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

January 9, 2023

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

RE: **Notice of Exempt Modification for ATT**
Crown #857012; ATT Site ID CTL01029
335 South Washington Street, Plainville, CT 06062
Latitude: 41° 39′ 11.03″ / Longitude: -72° 52′ 36.90″

Dear Ms. Bachman:

AT&T currently maintains twelve (12) antennas at the 122-foot level of the existing 121-foot monopole tower at 335 South Washington Street, Plainville, CT. The tower is owned by Crown Castle USA Inc. and the property is owned by Display Properties LLC. AT&T now intends to replace nine (9) antennas with nine (9) new antennas and ancillary equipment at the 122-foot level. This modification may include B2, B5, B17, B14, B29, B30, B66 & n77 hardware that is 4G(LTE) and/or 5GNR capable through remote software configuration and either or both services may be turned on or off at various times.

Panned Modification:

Tower:

Installed New:

(3) QUINTEL-QD6616-7 Antennas
(3) ERICSSON-AIR6449 B77D (below) + (2) AIR6419 B77G (above) stacked antennas
(3) Ericsson-4449 B5/B12 RRHs
(3) Ericsson-4415 B25 RRUs
(1) RAYCAP-DC9-48-60-24-8C-EV Squid
(1) 6AWG DC Cable (7/8")
(1) 24-Pair Fiber Cable (3/8")
(3) Y-CABLES

Remove:

(3) POWERWAVE-7770 Antennas
(3) CCI-HPA-65R-BUU-H6 Antennas
(3) QUINTEL-QS66512-2 Antennas
(6) POWERWAVE-LGP 21401 TMAs
(1) RAYCAP-DC6-48-60-18-8F Squid
(3) ERICSSON-RRUS-12 B2 RRHs
(3) ERICSSON-RRUS-11 B12 RRHs
(3) ERICSSON-4478 B5 RRHs
(3) KAELUS-DBC0061F1V51-2 Diplexers
(6) Coax Cables (1-5/8")

Ground:

Install New:

(1) VERTIV-48V Battery Pack
(4) VERTIV Rectifiers in Vertiv DC Power Plant
(8) Batteries in VERTIV-48V Battery Rack
(1) BB 6648 w/XCEDE Cable
(1) 4-way GPS Splitter

Remove:

(6) KAELUS-DBCT108F1V92-1 Diplexers
(3) KAELUS-DBC0061F1V51-2 Diplexers

The facility was approved by the Connecticut Siting Council in Docket No. 281 on June 23, 2004. Said approval given with conditions. AT&T's proposed exempt modification complies with the conditions of approval.

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 Town Manager Michael Paulhus for the municipality, Town Planner Mark DeVoe, property owner Display Properties LLC and Crown Castle is the tower owner.

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

For the foregoing reasons, 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: Domenica Tatasciore.

Sincerely,

Domenica Tatasciore
Site Acquisition Specialist
1800 W. Park Drive
Westborough, MA 01581
(508) 621-9161/ Domenica.Tatasciore@crowncastle.com

Attachments

cc:

Town Manager Michael Paulhus
Plainville Municipal Center
One Central Square
Plainville, CT 06062
860-793-0221

Mark DeVoe, Town Planner
Plainville Municipal Center
One Central Square
Plainville, CT 06062
860-793-0221

Display Properties LLC
335 South Washington Street
Plainville, CT 06062

Crown Castle, Tower Owner

DOCKET NO. 281 – New Cingular Wireless PCS, LLC Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility at 355 South Washington Street, Plainville, Connecticut.

} Connecticut

} Siting

} Council

June 23, 2004

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects wher ith the policies of the State concerning such effects, and lication and therefore directs that a Certificate of Environmen vided by General Statutes § 16-50k, be issued to

AT&T Wireless PCS d/b/a AT&T Wireless for the construction, maintenance and operation of a wireless telecommunications facility at Site B, 355 South Washington Street, Plainville, Connecticut. The Council denies certification of Site A, located off of Town Line Road, Plainville, Connecticut.

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

1. The tower shall be designed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of AT&T Wireless PCS LLC, Omnipoint Communications Inc. d/b/a T-Mobile, Cellco partnership d/b/a Verizon Wireless and other entities, both public and private, but such tower shall not exceed a total height of 120 feet above ground level. The height at the top of the antennas shall not exceed a height of 123 feet above ground level.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Plainville and all parties and intervenors, as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction. The D&M shall include:

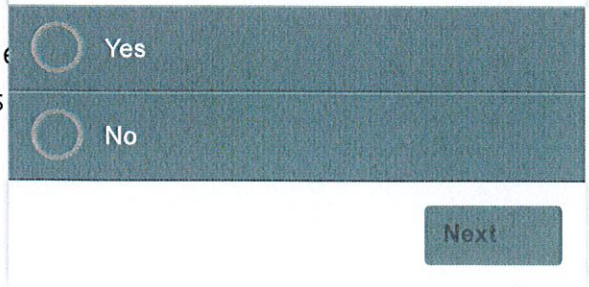
a. a detailed site development plan that depicts the location of the access road, compound, tower, utility line, erosion and sedimentation control features, and landscaping;

b. specifications for the tower, tower foundation, antennas, equipment building, and security fence; and

c. construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

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

4. Upon the ral radio frequency standards applicable to frequencies shall be brought into compliance with such standards.



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

6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.

7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.

9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. Any request for extensions of the period shall be filed with the Council not later than sixty days prior to expiration date of the Certificate and shall be served on all parties and intervenors, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

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

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

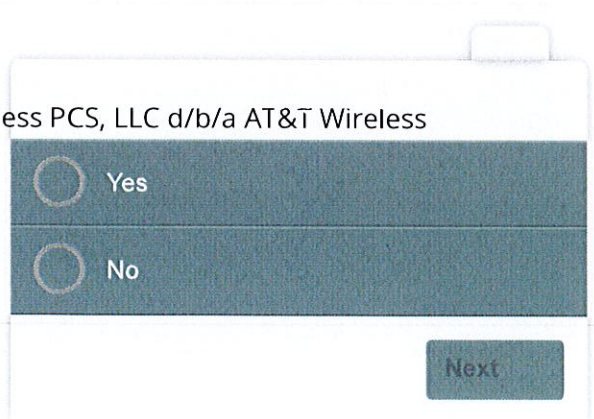
The parties and intervenors to this proceeding are:

Applicant

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

Its Representative

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



Intervenor

Omnipoint Communications Inc d/b/a T-Mobile

Its Representative

Stephen J. Humes
LeBoeuf, Lamb, Greene & MacRae, LLP
Goodwin Square
25 Asylum Street
Hartford, CT 06103

Intervenor

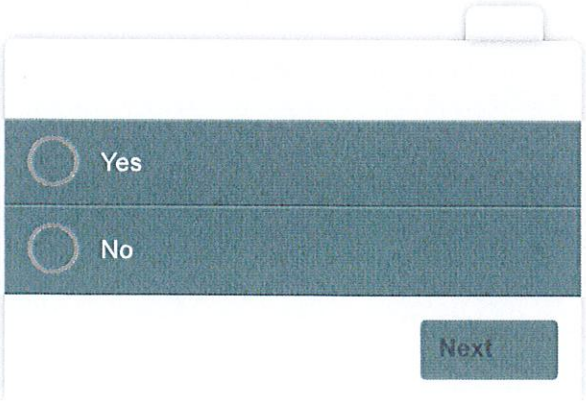
Cellco Partnership d/b/a Verizon Wireless

Its Representative

Kenneth C. Baldwin, Esq.
Robinson & Cole, LLP
280 Trumbull Street
Hartford, CT 06103-3597

Party

Robert S. Bocwinski
1785 St. Andrews Place
New Richmond, WI 54017-6050



Add "N" Alt Business

TOWN OF PLAINVILLE
BUILDING PERMIT
793-0221

PERMIT#: 35717
DATE: 10/03/05
RECEIPT: 045638

ESTIMATED COST:	78,000.00
PERMIT FEE:	1,175.00
CERT OF OCCUP FEE:	.00
ZONING CERT:	.00
STATE FEE:	12.48
TOTAL FEE:	1,187.48
MISCELLANEOUS INCOME	.00

#CO: 00000

#ZP: 00000

I hereby apply for a building permit to:
cell tower facility w/85' X 90' fenced gravel compound

Lot#: Location: 335 South Washington St.

OWNER: Display Properties LLC
335 S. Washington Street
Plainville, CT 06062
747-9110

CONTRACTOR: New Cingular Wireless PCS
500 Enterprise Drive
Rocky Hill, CT 06067

I hereby certify that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as an authorized agent and we agree to conform to all of the requirements of the laws of the State of Connecticut and the ordinances of the Town of Plainville and to notify the Building Official of any alteration in the plans or specifications of the building for which the permit is asked.

Applicant _____ Date _____ Approved By Wm Vinn Date 10/20/05

Plainville, CT : Assessor Database

Property Search:

Parcel ID:	Alternate ID:	Owner 1 Name:	Street Number:	Street Name:
				...

Search Reset

Property Detail:

Parcel ID:	Alternate ID/Map Block Lot:	Card:	Card:	Street Name:	Street Number:	Zoning:	LUC:	Acres:
42-A-03	R05380	1	1	S WASHINGTON ST	335	RI	Manufacturing Warehouse Facilities	8.00

Owner Information:

Owner 1 Name:	DISPLAY PROPERTIES LLC
Owner 2 Name:	
Street 1:	335 S WASHINGTON ST
Street 2:	
City:	PLAINVILLE
State:	CT
Zip:	06062
Volume:	374
Page:	357
Deed Date:	0000-00-00

Building Information:

Building Number:	1
Units:	1
Structure Type:	WAREHOUSE
Grade:	B-
Identical Units:	1
Year Built:	1989

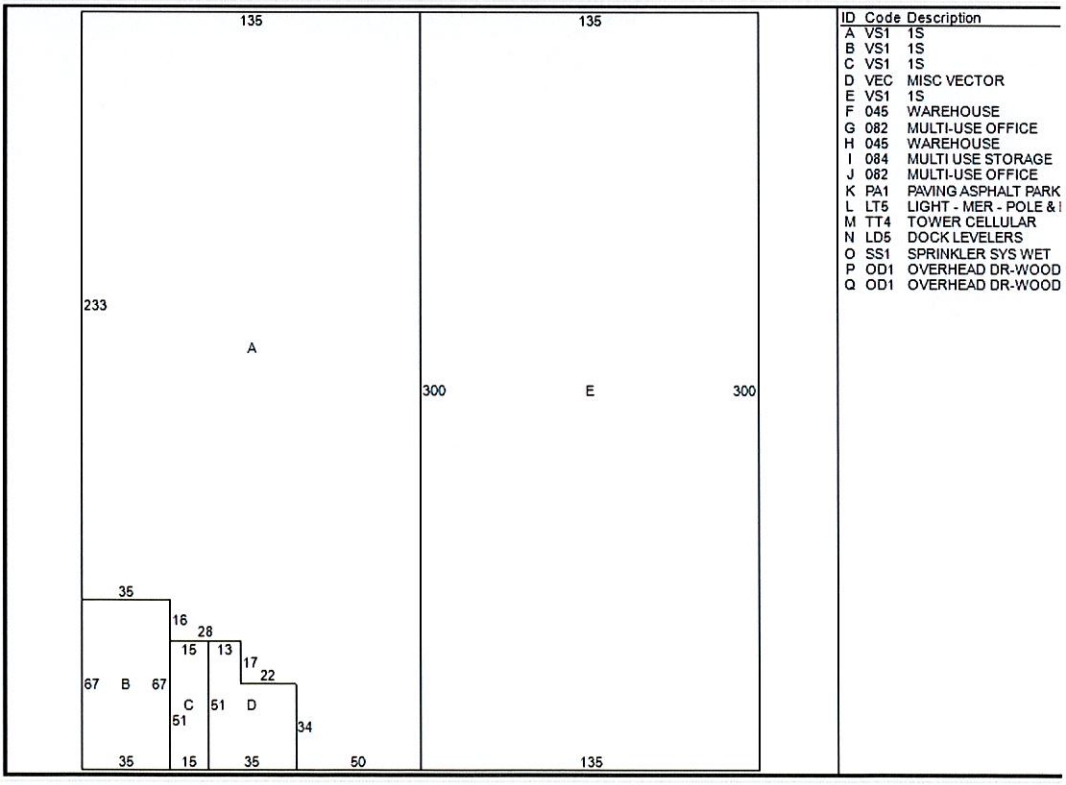
Valuation:

Appraised Land:	$467,600.00
Appraised Bldg:	$3,678,300.00
Appraised Total:	$4,145,900.00
Total Assessment:	$2,902,130.00

Property Images:

Picture:

Sketch:



ID	Code	Description
A	VS1	1S
B	VS1	1S
C	VS1	1S
D	VEC	MISC VECTOR
E	VS1	1S
F	045	WAREHOUSE
G	082	MULTI-USE OFFICE
H	045	WAREHOUSE
I	084	MULTI USE STORAGE
J	082	MULTI-USE OFFICE
K	PA1	PAVING ASPHALT PARK
L	LT5	LIGHT - MER - POLE & I
M	TT4	TOWER CELLULAR
N	LD5	DOCK LEVELERS
O	SS1	SPRINKLER SYS WET
P	OD1	OVERHEAD DR-WOOD
Q	OD1	OVERHEAD DR-WOOD

Sales History:

Book:	Page:	Sale Date:	Price:	Validity:	Sale Type:
374	35	03/27/2001	1,953,261		
130	418	05/07/1963			

261	271	09/14/1988
261	313	09/14/1988
374	357	03/27/2001

Out-Buildings:

Code:	Description:	Units:	Year Built:	Size1:	Size2:	Area:	Grade:	Condition:
TT4	TOWER CELLULAR	1	2000	1	120	120	C	NORMAL (Comm)
PA1	PAVING ASPHALT PARKING	1	1989	1	9200	9200	C	NORMAL (Comm)
LT5	LIGHT - MER - POLE & BRK	4	2006	0	0	1	C	NORMAL (Comm)

Building Interior/Exterior Information:

Floor From:	Floor To:	Area:	Use Type:	Exterior Walls:	Contruction Type:	Heating:	A/C:	Plumbing:	Functional U
01	01	39140	WAREHOUSE	METAL, SANDWICH	FIRE RESISTANT	UNIT HEATERS	NONE	NORMAL	3
M1	M1	2179	MULTI USE STORAGE	METAL, SANDWICH	FIRE RESISTANT	HOT AIR	NONE	NONE	3
M2	M2	429	MULTI-USE OFFICE	METAL, SANDWICH	FIRE RESISTANT	HOT AIR	CENTRAL	NORMAL	3
01	01	7584	MULTI-USE OFFICE	METAL, SANDWICH	FIRE RESISTANT	HOT AIR	CENTRAL	NORMAL	2
01	01	34279	WAREHOUSE	METAL, SANDWICH	FIRE RESISTANT	UNIT HEATERS	NONE	NORMAL	3

Fri, December 16, 2022 : 10:05 AM : 0.08s : 10mb

Town of Plainville, Connecticut - Assessment Parcel Map

Parcel: 42-A-03 Address: 335 S WASHINGTON ST

Approximate Scale:
1 inch = 108 feet

0 40 80 120 160
Feet

Map Produced March 2022

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 770819286018: Your package has been delivered
Date: Thursday, January 12, 2023 12:21:23 PM

Hi. Your package was delivered Thu, 01/12/2023 at 12:14pm.

Delivered to 1 CENTRAL SQ, PLAINVILLE, CT 06062
Received by D.CLARK

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER	770819286018
FROM	Domenica Tatasciore 1800 West Park Drive

	Suite 200 WESTBOROUGH, MA, US, 01581
TO	Plainville Municipal Center Town Manager Michael Paulhus One Central Square PLAINVILLE, CT, US, 06062
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/11/2023 08:32 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	PLAINVILLE, CT, US, 06062
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 770819273279: Your package has been delivered
Date: Thursday, January 12, 2023 12:21:29 PM

Hi. Your package was delivered Thu, 01/12/2023 at 12:14pm.

Delivered to 1 CENTRAL SQ, PLAINVILLE, CT 06062
Received by D.CLARK

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 770819273279

FROM Domenica Tatasciore
1800 West Park Drive

Suite 200
WESTBOROUGH, MA, US, 01581

TO	Plainville Municipal Center Mark DeVoe, Town Planner One Central Square PLAINVILLE, CT, US, 06062
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/11/2023 08:32 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	PLAINVILLE, CT, US, 06062
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	0.50 LB
SERVICE TYPE	FedEx Priority Overnight

From: TrackingUpdates@fedex.com
To: Tatasciore, Domenica
Subject: FedEx Shipment 770819339747: Your package has been delivered
Date: Thursday, January 12, 2023 1:02:33 PM

Hi. Your package was delivered Thu, 01/12/2023 at 12:53pm.

Delivered to 335 S WASHINGTON ST, PLAINVILLE, CT 06062
Received by D.EAN

OBTAIN PROOF OF DELIVERY

TRACKING NUMBER 770819339747

FROM Domenica Tatasciore
1800 West Park Drive

	Suite 200 WESTBOROUGH, MA, US, 01581
TO	Display Properties LLC 335 South Washington Street PLAINVILLE, CT, US, 06062
REFERENCE	799001.7680
SHIPPER REFERENCE	799001.7680
SHIP DATE	Wed 1/11/2023 08:32 PM
DELIVERED TO	Receptionist/Front Desk
PACKAGING TYPE	FedEx Envelope
ORIGIN	WESTBOROUGH, MA, US, 01581
DESTINATION	PLAINVILLE, CT, US, 06062
SPECIAL HANDLING	Deliver Weekday
NUMBER OF PIECES	1
TOTAL SHIPMENT WEIGHT	1.00 LB
SERVICE TYPE	FedEx Priority Overnight

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

Site Name:	PLAINVILLE SOUTH WASHINGTON STREET
Crown Castle Site#:	857012
Site ID:	CTL01029
Project Name:	5G NR 1SR CBAND
Address:	335 SOUTH WASHINGTON STREET, PLAINVILLE, CT 06062
County:	HARTFORD
Latitude:	41.6531111
Longitude:	-72.8769211
Structure Type:	MONOPOLE
Property Owner:	DISPLAY PROPERTIES LLC
Property Contact:	VERONICA CHAPMAN

AT&T Existing Facility

Report Information

Report Writer: Monti Kumar **Report Generated Date:** 11-29-2022

Site Compliance Statement

Compliance Status	Compliant
Cumulative General Population % MPE (Ground Level)	0.3723%

November 29, 2022

Emissions Analysis for Site: **CTL01029– PLAINVILLE SOUTH WASHINGTON STREET**

MobileComm Professionals, Inc was directed to analyze the proposed AT&T facility located at **335 SOUTH WASHINGTON STREET, PLAINVILLE, CT 06062**, 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 35.5.26.2022, 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	Quintel	QD6616-7	Panel	700	LTE(FN)	30	71	12.05	6	4	40.00	2286.23	3750.77	122.00	0.005039	466.67	0.001080
A	1	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	30	71	12.05	6	2	40.00	1143.12	1875.38	122.00	0.004243	466.67	0.000909
A	1	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	30	67	15.05	6	4	40.00	4561.63	7483.76	122.00	0.006338	1000.00	0.000634
A	1	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	30	62	15.55	6	4	60.00	7677.35	12595.38	122.00	0.006894	1000.00	0.000689
A	2-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	30	11	23.50	2.55	1	54.22	12138.53	19914.34	123.58	0.115059	1000.00	0.011506
A	2-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	30	11	23.50	2.55	1	86.75	19421.64	31862.94	120.08	0.272346	1000.00	0.027235
A	3	AT&T	Kathrein	80010965	Panel	700	LTE(B12)	30	62	12.65	6.5	4	40.00	2624.94	4306.46	122.00	0.029827	466.67	0.006392
A	3	AT&T	Kathrein	80010965	Panel	850	5G	30	60	13.45	6.5	4	40.00	3155.88	5177.50	122.00	0.040930	566.67	0.007223
A	3	AT&T	Kathrein	80010965	Panel	2300	LTE	30	56	15.95	6.5	4	25.00	3507.52	5754.40	122.00	0.024766	1000.00	0.002477
B	4	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	140	71	12.05	6	4	40.00	2286.23	3750.77	122.00	0.000014	466.67	0.000003
B	4	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	140	71	12.05	6	4	40.00	1143.12	1875.38	122.00	0.000021	466.67	0.000005
B	4	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	140	67	15.05	6	4	40.00	4561.63	7483.76	122.00	0.000002	1000.00	0.000000
B	4	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	140	62	15.55	6	4	60.00	7677.35	12595.38	122.00	0.000013	1000.00	0.000001
B	5-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	140	11	23.50	2.55	1	54.22	12138.53	19914.34	123.58	0.115659	1000.00	0.015506
B	5-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	140	11	23.50	2.55	1	86.75	19421.64	31862.94	120.08	0.279346	1000.00	0.028235
B	6	AT&T	Kathrein	80010965	Panel	700	LTE(B12)	140	62	12.65	6.5	4	40.00	2624.94	4306.46	122.00	0.000009	466.67	0.000002
B	6	AT&T	Kathrein	80010965	Panel	850	5G	140	60	13.45	6.5	4	40.00	3155.88	5177.50	122.00	0.000037	566.67	0.000007
B	6	AT&T	Kathrein	80010965	Panel	2300	LTE	140	56	15.95	6.5	4	25.00	3507.52	5754.40	122.00	0.000021	1000.00	0.000002
C	7	AT&T	Quintel	QD6616-7	Panel	700	LTE(FN)	270	71	12.05	6	4	40.00	2286.23	3750.77	122.00	0.000004	466.67	0.000001
C	7	AT&T	Quintel	QD6616-7	Panel	700	LTE(B29)	270	71	12.05	6	2	40.00	1143.12	1875.38	122.00	0.000004	466.67	0.000001
C	7	AT&T	Quintel	QD6616-7	Panel	1900	LTE/5G	270	67	15.05	6	4	40.00	4561.63	7483.76	122.00	0.000002	1000.00	0.000000
C	7	AT&T	Quintel	QD6616-7	Panel	2100	LTE/5G	270	62	15.55	6	4	60.00	7677.35	12595.38	122.00	0.000009	1000.00	0.000001
C	8-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	270	11	23.50	2.55	1	54.22	12138.53	19914.34	123.58	0.105059	1000.00	0.014506
C	8-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	270	11	23.50	2.55	1	86.75	19421.64	31862.94	120.08	0.252346	1000.00	0.037235
C	9	AT&T	Kathrein	80010965	Panel	700	LTE(B12)	270	62	12.65	6.5	4	40.00	2624.94	4306.46	122.00	0.000060	466.67	0.000013
C	9	AT&T	Kathrein	80010965	Panel	850	5G	270	60	13.45	6.5	4	40.00	3155.88	5177.50	122.00	0.000017	566.67	0.000003
C	9	AT&T	Kathrein	80010965	Panel	2300	LTE	270	56	15.95	6.5	4	25.00	3507.52	5754.40	122.00	0.000006	1000.00	0.000001

Table 2.1: Antenna Inventory & Power Data

**NOTE: 75% Duty Cycle and adjusted power reduction factor of 0.32 was applied to the AIR6449 & AIR6419 antennas per guidance from AT&T. Specifications were not available for the Ericsson AIR 6419 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6419 due to its similarity.*

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	10	Verizon	Samsung	MT6407-77A	Panel	3700	5G	30	17	22.85	2.92	4	35.00	24059.37	39457.36	113.50	0.000003	1000.00	0.000000
A	11	Verizon	Commscope	SBNHH-1D65B	Panel	700	LTE	30	68	12.75	6.1	4	40.00	2751.12	4511.83	112.00	0.000092	466.67	0.000020
A	11	Verizon	Commscope	SBNHH-1D65B	Panel	850	LTE	30	66	12.55	6.1	4	50.00	3239.13	5312.18	112.00	0.000091	566.67	0.000016
A	12	Verizon	Commscope	SBNHH-1D65B	Panel	1900	LTE	30	66	16.05	6.1	4	45.00	14100.17	23124.27	112.00	0.000127	1000.00	0.000013
A	12	Verizon	Commscope	SBNHH-1D65B	Panel	2100	LTE	30	63	16.45	6.1	4	40.00	6846.80	11228.76	112.00	0.000037	1000.00	0.000004
A	13	Verizon	Kathrein	80010765	Panel	850	CDMA	30	65	13.65	6.2	2	20.00	826.45	1355.38	112.00	0.000054	566.67	0.000010
A	14	Verizon	Samsung	XXDWMM-12.5-65-8T	Panel	3500	5G	30	17	10.85	1	4	5.00	243.32	399.05	110.00	0.000001	1000.00	0.000000
B	15	Verizon	Samsung	MT6407-77A	Panel	3700	5G	140	17	22.85	2.92	4	35.00	24059.37	39457.36	113.50	2.006983	1000.00	0.200698
B	16	Verizon	Commscope	SBNHH-1D65B	Panel	700	LTE	140	68	12.75	6.1	4	40.00	2751.12	4511.83	112.00	0.031988	466.67	0.006855
B	16	Verizon	Commscope	SBNHH-1D65B	Panel	850	LTE	140	66	12.55	6.1	4	50.00	3239.13	5312.18	112.00	0.027469	566.67	0.004847
B	17	Verizon	Commscope	SBNHH-1D65B	Panel	1900	LTE	140	66	16.05	6.1	4	45.00	14100.17	23124.27	112.00	0.009416	1000.00	0.000942
B	17	Verizon	Commscope	SBNHH-1D65B	Panel	2100	LTE	140	63	16.45	6.1	4	40.00	6846.80	11228.76	112.00	0.003391	1000.00	0.000339
B	18	Verizon	Kathrein	80010765	Panel	850	CDMA	140	65	13.65	6.2	2	20.00	826.45	1355.38	112.00	0.000275	566.67	0.000048
B	19	Verizon	Samsung	XXDWMM-12.5-65-8T	Panel	3500	5G	140	17	10.85	1	4	5.00	243.32	399.05	110.00	0.000004	1000.00	0.000000
C	20	Verizon	Samsung	MT6407-77A	Panel	3700	5G	270	17	22.85	2.92	4	35.00	24059.37	39457.36	113.50	0.000006	1000.00	0.000001
C	21	Verizon	Commscope	SBNHH-1D65B	Panel	700	LTE	270	68	12.75	6.1	4	40.00	2751.12	4511.83	112.00	0.000018	466.67	0.000004
C	21	Verizon	Commscope	SBNHH-1D65B	Panel	850	LTE	270	66	12.55	6.1	4	50.00	3239.13	5312.18	112.00	0.000012	566.67	0.000002
C	22	Verizon	Commscope	SBNHH-1D65B	Panel	1900	LTE	270	66	16.05	6.1	4	45.00	14100.17	23124.27	112.00	0.000039	1000.00	0.000004
C	22	Verizon	Commscope	SBNHH-1D65B	Panel	2100	LTE	270	63	16.45	6.1	4	40.00	6846.80	11228.76	112.00	0.000004	1000.00	0.000000
C	23	Verizon	Kathrein	80010765	Panel	850	CDMA	270	65	13.65	6.2	2	20.00	826.45	1355.38	112.00	0.000000	566.67	0.000000
C	24	Verizon	Samsung	XXDWMM-12.5-65-8T	Panel	3500	5G	270	17	10.85	1	4	5.00	243.32	399.05	110.00	0.000000	1000.00	0.000000

Table 2.2: Antenna Inventory & Power Data

**NOTE: 75% Duty Cycle and adjusted power reduction factor of 0.32 was applied to the AIR6449 & AIR6419 antennas per guidance from AT&T. Specifications were not available for the Ericsson AIR 6419 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6419 due to its similarity.*

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (^{0})	H B W (^{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	25	T-Mobile	Ericsson	KRC118023-1_B4A	Panel	2100	LTE	60	57.4	15.70	4.68	1	160.00	5946.70	9752.59	98.50	0.000320	1000.00	0.000032
A	26	T-Mobile	Ericsson	KRC118023-1_B2A	Panel	1900	GSM	60	65.6	15.60	4.68	1	40.00	1452.83	2382.65	98.50	0.000351	1000.00	0.000035
A	26	T-Mobile	Ericsson	KRC118023-1_B4P	Panel	2100	UMTS	60	57.4	15.70	4.68	1	40.00	1325.00	2173.00	98.50	0.000219	1000.00	0.000022
B	27	T-Mobile	Ericsson	KRC118023-1_B4A	Panel	2100	LTE	180	57.4	15.70	4.68	1	160.00	5946.70	9752.59	98.50	0.018850	1000.00	0.001885
B	28	T-Mobile	Ericsson	KRC118023-1_B2A	Panel	1900	GSM	180	65.6	15.60	4.68	1	40.00	1452.83	2382.65	98.50	0.000000	1000.00	0.000000
B	28	T-Mobile	Ericsson	KRC118023-1_B4P	Panel	2100	LTE	180	57.4	15.70	4.68	1	40.00	1325.00	2173.00	98.50	0.018850	1000.00	0.001885
C	29	T-Mobile	Ericsson	KRC118023-1_B4A	Panel	2100	LTE	300	57.4	15.70	4.68	1	160.00	5946.70	9752.59	98.50	0.001163	1000.00	0.000116
C	30	T-Mobile	Ericsson	KRC118023-1_B2A	Panel	1900	GSM	300	65.6	15.60	4.68	1	40.00	1452.83	2382.65	98.50	0.000019	1000.00	0.000002
C	30	T-Mobile	Ericsson	KRC118023-1_B4P	Panel	2100	LTE	300	57.4	15.70	4.68	1	40.00	1325.00	2173.00	98.50	0.000000	1000.00	0.000000
A	31	CLWR	Generic	Unknown	Panel	2600	LTE	0	65	16.00	6	1	80.00	2839.53	4656.83	88.00	0.000323	1000.00	0.000032
B	32	CLWR	Generic	Unknown	Panel	2600	LTE	120	65	16.00	6	1	80.00	2839.53	4656.83	88.00	0.001067	1000.00	0.000107
C	33	CLWR	Generic	Unknown	Panel	2600	LTE	240	65	16.00	6	1	80.00	2839.53	4656.83	88.00	0.000116	1000.00	0.000012
A	34	Metro PCS	Generic	Unknown	Panel	1900	GSM	10	64	16.65	6	1	40.00	1648.98	2704.33	76.00	0.000004	1000.00	0.000000
B	35	Metro PCS	Generic	Unknown	Panel	1900	GSM	120	64	16.65	6	1	40.00	1648.98	2704.33	76.00	0.007633	1000.00	0.000763
C	36	Metro PCS	Generic	Unknown	Panel	1900	GSM	240	64	16.65	6	1	40.00	1648.98	2704.33	76.00	0.000002	1000.00	0.000000
																Calculated Power Density ($\mu W/cm^2$)	**3.386998**	**Calculated MPE%**	**0.3723**

Table 2.3: Antenna Inventory & Power Data

**NOTE: 75% Duty Cycle and adjusted power reduction factor of 0.32 was applied to the AIR6449 & AIR6419 antennas per guidance from AT&T. Specifications were not available for the Ericsson AIR 6419 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6419 due to its similarity.*

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 0.3723% 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.

Date: **January 05, 2023**

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Site Number:	CTL01029
	Site Name:	PLAINVILLE SOUTH WASHINGTON STREET
	FA Number:	10105805
Crown Castle Designation:	**BU Number:**	857012
	Site Name:	PLAINVILLE SOUTH WASHINGTON ST
	JDE Job Number:	686266
	Work Order Number:	2190015
	Order Number:	586314 Rev. 0
Engineering Firm Designation:	**Project Number:**	93884.015.01.0001
Site Data:	**335 South Washington Street, Plainville, Hartford County, CT** **Latitude *41° 39' 11.03"*, Longitude *-72° 52' 36.9"*** **121 Foot - Monopole Tower**	

We are pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

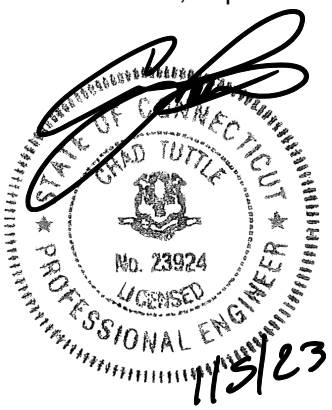
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration — **Sufficient Capacity (Rating: 76%)**

This analysis utilizes an ultimate 3-second gust wind speed of 117 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: Clint Coody

Respectfully submitted by: B+T Engineering, Inc.
COA: PEC.0001564; Expires: 02/01/2023



Chad E. Tuttle, P.E.

tnxTower Report - version 8.1.1.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 121 ft. Monopole tower mapped by B+T Group.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	117 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
121.0	123.0	3	Ericsson	AIR 6449 N77	6 1 6 3	1-5/8 7/8 3/4 3/8
	122.0	3	Ericsson	RRUS 4449 B5/B12		
		3	Kathrein	80010965		
		3	Quintel Technology	QD6616-7		
		2	Raycap	DC6-48-60-18-8F		
		1	Raycap	DC9-48-60-24-8C-EV		
	121.0	3	Ericsson	AIR 6419 B77G		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 32 B30		
		3	Ericsson	RRUS 4426 B66		
		3	Ericsson	RRUS 4478 B14		
		1	--	Platform Mount [LP 1201-1_KCKR-HR-1]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
110.0	114.0	3	Commscope	LNX-6514DS-A1M	7	1-5/8
		3	Samsung Telecom.	MT6407-77A		
	112.0	6	Andrew	SBNHH-1D65B		
		1	Raycap	RVZDC-6627-PF-48_CCIV2		
		3	Samsung Telecom.	RFV01U-D1A		
		3	Samsung Telecom.	RFV01U-D2A		
	110.0	3	Samsung Telecom.	CBRS		
		1	--	Platform Mount [LP 1201-1]		
		3	Commscope	BASMNT-SBS-1-2		
100.0	102.0	3	Ericsson	AIR 32 B2A B66AA_T-MOBILE	10	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
	100.0	3	Andrew	ONEBASE TWIN DUAL DUPLEX TMA		
		3	Commscope	SDX1926Q-43		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
		3	Ericsson	RRUS 4415 B25		
		3	RFS Celwave	APXVAALL24_43-U-NA20		
		1	--	Platform Mount [LP 602-1_KCKR]		
86.0	88.0	1	Dragonwave	A-ANT-18G-2-C	5 2	5/16 1/2
		3	Argus Technologies	LLPX310R-V1		
		1	Dragonwave	A-ANT-11G-3-C		
		2	Dragonwave	HORIZON DUO		
		3	Raycap	DC6-48-60-18-8F		
		3	Samsung Telecom.	URAS-FLEXIBLE		
	86.0	1	--	T-Arm Mount [TA 702-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Tower Mapping	5121623	CCI Sites
Foundation Mapping	4566996	CCI Sites
Geotech Report	4566990	CCI Sites
Crown CAD Package	Dated: 06/10/2022	CCI Sites

3.1) Analysis Method

tnxTower (version 8.1.1.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A. When applicable, Crown Castle has calculated and provided the effective area for panel antennas using approved methods following the intent of the TIA-222 standard.

3.2) Assumptions

1) The tower and structures were maintained in accordance with the - TIA-222 standard.
2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
3) The following material grades were assumed:
   a) Pole Shaft: A572-GR 65
   b) Base Plate: 60 ksi
   c) Anchor Rods: A615-J 75

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	121 - 96	Pole	TP27.56x21.26x0.188	1	-15.795	968.835	41.5	Pass
L2	96 - 48	Pole	TP39.56x26.316x0.25	2	-24.547	1853.890	76.0	Pass
L3	48 - 0	Pole	TP51.56x37.786x0.313	3	-38.310	3122.301	72.4	Pass
							Summary	
						Pole (L2)	76.0	Pass
						Rating =	76.0	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC7

Notes	Component		Elevation	% Capacity	Pass / Fail
1,2	Anchor Rods		Base	46.7	Pass
1,2	Base Plate		Base	59.1	Pass
1,2	Base Foundation	Structure	Base	42.6	Pass
		Soil	Base	42.8	Pass

Structure Rating (max from all components) =	76.0%

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

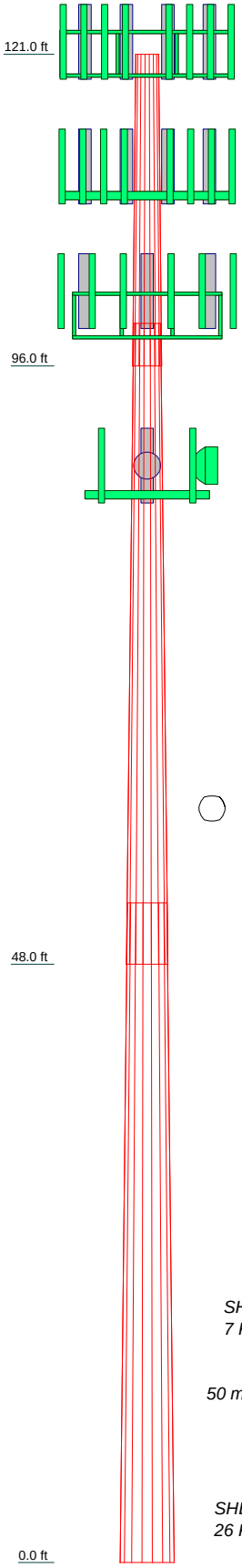
4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	25.000	18	0.188	3.450	21.260	27.560	A572-65	1.2
2	51.450	18	0.250	4.950	26.316	39.560		4.5
3	52.950	18	0.313		37.786	51.560		7.9
								13.7



MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 117 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 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 0.000 ft
8. TIA-222-H Annex S
9. TOWER RATING: 76%

ALL REACTIONS ARE FACTORED

AXIAL 67 K
SHEAR 7 K
MOMENT 712 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.500 in ICE

AXIAL 38 K
SHEAR 26 K
MOMENT 2462 kip-ft
TORQUE 2 kip-ft
REACTIONS - 117 mph WIND

B+T GRP
B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

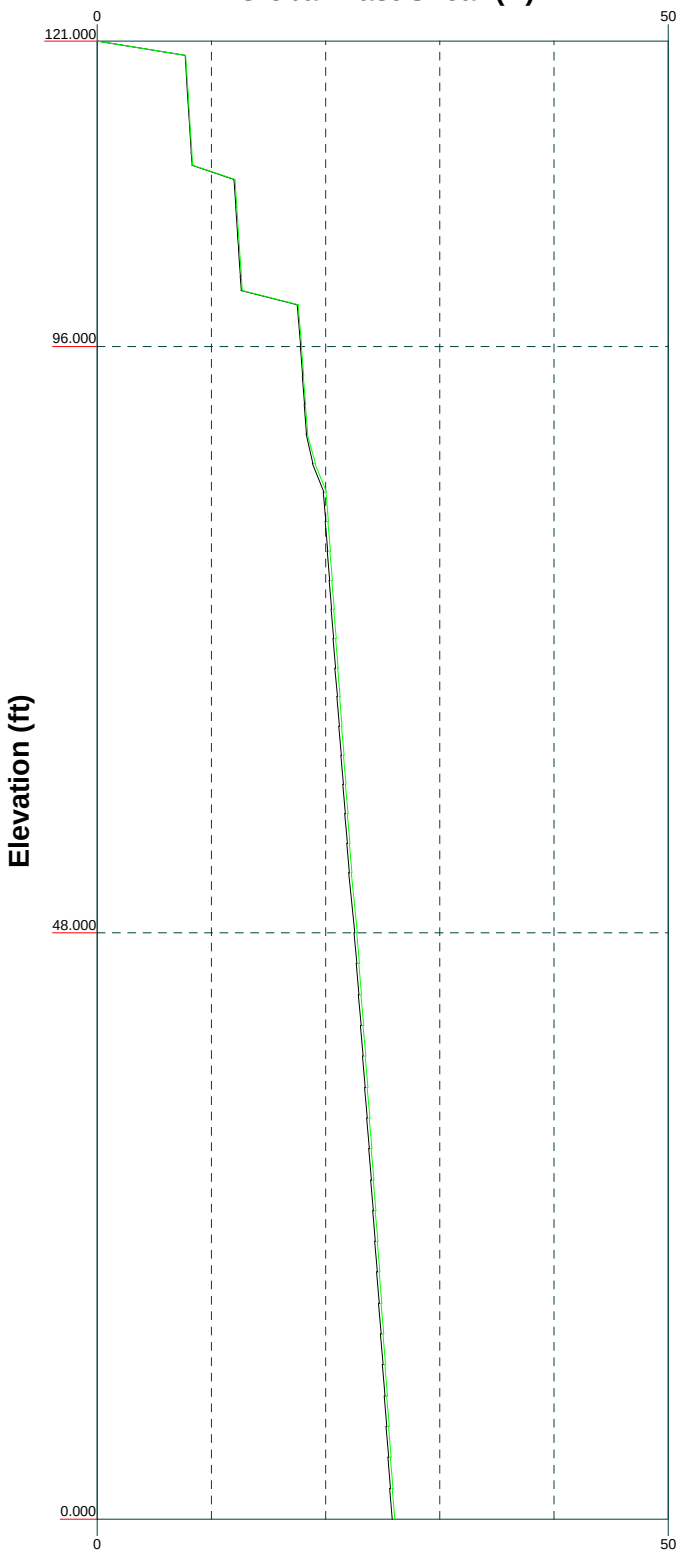
Job: ***93884.013.01.0001 - PLAINVILLE SOUTH WASHINGTON ST, CT (BU# 85701***		
Project:		
Client: Crown Castle	Drawn by: Rakshak	App'd:
Code: TIA-222-H	Date: 01/05/23	Scale: NTS
Path:		Dwg No. E-1

TIA-222-H - 117 mph/50 mph 1.500 in Ice Exposure C

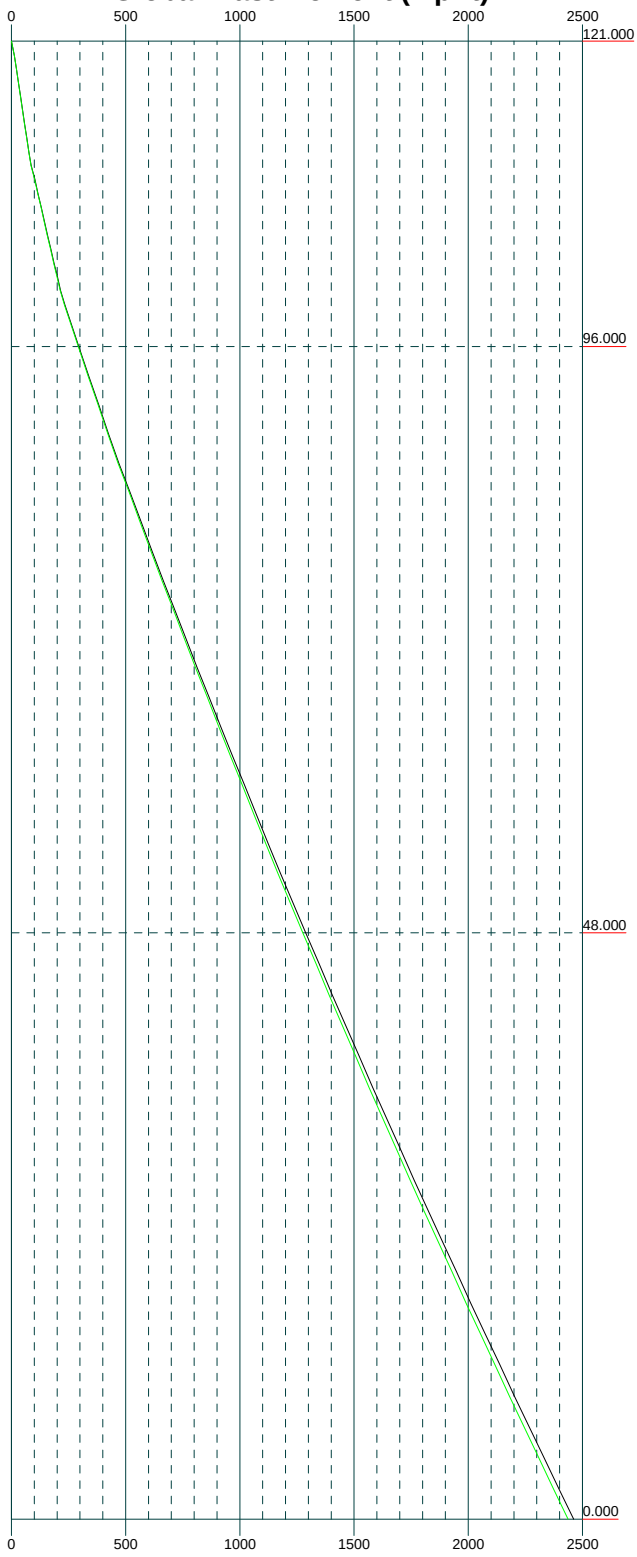
Maximum Values

Vx Vz Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



Elevation (ft)

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1717 S. Boulder, Suite 300
Tulsa, OK 74119
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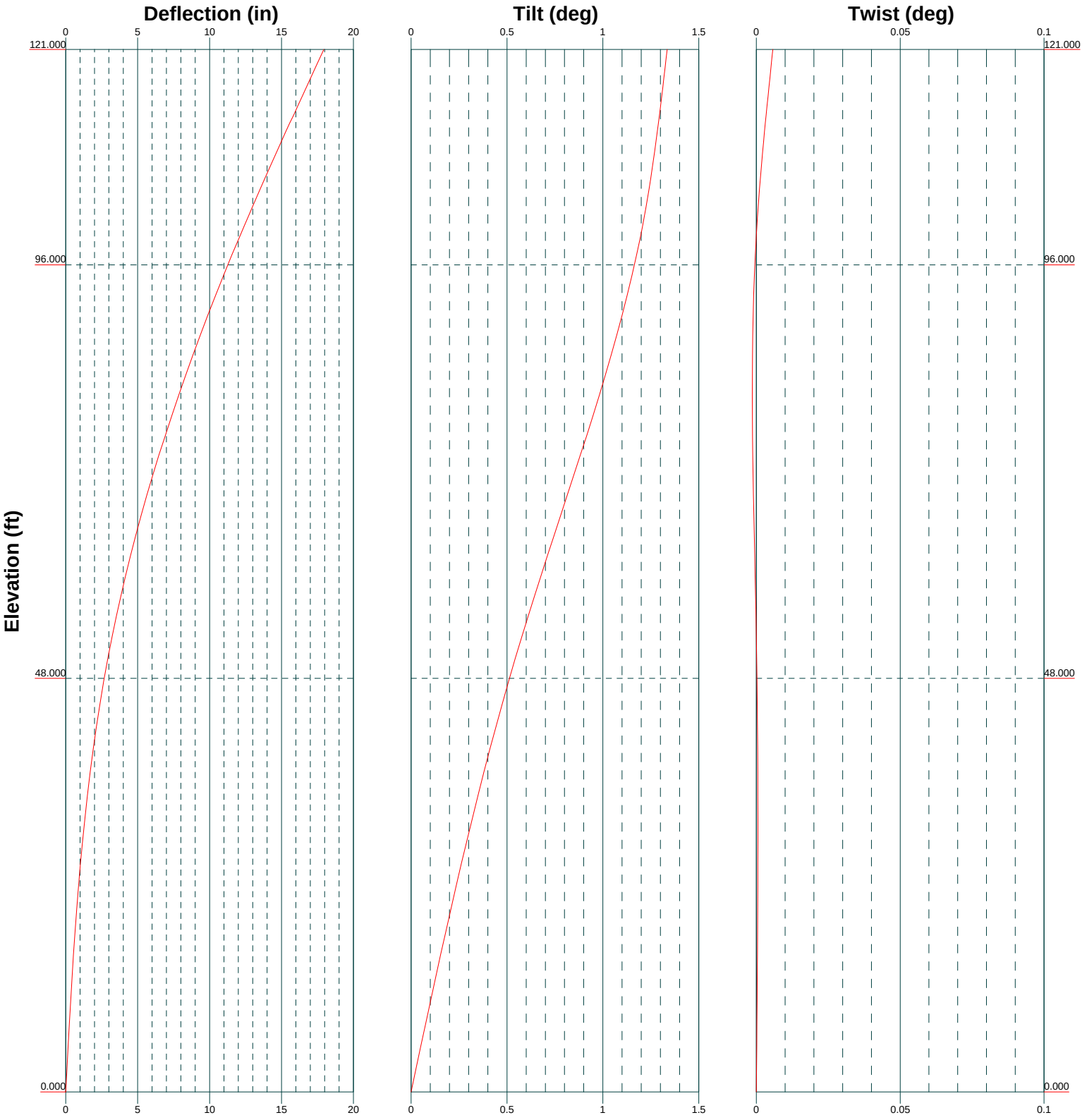
FAX: (918) 295-0265

Job: 93884.013.01.0001 - PLAINVILLE SOUTH WASHINGTON ST, CT (BU# 85701		
Project:		
Client: Crown Castle	Drawn by: Rakshak	App'd:
Code: TIA-222-H	Date: 01/05/23	Scale: NTS
Path:		Dwg No. E-4

TIA-222-H - Service - 60 mph

Maximum Values



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1717 S. Boulder, Suite 300
Tulsa, OK 74119
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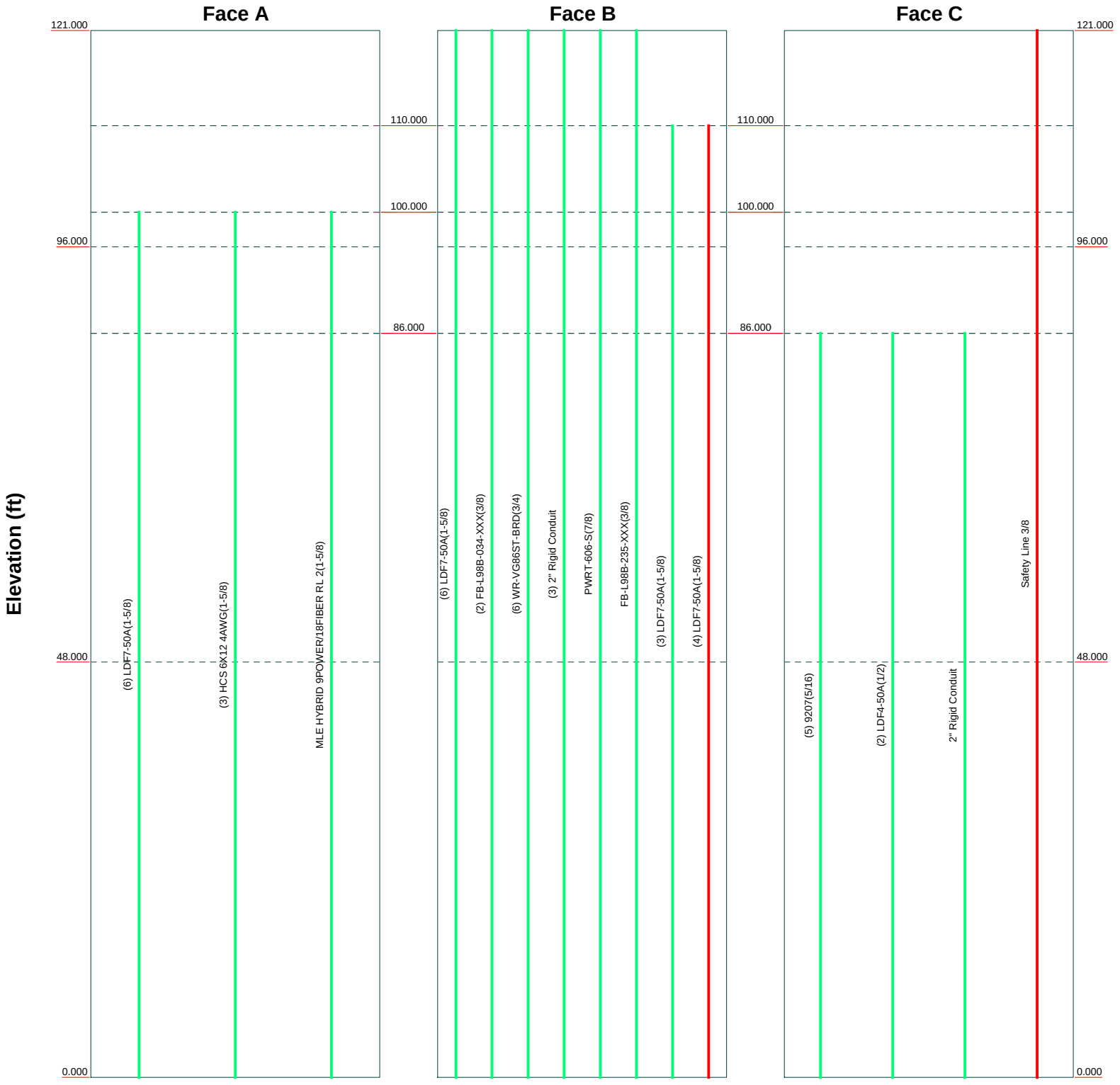
Job: 93884.013.01.0001 - PLAINVILLE SOUTH WASHINGTON ST, CT (BU# 85701		
Project:		
Client: Crown Castle	Drawn by: Rakshak	App'd:
Code: TIA-222-H	Date: 01/05/23	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
0' - 121'

Round | Flat | App In Face | App Out Face | Truss Leg



B+T GRP

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1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***93884.013.01.0001 - PLAINVILLE SOUTH WASHINGTON ST, CT (BU# 85701***		
Project:		
Client: Crown Castle	Drawn by: Rakshak	App'd:
Code: TIA-222-H	Date: 01/05/23	Scale: NTS
Path:		Dwg No. E-7

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1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

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 Hartford County, Connecticut.
Tower base elevation above sea level: 181.000 ft.
Basic wind speed of 117 mph.
Risk Category II.
Exposure Category C.
Simplified Topographic Factor Procedure for wind speed-up calculations is used.
Topographic Category: 1.
Crest Height: 0.000 ft.
Nominal ice thickness of 1.500 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 60 mph.
TIA-222-H Annex S.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Tower analysis based on target reliabilities in accordance with Annex S.
Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
Maximum demand-capacity ratio is: 1.05.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	121.000-96.000	25.000	3.450	18	21.260	27.560	0.188	0.750	A572-65 (65 ksi)
L2	96.000-48.000	51.450	4.950	18	26.316	39.560	0.250	1.000	A572-65 (65 ksi)
L3	48.000-0.000	52.950		18	37.786	51.560	0.313	1.250	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	21.559	12.541	703.548	7.481	10.800	65.143	1408.022	6.272	3.412	18.196
	27.956	16.290	1542.017	9.717	14.000	110.140	3086.062	8.147	4.521	24.11
L2	27.585	20.683	1775.365	9.253	13.368	132.804	3553.065	10.343	4.192	16.766
	40.132	31.192	6089.667	13.955	20.096	303.022	12187.346	15.599	6.523	26.09
L3	39.628	37.169	6594.148	13.303	19.195	343.532	13196.974	18.588	6.100	19.521
	52.307	50.831	16866.014	18.193	26.192	643.926	33754.220	25.420	8.525	27.279

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 121.000-96.000				1	1	1			
L2 96.000-48.000				1	1	1			
L3 48.000-0.000				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 klf
LDF7-50A(1-5/8)	B	No	Surface Ar (CaAa)	110.000 - 0.000	4	4	0.150 0.300	1.980		0.001
*										
Safety Line 3/8	C	No	Surface Ar (CaAa)	121.000 - 0.000	1	1	0.350 0.360	0.375		0.000
*										
*										

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 klf
LDF7-50A(1-5/8)	B	No	No	Inside Pole	121.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
FB-L98B-034-XXX(3/8)	B	No	No	Inside Pole	121.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	B	No	No	Inside Pole	121.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
2" Rigid Conduit	B	No	No	Inside Pole	121.000 - 0.000	3	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
PWRT-606-S(7/8)	B	No	No	Inside Pole	121.000 - 0.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
FB-L98B-235-XXX(3/8)	B	No	No	Inside Pole	121.000 - 0.000	1	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
*									
LDF7-50A(1-5/8)	B	No	No	Inside Pole	110.000 - 0.000	3	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
LDF7-50A(1-5/8)	A	No	No	Inside Pole	100.000 - 0.000	6	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
HCS 6X12 4AWG(1-5/8)	A	No	No	Inside Pole	100.000 - 0.000	3	No Ice	0.000	0.002
							1/2" Ice	0.000	0.002
							1" Ice	0.000	0.002
							2" Ice	0.000	0.002
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	A	No	No	Inside Pole	100.000 - 0.000	1	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
*									
9207(5/16)	C	No	No	Inside Pole	86.000 - 0.000	5	No Ice	0.000	0.001
							1/2" Ice	0.000	0.001
							1" Ice	0.000	0.001
							2" Ice	0.000	0.001
LDF4-50A(1/2)	C	No	No	Inside Pole	86.000 - 0.000	2	No Ice	0.000	0.000
							1/2" Ice	0.000	0.000
							1" Ice	0.000	0.000
							2" Ice	0.000	0.000
2" Rigid Conduit	C	No	No	Inside Pole	86.000 - 0.000	1	No Ice	0.000	0.003
							1/2" Ice	0.000	0.003
							1" Ice	0.000	0.003
							2" Ice	0.000	0.003
*									
*									

B+T Group
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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	121.000-96.000	A	0.000	0.000	0.000	0.000	0.053
		B	0.000	0.000	11.088	0.000	0.527
		C	0.000	0.000	0.938	0.000	0.005
L2	96.000-48.000	A	0.000	0.000	0.000	0.000	0.633
		B	0.000	0.000	38.016	0.000	1.133
		C	0.000	0.000	1.800	0.000	0.242
L3	48.000-0.000	A	0.000	0.000	0.000	0.000	0.633
		B	0.000	0.000	38.016	0.000	1.133
		C	0.000	0.000	1.800	0.000	0.303

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	121.000-96.000	A	1.435	0.000	0.000	0.000	0.000	0.053
		B		0.000	0.000	18.884	0.000	0.718
		C		0.000	0.000	8.115	0.000	0.085
L2	96.000-48.000	A	1.376	0.000	0.000	0.000	0.000	0.633
		B		0.000	0.000	64.745	0.000	1.786
		C		0.000	0.000	15.580	0.000	0.395
L3	48.000-0.000	A	1.235	0.000	0.000	0.000	0.000	0.633
		B		0.000	0.000	64.037	0.000	1.757
		C		0.000	0.000	15.014	0.000	0.445

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	121.000-96.000	2.937	0.010	1.854	0.577
L2	96.000-48.000	4.692	-0.092	3.385	0.469
L3	48.000-0.000	4.999	-0.096	3.766	0.510

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

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	14	LDF7-50A(1-5/8)	96.00 - 110.00	1.0000	1.0000
L1	25	Safety Line 3/8	96.00 - 121.00	1.0000	1.0000
L2	14	LDF7-50A(1-5/8)	48.00 - 96.00	1.0000	1.0000
L2	25	Safety Line 3/8	48.00 - 96.00	1.0000	1.0000
L3	14	LDF7-50A(1-5/8)	0.00 - 48.00	1.0000	1.0000
L3	25	Safety Line 3/8	0.00 - 48.00	1.0000	1.0000

Discrete Tower Loads

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
80010965 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.263 13.026 13.804 15.407	5.789 6.470 7.167 8.605	0.136 0.226 0.328 0.570
80010965 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.263 13.026 13.804 15.407	5.789 6.470 7.167 8.605	0.136 0.226 0.328 0.570
80010965 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.263 13.026 13.804 15.407	5.789 6.470 7.167 8.605	0.136 0.226 0.328 0.570
RRUS 32 B2	A	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	B	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 32 B2	C	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.731 2.953 3.182 3.663	1.668 1.855 2.049 2.458	0.053 0.074 0.098 0.157
RRUS 4478 B14	A	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.060 0.076 0.094 0.140
RRUS 4478 B14	B	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.060 0.076 0.094 0.140
RRUS 4478 B14	C	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.843 2.012 2.190 2.566	1.059 1.197 1.342 1.656	0.060 0.076 0.094 0.140
RRUS 4426 B66	A	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice	1.644 1.804 1.972	0.725 0.842 0.969	0.048 0.061 0.076

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
						2" Ice	2.329	1.244	0.115
RRUS 4426 B66	B	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.725 0.842 0.969 1.244	0.048 0.061 0.076 0.115
RRUS 4426 B66	C	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.644 1.804 1.972 2.329	0.725 0.842 0.969 1.244	0.048 0.061 0.076 0.115
RRUS 32 B30	A	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
RRUS 32 B30	B	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
RRUS 32 B30	C	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.692 2.912 3.138 3.614	1.573 1.756 1.945 2.346	0.060 0.080 0.104 0.161
DC6-48-60-18-8F	C	From Leg	2.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.791 1.274 1.450 1.831	0.791 1.274 1.450 1.831	0.020 0.035 0.053 0.095
QD6616-7 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.562 13.305 14.063 15.627	6.931 7.596 8.276 9.684	0.156 0.252 0.360 0.612
QD6616-7 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.562 13.305 14.063 15.627	6.931 7.596 8.276 9.684	0.156 0.252 0.360 0.612
QD6616-7 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	12.562 13.305 14.063 15.627	6.931 7.596 8.276 9.684	0.156 0.252 0.360 0.612
AIR 6449 N77	A	From Leg	4.000 0.000 2.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.698 4.059 4.436 5.235	2.142 2.453 2.778 3.476	0.097 0.130 0.168 0.255
AIR 6449 N77	B	From Leg	4.000 0.000 2.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.698 4.059 4.436 5.235	2.142 2.453 2.778 3.476	0.097 0.130 0.168 0.255
AIR 6449 N77	C	From Leg	4.000 0.000 2.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	3.698 4.059 4.436 5.235	2.142 2.453 2.778 3.476	0.097 0.130 0.168 0.255
AIR 6419 B77G	A	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.644 5.107 5.591 6.621	1.870 2.234 2.619 3.450	0.066 0.092 0.120 0.189
AIR 6419 B77G	B	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.644 5.107 5.591 6.621	1.870 2.234 2.619 3.450	0.066 0.092 0.120 0.189

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
AIR 6419 B77G	C	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	4.644 5.107 5.591 6.621	1.870 2.234 2.619 3.450	0.066 0.092 0.120 0.189
DC6-48-60-18-8F	A	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	0.791 1.274 1.450 1.831	0.791 1.274 1.450 1.831	0.020 0.035 0.053 0.095
DC9-48-60-24-8C-EV	B	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.737 2.963 3.196 3.684	4.785 5.065 5.352 5.948	0.026 0.063 0.104 0.200
RRUS 4449 B5/B12	A	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
RRUS 4449 B5/B12	B	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
RRUS 4449 B5/B12	C	From Leg	4.000 0.000 1.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.968 2.144 2.328 2.718	1.408 1.564 1.727 2.075	0.071 0.090 0.111 0.163
4' x 2.375" Pipe Mount	A	From Leg	2.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.457 1.748 2.046 2.664	1.457 1.748 2.046 2.664	0.022 0.031 0.044 0.082
4' x 2.375" Pipe Mount	B	From Leg	2.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.457 1.748 2.046 2.664	1.457 1.748 2.046 2.664	0.022 0.031 0.044 0.082
4' x 2.375" Pipe Mount	C	From Leg	2.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.457 1.748 2.046 2.664	1.457 1.748 2.046 2.664	0.022 0.031 0.044 0.082
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
6' x 2" Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090
8' x 2.375" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.061 0.075 0.095 0.150
8' x 2.375" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	121.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.900 2.728 3.401 4.396	1.900 2.728 3.401 4.396	0.061 0.075 0.095 0.150
8' x 2.375" Mount Pipe	C	From Leg	4.000	0.000	121.000	No Ice	1.900	1.900	0.061

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	2.728	2.728	0.075
			0.000			1" Ice	3.401	3.401	0.095
						2" Ice	4.396	4.396	0.150
6' x 2" Horizontal Mount Pipe	A	From Leg	3.000	0.000	121.000	No Ice	1.140	0.010	0.016
			0.000			1/2" Ice	1.760	0.040	0.025
			4.000			1" Ice	2.140	0.090	0.038
						2" Ice	2.900	0.210	0.077
6' x 2" Horizontal Mount Pipe	B	From Leg	3.000	0.000	121.000	No Ice	1.140	0.010	0.016
			0.000			1/2" Ice	1.760	0.040	0.025
			4.000			1" Ice	2.140	0.090	0.038
						2" Ice	2.900	0.210	0.077
6' x 2" Horizontal Mount Pipe	C	From Leg	3.000	0.000	121.000	No Ice	1.140	0.010	0.016
			0.000			1/2" Ice	1.760	0.040	0.025
			4.000			1" Ice	2.140	0.090	0.038
						2" Ice	2.900	0.210	0.077
Platform Mount [LP 1201-1_KCKR-HR-1]	C	None		0.000	121.000	No Ice	37.610	37.610	2.631
						1/2" Ice	45.620	45.620	3.478
						1" Ice	53.590	53.590	4.462
						2" Ice	69.650	69.650	6.848
*									
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.000	0.000	110.000	No Ice	4.090	3.300	0.066
			0.000			1/2" Ice	4.490	3.680	0.130
			2.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.000	0.000	110.000	No Ice	4.090	3.300	0.066
			0.000			1/2" Ice	4.490	3.680	0.130
			2.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.000	0.000	110.000	No Ice	4.090	3.300	0.066
			0.000			1/2" Ice	4.490	3.680	0.130
			2.000			1" Ice	4.890	4.070	0.204
						2" Ice	5.720	4.870	0.386
MT6407-77A w/ Mount Pipe	A	From Leg	4.000	0.000	110.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			4.000			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
MT6407-77A w/ Mount Pipe	B	From Leg	4.000	0.000	110.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			4.000			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
MT6407-77A w/ Mount Pipe	C	From Leg	4.000	0.000	110.000	No Ice	4.907	2.682	0.096
			0.000			1/2" Ice	5.256	3.145	0.136
			4.000			1" Ice	5.615	3.624	0.180
						2" Ice	6.362	4.631	0.288
LNX-6514DS-A1M w/ Mount Pipe	A	From Leg	4.000	0.000	110.000	No Ice	4.095	3.296	0.065
			0.000			1/2" Ice	4.485	3.675	0.128
			4.000			1" Ice	4.885	4.064	0.202
						2" Ice	5.712	4.869	0.383
LNX-6514DS-A1M w/ Mount Pipe	B	From Leg	4.000	0.000	110.000	No Ice	4.095	3.296	0.065
			0.000			1/2" Ice	4.485	3.675	0.128
			4.000			1" Ice	4.885	4.064	0.202
						2" Ice	5.712	4.869	0.383
LNX-6514DS-A1M w/ Mount Pipe	C	From Leg	4.000	0.000	110.000	No Ice	4.095	3.296	0.065
			0.000			1/2" Ice	4.485	3.675	0.128
			4.000			1" Ice	4.885	4.064	0.202
						2" Ice	5.712	4.869	0.383
CBRS w/ Mount Pipe	A	From Leg	4.000	0.000	110.000	No Ice	1.452	0.994	0.032

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000					1/2" Ice	1.671	1.185	0.048
			0.000					1" Ice	1.905	1.391	0.068
								2" Ice	2.418	1.847	0.123
CBRS w/ Mount Pipe	B	From Leg	4.000			0.000	110.000	No Ice	1.452	0.994	0.032
			0.000					1/2" Ice	1.671	1.185	0.048
			0.000					1" Ice	1.905	1.391	0.068
								2" Ice	2.418	1.847	0.123
CBRS w/ Mount Pipe	C	From Leg	4.000			0.000	110.000	No Ice	1.452	0.994	0.032
			0.000					1/2" Ice	1.671	1.185	0.048
			0.000					1" Ice	1.905	1.391	0.068
								2" Ice	2.418	1.847	0.123
RFV01U-D1A	A	From Leg	4.000			0.000	110.000	No Ice	1.875	1.250	0.084
			0.000					1/2" Ice	2.045	1.393	0.103
			2.000					1" Ice	2.223	1.543	0.124
								2" Ice	2.601	1.865	0.175
RFV01U-D1A	B	From Leg	4.000			0.000	110.000	No Ice	1.875	1.250	0.084
			0.000					1/2" Ice	2.045	1.393	0.103
			2.000					1" Ice	2.223	1.543	0.124
								2" Ice	2.601	1.865	0.175
RFV01U-D1A	C	From Leg	4.000			0.000	110.000	No Ice	1.875	1.250	0.084
			0.000					1/2" Ice	2.045	1.393	0.103
			2.000					1" Ice	2.223	1.543	0.124
								2" Ice	2.601	1.865	0.175
RFV01U-D2A	A	From Leg	4.000			0.000	110.000	No Ice	1.875	1.013	0.070
			0.000					1/2" Ice	2.045	1.145	0.087
			2.000					1" Ice	2.223	1.284	0.106
								2" Ice	2.601	1.585	0.153
RFV01U-D2A	B	From Leg	4.000			0.000	110.000	No Ice	1.875	1.013	0.070
			0.000					1/2" Ice	2.045	1.145	0.087
			2.000					1" Ice	2.223	1.284	0.106
								2" Ice	2.601	1.585	0.153
RFV01U-D2A	C	From Leg	4.000			0.000	110.000	No Ice	1.875	1.013	0.070
			0.000					1/2" Ice	2.045	1.145	0.087
			2.000					1" Ice	2.223	1.284	0.106
								2" Ice	2.601	1.585	0.153
RVZDC-6627-PF-48_CCIV2	A	From Leg	4.000			0.000	110.000	No Ice	4.056	3.098	0.032
			0.000					1/2" Ice	4.316	3.335	0.068
			2.000					1" Ice	4.582	3.580	0.109
								2" Ice	5.138	4.092	0.203
6' x 2.375" Mount Pipe	A	From Leg	1.000			0.000	110.000	No Ice	1.425	1.425	0.041
			0.000					1/2" Ice	1.925	1.925	0.051
			0.000					1" Ice	2.294	2.294	0.066
								2" Ice	3.060	3.060	0.109
Side Arm Mount [SO 102-3]	C	None				0.000	110.000	No Ice	3.600	3.600	0.075
								1/2" Ice	4.180	4.180	0.105
								1" Ice	4.750	4.750	0.135
								2" Ice	5.900	5.900	0.195
Platform Mount [LP 1201-1]	C	None				0.000	110.000	No Ice	18.380	18.380	2.100
								1/2" Ice	22.110	22.110	2.652
								1" Ice	25.870	25.870	3.263
								2" Ice	33.470	33.470	4.662
*											
AIR 32 B2A B66AA_T-MOBILE	A	From Leg	4.000			0.000	100.000	No Ice	3.855	2.506	0.172
			0.000					1/2" Ice	4.228	2.856	0.220
			2.000					1" Ice	4.612	3.217	0.273
								2" Ice	5.410	3.969	0.396
AIR 32 B2A	B	From Leg	4.000			0.000	100.000	No Ice	3.855	2.506	0.172

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
B66AA_T-MOBILE			0.000			1/2" Ice	4.228	2.856	0.220
			2.000			1" Ice	4.612	3.217	0.273
						2" Ice	5.410	3.969	0.396
AIR 32 B2A	C	From Leg	4.000	0.000	100.000	No Ice	3.855	2.506	0.172
B66AA_T-MOBILE			0.000			1/2" Ice	4.228	2.856	0.220
			2.000			1" Ice	4.612	3.217	0.273
						2" Ice	5.410	3.969	0.396
APXVAALL24_43-U-NA20	A	From Leg	4.000	0.000	100.000	No Ice	14.694	6.873	0.183
w/ Mount Pipe			0.000			1/2" Ice	15.455	7.554	0.311
			0.000			1" Ice	16.230	8.247	0.453
						2" Ice	17.816	9.670	0.782
APXVAALL24_43-U-NA20	B	From Leg	4.000	0.000	100.000	No Ice	14.694	6.873	0.183
w/ Mount Pipe			0.000			1/2" Ice	15.455	7.554	0.311
			0.000			1" Ice	16.230	8.247	0.453
						2" Ice	17.816	9.670	0.782
APXVAALL24_43-U-NA20	C	From Leg	4.000	0.000	100.000	No Ice	14.694	6.873	0.183
w/ Mount Pipe			0.000			1/2" Ice	15.455	7.554	0.311
			0.000			1" Ice	16.230	8.247	0.453
						2" Ice	17.816	9.670	0.782
AIR6449 B41_T-MOBILE	A	From Leg	4.000	0.000	100.000	No Ice	5.187	2.705	0.128
w/ Mount Pipe			0.000			1/2" Ice	5.594	3.038	0.174
			2.000			1" Ice	6.016	3.385	0.227
						2" Ice	6.904	4.122	0.354
AIR6449 B41_T-MOBILE	B	From Leg	4.000	0.000	100.000	No Ice	5.187	2.705	0.128
w/ Mount Pipe			0.000			1/2" Ice	5.594	3.038	0.174
			2.000			1" Ice	6.016	3.385	0.227
						2" Ice	6.904	4.122	0.354
AIR6449 B41_T-MOBILE	C	From Leg	4.000	0.000	100.000	No Ice	5.187	2.705	0.128
w/ Mount Pipe			0.000			1/2" Ice	5.594	3.038	0.174
			2.000			1" Ice	6.016	3.385	0.227
						2" Ice	6.904	4.122	0.354
ONEBASE TWIN DUAL	A	From Leg	4.000	0.000	100.000	No Ice	0.578	0.263	0.011
DUPLEX TMA			0.000			1/2" Ice	0.674	0.336	0.016
			0.000			1" Ice	0.778	0.416	0.022
						2" Ice	1.008	0.600	0.040
ONEBASE TWIN DUAL	B	From Leg	4.000	0.000	100.000	No Ice	0.578	0.263	0.011
DUPLEX TMA			0.000			1/2" Ice	0.674	0.336	0.016
			0.000			1" Ice	0.778	0.416	0.022
						2" Ice	1.008	0.600	0.040
ONEBASE TWIN DUAL	C	From Leg	4.000	0.000	100.000	No Ice	0.578	0.263	0.011
DUPLEX TMA			0.000			1/2" Ice	0.674	0.336	0.016
			0.000			1" Ice	0.778	0.416	0.022
						2" Ice	1.008	0.600	0.040
RADIO 4449 B71	A	From Leg	4.000	0.000	100.000	No Ice	1.970	1.587	0.073
B85A_T-MOBILE			0.000			1/2" Ice	2.147	1.749	0.093
			0.000			1" Ice	2.331	1.918	0.116
						2" Ice	2.721	2.280	0.170
RADIO 4449 B71	B	From Leg	4.000	0.000	100.000	No Ice	1.970	1.587	0.073
B85A_T-MOBILE			0.000			1/2" Ice	2.147	1.749	0.093
			0.000			1" Ice	2.331	1.918	0.116
						2" Ice	2.721	2.280	0.170
RADIO 4449 B71	C	From Leg	4.000	0.000	100.000	No Ice	1.970	1.587	0.073
B85A_T-MOBILE			0.000			1/2" Ice	2.147	1.749	0.093
			0.000			1" Ice	2.331	1.918	0.116
						2" Ice	2.721	2.280	0.170
RRUS 4415 B25	A	From Leg	4.000	0.000	100.000	No Ice	1.644	0.679	0.044
			0.000			1/2" Ice	1.804	0.791	0.056

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	1.972	0.913	0.071
						2" Ice	2.329	1.183	0.109
RRUS 4415 B25	B	From Leg	4.000	0.000	100.000	No Ice	1.644	0.679	0.044
			0.000			1/2" Ice	1.804	0.791	0.056
			0.000			1" Ice	1.972	0.913	0.071
						2" Ice	2.329	1.183	0.109
RRUS 4415 B25	C	From Leg	4.000	0.000	100.000	No Ice	1.644	0.679	0.044
			0.000			1/2" Ice	1.804	0.791	0.056
			0.000			1" Ice	1.972	0.913	0.071
						2" Ice	2.329	1.183	0.109
SDX1926Q-43	A	From Leg	4.000	0.000	100.000	No Ice	0.241	0.101	0.006
			0.000			1/2" Ice	0.306	0.144	0.009
			0.000			1" Ice	0.379	0.195	0.012
						2" Ice	0.547	0.318	0.023
SDX1926Q-43	B	From Leg	4.000	0.000	100.000	No Ice	0.241	0.101	0.006
			0.000			1/2" Ice	0.306	0.144	0.009
			0.000			1" Ice	0.379	0.195	0.012
						2" Ice	0.547	0.318	0.023
SDX1926Q-43	C	From Leg	4.000	0.000	100.000	No Ice	0.241	0.101	0.006
			0.000			1/2" Ice	0.306	0.144	0.009
			0.000			1" Ice	0.379	0.195	0.012
						2" Ice	0.547	0.318	0.023
(2) 7' x 2.375" Mount Pipe	A	From Leg	4.000	0.000	100.000	No Ice	1.663	1.663	0.061
			0.000			1/2" Ice	2.391	2.391	0.073
			0.000			1" Ice	2.825	2.825	0.090
						2" Ice	3.706	3.706	0.140
(2) 7' x 2.375" Mount Pipe	B	From Leg	4.000	0.000	100.000	No Ice	1.663	1.663	0.061
			0.000			1/2" Ice	2.391	2.391	0.073
			0.000			1" Ice	2.825	2.825	0.090
						2" Ice	3.706	3.706	0.140
(2) 7' x 2.375" Mount Pipe	C	From Leg	4.000	0.000	100.000	No Ice	1.663	1.663	0.061
			0.000			1/2" Ice	2.391	2.391	0.073
			0.000			1" Ice	2.825	2.825	0.090
						2" Ice	3.706	3.706	0.140
Platform Mount [LP 602-1_KCKR]	C	None		0.000	100.000	No Ice	42.300	42.300	1.618
						1/2" Ice	49.040	49.040	2.384
						1" Ice	55.870	55.870	3.267
						2" Ice	69.850	69.850	5.398
*									
*									
LLPX310R-V1 w/ Mount Pipe	A	From Leg	3.000	0.000	86.000	No Ice	3.882	2.355	0.057
			0.000			1/2" Ice	4.291	2.729	0.091
			2.000			1" Ice	4.716	3.117	0.133
						2" Ice	5.608	3.937	0.238
LLPX310R-V1 w/ Mount Pipe	B	From Leg	3.000	0.000	86.000	No Ice	3.882	2.355	0.057
			0.000			1/2" Ice	4.291	2.729	0.091
			2.000			1" Ice	4.716	3.117	0.133
						2" Ice	5.608	3.937	0.238
LLPX310R-V1 w/ Mount Pipe	C	From Leg	3.000	0.000	86.000	No Ice	3.882	2.355	0.057
			0.000			1/2" Ice	4.291	2.729	0.091
			2.000			1" Ice	4.716	3.117	0.133
						2" Ice	5.608	3.937	0.238
HORIZON DUO	A	From Leg	3.000	0.000	86.000	No Ice	0.469	0.294	0.007
			0.000			1/2" Ice	0.556	0.365	0.012
			2.000			1" Ice	0.650	0.444	0.018
						2" Ice	0.861	0.624	0.036
HORIZON DUO	B	From Leg	3.000	0.000	86.000	No Ice	0.469	0.294	0.007

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1/2" Ice	0.556	0.365	0.012
			2.000			1" Ice	0.650	0.444	0.018
						2" Ice	0.861	0.624	0.036
DC6-48-60-18-8F	A	From Leg	3.000	0.000	86.000	No Ice	0.791	0.791	0.020
			0.000			1/2" Ice	1.274	1.274	0.035
			2.000			1" Ice	1.450	1.450	0.053
						2" Ice	1.831	1.831	0.095
DC6-48-60-18-8F	B	From Leg	3.000	0.000	86.000	No Ice	0.791	0.791	0.020
			0.000			1/2" Ice	1.274	1.274	0.035
			2.000			1" Ice	1.450	1.450	0.053
						2" Ice	1.831	1.831	0.095
DC6-48-60-18-8F	C	From Leg	3.000	0.000	86.000	No Ice	0.791	0.791	0.020
			0.000			1/2" Ice	1.274	1.274	0.035
			2.000			1" Ice	1.450	1.450	0.053
						2" Ice	1.831	1.831	0.095
URAS-FLEXIBLE	A	From Leg	3.000	0.000	86.000	No Ice	1.547	0.684	0.033
			0.000			1/2" Ice	1.704	0.800	0.045
			2.000			1" Ice	1.868	0.923	0.058
						2" Ice	2.219	1.193	0.094
URAS-FLEXIBLE	B	From Leg	3.000	0.000	86.000	No Ice	1.547	0.684	0.033
			0.000			1/2" Ice	1.704	0.800	0.045
			2.000			1" Ice	1.868	0.923	0.058
						2" Ice	2.219	1.193	0.094
URAS-FLEXIBLE	C	From Leg	3.000	0.000	86.000	No Ice	1.547	0.684	0.033
			0.000			1/2" Ice	1.704	0.800	0.045
			2.000			1" Ice	1.868	0.923	0.058
						2" Ice	2.219	1.193	0.094
T-Arm Mount [TA 702-3]	C	None		0.000	86.000	No Ice	4.750	4.750	0.339
						1/2" Ice	5.820	5.820	0.432
						1" Ice	6.980	6.980	0.550
						2" Ice	9.720	9.720	0.868
*									
*									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
A-ANT-18G-2-C	A	Paraboloid w/Shroud (HP)	From Leg	3.000	30.000		86.000	2.175	No Ice	3.720	0.030
				0.000					1/2" Ice	4.010	0.030
				2.000					1" Ice	4.300	0.360
									2" Ice	4.880	0.065
A-ANT-11G-3-C	B	Paraboloid w/Shroud (HP)	From Leg	3.000	30.000		86.000	3.021	No Ice	7.170	0.050
				0.000					1/2" Ice	7.570	0.090
				2.000					1" Ice	7.970	0.130
									2" Ice	8.770	0.200
*											

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	121 - 96	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-35.841	-0.769	0.994
			Max. Mx	8	-15.814	-231.988	1.255
			Max. My	2	-15.794	-1.022	233.818
			Max. Vy	8	17.526	-231.988	1.255
			Max. Vx	2	-17.619	-1.022	233.818
			Max. Torque	4			-0.930
L2	96 - 48	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-49.051	-2.765	2.325
			Max. Mx	8	-24.567	-1165.390	1.214
			Max. My	2	-24.548	-0.842	1176.964
			Max. Vy	20	-22.083	1165.099	1.093
			Max. Vx	2	-22.312	-0.842	1176.964
			Max. Torque	25			-1.743
L3	48 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-66.815	-4.262	2.871
			Max. Mx	20	-38.311	2437.240	4.257
			Max. My	2	-38.310	0.569	2461.518
			Max. Vy	20	-25.842	2437.240	4.257
			Max. Vx	2	-26.061	0.569	2461.518
			Max. Torque	25			-1.737

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	27	66.815	0.007	7.345
	Max. H_x	21	28.751	25.807	0.055
	Max. H_z	2	38.335	0.033	26.025
	Max. M_x	2	2461.518	0.033	26.025
	Max. M_z	8	2436.842	-25.781	-0.020
	Max. Torsion	11	1.448	-22.300	-12.990
	Min. Vert	11	28.751	-22.300	-12.990
	Min. H_x	9	28.751	-25.781	-0.020
	Min. H_z	14	38.335	0.002	-25.989
	Min. M_x	14	-2456.791	0.002	-25.989
	Min. M_z	20	-2437.240	25.807	0.055
	Min. Torsion	25	-1.735	12.884	22.552

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	31.945	0.000	0.000	-0.540	-0.784	0.000
1.2 Dead+1.0 Wind 0 deg - No Ice	38.335	-0.033	-26.025	-2461.518	0.570	1.655
0.9 Dead+1.0 Wind 0 deg - No Ice	28.751	-0.033	-26.025	-2431.451	0.829	1.656
1.2 Dead+1.0 Wind 30 deg - No Ice	38.335	12.786	-22.569	-2135.369	-1210.637	1.286
0.9 Dead+1.0 Wind 30 deg - No	28.751	12.786	-22.569	-2109.256	-1195.654	1.285

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Ice 1.2 Dead+1.0 Wind 60 deg - No Ice	38.335	22.333	-12.979	-1229.327	-2111.771	0.476
0.9 Dead+1.0 Wind 60 deg - No Ice	28.751	22.333	-12.979	-1214.201	-2085.859	0.474
1.2 Dead+1.0 Wind 90 deg - No Ice	38.335	25.781	0.020	-0.319	-2436.842	-0.661
0.9 Dead+1.0 Wind 90 deg - No Ice	28.751	25.781	0.020	-0.123	-2406.981	-0.663
1.2 Dead+1.0 Wind 120 deg - No Ice	38.335	22.300	12.990	1226.386	-2107.283	-1.446
0.9 Dead+1.0 Wind 120 deg - No Ice	28.751	22.300	12.990	1211.672	-2081.437	-1.448
1.2 Dead+1.0 Wind 150 deg - No Ice	38.335	12.818	22.513	2127.384	-1210.951	-1.418
0.9 Dead+1.0 Wind 150 deg - No Ice	28.751	12.818	22.513	2101.722	-1195.997	-1.419
1.2 Dead+1.0 Wind 180 deg - No Ice	38.335	-0.002	25.989	2456.791	0.706	-1.434
0.9 Dead+1.0 Wind 180 deg - No Ice	28.751	-0.002	25.989	2427.122	0.926	-1.435
1.2 Dead+1.0 Wind 210 deg - No Ice	38.335	-12.860	22.551	2132.370	1215.433	-1.227
0.9 Dead+1.0 Wind 210 deg - No Ice	28.751	-12.860	22.551	2106.642	1200.893	-1.227
1.2 Dead+1.0 Wind 240 deg - No Ice	38.335	-22.327	13.067	1235.990	2109.303	-0.539
0.9 Dead+1.0 Wind 240 deg - No Ice	28.751	-22.327	13.067	1221.148	2083.914	-0.537
1.2 Dead+1.0 Wind 270 deg - No Ice	38.335	-25.807	-0.055	-4.257	2437.240	0.981
0.9 Dead+1.0 Wind 270 deg - No Ice	28.751	-25.807	-0.055	-4.058	2407.874	0.983
1.2 Dead+1.0 Wind 300 deg - No Ice	38.335	-22.337	-13.078	-1235.818	2108.676	1.569
0.9 Dead+1.0 Wind 300 deg - No Ice	28.751	-22.337	-13.078	-1220.662	2083.312	1.571
1.2 Dead+1.0 Wind 330 deg - No Ice	38.335	-12.884	-22.552	-2132.266	1215.003	1.733
0.9 Dead+1.0 Wind 330 deg - No Ice	28.751	-12.884	-22.552	-2106.208	1200.499	1.735
1.2 Dead+1.0 Ice+1.0 Temp	66.815	0.000	-0.000	-2.871	-4.262	0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	66.815	-0.007	-7.345	-711.719	-4.029	0.350
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	66.815	3.625	-6.368	-617.522	-354.192	0.256
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	66.815	6.318	-3.666	-356.932	-613.734	0.073
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	66.815	7.295	0.004	-2.878	-707.712	-0.173
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	66.815	6.312	3.668	350.694	-612.800	-0.336
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	66.815	3.632	6.357	610.233	-354.260	-0.315
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	66.815	-0.001	7.338	705.107	-4.005	-0.303
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	66.815	-3.641	6.364	611.290	346.945	-0.244
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	66.815	-6.317	3.684	352.828	604.896	-0.085
1.2 Dead+1.0 Wind 270	66.815	-7.300	-0.011	-3.702	699.486	0.243

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	66.815	-6.320	-3.687	-358.424	604.765	0.363
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	66.815	-3.646	-6.364	-616.896	346.858	0.384
Dead+Wind 0 deg - Service	31.945	-0.008	-6.453	-606.665	-0.439	0.409
Dead+Wind 30 deg - Service	31.945	3.171	-5.596	-526.330	-298.757	0.314
Dead+Wind 60 deg - Service	31.945	5.538	-3.218	-303.173	-520.696	0.112
Dead+Wind 90 deg - Service	31.945	6.393	0.005	-0.480	-600.755	-0.170
Dead+Wind 120 deg - Service	31.945	5.530	3.221	301.644	-519.590	-0.364
Dead+Wind 150 deg - Service	31.945	3.178	5.582	523.556	-298.835	-0.354
Dead+Wind 180 deg - Service	31.945	-0.000	6.444	604.693	-0.410	-0.355
Dead+Wind 210 deg - Service	31.945	-3.189	5.592	524.789	298.776	-0.301
Dead+Wind 240 deg - Service	31.945	-5.536	3.240	304.011	518.930	-0.128
Dead+Wind 270 deg - Service	31.945	-6.399	-0.014	-1.454	599.696	0.252
Dead+Wind 300 deg - Service	31.945	-5.539	-3.243	-304.777	518.775	0.396
Dead+Wind 330 deg - Service	31.945	-3.195	-5.592	-525.569	298.672	0.433

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-31.945	0.000	0.000	31.945	0.000	0.000%
2	-0.033	-38.335	-26.025	0.033	38.335	26.025	0.000%
3	-0.033	-28.751	-26.025	0.033	28.751	26.025	0.000%
4	12.786	-38.335	-22.569	-12.786	38.335	22.569	0.000%
5	12.786	-28.751	-22.569	-12.786	28.751	22.569	0.000%
6	22.333	-38.335	-12.979	-22.333	38.335	12.979	0.000%
7	22.333	-28.751	-12.979	-22.333	28.751	12.979	0.000%
8	25.781	-38.335	0.020	-25.781	38.335	-0.020	0.000%
9	25.781	-28.751	0.020	-25.781	28.751	-0.020	0.000%
10	22.300	-38.335	12.990	-22.300	38.335	-12.990	0.000%
11	22.300	-28.751	12.990	-22.300	28.751	-12.990	0.000%
12	12.818	-38.335	22.513	-12.818	38.335	-22.513	0.000%
13	12.818	-28.751	22.513	-12.818	28.751	-22.513	0.000%
14	-0.002	-38.335	25.989	0.002	38.335	-25.989	0.000%
15	-0.002	-28.751	25.989	0.002	28.751	-25.989	0.000%
16	-12.860	-38.335	22.551	12.860	38.335	-22.551	0.000%
17	-12.860	-28.751	22.551	12.860	28.751	-22.551	0.000%
18	-22.327	-38.335	13.067	22.327	38.335	-13.067	0.000%
19	-22.327	-28.751	13.067	22.327	28.751	-13.067	0.000%
20	-25.807	-38.335	-0.055	25.807	38.335	0.055	0.000%
21	-25.807	-28.751	-0.055	25.807	28.751	0.055	0.000%
22	-22.337	-38.335	-13.078	22.337	38.335	13.078	0.000%
23	-22.337	-28.751	-13.078	22.337	28.751	13.078	0.000%
24	-12.884	-38.335	-22.552	12.884	38.335	22.552	0.000%
25	-12.884	-28.751	-22.552	12.884	28.751	22.552	0.000%
26	0.000	-66.815	0.000	-0.000	66.815	0.000	0.000%
27	-0.007	-66.815	-7.345	0.007	66.815	7.345	0.000%
28	3.625	-66.815	-6.367	-3.625	66.815	6.368	0.000%
29	6.318	-66.815	-3.665	-6.318	66.815	3.666	0.000%
30	7.295	-66.815	0.004	-7.295	66.815	-0.004	0.000%
31	6.312	-66.815	3.668	-6.312	66.815	-3.668	0.000%
32	3.632	-66.815	6.357	-3.632	66.815	-6.357	0.000%
33	-0.001	-66.815	7.338	0.001	66.815	-7.338	0.000%
34	-3.641	-66.815	6.364	3.641	66.815	-6.364	0.000%
35	-6.317	-66.815	3.684	6.317	66.815	-3.684	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
36	-7.300	-66.815	-0.011	7.300	66.815	0.011	0.000%
37	-6.319	-66.815	-3.687	6.320	66.815	3.687	0.000%
38	-3.646	-66.815	-6.364	3.646	66.815	6.364	0.000%
39	-0.008	-31.945	-6.453	0.008	31.945	6.453	0.000%
40	3.171	-31.945	-5.596	-3.171	31.945	5.596	0.000%
41	5.538	-31.945	-3.218	-5.538	31.945	3.218	0.000%
42	6.393	-31.945	0.005	-6.393	31.945	-0.005	0.000%
43	5.530	-31.945	3.221	-5.530	31.945	-3.221	0.000%
44	3.178	-31.945	5.582	-3.178	31.945	-5.582	0.000%
45	-0.000	-31.945	6.444	0.000	31.945	-6.444	0.000%
46	-3.189	-31.945	5.592	3.189	31.945	-5.592	0.000%
47	-5.536	-31.945	3.240	5.536	31.945	-3.240	0.000%
48	-6.399	-31.945	-0.014	6.399	31.945	0.014	0.000%
49	-5.539	-31.945	-3.243	5.539	31.945	3.243	0.000%
50	-3.195	-31.945	-5.592	3.195	31.945	5.592	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00017451
3	Yes	5	0.00000001	0.00008265
4	Yes	6	0.00000001	0.00015039
5	Yes	6	0.00000001	0.00004903
6	Yes	6	0.00000001	0.00014414
7	Yes	6	0.00000001	0.00004676
8	Yes	5	0.00000001	0.00006337
9	Yes	4	0.00000001	0.00068886
10	Yes	6	0.00000001	0.00014028
11	Yes	6	0.00000001	0.00004548
12	Yes	6	0.00000001	0.00014987
13	Yes	6	0.00000001	0.00004898
14	Yes	5	0.00000001	0.00015020
15	Yes	5	0.00000001	0.00007123
16	Yes	6	0.00000001	0.00014136
17	Yes	6	0.00000001	0.00004576
18	Yes	6	0.00000001	0.00014796
19	Yes	6	0.00000001	0.00004817
20	Yes	5	0.00000001	0.00008643
21	Yes	4	0.00000001	0.00093770
22	Yes	6	0.00000001	0.00015052
23	Yes	6	0.00000001	0.00004916
24	Yes	6	0.00000001	0.00013945
25	Yes	6	0.00000001	0.00004510
26	Yes	4	0.00000001	0.00004186
27	Yes	5	0.00000001	0.00050434
28	Yes	5	0.00000001	0.00084868
29	Yes	5	0.00000001	0.00083505
30	Yes	5	0.00000001	0.00049815
31	Yes	5	0.00000001	0.00080511
32	Yes	5	0.00000001	0.00083266
33	Yes	5	0.00000001	0.00049633
34	Yes	5	0.00000001	0.00079576
35	Yes	5	0.00000001	0.00080777
36	Yes	5	0.00000001	0.00049098

37	Yes	5	0.00000001	0.00083323
38	Yes	5	0.00000001	0.00080344
39	Yes	4	0.00000001	0.00020886
40	Yes	4	0.00000001	0.00088565
41	Yes	4	0.00000001	0.00077978
42	Yes	4	0.00000001	0.00009693
43	Yes	4	0.00000001	0.00072920
44	Yes	4	0.00000001	0.00088579
45	Yes	4	0.00000001	0.00018902
46	Yes	4	0.00000001	0.00073725
47	Yes	4	0.00000001	0.00082695
48	Yes	4	0.00000001	0.00011810
49	Yes	4	0.00000001	0.00088708
50	Yes	4	0.00000001	0.00072030

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	121 - 96	17.941	39	1.337	0.004
L2	99.45 - 48	12.134	39	1.196	0.003
L3	52.95 - 0	3.234	39	0.578	0.001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.000	80010965 w/ Mount Pipe	39	17.941	1.337	0.004	22648
110.000	(2) SBNHH-1D65B w/ Mount Pipe	39	14.910	1.275	0.003	10294
100.000	AIR 32 B2A B66AA_T-MOBILE	39	12.274	1.201	0.003	5511
88.000	A-ANT-18G-2-C	39	9.392	1.072	0.002	4693
86.000	LLPX310R-V1 w/ Mount Pipe	39	8.946	1.047	0.002	4608

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	121 - 96	72.864	2	5.434	0.016
L2	99.45 - 48	49.289	2	4.864	0.011
L3	52.95 - 0	13.133	2	2.349	0.003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.000	80010965 w/ Mount Pipe	2	72.864	5.434	0.016	5679
110.000	(2) SBNHH-1D65B w/ Mount Pipe	2	60.561	5.185	0.013	2580
100.000	AIR 32 B2A B66AA_T-MOBILE	2	49.856	4.884	0.011	1379
88.000	A-ANT-18G-2-C	2	38.152	4.360	0.008	1169
86.000	LLPX310R-V1 w/ Mount Pipe	2	36.342	4.258	0.008	1146

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	121 - 96 (1)	TP27.56x21.26x0.188	25.000	0.000	0.0	15.773	-15.795	922.700	0.017
L2	96 - 48 (2)	TP39.56x26.316x0.25	51.450	0.000	0.0	30.181	-24.547	1765.610	0.014
L3	48 - 0 (3)	TP51.56x37.786x0.313	52.950	0.000	0.0	50.831	-38.310	2973.620	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	121 - 96 (1)	TP27.56x21.26x0.188	234.232	564.949	0.415	0.000	564.949	0.000
L2	96 - 48 (2)	TP39.56x26.316x0.25	1176.967	1504.700	0.782	0.000	1504.700	0.000
L3	48 - 0 (3)	TP51.56x37.786x0.313	2461.517	3297.608	0.746	0.000	3297.608	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	121 - 96 (1)	TP27.56x21.26x0.188	17.632	276.810	0.064	0.605	642.478	0.001
L2	96 - 48 (2)	TP39.56x26.316x0.25	22.312	521.109	0.043	1.659	1764.367	0.001
L3	48 - 0 (3)	TP51.56x37.786x0.313	26.061	880.646	0.030	1.655	4003.683	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	121 - 96 (1)	0.017	0.415	0.000	0.064	0.001	0.436 ✔	1.050	4.8.2 ✔
L2	96 - 48 (2)	0.014	0.782	0.000	0.043	0.001	0.798 ✔	1.050	4.8.2 ✔
L3	48 - 0 (3)	0.013	0.746	0.000	0.030	0.000	0.760 ✔	1.050	4.8.2 ✔

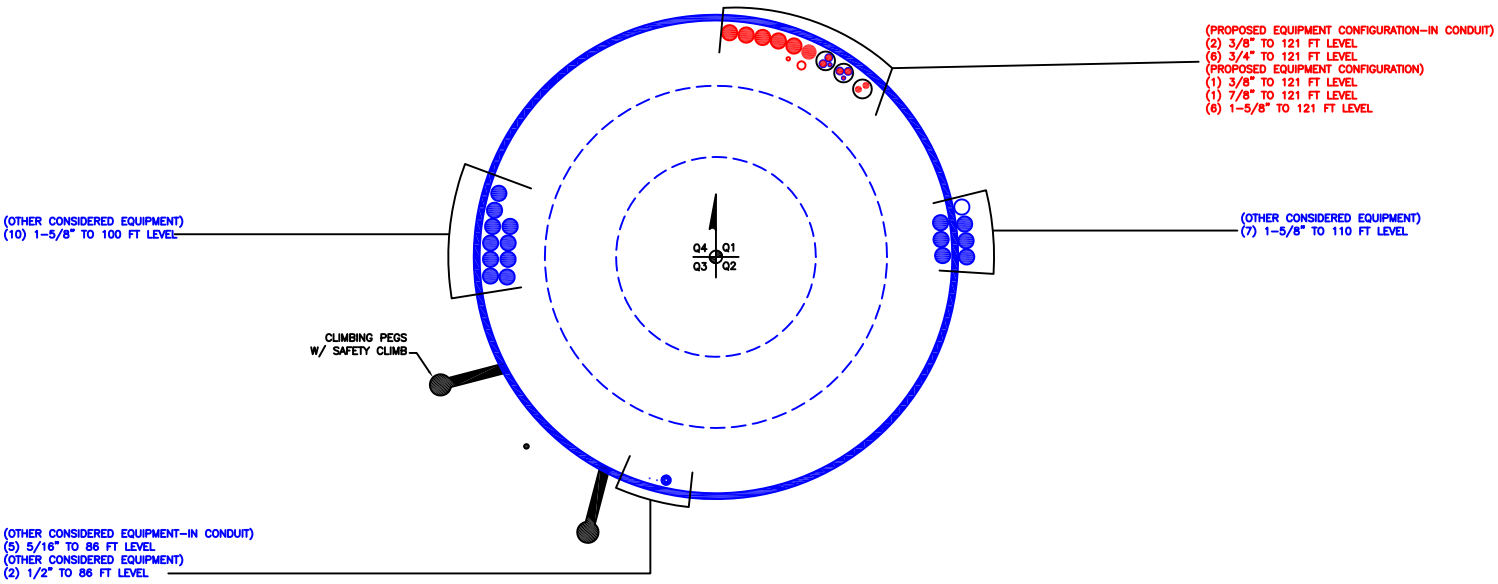
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	121 - 96	Pole	TP27.56x21.26x0.188	1	-15.795	968.835	41.5	Pass
L2	96 - 48	Pole	TP39.56x26.316x0.25	2	-24.547	1853.890	76.0	Pass
L3	48 - 0	Pole	TP51.56x37.786x0.313	3	-38.310	3122.301	72.4	Pass
							Summary	
						Pole (L2)	76.0	Pass
						RATING =	**76.0**	**Pass**

Program Version 8.1.1.0

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 857012

APPENDIX C

ADDITIONAL CALCULATIONS

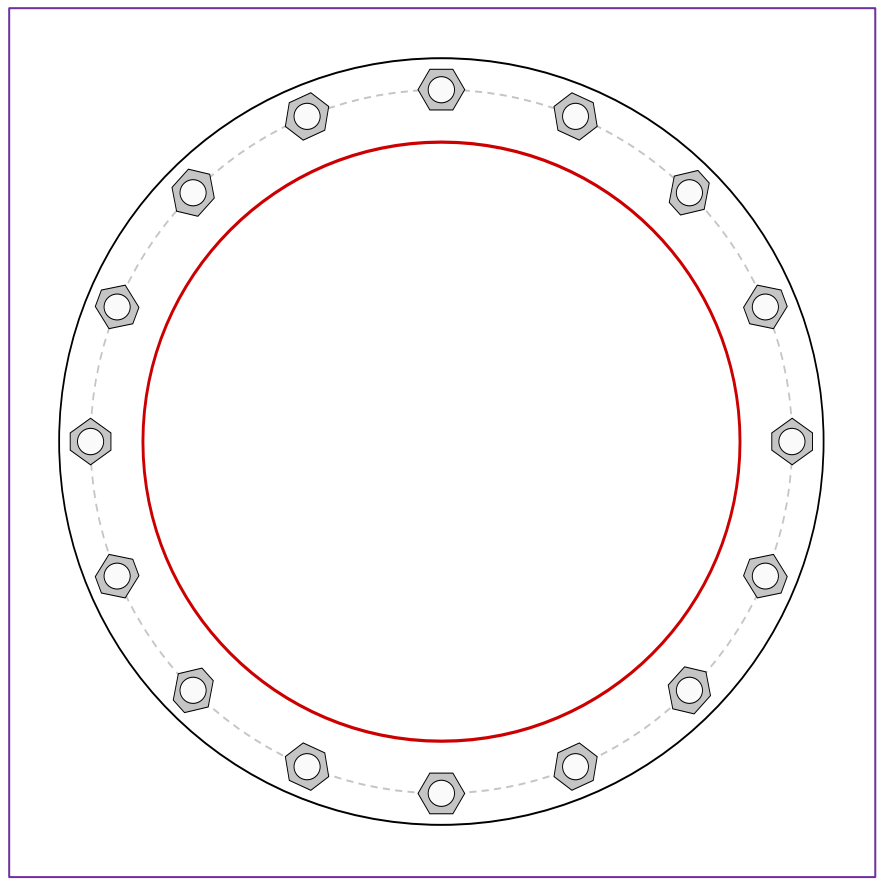
Monopole Base Plate Connection

Site Info	
BU #	857012
Site Name	LE SOUTH WASHINGTC
Order #	586314, Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	2.75

Applied Loads	
Moment (kip-ft)	2461.52
Axial Force (kips)	38.31
Shear Force (kips)	26.06

**TIA-222-H Section 15.5 Applied*



Connection Properties

Anchor Rod Data

(16) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 60.56" BC

Base Plate Data

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

Stiffener Data

N/A

Pole Data

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

Analysis Results

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

Pu_t = 119.47	ϕPn_t = 243.75	**Stress Rating**
Vu = 1.63	ϕVn = 149.1	**46.7%**
Mu = 2.91	ϕMn = 128.14	**Pass**

Base Plate Summary

Max Stress (ksi):	33.49	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**59.1%**	**Pass**

Drilled Pier Foundation

BU # :	857012
Site Name:	PLAINVILLE SOUTH WASH
Order Number:	586314, Rev. 0
TIA-222 Revison:	H
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2461.52	
Axial Force (kips)	38.34	
Shear Force (kips)	26.03	

Material Properties			Rebar 2, Fy Override (ksi)
Concrete Strength, f'c:	3	ksi	
Rebar Strength, Fy:	60	ksi	
Tie Yield Strength, Fyt:	40	ksi	

Pier Design Data		
Depth	32	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 32' below grade		
Pier Diameter	7	ft
Rebar Quantity	27	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	3	
Tie Spacing		in

Rebar & Pier Options

Embedded Pole Inputs

Belled Pier Inputs

Analysis Results		
Soil Lateral Check	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	7.12	-
Soil Safety Factor	4.49	-
Max Moment (kip-ft)	2635.82	-
Rating*	*28.2%*	-
Soil Vertical Check	*Compression*	*Uplift*
Skin Friction (kips)	169.92	-
End Bearing (kips)	237.10	-
Weight of Concrete (kips)	144.40	-
Total Capacity (kips)	407.02	-
Axial (kips)	182.74	-
Rating*	*42.8%*	-
Reinforced Concrete Flexure	*Compression*	*Uplift*
Critical Depth (ft from TOC)	7.07	-
Critical Moment (kip-ft)	2635.81	-
Critical Moment Capacity	6565.83	-
Rating*	*38.2%*	-
Reinforced Concrete Shear	*Compression*	*Uplift*
Critical Depth (ft from TOC)	22.17	-
Critical Shear (kip)	220.47	-
Critical Shear Capacity	492.65	-
Rating*	*42.6%*	-

Structural Foundation Rating*	**42.6%**
Soil Interaction Rating*	**42.8%**

*Rating per TIA-222-H Section 15.5

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

Go to Soil Calculations

Soil Profile

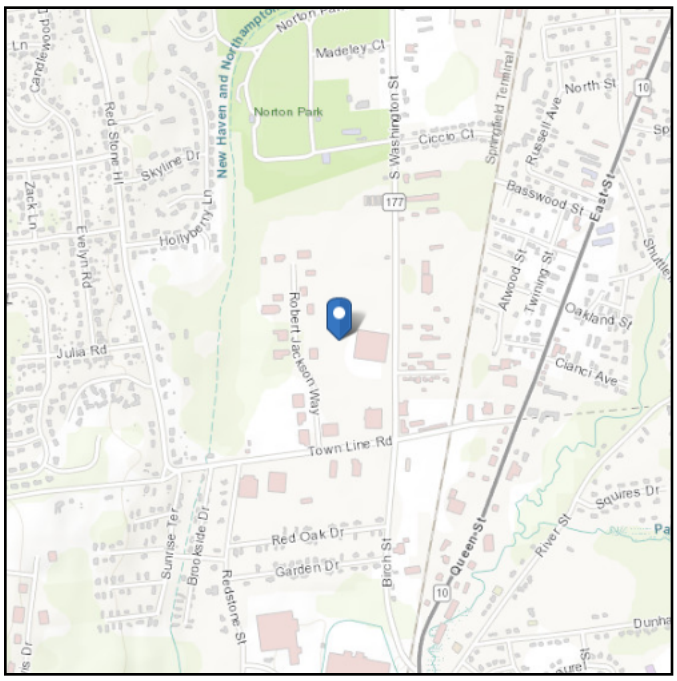
Groundwater Depth	4	# of Layers	8

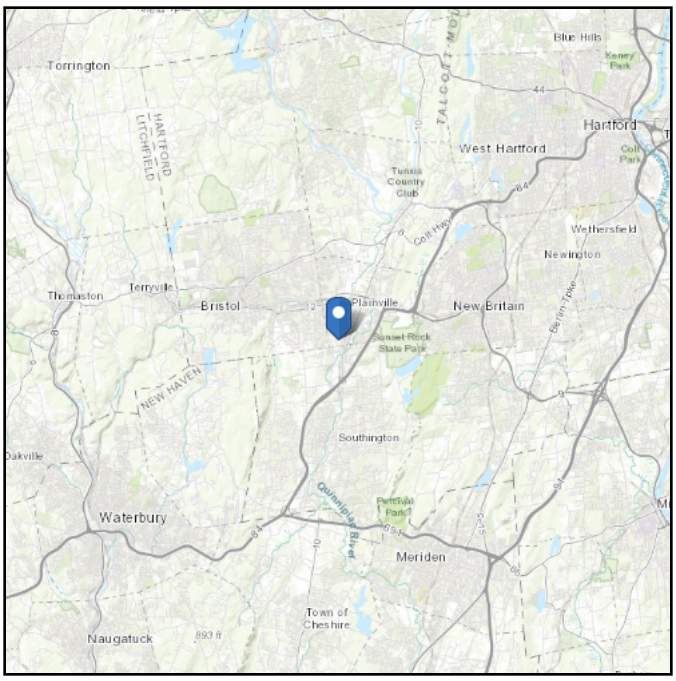
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Net Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.5	3.5	117.4	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.5	4	0.5	117.4	150	0	33	0.000	0.000	0.32	0.32			Cohesionless
3	4	13	9	55	87.6	0	33	0.000	0.000	0.32	0.32			Cohesionless
4	13	15	2	45	87.6	0	28	0.000	0.000	0.50	0.50			Cohesionless
5	15	19	4	45	87.6	0	28	0.000	0.000	0.56	0.56			Cohesionless
6	19	23	4	55	87.6	0	33	0.000	0.000	0.64	0.64			Cohesionless
7	23	25	2	40	87.6	0	28	0.00	0.00	0.76	0.76			Cohesionless
8	25	32	7	40	87.6	0	28	0.00	0.00	0.00	0.00	6.4		Cohesionless

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-16	**Latitude:**	41.653064
Risk Category:	II	**Longitude:**	-72.876917
Soil Class:	D - Default (see Section 11.4.3)	**Elevation:**	181.15 ft (NAVD 88)





Wind

Results:

Wind Speed	117 Vmph
10-year MRI	75 Vmph
25-year MRI	84 Vmph
50-year MRI	90 Vmph
100-year MRI	97 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:	Tue Jan 03 2023

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

D - Default (see Section 11.4.3)

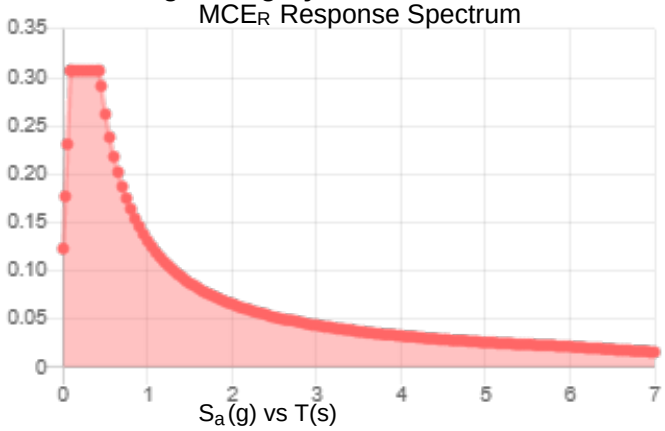
Site Soil Class:

Results:

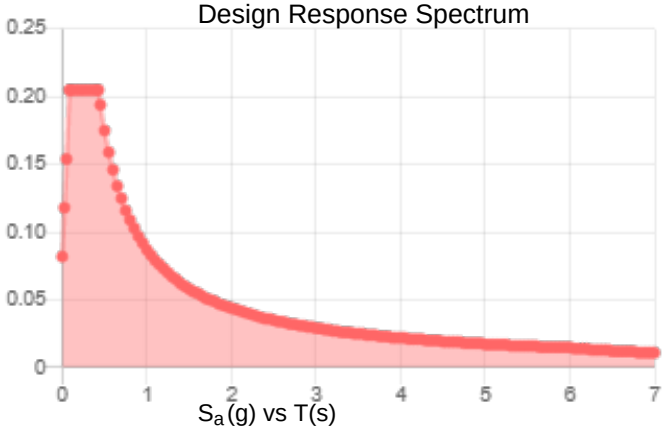
S_S :	0.192	S_{D1} :	0.087
S_1 :	0.055	T_L :	6
F_a :	1.6	PGA :	0.105
F_v :	2.4	PGA_M :	0.166
S_{MS} :	0.307	F_{PGA} :	1.591
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.205	C_v :	0.7

Seismic Design Category: B

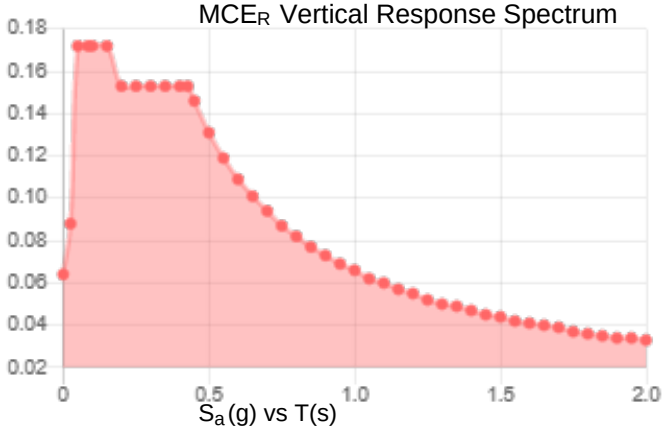
MCE_R Response Spectrum



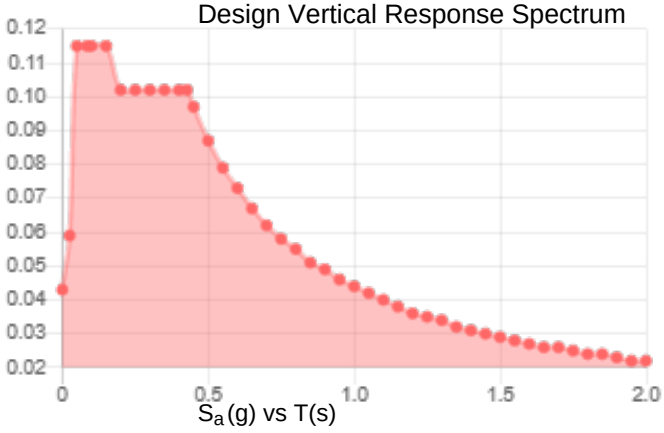
Design Response Spectrum



MCE_R Vertical Response Spectrum



Design Vertical Response Spectrum



Data Accessed: **Tue Jan 03 2023**

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:	1.50 in.
Concurrent Temperature:	15 F
Gust Speed	50 mph
Data Source:	Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8
Date Accessed:	Tue Jan 03 2023

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

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

AT&T SITE NUMBER: CTL01029
AT&T SITE NAME: PLAINVILLE SOUTH WASHINGTON STREET
AT&T FA CODE: 10105805
AT&T PACE NUMBER: MRCTB055161, MRCTB054687, MRCTB056664, MRCTB053283, MRCTB056859, MRCTB062592
AT&T PROJECT: 5G NR 1SR, 4TXRX ANTENNA RETROFIT, 5G NR 1SR CBAND, 5G NR ACTIVATION, 5G NR 1SR CBAND

BUSINESS UNIT #: 857012
SITE ADDRESS: 335 SOUTH WASHINGTON STREET PLAINVILLE, CT 06062
COUNTY: HARTFORD
SITE TYPE: MONOPOLE
TOWER HEIGHT: 121'-0"

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	PLAINVILLE SOUTH WASHINGTON ST
SITE ADDRESS:	335 SOUTH WASHINGTON STREET PLAINVILLE, CT 06062
COUNTY:	HARTFORD
MAP/PARCEL #:	42-A-03
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41.653226°
LONGITUDE:	-72.876975°
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	201'
CURRENT ZONING:	RI
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:	DISPLAY PROPERTIES LLC 335 S WASHINGTON ST PLAINVILLE, CT 06062
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:	CONNECTICUT LIGHT & POWER CO (860) 947-2000
TELCO PROVIDER:	AT&T (866) 620-6900

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 JASON D'AMICO - CONSTRUCTION MANAGER JASON.D'AMICO@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.

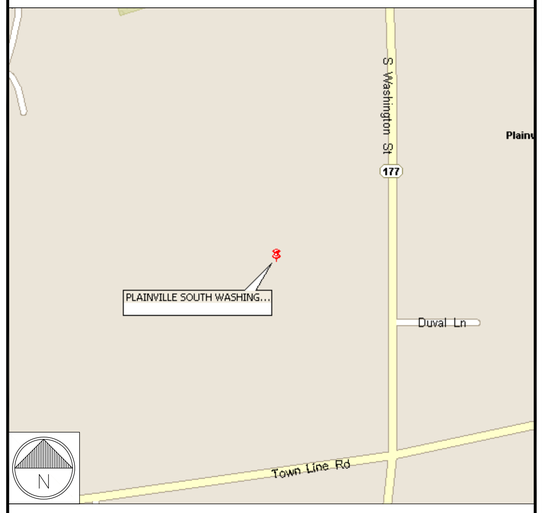
DRAWING INDEX

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.
G-1	GROUNDING DETAILS
G-2	GROUNDING DETAILS
ATTACHED	PLUMBING DIAGRAM

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) POWERWAVE - 7770 ANTENNAS
- REMOVE (3) CCI - HPA-65R-BUU-H6 ANTENNAS
- REMOVE (3) QUINTEL - QS66512-2 ANTENNAS
- REMOVE (6) POWERWAVE - LGP 21401 TMAs
- REMOVE (1) RAYCAP - DC6-48-60-18-8F SQUID
- REMOVE (3) ERICSSON - RRUS-12 B2 RRHs
- REMOVE (3) ERICSSON - RRUS-11 B12 RRHs
- REMOVE (3) ERICSSON - 4478 B5 RRHs
- RELOCATE (3) ERICSSON - RRUS-32 B2 RRHs
- REMOVE (3) KAELUS - DBC0061F1V51-2 DIPLEXERs
- REMOVE (6) COAX CABLES (1-5/8")
- RELOCATE (3) KATHRIEN - 800-10965 ANTENNAS
- RELOCATE (2) ERICSSON - 4478 B14 RRHs
- RELOCATE (3) ERICSSON - RRUS-32 B30 RRH
- INSTALL (3) QUINTEL - QD6616-7 ANTENNAS
- INSTALL (3) ERICSSON - AIR6449 B77D (BELOW) + (3) AIR6419 B77G (ABOVE) STACKED ANTENNAS
- INSTALL (3) ERICSSON - 4449 B5/B12 RRHs
- INSTALL (3) ERICSSON - 4415 B25 RRHs
- INSTALL (1) RAYCAP - DC9-48-60-24-8C-EV SQUID
- INSTALL (1) 6AWG DC CABLE (7/8")
- INSTALL (1) 24 PAIR FIBER CABLE (3/8")
- INSTALL (3) Y-CABLES

GROUND SCOPE OF WORK:
- REMOVE (6) KAELUS - DBCT108F1V92-1 DIPLEXERs
- REMOVE (3) KAELUS - DBC0061F1V51-2 DIPLEXERs
- INSTALL (1) VERTIV - 48V BATTERY RACK
- INSTALL (4) VERTIV RECTIFIERS IN VERTIV DC POWER PLANT
- INSTALL (8) BATTERIES IN VERTIV -48V BATTERY RACK
- INSTALL (1) BB 6648 W/ XCEDE CABLE
- INSTALL (1) 4-WAY GPS SPLITTER

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	2022 CONNECTICUT SBC
MECHANICAL	2022 CONNECTICUT SBC
ELECTRICAL	2022 CONNECTICUT SBC

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	B+T GRP
DATED:	4/7/22
MOUNT ANALYSIS:	POD
DATED:	3/11/22
RFDS REVISION:	PRELIMINARY
DATED:	11/4/22
ORDER ID:	586314
REVISION:	0

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:
CTL01029

BU #: **857012**
PLAINVILLE SOUTH WASHINGTON ST

335 SOUTH WASHINGTON STREET
PLAINVILLE, CT 06062

EXISTING
121'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/23/22	MLC	PRELIMINARY REVIEW	MTJ
B	9/28/22	TDG	PRELIMINARY REVIEW	MTJ
0	11/18/22	TDG	CONSTRUCTION	MTJ

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: T-1
REVISION: 0

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

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

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: 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
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B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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AT&T SITE NUMBER:
CTL01029

BU #: **857012**
PLAINVILLE SOUTH WASHINGTON ST

335 SOUTH WASHINGTON STREET
PLAINVILLE, CT 06062

EXISTING
121'-0" MONOPOLE

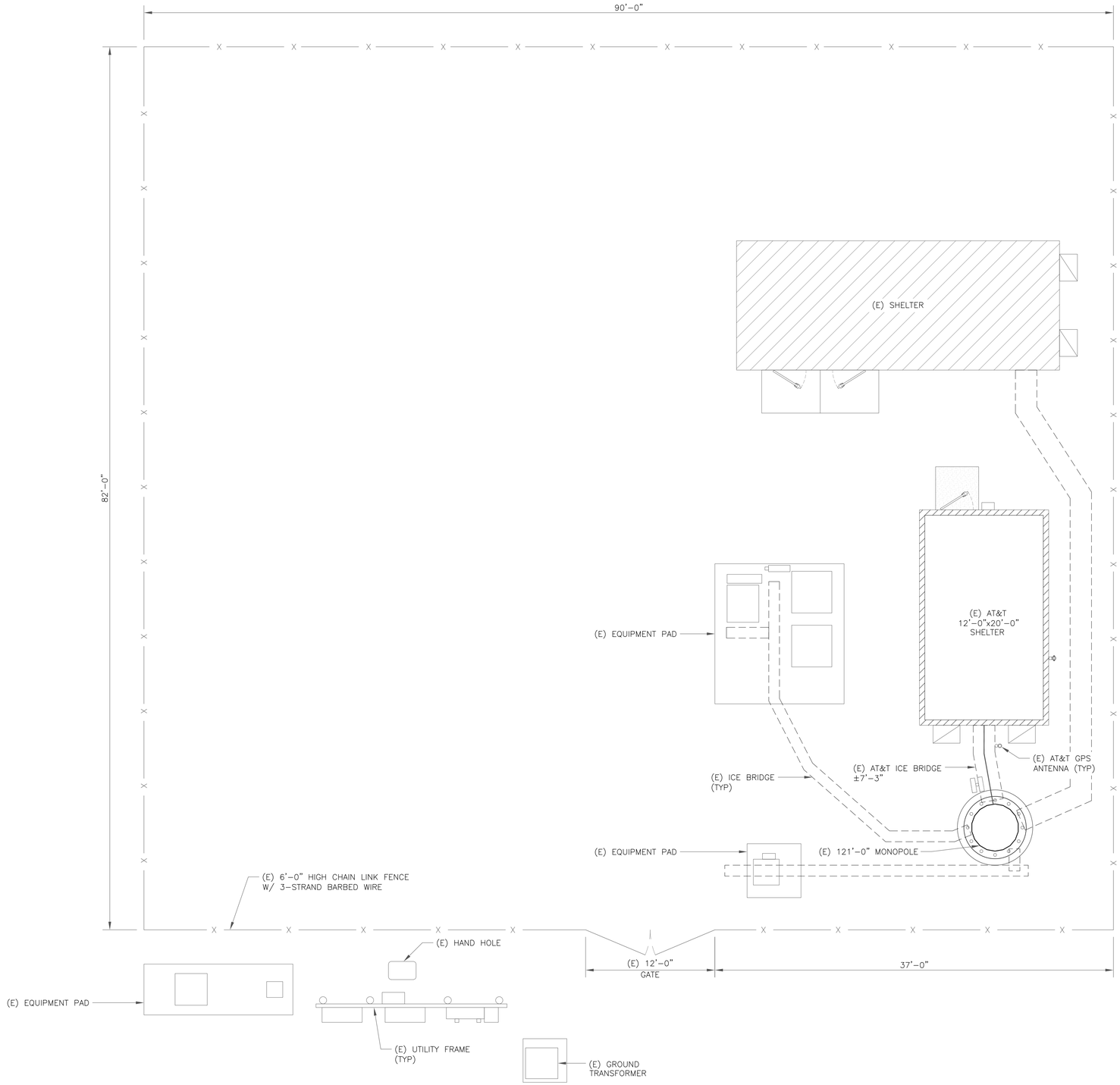
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/23/22	MLC	PRELIMINARY REVIEW	MTJ
B	9/28/22	TDG	PRELIMINARY REVIEW	MTJ
0	11/18/22	TDG	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
11/18/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER:	REVISION:
T-2	0



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

N

93884.014.0001_857012_PLAINVILLE SOUTH WASHINGTON ST.dwg – Sheet:C-1.1 – User: mjones – Nov 18, 2022 – 7:53am

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MICHAEL T. JONES
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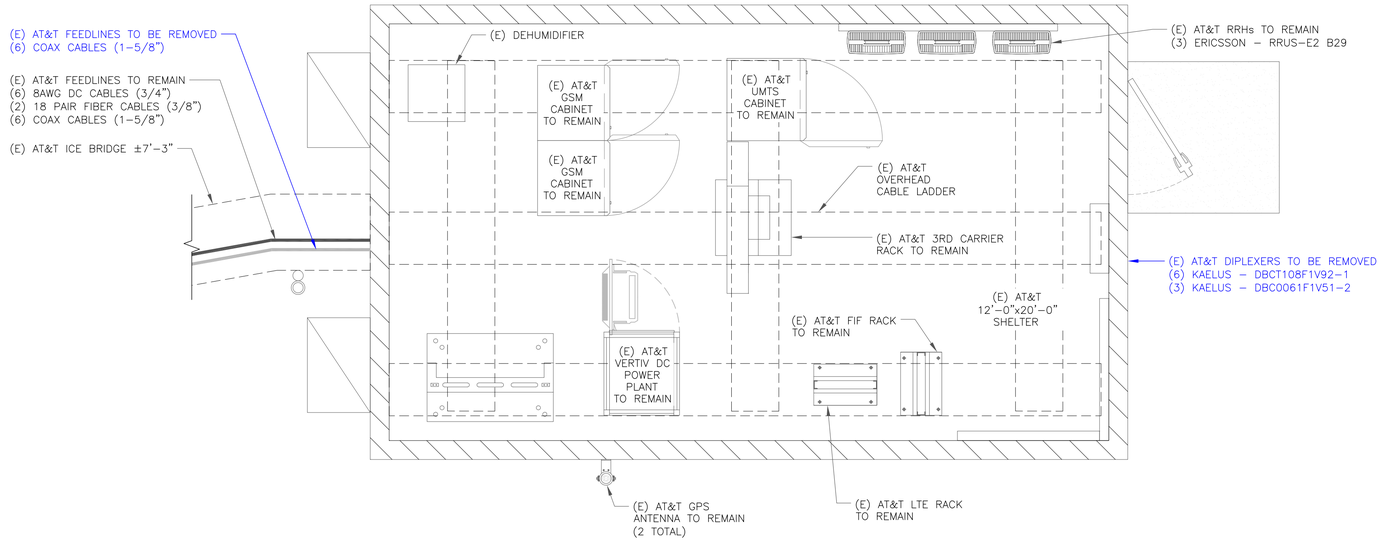
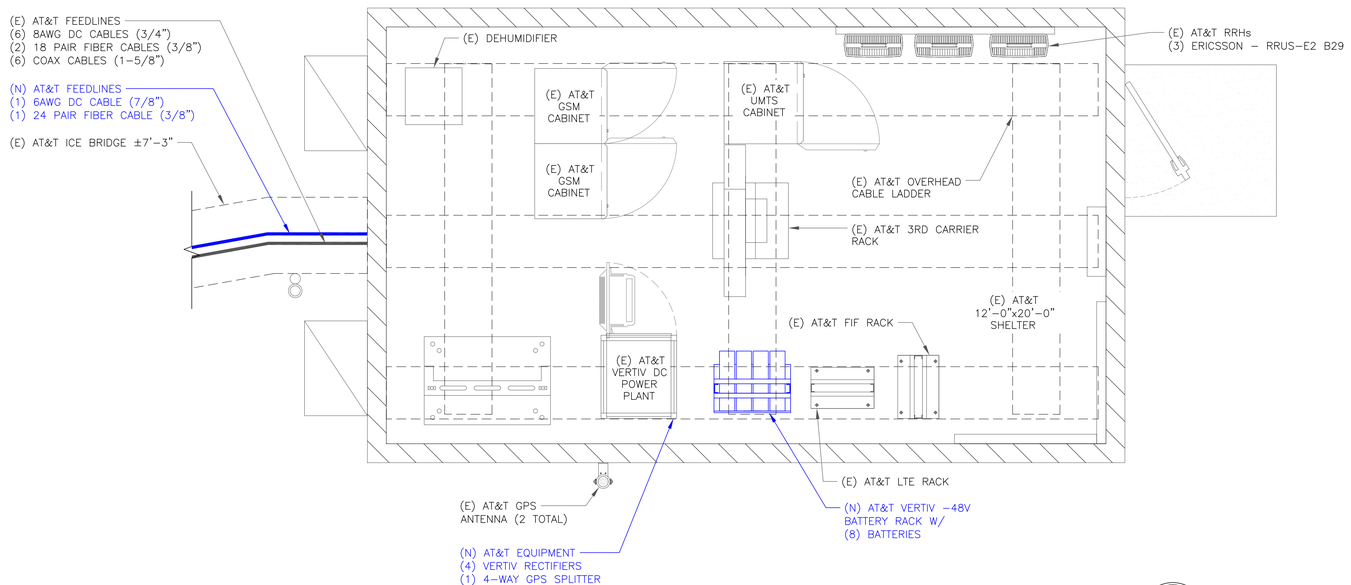
REVISION: 0



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:

- REMOVE (6) KAELUS - DBCT108F1V92-1 DIPLEXERs
- REMOVE (3) KAELUS - DBC0061F1V51-2 DIPLEXERs
- INSTALL (1) VERTIV -48V BATTERY RACK
- INSTALL (4) VERTIV RECTIFIERS IN VERTIV DC POWER PLANT
- INSTALL (8) BATTERIES IN VERTIV -48V BATTERY RACK
- INSTALL (1) 4-WAY GPS SPLITTER
- INSTALL (1) BB 6648 W/ XCEDE CABLE

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11/18/22

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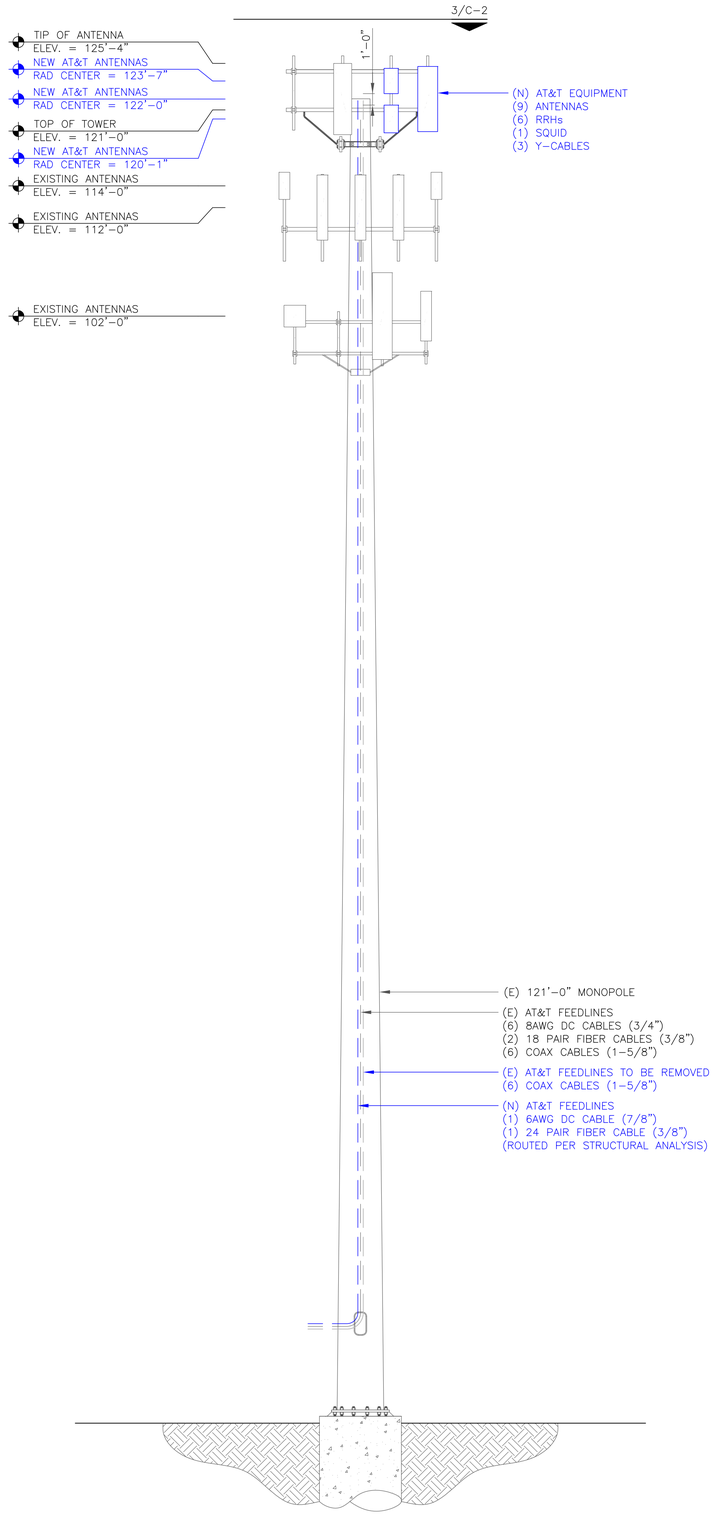
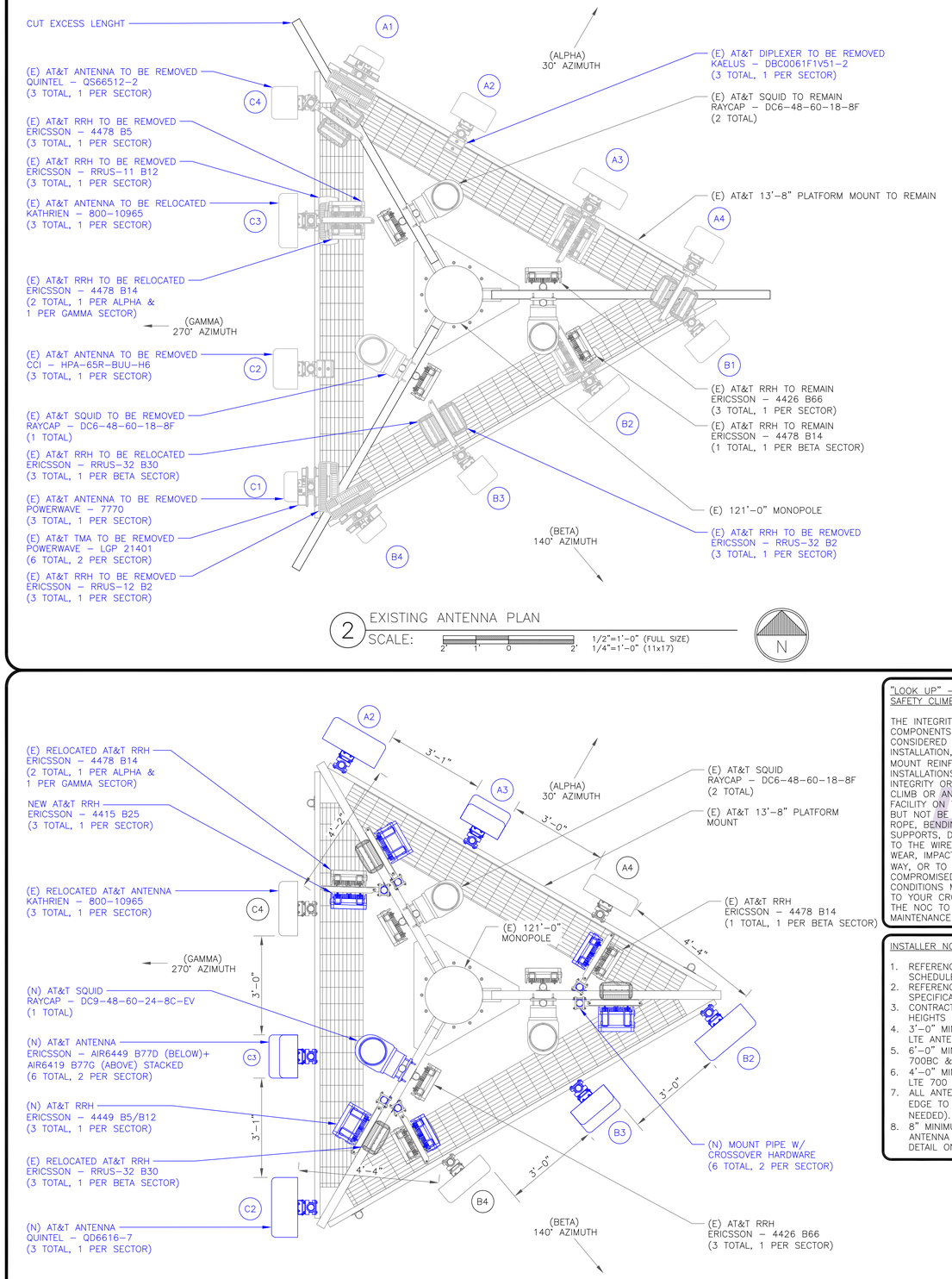
SHEET NUMBER: C-1.2

REVISION: 0



1 FINAL ELEVATION
SCALE: NOT TO SCALE



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

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

"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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BER:2386985
Expires 3/31/23

SHEET NUMBER: C-2

REVISION: 0

FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)

ALPHA

POSITION	ANTENNA				RADIO			DIPLEXER			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
A2	LTE/5G	(N) QUINTEL – QD6616–7	30°	122'–0"	1	(E) 4478 B14	TOWER	–	–	–	–	–	–	–	2	(E) COAX	1–5/8"	172'–0"
					1	(N) 4415 B25	TOWER											
					1	(E) 4426 B66	TOWER											
					1	(E) RRUS–E2 B29	GROUND											
A3	5G CBAND/ 5G DOD	(N) ERICSSON – AIR6419	30°	123'–7"	–	INTEGRATED RRH	TOWER	–	–	–	–	–	1	(E) DC6–48–60–18–8F	2	(E) DC	3/4"	172'–0"
		(N) ERICSSON – AIR6449	30°	120'–1"											1	(E) FIBER	3/8"	172'–0"
A4	LTE/5G	(E) KATHRIEN – 800–10965	30°	122'–0"	1 1	(N) 4449 B5/B12 (N) Y–CABLE	TOWER TOWER	–	–	–	–	–	–	–	–	–	–	–
					1	(E) RRUS–32 B30	TOWER											

BETA

B2	LTE/5G	(N) QUINTEL – QD6616–7	140°	122'–0"	1	(E) 4478 B14	TOWER	–	–	–	–	–	–	–	2	(E) COAX	1–5/8"	172'–0"
					1	(N) 4415 B25	TOWER											
					1	(E) 4426 B66	TOWER											
					1	(E) RRUS–E2 B29	GROUND											
B3	5G CBAND/ 5G DOD	(N) ERICSSON – AIR6419	140°	123'–7"	–	INTEGRATED RRH	TOWER	–	–	–	–	–	1	(E) DC6–48–60–18–8F	2	(E) DC	3/4"	172'–0"
		(N) ERICSSON – AIR6449	140°	120'–1"											1	(E) FIBER	3/8"	172'–0"
B4	LTE/5G	(E) KATHRIEN – 800–10965	140°	122'–0"	1 1	(N) 4449 B5/B12 (N) Y–CABLE	TOWER TOWER	–	–	–	–	–	–	–	–	–	–	–
					1	(E) RRUS–32 B30	TOWER											

GAMMA

C2	LTE/5G	(N) QUINTEL – QD6616–7	270°	122'–0"	1	(E) 4478 B14	TOWER	–	–	–	–	–	–	–	2	(E) COAX	1–5/8"	172'–0"
					1	(N) 4415 B25	TOWER											
					1	(E) 4426 B66	TOWER											
					1	(E) RRUS–E2 B29	GROUND											
C3	5G CBAND/ 5G DOD	(N) ERICSSON – AIR6419	270°	123'–7"	–	INTEGRATED RRH	TOWER	–	–	–	–	–	1	(N) DC9–48–60–24–8C–EV	2	(E) DC	3/4"	172'–0"
															1	(N) FIBER	3/8"	172'–0"
		(N) ERICSSON – AIR6449	270°	120'–1"											1	(N) DC	7/8"	172'–0"
C4	LTE/5G	(E) KATHRIEN – 800–10965	270°	122'–0"	1 1	(N) 4449 B5/B12 (N) Y–CABLE	TOWER TOWER	–	–	–	–	–	–	–	–	–	–	–
					1	(E) RRUS–32 B30	TOWER											
														UNUSED FEEDLINES:	6	(E) COAX	1–5/8"	172'–0"
															–	–	–	–

NOTE:
(E) – EXISTING
(N) – NEW

1 FINAL ANTENNA AND FEEDLINE SCHEDULE
SCALE: NOT TO SCALE

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BU #: **857012**
PLAINVILLE SOUTH WASHINGTON ST

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STATE OF CONNECTICUT
MICHAEL T. JONES
No. 23924
LICENSED
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11/18/22

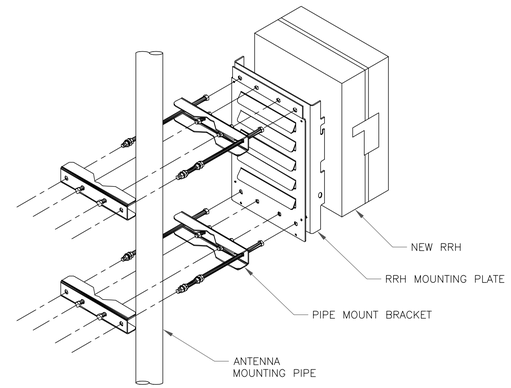
MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: C-3

REVISION: 0

1 NOT USED
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE



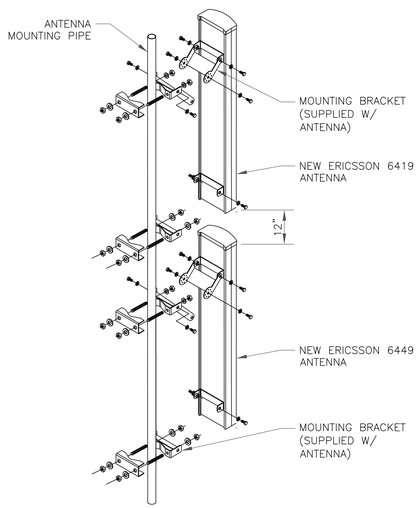
NOTE:

ANTENNA NOT SHOWN FOR CLARITY

3 SINGLE RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTE:

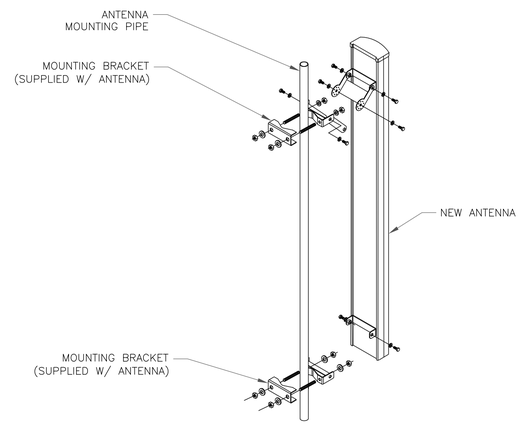
ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.



4 STACKED ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

1. ALL PIPES, BRACKETS, AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.
2. EQUIPMENT SHALL NOT BE INSTALLED CLOSER THAN 8" TO ANTENNAS.

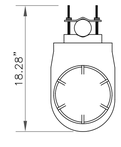


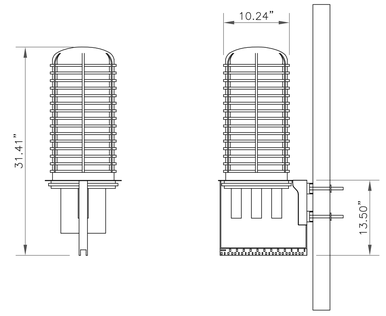
5 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

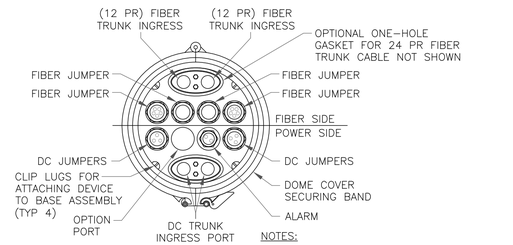
RAYCAP
DC9-48-60-24-8C-EV

RAYCAP - DC9-48-60-24-8C-EV
SIZE: 10.24x31.40 IN.
WEIGHT: 26.2 LBS
NOMINAL OPERATING VOLTAGE: 48 VDC
VOLTAGE PROTECTION RATING: 330 V
WIND LOADING: 150 MPH SUSTAINED (105.7 LBS)
WIND LOADING: 195 MPH GUST (213.6 LBS)

CONTRACTOR TO USE "THREAD LUBRICANT" ON MOUNTING BOLTS DURING INSTALLATION







NOTES:

1. REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

6 SQUID MOUNTING DETAIL
SCALE: NOT TO SCALE

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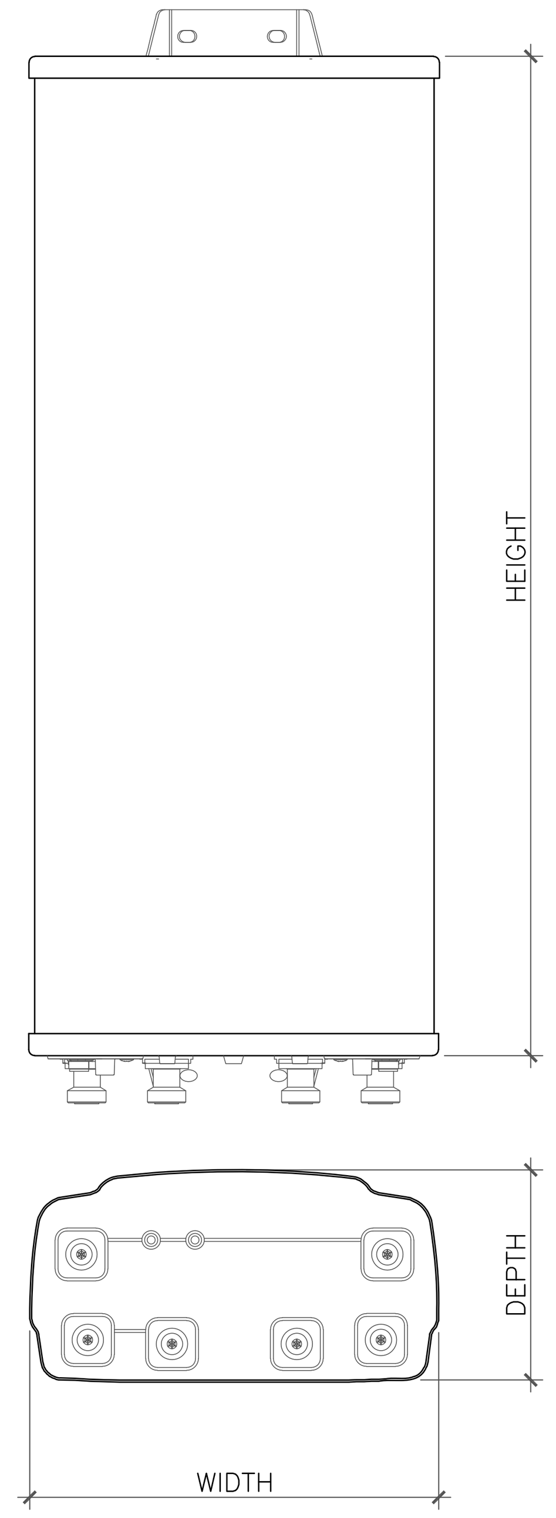
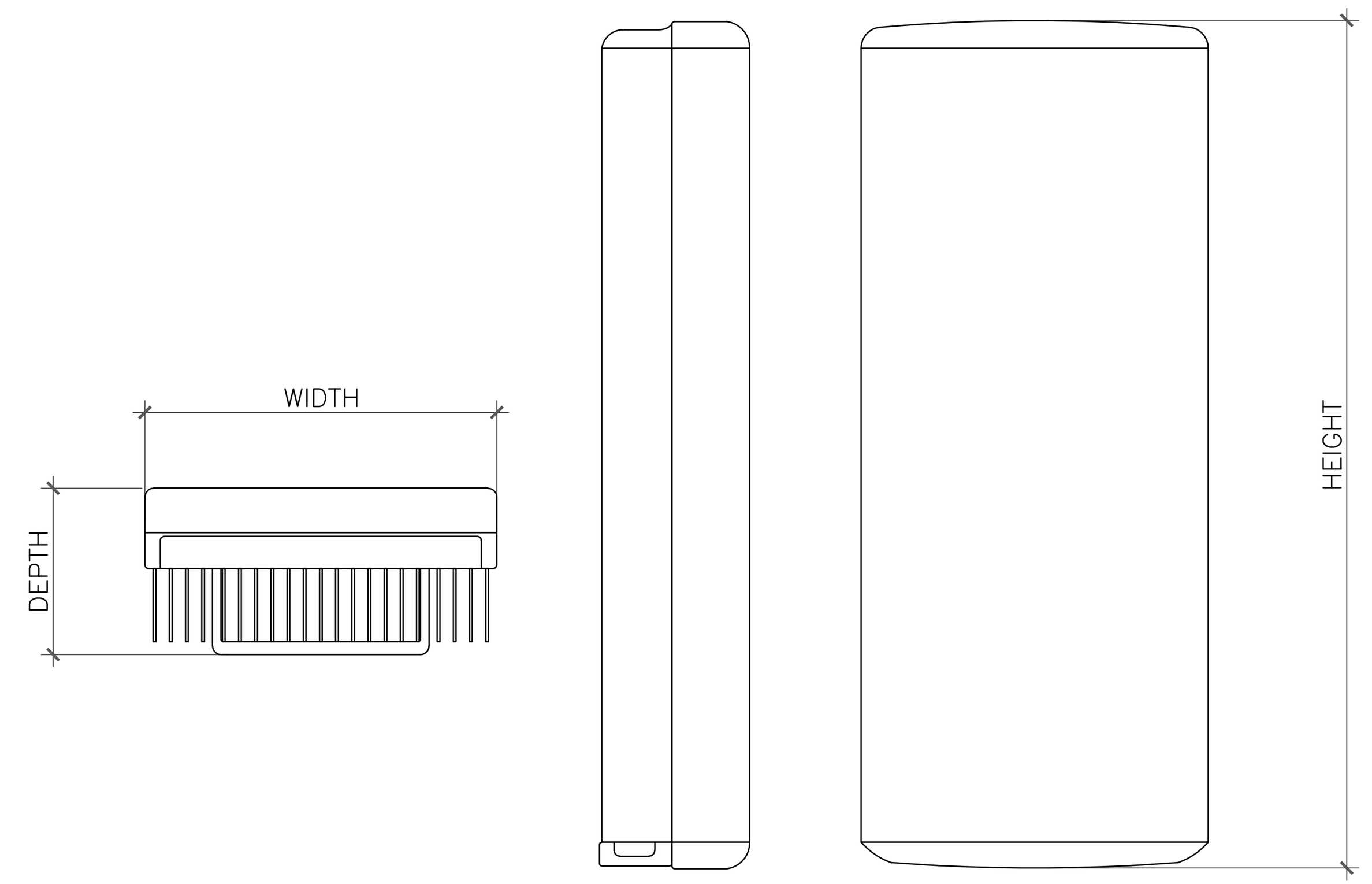
REVISION: 0



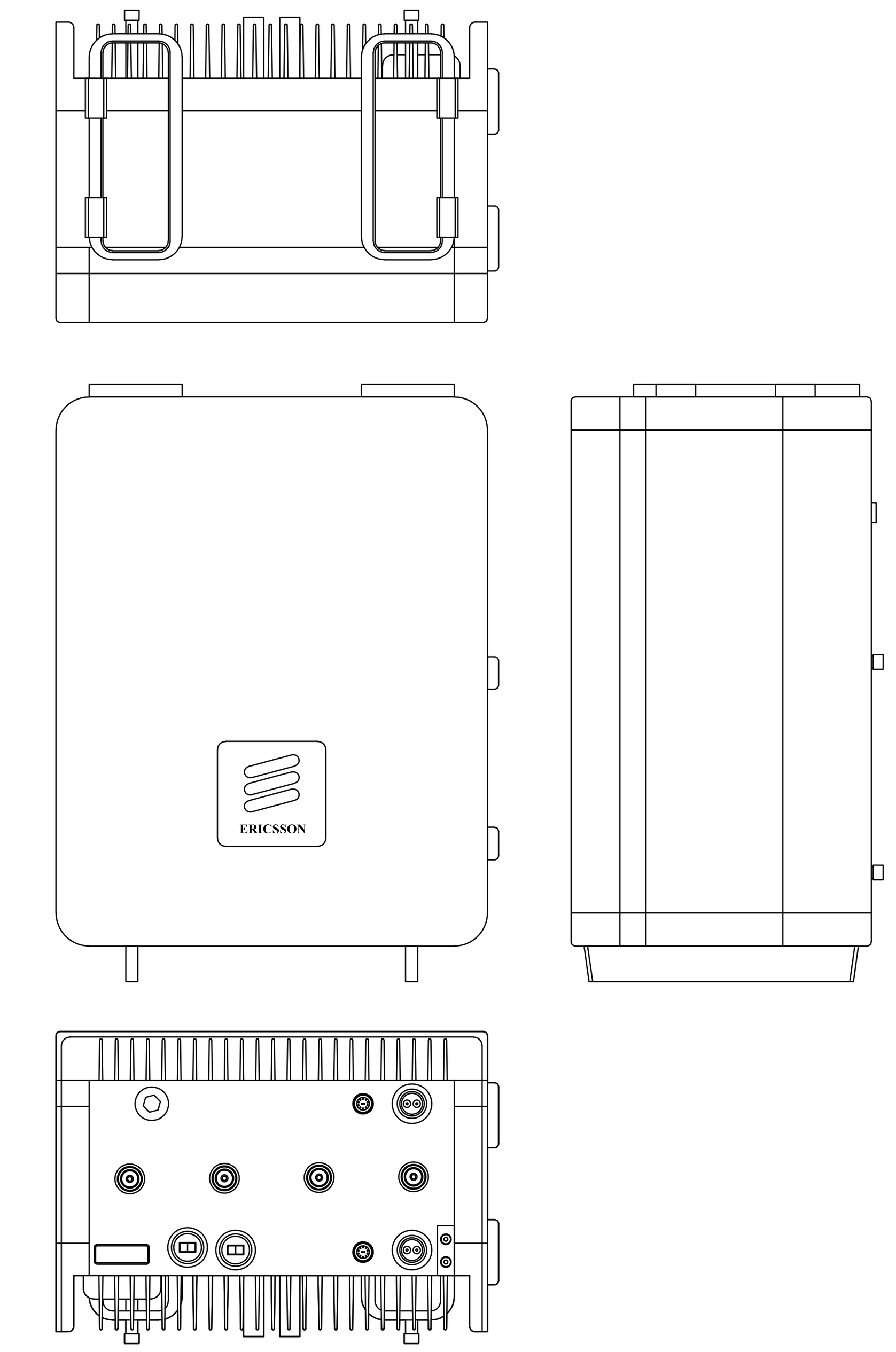
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
QD6616–7	72"	22"	9.6"	130 lbs

1 ANTENNA SPECS
SCALE: NOT TO SCALE



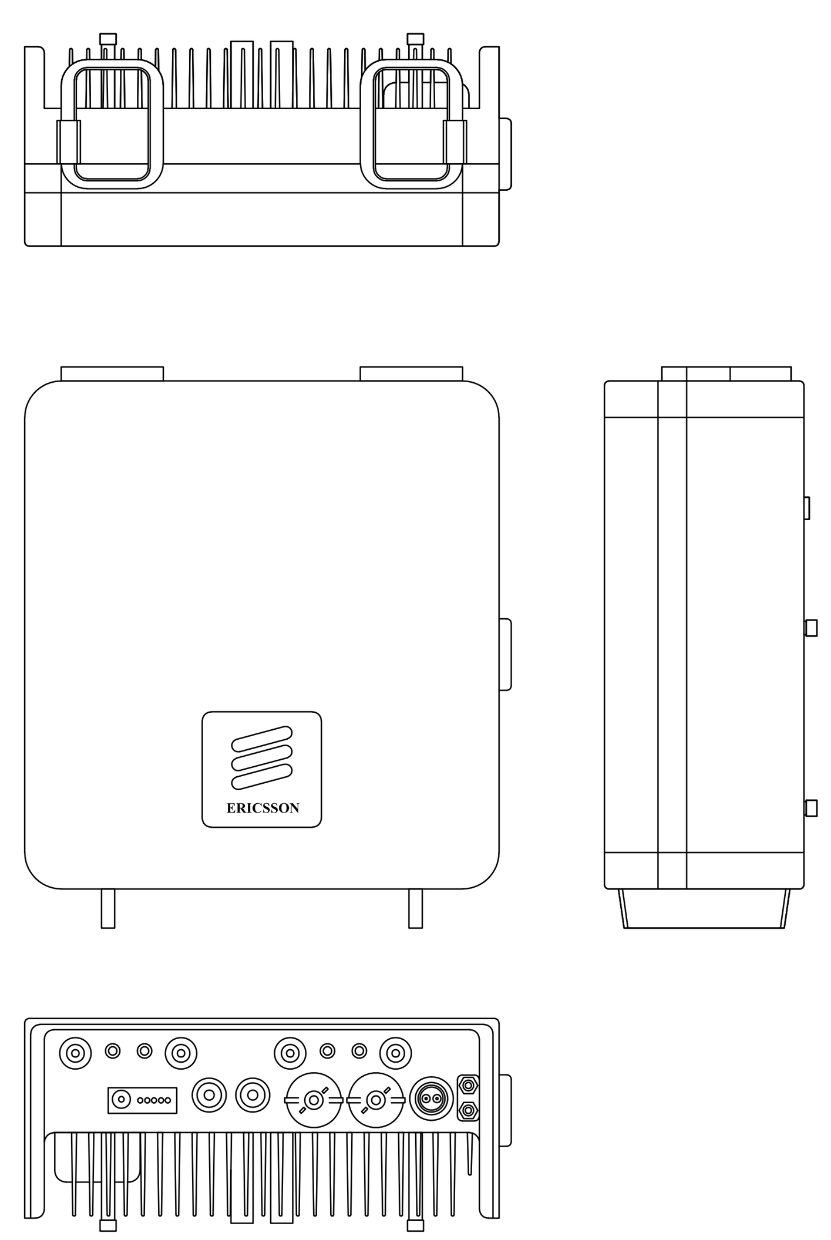
ANTENNA DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
AIR6449 B77D	30.63"	15.87"	10.55"	83.79 lbs
AIR6419 B77G	31.10"	16.10"	7.30"	55.40 lbs

2 ANTENNA SPECS
SCALE: NOT TO SCALE



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

3 ERICSSON – 4449 B5/B12
SCALE: NOT TO SCALE



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

4 ERICSSON – 4415 B25
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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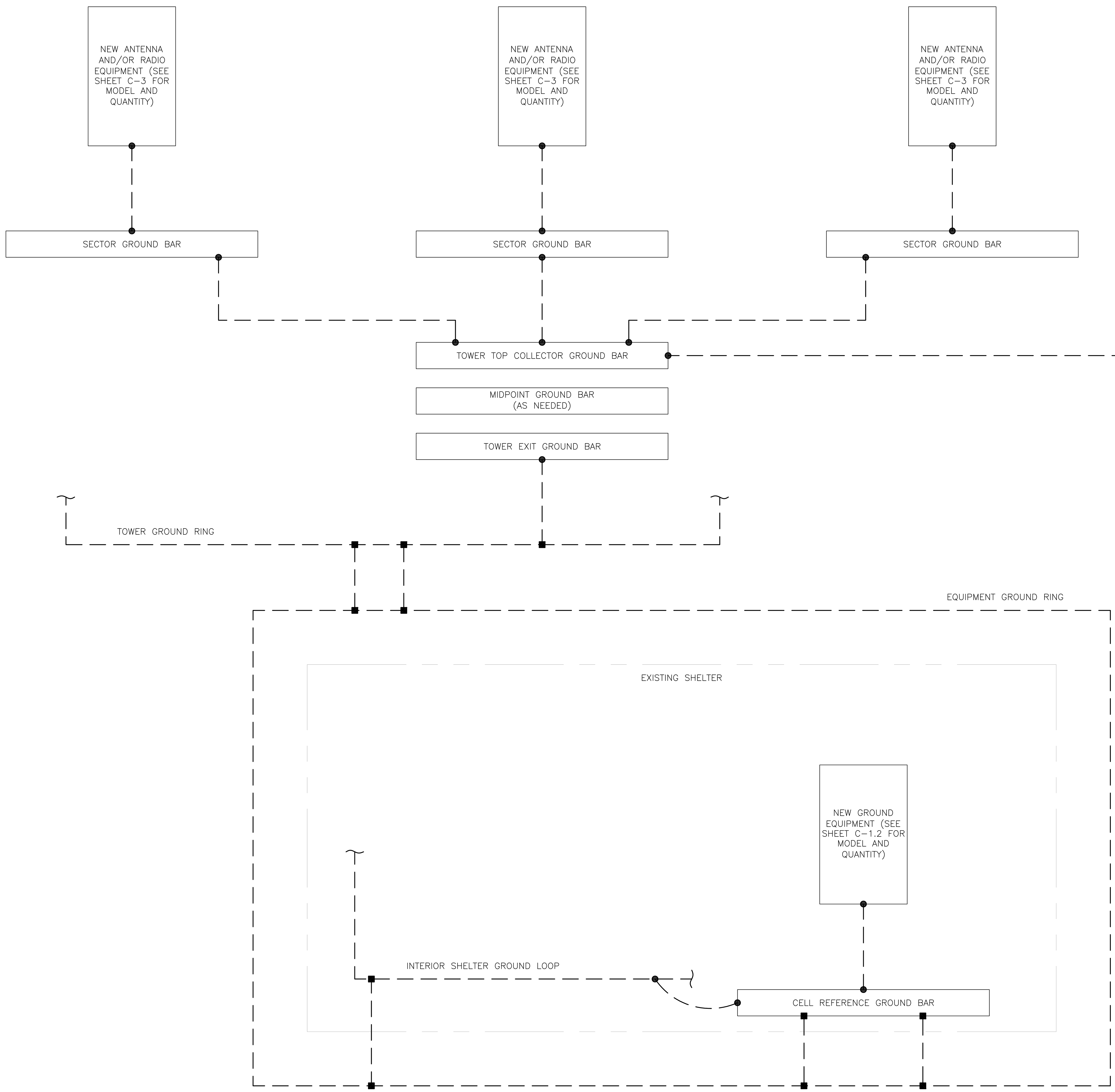
STATE OF CONNECTICUT
PROFESSIONAL ENGINEER
[illegible]
11/18/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

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

SHEET NUMBER: C-5
REVISION: 0


NEW ANTENNA AND/OR RADIO EQUIPMENT (SEE SHEET C–3 FOR MODEL AND QUANTITY)
NEW ANTENNA AND/OR RADIO EQUIPMENT (SEE SHEET C–3 FOR MODEL AND QUANTITY)
NEW ANTENNA AND/OR RADIO EQUIPMENT (SEE SHEET C–3 FOR MODEL AND QUANTITY)
SURGE SUPPRESSION DEVICE
SECTOR GROUND BAR
SECTOR GROUND BAR
SECTOR GROUND BAR
TOWER TOP COLLECTOR GROUND BAR
MIDPOINT GROUND BAR (AS NEEDED)
TOWER EXIT GROUND BAR
TOWER GROUND RING
EQUIPMENT GROUND RING
EXISTING SHELTER
NEW GROUND EQUIPMENT (SEE SHEET C–1.2 FOR MODEL AND QUANTITY)
INTERIOR SHELTER GROUND LOOP
CELL REFERENCE GROUND BAR

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.

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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:
CTL01029

BU #: **857012**
PLAINVILLE SOUTH WASHINGTON ST

335 SOUTH WASHINGTON STREET
PLAINVILLE, CT 06062

EXISTING
121'-0" MONOPOLE

ISSUED FOR:

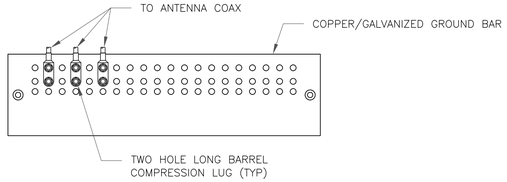
REV	DATE	DRWN	DESCRIPTION	DES./QA
A	9/23/22	MLC	PRELIMINARY REVIEW	MTJ
B	9/28/22	TDG	PRELIMINARY REVIEW	MTJ
0	11/18/22	TDG	CONSTRUCTION	MTJ

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
[illegible]
11/18/22

MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-1

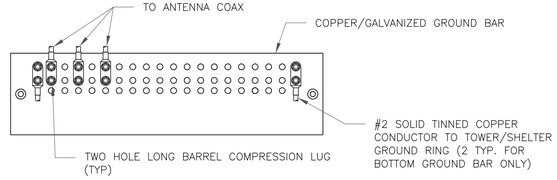
REVISION: 0



NOTES:

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

1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE

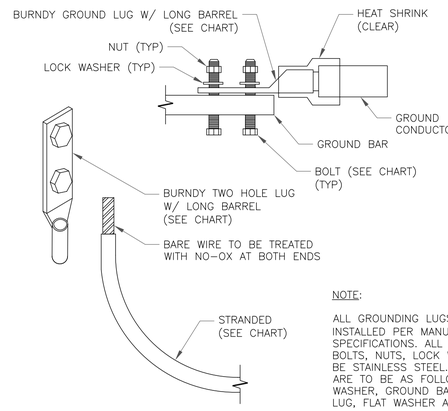


NOTES:

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

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

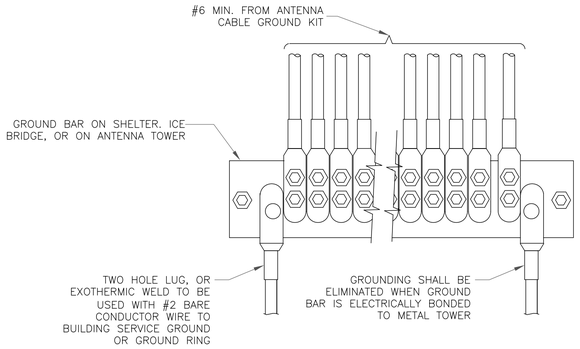
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



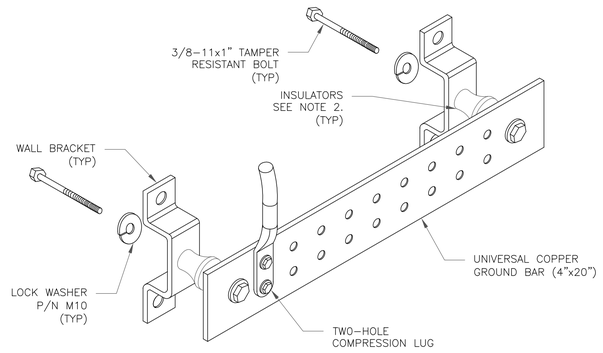
NOTE:

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

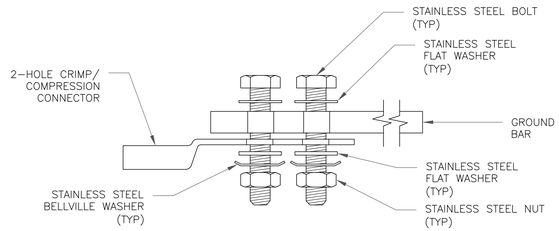


NOTES:

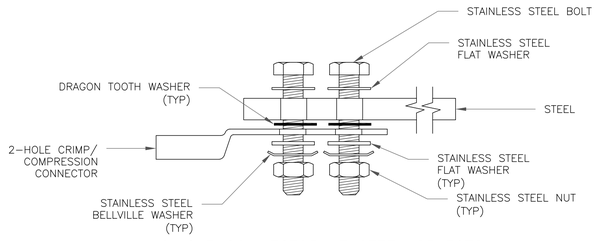
1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.

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

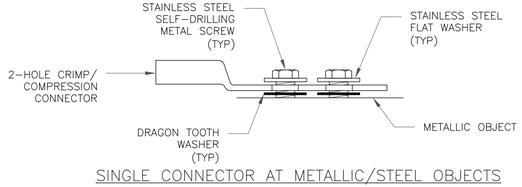
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

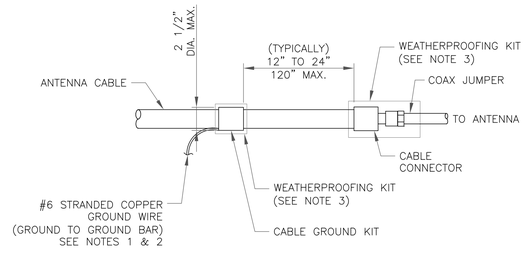


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

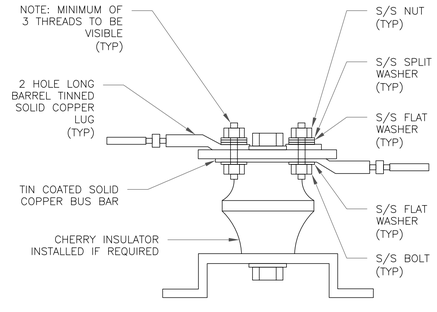
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



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

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MTS ENGINEERING P.L.L.C.
BER:2386985
Expires 3/31/23

SHEET NUMBER: G-2
REVISION: 0

ANTENNA POSITION 1

EMPTY

Antenna 2
LTE 700DE/ B14 / PCS /AWS

Q-7 16PORT

Low 850 +45/-45	Low 700 +45/-45	Low 700 B14 +45/-45	Low 700 B14 +45/-45	AWS/WCS/ PCS 4Tx/4Rx +45/-45	AWS/WCS/ PCS 4Tx/4Rx +45/-45	AWS/WCS/ PCS 4Tx/4Rx +45/-45	AWS/WCS/ PCS 4Tx/4Rx +45/-45
- +	- +	- +	- +	- +	- +	- +	- +
RET	RET	RET	RET	RET	RET	RET	RET

LTE RRUS-4478 700 B-14

LTE PCS RRH

LTE AWS RRH

Antenna 3
DoD + Cband

DoD
+45/-45
- +

E//
AIR
C-BAND
+45/-45
- +

Antenna 4
LTE 700 BC / 850 / WCS

Broadband Octo Low 700/850 +45/-45	Broadband Octo Low 700/850 +45/-45	Broadband Octo High 4Tx/4Rx +45/-45	Broadband Octo High 4Tx/4Rx +45/-45
- +	- +	- +	- +
RET	RET	RET	RET

LTE RRUS-4449 850/700 BC

LTE WCS RRH

(Y- Cable)

Fiber/DC Demarcation Box (Squid)

Fiber/DC Demarcation Box (Squid)

Fiber/DC Demarcation Box (Squid)

LTE RRUS-E2 700 (D/E)

DC Plant

DC Plant

DC Plant

- 3 Feet Minimum Separation between ALL Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE
- 12" Vertical Separation between DoD and C Band Antenna.
- Use "Y Cable" for Dual band RRHs

6648

5216

XMU

XMU

6630

IDLe

IDLe Xcede