MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS, LLC
95 RYAN DRIVE
RAYNHAM MA 02767

1 LBS

1 OF 1

SHIP TO:
DONALD TRINKS - MAYOR
TOWN OF WINDSOR
275 BROAD STREET
WINDSOR CT 06095-2940

CT 060 9-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 0816 9416

BILLING: P/P

Reference#1: CT5137: CSC filing to Mayor

UIS 20.0.32. WNINV50 97.0A 01/2018

MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS, LLC
95 RYAN DRIVE
RAYNHAM MA 02767

1 LBS

1 OF 1

SHIP TO:
ERIC BARZ, AICP - TOWN PLANNER
860.285.1981
TOWN OF WINDSOR
275 BROAD STREET
WINDSOR CT 06095-2940

CT 060 9-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 0205 4425

BILLING: P/P

Reference#1: CT5137: CSC filing to Town Planner

UIS 20.0.32. WNTNV50 97.0A 01/2018

MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS, LLC
95 RYAN DRIVE
RAYNHAM MA 02767

1 LBS

1 OF 1

SHIP TO:
GENESIS HEALTH VENTURES
1 EMERSON DRIVE
WINDSOR CT 06095-3204

CT 060 9-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 0123 0441

BILLING: P/P

Reference#1: CT5137: CSC filing Property Owner

UIS 20.0.32. WNTNV50 97.0A 01/2018

MARY CAULFIELD
978-994-0252
CENTERLINE COMMUNICATIONS, LLC
95 RYAN DRIVE
RAYNHAM MA 02767

1 LBS **1 OF 1**

SHIP TO:
PAUL PEDICONE
(518) 373-3530
CROWN CASTLE
SUITE 101
3 CORPORATE PARK DRIVE
CLIFTON PARK NY 12065

NY 122 9-02

UPS GROUND
TRACKING #: 1Z 9Y4 503 03 1294 1439

BILLING: P/P

Reference#1: CT5137: CSC filing to Crown

UIS 20.0.32. WNINV50 97.0A 01/2018

Mary Caulfield, Site Acquisition Consultant
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

March 19, 2018

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

RE: Notice of Exempt Modification
Site Number: CT5137 (Name: Windsor Matianuck Ave)
1170 Matianuck Avenue, Windsor, CT 06095
N 41.840555 // W -72.666500

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains 6 total antennas at the 97-foot mount level on the existing 100-foot monopine tower, located at 1170 Matianuck Avenue, Windsor, CT. The tower is owned by Crown Castle. The property is owned by Genesis Health Ventures of Bloomfield c/o AT&T Mobility. AT&T now intends to add three (3) new LTE (700/1900/2300 band) antennas for its LTE upgrade. AT&T also intends to install six (6) new remote radios and; and certain in-cabinet upgrades at the base.

Note that this facility was originally approved by the Planning and Zoning Commission of the Town of Winsdor Special Use Application #54B, dated October 26, 2001.

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 Donald S. Trinks, Mayor for the Town of Windsor, Eric Barz, AICP, Town Planner, as well as the tower owner, Crown Castle, and the ground owner, Genesis Health Ventures of Bloomfield c/o AT&T Mobility.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

Attached to accommodate this filing are construction drawings dated March 16, 2018 by Hudson Design Group LLC, a structural analysis dated February 8, 2018 by Crown Castle and an Emissions Analysis Report dated February 28, 2018 by Centerline Communications, LLC.

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

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

3. The proposed modifications 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 Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading, pursuant to the structural analysis by Crown Castle, dated February 8, 2018.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

_____

Mary Caulfield, Site Acquisition Consultant
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (978) 994-0252
MCaulfield@centerlinecommunications.com

cc: Donald S. Trinks, Mayor, Town of Windsor
Eric Barz, AICP, Town Planner, Town of Windsor
Crown Castle, Tower Owner
Genesis Health Ventures of Bloomfield c/o AT&T Mobility

Date: **February 08, 2018**

Cheryl Schultz
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Drive
Canonsburg. PA 15317
(724) 416-2000

Subject: Structural Analysis Report

Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5137
	Carrier Site Name:	Windsor Matianuck Ave
Crown Castle Designation:	**Crown Castle BU Number:**	842878
	Crown Castle Site Name:	WINDSOR SOUTH
	Crown Castle JDE Job Number:	478489
	Crown Castle Work Order Number:	1522339
	Crown Castle Application Number:	421272 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	1522339
Site Data:	**1170 MATIANUCK AVENUE, WINDSOR, Hartford County, CT** **Latitude *41° 50' 22.7"*, Longitude *-72° 40' 0"*** **100 Foot - Monopole Tower**	

Dear Cheryl Schultz,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1522339, in accordance with application 421272, revision 1.

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

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects, please give us a call.

Structural analysis prepared by: Kenneth Sukitch, E.I.T./ KB

Respectfully submitted by:

Bradley E. Byrom, P.E., S.E.
Senior Project Engineer

STATE OF CONNECTICUT
BRADLEY E. BYROM
31144
LICENSED
PROFESSIONAL ENGINEER
2/9/2018

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 100 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in April of 2002. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
97.0	97.0	1	andrew	SBNHH-1D65A w/ Mount Pipe	1 2	3/8 3/4	-
		1	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe			
		1	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe			
		1	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe			
		3	ericsson	RRUS 32 B2			
		3	ericsson	RRUS 32 B30			
		3	powerwave technologies	LGP21401			
		1	quintel technology	QS46512-2 w/ Mount Pipe			
		1	quintel technology	QS66512-2 w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	T-Arm Mount [TA 602-3]			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
97.0	97.0	2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	-	-	2
		1	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	tower mounts	T-Arm Mount [TA 702-3]			
		3	ericsson	RRUS 11 B12	1 2 6	3/8 3/4 7/8	1
		3	kathrein	800 10121 w/ Mount Pipe			
		3	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			

Notes:
1) Existing Equipment
2) Equipment To Be Removed; Not Considered in This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
97	97	6	swedcom	7250	-	-
87	87	12	swedcom	ALP 9212	-	-
77	77	12	swedcom	ALP 9212	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tectonic	4713265	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineered Endeavors Incorporated	4858947	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineered Endeavors Incorporated	6100542	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	100 - 80.487	Pole	TP21.1099x15x0.1875	1	-6.14	867.74	55.8	Pass
L2	80.487 - 42.779	Pole	TP32.4173x19.7523x0.3125	2	-15.57	2261.84	79.6	Pass
L3	42.779 - 0	Pole	TP45x30.3809x0.375	3	-26.72	3758.77	79.4	Pass
							Summary	
						Pole (L2)	79.6	Pass
						Rating =	79.6	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	80.4	Pass
1	Base Plate Stiffeners	0	99.9	Pass
1	Base Plate	0	73.9	Pass
1	Base Foundation	0	70.1	Pass
1	Base Foundation Soil Interaction	0	61.3	Pass

Structure Rating (max from all components) =	99.9%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A

TNXTOWER OUTPUT

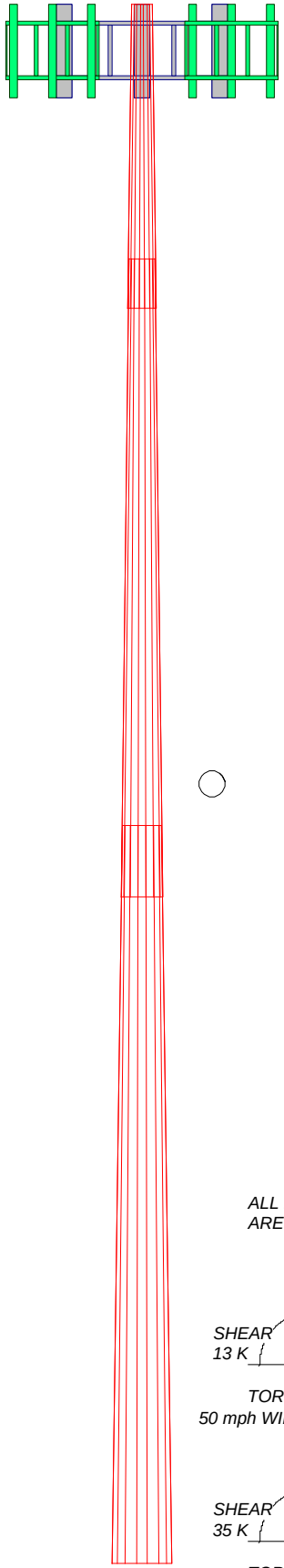
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	19.51	18	0.1875	3.14	15.0000	21.1099		0.7
2	40.85	18	0.3125	4.55	19.7523	32.4173	A572-65	3.6
3	47.33	18	0.3750		30.3809	45.0000		7.2
								11.4

100.0 ft

80.5 ft

42.8 ft

0.0 ft



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Pine (105)	105	LGP21401	97
800 10121 w/ Mount Pipe	97	LGP21401	97
800 10121 w/ Mount Pipe	97	LGP21401	97
800 10121 w/ Mount Pipe	97	DC6-48-60-18-8F	97
SBNHH-1D65A w/ Mount Pipe	97	RRUS 32 B2	97
QS46512-2 w/ Mount Pipe	97	RRUS 32 B2	97
HPA-65R-BUU-H8 w/ Mount Pipe	97	RRUS 32 B2	97
TPA-65R-LCUUUU-H8 w/ Mount Pipe	97	RRUS 32 B30	97
HPA-65R-BUU-H6 w/ Mount Pipe	97	RRUS 32 B30	97
QS66512-2 w/ Mount Pipe	97	RRUS 32 B30	97
LGP21401	97	T-Arm Mount [TA 602-3]	97
LGP21401	97	Pine (96)	96
LGP21401	97	Pine (88)	88
RRUS 11 B12	97	Pine (78)	78
RRUS 11 B12	97	Pine (68)	68
RRUS 11 B12	97	Pine (58)	58
DC6-48-60-18-8F	97		

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-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 79.6%

ALL REACTIONS ARE FACTORED

AXIAL 51 K

SHEAR 13 K *MOMENT 1074 kip-ft*

TORQUE 1 kip-ft

50 mph WIND - 1.0000 in ICE

AXIAL 27 K

SHEAR 35 K *MOMENT 2712 kip-ft*

TORQUE 2 kip-ft

REACTIONS - 97 mph WIND

CROWN CASTLE

The Foundation For A Wireless World

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX:

Job: ***BU# 842878***			
Project: ***1522339***			
Client: Crown Castle	Drawn by: KGebremariam		App'd:
Code: TIA-222-G	Date: 02/08/18		Scale: NTS
Path: C:\Users\KGebremariam\Desktop\AA\842878.eri			Dwg No. E-1

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 97 mph.
3) Structure Class II.
4) Exposure Category C.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 1.0000 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) 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-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G 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				

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	100.00-80.49	19.51	3.14	18	15.0000	21.1099	0.1875	0.7500	A572-65 (65 ksi)
L2	80.49-42.78	40.85	4.55	18	19.7523	32.4173	0.3125	1.2500	A572-65 (65 ksi)
L3	42.78-0.00	47.33		18	30.3809	45.0000	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	15.2314	8.8153	244.3603	5.2584	7.6200	32.0683	489.0422	4.4085	2.3100	12.32
	21.4356	12.4514	688.6208	7.4275	10.7238	64.2141	1378.1477	6.2269	3.3853	18.055
L2	21.0450	19.2819	920.6019	6.9011	10.0342	91.7466	1842.4151	9.6428	2.9264	9.365
	32.9174	31.8439	4146.7161	11.3972	16.4680	251.8047	8298.8885	15.9250	5.1554	16.497
L3	32.2772	35.7145	4062.5121	10.6521	15.4335	263.2271	8130.3697	17.8606	4.6870	12.499
	45.6942	53.1149	13363.1957	15.8419	22.8600	584.5667	26743.9750	26.5625	7.2600	19.36

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 100.00-80.49				1	1	1			
L2 80.49-42.78				1	1	1			
L3 42.78-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
*** 97 ft ***								
LDF5-50A(7/8)	B	No	Inside Pole	97.00 - 0.00	6	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
FB-L98B-034-XXX(3/8)	B	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	97.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
2" Flex Conduit	B	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	0.36
						1/2" Ice	0.00	0.36
						1" Ice	0.00	0.36
FB-L98B-034-XXX(3/8)	B	No	Inside Pole	97.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	97.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
***								

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	100.00-80.49	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.08
		C	0.000	0.000	0.000	0.000	0.00
L2	80.49-42.78	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.18
		C	0.000	0.000	0.000	0.000	0.00
L3	42.78-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.20
		C	0.000	0.000	0.000	0.000	0.00

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	100.00-80.49	A	2.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.00
L2	80.49-42.78	A	2.125	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.18
		C		0.000	0.000	0.000	0.000	0.00
L3	42.78-0.00	A	1.912	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.20
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	100.00-80.49	0.0000	0.0000	0.0000	0.0000
L2	80.49-42.78	0.0000	0.0000	0.0000	0.0000
L3	42.78-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
*** BRANCHES ***									
Pine (105)	C	None		0.0000	105.00	No Ice	45.00	45.00	0.75
						1/2" Ice	60.00	60.00	0.85
						1" Ice	75.00	75.00	0.95
Pine (96)	C	None		0.0000	96.00	No Ice	90.00	90.00	1.50

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* K
						1/2" Ice	120.00	120.00	1.90
						1" Ice	150.00	150.00	2.30
Pine (88)	C	None		0.0000	88.00	No Ice	90.00	90.00	1.50
						1/2" Ice	120.00	120.00	1.90
						1" Ice	150.00	150.00	2.30
Pine (78)	C	None		0.0000	78.00	No Ice	90.00	90.00	1.50
						1/2" Ice	120.00	120.00	1.90
						1" Ice	150.00	150.00	2.30
Pine (68)	C	None		0.0000	68.00	No Ice	90.00	90.00	1.50
						1/2" Ice	120.00	120.00	1.90
						1" Ice	150.00	150.00	2.30
Pine (58)	C	None		0.0000	58.00	No Ice	90.00	90.00	1.50
						1/2" Ice	120.00	120.00	1.90
						1" Ice	150.00	150.00	2.30
*** 97 ft ***									
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
800 10121 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
SBNHH-1D65A w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	5.95 6.39 6.82	5.19 5.96 6.66	0.06 0.11 0.17
QS46512-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	5.79 6.21 6.62	5.88 6.58 7.25	0.12 0.18 0.24
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30
TPA-65R-LCUUUU-H8 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	13.54 14.24 14.95	10.96 12.49 14.04	0.11 0.22 0.33
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	8.11 9.30 10.21	0.08 0.16 0.25
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.21 0.27 0.35	0.01 0.02 0.03
LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	97.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.21 0.27 0.35	0.01 0.02 0.03
LGP21401	C	From Leg	4.00	0.0000	97.00	No Ice	0.00	0.21	0.01

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* K
			0.00			1/2"	0.00	0.27	0.02
			0.00			Ice	0.00	0.35	0.03
						1" Ice			
RRUS 11 B12	A	From Leg	4.00	0.0000	97.00	No Ice	0.00	1.18	0.05
			0.00			1/2"	0.00	1.33	0.07
			0.00			Ice	0.00	1.48	0.10
						1" Ice			
RRUS 11 B12	B	From Leg	4.00	0.0000	97.00	No Ice	0.00	1.18	0.05
			0.00			1/2"	0.00	1.33	0.07
			0.00			Ice	0.00	1.48	0.10
						1" Ice			
RRUS 11 B12	C	From Leg	4.00	0.0000	97.00	No Ice	0.00	1.18	0.05
			0.00			1/2"	0.00	1.33	0.07
			0.00			Ice	0.00	1.48	0.10
						1" Ice			
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	97.00	No Ice	0.79	0.79	0.02
			0.00			1/2"	1.27	1.27	0.04
			0.00			Ice	1.45	1.45	0.05
						1" Ice			
LGP21401	A	From Leg	4.00	0.0000	97.00	No Ice	0.00	0.21	0.01
			0.00			1/2"	0.00	0.27	0.02
			0.00			Ice	0.00	0.35	0.03
						1" Ice			
LGP21401	B	From Leg	4.00	0.0000	97.00	No Ice	0.00	0.21	0.01
			0.00			1/2"	0.00	0.27	0.02
			0.00			Ice	0.00	0.35	0.03
						1" Ice			
LGP21401	C	From Leg	4.00	0.0000	97.00	No Ice	0.00	0.21	0.01
			0.00			1/2"	0.00	0.27	0.02
			0.00			Ice	0.00	0.35	0.03
						1" Ice			
DC6-48-60-18-8F	B	From Leg	4.00	0.0000	97.00	No Ice	0.79	0.79	0.02
			0.00			1/2"	1.27	1.27	0.04
			0.00			Ice	1.45	1.45	0.05
						1" Ice			
RRUS 32 B2	A	From Leg	4.00	0.0000	97.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			0.00			Ice	3.18	2.05	0.10
						1" Ice			
RRUS 32 B2	B	From Leg	4.00	0.0000	97.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			0.00			Ice	3.18	2.05	0.10
						1" Ice			
RRUS 32 B2	C	From Leg	4.00	0.0000	97.00	No Ice	2.73	1.67	0.05
			0.00			1/2"	2.95	1.86	0.07
			0.00			Ice	3.18	2.05	0.10
						1" Ice			
RRUS 32 B30	A	From Leg	4.00	0.0000	97.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
						1" Ice			
RRUS 32 B30	B	From Leg	4.00	0.0000	97.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
						1" Ice			
RRUS 32 B30	C	From Leg	4.00	0.0000	97.00	No Ice	2.69	1.57	0.06
			0.00			1/2"	2.91	1.76	0.08
			0.00			Ice	3.14	1.95	0.10
						1" Ice			
T-Arm Mount [TA 602-3]	C	None		0.0000	97.00	No Ice	11.59	11.59	0.77
						1/2"	15.44	15.44	0.99
						Ice	19.29	19.29	1.21
						1" Ice			
**********									
******									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 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	100 - 80.487	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.72	-1.41	-1.62
			Max. Mx	8	-6.15	-194.48	-1.13

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	14	-6.18	-1.08	-192.77
			Max. Vy	8	16.92	-194.48	-1.13
			Max. Vx	14	16.79	-1.08	-192.77
			Max. Torque	18			1.56
L2	80.487 - 42.779	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.23	-1.45	-1.67
			Max. Mx	8	-15.57	-1120.43	-4.21
			Max. My	14	-15.59	-4.12	-1113.74
			Max. Vy	8	32.12	-1120.43	-4.21
			Max. Vx	14	31.99	-4.12	-1113.74
			Max. Torque	18			1.55
L3	42.779 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.51	-1.40	-1.61
			Max. Mx	8	-26.72	-2708.67	-8.05
			Max. My	14	-26.72	-7.96	-2695.59
			Max. Vy	8	34.93	-2708.67	-8.05
			Max. Vx	14	34.79	-7.96	-2695.59
			Max. Torque	18			1.55

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	50.51	0.00	0.00
	Max. H_x	21	20.07	34.89	0.08
	Max. H_z	3	20.07	0.08	34.76
	Max. M_x	2	2695.30	0.08	34.76
	Max. M_z	8	2708.67	-34.89	-0.08
	Max. Torsion	18	1.54	30.18	-17.31
	Min. Vert	9	20.07	-34.89	-0.08
	Min. H_x	9	20.07	-34.89	-0.08
	Min. H_z	15	20.07	-0.08	-34.76
	Min. M_x	14	-2695.59	-0.08	-34.76
	Min. M_z	20	-2708.57	34.89	0.08
	Min. Torsion	6	-1.53	-30.18	17.31

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	22.30	0.00	0.00	0.12	-0.04	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	26.76	-0.08	-34.76	-2695.30	7.87	0.77
0.9 Dead+1.6 Wind 0 deg - No Ice	20.07	-0.08	-34.76	-2677.15	7.81	0.77
1.2 Dead+1.6 Wind 30 deg - No Ice	26.76	17.38	-30.07	-2330.31	-1347.58	1.33
0.9 Dead+1.6 Wind 30 deg - No Ice	20.07	17.38	-30.07	-2314.60	-1338.46	1.33
1.2 Dead+1.6 Wind 60 deg - No Ice	26.76	30.18	-17.31	-1340.77	-2341.93	1.53
0.9 Dead+1.6 Wind 60 deg - No Ice	20.07	30.18	-17.31	-1331.75	-2326.08	1.53
1.2 Dead+1.6 Wind 90 deg - No Ice	26.76	34.89	0.08	8.05	-2708.67	1.32
0.9 Dead+1.6 Wind 90 deg - No Ice	20.07	34.89	0.08	7.95	-2690.37	1.32
1.2 Dead+1.6 Wind 120 deg	26.76	30.26	17.45	1354.72	-2349.80	0.77

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
- No Ice 0.9 Dead+1.6 Wind 120 deg - No Ice	20.07	30.26	17.45	1345.52	-2333.89	0.77
1.2 Dead+1.6 Wind 150 deg - No Ice	26.76	17.52	30.15	2338.46	-1361.26	0.00
0.9 Dead+1.6 Wind 150 deg - No Ice	20.07	17.52	30.15	2322.61	-1352.03	0.00
1.2 Dead+1.6 Wind 180 deg - No Ice	26.76	0.08	34.76	2695.59	-7.96	-0.76
0.9 Dead+1.6 Wind 180 deg - No Ice	20.07	0.08	34.76	2677.37	-7.88	-0.76
1.2 Dead+1.6 Wind 210 deg - No Ice	26.76	-17.38	30.07	2330.60	1347.49	-1.33
0.9 Dead+1.6 Wind 210 deg - No Ice	20.07	-17.38	30.07	2314.81	1338.40	-1.33
1.2 Dead+1.6 Wind 240 deg - No Ice	26.76	-30.18	17.31	1341.04	2341.84	-1.54
0.9 Dead+1.6 Wind 240 deg - No Ice	20.07	-30.18	17.31	1331.95	2326.02	-1.54
1.2 Dead+1.6 Wind 270 deg - No Ice	26.76	-34.89	-0.08	-7.77	2708.57	-1.33
0.9 Dead+1.6 Wind 270 deg - No Ice	20.07	-34.89	-0.08	-7.75	2690.29	-1.33
1.2 Dead+1.6 Wind 300 deg - No Ice	26.76	-30.26	-17.45	-1354.44	2349.69	-0.76
0.9 Dead+1.6 Wind 300 deg - No Ice	20.07	-30.26	-17.45	-1345.31	2333.81	-0.76
1.2 Dead+1.6 Wind 330 deg - No Ice	26.76	-17.52	-30.15	-2338.17	1361.16	0.01
0.9 Dead+1.6 Wind 330 deg - No Ice	20.07	-17.52	-30.15	-2322.40	1351.96	0.01
1.2 Dead+1.0 Ice+1.0 Temp	50.51	-0.00	-0.00	1.61	-1.40	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	50.51	-0.01	-13.28	-1069.07	-0.71	0.39
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	50.51	6.64	-11.50	-925.21	-536.66	0.55
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	50.51	11.51	-6.63	-532.93	-929.22	0.57
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	50.51	13.29	0.01	2.62	-1073.19	0.43
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	50.51	11.51	6.65	537.95	-930.06	0.18
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	50.51	6.65	11.51	929.61	-538.11	-0.12
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	50.51	0.01	13.28	1072.63	-2.39	-0.39
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	50.51	-6.64	11.50	928.77	533.56	-0.55
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	50.51	-11.51	6.63	536.50	926.12	-0.57
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	50.51	-13.29	-0.01	0.95	1070.09	-0.43
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	50.51	-11.51	-6.65	-534.38	926.96	-0.18
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	50.51	-6.65	-11.51	-926.04	535.01	0.12
Dead+Wind 0 deg - Service	22.30	-0.02	-7.44	-574.91	1.64	0.17
Dead+Wind 30 deg - Service	22.30	3.72	-6.43	-497.03	-287.51	0.29
Dead+Wind 60 deg - Service	22.30	6.46	-3.70	-285.94	-499.64	0.33
Dead+Wind 90 deg - Service	22.30	7.47	0.02	1.81	-577.90	0.29
Dead+Wind 120 deg - Service	22.30	6.47	3.73	289.10	-501.33	0.17
Dead+Wind 150 deg - Service	22.30	3.75	6.45	498.96	-290.43	-0.00
Dead+Wind 180 deg - Service	22.30	0.02	7.44	575.16	-1.73	-0.17
Dead+Wind 210 deg - Service	22.30	-3.72	6.43	497.28	287.43	-0.29
Dead+Wind 240 deg -	22.30	-6.46	3.70	286.18	499.55	-0.33

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
Service						
Dead+Wind 270 deg - Service	22.30	-7.47	-0.02	-1.57	577.82	-0.29
Dead+Wind 300 deg - Service	22.30	-6.47	-3.73	-288.86	501.24	-0.17
Dead+Wind 330 deg - Service	22.30	-3.75	-6.45	-498.72	290.35	0.00

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	0.00	-22.30	0.00	0.00	22.30	-0.00	0.000%
2	-0.08	-26.76	-34.76	0.08	26.76	34.76	0.002%
3	-0.08	-20.07	-34.76	0.08	20.07	34.76	0.002%
4	17.38	-26.76	-30.07	-17.38	26.76	30.07	0.000%
5	17.38	-20.07	-30.07	-17.38	20.07	30.07	0.000%
6	30.18	-26.76	-17.31	-30.18	26.76	17.31	0.000%
7	30.18	-20.07	-17.31	-30.18	20.07	17.31	0.000%
8	34.90	-26.76	0.08	-34.89	26.76	-0.08	0.002%
9	34.90	-20.07	0.08	-34.89	20.07	-0.08	0.002%
10	30.26	-26.76	17.45	-30.26	26.76	-17.45	0.000%
11	30.26	-20.07	17.45	-30.26	20.07	-17.45	0.000%
12	17.52	-26.76	30.15	-17.52	26.76	-30.15	0.000%
13	17.52	-20.07	30.15	-17.52	20.07	-30.15	0.000%
14	0.08	-26.76	34.76	-0.08	26.76	-34.76	0.002%
15	0.08	-20.07	34.76	-0.08	20.07	-34.76	0.002%
16	-17.38	-26.76	30.07	17.38	26.76	-30.07	0.000%
17	-17.38	-20.07	30.07	17.38	20.07	-30.07	0.000%
18	-30.18	-26.76	17.31	30.18	26.76	-17.31	0.000%
19	-30.18	-20.07	17.31	30.18	20.07	-17.31	0.000%
20	-34.90	-26.76	-0.08	34.89	26.76	0.08	0.002%
21	-34.90	-20.07	-0.08	34.89	20.07	0.08	0.002%
22	-30.26	-26.76	-17.45	30.26	26.76	17.45	0.000%
23	-30.26	-20.07	-17.45	30.26	20.07	17.45	0.000%
24	-17.52	-26.76	-30.15	17.52	26.76	30.15	0.000%
25	-17.52	-20.07	-30.15	17.52	20.07	30.15	0.000%
26	0.00	-50.51	0.00	0.00	50.51	0.00	0.003%
27	-0.01	-50.51	-13.28	0.01	50.51	13.28	0.001%
28	6.64	-50.51	-11.50	-6.64	50.51	11.50	0.000%
29	11.51	-50.51	-6.63	-11.51	50.51	6.63	0.000%
30	13.29	-50.51	0.01	-13.29	50.51	-0.01	0.001%
31	11.51	-50.51	6.65	-11.51	50.51	-6.65	0.000%
32	6.65	-50.51	11.51	-6.65	50.51	-11.51	0.000%
33	0.01	-50.51	13.28	-0.01	50.51	-13.28	0.001%
34	-6.64	-50.51	11.50	6.64	50.51	-11.50	0.000%
35	-11.51	-50.51	6.63	11.51	50.51	-6.63	0.000%
36	-13.29	-50.51	-0.01	13.29	50.51	0.01	0.001%
37	-11.51	-50.51	-6.65	11.51	50.51	6.65	0.000%
38	-6.65	-50.51	-11.51	6.65	50.51	11.51	0.000%
39	-0.02	-22.30	-7.44	0.02	22.30	7.44	0.003%
40	3.72	-22.30	-6.43	-3.72	22.30	6.43	0.003%
41	6.46	-22.30	-3.70	-6.46	22.30	3.70	0.003%
42	7.47	-22.30	0.02	-7.47	22.30	-0.02	0.003%
43	6.47	-22.30	3.73	-6.47	22.30	-3.73	0.003%
44	3.75	-22.30	6.45	-3.75	22.30	-6.45	0.003%
45	0.02	-22.30	7.44	-0.02	22.30	-7.44	0.003%
46	-3.72	-22.30	6.43	3.72	22.30	-6.43	0.003%
47	-6.46	-22.30	3.70	6.46	22.30	-3.70	0.003%
48	-7.47	-22.30	-0.02	7.47	22.30	0.02	0.003%
49	-6.47	-22.30	-3.73	6.47	22.30	3.73	0.003%
50	-3.75	-22.30	-6.45	3.75	22.30	6.45	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	12	0.00000001	0.00007721
3	Yes	12	0.00000001	0.00005824
4	Yes	15	0.00000001	0.00005427
5	Yes	14	0.00000001	0.00013193
6	Yes	15	0.00000001	0.00005066
7	Yes	14	0.00000001	0.00012290
8	Yes	12	0.00000001	0.00014102
9	Yes	12	0.00000001	0.00010502
10	Yes	15	0.00000001	0.00005450
11	Yes	14	0.00000001	0.00013232
12	Yes	15	0.00000001	0.00005338
13	Yes	14	0.00000001	0.00012956
14	Yes	12	0.00000001	0.00009890
15	Yes	12	0.00000001	0.00007397
16	Yes	15	0.00000001	0.00005086
17	Yes	14	0.00000001	0.00012343
18	Yes	15	0.00000001	0.00005473
19	Yes	14	0.00000001	0.00013301
20	Yes	12	0.00000001	0.00011497
21	Yes	12	0.00000001	0.00008606
22	Yes	15	0.00000001	0.00005245
23	Yes	14	0.00000001	0.00012726
24	Yes	15	0.00000001	0.00005332
25	Yes	14	0.00000001	0.00012945
26	Yes	6	0.00000001	0.00002962
27	Yes	13	0.00000001	0.00005817
28	Yes	14	0.00000001	0.00006181
29	Yes	14	0.00000001	0.00005721
30	Yes	13	0.00000001	0.00005920
31	Yes	14	0.00000001	0.00006151
32	Yes	14	0.00000001	0.00006124
33	Yes	13	0.00000001	0.00005879
34	Yes	14	0.00000001	0.00005739
35	Yes	14	0.00000001	0.00006206
36	Yes	13	0.00000001	0.00005863
37	Yes	14	0.00000001	0.00005793
38	Yes	14	0.00000001	0.00005814
39	Yes	11	0.00000001	0.00007163
40	Yes	11	0.00000001	0.00010171
41	Yes	11	0.00000001	0.00007553
42	Yes	11	0.00000001	0.00007546
43	Yes	11	0.00000001	0.00009690
44	Yes	11	0.00000001	0.00008787
45	Yes	11	0.00000001	0.00007199
46	Yes	11	0.00000001	0.00007639
47	Yes	11	0.00000001	0.00010540
48	Yes	11	0.00000001	0.00007495
49	Yes	11	0.00000001	0.00008131
50	Yes	11	0.00000001	0.00008746

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	100 - 80.487	15.505	43	1.4482	0.0070
L2	83.625 - 42.779	10.761	43	1.2669	0.0031
L3	47.331 - 0	3.251	43	0.6601	0.0007

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
105.00	Pine (105)	43	15.505	1.4482	0.0070	12110
97.00	800 10121 w/ Mount Pipe	43	14.610	1.4180	0.0062	12110
96.00	Pine (96)	43	14.312	1.4079	0.0060	12110
88.00	Pine (88)	43	11.979	1.3212	0.0040	5046
78.00	Pine (78)	43	9.284	1.1872	0.0022	3527
68.00	Pine (68)	43	6.926	1.0241	0.0013	3261
58.00	Pine (58)	43	4.937	0.8470	0.0009	3033

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	100 - 80.487	72.528	10	6.7856	0.0319
L2	83.625 - 42.779	50.376	10	5.9390	0.0139
L3	47.331 - 0	15.236	10	3.0953	0.0034

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
105.00	Pine (105)	10	72.528	6.7856	0.0331	2661
97.00	800 10121 w/ Mount Pipe	10	68.351	6.6449	0.0293	2661
96.00	Pine (96)	10	66.962	6.5974	0.0281	2661
88.00	Pine (88)	10	56.067	6.1927	0.0188	1107
78.00	Pine (78)	10	43.471	5.5659	0.0104	770
68.00	Pine (68)	10	32.444	4.8018	0.0059	707
58.00	Pine (58)	10	23.131	3.9714	0.0041	654

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	100 - 80.487 (1)	TP21.1099x15x0.1875	19.51	0.00	0.0	11.8667	-6.14	867.74	0.007
L2	80.487 - 42.779 (2)	TP32.4173x19.7523x0.3125	40.85	0.00	0.0	30.4440	-15.57	2261.84	0.007
L3	42.779 - 0 (3)	TP45x30.3809x0.375	47.33	0.00	0.0	53.1149	-26.72	3758.77	0.007

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	100 - 80.487 (1)	TP21.1099x15x0.1875	195.04	355.26	0.549	0.00	355.26	0.000
L2	80.487 - 42.779 (2)	TP32.4173x19.7523x0.3125	1122.34	1424.29	0.788	0.00	1424.29	0.000
L3	42.779 - 0 (3)	TP45x30.3809x0.375	2712.35	3447.32	0.787	0.00	3447.32	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	100 - 80.487 (1)	TP21.1099x15x0.1875	16.96	433.87	0.039	0.77	711.38	0.001
L2	80.487 - 42.779 (2)	TP32.4173x19.7523x0.3125	32.16	1130.92	0.028	0.77	2852.07	0.000
L3	42.779 - 0 (3)	TP45x30.3809x0.375	34.96	1879.39	0.019	0.77	6903.08	0.000

Pole Interaction Design Data

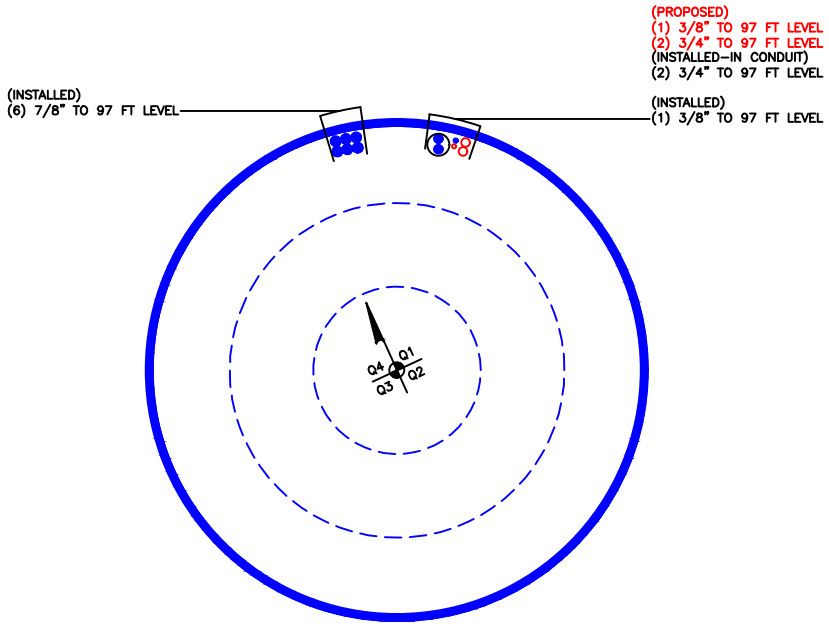
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 80.487 (1)	0.007	0.549	0.000	0.039	0.001	0.558	1.000	4.8.2
L2	80.487 - 42.779 (2)	0.007	0.788	0.000	0.028	0.000	0.796	1.000	4.8.2
L3	42.779 - 0 (3)	0.007	0.787	0.000	0.019	0.000	0.794	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	100 - 80.487	Pole	TP21.1099x15x0.1875	1	-6.14	867.74	55.8	Pass
L2	80.487 - 42.779	Pole	TP32.4173x19.7523x0.3125	2	-15.57	2261.84	79.6	Pass
L3	42.779 - 0	Pole	TP45x30.3809x0.375	3	-26.72	3758.77	79.4	Pass
							Summary	
						Pole (L2)	79.6	Pass
						RATING =	**79.6**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 843091 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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#: *842878*
Site Name: *WINDSOR SOUTH*
App #: *421272 - Rev. 1*

Pole Manufacturer:	*Other*

Reactions		
Mu:	2712	ft-kips
Axial, Pu:	27	kips
Shear, Vu:	35	kips
Eta Factor, ɳ	0.5	TIA G (Fig. 4-4)

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

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	54	in

Plate Data		
Diam:	60	in
Thick:	1.75	in
Grade:	60	ksi
Single-Rod B-eff:	11.90	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:	0	<-- Disregard
Groove Angle:	45	<-- Disregard
Fillet H. Weld:	0.5	in
Fillet V. Weld:	0.5	in
Width:	7.5	in
Height:	24	in
Thick:	1.25	in
Notch:	0.5	in
Grade:	50	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	45	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

		Stiffened
Max Rod (Cu+ Vu/ń):	209.0 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	80.4% **Pass**	

Base Plate Results

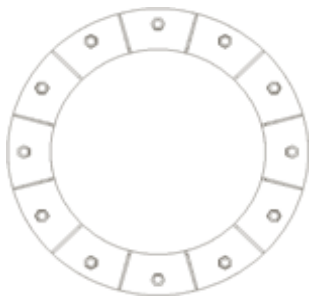
	Flexural Check	Stiffened
Base Plate Stress:	39.9 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	73.9% **Pass**	Y.L. Length:
		N/A, Roark

Stiffener Results

Horizontal Weld :	99.9% **Pass**
Vertical Weld:	32.1% **Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	9.2% **Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	40.9% **Pass**
Plate Comp. (AISC Bracket):	43.7% **Pass**

Pole Results

Pole Punching Shear Check:	12.0% **Pass**



* 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

Drilled Pier Foundation

BU # :	842878
Site Name:	Windsor South
App. Number:	421272 - Rev. 1

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2712	
Axial Force (kips)	27	
Shear Force (kips)	35	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	39	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 39' below grade		
Pier Diameter	6.5	ft
Rebar Quantity	18	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	7.51	-
Soil Safety Factor	2.56	-
Max Moment (kip-ft)	2953.84	-
Rating	*52.0%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	179.37	-
End Bearing (kips)	111.62	-
Weight of Concrete (kips)	151.45	-
Total Capacity (kips)	290.99	-
Axial (kips)	178.45	-
Rating	*61.3%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	7.62	-
Critical Moment (kip-ft)	2953.69	-
Critical Moment Capacity	4213.16	-
Rating	*70.1%*	-

Soil Interaction Rating	**61.3%**
Structural Foundation Rating	**70.1%**

Soil Profile

Groundwater Depth	5	ft	# 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. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	2	2	110	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	2	5	3	115	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
3	5	12	7	55	87.6	0	35	0.000	0.000	0.45	0.45			Cohesionless
4	12	23	11	45	87.6	0	29	0.000	0.000	0.70	0.70			Cohesionless
5	23	28	5	40	87.6	0.4	0	0.220	0.220	0.14	0.14			Cohesive
6	28	32.5	4.5	40	87.6	0.1	0	0.055	0.055	0.04	0.04			Cohesive
7	32.5	34	1.5	40	87.6	0.1	0	0.06	0.06	0.00	0.00			Cohesive
8	34	39	5	40	87.6	0.4	0	0.22	0.22	0.00	0.00	4.485		Cohesive

CCISeismic - Design Category

Per *2012/2015 IBC*

Site BU: 842878
Work Order: 1522339
Application: 421272 Rev. 1

	Degrees	Minutes	Seconds		
Site Latitude =	41	50	22.70	41.8396	degrees
Site Longitude =	-72	40	0.00	-72.6667	degrees
Ground Supported Structure =	Yes				
Structure Class =	II				*(Table 2-1)*
Site Class =	D - Stiff Soil				*(Table 2-11)*

Spectral response acceleration short periods, S_S =	0.179	USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.064	

Importance Factor, I =	1.0	*(Table 2-3)*
Acceleration-based site coefficient, F_a =	1.6	*(Table 2-12)*
Velocity-based site coefficient, F_v =	2.4	*(Table 2-13)*

Design spectral response acceleration short period, S_{DS} =	0.191	*(2.7.6)*
Design spectral response acceleration 1 s period, S_{D1} =	0.102	*(2.7.6)*

Seismic Design Category - Short Period Response =	B	*ASCE 7-05 Table 11.6-1*
Seismic Design Category - 1s Period Response =	B	*ASCE 7-05 Table 11.6-2*

Worst Case Seismic Design Category =	B	*ASCE 7-05 Tables 11.6-1 and 6-2*

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5137
FA#: 10071337

Windsor South
1170 Matianuck Avenue
Windsor, CT 06095

February 28, 2018

Centerline Communications Project Number: 950012-035

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**6.06 %**

February 28, 2018

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5137 – Windsor South**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **1170 Matianuck Avenue, Windsor, CT**, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **1170 Matianuck Avenue, Windsor, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	1	30
UMTS	1900 MHz (PCS)	1	30
LTE	700 MHz	2	40
LTE	2300 MHz (WCS)	4	30
LTE	1900 MHz (PCS)	4	40

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10121	97
A	2	Powerwave P65-17-XLH-RR	97
A	3	CCI TPA-65R-LCUUUU-H8	97
B	1	Kathrein 800-10121	97
B	2	KMW AM-X-CD-16-65-00T-RET	97
B	3	Quintel QS66512-2	97
C	1	Kathrein 800-10121	97
C	2	KMW AM-X-CD-14-65-00T-RET	97
C	3	Quintel QS46512-2	97

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	2	60	1,235.72	0.68
Antenna A2	Powerwave P65-17-XLH-RR	700 MHz	14.3	2	80	2,153.23	2.00
Antenna A3	CCI TPA-65R-LCUUUU-H8	2300 MHz (WCS) / 1900 MHz (PCS)	14.45 / 13.75	8	280	7,137.54	3.10
						Sector A Composite MPE%	**5.78**
Antenna B1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	2	60	1,235.72	0.68
Antenna B2	KMW AM-X-CD-16-65-00T-RET	700 MHz	13.35	2	80	1,730.17	1.61
Antenna B3	Quintel QS66512-2	2300 MHz (WCS) / 1900 MHz (PCS)	14.85 / 13.85	8	280	7,548.48	3.28
						Sector B Composite MPE%	**5.56**
Antenna C1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	2	60	1,235.72	0.68
Antenna C2	KMW AM-X-CD-14-65-00T-RET	700 MHz	11.85	2	80	1,224.87	1.14
Antenna C3	Quintel QS46512-2	2300 MHz (WCS) / 1900 MHz (PCS)	4.05 / 13.15	8	280	6,353.78	2.76
						Sector C Composite MPE%	**4.57**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sector with the largest calculated MPE% is Sector A. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**5.78 %**
Clearwire	0.28 %
Site Total MPE %:	**6.06 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	5.78 %
AT&T Sector B Total:	5.56 %
AT&T Sector C Total:	4.57 %
Site Total:	6.06 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sector with the largest calculated MPE% is Sector A.

AT&T _ Frequency Band / Technology Max Power Values (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	1	418.91	97	1.82	850 MHz	567	0.32%
AT&T 1900 MHz (PCS) UMTS	1	816.81	97	3.55	1900 MHz (PCS)	1000	0.35%
AT&T 700 MHz LTE	2	1,076.61	97	9.35	700 MHz	467	2.00%
AT&T 2300 MHz (WCS) LTE	4	835.84	97	14.51	2300 MHz (WCS)	1000	1.45%
AT&T 1900 MHz (PCS) LTE	4	948.55	97	16.47	1900 MHz (PCS)	1000	1.65%
						Total:	**5.78%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	5.78 %
Sector B:	5.56 %
Sector C:	4.57 %
AT&T Maximum Total (per sector):	5.78 %
Site Total:	6.06 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.06 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

Property Cards

Address Search : 1170 Matianuck Avenue Submit Clear Search

1170 Matianuck Ave

Property Owner:
Genesis Health Ventures Of Bloomfield

Property Co-Owner
C/O At&T Mobility

Mailing Address:
575 Morosgo Dr Suite 13-F
Atlanta, GA
30324

File Code
3188

Map:
55

Block:
479

Lot:
70

Census Tract:
4731.00

Property Type:
Cell Tower

Land Area (Acres):
0.05

Zone:
AG

Click to Enlarge

Construction Details

Year Built:

Building Style:

Stories:

Living Area:
0 Sq/Ft

Building ID
102174

Grade

Exterior Wall

Total Rooms:

Bedrooms:

Bathrooms:

Half Baths:

Heating Type

Heating Fuel

AC Type

Valuation

Assessed Land Value:
$103,320

Assessed Building Value:
$94,150

Total Assessed Value:
$197,470

Last Sale

Last Sale Date:
Wednesday, July 3rd, 1985

Last Sale Price:
$0

Qualified Sale:
U

Book/Page:

Appraised Land Value:
$147,600

Appraised Building Value:
$134,500

Total Appraised Value:
$282,100

517/ 199

Prior Owners

Sale Date	Owner Name	Sale Price	Book / Page

Parcel Sketch

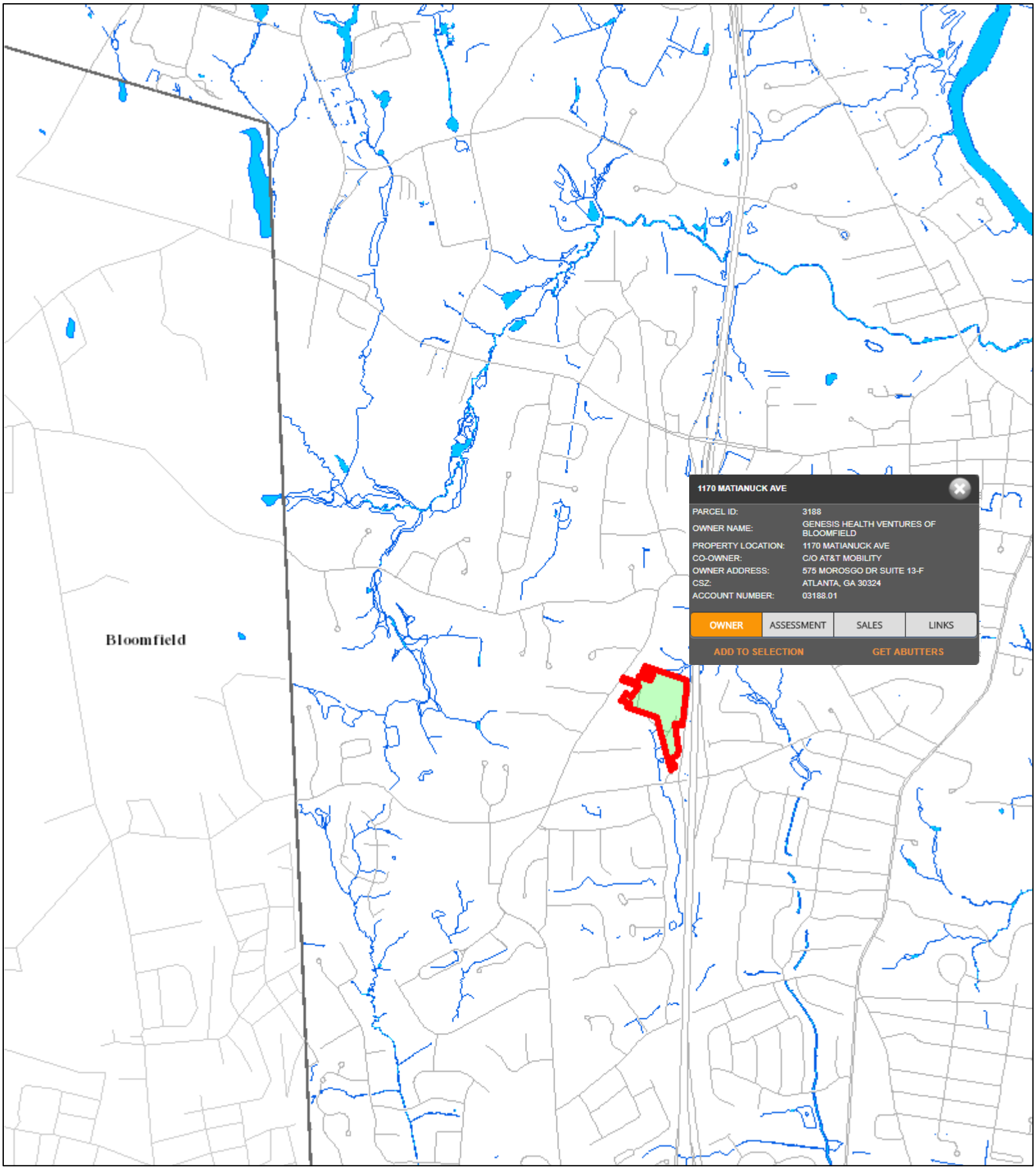
Sub Area Detail

Code	Gross Area (Sq Ft)	Living Area (Sq Ft)

Outbuildings & Extra Features

Code	Description	Appraised Value	Assessed Value

- **AOF** Office Area
- **APT** Apartment
- **BAS** First Floor
- **CAN** Canopy
- **CDN** Canopy (Det)
- **CLP** Loading Platform (Finished)
- **EAF** Attic (Expan)(Finished)
- **EAU** Attic (Expan)(Unfinished)
- **FAT** Attic (Finished)
- **FBM** Basement (Finished)
- **FCB** Cabana (Encl)(Finished)
- **FCP** Carport (Framed)
- **FDC** Carport (Det)(Framed)
- **FDS** Porch (Scrn)(Det)(Finished)
- **FDU** Utility (Det)(Finished)
- **FEP** Porch (Encl)(Finished)
- **FGR** Garage (Framed)
- **FHS** Half-Story (Finished)
- **FLL** Lower Level (Finished)
- **FOP** Porch (Open)(Finished)
- **FSP** Porch (Screen)(Finished)
- **FST** Utility (Finished)
- **FUS** Upper-Story (Finished)
- **PTO** Patio
- **SDA** Store Display Area
- **SFB** Base (Semi-Finished)
- **SPA** Service Prod Area
- **TQS** Three-Qtr Story
- **UAT** Attic (Unifinished)
- **UBM** Basement (Unfinished)
- **UCB** Cabana (Encl)(Unfinished)
- **UDS** Porch (Scrn)(Dedt)(Unifinished)
- **UDU** Utility (Det)(Unifinished)
- **UEP** Porch (Encl)(Unfinished)
- **UHS** Half-Story (Unfinished)
- **ULP** Loading Platform (Unfinished)
- **UOP** Porch (Open)(Unfinished)
- **USP** Porch (Scrn)(Unfinished)
- **UST** Utility (Strg)(Unfinished)
- **UUS** Upper-Story (Unfinished)
- **WDK** Wood Deck



Hartford County, Connecticut

Horizontal Datum is Connecticut State Plane Feet, NAD83

1170 Matianuck Ave

Property Boundaries not legally binding for title or zoning purposes.

1 inch = 2,560 feet

0 1,050 2,100 4,200 Feet

The Town of Windsor makes no warranty as to th accuracy, reliability, or completeness of the information and is not responsible for any error or omissions for results obtained from the use of the information.

PROJECT INFORMATION

SCOPE OF WORK:

ITEMS TO BE MOUNTED ON THE EXISTING TOWER:
- NEW AT&T ANTENNAS: (TPA-65R-LCUUUU-H8) (ALPHA SECTOR, TOTAL OF 1).
- NEW AT&T ANTENNAS: (QS66512-2) (BETA SECTOR, TOTAL OF 1).
- NEW AT&T ANTENNAS: (QS46512-2) (GAMMA SECTOR, TOTAL OF 1).
- NEW AT&T RRUS: RRUS-32 (WCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS: RRUS-32 B2 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T SURGE ARRESTOR: DC6-48-60-18-8F (TOTAL OF 1)
- COAX JUMPERS (4) PER SECTOR, FROM EACH RRU (TOTAL OF 12).
- FIBER JUMPERS (6) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 18).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:
- SWAP BB WITH 5216 & ADD XMU IN EXISTING PURCELL CABINET

ITEMS TO REMAIN:
- (6) ANTENNAS, (3) RRU'S, (6) 7/8" COAX CABLES, (2) DC POWER & (1) FIBER.

SQUID ALARMING (NOT TO BE DAISY CHAINED).
- THE 1ST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED RRH/RRU ON THE ALPHA SECTOR, IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS.
- 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE BETA SECTOR.
- 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE GAMMA SECTOR.

FA:	10071337
SITE OWNER:	CROWN CASTLE
SITE ADDRESS:	1170 MATIANUCK AVENUE WINDSOR, CT 06095
LATITUDE:	41.8404919 N, 41° 50' 25.77" N
LONGITUDE:	72.6664989 W, 72° 39' 59.40" W
TYPE OF SITE:	MONOPINE/ OUTDOOR EQUIPMENT
STRUCTURE HEIGHT:	100'±
RAD CENTER:	97'±
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	B
GN-1	GENERAL NOTES	B
A-1	COMPOUND & EQUIPMENT PLANS	B
A-2	ANTENNA LAYOUTS & ELEVATION	B
A-3	DETAILS	B
G-1	GROUNDING DETAILS	B
RF-1	RF PLUMBING DIAGRAM	B

CCI SITE NAME: WINDSOR SOUTH
CCI SITE #: 842878

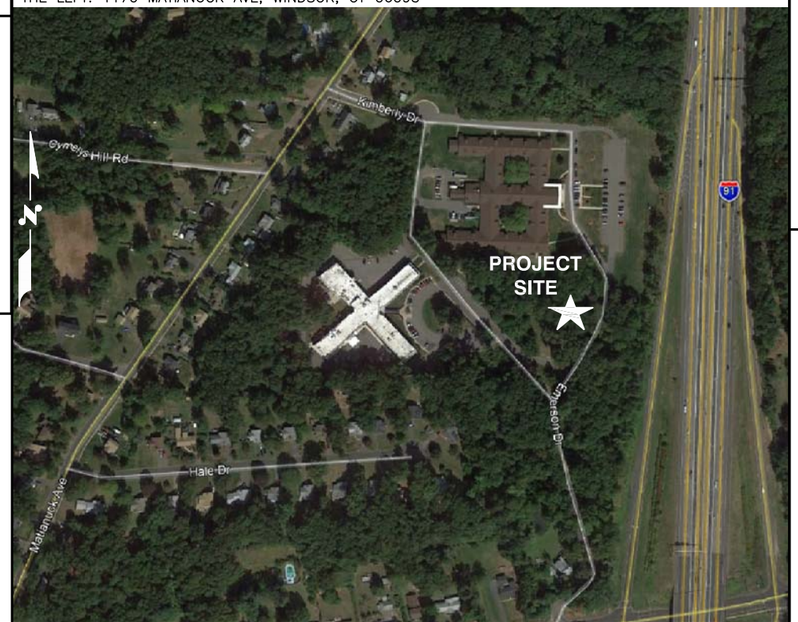
SITE NUMBER: CT5137

SITE NAME: WINDSOR SOUTH

PROJECT: LTE 2C, 3C 2018 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:
GET ON I-91 N FROM ENTERPRISE DR. HEAD SOUTHEAST ON ENTERPRISE DR. TURN LEFT ONTO CAPITAL BLVD. USE THE LEFT LANE TO TURN LEFT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I-91 N. FOLLOW I-91 N TO CT-178 W/PARK AVE IN WINDSOR. TAKE EXIT 36 FROM I-91 N MERGE ONTO I-91 N. TAKE EXIT 36 FOR CT-178/PARK AVE TOWARD BLOOMFIELD
FOLLOW CT-178 W/PARK AVE TO EMERSON DR. TURN LEFT ONTO CT-178 W/PARK AVE
TURN RIGHT ONTO EMERSON DR. TURN RIGHT TO STAY ON EMERSON DR. DESTINATION WILL BE ON THE LEFT. 1170 MATIANUCK AVE, WINDSOR, CT 06095



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

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OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
RAYNHAM, MA 02767

SITE NUMBER: CT5137
SITE NAME: WINDSOR SOUTH
CCI SITE #: 842878
1170 MATIANUCK AVENUE
WINDSOR, CT 06095
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	03/16/18	ISSUED FOR PERMITTING	AM	AT	DJC
A	02/08/18	ISSUED FOR REVIEW	GA	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CREASER · No. 28581 · LICENSED PROFESSIONAL ENGINEER

AT&T
TITLE SHEET
(LTE 2C-3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5137	T-1	B

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) 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 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 AWS 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 COMMUNICATIONS
   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. TOUCHUP 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 2012 WITH 2016 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

    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

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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		

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
RAYNHAM, MA 02767

SITE NUMBER: CT5137
SITE NAME: WINDSOR SOUTH
CCI SITE #: 842878

1170 MATIANUCK AVENUE
WINDSOR, CT 06095
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
B	03/16/18	ISSUED FOR PERMITTING	AM	AT	DJC
A	02/08/18	ISSUED FOR REVIEW	GA	AT	DJC

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

STATE OF CONNECTICUT · DEREK J. CLASEN · No. 28577 · LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES
(LTE 2C-3C)

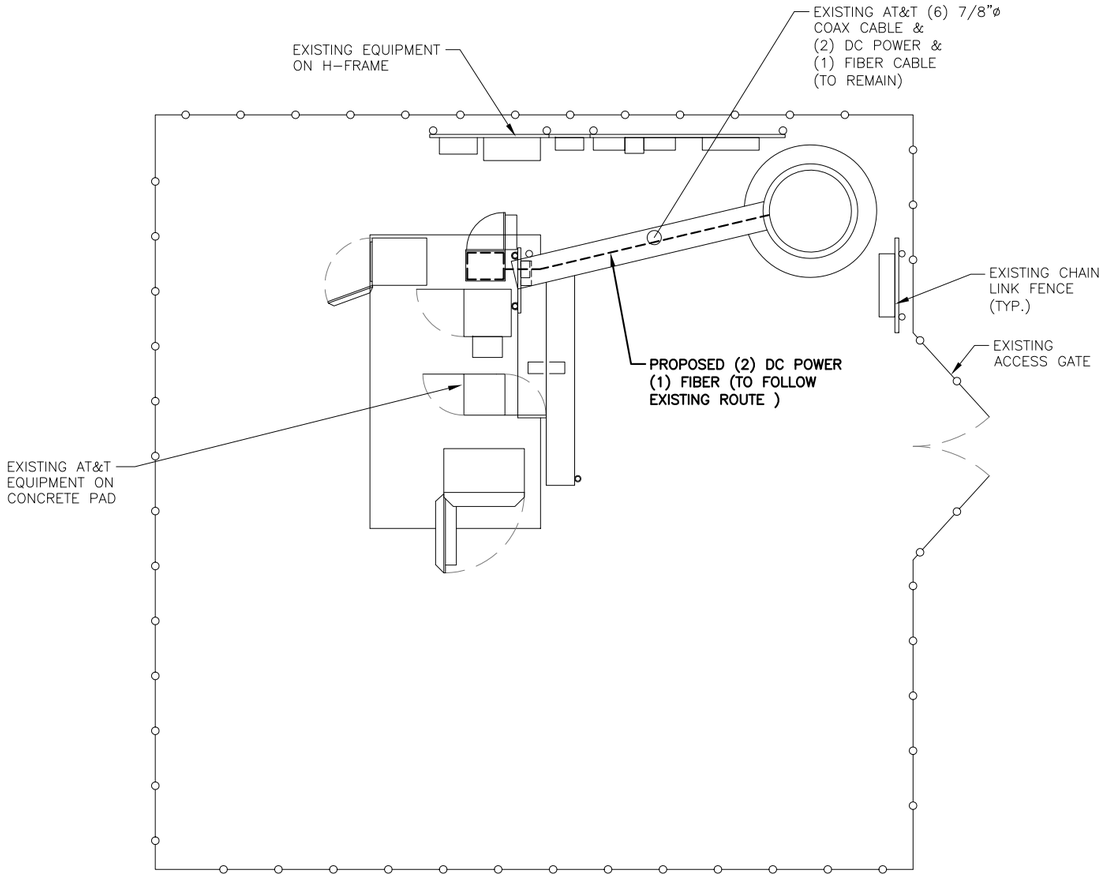
SITE NUMBER	DRAWING NUMBER	REV
CT5137	GN-1	B

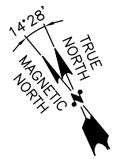
NOTE:

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

NOTE:

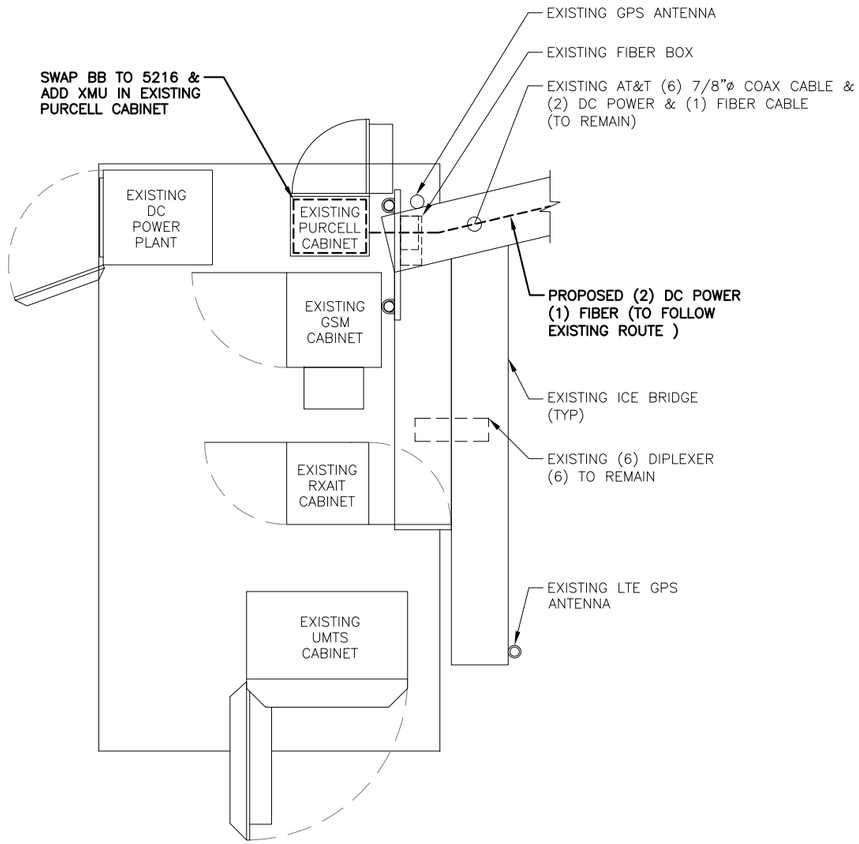
ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL RF DATA SHEET

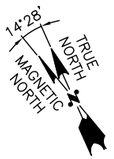




COMPOUND PLAN (1 / A-1)
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"





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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FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE
RAYNHAM, MA 02767

SITE NUMBER: CT5137
SITE NAME: WINDSOR SOUTH
CCI SITE #: 842878

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HARTFORD COUNTY

at&t
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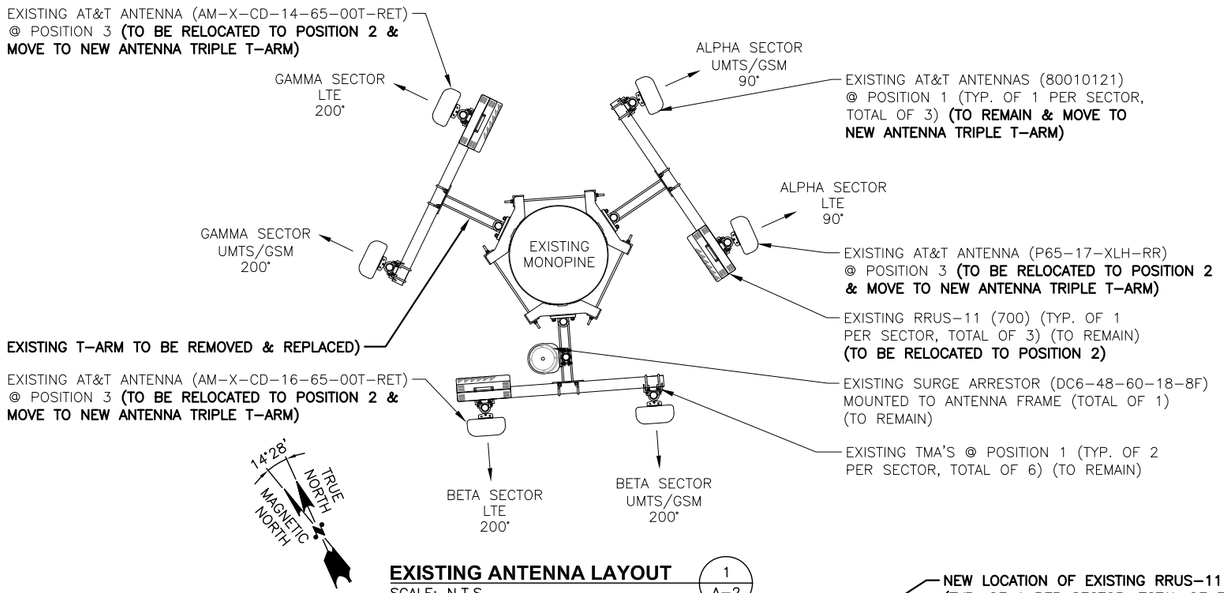
STATE OF CONNECTICUT
DEREK J. CREASER
No. 28547
LICENSED PROFESSIONAL ENGINEER

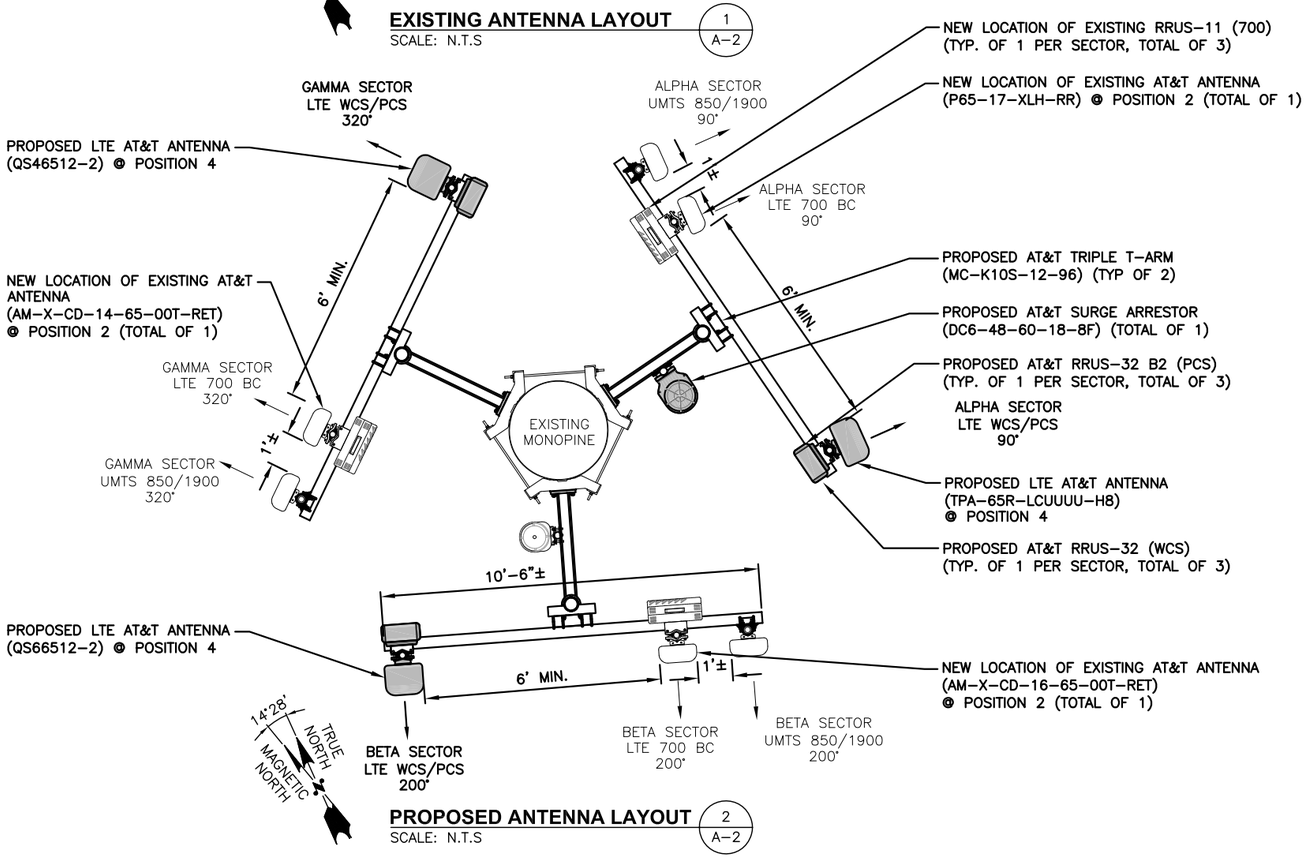
AT&T

COMPOUND & EQUIPMENT PLAN
(LTE 2C-3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5137	A-1	B



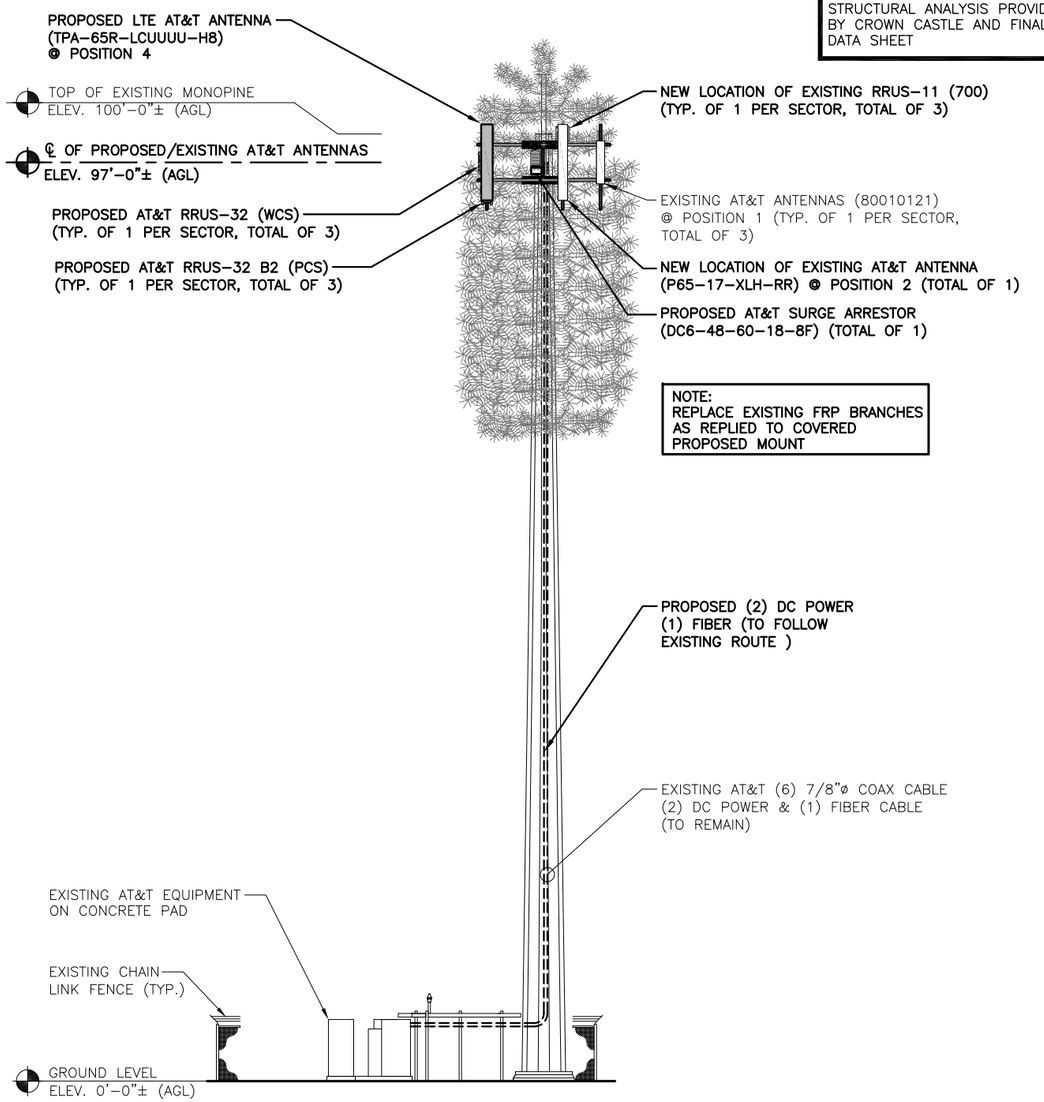
EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S



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

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

NOTE:
ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL RF DATA SHEET



ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"

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DEREK J. CREASER
No. 29555
LICENSED PROFESSIONAL ENGINEER

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ANTENNA LAYOUT & ELEVATION
(LTE 2C-3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5137	A-2	B

NOTE:

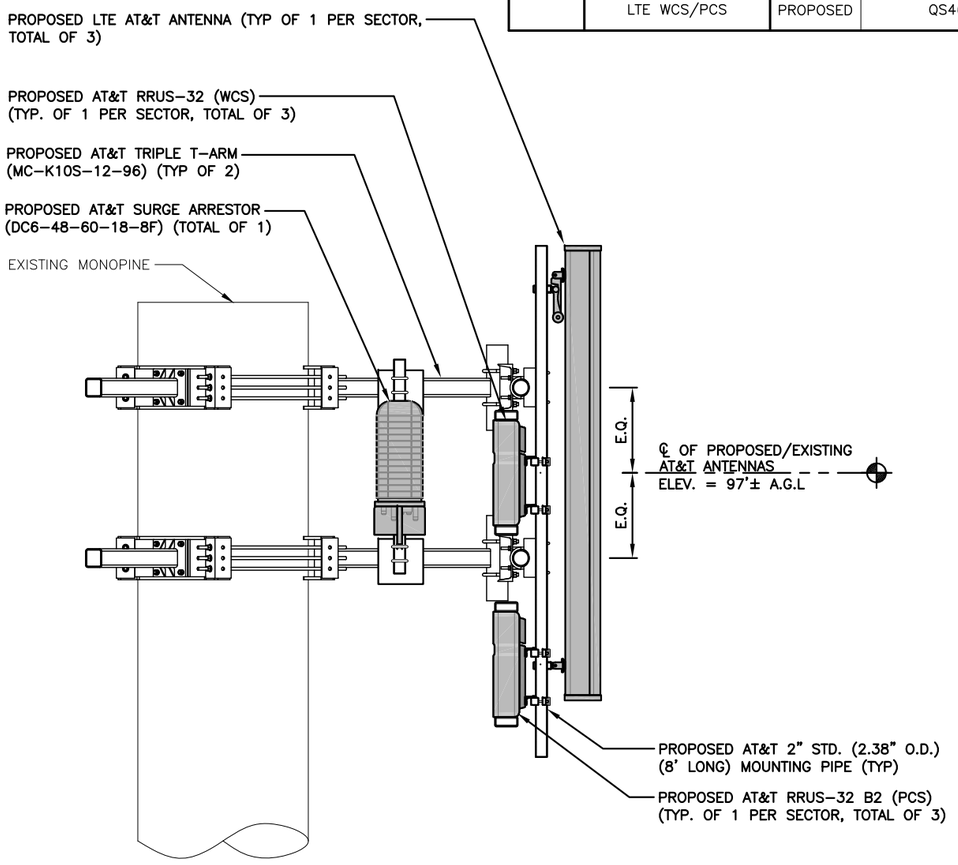
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

ALL ANTENNAS AND RRHS TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL RF DATA SHEET

FINAL ANTENNA SCHEDULE

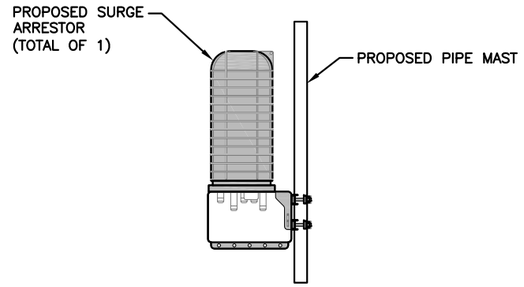
SECTOR	BAND	ANTENNA		SIZE (INCHES) (L X W X D)	RAD CENTER	AZIMUTH	TMA'S		DIPLEXER		RRU'S		SIZE (INCHES) (L X W X D)	COAX JUMPERS	FIBER JUMPERS	COAX
ALPHA	UMTS 850/1900	EXISTING	80010121	54.5X10.3X6.6	97'-0"±	90°	EXISTING	(2)LGP21401	EXISTING	(2)LGP21901	–	–	–	–	–	(2) 7/8
	LTE 700 BC	EXISTING	P65-17-XLH-RR	96X12X6	97'-0"±	90°	–	–	–	–	EXISTING	RRUS-11 (700)	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	LTE WCS/PCS	PROPOSED	TPA-65R-LCUUUU-H8	96X14.4X8.6	97'-0"±	90°	–	–	–	–	PROPOSED PROPOSED	RRUS-32 B2 (PCS) RRUS-32 (WCS)	27.2X12.1X7.0 27.2X12.1X7.0	*1 *1	**2 **1	–
BETA	UMTS 850/1900	EXISTING	80010121	54.5X10.3X6.6	97'-0"±	200°	EXISTING	(2)LGP21401	EXISTING	(2)LGP21901	–	–	–	–	–	(2) 7/8
	LTE 700 BC	EXISTING	AM-X-CD-16-65-00T-RET	72X11.8X5.9	97'-0"±	200°	–	–	–	–	EXISTING	RRUS-11 (700)	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	LTE WCS/PCS	PROPOSED	QS66512-2	72X12X9.6	97'-0"±	200°	–	–	–	–	PROPOSED PROPOSED	RRUS-32 B2 (PCS) RRUS-32 (WCS)	27.2x12.1X7.0 27.2X12.1X7.0	*1 *1	**2 **1	–
GAMMA	UMTS 850/1900	EXISTING	80010121	54.5X10.3X6.6	97'-0"±	320°	EXISTING	(2)LGP21401	EXISTING	(2)LGP21901	–	–	–	–	–	(2) 7/8
	LTE 700 BC	EXISTING	AM-X-CD-14-65-00T-RET	48X11.8X5.9	97'-0"±	320°	–	–	–	–	EXISTING	RRUS-11 (700)	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	LTE WCS/PCS	PROPOSED	QS46512-2	52X12X10.8	97'-0"±	320°	–	–	–	–	PROPOSED PROPOSED	RRUS-32 B2 (PCS) RRUS-32 (WCS)	27.2X12.1X7.0 27.2X12.1X7.0	*1 *1	**2 **1	–



PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL (1 / A-3)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

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

FINAL ANTENNA CONFIGURATION TABLE (3 / A-3)



*COAX JUMPER NOTE:
COAX JUMPERS (2) PER SECTOR, FROM EACH RRU (TOTAL OF 6).

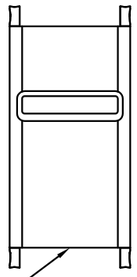
**FIBER JUMPER NOTE:
FIBER JUMPERS (3) PER SECTOR, FROM THE SQUID TO EACH RRU (TOTAL OF 9).

RRU CHART				
QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	19.7"	17.0"	7.2"
6(P)	RRUS-32	27.2"	12.1"	7.0"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

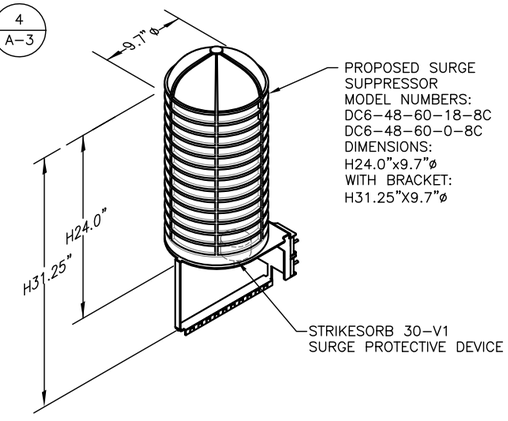


PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRUS DETAIL (2 / A-3)
SCALE: N.T.S

PROPOSED SURGE ARRESTOR MOUNTING DETAIL (4 / A-3)
SCALE: N.T.S



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL (5 / A-3)
SCALE: N.T.S

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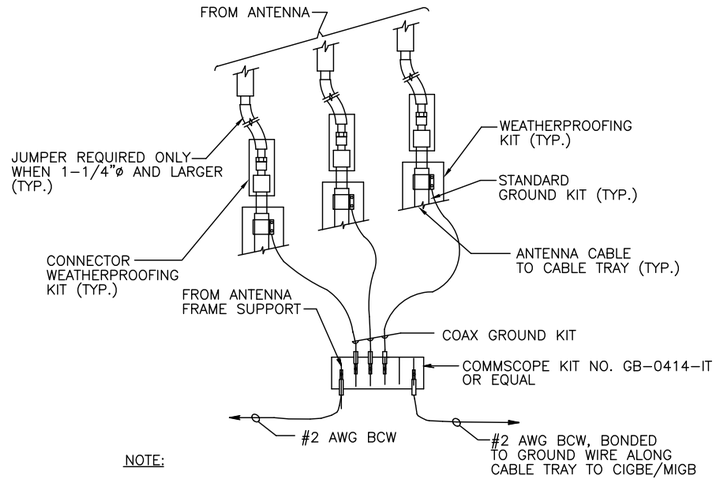
DETAILS
(LTE 2C-3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5137	A-3	B



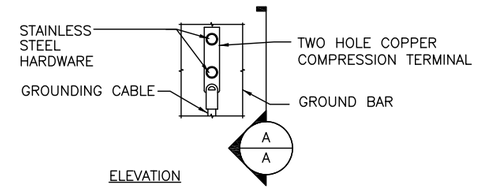
NOTE:

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

SCALE: N.T.S

1 / G–1



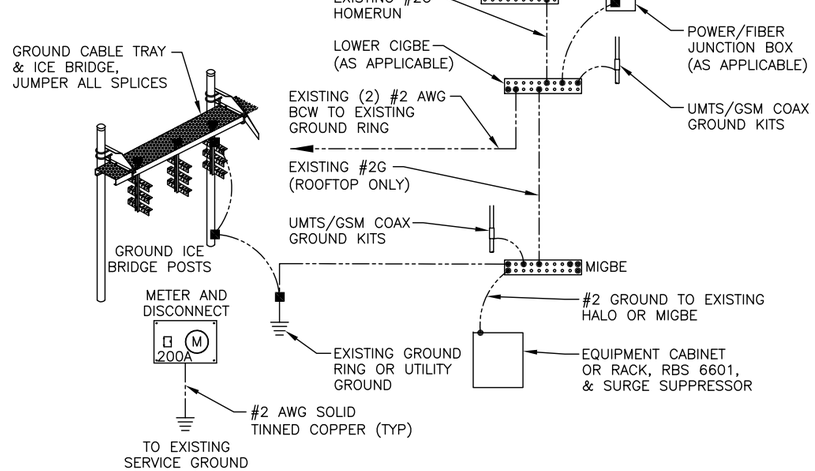
NOTE:

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

SCALE: N.T.S

3 / G–1



GROUNDING RISER DIAGRAM

SCALE: N.T.S

2 / G–1

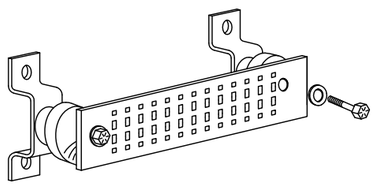
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

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

SECTION "A" – SURGE ABSORBERS

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



GROUND BAR - DETAIL

SCALE: N.T.S

4 / G–1

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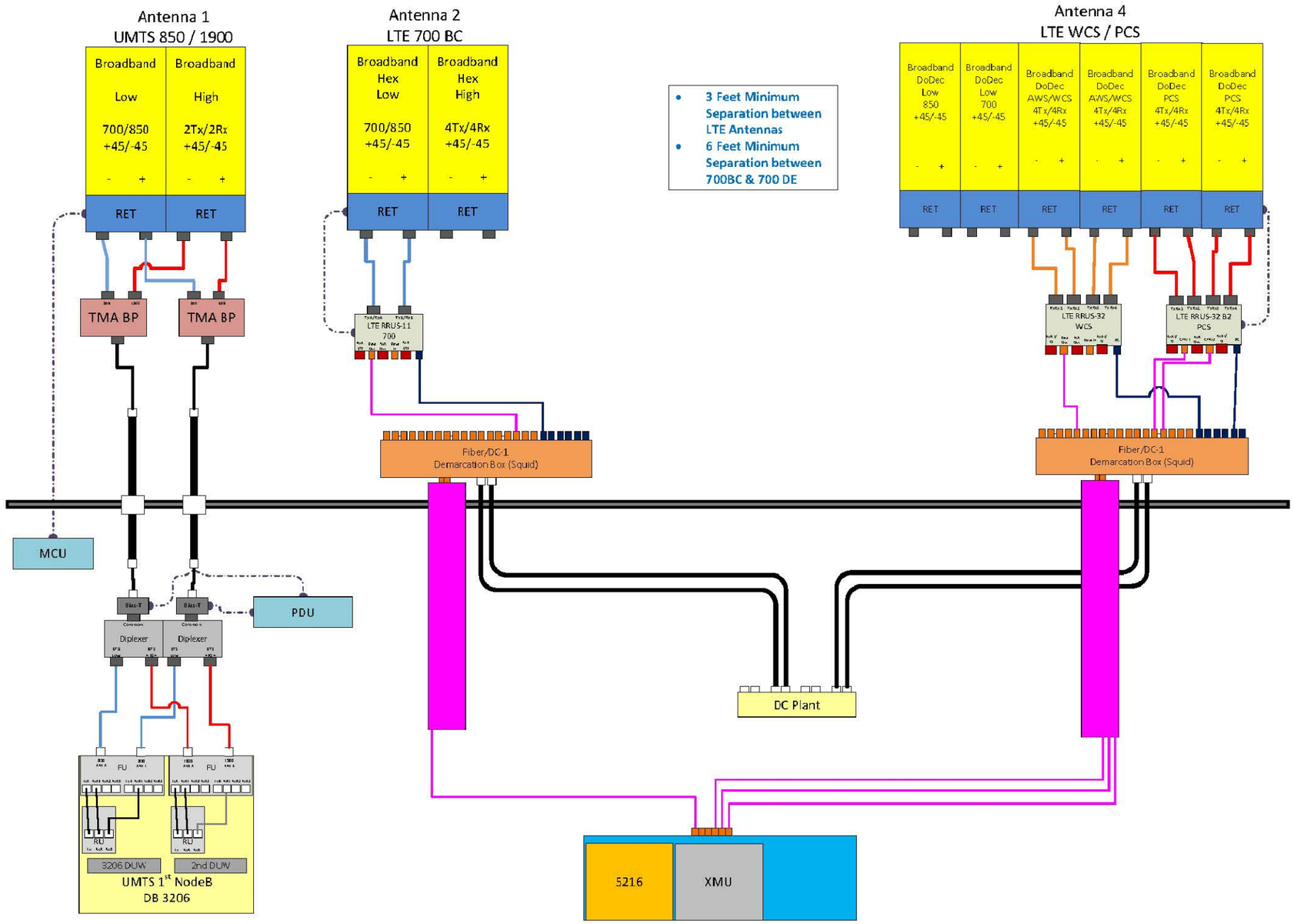
GROUNDING DETAILS
(LTE 2C–3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5137	G–1	B



- 3 Feet Minimum Separation between LTE Antennas
- 6 Feet Minimum Separation between 700BC & 700 DE

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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RF PLUMBING DIAGRAM
(LTE 2C–3C)

SITE NUMBER	DRAWING NUMBER	REV
CT5137	RF–1	B