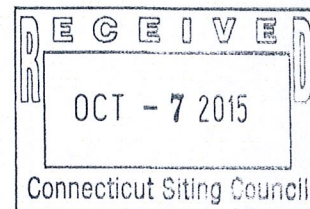


EM-T-MOBILE-077-151007

October 6, 2015

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051



RE: Notice of Exempt Modification
640 Hilliard Street
Manchester, CT 06040
N 41.78473
W -72.55083
T-Mobile Site #: CTHA071D_L700

ORIGINAL

Members of the Siting Council:

On behalf of T-Mobile, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 640 Hilliard Street, Manchester, CT.

The 640 Hilliard Street facility consists of a 149' Monopole Tower owned and operated by SBA Infrastructure, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located, Scott Shanley, General Manager of the Town of Manchester, as well as the property owner, 640 Hilliard Street, LLC.

As part of T-Mobile's L700 project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of \$625.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than the new equipment cabinets.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, SBA Communications on behalf of T-Mobile, respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 508.251.0720 x 3804 with any questions you may have concerning this matter.

Thank you,



Kri Pelletier
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbsite.com



T-Mobile

Equipment Modification

640 Hilliard Street, Manchester, CT
Site number CTHA071D_L700

Tower Owner: SBA Infrastructure, LLC

Equipment Configuration: Monopole

Current and/or approved:

- (3) Ericsson AIR B2A/B4P
- (3) Ericsson KRY 112 144 TMAs
- (12) 1-5/8" Lines
- (1) 1-5/8" Fiber

Final Configuration:

- (3) Ericsson AIR21 B2A/B4P - Panel
- (3) Ericsson AIR21 B4A B12P - Panel
- (3) Ericsson KRY 112 144/1 - TMA/TTA
- (3) Ericsson S11B12 - RRU
- (12) 1-5/8" lines
- (1) 1-5/8" Fiber

Structural Information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

Power Density:

The anticipated Maximum Composite contributions from the T-Mobile facility are 1.95% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 2.84% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE%	
Carrier	MPE%
T-Mobile	1.95
Clearwire	0.14 %
MetroPCS	0.75 %
Site Total MPE %:	2.84 %

October 6, 2015

Mr. Scott Shanley
General Manager
Town of Manchester
41 Center Street
Manchester, CT 06040

RE: Telecommunications Facility @ 640 Hilliard Street, Manchester, CT

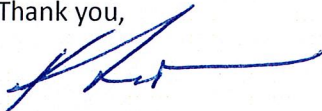
Dear Mr. Shanley,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,



Kri Pelletier
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbsite.com

COPY

October 6, 2015

640 Hilliard Street, LLC
40 Hansen Drive
Vernon, CT 06066
Attn: President or Manager

RE: Telecommunications Facility @ 640 Hilliard Street, Manchester, CT

To Whom It May Concern:

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,



Kri Pelletier
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33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
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kpelletier@sbsite.com

COPY



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

T-Mobile Existing Facility

Site ID: CTHA071D

CT071/ Optasite Hilliardvil
640 Hilliard Street
Manchester, CT 06042

October 6, 2015

EBI Project Number: 6215005003

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	2.84 %



October 6, 2015

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CTHA071D – CT071/ Optasite Hilliardvil**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **640 Hilliard Street, Manchester, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile 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 limit for the 700 MHz Band is approximately 467 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS and AWS 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 T-Mobile Wireless antenna facility located at **640 Hilliard Street, Manchester, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile 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 GSM / UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) 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.



- 6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antennas used in this modeling are the **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Ericsson AIR21 B4A/B12P** for 2100 MHz (AWS) and 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe. The **Ericsson AIR21 B4A/B12P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz and has a maximum gain of **13.6 dBd** at its main lobe at 700 MHz. 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.
- 8) The antenna mounting height centerline of the proposed antennas is **147 feet** above ground level (AGL).
- 9) 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.



EBI Consulting

environmental | engineering | due diligence

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	147	Height (AGL):	147	Height (AGL):	147
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	# PCS Channels:	4
Total TX Power:	120	Total TX Power:	120	# AWS Channels:	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	0.84	Antenna B1 MPE%	0.84	Antenna C1 MPE%	0.84
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P	Make / Model:	Ericsson AIR21 B4A/B12P
Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd	Gain:	15.9 / 13.6 dBd
Height (AGL):	147	Height (AGL):	147	Height (AGL):	147
Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz	Frequency Bands	2100 MHz (AWS) / 700 MHz
Channel Count	3	Channel Count	3	Channel Count	3
Total TX Power:	150	Total TX Power:	150	Total TX Power:	150
ERP (W):	5,355.80	ERP (W):	5,355.80	ERP (W):	5,355.80
Antenna A2 MPE%	1.11	Antenna B2 MPE%	1.11	Antenna C2 MPE%	1.11

Site Composite MPE%	
Carrier	MPE%
T-Mobile	1.95
Clearwire	0.14 %
MetroPCS	0.75 %
Site Total MPE %:	2.84 %

T-Mobile Sector 1 Total:	1.95 %
T-Mobile Sector 2 Total:	1.95 %
T-Mobile Sector 3 Total:	1.95 %
Site Total:	2.84 %

T-Mobile_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
T-Mobile 2100 MHz (AWS) LTE	2	2334.27	90	8.44	2100	1000	0.84 %
T-Mobile 700 MHz LTE	1	687.26	90	1.24	700	467	0.27 %
T-Mobile 1900 MHz (PCS) GSM/UMTS	2	1167.14	90	4.22	1900	1000	0.42 %
T-Mobile 2100 MHz (AWS) UMTS	2	1167.14	90	4.22	2100	1000	0.42 %
						Total:	1.95%



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 T-Mobile 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:

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.95 %
Sector 2:	1.95 %
Sector 3 :	1.95 %
T-Mobile Total:	1.95 %
Site Total:	2.84 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **2.84%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803



Tower Engineering Solutions

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

Structural Analysis Report

Existing 149 ft. Sabre Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13063-A

Customer Site Name: Middle Turnpike

Carrier Name: T-Mobile

Carrier Site Number: CTHA071D

Site Location: 640 Hilliard Street

Manchester, Connecticut

Hartford County

Latitude: 41.784500

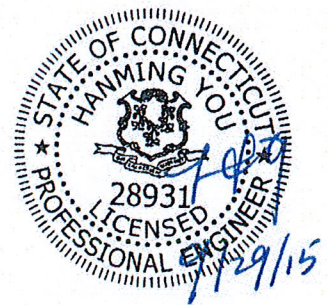
Longitude: -72.550806

Analysis Result:

Max Structural Usage: 99.6% [Pass]

Max Foundation Usage: 90.2% [Pass]

Report Prepared By : Kyle Wyant



Introduction

The purpose of this report is to summarize the analysis results on the 149 ft. Sabre 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	Sabre Towers & Poles, "Revised Stamped Permit Drawings," Job No. 08-01015 Revision A, Drawing No. 08-01015-PE, dated February 15, 2008
Foundation Drawing	Sabre Towers & Poles, "Revised Stamped Permit Drawings," Job No. 08-01015 Revision A, Drawing No. 08-01015-PE, dated February 15, 2008
Geotechnical Report	JGI Eastern, Inc., "Geotechnical Evaluation," Project No. J2085111, dated February 7, 2008
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA-222-G. 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:	100 mph (3-Sec. Gust)
Basic Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" Radial Ice Concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA-222-G / 2005 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft.

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	147.0	3	Ericsson AIR B2A/B4P	Flush Mount	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
3		3	Ericsson KRY 112 144 TMAs			
5	127.0	3	RFS APXV18-206517S-C	Flush Mount	(6) 1 5/8"	MetroPCS
6	117.0	3	Argus LLPX310R	Flush Mount	(3) 1/4" (2) 1/2" (3) 5/8" (1) 5/16"	Clearwire
7		3	BTSS			
8		1	Andrew VHLP2-11 Dish			
9		1	Andrew VHLP2.5-11 Dish			

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

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
1	147.0	3	Ericsson AIR21 B2A/B4P - Panel	(3) WiMax-Style T-Arms (Site Pro P/N RMV5-3096)	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
2		3	Ericsson AIR21 B4A B12P - Panel			
3		3	Ericsson KRY 112 144/1 - TMA/TTA			
4		3	Ericsson S11B12 - RRU			

All transmission lines are considered running 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	Flange Connection
Max. Usage:	56.6%	50.4%	40.0%	99.6%
Pass/Fail	Pass	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	1715.8	19.6	37.1
Analysis Reactions	1519.9	16.0	25.7
% of Design Reactions	88.6%	81.8%	69.2%

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-222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.0306 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-222-G Standard and the 2005 Connecticut State Building Code 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 Ratio 56.60% at 53.3ft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-G
Exposure: B
Gh: 1.1

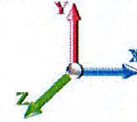
9/29/2015



Page: 1

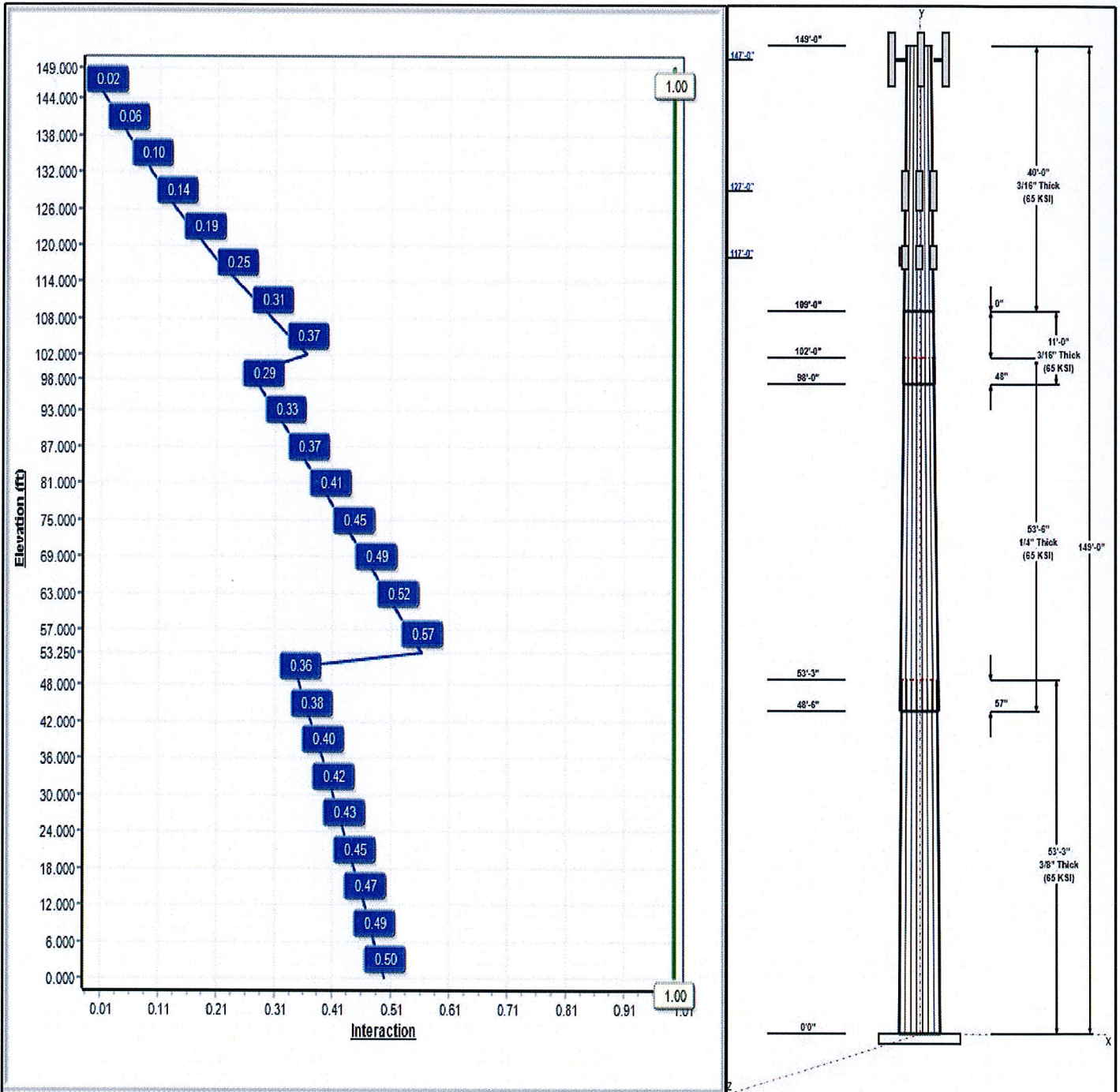
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 100 mph Wind



Iterations: 28

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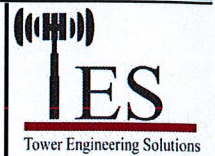


Structure: CT13063-A-SBA

Type: Tapered
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.12852

9/29/2015



Page: 2

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	35.51	42.35	0.375		0.12852	65
2	53.50	29.74	36.62	0.250	Slip	0.12852	65
3	11.00	29.22	30.63	0.188	Slip	0.12852	65
4	40.00	24.08	29.22	0.188	Butt	0.12852	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
147.00	147.00	3	AIR 21, 1.3M, B2A B4P	T-Mobile
147.00	147.00	3	Ericsson AIR21 B4A B12P	T-Mobile
147.00	147.00	3	KRY 112 144/1	T-Mobile
147.00	147.00	3	RRUS-11 (19)	T-Mobile
147.00	147.00	3	T-Arms (Site Pro P/N	T-Mobile
127.00	127.00	1	Flush Mount	MetroPCS
127.00	127.00	3	RFS APXV18-206517S-C	MetroPCS
117.00	117.00	1	Andrew VHLP2-11	Clearwire
117.00	117.00	1	Andrew VHLP2.5-11	Clearwire
117.00	117.00	3	Argus LLPX310R	Clearwire
117.00	117.00	3	BTS	Clearwire
117.00	117.00	1	Flush Mount	Clearwire

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	147.00	Inside	1 5/8" Coax	T-Mobile
0.00	147.00	Inside	1 5/8" Fiber	T-Mobile
0.00	127.00	Inside	1 5/8" Coax	MetroPCS
0.00	117.00	Inside	1/2" Coax	Clearwire
0.00	117.00	Inside	1/4" Coax	Clearwire
0.00	117.00	Inside	5/16" Coax	Clearwire
0.00	117.00	Inside	5/8" Coax	Clearwire

Anchor Bolts

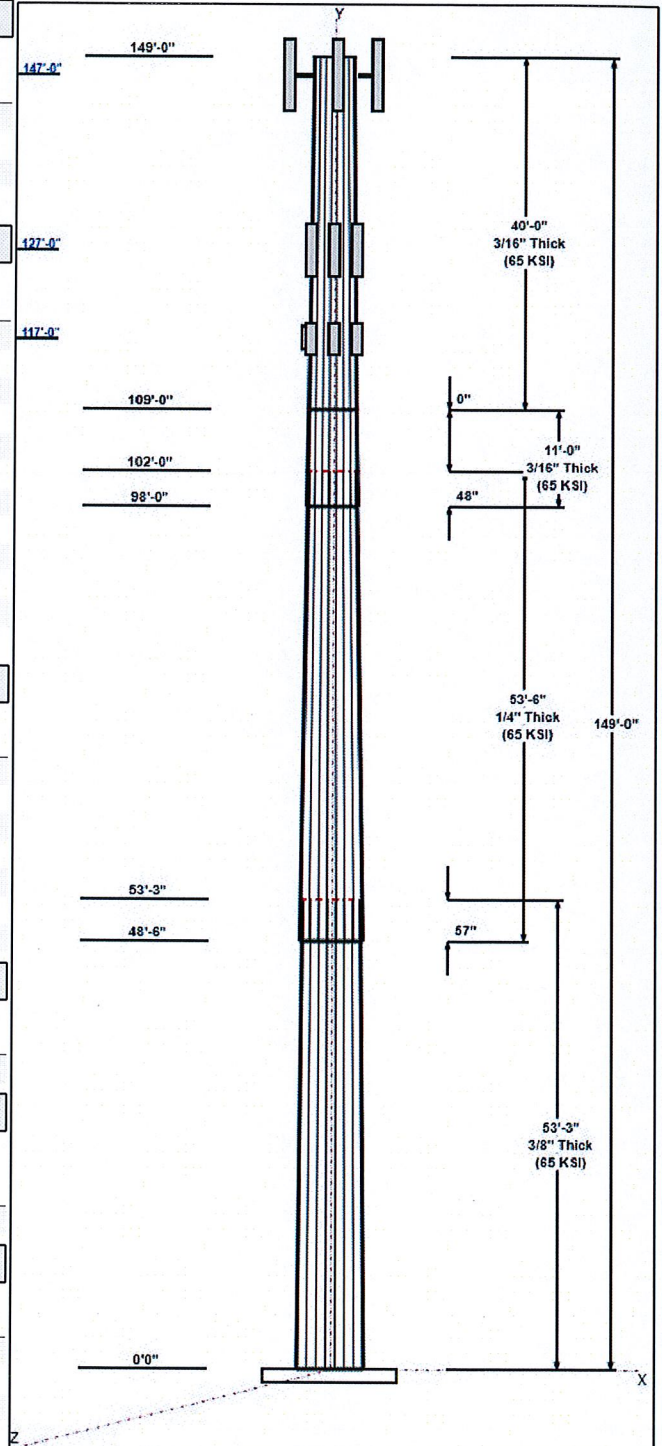
Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	48.0	60.0	Clipped

Reactions

Load Case	Moment	Shear	Axial
1.2D + 1.6W 100 mph Wind	1519.9	16.0	25.7
0.9D + 1.6W 100 mph Wind	1505.1	16.0	19.3
1.2D + 1.0Di + 1.0Wi 50 mph Wind	430.7	4.4	44.2
1.0D + 1.0W 60 mph Wind	340.0	3.6	21.4

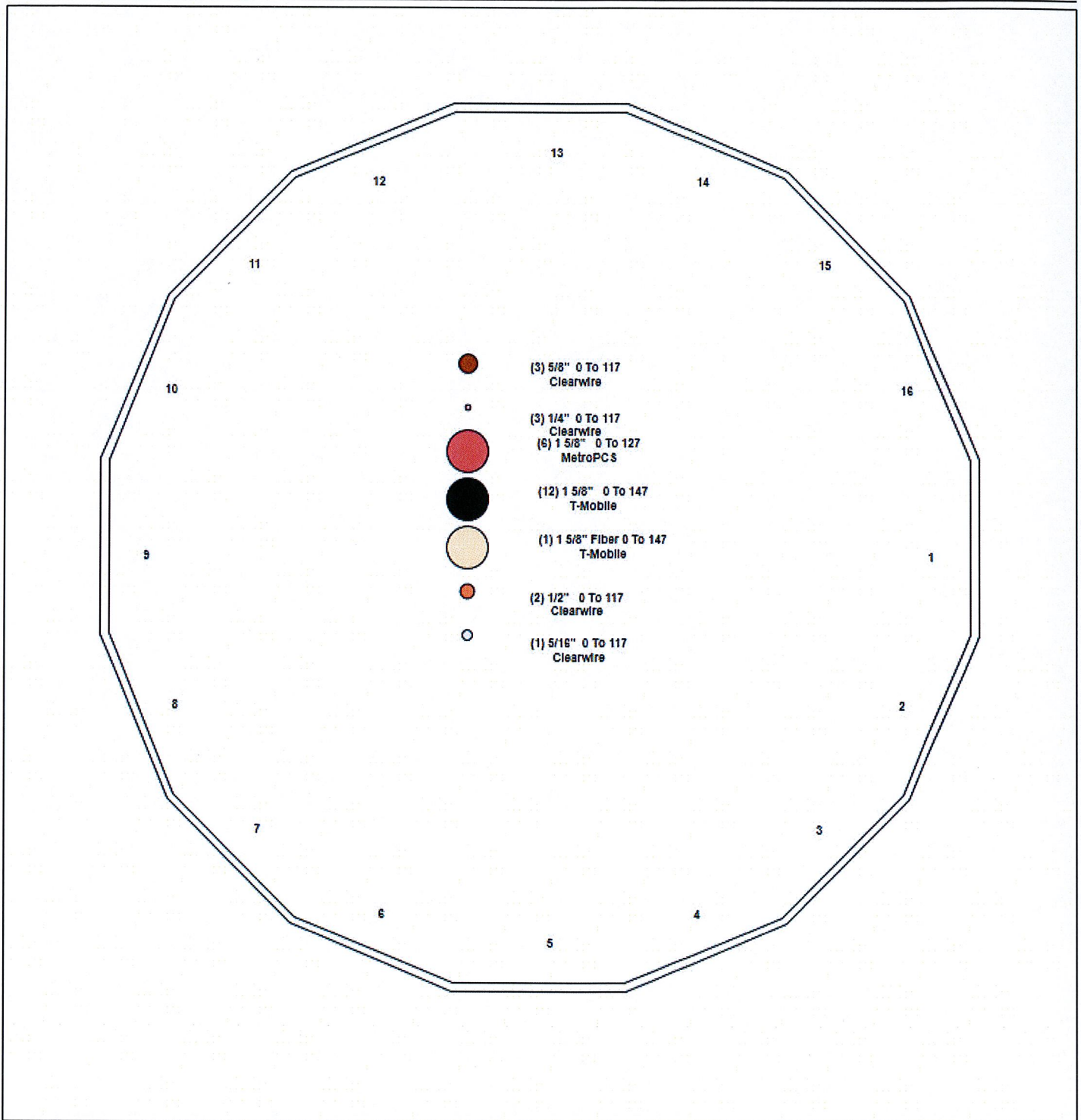


Structure: CT13063-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Middle Turnpike
Height: 149.00 (ft)

9/29/2015

Page: 3



Shaft Properties

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 4

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	16	53.250	0.3750	65		0.00	8,357
2	16	53.500	0.2500	65	Slip	57.00	4,781
3	16	11.000	0.1875	65	Slip	48.00	666
4	16	40.000	0.1875	65	Flange	0.00	2,154
Total Shaft Weight:							15,957

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	42.35	0.00	50.21	11176.57	20.87	112.9	35.51	53.25	42.03	6552.63	17.24	94.68	0.128522
2	36.62	48.50	29.00	4845.70	27.54	146.4	29.74	102.0	23.52	2584.07	22.07	118.9	0.128522
3	30.63	98.00	18.21	2131.78	30.90	163.3	29.22	109.0	17.36	1848.36	29.40	155.8	0.128522
4	29.22	109.0	17.36	1848.36	29.40	155.8	24.08	149.0	14.29	1029.99	23.94	128.4	0.128522

Load Summary

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 5

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	147.0	AIR 21, 1.3M, B2A B4P	3	117.00	6.30	0.92	356.34	7.582	0.95	0.00	0.00
2	147.0	Ericsson AIR21 B4A B12P	3	156.00	11.54	0.97	557.30	13.76	1.00	0.00	0.00
3	147.0	KRY 112 144/1	3	11.00	0.41	0.50	25.35	1.042	0.75	0.00	0.00
4	147.0	RRUS-11 (19)	3	51.00	2.83	0.50	152.48	4.310	0.72	0.00	0.00
5	147.0	T-Arms (Site Pro P/N RMV5-3096)	3	250.00	2.67	0.83	482.23	5.770	0.88	0.00	0.00
6	127.0	Flush Mount	1	200.00	1.00	1.00	419.70	1.915	1.00	0.00	0.00
7	127.0	RFS APXV18-206517S-C	3	49.00	5.17	0.74	274.98	8.284	0.98	0.00	0.00
8	117.0	Andrew VHLP2-11	1	27.00	4.68	0.80	154.28	6.337	1.00	0.00	0.00
9	117.0	Andrew VHLP2.5-11	1	47.60	8.43	0.80	272.20	10.65	1.00	0.00	0.00
10	117.0	Argus LLPX310R	3	47.00	4.59	0.84	240.01	6.895	0.88	0.00	0.00
11	117.0	BTS	3	20.00	3.03	0.50	83.70	5.005	0.84	0.00	0.00
12	117.0	Flush Mount	1	200.00	1.00	1.00	417.91	1.908	1.00	0.00	0.00
Totals:			28	2,577.60			7,781.23				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	147.0	(12) 1 5/8" Coax	0.00	Inside
0.00	147.0	(1) 1 5/8" Fiber	0.00	Inside
0.00	127.0	(6) 1 5/8" Coax	0.00	Inside
0.00	117.0	(2) 1/2" Coax	0.00	Inside
0.00	117.0	(3) 1/4" Coax	0.00	Inside
0.00	117.0	(1) 5/16" Coax	0.00	Inside
0.00	117.0	(3) 5/8" Coax	0.00	Inside

Shaft Section Properties

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015

Page: 6



Increment Length: 3 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in ³)	Weight (lb)
0.00		0.3750	42.350	50.213	11176.6	20.87	112.93	79.0	517.7	0.0
3.00		0.3750	41.964	49.751	10871.4	20.67	111.91	79.2	508.2	510.2
6.00		0.3750	41.579	49.290	10571.8	20.46	110.88	79.4	498.7	505.5
9.00		0.3750	41.193	48.829	10277.8	20.26	109.85	79.6	489.4	500.8
12.00		0.3750	40.808	48.368	9989.3	20.05	108.82	79.9	480.2	496.1
15.00		0.3750	40.422	47.906	9706.3	19.85	107.79	80.1	471.0	491.4
18.00		0.3750	40.037	47.445	9428.6	19.65	106.76	80.3	461.9	486.7
21.00		0.3750	39.651	46.984	9156.3	19.44	105.74	80.6	453.0	482.0
24.00		0.3750	39.265	46.523	8889.3	19.24	104.71	80.8	444.1	477.3
27.00		0.3750	38.880	46.062	8627.5	19.03	103.68	81.0	435.3	472.6
30.00		0.3750	38.494	45.600	8370.9	18.83	102.65	81.3	426.6	467.9
33.00		0.3750	38.109	45.139	8119.5	18.62	101.62	81.5	417.9	463.1
36.00		0.3750	37.723	44.678	7873.1	18.42	100.60	81.7	409.4	458.4
39.00		0.3750	37.338	44.217	7631.8	18.21	99.57	82.0	400.9	453.7
42.00		0.3750	36.952	43.755	7395.4	18.01	98.54	82.2	392.6	449.0
45.00		0.3750	36.567	43.294	7164.0	17.80	97.51	82.4	384.3	444.3
48.00		0.3750	36.181	42.833	6937.5	17.60	96.48	82.5	376.1	439.6
48.50	Bot - Section 2	0.3750	36.117	42.756	6900.2	17.57	96.31	82.5	374.8	72.8
51.00		0.3750	35.795	42.372	6715.8	17.40	95.45	82.5	368.0	607.7
53.25	Top - Section 1	0.2500	36.006	28.516	4605.7	27.06	144.02	0.0	0.0	542.3
54.00		0.2500	35.910	28.439	4568.6	26.98	143.64	72.0	249.6	72.7
57.00		0.2500	35.524	28.131	4422.0	26.67	142.10	72.4	244.2	288.7
60.00		0.2500	35.139	27.824	4278.6	26.37	140.55	72.7	238.8	285.6
63.00		0.2500	34.753	27.516	4138.3	26.06	139.01	73.1	233.6	282.5
66.00		0.2500	34.368	27.209	4001.1	25.75	137.47	73.4	228.4	279.3
69.00		0.2500	33.982	26.901	3867.0	25.45	135.93	73.8	223.2	276.2
72.00		0.2500	33.596	26.594	3735.9	25.14	134.39	74.1	218.1	273.0
75.00		0.2500	33.211	26.286	3607.8	24.83	132.84	74.5	213.1	269.9
78.00		0.2500	32.825	25.979	3482.7	24.53	131.30	74.8	208.1	266.8
81.00		0.2500	32.440	25.671	3360.5	24.22	129.76	75.2	203.2	263.6
84.00		0.2500	32.054	25.364	3241.1	23.91	128.22	75.5	198.3	260.5
87.00		0.2500	31.669	25.056	3124.7	23.61	126.67	75.9	193.5	257.4
90.00		0.2500	31.283	24.749	3011.1	23.30	125.13	76.2	188.8	254.2
93.00		0.2500	30.897	24.441	2900.2	22.99	123.59	76.6	184.1	251.1
96.00		0.2500	30.512	24.134	2792.1	22.69	122.05	76.9	179.5	247.9
98.00	Bot - Section 3	0.2500	30.255	23.929	2721.6	22.48	121.02	77.1	176.5	163.5
99.00		0.2500	30.126	23.826	2686.8	22.38	120.51	77.2	174.9	143.1
102.00	Top - Section 2	0.1875	30.116	17.901	2025.6	30.36	160.62	0.0	0.0	425.6
105.00		0.1875	29.730	17.670	1948.3	29.95	158.56	68.7	128.5	181.6
108.00		0.1875	29.345	17.440	1873.0	29.54	156.50	69.1	125.2	179.2
109.00	Top - Section 3	0.0000	0.000	0.000	0.0	NAN	NAN	69.3	124.1	59.2
109.00	Bot - Section 4	0.1875	29.216	17.363	1848.4	29.40	155.82	69.3	124.1	
111.00		0.1875	28.959	17.209	1799.7	29.13	154.45	69.6	121.9	117.6
114.00		0.1875	28.574	16.978	1728.3	28.72	152.39	70.1	118.6	174.5
117.00		0.1875	28.188	16.748	1658.8	28.31	150.34	70.5	115.4	172.1
120.00		0.1875	27.802	16.517	1591.2	27.90	148.28	71.0	112.3	169.8
123.00		0.1875	27.417	16.287	1525.5	27.49	146.22	71.5	109.1	167.4
126.00		0.1875	27.031	16.056	1461.6	27.09	144.17	71.9	106.1	165.1
127.00		0.1875	26.903	15.979	1440.7	26.95	143.48	72.1	105.0	54.5
129.00		0.1875	26.646	15.825	1399.5	26.68	142.11	72.4	103.0	108.2

Increment Length: 3 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in ³)	Weight (lb)
132.00		0.1875	26.260	15.595	1339.2	26.27	140.05	72.9	100.0	160.4
135.00		0.1875	25.875	15.364	1280.7	25.86	138.00	73.3	97.1	158.0
138.00		0.1875	25.489	15.133	1223.9	25.45	135.94	73.8	94.2	155.7
141.00		0.1875	25.103	14.903	1168.8	25.04	133.89	74.2	91.3	153.3
144.00		0.1875	24.718	14.672	1115.4	24.63	131.83	74.7	88.5	151.0
147.00		0.1875	24.332	14.442	1063.6	24.22	129.77	75.2	85.7	148.6
149.00		0.1875	24.075	14.288	1030.0	23.95	128.40	75.5	83.9	97.8
										<u>15957.1</u>

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

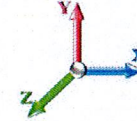
9/29/2015

Page: 8



Load Case: 1.2D + 1.6W 100 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 28

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		1.00	0.70	17.024	18.73	301.06	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
3.00		1.00	0.70	17.024	18.73	298.32	0.750	0.000	3.00	10.746	8.06	241.5	0.0	612.3
6.00		1.00	0.70	17.024	18.73	295.57	0.750	0.000	3.00	10.648	7.99	239.3	0.0	606.6
9.00		1.00	0.70	17.024	18.73	292.83	0.750	0.000	3.00	10.549	7.91	237.1	0.0	601.0
12.00		1.00	0.70	17.024	18.73	290.09	0.750	0.000	3.00	10.451	7.84	234.9	0.0	595.3
15.00		1.00	0.70	17.024	18.73	287.35	0.750	0.000	3.00	10.353	7.76	232.6	0.0	589.7
18.00		1.00	0.70	17.024	18.73	284.61	0.750	0.000	3.00	10.254	7.69	230.4	0.0	584.0
21.00		1.00	0.70	17.024	18.73	281.87	0.750	0.000	3.00	10.156	7.62	228.2	0.0	578.4
24.00		1.00	0.70	17.024	18.73	279.13	0.750	0.000	3.00	10.058	7.54	226.0	0.0	572.7
27.00		1.00	0.70	17.024	18.73	276.39	0.750	0.000	3.00	9.960	7.47	223.8	0.0	567.1
30.00		1.00	0.70	17.038	18.74	273.76	0.750	0.000	3.00	9.861	7.40	221.8	0.0	561.4
33.00		1.00	0.72	17.509	19.26	274.74	0.750	0.000	3.00	9.763	7.32	225.6	0.0	555.8
36.00		1.00	0.74	17.949	19.74	275.36	0.750	0.000	3.00	9.665	7.25	229.0	0.0	550.1
39.00		1.00	0.76	18.365	20.20	275.68	0.750	0.000	3.00	9.566	7.17	231.9	0.0	544.5
42.00		1.00	0.77	18.758	20.63	275.73	0.750	0.000	3.00	9.468	7.10	234.4	0.0	538.8
45.00		1.00	0.79	19.131	21.04	275.56	0.750	0.000	3.00	9.370	7.03	236.6	0.0	533.2
48.00		1.00	0.80	19.487	21.44	275.18	0.750	0.000	3.00	9.272	6.95	238.5	0.0	527.5
48.50 Bot - Section 2		1.00	0.80	19.545	21.50	275.10	0.750	0.000	0.50	1.536	1.15	39.6	0.0	87.4
51.00		1.00	0.82	19.828	21.81	274.62	0.750	0.000	2.50	7.744	5.81	202.7	0.0	729.3
53.25 Top - Section 1		1.00	0.83	20.074	22.08	274.08	0.750	0.000	2.25	6.911	5.18	183.1	0.0	650.7
54.00		1.00	0.83	20.154	22.17	277.75	0.750	0.000	0.75	2.291	1.72	61.0	0.0	87.2
57.00		1.00	0.84	20.468	22.51	276.90	0.750	0.000	3.00	9.104	6.83	246.0	0.0	346.5
60.00		1.00	0.85	20.770	22.85	275.91	0.750	0.000	3.00	9.006	6.75	246.9	0.0	342.7
63.00		1.00	0.87	21.062	23.17	274.79	0.750	0.000	3.00	8.908	6.68	247.6	0.0	339.0
66.00		1.00	0.88	21.343	23.48	273.55	0.750	0.000	3.00	8.809	6.61	248.2	0.0	335.2
69.00		1.00	0.89	21.616	23.78	272.21	0.750	0.000	3.00	8.711	6.53	248.6	0.0	331.4
72.00		1.00	0.90	21.881	24.07	270.76	0.750	0.000	3.00	8.613	6.46	248.8	0.0	327.7
75.00		1.00	0.91	22.137	24.35	269.22	0.750	0.000	3.00	8.515	6.39	248.8	0.0	323.9
78.00		1.00	0.92	22.387	24.63	267.59	0.750	0.000	3.00	8.416	6.31	248.7	0.0	320.1
81.00		1.00	0.93	22.630	24.89	265.88	0.750	0.000	3.00	8.318	6.24	248.5	0.0	316.4
84.00		1.00	0.94	22.866	25.15	264.08	0.750	0.000	3.00	8.220	6.16	248.1	0.0	312.6
87.00		1.00	0.95	23.096	25.41	262.22	0.750	0.000	3.00	8.121	6.09	247.6	0.0	308.8
90.00		1.00	0.96	23.321	25.65	260.28	0.750	0.000	3.00	8.023	6.02	247.0	0.0	305.1
93.00		1.00	0.97	23.541	25.89	258.28	0.750	0.000	3.00	7.925	5.94	246.3	0.0	301.3
96.00		1.00	0.98	23.755	26.13	256.22	0.750	0.000	3.00	7.827	5.87	245.4	0.0	297.5
98.00 Bot - Section 3		1.00	0.98	23.895	26.28	254.81	0.750	0.000	2.00	5.163	3.87	162.9	0.0	196.3
99.00		1.00	0.99	23.965	26.36	254.10	0.750	0.000	1.00	2.597	1.95	82.2	0.0	171.7
102.00 Top - Section 2		1.00	0.99	24.170	26.59	251.92	0.750	0.000	3.00	7.726	5.79	246.5	0.0	510.7
105.00		1.00	1.00	24.371	26.81	252.87	0.750	0.000	3.00	7.627	5.72	245.4	0.0	217.9
108.00		1.00	1.01	24.568	27.02	250.60	0.750	0.000	3.00	7.529	5.65	244.2	0.0	215.0
109.00 Top - Section 3		1.00	1.01	24.633	27.10	249.83	0.750	0.000	1.00	2.488	1.87	80.9	0.0	71.1
111.00		1.00	1.02	24.761	27.24	248.28	0.750	0.000	2.00	4.943	3.71	161.6	0.0	141.2
114.00		1.00	1.03	24.951	27.45	245.90	0.750	0.000	3.00	7.332	5.50	241.5	0.0	209.4
117.00 Appurtenance(s)		1.00	1.03	25.136	27.65	243.49	0.750	0.000	3.00	7.234	5.43	240.0	0.0	206.6
120.00		1.00	1.04	25.319	27.85	241.03	0.750	0.000	3.00	7.136	5.35	238.5	0.0	203.7
123.00		1.00	1.05	25.498	28.05	238.53	0.750	0.000	3.00	7.038	5.28	236.9	0.0	200.9
126.00		1.00	1.06	25.674	28.24	235.98	0.750	0.000	3.00	6.939	5.20	235.2	0.0	198.1

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015



Page: 9

127.00 Appurtenance(s)	1.00	1.06	25.732	28.31	235.13	0.750	0.000	1.00	2.291	1.72	77.8	0.0	65.4
129.00	1.00	1.06	25.848	28.43	233.40	0.750	0.000	2.00	4.550	3.41	155.2	0.0	129.9
132.00	1.00	1.07	26.018	28.62	230.78	0.750	0.000	3.00	6.743	5.06	231.6	0.0	192.4
135.00	1.00	1.08	26.185	28.80	228.12	0.750	0.000	3.00	6.645	4.98	229.7	0.0	189.6
138.00	1.00	1.08	26.350	28.99	225.43	0.750	0.000	3.00	6.546	4.91	227.7	0.0	186.8
141.00	1.00	1.09	26.513	29.16	222.70	0.750	0.000	3.00	6.448	4.84	225.7	0.0	184.0
144.00	1.00	1.10	26.673	29.34	219.94	0.750	0.000	3.00	6.350	4.76	223.6	0.0	181.1
147.00 Appurtenance(s)	1.00	1.10	26.830	29.51	217.15	0.750	0.000	3.00	6.251	4.69	221.4	0.0	178.3
149.00	1.00	1.11	26.934	29.63	215.27	0.750	0.000	2.00	4.113	3.08	146.2	0.0	117.3
Totals:							149.00				11,818.7		19,148.6

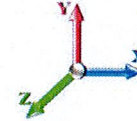
Discrete Appurtenance Forces

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.6W 100 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 28

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	RRUS-11 (19)	3	26.830	29.513	0.40	0.80	3.40	183.60	0.000	0.000	160.36	0.00	0.00
2	147.00	KRY 112 144/1	3	26.830	29.513	0.40	0.80	0.49	39.60	0.000	0.000	23.23	0.00	0.00
3	147.00	Ericsson AIR21 B4A B12P	3	26.830	29.513	0.87	0.90	30.16	561.60	0.000	0.000	1424.24	0.00	0.00
4	147.00	AIR 21, 1.3M, B2A B4P	3	26.830	29.513	0.74	0.80	13.90	421.20	0.000	0.000	656.16	0.00	0.00
5	147.00	T-Arms (Site Pro P/N	3	26.830	29.513	0.62	0.75	4.97	900.00	0.000	0.000	234.89	0.00	0.00
6	127.00	RFS APXV18-206517S-C	3	25.732	28.306	0.67	0.90	10.33	176.40	0.000	0.000	467.82	0.00	0.00
7	127.00	Flush Mount	1	25.732	28.306	1.00	1.00	1.00	240.00	0.000	0.000	45.29	0.00	0.00
8	117.00	Flush Mount	1	25.136	27.650	1.00	1.00	1.00	240.00	0.000	0.000	44.24	0.00	0.00
9	117.00	BTS	3	25.136	27.650	0.45	0.90	4.09	72.00	0.000	0.000	180.96	0.00	0.00
10	117.00	Argus LLPX310R	3	25.136	27.650	0.76	0.90	10.42	169.20	0.000	0.000	461.09	0.00	0.00
11	117.00	Andrew VHLP2.5-11	1	25.136	27.650	0.80	1.00	6.74	57.12	0.000	0.000	298.36	0.00	0.00
12	117.00	Andrew VHLP2-11	1	25.136	27.650	0.80	1.00	3.74	32.40	0.000	0.000	165.64	0.00	0.00
Totals:								3,093.12				4,162.29		

Total Applied Force Summary

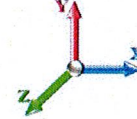
Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 11

Load Case: 1.2D + 1.6W 100 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 28

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
3.00		241.48	687.18	0.00	0.00
6.00		239.27	681.53	0.00	0.00
9.00		237.06	675.88	0.00	0.00
12.00		234.85	670.23	0.00	0.00
15.00		232.64	664.58	0.00	0.00
18.00		230.43	658.93	0.00	0.00
21.00		228.22	653.28	0.00	0.00
24.00		226.02	647.63	0.00	0.00
27.00		223.81	641.98	0.00	0.00
30.00		221.79	636.33	0.00	0.00
33.00		225.64	630.68	0.00	0.00
36.00		228.99	625.03	0.00	0.00
39.00		231.90	619.38	0.00	0.00
42.00		234.43	613.73	0.00	0.00
45.00		236.62	608.08	0.00	0.00
48.00		238.49	602.43	0.00	0.00
48.50		39.62	99.85	0.00	0.00
51.00		202.67	791.68	0.00	0.00
53.25		183.12	706.92	0.00	0.00
54.00		60.96	105.94	0.00	0.00
57.00		245.97	421.39	0.00	0.00
60.00		246.91	417.62	0.00	0.00
63.00		247.64	413.86	0.00	0.00
66.00		248.19	410.09	0.00	0.00
69.00		248.56	406.32	0.00	0.00
72.00		248.76	402.56	0.00	0.00
75.00		248.81	398.79	0.00	0.00
78.00		248.70	395.02	0.00	0.00
81.00		248.47	391.26	0.00	0.00
84.00		248.09	387.49	0.00	0.00
87.00		247.60	383.72	0.00	0.00
90.00		246.98	379.95	0.00	0.00
93.00		246.25	376.19	0.00	0.00
96.00		245.42	372.42	0.00	0.00
98.00		162.85	246.19	0.00	0.00
99.00		82.15	196.66	0.00	0.00
102.00		246.48	585.59	0.00	0.00
105.00		245.37	292.77	0.00	0.00
108.00		244.17	289.95	0.00	0.00
109.00		80.89	96.02	0.00	0.00
111.00		161.56	191.10	0.00	0.00
114.00		241.49	284.30	0.00	0.00
117.00	(9) attachments	1390.32	852.19	0.00	0.00
120.00		238.49	275.10	0.00	0.00
123.00		236.87	272.27	0.00	0.00
126.00		235.18	269.45	0.00	0.00

Total Applied Force Summary

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 12

127.00	(4) attachments	590.94	505.59	0.00	0.00
129.00		155.23	162.46	0.00	0.00
132.00		231.57	241.34	0.00	0.00
135.00		229.67	238.51	0.00	0.00
138.00		227.69	235.69	0.00	0.00
141.00		225.66	232.86	0.00	0.00
144.00		223.56	230.04	0.00	0.00
147.00	(15) attachments	2720.29	2333.21	0.00	0.00
149.00		<u>146.23</u>	<u>117.31</u>	<u>0.00</u>	<u>0.00</u>
	Totals:	15,981.02	25,726.47	0.00	0.00

Calculated Forces

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015



Page: 14

127.00	-3.47	-4.43	0.00	-74.97	0.00	74.97	1036.58	518.29	1143.91	567.88	61.62	-4.310	0.000	0.135
129.00	-3.31	-4.27	0.00	-66.11	0.00	66.11	1031.00	515.50	1126.73	559.36	63.43	-4.338	0.000	0.121
132.00	-3.09	-4.02	0.00	-53.30	0.00	53.30	1022.47	511.23	1101.01	546.59	66.17	-4.374	0.000	0.101
135.00	-2.87	-3.78	0.00	-41.24	0.00	41.24	1013.75	506.87	1075.36	533.85	68.93	-4.404	0.000	0.080
138.00	-2.65	-3.53	0.00	-29.91	0.00	29.91	1004.83	502.42	1049.79	521.16	71.70	-4.428	0.000	0.060
141.00	-2.43	-3.29	0.00	-19.32	0.00	19.32	995.73	497.86	1024.31	508.51	74.49	-4.445	0.000	0.040
144.00	-2.22	-3.05	0.00	-9.45	0.00	9.45	986.43	493.22	998.92	495.91	77.28	-4.456	0.000	0.021
147.00	-0.11	-0.15	0.00	-0.31	0.00	0.31	976.94	488.47	973.65	483.36	80.08	-4.460	0.000	0.001
149.00	0.00	-0.15	0.00	0.00	0.00	0.00	970.51	485.25	956.86	475.02	81.94	-4.460	0.000	0.000

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015

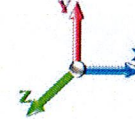


Page: 15

Load Case: 0.9D + 1.6W 100 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60

Iterations 28



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		1.00	0.70	17.024	18.73	301.06	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
3.00		1.00	0.70	17.024	18.73	298.32	0.750	0.000	3.00	10.746	8.06	241.5	0.0	459.2
6.00		1.00	0.70	17.024	18.73	295.57	0.750	0.000	3.00	10.648	7.99	239.3	0.0	455.0
9.00		1.00	0.70	17.024	18.73	292.83	0.750	0.000	3.00	10.549	7.91	237.1	0.0	450.7
12.00		1.00	0.70	17.024	18.73	290.09	0.750	0.000	3.00	10.451	7.84	234.9	0.0	446.5
15.00		1.00	0.70	17.024	18.73	287.35	0.750	0.000	3.00	10.353	7.76	232.6	0.0	442.3
18.00		1.00	0.70	17.024	18.73	284.61	0.750	0.000	3.00	10.254	7.69	230.4	0.0	438.0
21.00		1.00	0.70	17.024	18.73	281.87	0.750	0.000	3.00	10.156	7.62	228.2	0.0	433.8
24.00		1.00	0.70	17.024	18.73	279.13	0.750	0.000	3.00	10.058	7.54	226.0	0.0	429.5
27.00		1.00	0.70	17.024	18.73	276.39	0.750	0.000	3.00	9.960	7.47	223.8	0.0	425.3
30.00		1.00	0.70	17.038	18.74	273.76	0.750	0.000	3.00	9.861	7.40	221.8	0.0	421.1
33.00		1.00	0.72	17.509	19.26	274.74	0.750	0.000	3.00	9.763	7.32	225.6	0.0	416.8
36.00		1.00	0.74	17.949	19.74	275.36	0.750	0.000	3.00	9.665	7.25	229.0	0.0	412.6
39.00		1.00	0.76	18.365	20.20	275.68	0.750	0.000	3.00	9.566	7.17	231.9	0.0	408.4
42.00		1.00	0.77	18.758	20.63	275.73	0.750	0.000	3.00	9.468	7.10	234.4	0.0	404.1
45.00		1.00	0.79	19.131	21.04	275.56	0.750	0.000	3.00	9.370	7.03	236.6	0.0	399.9
48.00		1.00	0.80	19.487	21.44	275.18	0.750	0.000	3.00	9.272	6.95	238.5	0.0	395.6
48.50	Bot - Section 2	1.00	0.80	19.545	21.50	275.10	0.750	0.000	0.50	1.536	1.15	39.6	0.0	65.5
51.00		1.00	0.82	19.828	21.81	274.62	0.750	0.000	2.50	7.744	5.81	202.7	0.0	546.9
53.25	Top - Section 1	1.00	0.83	20.074	22.08	274.08	0.750	0.000	2.25	6.911	5.18	183.1	0.0	488.1
54.00		1.00	0.83	20.154	22.17	277.75	0.750	0.000	0.75	2.291	1.72	61.0	0.0	65.4
57.00		1.00	0.84	20.468	22.51	276.90	0.750	0.000	3.00	9.104	6.83	246.0	0.0	259.9
60.00		1.00	0.85	20.770	22.85	275.91	0.750	0.000	3.00	9.006	6.75	246.9	0.0	257.0
63.00		1.00	0.87	21.062	23.17	274.79	0.750	0.000	3.00	8.908	6.68	247.6	0.0	254.2
66.00		1.00	0.88	21.343	23.48	273.55	0.750	0.000	3.00	8.809	6.61	248.2	0.0	251.4
69.00		1.00	0.89	21.616	23.78	272.21	0.750	0.000	3.00	8.711	6.53	248.6	0.0	248.6
72.00		1.00	0.90	21.881	24.07	270.76	0.750	0.000	3.00	8.613	6.46	248.8	0.0	245.7
75.00		1.00	0.91	22.137	24.35	269.22	0.750	0.000	3.00	8.515	6.39	248.8	0.0	242.9
78.00		1.00	0.92	22.387	24.63	267.59	0.750	0.000	3.00	8.416	6.31	248.7	0.0	240.1
81.00		1.00	0.93	22.630	24.89	265.88	0.750	0.000	3.00	8.318	6.24	248.5	0.0	237.3
84.00		1.00	0.94	22.866	25.15	264.08	0.750	0.000	3.00	8.220	6.16	248.1	0.0	234.4
87.00		1.00	0.95	23.096	25.41	262.22	0.750	0.000	3.00	8.121	6.09	247.6	0.0	231.6
90.00		1.00	0.96	23.321	25.65	260.28	0.750	0.000	3.00	8.023	6.02	247.0	0.0	228.8
93.00		1.00	0.97	23.541	25.89	258.28	0.750	0.000	3.00	7.925	5.94	246.3	0.0	226.0
96.00		1.00	0.98	23.755	26.13	256.22	0.750	0.000	3.00	7.827	5.87	245.4	0.0	223.1
98.00	Bot - Section 3	1.00	0.98	23.895	26.28	254.81	0.750	0.000	2.00	5.163	3.87	162.9	0.0	147.2
99.00		1.00	0.99	23.965	26.36	254.10	0.750	0.000	1.00	2.597	1.95	82.2	0.0	128.8
102.00	Top - Section 2	1.00	0.99	24.170	26.59	251.92	0.750	0.000	3.00	7.726	5.79	246.5	0.0	383.0
105.00		1.00	1.00	24.371	26.81	252.87	0.750	0.000	3.00	7.627	5.72	245.4	0.0	163.4
108.00		1.00	1.01	24.568	27.02	250.60	0.750	0.000	3.00	7.529	5.65	244.2	0.0	161.3
109.00	Top - Section 3	1.00	1.01	24.633	27.10	249.83	0.750	0.000	1.00	2.488	1.87	80.9	0.0	53.3
111.00		1.00	1.02	24.761	27.24	248.28	0.750	0.000	2.00	4.943	3.71	161.6	0.0	105.9
114.00		1.00	1.03	24.951	27.45	245.90	0.750	0.000	3.00	7.332	5.50	241.5	0.0	157.0
117.00	Appurtenance(s)	1.00	1.03	25.136	27.65	243.49	0.750	0.000	3.00	7.234	5.43	240.0	0.0	154.9
120.00		1.00	1.04	25.319	27.85	241.03	0.750	0.000	3.00	7.136	5.35	238.5	0.0	152.8
123.00		1.00	1.05	25.498	28.05	238.53	0.750	0.000	3.00	7.038	5.28	236.9	0.0	150.7
126.00		1.00	1.06	25.674	28.24	235.98	0.750	0.000	3.00	6.939	5.20	235.2	0.0	148.6

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015



Page: 16

127.00 Appurtenance(s)	1.00	1.06	25.732	28.31	235.13	0.750	0.000	1.00	2.291	1.72	77.8	0.0	49.1	
129.00	1.00	1.06	25.848	28.43	233.40	0.750	0.000	2.00	4.550	3.41	155.2	0.0	97.4	
132.00	1.00	1.07	26.018	28.62	230.78	0.750	0.000	3.00	6.743	5.06	231.6	0.0	144.3	
135.00	1.00	1.08	26.185	28.80	228.12	0.750	0.000	3.00	6.645	4.98	229.7	0.0	142.2	
138.00	1.00	1.08	26.350	28.99	225.43	0.750	0.000	3.00	6.546	4.91	227.7	0.0	140.1	
141.00	1.00	1.09	26.513	29.16	222.70	0.750	0.000	3.00	6.448	4.84	225.7	0.0	138.0	
144.00	1.00	1.10	26.673	29.34	219.94	0.750	0.000	3.00	6.350	4.76	223.6	0.0	135.9	
147.00 Appurtenance(s)	1.00	1.10	26.830	29.51	217.15	0.750	0.000	3.00	6.251	4.69	221.4	0.0	133.7	
149.00	1.00	1.11	26.934	29.63	215.27	0.750	0.000	2.00	4.113	3.08	146.2	0.0	88.0	
Totals:									149.00			11,818.7		14,361.4

Discrete Appurtenance Forces

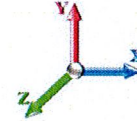
Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 17

Load Case: 0.9D + 1.6W 100 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 28

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	RRUS-11 (19)	3	26.830	29.513	0.40	0.80	3.40	137.70	0.000	0.000	160.36	0.00	0.00
2	147.00	KRY 112 144/1	3	26.830	29.513	0.40	0.80	0.49	29.70	0.000	0.000	23.23	0.00	0.00
3	147.00	Ericsson AIR21 B4A B12P	3	26.830	29.513	0.87	0.90	30.16	421.20	0.000	0.000	1424.24	0.00	0.00
4	147.00	AIR 21, 1.3M, B2A B4P	3	26.830	29.513	0.74	0.80	13.90	315.90	0.000	0.000	656.16	0.00	0.00
5	147.00	T-Arms (Site Pro P/N	3	26.830	29.513	0.62	0.75	4.97	675.00	0.000	0.000	234.89	0.00	0.00
6	127.00	RFS APXV18-206517S-C	3	25.732	28.306	0.67	0.90	10.33	132.30	0.000	0.000	467.82	0.00	0.00
7	127.00	Flush Mount	1	25.732	28.306	1.00	1.00	1.00	180.00	0.000	0.000	45.29	0.00	0.00
8	117.00	Flush Mount	1	25.136	27.650	1.00	1.00	1.00	180.00	0.000	0.000	44.24	0.00	0.00
9	117.00	BTS	3	25.136	27.650	0.45	0.90	4.09	54.00	0.000	0.000	180.96	0.00	0.00
10	117.00	Argus LLPX310R	3	25.136	27.650	0.76	0.90	10.42	126.90	0.000	0.000	461.09	0.00	0.00
11	117.00	Andrew VHLP2.5-11	1	25.136	27.650	0.80	1.00	6.74	42.84	0.000	0.000	298.36	0.00	0.00
12	117.00	Andrew VHLP2-11	1	25.136	27.650	0.80	1.00	3.74	24.30	0.000	0.000	165.64	0.00	0.00
Totals:								2,319.84				4,162.29		

Total Applied Force Summary

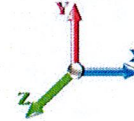
Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 18

Load Case: 0.9D + 1.6W 100 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 28

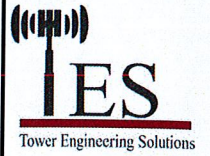
Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
3.00		241.48	515.38	0.00	0.00
6.00		239.27	511.15	0.00	0.00
9.00		237.06	506.91	0.00	0.00
12.00		234.85	502.67	0.00	0.00
15.00		232.64	498.43	0.00	0.00
18.00		230.43	494.20	0.00	0.00
21.00		228.22	489.96	0.00	0.00
24.00		226.02	485.72	0.00	0.00
27.00		223.81	481.48	0.00	0.00
30.00		221.79	477.24	0.00	0.00
33.00		225.64	473.01	0.00	0.00
36.00		228.99	468.77	0.00	0.00
39.00		231.90	464.53	0.00	0.00
42.00		234.43	460.29	0.00	0.00
45.00		236.62	456.06	0.00	0.00
48.00		238.49	451.82	0.00	0.00
48.50		39.62	74.89	0.00	0.00
51.00		202.67	593.76	0.00	0.00
53.25		183.12	530.19	0.00	0.00
54.00		60.96	79.45	0.00	0.00
57.00		245.97	316.04	0.00	0.00
60.00		246.91	313.22	0.00	0.00
63.00		247.64	310.39	0.00	0.00
66.00		248.19	307.57	0.00	0.00
69.00		248.56	304.74	0.00	0.00
72.00		248.76	301.92	0.00	0.00
75.00		248.81	299.09	0.00	0.00
78.00		248.70	296.27	0.00	0.00
81.00		248.47	293.44	0.00	0.00
84.00		248.09	290.62	0.00	0.00
87.00		247.60	287.79	0.00	0.00
90.00		246.98	284.97	0.00	0.00
93.00		246.25	282.14	0.00	0.00
96.00		245.42	279.32	0.00	0.00
98.00		162.85	184.64	0.00	0.00
99.00		82.15	147.50	0.00	0.00
102.00		246.48	439.19	0.00	0.00
105.00		245.37	219.58	0.00	0.00
108.00		244.17	217.46	0.00	0.00
109.00		80.89	72.02	0.00	0.00
111.00		161.56	143.33	0.00	0.00
114.00		241.49	213.22	0.00	0.00
117.00	(9) attachments	1390.32	639.14	0.00	0.00
120.00		238.49	206.32	0.00	0.00
123.00		236.87	204.21	0.00	0.00
126.00		235.18	202.09	0.00	0.00

Total Applied Force Summary

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015



Page: 19

127.00	(4) attachments	590.94	379.19	0.00	0.00
129.00		155.23	121.84	0.00	0.00
132.00		231.57	181.00	0.00	0.00
135.00		229.67	178.88	0.00	0.00
138.00		227.69	176.76	0.00	0.00
141.00		225.66	174.65	0.00	0.00
144.00		223.56	172.53	0.00	0.00
147.00	(15) attachments	2720.29	1749.91	0.00	0.00
149.00		<u>146.23</u>	<u>87.98</u>	<u>0.00</u>	<u>0.00</u>
Totals:		15,981.02	19,294.85	0.00	0.00

Calculated Forces

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015



Page: 21

127.00	-2.53	-4.36	0.00	-73.73	0.00	73.73	1036.58	518.29	1143.91	567.88	60.83	-4.251	0.000	0.132
129.00	-2.41	-4.20	0.00	-65.01	0.00	65.01	1031.00	515.50	1126.73	559.36	62.62	-4.278	0.000	0.119
132.00	-2.25	-3.95	0.00	-52.42	0.00	52.42	1022.47	511.23	1101.01	546.59	65.32	-4.314	0.000	0.098
135.00	-2.09	-3.71	0.00	-40.56	0.00	40.56	1013.75	506.87	1075.36	533.85	68.03	-4.343	0.000	0.078
138.00	-1.93	-3.47	0.00	-29.42	0.00	29.42	1004.83	502.42	1049.79	521.16	70.77	-4.367	0.000	0.058
141.00	-1.77	-3.23	0.00	-19.01	0.00	19.01	995.73	497.86	1024.31	508.51	73.52	-4.384	0.000	0.039
144.00	-1.61	-3.00	0.00	-9.30	0.00	9.30	986.43	493.22	998.92	495.91	76.27	-4.394	0.000	0.020
147.00	-0.08	-0.15	0.00	-0.30	0.00	0.30	976.94	488.47	973.65	483.36	79.03	-4.398	0.000	0.001
149.00	0.00	-0.15	0.00	0.00	0.00	0.00	970.51	485.25	956.86	475.02	80.87	-4.398	0.000	0.000

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

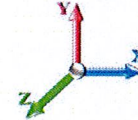
9/29/2015

Page: 22



Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 27

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		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
3.00		1.00	0.70	4.256	4.68	0.00	1.200	1.574	3.00	11.533	13.84	64.8	259.8	872.1
6.00		1.00	0.70	4.256	4.68	0.00	1.200	1.687	3.00	11.491	13.79	64.6	276.7	883.3
9.00		1.00	0.70	4.256	4.68	0.00	1.200	1.756	3.00	11.427	13.71	64.2	286.0	887.0
12.00		1.00	0.70	4.256	4.68	0.00	1.200	1.808	3.00	11.355	13.63	63.8	292.1	887.4
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.848	3.00	11.277	13.53	63.4	296.2	885.9
18.00		1.00	0.70	4.256	4.68	0.00	1.200	1.882	3.00	11.196	13.43	62.9	299.2	883.2
21.00		1.00	0.70	4.256	4.68	0.00	1.200	1.912	3.00	11.112	13.33	62.4	301.2	879.6
24.00		1.00	0.70	4.256	4.68	0.00	1.200	1.937	3.00	11.026	13.23	61.9	302.6	875.3
27.00		1.00	0.70	4.256	4.68	0.00	1.200	1.960	3.00	10.940	13.13	61.5	303.5	870.6
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.981	3.00	10.852	13.02	61.0	304.0	865.4
33.00		1.00	0.72	4.377	4.81	0.00	1.200	2.000	3.00	10.763	12.92	62.2	304.1	859.9
36.00		1.00	0.74	4.487	4.94	0.00	1.200	2.017	3.00	10.673	12.81	63.2	303.9	854.1
39.00		1.00	0.76	4.591	5.05	0.00	1.200	2.034	3.00	10.583	12.70	64.1	303.5	848.0
42.00		1.00	0.77	4.689	5.16	0.00	1.200	2.049	3.00	10.493	12.59	64.9	302.9	841.7
45.00		1.00	0.79	4.783	5.26	0.00	1.200	2.063	3.00	10.401	12.48	65.7	302.1	835.3
48.00		1.00	0.80	4.872	5.36	0.00	1.200	2.076	3.00	10.310	12.37	66.3	301.1	828.6
48.50 Bot - Section 2		1.00	0.80	4.886	5.37	0.00	1.200	2.079	0.50	1.709	2.05	11.0	50.2	137.5
51.00		1.00	0.82	4.957	5.45	0.00	1.200	2.089	2.50	8.614	10.34	56.4	253.3	982.6
53.25 Top - Section 1		1.00	0.83	5.018	5.52	0.00	1.200	2.098	2.25	7.698	9.24	51.0	227.3	878.0
54.00		1.00	0.83	5.039	5.54	0.00	1.200	2.101	0.75	2.554	3.06	17.0	75.7	162.9
57.00		1.00	0.84	5.117	5.63	0.00	1.200	2.112	3.00	10.160	12.19	68.6	301.4	647.8
60.00		1.00	0.85	5.193	5.71	0.00	1.200	2.123	3.00	10.068	12.08	69.0	299.9	642.6
63.00		1.00	0.87	5.265	5.79	0.00	1.200	2.134	3.00	9.974	11.97	69.3	298.3	637.3
66.00		1.00	0.88	5.336	5.87	0.00	1.200	2.144	3.00	9.881	11.86	69.6	296.6	631.8
69.00		1.00	0.89	5.404	5.94	0.00	1.200	2.153	3.00	9.788	11.75	69.8	294.9	626.3
72.00		1.00	0.90	5.470	6.02	0.00	1.200	2.162	3.00	9.694	11.63	70.0	293.1	620.7
75.00		1.00	0.91	5.534	6.09	0.00	1.200	2.171	3.00	9.600	11.52	70.1	291.2	615.0
78.00		1.00	0.92	5.597	6.16	0.00	1.200	2.180	3.00	9.506	11.41	70.2	289.2	609.3
81.00		1.00	0.93	5.657	6.22	0.00	1.200	2.188	3.00	9.412	11.29	70.3	287.1	603.5
84.00		1.00	0.94	5.716	6.29	0.00	1.200	2.196	3.00	9.318	11.18	70.3	285.0	597.6
87.00		1.00	0.95	5.774	6.35	0.00	1.200	2.204	3.00	9.223	11.07	70.3	282.9	591.7
90.00		1.00	0.96	5.830	6.41	0.00	1.200	2.211	3.00	9.129	10.95	70.3	280.7	585.7
93.00		1.00	0.97	5.885	6.47	0.00	1.200	2.218	3.00	9.034	10.84	70.2	278.4	579.7
96.00		1.00	0.98	5.939	6.53	0.00	1.200	2.225	3.00	8.939	10.73	70.1	276.1	573.6
98.00 Bot - Section 3		1.00	0.98	5.974	6.57	0.00	1.200	2.230	2.00	5.906	7.09	46.6	183.0	379.3
99.00		1.00	0.99	5.991	6.59	0.00	1.200	2.232	1.00	2.969	3.56	23.5	92.3	264.0
102.00 Top - Section 2		1.00	0.99	6.043	6.65	0.00	1.200	2.239	3.00	8.845	10.61	70.5	274.5	785.2
105.00		1.00	1.00	6.093	6.70	0.00	1.200	2.245	3.00	8.750	10.50	70.4	272.1	490.0
108.00		1.00	1.01	6.142	6.76	0.00	1.200	2.252	3.00	8.655	10.39	70.2	269.6	484.7
109.00 Top - Section 3		1.00	1.01	6.158	6.77	0.00	1.200	2.254	1.00	2.863	3.44	23.3	89.6	160.6
111.00		1.00	1.02	6.190	6.81	0.00	1.200	2.258	2.00	5.696	6.83	46.5	178.1	319.2
114.00		1.00	1.03	6.238	6.86	0.00	1.200	2.264	3.00	8.464	10.16	69.7	264.5	473.9
117.00 Appurtenance(s)		1.00	1.03	6.284	6.91	0.00	1.200	2.270	3.00	8.369	10.04	69.4	262.0	468.5
120.00		1.00	1.04	6.330	6.96	0.00	1.200	2.276	3.00	8.274	9.93	69.1	259.3	463.1
123.00		1.00	1.05	6.375	7.01	0.00	1.200	2.281	3.00	8.178	9.81	68.8	256.7	457.6
126.00		1.00	1.06	6.419	7.06	0.00	1.200	2.287	3.00	8.083	9.70	68.5	254.0	452.1

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015

Page: 23



127.00 Appurtenance(s)	1.00	1.06	6.433	7.08	0.00	1.200	2.289	1.00	2.673	3.21	22.7	84.4	149.8
129.00	1.00	1.06	6.462	7.11	0.00	1.200	2.292	2.00	5.314	6.38	45.3	167.5	297.4
132.00	1.00	1.07	6.504	7.15	0.00	1.200	2.297	3.00	7.891	9.47	67.8	248.6	441.0
135.00	1.00	1.08	6.546	7.20	0.00	1.200	2.303	3.00	7.796	9.35	67.4	245.8	435.4
138.00	1.00	1.08	6.588	7.25	0.00	1.200	2.308	3.00	7.700	9.24	67.0	243.0	429.8
141.00	1.00	1.09	6.628	7.29	0.00	1.200	2.313	3.00	7.604	9.13	66.5	240.2	424.2
144.00	1.00	1.10	6.668	7.34	0.00	1.200	2.317	3.00	7.508	9.01	66.1	237.4	418.5
147.00 Appurtenance(s)	1.00	1.10	6.708	7.38	0.00	1.200	2.322	3.00	7.413	8.90	65.6	234.5	412.8
149.00	1.00	1.11	6.734	7.41	0.00	1.200	2.325	2.00	4.888	5.87	43.4	155.0	272.4
							Totals:	149.00			3,338.7		33,060.6

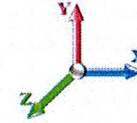
Discrete Appurtenance Forces

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 24



Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 27

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	RRUS-11 (19)	3	6.708	7.378	0.57	0.80	7.41	422.33	0.000	0.000	54.65	0.00	0.00
2	147.00	KRY 112 144/1	3	6.708	7.378	0.60	0.80	1.88	73.34	0.000	0.000	13.84	0.00	0.00
3	147.00	Ericsson AIR21 B4A B12P	3	6.708	7.378	0.90	0.90	37.25	1765.49	0.000	0.000	274.82	0.00	0.00
4	147.00	AIR 21, 1.3M, B2A B4P	3	6.708	7.378	0.76	0.80	17.25	1139.23	0.000	0.000	127.28	0.00	0.00
5	147.00	T-Arms (Site Pro P/N	3	6.708	7.378	0.66	0.75	11.43	1446.68	0.000	0.000	84.30	0.00	0.00
6	127.00	RFS APXV18-206517S-C	3	6.433	7.076	0.88	0.90	21.90	746.35	0.000	0.000	154.96	0.00	0.00
7	127.00	Flush Mount	1	6.433	7.076	1.00	1.00	1.92	409.70	0.000	0.000	13.55	0.00	0.00
8	117.00	Flush Mount	1	6.284	6.913	1.00	1.00	1.91	407.91	0.000	0.000	13.19	0.00	0.00
9	117.00	BTS	3	6.284	6.913	0.76	0.90	11.37	221.10	0.000	0.000	78.56	0.00	0.00
10	117.00	Argus LLPX310R	3	6.284	6.913	0.80	0.90	16.46	652.23	0.000	0.000	113.75	0.00	0.00
11	117.00	Andrew VHLP2.5-11	1	6.284	6.913	1.00	1.00	10.65	232.32	0.000	0.000	73.62	0.00	0.00
12	117.00	Andrew VHLP2-11	1	6.284	6.913	1.00	1.00	6.34	131.68	0.000	0.000	43.81	0.00	0.00
Totals:								7,648.35				1,046.33		

Total Applied Force Summary

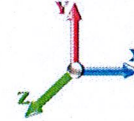
Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 25

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 27

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
3.00		64.79	946.97	0.00	0.00
6.00		64.55	958.20	0.00	0.00
9.00		64.20	961.89	0.00	0.00
12.00		63.79	962.29	0.00	0.00
15.00		63.35	960.80	0.00	0.00
18.00		62.90	958.09	0.00	0.00
21.00		62.43	954.50	0.00	0.00
24.00		61.95	950.25	0.00	0.00
27.00		61.46	945.48	0.00	0.00
30.00		61.02	940.30	0.00	0.00
33.00		62.19	934.78	0.00	0.00
36.00		63.22	928.96	0.00	0.00
39.00		64.14	922.90	0.00	0.00
42.00		64.95	916.63	0.00	0.00
45.00		65.67	910.17	0.00	0.00
48.00		66.30	903.54	0.00	0.00
48.50		11.02	150.01	0.00	0.00
51.00		56.36	1044.97	0.00	0.00
53.25		50.99	934.19	0.00	0.00
54.00		16.99	181.61	0.00	0.00
57.00		68.63	722.74	0.00	0.00
60.00		69.00	717.50	0.00	0.00
63.00		69.33	712.16	0.00	0.00
66.00		69.60	706.73	0.00	0.00
69.00		69.82	701.21	0.00	0.00
72.00		70.00	695.61	0.00	0.00
75.00		70.13	689.94	0.00	0.00
78.00		70.23	684.20	0.00	0.00
81.00		70.29	678.39	0.00	0.00
84.00		70.31	672.52	0.00	0.00
87.00		70.30	666.60	0.00	0.00
90.00		70.25	660.62	0.00	0.00
93.00		70.18	654.59	0.00	0.00
96.00		70.08	648.51	0.00	0.00
98.00		46.58	429.20	0.00	0.00
99.00		23.48	288.96	0.00	0.00
102.00		70.55	860.10	0.00	0.00
105.00		70.37	564.85	0.00	0.00
108.00		70.17	559.55	0.00	0.00
109.00		23.28	185.61	0.00	0.00
111.00		46.54	369.16	0.00	0.00
114.00		69.69	548.84	0.00	0.00
117.00	(9) attachments	392.35	2188.68	0.00	0.00
120.00		69.13	534.44	0.00	0.00
123.00		68.82	528.97	0.00	0.00
126.00		68.48	523.47	0.00	0.00

Total Applied Force Summary

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 26

127.00	(4) attachments	191.21	1329.61	0.00	0.00
129.00		45.33	330.00	0.00	0.00
132.00		67.76	489.91	0.00	0.00
135.00		67.37	484.32	0.00	0.00
138.00		66.96	478.70	0.00	0.00
141.00		66.53	473.06	0.00	0.00
144.00		66.09	467.39	0.00	0.00
147.00	(15) attachments	620.52	5308.75	0.00	0.00
149.00		43.45	272.35	0.00	0.00
	Totals:	4,385.01	44,193.74	0.00	0.00

Calculated Forces

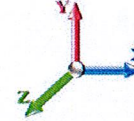
Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 27



Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 27

Dead Load Factor 1.20
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-44.19	-4.40	0.00	-430.71	0.00	430.71	3568.03	1784.01	6174.83	3065.44	0.00	0.000	0.000	0.153
3.00	-43.24	-4.36	0.00	-417.52	0.00	417.52	3545.62	1772.81	6079.18	3017.96	0.01	-0.032	0.000	0.151
6.00	-42.28	-4.31	0.00	-404.46	0.00	404.46	3523.01	1761.51	5983.92	2970.67	0.04	-0.065	0.000	0.148
9.00	-41.32	-4.27	0.00	-391.52	0.00	391.52	3500.21	1750.11	5889.06	2923.58	0.09	-0.097	0.000	0.146
12.00	-40.35	-4.23	0.00	-378.70	0.00	378.70	3477.22	1738.61	5794.62	2876.69	0.16	-0.129	0.000	0.143
15.00	-39.39	-4.18	0.00	-366.02	0.00	366.02	3454.04	1727.02	5700.59	2830.02	0.25	-0.161	0.000	0.141
18.00	-38.43	-4.14	0.00	-353.46	0.00	353.46	3430.67	1715.33	5607.00	2783.55	0.37	-0.192	0.000	0.138
21.00	-37.47	-4.09	0.00	-341.05	0.00	341.05	3407.10	1703.55	5513.84	2737.30	0.50	-0.224	0.000	0.136
24.00	-36.52	-4.05	0.00	-328.76	0.00	328.76	3383.34	1691.67	5421.14	2691.28	0.65	-0.255	0.000	0.133
27.00	-35.57	-4.00	0.00	-316.62	0.00	316.62	3359.39	1679.70	5328.89	2645.48	0.82	-0.286	0.000	0.130
30.00	-34.63	-3.95	0.00	-304.62	0.00	304.62	3335.25	1667.63	5237.10	2599.92	1.01	-0.317	0.000	0.128
33.00	-33.70	-3.90	0.00	-292.76	0.00	292.76	3310.92	1655.46	5145.79	2554.59	1.22	-0.347	0.000	0.125
36.00	-32.77	-3.85	0.00	-281.04	0.00	281.04	3286.39	1643.20	5054.97	2509.50	1.44	-0.377	0.000	0.122
39.00	-31.84	-3.80	0.00	-269.49	0.00	269.49	3261.67	1630.84	4964.64	2464.66	1.69	-0.407	0.000	0.119
42.00	-30.92	-3.74	0.00	-258.09	0.00	258.09	3236.76	1618.38	4874.82	2420.07	1.96	-0.437	0.000	0.116
45.00	-30.01	-3.68	0.00	-246.87	0.00	246.87	3211.66	1605.83	4785.51	2375.73	2.24	-0.466	0.000	0.113
48.00	-29.11	-3.62	0.00	-235.81	0.00	235.81	3182.27	1591.13	4690.68	2328.65	2.54	-0.494	0.000	0.110
48.50	-28.96	-3.61	0.00	-234.00	0.00	234.00	3176.56	1588.28	4673.77	2320.26	2.59	-0.499	0.000	0.110
51.00	-27.91	-3.56	0.00	-224.97	0.00	224.97	3148.00	1574.00	4589.69	2278.51	2.86	-0.523	0.000	0.108
53.25	-26.98	-3.51	0.00	-216.96	0.00	216.96	1846.69	923.35	2727.65	1354.12	3.11	-0.544	0.000	0.175
54.00	-26.79	-3.50	0.00	-214.33	0.00	214.33	1843.93	921.97	2716.18	1348.43	3.20	-0.551	0.000	0.173
57.00	-26.07	-3.44	0.00	-203.83	0.00	203.83	1832.78	916.39	2670.37	1325.68	3.56	-0.590	0.000	0.168
60.00	-25.35	-3.38	0.00	-193.51	0.00	193.51	1821.44	910.72	2624.63	1302.98	3.94	-0.628	0.000	0.162
63.00	-24.64	-3.32	0.00	-183.37	0.00	183.37	1809.91	904.95	2578.98	1280.32	4.35	-0.666	0.000	0.157
66.00	-23.93	-3.26	0.00	-173.42	0.00	173.42	1798.18	899.09	2533.44	1257.70	4.78	-0.703	0.000	0.151
69.00	-23.23	-3.19	0.00	-163.65	0.00	163.65	1786.27	893.13	2488.00	1235.15	5.23	-0.739	0.000	0.146
72.00	-22.53	-3.13	0.00	-154.07	0.00	154.07	1774.16	887.08	2442.68	1212.65	5.71	-0.774	0.000	0.140
75.00	-21.84	-3.06	0.00	-144.69	0.00	144.69	1761.85	880.93	2397.48	1190.21	6.20	-0.808	0.000	0.134
78.00	-21.15	-2.99	0.00	-135.51	0.00	135.51	1749.36	874.68	2352.43	1167.84	6.72	-0.841	0.000	0.128
81.00	-20.48	-2.92	0.00	-126.54	0.00	126.54	1736.67	868.34	2307.51	1145.55	7.26	-0.873	0.000	0.122
84.00	-19.80	-2.85	0.00	-117.77	0.00	117.77	1723.80	861.90	2262.76	1123.33	7.82	-0.904	0.000	0.116
87.00	-19.14	-2.78	0.00	-109.22	0.00	109.22	1710.73	855.36	2218.16	1101.19	8.40	-0.934	0.000	0.110
90.00	-18.48	-2.71	0.00	-100.87	0.00	100.87	1697.46	848.73	2173.74	1079.14	8.99	-0.963	0.000	0.104
93.00	-17.82	-2.64	0.00	-92.75	0.00	92.75	1684.01	842.00	2129.51	1057.18	9.61	-0.990	0.000	0.098
96.00	-17.17	-2.56	0.00	-84.84	0.00	84.84	1670.36	835.18	2085.46	1035.31	10.24	-1.016	0.000	0.092
98.00	-16.74	-2.51	0.00	-79.72	0.00	79.72	1661.16	830.58	2056.21	1020.79	10.67	-1.033	0.000	0.088
99.00	-16.45	-2.49	0.00	-77.21	0.00	77.21	1656.52	828.26	2041.62	1013.55	10.89	-1.041	0.000	0.086
102.00	-15.60	-2.41	0.00	-69.75	0.00	69.75	1099.11	549.56	1359.81	675.07	11.55	-1.065	0.000	0.118
105.00	-15.03	-2.33	0.00	-62.53	0.00	62.53	1092.31	546.16	1333.88	662.20	12.22	-1.087	0.000	0.108
108.00	-14.47	-2.26	0.00	-55.53	0.00	55.53	1085.32	542.66	1307.94	649.32	12.91	-1.112	0.000	0.099
109.00	-14.29	-2.23	0.00	-53.28	0.00	53.28	0.00	0.00	0.00	0.00	13.15	-1.121	0.000	0.096
109.00	-14.29	-2.23	0.00	-53.28	0.00	53.28	0.00	0.00	0.00	0.00	13.15	-1.121	0.000	0.096
111.00	-13.92	-2.18	0.00	-48.82	0.00	48.82	1078.13	539.07	1281.99	636.43	13.62	-1.136	0.000	0.090
114.00	-13.37	-2.11	0.00	-42.27	0.00	42.27	1070.76	535.38	1256.05	623.55	14.34	-1.158	0.000	0.080
117.00	-11.19	-1.67	0.00	-35.95	0.00	35.95	1063.19	531.60	1230.12	610.68	15.08	-1.177	0.000	0.069
120.00	-10.66	-1.60	0.00	-30.93	0.00	30.93	1055.43	527.72	1204.21	597.82	15.82	-1.194	0.000	0.062
123.00	-10.13	-1.52	0.00	-26.15	0.00	26.15	1047.48	523.74	1178.34	584.98	16.58	-1.210	0.000	0.054
126.00	-9.61	-1.44	0.00	-21.59	0.00	21.59	1039.33	519.67	1152.51	572.15	17.34	-1.223	0.000	0.047

Calculated Forces

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 28

127.00	-8.28	-1.22	0.00	-20.15	0.00	20.15	1036.58	518.29	1143.91	567.88	17.60	-1.227	0.000	0.043
129.00	-7.95	-1.17	0.00	-17.71	0.00	17.71	1031.00	515.50	1126.73	559.36	18.11	-1.235	0.000	0.039
132.00	-7.46	-1.09	0.00	-14.20	0.00	14.20	1022.47	511.23	1101.01	546.59	18.89	-1.244	0.000	0.033
135.00	-6.98	-1.02	0.00	-10.92	0.00	10.92	1013.75	506.87	1075.36	533.85	19.68	-1.252	0.000	0.027
138.00	-6.50	-0.94	0.00	-7.87	0.00	7.87	1004.83	502.42	1049.79	521.16	20.47	-1.259	0.000	0.022
141.00	-6.03	-0.86	0.00	-5.05	0.00	5.05	995.73	497.86	1024.31	508.51	21.26	-1.263	0.000	0.016
144.00	-5.57	-0.79	0.00	-2.46	0.00	2.46	986.43	493.22	998.92	495.91	22.05	-1.266	0.000	0.011
147.00	-0.27	-0.05	0.00	-0.10	0.00	0.10	976.94	488.47	973.65	483.36	22.85	-1.267	0.000	0.000
149.00	0.00	-0.04	0.00	0.00	0.00	0.00	970.51	485.25	956.86	475.02	23.38	-1.267	0.000	0.000

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

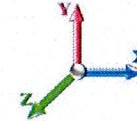
9/29/2015

Page: 29



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 27

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		1.00	0.70	6.129	6.74	180.63	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
3.00		1.00	0.70	6.129	6.74	178.99	0.750	0.000	3.00	10.746	8.06	54.3	0.0	510.2
6.00		1.00	0.70	6.129	6.74	177.34	0.750	0.000	3.00	10.648	7.99	53.8	0.0	505.5
9.00		1.00	0.70	6.129	6.74	175.70	0.750	0.000	3.00	10.549	7.91	53.3	0.0	500.8
12.00		1.00	0.70	6.129	6.74	174.06	0.750	0.000	3.00	10.451	7.84	52.8	0.0	496.1
15.00		1.00	0.70	6.129	6.74	172.41	0.750	0.000	3.00	10.353	7.76	52.3	0.0	491.4
18.00		1.00	0.70	6.129	6.74	170.77	0.750	0.000	3.00	10.254	7.69	51.8	0.0	486.7
21.00		1.00	0.70	6.129	6.74	169.12	0.750	0.000	3.00	10.156	7.62	51.4	0.0	482.0
24.00		1.00	0.70	6.129	6.74	167.48	0.750	0.000	3.00	10.058	7.54	50.9	0.0	477.3
27.00		1.00	0.70	6.129	6.74	165.83	0.750	0.000	3.00	9.960	7.47	50.4	0.0	472.6
30.00		1.00	0.70	6.134	6.75	164.26	0.750	0.000	3.00	9.861	7.40	49.9	0.0	467.9
33.00		1.00	0.72	6.303	6.93	164.84	0.750	0.000	3.00	9.763	7.32	50.8	0.0	463.1
36.00		1.00	0.74	6.462	7.11	165.21	0.750	0.000	3.00	9.665	7.25	51.5	0.0	458.4
39.00		1.00	0.76	6.611	7.27	165.41	0.750	0.000	3.00	9.566	7.17	52.2	0.0	453.7
42.00		1.00	0.77	6.753	7.43	165.44	0.750	0.000	3.00	9.468	7.10	52.7	0.0	449.0
45.00		1.00	0.79	6.887	7.58	165.34	0.750	0.000	3.00	9.370	7.03	53.2	0.0	444.3
48.00		1.00	0.80	7.015	7.72	165.11	0.750	0.000	3.00	9.272	6.95	53.7	0.0	439.6
48.50 Bot - Section 2		1.00	0.80	7.036	7.74	165.06	0.750	0.000	0.50	1.536	1.15	8.9	0.0	72.8
51.00		1.00	0.82	7.138	7.85	164.77	0.750	0.000	2.50	7.744	5.81	45.6	0.0	607.7
53.25 Top - Section 1		1.00	0.83	7.227	7.95	164.45	0.750	0.000	2.25	6.911	5.18	41.2	0.0	542.3
54.00		1.00	0.83	7.255	7.98	166.65	0.750	0.000	0.75	2.291	1.72	13.7	0.0	72.7
57.00		1.00	0.84	7.368	8.11	166.14	0.750	0.000	3.00	9.104	6.83	55.3	0.0	288.7
60.00		1.00	0.85	7.477	8.22	165.55	0.750	0.000	3.00	9.006	6.75	55.6	0.0	285.6
63.00		1.00	0.87	7.582	8.34	164.87	0.750	0.000	3.00	8.908	6.68	55.7	0.0	282.5
66.00		1.00	0.88	7.684	8.45	164.13	0.750	0.000	3.00	8.809	6.61	55.8	0.0	279.3
69.00		1.00	0.89	7.782	8.56	163.33	0.750	0.000	3.00	8.711	6.53	55.9	0.0	276.2
72.00		1.00	0.90	7.877	8.66	162.46	0.750	0.000	3.00	8.613	6.46	56.0	0.0	273.0
75.00		1.00	0.91	7.969	8.77	161.53	0.750	0.000	3.00	8.515	6.39	56.0	0.0	269.9
78.00		1.00	0.92	8.059	8.87	160.55	0.750	0.000	3.00	8.416	6.31	56.0	0.0	266.8
81.00		1.00	0.93	8.147	8.96	159.53	0.750	0.000	3.00	8.318	6.24	55.9	0.0	263.6
84.00		1.00	0.94	8.232	9.05	158.45	0.750	0.000	3.00	8.220	6.16	55.8	0.0	260.5
87.00		1.00	0.95	8.315	9.15	157.33	0.750	0.000	3.00	8.121	6.09	55.7	0.0	257.4
90.00		1.00	0.96	8.396	9.24	156.17	0.750	0.000	3.00	8.023	6.02	55.6	0.0	254.2
93.00		1.00	0.97	8.475	9.32	154.97	0.750	0.000	3.00	7.925	5.94	55.4	0.0	251.1
96.00		1.00	0.98	8.552	9.41	153.73	0.750	0.000	3.00	7.827	5.87	55.2	0.0	247.9
98.00 Bot - Section 3		1.00	0.98	8.602	9.46	152.89	0.750	0.000	2.00	5.163	3.87	36.6	0.0	163.5
99.00		1.00	0.99	8.627	9.49	152.46	0.750	0.000	1.00	2.597	1.95	18.5	0.0	143.1
102.00 Top - Section 2		1.00	0.99	8.701	9.57	151.15	0.750	0.000	3.00	7.726	5.79	55.5	0.0	425.6
105.00		1.00	1.00	8.774	9.65	151.72	0.750	0.000	3.00	7.627	5.72	55.2	0.0	181.6
108.00		1.00	1.01	8.845	9.73	150.36	0.750	0.000	3.00	7.529	5.65	54.9	0.0	179.2
109.00 Top - Section 3		1.00	1.01	8.868	9.75	149.90	0.750	0.000	1.00	2.488	1.87	18.2	0.0	59.2
111.00		1.00	1.02	8.914	9.81	148.97	0.750	0.000	2.00	4.943	3.71	36.4	0.0	117.6
114.00		1.00	1.03	8.982	9.88	147.54	0.750	0.000	3.00	7.332	5.50	54.3	0.0	174.5
117.00 Appurtenance(s)		1.00	1.03	9.049	9.95	146.09	0.750	0.000	3.00	7.234	5.43	54.0	0.0	172.1
120.00		1.00	1.04	9.115	10.03	144.62	0.750	0.000	3.00	7.136	5.35	53.7	0.0	169.8
123.00		1.00	1.05	9.179	10.10	143.12	0.750	0.000	3.00	7.038	5.28	53.3	0.0	167.4
126.00		1.00	1.06	9.243	10.17	141.59	0.750	0.000	3.00	6.939	5.20	52.9	0.0	165.1

Wind Loading - Shaft

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

9/29/2015



Page: 30

127.00	Appurtenance(s)	1.00	1.06	9.264	10.19	141.08	0.750	0.000	1.00	2.291	1.72	17.5	0.0	54.5	
129.00		1.00	1.06	9.305	10.24	140.04	0.750	0.000	2.00	4.550	3.41	34.9	0.0	108.2	
132.00		1.00	1.07	9.366	10.30	138.47	0.750	0.000	3.00	6.743	5.06	52.1	0.0	160.4	
135.00		1.00	1.08	9.427	10.37	136.87	0.750	0.000	3.00	6.645	4.98	51.7	0.0	158.0	
138.00		1.00	1.08	9.486	10.43	135.26	0.750	0.000	3.00	6.546	4.91	51.2	0.0	155.7	
141.00		1.00	1.09	9.545	10.50	133.62	0.750	0.000	3.00	6.448	4.84	50.8	0.0	153.3	
144.00		1.00	1.10	9.602	10.56	131.97	0.750	0.000	3.00	6.350	4.76	50.3	0.0	151.0	
147.00	Appurtenance(s)	1.00	1.10	9.659	10.62	130.29	0.750	0.000	3.00	6.251	4.69	49.8	0.0	148.6	
149.00		1.00	1.11	9.696	10.67	129.16	0.750	0.000	2.00	4.113	3.08	32.9	0.0	97.8	
								Totals:	149.00				2,659.2	15,957.1	

Discrete Appurtenance Forces

Structure: CT13063-A-SBA
Site Name: Middle Turnpike
Height: 149.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

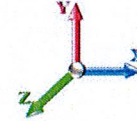
9/29/2015

Page: 31



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 27

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	147.00	RRUS-11 (19)	3	9.659	10.625	0.40	0.80	3.40	153.00	0.000	0.000	36.08	0.00	0.00
2	147.00	KRY 112 144/1	3	9.659	10.625	0.40	0.80	0.49	33.00	0.000	0.000	5.23	0.00	0.00
3	147.00	Ericsson AIR21 B4A B12P	3	9.659	10.625	0.87	0.90	30.16	468.00	0.000	0.000	320.46	0.00	0.00
4	147.00	AIR 21, 1.3M, B2A B4P	3	9.659	10.625	0.74	0.80	13.90	351.00	0.000	0.000	147.64	0.00	0.00
5	147.00	T-Arms (Site Pro P/N)	3	9.659	10.625	0.62	0.75	4.97	750.00	0.000	0.000	52.85	0.00	0.00
6	127.00	RFS APXV18-206517S-C	3	9.264	10.190	0.67	0.90	10.33	147.00	0.000	0.000	105.26	0.00	0.00
7	127.00	Flush Mount	1	9.264	10.190	1.00	1.00	1.00	200.00	0.000	0.000	10.19	0.00	0.00
8	117.00	Flush Mount	1	9.049	9.954	1.00	1.00	1.00	200.00	0.000	0.000	9.95	0.00	0.00
9	117.00	BTS	3	9.049	9.954	0.45	0.90	4.09	60.00	0.000	0.000	40.72	0.00	0.00
10	117.00	Argus LLPX310R	3	9.049	9.954	0.76	0.90	10.42	141.00	0.000	0.000	103.75	0.00	0.00
11	117.00	Andrew VHLP2.5-11	1	9.049	9.954	0.80	1.00	6.74	47.60	0.000	0.000	67.13	0.00	0.00
12	117.00	Andrew VHLP2-11	1	9.049	9.954	0.80	1.00	3.74	27.00	0.000	0.000	37.27	0.00	0.00
Totals:									2,577.60			936.51		

Total Applied Force Summary

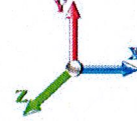
Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 32

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 27

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
3.00		54.33	572.65	0.00	0.00
6.00		53.84	567.94	0.00	0.00
9.00		53.34	563.23	0.00	0.00
12.00		52.84	558.52	0.00	0.00
15.00		52.34	553.81	0.00	0.00
18.00		51.85	549.11	0.00	0.00
21.00		51.35	544.40	0.00	0.00
24.00		50.85	539.69	0.00	0.00
27.00		50.36	534.98	0.00	0.00
30.00		49.90	530.27	0.00	0.00
33.00		50.77	525.56	0.00	0.00
36.00		51.52	520.86	0.00	0.00
39.00		52.18	516.15	0.00	0.00
42.00		52.75	511.44	0.00	0.00
45.00		53.24	506.73	0.00	0.00
48.00		53.66	502.02	0.00	0.00
48.50		8.91	83.21	0.00	0.00
51.00		45.60	659.73	0.00	0.00
53.25		41.20	589.10	0.00	0.00
54.00		13.72	88.28	0.00	0.00
57.00		55.34	351.16	0.00	0.00
60.00		55.55	348.02	0.00	0.00
63.00		55.72	344.88	0.00	0.00
66.00		55.84	341.74	0.00	0.00
69.00		55.93	338.60	0.00	0.00
72.00		55.97	335.46	0.00	0.00
75.00		55.98	332.32	0.00	0.00
78.00		55.96	329.18	0.00	0.00
81.00		55.90	326.05	0.00	0.00
84.00		55.82	322.91	0.00	0.00
87.00		55.71	319.77	0.00	0.00
90.00		55.57	316.63	0.00	0.00
93.00		55.41	313.49	0.00	0.00
96.00		55.22	310.35	0.00	0.00
98.00		36.64	205.16	0.00	0.00
99.00		18.48	163.88	0.00	0.00
102.00		55.46	487.99	0.00	0.00
105.00		55.21	243.98	0.00	0.00
108.00		54.94	241.62	0.00	0.00
109.00		18.20	80.02	0.00	0.00
111.00		36.35	159.25	0.00	0.00
114.00		54.34	236.91	0.00	0.00
117.00	(9) attachments	312.82	710.16	0.00	0.00
120.00		53.66	229.25	0.00	0.00
123.00		53.30	226.90	0.00	0.00
126.00		52.91	224.54	0.00	0.00

Total Applied Force Summary

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 33

127.00	(4) attachments	132.96	421.32	0.00	0.00
129.00		34.93	135.38	0.00	0.00
132.00		52.10	201.11	0.00	0.00
135.00		51.67	198.76	0.00	0.00
138.00		51.23	196.40	0.00	0.00
141.00		50.77	194.05	0.00	0.00
144.00		50.30	191.70	0.00	0.00
147.00	(15) attachments	612.06	1944.34	0.00	0.00
149.00		32.90	97.76	0.00	0.00
	Totals:	3,595.73	21,438.72	0.00	0.00

Calculated Forces

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



Page: 35

127.00	-3.14	-0.99	0.00	-16.72	0.00	16.72	1036.58	518.29	1143.91	567.88	13.77	-0.962	0.000	0.032
129.00	-3.01	-0.95	0.00	-14.75	0.00	14.75	1031.00	515.50	1126.73	559.36	14.17	-0.968	0.000	0.029
132.00	-2.81	-0.90	0.00	-11.89	0.00	11.89	1022.47	511.23	1101.01	546.59	14.79	-0.977	0.000	0.025
135.00	-2.61	-0.84	0.00	-9.20	0.00	9.20	1013.75	506.87	1075.36	533.85	15.40	-0.983	0.000	0.020
138.00	-2.41	-0.79	0.00	-6.67	0.00	6.67	1004.83	502.42	1049.79	521.16	16.02	-0.989	0.000	0.015
141.00	-2.22	-0.73	0.00	-4.31	0.00	4.31	995.73	497.86	1024.31	508.51	16.64	-0.992	0.000	0.011
144.00	-2.03	-0.68	0.00	-2.11	0.00	2.11	986.43	493.22	998.92	495.91	17.27	-0.995	0.000	0.006
147.00	-0.10	-0.03	0.00	-0.07	0.00	0.07	976.94	488.47	973.65	483.36	17.89	-0.996	0.000	0.000
149.00	0.00	-0.03	0.00	0.00	0.00	0.00	970.51	485.25	956.86	475.02	18.31	-0.996	0.000	0.000

Final Analysis Summary

Structure: CT13063-A-SBA	Code: EIA/TIA-222-G	9/29/2015
Site Name: Middle Turnpike	Exposure: B	
Height: 149.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 1.1	Topography: 1	Struct Class: II



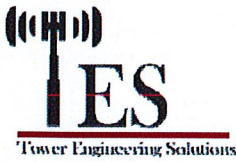
Page: 36

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	t MZ (ft-kips)
1.2D + 1.6W 100 mph Wind	16.0	0.00	25.71	0.00	0.00	1519.88
0.9D + 1.6W 100 mph Wind	16.0	0.00	19.28	0.00	0.00	1505.10
1.2D + 1.0Di + 1.0Wi 50 mph	4.4	0.00	44.19	0.00	0.00	430.71
1.0D + 1.0W 60 mph Wind	3.6	0.00	21.44	0.00	0.00	339.98

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 100 mph Wind	-13.41	-12.30	0.00	-756.39	0.00	-756.39	1846.69	923.35	2727.65	1354.12	53.25	0.566
0.9D + 1.6W 100 mph Wind	-9.96	-12.18	0.00	-745.90	0.00	-745.90	1846.69	923.35	2727.65	1354.12	53.25	0.556
1.2D + 1.0Di + 1.0Wi 50 mph	-26.98	-3.51	0.00	-216.96	0.00	-216.96	1846.69	923.35	2727.65	1354.12	53.25	0.175
1.0D + 1.0W 60 mph Wind	-11.49	-2.75	0.00	-168.84	0.00	-168.84	1846.69	923.35	2727.65	1354.12	53.25	0.131



Monopole Mat Foundation Design

Date

9/29/2015

Customer Name:	T-Mobile	EIA/TIA Standard:	EIA-222-G
Site Name:	Middle Turnpike	Structure Height (Ft.):	149
Site Number:	CT13063-A-SBA	Engineer Name:	K. Wyant
Engr. Number:	17791	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations

Structure Type:

Monopole

Analysis or Design?

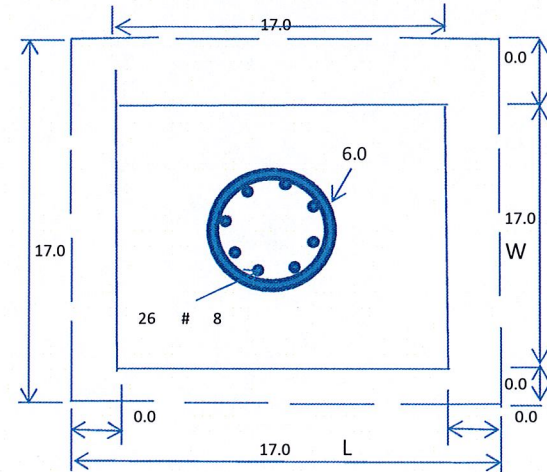
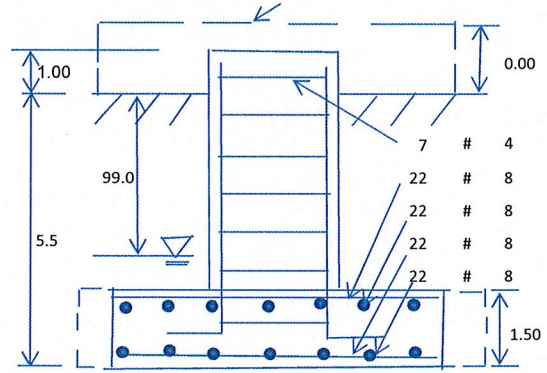
Analysis

Base Reactions (Factored):

Axial Load (Kips):	25.7	Shear Force (Kips):	16.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1569.1

Foundation Geometries:

Diameter of Pier (ft.):	6.0	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	1.50
Length of Pad (ft.):	17	Width of Pad (ft.):	17
Final Length of pad (ft)	17.0	Final width of pad (ft):	17.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi	
Vertical bar yield (ksi):	60	Tie steel yield (ksi):	60		
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4		
Qty. of Vertical Rebars:	26	Tie Spacing (in):	12.0		
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8		
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf	
Rebar at the bottom of the concrete pad:		Qty. of Rebar in Pad (L):	22	Qty. of Rebar in Pad (W):	22
Rebar at the top of the concrete pad:		Qty. of Rebar in Pad (L):	22	Qty. of Rebar in Pad (W):	22

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	10667	Ultimate Skin Friction:	0	Psf
Consider Friction for O.T.M. (Y/N):	Yes	Consider Friction for bearing (Y/N):	No	
Consider soil hori. force for O.T.M.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		Angle from Bottm of Pad:	25	
		Angle from Bottm of Pad:	25	

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	1042.90	Total Dry Soil Weight (Kips):	125.15
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	125.15	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	574.87	Total Dry Concrete Weight (Kips):	86.23
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	86.23	Total Vertical Load on Base (Kips):	237.09

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	4440	<	Allowable Factored Soil Bearing (psf):	8000	0.56	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	1835.6	>	Design Factored Momont (kips-ft):	1656	0.90	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.11					OK!

Load/
Capacity
Ratio

Check the capacities of Reinforcing Concrete:

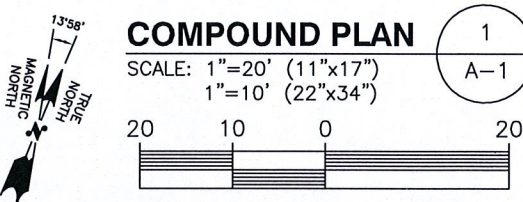
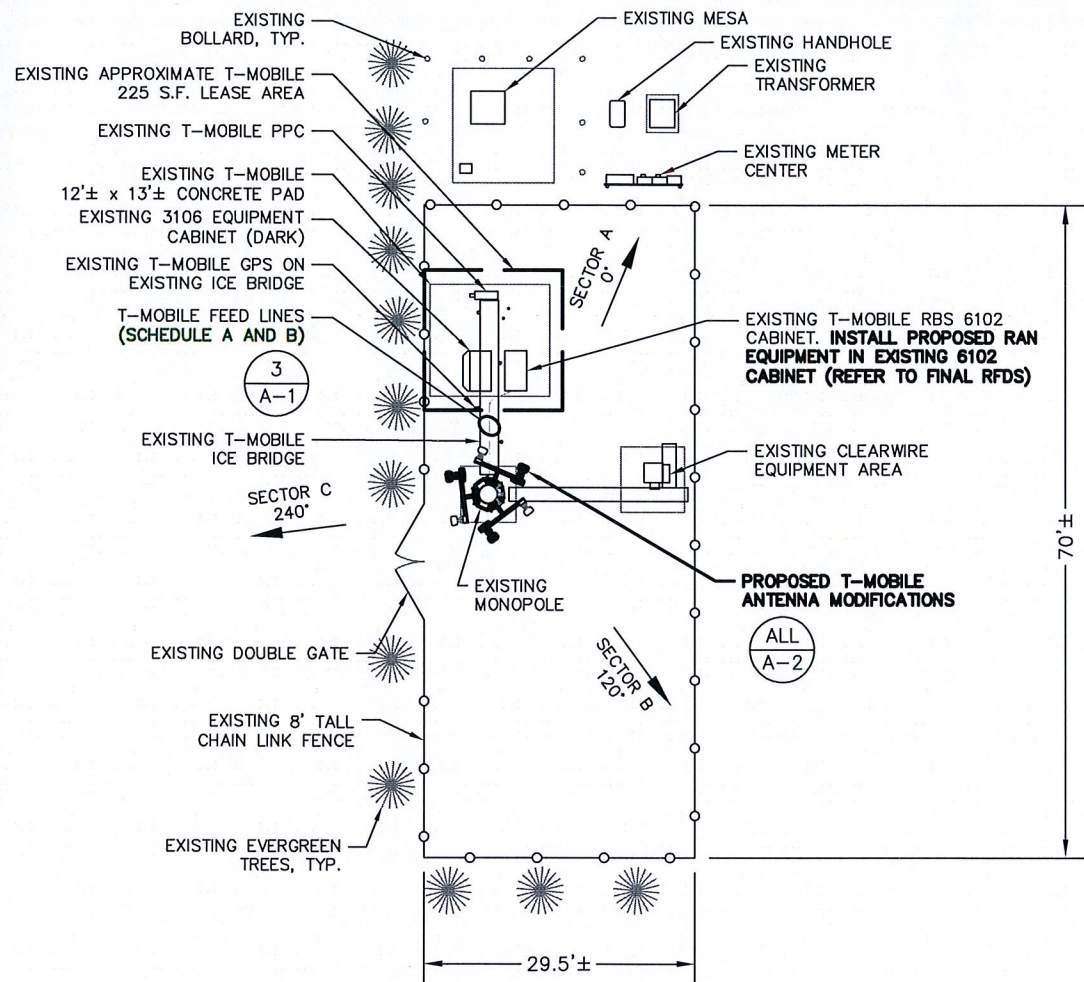
Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00		

(1) Concrete Pier:

				Load/ Capacity Ratio	
Vertical Steel Rebar Area (sq. in./each):	0.79	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn, Kips-Ft):	2994.3	> Design Factored Moment (Mu, Kips-Ft)	1651.1	0.55	OK!
Calculated Shear Capacity (Kips):	501.5	> Design Factored Shear (Kips):	16.4	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	1109.2	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7162.1	> Design Factored Axial Load (Pu Kips):	25.7	0.00	OK!
Moment & Axial Strength Combination:	0.55	OK! Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is satisfied per ACI			

(2). Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	280.6	> One-Way Factored Shear (L-D, Kips):	144.7	0.52	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	280.6	> One-Way Factored Shear (W-D., Kips):	144.7	0.52	OK!
One-Way Design Shear Capacity (Corner-Corner, Kips):	297.8	> One-Way Factored Shear (C-C, Kips):	239.1	0.80	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0059	OK! Lower Steel Pad Reinf. Ratio (W-Direct	0.0059		
Lower Steel Pad Moment Capacity (L-Direction, Kips-ft):	1075.3	> Moment at Bottom (L-Direct, K-Ft):	310.5	0.29	OK!
Lower Steel Pad Moment Capacity (W-Direction, Kips-ft):	1075.3	> Moment at Bottom (W-Direct, K-Ft):	310.5	0.29	OK!
Lower Steel Pad Moment Capacity (Corner-Corner, K-ft):	1493.0	> Moment at Bottom (C-C Dir, K-Ft):	439.1	0.29	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0059	OK! Upper Steel Reinf. Ratio (W-Direct.):	0.0059		
Upper Steel Pad Moment Capacity (L-Direction, Kips-ft):	1075.3	> Moment at the top (L-Dir Kips-Ft):	100.6	0.09	OK!
Upper Steel Pad Moment Capacity (W-Direction, Kips-ft):	1075.3	> Moment at the top (W-Dir Kips-Ft):	100.6	0.09	OK!
Upper Steel Pad Moment Capacity (Corner-Corner, K-ft):	1493.0	> Moment at the top (C-C Direc, K-Ft):	155.6	0.10	OK!



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STRUCTURAL NOTES:
 PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO TOWER STRUCTURAL ANALYSIS PROVIDED BY SBA TO DETERMINE IF THERE ARE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR TOWER TOP EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS

SPECIAL WORK NOTE:
 PAINT-TO-MATCH (MONOPOLE BROWN) ALL EXISTING AND PROPOSED AND EXPOSED EQUIPMENT CONSISTING OF ANTENNA FRAME, ANTENNA RADOMES, ASSOCIATED MOUNTING HARDWARE (PIPES, BRACKETS, HANGERS).

☉ OF T-MOBILE ANTENNAS
 EXISTING ELEV.= 147'± AGL (SBA DATABASE)
 PROPOSED ELEV.= 145'± AGL

ALL 1-3
 A-2 A-3

EXISTING 150'± MONOPOLE
 3/A-1 T-MOBILE FEED LINES

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING: TO REMAIN (6) 1-5/8" COAX AND (1) HYBRID FIBER TO 147' RAD	INSIDE MONOPOLE TO RAD
B	PROPOSED: USE EXISTING HYBRID FOR FIBER TO 145' RAD	INSIDE MONOPOLE TO RAD

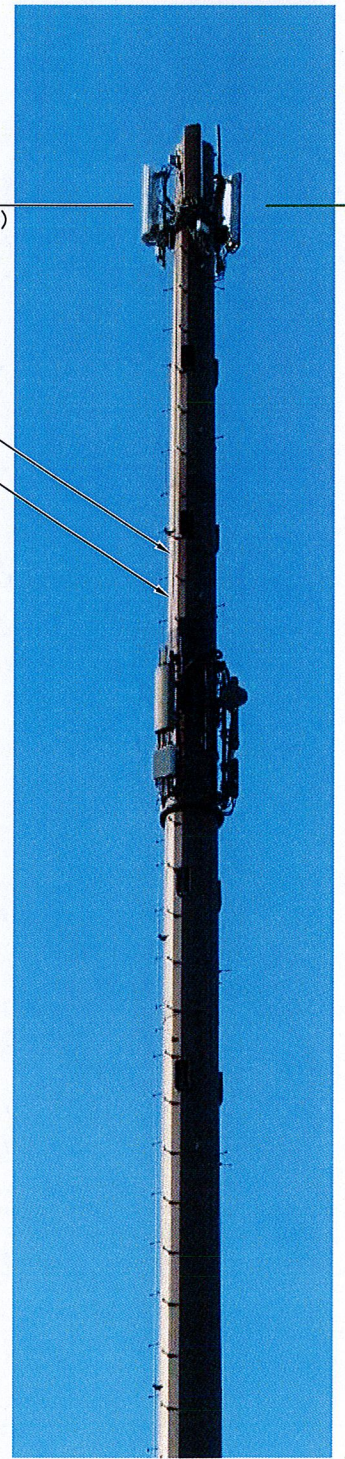


IMAGE SOURCE: PROTERRA 08/31/15

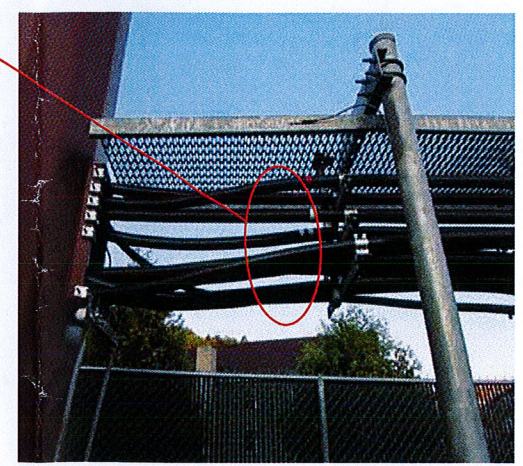


IMAGE SOURCE: PROTERRA 08/31/15

EXISTING T-MOBILE RBS 6102 CABINET. INSTALL PROPOSED RAN EQUIPMENT IN EXISTING 6102 CABINET (REFER TO FINAL RFDS)
 EXISTING T-MOBILE GPS ON EXISTING ICE BRIDGE
 EXISTING 3106 EQUIPMENT CABINET (DARK)



IMAGE SOURCE: PROTERRA 08/31/15

EXISTING (6) 1-5/8" COAX, (6) 1-5/8" COAX CUT AT GROUND LEVEL, & (1) HYBRID FIBER CABLE ACROSS EXISTING ICE BRIDGE & UP INSIDE MONOPOLE, ALL TO REMAIN (REFER TO SBA-PROVIDED STRUCTURAL ANALYSIS FOR SPECIAL FEEDLINE INSTALLATION REQUIREMENTS, STACKING, BUNDLING, SHIELDING, MOUNTING AND RELOCATION OF EXISTING OR PROPOSED FEEDLINES)

EXISTING T-MOBILE PPC

EQUIPMENT PHOTO DETAIL

SCALE: N.T.S.

2/A-1

FEEDLINE PHOTO DETAIL AT TOWER BASE

SCALE: N.T.S.

3/A-1

PARTIAL ELEVATION PHOTO DETAIL

SCALE: N.T.S.

4/A-1

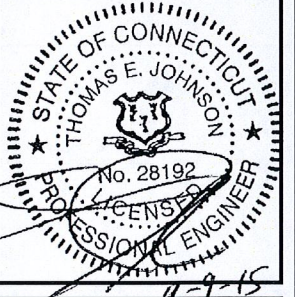
T-Mobile
 T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 TEL: (860) 648-1116

SBA

SBA COMMUNICATIONS CORP.
 33 BOSTON POST ROAD WEST, SUITE 320
 MARLBOROUGH, MA 01752 TEL: (508) 251-0720

ProTerra
 DESIGN GROUP, LLC

4 Bay Road, Building A
 Suite 200
 Hadley, MA 01035 Ph: (413)320-4918



CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	09/09/15	ISSUED FOR CONSTRUCTION	BLM

SITE NUMBER:
 CTHA071D
 SITE NAME:
 CT071 / OPTASITE HILLIARDVIL
 SITE ADDRESS:
 640 HILLIARD STREET
 MANCHESTER, CT 06042
 HARTFORD COUNTY

SHEET TITLE
 COMPOUND & ELEVATION PLAN

SHEET NUMBER
 A-1



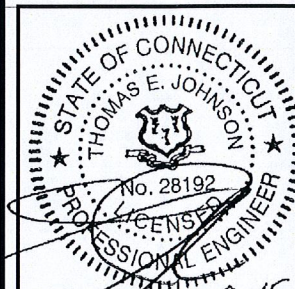
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
TEL: (860) 648-1116



SBA COMMUNICATIONS CORP.
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752 TEL: (508) 251-0720



4 Bay Road, Building A
Suite 200
Hadley, MA 01035 Ph: (413)320-4918



CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	09/08/15	ISSUED FOR CONSTRUCTION	BLM

SITE NUMBER:

CTHA071D

SITE NAME:

CT071 / OPTASITE
HILLIARDVIL

SITE ADDRESS:

640 HILLIARD STREET
MANCHESTER, CT 06042
HARTFORD COUNTY

SHEET TITLE

EXISTING & PROPOSED
ANTENNA PLAN

SHEET NUMBER

A-2

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:

ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOADS. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

STRUCTURAL NOTES:

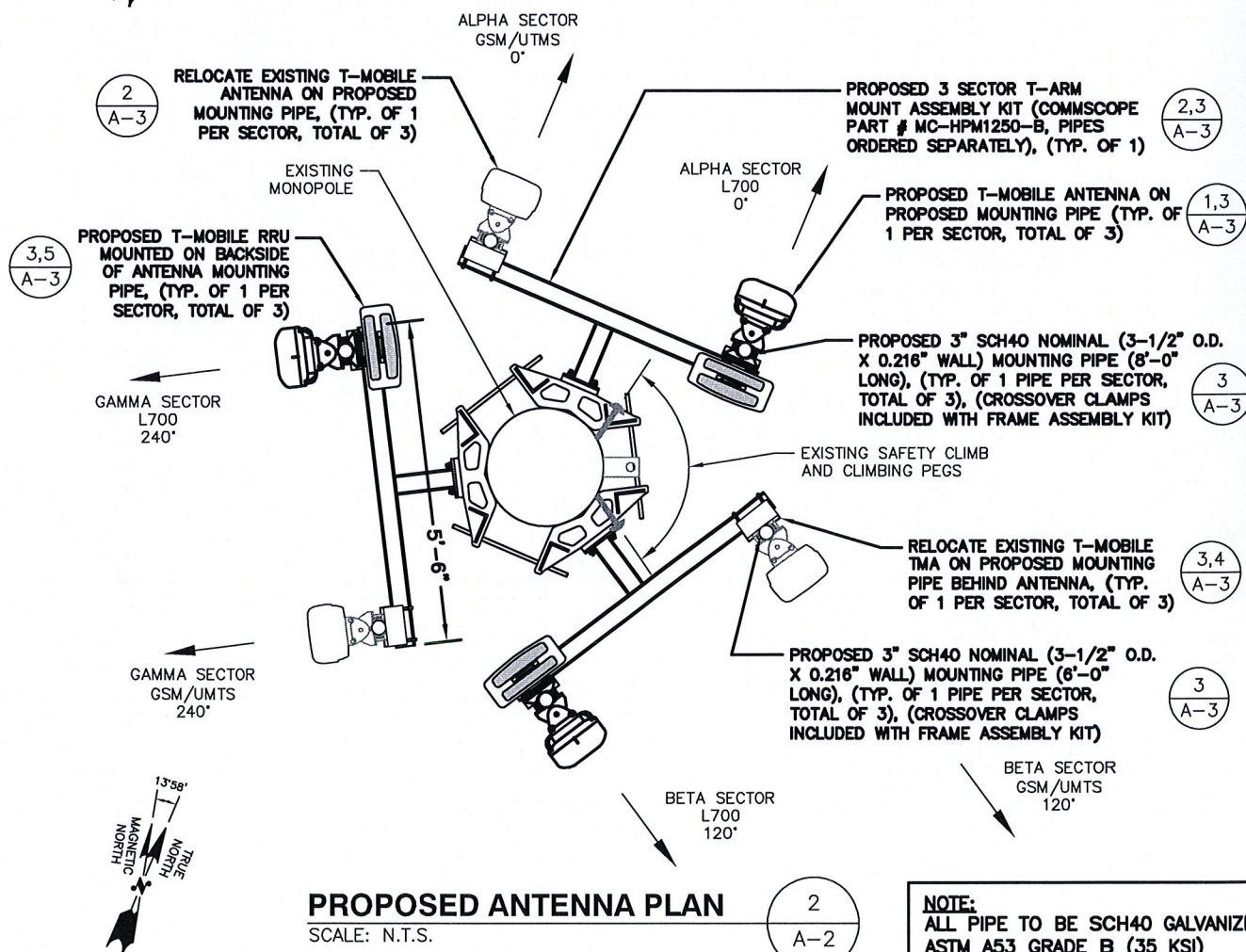
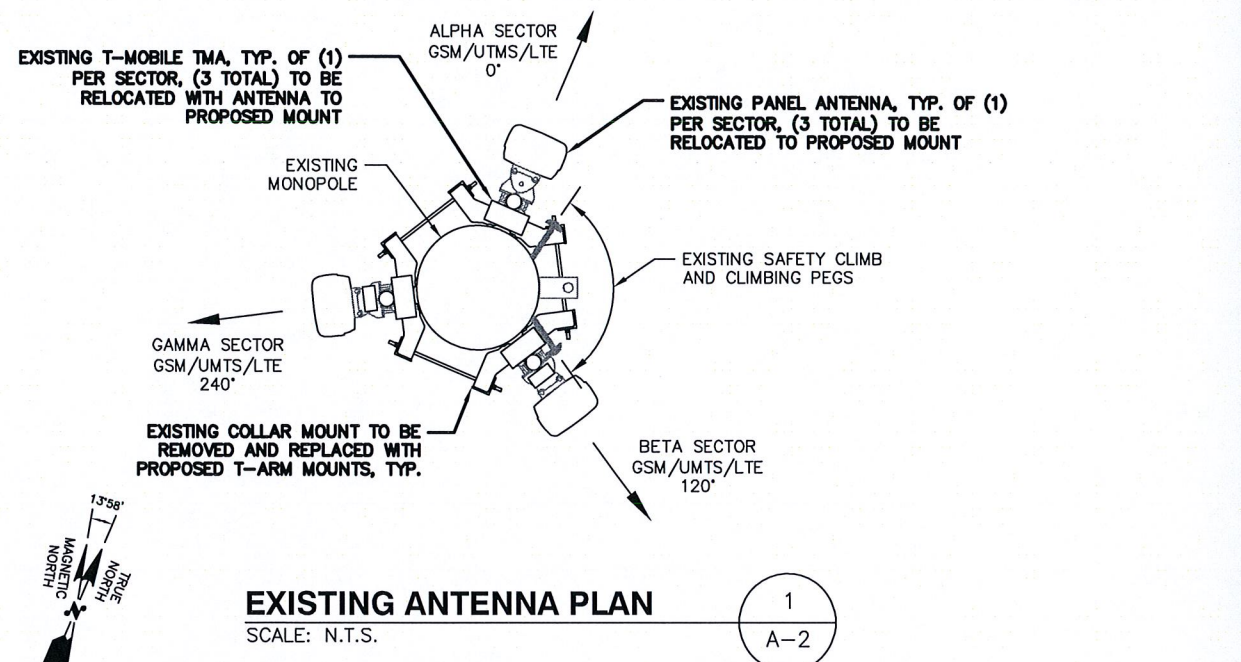
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SPECIAL WORK NOTE:

PAINT-TO-MATCH (MONOPOLE BROWN) ALL EXISTING AND PROPOSED AND EXPOSED EQUIPMENT CONSISTING OF ANTENNA FRAME, ANTENNA RADOMES, ASSOCIATED MOUNTING HARDWARE (PIPES, BRACKETS, HANGERS).

NOTE:

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



NOTE:
ALL PIPE TO BE SCH40 GALVANIZED
ASTM A53 GRADE B (35 KSI)

3
A-3
PROPOSED 3" SCH40 NOMINAL (3-1/2" O.D. X 0.216" WALL) MOUNTING PIPE (8'-0" LONG), (TYP. OF 1 PIPE PER SECTOR, TOTAL OF 3), (CROSSOVER CLAMPS INCLUDED WITH FRAME ASSEMBLY KIT)

2
A-3
RELOCATE EXISTING T-MOBILE ANTENNA ON PROPOSED MOUNTING PIPE, (TYP. OF 1 PER SECTOR, TOTAL OF 3)

2,3
A-3
PROPOSED 3 SECTOR T-ARM MOUNT ASSEMBLY KIT (COMMSCOPE PART # MC-HPM1250-B, PIPES ORDERED SEPARATELY), (TYP. OF 1)

1,3
A-3
PROPOSED T-MOBILE ANTENNA ON PROPOSED MOUNTING PIPE (TYP. OF 1 PER SECTOR, TOTAL OF 3)

3,5
A-3
PROPOSED T-MOBILE RRU MOUNTED ON BACKSIDE OF ANTENNA MOUNTING PIPE, (TYP. OF 1 PER SECTOR, TOTAL OF 3)

EL OF T-MOBILE ANTENNAS
EXISTING ELEV. (GSM/UMTS)= 147'± AGL (SBA DATABASE)
PROPOSED ELEV. (L700)= 145'± AGL

2
A-2
1-3
A-3

3
A-3
PROPOSED 3" SCH40 NOMINAL (3-1/2" O.D. X 0.216" WALL) MOUNTING PIPE (8'-0" LONG), (TYP. OF 1 PIPE PER SECTOR, TOTAL OF 3), (CROSSOVER CLAMPS INCLUDED WITH FRAME ASSEMBLY KIT)

3,4
A-3
RELOCATE EXISTING T-MOBILE TMA ON PROPOSED MOUNTING PIPE BEHIND ANTENNA, (TYP. OF 1 PER SECTOR, TOTAL OF 3)

3
A-3
PROPOSED 3" SCH40 NOMINAL (3-1/2" O.D. X 0.216" WALL) MOUNTING PIPE (8'-0" LONG), (TYP. OF 1 PIPE PER SECTOR, TOTAL OF 3), (CROSSOVER CLAMPS INCLUDED WITH FRAME ASSEMBLY KIT)

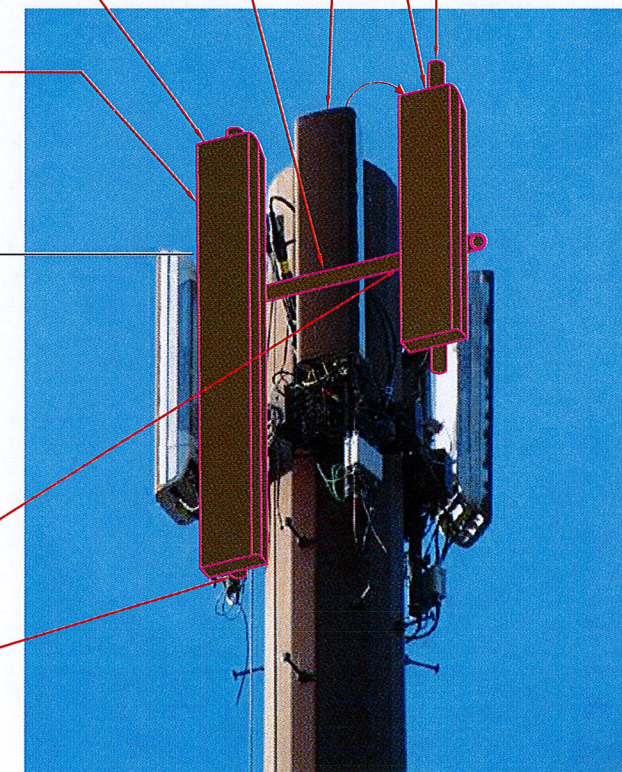
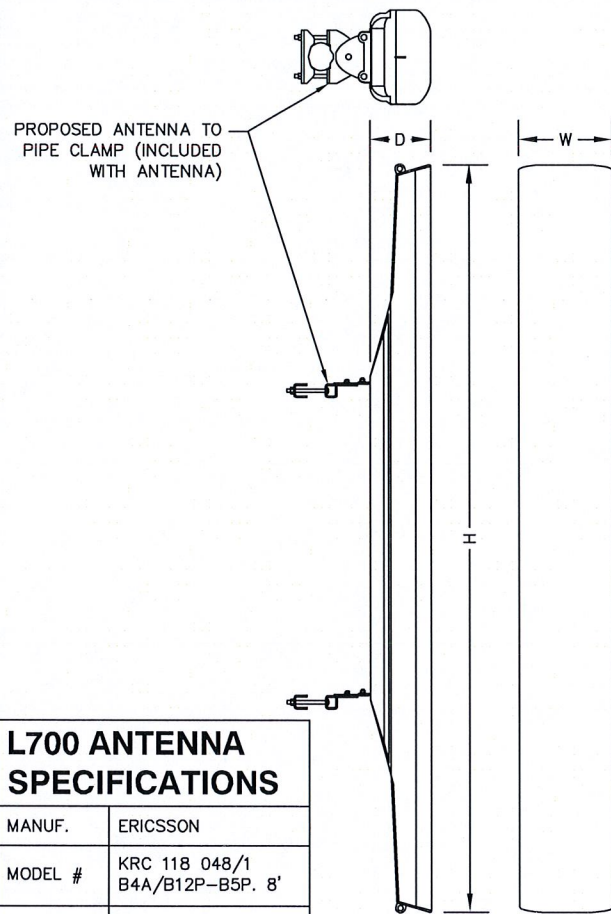


IMAGE SOURCE: PROTERRA 08/31/15
NOTE: ONE SECTOR SHOWN FOR CLARITY

ANTENNA PHOTO DETAIL
SCALE: N.T.S.

3
A-2



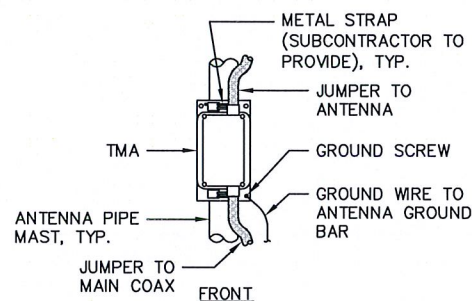
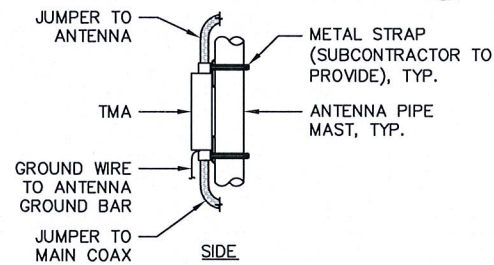
L700 ANTENNA SPECIFICATIONS

MANUF.	ERICSSON
MODEL #	KRC 118 048/1 B4A/B12P-B5P. 8'
HEIGHT	96"
WIDTH	12.1"
DEPTH	8.7
WEIGHT	126± LBS.

L700 ANTENNA DETAIL

SCALE: N.T.S.

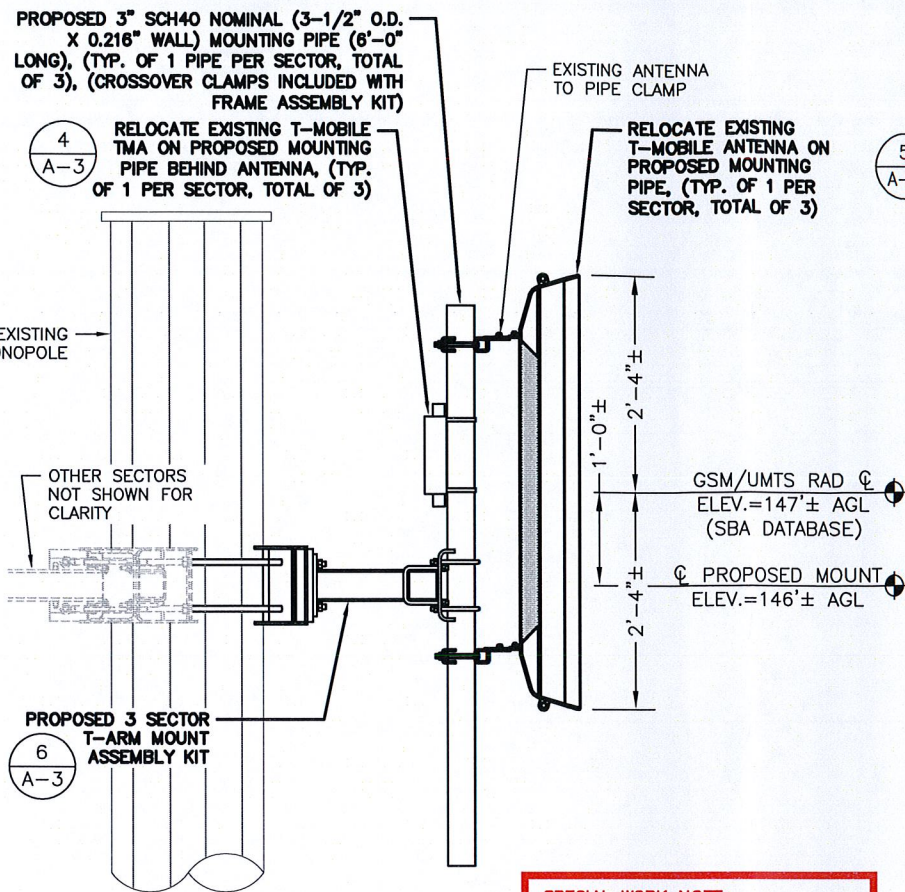
1
A-3



TMA MOUNTING DETAIL

SCALE: N.T.S.

4
A-3

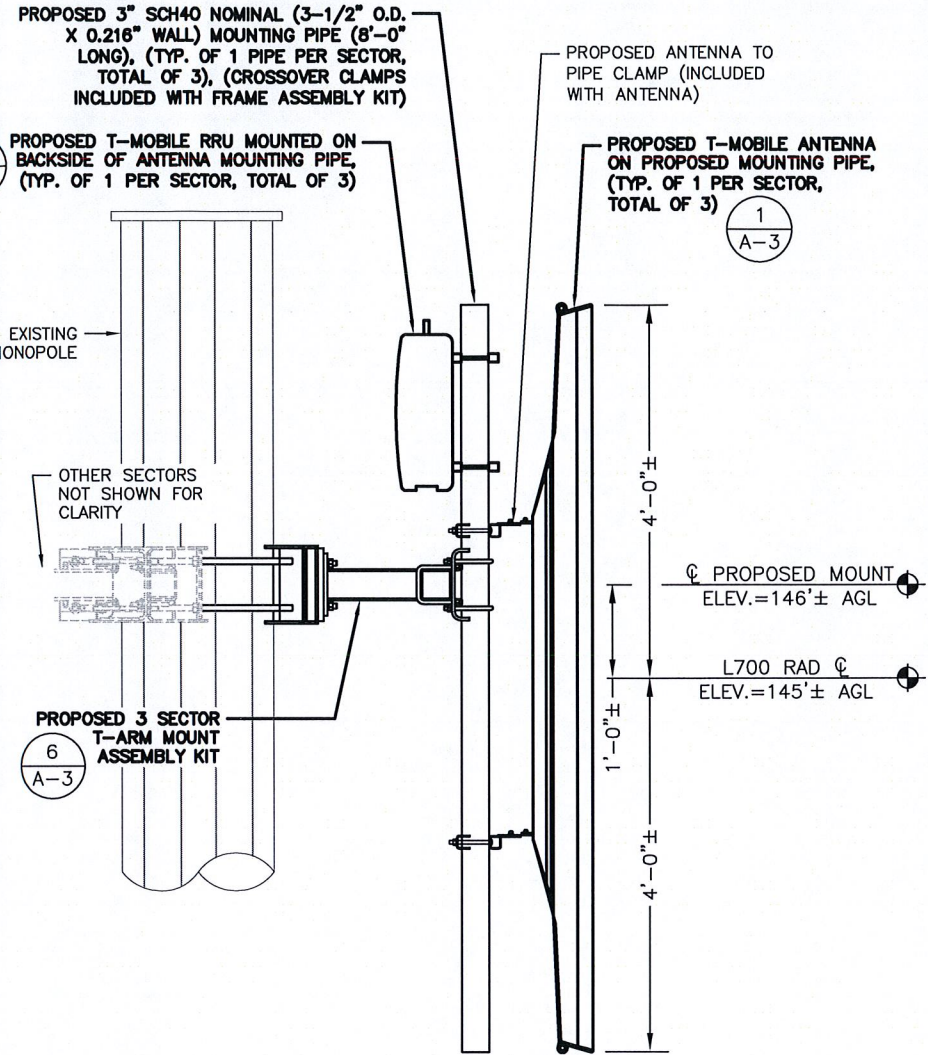


SPECIAL WORK NOTE:
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EXISTING ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

2
A-3



PROPOSED ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

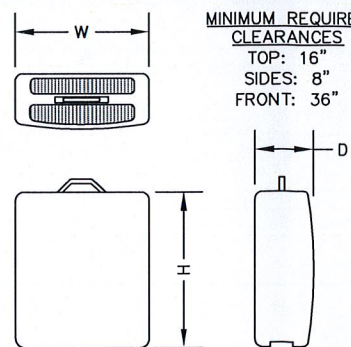
3
A-3

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RRU SPECIFICATIONS

MANUF.	ERICSSON
MODEL #	RRUS11 B12
HEIGHT	20"
WIDTH	17"
DEPTH	7"
WEIGHT	50.7 LBS.



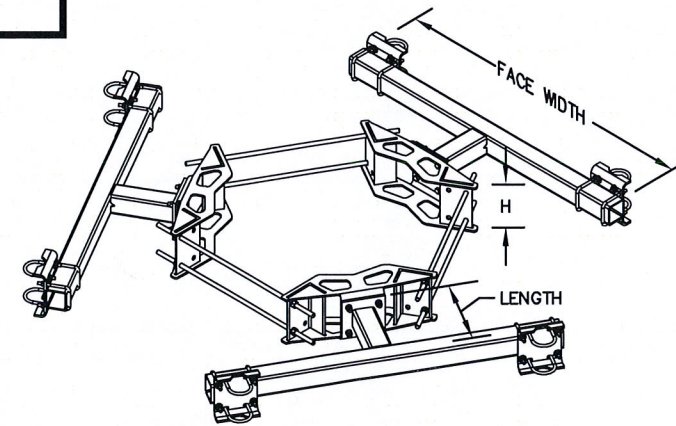
REMOTE RADIO UNIT (RRU)

SCALE: N.T.S.

5
A-3

3 SECTOR T-FRAME SPECIFICATIONS

MANUF.	COMMSCOPE
MODEL #	MC-HPM1250-B
HEIGHT	10.0"
FACE WIDTH	6.6'
LENGTH	14.0"
WEIGHT	534.2± LBS.



3 SECTOR T-FRAME MOUNT KIT

SCALE: N.T.S.

6
A-3



T-MOBILE NORTHEAST LLC
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BLOOMFIELD, CT 06002
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Suite 200
Hodley, MA 01035 Ph: (413)320-4918



CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	09/09/15	ISSUED FOR CONSTRUCTION	ELM

SITE NUMBER:

CTHA071D

SITE NAME:

CT071 / OPTASITE
HILLIARDVIL

SITE ADDRESS:

640 HILLIARD STREET
MANCHESTER, CT 06042
HARTFORD COUNTY

SHEET TITLE

DETAILS

SHEET NUMBER

A-3