

Plan Commission Meeting Monday, February 6, 2023 6:00 pm

Location of Meeting: 96 Russell Drive

Meeting Minutes

- 1. Call to Order, Roll Call: Chairman Mike San Felippo called the meeting to order at 6:00 pm. Commission members present included Mike San Felippo, Elizabeth Manian, Barbara Ruege, John Schluechtermann, Randy Soerens, and Peter Lederer. Village employees present were Clerk/Treasurer Stephanie Waala. For additional attendees see attached sign-in sheet.
- 2. Discussion and Possible Action to approve the minutes of the January 16, 2023 meeting.

Member Manian made a motion to approve as submitted, motion seconded by Member Schluechtermann. Motion carried 6-0.

3. Discussion and Possible Recommendation to the Village Board to approve a final plat for the Woodland View subdivision submitted by the Scholler Development, LLC.

Engineer Aaron Groh informed the board that changes has been made to the final plat and after review is satisfactory. It was determined not to extend Orth Dr to the west because it could cause potential of lot losage if further development is done to the property to the north.

Member Schluechtermann asks for clarification on the Additional Easement Detail drawing as the lot numbers do not correspond with the larger drawing. It was determined that parcel listed 38 should be listed as 39 and correspond continually to parcel 32.

Member Soerens made a motion to approve as submitted with directive to correct the lot numbering, motion was seconded by member Manian. Motion carried 6-0.

4. Adjourn: meeting was adjourned at 6:13 pm.



P.O. Box 344 • 96 Russell Drive • Random Lake, WI 53075 Phone: (920) 994-4852 • Fax: (920) 994-2390

Commercial & Industrial Permit Application

W 5009 hwy 144	4 , Random La			Date 02/06/23	Permit#		
Owner's Name		Phone Number	Contact's Name (When Relevant) Christina Wilburn on behalf of 3025 Highland		Phone Nu		
Global Signal A Owner's Address (if differe	ent from above)	301-283-2828	Downers Glove	d Parkway, 4th Floor ve, IL 60515		28-4388	
PO Box 277455 Atlan	ıta		City Atlanta	State GA	Zip Code 30384		
Contractor's Name		License Number	Contractor's Contact Name	<u> </u>	Phone Nu	mber	
VOX COMMUNICATIO Contractor's Address	ONS LLC			@vox-line.com	215-38	35-2738	
10871 Bustleton Avenue,			City Philadelphia	State PA	Zip Code 19116		
lt.	is the responsibility of required inspe inspection fee	of the permit holder to ections If the inspector will be charged.	o arrange for appointment times when ent r cannot access the work site or if the wo	try is available for took is not visible, a	he re-		
Use of Building	Type of Work		Item	2200	Fee	Amount	
☑ Commercial	□ New						
☐ Industrial	☐ Addition			+	-		
	☑ Alteration/Repair	Decks & Porches		+	.20/sq. ft.		
		Fences		+ +			
		Accessory Building	J.C.		\$50.00 20/sq. ft. or		
			در	\$	20/sq ft or 30 minimum		
		Re-Roof			\$ 100.00		
		Pools			\$ 100.00		
		Erosion Control – P			\$ 150.00		
		Erosion Control – Ir	nspection		\$ 150.00		
		Additional Inspection	on – Call Back - Erosion		\$ 475.00		
Required for exterior design, apportunity apportunity for fences, accessory but		Architectural Review			\$ 45.00	.00 45-100	
pools, etc		Plan Commission R	.eview	š.	\$ 45.00 45.60 \$ 45.00		
Required for new construction, ac accessory buildings, etc.		Zoning Permit			\$ 45.00		
Refer to current connection ra	ate schedule w/DPW	Sewer Connection F	lee		Refer to		
		Re-inspection Fee			\$ 75.00		
		Construction & HVA	AC permit fees shall be 75% of the fWI fee schedule.				
		State of WI fee schee	es shall be 75% of the most current				
Note: If any work is commenced obtained, the fees shall be doubled	d with no exceptions.	en					
I attest that the above information	on accurately describes the onsin codes applicable to the	the occupancy and work state	rk to be performed on it. I agree to comply with all ed above, I understand that any false misinformation ${\bf r}$	ll Village of n may result	Sub Total:		
			Base Fee:	(Add to Subtotal)		\$40.00	
			Total:			-	
Applicant Signature		Print Name	J.	Date			
Office use only Permit Paid By:				Date			

Christina wilburna crown castle com



3025 Highland Pkwy Suite 510 Downers Grove, IL 60515

Phone: (773) 628-4388 www.crowncastle.com

February 6, 2023

WI - VILLAGE OF RANDOM LAKE BUILDING DEPT 96 RUSSELL DRIVE RANDOM LAKE, WI 53075

Via Mail

*******NOTICE OF ELIGIBLE FACILITIES REQUEST********

RE: Request for Minor Modification to Existing Wireless Facility - Section 6409

Site Address: W 5009 Hwy 144, Random Lake, WI 53075 Crown Site Number: 878349 / Crown Site Name: JUNG BEER Customer Site Number: ML81125A / Application Number: 620275

Attention BUILDING DEPT:

On behalf of Sprint Spectrum LLC, f/k/a Sprint Spectrum L.P. ("Sprint PCS" or "Applicant"), Crown Castle USA Inc. ("Crown Castle") is pleased to submit this request to modify the existing wireless facility noted above through the collocation, replacement and/or removal of the Applicant's equipment as an eligible facilities request for a minor modification under Section 6409¹ and the rules of the Federal Communications Commission ("FCC").²

Section 6409 mandates that state and local governments must approve any eligible facilities request for the modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station. Under Section 6409, to toll the review period, if the reviewing authority determines that the application is incomplete, it must provide written notice to the applicant within 30 days, which clearly and specifically delineates all missing documents or information reasonably related to whether the request meets the federal requirements.³ Additionally, if a state or local government, fails to issue any approvals required for this request within 60 days, these approvals are deemed granted. The FCC has clarified that the 30-day and 60-day deadlines begins when an applicant: (1) takes the first step required under state or local law; and (2) submits information sufficient to inform the jurisdiction that this modification qualifies under the federal law⁴. Please note that with the submission of this letter and enclosed items, the thirty and sixty-day review periods have started. Based on this filing, the deadline for written notice of incomplete application is March 8, 2023, and the deadline for issuance of approval is April 7, 2023.

¹ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6409 (2012) (codified at 47 U.S.C. § 1455).

² Acceleration of Broadband Deployment by Improving Wireless Facility Siting Policies, 29 FCC Rcd. 12865 (2014) (codified at 47 CFR § 1.6100); and Implementation of State & Local Governments' Obligation to Approve Certain Wireless Facility Modification Requests Under Section 6409(a) of the Spectrum Act of 2012, WT Docket No. 19-250 (June 10, 2020).

³ See 47 CFR § 1.6100 (c)(3). ⁴ See 2020 Upgrade Order at paragraph 16.



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The proposed scope of work for this project includes:

Add or replace antennas and ancillary equipment as per plans for an existing carrier on an existing wireless communication facility.

At the end of this letter is a checklist of the applicable substantial change criteria under Section 6409. Additionally, please find enclosed the following information in support of this request:

- (1) Permit Application;
- (2) Construction Drawings;
- (3) Structural Analysis; and
- (4) Section 6409 Substantial Change Checklist.

As these documents indicate, (i) the modification involves the collocation, removal or replacement of transmission equipment; and (ii) such modification will not substantially change the physical dimensions of such tower or base station. As such, it is an "eligible facilities request" as defined in the FCC's rules to which the 60-day deadline for approval applies. Accordingly, Applicant requests all authorization necessary for this proposed minor modification under Section 6409.

Our goal is to work with you to obtain approvals earlier than the deadline. We will respond promptly to any request for related information you may have in connection with this request. Please let us know how we can work with you to expedite the approval process. We look forward to working with you on this important project, which will improve wireless telecommunication services in your community using collocation on existing infrastructure. If you have any questions, please do not hesitate to contact me.

Regards,

Christina Wilburn

Christina Wilburn
Site Acquisition Specialist
Crown Castle, Agent for Applicant
(773) 628-4388
Christina.Wilburn@crowncastle.com



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Section 6409 Substantial Change Checklist Towers Outside of the Public Right of Way

The Federal Communications Commission has determined that a modification substantially changes the physical dimension of a wireless tower or base station under 47 U.S.C. § 1455(a) if it meets one of six enumerated criteria under 47 C.F.R. § 1.6100.

Criteria for Towers Outside the Public Rights of Way

YES/NO	Does the modification increase the height of the tower by more than the greater of:
NO	(a) 10%
110	(b) or, the height of an additional antenna array plus separation of up to 20 feet from the top of
	the nearest existing antenna?
YES/NO	Does the modification add an appurtenance to the body of the tower that would protrude from the
NO	edge of the tower more than 20 feet or more than the width of the tower structure at the level of the
	appurtenance, whichever is greater?
YES/NO	Does the modification involve the installation of more than the standard number of new equipment
NO	cabinets for the technology involved or add more than four new equipment cabinets?
YES/NO	Does the modification entail any excavation or deployment outside the current site by more than 30
NO	feet in any direction, not including any access or utility easements?
YES/NO	Does the modification defeat the concealment elements of the eligible support structure?
NO	
YES/NO	Does the modification violate conditions associated with the siting approval with the prior approval the
NO	tower or base station other than as specified in 47 C.F.R. § 1.6100(c)(7)(i) – (iv)?

If all questions in the above section are answered "NO," then the modification does <u>not</u> constitute a substantial change to the existing tower under 47 C.F.R. § 1.6100.

Date: January 13, 2023



Subject:

Structural Analysis Report

Carrier Designation:

Site Number: Site Name: ML81125A ML33XR049

Crown Castle Designation:

BU Number: Site Name: JDE Job Number: Work Order Number:

Order Number:

878349 JUNG BEER 720045 2193158 620275 Rev. 0

Engineering Firm Designation:

Black & Veatch Corp. Project Number:

406642

Site Data:

W 5009 hwy 144, Random Lake, Sheboygan County, WI 53075

Latitude 43° 33' 52", Longitude -87° 56' 34.81"

145 Foot - Self Support Tower

Black & Veatch Corp. is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above-mentioned tower.

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

LC5: Proposed Equipment Configuration

Sufficient Capacity

This analysis utilizes an ultimate 3-second gust wind speed of 115 mph as required by the 2015 International Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Vinaykumar P. / Khushal Patel

Respectfully submitted by:

Ping Jiang, P.E. Professional Engineer



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1) INTRODUCTION

This tower is a 145 ft Self Support tower designed by Sabre Communications Corporation.

2) ANALYSIS CRITERIA

TIA-222 Revision:

TIA-222-H

Risk Category:

11

Wind Speed:

115 mph

Exposure Category:

C ...

Topographic Factor:

1

Ice Thickness:

1.5 in

Wind Speed with Ice: Seismic Ss:

40 mph

Seismic S1:

0.071

Service Wind Speed:

0.041 60 mph

Seismic Loading:

Does not control per engineering judgement

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)	
		2	commscope	HCS 2.0 Part 1			
		3	nokia	AHFIG_TMO			
	153.0	3	nokia	AHLOA_T-MOBILE			
151.0		3	samsung telecommunications	RRH-P4	2	Line	
131.0	131.0		3	commscope	FFV4-65C-R3-V1_TMO w/ Mount Pipe	2	1 1/2
	151.0	3	nokia	AEHC w/ Mount Pipe	-j	Ì	
		1	cci tower mounts (v2.1)	Platform Mount [14.4' LP 603-1]			

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Reference	Source	
4-GEOTECHNICAL REPORTS	1557593	CCISITES	
I-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	2054437	CCISITES	
4-TOWER MANUFACTURER DRAWINGS	2054439	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. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary) (Self Support Tower)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	145 - 140	Leg	P2x.154	3	-9.08	33.20	27.4	Pass
T2	140 - 120	Leg	P2.5x,203	15	-34.36	60.05	57.2	Pass
Т3	120 - 100	Leg	P3x.3	45	-50.35	116.14	43.4	Pass
T4	100 - 80	Leg	P3.5x.318	75	-62.80	148.90	42.2	Pass
T5	80 - 60	Leg	P4x.337	102	-74.28	167.91	44.2	Pass
T6	60 - 40	Leg	P5x.375	123	-86.68	251.36	34.5	Pass
T7	40 - 20	Leg	P6x.28	144	-99.27	240.27	41.3	Pass
T8	20 - 0	Leg	P6x.432	165	-111.06	318.94	34.8	Pass
T1	145 - 140	Diagonal	L1 3/4x1 3/4x3/16	12	-2.67	13.69	19.5	Pass
T2	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	21	-2.95	13.82	21.3	Pass
Т3	120 - 100	Diagonal	L1 3/4x1 3/4x3/16	51	-1.53	9.42	16.3	Pass
T4	100 - 80	Diagonal	L1 3/4x1 3/4x3/16	78	-1.70	6.51	26,1	Pass
T5	80 - 60	Diagonal	L2x2x3/16	105	-2.13	6.19	34.5	Pass
T6	60 - 40	Diagonal	L2 1/2x2 1/2x3/16	126	-2.43	9.58	25.3	Pass
T7	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	147	-2.80	7.60	36.8	Pass
Т8	20 - 0	Diagonal	L3x3x3/16	168	-3.54	9.01	39.3	Pass
T1	145 - 140	Top Girt	C7x9.8	6	0.54	92.92	0.6	Pass
T2	140 - 120	Top Girt	L1 3/4x1 3/4x3/16	17	-0.60	7.66	7.8	Pass
T3 120 - 100	Top Girt	L1 3/4x1 3/4x3/16	47	-0.87	7.84	11.1	Pass	
						Summary		
						Leg (T2)	57.2	Pass
						Diagonal (T8)	39.3	Pass
						Top Girt (T3)	11,1	Pass
						Bolt Checks	29.1	Pass
						Rating =	57.2	Pass

Table 4 - Tower Component Stresses vs. Capacity (Self Support Tower) - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	32.8	Pass
1	Base Foundation (Structure)		24.5	Pass
1	Base Foundation (Soil Interaction)	-j 0	56.4	Pass

Structure Rating (max from all components) =	57.2%

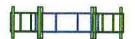
Note:

4.1) Recommendations

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

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

APPENDIX A TNXTOWER OUTPUT



Section	9T	41	8 <u>1</u>	ā	ā	57	12	E
Legs	P6x,432	P6x.28	P5x,375	P4x,337	P3.5x,318	P3x3	P2 5x 203	P2x.154
Leg Grade				A572-50				
Diagonals	L3x3x3/16	X1121	L2 1/2x2 1/2x3/16	L2x2x3/16		L1 3/4×1 3/4×3/16	k3/16	
Diagonal Grade				A36				
Top Girts			Ϋ́N				L1 3/4×1 3/4×3/16	C7x9.8
Face Width (ft) 17	15		13	11		2		us
# Panels @ (fl)	2@10		6 @ 6 66667			13 @ 5		
Weight (K) 11.9	27	2.1	2.1	1.5	8.1	p.	90	03
<u>0.0 fl</u>		20.0 ft	40.0 ft	60,0 ft	80.0 ft	100.0 ft	120.0 ft	145.0 ft

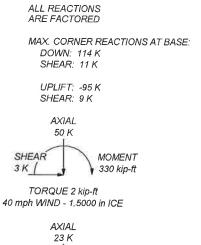
MATERIAL STRENGTH

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

TOWER DESIGN NOTES

 Tower is located in Sheboygan County, Wisconsin.
 Tower designed for Exposure C to the TIA-222-H Standard.
 Tower designed for a 115 mph basic wind in accordance with the TIA-222-H Standard.
 Tower is also designed for a 40 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
Deflections are based upon a 60 mph wind.

Tower Risk Category II.
 Topographic Category 1 with Crest Height of 0.00 ft
 TOWER RATING: 57.2%



MOMENT

1569 kip-ft

BLACK & VEATCH

SHEAR!

TORQUE 9 kip-ft REACTIONS - 115 mph WIND

18K /

 \triangle

Black & Veatch Corp. 11401 Lamar Avenue Building a world of difference: Overland Park, KS 66211 Phone: (913) 458-6909 FAX: (913) 458-8136

Job: JUNG BEER (Project: 406642 (87834	(BU#878349) 19.2193158)	
Client: Crown Castle	Drawn by: Khushal Patel	App'd:
Code: TIA-222-H	Date: 01/13/23	Scale: NTS
Path:		Dwg No. E-1

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 145.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 5.00 ft at the top and 17.00 ft at the base.

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

The following design criteria apply:

- Tower is located in Sheboygan County, Wisconsin.
- Tower base elevation above sea level: 898.00 ft.
- Basic wind speed of 115 mph.
- Risk Category II.
- Exposure Category C.
- Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- Topographic Category: 1.
- Crest Height: 0.00 ft.
- Nominal ice thickness of 1.5000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 40 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Tower analysis based on target reliabilities in accordance with Annex S.
- Load Modification Factors used: Kes(Fw) = 0.95, Kes(ti) = 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 Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification

- √ Use Code Stress Ratios
- √ Use Code Safety Factors Guys Escalate Ice Always Use Max Kz Use Special Wind Profile

Include Bolts In Member Capacity

Leg Bolts Are At Top Of Section
Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
SR Members Have Cut Ends
SR Members Are Concentric

Distribute Leg Loads As Uniform Assume Legs Pinned

- √ Assume Rigid Index Plate
- ✓ Use Clear Spans For Wind Area
 ✓ Use Clear Spans For KL/r
- Retension Guys To Initial Tension

 √ Bypass Mast Stability Checks
- Use Azimuth Dish Coefficients
- √ Project Wind Area of Appurt.

Autocalc Torque Arm Areas

Add IBC .6D+W Combination

Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs

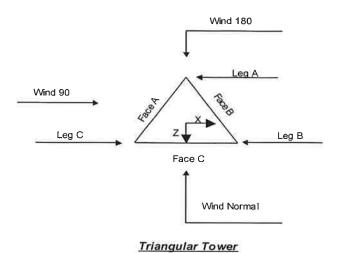
Use ASCE 10 X-Brace Ly Rules

- √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA
- √ SR Leg Bolts Resist Compression
 All Leg Panels Have Same Allowable
 Offset Girt At Foundation
- √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption
 Use TIA-222-H Tension Splice

Use TIA-222-H Tension Splice Exemption

Poles

Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known



Tower	Section	Geometry
104461	Section	Geometi v

Tower	Tower	Assembly	Description	Section	Number	Section
Section	Elevation	Database		Width	of	Length
					Sections	
	ft			ft		ft
T1	145.00-140.00			5.00	1	5.00
T2	140.00-120.00			5.00	1	20.00
T3	120,00-100.00			5.00	1	20.00
T4	100.00-80.00			7.00	1	20.00
T5	80.00-60.00			9.00	1	20.00
T 6	60.00-40.00			11.00	1	20.00
T7	40.00-20.00			13.00	1	20.00
T8	20.00-0.00			15.00	1	20.00

Tower Section Geometry (cont'd)

Tower	Tower	Diagonal	Bracina	Has	Has	Ton Cirt	Deltom Cir
						Top Girt	Bottom Gir
Section	Elevation	Spacing	Туре	K Brace	Horizontals	Offset	Offset
				End			
	ft	ft		Panels		in	in
T1	145.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T2	140.00-120.00	5.00	X Brace	No	No	0.0000	0.0000
Т3	120.00-100.00	5.00	X Brace	No	No	0.0000	0.0000
T4	100.00-80.00	5.00	X Brace	No	No	0.0000	0.0000
T5	80.00-60.00	6.67	X Brace	No	No	0.0000	0.0000
T6	60.00-40.00	6.67	X Brace	No	No	0.0000	0.0000
T7	40.00-20.00	6.67	X Brace	No	No	0.0000	0.0000
T8	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 145.00- 140.00	Pipe	P2x.154	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36
T2 140,00- 120.00	Pipe	P2.5x.203	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	(36 ksi) A36 (36 ksi)
T3 120.00- 100.00	Pipe	P3x.3	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 100.00- 80.00	Pipe	P3.5x.318	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T5 80.00-60.00	Pipe	P4x.337	A572-50 (50 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T6 60.00-40.00	Pipe	P5x.375	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 40.00-20.00	Pipe	P6x.28	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	` A36 ´
T8 20.00-0.00	Pipe	P6x.432	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	(36 ksi) A36 (36 ksi)

		Tower Sec	tion Ge	ometry (co	nt'd)	
Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 145.00- 140.00	Channel	C7x9.8	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T2 140.00- 120.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)
T3 120.00- 100.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Equal Angle		A36 (36 ksi)

			Tower Se	ection Ge	eomet	r y (cont'd	1)		
Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _t	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 145.00- 140.00	0.00	0.3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000
T2 140.00- 120.00	0.00	0.3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000
T3 120.00- 100.00	0.00	0.3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000
T4 100.00- 80.00	0.00	0,3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000
T5 80.00- 60.00	0.00	0.3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000
T6 60.00- 40.00	0.00	0.3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000
T7 40.00- 20.00	0.00	0.3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000
T8 20.00-0.00	0.00	0.3750	A36 (36 ksi)	1.05	1	1.05	0.0000	0.0000	0.0000

Tower	Section	Geometry	(cont'd))

Tower Elevation	Calc K Single	Calc K Solid	Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
	Angles	Rounds		X	X	X	X	X	X	X
ft				Y	Y	Y	Y	Y	Y	Y
T1 145.00-	Yes	Yes	1	1	1	1	1	1	1	1
140.00				1	1	1	1	1	1	4
T2 140.00-	Yes	Yes	1	1	1	1	1	1	1	1
120.00			**	1	1	1	i	i	â	ાં
T3 120.00-	Yes	Yes	1	1	1	1	1	1	i	4
100.00				1	1	1	4	4	1	4
T4 100.00-	Yes	Yes	1	i	i	i	4	i	•	4
80.00)2	1	- 4	i	197	4	4	
T5 80.00-	Yes	Yes	1	i	i	1	4	4	4	4
60.00		. 00		1	- 1	1	4	3	4	1
T6 60.00-	Yes	Yes	4	1	â	1	10/	1	4	3
40.00	100	100	65	1	4	1		1	2	
T7 40.00-	Yes	Yes	4	1		1	1		1	3
20.00	103	163	1	1	1	1	3	3	3	7
	V	V		ļ	1	1	1	1	1	1
T8 20.00-	Yes	Yes	1	1	1	1	1	1	1	1
0.00				1	1	1	1	1	1	- 1

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

Tower Elevation ft	Leg		Diagonal		Тор С	Top Girt		Bottom Girt		Mid Girt		rizontal	Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 145.00- 140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00- 120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 120.00- 100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100,00- 80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00- 60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00- 40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00- 20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0,75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redund Horizoi		Redun Diago		Redundar Diagoi		Redunda Horizo		Redur Vert		Redund	ant Hip	Redunda Diago	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 145.00- 140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00- 120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 120.00- 100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100.00- 80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00- 60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redund Horizo		Redun Diago		Redundan Diagoi		Redunda Horizo		Redur Vert		Redund	ant Hip	Redunda Diago	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct In	U	Net Width Deduct In	υ	Net Width Deduct in	U
T6 60.00- 40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00- 20.00 T8 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75 0.75	0.0000	0,75 0.75	0.0000	0.75 0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagor	nal	Top G	Top Girt		Bottom Girt		Mid Girt		zontal	Short Horizontal	
		Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.	Bolt Size	No.
		in		in		in		in		in		in		in	
T1 145,00-	Flange	0.7500	4	0.6250	1	0.6250	3	0.6250	0	0.6250	0	0.6250	0	0.6250	0
140.00		A325X		A325X		A325X		A325X		A325N		A325X		A325N	
T2 140,00-	Flange	0.7500	4	0.6250	1	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
120.00		A325X		A325X		A325X		A325X		A325N		A325X		A325N	
T3 120.00-	Flange	1.0000	4	0.6250	1	0.6250	1	0.7500	0	0.6250	0	0.6250	0	0.6250	0
100.00		A325X		A325X		A325X		A325X		A325N		A325X		A325N	
T4 100.00-	Flange	1.0000	4	0.6250	1	0.6250	0	0.7500	0	0.6250	0	0.6250	0	0.6250	0
80.00		A325X		A325X		A325X		A325X		A325N		A325X		A325N	
T5 80.00-	Flange	1.2500	4	0.6250	1	0.6250	0	0.7500	0	0.6250	0	0.6250	0	0.6250	1
60.00		A325X		A325X		A325X		A325X		A325N		A325X		A325N	
T6 60.00-	Flange	1.2500	4	0.6250	1	0.6250	0	0.7500	0	0.6250	0	0.6250	0	0.6250	1
40.00		A325X		A325X		A325X		A325X		A325N		A325X		A325N	
T7 40.00-	Flange	1.2500	6	0.7500	1	0.6250	0	0.7500	0	0.6250	0	0.6250	0	0.6250	1
20.00		A325X		A325X		A325X		A325X		A325N		A325X		A325N	
T8 20.00-0.00	Flange	1,5000	0	0.7500	1	0.6250	0	0,7500	0	0.6250	0	0.6250	0	0.6250	1
		A325X		A325X		A325X		A325X		A325N		A325X		A325N	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or	Allow Shield	Exclude From	Componen	Placement	Face Offset	Lateral Offset	#	#	Clear	Width or Diameter	Perimete r	Weight
	Leg	Ornera	Torque	Туре	ft	in	(Frac FW)		Row	g	in		plf
			Calculation							in		in	
Climbing Ladder (Af)	В	No	No	Af (CaAa)	145.00 - 0.00	0.0000	0	1	1	3.0000	3.0000		8.40
Safety Line 3/8	В	No	No	Ar (CaAa)	145.00 - 0.00	0.0000	0.01	1	1	0.3750	0.3750		0.22
Feedline Ladder (Af)	В	No	No	Af (CaAa)	145.00 - 0.00	0.0000	-0.45	1	1	3.0000	3.0000		8.40
HCS 2.0 Part 3(1-1/2) *****	В	No	No	Ar (CaAa)	145.00 - 0.00	0.0000	-0.431	2	2	0.5000	1.5500		1.71

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or	Allow Shield		Componen t	Placement	Total Number	C_AA_A	Weight
	Leg	Ciliola	Torque	Type	ft	rvamber	ft²/ft	plf
			Calculation					

Description	Face	Allow	Exclude	Componen	Placement	Total	$C_A A_A$	Weight
	or	Shield	From	t		Number		•
	Leg		Torque	Type	ft		ft²/ft	plf
			Calculation)				

Feed Line/Linear Appurtenances Section Areas

Tower Sectio	Tower Elevation	Face	A_R	A_F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft		ft ²	ft ²	ft ²	ft ²	K
T1	145.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	6.738	0.000	0.10
		С	0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	26.950	0.000	0.41
		С	0.000	0.000	0.000	0.000	0.00
T3	120.00-100.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	26.950	0.000	0.41
		С	0.000	0.000	0.000	0.000	0.00
T4	100.00-80,00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	26.950	0.000	0.41
		С	0.000	0.000	0.000	0.000	0.00
T5	80.00-60.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	26.950	0.000	0.41
		С	0.000	0.000	0.000	0.000	0.00
T6	60.00-40.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	26.950	0.000	0.41
		С	0.000	0.000	0.000	0.000	0.00
T7	40.00-20.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	26.950	0.000	0.41
		С	0.000	0.000	0.000	0.000	0.00
T8	20.00-0.00	Α	0.000	0.000	0.000	0.000	0.00
		В	0.000	0.000	26.950	0.000	0.41
		С	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio	Tower Elevation	Face or	lce Thickness	A_R	A_F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft	Leg	in	ft ²	ft ²	ft ²	ft ²	K
T1	145.00-140.00	Α	1.476	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	14.583	0.000	0.26
		С		0.000	0.000	0.000	0.000	0.00
T2	140.00-120.00	Α	1.462	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	58.078	0.000	1.04
		С		0.000	0.000	0.000	0.000	0.00
Т3	120.00-100.00	Α	1.438	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	57.618	0.000	1.02
		С		0.000	0.000	0.000	0.000	0.00
T4	100.00-80.00	Α	1.410	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	57.077	0.000	1.01
		С		0.000	0.000	0.000	0.000	0.00
T5	80.00-60.00	Α	1.375	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	56.414	0.000	0.99
		С		0.000	0.000	0.000	0.000	0.00
T6	60.00-40.00	Α	1.329	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	55.553	0.000	0.96
		С		0.000	0.000	0.000	0.000	0.00
T 7	40.00-20.00	Α	1.263	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	54.299	0.000	0.93
		С		0.000	0.000	0.000	0.000	0.00

Tower Sectio	Tower Elevation	Face or	lce Thickness	A_R	A_F	C _A A _A In Face	C _A A _A Out Face	Weight
n	ft	Leg	in	ft ²	ft ²	ft ²	ft²	K
T8	20.00-0.00	Α	1.132	0.000	0.000	0.000	0.000	0.00
		В		0.000	0.000	51.813	0.000	0.86
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation	CP_X	CPz	CP _X Ice	CP _z Ice
	ft	in	in	in	in
T1	145.00-140.00	1.4183	-4.7832	1.8914	-5.4162
T2	140.00-120.00	1.9810	-6.4433	2.7257	-7.5976
T3	120.00-100.00	2.0855	-6.9153	2.9575	-8.4053
T4	100.00-80.00	2.4025	-8.1921	3.4577	-10.0833
T5	80.00-60.00	2.6965	-9.3571	3.9629	-11.7748
T6	60.00-40.00	2.5688	-9.1120	3.9565	-12.0187
T7	40.00-20.00	2.6754	-9.5819	4.0733	-12.5496
T8	20.00-0.00	2.9861	-10.7412	4.5216	-14.1918

Shielding Factor Ka

Tower	Feed Line	Description	Feed Line	Ka	Ka
Section	Record No.		Segment Elev.	No Ice	Ice
T1	1	Climbing Ladder (AD	140.00 -	0.6000	0.4000
''	'	Climbing Ladder (Af)	140.00 -	0.6000	0.4863
T1	2	Safety Line 3/8	140.00 -	0.6000	0.4863
1			145.00		
T1	3	Feedline Ladder (Af)	140.00 -	0.6000	0.4863
	_		145.00		
T1	5	HCS 2.0 Part 3(1-1/2)	140.00 -	0.6000	0.4863
T2	1	Olimbias I adday (AB)	145.00	0.6000	0.0000
12	' '	Climbing Ladder (Af)	120.00 - 140.00	0.0000	0.6000
T2	2	Safety Line 3/8	120,00 -	0.6000	0.6000
	_	caloty Eine or o	140.00	0.0000	0.0000
T2	3	Feedline Ladder (Af)	120.00 -	0.6000	0.6000
l		` '	140.00	ľ.	
T2	5	HCS 2.0 Part 3(1-1/2)	120.00 -	0.6000	0.6000
т.		00.11.1.11.486	140.00		
Т3	1	Climbing Ladder (Af)	100.00 -	0.6000	0.6000
T3	2	Safety Line 3/8	120.00 100.00 -	0.6000	0.6000
13	2	Salety Line Sid	120.00	0.0000	0.0000
Т3	3	Feedline Ladder (Af)	100.00 -	0.6000	0.6000
	_		120.00	0.0000	0.0000
T3	5	HCS 2.0 Part 3(1-1/2)	100.00 -	0.6000	0.6000
			120.00		
T4	1	Climbing Ladder (Af)	80.00 -	0.6000	0.6000
		0-5-1 13 0/0	100.00		0.0000
T4	2	Safety Line 3/8	80.00 -	0.6000	0.6000
T4	3	Feedline Ladder (Af)	100.00 80.00 -	0.6000	0.6000
'7	3	r ccuiine Ladder (Ai)	100.00	0.0000	0.0000
T4	5	HCS 2.0 Part 3(1-1/2)	80.00 -	0.6000	0.6000
	_	`	100.00	2.2200	7,,1130
T5	1	Climbing Ladder (Af)	60.00 -	0.6000	0.6000
	_		80.00		
T5	2	Safety Line 3/8	60.00 -	0.6000	0.6000
Į į	, ,		80.00		1

Tower	Feed Line	Description	Feed Line	Ka	K _a
Section	Record No.		Segment	No Ice	Ice
			Elev.		
T5	3	Feedline Ladder (Af)	60.00 -	0.6000	0.6000
	_		80.00		
T5	5	HCS 2.0 Part 3(1-1/2)	60.00 -	0,6000	0.6000
Т6		08-4-1-1-40	80.00		
10	1	Climbing Ladder (Af)	40.00 -	0.6000	0.6000
т6	2	Sofahi Lina 2/0	60.00	0.0000	0.0000
''	- 4	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
Т6	3	Feedline Ladder (Af)	40.00 -	0.6000	0.6000
	ĭ	r ccdiirie Ladder (Ai)	60.00	0.0000	0.6000
Т6	5	HCS 2.0 Part 3(1-1/2)	40.00 -	0.6000	0.6000
			60.00	0.0000	0.0000
T7	1	Climbing Ladder (Af)	20.00 -	0.6000	0.6000
		. ,	40.00		
T7	2	Safety Line 3/8	20.00 -	0.6000	0.6000
- ()			40.00		
T7	3	Feedline Ladder (Af)	20.00 -	0.6000	0.6000
	_		40.00		
T7	5	HCS 2.0 Part 3(1-1/2)	20.00 -	0.6000	0.6000
		0, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	40.00		
T8 T8	1	Climbing Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T8	2	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T8	5	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
10	5	HCS 2.0 Part 3(1-1/2)	0.00 - 20.00	0.6000	0.6000

			Disc	rete Tov	ver Loa	ds			
Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	×	ft		ft²	ft²	K
Lightning Rod 5/8"x4'	Α	From Leg	0.00 0.00 8.00	0,0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.25 0.66 0.97 1.49	0.25 0.66 0.97 1.49	0.00 0.01 0.01 0.03
6'x3" Mount Pipe	Α	From Leg	0.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.93 2.29 2.67 3.44	1.93 2.29 2.67 3.44	0.05 0.06 0.08 0.13
Sabre 5' Rotatable Section	С	None		0.0000	145.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.00 7.80 10.61 16.21	5.00 7.80 10.61 16.21	0.30 0.39 0.48 0.66
Platform Mount [14.4' LP 603-1]	С	None		0.0000	151.00	No Ice 1/2" Ice 1" Ice 2" Ice	41.78 48.63 56.16 73.94	41.78 48.63 56.16 73.94	2.12 2.87 3.76 5.93
(2) 6'x2" Mount Pipe	Α	From Face	4.00 0.00 0.00	0.0000	151.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.43 1.92 2.29 3.06	1.43 1.92 2.29 3.06	0.02 0.03 0.05 0.09
(2) 6'x2" Mount Pipe	В	From Face	4.00 0.00 0.00	0.0000	151.00	No Ice 1/2" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			ft ft ft		ft		ft²	ft²	К
			п			1" Ice	3.06	3.06	0.09
(2) 6'x2" Mount Pipe	С	From Face	4.00	0.0000	454.00	2" Ice	4.40	4.40	
(2) 0 X2 Modrit Tipe	C	FIUITFACE	4.00 0.00	0.0000	151.00	No Ice 1/2"	1.43 1.92	1.43 1.92	0.02 0.03
			0.00			Ice	2.29	2.29	0.05
401.011.44						1" Ice 2" Ice	3.06	3.06	0.09
10'x2" Mount Pipe	Α	From Face	4.00	0.0000	151.00	No Ice	2.38	2.38	0.04
			0.00			1/2"	3.40	3.40	0.05
			0.00			lce 1" lce	4.45 5.91	4.45	0.08
						2" Ice	5.91	5.91	0.15
10'x2" Mount Pipe	В	From Face	4.00	0.0000	151.00	No Ice	2.38	2.38	0.04
•			0.00	-		1/2"	3.40	3.40	0.05
			0.00			Ice	4.45	4.45	0.08
						1" Ice	5.91	5.91	0.15
1050 Mount Dina	0	F F	4.00	0.0000	151.00	2" Ice			
10'x2" Mount Pipe	С	From Face	4.00	0.0000	151.00	No Ice	2.38	2.38	0.04
			0.00 0.00			1/2"	3.40	3.40	0.05
			0.00			lce 1" Ice	4.45 5.91	4. 45 5.91	0.08 0.15
						2" Ice	3.31	3.31	0.15
FFV4-65C-R3-V1_TMO w/	Α	From Face	4.00	0.0000	151.00	No Ice	12.97	6.20	0.18
Mount Pipe			0.00			1/2"	13.62	6.77	0.31
			0.00			Ice	14.27	7.36	0.46
F5) // 040 B0 // F1/5	_					1" Ice 2" Ice	15.62	8.57	0.81
FFV4-65C-R3-V1_TMO w/	В	From Face	4.00	0.0000	151.00	No Ice	12.97	6.20	0.18
Mount Pipe			0.00			1/2"	13.62	6.77	0.31
			0.00			Ice 1" Ice 2" Ice	14.27 15.62	7.36 8.57	0.46 0.81
FFV4-65C-R3-V1_TMO w/	С	From Face	4.00	0.0000	151.00	No Ice	12.97	6.20	0.18
Mount Pipe			0.00			1/2"	13.62	6.77	0.31
			0.00			Ice	14.27	7.36	0.46
						1" Ice 2" Ice	15.62	8.57	0.81
AEHC w/ Mount Pipe	Α	From Face	4.00	0.0000	151.00	No Ice	6.91	2.77	0.11
			0:00			1/2"	7.40	3.15	0.16
			0.00			lce	7.91	3.55	0.22
						1" Ice	8.99	4.39	0.36
AEHC w/ Mount Pipe	В	From Face	4.00	0.0000	151.00	2" Ice	0.04	0.77	0.44
/ Life W/ Modific ripe	Ь	1 TOTTI ACE	0.00	0.0000	151.00	No Ice 1/2"	6.91 7.40	2.77 3.15	0.11 0.16
			0.00			Ice	7.91	3.55	0.10
						1" Ice	8.99	4.39	0.36
AFILO (M. 10)	_					2" Ice			
AEHC w/ Mount Pipe	С	From Face	4.00	0.0000	151.00	No Ice	6.91	2.77	0.11
			0.00 0.00			1/2"	7.40	3.15	0.16
			0.00			Ice 1" Ice	7.91 8.99	3.55 4.39	0.22
						2" Ice	0.99	4.39	0.36
RRH-P4	Α	From Face	4.00	0.0000	151.00	No Ice	2.74	1.79	0.06
			0.00			1/2"	2.95	1.97	0.08
			2.00			Ice	3.17	2,16	0.11
						1" Ice 2" Ice	3.63	2.57	0.17
RRH-P4	В	From Face	4.00	0.0000	151.00	No Ice	2.74	1.79	0.06
			0.00			1/2"	2.95	1.97	0.08
			2.00			lce	3.17	2.16	0.11
DDU = :		_				1" lce 2" lce	3.63	2,57	0.17
RRH-P4	С	From Face	4.00	0.0000	151.00	No Ice	2.74	1.79	0.06
			0.00 2.00			1/2"	2.95	1.97	0.08
			∠.00			Ice	3.17	2.16	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustmen t	Placement		C _A A _A Front	C _A A _A Side	Weight
			ft ft ft	.9.	ft		ft²	ft ²	К
						1" Ice 2" Ice	3.63	2.57	0.17
AHFIG_TMO	Α	From Face	4.00 0.00	0.0000	151.00	No Ice 1/2"	3.08 3.32	1.47 1.66	0.07 0.09
			2.00			Ice 1" Ice 2" Ice	3.56 4.07	1.85 2.27	0.12 0.18
AHFIG_TMO	В	From Face	4.00 0.00	0.0000	151.00	No Ice 1/2"	3.08 3.32	1.47 1.66	0.07 0.09
			2.00			Ice 1" Ice 2" Ice	3.56 4.07	1.85 2.27	0.12 0.18
AHFIG_TMO	С	From Face	4.00 0.00	0.0000	151.00	No Ice 1/2"	3.08 3.32	1.47 1.66	0.07 0.09
			2.00			Ice 1" Ice	3.56 4.07	1.85 2.27	0.12 0.18
AHLOA_T-MOBILE	Α	From Face	4.00 0.00	0.0000	151.00	2" Ice No Ice 1/2"	2.86 3.08	1.85 2.04	0.08 0.11
			2.00			Ice 1" Ice	3.31 3.80	2.23 2.65	0.13 0.20
AHLOA_T-MOBILE	В	From Face	4.00 0.00	0.0000	151.00	2" Ice No Ice 1/2"	2.86 3.08	1,85 2.04	0.08 0.11
			2.00			lce 1" lce 2" lce	3,31 3.80	2.23 2.65	0.13 0.20
AHLOA_T-MOBILE	С	From Face	4.00 0.00	0.0000	151.00	No Ice 1/2"	2.86 3.08	1.85 2.04	0.08 0.11
			2.00			Ice 1" Ice 2" Ice	3.31 3.80	2.23 2.65	0.13 0.20
(2) HCS 2.0 Part 1	А	From Face	4.00 0.00 2.00	0.0000	151.00	No Ice 1/2" Ice 1" Ice	1.87 2.04 2.21 2.59	0.93 1.06 1.19 1.48	0.02 0.04 0.06 0.11
****** *****						2" 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	

Comb.	Description
No.	,
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 lce+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 lce+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 lce+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 lce+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 lce+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 43	Dead+Wind 90 deg - Service
43 44	Dead+Wind 120 deg - Service
	Dead+Wind 150 deg - Service
45 46	Dead+Wind 180 deg - Service
40 47	Dead+Wind 210 deg - Service
48	Dead+Wind 240 deg - Service
49	Dead+Wind 270 deg - Service Dead+Wind 300 deg - Service
50	
	Dead+Wind 330 deg - Service

Maximum Member Forces

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	145 - 140	Leg	Max Tension	23	6.71	0.03	0.03
		209	Max. Compression	2	-9.08	0.00	0.05
			Max. Mx	18	-8.93	0.04	-0.03
			Max. My	2	-9.08	0.00	0.05
			Max. Vy	8	-1.43	0.00	0.00
			Max. Vx	2	1.40	0.00	0.00
		Diagonal	Max Tension	7	2.07	0.00	0.00
		3	Max. Compression	18	-2.67	0.00	0.00
			Max. Mx	38	-0.34	0.01	-0.00
			Max. My	6	-1.66	-0.00	0.00
			Max. Vy	38	-0.02	0.01	-0.00
			Max. Vx	6	0.00	0.00	0.00
		Top Girt	Max Tension	31	0.54	0.00	0.00
		•	Max. Compression	1	0.00	0.00	0.00
			Max. Mx	26	0.49	0.09	0.00
			Max. Vy	26	-0.07	0.00	0.00
T2	140 - 120	Leg	Max Tension	23	29.91	0.02	0.02
		•	Max. Compression	2	-34.36	0.00	0.21
			Max. Mx	8	-2.32	-0.22	-0.02
			Max. My	2	-34.36	0.00	0.21
			Max. Vy	8	80.0	-0.22	-0.02
			Max. Vx	2	-0.07	0.00	0.21
		Diagonal	Max Tension	5	2.83	0.00	0.00
			Max. Compression	10	-2.95	0.00	0.00
			Max. Mx	2	2.13	0.03	-0.00

Sectio	Elevation	Component	Condition	Gov.	Axial	Major Axis	Minor Axis
n	ft	Type		Load		Moment	Moment
No.				Comb.	K	kip-ft	kip-ft
			Max. My	8 27	2.54	0.02	0.01
			Max. Vy Max. Vx	2 <i>1</i> 8	-0.02 0.00	0.02 0.02	-0.00 0.01
		Top Girt	Max Tension	22	0.80	0.02	0.00
		TOP OIL	Max. Compression	3	-0.39	0.00	0.00
			Max. Mx	26	0.50	-0.03	0.00
			Max. Vy	26	0.02	0.00	0.00
Т3	120 - 100	Leg	Max Tension	23	43.94	-0.11	-0.01
			Max. Compression	2	-50.35	0.15	-0.00
			Max. Mx	2	-39.67	0.21	-0.00
			Max. My	8	-2.72	-0.02	0.29
			Max. Vy	18	0.06	0.21	-0.01
		Diagonal	Max. Vx Max Tension	8 10	-0.10	-0.02	0.29
		Diagonal	Max. Compression	10	1.59 -1.74	0.00 0.00	0.00 0.00
			Max. Mx	27	0.25	0.00	-0.00
			Max. My	24	-1.50	-0.01	-0.00
			Max. Vy	29	0.02	0.02	-0.00
			Max. Vx	24	0.00	0.00	0.00
		Top Girt	Max Tension	23	0.18	0.00	0.00
			Max. Compression	2	-0.20	0.00	0.00
			Max. Mx	26	-0.02	-0.03	0.00
			Max. My	26	-0.03	0.00	0.00
			Max. Vy	26	-0.02	0.00	0.00
T4	100 - 80	Lan	Max. Vx Max Tension	26	-0.00	0.00	0.00
14	100 - 60	Leg	Max. Compression	7 2	54.34	-0.16	0.00
			Max, Mx	22	-62.80 53.42	0.19 -0.19	-0.00 -0.01
			Max, My	8	-3.89	-0.19	0.23
			Max. Vy	14	0.04	-0.19	0.00
			Max. Vx	8	-0.06	-0.01	0.23
		Diagonal	Max Tension	12	1.71	0.00	0.00
		•	Max. Compression	12	-1.70	0.00	0.00
			Max. Mx	29	0.19	0.03	0.00
			Max. My	37	-0.25	0.02	-0.00
			Max. Vy	29	0.03	0.03	0.00
T5	90 60	1.00	Max. Vx	37	0.00	0.00	0.00
13	80 - 60	Leg	Max Tension Max. Compression	7 2	63.77 -74.28	-0.19 0.26	0.01
			Max. Mx	19	-74.26 -72.54	0.26	-0.01 -0.01
			Max. My	8	-4.70	-0.00	0.28
			Max. Vy	19	-0.06	0.27	-0.01
			Max. Vx	20	0.06	-0.00	-0.28
		Diagonal	Max Tension	12	2.06	0.00	0.00
			Max. Compression	10	-2.13	0.00	0.00
			Max. Mx	29	0.28	0.05	-0.01
			Max. My	30	0.23	0.05	0.01
			Max. Vy	29	0.03	0.05	-0.01
Т6	60 40	1	Max. Vx	30	-0.00	0.00	0.00
16	60 - 40	Leg	Max Tension	7	73.51	-0.27	0.01
			Max. Compression Max. Mx	2 11	-86.68 - 84.93	0.36 0.36	-0.00
			Max. My	8	-64.93 -5.80	-0.01	0.01 0.33
			Max. Vy	14	0.06	-0.34	0.00
			Max. Vx	8	-0.06	-0.01	0.31
		Diagonal	Max Tension	12	2.41	0.00	0.00
		0	Max. Compression	12	-2.43	0.00	0.00
			Max. Mx	29	0.16	0.07	0.01
			Max. My	30	-0.41	0.07	0.01
			Max. Vy	29	0.05	0.07	0.01
			Max. Vx	37	0.00	0.00	0.00
T7	40 - 20	Leg	Max Tension	7	83.33	-0.36	0.00
			Max. Compression	2	-99.27	0.61	-0.01
			Max. Mx	29	4.38	-1.28	0.01
			Max. My	8	-6.29	-0.00	0.44
			Max⊬Vy Max. Vx	33	0.32	-1.28	0.00
		Diagonal	Max Tension	8 12	0.08 2.74	-0.01 0.00	0.43 0.00
		Diagonal	Max. Compression	10	-2.80	0.00	0.00
			max. Compression	10	2.00	0.00	0.00

Sectio n	Elevation ft	Component Type	Condition	Gov. Load	Axial	Major Axis Moment	Minor Axis Moment
No.		. , , , ,		Comb.	K	kip-ft	kip-ft
			Max. Mx	29	-0.01	0.08	-0.01
			Max. My	30	0.23	0.08	0.01
			Max. Vy	29	0.05	0.08	0.01
			Max. Vx	30	-0.00	0.00	0.00
T8	20 - 0	Leg	Max Tension	7	92.20	-0.44	0.02
			Max. Compression	2	-111.06	0.00	0.00
			Max. Mx	29	6.23	-1.28	0.01
			Max. My	8	-7.54	-0.07	0.92
			Max. Vy	33	-0.27	-1.28	0.00
			Max. Vx	8	0.17	-0.07	0.92
		Diagonal	Max Tension	12	3.29	0.00	0.00
		•	Max. Compression	10	-3.54	0.00	0.00
			Max. Mx	29	-0.69	0.13	0.01
			Max. My	30	1.51	0.10	0.02
			Max. Vý	29	0.06	0.13	0.01
			Max. Vx	30	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov.	Vertical	Horizontal, X	Horizontal, Z
		Load	K	K	K
		Comb.			
Leg C	Max. Vert	18	113.18	9.61	-5.83
	Max. H _x	18	113.18	9.61	-5.83
	Max. H _z	7	-94.58	-8.05	4.91
	Min. Vert	7	-94.58	-8.05	4.91
	Min⊋H _x	7	-94.58	-8.05	4.91
	$Min. H_z$	18	113.18	9.61	-5.83
Leg B	Max. Vert	10	113.53	-9.55	-5.88
•	Max. H _x	23	-94.02	7.98	4.94
	Max. H _z	23	-94.02	7.98	4.94
	Min. Vert	23	-94.02	7.98	4.94
	Min. H _x	10	113.53	-9.55	-5.88
	Min. H _z	10	113.53	-9.55	-5.88
Leg A	Max. Vert	2	114.20	0.09	11.20
ū	Max. H _x	20	8.82	1.38	0.61
	Max. H _z	2	114.20	0.09	11.20
	Min. Vert	15	-92.73	-0.08	-9.34
	Min, H _x	9	6.15	-1.37	0.43
	Min. H _z	15	-92.73	-0.08	-9.34

Tower Mast Reaction Summary

Load Combination	Vertical	Shear _x	Shear₂	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	19.09	0.00	0.00	-11.27	-3.69	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	22.91	-0.03	-17.61	-1568.86	-0.58	2.51
0.9 Dead+1.0 Wind 0 deg - No Ice	17.18	-0.03	-17.61	-1565.48	0.53	2.51
1.2 Dead+1.0 Wind 30 deg - No Ice	22.91	8.33	-14.42	-1304.37	-749.70	-2.46
0.9 Dead+1.0 Wind 30 deg - No Ice	17.18	8.33	-14.42	-1300.98	-748.59	-2.46
1.2 Dead+1.0 Wind 60 deg - No Ice	22.91	14.14	-8.13	-744.61	-1278.41	-6.82
0.9 Dead+1.0 Wind 60 deg - No Ice	17.18	14.14	-8,13	-741.23	-1277.31	-6.82
1.2 Dead+1.0 Wind 90 deg - No Ice	22.91	16.69	0.03	-9.67	-1501.64	-9.35

Load Combination	Vertical K	Shear _x K	Shear₂ K	Overturning Moment, M_x kip-ft	Overturning Moment, M₂ kip-ft	Torque kip-ft
0.9 Dead+1.0 Wind 90 deg -	17.18	16.69	0.03	-6.29	-1500.53	-9.35
No Ice			3.00	5.25		
1.2 Dead+1.0 Wind 120 deg	22.91	15.29	8.83	767.48	-1357.17	-8.86
- No Ice 0.9 Dead+1.0 Wind 120 deg	17.18	15.29	8.83	770.86	-1356.06	-8.86
- No Ice	17.10	15.29	0.03	770.00	-1350.00	-0.00
1.2 Dead+1.0 Wind 150 deg	22.91	8.24	14.22	1263.49	-746.16	-6.16
- No Ice						
0.9 Dead+1.0 Wind 150 deg	17.18	8.24	14.22	1266.87	-745.05	-6.16
- No Ice 1.2 Dead+1.0 Wind 180 deg	22.91	0.03	16.19	1446.16	-8.28	-2.51
- No Ice	22.51	0.03	10.19	1770.10	-0.20	-2.51
0.9 Dead+1.0 Wind 180 deg	17.18	0.03	16,19	1449.54	-7.17	-2.51
- No Ice						
1.2 Dead+1.0 Wind 210 deg	22.91	-8.33	14.42	1277.32	740.84	2.46
- No Ice 0.9 Dead+1.0 Wind 210 deg	17.18	-8.33	14.42	1280.70	741,94	2.46
- No Ice	17.10	-0.55	17.72	1200.70	771.07	2.40
1.2 Dead+1.0 Wind 240 deg	22.91	-15.36	8.84	765.39	1352,39	6.82
- No Ice						
0.9 Dead+1.0 Wind 240 deg	17.18	-15.36	8.84	768.77	1353.50	6.82
- No Ice	22.91	-16.69	-0.03	-17.37	1492.77	9.35
1.2 Dead+1.0 Wind 270 deg - No Ice	22.91	-10.09	-0.03	-17.37	1432.77	9.55
0.9 Dead+1.0 Wind 270 deg	17.18	-16.69	-0.03	-13.99	1493.88	9.35
- No Ice						
1.2 Dead+1.0 Wind 300 deg	22.91	-14,06	-8.12	-746.70	1265.46	8.86
- No Ice	17.18	-14.06	-8.12	-743.32	1266.57	8.86
0.9 Dead+1.0 Wind 300 deg - No Ice	17.10	-14.00	-0.12	-745.52	1200.37	0.00
1.2 Dead+1.0 Wind 330 deg	22.91	-8.24	-14.22	-1290.53	737.30	6.16
- No Ice						
0.9 Dead+1.0 Wind 330 deg	17.18	-8.24	-14,22	-1287.15	738.40	6.16
- No Ice	49.54	0.00	0.00	-28.64	-8.99	-0.00
1.2 Dead+1.0 Ice+1.0 Temp 1.2 Dead+1.0 Wind 0	49.54	-0.00	-3.38	-330.15	-8.46	0.75
deg+1.0 Ice+1.0 Temp	10.01	0.00	0.00	000.10	5.10	
1.2 Dead+1.0 Wind 30	49.54	1.65	-2.86	-285.60	-157,34	-0.53
deg+1.0 lce+1.0 Temp		0.05	4.04	470.40	005 57	4.70
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	49.54	2,85	-1.64	-176,16	-265.57	-1.75
1.2 Dead+1.0 Wind 90	49.54	3.31	0.00	-28-11	-306.62	-2.37
deg+1.0 lce+1.0 Temp	10.01	0.01	0.00	20	000.02	
1.2 Dead+1.0 Wind 120	49.54	2.93	1.69	122,57	-270.90	-2.28
deg+1.0 Ice+1.0 Temp				005.00	450.05	4 70
1,2 Dead+1.0 Wind 150	49.54	1.63	2.82	225,36	-156.25	-1.70
deg+1.0 lce+1.0 Temp 1.2 Dead+1.0 Wind 180	49.54	0.00	3.23	263.30	-9.52	-0.75
deg+1.0 lce+1.0 Temp	10.01	0.00	0.20	200.00	-	
1.2 Dead+1.0 Wind 210	49.54	-1.65	2.86	228.31	139.36	0.53
deg+1.0 Ice+1.0 Temp				100.07	055.07	4 ~-
1.2 Dead+1.0 Wind 240	49.54	-2,97	1.71	123.67	255.87	1.75
deg+1.0 lce+1.0 Temp 1.2 Dead+1.0 Wind 270	49.54	-3.31	-0.00	-29.17	288.64	2.37
deg+1.0 lce+1.0 Temp	45.54	-0.01	-0.00	20.11	200.01	2.07
1.2 Dead+1.0 Wind 300	49.54	-2.80	-1.62	-175.07	244.63	2.28
deg+1.0 lce+1.0 Temp						
1.2 Dead+1.0 Wind 330	49.54	-1.63	-2.82	-282.64	138.27	1.70
deg+1.0 Ice+1.0 Temp Dead+Wind 0 deg - Service	19.09	-0.01	-5.14	-460.31	-2.59	0.72
Dead+Wind 30 deg - Service	19.09	2,43	-4.22	-384.07	-218.93	-0.71
Dead+Wind 60 deg - Service	19.09	4.13	-2.38	-222.44	-371.66	-1.96
Dead+Wind 90 deg - Service	19.09	4.88	0.01	-10.17	-436.07	-2.68
Dead+Wind 120 deg -	19.09	4.46	2.58	214.20	-394.23	-2.54
Service	40.00	0.44	4.40	0.57.50	047.04	4 7
Dead+Wind 150 deg - Service	19.09	2.41	4.16	357.56	-217.91	-1.77
Dead+Wind 180 deg -	19.09	0.01	4.74	410.36	-4.80	-0.72

Load Combination	Vertical	Shear _x	Shearz	Overturning Moment, M _x	Overturning Moment, M _z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 210 deg - Service	19.09	-2.43	4.22	361.53	211.54	0.71
Dead+Wind 240 deg - Service	19,09	-4.49	2.58	213.61	388.01	1.96
Dead+Wind 270 deg - Service	19.09	-4.88	-0.01	-12.37	428.69	2.68
Dead+Wind 300 deg - Service	19.09	-4.11	-2.37	-223.04	363,10	2.54
Dead+Wind 330 deg - Service	19.09	-2.41	-4.16	-380.10	210.53	1.77

Solution Summary

	C	n of Applied Force			Sum of Reaction		
Load				D) (% Error
Comb.	PX K	PY K	PZ	PX	PY	PZ	% ⊑1101
1	0.00		K 0.00	K	K	K	0.0000/
		-19.09	0.00	0.00	19.09	-0.00	0.000%
2	-0.03	-22.91	-17.61	0.03	22.91	17.61	0.000%
3	-0.03	-17.18	-17.61	0.03	17.18	17.61	0.000%
4	8.33	-22.91	-14.42	-8.33	22.91	14.42	0.000%
5	8.33	-17.18	-14.42	-8.33	17.18	14.42	0.000%
6	14.14	-22.91	-8.13	-14.14	22.91	8.13	0.000%
7	14.14	-17.18	-8.13	-14.14	17.18	8.13	0.000%
8	16,69	-22.91	0.03	-16.69	22.91	-0.03	0.000%
9	16.69	-17.18	0.03	-16.69	17.18	-0.03	0.000%
10	15.29	-22.91	8.83	-15.29	22.91	-8.83	0.000%
11	15.29	-17.18	8.83	-15.29	17.18	-8.83	0.000%
12	8.24	-22.91	14.22	-8.24	22.91	-14.22	0.000%
13	8.24	-17.18	14.22	-8.24	17.18	-14,22	0.000%
14	0.03	-22.91	16.19	-0.03	22.91	-16.19	0.000%
15	0.03	-17.18	16.19	-0.03	17.18	-16.19	0.000%
16	-8.33	-22.91	14.42	8.33	22,91	-14.42	0.000%
17	-8.33	-17.18	14.42	8.33	17.18	-14.42	0.000%
18	-15.36	-22.91	8.84	15.36	22.91	-8.84	0.000%
19	-15.36	-17.18	8.84	15.36	17.18	-8.84	0.000%
20	-16.69	-22.91	-0.03	16.69	22.91	0.03	0.000%
21	-16.69	-17.18	-0.03	16.69	17.18	0.03	0.000%
22	-14.06	-22.91	-8.12	14.06	22.91	8.12	0.000%
23	-14.06	-17.18	-8.12	14.06	17.18	8.12	0.000%
24	-8.24	-22.91	-14.22	8.24	22.91	14.22	0.000%
25	-8.24	-17.18	-14.22	8.24	17.18	14.22	0.000%
26	0.00	-49.54	0.00	0.00	49.54	-0.00	0.000%
27	-0.00	-49.54	-3.38	0.00	49.54	3.38	0.000%
28	1.65	-49.54	-2.86	-1.65	49.54	2.86	0.000%
29	2.85	-49.54	-1.64	-2.85	49.54	1.64	0.000%
30	3.31	-49.54	0.00	-3.31	49.54	-0.00	0.000%
31	2.93	-49.54	1.69	-2.93	49.54	-1.69	0.000%
32	1.63	-49.54	2.82	-2.93	49.54	-2.82	0.000%
33	0.00	-49.54 -49.54	3.23	-0.00	49.54	-2.62 -3.23	
34	-1.65	-49.5 4 -49.54	2.86	-0.00 1.65			0.000%
					49.54	-2.86	0.000%
35	-2.97	-49.54	1.71	2.97	49.54	-1.71	0.000%
36	-3.31	-49.54	-0.00	3.31	49.54	0.00	0.000%
37	-2.80	-49.54	-1.62	2.80	49.54	1.62	0.000%
38	-1.63	-49.54	-2.82	1.63	49.54	2.82	0.000%
39	-0.01	-19.09	-5.14	0.01	19.09	5.14	0.000%
40	2.43	-19.09	-4.22	-2.43	19.09	4,22	0.000%
41	4.13	-19.09	-2.38	-4.13	19.09	2.38	0.000%
42	4.88	-19.09	0.01	-4.88	19.09	-0.01	0.000%
43	4.46	-19.09	2.58	-4.46	19.09	-2.58	0.000%
44	2.41	-19.09	4.16	-2.41	19.09	-4.16	0.000%
45	0.01	-19.09	4.74	-0.01	19.09	-4.74	0.000%
46	-2.43	-19.09	4.22	2.43	19.09	-4.22	0.000%
47	-4.49	-19.09	2.58	4.49	19.09	-2.58	0.000%
48	-4.88	-19.09	-0.01	4.88	19.09	0.01	0.000%
49	-4.11	-19.09	-2.37	4.11	19.09	2.37	0.000%
50	-2.41	-19.09	-4.16	2.41	19.09	4.16	0.000%

Maximum	Tower	Deflections	- Service	Wind
ITIGALIIIUIII	1 O AA CI	Dellections	- OCIVICE	AAIIIG

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	•	•
T1	145 - 140	2.877	39	0.2305	0.0235
T2	140 - 120	2.635	39	0.2233	0.0230
T3	120 - 100	1.774	39	0.1698	0.0192
T4	100 - 80	1.149	39	0.1235	0.0144
T5	80 - 60	0.696	39	0.0870	0.0103
T6	60 - 40	0.381	39	0.0575	0.0069
T7	40 - 20	0.170	39	0.0369	0.0044
T8	20 - 0	0.045	39	0.0146	0.0018

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	o	0	ft
151.00	Platform Mount [14.4' LP 603-1]	39	2.877	0.2305	0.0235	39020
150.00	Lightning Rod 5/8"x4"	39	2.877	0.2305	0.0235	39020
145.00	Sabre 5' Rotatable Section	39	2.877	0.2305	0.0235	39020

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load	Tilt	Twist
	ft	in	Comb.	•	•
T1	145 - 140	9.860	2	0.7893	0.0819
T2	140 - 120	9.032	2	0.7648	0.0804
T3	120 - 100	6.079	2	0.5819	0.0669
T4	100 - 80	3.937	2	0.4229	0.0503
T5	80 - 60	2.384	2	0.2976	0.0358
T6	60 - 40	1.303	2	0.1967	0.0242
T7	40 - 20	0.581	2	0.1260	0.0153
T8	20 - 0	0.154	19	0.0498	0.0064

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	o	0	ft
151.00	Platform Mount [14.4' LP 603-1]	2	9.860	0.7893	0.0819	11425
150.00	Lightning Rod 5/8"x4"	2	9.860	0.7893	0.0819	11425
145.00	Sabre 5' Rotatable Section	2	9.860	0.7893	0.0819	11425

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt	Allowable Load per Bolt	Ratio Load Allowable	Allowable Ratio	Criteria
						K	K	Allowable		
T1	145	Leg	A325X	0.7500	4	1.68	30.10	0.056	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	2.67	13.05	0.205	1.05	Member Bearing
		Top Girt	A325X	0.6250	3	0.18	13.89	0.013	1.05	Member Bearing
T2	140	Leg	A325X	0.7500	4	7.48	30.10	0.248	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	2.83	11.09	0.255	1.05	Member Bearing
		Top Girt	A325X	0.6250	1	0.80	11.09	0.072	1.05	Member Bearing
T3	120	Leg	A325X	1.0000	4	10.99	54.52	0.202	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	1,59	11.09	0.144	1.05	Member Bearing
		Top Girt	A325X	0.6250	1	0.87	11,09	0.079	1.05	Member Bearing
T4	100	Leg	A325X	1.0000	4	13.58	54.52	0.249	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	1.71	11.09	0.154	1.05	Member Bearing
T5	80	Leg	A325X	1.2500	4	15.94	87.22	0.183	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	2.06	11.09	0.186	1.05	Member Bearing
T6	60	Leg	A325X	1.2500	4	18.38	87.22	0.211	1.05	Bolt Tension
		Diagonal	A325X	0.6250	1	2.41	11.09	0.218	1.05	Member Bearing
T7	40	Leg	A325X	1.2500	6	13.89	87.22	0.159	1.05	Bolt Tension
		Diagonal	A325X	0.7500	1	2.74	10.77	0.255	1.05	Member Bearing
Т8	20	Diagonal	A325X	0.7500	1	3.29	10.77	0.306	1.05	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation	Size	L	Lu	KI/r	Α	Pu	ϕP_n	Ratio P.,
	ft		ft	ft		in ²	K	K	φP _n
T1	145 - 140	P2x.154	5.00	5.00	76.2 K=1.00	1.0745	-9.08	31.62	0.287 1
T2	140 - 120	P2,5x.203	20.00	5.00	63.3 K=1.00	1.7040	-34.36	57.19	0.601 1

Т3 120 - 100 20.03 P3x.3 5.01 52.9 3.0159 ~50.35 110.61 0.455 1 K=1.00 T4 100 - 80 P3.5x.318 20.03 5.01 46.0 3.6784 -62.80 141.81 0.443^{1} K=1.00 T5 80 - 60 P4x.337 20.03 6.68 54.3 4.4074 -74.28 159.91 0.465 1 K=1.00 T6 60 - 40 P5x.375 20.03 6.68 43.6 -86.68 0.362 1 6.1120 239.39 K=1.00 T7 40 - 20 P6x.28 20.03 6.68 35.7 5.5813 -99.27 228.83 0.434 1 K=1.00 T8 20 - 0 P6x.432 20.03 10.02 54.8 8.4049 -111.06 303.75 0.366 1 K=1.00

 $^{^{1}}$ P $_{u}$ / $_{\phi}P_{n}$ controls

1		Diagonal	Desig	n Da	ta (Co	mpres	sion)		
Section No.	Elevation	Size	L	Lu	KI/r	A	Pu	φ <i>P</i> _n	Ratio Pu
	ft		ft	ft		in ²	K	K	ϕP_n
T1	145 - 140	L1 3/4x1 3/4x3/16	7.07	3.25	115.2 K=1.01	0.6211	-2.67	13.04	0.205
T2	140 - 120	L1 3/4x1 3/4x3/16	7.07	3.22	114.4 K=1.02	0.6211	-2.95	13.16	0.224
T3	120 - 100	L1 3/4x1 3/4x3/16	8.40	4.03	140.8 K=1.00	0.6211	-1.53	8.97	0.171
T4	100 - 80	L1 3/4x1 3/4x3/16	10.08	4.85	169.3 K=1.00	0.6211	-1.70	6.20	0.274
T5	80 - 60	L2x2x3/16	12.58	6.12	186.4 K=1.00	0.7150	-2.13	5.89	0,362
T6	60 - 40	L2 1/2x2 1/2x3/16	14.32	6.94	168.2 K=1.00	0.9020	-2.43	9.13	0.266
T7	40 - 20	L2 1/2x2 1/2x3/16	16.11	7.79	188.8 K=1.00	0.9020	-2.80	7.24	0.386
T8	20 - 0	L3x3x3/16	19.30	9.47	190.7 K=1.00	1.0900	-3.54	8.58	0.413

¹ P_u / ϕP_n controls

	Top Girt Design Data (Compression)								
Section No.	Elevation	Size	L	Lu	Kl/r	Α	P_u	ϕP_n	Ratio Pu
	ft		ft	ft		in ²	K	K	φP _n
T2	140 - 120	L1 3/4x1 3/4x3/16	5.00	4.47	156.1 K=1.00	0.6211	-0.60	7.29	0.082 1
Т3	120 - 100	L1 3/4x1 3/4x3/16	5.00	4.42	154.3 K=1.00	0.6211	-0.87	7.46	0.117 ¹

¹ P_u / ϕP_n controls

Tension Checks

	Leg Design Data (Tension)									
Section No.	Elevation	Size	L	Lu	Kl/r	A	Pu	ϕP_n	Ratio P _u	
	ft		ft	ft		in²	K	K	${\phi P_n}$	
T1	145 - 140	P2x.154	5.00	5.00	76.2	1.0745	6.71	48.35	0.139 ¹	
T2	140 - 120	P2.5x.203	20.00	5.00	63.3	1.7040	29.91	76.68	0.390 1	
T3	120 - 100	P3x.3	20.03	5.01	52.9	3.0159	43.94	135.72	0.324 1	
T4	100 - 80	P3.5x.318	20.03	5.01	46.0	3.6784	54.34	165.53	0.328 1	
T5	80 - 60	P4x.337	20.03	6.68	54.3	4.4074	63.77	198.34	0.322 1	
T6	60 - 40	P5x.375	20.03	6.68	43.6	6.1120	73.51	275.04	0.267 1	
T 7	40 - 20	P6x.28	20.03	6.68	35.7	5.5813	83.33	251.16	0.332 1	
T8	20 - 0	P6x.432	20.03	10.02	54.8	8.4049	92.20	378.22	0.244 1	

 $^{^{1}}$ P $_{u}$ / $_{\phi}P_{n}$ controls

Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	KI/r	Α	P_u	ϕP_n	Ratio Pu
	ft		ft	ft		in²	K	K	ϕP_n
T1	145 - 140	L1 3/4x1 3/4x3/16	7.07	3.25	75.9	0.3604	2.07	15.68	0.132 1
T2	140 - 120	L1 3/4x1 3/4x3/16	7.07	3.22	75.2	0.3604	2.83	15.68	0.180 1
T3	120 - 100	L1 3/4x1 3/4x3/16	7.62	3.65	84.8	0.3604	1.59	15.68	0.102 1
T4	100 - 80	L1 3/4x1 3/4x3/16	10.08	4.85	111.6	0.3604	1.71	15.68	0.109 1
T5	80 - 60	L2x2x3/16	12.58	6.12	121.9	0.4308	2.06	18.74	0.110 1
T6	60 - 40	L2 1/2x2 1/2x3/16	14.32	6.94	109.3	0.5710	2.41	24.84	0.097 1
T7	40 - 20	L2 1/2x2 1/2x3/16	16.11	7.79	122.4	0.5535	2.74	24.08	0.114 1
T8	20 - 0	L3x3x3/16	19.30	9.47	122.9	0.6945	3.29	30.21	0.109 1

 $^{^{1}}$ P $_{u}$ / $_{\phi}$ P $_{n}$ controls

Top Girt Design Data (Tension)									
Section No.	Elevation	Size	L	Lu	KI/r	А	P_u	φ <i>P</i> _n	Ratio P.,
	ft		ft	ft		in²	K	K	ΦP_n
T1	145 - 140	C7x9.8	5.00	4.80	99.2	2.0344	0.54	88.50	0.006 ¹
T2	140 - 120	L1 3/4x1 3/4x3/16	5.00	4.47	106.4	0.3604	0.80	15.68	0.051 1
T3	120 - 100	L1 3/4x1 3/4x3/16	5.00	4.42	105.2	0.3604	0.87	15.68	0.056 ¹

 $^{^{1}}$ P $_{u}$ / ϕP_{n} controls

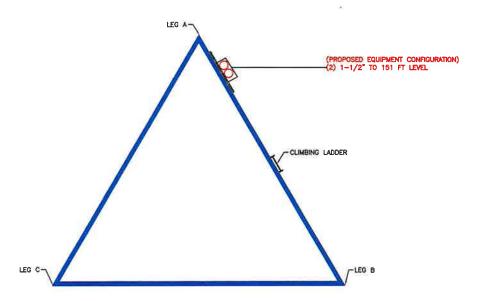
Section Capacity Table	Sect	ion	Capa	city 7	ſable
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Section	Elevation	Component	Size	Critical	P	øP _{allow}	%	Pass
No.	ft	Туре		Element	K	K	Capacity	Fail
T1	145 - 140	Leg	P2x.154	3	-9.08	33.20	27.4	Pass
T2	140 - 120	Leg	P2.5x.203	15	-34.36	60.05	57.2	Pass
T3	120 - 100	Leg	P3x.3	45	-50.35	116.14	43.4	Pass
T4	100 - 80	Leg	P3.5x.318	75	-62.80	148.90	42.2	Pass
T5	80 - 60	Leg	P4x.337	102	-74.28	167.91	44.2	Pass
T6	60 - 40	Leg	P5x.375	123	-86.68	251.36	34.5	Pass
T7	40 - 20	Leg	P6x.28	144	-99.27	240.27	41.3	Pass
T8	20 - 0	Leg	P6x.432	165	-111.06	318.94	34.8	Pass
T1	145 - 140	Diagonal	L1 3/4x1 3/4x3/16	12	-2.67	13.69	19.5	Pass
T2	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	21	-2.95	13.82	21.3	Pass
T3	120 - 100	Diagonal	L1 3/4x1 3/4x3/16	51	-1.53	9.42	16.3	Pass
T4	100 - 80	Diagonal	L1 3/4x1 3/4x3/16	78	-1.70	6.51	26.1	Pass
T5	80 - 60	Diagonal	L2x2x3/16	105	-2.13	6.19	34.5	Pass
T6	60 - 40	Diagonal	L2 1/2x2 1/2x3/16	126	-2.43	9.58	25.3	Pass
T7	40 - 20	Diagonal	L2 1/2x2 1/2x3/16	147	-2.80	7.60	36.8	Pass
T8	20 - 0	Diagonal	L3x3x3/16	168	-3.54	9.01	39.3	Pass
T1	145 - 140	Top Girt	C7x9.8	6	0.54	92.92	0.6	Pass
T2	140 - 120	Top Girt	L1 3/4x1 3/4x3/16	17	-0.60	7.66	7.8	Pass
T3	120 - 100	Top Girt	L1 3/4x1 3/4x3/16	47	-0.87	7.84	11.1	Pass
							Summary	
						Leg (T2)	57.2 [°]	Pass
						Diagonal (T8)	39.3	Pass
						Top Girt (T3)	11.1	Pass
						Bolt Checks	29.1	Pass
						RATING =	57.2	Pass

APPENDIX B BASE LEVEL DRAWING

APPENDIX C ADDITIONAL CALCULATIONS





APPENDIX C ADDITIONAL CALCULATIONS

Self Support Anchor Rod Capacity



Site Info						
BU #	878349					
Site Name	JUNG BEER					
Order #	620275 Rev. 0					

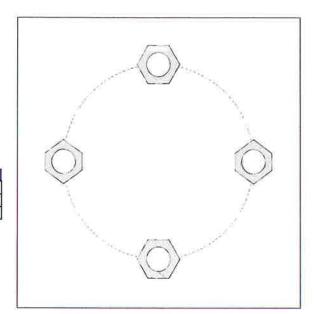
Analysis Considerations	
TIA-222 Revision	Н
Grout Considered:	Yes
l _{ar} (in)	2

Applied Loads			
	Comp.	Uplift	
Axial Force (kips)	114.20	94.58	
Shear Force (kips)	11.20	9.43	

^{*}TIA-222-H Section 15.5 Applied

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

^{*}Anchor Rod Eccentricity Applied



Connection Properties	
Anchor Rod Data	Anchor Rod Summary
(4) 1-1/2" ø bolts (AS72-50 N; Fy=50 ksi, Fu=65 ksi)	Pu_t = 23.65
l _{ar} (in): 2	Vu = 2.36

Anchor Rod Summary		(units of kips, kip-in)
Pu_t = 23.65	φPn_t = 68.74	Stress Rating
Vu = 2.36	$\phi Vn = 43.07$	32.8%
Mu = n/a	$\phi Mn = n/a$	Pass

Analysis Results

Pier and Pad Foundation

BU # : 878349 Site Name: JUNG BEER App. Number: 620275 Rev. 0



TIA-222 Revision: Tower Type:

	Н
Self	Support

10	Superstructure Analysis Rea	actions	
	Compression, P _{comp} :	114.2	kips
	Compression Shear, Vu_comp:	11.2	kips
	Uplift, P _{uplift} :	94.58	kips
	Uplift Shear, V _{u_uplift} :	9.43	kips
	Tower Height, H:	145	ft
	Base Face Width, BW:	17	ft
	BP Dist, Above Fdn, bp _{dist} :	3.5	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, dpier:	3,5	ft
Ext. Above Grade, E:	1.33	ft
Pier Rebar Size, Sc :	7	
Pier Rebar Quantity, mc:	12	
Pier Tie/Spiral Size, St:	3	
Pier Tie/Spiral Quantity, mt:	9	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc _{pler} :	3	in

Pad Properties	"	
Depth, D:	9.17	ft
Pad Width, W ₁:	9,5	ft
Pad Thickness, T:	1.5	ft
Pad Rebar Size (Bottom dir. 2), Sp ₂ :	7	
Pad Rebar Quantity (Bottom dir. 2), mp ₂ :	10	
Pad Clear Cover, ccpad:	3	in

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

Soil Properties		
Total Soil Unit Weight, γ	120	pcf
Ultimate Net Bearing, Qnet:	5.000	ksf
Cohesion, Cu:	0,000	ksf
Friction Angle, $arphi$	30	degrees
SPT Blow Count, Noblows:		
Base Friction, μ :	0.35	
Neglected Depth, N:	5.00	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, gw:	11	ft

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

Found	lation Anal	ysis Check	s	
	Capacity	Demand	Rating*	Check
Uplift (kips)	173.90	94.58	51.8%	Pass
Lateral (Sliding) (kips)	49.22	9.43	18.2%	Pass
Bearing Pressure (ksf)	4.58	2.71	56.4%	Pass
Pier Flexure (Comp.) (kip*ft)	670.13	100.80	14.3%	Pass
Pier Flexure (Tension) (kip*ft)	440.08	84.87	18.4%	Pass
Pier Compression (kip)	5847.66	134.05	2.2%	Pass
Pad Flexure (kip*ft)	352.84	57.09	15.4%	Pass
Pad Shear - 1-way (kips)	128,20	23,59	17.5%	Pass
Pad Shear - 2-way (Comp) (ksi)	0.164	0.040	23.2%	Pass
Flexural 2-way (Comp) (kip*ft)	570.30	60.48	10.1%	Pass
Pad Shear - 2-way (Uplift) (ksi)	0,164	0.042	24.5%	Pass
Flexural 2-way (Tension) (kip*ft)	570,30	50,92	8.5%	Pass

*Rating per TIA-222-H Section 15.5

Structural Rating*:	24.5%
Soil Rating*:	56.4%

<--Toggle between Gross and Net



ASCE 7 Hazards Report

Address:

No Address at This Location

Standard:

Soil Class:

ASCE/SEI 7-10

Latitude:

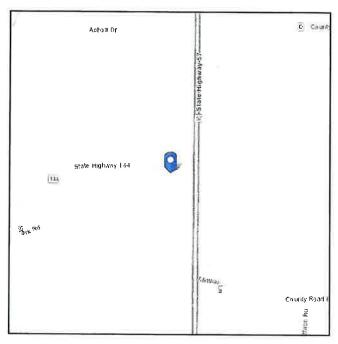
43.564444

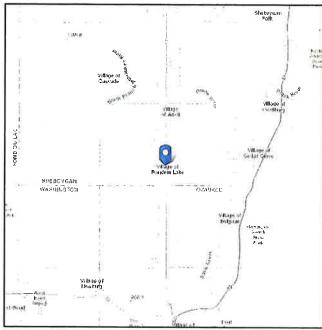
Risk Category: II

D - Stiff Soil

Longitude: -87.943003

Elevation: 897.74 ft (NAVD 88)





Wind

Results:

Wind Speed 115 Vmph 10-year MRI 76 Vmph 25-year MRI 84 Vmph 50-year MRI 90 Vmph 100-year MRI

Data Source:

ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1-CC-4, and Section 26.5.2,

incorparating organs of March 12, 2014 Date Accessed:

96 Vmph

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 not in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2.

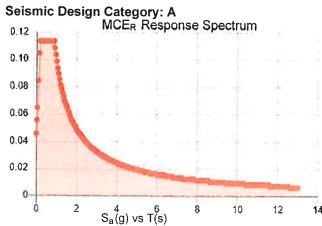


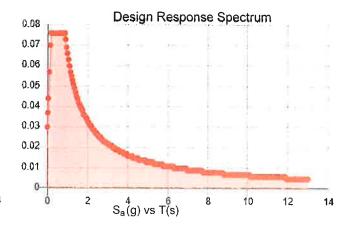
Seismic

D - Stiff Soil

Results:

S _s :	0.071	S _{D1} :	0.066
S ₁ I	0.041	T _L :	12
F _a \$	1.6	PGA:	0.034
F _v :	2.4	PGA _M :	0.054
S _{MS} :	0.114	F _{PGA} :	1.6
S _{M1} :	0.099	l _e :	1
S _{DS} :	0.076		





Data Accessed:

Thu Jan 12 2023

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.



lce

Results:

Ice Thickness:

0.75 in.

Concurrent Temperature:

-5 F

Gust Speed

40 mph

Data Source:

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

Date Accessed:

Thu Jan 12 2023

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

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 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.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

Ti--Mobile-

T-MOBILE SITE NUMBER: ML81125A

CROWN BU - 878349 T-MOBILE SITE NAME:

T-MOBILE PROJECT: **ANCHOR** **BUSINESS UNIT #:** 878349

W 5009 HWY 144 **SITE ADDRESS:** RANDOM LAKE, WI 53075 **COUNTY: SHEBOYGAN**

SELF SUPPORT SITE TYPE:

150'-0" **TOWER HEIGHT:**

SITE INFORMATION

CROWN CASTLE USA INC.

SITE NAME: BU NUMBER:

TOWER OWNER:

CROWN CASTLE

JUNG BEER

2000 CORPORATE DRIVE CANONSBURG, PA 15317

CARRIER/APPLICANT:

312 ELM STREET, 10TH FLOOR

CINCINNATI, OH 45202

SITE ADDRESS:

W 5009 HWY 144 RANDOM LAKE, WI 53075

COUNTY: LATITUDE: LONGITUDE LAT/LONG TYPE: GROUND ELEVATION:

43° 33' 52.00" -87° 56' 34.81" NAD83

SHEBOYGAN

AREA OF CONSTRUCTION: CURRENT ZONING: MAP/PARCEL #:

EXISTING NOT AVAILABLE 59176-744620

OCCUPANCY CLASSIFICATION: U TYPE OF CONSTRUCTION:

FACILITY IS UNMANNED AND A.D.A. COMPLIANCE:

NOT FOR HUMAN HABITATION

PROPERTY OWNER:

GLOBAL SIGNAL ACQUISITION P.O. BOX 277455

ATLANTA, GA 30389-7455

JURISDICTION:

VILLAGE OF RANDOM LAKE

ELECTRIC PROVIDER:

WE ENERGIES (800) 242-9137

TELCO PROVIDER: NOT AVAILABLE

PROJECT TEAM

A&E FIRM:

POWER OF DESIGN 11490 BLUEGRASS PARKWAY LOUISVILLE, KY 40299

CROWN CASTLE USA INC. DISTRICT CONTACTS:

3025 HIGHLAND PKWY, SUITE 510, DOWNERS GROVE, IL, 60515

PAUL SLIFER - PROJECT MANAGER PAUL.SLIFER@CROWNCASTLE.COM

COREY BESL - CONSTRUCTION MANAGER COREY.BESL@CROWNCASTLE.COM

DALE GRAY - A&E SPECIALIST DALE.GRAY@CROWNCASTLE.COM **DRAWING INDEX**

SHEET#	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	SITE PLAN
C-1.2	EXISTING & FINAL EQUIPMENT PLANS
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	EQUIPMENT DETAILS & COAX COLOR CODING
C-4	EQUIPMENT SPECIFICATIONS
C-5	ICE BRIDGE DETAIL
E-1	PANEL SCHEDULES & ONE-LINE DIAGRAM
E-2	ELECTRICAL DETAILS
G-1	TYPICAL FINAL GROUNDING SCHEMATIC
G-2	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11X17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THI IOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF AN DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FO SAME.



CALL WISCONSIN ONE CALL (800) 242-8511 CALL 3 WORKING DAYS



PROJECT DESCRIPTION

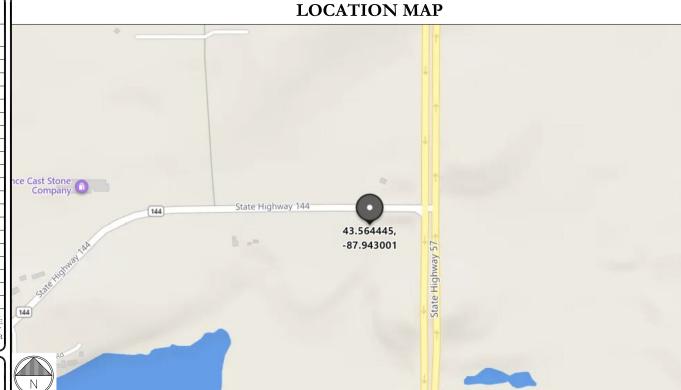
THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:

- REMOVE (3) HYBRID CABLES (1") • RELOCATE (6) RRHs
- RELOCATE (3) ANTENNAS
- INSTALL (3) ANTENNAS
- INSTALL (1) HCS 2.0 BREAKOUT PENDANT
- INSTALL (1) HCS 2.0 HYBRID CABLE (1-1/2")

GROUND SCOPE OF WORK:

- REMOVE (1) ASIB, (1) ASIK, (1) FSMF, (1) ABIA, (1) ABIL, (1)
- INSTALL (2) ASIL, (4) ABIO INSTALL (1) HCS 2.0 JUNCTION BOX INSTALL ICE BRIDGE 15'-0"±



NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO

PERMIT WORK NOT CONFORMING TO THESE CODES: CODE TYPE

BUILDING

WISCONSIN CBC/2015 IBC W/ WI AMENDMENTS MECHANICAL WISCONSIN CBC/2015 IMC W/ WI AMENDMENTS

ELECTRICAL. WISCONSIN ELECTRICAL CODE/2017 NEC W/ WI AMENDMENTS

REFERENCE DOCUMENTS

STRUCTURAL ANALYSIS: BLACK & VEATCH CORP.

DATED: JANUARY 13, 2023

MOUNT ANALYSIS: INFINIGY

DATED: JANUARY 05, 2023

RFDS REVISION: 2

ORDER ID: 620275 REVISION: 0

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

1 RAVINIA DRIVE, SUITE 1000 ATLANTA, GA 30346





T-MOBILE SITE NUMBER: ML81125A

> BU #: 878349 **JUNG BEER**

W 5009 HWY 144 RANDOM LAKE, WI 53075

EXISTING 150'-0" SELF SUPPORT

ISSUED FOR:							
REV	DATE	DRWN	DESCRIPTION	DES./QA			
0	01/27/2023	NM/NH	CONSTRUCTION	AH			
1	02/01/2023	NM	CONSTRUCTION	AH			



02/01/2023

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:

REVISION:

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 FOLIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR REINFORCEMENTS, AND/OW EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRIT OF 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 AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY 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
- 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
- ALL SITE WORK TO COMPLY WITH DAS-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 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.
- 9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

 10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES
- ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
- 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 REMOYED 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
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
- THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION FROSION CONTROL
- CONTRACTOR SHALL MINIMAZE DISTORBANCE TO EXISTING SHE 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
- 20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- 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.

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.

- 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 ROUMEMENTS 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
- ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLAREOUS 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 ENCINEER OR HIS REPSENTATIVE WILL NOT INCLUDE INSPECTION OF THEFSE LIEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
- INSPECTION OF THESE THEMS AND IS FOR STRUCTURAL OBSERVATION OF THE INISHED STRUCTURE ONLY.
 NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL
 DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT,
 AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANGES OCCUR BETWEEN PLANS, DETAILS,
 GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRUCT 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.
- 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 WSIT 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, OPDINANCES. RULES, REGULATIONS AND LONG AND APPLICABLE REGULATIONS.

 UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND THE CONTRACTOR SHALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

- THE CONTRACTOR SHALL INSTALLAL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.

 CONTRACTOR IS TO PEFFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN
- DRAWINGS.
 THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEM<mark>ENTS, PAVEMENTS, CURBS, LAND</mark>SCAPING AND STRUCTURES. ANY
- DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST—IN—PLACE CONCRETE.
 UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED
- TO BE 1000 psf.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90'F AT TIME OF PLACEMENT
- CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
- ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS: #4 RARS AND SMALLER-
- ON DRAWINGS CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH...
- CONCRETE EXPOSED TO EARTH OR WEATHER:
 #6 BARS AND LARGER..... #5 BARS AND SMALLER. ..1-1/2"
- CONCRETE NOT EXPOSED TO FARTH OR WEATHER BEAMS AND COLUMNS.
- A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

- 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
- ACCORDANCE WITH THE NEC.

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

 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
- 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
- DUAMITY STATES AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED
- 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.
 ALLIMINUM 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.

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

 APPROVED ANTIOXIDANT 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) \$\frac{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 \$\frac{4}{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 BAD OF THE CONDUIT WILLST BE SEALED WITH SULCOSE CAULE AND PROTECTION AS METAL AS ME
- POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CALUK. (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/O COPPER ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

- 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

- 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. VERY AVAILABLE SHORT CIRCUIT CURRENT DOES
 NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT
 AND TED CODE DEF THE COVERNING LIBITISTICATION. ADOPTED CODE PRE THE GOVERNING JURISDICTION.

 EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE
- EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR 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
- CIRCUIT ID'S).

- PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
 ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
 ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER)
 WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
- WITH THE INTHIN, INWN, INWN-2, ARHW, ARHW-2, INW, INW-2, RRW, OR RRW-2 INSUATION UNLESS DIFFERENTS SPECIFIED.

 SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 OR LARGER) WITH

 TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.

 POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS
- OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED. 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
- 15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS
- ELECTRICAL METALLIC TUBING (EMT) OR METAL—CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

 SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE
- GRADE PVC CONDUIT
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION COURS OF FLEXIBLE METALLIC CONDOIT (LIGOTI-THE FLEX) SHALL BE USED INDOORS AND COTDOORS, WHERE VIBRATION OCCURS OF 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.
- 20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND
- WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS

- 1. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
 2. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
 3. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER—ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MEADE WITH CONDUIT OF THE BODIES, CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS, ENDS OF CONDUITS SHALL BE REPORABLLY TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

 EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY—COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
- BETTER) FOR EXTERIOR LOCATIONS.
- METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC.
 BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
 THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE
 WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY. 27
- 29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T-MOBILE".
- 30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE							
SYSTEM	CONDUCTOR	COLOR					
	A PHASE	BLACK					
120/240V, 1Ø	B PHASE	RED					
120/2401, 16	NEUTRAL	WHITE					
	GROUND	GREEN					
	A PHASE	BLACK					
	B PHASE	RED					
120/208V, 3Ø	C PHASE	BLUE					
	NEUTRAL	WHITE					
	GROUND	GREEN					
	A PHASE	BROWN					
	B PHASE	ORANGE OR PURPLE					
277/480V, 3Ø	C PHASE	YELLOW					
	NEUTRAL	GREY					
	GROUND	GREEN					
DC VOLTAGE	POS (+)	RED**					
DC VOLIAGE	NEG (-)	BLACK**					

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

ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES

GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS POTABLE WATER

APWA UNIFORM COLOR CODE:

TEMPORARY SURVEY MARKINGS

WHITE PROPOSED EXCAVATION

RECLAIMED WATER, IRRIGATION, AND SLURRY LINES

SEWERS AND DRAIN LINES

1 RAVINIA DRIVE, SUITE 1000 ATLANTA, GA 30346





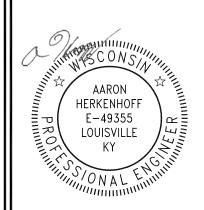
T-MOBILE SITE NUMBER: ML81125A

> BU #: 878349 **JUNG BEER**

W 5009 HWY 144 RANDOM LAKE, WI 53075

EXISTING 150'-0" SELF SUPPORT

	ISSUED FOR:										
RE	ΞV	DATE	DRWN	DESCRIPTION	DES./						
-0		01/27/2023	NM/NH	CONSTRUCTION	AH						
1		02/01/2023	NM	CONSTRUCTION	AH						
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02/01/2023

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REVISION:

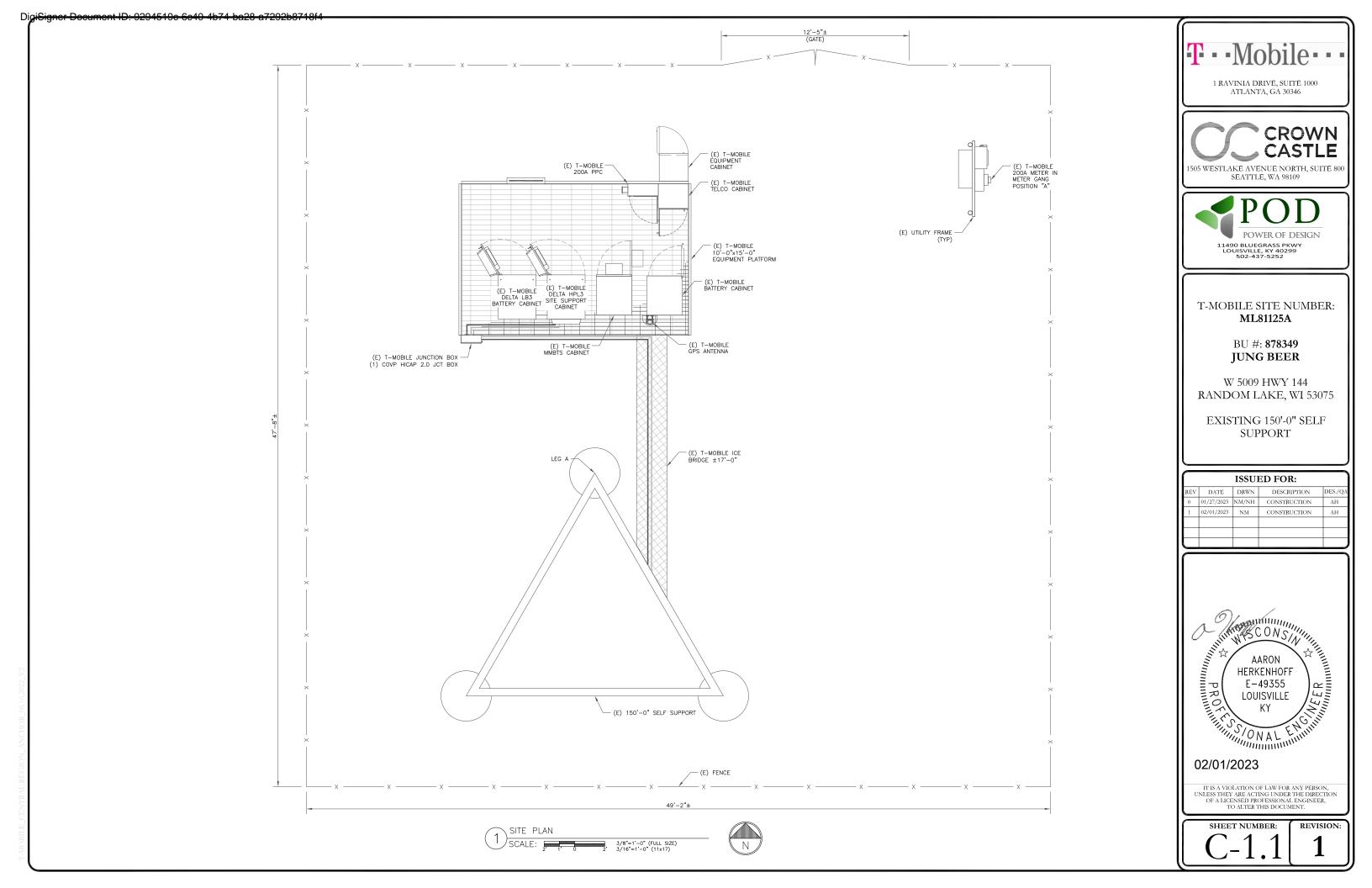
EXISTING FACILITY INTERFACE FRAME GEN GENERATOR GLOBAL POSITIONING SYSTEM GLOBAL SYSTEM FOR MOBILE

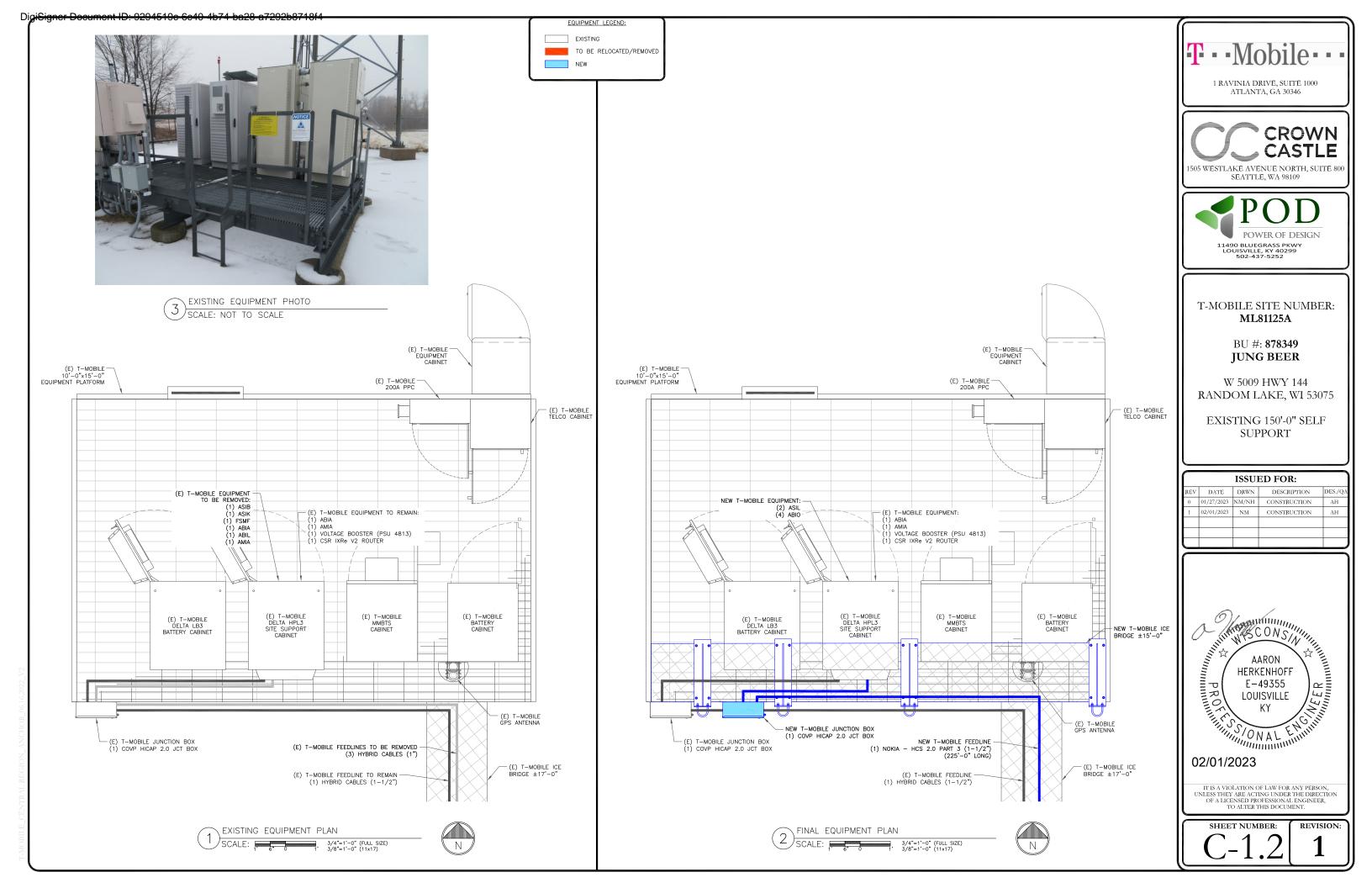
LONG TERM EVOLUTION MASTER GROUND BAR MICROWAVE

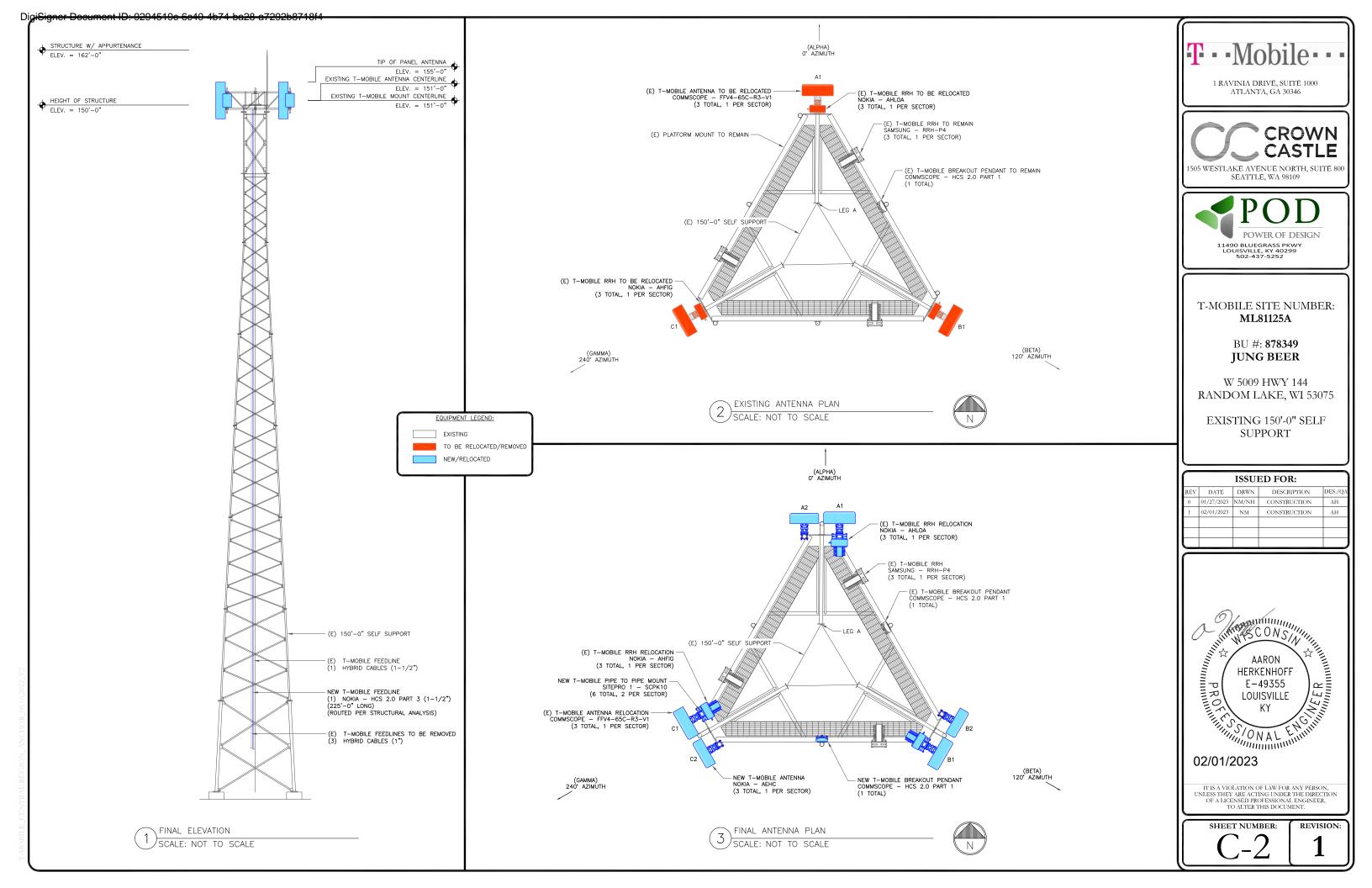
(N) NEC NATIONAL FLECTRIC CODE PROPOSED POWER PLANT

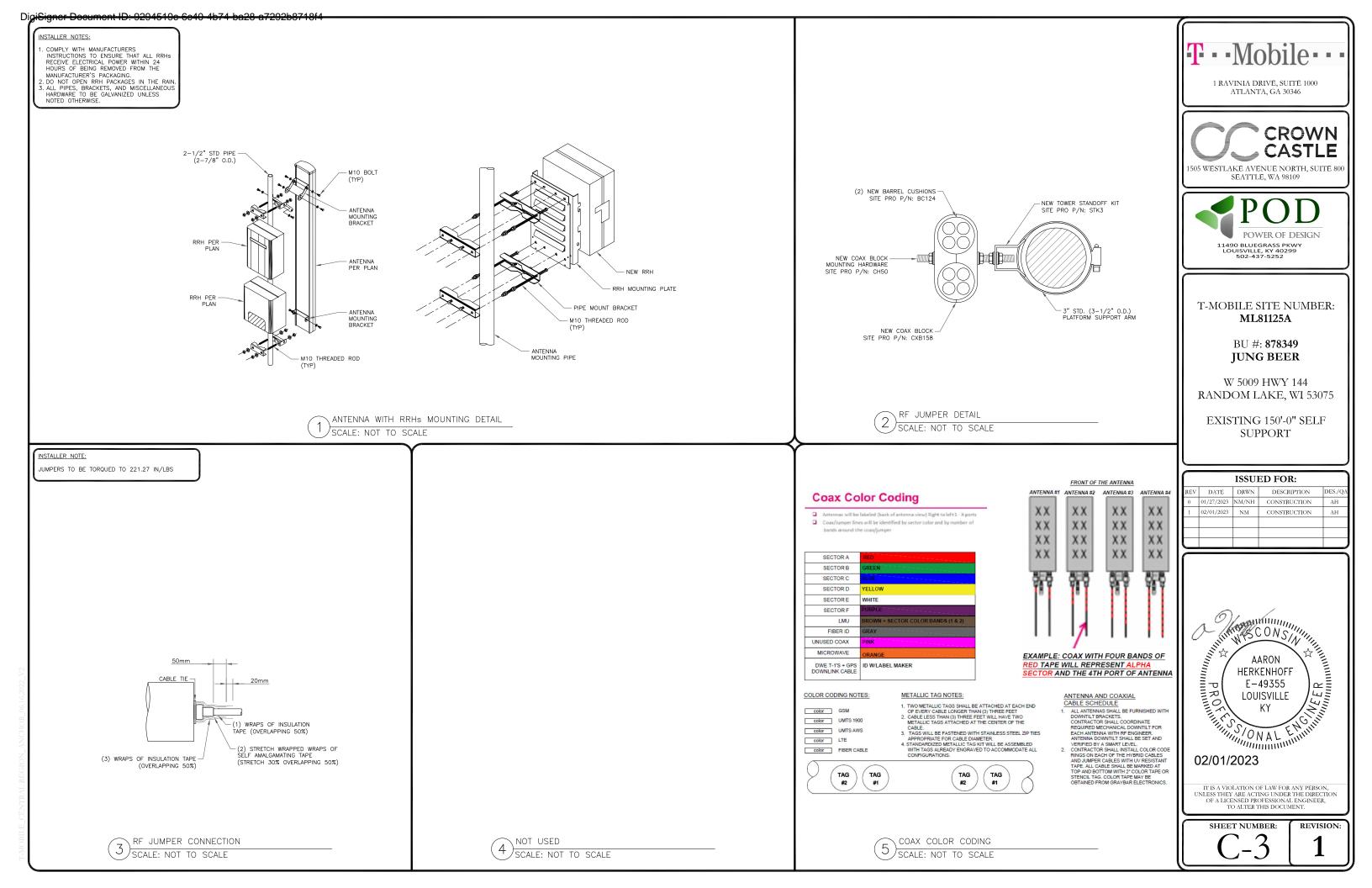
QTY RECT RECTIFIER RADIO BASE STATION REMOTE ELECTRIC TIL RADIO FREQUENCY DATA SHEET

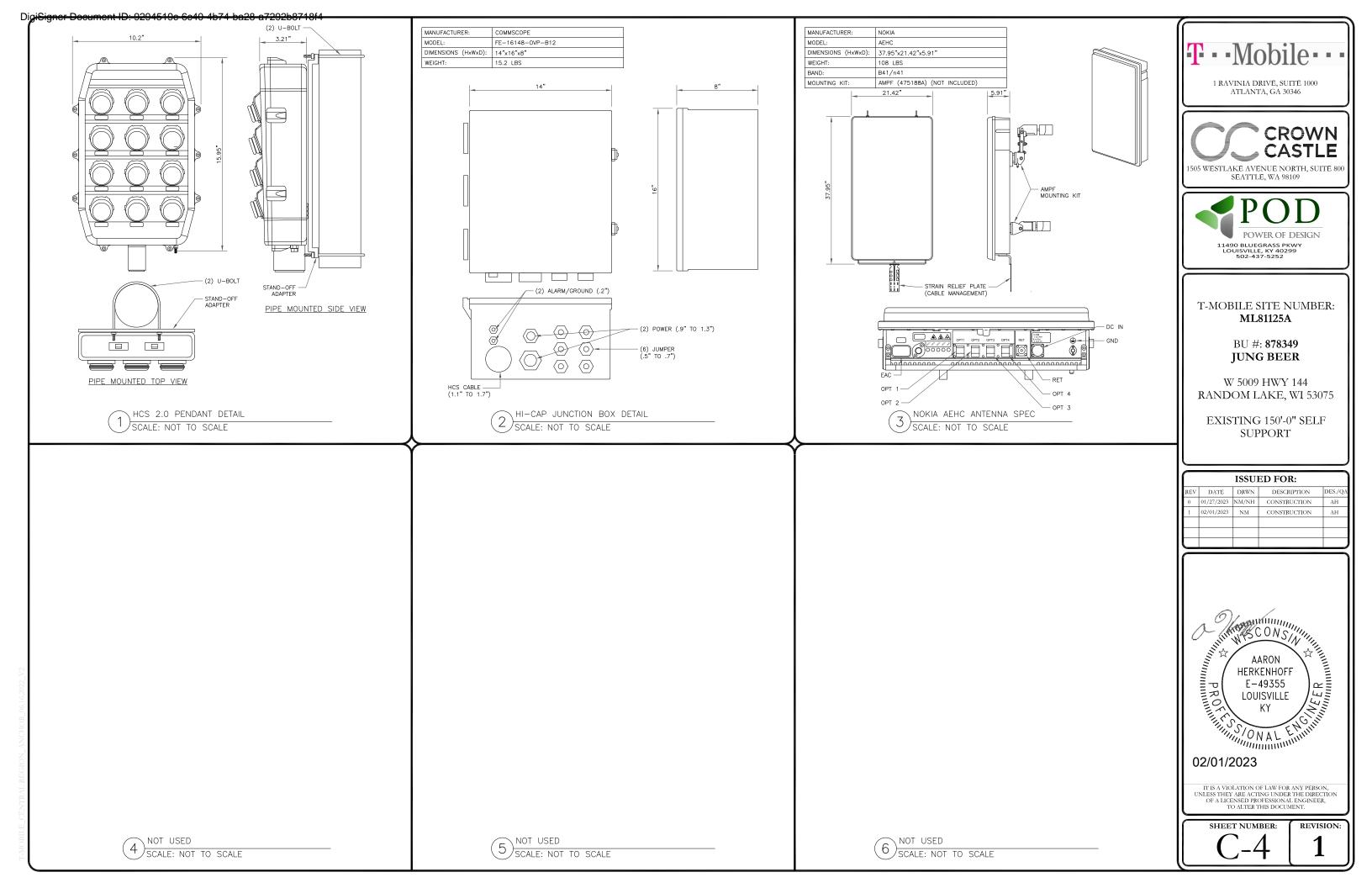
TOWER MOUNTED AMPLIFIER UMTS W P UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM

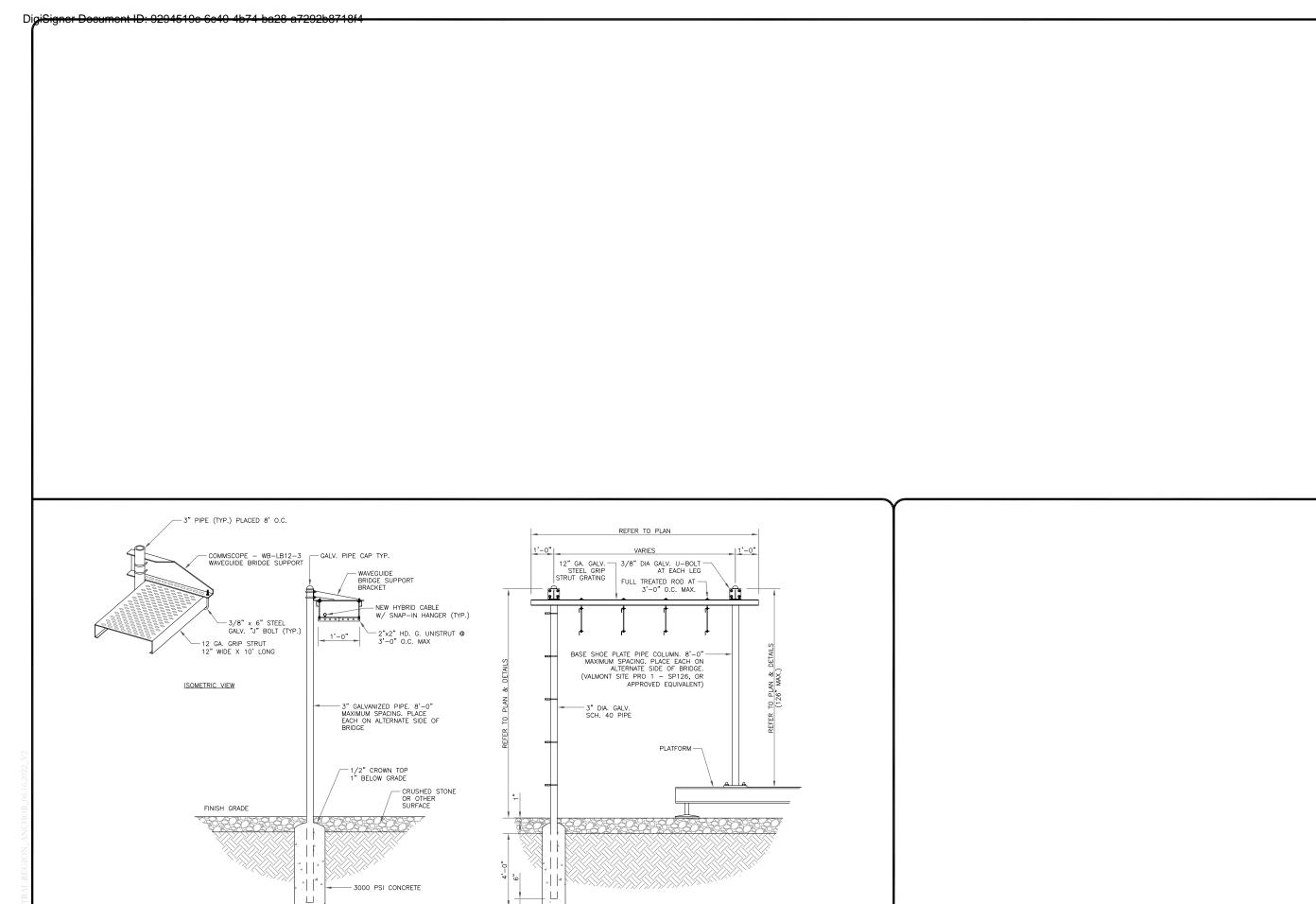












ICE BRIDGE DETAIL

1) SCALE: NOT TO SCALE







T-MOBILE SITE NUMBER: **ML81125A**

BU #: **878349 JUNG BEER**

W 5009 HWY 144 RANDOM LAKE, WI 53075

EXISTING 150'-0" SELF SUPPORT

ĺ	ISSUED FOR:							
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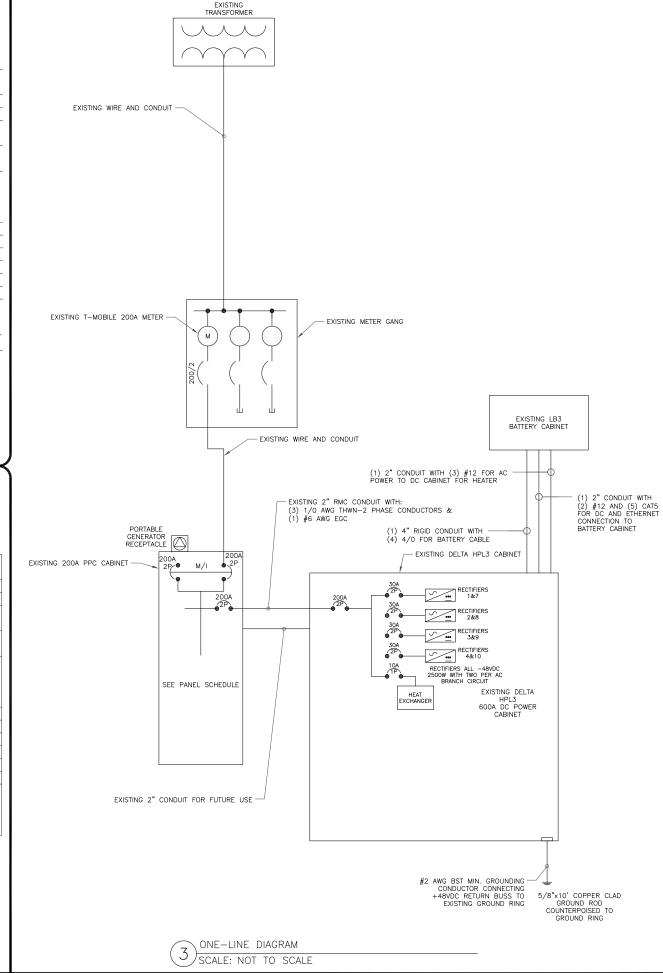
NOT USED
SCALE: NOT TO SCALE

revision:

T-MOBILE PANEL SCHEDULE											
MAIN: 200 AMP MAIN BREAKER	MAIN: 200 AMP MAIN BREAKER VOLTAGE/PHASE:								SHORT	CIRCUIT C	URRENT RATING: N/A
MOUNTING: INSIDE PPC ENCLOSURE			ENCLOS	SURE: NE	MA 3R				SURGE	PROTECT	ION DEVICE: YES
DESCRIPTION LOAD C or (VA) NC			C/B	CIR No.	LOA A-PHASE	D (VA) B-PHASE	CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
	0	NC	T	1	4800		2		С	4800	
SURGE PROTECTION DEVICE	0	NC	20	3		4800	4	100	С	4800	MMBS
BBU	1200	С	0.5	5	12200		6		С	11000	DELTA SSC MAIN FEEDER OCPD
BBO	1200	С	25	7		12380	8	200	С	11180	
				9	0		10	200	С		
				11		0	12	1	С		
				13	0		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
	17000	17180		C = CONTINUOUS LOAD; NC = NON-CONTINUOUS LOAD			IC = NON-CONTINUOUS LOAD				
	25% OF	CONTIN	IUOUS LO	AD (VA) =	4250	4295		** INDICATES NEW LOAD. ALL OTHER LOADS ARE EXISTING. NEW BREAKER TO BE SAME TYPE AND HAVE SAME AIC RATING AS EXISTING. CUSTOMER HAS NOT PROVIDED LOADS SHOWN ARE ESTIMATED VALUES			
		Т	OTAL LO	AD (VA) =	21250	21475					
			TOTAL LO	DAD (A) =	178	179	DL SAIVIE				

EXISTING PANEL SCHEDULE SCALE: NOT TO SCALE

				Т-МО	BILE PAN	NEL SCHI	EDULI	E			
MAIN: 200 AMP MAIN BREAKER			VOLTAC	GE/PHASE:	: 120/240V, 1-PH	IASE, 3-WIRE			SHORT	CIRCUIT C	:URRENT RATING: N/A
MOUNTING: INSIDE PPC ENCLOSURE			ENCLOS	SURE: NEM	vIA 3R				SURGE	PROTECTI	ION DEVICE: YES
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAI A-PHASE	D (VA) B-PHASE	CIR No.	C/B	C or NC		
OUROE DROTECTION DEVICE	0	NC	20	1	4800		2	100	С	4800	MMDC
SURGE PROTECTION DEVICE	0	NC	20	3		4800	4	100	С	4800	- MMBS
BBU	1200	С	25	5	12200		6		С	11000	
	1200	С	_ 25	7		12380	8	200	С	11180	DELTA SSC MAIN FEEDER OCPD
	T'			9	0		10	200	С		DELTA 330 IVIAIN FEEDER 301 D
				11		0	12]	С		
	<u> </u>			13	0		14				
	'			15		0	16				
				17	0		18				
	<u> </u>			19		0	20				
				21	0		22				
	<u> </u>			23		0	24				
			BASE LO	AD (VA) =	17000	17180		C = C(IS LOAD: N	IC = NON-CONTINUOUS LOAD
	25% OF	CONTIN	IUOUS LO	AD (VA) =	4250	4295					
		Т	OTAL LO	AD (VA) =	21250	21475					LOADS ARE EXISTING. NEW BREAKER TO ATING AS EXISTING. CUSTOMER HAS NO
			TOTAL LO	OAD (A) =	178	179	DE SVINIE				VN ARE ESTIMATED VALUES









11490 BLUEGRASS PKWY LOUISVILLE, KY 40299 502-437-5252

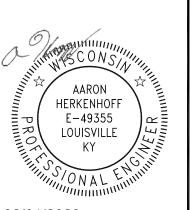
T-MOBILE SITE NUMBER: ML81125A

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W 5009 HWY 144 RANDOM LAKE, WI 53075

EXISTING 150'-0" SELF SUPPORT

				10					
ISSUED FOR:									
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02/01/2023

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SHEET NUMBER:

REVISION:

FINAL PANEL SCHEDULE

(2) SCALE: NOT TO SCALE



1 RAVINIA DRIVE, SUITE 1000 ATLANTA, GA 30346



SEATTLE, WA 98109



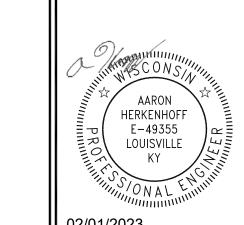
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EXISTING 150'-0" SELF SUPPORT

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02/01/2023

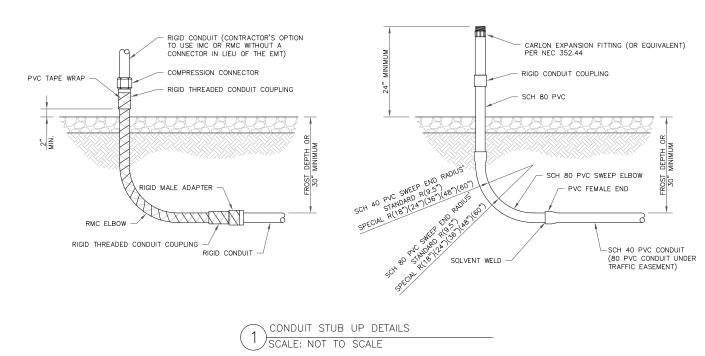
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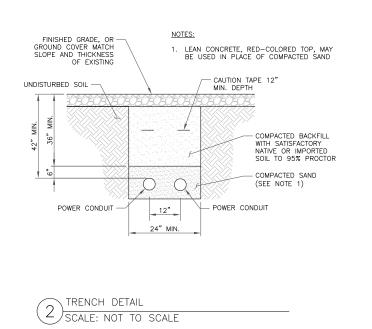
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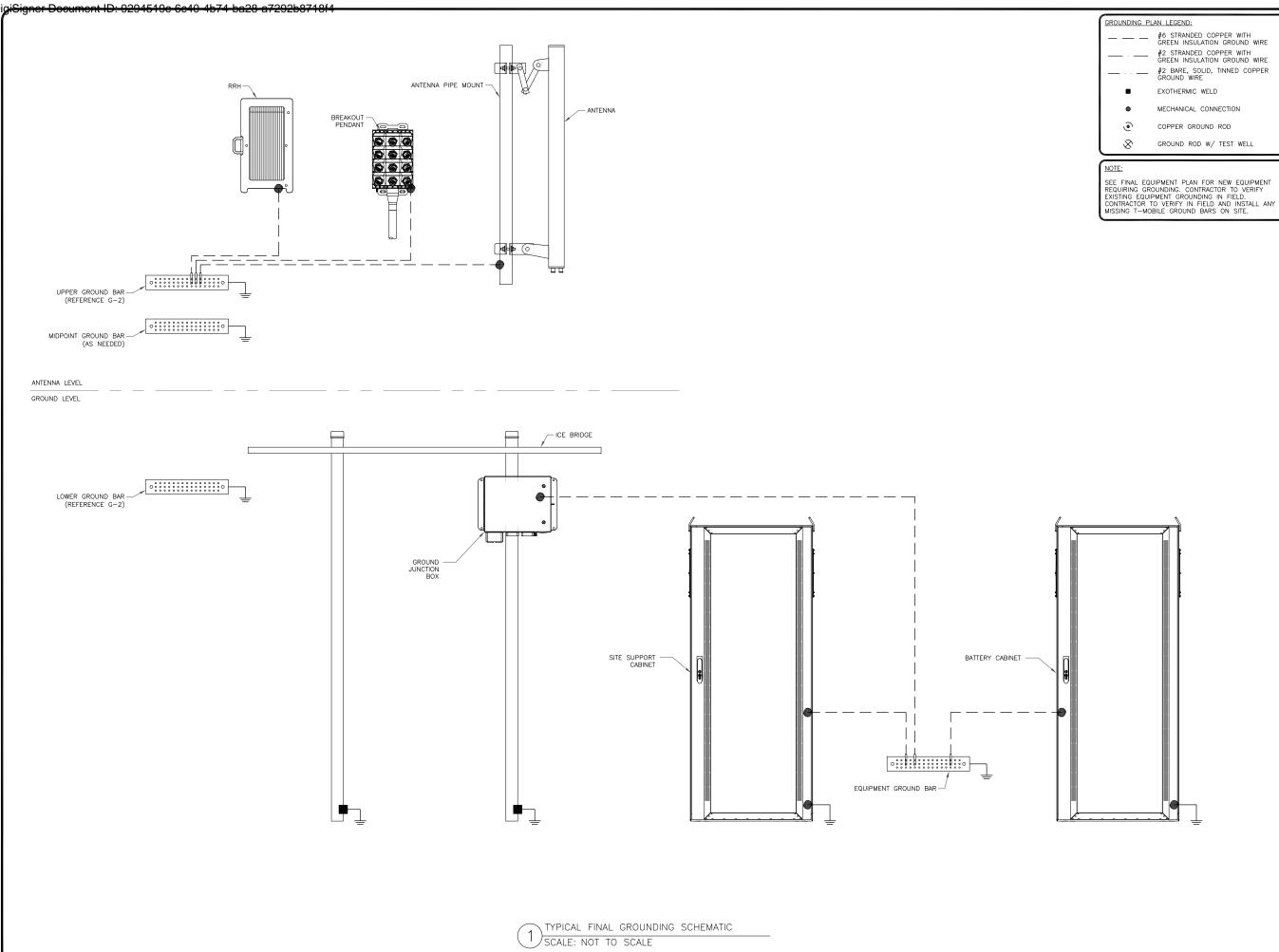
REVISION:

INSTALLER NOTES:

ALL METAL CONDUIT INSTALLED IN DIRECT CONTACT WITH THE EARTH SHALL BE CONSIDERED TO BE INSTALLED IN A SEVERELY CORROSIVE ENVIRONMENT AND IS REQUIRED TO HAVE SUPPLEMENTAL PROTECTION AGAINST CORROSION (NEC ARTICLE 342.10(B) & 344.10(B)(1)). THIS PROTECTION SHALL EITHER BE AN APPROVED MANUFACTURER INSTALLED PROTECTIVE COATING ON THE CONDUIT OR SHALL BE (2) LAYERS OF 10 MIL PVC PIPE WRAP TAPE INSTALLED USING OPPOSING SPIRAL WRAPS. ON VERTICAL PIPE THE OUTSIDE LAYER OF TAPE SHALL BE WRAPPED SO AS TO PROVIDE SHEDDING OF WATER (i.e. TAPE SHOULD WRAP IN AN UPWARD DIRECTION WITH LOWER WRAP BEING BENEATH THE WRAP ABOVE). SPIRAL WRAPS SHALL HAVE A MINIMUM OF 1/4" OVERLAP WITH THE PRECEDING THE WRAP AND OTHER METHODS OF CORROSION PROTECTION SHALL REQUIRE APPROVAL BY THE ENGINEER OF RECORD PRIOR TO BEING USED.







1 RAVINIA DRIVE, SUITE 1000 ATLANTA, GA 30346

CROWN CASTLE

1505 WESTLAKE AVENUE NORTH, SUITE 800 SEATTLE, WA 98109



T-MOBILE SITE NUMBER: ML81125A

> BU #: **878349 JUNG BEER**

W 5009 HWY 144 RANDOM LAKE, WI 53075

EXISTING 150'-0" SELF SUPPORT

ISSUED FOR:								
REV	DATE	DRWN	DESCRIPTION	DES./QA				
0	01/27/2023	NM/NH	CONSTRUCTION	AH				
1	02/01/2023	NM	CONSTRUCTION	AН				



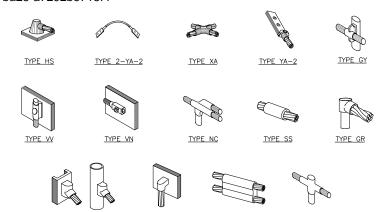
02/01/2023

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SHEET NUMBER:

REVISION:





NOTE:

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

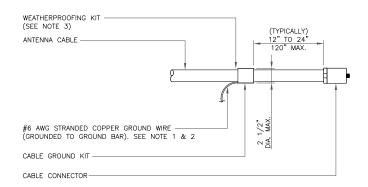
TYPE PT

TYPE GT2

TYPE VB

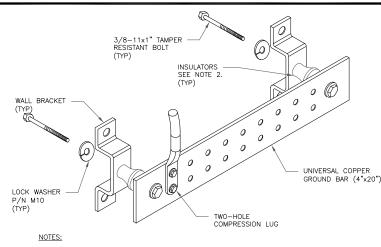
CADWELD GROUNDING CONNECTIONS

SCALE: NOT TO SCALE

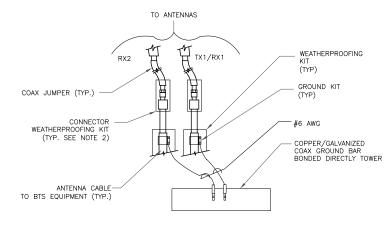


NOTES:

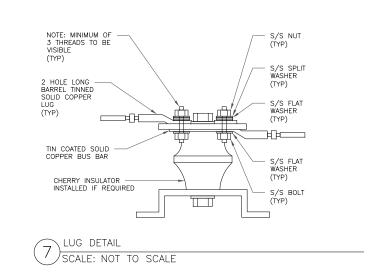
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
- GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
- WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.
 - CABLE GROUND KIT CONNECTION SCALE: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



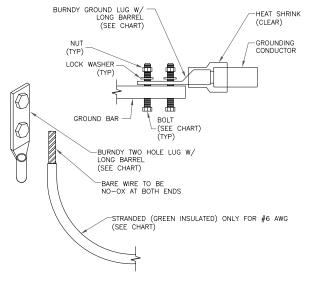
- 1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS—STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD—WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
- 2. OMIT INSULATOR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



- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
- 2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.
- GROUND CABLE CONNECTION 4) SCALE: NOT TO SCALE



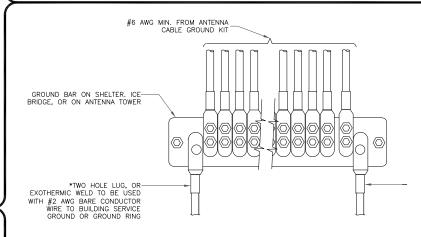




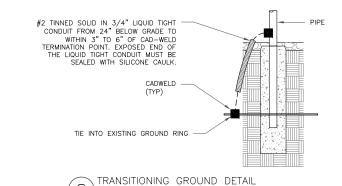
NOTES:

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

MECHANICAL LUG CONNECTION SCALE: NOT TO SCALE



GROUNDWIRE INSTALLATION 5) SCALE: NOT TO SCALE



SCALE: NOT TO SCALE

1 RAVINIA DRIVE, SUITE 1000 ATLANTA, GA 30346





T-MOBILE SITE NUMBER: ML81125A

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EXISTING 150'-0" SELF SUPPORT

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