Michael Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@clinellc.com

March 2, 2016

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

RE: Notice of Exempt Modification // Site Number: CT2070
302 Ball Pond Road, New Fairfield, CT 06812 (Site Name: New Fairfield)
N 41.4647778// W 73.4969445

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 135 foot level of the existing 175 foot monopole tower at 302 Ball Pond Road, New Fairfield, CT 06812. The tower is owned by the Town of New Fairfield. The property is also owned by the Town of New Fairfield. AT&T now intends to replace three (3) of the existing antennas with three (3) for its LTE upgrade. These antennas would be installed at the 135 foot level of the tower. AT&T also intends to install three (3) remote radio units, as well as three (3) remote radio unit modules.

The current proposal involves an antenna swap only (three for three); zero antennas will be added.

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 Susan Chapman, First Selectman for the Town of New Fairfield, as well as the tower owner and the ground owner, both being the Town of New Fairfield as well.

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 2/26/2016 by ComEx Consultants, a structural analysis dated 2/16/2016 by Infinigy Design and an Emissions Analysis Report dated 1/21/2016 by EBI Consulting.

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.

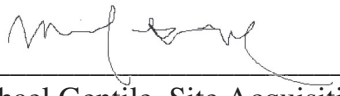
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading as shown in the attached structural analysis by Infinigy Design dated 2/16/2016.

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,



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Centerline Communications, LLC
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Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@centerlincommunications.com

Attachments

cc: Susan Chapman, Town of New Fairfield - as elected official
Town of New Fairfield - as tower owner
Town of New Fairfield - as property owner

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

AT&T Existing Facility

Site ID: CT2070

New Fairfield
302 Ball Pond Road
New Fairfield, CT 06812

January 21, 2016

EBI Project Number: 6216000229

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	8.55 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
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January 21, 2016

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

Emissions Analysis for Site: **CT2070 – New Fairfield**

EBI Consulting was directed to analyze the proposed AT&T facility located at **302 Ball Pond Road, New Fairfield, 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 public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of 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 done for the proposed AT&T Wireless antenna facility located at **302 Ball Pond Road, New Fairfield, 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.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

2) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

3) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

7) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antennas used in this modeling are the Powerwave 7770, CCI HPA-65R-BUU-H6 and the CCI HPA-65R-BUU-H8 for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) 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.

9) The antenna mounting height centerline of the proposed antennas is **135 feet** above ground level (AGL).

10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	CCI HPA-65R-BUU-H8	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	13.15 / 14.95 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	6,229.75	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A1 MPE%	**1.96**	Antenna B1 MPE%	**1.64**	Antenna C1 MPE%	**1.64**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A2 MPE%	**0.60**	Antenna B2 MPE%	**0.60**	Antenna C2 MPE%	**0.60**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 dBd	Gain:	11.4 dBd	Gain:	11.4 dBd
Height (AGL):	135 feet	Height (AGL):	135 feet	Height (AGL):	135 feet
Frequency Bands	850 MHz	Frequency Bands	850 MHz	Frequency Bands	850 MHz
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	60	Total TX Power(W):	60	Total TX Power(W):	60
ERP (W):	828.23	ERP (W):	828.23	ERP (W):	828.23
Antenna A3 MPE%	**0.32**	Antenna B3 MPE%	**0.32**	Antenna C3 MPE%	**0.32**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**2.87 %**
Town Fire Dept	0.23 %
Town Police Dept	0.15 %
Town Pub Wks Dept	0.21 %
Clearwire	0.12 %
T-Mobile	2.08 %
Verizon Wireless	2.89 %
Site Total MPE %:	**8.55 %**

AT&T Sector 1 Total:	2.87 %
AT&T Sector 2 Total:	2.56 %
AT&T Sector 3 Total:	2.56 %
Site Total:	8.55 %

AT&T _ Per Sector (Max Sector – 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 700 MHz LTE	2	1239.23	135	5.35	700	467	1.15 %
AT&T 1900 MHz (PCS) LTE	2	1875.65	135	8.10	1900	1000	0.81 %
AT&T 850 MHz UMTS	2	414.12	135	1.79	850	567	0.32 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	135	2.84	1900	1000	0.28 %
AT&T 850 MHz GSM	2	414.12	135	1.79	850	567	0.32 %
						Total:	2.81 %

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Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector 1:	2.87 %
Sector 2:	2.561 %
Sector 3 :	2.56 %
AT&T Maximum Total (per sector):	2.87 %
Site Total:	8.55 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.55%** of the allowable FCC established general public 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

EBI Consulting
21 B Street
Burlington, MA 01803

INFINIGY Design. Build. Deliver.

1033 Watervliet Shaker Road | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

Tower Design Report

February 16, 2016

Site Name	CT2070
Infinigy Job Number	158-093
Client	Com Ex Consultants
Proposed Carrier	AT&T Mobility
Site Location	302 Ball Pond Road, New Fairfield, CT 06812 41° 27' 53.1" N NAD83 73° 29' 49.02" W NAD83
Structure Type	175' Monopole
Structural Usage Ratio	**95.2%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and foundations are therefore deemed adequate to support the existing and proposed loading as listed in this report.

STATE OF CONNECTICUT
JOSEPH R. JOHNSTON
29460
LICENSED
PROFESSIONAL ENGINEER

Joseph R. Johnston

FEB 16 2016

Fathullah Zamani
Structural Engineer I

Contents

Introduction

Infinigy Engineering has been requested to perform a structural analysis on the existing 175' monopole. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The tower was analyzed using tnxTower version 7.0.5 tower analysis software.

Supporting Documentation

Original Design Drawings	Fred A. Nudd Corporation Drawing #03-0303-1, dated February 14, 2003
Proposed Loading	Com Ex Job #15122-EMP, dated December 7, 2015
Previous Analysis	AECOM Job #36931429.00001, dated March 6, 2015
Modification Drawings	Infinigy Engineering Project #379-016, dated April 24, 2015

Analysis Code Requirements

Wind Speed	85 mph (Fastest-Mile)
Wind Speed w/ ice	75 mph (Fastest-Mile) w/ 1/2" ice
TIA Revision	ANSI/TIA/EIA-222-F
Adopted IBC	2003 IBC w/ 2005 CT Supplements & 2013 CT Amendments

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and foundations are therefore deemed adequate to support the existing and proposed loading as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Fathullah Zamani
Structural I | Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790 | (M) (518) 892-0471
fzamani@infinigy.com | www.infinigy.com

Existing and Reserved Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
175.0	4	Celwave PD220	Platform	(4) 1-5/8” (2) 1/2”	Town
	1	1’ Square Panel			
	1	2’ Dish w/ Radome			
155.0	2	EMS RR65-18-02DTR	Platform	(4) 1-1/4” Hybrid	Sprint
	1	EMS RR45-19-02DPL			
	1	RFS APXVSPP18-C-A20			
	2	Powerwave P40-16-XLPP-RR			
	3	APXVTM14-G120			
	3	TDRRH8x20-25 RRH			
	3	ALU 1900 MHz RRH			
	3	ALU 800 MHz RRH			
145.0	3	Andrew LNX-6515DS-VTM	T-Arms	(18) 1-5/8” (1) Hybrid	T-Mobile
	3	Ericsson RRUS-11			
	3	Ericsson AIR 21 B2A/B4P			
	3	Ericsson AIR B4A/B2P			
	3	TMA			
135.0	6	Powerwave 7770	T-Arms	(12) 1-5/8” (1) Fiber Optic (2) DC Cables	AT&T
	6	TMA			
	6	Diplexers			
	3	RRUS-11			
	1	DC6			
125.0	6	Antel BXA-171085/12	Standoff	(18) 1-5/8” (1) Hybrid	Verizon
	6	Antel LPA-80080/6			
	3	Antel BXA-70063/6			
	3	RRH Units			
	1	Surge Suppressor Unit			
100.0	1	PD-220 Omni Antenna	Standoff	(1) 1-5/8”	Unknown
85.0	3	GPS Units	Standoff	(1) 1-5/8”	

To Be Removed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
135.0	3	Powerwave P65-17-XLH-RR	--	--	AT&T

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax& Lines	Carrier
135.0	3	CCI HPA-65R-BUU-H8	--	--	AT&T
	3	Ericsson A2 Module			
	3	Ericsson RRUS-12			

Structure Usages

Pole	95.0	Pass
Reinforcing	95.2	Pass
Anchor Bolts	73.9	Pass
Base Plate	76.2	Pass
RATING =	**95.2**	**Pass**

Foundation Reactions

Reaction Data	Design Reactions	Analysis Reactions	Result
Moment (kip-ft)	N/A	4505.1	79.6%
Shear (kip)	N/A	36.1	23.2%
Axial (kip)	N/A	48.1	72.7%

-Tower base reactions are acceptable per rigorous structural analysis

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (°)	Sway (°)
145.0	32.86	0.03	2.28

*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.
*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.
*Per ANSI/TIA-222-G Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.
*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

Assumptions and Limitations

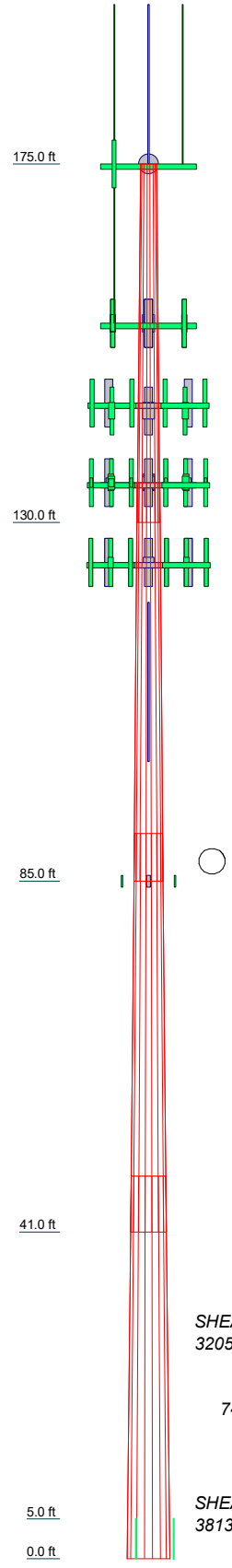
Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

Section	1	2	3	4
Length (ft)	45.00	50.00	50.00	48.00
Number of Sides	18	18	18	18
Thickness (in)	0.2500	0.3130	0.3750	0.3750
Socket Length (ft)	5.00	6.00	7.00	
Top Dia (in)	24.0000	33.0004	42.6595	52.0923
Bot Dia (in)	34.6880	44.6880	54.5000	64.5000
Grade	A572-65			
Tube Length (ft)	5.00			
Reinf Size	A			
Reinf Grade	A			
Weight (lb)	3535.1	6512.8	9761.9	11260.4

31070.1



AXIAL
57456 lb

SHEAR
32054 lb

MOMENT
3983027 lb-ft

TORQUE 13660 lb-ft
74 mph WIND - 0.5000 in ICE

AXIAL
48953 lb

SHEAR
38134 lb

MOMENT
4595140 lb-ft

TORQUE 14225 lb-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PD220 (Municipal)	175	(2) LGP21401 (ATI)	135
PD220 (Municipal)	175	(2) LGP21401 (ATI)	135
PD220 (Municipal)	175	TTA (ATI)	135
PD220 (Municipal)	175	TTA (ATI)	135
1' Square Panel (Municipal)	175	TTA (ATI)	135
Pipe Low Profile Platform (Municipal)	175	Pipe T-Arm (ATI)	135
2.5' Dish w/ Radome (Municipal)	175	Pipe T-Arm (ATI)	135
APXVTM14-C-120 (Sprint)	155	Pipe T-Arm (ATI)	135
APXVTM14-C-120 (Sprint)	155	HPA-65R-BUU-H8 (ATI)	135
APXVSPP18-C-A20 (Sprint)	155	HPA-65R-BUU-H8 (ATI)	135
P40-16-XLPP-RR-A (Sprint)	155	RRUS-11 (ATI)	135
P40-16-XLPP-RR-A (Sprint)	155	RRUS-11 (ATI)	135
RR65-18-DP (Sprint)	155	RRUS-11 (ATI)	135
RR65-18-DP (Sprint)	155	DC6-48-60-18-8F (ATI)	135
RR65-18-DP (Sprint)	155	RRUS-12 (ATI)	135
TD-RRH8X20 (Sprint)	155	RRUS-12 (ATI)	135
TD-RRH8X20 (Sprint)	155	RRUS-12 (ATI)	135
TD-RRH8X20 (Sprint)	155	A2 Module (ATI)	135
800 MHz RRH (Sprint)	155	A2 Module (ATI)	135
800 MHz RRH (Sprint)	155	A2 Module (ATI)	135
800 MHz RRH (Sprint)	155	HPA-65R-BUU-H8 (ATI)	135
1900MHz RRH (Sprint)	155	(2) Diplexer (Verizon)	125
1900MHz RRH (Sprint)	155	(2) Diplexer (Verizon)	125
1900MHz RRH (Sprint)	155	RDC-4276-PF-48J (Verizon)	125
Pipe Low Profile Platform (Municipal)	155	Pipe T-Arm (Verizon)	125
APXVTM14-C-120 (Sprint)	155	Pipe T-Arm (Verizon)	125
(2) AIR 21, 1.3 M, B2A B4P (T-Mobile)	145	Pipe T-Arm (Verizon)	125
(2) AIR 21, 1.3 M, B2A B4P (T-Mobile)	145	(2) LPA-80080/6CF (Verizon)	125
TTA 18"x6"x6" (T-Mobile)	145	(2) LPA-80080/6CF (Verizon)	125
TTA 18"x6"x6" (T-Mobile)	145	(2) LPA-80080/6CF (Verizon)	125
TTA 18"x6"x6" (T-Mobile)	145	(2) BXA-171085/12CF (Verizon)	125
Pipe T-Arm (T-Mobile)	145	(2) BXA-171085/12CF (Verizon)	125
Pipe T-Arm (T-Mobile)	145	(2) BXA-171085/12CF (Verizon)	125
Pipe T-Arm (T-Mobile)	145	BXA-70063/6CF (Verizon)	125
(2) AIR 21, 1.3 M, B2A B4P (T-Mobile)	145	BXA-70063/6CF (Verizon)	125
LNX-6515DS-VTM (T-Mobile)	144	BXA-70063/6CF (Verizon)	125
LNX-6515DS-VTM (T-Mobile)	144	RRH2x40-07-U (Verizon)	125
LNX-6515DS-VTM (T-Mobile)	144	RRH2x40-07-U (Verizon)	125
RRUS-11 (T-Mobile)	144	RRH2x40-07-U (Verizon)	125
RRUS-11 (T-Mobile)	144	(2) Diplexer (Verizon)	125
RRUS-11 (T-Mobile)	144	PD220 (Municipal)	100
(2) RA21-7770.00 (ATI)	135	Pipe Side Arm (Municipal)	100
(2) RA21-7770.00 (ATI)	135	GPS (Sprint)	85
(2) RA21-7770.00 (ATI)	135	GPS (Sprint)	85
(2) LGP21401 (ATI)	135	GPS (Sprint)	85

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Williams 150 KSI	120 ksi	150 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 95.2%

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Job: **158-093**			
Project: **CT2070**			
Client: Com Ex/ AT&T Mobility	Drawn by: FZamani	App'd:	
Code: TIA/EIA-222-F	Date: 02/16/16	Scale: NTS	
Path: C:\Users\fzamani\Desktop\Projects 2016\Feburary 2016\CT2070-1522\Structural Calculations\CT2070 Mod Designed		Dwg No. E-1	

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
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* *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	175.00-130.00	45.00	5.00	18	24.0000	34.6880	0.2500	1.0000	A572-65 (65 ksi)
L2	130.00-85.00	50.00	6.00	18	33.0004	44.6880	0.3130	1.2520	A572-65 (65 ksi)
L3	85.00-41.00	50.00	7.00	18	42.6595	54.5000	0.3750	1.5000	A572-65 (65 ksi)
L4	41.00-0.00	48.00		18	52.0923	64.5000	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	24.3702	18.8456	1342.9976	8.4313	12.1920	110.1540	2687.7623	9.4246	3.7840	15.136
	35.2231	27.3266	4094.4743	12.2255	17.6215	232.3567	8194.3362	13.6659	5.6651	22.66
L2	34.6963	32.4737	4383.6068	11.6040	16.7642	261.4858	8772.9818	16.2400	5.2572	16.796
	45.3774	44.0849	10967.4032	15.7531	22.7015	483.1135	21949.2375	22.0466	7.3142	23.368
L3	44.7604	50.3291	11368.9151	15.0110	21.6710	524.6137	22752.7897	25.1693	6.8481	18.262
	55.3408	64.4223	23843.4650	19.2144	27.6860	861.2102	47718.3038	32.2173	8.9320	23.819
L4	54.7333	61.5566	20800.9850	18.3597	26.4629	786.0432	41629.3406	30.7841	8.5082	22.689
	65.4950	76.3248	39651.3314	22.7644	32.7660	1210.1365	79354.8371	38.1696	10.6920	28.512

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 175.00-130.00				1	1	1			
L2 130.00-85.00				1	1	1			
L3 85.00-41.00				1	1	1			
L4 41.00-0.00				1	1	1			

Pole Reinforcing Data

Height Above Base ft	Segment Length ft	No. of Segments	Offset in	Grade	Type	Size	Unbraced Length ft	K	Bolt Hole Dia. in	Bolts per Row	Shear Lag Factor U
0.00	5.00	3	6.0000	Williams 150 KSI (120 ksi)	Solid Round	Williams R71 1-3/4" 150 KSI All-Thread-Bar	2.50	1.00	0.0000	0	0.000

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
1/2 (Municipal)	C	No	Inside Pole	175.00 - 8.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
1 5/8 (Municipal) ***	C	No	Inside Pole	175.00 - 8.00	4	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1 1/4" Hybriflex Cable (Sprint) ***	C	No	Inside Pole	155.00 - 8.00	4	No Ice	0.00	1.00
						1/2" Ice	0.00	1.00
1 5/8" Fiber (T-Mobile)	C	No	Inside Pole	145.00 - 8.00	1	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
1 5/8 (T-Mobile) ***	C	No	Inside Pole	145.00 - 8.00	18	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1/2 (T-Mobile)	C	No	Inside Pole	137.00 - 8.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
1 5/8 (T-Mobile) ***	C	No	Inside Pole	137.00 - 8.00	13	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1 5/8" Fiber (Verizon)	C	No	Inside Pole	125.00 - 8.00	1	No Ice	0.00	1.61
						1/2" Ice	0.00	1.61
1 5/8 (Verizon) ***	C	No	Inside Pole	125.00 - 8.00	18	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1 5/8 (Municipal) ***	C	No	Inside Pole	100.00 - 8.00	1	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1/2 (Municipal)	C	No	Inside Pole	85.00 - 8.00	3	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25

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 lb
L1	175.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	712.79
L2	130.00-85.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	2764.25
L3	85.00-41.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	2865.72
L4	41.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	2149.29

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 lb
L1	175.00-130.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	712.79
L2	130.00-85.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	2764.25
L3	85.00-41.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	2865.72
L4	41.00-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	2149.29

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
PD220	A	From Leg	4.00	0.0000	175.00	No Ice	3.56	3.56	23.00
(Municipal)			0.00			1/2" Ice	7.13	7.13	46.00
			10.00						
PD220	B	From Leg	4.00	0.0000	175.00	No Ice	3.56	3.56	23.00
(Municipal)			0.00			1/2" Ice	7.13	7.13	46.00
			10.00						
PD220	C	From Leg	4.00	0.0000	175.00	No Ice	3.56	3.56	23.00
(Municipal)			0.00			1/2" Ice	7.13	7.13	46.00
			10.00						
PD220	C	From Leg	4.00	0.0000	175.00	No Ice	3.56	3.56	23.00
(Municipal)			0.00			1/2" Ice	7.13	7.13	46.00
			-10.00						
1' Square Panel	C	From Leg	4.00	0.0000	175.00	No Ice	1.05	1.08	20.61
(Municipal)			0.00			1/2" Ice	1.21	1.27	30.47
			0.00						
Pipe Low Profile Platform	A	From Leg	4.00	0.0000	175.00	No Ice	21.70	21.70	1500.00
(Municipal)			0.00			1/2" Ice	27.20	27.20	1700.00
			0.00						
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APXVTM14-C-120	A	From Leg	4.00	0.0000	155.00	No Ice	6.53	3.38	52.90
(Sprint)			0.00			1/2" Ice	6.96	3.72	90.49
			0.00						
APXVTM14-C-120	B	From Leg	4.00	0.0000	155.00	No Ice	6.53	3.38	52.90
(Sprint)			0.00			1/2" Ice	6.96	3.72	90.49
			0.00						
APXVTM14-C-120	C	From Leg	4.00	0.0000	155.00	No Ice	6.53	3.38	52.90
(Sprint)			0.00			1/2" Ice	6.96	3.72	90.49
			0.00						
APXVSPP18-C-A20	A	From Leg	4.00	0.0000	155.00	No Ice	8.26	5.28	57.00
(Sprint)			0.00			1/2" Ice	8.81	5.74	106.52
			0.00						
P40-16-XLPP-RR-A	B	From Leg	4.00	0.0000	155.00	No Ice	10.50	3.52	53.00
(Sprint)			0.00			1/2" Ice	10.98	3.87	106.23
			0.00						
P40-16-XLPP-RR-A	C	From Leg	4.00	0.0000	155.00	No Ice	10.50	3.52	53.00
(Sprint)			0.00			1/2" Ice	10.98	3.87	106.23
			0.00						
RR65-18-DP	A	From Leg	4.00	0.0000	155.00	No Ice	10.16	4.28	34.00
(Sprint)			0.00			1/2" Ice	10.85	5.35	77.74
			0.00						
RR65-18-DP	B	From Leg	4.00	0.0000	155.00	No Ice	10.16	4.28	34.00
(Sprint)			0.00			1/2" Ice	10.85	5.35	77.74
			0.00						
RR65-18-DP	C	From Leg	4.00	0.0000	155.00	No Ice	10.16	4.28	34.00
(Sprint)			0.00			1/2" Ice	10.85	5.35	77.74
			0.00						
TD-RRH8X20	A	From Leg	4.00	0.0000	155.00	No Ice	4.32	1.41	66.14
(Sprint)			0.00			1/2" Ice	4.60	1.61	90.08
			0.00						
TD-RRH8X20	B	From Leg	4.00	0.0000	155.00	No Ice	4.32	1.41	66.14
(Sprint)			0.00			1/2" Ice	4.60	1.61	90.08
			0.00						
TD-RRH8X20	C	From Leg	4.00	0.0000	155.00	No Ice	4.32	1.41	66.14
(Sprint)			0.00			1/2" Ice	4.60	1.61	90.08

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
			0.00						
800 MHz RRH (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	2.25 2.46	2.40 2.61	64.00 86.12
800 MHz RRH (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	2.25 2.46	2.40 2.61	64.00 86.12
800 MHz RRH (Sprint)	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	2.25 2.46	2.40 2.61	64.00 86.12
1900MHz RRH (Sprint)	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	2.70 2.94	2.77 3.01	60.00 83.90
1900MHz RRH (Sprint)	B	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	2.70 2.94	2.77 3.01	60.00 83.90
1900MHz RRH (Sprint)	C	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	2.70 2.94	2.77 3.01	60.00 83.90
Pipe Low Profile Platform (Municipal)	A	From Leg	4.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	21.70 27.20	21.70 27.20	1500.00 1700.00
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(2) AIR 21, 1.3 M, B2A B4P (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	6.53 6.98	4.36 4.77	83.00 124.90
(2) AIR 21, 1.3 M, B2A B4P (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	6.53 6.98	4.36 4.77	83.00 124.90
(2) AIR 21, 1.3 M, B2A B4P (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	6.53 6.98	4.36 4.77	83.00 124.90
TTA 18"x6"x6" (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	1.05 1.21	1.08 1.27	20.61 30.47
TTA 18"x6"x6" (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	1.05 1.21	1.08 1.27	20.61 30.47
TTA 18"x6"x6" (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	1.05 1.21	1.08 1.27	20.61 30.47
Pipe T-Arm (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	9.70 12.10	3.30 5.20	250.00 314.00
Pipe T-Arm (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	9.70 12.10	3.30 5.20	250.00 314.00
Pipe T-Arm (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice	9.70 12.10	3.30 5.20	250.00 314.00
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HPA-65R-BUU-H8 (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	10.36 10.93	6.45 6.91	51.00 113.99
HPA-65R-BUU-H8 (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	10.36 10.93	6.45 6.91	51.00 113.99

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
HPA-65R-BUU-H8	C	From Leg	4.00	0.0000	135.00	No Ice	10.36	6.45	51.00
(AT&T)			0.00			1/2" Ice	10.93	6.91	113.99
			0.00						
RRUS-11	A	From Leg	4.00	0.0000	135.00	No Ice	4.42	1.63	55.00
(AT&T)			0.00			1/2" Ice	4.71	1.84	80.77
			0.00						
RRUS-11	B	From Leg	4.00	0.0000	135.00	No Ice	4.42	1.63	55.00
(AT&T)			0.00			1/2" Ice	4.71	1.84	80.77
			0.00						
RRUS-11	C	From Leg	4.00	0.0000	135.00	No Ice	4.42	1.63	55.00
(AT&T)			0.00			1/2" Ice	4.71	1.84	80.77
			0.00						
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	135.00	No Ice	2.22	2.22	20.00
(AT&T)			0.00			1/2" Ice	2.44	2.44	39.25
			0.00						
(2) RA21-7770.00	A	From Leg	4.00	0.0000	135.00	No Ice	6.79	3.51	37.20
(AT&T)			0.00			1/2" Ice	7.28	3.90	74.52
			0.00						
(2) RA21-7770.00	B	From Leg	4.00	0.0000	135.00	No Ice	6.79	3.51	37.20
(AT&T)			0.00			1/2" Ice	7.28	3.90	74.52
			0.00						
(2) RA21-7770.00	C	From Leg	4.00	0.0000	135.00	No Ice	6.79	3.51	37.20
(AT&T)			0.00			1/2" Ice	7.28	3.90	74.52
			0.00						
(2) LGP21401	A	From Leg	4.00	0.0000	135.00	No Ice	0.95	0.37	17.50
(AT&T)			0.00			1/2" Ice	1.09	0.48	23.31
			0.00						
(2) LGP21401	B	From Leg	4.00	0.0000	135.00	No Ice	0.95	0.37	17.50
(AT&T)			0.00			1/2" Ice	1.09	0.48	23.31
			0.00						
(2) LGP21401	C	From Leg	4.00	0.0000	135.00	No Ice	0.95	0.37	17.50
(AT&T)			0.00			1/2" Ice	1.09	0.48	23.31
			0.00						
TTA	A	From Leg	4.00	0.0000	135.00	No Ice	1.05	1.08	20.61
(AT&T)			0.00			1/2" Ice	1.21	1.27	30.47
			0.00						
TTA	B	From Leg	4.00	0.0000	135.00	No Ice	1.05	1.08	20.61
(AT&T)			0.00			1/2" Ice	1.21	1.27	30.47
			0.00						
TTA	C	From Leg	4.00	0.0000	135.00	No Ice	1.05	1.08	20.61
(AT&T)			0.00			1/2" Ice	1.21	1.27	30.47
			0.00						
Pipe T-Arm	A	From Leg	4.00	0.0000	135.00	No Ice	9.70	3.30	250.00
(AT&T)			0.00			1/2" Ice	12.10	5.20	314.00
			0.00						
Pipe T-Arm	B	From Leg	4.00	0.0000	135.00	No Ice	9.70	3.30	250.00
(AT&T)			0.00			1/2" Ice	12.10	5.20	314.00
			0.00						
Pipe T-Arm	C	From Leg	4.00	0.0000	135.00	No Ice	9.70	3.30	250.00
(AT&T)			0.00			1/2" Ice	12.10	5.20	314.00
			0.00						
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(2) LPA-80080/6CF	A	From Leg	4.00	0.0000	125.00	No Ice	4.32	9.10	21.00
(Verizon)			0.00			1/2" Ice	4.76	9.65	69.26
			0.00						
(2) LPA-80080/6CF	B	From Leg	4.00	0.0000	125.00	No Ice	4.32	9.10	21.00
(Verizon)			0.00			1/2" Ice	4.76	9.65	69.26

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						
(2) LPA-80080/6CF	C	From Leg	4.00	0.0000	125.00	No Ice	4.32	9.10	21.00
(Verizon)			0.00			1/2" Ice	4.76	9.65	69.26
			0.00						
(2) BXA-171085/12CF	A	From Leg	4.00	0.0000	125.00	No Ice	4.79	3.62	15.00
(Verizon)			0.00			1/2" Ice	5.24	4.06	42.45
			0.00						
(2) BXA-171085/12CF	B	From Leg	4.00	0.0000	125.00	No Ice	4.79	3.62	15.00
(Verizon)			0.00			1/2" Ice	5.24	4.06	42.45
			0.00						
(2) BXA-171085/12CF	C	From Leg	4.00	0.0000	125.00	No Ice	4.79	3.62	15.00
(Verizon)			0.00			1/2" Ice	5.24	4.06	42.45
			0.00						
BXA-70063/6CF	A	From Leg	4.00	0.0000	125.00	No Ice	7.73	4.04	14.90
(Verizon)			0.00			1/2" Ice	8.27	4.48	56.85
			0.00						
BXA-70063/6CF	B	From Leg	4.00	0.0000	125.00	No Ice	7.73	4.04	14.90
(Verizon)			0.00			1/2" Ice	8.27	4.48	56.85
			0.00						
BXA-70063/6CF	C	From Leg	4.00	0.0000	125.00	No Ice	7.73	4.04	14.90
(Verizon)			0.00			1/2" Ice	8.27	4.48	56.85
			0.00						
RRH2x40-07-U	A	From Leg	4.00	0.0000	125.00	No Ice	2.25	1.23	50.00
(Verizon)			0.00			1/2" Ice	2.45	1.39	66.85
			0.00						
RRH2x40-07-U	B	From Leg	4.00	0.0000	125.00	No Ice	2.25	1.23	50.00
(Verizon)			0.00			1/2" Ice	2.45	1.39	66.85
			0.00						
RRH2x40-07-U	C	From Leg	4.00	0.0000	125.00	No Ice	2.25	1.23	50.00
(Verizon)			0.00			1/2" Ice	2.45	1.39	66.85
			0.00						
(2) Diplexer	A	From Leg	4.00	0.0000	125.00	No Ice	0.49	0.29	50.00
(Verizon)			0.00			1/2" Ice	0.59	0.38	53.69
			0.00						
(2) Diplexer	B	From Leg	4.00	0.0000	125.00	No Ice	0.49	0.29	50.00
(Verizon)			0.00			1/2" Ice	0.59	0.38	53.69
			0.00						
(2) Diplexer	C	From Leg	4.00	0.0000	125.00	No Ice	0.49	0.29	50.00
(Verizon)			0.00			1/2" Ice	0.59	0.38	53.69
			0.00						
RDC-4276-PF-48J	A	From Leg	4.00	0.0000	125.00	No Ice	2.03	1.64	14.00
(Verizon)			0.00			1/2" Ice	2.23	1.83	30.23
			0.00						
Pipe T-Arm	A	From Leg	4.00	0.0000	125.00	No Ice	9.70	3.30	250.00
(Verizon)			0.00			1/2" Ice	12.10	5.20	314.00
			0.00						
Pipe T-Arm	B	From Leg	4.00	0.0000	125.00	No Ice	9.70	3.30	250.00
(Verizon)			0.00			1/2" Ice	12.10	5.20	314.00
			0.00						
Pipe T-Arm	C	From Leg	4.00	0.0000	125.00	No Ice	9.70	3.30	250.00
(Verizon)			0.00			1/2" Ice	12.10	5.20	314.00
			0.00						
***									
PD220	A	From Leg	4.00	0.0000	100.00	No Ice	3.56	3.56	23.00
(Municipal)			0.00			1/2" Ice	7.13	7.13	46.00
			10.00						
Pipe Side Arm	A	From Leg	4.00	0.0000	100.00	No Ice	0.46	3.55	150.00

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
(Municipal)			0.00 0.00			1/2" Ice	0.62	4.93	175.00
***									
GPS (Sprint)	A	From Leg	2.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice	0.50 0.63	0.50 0.63	10.00 15.96
GPS (Sprint)	B	From Leg	2.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice	0.50 0.63	0.50 0.63	10.00 15.96
GPS (Sprint)	C	From Leg	2.00 0.00 0.00	0.0000	85.00	No Ice 1/2" Ice	0.50 0.63	0.50 0.63	10.00 15.96
***									
LNX-6515DS-VTM (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	11.45 12.06	7.70 8.29	50.30 116.17
LNX-6515DS-VTM (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	11.45 12.06	7.70 8.29	50.30 116.17
LNX-6515DS-VTM (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	11.45 12.06	7.70 8.29	50.30 116.17
RRUS-11 (T-Mobile)	A	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	4.42 4.71	1.63 1.84	55.00 80.77
RRUS-11 (T-Mobile)	B	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	4.42 4.71	1.63 1.84	55.00 80.77
RRUS-11 (T-Mobile)	C	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice 1/2" Ice	4.42 4.71	1.63 1.84	55.00 80.77
RRUS-12 (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS-12 (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
RRUS-12 (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	3.67 3.93	1.49 1.67	50.00 73.22
A2 Module (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	1.87 2.05	0.42 0.53	21.20 31.53
A2 Module (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	1.87 2.05	0.42 0.53	21.20 31.53
A2 Module (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	1.87 2.05	0.42 0.53	21.20 31.53

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert (ft)	Azimuth Adjustment (°)	3 dB Beam Width (°)	Elevation (ft)	Outside Diameter (ft)		Aperture Area (ft^2)	Weight (lb)
2.5' Dish w/ Radome (Municipal)	A	Paraboloid w/Radome	From Leg	4.00 0.00 0.00	0.0000		175.00	2.50	No Ice 1/2" Ice	4.91 5.24	125.00 151.90

Load Combinations

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
L1	175 - 130	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-12177.81	343.74	18261.11
			Max. Mx	11	-8392.69	300762.51	14027.25
			Max. My	2	-8399.91	123.87	315417.71
			Max. Vy	11	-15232.39	300762.51	14027.25
			Max. Vx	8	15139.82	157.02	-285124.06
			Max. Torque	11			-11724.83
L2	130 - 85	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-26902.43	810.76	20261.41
			Max. Mx	11	-19854.52	1469635.09	10330.48
			Max. My	2	-19877.81	-3494.99	1474494.73
			Max. Vy	11	-30071.32	1469635.09	10330.48
			Max. Vx	8	29759.49	4452.10	-1443426.17
			Max. Torque	11			-14277.26
L3	85 - 41	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-40148.16	826.40	20652.31
			Max. Mx	11	-32467.55	2854798.42	5460.12
			Max. My	2	-32481.66	-7340.50	2844885.83
			Max. Vy	11	-34199.92	2854798.42	5460.12
			Max. Vx	8	33891.59	8351.35	-2815210.01
			Max. Torque	11			-14264.11
L4	41 - 0	Pole	Max Tension	17	31012.07	-2801043.01	1619081.00
			Max. Compression	14	-55523.23	829.98	20741.74
			Max. Mx	11	-47132.42	4402434.71	321.36
			Max. My	2	-47134.02	-11151.08	4377788.67
			Max. Vy	11	-37698.81	4402434.71	321.36
			Max. Vx	8	37400.21	12169.27	-4349753.98
			Max. Torque	11			-14235.53
	0 - 5	Reinforcing	Max Tension	11	142372.64	0.72	120.84
			Max. Compression	18	-153824.83	-0.00	-0.00
			Max. Mx	4	123088.83	120.85	-0.13
			Max. My	11	142372.64	0.72	120.84
			Max. Vy	4	24.46	120.85	-0.13
			Max. Vx	11	24.49	0.72	120.84

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	1	43456.15	-0.26	-8.94
	Max. H_x	11	43406.65	35854.03	-121.52
	Max. H_z	2	43407.18	-83.34	35525.43
	Max. M_x	2	3880194.23	-83.34	35525.43
	Max. M_z	5	3901758.80	-35850.93	40.78
	Max. Torsion	5	14222.78	-35850.93	40.78
	Min. Vert	17	-29206.82	-26159.73	14957.47
	Min. H_x	5	43406.66	-35850.93	40.78
	Min. H_z	8	43407.83	78.98	-35581.88
	Min. M_x	8	-3856651.53	78.98	-35581.88
	Min. M_z	11	-3902636.77	35854.03	-121.52
	Min. Torsion	11	-14223.34	35854.03	-121.52
Reinf @ Azimuth	Max. Vert	18	153817.77	-1474.38	-0.23

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
90 deg					
	Max. H_x	11	-142308.16	1681.56	1.20
	Max. H_z	20	91316.19	-925.13	100.71
	Min. Vert	11	-142308.16	1681.56	1.20
	Min. H_x	18	153817.77	-1474.38	-0.23
	Min. H_z	16	91683.95	-928.56	-101.79
Reinf @ Azimuth -30 deg	Max. Vert	26	153250.43	734.23	1273.15
	Max. H_x	15	136522.05	736.46	1109.37
	Max. H_z	26	153250.43	734.23	1273.15
	Min. Vert	7	-140780.44	-831.91	-1438.47
	Min. H_x	7	-140780.44	-831.91	-1438.47
	Min. H_z	7	-140780.44	-831.91	-1438.47
Reinf @ Azimuth 210 deg	Max. Vert	22	152947.61	732.60	-1271.19
	Max. H_x	22	152947.61	732.60	-1271.19
	Max. H_z	3	-142030.76	-838.82	1453.23
	Min. Vert	3	-142030.76	-838.82	1453.23
	Min. H_x	3	-142030.76	-838.82	1453.23
	Min. H_z	22	152947.61	732.60	-1271.19

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	48952.61	-0.00	-0.00	-17823.78	513.75	-0.39
Dead+Wind 0 deg - No Ice	48952.61	87.09	-37763.21	-4565540.94	-11589.02	-1303.99
Dead+Wind 30 deg - No Ice	48952.61	19144.19	-32727.85	-3958711.45	-2308833.07	-8312.53
Dead+Wind 60 deg - No Ice	48952.61	33040.48	-18912.12	-2293934.73	-3981604.41	-12980.81
Dead+Wind 90 deg - No Ice	48952.61	38102.77	-54.26	-23894.94	-4590860.24	-14224.89
Dead+Wind 120 deg - No Ice	48952.61	32991.05	18824.05	2248867.79	-3976358.86	-11770.02
Dead+Wind 150 deg - No Ice	48952.61	19027.14	32700.63	3921978.19	-2294024.66	-6127.59
Dead+Wind 180 deg - No Ice	48952.61	-87.09	37805.70	4537716.90	12603.79	1302.64
Dead+Wind 210 deg - No Ice	48952.61	-19177.98	32787.72	3934039.70	2315969.75	8383.38
Dead+Wind 240 deg - No Ice	48952.61	-33078.14	18974.89	2269801.61	3989437.23	13072.20
Dead+Wind 270 deg - No Ice	48952.61	-38102.77	119.92	297.39	4591886.53	14225.46
Dead+Wind 300 deg - No Ice	48952.61	-32953.39	-18761.28	-2273013.00	3970572.64	11678.74
Dead+Wind 330 deg - No Ice	48952.61	-18993.34	-32640.76	-3946662.08	2288922.99	6054.94
Dead+Ice+Temp	57455.96	-0.00	-0.00	-20741.73	829.98	-0.73
Dead+Wind 0 deg+Ice+Temp	57455.96	68.97	-31737.42	-3961184.40	-8816.15	-1677.33
Dead+Wind 30 deg+Ice+Temp	57455.96	16091.49	-27504.05	-3435141.21	-1999054.70	-8339.82
Dead+Wind 60 deg+Ice+Temp	57455.96	27777.12	-15892.12	-1992586.29	-3448783.07	-12675.90
Dead+Wind 90 deg+Ice+Temp	57455.96	32035.39	-42.42	-25447.75	-3977037.04	-13659.21
Dead+Wind 120 deg+Ice+Temp	57455.96	27738.61	15823.42	1943842.00	-3444729.45	-11073.86
Dead+Wind 150 deg+Ice+Temp	57455.96	15999.36	27483.50	3393012.61	-1987369.64	-5494.35
Dead+Wind 180 deg+Ice+Temp	57455.96	-68.97	31771.78	3926089.13	10457.48	1675.09
Dead+Wind 210 deg+Ice+Temp	57455.96	-16118.83	27552.48	3402632.58	2005691.86	8395.53
Dead+Wind 240 deg+Ice+Temp	57455.96	-27807.58	15942.89	1960527.24	3455995.18	12748.88
Dead+Wind 270 deg+Ice+Temp	57455.96	-32035.39	95.53	-6174.52	3978696.25	13659.59
Dead+Wind 300 deg+Ice+Temp	57455.96	-27708.14	-15772.65	-1975918.50	3440826.72	11000.28
Dead+Wind 330 deg+Ice+Temp	57455.96	-15972.02	-27435.08	-3425538.74	1984023.96	5435.45
Dead+Wind 0 deg - Service	48952.61	43.39	-18816.27	-2285787.59	-5518.59	-654.27
Dead+Wind 30 deg - Service	48952.61	9538.97	-16307.30	-1983183.07	-1151136.36	-4169.53
Dead+Wind 60 deg - Service	48952.61	16463.08	-9423.34	-1152978.06	-1985346.04	-6511.02
Dead+Wind 90 deg - Service	48952.61	18985.46	-27.04	-20919.85	-2289183.32	-7134.81
Dead+Wind 120 deg - Service	48952.61	16438.45	9379.46	1112493.45	-1982726.68	-5903.13

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+Wind 150 deg - Service	48952.61	9480.65	16293.74	1946852.84	-1143750.34	-3072.94
Dead+Wind 180 deg - Service	48952.61	-43.39	18837.44	2253911.58	6546.00	653.39
Dead+Wind 210 deg - Service	48952.61	-9555.81	16337.13	1952881.58	1155223.71	4204.54
Dead+Wind 240 deg - Service	48952.61	-16481.84	9454.62	1122940.26	1989783.39	6556.23
Dead+Wind 270 deg - Service	48952.61	-18985.46	59.75	-8855.34	2290213.62	7134.40
Dead+Wind 300 deg - Service	48952.61	-16419.68	-9348.18	-1142534.33	1980348.45	5856.85
Dead+Wind 330 deg - Service	48952.61	-9463.81	-16263.91	-1977157.43	1141719.20	3036.42

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-48952.61	0.00	0.00	48952.61	0.00	0.000%
2	87.09	-48952.61	-37763.21	-87.09	48952.61	37763.21	0.000%
3	19144.19	-48952.61	-32727.85	-19144.19	48952.61	32727.85	0.000%
4	33040.48	-48952.61	-18912.12	-33040.48	48952.61	18912.12	0.000%
5	38102.77	-48952.61	-54.26	-38102.77	48952.61	54.26	0.000%
6	32991.05	-48952.61	18824.05	-32991.05	48952.61	-18824.05	0.000%
7	19027.14	-48952.61	32700.63	-19027.14	48952.61	-32700.63	0.000%
8	-87.09	-48952.61	37805.70	87.09	48952.61	-37805.70	0.000%
9	-19177.98	-48952.61	32787.72	19177.98	48952.61	-32787.72	0.000%
10	-33078.14	-48952.61	18974.89	33078.14	48952.61	-18974.89	0.000%
11	-38102.77	-48952.61	119.92	38102.77	48952.61	-119.92	0.000%
12	-32953.39	-48952.61	-18761.28	32953.39	48952.61	18761.28	0.000%
13	-18993.34	-48952.61	-32640.76	18993.34	48952.61	32640.76	0.000%
14	0.00	-57455.96	0.00	0.00	57455.96	0.00	0.000%
15	68.97	-57455.96	-31737.41	-68.97	57455.96	31737.42	0.000%
16	16091.48	-57455.96	-27504.04	-16091.49	57455.96	27504.05	0.000%
17	27777.11	-57455.96	-15892.12	-27777.12	57455.96	15892.12	0.000%
18	32035.38	-57455.96	-42.42	-32035.39	57455.96	42.42	0.000%
19	27738.60	-57455.96	15823.42	-27738.61	57455.96	-15823.42	0.000%
20	15999.36	-57455.96	27483.49	-15999.36	57455.96	-27483.50	0.000%
21	-68.97	-57455.96	31771.77	68.97	57455.96	-31771.78	0.000%
22	-16118.82	-57455.96	27552.47	16118.83	57455.96	-27552.48	0.000%
23	-27807.57	-57455.96	15942.89	27807.58	57455.96	-15942.89	0.000%
24	-32035.38	-57455.96	95.53	32035.39	57455.96	-95.53	0.000%
25	-27708.14	-57455.96	-15772.65	27708.14	57455.96	15772.65	0.000%
26	-15972.02	-57455.96	-27435.07	15972.02	57455.96	27435.08	0.000%
27	43.39	-48952.61	-18816.27	-43.39	48952.61	18816.27	0.000%
28	9538.97	-48952.61	-16307.30	-9538.97	48952.61	16307.30	0.000%
29	16463.08	-48952.61	-9423.34	-16463.08	48952.61	9423.34	0.000%
30	18985.46	-48952.61	-27.04	-18985.46	48952.61	27.04	0.000%
31	16438.45	-48952.61	9379.46	-16438.45	48952.61	-9379.46	0.000%
32	9480.65	-48952.61	16293.74	-9480.65	48952.61	-16293.74	0.000%
33	-43.39	-48952.61	18837.44	43.39	48952.61	-18837.44	0.000%
34	-9555.81	-48952.61	16337.13	9555.81	48952.61	-16337.13	0.000%
35	-16481.84	-48952.61	9454.62	16481.84	48952.61	-9454.62	0.000%
36	-18985.46	-48952.61	59.75	18985.46	48952.61	-59.75	0.000%
37	-16419.68	-48952.61	-9348.18	16419.68	48952.61	9348.18	0.000%
38	-9463.81	-48952.61	-16263.91	9463.81	48952.61	16263.91	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00029021
3	Yes	5	0.00000001	0.00029306
4	Yes	5	0.00000001	0.00039603
5	Yes	5	0.00000001	0.00012727
6	Yes	5	0.00000001	0.00027223
7	Yes	5	0.00000001	0.00034319
8	Yes	4	0.00000001	0.00039551
9	Yes	5	0.00000001	0.00036019
10	Yes	5	0.00000001	0.00027413
11	Yes	5	0.00000001	0.00012304
12	Yes	5	0.00000001	0.00038450
13	Yes	5	0.00000001	0.00029664
14	Yes	4	0.00000001	0.00005707
15	Yes	5	0.00000001	0.00015931
16	Yes	5	0.00000001	0.00054658
17	Yes	5	0.00000001	0.00068773
18	Yes	5	0.00000001	0.00026779
19	Yes	5	0.00000001	0.00051379
20	Yes	5	0.00000001	0.00059925
21	Yes	5	0.00000001	0.00015798
22	Yes	5	0.00000001	0.00063118
23	Yes	5	0.00000001	0.00051828
24	Yes	5	0.00000001	0.00026359
25	Yes	5	0.00000001	0.00066591
26	Yes	5	0.00000001	0.00055232
27	Yes	4	0.00000001	0.00013301
28	Yes	5	0.00000001	0.00006231
29	Yes	5	0.00000001	0.00009997
30	Yes	5	0.00000001	0.00005031
31	Yes	5	0.00000001	0.00005616
32	Yes	5	0.00000001	0.00007700
33	Yes	4	0.00000001	0.00014627
34	Yes	5	0.00000001	0.00008347
35	Yes	5	0.00000001	0.00005794
36	Yes	5	0.00000001	0.00004951
37	Yes	5	0.00000001	0.00009561
38	Yes	5	0.00000001	0.00006269

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 130	53.279	28	2.5330	0.0499
L2	135 - 85	32.858	28	2.2787	0.0244
L3	91 - 41	14.756	28	1.5485	0.0105
L4	48 - 0	4.055	29	0.7837	0.0040

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	2.5' Dish w/ Radome	28	53.279	2.5330	0.0500	37318
155.00	APXVTM14-C-120	28	42.815	2.4429	0.0362	9328
145.00	(2) AIR 21, 1.3 M, B2A B4P	28	37.742	2.3742	0.0299	6218
144.00	LNX-6515DS-VTM	28	37.244	2.3660	0.0293	6017
135.00	HPA-65R-BUU-H8	28	32.858	2.2787	0.0245	4717
125.00	(2) LPA-80080/6CF	28	28.222	2.1481	0.0200	4196
100.00	PD220	28	17.936	1.7178	0.0124	3355
85.00	GPS	29	12.808	1.4370	0.0094	3049

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	175 - 130	105.698	3	4.9691	0.1000
L2	135 - 85	65.480	4	4.5236	0.0488
L3	91 - 41	29.494	4	3.0910	0.0210
L4	48 - 0	8.112	4	1.5675	0.0079

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	2.5' Dish w/ Radome	3	105.698	4.9691	0.1002	20079
155.00	APXVTM14-C-120	4	85.101	4.8255	0.0724	5017
145.00	(2) AIR 21, 1.3 M, B2A B4P	4	75.116	4.7043	0.0598	3343
144.00	LNX-6515DS-VTM	4	74.135	4.6892	0.0586	3235
135.00	HPA-65R-BUU-H8	4	65.480	4.5236	0.0489	2530
125.00	(2) LPA-80080/6CF	4	56.302	4.2709	0.0400	2212
100.00	PD220	4	35.840	3.4264	0.0248	1710
85.00	GPS	4	25.604	2.8696	0.0187	1537

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	175 - 130 (1)	TP34.688x24x0.25	45.00	175.00	177.9	4.718	26.3842	-11256.20	124483.00	0.090
L2	130 - 85 (2)	TP44.688x33.0004x0.313	50.00	175.00	137.7	7.880	42.6915	-19864.00	336428.00	0.059
L3	85 - 41 (3)	TP54.5x42.6595x0.375	50.00	175.00	112.7	11.748	62.4492	-32467.40	733625.00	0.044
L4	41 - 0 (4)	TP64.5x52.0923x0.375	48.00	175.00	94.1	16.848	74.7864	-47132.40	1259970.00	0.037

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	175 - 130 (1)	TP34.688x24x0.25	299924.17	-16.620	39.000	0.426	0.00	0.000	39.000	0.000
L2	130 - 85 (2)	TP44.688x33.0004x0.313	1477625.00	-39.146	39.000	1.004	0.00	0.000	39.000	0.000
L3	85 - 41 (3)	TP54.5x42.6595x0.375	2859600.00	-42.412	39.000	1.087	0.00	0.000	39.000	0.000
L4	41 - 0 (4)	TP64.5x52.0923x0.375	4405850.00	-45.511	37.043	1.229	0.00	0.000	37.043	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	175 - 130 (1)	TP34.688x24x0.25	0.090	0.426	0.000	0.517 ✔	1.333	H1-3 ✔
L2	130 - 85 (2)	TP44.688x33.0004x0.313	0.059	1.004	0.000	1.063 ✔	1.333	H1-3 ✔
L3	85 - 41 (3)	TP54.5x42.6595x0.375	0.044	1.087	0.000	1.132 ✔	1.333	H1-3 ✔
L4	41 - 0 (4)	TP64.5x52.0923x0.375	0.037	1.229	0.000	1.266 ✔	1.333	H1-3 ✔

Reinforcing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L4	5 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	5.00	2.50	60.0 K=1.00	39.110	3.1416	-153794.00	122869.00	1.252

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L4	5 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	104.37	-1.595	90.000	0.018	0.00	0.000	90.000	0.000

Reinforcing Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L4	5 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	1.252	0.018	0.000	1.269 ✔	1.333	H1-3 ✔

Tension Checks

Reinforcing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L4	5 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	5.00	2.50	60.0	72.000	3.1416	142373.00	226195.00	0.629

Reinforcing Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L4	5 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	120.85	1.846	90.000	0.021	0.00	0.000	90.000	0.000

Reinforcing Interaction Design Data

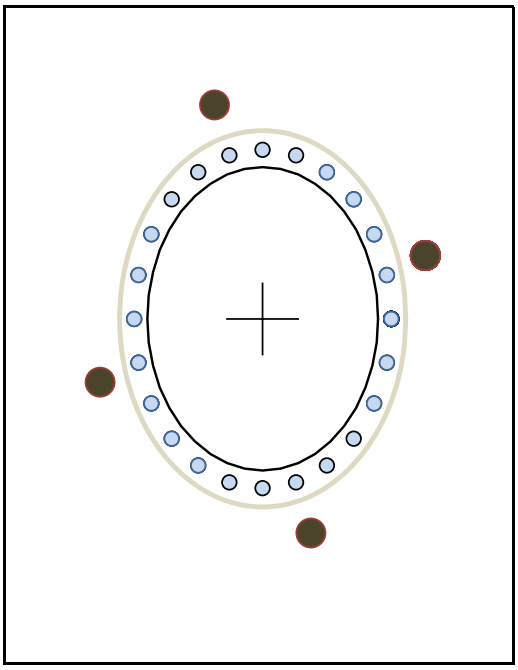
Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L4	5 - 0	Williams R71 1-3/4" 150 KSI All-Thread-Bar	0.629	0.021	0.000	0.650 ✔	1.333	H2-1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	175 - 130	Pole	TP34.688x24x0.25	1	-11256.20	165935.83	38.8	Pass
L2	130 - 85	Pole	TP44.688x33.0004x0.313	2	-19864.00	448458.51	79.7	Pass
L3	85 - 41	Pole	TP54.5x42.6595x0.375	3	-32467.40	977922.08	84.9	Pass
L4	41 - 0	Pole	TP64.5x52.0923x0.375	4	-47132.40	1679539.94	95.0	Pass
	5 - 0	Reinforcing	Williams R71 1-3/4" 150 KSI	5	-153794.00	163784.37	95.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
			All-Thread-Bar					
							Summary	
						Pole (L4)	95.0	Pass
						Reinforcing (L4)	95.2	Pass
						RATING =	**95.2**	**Pass**

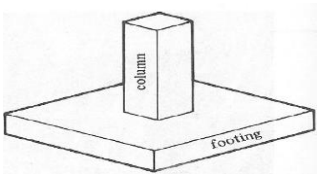
Date:	2/16/2016
Customer:	AT&T Mobility
Engineer:	FSZ
Job #:	158-093
Baseplate/Flange:	Base Plate
Plate Shape:	Circle
Use Addendum 3:	No



Loading Data		
TIA Code Revision:	Rev-F	
Axial:	48.1	kips
Moment:	4505.1	k-ft
Plate Data		
Pole Base Diameter:	64.5	in
Pole Base Shape:	18 Sided	
Pole thickness:	0.375	in
Pole Fy:	65	ksi
Base Weld Size:	0.375	in
Plate Diameter:	52	in
Plate Thickness:	1.5	in
Plate Steel Grade:	A572 Gr. 42	ksi
Internal/External:	Internal	ksi
Anchor Bolt Data		
Bolt Diameter:	2	in
Bolt Hole Diameter:	2.25	in
Bolt Quantity:	24	
Bolt Grade:	F1554 Gr. 105	psi
Bolt Circle:	58	in
Bolt Spacing:	6	in
Fully Developed:	Unknown	
Additional Bolt Data		
Bolt Diameter:	R41 1-3/4"	in
Bolt Quantity:	4	
Bolt Grade:	A1035 Gr. 120	psi
Bolt Circle:	76.5	in
Angle:	5	deg
Stiffener Data		
Stiffener Quantity:		
Stiffener Height:		in
Stiffener Width:		in

Plate Ratio:	76.22
Bolt Ratio:	73.88
Additional Bolt Ratio:	**81.02**
Vertical Weld Ratio:	-
Horizontal Weld Ratio:	-
Stiffener Ratio:	-

Date:	2/16/2106
Site Name:	CT2070
Client:	Com Ex
Infinigy Job #:	158-093
Analysis/Design:	Analysis
Column Shape:	Circle
Footing Shape:	Square
Tower Type:	Monopole



Infinigy Engineering PLLC
Pad + Pier Calculations
ACI 318-11

Loading Data		
TIA Code Revision:	ANSI/TIA/EIA-222-F	
Uplift:	0	kips
Axial:	48.1	kips
Shear:	36.1	kips
Moment:	4505.1	k-ft

Soil Data		
Soil Type:	Sand	
Water Table Depth:	10	ft
Soil Dry Unit Weight:	100	pcf
ø Angle:	30	deg
Cohesion:	0	psf
Allowable Skin Friction:	500	psf
Friction Coefficient:	0.45	
Allowable Bearing Pressure:	4000	psf

Column Data		
Concrete Strength:	3000	psi
Column Diameter:	7	ft
Column Total Length:	2.25	ft
Column Height above ground:	0.25	ft
Vertical Rebar Strength:	60000	psi
Vertical Rebar Size:	#11	(#10) max.
Vertical Rebar Quantity:	50	(4) min.
Tie Rebar Strength:	60000	psi
Tie Rebar Size:		(#3) max.
Tie Rebar Spacing:		in
Rebar Clear Distance:		in

Footing Data		
Concrete Strength:	3000	psi
Footing Length:	27.5	ft
Footing Width:	27.5	ft
Footing Thickness:	4	ft
Horizontal Rebar Strength:	60000	psi
Horizontal Rebar Size:	#10	
Horizontal Rebar Quantity:	32	
Rebar Clear Distance:	3	in
Dowel Strength:	60000	psi
Dowel Size:	#11	(#11) max.
Dowel Development Length:		in
Dowel Quantity:		

Concrete Strength Check		
Footing One-Way Shear Ratio:	22.59	%
Footing Two-Way Shear Ratio:	1.36	%
Footing Moment Ratio:	26.9	%

Soil Stability Check		
Bearing Safety Factor:	2	
Uplift Safety Factor:	2	
Uplift Ratio:	0.00	%
Bearing Ratio:	71.39	%
Sliding Ratio:	13.57	%
Overturning Ratio:	78.38	%

PROJECT INFORMATION

SCOPE OF WORK:
- REMOVE (1) ANTENNA PER SECTOR (TOTAL OF 3 ANTENNAS)
- INSTALL (1) ANTENNA PER SECTOR (TOTAL OF 3 NEW ANTENNAS)
- ADD (1) RRH PER SECTOR (TOTAL OF 3 NEW RRHs)
- ADD (1) A-2 MODULE PER SECTOR (TOTAL OF 3 NEW A-2 MODULES)

SITE ADDRESS:	302 BALL POND ROAD NEW FAIRFIELD, CT 06812
LATITUDE: LONGITUDE:	41.46471699 41° 27' 52.98"N -73.4969519 73° 29' 49.03"W
USID:	27009
TOWER OWNER:	TBD
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT
TOWER HEIGHT:	175-0"±
RAD CENTER:	135'-0"±
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY

at&t MOBILITY

FA CODE: 10035312
SITE NUMBER: CT2070
SITE NAME: NEW FAIRFIELD

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	DAVID COOPER
PHONE:	617-639-4908
EMAIL:	dcooper@empiretelecomm.com

SITE ACQUISITION:

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	DAVID COOPER
PHONE:	617-639-4908
EMAIL:	dcooper@empiretelecomm.com

ZONING:

COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	DAVID COOPER
PHONE:	617-639-4908
EMAIL:	dcooper@empiretelecomm.com

ENGINEERING:

COMPANY:	COM-EX CONSULTANTS, LLC
ADDRESS:	115 ROUTE 46 SUITE E39 MOUNTAIN LAKES, NJ 07046
CONTACT:	NICHOLAS D. BARILE, P.E.
PHONE:	862-209-4300
EMAIL:	nbarile@comexconsultants.com

RF ENGINEER:

COMPANY:	AT&T MOBILITY - NEW ENGLAND
ADDRESS:	550 COCHITUATE ROAD SUITE 550 13 & 14 FRAMINGHAM, MA 01701
CONTACT:	CAMERON SYME
PHONE:	508-596-7146
EMAIL:	cs6970@att.com

CONSTRUCTION MANAGEMENT:

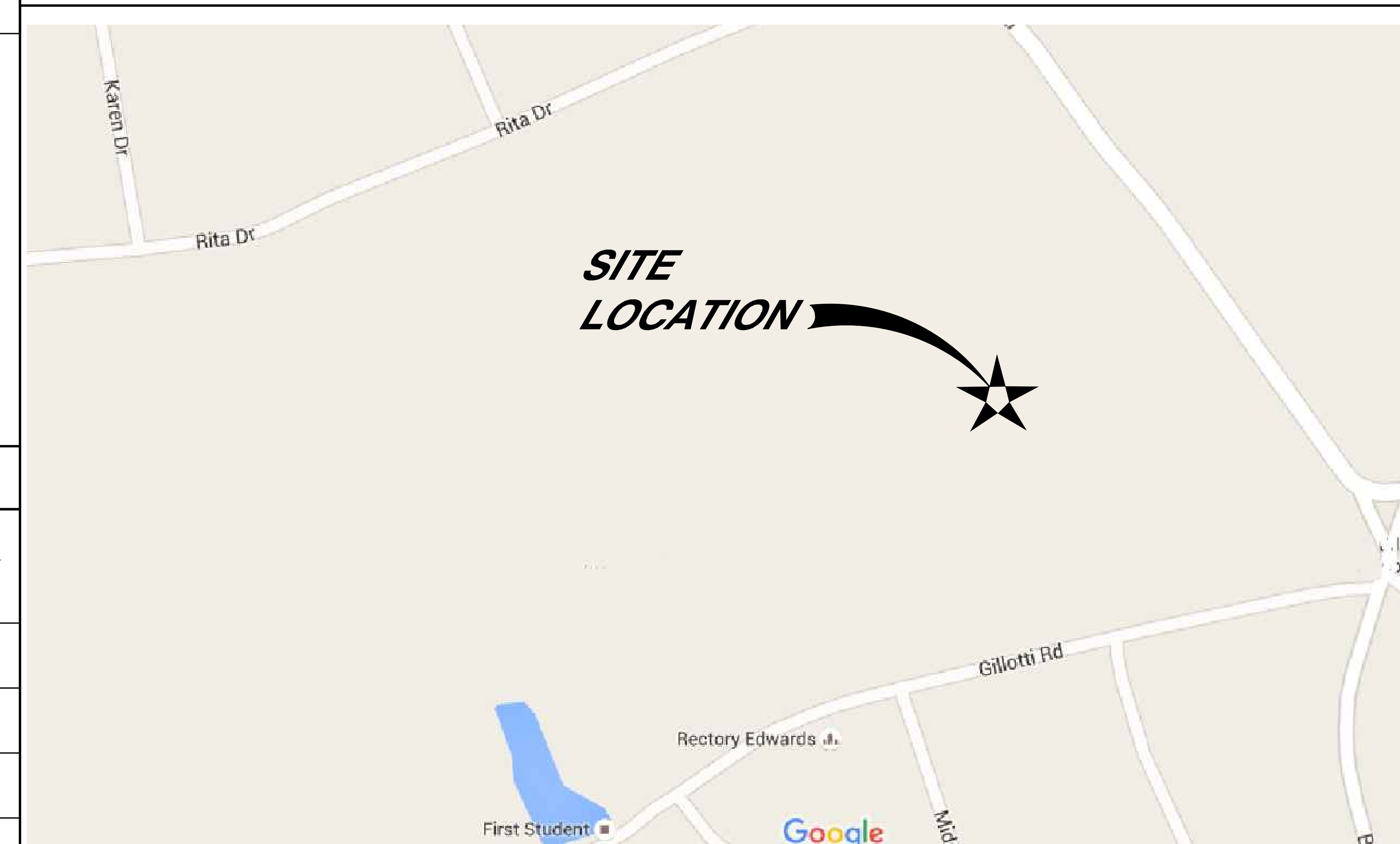
COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD BILLERICA, MA 01821
CONTACT:	GRZEGORZ "GREG" DORMAN
PHONE:	484-683-1750
EMAIL:	gdorman@empiretelecomm.com

DRAWING INDEX

		REV.
T-1	TITLE SHEET	0
GN-1	GROUNDING & GENERAL NOTES	0
A-1	COMPOUND LAYOUTS	0
A-2	EQUIPMENT LAYOUTS	0
A-3	ANTENNA LAYOUTS & ELEVATIONS	0
A-4	DETAILS	0
A-5	ANTENNA MOUNTING DETAILS	0
G-1	GROUNDING DETAILS	0

VICINITY MAP

FROM ROCKY HILL, HEAD SOUTHWEST ON CONCRIB LN. TURN LEFT ONTO SOLO DR. TURN RIGHT ONTO GILBERT AVE. TURN RIGHT ONTO STATE HWY 411. TURN LEFT TO MERGE ONTO I-91 S. TAKE EXIT 18 FOR I-691 W. TAKE EXIT 1 FOR I-84 W, TAKE EXIT 6 FOR CT-37 N. TURN RIGHT ONTO CT-37 N. TURN LEFT ONTO BARNUM RD. SLIGHT LEFT ONTO BALL POND RD. SITE WILL BE ON LEFT.



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 REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP-CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

COM-EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2070
SITE NAME: NEW FAIRFIELD
302 BALL POND RD
NEW FAIRFIELD, CT 06812
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	2/26/16	ISSUED AS FINAL	JW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL: STATE OF CONNECTICUT NICHOLAS D. BARILE No. 28643 LICENSED PROFESSIONAL ENGINEER
NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LIC. NO. 28643

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15122-EMP	T-1	0

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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471–000–3PS–EG00–0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

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 WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER 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 AND TRAY SHALL BE GROUNDED AND 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. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON–METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV–G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   - CONTRACTOR – EMPIRE TELECOM
   - SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   - OWNER – AT&T MOBILITY
   - OEM – ORIGINAL EQUIPMENT MANUFACTURER

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

7. 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.

8. 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. 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.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF 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.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. 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). 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.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741–000–3APS–A00Z–00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. 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.

17. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. 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.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA–101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. 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, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA–222–G–1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR–1503, COAXIAL CABLE CONNECTIONS

21. 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.

23. INFORMATION SHOWN ON THIS SET OF PLANS TAKEN FROM DRAWINGS PREPARED BY CHA FOR A RECENT UPGRADE DATED 04/05/2011. CONTRACTOR TO NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

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BILLERICA, MA 01821

SITE NUMBER: CT2070
SITE NAME: NEW FAIRFIELD
302 BALL POND RD
NEW FAIRFIELD, CT 06812
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	2/26/16	ISSUED AS FINAL	JW	NDB	NDB

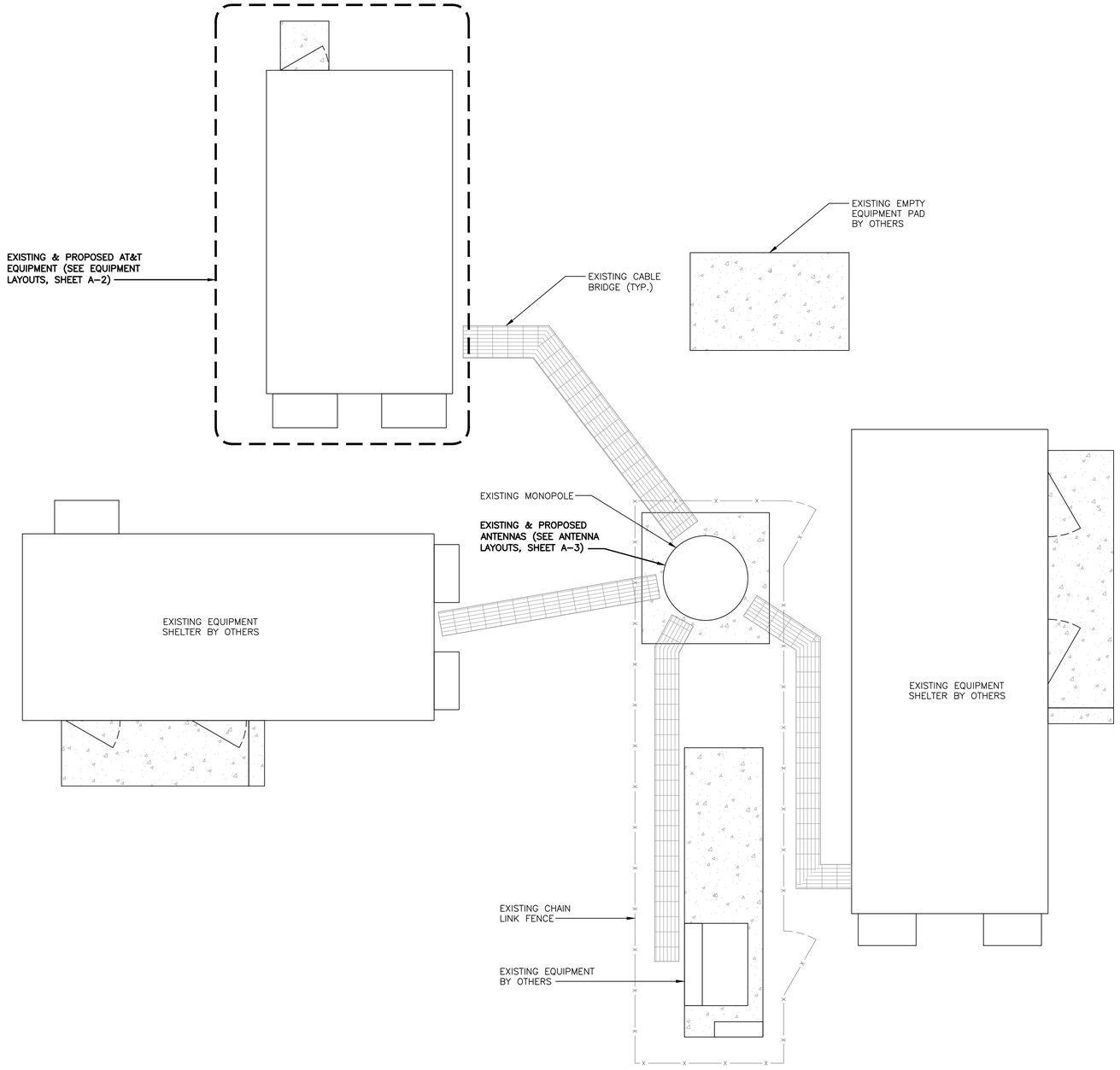
SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL: STATE OF CONNECTICUT NICHOLAS D. BARILE No. 28643 LICENSED PROFESSIONAL ENGINEER
NICHOLAS D. BARILE
PROFESSIONAL ENGINEER
CT LIC. NO. 28643

AT&T

DRAWING TITLE: GROUNDING NOTES & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15122–EMP	GN–1	0



NORTH

COMPOUND LAYOUT
SCALE: 1/8" = 1'-0"

0 4 8 16

GRAPHIC SCALE: 1/8"=1'-0"

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SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:
STATE OF CONNECTICUT
DOUGLAS D. BAKER
LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
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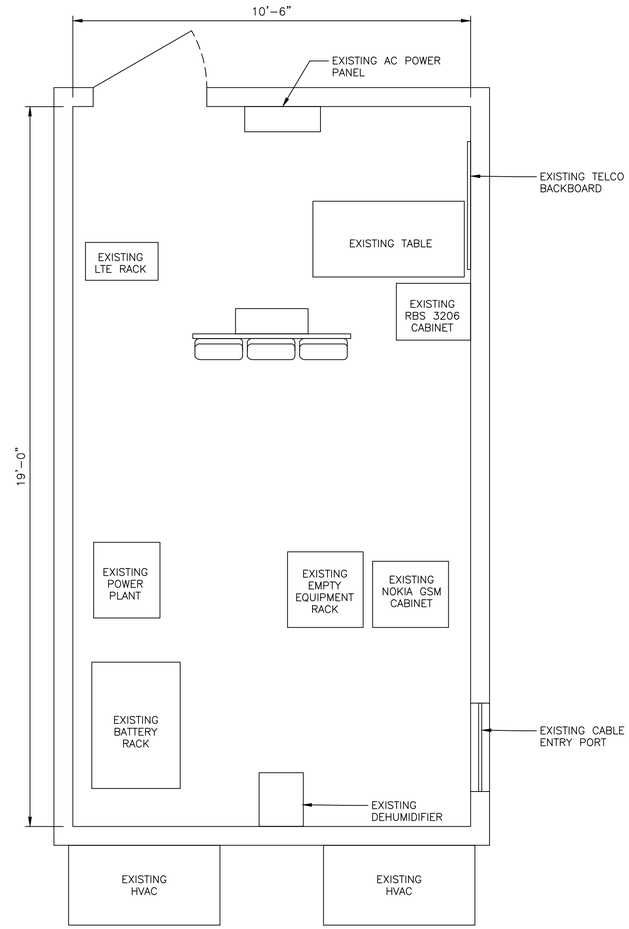
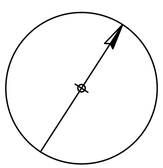


NOTE:
NO GROUND EQUIPMENT MODIFICATIONS ARE BEING MADE AS PART OF THIS SCOPE. EXISTING GROUND EQUIPMENT CONFIGURATION TO REMAIN.



NORTH

EXISTING EQUIPMENT LAYOUT

SCALE: 1/2" = 2'-0"

(IN FEET)
1/2 Inch = 1 Foot

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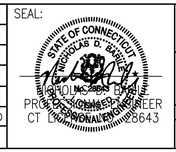
SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:



PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
EQUIPMENT LAYOUTS

JOB NUMBER	DRAWING NUMBER	REV
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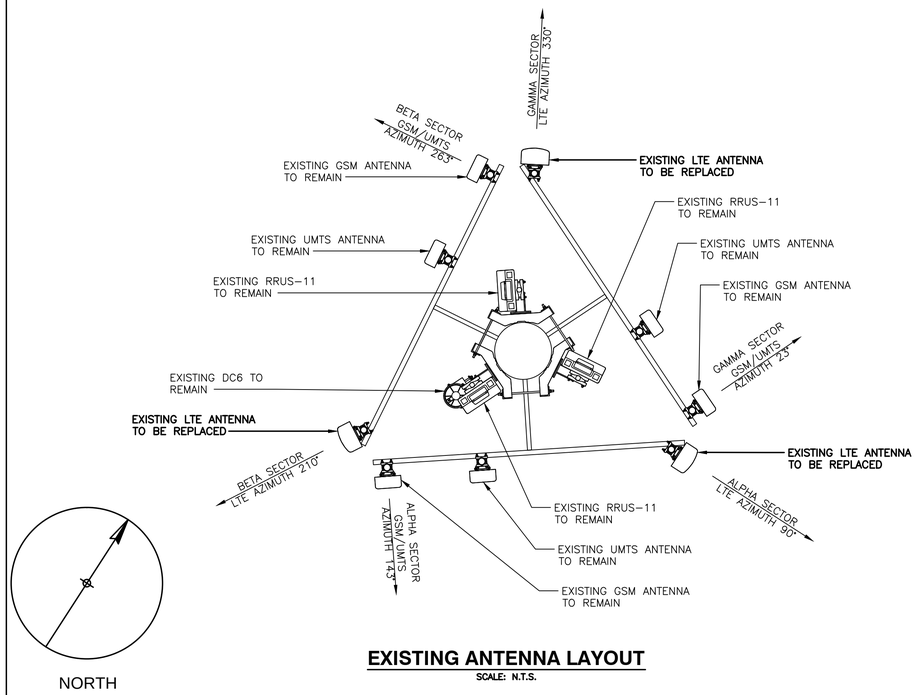
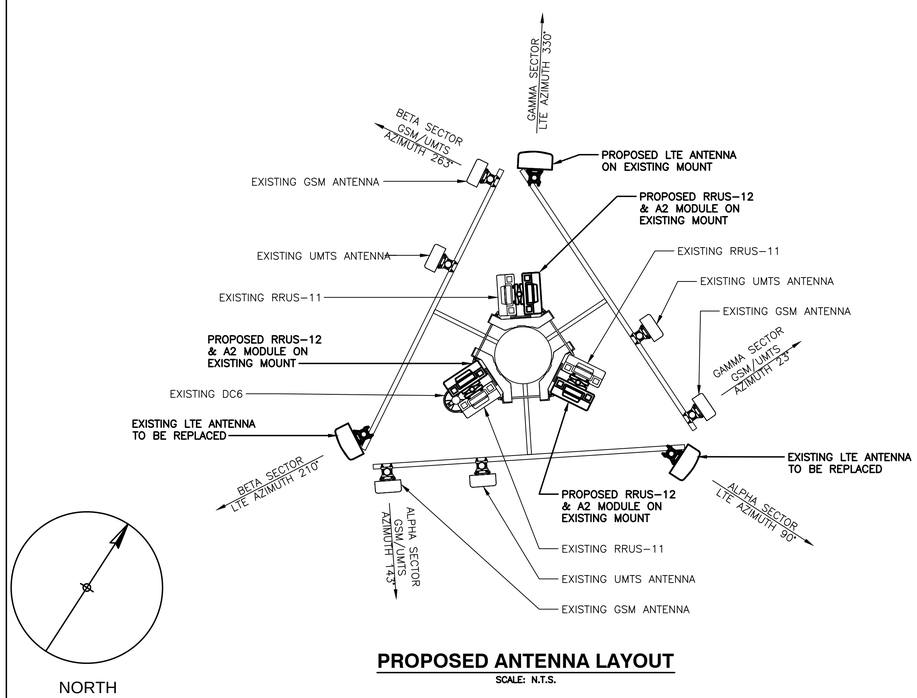


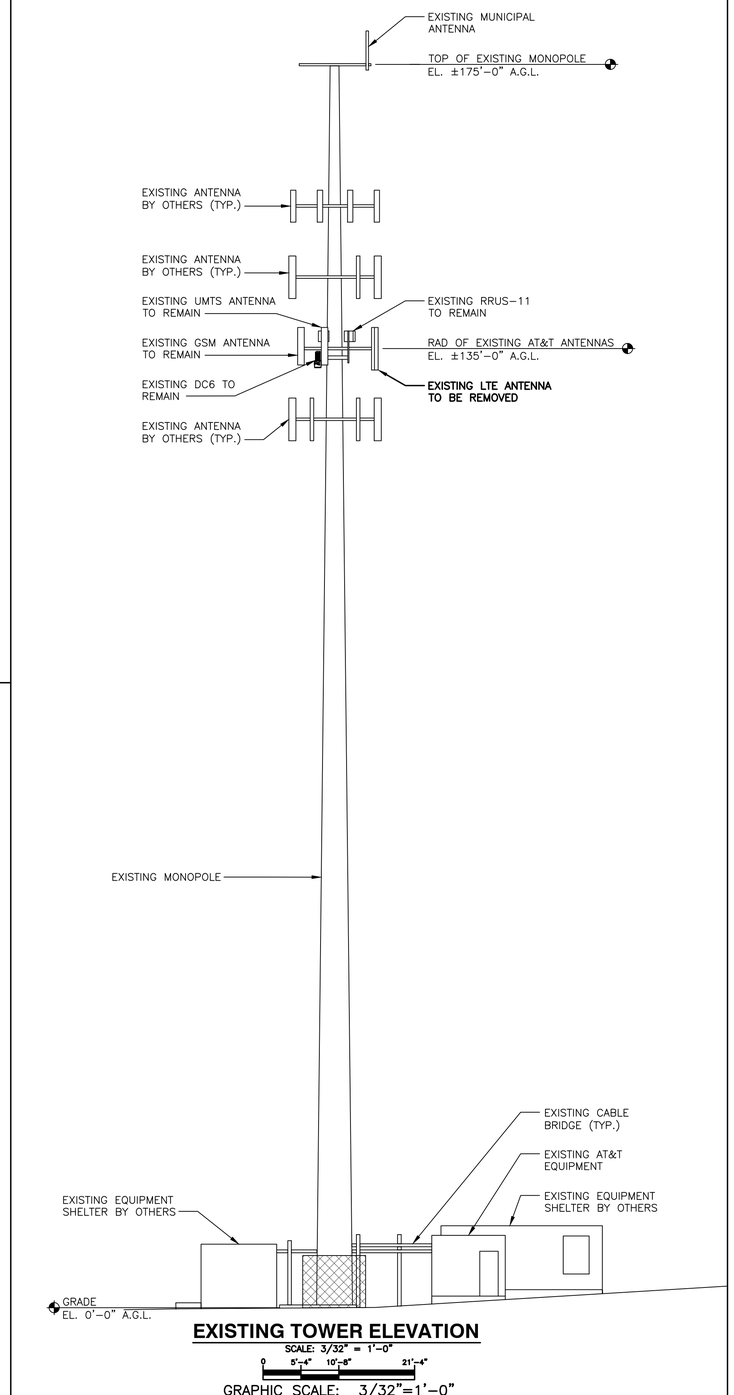
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.

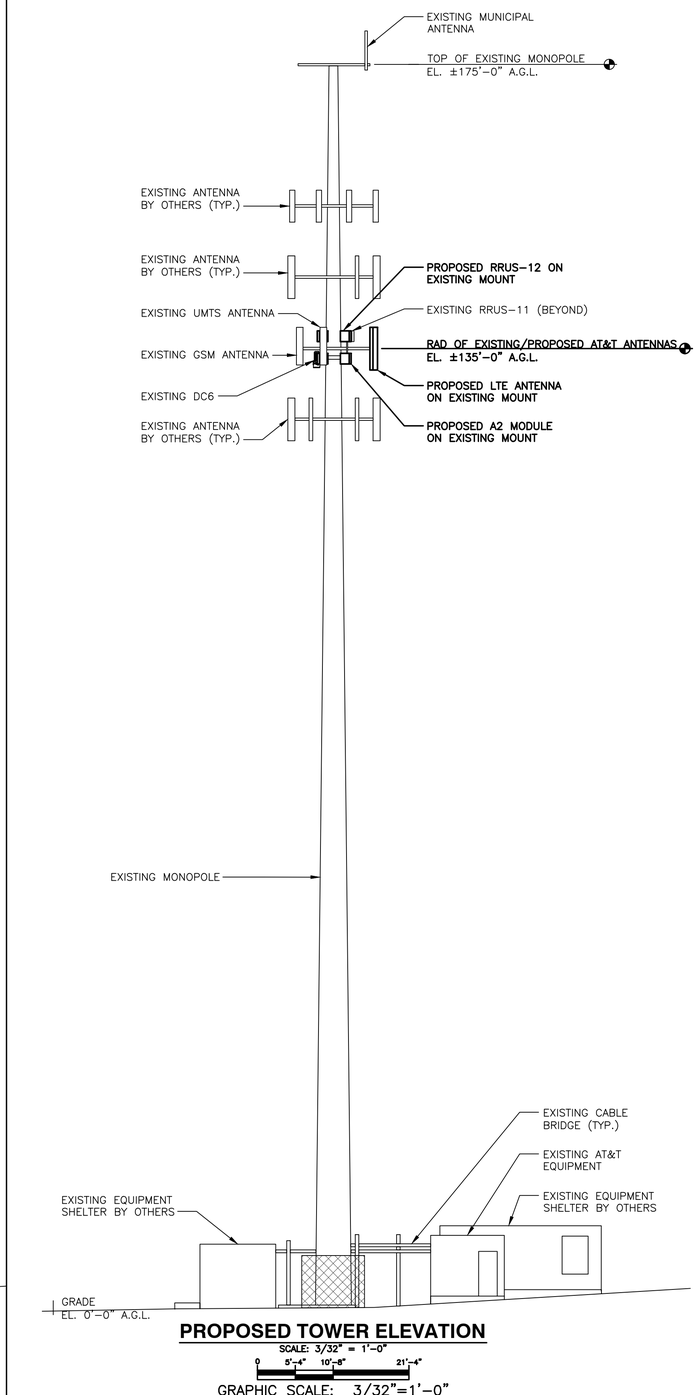


EXISTING TOWER ELEVATION

SCALE: 3/32" = 1'-0"

0 5'-4" 10'-8" 21'-4"

GRAPHIC SCALE: 3/32"=1'-0"



PROPOSED TOWER ELEVATION

SCALE: 3/32" = 1'-0"

0 5'-4" 10'-8" 21'-4"

GRAPHIC SCALE: 3/32"=1'-0"

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SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:

STATE OF CONNECTICUT
NICHOLAS D. BUTKOVICH
REG. NO. 28643
PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT

AT&T

DRAWING TITLE:
ANTENNA LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
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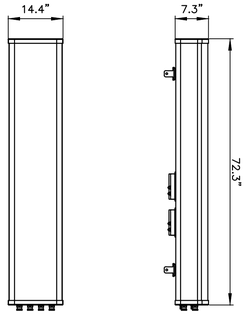


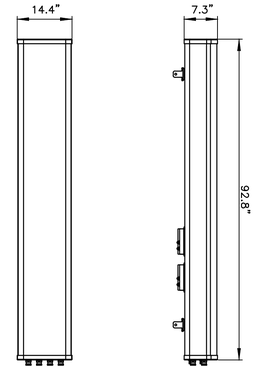
FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	HPA-65R-BUU-H6
WEIGHT	42.9 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.



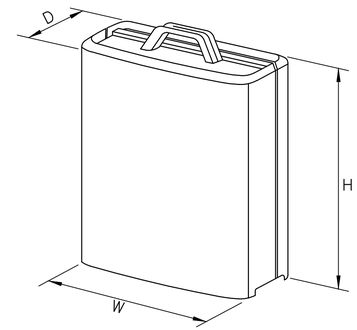
FRONT VIEW SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H8
WEIGHT	64.3 LBS

LTE ANTENNA DETAIL

SCALE: N.T.S.



MODEL	L x W x H	WEIGHT
*RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS

* DENOTES EXISTING

RRUS DETAIL

SCALE: N.T.S.

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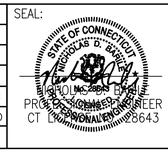
SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:



PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

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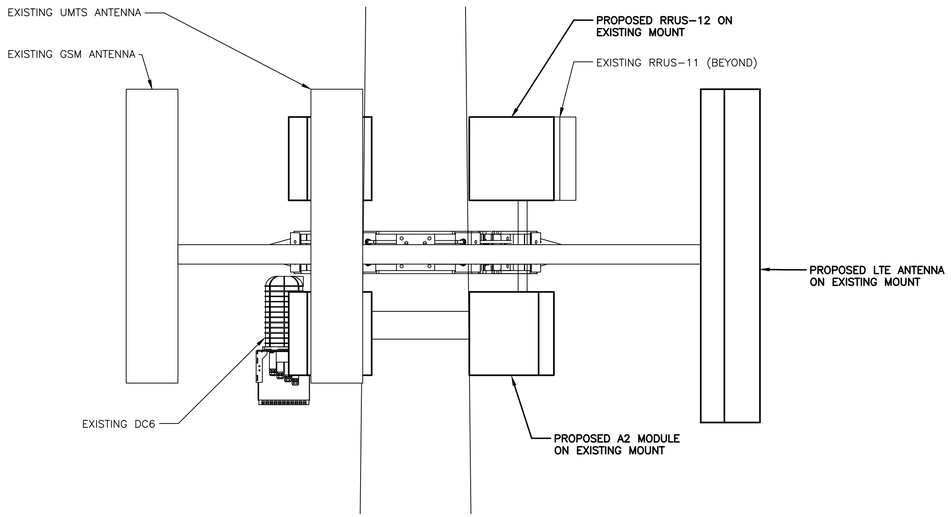
DRAWING TITLE:

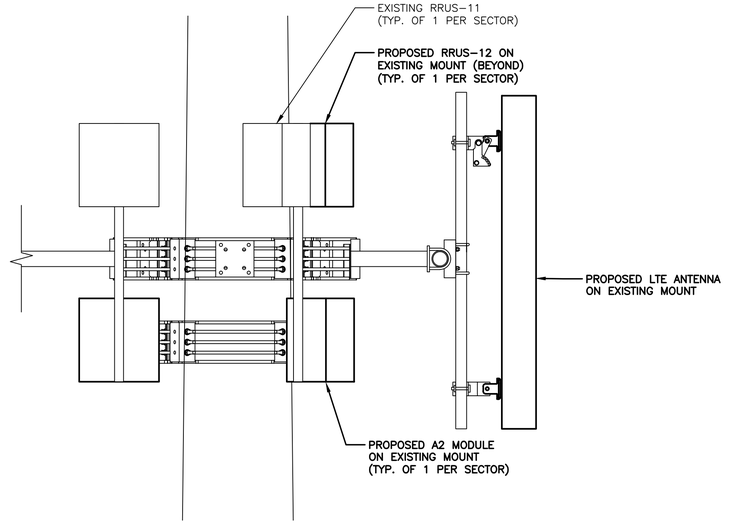
DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15122-EMP	A-4	0



PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)

SCALE: N.T.S.



PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	P65-17-XLH-RR	96"x12"x6"
	A2	–	–	–
	A3	POWERWAVE	7770	55"x11"x5"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
	B2	–	–	–
	B3	POWERWAVE	7770	55"x11"x5"
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	C1	POWERWAVE	P65-16-XLH-RR	72"x12"x6"
	C2	–	–	–
	C3	POWERWAVE	7770	55"x11"x5"
	C4	POWERWAVE	7770	55"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	**A1**	**CCI**	**HPA-65R-BUU-H8**	**92.4"x14.8"x7.4"**
	A2	–	–	–
	A3	POWERWAVE	7770	55"x11"x5"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	**B1**	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**
	B2	–	–	–
	B3	POWERWAVE	7770	55"x11"x5"
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	**C1**	**CCI**	**HPA-65R-BUU-H6**	**72"x14.8"x9"**
	C2	–	–	–
	C3	POWERWAVE	7770	55"x11"x5"
	C4	POWERWAVE	7770	55"x11"x5"

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS-12**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
BETA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS-12**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**
GAMMA	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	**RRUS-12**	**19.7"x16.9"x7.2"**	**ERICSSON A2 MODULE**	**16.4"x15.2"x3.4"**

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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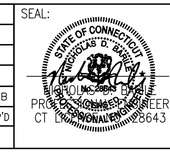
SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:



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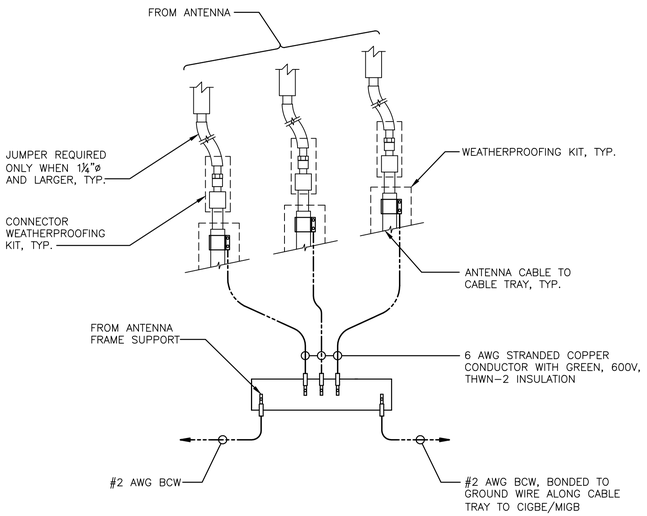
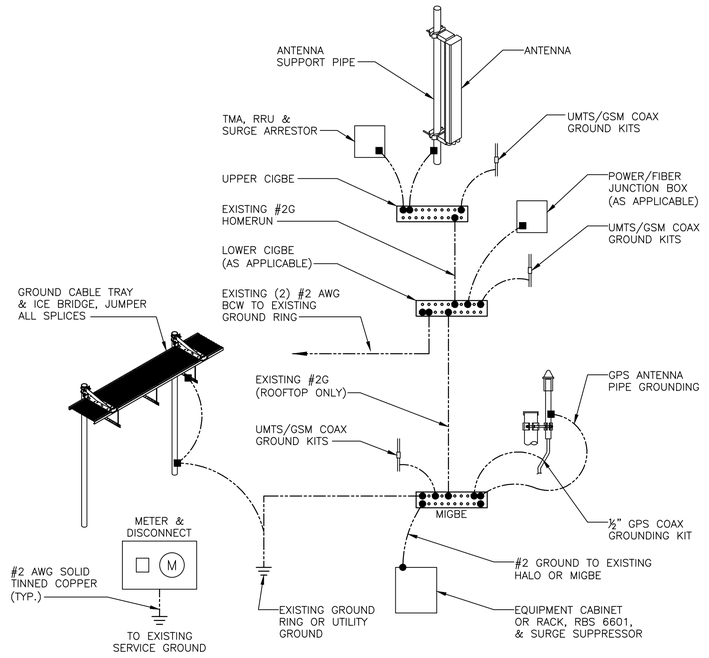
DRAWING TITLE:
ANTENNA MOUNTING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15122-EMP	A-5	0



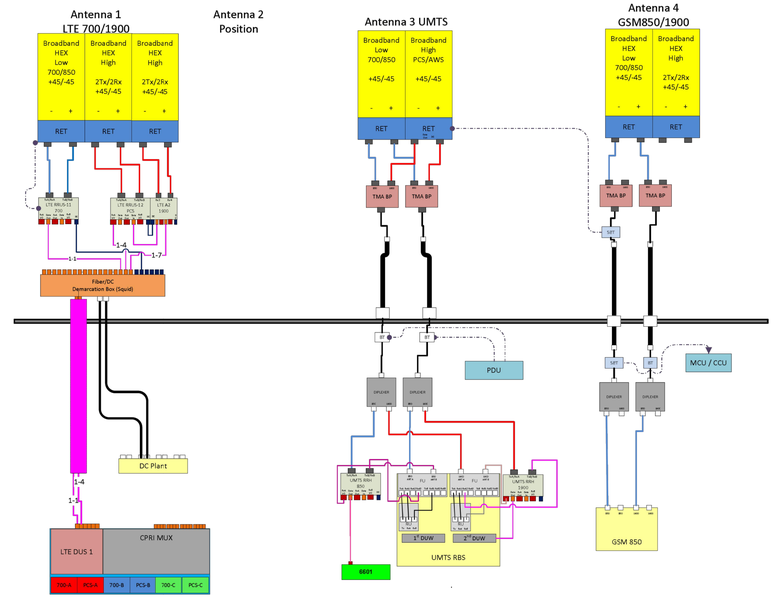
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



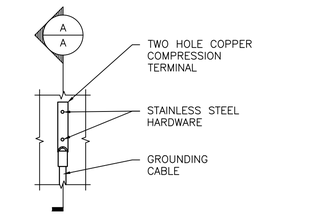
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

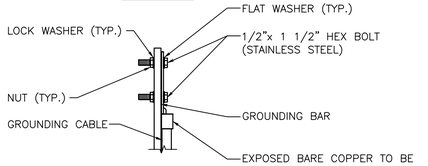


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



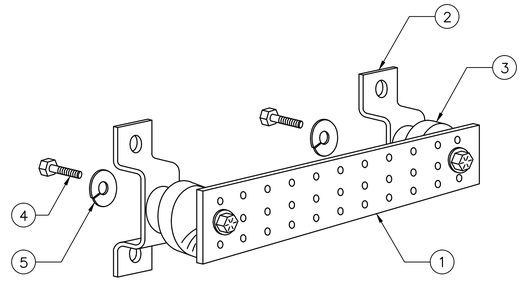
SECTION "A–A"

NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

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.

COM-EX Consultants
115 ROUTE 46
SUITE E39
MOUNTAIN LAKES, NJ 07046
PHONE: 862.209.4300
FAX: 862.209.4301

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2070

SITE NAME: NEW FAIRFIELD

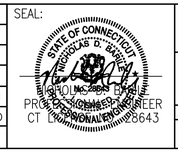
302 BALL POND RD
NEW FAIRFIELD, CT 06812
FAIRFIELD COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	2/26/16	ISSUED AS FINAL	JW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: JW | DRAWN BY: JW

SEAL:



PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:

GROUNDING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15122–EMP	G–1	0