



Aaron Meyers, Site Acquisition
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Centerline Communications, LLC
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DATE June 28, 2018

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

**RE: Notice of Exempt Modification // Site Number: CT51016
134 Kickapoo Road, Middlefield, CT 06455 (Site Name: Middlefield)
N 41.513600 // W 72.745800**

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains six (6) antennas at the 75-foot level of the existing 75-foot Monopole tower at 134 Kickapoo Road, Middlefield, CT 06455. The tower is owned by American Tower Corp.. The property is owned by American Tower Corp. AT&T now intends to swap three (3) antennas and six (6) Remote Radio Units for its LTE upgrade. These antennas and Remote Radio Units would be installed at the 75-foot level of the tower. AT&T also intends to install nine (9) remote radio units and two (2) surge arrestor.

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 Carolyn Mirek, Mayor of South Windsor, CT, as well as the tower owner, Crown Castle and the ground owner, G. Edward King.

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 June 20, 2018 by Dewberry Engineers Inc., a structural analysis dated February 1, 2018 by American Tower Corporation and an Emissions Analysis Report dated February 27, 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 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 American Tower Corporation, dated February 1, 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,

Aaron Meyers, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 W. Center Street, Floor
West Bridgewater, MA, MA 02379
Mobile: (774) 420-4202
ameyers@centerlincommunications.com

Attachments

cc: Edward P. Bailey - as elected official
American Tower Corp. - as tower owner
American Tower Corp. - as property owner
Jerry Russ – as Zoning Enforcement Officer



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1016

FA#: 10034970

Middlefield - Kickapoo

134 Kikapoo Street

Middlefield, CT 06455

February 27, 2018

Centerline Communications Project Number: 950012-032

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	15.65 %



February 27, 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: **CT1016 – Middlefield - Kickapoo**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **134 Kickapoo Street, Middlefield, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. 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 **134 Kikapoo Street, Middlefield, 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
LTE	700 MHz	2	40
LTE	1900 MHz (PCS)	4	40
LTE	700 MHz (Band 14)	4	40
LTE	2300 MHz (WCS)	4	30
LTE	2100 MHz (AWS)	4	30

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), 2100 MHz (AWS) 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	Powerwave 7770	78
A	2	CCI HPA-65R-BUU-H8	78
A	3	CCI TPA-65R-LCUUUU-H8	78
B	1	Powerwave 7770	78
B	2	CCI HPA-65R-BUU-H8	78
B	3	CCI TPA-65R-LCUUUU-H8	78
C	1	Powerwave 7770	78
C	2	CCI HPA-65R-BUU-H8	78
C	3	CCI TPA-65R-LCUUUU-H8	78

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	Powerwave 7770	850 MHz	11.4	1	30	414.12	0.51
Antenna A2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	240	6,654.03	5.92
Antenna A3	CCI TPA-65R-LCUUUU-H8	700 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	12.95 / 14.45 / 14.25	12	400	9,692.09	9.22
Sector A Composite MPE%							15.65
Antenna B1	Powerwave 7770	850 MHz	11.4	1	30	414.12	0.51
Antenna B2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	240	6,654.03	5.92
Antenna B3	CCI TPA-65R-LCUUUU-H8	700 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	12.95 / 14.45 / 14.25	12	400	9,692.09	9.22
Sector B Composite MPE%							15.65
Antenna C1	Powerwave 7770	850 MHz	11.4	1	30	414.12	0.51
Antenna C2	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	240	6,654.03	5.92
Antenna C3	CCI TPA-65R-LCUUUU-H8	700 MHz / 2300 MHz (WCS) / 2100 MHz (AWS)	12.95 / 14.45 / 14.25	12	400	9,692.09	9.22
Sector C Composite MPE%							15.65

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, all three sectors have the same configuration yielding the same results on all three sectors. *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	15.65 %
No Additional Carriers per CSC Active MPE Database	N/A
Site Total MPE %:	15.65 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	15.65 %
AT&T Sector B Total:	15.65 %
AT&T Sector C Total:	15.65 %
Site Total:	15.65 %

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, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology Max Power Values (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS (Antenna 1)	1	414.12	78	2.87	850 MHz	567	0.51%
AT&T 700 MHz LTE (Antenna 2)	2	826.15	78	11.46	700 MHz	467	2.45%
AT&T 1900 MHz (PCS) LTE (Antenna 2)	4	1,250.43	78	34.69	1900 MHz (PCS)	1000	3.47%
AT&T 700 MHz LTE (Antenna 3)	4	788.97	78	21.89	700 MHz	467	4.69%
AT&T 2300 MHz (WCS) LTE (Antenna 3)	4	835.84	78	23.19	2300 MHz (WCS)	1000	2.32%
AT&T 2100 MHz (AWS) LTE (Antenna 3)	4	798.22	78	22.14	2100 MHz (AWS)	1000	2.21%
						Total:	15.65 %

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:	15.65 %
Sector B:	15.65 %
Sector C:	15.65 %
AT&T Maximum Total (per sector):	15.65 %
Site Total:	15.65 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **15.65 %** 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



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 75 ft Monopole
ATC Site Name : Mdfd - Middlefield, CT
ATC Site Number : 302485
Engineering Number : OAA720207_C3_01
Proposed Carrier : AT&T Mobility
Carrier Site Name : Middlefield Kickapoo
Carrier Site Number : CT1016
Site Location : 134 Kikapoo Road
Middlefield, CT 06455-1334
41.513600,-72.745800
County : Middlesex
Date : January 30, 2018
Max Usage : 67%
Result : Pass

Prepared By:
Tyler Ferguson, E.I.
Structural Engineer I

Reviewed By:

COA: PEC.0001553



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 75 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	Meyer Industries Job #AT&T Technologies HTS mapping Project #HTS071108, dated July 10, 2008
Foundation Drawing	Southern New England Telephone Job #38920, dated October 28, 1983
Geotechnical Report	S&ME Job #1261-08-261M, dated July 30, 2008

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	97 mph (3-Second Gust, V_{asd}) / 125 mph (3-second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	$S_s = 0.24$, $S_1 = 0.06$
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier		
Mount	RAD							
75.0	84.0	1	10' Omni	Platform w/ Handrails	(1) 1 5/8" Coax	SPOK Holdings		
	83.0	1	10' Omni		(1) 7/8" Coax	-		
	77.0		6		Powerwave 7020		(12) 7/8" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk (1) 3" conduit	AT&T Mobility
			6		Powerwave LGP21401			
			1		Raycap DC6-48-60-18-8F (23.5" Height)			
			3		Powerwave 7770.00			
			3		CCI CCI-HPA-65R-BUU-H8			
10.0	10.0	1	Channel Master Type 120	Flush	(1) 0.28" RG-6	SPOK Holdings		

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
75.0	77.0	3	Powerwave 7770.00	-	-	AT&T Mobility
		3	Ericsson RRUS-12 800MHz			
		3	Ericsson RRUS A2 Module			

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
75.0	77.0	2	Raycap DC6-48-60-18-8F (23.5" Height)	Platform w/ Handrails	(4) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk	AT&T Mobility
		3	Ericsson 4478 Band 14 (15" Height)			
		3	Ericsson RRUS-11 (50 lbs.)			
		3	Ericsson RRUS 32 (50.8 lbs)			
		3	Ericsson RRUS 32 B2			
		3	Ericsson RRUS 32 B66			
		3	CCI TPA-65R-LCUUUU-H8			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	28%	Pass
Shaft	67%	Pass
Base Plate	54%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	625.8	844.8	517.7	61%

* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
75.0	Raycap DC6-48-60-18-8F (23.5" Height)	AT&T Mobility	0.742	1.039
	Ericsson 4478 Band 14 (15" Height)			
	Ericsson RRUS-11 (50 lbs.)			
	Ericsson RRUS 32 (50.8 lbs)			
	Ericsson RRUS 32 B2			
	Ericsson RRUS 32 B66			
	CCI TPA-65R-LCUUUU-H8			
10.0	Channel Master Type 120	SPOK Holdings	0.014	0.153

*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

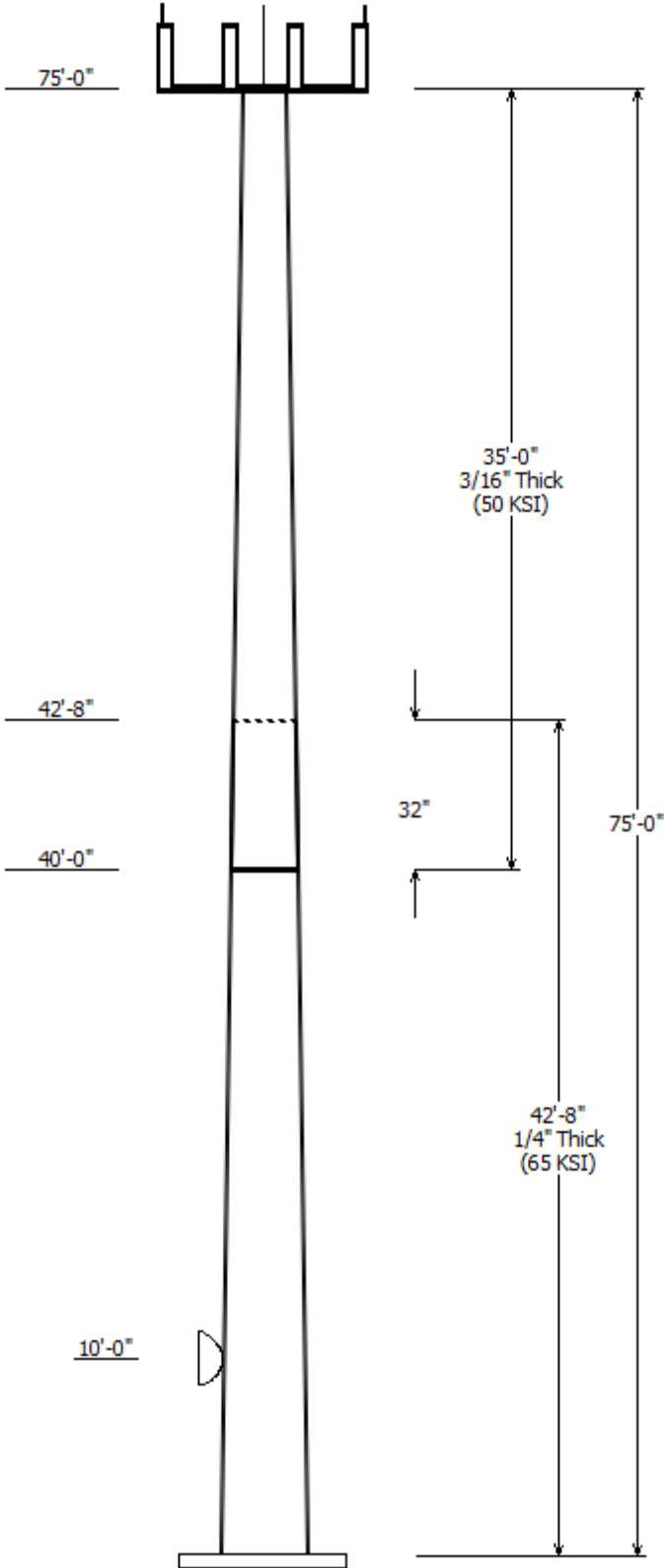
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

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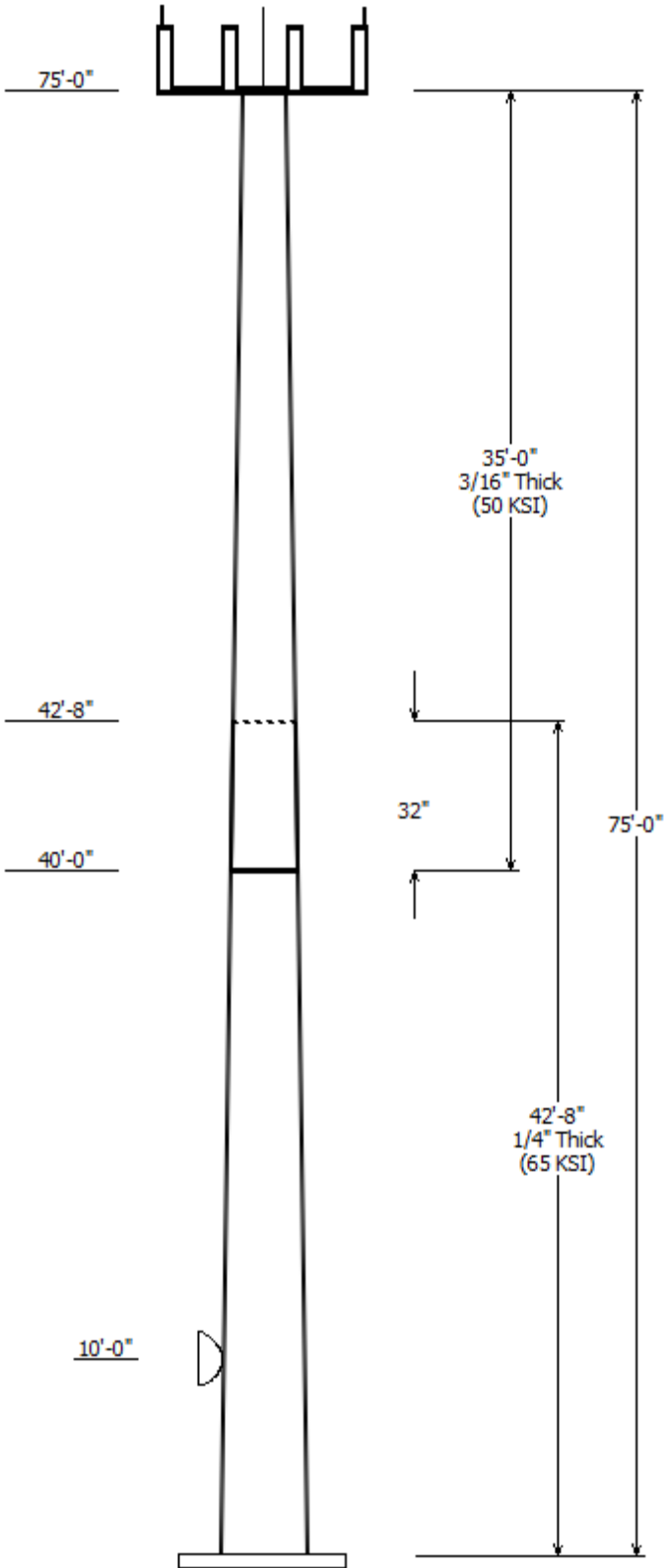
Job Information	
Pole : 302485	Code: ANSI/TIA-222-G
Location : Mdfd - Middlefield, CT	
Description : 75 ft ITT Meyer Monopole	
Client : AT&T MOBILITY	Struct Class : II
Shape : 12 Sides	Exposure : B
Height : 75.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.177934in/ft)	

Sections Properties						
Shaft Section	Length (ft)	Diameter (in)		Thick Joint (in)	Overlap Length (in)	Steel Grade
		Accross Top	Flats Bottom			
1	42.667	20.37	27.97	0.250	0.000	12 Sides 65
2	35.000	15.00	21.22	0.188	32.000	12 Sides 50

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
75.000	75.000	1	Flat Side Arm
75.000	83.000	1	10' Omni
75.000	84.000	1	10' Omni
75.000	77.000	3	CCI TPA-65R-LCUUUU-H8
75.000	77.000	3	Ericsson RRUS 32 B66
75.000	77.000	3	Ericsson RRUS 32 B2
75.000	77.000	3	Ericsson RRUS 32 (50.8 lbs)
75.000	77.000	3	Ericsson RRUS-11 (50 lbs.)
75.000	77.000	3	Ericsson 4478 Band 14 (15" Hei
75.000	77.000	1	Raycap DC6-48-60-18-8F (23.5"
75.000	75.000	1	Flat Platform with Handrails
75.000	77.000	3	CCI CCI-HPA-65R-BUU-H8
75.000	77.000	3	Powerwave Allgon 7770.00
75.000	77.000	2	Raycap DC6-48-60-18-8F (23.5"
75.000	77.000	6	Powerwave Allgon LGP21401
75.000	77.000	6	Powerwave Allgon 7020
10.000	10.000	1	Channel Master Type 120

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
5.000	10.000	0.28" (7mm) RG-6	No
5.000	75.000	0.39" (10mm)	No
5.000	75.000	0.39" (10mm)	No
5.000	75.000	0.78" (19.7mm) 8	No
5.000	75.000	0.78" (19.7mm) 8	No
5.000	75.000	1 5/8" Coax	No
5.000	75.000	3" conduit	No
5.000	75.000	7/8" Coax	No
5.000	75.000	7/8" Coax	No

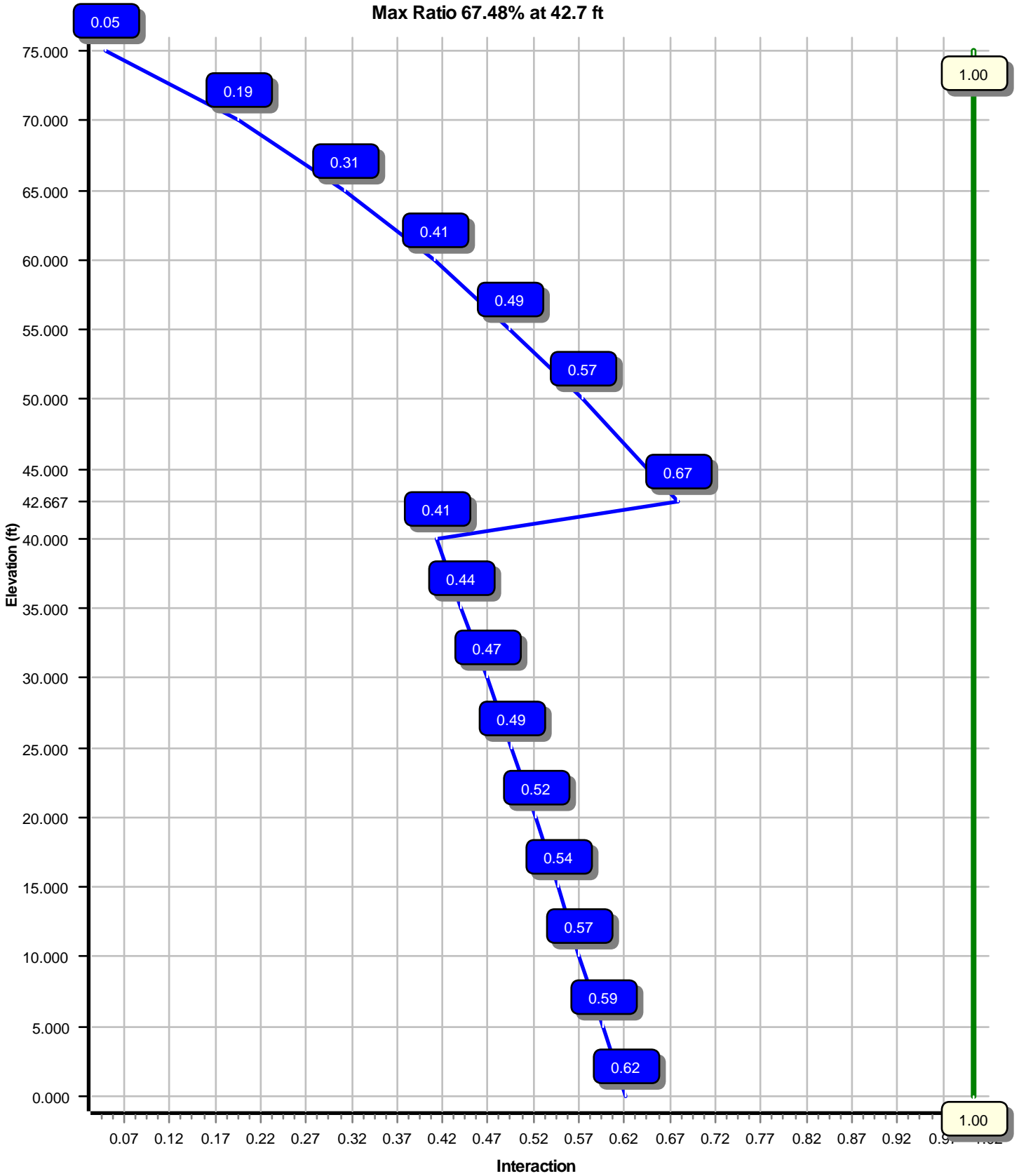
Load Cases	
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph



Reactions			
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	517.73	9.13	10.85
0.9D + 1.6W	512.56	9.13	8.13
1.2D + 1.0Di + 1.0Wi	119.93	2.02	18.83
(1.2 + 0.2Sds) * DL + E ELFM	32.13	0.47	10.88
(1.2 + 0.2Sds) * DL + E EMAM	133.34	1.83	10.87
(0.9 - 0.2Sds) * DL + E ELFM	31.71	0.46	7.38
(0.9 - 0.2Sds) * DL + E EMAM	131.51	1.82	7.38
1.0D + 1.0W	123.07	2.18	9.07

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	10.00	0.162	0.153

Load Case : 1.2D + 1.6W
Max Ratio 67.48% at 42.7 ft



Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:39 PM

Customer: AT&T MOBILITY

Analysis Parameters

Location :	MIDDLESEX County, CT	Height (ft) :	75
Code :	ANSI/TIA-222-G	Base Diameter (in) :	27.97
Shape :	12 Sides	Top Diameter (in) :	15.00
Pole Type :	Taper	Taper (in/ft) :	0.178
Pole Manufacturer :	ITT Meyer	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	1.68		
T _L (sec):	6	p:	1.3
S _s :	0.239	S ₁ :	0.062
F _a :	1.600	F _v :	2.400
S _{ds} :	0.255	S _{d1} :	0.099
		C _s :	0.039
		C _s Max:	0.039
		C _s Min:	0.030

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:39 PM

Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-12	42.667	0.2500	65		0.00	2,796	27.97	0.00	22.31	2188.6	27.30	111.88	20.37	42.67	16.20	837.9	19.16	81.51	0.177932
2-12	35.000	0.1875	50	Slip	32.00	1,289	21.22	40.00	12.70	717.8	27.66	113.21	15.00	75.00	8.94	250.5	18.76	80.00	0.177932
						Shaft Weight	4,085												

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
75.00	10' Omni	1	0.000	9.000	25.00	3.000	1.00
75.00	10' Omni	1	0.000	8.000	25.00	3.000	1.00
75.00	CCI CCI-HPA-65R-BUU-H8	3	0.000	2.000	68.00	12.980	0.67
75.00	CCI TPA-65R-LCUUUU-H8	3	0.000	2.000	81.60	13.300	0.69
75.00	Ericsson 4478 Band 14 (15" Hei	3	0.000	2.000	59.90	1.840	0.50
75.00	Ericsson RRUS 32 (50.8 lbs)	3	0.000	2.000	50.80	2.690	0.50
75.00	Ericsson RRUS 32 B2	3	0.000	2.000	53.00	2.740	0.50
75.00	Ericsson RRUS 32 B66	3	0.000	2.000	53.00	2.740	0.50
75.00	Ericsson RRUS-11 (50 lbs.)	3	0.000	2.000	50.00	2.570	0.50
75.00	Flat Platform with Handrails	1	0.000	0.000	2000.00	42.400	1.00
75.00	Flat Side Arm	1	0.000	0.000	150.00	6.300	0.67
75.00	Powerwave Allgon 7020	6	0.000	2.000	2.20	0.400	0.50
75.00	Powerwave Allgon 7770.00	3	0.000	2.000	35.00	5.510	0.65
75.00	Powerwave Allgon LGP21401	6	0.000	2.000	14.10	1.100	0.50
75.00	Raycap DC6-48-60-18-8F (23.5"	2	0.000	2.000	20.00	1.110	1.00
75.00	Raycap DC6-48-60-18-8F (23.5"	1	0.000	2.000	20.00	1.110	1.00
10.00	Channel Master Type 120	1	0.000	0.000	126.00	20.190	1.00
Totals	Num Loadings:17	44			3837.70		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Flat	Projected Width (in)	Exposed To Wind	Carrier
5.00	75.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T Mobility
5.00	75.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0.00	N	AT&T Mobility
5.00	75.00	2	0.78" (19.7mm) 8	0.78	0.59	N	0.00	N	AT&T Mobility
5.00	75.00	4	0.78" (19.7mm) 8	0.78	0.59	N	0.00	N	AT&T Mobility
5.00	75.00	1	1 5/8" Coax	1.98	0.82	N	0.00	N	SPOK Holdings
5.00	75.00	1	3" conduit	3.50	7.58	N	0.00	N	AT&T Mobility
5.00	75.00	12	7/8" Coax	1.09	0.33	N	0.00	N	AT&T Mobility
5.00	75.00	1	7/8" Coax	1.09	0.33	N	0.00	N	-
5.00	10.00	1	0.28" (7mm) RG-6	0.28	0.03	N	0.00	N	SPOK Holdings

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:39 PM

Customer: AT&T MOBILITY

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.2500	27.970	22.315	2,188.6	27.30	111.88	74.9	151.2	0.0	0.0
5.00		0.2500	27.080	21.598	1,984.5	26.35	108.32	76.0	141.6	0.0	373.6
10.00		0.2500	26.191	20.882	1,793.6	25.39	104.76	77.0	132.3	0.0	361.4
15.00		0.2500	25.301	20.166	1,615.3	24.44	101.20	78.1	123.3	0.0	349.2
20.00		0.2500	24.411	19.450	1,449.2	23.48	97.65	79.1	114.7	0.0	337.0
25.00		0.2500	23.522	18.734	1,295.0	22.53	94.09	80.1	106.4	0.0	324.8
30.00		0.2500	22.632	18.017	1,152.1	21.58	90.53	81.2	98.3	0.0	312.6
35.00		0.2500	21.742	17.301	1,020.1	20.62	86.97	81.9	90.6	0.0	300.5
40.00	Bot - Section 2	0.2500	20.853	16.585	898.6	19.67	83.41	81.9	83.2	0.0	288.3
42.67	Top - Section 1	0.1875	20.753	12.417	670.3	26.98	110.68	60.7	62.4	0.0	262.7
45.00		0.1875	20.338	12.166	630.5	26.38	108.47	61.1	59.9	0.0	97.6
50.00		0.1875	19.448	11.629	550.6	25.11	103.72	62.1	54.7	0.0	202.4
55.00		0.1875	18.559	11.092	477.8	23.84	98.98	63.0	49.7	0.0	193.3
60.00		0.1875	17.669	10.554	411.7	22.57	94.23	63.0	45.0	0.0	184.1
65.00		0.1875	16.779	10.017	352.0	21.30	89.49	63.0	40.5	0.0	175.0
70.00		0.1875	15.890	9.480	298.3	20.03	84.74	63.0	36.3	0.0	165.9
75.00		0.1875	15.000	8.943	250.5	18.76	80.00	63.0	32.3	0.0	156.7
4,085.1											

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:39 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W	97 mph with No Ice	20 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		167.4	0.0					0.0	0.0	167.4	0.0	0.0	0.0
5.00		329.3	448.3					0.0	0.0	329.3	448.3	0.0	0.0
10.00	Appurtenance(s)	318.5	433.7	569.2	0.0	0.0	151.2	0.0	98.3	887.7	683.1	0.0	0.0
15.00		307.7	419.0					0.0	98.1	307.7	517.1	0.0	0.0
20.00		296.9	404.4					0.0	98.1	296.9	502.5	0.0	0.0
25.00		286.0	389.8					0.0	98.1	286.0	487.9	0.0	0.0
30.00		278.5	375.2					0.0	98.1	278.5	473.3	0.0	0.0
35.00		276.3	360.5					0.0	98.1	276.3	458.6	0.0	0.0
40.00	Bot - Section 2	212.8	345.9					0.0	98.1	212.8	444.0	0.0	0.0
42.67	Top - Section 1	139.7	315.3					0.0	52.3	139.7	367.6	0.0	0.0
45.00		203.1	117.1					0.0	45.8	203.1	162.9	0.0	0.0
50.00		273.7	242.9					0.0	98.1	273.7	341.0	0.0	0.0
55.00		268.4	231.9					0.0	98.1	268.4	330.0	0.0	0.0
60.00		262.0	221.0					0.0	98.1	262.0	319.1	0.0	0.0
65.00		254.6	210.0					0.0	98.1	254.6	308.1	0.0	0.0
70.00		246.3	199.0					0.0	98.1	246.3	297.1	0.0	0.0
75.00	Appurtenance(s)	120.9	188.1	4,458.6	0.0	6,973.4	4,454.0	0.0	98.1	4,579.5	4,740.2	0.0	0.0
Totals:										9,269.82	10,880.9	0.00	0.00

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:40 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W

97 mph with No Ice

20 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-10.85	-9.13	0.00	-517.73	0.00	517.73	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.617
5.00	-10.36	-8.86	0.00	-472.07	0.00	472.07	1,476.97	738.48	1,633.58	806.76	0.17	-0.32	0.592
10.00	-9.64	-8.02	0.00	-427.76	0.00	427.76	1,447.54	723.77	1,547.45	764.23	0.68	-0.64	0.567
15.00	-9.08	-7.76	0.00	-387.65	0.00	387.65	1,416.77	708.38	1,462.12	722.09	1.53	-0.97	0.543
20.00	-8.54	-7.50	0.00	-348.86	0.00	348.86	1,384.66	692.33	1,377.73	680.41	2.72	-1.29	0.519
25.00	-8.02	-7.25	0.00	-311.36	0.00	311.36	1,351.21	675.60	1,294.43	639.27	4.25	-1.62	0.493
30.00	-7.52	-7.00	0.00	-275.12	0.00	275.12	1,316.42	658.21	1,212.38	598.75	6.11	-1.94	0.465
35.00	-7.03	-6.74	0.00	-240.14	0.00	240.14	1,275.28	637.64	1,127.29	556.73	8.31	-2.26	0.437
40.00	-6.57	-6.54	0.00	-206.43	0.00	206.43	1,222.49	611.24	1,035.38	511.34	10.84	-2.57	0.409
42.67	-6.19	-6.40	0.00	-188.99	0.00	188.99	678.30	339.15	575.17	284.05	12.32	-2.73	0.675
45.00	-6.01	-6.21	0.00	-174.06	0.00	174.06	669.39	334.69	556.05	274.61	13.70	-2.88	0.643
50.00	-5.65	-5.96	0.00	-142.99	0.00	142.99	649.62	324.81	515.59	254.63	16.90	-3.24	0.571
55.00	-5.31	-5.70	0.00	-113.20	0.00	113.20	628.89	314.45	475.86	235.01	20.47	-3.57	0.490
60.00	-4.98	-5.44	0.00	-84.71	0.00	84.71	598.44	299.22	430.66	212.69	24.37	-3.86	0.407
65.00	-4.67	-5.18	0.00	-57.51	0.00	57.51	567.98	283.99	387.72	191.48	28.55	-4.11	0.309
70.00	-4.38	-4.93	0.00	-31.60	0.00	31.60	537.53	268.76	347.04	171.39	32.95	-4.29	0.193
75.00	0.00	-4.58	0.00	-6.97	0.00	6.97	507.07	253.54	308.61	152.41	37.50	-4.38	0.046

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:41 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

20 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		167.4	0.0					0.0	0.0	167.4	0.0	0.0	0.0
5.00		329.3	336.2					0.0	0.0	329.3	336.2	0.0	0.0
10.00	Appurtenance(s)	318.5	325.2	569.2	0.0	0.0	113.4	0.0	73.7	887.7	512.3	0.0	0.0
15.00		307.7	314.3					0.0	73.6	307.7	387.8	0.0	0.0
20.00		296.9	303.3					0.0	73.6	296.9	376.9	0.0	0.0
25.00		286.0	292.3					0.0	73.6	286.0	365.9	0.0	0.0
30.00		278.5	281.4					0.0	73.6	278.5	355.0	0.0	0.0
35.00		276.3	270.4					0.0	73.6	276.3	344.0	0.0	0.0
40.00	Bot - Section 2	212.8	259.4					0.0	73.6	212.8	333.0	0.0	0.0
42.67	Top - Section 1	139.7	236.5					0.0	39.2	139.7	275.7	0.0	0.0
45.00		203.1	87.8					0.0	34.3	203.1	122.2	0.0	0.0
50.00		273.7	182.2					0.0	73.6	273.7	255.8	0.0	0.0
55.00		268.4	174.0					0.0	73.6	268.4	247.5	0.0	0.0
60.00		262.0	165.7					0.0	73.6	262.0	239.3	0.0	0.0
65.00		254.6	157.5					0.0	73.6	254.6	231.1	0.0	0.0
70.00		246.3	149.3					0.0	73.6	246.3	222.9	0.0	0.0
75.00	Appurtenance(s)	120.9	141.1	4,458.6	0.0	6,973.4	3,340.5	0.0	73.6	4,579.5	3,555.2	0.0	0.0
Totals:										9,269.82	8,160.68	0.00	0.00

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:42 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W

97 mph with No Ice (Reduced DL)

20 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-8.13	-9.13	0.00	-512.56	0.00	512.56	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.609
5.00	-7.75	-8.84	0.00	-466.93	0.00	466.93	1,476.97	738.48	1,633.58	806.76	0.17	-0.32	0.584
10.00	-7.20	-7.99	0.00	-422.74	0.00	422.74	1,447.54	723.77	1,547.45	764.23	0.68	-0.64	0.558
15.00	-6.77	-7.71	0.00	-382.81	0.00	382.81	1,416.77	708.38	1,462.12	722.09	1.51	-0.96	0.535
20.00	-6.36	-7.44	0.00	-344.25	0.00	344.25	1,384.66	692.33	1,377.73	680.41	2.69	-1.28	0.511
25.00	-5.96	-7.18	0.00	-307.04	0.00	307.04	1,351.21	675.60	1,294.43	639.27	4.20	-1.60	0.485
30.00	-5.58	-6.92	0.00	-271.13	0.00	271.13	1,316.42	658.21	1,212.38	598.75	6.04	-1.91	0.457
35.00	-5.21	-6.66	0.00	-236.52	0.00	236.52	1,275.28	637.64	1,127.29	556.73	8.21	-2.23	0.429
40.00	-4.86	-6.46	0.00	-203.21	0.00	203.21	1,222.49	611.24	1,035.38	511.34	10.71	-2.53	0.401
42.67	-4.57	-6.32	0.00	-185.99	0.00	185.99	678.30	339.15	575.17	284.05	12.17	-2.70	0.662
45.00	-4.43	-6.13	0.00	-171.25	0.00	171.25	669.39	334.69	556.05	274.61	13.53	-2.84	0.631
50.00	-4.16	-5.86	0.00	-140.62	0.00	140.62	649.62	324.81	515.59	254.63	16.69	-3.19	0.559
55.00	-3.90	-5.60	0.00	-111.30	0.00	111.30	628.89	314.45	475.86	235.01	20.21	-3.52	0.480
60.00	-3.65	-5.34	0.00	-83.28	0.00	83.28	598.44	299.22	430.66	212.69	24.05	-3.81	0.398
65.00	-3.42	-5.09	0.00	-56.56	0.00	56.56	567.98	283.99	387.72	191.48	28.17	-4.05	0.302
70.00	-3.20	-4.83	0.00	-31.13	0.00	31.13	537.53	268.76	347.04	171.39	32.51	-4.23	0.188
75.00	0.00	-4.58	0.00	-6.97	0.00	6.97	507.07	253.54	308.61	152.41	36.99	-4.32	0.046

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:42 PM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 19 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		36.1	0.0					0.0	0.0	36.1	0.0	0.0	0.0
5.00		71.4	660.1					0.0	0.0	71.4	660.1	0.0	0.0
10.00	Appurtenance(s)	69.7	663.7	105.0	0.0	0.0	152.7	0.0	98.3	174.7	914.7	0.0	0.0
15.00		67.8	653.9					0.0	98.1	67.8	752.0	0.0	0.0
20.00		65.8	639.6					0.0	98.1	65.8	737.7	0.0	0.0
25.00		63.8	622.9					0.0	98.1	63.8	721.0	0.0	0.0
30.00		62.5	604.8					0.0	98.1	62.5	702.9	0.0	0.0
35.00		62.4	585.7					0.0	98.1	62.4	683.8	0.0	0.0
40.00	Bot - Section 2	48.3	565.7					0.0	98.1	48.3	663.8	0.0	0.0
42.67	Top - Section 1	31.8	433.2					0.0	52.3	31.8	485.5	0.0	0.0
45.00		46.5	219.0					0.0	45.8	46.5	264.8	0.0	0.0
50.00		63.0	454.2					0.0	98.1	63.0	552.3	0.0	0.0
55.00		62.3	436.4					0.0	98.1	62.3	534.5	0.0	0.0
60.00		61.3	418.3					0.0	98.1	61.3	516.4	0.0	0.0
65.00		60.1	399.9					0.0	98.1	60.1	498.0	0.0	0.0
70.00		58.7	381.2					0.0	98.1	58.7	479.3	0.0	0.0
75.00	Appurtenance(s)	29.0	362.3	979.1	0.0	1,606.4	9,205.7	0.0	98.1	1,008.1	9,666.2	0.0	0.0
Totals:										2,044.71	18,833.1	0.00	0.00

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

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Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 0.75 in Radial Ice

19 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-18.83	-2.02	0.00	-119.93	0.00	119.93	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.154
5.00	-18.17	-1.97	0.00	-109.83	0.00	109.83	1,476.97	738.48	1,633.58	806.76	0.04	-0.07	0.148
10.00	-17.25	-1.82	0.00	-99.96	0.00	99.96	1,447.54	723.77	1,547.45	764.23	0.16	-0.15	0.143
15.00	-16.50	-1.77	0.00	-90.87	0.00	90.87	1,416.77	708.38	1,462.12	722.09	0.36	-0.23	0.137
20.00	-15.76	-1.72	0.00	-82.02	0.00	82.02	1,384.66	692.33	1,377.73	680.41	0.63	-0.30	0.132
25.00	-15.04	-1.67	0.00	-73.40	0.00	73.40	1,351.21	675.60	1,294.43	639.27	0.99	-0.38	0.126
30.00	-14.33	-1.63	0.00	-65.03	0.00	65.03	1,316.42	658.21	1,212.38	598.75	1.43	-0.45	0.120
35.00	-13.65	-1.58	0.00	-56.91	0.00	56.91	1,275.28	637.64	1,127.29	556.73	1.94	-0.53	0.113
40.00	-12.98	-1.53	0.00	-49.03	0.00	49.03	1,222.49	611.24	1,035.38	511.34	2.54	-0.60	0.107
42.67	-12.49	-1.50	0.00	-44.94	0.00	44.94	678.30	339.15	575.17	284.05	2.89	-0.64	0.177
45.00	-12.23	-1.47	0.00	-41.43	0.00	41.43	669.39	334.69	556.05	274.61	3.21	-0.68	0.169
50.00	-11.68	-1.41	0.00	-34.10	0.00	34.10	649.62	324.81	515.59	254.63	3.96	-0.76	0.152
55.00	-11.14	-1.36	0.00	-27.03	0.00	27.03	628.89	314.45	475.86	235.01	4.81	-0.84	0.133
60.00	-10.62	-1.30	0.00	-20.23	0.00	20.23	598.44	299.22	430.66	212.69	5.73	-0.91	0.113
65.00	-10.13	-1.24	0.00	-13.72	0.00	13.72	567.98	283.99	387.72	191.48	6.71	-0.97	0.090
70.00	-9.65	-1.18	0.00	-7.51	0.00	7.51	537.53	268.76	347.04	171.39	7.75	-1.01	0.062
75.00	0.00	-1.01	0.00	-1.61	0.00	1.61	507.07	253.54	308.61	152.41	8.83	-1.03	0.011

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

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Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W

Serviceability 60 mph

19 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		40.0	0.0					0.0	0.0	40.0	0.0	0.0	0.0
5.00		78.8	373.6					0.0	0.0	78.8	373.6	0.0	0.0
10.00	Appurtenance(s)	76.2	361.4	136.1	0.0	0.0	126.0	0.0	81.9	212.3	569.3	0.0	0.0
15.00		73.6	349.2					0.0	81.7	73.6	430.9	0.0	0.0
20.00		71.0	337.0					0.0	81.7	71.0	418.8	0.0	0.0
25.00		68.4	324.8					0.0	81.7	68.4	406.6	0.0	0.0
30.00		66.6	312.6					0.0	81.7	66.6	394.4	0.0	0.0
35.00		66.1	300.5					0.0	81.7	66.1	382.2	0.0	0.0
40.00	Bot - Section 2	50.9	288.3					0.0	81.7	50.9	370.0	0.0	0.0
42.67	Top - Section 1	33.4	262.7					0.0	43.6	33.4	306.3	0.0	0.0
45.00		48.6	97.6					0.0	38.1	48.6	135.7	0.0	0.0
50.00		65.5	202.4					0.0	81.7	65.5	284.2	0.0	0.0
55.00		64.2	193.3					0.0	81.7	64.2	275.0	0.0	0.0
60.00		62.7	184.1					0.0	81.7	62.7	265.9	0.0	0.0
65.00		60.9	175.0					0.0	81.7	60.9	256.8	0.0	0.0
70.00		58.9	165.9					0.0	81.7	58.9	247.6	0.0	0.0
75.00	Appurtenance(s)	28.9	156.7	1,066.2	0.0	1,667.6	3,711.7	0.0	81.7	1,095.1	3,950.2	0.0	0.0
Totals:										2,216.72	9,067.43	0.00	0.00

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

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Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W

Serviceability 60 mph

19 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-9.07	-2.18	0.00	-123.07	0.00	123.07	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.151
5.00	-8.69	-2.12	0.00	-112.16	0.00	112.16	1,476.97	738.48	1,633.58	806.76	0.04	-0.08	0.145
10.00	-8.12	-1.91	0.00	-101.59	0.00	101.59	1,447.54	723.77	1,547.45	764.23	0.16	-0.15	0.139
15.00	-7.69	-1.85	0.00	-92.02	0.00	92.02	1,416.77	708.38	1,462.12	722.09	0.36	-0.23	0.133
20.00	-7.26	-1.78	0.00	-82.78	0.00	82.78	1,384.66	692.33	1,377.73	680.41	0.65	-0.31	0.127
25.00	-6.86	-1.72	0.00	-73.86	0.00	73.86	1,351.21	675.60	1,294.43	639.27	1.01	-0.38	0.121
30.00	-6.46	-1.66	0.00	-65.24	0.00	65.24	1,316.42	658.21	1,212.38	598.75	1.45	-0.46	0.114
35.00	-6.08	-1.60	0.00	-56.93	0.00	56.93	1,275.28	637.64	1,127.29	556.73	1.97	-0.54	0.107
40.00	-5.70	-1.55	0.00	-48.93	0.00	48.93	1,222.49	611.24	1,035.38	511.34	2.57	-0.61	0.100
42.67	-5.40	-1.52	0.00	-44.79	0.00	44.79	678.30	339.15	575.17	284.05	2.93	-0.65	0.166
45.00	-5.26	-1.47	0.00	-41.25	0.00	41.25	669.39	334.69	556.05	274.61	3.25	-0.68	0.158
50.00	-4.98	-1.41	0.00	-33.88	0.00	33.88	649.62	324.81	515.59	254.63	4.01	-0.77	0.141
55.00	-4.70	-1.35	0.00	-26.82	0.00	26.82	628.89	314.45	475.86	235.01	4.86	-0.85	0.122
60.00	-4.43	-1.29	0.00	-20.07	0.00	20.07	598.44	299.22	430.66	212.69	5.79	-0.92	0.102
65.00	-4.18	-1.23	0.00	-13.63	0.00	13.63	567.98	283.99	387.72	191.48	6.78	-0.97	0.079
70.00	-3.93	-1.17	0.00	-7.50	0.00	7.50	537.53	268.76	347.04	171.39	7.82	-1.02	0.051
75.00	0.00	-1.10	0.00	-1.67	0.00	1.67	507.07	253.54	308.61	152.41	8.90	-1.04	0.011

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_{s1}):	0.24
Spectral Response Acceleration at 1.0 Second Period (S_{s1}):	0.06
Long-Period Transition Period (T_{L1}):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.25
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Seismic Response Coefficient (C_s):	0.04
Upper Limit C_s	0.04
Lower Limit C_s	0.03
Period based on Rayleigh Method (sec):	1.68
Redundancy Factor (ρ):	1.30
Seismic Force Distribution Exponent (k):	1.59
Total Unfactored Dead Load:	9.07 k
Seismic Base Shear (E):	0.46 k

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
16	72.50	238	217	0.042	19	298
15	67.50	248	201	0.039	18	310
14	62.50	257	184	0.035	16	321
13	57.50	266	167	0.032	15	333
12	52.50	275	150	0.029	13	344
11	47.50	284	132	0.025	12	355
10	43.83	136	55	0.011	5	170
9	41.33	306	114	0.022	10	383
8	37.50	370	118	0.023	10	463
7	32.50	382	97	0.019	9	478
6	27.50	394	77	0.015	7	493
5	22.50	407	58	0.011	5	509
4	17.50	419	40	0.008	4	524
3	12.50	431	24	0.005	2	539
2	7.50	443	11	0.002	1	555
1	2.50	374	2	0.000	0	467
Powerwave Allgon 702	75.00	13	13	0.002	1	17
Powerwave Allgon LGP	75.00	85	81	0.016	7	106
Raycap DC6-48-60-18-	75.00	40	38	0.007	3	50
Raycap DC6-48-60-18-	75.00	20	19	0.004	2	25
Ericsson 4478 Band 1	75.00	180	172	0.033	15	225
Ericsson RRUS-11 (50	75.00	150	144	0.028	13	188
Ericsson RRUS 32 (50	75.00	152	146	0.028	13	191

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

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Customer: AT&T MOBILITY

Ericsson RRUS 32 B2	75.00	159	153	0.029	14	199
Ericsson RRUS 32 B66	75.00	159	153	0.029	14	199
10' Omni	75.00	25	24	0.005	2	31
10' Omni	75.00	25	24	0.005	2	31
Powerwave Allgon 777	75.00	105	101	0.019	9	131
Flat Side Arm	75.00	150	144	0.028	13	188
CCI CCI-HPA-65R-BUU-	75.00	204	196	0.038	17	255
CCI TPA-65R-LCUUUU-H	75.00	245	235	0.045	21	306
Flat Platform with H	75.00	2,000	1,919	0.368	171	2,502
Channel Master Type	10.00	126	5	0.001	0	158
		9,067	5,213	1.000	464	11,343

Load Case (0.9 - 0.2Sds) * DL + E ELMF

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
16	72.50	238	217	0.042	19	202
15	67.50	248	201	0.039	18	210
14	62.50	257	184	0.035	16	218
13	57.50	266	167	0.032	15	226
12	52.50	275	150	0.029	13	234
11	47.50	284	132	0.025	12	241
10	43.83	136	55	0.011	5	115
9	41.33	306	114	0.022	10	260
8	37.50	370	118	0.023	10	314
7	32.50	382	97	0.019	9	324
6	27.50	394	77	0.015	7	335
5	22.50	407	58	0.011	5	345
4	17.50	419	40	0.008	4	356
3	12.50	431	24	0.005	2	366
2	7.50	443	11	0.002	1	376
1	2.50	374	2	0.000	0	317
Powerwave Allgon 702	75.00	13	13	0.002	1	11
Powerwave Allgon LGP	75.00	85	81	0.016	7	72
Raycap DC6-48-60-18-	75.00	40	38	0.007	3	34
Raycap DC6-48-60-18-	75.00	20	19	0.004	2	17
Ericsson 4478 Band 1	75.00	180	172	0.033	15	153
Ericsson RRUS-11 (50	75.00	150	144	0.028	13	127
Ericsson RRUS 32 (50	75.00	152	146	0.028	13	129
Ericsson RRUS 32 B2	75.00	159	153	0.029	14	135
Ericsson RRUS 32 B66	75.00	159	153	0.029	14	135
10' Omni	75.00	25	24	0.005	2	21
10' Omni	75.00	25	24	0.005	2	21
Powerwave Allgon 777	75.00	105	101	0.019	9	89
Flat Side Arm	75.00	150	144	0.028	13	127
CCI CCI-HPA-65R-BUU-	75.00	204	196	0.038	17	173
CCI TPA-65R-LCUUUU-H	75.00	245	235	0.045	21	208
Flat Platform with H	75.00	2,000	1,919	0.368	171	1,698
Channel Master Type	10.00	126	5	0.001	0	107
		9,067	5,213	1.000	464	7,698

Site Number: 302485

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

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Customer: AT&T MOBILITY

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-10.88	-0.47	0.00	-32.13	0.00	32.13	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.045
5.00	-10.32	-0.47	0.00	-29.80	0.00	29.80	1,476.97	738.48	1,633.58	806.76	0.01	-0.02	0.044
10.00	-9.62	-0.47	0.00	-27.46	0.00	27.46	1,447.54	723.77	1,547.45	764.23	0.04	-0.04	0.043
15.00	-9.10	-0.47	0.00	-25.12	0.00	25.12	1,416.77	708.38	1,462.12	722.09	0.10	-0.06	0.041
20.00	-8.59	-0.47	0.00	-22.78	0.00	22.78	1,384.66	692.33	1,377.73	680.41	0.17	-0.08	0.040
25.00	-8.10	-0.46	0.00	-20.46	0.00	20.46	1,351.21	675.60	1,294.43	639.27	0.27	-0.10	0.038
30.00	-7.62	-0.45	0.00	-18.15	0.00	18.15	1,316.42	658.21	1,212.38	598.75	0.39	-0.13	0.036
35.00	-7.16	-0.44	0.00	-15.89	0.00	15.89	1,275.28	637.64	1,127.29	556.73	0.53	-0.15	0.034
40.00	-6.77	-0.44	0.00	-13.66	0.00	13.66	1,222.49	611.24	1,035.38	511.34	0.70	-0.17	0.032
42.67	-6.60	-0.43	0.00	-12.50	0.00	12.50	678.30	339.15	575.17	284.05	0.79	-0.18	0.054
45.00	-6.25	-0.42	0.00	-11.49	0.00	11.49	669.39	334.69	556.05	274.61	0.88	-0.19	0.051
50.00	-5.90	-0.41	0.00	-9.39	0.00	9.39	649.62	324.81	515.59	254.63	1.09	-0.21	0.046
55.00	-5.57	-0.39	0.00	-7.35	0.00	7.35	628.89	314.45	475.86	235.01	1.32	-0.23	0.040
60.00	-5.25	-0.38	0.00	-5.38	0.00	5.38	598.44	299.22	430.66	212.69	1.58	-0.25	0.034
65.00	-4.94	-0.36	0.00	-3.50	0.00	3.50	567.98	283.99	387.72	191.48	1.85	-0.27	0.027
70.00	-4.64	-0.34	0.00	-1.70	0.00	1.70	537.53	268.76	347.04	171.39	2.14	-0.28	0.019
75.00	0.00	-0.32	0.00	0.00	0.00	0.00	507.07	253.54	308.61	152.41	2.43	-0.28	0.000

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

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Customer: AT&T MOBILITY

Load Case (0.9 - 0.2Sds) * DL + E ELM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-7.38	-0.46	0.00	-31.71	0.00	31.71	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.042
5.00	-7.00	-0.47	0.00	-29.38	0.00	29.38	1,476.97	738.48	1,633.58	806.76	0.01	-0.02	0.041
10.00	-6.53	-0.47	0.00	-27.05	0.00	27.05	1,447.54	723.77	1,547.45	764.23	0.04	-0.04	0.040
15.00	-6.18	-0.46	0.00	-24.72	0.00	24.72	1,416.77	708.38	1,462.12	722.09	0.10	-0.06	0.039
20.00	-5.83	-0.46	0.00	-22.41	0.00	22.41	1,384.66	692.33	1,377.73	680.41	0.17	-0.08	0.037
25.00	-5.50	-0.46	0.00	-20.10	0.00	20.10	1,351.21	675.60	1,294.43	639.27	0.27	-0.10	0.036
30.00	-5.17	-0.45	0.00	-17.83	0.00	17.83	1,316.42	658.21	1,212.38	598.75	0.38	-0.12	0.034
35.00	-4.86	-0.44	0.00	-15.59	0.00	15.59	1,275.28	637.64	1,127.29	556.73	0.52	-0.14	0.032
40.00	-4.60	-0.43	0.00	-13.40	0.00	13.40	1,222.49	611.24	1,035.38	511.34	0.69	-0.16	0.030
42.67	-4.48	-0.42	0.00	-12.25	0.00	12.25	678.30	339.15	575.17	284.05	0.78	-0.17	0.050
45.00	-4.24	-0.41	0.00	-11.26	0.00	11.26	669.39	334.69	556.05	274.61	0.87	-0.18	0.047
50.00	-4.01	-0.40	0.00	-9.20	0.00	9.20	649.62	324.81	515.59	254.63	1.07	-0.21	0.042
55.00	-3.78	-0.39	0.00	-7.20	0.00	7.20	628.89	314.45	475.86	235.01	1.30	-0.23	0.037
60.00	-3.56	-0.37	0.00	-5.27	0.00	5.27	598.44	299.22	430.66	212.69	1.55	-0.25	0.031
65.00	-3.35	-0.35	0.00	-3.42	0.00	3.42	567.98	283.99	387.72	191.48	1.82	-0.26	0.024
70.00	-3.15	-0.33	0.00	-1.66	0.00	1.66	537.53	268.76	347.04	171.39	2.10	-0.27	0.016
75.00	0.00	-0.32	0.00	0.00	0.00	0.00	507.07	253.54	308.61	152.41	2.39	-0.28	0.000

Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.24
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.25
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	1.68
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
16	72.50	238	1.766	1.389	0.920	0.383	79	298
15	67.50	248	1.531	0.580	0.580	0.212	45	310
14	62.50	257	1.312	0.138	0.347	0.084	19	321
13	57.50	266	1.111	-0.064	0.194	-0.002	0	333
12	52.50	275	0.926	-0.121	0.098	-0.047	-11	344
11	47.50	284	0.758	-0.103	0.043	-0.051	-13	355
10	43.83	136	0.646	-0.069	0.021	-0.032	-4	170
9	41.33	306	0.574	-0.043	0.012	-0.013	-3	383
8	37.50	370	0.472	-0.006	0.006	0.020	6	463
7	32.50	382	0.355	0.031	0.008	0.052	17	478
6	27.50	394	0.254	0.055	0.017	0.066	22	493
5	22.50	407	0.170	0.066	0.027	0.067	24	509
4	17.50	419	0.103	0.071	0.037	0.065	23	524
3	12.50	431	0.053	0.071	0.042	0.061	23	539
2	7.50	443	0.019	0.063	0.037	0.054	21	555
1	2.50	374	0.002	0.033	0.018	0.031	10	467
Powerwave Allgon 702	75.00	13	1.890	1.980	1.140	0.486	6	17
Powerwave Allgon LGP	75.00	85	1.890	1.980	1.140	0.486	36	106
Raycap DC6-48-60-18-	75.00	40	1.890	1.980	1.140	0.486	17	50
Raycap DC6-48-60-18-	75.00	20	1.890	1.980	1.140	0.486	8	25
Ericsson 4478 Band 1	75.00	180	1.890	1.980	1.140	0.486	76	225
Ericsson RRUS-11 (50	75.00	150	1.890	1.980	1.140	0.486	63	188
Ericsson RRUS 32 (50	75.00	152	1.890	1.980	1.140	0.486	64	191
Ericsson RRUS 32 B2	75.00	159	1.890	1.980	1.140	0.486	67	199
Ericsson RRUS 32 B66	75.00	159	1.890	1.980	1.140	0.486	67	199
10' Omni	75.00	25	1.890	1.980	1.140	0.486	11	31
10' Omni	75.00	25	1.890	1.980	1.140	0.486	11	31
Powerwave Allgon 777	75.00	105	1.890	1.980	1.140	0.486	44	131
Flat Side Arm	75.00	150	1.890	1.980	1.140	0.486	63	188
CCI CCI-HPA-65R-BUU-	75.00	204	1.890	1.980	1.140	0.486	86	255
CCI TPA-65R-LCUUUU-H	75.00	245	1.890	1.980	1.140	0.486	103	306
Flat Platform with H	75.00	2,000	1.890	1.980	1.140	0.486	842	2,502
Channel Master Type	10.00	126	0.034	0.069	0.041	0.059	6	158

			9,067	40.326	33.840	20.687	8.780	1,828	11,343
<u>Load Case (0.9 - 0.2Sds) * DL + E EMAM</u>			Seismic (Reduced DL) Equivalent Modal Analysis Method						
Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)	
16	72.50	238	1.766	1.389	0.920	0.383	79	202	
15	67.50	248	1.531	0.580	0.580	0.212	45	210	
14	62.50	257	1.312	0.138	0.347	0.084	19	218	
13	57.50	266	1.111	-0.064	0.194	-0.002	0	226	
12	52.50	275	0.926	-0.121	0.098	-0.047	-11	234	
11	47.50	284	0.758	-0.103	0.043	-0.051	-13	241	
10	43.83	136	0.646	-0.069	0.021	-0.032	-4	115	
9	41.33	306	0.574	-0.043	0.012	-0.013	-3	260	
8	37.50	370	0.472	-0.006	0.006	0.020	6	314	
7	32.50	382	0.355	0.031	0.008	0.052	17	324	
6	27.50	394	0.254	0.055	0.017	0.066	22	335	
5	22.50	407	0.170	0.066	0.027	0.067	24	345	
4	17.50	419	0.103	0.071	0.037	0.065	23	356	
3	12.50	431	0.053	0.071	0.042	0.061	23	366	
2	7.50	443	0.019	0.063	0.037	0.054	21	376	
1	2.50	374	0.002	0.033	0.018	0.031	10	317	
Powerwave Allgon 702	75.00	13	1.890	1.980	1.140	0.486	6	11	
Powerwave Allgon LGP	75.00	85	1.890	1.980	1.140	0.486	36	72	
Raycap DC6-48-60-18-	75.00	40	1.890	1.980	1.140	0.486	17	34	
Raycap DC6-48-60-18-	75.00	20	1.890	1.980	1.140	0.486	8	17	
Ericsson 4478 Band 1	75.00	180	1.890	1.980	1.140	0.486	76	153	
Ericsson RRUS-11 (50	75.00	150	1.890	1.980	1.140	0.486	63	127	
Ericsson RRUS 32 (50	75.00	152	1.890	1.980	1.140	0.486	64	129	
Ericsson RRUS 32 B2	75.00	159	1.890	1.980	1.140	0.486	67	135	
Ericsson RRUS 32 B66	75.00	159	1.890	1.980	1.140	0.486	67	135	
10' Omni	75.00	25	1.890	1.980	1.140	0.486	11	21	
10' Omni	75.00	25	1.890	1.980	1.140	0.486	11	21	
Powerwave Allgon 777	75.00	105	1.890	1.980	1.140	0.486	44	89	
Flat Side Arm	75.00	150	1.890	1.980	1.140	0.486	63	127	
CCI CCI-HPA-65R-BUU-	75.00	204	1.890	1.980	1.140	0.486	86	173	
CCI TPA-65R-LCUUUU-H	75.00	245	1.890	1.980	1.140	0.486	103	208	
Flat Platform with H	75.00	2,000	1.890	1.980	1.140	0.486	842	1,698	
Channel Master Type	10.00	126	0.034	0.069	0.041	0.059	6	107	
		9,067	40.326	33.840	20.687	8.780	1,828	7,698	

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:45 PM

Customer: AT&T MOBILITY

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-10.87	-1.83	0.00	-133.34	0.00	133.34	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.164
5.00	-10.32	-1.82	0.00	-124.22	0.00	124.22	1,476.97	738.48	1,633.58	806.76	0.04	-0.08	0.161
10.00	-9.62	-1.80	0.00	-115.12	0.00	115.12	1,447.54	723.77	1,547.45	764.23	0.18	-0.17	0.157
15.00	-9.09	-1.79	0.00	-106.11	0.00	106.11	1,416.77	708.38	1,462.12	722.09	0.40	-0.26	0.153
20.00	-8.58	-1.78	0.00	-97.15	0.00	97.15	1,384.66	692.33	1,377.73	680.41	0.72	-0.35	0.149
25.00	-8.08	-1.77	0.00	-88.25	0.00	88.25	1,351.21	675.60	1,294.43	639.27	1.13	-0.44	0.144
30.00	-7.60	-1.76	0.00	-79.43	0.00	79.43	1,316.42	658.21	1,212.38	598.75	1.64	-0.53	0.138
35.00	-7.14	-1.76	0.00	-70.64	0.00	70.64	1,275.28	637.64	1,127.29	556.73	2.24	-0.62	0.132
40.00	-6.75	-1.76	0.00	-61.85	0.00	61.85	1,222.49	611.24	1,035.38	511.34	2.95	-0.71	0.126
42.67	-6.58	-1.77	0.00	-57.15	0.00	57.15	678.30	339.15	575.17	284.05	3.36	-0.77	0.211
45.00	-6.22	-1.79	0.00	-53.01	0.00	53.01	669.39	334.69	556.05	274.61	3.74	-0.81	0.202
50.00	-5.88	-1.80	0.00	-44.07	0.00	44.07	649.62	324.81	515.59	254.63	4.65	-0.92	0.182
55.00	-5.54	-1.81	0.00	-35.05	0.00	35.05	628.89	314.45	475.86	235.01	5.67	-1.02	0.158
60.00	-5.22	-1.79	0.00	-26.00	0.00	26.00	598.44	299.22	430.66	212.69	6.79	-1.11	0.131
65.00	-4.91	-1.75	0.00	-17.04	0.00	17.04	567.98	283.99	387.72	191.48	7.99	-1.19	0.098
70.00	-4.61	-1.66	0.00	-8.32	0.00	8.32	537.53	268.76	347.04	171.39	9.27	-1.24	0.057
75.00	0.00	-1.56	0.00	0.00	0.00	0.00	507.07	253.54	308.61	152.41	10.58	-1.26	0.000

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:45 PM

Customer: AT&T MOBILITY

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-7.38	-1.82	0.00	-131.51	0.00	131.51	1,505.06	752.53	1,720.35	849.62	0.00	0.00	0.160
5.00	-7.00	-1.81	0.00	-122.40	0.00	122.40	1,476.97	738.48	1,633.58	806.76	0.04	-0.08	0.156
10.00	-6.53	-1.79	0.00	-113.34	0.00	113.34	1,447.54	723.77	1,547.45	764.23	0.18	-0.17	0.153
15.00	-6.17	-1.78	0.00	-104.39	0.00	104.39	1,416.77	708.38	1,462.12	722.09	0.40	-0.25	0.149
20.00	-5.82	-1.76	0.00	-95.51	0.00	95.51	1,384.66	692.33	1,377.73	680.41	0.71	-0.34	0.145
25.00	-5.48	-1.74	0.00	-86.71	0.00	86.71	1,351.21	675.60	1,294.43	639.27	1.11	-0.43	0.140
30.00	-5.16	-1.73	0.00	-78.00	0.00	78.00	1,316.42	658.21	1,212.38	598.75	1.61	-0.52	0.134
35.00	-4.84	-1.73	0.00	-69.34	0.00	69.34	1,275.28	637.64	1,127.29	556.73	2.21	-0.61	0.128
40.00	-4.58	-1.74	0.00	-60.69	0.00	60.69	1,222.49	611.24	1,035.38	511.34	2.90	-0.70	0.122
42.67	-4.46	-1.74	0.00	-56.06	0.00	56.06	678.30	339.15	575.17	284.05	3.31	-0.75	0.204
45.00	-4.22	-1.76	0.00	-52.00	0.00	52.00	669.39	334.69	556.05	274.61	3.68	-0.79	0.196
50.00	-3.98	-1.77	0.00	-43.21	0.00	43.21	649.62	324.81	515.59	254.63	4.58	-0.90	0.176
55.00	-3.75	-1.77	0.00	-34.36	0.00	34.36	628.89	314.45	475.86	235.01	5.58	-1.00	0.152
60.00	-3.53	-1.76	0.00	-25.49	0.00	25.49	598.44	299.22	430.66	212.69	6.67	-1.09	0.126
65.00	-3.32	-1.71	0.00	-16.70	0.00	16.70	567.98	283.99	387.72	191.48	7.86	-1.16	0.093
70.00	-3.12	-1.63	0.00	-8.15	0.00	8.15	537.53	268.76	347.04	171.39	9.11	-1.21	0.053
75.00	0.00	-1.56	0.00	0.00	0.00	0.00	507.07	253.54	308.61	152.41	10.39	-1.23	0.000

Site Number: 302485

Code: ANSI/TIA-222-G

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Site Name: Mdfd - Middlefield, CT

Engineering Number: OAA720207_C3_01

1/30/2018 5:17:45 PM

Customer: AT&T MOBILITY

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	9.13	0.00	10.85	0.00	0.00	517.73	42.67	0.67
0.9D + 1.6W	9.13	0.00	8.13	0.00	0.00	512.56	42.67	0.66
1.2D + 1.0Di + 1.0Wi	2.02	0.00	18.83	0.00	0.00	119.93	42.67	0.18
(1.2 + 0.2Sds) * DL + E ELFM	0.47	0.00	10.88	0.00	0.00	32.13	42.67	0.05
(1.2 + 0.2Sds) * DL + E EMAM	1.83	0.00	10.87	0.00	0.00	133.34	42.67	0.21
(0.9 - 0.2Sds) * DL + E ELFM	0.46	0.00	7.38	0.00	0.00	31.71	42.67	0.05
(0.9 - 0.2Sds) * DL + E EMAM	1.82	0.00	7.38	0.00	0.00	131.51	42.67	0.20
1.0D + 1.0W	2.18	0.00	9.07	0.00	0.00	123.07	42.67	0.17

Site Number: **302485**
 Site Name: **MDFD - Middlefield, CT**
 Job Number: **OAA720207**
 Engineer: **Tyler.Ferguson**
 Date: **1/30/2018**

Last Updated: 9/1/2017

Base Plate and Bolt Analysis

Moment: 517.7 k-ft
 Shear/Leg: 9.1 k
 Compression/Leg: 10.9 k

TIA-222 Code Revision (F/G):	G	<u>Anchor Bolts</u>	
Anchor Bolt Arrangement:	Corners	Anchor Bolt Yield Strength:	75 ksi
Monopole Shaft Diameter (Across Flats):	27.97 in	Anchor Bolt Ultimate Strength:	100 ksi
Lower Monopole Thickness:	0.25 in	Anchor Bolt Diameter:	2.25 in
# of Sides of Pole:	12	Anchor Bolt Circle:	44 in
Monopole Shaft Yield Strength:	65 ksi	# of Anchor Bolts:	8
Baseplate Diameter / Length:	44 in	Minimum Anchor Bolt Separation:	6 in
Base Plate Thickness:	2 in	Additional Anchor Bolts Installed:	N
Base Plate Yield Strength:	60 ksi		
Baseplate Detail Type:	C		
Include Plate Thickness Beyond Bolt Circle:	Y		
Stress Increase:	1		
Fillet Weld Size:	0.1875 in		
Weld Type (CJP or F/F):	CJP		
Weld Strength:	70 ksi		

Failure Mode:	Effective Width (in)	Moment (k-in)	Baseplate Flexural Capacity			Baseplate Shear Capacity			
			S/Z (in ³)	Capacity (k-in)	Usage	Shear (k)	Area (in ²)	Capacity (k)	Usage
AA	37.13	1042.5	37.1	2005.0	0.52	142.5	74.3	2406.0	0.06
BA	37.97	1112.7	38.0	2050.2	0.54	142.5	75.9	2460.3	0.06

Anchor Bolt Capacity

Area of Bolt: 3.25 in²
 Inertia of Bolt: 0.84 in⁴
 Total Bolt Inertia: 6294.2 in⁴
 Maximum Bolt Tension: 69.2 k
 Maximum Bolt Compression: 71.9 k
 Bolt Shear: 1.1 k
 Tensile Bolt Capacity: 259.8 k
 Compressive Bolt Capacity: 259.8 k
 Shear Bolt Capacity: 140.3 k
 Interaction Equation: **0.28** Result: OK

Base Weld Capacity

Force / Weld: 8.1 k/in
 Weld Capacity: 17.5 k/in
 Interaction Equation: **0.46** Result: OK

PROJECT INFORMATION

SCOPE OF WORK: REPLACE (3) EXISTING ANTENNAS WITH (3) NEW ANTENNAS. INSTALL (3) RRU-32 WCS, (3) RRU-32 AWS, AND (3) B14 700 RADIOS ON EXISTING MONOPOLE. REPLACE (3) EXISTING RRU & A2 MODULES WITH (3) NEW RRUS-32 PCS RADIOS. INSTALL (2) DC6 SQUIDS ON TOWER AND RUN NEW FIBER/DC/ALARM CABLING. INSTALL NEW SUPPORTING EQUIPMENT AT GRADE & WITHIN SHELTER.

SITE ADDRESS: 134 KICKAPOO ROAD
MIDDLEFIELD CT, 06455

LATITUDE: 41° 30' 48.97" N (NAD 83)*
LONGITUDE: 72° 44' 44.00" W (NAD 83)*
*PER EXISTING AT&T PLANS

CURRENT USE: TELECOMMUNICATIONS FACILITY
PROPOSED USE: TELECOMMUNICATIONS FACILITY

NAME OF APPLICANT: AT&T MOBILITY
500 ENTERPRISE DRIVE
SUITE 3A
ROCKY HILL, CT 06067

TOWER OWNER: AMERICAN TOWER CORPORATION

SITE ID: 302485 - MDFD MIDDLEFIELD CT



at&t
Mobility

SITE NAME: MIDDLEFIELD KICKAPOO - 3C/4C/5C/RETROFIT
SITE NUMBER: CT1016

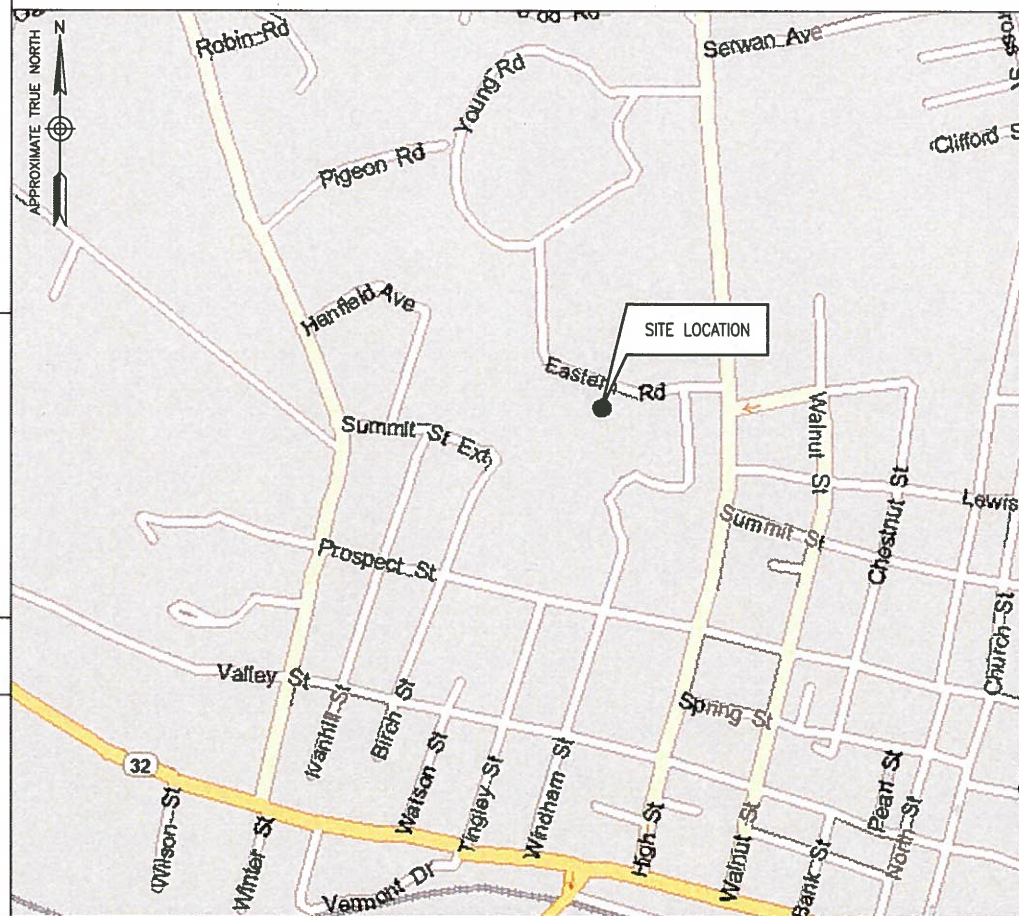
DRAWING INDEX

REV

T01	TITLE SHEET	0
G01	GENERAL NOTES	0
C01	PROPOSED SITE PLAN & SHELTER PLAN	0
C02	PROPOSED ELEVATION & CONSTRUCTION DETAILS	0
C03	EQUIPMENT PLUMBING DIAGRAM	0
E01	GROUNDING DETAILS	0

VICINITY MAP

DIRECTIONS: TAKE I-91 S. TAKE EXIT 20. TURN LEFT ONTO MIDDLE ST. TURN LEFT ONTO COUNTRY CLUB ROAD. TURN RIGHT ONTO HIGBY RD. TURN RIGHT ONTO CT-66W. TURN LEFT ONTO CT-147 S. TURN RIGHT ONTO LAKE RD. CONTINUE ONTO LAKE BESECK RD. TURN LEFT ONTO LAKE SHORE DR. TURN LEFT TO STAY ON LAKE SHORE DR. TURN RIGHT ONTO KICKAPOO RD.



APPLICABLE BUILDING CODES AND STANDARDS

CONTRACTOR'S WORK SHALL COMPLY WITH PROJECT STANDARD NOTES, SYMBOLS AND DETAILS (SEE DRAWING INDEX FOR STANDARD NOTES AND DETAILS INCLUDED WITH TYPICAL DRAWING PACKAGE). CONTRACTOR 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:
INTERNATIONAL BUILDING CODE (IBC 2012)

ELECTRICAL CODE:
NATIONAL ELECTRICAL CODE (NEC 2014)

CONTRACTOR'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, NINTH EDITION
TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION

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.

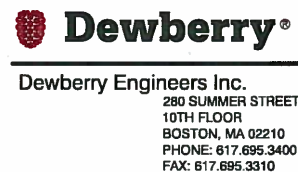
THIS DOCUMENT WAS DEVELOPED TO REFLECT A SPECIFIC SITE AND ITS SITE CONDITIONS AND IS NOT TO BE USED FOR ANOTHER SITE OR WHEN OTHER CONDITIONS PERTAIN. REUSE OF THIS DOCUMENT IS AT THE SOLE RISK OF THE USER.

STRUCTURAL NOTE:

1. AS REQUIRED UNDER TIA/EIA 222G - STANDARD, CENTERLINE COMMUNICATIONS SHALL PROVIDE A STRUCTURAL ANALYSIS OF THE TOWER PREPARED BY A LICENSED CONNECTICUT STRUCTURAL ENGINEER CERTIFYING THAT, THE EXISTING TOWER AND ANY REQUIRED IMPROVEMENTS AND REINFORCEMENTS HAVE SUFFICIENT CAPACITY TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, SUPPORTS AND APPURTENANCES AND COMPLIES WITH THE CURRENT CONNECTICUT STATE BUILDING CODE AND EIA/TIA CRITERIA. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

CONTACT INFORMATION

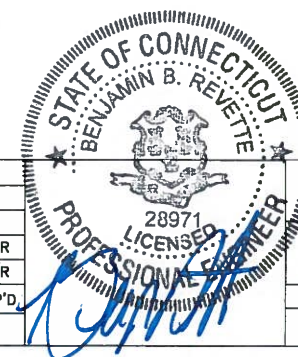
CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	BENJAMIN REVETTE, P.E.	DEWBERRY ENGINEERS INC.	(617) 531-0800
SAC:	MEREDITH PAYNTER	CENTERLINE COMMUNICATIONS	(508) 673-9116



**MIDDLEFIELD KICKAPOO-
3C/4C/5C/RETROFIT**
SITE NO. CT1016
134 KICKAPOO ROAD
MIDDLEFIELD CT, 06455

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	06/20/18	ISSUED FOR CSC APPROVAL	SK	DAS	BBR
A	12/08/17	ISSUED FOR REVIEW	SK	DAS	BBR

SCALE: AS SHOWN DESIGNED BY: DAS DRAWN BY: SK



AT&T MOBILITY
ROCKY HILL, CT 06067

TITLE SHEET

DEWBERRY NO.	DRAWING NUMBER	REV
50093723/50093823	T01	0

GENERAL NOTES:

- FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
PROJECT MANAGEMENT - CENTERLINE COMMUNICATIONS
CONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
OWNER - AT&T MOBILITY
OEM - ORIGINAL EQUIPMENT MANUFACTURER
- PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF PROJECT MANAGEMENT.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- DRAWINGS PROVIDED HERE ARE NOT TO SCALE UNLESS OTHERWISE NOTED AND ARE INTENDED TO SHOW OUTLINE ONLY.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY PROJECT MANAGEMENT.
- CONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. CONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. CONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH PROJECT MANAGEMENT.
- THE CONTRACTOR SHALL PROTECT EXISTING & PROPOSED IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
- CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
- CONTRACTOR SHALL NOTIFY DEWBERRY 48 HOURS IN ADVANCE OF POURING CONCRETE, OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS & POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEER REVIEW.
- CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY PROJECT MANAGEMENT OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
- THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY CONTRACTOR 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.
- 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.
- CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.

SITE WORK GENERAL NOTES:

- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO:
A) FALL PROTECTION
B) CONFINED SPACE
C) ELECTRICAL SAFETY
D) TRENCHING & EXCAVATION.
- ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
- IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES, TOP SOIL AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
- ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE AT&T SPECIFICATION FOR SITE SIGNAGE.
- THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE TRANSMISSION EQUIPMENT AND TOWER AREAS.
- NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
- THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION, SEE SOIL COMPACTION NOTES.
- THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
- EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL JURISDICTION'S GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

CONCRETE AND REINFORCING STEEL NOTES:

- ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000 PSI) MAY BE USED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
- REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE (UNO). SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
CONCRETE CAST AGAINST EARTH.....3 IN.
CONCRETE EXPOSED TO EARTH OR WEATHER:
#6 AND LARGER2 IN.
#5 AND SMALLER & WWF.....1 1/2 IN.
CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
SLAB AND WALL3/4 IN.
BEAMS AND COLUMNS.....1 1/2 IN.
- A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
- CONCRETE CYLINDER TEST IS NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC 1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
(A) RESULTS OF CONCRETE CYLINDER TESTS PERFORMED AT THE SUPPLIER'S PLANT,
(B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.
- AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
- EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

- ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS UNLESS NOTED OTHERWISE. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".
- ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION". PAINTED SURFACES SHALL BE TOUCHED UP.
- BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE 3/4"Ø CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
- NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8" DIA. ASTM A 307 BOLTS UNLESS NOTED OTHERWISE.
- INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY RAMSET/REDHEAD OR APPROVED EQUAL.
- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
- ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

- EXCAVATE AS REQUIRED TO REMOVE VEGETATION & TOPSOIL EXPOSE UNDISTURBED NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
- COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
- AS AN ALTERNATIVE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.
- COMPACTED SUBBASE SHALL BE UNIFORM & LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING 1" SIEVE.
- AS AN ALTERNATIVE TO ITEMS 2 AND 3 PROOFROLL THE SUBGRADE SOILS WITH 5 PASSES OF A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). ANY SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL-GRADED GRANULAR FILL, AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

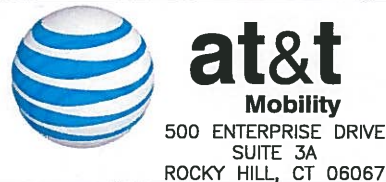
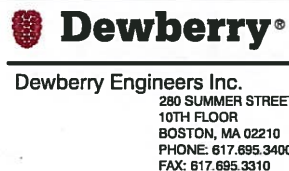
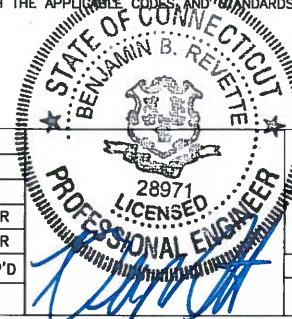
- HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

- FIELD VERIFICATION:
CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, AT&T ANTENNA PLATFORM LOCATION AND ANTENNAS TO BE REPLACED.
- COORDINATION OF WORK:
CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH PROJECT MANAGEMENT.
- CABLE LADDER RACK:
CONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO ANY NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

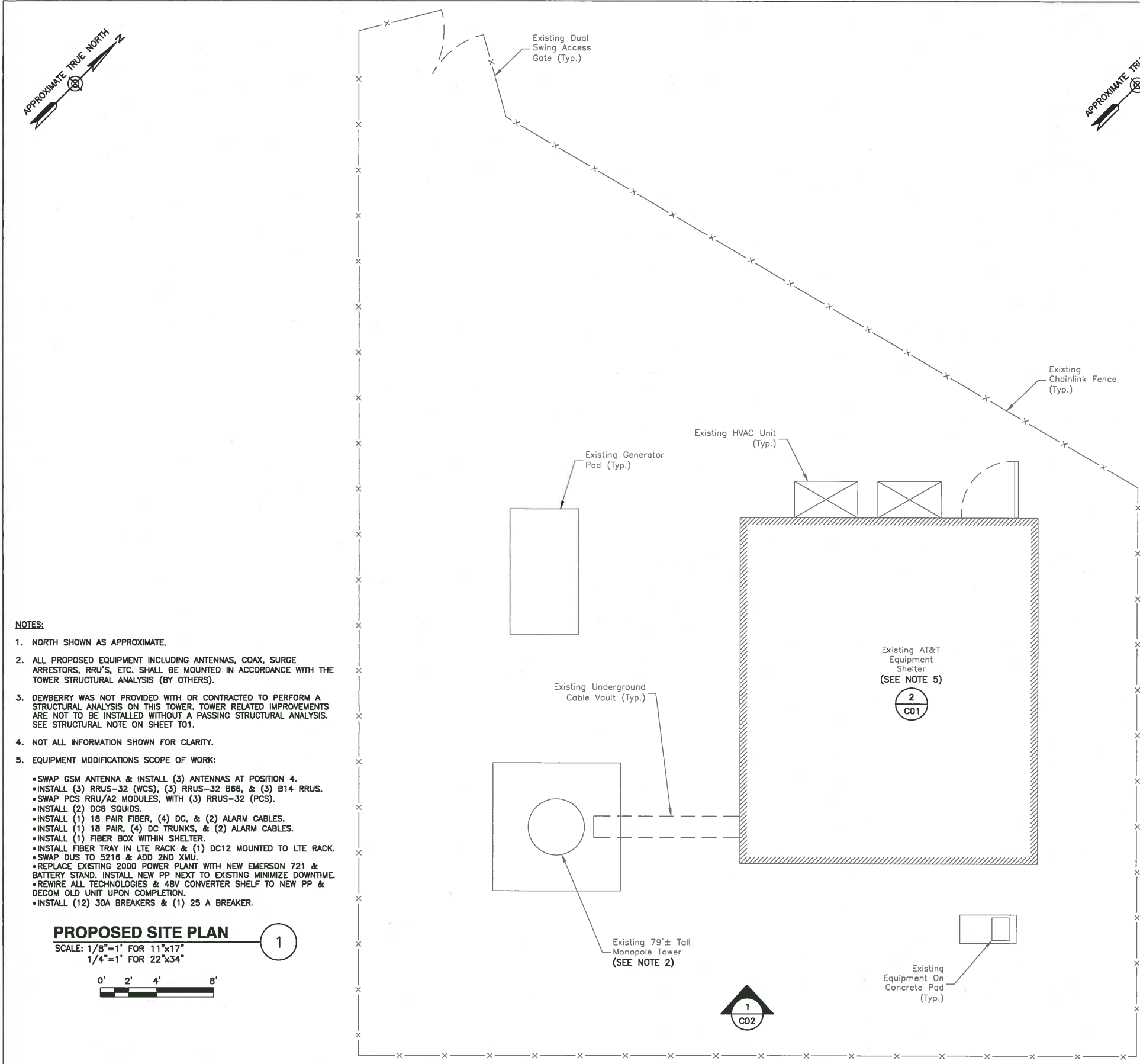
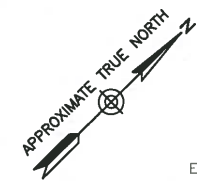
- ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
- CONTRACTOR SHALL MODIFY EXISTING CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLE TO NEW BTS EQUIPMENT. CONTRACTOR SHALL SUBMIT MODIFICATIONS TO PROJECT MANAGEMENT FOR APPROVAL.
- CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
- WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.
- ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.
- CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
- EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC & OSHA, AND MATCH EXISTING INSTALLATION REQUIREMENTS.
- ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
- PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.
- ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
- POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL) PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC & OSHA AND MATCH EXISTING INSTALLATION REQUIREMENTS.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (SIZE 6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
- SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.
- POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (SIZE 14 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
- ALL POWER AND POWER GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).
- RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC, AND NEC.
- NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
- ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
- GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
- RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
- LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
- CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
- CABINETS, BOXES, AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC, AND NEC.
- CABINETS, BOXES, AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
- WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
- METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
- THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM PROJECT MANAGEMENT BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
- THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.



MIDDLEFIELD KICKAPOO-
3C/4C/5C/RETROFIT
SITE NO. CT1016
134 KICKAPOO ROAD
MIDDLEFIELD CT, 06455

0	06/20/18	ISSUED FOR CSC APPROVAL	SK	DAS	BBR
A	12/08/17	ISSUED FOR REVIEW	SK	DAS	BBR
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: DAS	DRAWN BY: SK		

AT&T MOBILITY ROCKY HILL, CT 06067		
GENERAL NOTES		
DEWBERRY NO.	DRAWING NUMBER	REV
50093723/50093823	G01	0

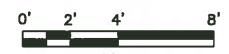


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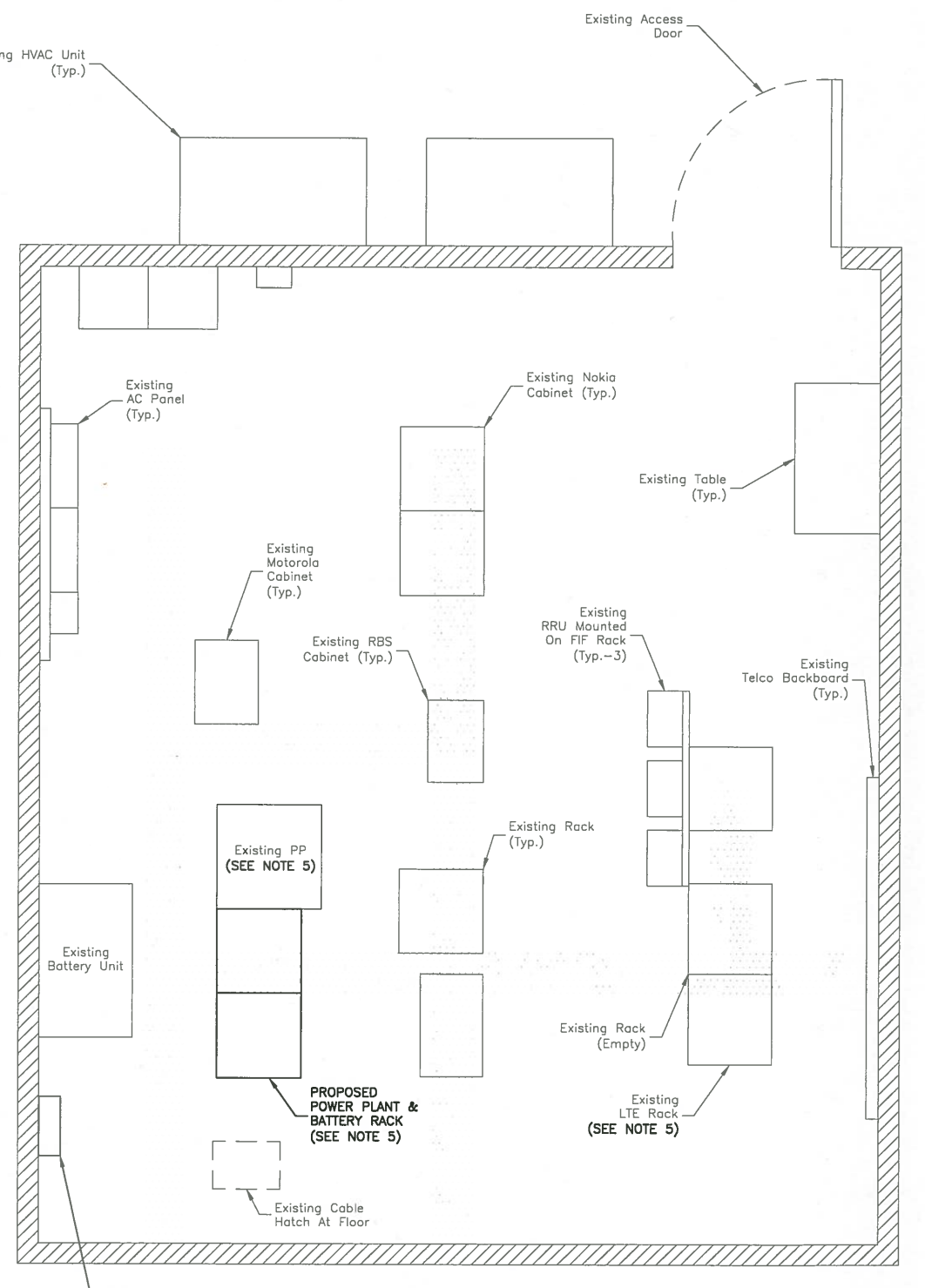
1. NORTH SHOWN AS APPROXIMATE.
2. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS (BY OTHERS).
3. DEWBERRY WAS NOT PROVIDED WITH OR CONTRACTED TO PERFORM A STRUCTURAL ANALYSIS ON THIS TOWER. TOWER RELATED IMPROVEMENTS ARE NOT TO BE INSTALLED WITHOUT A PASSING STRUCTURAL ANALYSIS. SEE STRUCTURAL NOTE ON SHEET T01.
4. NOT ALL INFORMATION SHOWN FOR CLARITY.
5. EQUIPMENT MODIFICATIONS SCOPE OF WORK:
 - SWAP GSM ANTENNA & INSTALL (3) ANTENNAS AT POSITION 4.
 - INSTALL (3) RRU-32 (WCS), (3) RRU-32 B66, & (3) B14 RRU.
 - SWAP PCS RRU/A2 MODULES, WITH (3) RRU-32 (PCS).
 - INSTALL (2) DC8 SQUIDS.
 - INSTALL (1) 18 PAIR FIBER, (4) DC, & (2) ALARM CABLES.
 - INSTALL (1) 18 PAIR, (4) DC TRUNKS, & (2) ALARM CABLES.
 - INSTALL (1) FIBER BOX WITHIN SHELTER.
 - INSTALL FIBER TRAY IN LTE RACK & (1) DC12 MOUNTED TO LTE RACK.
 - SWAP DJS TO 5216 & ADD 2ND XMU.
 - REPLACE EXISTING 2000 POWER PLANT WITH NEW EMERSON 721 & BATTERY STAND. INSTALL NEW PP NEXT TO EXISTING MINIMIZE DOWNTIME.
 - REWIRE ALL TECHNOLOGIES & 48V CONVERTER SHELF TO NEW PP & DECOM OLD UNIT UPON COMPLETION.
 - INSTALL (12) 30A BREAKERS & (1) 25 A BREAKER.

PROPOSED SITE PLAN

SCALE: 1/8"=1' FOR 11"x17"
1/4"=1' FOR 22"x34"



1



PROPOSED SHELTER PLAN

SCALE: 1/4"=1' FOR 11"x17"
1/2"=1' FOR 22"x34"



2

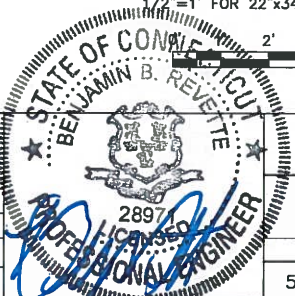
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SITE NO. CT1016
134 KICKAPOO ROAD
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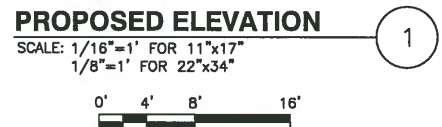
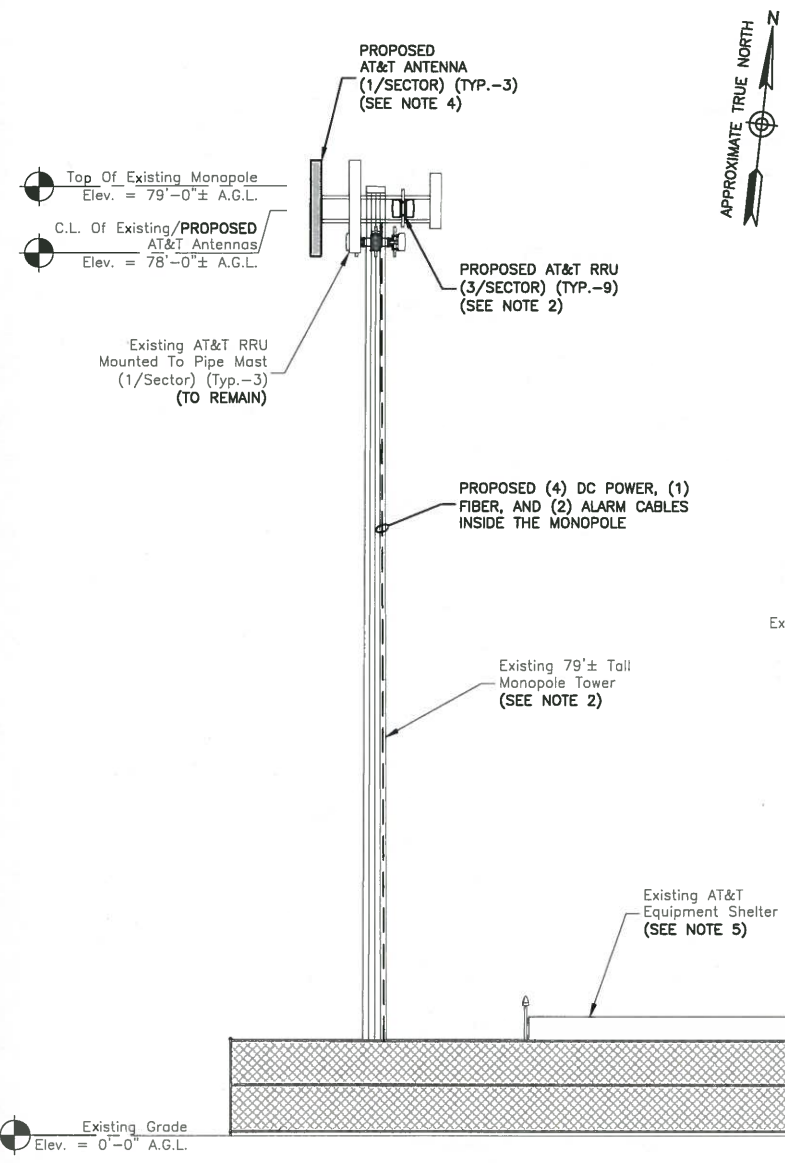
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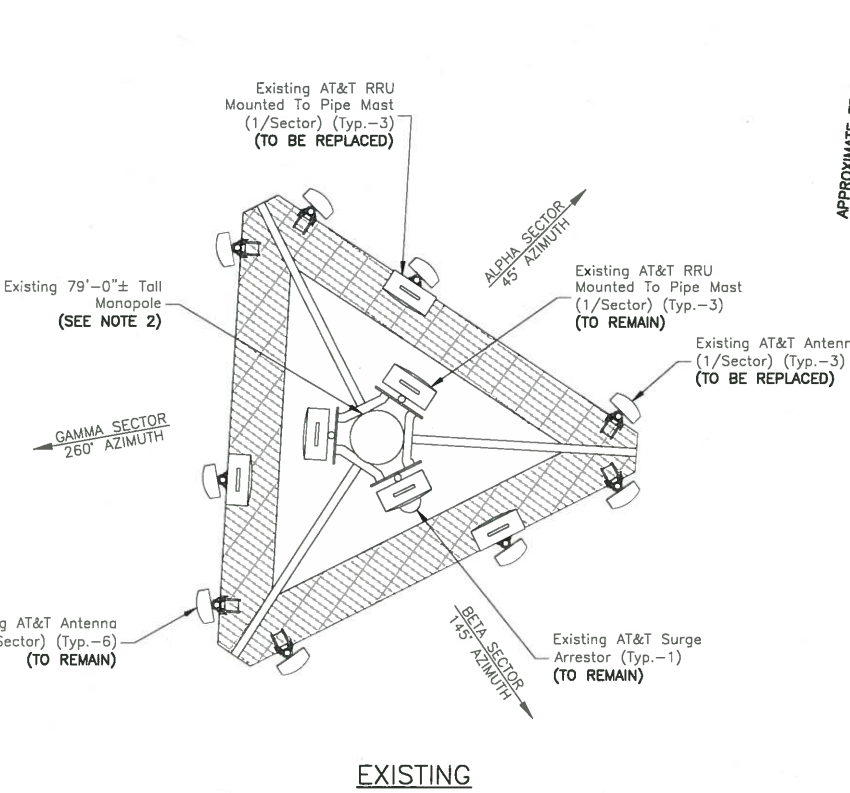
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PROPOSED SITE PLAN & SHELTER PLAN

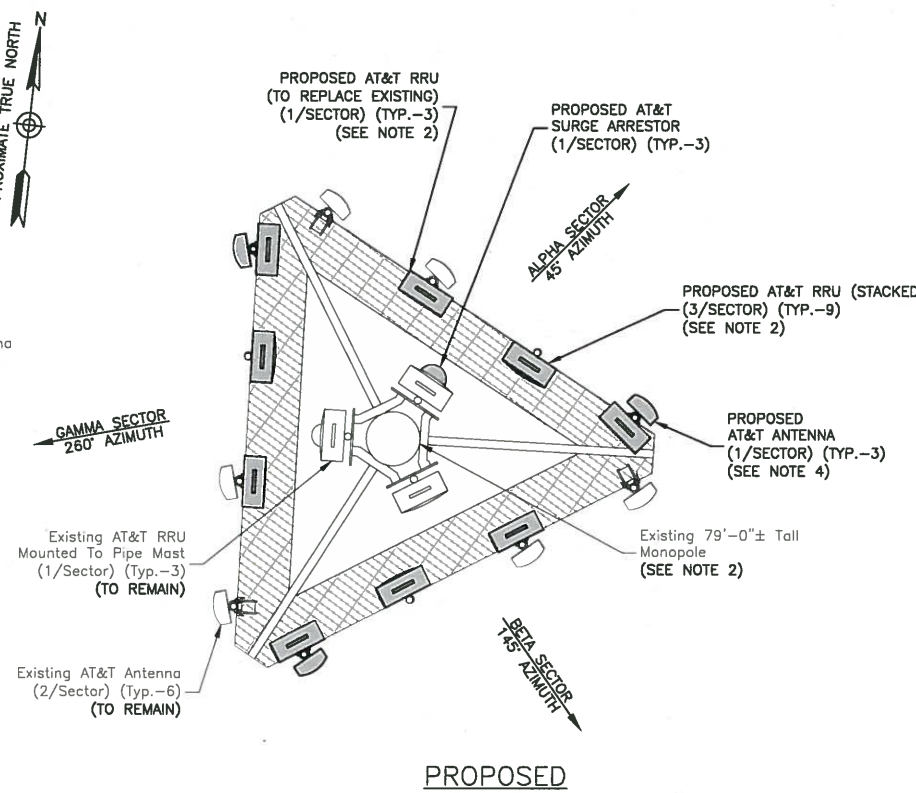
DEWBERRY NO.	DRAWING NUMBER	REV
50093723/50093823	C01	0



- NOTES:**
- NORTH SHOWN AS APPROXIMATE.
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 - INSTALL (3) RRUS-32 (WCS), (3) RRUS-32 B66, & (3) B14 RRUS.
 - SWAP PCS RRU/A2 MODULES, WITH (3) RRUS-32 (PCS).
 - INSTALL (2) DC6 SQUIDS.
 - INSTALL (1) 18 PAIR FIBER, (4) DC TRUNKS, & (2) ALARM CABLES.
 - INSTALL (1) FIBER BOX WITHIN SHELTER.
 - INSTALL FIBER TRAY IN LTE RACK & (1) DC12 MOUNTED TO LTE RACK.
 - SWAP DUS TO 5216 & ADD 2ND XMU.
 - REPLACE EXISTING 2000 POWER PLANT WITH NEW EMERSON 721 & BATTERY STAND. INSTALL NEW PP NEXT TO EXISTING MINIMIZE DOWNTIME.
 - REWIRE ALL TECHNOLOGIES & 48V CONVERTER SHELF TO NEW PP & DECOM OLD UNIT UPON COMPLETION.
 - INSTALL (12) 30A BREAKERS & (1) 25 A BREAKER.



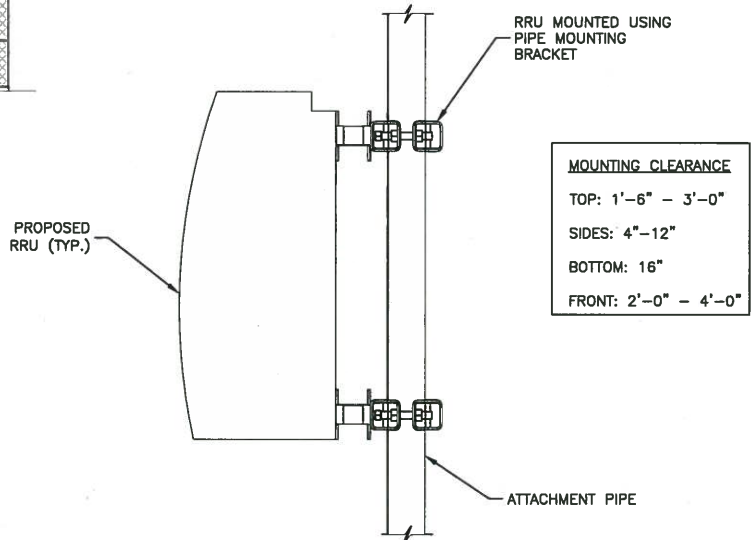
EXISTING



PROPOSED

ANTENNA ORIENTATION PLAN
 SCALE: N.T.S.

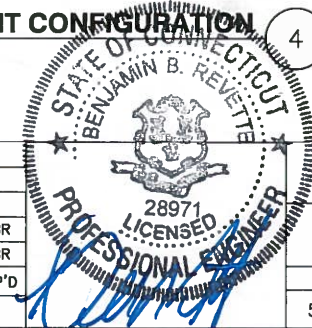
- NOTES:**
- ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, SURGE ARRESTORS, RRU'S, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS (BY OTHERS) AND MANUFACTURER SPECIFICATIONS.
 - PLEASE SEE RFDS FOR RRU FREQUENCY AND MODEL NUMBER.
 - ALL SPACING REQUIREMENTS FOR PROPOSED RRU MOUNTS SHALL BE CONFIRMED AND SHALL NOT IMPEDE CLIMBING PEGS, TIE OFF FEATURES, OR OTHER EXISTING SAFETY FEATURES. ALL MOUNTS SHALL MAINTAIN EXISTING/PROPOSED MANUFACTURER REQUIREMENTS AND SHALL NOT EXCEED THE TOP OF THE TOWER OR INTERFERE WITH OTHER RAD CENTERS.
 - CONTRACTOR SHALL VERIFY ANTENNA SPACING IN FIELD & RELOCATE PIPE MASTS AS REQUIRED TO MEET ANTENNA SPACING REQUIREMENTS. THE ANTENNA SPACING REQUIREMENTS ARE AS FOLLOWS:
 - 3'-0" MINIMUM SEPARATION BETWEEN LTE ANTENNAS
 - 6'-0" MINIMUM SEPARATION BETWEEN 700BC & 700DE



REMOTE ATTACHMENT DETAIL
 SCALE: N.T.S.

FINAL EQUIPMENT CONFIGURATION										
SECTOR	BAND	ANTENNA	SIZE (INCHES) (LxWxD)	RAD. CENTER	AZIMUTH	TMA	RRU	SIZE (INCHES) (LxWxD)	COAX JUMPERS	FIBER JUMPERS
ALPHA	UMTS DB	(E) POWERWAVE 7770	55.0x11.0x5.0	78'-0"	145'	(2) LPG21401	-	-	-	-
	LTE WCS/700 B14/AWS	(E) CCI HPA-65R-BUU-HB	92.4X14.8X7.4	78'-0"	45'	-	(E) RRUS-11 700 (B/C) (E) RRUS-32 B2 PCS	19.7 x 17.0 x 7.2 27.2 x 12.1 x 7.0	(E) 2	(E) 1
	LTE 700 BC/PCS	(P) CCI TPA-65R-LCUUUU-HB	96.0X14.4X8.6	78'-0"	45'	-	(P) 4478 700 B14 (P) RRUS-32 WCS (E) RRUS-32 B66 AWS	15.0 x 13.2 x 7.4	-	-
BETA	UMTS DB	(E) POWERWAVE 7770	55.0x11.0x5.0	78'-0"	280'	(2) LPG21401	-	-	-	-
	LTE WCS/700 B14/AWS	(E) CCI HPA-65R-BUU-HB	92.4X14.8X7.4	78'-0"	145'	-	(E) RRUS-11 700 (B/C) (E) RRUS-32 B2 PCS	19.7 x 17.0 x 7.2 27.2 x 12.1 x 7.0	(E) 2	(E) 1
	LTE 700 BC/PCS	(P) CCI TPA-65R-LCUUUU-HB	96.0X14.4X8.6	78'-0"	145'	-	(P) 4478 700 B14 (P) RRUS-32 WCS (E) RRUS-32 B66 AWS	15.0 x 13.2 x 7.4	-	-
GAMMA	UMTS DB	(E) POWERWAVE 7770	55.0x11.0x5.0	78'-0"	45'	(2) LPG21401	-	-	-	-
	LTE WCS/700 B14/AWS	(E) CCI HPA-65R-BUU-HB	92.4X14.8X7.4	78'-0"	260'	-	(E) RRUS-11 700 (B/C) (E) RRUS-32 B2 PCS	19.7 x 17.0 x 7.2 27.2 x 12.1 x 7.0	(E) 2	(E) 1
	LTE 700 BC/PCS	(P) CCI TPA-65R-LCUUUU-HB	96.0X14.4X8.6	78'-0"	280'	-	(P) 4478 700 B14 (P) RRUS-32 WCS (E) RRUS-32 B66 AWS	15.0 x 13.2 x 7.4	-	-

FINAL EQUIPMENT CONFIGURATION
 SCALE: N.T.S.



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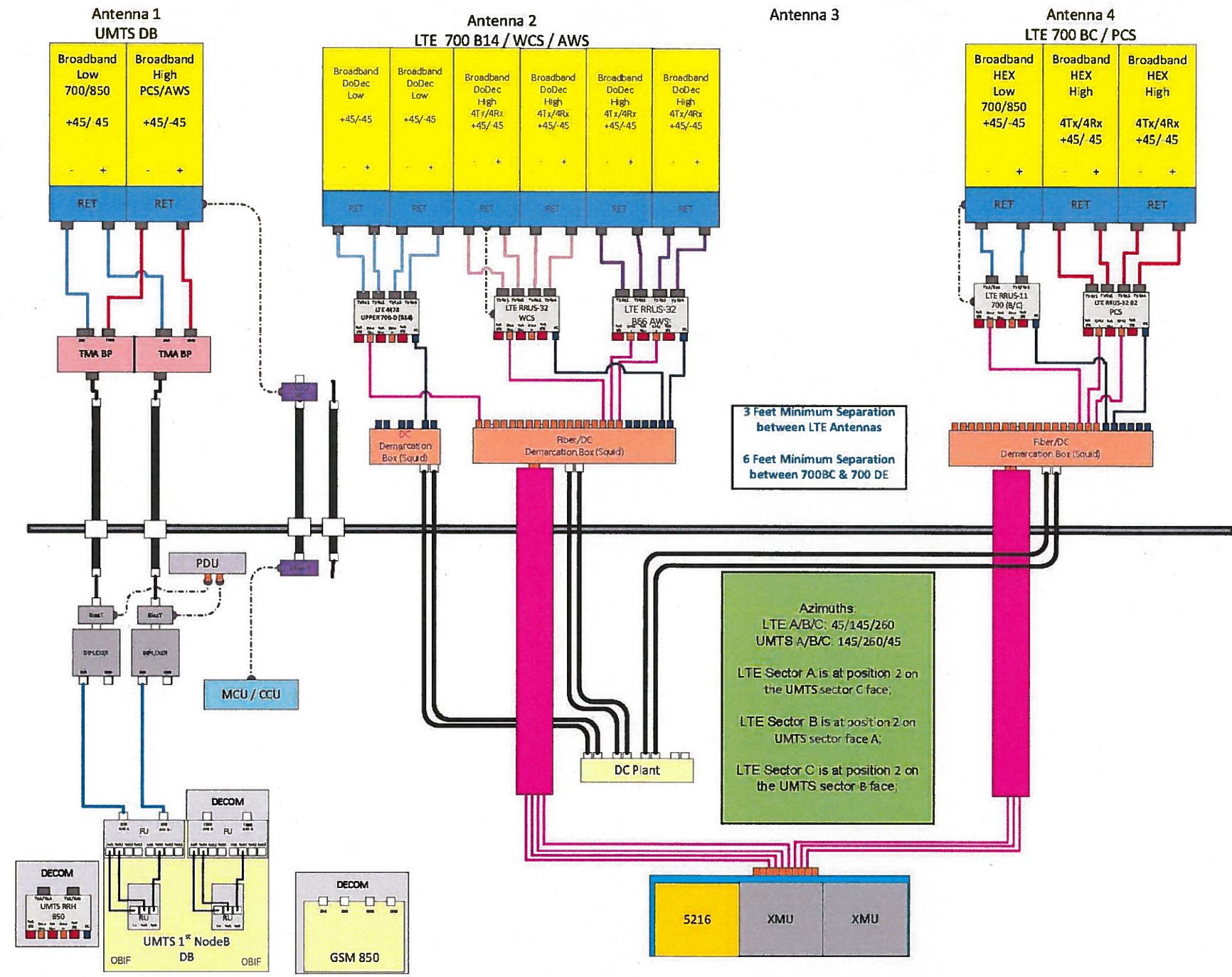
MIDDLEFIELD KICKAPOO-3C/4C/5C/RETROFIT
 SITE NO. CT1016
 134 KICKAPOO ROAD
 MIDDLEFIELD CT, 06455

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PROPOSED ELEVATION & CONSTRUCTION DETAILS

DEWBERRY NO.	DRAWING NUMBER	REV
50093723/50093823	C02	0



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

Azimuths:
 LTE A/B/C: 45/145/260
 UMTS A/B/C: 145/260/45
 LTE Sector A is at position 2 on the UMTS sector C face,
 LTE Sector B is at position 2 on UMTS sector face A,
 LTE Sector C is at position 2 on the UMTS sector B face;

EQUIPMENT PLUMBING DIAGRAM
 SCALE: N.T.S. 1

- NOTES:
- EQUIPMENT PLUMBING DIAGRAM PER RFDS VERSION 1 DATED 09/19/17.
 - CONTRACTOR TO VERIFY FINAL EQUIPMENT CONFIGURATION AND SEPARATIONS WITH AT&T PRIOR TO CONSTRUCTION.



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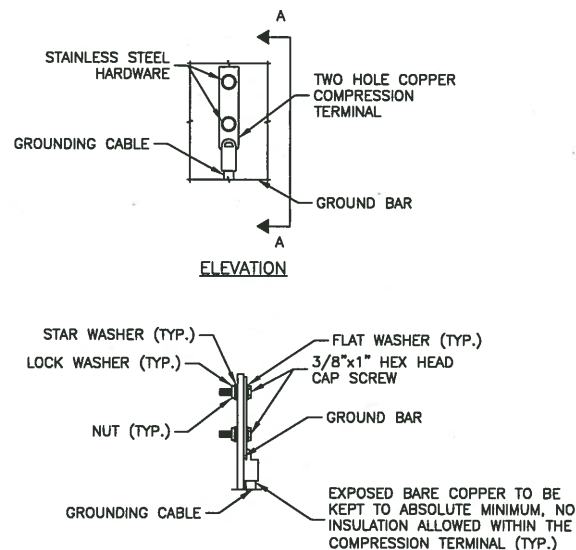
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 ROCKY HILL, CT 06067

EQUIPMENT PLUMBING DIAGRAM

DEWBERRY NO.	DRAWING NUMBER	REV
50093723/50093823	C03	0

GROUNDING NOTES:

- THE CONTRACTOR 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 CONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
- 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. ALL AVAILABLE GROUNDING ELECTRODES SHALL BE CONNECTED TOGETHER IN ACCORDANCE WITH THE NEC.
- THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. USE OF OTHER METHODS MUST BE PRE-APPROVED BY CONTRACTOR IN WRITING.
- THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS ON TOWER SITES AND 10 OHMS OR LESS ON ROOFTOP SITES. WHEN ADDING ELECTRODES, CONTRACTOR SHALL MAINTAIN A MINIMUM DISTANCE BETWEEN THE ADDED ELECTRODE AND ANY OTHER EXISTING ELECTRODE EQUAL TO THE BURIED LENGTH OF THE ROD. IDEALLY, CONTRACTOR SHALL STRIVE TO KEEP THE SEPARATION DISTANCE EQUAL TO TWICE THE BURIED LENGTH OF THE RODS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
- 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 AND UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
- 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 TRANSMISSION EQUIPMENT.
- CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK-TO-BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
- ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
- USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 8 INCHES.
- EACH INTERIOR TRANSMISSION CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH 6 AWG STRANDED, GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRE UNLESS NOTED OTHERWISE IN THE DETAILS. EACH OUTDOOR CABINET FRAME/PLINTH SHALL BE DIRECTLY CONNECTED TO THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER WIRE UNLESS NOTED OTHERWISE IN THE DETAILS.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE 2 AWG SOLID TIN-PLATED COPPER UNLESS OTHERWISE INDICATED.
- EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE. CONNECTIONS TO ABOVE GRADE UNITS SHALL BE MADE WITH EXOTHERMIC WELDS WHERE PRACTICAL OR WITH 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS. HIGH PRESSURE CRIMP CONNECTORS MAY ONLY BE USED WITH WRITTEN PERMISSION FROM CENTERLINE COMMUNICATIONS COMMUNICATIONS MARKET REPRESENTATIVE.
- EXOTHERMIC WELDS SHALL BE PERMITTED ON TOWERS ONLY WITH THE EXPRESS APPROVAL OF THE TOWER MANUFACTURER OR THE CONTRACTORS STRUCTURAL ENGINEER.
- ALL WIRE TO WIRE GROUND CONNECTIONS TO THE INTERIOR GROUND RING SHALL BE FORMED USING HIGH PRESS CRIMPS OR SPLIT BOLT CONNECTORS WHERE INDICATED IN THE DETAILS.
- ON ROOFTOP SITES WHERE EXOTHERMIC WELDS ARE A FIRE HAZARD COPPER COMPRESSION CAP CONNECTORS MAY BE USED FOR WIRE TO WIRE CONNECTIONS. 2 HOLE MECHANICAL TYPE BRASS CONNECTORS WITH STAINLESS STEEL HARDWARE, INCLUDING SET SCREWS SHALL BE USED FOR CONNECTION TO ALL ROOFTOP TRANSMISSION EQUIPMENT AND STRUCTURAL STEEL.
- COAX BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR USING TWO-HOLE MECHANICAL TYPE BRASS CONNECTORS AND STAINLESS STEEL HARDWARE.
- APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
- MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
- BOND ALL METALLIC OBJECTS WITHIN 6 FT OF THE BURIED GROUND RING WITH 2 AWG SOLID TIN-PLATED COPPER GROUND CONDUCTOR. DURING EXCAVATION FOR NEW GROUND CONDUCTORS, IF EXISTING GROUND CONDUCTORS ARE ENCOUNTERED, BOND EXISTING GROUND CONDUCTORS TO NEW CONDUCTORS.
- 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 WITH LISTED BONDING FITTINGS.



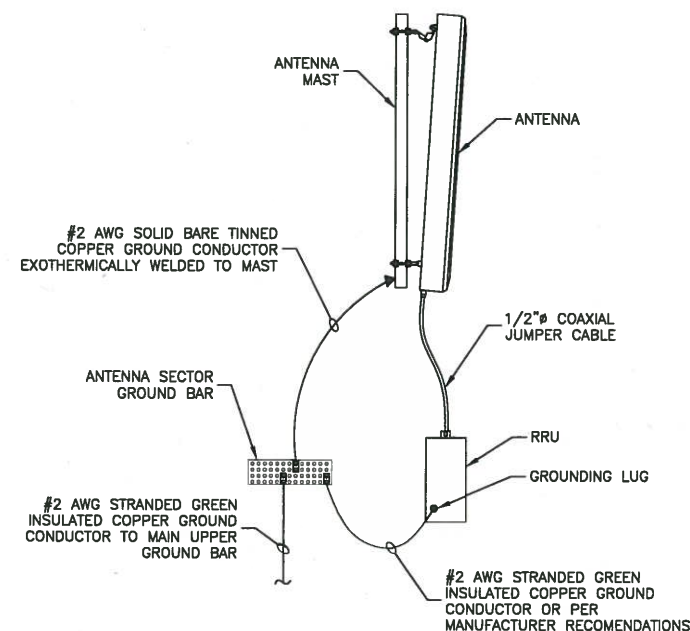
NOTES:

- DOUBLING UP OR STACKING OF CONNECTIONS IS NOT PERMITTED.
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

TYPICAL GROUND BAR MECHANICAL CONNECTION DETAIL

SCALE: N.T.S.

1



NOTES:

- VERIFY EXISTING GROUNDING SYSTEM IS INSTALLED PER AT&T STANDARDS.
- BOND NEW EQUIPMENT INTO EXISTING GROUND SYSTEM IN ACCORDANCE WITH AT&T STANDARDS & MANUFACTURER RECOMMENDATIONS.

TYPICAL ANTENNA/RRU GROUNDING DETAIL

SCALE: N.T.S.

2

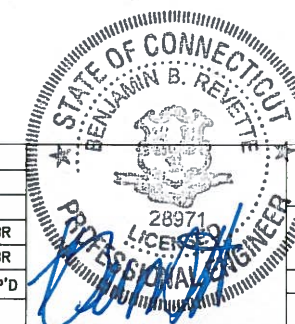
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GROUNDING DETAILS

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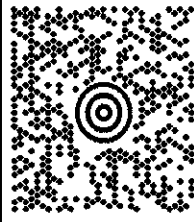
1 OF 1

1 LBS

GEOFFREY REGAN
(401) 500-3217
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

SHIP TO:

EDWARD P. BAILEY
PO BOX 179
393 JACKSON HILL RD
MIDDLEFIELD CT 06455

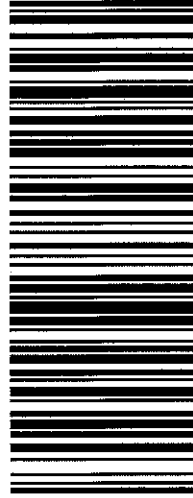


CT 061 9-01



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 2147 1895



BILLING: P/P



TM

XDL 18.03.09 NVMS 99.01.04/2018

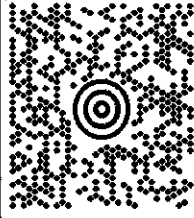
1 OF 1

1 LBS

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CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02879

SHIP TO:

JERRY RUSS
ZONING ENFORCEMENT OFFICER
PO BOX 179
393 JACKSON HILL RD
MIDDLEFIELD CT 06455



CT 061 9-01



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 2668 8287



BILLING: P/P



XOL 18 03 09 NWS 99.0A 04/2018

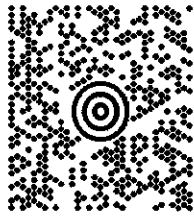
1 OF 1

1 LBS

GEOFFREY REGAN
(401) 500-3217
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

SHIP TO:

CONTRACT MANAGER
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBBURN MA 01801-1053



MA 018 9-04



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 3969 7672



BILLING: P/P



XOL 18.03.09 NY4S 99.04.04/2018

1 OF 1

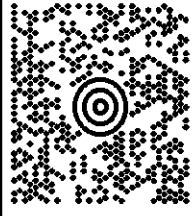
1 LBS

GEOFFREY REGAN
4015003217
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

SHIP TO:

CONTRACT MANAGER
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY

WOBURN MA 01801-1053



MA 018 9-04



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 0889 5775



BILLING: P/P



UPS 20.0.42. WINTNVS0 99.04.04/2018