STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

VIA ELECTRONIC MAIL

November 1, 2019

Aidan Griffin
Site Acquisition Consultant
Centerline Communications, LLC
750 W Center Street, Suite 301
West Bridgewater, MA 02379

RE: **EM-CING-020-191015** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 719 George Washington Turnpike, Burlington, Connecticut.

Dear Mr. Griffin:

The Connecticut Siting Council (Council) is in receipt of your correspondence of October 30, 2019 submitted in response to the Council's October 17, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Aidan Griffin <agriffin@clinellc.com>
Sent: Wednesday, October 30, 2019 10:05 AM
To: Robidoux, Evan
Cc: CSC-DL Siting Council; David Ford
Subject: RE: Council Incomplete Letter for EM-CING-020-191015 (719 George Washington Tpke, Burlington) - CT1123
Attachments: CT1123 Tower Structural Analysis Rev3 10232019.pdf; CT1123_LTE 2C-3C-4C_CD REV2_10.28.19.pdf

Hi Evan,

I have attached the electric versions of the requested documentation for submittal EM-CING-020-191015. The hard copies are being sent out today via UPS.

Thank you,

CENTERLINE
Aidan Griffin | Site Acquisition Consultant
750 W Center St., Suite 301 | West Bridgewater, MA 02379
Phone: 617.838.6796 Fax: 508.819.3017
agriffin@clinellc.com | www.centerlinecommunications.com

From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Monday, October 21, 2019 4:15 PM
To: Aidan Griffin <agriffin@clinellc.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council Incomplete Letter for EM-CING-020-191015 (719 George Washington Tpke, Burlington)

Please see the attached correspondence.

Evan Robidoux
Clerk Typist
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

(Revised)
STRUCTURAL ANALYSIS REPORT

For

CT1123
BURLINGTON - GEORGE WASH

BURLINGTON - GEORGE WASHINGTON TURNPIKE
BURLINGTON, CT 06013

Antennas Mounted to the Monopole

Prepared for:

CENTERLINE COMMUNICATIONS

at&t

Dated: October 23, 2019 (Rev 3)
Dated: October 1, 2019 (Rev 2)
Dated: June 18, 2019 (Rev 1)
Dated: May 10, 2019

Prepared by:

HUDSON Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

STATE OF CONNECTICUT
CI KAI WANG
No. 28220
LICENSED PROFESSIONAL ENGINEER
10/23/2019

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 179' monopole supporting the proposed AT&T antennas located at elevation 170' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

Record drawings of the existing monopole were not available for our use. The previous structural analysis report prepared by Nexius, dated August 15, 2017, was available for our use. The previous structural analysis report prepared by Centek Engineering, dated April 24, 2019, was available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole and foundation **are in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at **90.7%** - (Pole section L1 from EL.139.5' to EL.179' Controlling).

HUDSON Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(3) 20' Omni	191'	Low Profile Platform
T-Mobile	(3) AIR 21 B2A B4P Antennas	179'	Low Profile Platform
T-Mobile	(3) AIR 32 Antennas	179'	Low Profile Platform
T-Mobile	(3) APXVAARR24_43-U-NA20 Antennas	179'	Low Profile Platform
T-Mobile	(3) 4449 B71+B12	179'	Low Profile Platform
AT&T	(3) 7770 Antennas	170'	Low Profile Platform ***w/Handrail***
AT&T	(6) LGP 21400 TMA	170'	Low Profile Platform ***w/Handrail***
AT&T	(1) DC6-48-60-18-8F	170'	Ring Mount
AT&T	***(3) HPA65R-BU8A Antennas***	170'	Low Profile Platform ***w/Handrail***
AT&T	***(6) 800 10966 Antennas***	170'	Low Profile Platform ***w/Handrail***
AT&T	***(3) B25 4415***	170'	Low Profile Platform ***w/Handrail***
AT&T	***(3) B2/B66A 8843***	170'	Low Profile Platform ***w/Handrail***
AT&T	***(3) B5/B12 4449***	170'	Low Profile Platform ***w/Handrail***
AT&T	***(2) DC6-48-60-18-8F***	170'	Ring Mount
	(2) APL 866513 Antennas	160'	Low Profile Platform
	(4) APL868013 Antennas	160'	Low Profile Platform
	(6) JAHH-65B-R3B Antennas	160'	Low Profile Platform
	(3) RRH2x60-700	160'	Low Profile Platform
	(3) B66A RRH 4X45	160'	Low Profile Platform
	(3) 4T4R B5 RRH	160'	Low Profile Platform
	(2) RC2DC-3315-PF-48	160'	Low Profile Platform
	20' Dipole	138.5'	Side Mount Standoff
	8' Omni	132.5'	Side Mount Standoff
	3' Yagi	132.5'	Side Mount Standoff
	10' Dipole	112.5'	Side Mount Standoff

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(12) 1 5/8" Cables	170'	Inside Monopole
AT&T	(1) Fiber Cable	170'	Inside Monopole
AT&T	(2) DC Power Cables	170'	Inside Monopole
AT&T	***(1) Fiber Cable***	170'	Inside Monopole
AT&T	***(4) DC Power Cables***	170'	Inside Monopole

Proposed AT&T Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	**90.7 %**	139.5 – 179	PASS	**Controlling**
Pole Section-L2	65.8 %	93.4 – 139.5	PASS	
Pole Section-L3	77.8 %	46.31 – 93.4	PASS	
Pole Section-L4	86.0 %	0 – 46.31	PASS	
Base Plate	89.4 %	0	PASS	
Foundation	66.1 %	-	PASS	

HUDSON Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

2. 2018 Connecticut State Building Code

   City/Town: Burlington
   County: Hartford
   Wind Load: 93 mph
   Structural Class: II
   Exposure Category: B
   Topographic Category: 1
   Ice Thickness: 1.0 inch

3. Approximate height above grade to proposed antennas: 170'

ASSUMPTIONS:

1. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

4. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas and RRHs be mounted on the existing steel platform supported by the monopole; the proposed surge arrestors be mounted on the existing pipe mast.

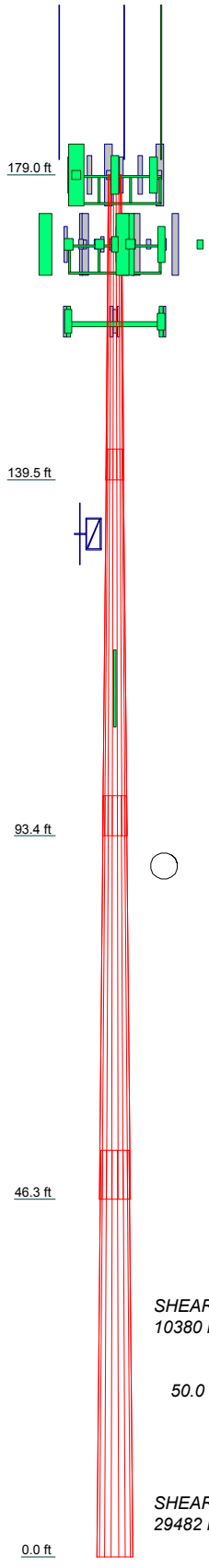
Reference HDG's latest Construction Drawings for all component and connection requirements (attached).

Photo 1: Photo illustrating the monopole with Appurtenances shown.

HUDSON
Design Group LLC

CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	39.50	18	0.1875	4.00	19.5000	28.0455		1886.6
2	50.10	18	0.3750	5.20	26.8051	37.5377		6451.9
3	52.29	18	0.3750	6.39	35.6737	47.1230		8688.1
4	52.70	18	0.3750		44.9739	56.2500		10722.8
							A572-65	27749.4



ALL REACTIONS ARE FACTORED

AXIAL 105990 lb

SHEAR 10380 lb

MOMENT 1654233 lb-ft

TORQUE 783 lb-ft
50.0 mph WIND - 1.0000 in ICE

AXIAL 55319 lb

SHEAR 29482 lb

MOMENT 4221398 lb-ft

TORQUE 1841 lb-ft
REACTIONS - 93.0 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Omni 2"x20'	191	B2/B66A 8843	170
Omni 2"x20'	191	B2/B66A 8843	170
Omni 2"x20'	191	B5/B12 4449	170
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	179	B5/B12 4449	170
		B5/B12 4449	170
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	179	DC6-48-60-18-8F	170
		DC6-48-60-18-8F	170
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	179	PiROD 13' Platform w/handrail (ATI - Proposed)	168
AIR 32 B66AA/B2P w/mount pipe	179	APL866513 w/Mount Pipe (VERIZON)	160
AIR 32 B66AA/B2P w/mount pipe	179	APL866513 w/Mount Pipe	160
AIR 32 B66AA/B2P w/mount pipe	179	APL868013 w/Mount Pipe	160
APXVAARR24_43-U-NA20 w/mount pipe	179	APL868013 w/Mount Pipe	160
		APL868013 w/Mount Pipe	160
APXVAARR24_43-U-NA20 w/mount pipe	179	APL868013 w/Mount Pipe	160
		PiROD 13' Low Profile Platform	160
APXVAARR24_43-U-NA20 w/mount pipe	179	JAHH-65B-R3B w/ Mount Pipe	160
4449 B71+B12	179	JAHH-65B-R3B w/ Mount Pipe	160
4449 B71+B12	179	JAHH-65B-R3B w/ Mount Pipe	160
4449 B71+B12	179	JAHH-65B-R3B w/ Mount Pipe	160
EEI 14' Platform w/Rails (T-Mobile)	177	JAHH-65B-R3B w/ Mount Pipe	160
Valmont Light Duty Tri-Bracket (1) (ATI - Existing)	170	JAHH-65B-R3B w/ Mount Pipe	160
		RRH2x60-700	160
Powerwave 7770 w/mount pipe	170	RRH2x60-700	160
Powerwave 7770 w/mount pipe	170	RRH2x60-700	160
Powerwave 7770 w/mount pipe	170	B66A RRH 4X45	160
(2) Powerwave TMA LGP21401	170	B66A RRH 4X45	160
(2) Powerwave TMA LGP21401	170	B66A RRH 4X45	160
(2) Powerwave TMA LGP21401	170	4T4R B5 RRH	160
DC6-48-60-18-8F	170	4T4R B5 RRH	160
HPA65R-BU8A w/mount pipe	170	4T4R B5 RRH	160
HPA65R-BU8A w/mount pipe	170	RC2DC-3315-PF-48	160
HPA65R-BU8A w/mount pipe	170	RC2DC-3315-PF-48	160
(2) 800 10966 w/ Mount Pipe	170	20'-4 Bay Dipole	138.5
(2) 800 10966 w/ Mount Pipe	170	3' Side Mount Standoff	138.5
(2) 800 10966 w/ Mount Pipe	170	3' Side Mount Standoff	132.5
B25 4415	170	3' Yagi antenna	132.5
B25 4415	170	Omni 2"x8'	132.5
B25 4415	170	10' Dipole	112.5
B2/B66A 8843	170	3' Side Mount Standoff	112.5

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 B to the TIA-222-G Standard.
3. Tower designed for a 93.0 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50.0 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60.0 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 90.7%

Hudson Design Group LLC
45 Beechwood Drive
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Job: **CT1123**			
Project: **179 ft Monopole**			
Client: AT&T	Drawn by: kw	App'd:	
Code: TIA-222-G	Date: 10/22/19	Scale: NTS	
Path:		Dwg No. E-1	

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 93.0 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56.0 pcf.
A wind speed of 50.0 mph is used in combination with ice.
Temperature drop of 50.0 °F.
Deflections calculated using a wind speed of 60.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

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	179.00-139.50	39.50	4.00	18	19.5000	28.0455	0.1875	0.7500	A572-65 (65 ksi)
L2	139.50-93.40	50.10	5.20	18	26.8051	37.5377	0.3750	1.5000	A572-65 (65 ksi)
L3	93.40-46.31	52.29	6.39	18	35.6737	47.1230	0.3750	1.5000	A572-65 (65 ksi)
L4	46.31-0.00	52.70		18	44.9739	56.2500	0.3750	1.5000	A572-65 (65 ksi)

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
HB114-U6S12-120-L1	B	No	Surface Ar (CaAa)	179.00 - 3.00	3	3	0.000 0.000	1.5400		1.70

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 5/8	A	No	No	Inside Pole	179.00 - 3.00	3	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
1 5/8	A	No	No	Inside Pole	138.50 - 3.00	1	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
1 5/8	A	No	No	Inside Pole	132.50 - 3.00	1	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
1/2	A	No	No	Inside Pole	128.50 - 3.00	1	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
1 5/8	A	No	No	Inside Pole	113.00 - 3.00	1	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
**********									
1 5/8	B	No	No	Inside Pole	179.00 - 3.00	6	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
HB114-U6S12-120-L1	B	No	No	Inside Pole	179.00 - 3.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
**********									
1 5/8 (AT&T - Existing)	A	No	No	Inside Pole	170.00 - 3.00	12	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
FB-L98B-002	A	No	No	Inside Pole	170.00 - 3.00	1	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
WR-VG122ST-BRDA	A	No	No	Inside Pole	170.00 - 3.00	2	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
**********									
FB-L98B-002 (AT&T - Proposed)	A	No	No	Inside Pole	170.00 - 3.00	1	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
WR-VG122ST-BRDA	A	No	No	Inside Pole	170.00 - 3.00	4	No Ice	0.00	0.25
							1/2" Ice	0.00	0.25
							1" Ice	0.00	0.25
**********									
1 5/8	C	No	No	Inside Pole	160.00 - 3.00	12	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04
1 5/8 Fiber Cable	C	No	No	Inside Pole	160.00 - 3.00	2	No Ice	0.00	1.04
							1/2" Ice	0.00	1.04
							1" Ice	0.00	1.04

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Omni 2"x20'	A	From Face	4.00 -6.00 0.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice	4.00 6.03 8.07	4.00 6.03 8.07	50.00 80.77 124.12
Omni 2"x20'	B	From Face	4.00 -6.00 0.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice	4.00 6.03 8.07	4.00 6.03 8.07	50.00 80.77 124.12
Omni 2"x20'	C	From Face	4.00 -6.00 0.00	0.0000	191.00	No Ice 1/2" Ice 1" Ice	4.00 6.03 8.07	4.00 6.03 8.07	50.00 80.77 124.12
20'-4 Bay Dipole	C	From Face	4.00 0.00 0.00	0.0000	138.50	No Ice 1/2" Ice 1" Ice	4.75 6.25 7.75	4.75 6.25 7.75	50.00 80.00 110.00
3' Side Mount Standoff	C	From Face	2.00 0.00 0.00	0.0000	138.50	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
Omni 2"x8'	A	From Face	4.00 0.00 0.00	0.0000	132.50	No Ice 1/2" Ice 1" Ice	1.60 2.42 3.24	1.60 2.42 3.24	35.00 47.45 65.14
3' Yagi antenna	A	From Face	4.00 0.00 0.00	0.0000	132.50	No Ice 1/2" Ice 1" Ice	0.60 0.81 1.04	0.30 0.41 0.54	10.00 36.35 66.52
3' Side Mount Standoff	A	From Face	2.00 0.00 0.00	0.0000	132.50	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
10' Dipole	C	From Face	4.00 0.00 0.00	0.0000	112.50	No Ice 1/2" Ice 1" Ice	4.00 4.97 5.57	4.00 4.97 5.57	25.00 53.13 87.92
3' Side Mount Standoff	C	From Face	2.00 0.00 0.00	0.0000	112.50	No Ice 1/2" Ice 1" Ice	1.50 2.20 2.90	1.50 2.20 2.90	45.00 70.00 95.00
**********									
EEI 14' Platform w/Rails (T-Mobile)	A	None		0.0000	177.00	No Ice 1/2" Ice 1" Ice	19.00 24.00 29.00	19.00 24.00 29.00	1750.00 2000.00 2250.00
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	3.00 -5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	6.37 6.85 7.30	5.78 6.63 7.35	129.90 187.69 252.28
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	3.00 -5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	6.37 6.85 7.30	5.78 6.63 7.35	129.90 187.69 252.28
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	3.00 -5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	6.37 6.85 7.30	5.78 6.63 7.35	129.90 187.69 252.28
AIR 32 B66AA/B2P w/mount pipe	A	From Face	3.00 0.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	7.12 7.60 8.07	6.41 7.28 8.03	153.90 217.59 288.39
AIR 32 B66AA/B2P w/mount pipe	B	From Face	3.00 0.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	7.12 7.60 8.07	6.41 7.28 8.03	153.90 217.59 288.39
AIR 32 B66AA/B2P w/mount pipe	C	From Face	3.00 0.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	7.12 7.60 8.07	6.41 7.28 8.03	153.90 217.59 288.39
APXVAARR24_43-U-NA20 w/mount pipe	A	From Face	3.00 5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	11.19 12.62 13.71	174.32 311.78 460.89
APXVAARR24_43-U-NA20 w/mount pipe	B	From Face	3.00 5.00	0.0000	179.00	No Ice 1/2" Ice	20.24 20.89	11.19 12.62	174.32 311.78

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	21.55	13.71	460.89
APXVAARR24_43-U-NA20 w/mount pipe	C	From Face	3.00 5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	20.24 20.89 21.55	11.19 12.62 13.71	174.32 311.78 460.89
4449 B71+B12	A	From Face	3.00 5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.14 1.28 1.42	74.00 89.99 108.60
4449 B71+B12	B	From Face	3.00 5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.14 1.28 1.42	74.00 89.99 108.60
4449 B71+B12	C	From Face	3.00 5.00 0.00	0.0000	179.00	No Ice 1/2" Ice 1" Ice	1.64 1.80 1.97	1.14 1.28 1.42	74.00 89.99 108.60
**********									
Valmont Light Duty Tri-Bracket (1) (AT&T - Existing)	C	None		0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.76 2.08 2.40	1.76 2.08 2.40	54.00 70.00 86.00
Powerwave 7770 w/mount pipe	A	From Face	3.00 -6.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	5.65 6.03 6.42	4.10 4.75 5.42	57.25 103.17 155.38
Powerwave 7770 w/mount pipe	B	From Face	3.00 -6.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	5.65 6.03 6.42	4.10 4.75 5.42	57.25 103.17 155.38
Powerwave 7770 w/mount pipe	C	From Face	3.00 -6.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	5.65 6.03 6.42	4.10 4.75 5.42	57.25 103.17 155.38
(2) Powerwave TMA LGP21401	A	From Face	3.00 -6.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.05 1.18 1.32	0.38 0.47 0.57	14.10 21.29 30.37
(2) Powerwave TMA LGP21401	B	From Face	3.00 -6.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.05 1.18 1.32	0.38 0.47 0.57	14.10 21.29 30.37
(2) Powerwave TMA LGP21401	C	From Face	3.00 -6.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.05 1.18 1.32	0.38 0.47 0.57	14.10 21.29 30.37
DC6-48-60-18-8F	A	From Face	1.00 0.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	0.79 1.27 1.45	0.79 1.27 1.45	20.00 35.12 52.57
**********									
PiROD 13' Platform w/handrail (AT&T - Proposed)	A	None		0.0000	168.00	No Ice 1/2" Ice 1" Ice	31.30 40.20 49.10	31.30 40.20 49.10	1822.00 2452.00 3082.00
HPA65R-BU8A w/mount pipe	A	From Face	3.00 -2.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	11.52 12.24 12.94	10.63 12.16 13.50	109.41 204.04 309.78
HPA65R-BU8A w/mount pipe	B	From Face	3.00 -2.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	11.52 12.24 12.94	10.63 12.16 13.50	109.41 204.04 309.78
HPA65R-BU8A w/mount pipe	C	From Face	3.00 -2.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	11.52 12.24 12.94	10.63 12.16 13.50	109.41 204.04 309.78
(2) 800 10966 w/ Mount Pipe	A	From Face	3.00 4.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	17.60 18.33 19.07	9.64 11.15 12.70	158.55 274.43 400.76
(2) 800 10966 w/ Mount Pipe	B	From Face	3.00 4.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	17.60 18.33 19.07	9.64 11.15 12.70	158.55 274.43 400.76

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 lb
(2) 800 10966 w/ Mount Pipe	C	From Face	3.00	0.0000	170.00	No Ice	17.60	9.64	158.55
			4.00			1/2" Ice	18.33	11.15	274.43
			0.00			1" Ice	19.07	12.70	400.76
B25 4415	A	From Face	3.00	0.0000	170.00	No Ice	1.65	0.93	60.00
			-2.00			1/2" Ice	1.81	1.05	74.37
			0.00			1" Ice	1.98	1.19	91.23
B25 4415	B	From Face	3.00	0.0000	170.00	No Ice	1.65	0.93	60.00
			-2.00			1/2" Ice	1.81	1.05	74.37
			0.00			1" Ice	1.98	1.19	91.23
B25 4415	C	From Face	3.00	0.0000	170.00	No Ice	1.65	0.93	60.00
			-2.00			1/2" Ice	1.81	1.05	74.37
			0.00			1" Ice	1.98	1.19	91.23
B2/B66A 8843	A	From Face	3.00	0.0000	170.00	No Ice	1.65	0.93	40.00
			2.00			1/2" Ice	1.81	1.05	54.37
			0.00			1" Ice	1.98	1.19	71.23
B2/B66A 8843	B	From Face	3.00	0.0000	170.00	No Ice	1.65	0.93	40.00
			2.00			1/2" Ice	1.81	1.05	54.37
			0.00			1" Ice	1.98	1.19	71.23
B2/B66A 8843	C	From Face	3.00	0.0000	170.00	No Ice	1.65	0.93	40.00
			2.00			1/2" Ice	1.81	1.05	54.37
			0.00			1" Ice	1.98	1.19	71.23
B5/B12 4449	A	From Face	3.00	0.0000	170.00	No Ice	1.97	1.40	71.00
			6.00			1/2" Ice	2.15	1.56	89.48
			0.00			1" Ice	2.33	1.72	110.77
B5/B12 4449	B	From Face	3.00	0.0000	170.00	No Ice	1.97	1.40	71.00
			6.00			1/2" Ice	2.15	1.56	89.48
			0.00			1" Ice	2.33	1.72	110.77
B5/B12 4449	C	From Face	3.00	0.0000	170.00	No Ice	1.97	1.40	71.00
			6.00			1/2" Ice	2.15	1.56	89.48
			0.00			1" Ice	2.33	1.72	110.77
DC6-48-60-18-8F	B	From Face	1.00	0.0000	170.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57
DC6-48-60-18-8F	C	From Face	1.00	0.0000	170.00	No Ice	0.79	0.79	20.00
			0.00			1/2" Ice	1.27	1.27	35.12
			0.00			1" Ice	1.45	1.45	52.57
**********									
APL866513 w/Mount Pipe (VERIZON)	A	From Face	3.00	0.0000	160.00	No Ice	4.76	5.28	41.25
			6.00			1/2" Ice	5.39	6.31	91.03
			0.00			1" Ice	5.89	7.06	147.11
APL866513 w/Mount Pipe	A	From Face	3.00	0.0000	160.00	No Ice	4.76	5.28	41.25
			-6.00			1/2" Ice	5.39	6.31	91.03
			0.00			1" Ice	5.89	7.06	147.11
APL868013 w/Mount Pipe	B	From Face	3.00	0.0000	160.00	No Ice	3.58	5.28	31.87
			6.00			1/2" Ice	4.20	6.31	75.74
			0.00			1" Ice	4.70	7.06	125.70
APL868013 w/Mount Pipe	B	From Face	3.00	0.0000	160.00	No Ice	3.58	5.28	31.87
			-6.00			1/2" Ice	4.20	6.31	75.74
			0.00			1" Ice	4.70	7.06	125.70
APL868013 w/Mount Pipe	C	From Face	3.00	0.0000	160.00	No Ice	3.58	5.28	31.87
			6.00			1/2" Ice	4.20	6.31	75.74
			0.00			1" Ice	4.70	7.06	125.70
APL868013 w/Mount Pipe	C	From Face	3.00	0.0000	160.00	No Ice	3.58	5.28	31.87
			-6.00			1/2" Ice	4.20	6.31	75.74
			0.00			1" Ice	4.70	7.06	125.70
PiROD 13' Low Profile Platform	A	None		0.0000	160.00	No Ice	15.70	15.70	1300.00
						1/2" Ice	20.10	20.10	1765.00

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 lb
						1" Ice	24.50	24.50	2230.00
JAHH-65B-R3B w/ Mount Pipe	A	From Face	3.00 2.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	A	From Face	3.00 -2.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	B	From Face	3.00 2.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	B	From Face	3.00 -2.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	C	From Face	3.00 2.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
JAHH-65B-R3B w/ Mount Pipe	C	From Face	3.00 -2.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	88.85 165.42 250.16
RRH2x60-700	A	From Face	2.50 6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	60.00 82.72 109.06
RRH2x60-700	B	From Face	2.50 6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	60.00 82.72 109.06
RRH2x60-700	C	From Face	2.50 6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	60.00 82.72 109.06
B66A RRH 4X45	A	From Face	2.50 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	64.00 84.35 107.85
B66A RRH 4X45	B	From Face	2.50 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	64.00 84.35 107.85
B66A RRH 4X45	C	From Face	2.50 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.66 2.88 3.10	1.59 1.77 1.96	64.00 84.35 107.85
4T4R B5 RRH	A	From Face	2.50 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.43 2.63 2.83	0.79 0.91 1.05	55.00 71.54 90.83
4T4R B5 RRH	B	From Face	2.50 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.43 2.63 2.83	0.79 0.91 1.05	55.00 71.54 90.83
4T4R B5 RRH	C	From Face	2.50 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.43 2.63 2.83	0.79 0.91 1.05	55.00 71.54 90.83
RC2DC-3315-PF-48	A	From Face	2.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	4.59 4.86 5.14	2.52 2.73 2.95	32.00 67.82 107.61
RC2DC-3315-PF-48	B	From Face	2.00 -6.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	4.59 4.86 5.14	2.52 2.73 2.95	32.00 67.82 107.61

Tower Mast Reaction Summary

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Dead Only	46099.32	0.00	0.00	-367.43	-683.98	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	55319.19	-48.04	-28971.13	-4140712.11	7280.61	-525.16
0.9 Dead+1.6 Wind 0 deg - No Ice	41489.39	-48.04	-28971.12	-4059009.01	7334.45	-516.52
1.2 Dead+1.6 Wind 30 deg - No Ice	55319.19	14471.69	-25065.70	-3582006.37	-2068632.89	449.70
0.9 Dead+1.6 Wind 30 deg - No Ice	41489.39	14471.69	-25065.70	-3511301.35	-2027670.09	463.01
1.2 Dead+1.6 Wind 60 deg - No Ice	55319.19	25113.75	-14443.95	-2063578.03	-3590463.93	1303.58
0.9 Dead+1.6 Wind 60 deg - No Ice	41489.39	25113.75	-14443.95	-2022794.92	-3519510.19	1318.33
1.2 Dead+1.6 Wind 90 deg - No Ice	55319.19	29026.61	48.04	7627.82	-4150407.21	1810.96
0.9 Dead+1.6 Wind 90 deg - No Ice	41489.39	29026.60	48.04	7596.19	-4068427.81	1822.77
1.2 Dead+1.6 Wind 120 deg - No Ice	55319.19	25161.79	14527.17	2076621.86	-3598538.43	1835.48
0.9 Dead+1.6 Wind 120 deg - No Ice	41489.39	25161.79	14527.17	2035817.82	-3527418.97	1841.19
1.2 Dead+1.6 Wind 150 deg - No Ice	55319.19	14782.61	25508.15	3651269.44	-2118592.80	1367.22
0.9 Dead+1.6 Wind 150 deg - No Ice	41489.39	14782.61	25508.15	3579485.51	-2076666.63	1365.55
1.2 Dead+1.6 Wind 180 deg - No Ice	55319.19	48.04	28971.13	4139791.21	-8983.05	531.88
0.9 Dead+1.6 Wind 180 deg - No Ice	41489.39	48.04	28971.12	4058326.31	-8602.80	523.05
1.2 Dead+1.6 Wind 210 deg - No Ice	55319.19	-14471.69	25065.70	3581074.73	2066974.27	-449.40
0.9 Dead+1.6 Wind 210 deg - No Ice	41489.39	-14471.69	25065.70	3510610.91	2026432.91	-462.94
1.2 Dead+1.6 Wind 240 deg - No Ice	55319.19	-25113.75	14443.95	2062602.91	3588817.82	-1310.63
0.9 Dead+1.6 Wind 240 deg - No Ice	41489.39	-25113.75	14443.95	2022073.50	3518281.81	-1324.95
1.2 Dead+1.6 Wind 270 deg - No Ice	55319.19	-29026.61	-48.04	-8635.55	4148729.76	-1817.69
0.9 Dead+1.6 Wind 270 deg - No Ice	41489.39	-29026.60	-48.04	-8340.80	4067177.04	-1829.31
1.2 Dead+1.6 Wind 300 deg - No Ice	55319.19	-25161.79	-14527.17	-2077618.97	3596817.12	-1835.19
0.9 Dead+1.6 Wind 300 deg - No Ice	41489.39	-25161.79	-14527.17	-2036554.71	3526137.03	-1841.12
1.2 Dead+1.6 Wind 330 deg - No Ice	55319.19	-14782.61	-25508.15	-3652223.61	2116858.16	-1360.75
0.9 Dead+1.6 Wind 330 deg - No Ice	41489.39	-14782.61	-25508.15	-3580191.81	2075375.30	-1359.06
1.2 Dead+1.0 Ice+1.0 Temp	105990.10	-0.01	-0.01	-2117.08	-1619.47	0.10
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	105990.10	-10.46	-9653.75	-1534854.87	442.71	-336.69
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	105990.10	4823.57	-8354.67	-1328733.50	-767315.27	62.73
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	105990.10	8365.13	-4817.54	-767006.16	-1329889.43	445.24

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	105990.10	9665.82	10.45	-391.06	-1536329.77	708.98
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	105990.10	8375.58	4835.64	765701.28	-1331892.25	782.95
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	105990.10	5199.24	8984.44	1428154.77	-829755.43	649.12
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	105990.10	10.45	9653.75	1530149.73	-3528.25	337.59
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	105990.10	-4823.57	8354.67	1324019.97	764253.79	-62.55
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	105990.10	-8365.13	4817.54	762268.40	1326832.93	-446.12
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	105990.10	-9665.82	-10.46	-4362.13	1533254.04	-709.72
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	105990.10	-8375.58	-4835.64	-770447.80	1328793.78	-782.75
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	105990.10	-5199.24	-8984.44	-1432877.18	826648.90	-648.34
Dead+Wind 0 deg - Service	46099.32	-11.18	-6743.39	-954644.38	1176.06	-124.13
Dead+Wind 30 deg - Service	46099.32	3368.46	-5834.34	-825883.70	-477300.70	108.77
Dead+Wind 60 deg - Service	46099.32	5845.53	-3362.00	-475904.31	-828072.13	312.52
Dead+Wind 90 deg - Service	46099.32	6756.30	11.18	1490.66	-957123.06	432.67
Dead+Wind 120 deg - Service	46099.32	5856.71	3381.37	478383.91	-829946.43	437.00
Dead+Wind 150 deg - Service	46099.32	3440.83	5937.33	841425.62	-488879.84	324.27
Dead+Wind 180 deg - Service	46099.32	11.18	6743.39	953882.10	-2571.39	124.48
Dead+Wind 210 deg - Service	46099.32	-3368.46	5834.34	825120.93	475907.30	-108.76
Dead+Wind 240 deg - Service	46099.32	-5845.53	3362.00	475139.59	826679.29	-312.87
Dead+Wind 270 deg - Service	46099.32	-6756.30	-11.18	-2256.78	955728.82	-433.02
Dead+Wind 300 deg - Service	46099.32	-5856.71	-3381.37	-479149.61	828550.22	-437.00
Dead+Wind 330 deg - Service	46099.32	-3440.83	-5937.33	-842189.39	487483.04	-323.93

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	179 - 139.5	41.6366	50	2.2473	0.0020
L2	143.5 - 93.4	26.0495	50	1.8003	0.0020
L3	98.6 - 46.31	11.8835	44	1.1858	0.0011
L4	52.7 - 0	3.2976	44	0.5840	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
191.00	Omni 2"x20'	50	41.6366	2.2473	0.0020	21767
179.00	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	50	41.6366	2.2473	0.0020	21767
177.00	EEI 14' Platform w/Rails	50	40.7122	2.2226	0.0020	21767
170.00	Valmont Light Duty Tri-Bracket (1)	50	37.4895	2.1362	0.0021	12093
168.00	PiROD 13' Platform w/handrail	50	36.5760	2.1114	0.0021	9894
160.00	APL866513 w/Mount Pipe	50	32.9795	2.0117	0.0021	5727

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
138.50	20'-4 Bay Dipole	44	24.1347	1.7341	0.0020	3196
132.50	Omni 2"x8'	44	21.9614	1.6535	0.0019	3370
112.50	10' Dipole	44	15.6020	1.3784	0.0014	4121

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	179 - 139.5	Pole	TP28.0455x19.5x0.1875	1	-12961.80	1062100.00	90.7	Pass
L2	139.5 - 93.4	Pole	TP37.5377x26.8051x0.375	2	-23419.10	3187780.00	65.8	Pass
L3	93.4 - 46.31	Pole	TP47.123x35.6737x0.375	3	-36928.00	3800330.00	77.8	Pass
L4	46.31 - 0	Pole	TP56.25x44.9739x0.375	4	-55290.20	4334660.00	86.0	Pass
							Summary	
						Pole (L1)	90.7	Pass
						RATING =	**90.7**	**Pass**

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data	
BU#:	*0*
Site Name:	*CT1123*
App #:	*0*
Pole Manufacturer:	*Other*

Reactions		
Mu:	4221	ft-kips
Axial, Pu:	55	kips
Shear, Vu:	30	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Data		
Qty:	18	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	65	in

Plate Data		
Diam:	71	in
Thick:	2	in
Grade:	60	ksi
Single-Rod B-eff:	9.92	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	56.25	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Anchor Rod Results

Max Rod (Cu+ Vu/ή):	179.5 Kips	Rigid
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	AISC LRFD
Anchor Rod Stress Ratio:	69.1% **Pass**	φ*Tn

Base Plate Results Flexural Check

Base Plate Stress:	48.3 ksi	Rigid
Allowable Plate Stress:	54.0 ksi	AISC LRFD
Base Plate Stress Ratio:	89.4% **Pass**	φ*Fy
		Y.L. Length:
		32.57

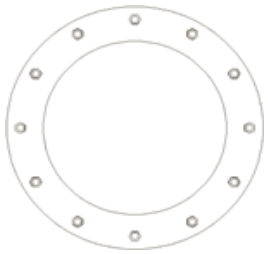
n/a

Stiffener Results

Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check:	n/a



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

CCI Foundation Tool Suite - Monopole Pier

CCIFTS 1.1.103.14128 - Phase 1 Date: 10/23/2019

BU:	
Site Name:	CT1123
App Number:	
Work Order:	

Monopole Drilled Pier

Input

Criteria

TIA Revision:	G
ACI 318 Revision:	2005
Seismic Category:	B

Forces

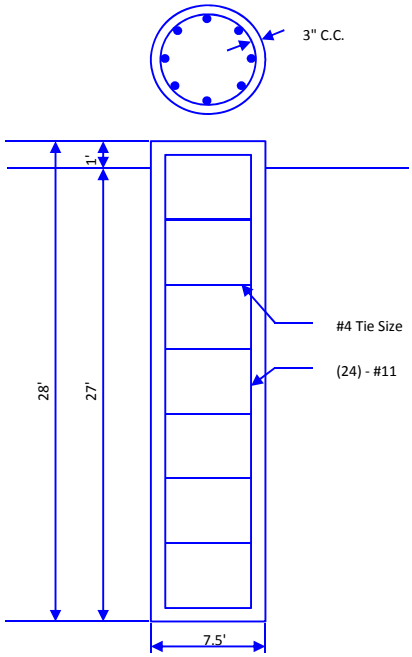
Compression	55.3	kips
Shear	29.5	kips
Moment	4221	k-ft
Swelling Force	0	kips

Foundation Dimensions

Pier Diameter:	7.5	ft
Ext. above grade:	1	ft
Depth below grade:	27	ft

Material Properties

Number of Rebar:	24	
Rebar Size:	11	
Tie Size	4	
Rebar tensile strength:	60	ksi
Concrete Strength:	4000	psi
Ultimate Concrete Strain	0.003	in/in
Clear Cover to Ties:	3	in



Soil Profile: Profile 1

Layer	Thickness (ft)	From (ft)	To (ft)	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (deg)	Ultimate Uplift Skin Friction (ksf)	Ultimate Comp. Skin Friction (ksf)	Ultimate Bearing Capacity (ksf)	SPT 'N' Counts
1	3.33	0	3.33	130	0	0	0	0		0
2	23.67	3.33	27	130		34			3	

Analysis Results

Soil Lateral Capacity

Depth to Zero Shear:	5.57	ft
Max Moment, Mu:	4358.57	k-ft
Soil Safety Factor:	3.98	
Safety Factor Req'd:	1.33	
RATING:	33.4%	

Soil Axial Capacity

Skin Friction (k):	333.73	kips
End Bearing (k):	99.40	kips
Comp. Capacity (k), ϕCn:	433.13	kips
Comp. (k), Cu:	55.30	kips
RATING:	12.8%	

Concrete/Steel Check

Mu (from soil analysis)	4358.57	k-ft
ϕMn	6591.02	k-ft
RATING:	66.1%	

rho provided	0.59	
rho required	0.33	OK

Rebar Spacing	9.27	
Spacing required	22.56	OK

Dev. Length required	21.18	
Dev. Length provided	53.51	OK

Overall Foundation Rating: 66.1%

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING MONOPOLE:
- NEW AT&T ANTENNAS: (800-10966) (TYP. OF 2 PER SECTOR, TOTAL OF 6).
- NEW AT&T ANTENNAS: (HPA-65R-BU8A) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B5/B12 4449 (700/850) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: B2/B66A 8843 (PCS/AWS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T (1) DC ONLY SURGE ARRESTOR WITH (2) DC POWER AND (1) DC/FIBER SURGE ARRESTOR WITH (2) DC POWER AND (1) FIBER RUN

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP BB WITH 6630, ADD XMU
- ADD 2ND 6630 FOR 5G RBS
- ADD HOMERUN RET TO UMTS ANTENNA
- NEW AT&T COMBINERS, SURGE ARRESTORS (TOTAL OF 8).

ITEMS TO REMAIN:
- (3) ANTENNAS, (6) TMAS, (1) SURGE ARRESTOR W/ (2) DC POWER & (1) FIBER, AND (12) 1-5/8" COAX CABLES.

SITE ADDRESS:	BURLINGTON-GEORGE WASHINGTON TPKE BURLINGTON, CT 06013
LATITUDE:	41.766820° N, 41° 46' 0.54" N
LONGITUDE:	72.961510° W, 72° 57' 41.43" W
TYPE OF SITE:	MONOPOLE/ INDOOR EQUIPMENT
STRUCTURE HEIGHT:	179'±
RAD CENTER:	170'±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT1123

SITE NAME: BURLINGTON-GEORGE WASH

FA CODE:10042310

PACE ID: MRCTB037961, MRCTB037939, MRCTB038079, MRCTB0038071

PROJECT: LTE 2C/3C/4C/4TX4RX 2019 UPGRADE

DRAWING INDEX

VICINITY MAP

DIRECTIONS TO SITE:

GET ONTO I-91 S TOWARD NEW HAVEN. MERGE ONTO CT-9 N VIA EXIT 22N TOWARD NEW BRITAIN 6.6 MILES. MERGE ONTO CT-72 W VIA EXIT 28 ON THE LEFT TOWARD BRISTOL. MERGE ONTO CT-72 W VIA EXIT 33 TOWARD BRISTOL. TAKE THE CT-177/N. WASHINGTON ST EXIT, EXIT 1. TURN RIGHT ONTO N WASHINGTON ST/CT-177. CONTINUE TO FOLLOW CT-177 FOR 4.9 MILES. TURN LEFT ONTO BURLINGTON RD. BURLINGTON RD BECOMES GEORGE WASHINGTON TURNPIKE. TURN RIGHT ONTO CASE RD. TURN LEFT ONTO PUNCH BROOK RD. TURN RIGHT ONTO GEORGE WASHINGTON TURNPIKE. END AT 719 GEORGE WASHINGTON TURNPIKE.

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

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CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1123
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: DJM

AT&T

TITLE SHEET
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT1123	T-1	2

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. 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.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81 STANDARDS) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. 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.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS AND #2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – CENTERLINE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR 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 CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR 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.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR 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.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. **APPLICABLE BUILDING CODES:**
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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SITE NUMBER: CT1123
SITE NAME: BURLINGTON-GEORGE WASH

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: DJM

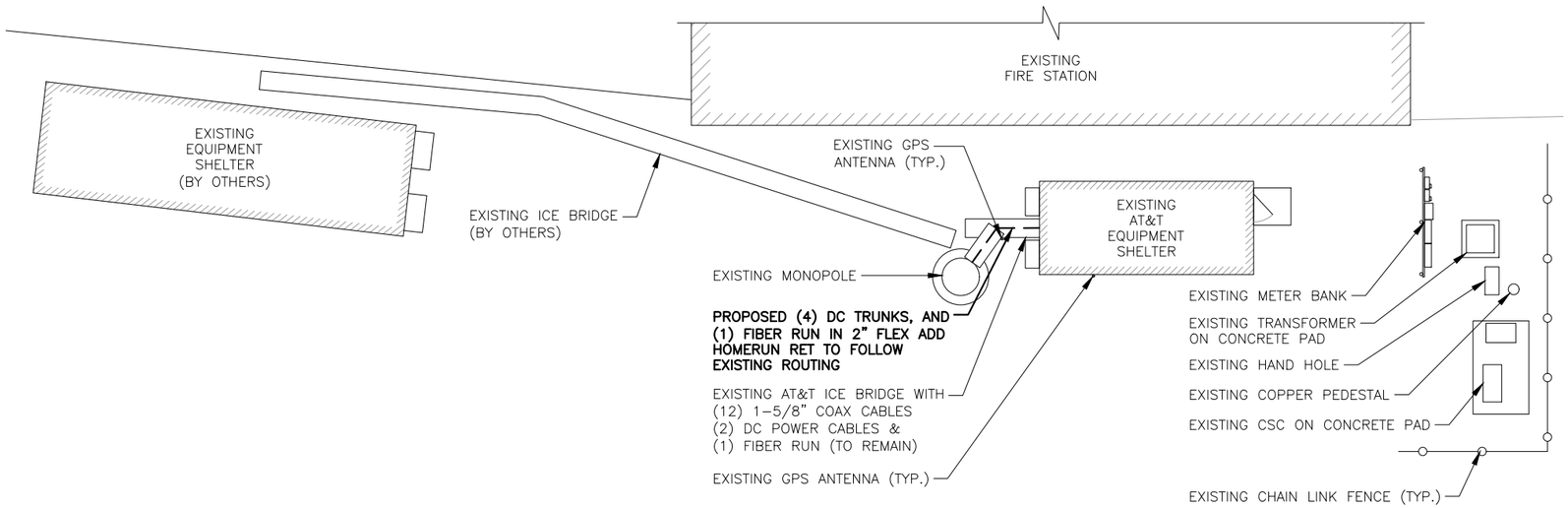
STATE OF CONNECTICUT · DANIEL P. HAMM · No.24178 · LICENSED PROFESSIONAL ENGINEER

Daniel P. Hamm

AT&T

GENERAL NOTES
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT1123	GN-1	2



MAGNETIC NORTH 13°31' TRUE NORTH

COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

NOTE:

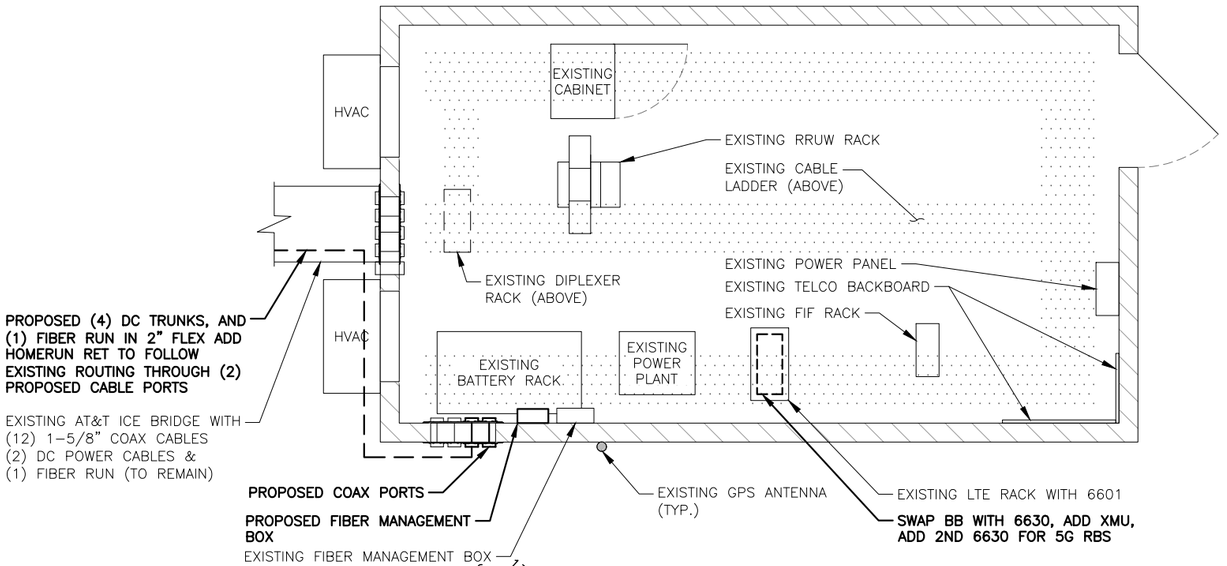
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 1, 2019

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: OCTOBER 23, 2019,(REV.3) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



MAGNETIC NORTH 13°31' TRUE NORTH

EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: DJM

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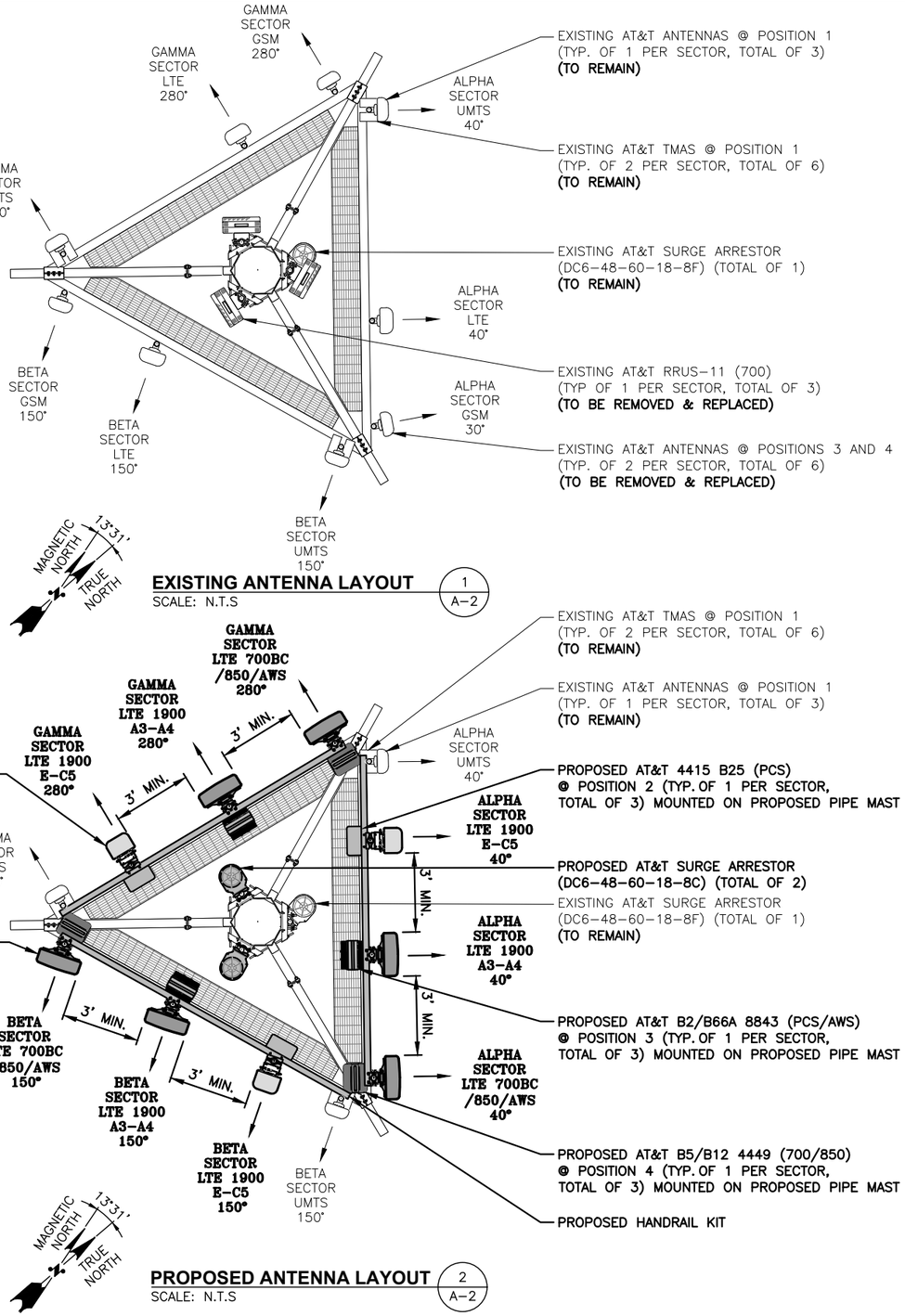
AT&T

COMPOUND & EQUIPMENT PLANS
(LTE 2C/3C/4C/4TX4RX)

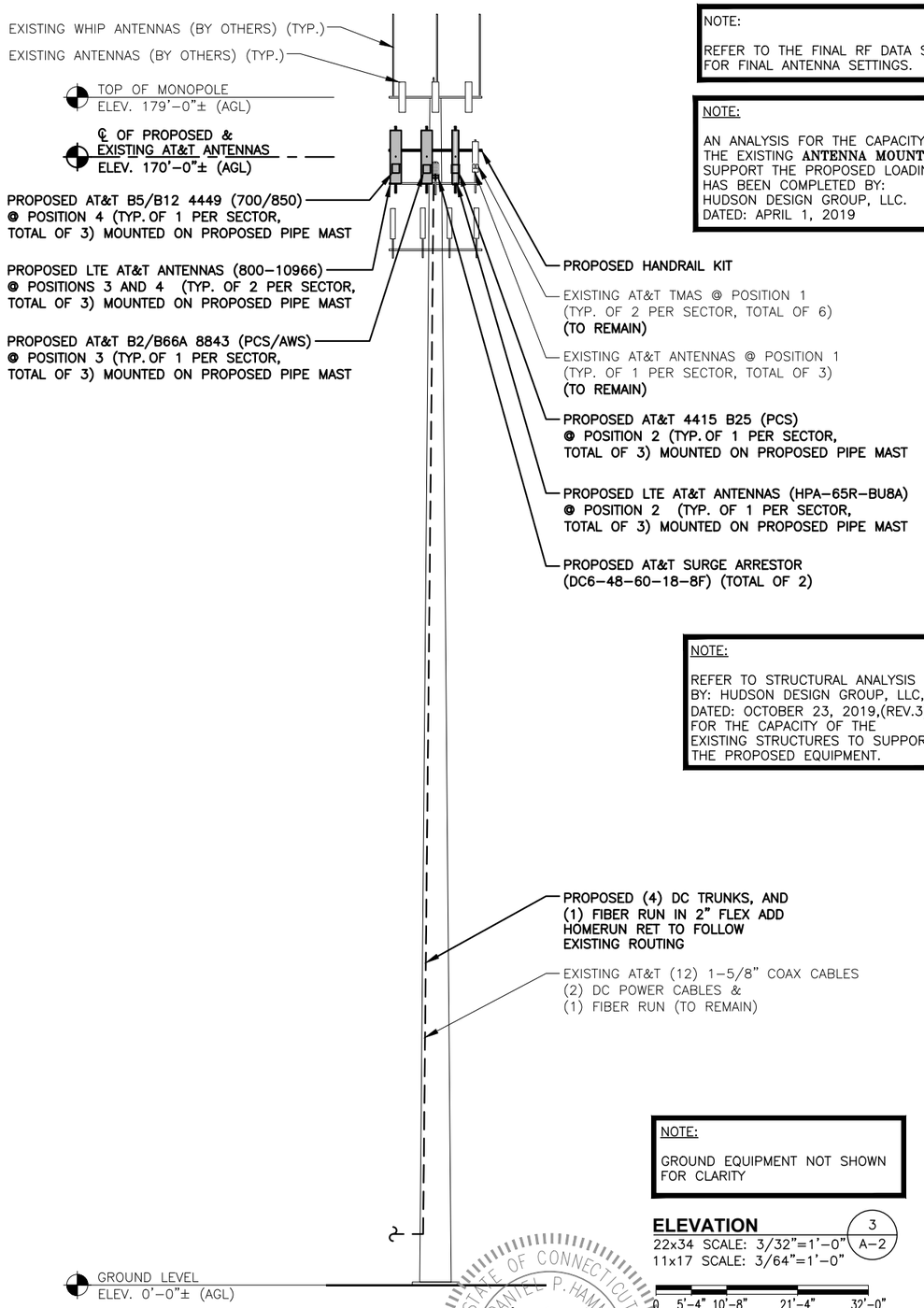
SITE NUMBER	DRAWING NUMBER	REV
CT1123	A-1	2



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S

PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S

NOTE:
EXISTING PIPE MOUNT TO BE MOVED IN POSITION 2 AS NEEDED TO ACCOMMODATE A MINIMUM SEPARATION OF 3'-0" BETWEEN ANTENNA POSITIONS 1 & 2.



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NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

ELEVATION (3 / A-2)
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"
0 5'-4" 10'-8" 21'-4" 32'-0"

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FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	10/28/19	ISSUED FOR CONSTRUCTION	MR	AT	DPH
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B	07/03/19	ISSUED FOR CONSTRUCTION	MR	AT	DPH
A	03/21/19	ISSUED FOR REVIEW	DJM	AT	DPH

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: DJM

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUTS & ELEVATION
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT1123	A-2	2

NOTE:

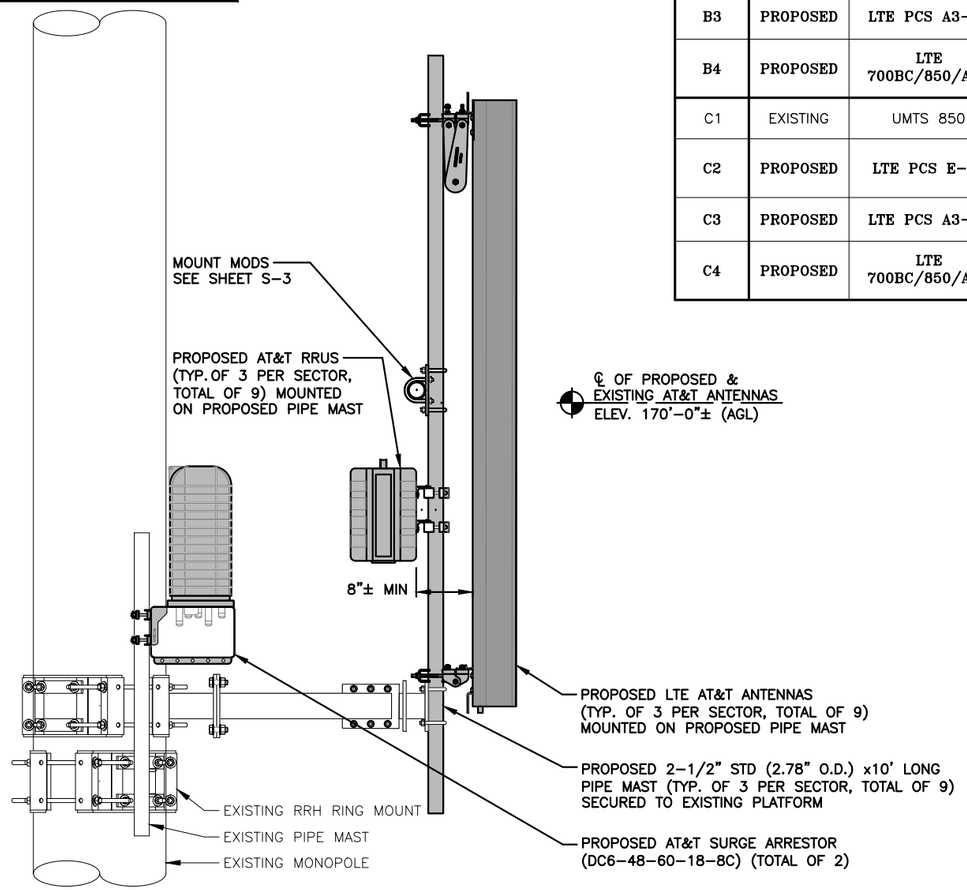
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY:
HUDSON DESIGN GROUP, LLC.
DATED: APRIL 1, 2019

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: OCTOBER 23, 2019,(REV.3) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED LTE ANTENNA, RRH AND SURGE ARRESTOR MOUNTING DETAIL (2 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

ANTENNA SCHEDULE

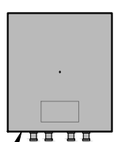
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	UMTS 850	7770	55x11x5	±170'	40	(2)(E) LGP 21401	–	–	(2)1-5/8 COAX	--
A2	**PROPOSED**	**LTE PCS E-C5**	**HPA-65R-BU8A**	**96x11.7x7.6**	**±170'**	**40**	–	**(1)(P) 4415 B25 (PCS)**	**18.5x13.4x5.9**	–	(E) (1) RAYCAP DC6-48-60-18-8F
A3	**PROPOSED**	**LTE PCS A3-A4**	**800-10966**	**96x20x6.9**	**±170'**	**40**	–	**(1)(P) B2/B66A 8843 (PCS/AWS)**	**14.9x13.2x10.9**	(2) DC POWER (1) FIBER	
A4	**PROPOSED**	**LTE 700BC/850/AWS**	**800-10966**	**96x20x6.9**	**±170'**	**40**	–	**(1)(P) B5/B12 4449 (700/850)**	**14.9x13.2x10.9**	–	
B1	EXISTING	UMTS 850	7770	55x11x5	±170'	150	(2)(E) LGP 21401	–	–	(2)1-5/8 COAX	--
B2	**PROPOSED**	**LTE PCS E-C5**	**HPA-65R-BU8A**	**96x11.7x7.6**	**±170'**	**150**	–	**(1)(P) 4415 B25 (PCS)**	**18.5x13.4x5.9**	–	(P) (1) RAYCAP DC6-48-60-18-8C
B3	**PROPOSED**	**LTE PCS A3-A4**	**800-10966**	**96x20x6.9**	**±170'**	**150**	–	**(1)(P) B2/B66A 8843 (PCS/AWS)**	**14.9x13.2x10.9**	**(2) DC POWER (1) FIBER**	
B4	**PROPOSED**	**LTE 700BC/850/AWS**	**800-10966**	**96x20x6.9**	**±170'**	**150**	–	**(1)(P) B5/B12 4449 (700/850)**	**14.9x13.2x10.9**	–	
C1	EXISTING	UMTS 850	7770	55x11x5	±170'	280	(2)(E) LGP 21401	–	–	(2)1-5/8 COAX	--
C2	**PROPOSED**	**LTE PCS E-C5**	**HPA-65R-BU8A**	**96x11.7x7.6**	**±170'**	**280**	–	**(1)(P) 4415 B25 (PCS)**	**18.5x13.4x5.9**	**(2) DC POWER**	(P) (1) RAYCAP DC6-48-60-18-8F DC ONLY
C3	**PROPOSED**	**LTE PCS A3-A4**	**800-10966**	**96x20x6.9**	**±170'**	**280**	–	**(1)(P) B2/B66A 8843 (PCS/AWS)**	**14.9x13.2x10.9**	–	
C4	**PROPOSED**	**LTE 700BC/850/AWS**	**800-10966**	**96x20x6.9**	**±170'**	**280**	–	**(1)(P) B5/B12 4449 (700/850)**	**14.9x13.2x10.9**	–	

FINAL ANTENNA SCHEDULE (1 / A-3)
SCALE: N.T.S

RRU CHART				
QUANTITY	MODEL	L	W	D
3(P)	4415 B25 (PCS)	16.5"	13.4"	5.9"
3(P)	B2/B66A 8843 (PCS/AWS)	14.9"	13.2"	10.9"
3(P)	B5/B12 4449 (700/850)	14.9"	13.2"	10.4"
NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS				

NOTE:

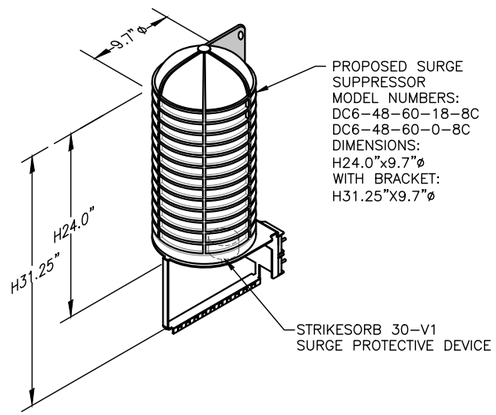
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER



PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (3 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (4 / A-3)
SCALE: N.T.S

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CENTERLINE COMMUNICATIONS
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WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT1123
SITE NAME: BURLINGTON-GEORGE WASH

BURLINGTON-GEORGE WASHINGTON TPKE
BURLINGTON, CT 06013
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Daniel P. Hamm
No. 24178
LICENSED PROFESSIONAL ENGINEER
STATE OF CONNECTICUT

AT&T

DETAILS
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT1123	A-3	2

STRUCTURAL NOTES:

. DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA–222–G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.

2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.

3. DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".

4. STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.

5. STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD–FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT–DIPPED ZINC–COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.

6. STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE–X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.

7. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT–DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.

8. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC–COATING (HOT–DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.

9. FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.

0. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND DI.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.

1. INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON–CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.

2. UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT–DIP GALVANIZED AFTER FABRICATION.

3. EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI–HIT HY–270 AND OR HY–200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.

4. EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF–S–325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

5. LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.

6. WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.

7. ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.

8. NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.

9. SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE–EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS [1]
N/A	MATERIAL SPECIFICATIONS REPORT [2]
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS [3]
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS [4]
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION [5]
N/A	GROUT VERIFICATION
REQUIRED	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
REQUIRED	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS [6]
N/A	POST INSTALLED ANCHOR PULL–OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: DJM

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

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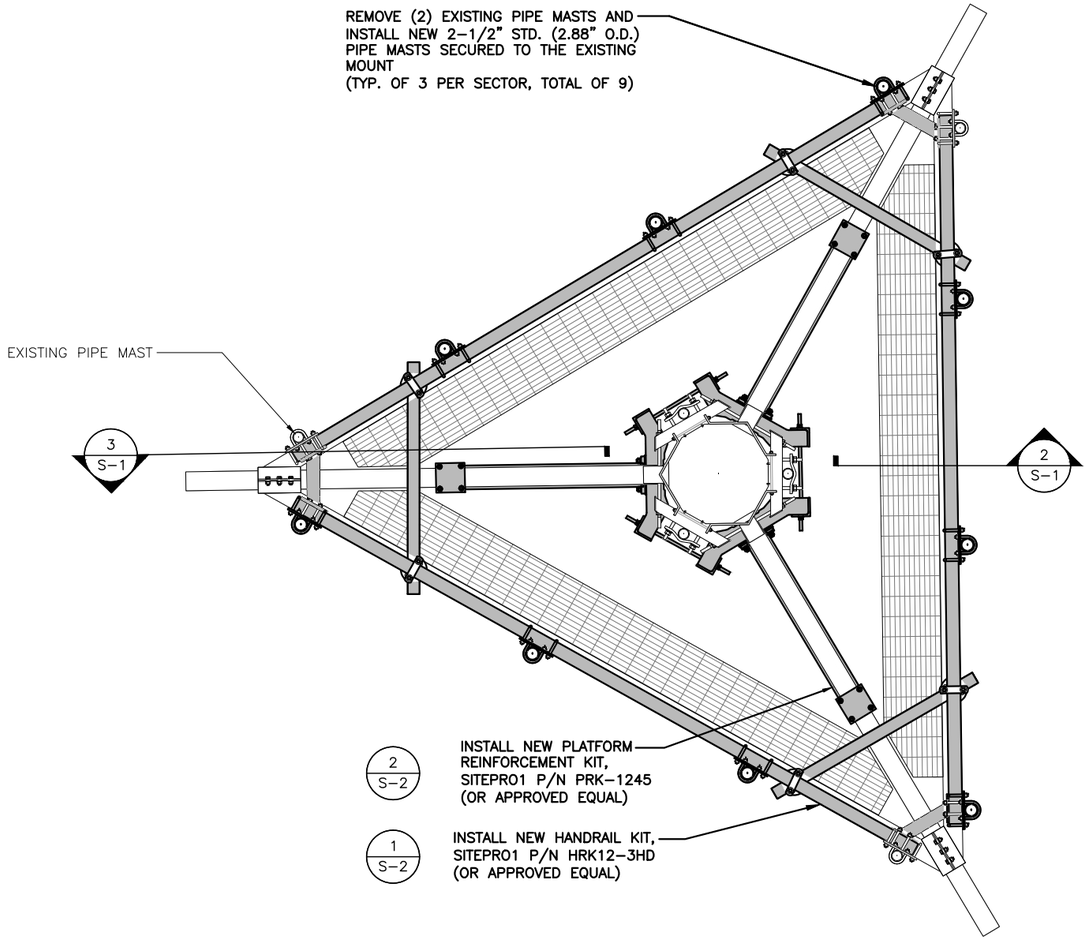
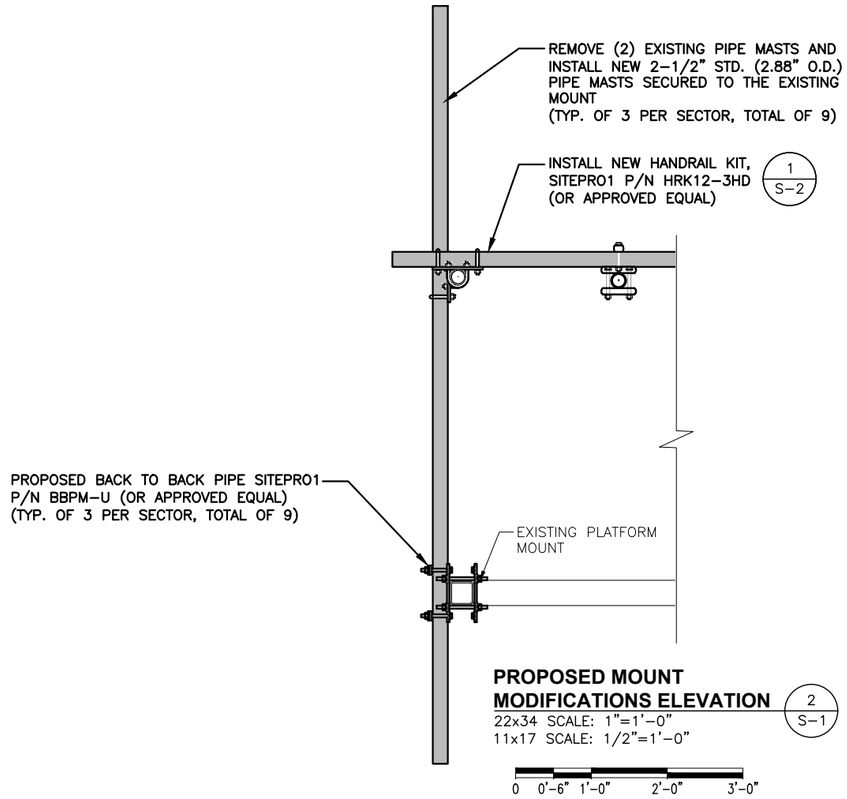
STRUCTURAL NOTES
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT1123	SN–1	2



PROPOSED MOUNT MODIFICATIONS PLAN 1 S-1
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 8" 1'-4" 2'-8" 4'-0"



PROPOSED MOUNT MODIFICATIONS ELEVATION 2 S-1
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

NOTE:

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DATED: APRIL 1, 2019

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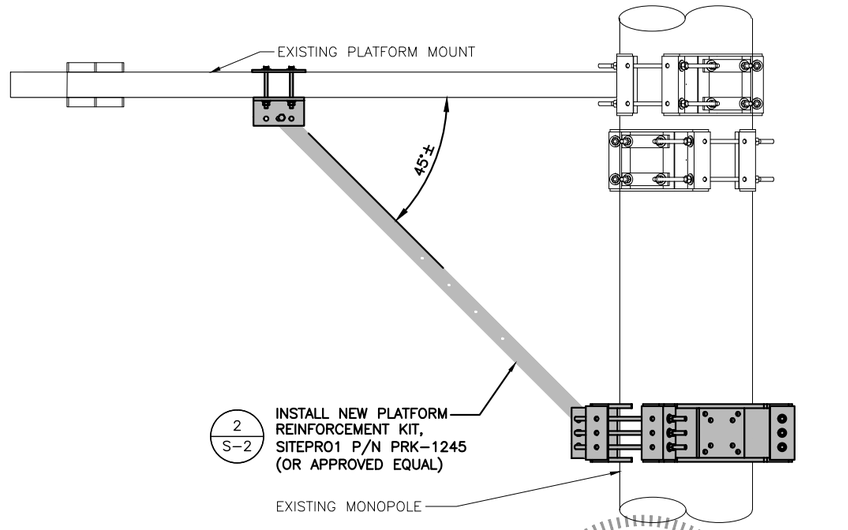

PROPOSED MOUNT MODIFICATIONS ELEVATION 3 S-1
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

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STATE OF CONNECTICUT · DANIEL P. HAMM · No.24178 · LICENSED PROFESSIONAL ENGINEER

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MOUNT MODIFICATION DESIGN
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
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NOTE:

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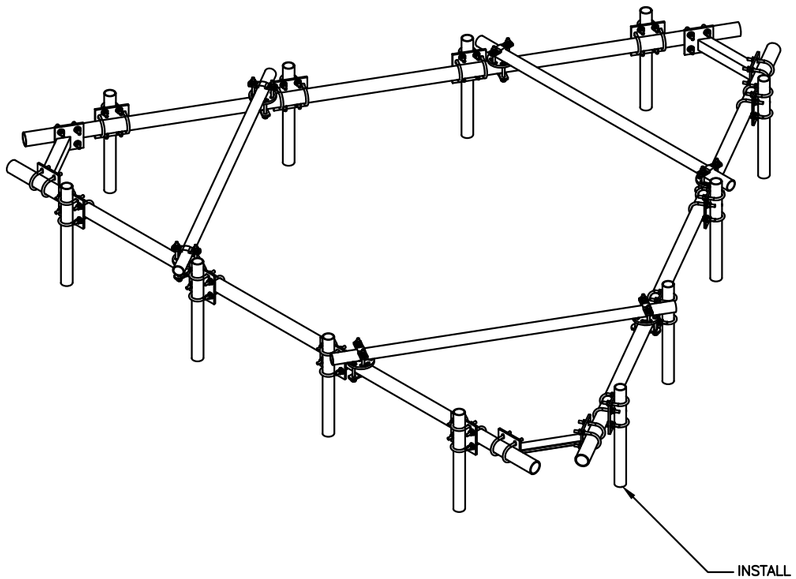
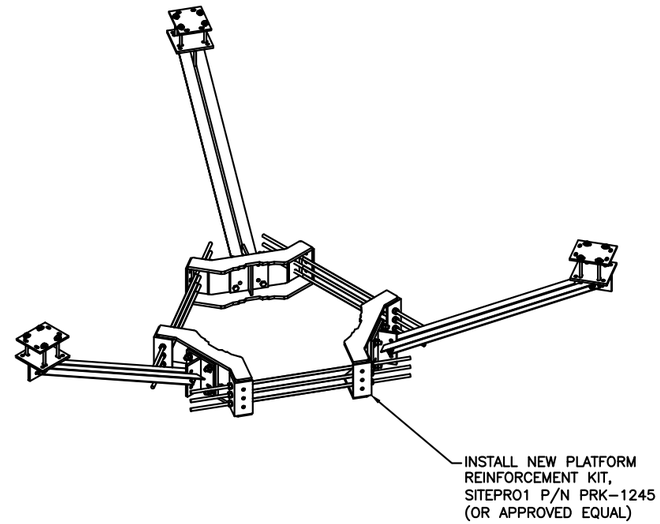


PROPOSED HANDRAIL KIT (1 / S-2)
SCALE: N.T.S



PROPOSED PLATFORM REINFORCEMENT (2 / S-2)
SCALE: N.T.S

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STRUCTURAL DETAILS
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
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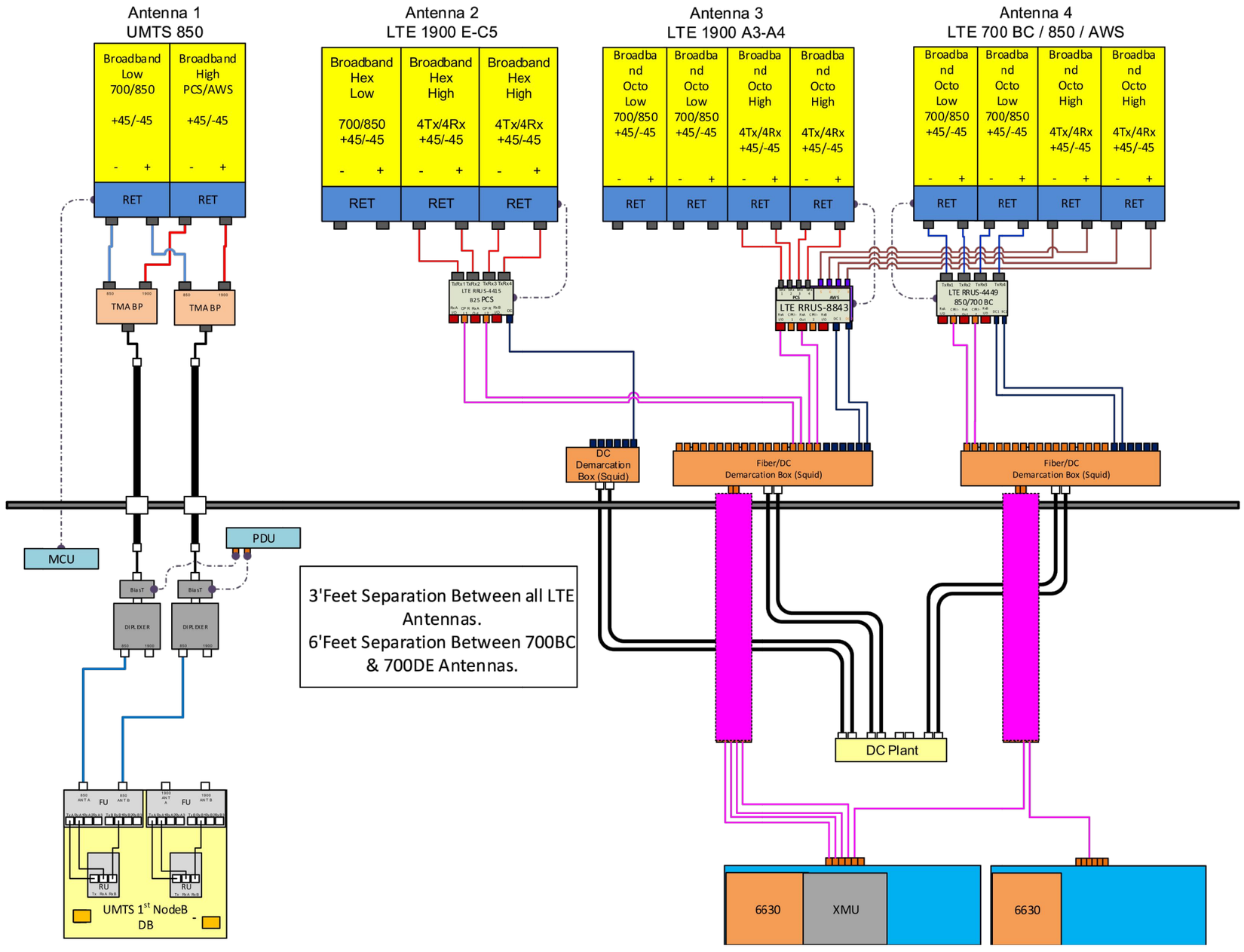

RF PLUMBING DIAGRAM (1 / RF–1)
SCALE: N.T.S

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

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1	10/09/19	ISSUED FOR CONSTRUCTION	MR	AT	DPH
B	07/03/19	ISSUED FOR CONSTRUCTION	MR	AT	DPH
A	03/21/19	ISSUED FOR REVIEW	DJM	AT	DPH

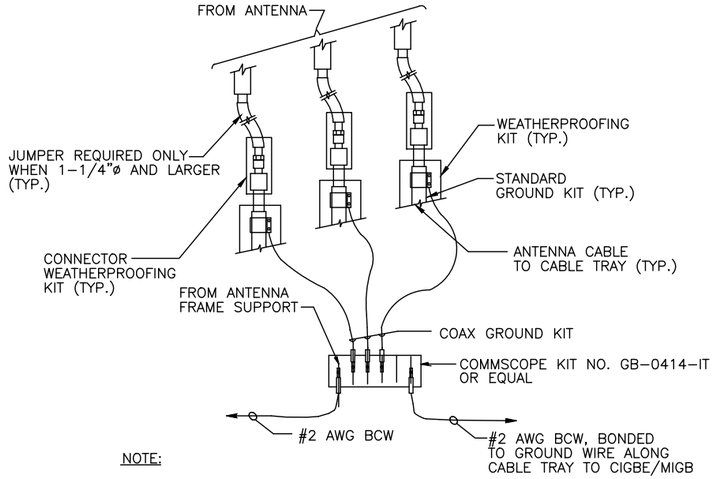
SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: DJM

STATE OF CONNECTICUT · DANIEL P. HAMM · No. 24178 · LICENSED PROFESSIONAL ENGINEER

AT&T

RF PLUMBING DIAGRAM
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT1123	RF–1	2

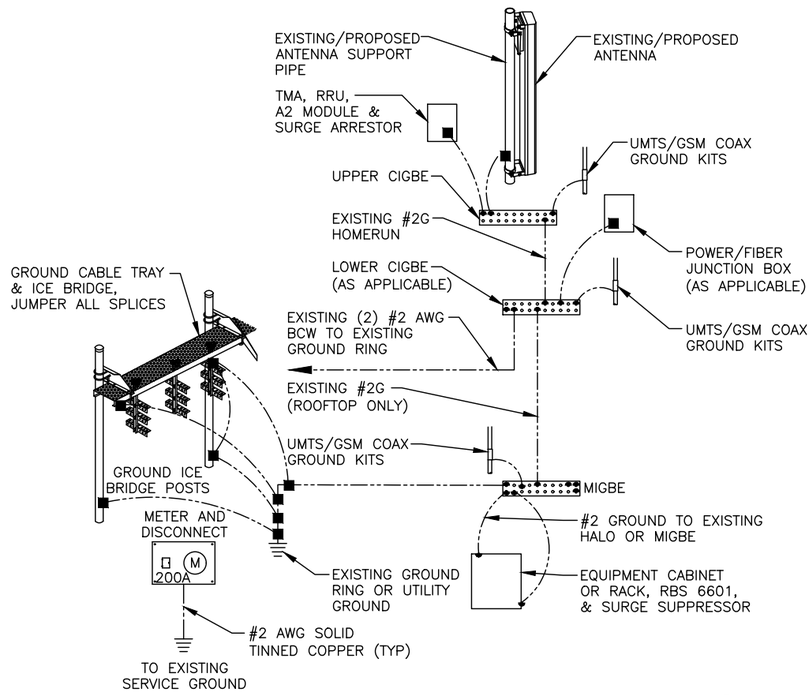


NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE.

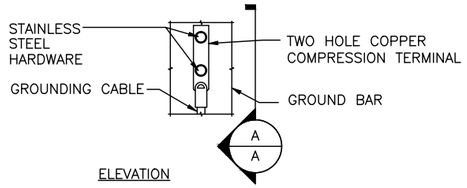
GROUND WIRE TO GROUND BAR CONNECTION DETAIL (1 / G-1)

SCALE: N.T.S



GROUNDING RISER DIAGRAM (2 / G-1)

SCALE: N.T.S



NOTES:

1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL (3 / G-1)

SCALE: N.T.S

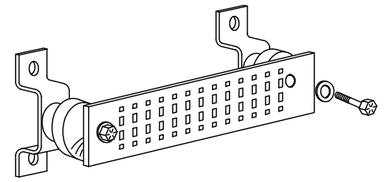
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2 AWG)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2 AWG)
+24V POWER SUPPLY RETURN BAR (#2 AWG)
-48V POWER SUPPLY RETURN BAR (#2 AWG)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2 AWG)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2 AWG)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2 AWG)
BUILDING STEEL (IF AVAILABLE) (#2 AWG)



GROUND BAR - DETAIL (4 / G-1)

SCALE: N.T.S

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TEL: (978) 557-5553
FAX: (978) 336-5586

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SITE NUMBER: CT1123
SITE NAME: BURLINGTON-GEORGE WASH

BURLINGTON-GEORGE WASHINGTON TPKE
BURLINGTON, CT 06013
HARTFORD COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

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GROUNDING DETAILS
(LTE 2C/3C/4C/4TX4RX)

SITE NUMBER	DRAWING NUMBER	REV
CT1123	G-1	2