November 17, 2021

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

RE: **Request T-Mobile for an Order to Approve the Shared Use of an Existing Tower 85 Paper Mill Road, Woodbury, CT 06798 Latitude: 41° 34' 23.07"/ Longitude: -73° 13' 39.51"**

Dear Ms. Bachman:

Pursuant to Connecticut General Statutes ("C.G.S.") §16-50aa, as amended, T-Mobile hereby requests an order from the Connecticut Siting Council ("Council") to approve the shared use by T-Mobile of an existing telecommunication tower at 85 Paper Mill Road in Woodbury, CT. The existing 150-foot monopole tower is owned by Crown Castle International Corp. ("Crown Castle"). The underlying property is owned by Jodie A. Bryan. T-Mobile requests that the Council find that the proposed shared use of the Crown Castle tower satisfies the criteria of C.G.S. §16-50aa and issue an order approving the proposed shared use. This modification/proposal includes hardware that is both 4G(LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times. A copy of this filing is being sent to Ms. Barbara Perkinson, First Selectwomen, Town of Woodbury, Mr. William Agresta, Town Planner, as well as the property owner.

Background

T-Mobile is licensed by the Federal Communications Commission ("FCC") to provide wireless services throughout the State of Connecticut. T-Mobile and Crown Castle have agreed to the proposed shared use of the 85 Paper Mill Road tower pursuant to mutually acceptable terms and conditions. Likewise, T-Mobile and Crown Castle have agreed to the proposed installation of equipment cabinets on the ground on the northeast side of the tower within the existing compound. Crown Castle has authorized T-Mobile to apply for all necessary permits and approvals that may be required to share the existing tower.

The existing Crown Castle facility consists of a 150-foot monopole tower within a 3,700 square foot leased area. ATT currently maintains antennas at the 150-foot level.

T-Mobile proposes to install six (6) antennas, six (6) RRUs, one (1) antenna platform with handrail kit and four (4) hybrid cables - 1 5/8". In addition, T-Mobile will install ground equipment cabinets and 25kw generator on a concrete pad. Included in the Construction Drawings are T-Mobile's project specifications for locations of all proposed site improvements. The Construction Drawings also contain specifications for T-Mobile's proposed antennas and ground work.

C.G.S. § 16-50aa(c)(1) provides that, upon written request for approval of a proposed shared use, "if the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the council shall issue an order approving such a shared use." T-Mobile respectfully submits that the shared use of the tower satisfies these criteria.

A. **Technical Feasibility.** The existing Crown Castle tower is structurally capable of supporting T-Mobile's proposed improvements. The proposed shared use of this tower is, therefore, technically feasible. A Feasibility Structural Analysis Report ("Structural Report") prepared for this project confirms that this tower can support T-Mobile's proposed loading. A copy of the Structural Report has been included in this application as well as a copy of the Mount Platform Analysis.

B. **Legal Feasibility.** Under C.G.S. § 16-50aa, the Council has been authorized to issue order approving the shared use of an existing tower such as the Crown Castle tower. This authority complements the Council's prior-existing authority under C.G.S. § 16-50p to issue orders approving the construction of new towers that are subject to the Council's jurisdiction. In addition, § 16-50x(a) directs the Council to "give such consideration to the other state laws and municipal regulations as it shall deem appropriate" in ruling on requests for the shared use of existing tower facilities. Under the statutory authority vested in the Council, an order by the Council approving the requested shared use would permit the Applicant to obtain a building permit for the proposed installations.

C. **Environmental Feasibility.** The shared use of Crown Castle tower would have a minimal environmental effect for the following reasons:

1. The proposed installation will have no visual impact. T-Mobile's equipment cabinet would be installed within the existing facility compound. T-Mobile's shared use of this tower therefore will not cause any significant change or alteration in the physical or environmental characteristics of the existing site.

2. Operation of T-Mobile's antennas at this site would not exceed the RF emissions standard adopted by the Federal Communications Commission ("FCC"). Included in the EME report of this filing are the approximation tables that demonstrate that T-Mobile's proposed facility will operate well within the FCC RF emissions safety standards.

3. Under ordinary operating conditions, the proposed installation would not require the use of any water or sanitary facilities and would not generate air emissions or discharges to water bodies or sanitary facilities. After construction is complete the

proposed installations would not generate any increased traffic to the Crown Castle facility other than periodic maintenance. The proposed shared use of the Crown Castle tower, would, therefore, have a minimal environmental effect, and is environmentally feasible.

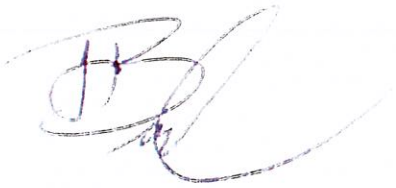
D. **Economic Feasibility.** As previously mentioned, T-Mobile has entered into an agreement with Crown Castle for the shared use of the existing facility subject to mutually agreeable terms. The proposed tower sharing is, therefore, economically feasible

E. **Public Safety Concerns.** As discussed above, the tower is structurally capable of supporting T-Mobile's full array of six (6) antennas, six (6) RRUs, one (1) antenna platform, four (4) hybrid cable 1-5/8" and all related equipment. T-Mobile is not aware of any public safety concerns relative to the proposed sharing of the existing Crown Castle tower

Conclusion

For the reasons discussed above, the proposed shared use of the existing Crown Castle tower at 85 Paper Mill Road satisfies the criteria stated in C.G.S. §16-50aa and advances the General Assembly's and the Council's goal of preventing the unnecessary proliferation of towers in Connecticut. The Applicant, therefore, respectfully requests that the Council issue an order approving the prosed shared use.

Sincerely,



Jeff Barbadora
Site Acquisition Specialist 1800
W. Park Drive
Westborogh, MA 0581
(781) 970-0053
jeff.barbadora@crowncastle.com

CC:

Barbara Perkins, First Selectwoman
Town of Woodbury
281 Main Street, Woodbury, CT

William Agresta, Town PLanner
Town Woodbury
281 Main Street, Woodbury, CT 06798

Jodie Bryan, Property Owner
85 Paper Mill Road
Woodbury, CT 06798

Crown Castle, Tower Owner

CROWN CASTLE

1800 W Park Dr, r2nd Floor
Westborough, Town of, MA 01581

Phone (781) 970-0053
Fax (724) 416-6120
www.crowncastle.com

Crown Castle Letter of Authorization

CT - CONNECTICUT SITING COUNCIL
M. Bachman
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06798

Re: Tower Share Application
Crown Castle telecommunications site at: 85 PAPER MILL ROAD, WOODBURY, CT 06798

CCATT LLC ("Crown Castle") hereby authorizes T-MOBILE, including their Agent, to act as our Agent in the processing of all zoning applications, building permits and approvals through the CT - CONNECTICUT SITING COUNCIL for the existing wireless communications site described below:

Crown Site ID/Name:	857528/WOODBURY PAPER MILL RD
Customer Site ID:	CTNH291A/
Site Address:	85 PAPER MILL ROAD, WOODBURY, CT 06798
APN:	WOOD-000040-000000-000032A-A000000

Crown Castle

By: _____ Date: _____

Jeff Barbadora
Real Estate Specialist

Town of Woodbury, CT

Property Listing Report

Map Block Lot	Building #	Unique Identifier
040-032A		240120

Property Information

Property Location	85 PAPER MILL RD
Mailing Address	754 PEACHTREE ST NE 16RL ATLANTA GA 30308
Land Use	Broadcasting Facility
Zoning Code	OS100
Neighborhood	20

Owner	BRYAN JODIE A
Co-Owner	
Book / Page	0376/0894*
Land Class	Commercial
Census Tract	3621
Acreage	2.3

Valuation Summary

Assessed value = 70% of Appraised Value

Item	Appraised	Assessed
Buildings	0	0
Outbuildings	252543	176780
Land	91840	64290
Total	344383	0

Utility Information

Electric	No
Gas	No
Sewer	No
Public Water	No
Well	No

Primary Construction Details

Year Built	
Building Desc.	
Building Style	
Stories	
Exterior Walls	
Exterior Walls 2	
Interior Walls	
Interior Walls 2	
Interior Floors 1	
Interior Floors 2	

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	
Full Bathrooms	
Half Bathrooms	
Extra Fixtures	
Total Rooms	
Bath Style	
Kitchen Style	
Occupancy	

Building Use	
Building Condition	
Frame Type	
Fireplaces	
Bsmt Gar	
Fin Bsmt Area	
Fin Bsmt Quality	
Building Grade	
Roof Style	
Roof Cover	

Report Created On 11/17/2021

Town of Woodbury, CT

Property Listing Report | Map Block Lot 040-032A | Building # | Unique Identifier 240120

Detached Outbuildings

Type	Description	Area (sq ft)	Condition	Year Built
Cell Towers	Fencing	120	Average	2010
Cell Towers	Pad	150	Average	2010
Cell Towers	Building/Equipment	240	Average	2010
Cell Towers	Mono Pole	150	Average	2010

Attached Extra Features

Type	Description	Area (sq ft)	Condition	Year Built

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
BRYAN JODIE A	0376_0894*	8/3/2010	0
BRYAN JODIE A	0251_0215	6/30/2000	0
BRYAN RALPH D & JODIE A	0222_0581	6/30/1997	260000

Report Created On 11/17/2021

Filing Guides
Meetings & Minutes
Public Participation
Audio Link to New Britain Hearing Rooms
Programs & Services
Telecommunications Database
Publications
Other Resources
Statutes & Regulations
Electric Transmission Upgrade Projects
Frequently Asked Questions

Melanie Bachman,
Executive Director

DOCKET NO. 170 - An application of Metro Mobile CTS of Hartford, Inc. for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located at 109 Maple Avenue West in the Higganum section of the Town of Haddam, Connecticut.

Connecticut Siting Council

November 15, 1995

DECISION AND ORDER

Pursuant to the foregoing Findings of Fact, and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a cellular telecommunications tower and equipment building at the proposed prime site in the Higganum section of Haddam, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Bell Atlantic NYNEX Mobile, Inc. for the construction, operation, and maintenance of a cellular telecommunications tower, associated equipment, and building at the proposed prime site, located within an 88.85 acre parcel at 109 Maple Avenue West, Haddam, Connecticut. We find the effects on scenic resources and the environment from the alternate site to be more significant than the effects from the prime site, and therefore deny certification of the alternate site without prejudice.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed communications service and sufficient to accommodate tower sharing, and not to exceed a total height of 120 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include plans for the tower and tower foundation; specifications for the placement of all antennas to be attached to this tower; plans for the equipment building, security fence, emergency generator and fuel tank; plans for the access road and utility line installation from 109 Maple Avenue West; plans for site clearing and tree trimming; and plans for water drainage and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sedimentation Control, as amended.

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

4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.

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

6. If the facility does not initially provide, or permanently ceases to provide, cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapplication for any continued or new use shall be made to the Council before any such use is made.

7. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

8. The Certificate Holder shall notify the Council upon completion of construction and provide the final cost to construct the facility.

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

Hartford Courant and the Middletown Press.

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

The parties and intervenors to this proceeding are:

APPLICANT	**ITS REPRESENTATIVES**
Bell Atlantic NYNEX Mobile, Inc.	Brian C.S. Freeman, Esq. Kenneth C. Baldwin, Esq. Robinson & Cole One Commercial Plaza Hartford, CT 06103-3597 David S. Malko General Manager - Engineering Sandy M. Ranciato Manager - Regulatory Services Bell Atlantic NYNEX Mobile, Inc. 20 Alexander Drive Wallingford, CT 06492
INTERVENOR	**ITS REPRESENTATIVE**
Town of Haddam	The Honorable Marjorie W. DeBold First Selectman Town of Haddam 30 Field Park Drive Haddam, CT 06438
INTERVENOR	**ITS REPRESENTATIVE**
Springwich Cellular Limited Partnership	Peter J. Tyrrell, Esq. General Counsel - Wireless Springwich Cellular Limited Partnership 500 Enterprise Dr., 4th floor Rocky Hill, CT 06067

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, November 19, 2021 12:10 PM
To: Barbadora, Jeff
Subject: FedEx Shipment 775253990260: Your package has been delivered

Hi. Your package was delivered Fri, 11/19/2021 at 12:08pm.

Delivered to 281 MAIN ST S, WOODBURY, CT 06798

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775253990260

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

TO	Town of Woodbury Barbara Perkins, First Selectwoman 281 Main Street WOODBURY, CT, US, 06798
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 11/18/2021 06:10 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WOODBURY, CT, US, 06798
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 11:09 AM CST 11/19/2021.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, November 19, 2021 12:10 PM
To: Barbadora, Jeff
Subject: FedEx Shipment 775254084267: Your package has been delivered

Hi. Your package was delivered Fri, 11/19/2021 at 12:08pm.

Delivered to 281 MAIN ST S, WOODBURY, CT 06798

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775254084267

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

TO	Town of Woodbury William Agesta, Town Planner 281 Main Street WOODBURY, CT, US, 06798
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 11/18/2021 06:10 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WOODBURY, CT, US, 06798
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 11:09 AM CST 11/19/2021.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Friday, November 19, 2021 1:15 PM
To: Barbadora, Jeff
Subject: FedEx Shipment 775254138889: Your package has been delivered

Hi. Your package was delivered Fri, 11/19/2021 at 1:11pm.

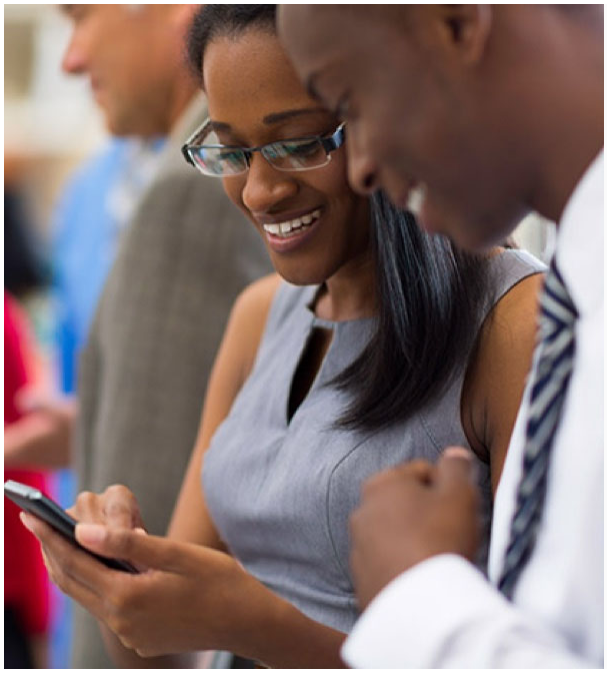
Delivered to 85 PAPER MILL RD, WOODBURY, CT 06798

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775254138889

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

TO	Jodie Bryan 85 Paper Mill Road WOODBURY, CT, US, 06798
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Thu 11/18/2021 06:10 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	WOODBURY, CT, US, 06798
SPECIAL HANDLING	Deliver Weekday Residential Delivery
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight



Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 12:15 PM CST 11/19/2021.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Date: **August 17, 2021**

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351

Subject: Structural Analysis Report

Carrier Designation:	***T-Mobile* Co-Locate**	
	Site Number:	CTNH291A
	Site Name:	N/A
Crown Castle Designation:	**BU Number:**	857528
	Site Name:	WOODBURY PAPER MILL RD
	JDE Job Number:	675005
	Work Order Number:	2000551
	Order Number:	576299 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	218217.582021
Site Data:	**85 Paper Mill Road, Woodbury, Litchfield County, CT 06798** **Latitude *41° 34' 23.07"*, Longitude *-73° 13' 39.51"*** **150 Foot - Monopole Tower**	

Tower Engineering Professionals is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

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

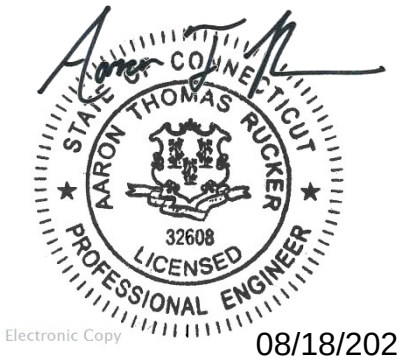
LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Matthew E. Crispi, E.I. / DEN

Respectfully submitted by:

Aaron T. Rucker, P.E.



Electronic Copy

08/18/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150-ft monopole tower designed by Ehresmann Engineering 1995.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	B
Topographic Factor:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
128.0	128.0	3	RFS Celwave	APXVAALL24_43-U-NA20_TMO	4	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4480 B71_TMO		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		1	Tower Mounts	SitePro1 RMQP-4096-HK		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148.0	148.0	2	Powerwave Technologies	P90-14-XLH-RR w/ Mount Pipe	2 2 3 6	3/8 5/8 3/4 1-5/8
		2	CCI Antennas	DMP65R-BU6D w/ Mount Pipe		
		1	CCI Antennas	DMP65R-BU4D w/ Mount Pipe		
		2	CCI Antennas	OPA65R-BU6D w/ Mount Pipe		
		1	CCI Antennas	OPA65R-BU4D w/ Mount Pipe		
		3	Powerwave Technologies	TT19-08BP111-001		
		2	Raycap	DC6-48-60-18-8F		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14		
		3	Ericsson	RRUS 8843 B2/B66A		
		1	Powerwave Technologies	P90-14-XLH-RR w/ Mount Pipe		
		1	Tower Mounts	Platform Mount [LP 303-1]		
		1	Tower Mounts	Miscellaneous [NA 507-1]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
138.0	138.0	3	JMA Wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		1	Raycap	RDIDC-9181-PF-48		
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Tower Mounts	Commscope MC-PK8-DSH		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	4570959	CCISites
Tower Foundation Drawings	4724414	CCISites
Tower Manufacturer Drawings	4724415	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) The 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. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (k)	ϕP_{allow} (k)	% Capacity	Pass / Fail
L1	150 - 104.5	Pole	TP28.1875x18x0.1875	1	-13.21	988.77	57.3	Pass
L2	104.5 - 68.75	Pole	TP35.75x26.8609x0.25	2	-18.03	1673.43	59.9	Pass
L3	68.75 - 34	Pole	TP43x34.0833x0.3125	3	-24.93	2519.29	53.2	Pass
L4	34 - 0	Pole	TP50x41.0375x0.3125	4	-34.66	3027.25	60.2	Pass
							Summary	
						Pole (L4)	60.2	Pass
						RATING =	**60.2**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	26.2	Pass
1,2	Base Plate	-	38.1	Pass
1,2	Base Foundation Structural	-	30.3	Pass
1,2	Base Foundation Soil Interaction	-	62.1	Pass

Structure Rating (max from all components) =	62.1%

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

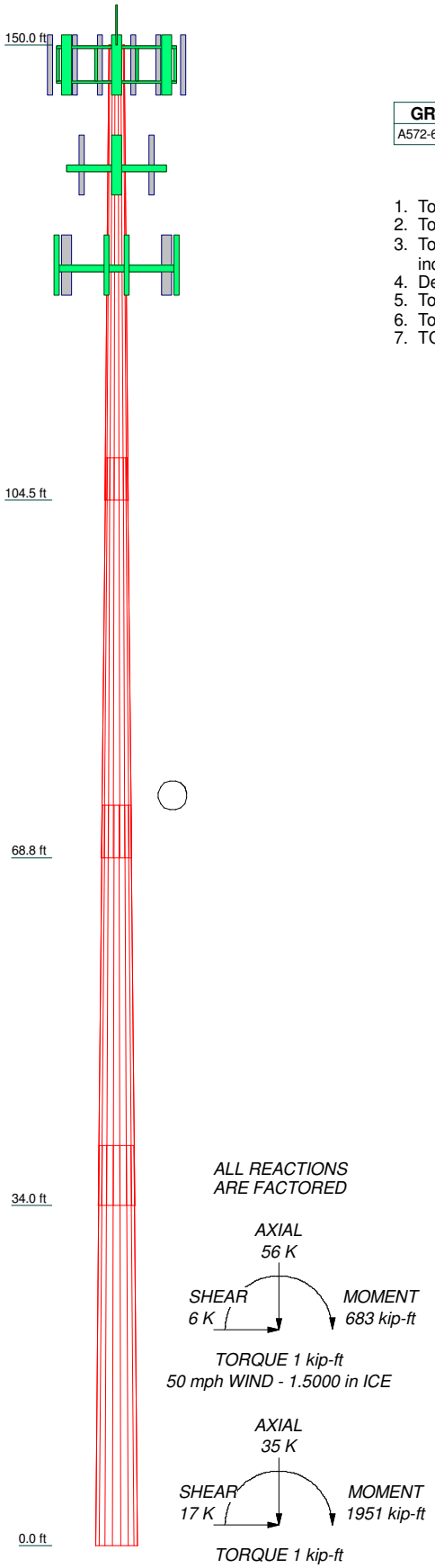
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	45.50	18	0.1875	4.25	18.0000	28.1875	A572-65	2.1
2	40.00	18	0.2500	5.25	26.8609	35.7500		3.4
3	40.00	18	0.3125	6.00	34.0833	43.0000		5.2
4	40.00	18	0.3125		41.0375	50.0000		6.1
								16.7



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-H Standard.
2. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Risk Category II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 60.2%

Tower Engineering Professionals
326 Tryon Rd.
Raleigh, NC 27603
Phone: (919) 661-6351
FAX:

Job:	***Woodbury Paper Mill Rd (BU 857528)***		
Project:	***TEP No. 218217.582021***		
Client: Crown Castle	Drawn by: kolson		App'd:
Code: TIA-222-H	Date: 08/17/21		Scale: NTS
Path: C:\Users\kolson\Desktop\tnx\857528\857528_2000551_LC7.en			Dwg No. E-1

Tower Input Data

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

Tower base elevation above sea level: 528.00 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category B.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.5000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals	√	Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios		Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-H Tension Splice Exemption
	Leg Bolts Are At Top Of Section		Add IBC .6D+W Combination		Poles
	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component	√	Include Shear-Torsion Interaction
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Always Use Sub-Critical Flow
	SR Members Have Cut Ends		Treat Feed Line Bundles As Cylinder		Use Top Mounted Sockets
	SR Members Are Concentric		Ignore KL/ry For 60 Deg. Angle Legs	√	Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-104.50	45.50	4.25	18	18.0000	28.1875	0.1875	0.7500	A572-65 (65 ksi)
L2	104.50-68.75	40.00	5.25	18	26.8609	35.7500	0.2500	1.0000	A572-65 (65 ksi)
L3	68.75-34.00	40.00	6.00	18	34.0833	43.0000	0.3125	1.2500	A572-65 (65 ksi)
L4	34.00-0.00	40.00		18	41.0375	50.0000	0.3125	1.2500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.2488	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	28.5934	16.6635	1650.5160	9.9400	14.3193	115.2655	3303.2038	8.3333	4.6310	24.699
L2	28.1958	21.1158	1889.1397	9.4469	13.6453	138.4457	3780.7651	10.5599	4.2875	17.15
	36.2629	28.1692	4485.0722	12.6025	18.1610	246.9617	8976.0460	14.0873	5.8520	23.408
L3	35.7493	33.4964	4826.3494	11.9886	17.3143	278.7490	9659.0495	16.7514	5.4487	17.436
	43.6151	42.3407	9747.5744	15.1541	21.8440	446.2358	19507.9749	21.1744	7.0180	22.458
L4	42.9875	40.3941	8464.0370	14.4574	20.8470	406.0065	16939.2112	20.2009	6.6726	21.352
	50.7231	49.2838	15372.1931	17.6391	25.4000	605.2045	30764.6134	24.6466	8.2500	26.4

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-104.50				1	1	1			
L2 104.50-68.75				1	1	1			
L3 68.75-34.00				1	1	1			
L4 34.00-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
HB158-21U6S24-xx M_TMO(1-5/8)	B	No	No	Inside Pole	128.00 - 0.00	4	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
							2" Ice	0.00	2.50
***									
CU12PSM9P6XXX(1-1/2)	C	No	No	Inside Pole	138.00 - 0.00	1	No Ice	0.00	2.35
							1/2" Ice	0.00	2.35
							1" Ice	0.00	2.35
							2" Ice	0.00	2.35
*									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	148.00 - 0.00	6	No Ice	0.00	0.82

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
							2" Ice	0.00	0.06
WR-VG82ST-BRD A(5/8)	B	No	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.31
							1/2" Ice	0.00	0.31
							1" Ice	0.00	0.31
							2" Ice	0.00	0.31
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	148.00 - 0.00	3	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
							2" Ice	0.00	0.58
2" Flexible Conduit	B	No	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
							2" Ice	0.00	0.34
****									
****									
Safety Line 3/8	C	No	No	CaAa (Out Of Face)	150.00 - 0.00	1	No Ice	0.04	0.22
							1/2" Ice	0.14	0.75
							1" Ice	0.24	1.28
							2" Ice	0.44	2.34
5/8 rod/step	C	No	No	CaAa (Out Of Face)	150.00 - 0.00	1	No Ice	0.02	0.27
							1/2" Ice	0.12	0.70
							1" Ice	0.22	1.74
							2" Ice	0.42	5.65

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-104.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.59
		C	0.000	0.000	0.000	2.616	0.10
L2	104.50-68.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.65
		C	0.000	0.000	0.000	2.056	0.10
L3	68.75-34.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.63
		C	0.000	0.000	0.000	1.998	0.10
L4	34.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.61
		C	0.000	0.000	0.000	1.955	0.10

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-104.50	A	1.458	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.59
		C		0.000	0.000	0.000	29.145	0.32
L2	104.50-68.75	A	1.403	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.65
		C		0.000	0.000	0.000	22.900	0.27
L3	68.75-34.00	A	1.332	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.63
		C		0.000	0.000	0.000	21.505	0.26
L4	34.00-0.00	A	1.190	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.61
		C		0.000	0.000	0.000	20.074	0.24

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-104.50	-0.4467	0.2579	-2.0969	1.2106
L2	104.50-68.75	-0.4522	0.2611	-2.2881	1.3210
L3	68.75-34.00	-0.4551	0.2627	-2.3296	1.3450
L4	34.00-0.00	-0.4568	0.2638	-2.3139	1.3359

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lighting Rod 5/8" x 5'	C	None		0.0000	152.00	No Ice	0.31	0.31	0.03
						1/2" Ice	0.83	0.83	0.03
						1" Ice	1.32	1.32	0.04
						2" Ice	1.96	1.96	0.07
*** 147 ***									
P90-14-XLH-RR w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice	3.10	2.65	0.06
						1/2" Ice	3.43	2.98	0.11
						1" Ice	3.77	3.31	0.16
						2" Ice	4.49	4.01	0.29
P90-14-XLH-RR w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice	3.10	2.65	0.06
						1/2" Ice	3.43	2.98	0.11
						1" Ice	3.77	3.31	0.16
						2" Ice	4.49	4.01	0.29
P90-14-XLH-RR w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice	3.10	2.65	0.06
						1/2" Ice	3.43	2.98	0.11
						1" Ice	3.77	3.31	0.16
						2" Ice	4.49	4.01	0.29

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DMP65R-BU6D w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.96 12.70 13.46 15.02	5.97 6.63 7.30 8.69	0.11 0.20 0.30 0.53
DMP65R-BU6D w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	11.96 12.70 13.46 15.02	5.97 6.63 7.30 8.69	0.11 0.20 0.30 0.53
DMP65R-BU4D w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.53 8.04 8.57 9.68	3.79 4.23 4.68 5.63	0.09 0.16 0.22 0.39
OPA65R-BU6D w/ Mount Pipe	A	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.25 13.00 13.76 15.34	6.05 6.71 7.39 8.79	0.09 0.18 0.27 0.51
OPA65R-BU6D w/ Mount Pipe	B	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	12.25 13.00 13.76 15.34	6.05 6.71 7.39 8.79	0.09 0.18 0.27 0.51
OPA65R-BU4D w/ Mount Pipe	C	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.10 8.65 9.21 10.39	4.03 4.50 4.98 5.98	0.08 0.14 0.21 0.38
TT19-08BP111-001	A	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.55 0.64 0.74 0.97	0.44 0.53 0.63 0.84	0.02 0.02 0.03 0.05
TT19-08BP111-001	B	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.55 0.64 0.74 0.97	0.44 0.53 0.63 0.84	0.02 0.02 0.03 0.05
TT19-08BP111-001	C	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.55 0.64 0.74 0.97	0.44 0.53 0.63 0.84	0.02 0.02 0.03 0.05
DC6-48-60-18-8F	A	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
DC6-48-60-18-8F	B	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.21 1.89 2.11 2.57	1.21 1.89 2.11 2.57	0.03 0.05 0.08 0.14
RRUS 4449 B5/B12	A	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	B	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4449 B5/B12	C	From Face	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.97 2.14 2.33 2.72	1.41 1.56 1.73 2.07	0.07 0.09 0.11 0.16
RRUS 4478 B14	A	From Face	4.00	0.0000	148.00	No Ice	1.84	1.06	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
RRUS 4478 B14	B	From Face	4.00	0.0000	148.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
RRUS 4478 B14	C	From Face	4.00	0.0000	148.00	No Ice	1.84	1.06	0.06
			0.00			1/2" Ice	2.01	1.20	0.08
			0.00			1" Ice	2.19	1.34	0.09
						2" Ice	2.57	1.66	0.14
RRUS 8843 B2/B66A	A	From Face	4.00	0.0000	148.00	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.80	1.50	0.09
			0.00			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	B	From Face	4.00	0.0000	148.00	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.80	1.50	0.09
			0.00			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
RRUS 8843 B2/B66A	C	From Face	4.00	0.0000	148.00	No Ice	1.64	1.35	0.07
			0.00			1/2" Ice	1.80	1.50	0.09
			0.00			1" Ice	1.97	1.65	0.11
						2" Ice	2.32	1.99	0.16
Platform Mount [LP 303-1]	C	None		0.0000	148.00	No Ice	14.69	14.69	1.25
						1/2" Ice	18.01	18.01	1.57
						1" Ice	21.34	21.34	1.94
						2" Ice	28.08	28.08	2.85
Miscellaneous [NA 507-1]	C	None		0.0000	148.00	No Ice	4.56	4.56	0.25
						1/2" Ice	6.39	6.39	0.31
						1" Ice	8.18	8.18	0.40
						2" Ice	11.66	11.66	0.66
2.9" Dia. x 8-ft Mount Pipe	A	From Centroid-Face	4.00	0.0000	148.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
						2" Ice	4.62	4.62	0.15
2.9" Dia. x 8-ft Mount Pipe	B	From Centroid-Face	4.00	0.0000	148.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
						2" Ice	4.62	4.62	0.15
2.9" Dia. x 8-ft Mount Pipe	C	From Centroid-Face	4.00	0.0000	148.00	No Ice	2.30	2.30	0.05
			0.00			1/2" Ice	3.13	3.13	0.06
			0.00			1" Ice	3.62	3.62	0.09
						2" Ice	4.62	4.62	0.15
****									
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Face	4.00	0.0000	138.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Face	4.00	0.0000	138.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Face	4.00	0.0000	138.00	No Ice	8.01	4.23	0.11
			0.00			1/2" Ice	8.52	4.69	0.19
			0.00			1" Ice	9.04	5.16	0.29
						2" Ice	10.11	6.12	0.52
RDIDC-9181-PF-48	B	From	4.00	0.0000	138.00	No Ice	2.01	1.17	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		Centroid-Face	0.00 0.00			1/2" Ice 1" Ice 2" Ice	2.19 2.37 2.76	1.31 1.46 1.78	0.04 0.06 0.11
TA08025-B604	A	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	B	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B604	C	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	0.98 1.11 1.25 1.55	0.06 0.08 0.10 0.15
TA08025-B605	A	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	B	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
TA08025-B605	C	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.96 2.14 2.32 2.71	1.13 1.27 1.41 1.72	0.08 0.09 0.11 0.16
Commscope MC-PK8-DSH	C	None		0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	34.24 62.95 91.66 149.08	34.24 62.95 91.66 149.08	1.75 2.10 2.45 3.15
(2) 8' x 2" Mount Pipe	A	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	B	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
(2) 8' x 2" Mount Pipe	C	From Centroid-Face	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.90 2.73 3.40 4.40	1.90 2.73 3.40 4.40	0.03 0.04 0.06 0.12
***									
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
APXVAALL24_43-U-NA20 _TMO w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice 2" Ice	14.69 15.46 16.23 17.82	6.87 7.55 8.25 9.67	0.18 0.31 0.45 0.78
AIR6449 B41_T-MOBILE	A	From	4.00	0.0000	128.00	No Ice	5.27	2.03	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
		Centroid-Leg	0.00 0.00			1/2" Ice	5.70	2.36	0.15
						1" Ice	6.14	2.70	0.20
						2" Ice	7.06	3.43	0.30
AIR6449 B41_T-MOBILE	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	5.27	2.03	0.11
						1/2" Ice	5.70	2.36	0.15
						1" Ice	6.14	2.70	0.20
						2" Ice	7.06	3.43	0.30
AIR6449 B41_T-MOBILE	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	5.27	2.03	0.11
						1/2" Ice	5.70	2.36	0.15
						1" Ice	6.14	2.70	0.20
						2" Ice	7.06	3.43	0.30
RADIO 4480 B71_TMO	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	2.85	1.38	0.09
						1/2" Ice	3.06	1.54	0.11
						1" Ice	3.28	1.71	0.14
						2" Ice	3.74	2.07	0.20
RADIO 4480 B71_TMO	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	2.85	1.38	0.09
						1/2" Ice	3.06	1.54	0.11
						1" Ice	3.28	1.71	0.14
						2" Ice	3.74	2.07	0.20
RADIO 4480 B71_TMO	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	2.85	1.38	0.09
						1/2" Ice	3.06	1.54	0.11
						1" Ice	3.28	1.71	0.14
						2" Ice	3.74	2.07	0.20
RADIO 4460 B2/B25 B66_TMO	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	2.14	1.69	0.11
						1/2" Ice	2.32	1.85	0.13
						1" Ice	2.51	2.02	0.16
						2" Ice	2.91	2.39	0.22
RADIO 4460 B2/B25 B66_TMO	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	2.14	1.69	0.11
						1/2" Ice	2.32	1.85	0.13
						1" Ice	2.51	2.02	0.16
						2" Ice	2.91	2.39	0.22
RADIO 4460 B2/B25 B66_TMO	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	128.00	No Ice	2.14	1.69	0.11
						1/2" Ice	2.32	1.85	0.13
						1" Ice	2.51	2.02	0.16
						2" Ice	2.91	2.39	0.22
SitePro1 RMQP-4096-HK	C	None		0.0000	128.00	No Ice	23.14	21.40	1.95
						1/2" Ice	28.17	26.44	2.34
						1" Ice	33.23	31.60	2.85
						2" Ice	43.26	41.56	3.50

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 104.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26.65	-0.12	1.80
			Max. Mx	8	-13.21	-342.16	0.71
			Max. My	2	-13.24	-0.43	335.41
			Max. Vy	8	11.92	-342.16	0.71
			Max. Vx	2	-11.73	-0.43	335.41
			Max. Torque	20			-0.97
L2	104.5 - 68.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.56	0.10	1.77
			Max. Mx	8	-18.03	-788.27	1.17

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-18.05	-0.84	775.09
			Max. Vy	8	13.75	-788.27	1.17
			Max. Vx	2	-13.57	-0.84	775.09
			Max. Torque	8			0.93
L3	68.75 - 34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.89	0.34	1.63
			Max. Mx	8	-24.93	-1288.02	1.58
			Max. My	2	-24.94	-1.22	1268.69
			Max. Vy	20	-15.59	1287.99	-0.84
			Max. Vx	2	-15.41	-1.22	1268.69
			Max. Torque	8			0.88
L4	34 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.60	0.65	1.45
			Max. Mx	20	-34.66	1950.62	-1.33
			Max. My	2	-34.66	-1.66	1924.26
			Max. Vy	20	-17.49	1950.62	-1.33
			Max. Vx	2	-17.33	-1.66	1924.26
			Max. Torque	8			0.84

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	55.60	5.92	-0.00
	Max. H_x	20	34.67	17.48	-0.01
	Max. H_z	3	26.00	-0.01	17.31
	Max. M_x	2	1924.26	-0.01	17.31
	Max. M_z	8	1950.57	-17.48	0.01
	Max. Torsion	8	0.79	-17.48	0.01
	Min. Vert	13	26.00	-8.73	-14.98
	Min. H_x	8	34.67	-17.48	0.01
	Min. H_z	15	26.00	0.01	-17.31
	Min. M_x	14	-1923.53	0.01	-17.31
	Min. M_z	20	-1950.62	17.48	-0.01
	Min. Torsion	20	-0.79	17.48	-0.01

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	28.89	0.00	0.00	-0.26	0.02	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	34.67	0.01	-17.31	-1924.26	-1.66	-0.20
0.9 Dead+1.0 Wind 0 deg - No Ice	26.00	0.01	-17.31	-1893.56	-1.63	-0.20
1.2 Dead+1.0 Wind 30 deg - No Ice	34.67	8.75	-14.99	-1667.32	-976.77	-0.57
0.9 Dead+1.0 Wind 30 deg - No Ice	26.00	8.75	-14.99	-1640.72	-961.21	-0.57
1.2 Dead+1.0 Wind 60 deg - No Ice	34.67	15.14	-8.66	-963.72	-1690.11	-0.78

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.0 Wind 60 deg - No Ice	26.00	15.14	-8.66	-948.30	-1663.18	-0.78
1.2 Dead+1.0 Wind 90 deg - No Ice	34.67	17.48	-0.01	-2.03	-1950.57	-0.79
0.9 Dead+1.0 Wind 90 deg - No Ice	26.00	17.48	-0.01	-1.90	-1919.50	-0.78
1.2 Dead+1.0 Wind 120 deg - No Ice	34.67	15.13	8.64	960.11	-1688.43	-0.58
0.9 Dead+1.0 Wind 120 deg - No Ice	26.00	15.13	8.64	944.94	-1661.53	-0.58
1.2 Dead+1.0 Wind 150 deg - No Ice	34.67	8.73	14.98	1664.93	-973.86	-0.22
0.9 Dead+1.0 Wind 150 deg - No Ice	26.00	8.73	14.98	1638.56	-958.35	-0.22
1.2 Dead+1.0 Wind 180 deg - No Ice	34.67	-0.01	17.31	1923.53	1.70	0.20
0.9 Dead+1.0 Wind 180 deg - No Ice	26.00	-0.01	17.31	1893.03	1.67	0.20
1.2 Dead+1.0 Wind 210 deg - No Ice	34.67	-8.75	14.99	1666.60	976.80	0.57
0.9 Dead+1.0 Wind 210 deg - No Ice	26.00	-8.75	14.99	1640.20	961.23	0.57
1.2 Dead+1.0 Wind 240 deg - No Ice	34.67	-15.14	8.66	963.01	1690.14	0.79
0.9 Dead+1.0 Wind 240 deg - No Ice	26.00	-15.14	8.66	947.79	1663.20	0.78
1.2 Dead+1.0 Wind 270 deg - No Ice	34.67	-17.48	0.01	1.33	1950.62	0.79
0.9 Dead+1.0 Wind 270 deg - No Ice	26.00	-17.48	0.01	1.39	1919.53	0.78
1.2 Dead+1.0 Wind 300 deg - No Ice	34.67	-15.13	-8.64	-960.82	1688.48	0.58
0.9 Dead+1.0 Wind 300 deg - No Ice	26.00	-15.13	-8.64	-945.45	1661.57	0.58
1.2 Dead+1.0 Wind 330 deg - No Ice	34.67	-8.73	-14.98	-1665.65	973.92	0.22
0.9 Dead+1.0 Wind 330 deg - No Ice	26.00	-8.73	-14.98	-1639.08	958.39	0.21
1.2 Dead+1.0 Ice+1.0 Temp	55.60	-0.00	-0.00	-1.45	0.65	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	55.60	0.00	-5.89	-678.81	0.33	-0.59
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	55.60	2.96	-5.11	-588.25	-340.77	-0.47
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	55.60	5.13	-2.95	-340.49	-590.38	-0.22
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	55.60	5.92	-0.00	-1.92	-681.62	0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	55.60	5.13	2.95	336.74	-590.04	0.37
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	55.60	2.96	5.10	584.76	-340.17	0.55
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	55.60	-0.00	5.89	675.67	1.03	0.59
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	55.60	-2.96	5.11	585.11	342.13	0.47
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	55.60	-5.13	2.95	337.35	591.75	0.22
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	55.60	-5.92	0.00	-1.22	682.98	-0.09
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	55.60	-5.13	-2.95	-339.89	591.40	-0.37

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	55.60	-2.96	-5.10	-587.90	341.53	-0.55
Dead+Wind 0 deg - Service	28.89	0.00	-4.08	-449.54	-0.37	-0.05
Dead+Wind 30 deg - Service	28.89	2.06	-3.53	-389.55	-228.06	-0.14
Dead+Wind 60 deg - Service	28.89	3.57	-2.04	-225.26	-394.63	-0.19
Dead+Wind 90 deg - Service	28.89	4.12	-0.00	-0.69	-455.46	-0.19
Dead+Wind 120 deg - Service	28.89	3.56	2.04	223.98	-394.24	-0.14
Dead+Wind 150 deg - Service	28.89	2.06	3.53	388.56	-227.38	-0.06
Dead+Wind 180 deg - Service	28.89	-0.00	4.08	448.94	0.41	0.05
Dead+Wind 210 deg - Service	28.89	-2.06	3.53	388.95	228.10	0.14
Dead+Wind 240 deg - Service	28.89	-3.57	2.04	224.66	394.67	0.19
Dead+Wind 270 deg - Service	28.89	-4.12	0.00	0.09	455.50	0.19
Dead+Wind 300 deg - Service	28.89	-3.56	-2.04	-224.58	394.28	0.14
Dead+Wind 330 deg - Service	28.89	-2.06	-3.53	-389.15	227.42	0.06

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-28.89	0.00	0.00	28.89	0.00	0.000%
2	0.01	-34.67	-17.31	-0.01	34.67	17.31	0.000%
3	0.01	-26.00	-17.31	-0.01	26.00	17.31	0.000%
4	8.75	-34.67	-14.99	-8.75	34.67	14.99	0.000%
5	8.75	-26.00	-14.99	-8.75	26.00	14.99	0.000%
6	15.14	-34.67	-8.66	-15.14	34.67	8.66	0.000%
7	15.14	-26.00	-8.66	-15.14	26.00	8.66	0.000%
8	17.48	-34.67	-0.01	-17.48	34.67	0.01	0.000%
9	17.48	-26.00	-0.01	-17.48	26.00	0.01	0.000%
10	15.13	-34.67	8.64	-15.13	34.67	-8.64	0.000%
11	15.13	-26.00	8.64	-15.13	26.00	-8.64	0.000%
12	8.73	-34.67	14.98	-8.73	34.67	-14.98	0.000%
13	8.73	-26.00	14.98	-8.73	26.00	-14.98	0.000%
14	-0.01	-34.67	17.31	0.01	34.67	-17.31	0.000%
15	-0.01	-26.00	17.31	0.01	26.00	-17.31	0.000%
16	-8.75	-34.67	14.99	8.75	34.67	-14.99	0.000%
17	-8.75	-26.00	14.99	8.75	26.00	-14.99	0.000%
18	-15.14	-34.67	8.66	15.14	34.67	-8.66	0.000%
19	-15.14	-26.00	8.66	15.14	26.00	-8.66	0.000%
20	-17.48	-34.67	0.01	17.48	34.67	-0.01	0.000%
21	-17.48	-26.00	0.01	17.48	26.00	-0.01	0.000%
22	-15.13	-34.67	-8.64	15.13	34.67	8.64	0.000%
23	-15.13	-26.00	-8.64	15.13	26.00	8.64	0.000%
24	-8.73	-34.67	-14.98	8.73	34.67	14.98	0.000%
25	-8.73	-26.00	-14.98	8.73	26.00	14.98	0.000%
26	0.00	-55.60	0.00	0.00	55.60	0.00	0.000%
27	0.00	-55.60	-5.89	-0.00	55.60	5.89	0.000%
28	2.96	-55.60	-5.11	-2.96	55.60	5.11	0.000%
29	5.13	-55.60	-2.95	-5.13	55.60	2.95	0.000%
30	5.92	-55.60	-0.00	-5.92	55.60	0.00	0.000%
31	5.13	-55.60	2.95	-5.13	55.60	-2.95	0.000%
32	2.96	-55.60	5.10	-2.96	55.60	-5.10	0.000%
33	-0.00	-55.60	5.89	0.00	55.60	-5.89	0.000%
34	-2.96	-55.60	5.11	2.96	55.60	-5.11	0.000%
35	-5.13	-55.60	2.95	5.13	55.60	-2.95	0.000%
36	-5.92	-55.60	0.00	5.92	55.60	-0.00	0.000%
37	-5.13	-55.60	-2.95	5.13	55.60	2.95	0.000%
38	-2.96	-55.60	-5.10	2.96	55.60	5.10	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
39	0.00	-28.89	-4.08	-0.00	28.89	4.08	0.000%
40	2.06	-28.89	-3.53	-2.06	28.89	3.53	0.000%
41	3.57	-28.89	-2.04	-3.57	28.89	2.04	0.000%
42	4.12	-28.89	-0.00	-4.12	28.89	0.00	0.000%
43	3.56	-28.89	2.04	-3.56	28.89	-2.04	0.000%
44	2.06	-28.89	3.53	-2.06	28.89	-3.53	0.000%
45	-0.00	-28.89	4.08	0.00	28.89	-4.08	0.000%
46	-2.06	-28.89	3.53	2.06	28.89	-3.53	0.000%
47	-3.57	-28.89	2.04	3.57	28.89	-2.04	0.000%
48	-4.12	-28.89	0.00	4.12	28.89	-0.00	0.000%
49	-3.56	-28.89	-2.04	3.56	28.89	2.04	0.000%
50	-2.06	-28.89	-3.53	2.06	28.89	3.53	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00003845
3	Yes	4	0.00000001	0.00068392
4	Yes	6	0.00000001	0.00022941
5	Yes	6	0.00000001	0.00007876
6	Yes	6	0.00000001	0.00023937
7	Yes	6	0.00000001	0.00008240
8	Yes	5	0.00000001	0.00015485
9	Yes	5	0.00000001	0.00007600
10	Yes	6	0.00000001	0.00022737
11	Yes	6	0.00000001	0.00007798
12	Yes	6	0.00000001	0.00023373
13	Yes	6	0.00000001	0.00008055
14	Yes	5	0.00000001	0.00004075
15	Yes	4	0.00000001	0.00069248
16	Yes	6	0.00000001	0.00023529
17	Yes	6	0.00000001	0.00008106
18	Yes	6	0.00000001	0.00022812
19	Yes	6	0.00000001	0.00007819
20	Yes	5	0.00000001	0.00014175
21	Yes	5	0.00000001	0.00006963
22	Yes	6	0.00000001	0.00023797
23	Yes	6	0.00000001	0.00008197
24	Yes	6	0.00000001	0.00022884
25	Yes	6	0.00000001	0.00007863
26	Yes	4	0.00000001	0.00004158
27	Yes	6	0.00000001	0.00019545
28	Yes	6	0.00000001	0.00026722
29	Yes	6	0.00000001	0.00027151
30	Yes	6	0.00000001	0.00019552
31	Yes	6	0.00000001	0.00026584
32	Yes	6	0.00000001	0.00026338
33	Yes	6	0.00000001	0.00019277
34	Yes	6	0.00000001	0.00026751
35	Yes	6	0.00000001	0.00026464
36	Yes	6	0.00000001	0.00019564
37	Yes	6	0.00000001	0.00026919
38	Yes	6	0.00000001	0.00027034
39	Yes	4	0.00000001	0.00012359

40	Yes	4	0.00000001	0.00056498
41	Yes	4	0.00000001	0.00063889
42	Yes	4	0.00000001	0.00016652
43	Yes	4	0.00000001	0.00054984
44	Yes	4	0.00000001	0.00060132
45	Yes	4	0.00000001	0.00012303
46	Yes	4	0.00000001	0.00060849
47	Yes	4	0.00000001	0.00055107
48	Yes	4	0.00000001	0.00016497
49	Yes	4	0.00000001	0.00063235
50	Yes	4	0.00000001	0.00056448

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 104.5	22.882	42	1.4260	0.0056
L2	108.75 - 68.75	11.542	42	1.0841	0.0016
L3	74 - 34	5.100	42	0.6619	0.0006
L4	40 - 0	1.483	48	0.3389	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	Lighting Rod 5/8" x 5'	42	22.882	1.4260	0.0056	32454
148.00	P90-14-XLH-RR w/ Mount Pipe	42	22.290	1.4121	0.0053	32454
138.00	MX08FRO665-21 w/ Mount Pipe	42	19.352	1.3409	0.0042	13522
128.00	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	42	16.503	1.2642	0.0031	7375

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 104.5	98.164	8	6.1265	0.0227
L2	108.75 - 68.75	49.520	8	4.6573	0.0064
L3	74 - 34	21.873	8	2.8411	0.0025
L4	40 - 0	6.356	20	1.4534	0.0010

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
152.00	Lighting Rod 5/8" x 5'	8	98.164	6.1265	0.0227	7695
148.00	P90-14-XLH-RR w/ Mount Pipe	8	95.626	6.0665	0.0218	7695
138.00	MX08FRO665-21 w/ Mount Pipe	8	83.025	5.7608	0.0171	3205
128.00	APXVAALL24_43-U-NA20_TMO w/ Mount Pipe	8	70.805	5.4314	0.0128	1746

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 104.5 (1)	TP28.1875x18x0.1875	45.50	0.00	0.0	16.0972	-13.21	941.69	0.014
L2	104.5 - 68.75 (2)	TP35.75x26.8609x0.25	40.00	0.00	0.0	27.2435	-18.03	1593.74	0.011
L3	68.75 - 34 (3)	TP43x34.0833x0.3125	40.00	0.00	0.0	41.0140	-24.93	2399.32	0.010
L4	34 - 0 (4)	TP50x41.0375x0.3125	40.00	0.00	0.0	49.2838	-34.66	2883.10	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	150 - 104.5 (1)	TP28.1875x18x0.1875	342.16	583.66	0.586	0.00	583.66	0.000
L2	104.5 - 68.75 (2)	TP35.75x26.8609x0.25	788.27	1278.26	0.617	0.00	1278.26	0.000
L3	68.75 - 34 (3)	TP43x34.0833x0.3125	1288.03	2349.59	0.548	0.00	2349.59	0.000
L4	34 - 0 (4)	TP50x41.0375x0.3125	1950.62	3146.22	0.620	0.00	3146.22	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 104.5 (1)	TP28.1875x18x0.1875	11.92	282.51	0.042	0.94	669.19	0.001
L2	104.5 - 68.75 (2)	TP35.75x26.8609x0.25	13.75	478.12	0.029	0.89	1437.59	0.001
L3	68.75 - 34 (3)	TP43x34.0833x0.3125	15.59	719.80	0.022	0.85	2606.54	0.000
L4	34 - 0 (4)	TP50x41.0375x0.3125	17.50	864.93	0.020	0.79	3763.64	0.000

Pole Interaction Design Data

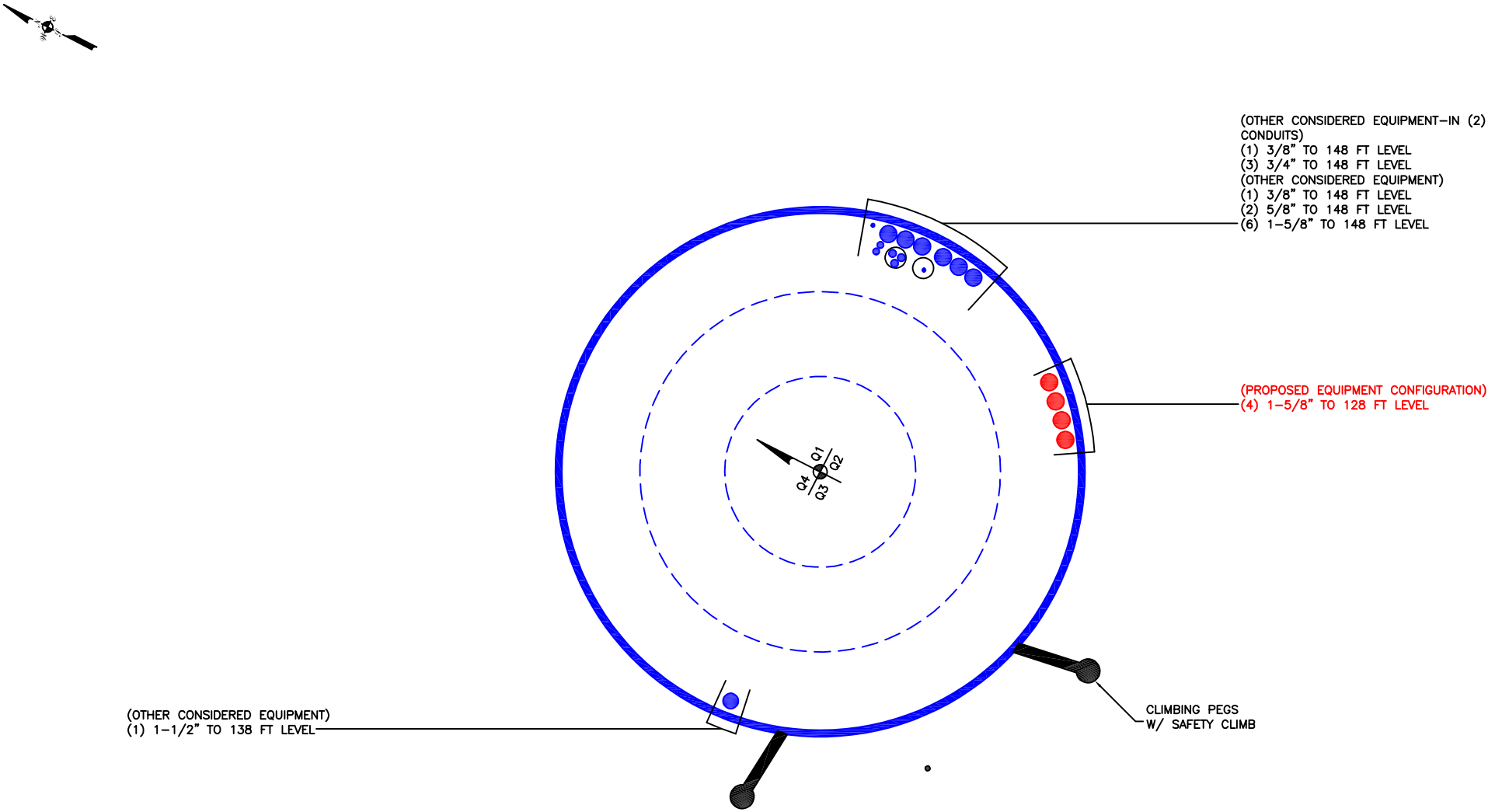
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 104.5 (1)	0.014	0.586	0.000	0.042	0.001	0.602	1.050	4.8.2
L2	104.5 - 68.75 (2)	0.011	0.617	0.000	0.029	0.001	0.629	1.050	4.8.2
L3	68.75 - 34 (3)	0.010	0.548	0.000	0.022	0.000	0.559	1.050	4.8.2
L4	34 - 0 (4)	0.012	0.620	0.000	0.020	0.000	0.632	1.050	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 104.5	Pole	TP28.1875x18x0.1875	1	-13.21	988.77	57.3	Pass
L2	104.5 - 68.75	Pole	TP35.75x26.8609x0.25	2	-18.03	1673.43	59.9	Pass
L3	68.75 - 34	Pole	TP43x34.0833x0.3125	3	-24.93	2519.29	53.2	Pass
L4	34 - 0	Pole	TP50x41.0375x0.3125	4	-34.66	3027.25	60.2	Pass
							Summary	
						Pole (L4)	60.2	Pass
						RATING =	**60.2**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT–IN (2) CONDUITS)
(1) 3/8" TO 148 FT LEVEL
(3) 3/4" TO 148 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 3/8" TO 148 FT LEVEL
(2) 5/8" TO 148 FT LEVEL
(6) 1–5/8" TO 148 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(4) 1–5/8" TO 128 FT LEVEL
Q1
Q2
Q3
Q4
(OTHER CONSIDERED EQUIPMENT)
(1) 1–1/2" TO 138 FT LEVEL
CLIMBING PEGS
W/ SAFETY CLIMB

APPENDIX C

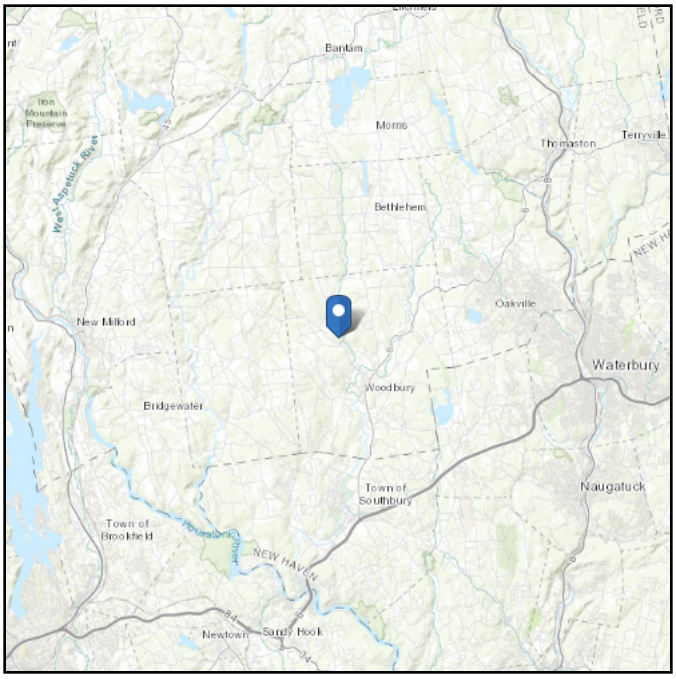
ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 528.06 ft (NAVD 88)
Latitude: 41.573075
Longitude: -73.227642



Wind

Results:

JDX requires 120mph Vult

Wind Speed:	117 Vmph
10-year MRI	76 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

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

Date Accessed: Tue Aug 17 2021

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

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

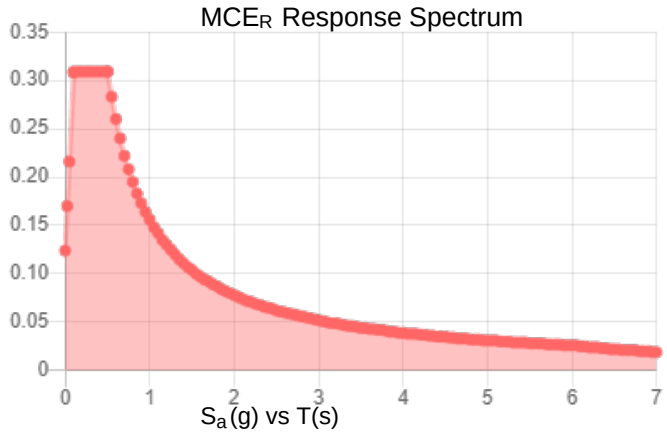
Seismic

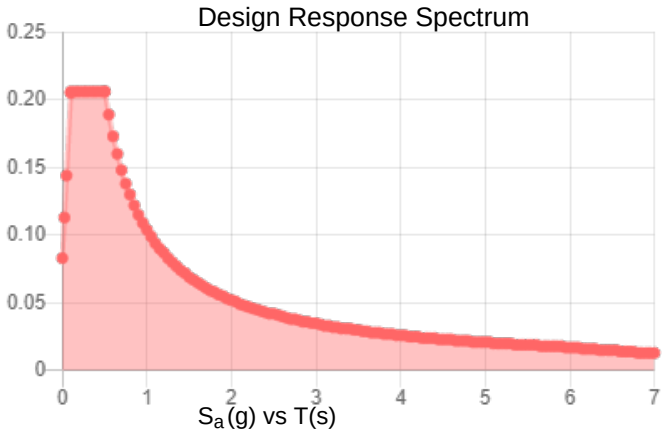
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.193	S_{DS} :	0.206
S_1 :	0.065	S_{D1} :	0.104
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.101
S_{MS} :	0.309	PGA_M :	0.161
S_{M1} :	0.156	F_{PGA} :	1.598
		I_e :	1

Seismic Design Category B





Data Accessed: Tue Aug 17 2021

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

Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Tue Aug 17 2021

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

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

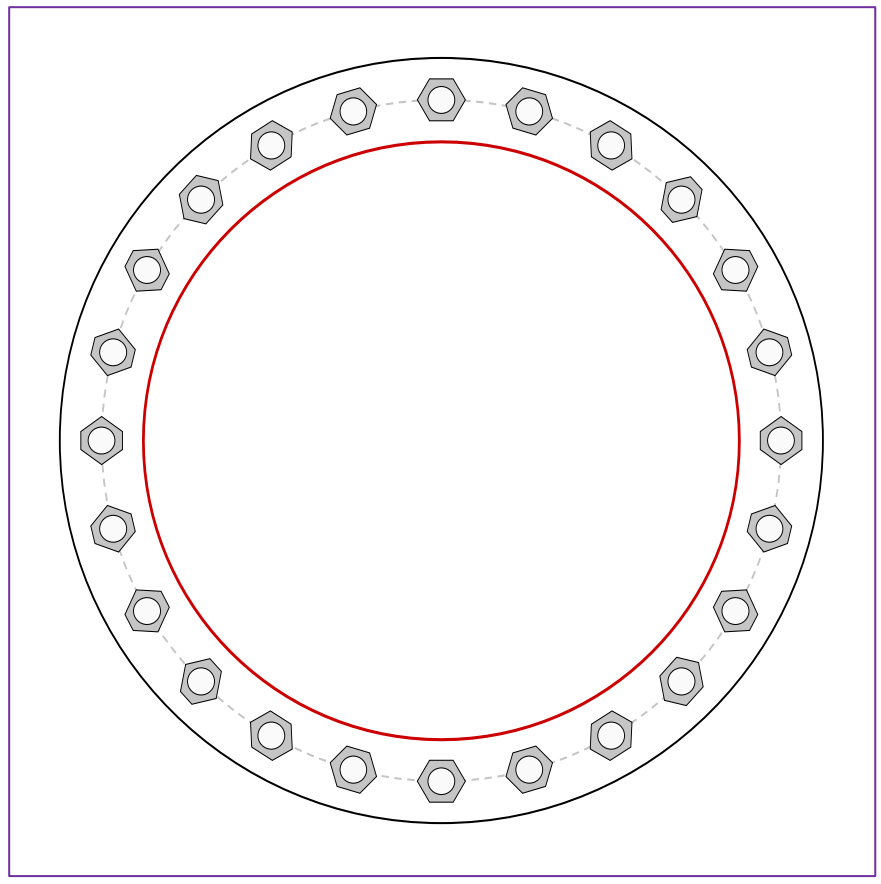
Monopole Base Plate Connection

Site Info	
BU #	857528
Site Name	ODDBURY PAPER MILL
Order #	576299 Rev 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2.25

Applied Loads	
Moment (kip-ft)	1950.62
Axial Force (kips)	34.66
Shear Force (kips)	17.49

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(24) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 57" BC

Base Plate Data

64" OD x 2.25" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

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

Analysis Results

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

Pu_t = 66.95	ϕPn_t = 243.75	**Stress Rating**
Vu = 0.73	ϕVn = 149.1	**26.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	17.99	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**38.1%**	**Pass**

Pier and Pad Foundation

BU # :	857528
Site Name:	WOODBURY PAPE
App. Number:	576299

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions

Compression, P_{comp}:	35	kips
Base Shear, Vu_comp:	17	kips
Moment, M_u:	1951	ft-kips
Tower Height, **H**:	150	ft
BP Dist. Above Fdn, bp_{dist}:	4.25	in

Pier Properties

Pier Shape:	Circular	
Pier Diameter, **dpier**:	6.5	ft
Ext. Above Grade, **E**:	0.5	ft
Pier Rebar Size, **Sc**:	10	
Pier Rebar Quantity, **mc**:	34	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	4	ft
Pad Width, W_1:	24	ft
Pad Thickness, **T**:	2.5	ft
Pad Rebar Size (Bottom dir. 2), Sp_2:	10	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	31	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

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

Soil Properties

Total Soil Unit Weight, γ:	90	pcf
Ultimate Gross Bearing, Qult:	12.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	0	degrees
SPT Blow Count, N_{blows}:	79	
Base Friction, μ:	0.3	
Neglected Depth, **N**:	4.17	ft
Foundation Bearing on Rock?	Yes	
Groundwater Depth, **gw**:	N/A	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating*	Check
Lateral (Sliding) (kips)	66.50	17.00	**24.3%**	**Pass**
Bearing Pressure (ksf)	9.00	2.16	**24.0%**	**Pass**
*Overturning (kip*ft)*	3277.12	2033.52	**62.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	6231.41	1985.00	**30.3%**	**Pass**
Pier Compression (kip)	21120.36	46.95	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	4232.26	771.82	**17.4%**	**Pass**
Pad Shear - 1-way (kips)	685.65	127.37	**17.7%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.031	**15.6%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	4903.88	1191.00	**23.1%**	**Pass**

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

Structural Rating*:	**30.3%**
Soil Rating*:	**62.1%**

Date: **July 21, 2021**

Darcy Tarr
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC, 28277
704-405-6589

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

Subject:	**Mount Replacement Analysis Report**	
Carrier Designation:	**T-Mobile New Install Connecticut**	
	Carrier Site Number:	CTNH291A
	Carrier Site Name:	CTNH291A
Crown Castle Designation:	**Crown Castle BU Number:**	857528
	Crown Castle Site Name:	Woodbury Paper Mill RD
	Crown Castle JDE Job Number:	657005
	Crown Castle Order Number:	576299 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	188094
Site Data:	**85 Paper Mill Road, Woodbury, Littchfield County, CT, 06798** **Latitude 41°34'23.07" Longitude -73°13'39.51"**	
Structure Information:	**Tower Height & Type:**	**150.0 ft Monopole**
	Mount Elevation:	**128.0 ft**
	Mount Type:	**12.5 ft Platform**

Dear Darcy Tarr,

Trylon is pleased to submit this **"Mount Replacement Analysis Report"** to determine the structural integrity of T-Mobile's antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point for fall protection or rigging is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

Platform **Sufficient***

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

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut Building State Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Teodor Nitescu

Respectfully Submitted by:
Jinshan Wang, P.E.

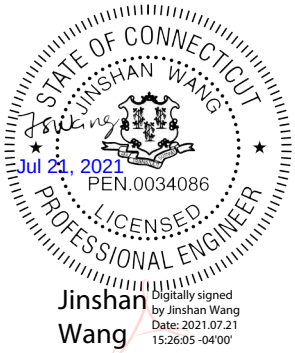


TABLE OF CONTENTS

1) INTRODUCTION

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

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	120.0 mph
Exposure Category:	B
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Seismic S_s:	0.194
Seismic S_1:	0.065
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
128.0	128.0	3	ERICSSON	AIR6449 B41_T-MOBILE	12.5 ft Platform **[Site Pro 1 RMQP-496 with HRK12-U handrail]**
		3	RFS/CELWAVE	APXVAALL24_43-U-NA20_TMO	
		3	ERICSSON	RADIO 4460 B2/B25 B66_TMO	
		3	ERICSSON	RADIO 4480 B71_TMO	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	576299 Rev. 0	CCI Sites
Mount Manufacturer Drawings	Site Pro 1	RMQP 496	Trylon
Mount Analysis Report	Site Pro 1	HRK12-U	Trylon
Exposure Category Determination	Crown Castle	5963760	CCI Sites

3.1) Analysis Method

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

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

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

3.2) Assumptions

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

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

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

4) ANALYSIS RESULTS

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

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1, 2, 3	Mount Pipe(s)	M92	128.0	33.2	Pass
	Horizontal(s)	M8		20.0	Pass
	Standoff(s)	M1		37.8	Pass
	Bracing(s)	M2		16.0	Pass
	Handrail(s)	M58		40.1	Pass
	Plates(s)	M43		35.5	Pass
	Mount Connection(s)	-		36.2	Pass

Structure Rating (max from all components) =	40.1%

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

4.1) Recommendations

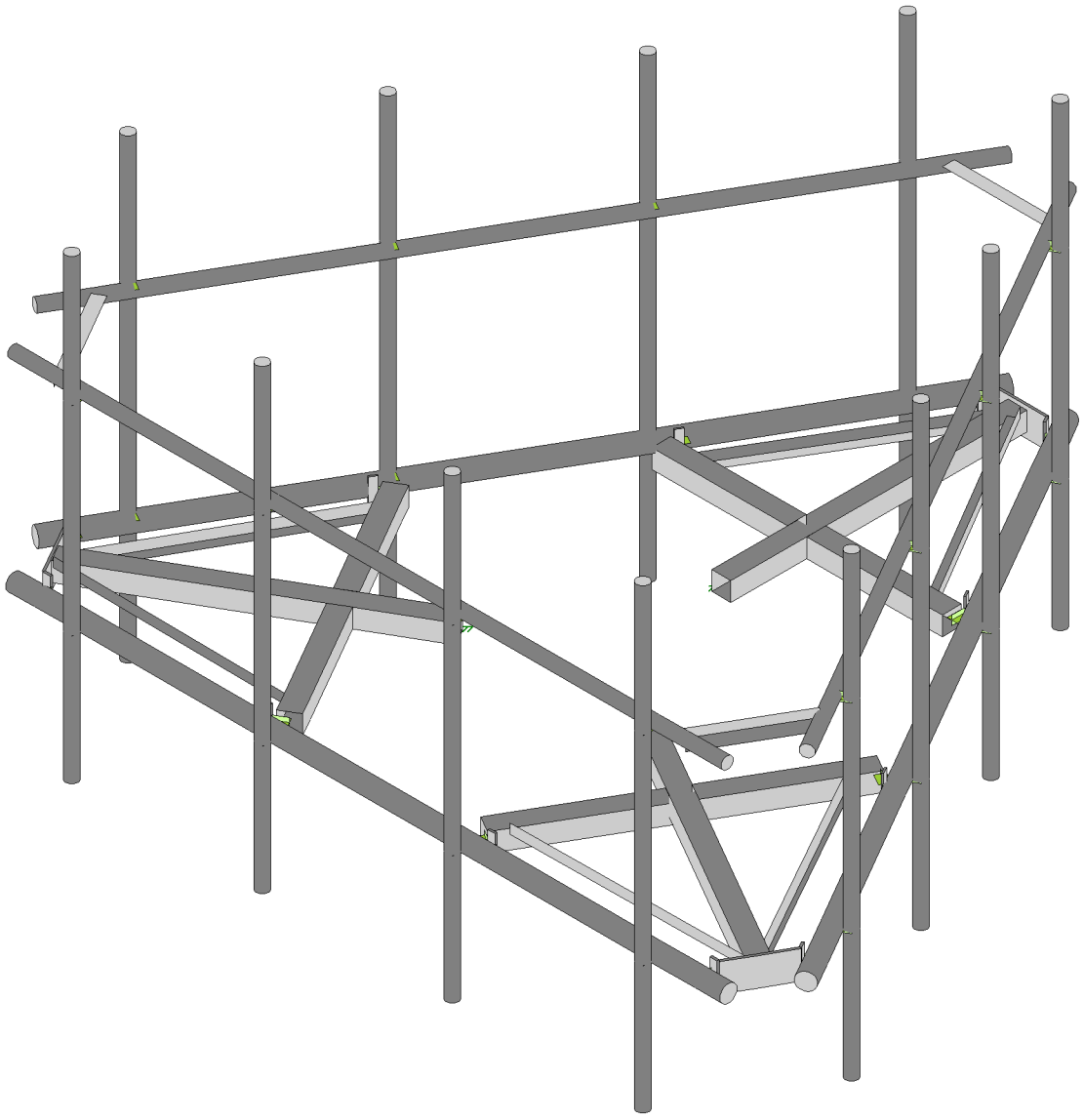
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Site Pro 1, RMQP-496 with HRK12-U handrail installed at 42" above face horizontal.

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

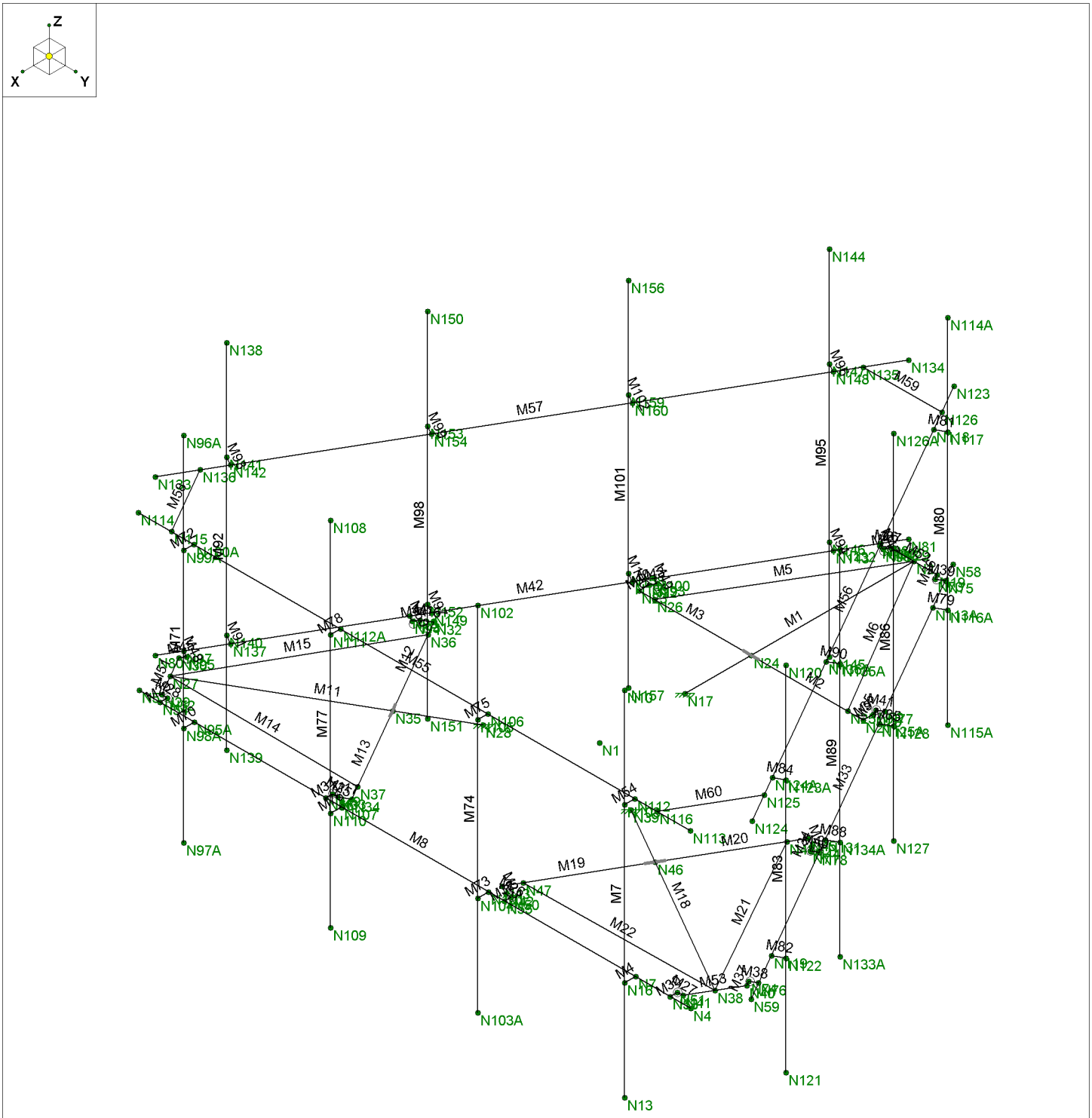
APPENDIX A

WIRE FRAME AND RENDERED MODELS



Envelope Only Solution

Trylon	857528	SK - 1
TN		July 21, 2021 at 9:43 PM
188094		857528.r3d



Envelope Only Solution

Trylon	857528	SK - 2
TN		July 21, 2021 at 9:43 PM
188094		857528.r3d

APPENDIX B

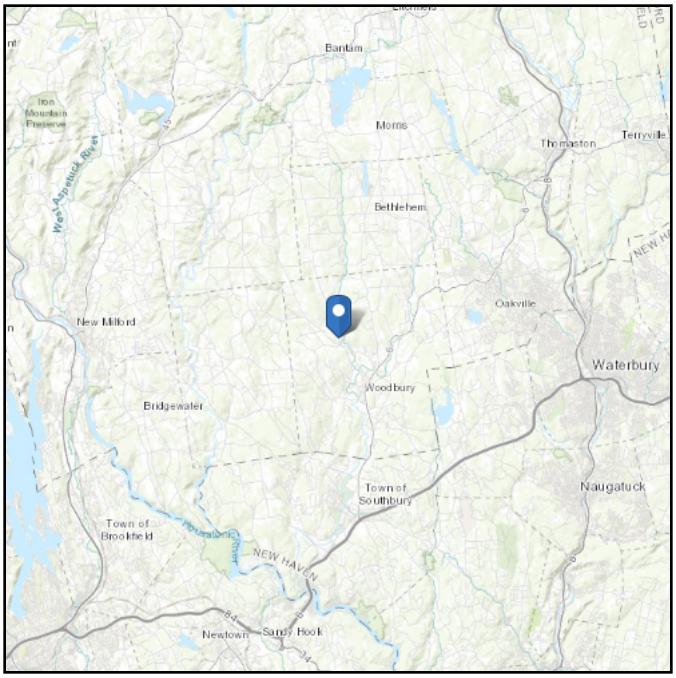
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 528.06 ft (NAVD 88)
Latitude: 41.573075
Longitude: -73.227642



Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph

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

Date Accessed: Wed Jul 21 2021

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

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

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

TIA LOAD CALCULATOR 2.0

PROJECT DATA	
Job Code:	188094
Carrier Site ID:	CTNH291A
Carrier Site Name:	CTNH291A

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	2018 CSBC
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Platform	--
Mount Elevation:	128.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	150.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	B	--
Site Class:	D - Default	--
Ground Elevation:	528.06	ft.

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

WIND PARAMETERS		
Design Wind Speed:	120	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.06	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	36.43	psf

ICE PARAMETERS		
Design Ice Wind Speed:	50	mph
Design Ice Thickness (t_i):	1.50	in
Importance Factor (I_i):	1.00	--
Ice Velocity Pressure (q_{zi}):	36.43	psf
Mount Ice Thickness (t_{iz}):	1.72	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	65.58	psf
Round Member Pressure:	39.35	psf
Ice Wind Pressure:	7.38	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.194	g
1 Second Accel (S_1):	0.065	g
Short Period Des. (S_{DS}):	0.21	g
1 Second Des. (S_{D1}):	0.10	g
Short Period Coeff. (F_a):	1.60	--
1 Second Coeff. (F_v):	2.40	--
Response Coefficient (Cs):	0.10	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

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

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

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

EQUIPMENT LOADING

Appurtenance Name/Location	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
AIR6449 B41_T-MOBILE	3	128	No Ice	5.27	2.03	114.63
M7/M92/M80, 30/150/270	--	--	w/ Ice	6.63	3.10	151.68
APXVAALL24_43-U-NA20_TMO	3	128	No Ice	14.67	5.32	149.90
M71/M95/M83, 30/150/270	--	--	w/ Ice	17.04	7.41	420.15
RADIO 4460 B2/B25 B66_TMO	3	128	No Ice	0.6	0.39	109.00
M7/M92/M80, 0/120/240	--	--	w/ Ice	1.17	0.89	89.25
RADIO 4480 B71_TMO	3	128	No Ice	0.6	0.39	92.60
M71/M95/M83, 0/120/240	--	--	w/ Ice	1.17	0.89	87.95
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			
			No Ice			
--	--	--	w/ Ice			

EQUIPMENT LOADING [CONT.]

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

EQUIPMENT WIND CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	K_{zt}	K_z	K_d	t_d	q_z [psf]	q_{zi} [psf]
AIR6449 B41_T-MOBILE	3	128	1.00	1.06	0.95	1.72	36.43	6.33
XVAALL24_43-U-NA20_TI	3	128	1.00	1.06	0.95	1.72	36.43	6.33
ADIO 4460 B2/B25 B66_TM	3	128	1.00	1.06	0.95	1.72	36.43	6.33
RADIO 4480 B71_TMO	3	128	1.00	1.06	0.95	1.72	36.43	6.33

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	Qty.	--	0° 180°	30° 210°	60° 240°	90° 270°	120° 300°	150° 330°
AIR6449 B41_T-MOBILE	3	No Ice	172.81	93.13	146.25	66.57	146.25	93.13
M7/M92/M80, 30/150/270	--	w/ Ice	37.77	22.68	32.74	17.65	32.74	22.68
APXVAALL24_43-U-NA20_TMO	3	No Ice	481.05	251.10	404.40	174.45	404.40	251.10
M71/M95/M83, 30/150/270	--	w/ Ice	96.99	55.87	83.28	42.16	83.28	55.87
RADIO 4460 B2/B25 B66_TMO	3	No Ice	19.67	14.51	17.95	12.79	17.95	14.51
M7/M92/M80, 0/120/240	--	w/ Ice	6.66	5.45	6.26	5.05	6.26	5.45
RADIO 4480 B71_TMO	3	No Ice	19.67	14.51	17.95	12.79	17.95	14.51
M71/M95/M83, 0/120/240	--	w/ Ice	6.66	5.45	6.26	5.05	6.26	5.45
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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

EQUIPMENT SEISMIC FORCE CALCULATIONS

Appurtenance Name	Qty.	Elevation [ft]	Weight [lbs]	F_p [lbs]
AIR6449 B41_T-MOBILE	3	128	114.63	14.23
APXVAALL24_43-U-NA20_TMO	3	128	149.9	18.61
RADIO 4460 B2/B25 B66_TMO	3	128	109	13.53
RADIO 4480 B71_TMO	3	128	92.6	11.50

APPENDIX C

SOFTWARE ANALYSIS OUTPUT

(Global) Model Settings

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

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

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

(Global) Model Settings, Continued

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

Hot Rolled Steel Properties

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

Cold Formed Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	HSS4X4X4	HSS4X4X4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
2	PIPE_3.0	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
3	L2x2x3	L2x2x3	Beam	Single Angle	A36 Gr.36	Typical	.722	.271	.271	.009
4	PIPE_2.0	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Plate 6"x0.5"	6"x1/2" Plate	Beam	RECT	A36 Gr.36	Typical	3	.063	9	.237

Hot Rolled Steel Section Sets (Continued)

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
6	L2.5x2.5x4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
7	Plate 6"x0.375"	PL6x.375	Beam	RECT	A36 Gr.36	Typical	2.25	.026	6.75	.101

Cold Formed Steel Section Sets

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

Joint Boundary Conditions

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

Basic Load Cases

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(Memb...	Surface...
1	Self Weight	DL			-1		18		3	
2	Structure Wind X	WLX						51		
3	Structure Wind Y	WLY						51		
4	Wind Load 0 AZI	WLX					18			
5	Wind Load 30 AZI	None					36			
6	Wind Load 45 AZI	None					36			
7	Wind Load 60 AZI	None					36			
8	Wind Load 90 AZI	WLY					18			
9	Wind Load 120 AZI	None					36			
10	Wind Load 135 AZI	None					36			
11	Wind Load 150 AZI	None					36			
12	Ice Weight	OL1					18	51	3	
13	Structure Ice Wind X	OL2						51		
14	Structure Ice Wind Y	OL3						51		
15	Ice Wind Load 0 AZI	OL2					18			
16	Ice Wind Load 30 AZI	None					36			
17	Ice Wind Load 45 AZI	None					36			
18	Ice Wind Load 60 AZI	None					36			
19	Ice Wind Load 90 AZI	OL3					18			
20	Ice Wind Load 120 AZI	None					36			
21	Ice Wind Load 135 AZI	None					36			
22	Ice Wind Load 150 AZI	None					36			
23	Seismic Load X	ELX	-.124				18			
24	Seismic Load Y	ELY		-.124			18			
25	Live Load 1 (Lv)	LL					1			
26	Live Load 2 (Lv)	LL					1			
27	Live Load 3 (Lv)	LL					1			
28	Live Load 4 (Lv)	LL					1			
29	Live Load 5 (Lv)	LL					1			
30	Live Load 6 (Lv)	LL					1			
31	Maintenance Load 1 (Lm)	None				1				
32	Maintenance Load 2 (Lm)	None				1				

Basic Load Cases (Continued)

	BLC Description	Category	X Gravi...	Y Gravi...	Z Gravity	Joint	Point	Distrib...	Area(Memb...	Surface...
33	Maintenance Load 3 (Lm)	None				1				
34	Maintenance Load 4 (Lm)	None				1				
35	Maintenance Load 5 (Lm)	None				1				
36	Maintenance Load 6 (Lm)	None				1				
37	Maintenance Load 7 (Lm)	None				1				
38	Maintenance Load 8 (Lm)	None				1				
39	Maintenance Load 9 (Lm)	None				1				
40	Maintenance Load 10 (Lm)	None				1				
41	Maintenance Load 11 (Lm)	None				1				
42	Maintenance Load 12 (Lm)	None				1				
43	BLC 1 Transient Area Loads	None						21		
44	BLC 12 Transient Area Loads	None						21		

Load Combinations

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4DL	Yes	Y		DL	1.4																		
2	1.2DL + 1WL 0 AZI	Yes	Y		DL	1.2	2	1	3		4	1												
3	1.2DL + 1WL 30 AZI	Yes	Y		DL	1.2	2	.866	3	.5	5	1												
4	1.2DL + 1WL 45 AZI	Yes	Y		DL	1.2	2	.707	3	.707	6	1												
5	1.2DL + 1WL 60 AZI	Yes	Y		DL	1.2	2	.5	3	.866	7	1												
6	1.2DL + 1WL 90 AZI	Yes	Y		DL	1.2	2		3	1	8	1												
7	1.2DL + 1WL 120 AZI	Yes	Y		DL	1.2	2	-.5	3	.866	9	1												
8	1.2DL + 1WL 135 AZI	Yes	Y		DL	1.2	2	-.7...	3	.707	10	1												
9	1.2DL + 1WL 150 AZI	Yes	Y		DL	1.2	2	-.8...	3	.5	11	1												
10	1.2DL + 1WL 180 AZI	Yes	Y		DL	1.2	2	-1	3		4	-1												
11	1.2DL + 1WL 210 AZI	Yes	Y		DL	1.2	2	-.8...	3	-.5	5	-1												
12	1.2DL + 1WL 225 AZI	Yes	Y		DL	1.2	2	-.7...	3	-.7...	6	-1												
13	1.2DL + 1WL 240 AZI	Yes	Y		DL	1.2	2	-.5	3	-.8...	7	-1												
14	1.2DL + 1WL 270 AZI	Yes	Y		DL	1.2	2		3	-1	8	-1												
15	1.2DL + 1WL 300 AZI	Yes	Y		DL	1.2	2	.5	3	-.8...	9	-1												
16	1.2DL + 1WL 315 AZI	Yes	Y		DL	1.2	2	.707	3	-.7...	10	-1												
17	1.2DL + 1WL 330 AZI	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1												
18	0.9DL + 1WL 0 AZI	Yes	Y		DL	.9	2	1	3		4	1												
19	0.9DL + 1WL 30 AZI	Yes	Y		DL	.9	2	.866	3	.5	5	1												
20	0.9DL + 1WL 45 AZI	Yes	Y		DL	.9	2	.707	3	.707	6	1												
21	0.9DL + 1WL 60 AZI	Yes	Y		DL	.9	2	.5	3	.866	7	1												
22	0.9DL + 1WL 90 AZI	Yes	Y		DL	.9	2		3	1	8	1												
23	0.9DL + 1WL 120 AZI	Yes	Y		DL	.9	2	-.5	3	.866	9	1												
24	0.9DL + 1WL 135 AZI	Yes	Y		DL	.9	2	-.7...	3	.707	10	1												
25	0.9DL + 1WL 150 AZI	Yes	Y		DL	.9	2	-.8...	3	.5	11	1												
26	0.9DL + 1WL 180 AZI	Yes	Y		DL	.9	2	-1	3		4	-1												
27	0.9DL + 1WL 210 AZI	Yes	Y		DL	.9	2	-.8...	3	-.5	5	-1												
28	0.9DL + 1WL 225 AZI	Yes	Y		DL	.9	2	-.7...	3	-.7...	6	-1												
29	0.9DL + 1WL 240 AZI	Yes	Y		DL	.9	2	-.5	3	-.8...	7	-1												
30	0.9DL + 1WL 270 AZI	Yes	Y		DL	.9	2		3	-1	8	-1												
31	0.9DL + 1WL 300 AZI	Yes	Y		DL	.9	2	.5	3	-.8...	9	-1												
32	0.9DL + 1WL 315 AZI	Yes	Y		DL	.9	2	.707	3	-.7...	10	-1												
33	0.9DL + 1WL 330 AZI	Yes	Y		DL	.9	2	.866	3	-.5	11	-1												
34	1.2DL + 1DLi + 1WLi 0...	Yes	Y		DL	1.2	O...	1	13	1	14		15	1										
35	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.866	14	.5	16	1										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
36	1.2DL + 1DLi + 1WLi 4...	Yes	Y		DL	1.2	O...	1	13	.707	14	.707	17	1										
37	1.2DL + 1DLi + 1WLi 6...	Yes	Y		DL	1.2	O...	1	13	.5	14	.866	18	1										
38	1.2DL + 1DLi + 1WLi 9...	Yes	Y		DL	1.2	O...	1	13		14	1	19	1										
39	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.5	14	.866	20	1										
40	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.7...	14	.707	21	1										
41	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-.8...	14	.5	22	1										
42	1.2DL + 1DLi + 1WLi 1...	Yes	Y		DL	1.2	O...	1	13	-1	14		15	-1										
43	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.8...	14	-.5	16	-1										
44	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.7...	14	-.7...	17	-1										
45	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13	-.5	14	-.8...	18	-1										
46	1.2DL + 1DLi + 1WLi 2...	Yes	Y		DL	1.2	O...	1	13		14	-1	19	-1										
47	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.5	14	-.8...	20	-1										
48	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.707	14	-.7...	21	-1										
49	1.2DL + 1DLi + 1WLi 3...	Yes	Y		DL	1.2	O...	1	13	.866	14	-.5	22	-1										
50	(1.2+0.2Sds) + 1.0E 0 ...	Yes	Y		DL	1.2...	E...	1	E...															
51	(1.2+0.2Sds) + 1.0E 3...	Yes	Y		DL	1.2...	E...	.866	E...	.5														
52	(1.2+0.2Sds) + 1.0E 4...	Yes	Y		DL	1.2...	E...	.707	E...	.707														
53	(1.2+0.2Sds) + 1.0E 6...	Yes	Y		DL	1.2...	E...	.5	E...	.866														
54	(1.2+0.2Sds) + 1.0E 9...	Yes	Y		DL	1.2...	E...		E...	1														
55	(1.2+0.2Sds) + 1.0E 1...	Yes	Y		DL	1.2...	E...	-.5	E...	.866														
56	(1.2+0.2Sds) + 1.0E 1...	Yes	Y		DL	1.2...	E...	-.7...	E...	.707														
57	(1.2+0.2Sds) + 1.0E 1...	Yes	Y		DL	1.2...	E...	-.8...	E...	.5														
58	(1.2+0.2Sds) + 1.0E 1...	Yes	Y		DL	1.2...	E...	-1	E...															
59	(1.2+0.2Sds) + 1.0E 2...	Yes	Y		DL	1.2...	E...	-.8...	E...	-.5														
60	(1.2+0.2Sds) + 1.0E 2...	Yes	Y		DL	1.2...	E...	-.7...	E...	-.7...														
61	(1.2+0.2Sds) + 1.0E 2...	Yes	Y		DL	1.2...	E...	-.5	E...	-.8...														
62	(1.2+0.2Sds) + 1.0E 2...	Yes	Y		DL	1.2...	E...		E...	-1														
63	(1.2+0.2Sds) + 1.0E 3...	Yes	Y		DL	1.2...	E...	.5	E...	-.8...														
64	(1.2+0.2Sds) + 1.0E 3...	Yes	Y		DL	1.2...	E...	.707	E...	-.7...														
65	(1.2+0.2Sds) + 1.0E 3...	Yes	Y		DL	1.2...	E...	.866	E...	-.5														
66	(0.9-0.2Sds) + 1.0E 0 ...	Yes	Y		DL	.859	E...	1	E...															
67	(0.9-0.2Sds) + 1.0E 30...	Yes	Y		DL	.859	E...	.866	E...	.5														
68	(0.9-0.2Sds) + 1.0E 45...	Yes	Y		DL	.859	E...	.707	E...	.707														
69	(0.9-0.2Sds) + 1.0E 60...	Yes	Y		DL	.859	E...	.5	E...	.866														
70	(0.9-0.2Sds) + 1.0E 90...	Yes	Y		DL	.859	E...		E...	1														
71	(0.9-0.2Sds) + 1.0E 12...	Yes	Y		DL	.859	E...	-.5	E...	.866														
72	(0.9-0.2Sds) + 1.0E 13...	Yes	Y		DL	.859	E...	-.7...	E...	.707														
73	(0.9-0.2Sds) + 1.0E 15...	Yes	Y		DL	.859	E...	-.8...	E...	.5														
74	(0.9-0.2Sds) + 1.0E 18...	Yes	Y		DL	.859	E...	-1	E...															
75	(0.9-0.2Sds) + 1.0E 21...	Yes	Y		DL	.859	E...	-.8...	E...	-.5														
76	(0.9-0.2Sds) + 1.0E 22...	Yes	Y		DL	.859	E...	-.7...	E...	-.7...														
77	(0.9-0.2Sds) + 1.0E 24...	Yes	Y		DL	.859	E...	-.5	E...	-.8...														
78	(0.9-0.2Sds) + 1.0E 27...	Yes	Y		DL	.859	E...		E...	-1														
79	(0.9-0.2Sds) + 1.0E 30...	Yes	Y		DL	.859	E...	.5	E...	-.8...														
80	(0.9-0.2Sds) + 1.0E 31...	Yes	Y		DL	.859	E...	.707	E...	-.7...														
81	(0.9-0.2Sds) + 1.0E 33...	Yes	Y		DL	.859	E...	.866	E...	-.5														
82	1.2D + 1.5 Lv1	Yes	Y		DL	1.2	25	1.5																
83	1.2D + 1.5 Lv2	Yes	Y		DL	1.2	26	1.5																
84	1.2D + 1.5 Lv3	Yes	Y		DL	1.2	27	1.5																
85	1.2D + 1.5 Lv4	Yes	Y		DL	1.2	28	1.5																
86	1.2D + 1.5 Lv5	Yes	Y		DL	1.2	29	1.5																
87	1.2D + 1.5 Lv6	Yes	Y		DL	1.2	30	1.5																

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
88	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	4	.063	2	.063	3											
89	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	5	.063	2	.054	3	.031										
90	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	6	.063	2	.044	3	.044										
91	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	7	.063	2	.031	3	.054										
92	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	8	.063	2		3	.063										
93	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	9	.063	2	-.0...	3	.054										
94	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	10	.063	2	-.0...	3	.044										
95	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	11	.063	2	-.0...	3	.031										
96	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	4	.063	2	-.0...	3											
97	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	5	.063	2	-.0...	3	-.031										
98	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	6	.063	2	-.0...	3	-.044										
99	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	7	.063	2	-.0...	3	-.054										
100	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	8	.063	2		3	-.063										
101	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	9	.063	2	.031	3	-.054										
102	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	10	.063	2	.044	3	-.044										
103	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	31	1.5	11	.063	2	.054	3	-.031										
104	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	4	.063	2	.063	3											
105	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	5	.063	2	.054	3	.031										
106	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	6	.063	2	.044	3	.044										
107	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	7	.063	2	.031	3	.054										
108	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	8	.063	2		3	.063										
109	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	9	.063	2	-.0...	3	.054										
110	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	10	.063	2	-.0...	3	.044										
111	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	11	.063	2	-.0...	3	.031										
112	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	4	.063	2	-.0...	3											
113	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	5	.063	2	-.0...	3	-.031										
114	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	6	.063	2	-.0...	3	-.044										
115	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	7	.063	2	-.0...	3	-.054										
116	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	8	.063	2		3	-.063										
117	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	9	.063	2	.031	3	-.054										
118	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	10	.063	2	.044	3	-.044										
119	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	32	1.5	11	.063	2	.054	3	-.031										
120	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	4	.063	2	.063	3											
121	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	5	.063	2	.054	3	.031										
122	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	6	.063	2	.044	3	.044										
123	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	7	.063	2	.031	3	.054										
124	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	8	.063	2		3	.063										
125	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	9	.063	2	-.0...	3	.054										
126	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	10	.063	2	-.0...	3	.044										
127	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	11	.063	2	-.0...	3	.031										
128	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	4	.063	2	-.0...	3											
129	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	5	.063	2	-.0...	3	-.031										
130	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	6	.063	2	-.0...	3	-.044										
131	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	7	.063	2	-.0...	3	-.054										
132	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	8	.063	2		3	-.063										
133	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	9	.063	2	.031	3	-.054										
134	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	10	.063	2	.044	3	-.044										
135	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	33	1.5	11	.063	2	.054	3	-.031										
136	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	4	.063	2	.063	3											
137	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	5	.063	2	.054	3	.031										
138	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	6	.063	2	.044	3	.044										
139	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	7	.063	2	.031	3	.054										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
140	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	8	.063	2		3	.063										
141	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	9	.063	2	-.0...	3	.054										
142	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	10	.063	2	-.0...	3	.044										
143	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	11	.063	2	-.0...	3	.031										
144	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	4	.063	2	-.0...	3											
145	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	5	.063	2	-.0...	3	-.031										
146	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	6	.063	2	-.0...	3	-.044										
147	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	7	.063	2	-.0...	3	-.054										
148	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	8	.063	2		3	-.063										
149	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	9	.063	2	.031	3	-.054										
150	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	10	.063	2	.044	3	-.044										
151	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	34	1.5	11	.063	2	.054	3	-.031										
152	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	4	.063	2	.063	3											
153	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	5	.063	2	.054	3	.031										
154	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	6	.063	2	.044	3	.044										
155	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	7	.063	2	.031	3	.054										
156	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	8	.063	2		3	.063										
157	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	9	.063	2	-.0...	3	.054										
158	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	10	.063	2	-.0...	3	.044										
159	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	11	.063	2	-.0...	3	.031										
160	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	4	.063	2	-.0...	3											
161	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	5	.063	2	-.0...	3	-.031										
162	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	6	.063	2	-.0...	3	-.044										
163	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	7	.063	2	-.0...	3	-.054										
164	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	8	.063	2		3	-.063										
165	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	9	.063	2	.031	3	-.054										
166	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	10	.063	2	.044	3	-.044										
167	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	35	1.5	11	.063	2	.054	3	-.031										
168	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	4	.063	2	.063	3											
169	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	5	.063	2	.054	3	.031										
170	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	6	.063	2	.044	3	.044										
171	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	7	.063	2	.031	3	.054										
172	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	8	.063	2		3	.063										
173	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	9	.063	2	-.0...	3	.054										
174	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	10	.063	2	-.0...	3	.044										
175	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	11	.063	2	-.0...	3	.031										
176	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	4	.063	2	-.0...	3											
177	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	5	.063	2	-.0...	3	-.031										
178	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	6	.063	2	-.0...	3	-.044										
179	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	7	.063	2	-.0...	3	-.054										
180	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	8	.063	2		3	-.063										
181	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	9	.063	2	.031	3	-.054										
182	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	10	.063	2	.044	3	-.044										
183	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	36	1.5	11	.063	2	.054	3	-.031										
184	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	4	.063	2	.063	3											
185	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	5	.063	2	.054	3	.031										
186	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	6	.063	2	.044	3	.044										
187	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	7	.063	2	.031	3	.054										
188	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	8	.063	2		3	.063										
189	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	9	.063	2	-.0...	3	.054										
190	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	10	.063	2	-.0...	3	.044										
191	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	11	.063	2	-.0...	3	.031										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
192	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	4	.063	2	-.0...	3											
193	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	5	.063	2	-.0...	3	-.031										
194	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	6	.063	2	-.0...	3	-.044										
195	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	7	.063	2	-.0...	3	-.054										
196	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	8	.063	2		3	-.063										
197	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	9	.063	2	.031	3	-.054										
198	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	10	.063	2	.044	3	-.044										
199	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	37	1.5	11	.063	2	.054	3	-.031										
200	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	4	.063	2	.063	3											
201	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	5	.063	2	.054	3	.031										
202	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	6	.063	2	.044	3	.044										
203	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	7	.063	2	.031	3	.054										
204	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	8	.063	2		3	.063										
205	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	9	.063	2	-.0...	3	.054										
206	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	10	.063	2	-.0...	3	.044										
207	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	11	.063	2	-.0...	3	.031										
208	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	4	.063	2	-.0...	3											
209	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	5	.063	2	-.0...	3	-.031										
210	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	6	.063	2	-.0...	3	-.044										
211	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	7	.063	2	-.0...	3	-.054										
212	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	8	.063	2		3	-.063										
213	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	9	.063	2	.031	3	-.054										
214	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	10	.063	2	.044	3	-.044										
215	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	38	1.5	11	.063	2	.054	3	-.031										
216	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	4	.063	2	.063	3											
217	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	5	.063	2	.054	3	.031										
218	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	6	.063	2	.044	3	.044										
219	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	7	.063	2	.031	3	.054										
220	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	8	.063	2		3	.063										
221	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	9	.063	2	-.0...	3	.054										
222	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	10	.063	2	-.0...	3	.044										
223	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	11	.063	2	-.0...	3	.031										
224	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	4	.063	2	-.0...	3											
225	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	5	.063	2	-.0...	3	-.031										
226	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	6	.063	2	-.0...	3	-.044										
227	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	7	.063	2	-.0...	3	-.054										
228	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	8	.063	2		3	-.063										
229	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	9	.063	2	.031	3	-.054										
230	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	10	.063	2	.044	3	-.044										
231	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	39	1.5	11	.063	2	.054	3	-.031										
232	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	4	.063	2	.063	3											
233	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	5	.063	2	.054	3	.031										
234	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	6	.063	2	.044	3	.044										
235	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	7	.063	2	.031	3	.054										
236	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	8	.063	2		3	.063										
237	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	9	.063	2	-.0...	3	.054										
238	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	10	.063	2	-.0...	3	.044										
239	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	11	.063	2	-.0...	3	.031										
240	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	4	.063	2	-.0...	3											
241	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	5	.063	2	-.0...	3	-.031										
242	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	6	.063	2	-.0...	3	-.044										
243	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	7	.063	2	-.0...	3	-.054										

Load Combinations (Continued)

	Description	Solve	PD...	S...	BLC	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Factor	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
244	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	8	.063	2		3	-.063										
245	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	9	.063	2	.031	3	-.054										
246	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	10	.063	2	.044	3	-.044										
247	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	40	1.5	11	.063	2	.054	3	-.031										
248	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	4	.063	2	.063	3											
249	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	5	.063	2	.054	3	.031										
250	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	6	.063	2	.044	3	.044										
251	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	7	.063	2	.031	3	.054										
252	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	8	.063	2		3	.063										
253	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	9	.063	2	-.0...	3	.054										
254	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	10	.063	2	-.0...	3	.044										
255	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	11	.063	2	-.0...	3	.031										
256	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	4	.063	2	-.0...	3											
257	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	5	.063	2	-.0...	3	-.031										
258	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	6	.063	2	-.0...	3	-.044										
259	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	7	.063	2	-.0...	3	-.054										
260	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	8	.063	2		3	-.063										
261	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	9	.063	2	.031	3	-.054										
262	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	10	.063	2	.044	3	-.044										
263	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	41	1.5	11	.063	2	.054	3	-.031										
264	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	4	.063	2	.063	3											
265	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	5	.063	2	.054	3	.031										
266	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	6	.063	2	.044	3	.044										
267	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	7	.063	2	.031	3	.054										
268	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	8	.063	2		3	.063										
269	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	9	.063	2	-.0...	3	.054										
270	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	10	.063	2	-.0...	3	.044										
271	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	11	.063	2	-.0...	3	.031										
272	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	4	.063	2	-.0...	3											
273	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	5	.063	2	-.0...	3	-.031										
274	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	6	.063	2	-.0...	3	-.044										
275	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	7	.063	2	-.0...	3	-.054										
276	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	8	.063	2		3	-.063										
277	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	9	.063	2	.031	3	-.054										
278	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	10	.063	2	.044	3	-.044										
279	1.2D + 1.5Lm + 1.0W...	Yes	Y		DL	1.2	42	1.5	11	.063	2	.054	3	-.031										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N17	max	1575.2503	18	754.2612	21	2866.1824	34	638.8274	247	6344.2828	34	1058.3901	29
2		min	-1625.5743	10	-754.5616	29	214.4998	26	-667.9414	187	45.0415	26	-1058.6971	21
3	N28	max	1127.1362	17	1362.6101	23	2864.294	39	-106.0098	31	88.3886	32	946.704	18
4		min	-1101.9313	25	-1406.2456	15	225.1569	31	-5443.9265	39	-3259.7888	40	-946.8863	26
5	N39	max	971.1709	4	1424.4287	6	2864.3326	45	5534.5265	45	-63.2377	20	819.5571	24
6		min	-945.6264	28	-1381.1324	30	225.1561	21	30.1564	21	-3099.0936	44	-820.8488	32
7	Totals:	max	3411.1071	2	3304.8944	22	8232.4931	46						
8		min	-3411.1058	26	-3304.8943	30	2290.4822	70						

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

	Member	Shape	Code Check	Loc...	L...	She...	Loc...	...	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn ...	Cb	Eqn
1	M58	L2.5x2.5x4	.422	0	2	.072	21....	z	2	34783.4524	38556	1113.55...	2537.3...	1	H2-1
2	M60	L2.5x2.5x4	.420	0	7	.072	21....	z	7	34783.4524	38556	1113.55...	2537.3...	1	H2-1
3	M59	L2.5x2.5x4	.419	0	13	.072	0	z	5	34783.4524	38556	1113.55...	2537.3...	1	H2-1
4	M1	HSS4X4X4	.397	0	36	.095	0	y	186	124657.7517	139518	16180.5	16180.5	2.7..	H1-1b
5	M18	HSS4X4X4	.396	0	45	.093	0	y	111	84904.9369	139518	16180.5	16180.5	2.7..	H1-1b
6	M11	HSS4X4X4	.396	0	41	.095	0	y	127	84904.9369	139518	16180.5	16180.5	2.7..	H1-1b
7	M80	PIPE 2.0	.349	69	45	.105	69		14	14916.0955	32130	1871.625	1871.625	3.8..	H1-1b
8	M92	PIPE 2.0	.349	69	34	.104	69		3	14916.0955	32130	1871.625	1871.625	3.7..	H1-1b
9	M7	PIPE 2.0	.348	69	39	.107	69		8	14916.0955	32130	1871.625	1871.625	1	H1-1b
10	M71	PIPE 2.0	.343	27	10	.101	27		9	14916.0955	32130	1871.625	1871.625	1	H1-1b
11	M95	PIPE 2.0	.337	69	39	.099	27		4	14916.0955	32130	1871.625	1871.625	1	H1-1b
12	M83	PIPE 2.0	.337	69	34	.101	27		14	14916.0955	32130	1871.625	1871.625	1	H1-1b
13	M89	PIPE 2.0	.321	69	3	.059	69		4	14916.0955	32130	1871.625	1871.625	1	H1-1b
14	M101	PIPE 2.0	.320	69	9	.055	69		9	14916.0955	32130	1871.625	1871.625	1	H1-1b
15	M56	PIPE 2.0	.319	15....	5	.250	9.3...		7	6295.4223	32130	1871.625	1871.625	1	H1-1b
16	M57	PIPE 2.0	.318	15....	10	.252	9.3...		13	6295.4223	32130	1871.625	1871.625	1	H1-1b
17	M55	PIPE 2.0	.317	15....	15	.254	9.3...		2	6295.4223	32130	1871.625	1871.625	1	H1-1b
18	M86	PIPE 2.0	.314	69	12	.048	69		10	14916.0955	32130	1871.625	1871.625	4.5..	H1-1b
19	M77	PIPE 2.0	.311	69	14	.054	69		15	14916.0955	32130	1871.625	1871.625	4.4..	H1-1b
20	M98	PIPE 2.0	.306	69	17	.050	69		16	14916.0955	32130	1871.625	1871.625	4.0..	H1-1b
21	M74	PIPE 2.0	.297	69	6	.048	69		5	14916.0955	32130	1871.625	1871.625	1	H1-1b
22	M34	PL6x.375	.235	0	6	.372	1.5	y	45	72166.8526	72900	569.5326	9112.5	1	H1-1b
23	M25	PL6x.375	.235	0	16	.372	1.5	y	39	72166.8526	72900	569.5326	9112.5	1	H1-1b
24	M43	PL6x.375	.231	0	11	.373	1.5	y	34	72166.8526	72900	569.5326	9112.5	1	H1-1b
25	M8	PIPE 3.0	.210	98....	42	.084	50		9	28250.554	65205	5748.75	5748.75	2.0..	H1-1b
26	M33	PIPE 3.0	.210	98....	47	.083	50		14	28250.554	65205	5748.75	5748.75	2.0..	H1-1b
27	M42	PIPE 3.0	.210	98....	37	.082	50		3	28250.554	65205	5748.75	5748.75	2.0..	H1-1b
28	M44	PL6x.375	.199	1.5	14	.366	0	y	39	72166.8526	72900	569.5326	9112.5	1	H1-1b
29	M35	PL6x.375	.194	1.5	9	.366	0	y	34	72166.8526	72900	569.5326	9112.5	1	H1-1b
30	M26	PL6x.375	.193	1.5	3	.366	0	y	44	72166.8526	72900	569.5326	9112.5	1	H1-1b
31	M12	HSS4X4X4	.168	28....	38	.046	28....	y	156	135796.5221	139518	16180.5	16180.5	1.6..	H1-1b
32	M2	HSS4X4X4	.168	28....	49	.046	28....	y	216	135796.5221	139518	16180.5	16180.5	1.6..	H1-1b
33	M19	HSS4X4X4	.168	28....	43	.045	28....	y	95	135796.5221	139518	16180.5	16180.5	1.6..	H1-1b
34	M20	HSS4X4X4	.167	0	45	.048	0	y	46	135796.5221	139518	16180.5	16180.5	1.6..	H1-1b
35	M3	HSS4X4X4	.167	0	34	.049	0	y	35	135796.5221	139518	16180.5	16180.5	1.6..	H1-1b
36	M13	HSS4X4X4	.167	0	40	.049	0	y	40	135796.5221	139518	16180.5	16180.5	1.6..	H1-1b
37	M14	L2x2x3	.164	51....	25	.010	51....	z	34	9312.5281	23392.8	557.7166	1094.4...	1.2..	H2-1
38	M21	L2x2x3	.159	51....	30	.010	51....	z	39	9312.5281	23392.8	557.7166	1099.6...	1.2..	H2-1
39	M5	L2x2x3	.153	51....	19	.010	51....	z	44	9312.5281	23392.8	557.7166	1096.577	1.2..	H2-1
40	M22	L2x2x3	.146	51....	11	.011	51....	y	47	9312.5281	23392.8	557.7166	1061.1...	1.1..	H2-1
41	M6	L2x2x3	.143	51....	17	.011	51....	y	36	9312.5281	23392.8	557.7166	1053.3...	1.0..	H2-1
42	M15	L2x2x3	.142	51....	6	.011	51....	y	45	9312.5281	23392.8	557.7166	1060.1...	1.1..	H2-1
43	M52	6"x1/2" Plate	.081	6.3...	2	.105	6.3...	y	34	64763.4029	97200	1012.5	12150	1.2..	H1-1b
44	M53	6"x1/2" Plate	.081	6.3...	14	.102	6.2...	y	42	64763.4029	97200	1012.5	12150	1.3..	H1-1b
45	M51	6"x1/2" Plate	.080	6.3...	8	.105	6.3...	y	40	64763.4029	97200	1012.5	12150	1.2..	H1-1b
46	M46	6"x1/2" Plate	.027	1.5	17	.106	0	y	202	96648.9279	97200	1012.5	12150	1.0..	H1-1b
47	M28	6"x1/2" Plate	.026	1.5	6	.106	0	y	143	96648.9279	97200	1012.5	12150	1.0..	H1-1b
48	M37	6"x1/2" Plate	.026	1.5	11	.104	0	y	273	96648.9279	97200	1012.5	12150	1.0..	H1-1b
49	M36	6"x1/2" Plate	.022	0	2	.101	1.5	y	216	96648.9279	97200	1012.5	12150	1.1..	H1-1b
50	M27	6"x1/2" Plate	.022	0	13	.101	1.5	y	95	96648.9279	97200	1012.5	12150	1.1..	H1-1b
51	M45	6"x1/2" Plate	.021	0	7	.102	1.5	y	156	96648.9279	97200	1012.5	12150	1.1..	H1-1b

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

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

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

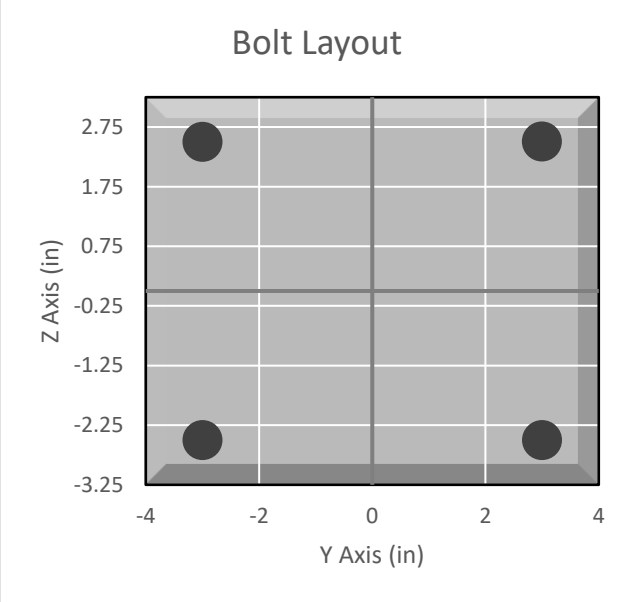
Analysis date: 7/21/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	188094
Carrier Site ID:	CTNH291A
Carrier Site Name:	CTNH291A

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

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



Connection Description
Mount to Collar

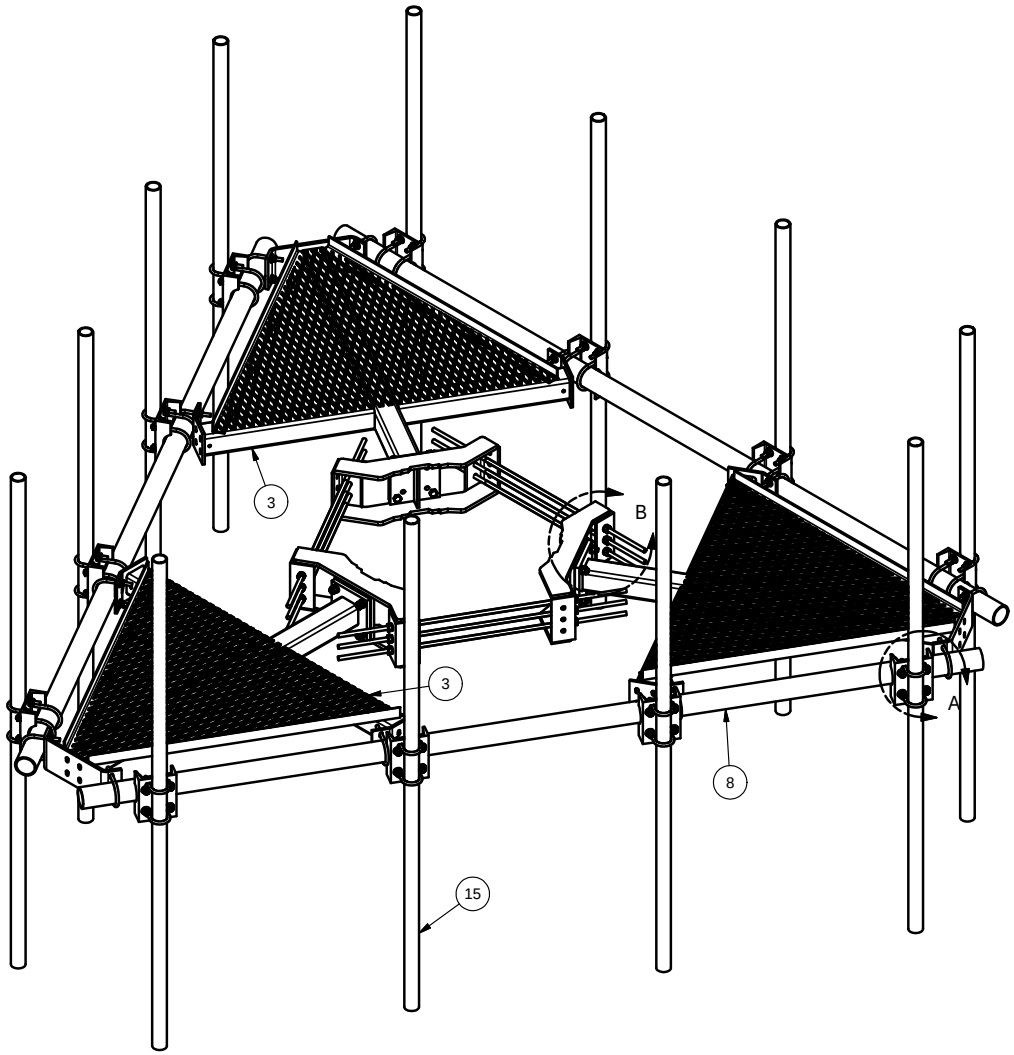
Bolt Check*		
Tensile Capacity (ϕT_n):	20340.1	lbs
Shear Capacity (ϕV_n):	13805.8	lbs
Tension Force (T_u):	7727.5	lbs
Shear Force (V_u):	770.6	lbs
Tension Usage:	36.2%	--
Shear Usage:	5.3%	--
Interaction:	36.2%	Pass
Controlling Member:	M18	--
Controlling LC:	45	--

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

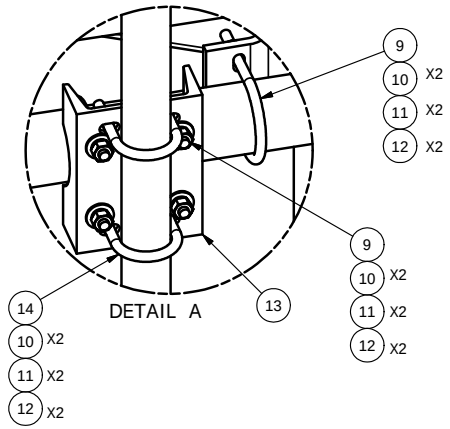
1825 W. Walnut Hill Lane, Suite 120
Irving, Texas 75038

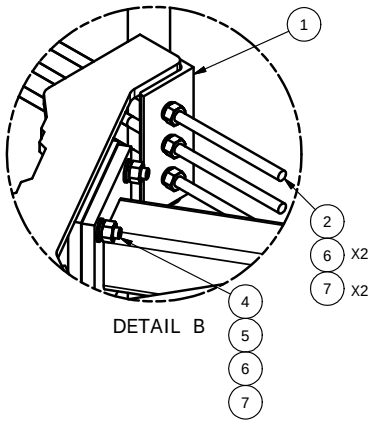
APPENDIX E

SUPPLEMENTAL DRAWINGS



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.40	3.59
2	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.40	3.59
3	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
4	12	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2.75	0.36	4.27
5	12	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.41
6	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
7	30	A58NUT	5/8" HDG A325 HEX NUT		0.13	3.90
8	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150.000 in	94.80	284.40
9	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.26	9.25
10	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.09
11	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
12	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
13	12	X-SP219	SMALL SUPPORT CROSS PLATE	8.250 in	8.61	103.33
14	24	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.26	6.17
15	12	B	ANTENNA MOUNTING PIPE	C	D	E





2-3/8" O.D. VERTICAL MOUNTING PIPES					
ASSEMBLY NO. "A"	PART NO. "B"	LENGTH, "C"	UNIT WEIGHT, "D"	NET WEIGHT, "E"	TOTAL WEIGHT
RMQP-463	P263	63"	20.18	242.16	1591.11
RMQP-472	P272	72"	23.07	276.84	1625.79
RMQP-484	P284	84"	26.91	322.92	1671.87
RMQP-496	P296	96"	30.76	369.12	1718.07
RMQP-4126	P2126	126"	40.75	489.00	1837.95

REVISION HISTORY				
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

TOLERANCE NOTE

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

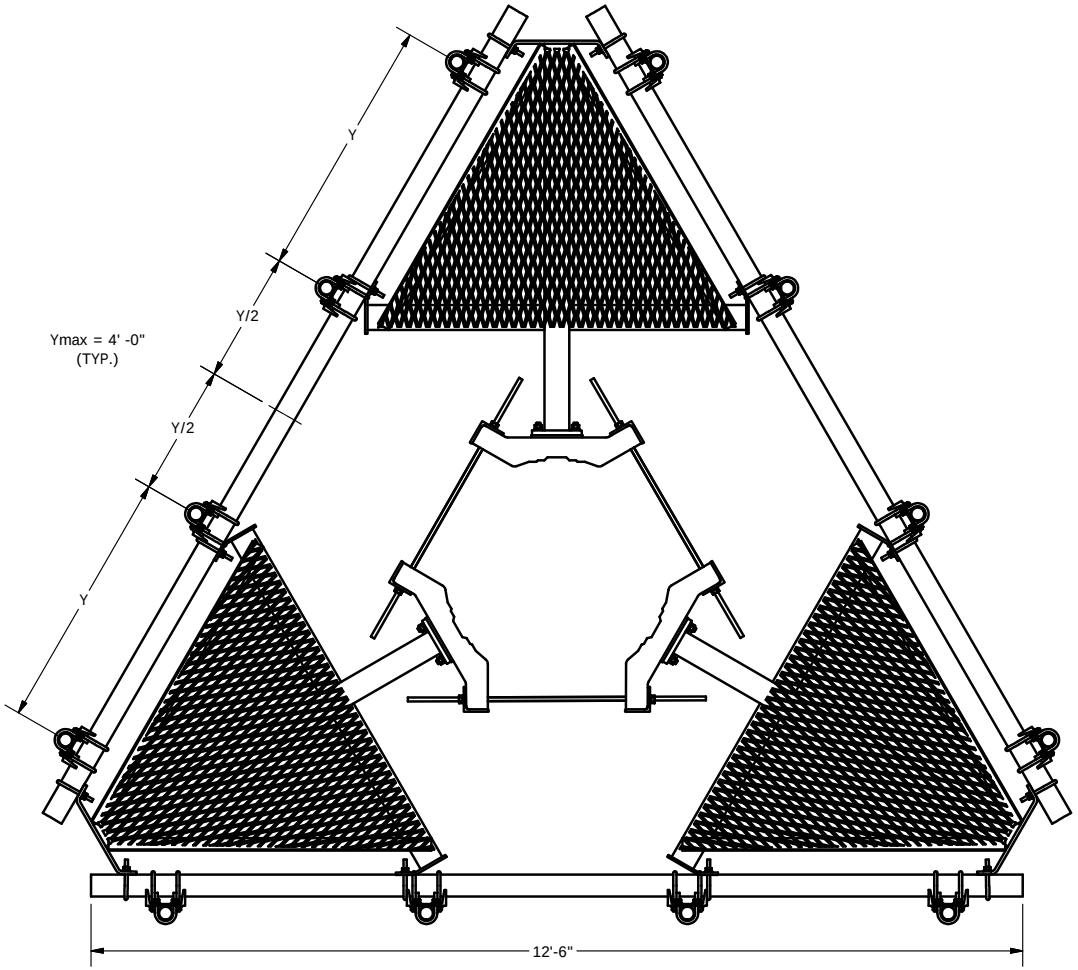
DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

SITE PRO 1
A valmont COMPANY

Engineering Support Team:
1-888-753-7446

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

DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY		DWG. NO.
	BMC 7/9/2015		RMQP-4XX



TOLERANCE NOTE

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

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	ADDED 10' 6" ANTENNA MOUNTING PIPES		CEK	7/9/2015

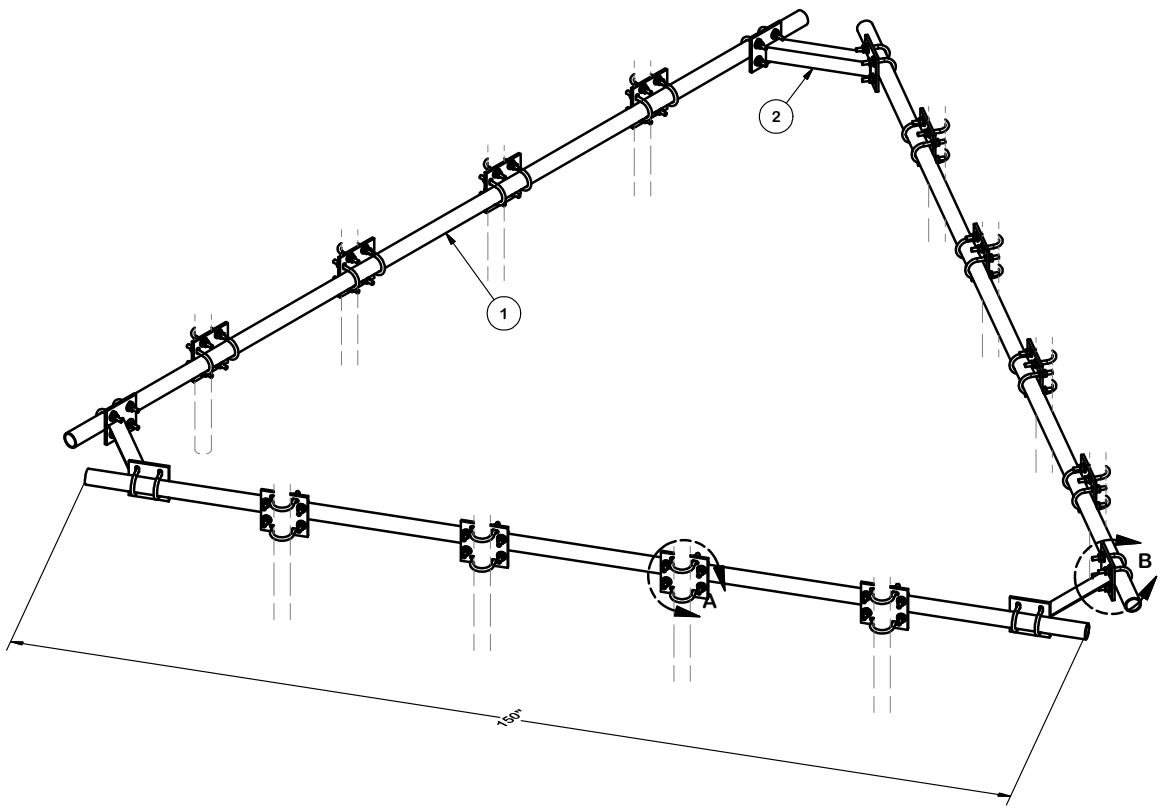
REVISION HISTORY

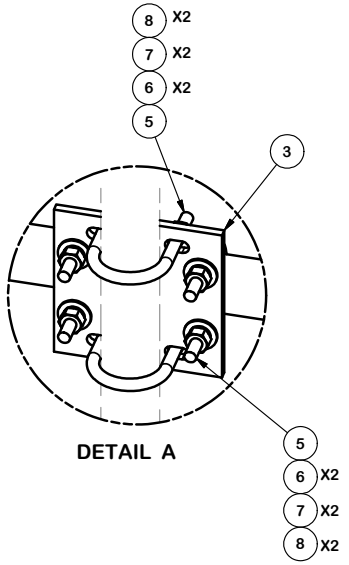
DESCRIPTION
LOW PROFILE CO-LOCATION PLATFORM
FOR 12 ANTENNAS WITH 12' 6" FACE WIDTH
FOR 12" - 38" DIAMETER POLES

SITE PRO 1
A valmont COMPANY
Engineering Support Team:
1-888-753-7446
Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

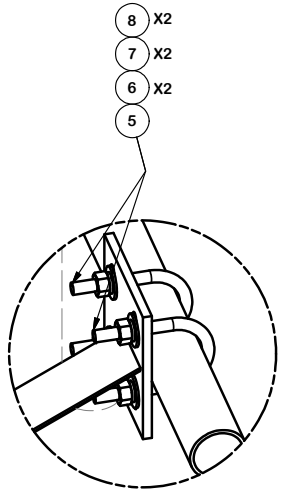
DRAWN BY	CPD NO.	DRAWING USAGE	PART NO.
CEK 1/20/2012	semb	CUSTOMER	SEE ASSEMBLY NO. "A"
ENG. APPROVAL	CHECKED BY	DWG. NO.	PAGE
	BMC 7/9/2015	RMQP-4XX	2 OF 2

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150 in	45.77	137.31
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
4	24	X-UB1300	1/2" X 3" X 5" X 2" U-BOLT (HDG.)		0.73	17.56
5	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	43.90
6	120	G12FW	1/2" HDG USS FLATWASHER		0.03	4.09
7	120	G12LW	1/2" HDG LOCKWASHER		0.01	1.67
8	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
					TOTAL WT. #	302.21





DETAIL A



DETAIL B

TOLERANCE NOTES

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

DESCRIPTION
UNIVERSAL HANDRAIL KIT
FOR 12' PLATFORM
2-3/8" & 2-7/8" ANTENNA PIPES

SITE PRO 1
A valmont COMPANY
Engineering Support Team: 1-888-753-7446
Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.	PAGE
	CEK 3/9/2015		HRK12-U	1 OF 1

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	01	CUSTOMER	BMC 3/10/2015	HRK12-U

EBI Consulting

environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CTNH291A

85 Paper Mill Road
Woodbury, Connecticut 06798

September 19, 2021

EBI Project Number: 6221005367

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**19.88%**

21 B Street, Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

September 19, 2021

T-Mobile
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTNH291A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **85 Paper Mill Road** in **Woodbury, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 85 Paper Mill Road in Woodbury, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

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

1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.

3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 2 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

8) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

9) 1 LTE Traffic channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.

10) 1 LTE Broadcast channel (LTE 1C and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.

11) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.

12) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.

13) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

14) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

15) The antennas used in this modeling are the RFS APXVAALL24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector A, the RFS APXVAALL24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector B, the RFS

APXVAALL24_43-UNA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s), the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

16) The antenna mounting height centerline of the proposed antennas is 128 feet above ground level (AGL).

17) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVAALL24_43-UNA20	Make / Model:	RFS APXVAALL24_43-UNA20	Make / Model:	RFS APXVAALL24_43-UNA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd / 16.45 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.65 dBd / 15.45 dBd / 15.45 dBd / 15.45 dBd / 16.45 dBd / 16.45 dBd
Height (AGL):	128 feet	Height (AGL):	128 feet	Height (AGL):	128 feet
Channel Count:	17	Channel Count:	17	Channel Count:	17
Total TX Power (W):	680 Watts	Total TX Power (W):	680 Watts	Total TX Power (W):	680 Watts
ERP (W):	22,622.65	ERP (W):	22,622.65	ERP (W):	22,622.65
Antenna A1 MPE %:	**6.85%**	Antenna B1 MPE %:	**6.85%**	Antenna C1 MPE %:	**6.85%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	128 feet	Height (AGL):	128 feet	Height (AGL):	128 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna A2 MPE %:	**8.78%**	Antenna B2 MPE %:	**8.78%**	Antenna C2 MPE %:	**8.78%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	15.63%
AT&T	4.25%
Site Total MPE % :	19.88%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	15.63%
T-Mobile Sector B Total:	15.63%
T-Mobile Sector C Total:	15.63%
Site Total MPE % :	19.88%

T-Mobile Maximum MPE Power Values (Sector A)

T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 600 MHz LTE	2	591.73	128.0	2.86	600 MHz LTE	400	0.71%
T-Mobile 600 MHz NR	1	1577.94	128.0	3.81	600 MHz NR	400	0.95%
T-Mobile 700 MHz LTE	2	695.22	128.0	3.36	700 MHz LTE	467	0.72%
T-Mobile 1900 MHz GSM	4	1052.26	128.0	10.17	1900 MHz GSM	1000	1.02%
T-Mobile 1900 MHz UMTS	2	1052.26	128.0	5.08	1900 MHz UMTS	1000	0.51%
T-Mobile 1900 MHz LTE	2	2104.51	128.0	10.17	1900 MHz LTE	1000	1.02%
T-Mobile 2100 MHz UMTS	2	1324.71	128.0	6.40	2100 MHz UMTS	1000	0.64%
T-Mobile 2100 MHz LTE	2	2649.42	128.0	12.80	2100 MHz LTE	1000	1.28%
T-Mobile 2500 MHz LTE 1C & 2C Traffic	1	11044.63	128.0	26.68	2500 MHz LTE 1C & 2C Traffic	1000	2.67%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	128.0	2.59	2500 MHz LTE 1C & 2C Broadcast	1000	0.26%
T-Mobile 2500 MHz NR Traffic	1	22089.26	128.0	53.36	2500 MHz NR Traffic	1000	5.34%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	128.0	5.19	2500 MHz NR Broadcast	1000	0.52%
						Total:	**15.63%**

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

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	15.63%
Sector B:	15.63%
Sector C:	15.63%
T-Mobile Maximum MPE % (Sector A):	15.63%
Site Total:	19.88%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **19.88%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

T-Mobile

T-MOBILE SITE NUMBER: CTNH291A
T-MOBILE SITE NAME: CTNH291A
SITE TYPE: MONOPOLE
TOWER HEIGHT: 150'-0"

BUSINESS UNIT #: 857528
SITE ADDRESS: 85 PAPER MILL ROAD WOODBURY, CT 06798
COUNTY: LITCHFIELD
JURISDICTION: CONNECTICUT SITING COUNCIL

T-MOBILE CELL SPLIT SITE CONFIGURATION: 67E5A998E 6160

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	WOODBURY PAPER MILL RD
SITE ADDRESS:	85 PAPER MILL ROAD WOODBURY, CT 06798
COUNTY:	LITCHFIELD
MAP/PARCEL #:	040-032A
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.573080
LONGITUDE:	-73.227640
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	528'
CURRENT ZONING:	OS 100
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	BRYAN JODIE A 754 PEACHTREE ST NE 16RL ATLANTA, GA 30308
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 12920 SE 38TH STREET BELLEVUE, WA 98006
ELECTRIC PROVIDER:	N/A
TELCO PROVIDER:	N/A

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS marvin.phillips@btgrp.com
CROWN CASTLE USA INC. DISTRICT CONTACTS:	
	N/A - PROJECT MANAGER
	N/A - CONSTRUCTION MANAGER

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

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	CODE SUMMARY
T-3	CODE SUMMARY
T-4	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	SITE PLAN & ENLARGED SITE PLAN
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
C-6	GENERATOR DETAILS
C-7	GENERATOR SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
E-2	DC GENERATOR ON LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 24X36. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- INSTALL (6) ANTENNAS
- INSTALL (6) RADIOS
- INSTALL (4) 1-5/8" HYBRID CABLE
- INSTALL (1) SITE PRO 1 RMQP- 496 PLATFORM WITH HRK12-U HANDRAIL KIT

- GROUND SCOPE OF WORK:
- INSTALL (1) 6160 CABINET
- INSTALL (1) B160 CABINET
- INSTALL (1) RBS 6601, (3) BB 6648, (1) CSR IXRE V2 (GEN2) TRNSPORT SYSTEM, (1) DUG20, IN RBS 6601 CABINET
- INSTALL (1) TELCO BOARD
- INSTALL (1) PPC EQUIPMENT
- INSTALL (1) ICE BRIDGE
- INSTALL (1) H-FRAME
- INSTALL (1) TMO METER
- INSTALL (1) (1) GENERAC - RD025 (25KW POWER OUTPUT, 240GAL TANK SIZE) GENERATOR
- PROPOSE (1) 10' x15' PAD ON 10' x15' LEASE AREA
- PROPOSED (2) 8'x10' ICE CANOPIES

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

LOCATION MAP

NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

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

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

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	N/A
DATED:	N/A
MOUNT ANALYSIS:	TRYLON
DATED:	7/21/21
AC ELECTRICAL POWER DESIGN:	BY OTHERS
DATED:	
RFDS REVISION:	1
DATED:	6/10/21
ORDER ID:	576299
REVISION:	0

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

APPROVALS

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

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

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

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

SHEET NUMBER: T-1
REVISION: 0

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Verizon Antenna Removal and Addition
Address: 85 PAPER MILL ROAD, WOODBURY, CT Zip Code 06798
Owner/Authorized Agent: _____ Phone # (____) ____ - _____ E-Mail _____
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City_____ ☒ County LITCHFIELD ☐ State

CONTACT: _____

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				(___)	
Civil	Crown Castle	Andrew Fandozzi, P.E., C.P.E.	042222	(724)416-2864	andrew.fandozzi@crowncastle.com
Electrical	Crown Castle	Andrew Fandozzi, P.E., C.P.E.	042222	(724)416-2864	andrew.fandozzi@crowncastle.com
Fire Alarm				(___)	
Plumbing				(___)	
Mechanical				(___)	
Sprinkler-Standpipe				(___)	
Structural	John W. Kelly P.E. Engineering, P.C.	John W/Kelly, III	042719	(918)587-4630	
Retaining Walls >5' High				(___)	
Other				(___)	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☐ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core- Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): U
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): U

RISK CATEGORY (Table 1604.5): **Current:** ☐ I ☒ II ☐ III ☐ IV
Proposed: ☐ I ☒ II ☐ III ☐ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ☒ II-B ☐ III-B ☐ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☐ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor			
Basement			
TOTAL			

ALLOWABLE AREA

Primary Occupancy Classification(s):
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☒

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: ☒ No ☐ Yes Separation: ____ Hr. Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ... = _____ ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]

[1] Frontage area increases from Section 506.3 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = _____ (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25] \times W/30$ = _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE [1]
Building Height in Feet (Table 504.3) [2]			
Building Height in Stories (Table 504.4) [3]			

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
[2] The maximum height of air traffic control towers must comply with Table 412.3.1.
[3] The maximum height of open parking garages must comply with Table 406.5.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/ * REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses							
Bearing Walls							
Exterior							
North							
East							
West							
South							
Interior							
Nonbearing Walls and Partitions							
Exterior walls							
North							
East							
West							
South							
Interior walls and partitions							
Floor Construction Including supporting beams and joists							
Floor Ceiling Assembly							
Columns Supporting Floors							
Roof Construction, including supporting beams and joists							
Roof Ceiling Assembly							
Columns Supporting Roof							
Shaft Enclosures - Exit							
Shaft Enclosures - Other							
Corridor Separation							
Occupancy/Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☐ Yes
Exit Signs: ☐ No ☐ Yes
Fire Alarm: ☐ No ☐ Yes
Smoke Detection Systems: ☐ No ☐ Yes ☐ Partial _____
Carbon Monoxide Detection: ☐ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

☐ Fire and/or smoke rated wall locations (Chapter 7)
☐ Assumed and real property line locations (if not on the site plan)
☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
☐ Occupant loads for each area
☐ Exit access travel distances (1017)
☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010.1.10)
☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
☐ Location of doors equipped with hold-open devices
☐ Location of emergency escape windows (1030)
☐ The square footage of each fire area (202)
☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES REQUIRED	TOTAL # OF PARKING SPACES PROVIDED	# OF ACCESSIBLE SPACES PROVIDED: REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATERCLOSETS MALE	WATERCLOSETS FEMALE	WATERCLOSETS UNISEX	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	LAVATORIES UNISEX	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXIST'G										
	NEW										
	REQ'D										

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

_____

_____

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT * No. 23924 LICENSED PROFESSIONAL ENGINEER * 10/4/21

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

SHEET NUMBER: T-2
REVISION: 0

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)

Exempt Building: ☐ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ☐ 3A ☐ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
(If "Other" specify source here)_____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____
- Skylights in each assembly: _____
- U-Value of skylight: _____
- total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____
- Openings (windows or doors with glazing)
  - U-Value of assembly: _____
  - Solar heat gain coefficient: _____
  - projection factor: _____
  - Door R-Values: _____

Walls below grade (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____

Floors over unconditioned space (each assembly)
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____

Floors slab on grade
- Description of assembly: _____
- U-Value of total assembly: _____
- R-Value of insulation: _____
- Horizontal/vertical requirement: _____
- slab heated: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code ☐ Performance ☐ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive

Lighting schedule (each fixture type)
- lamp type required in fixture
- number of lamps in fixture
- ballast type used in the fixture
- number of ballasts in fixture
- total wattage per fixture
- total interior wattage specified vs. allowed (whole building or space by space)
- total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
- ☐ C406.2 More Efficient HVAC Equipment Performance
- ☐ C406.3 Reduced Lighting Power Density
- ☐ C406.4 Enhanced Digital Lighting Controls
- ☐ C406.5 On-Site Renewable Energy
- ☐ C406.6 Dedicated Outdoor Air System
- ☐ C406.7 Reduced Energy Use in Service Water Heating

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_S) _____
Seismic (I_E) _____

Live Loads: Roof _____ psf
Mezzanine _____ psf
Floor _____ psf

Ground Snow Load: _____ psf

Wind Load: Ultimate Wind Speed _____ mph (ASCE-7)
Exposure Category _____

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☐ D

Provide the following Seismic Design Parameters:

Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☐ IV

Spectral Response Acceleration S_S_____ %g S_1_____ %g

Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F
Data Source: ☐ Field Test ☐ Presumptive ☐ Historical Data

Basic structural system
- ☐ Bearing Wall
- ☐ Building Frame
- ☐ Moment Frame
- ☐ Dual w/Special Moment Frame
- ☐ Dual w/Intermediate R/C or Special Steel
- ☐ Inverted Pendulum

Analysis Procedure: ☐ Simplified ☐ Equivalent Lateral Force ☐ Dynamic

Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☐

SOIL BEARING CAPACITIES:
- Field Test (provide copy of test report) _____ psf
- Presumptive Bearing capacity _____ psf
- Pile size, type, and capacity _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
- winter dry bulb: _____
- summer dry bulb: _____

Interior design conditions
- winter dry bulb: _____
- summer dry bulb: _____
- relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System
- Unitary
  - description of unit: _____
  - heating efficiency: _____
  - cooling efficiency: _____
  - size category of unit: _____
- Boiler
  - Size category. If oversized, state reason.: _____
- Chiller
  - Size category. If oversized, state reason.: _____

List equipment efficiencies: _____

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

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

SHEET NUMBER: T-3

REVISION: 0

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
CARRIER: T–MOBILE
TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°F AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
#4 BARS AND SMALLER....................40 ksi
#5 BARS AND LARGER....................60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH....................3"
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 BARS AND LARGER....................2"
#5 BARS AND SMALLER....................1–1/2"
CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
SLAB AND WALLS....................3/4"
BEAMS AND COLUMNS....................1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "T–MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE

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

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

APWA UNIFORM COLOR CODE:

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

ABBREVIATIONS:

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

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

10/4/21

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

SHEET NUMBER: **T-4**
REVISION: **0**

SITE PLAN DISCLAIMER:

PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS. CROWN CASTLE USA INC. HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.

1 OVERALL SITE PLAN

SCALE: 60' 30' 0 60' — 1" = 60'-0" (FULL SIZE) 1" = 120'-0" (11x17)

T-Mobile

4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

B+T GRP

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

10/4/21

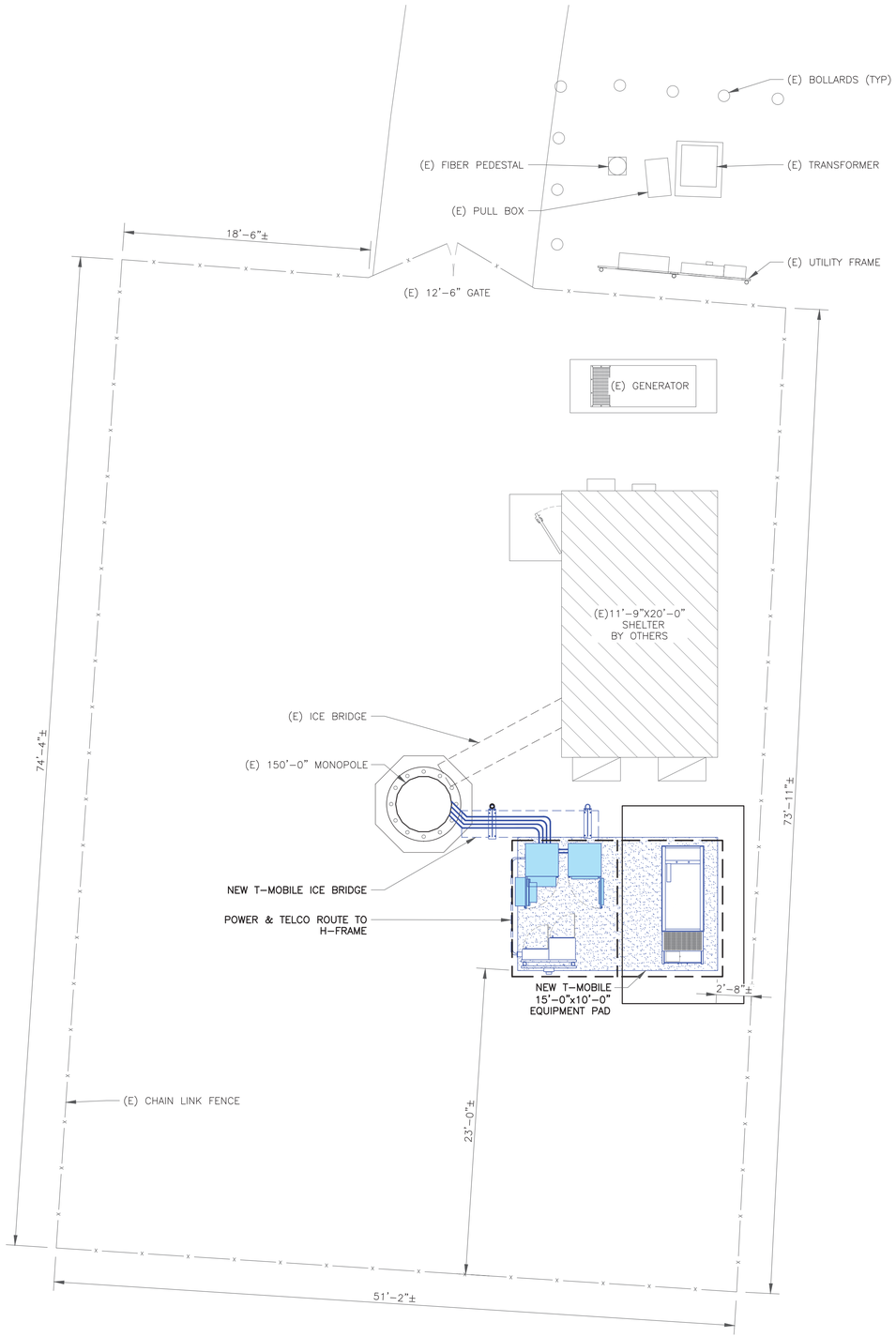
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

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

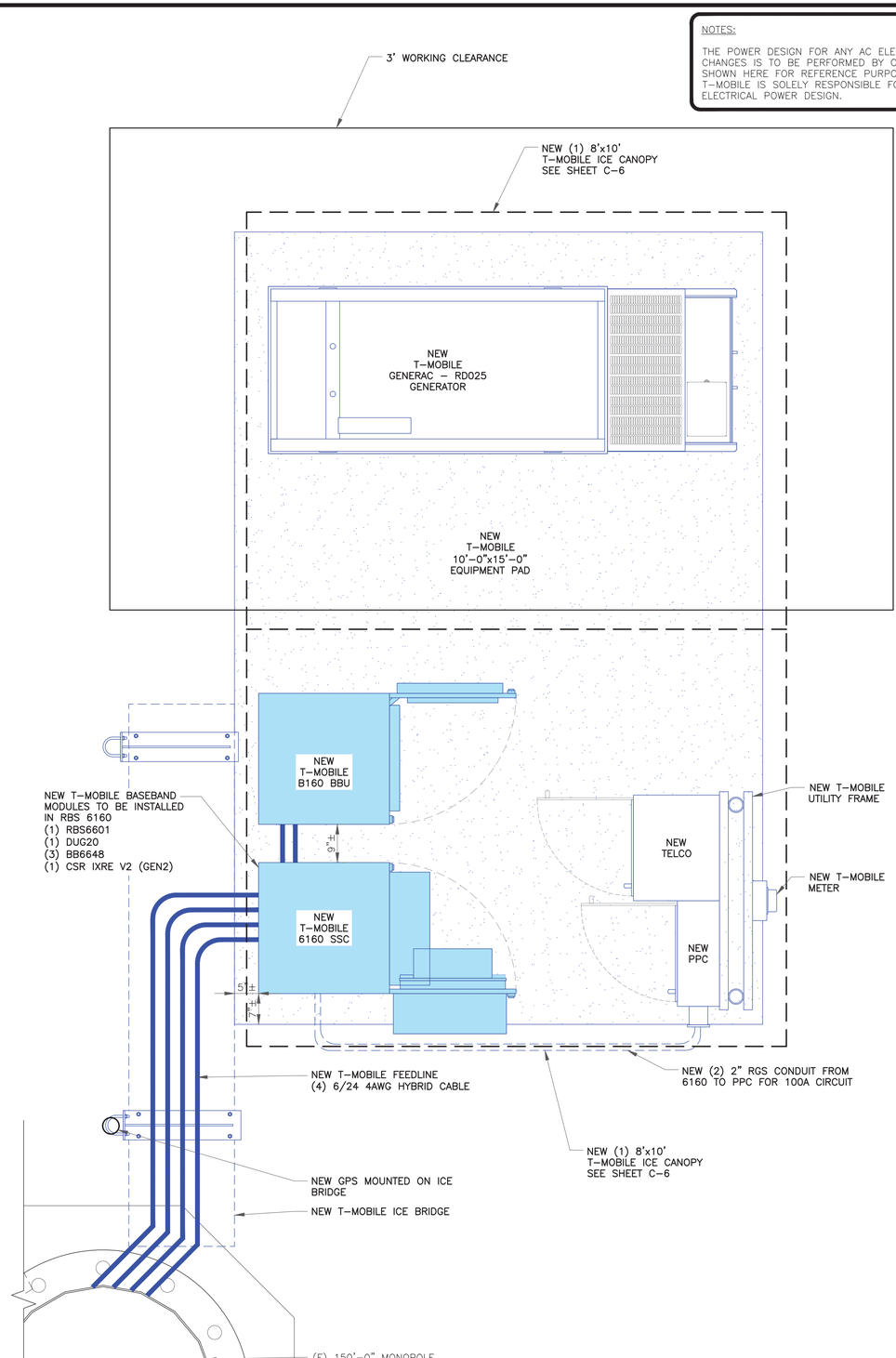
SHEET NUMBER: C-1.1

REVISION: 0

152945.001.01_WOODBURY PAPER MILL RD.dwg – Sheet:C-1.1 – User: jrichardson – Oct 04, 2021 – 8:47pm



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



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

NOTES:

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

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

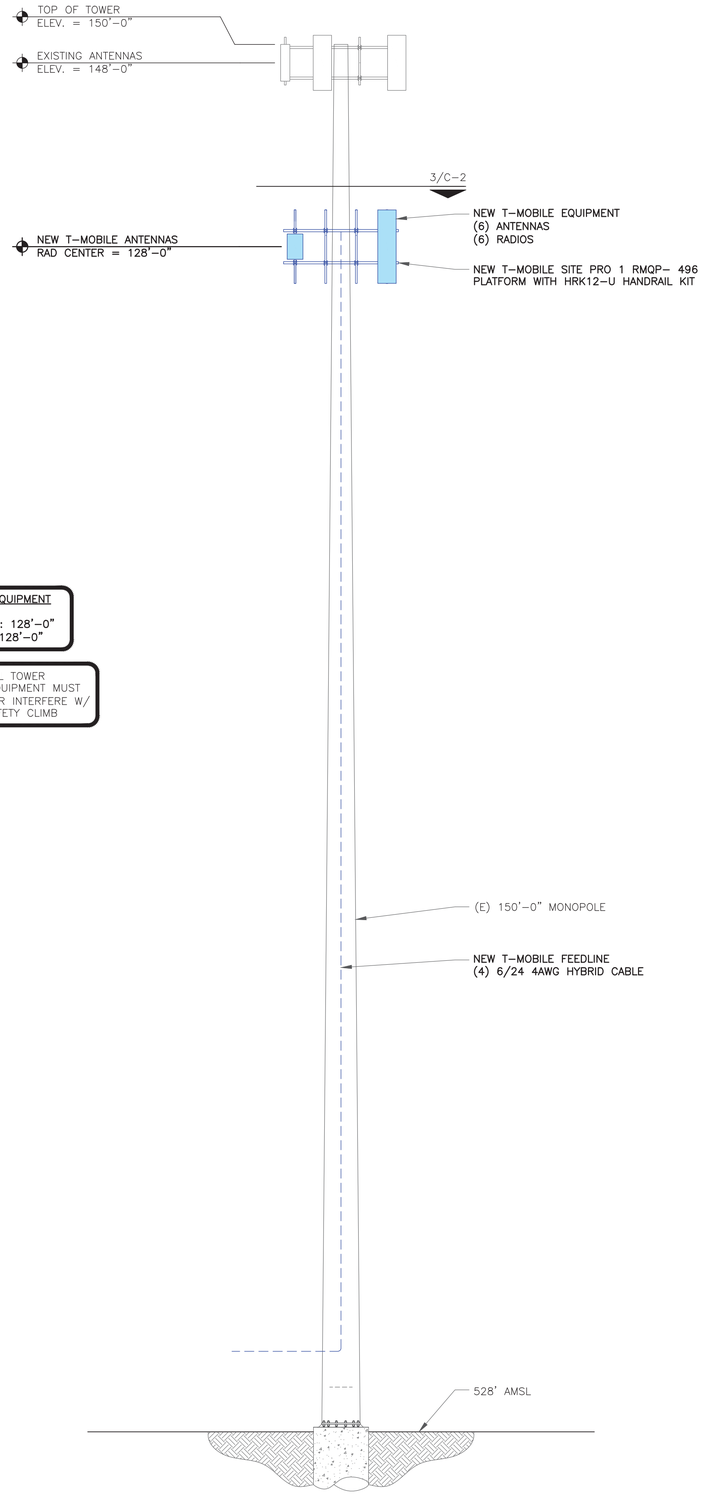
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
JOHN J. RICHARDSON
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

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

SHEET NUMBER: C-1.2
REVISION: 0



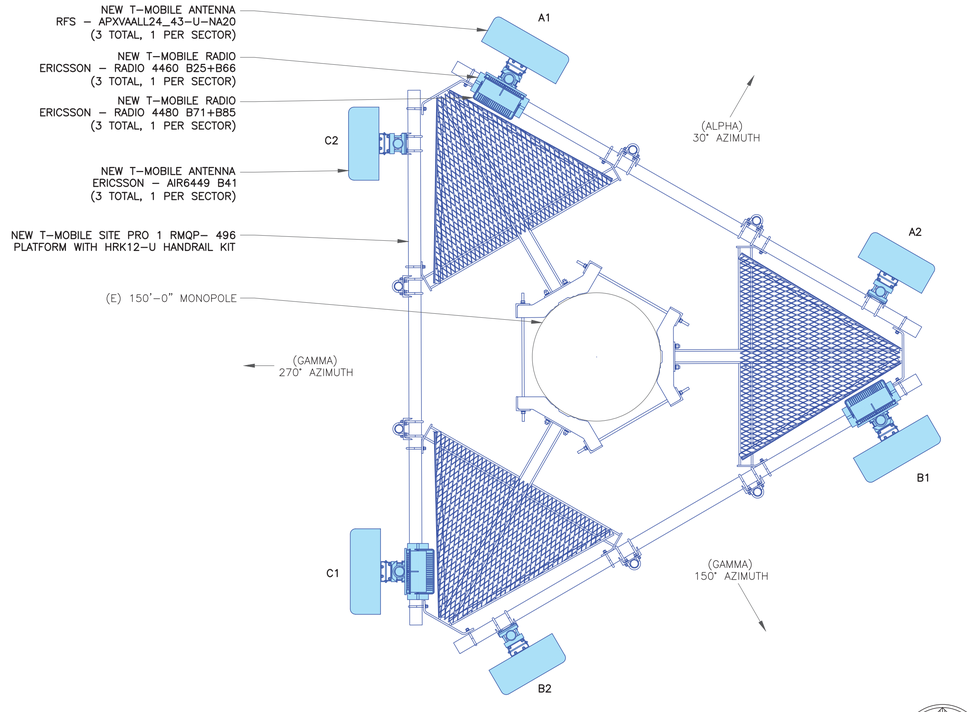
T-MOBILE EQUIPMENT

ANTENNA CL: 128'-0"
MOUNT CL: 128'-0"

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

1 FINAL ELEVATION
SCALE: NOT TO SCALE

2 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



3 FINAL ANTENNA LAYOUT
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

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

SHEET NUMBER: C-2

REVISION: 0

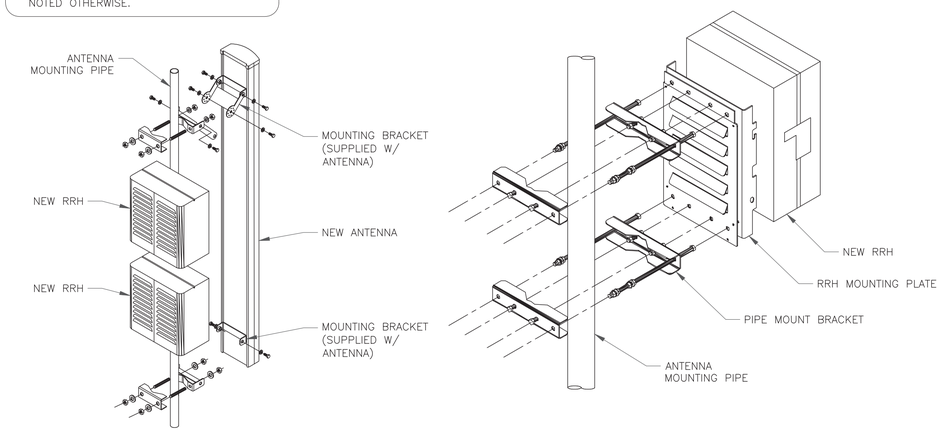
RF SYSTEM SCHEDULE

SECTOR	ANTENNA	TECH	MANUFACTURER	ANTENNA MODEL	AZIMUTH	M-TILT	E-TILT	RAD CENTER	TMA/RRU	FEEDLINE TYPE
ALPHA	A1	L700 / L600 / N600 / U2100 / L2100 / L1900 / G1900 / U1900	RFS	APXVAALL24_43-U-NA20	30°	–	–	128'-0"	(1) ERICSSON – RADIO 4480 B71+B85 (1) ERICSSON – RADIO 4460 B25+B66	(4) 6/24 4AWG HYBRID CABLE
		–	–	EMPTY MOUNT PIPE	–	–	–	–	–	
		–	–	EMPTY MOUNT PIPE	–	–	–	–	–	
	A2	L2500 / N2500	ERICSSON	AIR6449 B41	30°	–	–	128'-0"	–	
BETA	B1	L700 / L600 / N600 / U2100 / L2100 / L1900 / G1900 / U1900	RFS	APXVAALL24_43-U-NA20	150°	–	–	128'-0"	(1) ERICSSON – RADIO 4480 B71+B85 (1) ERICSSON – RADIO 4460 B25+B66	–
		–	–	EMPTY MOUNT PIPE	–	–	–	–	–	
		–	–	EMPTY MOUNT PIPE	–	–	–	–	–	
	B2	L2500 / N2500	ERICSSON	AIR6449 B41	150°	–	–	128'-0"	–	
GAMMA	C1	L700 / L600 / N600 / U2100 / L2100 / L1900 / G1900 / U1900	RFS	APXVAALL24_43-U-NA20	270°	–	–	128'-0"	(1) ERICSSON – RADIO 4480 B71+B85 (1) ERICSSON – RADIO 4460 B25+B66	–
		–	–	EMPTY MOUNT PIPE	–	–	–	–	–	
		–	–	EMPTY MOUNT PIPE	–	–	–	–	–	
	C2	L2500 / N2500	ERICSSON	AIR6449 B41	270°	–	–	128'-0"	–	

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



2 ANTENNA WITH RRHs MOUNTING DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

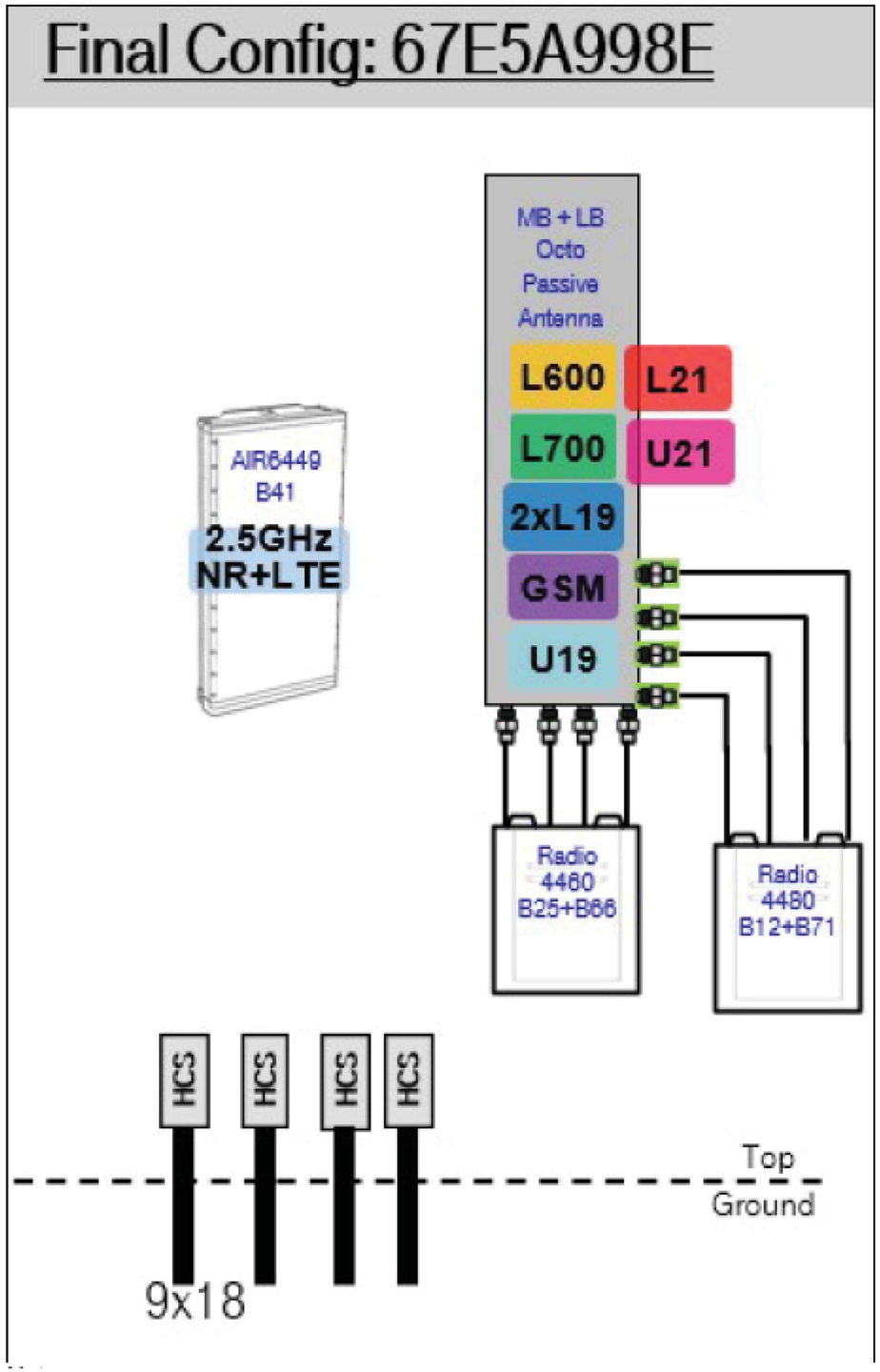
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
JOSEPH J. RICHARDSON
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

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

SHEET NUMBER: C-3

REVISION: 0



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

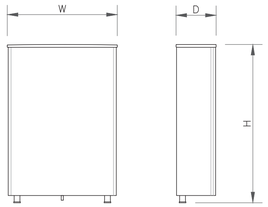
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

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

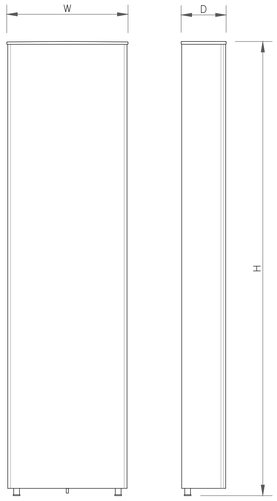
SHEET NUMBER: C-4

REVISION: 0



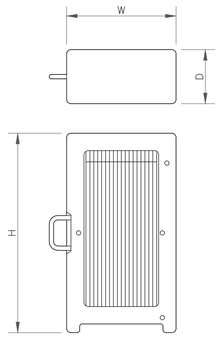
ANTENNA SPECS	
MANUFACTURER	ERICSSON
MODEL #	AIR6449 B41
WIDTH	20.51"
DEPTH	8.54"
HEIGHT	33.11"
WEIGHT	114.63 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE



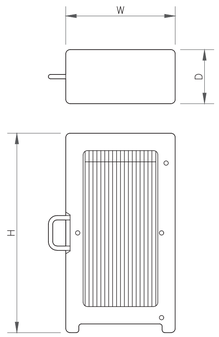
ANTENNA SPECS	
MANUFACTURER	RFS/CELWAVE
MODEL #	APXVAALL24_43-U-NA20
WIDTH	24.00"
DEPTH	8.50"
HEIGHT	95.90"
WEIGHT	149.90 LBS

2 ANTENNA SPECS
SCALE: NOT TO SCALE



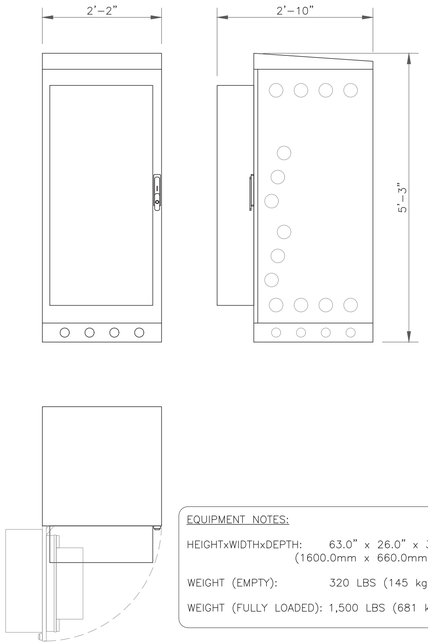
RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4480 B71+B85
WIDTH	15.70"
DEPTH	7.50"
HEIGHT	21.80"
WEIGHT	92.60 LBS

3 RRU SPECS
SCALE: NOT TO SCALE



RRU SPECIFICATIONS	
MANUFACTURER	ERICSSON
MODEL #	RADIO 4460 B2/B25+B66
WIDTH	15.10"
DEPTH	11.90"
HEIGHT	17.00"
WEIGHT	109.00 LBS

4 RRU SPECS
SCALE: NOT TO SCALE



EQUIPMENT NOTES:

HEIGHTxWIDTHxDEPTH: 63.0" x 26.0" x 34.0" (1600.0mm x 660.0mm x 864.0mm)

WEIGHT (EMPTY): 320 LBS (145 kg)

WEIGHT (FULLY LOADED): 1,500 LBS (681 kg)

5 ERICSSON 6160
SCALE: NOT TO SCALE

EQUIPMENT NOTES:

HEIGHTxWIDTHxDEPTH: 63.0" x 26.0" x 28.0" (1600.0mm x 660.0mm x 711.0mm)

WEIGHT (EMPTY): 295 LBS (134 kg)

WEIGHT (FULLY LOADED): 2,000 LBS (908 kg)

6 ERICSSON B160 BATTERY CABINET
SCALE: NOT TO SCALE

NOTE:
GC TO SUPPLY AND INSTALL 30A RELIANCE GENERATOR PLUG WITH INTERLOCK KIT (INSTALL ON PANEL COVER OF THE SQUARE-D PANEL)

SQUARE-D POWER PANEL DIMENSIONS	
MANUF.	SQUARE-D
WIDTH	14.76"
HEIGHT	26"

7 SQUARE-D POWER PANEL DIMENSIONS
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

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

SHEET NUMBER: C-5

REVISION: 0

NEPA 704 HAZARD IDENTIFICATION SYSTEM DIAMOND
10X14 VINYL REFECTIVE ADHESIVE

DIESEL FUEL
COMBUSTIBLE
NO SMOKING
NO OPEN FLAMES
FUEL TANK CAPACITY 54 GALS

(WHITE LETTERING W/ RED & BLACK BACKGROUND) 6X10 REFLECTIVE ADHESIVE

DIESEL (WHITE LETTERING W/ RED BACKGROUND)

COMBUSTIBLE (BLACK LETTERING W/ WHITE BACKGROUND)

FLAMMABLE (BLACK LETTERING W/ WHITE BACKGROUND)

NO SMOKING (BLACK LETTERING W/ WHITE BACKGROUND)

HAZARD RATINGS:

NINE O'CLOCK – HEALTH (BLUE BACKGROUND, BLACK LETTERING)

TWELVE O'CLOCK – FLAMMABILITY (RED BACKGROUND, BLACK LETTERING)

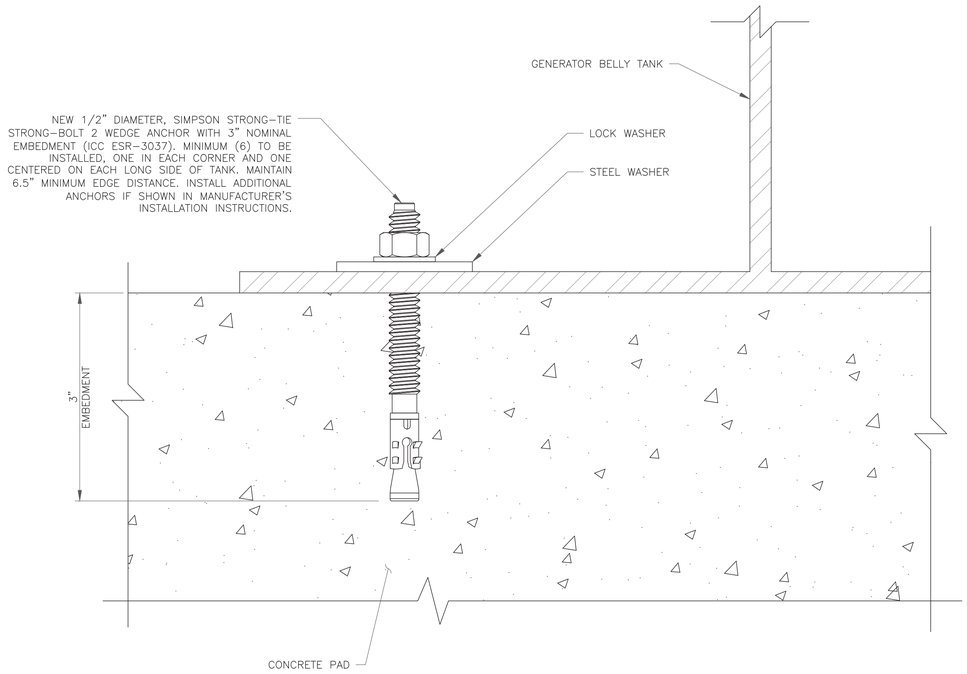
THREE O'CLOCK – INSTABILITY (YELLO BACKGROUND, BLACK LETTERING)

SIX O'CLOCK – SPECIAL (WHITE BACKGROUND, BLACK LETTERING)

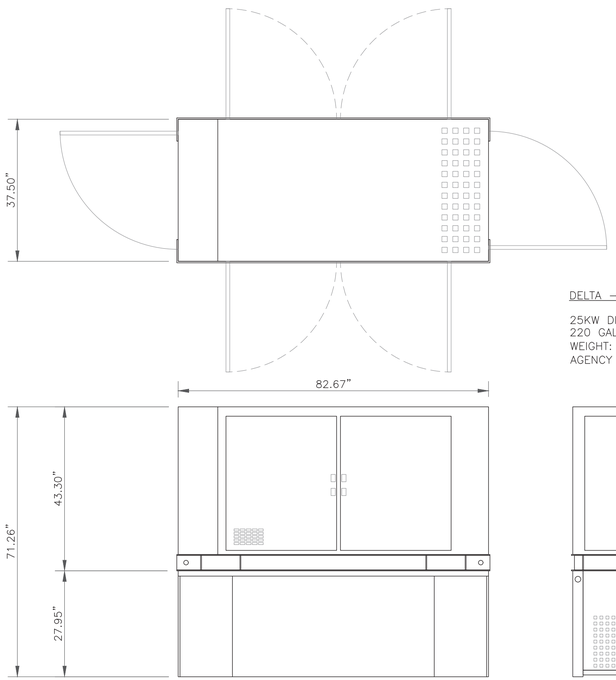
NOTE:

1. SIGNS MUST BE MADE OF DURABLE MATERIAL.
2. LETTERS SHALL NOT BE LESS THAN 1" (76.2mm) MIN. IN HEIGHT & 1/4" (12.7mm) IN STROKE.
3. SIGNS SHALL NOT BE OBSCURED OR REMOVED & SHALL BE IN ENGLISH AS A PRIMARY LANGUAGE.
4. SIGNS TO BE PLACED ON GENERATOR/FUEL TANK PER NEPA 704.
5. CONTRACTOR TO PROVIDE ALL REQUIRED SIGNAGE.

1 GENERATOR SIGN DETAIL
SCALE: NOT TO SCALE



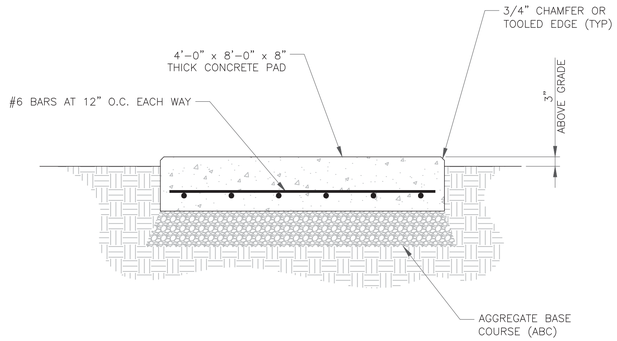
2 GENERATOR ANCHORAGE DETAIL
SCALE: NOT TO SCALE



DELTA – ESOG150-PCA01:

25KW DIESEL DC GENERATOR
220 GALLON FUEL TANK
WEIGHT: 5,000 LBS MAX (APPROXIMATE)
AGENCY LISTINGS: UL 2200/UL 142

3 DIESEL DC GENSET 25 KW (ESOG150-PCA01)
SCALE: NOT TO SCALE



NOTES:

1) MINIMUM CONCRETE STRENGTH (f'c) TO BE 4,500 psi UNLESS NOTED OTHERWISE. CONCRETE MIX SHALL BE DESIGNED BY A CERTIFIED LABORATORY. CONCRETE EXPOSED TO FREEZE-THAW CYCLES TO CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F2 CLASS EXPOSURE. CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A WATER-TO-CEMENT RATIO (W/C) NOT TO EXCEED 0.45.
2) CONCRETE PAD SHALL BEAR ON A MINIMUM OF 8" OF AGGREGATE BASE COURSE (ABC) MATERIAL COMPACTED TO 98% OF MAXIMUM DENSITY DETERMINED BY ASTM D1557 (MODIFIED PROCTOR). MATERIAL SHOULD BE WITHIN 3% OF OPTIMUM MOISTURE AT TIME OF COMPACTION.
3) ALL REINFORCING TO MAINTAIN 3" COVER WHEN CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.

4 CONCRETE PAD DETAIL
SCALE: NOT TO SCALE

IC-0810-B

Ice Canopy, 8 ft x 10 ft, four 13 ft 4 in burial pipes

Dimensions

Height	4064 mm | 160 in
Width	2,438.4 mm | 96 in
Length	3048 mm | 120 in
Pipe Length	4064 mm | 160 in

5 ICE CANOPY SPECS
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

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

SHEET NUMBER: C-6
REVISION: 0

SD025 | 2.2L | 25 kW

INDUSTRIAL DIESEL GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | INDUSTRIAL POWER

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Perkins
EPA Emissions Compliance	Stationary Emergency
EPA Emissions Reference	See Emission Data Sheet
Cylinder #	4
Type	In-Line
Displacement - in^3 (L)	135 (2.22)
Bore - in (mm)	3.3 (84)
Stroke - in (mm)	3.9 (100)
Compression Ratio	23.3:1
Intake Air Method	Turbocharged
Cylinder Head	Cast Iron
Piston Type	Aluminum
Crankshaft Type	Forged Steel

Engine Governing

Governor	Electronic Isochronous
Frequency Regulation (Steady State)	±0.5%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-Flow Cartridge
Crankcase Capacity - qt (L)	9.3 (10.6)

Cooling System

Cooling System Type	Closed Recovery
Water Pump Type	Pre-Lubed, Self Sealing
Fan Type	Pusher
Fan Speed - RPM	1,980
Fan Diameter - in (mm)	18 (457.2)

Fuel System

Fuel Type	Ultra Low Sulfur Diesel Fuel
Fuel Specifications	ASTM
Fuel Filtering (Microns)	5
Fuel Inject Pump	Distribution Injection Pump
Fuel Pump Type	Engine Driven Gear
Injector Type	Mechanical
Fuel Supply Line - in (mm)	0.31 (7.94) ID
Fuel Return Line - in (mm)	0.19 (4.76) ID

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	Standard
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	K0025124Y21
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5% (3-Phase Only)
Telephone Interference Factor (TIF)	<50
Standard Excitation	Synchronous Brushless
Bearings	Single Sealed
Coupling	Direct via Flexible Disc
Load Capacity - Standby	100%
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

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

SHEET NUMBER: C-7

REVISION: 0

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
TVSS	2	60A	1	2	20A	1	TELCO RECEP
			3	4	15A	1	GFCI
SPARE	2	–	5	6	15A	2	BBU PRIMARY
			7	8			
MMBS	2	100A	9	10	**100A**	**2**	**DELTA POWER CABINET**
			11	12			
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

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

REPLACE EXISTING WIRES FOR EXISTING SPRINT CABINETS WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG. MINIMUM CONDUIT SIZE TO BE 2". IF 200A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL). UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

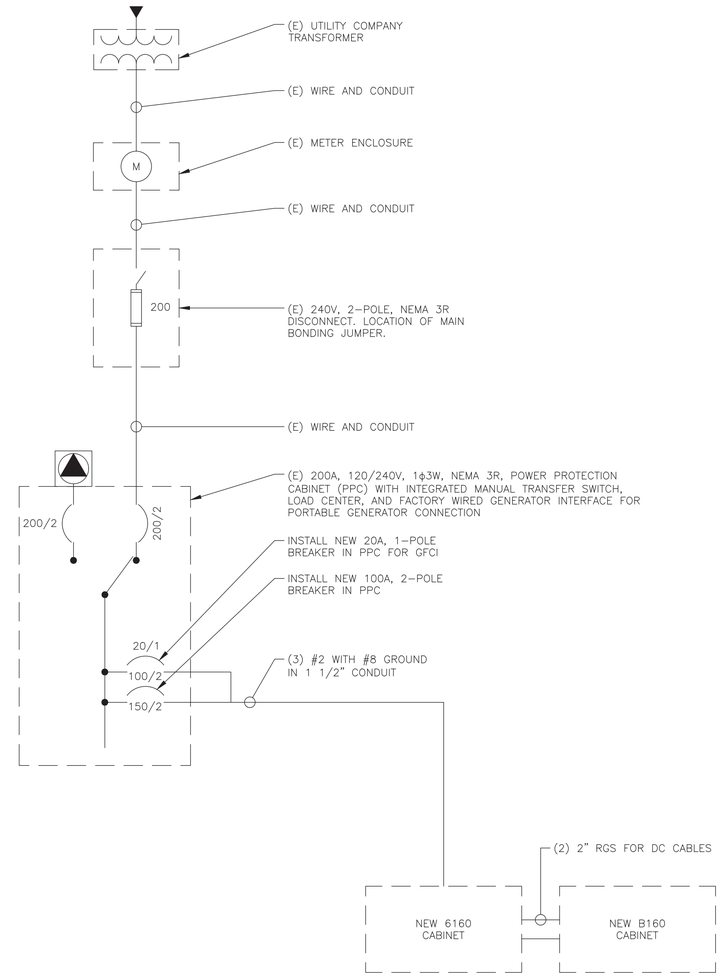
1 EXISTING AC PANEL SCHEDULE
SCALE: NOT TO SCALE

FINAL PANEL SCHEDULE							
LOAD	POLES	AMPS	BUS L1	BUS L2	AMPS	POLES	LOAD
TVSS	2	60A	1	2	20A	1	TELCO RECEP
			3	4	15A	1	GFCI
SPARE	2	–	5	6	15A	2	BBU PRIMARY
			7	8			
MMBS	2	100A	9	10	**200A**	**2**	**DELTA POWER CABINET**
			11	12			
			13	14			
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			

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

REPLACE EXISTING WIRES FOR EXISTING SPRINT CABINETS WITH (3) 1/0 AWG THWN (COPPER) AND (1) #6G AWG. MINIMUM CONDUIT SIZE TO BE 2". IF 200A BREAKER WILL NOT PROPERLY FIT IN EXISTING PANEL, REPLACE (E) PANEL WITH SQUARE D PANEL QO12040M200RB (OR APPROVED EQUAL). UPGRADE FEEDER WIRES TO MEET AMPACITY IF NEW PANEL IS REQUIRED.
FINAL PANEL DESIGN AND CALCULATIONS FOR WIRE SIZE WERE BASED OFF OF EXISTING PHOTOS

2 PROPOSED AC PANEL SCHEDULE
SCALE: NOT TO SCALE



NOTES:

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

3 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

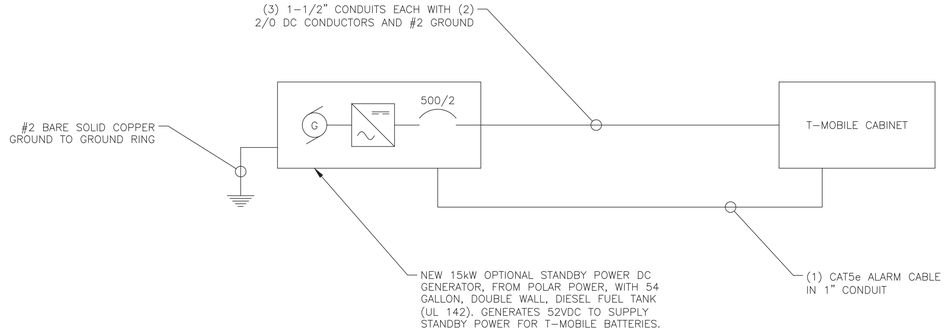
B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/22

SHEET NUMBER: E-1

REVISION: 0

NOTES:

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



1 DC GENERATOR ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

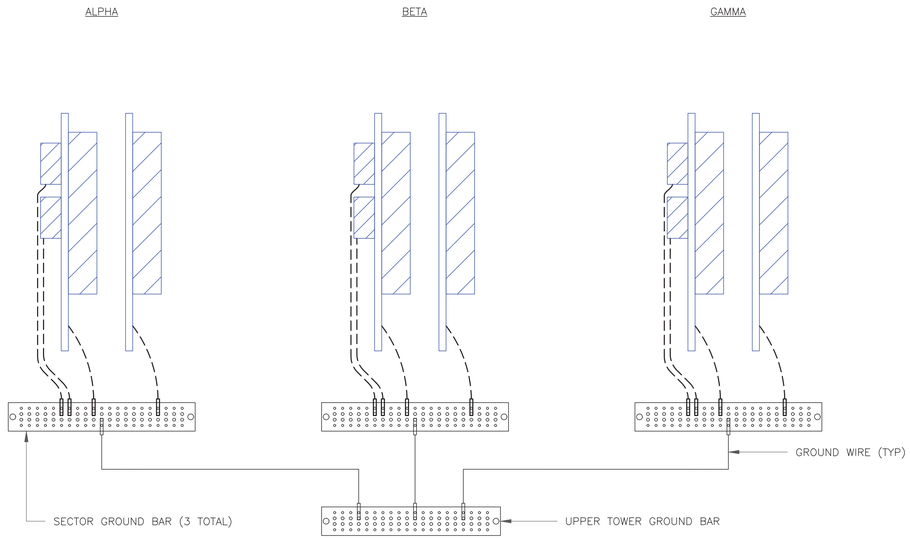
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
JEFFREY J. RICHARDSON
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

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

SHEET NUMBER: E-2

REVISION: 0



NOTE:

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

1 ANTENNA GROUNDING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

ISSUED FOR:

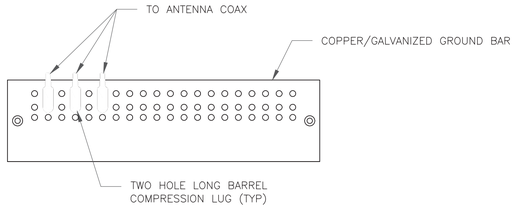
REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
10/4/21

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

SHEET NUMBER: G-1

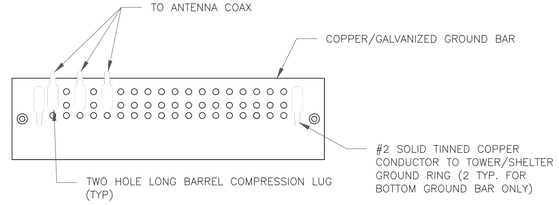
REVISION: 0



NOTES:

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

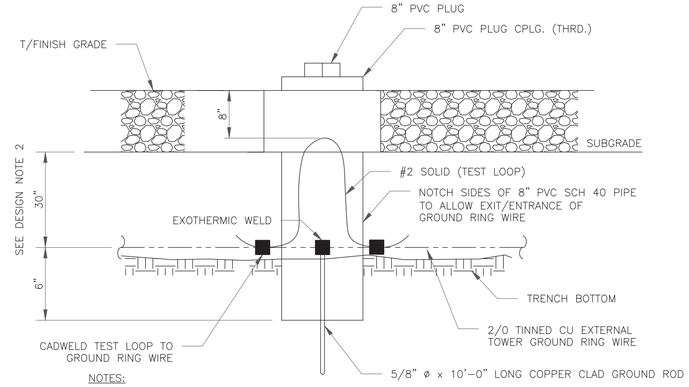
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

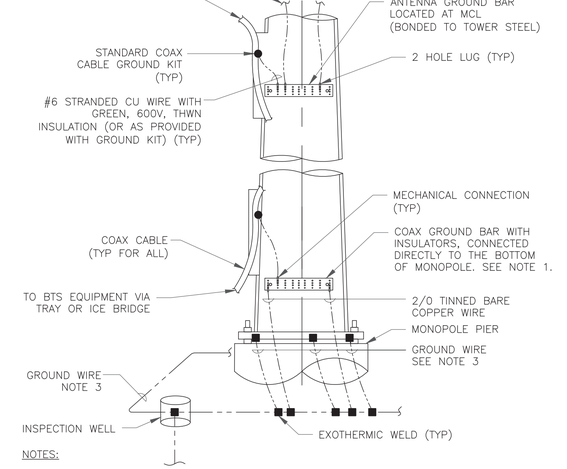
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

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

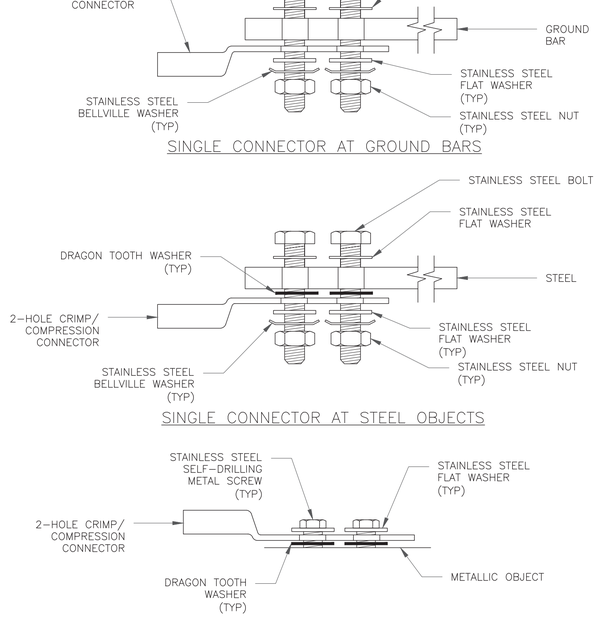
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



NOTES:

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

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE

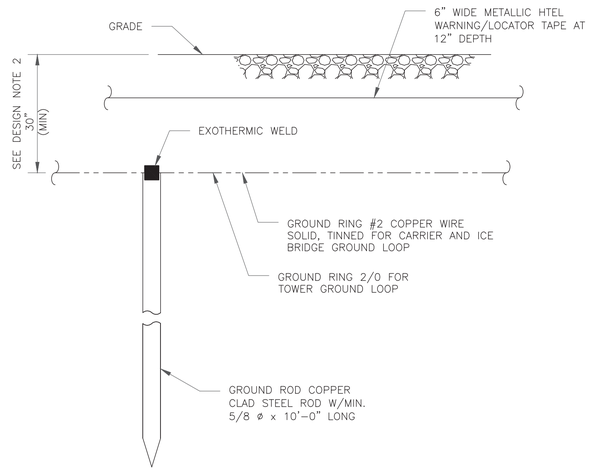


SINGLE CONNECTOR AT GROUND BARS

SINGLE CONNECTOR AT STEEL OBJECTS

SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

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

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

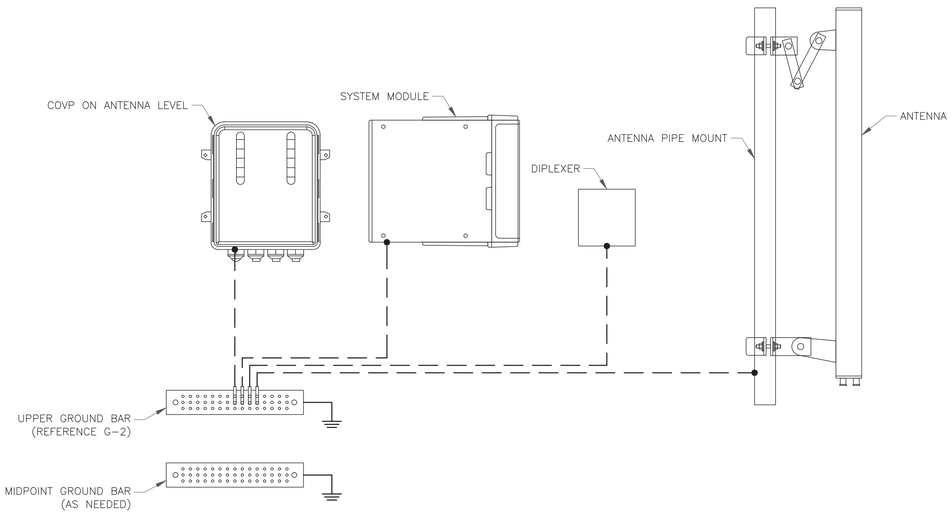
EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

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

SHEET NUMBER: G-2
REVISION: 0



1 TYPICAL FINAL GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

GROUNDING PLAN LEGEND:

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

NOTE:

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

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

EXISTING
150'-0" MONOPOLE

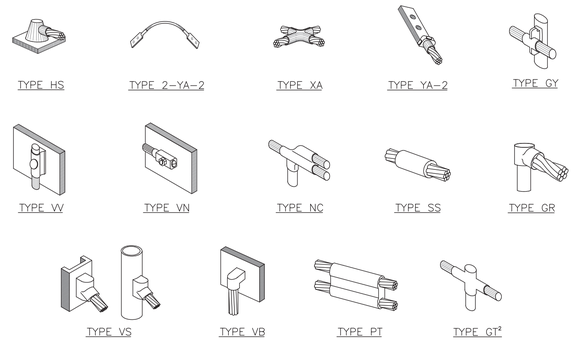
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

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

SHEET NUMBER: G-3

REVISION: 0

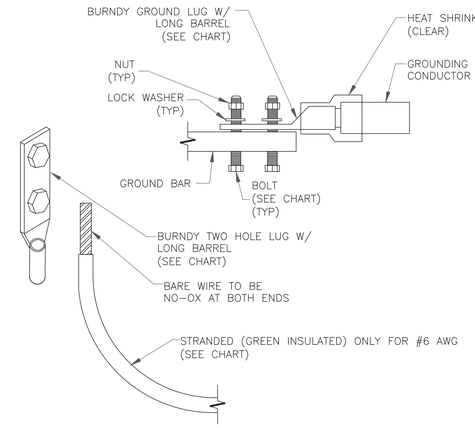


NOTE:

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

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

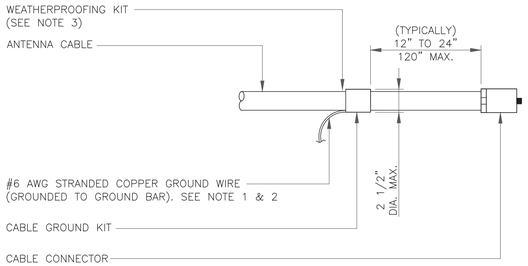
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

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

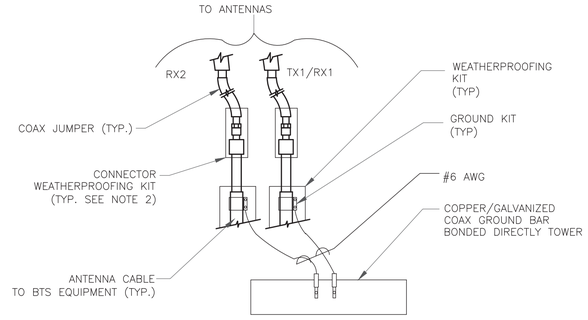
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

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

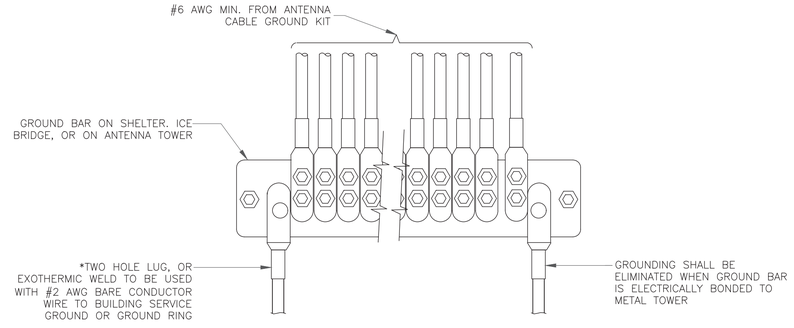
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



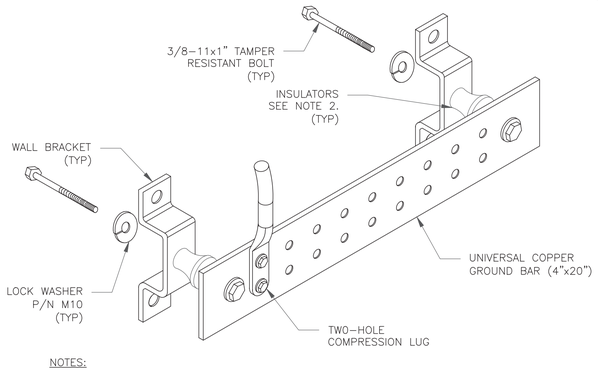
NOTES:

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

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



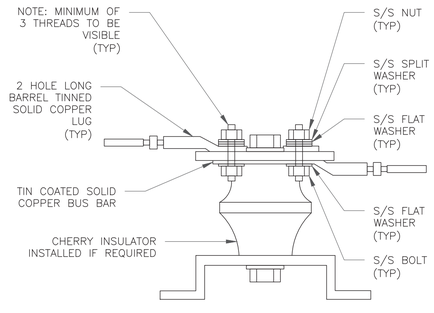
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



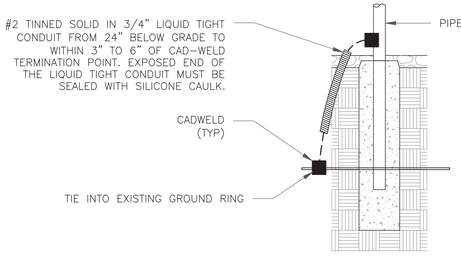
NOTES:

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

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

T-Mobile
4 SYLVAN WAY
PARSIPPANY, NJ 07054

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

T-MOBILE SITE NUMBER:
CTNH291A

BU #: **857528**
WOODBURY PAPER MILL RD

85 PAPER MILL ROAD
WOODBURY, CT 06798

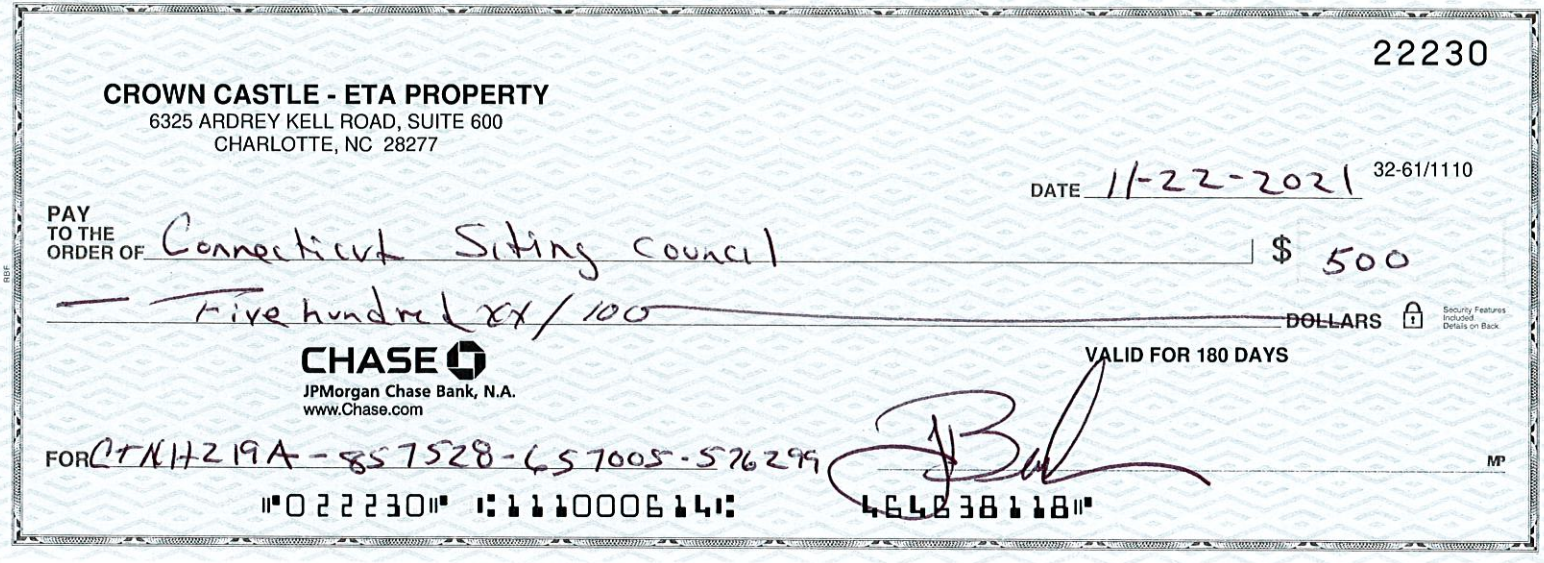
EXISTING
150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	10/4/21	JJR	CONSTRUCTION	JJR

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

SHEET NUMBER: G-4
REVISION: 0



22230

CROWN CASTLE - ETA PROPERTY
6325 ARDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

DATE 11-22-2021 32-61/1110

PAY TO THE ORDER OF Connecticut Siting Council $ 500

— Five hundred xx/100 DOLLARS

Security Features Included Details on Back

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

VALID FOR 180 DAYS

FOR CTN1219A-857528-657005-576299

MP

⑈022230⑈ ⑆111000614⑆ 464838118⑈