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

December 15, 2021

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

RE: **Notice of Exempt Modification for T-Mobile: CT11027D**
Crown Site ID#876343
1919 Boston Post Road, Guilford, CT 06437
Latitude: 41° 18′ 1.27″ / Longitude: -72° 42′ 29.13″

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 150-foot mount level on the existing 150-foot monopole tower, located at 1919 Boston Post Road, Guilford, CT. The property is owned by DDR Guilford LLC. The tower is owned by Crown Castle. T-Mobile now intends to replace six (6) antennas and ancillary equipment at the 150-ft level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:
Tower:

Installed New:
(3) CommScope – W-65A-R1 Antenna
(3) Ericsson – AIR6449 B41
(3) Ericsson Radio 4460 B25+B85
(2) HYBRID 6x24 Hybrid Cable (1-5/8")
(1) HYBRID 6x12 Hybrid Cable (1-5/8")

Remove:
(6) Ericsson-AIR21 B4A/B2P - Antennas
(3) Ericsson Twin Style 1B-AWS - TMA
(6) Coaxial Cables (1-5/8")
(2) Hybrid Cables (1-5/8")

Ground:

Install New:
(1) 6160 Equipment Cabinet
(1) B160 Battery Cabinet
(1.) BB 6648 FOR L2500, N2500
(1.) PSU 4813 Voltage Booster
(1.) DC DU & (4) Rectifiers
(1.) IXRe Router IN 6160

The facility was approved by the Connecticut Siting Council on May 22, 2008.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mr. Matthew T. Hoey III, First Selectman, Town of Guilford, CT, Mr. George Kral, Town Planner, Town of Guilford, CT and DDR Guilford LLC, Property Owner. Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

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

Attachments
cc:

Matthew T. Hoey III, First Selectman
Town of Guilford Selectman's Office
31 Park Street
Guilford, CT 06437
203-453-8015

George Kral, Town Planner
Town of Guilford
50 Boston Street
Guilford, CT 06437
203-453-8039

DDR Guilford LLC, Property Owner
3300 Enterprise Pkwy
Beachwood, OH 44122

Crown Castle, Tower Owner.

DOCKET NO. 349 – Global Signal Acquisitions II application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 1919 Boston Post Road, Guilford, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		May 22, 2008

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 telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Global Signal Acquisitions II, hereinafter referred to as the Certificate Holder, for an existing telecommunications facility to be relocated to the site identified as the Alternate Site in the Findings of Fact, located at 1919 Boston Post Road, Guilford, Connecticut. The Council denies certification of the site identified as the Application Site in the Findings of Fact, located at 1919 Boston Post Road, Guilford, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of the wireless carriers that utilize the existing tower and other entities, both public and private, but such tower shall not exceed a height of 150 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 served on the Town of Guilford for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:

    a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
    b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

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

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

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

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Guilford public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Guilford. Any proposed modifications to this Decision and Order shall likewise be so served.

9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

10. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the New Haven Register and the Shoreline Times.

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

The parties and intervenors to this proceeding are:

APPLICANT	**ITS REPRESENTATIVE**
Global Signal Acquisitions II	Julie Kohler, Esq. Carrie Larson, Esq. Cohen and Wolf, P.C.

PARTY	**ITS REPRESENTATIVE**
Anthony Poccia William and Myung Arabolos Margaret Rose Richard and Sandra Wilson	John S. Bennet, Esq. Gould, Larson, Bennet, Wells & McDonnell, P.C.

INTERVENORS	**THEIR REPRESENTATIVE**
Heather Fernandes Diane and Alan Sholomskas Brian Denning Daniel Capozziello Joel and Donna Zemke	John S. Bennet, Esq. Gould, Larson, Bennet, Wells & McDonnell, P.C.

All information is for assessment purposes only. Assessments are calculated at 70% of the estimated October 1, 2017 market value which was the date of the last revaluation as completed by eQuality Valuation Services, LLC.

The Town of Guilford
Connecticut, USA Founded 1639

Information on the Property Records for the Municipality of Guilford was last updated on 12/14/2021.

Parcel Information

Location:	1919 BOSTON POST RD	Map and Parcel:	079035	Census Tract:	1903
Zoning:	SCW	Developer's Map:	5074	Developer's Lot:	
Total Acreage:	27.83	Farm, Forest, Open Space Acres:		Unique ID:	7001

Value Information

	Appraised Value	Assessed Value
Land	6,694,400	4,686,080
Buildings	22,716,123	15,901,280
Detached Outbuildings	695,997	487,200
Total	30,106,520	21,074,560

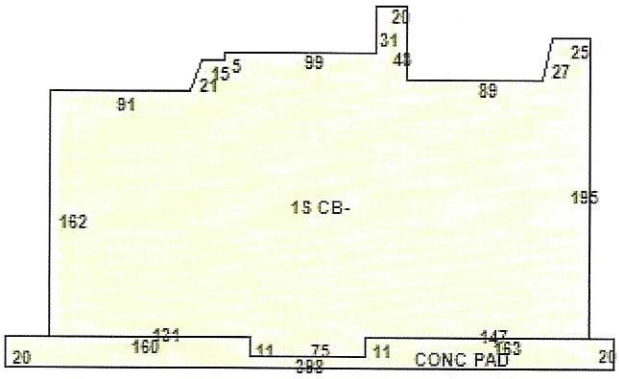
Owner's Information

Owner's Data

DDR GUILFORD LLC
3300 ENTERPRISE PKWY
BEACHWOOD OH 44122

Building 1

Photo Not Available



Category:	RETAIL	Use:	REGIONAL SHOPPING CENTER	GLA:	63,416
Stories:	1.00	Construction:	GOOD	Year Built:	2015
Condition:	GOOD	Heating:	RADIANT CEILING	Fuel:	GAS
Cooling Percent:	100%	Siding:	CONCRETE BLOCK	Roof Material:	RUBBER/EPDM

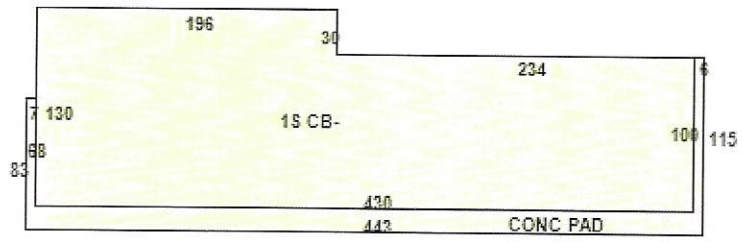
Special Features

LOAD LEVELER	2
OVERHEAD DOORS	2
WET SPRINKLERS	1

Attached Components

Type:	Year Built:	Area:
CONCRETE COMM PATIO	2015	7,135

Building 2



Category:	RETAIL	Use:	REGIONAL SHOPPING CENTER	GLA:	48,880
Stories:	1.00	Construction:	GOOD	Year Built:	2015
Condition:	GOOD	Heating:	RADIANT CEILING	Fuel:	GAS
Cooling Percent:	100%	Siding:	CONCRETE BLOCK	Roof Material:	RUBBER/EPDM

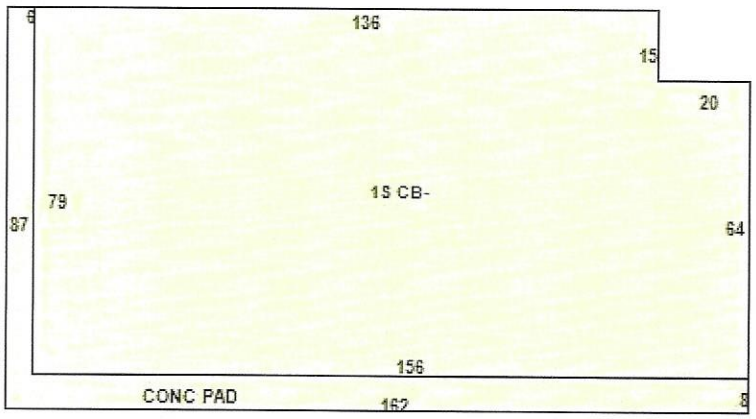
Special Features

Attached Components

Type:	Year Built:	Area:
CONCRETE COMM PATIO	2015	7,721

Building 3

Photo Not Available



Category:	RETAIL	Use:	REGIONAL SHOPPING CENTER	GLA:	12,024
Stories:	1.00	Construction:	GOOD	Year Built:	2015
Condition:	GOOD	Heating:		Fuel:	
Cooling Percent:	0%	Siding:	CONCRETE BLOCK	Roof Material:	POLY RUBBER

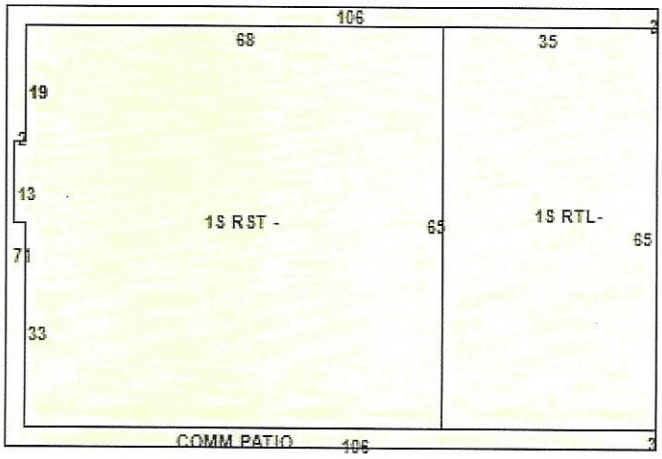
Special Features

Attached Components

Type:	Year Built:	Area:
CONCRETE COMM PATIO	2015	1,770

Building 4

Photo Not Available



Category:	RESTURANT	Use:	FAST FOOD	GLA:	6,721
Stories:	1.00	Construction:	GOOD	Year Built:	2019
Condition:	GOOD	Heating:	RADIANT CEILING	Fuel:	GAS
Cooling Percent:	100%	Siding:	GLASS	Roof Material:	COMPOSITE BUILT UP

Special Features

DETAILED FIREPLACES	1
WET SPRINKLERS	1

Attached Components

Type:	Year Built:	Area:
CONCRETE COMM PATIO	2019	805

Detached Outbuildings

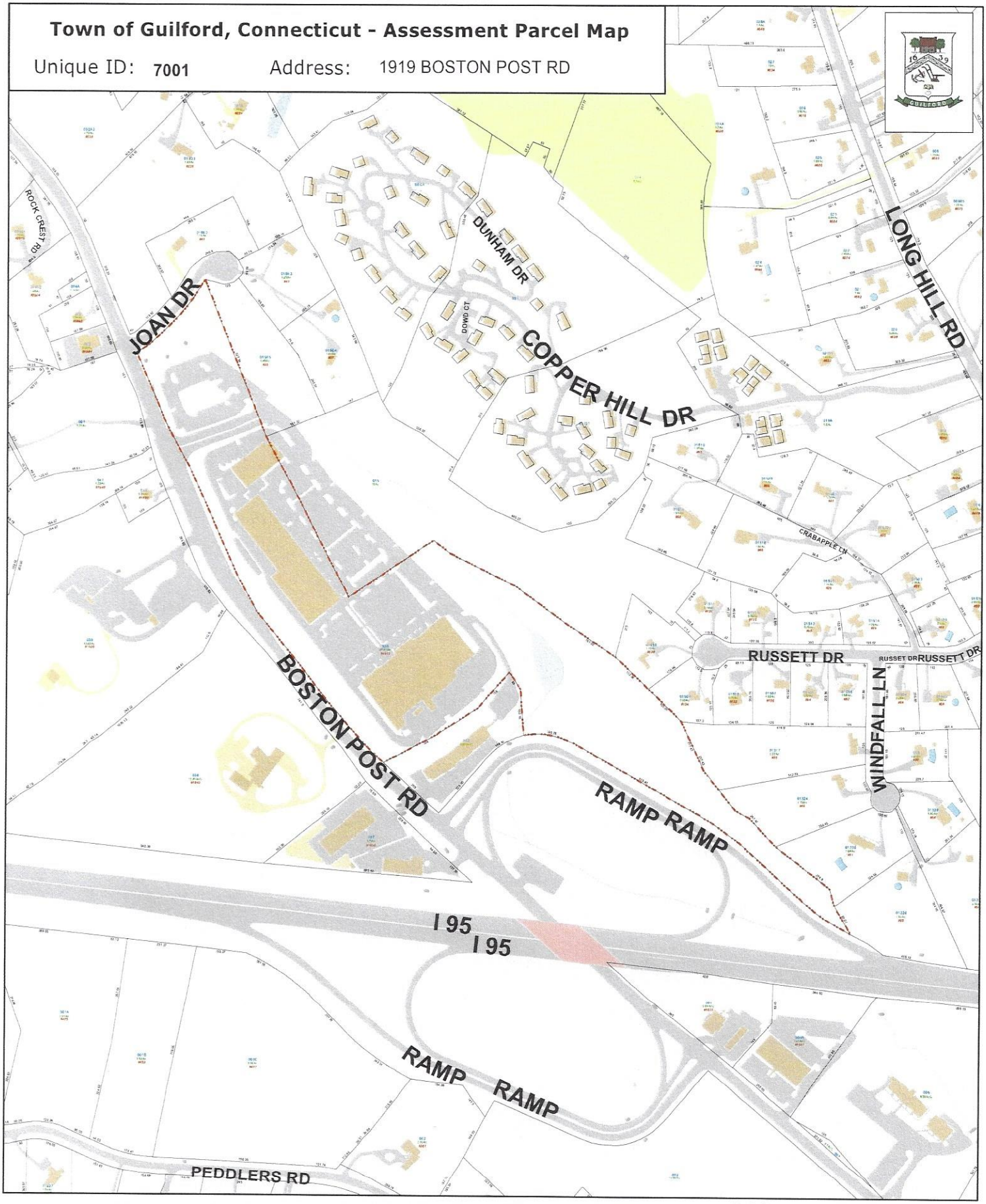
Type:	Year Built:	Length:	Width:	Area:
CONCRETE COMM PATIO	2019	15	17	255
FENCING	2015			1,200
PAVING	2015			130,000
LIGHT FIXTURES POLES	2015			33

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Sale Price
DDR GUILFORD LLC	0879	1141	01/28/2015	Quit Claim	$0
DDR GUILFORD LLC	0870	1017	05/16/2014	Warranty Deed	$1,200,000
STONE ROGER W	0780	0035	04/21/2009	Quit Claim	$0
STONE ROGER LLC	0775	0087	01/21/2009	Quit Claim	$0
STONE ROGER W	0335	0022	05/18/1987		$0

Town of Guilford, Connecticut - Assessment Parcel Map

Unique ID: **7001** Address: 1919 BOSTON POST RD



N

Approximate Scale: 1 inch = 400 feet

0 275 550 Feet

Map Produced: August 2021

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Guilford and its mapping contractors assume no legal responsibility for the information contained herein.

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Thursday, December 16, 2021 11:17 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775505189022: Your package has been delivered

Hi. Your package was delivered Thu, 12/16/2021 at 11:12am.

Delivered to 31 PARK ST, GUILFORD, CT 06437
Received by K.KAREN

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775505189022

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Guilford Matthew Hoey, First Selectman 31 Park Street GUILFORD, CT, US, 06437
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 12/15/2021 06:23 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	GUILFORD, CT, US, 06437
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Thursday, December 16, 2021 11:20 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775505215550: Your package has been delivered

Hi. Your package was delivered Thu, 12/16/2021 at 11:19am.

Delivered to 31 PARK ST, GUILFORD, CT 06437
Received by N.NANCT

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775505215550

FROM	Jeff Barbadora 1800 W. Park Drive WESTBOROUGH, MA, US, 01581
TO	Town of Guilford George Kral, Town Planner 31 Park Street GUILFORD, CT, US, 06437
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 12/15/2021 06:23 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	GUILFORD, CT, US, 06437
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Thursday, December 16, 2021 9:56 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 775505365053: Your package has been delivered

Hi. Your package was delivered Thu, 12/16/2021 at 9:53am.

Delivered to 3300 ENTERPRISE PKWY, BEACHWOOD, OH 44122

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 775505365053

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

TO	DDR Guilford LLC Property Owner 3300 Enterprise Pkwy BEACHWOOD, OH, US, 44122
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 12/15/2021 06:23 PM
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	BEACHWOOD, OH, US, 44122
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

Date: **November 2, 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:	CT11027D
	Site Name:	CT027/Sprint Guilford
Crown Castle Designation:	**BU Number:**	876343
	Site Name:	Guilford West Stone Property
	JDE Job Number:	687452
	Work Order Number:	2034247
	Order Number:	587434 Rev. 0
Engineering Firm Designation:	**TEP Project Number:**	80750.620171
Site Data:	**1919 Boston Post Rd., Guilford, New Haven County, CT 06437** **Latitude *41° 18' 1.27"*, Longitude *-72° 42' 29.13"*** **149 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 - 58.9%**

This analysis utilizes an ultimate 3-second gust wind speed of 122 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: Gautam Sopal, E.I. / DEN

Respectfully submitted by:

Aaron T. Rucker, P.E.

Electronic Copy 11/02/2021

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 149-ft monopole tower designed by Engineered Endeavors, Inc.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	122 mph
Exposure Category:	C
Topographic Factor:	1.0
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
148.0	148.0	3	Ericsson	AIR6449 B41_T-MOBILE	1 2	1-3/8 1-5/8
		3	RFS Celwave	APXVAARR24_43-U-NA20		
		3	Commscope	VV-65A-R1_TMO w/ Mount Pipe		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO		
		12	Generic	2.875" O.D., Sch.40, 10-ft. Long Mount Pipe		
		1	SitePro 1	MSFAA		
		3	SitePro 1	VFA12-HD		

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)
138.0	138.0	3	JMA Wireless	MX08FRO665-21 w/ Mount Pipe	1	1-1/2
		3	Fujitsu	TA08025-B604		
		3	Fujitsu	TA08025-B605		
		1	Raycap	RDIDC-9181-PF-48		
		1	Commscope	MC-PK8-DSH		
129.0	129.0	1	Tower Mounts	Pipe Mount [PM 601-3]	-	-
	127.0	3	Alcatel Lucent	TME-800MHZ RRH		
	123.0	3	Alcatel Lucent	TME-1900MHz RRH (65MHz)		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
128.0	130.0	3	RFS Celwave	APXVTM14-C-120 w/ Mount Pipe	4	1-1/4
		3	RFS Celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	Alcatel Lucent	800 EXTERNAL NOTCH FILTER		
		3	Alcatel Lucent	TD-RRH8X20-25		
		9	RFS Celwave	ACU-A20-N		
	128.0	1	Tower Mounts	Sector Mount [SM 901-3]		
116.0	124.0	3	VZW	Sub6 Antenna - VZS01 w/ Mount Pipe	12 2 1	1-5/8 1-1/4 1/2
	122.0	6	Commscope	JAHH-65B-R3B w/ Mount Pipe		
		4	Andrew	DB846F65ZAXY w/ Mount Pipe		
		2	Decibel	DB846H80E-SX w/ Mount Pipe		
		1	Raycap	RVZDC-6627-PF-48		
		3	Commscope	CBC78T-DS-43-2X		
		3	Samsung Telecom.	RFV01U-D1A		
		3	Samsung Telecom.	RFV01U-D2A		
	120.0	3	Samsung Telecom.	CBRS w/ Mount Pipe		
	118.0	1	Maxrad	GPS-TMG-26NMS		
	116.0	1	Tower Mounts	Sector Mount [SM 901-3]		
110.0	110.0	3	Ericsson	TME-RRUS-11	-	-
		1	Tower Mounts	Pipe Mount [PM 601-3]		
106.0	108.0	3	Powerwave Technologies	7770.00	6 3 3 2	1-5/8 7/8 3/8 3/4
		6	CCI Antennas	DMP65R-BU6D		
		6	Powerwave Technologies	LGP21401		
		1	Raycap	DC6-48-60-18-8F		
		3	Ericsson	RRUS 4478 B14_CCIV2		
		3	Ericsson	RRUS 8843 B2/B66A		
		1	Raycap	DC9-48-60-24-8C-EV		
		3	Ericsson	RRUS 4449 B5/B12		
	106.0	1	Site Pro 1	RMQLP-4120-H10		
98.0	98.0	3	RFS Celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	1531881	CCISites
Tower Foundation Drawings	2262540	CCISites
Tower Manufacturer Drawings	8702523	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	149 - 135.04	Pole	TP26.77x22x0.1875	1	-5.06	922.77	10.3	Pass
L2	135.04 - 92.17	Pole	TP40.91x25.0556x0.25	2	-26.02	1888.15	49.9	Pass
L3	92.17 - 45.21	Pole	TP56.31x38.4888x0.3125	3	-37.62	3255.33	58.9	Pass
L4	45.21 - 0	Pole	TP71x53.1183x0.375	4	-58.24	5023.87	56.0	Pass
							Summary	
						Pole (L3)	58.9	Pass
						RATING =	**58.9**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Anchor Rods	-	33.2	Pass
1,2	Base Plate	-	31.1	Pass
1,2	Base Foundation Structural	-	43.7	Pass
1,2	Base Foundation Soil Interaction	-	25.8	Pass

Structure Rating (max from all components) =	58.9%

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

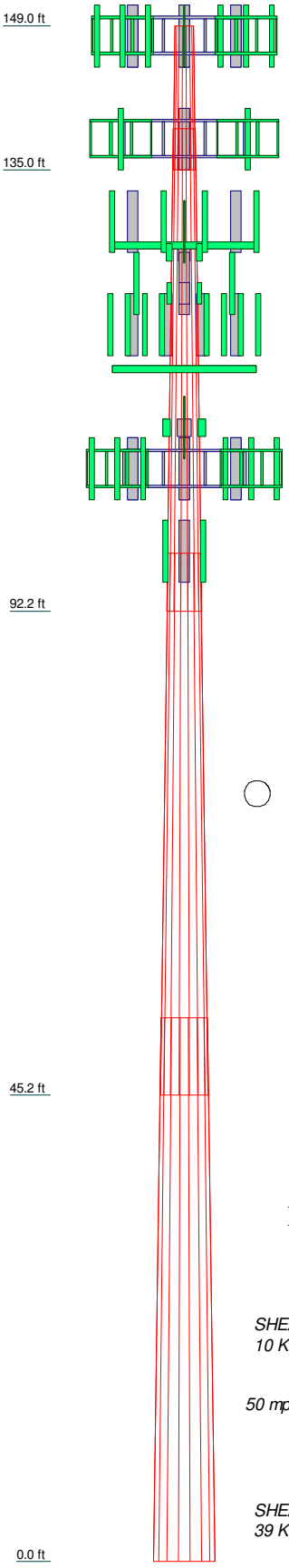
4.1) Recommendations

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	13.96	18	0.1875	3.92	22.0000	26.7700	A572-65	0.7
2	46.79	18	0.2500	5.67	25.0556	40.9100		4.1
3	52.63	18	0.3125	7.58	38.4888	56.3100		8.4
4	52.79	18	0.3750		53.1183	71.0000		13.2



ALL REACTIONS ARE FACTORED

AXIAL 81 K

SHEAR 10 K *MOMENT 1047 kip-ft*

TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 58 K

SHEAR 39 K *MOMENT 4007 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 122 mph WIND

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-H Standard.
2. Tower designed for a 122 mph basic wind in accordance with the TIA-222-H Standard.
3. Tower is also designed for a 50 mph basic wind with 1.00 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: 58.9%

Tower Engineering Professionals

Tower Engineering Professionals, Inc.
326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: ***Guilford West Stone Property (BU 876343)***			
Project: ***TEP No. 80750.620171***			
Client: Crown Castle	Drawn by: tmlester	App'd:	
Code: TIA-222-H	Date: 11/02/21	Scale: NTS	
Path: C:\Users\tmlester\Desktop\Guilford West Stone Property\876343_2034247_LC7.eri		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: 70.00 ft.
Basic wind speed of 122 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Horizontals		Assume Legs Pinned		Calculate Redundant Bracing Forces
	Consider Moments - Diagonals		Assume Rigid Index Plate		Ignore Redundant Members in FEA
	Use Moment Magnification	√	Use Clear Spans For Wind Area		SR Leg Bolts Resist Compression
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		All Leg Panels Have Same Allowable
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension		Offset Girt At Foundation
	Escalate Ice	√	Bypass Mast Stability Checks	√	Consider Feed Line Torque
	Always Use Max Kz	√	Use Azimuth Dish Coefficients		Include Angle Block Shear Check
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Use TIA-222-H Bracing Resist. 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	149.00-135.04	13.96	3.92	18	22.0000	26.7700	0.1875	0.7500	A572-65 (65 ksi)
L2	135.04-92.17	46.79	5.67	18	25.0556	40.9100	0.2500	1.0000	A572-65 (65 ksi)
L3	92.17-45.21	52.63	7.58	18	38.4888	56.3100	0.3125	1.2500	A572-65 (65 ksi)
L4	45.21-0.00	52.79		18	53.1183	71.0000	0.3750	1.5000	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	22.3105	12.9812	780.3007	7.7434	11.1760	69.8193	1561.6281	6.4918	3.5420	18.891
	27.1540	15.8199	1412.3200	9.4368	13.5992	103.8535	2826.4984	7.9115	4.3815	23.368
L2	26.7523	19.6832	1530.1435	8.8060	12.7282	120.2165	3062.3005	9.8435	3.9698	15.879
	41.5025	32.2637	6738.8611	14.4343	20.7823	324.2600	13486.5893	16.1349	6.7602	27.041
L3	40.9839	37.8661	6972.2781	13.5526	19.5523	356.5965	13953.7306	18.9366	6.2240	19.917
	57.1305	55.5425	22003.9328	19.8791	28.6055	769.2209	44036.8189	27.7765	9.3606	29.954
L4	56.4871	62.7777	22063.6703	18.7239	26.9841	817.6545	44156.3726	31.3948	8.6888	23.17
	72.0374	84.0614	52972.5675	25.0719	36.0680	1468.6860	106014.837 6	42.0387	11.8360	31.563

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 149.00-135.04				1	1	1			
L2 135.04-92.17				1	1	1			
L3 92.17-45.21				1	1	1			
L4 45.21-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
RFFT-48SM-001-XXX(3/8)	C	No	Surface Ar (CaAa)	106.00 - 0.00	1	1	0.166 0.166	0.4000		0.06
PWRT-606-S(7/8") **98**	C	No	Surface Ar (CaAa)	106.00 - 0.00	3	3	0.166 0.166	0.9200		0.89
LCF158-50JL(1-5/8) ***	A	No	Surface Ar (CaAa)	98.00 - 0.00	6	6	-0.333 -0.333	1.9800		0.52

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
148									
HCS 6X12 6AWG(1-3/8)	A	No	No	Inside Pole	148.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
HB158-21U6S24-xx M_TMO(1-5/8)	A	No	No	Inside Pole	148.00 - 0.00	2	No Ice	0.00	2.50
							1/2" Ice	0.00	2.50
							1" Ice	0.00	2.50
139									
138									
CU12PSM9P6XXX(1-1/2)	B	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
128									
HB114-1-0813U4-M 5J(1-1/4)	A	No	No	Inside Pole	128.00 - 0.00	4	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
116									
HB114-1-0813U4-M 5J(1-1/4)	B	No	No	Inside Pole	116.00 - 0.00	2	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
LDF4-50A(1/2)	B	No	No	Inside Pole	116.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
LDF7-50A(1-5/8)	B	No	No	Inside Pole	116.00 - 0.00	12	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
106									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	106.00 - 0.00	6	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
FB-L98B-002-75000 (3/8)	C	No	No	Inside Pole	106.00 - 0.00	2	No Ice	0.00	0.06
							1/2" Ice	0.00	0.06
							1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	C	No	No	Inside Pole	106.00 - 0.00	2	No Ice	0.00	0.58
							1/2" Ice	0.00	0.58
							1" Ice	0.00	0.58
2" Flexible Conduit	C	No	No	Inside Pole	106.00 - 0.00	1	No Ice	0.00	0.34
							1/2" Ice	0.00	0.34
							1" Ice	0.00	0.34
***									

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	149.00-135.04	A	0.000	0.000	0.000	0.000	0.09
		B	0.000	0.000	0.000	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L2	135.04-92.17	A	0.000	0.000	6.926	0.000	0.48

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
		B	0.000	0.000	0.000	0.000	0.40
		C	0.000	0.000	4.370	0.000	0.13
L3	92.17-45.21	A	0.000	0.000	55.788	0.000	0.69
		B	0.000	0.000	0.000	0.000	0.69
		C	0.000	0.000	14.839	0.000	0.44
L4	45.21-0.00	A	0.000	0.000	53.709	0.000	0.66
		B	0.000	0.000	0.000	0.000	0.67
		C	0.000	0.000	14.286	0.000	0.42

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	149.00-135.04	A	0.983	0.000	0.000	0.000	0.000	0.09
		B		0.000	0.000	0.000	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L2	135.04-92.17	A	0.961	0.000	0.000	10.091	0.000	0.55
		B		0.000	0.000	0.000	0.000	0.40
		C		0.000	0.000	11.445	0.000	0.20
L3	92.17-45.21	A	0.913	0.000	0.000	81.014	0.000	1.27
		B		0.000	0.000	0.000	0.000	0.69
		C		0.000	0.000	38.381	0.000	0.69
L4	45.21-0.00	A	0.819	0.000	0.000	77.462	0.000	1.20
		B		0.000	0.000	0.000	0.000	0.67
		C		0.000	0.000	35.991	0.000	0.64

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	149.00-135.04	0.0000	0.0000	0.0000	0.0000
L2	135.04-92.17	-1.7176	1.0577	-1.5490	1.3494
L3	92.17-45.21	-7.1520	2.7811	-5.8544	3.1140
L4	45.21-0.00	-7.6983	3.0014	-6.4337	3.3950

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	20	RFFT-48SM-001-XXX(3/8)	92.17 - 106.00	1.0000	1.0000
L2	21	PWRT-606-S(7/8")	92.17 - 106.00	1.0000	1.0000
L2	25	LCF158-50JL(1-5/8)	92.17 - 98.00	1.0000	1.0000
L3	20	RFFT-48SM-001-XXX(3/8)	45.21 - 92.17	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L3	21	PWRT-606-S(7/8")	45.21 - 92.17	1.0000	1.0000
L3	25	LCF158-50JL(1-5/8)	45.21 - 92.17	1.0000	1.0000
L4	20	RFFT-48SM-001-XXX(3/8)	0.00 - 45.21	1.0000	1.0000
L4	21	PWRT-606-S(7/8")	0.00 - 45.21	1.0000	1.0000
L4	25	LCF158-50JL(1-5/8)	0.00 - 45.21	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
148									
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
AIR6449 B41_T-MOBILE w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	5.19 5.59 6.02	2.71 3.04 3.38	0.13 0.17 0.23
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	14.69 15.46 16.23	6.87 7.55 8.25	0.19 0.31 0.46
VV-65A-R1_TMO w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	4.46 4.91 5.36	2.69 3.10 3.52	0.05 0.10 0.15
VV-65A-R1_TMO w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	4.46 4.91 5.36	2.69 3.10 3.52	0.05 0.10 0.15
VV-65A-R1_TMO w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	4.46 4.91 5.36	2.69 3.10 3.52	0.05 0.10 0.15
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4449 B71 B85A_T-MOBILE	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.97 2.15 2.33	1.59 1.75 1.92	0.07 0.09 0.12
RADIO 4460 B2/B25 B66_TMO	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16

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
RADIO 4460 B2/B25 B66_TMO	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
RADIO 4460 B2/B25 B66_TMO	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.14 2.32 2.51	1.69 1.85 2.02	0.11 0.13 0.16
2.9" Dia. x 10' Pipe	A	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.88 3.91 4.96	2.88 3.91 4.96	0.06 0.08 0.11
2.9" Dia. x 10' Pipe	B	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.88 3.91 4.96	2.88 3.91 4.96	0.06 0.08 0.11
2.9" Dia. x 10' Pipe	C	From Leg	4.00 0.00 0.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.88 3.91 4.96	2.88 3.91 4.96	0.06 0.08 0.11
Pipe Mount [PM 601-3]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice	3.17 3.79 4.42	3.17 3.79 4.42	0.20 0.23 0.28
Sitepro VFA12-HD Sector Mount (3)	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice	29.70 43.88 58.05	20.70 32.85 43.88	1.97 2.41 3.04
*** **138**									
MX08FRO665-21 w/ Mount Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
MX08FRO665-21 w/ Mount Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	8.01 8.52 9.04	4.23 4.69 5.16	0.11 0.19 0.29
TA08025-B604	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B604	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	0.98 1.11 1.25	0.06 0.08 0.10
TA08025-B605	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
TA08025-B605	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.96 2.14 2.32	1.13 1.27 1.41	0.08 0.09 0.11
RDIDC-9181-PF-48	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.01 2.19 2.37	1.17 1.31 1.46	0.02 0.04 0.06
(2) 2.4" Dia x 6-ft Pipe	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
(2) 2.4" Dia x 6-ft Pipe	B	From	4.00	0.0000	138.00	No Ice	1.43	1.43	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-Leg	0.00			1/2" Ice	1.93	1.93	0.03
			0.00			1" Ice	2.30	2.30	0.05
(2) 2.4" Dia x 6-ft Pipe	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.43 1.93 2.30	1.43 1.93 2.30	0.02 0.03 0.05
Commscope MC-PK8-DSH	C	None		0.0000	138.00	No Ice 1/2" Ice 1" Ice	34.24 62.95 91.66	34.24 62.95 91.66	1.75 2.10 2.45
***									
TME-800MHZ RRH	A	From Leg	0.50 0.00 -2.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
TME-800MHZ RRH	B	From Leg	0.50 0.00 -2.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
TME-800MHZ RRH	C	From Leg	0.50 0.00 -2.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.13 2.32 2.51	1.77 1.95 2.13	0.05 0.07 0.10
TME-1900MHz RRH (65MHz)	A	From Leg	0.50 0.00 -6.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	0.06 0.08 0.11
TME-1900MHz RRH (65MHz)	B	From Leg	0.50 0.00 -6.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	0.06 0.08 0.11
TME-1900MHz RRH (65MHz)	C	From Leg	0.50 0.00 -6.00	0.0000	129.00	No Ice 1/2" Ice 1" Ice	2.31 2.52 2.73	2.38 2.58 2.79	0.06 0.08 0.11
Pipe Mount [PM 601-3]	C	None		0.0000	129.00	No Ice 1/2" Ice 1" Ice	3.17 3.79 4.42	3.17 3.79 4.42	0.20 0.23 0.28
128									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.09 4.48 4.88	2.86 3.23 3.61	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.09 4.48 4.88	2.86 3.23 3.61	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.09 4.48 4.88	2.86 3.23 3.61	0.08 0.13 0.19
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.60 5.05 5.50	4.01 4.45 4.89	0.10 0.16 0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.60 5.05 5.50	4.01 4.45 4.89	0.10 0.16 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	4.60 5.05 5.50	4.01 4.45 4.89	0.10 0.16 0.23
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 0.00 2.00	0.0000	128.00	No Ice 1/2" Ice 1" Ice	0.66 0.76 0.87	0.32 0.40 0.48	0.01 0.02 0.02
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00 0.00	0.0000	128.00	No Ice 1/2" Ice	0.66 0.76	0.32 0.40	0.01 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
			2.00			1" Ice	0.87	0.48	0.02
TD-RRH8X20-25	A	From Leg	4.00	0.0000	128.00	No Ice	3.70	1.29	0.07
			0.00			1/2" Ice	3.95	1.46	0.09
			2.00			1" Ice	4.20	1.64	0.12
TD-RRH8X20-25	B	From Leg	4.00	0.0000	128.00	No Ice	3.70	1.29	0.07
			0.00			1/2" Ice	3.95	1.46	0.09
			2.00			1" Ice	4.20	1.64	0.12
TD-RRH8X20-25	C	From Leg	4.00	0.0000	128.00	No Ice	3.70	1.29	0.07
			0.00			1/2" Ice	3.95	1.46	0.09
			2.00			1" Ice	4.20	1.64	0.12
(3) ACU-A20-N	A	From Leg	4.00	0.0000	128.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			2.00			1" Ice	0.15	0.21	0.00
(3) ACU-A20-N	B	From Leg	4.00	0.0000	128.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			2.00			1" Ice	0.15	0.21	0.00
(3) ACU-A20-N	C	From Leg	4.00	0.0000	128.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			2.00			1" Ice	0.15	0.21	0.00
(2) 2.4" Dia. x 6-ft	A	From Leg	4.00	0.0000	128.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(2) 2.4" Dia. x 6-ft	B	From Leg	4.00	0.0000	128.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
(2) 2.4" Dia. x 6-ft	C	From Leg	4.00	0.0000	128.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.92	1.92	0.03
			0.00			1" Ice	2.29	2.29	0.05
Sector Mount [SM 901-3]	C	None		0.0000	128.00	No Ice	12.78	12.78	1.26
						1/2" Ice	15.53	15.53	1.45
						1" Ice	18.18	18.18	1.69
116									
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Leg	4.00	0.0000	116.00	No Ice	5.50	4.38	0.10
			0.00			1/2" Ice	5.97	4.84	0.17
			6.00			1" Ice	6.45	5.30	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	B	From Leg	4.00	0.0000	116.00	No Ice	5.50	4.38	0.10
			0.00			1/2" Ice	5.97	4.84	0.17
			6.00			1" Ice	6.45	5.30	0.25
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Leg	4.00	0.0000	116.00	No Ice	5.50	4.38	0.10
			0.00			1/2" Ice	5.97	4.84	0.17
			6.00			1" Ice	6.45	5.30	0.25
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00	0.0000	116.00	No Ice	6.10	6.81	0.06
			0.00			1/2" Ice	6.80	7.52	0.12
			6.00			1" Ice	7.51	8.24	0.19
(2) DB846H80E-SX w/ Mount Pipe	B	From Leg	4.00	0.0000	116.00	No Ice	4.12	6.38	0.05
			0.00			1/2" Ice	4.76	7.05	0.10
			6.00			1" Ice	5.42	7.74	0.17
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00	0.0000	116.00	No Ice	6.10	6.81	0.06
			0.00			1/2" Ice	6.80	7.52	0.12
			6.00			1" Ice	7.51	8.24	0.19
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Leg	4.00	0.0000	116.00	No Ice	4.92	2.69	0.10
			0.00			1/2" Ice	5.26	3.15	0.14
			8.00			1" Ice	5.62	3.63	0.19
Sub6 Antenna - VZS01 w/ Mount Pipe	B	From Leg	4.00	0.0000	116.00	No Ice	4.92	2.69	0.10
			0.00			1/2" Ice	5.26	3.15	0.14
			8.00			1" Ice	5.62	3.63	0.19
Sub6 Antenna - VZS01 w/	C	From Leg	4.00	0.0000	116.00	No Ice	4.92	2.69	0.10

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
Mount Pipe			0.00			1/2" Ice	5.26	3.15	0.14
			8.00			1" Ice	5.62	3.63	0.19
CBRS w/ Mount Pipe	A	From Leg	4.00	0.0000	116.00	No Ice	1.45	0.99	0.03
			0.00			1/2" Ice	1.67	1.18	0.05
			4.00			1" Ice	1.90	1.39	0.07
CBRS w/ Mount Pipe	B	From Leg	4.00	0.0000	116.00	No Ice	1.45	0.99	0.03
			0.00			1/2" Ice	1.67	1.18	0.05
			4.00			1" Ice	1.90	1.39	0.07
CBRS w/ Mount Pipe	C	From Leg	4.00	0.0000	116.00	No Ice	1.45	0.99	0.03
			0.00			1/2" Ice	1.67	1.18	0.05
			4.00			1" Ice	1.90	1.39	0.07
GPS-TMG-26NMS	B	From Leg	4.00	0.0000	116.00	No Ice	0.08	0.08	0.00
			0.00			1/2" Ice	0.12	0.12	0.00
			2.00			1" Ice	0.18	0.18	0.00
RVZDC-6627-PF-48	A	From Leg	4.00	0.0000	116.00	No Ice	3.79	2.51	0.03
			0.00			1/2" Ice	4.04	2.73	0.06
			6.00			1" Ice	4.30	2.95	0.10
CBC78T-DS-43-2X	A	From Leg	4.00	0.0000	116.00	No Ice	0.37	0.51	0.02
			0.00			1/2" Ice	0.45	0.60	0.03
			6.00			1" Ice	0.53	0.70	0.04
CBC78T-DS-43-2X	B	From Leg	4.00	0.0000	116.00	No Ice	0.37	0.51	0.02
			0.00			1/2" Ice	0.45	0.60	0.03
			6.00			1" Ice	0.53	0.70	0.04
CBC78T-DS-43-2X	C	From Leg	4.00	0.0000	116.00	No Ice	0.37	0.51	0.02
			0.00			1/2" Ice	0.45	0.60	0.03
			6.00			1" Ice	0.53	0.70	0.04
RFV01U-D1A	A	From Leg	4.00	0.0000	116.00	No Ice	1.88	1.25	0.08
			0.00			1/2" Ice	2.05	1.39	0.10
			6.00			1" Ice	2.22	1.54	0.12
RFV01U-D1A	B	From Leg	4.00	0.0000	116.00	No Ice	1.88	1.25	0.08
			0.00			1/2" Ice	2.05	1.39	0.10
			6.00			1" Ice	2.22	1.54	0.12
RFV01U-D1A	C	From Leg	4.00	0.0000	116.00	No Ice	1.88	1.25	0.08
			0.00			1/2" Ice	2.05	1.39	0.10
			6.00			1" Ice	2.22	1.54	0.12
RFV01U-D2A	A	From Leg	4.00	0.0000	116.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			6.00			1" Ice	2.22	1.28	0.11
RFV01U-D2A	B	From Leg	4.00	0.0000	116.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			6.00			1" Ice	2.22	1.28	0.11
RFV01U-D2A	C	From Leg	4.00	0.0000	116.00	No Ice	1.88	1.01	0.07
			0.00			1/2" Ice	2.05	1.14	0.09
			6.00			1" Ice	2.22	1.28	0.11
Sector Mount [SM 901-3]	C	None		0.0000	116.00	No Ice	12.78	12.78	1.26
						1/2" Ice	15.53	15.53	1.45
						1" Ice	18.18	18.18	1.69
110									
TME-RRUS-11	A	From Leg	0.50	0.0000	110.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			0.00			1" Ice	3.21	1.49	0.09
TME-RRUS-11	B	From Leg	0.50	0.0000	110.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			0.00			1" Ice	3.21	1.49	0.09
TME-RRUS-11	C	From Leg	0.50	0.0000	110.00	No Ice	2.78	1.19	0.05
			0.00			1/2" Ice	2.99	1.33	0.07
			0.00			1" Ice	3.21	1.49	0.09

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
Pipe Mount [PM 601-3]	C	None		0.0000	110.00	No Ice	3.17	3.17	0.20
						1/2" Ice	3.79	3.79	0.23
						1" Ice	4.42	4.42	0.28
106									
7770.00	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	2.93 3.27 3.63	0.04 0.07 0.11
7770.00	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	2.93 3.27 3.63	0.04 0.07 0.11
7770.00	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	2.93 3.27 3.63	0.04 0.07 0.11
(2) DMP65R-BU6D	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	11.93 12.68 13.45	4.48 5.12 5.78	0.09 0.16 0.24
(2) DMP65R-BU6D	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	11.93 12.68 13.45	4.48 5.12 5.78	0.09 0.16 0.24
(2) DMP65R-BU4D	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	7.48 8.01 8.55	2.81 3.23 3.67	0.08 0.13 0.19
(2) LGP21401	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	C	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
DC6-48-60-18-8F	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.21 1.89 2.11	1.21 1.89 2.11	0.03 0.05 0.08
(2) RRUS 4478 B14_CCIV2	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
RRUS 4478 B14_CCIV2	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	2.02 2.20 2.39	1.25 1.40 1.55	0.06 0.08 0.10
(2) RRUS 8843 B2/B66A	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
RRUS 8843 B2/B66A	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.35 1.50 1.65	0.07 0.09 0.11
DC9-48-60-24-8C-EV	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.14 1.79 2.00	1.14 1.79 2.00	0.03 0.05 0.07
RRUS 4449 B5/B12	A	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
(2) RRUS 4449 B5/B12	B	From Centroid-Leg	4.00 0.00 2.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	1.97 2.14 2.33	1.41 1.56 1.73	0.07 0.09 0.11
RMQLP-4120-H10	C	None		0.0000	106.00	No Ice 1/2" Ice	28.15 34.10	26.41 32.35	3.27 3.66

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
						1" Ice	40.10	38.54	4.18
98									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	0.50 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice	3.79 4.38 4.99	3.16 3.75 4.35	0.05 0.09 0.15
APXV18-206517S-C w/ Mount Pipe	B	From Leg	0.50 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice	3.79 4.38 4.99	3.16 3.75 4.35	0.05 0.09 0.15
APXV18-206517S-C w/ Mount Pipe	C	From Leg	0.50 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice	3.79 4.38 4.99	3.16 3.75 4.35	0.05 0.09 0.15
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Load Combinations

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

Comb. No.	Description
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	149 - 135.04	Pole	Max Tension	27	0.00	0.00	-0.00
			Max. Compression	26	-8.68	-0.00	0.01
			Max. Mx	8	-5.06	-52.95	0.01
			Max. My	2	-5.06	-0.00	52.97
			Max. Vy	8	6.22	-52.95	0.01
			Max. Vx	2	-6.22	-0.00	52.97
			Max. Torque	21			-0.11
L2	135.04 - 92.17	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.55	-1.73	3.18
			Max. Mx	8	-26.04	-778.81	1.48
			Max. My	2	-26.02	-1.05	785.42
			Max. Vy	8	26.75	-778.81	1.48
			Max. Vx	2	-27.08	-1.05	785.42
			Max. Torque	22			-2.35
L3	92.17 - 45.21	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.08	-0.55	3.14
			Max. Mx	8	-37.64	-2100.99	-2.10
			Max. My	2	-37.62	2.72	2122.49
			Max. Vy	8	32.07	-2100.99	-2.10
			Max. Vx	2	-32.39	2.72	2122.49
			Max. Torque	22			-2.35
L4	45.21 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.78	1.34	3.10
			Max. Mx	8	-58.24	-3968.52	-6.37
			Max. My	2	-58.24	7.26	4007.26
			Max. Vy	8	38.53	-3968.52	-6.37
			Max. Vx	2	-38.85	7.26	4007.26
			Max. Torque	22			-2.35

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	80.78	0.01	10.14
	Max. H_x	20	58.26	38.50	0.08
	Max. H_z	2	58.26	0.08	38.82
	Max. M_x	2	4007.26	0.08	38.82
	Max. M_z	8	3968.52	-38.50	-0.08
	Max. Torsion	10	2.33	-33.38	-19.48
	Min. Vert	19	43.70	33.31	-19.34
	Min. H_x	8	58.26	-38.50	-0.08
	Min. H_z	14	58.26	-0.08	-38.82
	Min. M_x	14	-4004.58	-0.08	-38.82
	Min. M_z	20	-3967.62	38.50	0.08
	Min. Torsion	22	-2.35	33.38	19.48

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	48.55	0.00	0.00	-1.05	-0.34	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	58.26	-0.08	-38.82	-4007.26	7.26	1.06
0.9 Dead+1.0 Wind 0 deg - No Ice	43.70	-0.08	-38.82	-3977.58	7.33	1.05
1.2 Dead+1.0 Wind 30 deg - No Ice	58.26	19.18	-33.58	-3466.73	-1977.80	-0.12
0.9 Dead+1.0 Wind 30 deg - No Ice	43.70	19.18	-33.58	-3441.00	-1963.19	-0.12
1.2 Dead+1.0 Wind 60 deg - No Ice	58.26	33.31	-19.34	-1997.64	-3433.05	-1.26
0.9 Dead+1.0 Wind 60 deg - No Ice	43.70	33.31	-19.34	-1982.67	-3407.78	-1.26
1.2 Dead+1.0 Wind 90 deg - No Ice	58.26	38.50	0.08	6.37	-3968.52	-2.07
0.9 Dead+1.0 Wind 90 deg - No Ice	43.70	38.50	0.08	6.67	-3939.34	-2.06
1.2 Dead+1.0 Wind 120 deg - No Ice	58.26	33.38	19.48	2008.31	-3440.74	-2.33
0.9 Dead+1.0 Wind 120 deg - No Ice	43.70	33.38	19.48	1993.95	-3415.43	-2.31
1.2 Dead+1.0 Wind 150 deg - No Ice	58.26	19.32	33.66	3471.75	-1991.14	-1.97
0.9 Dead+1.0 Wind 150 deg - No Ice	43.70	19.32	33.66	3446.67	-1976.45	-1.95
1.2 Dead+1.0 Wind 180 deg - No Ice	58.26	0.08	38.82	4004.58	-8.15	-1.08
0.9 Dead+1.0 Wind 180 deg - No Ice	43.70	0.08	38.82	3975.60	-7.99	-1.07
1.2 Dead+1.0 Wind 210 deg - No Ice	58.26	-19.18	33.58	3464.06	1976.90	0.10
0.9 Dead+1.0 Wind 210 deg - No Ice	43.70	-19.18	33.58	3439.02	1962.53	0.11
1.2 Dead+1.0 Wind 240 deg - No Ice	58.26	-33.31	19.34	1994.97	3432.15	1.27
0.9 Dead+1.0 Wind 240 deg - No Ice	43.70	-33.31	19.34	1980.69	3407.12	1.26
1.2 Dead+1.0 Wind 270 deg - No Ice	58.26	-38.50	-0.08	-9.04	3967.62	2.09

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 270 deg - No Ice	43.70	-38.50	-0.08	-8.64	3938.68	2.08
1.2 Dead+1.0 Wind 300 deg - No Ice	58.26	-33.38	-19.48	-2010.98	3439.85	2.35
0.9 Dead+1.0 Wind 300 deg - No Ice	43.70	-33.38	-19.48	-1995.93	3414.78	2.33
1.2 Dead+1.0 Wind 330 deg - No Ice	58.26	-19.32	-33.66	-3474.43	1990.25	1.97
0.9 Dead+1.0 Wind 330 deg - No Ice	43.70	-19.32	-33.66	-3448.65	1975.80	1.95
1.2 Dead+1.0 Ice+1.0 Temp	80.78	0.00	-0.00	-3.10	1.34	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	80.78	-0.01	-10.14	-1047.42	2.66	0.24
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	80.78	5.03	-8.77	-906.87	-516.24	-0.03
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	80.78	8.73	-5.06	-524.19	-896.46	-0.28
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	80.78	10.08	0.01	-1.93	-1036.11	-0.47
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	80.78	8.74	5.08	519.97	-897.80	-0.52
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	80.78	5.05	8.79	901.67	-518.55	-0.44
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	80.78	0.01	10.14	1040.88	-0.01	-0.24
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	80.78	-5.03	8.77	900.33	518.89	0.03
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	80.78	-8.73	5.06	517.66	899.11	0.28
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	80.78	-10.08	-0.01	-4.60	1038.76	0.47
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	80.78	-8.74	-5.08	-526.51	900.44	0.52
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	80.78	-5.05	-8.79	-908.21	521.20	0.44
Dead+Wind 0 deg - Service	48.55	-0.02	-8.85	-909.95	1.38	0.24
Dead+Wind 30 deg - Service	48.55	4.37	-7.65	-787.32	-448.98	-0.03
Dead+Wind 60 deg - Service	48.55	7.59	-4.41	-454.02	-779.14	-0.30
Dead+Wind 90 deg - Service	48.55	8.77	0.02	0.64	-900.62	-0.48
Dead+Wind 120 deg - Service	48.55	7.61	4.44	454.83	-780.88	-0.54
Dead+Wind 150 deg - Service	48.55	4.40	7.67	786.85	-452.01	-0.45
Dead+Wind 180 deg - Service	48.55	0.02	8.85	907.74	-2.12	-0.24
Dead+Wind 210 deg - Service	48.55	-4.37	7.65	785.10	448.24	0.03
Dead+Wind 240 deg - Service	48.55	-7.59	4.41	451.80	778.40	0.30
Dead+Wind 270 deg - Service	48.55	-8.77	-0.02	-2.86	899.88	0.49
Dead+Wind 300 deg - Service	48.55	-7.61	-4.44	-457.05	780.15	0.54
Dead+Wind 330 deg - Service	48.55	-4.40	-7.67	-789.07	451.27	0.45

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	-48.55	0.00	0.00	48.55	0.00	0.000%
2	-0.08	-58.26	-38.82	0.08	58.26	38.82	0.000%
3	-0.08	-43.70	-38.82	0.08	43.70	38.82	0.000%
4	19.18	-58.26	-33.58	-19.18	58.26	33.58	0.000%
5	19.18	-43.70	-33.58	-19.18	43.70	33.58	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
6	33.31	-58.26	-19.34	-33.31	58.26	19.34	0.000%
7	33.31	-43.70	-19.34	-33.31	43.70	19.34	0.000%
8	38.50	-58.26	0.08	-38.50	58.26	-0.08	0.000%
9	38.50	-43.70	0.08	-38.50	43.70	-0.08	0.000%
10	33.38	-58.26	19.48	-33.38	58.26	-19.48	0.000%
11	33.38	-43.70	19.48	-33.38	43.70	-19.48	0.000%
12	19.32	-58.26	33.66	-19.32	58.26	-33.66	0.000%
13	19.32	-43.70	33.66	-19.32	43.70	-33.66	0.000%
14	0.08	-58.26	38.82	-0.08	58.26	-38.82	0.000%
15	0.08	-43.70	38.82	-0.08	43.70	-38.82	0.000%
16	-19.18	-58.26	33.58	19.18	58.26	-33.58	0.000%
17	-19.18	-43.70	33.58	19.18	43.70	-33.58	0.000%
18	-33.31	-58.26	19.34	33.31	58.26	-19.34	0.000%
19	-33.31	-43.70	19.34	33.31	43.70	-19.34	0.000%
20	-38.50	-58.26	-0.08	38.50	58.26	0.08	0.000%
21	-38.50	-43.70	-0.08	38.50	43.70	0.08	0.000%
22	-33.38	-58.26	-19.48	33.38	58.26	19.48	0.000%
23	-33.38	-43.70	-19.48	33.38	43.70	19.48	0.000%
24	-19.32	-58.26	-33.66	19.32	58.26	33.66	0.000%
25	-19.32	-43.70	-33.66	19.32	43.70	33.66	0.000%
26	0.00	-80.78	0.00	-0.00	80.78	0.00	0.000%
27	-0.01	-80.78	-10.14	0.01	80.78	10.14	0.000%
28	5.03	-80.78	-8.77	-5.03	80.78	8.77	0.000%
29	8.73	-80.78	-5.06	-8.73	80.78	5.06	0.000%
30	10.08	-80.78	0.01	-10.08	80.78	-0.01	0.000%
31	8.74	-80.78	5.08	-8.74	80.78	-5.08	0.000%
32	5.05	-80.78	8.79	-5.05	80.78	-8.79	0.000%
33	0.01	-80.78	10.14	-0.01	80.78	-10.14	0.000%
34	-5.03	-80.78	8.77	5.03	80.78	-8.77	0.000%
35	-8.73	-80.78	5.06	8.73	80.78	-5.06	0.000%
36	-10.08	-80.78	-0.01	10.08	80.78	0.01	0.000%
37	-8.74	-80.78	-5.08	8.74	80.78	5.08	0.000%
38	-5.05	-80.78	-8.79	5.05	80.78	8.79	0.000%
39	-0.02	-48.55	-8.85	0.02	48.55	8.85	0.000%
40	4.37	-48.55	-7.65	-4.37	48.55	7.65	0.000%
41	7.59	-48.55	-4.41	-7.59	48.55	4.41	0.000%
42	8.77	-48.55	0.02	-8.77	48.55	-0.02	0.000%
43	7.61	-48.55	4.44	-7.61	48.55	-4.44	0.000%
44	4.40	-48.55	7.67	-4.40	48.55	-7.67	0.000%
45	0.02	-48.55	8.85	-0.02	48.55	-8.85	0.000%
46	-4.37	-48.55	7.65	4.37	48.55	-7.65	0.000%
47	-7.59	-48.55	4.41	7.59	48.55	-4.41	0.000%
48	-8.77	-48.55	-0.02	8.77	48.55	0.02	0.000%
49	-7.61	-48.55	-4.44	7.61	48.55	4.44	0.000%
50	-4.40	-48.55	-7.67	4.40	48.55	7.67	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	4	0.00000001	0.00016194
3	Yes	4	0.00000001	0.00009652
4	Yes	5	0.00000001	0.00019292
5	Yes	5	0.00000001	0.00008889
6	Yes	5	0.00000001	0.00019853

7	Yes	5	0.00000001	0.00009175
8	Yes	4	0.00000001	0.00034868
9	Yes	4	0.00000001	0.00022256
10	Yes	5	0.00000001	0.00018698
11	Yes	5	0.00000001	0.00008607
12	Yes	5	0.00000001	0.00020104
13	Yes	5	0.00000001	0.00009290
14	Yes	4	0.00000001	0.00019568
15	Yes	4	0.00000001	0.00011955
16	Yes	5	0.00000001	0.00019385
17	Yes	5	0.00000001	0.00008953
18	Yes	5	0.00000001	0.00018812
19	Yes	5	0.00000001	0.00008678
20	Yes	4	0.00000001	0.00038620
21	Yes	4	0.00000001	0.00024704
22	Yes	5	0.00000001	0.00020259
23	Yes	5	0.00000001	0.00009371
24	Yes	5	0.00000001	0.00018867
25	Yes	5	0.00000001	0.00008679
26	Yes	4	0.00000001	0.00000219
27	Yes	4	0.00000001	0.00092476
28	Yes	5	0.00000001	0.00006659
29	Yes	5	0.00000001	0.00006661
30	Yes	4	0.00000001	0.00091522
31	Yes	5	0.00000001	0.00006560
32	Yes	5	0.00000001	0.00006613
33	Yes	4	0.00000001	0.00091249
34	Yes	5	0.00000001	0.00006561
35	Yes	5	0.00000001	0.00006532
36	Yes	4	0.00000001	0.00091261
37	Yes	5	0.00000001	0.00006669
38	Yes	5	0.00000001	0.00006642
39	Yes	4	0.00000001	0.00001978
40	Yes	4	0.00000001	0.00007637
41	Yes	4	0.00000001	0.00008391
42	Yes	4	0.00000001	0.00002695
43	Yes	4	0.00000001	0.00007048
44	Yes	4	0.00000001	0.00008611
45	Yes	4	0.00000001	0.00001989
46	Yes	4	0.00000001	0.00007739
47	Yes	4	0.00000001	0.00007124
48	Yes	4	0.00000001	0.00002723
49	Yes	4	0.00000001	0.00008870
50	Yes	4	0.00000001	0.00007169

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
L1	149 - 135.04	13.756	39	0.8448	0.0016
L2	138.96 - 92.17	11.990	39	0.8306	0.0016
L3	97.84 - 45.21	5.664	39	0.5898	0.0010
L4	52.79 - 0	1.534	39	0.2707	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	39	13.579	0.8438	0.0016	36612
138.00	MX08FRO665-21 w/ Mount Pipe	39	11.823	0.8283	0.0016	18168
129.00	TME-800MHZ RRH	39	10.295	0.7958	0.0015	13574
128.00	APXVTM14-C-120 w/ Mount Pipe	39	10.129	0.7911	0.0015	13229
116.00	(2) JAHH-65B-R3B w/ Mount Pipe	39	8.218	0.7219	0.0013	10136
110.00	TME-RRUS-11	39	7.324	0.6805	0.0012	9075
106.00	7770.00	39	6.755	0.6513	0.0012	8484
98.00	APXV18-206517S-C w/ Mount Pipe	39	5.684	0.5910	0.0010	7591

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149 - 135.04	60.593	2	3.7235	0.0070
L2	138.96 - 92.17	52.811	2	3.6606	0.0069
L3	97.84 - 45.21	24.953	2	2.5984	0.0043
L4	52.79 - 0	6.760	2	1.1929	0.0012

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	AIR6449 B41_T-MOBILE w/ Mount Pipe	2	59.813	3.7191	0.0070	8358
138.00	MX08FRO665-21 w/ Mount Pipe	2	52.077	3.6503	0.0069	4145
129.00	TME-800MHZ RRH	2	45.347	3.5071	0.0066	3094
128.00	APXVTM14-C-120 w/ Mount Pipe	2	44.618	3.4864	0.0066	3016
116.00	(2) JAHH-65B-R3B w/ Mount Pipe	2	36.203	3.1810	0.0058	2312
110.00	TME-RRUS-11	2	32.266	2.9983	0.0053	2070
106.00	7770.00	2	29.757	2.8696	0.0050	1935
98.00	APXV18-206517S-C w/ Mount Pipe	2	25.043	2.6038	0.0043	1731

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	149 - 135.04 (1)	TP26.77x22x0.1875	13.96	0.00	0.0	15.0228	-5.06	878.83	0.006
L2	135.04 - 92.17	TP40.91x25.0556x0.25	46.79	0.00	0.0	30.7392	-26.02	1798.24	0.014

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L3	92.17 - 45.21 (2)	TP56.31x38.4888x0.3125	52.63	0.00	0.0	52.9967	-37.62	3100.31	0.012
L4	45.21 - 0 (3)	TP71x53.1183x0.375	52.79	0.00	0.0	84.0614	-58.24	4784.64	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	149 - 135.04 (1)	TP26.77x22x0.1875	52.97	522.10	0.101	0.00	522.10	0.000
L2	135.04 - 92.17 (2)	TP40.91x25.0556x0.25	785.42	1548.18	0.507	0.00	1548.18	0.000
L3	92.17 - 45.21 (3)	TP56.31x38.4888x0.3125	2122.49	3509.52	0.605	0.00	3509.52	0.000
L4	45.21 - 0 (4)	TP71x53.1183x0.375	4007.27	6966.27	0.575	0.00	6966.27	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	149 - 135.04 (1)	TP26.77x22x0.1875	6.22	263.65	0.024	0.00	582.84	0.000
L2	135.04 - 92.17 (2)	TP40.91x25.0556x0.25	27.08	529.72	0.051	1.07	1830.19	0.001
L3	92.17 - 45.21 (3)	TP56.31x38.4888x0.3125	32.39	930.09	0.035	1.06	4352.08	0.000
L4	45.21 - 0 (4)	TP71x53.1183x0.375	38.85	1475.28	0.026	1.06	9124.58	0.000

Pole Interaction Design Data

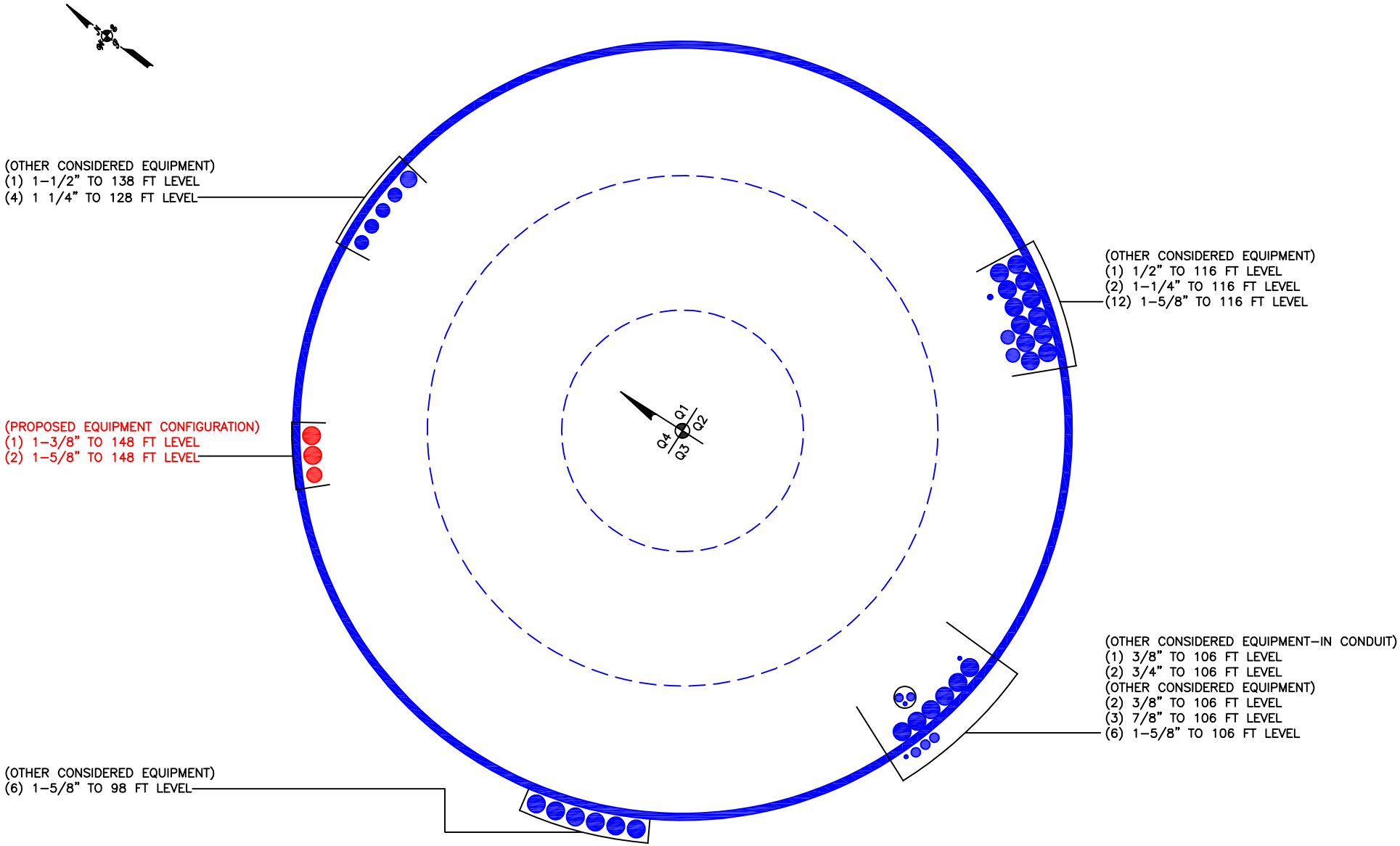
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149 - 135.04 (1)	0.006	0.101	0.000	0.024	0.000	0.108	1.050	4.8.2
L2	135.04 - 92.17 (2)	0.014	0.507	0.000	0.051	0.001	0.524	1.050	4.8.2
L3	92.17 - 45.21 (3)	0.012	0.605	0.000	0.035	0.000	0.618	1.050	4.8.2
L4	45.21 - 0 (4)	0.012	0.575	0.000	0.026	0.000	0.588	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	149 - 135.04	Pole	TP26.77x22x0.1875	1	-5.06	922.77	10.3	Pass
L2	135.04 - 92.17	Pole	TP40.91x25.0556x0.25	2	-26.02	1888.15	49.9	Pass
L3	92.17 - 45.21	Pole	TP56.31x38.4888x0.3125	3	-37.62	3255.33	58.9	Pass
L4	45.21 - 0	Pole	TP71x53.1183x0.375	4	-58.24	5023.87	56.0	Pass
							Summary	
						Pole (L3)	58.9	Pass
						RATING =	**58.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(OTHER CONSIDERED EQUIPMENT)
(1) 1-1/2" TO 138 FT LEVEL
(4) 1 1/4" TO 128 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(1) 1/2" TO 116 FT LEVEL
(2) 1-1/4" TO 116 FT LEVEL
(12) 1-5/8" TO 116 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(1) 1-3/8" TO 148 FT LEVEL
(2) 1-5/8" TO 148 FT LEVEL
Q1
Q2
Q3
Q4
(OTHER CONSIDERED EQUIPMENT-IN CONDUIT)
(1) 3/8" TO 106 FT LEVEL
(2) 3/4" TO 106 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(2) 3/8" TO 106 FT LEVEL
(3) 7/8" TO 106 FT LEVEL
(6) 1-5/8" TO 106 FT LEVEL
(OTHER CONSIDERED EQUIPMENT)
(6) 1-5/8" TO 98 FT LEVEL

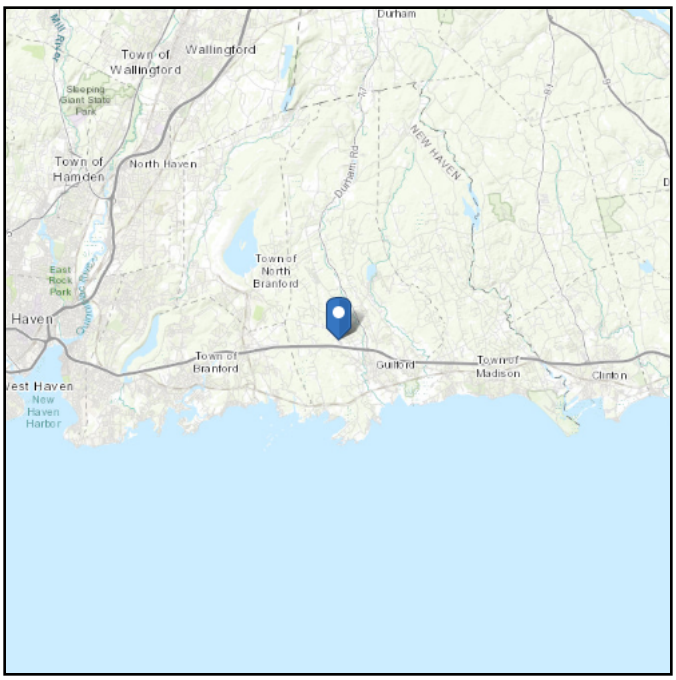
APPENDIX C

ADDITIONAL CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Elevation:**	70.13 ft (NAVD 88)
Risk Category:	II	**Latitude:**	41.300353
Soil Class:	D - Default (see Section 11.4.3)	**Longitude:**	-72.708092



Wind

Results:

Wind Speed:	122 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	93 Vmph
100-year MRI	100 Vmph

Data Source:	ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed:	Thu Oct 28 2021

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

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

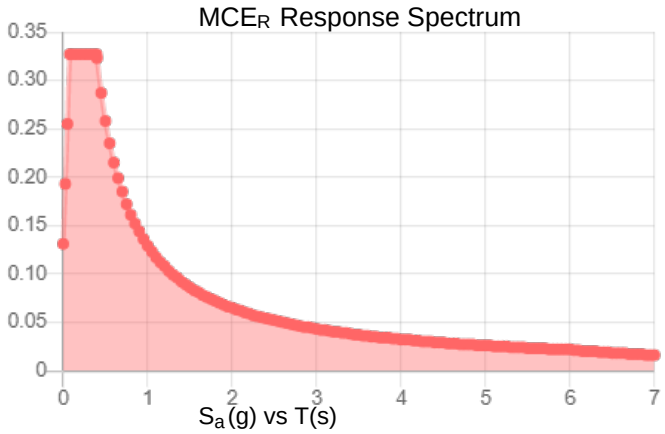
Seismic

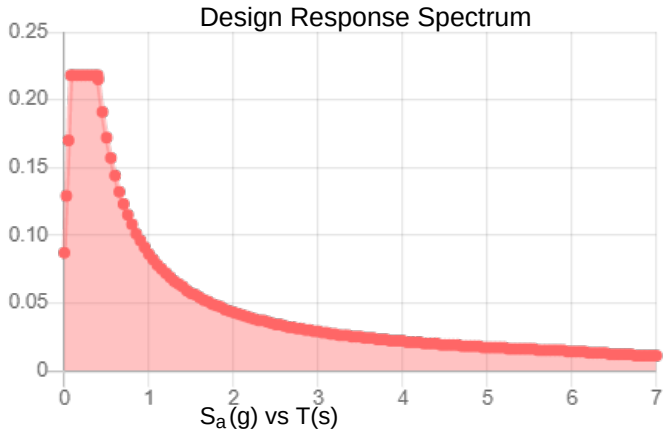
Site Soil Class: D - Default (see Section 11.4.3)

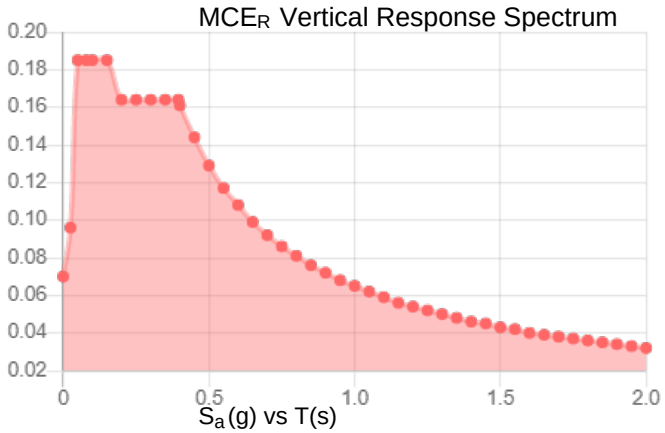
Results:

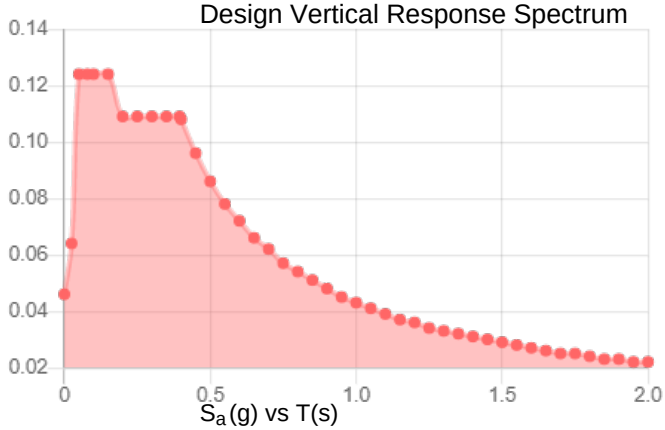
S_S :	0.204	S_{D1} :	0.086
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.114
F_v :	2.4	PGA_M :	0.18
S_{MS} :	0.327	F_{PGA} :	1.571
S_{M1} :	0.129	I_e :	1
S_{DS} :	0.218	C_v :	0.709

Seismic Design Category B









Data Accessed: Thu Oct 28 2021

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

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Thu Oct 28 2021

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

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

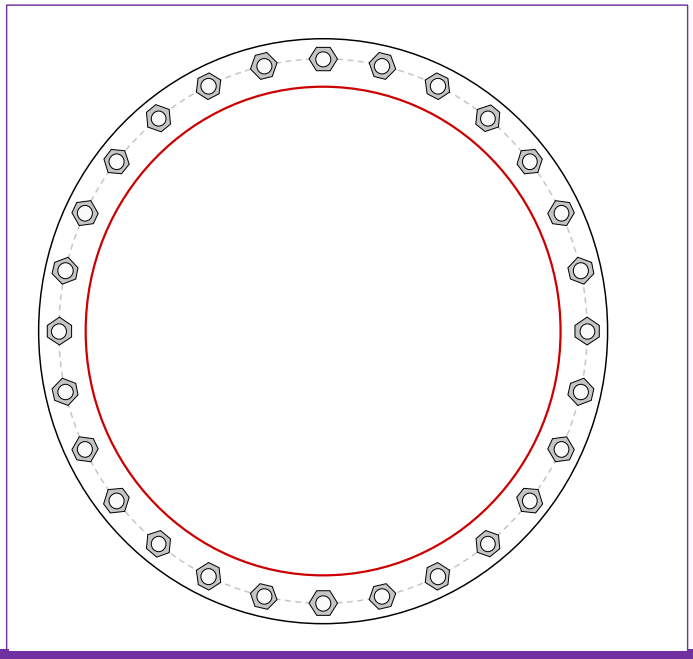
Monopole Base Plate Connection

Site Info	
BU #	876343
Site Name	ford West Stone Prop
Order #	587434 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1.3125

Applied Loads	
Moment (kip-ft)	4007.00
Axial Force (kips)	58.00
Shear Force (kips)	39.00

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(28) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 79" BC

Base Plate Data

85" OD x 2.75" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Stiffener Data

N/A

Pole Data

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

Analysis Results

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

Pu_t = 84.85	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.39	ϕVn = 149.1	**33.2%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	14.71	(Flexural)
Allowable Stress (ksi):	45	
Stress Rating:	**31.1%**	**Pass**

Pier and Pad Foundation

BU # :	876343
Site Name:	Guilford West Ston
App. Number:	587434 Rev. 0

TIA-222 Revision:	H
Tower Type:	Monopole

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

Superstructure Analysis Reactions		
Compression, P_{comp}:	58	kips
Base Shear, Vu_comp:	39	kips
Moment, M_u:	4007	ft-kips
Tower Height, **H**:	149	ft
BP Dist. Above Fdn, bp_{dist}:	3.5625	in

Pier Properties		
Pier Shape:	Square	
Pier Diameter, **dpier**:	8.5	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	9	
Pier Rebar Quantity, **mc**:	48	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	20	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties		
Depth, **D**:	12	ft
Pad Width, W_1:	30	ft
Pad Thickness, **T**:	3	ft
Pad Rebar Size (Top dir.2), Sp_{top2}:	8	
Pad Rebar Quantity (Top dir. 2), mp_{top2}:	34	
Pad Rebar Size (Bottom dir. 2), Sp_2:	8	
Pad Rebar Quantity (Bottom dir. 2), mp_2:	58	
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:	120	pcf
Ultimate Net Bearing, Qnet:	21.330	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:	50	
Base Friction, μ:	0.5	
Neglected Depth, **N**:	4.25	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)	818.66	39.00	**4.5%**	**Pass**
Bearing Pressure (ksf)	17.08	3.36	**18.8%**	**Pass**
*Overturning (kip*ft)*	17567.11	4525.58	**25.8%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	9587.26	4397.00	**43.7%**	**Pass**
Pier Compression (kip)	45985.68	188.05	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	6263.43	1508.68	**22.9%**	**Pass**
Pad Shear - 1-way (kips)	1075.81	204.32	**18.1%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.038	**19.1%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	5814.50	2638.20	**43.2%**	**Pass**

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

Structural Rating*:	**43.7%**
Soil Rating*:	**25.8%**

Date: **October 25, 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 Anchor**	
	Carrier Site Number:	CT11027D
	Carrier Site Name:	CT027/Sprint Guilford
Crown Castle Designation:	**Crown Castle BU Number:**	876343
	Crown Castle Site Name:	Guilford West Stone Property
	Crown Castle JDE Job Number:	687452
	Crown Castle Order Number:	587434 Rev. 0
Engineering Firm Designation:	**Trylon Report Designation:**	194374
Site Data:	**1919 Boston Post Rd., Guilford, New Haven County, CT, 06437** **Latitude 41°18'1.27" Longitude -72°42'29.13"**	
Structure Information:	**Tower Height & Type:**	**149.0 ft Monopole**
	Mount Elevation:	**148.0 ft**
	Mount Type:	**12.5 ft Sector Frame**

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:

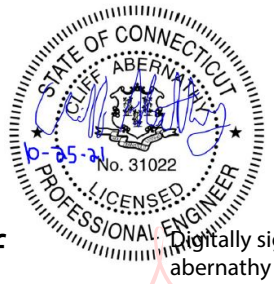
Sector Frame **Sufficient***

***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 130 mph as required by the 2018 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Ioana Gurgu

Respectfully Submitted by:
Cliff Abernathy, P.E.



cliff abernathy

Digitally signed by cliff abernathy
Date: 2021.10.25 21:11:58 -04'00'

TABLE OF CONTENTS

1) INTRODUCTION

This is a proposed 3 sector 12.5 ft Sector Frame**,** designed by Site Pro 1.

2) ANALYSIS CRITERIA

Building Code:	2015 IBC
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	130 mph
Exposure Category:	C
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:	0.176
Seismic S_1:	0.061
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
148.0	148.0	3	Commscope	VV-65A-R1_TMO	12.5 ft Sector Frame **[Site Pro 1, VFA12-HD with MSFAA kit]**
		3	Ericsson	AIR6449 B41_T-MOBILE	
		3	Rfs/Celwave	APXVAARR24_43-U-NA20	
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE	
		3	Ericsson	RADIO 4460 B2/B25 B66_TMO	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Crown Application	T-Mobile Application	587434, Rev.0	CCI Sites
Mount Manufacturer Drawings	Site Pro1	VFA12-HD	Trylon
Monopole Sector Frame Attachment Assembly	Site Pro1	MSFAA	Trylon
Structural Analysis Report	Tower Engineering Professionals	9833383	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 (Sector Frame, All Sectors)

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,2,3	Mount Pipe(s)	MP2	148.0	41.9	Pass
	Horizontal(s)	M126		54.9	Pass
	Standoff(s)	M130		23.4	Pass
	Bracing(s)	M110		9.2	Pass
	Vertical(s)	M141		7.4	Pass
	Plate(s)	M123		53.1	Pass
	Tieback(s)	M171A		8.0	Pass
	Mount Connection(s)	-		27.7	Pass

Structure Rating (max from all components) =	54.9%

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

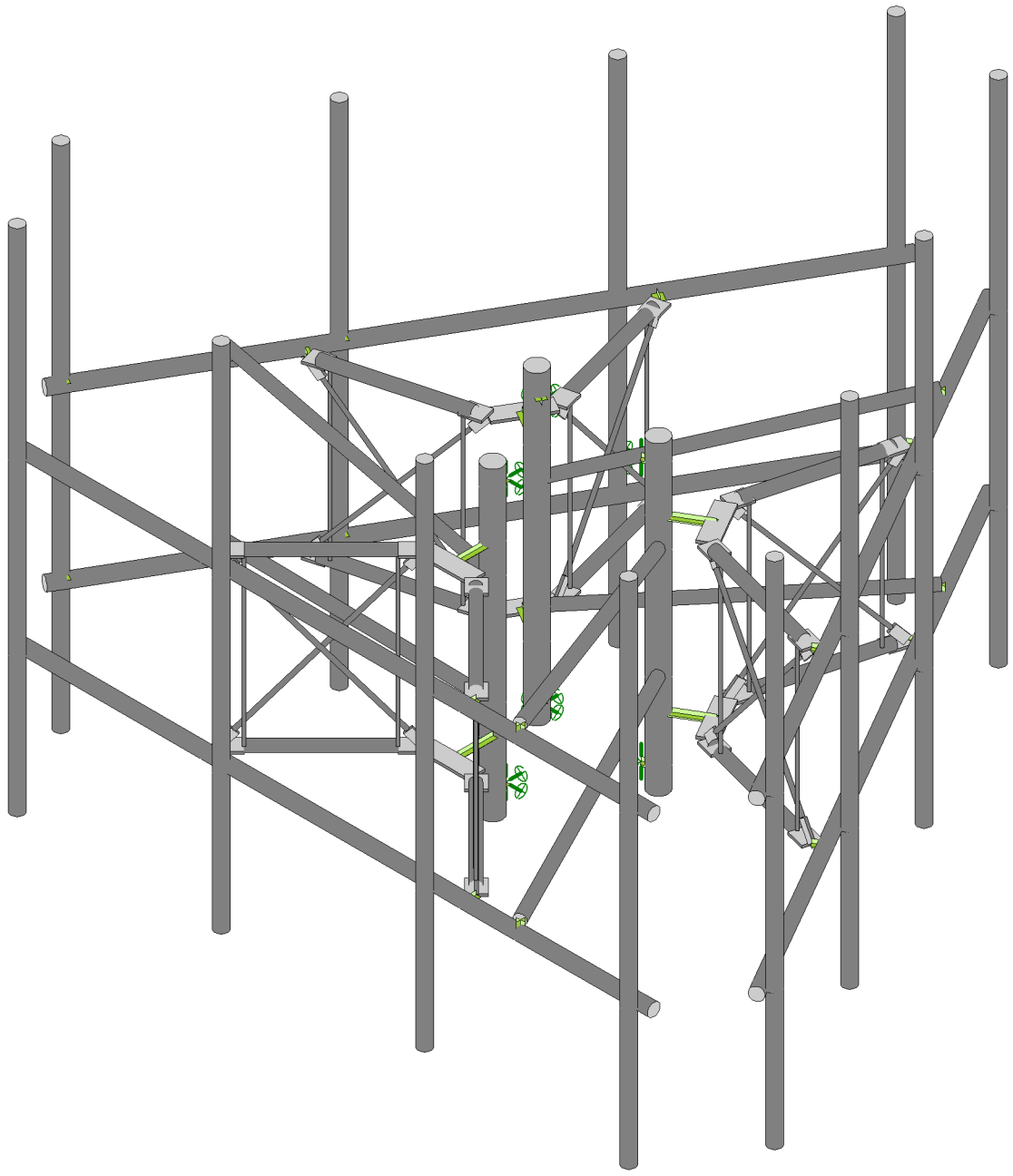
The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the proposed mount listed below must be installed.

1. Site Pro 1, VFA12-HD with MSFAA assembly
2. Install 2.875" O.D., Sch.40, 10-ft. long antenna pipes.
3. Install the tiebacks as recommended in manufacturer's drawings (Tie-Back Position 3) connecting them to the MSFAA kit.

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

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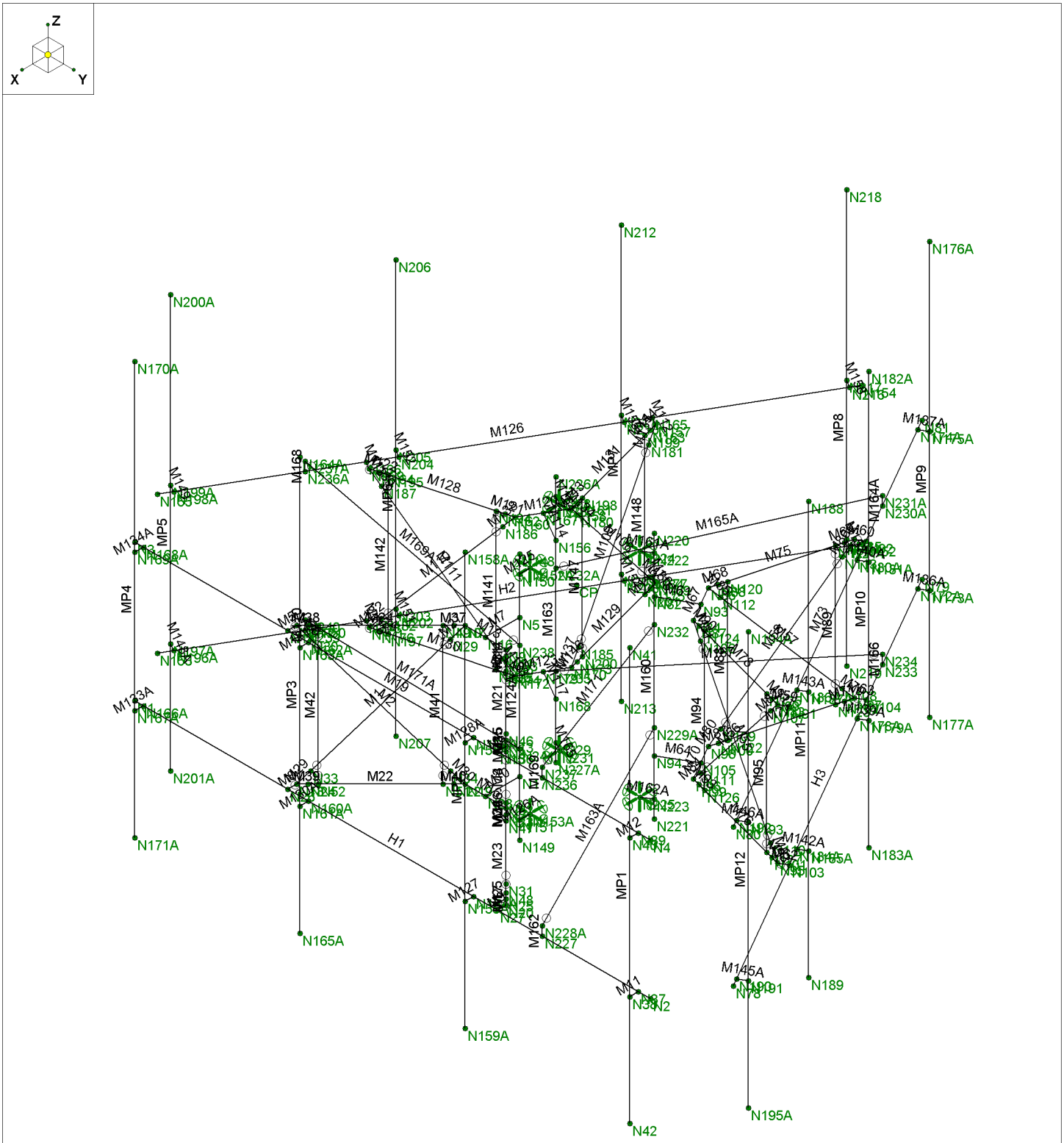

Envelope Only Solution

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APPENDIX B

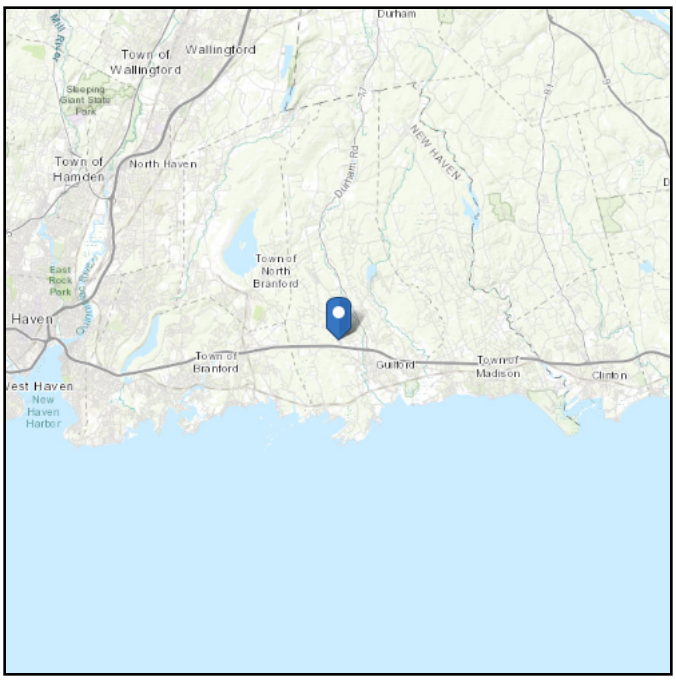
SOFTWARE INPUT CALCULATIONS

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 70.13 ft (NAVD 88)
Latitude: 41.300353
Longitude: -72.708092



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: Thu Oct 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.

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

TIA LOAD CALCULATOR 2.1

PROJECT DATA	
Job Code:	194374
Carrier Site ID:	CT11027D
Carrier Site Name:	CT027/Sprint Guilford

CODES AND STANDARDS	
Building Code:	2015 IBC
Local Building Code:	Connecticut State Building
Design Standard:	TIA-222-H

STRUCTURE DETAILS		
Mount Type:	Sector Frame	--
Mount Elevation:	148.0	ft.
Number of Sectors:	3	--
Structure Type:	Monopole	--
Structure Height:	149.0	ft.

ANALYSIS CRITERIA		
Structure Risk Category:	II	--
Exposure Category:	C	--
Site Class:	D - Stiff Soil	--
Ground Elevation:	70.13	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:	130	mph
Wind Escalation Factor (K_s):	1.00	--
Velocity Coefficient (K_z):	1.37	--
Directionality Factor (K_d):	0.95	--
Gust Effect Factor (Gh):	1.00	--
Shielding Factor (K_a):	0.90	--
Velocity Pressure (q_z):	56.35	psf
Ground Elevation Factor (K_e):	1.00	--

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}):	56.35	psf
Mount Ice Thickness (t_{iz}):	1.74	in

WIND STRUCTURE CALCULATIONS		
Flat Member Pressure:	101.43	psf
Round Member Pressure:	60.86	psf
Ice Wind Pressure:	7.61	psf

SEISMIC PARAMETERS		
Importance Factor (I_e):	1.00	--
Short Period Accel .(S_s):	0.176	g
1 Second Accel (S_1):	0.061	g
Short Period Des. (S_{DS}):	0.19	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):	0.09	--
Amplification Factor (A_S):	1.20	--

LOAD COMBINATIONS [LRFD]

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

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

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

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

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

EQUIPMENT LOADING

Appurtenance Name	Qty.	Elevation [ft]	--	EPA $_N$ (ft2)	EPA $_T$ (ft2)	Weight (lbs)
VV-65A-R1_TMO	3	148	No Ice	5.89	2.73	33.30
--	--	--	w/ Ice	6.80	3.59	138.26
AIR6449 B41_T-MOBILE	3	148	No Ice	5.27	2.03	114.63
--	--	--	w/ Ice	6.63	3.10	154.29
APXVAARR24_43-U-NA20	3	148	No Ice	14.67	5.32	128.00
--	--	--	w/ Ice	17.04	7.41	429.84
RADIO 4449B71 B85A_T-MOBILE	3	148	No Ice	1.97	1.59	73.21
--	--	--	w/ Ice	2.40	1.99	81.87
RADIO 4460B2/B25 B66_TMO	3	148	No Ice	2.14	1.69	109.00
--	--	--	w/ Ice	2.58	2.09	90.85
			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	*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]
VV-65A-R1_TMO	3	148	1.00	1.37	0.95	1.74	56.35	8.34
AIR6449 B41_T-MOBILE	3	148	1.00	1.37	0.95	1.74	56.35	8.34
APXVAARR24_43-U-NA20	3	148	1.00	1.37	0.95	1.74	56.35	8.34
IO 4449B71 B85A_T-MOB	3	148	1.00	1.37	0.95	1.74	56.35	8.34
DIO 4460B2/B25 B66_TM	3	148	1.00	1.37	0.95	1.74	56.35	8.34

EQUIPMENT LATERAL WIND FORCE CALCULATIONS

Appurtenance Name	*Qty.*	*--*	*0° 180°*	*30° 210°*	*60° 240°*	*90° 270°*	*120° 300°*	*150° 330°*
VV-65A-R1_TMO	3	No Ice	298.56	178.53	258.55	138.51	258.55	178.53
--	--	w/ Ice	51.03	32.96	45.01	26.94	45.01	32.96
AIR6449 B41_T-MOBILE	3	No Ice	267.27	144.03	226.19	102.95	226.19	144.03
--	--	w/ Ice	49.77	29.88	43.14	23.25	43.14	29.88
APXVAARR24_43-U-NA20	3	No Ice	743.99	388.35	625.44	269.80	625.44	388.35
--	--	w/ Ice	127.82	73.62	109.75	55.56	109.75	73.62
ADIO 4449B71 B85A_T-MOBILE	3	No Ice	99.91	85.32	95.05	80.46	95.05	85.32
--	--	w/ Ice	18.04	15.71	17.26	14.93	17.26	15.71
RADIO 4460B2/B25 B66_TMO	3	No Ice	108.49	91.25	102.74	85.50	102.74	91.25
--	--	w/ Ice	19.39	16.62	18.47	15.70	18.47	16.62
		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						
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		No Ice						
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		No Ice						
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		No Ice						
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		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						
		No Ice						
--	--	w/ Ice						

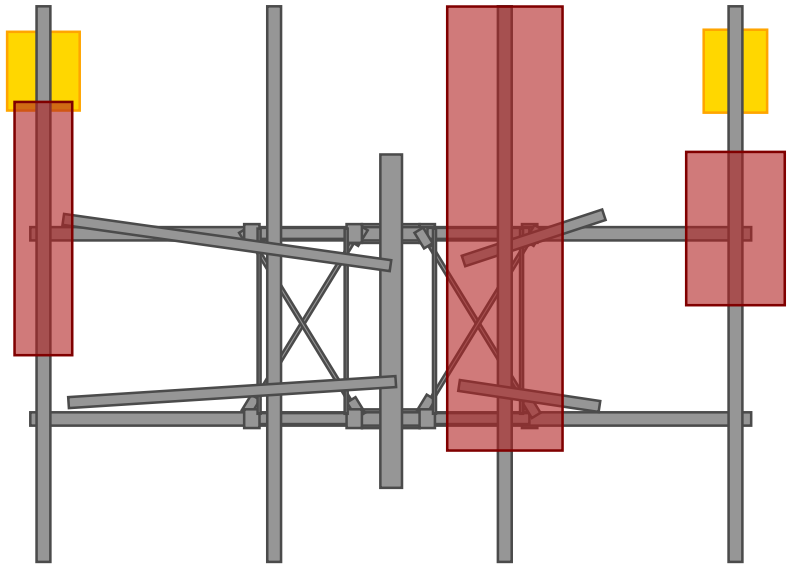
EQUIPMENT LATERAL WIND FORCE CALCULATIONS [CONT.]

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]
VV-65A-R1_TMO	3	148	33.3	3.75
AIR6449 B41_T-MOBILE	3	148	114.63	12.91
APXVAARR24_43-U-NA20	3	148	128	14.42
RADIO 4449B71 B85A_T-MOBILE	3	148	73.21	8.25
RADIO 4460B2/B25 B66_TMO	3	148	109	12.28

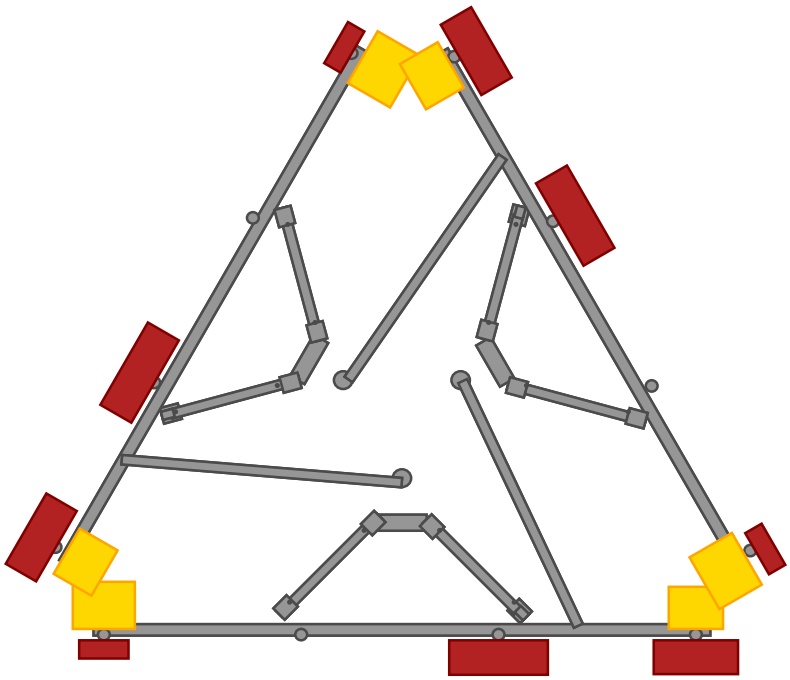
ELEVATION VIEW



MP4 MP3 MP2 MP1

*Elevation View Shows Alpha Sector Only

PLAN VIEW



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

Equipment Name	Total Quantity	Antenna Centerline	Mount Pipe Positions	Equipment Azimuths
VV-65A-R1_TMO	3	148	MP4/MP8/MP12	0/120/240
AIR6449 B41_T-MOBILE	3	148	MP1/MP5/MP9	0/120/240
APXVAARR24_43-U-NA20	3	148	MP2/MP6/MP10	0/120/240
RADIO 4449B71 B85A_T-MOBILE	3	148	MP1/MP5/MP9	0/120/240
RADIO 4460B2/B25 B66_TMO	3	148	MP4/MP8/MP12	0/120/240

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

Hot Rolled Steel Properties

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

Cold Formed Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE_2.0	PIPE_2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
2	PIPE_2.5	PIPE_2.5	Beam	Pipe	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
3	SR 3/4	SR 3/4	Beam	BAR	A36 Gr.36	Typical	.442	.016	.016	.031
4	PL 4"x0.625"	PL 4"x0.625"	Beam	RECT	A36 Gr.36	Typical	2.5	.081	3.333	.293
5	SR 5/8	SR 5/8	Beam	BAR	A36 Gr.36	Typical	.307	.007	.007	.015
6	PL 2"x0.625"	PL 2"x0.625"	Beam	RECT	A36 Gr.36	Typical	1.25	.041	.417	.131
7	PIPE_4.0	PIPE_4.0	Beam	Pipe	A53 Gr.B	Typical	2.96	6.82	6.82	13.6

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1	162T125-18	Beam	None	A653 SS Gr33	Typical	.078	.013	.042	9e-6

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	N5						
2	N17						
3	N82						
4	N94						
5	N156						
6	N168						
7	N148						
8	N149						
9	N150						
10	N151						
11	N152A	Reaction	Reaction	Reaction	Reaction	Reaction	
12	N153A	Reaction	Reaction	Reaction	Reaction	Reaction	
13	N220						
14	N221						
15	N222						
16	N223						
17	N224	Reaction	Reaction	Reaction	Reaction	Reaction	
18	N225	Reaction	Reaction	Reaction	Reaction	Reaction	
19	N226A						
20	N227A						
21	N228						
22	N229						
23	N230	Reaction	Reaction	Reaction	Reaction	Reaction	
24	N231	Reaction	Reaction	Reaction	Reaction	Reaction	
25	N232						
26	N229A						
27	N232A						
28	N235						
29	N238						
30	N241						

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL			-1		24			
2	Structure Wind X	WLX						171		
3	Structure Wind Y	WLY						171		
4	Wind Load 0 AZI	WLX					48			
5	Wind Load 30 AZI	None					48			
6	Wind Load 45 AZI	None					48			
7	Wind Load 60 AZI	None					48			
8	Wind Load 90 AZI	WLY					48			
9	Wind Load 120 AZI	None					48			
10	Wind Load 135 AZI	None					48			
11	Wind Load 150 AZI	None					48			

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
12	Ice Weight	OL1					24	171		
13	Ice Structure Wind X	OL2						171		
14	Ice Structure Wind Y	OL3						171		
15	Ice Wind Load 0 AZI	OL2					48			
16	Ice Wind Load 30 AZI	None					48			
17	Ice Wind Load 45 AZI	None					48			
18	Ice Wind Load 60 AZI	None					48			
19	Ice Wind Load 90 AZI	OL3					48			
20	Ice Wind Load 120 AZI	None					48			
21	Ice Wind Load 135 AZI	None					48			
22	Ice Wind Load 150 AZI	None					48			
23	Seismic Load X	ELX	-.113				24			
24	Seismic Load Y	ELY		-.113			24			
25	Live Load 1 (Lv)	None					1			
26	Live Load 2 (Lv)	None					1			
27	Live Load 3 (Lv)	None					1			
28	Live Load 4 (Lv)	None					1			
29	Live Load 5 (Lv)	None					1			
30	Live Load 6 (Lv)	None					1			
31	Live Load 7 (Lv)	None					1			
32	Live Load 8 (Lv)	None					1			
33	Live Load 9 (Lv)	None					1			
34	Maintenance Load 1 (...	None					1			
35	Maintenance Load 2 (...	None					1			
36	Maintenance Load 3 (...	None					1			
37	Maintenance Load 4 (...	None					1			
38	Maintenance Load 5 (...	None					1			
39	Maintenance Load 6 (...	None					1			
40	Maintenance Load 7 (...	None					1			
41	Maintenance Load 8 (...	None					1			
42	Maintenance Load 9 (...	None					1			
43	Maintenance Load 10 ...	None					1			
44	Maintenance Load 11 ...	None					1			
45	Maintenance Load 12 ...	None					1			

Load Combinations

	Description	Sol...	PD...	SR...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.4DL	Yes	Y		DL	1.4																				
2	1.2DL + 1...	Yes	Y		DL	1.2	2	1	3		4	1														
3	1.2DL + 1...	Yes	Y		DL	1.2	2	.866	3	.5	5	1														
4	1.2DL + 1...	Yes	Y		DL	1.2	2	.707	3	.707	6	1														
5	1.2DL + 1...	Yes	Y		DL	1.2	2	.5	3	.866	7	1														
6	1.2DL + 1...	Yes	Y		DL	1.2	2		3	1	8	1														
7	1.2DL + 1...	Yes	Y		DL	1.2	2	-.5	3	.866	9	1														
8	1.2DL + 1...	Yes	Y		DL	1.2	2	-.707	3	.707	10	1														
9	1.2DL + 1...	Yes	Y		DL	1.2	2	-.866	3	.5	11	1														
10	1.2DL + 1...	Yes	Y		DL	1.2	2	-1	3		4	-1														
11	1.2DL + 1...	Yes	Y		DL	1.2	2	-.866	3	-.5	5	-1														
12	1.2DL + 1...	Yes	Y		DL	1.2	2	-.707	3	-.707	6	-1														
13	1.2DL + 1...	Yes	Y		DL	1.2	2	-.5	3	-.866	7	-1														

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
14	1.2DL + 1...	Yes	Y		DL	1.2	2		3	-1	8	-1														
15	1.2DL + 1...	Yes	Y		DL	1.2	2	.5	3	-.866	9	-1														
16	1.2DL + 1...	Yes	Y		DL	1.2	2	.707	3	-.707	10	-1														
17	1.2DL + 1...	Yes	Y		DL	1.2	2	.866	3	-.5	11	-1														
18	0.9DL + 1...	Yes	Y		DL	.9	2	1	3		4	1														
19	0.9DL + 1...	Yes	Y		DL	.9	2	.866	3	.5	5	1														
20	0.9DL + 1...	Yes	Y		DL	.9	2	.707	3	.707	6	1														
21	0.9DL + 1...	Yes	Y		DL	.9	2	.5	3	.866	7	1														
22	0.9DL + 1...	Yes	Y		DL	.9	2		3	1	8	1														
23	0.9DL + 1...	Yes	Y		DL	.9	2	-.5	3	.866	9	1														
24	0.9DL + 1...	Yes	Y		DL	.9	2	-.707	3	.707	10	1														
25	0.9DL + 1...	Yes	Y		DL	.9	2	-.866	3	.5	11	1														
26	0.9DL + 1...	Yes	Y		DL	.9	2	-1	3		4	-1														
27	0.9DL + 1...	Yes	Y		DL	.9	2	-.866	3	-.5	5	-1														
28	0.9DL + 1...	Yes	Y		DL	.9	2	-.707	3	-.707	6	-1														
29	0.9DL + 1...	Yes	Y		DL	.9	2	-.5	3	-.866	7	-1														
30	0.9DL + 1...	Yes	Y		DL	.9	2		3	-1	8	-1														
31	0.9DL + 1...	Yes	Y		DL	.9	2	.5	3	-.866	9	-1														
32	0.9DL + 1...	Yes	Y		DL	.9	2	.707	3	-.707	10	-1														
33	0.9DL + 1...	Yes	Y		DL	.9	2	.866	3	-.5	11	-1														
34	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	1	14		15	1												
35	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.866	14	.5	16	1												
36	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.707	14	.707	17	1												
37	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.5	14	.866	18	1												
38	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13		14	1	19	1												
39	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	.866	20	1												
40	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	.707	21	1												
41	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	.5	22	1												
42	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-1	14		15	-1												
43	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.866	14	-.5	16	-1												
44	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.707	14	-.707	17	-1												
45	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	-.5	14	-.866	18	-1												
46	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13		14	-1	19	-1												
47	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.5	14	-.866	20	-1												
48	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.707	14	-.707	21	-1												
49	1.2DL + 1...	Yes	Y		DL	1.2	OL1	1	13	.866	14	-.5	22	-1												
50	(1.2+0.2S...	Yes	Y		DL	1.238	23	1	24																	
51	(1.2+0.2S...	Yes	Y		DL	1.238	23	.866	24	.5																
52	(1.2+0.2S...	Yes	Y		DL	1.238	23	.707	24	.707																
53	(1.2+0.2S...	Yes	Y		DL	1.238	23	.5	24	.866																
54	(1.2+0.2S...	Yes	Y		DL	1.238	23		24	1																
55	(1.2+0.2S...	Yes	Y		DL	1.238	23	-.5	24	.866																
56	(1.2+0.2S...	Yes	Y		DL	1.238	23	-.707	24	.707																
57	(1.2+0.2S...	Yes	Y		DL	1.238	23	-.866	24	.5																
58	(1.2+0.2S...	Yes	Y		DL	1.238	23	-1	24																	
59	(1.2+0.2S...	Yes	Y		DL	1.238	23	-.866	24	-.5																
60	(1.2+0.2S...	Yes	Y		DL	1.238	23	-.707	24	-.707																
61	(1.2+0.2S...	Yes	Y		DL	1.238	23	-.5	24	-.866																
62	(1.2+0.2S...	Yes	Y		DL	1.238	23		24	-1																
63	(1.2+0.2S...	Yes	Y		DL	1.238	23	.5	24	-.866																
64	(1.2+0.2S...	Yes	Y		DL	1.238	23	.707	24	-.707																
65	(1.2+0.2S...	Yes	Y		DL	1.238	23	.866	24	-.5																

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
66	(0.9-0.2Sd..	Yes	Y		DL	.862	23	1	24																	
67	(0.9-0.2Sd..	Yes	Y		DL	.862	23	.866	24	.5																
68	(0.9-0.2Sd..	Yes	Y		DL	.862	23	.707	24	.707																
69	(0.9-0.2Sd..	Yes	Y		DL	.862	23	.5	24	.866																
70	(0.9-0.2Sd..	Yes	Y		DL	.862	23		24	1																
71	(0.9-0.2Sd..	Yes	Y		DL	.862	23	-.5	24	.866																
72	(0.9-0.2Sd..	Yes	Y		DL	.862	23	-.707	24	.707																
73	(0.9-0.2Sd..	Yes	Y		DL	.862	23	-.866	24	.5																
74	(0.9-0.2Sd..	Yes	Y		DL	.862	23	-1	24																	
75	(0.9-0.2Sd..	Yes	Y		DL	.862	23	-.866	24	-.5																
76	(0.9-0.2Sd..	Yes	Y		DL	.862	23	-.707	24	-.707																
77	(0.9-0.2Sd..	Yes	Y		DL	.862	23	-.5	24	-.866																
78	(0.9-0.2Sd..	Yes	Y		DL	.862	23		24	-1																
79	(0.9-0.2Sd..	Yes	Y		DL	.862	23	.5	24	-.866																
80	(0.9-0.2Sd..	Yes	Y		DL	.862	23	.707	24	-.707																
81	(0.9-0.2Sd..	Yes	Y		DL	.862	23	.866	24	-.5																
82	1.2DL + 1...	Yes	Y		DL	1.2	25	1.5																		
83	1.2DL + 1...	Yes	Y		DL	1.2	26	1.5																		
84	1.2DL + 1...	Yes	Y		DL	1.2	27	1.5																		
85	1.2DL + 1...	Yes	Y		DL	1.2	28	1.5																		
86	1.2DL + 1...	Yes	Y		DL	1.2	29	1.5																		
87	1.2DL + 1...	Yes	Y		DL	1.2	30	1.5																		
88	1.2DL + 1...	Yes	Y		DL	1.2	31	1.5																		
89	1.2DL + 1...	Yes	Y		DL	1.2	32	1.5																		
90	1.2DL + 1...	Yes	Y		DL	1.2	33	1.5																		
91	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.053	3		4	.053												
92	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.046	3	.027	5	.053												
93	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.038	3	.038	6	.053												
94	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.027	3	.046	7	.053												
95	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2		3	.053	8	.053												
96	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.027	3	.046	9	.053												
97	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.038	3	.038	10	.053												
98	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	.027	11	.053												
99	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.053	3		4	-.053												
100	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.046	3	-.027	5	-.053												
101	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.038	3	-.038	6	-.053												
102	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	-.027	3	-.046	7	-.053												
103	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2		3	-.053	8	-.053												
104	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.027	3	-.046	9	-.053												
105	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.038	3	-.038	10	-.053												
106	1.2DL + 1...	Yes	Y		DL	1.2	34	1.5	2	.046	3	-.027	11	-.053												
107	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.053	3		4	.053												
108	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.046	3	.027	5	.053												
109	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.038	3	.038	6	.053												
110	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.027	3	.046	7	.053												
111	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2		3	.053	8	.053												
112	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.027	3	.046	9	.053												
113	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.038	3	.038	10	.053												
114	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	.027	11	.053												
115	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.053	3		4	-.053												
116	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.046	3	-.027	5	-.053												
117	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.038	3	-.038	6	-.053												

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
118	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	-.027	3	-.046	7	-.053										
119	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2		3	-.053	8	-.053										
120	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.027	3	-.046	9	-.053										
121	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.038	3	-.038	10	-.053										
122	1.2DL + 1...	Yes	Y		DL	1.2	35	1.5	2	.046	3	-.027	11	-.053										
123	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.053	3		4	.053										
124	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.046	3	.027	5	.053										
125	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.038	3	.038	6	.053										
126	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.027	3	.046	7	.053										
127	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2		3	.053	8	.053										
128	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.027	3	.046	9	.053										
129	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.038	3	.038	10	.053										
130	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	.027	11	.053										
131	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.053	3		4	-.053										
132	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.046	3	-.027	5	-.053										
133	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.038	3	-.038	6	-.053										
134	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	-.027	3	-.046	7	-.053										
135	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2		3	-.053	8	-.053										
136	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.027	3	-.046	9	-.053										
137	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.038	3	-.038	10	-.053										
138	1.2DL + 1...	Yes	Y		DL	1.2	36	1.5	2	.046	3	-.027	11	-.053										
139	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	.053	3		4	.053										
140	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	.046	3	.027	5	.053										
141	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	.038	3	.038	6	.053										
142	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	.027	3	.046	7	.053										
143	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2		3	.053	8	.053										
144	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	-.027	3	.046	9	.053										
145	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	-.038	3	.038	10	.053										
146	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	.027	11	.053										
147	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	-.053	3		4	-.053										
148	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	-.046	3	-.027	5	-.053										
149	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	-.038	3	-.038	6	-.053										
150	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	-.027	3	-.046	7	-.053										
151	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2		3	-.053	8	-.053										
152	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	.027	3	-.046	9	-.053										
153	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	.038	3	-.038	10	-.053										
154	1.2DL + 1...	Yes	Y		DL	1.2	37	1.5	2	.046	3	-.027	11	-.053										
155	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	.053	3		4	.053										
156	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	.046	3	.027	5	.053										
157	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	.038	3	.038	6	.053										
158	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	.027	3	.046	7	.053										
159	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2		3	.053	8	.053										
160	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	-.027	3	.046	9	.053										
161	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	-.038	3	.038	10	.053										
162	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	.027	11	.053										
163	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	-.053	3		4	-.053										
164	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	-.046	3	-.027	5	-.053										
165	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	-.038	3	-.038	6	-.053										
166	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	-.027	3	-.046	7	-.053										
167	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2		3	-.053	8	-.053										
168	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	.027	3	-.046	9	-.053										
169	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	.038	3	-.038	10	-.053										

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
170	1.2DL + 1...	Yes	Y		DL	1.2	38	1.5	2	.046	3	-.027	11	-.053												
171	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	.053	3		4	.053												
172	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	.046	3	.027	5	.053												
173	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	.038	3	.038	6	.053												
174	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	.027	3	.046	7	.053												
175	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2		3	.053	8	.053												
176	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	-.027	3	.046	9	.053												
177	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	-.038	3	.038	10	.053												
178	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	.027	11	.053												
179	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	-.053	3		4	-.053												
180	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	-.046	3	-.027	5	-.053												
181	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	-.038	3	-.038	6	-.053												
182	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	-.027	3	-.046	7	-.053												
183	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2		3	-.053	8	-.053												
184	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	.027	3	-.046	9	-.053												
185	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	.038	3	-.038	10	-.053												
186	1.2DL + 1...	Yes	Y		DL	1.2	39	1.5	2	.046	3	-.027	11	-.053												
187	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	.053	3		4	.053												
188	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	.046	3	.027	5	.053												
189	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	.038	3	.038	6	.053												
190	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	.027	3	.046	7	.053												
191	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2		3	.053	8	.053												
192	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	-.027	3	.046	9	.053												
193	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	-.038	3	.038	10	.053												
194	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	.027	11	.053												
195	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	-.053	3		4	-.053												
196	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	-.046	3	-.027	5	-.053												
197	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	-.038	3	-.038	6	-.053												
198	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	-.027	3	-.046	7	-.053												
199	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2		3	-.053	8	-.053												
200	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	.027	3	-.046	9	-.053												
201	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	.038	3	-.038	10	-.053												
202	1.2DL + 1...	Yes	Y		DL	1.2	40	1.5	2	.046	3	-.027	11	-.053												
203	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	.053	3		4	.053												
204	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	.046	3	.027	5	.053												
205	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	.038	3	.038	6	.053												
206	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	.027	3	.046	7	.053												
207	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2		3	.053	8	.053												
208	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	-.027	3	.046	9	.053												
209	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	-.038	3	.038	10	.053												
210	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	-.046	3	.027	11	.053												
211	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	-.053	3		4	-.053												
212	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	-.046	3	-.027	5	-.053												
213	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	-.038	3	-.038	6	-.053												
214	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	-.027	3	-.046	7	-.053												
215	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2		3	-.053	8	-.053												
216	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	.027	3	-.046	9	-.053												
217	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	.038	3	-.038	10	-.053												
218	1.2DL + 1...	Yes	Y		DL	1.2	41	1.5	2	.046	3	-.027	11	-.053												
219	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	.053	3		4	.053												
220	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	.046	3	.027	5	.053												
221	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	.038	3	.038	6	.053												

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
222	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	.027	3	.046	7	.053												
223	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2		3	.053	8	.053												
224	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	-.027	3	.046	9	.053												
225	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	-.038	3	.038	10	.053												
226	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	-.046	3	.027	11	.053												
227	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	-.053	3		4	-.053												
228	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	-.046	3	-.027	5	-.053												
229	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	-.038	3	-.038	6	-.053												
230	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	-.027	3	-.046	7	-.053												
231	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2		3	-.053	8	-.053												
232	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	.027	3	-.046	9	-.053												
233	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	.038	3	-.038	10	-.053												
234	1.2DL + 1...	Yes	Y		DL	1.2	42	1.5	2	.046	3	-.027	11	-.053												
235	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	.053	3		4	.053												
236	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	.046	3	.027	5	.053												
237	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	.038	3	.038	6	.053												
238	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	.027	3	.046	7	.053												
239	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2		3	.053	8	.053												
240	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	-.027	3	.046	9	.053												
241	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	-.038	3	.038	10	.053												
242	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	-.046	3	.027	11	.053												
243	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	-.053	3		4	-.053												
244	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	-.046	3	-.027	5	-.053												
245	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	-.038	3	-.038	6	-.053												
246	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	-.027	3	-.046	7	-.053												
247	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2		3	-.053	8	-.053												
248	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	.027	3	-.046	9	-.053												
249	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	.038	3	-.038	10	-.053												
250	1.2DL + 1...	Yes	Y		DL	1.2	43	1.5	2	.046	3	-.027	11	-.053												
251	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	.053	3		4	.053												
252	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	.046	3	.027	5	.053												
253	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	.038	3	.038	6	.053												
254	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	.027	3	.046	7	.053												
255	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2		3	.053	8	.053												
256	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	-.027	3	.046	9	.053												
257	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	-.038	3	.038	10	.053												
258	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	-.046	3	.027	11	.053												
259	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	-.053	3		4	-.053												
260	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	-.046	3	-.027	5	-.053												
261	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	-.038	3	-.038	6	-.053												
262	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	-.027	3	-.046	7	-.053												
263	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2		3	-.053	8	-.053												
264	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	.027	3	-.046	9	-.053												
265	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	.038	3	-.038	10	-.053												
266	1.2DL + 1...	Yes	Y		DL	1.2	44	1.5	2	.046	3	-.027	11	-.053												
267	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	.053	3		4	.053												
268	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	.046	3	.027	5	.053												
269	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	.038	3	.038	6	.053												
270	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	.027	3	.046	7	.053												
271	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2		3	.053	8	.053												
272	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	-.027	3	.046	9	.053												
273	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	-.038	3	.038	10	.053												

Load Combinations (Continued)

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
274	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	-.046	3	.027	11	.053												
275	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	-.053	3		4	-.053												
276	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	-.046	3	-.027	5	-.053												
277	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	-.038	3	-.038	6	-.053												
278	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	-.027	3	-.046	7	-.053												
279	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2		3	-.053	8	-.053												
280	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	.027	3	-.046	9	-.053												
281	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	.038	3	-.038	10	-.053												
282	1.2DL + 1...	Yes	Y		DL	1.2	45	1.5	2	.046	3	-.027	11	-.053												

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	N152A	max	1991.296	19	2546.215	20	1729.377	42	2088.587	19	1790.403	11	0	282
2		min	-3383.039	11	-2815.964	12	95.36	18	-2202.748	11	-1549.046	19	0	1
3	N153A	max	2521.762	36	1652.936	3	1673.685	36	1490.478	27	1291.761	3	0	282
4		min	-971.982	28	-1380.005	27	324.722	28	-1604.855	3	-994.409	27	0	1
5	N224	max	4061.837	17	512.677	24	1721.456	48	423.464	27	2520.14	25	0	282
6		min	-3129.245	25	-1867.428	48	111.684	24	-600.47	3	-2740.464	17	0	1
7	N225	max	1602.289	33	1878.705	43	1674.889	42	565.191	19	1719.787	33	0	282
8		min	-2568.67	9	-460.158	19	325.17	18	-757.844	12	-1966.574	9	0	1
9	N230	max	1447.942	14	4561.998	6	1727.63	37	2837.026	6	1197.796	22	0	282
10		min	-993.161	22	-3224.496	30	95.393	29	-2573.337	30	-1214.32	14	0	1
11	N231	max	562.831	26	1755.005	22	1679.383	47	2113.77	14	936.547	30	0	282
12		min	-1425.417	270	-3160.903	14	306.864	23	-1797.821	22	-990.591	6	0	1
13	Totals:	max	7122.377	2	6872.026	6	9845.101	43						
14		min	-7122.381	26	-6872.026	14	2691.816	66						

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

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[in]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
1	M126	PIPE_2.5	.577	104.687	15	.176	106.25		8	41048....	50715	3596.25	3596.25	1	H1-1b
2	M120	PL 4"x0.6...	.558	6	6	.126	6	y	6	76418....	81000	1054.6...	6750	1	H1-1b
3	M73	PIPE_2.5	.546	104.687	10	.177	117.187		5	41048....	50715	3596.25	3596.25	1	H1-1b
4	M19	PIPE_2.5	.540	104.688	4	.156	117.188		16	41048....	50715	3596.25	3596.25	1	H1-1b
5	M13	PL 4"x0.6...	.535	6	12	.123	6	y	12	76418....	81000	1054.6...	6750	1	H1-1b
6	M67	PL 4"x0.6...	.529	6	17	.123	6	y	17	76418....	81000	1054.6...	6750	1	H1-1b
7	H2	PIPE_2.5	.477	104.687	15	.197	106.25		6	41048....	50715	3596.25	3596.25	1	H1-1b
8	M123	PL 4"x0.6...	.471	6	47	.104	6	y	2..	76418....	81000	1054.6...	6750	1..	H1-1b
9	M70	PL 4"x0.6...	.467	6	42	.104	6	y	1..	76418....	81000	1054.6...	6750	1..	H1-1b
10	M16	PL 4"x0.6...	.463	6	36	.104	6	y	92	76418....	81000	1054.6...	6750	1..	H1-1b
11	H3	PIPE_2.5	.446	104.687	10	.185	106.25		2	41048....	50715	3596.25	3596.25	1	H1-1b
12	MP6	PIPE_2.5	.444	47.5	5	.046	48.75		6	22373....	50715	3596.25	3596.25	1	H1-1b
13	MP2	PIPE_2.5	.444	47.5	10	.045	48.75		11	22373....	50715	3596.25	3596.25	2..	H1-1b
14	MP10	PIPE_2.5	.444	47.5	15	.046	48.75		16	22373....	50715	3596.25	3596.25	1..	H1-1b
15	H1	PIPE_2.5	.442	104.688	4	.184	106.25		12	41048....	50715	3596.25	3596.25	1	H1-1b
16	M163	PIPE_4.0	.301	5.25	6	.246	5.25		6	83097....	93240	10631....	10631....	1	H1-1b
17	M124A	PIPE_4.0	.279	5.25	11	.229	5.25		11	83097....	93240	10631....	10631....	2..	H1-1b
18	M160	PIPE_4.0	.273	5.25	17	.226	5.25		17	83097....	93240	10631....	10631....	3..	H1-1b
19	MP12	PIPE_2.5	.254	87.5	213	.093	48.75		8	22373....	50715	3596.25	3596.25	1	H1-1b
20	MP4	PIPE_2.5	.254	87.5	143	.093	48.75		2	22373....	50715	3596.25	3596.25	2..	H1-1b

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

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[in]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
21	MP8	PIPE_2.5	.254	87.5	282	.093	48.75		13	22373....	50715	3596.25	3596.25	1	H1-1b
22	MP5	PIPE_2.5	.254	87.5	224	.086	48.75		6	22373....	50715	3596.25	3596.25	2..	H1-1b
23	MP9	PIPE_2.5	.254	87.5	155	.088	48.75		16	22373....	50715	3596.25	3596.25	3..	H1-1b
24	MP1	PIPE_2.5	.251	87.5	101	.084	48.75		10	30038....	50715	3596.25	3596.25	1	H1-1b
25	M128	PIPE_2.0	.246	2.188	7	.060	27.813		39	29810....	32130	1871.6...	1871.6...	1	H1-1b
26	M75	PIPE_2.0	.232	2.188	2	.059	27.813		34	29810....	32130	1871.6...	1871.6...	1	H1-1b
27	M130	PIPE_2.0	.227	2.188	14	.061	27.813		47	29810....	32130	1871.6...	1871.6...	1	H1-1b
28	M21	PIPE_2.0	.225	2.188	12	.059	27.813		44	29810....	32130	1871.6...	1871.6...	1	H1-1b
29	M77	PIPE_2.0	.211	2.188	10	.061	27.813		43	29810....	32130	1871.6...	1871.6...	1	H1-1b
30	M23	PIPE_2.0	.208	2.188	4	.060	27.813		37	29810....	32130	1871.6...	1871.6...	1	H1-1b
31	M71	PL 4"x0.6...	.198	4.512	168	.106	4.512	y	45	79311....	81000	1054.6...	6750	1	H1-1b
32	M17	PL 4"x0.6...	.198	4.512	99	.105	4.512	y	40	79311....	81000	1054.6...	6750	1	H1-1b
33	M124	PL 4"x0.6...	.198	4.512	222	.106	4.512	y	48	79311....	81000	1054.6...	6750	1	H1-1b
34	M15	PL 4"x0.6...	.196	4.512	105	.101	2.209	y	44	79311....	81000	1054.6...	6750	1..	H1-1b
35	M122	PL 4"x0.6...	.195	4.512	227	.102	4.512	y	39	79311....	81000	1054.6...	6750	1..	H1-1b
36	M69	PL 4"x0.6...	.195	4.512	158	.101	4.512	y	34	79311....	81000	1054.6...	6750	1..	H1-1b
37	M144	PL 4"x0.6...	.177	4.512	281	.080	2.209	y	2..	79311....	81000	1054.6...	6750	1	H1-1b
38	M91	PL 4"x0.6...	.177	4.512	212	.080	2.209	y	1..	79311....	81000	1054.6...	6750	1	H1-1b
39	M38	PL 4"x0.6...	.177	4.512	143	.080	2.209	y	1..	79311....	81000	1054.6...	6750	1	H1-1b
40	M39	PL 4"x0.6...	.175	4.512	145	.080	2.209	y	1..	79311....	81000	1054.6...	6750	1..	H1-1b
41	M145	PL 4"x0.6...	.175	4.512	268	.080	4.512	y	2..	79311....	81000	1054.6...	6750	1..	H1-1b
42	M92	PL 4"x0.6...	.175	4.512	215	.080	4.512	y	1..	79311....	81000	1054.6...	6750	1..	H1-1b
43	MP11	PIPE_2.5	.169	48.75	16	.046	48.75		17	22373....	50715	3596.25	3596.25	2..	H1-1b
44	MP7	PIPE_2.5	.168	48.75	5	.046	48.75		6	22373....	50715	3596.25	3596.25	1	H1-1b
45	MP3	PIPE_2.5	.168	48.75	10	.047	48.75		11	22373....	50715	3596.25	3596.25	1	H1-1b
46	M129	PIPE_2.0	.165	2.188	14	.043	27.813		2..	29810....	32130	1871.6...	1871.6...	1	H1-1b
47	M121	PL 4"x0.6...	.159	0	6	.101	2.303	y	39	79311....	81000	1054.6...	6750	1	H1-1b
48	M14	PL 4"x0.6...	.151	0	12	.101	1.974	y	44	79311....	81000	1054.6...	6750	1	H1-1b
49	M68	PL 4"x0.6...	.150	0	17	.101	2.303	y	34	79311....	81000	1054.6...	6750	1	H1-1b
50	M22	PIPE_2.0	.149	2.188	4	.043	27.813		1..	29810....	32130	1871.6...	1871.6...	1	H1-1b
51	M76	PIPE_2.0	.148	2.188	10	.043	27.813		1..	29810....	32130	1871.6...	1871.6...	1	H1-1b
52	M131	PIPE_2.0	.140	27.813	7	.043	2.188		2..	29810....	32130	1871.6...	1871.6...	1	H1-1b
53	M140	PL 4"x0.6...	.139	4.511	47	.106	2.209	y	48	79311....	81000	1054.6...	6750	1	H1-1b
54	M87	PL 4"x0.6...	.138	4.511	42	.106	2.209	y	45	79311....	81000	1054.6...	6750	1	H1-1b
55	M34	PL 4"x0.6...	.135	4.512	36	.105	2.209	y	37	79311....	81000	1054.6...	6750	1	H1-1b
56	M78	PIPE_2.0	.129	27.813	2	.043	2.188		1..	29810....	32130	1871.6...	1871.6...	1	H1-1b
57	M24	PIPE_2.0	.125	27.813	12	.043	2.188		1..	29810....	32130	1871.6...	1871.6...	1	H1-1b
58	M146	PL 4"x0.6...	.105	4.511	272	.080	4.511	y	2..	79311....	81000	1054.6...	6750	1..	H1-1b
59	M93	PL 4"x0.6...	.104	4.511	203	.080	4.511	y	1..	79311....	81000	1054.6...	6750	1..	H1-1b
60	M90	PL 4"x0.6...	.104	0	214	.080	0	y	1..	79311....	81000	1054.6...	6750	1..	H1-1b
61	M143	PL 4"x0.6...	.104	0	280	.080	0	y	2..	79311....	81000	1054.6...	6750	1..	H1-1b
62	M40	PL 4"x0.6...	.104	4.512	149	.080	4.512	y	1..	79311....	81000	1054.6...	6750	1..	H1-1b
63	M37	PL 4"x0.6...	.104	0	145	.080	0	y	1..	79311....	81000	1054.6...	6750	1..	H1-1b
64	M110	SR 3/4	.097	44	38	.022	0		6	4419.0...	14320.8	184.32	184.32	1	H1-1b*
65	M3	SR 3/4	.097	44	43	.020	0		11	4419.0...	14320.8	184.32	184.32	1	H1-1b*
66	M57	SR 3/4	.097	44	49	.020	44		17	4419.0...	14320.8	184.32	184.32	1	H1-1b*
67	M165A	PIPE_2.0	.085	68.985	5	.058	68.985		1..	21618....	32130	1871.6...	1871.6...	1	H1-1b*
68	M169A	PIPE_2.0	.082	68.985	10	.058	0		2..	21618....	32130	1871.6...	1871.6...	1	H1-1b*
69	M89	SR 5/8	.078	20	18	.008	0		2	2339.3...	9946.8	96.768	96.768	1	H1-1b
70	M171	PIPE_2.0	.078	68.985	16	.058	0		1..	21618....	32130	1871.6...	1871.6...	1	H1-1b*
71	M171A	PIPE_2.0	.077	0	23	.060	0		2..	21751....	32130	1871.6...	1871.6...	1	H1-1b*
72	M1	SR 3/4	.077	0	145	.016	0		4	4419.0...	14320.8	184.32	184.32	1	H1-1b*

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

	Member	Shape	Code Check	Loc[in]	LC	Shea...	Loc[in]	Dir	LC	phi*Pn...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
73	M55	SR 3/4	.077	0	215	.016	44		10	4419.0...	14320.8	184.32	184.32	1	H1-1b*
74	M108	SR 3/4	.077	0	268	.017	0		15	4419.0...	14320.8	184.32	184.32	1	H1-1b*
75	M167	PIPE_2.0	.073	0	18	.060	0		1...	21751....	32130	1871.6...	1871.6...	1	H1-1b*
76	M142	SR 5/8	.071	0	7	.008	0		7	2339.3...	9946.8	96.768	96.768	1	H1-1b*
77	M35	SR 5/8	.070	20	26	.007	0		1...	2339.3...	9946.8	96.768	96.768	1	H1-1b
78	M36	SR 5/8	.069	20	27	.008	0		12	2339.3...	9946.8	96.768	96.768	1	H1-1b
79	M147	SR 5/8	.068	20	18	.008	0		2...	2339.3...	9946.8	96.768	96.768	1	H1-1b
80	M41	SR 5/8	.067	20	26	.008	0		1...	2339.3...	9946.8	96.768	96.768	1	H1-1b
81	M163A	PIPE_2.0	.067	0	28	.060	0		1...	21751....	32130	1871.6...	1871.6...	1	H1-1b*
82	M141	SR 5/8	.064	20	19	.007	0		2...	2339.3...	9946.8	96.768	96.768	1	H1-1b
83	M148	SR 5/8	.054	20	26	.007	0		2...	2339.3...	9946.8	96.768	96.768	1	H1-1b
84	M95	SR 5/8	.053	20	18	.007	0		2...	2339.3...	9946.8	96.768	96.768	1	H1-1b
85	M94	SR 5/8	.053	20	27	.008	0		1...	2339.3...	9946.8	96.768	96.768	1	H1-1b
86	M88	SR 5/8	.053	40	15	.007	0		2...	2339.3...	9946.8	96.768	96.768	1	H1-1b*
87	M42	SR 5/8	.047	20	26	.007	0		1...	2339.3...	9946.8	96.768	96.768	1	H1-1b
88	M133	PL 2"x0.6...	.033	0	46	.006	4.46	y	14	39953....	40500	527.345	1687.5	1...	H1-1b*
89	M26	PL 2"x0.6...	.033	0	35	.005	0	y	34	39953....	40500	527.345	1687.5	1...	H1-1b*
90	M80	PL 2"x0.6...	.033	0	41	.005	0	y	41	39953....	40500	527.345	1687.5	1...	H1-1b*
91	M139	PL 2"x0.6...	.033	0	46	.006	4.46	y	14	39953....	40500	527.345	1687.5	1	H1-1b*
92	M86	PL 2"x0.6...	.032	0	41	.005	4.46	y	8	39953....	40500	527.345	1687.5	1	H1-1b*
93	M32	PL 2"x0.6...	.032	0	34	.006	4.46	y	2	39953....	40500	527.345	1687.5	1	H1-1b*
94	M30	PL 2"x0.6...	.028	4.46	140	.004	4.46	y	1...	39953....	40500	527.345	1687.5	1...	H1-1b*
95	M84	PL 2"x0.6...	.028	4.46	210	.004	4.46	y	2...	39953....	40500	527.345	1687.5	1...	H1-1b*
96	M137	PL 2"x0.6...	.028	4.46	279	.004	4.46	y	2...	39953....	40500	527.345	1687.5	1...	H1-1b*
97	M28	PL 2"x0.6...	.027	4.46	140	.004	4.46	y	1...	39953....	40500	527.345	1687.5	1	H1-1b*
98	M82	PL 2"x0.6...	.027	4.46	210	.004	4.46	y	2...	39953....	40500	527.345	1687.5	1	H1-1b*
99	M135	PL 2"x0.6...	.027	4.46	279	.004	4.46	y	2...	39953....	40500	527.345	1687.5	1	H1-1b*
100	M138	PL 2"x0.6...	.023	4.46	42	.008	4.46	y	6	39953....	40500	527.345	1687.5	1...	H1-1b
101	M85	PL 2"x0.6...	.023	4.46	37	.008	4.46	y	17	39953....	40500	527.345	1687.5	1...	H1-1b
102	M132	PL 2"x0.6...	.022	0	35	.009	4.46	y	6	39953....	40500	527.345	1687.5	1...	H1-1b
103	M79	PL 2"x0.6...	.022	0	47	.008	4.46	y	17	39953....	40500	527.345	1687.5	1...	H1-1b
104	M31	PL 2"x0.6...	.022	4.46	47	.008	4.46	y	11	39953....	40500	527.345	1687.5	1...	H1-1b
105	M25	PL 2"x0.6...	.021	0	41	.008	4.46	y	11	39953....	40500	527.345	1687.5	1...	H1-1b
106	M134	PL 2"x0.6...	.017	0	46	.006	0	y	15	39953....	40500	527.345	1687.5	1...	H1-1b
107	M81	PL 2"x0.6...	.017	0	42	.006	4.46	y	10	39953....	40500	527.345	1687.5	1...	H1-1b
108	M83	PL 2"x0.6...	.016	4.46	34	.006	0	y	10	39953....	40500	527.345	1687.5	1...	H1-1b
109	M27	PL 2"x0.6...	.016	0	36	.006	0	y	4	39953....	40500	527.345	1687.5	1...	H1-1b
110	M136	PL 2"x0.6...	.016	4.46	269	.007	4.46	y	15	39953....	40500	527.345	1687.5	1...	H1-1b
111	M29	PL 2"x0.6...	.016	4.46	147	.006	4.46	y	4	39953....	40500	527.345	1687.5	1...	H1-1b
112	M2	SR 3/4	.001	0	27	.009	0		1...	4419.0...	14320.8	184.32	184.32	1	H1-1b*
113	M56	SR 3/4	.001	0	33	.009	0		2...	4419.0...	14320.8	184.32	184.32	1	H1-1b*
114	M109	SR 3/4	.000	0	22	.009	0		2...	4419.0...	14320.8	184.32	184.32	1	H1-1b*
115	M4	SR 3/4	.000	0	282	.014	44		2	4419.0...	14320.8	184.32	184.32	1	H1-1a
116	M58	SR 3/4	.000	0	282	.014	44		8	4419.0...	14320.8	184.32	184.32	1	H1-1a
117	M111	SR 3/4	.000	0	282	.015	0		14	4419.0...	14320.8	184.32	184.32	1	H1-1a

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

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

APPENDIX D

ADDITIONAL CALCUATIONS

Trylon

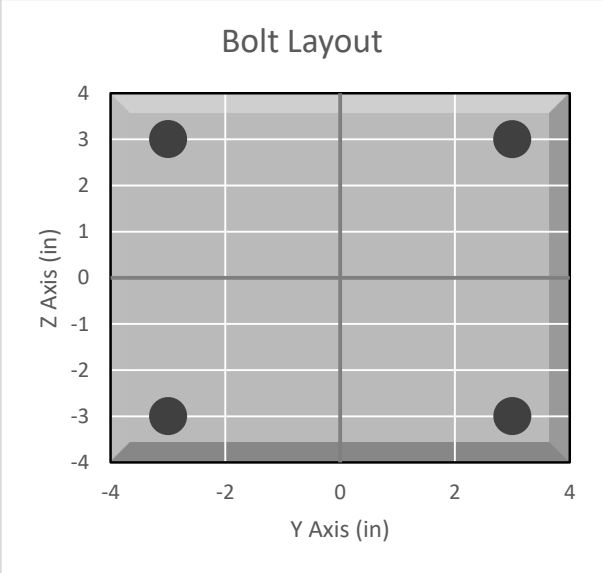
Analysis date: 25/10/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	194374
Carrier Site ID:	CT11027D
Carrier Site Name:	CT027/Sprint Guilford

Code	
Design Standard:	TIA-222-H
Slip Check:	Yes
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.625	in
Grade:	SAE J429 Gr.	--
Yield Strength (Fy):	57	ksi
Ultimate Strength (Fu):	74	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	6	in



Connection Description
4.5 O.D. Pipe to Collar

Bolt Check*		
Tensile Capacity (ϕT_n):	12543.1	lbs
Shear Capacity (ϕV_n):	8513.6	lbs
Tension Force (T_u):	0.0	lbs
Shear Force (V_u):	2472.1	lbs
Tension Usage:	0.0%	--
Shear Usage:	27.7%	--
Interaction:	27.7%	Pass
Controlling Member:	M164	--
Controlling LC:	6	--

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

Slip Check*		
Sliding Capacity (ϕR_{ns}):	13089.7	lbs
Torsion Capacity (ϕR_{nr}):	3272.4	lb-ft
Sliding Force (V_{us}):	1724.8	lbs
Torsional Force (T_{ur}):	0.0	lb-ft
Sliding Usage:	12.5%	--
Torsion Usage:	0.0%	--
Interaction:	12.5%	Pass
Controlling Member:	M164	--
Controlling LC:	38	--

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

Trylon

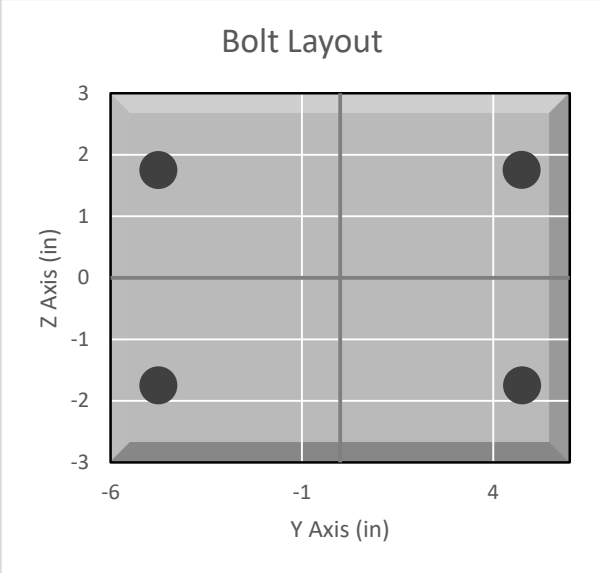
Analysis date: 25/10/2021

BOLT TOOL 1.5.2

Project Data	
Job Code:	194374
Carrier Site ID:	CT11027D
Carrier Site Name:	CT027/Sprint Guilford

Code	
Design Standard:	TIA-222-H
Slip Check:	Yes
Pretension Standard:	TIA-222-H

Bolt Properties		
Connection Type:	Threaded Rod	
Diameter:	0.625	in
Grade:	SAE J429 Gr.	--
Yield Strength (Fy):	57	ksi
Ultimate Strength (Fu):	74	ksi
Number of Bolts:	4	--
Threads Included:	Yes	--
Double Shear:	No	--
Connection Pipe Size:	9.5	in



Connection Description
Mount to 4.5" O.D. Pipe

Bolt Check*		
Tensile Capacity (ϕT_n):	12543.1	lbs
Shear Capacity (ϕV_n):	8513.6	lbs
Tension Force (T_u):	2835.1	lbs
Shear Force (V_u):	521.5	lbs
Tension Usage:	21.5%	--
Shear Usage:	5.8%	--
Interaction:	21.5%	Pass
Controlling Member:	M7	--
Controlling LC:	43	--

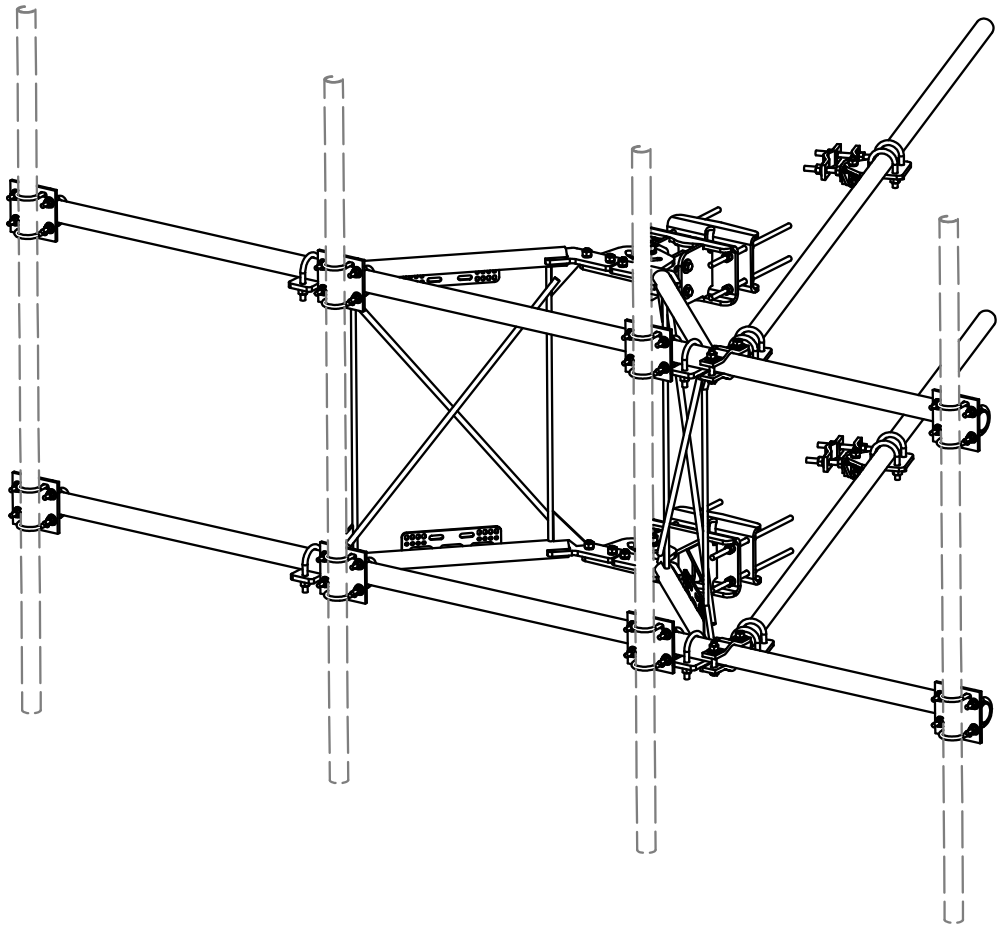
**Rating per TIA-222-H Section 15.5*

Slip Check*		
Sliding Capacity (ϕR_{ns}):	14229.9	lbs
Torsion Capacity (ϕR_{nr}):	5632.7	lb-ft
Sliding Force (V_{us}):	130.1	lbs
Torsional Force (T_{ur}):	729.0	lb-ft
Sliding Usage:	0.9%	--
Torsion Usage:	12.8%	--
Interaction:	12.8%	Pass
Controlling Member:	M117	--
Controlling LC:	22	--

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

APPENDIX E

SUPPLEMENTAL DRAWINGS



PARTS LIST

ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	1	X-HDCAMTBW	CLAMP WELDMENT FOR BCAM-HD		33.86	33.86
3	1	X-MHTPHD	MULTI-HOLE TAPER PLATE WELDMENT		36.24	36.24
4	2	X-VFAPL4	VFA-HD PIVOT PLATE	12 in	15.88	31.77
5	2	X-LCBP4	BENT BACKING PLATE	13 in	20.04	40.09
6	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.39	16.39
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	1	X-HDCAMSP	POSITIONING PLATE WELDMENT FOR BCAM-HD		2.58	2.58
9	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
10	8	SCX2	CROSSOVER PLATE	7 in	4.80	38.37
11	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
12	8	DCP	1/2" THICK, 5-3/4" CNTER TO CENTER CLAMP HALF	8 1/8 in	2.36	18.90
13	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
14	2	P30150	2-7/8" X 150" (2-1/2" SCH. 40) GALVANIZED PIPE	150 in	76.94	153.87
15	4	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	1.92
16	4	G34FW	3/4" HDG USS FLATWASHER		0.06	0.24
17	4	G34LW	3/4" HDG LOCKWASHER		0.04	0.17
18	4	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.85
19	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)		1.57	12.54
20	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
21	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
22	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
23	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
24	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
25	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.62	0.62
26	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
27	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
28	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
29	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
30	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
31	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
32	32	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	23.64
33	16	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.60	9.56
34	64	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.18
35	64	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.89
36	64	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	4.58
					TOTAL WT. #	740.26

REVISION HISTORY

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
B	CHANGED TIE-BACK BACK CONNECTION		CEK	7/31/2017
A	CHANGED TIE-BACK FRONT CONNECTION		CEK	2/2/2017

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
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

SITE PRO 1
A valmont COMPANY

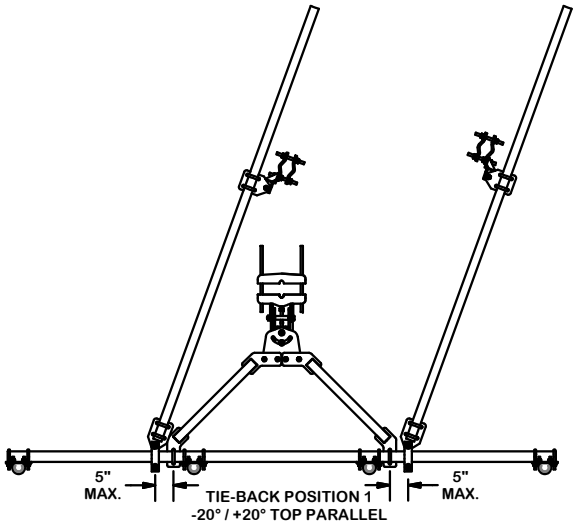
Engineering Support Team: 1-888-753-7446

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

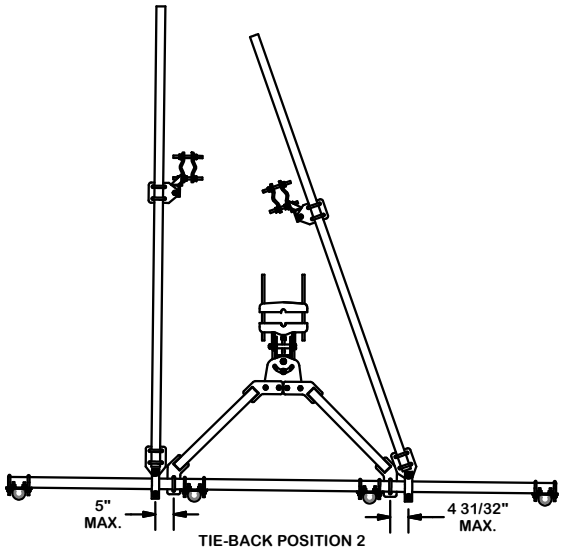
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

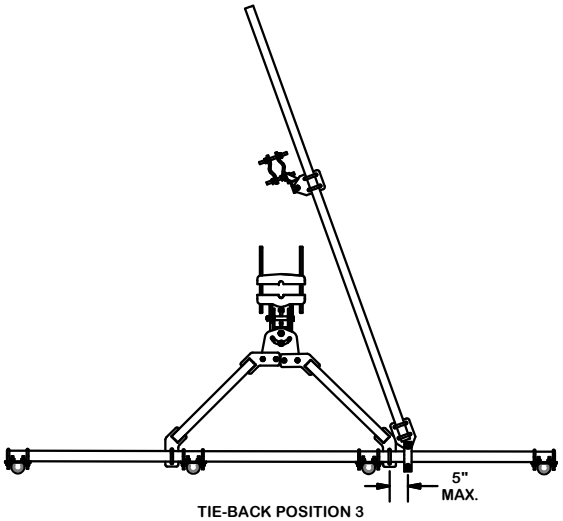
TIE-BACK POSITIONS



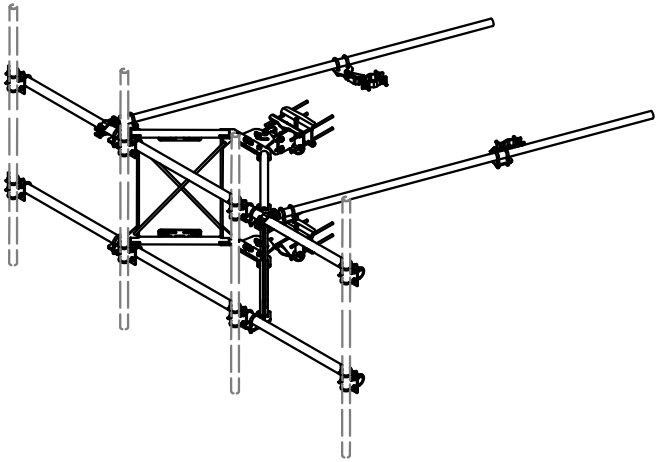
TIE-BACK POSITION 1
-20° / +20° TOP PARALLEL

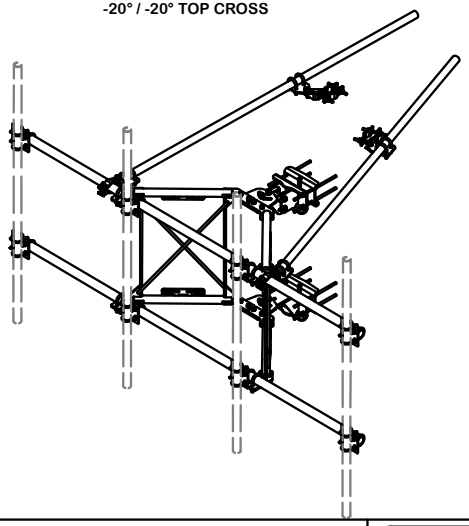


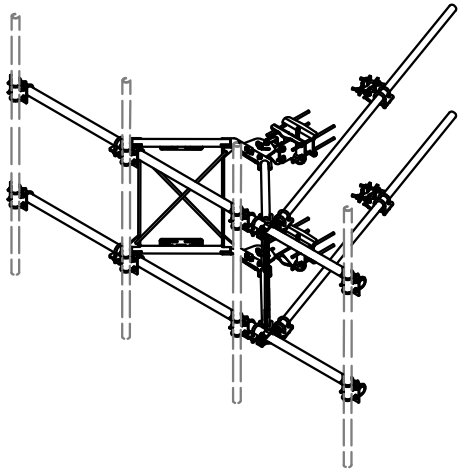
TIE-BACK POSITION 2
-20° / -20° TOP CROSS



TIE-BACK POSITION 3
-20° SAME SIDE STACKED







REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
D	UPDATED BCAM VERSION 1 TO BCAM VERSION 2		CEK	6/29/2018
C	UPDATED PIN LEG CONNECTION TO B-CAM CONNECTION		CEK	12/7/2017
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REVISION HISTORY

TOLERANCE NOTES

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ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

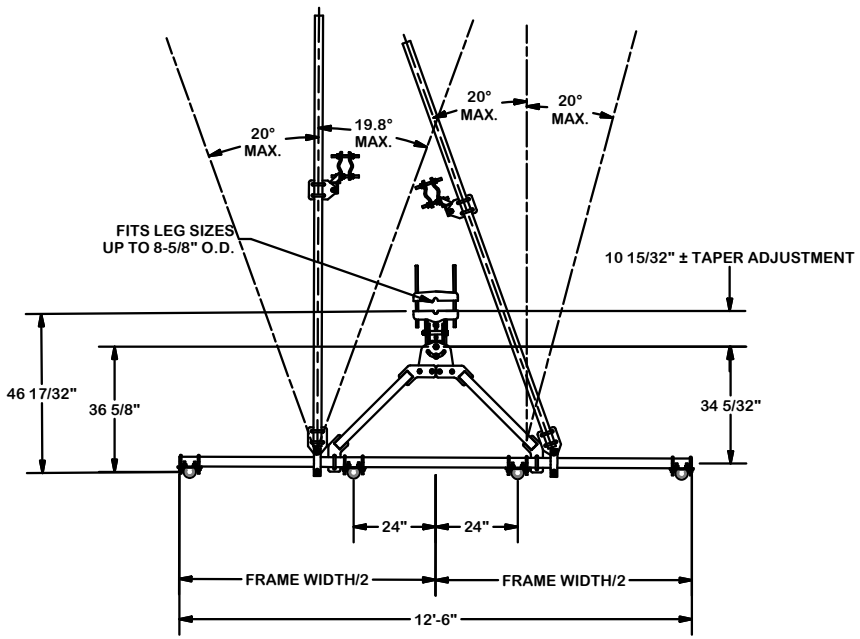
SITE PRO 1
A valmont COMPANY

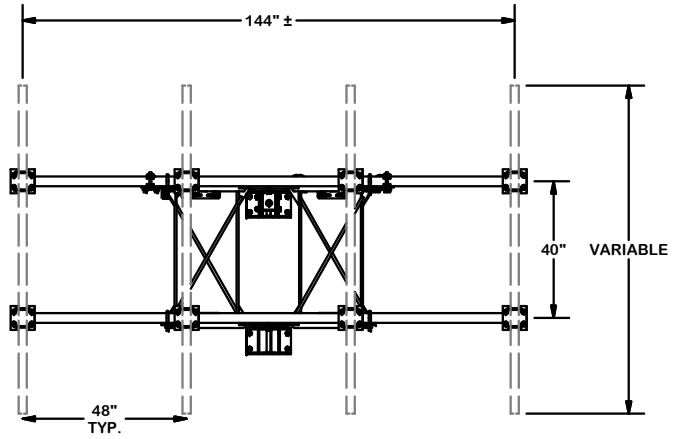
Engineering Support Team:
1-888-753-7446

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

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

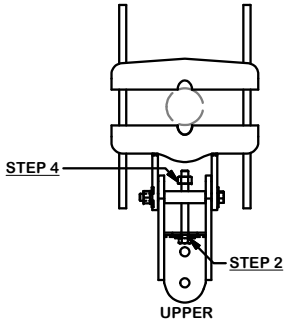
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

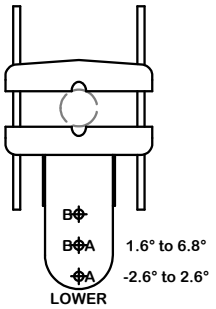


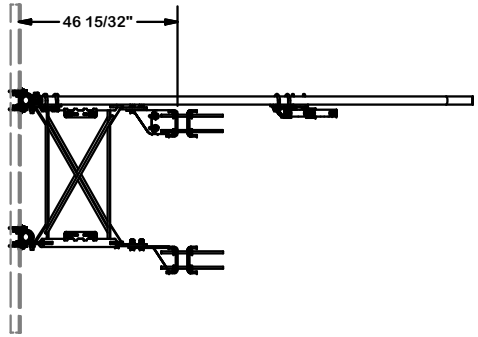


ANGLE CALIBRATING PROCEDURE:

1. MEASURE TOWER TAPER AND PICK LOWER BRACKET HOLE:
   - HOLE A = -2.6° TO 2.6°
   - HOLE B = 1.6° TO 6.8°
2. USE CALIBRATING BOLT TO ADJUST FRAME TO DESIRED TAPER
3. TORQUE LOCKING BOLTS TO 100 ft.-lbs.
4. ADVANCE LOCKING NUT TO POSITIONING PLATE, THEN TIGHTEN.







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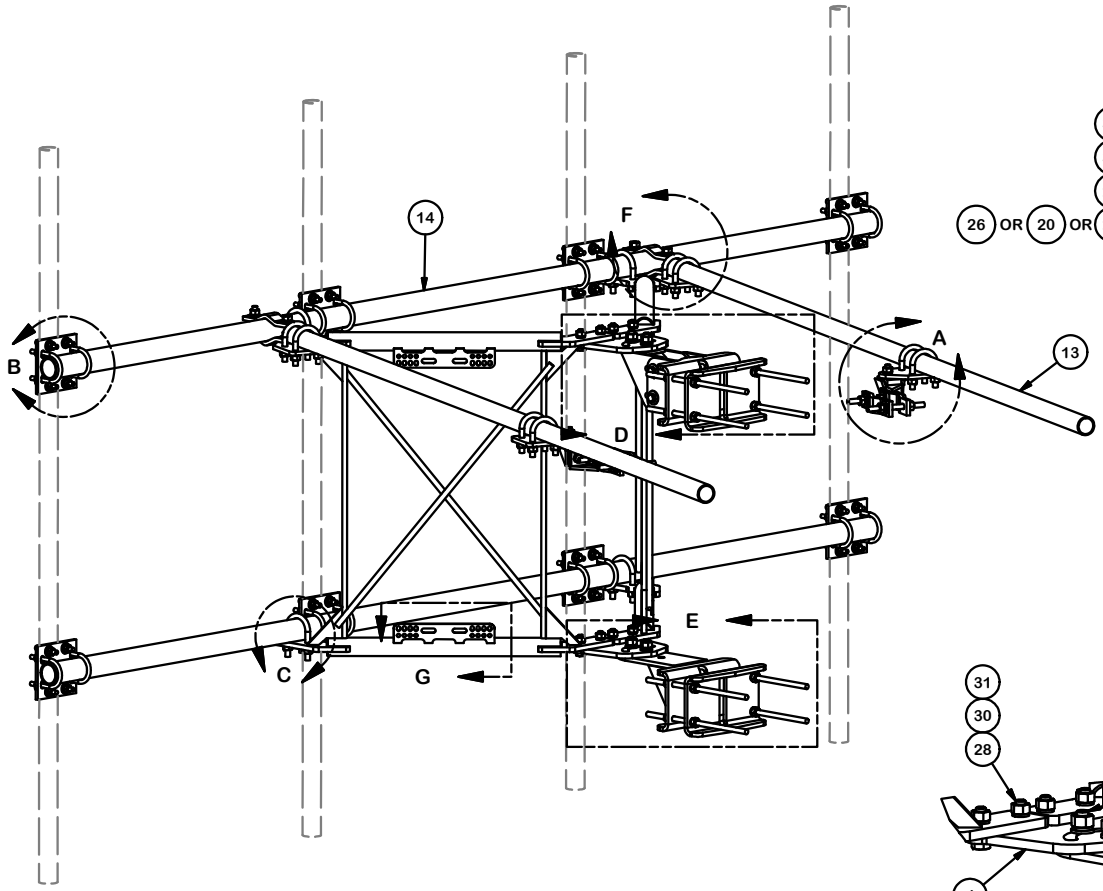
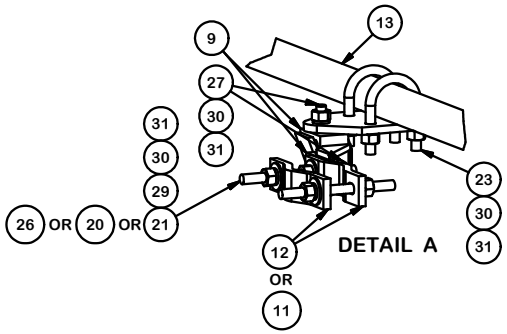
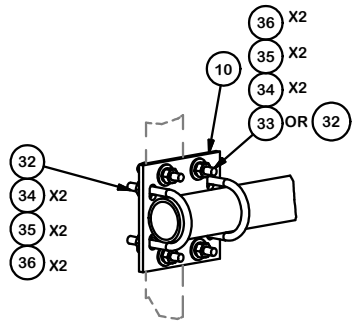
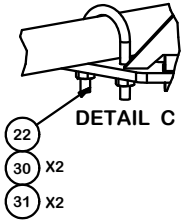
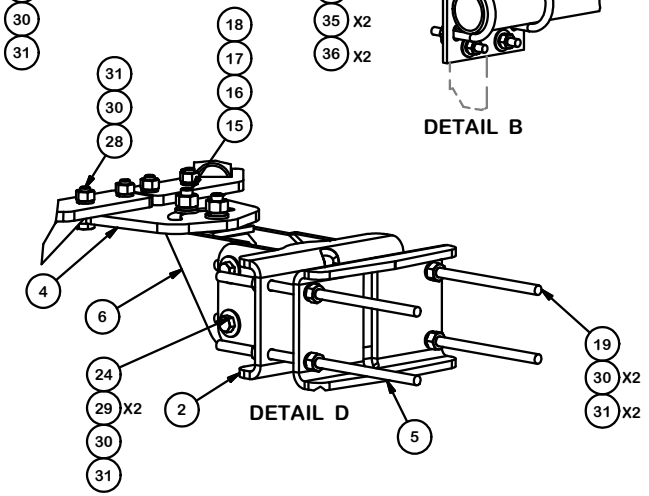
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

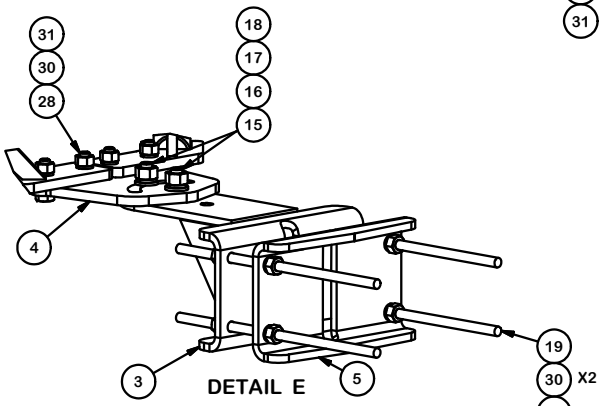


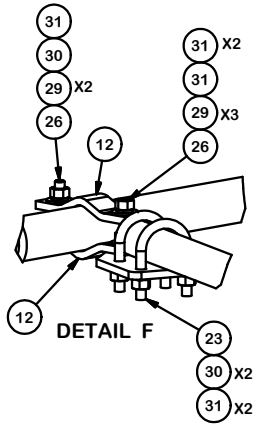








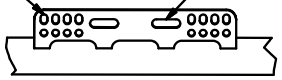




7/16" LUG HOLES

REVIEW CARRIER STANDARDS FOR PROPER SURFACE PREPARTION AND ASSEMBLY OF ELECTRICAL CONNECTIONS

9/16" SLOTTED HOLE FOR EQUIPMENT PIPE U-BOLT



DETAIL G

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
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REVISION HISTORY

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ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION
12' 6" HEAVY DUTY
V-FRAME ASSEMBLY
WITH TWO STIFF ARMS

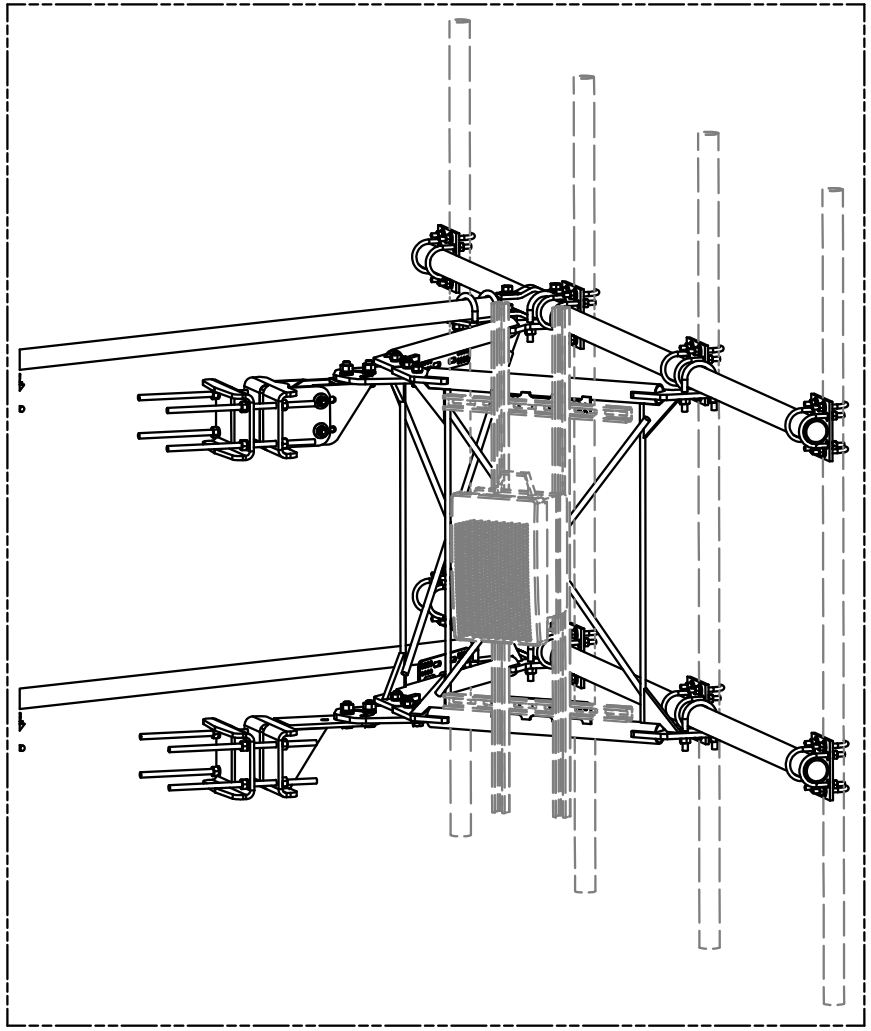
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

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

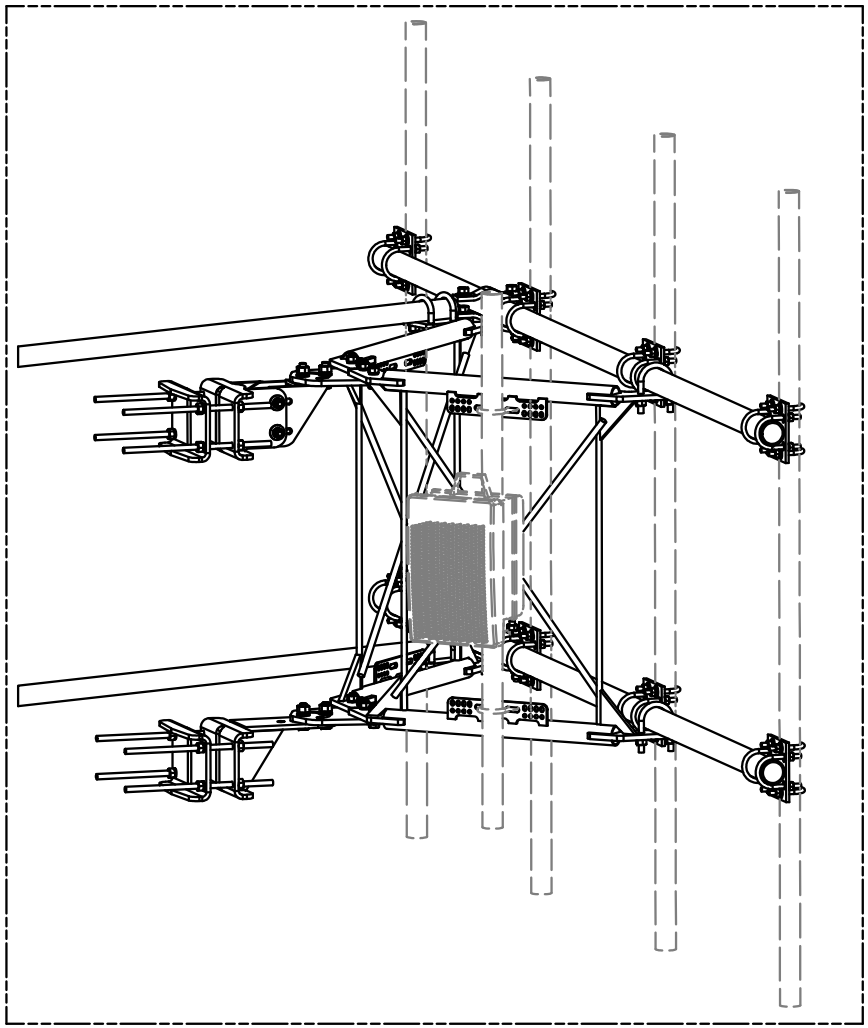
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
	CEK 1/25/2017		VFA12-HD

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD



UNISTRUT AND HARDWARE
SOLD SEPARATELY.

REQUIRES 3/8" HARDWARE



EQUIPMENT PIPE AND HARDWARE
SOLD SEPARATELY.

REQUIRES 1/2" HARDWARE
AND 2-3/8" TO 4-1/2" O.D. PIPE

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
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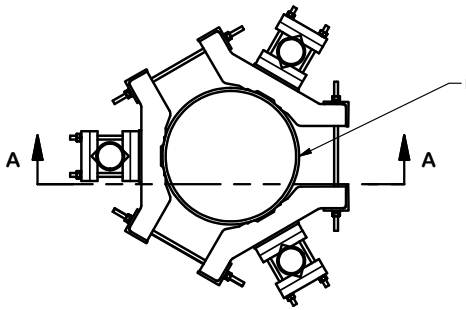
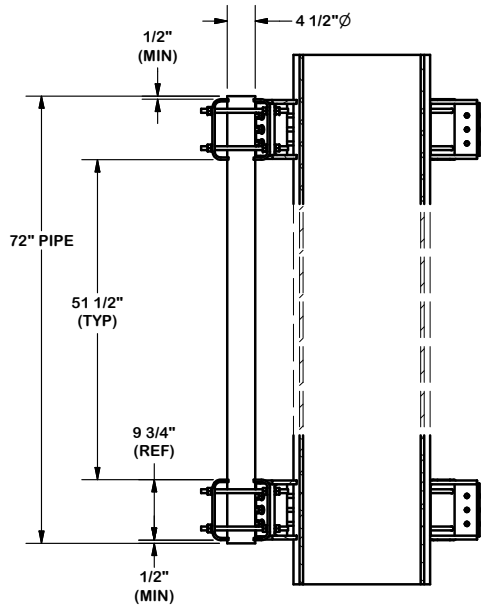
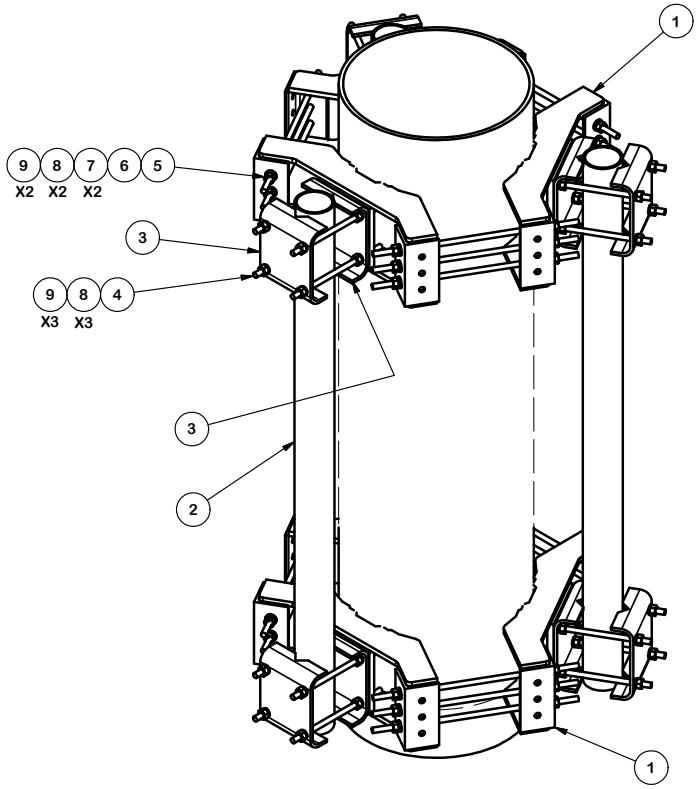
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	CUSTOMER	BMC 12/13/2017	VFA12-HD

PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT
1	6	X-LWRM	RING MOUNT WELDMENT		68.16	408.96
2	3	P472	4-1/2" X 72" SCH. 40 GALVANIZED PIPE	72 in	64.89	194.68
3	12	X-214130	BENT PLATE V-CLAMP	12 5/8 in	11.43	137.16
4	24	G58R-14	5/8" x 14" THREADED ROD (HDG.)	14 in	0.40	9.57
5	18	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	.55	9.90
6	18	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	.55	9.90
7	36	A58FW	5/8" HDG A325 FLATWASHER		.03	1.08
8	108	G58LW	5/8" HDG LOCKWASHER		0.03	3.24
9	108	A58NUT	5/8" HDG A325 HEX NUT		0.13	14.04
					TOTAL WT. #	788.53





SECTION A-A



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ALL OTHER MACHINING *(± 0.030")*
ALL OTHER ASSEMBLY *(± 0.060")*

DESCRIPTION: MONOPOLE SECTOR FRAME ATTACHMENT ASSEMBLY

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.
	KC8 3/18/2016	3RD PARTY	MSFAA
CLASS / SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
01 / 01	CUSTOMER	BMC 5/2/2016	MSFAA

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: CT11027D

876343
1919 Boston Post Road
Guilford, Connecticut 06437

December 9, 2021

EBI Project Number: 6221007493

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**19.75%**

December 9, 2021

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

Emissions Analysis for Site: CT11027D - 876343

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1919 Boston Post Road** in **Guilford, 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 1919 Boston Post Road in Guilford, 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 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.

6) 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.

7) 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.

8) 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.

9) 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.

10) 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.

11) 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.

12) 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.

13) 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.

14) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz channel(s), the Commscope VV-65A-R1 for the 1900

MHz / 1900 MHz / 2100 MHz / 2100 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.

15) The antenna mounting height centerline of the proposed antennas is 148 feet above ground level (AGL).

16) 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.

17) 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:	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):	148 feet	Height (AGL):	148 feet	Height (AGL):	148 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 A1 MPE %:	**6.48%**	Antenna B1 MPE %:	**6.48%**	Antenna C1 MPE %:	**6.48%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd
Height (AGL):	148 feet	Height (AGL):	148 feet	Height (AGL):	148 feet
Channel Count:	5	Channel Count:	5	Channel Count:	5
Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts	Total TX Power (W):	200 Watts
ERP (W):	4,059.02	ERP (W):	4,059.02	ERP (W):	4,059.02
Antenna A2 MPE %:	**1.73%**	Antenna B2 MPE %:	**1.73%**	Antenna C2 MPE %:	**1.73%**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1	Make / Model:	Commscope VV-65A-R1
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz / 2100 MHz
Gain:	15.15 dBd / 15.15 dBd / 15.8 dBd / 15.8 dBd	Gain:	15.15 dBd / 15.15 dBd / 15.8 dBd / 15.8 dBd	Gain:	15.15 dBd / 15.15 dBd / 15.8 dBd / 15.8 dBd
Height (AGL):	148 feet	Height (AGL):	148 feet	Height (AGL):	148 feet
Channel Count:	10	Channel Count:	10	Channel Count:	10
Total TX Power (W):	420 Watts	Total TX Power (W):	420 Watts	Total TX Power (W):	420 Watts
ERP (W):	14,699.59	ERP (W):	14,699.59	ERP (W):	14,699.59
Antenna A3 MPE %:	**2.62%**	Antenna B3 MPE %:	**2.62%**	Antenna C3 MPE %:	**2.62%**

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	10.83%
Verizon	2.68%
AT&T	4.78%
Metro PCS	0.72%
Nextel	0.32%
Sprint	0.42%
Site Total MPE % :	19.75%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	10.83%
T-Mobile Sector B Total:	10.83%
T-Mobile Sector C Total:	10.83%
Site Total MPE % :	19.75%

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 2500 MHz LTE 1C & 2C Traffic	1	11044.63	148.0	19.69	2500 MHz LTE 1C & 2C Traffic	1000	1.97%
T-Mobile 2500 MHz LTE 1C & 2C Broadcast	1	1074.06	148.0	1.92	2500 MHz LTE 1C & 2C Broadcast	1000	0.19%
T-Mobile 2500 MHz NR Traffic	1	22089.26	148.0	39.38	2500 MHz NR Traffic	1000	3.94%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	148.0	3.83	2500 MHz NR Broadcast	1000	0.38%
T-Mobile 600 MHz LTE	2	591.73	148.0	2.11	600 MHz LTE	400	0.53%
T-Mobile 600 MHz NR	1	1577.94	148.0	2.81	600 MHz NR	400	0.70%
T-Mobile 700 MHz LTE	2	648.82	148.0	2.31	700 MHz LTE	467	0.50%
T-Mobile 1900 MHz GSM	4	982.02	148.0	7.00	1900 MHz GSM	1000	0.70%
T-Mobile 1900 MHz LTE	2	1964.04	148.0	7.00	1900 MHz LTE	1000	0.70%
T-Mobile 2100 MHz UMTS	2	1140.57	148.0	4.07	2100 MHz UMTS	1000	0.41%
T-Mobile 2100 MHz LTE	2	2281.14	148.0	8.13	2100 MHz LTE	1000	0.81%
						Total:	**10.83%**

• 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:	10.83%
Sector B:	10.83%
Sector C:	10.83%
T-Mobile Maximum MPE % (Sector A):	10.83%
Site Total:	19.75%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **19.75%** 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: CT11027D
T-MOBILE SITE NAME: CT027/SPRINT GUILFORD
SITE TYPE: MONOPOLE
TOWER HEIGHT: 150'-0"

BUSINESS UNIT #: 876343
SITE ADDRESS: 1919 BOSTON POST RD. GUILFORD, CT 06437
COUNTY: NEW HAVEN COUNTY
JURISDICTION: GUILFORD TPWNSHIP

T-MOBILE ANCHOR SITE CONFIGURATION: 67D5A998E Outdoor

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	GUILFORD WEST STONE PROPERTY
SITE ADDRESS:	1919 BOSTON POST RD. GUILFORD, CT 06437
COUNTY:	NEW HAVEN COUNTY
MAP/PARCEL #:	----
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.30036500
LONGITUDE:	-72.70765600
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	94.0 FT
CURRENT ZONING:	----
JURISDICTION:	GUILFORD TPWNSHIP
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	---- ---- CITY, STATE ZIP
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	T-MOBILE 35 GRIFFIN ROAD BLOOMFIELD, CT 06002
ELECTRIC PROVIDER:	---- ----
TELCO PROVIDER:	---- ----
JOB NO.:	2438.6884

PROJECT TEAM

A&E FIRM:	CROWN CASTLE USA INC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317 CROWNAE.APPROVAL@CROWNCASTLE.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	1200 MACARTHUR BLVD, SUITE 200 MAHWAH, NJ 07430
	TRICIA PELON - PROJECT MANAGER ----
	JASON D'AMICO - 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	GENERAL NOTES
C-1.1	SITE PLAN
C-1.2	ENLARGED SITE PLANS
C-2	FINAL ELEVATION & ANTENNA PLANS
C-3	ANTENNA & CABLE SCHEDULE
C-4	PLUMBING DIAGRAM
C-5	EQUIPMENT SPECS
E-1	AC PANEL SCHEDULES & ONE LINE DIAGRAM
G-1	ANTENNA GROUNDING DIAGRAM
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS
ATTACHED	MOUNT SPECS

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

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- REMOVE (6) ANTENNAS
- REMOVE (3) TMAs
- REMOVE (6) 1-5/8" COAX CABLES
- REMOVE (2) 1-5/8" HYBRID CABLES
- INSTALL (6) ANTENNAS
- INSTALL (3) RRUs
- INSTALL (3) 1-5/8" HYBRID CABLES

GROUND SCOPE OF WORK:
- UPGRADE BTS CABINET BREAKER
- INSTALL (1) 6160 EQUIPMENT CABINET
- INSTALL (1) B160 BATTERY CABINET
- INSTALL (1) DC DU & (4) RECTIFIERS
- INSTALL (1) IXRE ROUTER IN 6160
- INSTALL (1) BB6648 FOR L2500,N2500
- INSTALL (1) PSU4813 VOLTAGE BOOSTER IN 6160

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	2018 IBC
MECHANICAL	2018 IMC
ELECTRICAL	2017 NEC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	TOWER ENGINEERING PROFESSIONALS
DATED:	11/02/21
MOUNT ANALYSIS:	TRYLON
DATED:	10/25/21
AC ELECTRICAL POWER DESIGN:	BY OTHERS
DATED:	
RFDS REVISION:	4
DATED:	10/04/21
ORDER ID:	587434
REVISION:	0

APPROVALS

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

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

T-Mobile
1001 PINNACLE POINT DRIVE
COLUMBIA, SC 29223

CROWN CASTLE
6325 AUDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

FPA FRENCH & PARRELLO ASSOCIATES
1800 Route 34, Suite 101 • Wall, New Jersey 07719
o: 732.312.9800 f: 732.312.9801

T-MOBILE SITE NUMBER:
CT11027D

BU #: **876343**
GUILFORD WEST STONE PROPERTY

1919 BOSTON POST RD.
GUILFORD, CT 06437

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	11/24/21	K.S.S.	PRELIMINARY	J.B.
B	11/30/21	K.S.S.	FINAL	J.B.
C	12/07/21	K.S.S.	FINAL	J.B.

STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: T-1
REVISION: B

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

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

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

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

GREENFIELD GROUNDING NOTES:

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

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. 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 · · ·
1001 PINNACLE POINT DRIVE
COLUMBIA, SC 29223

CROWN CASTLE
6325 AUDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

FPA
FRENCH & PARRELLO
ASSOCIATES
1800 Route 34, Suite 101 ▲ Wall, New Jersey 07719
o: 732.312.9800 f: 732.312.9801

T-MOBILE SITE NUMBER:
CT11027D

BU #: **876343**
GUILFORD WEST STONE PROPERTY

1919 BOSTON POST RD.
GUILFORD, CT 06437

EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	11/24/21	K.S.S.	PRELIMINARY	J.B.
B	11/30/21	K.S.S.	FINAL	J.B.
C	12/07/21	K.S.S.	FINAL	J.B.

STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

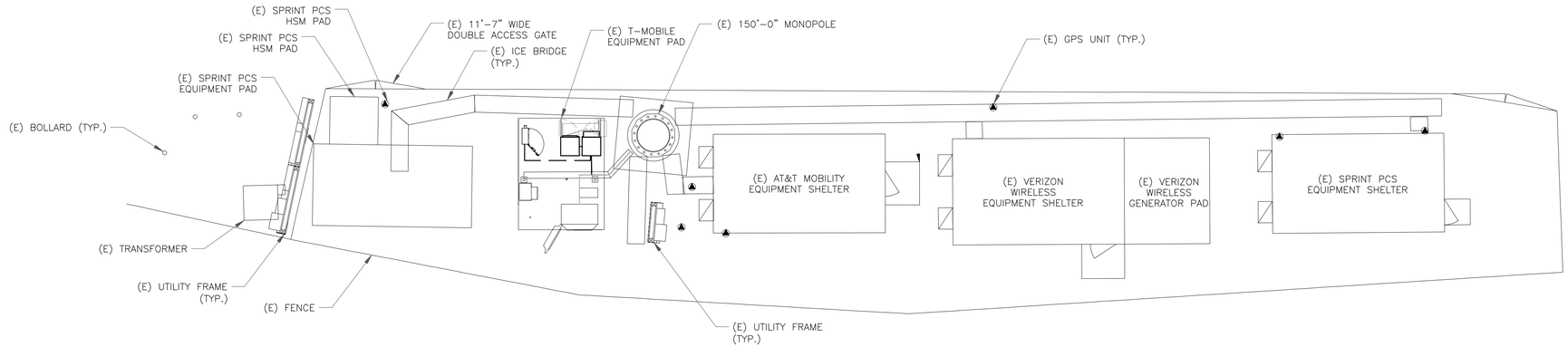
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2

REVISION: B

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

N

T-Mobile

1001 PINNACLE POINT DRIVE
COLUMBIA, SC 29223

CROWN CASTLE

6325 AUDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

FPA
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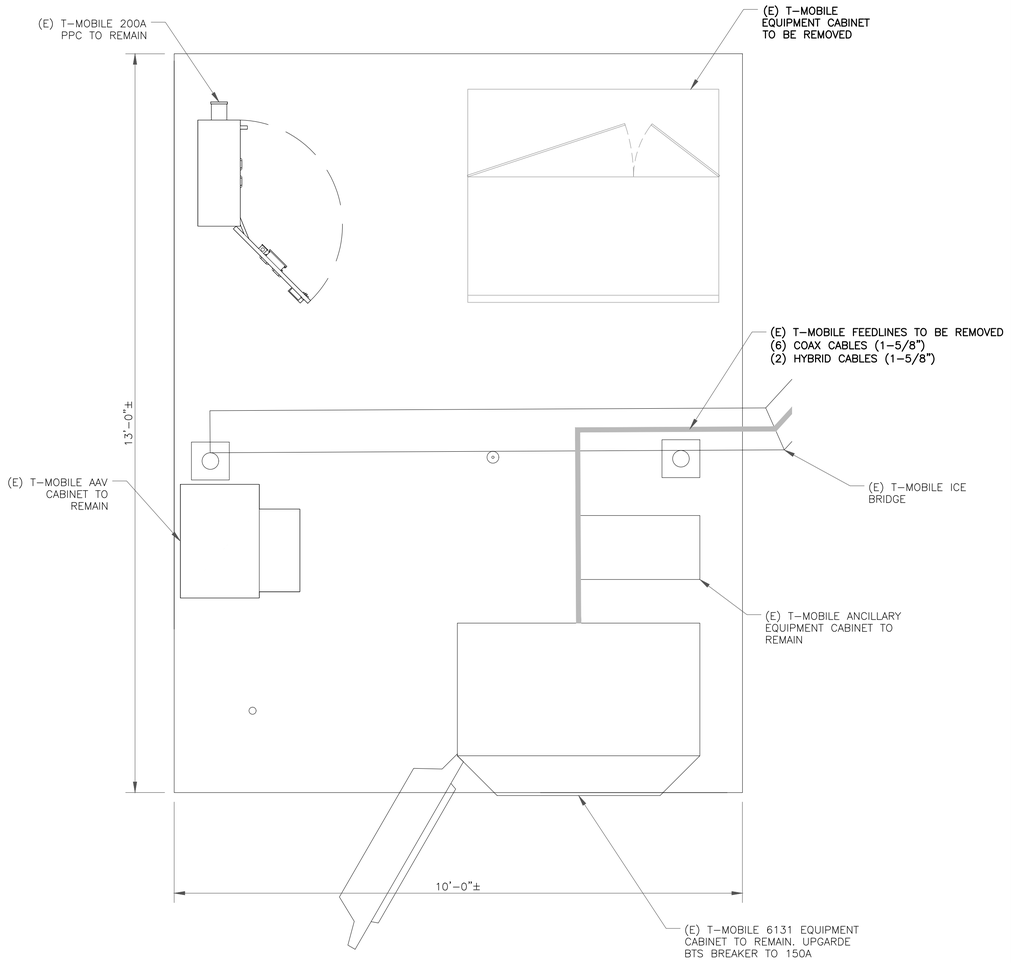
STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

SHEET NUMBER: C-1.1
REVISION: B



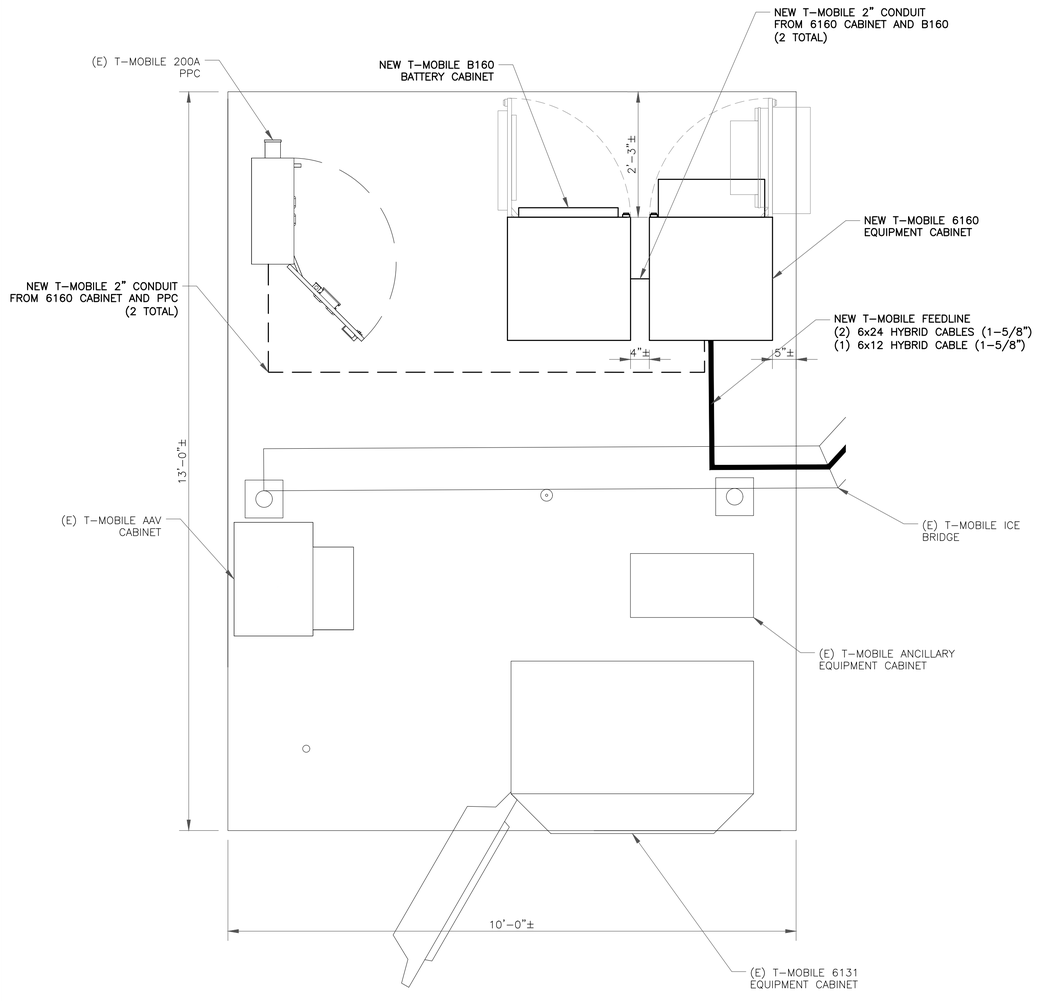
1 EXISTING ENLARGED SITE PLAN

SCALE: 0 6" 1' — 1-1/2"=1'-0" (FULL SIZE), 3/4"=1'-0" (11x17)

N

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.



2 NEW ENLARGED SITE PLAN

SCALE: 0 6" 1' — 1-1/2"=1'-0" (FULL SIZE), 3/4"=1'-0" (11x17)

N

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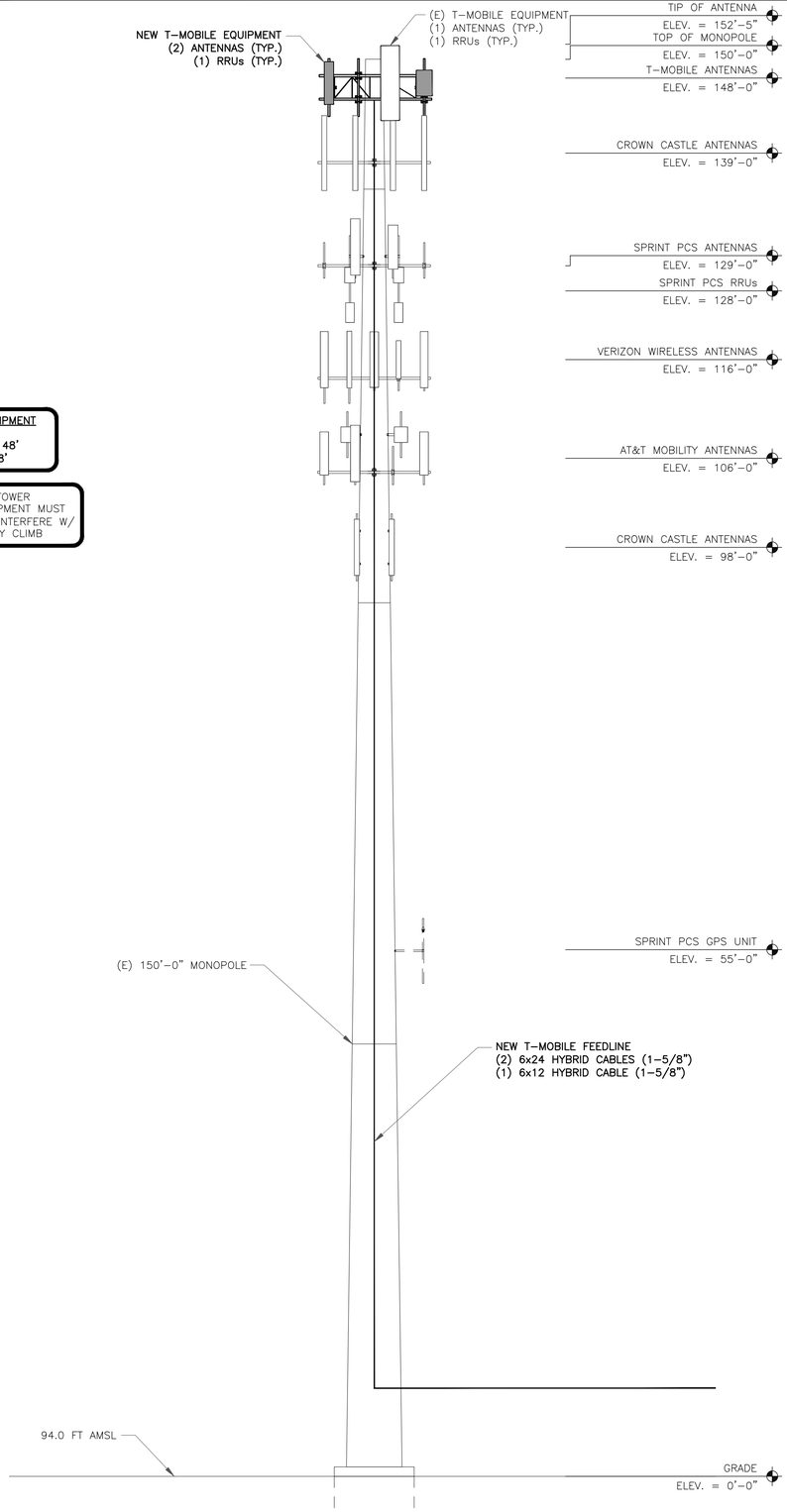
STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: C-1.2

REVISION: B

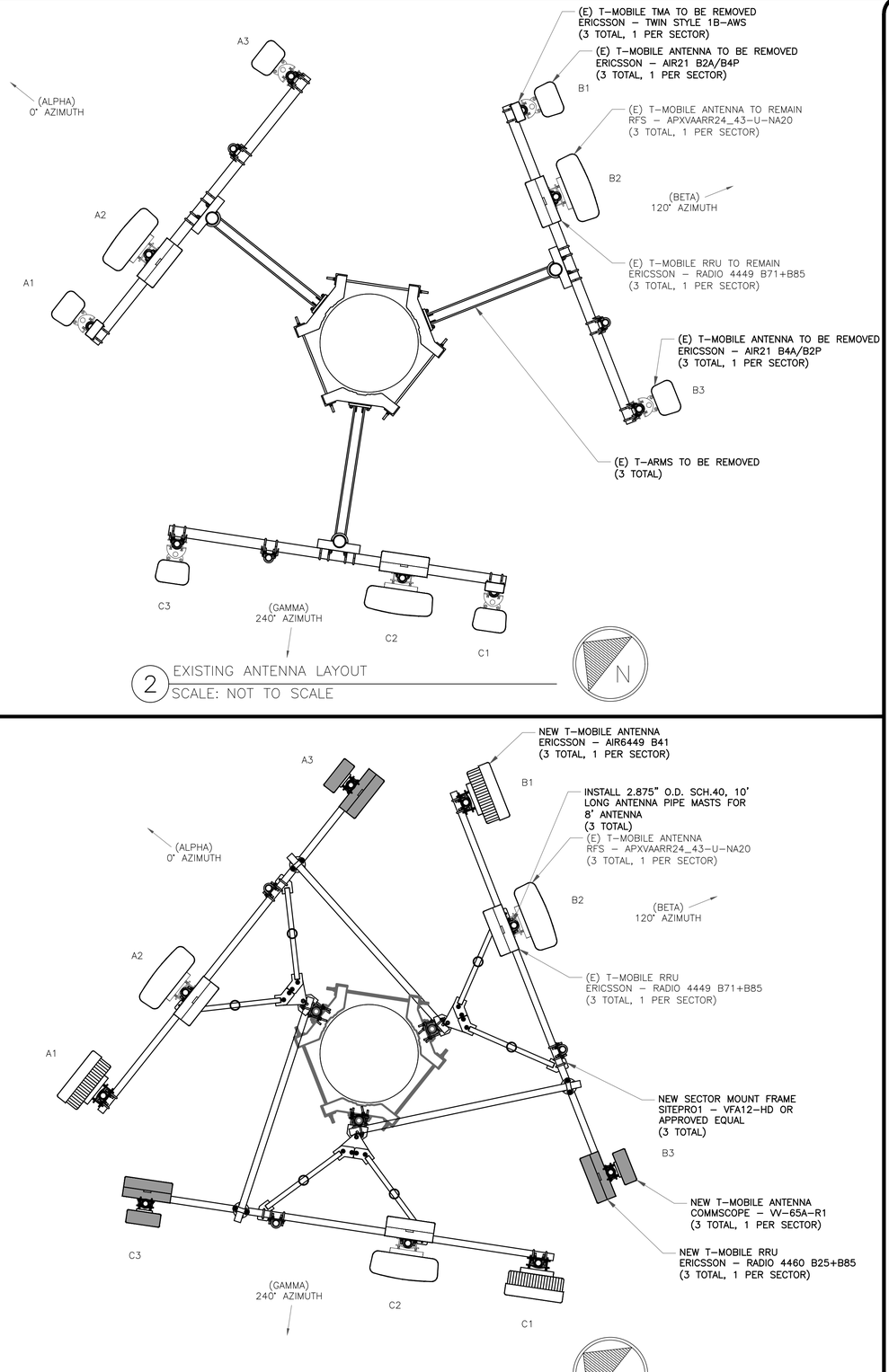


T-MOBILE EQUIPMENT

ANTENNA CL: 148'
MOUNT CL: 148'

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

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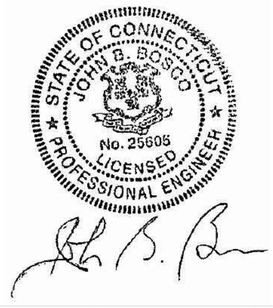


SHEET NUMBER:	REVISION:
C-2	B

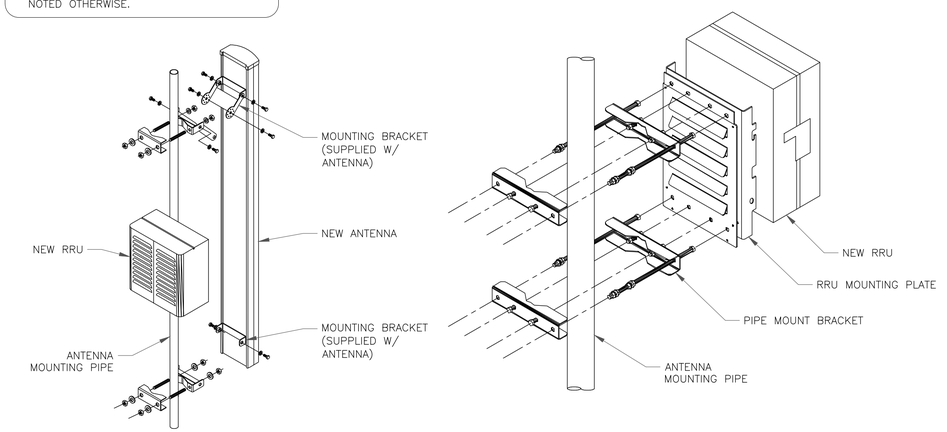
ANTENNA SCHEDULE

SECTOR	POS.	TECHNOLOGY	RAD CENTER	AZIMUTH	ANTENNA MANUFACTURER	ANTENNA MODEL	MECH. TILT	ELECT. TILT	TOWER MOUNTED EQUIPMENT	FEEDLINE TYPE	FEEDLINE LENGTH
ALPHA	A1	L2500/N2500	148'	0°	ERICSSON	AIR6449 B41	0°	2°/2°	–	(1) 1-5/8" 6x24 HYBRID (SHARED)	210'-0"
ALPHA	A2	L600/L700/N600	148'	0°	RFS	APXVAARR24_43-U-NA20	0°	2°/2°/0°/0°	(1) ERICSSON – RADIO 4449 B71+B85	(SHARED FIBER)	–
ALPHA	A3	–	–	–	–	–	–	–	–	–	–
ALPHA	A4	L2100/L1900/G1900	148'	0°	COMMSCOPE	VV-65A-R1	0°	2°/2°	(1) ERICSSON – RADIO 4460 B25+B66	(SHARED FIBER)	–
BETA	B1	L2500/N2500	148'	120°	ERICSSON	AIR6449 B41	0°	2°/2°	–	(1) 1-3/8" 6x12 HYBRID (SHARED)	210'-0"
BETA	B2	L600/L700/N600	148'	120°	RFS	APXVAARR24_43-U-NA20	0°	2°/2°/0°/0°	(1) ERICSSON – RADIO 4449 B71+B85	(SHARED FIBER)	–
BETA	B3	–	–	–	–	–	–	–	–	–	–
BETA	B4	L2100/L1900/G1900	148'	120°	COMMSCOPE	VV-65A-R1	0°	2°/2°	(1) ERICSSON – RADIO 4460 B25+B66	(SHARED FIBER)	–
GAMMA	C1	L2500/N2500	148'	240°	ERICSSON	AIR6449 B41	0°	2°/2°	–	(1) 1-5/8" 6x24 HYBRID (SHARED)	210'-0"
GAMMA	C2	L600/L700/N600	148'	240°	RFS	APXVAARR24_43-U-NA20	0°	2°/2°/0°/0°	(1) ERICSSON – RADIO 4449 B71+B85	(SHARED FIBER)	–
GAMMA	C3	–	–	–	–	–	–	–	–	–	–
GAMMA	C4	L2100/L1900/G1900	148'	240°	COMMSCOPE	VV-65A-R1	0°	2°/2°	(1) ERICSSON – RADIO 4460 B25+B66	(SHARED FIBER)	–

1 ANTENNA AND CABLE SCHEDULE
SCALE: NOT TO SCALE

INSTALLER NOTES:

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



2 ANTENNA WITH RRU MOUNTING DETAIL
SCALE: NOT TO SCALE

T-Mobile
1001 PINNACLE POINT DRIVE
COLUMBIA, SC 29223

CROWN CASTLE
6325 AUDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

FPA FRENCH & PARRELLO ASSOCIATES
1800 Route 34, Suite 101 • Wall, New Jersey 07719
o: 732.312.9800 f: 732.312.9801

T-MOBILE SITE NUMBER:
CT11027D

BU #: **876343**
GUILFORD WEST STONE PROPERTY

1919 BOSTON POST RD.
GUILFORD, CT 06437

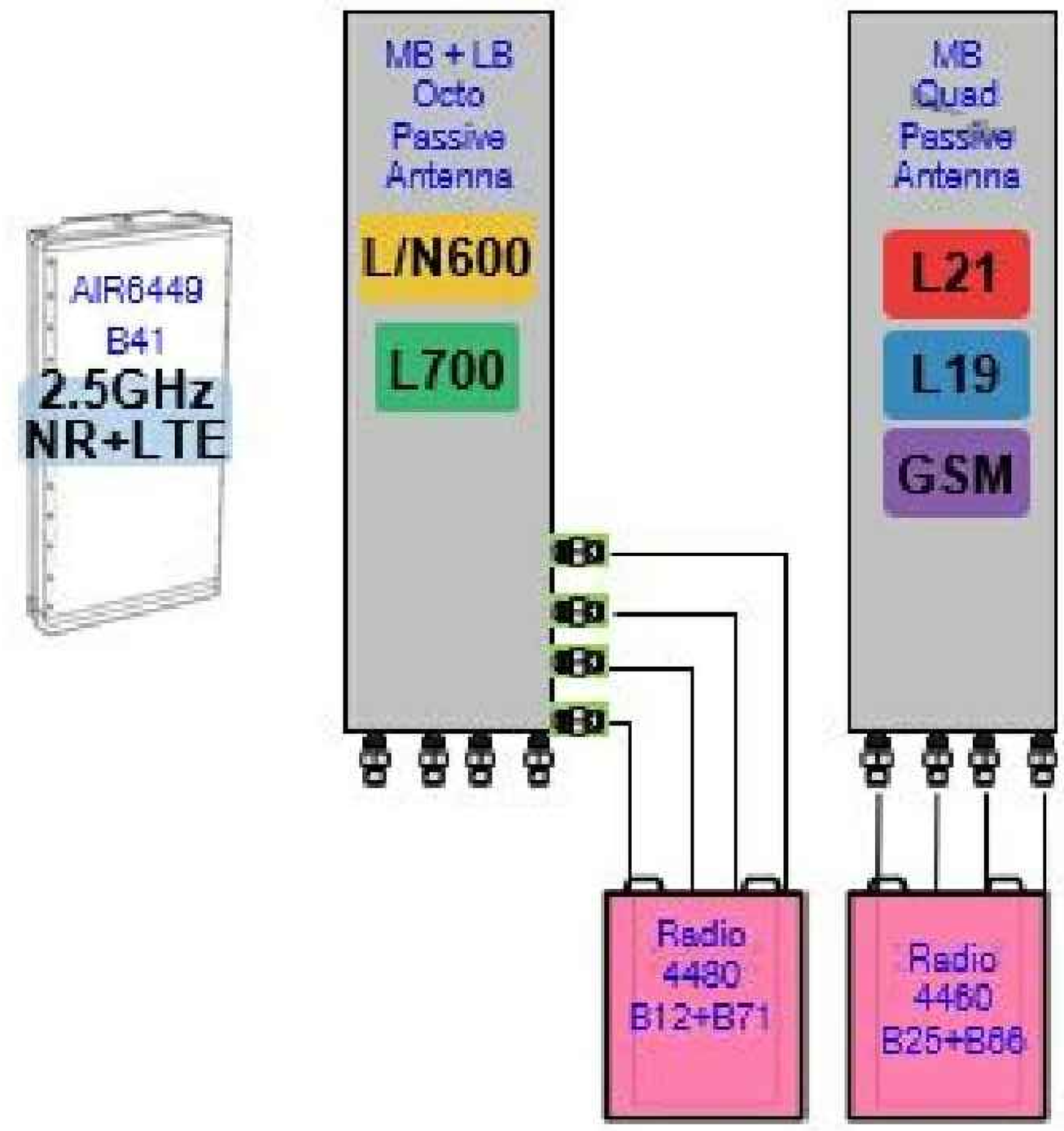
EXISTING 150'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	11/24/21	K.S.S.	PRELIMINARY	J.B.
B	11/30/21	K.S.S.	FINAL	J.B.
C	12/07/21	K.S.S.	FINAL	J.B.

STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED
PROFESSIONAL ENGINEER

SHEET NUMBER: C-3
REVISION: B



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
1001 PINNACLE POINT DRIVE
COLUMBIA, SC 29223

CROWN CASTLE
6325 AUDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

FPA
FRENCH & PARRELLO ASSOCIATES
1800 Route 34, Suite 101 • Wall, New Jersey 07719
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T-MOBILE SITE NUMBER:
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1919 BOSTON POST RD.
GUILFORD, CT 06437

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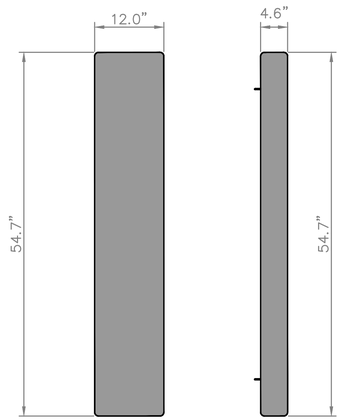
STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED
PROFESSIONAL ENGINEER

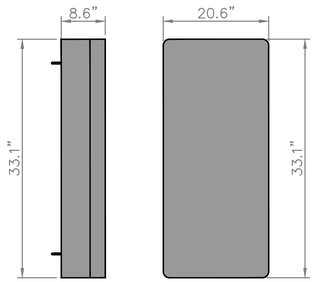
SHEET NUMBER: C-4

REVISION: B



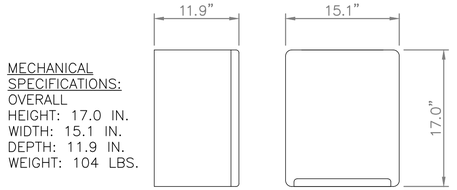
MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 54.7 IN.
WIDTH: 12.0 IN.
DEPTH: 4.6 IN.
WEIGHT: 33.3 LBS.

1 VV-65A-R1 (QUAD) DETAIL
SCALE: NOT TO SCALE



MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 33.1 IN.
WIDTH: 20.6 IN.
DEPTH: 8.6 IN.
WEIGHT: 104 LBS.

2 AIR6449 B41 ANTENNA DETAIL
SCALE: NOT TO SCALE



MECHANICAL
SPECIFICATIONS:
OVERALL
HEIGHT: 17.0 IN.
WIDTH: 15.1 IN.
DEPTH: 11.9 IN.
WEIGHT: 104 LBS.

3 RADIO 4460 B25 B66 DETAIL
SCALE: NOT TO SCALE

Technical Specifications

Dimensions		
	Height	63 in.
	Width	25.6 in.
	Depth	33.5 in.
Max. Weight		605 lbs

4 6160 CABINET DETAIL
SCALE: NOT TO SCALE

Technical Specifications

Dimensions		
	Height	63 in.
	Width	25.6 in.
	Depth	25.6 in.
Max. Weight		1,883 lbs

5 B160 BATTERY CABINET DETAIL
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

T-Mobile
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T-MOBILE SITE NUMBER:
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GUILFORD WEST STONE PROPERTY

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SHEET NUMBER: C-5

REVISION: B

JOB NAME: CT11027D RATING: 240/120V, 1 PH, 3W, 200A		**TM (T-MOBILE PANEL)** (EXISTING)						T-MOBILE LOCATION: PPC	
CKT. NO.	CIRCUIT DESCRIPTION	POLE	BKR.	A	B	BKR.	POLE	CIRCUIT DESCRIPTION	CKT. NO.
1	NO LABEL	2	30			20	1	NO LABEL	2
3						60	2	NO LABEL	4
5	RBS 6131	2	150						6
7						20	1	NO LABEL	8
9		2	150			150	2	6160/B160	10
11									12
13	SAFETY LIGHT	1	15			150	2		14
15									16
17									18
19									20
21									22
23									24

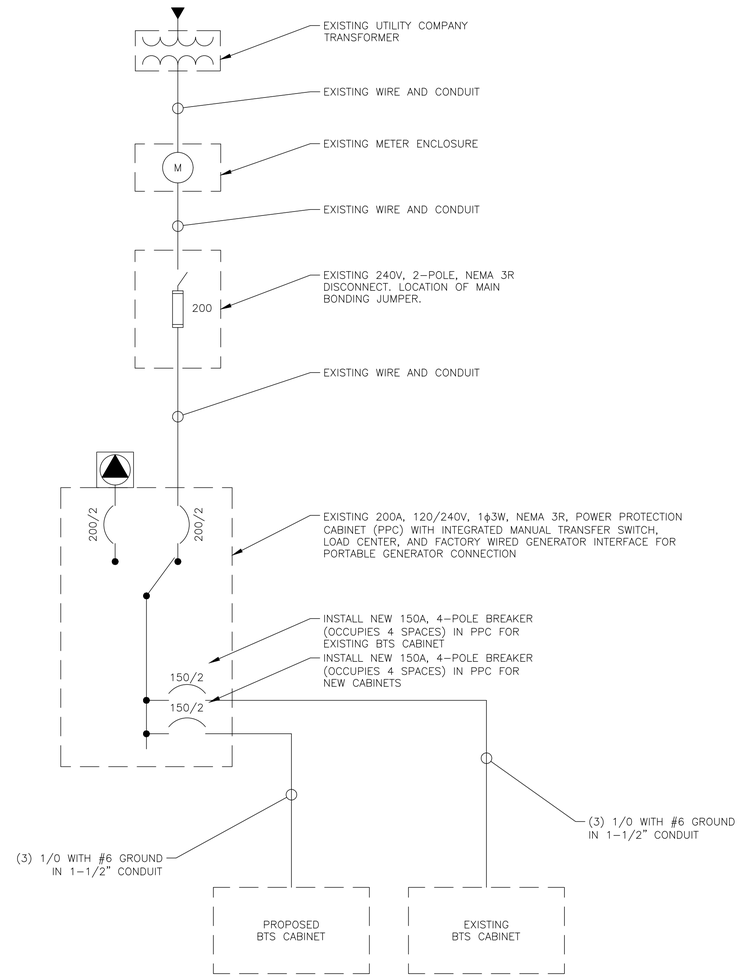
NOTES

1. ALL BUSING TO BE COPPER
2. BOLT ON BREAKERS ONLY
3. CONTRACTOR IS RESPONSIBLE TO COORDINATE THE SHORT CIRCUIT RATING PRIOR TO PURCHASING ANY EQUIPMENT.
4. ALL WIRE SIZES ARE BASED ON 75 DEGREE WIRE.
5. SHORT CIRCUIT RATING: PANEL SHALL BE FULLY RATED TO INTERRUPT SYMMETRICAL SHORT CIRCUIT CURRENT AVAILA

1 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, 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.



2 ONE LINE DIAGRAM
SCALE: NOT TO SCALE

T-Mobile
1001 PINNACLE POINT DRIVE
COLUMBIA, SC 29223

CROWN CASTLE
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CHARLOTTE, NC 28277

FPA FRENCH & PARRELLO ASSOCIATES
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T-MOBILE SITE NUMBER:
CT11027D

BU #: **876343**
GUILFORD WEST STONE PROPERTY

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EXISTING 150'-0" MONOPOLE

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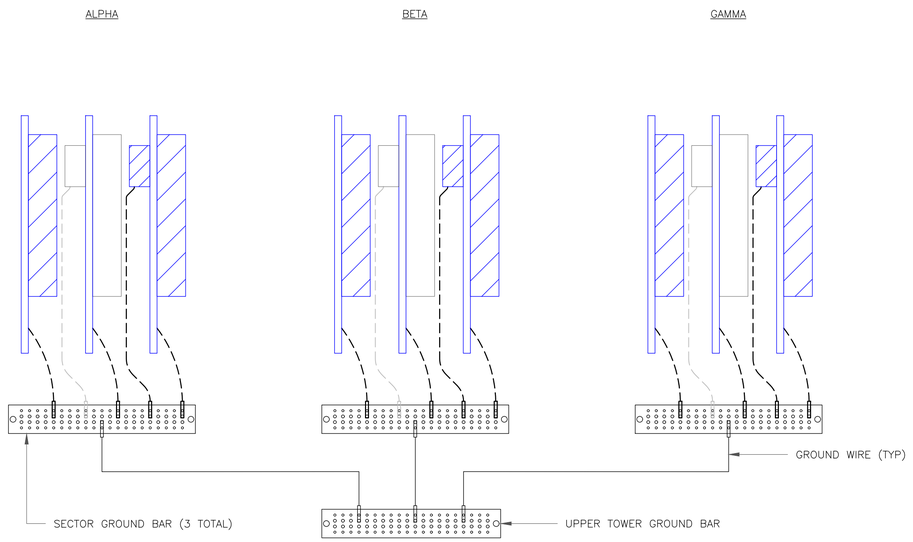
SHEET NUMBER: E-1

REVISION: B



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

1001 PINNACLE POINT DRIVE
COLUMBIA, SC 29223

CROWN CASTLE

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CHARLOTTE, NC 28277

FPA
FRENCH & PARRELLO ASSOCIATES
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GUILFORD, CT 06437

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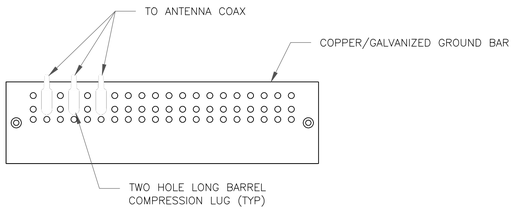
STATE OF CONNECTICUT
JOHN B. BOSCO
No. 25605
LICENSED PROFESSIONAL ENGINEER

SHEET NUMBER: G-1

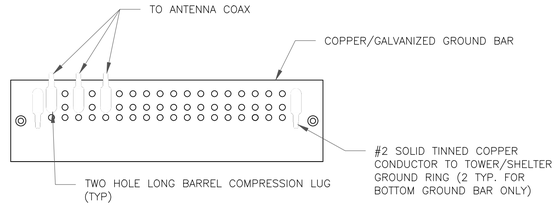
REVISION: B



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.

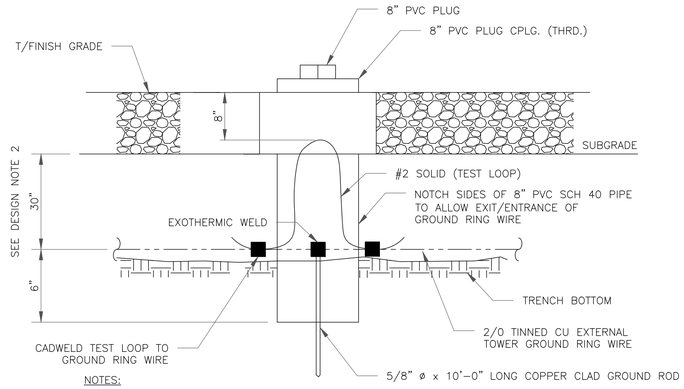
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



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.

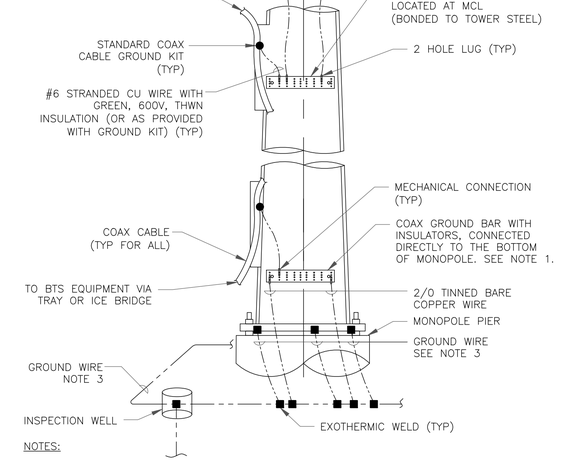
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



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)

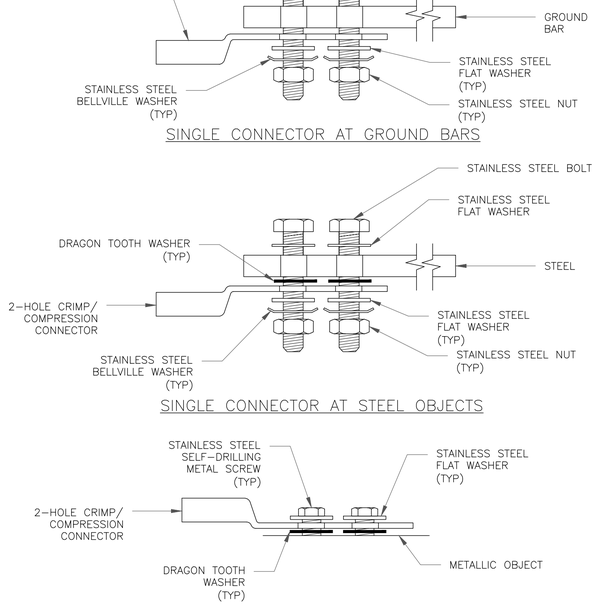
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



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

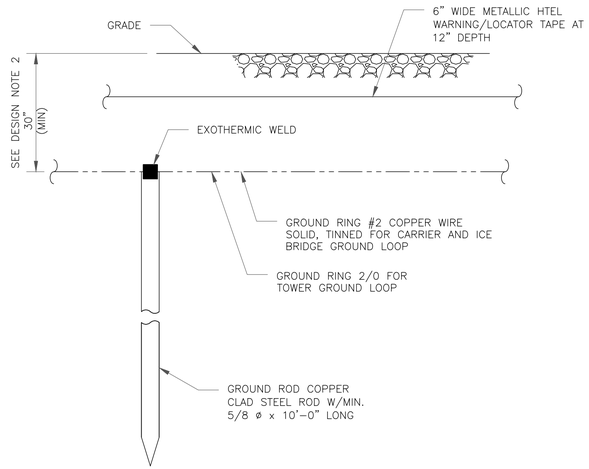


SINGLE CONNECTOR AT GROUND BARS

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

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COLUMBIA, SC 29223

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6325 AUDREY KELL ROAD, SUITE 600
CHARLOTTE, NC 28277

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T-MOBILE SITE NUMBER:
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BU #: **876343**
GUILFORD WEST STONE PROPERTY

1919 BOSTON POST RD.
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EXISTING 150'-0" MONOPOLE

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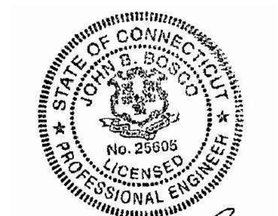
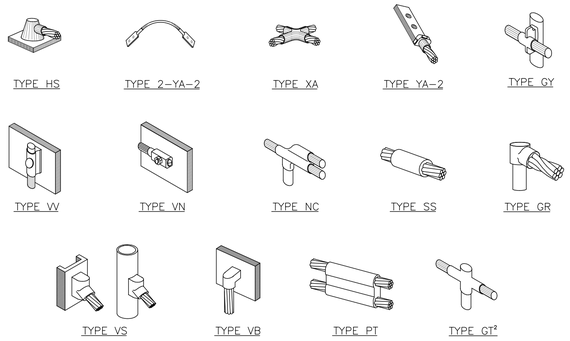


SHEET NUMBER: G-2

REVISION: B

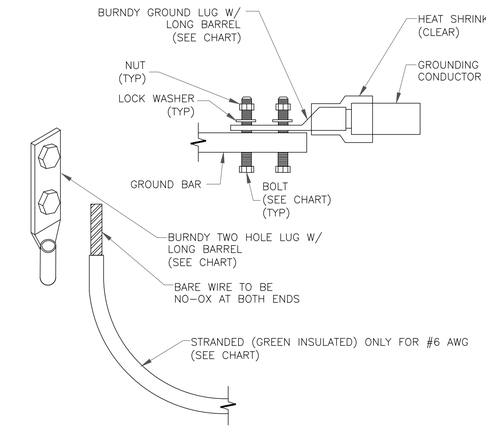


NOTE:

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

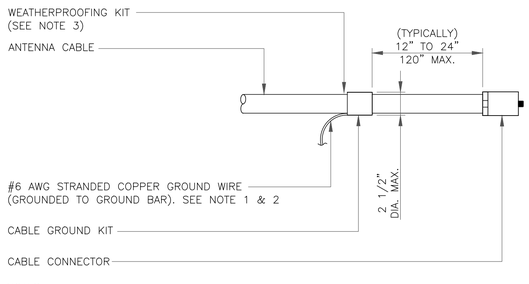
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



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.

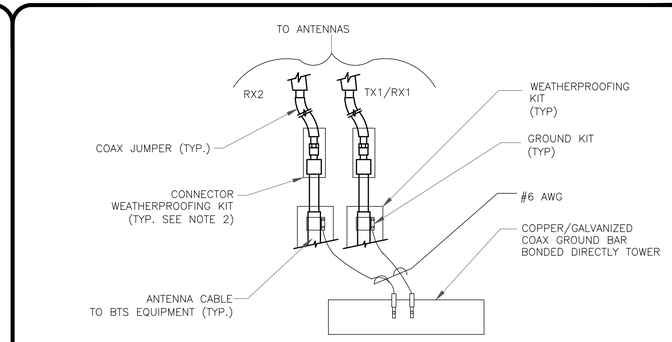
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



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.

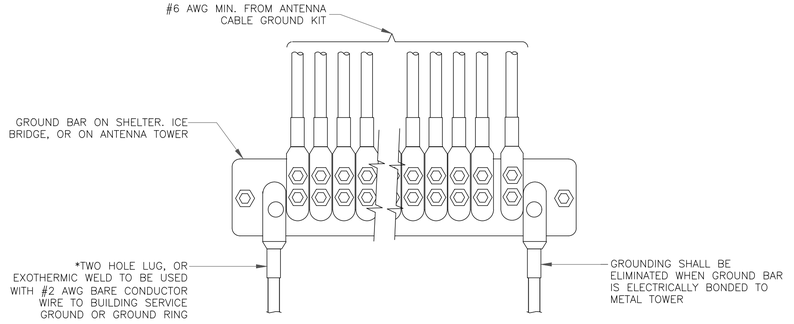
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



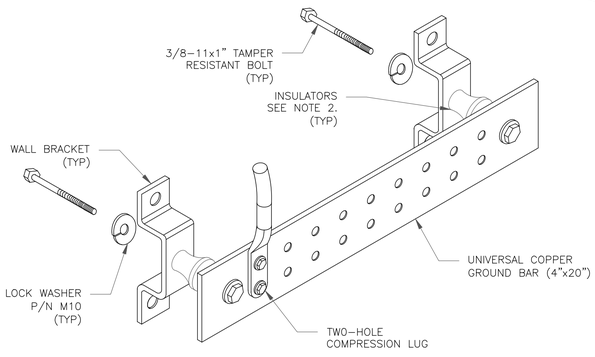
NOTES:

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



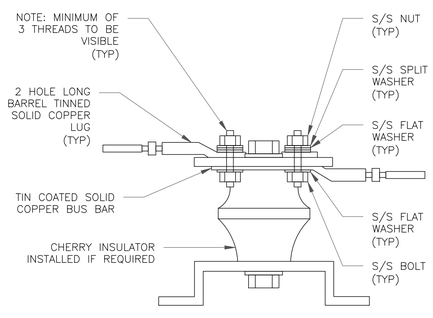
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



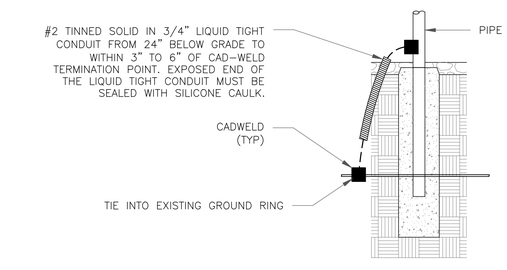
NOTES:

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
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SHEET NUMBER: G-3

REVISION: B