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

February 12, 2017

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

RE: Notice of Exempt Modification // Site Number: CT1142
290 Preston Avenue, Middletown, CT 06457 (Name: Middletown SW)
N 41.5573531 // W -072.7432769

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 150-foot level of the existing 150-foot monopole tower at 290 Preston Avenue, Middletown, CT. The tower is owned by New Cingular Wireless PCS, LLC ("AT&T"). The property is owned by Brenda & Ernie Trumpold. AT&T now intends to install three (3) remote radio heads in the existing shelter as well as three (3) remote radio heads on the 150' level of the existing tower.

The current proposal involves radio work only (; no antennas will be added. Prior conditions do not pertain.

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 Daniel Drew, Mayor for the Town of Middletown, as well as the property owner, Brenda & Ernie Trumpold and the tower owner.

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 November 14, 2016 by Centek Engineering, a structural analysis dated February 1, 2017 by GPD Engineering and an Emissions Analysis Report dated January 30, 2017 by Centerline Communications.

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.

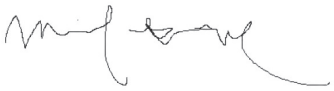
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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 GPD Engineering, dated February 1, 2017.

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

Sincerely,



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Attachments

cc: Daniel Drew, Mayor, Town of Middletown - as elected official
New Cingular Wireless PCS, LLC - as tower owner
Brenda & Ernie Trumpold, individuals - as property owner

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1142

Middletown SW
290 Preston Ave
Middletown, CT 6457

January 30, 2017

Centerline Communications Project Number: 950006-027

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**10.14 %**

January 30, 2017

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

Emissions Analysis for Site: **CT1142 – Middletown SW**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **290 Preston Ave, Middletown, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **290 Preston Ave, Middletown, 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	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	700 MHz	2	60
LTE	1900 MHz (PCS)	2	60
GSM	850 MHz	2	30
GSM	1900 MHz (PCS)	2	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 and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	150
A	2	CCI HPA-65R-BUU-H6	150
A	3	Powerwave 7770	150
B	1	Powerwave 7770	150
B	2	Commscope SBNHH-1D65C	150
B	3	Powerwave 7770	150
C	1	Powerwave 7770	150
C	2	Commscope SBNHH-1D65A	150
C	3	Powerwave 7770	150

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 / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
Antenna A2	CCI HPA-65R-BUU-H6	700 MHz / 1900 MHz (PCS)	11.95 / 14.75	4	240	5,462.56	1.32
Antenna A3	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
						Sector A Composite MPE%	**2.28**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
Antenna B2	Commscope SBNHH-1D65C	700 MHz / 1900 MHz (PCS)	13.55 / 15.05	4	240	6,556.25	1.67
Antenna B3	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
						Sector B Composite MPE%	**2.64**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
Antenna C2	Commscope SBNHH-1D65A	700 MHz / 1900 MHz (PCS)	10.85 / 14.55	4	240	4,880.65	1.13
Antenna C3	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.48
						Sector C Composite MPE%	**2.10**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sector with the largest calculated MPE% is Sector B. *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	**2.64 %**
MetroPCS	1.72 %
Sprint	0.53 %
Nextel	0.46 %
Verizon Wireless	3.84 %
T-Mobile	0.95 %
Site Total MPE %:	**10.14 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	2.28 %
AT&T Sector B Total:	2.64 %
AT&T Sector C Total:	2.10 %
Site Total:	10.14 %

Table 5: Site MPE Summary

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

AT&T _ Frequency Band / Technology (Sector B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	150	1.44	850 MHz	567	0.25%
AT&T 1900 MHz (PCS) UMTS	2	656.33	150	2.28	1900 MHz (PCS)	1000	0.23%
AT&T 700 MHz LTE	2	1,358.79	150	4.71	700 MHz	467	1.01%
AT&T 1900 MHz (PCS) LTE	2	1,919.34	150	6.66	1900 MHz (PCS)	1000	0.67%
AT&T 850 MHz GSM	2	414.12	150	1.44	850 MHz	567	0.25%
AT&T 1900 MHz (PCS) GSM	2	656.33	150	2.28	1900 MHz (PCS)	1000	0.23%
						Total:	2.64%

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:	2.28 %
Sector B:	2.64 %
Sector C:	2.10 %
AT&T Maximum Total (per sector):	2.64 %
Site Total:	10.14 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.14 %** 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

Empire Telecommunications
1150 1st Avenue, Suite 600
King of Prussia, PA 19406
(508) 844-9813

GPD Engineering and Architecture
Professional Corporation
Christopher J. Scheks
520 South Main Street, Suite 2531
Akron, OH 44311
(614) 588-8973
cscheks@gpdgroup.com

GPD# 2017701.95
February 1, 2017

RIGOROUS STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**Site USID:**	**14635**
	Site FA:	**10035088**
	Site Name:	**MIDDLETOWN SW**
	Client Site #:	**CT1142**
ANALYSIS CRITERIA:	**Codes:**	**TIA-222-G, 2012 IBC & 2016 CSBC** **130-mph Ultimate 3 second gust with 0" ice** **101-mph Nominal 3 second gust with 0" ice** **50-mph Nominal 3 second gust with 3/4" ice**
SITE DATA:		**290 Preston Avenue, Middletown, CT 06457, Middlesex County** **Latitude 41° 33' 26.471"N, Longitude 72° 44' 35.797"W** **Market: NEW ENGLAND** **148' Modified PennSummit Monopole**

Mr. Michael Gentile,

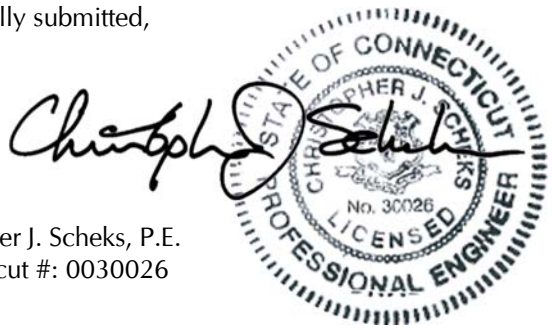
GPD is pleased to submit this Rigorous Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	64.2%	Pass
Foundation Ratio with Proposed Equipment:	53.5%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Empire Telecommunications. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



Christopher J. Scheks, P.E.
Connecticut #: 0030026

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing modified structure is capable of carrying the proposed loading configuration as specified by AT&T Mobility to Empire Telecommunications. This report was commissioned by Mr. Michael Gentile of Centerline Communication.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.0 and Risk Category II were used in this analysis.

Modifications designed by B+T Group (Project #: 84934.003, dated 2/8/2013) have been considered in this analysis.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	64.2%	Pass
Anchor Rods	55.7%	Pass
Base Plate	46.7%	Pass
Foundation	53.5%	Pass

ANALYSIS METHOD

tnxTower (Version 7.0.7.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
RF Data Sheet	RFDS Name: CT1142 V1.0, updated 9/1/2016	Empire
Tower Design	PJF Job #: 29201-0230, dated 2/26/01	Siterra
Foundation Design	PJF Job #: 29201-0230, dated 2/26/01	Siterra
Geotechnical Report	Not Provided	N/A
Previous Structural Analysis	B+T Project #: 103655.001.01, dated 12/29/2015	Siterra
Modification Drawings	B+T Project #: 84934.003, dated 2/8/2013	Empire
Post Modification Report	Centek Project #: 12033.034, dated 8/2/2013	Empire

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
4. The soil parameters are as per data supplied or as assumed and stated in the calculations.
5. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
8. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
9. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
10. All existing loading has been modeled based on the Previous Structural Analysis by B+T Group (Project #: 103655.001.01, dated 12/29/2015), site photos, and the provided RF Data Sheet and is assumed to be accurate.
11. AT&T's proposed loading has been modeled to reflect the final loading configuration found in the RF Data Sheet and is assumed to be accurate.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Rigorous Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the capability of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	MIDDLETOWN SW
Site Number	14635
FA Number	10035088
Date of Analysis	2/1/2017
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	148'	
Tower Manufacturer	PennSummit	
Tower Model	n/a	
Tower Design	PJF Job #: 29201-0230	2/26/2001
Foundation Design	PJF Job #: 29201-0230	2/26/2001
Geotech Report	Dr. Clarence Welti, P.E.	7/25/2000
Tower Mapping	n/a	
Previous Structural Analysis	B+T Project #: 103655.001.01	12/29/2015
Modification Drawings	B+T Project #: 84934.003	2/8/2013
Post Modification Report	Centek Project #: 12033.034	8/2/2013

Design Parameters

Design Code Used	TIA-222-G, 2012 IBC & 2016 CSBC
Location of Tower (County, State)	Middlesex, CT
Nominal Wind Speed (mph)	101 (3 second gust)
Ice Thickness (in)	0.75
Structure Classification (I, II, III)	II
Exposure Category (B, C, D)	B
Topographic Category (1 to 5)	1

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	64.2%
Tower Base (%)	55.7%
Foundation (%)	53.5%
Foundation Adequate?	YES

Steel Yield Strength (ksi)

Pole	65
Base Plate	55
Anchor Rods	75

Modifications designed by B+T Group (Project #: 84934.003, dated 2/8/2013) have been considered in this analysis.

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int. / Ext.
AT&T Mobility	148	150	6	Panel	Powerwave	7770.00	40/200/320	1	Unknown	12' LP Platform	12	LDF7-50A	1-5/8"	External
AT&T Mobility	148	150	1	Panel	CCI	HPA-65R-BUU-H6	40			on the same mount	2	DC Power	7/8"	Internal
AT&T Mobility	148	150	1	Panel	Andrew	SBNHH-1D65C	200			on the same mount	1	Fiber	3/8"	Internal
AT&T Mobility	148	150	1	Panel	Andrew	SBNHH-1D65A	320			on the same mount				
AT&T Mobility	148	150	3	RRU	Ericsson	RRUS-11				on the same mount				
AT&T Mobility	148	150	3	RRU	Ericsson	RRUS A2 Module				on the same mount				
AT&T Mobility	148	149	12	TMA	Powerwave	LGP21401				on the same mount				
AT&T Mobility	148	148	3	RRU	Ericsson	RRUS-11				on the same mount				
AT&T Mobility	148	148	1	Squid	Raycap	DC6-48-60-18-8F				on the same mount				
T-Mobile	140	140	6	Panel	Ericsson	AIR21	Assumed	1	Unknown	12' LP Platform	18	Unknown	1-5/8"	Internal
T-Mobile	140	140	2	Panel	RFS	APX16DWV-16DWV-S-E-ACU	Assumed			on the same mount	1	Hybrid	1-5/8"	Internal
T-Mobile	140	140	3	TMA	Andrew	Onebase Twin Dual Duplex TMA				on the same mount				
Sprint	130	130	3	Panel	Powerwave	APXVSPP18-C-A20	Assumed	1	Unknown	12' LP Platform	3	Hybrid	1-1/4"	Internal
Sprint	130	130	3	RRH	Alcatel Lucent	1900 RRH				on the same mount				
Sprint	130	130	3	RRH	Alcatel Lucent	800 RRH				on the same mount				
Verizon	110	111	1	Panel	Andrew	LNX-6514DS-T4M	Assumed	1	Unknown	13' LP Platform	12	Unknown	1-5/8"	Internal
Verizon	110	111	2	Panel	Antel	BXA-70063-6CF	Assumed	1	Unknown	Collar Mount	1	Hybrid	1-5/8"	Internal
Verizon	110	111	6	Diplexer	RFS	FD9R6004/2C-3				on the same mounts				
Verizon	110	110	3	Panel	Andrew	HBX-6517DS-VTM	Assumed			on the same mounts				
Verizon	110	110	3	Panel	Andrew	LNX-6513DS-VTM	Assumed			on the same mounts				
Verizon	110	110	3	Panel	Andrew	HBX-6516DS-VTM	Assumed			on the same mounts				
Verizon	110	110	3	RRH	Alcatel Lucent	RRH 2x40AWS				on the same mounts				
Verizon	110	110	1	Surge	RFS	DB-T1-6Z-8AB00Z				on the same mounts				
Metro PCS	90	90	3	Panel	Kathrein	742-213	Assumed	3	Unknown	Pipe Mounts	6	Unknown	1-5/8"	External
Metro PCS	55	55	1	GPS	Unknown	GPS Unit		1	Unknown	1' Standoff	1	Unknown	3/8"	External
Unknown	50	50	1	GPS	Unknown	GPS Unit		1	Unknown	1' Standoff	1	Unknown	1/2"	External

Note: (3) RRUS-11 RRUs and (3) RRUS-A2 modules at 150' shall be removed prior to the installation of the proposed configuration and have not been considered in this analysis. All other existing/reserved equipment shall be reused.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int. / Ext.
AT&T Mobility	148	150	3	RRU	Ericsson	RRUS-32 B2				on the existing mount				

Note: The proposed equipment shall be installed in addition to the remaining existing/reserved loading at the same elevation.

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Int. / Ext.

APPENDIX B

tnxTower Output File

Tower Input Data

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

Tower is located in Middlesex County, Connecticut.
Basic wind speed of 101 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Climbing Pegs	A	Surface Ar (CaAa)	148.00 - 8.00	1	1	0.000 0.000	0.1500		0.31
LDF7-50A (1-5/8 FOAM) (ATT)	B	Surface Ar (CaAa)	148.00 - 8.00	12	6	0.400 0.500	1.9800		0.82
LDF7-50A (1-5/8 FOAM) (Metro PCS)	B	Surface Ar (CaAa)	90.00 - 8.00	6	6	0.000 0.100	1.9800		0.82
LDF2-50A (3/8 FOAM) (Metro PCS)	C	Surface Ar (CaAa)	55.00 - 8.00	1	1	0.100 0.100	0.4400		0.08
LDF4-50A (1/2 FOAM)	C	Surface Ar (CaAa)	50.00 - 8.00	1	1	0.000 0.000	0.6300		0.15

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Safety Line (3/8")	A	No	CaAa (Out Of Face)	148.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.04 0.14 0.24	0.22 0.75 1.28
7/8" DC Power Cable (ATT)	A	No	Inside Pole	148.00 - 8.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.60 0.60 0.60
3/8" Fiber Cable (ATT)	A	No	Inside Pole	148.00 - 8.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.10 0.10 0.10
LDF7-50A (1-5/8 FOAM) (TMO)	B	No	Inside Pole	140.00 - 8.00	18	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.82 0.82 0.82

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1-5/8" Fiber Cable (TMO)	B	No	Inside Pole	140.00 - 8.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
1-1/4" Hybrid Cable (Sprint)	B	No	Inside Pole	124.00 - 8.00	3	No Ice	0.00	1.00
						1/2" Ice	0.00	1.00
						1" Ice	0.00	1.00
LDF7-50A (1-5/8 FOAM) (VZW)	C	No	Inside Pole	110.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
1-5/8" Fiber Cable (VZW)	C	No	Inside Pole	110.00 - 8.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Lightning Rod 8'x3/4"	C	From Leg	0.00 0.00 4.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	0.60 1.41 2.25	0.60 1.41 2.25	12.00 18.19 29.49
Platform Mount [LP 1201-1]	C	None		0.0000	148.00	No Ice 1/2" Ice 1" Ice	23.10 26.80 30.50	23.10 26.80 30.50	2100.00 2500.00 2900.00
(2) 7770.00 w/Mount Pipe	A	From Leg	3.00 0.00 2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	4.10 4.73 5.37	61.54 108.55 162.39
(2) 7770.00 w/Mount Pipe	B	From Leg	3.00 0.00 2.00	40.0000	148.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	4.10 4.73 5.37	61.54 108.55 162.39
(2) 7770.00 w/Mount Pipe	C	From Leg	3.00 0.00 2.00	40.0000	148.00	No Ice 1/2" Ice 1" Ice	5.51 5.87 6.23	4.10 4.73 5.37	61.54 108.55 162.39
HPA-65R-BUU-H6	A	From Leg	3.00 0.00 2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	9.66 10.13 10.61	6.45 6.91 7.38	51.00 113.99 183.38
SBNHH-1D65C w/ Mount Pipe	B	From Leg	3.00 0.00 2.00	40.0000	148.00	No Ice 1/2" Ice 1" Ice	11.35 11.97 12.59	8.28 9.07 9.87	61.16 135.10 217.80
SBNHH-1D65A w/ Mount Pipe	C	From Leg	3.00 0.00 2.00	40.0000	148.00	No Ice 1/2" Ice 1" Ice	6.10 6.54 6.97	5.19 5.96 6.66	61.30 115.03 175.35
RRUS 32 B2	A	From Leg	3.00 0.00 2.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	52.90 73.96 98.21
RRUS 32 B2	B	From Leg	3.00 0.00 2.00	40.0000	148.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	52.90 73.96 98.21
RRUS 32 B2	C	From Leg	3.00 0.00 2.00	40.0000	148.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	52.90 73.96 98.21
(4) LGP21401	A	From Leg	3.00 0.00 1.00	0.0000	148.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14.10 21.26 30.32
(4) LGP21401	B	From Leg	3.00 0.00 1.00	40.0000	148.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	14.10 21.26 30.32

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(4) LGP21401	C	From Leg	3.00	40.0000	148.00	No Ice	1.10	0.21	14.10
			0.00			1/2" Ice	1.24	0.27	21.26
			1.00			1" Ice	1.38	0.35	30.32
RRUS-11	A	From Leg	3.00	0.0000	148.00	No Ice	2.78	1.19	47.62
			0.00			1/2" Ice	2.99	1.33	68.42
			0.00			1" Ice	3.21	1.49	92.25
RRUS-11	B	From Leg	3.00	40.0000	148.00	No Ice	2.78	1.19	47.62
			0.00			1/2" Ice	2.99	1.33	68.42
			0.00			1" Ice	3.21	1.49	92.25
RRUS-11	C	From Leg	3.00	40.0000	148.00	No Ice	2.78	1.19	47.62
			0.00			1/2" Ice	2.99	1.33	68.42
			0.00			1" Ice	3.21	1.49	92.25
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	3.00	0.0000	148.00	No Ice	0.92	0.92	18.90
			0.00			1/2" Ice	1.46	1.46	36.62
			0.00			1" Ice	1.64	1.64	56.82
Platform Mount [LP 1201-1]	C	None		0.0000	140.00	No Ice	23.10	23.10	2100.00
						1/2" Ice	26.80	26.80	2500.00
						1" Ice	30.50	30.50	2900.00
(2) AIR 21 w/ Mount Pipe	A	From Leg	3.00	0.0000	140.00	No Ice	6.37	5.78	112.90
			0.00			1/2" Ice	6.85	6.63	170.69
			0.00			1" Ice	7.30	7.35	235.28
(2) AIR 21 w/ Mount Pipe	B	From Leg	3.00	0.0000	140.00	No Ice	6.37	5.78	112.90
			0.00			1/2" Ice	6.85	6.63	170.69
			0.00			1" Ice	7.30	7.35	235.28
(2) AIR 21 w/ Mount Pipe	C	From Leg	3.00	0.0000	140.00	No Ice	6.37	5.78	112.90
			0.00			1/2" Ice	6.85	6.63	170.69
			0.00			1" Ice	7.30	7.35	235.28
APX16DWV-16DWV-S-E-A CU w/ Mount Pipe	A	From Leg	3.00	0.0000	140.00	No Ice	6.22	3.19	57.85
			0.00			1/2" Ice	6.61	3.82	102.47
			0.00			1" Ice	7.01	4.46	153.24
APX16DWV-16DWV-S-E-A CU w/ Mount Pipe	B	From Leg	3.00	0.0000	140.00	No Ice	6.22	3.19	57.85
			0.00			1/2" Ice	6.61	3.82	102.47
			0.00			1" Ice	7.01	4.46	153.24
APX16DWV-16DWV-S-E-A CU w/ Mount Pipe	C	From Leg	3.00	0.0000	140.00	No Ice	6.22	3.19	57.85
			0.00			1/2" Ice	6.61	3.82	102.47
			0.00			1" Ice	7.01	4.46	153.24
Onebase Twin Dual Duplex TMA	A	From Leg	3.00	0.0000	140.00	No Ice	0.58	0.26	11.00
			0.00			1/2" Ice	0.67	0.34	15.83
			0.00			1" Ice	0.78	0.42	22.16
Onebase Twin Dual Duplex TMA	B	From Leg	3.00	0.0000	140.00	No Ice	0.58	0.26	11.00
			0.00			1/2" Ice	0.67	0.34	15.83
			0.00			1" Ice	0.78	0.42	22.16
Onebase Twin Dual Duplex TMA	C	From Leg	3.00	0.0000	140.00	No Ice	0.58	0.26	11.00
			0.00			1/2" Ice	0.67	0.34	15.83
			0.00			1" Ice	0.78	0.42	22.16
Platform Mount [LP 1201-1]	C	None		0.0000	130.00	No Ice	23.10	23.10	2100.00
						1/2" Ice	26.80	26.80	2500.00
						1" Ice	30.50	30.50	2900.00
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	3.00	0.0000	130.00	No Ice	8.02	6.71	78.90
			0.00			1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	3.00	0.0000	130.00	No Ice	8.02	6.71	78.90
			0.00			1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	3.00	0.0000	130.00	No Ice	8.02	6.71	78.90
			0.00			1/2" Ice	8.48	7.66	144.31
			0.00			1" Ice	8.94	8.49	217.47
1900MHz RRH	A	From Leg	3.00	0.0000	130.00	No Ice	2.49	3.26	44.00
			0.00			1/2" Ice	2.70	3.48	75.27

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1" Ice	2.91	3.72	110.18
1900MHz RRH	B	From Leg	3.00	0.0000	130.00	No Ice	2.49	3.26	44.00
			0.00			1/2" Ice	2.70	3.48	75.27
			0.00			1" Ice	2.91	3.72	110.18
1900MHz RRH	C	From Leg	3.00	0.0000	130.00	No Ice	2.49	3.26	44.00
			0.00			1/2" Ice	2.70	3.48	75.27
			0.00			1" Ice	2.91	3.72	110.18
800MHZ RRH	A	From Leg	3.00	0.0000	130.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
800MHZ RRH	B	From Leg	3.00	0.0000	130.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
800MHZ RRH	C	From Leg	3.00	0.0000	130.00	No Ice	2.13	1.77	53.00
			0.00			1/2" Ice	2.32	1.95	74.19
			0.00			1" Ice	2.51	2.13	98.39
Platform Mount [LP 1201-1]	C	None		0.0000	110.00	No Ice	23.10	23.10	2100.00
						1/2" Ice	26.80	26.80	2500.00
						1" Ice	30.50	30.50	2900.00
LNX-6514DS-T4M w/ Mount Pipe	A	From Leg	3.00	0.0000	110.00	No Ice	8.32	7.00	58.15
			0.00			1/2" Ice	8.88	8.19	126.70
			1.00			1" Ice	9.40	9.08	203.21
BXA-70063-6CF w/ Mount Pipe	B	From Leg	3.00	0.0000	110.00	No Ice	7.57	5.49	45.95
			0.00			1/2" Ice	8.02	6.23	104.10
			1.00			1" Ice	8.47	6.99	170.26
BXA-70063-6CF w/ Mount Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	7.57	5.49	45.95
			0.00			1/2" Ice	8.02	6.23	104.10
			1.00			1" Ice	8.47	6.99	170.26
(2) FD9R6004/2C-3L	A	From Leg	3.00	0.0000	110.00	No Ice	0.31	0.08	3.10
			0.00			1/2" Ice	0.39	0.12	5.40
			1.00			1" Ice	0.47	0.17	8.79
(2) FD9R6004/2C-3L	B	From Leg	3.00	0.0000	110.00	No Ice	0.31	0.08	3.10
			0.00			1/2" Ice	0.39	0.12	5.40
			1.00			1" Ice	0.47	0.17	8.79
(2) FD9R6004/2C-3L	C	From Leg	3.00	0.0000	110.00	No Ice	0.31	0.08	3.10
			0.00			1/2" Ice	0.39	0.12	5.40
			1.00			1" Ice	0.47	0.17	8.79
HBX-6517DS-VTM w/ Mount Pipe	A	From Leg	3.00	0.0000	110.00	No Ice	5.30	4.73	40.60
			0.00			1/2" Ice	5.77	5.68	84.00
			0.00			1" Ice	6.25	6.50	134.78
HBX-6517DS-VTM w/ Mount Pipe	B	From Leg	3.00	0.0000	110.00	No Ice	5.30	4.73	40.60
			0.00			1/2" Ice	5.77	5.68	84.00
			0.00			1" Ice	6.25	6.50	134.78
HBX-6517DS-VTM w/ Mount Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	5.30	4.73	40.60
			0.00			1/2" Ice	5.77	5.68	84.00
			0.00			1" Ice	6.25	6.50	134.78
LNX-6513DS-VTM w/ Mount Pipe	A	From Leg	3.00	0.0000	110.00	No Ice	5.95	5.03	48.65
			0.00			1/2" Ice	6.34	5.69	100.77
			0.00			1" Ice	6.74	6.35	159.34
LNX-6513DS-VTM w/ Mount Pipe	B	From Leg	3.00	0.0000	110.00	No Ice	5.95	5.03	48.65
			0.00			1/2" Ice	6.34	5.69	100.77
			0.00			1" Ice	6.74	6.35	159.34
LNX-6513DS-VTM w/ Mount Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	5.95	5.03	48.65
			0.00			1/2" Ice	6.34	5.69	100.77
			0.00			1" Ice	6.74	6.35	159.34
HBX-6516DS-VTM w/ Mount Pipe	A	From Leg	3.00	0.0000	110.00	No Ice	3.53	3.17	28.15
			0.00			1/2" Ice	3.91	3.80	60.65
			0.00			1" Ice	4.28	4.43	98.79
HBX-6516DS-VTM w/	B	From Leg	3.00	0.0000	110.00	No Ice	3.53	3.17	28.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
Mount Pipe			0.00			1/2" Ice	3.91	3.80	60.65
			0.00			1" Ice	4.28	4.43	98.79
HBX-6516DS-VTM w/ Mount Pipe	C	From Leg	3.00	0.0000	110.00	No Ice	3.53	3.17	28.15
			0.00			1/2" Ice	3.91	3.80	60.65
			0.00			1" Ice	4.28	4.43	98.79
RRH2x40-AWS	A	From Leg	3.00	0.0000	110.00	No Ice	2.16	1.42	43.00
			0.00			1/2" Ice	2.36	1.59	60.40
			0.00			1" Ice	2.57	1.77	80.69
RRH2x40-AWS	B	From Leg	3.00	0.0000	110.00	No Ice	2.16	1.42	43.00
			0.00			1/2" Ice	2.36	1.59	60.40
			0.00			1" Ice	2.57	1.77	80.69
RRH2x40-AWS	C	From Leg	3.00	0.0000	110.00	No Ice	2.16	1.42	43.00
			0.00			1/2" Ice	2.36	1.59	60.40
			0.00			1" Ice	2.57	1.77	80.69
DB-T1-6Z-8AB-0Z	A	From Leg	3.00	0.0000	110.00	No Ice	4.80	2.00	50.00
			0.00			1/2" Ice	5.07	2.19	86.13
			0.00			1" Ice	5.35	2.39	126.22
742-213 w/Mount Pipe	A	From Leg	3.00	0.0000	90.00	No Ice	5.42	4.63	47.55
			0.00			1/2" Ice	5.95	6.02	91.91
			0.00			1" Ice	6.47	6.93	144.02
742-213 w/Mount Pipe	B	From Leg	3.00	0.0000	90.00	No Ice	5.42	4.63	47.55
			0.00			1/2" Ice	5.95	6.02	91.91
			0.00			1" Ice	6.47	6.93	144.02
742-213 w/Mount Pipe	C	From Leg	3.00	0.0000	90.00	No Ice	5.42	4.63	47.55
			0.00			1/2" Ice	5.95	6.02	91.91
			0.00			1" Ice	6.47	6.93	144.02
GPS	A	From Leg	1.00	0.0000	55.00	No Ice	0.12	0.12	0.87
			0.00			1/2" Ice	0.21	0.21	3.85
			0.00			1" Ice	0.28	0.28	7.85
MTS 12" Antenna Standoff	A	From Leg	0.50	0.0000	55.00	No Ice	2.82	2.20	40.00
			0.00			1/2" Ice	4.07	3.16	61.95
			0.00			1" Ice	5.32	4.12	83.90
GPS	A	From Leg	1.00	0.0000	50.00	No Ice	0.12	0.12	0.87
			0.00			1/2" Ice	0.21	0.21	3.85
			0.00			1" Ice	0.28	0.28	7.85
MTS 12" Antenna Standoff	A	From Leg	0.50	0.0000	50.00	No Ice	2.82	2.20	40.00
			0.00			1/2" Ice	4.07	3.16	61.95
			0.00			1" Ice	5.32	4.12	83.90

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
148.00	Lightning Rod 8'x3/4"	40	14.535	0.8987	0.0034	49158
140.00	Platform Mount [LP 1201-1]	40	13.034	0.8913	0.0028	32223
130.00	Platform Mount [LP 1201-1]	40	11.193	0.8628	0.0022	14218
110.00	Platform Mount [LP 1201-1]	40	7.801	0.7536	0.0014	8069
90.00	742-213 w/Mount Pipe	40	5.046	0.5537	0.0007	6597
55.00	GPS	40	1.830	0.3205	0.0003	8639
50.00	GPS	40	1.512	0.2869	0.0002	8501

CCIpole

per TIA-222- G

Site BU: _____

Work Order: _____

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	148	37	4	18	24	30.661	0.25	1	A607-65
2	115	40	4.75	18	29.44	36.643	0.25	1	A607-65
3	79.75	40	5.25	18	35.29	42.489	0.3125	1.25	A607-65
4	45	45	0	18	40.92	49.02	0.375	1.5	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	18.083	channel	MP3-05 (1.1875")	2					1		1											
2	18.083	30.5	channel	MP3-08 (1.1875")	1						1												
3	0	30.5	channel	MP3-08 (1.1875")	3						1						1						1
4	30.5	60.5	channel	MP3-06 (1.1875")	3						1						1						1
5	60.5	90.5	channel	MP3-05 (1.1875")	3						1						1						1
6	90.5	99.33	channel	MP3-03 (1.1875")	3						1						1						1
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
2	7.93	2.8	10.32	0.95	47.000	47.000	24.000	9.370	1.1875	A572-65
3	7.93	2.8	10.32	0.95	47.000	47.000	24.000	9.370	1.1875	A572-65
4	6.89	2.61	8.47	0.93	41.000	41.000	24.000	7.670	1.1875	A572-65
5	5.33	2.09	5.65	0.79	29.000	29.000	18.000	5.025	1.1875	A572-65
6	4.06	1.57	2.92	0.59	14.000	14.000	18.000	2.545	1.1875	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	148 - 143	5		18	24.000	24.900	0.25	A607-65	1.000
2	143 - 138	5		18	24.900	25.800	0.25	A607-65	1.000
3	138 - 133	5		18	25.800	26.700	0.25	A607-65	1.000
4	133 - 128	5		18	26.700	27.601	0.25	A607-65	1.000
5	128 - 123	5		18	27.601	28.501	0.25	A607-65	1.000
6	123 - 118	5		18	28.501	29.401	0.25	A607-65	1.000
7	118 - 115	7	4	18	29.401	30.661	0.25	A607-65	1.000
8	115 - 110	5		18	29.441	30.341	0.25	A607-65	1.000
9	110 - 105	5		18	30.341	31.241	0.25	A607-65	1.000
10	105 - 100	5		18	31.241	32.142	0.25	A607-65	1.000
11	100 - 99.33	0.67		18	32.142	32.262	0.25	A607-65	1.000
12	99.33 - 99.08	0.25		18	32.262	32.307	0.25	A607-65	1.000
13	99.08 - 94.08	5		18	32.307	33.208	0.25	A607-65	1.000
14	94.08 - 90.5	3.58		18	33.208	33.852	0.25	A607-65	1.000
15	90.5 - 90.25	0.25		18	33.852	33.897	0.43125	A607-65	0.953
16	90.25 - 85.25	5		18	33.897	34.797	0.425	A607-65	0.957
17	85.25 - 80.25	5		18	34.797	35.698	0.425	A607-65	0.947
18	80.25 - 79.75	5.25	4.75	18	35.698	36.643	0.425	A607-65	0.946
19	79.75 - 74.75	5		18	35.288	36.188	0.4875	A607-65	0.951
20	74.75 - 69.75	5		18	36.188	37.088	0.475	A607-65	0.968
21	69.75 - 64.75	5		18	37.088	37.988	0.475	A607-65	0.960
22	64.75 - 60.5	4.25		18	37.988	38.753	0.46875	A607-65	0.967
23	60.5 - 60.25	0.25		18	38.753	38.798	0.55	A607-65	0.952
24	60.25 - 55.25	5		18	38.798	39.699	0.55	A607-65	0.943
25	55.25 - 50.25	5		18	39.699	40.599	0.5375	A607-65	0.956
26	50.25 - 45.25	5		18	40.599	41.499	0.5375	A607-65	0.948
27	45.25 - 45	5.5	5.25	18	41.499	42.489	0.5375	A607-65	0.948
28	45 - 38.75	6.25		18	40.919	42.044	0.6	A607-65	0.950
29	38.75 - 33.75	5		18	42.044	42.944	0.5875	A607-65	0.963
30	33.75 - 30.5	3.25		18	42.944	43.529	0.5875	A607-65	0.959
31	30.5 - 30.25	0.25		18	43.529	43.574	0.6625	A607-65	1.027
32	30.25 - 25.25	5		18	43.574	44.474	0.6625	A607-65	1.018
33	25.25 - 20.25	5		18	44.474	45.374	0.65	A607-65	1.028
34	20.25 - 18.083	2.167		18	45.374	45.765	0.65	A607-65	1.024
35	18.083 - 17.833	0.25		18	45.765	45.810	0.6625	A607-65	1.015
36	17.833 - 12.833	5		18	45.810	46.710	0.65	A607-65	1.025
37	12.833 - 7.833	5		18	46.710	47.610	0.65	A607-65	1.017
38	7.833 - 2.833	5		18	47.610	48.510	0.6375	A607-65	1.028
39	2.833 - 0	2.833		18	48.510	49.020	0.6375	A607-65	1.023

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	148 - 143	3.8403	31.444	5.2583
2	143 - 138	7.6656	65.387	8.9658
3	138 - 133	8.233	111.22	9.3484
4	133 - 128	11.733	165.26	12.704
5	128 - 123	12.345	229.91	13.166
6	123 - 118	12.993	296.87	13.624
7	118 - 115	13.393	338.14	13.893
8	115 - 110	14.44	408.85	14.387
9	110 - 105	18.331	501.98	18.637
10	105 - 100	19.138	596.16	19.05
11	100 - 99.33	19.251	608.94	19.102
12	99.33 - 99.08	19.296	613.72	19.121
13	99.08 - 94.08	20.127	710.3	19.525
14	94.08 - 90.5	20.739	780.66	19.805
15	90.5 - 90.25	20.808	785.61	19.82
16	90.25 - 85.25	22.152	888.86	20.9
17	85.25 - 80.25	23.382	994.44	21.329
18	80.25 - 79.75	23.511	1005.1	21.368
19	79.75 - 74.75	25.748	1113.2	21.869
20	74.75 - 69.75	27.148	1223.6	22.285
21	69.75 - 64.75	28.575	1336.1	22.685
22	64.75 - 60.5	29.806	1433.2	23.015
23	60.5 - 60.25	29.894	1438.9	23.028
24	60.25 - 55.25	31.519	1555.1	23.426
25	55.25 - 50.25	33.218	1673.7	23.906
26	50.25 - 45.25	34.941	1794.7	24.367
27	45.25 - 45	35.031	1800.8	24.377
28	45 - 38.75	38.737	1954.9	24.905
29	38.75 - 33.75	40.614	2080.2	25.226
30	33.75 - 30.5	41.848	2162.5	25.425
31	30.5 - 30.25	41.966	2168.9	25.43
32	30.25 - 25.25	44.192	2296.9	25.748
33	25.25 - 20.25	46.447	2426.4	26.05
34	20.25 - 18.083	47.434	2482.9	26.181
35	18.083 - 17.833	47.555	2489.5	26.186
36	17.833 - 12.833	49.86	2621.2	26.49
37	12.833 - 7.833	52.184	2754.4	26.775
38	7.833 - 2.833	54.265	2888.8	27.048
39	2.833 - 0	55.5	2965.6	27.2

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
148 - 143	Pole	TP24.9x24x0.25	Pole	4.5%	Pass
143 - 138	Pole	TP25.8x24.9x0.25	Pole	8.8%	Pass
138 - 133	Pole	TP26.7x25.8x0.25	Pole	13.9%	Pass
133 - 128	Pole	TP27.601x26.7x0.25	Pole	19.5%	Pass
128 - 123	Pole	TP28.501x27.601x0.25	Pole	25.4%	Pass
123 - 118	Pole	TP29.401x28.501x0.25	Pole	30.9%	Pass
118 - 115	Pole	TP30.661x29.401x0.25	Pole	34.0%	Pass
115 - 110	Pole	TP30.341x29.441x0.25	Pole	40.2%	Pass
110 - 105	Pole	TP31.241x30.341x0.25	Pole	47.0%	Pass
105 - 100	Pole	TP32.142x31.241x0.25	Pole	53.1%	Pass
100 - 99.33	Pole	TP32.262x32.142x0.25	Pole	53.9%	Pass
99.33 - 99.08	Pole	TP32.307x32.262x0.25	Pole	54.2%	Pass
99.08 - 94.08	Pole	TP33.208x32.307x0.25	Pole	59.8%	Pass
94.08 - 90.5	Pole	TP33.852x33.208x0.25	Pole	63.6%	Pass
90.5 - 90.25	Pole + Reinf.	TP33.897x33.852x0.4313	Reinf. 5 Tension Rupture	50.5%	Pass
90.25 - 85.25	Pole + Reinf.	TP34.797x33.897x0.425	Reinf. 5 Tension Rupture	54.7%	Pass
85.25 - 80.25	Pole + Reinf.	TP35.698x34.797x0.425	Reinf. 5 Tension Rupture	58.7%	Pass
80.25 - 79.75	Pole + Reinf.	TP36.643x35.698x0.425	Reinf. 5 Tension Rupture	59.1%	Pass
79.75 - 74.75	Pole + Reinf.	TP36.188x35.288x0.4875	Reinf. 5 Tension Rupture	56.0%	Pass
74.75 - 69.75	Pole + Reinf.	TP37.088x36.188x0.475	Reinf. 5 Tension Rupture	59.0%	Pass
69.75 - 64.75	Pole + Reinf.	TP37.988x37.088x0.475	Reinf. 5 Tension Rupture	61.9%	Pass
64.75 - 60.5	Pole + Reinf.	TP38.753x37.988x0.4688	Reinf. 5 Tension Rupture	64.2%	Pass
60.5 - 60.25	Pole + Reinf.	TP38.798x38.753x0.55	Reinf. 4 Tension Rupture	54.0%	Pass
60.25 - 55.25	Pole + Reinf.	TP39.699x38.798x0.55	Reinf. 4 Tension Rupture	56.3%	Pass
55.25 - 50.25	Pole + Reinf.	TP40.599x39.699x0.5375	Reinf. 4 Tension Rupture	58.5%	Pass
50.25 - 45.25	Pole + Reinf.	TP41.499x40.599x0.5375	Reinf. 4 Tension Rupture	60.5%	Pass
45.25 - 45	Pole + Reinf.	TP42.489x41.499x0.5375	Reinf. 4 Tension Rupture	60.6%	Pass
45 - 38.75	Pole + Reinf.	TP42.044x40.919x0.6	Reinf. 4 Tension Rupture	57.8%	Pass
38.75 - 33.75	Pole + Reinf.	TP42.944x42.044x0.5875	Reinf. 4 Tension Rupture	59.4%	Pass
33.75 - 30.5	Pole + Reinf.	TP43.529x42.944x0.5875	Reinf. 4 Tension Rupture	60.4%	Pass
30.5 - 30.25	Pole + Reinf.	TP43.574x43.529x0.6625	Reinf. 3 Tension Rupture	55.8%	Pass
30.25 - 25.25	Pole + Reinf.	TP44.474x43.574x0.6625	Reinf. 3 Tension Rupture	57.1%	Pass
25.25 - 20.25	Pole + Reinf.	TP45.374x44.474x0.65	Reinf. 3 Tension Rupture	58.4%	Pass
20.25 - 18.08	Pole + Reinf.	TP45.765x45.374x0.65	Reinf. 3 Tension Rupture	59.0%	Pass
18.08 - 17.83	Pole + Reinf.	TP45.81x45.765x0.6625	Reinf. 3 Tension Rupture	57.8%	Pass
17.83 - 12.83	Pole + Reinf.	TP46.71x45.81x0.65	Reinf. 3 Tension Rupture	58.9%	Pass
12.83 - 7.83	Pole + Reinf.	TP47.61x46.71x0.65	Reinf. 3 Tension Rupture	60.0%	Pass
7.83 - 2.83	Pole + Reinf.	TP48.51x47.61x0.6375	Reinf. 3 Tension Rupture	61.1%	Pass
2.83 - 0	Pole + Reinf.	TP49.02x48.51x0.6375	Reinf. 3 Tension Rupture	61.7%	Pass
				Summary	
			Pole	63.6%	Pass
			Reinforcement	64.2%	Pass
			Overall	64.2%	Pass

Additional Calculations

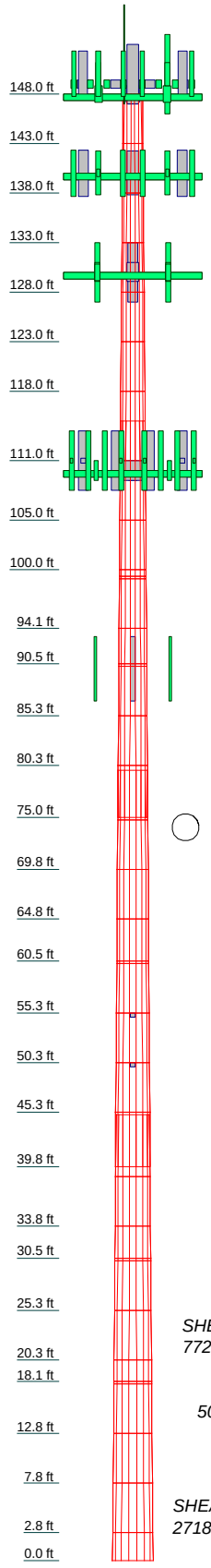
Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
148 - 143	1501	n/a	1501	19.56	n/a	19.56	4.5%						
143 - 138	1672	n/a	1672	20.27	n/a	20.27	8.8%						
138 - 133	1855	n/a	1855	20.99	n/a	20.99	13.9%						
133 - 128	2050	n/a	2050	21.70	n/a	21.70	19.5%						
128 - 123	2260	n/a	2260	22.42	n/a	22.42	25.4%						
123 - 118	2482	n/a	2482	23.13	n/a	23.13	30.9%						
118 - 115	2623	n/a	2623	23.56	n/a	23.56	34.0%						
115 - 110	2731	n/a	2731	23.88	n/a	23.88	40.2%						
110 - 105	2983	n/a	2983	24.59	n/a	24.59	47.0%						
105 - 100	3251	n/a	3251	25.31	n/a	25.31	53.1%						
100 - 99.33	3288	n/a	3288	25.40	n/a	25.40	53.9%						
99.33 - 99.08	3301	n/a	3301	25.44	n/a	25.44	54.2%						
99.08 - 94.08	3588	n/a	3588	26.15	n/a	26.15	59.8%						
94.08 - 90.5	3802	n/a	3802	26.66	n/a	26.66	63.6%						
90.5 - 90.25	3817	2678	6495	26.70	16.95	43.65	37.1%					50.5%	
90.25 - 85.25	4132	2815	6947	27.41	16.95	44.36	40.6%					54.7%	
85.25 - 80.25	4464	2955	7419	28.13	16.95	45.08	44.0%					58.7%	
80.25 - 79.75	4498	2969	7467	28.20	16.95	45.15	44.4%					59.1%	
79.75 - 74.75	5784	3033	8817	35.58	16.95	52.53	39.1%					56.0%	
74.75 - 69.75	6230	3179	9409	36.48	16.95	53.43	41.6%					59.0%	
69.75 - 64.75	6699	3328	10027	37.37	16.95	54.32	43.9%					61.9%	
64.75 - 60.5	7116	3458	10573	38.13	16.95	55.08	45.9%					64.2%	
60.5 - 60.25	7141	5276	12417	38.17	25.41	63.58	39.3%				54.0%		
60.25 - 55.25	7654	5511	13165	39.06	25.41	64.47	41.3%				56.3%		
55.25 - 50.25	8190	5752	13942	39.96	25.41	65.37	43.3%				58.5%		
50.25 - 45.25	8752	5997	14749	40.85	25.41	66.26	45.2%				60.5%		
45.25 - 45	8781	6009	14790	40.89	25.41	66.30	45.3%				60.6%		
45 - 38.75	10876	6148	17024	49.59	25.41	75.00	40.9%				57.8%		
38.75 - 33.75	11596	6402	17998	50.67	25.41	76.08	42.3%				59.4%		
33.75 - 30.5	12081	6569	18650	51.36	25.41	76.77	43.2%				60.4%		
30.5 - 30.25	12177	8902	21080	51.42	41.28	92.70	40.6%		40.3%	55.6%			
30.25 - 25.25	12953	9255	22208	52.49	41.28	93.77	41.9%		41.4%	57.0%			
25.25 - 20.25	13761	9615	23376	53.56	41.28	94.84	43.2%		42.5%	58.3%			
20.25 - 18.08	14121	9773	23894	54.02	41.28	95.30	43.7%		43.0%	58.9%			
18.08 - 17.83	14165	10288	24453	54.08	42.26	96.34	42.9%	46.0%		57.8%			
17.83 - 12.83	15022	10680	25702	55.15	42.26	97.41	44.1%	47.1%		58.9%			
12.83 - 7.83	15913	11079	26992	56.22	42.26	98.48	45.3%	48.1%		60.0%			
7.83 - 2.83	16838	11486	28324	57.29	42.26	99.55	46.4%	49.1%		61.1%			
2.83 - 0	17378	11719	29097	57.90	42.26	100.16	47.0%	49.6%		61.7%			

Note: Section capacity checked in 5 degree increments.

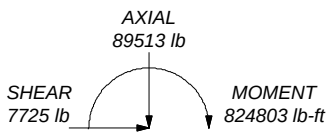
APPENDIX C

Tower Elevation Drawing

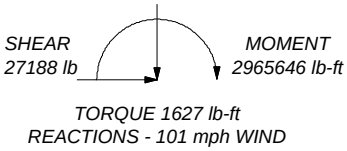
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	5.00	18	0.2500		24.0000	24.9001		326.7
2	5.00	18	0.2500		24.9001	25.8003		338.9
3	5.00	18	0.2500		25.8003	26.7004		351.0
4	5.00	18	0.2500		26.7004	27.6005		363.2
5	5.00	18	0.2500		27.6005	28.5007		375.3
6	5.00	18	0.2500		28.5007	29.4008		387.5
7	5.00	18	0.2500	4.00	29.4008	30.3010		562.9
8	5.00	18	0.2500		30.3010	31.2011		400.2
9	5.00	18	0.2500		31.2011	32.1013		412.3
10	5.00	18	0.2500		32.1013	33.0014		424.5
12	5.00	18	0.2500		33.0014	33.9016		436.6
13	5.00	18	0.2500		33.9016	34.8017		448.8
14	5.00	18	0.2500		34.8017	35.7019		460.9
15	5.00	18	0.2500		35.7019	36.6020		473.1
16	5.00	18	0.4250		36.6020	37.5022		744.9
17	5.00	18	0.4250		37.5022	38.4023		757.2
18	5.00	18	0.4250	4.75	38.4023	39.3025		615.3
19	5.00	18	0.4750		39.3025	40.2026		627.6
20	5.00	18	0.4750		40.2026	41.1028		897.8
21	5.00	18	0.4750		41.1028	42.0029		913.1
22	4.25	18	0.4688		42.0029	42.8531		788.6
23	4.25	18	0.5000		42.8531	43.7033		811.2
24	5.00	18	0.5500		43.7033	44.6034		1084.8
25	5.00	18	0.5375		44.6034	45.5036		1099.7
26	5.00	18	0.5375		45.5036	46.4037		1115.0
27	6.250	18	0.5375	5.25	46.4037	47.3039		1254.6
28	6.250	18	0.5600		47.3039	48.2040		1573.6
29	5.00	18	0.5875		48.2040	49.1042		1280.1
30	5.00	18	0.5875		49.1042	50.0043		1303.3
31	5.00	18	0.6250		50.0043	50.9045		1579.0
32	5.00	18	0.6500		50.9045	51.8046		1597.4
33	5.00	18	0.6500		51.8046	52.7048		1615.7
34	2.17	18	0.6500		52.7048	53.1382		699.2
36	5.00	18	0.6500		53.1382	54.0383		1641.8
37	5.00	18	0.6500		54.0383	54.9385		1659.5
38	5.00	18	0.6375		54.9385	55.8386		1677.9
39	2.83	18	0.6375		55.8386	56.2720		860.5
					28900.2		A607-65	



ALL REACTIONS ARE FACTORED



TORQUE 656 lb-ft
50 mph WIND - 0.7500 in ICE



TORQUE 1627 lb-ft
REACTIONS - 101 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 8'x3/4"	148	APXVSPP18-C-A20 w/ Mount Pipe	130
Platform Mount [LP 1201-1]	148	1900MHz RRH	130
(2) 7770.00 w/Mount Pipe	148	1900MHz RRH	130
(2) 7770.00 w/Mount Pipe	148	1900MHz RRH	130
(2) 7770.00 w/Mount Pipe	148	800MHZ RRH	130
HPA-65R-BUU-H6	148	800MHZ RRH	130
SBNHH-1D65C w/ Mount Pipe	148	800MHZ RRH	130
SBNHH-1D65A w/ Mount Pipe	148	Platform Mount [LP 1201-1]	110
RRUS 32 B2	148	LNX-6514DS-T4M w/ Mount Pipe	110
RRUS 32 B2	148	BXA-70063-6CF w/ Mount Pipe	110
RRUS 32 B2	148	BXA-70063-6CF w/ Mount Pipe	110
(4) LGP21401	148	(2) FD9R6004/2C-3L	110
(4) LGP21401	148	(2) FD9R6004/2C-3L	110
(4) LGP21401	148	(2) FD9R6004/2C-3L	110
RRUS-11	148	HBX-6517DS-VTM w/ Mount Pipe	110
RRUS-11	148	HBX-6517DS-VTM w/ Mount Pipe	110
RRUS-11	148	HBX-6517DS-VTM w/ Mount Pipe	110
DC6-48-60-18-8F Surge Suppression Unit	148	LNX-6513DS-VTM w/ Mount Pipe	110
		LNX-6513DS-VTM w/ Mount Pipe	110
Platform Mount [LP 1201-1]	140	LNX-6513DS-VTM w/ Mount Pipe	110
(2) AIR 21 w/ Mount Pipe	140	HBX-6516DS-VTM w/ Mount Pipe	110
(2) AIR 21 w/ Mount Pipe	140	HBX-6516DS-VTM w/ Mount Pipe	110
(2) AIR 21 w/ Mount Pipe	140	HBX-6516DS-VTM w/ Mount Pipe	110
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	140	RRH2x40-AWS	110
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	140	RRH2x40-AWS	110
		RRH2x40-AWS	110
APX16DWV-16DWV-S-E-ACU w/ Mount Pipe	140	DB-T1-6Z-8AB-0Z	110
		742-213 w/Mount Pipe	90
Onebase Twin Dual Duplex TMA	140	742-213 w/Mount Pipe	90
Onebase Twin Dual Duplex TMA	140	742-213 w/Mount Pipe	90
Onebase Twin Dual Duplex TMA	140	GPS	55
Platform Mount [LP 1201-1]	130	MTS 12" Antenna Standoff	55
APXVSPP18-C-A20 w/ Mount Pipe	130	GPS	50
APXVSPP18-C-A20 w/ Mount Pipe	130	MTS 12" Antenna Standoff	50

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

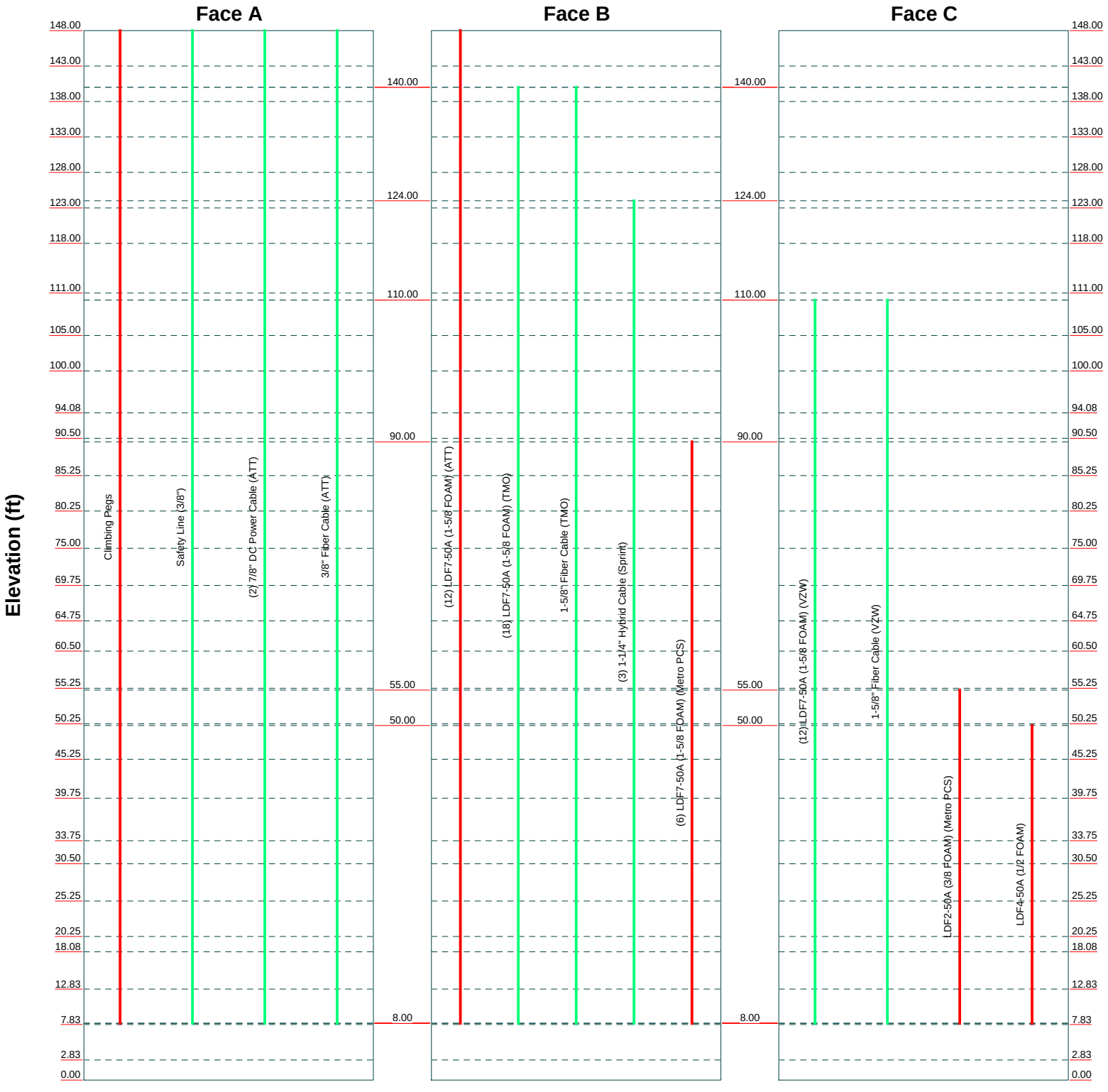
1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

GPD Group
520 South Main Street Suite 2531
Akron, Ohio 44311
Phone: (330) 572-2100
FAX: (330) 572-2101
GPD Group

Job:	***14635 - MIDDLETOWN SW***		
Project:	***2017701.95***		
Client: Empire Telecommunications	Drawn by: MShumway	App'd:	
Code: TIA-222-G	Date: 01/31/17	Scale: NTS	
Path: \\AKRN05.gpdco.com\TELECOM\ATandT\14635\03 2017701 95 Empire SA\tnx\14635 Modified.eri		Dwg No. E-1	

Feed Line Distribution Chart
0' - 148'

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



GPD Group
520 South Main Street Suite 2531
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Job:	***14635 - MIDDLETOWN SW***		
Project:	***2017701.95***		
Client: Empire Telecommunications		Drawn by: MShumway	App'd:
Code: TIA-222-G		Date: 01/31/17	Scale: NTS
Path: \\AKRN05.gpdco.com\TELECOM\ATandT\14635\03 2017701.95 Empire SA\tnx\14635 Modified.eri			Dwg No. E-7

APPENDIX D

Base Plate and Anchor Rod Analysis

Anchor Rod Interaction, TIA-222-G
14635 - MIDDLETOWN SW
2017701.95

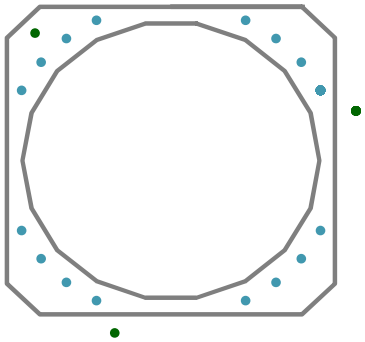
tnx Reactions		
Overturning Moment=	2965.65	k*ft
Axial Force =	55.46	k
Shear Force =	27.19	k

Existing Anchor Rods		
Number of Rods =	16	
Rod Circle =	56	in
Rod Diameter =	2.25	in
Est. Dist. b/w ea. Rod =	6	in
Plate Type =	Square	
Plate Width =	55	in

Pole		
Pole Diameter =	49.02	in
Number of Sides =	18	
Thickness =	0.375	in

First Added Anchor Rods		
Number of Rods =	3	
Rod Circle =	64.50	in
Rod Diameter =	1.75	in
Anchor Rod Grade =	A772	

Rod Number	Initial Angle
1	74
2	197
3	315



Second Added Anchor Rods		
Number of Rods =		
Rod Circle =		in
Rod Diameter =		in
Anchor Rod Grade =		

First Added Anchor Rods		
Max Rod Compression =	96.37	k
ϕRnt =	228.00	k
Anchor Rod Capacity =	42.27%	**OK**

Reactions in Existing Rods		
Overturning Moment=	**2588.20**	k*ft
Axial Force =	**55.46**	k
Shear Force =	**27.19**	k
Centroid Offset =	**0.05**	in

Anchor Rod and Base Plate Stresses, TIA-222-G-1

14635 - MIDDLETOWN SW

2017701.95

Overturning Moment* =	2588.20	k*ft
Axial Force =	55.46	k
Shear Force =	27.19	k
Centroid Offset =	0.05	in

Acceptable Stress Ratio =	105.0%

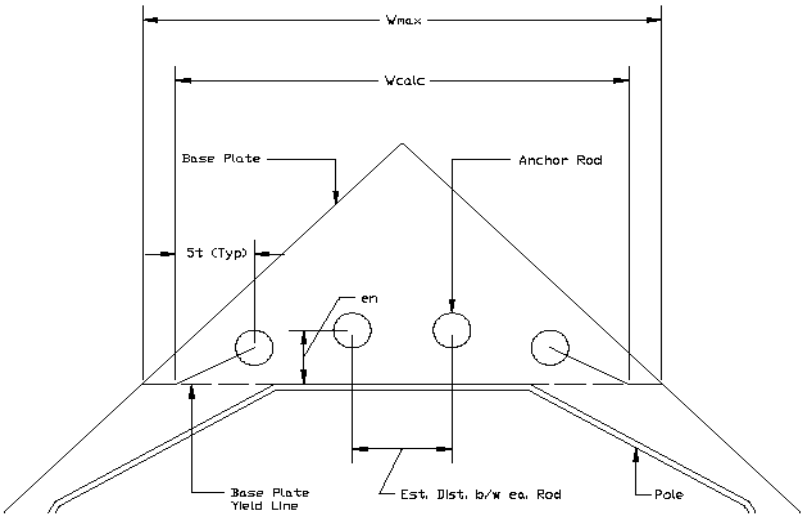
*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of anchor rod forces in the analysis.

Anchor Rods		
Pole Diameter =	49.02	in
Number of Rods =	16	
ϕ =	0.8	
Rod Ultimate Strength (F_u) =	100	ksi
Base Plate Detail Type* =	d	
Rod Circle =	56	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in^2
Max Tension on Rod =	134.53	kips
Max Compression on Rod =	141.46	kips
P_u =	141.46	kips
V_u =	1.70	kips
η =	0.50	
$P_u + V_u / \eta$ =	144.86	kips
φR_{nt} =	260.00	kips
Anchor Rod Capacity =	**55.7%**	**OK**

(Section 4.9.9, TIA-222-G-1)

Base Plate		
Plate Strength (Fy) =	55	ksi
ϕ =	0.9	
Plate Thickness =	3	in
Plate Width =	55	in
Est. Dist. b/w ea. Rod =	6	in
w_{calc} =	47.72	in
w_{max} =	28.76	in
w =	28.76	in
Z =	64.71	in^3
M_u =	1496.00	k-in
φM_n =	3203.34	k-in
Base Plate Capacity =	**46.7%**	**OK**

***This analysis assumes the clear distance from the top of the concrete to the bottom of the leveling nut is less than the diameter of the anchor rod. Notify GPD Group immediately if existing field conditions do not meet this assumption.**



APPENDIX E

Foundation Analysis

Mat Foundation Analysis
14635 - MIDDLETOWN SW
2017701.95

General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-G
Soil Code	AASHTO 2012
Concrete Code	ACI 318-11
Seismic Design Category	B
Tower Height	148 ft
Bearing On	Rock
Foundation Type	Monopole Pad
Pier Type	Round
Reinforcing Known	Yes
Max Bearing Capacity	105%
Max Overturning Capacity	105%

Tower Reactions	
Moment, M	2965.646 k-ft
Axial, P	55.464 k
Shear, V	27.188 k

Pad & Pier Geometry	
Pier Diameter, ø	7 ft
Pad Length, L [y]	22 ft
Pad Width, W [x]	22 ft
Pad Thickness, t	3 ft
Depth, D	8 ft
Height Above Grade, HG	0.5 ft
Tower Centroid, X	11 ft
Tower Centroid, Y	11 ft
Tower Eccentricity	0.0000 ft

Pad & Pier Reinforcing	
Rebar Fy	60 ksi
Concrete F'c	3 ksi
Pier Reinforcing Clear Cover	3 in
Shear Rebar Type	Tie
Shear Rebar Size	# 5
Pad Reinforcing Clear Cover	3 in
Reinforced Top & Bottom?	Yes
Pad Reinforcing Size	# 11
Pad Quantity Per Layer	22
Pier Rebar Size	# 11
Pier Quantity of Rebar	28

Soil Properties	
Soil Type	Granular
Soil Unit Weight	100 pcf
Angle of Friction, ø	30
Base Friction Coeff. Provided in Geo?	No
Bearing Type	Gross
Ultimate Bearing	12 ksf
Water Table Depth	7 ft
Frost Depth	3.5 ft

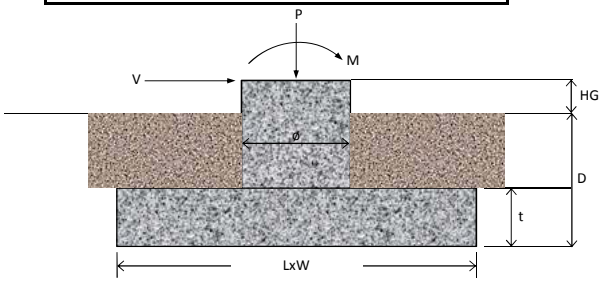
GPD Mat Foundation Analysis - V3.1

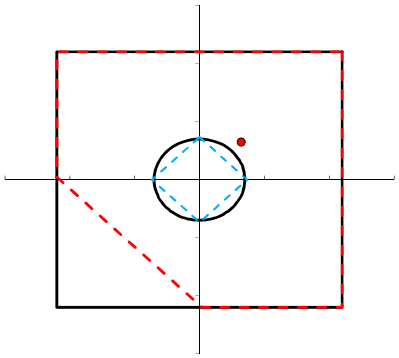
Bearing Summary			Eccentricity	Load Case
Qxmax (ksf)	2.76	OK, <= 105%	L/4.8	1.2D+1.6W
Qymax (ksf)	2.76	OK, <= 105%	W/4.8	1.2D+1.6W
Qmax @ 45° (ksf)	3.52	OK, <= 105%	W/6.8	1.2D+1.6W
Q(all) Gross (ksf)	9.00			
Controlling Capacity	**39.1%**	**Pass**		

Overturning Summary			Load Case
Ovtx	53.5%	OK	0.9D+1.6W
Ovty	53.5%	OK	0.9D+1.6W
Ovtxy	37.2%	OK	0.9D+1.6W
Controlling Capacity	**53.5%**	**Pass**	

Sliding Summary			Load Case
Sliding	OK	**Pass**	0.9D+1.6W

Reinforcement Summary			Load Case
Moment in Pad	18.8%	OK	0.9D+1.6W
Shear in Pad	22.9%	OK	0.9D+1.6W
Compression on Pier	0.5%	OK	1.2D+1.6W
Moment on Pier	46.0%	OK	1.2D+1.6W
As Min Met?	Yes		
Controlling Capacity	**46.0%**	**Pass**	





WIRELESS COMMUNICATIONS FACILITY
CT1142 - LTE BWE
MIDDLETOWN SW
290 PRESTON AVE
MIDDLETOWN, CT 06457

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA–222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD–OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN 'AS–BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON–SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB–CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1–800–922–4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT

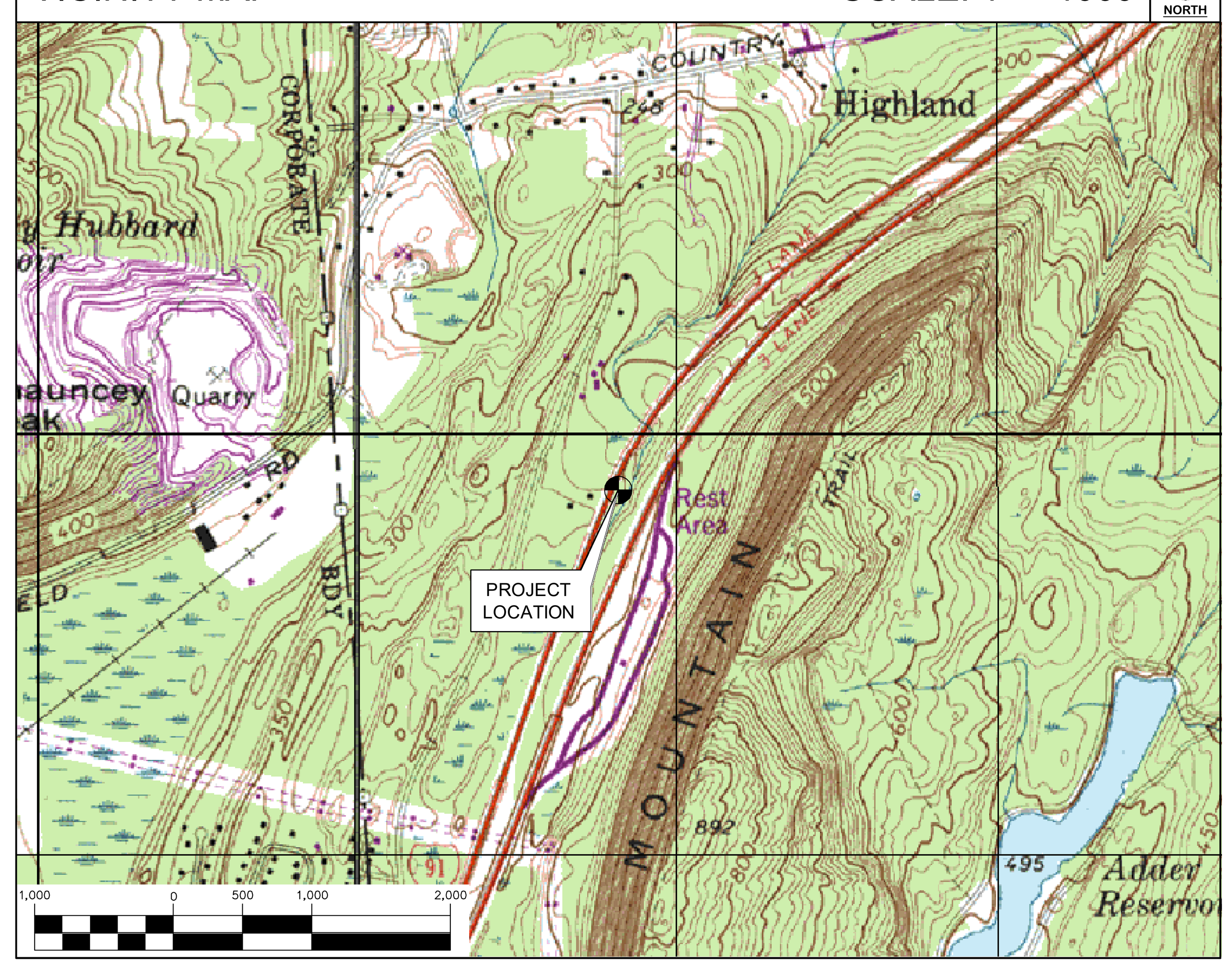
TO: 290 PRESTON AVE
MIDDLETOWN, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.37 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I–91 S TOWARD NEW HAVEN	5.92 MI
5.	TAKE EXIT 20	0.27 MI
6.	TURN LEFT ONTO MIDDLE ST	0.11 MI
7.	TAKE FIRST RIGHT ONTO COUNTRY CLUB RD	1.00 MI
8.	TURN LEFT ONTO PRESTON AVE. DESTINATION IS ON THE LEFT	0.63 MI

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. REMOVE AND REPLACE (3) EXISTING RRUS–11+A2'S FOR PROPOSED RRUS–32 B2'S, TYP OF (3) TOTAL ON EXISTING PIPE MAST.

PROJECT INFORMATION

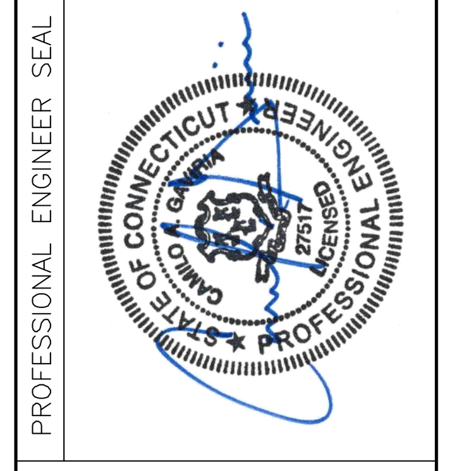
AT&T SITE NUMBER:	CT1142
AT&T SITE NAME:	MIDDLETOWN SW
SITE ADDRESS:	290 PRESTON AVE MIDDLETOWN, CT 06457
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63–2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°–33'–26.47116" N LONGITUDE: 72°–44'–35.79684" W GROUND ELEVATION: ±408' AMSL GROUND ELEVATION REFERENCED FROM GOOGLE EARTH. COORDINATES REFERENCED FROM RFDS DOCUMENTS.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	0
N–1	NOTES AND SPECIFICATIONS	0
C–1	PLANS AND ELEVATION	0
C–2	LTE BWE EQUIPMENT DETAILS	0
E–1	TYPICAL ELECTRICAL DETAILS AND NOTES	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/14/16	JTD	CAG	CONSTRUCTION DOCUMENTS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL



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AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
MIDDLETOWN SW
CT1142 – LTE BWE
290 PRESTON AVE
MIDDLETOWN, CT 06457

DATE: 11/11/16
SCALE: AS NOTED
JOB NO. 16071.58

TITLE SHEET

T–1

Sheet No. 1 of 5

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 100–120 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 101 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF–SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON CL&P OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)–––ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)–––ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)–––ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)–––ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE–––ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS–––ASTM A325–N
   G. U–BOLTS–––ASTM A36
   H. ANCHOR RODS–––ASTM F 1554
   I. WELDING ELECTRODE–––ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON–GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT–DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:

   A. SHERWIN WILLIAMS POLANE–B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.

2. COAXIAL CABLES:

   A. ONE COAT OF DTM BONDING PRIMER (2–5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5–5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI–SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH–PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON–PETROLEUM–BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

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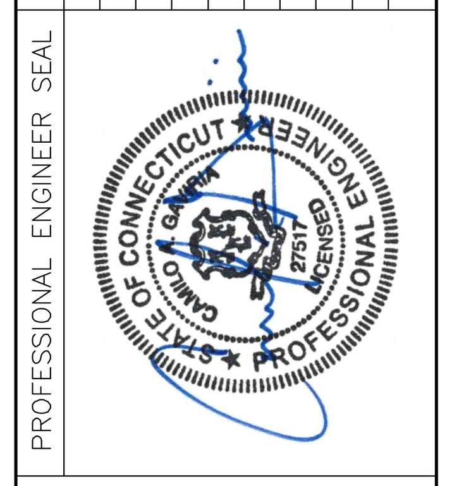

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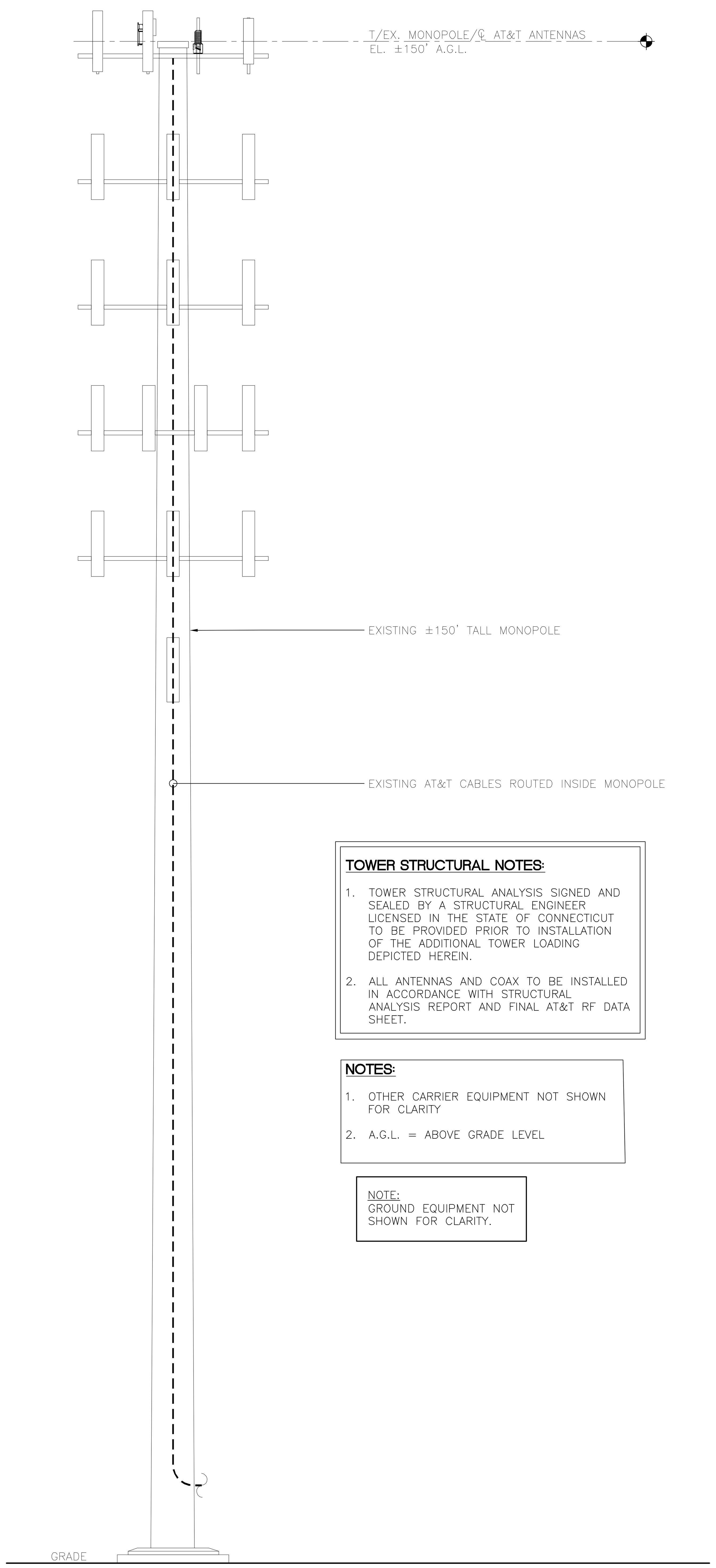
NOTES AND SPECIFICATIONS

N-1

Sheet No. __ of 5



TOWER STRUCTURAL NOTES:

1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS REPORT AND FINAL AT&T RF DATA SHEET.

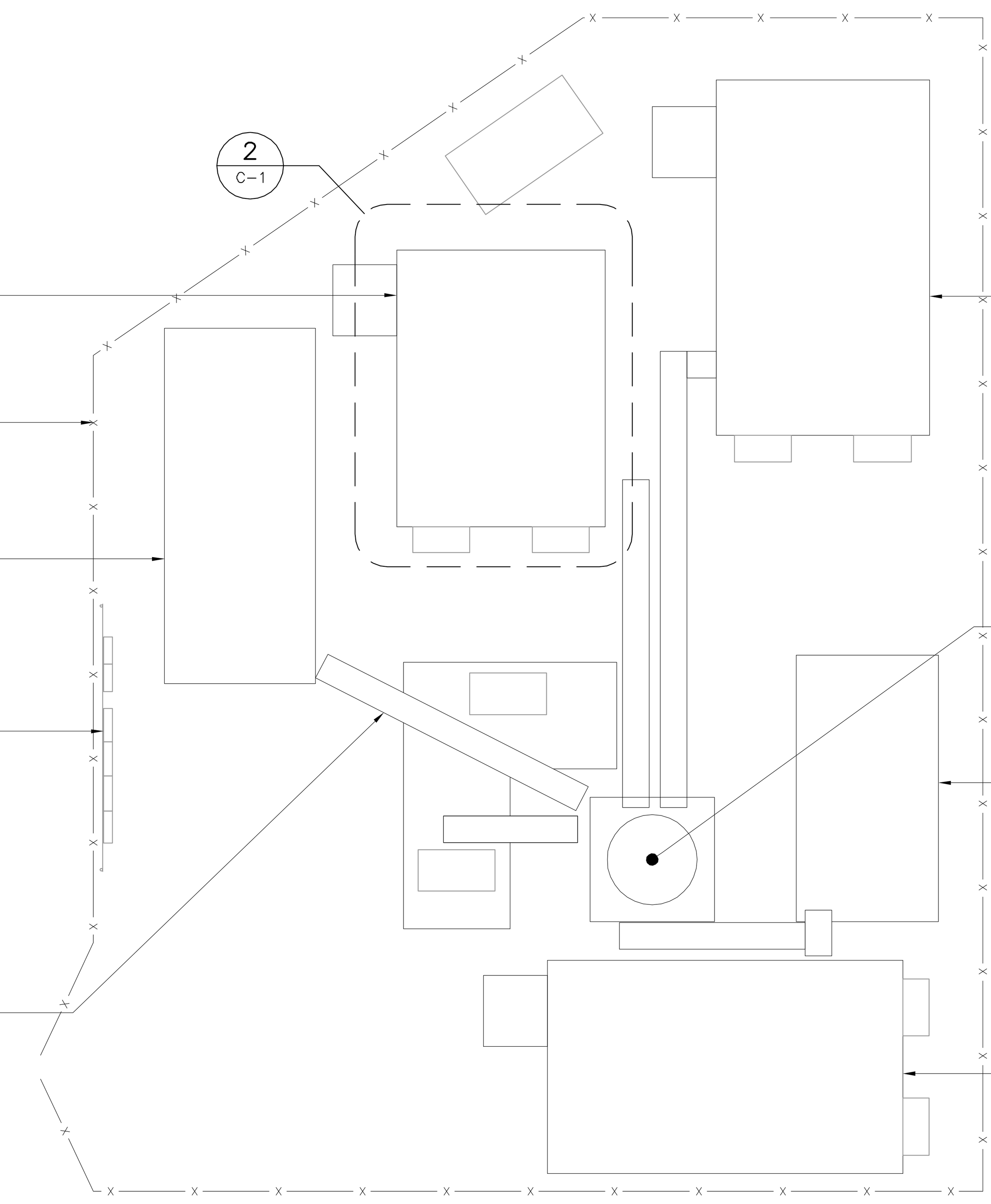
NOTES:

1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

3 / C-1 TOWER ELEVATION
SCALE: 1/8" = 1'-0"

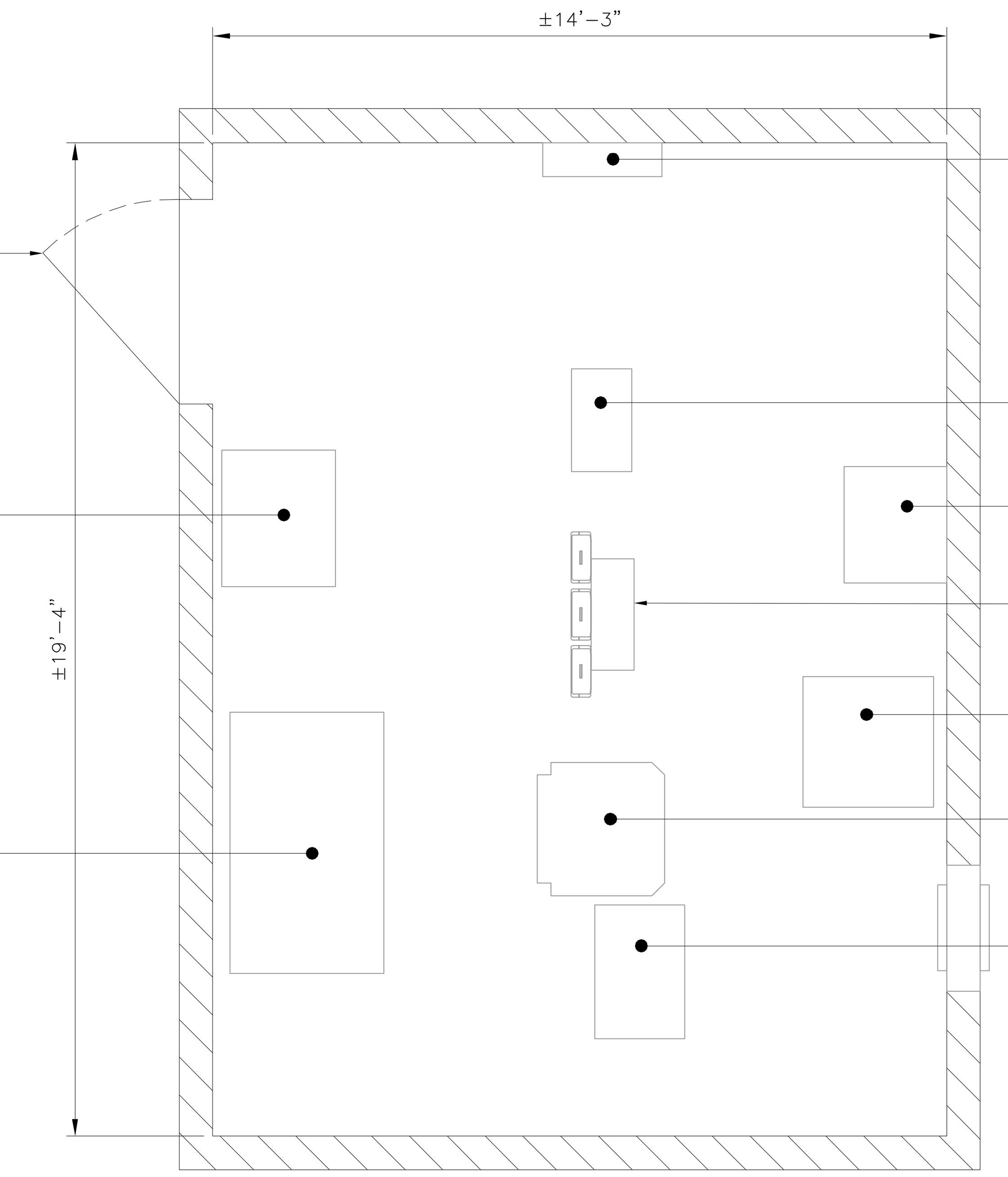
GRAPHIC SCALE 8 0 4 8 16 32 (IN FEET) 1 inch = 8 ft.



1 / C-1 COMPOUND PLAN
SCALE: 1" = 15'-0"

APPROX. NORTH

GRAPHIC SCALE 15 0 7.5 15 30 60 (IN FEET) 1 inch = 15 ft.



2 / C-1 EQUIPMENT LAYOUT PLAN
SCALE: 3/8" = 1'-0"

APPROX. NORTH

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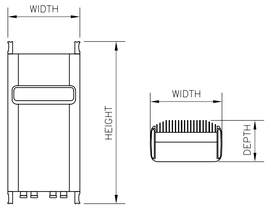
PLANS AND ELEVATION

C-1

Sheet No. 3 of 5

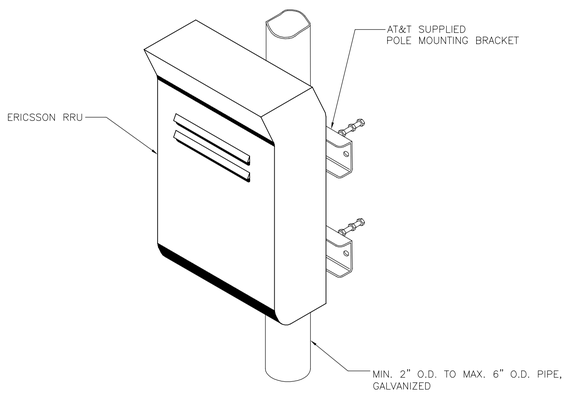


FRONT VIEW TOP VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B2	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

5 / C-2 **ERICSSON RRUS 32 B2 DETAIL**
SCALE: 1" = 1'-0"

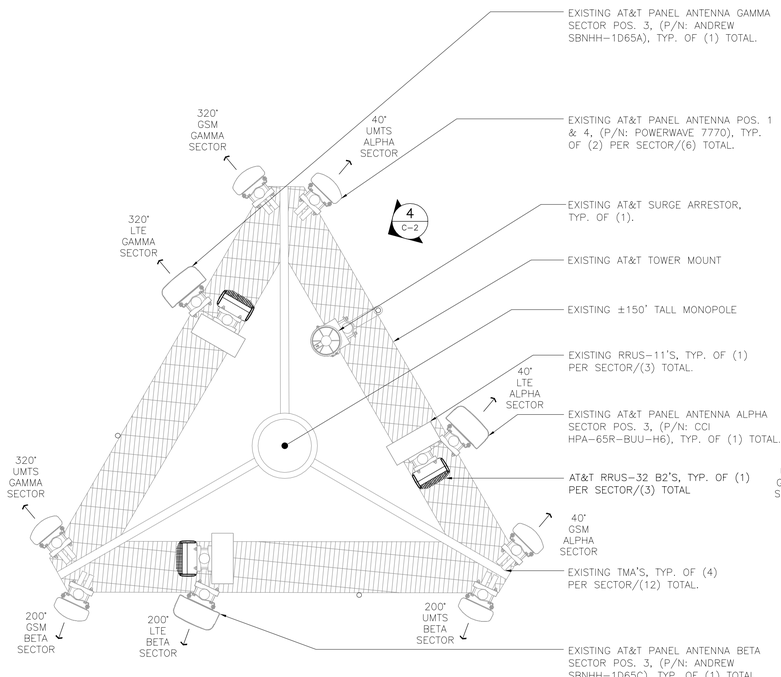


ISOMETRIC VIEW

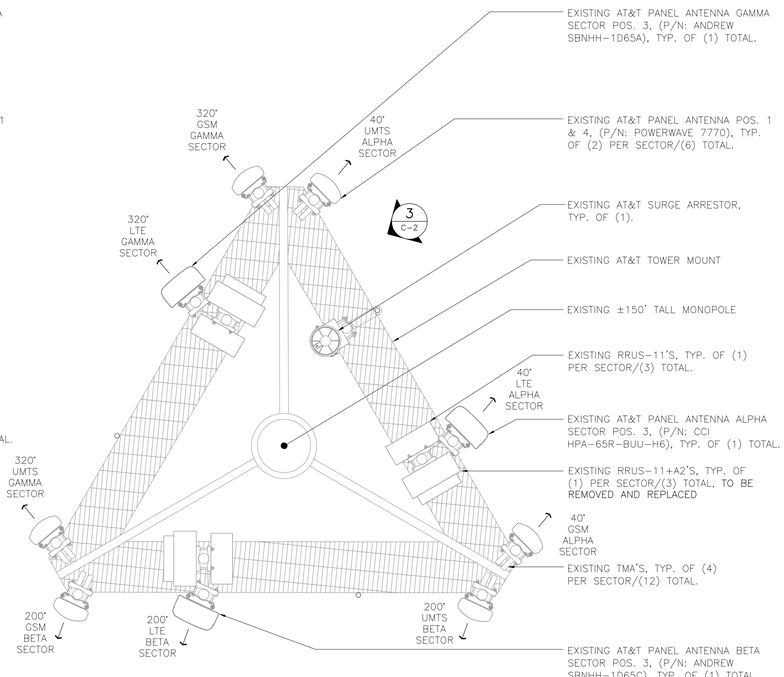
NOTES:

1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

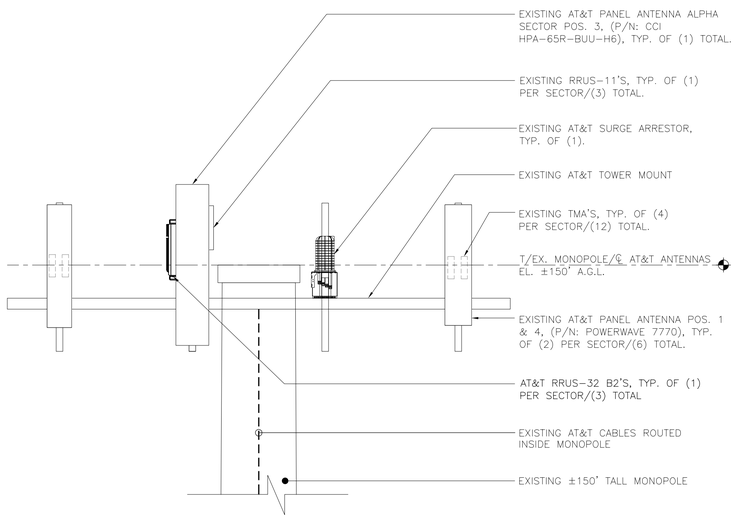
6 / C-2 **TYPICAL RRUS MOUNTING DETAILS**
SCALE: NTS



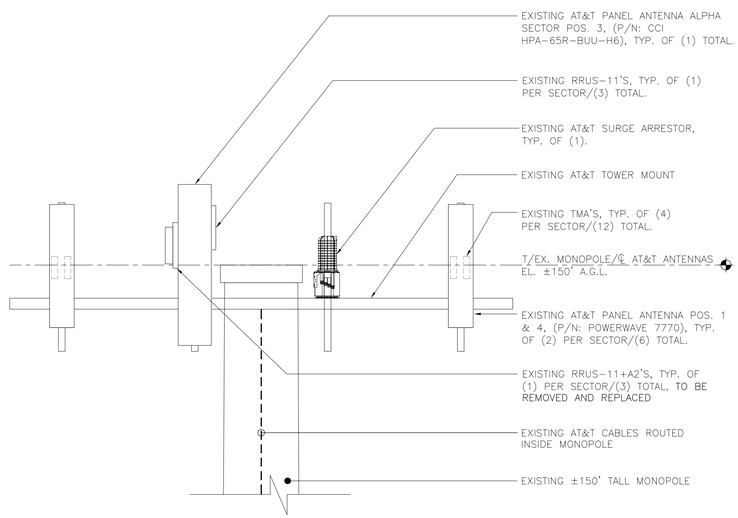
2 / C-2 **PROPOSED ANTENNA PLAN** NORTH
SCALE: 1/2" = 1'-0"



1 / C-2 **EXISTING ANTENNA PLAN** NORTH
SCALE: 1/2" = 1'-0"



4 / C-2 **PROPOSED ANTENNA ELEVATION**
SCALE: 3/8" = 1'-0"



3 / C-2 **EXISTING ANTENNA ELEVATION**
SCALE: 3/8" = 1'-0"

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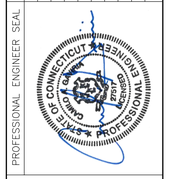

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LTE BWE EQUIPMENT DETAILS

C-2

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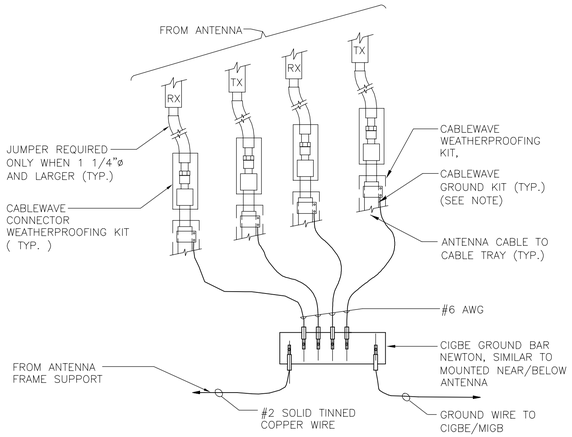
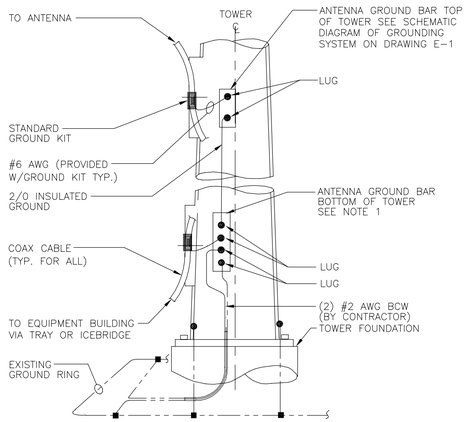


NOTE:

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

5 E-1 CONNECTION OF GROUND WIRES TO GROUND BAR

NOT TO SCALE

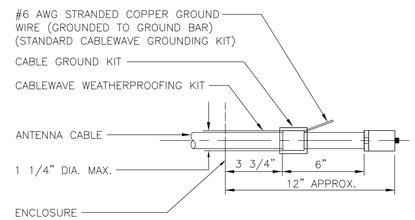


NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

2 E-1 ANTENNA CABLE GROUNDING - TOWER

NOT TO SCALE

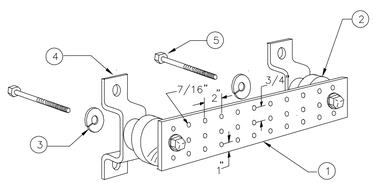


NOTE:

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

4 E-1 ANTENNA CABLE GROUNDING DETAIL

NOT TO SCALE

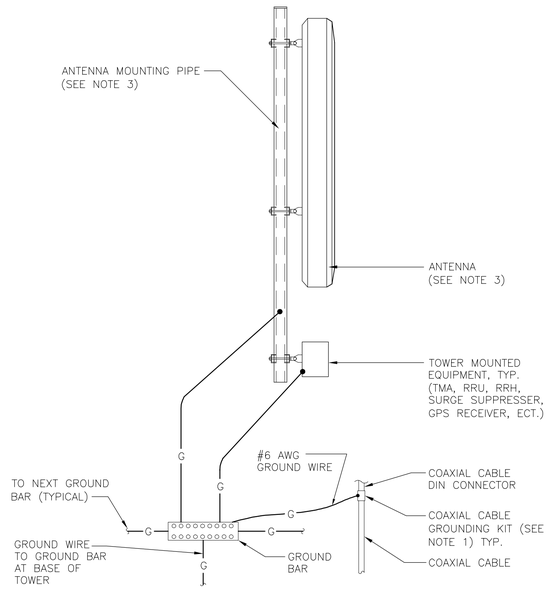


LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20". NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

3 E-1 GROUND BAR DETAIL

NOT TO SCALE



NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 E-1 TYPICAL ANTENNA GROUNDING DETAIL

NOT TO SCALE

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

   THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

   1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
   2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
   3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	11/14/16	JTD	CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT — CRAIG A. GAUDIOSO — 21752 — REGISTERED PROFESSIONAL ENGINEER

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MIDDLETOWN, CT 06457

DATE: 11/11/16
SCALE: AS NOTED
JOB NO. 16071.58

TYPICAL ELECTRICAL DETAILS AND NOTES

E-1

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