



Filed by:

*Kri Pelletier, Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3804 - kpelletier@sbsite.com*

July 5, 2016

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

Notice of Exempt Modification
60 Adams Street, Manchester, CT 06042
41.7940481 N
-72.55536 W
AT&T #: 10035244_LTE-CT1080

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 125-foot level of the existing 140-foot Monopole Tower at 60 Adams Street. The tower is owned by SBA Towers V, LLC. The property is owned by Pom-Pam Gali, LLC. AT&T now intends to swap three (3) existing LTE antennas with three (3) new antennas. These antennas would be installed at the 125-foot level of the tower. AT&T also intends to:

Remove:

- (3) Ericsson RRU 11s

Remove and Replace:

- Remove (3) KMW AM-X-CD Panel Antennas and replace with (3) Quintel QS66512-2 Panel Antennas

Install:

- (3) Ericsson RRU 32

Existing Equipment to Remain:

- (3) KMW AM-X-CD Panel Antennas (Reserved entitlement)
- (12) 1-1/4" coax
- (1) 2" Fiber Conduit
- (2) Fiber
- (4) DC / Power
- (6) CCI DTMABP7819VG12A TMAs
- (6) Kathrein 782-10250s
- (2) Raycap DC6 Squids



This facility was approved on 12/17/98 by the Council in Case # TS-BAM/SCLP-077-981208 (CSC) and the Town of Manchester on 4/19/99 with Zoning Permit # 99-1764. This approval included the conditions that the fence surrounding the base of the tower be black vinyl chainlink and that the 140' monopole would have two modular buildings. This modification complies with the aforementioned conditions.

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 Scott Shaley, General Manager for the Town of Manchester, as well as the property owner, Pom-Pom Gali, LLC. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

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

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

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T
508.366.2610 + F
203.446.7700 + C
kpelletier@sbsite.com

Attachments

cc: Scott Shaley, General Manager—as elected official
Town of Manchester, 41 Center Street, Manchester, CT 06045
Pom-Pom Gali, LLC—as property owner
79 Boston Post Road, Willimantic, CT 06226



POWER DENSITY

AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	4,105.06	ERP (W):	4,105.06	ERP (W):	4,105.06
Antenna A1 MPE%	1.20 %	Antenna B1 MPE%	1.20 %	Antenna C1 MPE%	1.20 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	5,263.78	ERP (W):	5,263.78	ERP (W):	5,263.78
Antenna A2 MPE%	1.54 %	Antenna B2 MPE%	1.54 %	Antenna C2 MPE%	1.54 %
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2
Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	4,371.36	ERP (W):	4,371.36	ERP (W):	4,371.36
Antenna A3 MPE%	1.53 %	Antenna B3 MPE%	1.53 %	Antenna C3 MPE%	1.53 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	4.28 %
Nextel	0.65 %
PageNet	0.40 %
Verizon Wireless	9.91 %
Clearwire	0.16 %
Sprint	0.07 %
Site Total MPE %:	15.47 %

AT&T Sector A Total:	4.28 %
AT&T Sector B Total:	4.28 %
AT&T Sector C Total:	4.28 %
Site Total:	15.47 %

T&T_ Max Values Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (µW/cm ²)	Frequency (MHz)	Allowable MPE (µW/cm ²)	Calculated % MPE
AT&T 850 MHz UMTS	2	837.82	125	2.13	850 MHz	567	0.38 %
AT&T 1900 MHz (PCS) UMTS	2	1,633.62	125	4.15	1900 MHz (PCS)	1000	0.41 %
AT&T 1900 MHz (PCS) GSM	2	1,633.62	125	4.15	1900 MHz (PCS)	1000	0.41 %
AT&T 850 MHz GSM	2	1,054.75	125	2.68	850 MHz	567	0.47 %
AT&T 2300 MHz (WCS) LTE	2	4,209.02	125	10.69	2300 MHz (WCS)	1000	1.07 %
AT&T 700 MHz LTE	2	1,459.42	125	3.71	700 MHz	467	0.79 %
AT&T 1900 MHz (PCS) LTE	2	2,911.93	125	7.39	1900 MHz (PCS)	1000	0.74 %
						Total:	4.28 %

7737

EMPIRE TELECOM USA, LLC1150 1ST AVE. STE. 600
KING OF PRUSSIA, PA 19406PNC BANK, N.A.
PHILADELPHIA, PA 020

3-5/310 7737

4/27/2016

PAY TO THE
ORDER OF

Connecticut Siting Council

\$ 625.00

Six hundred twenty five dollars

DOLLARS

Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051
AUTHORIZED SIGNATURE

MEMO

1120

⑈007737⑈ ⑆031000053⑆ 8611839741⑈

EMPIRE TELECOM USA, LLC

7737

Vendor	Vendor Name	Check Date	Check Number		
CONN001	Connecticut Siting Council	4/27/2016	7737		
Invoice Number	Invoice Date	Reference	Invoice Amount	Discount Amount	Payment Amount
2051A0490V	4/21/2016	CTL01080 New Britain, CT	625.00		625.00
Check Total			625.00		625.00



10(P)

287.15(P)

1381

120.91(F)

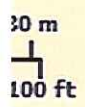
Parcel: 60 ADAMS STREET

Property Map

RPKEY: 002000060
Owner Name: POM-POM GALI LLC
Co Owner:
Owner Address: 79 BOSTON RD
City: WILLIMANTIC
State: CT
Zip Code: 06226
Acreage: 26.45
Sale Date: 12/23/2005
Yr Built: 1965
Book: 3204
Page: 184
Use Code: Industrial 96
Vision Link: [Click Here & Login](#)

210(P)

58





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

AT&T Existing Facility

Site ID: CT1080

Manchester Sand & Gravel
60 Adams Street
Manchester, CT 06042

June 18, 2016

EBI Project Number: 6216002851

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	15.47 %



June 18, 2016

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

Emissions Analysis for Site: **CT1080 – Manchester Sand & Gravel**

EBI Consulting was directed to analyze the proposed AT&T facility located at **60 Adams Street, Manchester, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **60 Adams Street, Manchester, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 8) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 9) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antennas used in this modeling are the **Kathrein 800-10121**, **CCI OPA-65R-LCUU-H6** and the **Quintel QS66512-2** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antenna mounting height centerlines of the proposed antennas are **125 feet** above ground level (AGL) for **Sector A**, **125 feet** above ground level (AGL) for **Sector B** and **125 feet** above ground level (AGL) for Sector C.
- 12) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd	Gain:	11.45 / 14.35 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	4,105.06	ERP (W):	4,105.06	ERP (W):	4,105.06
Antenna A1 MPE%	1.20 %	Antenna B1 MPE%	1.20 %	Antenna C1 MPE%	1.20 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	5,263.78	ERP (W):	5,263.78	ERP (W):	5,263.78
Antenna A2 MPE%	1.54 %	Antenna B2 MPE%	1.54 %	Antenna C2 MPE%	1.54 %
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2
Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd
Height (AGL):	125 feet	Height (AGL):	125 feet	Height (AGL):	125 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	4,371.36	ERP (W):	4,371.36	ERP (W):	4,371.36
Antenna A3 MPE%	1.53 %	Antenna B3 MPE%	1.53 %	Antenna C3 MPE%	1.53 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	4.28 %
Nextel	0.65 %
PageNet	0.40 %
Verizon Wireless	9.91 %
Clearwire	0.16 %
Sprint	0.07 %
Site Total MPE %:	15.47 %

AT&T Sector A Total:	4.28 %
AT&T Sector B Total:	4.28 %
AT&T Sector C Total:	4.28 %
Site Total:	15.47 %

AT&T _ Max Values Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	837.82	125	2.13	850 MHz	567	0.38 %
AT&T 1900 MHz (PCS) UMTS	2	1,633.62	125	4.15	1900 MHz (PCS)	1000	0.41 %
AT&T 1900 MHz (PCS) GSM	2	1,633.62	125	4.15	1900 MHz (PCS)	1000	0.41 %
AT&T 850 MHz GSM	2	1,054.75	125	2.68	850 MHz	567	0.47 %
AT&T 2300 MHz (WCS) LTE	2	4,209.02	125	10.69	2300 MHz (WCS)	1000	1.07 %
AT&T 700 MHz LTE	2	1,459.42	125	3.71	700 MHz	467	0.79 %
AT&T 1900 MHz (PCS) LTE	2	2,911.93	125	7.39	1900 MHz (PCS)	1000	0.74 %
						Total:	4.28 %



Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	4.28 %
Sector B:	4.28 %
Sector C:	4.28 %
AT&T Maximum Total (per sector):	4.28 %
Site Total:	15.47 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **15.47 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 141 ft. EEI Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT16504-A

Customer Site Name: Manchester 12, CT

Carrier Name: AT&T

Carrier Site ID / Name: CT1080 Fixed Asset # 10035244

Site Location: 60 Adams Street

Manchester, Connecticut 06042

Hartford County

Latitude: 41.794100

Longitude: -72.555300

Analysis Result:

Max Structural Usage: 99.7% [Pass]

Max Foundation Usage: 75.0% [Pass]

Report Prepared By: Kyle Wyant



5/24/16

Introduction

The purpose of this report is to summarize the analysis results on the 141 ft. EEI Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	FDH Velocitel, Inc., "Monopole Mapping Report," Project No. 15BRLA1500, dated June 15, 2015
Foundation Drawing	FDH Velocitel, Inc., "Dispersive Wave Propagation Testing and Rebar Investigation of an Existing Tower Foundation," Project No. 15BRLC1500, dated June 16, 2015
Geotechnical Report	FDH Velocitel, Inc., "Geotechnical Evaluation of Subsurface Conditions," Project No. 15BRNG1600, dated June 17, 2015
Modification Drawings	N/A

Analysis Criteria

The analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-F. In accordance with this standard, the structure was analyzed using **TESPoles**, a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Basic Wind Speed Used in the Analysis:	80.0 mph (Fastest Mile)
Basic Wind Speed with Ice:	69 mph (Fastest Mile) with 1/2" Radial Ice Concurrent
Operational Wind Speed:	50 mph + 0" Radial Ice
Standard/Codes:	ANSI/TIA/EIA-222-F / 2005 Connecticut State Building Code

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines ¹	Owner	
1	139.0*	-	-	(2) 3.5' Standoffs w/ (2) 2.4" x 5.0' Pipe Mounts	-	N/A	
2	132.5*	-	-	(1) 5.0' Standoff w/ (1) 2.4" x 3.0' Pipe Mount	-		
-	129.5	2	Raycap DC6-48-60-18-8F	Direct Mount	(12) 1 1/4" (1) 2 1/8" F.C. ² (2) Fiber ² (4) Power ²	AT&T	
-	124.0	3	Allgon 7120.16 - Panel	Platform w/ Hand Rails			
-		3	CCI OPA-65R-LCUU-H6 - Panel				
-		6	Kathrein 782-10250- RET				
-		6	CCI DTMABP7819VG12A				
-		6	Ericsson RRUS 11				
-		3	Ericsson RRUS-32				
-		3	Kathrein 800 10121 - Panel				
-		3	KMW AM-X-CD-16-65-00T-RET - Panel				
12	118.5	1	Andrew VHLP1-23-DW1 - Dish	Low Profile Platform	(2) 5/8" (2) 2 1/8" F.C.	Clearwire	
13		1	Andrew VHLP2-23-DW1 - Dish				
14	114.5	3	Argus LLPX310R-V1 - Panel				
15	114.0	1	20" x 18" x 9" Junction Box				
16	113.0	3	Samsung SPI-22132825WB				
17	117.0	3	RFS APXVTM14 - Panel		(1) 3/4" (3) 1 1/4"	Sprint	
18		3	Alcatel Lucent RRH8x20-25-FEU - RRU				
19		3	Alcatel Lucent RRH1900-4X45 - RRU				
20	115.0	3	RFS APXVSPP18 - Panel		Platform w/ Hand Rails	(12) 1 5/8" Coax (2) 1 5/8" Hybrid	Verizon
21	112.5	3	Alcatel Lucent RRH2X50-800 - RRU				
22	90.0	3	Swedcom SLCP 2x6014 - Panel				
23		3	Alcatel Lucent RRH2X60-700 - RRU				
24		3	Alcatel Lucent RRH2X60-AWS - RRU				
25		3	Alcatel Lucent RRH2X60-PCS - RRU				
26		3	Antel BXA-70063-6CF-EDIN-x - Panel				
27		6	Commscope SBNHH-1D65B - Panel				
28		1	RFS DB-T1-6Z-8AB-0Z – Distribution Box				

1. Transmission lines are installed inside of the pole shafts unless otherwise noted.

2. AT&T currently has (4) Power cables and (2) Fiber running inside of the (1) 2 1/8" F.C. on the inside of the pole shafts.

* These empty mounts are to be removed prior to the installation of the proposed antennas. They are not taken into consideration in this analysis.

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
3	125.0	3	Quintel QS66512-2 - Panel	Platform w/ Hand Rails	(12) 1-1/4" Coax (1) 2" Conduit (4) 0.625" DC (2) 0.40" Fiber	AT&T
4		3	Kathrein 800-10121 - Panel			
5		3	CCI OPA-65R-LCUU-H6 - Panel			
6		3	KMW AM-X-CD-16-65-00T-RET - Panel			
7		6	CCI DTMAPB7819VG12A - TMA/TTA			
8		6	Kathrein 782-10250 - RET			
9		6	Ericsson RRUS-32 - RRU			
10		3	Ericsson RRUS-11 - RRU			
11		2	Raycap DC6-48-60-18-8F - Surge Suppressor			

All transmission lines are considered running inside of the pole shafts. AT&T's proposed (4) 0.625" DC and (2) 0.40" Fiber lines are to be installed inside of the (1) 2" Conduit on the inside of the pole shafts.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	99.7%	88.4%	75.6%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2227.7	22.5	35.5

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA-222-F for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 2.5769 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-F Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed or/and ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Stress 99.7% at 0.0ft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69

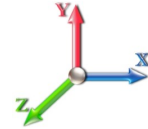
5/24/2016



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Dead Load Factor: 1.00
Wind Load Factor: 1.00

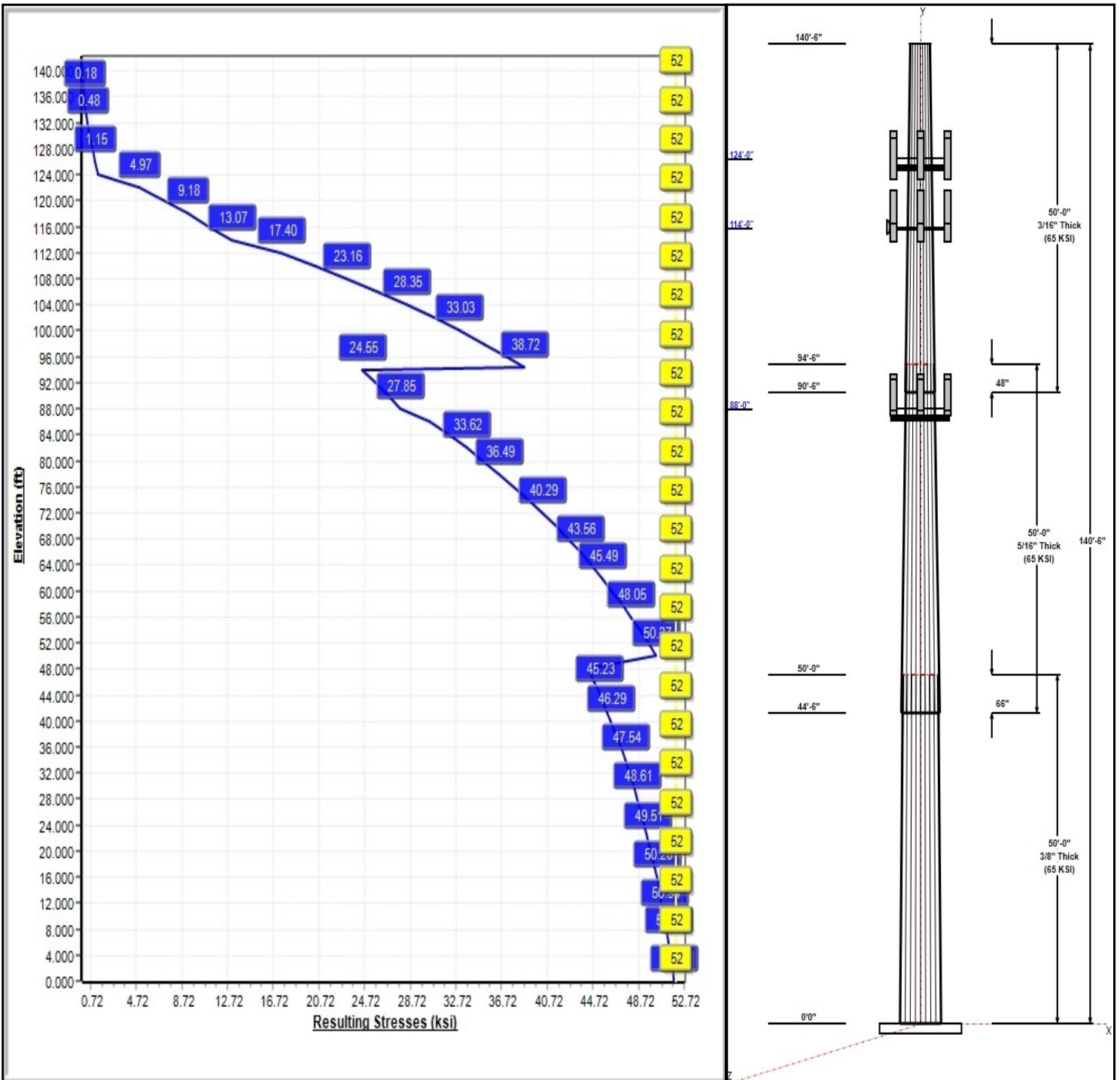
Load Case : 80 mph Wind with 0 in Ice



Iterations: 30

- 52 Allowable Stress
- 52 Resulting Stress

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Structure: CT16504-A-SBA

Type: Tapered
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.18206

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	50.00	33.44	42.54	0.375		0.18206	65
2	50.00	25.96	35.06	0.313	Slip	0.18206	65
3	50.00	17.96	27.06	0.188	Slip	0.18206	65

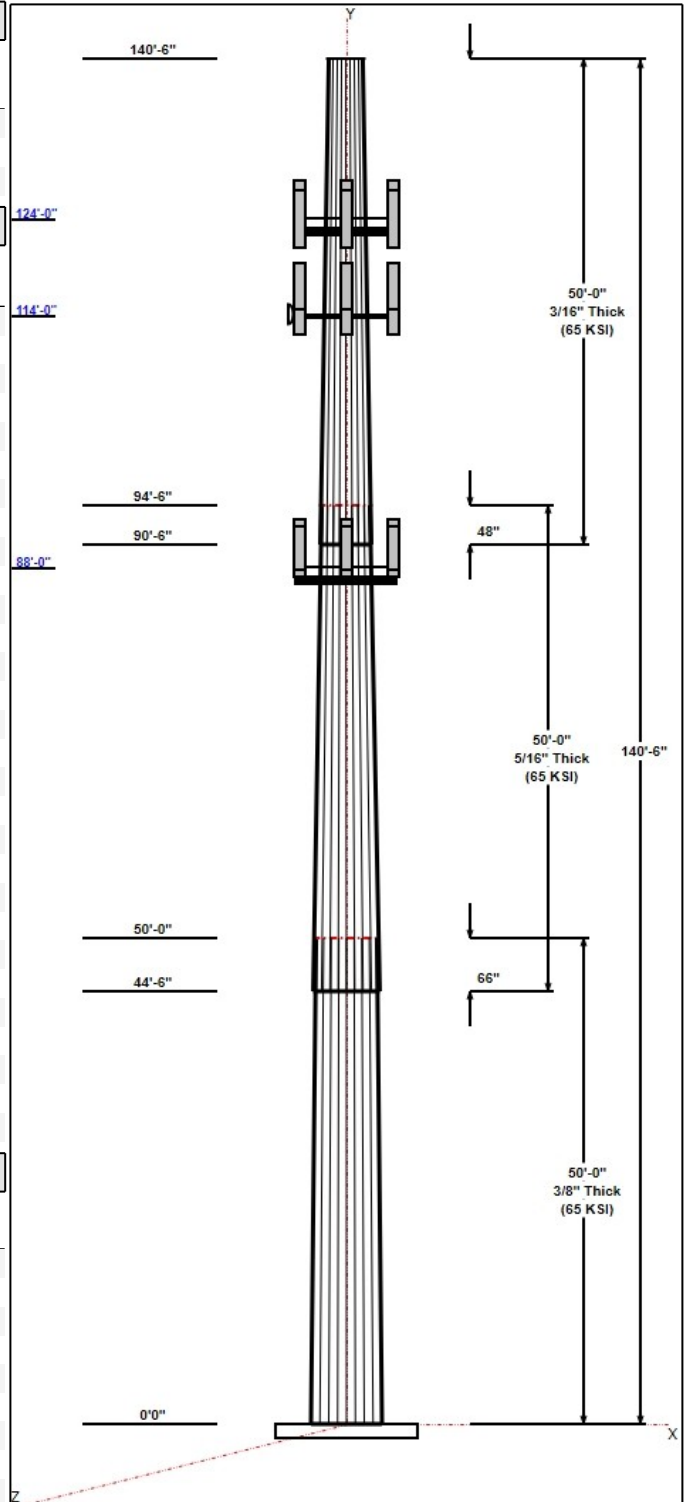
Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
124.00	125.00	6	CCI DTMABP7819VG12A	AT&T
124.00	125.00	3	CCI OPA-65R-LCUU-H6	AT&T
124.00	125.00	3	Ericsson RRUS-11	AT&T
124.00	125.00	6	Ericsson RRUS-32	AT&T
124.00	125.00	6	Kathrein 782 10250	AT&T
124.00	125.00	3	Kathrein 800-10121	AT&T
124.00	125.00	3	KMW	AT&T
124.00	124.00	1	Platform w/ Hand Rails	AT&T
124.00	124.00	3	Qunitel QS66512-2	AT&T
124.00	125.00	2	Raycap DC6-48-60-18-8F	AT&T
114.00	114.00	1	20" x 18" x 9" Junction Box	Clearwire
114.00	117.00	3	Alcatel Lucent	Sprint
114.00	112.50	3	Alcatel Lucent	Sprint
114.00	117.00	3	Alcatel Lucent	Sprint
114.00	118.50	1	Andrew VHLP1-23-DW1	Clearwire
114.00	118.50	1	Andrew VHLP2-23-DW1	Clearwire
114.00	114.50	3	Argus LLPX310R-V1	Clearwire
114.00	114.00	1	Low Profile Platform	Sprint
114.00	115.00	3	RFS APXVSP18	Sprint
114.00	117.00	3	RFS APXVTM14	Sprint
114.00	113.00	3	Samsung	Clearwire
88.00	90.00	3	Alcatel Lucent	Verizon
88.00	90.00	3	Alcatel Lucent	Verizon
88.00	90.00	3	Alcatel Lucent	Verizon
88.00	90.00	3	Antel	Verizon
88.00	90.00	6	Commscope	Verizon
88.00	90.00	1	Platform w/ Hand Rails	Verizon
88.00	90.00	1	RFS DB-T1-6Z-8AB-0Z	Verizon
88.00	90.00	3	Swedcom SLCP 2x6014	Verizon

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	124.00	Inside	0.40" Fiber	AT&T
0.00	124.00	Inside	0.625" DC	AT&T
0.00	124.00	Inside	1 1/4" Coax	AT&T
0.00	124.00	Inside	2" Conduit	AT&T
0.00	114.00	Inside	1-1/4"	Sprint
0.00	114.00	Inside	2 1/8" F.C.	Clearwire
0.00	114.00	Inside	3/4"	Sprint
0.00	114.00	Inside	5/8"	Clearwire
0.00	90.00	Inside	1 5/8" Coax	Verizon
0.00	90.00	Inside	1 5/8" Hybrid	Verizon
0.00	20.00	Outside	1.0" Reinforcing plate	

Anchor Bolts



Structure: CT16504-A-SBA

Type: Tapered
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.18206

5/24/2016

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Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	57.0	60.0	Round

Reactions

Load Case	Moment	Shear	Axial
80 mph Wind with 0" Ice	2227.7	22.5	29.1
69.28 mph Wind with 0.5" Ice	1985.1	19.6	35.5
50 mph Wind with 0" Ice	871.6	8.8	29.1

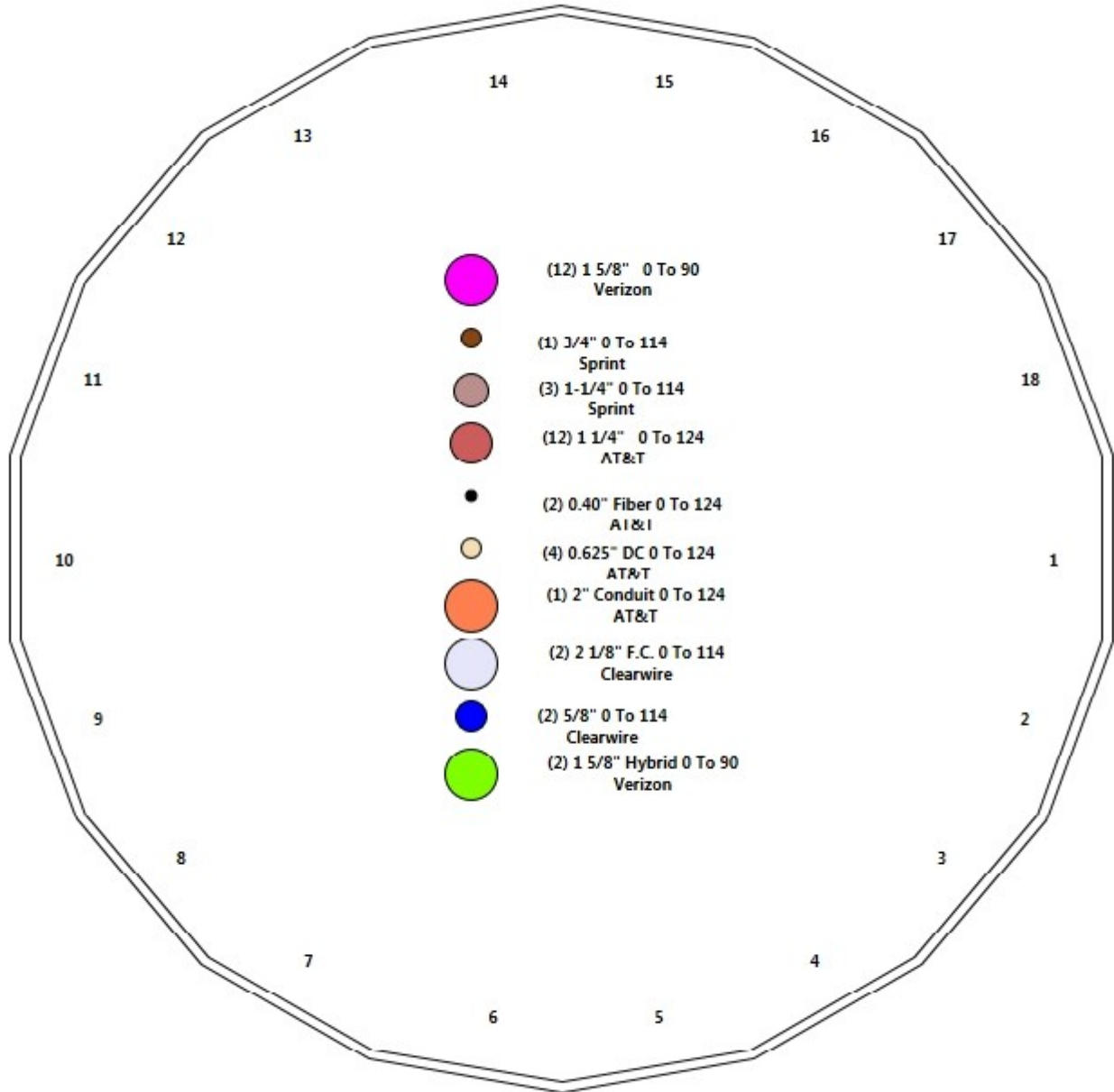
Structure: CT16504-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Manchester 12, CT
Height: 140.50 (ft)

5/24/2016



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Shaft Properties

Structure: CT16504-A-SBA	Code: EIA/TIA-222-F	5/24/2016
Site Name: Manchester 12, CT	Exposure: C	
Height: 140.50 (ft)	Gh: 1.69	
Base Elev: 0.000 (ft)	Struct Class: II	Page: 5



Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	50.000	0.3750	65		0.00	7,617
2	18	50.000	0.3125	65	Slip	66.00	5,096
3	18	50.000	0.1875	65	Slip	48.00	2,260
Total Shaft Weight:							14,973

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	42.54	0.00	50.19	11272.80	18.59	113.44	33.44	50.00	39.35	5434.44	14.31	89.16	0.182064
2	35.06	44.50	34.47	5258.76	18.37	112.20	25.96	94.50	25.44	2114.11	13.24	83.07	0.182064
3	27.06	90.50	15.99	1459.57	24.04	144.34	17.96	140.50	10.58	422.08	15.48	95.79	0.182064

Loading Summary

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016

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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	124.00	CCI DTMAPB7819VG12A	6	19.00	0.39	0.50	24.55	0.480	0.58	0.00	1.00
2	124.00	CCI OPA-65R-LCUU-H6	3	73.00	10.36	0.76	126.70	10.850	0.77	0.00	1.00
3	124.00	Ericsson RRUS-11	3	54.00	2.94	0.50	69.31	3.140	0.77	0.00	1.00
4	124.00	Ericsson RRUS-32	6	77.00	4.04	0.50	100.44	4.290	0.85	0.00	1.00
5	124.00	Kathrein 782 10250	6	6.40	0.52	0.50	10.00	0.690	0.81	0.00	1.00
6	124.00	Kathrein 800-10121	3	44.10	5.46	0.80	74.10	6.230	0.81	0.00	1.00
7	124.00	KMW AM-X-CD-16-65-00T-RET	3	48.50	8.26	0.78	91.70	8.730	0.79	0.00	1.00
8	124.00	Platform w/ Hand Rails	1	2000.00	32.00	1.00	2500.00	40.000	1.00	0.00	0.00
9	124.00	Qunitel QS66512-2	3	111.00	8.40	0.91	163.23	8.870	0.91	0.00	0.00
10	124.00	Raycap DC6-48-60-18-8F	2	32.80	1.47	1.00	50.50	1.670	1.00	0.00	1.00
11	114.00	20" x 18" x 9" Junction Box	1	20.00	3.50	0.90	38.00	3.510	0.95	0.00	0.00
12	114.00	Alcatel Lucent RRH1900-4X45	3	60.00	2.61	0.50	83.10	2.820	0.50	0.00	3.00
13	114.00	Alcatel Lucent RRH2X50-800	3	64.00	2.25	0.50	86.10	2.430	0.50	0.00	-1.50
14	114.00	Alcatel Lucent RRH8x20-25-FEU	3	70.00	1.70	0.50	92.00	1.890	0.50	0.00	3.00
15	114.00	Andrew VHLP1-23-DW1	1	14.00	1.61	0.80	24.10	1.820	0.80	0.00	4.50
16	114.00	Andrew VHLP2-23-DW1	1	31.00	4.69	0.80	59.00	5.050	0.80	0.00	4.50
17	114.00	Argus LLPX310R-V1	3	50.70	4.91	0.70	74.28	5.220	0.71	0.00	0.50
18	114.00	Low Profile Platform	1	1800.00	22.00	1.00	2200.00	26.600	1.00	0.00	0.00
19	114.00	RFS APXVSP18	3	125.30	9.14	0.96	193.00	9.860	0.99	0.00	1.00
20	114.00	RFS APXVTM14	3	116.70	7.86	0.90	172.20	8.530	0.93	0.00	3.00
21	114.00	Samsung SPI-22132825WB	3	33.10	1.82	0.80	45.60	2.100	0.85	0.00	-1.00
22	88.00	Alcatel Lucent RRH2X60-700	3	90.00	4.53	0.50	120.60	5.050	0.91	0.00	2.00
23	88.00	Alcatel Lucent RRH2X60-AWS	3	90.00	4.53	0.50	120.60	5.050	0.91	0.00	2.00
24	88.00	Alcatel Lucent RRH2X60-PCS	3	55.00	2.57	0.50	70.90	2.760	0.92	0.00	2.00
25	88.00	Antel BXA-70063-6CF-EDIN-x	3	42.60	7.95	0.75	94.50	8.500	0.92	0.00	2.00
26	88.00	Commscope SBNHH-1D65B	6	76.40	8.49	0.84	134.70	9.050	0.95	0.00	2.00
27	88.00	Platform w/ Hand Rails	1	2000.00	40.00	1.00	2400.00	42.820	1.00	0.00	2.00
28	88.00	RFS DB-T1-6Z-8AB-OZ	1	44.00	5.60	0.76	0.00	6.080	0.77	0.00	2.00
29	88.00	Swedcom SLCP 2x6014	3	45.60	7.73	0.89	102.20	8.320	1.00	0.00	2.00
Totals:			84	10,568.20			14,280.60				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	No Ice		Ice		Exposed
			Weight (lb/ft)	CaAa (sf/ft)	Weight (lb/ft)	CaAa (sf/ft)	
0.00	124.00	(2) 0.40" Fiber	0.16	0.00	0.16	0.00	Inside
0.00	124.00	(4) 0.625" DC	1.60	0.00	1.60	0.00	Inside
0.00	124.00	(12) 1 1/4" Coax	7.92	0.00	7.92	0.00	Inside
0.00	124.00	(1) 2" Conduit	1.61	0.00	1.61	0.00	Inside
0.00	114.00	(3) 1-1/4"	2.86	0.00	2.86	0.00	Inside
0.00	114.00	(2) 2 1/8" F.C.	3.22	0.00	3.22	0.00	Inside
0.00	114.00	(1) 3/4"	0.40	0.00	0.40	0.00	Inside
0.00	114.00	(2) 5/8"	1.04	0.00	1.04	0.00	Inside
0.00	90.00	(12) 1 5/8" Coax	12.48	0.00	12.48	0.00	Inside
0.00	90.00	(2) 1 5/8" Hybrid	2.20	0.00	2.20	0.00	Inside
0.00	20.00	(1) 1.0" Reinforcing plate	0.00	0.33	0.00	0.54	Outside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
Totals:				3,578.67			3,578.44				

Shaft Section Properties

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016

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Increment Length: 2 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
0.00		0.3750	42.540	50.185	11272.8	18.59	113.44	65	52	0.0
2.00		0.3750	42.176	49.752	10983.3	18.42	112.47	65	52	340.1
4.00		0.3750	41.812	49.318	10698.7	18.25	111.50	65	52	337.1
6.00		0.3750	41.448	48.885	10419.2	18.08	110.53	65	52	334.2
8.00		0.3750	41.083	48.452	10144.5	17.91	109.56	65	52	331.2
10.00		0.3750	40.719	48.018	9874.7	17.74	108.58	65	52	328.3
12.00		0.3750	40.355	47.585	9609.7	17.56	107.61	65	52	325.3
14.00		0.3750	39.991	47.151	9349.6	17.39	106.64	65	52	322.4
16.00		0.3750	39.627	46.718	9094.1	17.22	105.67	65	52	319.4
18.00		0.3750	39.263	46.285	8843.4	17.05	104.70	65	52	316.5
20.00		0.3750	38.899	45.851	8597.3	16.88	103.73	65	52	313.5
22.00		0.3750	38.535	45.418	8355.8	16.71	102.76	65	52	310.6
24.00		0.3750	38.170	44.984	8118.9	16.54	101.79	65	52	307.6
26.00		0.3750	37.806	44.551	7886.5	16.37	100.82	65	52	304.7
28.00		0.3750	37.442	44.118	7658.5	16.19	99.85	65	52	301.7
30.00		0.3750	37.078	43.684	7435.0	16.02	98.87	65	52	298.8
32.00		0.3750	36.714	43.251	7215.9	15.85	97.90	65	52	295.8
34.00		0.3750	36.350	42.817	7001.2	15.68	96.93	65	52	292.9
36.00		0.3750	35.986	42.384	6790.7	15.51	95.96	65	52	289.9
38.00		0.3750	35.622	41.951	6584.5	15.34	94.99	65	52	287.0
40.00		0.3750	35.257	41.517	6382.6	15.17	94.02	65	52	284.0
42.00		0.3750	34.893	41.084	6184.8	15.00	93.05	65	52	281.1
44.00		0.3750	34.529	40.651	5991.1	14.83	92.08	65	52	278.1
44.50	Bot - Section 2	0.3750	34.438	40.542	5943.3	14.78	91.84	65	52	69.1
46.00		0.3750	34.165	40.217	5801.5	14.65	91.11	65	52	381.3
48.00		0.3750	33.801	39.784	5616.0	14.48	90.14	65	52	503.7
50.00	Top - Section 1	0.3125	34.062	33.474	4817.1	17.81	109.00	65	52	498.3
52.00		0.3125	33.698	33.113	4662.9	17.60	107.83	65	52	226.6
54.00		0.3125	33.334	32.752	4512.0	17.40	106.67	65	52	224.1
56.00		0.3125	32.969	32.390	4364.4	17.19	105.50	65	52	221.7
58.00		0.3125	32.605	32.029	4220.0	16.99	104.34	65	52	219.2
60.00		0.3125	32.241	31.668	4078.8	16.78	103.17	65	52	216.7
62.00		0.3125	31.877	31.307	3940.9	16.58	102.01	65	52	214.3
64.00		0.3125	31.513	30.946	3806.1	16.37	100.84	65	52	211.8
66.00		0.3125	31.149	30.585	3674.3	16.16	99.68	65	52	209.4
68.00		0.3125	30.785	30.223	3545.7	15.96	98.51	65	52	206.9
70.00		0.3125	30.421	29.862	3420.1	15.75	97.35	65	52	204.5
72.00		0.3125	30.056	29.501	3297.5	15.55	96.18	65	52	202.0
74.00		0.3125	29.692	29.140	3177.9	15.34	95.02	65	52	199.5
76.00		0.3125	29.328	28.779	3061.2	15.14	93.85	65	52	197.1
78.00		0.3125	28.964	28.418	2947.4	14.93	92.68	65	52	194.6
80.00		0.3125	28.600	28.057	2836.4	14.73	91.52	65	52	192.2
82.00		0.3125	28.236	27.695	2728.3	14.52	90.35	65	52	189.7
84.00		0.3125	27.872	27.334	2623.0	14.32	89.19	65	52	187.3
86.00		0.3125	27.507	26.973	2520.4	14.11	88.02	65	52	184.8
88.00		0.3125	27.143	26.612	2420.5	13.90	86.86	65	52	182.3
90.00		0.3125	26.779	26.251	2323.2	13.70	85.69	65	52	179.9
90.50	Bot - Section 3	0.3125	26.688	26.160	2299.4	13.65	85.40	65	52	44.6
92.00		0.3125	26.415	25.890	2228.7	13.49	84.53	65	52	214.1
94.00		0.3125	26.051	25.528	2136.7	13.29	83.36	65	52	282.0
94.50	Top - Section 2	0.1875	26.335	15.560	1344.1	23.36	140.45	65	52	69.9
96.00		0.1875	26.062	15.398	1302.4	23.10	139.00	65	52	79.0

Increment Length: 2 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
98.00		0.1875	25.698	15.181	1248.2	22.76	137.05	65	52	104.1
100.00		0.1875	25.334	14.965	1195.5	22.41	135.11	65	52	102.6
102.00		0.1875	24.969	14.748	1144.3	22.07	133.17	65	52	101.1
104.00		0.1875	24.605	14.531	1094.6	21.73	131.23	65	52	99.6
106.00		0.1875	24.241	14.314	1046.4	21.39	129.29	65	52	98.2
108.00		0.1875	23.877	14.098	999.6	21.04	127.34	65	52	96.7
110.00		0.1875	23.513	13.881	954.2	20.70	125.40	65	52	95.2
112.00		0.1875	23.149	13.664	910.2	20.36	123.46	65	52	93.7
114.00		0.1875	22.785	13.448	867.6	20.02	121.52	65	52	92.3
116.00		0.1875	22.421	13.231	826.3	19.67	119.58	65	52	90.8
118.00		0.1875	22.056	13.014	786.4	19.33	117.63	65	52	89.3
120.00		0.1875	21.692	12.798	747.7	18.99	115.69	65	52	87.8
122.00		0.1875	21.328	12.581	710.4	18.65	113.75	65	52	86.4
124.00		0.1875	20.964	12.364	674.3	18.30	111.81	65	52	84.9
126.00		0.1875	20.600	12.148	639.5	17.96	109.87	65	52	83.4
128.00		0.1875	20.236	11.931	605.9	17.62	107.92	65	52	81.9
130.00		0.1875	19.872	11.714	573.5	17.28	105.98	65	52	80.5
132.00		0.1875	19.508	11.497	542.2	16.93	104.04	65	52	79.0
134.00		0.1875	19.143	11.281	512.1	16.59	102.10	65	52	77.5
136.00		0.1875	18.779	11.064	483.2	16.25	100.16	65	52	76.0
138.00		0.1875	18.415	10.847	455.3	15.91	98.21	65	52	74.6
140.00		0.1875	18.051	10.631	428.6	15.56	96.27	65	52	73.1
140.50		0.1875	17.960	10.576	422.1	15.48	95.79	65	52	18.0

14973.2

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

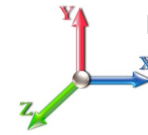
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	16.384	27.69	283.60	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		0.00	1.00	16.384	27.69	281.17	0.650	0.000	2.00	7.060	4.59	127.1	0.0	340.1
4.00		0.00	1.00	16.384	27.69	278.74	0.650	0.000	2.00	6.999	4.55	126.0	0.0	337.1
6.00		0.00	1.00	16.384	27.69	276.32	0.650	0.000	2.00	6.938	4.51	124.9	0.0	334.2
8.00		0.00	1.00	16.384	27.69	273.89	0.650	0.000	2.00	6.878	4.47	123.8	0.0	331.2
10.00		0.00	1.00	16.384	27.69	271.46	0.650	0.000	2.00	6.817	4.43	122.7	0.0	328.3
12.00		0.00	1.00	16.384	27.69	269.03	0.650	0.000	2.00	6.756	4.39	121.6	0.0	325.3
14.00		0.00	1.00	16.384	27.69	266.61	0.650	0.000	2.00	6.696	4.35	120.5	0.0	322.4
16.00		0.00	1.00	16.384	27.69	264.18	0.650	0.000	2.00	6.635	4.31	119.4	0.0	319.4
18.00		0.00	1.00	16.384	27.69	261.75	0.650	0.000	2.00	6.574	4.27	118.3	0.0	316.5
20.00		0.00	1.00	16.384	27.69	259.32	0.650	0.000	2.00	6.513	4.23	117.2	0.0	313.5
22.00		0.00	1.00	16.384	27.69	256.90	0.650	0.000	2.00	6.453	4.19	116.1	0.0	310.6
24.00		0.00	1.00	16.384	27.69	254.47	0.650	0.000	2.00	6.392	4.15	115.0	0.0	307.6
26.00		0.00	1.00	16.384	27.69	252.04	0.650	0.000	2.00	6.331	4.12	114.0	0.0	304.7
28.00		0.00	1.00	16.384	27.69	249.61	0.650	0.000	2.00	6.271	4.08	112.9	0.0	301.7
30.00		0.00	1.00	16.384	27.69	247.19	0.650	0.000	2.00	6.210	4.04	111.8	0.0	298.8
32.00		0.00	1.00	16.384	27.69	244.76	0.650	0.000	2.00	6.149	4.00	110.7	0.0	295.8
34.00		0.00	1.01	16.524	27.93	243.37	0.650	0.000	2.00	6.089	3.96	110.5	0.0	292.9
36.00		0.00	1.03	16.796	28.39	242.91	0.650	0.000	2.00	6.028	3.92	111.2	0.0	289.9
38.00		0.00	1.04	17.058	28.83	242.31	0.650	0.000	2.00	5.967	3.88	111.8	0.0	287.0
40.00		0.00	1.06	17.310	29.25	241.60	0.650	0.000	2.00	5.907	3.84	112.3	0.0	284.0
42.00		0.00	1.07	17.553	29.66	240.78	0.650	0.000	2.00	5.846	3.80	112.7	0.0	281.1
44.00		0.00	1.09	17.788	30.06	239.85	0.650	0.000	2.00	5.785	3.76	113.0	0.0	278.1
44.50	Bot - Section 2	0.00	1.09	17.845	30.16	239.61	0.650	0.000	0.50	1.437	0.93	28.2	0.0	69.1
46.00		0.00	1.10	18.015	30.45	238.83	0.650	0.000	1.50	4.366	2.84	86.4	0.0	381.3
48.00		0.00	1.11	18.235	30.82	237.73	0.650	0.000	2.00	5.768	3.75	115.5	0.0	503.7
50.00	Top - Section 1	0.00	1.13	18.449	31.18	236.54	0.650	0.000	2.00	5.707	3.71	115.7	0.0	498.3
52.00		0.00	1.14	18.657	31.53	239.73	0.650	0.000	2.00	5.647	3.67	115.7	0.0	226.6
54.00		0.00	1.15	18.859	31.87	238.42	0.650	0.000	2.00	5.586	3.63	115.7	0.0	224.1
56.00		0.00	1.16	19.056	32.21	237.04	0.650	0.000	2.00	5.525	3.59	115.7	0.0	221.7
58.00		0.00	1.17	19.248	32.53	235.60	0.650	0.000	2.00	5.465	3.55	115.5	0.0	219.2
60.00		0.00	1.19	19.436	32.85	234.10	0.650	0.000	2.00	5.404	3.51	115.4	0.0	216.7
62.00		0.00	1.20	19.619	33.16	232.55	0.650	0.000	2.00	5.343	3.47	115.2	0.0	214.3
64.00		0.00	1.21	19.797	33.46	230.94	0.650	0.000	2.00	5.282	3.43	114.9	0.0	211.8
66.00		0.00	1.22	19.972	33.75	229.27	0.650	0.000	2.00	5.222	3.39	114.6	0.0	209.4
68.00		0.00	1.23	20.143	34.04	227.56	0.650	0.000	2.00	5.161	3.35	114.2	0.0	206.9
70.00		0.00	1.24	20.311	34.33	225.80	0.650	0.000	2.00	5.100	3.32	113.8	0.0	204.5
72.00		0.00	1.25	20.475	34.60	224.00	0.650	0.000	2.00	5.040	3.28	113.4	0.0	202.0
74.00		0.00	1.26	20.636	34.87	222.15	0.650	0.000	2.00	4.979	3.24	112.9	0.0	199.5
76.00		0.00	1.27	20.794	35.14	220.27	0.650	0.000	2.00	4.918	3.20	112.3	0.0	197.1
78.00		0.00	1.28	20.949	35.40	218.34	0.650	0.000	2.00	4.858	3.16	111.8	0.0	194.6
80.00		0.00	1.29	21.101	35.66	216.38	0.650	0.000	2.00	4.797	3.12	111.2	0.0	192.2
82.00		0.00	1.30	21.250	35.91	214.38	0.650	0.000	2.00	4.736	3.08	110.6	0.0	189.7
84.00		0.00	1.31	21.397	36.16	212.34	0.650	0.000	2.00	4.676	3.04	109.9	0.0	187.3
86.00		0.00	1.31	21.541	36.40	210.27	0.650	0.000	2.00	4.615	3.00	109.2	0.0	184.8
88.00	Appurtenance(s)	0.00	1.32	21.683	36.64	208.17	0.650	0.000	2.00	4.554	2.96	108.5	0.0	182.3
90.00		0.00	1.33	21.823	36.88	206.04	0.650	0.000	2.00	4.494	2.92	107.7	0.0	179.9
90.50	Bot - Section 3	0.00	1.33	21.858	36.94	205.50	0.650	0.000	0.50	1.114	0.72	26.7	0.0	44.6

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016

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92.00	0.00	1.34	21.960	37.11	203.88	0.650	0.000	1.50	3.366	2.19	81.2	0.0	214.1
94.00	0.00	1.35	22.096	37.34	201.69	0.650	0.000	2.00	4.435	2.88	107.6	0.0	282.0
94.50 Top - Section 2	0.00	1.35	22.129	37.40	201.13	0.650	0.000	0.50	1.099	0.71	26.7	0.0	69.9
96.00	0.00	1.36	22.229	37.57	202.38	0.650	0.000	1.50	3.275	2.13	80.0	0.0	79.0
98.00	0.00	1.36	22.360	37.79	200.14	0.650	0.000	2.00	4.313	2.80	105.9	0.0	104.1
100.00	0.00	1.37	22.490	38.01	197.87	0.650	0.000	2.00	4.253	2.76	105.1	0.0	102.6
102.00	0.00	1.38	22.617	38.22	195.58	0.650	0.000	2.00	4.192	2.72	104.1	0.0	101.1
104.00	0.00	1.39	22.743	38.44	193.27	0.650	0.000	2.00	4.131	2.69	103.2	0.0	99.6
106.00	0.00	1.40	22.867	38.65	190.92	0.650	0.000	2.00	4.071	2.65	102.3	0.0	98.2
108.00	0.00	1.40	22.990	38.85	188.56	0.650	0.000	2.00	4.010	2.61	101.3	0.0	96.7
110.00	0.00	1.41	23.111	39.06	186.17	0.650	0.000	2.00	3.949	2.57	100.3	0.0	95.2
112.00	0.00	1.42	23.230	39.26	183.76	0.650	0.000	2.00	3.888	2.53	99.2	0.0	93.7
114.00 Appurtenance(s)	0.00	1.43	23.348	39.46	181.33	0.650	0.000	2.00	3.828	2.49	98.2	0.0	92.3
116.00	0.00	1.43	23.464	39.65	178.87	0.650	0.000	2.00	3.767	2.45	97.1	0.0	90.8
118.00	0.00	1.44	23.579	39.85	176.40	0.650	0.000	2.00	3.706	2.41	96.0	0.0	89.3
120.00	0.00	1.45	23.692	40.04	173.90	0.650	0.000	2.00	3.646	2.37	94.9	0.0	87.8
122.00	0.00	1.45	23.805	40.23	171.39	0.650	0.000	2.00	3.585	2.33	93.7	0.0	86.4
124.00 Appurtenance(s)	0.00	1.46	23.915	40.42	168.85	0.650	0.000	2.00	3.524	2.29	92.6	0.0	84.9
126.00	0.00	1.47	24.025	40.60	166.30	0.650	0.000	2.00	3.464	2.25	91.4	0.0	83.4
128.00	0.00	1.47	24.133	40.79	163.73	0.650	0.000	2.00	3.403	2.21	90.2	0.0	81.9
130.00	0.00	1.48	24.241	40.97	161.14	0.650	0.000	2.00	3.342	2.17	89.0	0.0	80.5
132.00	0.00	1.49	24.347	41.15	158.53	0.650	0.000	2.00	3.282	2.13	87.8	0.0	79.0
134.00	0.00	1.49	24.451	41.32	155.91	0.650	0.000	2.00	3.221	2.09	86.5	0.0	77.5
136.00	0.00	1.50	24.555	41.50	153.27	0.650	0.000	2.00	3.160	2.05	85.2	0.0	76.0
138.00	0.00	1.50	24.658	41.67	150.61	0.650	0.000	2.00	3.100	2.01	84.0	0.0	74.6
140.00	0.00	1.51	24.759	41.84	147.93	0.650	0.000	2.00	3.039	1.98	82.7	0.0	73.1
140.50	0.00	1.51	24.785	41.89	147.26	0.650	0.000	0.50	0.750	0.49	20.4	0.0	18.0
Totals:								140.50			7,610.6		14,973.2

Discrete Appurtenance Forces

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

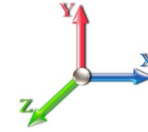
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016
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Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	124.00	Kathrein 782 10250	6	23.970	40.510	0.50	1.56	38.40	0.000	1.000	63.20	0.00	63.20
2	124.00	CCI DTMABP7819VG12A	6	23.970	40.510	0.50	1.17	114.00	0.000	1.000	47.40	0.00	47.40
3	124.00	CCI OPA-65R-LCUU-H6	3	23.970	40.510	0.76	23.62	219.00	0.000	1.000	956.88	0.00	956.88
4	124.00	Ericsson RRUS-11	3	23.970	40.510	0.50	4.41	162.00	0.000	1.000	178.65	0.00	178.65
5	124.00	Ericsson RRUS-32	6	23.970	40.510	0.50	12.12	462.00	0.000	1.000	490.98	0.00	490.98
6	124.00	Raycap DC6-48-60-18-8F	2	23.970	40.510	1.00	2.94	65.60	0.000	1.000	119.10	0.00	119.10
7	124.00	Kathrein 800-10121	3	23.970	40.510	0.80	13.10	132.30	0.000	1.000	530.84	0.00	530.84
8	124.00	KMW	3	23.970	40.510	0.78	19.33	145.50	0.000	1.000	782.99	0.00	782.99
9	124.00	Platform w/ Hand Rails	1	23.915	40.417	1.00	32.00	2000.00	0.000	0.000	1293.35	0.00	0.00
10	124.00	Qunitel QS66512-2	3	23.915	40.417	0.91	22.81	333.00	0.000	0.000	921.75	0.00	0.00
11	114.00	Samsung SPI-22132825WB	3	23.289	39.359	0.80	4.37	99.30	0.000	-1.000	171.92	0.00	-171.92
12	114.00	RFS APXVTM14	3	23.522	39.752	0.90	21.22	350.10	0.000	3.000	843.61	0.00	2530.83
13	114.00	RFS APXVSP18	3	23.406	39.556	0.96	26.32	375.90	0.000	1.000	1041.25	0.00	1041.25
14	114.00	Low Profile Platform	1	23.348	39.458	1.00	22.00	1800.00	0.000	0.000	868.07	0.00	0.00
15	114.00	Argus LLPX310R-V1	3	23.377	39.507	0.70	10.28	152.10	0.000	0.500	406.19	0.00	203.10
16	114.00	Andrew VHLP1-23-DW1	1	23.607	39.897	0.80	1.29	14.00	0.000	4.500	51.39	0.00	231.24
17	114.00	Alcatel Lucent	3	23.522	39.752	0.50	2.55	210.00	0.000	3.000	101.37	0.00	304.10
18	114.00	Alcatel Lucent RRH2X50-800	3	23.260	39.309	0.50	3.38	192.00	0.000	-1.500	132.67	0.00	-199.00
19	114.00	Alcatel Lucent	3	23.522	39.752	0.50	3.92	180.00	0.000	3.000	155.63	0.00	466.88
20	114.00	20" x 18" x 9" Junction Box	1	23.348	39.458	0.90	3.15	20.00	0.000	0.000	124.29	0.00	0.00
21	114.00	Andrew VHLP2-23-DW1	1	23.607	39.897	0.80	3.75	31.00	0.000	4.500	149.69	0.00	673.62
22	88.00	Antel	3	21.823	36.881	0.75	17.89	127.80	0.000	2.000	659.71	0.00	1319.41
23	88.00	Alcatel Lucent RRH2X60-700	3	21.823	36.881	0.50	6.79	270.00	0.000	2.000	250.61	0.00	501.21
24	88.00	Alcatel Lucent	3	21.823	36.881	0.50	6.79	270.00	0.000	2.000	250.61	0.00	501.21
25	88.00	Alcatel Lucent	3	21.823	36.881	0.50	3.85	165.00	0.000	2.000	142.18	0.00	284.35
26	88.00	Swedcom SLCP 2x6014	3	21.823	36.881	0.89	20.64	136.80	0.000	2.000	761.19	0.00	1522.37
27	88.00	Commscope SBNHH-1D65B	6	21.823	36.881	0.84	42.79	458.40	0.000	2.000	1578.12	0.00	3156.23
28	88.00	Platform w/ Hand Rails	1	21.823	36.881	1.00	40.00	2000.00	0.000	2.000	1475.23	0.00	2950.47
29	88.00	RFS DB-T1-6Z-8AB-0Z	1	21.823	36.881	0.76	4.26	44.00	0.000	2.000	156.96	0.00	313.93
Totals:							10,568.20				14,705.81		

Total Applied Force Summary

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

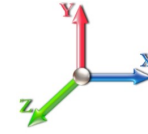
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Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		145.33	407.05	0.00	0.00
4.00		144.24	404.10	0.00	0.00
6.00		143.15	401.15	0.00	0.00
8.00		142.06	398.20	0.00	0.00
10.00		140.96	395.25	0.00	0.00
12.00		139.87	392.30	0.00	0.00
14.00		138.78	389.35	0.00	0.00
16.00		137.69	386.40	0.00	0.00
18.00		136.60	383.45	0.00	0.00
20.00		135.50	380.50	0.00	0.00
22.00		116.14	377.55	0.00	0.00
24.00		115.04	374.60	0.00	0.00
26.00		113.95	371.65	0.00	0.00
28.00		112.86	368.70	0.00	0.00
30.00		111.77	365.75	0.00	0.00
32.00		110.67	362.80	0.00	0.00
34.00		110.52	359.86	0.00	0.00
36.00		111.22	356.91	0.00	0.00
38.00		111.82	353.96	0.00	0.00
40.00		112.31	351.01	0.00	0.00
42.00		112.72	348.06	0.00	0.00
44.00		113.04	345.11	0.00	0.00
44.50		28.17	85.82	0.00	0.00
46.00		86.40	431.58	0.00	0.00
48.00		115.54	570.70	0.00	0.00
50.00		115.67	565.30	0.00	0.00
52.00		115.73	293.56	0.00	0.00
54.00		115.72	291.11	0.00	0.00
56.00		115.66	288.65	0.00	0.00
58.00		115.54	286.19	0.00	0.00
60.00		115.37	283.73	0.00	0.00
62.00		115.15	281.27	0.00	0.00
64.00		114.88	278.82	0.00	0.00
66.00		114.56	276.36	0.00	0.00
68.00		114.20	273.90	0.00	0.00
70.00		113.80	271.44	0.00	0.00
72.00		113.35	268.98	0.00	0.00
74.00		112.87	266.53	0.00	0.00
76.00		112.35	264.07	0.00	0.00
78.00		111.79	261.61	0.00	0.00
80.00		111.19	259.15	0.00	0.00
82.00		110.56	256.70	0.00	0.00
84.00		109.90	254.24	0.00	0.00
86.00		109.20	251.78	0.00	0.00
88.00	(23) appurtenances	5383.07	3721.32	0.00	10549.18
90.00		107.72	246.86	0.00	0.00
90.50		26.75	53.99	0.00	0.00
92.00		81.20	242.27	0.00	0.00

Total Applied Force Summary

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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94.00		107.64	319.59	0.00	0.00
94.50		26.72	79.28	0.00	0.00
96.00		79.97	107.23	0.00	0.00
98.00		105.95	141.68	0.00	0.00
100.00		105.06	140.20	0.00	0.00
102.00		104.15	138.73	0.00	0.00
104.00		103.21	137.25	0.00	0.00
106.00		102.25	135.78	0.00	0.00
108.00		101.27	134.30	0.00	0.00
110.00		100.26	132.83	0.00	0.00
112.00		99.23	131.35	0.00	0.00
114.00	(25) appurtenances	4144.25	3554.28	0.00	5080.10
116.00		97.10	113.36	0.00	0.00
118.00		96.00	111.89	0.00	0.00
120.00		94.88	110.41	0.00	0.00
122.00		93.75	108.94	0.00	0.00
124.00	(36) appurtenances	5477.73	3779.26	0.00	3170.04
126.00		91.41	83.41	0.00	0.00
128.00		90.21	81.93	0.00	0.00
130.00		89.00	80.46	0.00	0.00
132.00		87.77	78.98	0.00	0.00
134.00		86.51	77.51	0.00	0.00
136.00		85.24	76.03	0.00	0.00
138.00		83.96	74.56	0.00	0.00
140.00		82.65	73.08	0.00	0.00
140.50		20.43	18.04	0.00	0.00
Totals:		22,499.18	29,120.02	0.00	18,799.32

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

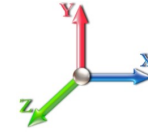
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Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-22.527	-29.097	0.000	0.000	0.000	-2227.672	0.000	0.000	0.000	0.000	0.000
2.00	-22.437	-28.647	0.000	0.000	0.000	-2182.618	-0.024	0.000	0.024	-0.111	0.000
4.00	-22.347	-28.199	0.000	0.000	0.000	-2137.745	-0.095	0.000	0.095	-0.223	0.000
6.00	-22.257	-27.755	0.000	0.000	0.000	-2093.052	-0.213	0.000	0.213	-0.336	0.000
8.00	-22.166	-27.314	0.000	0.000	0.000	-2048.539	-0.378	0.000	0.378	-0.449	0.000
10.00	-22.075	-26.876	0.000	0.000	0.000	-2004.208	-0.591	0.000	0.591	-0.562	0.000
12.00	-21.984	-26.442	0.000	0.000	0.000	-1960.059	-0.851	0.000	0.851	-0.677	0.000
14.00	-21.892	-26.010	0.000	0.000	0.000	-1916.092	-1.159	0.000	1.159	-0.791	0.000
16.00	-21.800	-25.582	0.000	0.000	0.000	-1872.309	-1.516	0.000	1.516	-0.907	0.000
18.00	-21.708	-25.157	0.000	0.000	0.000	-1828.709	-1.921	0.000	1.921	-1.023	0.000
20.00	-21.616	-24.735	0.000	0.000	0.000	-1785.293	-2.374	0.000	2.374	-1.139	0.000
22.00	-21.542	-24.316	0.000	0.000	0.000	-1742.061	-2.877	0.000	2.877	-1.256	0.000
24.00	-21.467	-23.900	0.000	0.000	0.000	-1698.979	-3.428	0.000	3.428	-1.373	0.000
26.00	-21.392	-23.488	0.000	0.000	0.000	-1656.045	-4.028	0.000	4.028	-1.490	0.000
28.00	-21.317	-23.078	0.000	0.000	0.000	-1613.262	-4.678	0.000	4.678	-1.608	0.000
30.00	-21.242	-22.672	0.000	0.000	0.000	-1570.628	-5.377	0.000	5.377	-1.726	0.000
32.00	-21.166	-22.269	0.000	0.000	0.000	-1528.146	-6.126	0.000	6.126	-1.845	0.000
34.00	-21.089	-21.870	0.000	0.000	0.000	-1485.815	-6.925	0.000	6.925	-1.964	0.000
36.00	-21.010	-21.473	0.000	0.000	0.000	-1443.638	-7.773	0.000	7.773	-2.083	0.000
38.00	-20.929	-21.080	0.000	0.000	0.000	-1401.619	-8.671	0.000	8.671	-2.202	0.000
40.00	-20.846	-20.690	0.000	0.000	0.000	-1359.762	-9.619	0.000	9.619	-2.321	0.000
42.00	-20.761	-20.304	0.000	0.000	0.000	-1318.071	-10.617	0.000	10.617	-2.441	0.000
44.00	-20.659	-19.937	0.000	0.000	0.000	-1276.550	-11.665	0.000	11.665	-2.560	0.000
44.50	-20.648	-19.831	0.000	0.000	0.000	-1266.220	-11.935	0.000	11.935	-2.590	0.000
46.00	-20.577	-19.367	0.000	0.000	0.000	-1235.249	-12.763	0.000	12.763	-2.680	0.000
48.00	-20.473	-18.760	0.000	0.000	0.000	-1194.095	-13.911	0.000	13.911	-2.799	0.000
50.00	-20.367	-18.159	0.000	0.000	0.000	-1153.149	-15.109	0.000	15.109	-2.918	0.000
52.00	-20.276	-17.827	0.000	0.000	0.000	-1112.415	-16.357	0.000	16.357	-3.037	0.000
54.00	-20.185	-17.496	0.000	0.000	0.000	-1071.864	-17.657	0.000	17.657	-3.170	0.000
56.00	-20.093	-17.168	0.000	0.000	0.000	-1031.494	-19.013	0.000	19.013	-3.303	0.000
58.00	-20.000	-16.843	0.000	0.000	0.000	-991.309	-20.425	0.000	20.425	-3.435	0.000
60.00	-19.905	-16.521	0.000	0.000	0.000	-951.310	-21.891	0.000	21.891	-3.566	0.000
62.00	-19.809	-16.203	0.000	0.000	0.000	-911.501	-23.412	0.000	23.412	-3.695	0.000
64.00	-19.712	-15.889	0.000	0.000	0.000	-871.884	-24.987	0.000	24.987	-3.824	0.000
66.00	-19.613	-15.577	0.000	0.000	0.000	-832.462	-26.616	0.000	26.616	-3.952	0.000
68.00	-19.513	-15.270	0.000	0.000	0.000	-793.237	-28.297	0.000	28.297	-4.077	0.000
70.00	-19.412	-14.965	0.000	0.000	0.000	-754.211	-30.031	0.000	30.031	-4.202	0.000
72.00	-19.310	-14.665	0.000	0.000	0.000	-715.387	-31.816	0.000	31.816	-4.324	0.000
74.00	-19.207	-14.368	0.000	0.000	0.000	-676.767	-33.652	0.000	33.652	-4.444	0.000
76.00	-19.103	-14.075	0.000	0.000	0.000	-638.353	-35.537	0.000	35.537	-4.562	0.000
78.00	-18.998	-13.785	0.000	0.000	0.000	-600.147	-37.472	0.000	37.472	-4.677	0.000
80.00	-18.892	-13.500	0.000	0.000	0.000	-562.152	-39.453	0.000	39.453	-4.789	0.000
82.00	-18.785	-13.218	0.000	0.000	0.000	-524.368	-41.481	0.000	41.481	-4.898	0.000
84.00	-18.677	-12.941	0.000	0.000	0.000	-486.799	-43.553	0.000	43.553	-5.003	0.000
86.00	-18.568	-12.667	0.000	0.000	0.000	-449.445	-45.669	0.000	45.669	-5.105	0.000
88.00	-12.888	-9.424	0.000	0.000	0.000	-401.761	-47.826	0.000	47.826	-5.202	0.000
90.00	-12.767	-9.175	0.000	0.000	0.000	-375.986	-50.023	0.000	50.023	-5.294	0.000
90.50	-12.743	-9.114	0.000	0.000	0.000	-369.602	-50.578	0.000	50.578	-5.317	0.000
92.00	-12.651	-8.863	0.000	0.000	0.000	-350.489	-52.257	0.000	52.257	-5.383	0.000

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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94.00	-12.522	-8.544	0.000	0.000	0.000	-325.187	-54.527	0.000	54.527	-5.470	0.000
94.50	-12.494	-8.458	0.000	0.000	0.000	-318.927	-55.100	0.000	55.100	-5.491	0.000
96.00	-12.418	-8.338	0.000	0.000	0.000	-300.187	-56.833	0.000	56.833	-5.554	0.000
98.00	-12.316	-8.181	0.000	0.000	0.000	-275.352	-59.184	0.000	59.184	-5.679	0.000
100.00	-12.214	-8.027	0.000	0.000	0.000	-250.720	-61.586	0.000	61.586	-5.799	0.000
102.00	-12.111	-7.877	0.000	0.000	0.000	-226.293	-64.036	0.000	64.036	-5.913	0.000
104.00	-12.008	-7.729	0.000	0.000	0.000	-202.071	-66.532	0.000	66.532	-6.019	0.000
106.00	-11.905	-7.586	0.000	0.000	0.000	-178.055	-69.071	0.000	69.071	-6.118	0.000
108.00	-11.801	-7.445	0.000	0.000	0.000	-154.246	-71.649	0.000	71.649	-6.208	0.000
110.00	-11.696	-7.309	0.000	0.000	0.000	-130.645	-74.264	0.000	74.264	-6.289	0.000
112.00	-11.592	-7.176	0.000	0.000	0.000	-107.252	-76.909	0.000	76.909	-6.360	0.000
114.00	-7.081	-4.099	0.000	0.000	0.000	-78.990	-79.582	0.000	79.582	-6.420	0.000
116.00	-6.975	-3.992	0.000	0.000	0.000	-64.828	-82.277	0.000	82.277	-6.467	0.000
118.00	-6.869	-3.887	0.000	0.000	0.000	-50.878	-84.990	0.000	84.990	-6.507	0.000
120.00	-6.764	-3.785	0.000	0.000	0.000	-37.140	-87.717	0.000	87.717	-6.539	0.000
122.00	-6.660	-3.685	0.000	0.000	0.000	-23.611	-90.457	0.000	90.457	-6.562	0.000
124.00	-0.786	-0.558	0.000	0.000	0.000	-7.121	-93.203	0.000	93.203	-6.576	0.000
126.00	-0.686	-0.485	0.000	0.000	0.000	-5.550	-95.953	0.000	95.953	-6.581	0.000
128.00	-0.587	-0.414	0.000	0.000	0.000	-4.179	-98.705	0.000	98.705	-6.585	0.000
130.00	-0.489	-0.344	0.000	0.000	0.000	-3.006	-101.458	0.000	101.458	-6.589	0.000
132.00	-0.393	-0.276	0.000	0.000	0.000	-2.028	-104.212	0.000	104.212	-6.591	0.000
134.00	-0.298	-0.209	0.000	0.000	0.000	-1.242	-106.968	0.000	106.968	-6.593	0.000
136.00	-0.205	-0.143	0.000	0.000	0.000	-0.646	-109.723	0.000	109.723	-6.594	0.000
138.00	-0.113	-0.079	0.000	0.000	0.000	-0.237	-112.480	0.000	112.480	-6.595	0.000
140.00	-0.022	-0.016	0.000	0.000	0.000	-0.011	-115.236	0.000	115.236	-6.595	0.000
140.50	-0.020	0.000	0.000	0.000	0.000	0.000	0.000	0.000	115.925	-6.595	0.000

Resulting Stresses

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

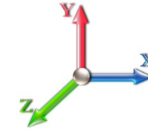
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Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.58	0.90	0.00	0.00	0.00	51.22	51.82	52.0	0.997
2.00	0.58	0.91	0.00	0.00	0.00	51.06	51.66	52.0	0.994
4.00	0.57	0.91	0.00	0.00	0.00	50.90	51.50	52.0	0.991
6.00	0.57	0.92	0.00	0.00	0.00	50.73	51.32	52.0	0.987
8.00	0.56	0.92	0.00	0.00	0.00	50.55	51.13	52.0	0.984
10.00	0.56	0.93	0.00	0.00	0.00	50.35	50.94	52.0	0.980
12.00	0.56	0.93	0.00	0.00	0.00	50.15	50.73	52.0	0.976
14.00	0.55	0.94	0.00	0.00	0.00	49.93	50.51	52.0	0.972
16.00	0.55	0.94	0.00	0.00	0.00	49.71	50.28	52.0	0.967
18.00	0.54	0.95	0.00	0.00	0.00	49.47	50.04	52.0	0.963
20.00	0.54	0.95	0.00	0.00	0.00	49.21	49.78	52.0	0.958
22.00	0.54	0.96	0.00	0.00	0.00	48.95	49.51	52.0	0.952
24.00	0.53	0.96	0.00	0.00	0.00	48.67	49.22	52.0	0.947
26.00	0.53	0.97	0.00	0.00	0.00	48.37	48.92	52.0	0.941
28.00	0.52	0.97	0.00	0.00	0.00	48.05	48.61	52.0	0.935
30.00	0.52	0.98	0.00	0.00	0.00	47.72	48.27	52.0	0.929
32.00	0.51	0.99	0.00	0.00	0.00	47.37	47.92	52.0	0.922
34.00	0.51	0.99	0.00	0.00	0.00	47.00	47.54	52.0	0.915
36.00	0.51	1.00	0.00	0.00	0.00	46.61	47.15	52.0	0.907
38.00	0.50	1.01	0.00	0.00	0.00	46.20	46.73	52.0	0.899
40.00	0.50	1.01	0.00	0.00	0.00	45.76	46.29	52.0	0.891
42.00	0.49	1.02	0.00	0.00	0.00	45.31	45.83	52.0	0.882
44.00	0.49	1.02	0.00	0.00	0.00	44.82	45.35	52.0	0.872
44.50	0.49	1.03	0.00	0.00	0.00	44.70	45.23	52.0	0.870
46.00	0.48	1.03	0.00	0.00	0.00	44.32	44.84	52.0	0.863
48.00	0.47	1.04	0.00	0.00	0.00	43.79	44.29	52.0	0.852
50.00	0.54	1.23	0.00	0.00	0.00	49.68	50.27	52.0	0.967
52.00	0.54	1.23	0.00	0.00	0.00	48.98	49.56	52.0	0.954
54.00	0.53	1.24	0.00	0.00	0.00	48.25	48.83	52.0	0.939
56.00	0.53	1.25	0.00	0.00	0.00	47.47	48.05	52.0	0.924
58.00	0.53	1.26	0.00	0.00	0.00	46.66	47.24	52.0	0.909
60.00	0.52	1.27	0.00	0.00	0.00	45.81	46.39	52.0	0.892
62.00	0.52	1.28	0.00	0.00	0.00	44.92	45.49	52.0	0.875
64.00	0.51	1.28	0.00	0.00	0.00	43.98	44.55	52.0	0.857
66.00	0.51	1.29	0.00	0.00	0.00	43.00	43.56	52.0	0.838
68.00	0.51	1.30	0.00	0.00	0.00	41.96	42.52	52.0	0.818
70.00	0.50	1.31	0.00	0.00	0.00	40.87	41.43	52.0	0.797
72.00	0.50	1.32	0.00	0.00	0.00	39.73	40.29	52.0	0.775
74.00	0.49	1.33	0.00	0.00	0.00	38.53	39.09	52.0	0.752
76.00	0.49	1.34	0.00	0.00	0.00	37.26	37.82	52.0	0.728
78.00	0.49	1.35	0.00	0.00	0.00	35.93	36.49	52.0	0.702
80.00	0.48	1.36	0.00	0.00	0.00	34.53	35.09	52.0	0.675
82.00	0.48	1.37	0.00	0.00	0.00	33.06	33.62	52.0	0.647
84.00	0.47	1.38	0.00	0.00	0.00	31.52	32.08	52.0	0.617
86.00	0.47	1.39	0.00	0.00	0.00	29.89	30.45	52.0	0.586
88.00	0.35	0.98	0.00	0.00	0.00	27.45	27.85	52.0	0.536
90.00	0.35	0.98	0.00	0.00	0.00	26.40	26.81	52.0	0.516

Resulting Stresses

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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90.50	0.35	0.98	0.00	0.00	0.00	26.14	26.54	52.0	0.511
92.00	0.34	0.98	0.00	0.00	0.00	25.31	25.71	52.0	0.495
94.00	0.33	0.99	0.00	0.00	0.00	24.16	24.55	52.0	0.472
94.50	0.54	1.62	0.00	0.00	0.00	38.07	38.72	52.0	0.745
96.00	0.54	1.63	0.00	0.00	0.00	36.60	37.24	52.0	0.717
98.00	0.54	1.64	0.00	0.00	0.00	34.54	35.19	52.0	0.677
100.00	0.54	1.64	0.00	0.00	0.00	32.37	33.03	52.0	0.635
102.00	0.53	1.66	0.00	0.00	0.00	30.08	30.75	52.0	0.592
104.00	0.53	1.67	0.00	0.00	0.00	27.67	28.35	52.0	0.545
106.00	0.53	1.68	0.00	0.00	0.00	25.13	25.83	52.0	0.497
108.00	0.53	1.69	0.00	0.00	0.00	22.45	23.16	52.0	0.446
110.00	0.53	1.70	0.00	0.00	0.00	19.61	20.35	52.0	0.392
112.00	0.53	1.71	0.00	0.00	0.00	16.62	17.40	52.0	0.335
114.00	0.30	1.06	0.00	0.00	0.00	12.64	13.07	52.0	0.252
116.00	0.30	1.06	0.00	0.00	0.00	10.72	11.17	52.0	0.215
118.00	0.30	1.06	0.00	0.00	0.00	8.69	9.18	52.0	0.177
120.00	0.30	1.07	0.00	0.00	0.00	6.56	7.10	52.0	0.137
122.00	0.29	1.07	0.00	0.00	0.00	4.32	4.97	52.0	0.096
124.00	0.05	0.13	0.00	0.00	0.00	1.35	1.41	52.0	0.027
126.00	0.04	0.11	0.00	0.00	0.00	1.09	1.15	52.0	0.022
128.00	0.03	0.10	0.00	0.00	0.00	0.85	0.90	52.0	0.017
130.00	0.03	0.08	0.00	0.00	0.00	0.63	0.68	52.0	0.013
132.00	0.02	0.07	0.00	0.00	0.00	0.44	0.48	52.0	0.009
134.00	0.02	0.05	0.00	0.00	0.00	0.28	0.32	52.0	0.006
136.00	0.01	0.04	0.00	0.00	0.00	0.15	0.18	52.0	0.003
138.00	0.01	0.02	0.00	0.00	0.00	0.06	0.07	52.0	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000
140.50	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

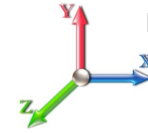
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	12.287	20.77	245.60	0.650	0.500	0.00	0.000	0.00	0.0	0.0	0.0
2.00		0.00	1.00	12.287	20.77	243.50	0.650	0.500	2.00	7.226	4.70	97.5	52.7	392.7
4.00		0.00	1.00	12.287	20.77	241.39	0.650	0.500	2.00	7.166	4.66	96.7	52.2	389.3
6.00		0.00	1.00	12.287	20.77	239.29	0.650	0.500	2.00	7.105	4.62	95.9	51.8	385.9
8.00		0.00	1.00	12.287	20.77	237.19	0.650	0.500	2.00	7.044	4.58	95.1	51.3	382.5
10.00		0.00	1.00	12.287	20.77	235.09	0.650	0.500	2.00	6.984	4.54	94.3	50.9	379.1
12.00		0.00	1.00	12.287	20.77	232.98	0.650	0.500	2.00	6.923	4.50	93.4	50.4	375.7
14.00		0.00	1.00	12.287	20.77	230.88	0.650	0.500	2.00	6.862	4.46	92.6	50.0	372.3
16.00		0.00	1.00	12.287	20.77	228.78	0.650	0.500	2.00	6.802	4.42	91.8	49.5	368.9
18.00		0.00	1.00	12.287	20.77	226.68	0.650	0.500	2.00	6.741	4.38	91.0	49.1	365.5
20.00		0.00	1.00	12.287	20.77	224.58	0.650	0.500	2.00	6.680	4.34	90.2	48.6	362.1
22.00		0.00	1.00	12.287	20.77	222.47	0.650	0.500	2.00	6.619	4.30	89.3	48.2	358.7
24.00		0.00	1.00	12.287	20.77	220.37	0.650	0.500	2.00	6.559	4.26	88.5	47.7	355.3
26.00		0.00	1.00	12.287	20.77	218.27	0.650	0.500	2.00	6.498	4.22	87.7	47.3	352.0
28.00		0.00	1.00	12.287	20.77	216.17	0.650	0.500	2.00	6.437	4.18	86.9	46.8	348.6
30.00		0.00	1.00	12.287	20.77	214.06	0.650	0.500	2.00	6.377	4.14	86.1	46.4	345.2
32.00		0.00	1.00	12.287	20.77	211.96	0.650	0.500	2.00	6.316	4.11	85.3	45.9	341.8
34.00		0.00	1.01	12.393	20.94	210.76	0.650	0.500	2.00	6.255	4.07	85.2	45.5	338.4
36.00		0.00	1.03	12.597	21.29	210.36	0.650	0.500	2.00	6.195	4.03	85.7	45.0	335.0
38.00		0.00	1.04	12.793	21.62	209.84	0.650	0.500	2.00	6.134	3.99	86.2	44.6	331.6
40.00		0.00	1.06	12.982	21.94	209.22	0.650	0.500	2.00	6.073	3.95	86.6	44.1	328.2
42.00		0.00	1.07	13.164	22.25	208.51	0.650	0.500	2.00	6.013	3.91	86.9	43.7	324.8
44.00		0.00	1.09	13.340	22.54	207.71	0.650	0.500	2.00	5.952	3.87	87.2	43.2	321.4
44.50	Bot - Section 2	0.00	1.09	13.383	22.62	207.50	0.650	0.500	0.50	1.478	0.96	21.7	10.8	79.9
46.00		0.00	1.10	13.510	22.83	206.83	0.650	0.500	1.50	4.491	2.92	66.6	32.7	414.0
48.00		0.00	1.11	13.676	23.11	205.87	0.650	0.500	2.00	5.935	3.86	89.2	43.1	546.8
50.00	Top - Section 1	0.00	1.13	13.836	23.38	204.85	0.650	0.500	2.00	5.874	3.82	89.3	42.7	541.0
52.00		0.00	1.14	13.992	23.65	207.61	0.650	0.500	2.00	5.813	3.78	89.4	42.2	268.8
54.00		0.00	1.15	14.144	23.90	206.47	0.650	0.500	2.00	5.753	3.74	89.4	41.8	265.9
56.00		0.00	1.16	14.291	24.15	205.28	0.650	0.500	2.00	5.692	3.70	89.4	41.3	263.0
58.00		0.00	1.17	14.435	24.40	204.03	0.650	0.500	2.00	5.631	3.66	89.3	40.9	260.1
60.00		0.00	1.19	14.576	24.63	202.73	0.650	0.500	2.00	5.571	3.62	89.2	40.4	257.2
62.00		0.00	1.20	14.713	24.87	201.39	0.650	0.500	2.00	5.510	3.58	89.1	40.0	254.3
64.00		0.00	1.21	14.847	25.09	199.99	0.650	0.500	2.00	5.449	3.54	88.9	39.5	251.3
66.00		0.00	1.22	14.978	25.31	198.55	0.650	0.500	2.00	5.388	3.50	88.7	39.1	248.4
68.00		0.00	1.23	15.107	25.53	197.07	0.650	0.500	2.00	5.328	3.46	88.4	38.6	245.5
70.00		0.00	1.24	15.232	25.74	195.55	0.650	0.500	2.00	5.267	3.42	88.1	38.2	242.6
72.00		0.00	1.25	15.355	25.95	193.98	0.650	0.500	2.00	5.206	3.38	87.8	37.7	239.7
74.00		0.00	1.26	15.476	26.15	192.39	0.650	0.500	2.00	5.146	3.34	87.5	37.3	236.8
76.00		0.00	1.27	15.594	26.35	190.75	0.650	0.500	2.00	5.085	3.31	87.1	36.8	233.9
78.00		0.00	1.28	15.711	26.55	189.08	0.650	0.500	2.00	5.024	3.27	86.7	36.4	231.0
80.00		0.00	1.29	15.825	26.74	187.38	0.650	0.500	2.00	4.964	3.23	86.3	35.9	228.1
82.00		0.00	1.30	15.937	26.93	185.65	0.650	0.500	2.00	4.903	3.19	85.8	35.5	225.2
84.00		0.00	1.31	16.047	27.12	183.89	0.650	0.500	2.00	4.842	3.15	85.4	35.0	222.3
86.00		0.00	1.31	16.155	27.30	182.10	0.650	0.500	2.00	4.782	3.11	84.9	34.6	219.4
88.00	Appurtenance(s)	0.00	1.32	16.262	27.48	180.28	0.650	0.500	2.00	4.721	3.07	84.3	34.1	216.5
90.00		0.00	1.33	16.366	27.66	178.43	0.650	0.500	2.00	4.660	3.03	83.8	33.7	213.6
90.50	Bot - Section 3	0.00	1.33	16.392	27.70	177.97	0.650	0.500	0.50	1.156	0.75	20.8	8.4	53.0

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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92.00	0.00	1.34	16.469	27.83	176.56	0.650	0.500	1.50	3.491	2.27	63.2	25.3	239.3
94.00	0.00	1.35	16.571	28.00	174.66	0.650	0.500	2.00	4.601	2.99	83.8	33.2	315.2
94.50 Top - Section 2	0.00	1.35	16.596	28.05	174.18	0.650	0.500	0.50	1.141	0.74	20.8	8.3	78.2
96.00	0.00	1.36	16.671	28.17	175.26	0.650	0.500	1.50	3.400	2.21	62.3	24.6	103.6
98.00	0.00	1.36	16.769	28.34	173.32	0.650	0.500	2.00	4.480	2.91	82.5	32.3	136.4
100.00	0.00	1.37	16.866	28.50	171.36	0.650	0.500	2.00	4.419	2.87	81.9	31.9	134.5
102.00	0.00	1.38	16.962	28.67	169.37	0.650	0.500	2.00	4.359	2.83	81.2	31.4	132.5
104.00	0.00	1.39	17.056	28.83	167.37	0.650	0.500	2.00	4.298	2.79	80.5	31.0	130.6
106.00	0.00	1.40	17.150	28.98	165.34	0.650	0.500	2.00	4.237	2.75	79.8	30.5	128.7
108.00	0.00	1.40	17.241	29.14	163.29	0.650	0.500	2.00	4.177	2.71	79.1	30.1	126.8
110.00	0.00	1.41	17.332	29.29	161.22	0.650	0.500	2.00	4.116	2.68	78.4	29.6	124.8
112.00	0.00	1.42	17.421	29.44	159.14	0.650	0.500	2.00	4.055	2.64	77.6	29.2	122.9
114.00 Appurtenance(s)	0.00	1.43	17.510	29.59	157.03	0.650	0.500	2.00	3.994	2.60	76.8	28.7	121.0
116.00	0.00	1.43	17.597	29.74	154.90	0.650	0.500	2.00	3.934	2.56	76.0	28.3	119.1
118.00	0.00	1.44	17.683	29.88	152.76	0.650	0.500	2.00	3.873	2.52	75.2	27.8	117.1
120.00	0.00	1.45	17.768	30.03	150.60	0.650	0.500	2.00	3.812	2.48	74.4	27.4	115.2
122.00	0.00	1.45	17.852	30.17	148.42	0.650	0.500	2.00	3.752	2.44	73.6	26.9	113.3
124.00 Appurtenance(s)	0.00	1.46	17.936	30.31	146.23	0.650	0.500	2.00	3.691	2.40	72.7	26.5	111.4
126.00	0.00	1.47	18.018	30.45	144.02	0.650	0.500	2.00	3.630	2.36	71.9	26.0	109.5
128.00	0.00	1.47	18.099	30.59	141.79	0.650	0.500	2.00	3.570	2.32	71.0	25.6	107.5
130.00	0.00	1.48	18.179	30.72	139.55	0.650	0.500	2.00	3.509	2.28	70.1	25.1	105.6
132.00	0.00	1.49	18.259	30.86	137.29	0.650	0.500	2.00	3.448	2.24	69.2	24.7	103.7
134.00	0.00	1.49	18.337	30.99	135.02	0.650	0.500	2.00	3.388	2.20	68.2	24.2	101.8
136.00	0.00	1.50	18.415	31.12	132.73	0.650	0.500	2.00	3.327	2.16	67.3	23.8	99.8
138.00	0.00	1.50	18.492	31.25	130.43	0.650	0.500	2.00	3.266	2.12	66.3	23.3	97.9
140.00	0.00	1.51	18.568	31.38	128.11	0.650	0.500	2.00	3.206	2.08	65.4	22.9	96.0
140.50	0.00	1.51	18.587	31.41	127.53	0.650	0.500	0.50	0.792	0.51	16.2	5.7	23.7
Totals:								140.50			5,902.4		17,629.2

Discrete Appurtenance Forces

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

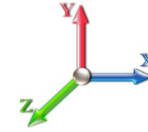
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016
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Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	124.00	Kathrein 782 10250	6	17.977	30.381	0.81	3.35	60.00	0.000	1.000	101.88	0.00	101.88
2	124.00	CCI DTMABP7819VG12A	6	17.977	30.381	0.58	1.68	147.30	0.000	1.000	50.92	0.00	50.92
3	124.00	CCI OPA-65R-LCUU-H6	3	17.977	30.381	0.77	25.06	380.10	0.000	1.000	761.45	0.00	761.45
4	124.00	Ericsson RRUS-11	3	17.977	30.381	0.77	7.23	207.93	0.000	1.000	219.51	0.00	219.51
5	124.00	Ericsson RRUS-32	6	17.977	30.381	0.85	21.85	602.64	0.000	1.000	663.92	0.00	663.92
6	124.00	Raycap DC6-48-60-18-8F	2	17.977	30.381	1.00	3.34	101.00	0.000	1.000	101.47	0.00	101.47
7	124.00	Kathrein 800-10121	3	17.977	30.381	0.81	15.14	222.30	0.000	1.000	459.93	0.00	459.93
8	124.00	KMW	3	17.977	30.381	0.79	20.69	275.10	0.000	1.000	628.58	0.00	628.58
9	124.00	Platform w/ Hand Rails	1	17.936	30.311	1.00	40.00	2500.00	0.000	0.000	1212.44	0.00	0.00
10	124.00	Qunitel QS66512-2	3	17.936	30.311	0.91	24.08	489.69	0.000	0.000	729.95	0.00	0.00
11	114.00	Samsung SPI-22132825WB	3	17.466	29.517	0.85	5.36	136.80	0.000	-1.000	158.06	0.00	-158.06
12	114.00	RFS APXVTM14	3	17.640	29.812	0.93	23.72	516.60	0.000	3.000	707.20	0.00	2121.60
13	114.00	RFS APXVSP18	3	17.554	29.666	0.99	29.25	579.00	0.000	1.000	867.85	0.00	867.85
14	114.00	Low Profile Platform	1	17.510	29.592	1.00	26.60	2200.00	0.000	0.000	787.14	0.00	0.00
15	114.00	Argus LLPX310R-V1	3	17.532	29.629	0.71	11.06	222.84	0.000	0.500	327.57	0.00	163.79
16	114.00	Andrew VHLP1-23-DW1	1	17.705	29.921	0.80	1.46	24.10	0.000	4.500	43.56	0.00	196.04
17	114.00	Alcatel Lucent	3	17.640	29.812	0.50	2.83	276.00	0.000	3.000	84.52	0.00	253.55
18	114.00	Alcatel Lucent RRH2X50-800	3	17.444	29.480	0.50	3.65	258.30	0.000	-1.500	107.45	0.00	-161.18
19	114.00	Alcatel Lucent	3	17.640	29.812	0.50	4.23	249.30	0.000	3.000	126.10	0.00	378.31
20	114.00	20" x 18" x 9" Junction Box	1	17.510	29.592	0.95	3.33	38.00	0.000	0.000	98.67	0.00	0.00
21	114.00	Andrew VHLP2-23-DW1	1	17.705	29.921	0.80	4.04	59.00	0.000	4.500	120.88	0.00	543.96
22	88.00	Antel	3	16.366	27.659	0.92	23.49	283.50	0.000	2.000	649.59	0.00	1299.17
23	88.00	Alcatel Lucent RRH2X60-700	3	16.366	27.659	0.91	13.80	361.80	0.000	2.000	381.74	0.00	763.48
24	88.00	Alcatel Lucent	3	16.366	27.659	0.91	13.80	361.80	0.000	2.000	381.74	0.00	763.48
25	88.00	Alcatel Lucent	3	16.366	27.659	0.92	7.58	212.70	0.000	2.000	209.78	0.00	419.56
26	88.00	Swedcom SLCP 2x6014	3	16.366	27.659	1.00	24.96	306.60	0.000	2.000	690.37	0.00	1380.74
27	88.00	Commscope SBNHH-1D65B	6	16.366	27.659	0.95	51.86	808.20	0.000	2.000	1434.30	0.00	2868.60
28	88.00	Platform w/ Hand Rails	1	16.366	27.659	1.00	42.82	2400.00	0.000	2.000	1184.36	0.00	2368.72
29	88.00	RFS DB-T1-6Z-8AB-0Z	1	16.366	27.659	0.77	4.66	0.00	0.000	2.000	128.82	0.00	257.63
Totals:								14,280.60			13,419.76		

Total Applied Force Summary

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

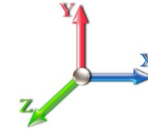
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Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		119.96	459.72	0.00	0.00
4.00		119.15	456.32	0.00	0.00
6.00		118.33	452.92	0.00	0.00
8.00		117.51	449.52	0.00	0.00
10.00		116.69	446.13	0.00	0.00
12.00		115.87	442.73	0.00	0.00
14.00		115.05	439.33	0.00	0.00
16.00		114.23	435.93	0.00	0.00
18.00		113.41	432.53	0.00	0.00
20.00		112.59	429.13	0.00	0.00
22.00		89.35	425.73	0.00	0.00
24.00		88.53	422.33	0.00	0.00
26.00		87.71	418.93	0.00	0.00
28.00		86.89	415.54	0.00	0.00
30.00		86.07	412.14	0.00	0.00
32.00		85.25	408.74	0.00	0.00
34.00		85.15	405.34	0.00	0.00
36.00		85.72	401.94	0.00	0.00
38.00		86.20	398.54	0.00	0.00
40.00		86.61	395.14	0.00	0.00
42.00		86.94	391.74	0.00	0.00
44.00		87.22	388.34	0.00	0.00
44.50		21.74	96.60	0.00	0.00
46.00		66.65	464.25	0.00	0.00
48.00		89.15	613.81	0.00	0.00
50.00		89.28	607.96	0.00	0.00
52.00		89.35	335.77	0.00	0.00
54.00		89.38	332.87	0.00	0.00
56.00		89.36	329.96	0.00	0.00
58.00		89.30	327.05	0.00	0.00
60.00		89.19	324.14	0.00	0.00
62.00		89.05	321.24	0.00	0.00
64.00		88.87	318.33	0.00	0.00
66.00		88.66	315.42	0.00	0.00
68.00		88.41	312.51	0.00	0.00
70.00		88.13	309.61	0.00	0.00
72.00		87.82	306.70	0.00	0.00
74.00		87.48	303.79	0.00	0.00
76.00		87.11	300.89	0.00	0.00
78.00		86.71	297.98	0.00	0.00
80.00		86.29	295.07	0.00	0.00
82.00		85.83	292.16	0.00	0.00
84.00		85.36	289.26	0.00	0.00
86.00		84.86	286.35	0.00	0.00
88.00	(23) appurtenances	5145.01	5018.04	0.00	10121.37
90.00		83.78	280.53	0.00	0.00
90.50		20.81	62.38	0.00	0.00
92.00		63.15	267.54	0.00	0.00

Total Applied Force Summary

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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94.00		83.76	352.83	0.00	0.00
94.50		20.80	87.56	0.00	0.00
96.00		62.26	131.82	0.00	0.00
98.00		82.53	174.01	0.00	0.00
100.00		81.88	172.09	0.00	0.00
102.00		81.21	170.17	0.00	0.00
104.00		80.53	168.24	0.00	0.00
106.00		79.82	166.32	0.00	0.00
108.00		79.10	164.39	0.00	0.00
110.00		78.36	162.47	0.00	0.00
112.00		77.61	160.54	0.00	0.00
114.00	(25) appurtenances	3505.85	4718.56	0.00	4205.86
116.00		76.04	141.65	0.00	0.00
118.00		75.23	139.73	0.00	0.00
120.00		74.41	137.80	0.00	0.00
122.00		73.57	135.88	0.00	0.00
124.00	(36) appurtenances	5002.78	5120.02	0.00	2987.66
126.00		71.85	109.45	0.00	0.00
128.00		70.97	107.53	0.00	0.00
130.00		70.07	105.60	0.00	0.00
132.00		69.16	103.68	0.00	0.00
134.00		68.24	101.75	0.00	0.00
136.00		67.30	99.83	0.00	0.00
138.00		66.35	97.91	0.00	0.00
140.00		65.38	95.98	0.00	0.00
140.50		16.17	23.74	0.00	0.00
Totals:		19,546.41	35,488.47	0.00	17,314.88

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

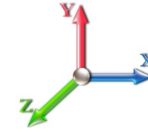
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016
 Page: 24



Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-19.577	-35.471	0.000	0.000	0.000	-1985.096	0.000	0.000	0.000	0.000	0.000
2.00	-19.517	-34.977	0.000	0.000	0.000	-1945.943	-0.021	0.000	0.021	-0.099	0.000
4.00	-19.457	-34.487	0.000	0.000	0.000	-1906.910	-0.085	0.000	0.085	-0.199	0.000
6.00	-19.397	-34.001	0.000	0.000	0.000	-1867.997	-0.190	0.000	0.190	-0.299	0.000
8.00	-19.336	-33.518	0.000	0.000	0.000	-1829.204	-0.337	0.000	0.337	-0.400	0.000
10.00	-19.274	-33.039	0.000	0.000	0.000	-1790.534	-0.527	0.000	0.527	-0.502	0.000
12.00	-19.212	-32.563	0.000	0.000	0.000	-1751.987	-0.759	0.000	0.759	-0.604	0.000
14.00	-19.150	-32.091	0.000	0.000	0.000	-1713.563	-1.034	0.000	1.034	-0.707	0.000
16.00	-19.087	-31.622	0.000	0.000	0.000	-1675.265	-1.353	0.000	1.353	-0.810	0.000
18.00	-19.023	-31.157	0.000	0.000	0.000	-1637.092	-1.714	0.000	1.714	-0.913	0.000
20.00	-18.960	-30.695	0.000	0.000	0.000	-1599.046	-2.119	0.000	2.119	-1.017	0.000
22.00	-18.918	-30.236	0.000	0.000	0.000	-1561.128	-2.568	0.000	2.568	-1.122	0.000
24.00	-18.875	-29.781	0.000	0.000	0.000	-1523.293	-3.061	0.000	3.061	-1.227	0.000
26.00	-18.832	-29.330	0.000	0.000	0.000	-1485.544	-3.598	0.000	3.598	-1.332	0.000
28.00	-18.789	-28.882	0.000	0.000	0.000	-1447.880	-4.179	0.000	4.179	-1.438	0.000
30.00	-18.745	-28.437	0.000	0.000	0.000	-1410.303	-4.804	0.000	4.804	-1.544	0.000
32.00	-18.700	-27.996	0.000	0.000	0.000	-1372.815	-5.474	0.000	5.474	-1.651	0.000
34.00	-18.655	-27.559	0.000	0.000	0.000	-1335.415	-6.188	0.000	6.188	-1.758	0.000
36.00	-18.607	-27.125	0.000	0.000	0.000	-1298.106	-6.948	0.000	6.948	-1.865	0.000
38.00	-18.558	-26.695	0.000	0.000	0.000	-1260.893	-7.752	0.000	7.752	-1.972	0.000
40.00	-18.506	-26.269	0.000	0.000	0.000	-1223.779	-8.601	0.000	8.601	-2.079	0.000
42.00	-18.453	-25.846	0.000	0.000	0.000	-1186.767	-9.495	0.000	9.495	-2.187	0.000
44.00	-18.381	-25.440	0.000	0.000	0.000	-1149.861	-10.434	0.000	10.434	-2.294	0.000
44.50	-18.379	-25.327	0.000	0.000	0.000	-1140.671	-10.676	0.000	10.676	-2.321	0.000
46.00	-18.334	-24.835	0.000	0.000	0.000	-1113.103	-11.419	0.000	11.419	-2.402	0.000
48.00	-18.264	-24.192	0.000	0.000	0.000	-1076.435	-12.448	0.000	12.448	-2.510	0.000
50.00	-18.192	-23.555	0.000	0.000	0.000	-1039.908	-13.522	0.000	13.522	-2.617	0.000
52.00	-18.133	-23.187	0.000	0.000	0.000	-1003.524	-14.641	0.000	14.641	-2.724	0.000
54.00	-18.076	-22.821	0.000	0.000	0.000	-967.259	-15.808	0.000	15.808	-2.844	0.000
56.00	-18.017	-22.459	0.000	0.000	0.000	-931.109	-17.025	0.000	17.025	-2.964	0.000
58.00	-17.956	-22.100	0.000	0.000	0.000	-895.077	-18.292	0.000	18.292	-3.083	0.000
60.00	-17.894	-21.744	0.000	0.000	0.000	-859.166	-19.608	0.000	19.608	-3.201	0.000
62.00	-17.830	-21.392	0.000	0.000	0.000	-823.379	-20.974	0.000	20.974	-3.319	0.000
64.00	-17.765	-21.044	0.000	0.000	0.000	-787.719	-22.389	0.000	22.389	-3.435	0.000
66.00	-17.699	-20.699	0.000	0.000	0.000	-752.190	-23.852	0.000	23.852	-3.550	0.000
68.00	-17.631	-20.358	0.000	0.000	0.000	-716.792	-25.363	0.000	25.363	-3.664	0.000
70.00	-17.562	-20.021	0.000	0.000	0.000	-681.531	-26.921	0.000	26.921	-3.776	0.000
72.00	-17.492	-19.687	0.000	0.000	0.000	-646.407	-28.526	0.000	28.526	-3.886	0.000
74.00	-17.420	-19.358	0.000	0.000	0.000	-611.424	-30.176	0.000	30.176	-3.995	0.000
76.00	-17.347	-19.032	0.000	0.000	0.000	-576.585	-31.871	0.000	31.871	-4.101	0.000
78.00	-17.272	-18.710	0.000	0.000	0.000	-541.892	-33.611	0.000	33.611	-4.205	0.000
80.00	-17.196	-18.392	0.000	0.000	0.000	-507.349	-35.393	0.000	35.393	-4.306	0.000
82.00	-17.119	-18.078	0.000	0.000	0.000	-472.957	-37.217	0.000	37.217	-4.405	0.000
84.00	-17.041	-17.769	0.000	0.000	0.000	-438.719	-39.081	0.000	39.081	-4.500	0.000
86.00	-16.961	-17.464	0.000	0.000	0.000	-404.639	-40.985	0.000	40.985	-4.591	0.000
88.00	-11.446	-12.861	0.000	0.000	0.000	-360.597	-42.925	0.000	42.925	-4.679	0.000
90.00	-11.350	-12.579	0.000	0.000	0.000	-337.706	-44.901	0.000	44.901	-4.761	0.000
90.50	-11.333	-12.510	0.000	0.000	0.000	-332.031	-45.400	0.000	45.400	-4.781	0.000
92.00	-11.263	-12.235	0.000	0.000	0.000	-315.032	-46.911	0.000	46.911	-4.841	0.000

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016

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94.00	-11.159	-11.882	0.000	0.000	0.000	-292.507	-48.953	0.000	48.953	-4.919	0.000
94.50	-11.139	-11.789	0.000	0.000	0.000	-286.928	-49.469	0.000	49.469	-4.938	0.000
96.00	-11.083	-11.646	0.000	0.000	0.000	-270.220	-51.028	0.000	51.028	-4.995	0.000
98.00	-11.007	-11.459	0.000	0.000	0.000	-248.055	-53.142	0.000	53.142	-5.108	0.000
100.00	-10.931	-11.275	0.000	0.000	0.000	-226.041	-55.303	0.000	55.303	-5.216	0.000
102.00	-10.854	-11.094	0.000	0.000	0.000	-204.179	-57.508	0.000	57.508	-5.318	0.000
104.00	-10.776	-10.917	0.000	0.000	0.000	-182.472	-59.754	0.000	59.754	-5.414	0.000
106.00	-10.697	-10.743	0.000	0.000	0.000	-160.921	-62.039	0.000	62.039	-5.504	0.000
108.00	-10.616	-10.572	0.000	0.000	0.000	-139.529	-64.359	0.000	64.359	-5.585	0.000
110.00	-10.535	-10.406	0.000	0.000	0.000	-118.297	-66.712	0.000	66.712	-5.659	0.000
112.00	-10.452	-10.243	0.000	0.000	0.000	-97.228	-69.093	0.000	69.093	-5.723	0.000
114.00	-6.496	-5.894	0.000	0.000	0.000	-72.118	-71.499	0.000	71.499	-5.777	0.000
116.00	-6.410	-5.756	0.000	0.000	0.000	-59.127	-73.925	0.000	73.925	-5.820	0.000
118.00	-6.324	-5.622	0.000	0.000	0.000	-46.307	-76.368	0.000	76.368	-5.857	0.000
120.00	-6.239	-5.489	0.000	0.000	0.000	-33.659	-78.824	0.000	78.824	-5.885	0.000
122.00	-6.153	-5.360	0.000	0.000	0.000	-21.182	-81.290	0.000	81.290	-5.906	0.000
124.00	-0.649	-0.783	0.000	0.000	0.000	-5.889	-83.763	0.000	83.763	-5.918	0.000
126.00	-0.567	-0.681	0.000	0.000	0.000	-4.590	-86.239	0.000	86.239	-5.923	0.000
128.00	-0.485	-0.581	0.000	0.000	0.000	-3.457	-88.716	0.000	88.716	-5.926	0.000
130.00	-0.404	-0.484	0.000	0.000	0.000	-2.487	-91.195	0.000	91.195	-5.929	0.000
132.00	-0.325	-0.388	0.000	0.000	0.000	-1.678	-93.675	0.000	93.675	-5.931	0.000
134.00	-0.247	-0.293	0.000	0.000	0.000	-1.028	-96.155	0.000	96.155	-5.933	0.000
136.00	-0.169	-0.201	0.000	0.000	0.000	-0.535	-98.636	0.000	98.636	-5.933	0.000
138.00	-0.093	-0.111	0.000	0.000	0.000	-0.196	-101.117	0.000	101.117	-5.934	0.000
140.00	-0.018	-0.022	0.000	0.000	0.000	-0.009	-103.598	0.000	103.598	-5.934	0.000
140.50	-0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	104.218	-5.934	0.000

Resulting Stresses

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

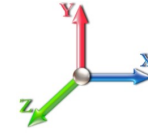
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016
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Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 30

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.71	0.79	0.00	0.00	0.00	45.64	46.37	52.0	0.892
2.00	0.70	0.79	0.00	0.00	0.00	45.53	46.25	52.0	0.890
4.00	0.70	0.80	0.00	0.00	0.00	45.40	46.12	52.0	0.887
6.00	0.70	0.80	0.00	0.00	0.00	45.27	45.99	52.0	0.885
8.00	0.69	0.80	0.00	0.00	0.00	45.13	45.85	52.0	0.882
10.00	0.69	0.81	0.00	0.00	0.00	44.98	45.69	52.0	0.879
12.00	0.68	0.81	0.00	0.00	0.00	44.82	45.53	52.0	0.876
14.00	0.68	0.82	0.00	0.00	0.00	44.66	45.36	52.0	0.873
16.00	0.68	0.82	0.00	0.00	0.00	44.47	45.17	52.0	0.869
18.00	0.67	0.83	0.00	0.00	0.00	44.28	44.98	52.0	0.865
20.00	0.67	0.83	0.00	0.00	0.00	44.08	44.77	52.0	0.861
22.00	0.67	0.84	0.00	0.00	0.00	43.86	44.55	52.0	0.857
24.00	0.66	0.85	0.00	0.00	0.00	43.63	44.32	52.0	0.853
26.00	0.66	0.85	0.00	0.00	0.00	43.39	44.07	52.0	0.848
28.00	0.65	0.86	0.00	0.00	0.00	43.13	43.81	52.0	0.843
30.00	0.65	0.86	0.00	0.00	0.00	42.85	43.53	52.0	0.837
32.00	0.65	0.87	0.00	0.00	0.00	42.55	43.23	52.0	0.832
34.00	0.64	0.88	0.00	0.00	0.00	42.24	42.91	52.0	0.826
36.00	0.64	0.88	0.00	0.00	0.00	41.91	42.58	52.0	0.819
38.00	0.64	0.89	0.00	0.00	0.00	41.56	42.22	52.0	0.812
40.00	0.63	0.90	0.00	0.00	0.00	41.19	41.85	52.0	0.805
42.00	0.63	0.91	0.00	0.00	0.00	40.79	41.45	52.0	0.797
44.00	0.63	0.91	0.00	0.00	0.00	40.38	41.03	52.0	0.789
44.50	0.62	0.91	0.00	0.00	0.00	40.27	40.92	52.0	0.787
46.00	0.62	0.92	0.00	0.00	0.00	39.94	40.59	52.0	0.781
48.00	0.61	0.93	0.00	0.00	0.00	39.47	40.11	52.0	0.772
50.00	0.70	1.10	0.00	0.00	0.00	44.80	45.54	52.0	0.876
52.00	0.70	1.10	0.00	0.00	0.00	44.18	44.93	52.0	0.864
54.00	0.70	1.11	0.00	0.00	0.00	43.54	44.28	52.0	0.852
56.00	0.69	1.12	0.00	0.00	0.00	42.85	43.59	52.0	0.839
58.00	0.69	1.13	0.00	0.00	0.00	42.13	42.87	52.0	0.825
60.00	0.69	1.14	0.00	0.00	0.00	41.38	42.11	52.0	0.810
62.00	0.68	1.15	0.00	0.00	0.00	40.58	41.31	52.0	0.795
64.00	0.68	1.16	0.00	0.00	0.00	39.74	40.47	52.0	0.778
66.00	0.68	1.17	0.00	0.00	0.00	38.85	39.58	52.0	0.761
68.00	0.67	1.18	0.00	0.00	0.00	37.92	38.64	52.0	0.743
70.00	0.67	1.19	0.00	0.00	0.00	36.93	37.66	52.0	0.724
72.00	0.67	1.19	0.00	0.00	0.00	35.90	36.62	52.0	0.705
74.00	0.66	1.20	0.00	0.00	0.00	34.81	35.53	52.0	0.684
76.00	0.66	1.21	0.00	0.00	0.00	33.66	34.38	52.0	0.661
78.00	0.66	1.22	0.00	0.00	0.00	32.44	33.17	52.0	0.638
80.00	0.66	1.24	0.00	0.00	0.00	31.17	31.89	52.0	0.614
82.00	0.65	1.25	0.00	0.00	0.00	29.82	30.55	52.0	0.588
84.00	0.65	1.26	0.00	0.00	0.00	28.40	29.13	52.0	0.560
86.00	0.65	1.27	0.00	0.00	0.00	26.91	27.64	52.0	0.532
88.00	0.48	0.87	0.00	0.00	0.00	24.64	25.17	52.0	0.484
90.00	0.48	0.87	0.00	0.00	0.00	23.72	24.24	52.0	0.466

Resulting Stresses

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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90.50	0.48	0.87	0.00	0.00	0.00	23.48	24.01	52.0	0.462
92.00	0.47	0.88	0.00	0.00	0.00	22.75	23.27	52.0	0.448
94.00	0.47	0.88	0.00	0.00	0.00	21.73	22.25	52.0	0.428
94.50	0.76	1.44	0.00	0.00	0.00	34.25	35.10	52.0	0.675
96.00	0.76	1.45	0.00	0.00	0.00	32.94	33.79	52.0	0.650
98.00	0.75	1.46	0.00	0.00	0.00	31.11	31.97	52.0	0.615
100.00	0.75	1.47	0.00	0.00	0.00	29.18	30.04	52.0	0.578
102.00	0.75	1.48	0.00	0.00	0.00	27.14	28.01	52.0	0.539
104.00	0.75	1.49	0.00	0.00	0.00	24.99	25.87	52.0	0.498
106.00	0.75	1.51	0.00	0.00	0.00	22.71	23.61	52.0	0.454
108.00	0.75	1.52	0.00	0.00	0.00	20.31	21.22	52.0	0.408
110.00	0.75	1.53	0.00	0.00	0.00	17.76	18.70	52.0	0.360
112.00	0.75	1.54	0.00	0.00	0.00	15.07	16.04	52.0	0.309
114.00	0.44	0.97	0.00	0.00	0.00	11.54	12.10	52.0	0.233
116.00	0.44	0.98	0.00	0.00	0.00	9.77	10.35	52.0	0.199
118.00	0.43	0.98	0.00	0.00	0.00	7.91	8.52	52.0	0.164
120.00	0.43	0.98	0.00	0.00	0.00	5.95	6.60	52.0	0.127
122.00	0.43	0.99	0.00	0.00	0.00	3.87	4.63	52.0	0.089
124.00	0.06	0.11	0.00	0.00	0.00	1.12	1.19	52.0	0.023
126.00	0.06	0.09	0.00	0.00	0.00	0.90	0.97	52.0	0.019
128.00	0.05	0.08	0.00	0.00	0.00	0.70	0.77	52.0	0.015
130.00	0.04	0.07	0.00	0.00	0.00	0.53	0.58	52.0	0.011
132.00	0.03	0.06	0.00	0.00	0.00	0.37	0.41	52.0	0.008
134.00	0.03	0.04	0.00	0.00	0.00	0.23	0.27	52.0	0.005
136.00	0.02	0.03	0.00	0.00	0.00	0.13	0.15	52.0	0.003
138.00	0.01	0.02	0.00	0.00	0.00	0.05	0.07	52.0	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000
140.50	0.00	0.00	0.00	0.00	0.00	0.00	0.01	52.0	0.000

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

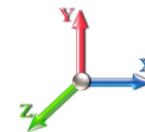
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 29

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	6.400	10.82	177.25	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
2.00		0.00	1.00	6.400	10.82	175.73	0.650	0.000	2.00	7.060	4.59	49.6	0.0	340.1
4.00		0.00	1.00	6.400	10.82	174.22	0.650	0.000	2.00	6.999	4.55	49.2	0.0	337.1
6.00		0.00	1.00	6.400	10.82	172.70	0.650	0.000	2.00	6.938	4.51	48.8	0.0	334.2
8.00		0.00	1.00	6.400	10.82	171.18	0.650	0.000	2.00	6.878	4.47	48.4	0.0	331.2
10.00		0.00	1.00	6.400	10.82	169.66	0.650	0.000	2.00	6.817	4.43	47.9	0.0	328.3
12.00		0.00	1.00	6.400	10.82	168.15	0.650	0.000	2.00	6.756	4.39	47.5	0.0	325.3
14.00		0.00	1.00	6.400	10.82	166.63	0.650	0.000	2.00	6.696	4.35	47.1	0.0	322.4
16.00		0.00	1.00	6.400	10.82	165.11	0.650	0.000	2.00	6.635	4.31	46.6	0.0	319.4
18.00		0.00	1.00	6.400	10.82	163.60	0.650	0.000	2.00	6.574	4.27	46.2	0.0	316.5
20.00		0.00	1.00	6.400	10.82	162.08	0.650	0.000	2.00	6.513	4.23	45.8	0.0	313.5
22.00		0.00	1.00	6.400	10.82	160.56	0.650	0.000	2.00	6.453	4.19	45.4	0.0	310.6
24.00		0.00	1.00	6.400	10.82	159.04	0.650	0.000	2.00	6.392	4.15	44.9	0.0	307.6
26.00		0.00	1.00	6.400	10.82	157.53	0.650	0.000	2.00	6.331	4.12	44.5	0.0	304.7
28.00		0.00	1.00	6.400	10.82	156.01	0.650	0.000	2.00	6.271	4.08	44.1	0.0	301.7
30.00		0.00	1.00	6.400	10.82	154.49	0.650	0.000	2.00	6.210	4.04	43.7	0.0	298.8
32.00		0.00	1.00	6.400	10.82	152.97	0.650	0.000	2.00	6.149	4.00	43.2	0.0	295.8
34.00		0.00	1.01	6.455	10.91	152.10	0.650	0.000	2.00	6.089	3.96	43.2	0.0	292.9
36.00		0.00	1.03	6.561	11.09	151.82	0.650	0.000	2.00	6.028	3.92	43.4	0.0	289.9
38.00		0.00	1.04	6.663	11.26	151.44	0.650	0.000	2.00	5.967	3.88	43.7	0.0	287.0
40.00		0.00	1.06	6.762	11.43	151.00	0.650	0.000	2.00	5.907	3.84	43.9	0.0	284.0
42.00		0.00	1.07	6.857	11.59	150.48	0.650	0.000	2.00	5.846	3.80	44.0	0.0	281.1
44.00		0.00	1.09	6.948	11.74	149.91	0.650	0.000	2.00	5.785	3.76	44.2	0.0	278.1
44.50	Bot - Section 2	0.00	1.09	6.971	11.78	149.75	0.650	0.000	0.50	1.437	0.93	11.0	0.0	69.1
46.00		0.00	1.10	7.037	11.89	149.27	0.650	0.000	1.50	4.366	2.84	33.7	0.0	381.3
48.00		0.00	1.11	7.123	12.04	148.58	0.650	0.000	2.00	5.768	3.75	45.1	0.0	503.7
50.00	Top - Section 1	0.00	1.13	7.207	12.18	147.84	0.650	0.000	2.00	5.707	3.71	45.2	0.0	498.3
52.00		0.00	1.14	7.288	12.32	149.83	0.650	0.000	2.00	5.647	3.67	45.2	0.0	226.6
54.00		0.00	1.15	7.367	12.45	149.01	0.650	0.000	2.00	5.586	3.63	45.2	0.0	224.1
56.00		0.00	1.16	7.444	12.58	148.15	0.650	0.000	2.00	5.525	3.59	45.2	0.0	221.7
58.00		0.00	1.17	7.519	12.71	147.25	0.650	0.000	2.00	5.465	3.55	45.1	0.0	219.2
60.00		0.00	1.19	7.592	12.83	146.32	0.650	0.000	2.00	5.404	3.51	45.1	0.0	216.7
62.00		0.00	1.20	7.664	12.95	145.34	0.650	0.000	2.00	5.343	3.47	45.0	0.0	214.3
64.00		0.00	1.21	7.733	13.07	144.34	0.650	0.000	2.00	5.282	3.43	44.9	0.0	211.8
66.00		0.00	1.22	7.802	13.18	143.30	0.650	0.000	2.00	5.222	3.39	44.8	0.0	209.4
68.00		0.00	1.23	7.869	13.30	142.23	0.650	0.000	2.00	5.161	3.35	44.6	0.0	206.9
70.00		0.00	1.24	7.934	13.41	141.13	0.650	0.000	2.00	5.100	3.32	44.5	0.0	204.5
72.00		0.00	1.25	7.998	13.52	140.00	0.650	0.000	2.00	5.040	3.28	44.3	0.0	202.0
74.00		0.00	1.26	8.061	13.62	138.85	0.650	0.000	2.00	4.979	3.24	44.1	0.0	199.5
76.00		0.00	1.27	8.123	13.73	137.67	0.650	0.000	2.00	4.918	3.20	43.9	0.0	197.1
78.00		0.00	1.28	8.183	13.83	136.46	0.650	0.000	2.00	4.858	3.16	43.7	0.0	194.6
80.00		0.00	1.29	8.242	13.93	135.24	0.650	0.000	2.00	4.797	3.12	43.4	0.0	192.2
82.00		0.00	1.30	8.301	14.03	133.99	0.650	0.000	2.00	4.736	3.08	43.2	0.0	189.7
84.00		0.00	1.31	8.358	14.13	132.71	0.650	0.000	2.00	4.676	3.04	42.9	0.0	187.3
86.00		0.00	1.31	8.415	14.22	131.42	0.650	0.000	2.00	4.615	3.00	42.7	0.0	184.8
88.00	Appurtenance(s)	0.00	1.32	8.470	14.31	130.11	0.650	0.000	2.00	4.554	2.96	42.4	0.0	182.3
90.00		0.00	1.33	8.525	14.41	128.78	0.650	0.000	2.00	4.494	2.92	42.1	0.0	179.9
90.50	Bot - Section 3	0.00	1.33	8.538	14.43	128.44	0.650	0.000	0.50	1.114	0.72	10.4	0.0	44.6

Wind Loading - Shaft

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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92.00	0.00	1.34	8.578	14.50	127.42	0.650	0.000	1.50	3.366	2.19	31.7	0.0	214.1		
94.00	0.00	1.35	8.631	14.59	126.05	0.650	0.000	2.00	4.435	2.88	42.0	0.0	282.0		
94.50 Top - Section 2	0.00	1.35	8.644	14.61	125.71	0.650	0.000	0.50	1.099	0.71	10.4	0.0	69.9		
96.00	0.00	1.36	8.683	14.67	126.49	0.650	0.000	1.50	3.275	2.13	31.2	0.0	79.0		
98.00	0.00	1.36	8.735	14.76	125.09	0.650	0.000	2.00	4.313	2.80	41.4	0.0	104.1		
100.00	0.00	1.37	8.785	14.85	123.67	0.650	0.000	2.00	4.253	2.76	41.0	0.0	102.6		
102.00	0.00	1.38	8.835	14.93	122.24	0.650	0.000	2.00	4.192	2.72	40.7	0.0	101.1		
104.00	0.00	1.39	8.884	15.01	120.79	0.650	0.000	2.00	4.131	2.69	40.3	0.0	99.6		
106.00	0.00	1.40	8.933	15.10	119.33	0.650	0.000	2.00	4.071	2.65	39.9	0.0	98.2		
108.00	0.00	1.40	8.980	15.18	117.85	0.650	0.000	2.00	4.010	2.61	39.6	0.0	96.7		
110.00	0.00	1.41	9.028	15.26	116.36	0.650	0.000	2.00	3.949	2.57	39.2	0.0	95.2		
112.00	0.00	1.42	9.074	15.34	114.85	0.650	0.000	2.00	3.888	2.53	38.8	0.0	93.7		
114.00 Appurtenance(s)	0.00	1.43	9.120	15.41	113.33	0.650	0.000	2.00	3.828	2.49	38.3	0.0	92.3		
116.00	0.00	1.43	9.166	15.49	111.80	0.650	0.000	2.00	3.767	2.45	37.9	0.0	90.8		
118.00	0.00	1.44	9.211	15.57	110.25	0.650	0.000	2.00	3.706	2.41	37.5	0.0	89.3		
120.00	0.00	1.45	9.255	15.64	108.69	0.650	0.000	2.00	3.646	2.37	37.1	0.0	87.8		
122.00	0.00	1.45	9.299	15.71	107.12	0.650	0.000	2.00	3.585	2.33	36.6	0.0	86.4		
124.00 Appurtenance(s)	0.00	1.46	9.342	15.79	105.53	0.650	0.000	2.00	3.524	2.29	36.2	0.0	84.9		
126.00	0.00	1.47	9.385	15.86	103.94	0.650	0.000	2.00	3.464	2.25	35.7	0.0	83.4		
128.00	0.00	1.47	9.427	15.93	102.33	0.650	0.000	2.00	3.403	2.21	35.2	0.0	81.9		
130.00	0.00	1.48	9.469	16.00	100.71	0.650	0.000	2.00	3.342	2.17	34.8	0.0	80.5		
132.00	0.00	1.49	9.510	16.07	99.08	0.650	0.000	2.00	3.282	2.13	34.3	0.0	79.0		
134.00	0.00	1.49	9.551	16.14	97.44	0.650	0.000	2.00	3.221	2.09	33.8	0.0	77.5		
136.00	0.00	1.50	9.592	16.21	95.79	0.650	0.000	2.00	3.160	2.05	33.3	0.0	76.0		
138.00	0.00	1.50	9.632	16.28	94.13	0.650	0.000	2.00	3.100	2.01	32.8	0.0	74.6		
140.00	0.00	1.51	9.672	16.35	92.46	0.650	0.000	2.00	3.039	1.98	32.3	0.0	73.1		
140.50	0.00	1.51	9.681	16.36	92.04	0.650	0.000	0.50	0.750	0.49	8.0	0.0	18.0		
Totals:								140.50				2,972.9			14,973.2

Discrete Appurtenance Forces

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

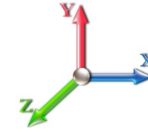
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 29

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	124.00	Kathrein 782 10250	6	9.363	15.824	0.50	1.56	38.40	0.000	1.000	24.69	0.00	24.69
2	124.00	CCI DTMABP7819VG12A	6	9.363	15.824	0.50	1.17	114.00	0.000	1.000	18.51	0.00	18.51
3	124.00	CCI OPA-65R-LCUU-H6	3	9.363	15.824	0.76	23.62	219.00	0.000	1.000	373.78	0.00	373.78
4	124.00	Ericsson RRUS-11	3	9.363	15.824	0.50	4.41	162.00	0.000	1.000	69.78	0.00	69.78
5	124.00	Ericsson RRUS-32	6	9.363	15.824	0.50	12.12	462.00	0.000	1.000	191.79	0.00	191.79
6	124.00	Raycap DC6-48-60-18-8F	2	9.363	15.824	1.00	2.94	65.60	0.000	1.000	46.52	0.00	46.52
7	124.00	Kathrein 800-10121	3	9.363	15.824	0.80	13.10	132.30	0.000	1.000	207.36	0.00	207.36
8	124.00	KMW	3	9.363	15.824	0.78	19.33	145.50	0.000	1.000	305.86	0.00	305.86
9	124.00	Platform w/ Hand Rails	1	9.342	15.788	1.00	32.00	2000.00	0.000	0.000	505.21	0.00	0.00
10	124.00	Qunitel QS66512-2	3	9.342	15.788	0.91	22.81	333.00	0.000	0.000	360.06	0.00	0.00
11	114.00	Samsung SPI-22132825WB	3	9.097	15.374	0.80	4.37	99.30	0.000	-1.000	67.16	0.00	-67.16
12	114.00	RFS APXVTM14	3	9.188	15.528	0.90	21.22	350.10	0.000	3.000	329.54	0.00	988.61
13	114.00	RFS APXVSP18	3	9.143	15.452	0.96	26.32	375.90	0.000	1.000	406.74	0.00	406.74
14	114.00	Low Profile Platform	1	9.120	15.413	1.00	22.00	1800.00	0.000	0.000	339.09	0.00	0.00
15	114.00	Argus LLPX310R-V1	3	9.132	15.432	0.70	10.28	152.10	0.000	0.500	158.67	0.00	79.33
16	114.00	Andrew VHLP1-23-DW1	1	9.222	15.585	0.80	1.29	14.00	0.000	4.500	20.07	0.00	90.33
17	114.00	Alcatel Lucent	3	9.188	15.528	0.50	2.55	210.00	0.000	3.000	39.60	0.00	118.79
18	114.00	Alcatel Lucent RRH2X50-800	3	9.086	15.355	0.50	3.38	192.00	0.000	-1.500	51.82	0.00	-77.73
19	114.00	Alcatel Lucent	3	9.188	15.528	0.50	3.92	180.00	0.000	3.000	60.79	0.00	182.38
20	114.00	20" x 18" x 9" Junction Box	1	9.120	15.413	0.90	3.15	20.00	0.000	0.000	48.55	0.00	0.00
21	114.00	Andrew VHLP2-23-DW1	1	9.222	15.585	0.80	3.75	31.00	0.000	4.500	58.47	0.00	263.13
22	88.00	Antel	3	8.525	14.407	0.75	17.89	127.80	0.000	2.000	257.70	0.00	515.39
23	88.00	Alcatel Lucent RRH2X60-700	3	8.525	14.407	0.50	6.79	270.00	0.000	2.000	97.89	0.00	195.79
24	88.00	Alcatel Lucent	3	8.525	14.407	0.50	6.79	270.00	0.000	2.000	97.89	0.00	195.79
25	88.00	Alcatel Lucent	3	8.525	14.407	0.50	3.85	165.00	0.000	2.000	55.54	0.00	111.07
26	88.00	Swedcom SLCP 2x6014	3	8.525	14.407	0.89	20.64	136.80	0.000	2.000	297.34	0.00	594.68
27	88.00	Commscope SBNHH-1D65B	6	8.525	14.407	0.84	42.79	458.40	0.000	2.000	616.45	0.00	1232.90
28	88.00	Platform w/ Hand Rails	1	8.525	14.407	1.00	40.00	2000.00	0.000	2.000	576.26	0.00	1152.53
29	88.00	RFS DB-T1-6Z-8AB-OZ	1	8.525	14.407	0.76	4.26	44.00	0.000	2.000	61.31	0.00	122.63
Totals:							10,568.20				5,744.46		

Total Applied Force Summary

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

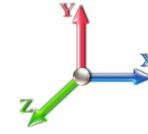
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Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 29

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
2.00		56.77	407.05	0.00	0.00
4.00		56.34	404.10	0.00	0.00
6.00		55.92	401.15	0.00	0.00
8.00		55.49	398.20	0.00	0.00
10.00		55.06	395.25	0.00	0.00
12.00		54.64	392.30	0.00	0.00
14.00		54.21	389.35	0.00	0.00
16.00		53.78	386.40	0.00	0.00
18.00		53.36	383.45	0.00	0.00
20.00		52.93	380.50	0.00	0.00
22.00		45.37	377.55	0.00	0.00
24.00		44.94	374.60	0.00	0.00
26.00		44.51	371.65	0.00	0.00
28.00		44.09	368.70	0.00	0.00
30.00		43.66	365.75	0.00	0.00
32.00		43.23	362.80	0.00	0.00
34.00		43.17	359.86	0.00	0.00
36.00		43.45	356.91	0.00	0.00
38.00		43.68	353.96	0.00	0.00
40.00		43.87	351.01	0.00	0.00
42.00		44.03	348.06	0.00	0.00
44.00		44.16	345.11	0.00	0.00
44.50		11.00	85.82	0.00	0.00
46.00		33.75	431.58	0.00	0.00
48.00		45.13	570.70	0.00	0.00
50.00		45.18	565.30	0.00	0.00
52.00		45.21	293.56	0.00	0.00
54.00		45.20	291.11	0.00	0.00
56.00		45.18	288.65	0.00	0.00
58.00		45.13	286.19	0.00	0.00
60.00		45.07	283.73	0.00	0.00
62.00		44.98	281.27	0.00	0.00
64.00		44.88	278.82	0.00	0.00
66.00		44.75	276.36	0.00	0.00
68.00		44.61	273.90	0.00	0.00
70.00		44.45	271.44	0.00	0.00
72.00		44.28	268.98	0.00	0.00
74.00		44.09	266.53	0.00	0.00
76.00		43.88	264.07	0.00	0.00
78.00		43.67	261.61	0.00	0.00
80.00		43.43	259.15	0.00	0.00
82.00		43.19	256.70	0.00	0.00
84.00		42.93	254.24	0.00	0.00
86.00		42.66	251.78	0.00	0.00
88.00	(23) appurtenances	2102.76	3721.32	0.00	4120.77
90.00		42.08	246.86	0.00	0.00
90.50		10.45	53.99	0.00	0.00
92.00		31.72	242.27	0.00	0.00

Total Applied Force Summary

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

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94.00		42.05	319.59	0.00	0.00
94.50		10.44	79.28	0.00	0.00
96.00		31.24	107.23	0.00	0.00
98.00		41.39	141.68	0.00	0.00
100.00		41.04	140.20	0.00	0.00
102.00		40.68	138.73	0.00	0.00
104.00		40.32	137.25	0.00	0.00
106.00		39.94	135.78	0.00	0.00
108.00		39.56	134.30	0.00	0.00
110.00		39.16	132.83	0.00	0.00
112.00		38.76	131.35	0.00	0.00
114.00	(25) appurtenances	1618.85	3554.28	0.00	1984.41
116.00		37.93	113.36	0.00	0.00
118.00		37.50	111.89	0.00	0.00
120.00		37.06	110.41	0.00	0.00
122.00		36.62	108.94	0.00	0.00
124.00	(36) appurtenances	2139.74	3779.26	0.00	1238.30
126.00		35.71	83.41	0.00	0.00
128.00		35.24	81.93	0.00	0.00
130.00		34.77	80.46	0.00	0.00
132.00		34.28	78.98	0.00	0.00
134.00		33.79	77.51	0.00	0.00
136.00		33.30	76.03	0.00	0.00
138.00		32.80	74.56	0.00	0.00
140.00		32.29	73.08	0.00	0.00
140.50		7.98	18.04	0.00	0.00
Totals:		8,788.74	29,120.02	0.00	7,343.49

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

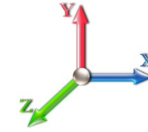
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Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 29

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-8.799	-29.116	0.000	0.000	0.000	-871.634	0.000	0.000	0.000	0.000	0.000
2.00	-8.764	-28.703	0.000	0.000	0.000	-854.037	-0.009	0.000	0.009	-0.044	0.000
4.00	-8.729	-28.292	0.000	0.000	0.000	-836.510	-0.037	0.000	0.037	-0.087	0.000
6.00	-8.693	-27.884	0.000	0.000	0.000	-819.053	-0.083	0.000	0.083	-0.131	0.000
8.00	-8.658	-27.480	0.000	0.000	0.000	-801.666	-0.148	0.000	0.148	-0.176	0.000
10.00	-8.623	-27.078	0.000	0.000	0.000	-784.350	-0.231	0.000	0.231	-0.220	0.000
12.00	-8.587	-26.679	0.000	0.000	0.000	-767.105	-0.333	0.000	0.333	-0.265	0.000
14.00	-8.552	-26.283	0.000	0.000	0.000	-749.931	-0.454	0.000	0.454	-0.310	0.000
16.00	-8.516	-25.891	0.000	0.000	0.000	-732.827	-0.593	0.000	0.593	-0.355	0.000
18.00	-8.481	-25.501	0.000	0.000	0.000	-715.795	-0.752	0.000	0.752	-0.400	0.000
20.00	-8.445	-25.114	0.000	0.000	0.000	-698.834	-0.929	0.000	0.929	-0.446	0.000
22.00	-8.416	-24.730	0.000	0.000	0.000	-681.945	-1.126	0.000	1.126	-0.491	0.000
24.00	-8.387	-24.349	0.000	0.000	0.000	-665.112	-1.342	0.000	1.342	-0.537	0.000
26.00	-8.359	-23.971	0.000	0.000	0.000	-648.338	-1.577	0.000	1.577	-0.583	0.000
28.00	-8.330	-23.596	0.000	0.000	0.000	-631.621	-1.831	0.000	1.831	-0.629	0.000
30.00	-8.301	-23.224	0.000	0.000	0.000	-614.962	-2.105	0.000	2.105	-0.676	0.000
32.00	-8.272	-22.855	0.000	0.000	0.000	-598.361	-2.398	0.000	2.398	-0.722	0.000
34.00	-8.242	-22.489	0.000	0.000	0.000	-581.819	-2.710	0.000	2.710	-0.769	0.000
36.00	-8.212	-22.126	0.000	0.000	0.000	-565.335	-3.042	0.000	3.042	-0.815	0.000
38.00	-8.180	-21.767	0.000	0.000	0.000	-548.912	-3.394	0.000	3.394	-0.862	0.000
40.00	-8.149	-21.410	0.000	0.000	0.000	-532.552	-3.765	0.000	3.765	-0.909	0.000
42.00	-8.116	-21.056	0.000	0.000	0.000	-516.255	-4.156	0.000	4.156	-0.955	0.000
44.00	-8.077	-20.707	0.000	0.000	0.000	-500.023	-4.566	0.000	4.566	-1.002	0.000
44.50	-8.073	-20.618	0.000	0.000	0.000	-495.985	-4.672	0.000	4.672	-1.014	0.000
46.00	-8.046	-20.182	0.000	0.000	0.000	-483.876	-4.996	0.000	4.996	-1.049	0.000
48.00	-8.006	-19.605	0.000	0.000	0.000	-467.785	-5.446	0.000	5.446	-1.096	0.000
50.00	-7.965	-19.035	0.000	0.000	0.000	-451.774	-5.915	0.000	5.915	-1.142	0.000
52.00	-7.930	-18.735	0.000	0.000	0.000	-435.845	-6.404	0.000	6.404	-1.189	0.000
54.00	-7.895	-18.438	0.000	0.000	0.000	-419.985	-6.913	0.000	6.913	-1.241	0.000
56.00	-7.860	-18.143	0.000	0.000	0.000	-404.195	-7.444	0.000	7.444	-1.293	0.000
58.00	-7.825	-17.851	0.000	0.000	0.000	-388.474	-7.997	0.000	7.997	-1.345	0.000
60.00	-7.788	-17.562	0.000	0.000	0.000	-372.826	-8.572	0.000	8.572	-1.396	0.000
62.00	-7.752	-17.275	0.000	0.000	0.000	-357.249	-9.168	0.000	9.168	-1.447	0.000
64.00	-7.715	-16.990	0.000	0.000	0.000	-341.746	-9.785	0.000	9.785	-1.498	0.000
66.00	-7.677	-16.709	0.000	0.000	0.000	-326.317	-10.423	0.000	10.423	-1.547	0.000
68.00	-7.639	-16.430	0.000	0.000	0.000	-310.963	-11.082	0.000	11.082	-1.597	0.000
70.00	-7.601	-16.153	0.000	0.000	0.000	-295.685	-11.761	0.000	11.761	-1.645	0.000
72.00	-7.562	-15.879	0.000	0.000	0.000	-280.485	-12.461	0.000	12.461	-1.693	0.000
74.00	-7.522	-15.608	0.000	0.000	0.000	-265.362	-13.181	0.000	13.181	-1.740	0.000
76.00	-7.483	-15.340	0.000	0.000	0.000	-250.317	-13.920	0.000	13.920	-1.787	0.000
78.00	-7.442	-15.074	0.000	0.000	0.000	-235.353	-14.678	0.000	14.678	-1.832	0.000
80.00	-7.402	-14.810	0.000	0.000	0.000	-220.468	-15.455	0.000	15.455	-1.876	0.000
82.00	-7.361	-14.550	0.000	0.000	0.000	-205.665	-16.250	0.000	16.250	-1.919	0.000
84.00	-7.320	-14.292	0.000	0.000	0.000	-190.944	-17.063	0.000	17.063	-1.960	0.000
86.00	-7.278	-14.037	0.000	0.000	0.000	-176.305	-17.892	0.000	17.892	-2.000	0.000
88.00	-5.052	-10.389	0.000	0.000	0.000	-157.629	-18.738	0.000	18.738	-2.038	0.000
90.00	-5.005	-10.142	0.000	0.000	0.000	-147.526	-19.600	0.000	19.600	-2.074	0.000
90.50	-4.996	-10.087	0.000	0.000	0.000	-145.023	-19.817	0.000	19.817	-2.083	0.000
92.00	-4.960	-9.843	0.000	0.000	0.000	-137.530	-20.476	0.000	20.476	-2.109	0.000

Resulting Forces and Deflections

Structure: CT16504-A-SB
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016

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94.00	-4.910	-9.523	0.000	0.000	0.000	-127.610	-21.366	0.000	21.366	-2.143	0.000
94.50	-4.899	-9.443	0.000	0.000	0.000	-125.155	-21.591	0.000	21.591	-2.151	0.000
96.00	-4.870	-9.334	0.000	0.000	0.000	-117.807	-22.271	0.000	22.271	-2.176	0.000
98.00	-4.831	-9.190	0.000	0.000	0.000	-108.067	-23.193	0.000	23.193	-2.225	0.000
100.00	-4.792	-9.048	0.000	0.000	0.000	-98.405	-24.135	0.000	24.135	-2.272	0.000
102.00	-4.752	-8.907	0.000	0.000	0.000	-88.822	-25.097	0.000	25.097	-2.317	0.000
104.00	-4.713	-8.768	0.000	0.000	0.000	-79.317	-26.077	0.000	26.077	-2.358	0.000
106.00	-4.673	-8.631	0.000	0.000	0.000	-69.892	-27.073	0.000	27.073	-2.397	0.000
108.00	-4.633	-8.496	0.000	0.000	0.000	-60.547	-28.085	0.000	28.085	-2.433	0.000
110.00	-4.592	-8.363	0.000	0.000	0.000	-51.282	-29.111	0.000	29.111	-2.465	0.000
112.00	-4.551	-8.231	0.000	0.000	0.000	-42.098	-30.150	0.000	30.150	-2.492	0.000
114.00	-2.780	-4.750	0.000	0.000	0.000	-31.011	-31.199	0.000	31.199	-2.516	0.000
116.00	-2.739	-4.638	0.000	0.000	0.000	-25.451	-32.257	0.000	32.257	-2.534	0.000
118.00	-2.698	-4.527	0.000	0.000	0.000	-19.973	-33.322	0.000	33.322	-2.550	0.000
120.00	-2.657	-4.418	0.000	0.000	0.000	-14.577	-34.393	0.000	34.393	-2.563	0.000
122.00	-2.616	-4.310	0.000	0.000	0.000	-9.264	-35.468	0.000	35.468	-2.572	0.000
124.00	-0.308	-0.631	0.000	0.000	0.000	-2.795	-36.546	0.000	36.546	-2.577	0.000
126.00	-0.269	-0.549	0.000	0.000	0.000	-2.178	-37.626	0.000	37.626	-2.579	0.000
128.00	-0.230	-0.469	0.000	0.000	0.000	-1.640	-38.706	0.000	38.706	-2.581	0.000
130.00	-0.192	-0.390	0.000	0.000	0.000	-1.179	-39.787	0.000	39.787	-2.582	0.000
132.00	-0.154	-0.313	0.000	0.000	0.000	-0.796	-40.869	0.000	40.869	-2.583	0.000
134.00	-0.117	-0.237	0.000	0.000	0.000	-0.487	-41.951	0.000	41.951	-2.584	0.000
136.00	-0.080	-0.162	0.000	0.000	0.000	-0.253	-43.033	0.000	43.033	-2.584	0.000
138.00	-0.044	-0.089	0.000	0.000	0.000	-0.093	-44.115	0.000	44.115	-2.584	0.000
140.00	-0.009	-0.018	0.000	0.000	0.000	-0.004	-45.197	0.000	45.197	-2.584	0.000
140.50	-0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	45.467	-2.584	0.000

Resulting Stresses

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

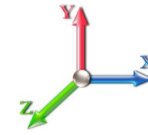
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Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 29

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.58	0.35	0.00	0.00	0.00	20.04	20.63	52.0	0.397
2.00	0.58	0.36	0.00	0.00	0.00	19.98	20.57	52.0	0.396
4.00	0.57	0.36	0.00	0.00	0.00	19.92	20.50	52.0	0.394
6.00	0.57	0.36	0.00	0.00	0.00	19.85	20.43	52.0	0.393
8.00	0.57	0.36	0.00	0.00	0.00	19.78	20.36	52.0	0.392
10.00	0.56	0.36	0.00	0.00	0.00	19.71	20.28	52.0	0.390
12.00	0.56	0.36	0.00	0.00	0.00	19.63	20.20	52.0	0.389
14.00	0.56	0.37	0.00	0.00	0.00	19.54	20.11	52.0	0.387
16.00	0.55	0.37	0.00	0.00	0.00	19.46	20.02	52.0	0.385
18.00	0.55	0.37	0.00	0.00	0.00	19.36	19.92	52.0	0.383
20.00	0.55	0.37	0.00	0.00	0.00	19.26	19.82	52.0	0.381
22.00	0.54	0.37	0.00	0.00	0.00	19.16	19.72	52.0	0.379
24.00	0.54	0.38	0.00	0.00	0.00	19.05	19.60	52.0	0.377
26.00	0.54	0.38	0.00	0.00	0.00	18.94	19.48	52.0	0.375
28.00	0.53	0.38	0.00	0.00	0.00	18.81	19.36	52.0	0.372
30.00	0.53	0.38	0.00	0.00	0.00	18.68	19.23	52.0	0.370
32.00	0.53	0.39	0.00	0.00	0.00	18.55	19.09	52.0	0.367
34.00	0.53	0.39	0.00	0.00	0.00	18.40	18.94	52.0	0.364
36.00	0.52	0.39	0.00	0.00	0.00	18.25	18.79	52.0	0.361
38.00	0.52	0.39	0.00	0.00	0.00	18.09	18.62	52.0	0.358
40.00	0.52	0.40	0.00	0.00	0.00	17.92	18.45	52.0	0.355
42.00	0.51	0.40	0.00	0.00	0.00	17.75	18.27	52.0	0.351
44.00	0.51	0.40	0.00	0.00	0.00	17.56	18.08	52.0	0.348
44.50	0.51	0.40	0.00	0.00	0.00	17.51	18.03	52.0	0.347
46.00	0.50	0.40	0.00	0.00	0.00	17.36	17.88	52.0	0.344
48.00	0.49	0.41	0.00	0.00	0.00	17.15	17.66	52.0	0.340
50.00	0.57	0.48	0.00	0.00	0.00	19.46	20.05	52.0	0.386
52.00	0.57	0.48	0.00	0.00	0.00	19.19	19.77	52.0	0.380
54.00	0.56	0.49	0.00	0.00	0.00	18.90	19.48	52.0	0.375
56.00	0.56	0.49	0.00	0.00	0.00	18.60	19.18	52.0	0.369
58.00	0.56	0.49	0.00	0.00	0.00	18.29	18.86	52.0	0.363
60.00	0.55	0.50	0.00	0.00	0.00	17.95	18.53	52.0	0.356
62.00	0.55	0.50	0.00	0.00	0.00	17.61	18.18	52.0	0.350
64.00	0.55	0.50	0.00	0.00	0.00	17.24	17.81	52.0	0.343
66.00	0.55	0.51	0.00	0.00	0.00	16.85	17.42	52.0	0.335
68.00	0.54	0.51	0.00	0.00	0.00	16.45	17.02	52.0	0.327
70.00	0.54	0.51	0.00	0.00	0.00	16.02	16.59	52.0	0.319
72.00	0.54	0.52	0.00	0.00	0.00	15.58	16.14	52.0	0.310
74.00	0.54	0.52	0.00	0.00	0.00	15.11	15.67	52.0	0.301
76.00	0.53	0.52	0.00	0.00	0.00	14.61	15.17	52.0	0.292
78.00	0.53	0.53	0.00	0.00	0.00	14.09	14.65	52.0	0.282
80.00	0.53	0.53	0.00	0.00	0.00	13.54	14.10	52.0	0.271
82.00	0.53	0.54	0.00	0.00	0.00	12.97	13.53	52.0	0.260
84.00	0.52	0.54	0.00	0.00	0.00	12.36	12.92	52.0	0.249
86.00	0.52	0.54	0.00	0.00	0.00	11.72	12.28	52.0	0.236
88.00	0.39	0.38	0.00	0.00	0.00	10.77	11.18	52.0	0.215
90.00	0.39	0.38	0.00	0.00	0.00	10.36	10.77	52.0	0.207

Resulting Stresses

Structure: CT16504-A-SBA
Site Name: Manchester 12, CT
Height: 140.50 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

5/24/2016

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90.50	0.39	0.38	0.00	0.00	0.00	10.26	10.66	52.0	0.205
92.00	0.38	0.39	0.00	0.00	0.00	9.93	10.33	52.0	0.199
94.00	0.37	0.39	0.00	0.00	0.00	9.48	9.87	52.0	0.190
94.50	0.61	0.63	0.00	0.00	0.00	14.94	15.59	52.0	0.300
96.00	0.61	0.64	0.00	0.00	0.00	14.36	15.01	52.0	0.289
98.00	0.61	0.64	0.00	0.00	0.00	13.55	14.20	52.0	0.273
100.00	0.60	0.65	0.00	0.00	0.00	12.70	13.36	52.0	0.257
102.00	0.60	0.65	0.00	0.00	0.00	11.81	12.46	52.0	0.240
104.00	0.60	0.65	0.00	0.00	0.00	10.86	11.52	52.0	0.222
106.00	0.60	0.66	0.00	0.00	0.00	9.86	10.53	52.0	0.203
108.00	0.60	0.66	0.00	0.00	0.00	8.81	9.48	52.0	0.182
110.00	0.60	0.67	0.00	0.00	0.00	7.70	8.38	52.0	0.161
112.00	0.60	0.67	0.00	0.00	0.00	6.52	7.22	52.0	0.139
114.00	0.35	0.42	0.00	0.00	0.00	4.96	5.36	52.0	0.103
116.00	0.35	0.42	0.00	0.00	0.00	4.21	4.61	52.0	0.089
118.00	0.35	0.42	0.00	0.00	0.00	3.41	3.83	52.0	0.074
120.00	0.35	0.42	0.00	0.00	0.00	2.58	3.01	52.0	0.058
122.00	0.34	0.42	0.00	0.00	0.00	1.69	2.16	52.0	0.042
124.00	0.05	0.05	0.00	0.00	0.00	0.53	0.59	52.0	0.011
126.00	0.05	0.04	0.00	0.00	0.00	0.43	0.48	52.0	0.009
128.00	0.04	0.04	0.00	0.00	0.00	0.33	0.38	52.0	0.007
130.00	0.03	0.03	0.00	0.00	0.00	0.25	0.29	52.0	0.006
132.00	0.03	0.03	0.00	0.00	0.00	0.17	0.21	52.0	0.004
134.00	0.02	0.02	0.00	0.00	0.00	0.11	0.14	52.0	0.003
136.00	0.01	0.01	0.00	0.00	0.00	0.06	0.08	52.0	0.002
138.00	0.01	0.01	0.00	0.00	0.00	0.02	0.03	52.0	0.001
140.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.000
140.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.0	0.000

Final Analysis Summary

Structure: CT16504-A-SBA	Code: EIA/TIA-222-F	5/24/2016
Site Name: Manchester 12, CT	Exposure: C	
Height: 140.50 (ft)	Gh: 1.69	
Base Elev: 0.000 (ft)	Struct Class: II	Page: 37



Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
80 mph Wind with 0" Ice	22.5	0.00	29.10	0.00	0.00	2227.67
69.28 mph Wind with 0.5" Ice	19.6	0.00	35.47	0.00	0.00	1985.10
50 mph Wind with 0" Ice	8.8	0.00	29.12	0.00	0.00	871.63

Max Stresses

Load Case	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
80 mph Wind with 0" Ice	0.58	0.90	0.00	0.00	0.00	51.22	51.82	52.0	0.00	0.997
69.28 mph Wind with 0.5" Ice	0.71	0.79	0.00	0.00	0.00	45.64	46.37	52.0	0.00	0.892
50 mph Wind with 0" Ice	0.58	0.35	0.00	0.00	0.00	20.04	20.63	52.0	0.00	0.397



Pier Foundation Design For Monopole

Date

5/17/2016

Customer Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-F
Site Name:	Manchester 12, CT	Structure Height (Ft.):	140.5
Site Number:	CT16504-A-SBA	Engineer Name:	K. Wyant
Engr. Number:	22609	Engineer Login ID:	

Foundation Info Obtained from:

Mapping Operation Acceptable overstress (%) 0.0%

Structure Type:

Monopole

Analysis or Design?

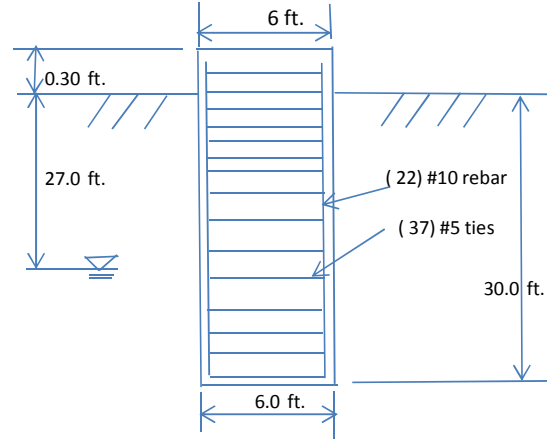
Analysis

Base Reactions (Unfactored)

Axial Load (Kips):	35.5	Shear Force (Kips):	22.5
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2227.7

Foundation Geometries:

Mods required -Yes/No ?:	No	ft.	
Diameter of Pier (ft.):	6.0	Depth of Base B. G. S. :	30.0 ft.
Pier Height A. G. (ft.):	0.30		



Monopole Pier Foundation

Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000 ksi
Vertical bar yield (ksi):	60	Tie steel yield strength:	40 ksi
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	5
Qty. of Vertical Rebars:	22	Tie Spacing:	12.0 in.
Concrete Cover (in.):	4	Concrete unit weight:	150.0 pcf

Soil Design Parameters:

Water Table B.G.S. (ft):	27.0	Unit weight of water:	62.4 psf
Ratio of Uplift/Axial Skin Friction:	1.0	Pullout failure Angle:	30 (°)
Skin Frictions are to be obtained from:	Calculations	Please Enter Allowable End Bearing Pressure (psf):	11600
Kc = 1.15 For Sand		Kt = 0.7 For Sand and Silt	Friction δ Between Pier & Soil = 0.95
Kc = 1.0 Silt/Clay		Kt = 0.85 For Clay	

Depth of Layers (ft)		γ _{soil} (pcf)	φ (°)	Cohesion (psf)			Soil Types	Allow. Uplift Skin Friction (psf)	Allow. Axial Skin Friction (psf)	Kc	Kt	α
Top	Bottom											
0.0	1.0	100	0	0		0	Sand			1.15	0.70	
1.0	5.0	135	40	0		0	Sand	87.5	143.8	1.15	0.70	
5.0	7.0	120	33	0		0	Sand	93.8	154.1	1.15	0.70	
7.0	10.0	130	38	0		0	Sand	162.1	266.3	1.15	0.70	
10.0	15.0	128	37	0		0	Sand	235.4	386.6	1.15	0.70	
15.0	30.0	132	39	0		11600	Sand	494.4	812.3	1.15	0.70	
30.0	35.0	127	36	0		11600	Sand	491.0	806.7	1.15	0.70	

Soil weight Increase Factor for bouyant soils (1.0 to 1.15): 1.1

Foundation Analysis and Design:

Total Dry Soil Volume from Conical Failure (cu. Ft.):	14255	Dry Soil Weight from Conical Failure:	1845	Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	58	Buoyant Soil Weight from Conical Failure (K	5	Kips
Total Dry Concrete Volume (cu. Ft.):	772	Total Dry Concrete Weight:	115.8	Kips
Total Buoyant Concrete Volume (cu. Ft.):	84.8	Total Buoyant Concrete Weight:	7.43	Kips
Total Effective Concrete Weight (Kips):	123.2	Total Effective Soil Weight:	1849.7	Kips
Total Effective Vertical Load on Base (Kips):	52.6			

Check Soil Capacities:

Allowable Foundation Overturning Resistance (kips-ft.):	10774.5	>	Applied Moment (kips-ft):	2696	Usage	0.25	OK!
Factor of Safety of Passive Soil Resistance against Moment:	7.99	OK!					

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.30

Reinforcing Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	1.27	Tie / Stirrup Area (sq. in./each):	0.31	Usage	
Calculated Moment Capacity (Mn,Kips-Ft):	3931.4	>	Design Factored Moment (Mu, K-Ft):	2962.8	0.75 OK!
Calculated Shear Capacity (Kips):	707.8	>	Design Factored Shear (Kips):	251.6	0.36 OK!
Calculated Tension Capacity (Tn, Kips):	1508.8	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	5362	>	Design Factored Axial Load (Pu Kips):	46.2	0.01 OK!
Moment & Axial Strength Combination:	0.75	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.
Pier Reinforcement Ratio:	0.007	Reinforcement Ratio is satisfied per ACI			





WIRELESS COMMUNICATIONS FACILITY CT1080 - LTE PCS 1900 RETROFIT MANCHESTER SAND & GRAVEL 60 ADAMS STREET MANCHESTER, CT 06042

GENERAL NOTES

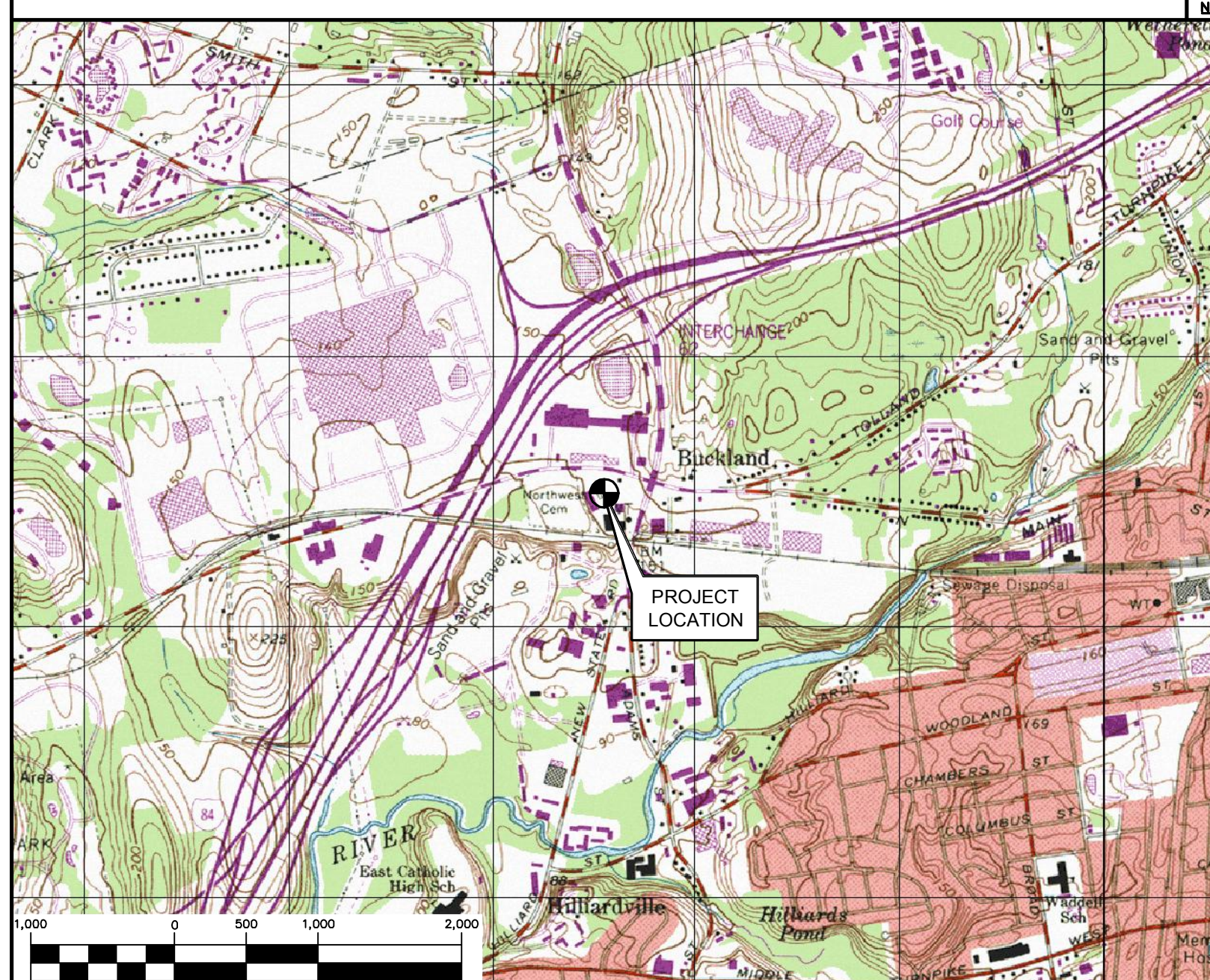
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CONNECTICUT SUPPLEMENT AND 2009 AMENDMENTS, INCLUDING THE TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2005 CONNECTICUT FIRE SAFETY CODE AND 2009 AMENDMENTS, 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: 60 ADAMS STREET MANCHESTER, CT 06042
1. TURN LEFT ONTO CAPITOL BLVD	0.3 mi
2. TURN LEFT ONTO WEST STREET	0.3 mi
3. TAKE RAMP LEFT FOR I-91 N	7.8 mi
4. AT EXIT 29, TAKE RAMP RIGHT FOR CT-15 NORTH TOWARD I-84 EAST HARTFORD/BOSTON	2.1 mi
5. CT-15 NORTH BECOMES I-84	3.9 mi
6. TAKE EXIT 62 FOR BUCKLAND STREET	1.0 mi
7. TURN RIGHT ON BUCKLAND STREET	0.3 mi
8. STAY STRAIGHT TO GO ONTO ADAMS STREET	0.1 mi
9. END AT 60 ADAMS STREET, MANCHESTER, CT 06042	0.1 mi

VICINITY MAP

SCALE: 1" = 1000'



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 EXISTING POSITION 4 ANTENNA FOR PROPOSED (12) PORT ANTENNA, (1) PER SECTOR.
 - B. REMOVE & REPLACE (3) EXISTING RRUS-11 (1900MHz WITH (3) NEW RRUS-32 B2 MOUNTED BY ANTENNA ON EXISTING TOWER.

PROJECT INFORMATION

AT&T SITE NUMBER:	CT1080
AT&T SITE NAME:	MANCHESTER SAND & GRAVEL
SITE ADDRESS:	60 ADAMS STREET MANCHESTER, CT 06042
PROPERTY OWNER:	SBA COMMUNICATIONS, CORP. 8051 CONGRESS AVENUE BOCA RATON, FL 33487 SBA SITE ID: CT16504
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
CONTACT PERSON:	LAUREN GROPP EMPIRE TELECOM, LLC (978) 430-2534
ENGINEER:	CENITEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT. 06405
PROJECT COORDINATES:	LATITUDE: 41°-47'-38.6" N LONGITUDE: 72°-33'-19.3" W GROUND ELEVATION: ±130' AMSL

SHEET INDEX

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

PROFESSIONAL ENGINEER SEAL



CENITEK engineering
 Continued on solutions™
 (203) 468-0580
 (203) 468-8587 Fax
 63-2 North Branford Road
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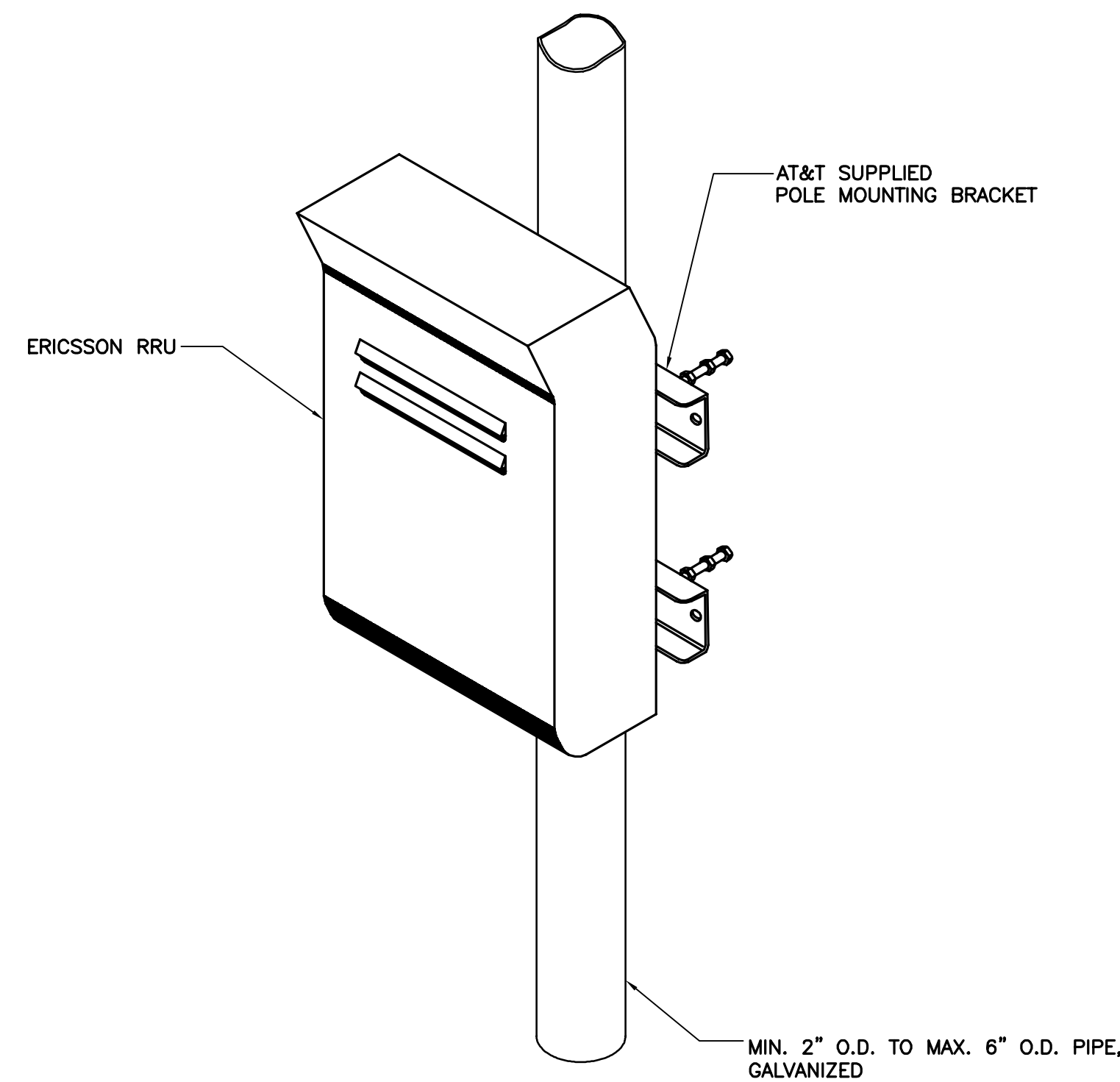
AT&T MOBILITY
 WIRELESS COMMUNICATIONS FACILITY
MANCHESTER SAND AND GRAVEL
SITE NUMBER: CT1080
60 ADAMS STREET
MANCHESTER, CT 06042

DATE: 04/08/16
 SCALE: AS NOTED
 JOB NO. 16002.11

TITLE SHEET

T-1
 Sheet No. 1 of 1

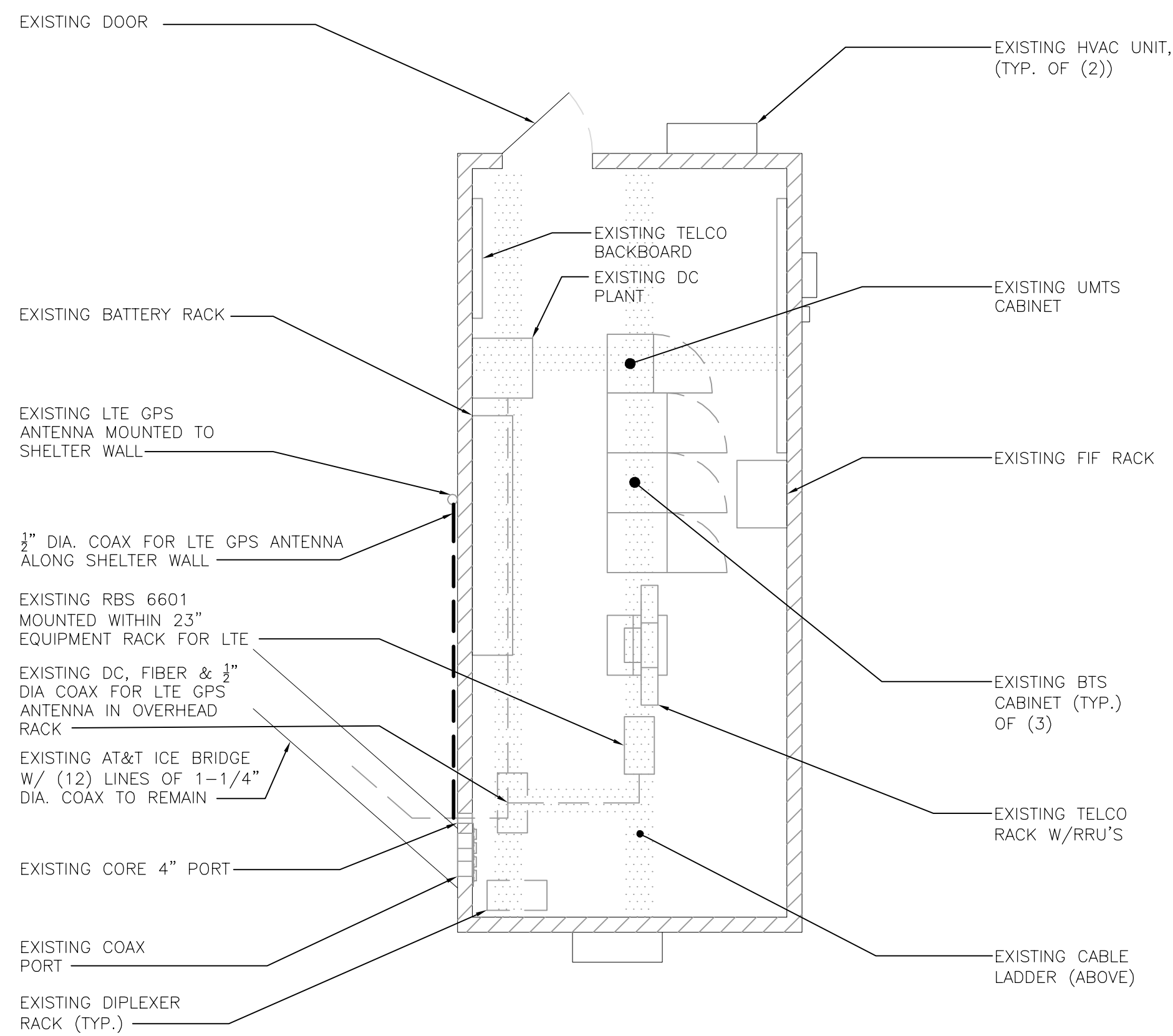
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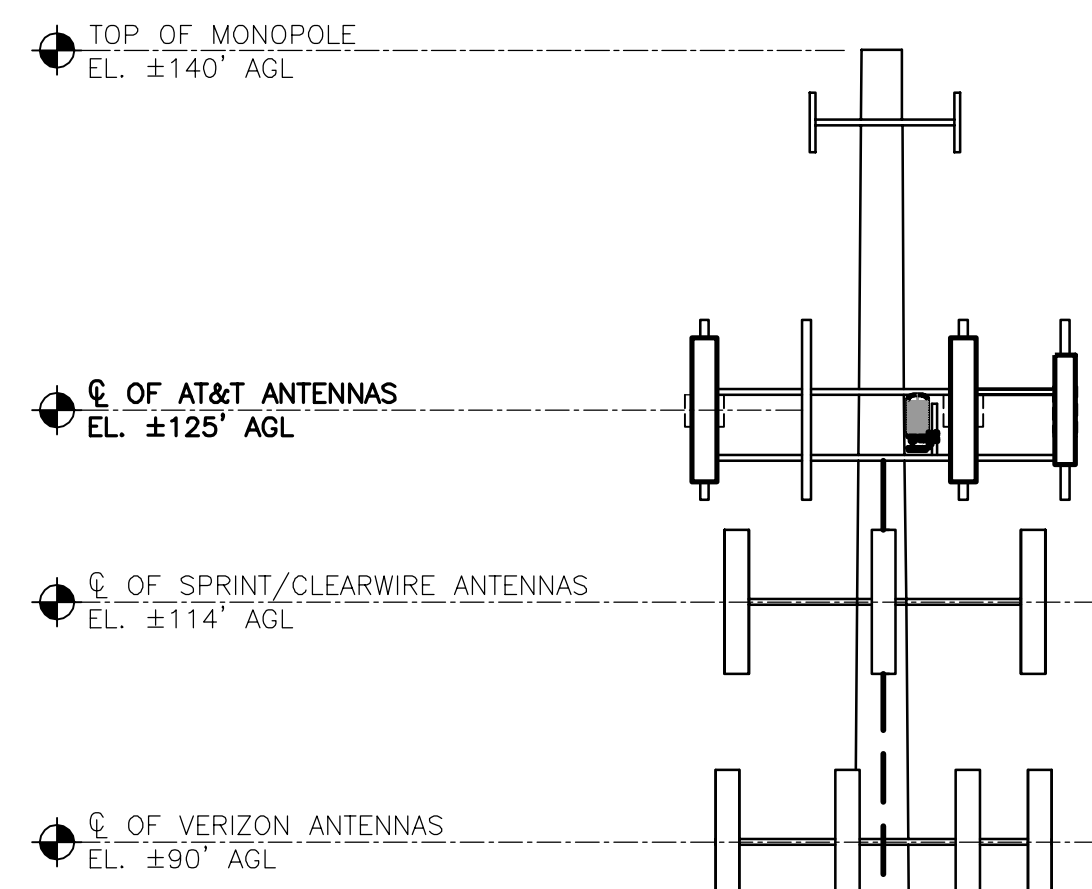
ISOMETRIC VIEW

NOTES:

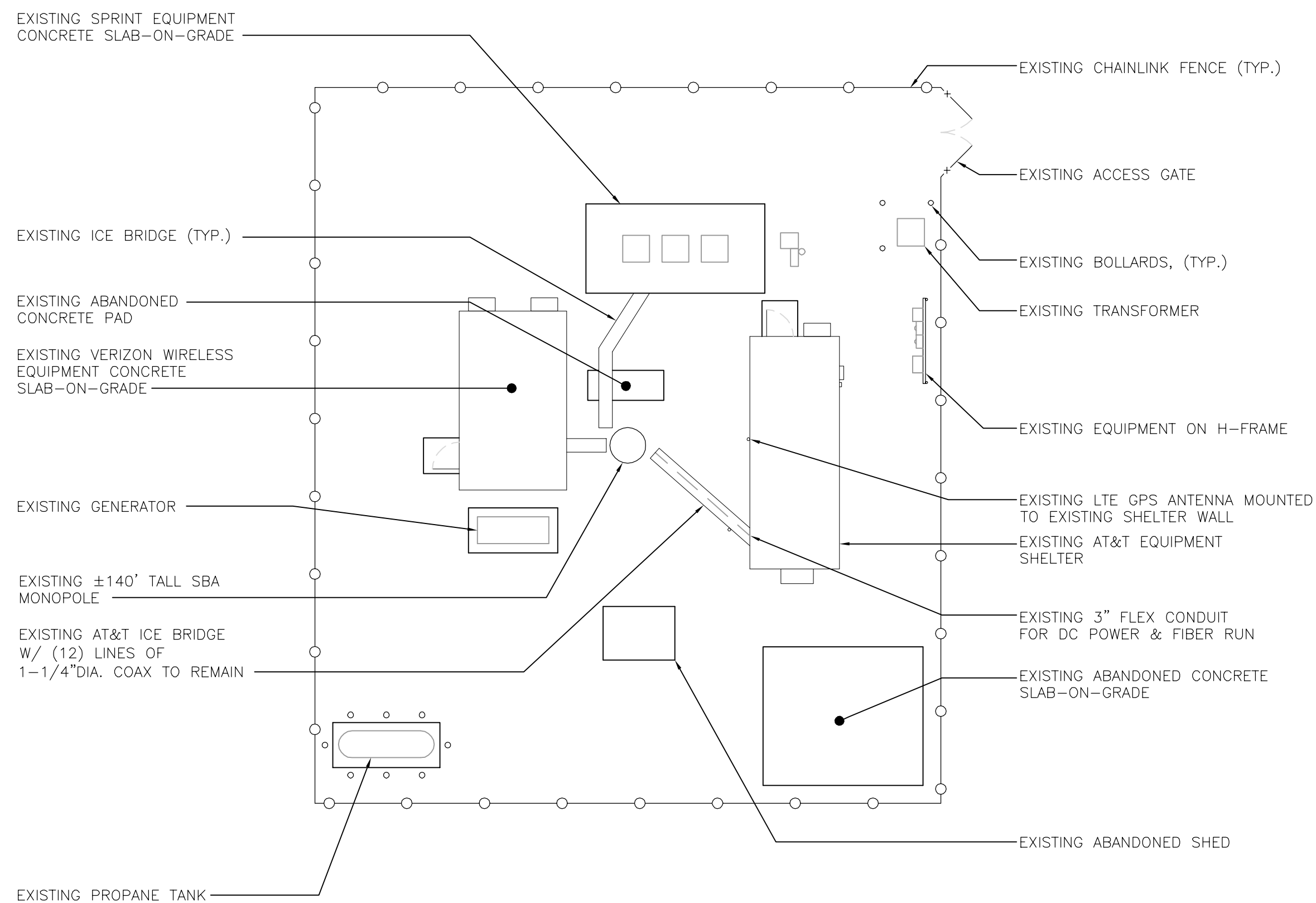
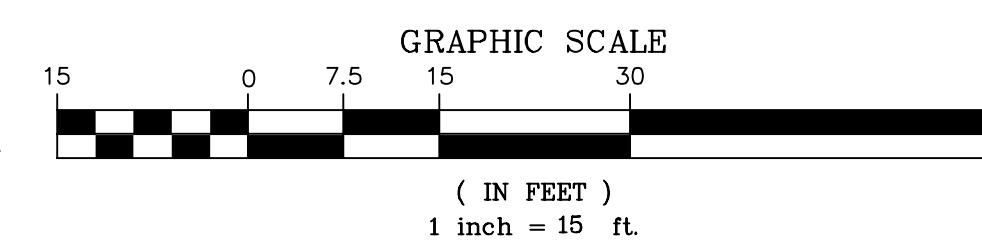
1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
3. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.



2 EQUIPMENT BUILDING FLOOR PLAN
SCALE: 1/4" = 1'-0"



1 NORTH ELEVATION
SCALE: 1" = 15'-0"



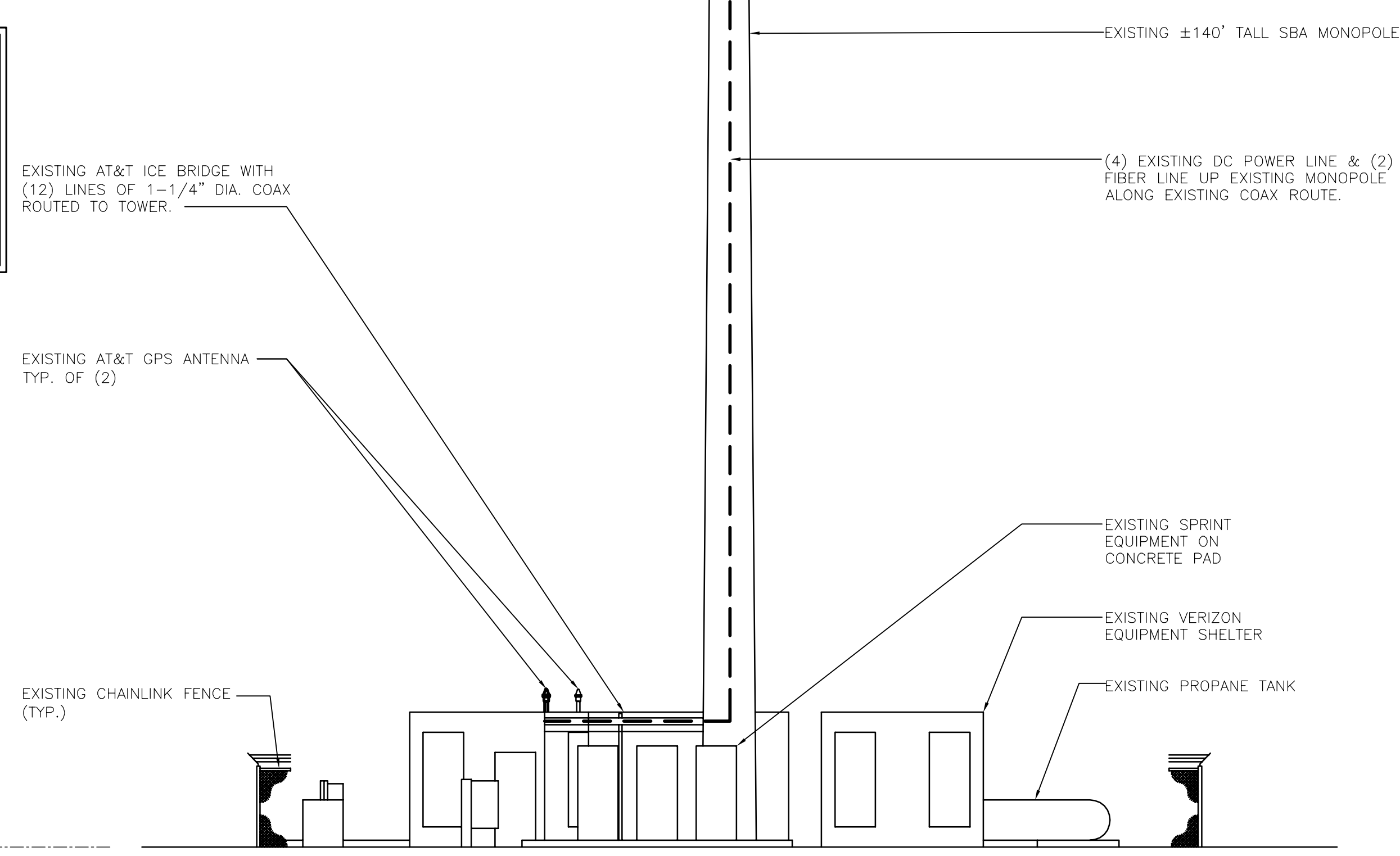
4 COMPOUND PLAN
SCALE: 1" = 30'-0"

TOWER STRUCTURAL NOTES:

1. REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY XXXXXX, PROJ. NO. XXXXX.XX, DATED XXXXXX XX, XXXX FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY SBA COMMUNICATIONS, CORP. AND FINAL AT&T RF DATA SHEET.

NOTES:

1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY.
2. AGL = ABOVE GRADE LEVEL



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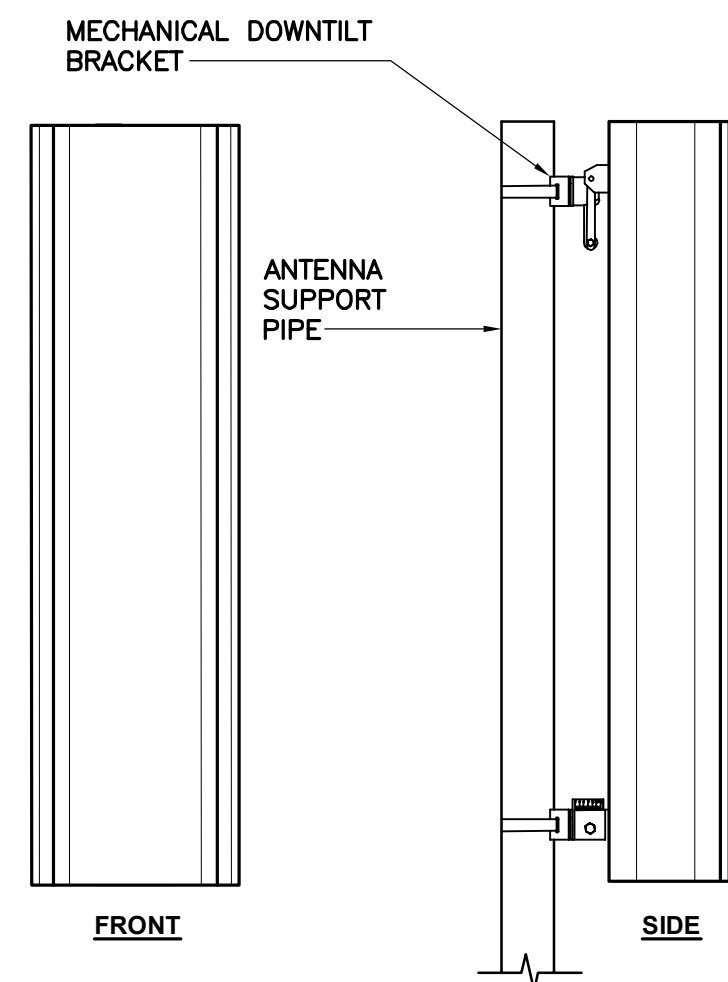
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PLANS, ELEVATION AND DETAILS

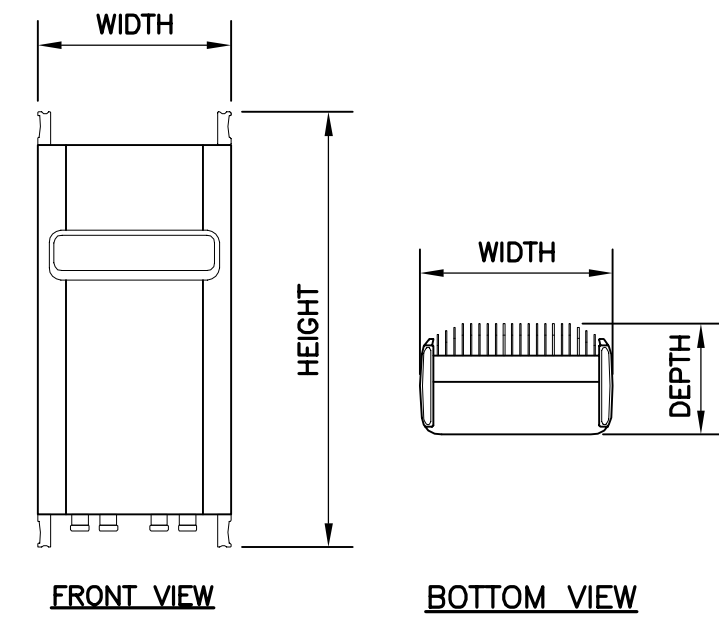
C-1
Sheet No. 3 of 7



ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: QUINTEL MODEL: QS66512-2	72.0"H x 12.0"W x 9.6"D	111.0-LBS

5 PROPOSED ANTENNA DETAIL

- SCALE: NTS
- NOTES:
- INSTALL ANTENNA TO EXISTING PIPE MAST USING MANUFACTURERS SUPPLIED BRACKETS AND MOUNTING HARDWARE
 - SET MECHANICAL DOWNTILT TO VALUE SPECIFIED IN LATEST RFDS



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

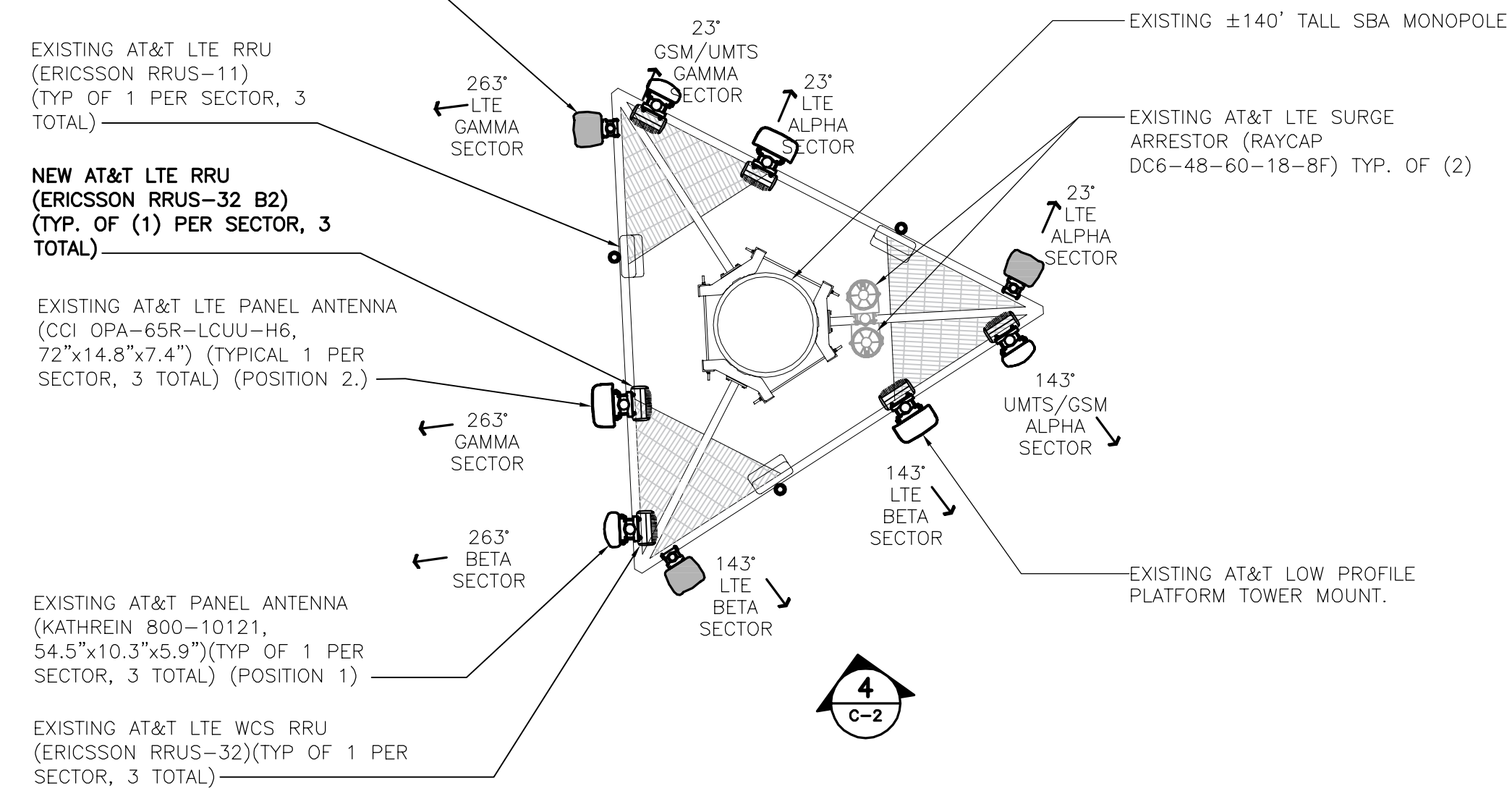
NOTES:

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

7 ERICSSON RRU 32 DETAIL

SCALE: 1" = 1'-0"

NEW AT&T PANEL ANTENNA (QUINTEL QS66512-2, 72"x12"x9.6") TYPICAL OF 1 PER SECTOR, 3 TOTAL (POSITION 4.)

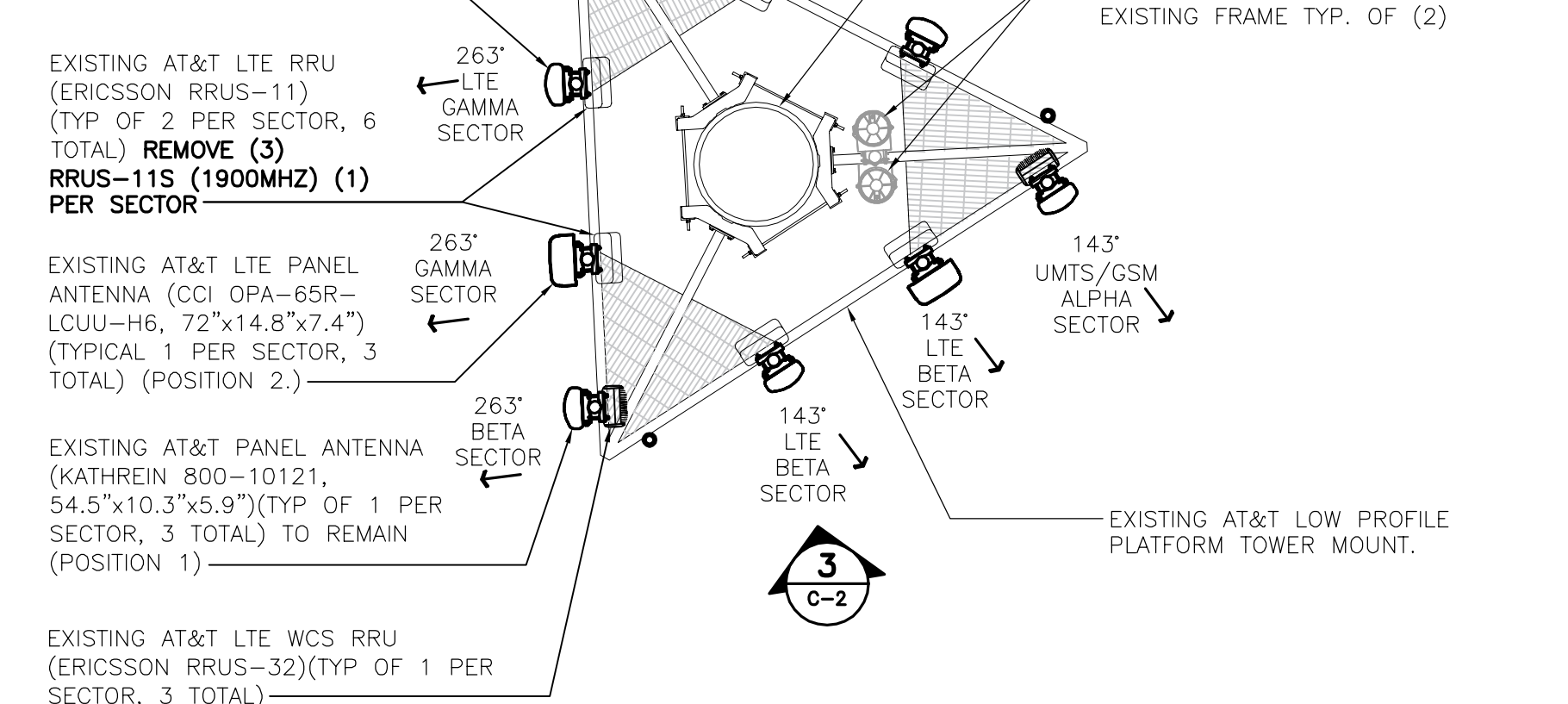


2 PROPOSED ANTENNA PLAN

SCALE: 1/4" = 1'-0"

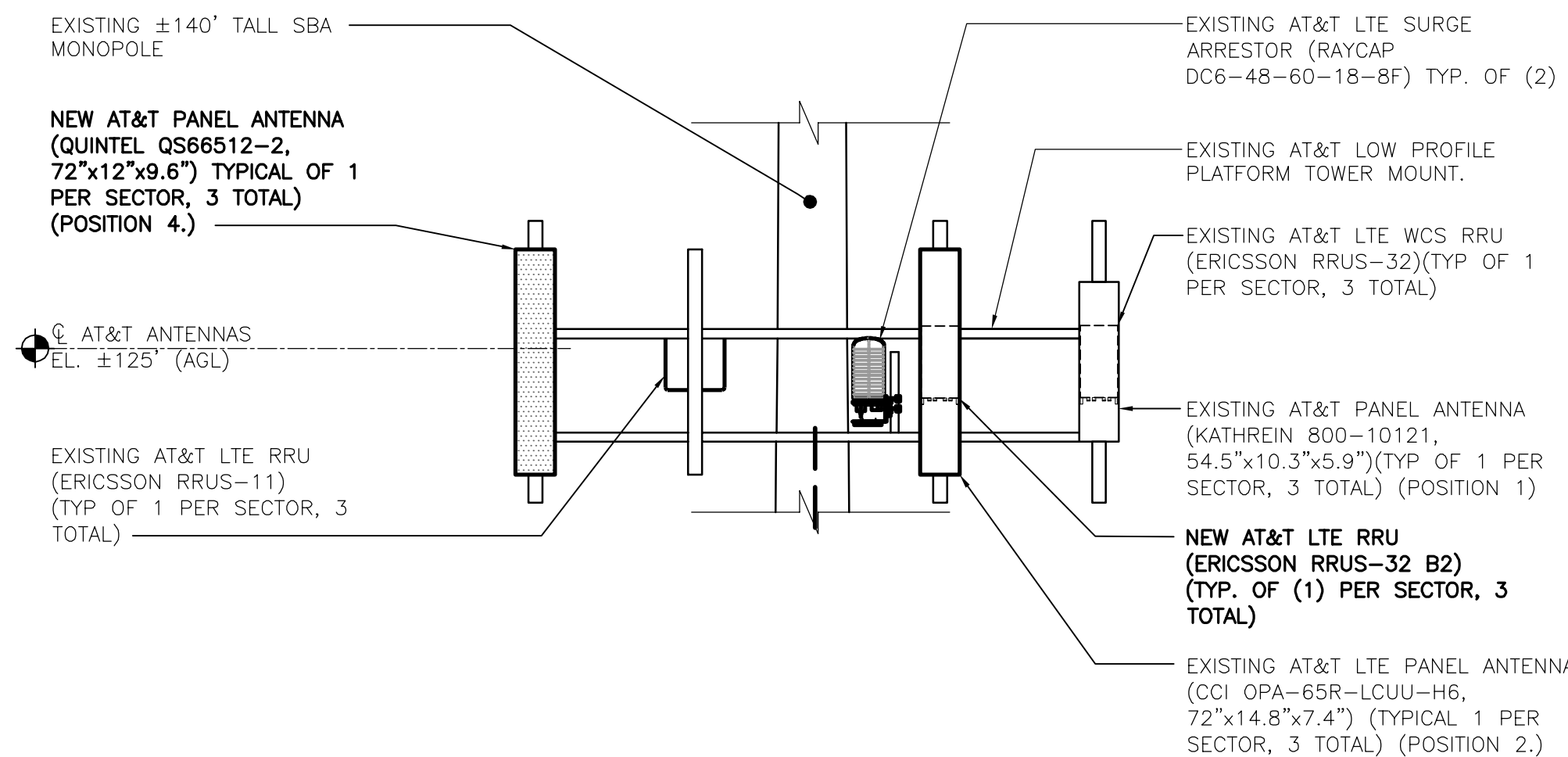


EXISTING AT&T PANEL ANTENNA (KMW AM-X-CD-16-65-00T, 72"x11.8"x5.9") (TYP OF 1 PER SECTOR, 3 TOTAL) IN POSITION 3 TO BE REMOVED AND REPLACED



1 EXISTING ANTENNA PLAN

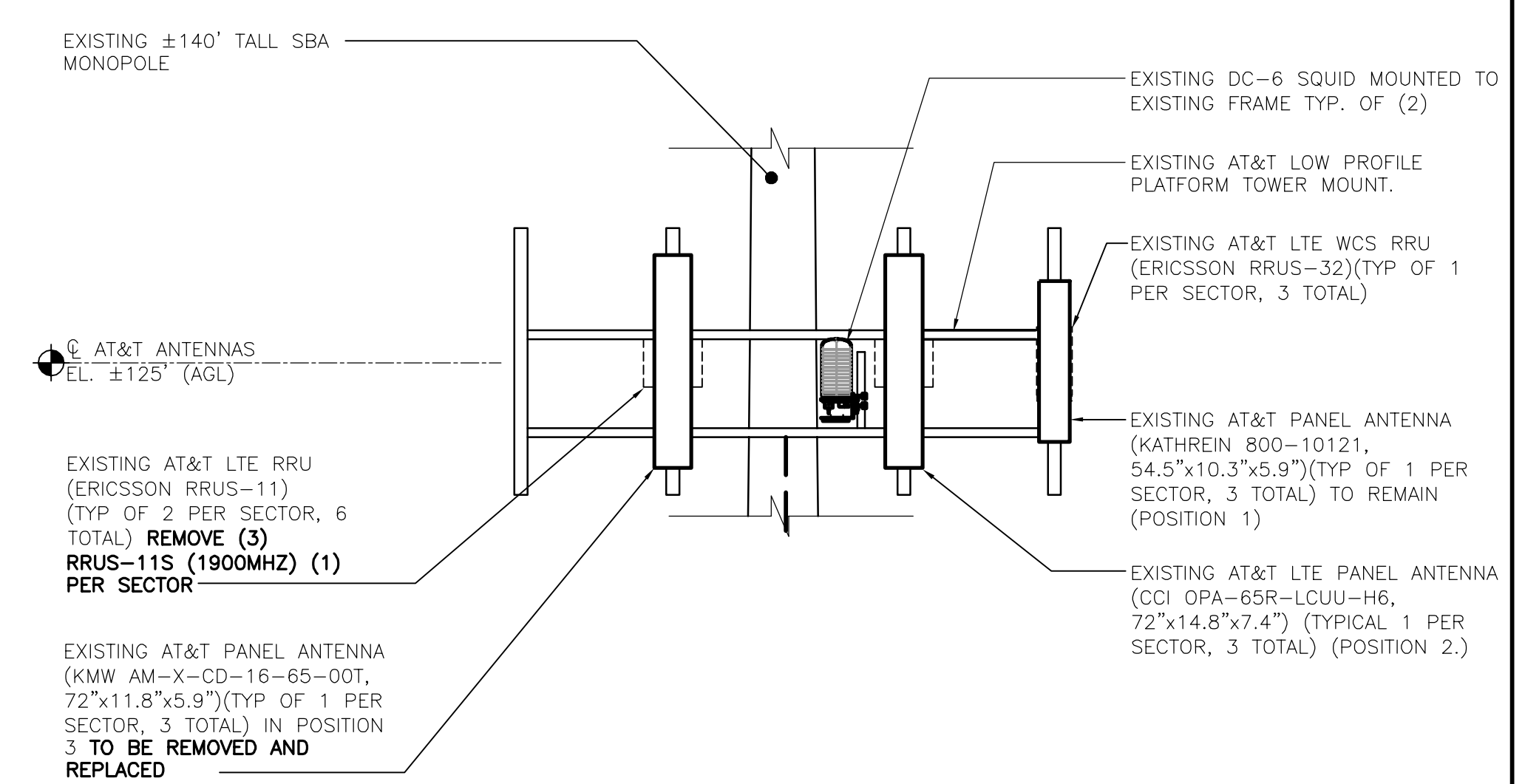
SCALE: 1/4" = 1'-0"



4 PROPOSED ANTENNA PLAN

SCALE: 1/4" = 1'-0"

- NOTE:
- TOWER MOUNTED AMPLIFIERS (TMA), NOT SHOWN FOR CLARITY.



3 EXISTING ANTENNA PLAN

SCALE: 1/4" = 1'-0"

- NOTE:
- TOWER MOUNTED AMPLIFIERS (TMA), NOT SHOWN FOR CLARITY.

- NOTES:
- PROVIDE MOUNTING PIPES, CROSSOVERS & ASSOCIATED HARDWARE TO COMPLETE THE PROPOSED UPGRADE.
 - REFER TO SBA COMMUNICATIONS CORP. STRUCTURAL REPORT AND FINAL AT&T RF DATA SHEET PRIOR TO INSTALLATION OF TOWER MOUNTED LTE RELATED ANTENNAS, CABLES AND RELATED EQUIPMENT
 - COORDINATE ANTENNA CENTERLINE ELEVATION, RRU/SURGE ARRESTOR MOUNTING ELEVATION, ATTACHMENT HARDWARE WITH AMERICAN TOWER, CO.

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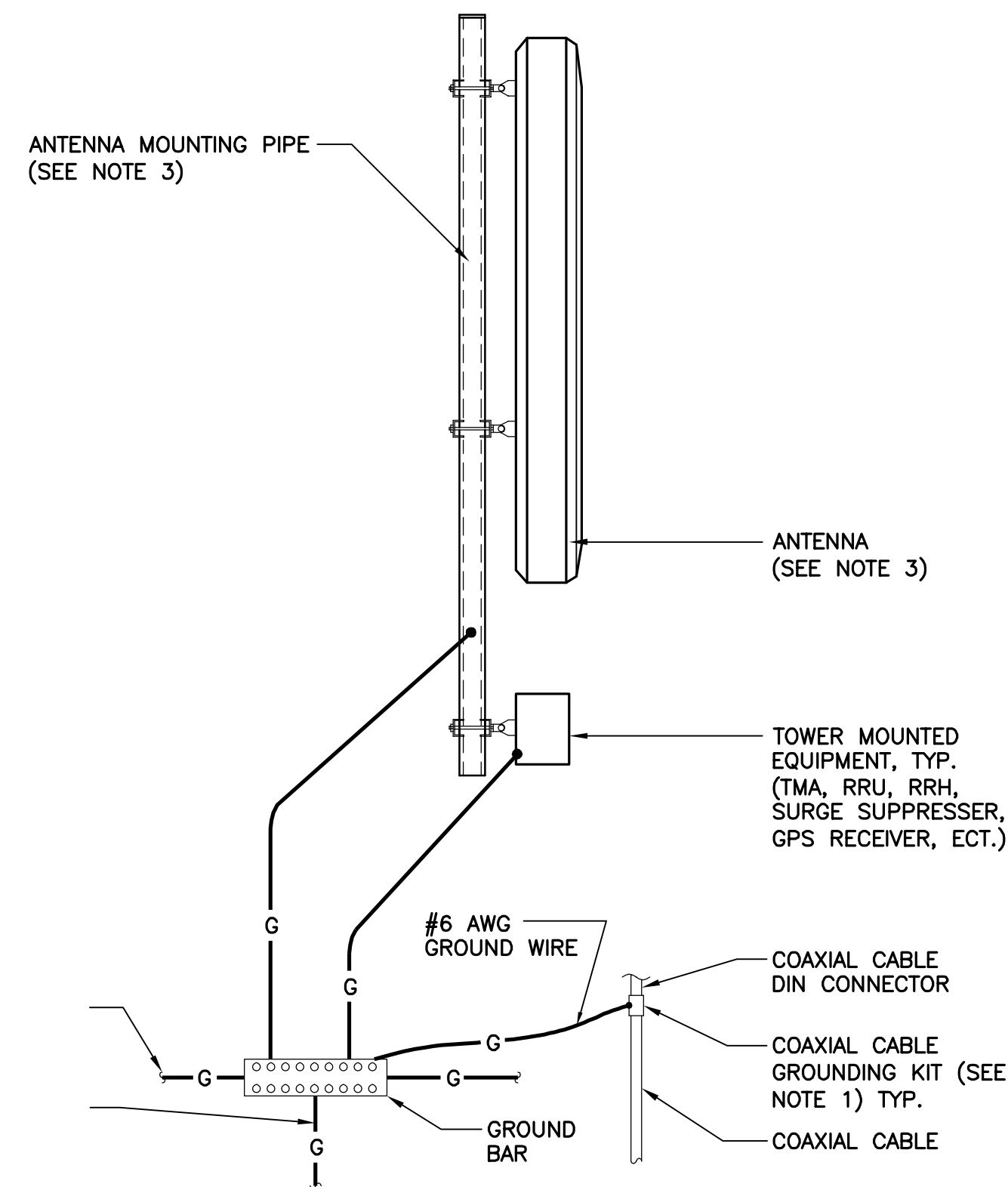
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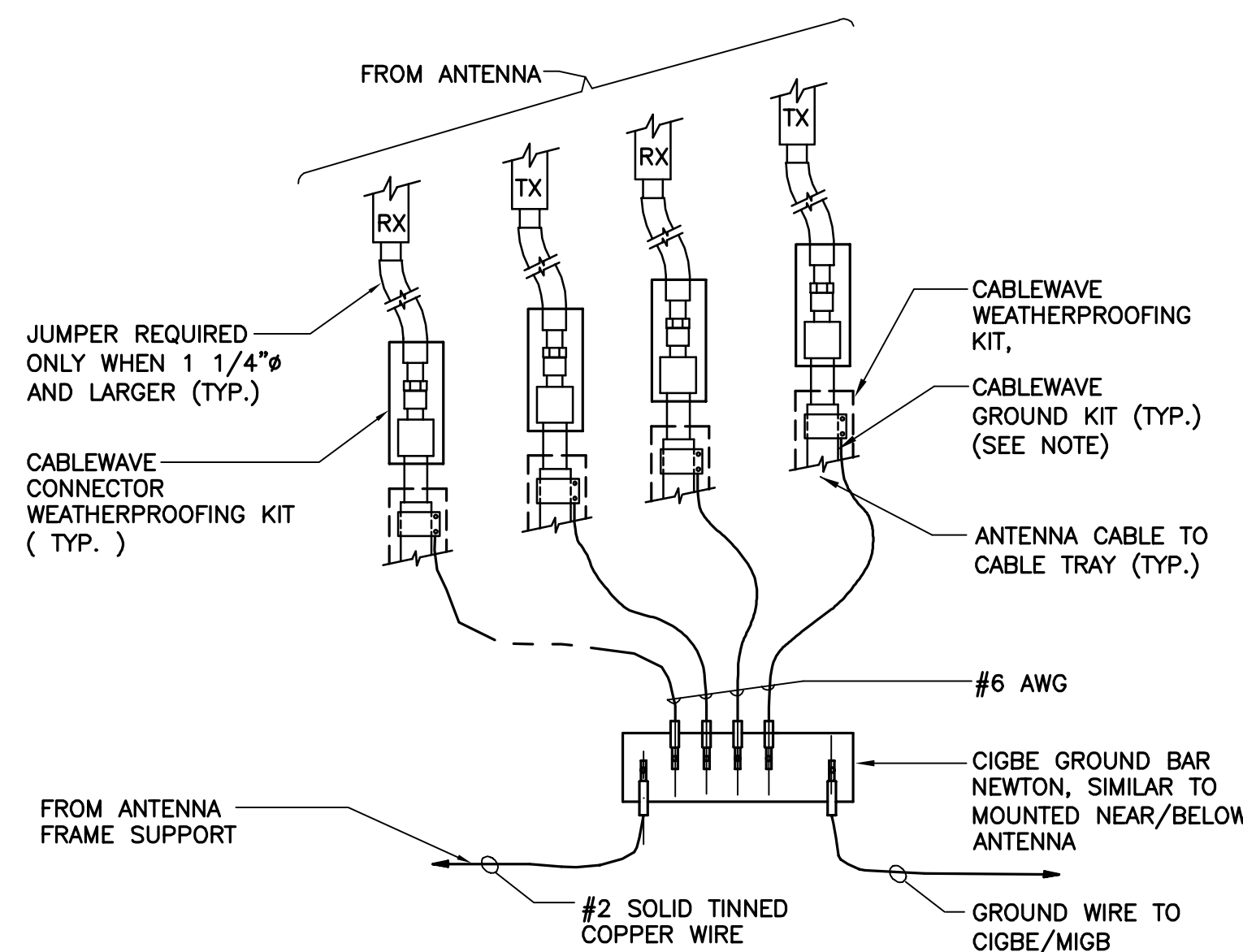
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 EQUIPMENT
 DETAILS AND
 ELEVATIONS
C-2
 Sheet No. 4 of 7



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.

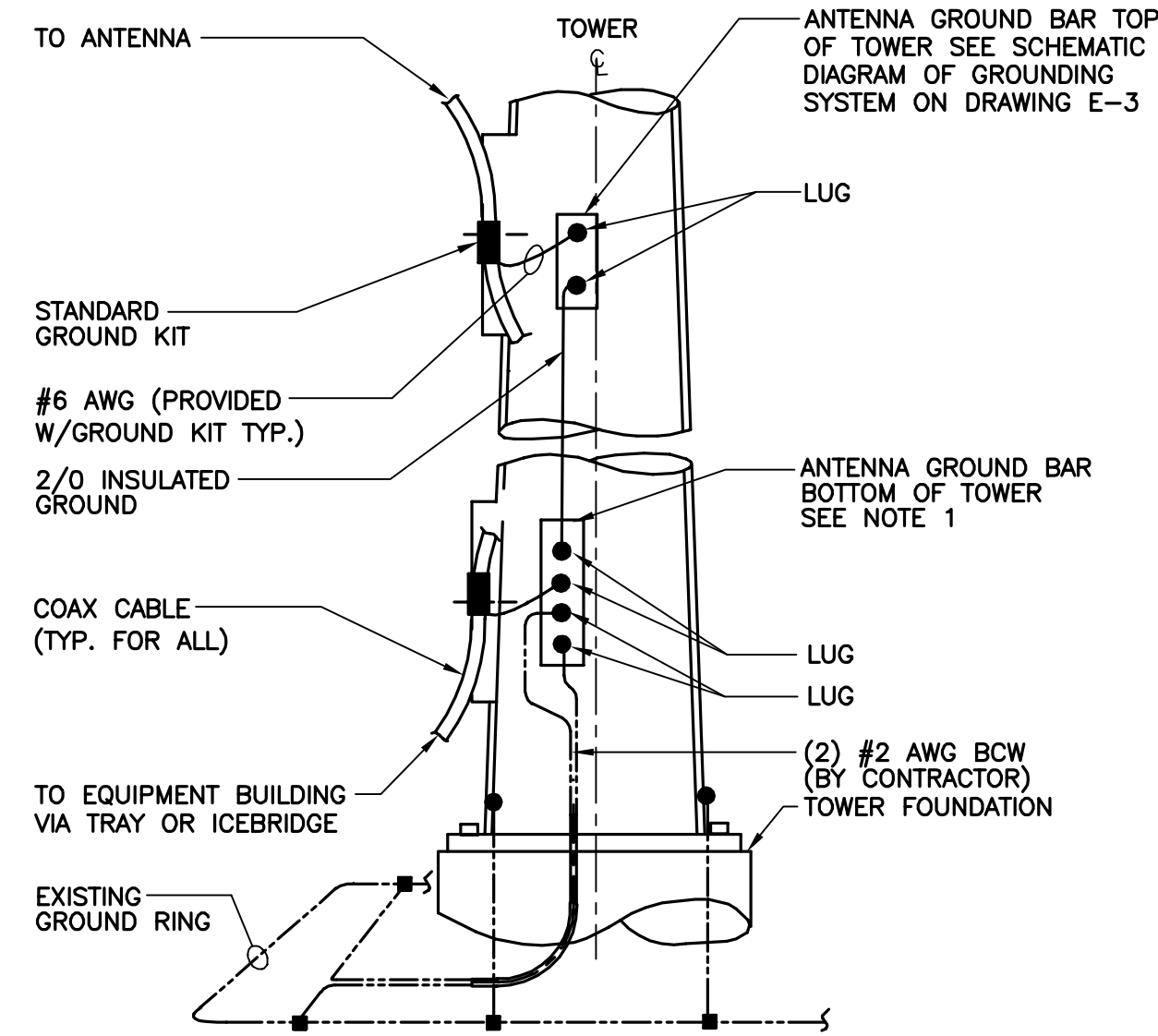
2 TYPICAL ANTENNA GROUNDING DETAIL
E-1 NOT TO SCALE



NOTE:

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

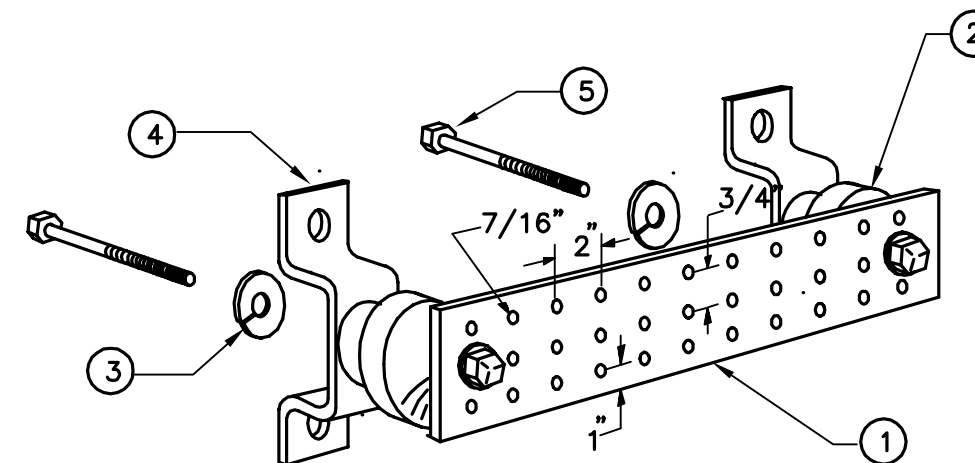
5 CONNECTION OF GROUND WIRES TO GROUND BAR
E-1 NOT TO SCALE



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.

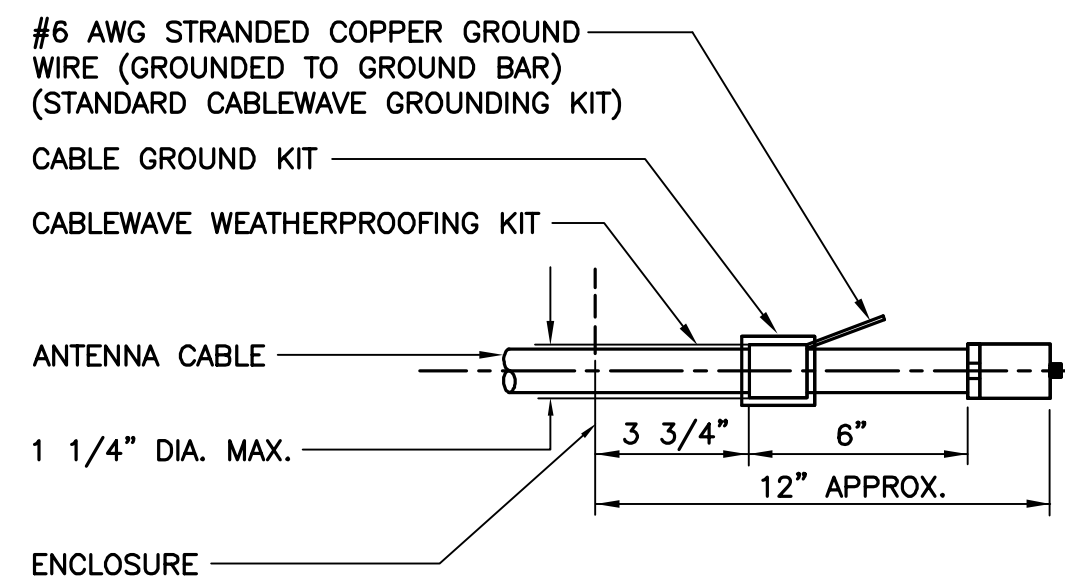
1 ANTENNA CABLE GROUNDING - TOWER
E-1 NOT TO SCALE



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. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-8056.
5. STAINLESS STEEL SECURITY SCREWS.

3 GROUND BAR DETAIL
E-1 NOT TO SCALE



NOTE:

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

4 ANTENNA CABLE GROUNDING DETAIL
E-1 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.

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TYPICAL ELECTRICAL DETAILS & NOTES

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Sheet No. 5 of 7

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