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

July 11, 2024

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

RE: **Notice of Exempt Modification for ATT**
Crown #825998; ATT Site ID CTL05601
234 Melba Street, Milford, CT 06460
Latitude: 41° 12′ 36.02" / Longitude: -73° 1' 8.45"

Dear Ms. Bachman:

ATT currently maintains three (3) antennas at the 91'6" foot mount and three (3) antennas at the 101'foot mount on the existing 125-foot concealed flagpole tower located at 234 Melba Street, Milford, CT. The property is owned by 17 Mile 04 LLC and the tower is owned by Crown Castle. ATT now intends to replace three (3) new antennas at both the 91'6" foot & 101' foot level. This modification/proposal includes hardware that is both 4G (LTE) and 5G capable through remote software configuration and either or both services may be turned on or off at various times.

Planned Modification:

Tower:

Installed New:

EEI-TRIAD-FPXL W/EEI-TRIAD-AB & EEI-TRIAD CB Mounts at both levels
(3) Commscope-NNHHS4-65B-R5 Antennas
(3) CCI-DMP65R-BU6EA-K Antennas
(6) CCI-TMAT192123B68-31 TMAs
(6) Commscope-STX61742Q-43 Triplexers

Remove:

(3) CCI-OPA-65R-BU6BA Antennas
(3) CCI-OPA-65R-BU6A Antennas
(6) CCI-TMABPD783VG12A TMAs

Ground:

Install New:

(1) 6651 WITH XCEDE CABLE
(12) Batteries
(1) VERTIV-48V Battery Cabinet with (8) new batteries
(1) 4-way splitter for BBU Configuration
(3) Rectifiers
(3) ERICSSON-4415 B25 RRUs
(3) ERICSSON-8863 N77 RRUs
(3) ERICSSON-4449 B5/B12 RRUs
(1) ERICSSON-4478 B14 RRU
(6) KAELUS-DBC0062F3V52-1 Combiners
(6) COMMSCOPE-STX61742Q-43 Triplexers

Remove:

(1) Decom UMTS
(12) Batteries from Power Plant
(1) RXAIT Cabinet
(1) 5216
(3) ERICSSON-RRUS-12 B2 RRUs
(3) ERICSSON-RRUS-11 B12 RRUs
(3) ERICSSON-4478 B5 RRUs
(12) KAELUS-TBC0030F2V1-1 Diplexers
(12) KAELUS-TBC0042F1V51-1 Diplexers

The facility was approved by the City of Milford Planning & Zoning Board by way of a Special Exception on December 5, 2000. The approval was given with conditions which this exempt modification complies with.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mayor Anthony Giannattasio for the City of Milford, David B. Sulkis, City of Milford Planning Director, Crown Castle as the tower owner, and 17 Mile 04 LLC, the property owner.

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

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

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

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

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

Sincerely,

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

Attachments
cc:

Mayor Anthony Giannattasio
City of Milford
70 West River Street
Milford, CT 06460
(203) 783-3201

David B. Sulkis, Planning Director
City of Milford
70 West River Street
Milford, CT 06460
(203) 783-3245

17 Mile 04 LLC, Property Owner
69 Harry Street
Conshohocken, PA 19428

Crown Castle, Tower Owner

11738 Vol 2443 P49

DEC 27 2000

'00 DEC27AM11:33 19

CITY OF MILFORD, CONNECTICUT

THIS IS TO CERTIFY THAT VOICE STREAM WIRELESS CORPORATION

WAS GRANTED A SPECIAL EXCEPTION BY THE

MILFORD PLANNING & ZONING BOARD ON DECEMBER 5, 2000 FOR

PROPERTY LOCATED AT 234 MELBA STREET

MAP 39 BLOCK 542 PARCEL 38A

IN THE CITY OF MILFORD, COUNTY OF NEW HAVEN, STATE OF

CONNECTICUT FOR WHICH MELBA REALTY, LLC IS THE OWNER.

THE SPECIAL EXCEPTION WAS GRANTED:

To install a 125' tall monopole communications tower to also function as a flag pole structure with 15'x25' American Flag flown atop daily. It will be incumbent upon the applicant to maintain the flag and to submit an appropriate lighting plan which will illuminate, but not "over" illuminate the flag. If the applicant elects not to light the flag at night, the flag must be removed before nightfall; to be promptly re-flown during the daylight hours. Any proposed lighting system shall be submitted to Planning & Zoning Staff for review before installation is commenced. All construction shall be in accordance with plan prepared by Carter Burgess consisting of the following sheets: Title sheet dated June 2000; General Location Map Survey by Design Professionals, Inc. dated June 21, 2000; Specifications dated July 13, 2000, sheet C-0; Proposed Site Diagram dated July 13, 2000, sheet C-1; Site Details dated July 13, 2000, sheet C-2. The applicant will be required to weave grass insert strips between the links of the proposed chain link surround fence. Additional antennas, if any, must be installed within the interior of the flagpole (as shown). No further Planning & Zoning Board approval is required for "interior" antennas unless the associated equipment buildings exceed 6 ft. in height or are constructed beyond the proposed 20'x41'1" enclosure area. A variance was granted for the pole height to be at 125 ft. from 45 ft. allowed. The waiver was granted on September 12, 2000.

"NO VARIANCE, SPECIAL PERMIT OR SPECIAL EXCEPTION GRANTED PURSUANT TO CHAPTER 124 OF ANY SPECIAL ACT SHALL BE EFFECTIVE UNTIL A COPY THEREOF...IS RECORDED IN THE LAND RECORDS OF THE TOWN IN WHICH SUCH PREMISES ARE LOCATED."
P.A. 75-317

PLANNING & ZONING BOARD

RECORDED _____

CITY CLERK REC. NO. _____

BY: Wade E. Pierce

WADE E. PIERCE
EXECUTIVE SECRETARY

Received for record DEC 27 2000
at 11:33:19 AM and recorded by me.
Alan H. Jepsen
Milford City Clerk

VOL 2443 PG 051

'00 DEC 27 AM 11:54 11$

City of Milford, Connecticut

Founded 1639

ZONING BOARD OF APPEALS

70 West River Street
Milford, CT 06460-3317
Telephone (203) 783-3245
Fax (203) 783-3303

THIS IS TO CERTIFY THAT, Bruce Hoben Agent for VoiceStream Wireless appellant, was granted a variance by the Zoning Board of Appeals on September 12, 2000, for the property located at: **234 Melba Street,** Assessor's Map **39,** Block **542**, Parcel **38A ,** in the City of Milford, County of New Haven, State of Connecticut, of which Melba Realty, LLC, 20 E. Main Street, Suite 300, Waterbury, CT, are the owners.

A VARIANCE WAS GRANTED TO:

Vary Section 4.1.13 to allow flag pole with antenna concealed within to be 125 ft. tall where a maximum height of 45 ft. is allowed.

"NO VARIANCE, SPECIAL PERMIT OR SPECIAL EXCEPTION GRANTED PURSUANT TO CHAPTER 124 OF ANY SPECIAL ACT SHALL BE EFFECTIVE UNTIL A COPY THEREOF...IS RECORDED IN THE LAND RECORDS OF THE TOWN IN WHICH SUCH PREMISES ARE LOCATED." P.A. 75-317

RECORDED: _____ **ZONING BOARD OF APPEALS**
DATE

CITY CLERK REC. NO. _____ **BY:** Errol Van Hise/BN
Errol Van Hise, Chairman

Received for record DEC 27 2000
at 11:54:11 AM and recorded by me.
Alan H. Jepson
Milford City Clerk

20672

VOL 2814 PG 467

ZONING BOARD OF APPEALS

City of Milford, Connecticut

Founded 1639

70 West River Street
Milford, CT 06460-3317
Telephone (203) 783-3245
Fax (203) 783-3303

THIS IS TO CERTIFY THAT, Ronald Lombard, appellant, was granted a variance by the Zoning Board of Appeals on October 14, 2003, for the property located at: **232 – 234 Melba Street,** Assessor's Map **39,** Block **542,** Parcel **38A,** in the City of Milford, County of New Haven, State of Connecticut, of which, **Melba Realty, LLC, 20 East Main Street,** Waterbury, CT is the owner.

A VARIANCE WAS GRANTED TO:

Vary Sect. 3.9.4.2(3)(a) front yard setback (for parking) from 20 ft. to 0 ft.

"NO VARIANCE, SPECIAL PERMIT OR SPECIAL EXCEPTION GRANTED PURSUANT TO CHAPTER 124 OF ANY SPECIAL ACT SHALL BE EFFECTIVE UNTIL A COPY THEREOF...IS RECORDED IN THE LAND RECORDS OF THE TOWN IN WHICH SUCH PREMISES ARE LOCATED." P.A. 75-317

RECORDED: _____ **ZONING BOARD OF APPEALS**
DATE

CITY CLERK REC. NO. _____ **BY:** Fred Katen /BH
Fred Katen, Chairman

VOL. _____ **PAGE** _____

Received for record OCT 21 2003
at 8:38:25 A.M. and recorded by me.
Alan H. Jafferson
Milford City Clerk

234 MELBA ST

Location	234 MELBA ST	**Mblu**	39/ 542/ 38/A /
Acct#	016774	**Owner**	17 MILE 04 LLC
Assessment	$1,306,810	**Appraisal**	$1,866,870
PID	9527	**Building Count**	1

Current Value

Appraisal

Valuation Year	Improvements	Land	Total
2021	$1,299,840	$567,030	$1,866,870

Assessment

Valuation Year	Improvements	Land	Total
2021	$909,890	$396,920	$1,306,810

Owner of Record

Owner	17 MILE 04 LLC	**Sale Price**	$0
Other		**Certificate**	
Address	69 HARRY ST CONSHOHOCKEN, PA 19428	**Book & Page**	03670/0238
		Sale Date	03/04/2016
		Instrument	

Ownership History

Ownership History

Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
17 MILE 04 LLC	$0		03670/0238		03/04/2016
17 MILE 04 LLC	$2,490,000		03670/0233	00	03/04/2016
MELBA REALTY LLC	$0		02273/0471	14	04/16/1998
LOJAC LLC	$20,000		02252/0466	14	12/12/1997
SADL ANTON	$0		01169/0031		08/31/1982

Building Information

Building 1 : Section 1

Year Built: 1970

Living Area:	15,684
Replacement Cost:	$1,073,272
Building Percent Good:	70
Replacement Cost Less Depreciation:	$751,290

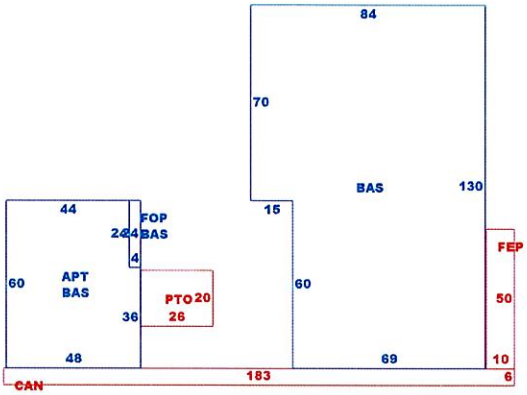
Building Attributes

Field	Description
Style:	Stores/Apt Com
Model	Commercial
Grade	AVERAGE
Stories:	2
Occupancy	2.00
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	Concr/Cinder
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall/Sheet
Interior Wall 2	
Interior Floor 1	Linoleum
Interior Floor 2	
Heating Fuel	Gas
Heating Type	Forced Air-Duc
AC Type	Central
Struct Class	
Bldg Use	STORE/SHOP MDL-94
Total Rooms	
Total Bedrms	00
Total Baths	2
Bath Desc.	0-Full 2-Half
1st Floor Use:	3220
Heat/AC	HEAT/AC PKGS
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	8.00
% Comn Wall	0.00

Building Photo

(https://images.vgsi.com/photos/MilfordCTPhotos///0059/DSCN0875_5962

Building Layout



(ParcelSketch.ashx?pid=9527&bid=9633)

Building Sub-Areas (sq ft) Legend

Code	Description	Gross Area	Living Area
BAS	First Floor	12,900	12,900
APT	Apartment	2,784	2,784
CAN	Canopy	1,098	0
FEP	Porch, Enclosed, Finished	500	0
FOP	Porch, Open, Finished	96	0
PTO	Patio	520	0
		17,898	15,684

Extra Features

Extra Features Legend

No Data for Extra Features

Land

Land Use

Use Code	3220
Description	STORE/SHOP MDL-94
Zone	BD
Neighborhood	J
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	2.71
Frontage	
Depth	
Assessed Value	$396,920
Appraised Value	$567,030

Outbuildings

Outbuildings — Legend

Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	PAVING-ASPHALT			9500.00 S.F.	$8,550	1
CEL1	CEL TWR SITE			2.00 UNITS	$540,000	1

Valuation History

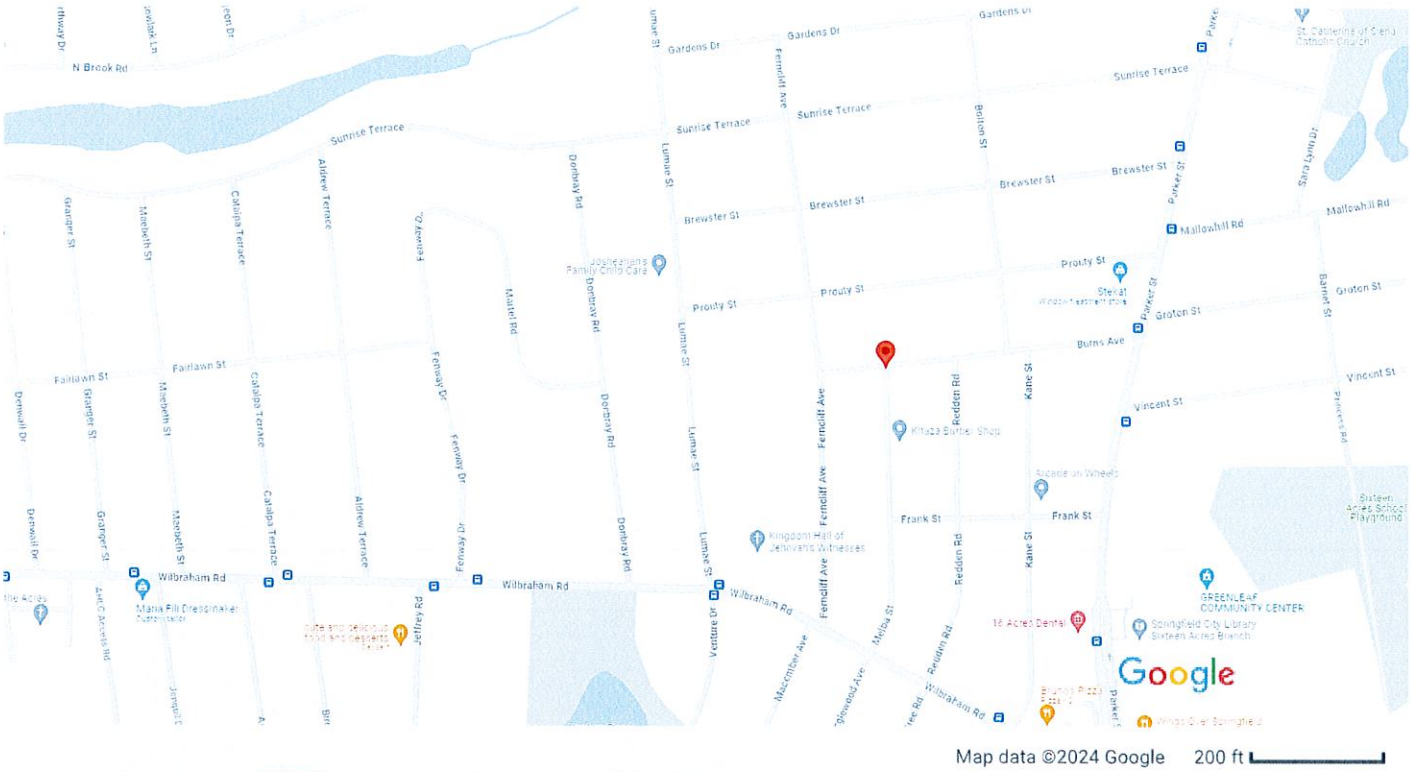
Appraisal

Valuation Year	Improvements	Land	Total
2022	$1,285,360	$567,030	$1,852,390
2021	$1,285,360	$567,030	$1,852,390
2019	$1,491,000	$453,620	$1,944,620
2018	$1,491,000	$453,620	$1,944,620

Assessment

Valuation Year	Improvements	Land	Total
2022	$899,760	$396,920	$1,296,680
2021	$899,760	$396,920	$1,296,680
2019	$1,043,700	$317,530	$1,361,230
2018	$1,043,700	$317,530	$1,361,230

234 Melba St



234 Melba St

Directions | Save | Nearby | Send to phone | Share

234 Melba St, Springfield, MA 01119

Confirm or fix this location
The location shown is not precise

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, July 10, 2024 10:14 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777295066179: Your package has been delivered

Hi. Your package was delivered Wed, 07/10/2024 at 10:07am.

Delivered to 70 W RIVER ST, MILFORD, CT 06460
Received by A.AGAVINO

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	777295066179
FROM	Crown Castle 1800 West Park Drive Suite 200 WESTBOROUGH, MA, US, 01581
TO	City of Milford Mayor Anthony Giannattasio 70 West River Street MILFORD, CT, US, 06460
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 7/09/2024 06:16 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	MILFORD, CT, US, 06460
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, July 10, 2024 10:15 AM
To: Barbadora, Jeff
Subject: FedEx Shipment 777295142472: Your package has been delivered

Hi. Your package was delivered Wed, 07/10/2024 at 10:07am.

Delivered to 70 W RIVER ST, MILFORD, CT 06460
Received by A.AGAVINO

OBTAIN PROOF OF DELIVERY

How was your delivery ?

TRACKING NUMBER	777295142472
FROM	Crown Castle 1800 West Park Drive Suite 200 WESTBOROUGH, MA, US, 01581
TO	City of Milford David Sulkis, Planning Director 70 West River Street MILFORD, CT, US, 06460
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 7/09/2024 06:16 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	MILFORD, CT, US, 06460
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

Barbadora, Jeff

From: TrackingUpdates@fedex.com
Sent: Wednesday, July 10, 2024 4:29 PM
To: Barbadora, Jeff
Subject: FedEx Shipment 777295187240: Your package has been delivered
Attachments: DeliveryPicture.jpeg

Hi. Your package was delivered Wed, 07/10/2024 at 4:22pm.

Delivered to 69 HARRY ST, CONSHOHOCKEN, PA 19428

OBTAIN PROOF OF DELIVERY

Delivery picture not showing? View in browser.

How was your delivery ?

TRACKING NUMBER	777295187240
FROM	Crown Castle 1800 West Park Drive Suite 200 WESTBOROUGH, MA, US, 01581
TO	17 Mile 04 LLC 69 Harry Street CONSHOHOCKEN, PA, US, 19428
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Tue 7/09/2024 06:16 PM
DELIVERED TO	Residence
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	CONSHOHOCKEN, PA, US, 19428

Date: **April 8, 2024**

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

Subject: Structural Analysis Report

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Site Number:	CTL05601
	Site Name:	SHERMAN-ANDERSON R D EXIT
	FA Number:	10071133
Crown Castle Designation:	**BU Number:**	825998
	Site Name:	Milford Shore Area
	JDE Job Number:	649386
	Work Order Number:	2289483
	Order Number:	556514 Rev. 7
Engineering Firm Designation:	**TEP Project Number:**	53131.944092
Site Data:	**234 Melba Street, Milford, New Haven County, CT 06460** **Latitude *41° 12' 36.02"*, Longitude *-73° 1' 8.45"*** **125 Foot - Concealment 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:

LC5: Proposed Equipment Configuration **Sufficient Capacity**

This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2022 Connecticut State Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: SPN / CS

Respectfully submitted by:

Aaron T. Rucker, P.E.

Electronic Copy

04/08/2024

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6) APPENDIX B
Base Level Drawing

7) APPENDIX C
Additional Calculations

1) INTRODUCTION

This tower is a 125-ft concealment tower designed by PiROD Inc. and mapped by Tower Engineering Professionals in December of 2018. The base tower is 85.0-ft, and the concealment spine extends from 85.0-ft to 125.0-ft. The tower has been modified multiple times in the past to accommodate additional loading.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	D
Topographic Factor:	1.0
Ice Thickness:	1.00 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)
100.0	101.0	3	CCI Antennas	DMP65R-BU6E_CCIV2 w/ Mount Pipe	18	7/8
		3	Commscope	STX61742Q-43		
	100.0	1	Generic	42" Dia. x 10' Long Concealment Canister		
	97.0	3	Commscope	TMAT192123B68-31		
	96.0	3	Commscope	TMAT192123B68-31		
90.0	91.0	3	Commscope	NNHHS4-65B-R5 w/ Mount Pipe	6 3	7/8 1/2
		3	Commscope	STX61742Q-43		
	90.0	1	Generic	42" Dia. x 10' Long Concealment Canister		
	87.0	3	CCI Antennas	TMABPDB7823VG12A		
	86.0	3	CCI Antennas	TMABPDB7823VG12A		

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)
120.0	120.0	1	Generic	42" Dia. x 10' Long Concealment Canister	6	7/8
		3	RFS Celwave	APXV18-206516L-A w/ Mount Pipe		
	117.0	3	Ericsson	KRY 112 144/1		
110.0	110.0	1	Generic	42" Dia. x 10' Long Concealment Canister	6	7/8
		3	RFS Celwave	APXV18-206516L-A w/ Mount Pipe		
	108.0	3	Ericsson	KRY 112 144/1		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Report	3588955	CCISites
Tower Foundation Drawings	3961273	CCISites
Tower Mapping Report/Tower Manufacturer Drawings	3588957	CCISites
Tower Reinforcement Drawings	3747239	CCISites
Post-Modification Inspection	5601155	CCISites
Tower Reinforcement Drawings	8682643	CCISites
Post-Modification Inspection	9190652	CCISites
Tower Structural Analysis Report	10569249	CCISites

3.1) Analysis Method

tnxTower (version 8.2.4.3), 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.

tnxTower was used to determine the loads on the modified structure. Additional calculations were performed to determine the stresses in the pole and in the reinforcing elements. These calculations are presented in Appendix C.

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.
3) TEP previously analyzed the flange connection at 85.0-ft using an FEA analysis and found the flange to be sufficient (Doc ID 10569249). There is no increase to the wind loading in this analysis from that previous analysis, and thus the flange remains sufficient for this load case.

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)[1,2]

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
125 - 120	Pole	TP6.625x6.625x0.432	Pole	10.4%	Pass
120 - 115	Pole	TP6.625x6.625x0.432	Pole	21.3%	Pass
115 - 110	Pole	TP6.625x6.625x0.432	Pole	41.0%	Pass
110 - 105	Pole	TP6.625x6.625x0.432	Pole	60.9%	Pass
105 - 100	Pole	TP10.75x10.75x0.5	Pole	28.4%	Pass
100 - 95	Pole	TP10.75x10.75x0.5	Pole	37.7%	Pass
95 - 90	Pole	TP10.75x10.75x0.5	Pole	49.6%	Pass
90 - 85	Pole	TP10.75x10.75x0.5	Pole	61.7%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
85 - 80	Pole	TP24x24x0.375	Pole	20.5%	Pass
80 - 75	Pole	TP24x24x0.375	Pole	24.5%	Pass
75 - 70	Pole	TP24x24x0.375	Pole	28.7%	Pass
70 - 65	Pole	TP24x24x0.375	Pole	33.2%	Pass
65 - 60	Pole	TP24x24x0.375	Pole	38.0%	Pass
60 - 55	Pole	TP24x24x0.375	Pole	43.0%	Pass
55 - 50	Pole	TP24x24x0.375	Pole	48.2%	Pass
50 - 45	Pole	TP24x24x0.375	Pole	53.6%	Pass
45 - 40	Pole	TP24x24x0.375	Pole	59.3%	Pass
40 - 35	Pole	TP24x24x0.375	Pole	65.1%	Pass
35 - 30	Pole	TP24x24x0.375	Pole	71.2%	Pass
30 - 25	Pole	TP24x24x0.375	Pole	77.3%	Pass
25 - 23.83	Pole	TP24x24x0.375	Pole	78.8%	Pass
23.83 - 23.58	Pole + Reinf.	TP24x24x0.5125	Reinf. 1 Tension Rupture	69.4%	Pass
23.58 - 20.5	Pole + Reinf.	TP24x24x0.5125	Reinf. 1 Tension Rupture	72.9%	Pass
20.5 - 20.25	Pole + Reinf.	TP24x24x0.6375	Reinf. 1 Tension Rupture	68.1%	Pass
20.25 - 20	Pole + Reinf.	TP24x24x0.825	Reinf. 1 Tension Rupture	59.6%	Pass
20 - 19.75	Pole + Reinf.	TP24x24x0.975	Reinf. 1 Tension Rupture	51.5%	Pass
19.75 - 19.5	Pole + Reinf.	TP24x24x0.775	Reinf. 1 Tension Rupture	58.3%	Pass
19.5 - 19.25	Pole	TP24x24x0.5	Pole	60.8%	Pass
19.25 - 14.25	Pole	TP24x24x0.5	Pole	65.6%	Pass
14.25 - 9.25	Pole	TP24x24x0.5	Pole	70.5%	Pass
9.25 - 4.25	Pole	TP24x24x0.5	Pole	75.5%	Pass
4.25 - 0	Pole	TP24x24x0.5	Pole	79.8%	Pass
				Summary	
			Pole	79.8%	Pass
			Reinforcement	72.9%	Pass
			Overall	**79.8%**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity - LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1,2	Flange Connection	105.0	76.8	Pass
1,2	Flange Connection	85.0	74.1	Pass
1,2	Flange Connection	50.0	83.0	Pass
1,2	Flange Connection	20.0	69.3	Pass
1,2	Anchor Rods	-	73.9	Pass
1,2	Base Plate	-	83.7	Pass
1,2	Base Foundation Structural	-	60.0	Pass
1,2	Base Foundation Soil Interaction	-	51.1	Pass

Structure Rating (max from all components) =	83.7%

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

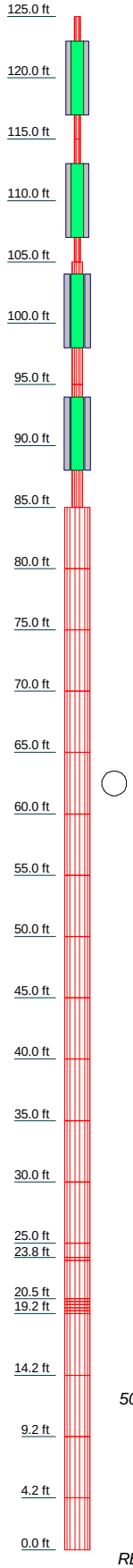
4.1) Recommendations

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

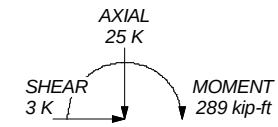
APPENDIX A

TNXTOWER OUTPUT

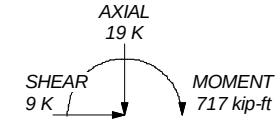
Section	Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	0	0.4320	6.6250	6.6250	A500-42	0.1
2	5.00	0	0.4320	6.6250	6.6250		0.1
3	5.00	0	0.4320	6.6250	6.6250		0.1
4	5.00	0	0.4320	6.6250	6.6250		0.1
5	5.00	0	0.5000	10.7500	10.7500		0.3
6	5.00	0	0.5000	10.7500	10.7500		0.3
7	5.00	0	0.5000	10.7500	10.7500		0.3
8	5.00	0	0.5000	10.7500	10.7500		0.3
9	5.00	0	0.3750	24.0000	24.0000		0.5
10	5.00	0	0.3750	24.0000	24.0000		0.5
11	5.00	0	0.3750	24.0000	24.0000		0.5
12	5.00	0	0.3750	24.0000	24.0000		0.5
13	5.00	0	0.3750	24.0000	24.0000		0.5
14	5.00	0	0.3750	24.0000	24.0000		0.5
15	5.00	0	0.3750	24.0000	24.0000		0.5
16	5.00	0	0.3750	24.0000	24.0000		0.5
17	5.00	0	0.3750	24.0000	24.0000	A53-B-42	0.5
18	5.00	0	0.3750	24.0000	24.0000		0.5
19	5.00	0	0.3750	24.0000	24.0000		0.5
20	5.00	0	0.3750	24.0000	24.0000		0.5
21	1.17	0	0.3750	24.0000	24.0000		0.1
22	0.08	0	0.3750	24.0000	24.0000		0.0
23	0.25	0	0.3750	24.0000	24.0000		0.0
24	0.08	0	0.3750	24.0000	24.0000		0.0
25	0.25	0	0.3750	24.0000	24.0000		0.0
26	0.08	0	0.3750	24.0000	24.0000		0.0
27	0.25	0	0.3750	24.0000	24.0000		0.0
28	0.08	0	0.3750	24.0000	24.0000		0.0
29	5.00	0	0.5000	24.0000	24.0000		0.6
30	5.00	0	0.5000	24.0000	24.0000		0.6
31	5.00	0	0.5000	24.0000	24.0000		0.6
32	4.25	0	0.5000	24.0000	24.0000		0.5
							10.6



ALL REACTIONS ARE FACTORED



TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE



REACTIONS - 120 mph WIND

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-42	42 ksi	58 ksi	A53-B-42	42 ksi	63 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure D to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 79.8%

Tower Engineering Professionals

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

Job:	***Milford Shore Area (BU 825998)***		
Project:	***TEP No. 53131.944092***		
Client: Crown Castle	Drawn by: RTP		App'd:
Code: TIA-222-H	Date: 04/08/24		Scale: NTS
Path:			Dwg No. E-1

Tower Input Data

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

Tower is located in New Haven County, Connecticut.
Tower base elevation above sea level: 31.00 ft.
Basic wind speed of 120 mph.
Risk Category II.
Exposure Category D.
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.
TOWER RATING: 79.8%.
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	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Horizontals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Consider Moments - Diagonals	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
Use Moment Magnification	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Stress Ratios	Retension Guys To Initial Tension	Offset Girt At Foundation
√ Use Code Safety Factors - Guys	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Escalate Ice	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Always Use Max Kz	√ Project Wind Area of Appurtenances	Use TIA-222-H Bracing Resist. Exemption
Use Special Wind Profile	√ Alternative Appurt. EPA Calculation	Use TIA-222-H Tension Splice Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	√ Include Shear-Torsion Interaction
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Pole Without Linear Attachments
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	√ Pole With Shroud Or No Appurtenances
Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules	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	125.00-120.00	5.00	0.00	Round	6.6250	6.6250	0.4320		A500-42 (42 ksi)
L2	120.00-115.00	5.00	0.00	Round	6.6250	6.6250	0.4320		A500-42 (42 ksi)
L3	115.00-110.00	5.00	0.00	Round	6.6250	6.6250	0.4320		A500-42 (42 ksi)
L4	110.00-105.00	5.00	0.00	Round	6.6250	6.6250	0.4320		A500-42 (42 ksi)
L5	105.00-100.00	5.00	0.00	Round	10.7500	10.7500	0.5000		A500-42 (42 ksi)
L6	100.00-95.00	5.00	0.00	Round	10.7500	10.7500	0.5000		A500-42 (42 ksi)
L7	95.00-90.00	5.00	0.00	Round	10.7500	10.7500	0.5000		A500-42 (42 ksi)
L8	90.00-85.00	5.00	0.00	Round	10.7500	10.7500	0.5000		A500-42 (42 ksi)
L9	85.00-80.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L10	80.00-75.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L11	75.00-70.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L12	70.00-65.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L13	65.00-60.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L14	60.00-55.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L15	55.00-50.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L16	50.00-45.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L17	45.00-40.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L18	40.00-35.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L19	35.00-30.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L20	30.00-25.00	5.00	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L21	25.00-23.83	1.17	0.00	Round	24.0000	24.0000	0.3750		A53-B-42 (42 ksi)
L22	23.83-23.58	0.25	0.00	Round	24.0000	24.0000	0.5125		A53-B-42 (42 ksi)
L23	23.58-20.50	3.08	0.00	Round	24.0000	24.0000	0.5125		A53-B-42 (42 ksi)
L24	20.50-20.25	0.25	0.00	Round	24.0000	24.0000	0.6375		A53-B-42 (42 ksi)
L25	20.25-20.00	0.25	0.00	Round	24.0000	24.0000	0.8250		A53-B-42 (42 ksi)
L26	20.00-19.75	0.25	0.00	Round	24.0000	24.0000	0.9750		A53-B-42 (42 ksi)
L27	19.75-19.50	0.25	0.00	Round	24.0000	24.0000	0.7750		A53-B-42 (42 ksi)
L28	19.50-19.25	0.25	0.00	Round	24.0000	24.0000	0.5000		A53-B-42 (42 ksi)
L29	19.25-14.25	5.00	0.00	Round	24.0000	24.0000	0.5000		A53-B-42 (42 ksi)
L30	14.25-9.25	5.00	0.00	Round	24.0000	24.0000	0.5000		A53-B-42 (42 ksi)
L31	9.25-4.25	5.00	0.00	Round	24.0000	24.0000	0.5000		A53-B-42

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
L32	4.25-0.00	4.25		Round	24.0000	24.0000	0.5000		(42 ksi) A53-B-42 (42 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	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
L2	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
L3	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
L4	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
	6.6250	8.4049	40.4907	2.1949	3.3125	12.2236	80.9813	4.2000	0.0000	0
L5	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
L6	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
L7	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
L8	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
	10.7500	16.1007	211.9501	3.6282	5.3750	39.4326	423.9003	8.0455	0.0000	0
L9	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L10	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L11	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L12	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L13	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L14	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L15	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L16	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L17	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L18	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L19	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L20	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L21	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
	24.0000	27.8325	1942.2987	8.3538	12.0000	161.8582	3884.5973	13.9080	0.0000	0
L22	24.0000	37.8164	2608.9807	8.3061	12.0000	217.4151	5217.9613	18.8969	0.0000	0
	24.0000	37.8164	2608.9807	8.3061	12.0000	217.4151	5217.9613	18.8969	0.0000	0
L23	24.0000	37.8164	2608.9807	8.3061	12.0000	217.4151	5217.9613	18.8969	0.0000	0
	24.0000	37.8164	2608.9807	8.3061	12.0000	217.4151	5217.9613	18.8969	0.0000	0
L24	24.0000	46.7896	3194.6352	8.2630	12.0000	266.2196	6389.2704	23.3808	0.0000	0
	24.0000	46.7896	3194.6352	8.2630	12.0000	266.2196	6389.2704	23.3808	0.0000	0

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
L25	24.0000	60.0653	4037.5980	8.1988	12.0000	336.4665	8075.1961	30.0147	0.0000	0
	24.0000	60.0653	4037.5980	8.1988	12.0000	336.4665	8075.1961	30.0147	0.0000	0
L26	24.0000	70.5268	4682.1084	8.1479	12.0000	390.1757	9364.2168	35.2423	0.0000	0
	24.0000	70.5268	4682.1084	8.1479	12.0000	390.1757	9364.2168	35.2423	0.0000	0
L27	24.0000	56.5467	3816.9114	8.2158	12.0000	318.0759	7633.8227	28.2565	0.0000	0
	24.0000	56.5467	3816.9114	8.2158	12.0000	318.0759	7633.8227	28.2565	0.0000	0
L28	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
L29	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
L30	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
L31	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
L32	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0
	24.0000	36.9137	2549.3534	8.3104	12.0000	212.4461	5098.7067	18.4458	0.0000	0

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 125.00-120.00				0	0	1			
L2 120.00-115.00				0	0	1			
L3 115.00-110.00				0	0	1			
L4 110.00-105.00				0	0	1			
L5 105.00-100.00				0	0	1			
L6 100.00-95.00				0	0	1			
L7 95.00-90.00				0	0	1			
L8 90.00-85.00				0	0	1			
L9 85.00-80.00				1	1	1			
L10 80.00-75.00				1	1	1			
L11 75.00-70.00				1	1	1			
L12 70.00-65.00				1	1	1			
L13 65.00-60.00				1	1	1			
L14 60.00-55.00				1	1	1			
L15 55.00-50.00				1	1	1			
L16 50.00-45.00				1	1	1			
L17 45.00-40.00				1	1	1			
L18 40.00-35.00				1	1	1			
L19 35.00-30.00				1	1	1			
L20 30.00-25.00				1	1	1			
L21 25.00-23.83				1	1	1			

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
L22 23.83-23.58				1	1	1.15743			
L23 23.58-20.50				1	1	1.15743			
L24 20.50-20.25				1	1	1.04233			
L25 20.25-20.00				1	1	0.911842			
L26 20.00-19.75				1	1	0.905347			
L27 19.75-19.50				1	1	1.02307			
L28 19.50-19.25				1	1	1			
L29 19.25-14.25				1	1	1			
L30 14.25-9.25				1	1	1			
L31 9.25-4.25				1	1	1			
L32 4.25-0.00				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
Halyard Line 3/8" *Mods*	C	No	Surface Ar (CaAa)	125.00 - 0.00	2	1	0.000 0.000	0.3750		0.22
PL 6.00x1.00 (50 ksi)	B	No	Surface Af (CaAa)	22.29 - 17.71	1	1	0.000 0.000	6.0000	14.0000	0.00
PL 4.25x1.25 (50 ksi)	A	No	Surface Af (CaAa)	22.25 - 17.75	1	1	0.000 0.000	4.2500	11.0000	0.00
PL 4.25x1.25 (50 ksi)	C	No	Surface Af (CaAa)	22.25 - 17.75	1	1	0.500 0.500	4.2500	11.0000	0.00
PL 4.25x1.25 (50 ksi) *	B	No	Surface Af (CaAa)	22.25 - 17.75	1	1	0.500 0.500	4.2500	11.0000	0.00
(Area) CCI-65FP-040125 (sh) (H) *	A	No	Surface Af (CaAa)	22.00 - 18.00	1	1	0.500 0.500	4.0000	10.5000	0.00

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
120 AVA5-50(7/8)	C	No	No	Inside Pole	120.00 - 0.00	6	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.30 0.30 0.30

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
110									
AVA5-50(7/8)	C	No	No	Inside Pole	110.00 - 0.00	6	No Ice	0.00	0.30
							1/2" Ice	0.00	0.30
							1" Ice	0.00	0.30
100									
AL5-50(7/8)	C	No	No	Inside Pole	100.00 - 0.00	18	No Ice	0.00	0.26
							1/2" Ice	0.00	0.26
							1" Ice	0.00	0.26
90									
AL5-50(7/8)	C	No	No	Inside Pole	90.00 - 0.00	6	No Ice	0.00	0.26
							1/2" Ice	0.00	0.26
							1" Ice	0.00	0.26
LDF4-50A(1/2)	C	No	No	Inside Pole	90.00 - 0.00	3	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
*									

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	125.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.00
L2	120.00-115.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.01
L3	115.00-110.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.01
L4	110.00-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.02
L5	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.02
L6	100.00-95.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.04
L7	95.00-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.04
L8	90.00-85.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L9	85.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L10	80.00-75.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L11	75.00-70.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

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
		C	0.000	0.000	0.188	0.000	0.05
L12	70.00-65.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L13	65.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L14	60.00-55.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L15	55.00-50.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L16	50.00-45.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L17	45.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L18	40.00-35.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L19	35.00-30.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L20	30.00-25.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L21	25.00-23.83	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.044	0.000	0.01
L22	23.83-23.58	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.009	0.000	0.00
L23	23.58-20.50	A	0.000	0.000	1.749	0.000	0.00
		B	0.000	0.000	2.289	0.000	0.00
		C	0.000	0.000	1.090	0.000	0.03
L24	20.50-20.25	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.323	0.000	0.00
		C	0.000	0.000	0.149	0.000	0.00
L25	20.25-20.00	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.323	0.000	0.00
		C	0.000	0.000	0.149	0.000	0.00
L26	20.00-19.75	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.323	0.000	0.00
		C	0.000	0.000	0.149	0.000	0.00
L27	19.75-19.50	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.323	0.000	0.00
		C	0.000	0.000	0.149	0.000	0.00
L28	19.50-19.25	A	0.000	0.000	0.268	0.000	0.00
		B	0.000	0.000	0.323	0.000	0.00
		C	0.000	0.000	0.149	0.000	0.00
L29	19.25-14.25	A	0.000	0.000	1.481	0.000	0.00
		B	0.000	0.000	1.966	0.000	0.00
		C	0.000	0.000	1.023	0.000	0.05
L30	14.25-9.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05
L31	9.25-4.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.188	0.000	0.05

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
L32	4.25-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.159	0.000	0.05

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	125.00-120.00	A	0.969	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.157	0.000	0.02
L2	120.00-115.00	A	0.965	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.153	0.000	0.03
L3	115.00-110.00	A	0.961	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.148	0.000	0.03
L4	110.00-105.00	A	0.957	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.144	0.000	0.04
L5	105.00-100.00	A	0.952	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.140	0.000	0.04
L6	100.00-95.00	A	0.947	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.135	0.000	0.06
L7	95.00-90.00	A	0.942	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.130	0.000	0.06
L8	90.00-85.00	A	0.937	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.125	0.000	0.07
L9	85.00-80.00	A	0.932	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.119	0.000	0.07
L10	80.00-75.00	A	0.926	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.113	0.000	0.07
L11	75.00-70.00	A	0.920	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.107	0.000	0.07
L12	70.00-65.00	A	0.913	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.101	0.000	0.07
L13	65.00-60.00	A	0.906	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.094	0.000	0.07
L14	60.00-55.00	A	0.899	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.086	0.000	0.07
L15	55.00-50.00	A	0.890	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.078	0.000	0.07
L16	50.00-45.00	A	0.882	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.069	0.000	0.07
L17	45.00-40.00	A	0.872	0.000	0.000	0.000	0.000	0.00

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
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.059	0.000	0.07
L18	40.00-35.00	A	0.861	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.048	0.000	0.07
L19	35.00-30.00	A	0.849	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.036	0.000	0.07
L20	30.00-25.00	A	0.835	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	1.022	0.000	0.07
L21	25.00-23.83	A	0.825	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.237	0.000	0.02
L22	23.83-23.58	A	0.822	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.050	0.000	0.00
L23	23.58-20.50	A	0.816	0.000	0.000	2.040	0.000	0.01
		B		0.000	0.000	2.605	0.000	0.02
		C		0.000	0.000	1.750	0.000	0.05
L24	20.50-20.25	A	0.810	0.000	0.000	0.313	0.000	0.00
		B		0.000	0.000	0.367	0.000	0.00
		C		0.000	0.000	0.211	0.000	0.00
L25	20.25-20.00	A	0.809	0.000	0.000	0.313	0.000	0.00
		B		0.000	0.000	0.367	0.000	0.00
		C		0.000	0.000	0.211	0.000	0.00
L26	20.00-19.75	A	0.808	0.000	0.000	0.313	0.000	0.00
		B		0.000	0.000	0.367	0.000	0.00
		C		0.000	0.000	0.211	0.000	0.00
L27	19.75-19.50	A	0.807	0.000	0.000	0.313	0.000	0.00
		B		0.000	0.000	0.367	0.000	0.00
		C		0.000	0.000	0.211	0.000	0.00
L28	19.50-19.25	A	0.806	0.000	0.000	0.312	0.000	0.00
		B		0.000	0.000	0.367	0.000	0.00
		C		0.000	0.000	0.211	0.000	0.00
L29	19.25-14.25	A	0.794	0.000	0.000	1.720	0.000	0.01
		B		0.000	0.000	2.231	0.000	0.01
		C		0.000	0.000	1.948	0.000	0.07
L30	14.25-9.25	A	0.767	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.954	0.000	0.06
L31	9.25-4.25	A	0.725	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.913	0.000	0.06
L32	4.25-0.00	A	0.646	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.709	0.000	0.05

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	125.00-120.00	0.0000	3.8750	0.0000	3.8750
L2	120.00-115.00	0.0000	3.8750	0.0000	3.8750
L3	115.00-110.00	0.0000	3.8750	0.0000	3.8750
L4	110.00-105.00	0.0000	3.8750	0.0000	3.8750

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L5	105.00-100.00	0.0000	5.9375	0.0000	5.9375
L6	100.00-95.00	0.0000	5.9375	0.0000	5.9375
L7	95.00-90.00	0.0000	5.9375	0.0000	5.9375
L8	90.00-85.00	0.0000	5.9375	0.0000	5.9375
L9	85.00-80.00	0.0000	0.3807	0.0000	1.0005
L10	80.00-75.00	0.0000	0.3807	0.0000	0.9962
L11	75.00-70.00	0.0000	0.3807	0.0000	0.9915
L12	70.00-65.00	0.0000	0.3807	0.0000	0.9866
L13	65.00-60.00	0.0000	0.3807	0.0000	0.9813
L14	60.00-55.00	0.0000	0.3807	0.0000	0.9756
L15	55.00-50.00	0.0000	0.3807	0.0000	0.9694
L16	50.00-45.00	0.0000	0.3807	0.0000	0.9627
L17	45.00-40.00	0.0000	0.3807	0.0000	0.9552
L18	40.00-35.00	0.0000	0.3807	0.0000	0.9469
L19	35.00-30.00	0.0000	0.3807	0.0000	0.9375
L20	30.00-25.00	0.0000	0.3807	0.0000	0.9267
L21	25.00-23.83	0.0000	0.3807	0.0000	0.9190
L22	23.83-23.58	0.0000	0.3807	0.0000	0.9171
L23	23.58-20.50	0.1307	-1.1763	0.0639	-0.4039
L24	20.50-20.25	0.2519	-1.3154	0.2194	-1.0027
L25	20.25-20.00	0.2519	-1.3154	0.2195	-1.0031
L26	20.00-19.75	0.2519	-1.3154	0.2195	-1.0034
L27	19.75-19.50	0.2519	-1.3154	0.2195	-1.0038
L28	19.50-19.25	0.2519	-1.3154	0.2196	-1.0041
L29	19.25-14.25	0.0777	-0.7239	0.0310	0.0540
L30	14.25-9.25	0.0000	0.3807	0.0000	0.8736
L31	9.25-4.25	0.0000	0.3807	0.0000	0.8408
L32	4.25-0.00	0.0000	0.3807	0.0000	0.7769

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Halyard Line 3/8"	120.00 - 125.00	1.0000	1.0000
L2	1	Halyard Line 3/8"	115.00 - 120.00	1.0000	1.0000
L3	1	Halyard Line 3/8"	110.00 - 115.00	1.0000	1.0000
L4	1	Halyard Line 3/8"	105.00 - 110.00	1.0000	1.0000
L5	1	Halyard Line 3/8"	100.00 - 105.00	1.0000	1.0000
L6	1	Halyard Line 3/8"	95.00 - 100.00	1.0000	1.0000
L7	1	Halyard Line 3/8"	90.00 - 95.00	1.0000	1.0000
L8	1	Halyard Line 3/8"	85.00 - 90.00	1.0000	1.0000
L9	1	Halyard Line 3/8"	80.00 - 85.00	1.0000	1.0000
L10	1	Halyard Line 3/8"	75.00 - 80.00	1.0000	1.0000
L11	1	Halyard Line 3/8"	70.00 - 75.00	1.0000	1.0000
L12	1	Halyard Line 3/8"	65.00 - 70.00	1.0000	1.0000
L13	1	Halyard Line 3/8"	60.00 - 65.00	1.0000	1.0000
L14	1	Halyard Line 3/8"	55.00 - 60.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	1	Halyard Line 3/8"	50.00 - 55.00	1.0000	1.0000
L16	1	Halyard Line 3/8"	45.00 - 50.00	1.0000	1.0000
L17	1	Halyard Line 3/8"	40.00 - 45.00	1.0000	1.0000
L18	1	Halyard Line 3/8"	35.00 - 40.00	1.0000	1.0000
L19	1	Halyard Line 3/8"	30.00 - 35.00	1.0000	1.0000
L20	1	Halyard Line 3/8"	25.00 - 30.00	1.0000	1.0000
L21	1	Halyard Line 3/8"	23.83 - 25.00	1.0000	1.0000
L22	1	Halyard Line 3/8"	23.58 - 23.83	1.0000	1.0000
L23	1	Halyard Line 3/8"	20.50 - 23.58	1.0000	1.0000
L23	12	PL 6.00x1.00 (50 ksi)	20.50 - 22.29	1.0000	1.0000
L23	13	PL 4.25x1.25 (50 ksi)	20.50 - 22.25	1.0000	1.0000
L23	14	PL 4.25x1.25 (50 ksi)	20.50 - 22.25	1.0000	1.0000
L23	15	PL 4.25x1.25 (50 ksi)	20.50 - 22.25	1.0000	1.0000
L23	17	(Area) CCI-65FP-040125 (sh) (H)	20.50 - 22.00	1.0000	1.0000
L24	1	Halyard Line 3/8"	20.25 - 20.50	1.0000	1.0000
L24	12	PL 6.00x1.00 (50 ksi)	20.25 - 20.50	1.0000	1.0000
L24	13	PL 4.25x1.25 (50 ksi)	20.25 - 20.50	1.0000	1.0000
L24	14	PL 4.25x1.25 (50 ksi)	20.25 - 20.50	1.0000	1.0000
L24	15	PL 4.25x1.25 (50 ksi)	20.25 - 20.50	1.0000	1.0000
L24	17	(Area) CCI-65FP-040125 (sh) (H)	20.25 - 20.50	1.0000	1.0000
L25	1	Halyard Line 3/8"	20.00 - 20.25	1.0000	1.0000
L25	12	PL 6.00x1.00 (50 ksi)	20.00 - 20.25	1.0000	1.0000
L25	13	PL 4.25x1.25 (50 ksi)	20.00 - 20.25	1.0000	1.0000
L25	14	PL 4.25x1.25 (50 ksi)	20.00 - 20.25	1.0000	1.0000
L25	15	PL 4.25x1.25 (50 ksi)	20.00 - 20.25	1.0000	1.0000
L25	17	(Area) CCI-65FP-040125 (sh) (H)	20.00 - 20.25	1.0000	1.0000
L26	1	Halyard Line 3/8"	19.75 - 20.00	1.0000	1.0000
L26	12	PL 6.00x1.00 (50 ksi)	19.75 - 20.00	1.0000	1.0000
L26	13	PL 4.25x1.25 (50 ksi)	19.75 - 20.00	1.0000	1.0000
L26	14	PL 4.25x1.25 (50 ksi)	19.75 - 20.00	1.0000	1.0000
L26	15	PL 4.25x1.25 (50 ksi)	19.75 - 20.00	1.0000	1.0000
L26	17	(Area) CCI-65FP-040125 (sh) (H)	19.75 - 20.00	1.0000	1.0000
L27	1	Halyard Line 3/8"	19.50 - 19.75	1.0000	1.0000
L27	12	PL 6.00x1.00 (50 ksi)	19.50 - 19.75	1.0000	1.0000
L27	13	PL 4.25x1.25 (50 ksi)	19.50 - 19.75	1.0000	1.0000
L27	14	PL 4.25x1.25 (50 ksi)	19.50 - 19.75	1.0000	1.0000
L27	15	PL 4.25x1.25 (50 ksi)	19.50 - 19.75	1.0000	1.0000
L27	17	(Area) CCI-65FP-040125 (sh) (H)	19.50 - 19.75	1.0000	1.0000
L28	1	Halyard Line 3/8"	19.25 - 19.50	1.0000	1.0000
L28	12	PL 6.00x1.00 (50 ksi)	19.25 - 19.50	1.0000	1.0000
L28	13	PL 4.25x1.25 (50 ksi)	19.25 - 19.50	1.0000	1.0000
L28	14	PL 4.25x1.25 (50 ksi)	19.25 - 19.50	1.0000	1.0000
L28	15	PL 4.25x1.25 (50 ksi)	19.25 - 19.50	1.0000	1.0000
L28	17	(Area) CCI-65FP-040125 (sh) (H)	19.25 - 19.50	1.0000	1.0000
L29	1	Halyard Line 3/8"	14.25 - 19.25	1.0000	1.0000
L29	12	PL 6.00x1.00 (50 ksi)	17.71 - 19.25	1.0000	1.0000
L29	13	PL 4.25x1.25 (50 ksi)	17.75 - 19.25	1.0000	1.0000
L29	14	PL 4.25x1.25 (50 ksi)	17.75 - 19.25	1.0000	1.0000
L29	15	PL 4.25x1.25 (50 ksi)	17.75 - 19.25	1.0000	1.0000
L29	17	(Area) CCI-65FP-040125 (sh) (H)	18.00 - 19.25	1.0000	1.0000
L30	1	Halyard Line 3/8"	9.25 - 14.25	1.0000	1.0000
L31	1	Halyard Line 3/8"	4.25 - 9.25	1.0000	1.0000
L32	1	Halyard Line 3/8"	0.00 - 4.25	1.0000	1.0000

Effective Width of Flat Linear Attachments / Feed Lines

Tower Section	*Attachment Record No.*	*Description*	*Attachment Segment Elev.*	*Ratio Calculation Method*	*Effective Width Ratio*
L23	12	PL 6.00x1.00 (50 ksi)	20.50 - 22.29	Auto	1.0000
L23	13	PL 4.25x1.25 (50 ksi)	20.50 - 22.25	Auto	1.0000
L23	14	PL 4.25x1.25 (50 ksi)	20.50 - 22.25	Auto	1.0000
L23	15	PL 4.25x1.25 (50 ksi)	20.50 - 22.25	Auto	1.0000
L23	17	(Area) CCI-65FP-040125 (sh) (H)	20.50 - 22.00	Auto	1.0000
L24	12	PL 6.00x1.00 (50 ksi)	20.25 - 20.50	Auto	1.0000
L24	13	PL 4.25x1.25 (50 ksi)	20.25 - 20.50	Auto	1.0000
L24	14	PL 4.25x1.25 (50 ksi)	20.25 - 20.50	Auto	1.0000
L24	15	PL 4.25x1.25 (50 ksi)	20.25 - 20.50	Auto	1.0000
L24	17	(Area) CCI-65FP-040125 (sh) (H)	20.25 - 20.50	Auto	1.0000
L25	12	PL 6.00x1.00 (50 ksi)	20.00 - 20.25	Auto	1.0000
L25	13	PL 4.25x1.25 (50 ksi)	20.00 - 20.25	Auto	1.0000
L25	14	PL 4.25x1.25 (50 ksi)	20.00 - 20.25	Auto	1.0000
L25	15	PL 4.25x1.25 (50 ksi)	20.00 - 20.25	Auto	1.0000
L25	17	(Area) CCI-65FP-040125 (sh) (H)	20.00 - 20.25	Auto	1.0000
L26	12	PL 6.00x1.00 (50 ksi)	19.75 - 20.00	Auto	1.0000
L26	13	PL 4.25x1.25 (50 ksi)	19.75 - 20.00	Auto	1.0000
L26	14	PL 4.25x1.25 (50 ksi)	19.75 - 20.00	Auto	1.0000
L26	15	PL 4.25x1.25 (50 ksi)	19.75 - 20.00	Auto	1.0000
L26	17	(Area) CCI-65FP-040125 (sh) (H)	19.75 - 20.00	Auto	1.0000
L27	12	PL 6.00x1.00 (50 ksi)	19.50 - 19.75	Auto	1.0000
L27	13	PL 4.25x1.25 (50 ksi)	19.50 - 19.75	Auto	1.0000
L27	14	PL 4.25x1.25 (50 ksi)	19.50 - 19.75	Auto	1.0000
L27	15	PL 4.25x1.25 (50 ksi)	19.50 - 19.75	Auto	1.0000
L27	17	(Area) CCI-65FP-040125 (sh) (H)	19.50 - 19.75	Auto	1.0000
L28	12	PL 6.00x1.00 (50 ksi)	19.25 - 19.50	Auto	1.0000
L28	13	PL 4.25x1.25 (50 ksi)	19.25 - 19.50	Auto	1.0000
L28	14	PL 4.25x1.25 (50 ksi)	19.25 - 19.50	Auto	1.0000
L28	15	PL 4.25x1.25 (50 ksi)	19.25 - 19.50	Auto	1.0000
L28	17	(Area) CCI-65FP-040125 (sh) (H)	19.25 - 19.50	Auto	1.0000
L29	12	PL 6.00x1.00 (50 ksi)	17.71 - 19.25	Auto	1.0000
L29	13	PL 4.25x1.25 (50 ksi)	17.75 - 19.25	Auto	1.0000
L29	14	PL 4.25x1.25 (50 ksi)	17.75 - 19.25	Auto	1.0000
L29	15	PL 4.25x1.25 (50 ksi)	17.75 - 19.25	Auto	1.0000
L29	17	(Area) CCI-65FP-040125 (sh) (H)	18.00 - 19.25	Auto	1.0000

User Defined Loads

Description	Elevation	Offset From Centroid	Azimuth Angle		Weight	F_x	F_z	Wind Force	C_AA_C
	ft	ft	°		K	K	K	K	ft^2
Flag (25'x15')	125.00	0.00	0.0000	No Ice	0.04	0.00	0.00	0.59	**10.30**
				Ice	0.84	0.00	0.00	0.10	**10.51**
				Service	0.04	0.00	0.00	0.15	**11.51**

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)
120									
APXV18-206516L-A w/ Mount Pipe	A	From Face	0.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.04 0.04 0.04
APXV18-206516L-A w/ Mount Pipe	B	From Face	0.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.04 0.04 0.04
APXV18-206516L-A w/ Mount Pipe	C	From Face	0.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.04 0.04 0.04
KRY 112 144/1	A	From Face	0.50 0.00 -3.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.01 0.01 0.01
KRY 112 144/1	B	From Face	0.50 0.00 -3.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.01 0.01 0.01
KRY 112 144/1	C	From Face	0.50 0.00 -3.00	0.0000	120.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.01 0.01 0.01
110									
APXV18-206516L-A w/ Mount Pipe	A	From Face	0.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.04 0.04 0.04
APXV18-206516L-A w/ Mount Pipe	B	From Face	0.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.04 0.04 0.04
APXV18-206516L-A w/ Mount Pipe	C	From Face	0.50 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.04 0.04 0.04
KRY 112 144/1	A	From Face	0.50 0.00 -2.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.01 0.01 0.01
KRY 112 144/1	B	From Face	0.50 0.00 -2.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.01 0.01 0.01
KRY 112 144/1	C	From Face	0.50 0.00 -2.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.01 0.01 0.01
100									
DMP65R-BU6E_CCIV2 w/ Mount Pipe	A	From Face	0.50 0.00 1.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	0.14 0.14 0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DMP65R-BU6E_CCIV2 w/ Mount Pipe	B	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.14
			0.00			1/2" Ice	0.00	0.00	0.14
			1.00			1" Ice	0.00	0.00	0.14
DMP65R-BU6E_CCIV2 w/ Mount Pipe	C	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.14
			0.00			1/2" Ice	0.00	0.00	0.14
			1.00			1" Ice	0.00	0.00	0.14
TMAT192123B68-31	A	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-3.00			1" Ice	0.00	0.00	0.02
TMAT192123B68-31	B	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-3.00			1" Ice	0.00	0.00	0.02
TMAT192123B68-31	C	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-3.00			1" Ice	0.00	0.00	0.02
TMAT192123B68-31	A	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-4.00			1" Ice	0.00	0.00	0.02
TMAT192123B68-31	B	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-4.00			1" Ice	0.00	0.00	0.02
TMAT192123B68-31	C	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-4.00			1" Ice	0.00	0.00	0.02
STX61742Q-43	A	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.01
			0.00			1/2" Ice	0.00	0.00	0.01
			1.00			1" Ice	0.00	0.00	0.01
STX61742Q-43	B	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.01
			0.00			1/2" Ice	0.00	0.00	0.01
			1.00			1" Ice	0.00	0.00	0.01
STX61742Q-43	C	From Face	0.50	0.0000	100.00	No Ice	0.00	0.00	0.01
			0.00			1/2" Ice	0.00	0.00	0.01
			1.00			1" Ice	0.00	0.00	0.01
90									
NNHHS4-65B-R5 w/ Mount Pipe	A	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.11
			0.00			1/2" Ice	0.00	0.00	0.11
			1.00			1" Ice	0.00	0.00	0.11
NNHHS4-65B-R5 w/ Mount Pipe	B	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.11
			0.00			1/2" Ice	0.00	0.00	0.11
			1.00			1" Ice	0.00	0.00	0.11
NNHHS4-65B-R5 w/ Mount Pipe	C	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.11
			0.00			1/2" Ice	0.00	0.00	0.11
			1.00			1" Ice	0.00	0.00	0.11
TMABPDB7823VG12A	A	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.22
			-3.00			1" Ice	0.00	0.00	0.02
TMABPDB7823VG12A	B	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-3.00			1" Ice	0.00	0.00	0.02
TMABPDB7823VG12A	C	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-3.00			1" Ice	0.00	0.00	0.02
TMABPDB7823VG12A	A	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-4.00			1" Ice	0.00	0.00	0.02
TMABPDB7823VG12A	B	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	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
			-4.00			1" Ice	0.00	0.00	0.02
TMABPDB7823VG12A	C	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.02
			0.00			1/2" Ice	0.00	0.00	0.02
			-4.00			1" Ice	0.00	0.00	0.02
STX61742Q-43	A	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.01
			0.00			1/2" Ice	0.00	0.00	0.01
			1.00			1" Ice	0.00	0.00	0.01
STX61742Q-43	B	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.01
			0.00			1/2" Ice	0.00	0.00	0.01
			1.00			1" Ice	0.00	0.00	0.01
STX61742Q-43	C	From Face	0.50	0.0000	90.00	No Ice	0.00	0.00	0.01
			0.00			1/2" Ice	0.00	0.00	0.01
			1.00			1" Ice	0.00	0.00	0.01
*									
42" Dia. x 10' Long Concealment Canister	C	None		0.0000	110.00	No Ice	0.00	0.00	0.00
						1/2" Ice	0.00	0.00	0.00
						1" Ice	0.00	0.00	0.00
42" Dia. x 10' Long Concealment Canister	C	None		0.0000	120.00	No Ice	0.00	0.00	0.00
						1/2" Ice	0.00	0.00	0.00
						1" Ice	0.00	0.00	0.00
42" Dia. x 10' Long Concealment Canister	C	None		0.0000	100.00	No Ice	0.00	0.00	0.00
						1/2" Ice	0.00	0.00	0.00
						1" Ice	0.00	0.00	0.00
42" Dia. x 10' Long Concealment Canister	C	None		0.0000	90.00	No Ice	0.00	0.00	0.00
						1/2" Ice	0.00	0.00	0.00
						1" Ice	0.00	0.00	0.00
*									
Canister Load1	C	None		0.0000	125.00	No Ice	7.88	7.88	0.11
						1/2" Ice	19.71	19.71	0.24
						1" Ice	20.17	20.17	0.37
Canister Load2	C	None		0.0000	115.00	No Ice	15.75	15.75	0.44
						1/2" Ice	39.42	39.42	0.70
						1" Ice	40.33	40.33	0.96
Canister Load3	C	None		0.0000	105.00	No Ice	15.75	15.75	0.35
						1/2" Ice	39.42	39.42	0.61
						1" Ice	40.33	40.33	0.88
Canister Load4	C	None		0.0000	95.00	No Ice	15.75	15.75	0.44
						1/2" Ice	39.42	39.42	0.70
						1" Ice	40.33	40.33	0.96
Canister Load5	C	None		0.0000	85.00	No Ice	7.88	7.88	0.94
						1/2" Ice	19.71	19.71	1.07
						1" Ice	20.17	20.17	1.20
Truck Ball	C	None		0.0000	125.75	No Ice	0.88	0.88	0.05
						1/2" Ice	1.38	1.38	0.07
						1" Ice	1.53	1.53	0.09

Load Combinations

Comb. No.	Description
1	Dead Only

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	22.066	45	1.8115	0.0000
L2	120 - 115	20.177	45	1.7877	0.0000
L3	115 - 110	18.339	45	1.7159	0.0000
L4	110 - 105	16.608	45	1.5764	0.0000

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L5	105 - 100	15.068	45	1.3498	0.0000
L6	100 - 95	13.686	45	1.2864	0.0000
L7	95 - 90	12.383	45	1.1992	0.0000
L8	90 - 85	11.184	45	1.0844	0.0000
L9	85 - 80	10.122	45	0.9385	0.0000
L10	80 - 75	9.150	45	0.9190	0.0000
L11	75 - 70	8.199	45	0.8954	0.0000
L12	70 - 65	7.276	45	0.8674	0.0000
L13	65 - 60	6.384	45	0.8348	0.0000
L14	60 - 55	5.529	45	0.7973	0.0000
L15	55 - 50	4.716	45	0.7546	0.0000
L16	50 - 45	3.951	45	0.7066	0.0000
L17	45 - 40	3.238	45	0.6529	0.0000
L18	40 - 35	2.585	45	0.5933	0.0000
L19	35 - 30	1.998	45	0.5277	0.0000
L20	30 - 25	1.482	45	0.4558	0.0000
L21	25 - 23.83	1.046	45	0.3774	0.0000
L22	23.83 - 23.58	0.956	45	0.3581	0.0000
L23	23.58 - 20.5	0.937	45	0.3550	0.0000
L24	20.5 - 20.25	0.720	45	0.3157	0.0000
L25	20.25 - 20	0.704	45	0.3130	0.0000
L26	20 - 19.75	0.688	45	0.3109	0.0000
L27	19.75 - 19.5	0.671	45	0.3091	0.0000
L28	19.5 - 19.25	0.655	45	0.3068	0.0000
L29	19.25 - 14.25	0.639	45	0.3034	0.0000
L30	14.25 - 9.25	0.358	45	0.2325	0.0000
L31	9.25 - 4.25	0.154	45	0.1561	0.0000
L32	4.25 - 0	0.033	45	0.0741	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.75	Truck Ball	45	22.066	1.8115	0.0000	6021
125.00	Canister Load1	45	22.066	1.8115	0.0000	6021
120.00	APXV18-206516L-A w/ Mount Pipe	45	20.177	1.7877	0.0000	6021
115.00	Canister Load2	45	18.339	1.7159	0.0000	2799
110.00	APXV18-206516L-A w/ Mount Pipe	45	16.608	1.5764	0.0000	1568
105.00	Canister Load3	45	15.068	1.3498	0.0000	1909
100.00	DMP65R-BU6E_CCIV2 w/ Mount Pipe	45	13.686	1.2864	0.0000	3809
95.00	Canister Load4	45	12.383	1.1992	0.0000	2854
90.00	NNHHS4-65B-R5 w/ Mount Pipe	45	11.184	1.0844	0.0000	2200
85.00	Canister Load5	45	10.122	0.9385	0.0000	3374

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	125 - 120	97.737	14	7.9476	0.0001
L2	120 - 115	89.476	14	7.8476	0.0001
L3	115 - 110	81.423	14	7.5452	0.0000
L4	110 - 105	73.820	14	6.9508	0.0000
L5	105 - 100	67.033	14	5.9771	0.0000
L6	100 - 95	60.919	14	5.7027	0.0000
L7	95 - 90	55.146	14	5.3228	0.0000
L8	90 - 85	49.829	14	4.8207	0.0000
L9	85 - 80	45.109	14	4.1803	0.0000
L10	80 - 75	40.779	14	4.0942	0.0000
L11	75 - 70	36.548	14	3.9898	0.0000
L12	70 - 65	32.437	14	3.8660	0.0000
L13	65 - 60	28.465	14	3.7214	0.0000
L14	60 - 55	24.656	14	3.5549	0.0000
L15	55 - 50	21.033	14	3.3653	0.0000
L16	50 - 45	17.620	14	3.1514	0.0000
L17	45 - 40	14.444	14	2.9123	0.0000
L18	40 - 35	11.532	14	2.6470	0.0000
L19	35 - 30	8.912	14	2.3543	0.0000
L20	30 - 25	6.613	14	2.0335	0.0000
L21	25 - 23.83	4.665	18	1.6838	0.0000
L22	23.83 - 23.58	4.263	18	1.5977	0.0000
L23	23.58 - 20.5	4.179	18	1.5838	0.0000
L24	20.5 - 20.25	3.214	18	1.4085	0.0000
L25	20.25 - 20	3.140	18	1.3966	0.0000
L26	20 - 19.75	3.068	18	1.3871	0.0000
L27	19.75 - 19.5	2.995	18	1.3789	0.0000
L28	19.5 - 19.25	2.923	18	1.3688	0.0000
L29	19.25 - 14.25	2.852	18	1.3536	0.0000
L30	14.25 - 9.25	1.598	18	1.0372	0.0000
L31	9.25 - 4.25	0.688	18	0.6964	0.0000
L32	4.25 - 0	0.149	18	0.3307	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
125.75	Truck Ball	14	97.737	7.9476	0.0001	1483
125.00	Canister Load1	14	97.737	7.9476	0.0001	1483
120.00	APXV18-206516L-A w/ Mount Pipe	14	89.476	7.8476	0.0001	1483
115.00	Canister Load2	14	81.423	7.5452	0.0000	683
110.00	APXV18-206516L-A w/ Mount Pipe	14	73.820	6.9508	0.0000	376
105.00	Canister Load3	14	67.033	5.9771	0.0000	453
100.00	DMP65R-BU6E_CCIV2 w/ Mount Pipe	14	60.919	5.7027	0.0000	894
95.00	Canister Load4	14	55.146	5.3228	0.0000	665
90.00	NNHHS4-65B-R5 w/ Mount Pipe	14	49.829	4.8207	0.0000	509
85.00	Canister Load5	14	45.109	4.1803	0.0000	776

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	125 - 120 (1)	TP6.625x6.625x0.432	5.00	0.00	0.0	8.4049	-0.26	317.71	0.001
L2	120 - 115 (2)	TP6.625x6.625x0.432	5.00	0.00	0.0	8.4049	-0.64	317.71	0.002
L3	115 - 110 (3)	TP6.625x6.625x0.432	5.00	0.00	0.0	8.4049	-1.25	317.71	0.004
L4	110 - 105 (4)	TP6.625x6.625x0.432	5.00	0.00	0.0	8.4049	-1.68	317.71	0.005
L5	105 - 100 (5)	TP10.75x10.75x0.5	5.00	0.00	0.0	16.1007	-2.37	608.61	0.004
L6	100 - 95 (6)	TP10.75x10.75x0.5	5.00	0.00	0.0	16.1007	-3.46	608.61	0.006
L7	95 - 90 (7)	TP10.75x10.75x0.5	5.00	0.00	0.0	16.1007	-4.32	608.61	0.007
L8	90 - 85 (8)	TP10.75x10.75x0.5	5.00	0.00	0.0	16.1007	-5.34	608.61	0.009
L9	85 - 80 (9)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-7.05	1052.07	0.007
L10	80 - 75 (10)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-7.67	1052.07	0.007
L11	75 - 70 (11)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-8.29	1052.07	0.008
L12	70 - 65 (12)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-8.92	1052.07	0.008
L13	65 - 60 (13)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-9.55	1052.07	0.009
L14	60 - 55 (14)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-10.18	1052.07	0.010
L15	55 - 50 (15)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-10.82	1052.07	0.010
L16	50 - 45 (16)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-11.47	1052.07	0.011
L17	45 - 40 (17)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-12.12	1052.07	0.012
L18	40 - 35 (18)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-12.78	1052.07	0.012
L19	35 - 30 (19)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-13.44	1052.07	0.013
L20	30 - 25 (20)	TP24x24x0.375	5.00	0.00	0.0	27.8325	-14.11	1052.07	0.013
L21	25 - 23.83 (21)	TP24x24x0.375	1.17	0.00	0.0	27.8325	-14.27	1052.07	0.014
L22	23.83 - 23.58 (22)	TP24x24x0.5125	0.25	0.00	0.0	37.8164	-14.32	1429.46	0.010
L23	23.58 - 20.5 (23)	TP24x24x0.5125	3.08	0.00	0.0	37.8164	-14.93	1429.46	0.010
L24	20.5 - 20.25 (24)	TP24x24x0.6375	0.25	0.00	0.0	46.7896	-14.99	1768.65	0.008
L25	20.25 - 20 (25)	TP24x24x0.825	0.25	0.00	0.0	60.0653	-15.05	2270.47	0.007
L26	20 - 19.75 (26)	TP24x24x0.975	0.25	0.00	0.0	70.5268	-15.11	2665.91	0.006
L27	19.75 - 19.5 (27)	TP24x24x0.775	0.25	0.00	0.0	56.5467	-15.18	2137.47	0.007
L28	19.5 - 19.25 (28)	TP24x24x0.5	0.25	0.00	0.0	36.9137	-15.22	1395.34	0.011
L29	19.25 - 14.25 (29)	TP24x24x0.5	5.00	0.00	0.0	36.9137	-16.08	1395.34	0.012
L30	14.25 - 9.25 (30)	TP24x24x0.5	5.00	0.00	0.0	36.9137	-16.94	1395.34	0.012
L31	9.25 - 4.25 (31)	TP24x24x0.5	5.00	0.00	0.0	36.9137	-17.82	1395.34	0.013
L32	4.25 - 0 (32)	TP24x24x0.5	4.25	0.00	0.0	36.9137	-18.56	1395.34	0.013

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	125 - 120 (1)	TP6.625x6.625x0.432	5.67	52.28	0.109	0.00	52.28	0.000
L2	120 - 115 (2)	TP6.625x6.625x0.432	11.56	52.28	0.221	0.00	52.28	0.000
L3	115 - 110 (3)	TP6.625x6.625x0.432	22.28	52.28	0.426	0.00	52.28	0.000
L4	110 - 105 (4)	TP6.625x6.625x0.432	33.15	52.28	0.634	0.00	52.28	0.000
L5	105 - 100 (5)	TP10.75x10.75x0.5	48.64	165.60	0.294	0.00	165.60	0.000
L6	100 - 95 (6)	TP10.75x10.75x0.5	64.57	165.60	0.390	0.00	165.60	0.000

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 $\frac{M_{uy}}{\phi M_{ny}}$
L7	95 - 90 (7)	TP10.75x10.75x0.5	85.07	165.60	0.514	0.00	165.60	0.000
L8	90 - 85 (8)	TP10.75x10.75x0.5	105.74	165.60	0.639	0.00	165.60	0.000
L9	85 - 80 (9)	TP24x24x0.375	129.74	623.72	0.208	0.00	623.72	0.000
L10	80 - 75 (10)	TP24x24x0.375	155.50	623.72	0.249	0.00	623.72	0.000
L11	75 - 70 (11)	TP24x24x0.375	182.97	623.72	0.293	0.00	623.72	0.000
L12	70 - 65 (12)	TP24x24x0.375	212.11	623.72	0.340	0.00	623.72	0.000
L13	65 - 60 (13)	TP24x24x0.375	242.86	623.72	0.389	0.00	623.72	0.000
L14	60 - 55 (14)	TP24x24x0.375	275.17	623.72	0.441	0.00	623.72	0.000
L15	55 - 50 (15)	TP24x24x0.375	308.98	623.72	0.495	0.00	623.72	0.000
L16	50 - 45 (16)	TP24x24x0.375	344.21	623.72	0.552	0.00	623.72	0.000
L17	45 - 40 (17)	TP24x24x0.375	380.78	623.72	0.611	0.00	623.72	0.000
L18	40 - 35 (18)	TP24x24x0.375	418.61	623.72	0.671	0.00	623.72	0.000
L19	35 - 30 (19)	TP24x24x0.375	457.61	623.72	0.734	0.00	623.72	0.000
L20	30 - 25 (20)	TP24x24x0.375	497.67	623.72	0.798	0.00	623.72	0.000
L21	25 - 23.83 (21)	TP24x24x0.375	507.18	623.72	0.813	0.00	623.72	0.000
L22	23.83 - 23.58 (22)	TP24x24x0.5125	509.22	890.73	0.572	0.00	890.73	0.000
L23	23.58 - 20.5 (23)	TP24x24x0.5125	534.81	890.73	0.600	0.00	890.73	0.000
L24	20.5 - 20.25 (24)	TP24x24x0.6375	536.93	1096.32	0.490	0.00	1096.32	0.000
L25	20.25 - 20 (25)	TP24x24x0.825	539.05	1396.33	0.386	0.00	1396.33	0.000
L26	20 - 19.75 (26)	TP24x24x0.975	541.18	1629.20	0.332	0.00	1629.20	0.000
L27	19.75 - 19.5 (27)	TP24x24x0.775	543.32	1317.30	0.412	0.00	1317.30	0.000
L28	19.5 - 19.25 (28)	TP24x24x0.5	545.46	869.92	0.627	0.00	869.92	0.000
L29	19.25 - 14.25 (29)	TP24x24x0.5	588.82	869.92	0.677	0.00	869.92	0.000
L30	14.25 - 9.25 (30)	TP24x24x0.5	633.00	869.92	0.728	0.00	869.92	0.000
L31	9.25 - 4.25 (31)	TP24x24x0.5	677.89	869.92	0.779	0.00	869.92	0.000
L32	4.25 - 0 (32)	TP24x24x0.5	716.55	869.92	0.824	0.00	869.92	0.000

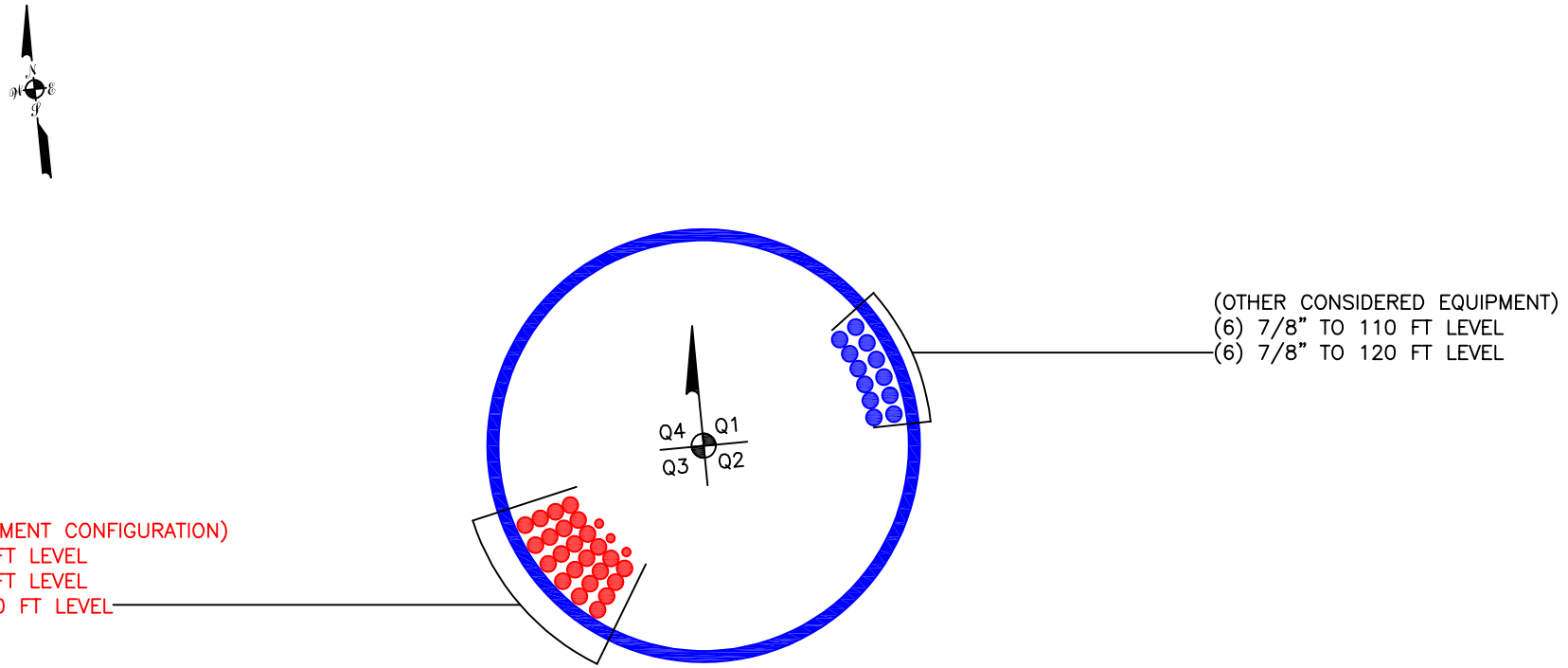
Pole Shear Design Data

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	125 - 120 (1)	TP6.625x6.625x0.432	1.14	95.31	0.012	0.00	51.90	0.000
L2	120 - 115 (2)	TP6.625x6.625x0.432	1.19	95.31	0.012	0.00	51.90	0.000
L3	115 - 110 (3)	TP6.625x6.625x0.432	2.15	95.31	0.023	0.00	51.90	0.000
L4	110 - 105 (4)	TP6.625x6.625x0.432	2.17	95.31	0.023	0.00	51.90	0.000
L5	105 - 100 (5)	TP10.75x10.75x0.5	3.11	182.58	0.017	0.00	164.54	0.000
L6	100 - 95 (6)	TP10.75x10.75x0.5	3.20	182.58	0.018	0.00	164.54	0.000
L7	95 - 90 (7)	TP10.75x10.75x0.5	4.10	182.58	0.022	0.00	164.54	0.000
L8	90 - 85 (8)	TP10.75x10.75x0.5	4.13	182.58	0.023	0.00	164.54	0.000
L9	85 - 80 (9)	TP24x24x0.375	4.98	315.62	0.016	0.00	655.57	0.000
L10	80 - 75 (10)	TP24x24x0.375	5.33	315.62	0.017	0.00	655.57	0.000
L11	75 - 70 (11)	TP24x24x0.375	5.66	315.62	0.018	0.00	655.57	0.000
L12	70 - 65 (12)	TP24x24x0.375	5.99	315.62	0.019	0.00	655.57	0.000
L13	65 - 60 (13)	TP24x24x0.375	6.31	315.62	0.020	0.00	655.57	0.000
L14	60 - 55 (14)	TP24x24x0.375	6.62	315.62	0.021	0.00	655.57	0.000
L15	55 - 50 (15)	TP24x24x0.375	6.91	315.62	0.022	0.00	655.57	0.000
L16	50 - 45 (16)	TP24x24x0.375	7.19	315.62	0.023	0.00	655.57	0.000
L17	45 - 40 (17)	TP24x24x0.375	7.45	315.62	0.024	0.00	655.57	0.000

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 $\frac{T_u}{\phi T_n}$
L18	40 - 35 (18)	TP24x24x0.375	7.69	315.62	0.024	0.00	655.57	0.000
L19	35 - 30 (19)	TP24x24x0.375	7.92	315.62	0.025	0.00	655.57	0.000
L20	30 - 25 (20)	TP24x24x0.375	8.12	315.62	0.026	0.00	655.57	0.000
L21	25 - 23.83 (21)	TP24x24x0.375	8.16	315.62	0.026	0.00	655.57	0.000
L22	23.83 - 23.58 (22)	TP24x24x0.5125	8.17	428.84	0.019	0.00	885.54	0.000
L23	23.58 - 20.5 (23)	TP24x24x0.5125	8.46	428.84	0.020	0.00	885.54	0.000
L24	20.5 - 20.25 (24)	TP24x24x0.6375	8.48	530.59	0.016	0.00	1089.83	0.000
L25	20.25 - 20 (25)	TP24x24x0.825	8.51	681.14	0.012	0.00	1387.83	0.000
L26	20 - 19.75 (26)	TP24x24x0.975	8.53	799.77	0.011	0.00	1619.00	0.000
L27	19.75 - 19.5 (27)	TP24x24x0.775	8.56	641.24	0.013	0.00	1309.35	0.000
L28	19.5 - 19.25 (28)	TP24x24x0.5	8.58	418.60	0.021	0.00	864.87	0.000
L29	19.25 - 14.25 (29)	TP24x24x0.5	8.77	418.60	0.021	0.00	864.87	0.000
L30	14.25 - 9.25 (30)	TP24x24x0.5	8.92	418.60	0.021	0.00	864.87	0.000
L31	9.25 - 4.25 (31)	TP24x24x0.5	9.06	418.60	0.022	0.00	864.87	0.000
L32	4.25 - 0 (32)	TP24x24x0.5	9.16	418.60	0.022	0.00	864.87	0.000

APPENDIX B

BASE LEVEL DRAWING


N
W
E
S
Q4
Q1
Q3
Q2
(OTHER CONSIDERED EQUIPMENT)
(6) 7/8" TO 110 FT LEVEL
(6) 7/8" TO 120 FT LEVEL
(PROPOSED EQUIPMENT CONFIGURATION)
(3) 1/2" TO 90 FT LEVEL
(6) 7/8" TO 90 FT LEVEL
(18) 7/8" TO 100 FT LEVEL

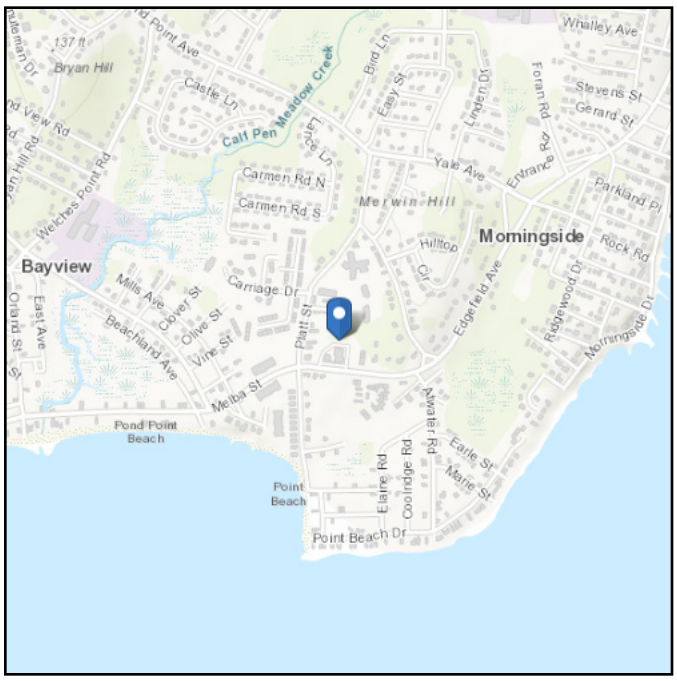
APPENDIX C

ADDITIONAL CALCULATIONS

ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.210006
Risk Category:	II	**Longitude:**	-73.019014
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	30.552759924538677 ft (NAVD 88)



Wind

Results:

Wind Speed	120 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	91 Vmph
100-year MRI	99 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: Mon Apr 08 2024

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.

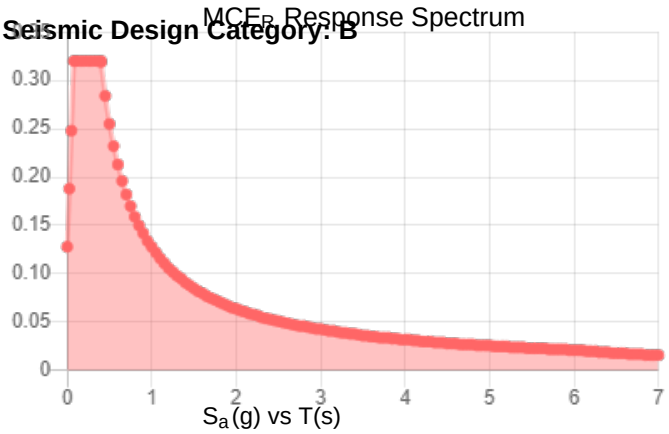
Seismic

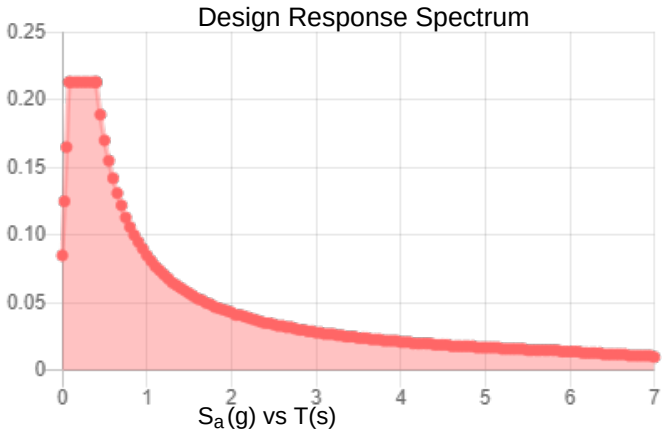
Site Soil Class: D - Default (see Section 11.4.3)

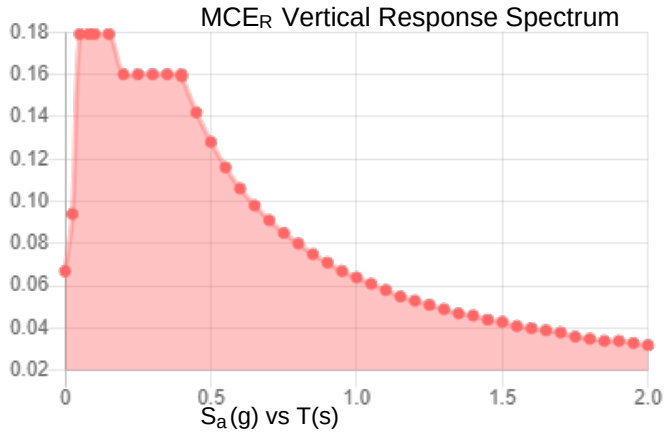
Results:

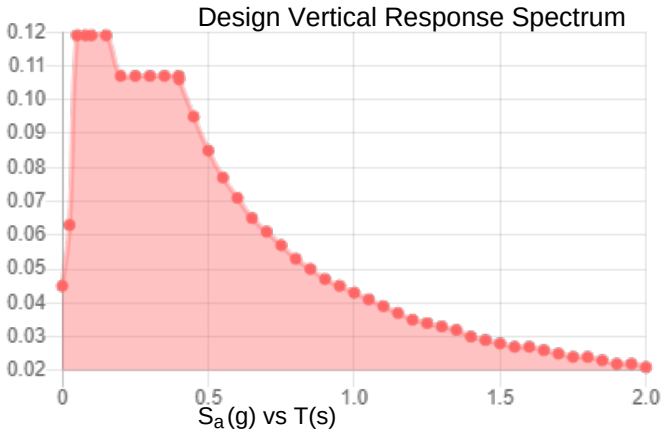
S_S :	0.2	S_{D1} :	0.085
S_1 :	0.053	T_L :	6
F_a :	1.6	PGA :	0.112
F_v :	2.4	PGA_M :	0.177
S_{MS} :	0.32	F_{PGA} :	1.576
S_{M1} :	0.128	I_e :	1
S_{DS} :	0.213	C_v :	0.7

Seismic Design Category: B









Data Accessed: **Mon Apr 08 2024**

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:	Mon Apr 08 2024

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

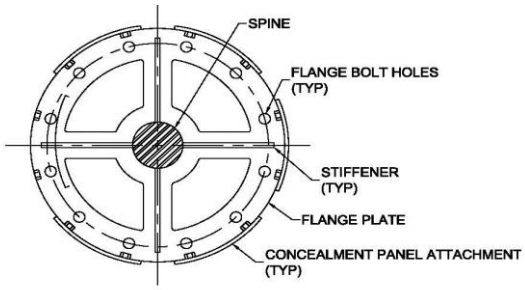
Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from 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.

CCI Flagpole Tool

Site Data	
BU#:	825998
Site Name:	Milford Shore Area
Order #:	556414 Rev. 7

Code		
Code:	TIA-222-H	
Ice Thickness:	1	in
Windspeed (V):	120	mph
Ice Wind Speed (V):	50	mph
Exposure Category:	D	
Topographic Feature:	N/A	
Risk Category:	II	

Tower Information		
Total Tower Height:	125	ft
Base Tower Height:	85	ft
Total Canister Length:	40	ft
Number of Canister Assembly Sections:	4	



FLANGE PLATE
(TYPE 2: SOLIDITY RATIO 0.75)

Canister Section Number[1]:	Canister Assembly Length (ft):	Canister Assembly Diameter (in):	Ventilated Canister:	Manufacturer[2]:	Number of Sides Canister Section	Plate Type:	Mating Flange Plate Thickness (in)[3]:	Mating Flange Plate Diameter (in):	Solidity Ratio	Plate Weight (Kip):	Canister Weight (Kip)	Vent Length (ft):
1	10	42	No		Round	4	0.50	42	0.55	0.216	0.220	0-0
2	10	42	No		Round	5	1.50	14.75	0.9	0.131	0.220	0-0
3	10	42	No		Round	4	0.50	42	0.55	0.216	0.220	0-0
4	10	42	No		Round	2	2.75	30	0.75	0.827	0.220	0-0

[1] Sections are numbered from the top of the tower down

[2] Select manufacturer if available for vented canister. Leave blank to autocalculate Cf values.

[3] Mating Flange Plate Thickness at the bottom of canister section

Flag on Tower:	Yes	
Flag Width:	25	ft
Flag Height:	15	ft
Flag Elevation(z):	125	ft

Truck Ball on Tower:	Yes	
Diameter of Ball:	18	in

Geometry : Base Tower + Spine PreQT_PreFlag_825998_2289483_LC5.eri *(last saved 04/ 8 10:24 am)*

Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material	Delete
125	20	0	0	6.625	6.625	0.432	n/a	A500-42	[x]
105	20	0	0	10.75	10.75	0.5	n/a	A500-42	[x]
85	35	0	0	24	24	0.375	n/a	A53-B-42	[x]
50	30	0	0	24	24	0.375	n/a	A53-B-42	[x]
20	20	0	0	24	24	0.5	n/a	A53-B-42	[x]

Discrete Loads: Truck Ball	Apply C_aA_A at Elevation(z) (ft)	C_aA_A No Ice (ft^2)	C_aA_A 1/2" Ice (ft^2)	C_aA_A 1" Ice (ft^2)	C_aA_A 2" Ice (ft^2)	C_aA_A 4" Ice (ft^2)	Weight No Ice (Kip)	Weight 1/2" Ice (Kip)
	125.75	0.884	1.378	1.527	1.848	2.581	0.05	0.067

Discrete Loads : C_FA_F for Canister Assembly								
Canister Loading	Apply C_FA_F at Elevation(z) (ft)	C_FA_F No Ice (ft^2)	C_FA_F 1/2" Ice (ft^2)	C_FA_F 1" Ice (ft^2)	C_FA_F 2" Ice (ft^2)	C_FA_F 4" Ice (ft^2)	Canister Assembly Weight No Ice (Kip)	Canister Assembly Weight 1/2" Ice (Kip)
Canister Load 1	125	7.875	19.708	20.167	21.083	22.917	0.110	0.240
Canister Load 2	115	15.750	39.417	40.333	42.167	45.833	0.436	0.696
Canister Load 3	105	15.750	39.417	40.333	42.167	45.833	0.351	0.610
Canister Load 4	95	15.750	39.417	40.333	42.167	45.833	0.436	0.696
Canister Load 5	85	7.875	19.708	20.167	21.083	22.917	0.937	1.067

User Forces: Flag Force Calculation Per ANSI/NAAMM FP 1001-07	
$Wind_{FORCE}$=	0.590 Kip
Weight=	0.039 Kip
$Wind_{FORCE, ICE}$=	0.105 Kip
$Weight_{ICE}$=	0.839 Kip
$W_{FORCE, SERVICE WIND}$=	0.148 Kip
Weight=	0.039 Kip

←Flag force should be included at the top of the flag attachment elevation. If the attachment of the flag to the halyard distributes forces equally to the pole, apply flag forces accordingly in tnx file.

Deflection Check Required:	Yes	Import Deflection Results
3% Spine Deflection Check		
Allowable (3%) Horizontal Spine Deflection (inches)	Actual Deflection[1] (inches)	Sufficient/ Insufficient
14.400	11.943	Sufficient

[1] Relative deflection under service level wind speed

CCIpole

per TIA-222- H

Site BU: 825998

Work Order: 2289483

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	125	20	0	0	6.625	6.625	0.432		A500-42
2	105	20	0	0	10.75	10.75	0.5		A500-42
3	85	35	0	0	24.00	24	0.375		A53-B-42
4	50	30	0	0	24.00	24	0.375		A53-B-42
5	20	20	0	0	24.00	24	0.5		A53-B-42

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	19.5	23.83	plate	PL 4.25x1.25	3	52	128	232															
2	19.75	20.25	plate	PL 6x1	1				308														
3	19.5	20.5	plate	CCI-CFP-040125 (sh)	1					2													
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Type	Bottom Termination Length (in)	Top Termination Type	Top Termination Length (in)	Lu (in)	Net Area (in2)	Bolt Hole Size (in)	Reinforcement Material
1	4.25	1.25	5.3125	0.625	PC 8.8 - M20 (100)	21	PC 8.8 - M20 (100)	21.000	12.000	3.750	1.1875	A572-50
2	6	1	6	0.5	PC 8.8 - M20 (100)	24	PC 8.8 - M20 (100)	24.000	7.000	4.750	1.1875	A572-50
3	4	1.25	5	1.125	PC 8.8 - M20 (100)	18	PC 8.8 - M20 (100)	18.000	12.000	3.438	1.1875	A572-65

Connection Details for Custom Reinforcements

Reinforcement	End	# Bolts	N or X	Bolt Spacing (in)	Edge Dist (in)	Weld Grade (ksi)	Transverse (Horiz.) Weld Type	Horiz. Weld Length (in)	Horiz. Groove Depth (in)	Horiz. Groove Angle (deg)	Horiz. Fillet Size (in)	Vertical Weld Length (in)	Vertical Fillet Size (in)	Rev H Connection Capacity (kip)
PL 4.25x1.25	Top	7	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	7	N	3	3	-	-	-	-	-	-	-	-	-
PL 6x1	Top	8	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	8	N	3	3	-	-	-	-	-	-	-	-	-
CCI-CFP-040125 (sh)	Top	6	N	3	3	-	-	-	-	-	-	-	-	-
	Bottom	6	N	3	3	-	-	-	-	-	-	-	-	-

TNX Geometry Input

Increment (ft): 5 Export to TNX

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	125 - 120	5		0	6.625	6.625	0.432	A500-42	1.000
2	120 - 115	5		0	6.625	6.625	0.432	A500-42	1.000
3	115 - 110	5		0	6.625	6.625	0.432	A500-42	1.000
4	110 - 105	5	0	0	6.625	6.625	0.432	A500-42	1.000
5	105 - 100	5		0	10.750	10.750	0.5	A500-42	1.000
6	100 - 95	5		0	10.750	10.750	0.5	A500-42	1.000
7	95 - 90	5		0	10.750	10.750	0.5	A500-42	1.000
8	90 - 85	5	0	0	10.750	10.750	0.5	A500-42	1.000
9	85 - 80	5		0	24.000	24.000	0.375	A53-B-42	1.000
10	80 - 75	5		0	24.000	24.000	0.375	A53-B-42	1.000
11	75 - 70	5		0	24.000	24.000	0.375	A53-B-42	1.000
12	70 - 65	5		0	24.000	24.000	0.375	A53-B-42	1.000
13	65 - 60	5		0	24.000	24.000	0.375	A53-B-42	1.000
14	60 - 55	5		0	24.000	24.000	0.375	A53-B-42	1.000
15	55 - 50	5	0	0	24.000	24.000	0.375	A53-B-42	1.000
16	50 - 45	5		0	24.000	24.000	0.375	A53-B-42	1.000
17	45 - 40	5		0	24.000	24.000	0.375	A53-B-42	1.000
18	40 - 35	5		0	24.000	24.000	0.375	A53-B-42	1.000
19	35 - 30	5		0	24.000	24.000	0.375	A53-B-42	1.000
20	30 - 25	5		0	24.000	24.000	0.375	A53-B-42	1.000
21	25 - 23.83	1.17		0	24.000	24.000	0.375	A53-B-42	1.000
22	23.83 - 23.58	0.25		0	24.000	24.000	0.5125	A53-B-42	1.157
23	23.58 - 20.5	3.08		0	24.000	24.000	0.5125	A53-B-42	1.157
24	20.5 - 20.25	0.25		0	24.000	24.000	0.6375	A53-B-42	1.042
25	20.25 - 20	0.25	0	0	24.000	24.000	0.825	A53-B-42	0.912
26	20 - 19.75	0.25		0	24.000	24.000	0.975	A53-B-42	0.905
27	19.75 - 19.5	0.25		0	24.000	24.000	0.775	A53-B-42	1.023
28	19.5 - 19.25	0.25		0	24.000	24.000	0.5	A53-B-42	1.000
29	19.25 - 14.25	5		0	24.000	24.000	0.5	A53-B-42	1.000
30	14.25 - 9.25	5		0	24.000	24.000	0.5	A53-B-42	1.000
31	9.25 - 4.25	5		0	24.000	24.000	0.5	A53-B-42	1.000
32	4.25 - 0	4.25		0	24.000	24.000	0.5	A53-B-42	1.000

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	125 - 120	0.26	5.67	1.14
2	120 - 115	0.64	11.56	1.19
3	115 - 110	1.25	22.28	2.15
4	110 - 105	1.68	33.15	2.17
5	105 - 100	2.37	48.64	3.11
6	100 - 95	3.46	64.57	3.20
7	95 - 90	4.32	85.07	4.10
8	90 - 85	5.34	105.74	4.13
9	85 - 80	7.05	129.74	4.98
10	80 - 75	7.67	155.50	5.33
11	75 - 70	8.29	182.97	5.66
12	70 - 65	8.92	212.11	5.99
13	65 - 60	9.55	242.86	6.31
14	60 - 55	10.18	275.17	6.62
15	55 - 50	10.82	308.98	6.91
16	50 - 45	11.47	344.21	7.19
17	45 - 40	12.12	380.78	7.45
18	40 - 35	12.78	418.61	7.69
19	35 - 30	13.44	457.61	7.92
20	30 - 25	14.11	497.67	8.12
21	25 - 23.83	14.27	507.18	8.16
22	23.83 - 23.58	14.32	509.22	8.17
23	23.58 - 20.5	14.93	534.81	8.46
24	20.5 - 20.25	14.99	536.93	8.48
25	20.25 - 20	15.05	539.05	8.51
26	20 - 19.75	15.11	541.18	8.53
27	19.75 - 19.5	15.18	543.32	8.56
28	19.5 - 19.25	15.22	545.46	8.58
29	19.25 - 14.25	16.08	588.82	8.77
30	14.25 - 9.25	16.94	633.00	8.92
31	9.25 - 4.25	17.82	677.89	9.06
32	4.25 - 0	18.56	716.55	9.16

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
125 - 120	Pole	TP6.625x6.625x0.432	Pole	10.4%	Pass
120 - 115	Pole	TP6.625x6.625x0.432	Pole	21.3%	Pass
115 - 110	Pole	TP6.625x6.625x0.432	Pole	41.0%	Pass
110 - 105	Pole	TP6.625x6.625x0.432	Pole	60.9%	Pass
105 - 100	Pole	TP10.75x10.75x0.5	Pole	28.4%	Pass
100 - 95	Pole	TP10.75x10.75x0.5	Pole	37.7%	Pass
95 - 90	Pole	TP10.75x10.75x0.5	Pole	49.6%	Pass
90 - 85	Pole	TP10.75x10.75x0.5	Pole	61.7%	Pass
85 - 80	Pole	TP24x24x0.375	Pole	20.5%	Pass
80 - 75	Pole	TP24x24x0.375	Pole	24.5%	Pass
75 - 70	Pole	TP24x24x0.375	Pole	28.7%	Pass
70 - 65	Pole	TP24x24x0.375	Pole	33.2%	Pass
65 - 60	Pole	TP24x24x0.375	Pole	38.0%	Pass
60 - 55	Pole	TP24x24x0.375	Pole	43.0%	Pass
55 - 50	Pole	TP24x24x0.375	Pole	48.2%	Pass
50 - 45	Pole	TP24x24x0.375	Pole	53.6%	Pass
45 - 40	Pole	TP24x24x0.375	Pole	59.3%	Pass
40 - 35	Pole	TP24x24x0.375	Pole	65.1%	Pass
35 - 30	Pole	TP24x24x0.375	Pole	71.2%	Pass
30 - 25	Pole	TP24x24x0.375	Pole	77.3%	Pass
25 - 23.83	Pole	TP24x24x0.375	Pole	78.8%	Pass
23.83 - 23.58	Pole + Reinf.	TP24x24x0.5125	Reinf. 1 Tension Rupture	69.4%	Pass
23.58 - 20.5	Pole + Reinf.	TP24x24x0.5125	Reinf. 1 Tension Rupture	72.9%	Pass
20.5 - 20.25	Pole + Reinf.	TP24x24x0.6375	Reinf. 1 Tension Rupture	68.1%	Pass
20.25 - 20	Pole + Reinf.	TP24x24x0.825	Reinf. 1 Tension Rupture	59.6%	Pass
20 - 19.75	Pole + Reinf.	TP24x24x0.975	Reinf. 1 Tension Rupture	51.5%	Pass
19.75 - 19.5	Pole + Reinf.	TP24x24x0.775	Reinf. 1 Tension Rupture	58.3%	Pass
19.5 - 19.25	Pole	TP24x24x0.5	Pole	60.8%	Pass
19.25 - 14.25	Pole	TP24x24x0.5	Pole	65.6%	Pass
14.25 - 9.25	Pole	TP24x24x0.5	Pole	70.5%	Pass
9.25 - 4.25	Pole	TP24x24x0.5	Pole	75.5%	Pass
4.25 - 0	Pole	TP24x24x0.5	Pole	79.8%	Pass
				Summary	
			Pole	79.8%	Pass
			Reinforcement	72.9%	Pass
			Overall	79.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*			
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3
125 - 120	40	n/a	40	8.40	n/a	8.40	10.4%			
120 - 115	40	n/a	40	8.40	n/a	8.40	21.3%			
115 - 110	40	n/a	40	8.40	n/a	8.40	41.0%			
110 - 105	40	n/a	40	8.40	n/a	8.40	60.9%			
105 - 100	212	n/a	212	16.10	n/a	16.10	28.4%			
100 - 95	212	n/a	212	16.10	n/a	16.10	37.7%			
95 - 90	212	n/a	212	16.10	n/a	16.10	49.6%			
90 - 85	212	n/a	212	16.10	n/a	16.10	61.7%			
85 - 80	1942	n/a	1942	27.83	n/a	27.83	20.5%			
80 - 75	1942	n/a	1942	27.83	n/a	27.83	24.5%			
75 - 70	1942	n/a	1942	27.83	n/a	27.83	28.7%			
70 - 65	1942	n/a	1942	27.83	n/a	27.83	33.2%			
65 - 60	1942	n/a	1942	27.83	n/a	27.83	38.0%			
60 - 55	1942	n/a	1942	27.83	n/a	27.83	43.0%			
55 - 50	1942	n/a	1942	27.83	n/a	27.83	48.2%			
50 - 45	1942	n/a	1942	27.83	n/a	27.83	53.6%			
45 - 40	1942	n/a	1942	27.83	n/a	27.83	59.3%			
40 - 35	1942	n/a	1942	27.83	n/a	27.83	65.1%			
35 - 30	1942	n/a	1942	27.83	n/a	27.83	71.2%			
30 - 25	1942	n/a	1942	27.83	n/a	27.83	77.3%			
25 - 23.83	1942	n/a	1942	27.83	n/a	27.83	78.8%			
23.83 - 23.58	2005	668	2673	27.83	15.94	43.77	64.4%	69.4%		
23.58 - 20.5	2005	668	2673	27.83	15.94	43.77	67.6%	72.9%		
20.5 - 20.25	1951	1243	3194	27.83	20.94	48.77	52.9%	68.1%		52.6%
20.25 - 20	1968	2128	4096	27.83	26.94	54.77	42.8%	59.6%	46.0%	44.2%
20 - 19.75	2570	2145	4716	36.91	26.94	63.85	32.9%	51.5%	40.6%	39.1%
19.75 - 19.5	2557	1246	3803	36.91	20.94	57.85	40.6%	58.3%		45.5%
19.5 - 19.25	2549	n/a	2549	36.91	n/a	36.91	60.8%			
19.25 - 14.25	2549	n/a	2549	36.91	n/a	36.91	65.6%			
14.25 - 9.25	2549	n/a	2549	36.91	n/a	36.91	70.5%			
9.25 - 4.25	2549	n/a	2549	36.91	n/a	36.91	75.5%			
4.25 - 0	2549	n/a	2549	36.91	n/a	36.91	79.8%			

Note: Section capacity checked using 5 degree increments.
Rating per TIA-222-H Section 15.5.

Monopole Flange Plate Connection

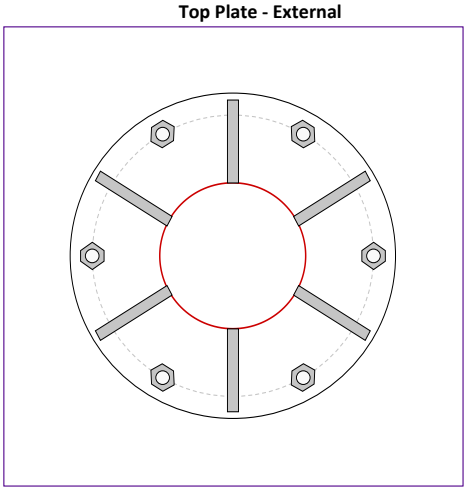
Elevation = 105 ft.

BU #	825998
Site Name	Milford Shore Area
Order #	556514 Rev. 7
TIA-222 Revision	H

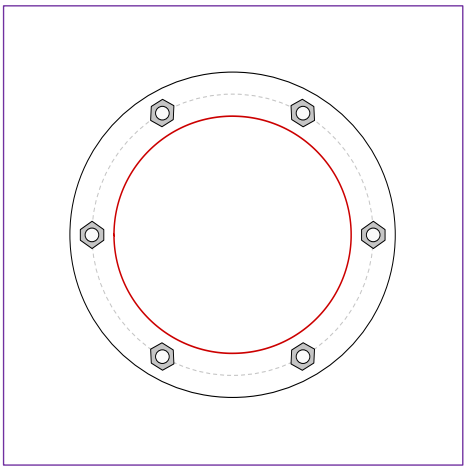
Applied Loads	
Moment (kip-ft)	33.15
Axial Force (kips)	1.68
Shear Force (kips)	2.17

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(6) 5/8" ø bolts (A490 N; Fy=130 ksi, Fu=150 ksi) on 12.75" BC

Top Plate Data

14.75" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

14.75" OD x 0.75" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

(6) 6"H x 3.75"W x 0.5"T, Notch: 0.5"
plate: Fy= 36 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.25" fillet
vert. weld: 0.25" fillet

Bottom Stiffener Data

N/A

Top Pole Data

6.625" x 0.432" round pole (A500-42; Fy=42 ksi, Fu=58 ksi)

Bottom Pole Data

10.75" x 0.5" round pole (A500-42; Fy=42 ksi, Fu=58 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	20.50	
Allowable (kips)	25.42	
Stress Rating:	**76.8%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	7.37	(Roark's Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**21.7%**	**Pass**
Tension Side Stress Rating:	**N/A**	

Bottom Plate Capacity

Max Stress (ksi):	21.84	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**64.2%**	**Pass**
Tension Side Stress Rating:	**21.4%**	**Pass**

Top Stiffener Capacity

Horizontal Weld:	**55.8%**	**Pass**
Vertical Weld:	**40.7%**	**Pass**
Plate Flexure+Shear:	**29.0%**	**Pass**
Plate Tension+Shear:	**41.5%**	**Pass**
Plate Compression:	**65.3%**	**Pass**

Bottom Stiffener Capacity

Horizontal Weld:	**N/A**
Vertical Weld:	**N/A**
Plate Flexure+Shear:	**N/A**
Plate Tension+Shear:	**N/A**
Plate Compression:	**N/A**

Top Pole Capacity

Punching Shear:	**14.5%**	**Pass**

Bottom Pole Capacity

Punching Shear:	**N/A**

Monopole Flange Plate Connection

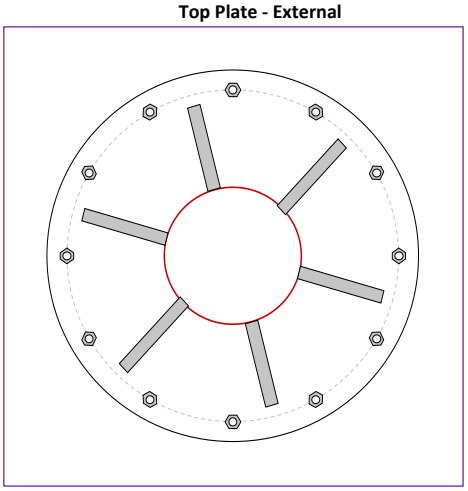
Elevation = 85 ft.

BU #	825998
Site Name	Milford Shore Area
Order #	556514 Rev. 7
TIA-222 Revision	H

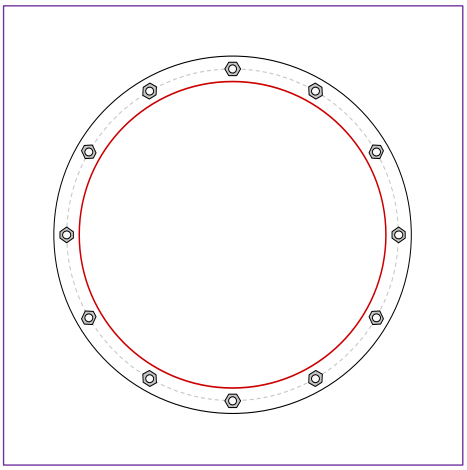
Applied Loads	
Moment (kip-ft)	105.74
Axial Force (kips)	5.34
Shear Force (kips)	4.13

**TIA-222-H Section 15.5 Applied*

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 5/8" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 26" BC

Top Plate Data

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

Bottom Plate Data

28" OD x 0.75" Plate (A572-50; Fy=50 ksi, Fu=65 ksi)

Top Stiffener Data

(6) 6.75"H x 6.75"W x 1"T, Notch: 0.5"
plate: Fy= 50 ksi ; weld: Fy= 70 ksi
horiz. weld: 0.5" fillet
vert. weld: 0.5" fillet

Bottom Stiffener Data

N/A

Top Pole Data

10.75" x 0.5" round pole (A500-42; Fy=42 ksi, Fu=58 ksi)

Bottom Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	15.82	
Allowable (kips)	20.33	
Stress Rating:	**74.1%**	**Pass**

Top Plate Capacity

Max Stress (ksi):	7.22	(Flexural)	
Allowable Stress (ksi):	45.00		
Stress Rating:	**15.3%**	**Pass**	
Tension Side Stress Rating:	**32.8%**	**Pass**	

Bottom Plate Capacity

Max Stress (ksi):	12.80	(Flexural)	
Allowable Stress (ksi):	45.00		
Stress Rating:	**27.1%**	**Pass**	
Tension Side Stress Rating:	**14.7%**	**Pass**	

Top Stiffener Capacity

Horizontal Weld:	**35.4%**	**Pass**
Vertical Weld:	**49.7%**	**Pass**
Plate Flexure+Shear:	**24.9%**	**Pass**
Plate Tension+Shear:	**16.5%**	**Pass**
Plate Compression:	**60.4%**	**Pass**

Bottom Stiffener Capacity

Horizontal Weld:	**N/A**
Vertical Weld:	**N/A**
Plate Flexure+Shear:	**N/A**
Plate Tension+Shear:	**N/A**
Plate Compression:	**N/A**

Top Pole Capacity

Punching Shear:	**36.5%**	**Pass**

Bottom Pole Capacity

Punching Shear:	**N/A**

Monopole Flange Plate Connection

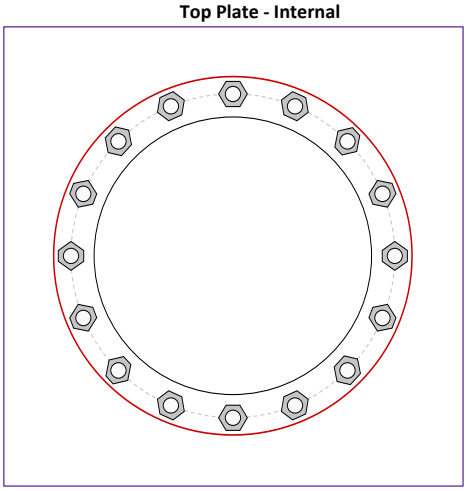
Elevation = 50 ft.

BU #	825998
Site Name	Milford Shore Area
Order #	556514 Rev. 7
TIA-222 Revision	H

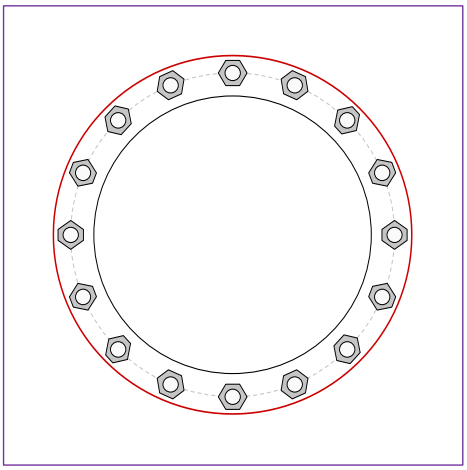
Applied Loads	
Moment (kip-ft)	308.98
Axial Force (kips)	10.82
Shear Force (kips)	6.91

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

(16) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 21" BC

Top Plate Data

18" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

18" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	43.42	
Allowable (kips)	54.54	
Stress Rating:	**75.8%**	Pass

Top Plate Capacity

Max Stress (ksi):	28.25	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**83.0%**	Pass
Tension Side Stress Rating:	**15.7%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	28.25	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**83.0%**	Pass
Tension Side Stress Rating:	**15.7%**	Pass

Monopole Flange Plate Connection

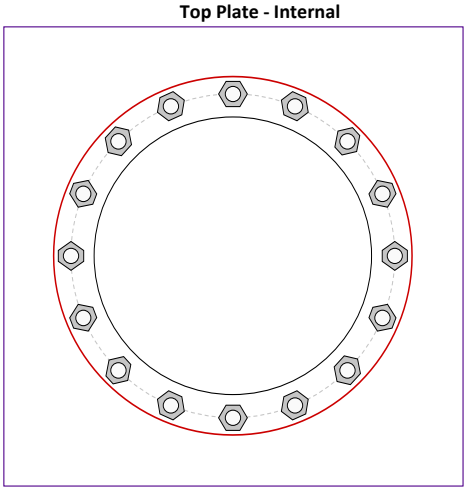
Elevation = 20 ft.

BU #	825998
Site Name	Milford Shore Area
Order #	556514 Rev. 7
TIA-222 Revision	H

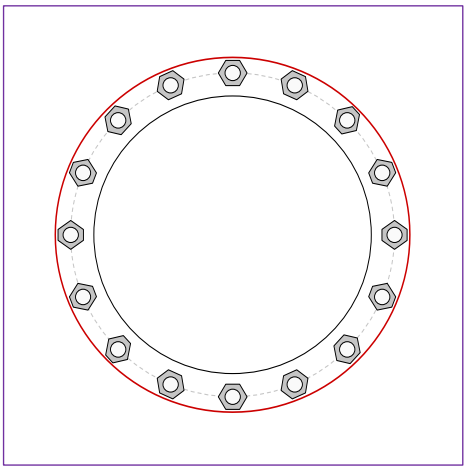
Applied Loads	
Moment (kip-ft)	258.60
Axial Force (kips)	7.65
Shear Force (kips)	4.32

**TIA-222-H Section 15.5 Applied*

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

(16) 1" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 21" BC

Top Plate Data

18" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

18" ID x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

24" x 0.375" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Bottom Pole Data

24" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	36.43	
Allowable (kips)	54.54	
Stress Rating:	**63.6%**	Pass

Top Plate Capacity

Max Stress (ksi):	23.59	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**69.3%**	Pass
Tension Side Stress Rating:	**13.2%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	21.19	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**62.3%**	Pass
Tension Side Stress Rating:	**10.7%**	Pass

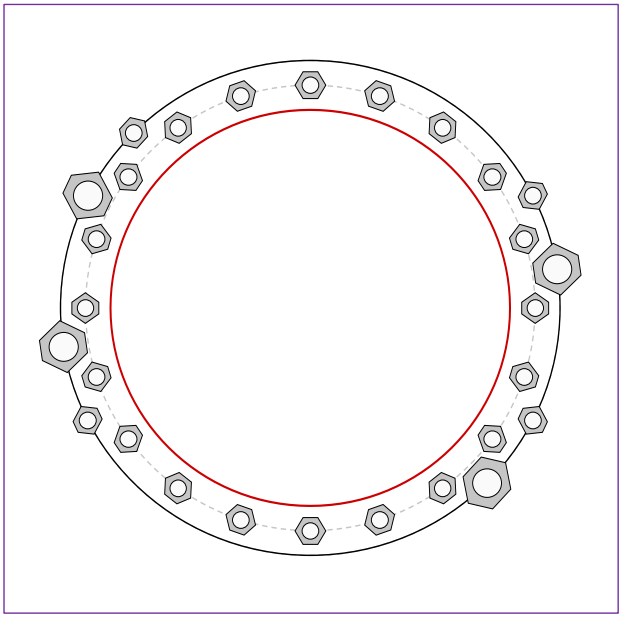
Monopole Base Plate Connection

Site Info	
BU #	825998
Site Name	Milford Shore Area
Order #	556514 Rev. 7

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	See Custom Sheet
l_{ar} (in)	See Custom Sheet

Applied Loads	
Moment (kip-ft)	716.55
Axial Force (kips)	18.56
Shear Force (kips)	9.16

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

GROUP 1: (20) 1" ø bolts (A687 N; Fy=105 ksi, Fu=125 ksi) on 27" BC

GROUP 2: (4) 1" ø bolts (A687 N; Fy=105 ksi, Fu=125 ksi) on 30" BC

pos. (deg): 27, 135, 207, 333

GROUP 3: (4) 1-3/4" ø bolts (A193 Gr. B7 N; Fy=105 ksi, Fu=125 ksi) on 30" BC

pos. (deg): 9, 153, 189, 315

Base Plate Data

30" OD x 1.25" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Stiffener Data

N/A

Pole Data

24" x 0.5" round pole (A53-B-42; Fy=42 ksi, Fu=63 ksi)

Analysis Results

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

GROUP 1:		
Pu_t = 44.08	ϕPn_t = 56.81	**Stress Rating**
Vu = 0.46	ϕVn = 36.82	**73.9%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 53.94	ϕPn_c = 80.33	**Stress Rating**
Vu = 0	ϕVn = 36.15	**64.0%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 3:		
Pu_t = 110.62	ϕPn_t = 178.13	**Stress Rating**
Vu = 0	ϕVn = 112.75	**59.1%**
Mu = 0	ϕMn = 84.41	**Pass**

Base Plate Summary

Max Stress (ksi):	28.47	(Flexural)
Allowable Stress (ksi):	32.4	
Stress Rating:	**83.7%**	**Pass**

CCIplate

Elevation (ft)	0	*(Base)*

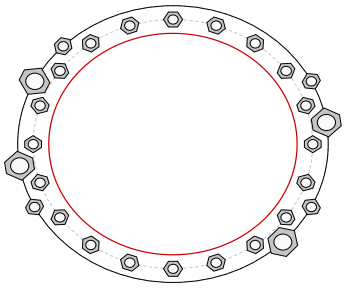
note: Bending interaction not considered when Grout Considered = "Yes"

Bolt Group	Resist Axial	Resist Shear	Induce Plate Bending	Grout Considered	Apply at BARB Elevation	BARB CL Elevation (ft)
1	Yes	Yes	Yes	Yes	No	
2	Yes	No	No	No	No	
3	Yes	No	No	No	No	

Custom Bolt Connection

Bolt	Bolt Group ID	Location (deg.)	Diameter (in)	Material	Bolt Circle (in)	Eta Factor, η:	l_{ar} (in):	Thread Type	Area Override, in^2	Tension Only
1	1	0	1	A687	27	0.5	0	N-Included		No
2	1	18	1	A687	27	0.5	0	N-Included		No
3	1	36	1	A687	27	0.5	0	N-Included		No
4	1	54	1	A687	27	0.5	0	N-Included		No
5	1	72	1	A687	27	0.5	0	N-Included		No
6	1	90	1	A687	27	0.5	0	N-Included		No
7	1	108	1	A687	27	0.5	0	N-Included		No
8	1	126	1	A687	27	0.5	0	N-Included		No
9	1	144	1	A687	27	0.5	0	N-Included		No
10	1	162	1	A687	27	0.5	0	N-Included		No
11	1	180	1	A687	27	0.5	0	N-Included		No
12	1	198	1	A687	27	0.5	0	N-Included		No
13	1	216	1	A687	27	0.5	0	N-Included		No
14	1	234	1	A687	27	0.5	0	N-Included		No
15	1	252	1	A687	27	0.5	0	N-Included		No
16	1	270	1	A687	27	0.5	0	N-Included		No
17	1	288	1	A687	27	0.5	0	N-Included		No
18	1	306	1	A687	27	0.5	0	N-Included		No
19	1	324	1	A687	27	0.5	0	N-Included		No
20	1	342	1	A687	27	0.5	0	N-Included		No
21	2	27	1	A687	30	0.5	0	N-Included	0.85	No
22	2	135	1	A687	30	0.5	0	N-Included	0.85	No
23	2	207	1	A687	30	0.5	0	N-Included	0.85	No
24	2	333	1	A687	30	0.5	0	N-Included	0.85	No
25	3	9	1.75	A193 Gr. B7	30	0.5	7	N-Included		No
26	3	153	1.75	A193 Gr. B7	30	0.5	7	N-Included		No
27	3	189	1.75	A193 Gr. B7	30	0.5	7	N-Included		No
28	3	315	1.75	A193 Gr. B7	30	0.5	7	N-Included		No

Plot Graphic



Drilled Pier Foundation

BU # :	825998
Site Name:	Milford Shore Area
Order Number:	556514 Rev. 7
TIA-222 Revison:	H
Tower Type:	Monopole

Check Limitation	
Apply TIA-222-H Section 15.5:	☑
N/A	☐
Design Options	
Input Effective Depths (else Actual):	☐
Consider non-tapered moment capacity:	☐
Check Shear along Depth of Pier:	☑
Utilize Shear-Friction Methodology:	☐
Override Critical Depth:	☐

Go to Soil Calculations

Applied Loads	Comp.	Uplift
Moment (kip-ft)	716.6	
Axial Force (kips)	18.6	
Shear Force (kips)	9.2	

Material Properties			Rebar 2, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi	
Rebar Strength, Fy:	60	ksi	80
Tie Yield Strength, Fyt:	60	ksi	

Pier Design Data		
Depth	18.4	ft
Ext. Above Grade	0.8	ft
Pier Section 1		
From 0.8' above grade to 17.7' below grade		
Pier Diameter	4.5	ft
Rebar Quantity	14	
Rebar Size	7	
Clear Cover to Ties	9	in
Tie Size	4	
Tie Spacing	16	in
Rebar Quantity	4	
Rebar Size	1-in Dywidag	
Rebar Cage Diameter	30	in
Pier Section 2		
From 17.7' below grade to 18.4' below grade		
Pier Diameter	4.5	ft
Rebar Quantity	14	
Rebar Size	7	
Clear Cover to Ties	9	in
Tie Size	4	
Tie Spacing	16	in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.60	-
Soil Safety Factor	2.48	-
Max Moment (kip-ft)	762.23	-
Rating*	*51.1%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	70.48	-
End Bearing (kips)	295.82	-
Weight of Concrete (kips)	42.57	-
Total Capacity (kips)	366.30	-
Axial (kips)	61.17	-
Rating*	*15.9%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.41	-
Critical Moment (kip-ft)	762.11	-
Critical Moment Capacity	1210.35	-
Rating*	*60.0%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	14.50	-
Critical Shear (kip)	141.99	-
Critical Shear Capacity	233.55	-
Rating*	*57.9%*	-

Tie Spacing Requirements Not Met

Structural Foundation Rating*	**60.0%**
Soil Interaction Rating*	**51.1%**

*Rating per TIA-222-H Section 15.5

Soil Profile

Groundwater Depth	8	# of Layers	5

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.3	3.3	115	150	0		0.000	0.000	0.00	0.00			Cohesionless
2	3.3	8	4.7	114	150		25	0.000	0.000	0.21	0.21			Cohesionless
3	8	11	3	37.6	87.6		10	0.000	0.000	0.12	0.12			Cohesionless
4	11	15	4	55.6	87.6		44	0.000	0.000	0.73	0.73			Cohesionless
5	15	18.4	3.4	57.6	87.6		36	0.000	0.000	0.70	0.70	24.8		Cohesionless

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

Site Name:	SHERMAN-ANDERSON R D EXIT
AT&T Mobility FA#	10071133
Site ID:	CTL05601
Project Name:	5G NR 1SR CBAND
Address:	234 MELBA STREET, MILFORD, CT 06460
County:	NEW HAVEN
Latitude:	41.2100380
Longitude:	-73.0190580
Structure Type:	STEALTH POLE-INTRNL ARRAY
Property Owner:	17 MILE 04 LLC
Property Contact:	NA

AT&T Existing Facility

Report Information

Report Writer: Monti Saini **Report Generated Date:** 06-28-2024

Site Compliance Statement

Compliance Status	Compliant
Cumulative General Population % MPE (Ground Level)	0.0521%

June 28, 2024

Emissions Analysis for Site: **SHERMAN-ANDERSON R D EXIT**

MobileComm Professionals, Inc was directed to analyze the proposed AT&T facility located at **234 MELBA STREET, MILFORD, CT 06460**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of milliwatts per square centimeter (mW/cm^2) or microwatts per square centimeter (µW/cm2). The number of mW/cm^2 or µW/cm2 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 public 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 public 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 milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the 700 and 850 MHz Bands are approximately 0.467 mW/cm^2 and 0.567 mW/cm^2 respectively or 466.667 µW/cm2 and 566.667 µW/cm2 respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS), 2300 MHz (WCS), 3540 MHz (DoD Band) and 3840 MHz (C-Band) bands is 1 mW/cm^2 or 1000 µW/cm2. 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.

1. Theoretical Calculations: Methods and Procedures

MobileComm Professionals, Inc has performed theoretical modeling of the site using a software tool, RoofMaster® Version 40.12.23.2022, which incorporates calculation methodologies detailed in FCC OET 65. RoofMaster® uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations, the power decreases inversely with the square of the distance. The modeling is based on worst-case assumptions in terms of transmitter power and duty cycle. No losses were included in the power calculations unless they were specifically provided for the project.

In OET 65, a far field model is presented to calculate the spatial peak power density. The RoofMaster® implementation of this model incorporates antenna manufacturer's horizontal and vertical pattern data to determine the power density in all directions. This model yields the power density at a single point in space. In order to determine the spatial power density for comparison to the FCC limits, the average of several points calculated within the human profile (0-6') must be conducted. RoofMaster® calculates seven power density values between 0-6' above the specified study plane and performs a linear spatial average.

The following table details the antennas and operating parameters for the AT&T antenna system as well as any other antenna systems at the site. This is based on antenna information provided by the client and data compiled from other sources where necessary. The data below was input into Roofmaster® to perform the theoretical exposure calculations at the ground.

The theoretical calculations performed in Roofmaster® determine the cumulative exposure at all sample points at ground level (0-6' spatial average). The results from highest cumulative sample point at ground level surrounding the site are displayed in the table below. The contribution from directional antennas to the maximum cumulative totals varies greatly depending on location; therefore, the contribution from one antenna sector at the highest calculated exposure point may be greater or less than other sectors since sectorized directional antennas are pointed in different directions and there is not much overlapping exposure.

The contribution to the cumulative power density and % MPE for each antenna/frequency band is listed in the table. The cumulative power density and cumulative % MPE are displayed at the bottom of the table.

2. Antenna Inventory & Power Data

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (^{0})	HBW (^{0})	Antenna Gain (dBd)	Antenna Aperture (ft)	#of Channels	Transmitter Power Per Channel (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Height (ft)	Calculated Power Density ($\mu W/cm^2$)	Allowable MPE ($\mu W/cm^2$)	Calculated MPE%
A	1	AT&T	CommScope	NNHHS4-65B-R5	Panel	700(B14)	LTE	60	72	12.45	6	4	40.00	2506.80	4112.63	91.50	0.000812	2333.33	0.000035
A	1	AT&T	CommScope	NNHHS4-65B-R5	Panel	1900	LTE/5G	60	58	15.65	6	4	40.00	5237.45	8592.51	91.50	0.000755	5000.00	0.000015
A	1	AT&T	CommScope	NNHHS4-65B-R5	Panel	3840	5G	60	55	14.32	6	8	40.00	2613.34	4287.42	91.50	0.000193	5000.00	0.000004
A	2	AT&T	CCI	DMP65R-BU6EA	Panel	700(B12)	LTE	60	73	11.95	6	4	40.00	2234.19	3665.39	101.00	0.000287	2333.33	0.000012
A	2	AT&T	CCI	DMP65R-BU6EA	Panel	850	5G	60	62	12.45	6	4	40.00	2506.80	4112.63	101.00	0.000780	2833.33	0.000028
A	2	AT&T	CCI	DMP65R-BU6EA	Panel	2100	LTE/5G	60	71	15.95	6	4	60.00	8418.04	13810.56	101.00	0.000012	5000.00	0.000000
A	2	AT&T	CCI	DMP65R-BU6EA	Panel	2300	LTE	60	52	16.15	6	4	40.00	3672.82	6025.60	101.00	0.000047	5000.00	0.000001
B	3	AT&T	CommScope	NNHHS4-65B-R5	Panel	700(B14)	LTE	180	72	12.45	6	4	40.00	2506.80	4112.63	91.50	0.000230	2333.33	0.000010
B	3	AT&T	CommScope	NNHHS4-65B-R5	Panel	1900	LTE/5G	180	58	15.65	6	4	40.00	5237.45	8592.51	91.50	0.000551	5000.00	0.000011
B	3	AT&T	CommScope	NNHHS4-65B-R5	Panel	3840	5G	180	55	14.32	6	8	40.00	2613.34	4287.42	91.50	0.000064	5000.00	0.000001
B	4	AT&T	CCI	DMP65R-BU6EA	Panel	700(B12)	LTE	180	73	11.95	6	4	40.00	2234.19	3665.39	101.00	0.000381	2333.33	0.000016
B	4	AT&T	CCI	DMP65R-BU6EA	Panel	850	5G	180	62	12.45	6	4	40.00	2506.80	4112.63	101.00	0.000172	2833.33	0.000006
B	4	AT&T	CCI	DMP65R-BU6EA	Panel	2100	LTE/5G	180	71	15.95	6	4	60.00	8418.04	13810.56	101.00	0.000068	5000.00	0.000001
B	4	AT&T	CCI	DMP65R-BU6EA	Panel	2300	LTE	180	52	16.15	6	4	40.00	3672.82	6025.60	101.00	0.000152	5000.00	0.000003
C	5	AT&T	CommScope	NNHHS4-65B-R5	Panel	700(B14)	LTE	300	72	12.45	6	4	40.00	2506.80	4112.63	91.50	0.206871	2333.33	0.008866
C	5	AT&T	CommScope	NNHHS4-65B-R5	Panel	1900	LTE/5G	300	58	15.65	6	4	40.00	5237.45	8592.51	91.50	0.473990	5000.00	0.009480
C	5	AT&T	CommScope	NNHHS4-65B-R5	Panel	3840	5G	300	55	14.32	6	8	40.00	2613.34	4287.42	91.50	0.133240	5000.00	0.002665
C	6	AT&T	CCI	DMP65R-BU6EA	Panel	700(B12)	LTE	300	73	11.95	6	4	40.00	2234.19	3665.39	101.00	0.209411	2333.33	0.008975
C	6	AT&T	CCI	DMP65R-BU6EA	Panel	850	5G	300	62	12.45	6	4	40.00	2506.80	4112.63	101.00	0.233879	2833.33	0.008255
C	6	AT&T	CCI	DMP65R-BU6EA	Panel	2100	LTE/5G	300	71	15.95	6	4	60.00	8418.04	13810.56	101.00	0.265267	5000.00	0.005305
C	6	AT&T	CCI	DMP65R-BU6EA	Panel	2300	LTE	300	52	16.15	6	4	40.00	3672.82	6025.60	101.00	0.145908	5000.00	0.002918
A	7	T-Mobile	RFS	APXV18-206516S-C-A20	Panel	1900	LTE	60	65	16.3	6	4	40.00	6083.03	9979.76	120.00	0.000201	5000.00	0.000004
A	8	T-Mobile	RFS	APXV18-206516S-C-A20	Panel	2100	LTE	60	65	16.3	6	4	40.00	6083.03	9979.76	110.00	0.000451	5000.00	0.000009
B	9	T-Mobile	RFS	APXV18-206516S-C-A20	Panel	1900	LTE	280	65	16.3	6	4	40.00	6083.03	9979.76	120.00	0.100244	5000.00	0.002005
B	10	T-Mobile	RFS	APXV18-206516S-C-A20	Panel	2100	LTE	280	65	16.3	6	4	40.00	6083.03	9979.76	110.00	0.108941	5000.00	0.002179
C	11	T-Mobile	RFS	APXV18-206516S-C-A20	Panel	1900	LTE	350	65	16.3	6	4	40.00	6083.03	9979.76	120.00	0.028442	5000.00	0.000569
C	12	T-Mobile	RFS	APXV18-206516S-C-A20	Panel	2100	LTE	350	65	16.3	6	4	40.00	6083.03	9979.76	110.00	0.036783	5000.00	0.000736
																Calculated Power Density ($\mu W/cm^2$)	1.948132%	Calculated MPE%	0.0521%

Table 2: Antenna Inventory & Power Data

3. Compliance Summary

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

The anticipated composite MPE value for this site assuming all carriers present is 0.0521% of the allowable FCC established general public limit sampled at the ground level.

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 within the allowable 100% threshold standard per the federal government.

AT&T SITE NUMBER: CTL05601
AT&T SITE NAME: SHERMAN-ANDERSON R D EXIT
AT&T FA CODE: 10071133
AT&T PACE NUMBER: MRCTB062481, MRCTB061761, MRCTB057909, MRCTB057912, MRCTB050966, MRCTB050849, MRCTB050817
AT&T PROJECT: 4TX4RX SOFTWARE RETROFIT, 4TXRX ANTENNA RETROFIT, 5G NR ACTIVATION, 5G NR 1SR CBAND, 5G NR UPGRADE

BUSINESS UNIT #: 825998
SITE ADDRESS: 234 MELBA STREET MILFORD, CT 06460
COUNTY: NEW HAVEN
SITE TYPE: CONCEALMENT TOWER
TOWER HEIGHT: 125'-0"

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	MILFORD SHORE AREA
SITE ADDRESS:	234 MELBA STREET MILFORD, CT 06460
COUNTY:	NEW HAVEN
MAP/PARCEL #:	039 542 38 A
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 12' 36.02"
LONGITUDE:	-73° 1' 8.45"
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	19'
CURRENT ZONING:	BD
JURISDICTION:	CONNECTICUT SITING COUNCIL
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	17 MILE 04 LLC 69 HARRY ST CONSHOHOCKEN, PA 19428
TOWER OWNER:	CROWN CASTLE USA INC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	AT&T TOWER ASSET GROUP 575 MOROSGO DRIVE ATLANTA, GA 30324-3300
ELECTRIC PROVIDER:	UNITED ILLUMINATING CO 800-722-5584
TELCO PROVIDER:	LIGHTOWER 855-91-FIBER

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 MARVIN PHILLIPS MARVIN.PHILLIPS@BTGRP.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	3530 TORINGDON WAY, SUITE 300 CHARLOTTE, NC 28277
	VERONICA CHAPMAN - PROJECT MANAGER VERONICA.CHAPMAN@CROWNCASTLE.COM
	ISRAEL CAREY - CONSTRUCTION MANAGER ISRAEL.CAREY@CROWNCASTLE.COM
	HEATHER MILLER - AES HEATHER.MILLER@CROWNCASTLE.COM

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

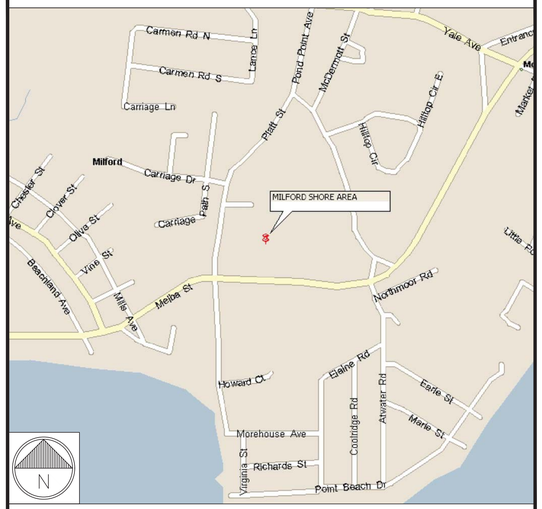
DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	SITE PLAN
C-1.2	EQUIPMENT PLANS
C-2	TOWER ELEVATION & ANTENNA PLANS
C-3	ANTENNA SCHEDULE
C-4	EQUIPMENT DETAILS
C-5	EQUIPMENT SPECS.
C-5.1	EQUIPMENT SPECS.
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS
ATTACHED	PLUMBING DIAGRAM
ATTACHED	MOUNT SPECIFICATION

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

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

LOCATION MAP



NO SCALE

SITE PHOTO

PROJECT DESCRIPTION

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

TOWER SCOPE OF WORK:
- REMOVE (3) CCI - OPA65R-BU6BA ANTENNAS
- REMOVE (3) CCI - OPA65R-BU6A ANTENNAS
- REMOVE (6) CCI - TMABPD7823VG12A TMAs
- INSTALL EEI - TRAID-FPXL W/ EEI - TRIAD-AB & EEI - TRIAD CB MOUNTS AT BOTH LEVELS
- INSTALL (3) COMMSCOPE - NNHHS4-65B-R5 ANTENNAS
- INSTALL (3) CCI - DMP65R-BU6EA-K ANTENNAS
- INSTALL (6) CCI - TMAT192123B68-31 TMAs
- INSTALL (6) COMMSCOPE - STX61742Q-43 TRIPLEXERS

GROUND SCOPE OF WORK:
- DECOM UMTS
- REMOVE (12) BATTERIES FROM POWER PLANT
- REMOVE (1) RXAIT CABINET
- REMOVE (1) 5216
- REMOVE (3) ERICSSON - RRUS-12 B2 RRUs
- REMOVE (3) ERICSSON - RRUS-11 B12 RRUs
- REMOVE (3) ERICSSON - 4478 B5 RRUs
- REMOVE (12) KAELUS - TBC0030F2V1-1 DIPLEXERS
- REMOVE (12) KAELUS - TBC0042F1V51-1 DIPLEXERS
- INSTALL (1) 6651 WITH XCEDE CABLE
- INSTALL (12) BATTERIES
- INSTALL (1) VERTIV -48V BATTERY CABINET WITH (8) NEW BATTERIES
- INSTALL 4-WAY SPLITTER FOR BBU CONFIG
- INSTALL (3) RECTIFIERS
- INSTALL (3) ERICSSON - 4415 B25 RRUs
- INSTALL (3) ERICSSON - 8863 N77 RRUs
- INSTALL (3) ERICSSON - 4449 B5/B12 RRUs
- INSTALL (1) ERICSSON - 4478 B14 RRU
- INSTALL (6) KAELUS - DBC0062F3V52-1 COMBINERS
- INSTALL (6) COMMSCOPE - STX61742Q-43 TRIPLEXERS

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

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	IBC 2021 / 2022 CSBC
MECHANICAL	IMC 2021 / 2022 CSBC
ELECTRICAL	NEC 2020 / 2022 CSBC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	BY OTHERS
DATED:	
MOUNT ANALYSIS:	BY OTHERS
DATED:	
RFDS REVISION:	FINAL
DATED:	6/13/23
ORDER ID:	556514
REVISION:	7
AC ELECTRICAL POWER DESIGN:	BY OTHERS
DATED:	

INSTALLER NOTE:
TOWER DOES NOT HAVE CLIMBING FACILITIES – MANLIFT REQUIRED FOR ELEVATED WORK.

575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

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

AT&T SITE NUMBER:
CTL05601

BU #: **825998**
MILFORD SHORE AREA

234 MELBA STREET
MILFORD, CT 06460

EXISTING
125'-0" CONCEALMENT
TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
B	4/4/23	GAC	PRELIMINARY REVIEW	LR
C	4/10/23	YX	PRELIMINARY REVIEW	LR
0	5/4/23	CLG	CONSTRUCTION	LR
1	5/10/23	CLG	CONSTRUCTION	LR
2	6/2/23	LR	CONSTRUCTION	LR
3	4/29/24	JDB	CONSTRUCTION	TDG

STATE OF CONNECTICUT
No. 23924
LICENSED
PROFESSIONAL ENGINEER
4/29/24

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: T-1
REVISION: 3

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: AT&T
   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 "AT&T".
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

AT&T
575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

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

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

AT&T SITE NUMBER:
CTL05601

BU #: **825998**
MILFORD SHORE AREA

234 MELBA STREET
MILFORD, CT 06460

EXISTING
125'-0" CONCEALMENT
TOWER

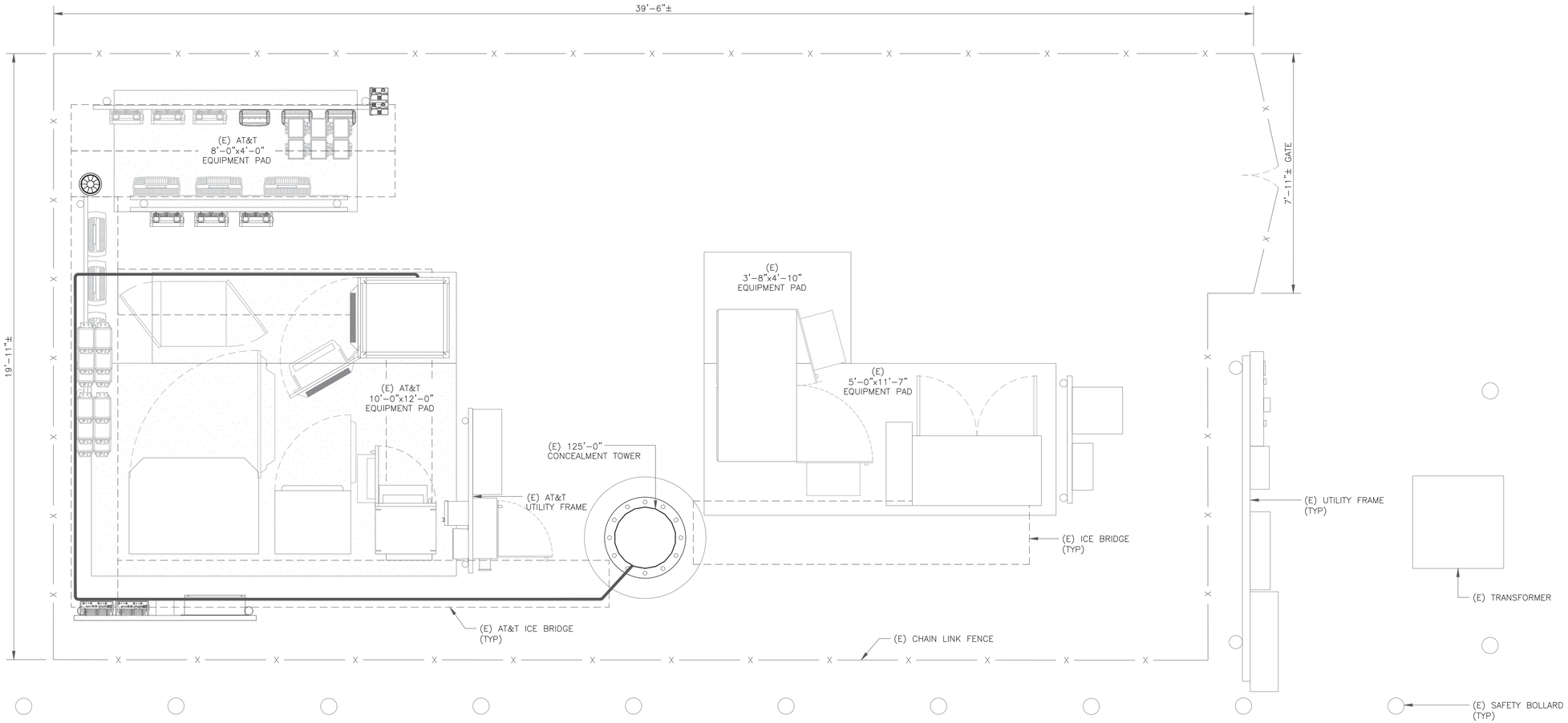
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
B	4/4/23	GAC	PRELIMINARY REVIEW	LR
C	4/10/23	YX	PRELIMINARY REVIEW	LR
0	5/4/23	CLG	CONSTRUCTION	LR
1	5/10/23	CLG	CONSTRUCTION	LR
2	6/2/23	LR	CONSTRUCTION	LR
3	4/29/24	JDB	CONSTRUCTION	TDG

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
4/29/24

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: T-2
REVISION: 3



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

N

AT&T
575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

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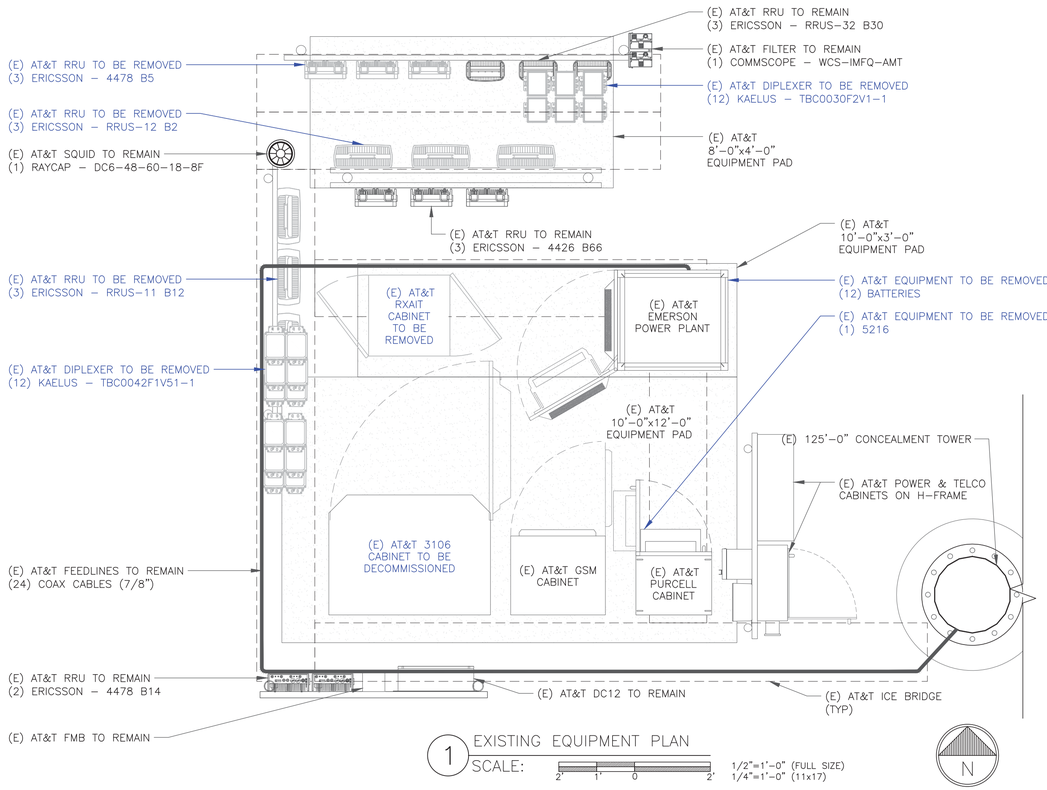
1	5/10/23	CLG	CONSTRUCTION	LR
2	6/2/23	LR	CONSTRUCTION	LR
3	4/29/24	JDB	CONSTRUCTION	TDG

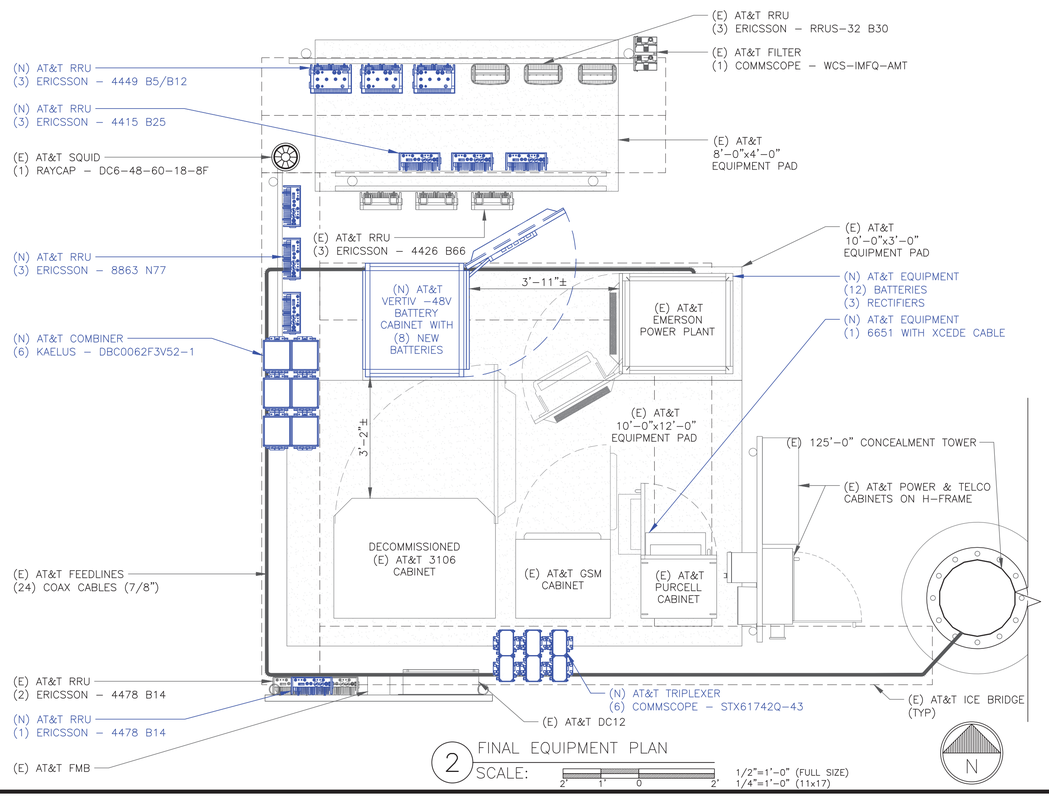
STATE OF CONNECTICUT
No. 23024
LICENSED
PROFESSIONAL ENGINEER
4/29/24

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: C-1.1
REVISION: 3



1 EXISTING EQUIPMENT PLAN
SCALE: 2' 1' 0 2' 1/2"=1'–0" (FULL SIZE) 1/4"=1'–0" (11x17)



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

GROUND SCOPE OF WORK:

- DECOM UMTS
- REMOVE (12) BATTERIES FROM POWER PLANT
- REMOVE (1) RXAIT CABINET
- REMOVE (1) 5216
- REMOVE (3) ERICSSON – RRUS–12 B2 RRUs
- REMOVE (3) ERICSSON – RRUS–11 B12 RRUs
- REMOVE (3) ERICSSON – 4478 B5 RRUs
- REMOVE (12) KAELUS – TBC0030F2V1–1 DIPLEXERS
- REMOVE (12) KAELUS – TBC0042F1V51–1 DIPLEXERS
- INSTALL (1) 6651 WITH XCEDE CABLE
- INSTALL (12) BATTERIES
- INSTALL (1) VERTIV –48V BATTERY CABINET WITH (8) NEW BATTERIES
- INSTALL 4–WAY SPLITTER FOR BBU CONFIG
- INSTALL (3) RECTIFIERS
- INSTALL (3) ERICSSON – 4415 B25 RRUs
- INSTALL (3) ERICSSON – 8863 N77 RRUs
- INSTALL (3) ERICSSON – 4449 B5/B12 RRUs
- INSTALL (1) ERICSSON – 4478 B14 RRU
- INSTALL (6) KAELUS – DBC0062F3V52–1 COMBINERS
- INSTALL (6) COMMSCOPE – STX61742Q–43 TRIPLEXERS

NOTE:

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

AT&T
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www.btgrp.com

AT&T SITE NUMBER:
CTL05601

BU #: **825998**
MILFORD SHORE AREA

234 MELBA STREET
MILFORD, CT 06460

EXISTING
125'-0" CONCEALMENT
TOWER

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
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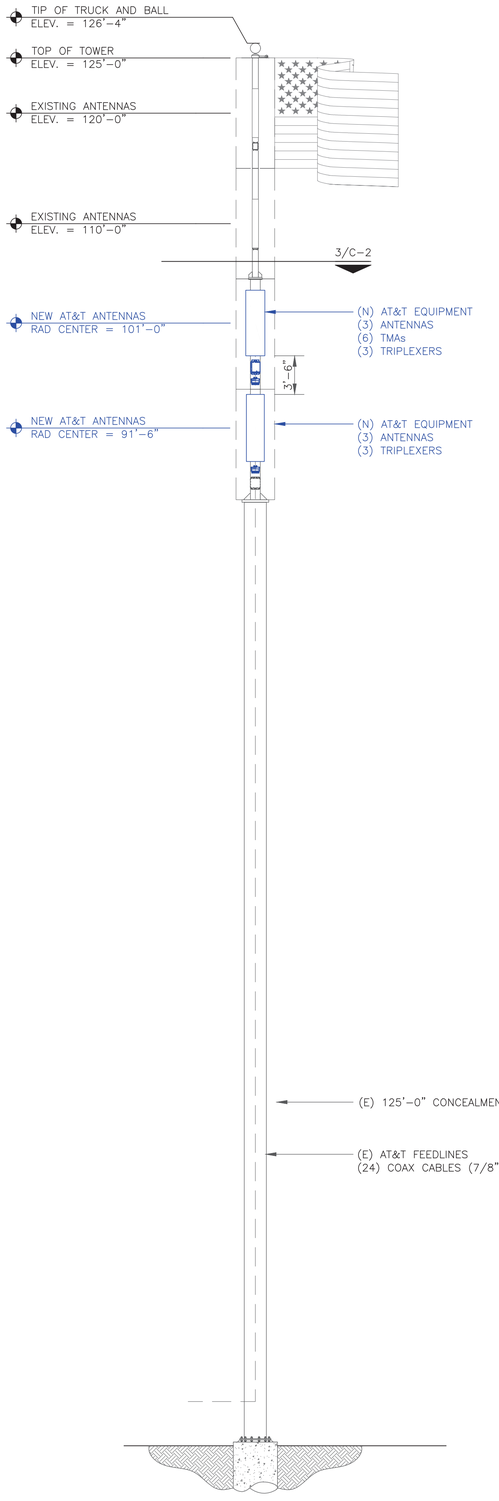
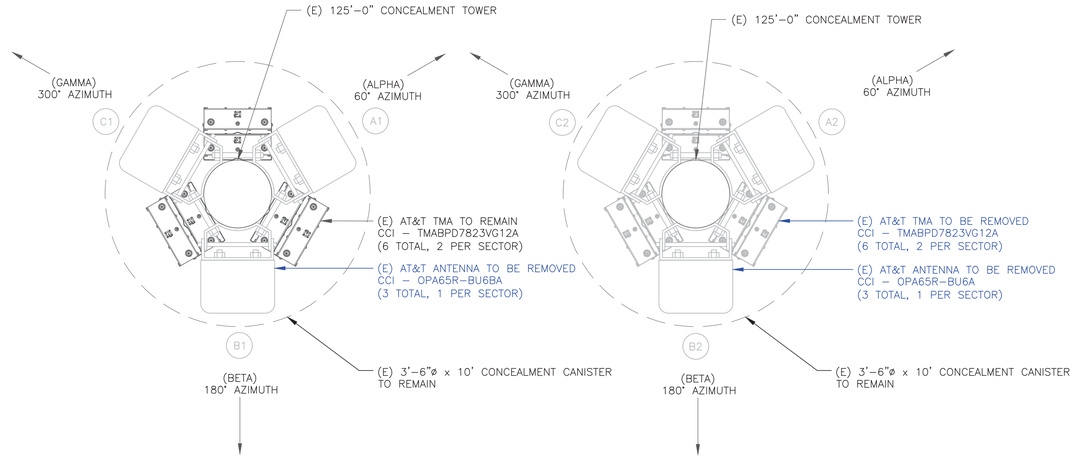
1	5/10/23	CLG	CONSTRUCTION	LR
2	6/2/23	LR	CONSTRUCTION	LR
3	4/29/24	JDB	CONSTRUCTION	TDG

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: C-1.2
REVISION: 3



1 FINAL ELEVATION
SCALE: NOT TO SCALE



EXISTING ANTENNA PLAN
@ 91'-6"

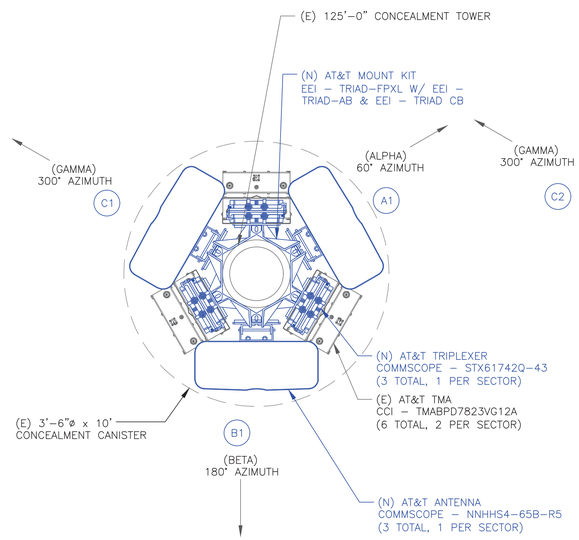
EXISTING ANTENNA PLAN
@ 101'-0"

2 EXISTING ANTENNA PLAN
SCALE: 1' 6" 0 1' — 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

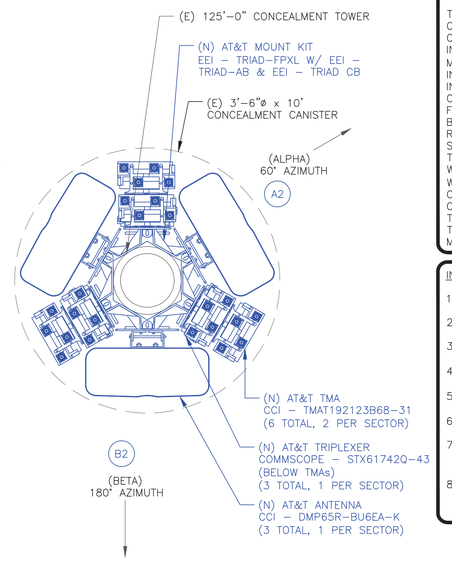
N

INSTALLER NOTE:

TOWER DOES NOT HAVE CLIMBING FACILITIES – MANLIFT REQUIRED FOR ELEVATED WORK.



FINAL ANTENNA PLAN
@ 91'-6"



FINAL ANTENNA PLAN
@ 101'-0"

3 FINAL ANTENNA PLAN
SCALE: 1' 6" 0 1' — 1"=1'-0" (FULL SIZE) 1/2"=1'-0" (11x17)

N

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

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

INSTALLER NOTES:

1. REFERENCE C-3 FOR FINAL EQUIPMENT SCHEDULE.
2. REFERENCE C-4 FOR NEW EQUIPMENT SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL ANTENNA TIP HEIGHTS DO NOT EXCEED BEACON BASE HEIGHT.
4. 3'-0" MINIMUM DISTANCE REQUIRED BETWEEN LTE ANTENNAS ON SAME SECTOR.
5. 6'-0" MINIMUM DISTANCE REQUIRED BETWEEN 700BC & 700DE ANTENNAS ON SAME SECTOR.
6. 4'-0" MINIMUM DISTANCE REQUIRED BETWEEN LTE 700 ANTENNAS ON OPPOSING SECTORS.
7. ALL ANTENNA MEASUREMENT DISTANCES MUST BE EDGE TO EDGE (RELOCATE ANTENNAS AS NEEDED).
8. 8" MINIMUM DISTANCE REQUIRED BETWEEN ANTENNA & RADIO. SEE GENERIC EXAMPLE DETAIL ON SHEET C-4.

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AT&T SITE NUMBER:
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BU #: **825998**
MILFORD SHORE AREA

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EXISTING
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3	4/29/24	JDB	CONSTRUCTION	TDG

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: C-2

REVISION: 3

FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)

POSITION	ANTENNA				RADIO			TRIPLEXER/COMBINER			TMA			SURGE PROTECTION		CABLES			
	TECH.	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS/MANUFACTURER MODEL	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
ALPHA																			
A1	5G CBAND/LTE/5G	(N) COMMSCOPE NNHHS4-65B-R5	60°	91'-6"	1	(E) 4478 B14	GROUND	1	(N) TRIPLEXER	TOWER	2	(E) CCI - TMABPD7823VG12A	1	(E) DC6-48-60-18-8F (GROUND-MOUNTED)	4	(E) COAX	7/8"	141'-0"
					1	(N) 4415 B25	GROUND	1	(N) TRIPLEXER	GROUND								
					1	(N) 8863 N77	GROUND											
A2	LTE/5G	(N) CCI DMP65R-BU6EA-K	60°	101'-0"	1	(N) 4449 B5/B12	GROUND	1	(N) TRIPLEXER	TOWER	2	(N) CCI - TMAT192123B68-31	-	-	4	(E) COAX	7/8"	152'-0"
					1	(E) 4426 B66	GROUND	1	(N) TRIPLEXER	GROUND								
					1	(E) RRUS-32 B30	GROUND	2	(N) COMBINERS	GROUND								
BETA																			
B1	5G CBAND/LTE/5G	(N) COMMSCOPE NNHHS4-65B-R5	180°	91'-6"	1	(N) 4478 B14	GROUND	1	(N) TRIPLEXER	TOWER	2	(E) CCI - TMABPD7823VG12A	-	-	4	(E) COAX	7/8"	141'-0"
					1	(N) 4415 B25	GROUND	1	(N) TRIPLEXER	GROUND								
					1	(N) 8863 N77	GROUND											
B2	LTE/5G	(N) CCI DMP65R-BU6EA-K	180°	101'-0"	1	(N) 4449 B5/B12	GROUND	1	(N) TRIPLEXER	TOWER	2	(N) CCI - TMAT192123B68-31	-	-	4	(E) COAX	7/8"	152'-0"
					1	(E) 4426 B66	GROUND	1	(N) TRIPLEXER	GROUND								
					1	(E) RRUS-32 B30	GROUND	2	(N) COMBINERS	GROUND								
GAMMA																			
C1	5G CBAND/LTE/5G	(N) COMMSCOPE NNHHS4-65B-R5	300°	91'-6"	1	(E) 4478 B14	GROUND	1	(N) TRIPLEXER	TOWER	2	(E) CCI - TMABPD7823VG12A	-	-	4	(E) COAX	7/8"	141'-0"
					1	(N) 4415 B25	GROUND	1	(N) TRIPLEXER	GROUND								
					1	(N) 8863 N77	GROUND											
C2	LTE/5G	(N) CCI DMP65R-BU6EA-K	300°	101'-0"	1	(N) 4449 B5/B12	GROUND	1	(N) TRIPLEXER	TOWER	2	(N) CCI - TMAT192123B68-31	-	-	4	(E) COAX	7/8"	152'-0"
					1	(E) 4426 B66	GROUND	1	(N) TRIPLEXER	GROUND	1	(E) COMMSCOPE - WCS-IMFQ-AMT @ GROUND						
					1	(E) RRUS-32 B30	GROUND	2	(N) COMBINERS	GROUND									
														UNUSED FEEDLINES:	-	-	-	-	
															-	-	-	-	

NOTE:
(E) - EXISTING
(N) - NEW

1 FINAL ANTENNA AND FEEDLINE SCHEDULE
SCALE: NOT TO SCALE

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AT&T SITE NUMBER:
CTL05601

BU #: **825998**
MILFORD SHORE AREA

234 MELBA STREET
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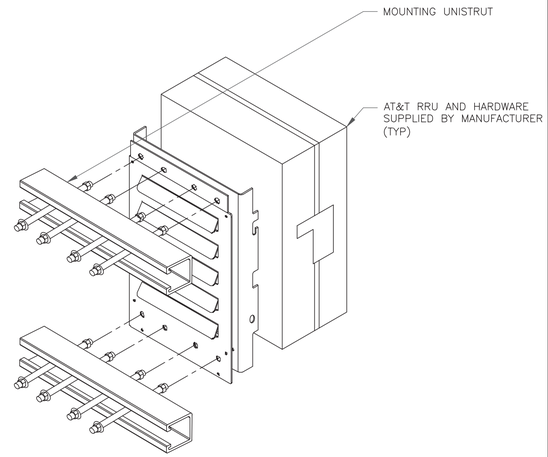
MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: C-3
REVISION: 3

1 NOT USED
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

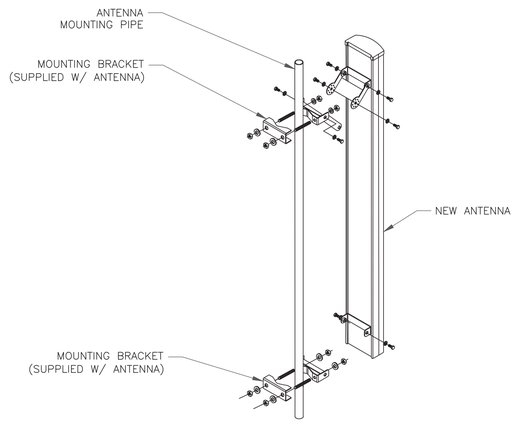


3 RRU UNISTRUT MOUNTING
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

INSTALLER NOTE:

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



5 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

6 SQUID MOUNTING DETAIL
SCALE: NOT TO SCALE

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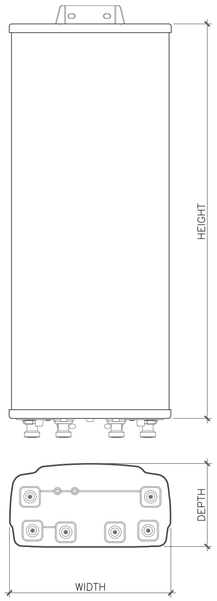
2	6/2/23	LR	CONSTRUCTION	LR
3	4/29/24	JDB	CONSTRUCTION	TDG

STATE OF CONNECTICUT
No. 23824
LICENSED PROFESSIONAL ENGINEER
4/29/24

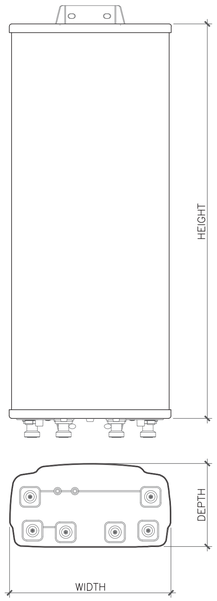
MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: C-4
REVISION: 3



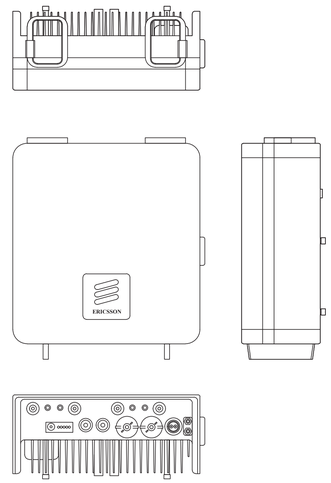
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
NNHHS4-65B-R5-V2	72.80"	19.6"	7.8"	100.3 lbs

1 ANTENNA DETAIL
SCALE: NOT TO SCALE



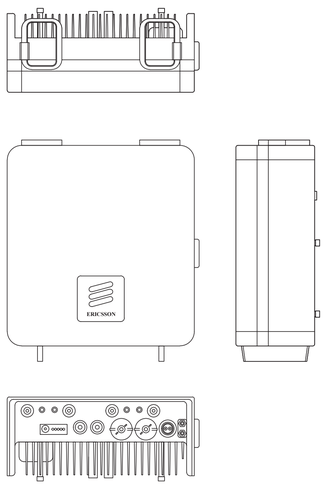
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
DMP65R-BU6EA-K	71.20"	20.7"	9.7"	103.8 lbs

2 ANTENNA DETAIL
SCALE: NOT TO SCALE



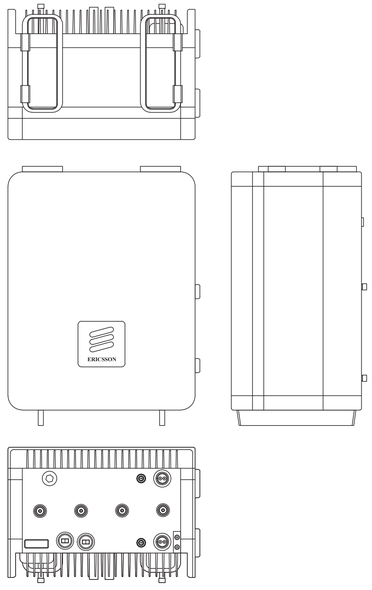
ERICSSON – RRUS 4415 B25
WEIGHT: 60.0 LBS
SIZE (HxWxD): 15.0x13.0x8.0 IN.

3 ERICSSON – RRUS 4415 B25
SCALE: NOT TO SCALE



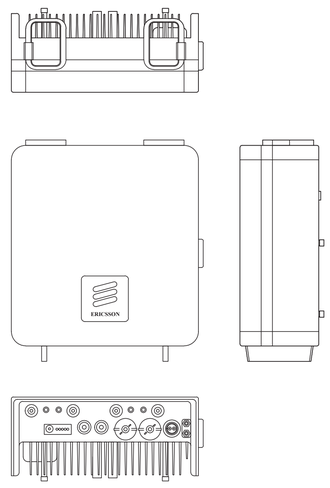
ERICSSON – RRUS 4478 B14
WEIGHT: 60.0 LBS
SIZE (HxWxD): 15.0x13.0x8.0 IN.

4 ERICSSON – RRUS 4478 B14
SCALE: NOT TO SCALE



ERICSSON – RADIO 4449 B5/B12
WEIGHT: 70.0 LBS
SIZE (HxWxD): 18.0x13.2x9.4 IN.

5 ERICSSON – RADIO 4449 B5/B12
SCALE: NOT TO SCALE



ERICSSON – 8863 N77
WEIGHT: 52.0 LBS
SIZE (HxWxD): 16.5x14.4x5.5 IN.

6 ERICSSON – 8863 N77
SCALE: NOT TO SCALE

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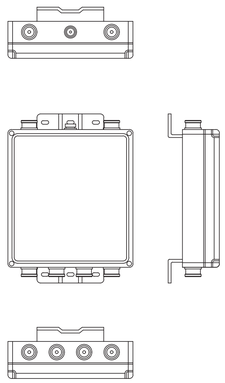
PEC.0001564
Expires 2/10/25

SHEET NUMBER: C-5
REVISION: 3

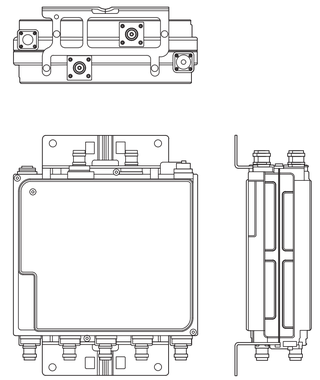


KAELUS – DBC0062F3V52-1
WEIGHT : 6.6 LBS
SIZE (HxWxD): 9.7x8.8x2.6 IN.

1 KAELUS – DBC0062F3V52-1
SCALE: NOT TO SCALE

COMMSCOPE – STX61742Q-43
WEIGHT : 5.9 LBS
SIZE (HxWxD): 4.6x8.97x2.24 IN.

2 COMMSCOPE – STX61742Q-43
SCALE: NOT TO SCALE



COMMSCOPE – TMAT1923B68-31
WEIGHT (WITHOUT MOUNTING HARDWARE): 21.4 LBS
SIZE (HxWxD): 9.70x11.0x3.90 IN.

3 COMMSCOPE – TMAT1923B68-31
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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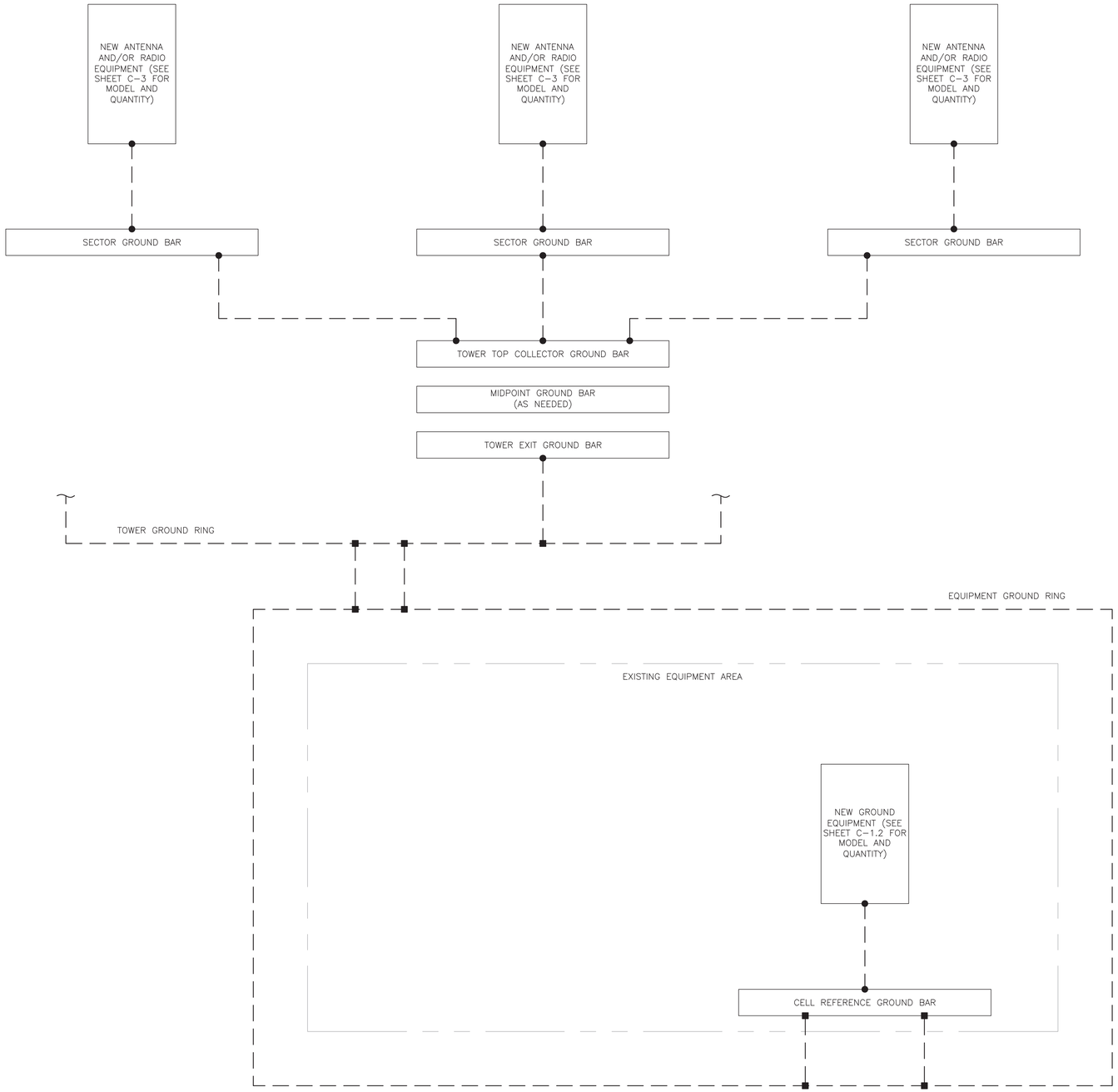
STATE OF CONNECTICUT
No. 23924
LICENSED PROFESSIONAL ENGINEER
4/29/24

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: C-5.1
REVISION: 3



1 GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

GROUNDING PLAN LEGEND:

--- GROUND WIRE
■ EXOTHERMIC WELD
● MECHANICAL CONNECTION
COPPER GROUND ROD
GROUND ROD W/ TEST WELL

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

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

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

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

AT&T
575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

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

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

AT&T SITE NUMBER:
CTL05601

BU #: **825998**
MILFORD SHORE AREA

234 MELBA STREET
MILFORD, CT 06460

EXISTING
125'-0" CONCEALMENT
TOWER

ISSUED FOR:

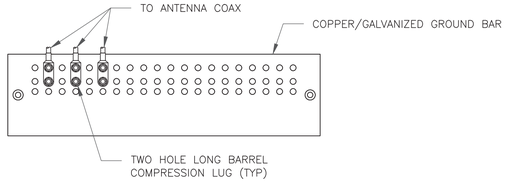
REV	DATE	DRWN	DESCRIPTION	DES./QA
B	4/4/23	GAC	PRELIMINARY REVIEW	LR
C	4/10/23	YX	PRELIMINARY REVIEW	LR
0	5/4/23	CLG	CONSTRUCTION	LR
1	5/10/23	CLG	CONSTRUCTION	LR
2	6/2/23	LR	CONSTRUCTION	LR
3	4/29/24	JDB	CONSTRUCTION	TDG

STATE OF CONNECTICUT
No. 23924
LICENSED PROFESSIONAL ENGINEER
4/29/24

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: G-1
REVISION: 3

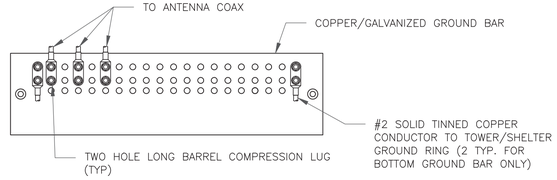
142070.004.01.0001_MILFORD SHORE AREA_Rev3_04-25-24.dwg — Sheet:G-1 — User: tim.grove — Apr 29, 2024 — 5:31pm



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

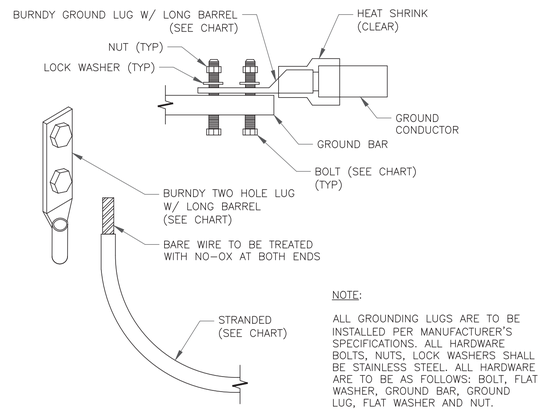


NOTES:

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

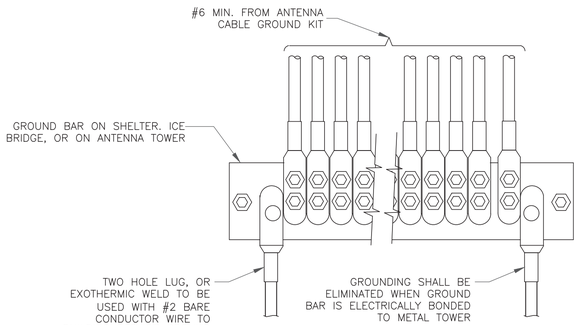
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



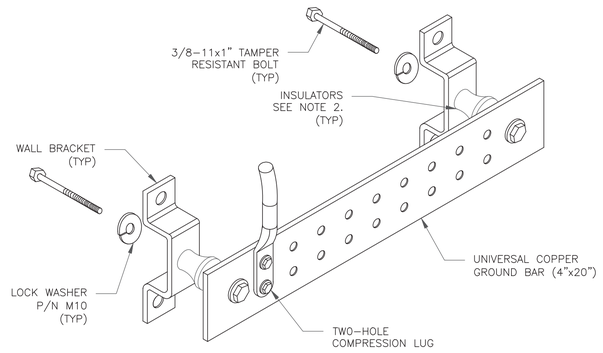
NOTE:

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

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE

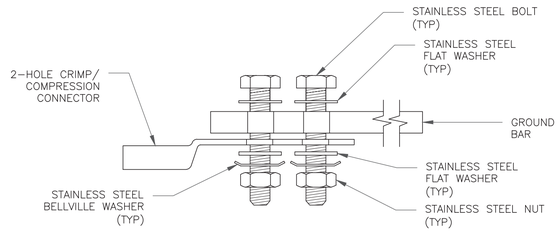


NOTES:

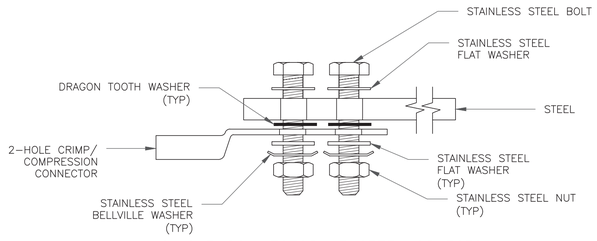
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.

2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

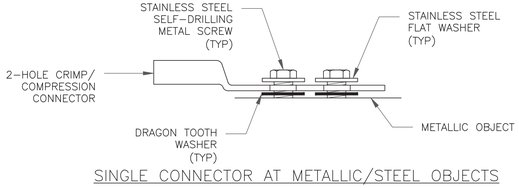
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

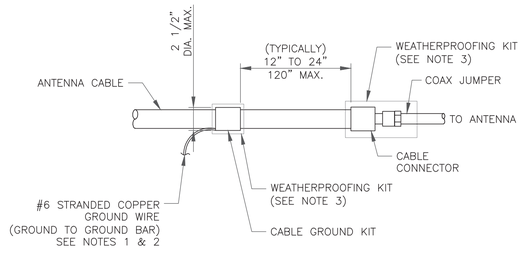


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

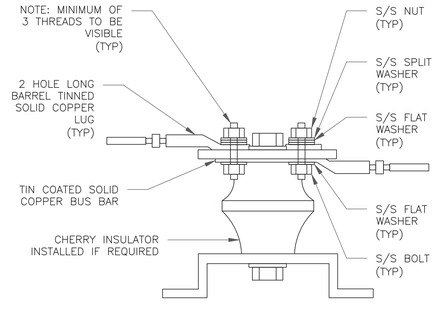
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



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.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

AT&T
575 MOROSGO DRIVE
ATLANTA, GA 30324-3300

CROWN CASTLE
3530 TORINGDON WAY, SUITE 300
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AT&T SITE NUMBER:
CTL05601

BU #: **825998**
MILFORD SHORE AREA

234 MELBA STREET
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EXISTING
125'-0" CONCEALMENT
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ISSUED FOR:

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2	6/2/23	LR	CONSTRUCTION	LR
3	4/29/24	JDB	CONSTRUCTION	TDG

MTS ENGINEERING P.L.L.C.
PEC.0001564
Expires 2/10/25

SHEET NUMBER: G-2

REVISION: 3

Diagram - Sector	A	Diagram File Name - CT5601_AB_C-Band_DoD_Rev.3.vsd					
Atoll Site Name -	CT5601	Location Name -	SHERMAN-ANDERSON R D EXIT	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments: Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson							

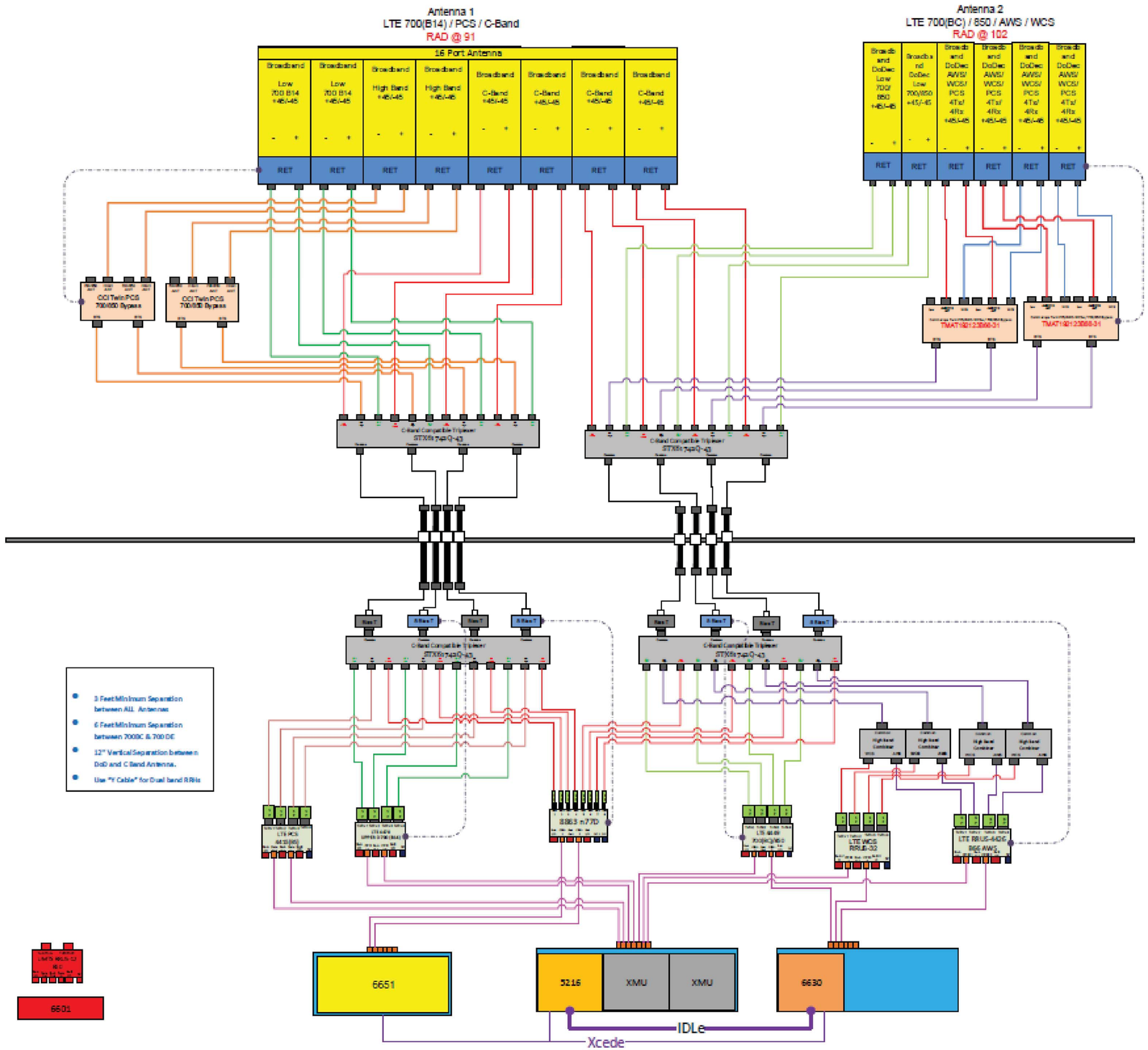


Diagram - Sector	B	Diagram File Name - CT5601_AB_C-Band_DoD_Rev.3.vsd					
Atoll Site Name -	CT5601	Location Name -	SHERMAN-ANDERSON R D EXIT	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson

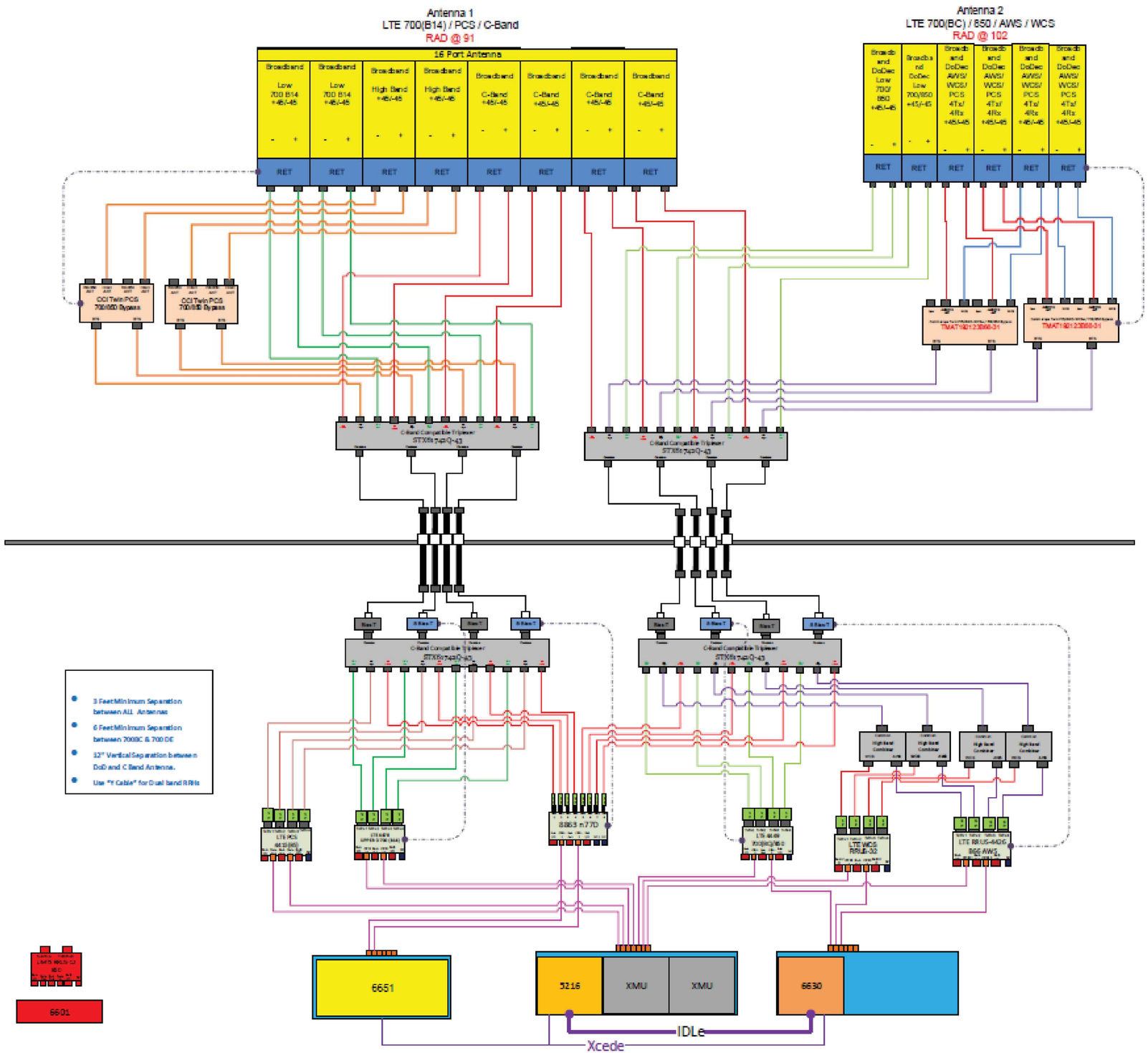
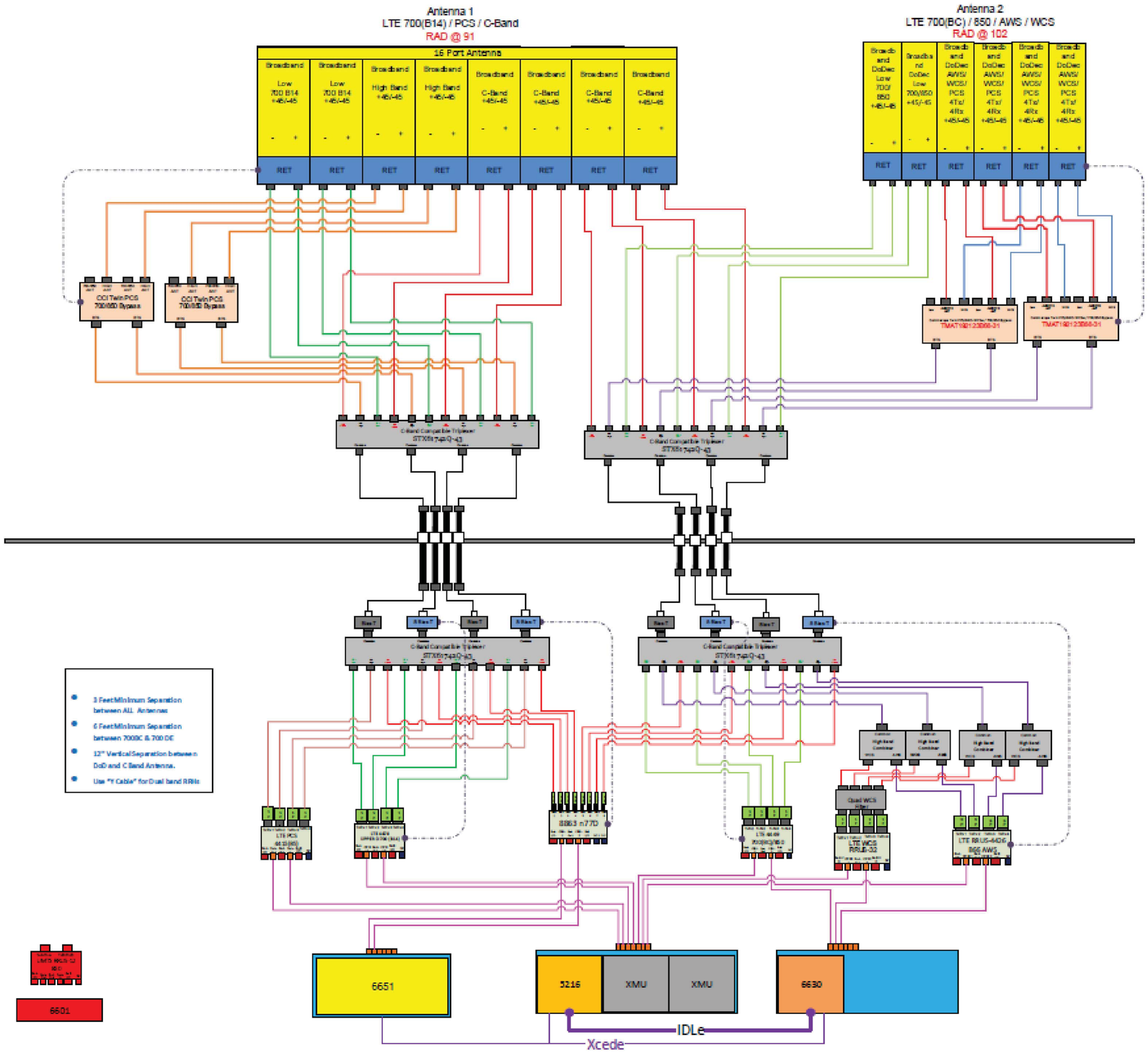


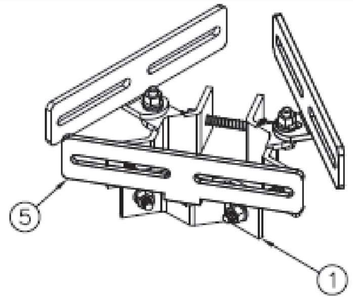
Diagram - Sector	C	Diagram File Name - CT5601_G_C-Band_DoD_Rev.3.vsd					
Atoll Site Name -	CT5601	Location Name -	SHERMAN-ANDERSON R D EXIT	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND

Comments: Important Note: For detailed radio to antenna wiring refer to the latest field notice - Antenna_Radio Connection Drawings Playbook v6.0_Ericsson

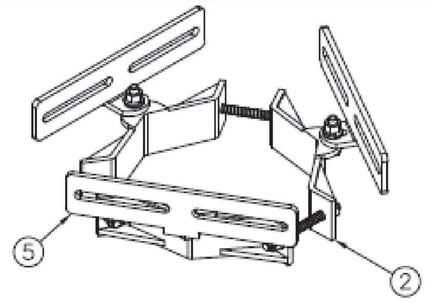


PARTS LIST UNIT/PART	QTY.	PART NO.	PART DESCRIPTION	MATERIAL	SPECIFICATION OR REMARKS
1	6	TRIAD–FPS	¼" BRACKET ASSEMBLY	GALV. STEEL	FOR ROUND OR POLYGON POLES 3" TO 7" DIA.
2	6	TRIAD–FPL	¼" BRACKET ASSEMBLY	GALV. STEEL	FOR ROUND OR POLYGON POLES 6" TO 11" DIA.
3	6	TRIAD–FPXL	¼" BRACKET ASSEMBLY	GALV. STEEL	FOR ROUND OR POLYGON POLES 10" TO 14" DIA.
4	6	TRIAD–FPXXL	¼" BRACKET ASSEMBLY	GALV. STEEL	FOR ROUND OR POLYGON POLES 14" TO 24" DIA.
5	6	TRIAD–AB	¼" HRPO GUSSET ASSEMBLY	GALV. STEEL	ANTENNA BRACKET, 10"
6	6	TRIAD–CAB	¼" HRPO GUSSET ASSEMBLY	GALV. STEEL	ANTENNA BRACKET, 7½"
7	6	TRIAD–CB	11 GA. CRS	GALV. STEEL	COMBINER STANDOFF BRACKET (OPTIONAL)
8	6	–	⅜"ø x 5½" A36 THREADED ROD (GALV.)	GALV. STEEL	FOR TRIAD–FPS ASSEMBLY
9	6	–	⅜"ø x 7" A36 THREADED ROD (GALV.)	GALV. STEEL	FOR TRIAD–FPL ASSEMBLY
10	6	–	⅜"ø x 7" A36 THREADED ROD (GALV.)	GALV. STEEL	FOR TRIAD–FPXL ASSEMBLY
11	12	–	⅜"ø x 10" A36 THREADED ROD (GALV.)	GALV. STEEL	FOR TRIAD–FPXXL ASSEMBLY
12	6		⅜"ø x 1¼" A307 BOLT	GALV. STEEL	SPINDLE BOLT
13	6	–	⅜"ø x 1¼" A307 BOLT LOCK WASHER & NUT	GALV. STEEL	(OPTIONAL, FOR TRIAD–CB)
14	18	–	⅜" HEX NUT	GALV. STEEL	–
15	12	–	⅜" FLAT WASHER	GALV. STEEL	–
16	18	–	⅜" LOCK WASHER	GALV. STEEL	–
17	12	–	⅜" ISOLATION WASHER	NYLON	FOR ANTENNA MOUNTING HARDWARE

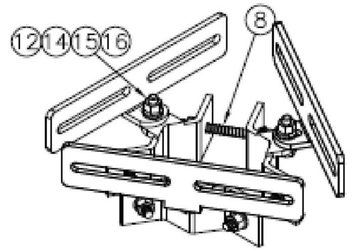
UNITS/PARTS SPECIFICATION 1

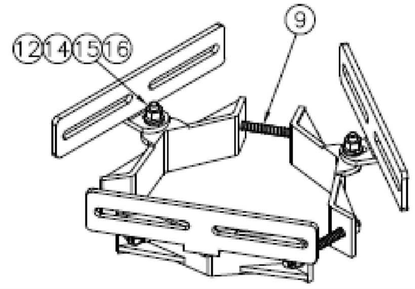


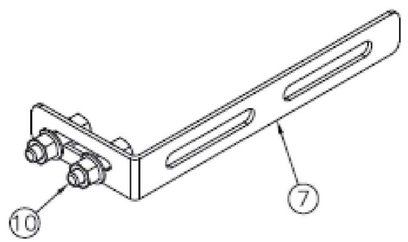
FPS ISOMETRIC ASSEMBLY VIEW NTS 5



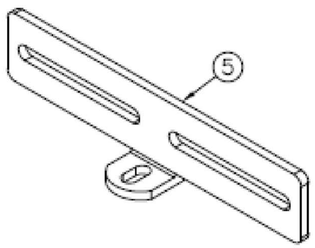
FPL ISOMETRIC ASSEMBLY VIEW NTS 6



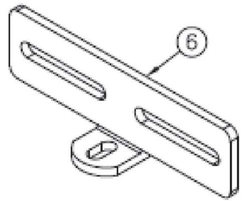




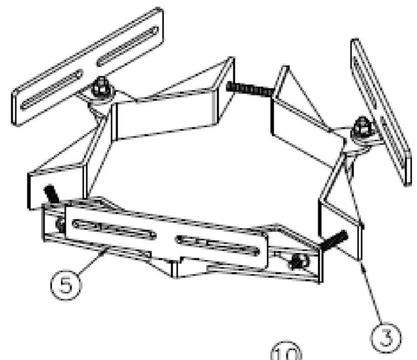
CB ISOMETRIC ASSEMBLY VIEW NTS 2

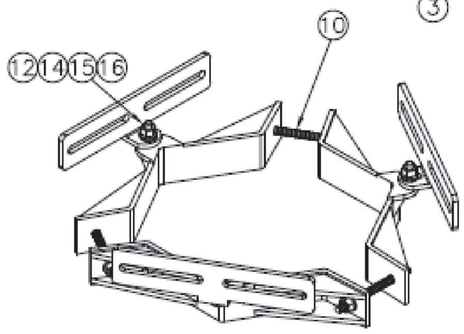


AB ISOMETRIC ASSEMBLY VIEW NTS 3

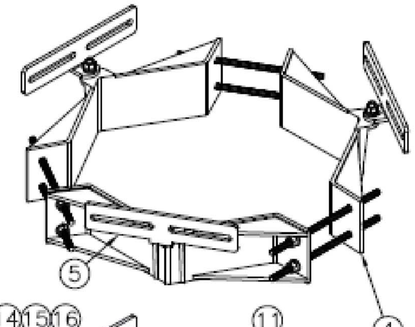


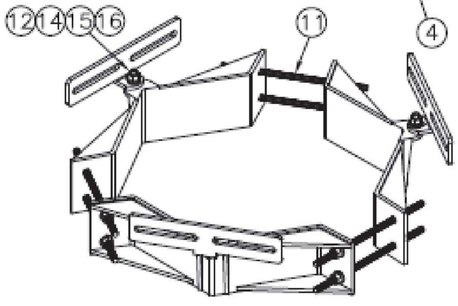
CAB ISOMETRIC ASSEMBLY VIEW NTS 4





FPXL ISOMETRIC ASSEMBLY VIEW NTS 7





FPXXL ISOMETRIC ASSEMBLY VIEW NTS 8

REV	DATE	DESCRIPTION
A	12/31/19	PRELIMINARY
B	1/16/20	PRELIMINARY
0	1/24/20	FOR CONSTRUCTION
1	11/2/20	REVISED
2	12/30/21	REVISED

APX PROJECT NO.:	19–0236.01
DRAWN BY:	J. ACOSTA
CHECKED BY:	M. PHILLIPS

apx ENGINEERING GROUP
14471 MIRAMAR PARKWAY, SUITE 202
MIRAMAR, FL 33027
(954) 744–1538
CERTIFICATE OF AUTHORIZATION 31948

EEI Fabricated Solutions, LLC.
Orders@EEI-FS.COM
6861 Garden Road
Riviera Beach, FL. 33404

ASSEMBLY DRAWINGS

Triad

EEI TRIAD MOUNT

SHEET NAME

ISOMETRIC AND COMPONENTS

SHEET NUMBER

SP1