3	ericsson	RRUS 4478 B14_CCIV2		
		3	ericsson	RRUS 8843 B2/B66A_CCIV2		
		1	raycap	DC6-48-60-18-8F		
		1	raycap	DC9-48-60-24-8C-EV_CCIV2		
	138.0	3	ericsson	AIR 6449 B77D w/ Mount Pipe		
	136.0	1	-	T-Arm Mount [TA 702-3]		

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Disclaimer provided by AT&T. This statement does not constitute engineering analysis or design

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)
132.0	132.0	1	-	Side Arm Mount [SO 102-3]	-	-
	128.0	3	alcatel lucent	1900MHZ RRH (65MHZ)		
		3	alcatel lucent	800MHZ RRH		
130.0	132.0	3	argus technologies	LLPX310R w/ Mount Pipe	2	1-5/8
	130.0	3	ericsson	AIR6449 B41_T-MOBILE w/ Mount Pipe		
		3	rfs/celwave	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe		
		3	ericsson	RADIO 4460 B2/B25 B66_TMO		
		3	ericsson	RADIO 4480 B71_TMO		
		3	-	8' HD V-Frame [VFA8-HD]		
		1	-	MP Sector Frame Attachment Assembly [MSFAA]		
119.0	119.0	3	antel	BXA-171063-8BF-EDIN-0 w/ Mount Pipe	12 1	1-5/8 1-1/4
		3	antel	BXA-70063-6CF-EDIN-0 w/ Mount Pipe		
		6	decibel	DB846F65ZAXY w/ Mount Pipe		
		3	rymsa wireless	MG D3-800TX w/ Mount Pipe		
		1	-	T-Arm Mount [TA 602-3]		
	118.0	3	alcatel lucent	RRH2X40-AWS		
110.0	110.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	10	1-5/8
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe		
		3	rfs/celwave	APXVAALL24_43-U-NA20 w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RADIO 4449 B71/B85A		
		1	-	Stabilizer Kit [PRF-SFS]		
		1	-	T-Arm Mount [TA 602-3_KCKR]		
100.0	100.0	3	jma wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	fujitsu	TA08025-B604		
		3	fujitsu	TA08025-B605		
		1	raycap	RDIDC-9181-PF-48		
		1	Commscope	MC-PK8-DSH		
75.0	77.0	1	lucent	KS24019-L112A	1	1/2
	75.0	1	-	Side Arm Mount [SO 701-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
4-GEOTECHNICAL REPORTS	2245154	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	2208511	CCISITES
4-TOWER MANUFACTURER DRAWINGS	2207700	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	4024239	CCISITES
4-POST-MODIFICATION INSPECTION	4432995	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	139.5 - 93.04	Pole	TP26.99x15.5x0.25	1	-18.91	1256.07	76.8	Pass
L2	93.04 - 46.38	Pole	TP37.91x25.5205x0.375	2	-29.84	2650.21	74.6	Pass
L3	46.38 - 0	Pole	TP48.5x35.874x0.375	3	-45.82	3518.48	84.4	Pass
							Summary	
						Pole (L3)	84.4	Pass
						Rating =	84.4	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	68.0	Pass
1	Base Plate		73.5	Pass
1	Base Foundation (Structure)	0	82.8	Pass
1	Base Foundation (Soil Interaction)		98.5	Pass
Structure Rating (max from all components) =				98.5%*

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.
- 2) *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

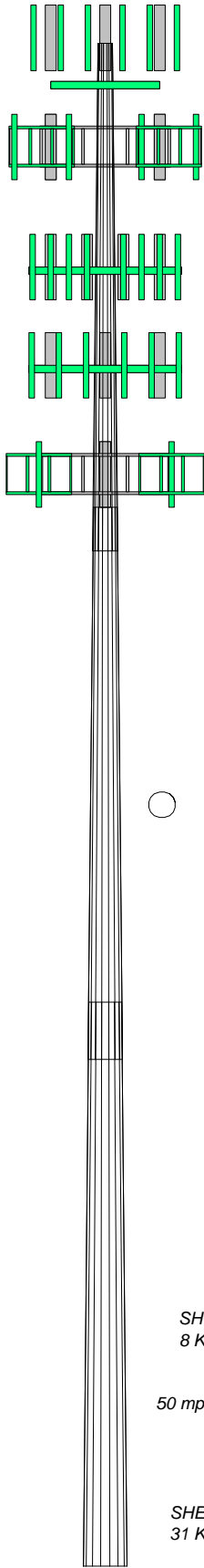
Section	1	2	3
Length (ft)	46.46	50.58	51.63
Number of Sides	18	18	18
Thickness (in)	0.2500	0.3750	0.3750
Socket Length (ft)	3.92	5.25	
Top Dia (in)	15.5000	25.5205	35.8740
Bot Dia (in)	26.9900	37.9100	48.5000
Grade		A572-65	
Weight (K)	2.6	6.4	8.7
			17.8

139.5 ft

93.0 ft

46.4 ft

0.0 ft



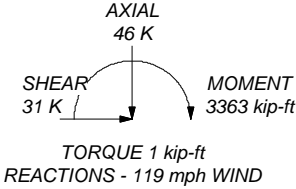
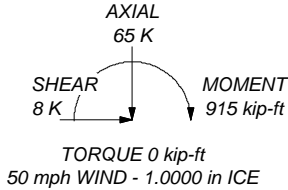
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 84.4%

ALL REACTIONS
ARE FACTORED



Consulting Engineers

Morrison Hershfield

1455 Lincoln Parkway, Suit 500

Atlanta, GA 30346

Phone: (770) 379-8500

FAX: (770) 379-8501

Job: CN9-494R2 / 2200039

Project: 881541 / Rogers Property

Client: Crown Castle USA

Drawn by: AML

App'd:

Code: TIA-222-H

Date: 01/07/22

Scale: NTS

Path:

Dwg No. E-1

C:\Users\Phum\Desktop\Jan-07\CN9-494R2\CN9-494R2 50 Analysis\CN9-494R2_BU_881541_WD_205205.dwg

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 New Haven County, Connecticut.

Tower base elevation above sea level: 91.00 ft.

Basic wind speed of 119 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.

Maximum demand-capacity ratio is: 1.05.

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

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retention Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist.
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Use TIA-222-H Tension Splice
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Exemption
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	

Poles

- √ Include Shear-Torsion Interaction
- Always Use Sub-Critical Flow
- Use Top Mounted Sockets
- Pole Without Linear Attachments
- Pole With Shroud Or No
- Appurtenances
- 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	

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	139.50-93.04	46.46	3.92	18	15.5000	26.9900	0.2500	0.3750	A572-65 (65 ksi)
L2	93.04-46.38	50.58	5.25	18	25.5205	37.9100	0.3750	0.5625	A572-65 (65 ksi)
L3	46.38-0.00	51.63		18	35.8740	48.5000	0.3750	0.5625	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	15.7198	12.1009	355.5445	5.4138	7.8740	45.1542	711.5567	6.0516	2.5080	10.032
	27.3871	21.2182	1916.7638	9.4927	13.7109	139.7983	3836.0497	10.6111	4.5302	18.121
L2	26.8603	29.9295	2390.8861	8.9267	12.9644	184.4188	4784.9182	14.9676	4.1616	11.098
	38.4659	44.6760	7952.1562	13.3249	19.2583	412.9214	15914.776	22.3423	6.3422	16.912
L3	37.7022	42.2527	6727.0539	12.6022	18.2240	369.1315	13462.959	21.1304	5.9838	15.957
	49.2193	57.2808	16760.534	17.0844	24.6380	680.2717	33543.123	28.6458	8.2060	21.883

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 139.50- 93.04				1	1	1			
L2 93.04- 46.38				1	1	1			
L3 46.38-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf

Safety Line 3/8	C	No	Surface Ar (CaAa)	139.50 - 11.00	1	1	-0.450 -0.450	0.3750		0.22
Step Pegs	C	No	Surface Ar (CaAa)	139.50 - 11.00	1	1	-0.500 -0.400	0.3500		0.45
HCS 6X12 4AWG(1- 5/8)	B	No	Surface Ar (CaAa)	110.00 - 0.00	4	4	-0.030 0.100	1.6600		2.40

CU12PSM9P6XXX(1- 1/2)	A	No	Surface Ar (CaAa)	100.00 - 0.00	1	1	-0.400 -0.400	1.6000		2.35

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	CaAa ft ² /ft	Weight plf

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
LDF7-50A(1-5/8)	B	No	No	Inside Pole	136.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
FB-L98B-002-75000(3/8)	B	No	No	Inside Pole	136.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
2" Conduit	B	No	No	Inside Pole	0.00 - 0.00	1	No Ice	0.00	2.80
							1/2" Ice	0.00	2.80
							1" Ice	0.00	2.80
*									
PWRT-606-S(7/8)	B	No	No	Inside Pole	136.00 - 0.00	3	No Ice	0.00	0.89
							1/2" Ice	0.00	0.89
							1" Ice	0.00	0.89
PWRT-608-S(13/16)	B	No	No	Inside Pole	136.00 - 0.00	2	No Ice	0.00	0.62
							1/2" Ice	0.00	0.62
							1" Ice	0.00	0.62
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	136.00 - 0.00	1	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06

HB158-21U6S24-xxM_TMO(1-5/8)	A	No	No	Inside Pole	130.00 - 0.00	2	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50

561(1-5/8)	A	No	No	Inside Pole	119.00 - 0.00	12	No Ice	0.00	1.35
							1/2" Ice	0.00	1.35
							1" Ice	0.00	1.35
LDF6-50A(1-1/4)	A	No	No	Inside Pole	119.00 - 0.00	1	No Ice	0.00	0.60
							1/2" Ice	0.00	0.60
							1" Ice	0.00	0.60

LDF7-50A(1-5/8)	B	No	No	Inside Pole	110.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82

LDF4-50A(1/2)	B	No	No	Inside Pole	75.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	139.50-93.04	A	0.000	0.000	1.114	0.000	0.64
		B	0.000	0.000	11.261	0.000	0.63
		C	0.000	0.000	3.368	0.000	0.03
L2	93.04-46.38	A	0.000	0.000	7.466	0.000	1.13
		B	0.000	0.000	30.982	0.000	1.10
		C	0.000	0.000	3.383	0.000	0.03
L3	46.38-0.00	A	0.000	0.000	7.421	0.000	1.12
		B	0.000	0.000	30.796	0.000	1.10
		C	0.000	0.000	2.565	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight K
L1	139.50-93.04	A	0.963	0.000	0.000	2.453	0.000	0.66
		B		0.000	0.000	18.158	0.000	0.76
		C		0.000	0.000	21.256	0.000	0.18
L2	93.04-46.38	A	0.915	0.000	0.000	16.448	0.000	1.27
		B		0.000	0.000	49.956	0.000	1.45
		C		0.000	0.000	21.348	0.000	0.18
L3	46.38-0.00	A	0.820	0.000	0.000	15.906	0.000	1.25
		B		0.000	0.000	49.102	0.000	1.43
		C		0.000	0.000	15.510	0.000	0.12

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	139.50-93.04	1.9484	-0.5076	2.3367	0.2559
L2	93.04-46.38	2.9489	-1.1662	2.8863	-0.2889
L3	46.38-0.00	3.0807	-1.3198	2.9357	-0.5661

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	2	Safety Line 3/8	93.04 - 139.50	1.0000	1.0000
L1	3	Step Pegs	93.04 - 139.50	1.0000	1.0000
L1	22	HCS 6X12 4AWG(1-5/8)	93.04 - 110.00	1.0000	1.0000
L1	24	CU12PSM9P6XXX(1-1/2)	93.04 - 100.00	1.0000	1.0000
L2	2	Safety Line 3/8	46.38 - 93.04	1.0000	1.0000
L2	3	Step Pegs	46.38 - 93.04	1.0000	1.0000
L2	22	HCS 6X12 4AWG(1-5/8)	46.38 - 93.04	1.0000	1.0000
L2	24	CU12PSM9P6XXX(1-1/2)	46.38 - 93.04	1.0000	1.0000
L3	2	Safety Line 3/8	11.00 - 46.38	1.0000	1.0000
L3	3	Step Pegs	11.00 - 46.38	1.0000	1.0000
L3	22	HCS 6X12 4AWG(1-5/8)	0.00 - 46.38	1.0000	1.0000
L3	24	CU12PSM9P6XXX(1-1/2)	0.00 - 46.38	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		CAAA Front ft²	CAAA Side ft²	Weight K

DC6-48-60-18-8F	B	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
6' x 2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
6' x 2" Mount Pipe	A	From Leg	3.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
T-Arm Mount [TA 702-3]	C	None		0.0000	136.00	No Ice 1/2" Ice 1" Ice	4.75 5.82 6.98	4.75 5.82 6.98	0.34 0.43 0.55
*									
DMP65R-BU6D w/ Mount Pipe	A	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.11 0.20 0.30
DMP65R-BU6D w/ Mount Pipe	B	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.11 0.20 0.30
DMP65R-BU6D w/ Mount Pipe	C	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.11 0.20 0.30
TPA65R-BU6D_CCIV2 w/ Mount Pipe	A	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.09 0.18 0.28
TPA65R-BU6D_CCIV2 w/ Mount Pipe	B	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.09 0.18 0.28
TPA65R-BU6D_CCIV2 w/ Mount Pipe	C	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	11.96 12.70 13.46	5.97 6.63 7.30	0.09 0.18 0.28
AIR 6419 B77G w/ Mount Pipe	A	From Leg	4.00 0.00 6.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	4.32 4.74 5.17	2.49 2.84 3.21	0.08 0.11 0.15
AIR 6419 B77G w/ Mount Pipe	B	From Leg	4.00 0.00 6.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	4.32 4.74 5.17	2.49 2.84 3.21	0.08 0.11 0.15
AIR 6419 B77G w/ Mount Pipe	C	From Leg	4.00 0.00 6.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	4.32 4.74 5.17	2.49 2.84 3.21	0.08 0.11 0.15

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
AIR 6449 B77D w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	3.58 3.92 4.27	2.31 2.60 2.91	0.09 0.13 0.17
AIR 6449 B77D w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	3.58 3.92 4.27	2.31 2.60 2.91	0.09 0.13 0.17
AIR 6449 B77D w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	3.58 3.92 4.27	2.31 2.60 2.91	0.09 0.13 0.17
RRUS 4449 B5/B12	A	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12	B	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4449 B5/B12	C	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RRUS 4478 B14_CCIV2	A	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4478 B14_CCIV2	B	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4478 B14_CCIV2	C	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 8843 B2/B66A_CCIV2	A	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
RRUS 8843 B2/B66A_CCIV2	B	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
RRUS 8843 B2/B66A_CCIV2	C	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.98 2.16 2.34	1.70 1.86 2.04	0.08 0.10 0.12
DC9-48-60-24-8C- EV_CCIV2	A	From Leg	4.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.74 2.96 3.20	2.74 2.96 3.20	0.02 0.04 0.07

1900MHZ RRH (65MHZ)	A	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
1900MHZ RRH (65MHZ)	B	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
1900MHZ RRH (65MHZ)	C	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
800MHZ RRH	A	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
800MHZ RRH	B	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
800MHZ RRH	C	From Leg	4.00 0.00 -4.00	0.0000	132.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
Side Arm Mount [SO 102-3]	C	None		0.0000	132.00	No Ice 1/2" Ice 1" Ice	3.60 4.18 4.75	3.60 4.18 4.75	0.07 0.11 0.14
*** *									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
APXVAALL24_43-U- NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.18 0.31 0.45
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4480 B71_TMO	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.85 3.06 3.28	1.38 1.54 1.71	0.09 0.11 0.14
RADIO 4480 B71_TMO	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.85 3.06 3.28	1.38 1.54 1.71	0.09 0.11 0.14
RADIO 4480 B71_TMO	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice	2.85 3.06 3.28	1.38 1.54 1.71	0.09 0.11 0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' HD V-Frame [VFA8-HD]	A	From Leg	2.00 0.00 0.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	11.60 16.90 20.90	9.20 14.60 19.50	0.61 0.74 0.93
8' HD V-Frame [VFA8-HD]	B	From Leg	2.00 0.00 0.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	11.60 16.90 20.90	9.20 14.60 19.50	0.61 0.74 0.93
8' HD V-Frame [VFA8-HD]	C	From Leg	2.00 0.00 0.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	11.60 16.90 20.90	9.20 14.60 19.50	0.61 0.74 0.93
MP Sector Frame Attachment Assembly [MSFAA]	C	None		0.0000	130.00	1" Ice No Ice 1/2" Ice	6.67 7.70 8.74	6.67 7.70 8.74	0.79 1.02 1.26
**						1" Ice			
LLPX310R w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	130.00	No Ice 1/2" Ice	3.88 4.29 4.72	2.36 2.73 3.12	0.06 0.09 0.13
LLPX310R w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	3.88 4.29 4.72	2.36 2.73 3.12	0.06 0.09 0.13
LLPX310R w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	130.00	1" Ice No Ice 1/2" Ice	3.88 4.29 4.72	2.36 2.73 3.12	0.06 0.09 0.13
***						1" Ice			
BXA-171063-8BF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice	2.85 3.34 3.85	3.00 3.49 4.00	0.04 0.06 0.10
BXA-171063-8BF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice 1/2" Ice	2.85 3.34 3.85	3.00 3.49 4.00	0.04 0.06 0.10
BXA-171063-8BF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice 1/2" Ice	2.85 3.34 3.85	3.00 3.49 4.00	0.04 0.06 0.10
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice 1/2" Ice	7.40 8.14 8.90	5.39 6.10 6.83	0.04 0.10 0.16
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice 1/2" Ice	7.40 8.14 8.90	5.39 6.10 6.83	0.04 0.10 0.16
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	119.00	1" Ice No Ice 1/2"	7.40 8.14	5.39 6.10	0.04 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			Ice	8.90	6.83	0.16
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice	6.10 6.80	6.81 7.52	0.06 0.12
						1/2" Ice	7.51	8.24	0.19
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice	6.10 6.80	6.81 7.52	0.06 0.12
						1/2" Ice	7.51	8.24	0.19
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice	6.10 6.80	6.81 7.52	0.06 0.12
						1/2" Ice	7.51	8.24	0.19
MG D3-800TX w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice	2.40 2.81	2.29 2.68	0.05 0.07
						1/2" Ice	3.22	3.10	0.11
MG D3-800TX w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice	2.40 2.81	2.29 2.68	0.05 0.07
						1/2" Ice	3.22	3.10	0.11
MG D3-800TX w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	1" Ice No Ice	2.40 2.81	2.29 2.68	0.05 0.07
						1/2" Ice	3.22	3.10	0.11
RRH2X40-AWS	A	From Leg	4.00 0.00 -1.00	0.0000	119.00	1" Ice No Ice	2.16 2.36	1.42 1.59	0.04 0.06
						1/2" Ice	2.57	1.77	0.08
RRH2X40-AWS	B	From Leg	4.00 0.00 -1.00	0.0000	119.00	1" Ice No Ice	2.16 2.36	1.42 1.59	0.04 0.06
						1/2" Ice	2.57	1.77	0.08
RRH2X40-AWS	C	From Leg	4.00 0.00 -1.00	0.0000	119.00	1" Ice No Ice	2.16 2.36	1.42 1.59	0.04 0.06
						1/2" Ice	2.57	1.77	0.08
T-Arm Mount [TA 602-3]	C	None		0.0000	119.00	1" Ice No Ice	13.40 16.44	13.40 16.44	0.77 1.00
						1/2" Ice	19.70	19.70	1.29
***						1" Ice			
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice	3.14 3.45 3.77	2.59 2.88 3.19	0.11 0.16 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	1" Ice No Ice 1/2" Ice	3.14 3.45 3.77	2.59 2.88 3.19	0.11 0.16 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	1" Ice No Ice 1/2" Ice	3.14 3.45 3.77	2.59 2.88 3.19	0.11 0.16 0.23
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	1" Ice No Ice 1/2" Ice	3.14 3.45 3.77	2.59 2.88 3.19	0.11 0.16 0.22
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	1" Ice No Ice 1/2" Ice	3.14 3.45 3.77	2.59 2.88 3.19	0.11 0.16 0.22
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00	0.0000	110.00	1" Ice No Ice 1/2"	3.14 3.45	2.59 2.88	0.11 0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			Ice	3.77	3.19	0.22
						1" Ice			
APXVAALL24_43-U-NA20	A	From Leg	4.00	0.0000	110.00	No Ice	14.69	6.87	0.18
w/ Mount Pipe			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.45
						1" Ice			
APXVAALL24_43-U-NA20	B	From Leg	4.00	0.0000	110.00	No Ice	14.69	6.87	0.18
w/ Mount Pipe			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.45
						1" Ice			
APXVAALL24_43-U-NA20	C	From Leg	4.00	0.0000	110.00	No Ice	14.69	6.87	0.18
w/ Mount Pipe			0.00			1/2"	15.46	7.55	0.31
			0.00			Ice	16.23	8.25	0.45
						1" Ice			
KRY 112 144/1	A	From Leg	4.00	0.0000	110.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			0.00			Ice	0.51	0.30	0.02
						1" Ice			
KRY 112 144/1	B	From Leg	4.00	0.0000	110.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			0.00			Ice	0.51	0.30	0.02
						1" Ice			
KRY 112 144/1	C	From Leg	4.00	0.0000	110.00	No Ice	0.35	0.17	0.01
			0.00			1/2"	0.43	0.23	0.01
			0.00			Ice	0.51	0.30	0.02
						1" Ice			
RADIO 4449 B71/B85A	A	From Leg	4.00	0.0000	110.00	No Ice	1.64	1.31	0.07
			0.00			1/2"	1.80	1.46	0.09
			0.00			Ice	1.97	1.61	0.11
						1" Ice			
RADIO 4449 B71/B85A	B	From Leg	4.00	0.0000	110.00	No Ice	1.64	1.31	0.07
			0.00			1/2"	1.80	1.46	0.09
			0.00			Ice	1.97	1.61	0.11
						1" Ice			
RADIO 4449 B71/B85A	C	From Leg	4.00	0.0000	110.00	No Ice	1.64	1.31	0.07
			0.00			1/2"	1.80	1.46	0.09
			0.00			Ice	1.97	1.61	0.11
						1" Ice			
8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	110.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice			
8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	110.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice			
8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	110.00	No Ice	1.90	1.90	0.03
			0.00			1/2"	2.73	2.73	0.04
			0.00			Ice	3.40	3.40	0.06
						1" Ice			
14' x 2" horizontal mount	A	From Leg	4.00	0.0000	110.00	No Ice	2.66	0.01	0.04
pipe			0.00			1/2"	4.08	0.04	0.06
			0.00			Ice	5.53	0.09	0.09
						1" Ice			
14' x 2" horizontal mount	B	From Leg	4.00	0.0000	110.00	No Ice	2.66	0.01	0.04
pipe			0.00			1/2"	4.08	0.04	0.06
			0.00			Ice	5.53	0.09	0.09
						1" Ice			
14' x 2" horizontal mount	C	From Leg	4.00	0.0000	110.00	No Ice	2.66	0.01	0.04
pipe			0.00			1/2"	4.08	0.04	0.06
			0.00			Ice	5.53	0.09	0.09
						1" Ice			
Stabilizer Kit [PRF-SFS]	A	None		0.0000	110.00	No Ice	11.84	11.84	0.59
						1/2"	16.96	16.96	0.76
						Ice	22.08	22.08	0.94

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
T-Arm Mount [TA 602-3_KCKR]	C	None		0.0000	110.00	1" Ice No Ice 1/2" Ice 1" Ice	23.41 28.72 34.48	23.41 28.72 34.48	1.05 1.42 1.90

MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
TA08025-B604	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B605	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
RDIDC-9181-PF-48	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	2.01 2.19 2.37	1.17 1.31 1.46	0.02 0.04 0.06
8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Commscope MC-PK8-DSH	C	None		0.0000	100.00	No Ice 1/2" Ice 1" Ice	34.24 62.95 91.66	34.24 62.95 91.66	1.75 2.10 2.45

KS24019-L112A	C	From Leg	3.00 0.00	0.0000	75.00	No Ice 1/2"	0.14 0.20	0.14 0.20	0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
			2.00			Ice 1" Ice 0.26	0.26	0.01
Side Arm Mount [SO 701- 1]	C	From Leg	1.50 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice 0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09

Load Combinations

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

Comb. No.	Description
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	139.5 - 93.04	Pole	Max Tension	27	0.00	0.00	-0.00
			Max. Compression	26	-35.34	-0.57	1.26
			Max. Mx	8	-18.91	-618.33	0.45
			Max. My	2	-18.91	-0.25	618.75
			Max. Vy	8	25.04	-618.33	0.45
			Max. Vx	2	-25.08	-0.25	618.75
			Max. Torque	21			-1.30
L2	93.04 - 46.38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-47.47	-1.02	1.68
			Max. Mx	8	-29.85	-1824.54	0.44
			Max. My	2	-29.84	-0.16	1826.89
			Max. Vy	8	28.17	-1824.54	0.44
			Max. Vx	2	-28.22	-0.16	1826.89
			Max. Torque	21			-1.30
L3	46.38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-65.01	-2.07	2.56
			Max. Mx	8	-45.82	-3358.47	0.28
			Max. My	2	-45.82	-0.08	3363.29
			Max. Vy	8	31.00	-3358.47	0.28
			Max. Vx	2	-31.05	-0.08	3363.29
			Max. Torque	21			-1.18

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	65.01	0.00	8.35
	Max. H _x	20	45.85	30.95	0.02
	Max. H _z	2	45.85	0.02	30.99
	Max. M _x	2	3363.29	0.02	30.99
	Max. M _z	8	3358.47	-30.95	-0.02
	Max. Torsion	9	1.17	-30.95	-0.02
	Min. Vert	7	34.39	-26.79	15.48
	Min. H _x	8	45.85	-30.95	-0.02
	Min. H _z	14	45.85	-0.02	-30.99
	Min. M _x	14	-3360.31	-0.02	-30.99
	Min. M _z	20	-3355.94	30.95	0.02
	Min. Torsion	21	-1.17	30.95	0.02

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	38.21	0.00	0.00	-1.17	-1.00	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	45.85	-0.02	-30.99	-3363.29	-0.08	-0.03
0.9 Dead+1.0 Wind 0 deg -	34.39	-0.02	-30.99	-3304.23	0.24	-0.02

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
No Ice						
1.2 Dead+1.0 Wind 30 deg - No Ice	45.85	15.46	-26.83	-2912.30	-1678.85	-0.60
0.9 Dead+1.0 Wind 30 deg - No Ice	34.39	15.46	-26.83	-2861.11	-1649.23	-0.61
1.2 Dead+1.0 Wind 60 deg - No Ice	45.85	26.79	-15.48	-1681.35	-2908.11	-1.02
0.9 Dead+1.0 Wind 60 deg - No Ice	34.39	26.79	-15.48	-1651.64	-2857.03	-1.03
1.2 Dead+1.0 Wind 90 deg - No Ice	45.85	30.95	0.02	-0.28	-3358.47	-1.16
0.9 Dead+1.0 Wind 90 deg - No Ice	34.39	30.95	0.02	0.10	-3299.55	-1.17
1.2 Dead+1.0 Wind 120 deg - No Ice	45.85	26.81	15.51	1680.46	-2909.28	-0.99
0.9 Dead+1.0 Wind 120 deg - No Ice	34.39	26.81	15.51	1651.51	-2858.19	-1.00
1.2 Dead+1.0 Wind 150 deg - No Ice	45.85	15.49	26.85	2910.52	-1680.89	-0.56
0.9 Dead+1.0 Wind 150 deg - No Ice	34.39	15.49	26.85	2860.10	-1651.24	-0.57
1.2 Dead+1.0 Wind 180 deg - No Ice	45.85	0.02	30.99	3360.31	-2.46	0.03
0.9 Dead+1.0 Wind 180 deg - No Ice	34.39	0.02	30.99	3302.05	-2.11	0.02
1.2 Dead+1.0 Wind 210 deg - No Ice	45.85	-15.46	26.83	2909.35	1676.29	0.60
0.9 Dead+1.0 Wind 210 deg - No Ice	34.39	-15.46	26.83	2858.94	1647.34	0.61
1.2 Dead+1.0 Wind 240 deg - No Ice	45.85	-26.79	15.48	1678.42	2905.56	1.02
0.9 Dead+1.0 Wind 240 deg - No Ice	34.39	-26.79	15.48	1649.48	2855.15	1.03
1.2 Dead+1.0 Wind 270 deg - No Ice	45.85	-30.95	-0.02	-2.66	3355.94	1.16
0.9 Dead+1.0 Wind 270 deg - No Ice	34.39	-30.95	-0.02	-2.25	3297.68	1.17
1.2 Dead+1.0 Wind 300 deg - No Ice	45.85	-26.81	-15.51	-1683.41	2906.76	0.99
0.9 Dead+1.0 Wind 300 deg - No Ice	34.39	-26.81	-15.51	-1653.68	2856.34	1.00
1.2 Dead+1.0 Wind 330 deg - No Ice	45.85	-15.49	-26.85	-2913.49	1678.37	0.56
0.9 Dead+1.0 Wind 330 deg - No Ice	34.39	-15.49	-26.85	-2862.29	1649.38	0.57
1.2 Dead+1.0 Ice+1.0 Temp	65.01	0.00	-0.00	-2.56	-2.07	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	65.01	-0.00	-8.35	-914.59	-1.78	-0.01
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	65.01	4.16	-7.23	-792.22	-457.22	-0.14
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	65.01	7.22	-4.17	-458.30	-790.74	-0.23
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	65.01	8.34	0.00	-2.31	-912.96	-0.26
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	65.01	7.22	4.18	453.58	-791.14	-0.22
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	65.01	4.17	7.23	787.21	-457.92	-0.12
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	65.01	0.00	8.35	909.17	-2.58	0.01
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	65.01	-4.16	7.23	786.81	452.86	0.14
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	65.01	-7.22	4.17	452.89	786.38	0.23
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	65.01	-8.34	-0.00	-3.11	908.60	0.26
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	65.01	-7.22	-4.18	-459.00	786.78	0.22
1.2 Dead+1.0 Wind 330	65.01	-4.17	-7.23	-792.63	453.56	0.12

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
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	38.21	-0.00	-7.42	-799.47	-0.77	-0.00
Dead+Wind 30 deg - Service	38.21	3.70	-6.43	-692.40	-399.38	-0.14
Dead+Wind 60 deg - Service	38.21	6.42	-3.71	-400.12	-691.26	-0.25
Dead+Wind 90 deg - Service	38.21	7.41	0.00	-0.96	-798.19	-0.29
Dead+Wind 120 deg - Service	38.21	6.42	3.71	398.13	-691.55	-0.25
Dead+Wind 150 deg - Service	38.21	3.71	6.43	690.20	-399.87	-0.14
Dead+Wind 180 deg - Service	38.21	0.00	7.42	796.99	-1.34	0.00
Dead+Wind 210 deg - Service	38.21	-3.70	6.43	689.92	397.28	0.14
Dead+Wind 240 deg - Service	38.21	-6.42	3.71	397.64	689.16	0.25
Dead+Wind 270 deg - Service	38.21	-7.41	-0.00	-1.52	796.08	0.29
Dead+Wind 300 deg - Service	38.21	-6.42	-3.71	-400.61	689.44	0.25
Dead+Wind 330 deg - Service	38.21	-3.71	-6.43	-692.68	397.77	0.14

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-38.21	0.00	0.00	38.21	0.00	0.000%
2	-0.02	-45.85	-30.99	0.02	45.85	30.99	0.000%
3	-0.02	-34.39	-30.99	0.02	34.39	30.99	0.000%
4	15.46	-45.85	-26.83	-15.46	45.85	26.83	0.000%
5	15.46	-34.39	-26.83	-15.46	34.39	26.83	0.000%
6	26.79	-45.85	-15.48	-26.79	45.85	15.48	0.000%
7	26.79	-34.39	-15.48	-26.79	34.39	15.48	0.000%
8	30.95	-45.85	0.02	-30.95	45.85	-0.02	0.000%
9	30.95	-34.39	0.02	-30.95	34.39	-0.02	0.000%
10	26.81	-45.85	15.51	-26.81	45.85	-15.51	0.000%
11	26.81	-34.39	15.51	-26.81	34.39	-15.51	0.000%
12	15.49	-45.85	26.85	-15.49	45.85	-26.85	0.000%
13	15.49	-34.39	26.85	-15.49	34.39	-26.85	0.000%
14	0.02	-45.85	30.99	-0.02	45.85	-30.99	0.000%
15	0.02	-34.39	30.99	-0.02	34.39	-30.99	0.000%
16	-15.46	-45.85	26.83	15.46	45.85	-26.83	0.000%
17	-15.46	-34.39	26.83	15.46	34.39	-26.83	0.000%
18	-26.79	-45.85	15.48	26.79	45.85	-15.48	0.000%
19	-26.79	-34.39	15.48	26.79	34.39	-15.48	0.000%
20	-30.95	-45.85	-0.02	30.95	45.85	0.02	0.000%
21	-30.95	-34.39	-0.02	30.95	34.39	0.02	0.000%
22	-26.81	-45.85	-15.51	26.81	45.85	15.51	0.000%
23	-26.81	-34.39	-15.51	26.81	34.39	15.51	0.000%
24	-15.49	-45.85	-26.85	15.49	45.85	26.85	0.000%
25	-15.49	-34.39	-26.85	15.49	34.39	26.85	0.000%
26	0.00	-65.01	0.00	-0.00	65.01	0.00	0.000%
27	-0.00	-65.01	-8.35	0.00	65.01	8.35	0.000%
28	4.16	-65.01	-7.23	-4.16	65.01	7.23	0.000%
29	7.22	-65.01	-4.17	-7.22	65.01	4.17	0.000%
30	8.34	-65.01	0.00	-8.34	65.01	-0.00	0.000%
31	7.22	-65.01	4.18	-7.22	65.01	-4.18	0.000%
32	4.17	-65.01	7.23	-4.17	65.01	-7.23	0.000%
33	0.00	-65.01	8.35	-0.00	65.01	-8.35	0.000%
34	-4.16	-65.01	7.23	4.16	65.01	-7.23	0.000%
35	-7.22	-65.01	4.17	7.22	65.01	-4.17	0.000%
36	-8.34	-65.01	-0.00	8.34	65.01	0.00	0.000%
37	-7.22	-65.01	-4.18	7.22	65.01	4.18	0.000%
38	-4.17	-65.01	-7.23	4.17	65.01	7.23	0.000%
39	-0.00	-38.21	-7.42	0.00	38.21	7.42	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
40	3.70	-38.21	-6.43	-3.70	38.21	6.43	0.000%
41	6.42	-38.21	-3.71	-6.42	38.21	3.71	0.000%
42	7.41	-38.21	0.00	-7.41	38.21	-0.00	0.000%
43	6.42	-38.21	3.71	-6.42	38.21	-3.71	0.000%
44	3.71	-38.21	6.43	-3.71	38.21	-6.43	0.000%
45	0.00	-38.21	7.42	-0.00	38.21	-7.42	0.000%
46	-3.70	-38.21	6.43	3.70	38.21	-6.43	0.000%
47	-6.42	-38.21	3.71	6.42	38.21	-3.71	0.000%
48	-7.41	-38.21	-0.00	7.41	38.21	0.00	0.000%
49	-6.42	-38.21	-3.71	6.42	38.21	3.71	0.000%
50	-3.71	-38.21	-6.43	3.71	38.21	6.43	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	0.00002184
3	Yes	5	0.00000001	0.00001027
4	Yes	6	0.00000001	0.00034359
5	Yes	6	0.00000001	0.00010139
6	Yes	6	0.00000001	0.00035143
7	Yes	6	0.00000001	0.00010421
8	Yes	5	0.00000001	0.00013071
9	Yes	5	0.00000001	0.00005948
10	Yes	6	0.00000001	0.00034093
11	Yes	6	0.00000001	0.00010049
12	Yes	6	0.00000001	0.00034953
13	Yes	6	0.00000001	0.00010356
14	Yes	5	0.00000001	0.00002468
15	Yes	5	0.00000001	0.00001137
16	Yes	6	0.00000001	0.00034837
17	Yes	6	0.00000001	0.00010324
18	Yes	6	0.00000001	0.00034079
19	Yes	6	0.00000001	0.00010053
20	Yes	5	0.00000001	0.00013672
21	Yes	5	0.00000001	0.00006212
22	Yes	6	0.00000001	0.00035178
23	Yes	6	0.00000001	0.00010435
24	Yes	6	0.00000001	0.00034293
25	Yes	6	0.00000001	0.00010117
26	Yes	4	0.00000001	0.00001714
27	Yes	5	0.00000001	0.00050712
28	Yes	5	0.00000001	0.00085696
29	Yes	5	0.00000001	0.00086723
30	Yes	5	0.00000001	0.00050711
31	Yes	5	0.00000001	0.00084337
32	Yes	5	0.00000001	0.00085639
33	Yes	5	0.00000001	0.00050289
34	Yes	5	0.00000001	0.00084755
35	Yes	5	0.00000001	0.00083759
36	Yes	5	0.00000001	0.00050457
37	Yes	5	0.00000001	0.00086308
38	Yes	5	0.00000001	0.00084989
39	Yes	4	0.00000001	0.00021734
40	Yes	5	0.00000001	0.00008286
41	Yes	5	0.00000001	0.00008830
42	Yes	4	0.00000001	0.00024799
43	Yes	5	0.00000001	0.00008041
44	Yes	5	0.00000001	0.00008653
45	Yes	4	0.00000001	0.00021584
46	Yes	5	0.00000001	0.00008532
47	Yes	5	0.00000001	0.00008018
48	Yes	4	0.00000001	0.00024757
49	Yes	5	0.00000001	0.00008833

50 Yes 5 0.00000001 0.00008193

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	139.5 - 93.04	32.847	39	2.1703	0.0062
L2	96.96 - 46.38	15.390	39	1.5698	0.0016
L3	51.63 - 0	4.183	39	0.7706	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
136.00	DC6-48-60-18-8F	39	31.299	2.1246	0.0057	22656
132.00	1900MHZ RRH (65MHZ)	39	29.537	2.0722	0.0052	15104
130.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	39	28.660	2.0458	0.0050	11924
119.00	BXA-171063-8BF-EDIN-0 w/ Mount Pipe	39	23.931	1.8977	0.0037	5525
110.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	39	20.251	1.7702	0.0027	3838
100.00	MX08FRO665-21 w/ Mount Pipe	39	16.463	1.6185	0.0019	2870
75.00	KS24019-L112A	39	8.856	1.1871	0.0007	2787

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	139.5 - 93.04	138.035	2	9.1275	0.0257
L2	96.96 - 46.38	64.777	2	6.6152	0.0068
L3	51.63 - 0	17.610	2	3.2464	0.0020

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
136.00	DC6-48-60-18-8F	2	131.544	8.9369	0.0239	5618
132.00	1900MHZ RRH (65MHZ)	2	124.150	8.7182	0.0218	3744
130.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	2	120.471	8.6082	0.0207	2955
119.00	BXA-171063-8BF-EDIN-0 w/ Mount Pipe	2	100.631	7.9895	0.0153	1366
110.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	2	85.189	7.4560	0.0113	946
100.00	MX08FRO665-21 w/ Mount Pipe	2	69.285	6.8199	0.0077	704
75.00	KS24019-L112A	2	37.298	5.0034	0.0030	672

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	139.5 - 93.04 (1)	TP26.99x15.5x0.25	46.46	0.00	0.0	20.448 9	-18.91	1196.26	0.016
L2	93.04 - 46.38 (2)	TP37.91x25.5205x0.375	50.58	0.00	0.0	43.145 4	-29.84	2524.01	0.012
L3	46.38 - 0 (3)	TP48.5x35.874x0.375	51.63	0.00	0.0	57.280 8	-45.82	3350.93	0.014

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	139.5 - 93.04 (1)	TP26.99x15.5x0.25	618.77	787.46	0.786	0.00	787.46	0.000
L2	93.04 - 46.38 (2)	TP37.91x25.5205x0.375	1826.89	2373.92	0.770	0.00	2373.92	0.000
L3	46.38 - 0 (3)	TP48.5x35.874x0.375	3363.28	3860.34	0.871	0.00	3860.34	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	139.5 - 93.04 (1)	TP26.99x15.5x0.25	25.07	358.88	0.070	0.50	809.94	0.001
L2	93.04 - 46.38 (2)	TP37.91x25.5205x0.375	28.22	745.43	0.038	0.03	2403.74	0.000
L3	46.38 - 0 (3)	TP48.5x35.874x0.375	31.05	992.81	0.031	0.03	4236.79	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	139.5 - 93.04 (1)	0.016	0.786	0.000	0.070	0.001	0.807	1.050	4.8.2
L2	93.04 - 46.38 (2)	0.012	0.770	0.000	0.038	0.000	0.783	1.050	4.8.2
L3	46.38 - 0 (3)	0.014	0.871	0.000	0.031	0.000	0.886	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	φP _{allow} K	% Capacity	Pass Fail
L1	139.5 - 93.04	Pole	TP26.99x15.5x0.25	1	-18.91	1256.07	76.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L2	93.04 - 46.38	Pole	TP37.91x25.5205x0.375	2	-29.84	2650.21	74.6	Pass
L3	46.38 - 0	Pole	TP48.5x35.874x0.375	3	-45.82	3518.48	84.4	Pass
							Summary	
							Pole (L3)	84.4 Pass
							RATING =	84.4 Pass

APPENDIX B

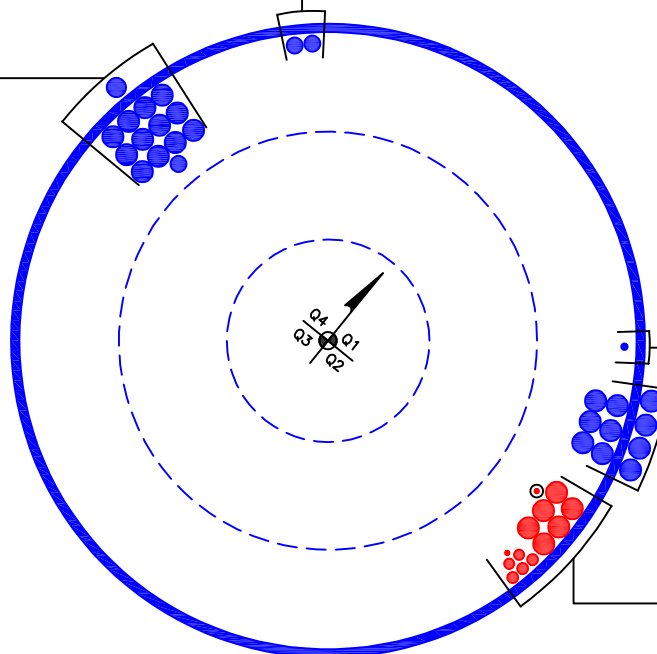
BASE LEVEL DRAWING



(OTHER CONSIDERED EQUIPMENT)
(2) 1-5/8" TO 130 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/2" TO 100 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/4" TO 119 FT LEVEL
(12) 1-5/8" TO 119 FT LEVEL



(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 75 FT LEVEL

(OTHER CONSIDERED EQUIPMENT)
(10) 1-5/8" TO 110 FT LEVEL

(PROPOSED EQUIPMENT CONFIGURATION--IN CONDUIT)
(1) 3/8" TO 136 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 3/8" TO 136 FT LEVEL
(2) 13/16" TO 136 FT LEVEL
(3) 7/8" TO 136 FT LEVEL
(6) 1-5/8" TO 136 FT LEVEL

SAFETY CLIMB

APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

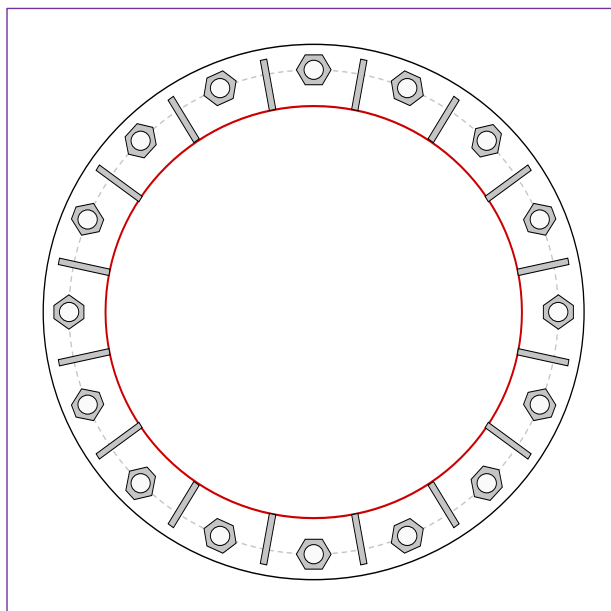


Site Info	
BU #	881541
Site Name	Rogers Property
Order #	586311 Rev 1

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
I_{ar} (in)	2.625

Applied Loads	
Moment (kip-ft)	3363.29
Axial Force (kips)	45.82
Shear Force (kips)	31.05

*TIA-222-H Section 15.5 Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(16) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 57" BC		$Pu_t = 174.04$	$\phi Pn_t = 243.75$ Stress Rating
		$Vu = 1.94$	$\phi Vn = 149.1$ 68.0%
		$Mu = 3.31$	$\phi Mn = 128.14$ Pass
Base Plate Data		Base Plate Summary	
63" OD x 2" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi)		Max Stress (ksi):	31 (Roark's Flexural)
		Allowable Stress (ksi):	54
		Stress Rating:	54.7% Pass
Stiffener Data		Stiffener Summary	
(16) 15"H x 6"W x 0.75"T, Notch: 0.75"		Horizontal Weld:	66.9% Pass
plate: $F_y=50$ ksi ; weld: $F_y=70$ ksi		Vertical Weld:	62.1% Pass
horiz. weld: 0.375" groove, 45° dbl bevel, 0.3125" fillet		Plate Flexure+Shear:	24.8% Pass
vert. weld: 0.3125" fillet		Plate Tension+Shear:	67.7% Pass
		Plate Compression:	73.5% Pass
Pole Data		Pole Summary	
48.5" x 0.375" 18-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)		Punching Shear:	16.0% Pass

Drilled Pier Foundation

BU # :	881541
Site Name:	Rogers Propety
Order Number:	586311 Rev 1
TIA-222 Revision:	H
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	3363.29	
Axial Force (kips)	45.85	
Shear Force (kips)	30.99	

Material Properties		
Concrete Strength, f _c :	4	ksi
Rebar Strength, F _y :	60	ksi
Tie Yield Strength, F _y :	60	ksi

Pier Design Data		
Depth	20	ft
Ext. Above Grade	1	ft
Pier Section 1		
From 1' above grade to 20' below grade		
Pier Diameter	6.5	ft
Rebar Quantity	22	
Rebar Size	11	
Rebar Cage Diameter	67	in
Tie Size	5	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check		
D _{v=0} (ft from TOC)	5.63	-
Soil Safety Factor	1.29	-
Max Moment (kip-ft)	3597.79	-
Rating*	98.5%	-
Soil Vertical Check		
Skin Friction (kips)	298.12	-
End Bearing (kips)	995.49	-
Weight of Concrete (kips)	93.11	-
Total Capacity (kips)	1293.62	-
Axial (kips)	138.96	-
Rating*	10.2%	-
Reinforced Concrete Flexure		
Critical Depth (ft from TOC)	5.48	-
Critical Moment (kip-ft)	3597.44	-
Critical Moment Capacity	5059.03	-
Rating*	67.7%	-
Reinforced Concrete Shear		
Critical Depth (ft from TOC)	14.86	-
Critical Shear (kip)	493.03	-
Critical Shear Capacity	566.97	-
Rating*	82.8%	-
Structural Foundation Rating*	82.8%	
Soil Interaction Rating*	98.5%	

*Rating per TIA-222-H Section 15.5



Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
N/A	<input type="checkbox"/>
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	<input type="checkbox"/>
Shear Design Options	
Check Shear along Depth of Pier:	<input checked="" type="checkbox"/>
Utilize Shear-Friction Methodology:	<input type="checkbox"/>
Override Critical Depth:	<input type="checkbox"/>

[Go to Soil Calculations](#)

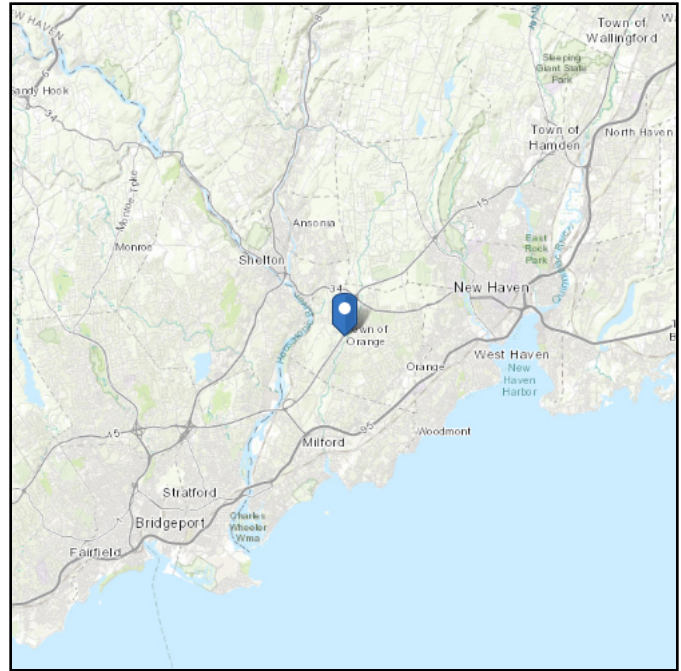
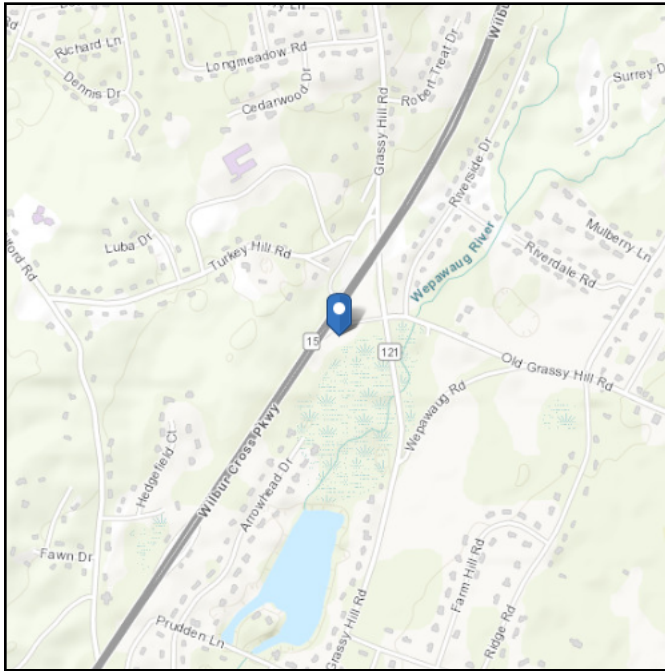
Soil Profile														
Groundwater Depth		7	# of Layers		3									
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	Y _{soil} (pcf)	Y _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	125	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	7	3.5	125	150	0	34	0.781	0.781				28	Cohesionless
3	7	20	13	62.6	87.6	0	34	1.287	1.287			40	50	Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 91.22 ft (NAVD 88)
Latitude: 41.285486
Longitude: -73.042575



Wind

Results:

The State will allow ASCE 7-16 wind speeds to be utilized

Wind Speed	119 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Jan 07 2022

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

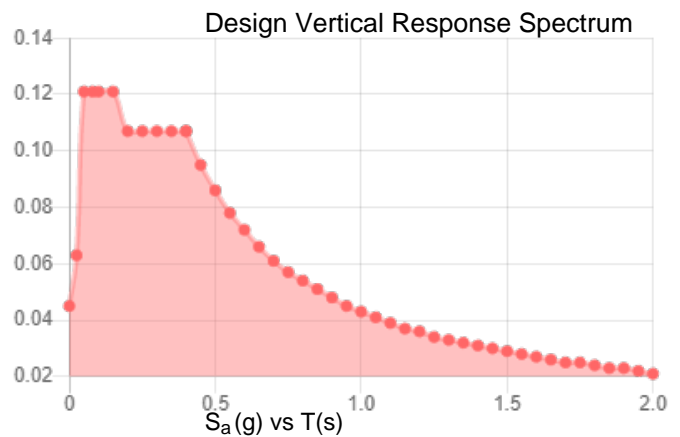
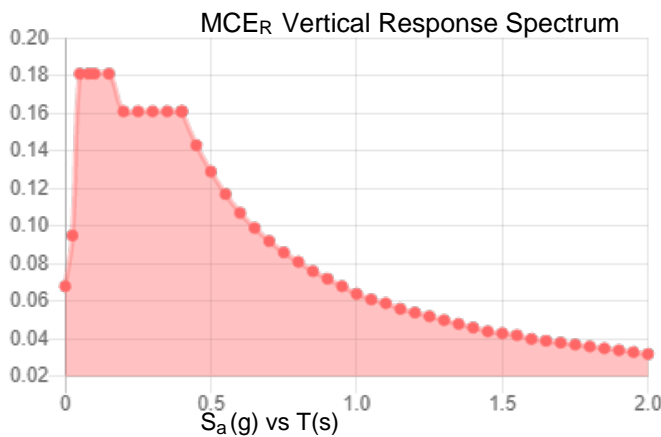
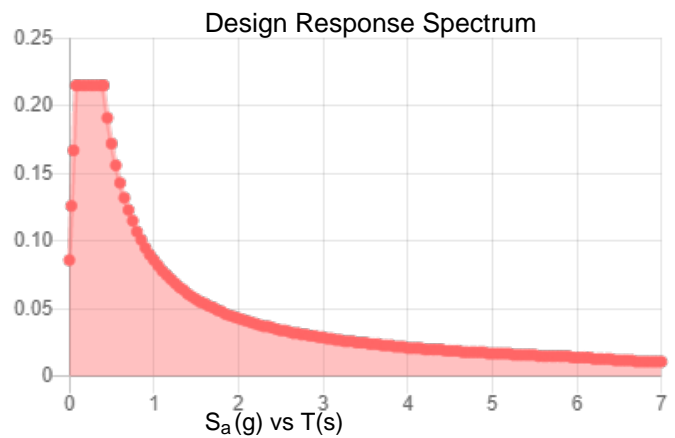
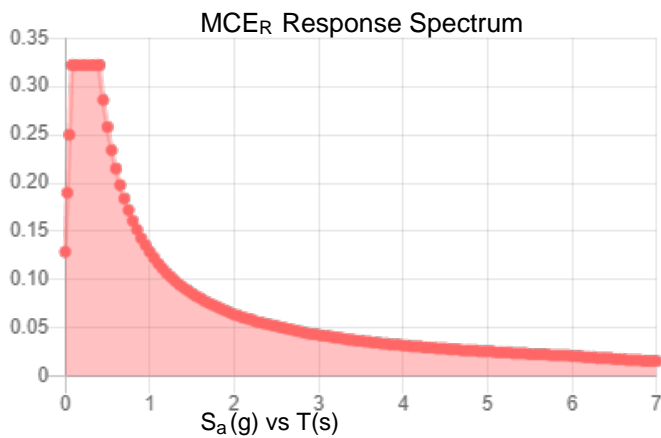
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.202	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA _M :	0.178
S_{MS} :	0.322	F_{PGA} :	1.574
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.215	C_v :	0.703

Seismic Design Category B



Data Accessed: Fri Jan 07 2022

Date Source:

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

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Fri Jan 07 2022

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

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

The ASCE 7 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 7 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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December 28, 2021

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Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
CrownMA@tepgroup.net

Subject: Mount Analysis

Carrier Designation:

AT&T Mobility Reconfiguration

Client Site Number:

CTL03159

Client Site Name:

Orange NW

FA Location Code:

10091761

Crown Castle Designation:

Crown Castle BU Number:

881541

Crown Castle Site Name:

Rogers Property

Crown Castle JDE Job Number:

686304

Crown Castle Order Number:

586311 Rev. 1

Engineering Firm Designation:

TEP Project Number:

25577.636120

Site Data:

700 Grassy Hill Road, Orange, New Haven County, CT 06477

Latitude 41° 17' 07.75", Longitude -73° 02' 33.27"

Structure Information:

Tower Height & Type:

139.5± ft Monopole

Mount Elevation:

136.0 ft

Mount Width & Type:

6.0 ft T-Arm Mount

Tower Engineering Professionals is pleased to submit this "**Mount Analysis**" to determine the structural integrity of AT&T Mobility's antenna mounting system with proposed appurtenance and equipment addition on the above mentioned 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:

T-Arm Mount

Sufficient Capacity

The analysis has been performed in accordance with the 2018 International Building Code based upon an ultimate 3-second gust wind speed of 119 mph. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Jordan Marks / WHW

Respectfully submitted by:

Aaron T. Rucker, P.E.
Structural Division Manager
919-661-6351
arucker@tepgroup.net



Electronic Copy

12/28/2021

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1) INTRODUCTION

The mount is an existing 6.0-ft T-Arm mount, mapped by Tower Engineering Professionals. The mount is installed at the 136.0 ft elevation on the 139.5± ft Monopole.

2) ANALYSIS CRITERIA

Building Code:	2018 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	119 mph
Exposure Category:	C
Topographic Category at Base:	1.0
Topographic Category at Mount:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Seismic Design Category:	B
Seismic S_s:	0.202
Seismic S₁:	0.054
Live Loading Wind Speed:	30 mph
Live Loading at Mid/End-Points:	250 lb
Man Live Loading 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
136.0	142.0	3	Ericsson	AIR 6419 B77G	(3) T-Arm Mounts
	140.0	3	CCI Antennas	DMP65R-BU6D	
		3	CCI Antennas	TPA65R-BU6D_CCIV2	
		3	Ericsson	RRUS 4449 B5/B12	
		3	Ericsson	RRUS 4478 B14_CCIV2	
		3	Ericsson	RRUS 8843 B2/B66A_CCIV2	
		1	Raycap	DC6-48-60-18-8F	
		1	Raycap	DC9-48-60-24-8C-EV_CCIV2	
	138.0	3	Ericsson	AIR 6449 B77D	

3) ANALYSIS PROCEDURE**Table 2 - Documents Provided**

Document	Remarks	Reference	Source
Mount Mapping	Tower Engineering Professionals	10019709	CCIsites
RFDS	AT&T Mobility	RFDS ID: 4783591	CCIsites
Loading Application	AT&T Mobility	Order 586311 Rev. 1	CCIsites

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 mount and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A and Appendix C.

TEP Mount Analysis Tool, a tool internally developed by TEP using Microsoft Excel, was used to calculate member loading 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 D)*.

In addition, this analysis is in accordance with AT&T's *Mount Technical Guidance – Revision 16*.

3.2) Assumptions

- 1) The mount was built in accordance with the manufacturer's specifications.
- 2) The mount has been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, mounts and other appurtenances are as specified in Table 1. All mount components have been assumed to be in sufficient condition to carry their full design capacity for this analysis. Refer to the issued mapping for any structural and/or maintenance issues found during our site visit if applicable.
- 4) All mount components are in sufficient condition to carry their full design capacity.
- 5) TEP did not analyze the collar mount connection to the pole and assumes it to have sufficient structural capacity to transfer the applied forces from the mount to the tower.
- 6) All material grades used for this analysis, unless verified by mount manufacturer design, were assumed per AISC Table 2-4, 15th Edition. See RISA-3D output for confirmation on grades used in this analysis.
- 7) This analysis report is not a construction document.

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

4) ANALYSIS RESULTS**Table 3 - Mount Component Stresses vs. Capacity (T-Arm Mount)³**

Notes	Component	Critical Member	Mount Centerline (ft)	% Capacity	Pass / Fail
1	Face Horizontals	FF-TH	136.0	53.8	Pass
1	Support Horizontals	SF1-TH	136.0	58.2	Pass
1	Mount Pipes	M15	136.0	98.3	Pass
2	Connection Bolts	-	136.0	32.5	Pass
2	Connection Plate	-	136.0	50.1	Pass

Structure Rating (max from all components) =	98.3%
---	--------------

Notes:

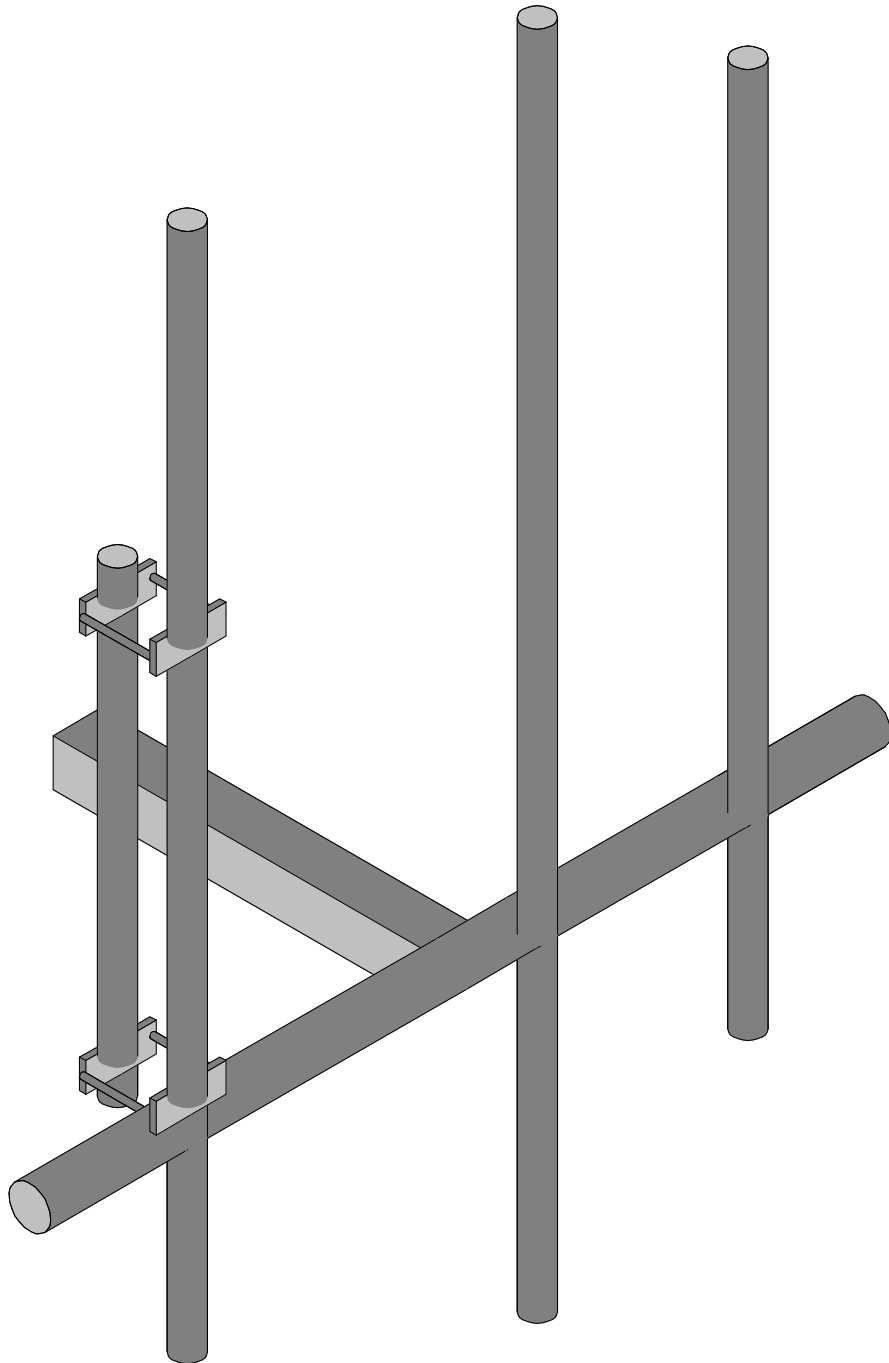
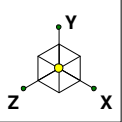
- 1) See additional documentation in "Appendix C - Analysis Output" for calculations supporting the % capacity listed.
- 2) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity listed.
- 3) All sectors are typical.

4.1) Recommendations

- 1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The mount and its connection have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

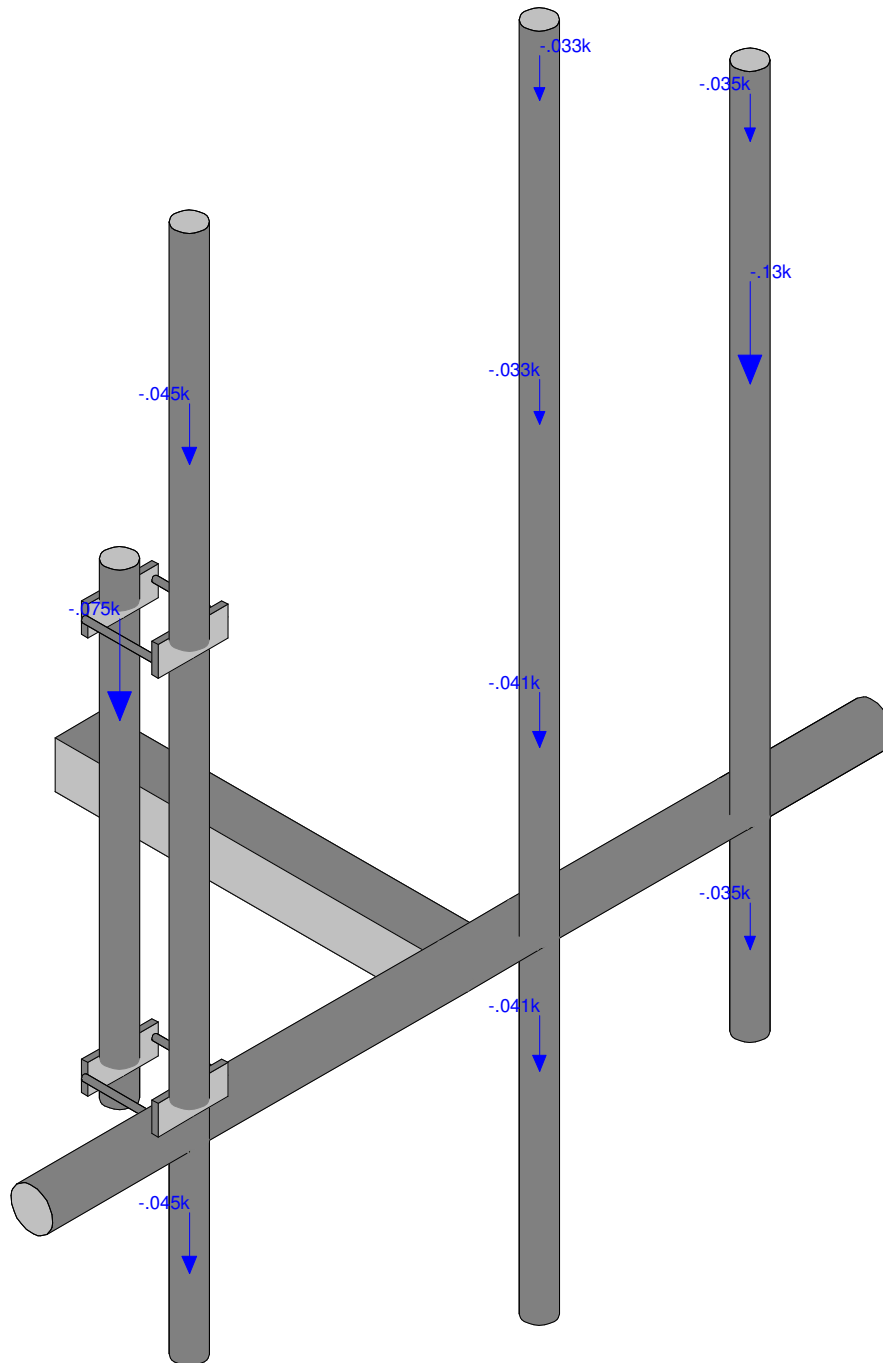
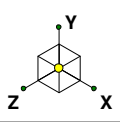
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Tower Engineering Profess...	Rogers Property (881541)	SK - 1
JCM		Dec 28, 2021 at 4:00 PM
TEP No. 25577.636120		T-Arm Mount.r3d



Loads: BLC 1, Dead
Envelope Only Solution

Tower Engineering Profess...

JCM

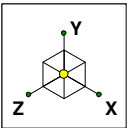
TEP No. 25577.636120

Rogers Property (881541)

SK - 2

Dec 28, 2021 at 4:00 PM

T-Arm Mount.r3d



Code Check
(Env)

No Calc

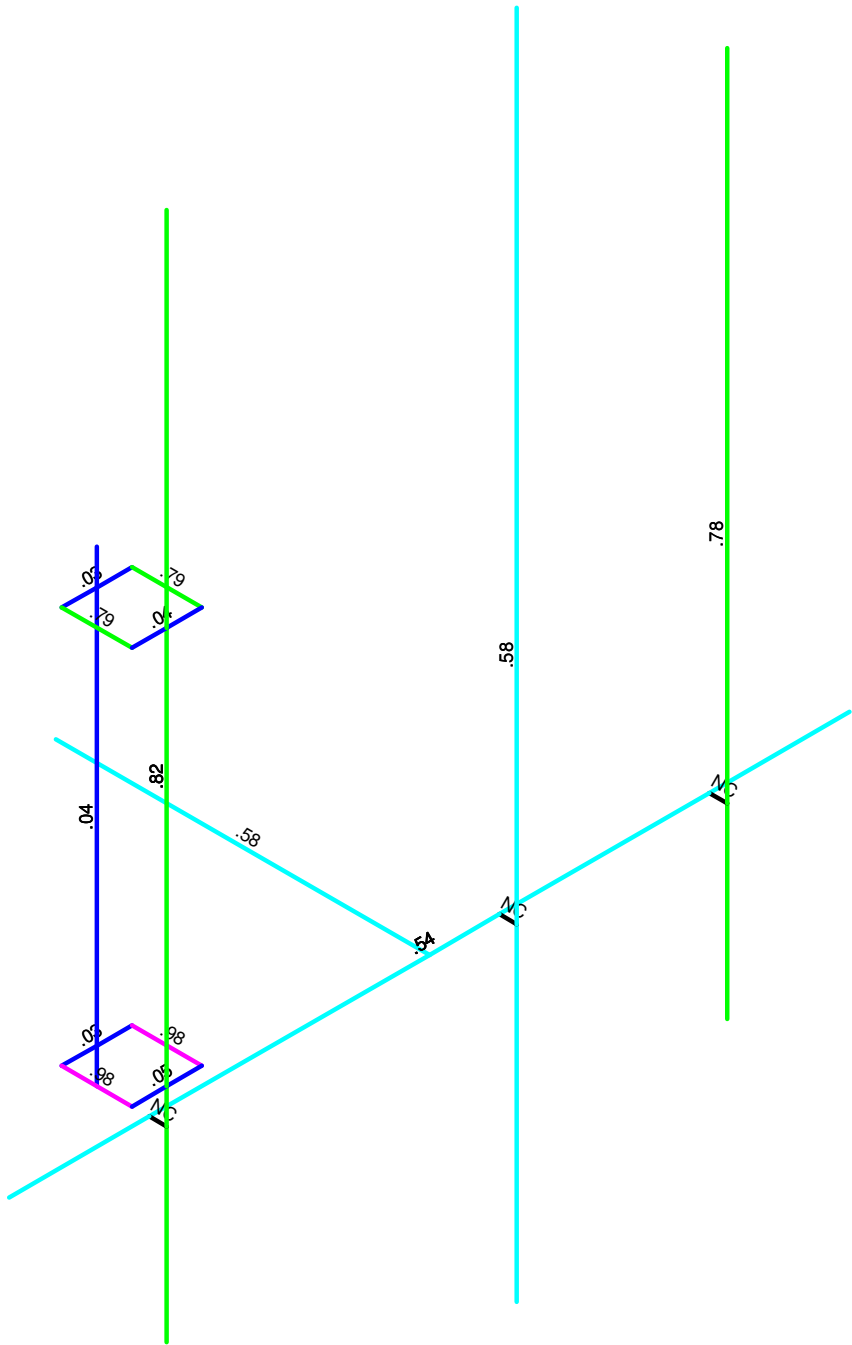
> 1.0

.90-1.0

.75-.90

.50-.75

0-.50



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tower Engineering Profess...	Rogers Property (881541)	SK - 3
JCM		Dec 28, 2021 at 4:00 PM
TEP No. 25577.636120		T-Arm Mount.r3d

APPENDIX B

SOFTWARE INPUT CALCULATIONS



Rogers Property (881541)

TEP No. 25577.636120

Analysis By: JCM 12/28/2021

Checked By: WHW 12/28/2021

Code Revisions:	TIA-222-H	IBC 2018
Tower Type:	Monopole	

Wind Inputs:

Ult. Wind Velocity:	119.0	mph
Live Load Velocity:	30.0	mph
Ice Wind Velocity:	50.0	mph
Base Ice Thickness:	1.00	inches
Mount Centerline:	136.0	ft
Antenna Centerline:	140.0	ft
Exposure Category:	C	
Topo Category:	1	
Risk Category:	II	
Ground Elevation:	91	ft

Wind Calculations:

K_{zt} :	1.000	Section 2.6.6
K_d :	0.950	
$K_{z-Mount}$:	1.350	Section 2.6.5.2
$K_{z-Antenna}$:	1.359	Section 2.6.5.2
K_{iz} :	1.154	Section 2.6.10
Ice Thickness:	1.154	inches - Section 2.6.10

Without Ice - (psf)	With Ice - (psf)
$(q_z G_h)_{Mount}$: 46.35	$(q_z G_h)_{Mount}$: 8.18
$(q_z G_h)_{Antenna}$: 46.63	$(q_z G_h)_{Antenna}$: 8.23

Seismic Code Revisions:	TIA-222-H
Seismic Risk Category:	II

Seismic Input

S_{DS} :	0.215	Design Short Period Spectral Accel.
I_p :	1.0	Importance Factor
R_p :	2.0	Response Modification Factor
ρ :	1.0	
A_s :	1.0	Applification Factor - TIA-222-H Section 2.7.8.1
S_1 :	0.054	Spectral Acceleration at a Period of 1 Second

Seismic Design Force

Cs:	0.108	kips/kip	TIA-H Sec 2.7.7.1.1
Cs-min:	0.030	kips/kip	TIA-H Sec 2.7.7.1.1



Rogers Property (881541)
 TEP No. 25577.636120
 Analysis By: JCM 12/28/2021
 Checked By: WHW 12/28/2021

Antenna Loads are Calculated in Accordance with TIA-222-H

Azimuth is the absolute angle measured clockwise from RISA-3D global X-axis.

MFR	Model	Height (in)	Width (in)	Depth (in)	Wt. (lbs)	Azimuth°	Qty	Shape	Member Label	Distance from start node of the member		
										Location #1 (ft,%)	Location #2 (ft,%)	Location #3 (ft,%)
CCI ANTENNAS	DMP65R-BU6D	71.20	20.70	7.70	89.30	0.00	1	Flat	MP-3	1.50	6.50	
CCI ANTENNAS	TPA65R-BU6D_CCIV2	71.20	20.70	7.70	69.00	0.00	1	Flat	MP-1	0.50	5.50	
ERICSSON	AIR 6419 B77G	27.95	15.75	6.68	66.20	0.00	1	Flat	MP-2	0.50	2.50	
ERICSSON	AIR 6449 B77D	30.39	15.87	8.07	81.60	0.00	1	Flat	MP-2	4.50	6.50	
ERICSSON	RRUS 4449 B5/B12	17.90	13.19	9.44	71.00	90.00	1	Flat	MP-1	2.00		
ERICSSON	RRUS 4478 B14_CCIV2	18.10	13.40	8.26	59.40	90.00	1	Flat	MP-1	2.00		
ERICSSON	RRUS 8843 B2/B66A_CCIV2	18.00	13.20	11.30	75.00	0.00	1	Flat	MP-4	1.00		



Rogers Property (881541)

TEP No. 25577.636120

Analysis By: JCM 12/28/2021

Checked By: WHW 12/28/2021

Member Forces are Calculated in Accordance with TIA-222-H

Member Name	Wind Proj. (in)	Length (in)	Shape	θ (°)	Perimeter (in)
FFTH	3.500	72.00	Round	90.00	11.00
SF1-TH	4.000	32.00	Flat	0.00	16.00
MP-1	2.375	72.00	Round		7.46
MP-3	2.375	84.00	Round		7.46
MP-4	2.375	40.00	Round		7.46
MP-2	2.375	96.00	Round		7.46
M12	0.500	6.00	Round	0.00	1.57
M13	0.500	6.00	Round	0.00	1.57
M14	0.500	6.00	Round	0.00	1.57
M15	0.500	6.00	Round	0.00	1.57
M14A	2.500	6.00	Flat	90.00	6.00
M15A	2.500	6.00	Flat	90.00	6.00
M16	2.500	6.00	Flat	90.00	6.00
M17	2.500	6.00	Flat	90.00	6.00



ASCE 7 Hazards Report

Address:

No Address at This Location

Standard:

ASCE/SEI 7-16

Risk Category: II

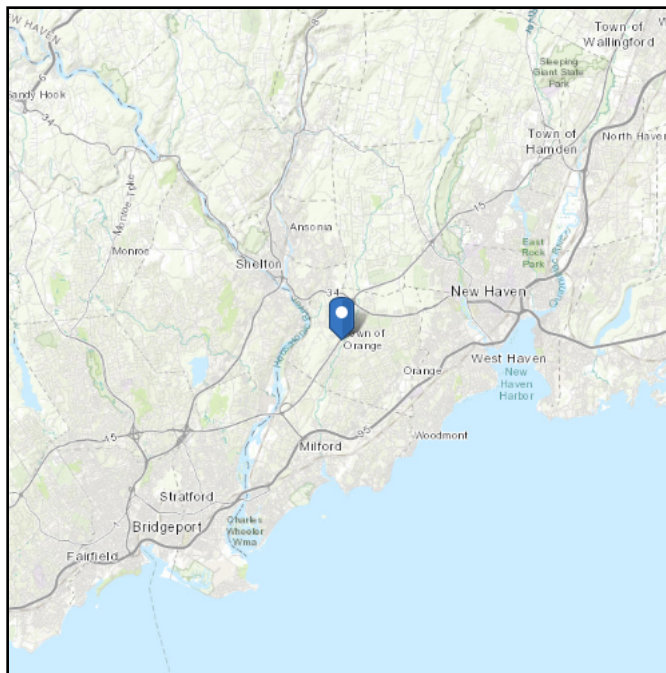
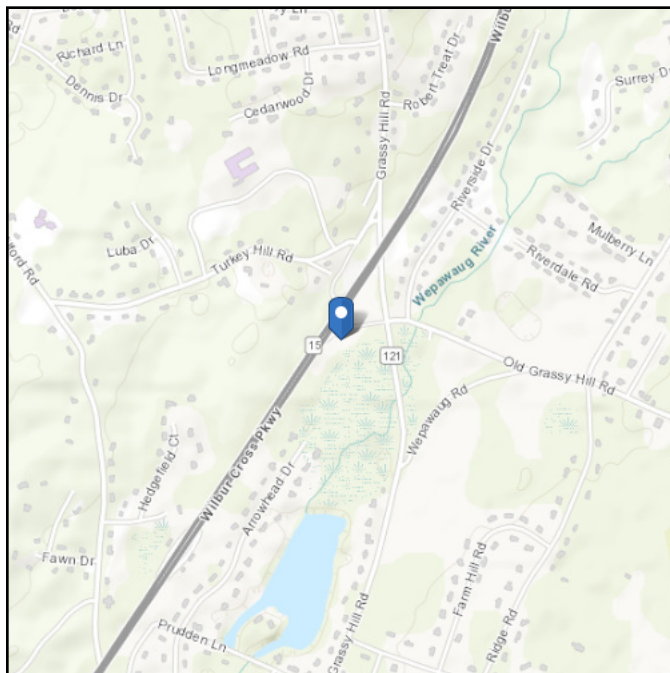
Soil Class:

D - Default (see Section 11.4.3)

Elevation: 91.22 ft (NAVD 88)

Latitude: 41.285486

Longitude: -73.042575



Wind

Results:

Wind Speed	119 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	98 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:

Tue Dec 21 2021

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

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

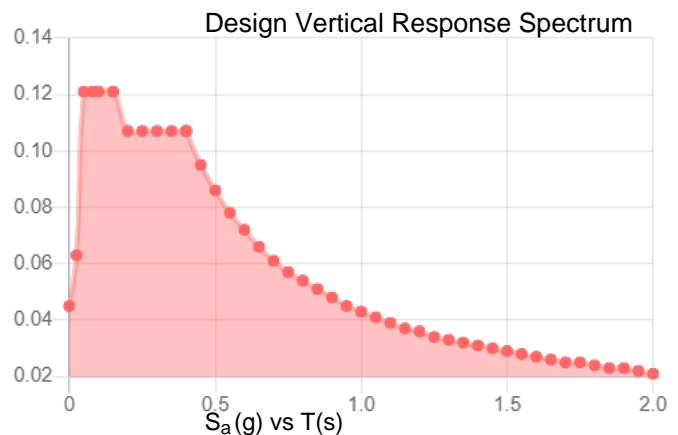
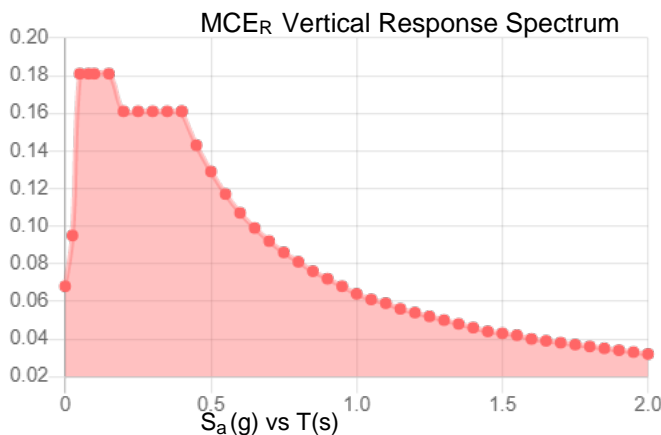
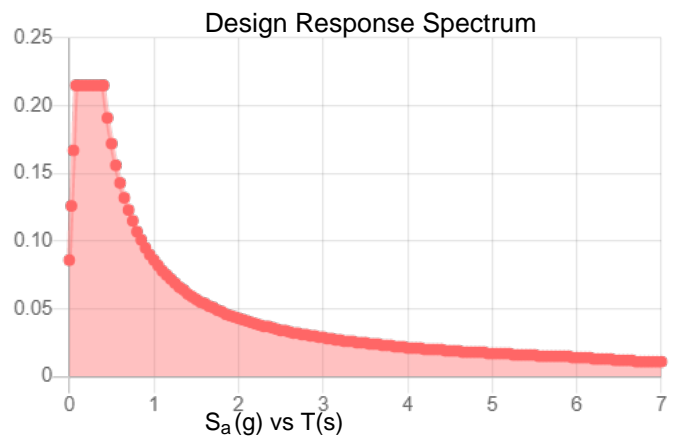
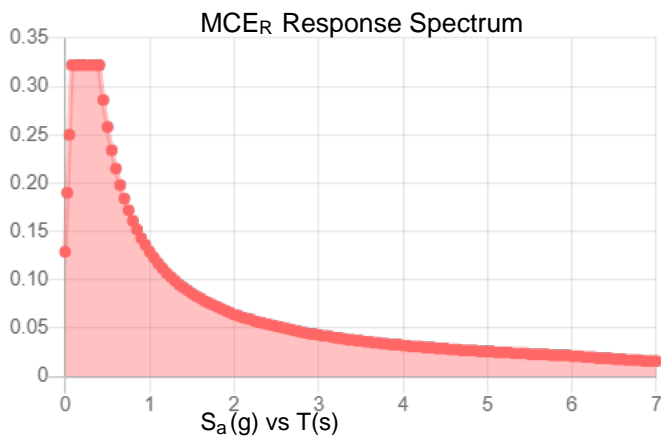


Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	0.202	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA _M :	0.178
S_{MS} :	0.322	F_{PGA} :	1.574
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.215	C_v :	0.703

Seismic Design Category B



Data Accessed: Tue Dec 21 2021

Date Source:

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



Ice

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue Dec 21 2021

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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APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Company : Tower Engineering Professionals, Inc.
 Designer : JCM
 Job Number : TEP No. 25577.636120
 Model Name : Rogers Property (881541)

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(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 (ft/sec^2)	32.2
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?	No
RISACONNECTION CODE	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parame 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 ASTM A615
Min % Steel for Column	1
Max % Steel for Column	8



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(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	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 (1E5 F)	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	.49	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	Grating	29000	11154	.3	.65	0	36	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Desig...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	PIPE 3.0	None	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Support Horizontal	HSS4X4X3	None	None	A500 Gr.B Rect	Typical	2.58	6.21	6.21	10
3	Mount Pipe	PIPE 2.0	None	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
4	MP Standoff	1/2 TR	None	None	A36 Gr.36	Typical	.142	.002	.002	.003
5	MP Plate	PL 2 1/2x1/2	None	None	A36 Gr.36	Typical	1.25	.026	.651	.091

Material Takeoff

	Material	Size	Pieces	Length[ft]	Weight[K]
1	General				
2	RIGID		3	.4	0
3	Total General		3	.4	0



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Material Takeoff (Continued)

	Material	Size	Pieces	Length[ft]	Weight[K]
4					
5	Hot Rolled Steel				
6	A36 Gr.36	1/2 TR	4	2	0
7	A36 Gr.36	PL 2 1/2x1/2	4	2	0
8	A500 Gr.B Rect	HSS4X4X3	1	2.7	0
9	A53 Gr.B	PIPE 2.0	4	24.3	0
10	A53 Gr.B	PIPE 3.0	1	6	0
11	Total HR Steel		14	37	.2

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	SF1-1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Primary Data

	Label	I Joint	J Joint	K J...	Rotate(...)	Section/Shape	Type	Desig...	Material	Design ...
1	FFTH	FF1	FF2			Face Horizontal	None	None	A53 Gr.B	Typical
2	SF1-TH	SF1-1	SF1-3			Support Horizontal	None	None	A500 Gr.B Rect	Typical
3	MP-1	N12	N16			Mount Pipe	None	None	A53 Gr.B	Typical
4	MP-3	N11	N15			Mount Pipe	None	None	A53 Gr.B	Typical
5	MP-4	N9	N13			Mount Pipe	None	None	A53 Gr.B	Typical
6	M8	N8	N6			RIGID	None	None	RIGID	Typical
7	M9	N7	N5			RIGID	None	None	RIGID	Typical
8	MP-2	N22	N26			Mount Pipe	None	None	A53 Gr.B	Typical
9	M11	N20A	N19A			RIGID	None	None	RIGID	Typical
10	M12	X25	X23			MP Standoff	None	None	A36 Gr.36	Typical
11	M13	X29	X27			MP Standoff	None	None	A36 Gr.36	Typical
12	M14	X26	X24			MP Standoff	None	None	A36 Gr.36	Typical
13	M15	X30	X28			MP Standoff	None	None	A36 Gr.36	Typical
14	M14A	X25	X29			MP Plate	None	None	A36 Gr.36	Typical
15	M15A	X23	X27			MP Plate	None	None	A36 Gr.36	Typical
16	M16	X26	X30			MP Plate	None	None	A36 Gr.36	Typical
17	M17	X24	X28			MP Plate	None	None	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	FFTH						Yes	** NA **			None
2	SF1-TH						Yes	** NA **			None
3	MP-1						Yes	** NA **			None
4	MP-3						Yes	** NA **			None
5	MP-4						Yes	** NA **			None
6	M8						Yes	** NA **			None
7	M9						Yes	** NA **			None
8	MP-2						Yes	** NA **			None
9	M11						Yes	** NA **			None
10	M12						Yes	** NA **			None
11	M13						Yes	** NA **			None
12	M14						Yes	** NA **			None



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Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
13	M15						Yes	** NA **			None
14	M14A						Yes	** NA **			None
15	M15A						Yes	** NA **			None
16	M16						Yes	** NA **			None
17	M17						Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...]	Lcomp bot[...]	L-torq...	Kyy	Kzz	Cb	Functi...
1	FFTH	Face Horizontal	6	3	3				2.1	2.1		Lateral
2	SF1-TH	Support Horizontal	2.667						2.1	2.1		Lateral
3	MP-1	Mount Pipe	6	Segment	Segment				2.1	2.1		Lateral
4	MP-3	Mount Pipe	7	Segment	Segment				2.1	2.1		Lateral
5	MP-4	Mount Pipe	3.333	Segment	Segment				2.1	2.1		Lateral
6	MP-2	Mount Pipe	8	Segment	Segment				2.1	2.1		Lateral
7	M12	MP Standoff	.5						1	1		Lateral
8	M13	MP Standoff	.5						1	1		Lateral
9	M14	MP Standoff	.5						1	1		Lateral
10	M15	MP Standoff	.5						1	1		Lateral
11	M14A	MP Plate	.5						1	1		Lateral
12	M15A	MP Plate	.5						1	1		Lateral
13	M16	MP Plate	.5						1	1		Lateral
14	M17	MP Plate	.5						1	1		Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface...
1	Dead	None		-1			11			
2	0 Wind - No Ice	None					11	14		
3	30 Wind - No Ice	None					22	28		
4	45 Wind - No Ice	None					22	28		
5	60 Wind - No Ice	None					22	28		
6	90 Wind - No Ice	None					11	14		
7	120 Wind - No Ice	None					22	28		
8	135 Wind - No Ice	None					22	28		
9	150 Wind - No Ice	None					22	28		
10	180 Wind - No Ice	None					11	14		
11	210 Wind - No Ice	None					22	28		
12	225 Wind - No Ice	None					22	28		
13	240 Wind - No Ice	None					22	28		
14	270 Wind - No Ice	None					11	14		
15	300 Wind - No Ice	None					22	28		
16	315 Wind - No Ice	None					22	28		
17	330 Wind - No Ice	None					22	28		
18	Ice Weight	None					11	14		
19	0 Wind - Ice	None					11	14		
20	30 Wind - Ice	None					22	28		
21	45 Wind - Ice	None					22	28		
22	60 Wind - Ice	None					22	28		
23	90 Wind - Ice	None					11	14		
24	120 Wind - Ice	None					22	28		

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	Joint Label	L,D,M	Direction	Magnitude((k,k-ft),(in,rad),(k*s^2/ft..
1	N8	L	Y	-.5

	Joint Label	L,D,M	Direction	Magnitude($(k,k-f)$, (in,rad), (k^s °2/f..
1	FF1	L	Y	-25

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	Y	- .045	1.5
2	MP-1	Y	- .035	.5
3	MP-2	Y	- .033	.5
4	MP-2	Y	- .041	4.5
5	MP-1	Y	- .071	2
6	MP-1	Y	- .059	2
7	MP-4	Y	- .075	1
8	MP-3	Y	- .045	6.5
9	MP-1	Y	- .035	5.5
10	MP-2	Y	- .033	2.5
11	MP-2	Y	- .041	6.5

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	-.25	1.5
2	MP-1	X	-.25	.5
3	MP-2	X	-.097	.5
4	MP-2	X	-.076	4.5
5	MP-1	X	-.059	2
6	MP-1	X	-.052	2
7	MP-4	X	-.083	1
8	MP-3	X	-.25	6.5
9	MP-1	X	-.25	5.5
10	MP-2	X	-.097	2.5



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	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
11	MP-2	X	-076	6.5

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	-.183	1.5
2	MP-1	X	-.183	.5
3	MP-2	X	-.072	.5
4	MP-2	X	-.057	4.5
5	MP-1	X	-.056	2
6	MP-1	X	-.052	2
7	MP-4	X	-.069	1
8	MP-3	X	-.183	6.5
9	MP-1	X	-.183	5.5
10	MP-2	X	-.072	2.5
11	MP-2	X	-.057	6.5
12	MP-3	Z	-.106	1.5
13	MP-1	Z	-.106	.5
14	MP-2	Z	-.041	.5
15	MP-2	Z	-.033	4.5
16	MP-1	Z	-.032	2
17	MP-1	Z	-.03	2
18	MP-4	Z	-.04	1
19	MP-3	Z	-.106	6.5
20	MP-1	Z	-.106	5.5
21	MP-2	Z	-.041	2.5
22	MP-2	Z	-.033	6.5

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	-1.22	1.5
2	MP-1	X	-1.22	.5
3	MP-2	X	-.048	.5
4	MP-2	X	-.04	4.5
5	MP-1	X	-.05	2
6	MP-1	X	-.048	2
7	MP-4	X	-.055	1
8	MP-3	X	-1.22	6.5
9	MP-1	X	-1.22	5.5
10	MP-2	X	-.048	2.5
11	MP-2	X	-.04	6.5
12	MP-3	Z	-1.22	1.5
13	MP-1	Z	-1.22	.5
14	MP-2	Z	-.048	.5
15	MP-2	Z	-.04	4.5
16	MP-1	Z	-.05	2
17	MP-1	Z	-.048	2
18	MP-4	Z	-.055	1
19	MP-3	Z	-1.22	6.5
20	MP-1	Z	-1.22	5.5
21	MP-2	Z	-.048	2.5
22	MP-2	Z	-.04	6.5



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 Model Name : Rogers Property (881541)

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Member Point Loads (BLC 5 : 60 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.067	1.5
2	MP-1	X	-.067	.5
3	MP-2	X	-.027	.5
4	MP-2	X	-.023	4.5
5	MP-1	X	-.038	2
6	MP-1	X	-.038	2
7	MP-4	X	-.037	1
8	MP-3	X	-.067	6.5
9	MP-1	X	-.067	5.5
10	MP-2	X	-.027	2.5
11	MP-2	X	-.023	6.5
12	MP-3	Z	-.115	1.5
13	MP-1	Z	-.115	.5
14	MP-2	Z	-.047	.5
15	MP-2	Z	-.04	4.5
16	MP-1	Z	-.066	2
17	MP-1	Z	-.066	2
18	MP-4	Z	-.064	1
19	MP-3	Z	-.115	6.5
20	MP-1	Z	-.115	5.5
21	MP-2	Z	-.047	2.5
22	MP-2	Z	-.04	6.5

Member Point Loads (BLC 6 : 90 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	Z	-.094	1.5
2	MP-1	Z	-.094	.5
3	MP-2	Z	-.039	.5
4	MP-2	Z	-.036	4.5
5	MP-1	Z	-.083	2
6	MP-1	Z	-.085	2
7	MP-4	Z	-.071	1
8	MP-3	Z	-.094	6.5
9	MP-1	Z	-.094	5.5
10	MP-2	Z	-.039	2.5
11	MP-2	Z	-.036	6.5

Member Point Loads (BLC 7 : 120 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	.067	1.5
2	MP-1	X	.067	.5
3	MP-2	X	.027	.5
4	MP-2	X	.023	4.5
5	MP-1	X	.038	2
6	MP-1	X	.038	2
7	MP-4	X	.037	1
8	MP-3	X	.067	6.5
9	MP-1	X	.067	5.5
10	MP-2	X	.027	2.5
11	MP-2	X	.023	6.5
12	MP-3	Z	-.115	1.5



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Member Point Loads (BLC 7 : 120 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
13	MP-1	Z	-.115	.5
14	MP-2	Z	-.047	.5
15	MP-2	Z	-.04	4.5
16	MP-1	Z	-.066	2
17	MP-1	Z	-.066	2
18	MP-4	Z	-.064	1
19	MP-3	Z	-.115	6.5
20	MP-1	Z	-.115	5.5
21	MP-2	Z	-.047	2.5
22	MP-2	Z	-.04	6.5

Member Point Loads (BLC 8 : 135 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	.122	1.5
2	MP-1	X	.122	.5
3	MP-2	X	.048	.5
4	MP-2	X	.04	4.5
5	MP-1	X	.05	2
6	MP-1	X	.048	2
7	MP-4	X	.055	1
8	MP-3	X	.122	6.5
9	MP-1	X	.122	5.5
10	MP-2	X	.048	2.5
11	MP-2	X	.04	6.5
12	MP-3	Z	-.122	1.5
13	MP-1	Z	-.122	.5
14	MP-2	Z	-.048	.5
15	MP-2	Z	-.04	4.5
16	MP-1	Z	-.05	2
17	MP-1	Z	-.048	2
18	MP-4	Z	-.055	1
19	MP-3	Z	-.122	6.5
20	MP-1	Z	-.122	5.5
21	MP-2	Z	-.048	2.5
22	MP-2	Z	-.04	6.5

Member Point Loads (BLC 9 : 150 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	.183	1.5
2	MP-1	X	.183	.5
3	MP-2	X	.072	.5
4	MP-2	X	.057	4.5
5	MP-1	X	.056	2
6	MP-1	X	.052	2
7	MP-4	X	.069	1
8	MP-3	X	.183	6.5
9	MP-1	X	.183	5.5
10	MP-2	X	.072	2.5
11	MP-2	X	.057	6.5
12	MP-3	Z	-.106	1.5
13	MP-1	Z	-.106	.5



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Member Point Loads (BLC 9 : 150 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
14	MP-2	Z	-.041	.5
15	MP-2	Z	-.033	4.5
16	MP-1	Z	-.032	2
17	MP-1	Z	-.03	2
18	MP-4	Z	-.04	1
19	MP-3	Z	-.106	6.5
20	MP-1	Z	-.106	5.5
21	MP-2	Z	-.041	2.5
22	MP-2	Z	-.033	6.5

Member Point Loads (BLC 10 : 180 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	.25	1.5
2	MP-1	X	.25	.5
3	MP-2	X	.097	.5
4	MP-2	X	.076	4.5
5	MP-1	X	.059	2
6	MP-1	X	.052	2
7	MP-4	X	.083	1
8	MP-3	X	.25	6.5
9	MP-1	X	.25	5.5
10	MP-2	X	.097	2.5
11	MP-2	X	.076	6.5

Member Point Loads (BLC 11 : 210 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	.183	1.5
2	MP-1	X	.183	.5
3	MP-2	X	.072	.5
4	MP-2	X	.057	4.5
5	MP-1	X	.056	2
6	MP-1	X	.052	2
7	MP-4	X	.069	1
8	MP-3	X	.183	6.5
9	MP-1	X	.183	5.5
10	MP-2	X	.072	2.5
11	MP-2	X	.057	6.5
12	MP-3	Z	.106	1.5
13	MP-1	Z	.106	.5
14	MP-2	Z	.041	.5
15	MP-2	Z	.033	4.5
16	MP-1	Z	.032	2
17	MP-1	Z	.03	2
18	MP-4	Z	.04	1
19	MP-3	Z	.106	6.5
20	MP-1	Z	.106	5.5
21	MP-2	Z	.041	2.5
22	MP-2	Z	.033	6.5

Member Point Loads (BLC 12 : 225 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
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Member Point Loads (BLC 12 : 225 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	.122	1.5
2	MP-1	X	.122	.5
3	MP-2	X	.048	.5
4	MP-2	X	.04	4.5
5	MP-1	X	.05	2
6	MP-1	X	.048	2
7	MP-4	X	.055	1
8	MP-3	X	.122	6.5
9	MP-1	X	.122	5.5
10	MP-2	X	.048	2.5
11	MP-2	X	.04	6.5
12	MP-3	Z	.122	1.5
13	MP-1	Z	.122	.5
14	MP-2	Z	.048	.5
15	MP-2	Z	.04	4.5
16	MP-1	Z	.05	2
17	MP-1	Z	.048	2
18	MP-4	Z	.055	1
19	MP-3	Z	.122	6.5
20	MP-1	Z	.122	5.5
21	MP-2	Z	.048	2.5
22	MP-2	Z	.04	6.5

Member Point Loads (BLC 13 : 240 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	.067	1.5
2	MP-1	X	.067	.5
3	MP-2	X	.027	.5
4	MP-2	X	.023	4.5
5	MP-1	X	.038	2
6	MP-1	X	.038	2
7	MP-4	X	.037	1
8	MP-3	X	.067	6.5
9	MP-1	X	.067	5.5
10	MP-2	X	.027	2.5
11	MP-2	X	.023	6.5
12	MP-3	Z	.115	1.5
13	MP-1	Z	.115	.5
14	MP-2	Z	.047	.5
15	MP-2	Z	.04	4.5
16	MP-1	Z	.066	2
17	MP-1	Z	.066	2
18	MP-4	Z	.064	1
19	MP-3	Z	.115	6.5
20	MP-1	Z	.115	5.5
21	MP-2	Z	.047	2.5
22	MP-2	Z	.04	6.5

Member Point Loads (BLC 14 : 270 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	Z	.094	1.5

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Member Point Loads (BLC 14 : 270 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
2	MP-1	Z	.094	.5
3	MP-2	Z	.039	.5
4	MP-2	Z	.036	4.5
5	MP-1	Z	.083	2
6	MP-1	Z	.085	2
7	MP-4	Z	.071	1
8	MP-3	Z	.094	6.5
9	MP-1	Z	.094	5.5
10	MP-2	Z	.039	2.5
11	MP-2	Z	.036	6.5

Member Point Loads (BLC 15 : 300 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.067	1.5
2	MP-1	X	-.067	.5
3	MP-2	X	-.027	.5
4	MP-2	X	-.023	4.5
5	MP-1	X	-.038	2
6	MP-1	X	-.038	2
7	MP-4	X	-.037	1
8	MP-3	X	-.067	6.5
9	MP-1	X	-.067	5.5
10	MP-2	X	-.027	2.5
11	MP-2	X	-.023	6.5
12	MP-3	Z	.115	1.5
13	MP-1	Z	.115	.5
14	MP-2	Z	.047	.5
15	MP-2	Z	.04	4.5
16	MP-1	Z	.066	2
17	MP-1	Z	.066	2
18	MP-4	Z	.064	1
19	MP-3	Z	.115	6.5
20	MP-1	Z	.115	5.5
21	MP-2	Z	.047	2.5
22	MP-2	Z	.04	6.5

Member Point Loads (BLC 16 : 315 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.122	1.5
2	MP-1	X	-.122	.5
3	MP-2	X	-.048	.5
4	MP-2	X	-.04	4.5
5	MP-1	X	-.05	2
6	MP-1	X	-.048	2
7	MP-4	X	-.055	1
8	MP-3	X	-.122	6.5
9	MP-1	X	-.122	5.5
10	MP-2	X	-.048	2.5
11	MP-2	X	-.04	6.5
12	MP-3	Z	.122	1.5
13	MP-1	Z	.122	.5



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Member Point Loads (BLC 16 : 315 Wind - No Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
14	MP-2	Z	.048	.5
15	MP-2	Z	.04	4.5
16	MP-1	Z	.05	2
17	MP-1	Z	.048	2
18	MP-4	Z	.055	1
19	MP-3	Z	.122	6.5
20	MP-1	Z	.122	5.5
21	MP-2	Z	.048	2.5
22	MP-2	Z	.04	6.5

Member Point Loads (BLC 17 : 330 Wind - No Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.183	1.5
2	MP-1	X	-.183	.5
3	MP-2	X	-.072	.5
4	MP-2	X	-.057	4.5
5	MP-1	X	-.056	2
6	MP-1	X	-.052	2
7	MP-4	X	-.069	1
8	MP-3	X	-.183	6.5
9	MP-1	X	-.183	5.5
10	MP-2	X	-.072	2.5
11	MP-2	X	-.057	6.5
12	MP-3	Z	.106	1.5
13	MP-1	Z	.106	.5
14	MP-2	Z	.041	.5
15	MP-2	Z	.033	4.5
16	MP-1	Z	.032	2
17	MP-1	Z	.03	2
18	MP-4	Z	.04	1
19	MP-3	Z	.106	6.5
20	MP-1	Z	.106	5.5
21	MP-2	Z	.041	2.5
22	MP-2	Z	.033	6.5

Member Point Loads (BLC 18 : Ice Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	Y	-.09	1.5
2	MP-1	Y	-.09	.5
3	MP-2	Y	-.032	.5
4	MP-2	Y	-.037	4.5
5	MP-1	Y	-.047	2
6	MP-1	Y	-.045	2
7	MP-4	Y	-.052	1
8	MP-3	Y	-.09	6.5
9	MP-1	Y	-.09	5.5
10	MP-2	Y	-.032	2.5
11	MP-2	Y	-.037	6.5

Member Point Loads (BLC 19 : 0 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
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Member Point Loads (BLC 19 : 0 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.05	1.5
2	MP-1	X	-.05	.5
3	MP-2	X	-.021	.5
4	MP-2	X	-.016	4.5
5	MP-1	X	-.019	2
6	MP-1	X	-.02	2
7	MP-4	X	-.019	1
8	MP-3	X	-.05	6.5
9	MP-1	X	-.05	5.5
10	MP-2	X	-.021	2.5
11	MP-2	X	-.016	6.5

Member Point Loads (BLC 20 : 30 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.037	1.5
2	MP-1	X	-.037	.5
3	MP-2	X	-.016	.5
4	MP-2	X	-.012	4.5
5	MP-1	X	-.014	2
6	MP-1	X	-.013	2
7	MP-4	X	-.016	1
8	MP-3	X	-.037	6.5
9	MP-1	X	-.037	5.5
10	MP-2	X	-.016	2.5
11	MP-2	X	-.012	6.5
12	MP-3	Z	-.021	1.5
13	MP-1	Z	-.021	.5
14	MP-2	Z	-.009	.5
15	MP-2	Z	-.007	4.5
16	MP-1	Z	-.008	2
17	MP-1	Z	-.007	2
18	MP-4	Z	-.009	1
19	MP-3	Z	-.021	6.5
20	MP-1	Z	-.021	5.5
21	MP-2	Z	-.009	2.5
22	MP-2	Z	-.007	6.5

Member Point Loads (BLC 21 : 45 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.025	1.5
2	MP-1	X	-.025	.5
3	MP-2	X	-.011	.5
4	MP-2	X	-.009	4.5
5	MP-1	X	-.012	2
6	MP-1	X	-.012	2
7	MP-4	X	-.013	1
8	MP-3	X	-.025	6.5
9	MP-1	X	-.025	5.5
10	MP-2	X	-.011	2.5
11	MP-2	X	-.009	6.5
12	MP-3	Z	-.025	1.5



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Member Point Loads (BLC 21 : 45 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
13	MP-1	Z	-.025	.5
14	MP-2	Z	-.011	.5
15	MP-2	Z	-.009	4.5
16	MP-1	Z	-.012	2
17	MP-1	Z	-.012	2
18	MP-4	Z	-.013	1
19	MP-3	Z	-.025	6.5
20	MP-1	Z	-.025	5.5
21	MP-2	Z	-.011	2.5
22	MP-2	Z	-.009	6.5

Member Point Loads (BLC 22 : 60 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	X	-.014	1.5
2	MP-1	X	-.014	.5
3	MP-2	X	-.006	.5
4	MP-2	X	-.005	4.5
5	MP-1	X	-.009	2
6	MP-1	X	-.009	2
7	MP-4	X	-.009	1
8	MP-3	X	-.014	6.5
9	MP-1	X	-.014	5.5
10	MP-2	X	-.006	2.5
11	MP-2	X	-.005	6.5
12	MP-3	Z	-.025	1.5
13	MP-1	Z	-.025	.5
14	MP-2	Z	-.011	.5
15	MP-2	Z	-.009	4.5
16	MP-1	Z	-.016	2
17	MP-1	Z	-.016	2
18	MP-4	Z	-.015	1
19	MP-3	Z	-.025	6.5
20	MP-1	Z	-.025	5.5
21	MP-2	Z	-.011	2.5
22	MP-2	Z	-.009	6.5

Member Point Loads (BLC 23 : 90 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft, %]
1	MP-3	Z	-.021	1.5
2	MP-1	Z	-.021	.5
3	MP-2	Z	-.01	.5
4	MP-2	Z	-.009	4.5
5	MP-1	Z	-.015	2
6	MP-1	Z	-.013	2
7	MP-4	Z	-.017	1
8	MP-3	Z	-.021	6.5
9	MP-1	Z	-.021	5.5
10	MP-2	Z	-.01	2.5
11	MP-2	Z	-.009	6.5



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Member Point Loads (BLC 24 : 120 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	.014	1.5
2	MP-1	X	.014	.5
3	MP-2	X	.006	.5
4	MP-2	X	.005	4.5
5	MP-1	X	.009	2
6	MP-1	X	.009	2
7	MP-4	X	.009	1
8	MP-3	X	.014	6.5
9	MP-1	X	.014	5.5
10	MP-2	X	.006	2.5
11	MP-2	X	.005	6.5
12	MP-3	Z	-.025	1.5
13	MP-1	Z	-.025	.5
14	MP-2	Z	-.011	.5
15	MP-2	Z	-.009	4.5
16	MP-1	Z	-.016	2
17	MP-1	Z	-.016	2
18	MP-4	Z	-.015	1
19	MP-3	Z	-.025	6.5
20	MP-1	Z	-.025	5.5
21	MP-2	Z	-.011	2.5
22	MP-2	Z	-.009	6.5

Member Point Loads (BLC 25 : 135 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	.025	1.5
2	MP-1	X	.025	.5
3	MP-2	X	.011	.5
4	MP-2	X	.009	4.5
5	MP-1	X	.012	2
6	MP-1	X	.012	2
7	MP-4	X	.013	1
8	MP-3	X	.025	6.5
9	MP-1	X	.025	5.5
10	MP-2	X	.011	2.5
11	MP-2	X	.009	6.5
12	MP-3	Z	-.025	1.5
13	MP-1	Z	-.025	.5
14	MP-2	Z	-.011	.5
15	MP-2	Z	-.009	4.5
16	MP-1	Z	-.012	2
17	MP-1	Z	-.012	2
18	MP-4	Z	-.013	1
19	MP-3	Z	-.025	6.5
20	MP-1	Z	-.025	5.5
21	MP-2	Z	-.011	2.5
22	MP-2	Z	-.009	6.5

Member Point Loads (BLC 26 : 150 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	.037	1.5



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Member Point Loads (BLC 26 : 150 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	MP-1	X	.037	.5
3	MP-2	X	.016	.5
4	MP-2	X	.012	4.5
5	MP-1	X	.014	2
6	MP-1	X	.013	2
7	MP-4	X	.016	1
8	MP-3	X	.037	6.5
9	MP-1	X	.037	5.5
10	MP-2	X	.016	2.5
11	MP-2	X	.012	6.5
12	MP-3	Z	-.021	1.5
13	MP-1	Z	-.021	.5
14	MP-2	Z	-.009	.5
15	MP-2	Z	-.007	4.5
16	MP-1	Z	-.008	2
17	MP-1	Z	-.007	2
18	MP-4	Z	-.009	1
19	MP-3	Z	-.021	6.5
20	MP-1	Z	-.021	5.5
21	MP-2	Z	-.009	2.5
22	MP-2	Z	-.007	6.5

Member Point Loads (BLC 27 : 180 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	.05	1.5
2	MP-1	X	.05	.5
3	MP-2	X	.021	.5
4	MP-2	X	.016	4.5
5	MP-1	X	.019	2
6	MP-1	X	.02	2
7	MP-4	X	.019	1
8	MP-3	X	.05	6.5
9	MP-1	X	.05	5.5
10	MP-2	X	.021	2.5
11	MP-2	X	.016	6.5

Member Point Loads (BLC 28 : 210 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	.037	1.5
2	MP-1	X	.037	.5
3	MP-2	X	.016	.5
4	MP-2	X	.012	4.5
5	MP-1	X	.014	2
6	MP-1	X	.013	2
7	MP-4	X	.016	1
8	MP-3	X	.037	6.5
9	MP-1	X	.037	5.5
10	MP-2	X	.016	2.5
11	MP-2	X	.012	6.5
12	MP-3	Z	.021	1.5
13	MP-1	Z	.021	.5



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Member Point Loads (BLC 28 : 210 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
14	MP-2	Z	.009	.5
15	MP-2	Z	.007	4.5
16	MP-1	Z	.008	2
17	MP-1	Z	.007	2
18	MP-4	Z	.009	1
19	MP-3	Z	.021	6.5
20	MP-1	Z	.021	5.5
21	MP-2	Z	.009	2.5
22	MP-2	Z	.007	6.5

Member Point Loads (BLC 29 : 225 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	.025	1.5
2	MP-1	X	.025	.5
3	MP-2	X	.011	.5
4	MP-2	X	.009	4.5
5	MP-1	X	.012	2
6	MP-1	X	.012	2
7	MP-4	X	.013	1
8	MP-3	X	.025	6.5
9	MP-1	X	.025	5.5
10	MP-2	X	.011	2.5
11	MP-2	X	.009	6.5
12	MP-3	Z	.025	1.5
13	MP-1	Z	.025	.5
14	MP-2	Z	.011	.5
15	MP-2	Z	.009	4.5
16	MP-1	Z	.012	2
17	MP-1	Z	.012	2
18	MP-4	Z	.013	1
19	MP-3	Z	.025	6.5
20	MP-1	Z	.025	5.5
21	MP-2	Z	.011	2.5
22	MP-2	Z	.009	6.5

Member Point Loads (BLC 30 : 240 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	.014	1.5
2	MP-1	X	.014	.5
3	MP-2	X	.006	.5
4	MP-2	X	.005	4.5
5	MP-1	X	.009	2
6	MP-1	X	.009	2
7	MP-4	X	.009	1
8	MP-3	X	.014	6.5
9	MP-1	X	.014	5.5
10	MP-2	X	.006	2.5
11	MP-2	X	.005	6.5
12	MP-3	Z	.025	1.5
13	MP-1	Z	.025	.5
14	MP-2	Z	.011	.5



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Member Point Loads (BLC 30 : 240 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
15	MP-2	Z	.009	4.5
16	MP-1	Z	.016	2
17	MP-1	Z	.016	2
18	MP-4	Z	.015	1
19	MP-3	Z	.025	6.5
20	MP-1	Z	.025	5.5
21	MP-2	Z	.011	2.5
22	MP-2	Z	.009	6.5

Member Point Loads (BLC 31 : 270 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	Z	.021	1.5
2	MP-1	Z	.021	.5
3	MP-2	Z	.01	.5
4	MP-2	Z	.009	4.5
5	MP-1	Z	.015	2
6	MP-1	Z	.013	2
7	MP-4	Z	.017	1
8	MP-3	Z	.021	6.5
9	MP-1	Z	.021	5.5
10	MP-2	Z	.01	2.5
11	MP-2	Z	.009	6.5

Member Point Loads (BLC 32 : 300 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	-.014	1.5
2	MP-1	X	-.014	.5
3	MP-2	X	-.006	.5
4	MP-2	X	-.005	4.5
5	MP-1	X	-.009	2
6	MP-1	X	-.009	2
7	MP-4	X	-.009	1
8	MP-3	X	-.014	6.5
9	MP-1	X	-.014	5.5
10	MP-2	X	-.006	2.5
11	MP-2	X	-.005	6.5
12	MP-3	Z	.025	1.5
13	MP-1	Z	.025	.5
14	MP-2	Z	.011	.5
15	MP-2	Z	.009	4.5
16	MP-1	Z	.016	2
17	MP-1	Z	.016	2
18	MP-4	Z	.015	1
19	MP-3	Z	.025	6.5
20	MP-1	Z	.025	5.5
21	MP-2	Z	.011	2.5
22	MP-2	Z	.009	6.5

Member Point Loads (BLC 33 : 315 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
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Member Point Loads (BLC 33 : 315 Wind - Ice) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	-.025	1.5
2	MP-1	X	-.025	.5
3	MP-2	X	-.011	.5
4	MP-2	X	-.009	4.5
5	MP-1	X	-.012	2
6	MP-1	X	-.012	2
7	MP-4	X	-.013	1
8	MP-3	X	-.025	6.5
9	MP-1	X	-.025	5.5
10	MP-2	X	-.011	2.5
11	MP-2	X	-.009	6.5
12	MP-3	Z	.025	1.5
13	MP-1	Z	.025	.5
14	MP-2	Z	.011	.5
15	MP-2	Z	.009	4.5
16	MP-1	Z	.012	2
17	MP-1	Z	.012	2
18	MP-4	Z	.013	1
19	MP-3	Z	.025	6.5
20	MP-1	Z	.025	5.5
21	MP-2	Z	.011	2.5
22	MP-2	Z	.009	6.5

Member Point Loads (BLC 34 : 330 Wind - Ice)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	-.037	1.5
2	MP-1	X	-.037	.5
3	MP-2	X	-.016	.5
4	MP-2	X	-.012	4.5
5	MP-1	X	-.014	2
6	MP-1	X	-.013	2
7	MP-4	X	-.016	1
8	MP-3	X	-.037	6.5
9	MP-1	X	-.037	5.5
10	MP-2	X	-.016	2.5
11	MP-2	X	-.012	6.5
12	MP-3	Z	.021	1.5
13	MP-1	Z	.021	.5
14	MP-2	Z	.009	.5
15	MP-2	Z	.007	4.5
16	MP-1	Z	.008	2
17	MP-1	Z	.007	2
18	MP-4	Z	.009	1
19	MP-3	Z	.021	6.5
20	MP-1	Z	.021	5.5
21	MP-2	Z	.009	2.5
22	MP-2	Z	.007	6.5

Member Point Loads (BLC 37 : Seismic Load X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	X	-.045	1.5



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Member Point Loads (BLC 37 : Seismic Load X) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
2	MP-1	X	-.035	.5
3	MP-2	X	-.033	.5
4	MP-2	X	-.041	4.5
5	MP-1	X	-.071	2
6	MP-1	X	-.059	2
7	MP-4	X	-.075	1
8	MP-3	X	-.045	6.5
9	MP-1	X	-.035	5.5
10	MP-2	X	-.033	2.5
11	MP-2	X	-.041	6.5

Member Point Loads (BLC 38 : Seismic Load Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	MP-3	Z	-.045	1.5
2	MP-1	Z	-.035	.5
3	MP-2	Z	-.033	.5
4	MP-2	Z	-.041	4.5
5	MP-1	Z	-.071	2
6	MP-1	Z	-.059	2
7	MP-4	Z	-.075	1
8	MP-3	Z	-.045	6.5
9	MP-1	Z	-.035	5.5
10	MP-2	Z	-.033	2.5
11	MP-2	Z	-.041	6.5

Member Distributed Loads (BLC 2 : 0 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...]	End Location[ft,...]
1	FFTH	X	-.01	-.01	0	%100
2	SF1-TH	X	0	0	0	%100
3	MP-1	X	-.01	-.01	0	%100
4	MP-3	X	-.01	-.01	0	%100
5	MP-4	X	-.008	-.008	0	%100
6	MP-2	X	-.01	-.01	0	%100
7	M12	X	0	0	0	%100
8	M13	X	0	0	0	%100
9	M14	X	0	0	0	%100
10	M15	X	0	0	0	%100
11	M14A	X	-.01	-.01	0	%100
12	M15A	X	-.01	-.01	0	%100
13	M16	X	-.01	-.01	0	%100
14	M17	X	-.01	-.01	0	%100

Member Distributed Loads (BLC 3 : 30 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...]	End Location[ft,...]
1	FFTH	X	-.008	-.008	0	%100
2	SF1-TH	X	-.007	-.007	0	%100
3	MP-1	X	-.009	-.009	0	%100
4	MP-3	X	-.009	-.009	0	%100
5	MP-4	X	-.007	-.007	0	%100



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Member Distributed Loads (BLC 3 : 30 Wind - No Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
6	MP-2	X	-0.009	0	%100
7	M12	X	-0.000527	0	%100
8	M13	X	-0.000527	0	%100
9	M14	X	-0.000527	0	%100
10	M15	X	-0.000527	0	%100
11	M14A	X	-0.008	0	%100
12	M15A	X	-0.008	0	%100
13	M16	X	-0.008	0	%100
14	M17	X	-0.008	0	%100
15	FFTH	Z	-0.005	0	%100
16	SF1-TH	Z	-0.005	0	%100
17	MP-1	Z	-0.005	0	%100
18	MP-3	Z	-0.005	0	%100
19	MP-4	Z	-0.004	0	%100
20	MP-2	Z	-0.005	0	%100
21	M12	Z	-0.000396	0	%100
22	M13	Z	-0.000396	0	%100
23	M14	Z	-0.000396	0	%100
24	M15	Z	-0.000396	0	%100
25	M14A	Z	-0.005	0	%100
26	M15A	Z	-0.005	0	%100
27	M16	Z	-0.005	0	%100
28	M17	Z	-0.005	0	%100

Member Distributed Loads (BLC 4 : 45 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	X	-0.005	0	%100
2	SF1-TH	X	-0.008	0	%100
3	MP-1	X	-0.007	0	%100
4	MP-3	X	-0.007	0	%100
5	MP-4	X	-0.006	0	%100
6	MP-2	X	-0.007	0	%100
7	M12	X	-0.000608	0	%100
8	M13	X	-0.000608	0	%100
9	M14	X	-0.000608	0	%100
10	M15	X	-0.000608	0	%100
11	M14A	X	-0.005	0	%100
12	M15A	X	-0.005	0	%100
13	M16	X	-0.005	0	%100
14	M17	X	-0.005	0	%100
15	FFTH	Z	-0.005	0	%100
16	SF1-TH	Z	-0.01	0	%100
17	MP-1	Z	-0.007	0	%100
18	MP-3	Z	-0.007	0	%100
19	MP-4	Z	-0.006	0	%100
20	MP-2	Z	-0.007	0	%100
21	M12	Z	-0.000792	0	%100
22	M13	Z	-0.000792	0	%100
23	M14	Z	-0.000792	0	%100
24	M15	Z	-0.000792	0	%100
25	M14A	Z	-0.005	0	%100



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Member Distributed Loads (BLC 4 : 45 Wind - No Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
26	M15A	Z	-0.005	0	%100
27	M16	Z	-0.005	0	%100
28	M17	Z	-0.005	0	%100

Member Distributed Loads (BLC 5 : 60 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	X	-0.003	0	%100
2	SF1-TH	X	-0.007	0	%100
3	MP-1	X	-0.005	0	%100
4	MP-3	X	-0.005	0	%100
5	MP-4	X	-0.004	0	%100
6	MP-2	X	-0.005	0	%100
7	M12	X	-0.000527	0	%100
8	M13	X	-0.000527	0	%100
9	M14	X	-0.000527	0	%100
10	M15	X	-0.000527	0	%100
11	M14A	X	-0.003	0	%100
12	M15A	X	-0.003	0	%100
13	M16	X	-0.003	0	%100
14	M17	X	-0.003	0	%100
15	FFTH	Z	-0.005	0	%100
16	SF1-TH	Z	-0.015	0	%100
17	MP-1	Z	-0.009	0	%100
18	MP-3	Z	-0.009	0	%100
19	MP-4	Z	-0.007	0	%100
20	MP-2	Z	-0.009	0	%100
21	M12	Z	-0.001	0	%100
22	M13	Z	-0.001	0	%100
23	M14	Z	-0.001	0	%100
24	M15	Z	-0.001	0	%100
25	M14A	Z	-0.005	0	%100
26	M15A	Z	-0.005	0	%100
27	M16	Z	-0.005	0	%100
28	M17	Z	-0.005	0	%100

Member Distributed Loads (BLC 6 : 90 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	Z	0	0	%100
2	SF1-TH	Z	-0.02	0	%100
3	MP-1	Z	-0.01	0	%100
4	MP-3	Z	-0.01	0	%100
5	MP-4	Z	-0.008	0	%100
6	MP-2	Z	-0.01	0	%100
7	M12	Z	-0.002	0	%100
8	M13	Z	-0.002	0	%100
9	M14	Z	-0.002	0	%100
10	M15	Z	-0.002	0	%100
11	M14A	Z	0	0	%100
12	M15A	Z	0	0	%100
13	M16	Z	0	0	%100
14	M17	Z	0	0	%100



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Member Distributed Loads (BLC 7 : 120 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft....
1	FFTH	X	.003	.003 0 %100
2	SF1-TH	X	.007	.007 0 %100
3	MP-1	X	.005	.005 0 %100
4	MP-3	X	.005	.005 0 %100
5	MP-4	X	.004	.004 0 %100
6	MP-2	X	.005	.005 0 %100
7	M12	X	.000527	.000527 0 %100
8	M13	X	.000527	.000527 0 %100
9	M14	X	.000527	.000527 0 %100
10	M15	X	.000527	.000527 0 %100
11	M14A	X	.003	.003 0 %100
12	M15A	X	.003	.003 0 %100
13	M16	X	.003	.003 0 %100
14	M17	X	.003	.003 0 %100
15	FFTH	Z	-.005	-.005 0 %100
16	SF1-TH	Z	-.015	-.015 0 %100
17	MP-1	Z	-.009	-.009 0 %100
18	MP-3	Z	-.009	-.009 0 %100
19	MP-4	Z	-.007	-.007 0 %100
20	MP-2	Z	-.009	-.009 0 %100
21	M12	Z	-.001	-.001 0 %100
22	M13	Z	-.001	-.001 0 %100
23	M14	Z	-.001	-.001 0 %100
24	M15	Z	-.001	-.001 0 %100
25	M14A	Z	-.005	-.005 0 %100
26	M15A	Z	-.005	-.005 0 %100
27	M16	Z	-.005	-.005 0 %100
28	M17	Z	-.005	-.005 0 %100

Member Distributed Loads (BLC 8 : 135 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft....
1	FFTH	X	.005	.005 0 %100
2	SF1-TH	X	.008	.008 0 %100
3	MP-1	X	.007	.007 0 %100
4	MP-3	X	.007	.007 0 %100
5	MP-4	X	.006	.006 0 %100
6	MP-2	X	.007	.007 0 %100
7	M12	X	.000608	.000608 0 %100
8	M13	X	.000608	.000608 0 %100
9	M14	X	.000608	.000608 0 %100
10	M15	X	.000608	.000608 0 %100
11	M14A	X	.005	.005 0 %100
12	M15A	X	.005	.005 0 %100
13	M16	X	.005	.005 0 %100
14	M17	X	.005	.005 0 %100
15	FFTH	Z	-.005	-.005 0 %100
16	SF1-TH	Z	-.01	-.01 0 %100
17	MP-1	Z	-.007	-.007 0 %100
18	MP-3	Z	-.007	-.007 0 %100
19	MP-4	Z	-.006	-.006 0 %100
20	MP-2	Z	-.007	-.007 0 %100



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Member Distributed Loads (BLC 8 : 135 Wind - No Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft....
21	M12	Z	-.000792	-.000792 0 %100
22	M13	Z	-.000792	-.000792 0 %100
23	M14	Z	-.000792	-.000792 0 %100
24	M15	Z	-.000792	-.000792 0 %100
25	M14A	Z	-.005	-.005 0 %100
26	M15A	Z	-.005	-.005 0 %100
27	M16	Z	-.005	-.005 0 %100
28	M17	Z	-.005	-.005 0 %100

Member Distributed Loads (BLC 9 : 150 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft....
1	FFTH	X	.008	.008 0 %100
2	SF1-TH	X	.007	.007 0 %100
3	MP-1	X	.009	.009 0 %100
4	MP-3	X	.009	.009 0 %100
5	MP-4	X	.007	.007 0 %100
6	MP-2	X	.009	.009 0 %100
7	M12	X	.000527	.000527 0 %100
8	M13	X	.000527	.000527 0 %100
9	M14	X	.000527	.000527 0 %100
10	M15	X	.000527	.000527 0 %100
11	M14A	X	.008	.008 0 %100
12	M15A	X	.008	.008 0 %100
13	M16	X	.008	.008 0 %100
14	M17	X	.008	.008 0 %100
15	FFTH	Z	-.005	-.005 0 %100
16	SF1-TH	Z	-.005	-.005 0 %100
17	MP-1	Z	-.005	-.005 0 %100
18	MP-3	Z	-.005	-.005 0 %100
19	MP-4	Z	-.004	-.004 0 %100
20	MP-2	Z	-.005	-.005 0 %100
21	M12	Z	-.000396	-.000396 0 %100
22	M13	Z	-.000396	-.000396 0 %100
23	M14	Z	-.000396	-.000396 0 %100
24	M15	Z	-.000396	-.000396 0 %100
25	M14A	Z	-.005	-.005 0 %100
26	M15A	Z	-.005	-.005 0 %100
27	M16	Z	-.005	-.005 0 %100
28	M17	Z	-.005	-.005 0 %100

Member Distributed Loads (BLC 10 : 180 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft....
1	FFTH	X	.01	.01 0 %100
2	SF1-TH	X	0	0 0 %100
3	MP-1	X	.01	.01 0 %100
4	MP-3	X	.01	.01 0 %100
5	MP-4	X	.008	.008 0 %100
6	MP-2	X	.01	.01 0 %100
7	M12	X	0	0 0 %100
8	M13	X	0	0 0 %100
9	M14	X	0	0 0 %100



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Member Distributed Loads (BLC 10 : 180 Wind - No Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
10	M15	X	0	0	%100
11	M14A	X	.01	.01	%100
12	M15A	X	.01	.01	%100
13	M16	X	.01	.01	%100
14	M17	X	.01	.01	%100

Member Distributed Loads (BLC 11 : 210 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	X	.008	.008	0	%100
2	SF1-TH	X	.007	.007	0	%100
3	MP-1	X	.009	.009	0	%100
4	MP-3	X	.009	.009	0	%100
5	MP-4	X	.007	.007	0	%100
6	MP-2	X	.009	.009	0	%100
7	M12	X	.000527	.000527	0	%100
8	M13	X	.000527	.000527	0	%100
9	M14	X	.000527	.000527	0	%100
10	M15	X	.000527	.000527	0	%100
11	M14A	X	.008	.008	0	%100
12	M15A	X	.008	.008	0	%100
13	M16	X	.008	.008	0	%100
14	M17	X	.008	.008	0	%100
15	FFTH	Z	.005	.005	0	%100
16	SF1-TH	Z	.005	.005	0	%100
17	MP-1	Z	.005	.005	0	%100
18	MP-3	Z	.005	.005	0	%100
19	MP-4	Z	.004	.004	0	%100
20	MP-2	Z	.005	.005	0	%100
21	M12	Z	.000396	.000396	0	%100
22	M13	Z	.000396	.000396	0	%100
23	M14	Z	.000396	.000396	0	%100
24	M15	Z	.000396	.000396	0	%100
25	M14A	Z	.005	.005	0	%100
26	M15A	Z	.005	.005	0	%100
27	M16	Z	.005	.005	0	%100
28	M17	Z	.005	.005	0	%100

Member Distributed Loads (BLC 12 : 225 Wind - No Ice)

	Member Label	Dirction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	X	.005	.005	0	%100
2	SF1-TH	X	.008	.008	0	%100
3	MP-1	X	.007	.007	0	%100
4	MP-3	X	.007	.007	0	%100
5	MP-4	X	.006	.006	0	%100
6	MP-2	X	.007	.007	0	%100
7	M12	X	.000608	.000608	0	%100
8	M13	X	.000608	.000608	0	%100
9	M14	X	.000608	.000608	0	%100
10	M15	X	.000608	.000608	0	%100
11	M14A	X	.005	.005	0	%100
12	M15A	X	.005	.005	0	%100



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Member Distributed Loads (BLC 12 : 225 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
13	M16	X	.005	.005	0	%100
14	M17	X	.005	.005	0	%100
15	FFTH	Z	.005	.005	0	%100
16	SF1-TH	Z	.01	.01	0	%100
17	MP-1	Z	.007	.007	0	%100
18	MP-3	Z	.007	.007	0	%100
19	MP-4	Z	.006	.006	0	%100
20	MP-2	Z	.007	.007	0	%100
21	M12	Z	.000792	.000792	0	%100
22	M13	Z	.000792	.000792	0	%100
23	M14	Z	.000792	.000792	0	%100
24	M15	Z	.000792	.000792	0	%100
25	M14A	Z	.005	.005	0	%100
26	M15A	Z	.005	.005	0	%100
27	M16	Z	.005	.005	0	%100
28	M17	Z	.005	.005	0	%100

Member Distributed Loads (BLC 13 : 240 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]....
1	FFTH	X	.003	.003	0	%100
2	SF1-TH	X	.007	.007	0	%100
3	MP-1	X	.005	.005	0	%100
4	MP-3	X	.005	.005	0	%100
5	MP-4	X	.004	.004	0	%100
6	MP-2	X	.005	.005	0	%100
7	M12	X	.000527	.000527	0	%100
8	M13	X	.000527	.000527	0	%100
9	M14	X	.000527	.000527	0	%100
10	M15	X	.000527	.000527	0	%100
11	M14A	X	.003	.003	0	%100
12	M15A	X	.003	.003	0	%100
13	M16	X	.003	.003	0	%100
14	M17	X	.003	.003	0	%100
15	FFTH	Z	.005	.005	0	%100
16	SF1-TH	Z	.015	.015	0	%100
17	MP-1	Z	.009	.009	0	%100
18	MP-3	Z	.009	.009	0	%100
19	MP-4	Z	.007	.007	0	%100
20	MP-2	Z	.009	.009	0	%100
21	M12	Z	.001	.001	0	%100
22	M13	Z	.001	.001	0	%100
23	M14	Z	.001	.001	0	%100
24	M15	Z	.001	.001	0	%100
25	M14A	Z	.005	.005	0	%100
26	M15A	Z	.005	.005	0	%100
27	M16	Z	.005	.005	0	%100
28	M17	Z	.005	.005	0	%100

Member Distributed Loads (BLC 14 : 270 Wind - No Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	Z	0	0	0	%100



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 Job Number : TEP No. 25577.636120
 Model Name : Rogers Property (881541)

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Member Distributed Loads (BLC 14 : 270 Wind - No Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
2	SF1-TH	Z	.02	0 %100
3	MP-1	Z	.01	0 %100
4	MP-3	Z	.01	0 %100
5	MP-4	Z	.008	0 %100
6	MP-2	Z	.01	0 %100
7	M12	Z	.002	0 %100
8	M13	Z	.002	0 %100
9	M14	Z	.002	0 %100
10	M15	Z	.002	0 %100
11	M14A	Z	0	0 %100
12	M15A	Z	0	0 %100
13	M16	Z	0	0 %100
14	M17	Z	0	0 %100

Member Distributed Loads (BLC 15 : 300 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	-.003	0 %100
2	SF1-TH	X	-.007	0 %100
3	MP-1	X	-.005	0 %100
4	MP-3	X	-.005	0 %100
5	MP-4	X	-.004	0 %100
6	MP-2	X	-.005	0 %100
7	M12	X	-.000527	0 %100
8	M13	X	-.000527	0 %100
9	M14	X	-.000527	0 %100
10	M15	X	-.000527	0 %100
11	M14A	X	-.003	0 %100
12	M15A	X	-.003	0 %100
13	M16	X	-.003	0 %100
14	M17	X	-.003	0 %100
15	FFTH	Z	.005	0 %100
16	SF1-TH	Z	.015	0 %100
17	MP-1	Z	.009	0 %100
18	MP-3	Z	.009	0 %100
19	MP-4	Z	.007	0 %100
20	MP-2	Z	.009	0 %100
21	M12	Z	.001	0 %100
22	M13	Z	.001	0 %100
23	M14	Z	.001	0 %100
24	M15	Z	.001	0 %100
25	M14A	Z	.005	0 %100
26	M15A	Z	.005	0 %100
27	M16	Z	.005	0 %100
28	M17	Z	.005	0 %100

Member Distributed Loads (BLC 16 : 315 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	-.005	0 %100
2	SF1-TH	X	-.008	0 %100
3	MP-1	X	-.007	0 %100
4	MP-3	X	-.007	0 %100



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Member Distributed Loads (BLC 16 : 315 Wind - No Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
5	MP-4	X	-.006	0 %100
6	MP-2	X	-.007	0 %100
7	M12	X	-.000608	0 %100
8	M13	X	-.000608	0 %100
9	M14	X	-.000608	0 %100
10	M15	X	-.000608	0 %100
11	M14A	X	-.005	0 %100
12	M15A	X	-.005	0 %100
13	M16	X	-.005	0 %100
14	M17	X	-.005	0 %100
15	FFTH	Z	.005	0 %100
16	SF1-TH	Z	.01	0 %100
17	MP-1	Z	.007	0 %100
18	MP-3	Z	.007	0 %100
19	MP-4	Z	.006	0 %100
20	MP-2	Z	.007	0 %100
21	M12	Z	.000792	0 %100
22	M13	Z	.000792	0 %100
23	M14	Z	.000792	0 %100
24	M15	Z	.000792	0 %100
25	M14A	Z	.005	0 %100
26	M15A	Z	.005	0 %100
27	M16	Z	.005	0 %100
28	M17	Z	.005	0 %100

Member Distributed Loads (BLC 17 : 330 Wind - No Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	-.008	0 %100
2	SF1-TH	X	-.007	0 %100
3	MP-1	X	-.009	0 %100
4	MP-3	X	-.009	0 %100
5	MP-4	X	-.007	0 %100
6	MP-2	X	-.009	0 %100
7	M12	X	-.000527	0 %100
8	M13	X	-.000527	0 %100
9	M14	X	-.000527	0 %100
10	M15	X	-.000527	0 %100
11	M14A	X	-.008	0 %100
12	M15A	X	-.008	0 %100
13	M16	X	-.008	0 %100
14	M17	X	-.008	0 %100
15	FFTH	Z	.005	0 %100
16	SF1-TH	Z	.005	0 %100
17	MP-1	Z	.005	0 %100
18	MP-3	Z	.005	0 %100
19	MP-4	Z	.004	0 %100
20	MP-2	Z	.005	0 %100
21	M12	Z	.000396	0 %100
22	M13	Z	.000396	0 %100
23	M14	Z	.000396	0 %100
24	M15	Z	.000396	0 %100



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Member Distributed Loads (BLC 17 : 330 Wind - No Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...	
25	M14A	Z	.005	.005	0	%100
26	M15A	Z	.005	.005	0	%100
27	M16	Z	.005	.005	0	%100
28	M17	Z	.005	.005	0	%100

Member Distributed Loads (BLC 18 : Ice Weight)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...	
1	FFTH	Y	-.007	-.007	0	%100
2	SF1-TH	Y	-.008	-.008	0	%100
3	MP-1	Y	-.005	-.005	0	%100
4	MP-3	Y	-.005	-.005	0	%100
5	MP-4	Y	-.005	-.005	0	%100
6	MP-2	Y	-.005	-.005	0	%100
7	M12	Y	-.003	-.003	0	%100
8	M13	Y	-.003	-.003	0	%100
9	M14	Y	-.003	-.003	0	%100
10	M15	Y	-.003	-.003	0	%100
11	M14A	Y	-.004	-.004	0	%100
12	M15A	Y	-.004	-.004	0	%100
13	M16	Y	-.004	-.004	0	%100
14	M17	Y	-.004	-.004	0	%100

Member Distributed Loads (BLC 19 : 0 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...	
1	FFTH	X	-.003	-.003	0	%100
2	SF1-TH	X	-.005	-.005	0	%100
3	MP-1	X	-.003	-.003	0	%100
4	MP-3	X	-.003	-.003	0	%100
5	MP-4	X	-.002	-.002	0	%100
6	MP-2	X	-.003	-.003	0	%100
7	M12	X	-.002	-.002	0	%100
8	M13	X	-.002	-.002	0	%100
9	M14	X	-.002	-.002	0	%100
10	M15	X	-.002	-.002	0	%100
11	M14A	X	-.005	-.005	0	%100
12	M15A	X	-.005	-.005	0	%100
13	M16	X	-.005	-.005	0	%100
14	M17	X	-.005	-.005	0	%100

Member Distributed Loads (BLC 20 : 30 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...	
1	FFTH	X	-.003	-.003	0	%100
2	SF1-TH	X	-.002	-.002	0	%100
3	MP-1	X	-.002	-.002	0	%100
4	MP-3	X	-.002	-.002	0	%100
5	MP-4	X	-.002	-.002	0	%100
6	MP-2	X	-.003	-.003	0	%100
7	M12	X	-.000723	-.000723	0	%100
8	M13	X	-.000723	-.000723	0	%100
9	M14	X	-.000723	-.000723	0	%100



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Member Distributed Loads (BLC 20 : 30 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...	
10	M15	X	-.000723	-.000723	0	%100
11	M14A	X	-.004	-.004	0	%100
12	M15A	X	-.004	-.004	0	%100
13	M16	X	-.004	-.004	0	%100
14	M17	X	-.004	-.004	0	%100
15	FFTH	Z	-.001	-.001	0	%100
16	SF1-TH	Z	-.001	-.001	0	%100
17	MP-1	Z	-.001	-.001	0	%100
18	MP-3	Z	-.002	-.002	0	%100
19	MP-4	Z	-.001	-.001	0	%100
20	MP-2	Z	-.002	-.002	0	%100
21	M12	Z	-.000424	-.000424	0	%100
22	M13	Z	-.000424	-.000424	0	%100
23	M14	Z	-.000424	-.000424	0	%100
24	M15	Z	-.000424	-.000424	0	%100
25	M14A	Z	-.002	-.002	0	%100
26	M15A	Z	-.002	-.002	0	%100
27	M16	Z	-.002	-.002	0	%100
28	M17	Z	-.002	-.002	0	%100

Member Distributed Loads (BLC 21 : 45 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...	
1	FFTH	X	-.002	-.002	0	%100
2	SF1-TH	X	-.002	-.002	0	%100
3	MP-1	X	-.002	-.002	0	%100
4	MP-3	X	-.002	-.002	0	%100
5	MP-4	X	-.002	-.002	0	%100
6	MP-2	X	-.002	-.002	0	%100
7	M12	X	-.000835	-.000835	0	%100
8	M13	X	-.000835	-.000835	0	%100
9	M14	X	-.000835	-.000835	0	%100
10	M15	X	-.000835	-.000835	0	%100
11	M14A	X	-.002	-.002	0	%100
12	M15A	X	-.002	-.002	0	%100
13	M16	X	-.002	-.002	0	%100
14	M17	X	-.002	-.002	0	%100
15	FFTH	Z	-.002	-.002	0	%100
16	SF1-TH	Z	-.003	-.003	0	%100
17	MP-1	Z	-.002	-.002	0	%100
18	MP-3	Z	-.002	-.002	0	%100
19	MP-4	Z	-.002	-.002	0	%100
20	MP-2	Z	-.002	-.002	0	%100
21	M12	Z	-.000847	-.000847	0	%100
22	M13	Z	-.000847	-.000847	0	%100
23	M14	Z	-.000847	-.000847	0	%100
24	M15	Z	-.000847	-.000847	0	%100
25	M14A	Z	-.002	-.002	0	%100
26	M15A	Z	-.002	-.002	0	%100
27	M16	Z	-.002	-.002	0	%100
28	M17	Z	-.002	-.002	0	%100



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Member Distributed Loads (BLC 22 : 60 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	-0.00854	-0.00854 0 %100
2	SF1-TH	X	-0.002	-0.002 0 %100
3	MP-1	X	-0.001	-0.001 0 %100
4	MP-3	X	-0.001	-0.001 0 %100
5	MP-4	X	-0.001	-0.001 0 %100
6	MP-2	X	-0.001	-0.001 0 %100
7	M12	X	-0.000723	-0.000723 0 %100
8	M13	X	-0.000723	-0.000723 0 %100
9	M14	X	-0.000723	-0.000723 0 %100
10	M15	X	-0.000723	-0.000723 0 %100
11	M14A	X	-0.001	-0.001 0 %100
12	M15A	X	-0.001	-0.001 0 %100
13	M16	X	-0.001	-0.001 0 %100
14	M17	X	-0.001	-0.001 0 %100
15	FFTH	Z	-0.001	-0.001 0 %100
16	SF1-TH	Z	-0.004	-0.004 0 %100
17	MP-1	Z	-0.003	-0.003 0 %100
18	MP-3	Z	-0.003	-0.003 0 %100
19	MP-4	Z	-0.002	-0.002 0 %100
20	MP-2	Z	-0.003	-0.003 0 %100
21	M12	Z	-0.001	-0.001 0 %100
22	M13	Z	-0.001	-0.001 0 %100
23	M14	Z	-0.001	-0.001 0 %100
24	M15	Z	-0.001	-0.001 0 %100
25	M14A	Z	-0.002	-0.002 0 %100
26	M15A	Z	-0.002	-0.002 0 %100
27	M16	Z	-0.002	-0.002 0 %100
28	M17	Z	-0.002	-0.002 0 %100

Member Distributed Loads (BLC 23 : 90 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	Z	0	0 0 %100
2	SF1-TH	Z	-0.006	-0.006 0 %100
3	MP-1	Z	-0.003	-0.003 0 %100
4	MP-3	Z	-0.003	-0.003 0 %100
5	MP-4	Z	-0.003	-0.003 0 %100
6	MP-2	Z	-0.003	-0.003 0 %100
7	M12	Z	-0.002	-0.002 0 %100
8	M13	Z	-0.002	-0.002 0 %100
9	M14	Z	-0.002	-0.002 0 %100
10	M15	Z	-0.002	-0.002 0 %100
11	M14A	Z	0	0 0 %100
12	M15A	Z	0	0 0 %100
13	M16	Z	0	0 0 %100
14	M17	Z	0	0 0 %100

Member Distributed Loads (BLC 24 : 120 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	.000854	.000854 0 %100
2	SF1-TH	X	.002	.002 0 %100
3	MP-1	X	.001	.001 0 %100



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Member Distributed Loads (BLC 24 : 120 Wind - Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
4	MP-3	X	.001	.001 0 %100
5	MP-4	X	.001	.001 0 %100
6	MP-2	X	.001	.001 0 %100
7	M12	X	.000723	.000723 0 %100
8	M13	X	.000723	.000723 0 %100
9	M14	X	.000723	.000723 0 %100
10	M15	X	.000723	.000723 0 %100
11	M14A	X	.001	.001 0 %100
12	M15A	X	.001	.001 0 %100
13	M16	X	.001	.001 0 %100
14	M17	X	.001	.001 0 %100
15	FFTH	Z	-0.001	-0.001 0 %100
16	SF1-TH	Z	-0.004	-0.004 0 %100
17	MP-1	Z	-0.003	-0.003 0 %100
18	MP-3	Z	-0.003	-0.003 0 %100
19	MP-4	Z	-0.002	-0.002 0 %100
20	MP-2	Z	-0.003	-0.003 0 %100
21	M12	Z	-0.001	-0.001 0 %100
22	M13	Z	-0.001	-0.001 0 %100
23	M14	Z	-0.001	-0.001 0 %100
24	M15	Z	-0.001	-0.001 0 %100
25	M14A	Z	-0.002	-0.002 0 %100
26	M15A	Z	-0.002	-0.002 0 %100
27	M16	Z	-0.002	-0.002 0 %100
28	M17	Z	-0.002	-0.002 0 %100

Member Distributed Loads (BLC 25 : 135 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	.002	.002 0 %100
2	SF1-TH	X	.002	.002 0 %100
3	MP-1	X	.002	.002 0 %100
4	MP-3	X	.002	.002 0 %100
5	MP-4	X	.002	.002 0 %100
6	MP-2	X	.002	.002 0 %100
7	M12	X	.000835	.000835 0 %100
8	M13	X	.000835	.000835 0 %100
9	M14	X	.000835	.000835 0 %100
10	M15	X	.000835	.000835 0 %100
11	M14A	X	.002	.002 0 %100
12	M15A	X	.002	.002 0 %100
13	M16	X	.002	.002 0 %100
14	M17	X	.002	.002 0 %100
15	FFTH	Z	-0.002	-0.002 0 %100
16	SF1-TH	Z	-0.003	-0.003 0 %100
17	MP-1	Z	-0.002	-0.002 0 %100
18	MP-3	Z	-0.002	-0.002 0 %100
19	MP-4	Z	-0.002	-0.002 0 %100
20	MP-2	Z	-0.002	-0.002 0 %100
21	M12	Z	-0.00847	-0.00847 0 %100
22	M13	Z	-0.00847	-0.00847 0 %100
23	M14	Z	-0.00847	-0.00847 0 %100



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Member Distributed Loads (BLC 25 : 135 Wind - Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
24	M15	Z	-0.00847	-0.00847 0 %100
25	M14A	Z	-0.002	-0.002 0 %100
26	M15A	Z	-0.002	-0.002 0 %100
27	M16	Z	-0.002	-0.002 0 %100
28	M17	Z	-0.002	-0.002 0 %100

Member Distributed Loads (BLC 26 : 150 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	.003	.003 0 %100
2	SF1-TH	X	.002	.002 0 %100
3	MP-1	X	.002	.002 0 %100
4	MP-3	X	.002	.002 0 %100
5	MP-4	X	.002	.002 0 %100
6	MP-2	X	.003	.003 0 %100
7	M12	X	.000723	.000723 0 %100
8	M13	X	.000723	.000723 0 %100
9	M14	X	.000723	.000723 0 %100
10	M15	X	.000723	.000723 0 %100
11	M14A	X	.004	.004 0 %100
12	M15A	X	.004	.004 0 %100
13	M16	X	.004	.004 0 %100
14	M17	X	.004	.004 0 %100
15	FFTH	Z	-0.001	-0.001 0 %100
16	SF1-TH	Z	-0.001	-0.001 0 %100
17	MP-1	Z	-0.001	-0.001 0 %100
18	MP-3	Z	-0.002	-0.002 0 %100
19	MP-4	Z	-0.001	-0.001 0 %100
20	MP-2	Z	-0.002	-0.002 0 %100
21	M12	Z	-0.000424	-0.000424 0 %100
22	M13	Z	-0.000424	-0.000424 0 %100
23	M14	Z	-0.000424	-0.000424 0 %100
24	M15	Z	-0.000424	-0.000424 0 %100
25	M14A	Z	-0.002	-0.002 0 %100
26	M15A	Z	-0.002	-0.002 0 %100
27	M16	Z	-0.002	-0.002 0 %100
28	M17	Z	-0.002	-0.002 0 %100

Member Distributed Loads (BLC 27 : 180 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	.003	.003 0 %100
2	SF1-TH	X	.005	.005 0 %100
3	MP-1	X	.003	.003 0 %100
4	MP-3	X	.003	.003 0 %100
5	MP-4	X	.002	.002 0 %100
6	MP-2	X	.003	.003 0 %100
7	M12	X	.002	.002 0 %100
8	M13	X	.002	.002 0 %100
9	M14	X	.002	.002 0 %100
10	M15	X	.002	.002 0 %100
11	M14A	X	.005	.005 0 %100
12	M15A	X	.005	.005 0 %100



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Member Distributed Loads (BLC 27 : 180 Wind - Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
13	M16	X	.005	.005 0 %100
14	M17	X	.005	.005 0 %100

Member Distributed Loads (BLC 28 : 210 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	.003	.003 0 %100
2	SF1-TH	X	.002	.002 0 %100
3	MP-1	X	.002	.002 0 %100
4	MP-3	X	.002	.002 0 %100
5	MP-4	X	.002	.002 0 %100
6	MP-2	X	.003	.003 0 %100
7	M12	X	.000723	.000723 0 %100
8	M13	X	.000723	.000723 0 %100
9	M14	X	.000723	.000723 0 %100
10	M15	X	.000723	.000723 0 %100
11	M14A	X	.004	.004 0 %100
12	M15A	X	.004	.004 0 %100
13	M16	X	.004	.004 0 %100
14	M17	X	.004	.004 0 %100
15	FFTH	Z	.001	.001 0 %100
16	SF1-TH	Z	.001	.001 0 %100
17	MP-1	Z	.001	.001 0 %100
18	MP-3	Z	.002	.002 0 %100
19	MP-4	Z	.001	.001 0 %100
20	MP-2	Z	.002	.002 0 %100
21	M12	Z	.000424	.000424 0 %100
22	M13	Z	.000424	.000424 0 %100
23	M14	Z	.000424	.000424 0 %100
24	M15	Z	.000424	.000424 0 %100
25	M14A	Z	.002	.002 0 %100
26	M15A	Z	.002	.002 0 %100
27	M16	Z	.002	.002 0 %100
28	M17	Z	.002	.002 0 %100

Member Distributed Loads (BLC 29 : 225 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...End Location[ft,...
1	FFTH	X	.002	.002 0 %100
2	SF1-TH	X	.002	.002 0 %100
3	MP-1	X	.002	.002 0 %100
4	MP-3	X	.002	.002 0 %100
5	MP-4	X	.002	.002 0 %100
6	MP-2	X	.002	.002 0 %100
7	M12	X	.000835	.000835 0 %100
8	M13	X	.000835	.000835 0 %100
9	M14	X	.000835	.000835 0 %100
10	M15	X	.000835	.000835 0 %100
11	M14A	X	.002	.002 0 %100
12	M15A	X	.002	.002 0 %100
13	M16	X	.002	.002 0 %100
14	M17	X	.002	.002 0 %100
15	FFTH	Z	.002	.002 0 %100



Company : Tower Engineering Professionals, Inc.
 Designer : JCM
 Job Number : TEP No. 25577.636120
 Model Name : Rogers Property (881541)

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Member Distributed Loads (BLC 29 : 225 Wind - Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
16	SF1-TH	Z	.003	0	%100
17	MP-1	Z	.002	0	%100
18	MP-3	Z	.002	0	%100
19	MP-4	Z	.002	0	%100
20	MP-2	Z	.002	0	%100
21	M12	Z	.000847	0	%100
22	M13	Z	.000847	0	%100
23	M14	Z	.000847	0	%100
24	M15	Z	.000847	0	%100
25	M14A	Z	.002	0	%100
26	M15A	Z	.002	0	%100
27	M16	Z	.002	0	%100
28	M17	Z	.002	0	%100

Member Distributed Loads (BLC 30 : 240 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	X	.000854	0	%100
2	SF1-TH	X	.002	0	%100
3	MP-1	X	.001	0	%100
4	MP-3	X	.001	0	%100
5	MP-4	X	.001	0	%100
6	MP-2	X	.001	0	%100
7	M12	X	.000723	0	%100
8	M13	X	.000723	0	%100
9	M14	X	.000723	0	%100
10	M15	X	.000723	0	%100
11	M14A	X	.001	0	%100
12	M15A	X	.001	0	%100
13	M16	X	.001	0	%100
14	M17	X	.001	0	%100
15	FFTH	Z	.001	0	%100
16	SF1-TH	Z	.004	0	%100
17	MP-1	Z	.003	0	%100
18	MP-3	Z	.003	0	%100
19	MP-4	Z	.002	0	%100
20	MP-2	Z	.003	0	%100
21	M12	Z	.001	0	%100
22	M13	Z	.001	0	%100
23	M14	Z	.001	0	%100
24	M15	Z	.001	0	%100
25	M14A	Z	.002	0	%100
26	M15A	Z	.002	0	%100
27	M16	Z	.002	0	%100
28	M17	Z	.002	0	%100

Member Distributed Loads (BLC 31 : 270 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	Z	0	0	%100
2	SF1-TH	Z	.006	0	%100
3	MP-1	Z	.003	0	%100
4	MP-3	Z	.003	0	%100



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Member Distributed Loads (BLC 31 : 270 Wind - Ice) (Continued)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
5	MP-4	Z	.003	0	%100
6	MP-2	Z	.003	0	%100
7	M12	Z	.002	0	%100
8	M13	Z	.002	0	%100
9	M14	Z	.002	0	%100
10	M15	Z	.002	0	%100
11	M14A	Z	0	0	%100
12	M15A	Z	0	0	%100
13	M16	Z	0	0	%100
14	M17	Z	0	0	%100

Member Distributed Loads (BLC 32 : 300 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	X	-.000854	0	%100
2	SF1-TH	X	-.002	0	%100
3	MP-1	X	-.001	0	%100
4	MP-3	X	-.001	0	%100
5	MP-4	X	-.001	0	%100
6	MP-2	X	-.001	0	%100
7	M12	X	-.000723	0	%100
8	M13	X	-.000723	0	%100
9	M14	X	-.000723	0	%100
10	M15	X	-.000723	0	%100
11	M14A	X	-.001	0	%100
12	M15A	X	-.001	0	%100
13	M16	X	-.001	0	%100
14	M17	X	-.001	0	%100
15	FFTH	Z	.001	0	%100
16	SF1-TH	Z	.004	0	%100
17	MP-1	Z	.003	0	%100
18	MP-3	Z	.003	0	%100
19	MP-4	Z	.002	0	%100
20	MP-2	Z	.003	0	%100
21	M12	Z	.001	0	%100
22	M13	Z	.001	0	%100
23	M14	Z	.001	0	%100
24	M15	Z	.001	0	%100
25	M14A	Z	.002	0	%100
26	M15A	Z	.002	0	%100
27	M16	Z	.002	0	%100
28	M17	Z	.002	0	%100

Member Distributed Loads (BLC 33 : 315 Wind - Ice)

Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
1	FFTH	X	-.002	0	%100
2	SF1-TH	X	-.002	0	%100
3	MP-1	X	-.002	0	%100
4	MP-3	X	-.002	0	%100
5	MP-4	X	-.002	0	%100
6	MP-2	X	-.002	0	%100
7	M12	X	-.000835	0	%100



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Member Distributed Loads (BLC 33 : 315 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...]	End Location[ft,...]
8	M13	X	- .000835	- .000835	0	%100
9	M14	X	- .000835	- .000835	0	%100
10	M15	X	- .000835	- .000835	0	%100
11	M14A	X	- .002	- .002	0	%100
12	M15A	X	- .002	- .002	0	%100
13	M16	X	- .002	- .002	0	%100
14	M17	X	- .002	- .002	0	%100
15	FFTH	Z	.002	.002	0	%100
16	SF1-TH	Z	.003	.003	0	%100
17	MP-1	Z	.002	.002	0	%100
18	MP-3	Z	.002	.002	0	%100
19	MP-4	Z	.002	.002	0	%100
20	MP-2	Z	.002	.002	0	%100
21	M12	Z	.000847	.000847	0	%100
22	M13	Z	.000847	.000847	0	%100
23	M14	Z	.000847	.000847	0	%100
24	M15	Z	.000847	.000847	0	%100
25	M14A	Z	.002	.002	0	%100
26	M15A	Z	.002	.002	0	%100
27	M16	Z	.002	.002	0	%100
28	M17	Z	.002	.002	0	%100

Member Distributed Loads (BLC 34 : 330 Wind - Ice)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft,...	End Location[ft,...
1	FFTH	X	-.003	-.003	0	%100
2	SF1-TH	X	-.002	-.002	0	%100
3	MP-1	X	-.002	-.002	0	%100
4	MP-3	X	-.002	-.002	0	%100
5	MP-4	X	-.002	-.002	0	%100
6	MP-2	X	-.003	-.003	0	%100
7	M12	X	-.000723	-.000723	0	%100
8	M13	X	-.000723	-.000723	0	%100
9	M14	X	-.000723	-.000723	0	%100
10	M15	X	-.000723	-.000723	0	%100
11	M14A	X	-.004	-.004	0	%100
12	M15A	X	-.004	-.004	0	%100
13	M16	X	-.004	-.004	0	%100
14	M17	X	-.004	-.004	0	%100
15	FFTH	Z	.001	.001	0	%100
16	SF1-TH	Z	.001	.001	0	%100
17	MP-1	Z	.001	.001	0	%100
18	MP-3	Z	.002	.002	0	%100
19	MP-4	Z	.001	.001	0	%100
20	MP-2	Z	.002	.002	0	%100
21	M12	Z	.000424	.000424	0	%100
22	M13	Z	.000424	.000424	0	%100
23	M14	Z	.000424	.000424	0	%100
24	M15	Z	.000424	.000424	0	%100
25	M14A	Z	.002	.002	0	%100
26	M15A	Z	.002	.002	0	%100
27	M16	Z	.002	.002	0	%100



Company : Tower Engineering Professionals, Inc.
 Designer : JCM
 Job Number : TEP No. 25577.636120
 Model Name : Rogers Property (881541)

Dec 28, 2021
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 Checked By: WHW

Member Distributed Loads (BLC 34 : 330 Wind - Ice) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/ft,F,ksf]	Start Location[ft]...	End Location[ft]...
28	M17	Z	.002	.002	0	%100

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	SF1-1	max	1.863	18	1.648	44	1.114	23	2.216	21	3.097	29	5.617	26
2		min	-1.863	10	.575	86	-1.114	15	-1.984	15	-3.102	21	-1.89	2
3	Totals:	max	1.863	18	1.648	44	1.114	23						
4		min	-1.863	10	.575	86	-1.114	15						

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

Member	Shape	Code Che...	Loc[ft]	LC	Shear Ch...	Loc[ft]	LC	phi*Pnc [k]	phi*Pnt...	phi*Mn y...	phi*Mn ...	Cb	Egn
1	M15	1/2 TR	.983	0	33	.170	0	32	3.887	4.597	.033	.033	2.202H1...
2	M14	1/2 TR	.983	0	19	.170	0	20	3.887	4.597	.033	.033	2.202H1...
3	MP-3	PIPE 2.0	.815	5.615	18	.061	5.615	28	32.024	32.13	1.872	1.872	1.814H1...
4	M12	1/2 TR	.789	0	27	.111	0	28	3.887	4.597	.033	.033	2.22H1...
5	M13	1/2 TR	.789	0	25	.110	0	24	3.887	4.597	.033	.033	2.22H1...
6	MP-1	PIPE 2.0	.784	4.625	26	.043	4.625	26	10.242	32.13	1.872	1.872	1.536H1...
7	MP-2	PIPE 2.0	.583	5.667	26	.034	5.667	26	6.946	32.13	1.872	1.872	2.366H1...
8	SF1-TH	HSS4X4X3	.582	0	27	.247	0	z 21	94.148	106.812	12.662	12.662	1.211H1...
9	FFTH	PIPE 3.0	.538	3	26	.509	3	26	52.724	65.205	5.749	5.749	1.615H3-6
10	M16	PL 2 1/2x1/2	.050	.25	29	.114	.25	y 33	36.978	40.5	.422	2.109	1.317H1...
11	M14A	PL 2 1/2x1/2	.042	.25	17	.091	.25	y 27	36.978	40.5	.422	2.109	1.485H1...
12	MP-4	PIPE 2.0	.042	.972	26	.013	.278	31	21.016	32.13	1.872	1.872	1.375H1...
13	M15A	PL 2 1/2x1/2	.035	.25	17	.068	0	y 27	36.978	40.5	.422	2.109	1.492H1...
14	M17	PL 2 1/2x1/2	.028	.25	32	.077	.5	y 32	36.978	40.5	.422	2.109	1.516H1...

APPENDIX D

ADDITIONAL CALCULATIONS



Rogers Property (881541)

TEP No. 25577.636120

Analysis By: JCM 12/28/2021

Checked By: WHW 12/28/2021

Moment Bolt Group - Collar Connection

Code Revisions: ANSI/TIA-222-H

Bolt Type: Headed Bolts

Connection Inputs:

Bolt Size:	0.625	in
# Bolts:	4	
Plate Width:	10.00	in
Plate Height:	10.00	in
Bolt H Gap:	7.00	in
Bolt V Gap:	7.00	in
Plate T:	0.625	in
Slip Member Ø:	N/A	in
Bolt Grade:	A325N	

Capacities:

Bolt Capacity=	32.5%	PASS
Plate Capacity=	50.1%	PASS

Bolt Properties:

$F_{y_{bolt}}$:	92.0	ksi
$F_{u_{bolt}}$:	120.0	ksi
r:	4.9	in
J:	98.0	in ⁴ /in ²
A_{bolt} :	0.3	in ²
$A_{bolt, Net Tensile}$:	0.2	in ²
Pretension:	19.0	kips

Member Properties:

Member Shape:	Flat	
Plate F_y :	36.0	ksi
Plate F_u :	58.0	ksi
Member Height:	4.0	in
Member Width:	4.0	in



EBI Consulting

environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CTL03159

881541

700 Grassy Hill Road
Orange, Connecticut 06477

February 24, 2022

EBI Project Number: 6222000316

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	30.68%

February 24, 2022

AT&T

Emissions Analysis for Site: CTL03159 - 881541

EBI Consulting was directed to analyze the proposed AT&T facility located at **700 Grassy Hill Road in Orange, Connecticut** for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at 700 Grassy Hill Road in Orange, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

- 1) 4 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 2) 4 LTE FN channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 5G channels (850 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 4) 4 LTE / 5G channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 4 LTE / 5G channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 6) 2 C-Band Channels (3700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 144.58 Watts per Channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the CCI TPA65R-BU6D for the 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 3700 MHz channel(s), the Ericsson AIR 6449 for the 3700 MHz channel(s), the CCI DMP65R-BU6DA for the 700 MHz / 850 MHz channel(s) in Sector A, the CCI TPA65R-BU6D for the 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 3700 MHz channel(s), the Ericsson AIR 6449 for the 3700 MHz channel(s), the CCI DMP65R-BU6DA for the 700 MHz / 850 MHz channel(s) in Sector B, the CCI TPA65R-BU6D for the 700 MHz / 1900 MHz / 2100 MHz channel(s), the Ericsson AIR 6419 for the 3700 MHz channel(s), the Ericsson AIR 6449 for the 3700 MHz channel(s), the CCI DMP65R-BU6DA for the 700 MHz / 850 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerlines of the proposed antennas are 138, 140, and 142 feet above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 12) All calculations were done with respect to uncontrolled / general population threshold limits.



AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	CCI TPA65R-BU6D	Make / Model:	CCI TPA65R-BU6D	Make / Model:	CCI TPA65R-BU6D
Frequency Bands:	700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	700 MHz / 1900 MHz / 2100 MHz
Gain:	12.35 dBd / 15.95 dBd / 16.25 dBd	Gain:	12.35 dBd / 15.95 dBd / 16.25 dBd	Gain:	12.35 dBd / 15.95 dBd / 16.25 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	12	Channel Count:	12	Channel Count:	12
Total TX Power (W):	480.00 Watts	Total TX Power (W):	480.00 Watts	Total TX Power (W):	480.00 Watts
ERP (W):	15,792.60	ERP (W):	15,792.60	ERP (W):	15,792.60
Antenna A1 MPE %:	3.79%	Antenna B1 MPE %:	3.79%	Antenna C1 MPE %:	3.79%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419	Make / Model:	Ericsson AIR 6419
Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz
Gain:	23.45 dBd	Gain:	23.45 dBd	Gain:	23.45 dBd
Height (AGL):	142 feet	Height (AGL):	142 feet	Height (AGL):	142 feet
Channel Count:	1	Channel Count:	1	Channel Count:	1
Total TX Power (W):	144.58 Watts	Total TX Power (W):	144.58 Watts	Total TX Power (W):	144.58 Watts
ERP (W):	31,996.92	ERP (W):	31,996.92	ERP (W):	31,996.92
Antenna A2 MPE %:	6.22%	Antenna B2 MPE %:	6.22%	Antenna C2 MPE %:	6.22%
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz	Frequency Bands:	3700 MHz
Gain:	23.45 dBd	Gain:	23.45 dBd	Gain:	23.45 dBd
Height (AGL):	138 feet	Height (AGL):	138 feet	Height (AGL):	138 feet
Channel Count:	1	Channel Count:	1	Channel Count:	1
Total TX Power (W):	144.58 Watts	Total TX Power (W):	144.58 Watts	Total TX Power (W):	144.58 Watts
ERP (W):	31,996.92	ERP (W):	31,996.92	ERP (W):	31,996.92
Antenna A3 MPE %:	6.60%	Antenna B3 MPE %:	6.60%	Antenna C3 MPE %:	6.60%
Antenna #:	4	Antenna #:	4	Antenna #:	4
Make / Model:	CCI DMP65R-BU6DA	Make / Model:	CCI DMP65R-BU6DA	Make / Model:	CCI DMP65R-BU6DA
Frequency Bands:	700 MHz / 850 MHz	Frequency Bands:	700 MHz / 850 MHz	Frequency Bands:	700 MHz / 850 MHz
Gain:	11.85 dBd / 12.45 dBd	Gain:	11.85 dBd / 12.45 dBd	Gain:	11.85 dBd / 12.45 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	320.00 Watts	Total TX Power (W):	320.00 Watts	Total TX Power (W):	320.00 Watts
ERP (W):	5,262.42	ERP (W):	5,262.42	ERP (W):	5,262.42
Antenna A4 MPE %:	2.04%	Antenna B4 MPE %:	2.04%	Antenna C4 MPE %:	2.04%

- An adjusted power reduction factor of 0.32 was applied to the AIR 6449 antennas per guidance from AT&T.
- Specifications were not available for the Ericsson AIR 6419 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6419 due to its similarity.



Site Composite MPE %	
Carrier	MPE %
AT&T (Max at Sector A):	18.66%
Verizon	2.75%
Metro PCS	0.77%
Sprint	3.85%
Clearwire	0.12%
T-Mobile	4.53%
Site Total MPE % :	30.68%

AT&T MPE % Per Sector	
AT&T Sector A Total:	18.66%
AT&T Sector B Total:	18.66%
AT&T Sector C Total:	18.66%
Site Total MPE % :	30.68%

AT&T Maximum MPE Power Values (Sector A)

AT&T Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 700 MHz LTE FN	4	687.16	140.0	5.50	700 MHz LTE FN	467	1.18%
AT&T 1900 MHz LTE/5G	4	1574.20	140.0	12.61	1900 MHz LTE/5G	1000	1.26%
AT&T 2100 MHz LTE/5G	4	1686.79	140.0	13.51	2100 MHz LTE/5G	1000	1.35%
AT&T 3700 MHz C-Band	1	31996.92	142.0	62.19	3700 MHz C-Band	1000	6.22%
AT&T 3700 MHz C-Band	1	31996.92	138.0	66.02	3700 MHz C-Band	1000	6.60%
AT&T 700 MHz LTE	4	612.43	140.0	4.90	700 MHz LTE	467	1.05%
AT&T 850 MHz 5G	4	703.17	140.0	5.63	850 MHz 5G	567	0.99%
						Total:	18.66%

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.



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

AT&T Sector	Power Density Value (%)
Sector A:	18.66%
Sector B:	18.66%
Sector C:	18.66%
AT&T Maximum MPE % (Sector A):	18.66%
Site Total:	30.68%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **30.68%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

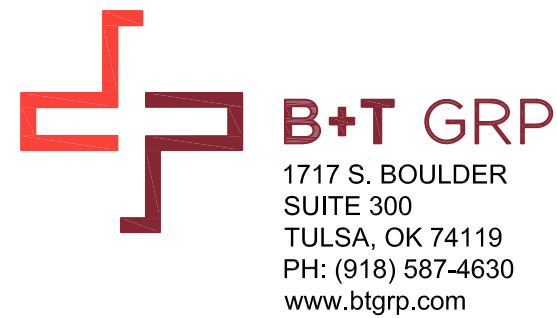


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DISCLAIMER PROVIDED BY AT&T. THIS STATEMENT DOES NOT CONSTITUTE ENGINEERING ANALYSIS OR DESIGN.



AT&T SITE NUMBER: CTL03159
AT&T SITE NAME: ORANGE NW
AT&T FA CODE: 10091761
AT&T PACE NUMBER: MRCTB056826
AT&T PROJECT: CBAND + DOD, 700BC 4T4R, 700 B14, AWSJ, 1900 SOFTWARE CARRIER//1900 A3-A4 & E

BUSINESS UNIT #: 881541
SITE ADDRESS: 700 GRASSY HILL ROAD ORANGE, CT 06477
COUNTY: NEW HAVEN
SITE TYPE: MONOPOLE
TOWER HEIGHT: 139'-6"



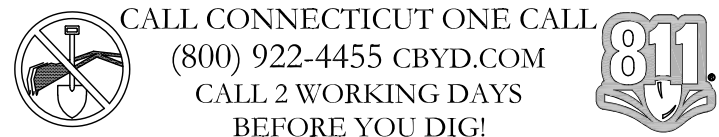
SITE INFORMATION

CROWN CASTLE USA INC. ROGERS PROPERTY
SITE NAME:
SITE ADDRESS: 700 GRASSY HILL ROAD ORANGE, CT 06477
COUNTY: NEW HAVEN
MAP/PARCEL #: 60-6-1A
AREA OF CONSTRUCTION: EXISTING
LATITUDE: 41° 17' 7.7469"
LONGITUDE: -73° 2' 33.27"
LAT/LONG TYPE: NAD83
GROUND ELEVATION: 81'-0"
CURRENT ZONING: RES (RESIDENTIAL)
JURISDICTION: CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION: U
TYPE OF CONSTRUCTION: IIB
A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER: TOWN OF ORANGE 617 ORANGE CENTER ROAD ORANGE, CT 6477
TOWER OWNER: CROWN CASTLE USA INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT: AT&T TOWER ASSET GROUP 575 MOROSGO DRIVE ATLANTA, GA 30324-3300
ELECTRIC PROVIDER: UNITED ILLUMINATING CO. (203) 499-2000
TELCO PROVIDER: N/A

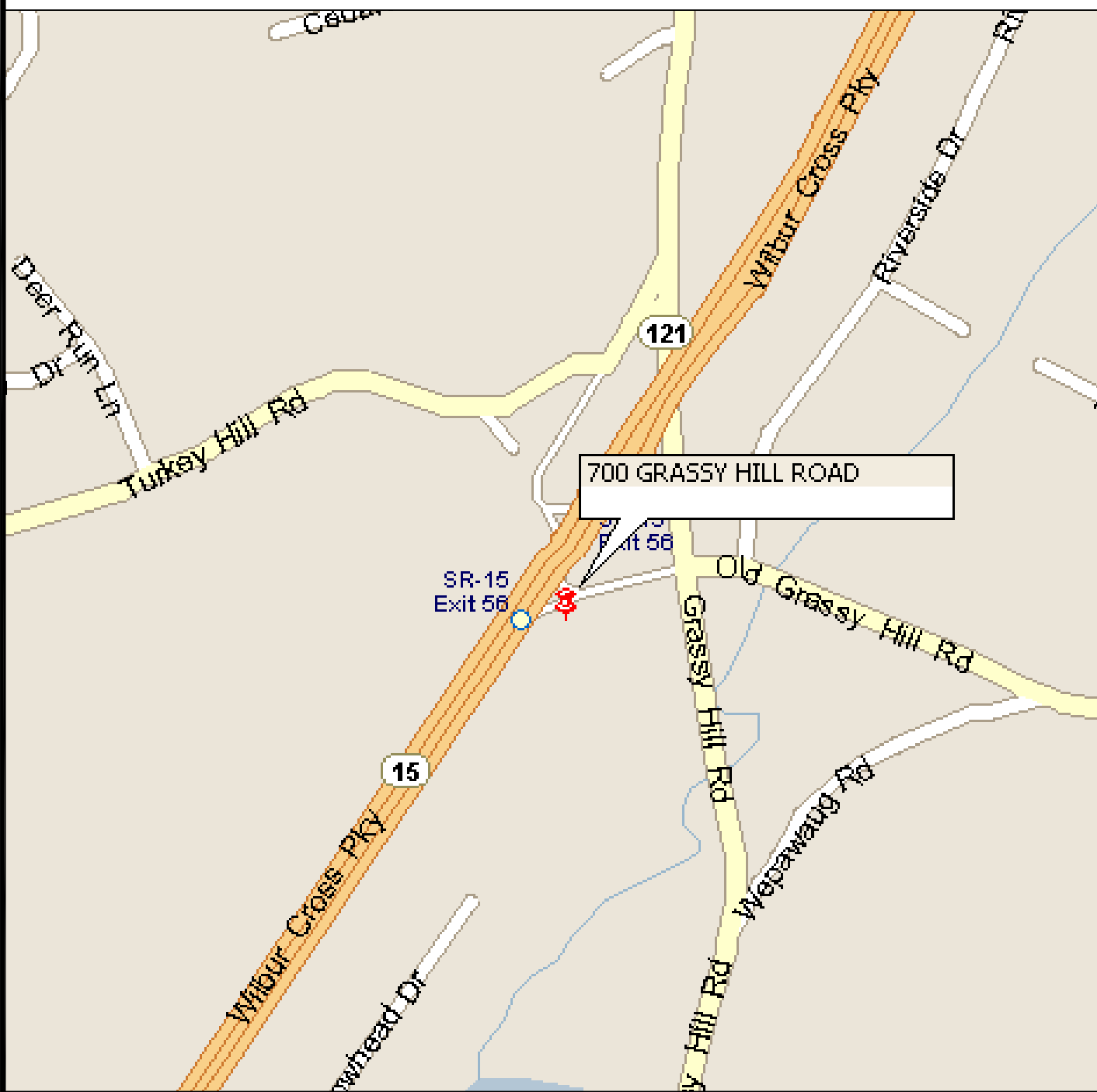
DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	SITE PLAN
C-1.2	EXISTING & FINAL EQUIPMENT PLANS
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	FINAL EQUIPMENT SCHEDULE
C-4	EQUIPMENT MOUNTING DETAILS
C-5	EQUIPMENT SPECS
G-1	GROUNDING SCHEMATIC
G-2	GROUNDING DETAILS
ATTACHED	PLUMBING DIAGRAM

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.



LOCATION MAP



SITE PHOTO



AT&T SITE NUMBER: CTL03159

BU #: 881541
ROGERS PROPERTY

700 GRASSY HILL ROAD
ORANGE, CT 06477

EXISTING
139'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	1/7/22	JTS	PRELIMINARY REVIEW	JHW
0	2/15/22	JHW	CONSTRUCTION	MTJ

PROJECT TEAM

A&E FIRM: B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS: 1505 WESTLAKE AVENUE NORTH, SUITE 800 SEATTLE, WA 98109
PAUL PEDICONE - PROJECT MANAGER PAUL.PEDICONE@CROWNCastle.COM
JASON D'AMICO - CONSTRUCTION MANAGER JASON.DAMICO@CROWNCastle.COM

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

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 (3) KATHREIN - 800-10121 ANTENNAS
 - REMOVE (3) CCI - HPA-65R-BUU-H6 ANTENNAS
 - REMOVE (3) ERICSSON - RRUS-11 B12 RRU
 - REMOVE (3) ERICSSON - RRUS-12 B2 + RRUS-A2 B25 RRU
 - REMOVE (6) POWERWAVE - LGP21401 TMA5
 - INSTALL (3) CCI - TPA65R-BU6DA-K ANTENNAS
 - INSTALL (3+3) ERICSSON - AIR6449 B77D+AIR6419 B77G STACKED ANTENNAS W/ INTEGRATED RADIOS
 - INSTALL (3) CCI - DMP65R-BU6DA ANTENNAS
 - INSTALL (3) ERICSSON - RRUS 4478 B14 RRU
 - INSTALL (3) ERICSSON - RRUS 8843 B2/B66A RRU
 - INSTALL (3) ERICSSON - RRUS 4449 B5/B12 RRU
 - INSTALL (1) RAYCAP - DC9-48-60-24-8C-EV SQUID
 - INSTALL (3) 2-3/8" O.D. (SCH 40) X 10'-0" LONG MOUNT PIPE W/ ASSOCIATED HARDWARE
 - INSTALL (3) DC CABLES (7/8")
 - INSTALL (1) FIBER CABLE (3/8")
 - INSTALL (6) Y-CABLES

- GROUND SCOPE OF WORK:**
- REMOVE (6) POWERWAVE - LGP 13519 DIPLEXER
 - REMOVE (1) RETIRED GSM CABINET
 - INSTALL (5) RECTIFIERS IN EXISTING POWER PLANT
 - INSTALL (8) BATTERIES IN NEW BATTERY CABINET
 - INSTALL (1) VERTIVE 48V BATTERY CABINET
 - INSTALL (1) 6601 MODULE
 - INSTALL (1) 5216 MODULE
 - INSTALL GPS SPLITTER TO BBU CONFIGURATION
 - INSTALL IDLE
 - INSTALL 6648 W/ XCEDE CABLE

INSTALLER NOTE:
BIRD NEST ON SITE

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	2015 IBC W/ AMENDMENTS
MECHANICAL	2015 IMC W/ AMENDMENTS
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BY OTHERS
DATED:	
MOUNT ANALYSIS:	TEP
DATED:	12/28/21
RFDS REVISION:	PRELIMINARY
DATED:	12/21/21
ORDER ID:	586311
REVISION:	1



B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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:

- 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.
- "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.
- 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.
- 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, TO CERTIFY 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).
- 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." 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.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- 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.
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- 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.
- 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.
- 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.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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.

GREENFIELD GROUNDING NOTES:

- 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.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL 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.
- 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.
- METAL CONDUIT AND TRAY SHALL BE GROUNDDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 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.
- 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.
- 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.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
- ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
- COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
- ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
- APPROVED ANTI-OXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 ft. OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
- 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.
- 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).
- 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).

GENERAL NOTES:

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER: AT&T
TOWER OWNER: CROWN CASTLE USA INC.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

- 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.
- UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
- 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.
- 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.
- ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WFF) 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
- 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"
- A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
- 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. VERIFY 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.
- 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.
- 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).
- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- 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.
- 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.
- POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TO CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- 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).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC AND NEC.
- ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ALLOWABLE.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC AND THE NEC.
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECIMATE WIREWAY).
- SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "AT&T".
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

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

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

ABBREVIATIONS:

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

APWA UNIFORM COLOR CODE:

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



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ATLANTA, GA 30324-3300



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AT&T SITE NUMBER:
CTL03159

BU #: 881541
ROGERS PROPERTY

700 GRASSY HILL ROAD
ORANGE, CT 06477

EXISTING
139'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	1/7/22	JTS	PRELIMINARY REVIEW	JHW
0	2/15/22	JHW	CONSTRUCTION	MTJ



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T-2

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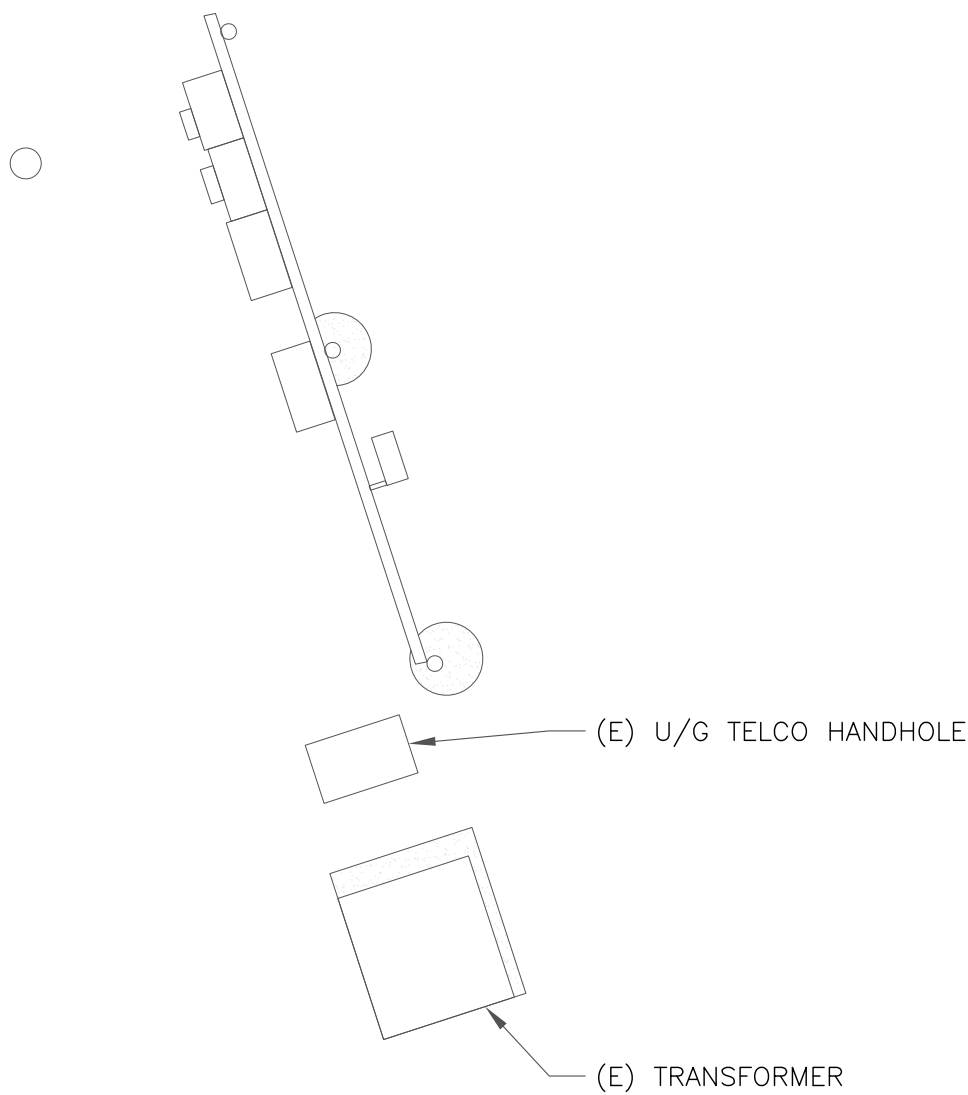
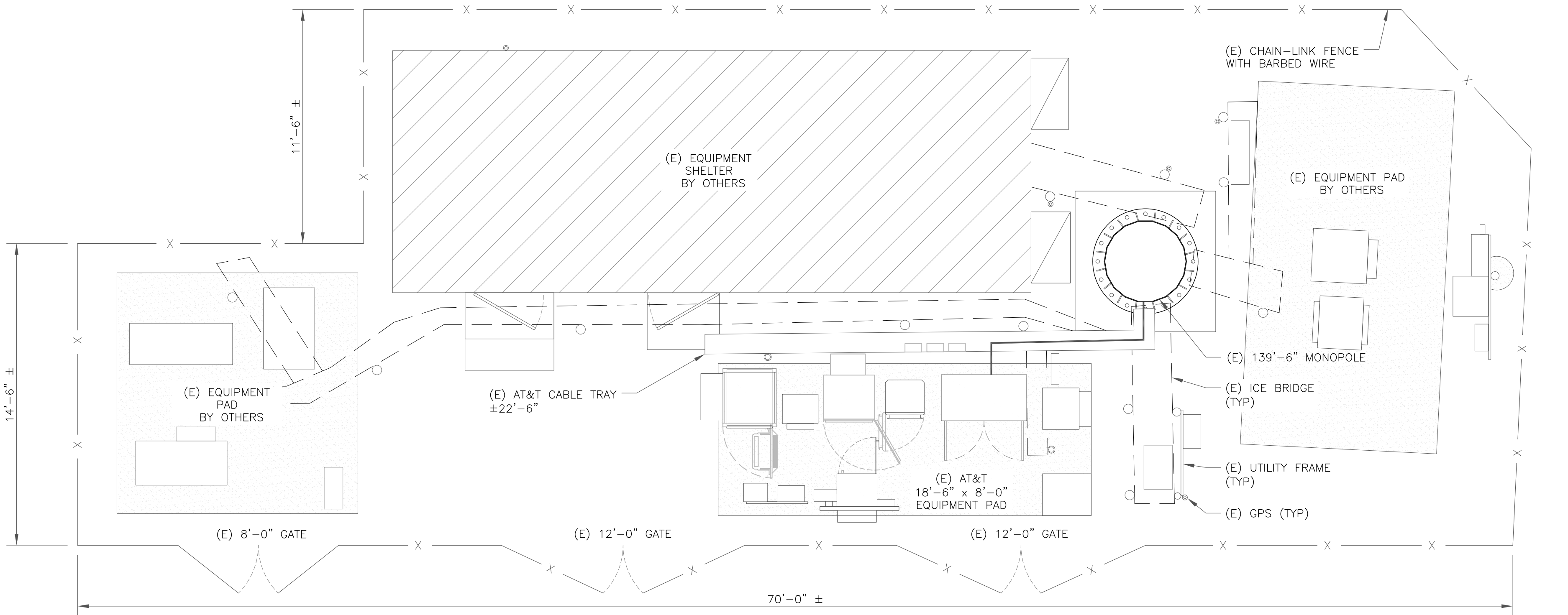
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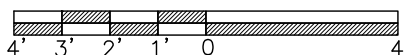
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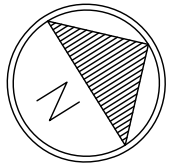
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SITE PLAN

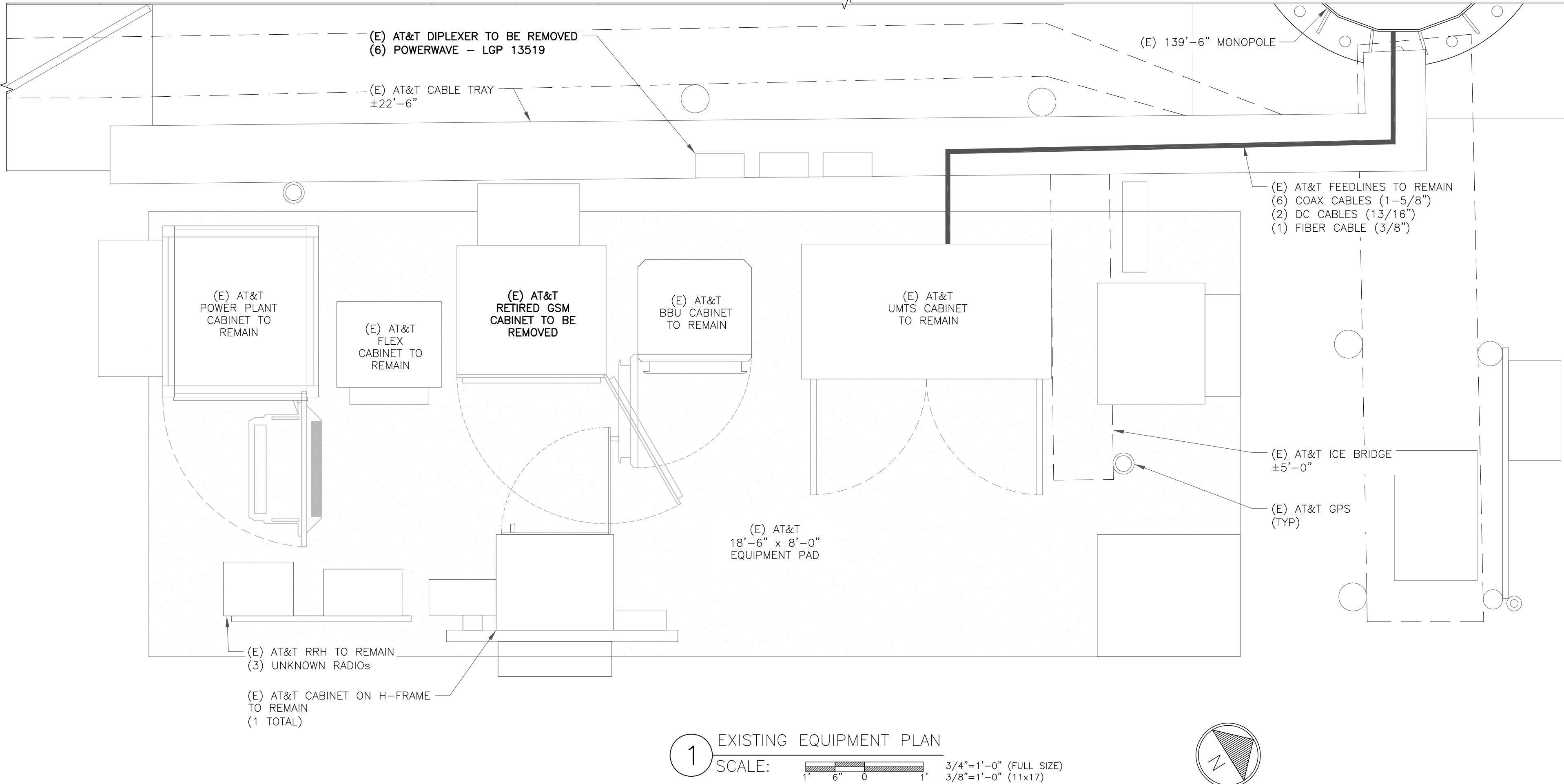
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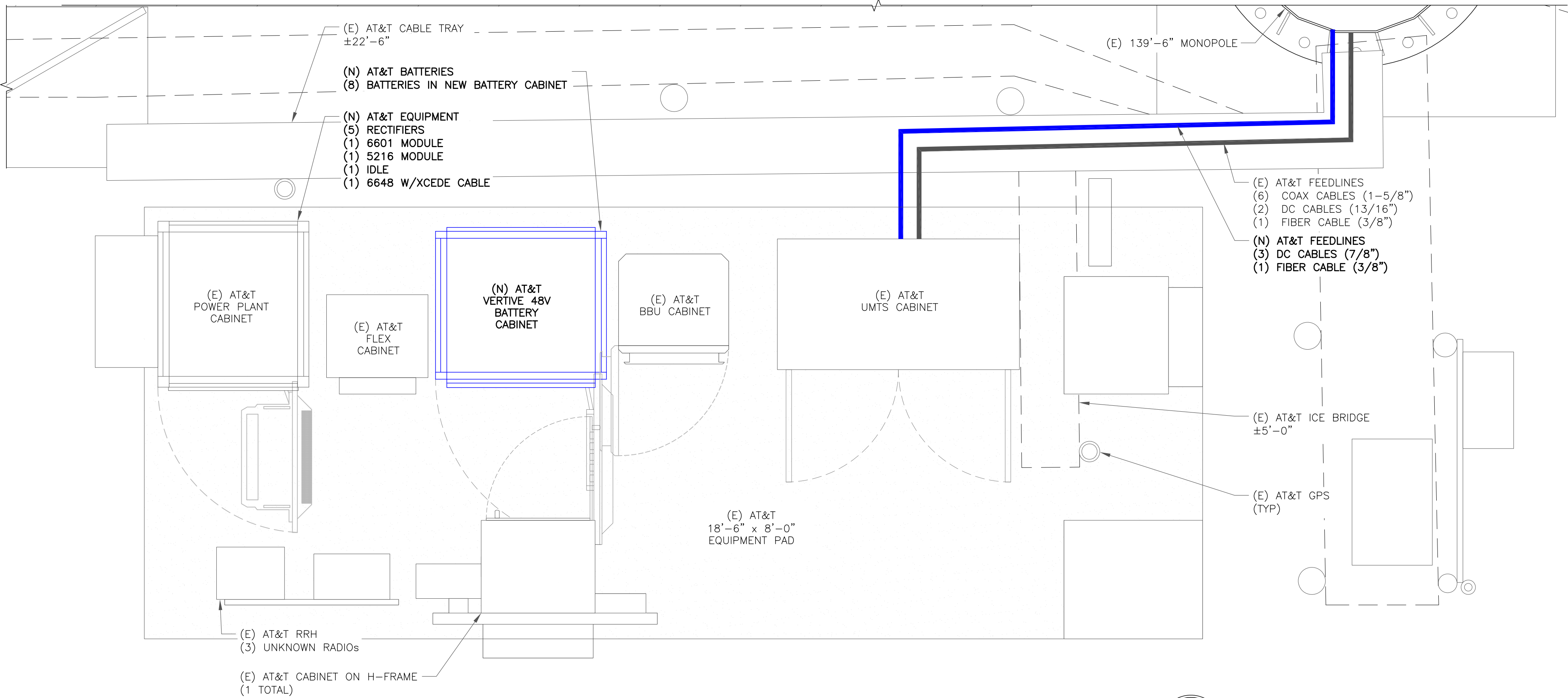
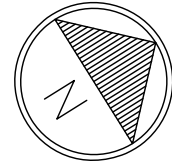
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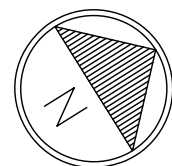
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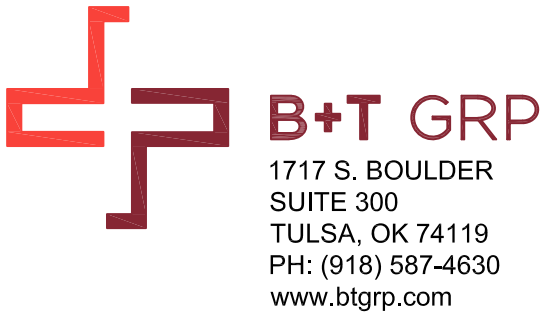
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3/8"=1'-0" (11x17)



2 FINAL EQUIPMENT PLAN
SCALE: 3/4"=1'-0" (FULL SIZE)
3/8"=1'-0" (11x17)



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EXISTING
139'-6" MONOPOLE

- GROUND SCOPE OF WORK:
- REMOVE (6) POWERWAVE - LGP 13519 DIPLEXER
 - REMOVE (1) RETIRED GSM CABINET
 - INSTALL (5) RECTIFIERS IN EXISTING POWER PLANT
 - INSTALL (8) BATTERIES IN NEW BATTERY CABINET
 - INSTALL (1) VERTIVE 48V BATTERY CABINET
 - INSTALL (1) 6601 MODULE
 - INSTALL (1) 5216 MODULE
 - INSTALL GPS SPLITTER TO BBU CONFIGURATION
 - INSTALL IDLE
 - INSTALL 6648 W/XCEDE CABLE

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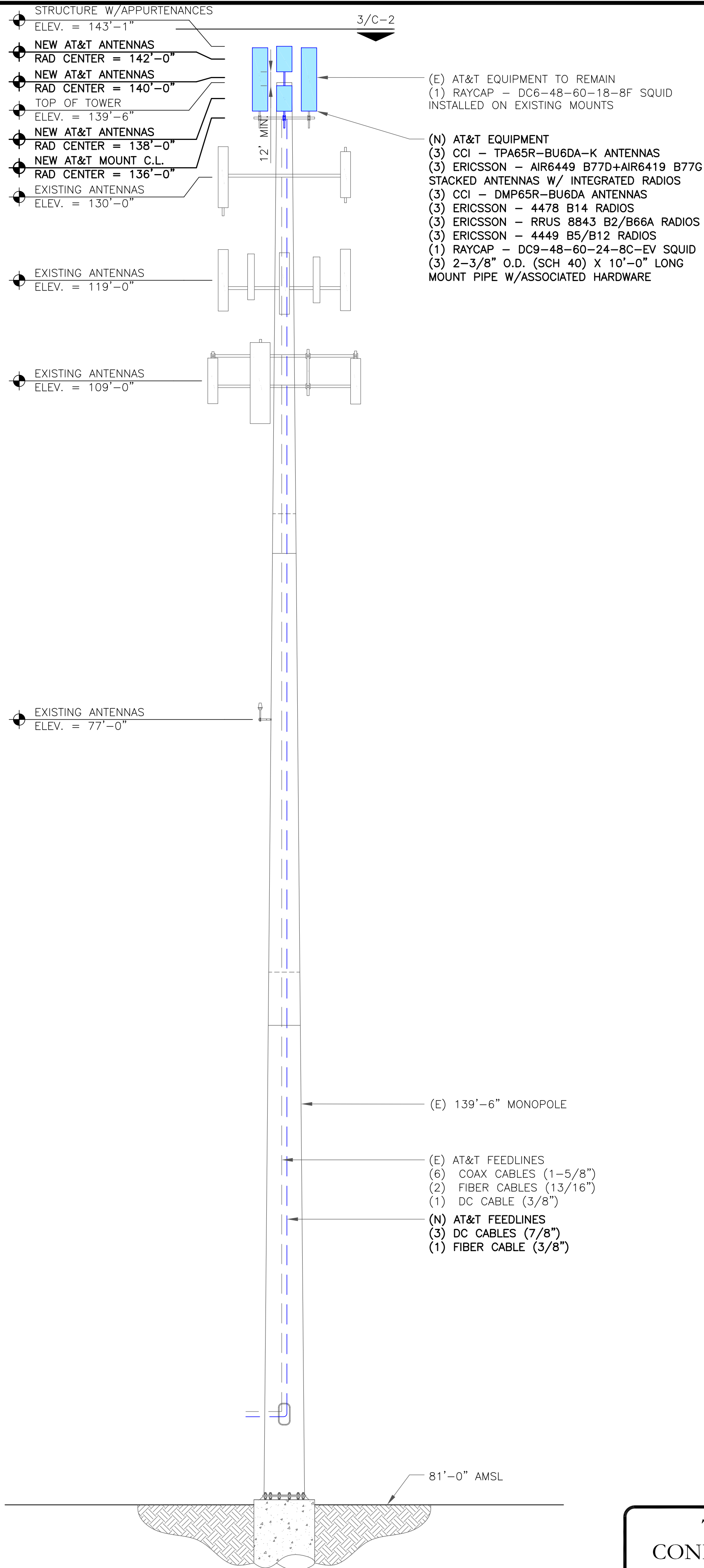
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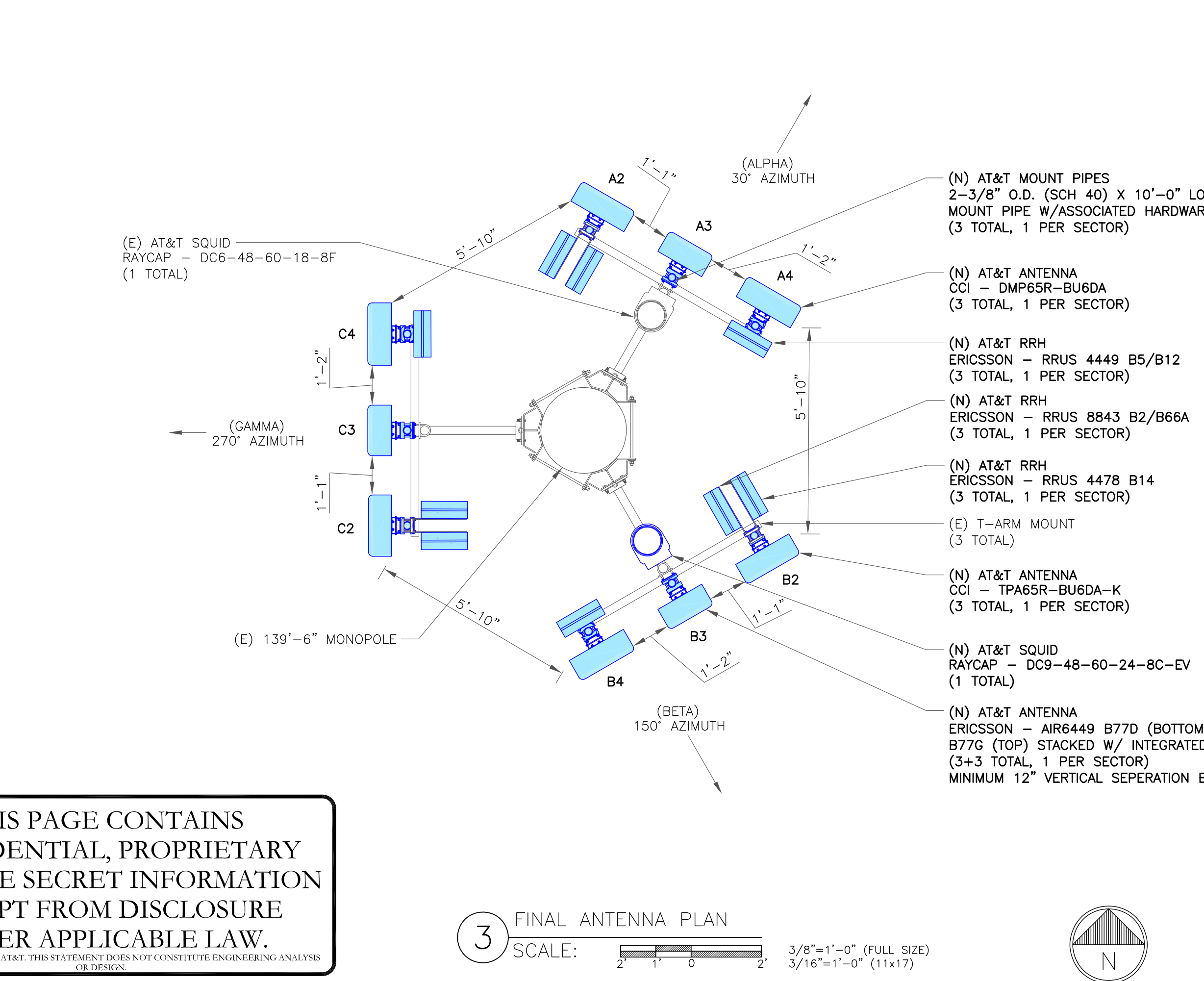
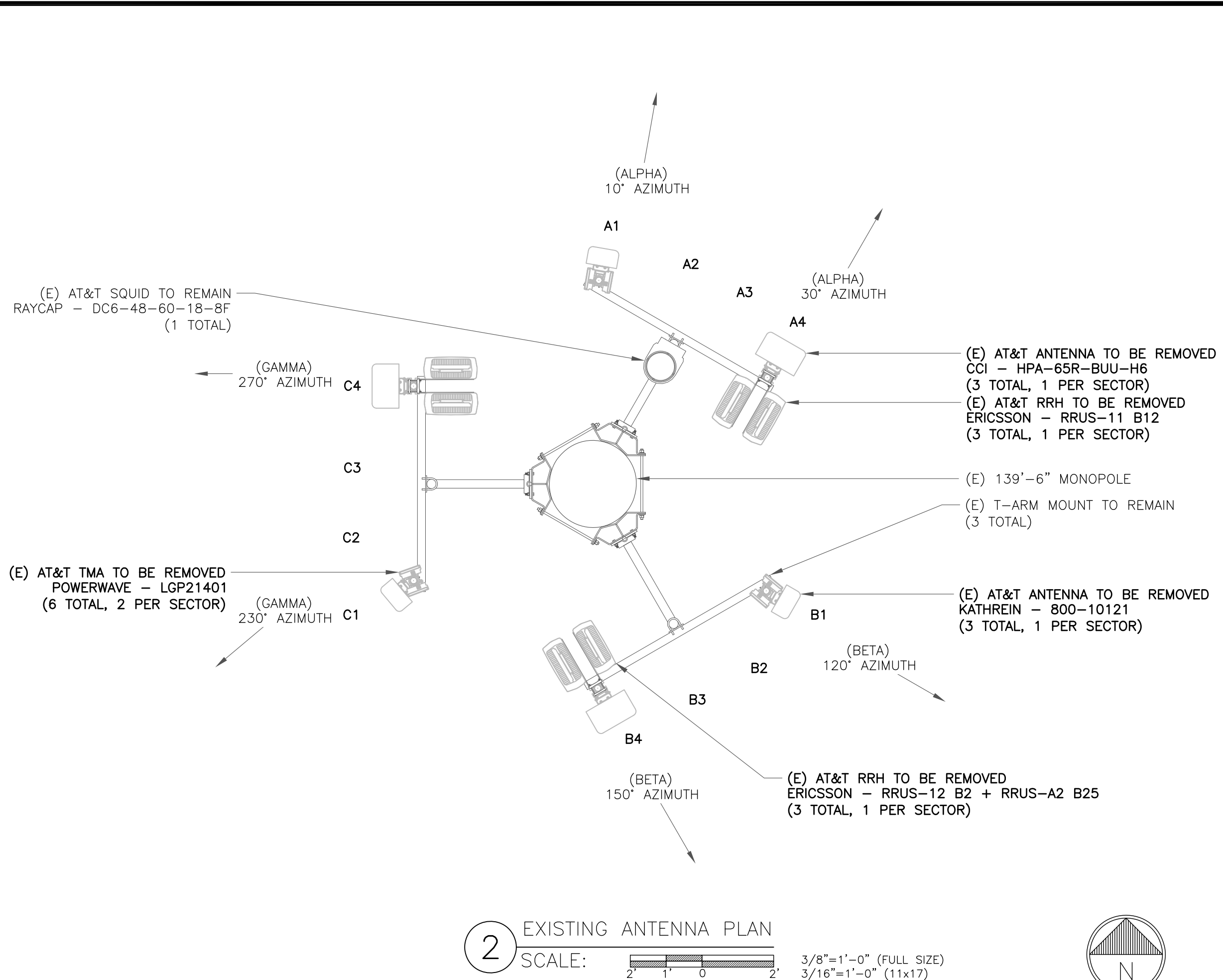
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1 FINAL ELEVATION
SCALE: NOT TO SCALE



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"LOOK UP" - CROWN CASTLE, USA INC.
SAFETY CLIMB REQUIREMENT:

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

INSTALLER NOTES:

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

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C-2

REVISION:
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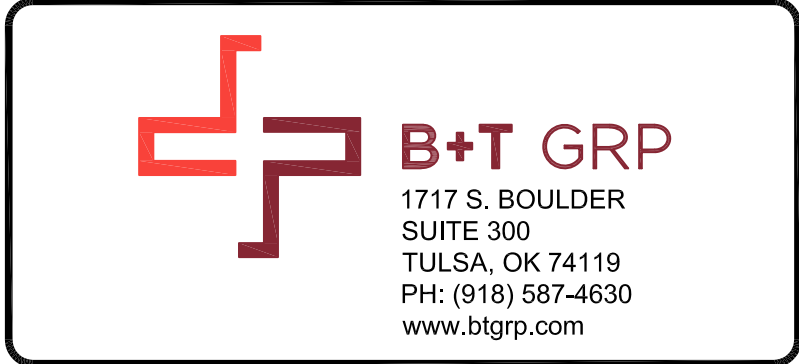
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ATLANTA, GA 30324-3300



1505 WESTLAKE AVENUE NORTH, SUITE 800
SEATTLE, WA 98109



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TULSA, OK 74119
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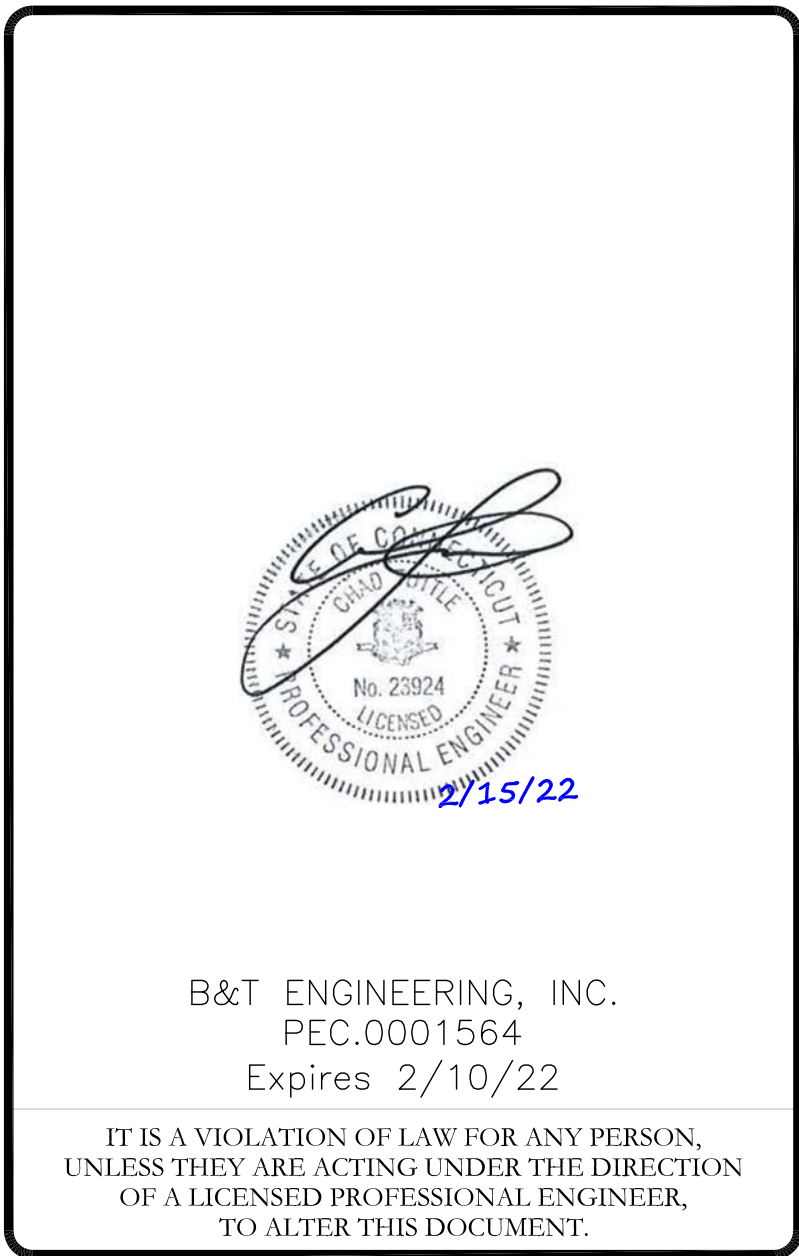
AT&T SITE NUMBER:
CTL03159

BU #: **881541**
ROGERS PROPERTY

700 GRASSY HILL ROAD
ORANGE, CT 06477

EXISTING
139'-6" MONOPOLE

ISSUED FOR:				
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	1/7/22	JTS	PRELIMINARY REVIEW	JHW
0	2/15/22	JHW	CONSTRUCTION	MTJ



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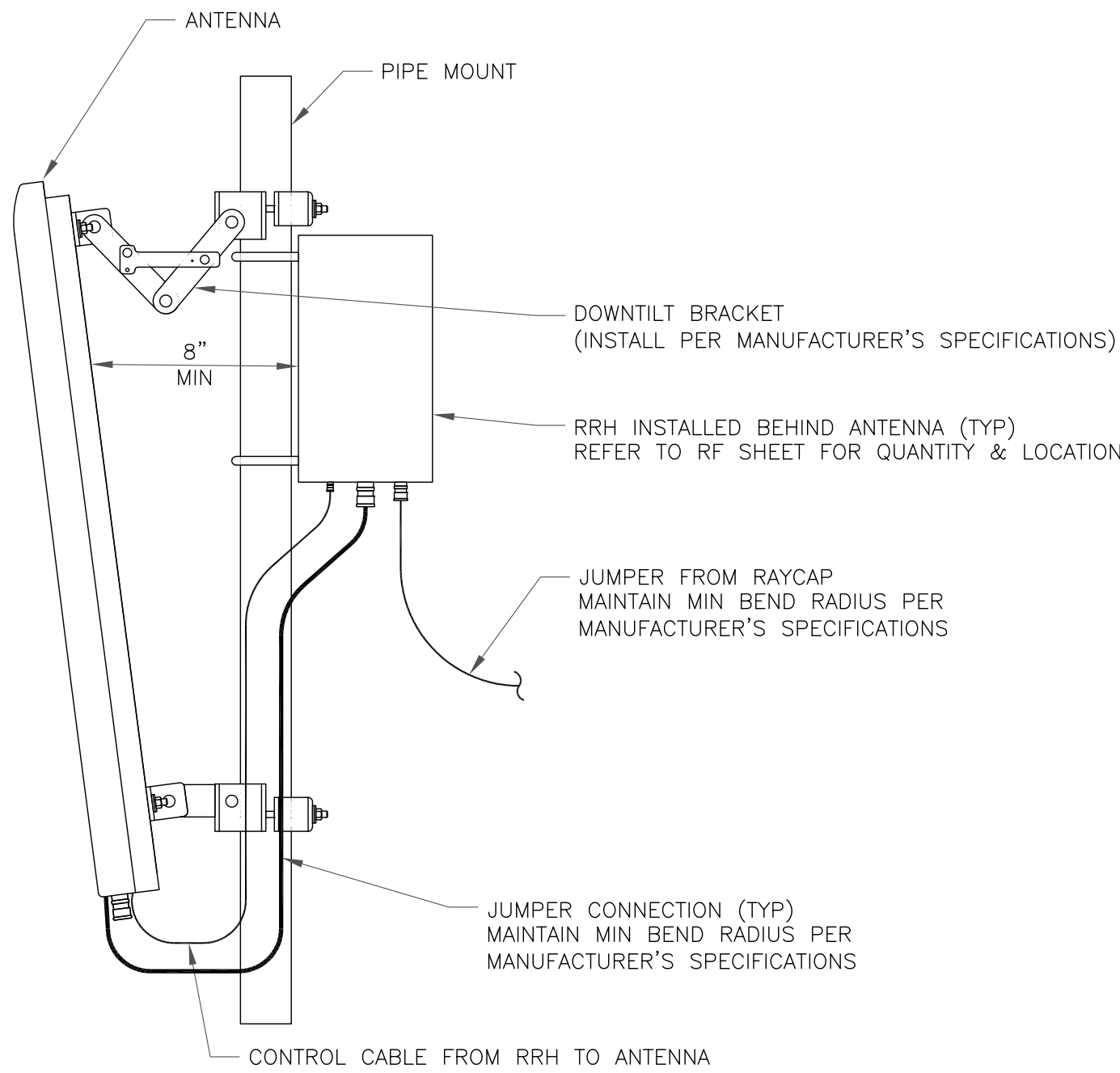
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REVISION:
0

FINAL ANTENNA AND FEEDLINE SCHEDULE																		
POS.	TECH	STATUS	AZIMUTH	ANTENNA TYPE	ANTENNA RAD CENTER	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	MAIN COAX SIZE	MAIN COAX LENGTH	COAX QTY	TMA QTY AND MODEL	SURGE PROTECTION	DC/FIBER CABLES	RRHs QTY & MODEL ON TOWER	LOCATION	DIPLEXER ON TOWER	DIPLEXER ON GROUND	RET CABLE
ALPHA SECTOR																		
A1	—	—	—	EMPTY SPACE	—	—	—	—	—	—	—	DC6-48-60-18-8F	(1) 3/8" FIBER (2) 13/16" DC	—	—	—	—	—
A2	LTE 700/LTE 1900/LTE AWS/5G 1900/5G AWS	NEW	30°	CCI — TPA65R-BU6DA-K	140'-0"	0°	3°/3°/3°/5°/5°/5°	1-5/8"	190'-0"	2	—			(1) RRUS 4478 B14 (1) RRUS 8843 B2/B66A	TOWER	N	N	N
A3	5G CBAND	NEW	30°	ERICSSON — AIR6449 B77D ERICSSON — AIR6419 B77G	138'-0" 142'-0"	0° 0°	0°/0° 0°/0°	—	—	—	—			INTEGRATED WITHIN	TOWER	—	—	—
A4	LTE 700/5G 850	NEW	30°	CCI — DMP65R-BU6DA	140'-0"	0°	8°/4°	—	—	—	—			(1) RRUS 4449 B5/B12	TOWER	N	N	N
BETA SECTOR																		
B1	—	—	—	EMPTY SPACE	—	—	—	—	—	—	—	DC9-48-60-24-8C-EV	(3) 7/8" DC (1) 3/8" FIBER	—	—	—	—	—
B2	LTE 700/LTE 1900/LTE AWS/5G 1900/5G AWS	NEW	150°	CCI — TPA65R-BU6DA-K	140'-0"	0°	3°/3°/3°/5°/5°/5°	1-5/8"	190'-0"	2	—			(1) RRUS 4478 B14 (1) RRUS 8843 B2/B66A	TOWER	N	N	N
B3	5G CBAND	NEW	150°	ERICSSON — AIR6449 B77D ERICSSON — AIR6419 B77G	138'-0" 142'-0"	0° 0°	0°/0° 0°/0°	—	—	—	—			INTEGRATED WITHIN	TOWER	—	—	—
B4	LTE 700/5G 850	NEW	150°	CCI — DMP65R-BU6DA	140'-0"	0°	8°/4°	—	—	—	—			(1) RRUS 4449 B5/B12	TOWER	N	N	N
GAMMA SECTOR																		
C1	—	—	—	EMPTY SPACE	—	—	—	—	—	—	—	—	—	—	—	—	—	—
C2	LTE 700/LTE 1900/LTE AWS/5G 1900/5G AWS	NEW	270°	CCI — TPA65R-BU6DA-K	140'-0"	0°	3°/3°/3°/5°/5°/5°	1-5/8"	190'-0"	2	—			(1) RRUS 4478 B14 (1) RRUS 8843 B2/B66A	TOWER	N	N	N
C3	5G CBAND	NEW	270°	ERICSSON — AIR6449 B77D ERICSSON — AIR6419 B77G	138'-0" 142'-0"	0° 0°	0°/0° 0°/0°	—	—	—	—			INTEGRATED WITHIN	TOWER	—	—	—
C4	LTE 700/5G 850	NEW	270°	CCI — DMP65R-BU6DA	140'-0"	0°	8°/4°	—	—	—	—			(1) RRUS 4449 B5/B12	TOWER	N	N	N

NOTE: BOLD DENOTES NEW EQUIPMENT

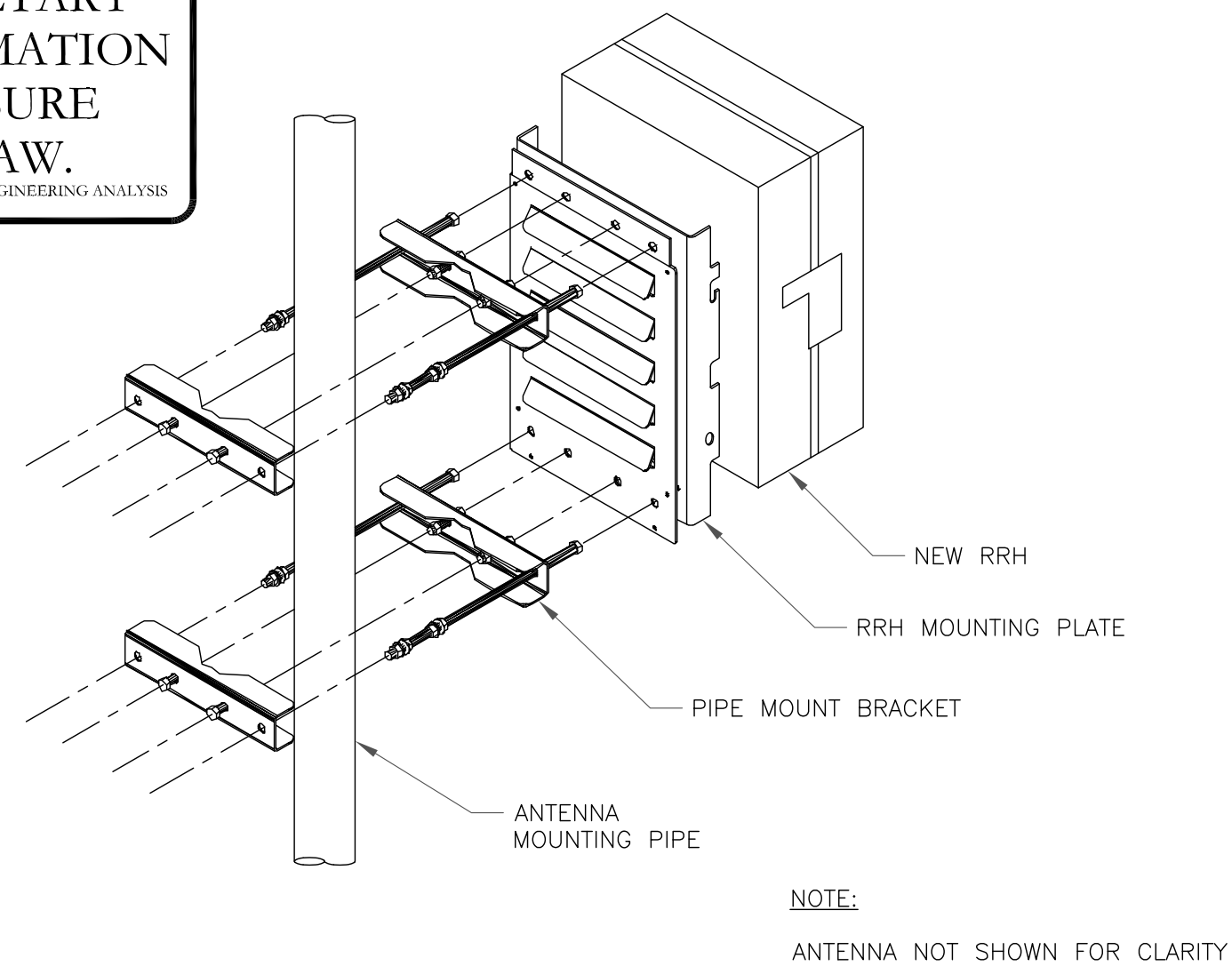
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1 GENERIC ANTENNA MOUNTING ELEVATION
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

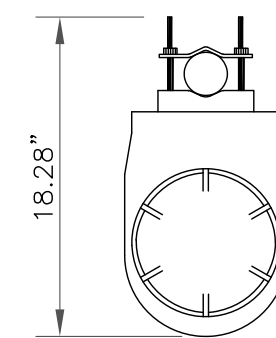
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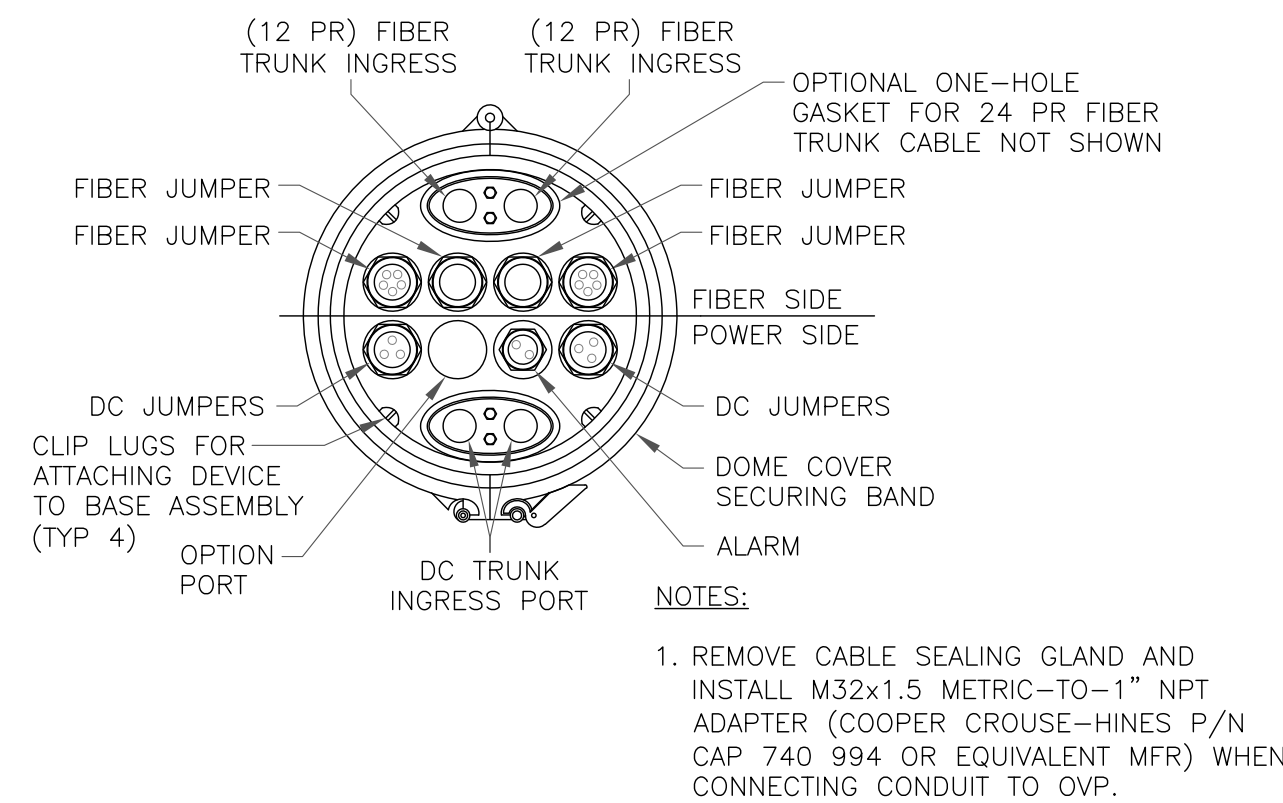
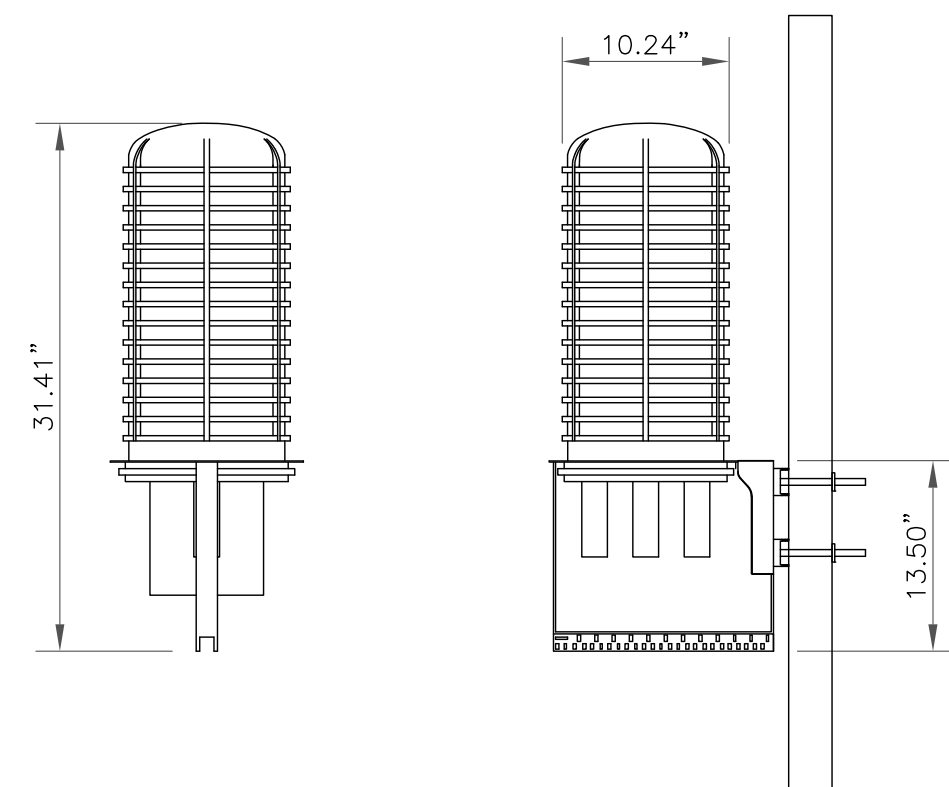
3 SINGLE RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

RAYCAP
DC9-48-60-24-8C-EV

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



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

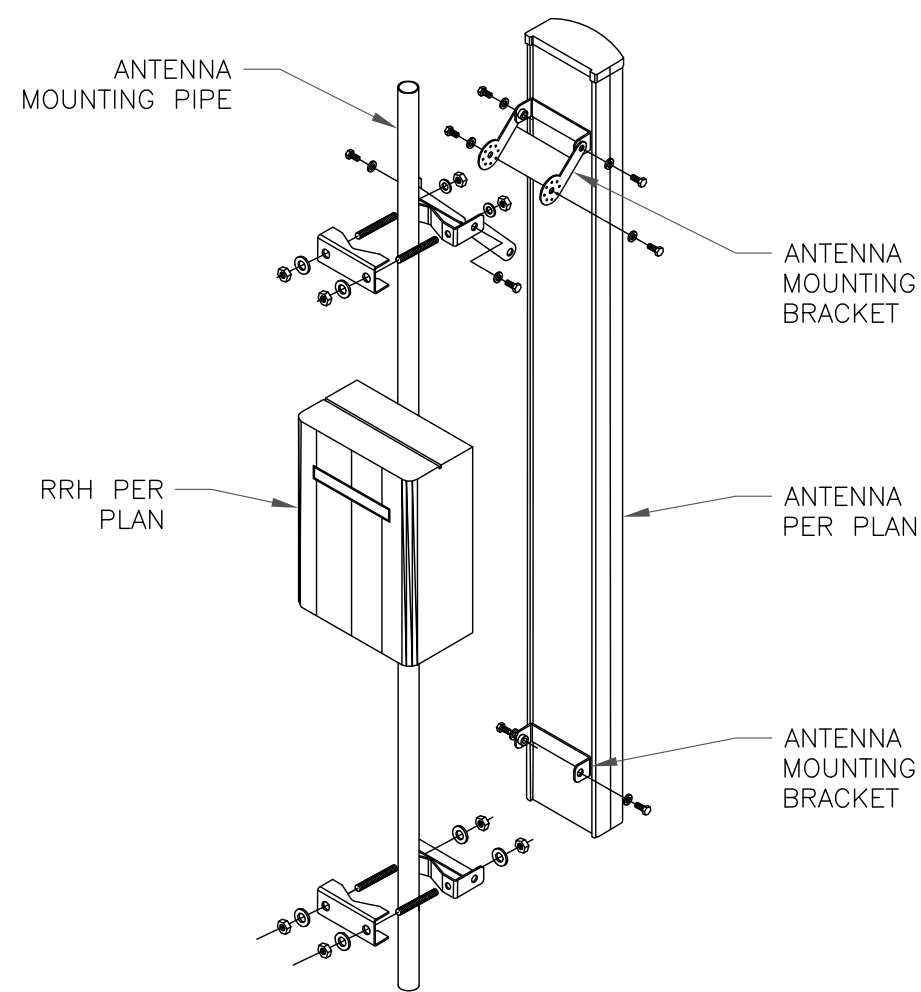


7 SQUID MOUNTING DETAIL
SCALE: NOT TO SCALE

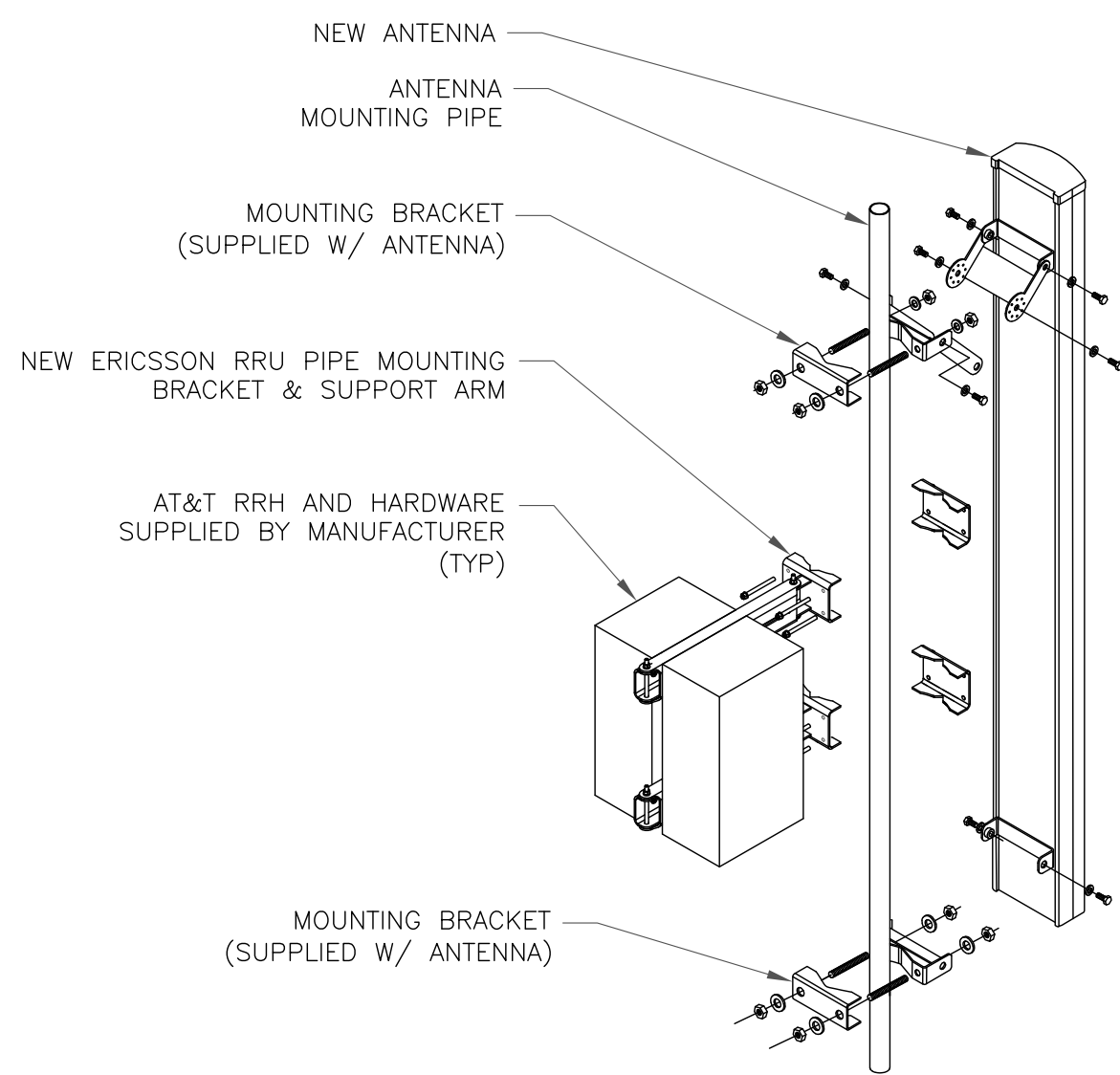
- INSTALLER NOTES:
1. COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRHs RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING.
 2. DO NOT OPEN RRH PACKAGES IN THE RAIN.
 3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.

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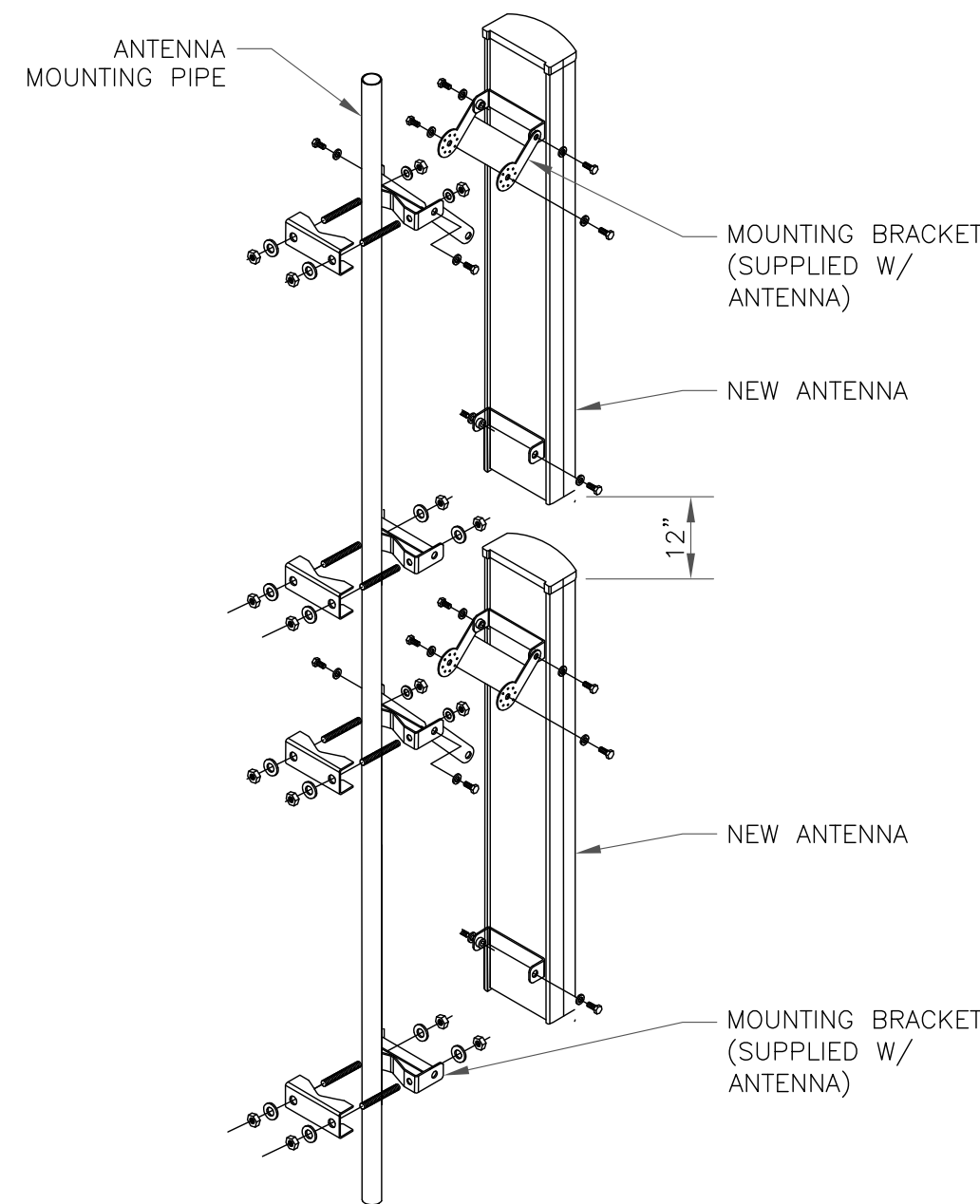
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 3. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



4 ANTENNA WITH RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



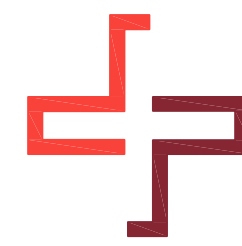
5 ANTENNA WITH DUAL RRH MOUNTING DETAIL
SCALE: NOT TO SCALE



6 STACKED ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

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700 GRASSY HILL ROAD
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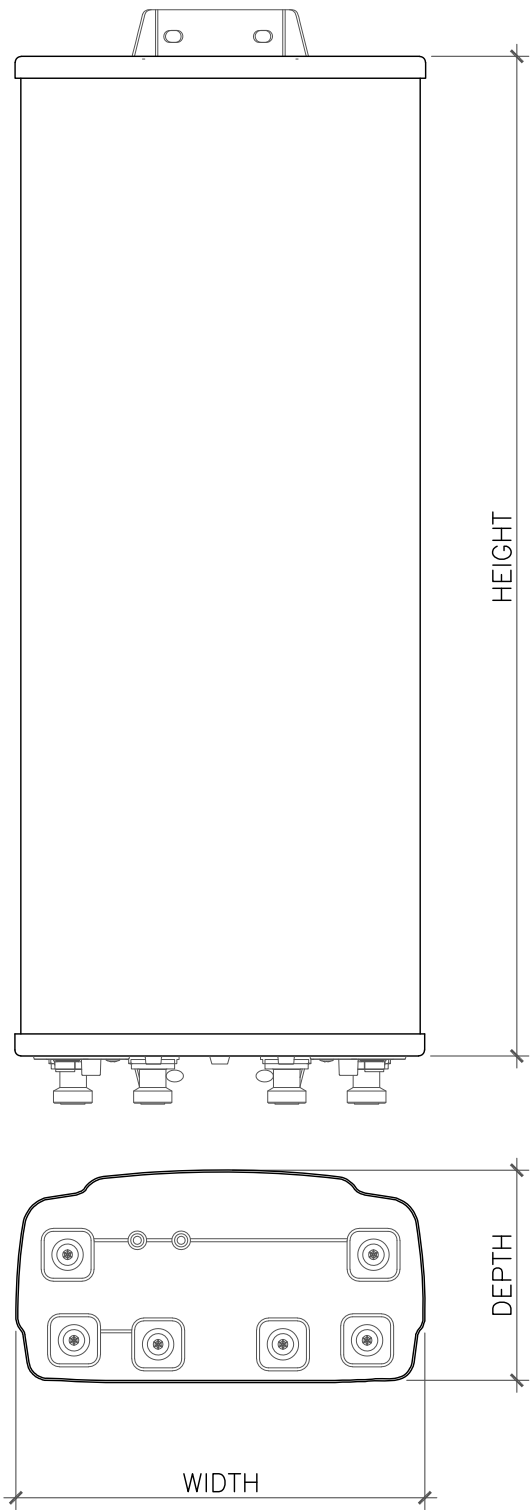
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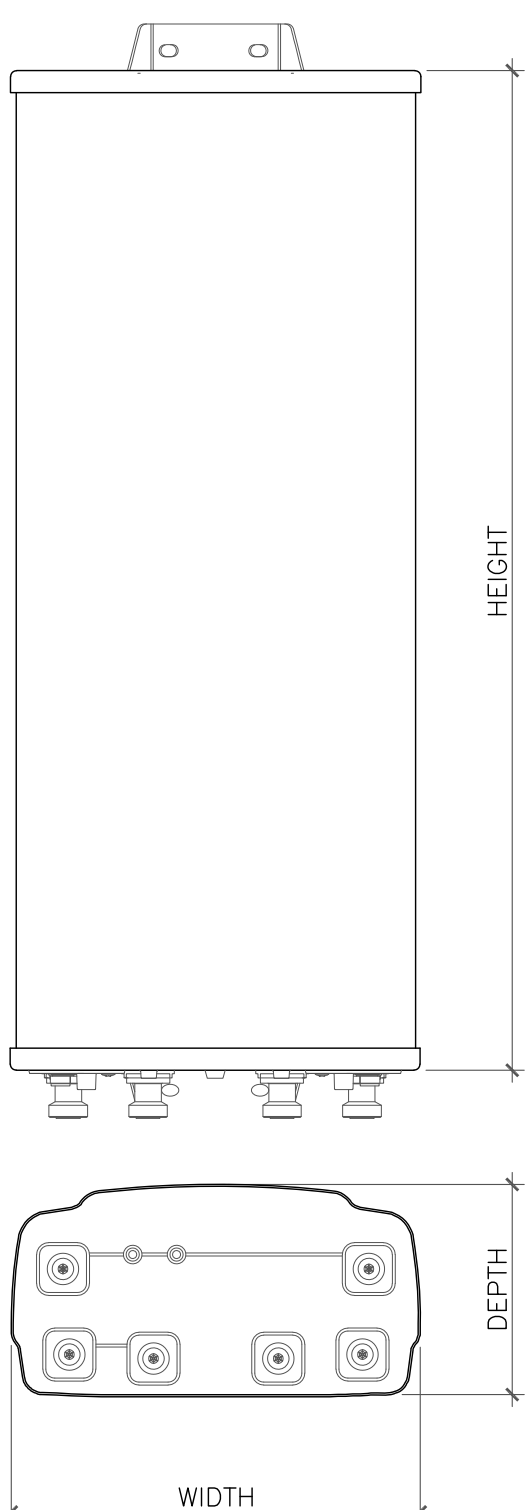
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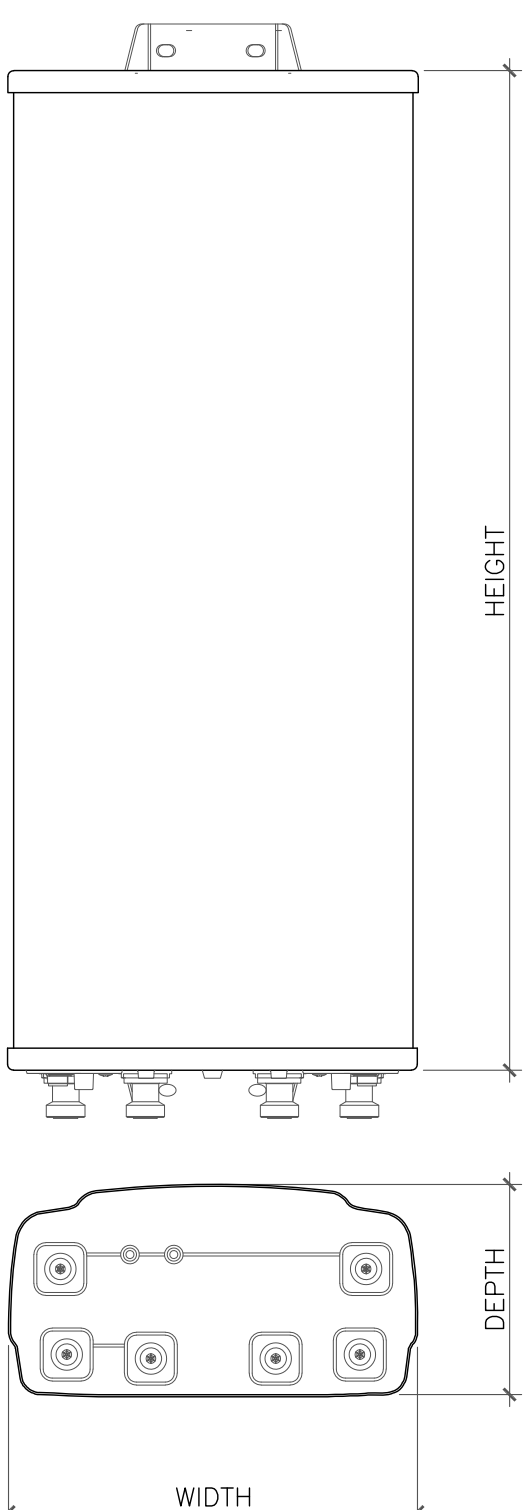
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
TPA65R-BU6DA-K	71.20"	20.70"	7.70"	69.0 lbs

1 ANTENNA DETAIL
SCALE: NOT TO SCALE



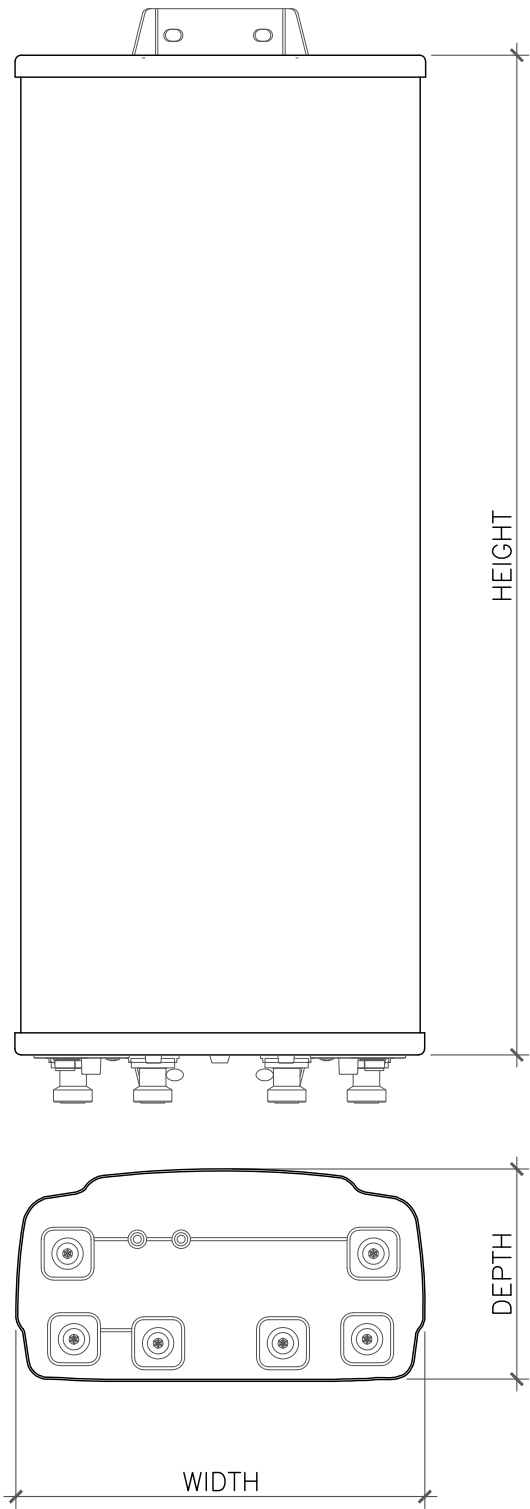
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
AIR6449 B77D	30.63"	15.87"	8.07"	81.60 lbs

2 ANTENNA DETAIL
SCALE: NOT TO SCALE



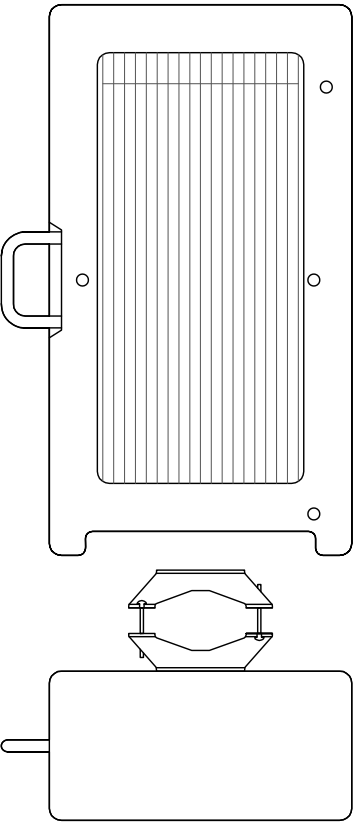
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
AIR6419 B77G	27.95"	15.75"	6.68"	66.2 lbs

3 ANTENNA DETAIL
SCALE: NOT TO SCALE



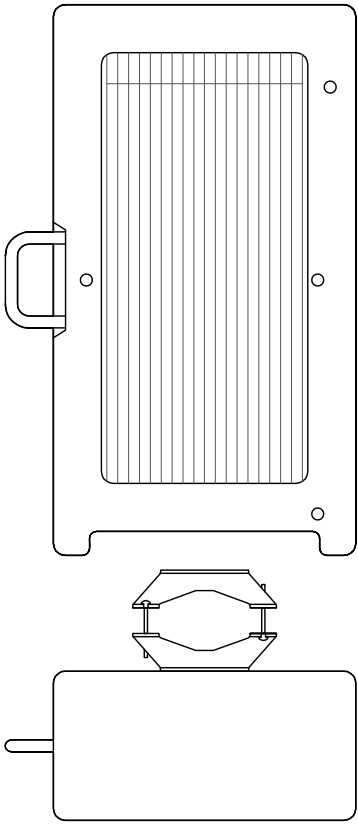
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
DMP65R-BU6DA	71.20"	20.70"	7.70"	89.30 lbs

4 ANTENNA DETAIL
SCALE: NOT TO SCALE



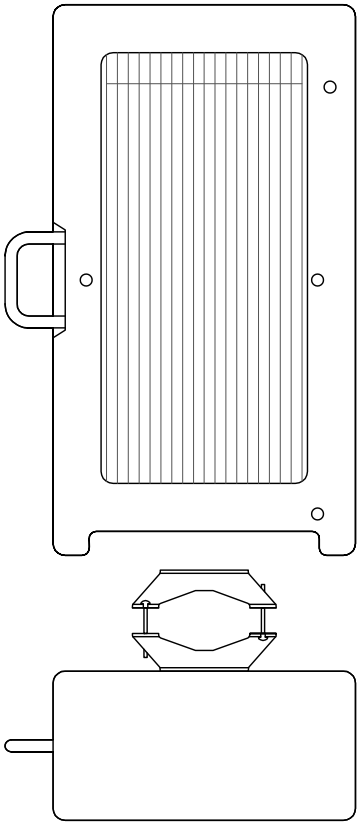
ERICSSON - 4478 B14
WEIGHT (FULLY EQUIPPED): 59.40 LBS
SIZE (HxWxD): 18.10x13.40x8.26 IN.
CONNECTOR TYPE: 4.3-10 FEMALE (4 TOTAL PORTS)

5 ERICSSON - 4478 B14
SCALE: NOT TO SCALE



ERICSSON - 8843 B2/B66A
WEIGHT (FULLY EQUIPPED): 75.0 LBS
SIZE (HxWxD): 18.00x13.20x11.30 IN.
CONNECTOR TYPE: 4.3-10 FEMALE (4 TOTAL PORTS)

6 ERICSSON - 8843 B2/B66A
SCALE: NOT TO SCALE



ERICSSON - 4449 B5/B12
WEIGHT (FULLY EQUIPPED): 71.0 LBS
SIZE (HxWxD): 17.90x13.19x9.44 IN.
CONNECTOR TYPE: 4.3-10 FEMALE (4 TOTAL PORTS)

7 ERICSSON - 4449 B5/B12
SCALE: NOT TO SCALE

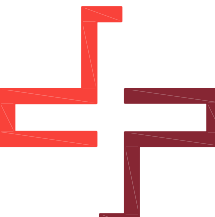
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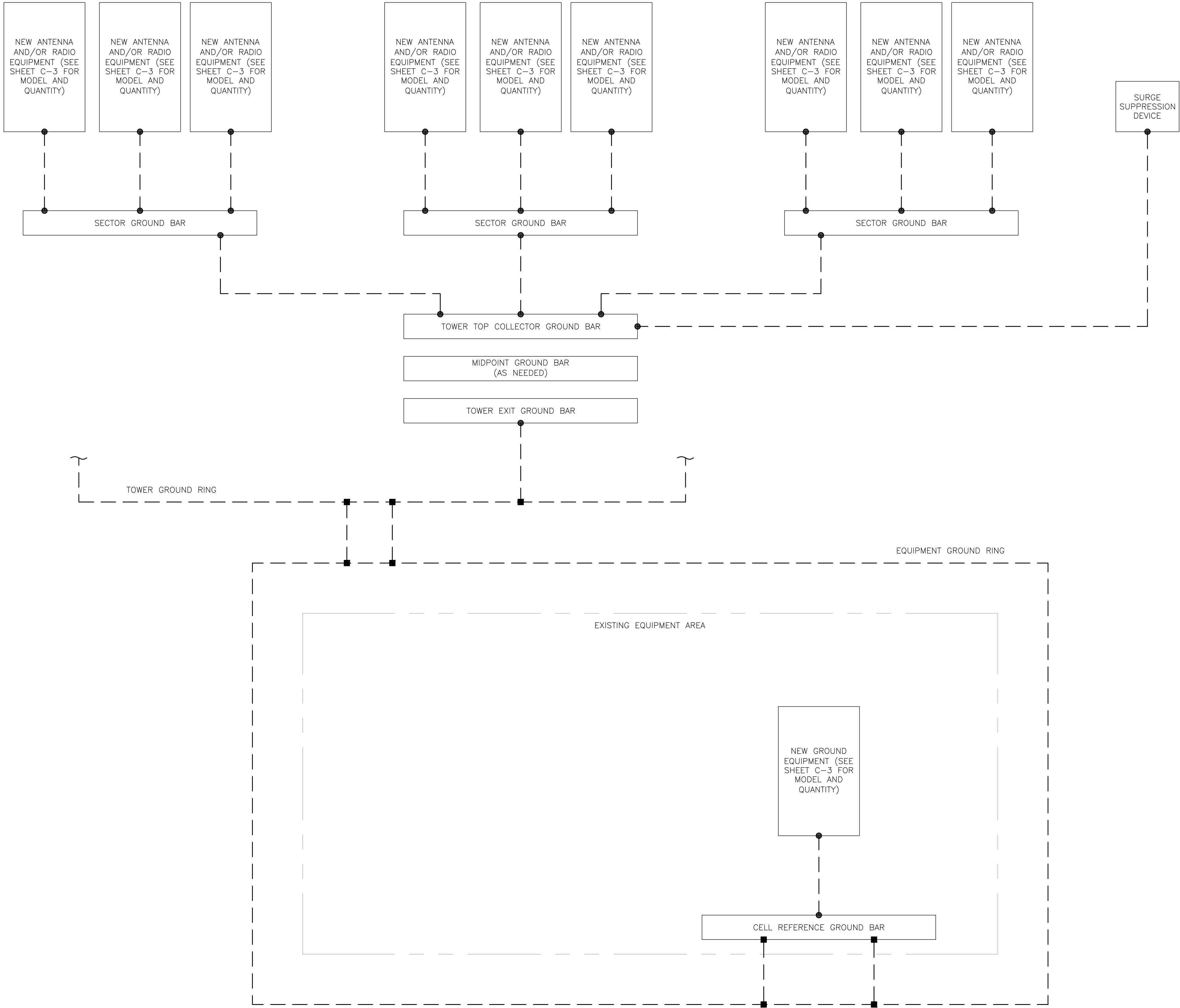
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GROUNDING PLAN LEGEND:

--- GROUND WIRE

■ EXOTHERMIC WELD

● MECHANICAL CONNECTION

⊙ COPPER GROUND ROD

⊗ GROUND ROD W/ TEST WELL

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

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

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


DURING ALL DC POWER SYSTEM CHANGES INCLUDING DC SYSTEM CHANGE OUTS, RECTIFIER REPLACEMENTS OR ADDITIONS, BREAKER DISTRIBUTION CHANGES, BATTERY ADDITIONS, BATTERY REPLACEMENTS AND INSTALLATIONS OR CHANGES TO DC CONVERTER SYSTEMS IT SHALL BE REQUIRED THAT SERVICES CONTRACTORS VERIFY ALL DC POWER SYSTEMS ARE EQUIPPED WITH MASTER DC SYSTEM RETURN GROUND CONDUCTOR FROM THE DC POWER SYSTEM COMMON RETURN BUS DIRECTLY CONNECTED TO THE CELL SITE REFERENCE GROUND BAR PER TP76300 SECTION H 6 AND TP76416 FIGURE 7-11 REQUIREMENTS.



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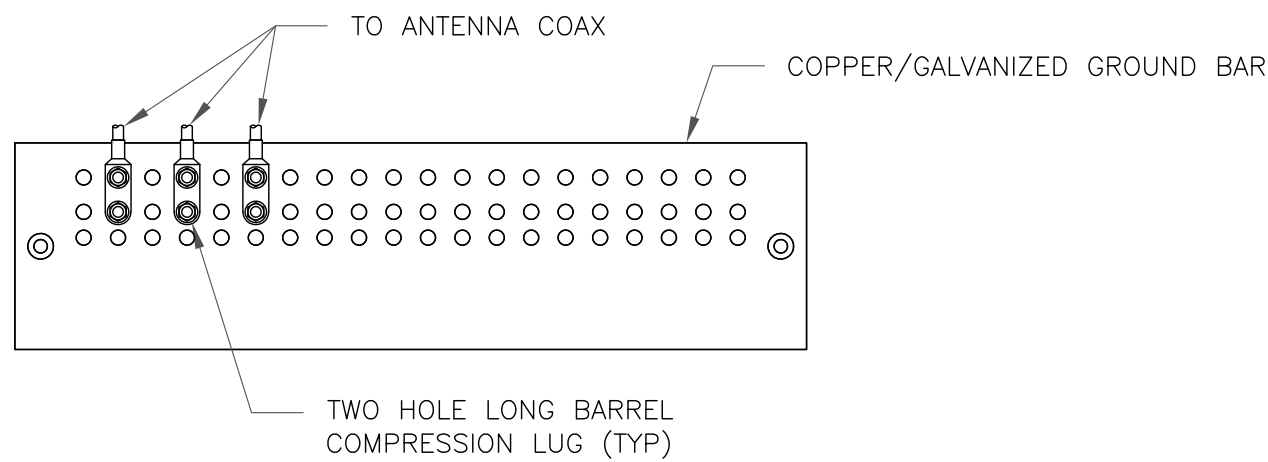
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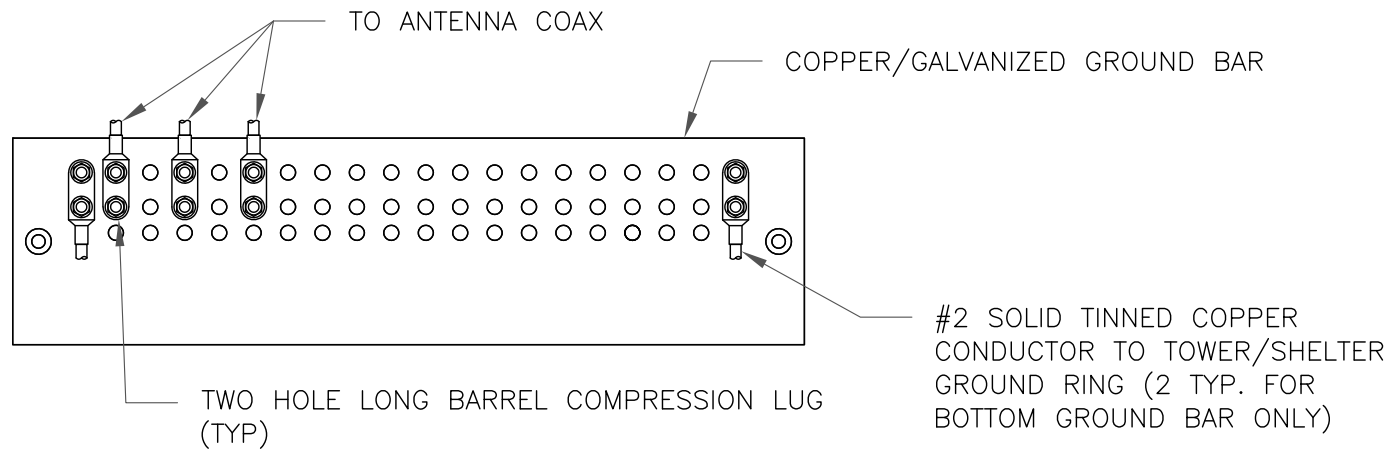
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- NOTES:
- DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
 - EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
 - GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE

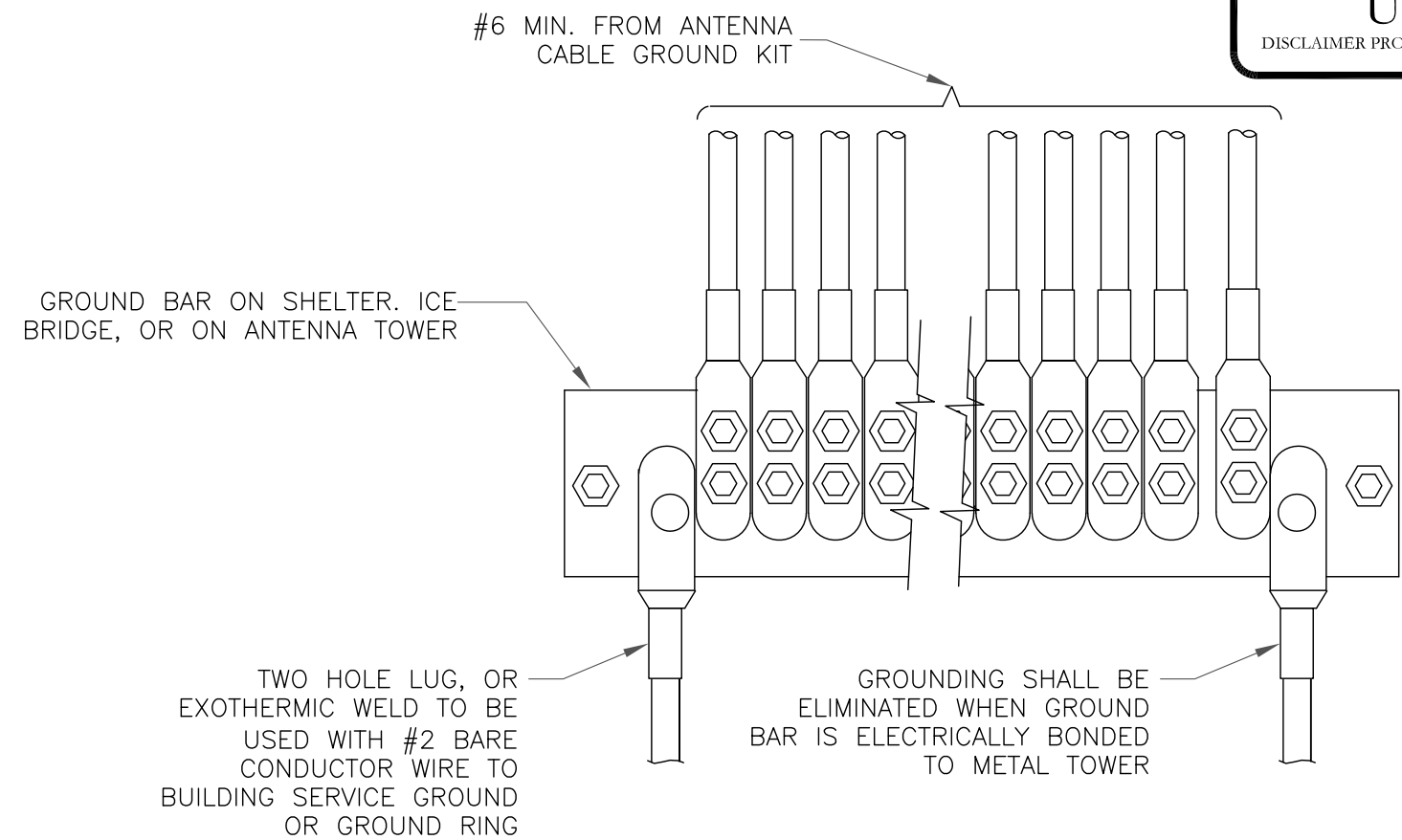


- NOTES:
- EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
 - GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
 - GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

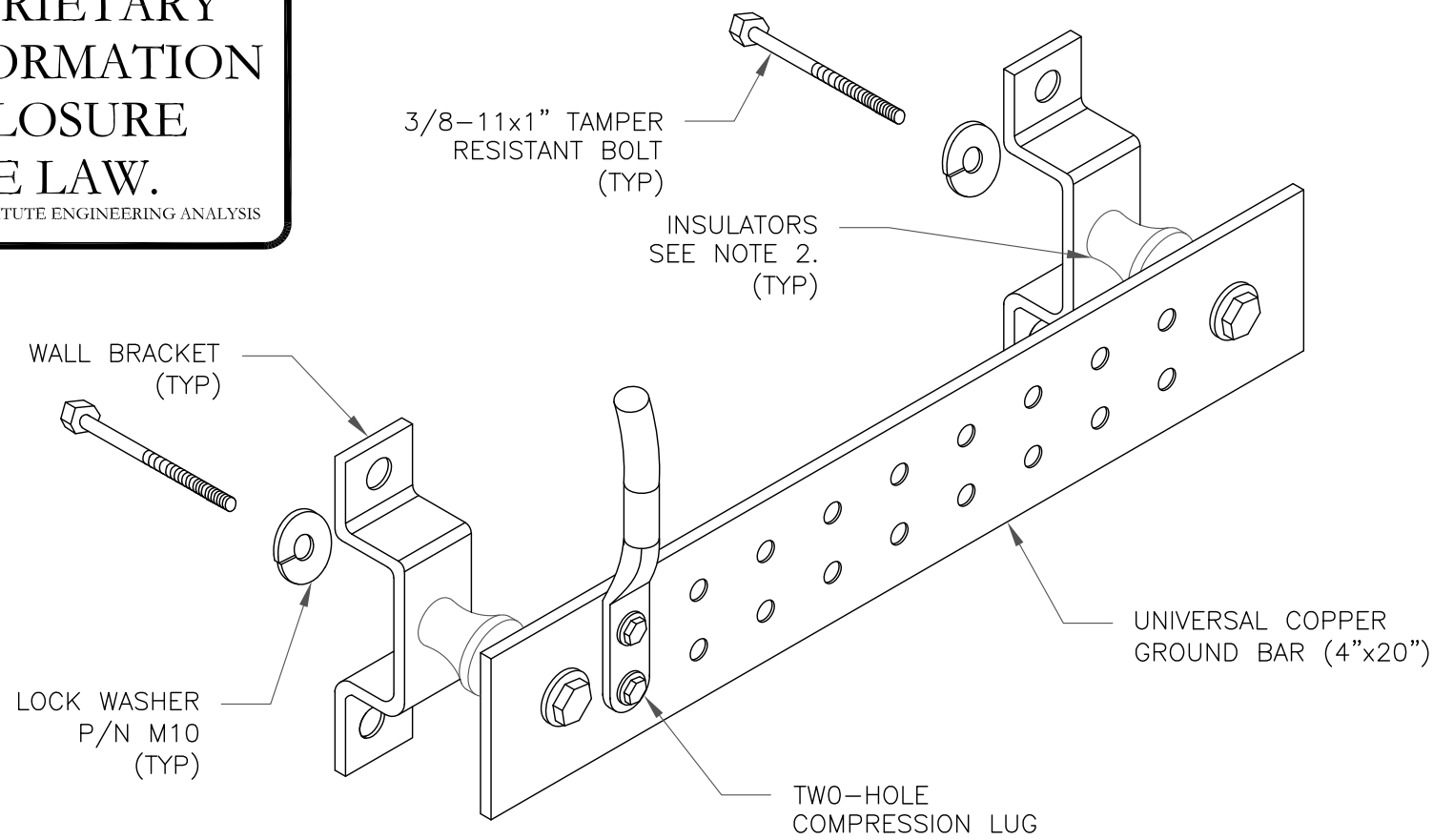
2 TOWER/SHELTER GROUND BAR DETAIL
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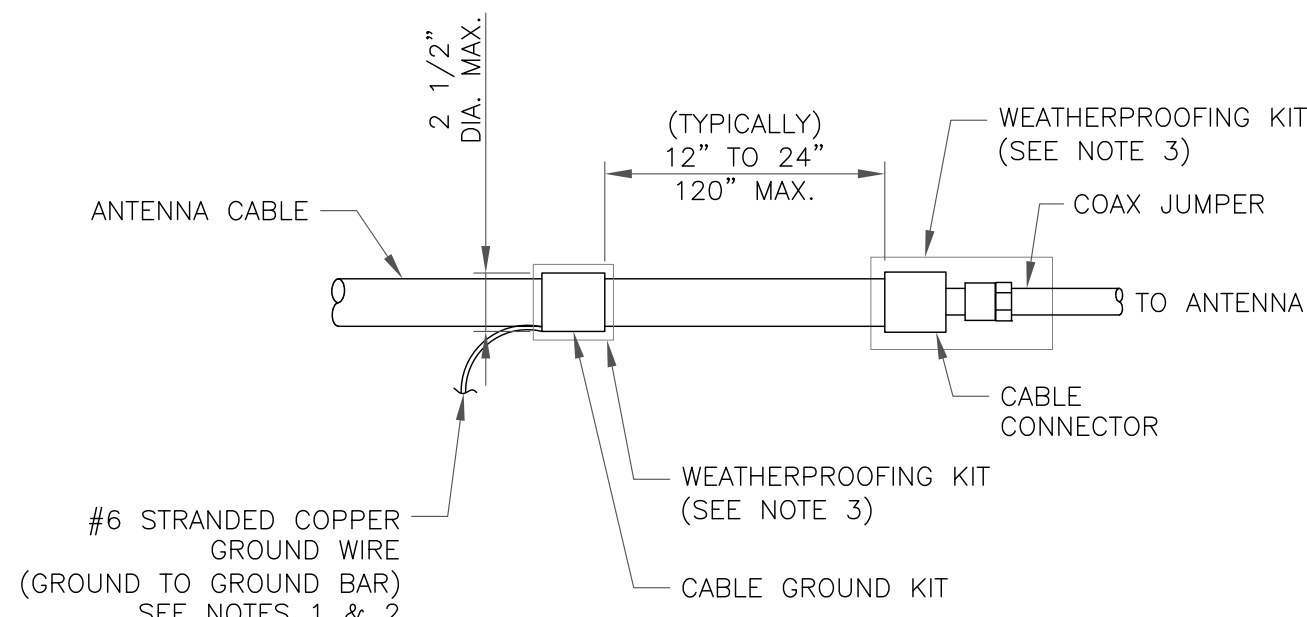


4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



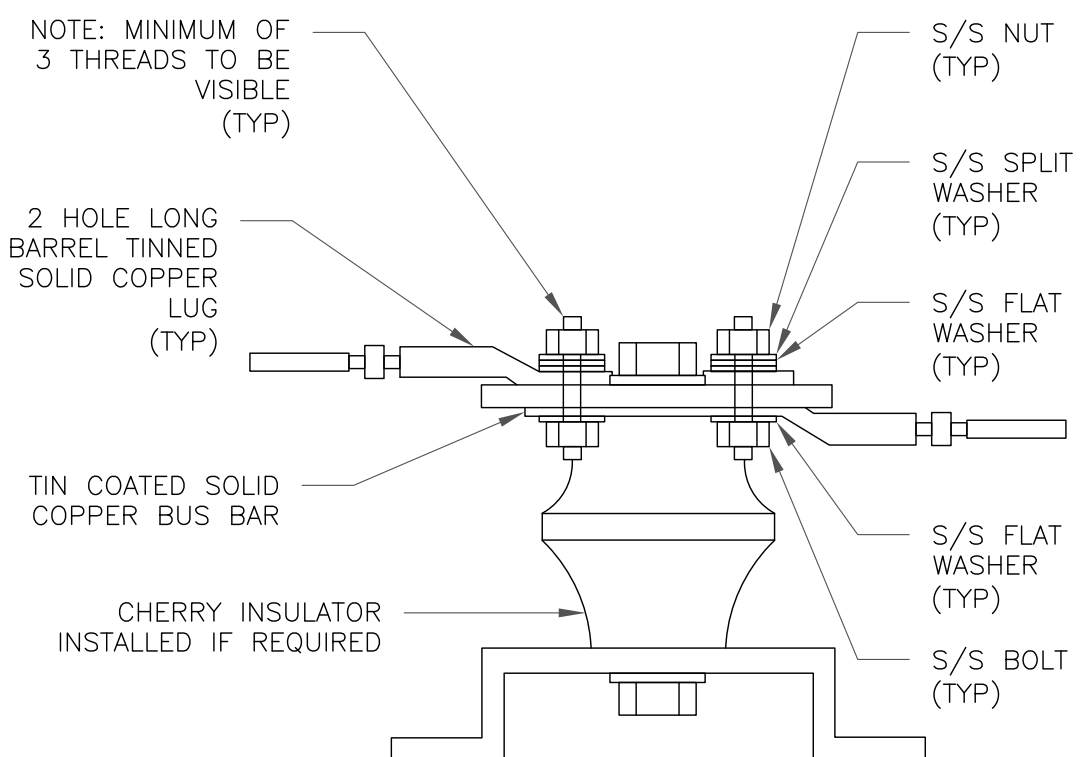
- NOTES:
- DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
 - OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL. USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



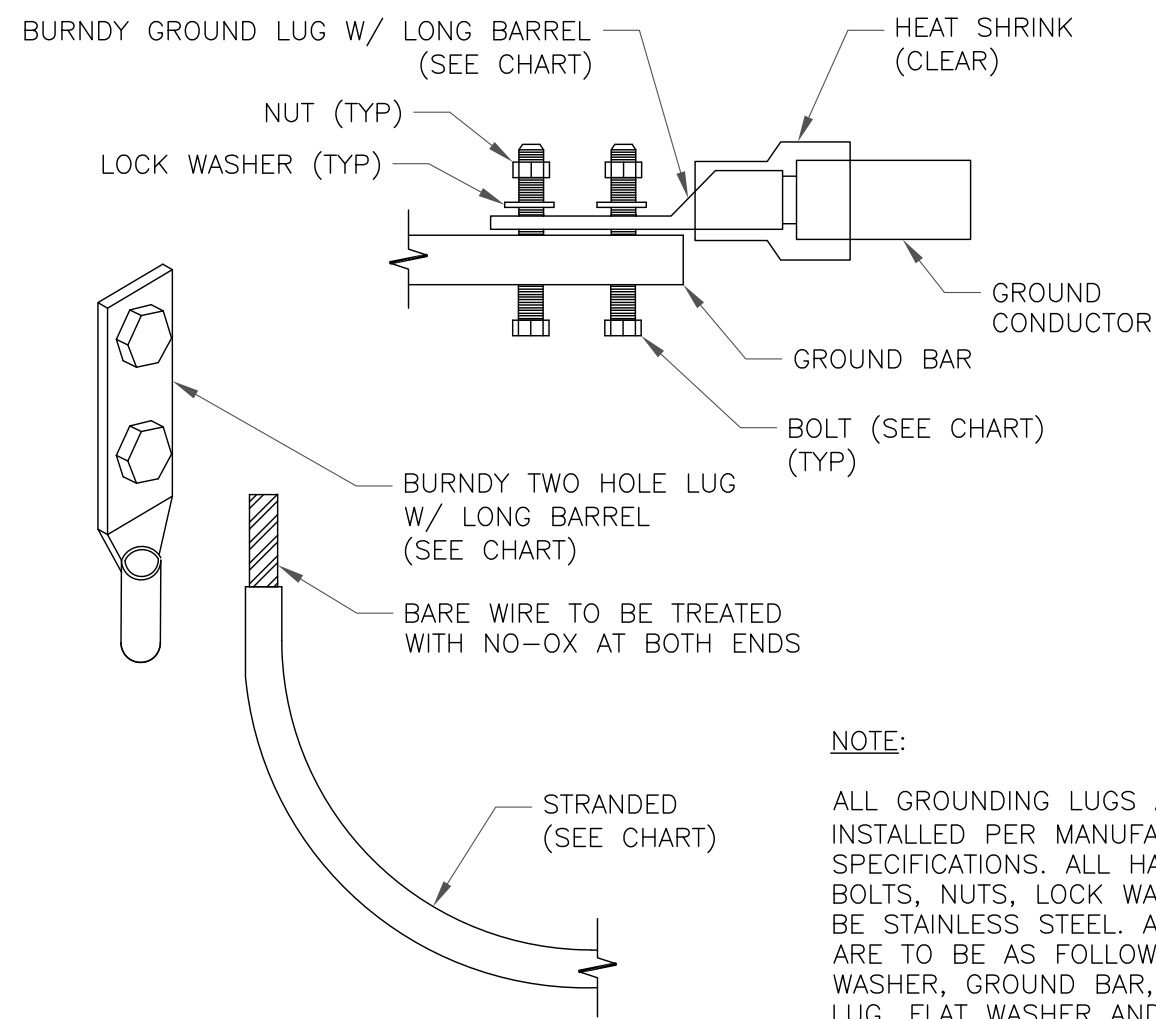
- NOTES:
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
 - GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
 - WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



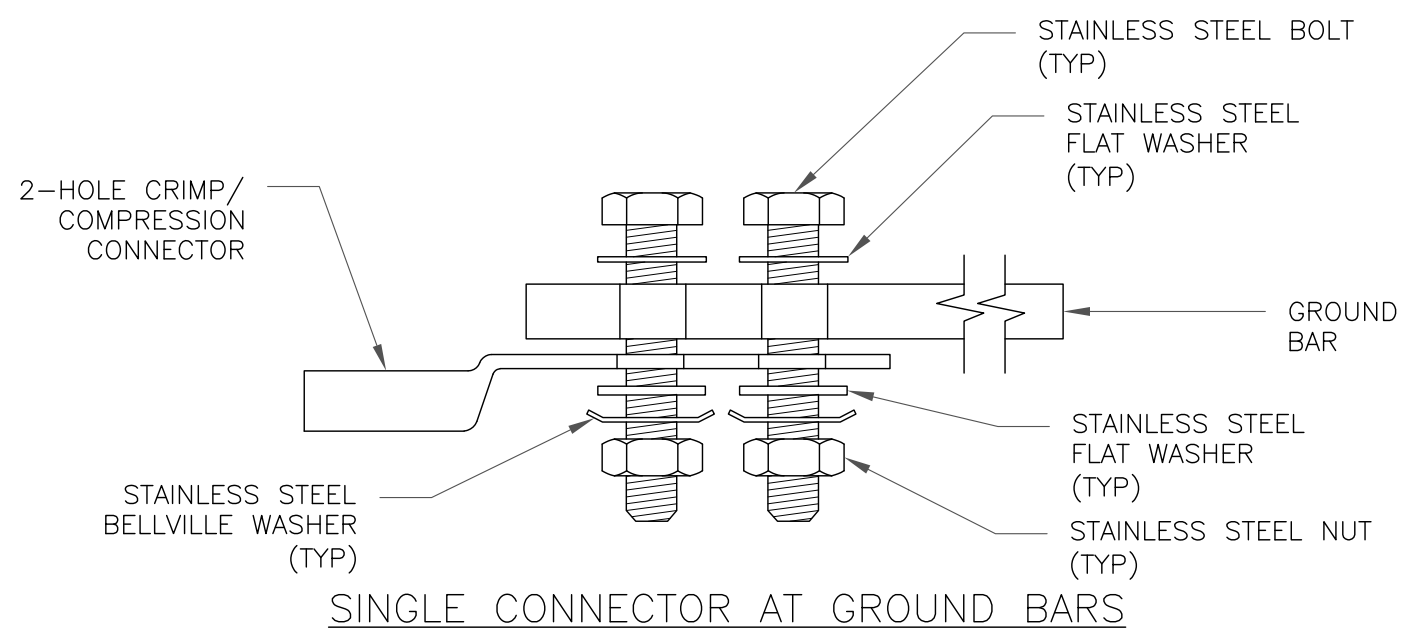
7 LUG DETAIL
SCALE: NOT TO SCALE

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

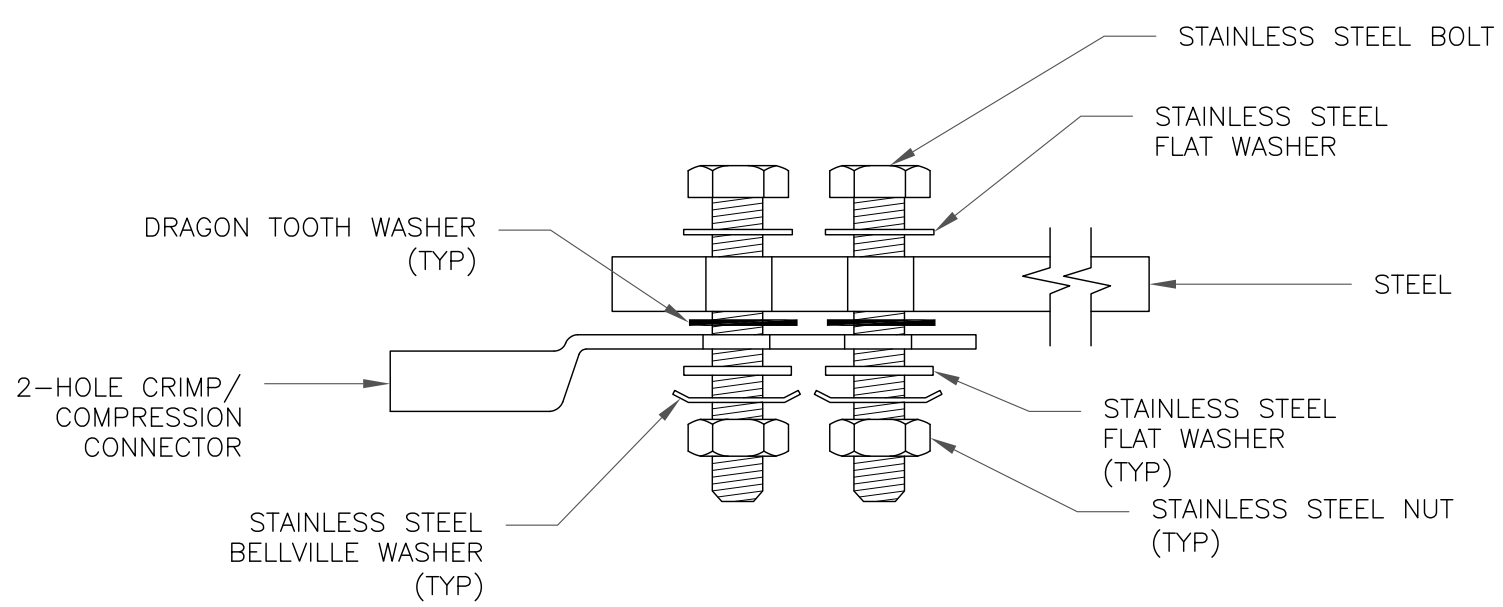


NOTE:
ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER, GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

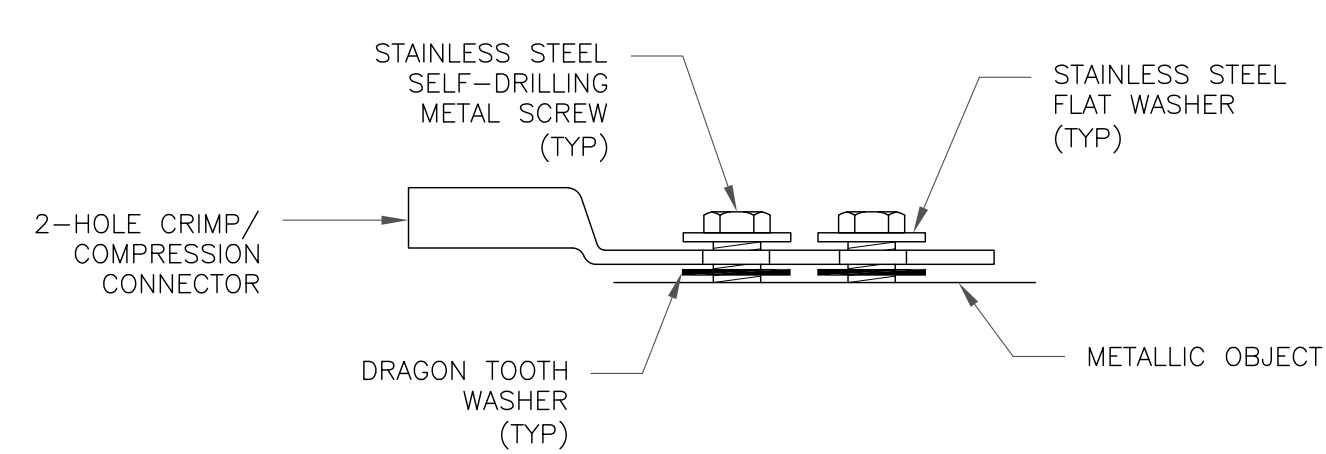
3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

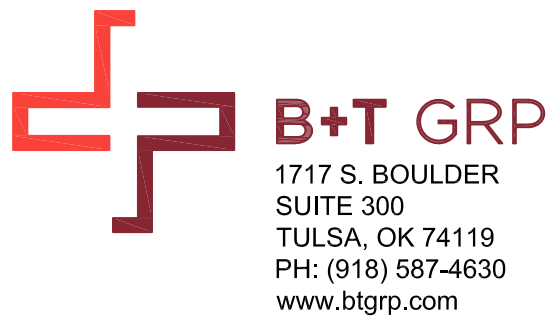


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



AT&T SITE NUMBER:
CTL03159

BU #: 881541
ROGERS PROPERTY

700 GRASSY HILL ROAD
ORANGE, CT 06477

EXISTING
139'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	1/7/22	JTS	PRELIMINARY REVIEW	JHW
0	2/15/22	JHW	CONSTRUCTION	MTJ



B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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.

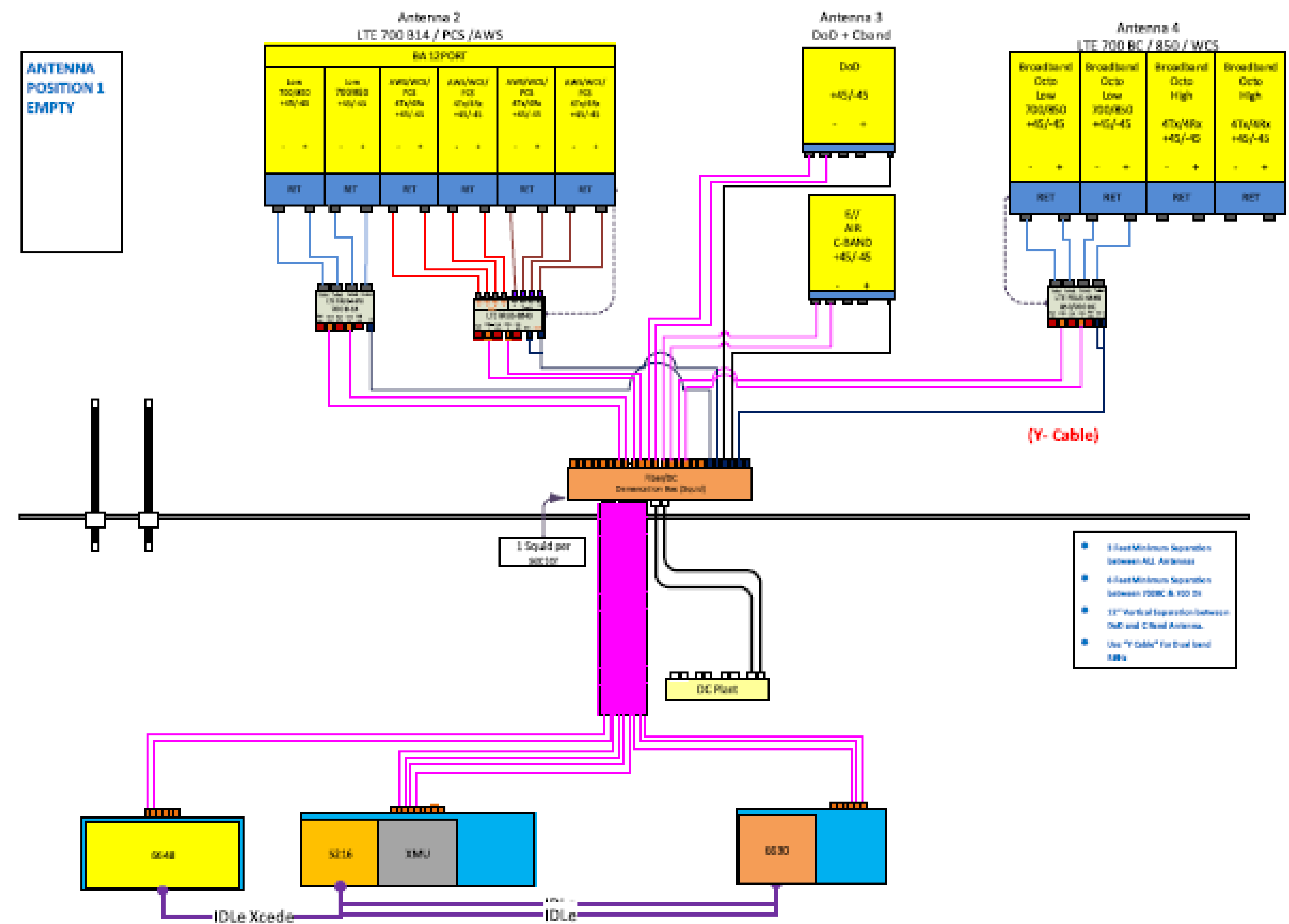
SHEET NUMBER:

G-2

REVISION:

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OR DESIGN.



22250

CROWN CASTLE - ETA PROPERTY

6325 ARDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

DATE 2-28-2022 32-61/1110

PAY
TO THE
ORDER OF

Connecticut Siding Council

\$ 625

Six hundred twenty five xx/100

DOLLARS



Security Features
Included
Details on Back



JPMorgan Chase Bank, N.A.
www.Chase.com

VALID FOR 180 DAYS

FOR CTL03159-881541-686304-586311

⑈022250⑈ ⑆111000614⑆

464638118⑈

MP