



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

September 1, 2022

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

**RE: Notice of Exempt Modification for T-Mobile: CT11083Q
700 Grassy Hill Road, Orange, CT 06477
Latitude: 41° 17' 7.75" / Longitude: -73° 2' 33.27"**

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 130-foot mount on the existing 143-foot monopole tower located at 700 Grassy Hill Road, Orange, CT. The property and tower are owned by Crown Castle. T-Mobile now intends to replace nine (9) antennas and ancillary equipment at the 130-foot 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) RFS-APXVAALL24-43-U-NA20 Antennas
- (3) COMMSCOPE-VV-65B-R1 Antennas
- (3) Ericsson-AIR6419 B41 Antennas
- (3) Ericsson-Radio 4480 B71+B85 RRU
- (3) Ericsson-Radio 4460 B25+B66 RRU
- (3) Hybrid Cables
- Platform Mount

Remove:

- (3) RFS-APXVAALL24_43-U-NA20 Antennas
- (3) Ericsson – AIR21 KRC118023-1_B2P_B4A Antennas
- (3) Ericsson – AIR21 KRC118023-1_B2A_B4P Antennas
- (3) Ericsson-RRUS-4449 B71+B85
- (3) Generic Twin Style 1B-AWS TMAs
- All Coax Cables
- (4) Hybrid Cables
- (3) Antenna Mounts

Ground:

Install New:

- (1) 6160 Cabinet

The Foundation for a Wireless World.

CrownCastle.com

(1) B160 Battery Cabinet
(1) PSU 4813 Voltage Booster in (P) Cabinet
(1) CSR IXRE Router in (P) Cabinet
(1) RP 6651 in (P) Cabinet
125-Amp Breaker for 6160
(1) PSU4813 Voltage Booster in (E) Cabinet
AVV Cabinet

Remove:

(3) Equipment Cabinets

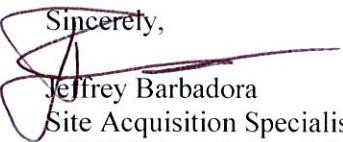
The facility was approved by the Connecticut Siting Council, Docket No. 262 on January 12, 2004.

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 and Jack Demirjian, Zoning Administrator & Enforcement Officer. Crown Castle is both the property and tower owner.

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

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

Sincerely,


Jeffrey Barbadora
Site Acquisition Specialist
1800 W. Park Drive, Suite 250
Westborough, MA 01581
(781) 970-0053
Jeff.Barbadora@crowncastle.com

Melanie A. Bachman

Page 3

Attachments

cc:

James M. Zeoli, First Selectman
Town of Orange
617 Orange Center Road
Orange, CT 06477
(203) 891-4737

Jack Demirjian, Zoning Administrator & Enforcement Officer
Town of Orange
617 Orange Center Road
Orange, CT 06477
(203) 891-4746

Crown Castle, Property/Tower Owner

Connecticut Siting Council Decisions

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

Its Representative

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

Intervenor

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

Its Representative

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

Intervenor

Cellco Partnership d/b/a Verison 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/ /

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

Sale Price \$25,000

Co-Owner

Certificate

Address 617 ORANGE CENTER ROAD
ORANGE, CT 06477

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	
Bsmtn Gar(s)	
Fireplaces	
SF FBM	
SF Rec Rm	
Basement_2	
Bsmtn Floor	
Fndtn Cndtn	
Basement	

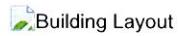
Building Photo



60-6-1A 03/05/2017

(<https://images.vgsi.com/photos/OrangeCTPhotos//00\01\70\98.JPG>)

Building Layout



Building Layout

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

Building Sub-Areas (sq ft)

[Legend](#)

No Data for Building Sub-Areas

Extra Features**Legend**

No Data for Extra Features

Land**Land Use**

Use Code	510E	Size (Acres)	0.62
Description	Exempt Vac	Frontage	
Zone	RES	Depth	
Neighborhood	010	Assessed Value	\$109,800
Alt Land Appr	No	Appraised Value	\$156,900
Category			

Outbuildings

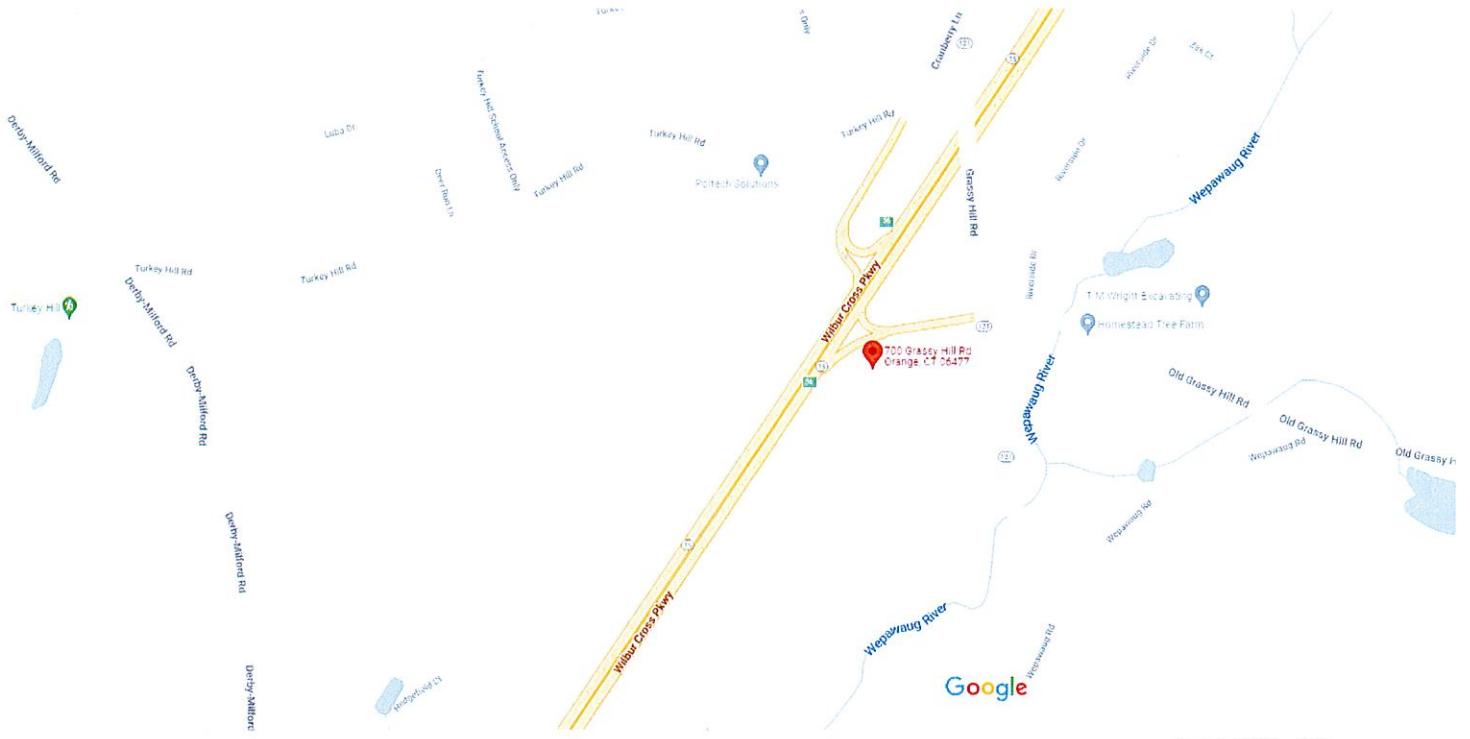
Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD7	Cell Shed			240.00 UNITS	\$13,500	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2021	\$13,500	\$156,900	\$170,400
2020	\$13,500	\$156,900	\$170,400
2019	\$13,500	\$156,900	\$170,400

Assessment			
Valuation Year	Improvements	Land	Total
2021	\$9,500	\$109,800	\$119,300
2020	\$9,500	\$109,800	\$119,300
2019	\$9,500	\$109,800	\$119,300

700 Grassy Hill Rd



Map data ©2022 200 ft



700 Grassy Hill Rd

Orange, CT 06477
Building

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Photos

Barbadora, Jeff

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Hi. Your package was
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10:18am.



Delivered to 617 ORANGE CENTER RD, ORANGE, CT 06477
Received by J.ZIEOL

OBTAI^N PROOF OF DELIVERY

TRACKING NUMBER

777828484189

FROM Jeff Barbadora
1800 W. Park Drive
WESTBOROUGH, MA, US, 01581

TO Town of Orange
James M. Zeoli, First Selectman
617 Orange Center Road
ORANGE, CT, US, 06477

REFERENCE 799001.7680

SHIPPER REFERENCE 799001.7680

SHIP DATE Thu 9/01/2022 05:09 PM

DELIVERED TO Receptionist/Front Desk

PACKAGING TYPE FedEx Envelope

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 J.JACK

OBTAI^N PROOF OF DELIVERY

TRACKING NUMBER

[777828505868](#)

FROM Jeff Barbadora
1800 W. Park Drive
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TO Town of Orange
Jack Demirjian, ZEO
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REFERENCE 799001.7680

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ORIGIN WESTBOROUGH, MA, US, 01581

DESTINATION ORANGE, CT, US, 06477

SPECIAL HANDLING Deliver Weekday

NUMBER OF PIECES 1

TOTAL SHIPMENT WEIGHT 0.50 LB

SERVICE TYPE FedEx Priority Overnight

Date: June 21, 2022



Morrison Hershfield
1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
(770) 397-8500

Subject: Structural Analysis Report

Carrier Designation:

Site Number: CT11083Q
Site Name: CT23XC313

Crown Castle Designation:

BU Number: 881541
Site Name: ROGERS PROPERTY
JDE Job Number: 719209
Work Order Number: 2126761
Order Number: 619473 Rev. 0

Engineering Firm Designation: Morrison Hershfield Project Number: CN9-494R3 / 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 - 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:

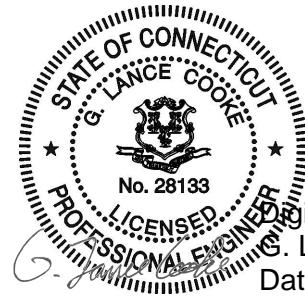
LC7: Proposed Equipment Configuration

Sufficient Capacity

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: 2022.06.21
08:29:13-07'00'

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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 consists of addition of base plate stiffeners. Per the post modification report completed by SGS, Inc., in February of 2014, these modifications were properly installed on the tower and has been considered in this analysis.

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 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)
130.0	130.0	3	commscope	VV-65B-R1_TMO w/ Mount Pipe	3	1-5/8
		3	ericsson	AIR 6419 B41_TMO 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_TMOV2		
		1	-	Site Pro 1 RMQP+HRK12		
75.0	77.0	1	lucent	KS24019-L112A	1	1/2
	75.0	1	-	Side Arm Mount [SO 701-1]		

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)
136.0	142.0	3	ericsson	AIR 6419 B77G	6	1-5/8
		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		
132.0	138.0	3	ericsson	AIR 6449 B77D	3	7/8
	136.0	1	-	Better Metal Platorm [#BPM]		
	132.0	1	-	Side Arm Mount [SO 102-3]		
	128.0	3	alcatel lucent	1900MHZ RRH (65MHZ)	-	-

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
		3	alcatel lucent	800MHZ RRH		
130.0	132.0	3	argus technologies	LLPX310R w/ Mount Pipe	-	-
119.0	119.0	3	antel	BXA-171063-8BF-EDIN-0 w/ Mount Pipe	12	1-5/8
		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	-	T-Arm Mount [TA 602-3_KCKR]		
		1	Site Pro 1	Stabilizer Kit [PRF-SFS]		
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		

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	-18.90	1256.07	85.0	Pass	
L2	93.04 - 46.38	Pole	TP37.91x25.5205x0.375	2	-30.37	2650.21	81.1	Pass	
L3	46.38 - 0	Pole	TP48.5x35.874x0.375	3	-46.51	3518.48	91.0	Pass	
							Summary		
							Pole (L3)	91.0	Pass
							Rating =	91.0	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	73.4	Pass
1	Base Plate		79.2	Pass
1	Base Foundation (Structure)	0	86.1	Pass
1	Base Foundation (Soil Interaction)		10.3	Pass

Structure Rating (max from all components) =	91%*
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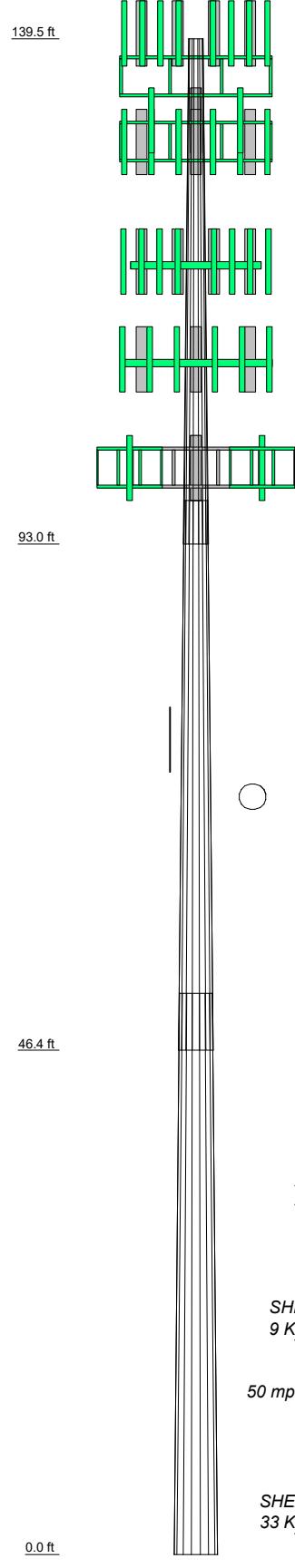
Notes:

- 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



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

MATERIAL STRENGTH

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: 91%

ALL REACTIONS
ARE FACTORED

AXIAL 66 K
SHEAR 9 K
MOMENT 988 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 47 K
SHEAR 33 K
MOMENT 3629 kip-ft
TORQUE 0 kip-ft
REACTIONS - 119 mph WIND



Morrison Hershfield

1455 Lincoln Parkway, Suite 500
Atlanta, GA 30346
Phone: (770) 397-8500
FAX: (770) 397-8501

Job: **CN9-494R3 / 2200039**

Project: **881541 / Rogers Property**

Client: Crown Castle USA	Drawn by: BP	App'd:
Code: TIA-222-H	Date: 06/21/22	Scale: NTS
Path: Download PDF	Dwg No. E-1	

Tower Input Data

The tower is a monopole.

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

The following design criteria apply:

- Tower is located in 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	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	✓ Bypass Mast Stability Checks	✓ Consider Feed Line Torque
Always Use Max Kz	✓ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	✓ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist.
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	Poles
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	✓ Include Shear-Torsion Interaction
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	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 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

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
L3	46.38-0.00	51.63		18	35.8740	48.5000	0.3750	0.5625	(65 ksi) 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
								4		
								2		

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor <i>A_f</i>	Adjust. Factor <i>A_r</i>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals 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	Componen t Type	Placement ft	Total Number	Number Per Row	Start/En d Position	Width or Diamete r in	Perimete r in	Weight plf

Safety Line 3/8	C	No	Surface Ar (CaAa)	139.50 - 11.00	1	1	0.000	0.3750		0.22
Step Pegs	C	No	Surface Ar (CaAa)	139.50 - 12.00	1	1	-0.050 0.050	0.3500		0.45
HCS 6X12 4AWG(1- 5/8)	B	No	Surface Ar (CaAa)	110.00 - 6.00	4	4	0.000 0.130	1.6600		2.40
CU12PSM9P6XXX(1- 1/2)	A	No	Surface Ar (CaAa)	100.00 - 6.00	1	1	-0.120 -0.120	1.6000		2.35

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Componen t Type	Placement ft	Total Number	C _{AA}	Weight
							ft ² /ft	plf

LDF7-50A(1-5/8)	B	No	No	Inside Pole	136.00 - 3.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
FB-L98B-002- 75000(3/8)	B	No	No	Inside Pole	136.00 - 3.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
								0.82 0.82 0.82
								0.06 0.06 0.06
								0.06 0.06 0.06

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	C_{AA}	Weight
							ft ² /ft	plf
2" Rigid Conduit	B	No	No	Inside Pole	136.00 - 3.00	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	2.80
PWRT-606-S(7/8)	B	No	No	Inside Pole	136.00 - 3.00	3	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.89
PWRT-608-S(13/16)	B	No	No	Inside Pole	136.00 - 3.00	2	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.62
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	136.00 - 3.00	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.06
HB158-21U6S24-xxM_TMO(1-5/8)	A	No	No	Inside Pole	130.00 - 6.00	3	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	2.50
561(1-5/8)	A	No	No	Inside Pole	119.00 - 10.00	12	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	1.35
LDF6-50A(1-1/4)	A	No	No	Inside Pole	119.00 - 10.00	1	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.60
LDF7-50A(1-5/8)	B	No	No	Inside Pole	110.00 - 6.00	6	No Ice 0.00 1/2" Ice 0.00 1" Ice 0.00	0.82
LDF4-50A(1/2)	B	No	No	Inside Pole	75.00 - 6.00	1	No Ice 0.00 1/2" Ice 0.00 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_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	139.50-93.04	A	0.000	0.000	1.114	0.000	0.73
		B	0.000	0.000	11.261	0.000	0.75
		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	1.24
		B	0.000	0.000	30.982	0.000	1.23
		C	0.000	0.000	3.383	0.000	0.03
L3	46.38-0.00	A	0.000	0.000	6.461	0.000	1.01
		B	0.000	0.000	26.812	0.000	1.10
		C	0.000	0.000	2.530	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_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L1	139.50-93.04	A	0.963	0.000	0.000	2.453	0.000	0.75
		B		0.000	0.000	18.158	0.000	0.88
		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	1.38
		B		0.000	0.000	49.956	0.000	1.58
		C		0.000	0.000	21.348	0.000	0.18
L3	46.38-0.00	A	0.820	0.000	0.000	13.848	0.000	1.12

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
		B		0.000	0.000	42.750	0.000	1.39
		C		0.000	0.000	15.292	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	1.6118	-0.3164	1.2011	0.8162
L2	93.04-46.38	2.7060	-1.3157	1.9112	-0.1734
L3	46.38-0.00	2.5700	-1.3049	1.9235	-0.3858

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	24	HCS 6X12 4AWG(1-5/8)	93.04 - 110.00	1.0000	1.0000
L1	27	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	24	HCS 6X12 4AWG(1-5/8)	46.38 - 93.04	1.0000	1.0000
L2	27	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	12.00 - 46.38	1.0000	1.0000
L3	24	HCS 6X12 4AWG(1-5/8)	6.00 - 46.38	1.0000	1.0000
L3	27	CU12PSM9P6XXX(1-1/2)	6.00 - 46.38	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz ft	Lateral ft	Azimuth Adjustment °	Placement ft	C_{AA} Front	C_{AA} Side	Weight K

DC6-48-60-18-8F	B	From Leg	2.00 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
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
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
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
TPA65R-BU6D_CCIv2 w/ Mount Pipe	A	From Leg	4.00 0.00	0.0000		136.00	No Ice 1/2" Ice 1" Ice	11.96 12.70	5.97 6.63

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front	C _A A _A Side	Weight K
			4.00			1/2" Ice 1" Ice	13.46	7.30 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 0.09 6.63 0.18 7.30 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 0.09 6.63 0.18 7.30 0.28
AIR 6419 B77G	A	From Leg	4.00 0.00 6.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	4.64 5.11 5.59	1.87 0.07 2.23 0.09 2.62 0.12
AIR 6419 B77G	B	From Leg	4.00 0.00 6.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	4.64 5.11 5.59	1.87 0.07 2.23 0.09 2.62 0.12
AIR 6419 B77G	C	From Leg	4.00 0.00 6.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	4.64 5.11 5.59	1.87 0.07 2.23 0.09 2.62 0.12
AIR 6449 B77D	A	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	3.64 4.00 4.37	1.72 0.08 2.02 0.11 2.33 0.14
AIR 6449 B77D	B	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	3.64 4.00 4.37	1.72 0.08 2.02 0.11 2.33 0.14
AIR 6449 B77D	C	From Leg	4.00 0.00 2.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	3.64 4.00 4.37	1.72 0.08 2.02 0.11 2.33 0.14
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 0.07 1.56 0.09 1.73 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 0.07 1.56 0.09 1.73 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 0.07 1.56 0.09 1.73 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 0.06 1.40 0.08 1.55 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 0.06 1.40 0.08 1.55 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 0.06 1.40 0.08 1.55 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 0.08 1.86 0.10 2.04 0.12
RRUS 8843 B2/B66A_CCIV2	B	From Leg	4.00 0.00	0.0000	136.00	No Ice	1.98 2.16	1.70 0.08 1.86 0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			4.00		1/2" Ice 1" Ice	2.34	2.04	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
DC9-48-60-24-8C-EV_CCIV2	A	From Leg	2.00 0.00 4.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	1.53 1.69 1.85	1.53 1.69 1.85
(3) 10' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45
(3) 10' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45
(3) 10' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	136.00	No Ice 1/2" Ice 1" Ice	2.38 3.40 4.45	2.38 3.40 4.45
Better Metal Platorm [#BPM]	A	None		0.0000	136.00	No Ice 1/2" Ice 1" Ice	22.41 29.88 37.35	22.41 29.88 37.35

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
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
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
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
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
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
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

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
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

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	1" Ice No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25
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
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
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

VV-65B-R1_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.43 6.56 7.41
VV-65B-R1_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.43 6.56 7.41
VV-65B-R1_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	8.15 8.70 9.22	5.43 6.56 7.41
AIR 6419 B41_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	6.58 7.06 7.57	3.50 3.90 4.32
AIR 6419 B41_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	6.58 7.06 7.57	3.50 3.90 4.32
AIR 6419 B41_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	6.58 7.06 7.57	3.50 3.90 4.32
Radio 4480_TMOV2	A	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.88 3.09 3.31	1.40 1.56 1.73
Radio 4480_TMOV2	B	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.88 3.09 3.31	1.40 1.56 1.73
Radio 4480_TMOV2	C	From Leg	4.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.88 3.09 3.31	1.40 1.56 1.73
Site Pro 1 RMQP+HRK12	A	None		0.0000	130.00	No Ice 1/2" Ice 1" Ice	31.60 38.57 45.53	29.33 36.09 42.85
**								
LLPX310R w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.88 4.29 4.72	2.36 2.73 3.12
LLPX310R w/ Mount Pipe	B	From Leg	4.00 0.00	0.0000	130.00	No Ice	3.88 4.29	2.36 2.73

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
			2.00			1/2" Ice 1" Ice	4.72	3.12	0.13
LLPX310R w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.88 4.29 4.72	2.36 2.73 3.12	0.06 0.09 0.13

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 1" 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	No Ice 1/2" Ice 1" 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	No Ice 1/2" Ice 1" 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	No Ice 1/2" Ice 1" 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	No Ice 1/2" Ice 1" 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 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	7.40 8.14 8.90	5.39 6.10 6.83	0.04 0.10 0.16
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	6.10 6.80 7.51	6.81 7.52 8.24	0.06 0.12 0.19
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	6.10 6.80 7.51	6.81 7.52 8.24	0.06 0.12 0.19
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	6.10 6.80 7.51	6.81 7.52 8.24	0.06 0.12 0.19
MG D3-800TX w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	2.40 2.81 3.22	2.29 2.68 3.10	0.05 0.07 0.11
MG D3-800TX w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	2.40 2.81 3.22	2.29 2.68 3.10	0.05 0.07 0.11
MG D3-800TX w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	2.40 2.81 3.22	2.29 2.68 3.10	0.05 0.07 0.11
RRH2X40-AWS	A	From Leg	4.00 0.00 -1.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	0.04 0.06 0.08
RRH2X40-AWS	B	From Leg	4.00 0.00 -1.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	2.16 2.36 2.57	1.42 1.59 1.77	0.04 0.06 0.08
RRH2X40-AWS	C	From Leg	4.00	0.0000	119.00	No Ice	2.16	1.42	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00 -1.00		1/2" Ice 1" Ice	2.36 2.57 1.77	1.59 1.77 0.08	0.06
T-Arm Mount [TA 602-3]	C	None	0.0000	119.00	No Ice 1/2" Ice 1" Ice	13.40 16.44 19.70 19.70	13.40 16.44 19.70 19.70	0.77 1.00 1.29

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 1" Ice	3.14 3.45 3.77	2.59 2.88 3.19
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.14 3.45 3.77	2.59 2.88 3.19
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.14 3.45 3.77	2.59 2.88 3.19
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.14 3.45 3.77	2.59 2.88 3.19
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.14 3.45 3.77	2.59 2.88 3.19
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	3.14 3.45 3.77	2.59 2.88 3.19
APXVAALL24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25
APXVAALL24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25
APXVAALL24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25
KRY 112 144/1	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30
KRY 112 144/1	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30
KRY 112 144/1	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.35 0.43 0.51	0.17 0.23 0.30
RADIO 4449 B71/B85A	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.31 1.46 1.61
RADIO 4449 B71/B85A	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.31 1.46 1.61
RADIO 4449 B71/B85A	C	From Leg	4.00	0.0000	110.00	No Ice	1.64	1.31

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			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 pipe	A	From Leg	4.00	0.0000	110.00	No Ice	2.66	0.01	0.04
			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 pipe	B	From Leg	4.00	0.0000	110.00	No Ice	2.66	0.01	0.04
			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 pipe	C	From Leg	4.00	0.0000	110.00	No Ice	2.66	0.01	0.04
			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	
					1" Ice				
T-Arm Mount [TA 602-3_KCKR]	C	None		0.0000	110.00	No Ice	23.41	23.41	1.05
					1/2"	28.72	28.72	1.42	
					Ice	34.48	34.48	1.90	
					1" Ice				

MX08FRO665-21 w/ Mount Pipe	A	From Leg	4.00	0.0000	100.00	No Ice	8.01	4.23	0.11
			0.00		1/2"	8.52	4.69	0.19	
			0.00		Ice	9.04	5.16	0.29	
					1" Ice				
MX08FRO665-21 w/ Mount Pipe	B	From Leg	4.00	0.0000	100.00	No Ice	8.01	4.23	0.11
			0.00		1/2"	8.52	4.69	0.19	
			0.00		Ice	9.04	5.16	0.29	
					1" Ice				
MX08FRO665-21 w/ Mount Pipe	C	From Leg	4.00	0.0000	100.00	No Ice	8.01	4.23	0.11
			0.00		1/2"	8.52	4.69	0.19	
			0.00		Ice	9.04	5.16	0.29	
					1" Ice				
TA08025-B604	A	From Leg	4.00	0.0000	100.00	No Ice	1.96	0.98	0.06
			0.00		1/2"	2.14	1.11	0.08	
			0.00		Ice	2.32	1.25	0.10	
					1" Ice				
TA08025-B604	B	From Leg	4.00	0.0000	100.00	No Ice	1.96	0.98	0.06
			0.00		1/2"	2.14	1.11	0.08	
			0.00		Ice	2.32	1.25	0.10	
					1" Ice				
TA08025-B604	C	From Leg	4.00	0.0000	100.00	No Ice	1.96	0.98	0.06
			0.00		1/2"	2.14	1.11	0.08	
			0.00		Ice	2.32	1.25	0.10	
					1" Ice				
TA08025-B605	A	From Leg	4.00	0.0000	100.00	No Ice	1.96	1.13	0.08
			0.00		1/2"	2.14	1.27	0.09	
			0.00		Ice	2.32	1.41	0.11	
					1" Ice				
TA08025-B605	B	From Leg	4.00	0.0000	100.00	No Ice	1.96	1.13	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front	C _{AA} Side	Weight K	
			0.00		1/2"	2.14	1.27	0.09	
			0.00		Ice	2.32	1.41	0.11	
					1" Ice				
TA08025-B605	C	From Leg	4.00	0.0000	100.00	No Ice	1.96	1.13	0.08
			0.00		1/2"	2.14	1.27	0.09	
			0.00		Ice	2.32	1.41	0.11	
					1" Ice				
RDIDC-9181-PF-48	A	From Leg	4.00	0.0000	100.00	No Ice	2.01	1.17	0.02
			0.00		1/2"	2.19	1.31	0.04	
			0.00		Ice	2.37	1.46	0.06	
					1" Ice				
(2) 8' x 2" Mount Pipe	A	From Leg	4.00	0.0000	100.00	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				
(2) 8' x 2" Mount Pipe	B	From Leg	4.00	0.0000	100.00	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				
(2) 8' x 2" Mount Pipe	C	From Leg	4.00	0.0000	100.00	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				
Commscope MC-PK8-DSH	C	None		0.0000	100.00	No Ice	34.24	34.24	1.75
					1/2"	62.95	62.95	2.10	
					Ice	91.66	91.66	2.45	
					1" Ice				

KS24019-L112A	C	From Leg	3.00	0.0000	75.00	No Ice	0.14	0.14	0.01
			0.00		1/2"	0.20	0.20	0.01	
			2.00		Ice	0.26	0.26	0.01	
					1" Ice				
Side Arm Mount [SO 701-1]	C	From Leg	1.50	0.0000	75.00	No Ice	0.85	1.67	0.07
			0.00		1/2"	1.14	2.34	0.08	
			0.00		Ice	1.43	3.01	0.09	
					1" Ice				

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

Comb. No.	Description
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	139.5 - 93.04	Pole	Max Tension	27	0.00	0.00	-0.00
			Max. Compression	26	-36.33	-0.43	0.44
			Max. Mx	8	-18.91	-685.57	0.21
			Max. My	2	-18.90	-0.21	685.73
			Max. Vy	8	27.18	-685.57	0.21
			Max. Vx	2	-27.21	-0.21	685.73
			Max. Torque	21			-0.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.75	-0.83	0.79
			Max. Mx	8	-30.38	-1987.75	0.15
L2	93.04 - 46.38	Pole	Max. My	2	-30.37	-0.12	1989.83
			Max. Vy	8	30.25	-1987.75	0.15
			Max. Vx	2	-30.30	-0.12	1989.83
			Max. Torque	21			-0.32
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.13	-1.74	1.52
			Max. Mx	8	-46.51	-3624.54	-0.11
			Max. My	2	-46.51	0.06	3629.09
			Max. Vy	8	32.90	-3624.54	-0.11
			Max. Vx	2	-32.94	0.06	3629.09
L3	46.38 - 0	Pole	Max. Torque	7			0.23

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	66.13	0.00	8.83
	Max. H _x	20	46.55	32.83	0.02
	Max. H _z	2	46.55	0.02	32.88
	Max. M _x	2	3629.09	0.02	32.88
	Max. M _z	8	3624.54	-32.83	-0.02
	Max. Torsion	7	0.23	-28.43	16.43
	Min. Vert	7	34.92	-28.43	16.43
	Min. H _x	8	46.55	-32.83	-0.02
	Min. H _z	14	46.55	-0.02	-32.88
	Min. M _x	14	-3626.93	-0.02	-32.88
	Min. M _z	20	-3622.29	32.83	0.02
	Min. Torsion	19	-0.23	28.43	-16.43

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear _z	Overswing Moment, M _x kip-ft	Overswing Moment, M _z kip-ft	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	38.80	0.00	0.00	-0.85	-0.89	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	46.55	-0.02	-32.88	-3629.09	0.06	-0.12
0.9 Dead+1.0 Wind 0 deg - No Ice	34.92	-0.02	-32.88	-3563.07	0.34	-0.12
1.2 Dead+1.0 Wind 30 deg - No Ice	46.55	16.40	-28.47	-3142.44	-1811.80	-0.20
0.9 Dead+1.0 Wind 30 deg - No Ice	34.92	16.40	-28.47	-3085.23	-1778.68	-0.20
1.2 Dead+1.0 Wind 60 deg - No Ice	46.55	28.43	-16.43	-1814.06	-3138.50	-0.23
0.9 Dead+1.0 Wind 60 deg - No Ice	34.92	28.43	-16.43	-1780.92	-3081.34	-0.23
1.2 Dead+1.0 Wind 90 deg - No Ice	46.55	32.83	0.02	0.11	-3624.54	-0.20
0.9 Dead+1.0 Wind 90 deg - No Ice	34.92	32.83	0.02	0.38	-3558.57	-0.20
1.2 Dead+1.0 Wind 120 deg - No Ice	46.55	28.44	16.45	1813.97	-3139.69	-0.11
0.9 Dead+1.0 Wind 120 deg - No Ice	34.92	28.44	16.45	1781.37	-3082.51	-0.11
1.2 Dead+1.0 Wind 150 deg - No Ice	46.55	16.43	28.48	3141.47	-1813.86	0.01
0.9 Dead+1.0 Wind 150 deg - No Ice	34.92	16.43	28.48	3084.81	-1780.71	0.00
1.2 Dead+1.0 Wind 180 deg - No Ice	46.55	0.02	32.88	3626.93	-2.32	0.12
0.9 Dead+1.0 Wind 180 deg - No Ice	34.92	0.02	32.88	3561.48	-2.01	0.12
1.2 Dead+1.0 Wind 210 deg - No Ice	46.55	-16.40	28.47	3140.30	1809.54	0.20
0.9 Dead+1.0 Wind 210 deg - No Ice	34.92	-16.40	28.47	3083.65	1777.01	0.20
1.2 Dead+1.0 Wind 240 deg - No Ice	46.55	-28.43	16.43	1811.92	3136.26	0.23
0.9 Dead+1.0 Wind 240 deg - No Ice	34.92	-28.43	16.43	1779.34	3079.68	0.23
1.2 Dead+1.0 Wind 270 deg - No Ice	46.55	-32.83	-0.02	-2.27	3622.29	0.20
0.9 Dead+1.0 Wind 270 deg - No Ice	34.92	-32.83	-0.02	-1.97	3556.92	0.20
1.2 Dead+1.0 Wind 300 deg - No Ice	46.55	-28.44	-16.45	-1816.13	3137.44	0.11

Load Combination	Vertical	Shear _x	Shear _z	Overspinning Moment, M _x kip-ft	Overspinning Moment, M _z kip-ft	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 300 deg - No Ice	34.92	-28.44	-16.45	-1782.96	3080.85	0.11
1.2 Dead+1.0 Wind 330 deg - No Ice	46.55	-16.43	-28.48	-3143.63	1811.60	-0.01
0.9 Dead+1.0 Wind 330 deg - No Ice	34.92	-16.43	-28.48	-3086.41	1779.05	-0.00
1.2 Dead+1.0 Ice+1.0 Temp	66.13	0.00	-0.00	-1.52	-1.74	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	66.13	-0.00	-8.83	-987.83	-1.51	-0.04
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	66.13	4.40	-7.64	-855.55	-494.11	-0.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	66.13	7.63	-4.41	-494.43	-854.82	-0.04
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	66.13	8.82	0.00	-1.28	-986.96	-0.02
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	66.13	7.64	4.42	491.77	-855.23	-0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	66.13	4.41	7.65	852.59	-494.81	0.02
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	66.13	0.00	8.83	984.48	-2.31	0.04
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	66.13	-4.40	7.64	852.19	490.28	0.05
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	66.13	-7.63	4.41	491.07	851.00	0.04
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	66.13	-8.82	-0.00	-2.08	983.14	0.02
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	66.13	-7.64	-4.42	-495.12	851.40	0.00
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	66.13	-4.41	-7.65	-855.95	490.98	-0.02
Dead+Wind 0 deg - Service	38.80	-0.00	-7.87	-862.48	-0.65	-0.03
Dead+Wind 30 deg - Service	38.80	3.93	-6.82	-746.93	-430.94	-0.05
Dead+Wind 60 deg - Service	38.80	6.81	-3.93	-431.45	-746.01	-0.05
Dead+Wind 90 deg - Service	38.80	7.86	0.00	-0.61	-861.42	-0.05
Dead+Wind 120 deg - Service	38.80	6.81	3.94	430.15	-746.30	-0.03
Dead+Wind 150 deg - Service	38.80	3.93	6.82	745.42	-431.43	-0.00
Dead+Wind 180 deg - Service	38.80	0.00	7.87	860.69	-1.22	0.03
Dead+Wind 210 deg - Service	38.80	-3.93	6.82	745.13	429.07	0.05
Dead+Wind 240 deg - Service	38.80	-6.81	3.93	429.66	744.14	0.05
Dead+Wind 270 deg - Service	38.80	-7.86	-0.00	-1.18	859.55	0.05
Dead+Wind 300 deg - Service	38.80	-6.81	-3.94	-431.94	744.43	0.03
Dead+Wind 330 deg - Service	38.80	-3.93	-6.82	-747.21	429.56	0.00

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	-38.80	0.00	0.00	38.80	0.00	0.000%
2	-0.02	-46.55	-32.88	0.02	46.55	32.88	0.000%
3	-0.02	-34.92	-32.88	0.02	34.92	32.88	0.000%
4	16.40	-46.55	-28.47	-16.40	46.55	28.47	0.000%
5	16.40	-34.92	-28.47	-16.40	34.92	28.47	0.000%
6	28.43	-46.55	-16.43	-28.43	46.55	16.43	0.000%
7	28.43	-34.92	-16.43	-28.43	34.92	16.43	0.000%
8	32.83	-46.55	0.02	-32.83	46.55	-0.02	0.000%
9	32.83	-34.92	0.02	-32.83	34.92	-0.02	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
10	28.44	-46.55	16.45	-28.44	46.55	-16.45	0.000%
11	28.44	-34.92	16.45	-28.44	34.92	-16.45	0.000%
12	16.43	-46.55	28.48	-16.43	46.55	-28.48	0.000%
13	16.43	-34.92	28.48	-16.43	34.92	-28.48	0.000%
14	0.02	-46.55	32.88	-0.02	46.55	-32.88	0.000%
15	0.02	-34.92	32.88	-0.02	34.92	-32.88	0.000%
16	-16.40	-46.55	28.47	16.40	46.55	-28.47	0.000%
17	-16.40	-34.92	28.47	16.40	34.92	-28.47	0.000%
18	-28.43	-46.55	16.43	28.43	46.55	-16.43	0.000%
19	-28.43	-34.92	16.43	28.43	34.92	-16.43	0.000%
20	-32.83	-46.55	-0.02	32.83	46.55	0.02	0.000%
21	-32.83	-34.92	-0.02	32.83	34.92	0.02	0.000%
22	-28.44	-46.55	-16.45	28.44	46.55	16.45	0.000%
23	-28.44	-34.92	-16.45	28.44	34.92	16.45	0.000%
24	-16.43	-46.55	-28.48	16.43	46.55	28.48	0.000%
25	-16.43	-34.92	-28.48	16.43	34.92	28.48	0.000%
26	0.00	-66.13	0.00	-0.00	66.13	0.00	0.000%
27	-0.00	-66.13	-8.83	0.00	66.13	8.83	0.000%
28	4.40	-66.13	-7.64	-4.40	66.13	7.64	0.000%
29	7.63	-66.13	-4.41	-7.63	66.13	4.41	0.000%
30	8.82	-66.13	0.00	-8.82	66.13	-0.00	0.000%
31	7.64	-66.13	4.42	-7.64	66.13	-4.42	0.000%
32	4.41	-66.13	7.65	-4.41	66.13	-7.65	0.000%
33	0.00	-66.13	8.83	-0.00	66.13	-8.83	0.000%
34	-4.40	-66.13	7.64	4.40	66.13	-7.64	0.000%
35	-7.63	-66.13	4.41	7.63	66.13	-4.41	0.000%
36	-8.82	-66.13	-0.00	8.82	66.13	0.00	0.000%
37	-7.64	-66.13	-4.42	7.64	66.13	4.42	0.000%
38	-4.41	-66.13	-7.65	4.41	66.13	7.65	0.000%
39	-0.00	-38.80	-7.87	0.00	38.80	7.87	0.000%
40	3.93	-38.80	-6.82	-3.93	38.80	6.82	0.000%
41	6.81	-38.80	-3.93	-6.81	38.80	3.93	0.000%
42	7.86	-38.80	0.00	-7.86	38.80	-0.00	0.000%
43	6.81	-38.80	3.94	-6.81	38.80	-3.94	0.000%
44	3.93	-38.80	6.82	-3.93	38.80	-6.82	0.000%
45	0.00	-38.80	7.87	-0.00	38.80	-7.87	0.000%
46	-3.93	-38.80	6.82	3.93	38.80	-6.82	0.000%
47	-6.81	-38.80	3.93	6.81	38.80	-3.93	0.000%
48	-7.86	-38.80	-0.00	7.86	38.80	0.00	0.000%
49	-6.81	-38.80	-3.94	6.81	38.80	3.94	0.000%
50	-3.93	-38.80	-6.82	3.93	38.80	6.82	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	0.00002224
3	Yes	5	0.00000001	0.00001061
4	Yes	6	0.00000001	0.00044418
5	Yes	6	0.00000001	0.00012590
6	Yes	6	0.00000001	0.00044609
7	Yes	6	0.00000001	0.00012659
8	Yes	5	0.00000001	0.00003194
9	Yes	5	0.00000001	0.00001441
10	Yes	6	0.00000001	0.00044398
11	Yes	6	0.00000001	0.00012586
12	Yes	6	0.00000001	0.00044539
13	Yes	6	0.00000001	0.00012634
14	Yes	5	0.00000001	0.00002254
15	Yes	5	0.00000001	0.00001055
16	Yes	6	0.00000001	0.00044511
17	Yes	6	0.00000001	0.00012635
18	Yes	6	0.00000001	0.00044338
19	Yes	6	0.00000001	0.00012574
20	Yes	5	0.00000001	0.00003792

21	Yes	5	0.00000001	0.00001686
22	Yes	6	0.00000001	0.00044597
23	Yes	6	0.00000001	0.00012655
24	Yes	6	0.00000001	0.00044440
25	Yes	6	0.00000001	0.00012600
26	Yes	4	0.00000001	0.00000579
27	Yes	5	0.00000001	0.00060053
28	Yes	6	0.00000001	0.00016532
29	Yes	6	0.00000001	0.00016560
30	Yes	5	0.00000001	0.00060025
31	Yes	6	0.00000001	0.00016448
32	Yes	6	0.00000001	0.00016492
33	Yes	5	0.00000001	0.00059847
34	Yes	6	0.00000001	0.00016373
35	Yes	6	0.00000001	0.00016340
36	Yes	5	0.00000001	0.00059787
37	Yes	6	0.00000001	0.00016484
38	Yes	6	0.00000001	0.00016446
39	Yes	4	0.00000001	0.00028857
40	Yes	5	0.00000001	0.00011741
41	Yes	5	0.00000001	0.00011860
42	Yes	4	0.00000001	0.00028907
43	Yes	5	0.00000001	0.00011671
44	Yes	5	0.00000001	0.00011791
45	Yes	4	0.00000001	0.00028748
46	Yes	5	0.00000001	0.00011729
47	Yes	5	0.00000001	0.00011605
48	Yes	4	0.00000001	0.00028809
49	Yes	5	0.00000001	0.00011820
50	Yes	5	0.00000001	0.00011705

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	139.5 - 93.04	35.833	39	2.3801	0.0009
L2	96.96 - 46.38	16.710	39	1.7112	0.0003
L3	51.63 - 0	4.526	39	0.8350	0.0001

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	34.136	2.3290	0.0008	20345
132.00	1900MHZ RRH (65MHZ)	39	32.203	2.2703	0.0007	13563
130.00	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	39	31.241	2.2408	0.0007	10708
119.00	BXA-171063-8BF-EDIN-0 w/ Mount Pipe	39	26.056	2.0754	0.0006	4961
110.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	39	22.026	1.9334	0.0005	3447
100.00	MX08FRO665-21 w/ Mount Pipe	39	17.882	1.7651	0.0004	2577
75.00	KS24019-L112A	39	9.593	1.2902	0.0002	2535

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	139.5 - 93.04	150.552	2	10.0185	0.0037
L2	96.96 - 46.38	70.325	2	7.2115	0.0014

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	51.63 - 0	19.058	2	3.5184	0.0004

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	143.435	9.8042	0.0035	5081
132.00	1900MHZ RRH (65MHZ)	2	135.328	9.5584	0.0032	3386
130.00	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	2	131.294	9.4349	0.0031	2672
119.00	BXA-171063-8BF-EDIN-0 w/ Mount Pipe	2	109.552	8.7412	0.0024	1234
110.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	2	92.642	8.1453	0.0020	854
100.00	MX08FRO665-21 w/ Mount Pipe	2	75.249	7.4382	0.0015	635
75.00	KS24019-L112A	2	40.401	5.4376	0.0008	613

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 ϕP _n ϕP _u
L1	139.5 - 137.261	TP26.99x15.5x0.25	46.46	0.00	0.0	12.5402	-0.18	733.60	0.000
	137.261 - 135.022					12.9796	-3.43	759.31	0.005
	135.022 - 132.783					13.4190	-3.62	785.01	0.005
	132.783 - 130.544					13.8584	-4.18	810.71	0.005
	130.544 - 128.305					14.2977	-7.46	836.42	0.009
	128.305 - 126.066					14.7371	-7.68	862.12	0.009
	126.066 - 123.827					15.1765	-7.90	887.82	0.009
	123.827 - 121.588					15.6158	-8.14	913.53	0.009
	121.588 - 119.349					16.0552	-8.38	939.23	0.009
	119.349 - 117.111					16.4946	-9.96	964.93	0.010
	117.111 - 114.872					16.9340	-10.23	990.64	0.010
	114.872 - 112.633					17.3733	-10.50	1016.34	0.010
	112.633 - 110.394					17.8127	-10.79	1042.04	0.010
	110.394 - 108.155					18.2521	-14.41	1067.75	0.013
	108.155 - 105.916					18.6914	-14.73	1093.45	0.013
	105.916 - 103.677					19.1308	-15.05	1119.15	0.013
	103.677 - 101.438					19.5702	-15.39	1144.86	0.013
	101.438 - 99.1989					20.0096	-18.54	1170.56	0.016
	99.1989 - 96.96					20.4489	-18.90	1196.26	0.016
	96.96 - 93.04					21.2182	-8.12	1241.26	0.007
L2	96.96 - 93.04	TP37.91x25.5205x 0.375	50.58	0.00	0.0	31.0724	-11.81	1817.73	0.006
	93.04 - 90.7394					31.7431	-20.45	1856.97	0.011
	90.7394 - 88.4389					32.4138	-20.97	1896.21	0.011
	88.4389 - 86.1383					33.0845	-21.50	1935.45	0.011
	86.1383 - 83.8378					33.7553	-22.04	1974.68	0.011
	83.8378 - 81.5372					34.4260	-22.58	2013.92	0.011
	81.5372 - 79.2367					35.0967	-23.13	2053.16	0.011
	79.2367 - 76.9361					35.7674	-23.69	2092.39	0.011
	76.9361 - 74.6356					36.4382	-24.34	2131.63	0.011
	74.6356 - 72.335					37.1089	-24.91	2170.87	0.011
	72.335 - 70.0344					37.7796	-25.49	2210.11	0.012
	70.0344 - 67.7339					38.4503	-26.08	2249.34	0.012
	67.7339 - 65.4333					39.1211	-26.67	2288.58	0.012
	65.4333 - 63.1328					39.7918	-27.27	2327.82	0.012

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	ϕP _n K	Ratio P _u / ϕP _n	
L3	63.1328 - 60.8322	TP48.5x35.874x0.3 75	51.63	0.00	0.0	40.4625	-27.88	2367.06	0.012	
	60.8322 - 58.5317						41.1332	-28.49	2406.29	0.012
	58.5317 - 56.2311						41.8040	-29.11	2445.53	0.012
	56.2311 - 53.9306						42.4747	-29.74	2484.77	0.012
	53.9306 - 51.63						43.1454	-30.37	2524.01	0.012
	51.63 - 46.38						44.6760	-16.57	2613.55	0.006
	46.38 - 43.9389						43.7808	-16.08	2561.18	0.006
	43.9389 - 41.4979						44.4914	-33.32	2602.75	0.013
	41.4979 - 39.0568						45.2019	-33.99	2644.31	0.013
	39.0568 - 36.6158						45.9124	-34.68	2685.88	0.013
	36.6158 - 34.1747						46.6229	-35.37	2727.44	0.013
	34.1747 - 31.7337						47.3335	-36.06	2769.01	0.013
	31.7337 - 29.2926						48.0440	-36.77	2810.57	0.013
	29.2926 - 26.8516						48.7545	-37.48	2852.14	0.013
	26.8516 - 24.4105						49.4650	-38.19	2893.70	0.013
	24.4105 - 21.9695						50.1756	-38.91	2935.27	0.013
	21.9695 - 19.5284						50.8861	-39.64	2976.84	0.013
	19.5284 - 17.0874						51.5966	-40.38	3018.40	0.013
	17.0874 - 14.6463						52.3071	-41.12	3059.97	0.013
	14.6463 - 12.2053						53.0176	-41.87	3101.53	0.014
	12.2053 - 9.76421						53.7282	-42.63	3143.10	0.014
	9.76421 - 7.32316						54.4387	-43.39	3184.66	0.014
	7.32316 - 4.88211						55.1492	-44.16	3226.23	0.014
	4.88211 - 2.44105						55.8597	-44.94	3267.79	0.014
	2.44105 - 0						56.5703	-45.72	3309.36	0.014
							57.2808	-46.51	3350.93	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	ϕM _{nx} kip-ft	Ratio M _{ux} / ϕM _{nx}	M _{uy} kip-ft	ϕM _{ny} kip-ft	Ratio M _{uy} / ϕM _{ny}
L1	139.5 - 137.261	TP26.99x15.5x0.25	0.16	300.40	0.001	0.00	300.40	0.000
	137.261 - 135.022		22.33	321.99	0.069	0.00	321.99	0.000
	135.022 - 135.022		37.44	344.33	0.109	0.00	344.33	0.000
	135.022 - 132.783		52.04	367.41	0.142	0.00	367.41	0.000
	132.783 - 130.544		79.56	391.25	0.203	0.00	391.25	0.000
	130.544 - 128.305		109.72	415.84	0.264	0.00	415.84	0.000
	128.305 - 126.066		140.22	441.17	0.318	0.00	441.17	0.000
	126.066 - 123.827		171.03	467.26	0.366	0.00	467.26	0.000
	123.827 - 121.588		202.17	494.09	0.409	0.00	494.09	0.000
	121.588 - 119.349		240.75	521.67	0.462	0.00	521.67	0.000
	119.349 - 117.111		281.22	550.00	0.511	0.00	550.00	0.000
	117.111 - 114.872		322.00	579.08	0.556	0.00	579.08	0.000
	114.872 - 112.633		363.10	608.91	0.596	0.00	608.91	0.000
	112.633 - 110.394		412.91	639.49	0.646	0.00	639.49	0.000
	110.394 - 108.155		464.81	670.82	0.693	0.00	670.82	0.000
	108.155 - 105.916		517.00	700.47	0.738	0.00	700.47	0.000
	105.916 - 103.677							

Section No.	Elevation ft	Size	M_{ux}	ϕM_{nx}	$\frac{Ratio}{M_{ux}} \frac{\phi M_{nx}}{M_{ux}}$	M_{uy}	ϕM_{ny}	$\frac{Ratio}{M_{uy}} \frac{\phi M_{ny}}{M_{uy}}$
			kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
L2	103.677 -	TP37.91x25.5205x0.375	569.47	729.10	0.781	0.00	729.10	0.000
	101.438		625.08	758.10	0.825	0.00	758.10	0.000
	101.438 -		685.77	787.46	0.871	0.00	787.46	0.000
	99.1989		96.96	331.17	0.394	0.00	839.70	0.000
	99.1989 -		461.76	1231.31	0.375	0.00	1231.31	0.000
	96.96		856.43	1285.43	0.666	0.00	1285.43	0.000
	96.96 - 93.04		90.7394	920.27	0.686	0.00	1340.71	0.000
	93.04 -		88.4389	984.47	0.705	0.00	1397.15	0.000
	90.7394 -		86.1383	1049.01	0.721	0.00	1454.76	0.000
	88.4389 -		83.8378	1113.89	0.736	0.00	1513.53	0.000
	86.1383 -		81.5372	1179.11	0.749	0.00	1573.47	0.000
	83.8378 -		79.2367	1244.68	0.761	0.00	1634.57	0.000
	79.2367 -		76.9361	1310.49	0.772	0.00	1696.83	0.000
	76.9361 -		74.6356	1376.91	0.782	0.00	1760.26	0.000
	74.6356 -		72.335	1443.67	0.791	0.00	1824.85	0.000
	72.335 -		70.0344	1510.76	0.799	0.00	1890.61	0.000
	70.0344 -		67.7339	1578.18	0.806	0.00	1957.53	0.000
	67.7339 -		65.4333	1645.95	0.813	0.00	2025.61	0.000
	65.4333 -		63.1328	1714.06	0.818	0.00	2094.86	0.000
	63.1328 -		60.8322	1782.49	0.823	0.00	2165.28	0.000
	60.8322 -		58.5317	1851.27	0.828	0.00	2236.85	0.000
	58.5317 -		56.2311	1920.38	0.832	0.00	2309.01	0.000
	56.2311 -		53.9306	1989.83	0.838	0.00	2373.92	0.000
	53.9306 -		51.63	2225.27	0.888	0.00	2505.95	0.000
L3	51.63 - 46.38	TP48.5x35.874x0.375	1108.25	2524.24	0.439	0.00	2524.24	0.000
	51.63 - 46.38		1041.77	2435.96	0.428	0.00	2435.96	0.000
	46.38 -		2300.83	2576.58	0.893	0.00	2576.58	0.000
	43.9389		2376.71	2647.84	0.898	0.00	2647.84	0.000
	43.9389 -		39.0568	2452.90	0.902	0.00	2719.72	0.000
	41.4979		36.6158	2529.39	0.906	0.00	2792.18	0.000
	41.4979 -		34.1747	2606.18	0.910	0.00	2865.22	0.000
	39.0568 -		31.7337	2683.26	0.913	0.00	2938.83	0.000
	36.6158 -		29.2926	2760.62	0.916	0.00	3012.98	0.000
	34.1747 -		26.8516	2838.27	0.919	0.00	3087.67	0.000
	31.7337 -		24.4105	2916.19	0.922	0.00	3162.88	0.000
	29.2926 -		21.9695	2994.38	0.925	0.00	3238.57	0.000
	26.8516 -		19.5284					

Section No.	Elevation ft	Size	M_{ux}	ϕM_{nx}	$\frac{Ratio}{M_{ux}} \frac{M_{nx}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	$\frac{Ratio}{M_{uy}} \frac{M_{ny}}{\phi M_{ny}}$
			kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
	19.5284 -		3072.84	3314.77	0.927	0.00	3314.77	0.000
	17.0874 -		3151.56	3391.42	0.929	0.00	3391.42	0.000
	17.0874 -		3230.54	3468.53	0.931	0.00	3468.53	0.000
	14.6463 -		3309.77	3546.08	0.933	0.00	3546.08	0.000
	12.2053 -		3389.24	3624.05	0.935	0.00	3624.05	0.000
	12.2053 -		3468.95	3702.43	0.937	0.00	3702.43	0.000
	9.76421 -		3548.90	3781.20	0.939	0.00	3781.20	0.000
	9.76421 -		3629.08	3860.34	0.940	0.00	3860.34	0.000
	7.32316 -							
	7.32316 -							
	4.88211 -							
	4.88211 -							
	2.44105 -							
	2.44105 - 0							

Pole Shear Design Data

Section No.	Elevation ft	Size	$Actual V_u K$	$\phi V_n K$	$\frac{Ratio}{V_u} \frac{V_n}{\phi V_n}$	$Actual T_u kip-ft$	$\phi T_n kip-ft$	$\frac{Ratio}{T_u} \frac{T_n}{\phi T_n}$
			K	K	kip-ft	kip-ft	kip-ft	kip-ft
L1	139.5 -							
	137.261 -	TP26.99x15.5x0.25	0.14	220.08	0.001	0.00	304.60	0.000
	137.261 -		6.67	227.79	0.029	0.05	326.31	0.000
	135.022 -		6.82	235.50	0.029	0.05	348.78	0.000
	132.783 -		7.70	243.21	0.032	0.05	371.99	0.000
	130.544 -		13.40	250.93	0.053	0.05	395.95	0.000
	128.305 -		13.55	258.64	0.052	0.05	420.66	0.000
	126.066 -		13.70	266.35	0.051	0.05	446.12	0.000
	126.066 -		13.84	274.06	0.051	0.05	472.32	0.000
	123.827 -		13.99	281.77	0.050	0.05	499.28	0.000
	121.588 -		18.01	289.48	0.062	0.05	526.98	0.000
	121.588 -		18.16	297.19	0.061	0.05	555.43	0.000
	119.349 -		18.30	304.90	0.060	0.05	584.62	0.000
	117.111 -		18.44	312.61	0.059	0.05	614.57	0.000
	117.111 -		23.14	320.32	0.072	0.05	645.26	0.000
	108.155 -		23.27	328.04	0.071	0.05	676.70	0.000
	105.916 -		23.40	335.75	0.070	0.05	708.89	0.000
	105.916 -		23.53	343.46	0.069	0.05	741.82	0.000
	103.677 -		27.09	351.17	0.077	0.09	775.51	0.000
	101.438 -		27.21	358.88	0.076	0.09	809.94	0.000
	99.1989 -							
	99.1989 -							
	96.96 -							
L2	96.96 - 93.04	TP37.91x25.5205x0.375	11.59	358.88	0.032	0.03	872.02	0.000
	96.96 - 93.04		15.95	545.32	0.029	0.05	1246.72	0.000
	93.04 -		27.70	557.09	0.050	0.09	1301.12	0.000
	90.7394 -		27.86	568.86	0.049	0.08	1356.68	0.000
	88.4389 -							

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 $\frac{T_u}{\phi T_n}$
L3	88.4389 -	TP48.5x35.874x0.375	28.01	580.63	0.048	0.08	1413.42	0.000
	86.1383		28.16	592.40	0.048	0.08	1471.30	0.000
	86.1383 -		28.31	604.18	0.047	0.08	1530.35	0.000
	83.8378		28.46	604.18	0.047	0.08	1590.57	0.000
	81.5372		28.61	615.95	0.046	0.08	1651.94	0.000
	81.5372 -		28.83	639.49	0.045	0.12	1714.47	0.000
	79.2367		28.98	639.49	0.045	0.12	1778.18	0.000
	79.2367 -		29.12	651.26	0.045	0.12	1843.03	0.000
	76.9361		29.27	663.03	0.044	0.12	1909.06	0.000
	76.9361 -		29.42	674.80	0.044	0.12	1976.24	0.000
	74.6356		29.57	686.58	0.043	0.12	2044.58	0.000
	72.335		29.71	698.35	0.043	0.12	2114.09	0.000
	72.335 -		29.86	721.89	0.041	0.12	2184.77	0.000
	70.0344		30.01	733.66	0.041	0.12	2256.59	0.000
	70.0344 -		30.15	745.43	0.040	0.12	2329.59	0.000
	67.7339		30.30	757.20	0.040	0.12	2403.74	0.000
	67.7339 -	TP48.5x35.874x0.375	16.00	784.06	0.020	0.06	2577.32	0.000
	65.4333		14.81	741.53	0.020	0.06	2475.07	0.000
	65.4333 -		30.94	780.82	0.040	0.12	2556.06	0.000
	58.5317		31.07	793.29	0.039	0.12	2638.35	0.000
	56.2311		31.20	805.76	0.039	0.12	2721.94	0.000
	56.2311 -		31.32	818.23	0.038	0.12	2806.84	0.000
	53.9306		31.44	830.70	0.038	0.12	2893.05	0.000
	53.9306 -		31.57	843.17	0.037	0.12	2980.55	0.000
	51.63		31.68	855.64	0.037	0.12	3069.37	0.000
	51.63 - 46.38		31.68	868.11	0.037	0.12	3159.47	0.000
	46.38		31.80	880.58	0.036	0.12	3250.90	0.000
	43.9389		31.91	893.05	0.036	0.12	3343.62	0.000
	43.9389 -		32.14	905.52	0.035	0.12	3437.64	0.000
	41.4979		32.25	917.99	0.035	0.12	3532.97	0.000
	41.4979 -		32.35	930.46	0.035	0.12	3629.61	0.000
	39.0568		32.46	942.93	0.034	0.12	3727.54	0.000
	39.0568 -		32.56	955.40	0.034	0.12	3826.78	0.000
	36.6158		32.66	967.87	0.034	0.12	3927.33	0.000
	36.6158 -		32.76	980.34	0.033	0.12	4029.18	0.000
	34.1747							
	34.1747 -							
	31.7337							
	31.7337 -							
	29.2926							
	29.2926 -							
	26.8516							
	26.8516 -							
	24.4105							
	24.4105 -							
	21.9695							
	21.9695 -							
	19.5284							
	19.5284 -							
	17.0874							
	17.0874 -							
	14.6463							
	14.6463 -							
	12.2053							
	12.2053 -							
	9.76421							
	9.76421 -							
	7.32316							
	7.32316 -							
	4.88211							

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u $\frac{\phi V_n}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u $\frac{\phi T_n}{\phi T_n}$
	4.88211 - 2.44105		32.85	992.81	0.033	0.12	4132.33	0.000
	2.44105 - 0		32.94	1005.28	0.033	0.12	4236.79	0.000

Pole Interaction Design Data

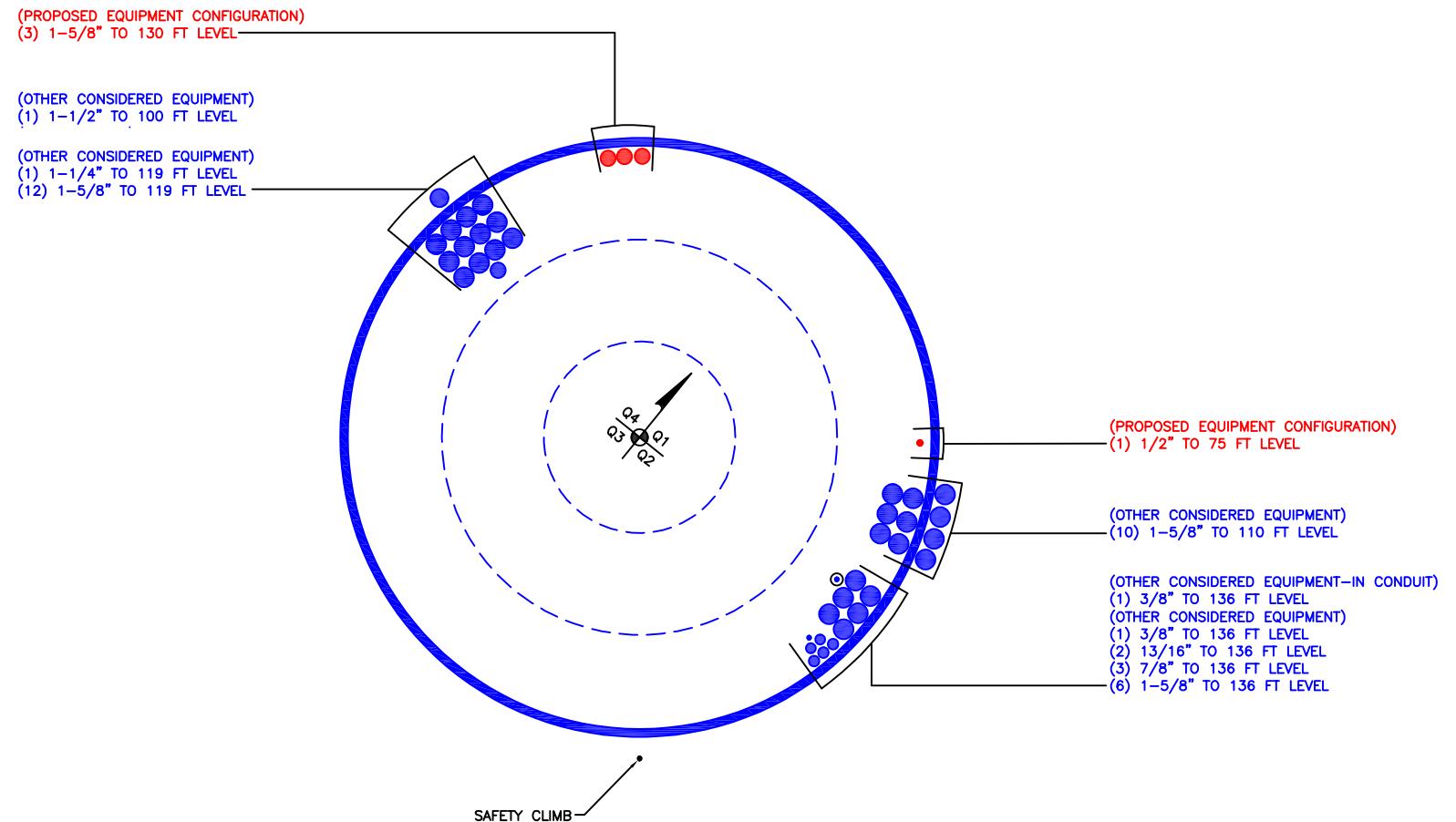
Section No.	Elevation ft	Ratio P_u $\frac{\phi P_n}{\phi P_n}$	Ratio M_{ux} $\frac{\phi M_{nx}}{\phi M_{nx}}$	Ratio M_{uy} $\frac{\phi M_{ny}}{\phi M_{ny}}$	Ratio V_u $\frac{\phi V_n}{\phi V_n}$	Ratio T_u $\frac{\phi T_n}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	139.5 - 137.261	0.000	0.001	0.000	0.001	0.000	0.001	1.050	4.8.2
	137.261 - 135.022	0.005	0.069	0.000	0.029	0.000	0.075	1.050	4.8.2
	135.022 - 132.783	0.005	0.109	0.000	0.029	0.000	0.114	1.050	4.8.2
	132.783 - 130.544	0.005	0.142	0.000	0.032	0.000	0.148	1.050	4.8.2
	130.544 - 128.305	0.009	0.203	0.000	0.053	0.000	0.215	1.050	4.8.2
	128.305 - 126.066	0.009	0.264	0.000	0.052	0.000	0.276	1.050	4.8.2
	126.066 - 123.827	0.009	0.318	0.000	0.051	0.000	0.329	1.050	4.8.2
	123.827 - 121.588	0.009	0.366	0.000	0.051	0.000	0.378	1.050	4.8.2
	121.588 - 119.349	0.009	0.409	0.000	0.050	0.000	0.421	1.050	4.8.2
	119.349 - 117.111	0.010	0.462	0.000	0.062	0.000	0.476	1.050	4.8.2
	117.111 - 114.872	0.010	0.511	0.000	0.061	0.000	0.525	1.050	4.8.2
	114.872 - 112.633	0.010	0.556	0.000	0.060	0.000	0.570	1.050	4.8.2
	112.633 - 110.394	0.010	0.596	0.000	0.059	0.000	0.610	1.050	4.8.2
	110.394 - 108.155	0.013	0.646	0.000	0.072	0.000	0.664	1.050	4.8.2
	108.155 - 105.916	0.013	0.693	0.000	0.071	0.000	0.711	1.050	4.8.2
	105.916 - 103.677	0.013	0.738	0.000	0.070	0.000	0.756	1.050	4.8.2
	103.677 - 101.438	0.013	0.781	0.000	0.069	0.000	0.799	1.050	4.8.2
	101.438 - 99.1989	0.016	0.825	0.000	0.077	0.000	0.846	1.050	4.8.2
	99.1989 - 96.96	0.016	0.871	0.000	0.076	0.000	0.892	1.050	4.8.2
	96.96 - 93.04	0.007	0.394	0.000	0.032	0.000	0.402	1.050	4.8.2
L2	96.96 - 93.04	0.006	0.375	0.000	0.029	0.000	0.382	1.050	4.8.2
	93.04 - 90.7394	0.011	0.666	0.000	0.050	0.000	0.680	1.050	4.8.2
	90.7394 - 88.4389	0.011	0.686	0.000	0.049	0.000	0.700	1.050	4.8.2
	88.4389 - 86.1383	0.011	0.705	0.000	0.048	0.000	0.718	1.050	4.8.2
	86.1383 - 83.8378	0.011	0.721	0.000	0.048	0.000	0.735	1.050	4.8.2
	83.8378 - 81.5372	0.011	0.736	0.000	0.047	0.000	0.749	1.050	4.8.2
	81.5372 - 79.2367	0.011	0.749	0.000	0.047	0.000	0.763	1.050	4.8.2
	79.2367 - 76.9361	0.011	0.761	0.000	0.046	0.000	0.775	1.050	4.8.2
	76.9361 - 74.6356	0.011	0.772	0.000	0.045	0.000	0.786	1.050	4.8.2
	74.6356 - 72.335	0.011	0.782	0.000	0.045	0.000	0.796	1.050	4.8.2
	72.335 - 70.0344	0.012	0.791	0.000	0.045	0.000	0.805	1.050	4.8.2
	70.0344 - 67.7339	0.012	0.799	0.000	0.044	0.000	0.813	1.050	4.8.2
	67.7339 - 65.4333	0.012	0.806	0.000	0.044	0.000	0.820	1.050	4.8.2
	65.4333 - 63.1328	0.012	0.813	0.000	0.043	0.000	0.826	1.050	4.8.2
	63.1328 - 60.8322	0.012	0.818	0.000	0.043	0.000	0.832	1.050	4.8.2
	60.8322 - 58.5317	0.012	0.823	0.000	0.041	0.000	0.837	1.050	4.8.2
	58.5317 - 56.2311	0.012	0.828	0.000	0.041	0.000	0.841	1.050	4.8.2
	56.2311 - 53.9306	0.012	0.832	0.000	0.040	0.000	0.845	1.050	4.8.2
	53.9306 - 51.63	0.012	0.838	0.000	0.040	0.000	0.852	1.050	4.8.2
L3	51.63 - 46.38	0.006	0.439	0.000	0.020	0.000	0.446	1.050	4.8.2
	51.63 - 46.38	0.006	0.428	0.000	0.020	0.000	0.434	1.050	4.8.2
	46.38 - 43.9389	0.013	0.888	0.000	0.040	0.000	0.902	1.050	4.8.2
	43.9389 - 41.4979	0.013	0.893	0.000	0.039	0.000	0.907	1.050	4.8.2
	41.4979 - 39.0568	0.013	0.898	0.000	0.039	0.000	0.912	1.050	4.8.2
	39.0568 - 36.6158	0.013	0.902	0.000	0.038	0.000	0.916	1.050	4.8.2
	36.6158 - 34.1747	0.013	0.906	0.000	0.038	0.000	0.920	1.050	4.8.2
	34.1747 - 31.7337	0.013	0.910	0.000	0.037	0.000	0.924	1.050	4.8.2
	31.7337 - 29.2926	0.013	0.913	0.000	0.037	0.000	0.928	1.050	4.8.2
	29.2926 - 26.8516	0.013	0.916	0.000	0.037	0.000	0.931	1.050	4.8.2
	26.8516 - 24.4105	0.013	0.919	0.000	0.036	0.000	0.934	1.050	4.8.2
	24.4105 - 21.9695	0.013	0.922	0.000	0.036	0.000	0.937	1.050	4.8.2
	21.9695 - 19.5284	0.013	0.925	0.000	0.035	0.000	0.939	1.050	4.8.2
	19.5284 - 17.0874	0.013	0.927	0.000	0.035	0.000	0.942	1.050	4.8.2
	17.0874 - 14.6463	0.014	0.929	0.000	0.035	0.000	0.944	1.050	4.8.2
	14.6463 - 12.2053	0.014	0.931	0.000	0.034	0.000	0.946	1.050	4.8.2
	12.2053 - 9.76421	0.014	0.933	0.000	0.034	0.000	0.948	1.050	4.8.2

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
	9.76421 - 7.32316	0.014	0.935	0.000	0.034	0.000	0.950	1.050	4.8.2
	7.32316 - 4.88211	0.014	0.937	0.000	0.033	0.000	0.952	1.050	4.8.2
	4.88211 - 2.44105	0.014	0.939	0.000	0.033	0.000	0.953	1.050	4.8.2
	2.44105 - 0	0.014	0.940	0.000	0.033	0.000	0.955	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	-18.90	1256.07	85.0	Pass
L2	93.04 - 46.38	Pole	TP37.91x25.5205x0.375	2	-30.37	2650.21	81.1	Pass
L3	46.38 - 0	Pole	TP48.5x35.874x0.375	3	-46.51	3518.48	91.0	Pass
			Summary					
						Pole (L3)	91.0	Pass
						RATING =	91.0	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Monopole Base Plate Connection

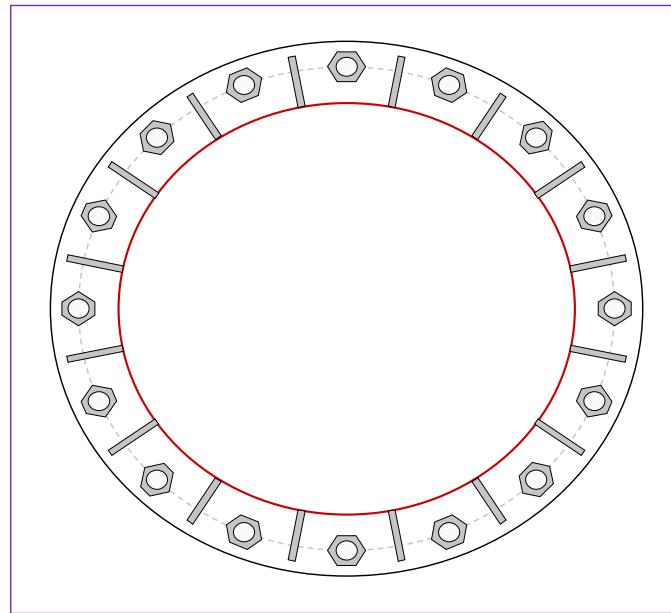


Site Info	
BU #	881541
Site Name	Rogers Property
Order #	619473 Rev. 0

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

Applied Loads	
Moment (kip-ft)	3629.09
Axial Force (kips)	46.51
Shear Force (kips)	32.94

*TIA-222-H Section 15.5 Applied



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 57" BC

Base Plate Data

63" OD x 2" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(16) 15"H x 6"W x 0.75"T, Notch: 0.75"

plate: Fy= 50 ksi ; weld: Fy= 70 ksi

horiz. weld: 0.375" groove, 45° dbl bevel, 0.3125" fillet

vert. weld: 0.3125" fillet

Pole Data

48.5" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary

(units of kips, kip-in)

P_u _t = 187.98	ϕP_n _t = 243.75	Stress Rating
V_u = 2.06	ϕV_n = 149.1	73.4%
M_u = 3.51	ϕM_n = 128.14	Pass

Base Plate Summary

Max Stress (ksi):	33.42	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	58.9%	Pass

Stiffener Summary

Horizontal Weld:	72.8%	Pass
Vertical Weld:	67.0%	Pass
Plate Flexure+Shear:	27.7%	Pass
Plate Tension+Shear:	73.8%	Pass
Plate Compression:	79.2%	Pass

Pole Summary

Punching Shear:	17.2%	Pass
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Drilled Pier Foundation

BU # :	881541
Site Name:	Rogers Property
Order Number:	619473 Rev. 0
TIA-222 Revision:	H
Tower Type:	Monopole

Report File: C:\Users\bpolamarasetty\OneDrive - MORRISON HERSHFIELD\Desktop\Projects\SA\CN9-49

Applied Loads	
Comp.	Uplift
Moment (kip-ft)	3629.09
Axial Force (kips)	46.55
Shear Force (kips)	32.88

Material Properties	
Concrete Strength, f_c :	4 ksi
Rebar Strength, F_y :	60 ksi
Tie Yield Strength, F_{yt} :	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)	Compression	Uplift
Soil Safety Factor		
Max Moment (kip-ft)		
Rating*	*See Attached L-PILE Results	
Soil Vertical Check		
Skin Friction (kips)	301.24	-
End Bearing (kips)	995.49	-
Weight of Concrete (kips)	93.11	-
Total Capacity (kips)	1296.73	-
Axial (kips)	139.66	-
Rating*	10.3%	-
Reinforced Concrete Flexure		
Critical Depth (ft from TOC)	5.51	-
Critical Moment (kip-ft)	3801.00	-
Critical Moment Capacity	5060.69	-
Rating*	71.5%	-
Reinforced Concrete Shear		
Critical Depth (ft from TOC)	14.90	-
Critical Shear (kip)	509.68	-
Critical Shear Capacity	563.89	-
Rating*	86.1%	-
Structural Foundation Rating*	86.1%	
Soil Interaction Rating*	10.3%	

*Rating per TIA-222-H Section 15.5



Check Limitation

Apply TIA-222-H Section 15.5:

N/A

Additional Longitudinal Rebar

Input Effective Depths (else Actual):

Shear Design Options

Check Shear along Depth of Pier:

Utilize Shear-Friction Methodology:

Override Critical Depth:

[Go to Soil Calculations](#)

Soil Profile														
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (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	65	87.6	0	34	1.303	1.303			40	50	Cohesionless

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LPile for Windows, Version 2019-11.009

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method
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Files Used for Analysis

Path to file locations:
\Users\KChalat\Desktop\

Name of input data file:
CN9-494R3_New LPile (USCS units).lp11d

Name of output report file:
CN9-494R3_New LPile (USCS units).lp11o

Name of plot output file:
CN9-494R3_New LPile (USCS units).lp11p

Name of runtime message file:
CN9-494R3_New LPile (USCS units).lp11r

Date and Time of Analysis

Date: June 21, 2022

Time: 6:33:28

Problem Title

Project Name: ROGERS PROPERTY

Job Number: CN9-494R3 / 2200039

Client: CCI

Engineer: KCM

Description: BU# 881541

Program Options and Settings

Computational Options:

- Conventional Analysis

Engineering Units Used for Data Input and Computations:

- US Customary System Units (pounds, feet, inches)

Analysis Control Options:

- | | | |
|--|---|---------------|
| - Maximum number of iterations allowed | = | 500 |
| - Deflection tolerance for convergence | = | 1.0000E-05 in |
| - Maximum allowable deflection | = | 100.0000 in |
| - Number of pile increments | = | 100 |

Loading Type and Number of Cycles of Loading:

- Static loading specified
- Use of p-y modification factors for p-y curves not selected

- Analysis uses layering correction (Method of Georgiadis)
- No distributed lateral loads are entered
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Input of moment resistance at the pile tip not selected
- Input of side resistance moment along pile not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:

- Output files use decimal points to denote decimal symbols.
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Properties and Geometry

Number of pile sections defined	=	1
Total length of pile	=	21.000 ft
Depth of ground surface below top of pile	=	1.0000 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile. A summary of values of pile diameter vs. depth follows.

Point No.	Depth Below Pile Head feet	Pile Diameter inches
1	0.000	78.0000
2	21.000	78.0000

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is a round drilled shaft, bored pile, or CIDH pile	
Length of section	= 21.000000 ft
Shaft Diameter	= 78.000000 in

Shear capacity of section = 0.0000 lbs

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	1.000000 ft
Distance from top of pile to bottom of layer	=	4.500000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Friction angle at top of layer	=	1.000000 deg.
Friction angle at bottom of layer	=	1.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	4.500000 ft
Distance from top of pile to bottom of layer	=	8.000000 ft
Effective unit weight at top of layer	=	125.000000 pcf
Effective unit weight at bottom of layer	=	125.000000 pcf
Friction angle at top of layer	=	34.000000 deg.
Friction angle at bottom of layer	=	34.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	8.000000 ft
Distance from top of pile to bottom of layer	=	21.000000 ft
Effective unit weight at top of layer	=	62.600000 pcf
Effective unit weight at bottom of layer	=	62.600000 pcf
Friction angle at top of layer	=	34.000000 deg.
Friction angle at bottom of layer	=	34.000000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Default values for subgrade k will be computed for this layer.

(Depth of the lowest soil layer extends 0.000 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type Name (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	1.0000 4.5000	125.0000 125.0000	1.0000 1.0000	default default
2	Sand (Reese, et al.)	4.5000 8.0000	125.0000 125.0000	34.0000 34.0000	default default
3	Sand (Reese, et al.)	8.0000 21.0000	62.6000 62.6000	34.0000 34.0000	default default

Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load Compute No.	Load Top y Type vs. Pile Length	Condition Run Analysis 1	Condition 2	Axial Thrust Force, lbs

1	1	V =	8000. lbs	M =	10332000. in-lbs	39000.
No		Yes				

V = shear force applied normal to pile axis

M = bending moment applied to pile head

y = lateral deflection normal to pile axis

S = pile slope relative to original pile batter angle

R = rotational stiffness applied to pile head

Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3).

Thrust force is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	21.000000 ft
Shaft Diameter	=	78.000000 in
Concrete Cover Thickness (to edge of long. rebar)	=	5.500000 in
Number of Reinforcing Bars	=	22 bars
Yield Stress of Reinforcing Bars	=	60000. psi
Modulus of Elasticity of Reinforcing Bars	=	29000000. psi
Gross Area of Shaft	=	4778. sq. in.
Total Area of Reinforcing Steel	=	34.320000 sq. in.
Area Ratio of Steel Reinforcement	=	0.72 percent
Edge-to-Edge Bar Spacing	=	7.924430 in
Maximum Concrete Aggregate Size	=	0.750000 in
Ratio of Bar Spacing to Aggregate Size	=	10.57
Offset of Center of Rebar Cage from Center of Pile	=	0.0000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = 0.85 Fc Ac + Fy As	=	14156.508 kips
Tensile Load for Cracking of Concrete	=	-1832.859 kips
Nominal Axial Tensile Capacity	=	-2059.200 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
1	1.410000	1.560000	32.795000	0.00000
2	1.410000	1.560000	31.466572	9.239419
3	1.410000	1.560000	27.588910	17.730316
4	1.410000	1.560000	21.476158	24.784807
5	1.410000	1.560000	13.623535	29.831381
6	1.410000	1.560000	4.667215	32.461194
7	1.410000	1.560000	-4.667215	32.461194
8	1.410000	1.560000	-13.623535	29.831381
9	1.410000	1.560000	-21.476158	24.784807
10	1.410000	1.560000	-27.588910	17.730316
11	1.410000	1.560000	-31.466572	9.239419
12	1.410000	1.560000	-32.795000	0.00000
13	1.410000	1.560000	-31.466572	-9.239419
14	1.410000	1.560000	-27.588910	-17.730316
15	1.410000	1.560000	-21.476158	-24.784807
16	1.410000	1.560000	-13.623535	-29.831381
17	1.410000	1.560000	-4.667215	-32.461194
18	1.410000	1.560000	4.667215	-32.461194
19	1.410000	1.560000	13.623535	-29.831381
20	1.410000	1.560000	21.476158	-24.784807
21	1.410000	1.560000	27.588910	-17.730316
22	1.410000	1.560000	31.466572	-9.239419

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 7.924 inches
between bars 8 and 9.

Ratio of bar spacing to maximum aggregate size = 10.57

Concrete Properties:

Compressive Strength of Concrete	=	3000. psi
Modulus of Elasticity of Concrete	=	3122019. psi
Modulus of Rupture of Concrete	=	-410.791918 psi
Compression Strain at Peak Stress	=	0.001634
Tensile Strain at Fracture of Concrete	=	-0.0001160
Maximum Coarse Aggregate Size	=	0.750000 in

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	39.000

Definitions of Run Messages and Notes:

C = concrete in section has cracked in tension.

Y = stress in reinforcing steel has reached yield stress.

T = ACI 318 criteria for tension-controlled section met, tensile strain in reinforcement exceeds 0.005 while simultaneously compressive strain in concrete more than 0.003. See ACI 318, Section 10.3.4.

Z = depth of tensile zone in concrete section is less than 10 percent of section depth.

Bending Stiffness (EI) = Computed Bending Moment / Curvature.

Position of neutral axis is measured from edge of compression side of pile.

Compressive stresses and strains are positive in sign.

Tensile stresses and strains are negative in sign.

Axial Thrust Force = 39.000 kips

Bending Max Conc Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Run Stiffness Msg	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
4.16667E-07	2966.	7119144394.	44.1019379	0.00001838	-0.00001412
0.0665239	0.4622109				
8.33333E-07	5914.	7097309751.	41.5611688	0.00003463	-0.00003037
0.1246935	0.8630199				
0.00000125	8844.	7075162764.	40.7143201	0.00005089	-0.00004661
0.1822809	1.2638316				
0.00000167	11755.	7052937160.	40.2909410	0.00006715	-0.00006285
0.2392860	1.6646455				
0.00000208	14647.	7030680069.	40.0369490	0.00008341	-0.00007909
0.2957088	2.0654615				
0.00000250	17521.	7008407213.	39.8676497	0.00009967	-0.00009533
0.3515494	2.4662796				
0.00000292	20376.	6986125347.	39.7467466	0.0001159	-0.0001116
0.4068076	2.8670998				
0.00000333	20376.	6112859679.	20.4666052	0.00006822	-0.0001918
0.2407672	-4.9960615 C				

0.00000375	20376.	5433653048.	20.1890884	0.00007571	-0.0002168
0.2665076	-5.6507492 C				
0.00000417	20376.	4890287743.	19.9683867	0.00008320	-0.0002418
0.2921465	-6.3052783 C				
0.00000458	20376.	4445716130.	19.7844479	0.00009068	-0.0002668
0.3176110	-6.9602546 C				
0.00000500	20376.	4075239786.	19.6293487	0.00009815	-0.0002919
0.3429237	-7.6154944 C				
0.00000542	20376.	3761759802.	19.4991571	0.0001056	-0.0003169
0.3681360	-8.2705700 C				
0.00000583	20376.	3493062673.	19.3885395	0.0001131	-0.0003419
0.3932476	-8.9254805 C				
0.00000625	20376.	3260191829.	19.2935847	0.0001206	-0.0003669
0.4182582	-9.5802254 C				
0.00000667	20376.	3056429839.	19.2113593	0.0001281	-0.0003919
0.4431678	-10.2348038 C				
0.00000708	20376.	2876639849.	19.1396201	0.0001356	-0.0004169
0.4679760	-10.8892155 C				
0.00000750	20376.	2716826524.	19.0750506	0.0001431	-0.0004419
0.4926431	-11.5438015 C				
0.00000792	20376.	2573835654.	19.0167908	0.0001505	-0.0004670
0.5171765	-12.1984993 C				
0.00000833	20376.	2445143871.	18.9650810	0.0001580	-0.0004920
0.5416095	-12.8530221 C				
0.00000875	20376.	2328708449.	18.9189884	0.0001655	-0.0005170
0.5659416	-13.5073692 C				
0.00000917	20376.	2222858065.	18.8777498	0.0001730	-0.0005420
0.5901727	-14.1615399 C				
0.00000958	20376.	2126212062.	18.8407348	0.0001806	-0.0005669
0.6143027	-14.8155333 C				
0.00001000	20376.	2037619893.	18.8074179	0.0001881	-0.0005919
0.6383312	-15.4693489 C				
0.00001042	20376.	1956115097.	18.7773579	0.0001956	-0.0006169
0.6622581	-16.1229858 C				
0.00001083	20376.	1880879901.	18.7501814	0.0002031	-0.0006419
0.6860831	-16.7764432 C				
0.00001125	20376.	1811217683.	18.7255704	0.0002107	-0.0006668
0.7098060	-17.4297204 C				
0.00001167	20376.	1746531337.	18.7032522	0.0002182	-0.0006918
0.7334267	-18.0828166 C				
0.00001208	20376.	1686306118.	18.6829920	0.0002258	-0.0007167
0.7569448	-18.7357310 C				
0.00001250	20376.	1630095914.	18.6645860	0.0002333	-0.0007417
0.7803601	-19.3884625 C				
0.00001292	20376.	1577512175.	18.6478569	0.0002409	-0.0007666
0.8036725	-20.0410111 C				
0.00001333	20376.	1528214920.	18.6326496	0.0002484	-0.0007916
0.8268816	-20.6933754 C				
0.00001375	20376.	1481905377.	18.6188278	0.0002560	-0.0008165
0.8499873	-21.3455549 C				

0.00001417	20376.	1438319924.	18.6062711	0.0002636	-0.0008414
0.8729892	-21.9975486 C				
0.00001458	20376.	1397225069.	18.5948731	0.0002712	-0.0008663
0.8958873	-22.6493557 C				
0.00001500	20376.	1358413262.	18.5845391	0.0002788	-0.0008912
0.9186812	-23.3009755 C				
0.00001542	20376.	1321699390.	18.5751846	0.0002864	-0.0009161
0.9413707	-23.9524070 C				
0.00001583	20376.	1286917827.	18.5667342	0.0002940	-0.0009410
0.9639556	-24.6036495 C				
0.00001625	20376.	1253919934.	18.5591201	0.0003016	-0.0009659
0.9864357	-25.2547021 C				
0.00001708	21180.	1239794930.	18.5461629	0.0003168	-0.0010157
1.0310801	-26.5562342 C				
0.00001792	22159.	1236793729.	18.5358927	0.0003321	-0.0010654
1.0753022	-27.8569965 C				
0.00001875	23137.	1233989839.	18.5279640	0.0003474	-0.0011151
1.1191000	-29.1569820 C				
0.00001958	24114.	1231357546.	18.5220904	0.0003627	-0.0011648
1.1624713	-30.4561836 C				
0.00002042	25090.	1228875329.	18.5180325	0.0003781	-0.0012144
1.2054143	-31.7545940 C				
0.00002125	26064.	1226525035.	18.5155886	0.0003935	-0.0012640
1.2479268	-33.0522060 C				
0.00002208	27036.	1224291244.	18.5145876	0.0004089	-0.0013136
1.2900067	-34.3490120 C				
0.00002292	28008.	1222160770.	18.5148836	0.0004243	-0.0013632
1.3316521	-35.6450044 C				
0.00002375	28978.	1220122271.	18.5163512	0.0004398	-0.0014127
1.3728606	-36.9401755 C				
0.00002458	29947.	1218165938.	18.5188824	0.0004553	-0.0014622
1.4136302	-38.2345175 C				
0.00002542	30914.	1216283238.	18.5223833	0.0004708	-0.0015117
1.4539587	-39.5280224 C				
0.00002625	31880.	1214466716.	18.5267724	0.0004863	-0.0015612
1.4938438	-40.8206820 C				
0.00002708	32844.	1212709828.	18.5319781	0.0005019	-0.0016106
1.5332832	-42.1124880 C				
0.00002792	33807.	1211006803.	18.5379378	0.0005175	-0.0016600
1.5722747	-43.4034320 C				
0.00002875	34769.	1209352534.	18.5445962	0.0005332	-0.0017093
1.6108160	-44.6935054 C				
0.00002958	35729.	1207742481.	18.5519044	0.0005488	-0.0017587
1.6489046	-45.9826995 C				
0.00003042	36688.	1206172596.	18.5598191	0.0005645	-0.0018080
1.6865383	-47.2710053 C				
0.00003125	37645.	1204639254.	18.5683018	0.0005803	-0.0018572
1.7237145	-48.5584139 C				
0.00003208	38601.	1203139204.	18.5773182	0.0005960	-0.0019065
1.7604308	-49.8449159 C				

0.00003292	39555.	1201669510.	18.5868375	0.0006118	-0.0019557
1.7966848	-51.1305021 C				
0.00003375	40508.	1200227525.	18.5968324	0.0006276	-0.0020049
1.8324738	-52.4151627 C				
0.00003458	41459.	1198810850.	18.6072781	0.0006435	-0.0020540
1.8677953	-53.6988881 C				
0.00003542	42409.	1197417303.	18.6181525	0.0006594	-0.0021031
1.9026466	-54.9816682 C				
0.00003625	43357.	1196044895.	18.6294358	0.0006753	-0.0021522
1.9370252	-56.2634930 C				
0.00003708	44303.	1194691813.	18.6411099	0.0006913	-0.0022012
1.9709283	-57.5443522 C				
0.00003792	45248.	1193356391.	18.6531586	0.0007073	-0.0022502
2.0043531	-58.8242351 C				
0.00003875	46187.	1191931888.	18.6650182	0.0007233	-0.0022992
2.0372527	-60.0000000 CY				
0.00003958	47024.	1187985653.	18.6638168	0.0007388	-0.0023487
2.0685822	-60.0000000 CY				
0.00004042	47761.	1181710245.	18.6502843	0.0007538	-0.0023987
2.0983862	-60.0000000 CY				
0.00004125	48453.	1174610381.	18.6321469	0.0007686	-0.0024489
2.1272846	-60.0000000 CY				
0.00004208	49015.	1164706818.	18.5981062	0.0007827	-0.0024998
2.1543488	-60.0000000 CY				
0.00004292	49542.	1154371275.	18.5613779	0.0007966	-0.0025509
2.1806565	-60.0000000 CY				
0.00004375	50068.	1144409763.	18.5265675	0.0008105	-0.0026020
2.2065913	-60.0000000 CY				
0.00004458	50593.	1134801170.	18.4935717	0.0008245	-0.0026530
2.2321516	-60.0000000 CY				
0.00004542	51095.	1125030584.	18.4591940	0.0008384	-0.0027041
2.2570781	-60.0000000 CY				
0.00004625	51508.	1113679840.	18.4144072	0.0008517	-0.0027558
2.2806248	-60.0000000 CY				
0.00004708	51862.	1101487575.	18.3637649	0.0008646	-0.0028079
2.3031722	-60.0000000 CY				
0.00004792	52212.	1089651450.	18.3140387	0.0008775	-0.0028600
2.3252901	-60.0000000 CY				
0.00004875	52562.	1078189489.	18.2643876	0.0008904	-0.0029121
2.3469155	-60.0000000 CY				
0.00004958	52910.	1067100678.	18.2167921	0.0009032	-0.0029643
2.3682210	-60.0000000 CY				
0.00005292	54287.	1025900369.	18.0433082	0.0009548	-0.0031727
2.4500687	-60.0000000 CY				
0.00005625	55229.	981845562.	17.8345012	0.0010032	-0.0033843
2.5216413	-60.0000000 CY				
0.00005958	56074.	941097979.	17.6411490	0.0010511	-0.0035964
2.5875847	-60.0000000 CY				
0.00006292	56909.	904508339.	17.4670363	0.0010990	-0.0038085
2.6485409	-60.0000000 CY				

0.00006625	57716.	871185860.	17.3059883	0.0011465	-0.0040210
2.7042848	-60.000000 CY	58249.	837114388.	17.1210318	0.0011913
0.00006958					-0.0042362
2.7523380	-60.000000 CY	58704.	805086436.	16.9447657	0.0012356
0.00007292					-0.0044519
2.7955590	-60.000000 CY	59154.	775794643.	16.7869680	0.0012800
0.00007625					-0.0046675
2.8348395	-60.000000 CY	59593.	748811096.	16.6353692	0.0013239
0.00007958					-0.0048836
2.8695060	-60.000000 CY	60026.	723929589.	16.4976375	0.0013679
0.00008292					-0.0050996
2.9001868	-60.000000 CY	60454.	700915079.	16.3734274	0.0014122
0.00008625					-0.0053153
2.9269044	-60.000000 CY	60873.	679517818.	16.2606145	0.0014567
0.00008958					-0.0055308
2.9495607	-60.000000 CY	61166.	658284677.	16.1356440	0.0014993
0.00009292					-0.0057482
2.9673087	-60.000000 CY	61375.	637659259.	16.0069397	0.0015407
0.00009625					-0.0059668
2.9808753	-60.000000 CY	61573.	618308917.	15.8795739	0.0015813
0.00009958					-0.0061862
2.9906790	-60.000000 CY	61767.	600168714.	15.7611634	0.0016221
0.0001029					-0.0064054
2.9970056	-60.000000 CY	61958.	583134617.	15.6523486	0.0016631
0.0001063					-0.0066244
2.9998399	-60.000000 CY	62145.	567100478.	15.5525004	0.0017043
0.0001096					-0.0068432
2.9962861	-60.000000 CY	62328.	551981878.	15.4606563	0.0017458
0.0001129					-0.0070617
2.9995546	-60.000000 CY	62507.	537696656.	15.3763113	0.0017875
0.0001163					-0.0072800
2.9962767	-60.000000 CY	62683.	524177050.	15.2987610	0.0018295
0.0001196					-0.0074980
2.9984385	-60.000000 CY	62855.	511366349.	15.2271994	0.0018717
0.0001229					-0.0077158
2.9999972	-60.000000 CY	63021.	499175227.	15.1563735	0.0019135
0.0001263					-0.0079340
2.9952897	-60.000000 CY	63183.	487584938.	15.0890075	0.0019553
0.0001296					-0.0081522
2.9988461	-60.000000 CY	63342.	476554363.	15.0264810	0.0019973
0.0001329					-0.0083702
2.9998237	-60.000000 CY	63497.	466033137.	14.9690154	0.0020395
0.0001363					-0.0085880
2.9941286	-60.000000 CY	63611.	455717414.	14.9050594	0.0020805
0.0001396					-0.0088070
2.9979215	-60.000000 CY	63706.	445757375.	14.8409784	0.0021210
0.0001429					-0.0090265
2.9997742	-60.000000 CY	63771.	436037763.	14.7733412	0.0021606
0.0001462					-0.0092469
2.9971532	-60.000000 CY				

0.0001496	63827.	426700617.	14.7083364	0.0022001	-0.0094674
2.9936511	-60.000000 CY				
0.0001529	63883.	417764273.	14.6469963	0.0022398	-0.0096877
2.9972118	-60.000000 CY				
0.0001562	63938.	409202952.	14.5891005	0.0022795	-0.0099080
2.9993348	-60.000000 CY				
0.0001596	63992.	400992656.	14.5344806	0.0023195	-0.0101280
2.9997321	-60.000000 CY				
0.0001629	64044.	393106413.	14.4834397	0.0023596	-0.0103479
2.9943662	-60.000000 CY				
0.0001662	64095.	385531991.	14.4350941	0.0023998	-0.0105677
2.9934016	-60.000000 CY				
0.0001696	64142.	378233083.	14.3836881	0.0024392	-0.0107883
2.9967081	-60.000000 CY				
0.0001729	64188.	371209680.	14.3342198	0.0024786	-0.0110089
2.9988759	-60.000000 CY				
0.0001762	64234.	364448205.	14.2872464	0.0025181	-0.0112294
2.9999086	-60.000000 CY				
0.0001796	64278.	357930980.	14.2430120	0.0025578	-0.0114497
2.9971415	-60.000000 CY				
0.0001829	64322.	351646594.	14.2011313	0.0025976	-0.0116699
2.9923815	-60.000000 CY				
0.0002029	64573.	318223445.	13.9884987	0.0028385	-0.0129890
2.9962864	-60.000000 CY				
0.0002229	64805.	290714274.	13.8296589	0.0030829	-0.0143046
2.9990782	-60.000000 CYT				
0.0002429	65022.	267673596.	13.7096321	0.0033303	-0.0156172
2.9880099	-60.000000 CYT				
0.0002629	65219.	248060101.	13.6068093	0.0035775	-0.0169300
2.9999791	-60.000000 CYT				
0.0002829	65293.	230785663.	13.4821298	0.0038143	-0.0182532
2.9824797	60.000000 CYT				

Summary of Results for Nominal Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
1	39.000	64726.314	0.00300000

Note that the values of moment capacity in the table above are not factored by a strength reduction factor (phi-factor).

In ACI 318, the value of the strength reduction factor depends on whether

the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.75).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318, or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial Stiff.	Resist.	Nominal Ax. Thrust	Nominal Moment Cap	Ult. (Fac)	Ult. (Fac)	Bend.
Load Ult Mom No.	Factor	kips	in-kips	kips	in-kips	at
1 1.1979E+09	0.65	39.000000	64726.	25.350000	42072.	
1 1.1730E+09	0.75	39.000000	64726.	29.250000	48545.	
1 836799533.	0.90	39.000000	64726.	35.100000	58254.	

Layering Correction Equivalent Depths of Soil & Rock Layers

Layer No.	Top of Layer Below Pile Head ft	Equivalent Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	1.0000	0.00	N.A.	No	0.00	1087.
2	4.5000	0.5283	Yes	No	1087.	71292.
3	8.0000	4.0275	Yes	No	72378.	N.A.

Notes: The F0 integral of Layer n+1 equals the sum of the F0 and F1 integrals for Layer n. Layering correction equivalent depths are computed only for soil types with both shallow-depth and deep-depth expressions for peak lateral load transfer. These soil types are soft and stiff clays, non-liquefied sands, and cemented c-phi soil.

 Computed Values of Pile Loading and Deflection
 for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head	= 8000.0 lbs
Applied moment at pile head	= 10332000.0 in-lbs
Axial thrust load on pile head	= 39000.0 lbs

Res.	Depth	Deflect.	Bending	Shear	Slope	Total	Bending	Soil
	Soil	Spr.	Distrib.	Force	S	Stress	Stiffness	p
	X	y	Moment	lbs	radians	psi*	lb-in^2	
	Es*H	Lat.	Load	feet	inches	in-lbs	lb/inch	lb/inch
	0.00	0.4407	1.03E+07	8000.	-0.00257	0.00	7.06E+12	
0.00	0.00	0.00						
	0.2100	0.4343	1.04E+07	8000.	-0.00257	0.00	7.06E+12	
0.00	0.00	0.00						
	0.4200	0.4278	1.04E+07	8000.	-0.00257	0.00	7.06E+12	
0.00	0.00	0.00						
	0.6300	0.4213	1.04E+07	8000.	-0.00256	0.00	7.06E+12	
0.00	0.00	0.00						
	0.8400	0.4149	1.04E+07	8000.	-0.00256	0.00	7.06E+12	
0.00	0.00	0.00						
	1.0500	0.4084	1.04E+07	8000.	-0.00255	0.00	7.06E+12	
-0.09049	0.5583	0.00						
	1.2600	0.4020	1.05E+07	7999.	-0.00255	0.00	7.06E+12	
-0.4631	2.9032	0.00						
	1.4700	0.3956	1.05E+07	7998.	-0.00255	0.00	7.06E+12	
-0.8238	5.2480	0.00						
	1.6800	0.3892	1.05E+07	7995.	-0.00254	0.00	7.06E+12	
-1.1726	7.5929	0.00						
	1.8900	0.3828	1.05E+07	7992.	-0.00254	0.00	7.06E+12	
-1.5094	9.9377	0.00						
	2.1000	0.3764	1.05E+07	7987.	-0.00254	0.00	7.06E+12	
-1.8344	12.2826	0.00						
	2.3100	0.3700	1.06E+07	7982.	-0.00253	0.00	7.06E+12	
-2.1476	14.6274	0.00						
	2.5200	0.3636	1.06E+07	7977.	-0.00253	0.00	7.06E+12	
-2.4489	16.9723	0.00						
	2.7300	0.3572	1.06E+07	7970.	-0.00252	0.00	7.06E+12	
-2.7384	19.3171	0.00						
	2.9400	0.3509	1.06E+07	7963.	-0.00252	0.00	7.06E+12	

-3.0162	21.6620	0.00				
3.1500	0.3445	1.06E+07	7955.	-0.00252	0.00	7.06E+12
-3.2822	24.0068	0.00				
3.3600	0.3382	1.07E+07	7946.	-0.00251	0.00	7.06E+12
-3.5365	26.3517	0.00				
3.5700	0.3319	1.07E+07	7937.	-0.00251	0.00	7.06E+12
-3.7791	28.6965	0.00				
3.7800	0.3255	1.07E+07	7927.	-0.00251	0.00	7.06E+12
-4.0101	31.0414	0.00				
3.9900	0.3192	1.07E+07	7917.	-0.00250	0.00	7.06E+12
-4.2294	33.3862	0.00				
4.2000	0.3129	1.07E+07	7906.	-0.00250	0.00	7.06E+12
-4.4371	35.7311	0.00				
4.4100	0.3066	1.08E+07	7895.	-0.00249	0.00	7.06E+12
-4.6333	38.0760	0.00				
4.6200	0.3004	1.08E+07	7613.	-0.00249	0.00	7.06E+12
-218.9227	1837.	0.00				
4.8300	0.2941	1.08E+07	6969.	-0.00249	0.00	7.06E+12
-291.9012	2501.	0.00				
5.0400	0.2878	1.08E+07	6141.	-0.00248	0.00	7.06E+12
-365.5748	3201.	0.00				
5.2500	0.2816	1.08E+07	5126.	-0.00248	0.00	7.06E+12
-439.7578	3936.	0.00				
5.4600	0.2753	1.08E+07	3924.	-0.00247	0.00	7.06E+12
-514.2642	4707.	0.00				
5.6700	0.2691	1.08E+07	2534.	-0.00247	0.00	7.06E+12
-588.9079	5515.	0.00				
5.8800	0.2629	1.09E+07	956.0145	-0.00247	0.00	7.06E+12
-663.5024	6360.	0.00				
6.0900	0.2567	1.09E+07	-809.7030	-0.00246	0.00	7.06E+12
-737.8608	7244.	0.00				
6.3000	0.2505	1.09E+07	-2762.	-0.00246	0.00	7.06E+12
-811.7962	8168.	0.00				
6.5100	0.2443	1.08E+07	-4900.	-0.00246	0.00	7.06E+12
-885.1211	9131.	0.00				
6.7200	0.2381	1.08E+07	-7222.	-0.00245	0.00	7.06E+12
-957.6475	10136.	0.00				
6.9300	0.2319	1.08E+07	-9726.	-0.00245	0.00	7.06E+12
-1029.	11183.	0.00				
7.1400	0.2258	1.08E+07	-12408.	-0.00244	0.00	7.06E+12
-1100.	12274.	0.00				
7.3500	0.2196	1.07E+07	-15268.	-0.00244	0.00	7.06E+12
-1171.	13435.	0.00				
7.5600	0.2135	1.07E+07	-18309.	-0.00244	0.00	7.06E+12
-1242.	14666.	0.00				
7.7700	0.2073	1.07E+07	-21528.	-0.00243	0.00	7.06E+12
-1313.	15957.	0.00				
7.9800	0.2012	1.06E+07	-24924.	-0.00243	0.00	7.06E+12
-1382.	17309.	0.00				
8.1900	0.1951	1.05E+07	-28256.	-0.00243	0.00	7.06E+12

-1263.	16315.	0.00					
8.4000	0.1890	1.05E+07	-31434.	-0.00242	0.00	7.06E+12	
-1259.	16792.	0.00					
8.6100	0.1829	1.04E+07	-34600.	-0.00242	0.00	7.06E+12	
-1253.	17268.	0.00					
8.8200	0.1768	1.03E+07	-37748.	-0.00241	0.00	7.06E+12	
-1245.	17745.	0.00					
9.0300	0.1707	1.02E+07	-40871.	-0.00241	0.00	7.06E+12	
-1234.	18221.	0.00					
9.2400	0.1646	1.01E+07	-43966.	-0.00241	0.00	7.06E+12	
-1222.	18698.	0.00					
9.4500	0.1586	9957756.	-47026.	-0.00240	0.00	7.07E+12	
-1207.	19175.	0.00					
9.6600	0.1525	9835656.	-50045.	-0.00240	0.00	7.07E+12	
-1189.	19651.	0.00					
9.8700	0.1465	9706002.	-53018.	-0.00240	0.00	7.07E+12	
-1170.	20128.	0.00					
10.0800	0.1405	9568918.	-55939.	-0.00239	0.00	7.07E+12	
-1148.	20604.	0.00					
10.2900	0.1344	9424541.	-58803.	-0.00239	0.00	7.07E+12	
-1125.	21081.	0.00					
10.5000	0.1284	9273022.	-61604.	-0.00239	0.00	7.07E+12	
-1099.	21557.	0.00					
10.7100	0.1224	9114527.	-64336.	-0.00238	0.00	7.07E+12	
-1070.	22034.	0.00					
10.9200	0.1164	8949236.	-66995.	-0.00238	0.00	7.07E+12	
-1040.	22510.	0.00					
11.1300	0.1104	8777340.	-69574.	-0.00238	0.00	7.08E+12	
-1007.	22987.	0.00					
11.3400	0.1044	8599049.	-72068.	-0.00237	0.00	7.08E+12	
-972.3209	23463.	0.00					
11.5500	0.09845	8414582.	-74472.	-0.00237	0.00	7.08E+12	
-935.2929	23940.	0.00					
11.7600	0.09248	8224176.	-76779.	-0.00237	0.00	7.08E+12	
-896.0778	24416.	0.00					
11.9700	0.08652	8028079.	-78985.	-0.00236	0.00	7.08E+12	
-854.6782	24893.	0.00					
12.1800	0.08057	7826554.	-81084.	-0.00236	0.00	7.08E+12	
-811.0965	25369.	0.00					
12.3900	0.07462	7619878.	-83071.	-0.00236	0.00	7.08E+12	
-765.3350	25846.	0.00					
12.6000	0.06868	7408342.	-84939.	-0.00236	0.00	7.08E+12	
-717.3955	26322.	0.00					
12.8100	0.06275	7192250.	-86684.	-0.00235	0.00	7.09E+12	
-667.2800	26799.	0.00					
13.0200	0.05682	6971920.	-88299.	-0.00235	0.00	7.09E+12	
-614.9902	27275.	0.00					
13.2300	0.05090	6747684.	-89780.	-0.00235	0.00	7.09E+12	
-560.5275	27752.	0.00					
13.4400	0.04498	6519888.	-91122.	-0.00235	0.00	7.09E+12	

-503.8932	28229.	0.00				
13.6500	0.03907	6288893.	-92317.	-0.00234	0.00	7.09E+12
-445.0883	28705.	0.00				
13.8600	0.03317	6055070.	-93362.	-0.00234	0.00	7.10E+12
-384.1138	29182.	0.00				
14.0700	0.02727	5818808.	-94250.	-0.00234	0.00	7.10E+12
-320.9704	29658.	0.00				
14.2800	0.02138	5580508.	-94977.	-0.00234	0.00	7.10E+12
-255.6585	30135.	0.00				
14.4900	0.01549	5340584.	-95536.	-0.00234	0.00	7.10E+12
-188.1787	30611.	0.00				
14.7000	0.00961	5099464.	-95923.	-0.00233	0.00	7.10E+12
-118.5309	31088.	0.00				
14.9100	0.00373	4857592.	-96131.	-0.00233	0.00	7.10E+12
-46.7153	31564.	0.00				
15.1200	-0.00214	4615423.	-96155.	-0.00233	0.00	7.10E+12
27.2684	32041.	0.00				
15.3300	-0.00801	4373427.	-95991.	-0.00233	0.00	7.11E+12
103.4204	32517.	0.00				
15.5400	-0.01388	4132088.	-95631.	-0.00233	0.00	7.11E+12
181.7413	32994.	0.00				
15.7500	-0.01974	3891902.	-95072.	-0.00233	0.00	7.11E+12
262.2318	33470.	0.00				
15.9600	-0.02560	3653382.	-94307.	-0.00232	0.00	7.11E+12
344.8926	33947.	0.00				
16.1700	-0.03146	3417052.	-93331.	-0.00232	0.00	7.11E+12
429.7248	34423.	0.00				
16.3800	-0.03731	3183450.	-92138.	-0.00232	0.00	7.12E+12
516.7293	34900.	0.00				
16.5900	-0.04316	2953130.	-90724.	-0.00232	0.00	7.12E+12
605.9074	35376.	0.00				
16.8000	-0.04901	2726658.	-89082.	-0.00232	0.00	7.12E+12
697.2605	35853.	0.00				
17.0100	-0.05485	2504613.	-87207.	-0.00232	0.00	7.12E+12
790.7899	36329.	0.00				
17.2200	-0.06070	2287590.	-85094.	-0.00232	0.00	7.12E+12
886.4972	36806.	0.00				
17.4300	-0.06654	2076197.	-82736.	-0.00232	0.00	7.12E+12
984.3840	37283.	0.00				
17.6400	-0.07238	1871055.	-80130.	-0.00232	0.00	7.12E+12
1084.	37759.	0.00				
17.8500	-0.07821	1672799.	-77268.	-0.00232	0.00	7.12E+12
1187.	38236.	0.00				
18.0600	-0.08405	1482079.	-74146.	-0.00232	0.00	7.12E+12
1291.	38712.	0.00				
18.2700	-0.08988	1299559.	-70758.	-0.00231	0.00	7.12E+12
1398.	39189.	0.00				
18.4800	-0.09572	1125915.	-67098.	-0.00231	0.00	7.12E+12
1507.	39665.	0.00				
18.6900	-0.1015	961838.	-63162.	-0.00231	0.00	7.12E+12

1618.	40142.	0.00					
	18.9000	-0.1074	808033.	-58943.	-0.00231	0.00	7.12E+12
1731.	40618.	0.00					
	19.1100	-0.1132	665220.	-54436.	-0.00231	0.00	7.12E+12
1846.	41095.	0.00					
	19.3200	-0.1190	534130.	-49636.	-0.00231	0.00	7.12E+12
1964.	41571.	0.00					
	19.5300	-0.1249	415510.	-44536.	-0.00231	0.00	7.12E+12
2084.	42048.	0.00					
	19.7400	-0.1307	310122.	-39132.	-0.00231	0.00	7.12E+12
2205.	42524.	0.00					
	19.9500	-0.1365	218739.	-33418.	-0.00231	0.00	7.12E+12
2330.	43001.	0.00					
	20.1600	-0.1424	142151.	-27388.	-0.00231	0.00	7.12E+12
2456.	43477.	0.00					
	20.3700	-0.1482	81159.	-21037.	-0.00231	0.00	7.12E+12
2585.	43954.	0.00					
	20.5800	-0.1540	36581.	-14359.	-0.00231	0.00	7.12E+12
2715.	44430.	0.00					
	20.7900	-0.1598	9246.	-7348.	-0.00231	0.00	7.12E+12
2848.	44907.	0.00					
	21.0000	-0.1657	0.00	0.00	-0.00231	0.00	7.12E+12
2984.	22692.	0.00					

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

Pile-head deflection	=	0.44074865 inches
Computed slope at pile head	=	-0.00257333 radians
Maximum bending moment	=	10854946. inch-lbs
Maximum shear force	=	-96155. lbs
Depth of maximum bending moment	=	6.09000000 feet below pile head
Depth of maximum shear force	=	15.12000000 feet below pile head
Number of iterations	=	9
Number of zero deflection points	=	1

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Type	Load Max	Shear	Moment	Axial	Pile-head Loading	Deflection	Pile-head Rotation	Max in
Case Type	Pile-head	Type	Pile-head	Load 2	lbs	inches	radians	lbs
Pile	in Pile	No.	1	Load 1	2			
				in-lbs				
- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
1	V, lb	8000.	M, in-lb	1.03E+07	39000.	0.4407	-0.00257	
-96155.		1.09E+07						

Maximum pile-head deflection = 0.4407486516 inches
Maximum pile-head rotation = -0.0025733267 radians = -0.147441 deg.

Summary of Warning Messages

The following warning was reported 153 times

**** Warning ****

An unreasonable value was input for friction angle has been specified for a soil layer defined using the sand criteria. The input value is either smaller than 20 degrees or higher than 48 degrees. The input data should be checked for correctness.

The following warning was reported 153 times

**** Warning ****

The input value for friction angle is either smaller than 29 degrees or higher than 41 degrees and no value of k has been specified for a soil layer defined using the sand criteria. Program will assume an internal default value, for k, but the friction angle is outside the range of data available. Please check your input data for correctness.

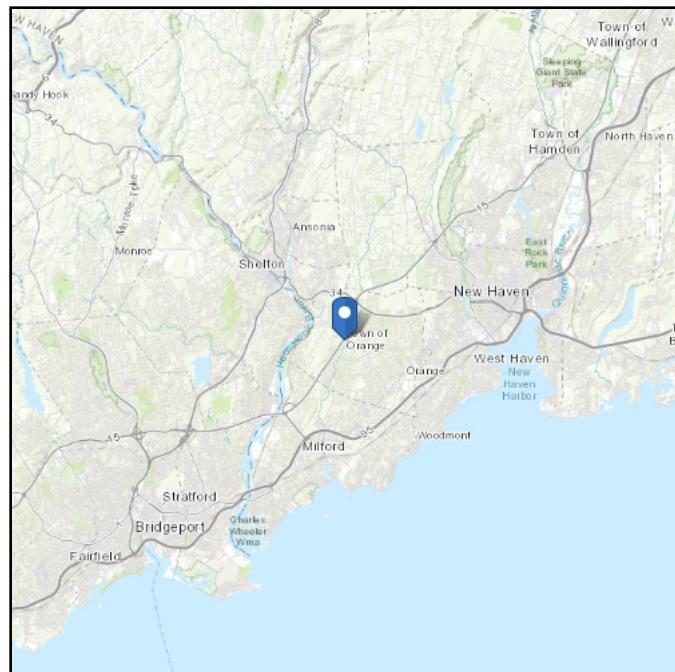
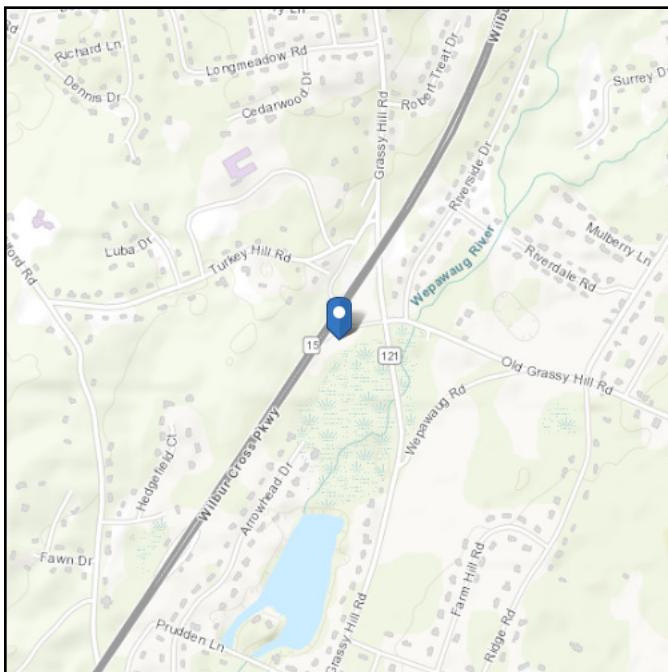
The analysis ended normally.

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:

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: Sat Jun 18 2022

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

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

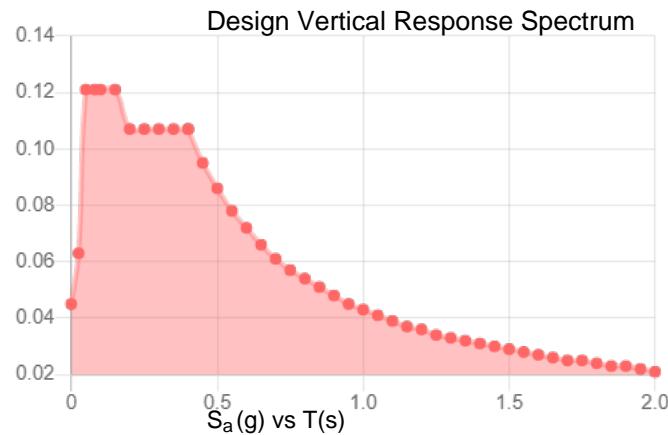
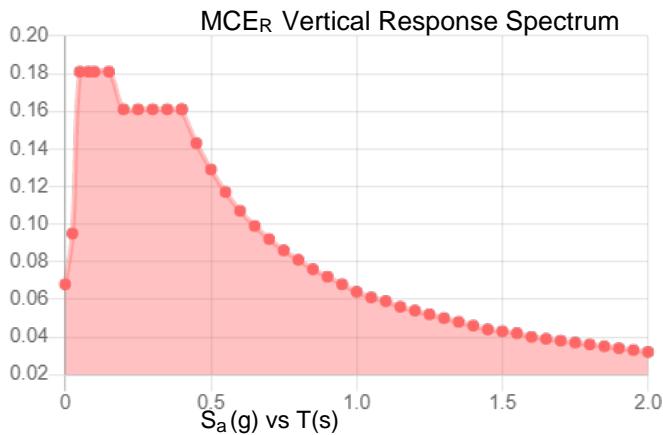
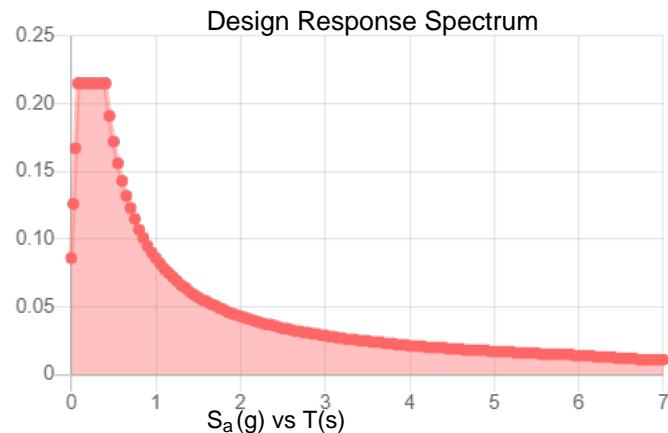
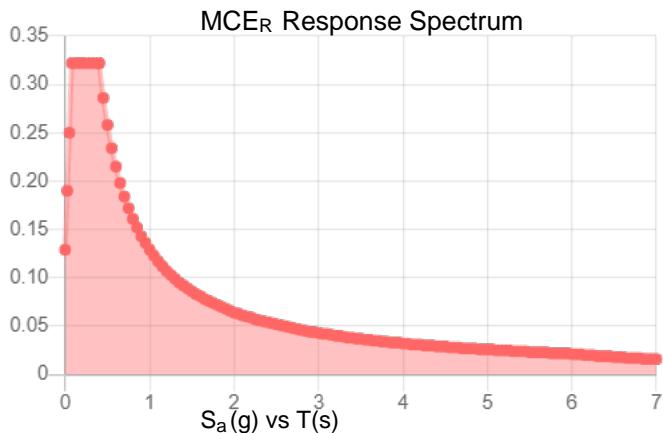
Seismic

Site Soil Class: D - 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: Sat Jun 18 2022

Date Source:

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

Ice

Results:

Ice Thickness: 1.00 in.

Concurrent Temperature: 15 F

Gust Speed 50 mph

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

Date Accessed: Sat Jun 18 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.

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Date: June 8, 2022



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

Subject:	Mount Replacement Analysis Report	
Carrier Designation:	T-Mobile Equipment Change-Out	
	Carrier Site Number:	CT11083Q
	Carrier Site Name:	CT083/Sprint/Grassy Hill
Crown Castle Designation:	BU Number:	881541
	Site Name:	ROGERS PROPERTY
	JDE Job Number:	719209
	Order Number:	619473 Rev. 0
Engineering Firm Designation:	Trylon Report Designation:	211321
Site Data:	700 Grassy Hill Road, Orange, New Haven County, CT, 06477 Latitude 41°17'7.75" Longitude -73°2'33.27"	
Structure Information:	Tower Height & Type:	139.5 ft Monopole
	Mount Elevation:	130.0 ft
	Mount Width & Type:	12.5 ft Platform

Trylon is pleased to submit this "**Mount Replacement Analysis Report**" to determine the structural integrity of T-Mobile's antenna mounting system with the 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:

Platform	Sufficient*
*Sufficient upon completion of the changes listed in the 'Recommendations' section of this report.	

This analysis utilizes an ultimate 3-second gust wind speed of 124 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Andrei Florea

Respectfully Submitted by:
Cliff Abernathy, P.E.

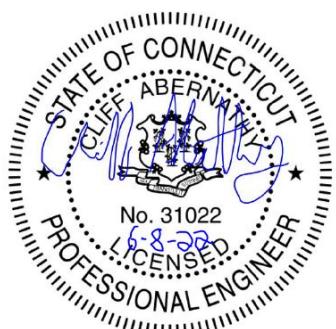


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Supplemental Drawings

1) INTRODUCTION

This is a proposed 3 sector 12.5 ft Platform, designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	124 mph
Exposure Category:	C
Topographic Factor at Base:	1.000
Topographic Factor at Mount:	1.000
Ice Thickness:	1.50 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.193
Seismic S₁:	0.063
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
130.0	130.0	3	COMMSCOPE	VV-65B-R1_TMO	12.5 ft Platform [Site Pro 1, RMQP-396 with Site Pro 1, HRK12 handrail kit]
		3	ERICSSON	AIR 6419 B41_TMO	
		3	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	
		3	ERICSSON	RADIO 4480_TMOV2	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	619473 Rev.0	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	RMQP-396	Trylon
Handrail Manufacturer Drawings	Site Pro 1	HRK12	Trylon

3.1) Analysis Method

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

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

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision E). In addition, this analysis is in accordance with AT&T's Mount Technical Directive.

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3,4	Mount Pipe(s)	MP5	130.0	55.2	Pass
	Horizontal(s)	H1		20.7	Pass
	Standoff(s)	M22		59.9	Pass
	Bracing(s)	M3		22.7	Pass
	Handrail(s)	M77		62.2	Pass
	Mount Connection(s)	-		36.7	Pass

Structure Rating (max from all components) =	62.2%
---	--------------

Notes:

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

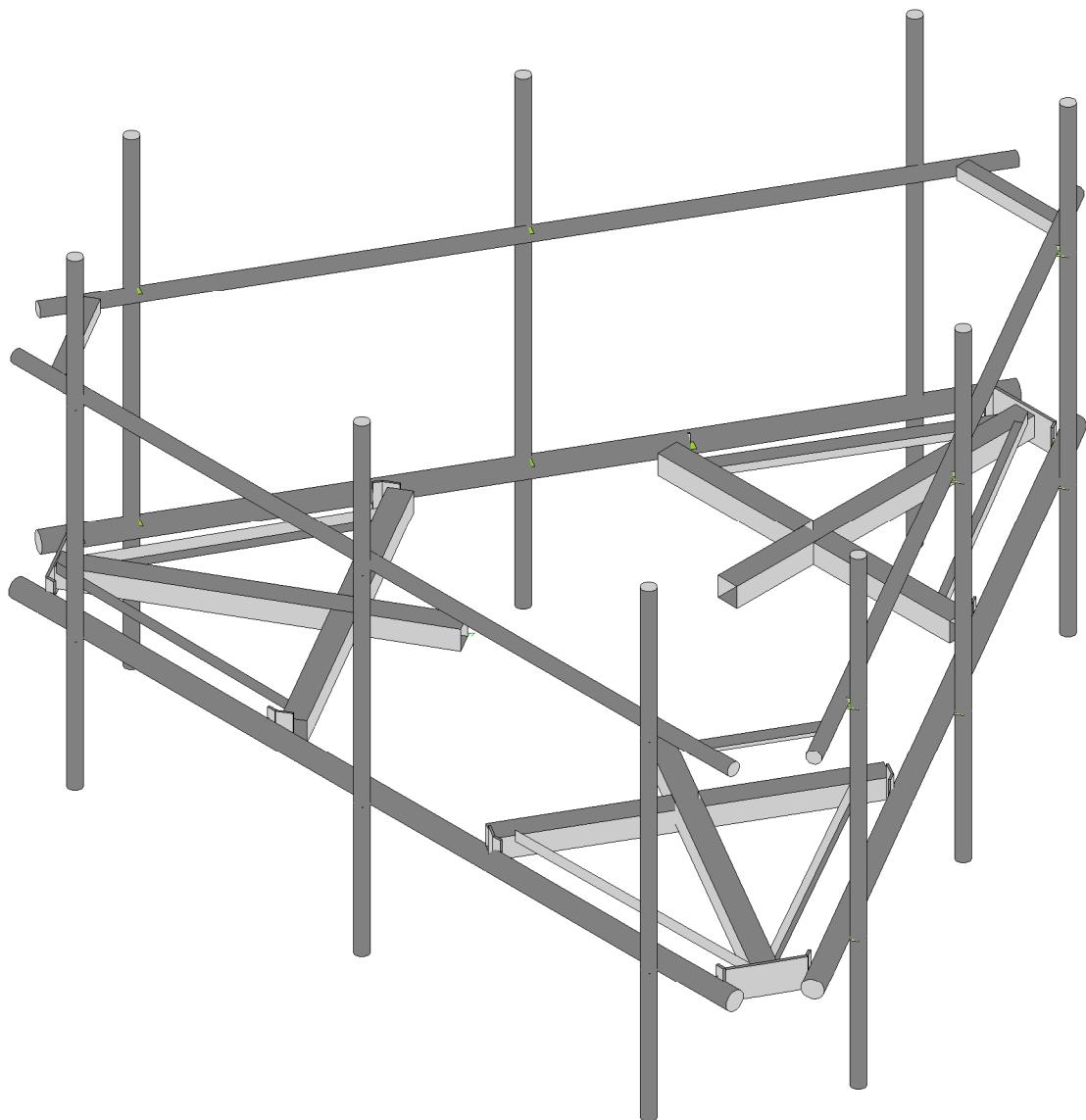
4.1) Recommendations

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

1. Site Pro 1, RMQP-396.
2. Site Pro 1, HRK12 kit to be installed 42" above platform

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

APPENDIX A
WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

TRYLON

AF

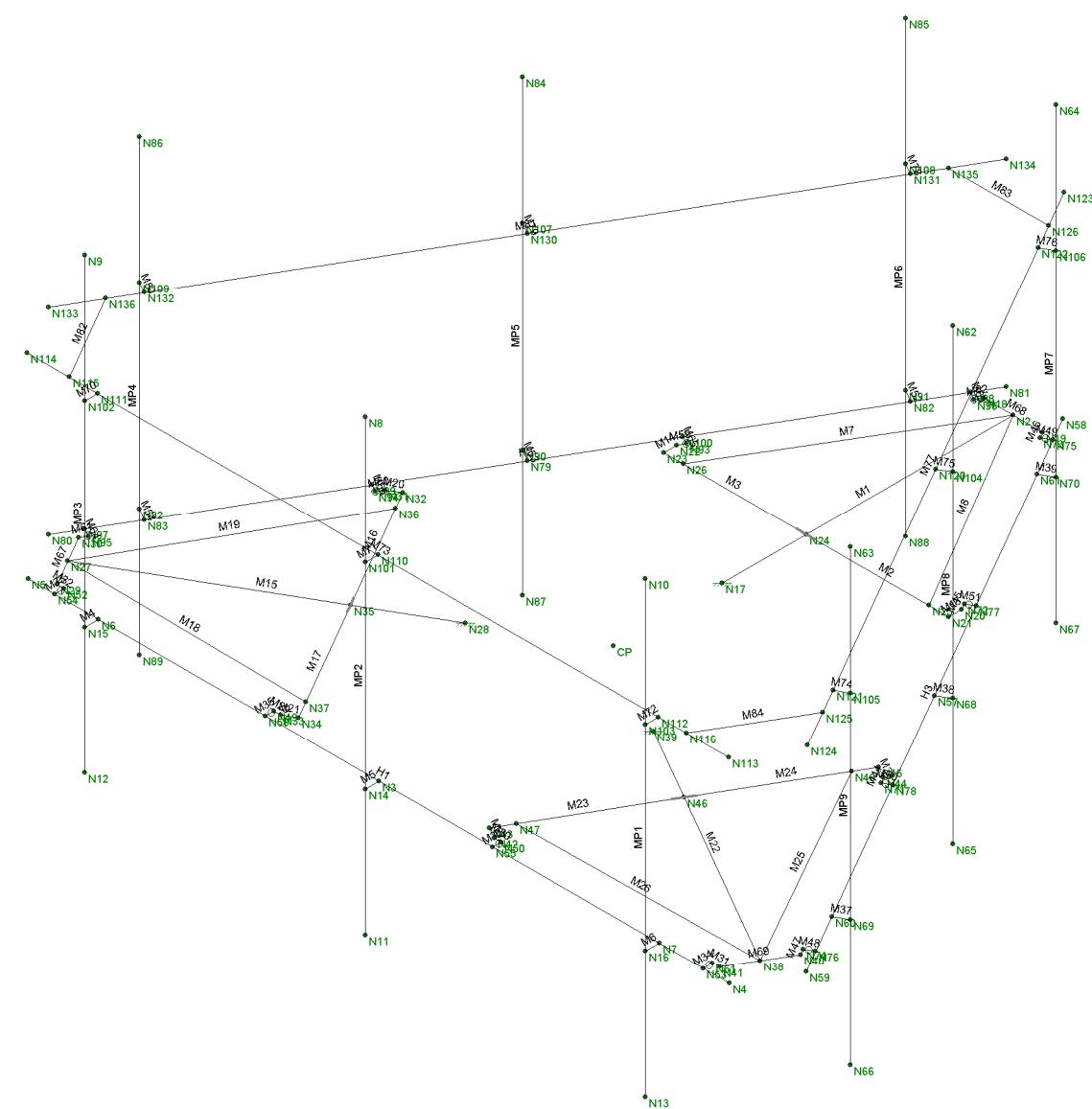
211321

881541

SK - 1

June 8, 2022 at 4:52 PM

881541_loaded.r3d



Envelope Only Solution

TRYLON

AF

211321

881541

SK - 2

June 8, 2022 at 4:52 PM

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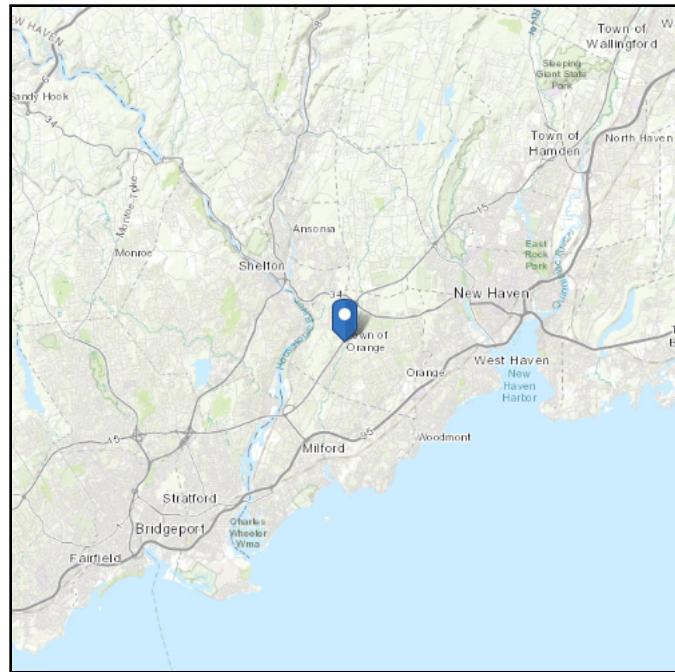
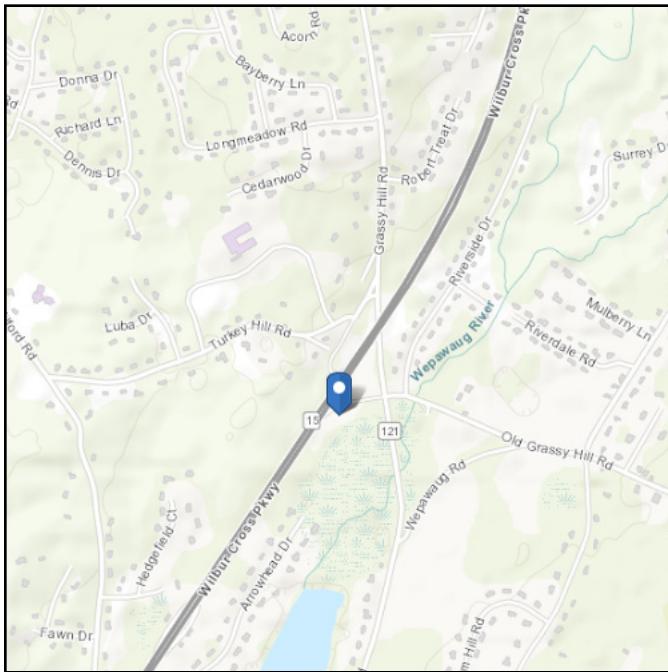
APPENDIX B
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

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



Wind

Results:

Wind Speed	124 Vmph
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

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

Date Accessed: Wed Jun 08 2022

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

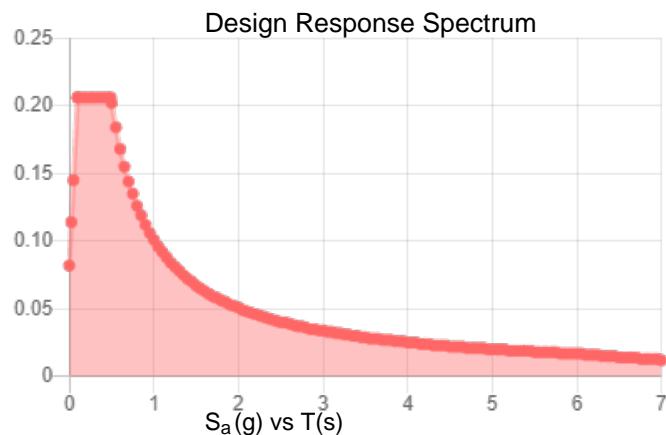
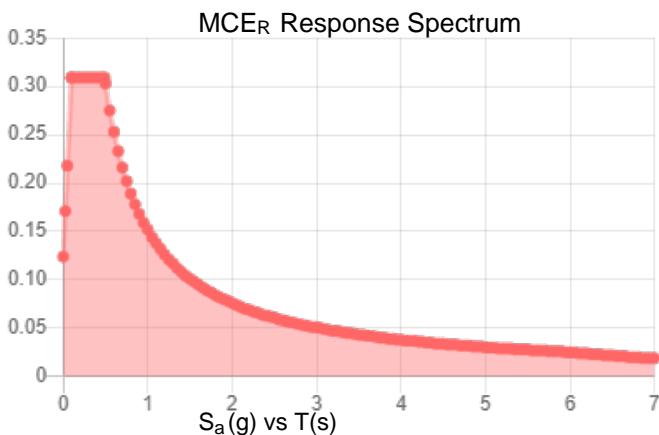
Seismic

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.193	S_{DS} :	0.206
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.102
S_{MS} :	0.309	PGA _M :	0.163
S_{M1} :	0.152	F_{PGA} :	1.596
		I_e :	1

Seismic Design Category B



Data Accessed: Wed Jun 08 2022

Date Source:

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

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed 50 mph

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

Date Accessed: Wed Jun 08 2022

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

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TIA LOAD CALCULATOR 2.2

PROJECT DATA			WIND PARAMETERS		
Job Code:	211321		Design Wind Speed:	124	mph
Carrier Site ID:	CT11083Q		Wind Escalation Factor (K_s):	1.00	--
Carrier Site Name:	CT083/Sprint/Grassy Hill		Velocity Coefficient (K_z):	1.34	--
CODES AND STANDARDS			Directionality Factor (K_d):	0.95	--
Building Code:	2015 IBC		Gust Effect Factor (G_h):	1.00	--
Local Building Code:	2018 CSBC		Shielding Factor (K_a):	0.90	--
Design Standard:	TIA-222-H		Velocity Pressure (q_z):	49.85	psf
STRUCTURE DETAILS			Ground Elevation Factor (K_e):	1.00	--
Mount Type:	Platform	--	ICE PARAMETERS		
Mount Elevation:	130.0	ft.	Design Ice Wind Speed:	50	mph
Number of Sectors:	3	--	Design Ice Thickness (t_i):	1.50	in
Structure Type:	Monopole	--	Importance Factor (I_i):	1.00	--
Structure Height:	139.5	ft.	Ice Velocity Pressure (q_{zi}):	6.95	psf
ANALYSIS CRITERIA			Mount Ice Thickness (t_{iz}):	1.72	in
Structure Risk Category:	II	--	WIND STRUCTURE CALCULATIONS		
Exposure Category:	C	--	Flat Member Pressure:	89.73	psf
Site Class:	D - Default	--	Round Member Pressure:	53.84	psf
Ground Elevation:	91.22	ft.	Ice Wind Pressure:	7.51	psf
TOPOGRAPHIC DATA			SEISMIC PARAMETERS		
Topographic Category:	1.00	--	Importance Factor (I_e):	1.00	--
Topographic Feature:	N/A	--	Short Period Accel .(S_s):	0.19	g
Crest Point Elevation:	0.00	ft.	1 Second Accel (S_1):	0.06	g
Base Point Elevation:	0.00	ft.	Short Period Des. (S_{DS}):	0.21	g
Crest to Mid-Height (L/2):	0.00	ft.	1 Second Des. (S_{D1}):	0.10	g
Distance from Crest (x):	0.00	ft.	Short Period Coeff. (F_a):	1.60	--
Base Topo Factor (K_{zt}):	1.00	--	1 Second Coeff. (F_v):	2.40	--
Mount Topo Factor (K_{zt}):	1.00	--	Response Coefficient (C_s):	0.10	--
			Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

#	Description	#	Description
89	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP1	121	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP3
90	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP1	122	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP3
91	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP1	123	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP3
92	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP1	124	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP3
93	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP1	125	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP3
94	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP1	126	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP3
95	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP1	127	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP3
96	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP1	128	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP3
97	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP1	129	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP3
98	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP1	130	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP3
99	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP1	131	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP3
100	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP1	132	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP3
101	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP1	133	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP3
102	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP1	134	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP3
103	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP1	135	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP3
104	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP1	136	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP3
105	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP2	137	1.2D + 1.5Lm + 1.0Wm 0 AZI - MP4
106	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP2	138	1.2D + 1.5Lm + 1.0Wm 30 AZI - MP4
107	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP2	139	1.2D + 1.5Lm + 1.0Wm 45 AZI - MP4
108	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP2	140	1.2D + 1.5Lm + 1.0Wm 60 AZI - MP4
109	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP2	141	1.2D + 1.5Lm + 1.0Wm 90 AZI - MP4
110	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP2	142	1.2D + 1.5Lm + 1.0Wm 120 AZI - MP4
111	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP2	143	1.2D + 1.5Lm + 1.0Wm 135 AZI - MP4
112	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP2	144	1.2D + 1.5Lm + 1.0Wm 150 AZI - MP4
113	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP2	145	1.2D + 1.5Lm + 1.0Wm 180 AZI - MP4
114	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP2	146	1.2D + 1.5Lm + 1.0Wm 210 AZI - MP4
115	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP2	147	1.2D + 1.5Lm + 1.0Wm 225 AZI - MP4
116	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP2	148	1.2D + 1.5Lm + 1.0Wm 240 AZI - MP4
117	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP2	149	1.2D + 1.5Lm + 1.0Wm 270 AZI - MP4
118	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP2	150	1.2D + 1.5Lm + 1.0Wm 300 AZI - MP4
119	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP2	151	1.2D + 1.5Lm + 1.0Wm 315 AZI - MP4
120	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP2	152	1.2D + 1.5Lm + 1.0Wm 330 AZI - MP4

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

EQUIPMENT LOADING

EQUIPMENT LOADING [CONT.]

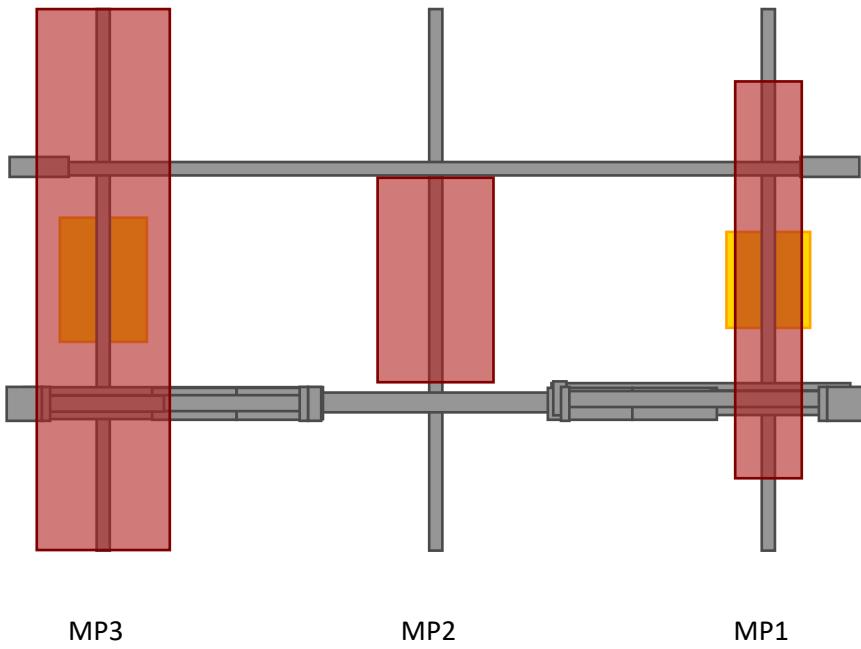
EQUIPMENT WIND CALCULATIONS

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

EQUIPMENT SEISMIC FORCE CALCULATIONS

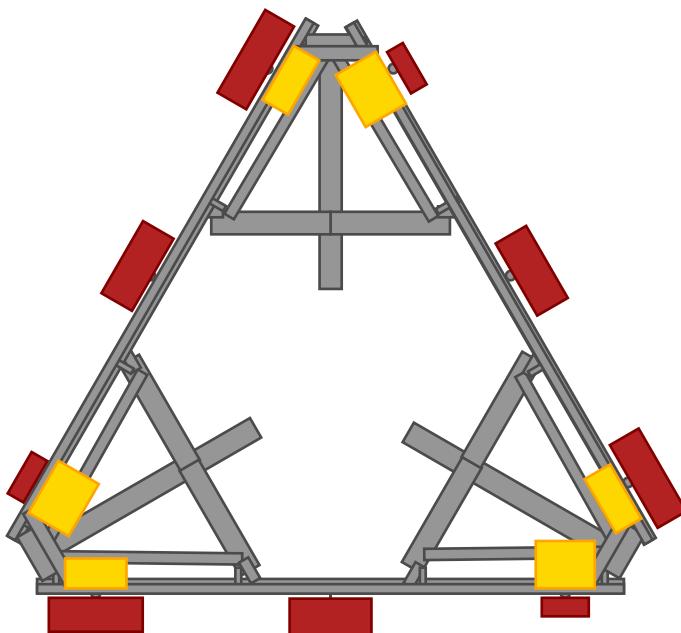
ELEVATION VIEW



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

**Elevation View Shows Only One Sector

PLAN VIEW



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

**APPENDIX C
SOFTWARE ANALYSIS OUTPUT**

(Global) Model Settings

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

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 15th(360-16): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)

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

(Global) Model Settings, Continued

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E5 F)	Density[k/f...]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
8	Q235-GB	29000	11154	.3	.65	.49	35	1.5	58	1.2
9	Q345	29000	11154	.3	.65	.49	36	1.1	58	1.1

Cold Formed Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Tube 4"x4"x0.25"	HSS4X4X4	Beam	Tube	A53 Gr.B	Typical	3.37	7.8	7.8	12.8
2	Pipe 3.5" O.D Sch...	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	L2"x2"x0.188"	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
4	Pipe 2.375" O.D S...	PIPE 2.0	Colu...	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Plate 6"x0.5"	6"x1/2" Plate	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237
6	L2.5"x2.5"x0.25"	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
7	Plate 6"x0.375"	PL6x.375	Beam	RECT	A36 Gr.36	Typical	2.25	.026	6.75	.101

Cold Formed Steel Section Sets

Label	Shape	Type	Design ...	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1 CF1A	8CU1.25X057	Beam	None	A653 S...	Typical	.581	.057	4.41	.00063

Joint Boundary Conditions

Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1 N17	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2 N28	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3 N39	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Basic Load Cases

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...)	Surface(P...)
1 Self Weight	DL			-1		24		6
2 Structure Wind X	WLX						84	
3 Structure Wind Y	WLY						84	
4 Wind Load 0 AZI	WLX					48		
5 Wind Load 30 AZI	None					48		
6 Wind Load 45 AZI	None					48		
7 Wind Load 60 AZI	None					48		
8 Wind Load 90 AZI	WLY					48		
9 Wind Load 120 AZI	None					48		
10 Wind Load 135 AZI	None					48		
11 Wind Load 150 AZI	None					48		
12 Ice Weight	OL1					24	84	6
13 Ice Structure Wind X	OL2						84	
14 Ice Structure Wind Y	OL3						84	
15 Ice Wind Load 0 AZI	OL2					48		
16 Ice Wind Load 30 AZI	None					48		
17 Ice Wind Load 45 AZI	None					48		
18 Ice Wind Load 60 AZI	None					48		
19 Ice Wind Load 90 AZI	OL3					48		
20 Ice Wind Load 120 AZI	None					48		
21 Ice Wind Load 135 AZI	None					48		
22 Ice Wind Load 150 AZI	None					48		
23 Seismic Load X	ELX	-.124				24		
24 Seismic Load Y	ELY		-.124			24		
25 Live Load 1 (Lv)	None					1		
26 Live Load 2 (Lv)	None					1		
27 Live Load 3 (Lv)	None					1		
28 Live Load 4 (Lv)	None					1		
29 Live Load 5 (Lv)	None					1		
30 Live Load 6 (Lv)	None					1		
31 Live Load 7 (Lv)	None					1		
32 Live Load 8 (Lv)	None					1		
33 Live Load 9 (Lv)	None					1		
34 Maintenance Load 1 (...)	None					1		
35 Maintenance Load 2 (...)	None					1		
36 Maintenance Load 3 (...)	None					1		
37 Maintenance Load 4 (...)	None					1		
38 Maintenance Load 5 (...)	None					1		
39 Maintenance Load 6 (...)	None					1		
40 Maintenance Load 7 (...)	None					1		
41 Maintenance Load 8 (...)	None					1		
42 Maintenance Load 9 (...)	None					1		
43 BLC 1 Transient Area...	None						21	



Company : TRYLON
Designer : AF
Job Number : 211321
Model Name : 881541

June 8, 2022
4:53 PM
Checked By: CA

Basic Load Cases (Continued)

BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
44 BLC 12 Transient Are...	None						21		

Load Combinations

	Description	So...P...	S...	BLC Fac...										
1	1.4DL	Yes	Y		DL	1.4								
2	1.2DL + 1WL 0 ...	Yes	Y		DL	1.2	2	1	3	4	1			
3	1.2DL + 1WL 30 ...	Yes	Y		DL	1.2	2	.866	3	.5	5	1		
4	1.2DL + 1WL 45 ...	Yes	Y		DL	1.2	2	.707	3	.707	6	1		
5	1.2DL + 1WL 60 ...	Yes	Y		DL	1.2	2	.5	3	.866	7	1		
6	1.2DL + 1WL 90 ...	Yes	Y		DL	1.2	2	3	1	8	1			
7	1.2DL + 1WL 12...	Yes	Y		DL	1.2	2	-.5	3	.866	9	1		
8	1.2DL + 1WL 13...	Yes	Y		DL	1.2	2	-.707	3	.707	10	1		
9	1.2DL + 1WL 15...	Yes	Y		DL	1.2	2	-.866	3	.5	11	1		
10	1.2DL + 1WL 18...	Yes	Y		DL	1.2	2	-1	3	4	-1			
11	1.2DL + 1WL 21...	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1		
12	1.2DL + 1WL 22...	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1		
13	1.2DL + 1WL 24...	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1		
14	1.2DL + 1WL 27...	Yes	Y		DL	1.2	2	3	-1	8	-1			
15	1.2DL + 1WL 30...	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1		
16	1.2DL + 1WL 31...	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1		
17	1.2DL + 1WL 33...	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1		
18	0.9DL + 1WL 0 ...	Yes	Y		DL	.9	2	1	3	4	1			
19	0.9DL + 1WL 30 ...	Yes	Y		DL	.9	2	.866	3	.5	5	1		
20	0.9DL + 1WL 45 ..	Yes	Y		DL	.9	2	.707	3	.707	6	1		
21	0.9DL + 1WL 60 ..	Yes	Y		DL	.9	2	.5	3	.866	7	1		
22	0.9DL + 1WL 90 ..	Yes	Y		DL	.9	2	3	1	8	1			
23	0.9DL + 1WL 12...	Yes	Y		DL	.9	2	-.5	3	.866	9	1		
24	0.9DL + 1WL 13...	Yes	Y		DL	.9	2	-.707	3	.707	10	1		
25	0.9DL + 1WL 15...	Yes	Y		DL	.9	2	-.866	3	.5	11	1		
26	0.9DL + 1WL 18...	Yes	Y		DL	.9	2	-1	3	4	-1			
27	0.9DL + 1WL 21...	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1		
28	0.9DL + 1WL 22...	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1		
29	0.9DL + 1WL 24...	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1		
30	0.9DL + 1WL 27...	Yes	Y		DL	.9	2	3	-1	8	-1			
31	0.9DL + 1WL 30...	Yes	Y		DL	.9	2	.5	3	-.866	9	-1		
32	0.9DL + 1WL 31...	Yes	Y		DL	.9	2	.707	3	-.707	10	-1		
33	0.9DL + 1WL 33...	Yes	Y		DL	.9	2	.866	3	-.5	11	-1		
34	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	1	14	15	1	
35	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1
36	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1
37	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1
38	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	14	1	19	1	
39	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1
40	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1
41	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1
42	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	-1	14	15	-1	
43	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1
44	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1
45	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1
46	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	14	-1	19	-1	
47	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1
48	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1
49	1.2DL + 1DLi + 1...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1
50	(1.2+0.2Sds)DL ...	Yes	Y		DL	1.241	23	1	24					
51	(1.2+0.2Sds)DL ...	Yes	Y		DL	1.241	23	.866	24	.5				

Load Combinations (Continued)

Description	So...	P...	S...	BLC Fac...									
52 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	.707	24	.707							
53 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	.5	24	.866							
54 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23		24	1							
55 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	-.5	24	.866							
56 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	-.707	24	.707							
57 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	-.866	24	.5							
58 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	-1	24								
59 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	-.866	24	-.5							
60 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	-.707	24	-.707							
61 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	-.5	24	-.866							
62 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23		24	-1							
63 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	.5	24	-.866							
64 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	.707	24	-.707							
65 (1.2+0.2Sds)DL ... Yes Y	DL	1.241	23	.866	24	-.5							
66 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	1	24								
67 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	.866	24	.5							
68 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	.707	24	.707							
69 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	.5	24	.866							
70 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23		24	1							
71 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	-.5	24	.866							
72 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	-.707	24	.707							
73 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	-.866	24	.5							
74 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	-1	24								
75 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	-.866	24	-.5							
76 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	-.707	24	-.707							
77 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	-.5	24	-.866							
78 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23		24	-1							
79 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	.5	24	-.866							
80 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	.707	24	-.707							
81 (0.9-0.2Sds)DL ... Yes Y	DL	.859	23	.866	24	-.5							
82 1.2DL + 1Lv1 Yes Y	DL	1.2	25	1.5									
83 1.2DL + 1Lv2 Yes Y	DL	1.2	26	1.5									
84 1.2DL + 1Lv3 Yes Y	DL	1.2	27	1.5									
85 1.2DL + 1Lv4 Yes Y	DL	1.2	28	1.5									
86 1.2DL + 1Lv5 Yes Y	DL	1.2	29	1.5									
87 1.2DL + 1Lv6 Yes Y	DL	1.2	30	1.5									
88 1.2DL + 1Lv7 Yes Y	DL	1.2	31	1.5									
89 1.2DL + 1Lv8 Yes Y	DL	1.2	32	1.5									
90 1.2DL + 1Lv9 Yes Y	DL	1.2	33	1.5									
91 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	.059	3		4	.059			
92 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	.051	3	.029	5	.059			
93 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	.041	3	.041	6	.059			
94 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	.029	3	.051	7	.059			
95 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2		3	.059	8	.059			
96 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	-.029	3	.051	9	.059			
97 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	-.041	3	.041	10	.059			
98 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	-.051	3	.029	11	.059			
99 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	-.059	3		4	-.059			
100 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	-.051	3	-.029	5	-.059			
101 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	-.041	3	-.041	6	-.059			
102 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	-.029	3	-.051	7	-.059			
103 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2		3	-.059	8	-.059			
104 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	.029	3	-.051	9	-.059			
105 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	.041	3	-.041	10	-.059			
106 1.2DL + 1.5Lm ... Yes Y	DL	1.2	34	1.5	2	.051	3	-.029	11	-.059			
107 1.2DL + 1.5Lm ... Yes Y	DL	1.2	35	1.5	2	.059	3		4	.059			
108 1.2DL + 1.5Lm ... Yes Y	DL	1.2	35	1.5	2	.051	3	.029	5	.059			



Company : TRYLON
Designer : AF
Job Number : 211321
Model Name : 881541

June 8, 2022
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Checked By: CA

Load Combinations (Continued)

Load Combinations (Continued)

	Description	So...	P...	S...	BLC Fac...															
166	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	38	1.5	2	-.029	3	-.051	7	-.059						
167	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	38	1.5	2		3	-.059	8	-.059						
168	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	38	1.5	2	.029	3	-.051	9	-.059						
169	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	38	1.5	2	.041	3	-.041	10	-.059						
170	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	38	1.5	2	.051	3	-.029	11	-.059						
171	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	.059	3		4	.059						
172	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	.051	3	.029	5	.059						
173	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	.041	3	.041	6	.059						
174	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	.029	3	.051	7	.059						
175	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2		3	.059	8	.059						
176	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	-.029	3	.051	9	.059						
177	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	-.041	3	.041	10	.059						
178	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	-.051	3	.029	11	.059						
179	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	-.059	3		4	-.059						
180	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	-.051	3	-.029	5	-.059						
181	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	-.041	3	-.041	6	-.059						
182	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	-.029	3	.051	7	-.059						
183	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2		3	-.059	8	-.059						
184	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	.029	3	-.051	9	-.059						
185	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	.041	3	-.041	10	-.059						
186	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	39	1.5	2	.051	3	-.029	11	-.059						
187	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	.059	3		4	.059						
188	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	.051	3	.029	5	.059						
189	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	.041	3	.041	6	.059						
190	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	.029	3	.051	7	.059						
191	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2		3	.059	8	.059						
192	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	-.029	3	.051	9	.059						
193	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	-.041	3	.041	10	.059						
194	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	-.051	3	.029	11	.059						
195	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	-.059	3		4	-.059						
196	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	-.051	3	-.029	5	-.059						
197	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	-.041	3	-.041	6	-.059						
198	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	-.029	3	-.051	7	-.059						
199	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2		3	-.059	8	-.059						
200	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	.029	3	-.051	9	-.059						
201	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	.041	3	-.041	10	-.059						
202	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	40	1.5	2	.051	3	-.029	11	-.059						
203	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	.059	3		4	.059						
204	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	.051	3	.029	5	.059						
205	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	.041	3	.041	6	.059						
206	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	.029	3	.051	7	.059						
207	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2		3	.059	8	.059						
208	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	-.029	3	.051	9	.059						
209	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	-.041	3	.041	10	.059						
210	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	-.051	3	.029	11	.059						
211	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	-.059	3		4	-.059						
212	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	-.051	3	-.029	5	-.059						
213	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	-.041	3	-.041	6	-.059						
214	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	-.029	3	-.051	7	-.059						
215	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2		3	-.059	8	-.059						
216	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	.029	3	-.051	9	-.059						
217	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	.041	3	-.041	10	-.059						
218	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	41	1.5	2	.051	3	-.029	11	-.059						
219	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	42	1.5	2	.059	3		4	.059						
220	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	42	1.5	2	.051	3	.029	5	.059						
221	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	42	1.5	2	.029	3	.051	7	.059						
222	1.2DL + 1.5Lm +.. Yes	Y			DL	1.2	42	1.5	2		3	.051	7	.059						



Company : TRYTHON
Designer : AF
Job Number : 211321
Model Name : 881541

June 8, 2022
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Checked By: CA

Load Combinations (Continued)

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC	
1	N17	max	2640.176	18	1308.387	22	3237.993	34	690.298	30	7634.467	34	2164.304	30
2		min	-2695.073	10	-1309.232	30	-209.164	26	-750.383	6	-1093.336	26	-2170.972	22
3	N28	max	1710.116	2	2306.642	23	3233.508	39	876.018	31	734.895	33	1834.452	19
4		min	-1682.084	26	-2354.054	15	-194.835	31	-6527.616	39	-3967.691	41	-1840.609	27
5	N39	max	1524.113	3	2322.603	5	3233.556	45	6669.913	45	588.091	20	1834.227	25
6		min	-1493.456	27	-2273.648	29	-194.88	21	-935.225	21	-3713.858	44	-1840.967	33
7	Totals:	max	5817.146	18	5677.468	6	8989.697	45						
8		min	-5817.144	26	-5677.464	30	2272.489	69						

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

Member	Shape	Code	Check	Loc[in]	LC Shear ...	Loc[in]	Dir	LC phi*Pnc ...	phi*Pnt [...	phi*Mn y...	phi*Mn z...	Cb	Eqn	
1	M77	PIPE	2.0	.654	14.062	8	.484	9.375	8	6295.422	32130	1871.625	1871.625	1 H3-6
2	M73	PIPE	2.0	.638	14.063	27	.472	9.375	3	6295.422	32130	1871.625	1871.625	2 H3-6
3	M81	PIPE	2.0	.635	14.062	14	.473	9.375	14	6295.422	32130	1871.625	1871.625	1 H3-6
4	M22	HSS4X4X4		.629	0	45	.134	0	y	4772748.3...	106155	12311.25	12311.25	2 H1-1b
5	M15	HSS4X4X4		.626	0	39	.135	0	y	4272748.3...	106155	12311.25	12311.25	2 H1-1b
6	M1	HSS4X4X4		.624	0	34	.135	0	y	3772748.3...	106155	12311.25	12311.25	2 H1-1b
7	M84	L2.5x2.5x4		.585	0	8	.137	21.317	y	834783.4...	38556	1113.554	2537.388	2 H2-1
8	MP8	PIPE	2.0	.581	69	4	.093	69	4	14916.0...	32130	1871.625	1871.625	1 H1-1b
9	MP5	PIPE	2.0	.580	69	9	.092	69	9	14916.0...	32130	1871.625	1871.625	1 H1-1b
10	MP2	PIPE	2.0	.565	69	14	.088	69	14	14916.0...	32130	1871.625	1871.625	4 H1-1b
11	M83	L2.5x2.5x4		.561	0	14	.132	21.317	y	1434783.4...	38556	1113.554	2537.388	2 H2-1
12	MP4	PIPE	2.0	.555	69	2	.190	69	4	14916.0...	32130	1871.625	1871.625	3 H1-1b
13	MP3	PIPE	2.0	.555	69	11	.214	27	10	14916.0...	32130	1871.625	1871.625	2 H1-1b
14	M82	L2.5x2.5x4		.554	0	2	.132	21.317	y	334783.4...	38556	1113.554	2537.388	2 H2-1
15	MP7	PIPE	2.0	.553	69	13	.186	69	14	14916.0...	32130	1871.625	1871.625	2 H1-1b
16	MP9	PIPE	2.0	.547	69	2	.212	27	15	14916.0...	32130	1871.625	1871.625	1 H1-1b
17	MP1	PIPE	2.0	.545	69	7	.190	69	9	14916.0...	32130	1871.625	1871.625	1 H1-1b
18	MP6	PIPE	2.0	.544	69	7	.209	27	5	14916.0...	32130	1871.625	1871.625	1 H1-1b
19	M20	PL6x.375		.321	2.75	6	.310	2.75	y	4270464.9...	72900	569.533	9112.5	1 H1-1b
20	M28	PL6x.375		.318	2.75	13	.239	2.75	y	4270464.9...	72900	569.533	9112.5	1 H1-1b
21	M14	PL6x.375		.311	2.75	2	.239	2.75	y	4770464.9...	72900	569.533	9112.5	1 H1-1b
22	M44	PL6x.375		.307	0	6	.411	1.5	y	4572166.8...	72900	569.533	9112.5	1 H1-1b
23	M29	PL6x.375		.306	0	17	.412	1.5	y	4072166.8...	72900	569.533	9112.5	1 H1-1b
24	M59	PL6x.375		.304	0	11	.412	1.5	y	3472166.8...	72900	569.533	9112.5	1 H1-1b
25	M21	PL6x.375		.301	2.75	8	.238	2.75	y	3770464.9...	72900	569.533	9112.5	1 H1-1b
26	M13	PL6x.375		.294	2.75	17	.310	2.75	y	3770464.9...	72900	569.533	9112.5	1 H1-1b
27	M60	PL6x.375		.288	1.5	14	.408	0	y	3972166.8...	72900	569.533	9112.5	1 H1-1b
28	M30	PL6x.375		.287	1.5	3	.409	0	y	4472166.8...	72900	569.533	9112.5	1 H1-1b

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

Member	Shape	Code Check	Loc[in]	LC Shear ...	Loc[in]	Dir LC	phi*Pnc ...	phi*Pnt [...]	phi*Mn y ...	phi*Mn z ...	Cb	Eqn
29	M27	PL6x.375	.287	2.75	11	.309	2.75	v	4770464.9...	72900	569.533	9112.5 1...H1-1b
30	M45	PL6x.375	.284	1.5	9	.409	0	y	3472166.8...	72900	569.533	9112.5 1 H1-1b
31	M16	HSS4X4X4	.241	28.5	38	.085	28.5	v	38103993....	106155	12311.25	12311.25 1...H1-1b
32	M24	HSS4X4X4	.240	0	46	.092	0	y	46103993....	106155	12311.25	12311.25 1...H1-1b
33	M18	L2x2x3	.240	51.454	25	.013	51.454	z	349312.528	23392.8	557.717	1091.465 1... H2-1
34	M2	HSS4X4X4	.239	28.5	49	.085	28.5	y	49103993....	106155	12311.25	12311.25 1...H1-1b
35	M23	HSS4X4X4	.239	28.5	43	.085	28.5	y	43103993....	106155	12311.25	12311.25 1...H1-1b
36	M17	HSS4X4X4	.239	0	40	.092	0	y	41103993....	106155	12311.25	12311.25 1...H1-1b
37	M3	HSS4X4X4	.239	0	35	.092	0	y	35103993....	106155	12311.25	12311.25 1...H1-1b
38	M26	L2x2x3	.230	51.455	11	.014	51.455	y	499312.528	23392.8	557.717	1031.803 1 H2-1
39	M25	L2x2x3	.229	51.454	30	.013	51.454	z	409312.528	23392.8	557.717	1094.685 1... H2-1
40	M7	L2x2x3	.220	51.454	19	.013	51.454	z	459312.528	23392.8	557.717	1085.909 1... H2-1
41	M19	L2x2x3	.220	51.455	6	.014	51.455	y	449312.528	23392.8	557.717	1031.803 1 H2-1
42	H1	PIPE 3.0	.218	98.437	43	.111	50		928250.5...	65205	5748.75	5748.75 1...H1-1b
43	H3	PIPE 3.0	.218	98.437	49	.112	50		1428250.5...	65205	5748.75	5748.75 1...H1-1b
44	H2	PIPE 3.0	.217	98.437	38	.113	50		428250.5...	65205	5748.75	5748.75 1...H1-1b
45	M69	6"x1/2" Plate	.211	6.338	14	.100	6.206	y	4264763.4...	97200	1012.5	12150 1...H1-1b
46	M8	L2x2x3	.211	51.455	17	.014	51.455	y	389312.528	23392.8	557.717	1031.803 1 H2-1
47	M67	6"x1/2" Plate	.209	6.338	6	.102	6.338	y	3864763.4...	97200	1012.5	12150 1...H1-1b
48	M68	6"x1/2" Plate	.205	6.338	3	.103	6.338	y	4864763.4...	97200	1012.5	12150 1...H1-1b
49	M62	6"x1/2" Plate	.067	1.5	2	.120	0	y	2...96648.9...	97200	1012.5	12150 1...H1-1b
50	M47	6"x1/2" Plate	.066	1.5	13	.120	0	y	1...96648.9...	97200	1012.5	12150 1...H1-1b
51	M46	6"x1/2" Plate	.064	0	2	.104	1.5	v	1...96648.9...	97200	1012.5	12150 1...H1-1b
52	M32	6"x1/2" Plate	.063	1.5	7	.120	0	y	1...96648.9...	97200	1012.5	12150 1...H1-1b
53	M61	6"x1/2" Plate	.063	0	7	.104	1.5	v	1...96648.9...	97200	1012.5	12150 1...H1-1b
54	M31	6"x1/2" Plate	.060	0	13	.104	1.5	y	9896648.9...	97200	1012.5	12150 1...H1-1b

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

Member	Shape	Code ...Loc[in]	LC Shear...	Loc[in]	Dir LC	phi*Pnc[...]	phi*Tn[...]	phi*Mn...	phi*Mn...	phi*...	Cb	Eqn
No Data to Print ...												

APPENDIX D

ADDITIONAL CALCULATIONS

BOLT TOOL 1.5.2

Project Data	
Job Code:	211321
Carrier Site ID:	CT11083Q
Carrier Site Name:	CT083/Sprint/Grassy Hill

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

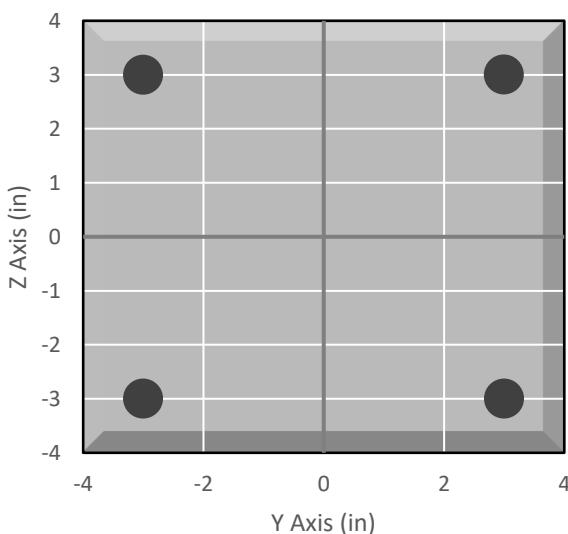
Bolt Properties		
Connection Type:	Bolt	
Diameter:	0.625	in
Grade:	A325	--
Yield Strength (Fy):	92	ksi
Ultimate Strength (Fu):	120	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	-	in

Connection Description	
Standoff to Collar	

Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	7839.2	lbs
Shear Force (V_u):	881.7	lbs
Tension Usage:	36.7%	--
Shear Usage:	6.1%	--
Interaction:	36.7%	Pass
Controlling Member:	M22	--
Controlling LC:	45	--

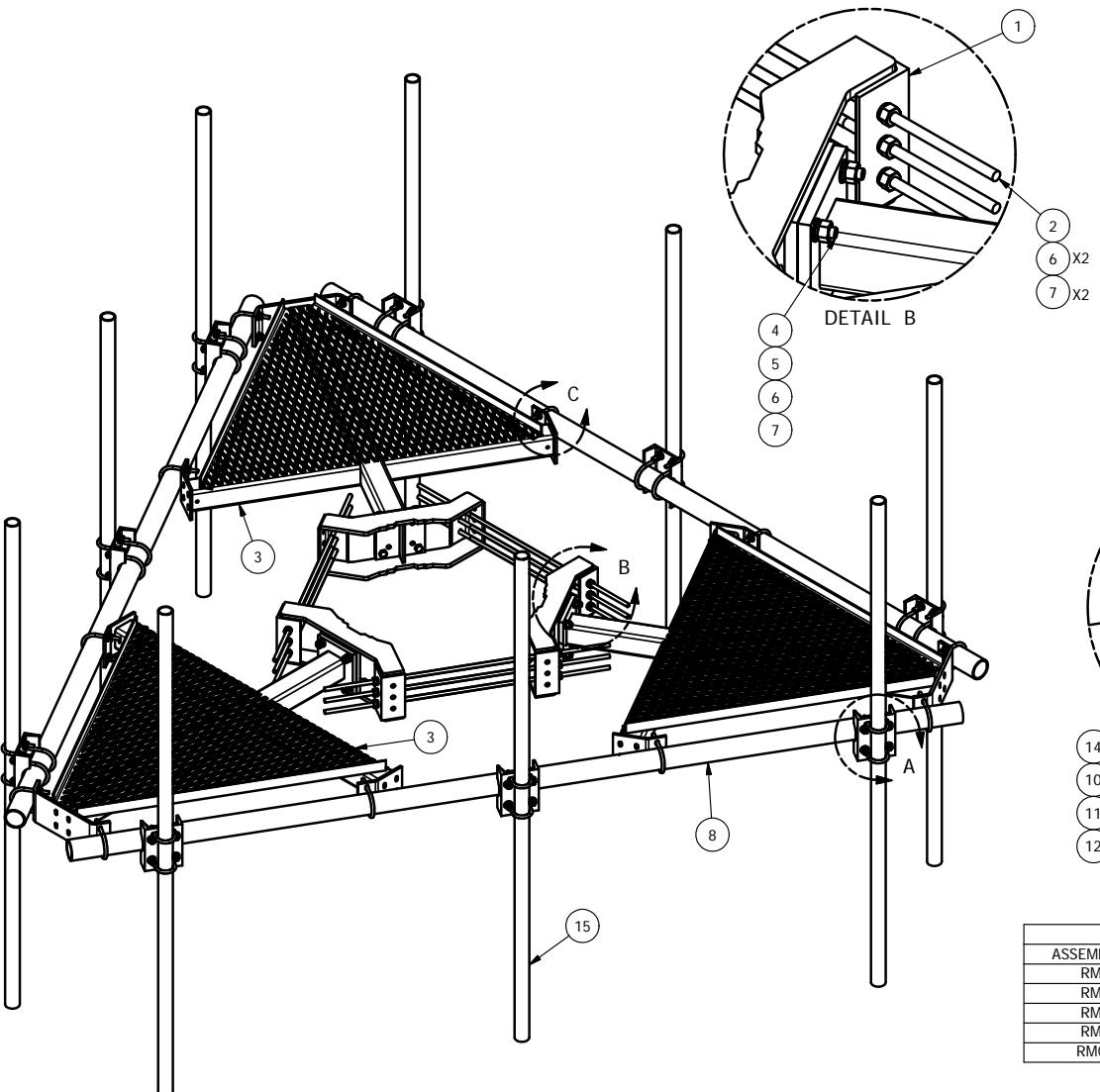
*Rating per TIA-222-H Section 15.5

Bolt Layout

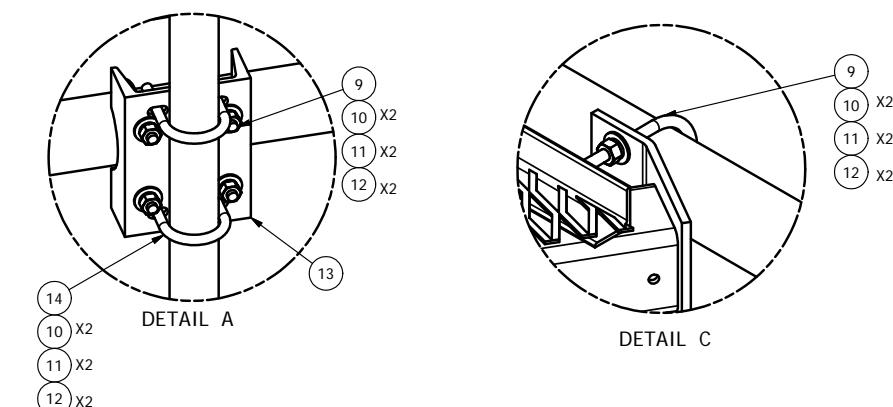


APPENDIX E

SUPPLEMENTAL DRAWINGS

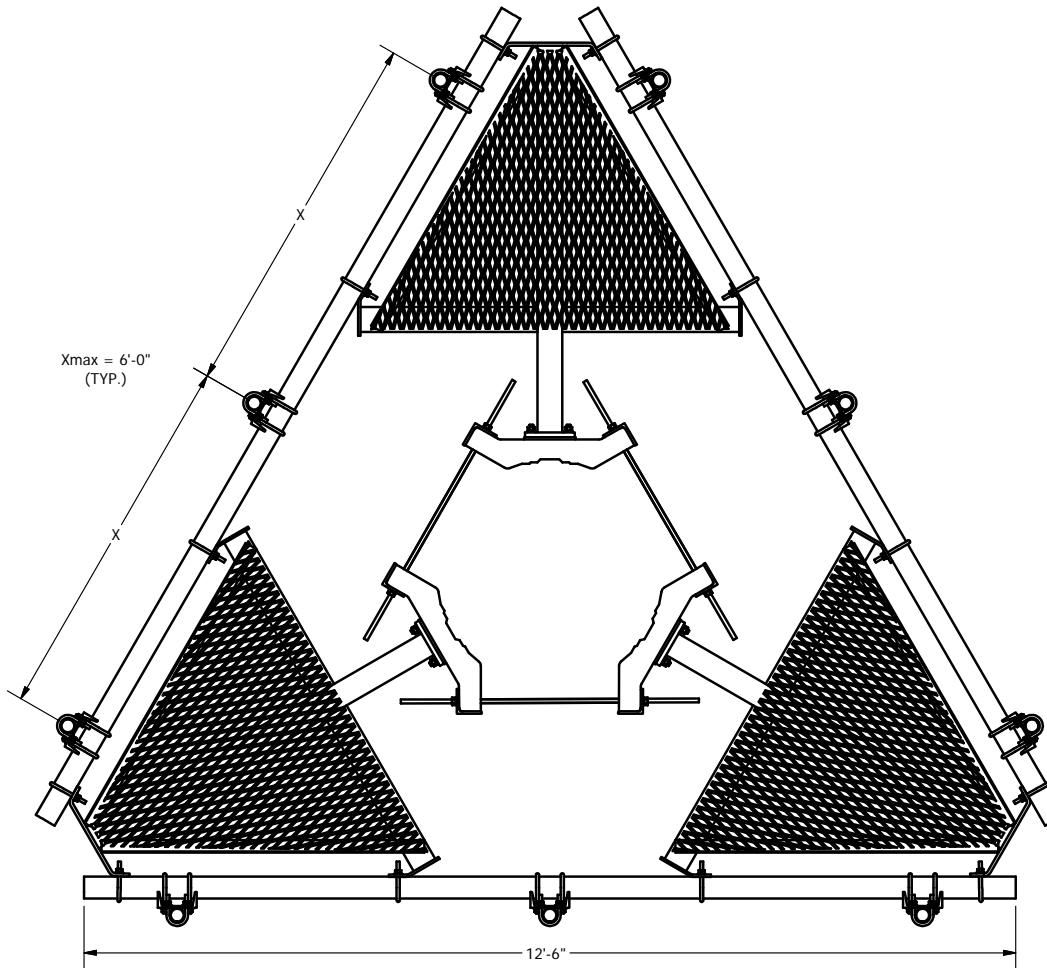


PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LVRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	30	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	7.71
10	96	G12FW	1/2" HDG USS FLATWASHER		0.03	3.27
11	96	G12LW	1/2" HDG LOCKWASHER		0.01	1.33
12	96	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	6.88
13	9	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	77.50
14	18	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	4.63
15	9	B	ANTENNA MOUNTING PIPE	C	D	E



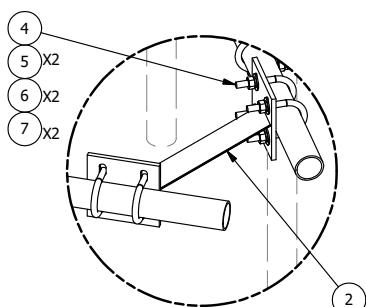
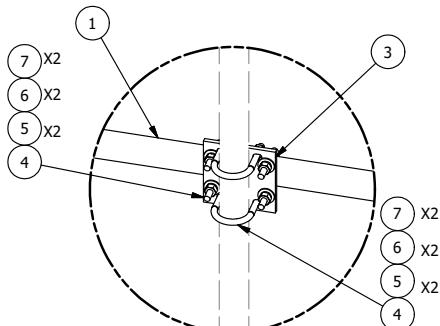
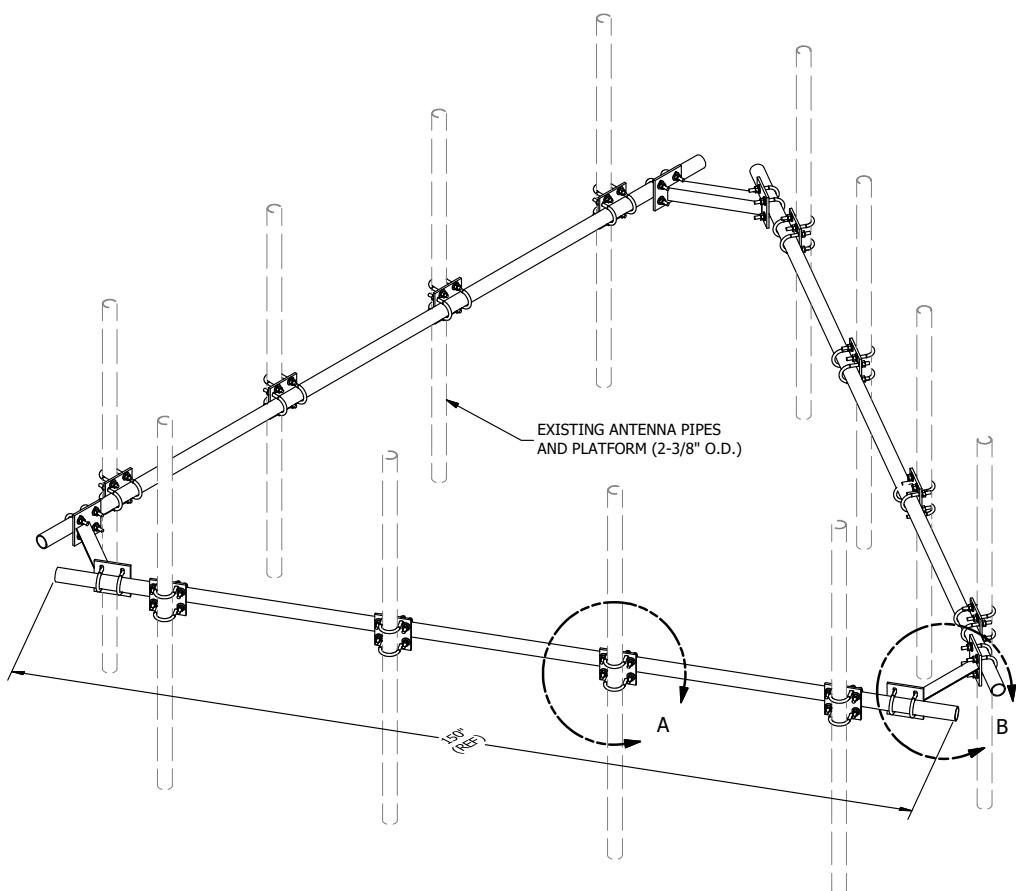
2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMOP-363	P263	63"	20.18	181.62	1494.37
RMOP-372	P272	72"	23.07	207.63	1520.38
RMOP-384	P284	84"	26.91	242.19	1554.94
RMOP-396	P296	96"	30.76	276.84	1589.59
RMQP-3126	P2126	126"	40.75	366.75	1679.50

TOLERANCE NOTE				DESCRIPTION				DRAWN BY		CPD NO.		DRAWING USAGE		PART NO.		SEE ASSEMBLY NO. "A"	
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE: SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$) DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES BENDS ARE $\pm 1/2$ DEGREE - ALL OTHER MACHINING ($\pm 0.030"$) ALL OTHER ASSEMBLY ($\pm 0.060"$)				LOW PROFILE CO-LOCATION PLATFORM FOR 9 ANTENNAS WITH 12' 6" FACE WIDTH FOR 12" - 38" DIAMETER POLES				CEK	1/19/2012	semb	customer					SITE PRO	1
PROPRIETARY NOTE <small>THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.</small>				ENG. APPROVAL	CHECKED BY	BMC	1/23/2012	DWG. NO.	RMQP-3XX								
A	ADDED 10' 6" ANTENNA MOUNTING PIPES	CEK	7/7/2015	REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE	valmont		Engineering Support Team: 1-888-753-7446	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX					
REVISION HISTORY				PAGE 2													



				TOLERANCE NOTE			DESCRIPTION			SITE PRO	
A	ADDED 10' 6" ANTENNA MOUNTING PIPES			CEK	7/7/2015		LOW PROFILE CO-LOCATION PLATFORM FOR 9 ANTENNAS WITH 12' 6" FACE WIDTH FOR 12" - 38" DIAMETER POLES			1	Engineering Support Team: 1-888-753-7446
REV	DESCRIPTION OF REVISIONS			CPD	BY	DATE	DRAWN BY CEK 1/19/2012 CPD NO. semb DRAWING USAGE CUSTOMER				Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
REVISION HISTORY				PROPRIETARY NOTE			ENG. APPROVAL	CHECKED BY	DWG. NO.	SEE ASSEMBLY NO. "A"	
								BMC	1/23/2012		RMQP-3XX

PARTS LIST							
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.	
1	3	P2150	2-3/8" O.D. X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31	
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76	
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50	
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51	
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09	
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67	
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60	
TOTAL WT. #							272.43



TOLERANCE NOTES

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

DESCRIPTION

HANDRAIL KIT
FOR 12'-6" FACE

CPD NO. DRAWN BY
KC8 5/30/2012

ENG. APPROVAL



Engineering
Support Team:
1-888-753-7446
A valmont COMPANY

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

HRK12

PART NO.

HRK12

DWG. NO.

PROPRIETARY NOTE:
THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

A	REPLACED HCP WITH X-AHCP	CEK	7/10/2014
REV	DESCRIPTION OF REVISIONS	CPD	BY DATE
REVISION HISTORY			



Radio Frequency Emissions Analysis Report

T Mobile™

Site ID: CT11083Q

CT083/Sprint/Grassy Hill
700 Grassy Hill Road
Orange, CT 06477

August 12, 2022

Fox Hill Telecom Project Number: 221559

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	19.79 %



August 12, 2022

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

Emissions Analysis for Site: **CT11083Q – CT083/Sprint/Grassy Hill**

Fox Hill Telecom, Inc (“Fox Hill”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **700 Grassy Hill Road, Orange, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

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

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

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

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



Fox Hill Telecom

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

Additional details can be found in FCC OET 65.



CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **700 Grassy Hill Road, Orange, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-MOBILE 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, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves.

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

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

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	RFS APXVAALL24_43-U-NA20	130
A	2	Commscope VV-65B-R1	130
A	3	Ericsson AIR6419 B41	130
B	1	RFS APXVAALL24_43-U-NA20	130
B	2	Commscope VV-65B-R1	130
B	3	Ericsson AIR6419 B41	130
C	1	RFS APXVAALL24_43-U-NA20	130
C	2	Commscope VV-65B-R1	130
C	3	Ericsson AIR6419 B41	130

Table 2: Antenna Data

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



RESULTS

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

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.57
Antenna A2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	9	335	15,654.24	3.66
Antenna A3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	5.28
Sector A Composite MPE%							10.51
Antenna B1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.57
Antenna B2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	9	335	15,654.24	3.66
Antenna B3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	5.28
Sector B Composite MPE%							10.51
Antenna C1	RFS APXVAALL24_43-U-NA20	600 MHz / 700 MHz	13.65 / 13.85	4	120	2,824.56	1.57
Antenna C2	Commscope VV-65B-R1	1900 MHz (PCS) / 2100 MHz (AWS)	16.55 / 16.85	9	335	15,654.24	3.66
Antenna C3	Ericsson AIR6419 B41	2500 MHz (BRS)	21.5	8	160	22,600.60	5.28
Sector C Composite MPE%							10.51

Table 3: T-MOBILE Emissions Levels



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

Site Composite MPE%	
Carrier	MPE%
T-MOBILE – Max Per Sector Value	10.51 %
Sprint	3.85 %
Verizon Wireless	2.75 %
MetroPCS	0.12 %
Clearwire	0.12 %
AT&T	2.44 %
Site Total MPE %:	19.79 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	10.51 %
T-MOBILE Sector B Total:	10.51 %
T-MOBILE Sector C Total:	10.51 %
Site Total:	19.79 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE – Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μ W/cm ²)	Frequency (MHz)	Allowable MPE (μ W/cm ²)	Calculated % MPE
T-Mobile 600 MHz LTE / 5G NR	2	926.96	130	4.33	600 MHz	400	1.08%
T-Mobile 700 MHz LTE	2	485.32	130	2.27	700 MHz	467	0.49%
T-Mobile 1900 MHz (PCS) LTE	4	1,807.42	130	16.90	1900 MHz (PCS)	1000	1.69%
T-Mobile 1900 MHz (PCS) GSM	1	677.78	130	1.58	1900 MHz (PCS)	1000	0.16%
T-Mobile 2100 MHz (AWS) LTE	4	1,936.69	130	18.11	2100 MHz (AWS)	1000	1.81%
T-Mobile 2500 MHz (BRS) LTE / 5G NR	8	2,825.08	130	52.84	2500 MHz (BRS)	1000	5.28%
							Total: 10.51%

Table 6: T-MOBILE Maximum Sector MPE Power Values



Summary

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

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

T-MOBILE Sector	Power Density Value (%)
Sector A:	10.51 %
Sector B:	10.51 %
Sector C:	10.51 %
T-MOBILE Maximum Total (per sector):	10.51 %
Site Total:	19.79 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **19.79 %** 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.

Scott Heffernan
Principal RF Engineer
Fox Hill Telecom, Inc
Holden, MA 01520
(978)660-3998

T-Mobile

T-MOBILE SITE NUMBER: CT11083Q

T-MOBILE SITE NAME: CT083/SPRINT/GRASSY HILL
SITE TYPE: MONOPOLE
TOWER HEIGHT: 139'-6"

CT11083Q _ANCHOR: 67E5998E_1XAIR+1OP+1QP

BUSINESS UNIT #: 881541

SITE ADDRESS:
COUNTY:
JURISDICTION:

700 GRASSY HILL RD
 ORANGE, CT 06477
 NEW HAVEN
 NEW HAVEN COUNTY

T-Mobile

35 GRIFFIN ROAD
 BLOOMFIELD, CT 06002

CROWN CASTLE

1500 CORPORATE DRIVE
 CANONSBURG, PA 15317

INFINIGY®

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500 West Office Center Dr.
 Suite 150 | Fort Washington, PA 19034
www.infinigy.com

SITE INFORMATION

CROWN CASTLE USA INC.	ROGERS PROPERTY
SITE NAME:	
SITE ADDRESS:	700 GRASSY HILL RD ORANGE, CT 06477
COUNTY:	NEW HAVEN
MAP/PARCEL #:	60-6-1
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.28552000° (41° 17' 7.75")
LONGITUDE:	-73.04250000° (-73° 2' 33.27")
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	±100 FT
CURRENT ZONING:	TBD
JURISDICTION:	NEW HAVEN COUNTY
OCCUPANCY CLASSIFICATION:	TBD
TYPE OF CONSTRUCTION:	TBD
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	CROWN CASTLE USA 2000 CORPORATE DRIVE CANONSBURG, PA
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	TBD
TELCO PROVIDER:	TBD

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
C-6	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. 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.

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:

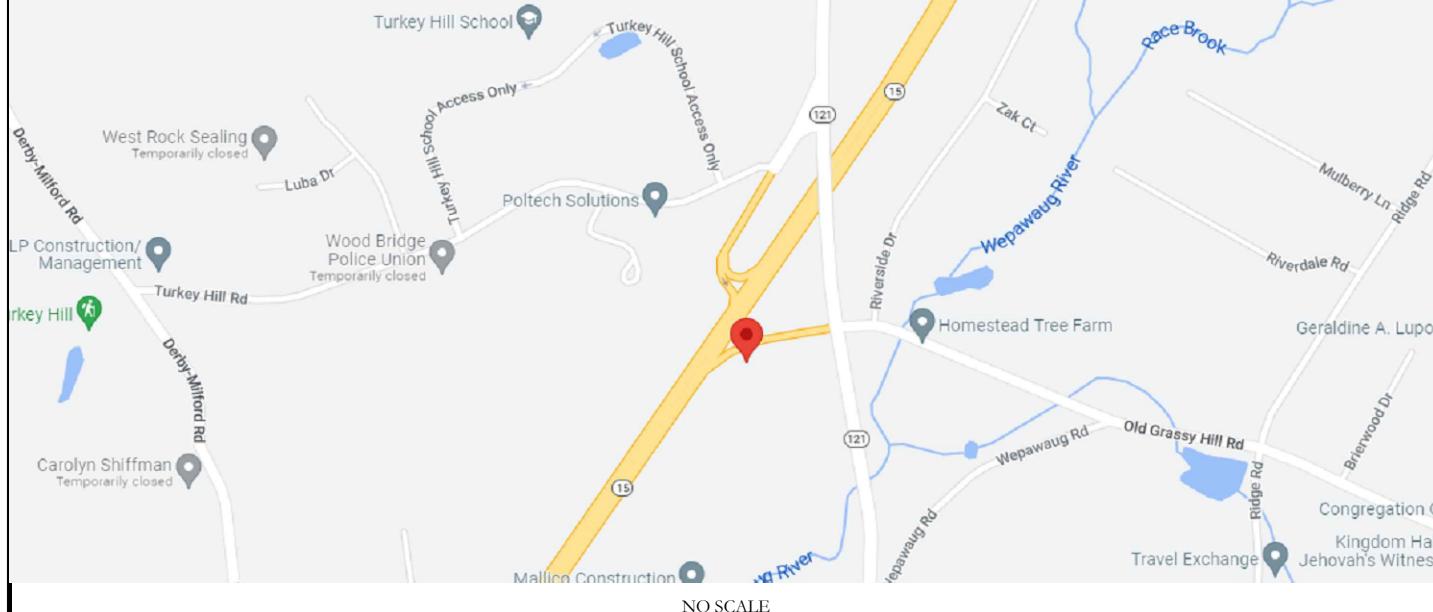
- REMOVE (9) ANTENNAS
- REMOVE (3) TMAS
- REMOVE (3) RRHS
- REMOVE ALL COAX CABLES
- REMOVE (4) HYBRID CABLES
- REMOVE (3) ANTENNA MOUNTS
- INSTALL (9) ANTENNAS
- INSTALL (6) RRHS
- INSTALL (3) HYBRID CABLES
- INSTALL PLATFORM MOUNT

GROUND SCOPE OF WORK:

- REMOVE (3) EQUIPMENT CABINETS
- INSTALL (1) B160 & (1) B160 BATTERY CABINET
- INSTALL (1) PSU4813 VOLTAGE BOOSTER IN (P) CABINET
- INSTALL (1) CSR IXRE ROUTER IN (P) CABINET
- INSTALL (1) RP 6651 IN (P) CABINET
- INSTALL 125 AMP BREAKER FOR 6160
- INSTALL (1) PSU4813 VOLTAGE BOOSTER IN (E) CABINET
- INSTALL AVV CABINET

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

LOCATION MAP



PROJECT TEAM

A&E FIRM:	INFINIGY 500 WEST OFFICE CENTER DR. SUITE 150, FORT WASHINGTON, PA 19034
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1500 CORPORATE DRIVE CANONSBURG, PA 15317
	TBD - PROJECT MANAGER
	TBD - CONSTRUCTION MANAGER

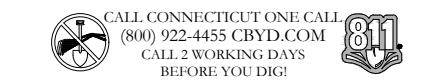
APPLICABLE CODES/REFERENCE DOCUMENTS

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

CODE TYPE	CODE
BUILDING	2018 IBC
MECHANICAL	2015 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

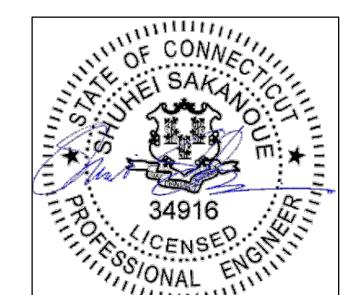
STRUCTURAL ANALYSIS:	MORRISON HERSHFIELD
DATED:	06/21/2022
MOUNT ANALYSIS:	TRYLON
DATED:	06/08/2022
RFDS REVISION:	5
DATED:	4/26/2022
ORDER ID:	619473
REVISION:	0



APPROVALS

APPROVAL	SIGNATURE	DATE
PROPERTY OWNER OR REP.		
LAND USE PLANNER		
T-MOBILE		
OPERATIONS		
RF		
NETWORK		
BACKHAUL		
CONSTRUCTION MANAGER		

THE PARTIES ABOVE HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL CONSTRUCTION DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND ANY CHANGES AND MODIFICATIONS THEY MAY IMPOSE.



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, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA-322 (LATEST EDITION).
- 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 COMPAKTED 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 GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 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: T-MOBILE
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 PRIORITY 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.
- 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 SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
- 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.
- THE 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.

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.
- ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
- 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.
- 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.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THHN-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 TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THHN-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/IEEE AND NEC.
- ELECTRICAL METALIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALIC 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/90's 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 acceptable.
- CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE 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).
- CONDUTS 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 FIRED 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 RIDGELY 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. SHELL 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 0S 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 0S 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 "T-MOBILE".
- ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

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

* SEE NEC 210.5(C)(1) AND (2)

** POLARITY MARKED AT TERMINATION

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	

T-Mobile

35 GRIFFIN ROAD
BLOOMFIELD, CT 06002

CROWN CASTLE

1500 CORPORATE DRIVE
CANONSBURG, PA 15317

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T-MOBILE SITE NUMBER:
CT11083Q

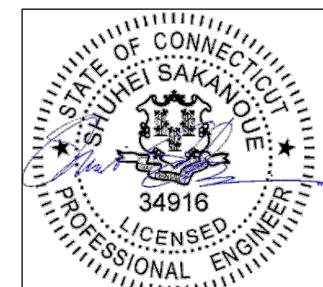
BU #: 881541
ROGERS PROPERTY

700 GRASSY HILL RD
ORANGE, CT 06477

EXISTING 139'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES/QA
A	07/12/22	RCD	PRELIMINARY	SS
0	08/17/22	RCD	100% FINALS	SS

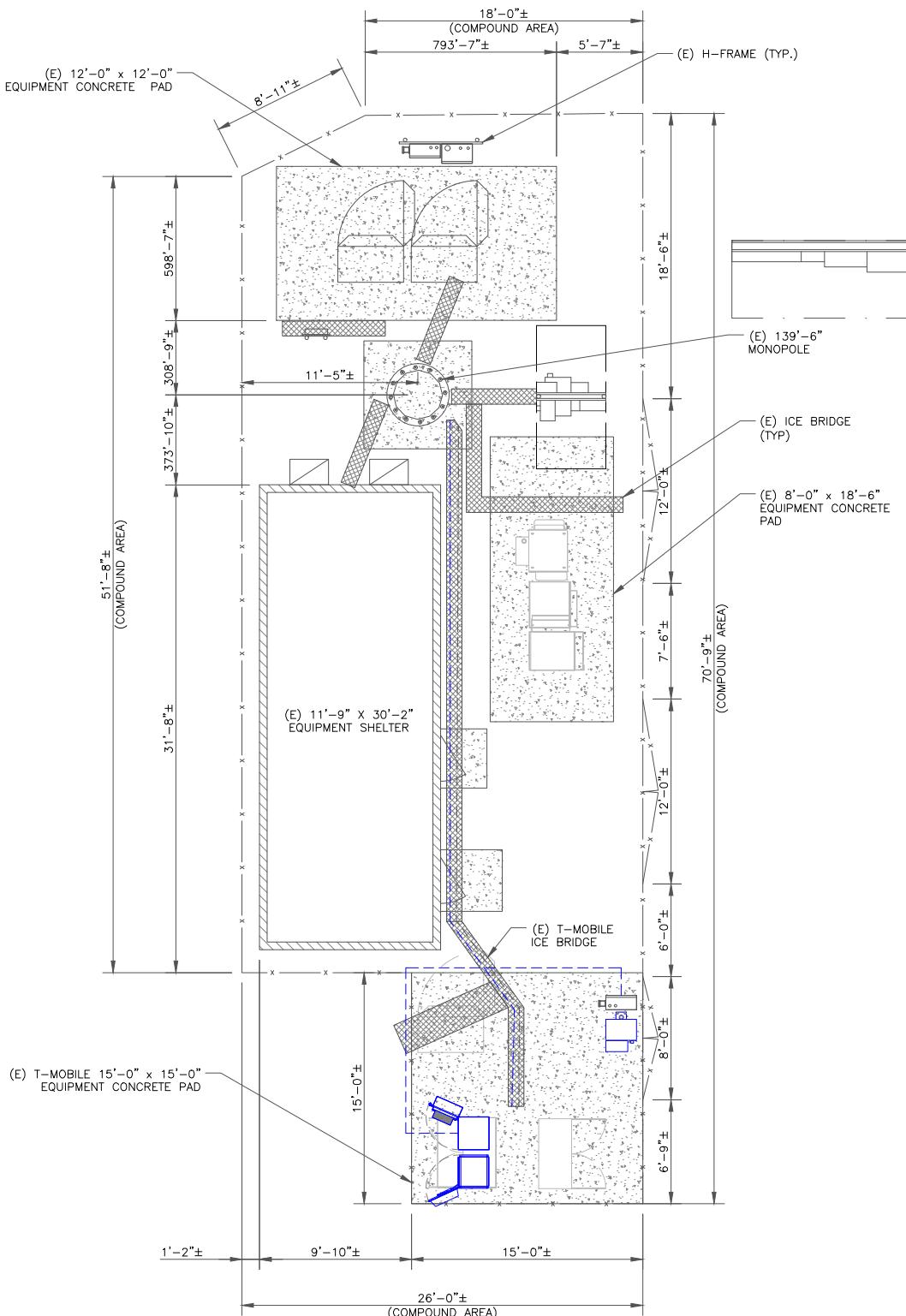


IT IS A VIOLATION OF LAW FOR ANY PERSON,
UNLESS THEY ARE ACTING UNDER THE DIRECTION
OF A LICENSED PROFESSIONAL ENGINEER,
TO ALTER THIS DOCUMENT.

SHEET NUMBER: **C-1** REVISION: **0**

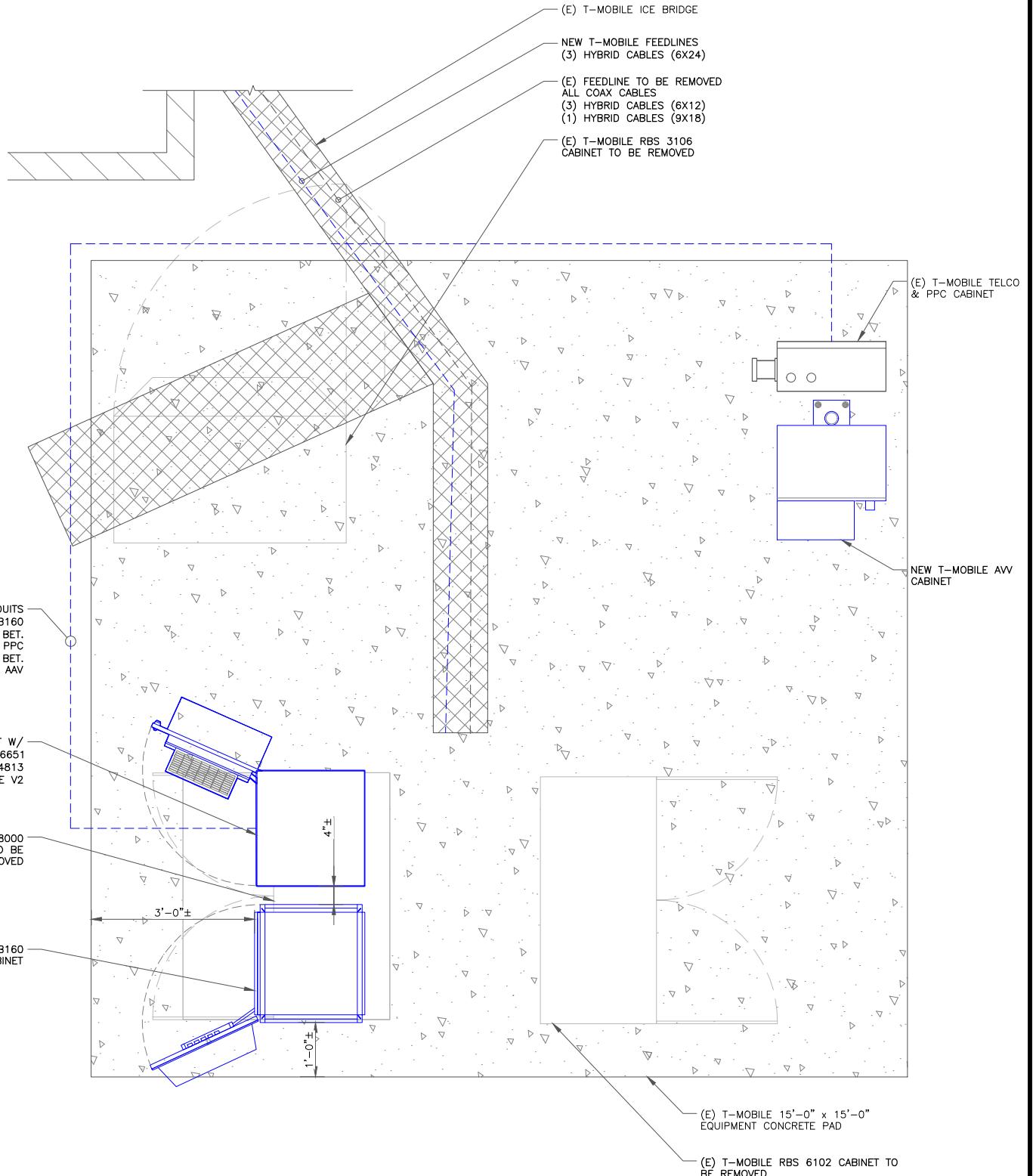
NOTE:

1. PLANS BASED ON SITE PLAN PROVIDED BY TOWER OWNER AND SITE VISIT PERFORMED BY INFINIGY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING T-MOBILE EQUIPMENT.



1 SITE PLAN

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

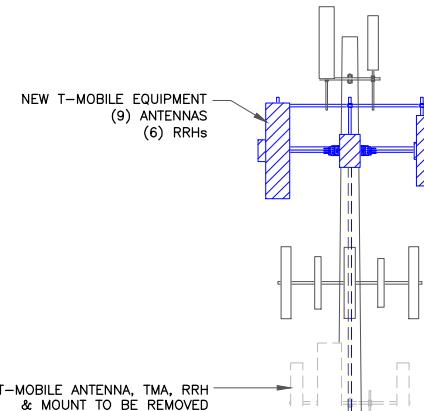


2 ENLARGED SITE PLAN

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

NOTES:

- ELEVATION BASED ON DRAWING PROVIDED BY TOWER OWNER. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATION/ORIENTATION OF EXISTING EQUIPMENT.
- INFINIGY HAS NOT EVALUATED THE TOWER OR MOUNT STRUCTURE AND ASSUMES NO RESPONSIBILITY FOR THEIR STRUCTURAL INTEGRITY REGARDING PROPOSED LOADINGS. FINAL INSTALLATION SHALL COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSES PERFORMED BY OTHERS.



STRUCTURES W/ APPURTENANCES
ELEV. = 143'-4"
TIP OF MONPOLE
ELEV. = 139'-6"
RAD CENTER OF ANTENNA MOUNT
ELEV. = 136'-0"
TIP OF ANTENNA
ELEV. = 134'-0"
RAD CENTER OF ANTENNA
ELEV. = 130'-0"

RAD CENTER OF ANTENNA MOUNT
ELEV. = 119'-0"
RAD CENTER OF ANTENNA
ELEV. = 110'-0"
RAD CENTER OF ANTENNA MOUNT
ELEV. = 109'-0"

(E) T-MOBILE ANTENNA, TMA, RRH & MOUNT TO BE REMOVED

T-MOBILE EQUIPMENT
ANTENNA CL: 130'-0"
MOUNT CL: 130'-0"

ANY AND ALL TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ EXISTING SAFETY CLIMB

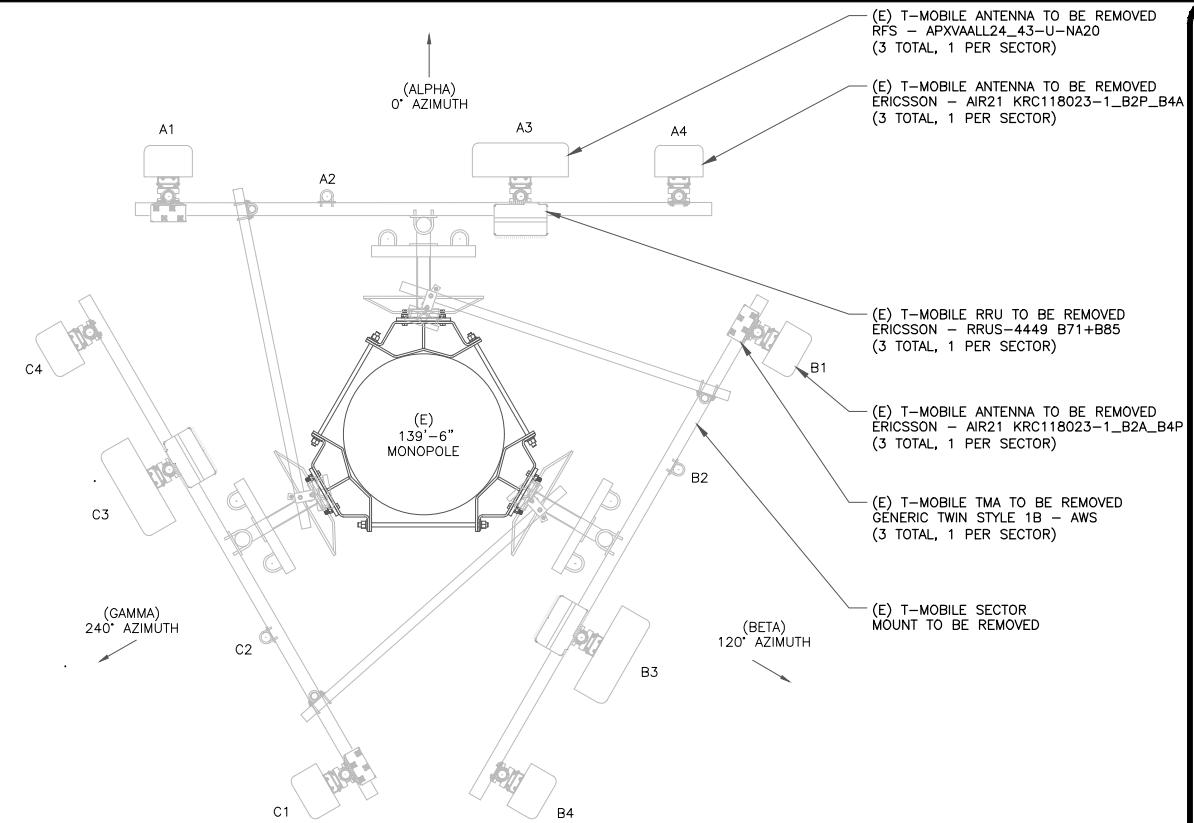
RAD CENTER OF ANTENNA MOUNT
ELEV. = 75'-0"

NEW T-MOBILE FEEDLINES
(3) HYBRID CABLES (6X24)
(E) FEEDLINE TO BE REMOVED
ALL COAX CABLES
(3) HYBRID CABLES (6X12)
(1) HYBRID CABLES (9X18)

(E) 139'-6" MONOPOLE

1 FINAL ELEVATION

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



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

(E) T-MOBILE ANTENNA TO BE REMOVED
RFS - APXVAL24_43-U-NA20
(3 TOTAL, 1 PER SECTOR)

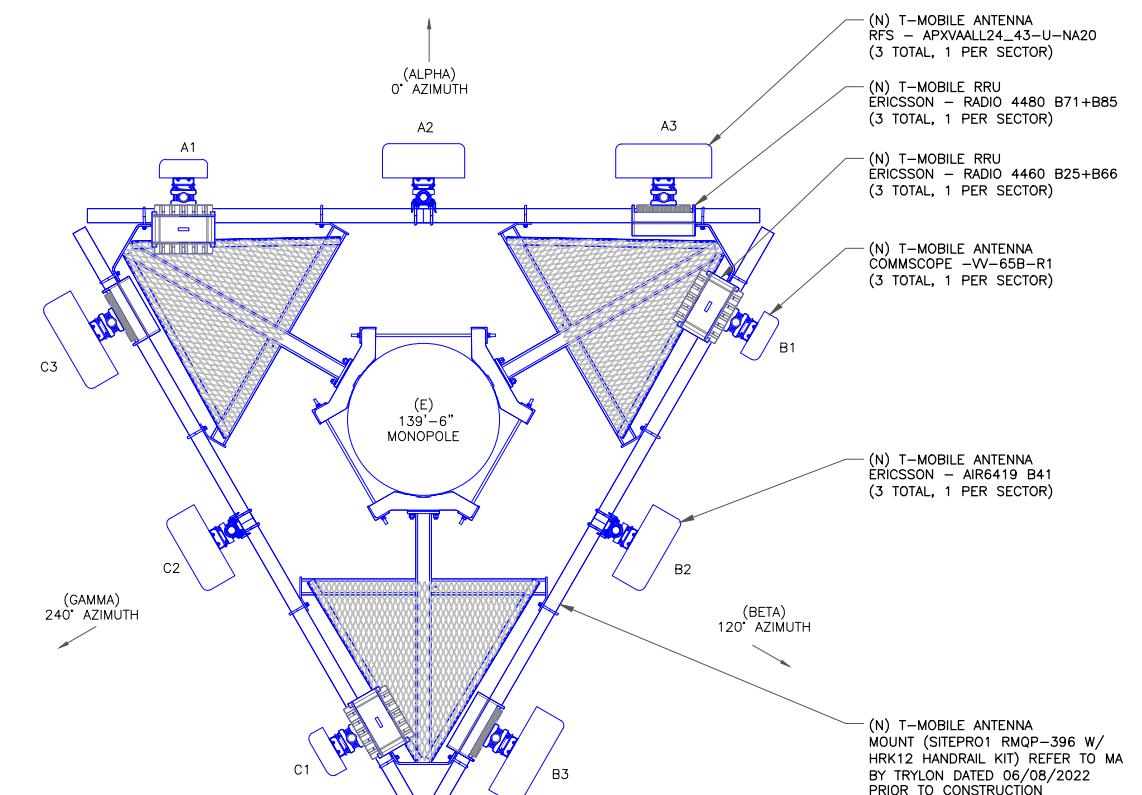
(E) T-MOBILE ANTENNA TO BE REMOVED
ERICSSON - AIR21 KRC118023-1_B2P_B4A
(3 TOTAL, 1 PER SECTOR)

(E) T-MOBILE RRU TO BE REMOVED
ERICSSON - RRU8-4449 B71+B85
(3 TOTAL, 1 PER SECTOR)

(E) T-MOBILE ANTENNA TO BE REMOVED
ERICSSON - AIR21 KRC118023-1_B2A_B4P
(3 TOTAL, 1 PER SECTOR)

(E) T-MOBILE TMA TO BE REMOVED
GENERIC TWIN STYLE 1B - AWS
(3 TOTAL, 1 PER SECTOR)

(E) T-MOBILE SECTOR MOUNT TO BE REMOVED



3 FINAL ANTENNA LAYOUT

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

(N) T-MOBILE ANTENNA
RFS - APXVAL24_43-U-NA20
(3 TOTAL, 1 PER SECTOR)

(N) T-MOBILE RRU
ERICSSON - RADIO 4480 B71+B85
(3 TOTAL, 1 PER SECTOR)

(N) T-MOBILE RRU
ERICSSON - RADIO 4460 B25+B66
(3 TOTAL, 1 PER SECTOR)

(N) T-MOBILE ANTENNA
COMMSCOPE - VV-65B-R1
(3 TOTAL, 1 PER SECTOR)

(N) T-MOBILE ANTENNA
ERICSSON - AIR6419 B41
(3 TOTAL, 1 PER SECTOR)

(N) T-MOBILE ANTENNA
ERICSSON - AIR6419 B41
(3 TOTAL, 1 PER SECTOR)

(N) T-MOBILE ANTENNA
MOUNT (SITEPRO1 RMQP-396 W/
HRK12 HANDRAIL KIT) REFER TO MA
BY TRYLON DATED 06/08/2022
PRIOR TO CONSTRUCTION

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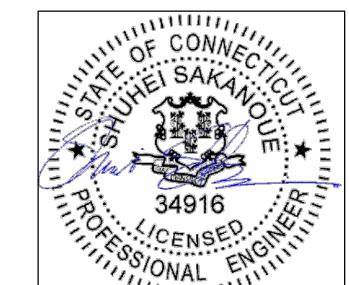
BU #: 881541
ROGERS PROPERTY

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EXISTING 139'-6" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES/QA
A	07/12/22	RCD	PRELIMINARY	SS
0	08/17/22	RCD	100% FINALS	SS



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BU #: 881541
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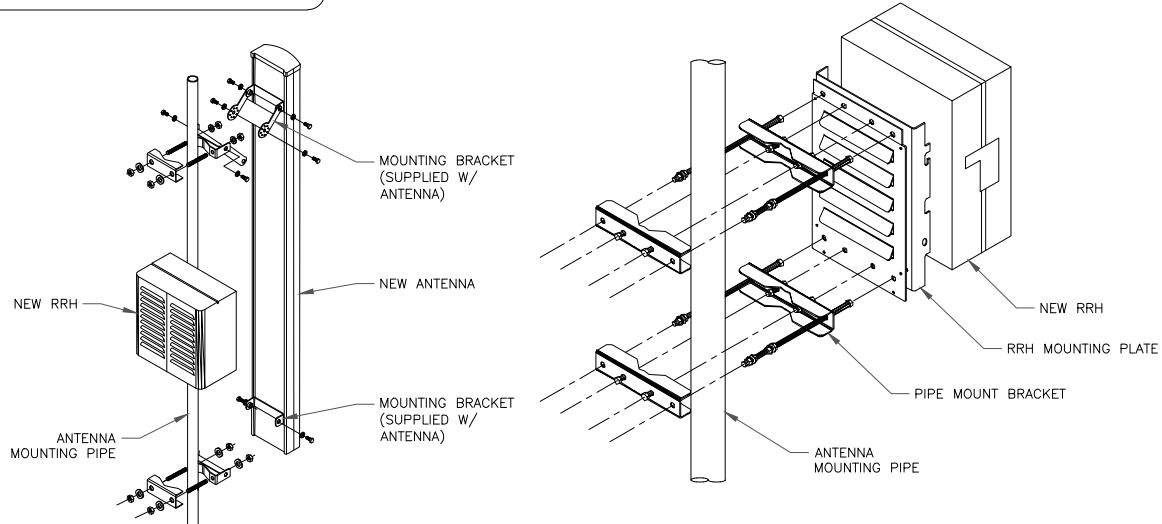
EXISTING 139'-6" MONOPOLE

1 ANTENNA AND CABLE SCHEDULE

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.

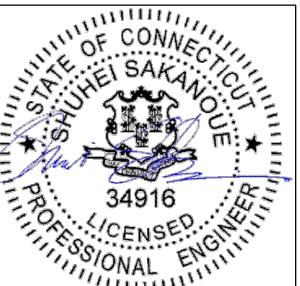


NOTE:

1. CONTRACTOR SHALL INSTALL 3RD DUAL RRH MOUNT TO ACCOMMODATE ALL RRH BRACKETS HOLES IF NECESSARY.

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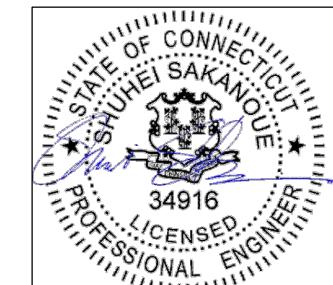
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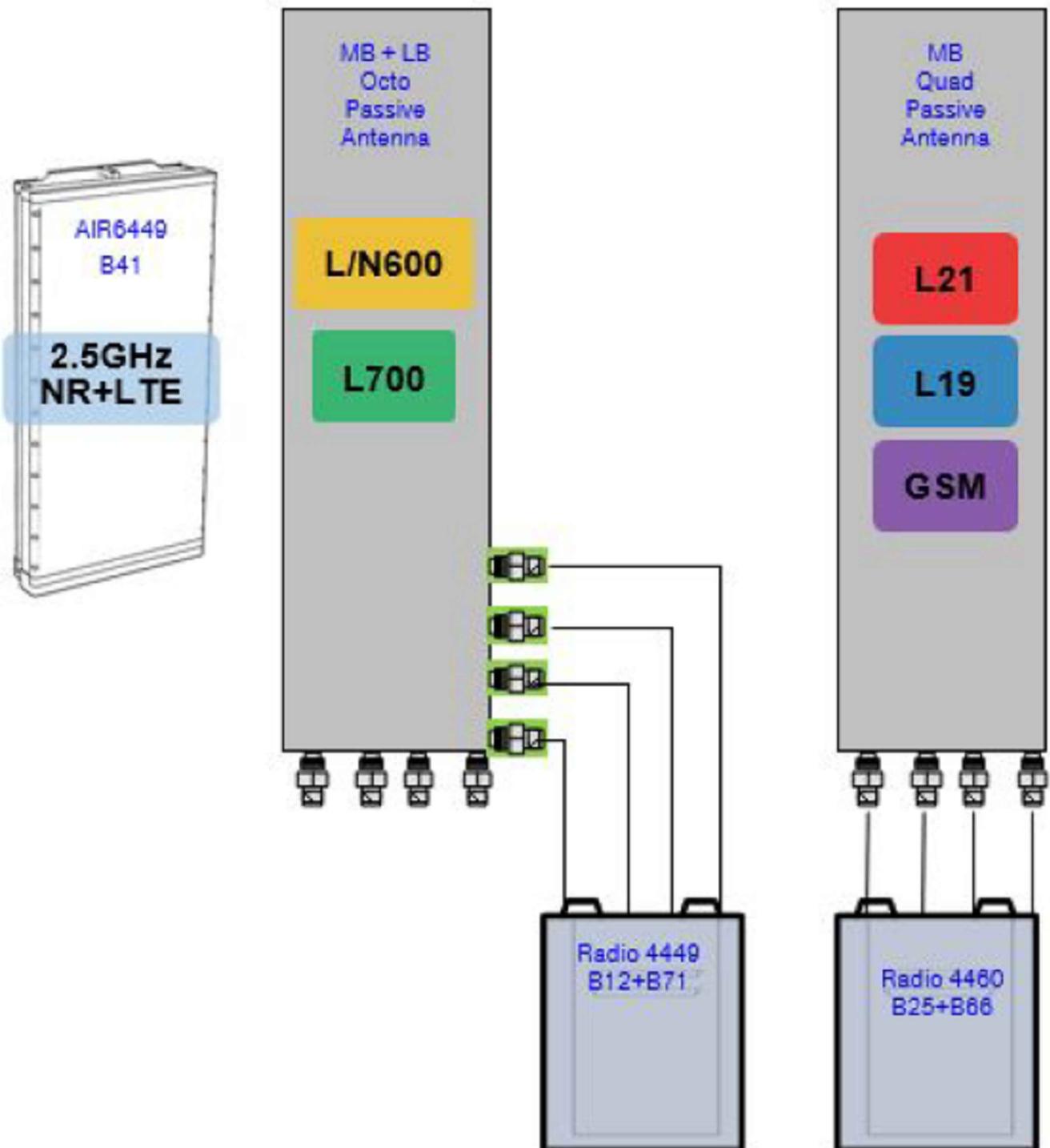
EXISTING 139'-6" MONOPOLE

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SHEET NUMBER: REVISION:

C-4 **0**

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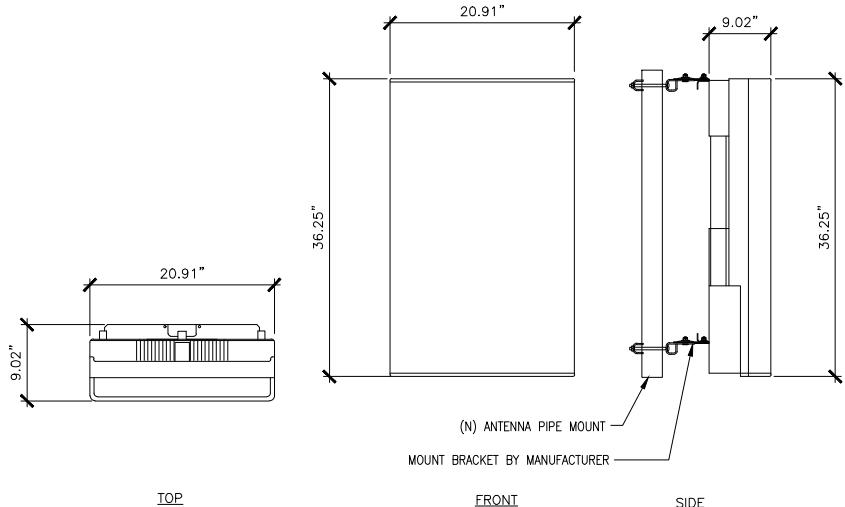
T-MOBILE SITE NUMBER:
CT11083Q

BU #: 881541
ROGERS PROPERTY

700 GRASSY HILL RD
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EXISTING 139'-6" MONOPOLE

MANUFACTURER: ERICSSON
MODEL: AIR6419 B41
WEIGHT: 96.5 LBS (W/ MOUNT BRACKET 113)
DIMENSIONS: 36.25"H. X 20.91"W. X 9.02"D.
FREQUENCY: REFER TO RF DATA SHEET

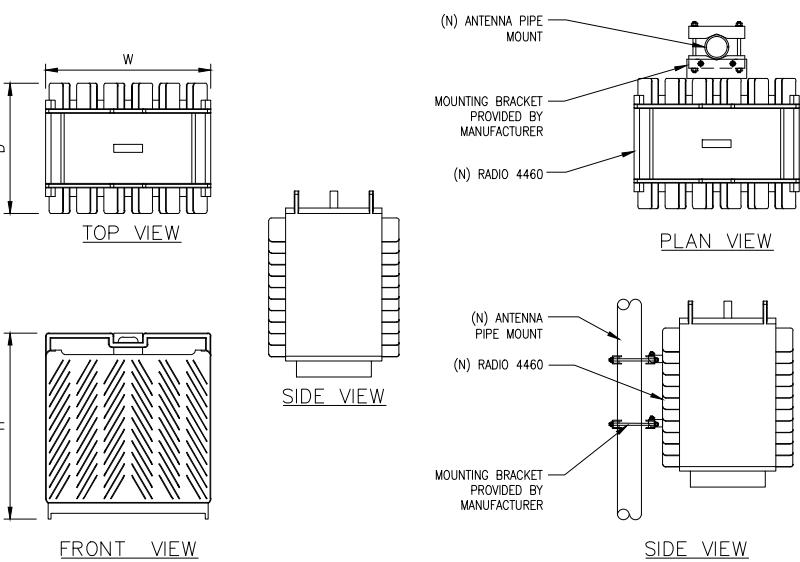
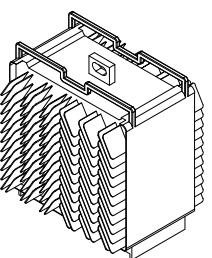


1 (N) AIR6419 B41 ANTENNA SPEC

SCALE: NOT TO SCALE

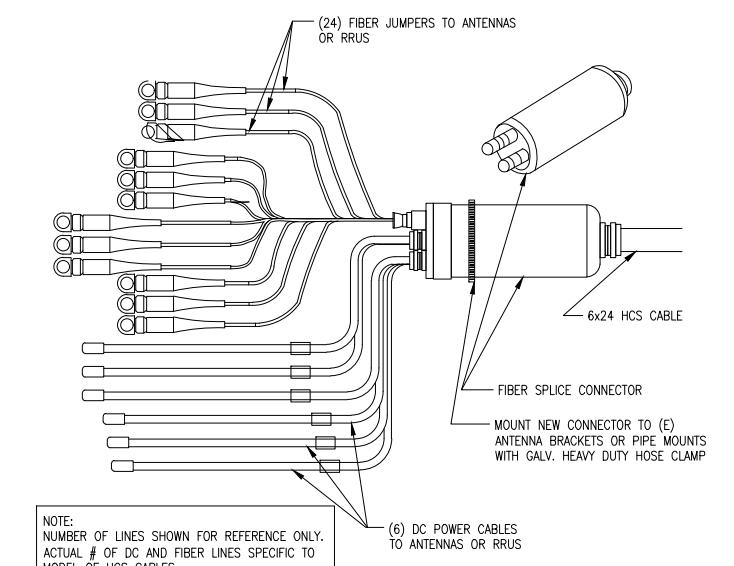
ERICSSON RADIO-4460 B25 B66

DIMENSIONS, WxDxH: 17.0"x15.1"x11.9"
MAX OUTPUT POWER: 4x80W (2x(2x80W))
TOTAL WEIGHT: 109 lbs
TEMPERATURE: -40° TO 55° C



2 (N) RADIO 4460 SPEC

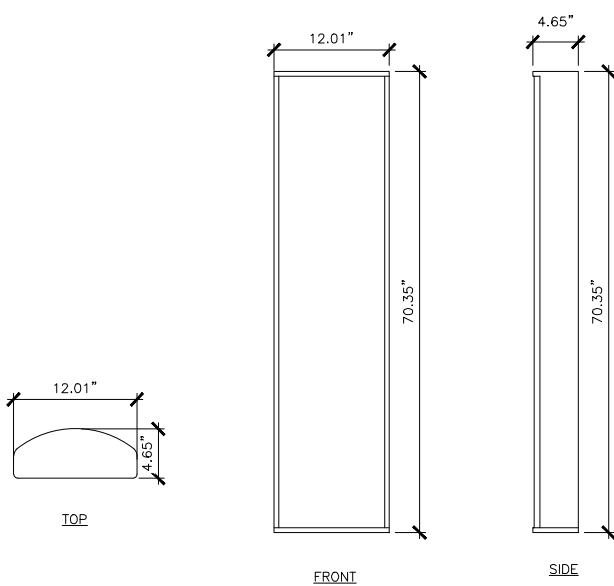
SCALE: NOT TO SCALE



3 (N) 6X24 HCS CABLE DETAIL

SCALE: NOT TO SCALE

MANUFACTURER: commscope
MODEL: VV-65B-R1
WEIGHT: 41.67 LBS
DIMENSIONS: 70.35"H. X 12.01"W. X 4.65"D.
FREQUENCY: REFER TO RF DATA SHEET

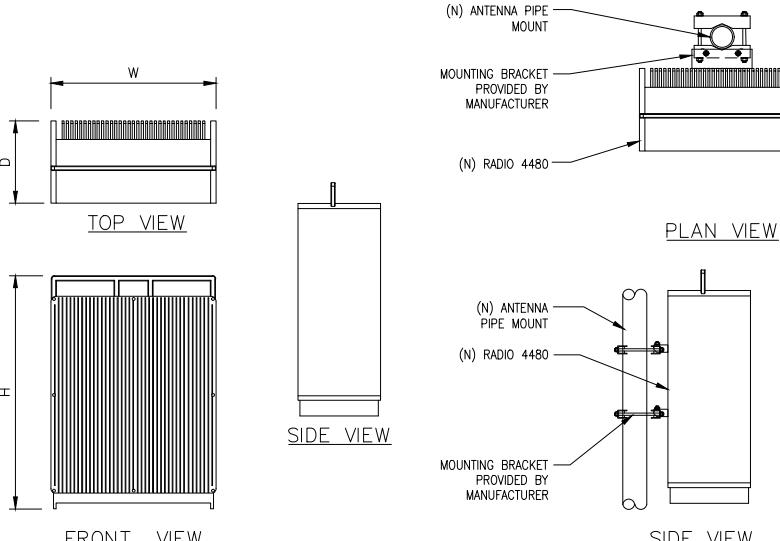
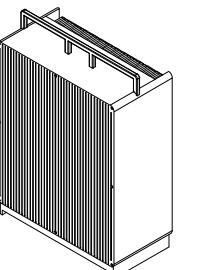


4 (N) VV-65B-R1 ANTENNA SPEC

SCALE: NOT TO SCALE

ERICSSON RADIO-4480 B71 B85

DIMENSIONS, WxDxH: 21.8"x15.7"x7.5"
MAX OUTPUT POWER: 4x80W (2x(2x80W))
TOTAL WEIGHT: 93 lbs
TEMPERATURE: -40° TO 55° C

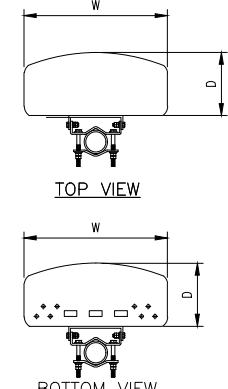
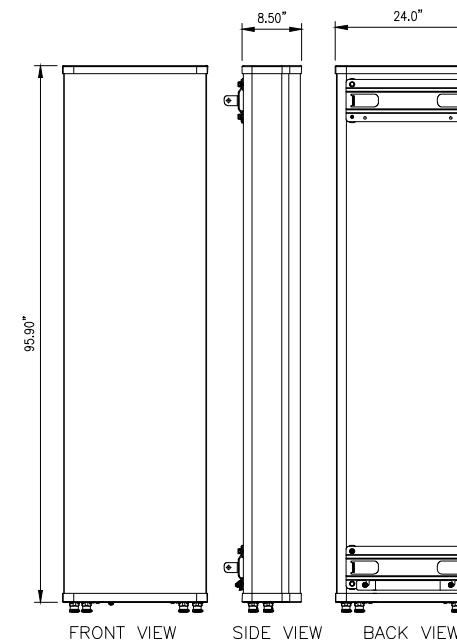


5 (N) RADIO 4480 SPEC

SCALE: NOT TO SCALE

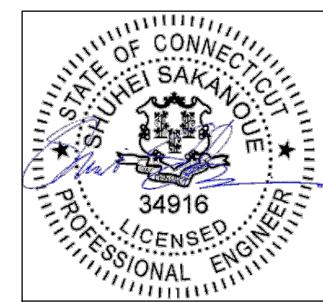
RFS ANTENNAS

MODEL	WEIGHT (lb)
APXVAALL24_43-U-NA20	149.90
WEIGHT W/ MOUNTING BRACKET (lb):	-



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SHEET NUMBER: **C-5** REVISION: **0**



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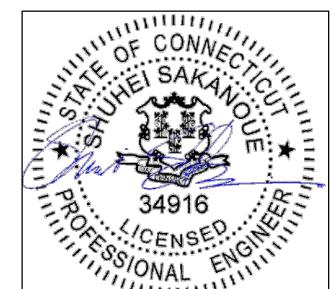
BU #: 881541
ROGERS PROPERTY

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EXISTING 139'-6" MONOPOLE

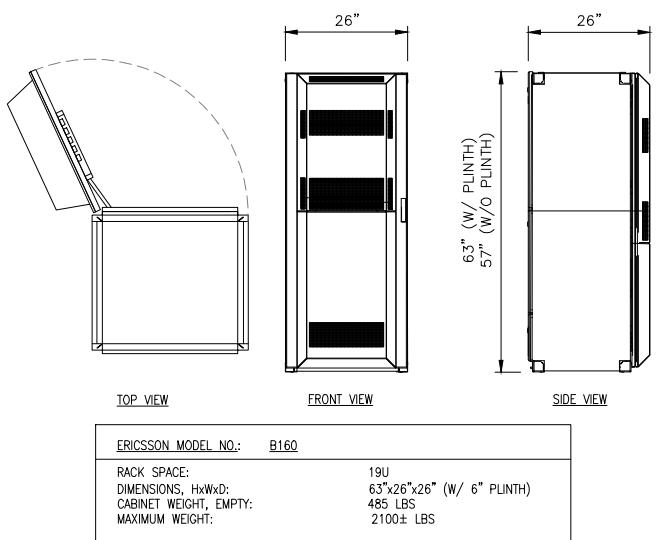
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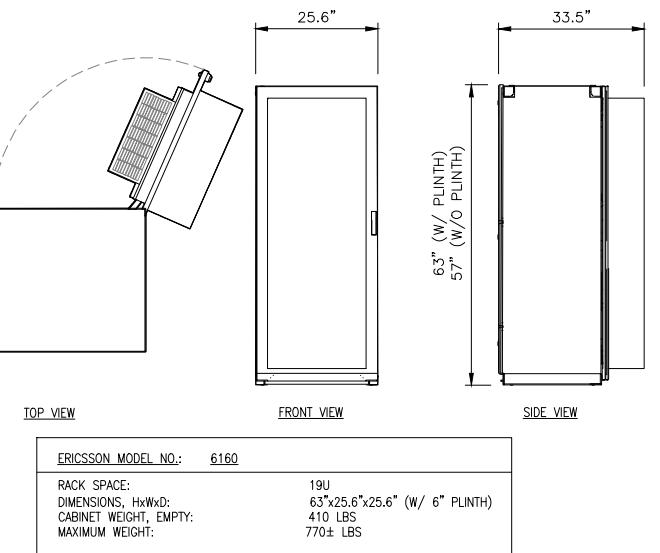
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SHEET NUMBER: **C-6** REVISION: **0**



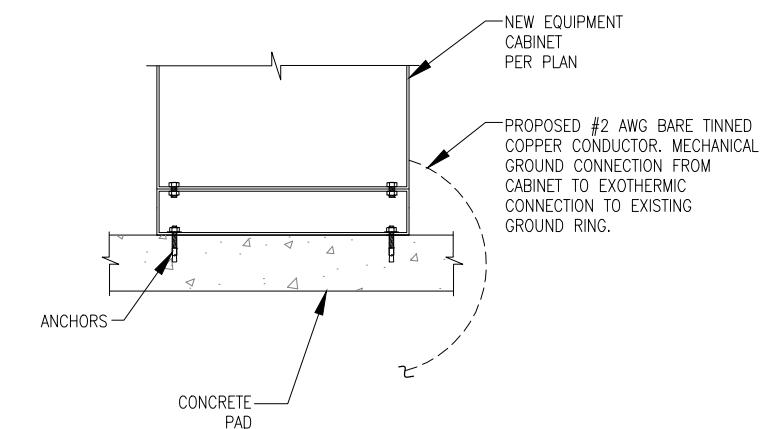
1 (N) B160 CABINET DETAIL

SCALE: NOT TO SCALE



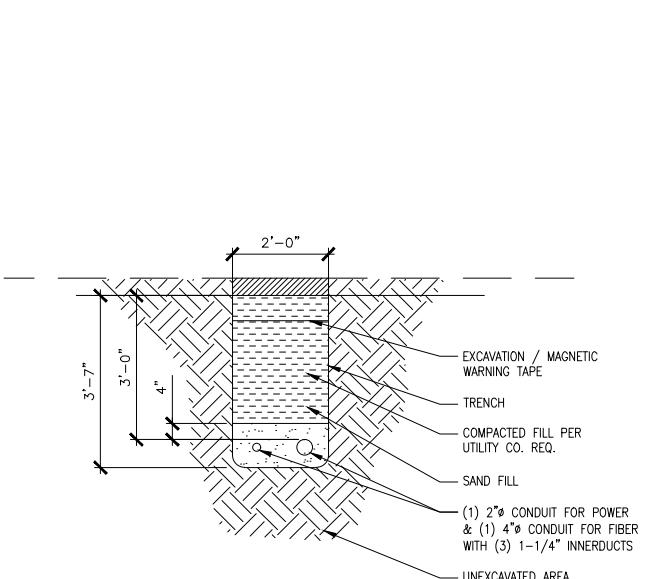
2 (N) 6160 CABINET DETAIL

SCALE: NOT TO SCALE



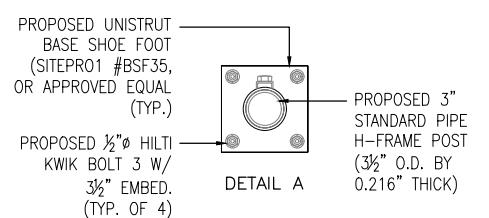
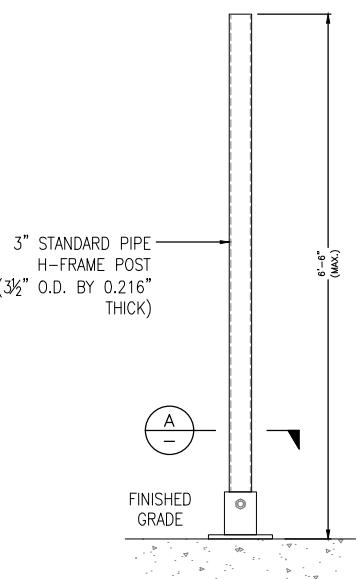
3 (N) EQUIPMENT CABINET MOUNTING DETAIL

SCALE: NOT TO SCALE



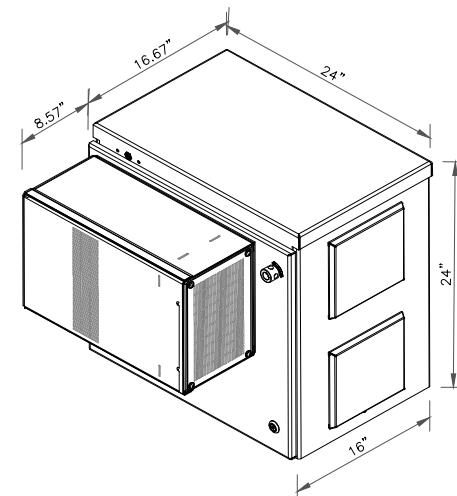
4 (N) CONDUIT TRENCH DETAIL

SCALE: NOT TO SCALE



5 (N) POST DETAIL

SCALE: NOT TO SCALE



6 (N) AAV DETAIL

SCALE: NOT TO SCALE

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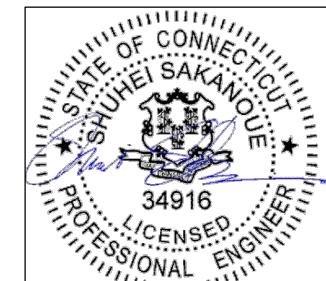
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EXISTING 139'-6" MONOPOLE

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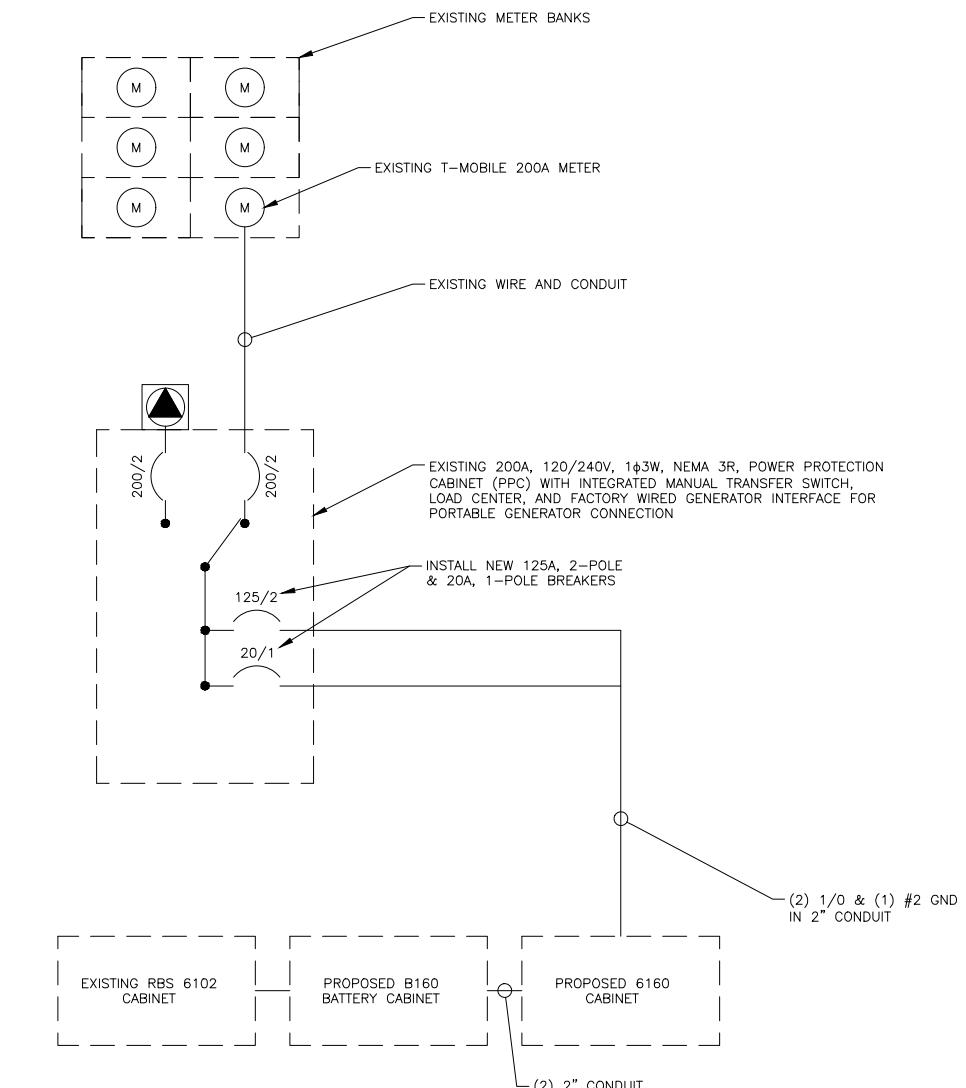


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SHEET NUMBER: E-1 **REVISION:** 0

NOTES:

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



T-MOBILE PANEL SCHEDULE

MAIN: 200A MAIN BREAKER		VOTAGE/PHASE: 120/240V, 1-PHASE, 3-WIRE			SHORT CIRCUIT CURRENT RATING: --								
MOUNTING: INSIDE PPC ENCLOSURE		ENCLOSURE: NEMA 3R			SURGE PROTECTION DEVICE: YES								
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	PHASE LOADS (VA)		CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION		
SURGE SUPPRESSION		NC	60	1	180		2	20	NC	180	TELCO		
				3	3500		4	125		3500	6160		
				5	3500		6			3500			
BTS GROWTH	3500	C	60	9	7000		10	100	C	3500	6102		
	3500			11	7000		12			3500			
	3500			13	3500		14						
UMTS	3500	C	60	15	3500		16						
	3500			17	0		18						
	3500			19	0		20						
				21	0		22						
				23	0		24						
BASE LOAD (VA) =		14180	14180										
25% OF CONTINUOUS LOAD (VA) =		2125	2125										
TOTAL LOAD (VA) =		16305	16305										
TOTAL LOAD (A) =		136	136										
C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD													
NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS FOR EQUIPMENT CABINETS THEREFORE THE CABINET LOADS SHOWN ARE ESTIMATED VALUES.													

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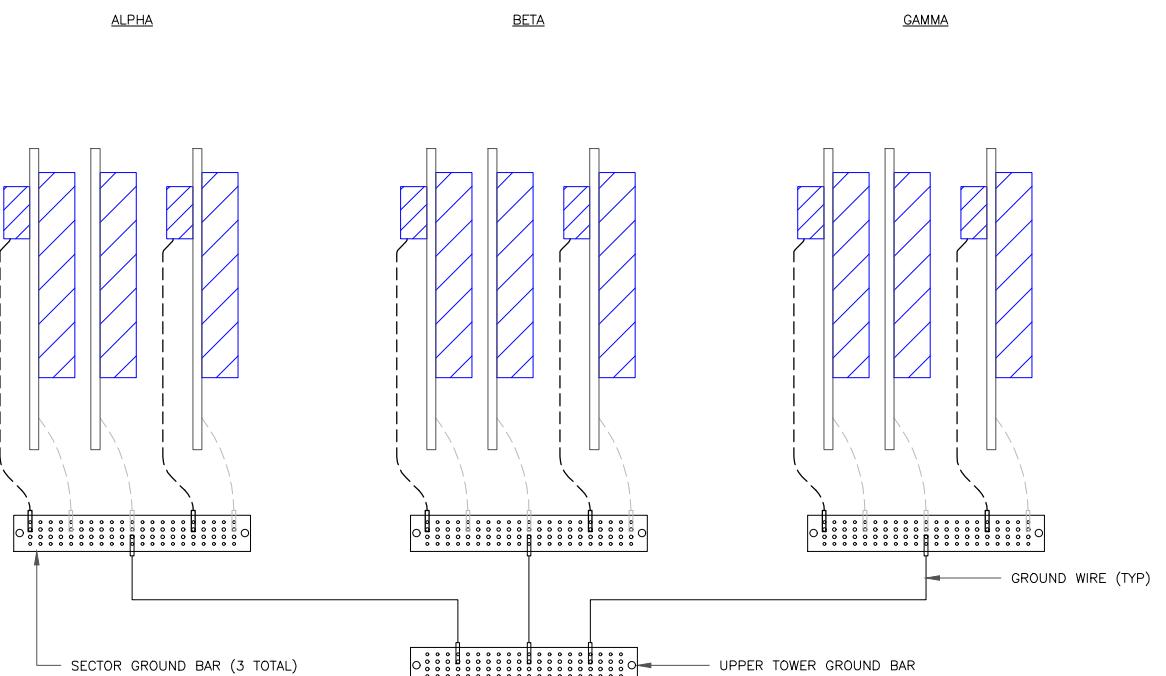
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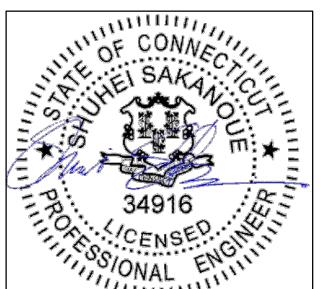
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1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

NOTE:

ALL NEW GROUNDS TO BE #6 STRANDED COPPER WITH GREEN INSULATION UNLESS NOTED OTHERWISE.



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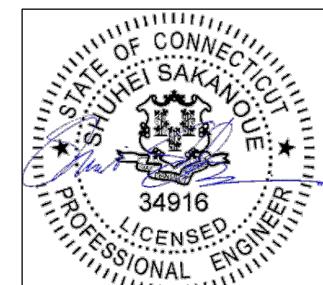
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EXISTING 139'-6" MONOPOLE

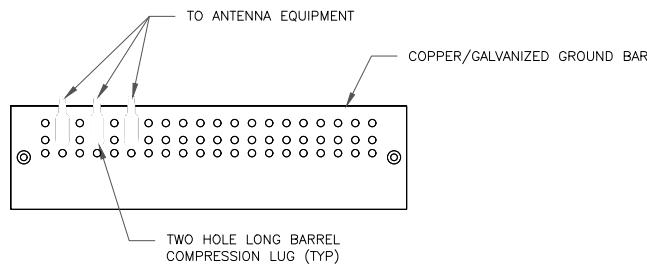
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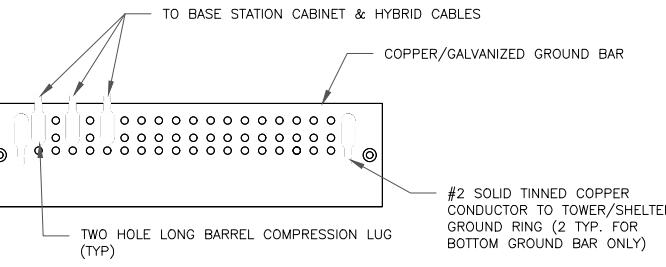


NOTES:

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

1 ANTENNA SECTOR GROUND BAR DETAIL

SCALE: NOT TO SCALE

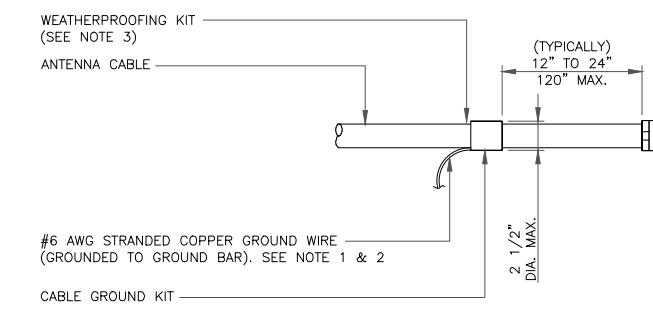


NOTES:

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

2 TOWER/SHELTER GROUND BAR DETAIL

SCALE: NOT TO SCALE

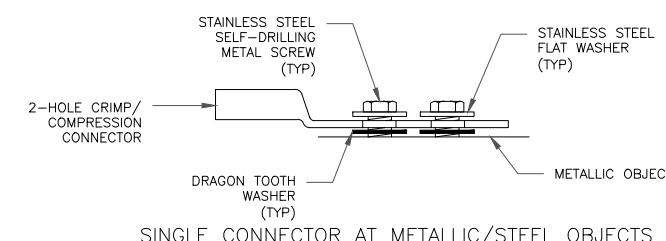
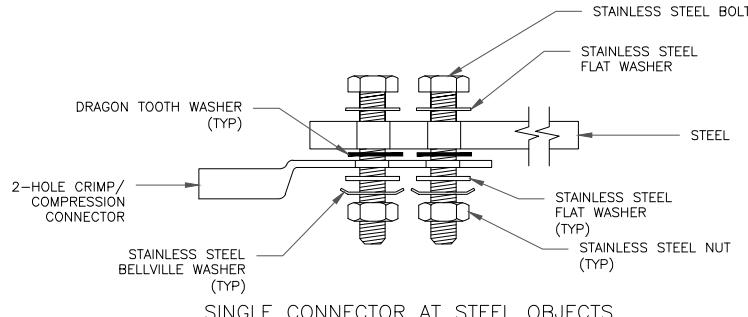
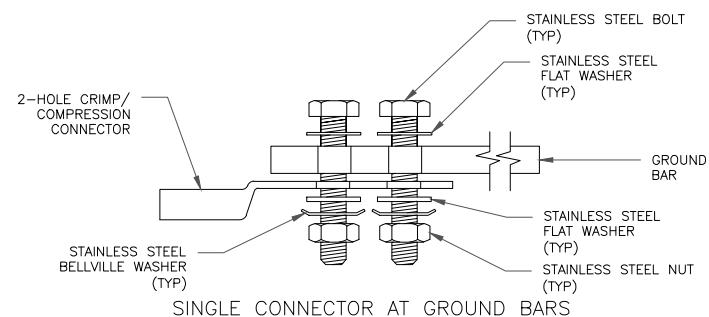


NOTES:

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

3 CABLE GROUND KIT CONNECTION

SCALE: NOT TO SCALE



4 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS

SCALE: NOT TO SCALE

5 NOT USED

SCALE: NOT TO SCALE

6 NOT USED

SCALE: NOT TO SCALE