



October 29, 2019

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

Re: **Notice of Exempt Modification – Antenna and RRU Add**
Property Address: **300 Plain Hill Road, Norwich, CT 06280**
Applicant: **AT&T Mobility, LLC**

Dear Ms. Bachman:

On behalf of AT&T, please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16- 50j-72(b) (2).

AT&T currently maintains a wireless telecommunications facility consisting of nine (9) wireless telecommunication antennas at an antenna center line height of 147-feet on an existing 180-foot monopole, owned by SBA at 8051 Congress Ave, Boca Raton, FL 33487. AT&T now intends to remove three (3) 4' Kathrein 7770 Panel Antennas, each currently installed in position [3], and swap these for four (4) 6' CCI DMP65R-BU6DA Panel Antennas, each to be installed in position [3 + 4], Alpha and Beta sectors only, and install two (2) 8' CCI DMP65R-BU8DA Panel Antennas, to be installed in position [3+4] Gamma Sector only . In addition, AT&T intends to remove three (3) RRUS-11 and add one (1) RRUS-4478 B14 and (1) RRUS-4449 B5/B12 in position [3 + 4], all sectors, for a total of six (6) new RRUs. AT&T is also proposing to add (1) Raycap Squid, as well as one (1) fiber line and (2) DC Power Cables to their equipment configuration. All the changes will take place on the existing antenna mount.

Attached is a summary of the planned modifications including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-510j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent Jim Troeger – Building Enforcement Official, City of Norwich, CT at 23 Union St., Norwich, CT 06360 and Peter A. Nystrom – Mayor, City of Norwich, CT at 100 Broadway, Norwich, CT 06360. A copy of this letter is being sent to the property owner, Kelvin H. Scott & Frances S. Scott at 300 Plain Hill Road, Norwich, CT 06360 and to the tower company, SBA at 8051 Congress Ave, Boca Raton, FL 33487.

The following is a list of subsequent decisions by the Connecticut Siting Council:

- **EM-CING-104-081202**- New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 300 Plain Hill Road, Norwich, Connecticut
- **EM-CING-104-121031** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 300 Plain Hill Road, Norwich, Connecticut
- **EM-AT&T-104-140303** - American Telephone and Telegraph Company notice of intent to modify an existing telecommunications facility located at 300 Plain Hill Road, Norwich, Connecticut.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b) (2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 105-foot level of the 147-foot self-support tower.



2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require any extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included in Tab 3).

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

Sincerely,

Kristina Cottone

CC w/enclosures:

Jim Troeger – Building Enforcement Official, City of Norwich, CT
Peter A. Nystrom – Mayor, City of Norwich, CT
Kelvin H. Scott & Frances S. Scott – Property Owners
SBA – Tower Company

300 PLAIN HILL RD

Location 300 PLAIN HILL RD

Mblu 28/ 1/ 14/ /

Acct# 0108690001

Owner STOTT KELVIN H +

Assessment \$101,400

Appraisal \$144,800

PID 10713

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$96,800	\$48,000	\$144,800
Assessment			
Valuation Year	Improvements	Land	Total
2018	\$67,800	\$33,600	\$101,400

Parcel Addresses

Additional Addresses
No Additional Addresses available for this parcel

Owner of Record

Owner STOTT KELVIN H +
STOTT FRANCES S
Address 300 PLAIN HILL RD
NORWICH, CT 06360

Sale Price \$0
Certificate
Book & Page 0316/0615
Sale Date 05/10/1962

Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
STOTT KELVIN H +	\$0		0316/0615	05/10/1962

Building Information

Building 1 : Section 1

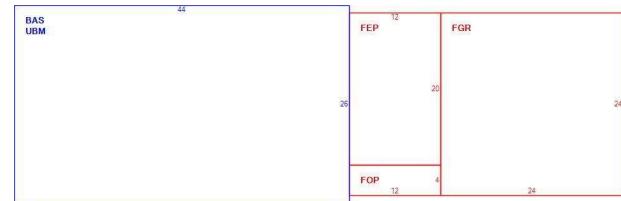
Year Built: 1962
Living Area: 1,144
Replacement Cost: \$134,501

Building Percent 72**Good:****Replacement Cost****Less Depreciation:** \$96,800

Building Attributes	
Field	Description
Style	Ranch
Model	Residential
Grade:	C
Stories:	1 Story
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure:	Gable/Hip
Roof Cover	Asphalt Shingl
Interior Wall 1	Plastered
Interior Wall 2	
Interior Flr 1	Carpet
Interior Flr 2	
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	3 Bedrooms
Total Bthrms:	1
Total Half Baths:	0
Total Xtra Fixtrs:	
Total Rooms:	6 Rooms
Bath Style:	Average
Kitchen Style:	Average
Num Kitchens	
Fireplace (s)	1
Whirlpool	
FPLG Gas	
FPLW Wood	
FPO	
Usrfld 107	
park	
Fireplaces	
Usrfld 108	
Usrfld 101	
Usrfld 102	
Usrfld 100	

Building Photo

(http://images.vgsi.com/photos/NorwichCTPhotos//\00\01\84\49

Building Layout

(ParcelSketch.ashx?pid=10713&bid=10713)

Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	1,144	1,144
FEP	Porch, Enclosed, Finished	240	0
FGR	Garage, Finished	576	0
FOP	Porch, Open, Finished	48	0
UBM	Basement, Unfinished	1,144	0
		3,152	1,144

Usrfd 300	
Usrfd 301	

Extra Features

Extra Features	<u>Legend</u>
No Data for Extra Features	

Land

Land Use

Use Code 1010
Description Single Family
Zone R40
Neighborhood 0050
Alt Land Appr No
Category

Land Line Valuation

Size (Acres) 0.92
Frontage 0
Depth 0
Assessed Value \$33,600
Appraised Value \$48,000

Outbuildings

Outbuildings	<u>Legend</u>
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2018	\$96,800	\$48,000	\$144,800
2017	\$95,143	\$56,571	\$151,714
2016	\$95,100	\$56,500	\$151,600

Assessment			
Valuation Year	Improvements	Land	Total
2018	\$67,800	\$33,600	\$101,400
2017	\$66,600	\$39,600	\$106,200
2016	\$66,600	\$39,600	\$106,200



Tower Engineering Solutions

Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 180 ft. SBA Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01365-S

Customer Site Name: Norwich 2 CT

Carrier Name: AT&T (App#: 123385, V1)

Carrier Site ID / Name: CTL02026 / Norwich Plain Hill RD

Site Location: 292 Plain Hill Road

Norwich, Connecticut

New London County

Latitude: 41.578199

Longitude: -72.103675



Analysis Result:

Max Structural Usage: 87.3% [Pass]

Max Foundation Usage: 93.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Delu Zhou



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Report Prepared By : Delu Zhou

Introduction

The purpose of this report is to summarize the analysis results on the 180 ft. SBA 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	Tower Design prepared by Valmont, job # 18407-99, dated 06/03/1999
Foundation Drawing	Foundation Design prepared by Valmont, job # 18407-99, dated 06/03/1999
Geotechnical Report	Geotechnical Report prepared by FDH, job # 1207121EG1, dated 08/13/2012
Modification Drawings	Modification Design prepared by FDH, job # 1316541400, dated 03/14/13

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 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.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 136.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 105.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft.
Seismic Parameters:	$S_S = 0.17, S_1 = 0.061$

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

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	Owner
1	177.0	3	RFS APXVSP18-C-A20 - Panel	Platform w/ Hand Rail	(4) 1 1/4" Hybrid	Sprint Nextel
2		3	RFS APXVTM14-C-120 - Panel			
3		4	RFS ACU-A20-N RET			
4		3	Alcatel Lucent 1900 MHz RRH			
5		3	Alcatel-Lucent 800MHZ RRH			
6		3	Alcatel Lucent TD-RRH8x20-25			
7		3	Alcatel-Lucent 800 MHz Filter			
8	159.0	3	Antel - BXA-80080/4CF - Panel	Low Profile Platform	(11) 1 5/8" (2) 1 5/8" Fiber	Verizon
9		3	Antel - BXA-171085-8BF-EDIN-2 Panel			
10		2	RFS - DB-T1-6Z-8AB-0Z - ODU			
11		6	Commscope - SBNHH-1D65B Panel			
12		3	Alcatel Lucent - B25 RRH4X30 RRH			
13		3	Alcatel Lucent - B25 RRH4X30 RRH			
14		3	Alcatel Lucent - RRH 4X45-PCS RRH			
-	147.0	1	CCI Antennas HPA-65R-BUU-H6 Panel	Low Profile Platform	(1) 1/2" Fiber (12) 1 5/8" (2) 3/4" DC	AT&T
-		2	Cci Antennas HPA-65R-BUU-H8 Panel			
-		3	Ericsson - RRUS 12 - RRU			
-		3	Ericsson - RRUS A2 - RRU			
-		6	Powerwave 7770 - Panel			
-		6	Powerwave LGP21401 TMA			
-		12	Kathrein - 860 10025 RET - RET			
-		6	Ericsson - RRUS 11 - RRU			
-		6	Powerwave LGP21901 Diplexer			
-		1	Raycap DC6-48-60-18-8F COVP			
28	52.0	1	GPS	-	(1) 1/2"	Sprint Nextel

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
15	147.0	3	Powerwave - 7770 - Panel	Low Profile Platform	(12) 1 5/8" (2) 3" Conduit [housing (4) 3/4" DC & (2) 1/2" Fiber]	AT&T
16		1	CCI - HPA-65R-BUU-H6 - Panel			
17		2	CCI - HPA-65R-BUU-H8 - Panel			
18		2	CCI - DMP65R-BU6DA - Panel			
19		4	CCI - DMP65R-BU8DA - Panel			
20		6	Powerwave LGP21401 TMA			
21		12	Kathrein 860 10025 RET			
22		3	Ericsson RRUS 12			
23		3	Ericsson RRUS 4478 B14			
24		3	Ericsson RRUS 4449 B5/B12			
25		3	Ericsson RRUS-A2			
26		2	Raycap DC6-48-60-18-8F COVP			
27	127.0	1	CS72188.01 LMU - Whip	Direct Mount	(1) 1/2" w/LMU	

See the attached coax layout for the line placement considered in the analysis.

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	Reinforce Plates
Max. Usage:	85.6%	65.2%	56.3%	87.3%
Pass/Fail	Pass	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	4948.0	38.8
Analysis Reactions	5559.1	45.6
Factored Reactions*	6679.8	52.4
% of Design Reactions	83.2%	87.1%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.3943 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. 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 and/or 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.
4. 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.
5. 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.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Usage Diagram - Max Ratio 85.59% at 98.9ft

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-G
Exposure: C
G_h: 1.1

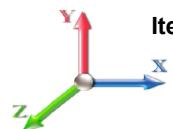
10/24/2019



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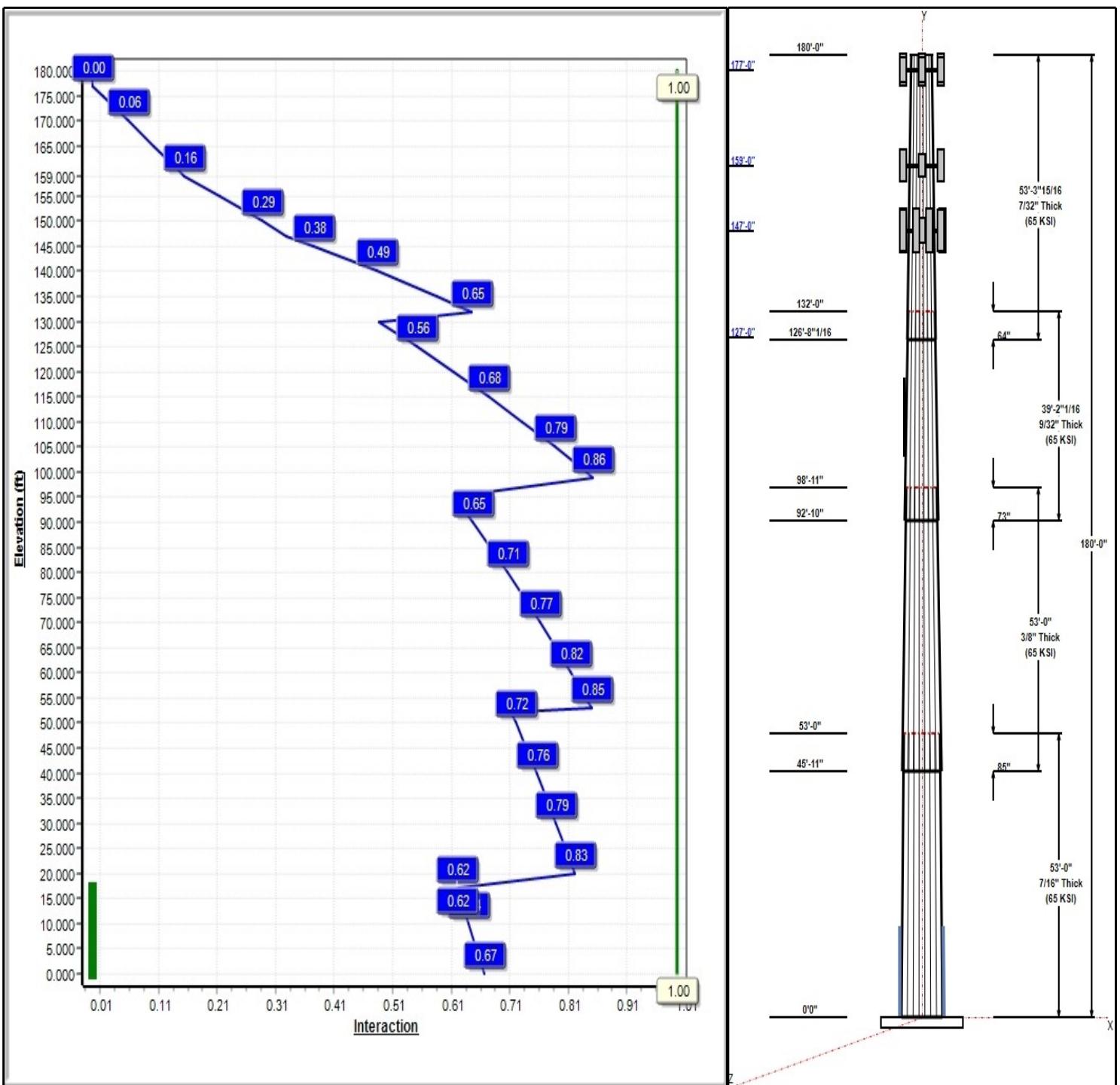
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 105 mph Wind



Iterations: 27

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Structure: CT01365-S-SBA

Type: Tapered
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.18500

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Shaft Properties

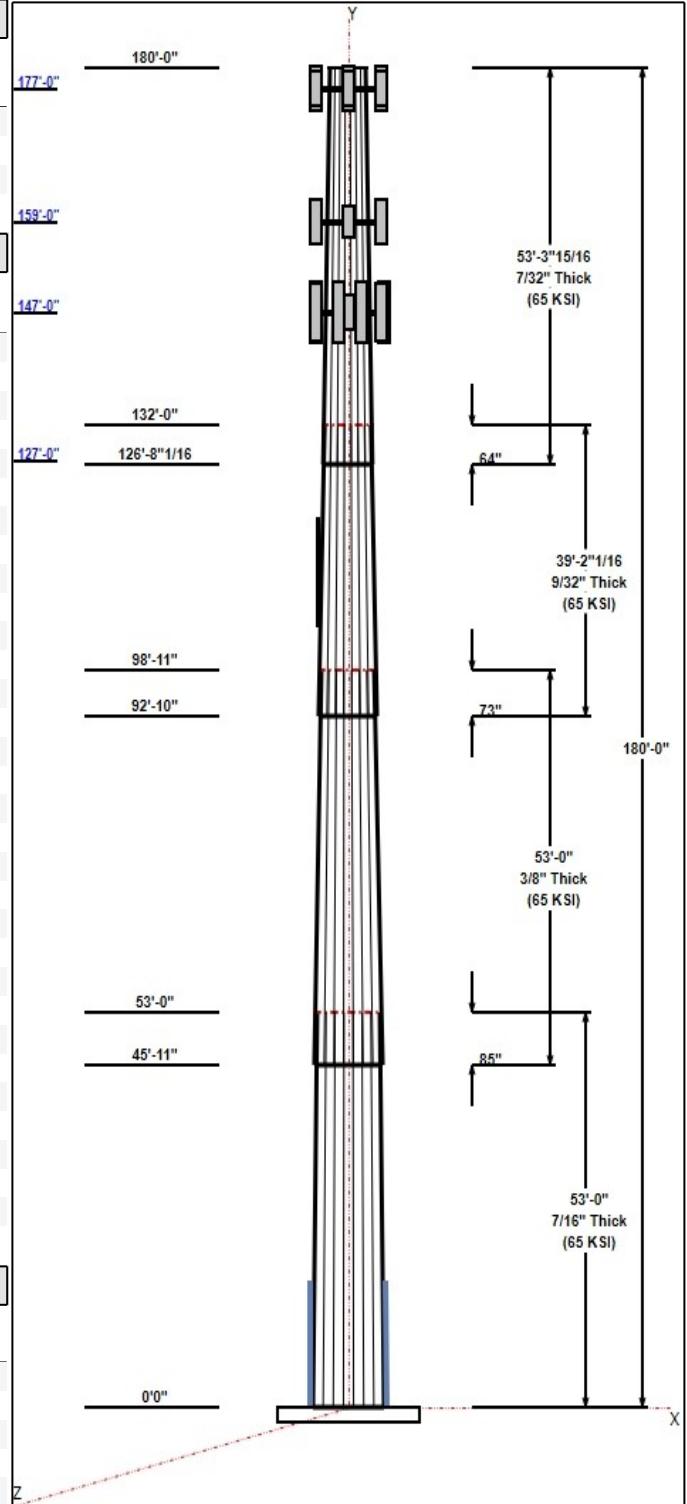
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.00	48.20	58.00	0.438		0.18500	65
2	53.00	40.45	50.26	0.375	Slip	0.18500	65
3	39.17	34.89	42.14	0.281	Slip	0.18500	65
4	53.33	26.45	36.32	0.219	Slip	0.18500	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
180.00	180.00	1	Lightning Rod	
177.00	177.00	3	APXVSPP18-C-A20	Sprint Nextel
177.00	177.00	3	APXVTM14-C-120	Sprint Nextel
177.00	177.00	3	TD-RRH8x20-25	Sprint Nextel
177.00	177.00	3	1900MHz RRUs	Sprint Nextel
177.00	177.00	3	800 MHz RRUs	Sprint Nextel
177.00	177.00	3	ALU 800MHz External	Sprint Nextel
177.00	177.00	4	ACU-A20-N	Sprint Nextel
177.00	177.00	1	Platform w/ Hand Rail	Sprint Nextel
159.00	159.00	6	SBNHH-1D65B	Verizon
159.00	159.00	3	B25 RRH4x30	Verizon
159.00	159.00	3	BXA-80080/4CF	Verizon
159.00	159.00	3	BXA-171085-8BF-EDIN-2	Verizon
159.00	159.00	3	B25 RRH4x30	Verizon
159.00	159.00	3	RRH 4X45-PCS	Verizon
159.00	159.00	2	DB-T1-6Z-8AB-0Z	Verizon
159.00	159.00	1	Low Profile	Verizon
147.00	147.00	3	7770	AT&T
147.00	147.00	6	Powerwave LGP21401	AT&T
147.00	147.00	2	Raycap DC6-48-60-18-8F	AT&T
147.00	147.00	1	Low Profile Platform	AT&T
147.00	147.00	1	HPA-65R-BUU-H6	AT&T
147.00	147.00	2	HPA-65R-BUU-H8	AT&T
147.00	147.00	12	Kathrein 860 10025 RET	AT&T
147.00	147.00	3	Ericsson RRUS 12	AT&T
147.00	147.00	3	Ericsson RRUS-A2	AT&T
147.00	147.00	2	DMP65R-BU6DA	AT&T
147.00	147.00	4	DMP65R-BU8DA	AT&T
147.00	147.00	3	Ericsson RRUS 4478 B14	AT&T
147.00	147.00	3	Ericsson RRUS 4449	AT&T
127.00	112.00	1	CS72188.01 LMU	AT&T
52.00	52.00	1	GPS	Sprint Nextel

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	177.00	Inside	1 1/4" Coax	Sprint Nextel
0.00	159.00	Inside	1 5/8" Coax	Verizon
0.00	159.00	Inside	1 5/8" Fiber	Verizon
0.00	147.00	Inside	1 5/8" Coax	AT&T
0.00	147.00	Inside	1/2" Fiber	AT&T
0.00	147.00	Inside	3" Conduit	AT&T
0.00	147.00	Inside	3/4" DC	AT&T
0.00	127.00	Inside	1/2" w/LMU	AT&T
0.00	52.00	Outside	1/2" Coax	Sprint Nextel



Structure: CT01365-S-SBA

Type: Tapered
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.18500

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Anchor Bolts

Qty	Specifications	Grade (ksi)	Grade
			Arrangement
20	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	72.5	60.0	Polygon

Reactions

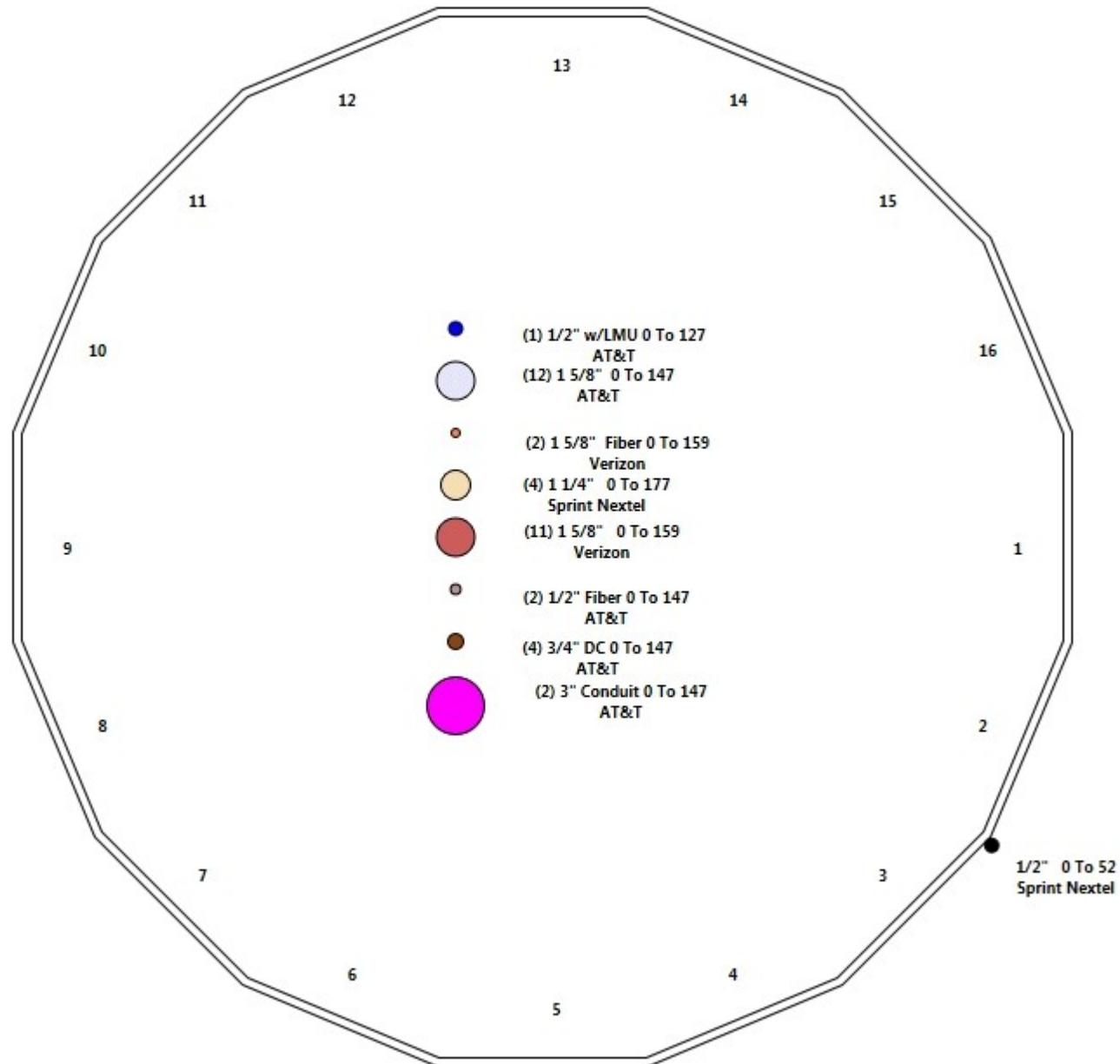
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	5559.1	45.6	53.3
0.9D + 1.6W 105 mph Wind	5502.2	45.6	39.9
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1308.6	10.5	81.1
1.2D + 1.0E	213.7	1.7	53.3
0.9D + 1.0E	211.3	1.7	40.0
1.0D + 1.0W 60 mph Wind	1129.1	9.3	44.5

Structure: CT01365-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Norwich 2 CT
Height: 180.00 (ft)

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Shaft Properties

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	16	53.000	0.4380	65		0.00	13,269
2	16	53.000	0.3750	65	Slip	85.00	9,704
3	16	39.170	0.2810	65	Slip	73.00	4,568
4	16	53.330	0.2190	65	Slip	64.00	3,951
Total Shaft Weight:							31,492

Bottom

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	58.00	0.00	80.43	33665.63	24.75	132.42	48.20	53.00	66.73	19226.0	20.30	110.0	0.185000
2	50.26	45.92	59.67	18755.41	25.07	134.01	40.45	98.92	47.94	9726.81	19.86	107.8	0.185000
3	42.14	92.83	37.52	8304.44	28.24	149.96	34.89	132.00	31.02	4694.95	23.11	124.1	0.185000
4	36.32	126.6	25.22	4151.11	31.39	165.83	26.45	180.00	18.33	1592.92	22.43	120.7	0.185000

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors		Termination Connectors		Lower Qty	Upper Qty
							Description	Spacing (in)	Description	Spacing (in)		
0.00	17.00	3	PLT 7.5"x1.25"(1.25"hole	65	80	0.00	AJM20&sleeve	18.00	AJM20&sleeve	3.00	14	14

Load Summary

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

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

10/24/2019



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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	180.00	Lightning Rod	1	5.00	0.50	1.00	26.33	2.277	1.00	0.00	0.00
2	177.00	APXVSPP18-C-A20	3	57.00	8.02	0.83	232.74	10.860	0.83	0.00	0.00
3	177.00	APXVTM14-C-120	3	56.00	6.34	0.79	219.64	7.473	0.79	0.00	0.00
4	177.00	TD-RRH8x20-25	3	70.00	4.05	0.57	182.70	4.878	0.57	0.00	0.00
5	177.00	1900MHz RRUs	3	44.00	3.80	0.57	154.99	5.213	0.57	0.00	0.00
6	177.00	800 MHz RRUs	3	53.00	2.49	0.57	128.19	3.653	0.57	0.00	0.00
7	177.00	ALU 800MHz External Notch Filt	3	8.80	0.78	0.57	26.74	1.438	0.57	0.00	0.00
8	177.00	ACU-A20-N	4	1.00	0.14	0.57	5.37	0.442	0.57	0.00	0.00
9	177.00	Platform w/ Hand Rail (round)	1	1600.00	32.00	1.00	3734.89	60.389	1.00	0.00	0.00
10	159.00	SBNHH-1D65B	6	40.60	8.08	0.78	243.61	9.380	0.78	0.00	0.00
11	159.00	B25 RRH4x30	3	51.00	2.14	0.57	109.08	2.752	0.57	0.00	0.00
12	159.00	BXA-80080/4CF	3	14.30	4.80	0.76	123.13	6.684	0.76	0.00	0.00
13	159.00	BXA-171085-8BF-EDIN-2	3	10.50	2.94	0.84	76.43	4.608	0.84	0.00	0.00
14	159.00	B25 RRH4x30	3	51.00	2.14	0.57	109.08	2.752	0.57	0.00	0.00
15	159.00	RRH 4X45-PCS	3	60.00	2.71	0.57	141.23	3.981	0.57	0.00	0.00
16	159.00	DB-T1-6Z-8AB-0Z	2	18.90	4.80	0.67	163.62	5.679	0.67	0.00	0.00
17	159.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	2816.56	39.765	1.00	0.00	0.00
18	147.00	7770	3	35.00	5.50	0.73	169.84	6.563	0.73	0.00	0.00
19	147.00	Powerwave LGP21401 TMA	6	19.00	1.29	0.50	52.62	2.124	0.50	0.00	0.00
20	147.00	Raycap DC6-48-60-18-8F COVP	2	32.80	0.92	0.67	96.44	1.357	0.67	1.00	0.00
21	147.00	Low Profile Platform	1	1500.00	22.00	1.00	2806.27	39.626	1.00	0.00	0.00
22	147.00	HPA-65R-BUU-H6	1	51.00	9.66	1.00	298.52	11.023	1.00	1.00	0.00
23	147.00	HPA-65R-BUU-H8	2	68.00	12.98	0.81	358.36	14.592	0.81	0.00	0.00
24	147.00	Kathrein 860 10025 RET	12	1.20	0.18	0.50	7.18	0.558	0.50	0.00	0.00
25	147.00	Ericsson RRUS 12	3	58.00	2.70	0.57	122.65	3.358	0.57	0.00	0.00
26	147.00	Ericsson RRUS-A2	3	22.00	1.86	0.57	59.40	2.832	0.57	0.00	0.00
27	147.00	DMP65R-BU6DA	2	79.40	9.66	0.81	366.20	14.195	0.81	0.00	0.00
28	147.00	DMP65R-BU8DA	4	95.70	12.75	0.77	471.76	19.689	0.77	0.00	0.00
29	147.00	Ericsson RRUS 4478 B14	3	59.40	1.65	0.57	100.78	2.167	0.57	0.00	0.00
30	147.00	Ericsson RRUS 4449 B5/B12	3	73.00	1.97	0.57	127.77	2.516	0.57	0.00	0.00
31	127.00	CS72188.01 LMU	1	35.00	6.41	1.00	187.54	11.458	1.00	1.50	-15.00
32	52.00	GPS	1	0.20	0.11	1.00	0.92	0.542	1.00	1.00	0.00
Totals:			95	8,017.20			21,865.55				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	177.00	(4) 1 1/4" Coax	0.00	Inside
0.00	159.00	(11) 1 5/8" Coax	0.00	Inside
0.00	159.00	(2) 1 5/8" Fiber	0.00	Inside
0.00	147.00	(12) 1 5/8" Coax	0.00	Inside
0.00	147.00	(2) 1/2" Fiber	0.00	Inside
0.00	147.00	(2) 3" Conduit	0.00	Inside
0.00	147.00	(4) 3/4" DC	0.00	Inside
0.00	127.00	(1) 1/2" w/LMU	0.00	Inside
0.00	52.00	(1) 1/2" Coax	0.65	Outside

Discrete Appurtenances

No.	Elev (ft)	Description	No Ice				Ice				Hor. Ecc. (ft)	Vert Ecc (ft)
			Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor			

Shaft Section Properties

Structure: CT01365-S-SBA	Code: EIA/TIA-222-G	10/24/2019	 IES <small>Tower Engineering Solutions</small>
Site Name: Norwich 2 CT	Exposure: C		
Height: 180.00 (ft)	Crest Height: 0.00		
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil		
Gh: 1.1	Topography: 1	Struct Class: II	Page: 8

Increment Length: 5 (ft)

Additional Reinforcing														
Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00	RB1	0.4380	58.000	80.427	33665.6	24.75	132.42	65	75	0.0	28.13	14104.8	10646.3	
5.00		0.4380	57.075	79.134	32068.6	24.33	130.31	65	75	1357.4	28.13	13669.6	10318.1	478.5
10.00		0.4380	56.150	77.842	30522.9	23.91	128.20	65	76	1335.4	28.13	13241.3	9995.2	478.5
15.00		0.4380	55.225	76.549	29027.6	23.49	126.08	65	76	1313.4	28.13	12819.9	9677.4	478.5
17.00	RT1	0.4380	54.855	76.033	28443.5	23.32	125.24	65	76	519.2	28.13	12653.2	9551.8	191.4
20.00		0.4380	54.300	75.257	27582.1	23.07	123.97	65	76	772.2				
25.00		0.4380	53.375	73.965	26185.3	22.65	121.86	65	77	1269.4				
30.00		0.4380	52.450	72.672	24836.5	22.23	119.75	65	77	1247.4				
35.00		0.4380	51.525	71.380	23534.8	21.81	117.64	65	78	1225.4				
40.00		0.4380	50.600	70.087	22279.4	21.39	115.53	65	78	1203.5				
45.00		0.4380	49.675	68.795	21069.5	20.97	113.41	65	79	1181.5				
45.92	Bot - Section 2	0.4380	49.505	68.558	20852.5	20.89	113.03	65	79	214.2				
50.00		0.4380	48.750	67.502	19904.2	20.55	111.30	65	79	1768.1				
52.00		0.4380	48.380	66.986	19450.4	20.38	110.46	65	80	856.1				
53.00	Top - Section 1	0.3750	48.945	58.102	17315.7	24.37	130.52	65	75	425.6				
55.00		0.3750	48.575	57.659	16923.0	24.17	129.53	65	75	393.9				
60.00		0.3750	47.650	56.553	15967.3	23.68	127.07	65	76	971.6				
65.00		0.3750	46.725	55.446	15048.2	23.19	124.60	65	76	952.8				
70.00		0.3750	45.800	54.340	14165.1	22.70	122.13	65	77	933.9				
75.00		0.3750	44.875	53.233	13317.3	22.21	119.67	65	77	915.1				
80.00		0.3750	43.950	52.127	12504.0	21.72	117.20	65	78	896.3				
85.00		0.3750	43.025	51.020	11724.5	21.23	114.73	65	79	877.5				
90.00		0.3750	42.100	49.914	10978.1	20.74	112.27	65	79	858.6				
92.83	Bot - Section 3	0.3750	41.576	49.286	10569.5	20.46	110.87	65	79	478.2				
95.00		0.3750	41.175	48.807	10264.0	20.25	109.80	65	80	636.9				
98.92	Top - Section 2	0.2810	41.012	36.511	7652.4	27.44	145.95	65	72	1135.6				
100.00		0.2810	40.812	36.332	7540.0	27.30	145.24	65	72	134.3				
105.00		0.2810	39.887	35.502	7035.5	26.64	141.95	65	72	611.1				
110.00		0.2810	38.962	34.673	6554.0	25.99	138.65	65	73	597.0				
115.00		0.2810	38.037	33.844	6094.9	25.33	135.36	65	74	582.9				
120.00		0.2810	37.112	33.015	5657.9	24.68	132.07	65	75	568.8				
125.00		0.2810	36.187	32.186	5242.2	24.02	128.78	65	75	554.7				
126.67	Bot - Section 4	0.2810	35.878	31.909	5108.0	23.81	127.68	65	76	182.1				
127.00		0.2810	35.817	31.854	5081.8	23.76	127.46	65	76	64.1				
130.00		0.2810	35.262	31.357	4847.4	23.37	125.49	65	76	577.7				
132.00	Top - Section 3	0.2190	35.329	24.528	3819.9	30.50	161.32	65	68	380.7				
135.00		0.2190	34.775	24.141	3641.8	29.99	158.79	65	69	248.1				
140.00		0.2190	33.850	23.495	3357.1	29.15	154.57	65	70	405.2				
145.00		0.2190	32.925	22.849	3087.7	28.31	150.34	65	71	394.2				
147.00		0.2190	32.555	22.590	2984.1	27.98	148.65	65	71	154.6				
150.00		0.2190	32.000	22.203	2833.0	27.47	146.12	65	71	228.6				
155.00		0.2190	31.075	21.556	2592.8	26.63	141.89	65	72	372.3				
159.00		0.2190	30.335	21.039	2410.7	25.96	138.52	65	73	289.9				
160.00		0.2190	30.150	20.910	2366.5	25.79	137.67	65	73	71.4				
165.00		0.2190	29.225	20.264	2153.8	24.95	133.45	65	74	350.3				
170.00		0.2190	28.300	19.618	1954.3	24.11	129.22	65	75	339.3				
175.00		0.2190	27.375	18.971	1767.4	23.27	125.00	65	76	328.3				
177.00		0.2190	27.005	18.713	1696.2	22.94	123.31	65	77	128.2				
180.00		0.2190	26.450	18.325	1592.9	22.43	120.78	65	77	189.0				

Total Weight **31491.9**

1626.9

Wind Loading - Shaft

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1

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

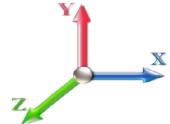
10/24/2019



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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations

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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	RB1		1.00	0.85	22.791	25.07	477.06	0.750	0.000	0.00	0.000	0.00	0.0	0.0
5.00			1.00	0.85	22.791	25.07	469.45	0.750	0.000	5.00	24.444	18.33	735.4	0.0
10.00			1.00	0.85	22.791	25.07	461.84	0.750	0.000	5.00	24.051	18.04	723.5	0.0
15.00			1.00	0.85	22.791	25.07	454.23	0.750	0.000	5.00	23.658	17.74	711.7	0.0
17.00	RT1		1.00	0.87	23.369	25.71	456.87	0.750	0.000	2.00	9.353	7.01	288.5	0.0
20.00			1.00	0.90	24.182	26.60	460.05	0.750	0.000	3.00	13.912	10.43	444.1	0.0
25.00			1.00	0.95	25.345	27.88	462.97	0.750	0.000	5.00	22.872	17.15	765.2	0.0
30.00			1.00	0.98	26.337	28.97	463.76	0.750	0.000	5.00	22.479	16.86	781.5	0.0
35.00			1.00	1.01	27.206	29.93	463.03	0.750	0.000	5.00	22.086	16.56	793.1	0.0
40.00			1.00	1.04	27.981	30.78	461.16	0.750	0.000	5.00	21.693	16.27	801.2	0.0
45.00			1.00	1.07	28.684	31.55	458.37	0.750	0.000	5.00	21.300	15.97	806.5	0.0
45.92	Bot - Section 2		1.00	1.07	28.806	31.69	457.78	0.750	0.000	0.92	3.862	2.90	146.9	0.0
50.00			1.00	1.09	29.327	32.26	454.85	0.750	0.000	4.08	17.305	12.98	669.9	0.0
52.00	Appurtenance(s)		1.00	1.10	29.570	32.53	453.27	0.750	0.000	2.00	8.380	6.29	327.1	0.0
53.00	Top - Section 1		1.00	1.11	29.689	32.66	452.44	0.750	0.000	1.00	4.167	3.12	163.3	0.0
55.00			1.00	1.12	29.922	32.91	457.79	0.750	0.000	2.00	8.286	6.21	327.3	0.0
60.00			1.00	1.14	30.475	33.52	453.21	0.750	0.000	5.00	20.440	15.33	822.2	0.0
65.00			1.00	1.16	30.993	34.09	448.17	0.750	0.000	5.00	20.047	15.03	820.1	0.0
70.00			1.00	1.17	31.480	34.63	442.74	0.750	0.000	5.00	19.654	14.74	816.7	0.0
75.00			1.00	1.19	31.941	35.13	436.96	0.750	0.000	5.00	19.261	14.45	812.1	0.0
80.00			1.00	1.21	32.377	35.62	430.87	0.750	0.000	5.00	18.868	14.15	806.4	0.0
85.00			1.00	1.22	32.793	36.07	424.50	0.750	0.000	5.00	18.475	13.86	799.7	0.0
90.00			1.00	1.24	33.190	36.51	417.88	0.750	0.000	5.00	18.082	13.56	792.2	0.0
92.83	Bot - Section 3		1.00	1.25	33.408	36.75	414.03	0.750	0.000	2.83	10.072	7.55	444.2	0.0
95.00			1.00	1.25	33.570	36.93	411.03	0.750	0.000	2.17	7.720	5.79	342.1	0.0
98.92	Top - Section 2		1.00	1.26	33.857	37.24	405.52	0.750	0.000	3.92	13.769	10.33	615.3	0.0
100.00			1.00	1.27	33.935	37.33	409.61	0.750	0.000	1.08	3.766	2.82	168.7	0.0
105.00			1.00	1.28	34.285	37.71	402.39	0.750	0.000	5.00	17.142	12.86	775.8	0.0
110.00			1.00	1.29	34.623	38.08	394.99	0.750	0.000	5.00	16.749	12.56	765.4	0.0
115.00			1.00	1.30	34.948	38.44	387.42	0.750	0.000	5.00	16.356	12.27	754.5	0.0
120.00			1.00	1.32	35.263	38.79	379.69	0.750	0.000	5.00	15.963	11.97	743.0	0.0
125.00			1.00	1.33	35.567	39.12	371.83	0.750	0.000	5.00	15.570	11.68	731.0	0.0
126.67	Bot - Section 4		1.00	1.33	35.667	39.23	369.17	0.750	0.000	1.67	5.113	3.83	240.7	0.0
127.00	Appurtenance(s)		1.00	1.33	35.686	39.25	368.64	0.750	0.000	0.33	1.017	0.76	47.9	0.0
130.00			1.00	1.34	35.862	39.45	363.82	0.750	0.000	3.00	9.171	6.88	434.1	0.0
132.00	Top - Section 3		1.00	1.34	35.978	39.58	360.58	0.750	0.000	2.00	6.045	4.53	287.1	0.0
135.00			1.00	1.35	36.148	39.76	360.22	0.750	0.000	3.00	8.925	6.69	425.8	0.0
140.00			1.00	1.36	36.426	40.07	351.99	0.750	0.000	5.00	14.577	10.93	700.9	0.0
145.00			1.00	1.37	36.696	40.37	343.64	0.750	0.000	5.00	14.184	10.64	687.1	0.0
147.00	Appurtenance(s)		1.00	1.37	36.802	40.48	340.26	0.750	0.000	2.00	5.564	4.17	270.3	0.0
150.00			1.00	1.38	36.959	40.65	335.17	0.750	0.000	3.00	8.227	6.17	401.4	0.0
155.00			1.00	1.39	37.215	40.94	326.61	0.750	0.000	5.00	13.398	10.05	658.2	0.0
159.00	Appurtenance(s)		1.00	1.40	37.415	41.16	319.69	0.750	0.000	4.00	10.436	7.83	515.4	0.0
160.00			1.00	1.40	37.464	41.21	317.95	0.750	0.000	1.00	2.570	1.93	127.1	0.0
165.00			1.00	1.41	37.708	41.48	309.20	0.750	0.000	5.00	12.612	9.46	627.8	0.0
170.00			1.00	1.42	37.946	41.74	300.35	0.750	0.000	5.00	12.219	9.16	612.0	0.0
175.00			1.00	1.42	38.178	42.00	291.42	0.750	0.000	5.00	11.826	8.87	596.0	0.0

Wind Loading - Shaft

Structure: CT01365-S-SBA	Code:	EIA/TIA-222-G	10/24/2019	 Tower Engineering Solutions
Site Name: Norwich 2 CT	Exposure:	C		
Height: 180.00 (ft)	Crest Height:	0.00		
Base Elev: 0.000 (ft)	Site Class:	D - Stiff Soil		
G_h: 1.1	Topography:	I	Struct Class: II	
			Page: 10	
177.00 Appurtenance(s)	1.00	1.43 38.269 42.10	287.83 0.750 0.000	2.00 4.620 3.47 233.4 0.0 153.9
180.00 Appurtenance(s)	1.00	1.43 38.405 42.25	282.41 0.750 0.000	3.00 6.813 5.11 345.4 0.0 226.9
			Totals: 180.00	26,704.9 37,790.2

Discrete Appurtenance Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor 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	180.00	Lightning Rod	1	38.405	42.245	1.00	1.00	0.50	6.00	0.000	0.000	33.80	0.00	0.00
2	177.00	1900MHz RRUs	3	38.269	42.096	0.46	0.80	5.20	158.40	0.000	0.000	350.13	0.00	0.00
3	177.00	APXVSPP18-C-A20	3	38.269	42.096	0.66	0.80	15.98	205.20	0.000	0.000	1076.03	0.00	0.00
4	177.00	TD-RRH8x20-25	3	38.269	42.096	0.46	0.80	5.54	252.00	0.000	0.000	373.17	0.00	0.00
5	177.00	APXVTM14-C-120	3	38.269	42.096	0.63	0.80	12.02	201.60	0.000	0.000	809.64	0.00	0.00
6	177.00	ALU 800MHz External	3	38.269	42.096	0.46	0.80	1.07	31.68	0.000	0.000	71.87	0.00	0.00
7	177.00	ACU-A20-N	4	38.269	42.096	0.46	0.80	0.26	4.80	0.000	0.000	17.20	0.00	0.00
8	177.00	Platform w/ Hand Rail	1	38.269	42.096	1.00	1.00	32.00	1920.00	0.000	0.000	2155.32	0.00	0.00
9	177.00	800 MHz RRUs	3	38.269	42.096	0.46	0.80	3.41	190.80	0.000	0.000	229.43	0.00	0.00
10	159.00	BXA-171085-8BF-EDIN-2	3	37.415	41.156	0.67	0.80	5.93	37.80	0.000	0.000	390.30	0.00	0.00
11	159.00	B25 RRH4x30	3	37.415	41.156	0.46	0.80	2.93	183.60	0.000	0.000	192.78	0.00	0.00
12	159.00	BXA-80080/4CF	3	37.415	41.156	0.61	0.80	8.76	51.48	0.000	0.000	576.53	0.00	0.00
13	159.00	DB-T1-6Z-8AB-0Z	2	37.415	41.156	0.60	0.90	5.79	45.36	0.000	0.000	381.19	0.00	0.00
14	159.00	B25 RRH4x30	3	37.415	41.156	0.46	0.80	2.93	183.60	0.000	0.000	192.78	0.00	0.00
15	159.00	RRH 4X45-PCS	3	37.415	41.156	0.46	0.80	3.71	216.00	0.000	0.000	244.13	0.00	0.00
16	159.00	Low Profile	1	37.415	41.156	1.00	1.00	22.00	1800.00	0.000	0.000	1448.70	0.00	0.00
17	159.00	SBNHH-1D65B	6	37.415	41.156	0.62	0.80	30.25	292.32	0.000	0.000	1992.07	0.00	0.00
18	147.00	HPA-65R-BUU-H8	2	36.802	40.482	0.73	0.90	18.92	163.20	0.000	0.000	1225.79	0.00	0.00
19	147.00	7770	3	36.802	40.482	0.58	0.80	9.64	126.00	0.000	0.000	624.14	0.00	0.00
20	147.00	Powerwave LGP21401	6	36.802	40.482	0.40	0.80	3.10	136.80	0.000	0.000	200.53	0.00	0.00
21	147.00	Raycap DC6-48-60-18-8F	2	36.802	40.482	0.60	0.90	1.11	78.72	2.383	0.000	71.87	107.04	0.00
22	147.00	Low Profile Platform	1	36.802	40.482	1.00	1.00	22.00	1800.00	0.000	0.000	1424.97	0.00	0.00
23	147.00	HPA-65R-BUU-H6	1	36.802	40.482	1.00	1.00	9.66	61.20	2.383	0.000	625.69	931.90	0.00
24	147.00	Ericsson RRUS 4449	3	36.802	40.482	0.46	0.80	2.69	262.80	0.000	0.000	174.56	0.00	0.00
25	147.00	Kathrein 860 10025 RET	12	36.802	40.482	0.40	0.80	0.86	17.28	0.000	0.000	55.96	0.00	0.00
26	147.00	Ericsson RRUS 12	3	36.802	40.482	0.46	0.80	3.69	208.80	0.000	0.000	239.24	0.00	0.00
27	147.00	Ericsson RRUS-A2	3	36.802	40.482	0.46	0.80	2.54	79.20	0.000	0.000	164.81	0.00	0.00
28	147.00	DMP65R-BU6DA	2	36.802	40.482	0.73	0.90	14.08	190.56	0.000	0.000	912.26	0.00	0.00
29	147.00	DMP65R-BU8DA	4	36.802	40.482	0.62	0.80	31.42	459.36	0.000	0.000	2034.85	0.00	0.00
30	147.00	Ericsson RRUS 4478 B14	3	36.802	40.482	0.46	0.80	2.26	213.84	0.000	0.000	146.20	0.00	0.00
31	127.00	CS72188.01 LMU	1	34.754	38.230	1.00	1.00	6.41	42.00	3.022	-15.000	392.08	740.45	-5881.24
32	52.00	GPS	1	29.570	32.527	0.80	0.80	0.09	0.24	3.055	0.000	4.58	8.75	0.00

Totals: **9,620.64** **18,832.59**

Total Applied Force Summary

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



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
5.00		735.36	1822.53	0.00	0.00
10.00		723.54	1796.15	0.00	0.00
15.00		711.72	1769.76	0.00	0.00
17.00		288.51	700.52	0.00	0.00
20.00		444.07	1042.86	0.00	0.00
25.00		765.19	1716.98	0.00	0.00
30.00		781.47	1690.60	0.00	0.00
35.00		793.13	1664.21	0.00	0.00
40.00		801.23	1637.82	0.00	0.00
45.00		806.47	1611.44	0.00	0.00
45.92		146.86	292.57	0.00	0.00
50.00		669.90	2279.85	0.00	0.00
52.00	(1) attachments	331.68	1104.98	8.75	0.00
53.00		163.28	549.24	0.00	0.00
55.00		327.26	549.78	0.00	0.00
60.00		822.22	1358.63	0.00	0.00
65.00		820.11	1336.04	0.00	0.00
70.00		816.68	1313.45	0.00	0.00
75.00		812.06	1290.86	0.00	0.00
80.00		806.37	1268.27	0.00	0.00
85.00		799.72	1245.68	0.00	0.00
90.00		792.19	1223.08	0.00	0.00
92.83		444.15	683.05	0.00	0.00
95.00		342.11	847.80	0.00	0.00
98.92		615.35	1513.73	0.00	0.00
100.00		168.69	202.87	0.00	0.00
105.00		775.77	926.03	0.00	0.00
110.00		765.45	909.10	0.00	0.00
115.00		754.51	892.17	0.00	0.00
120.00		743.01	875.24	0.00	0.00
125.00		730.98	858.31	0.00	0.00
126.67		240.71	282.90	0.00	0.00
127.00	(1) attachments	440.01	131.63	740.45	-5881.24
130.00		434.11	808.24	0.00	0.00
132.00		287.09	533.69	0.00	0.00
135.00		425.85	412.70	0.00	0.00
140.00		700.89	678.05	0.00	0.00
145.00		687.05	664.85	0.00	0.00
147.00	(45) attachments	8171.13	4060.01	1038.94	0.00
150.00		401.38	325.48	0.00	0.00
155.00		658.16	531.90	0.00	0.00
159.00	(24) attachments	5933.86	3226.18	0.00	0.00
160.00		127.07	88.81	0.00	0.00
165.00		627.76	436.16	0.00	0.00
170.00		612.03	422.96	0.00	0.00
175.00		595.98	409.77	0.00	0.00

Total Applied Force Summary

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	(23) attachments	5316.20	3124.69	0.00	0.00
180.00	(1) attachments	379.17	232.86	0.00	0.00
Totals:		45,537.50	53,344.48	1,788.13	-5,881.24

Linear Appurtenance Segment Forces (Factored)

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 14



Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations

27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	22.791	0.00	0.96
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	22.791	0.00	0.96
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	22.791	0.00	0.96
17.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.012	0.000	23.369	0.00	0.38
20.00	1/2" Coax	Yes	3.00	0.000	0.65	0.16	0.00	0.012	0.000	24.182	0.00	0.58
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	25.345	0.00	0.96
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	26.337	0.00	0.96
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	27.206	0.00	0.96
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	27.981	0.00	0.96
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	28.684	0.00	0.96
45.92	1/2" Coax	Yes	0.92	0.000	0.65	0.05	0.00	0.013	0.000	28.806	0.00	0.18
50.00	1/2" Coax	Yes	4.08	0.000	0.65	0.22	0.00	0.013	0.000	29.327	0.00	0.78
52.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.013	0.000	29.570	0.00	0.38
Totals:										0.0	0.0	10.0

Calculated Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



Page: 15

Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations

27

Seg Elevation (ft)	Fy (kips)	Vu (kips)	Tu (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	-53.27	-45.62	-1.74	-5559.0	-0.03	5559.08	5397.55	2698.78	12826.5	6367.63	0.00	0.000	0.000	0.670
5.00	-51.31	-45.04	-1.74	-5330.9	-0.03	5330.98	5344.66	2672.33	12495.2	6203.15	0.09	-0.175	0.000	0.657
10.00	-49.39	-44.46	-1.74	-5105.7	-0.03	5105.79	5290.67	2645.34	12165.4	6039.43	0.37	-0.350	0.000	0.644
15.00	-47.53	-43.84	-1.74	-4883.5	-0.03	4883.50	5235.58	2617.79	11837.2	5876.53	0.83	-0.525	0.000	0.630
17.00	-46.76	-43.61	-1.74	-4795.8	-0.03	4795.83	5213.23	2606.61	11706.5	5811.61	1.07	-0.596	0.000	0.624
17.00	-46.76	-43.61	-1.74	-4795.8	-0.03	4795.83	5213.23	2606.61	11706.5	5811.61	1.07	-0.596	0.000	0.624
20.00	-45.60	-43.29	-1.75	-4665.0	-0.03	4665.00	5179.37	2589.69	11510.9	5714.52	1.48	-0.702	0.000	0.825
25.00	-43.71	-42.68	-1.75	-4448.5	-0.03	4448.54	5122.07	2561.03	11186.5	5553.45	2.34	-0.937	0.000	0.810
30.00	-41.87	-42.04	-1.75	-4235.1	-0.03	4235.12	5063.65	2531.83	10864.1	5393.40	3.45	-1.173	-0.001	0.794
35.00	-40.05	-41.38	-1.75	-4024.9	-0.03	4024.90	5004.13	2502.07	10543.8	5234.42	4.80	-1.410	-0.001	0.777
40.00	-38.27	-40.69	-1.75	-3818.0	-0.04	3818.01	4943.51	2471.75	10225.9	5076.58	6.40	-1.647	-0.001	0.760
45.00	-36.58	-39.93	-1.75	-3614.5	-0.03	3614.55	4881.77	2440.89	9910.40	4919.94	8.26	-1.884	-0.001	0.742
45.92	-36.21	-39.85	-1.75	-3577.9	-0.04	3577.95	4870.34	2435.17	9852.83	4891.36	8.62	-1.928	-0.001	0.739
50.00	-33.86	-39.18	-1.75	-3415.2	-0.04	3415.24	4818.94	2409.47	9597.43	4764.57	10.36	-2.123	-0.001	0.724
52.00	-32.72	-38.85	-1.74	-3336.8	-0.04	3336.88	4793.49	2396.75	9472.99	4702.79	11.27	-2.220	-0.001	0.717
53.00	-32.13	-38.71	-1.74	-3298.0	-0.04	3298.03	3921.66	1960.83	7862.59	3903.32	11.74	-2.268	-0.001	0.854
55.00	-31.47	-38.46	-1.74	-3220.6	-0.04	3220.62	3903.31	1951.65	7765.73	3855.23	12.71	-2.365	-0.001	0.844
60.00	-29.97	-37.71	-1.74	-3028.3	-0.05	3028.34	3856.65	1928.33	7524.53	3735.49	15.33	-2.627	-0.001	0.819
65.00	-28.51	-36.96	-1.74	-2839.7	-0.05	2839.77	3808.89	1904.45	7284.80	3616.48	18.22	-2.889	-0.001	0.793
70.00	-27.08	-36.20	-1.74	-2654.9	-0.06	2654.98	3760.03	1880.02	7046.68	3498.27	21.38	-3.149	-0.002	0.767
75.00	-25.68	-35.43	-1.75	-2473.9	-0.06	2473.99	3710.06	1855.03	6810.28	3380.91	24.82	-3.406	-0.002	0.739
80.00	-24.31	-34.65	-1.75	-2296.8	-0.06	2296.85	3658.99	1829.49	6575.75	3264.48	28.52	-3.661	-0.002	0.711
85.00	-22.97	-33.87	-1.75	-2123.5	-0.07	2123.58	3606.81	1803.40	6343.20	3149.03	32.49	-3.912	-0.002	0.681
90.00	-21.70	-33.07	-1.75	-1954.2	-0.07	1954.22	3553.52	1776.76	6112.76	3034.63	36.71	-4.160	-0.002	0.650
92.83	-20.98	-32.62	-1.75	-1860.5	-0.08	1860.52	3522.83	1761.42	5983.17	2970.30	39.22	-4.300	-0.002	0.633
95.00	-20.08	-32.27	-1.75	-1799.8	-0.08	1799.84	3499.13	1749.56	5884.57	2921.35	41.20	-4.406	-0.003	0.619
98.92	-18.55	-31.57	-1.75	-1663.4	-0.08	1663.46	2350.25	1175.12	3954.81	1963.33	44.89	-4.594	-0.003	0.856
100.00	-18.27	-31.45	-1.76	-1629.2	-0.09	1629.26	2343.93	1171.97	3924.64	1948.36	45.94	-4.646	-0.003	0.845
105.00	-17.25	-30.68	-1.76	-1472.0	-0.09	1472.03	2314.11	1157.05	3785.67	1879.37	50.95	-4.938	-0.003	0.791
110.00	-16.27	-29.92	-1.76	-1318.6	-0.10	1318.62	2283.18	1141.59	3647.23	1810.64	56.27	-5.220	-0.003	0.736
115.00	-15.32	-29.15	-1.76	-1169.0	-0.11	1169.03	2251.15	1125.57	3509.45	1742.24	61.88	-5.490	-0.004	0.678
120.00	-14.40	-28.39	-1.77	-1023.2	-0.12	1023.26	2218.01	1109.01	3372.44	1674.22	67.76	-5.746	-0.004	0.618
125.00	-13.55	-27.61	-1.77	-881.31	-0.12	881.31	2183.77	1091.88	3236.35	1606.66	73.90	-5.986	-0.005	0.555
126.67	-13.27	-27.36	-1.77	-835.19	-0.13	835.19	2172.08	1086.04	3191.13	1584.21	76.00	-6.063	-0.005	0.534
127.00	-13.15	-26.92	-1.03	-826.17	-0.05	826.17	2169.76	1084.88	3182.20	1579.78	76.42	-6.079	-0.005	0.530
130.00	-12.34	-26.43	-1.03	-745.41	-0.06	745.41	2148.42	1074.21	3101.30	1539.62	80.28	-6.211	-0.005	0.491
132.00	-11.80	-26.10	-1.03	-692.47	-0.06	692.47	1502.55	751.27	2180.88	1082.68	82.90	-6.295	-0.005	0.649
135.00	-11.36	-25.67	-1.03	-614.24	-0.07	614.24	1491.20	745.60	2130.02	1057.43	86.88	-6.414	-0.005	0.590
140.00	-10.68	-24.93	-1.03	-485.90	-0.08	485.90	1471.39	735.69	2045.11	1015.28	93.70	-6.629	-0.006	0.487
145.00	-10.05	-24.19	-1.04	-361.24	-0.09	361.24	1450.46	725.23	1960.22	973.13	100.73	-6.808	-0.006	0.379
147.00	-6.97	-15.60	0.00	-312.86	0.03	312.86	1441.79	720.89	1926.30	956.30	103.59	-6.870	-0.006	0.332
150.00	-6.67	-15.18	0.00	-266.05	0.03	266.05	1428.44	714.22	1875.49	931.07	107.93	-6.953	-0.006	0.291
155.00	-6.20	-14.47	0.00	-190.16	0.02	190.16	1405.30	702.65	1791.05	889.15	115.26	-7.068	-0.006	0.219
159.00	-3.73	-8.19	0.00	-132.28	0.01	132.28	1386.00	693.00	1723.78	855.76	121.19	-7.138	-0.006	0.157
160.00	-3.65	-8.05	0.00	-124.09	0.01	124.09	1381.06	690.53	1707.02	847.43	122.69	-7.154	-0.006	0.149
165.00	-3.29	-7.38	0.00	-83.84	0.01	83.84	1355.72	677.86	1623.53	805.99	130.20	-7.216	-0.006	0.107
170.00	-2.94	-6.72	0.00	-46.96	0.00	46.96	1329.27	664.63	1540.71	764.87	137.76	-7.259	-0.006	0.064
175.00	-2.61	-6.08	0.00	-13.37	0.00	13.37	1301.71	650.86	1458.68	724.15	145.35	-7.281	-0.006	0.021

Calculated Forces

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	-0.18	-0.41	0.00	-1.22	0.00	1.22	1290.38	645.19	1426.13	707.99	148.40	-7.284	-0.006	0.002
180.00	0.00	-0.38	0.00	0.00	0.00	0.00	1273.05	636.53	1377.59	683.89	152.96	-7.284	-0.006	0.000

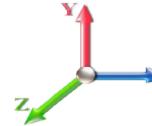
Wind Loading - Shaft

Structure: CT01365-S-SBA Site Name: Norwich 2 CT Height: 180.00 (ft) Base Elev: 0.000 (ft) Gh: 1.1 Topography: 1				Code: EIA/TIA-222-G Exposure: C Crest Height: 0.00 Site Class: D - Stiff Soil Struct Class: II	10/24/2019	
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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations

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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 X (lb)	Ice Load X (lb)	Tot Dead Load (lb)
0.00	RB1		1.00	0.85	22.791	25.07	477.06	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00			1.00	0.85	22.791	25.07	469.45	0.750	0.000	5.00	24.444	18.33	735.4	0.0	1221.6
10.00			1.00	0.85	22.791	25.07	461.84	0.750	0.000	5.00	24.051	18.04	723.5	0.0	1201.8
15.00			1.00	0.85	22.791	25.07	454.23	0.750	0.000	5.00	23.658	17.74	711.7	0.0	1182.1
17.00	RT1		1.00	0.87	23.369	25.71	456.87	0.750	0.000	2.00	9.353	7.01	288.5	0.0	467.3
20.00			1.00	0.90	24.182	26.60	460.05	0.750	0.000	3.00	13.912	10.43	444.1	0.0	695.0
25.00			1.00	0.95	25.345	27.88	462.97	0.750	0.000	5.00	22.872	17.15	765.2	0.0	1142.5
30.00			1.00	0.98	26.337	28.97	463.76	0.750	0.000	5.00	22.479	16.86	781.5	0.0	1122.7
35.00			1.00	1.01	27.206	29.93	463.03	0.750	0.000	5.00	22.086	16.56	793.1	0.0	1102.9
40.00			1.00	1.04	27.981	30.78	461.16	0.750	0.000	5.00	21.693	16.27	801.2	0.0	1083.1
45.00			1.00	1.07	28.684	31.55	458.37	0.750	0.000	5.00	21.300	15.97	806.5	0.0	1063.3
45.92	Bot - Section 2		1.00	1.07	28.806	31.69	457.78	0.750	0.000	0.92	3.862	2.90	146.9	0.0	192.8
50.00			1.00	1.09	29.327	32.26	454.85	0.750	0.000	4.08	17.305	12.98	669.9	0.0	1591.3
52.00	Appurtenance(s)		1.00	1.10	29.570	32.53	453.27	0.750	0.000	2.00	8.380	6.29	327.1	0.0	770.5
53.00	Top - Section 1		1.00	1.11	29.689	32.66	452.44	0.750	0.000	1.00	4.167	3.12	163.3	0.0	383.0
55.00			1.00	1.12	29.922	32.91	457.79	0.750	0.000	2.00	8.286	6.21	327.3	0.0	354.5
60.00			1.00	1.14	30.475	33.52	453.21	0.750	0.000	5.00	20.440	15.33	822.2	0.0	874.4
65.00			1.00	1.16	30.993	34.09	448.17	0.750	0.000	5.00	20.047	15.03	820.1	0.0	857.5
70.00			1.00	1.17	31.480	34.63	442.74	0.750	0.000	5.00	19.654	14.74	816.7	0.0	840.5
75.00			1.00	1.19	31.941	35.13	436.96	0.750	0.000	5.00	19.261	14.45	812.1	0.0	823.6
80.00			1.00	1.21	32.377	35.62	430.87	0.750	0.000	5.00	18.868	14.15	806.4	0.0	806.7
85.00			1.00	1.22	32.793	36.07	424.50	0.750	0.000	5.00	18.475	13.86	799.7	0.0	789.7
90.00			1.00	1.24	33.190	36.51	417.88	0.750	0.000	5.00	18.082	13.56	792.2	0.0	772.8
92.83	Bot - Section 3		1.00	1.25	33.408	36.75	414.03	0.750	0.000	2.83	10.072	7.55	444.2	0.0	430.4
95.00			1.00	1.25	33.570	36.93	411.03	0.750	0.000	2.17	7.720	5.79	342.1	0.0	573.2
98.92	Top - Section 2		1.00	1.26	33.857	37.24	405.52	0.750	0.000	3.92	13.769	10.33	615.3	0.0	1022.1
100.00			1.00	1.27	33.935	37.33	409.61	0.750	0.000	1.08	3.766	2.82	168.7	0.0	120.8
105.00			1.00	1.28	34.285	37.71	402.39	0.750	0.000	5.00	17.142	12.86	775.8	0.0	550.0
110.00			1.00	1.29	34.623	38.08	394.99	0.750	0.000	5.00	16.749	12.56	765.4	0.0	537.3
115.00			1.00	1.30	34.948	38.44	387.42	0.750	0.000	5.00	16.356	12.27	754.5	0.0	524.6
120.00			1.00	1.32	35.263	38.79	379.69	0.750	0.000	5.00	15.963	11.97	743.0	0.0	511.9
125.00			1.00	1.33	35.567	39.12	371.83	0.750	0.000	5.00	15.570	11.68	731.0	0.0	499.2
126.67	Bot - Section 4		1.00	1.33	35.667	39.23	369.17	0.750	0.000	1.67	5.113	3.83	240.7	0.0	163.9
127.00	Appurtenance(s)		1.00	1.33	35.686	39.25	368.64	0.750	0.000	0.33	1.017	0.76	47.9	0.0	57.7
130.00			1.00	1.34	35.862	39.45	363.82	0.750	0.000	3.00	9.171	6.88	434.1	0.0	519.9
132.00	Top - Section 3		1.00	1.34	35.978	39.58	360.58	0.750	0.000	2.00	6.045	4.53	287.1	0.0	342.6
135.00			1.00	1.35	36.148	39.76	360.22	0.750	0.000	3.00	8.925	6.69	425.8	0.0	223.3
140.00			1.00	1.36	36.426	40.07	351.99	0.750	0.000	5.00	14.577	10.93	700.9	0.0	364.7
145.00			1.00	1.37	36.696	40.37	343.64	0.750	0.000	5.00	14.184	10.64	687.1	0.0	354.8
147.00	Appurtenance(s)		1.00	1.37	36.802	40.48	340.26	0.750	0.000	2.00	5.564	4.17	270.3	0.0	139.2
150.00			1.00	1.38	36.959	40.65	335.17	0.750	0.000	3.00	8.227	6.17	401.4	0.0	205.8
155.00			1.00	1.39	37.215	40.94	326.61	0.750	0.000	5.00	13.398	10.05	658.2	0.0	335.0
159.00	Appurtenance(s)		1.00	1.40	37.415	41.16	319.69	0.750	0.000	4.00	10.436	7.83	515.4	0.0	260.9
160.00			1.00	1.40	37.464	41.21	317.95	0.750	0.000	1.00	2.570	1.93	127.1	0.0	64.2
165.00			1.00	1.41	37.708	41.48	309.20	0.750	0.000	5.00	12.612	9.46	627.8	0.0	315.2
170.00			1.00	1.42	37.946	41.74	300.35	0.750	0.000	5.00	12.219	9.16	612.0	0.0	305.3
175.00			1.00	1.42	38.178	42.00	291.42	0.750	0.000	5.00	11.826	8.87	596.0	0.0	295.4

Wind Loading - Shaft

Structure: CT01365-S-SBA	Code:	EIA/TIA-222-G	10/24/2019	 Tower Engineering Solutions
Site Name: Norwich 2 CT	Exposure:	C		
Height: 180.00 (ft)	Crest Height:	0.00		
Base Elev: 0.000 (ft)	Site Class:	D - Stiff Soil		
G_h: 1.1	Topography:	I	Struct Class: II	
			Page: 18	
177.00 Appurtenance(s)	1.00	1.43 38.269 42.10	287.83 0.750 0.000	2.00 4.620 3.47 233.4 0.0 115.4
180.00 Appurtenance(s)	1.00	1.43 38.405 42.25	282.41 0.750 0.000	3.00 6.813 5.11 345.4 0.0 170.1
			Totals: 180.00	26,704.9 28,342.7

Discrete Appurtenance Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor 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	180.00	Lightning Rod	1	38.405	42.245	1.00	1.00	0.50	4.50	0.000	0.000	33.80	0.00	0.00
2	177.00	1900MHz RRUs	3	38.269	42.096	0.46	0.80	5.20	118.80	0.000	0.000	350.13	0.00	0.00
3	177.00	APXVSPP18-C-A20	3	38.269	42.096	0.66	0.80	15.98	153.90	0.000	0.000	1076.03	0.00	0.00
4	177.00	TD-RRH8x20-25	3	38.269	42.096	0.46	0.80	5.54	189.00	0.000	0.000	373.17	0.00	0.00
5	177.00	APXVTM14-C-120	3	38.269	42.096	0.63	0.80	12.02	151.20	0.000	0.000	809.64	0.00	0.00
6	177.00	ALU 800MHz External	3	38.269	42.096	0.46	0.80	1.07	23.76	0.000	0.000	71.87	0.00	0.00
7	177.00	ACU-A20-N	4	38.269	42.096	0.46	0.80	0.26	3.60	0.000	0.000	17.20	0.00	0.00
8	177.00	Platform w/ Hand Rail	1	38.269	42.096	1.00	1.00	32.00	1440.00	0.000	0.000	2155.32	0.00	0.00
9	177.00	800 MHz RRUs	3	38.269	42.096	0.46	0.80	3.41	143.10	0.000	0.000	229.43	0.00	0.00
10	159.00	BXA-171085-8BF-EDIN-2	3	37.415	41.156	0.67	0.80	5.93	28.35	0.000	0.000	390.30	0.00	0.00
11	159.00	B25 RRH4x30	3	37.415	41.156	0.46	0.80	2.93	137.70	0.000	0.000	192.78	0.00	0.00
12	159.00	BXA-80080/4CF	3	37.415	41.156	0.61	0.80	8.76	38.61	0.000	0.000	576.53	0.00	0.00
13	159.00	DB-T1-6Z-8AB-0Z	2	37.415	41.156	0.60	0.90	5.79	34.02	0.000	0.000	381.19	0.00	0.00
14	159.00	B25 RRH4x30	3	37.415	41.156	0.46	0.80	2.93	137.70	0.000	0.000	192.78	0.00	0.00
15	159.00	RRH 4X45-PCS	3	37.415	41.156	0.46	0.80	3.71	162.00	0.000	0.000	244.13	0.00	0.00
16	159.00	Low Profile	1	37.415	41.156	1.00	1.00	22.00	1350.00	0.000	0.000	1448.70	0.00	0.00
17	159.00	SBNHH-1D65B	6	37.415	41.156	0.62	0.80	30.25	219.24	0.000	0.000	1992.07	0.00	0.00
18	147.00	HPA-65R-BUU-H8	2	36.802	40.482	0.73	0.90	18.92	122.40	0.000	0.000	1225.79	0.00	0.00
19	147.00	7770	3	36.802	40.482	0.58	0.80	9.64	94.50	0.000	0.000	624.14	0.00	0.00
20	147.00	Powerwave LGP21401	6	36.802	40.482	0.40	0.80	3.10	102.60	0.000	0.000	200.53	0.00	0.00
21	147.00	Raycap DC6-48-60-18-8F	2	36.802	40.482	0.60	0.90	1.11	59.04	2.383	0.000	71.87	107.04	0.00
22	147.00	Low Profile Platform	1	36.802	40.482	1.00	1.00	22.00	1350.00	0.000	0.000	1424.97	0.00	0.00
23	147.00	HPA-65R-BUU-H6	1	36.802	40.482	1.00	1.00	9.66	45.90	2.383	0.000	625.69	931.90	0.00
24	147.00	Ericsson RRUS 4449	3	36.802	40.482	0.46	0.80	2.69	197.10	0.000	0.000	174.56	0.00	0.00
25	147.00	Kathrein 860 10025 RET	12	36.802	40.482	0.40	0.80	0.86	12.96	0.000	0.000	55.96	0.00	0.00
26	147.00	Ericsson RRUS 12	3	36.802	40.482	0.46	0.80	3.69	156.60	0.000	0.000	239.24	0.00	0.00
27	147.00	Ericsson RRUS-A2	3	36.802	40.482	0.46	0.80	2.54	59.40	0.000	0.000	164.81	0.00	0.00
28	147.00	DMP65R-BU6DA	2	36.802	40.482	0.73	0.90	14.08	142.92	0.000	0.000	912.26	0.00	0.00
29	147.00	DMP65R-BU8DA	4	36.802	40.482	0.62	0.80	31.42	344.52	0.000	0.000	2034.85	0.00	0.00
30	147.00	Ericsson RRUS 4478 B14	3	36.802	40.482	0.46	0.80	2.26	160.38	0.000	0.000	146.20	0.00	0.00
31	127.00	CS72188.01 LMU	1	34.754	38.230	1.00	1.00	6.41	31.50	3.022	-15.000	392.08	740.45	-5881.24
32	52.00	GPS	1	29.570	32.527	0.80	0.80	0.09	0.18	3.055	0.000	4.58	8.75	0.00

Totals: **7,215.48** **18,832.59**

Total Applied Force Summary

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



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
5.00		735.36	1366.90	0.00	0.00
10.00		723.54	1347.11	0.00	0.00
15.00		711.72	1327.32	0.00	0.00
17.00		288.51	525.39	0.00	0.00
20.00		444.07	782.14	0.00	0.00
25.00		765.19	1287.74	0.00	0.00
30.00		781.47	1267.95	0.00	0.00
35.00		793.13	1248.16	0.00	0.00
40.00		801.23	1228.37	0.00	0.00
45.00		806.47	1208.58	0.00	0.00
45.92		146.86	219.43	0.00	0.00
50.00		669.90	1709.89	0.00	0.00
52.00	(1) attachments	331.68	828.74	8.75	0.00
53.00		163.28	411.93	0.00	0.00
55.00		327.26	412.33	0.00	0.00
60.00		822.22	1018.98	0.00	0.00
65.00		820.11	1002.03	0.00	0.00
70.00		816.68	985.09	0.00	0.00
75.00		812.06	968.14	0.00	0.00
80.00		806.37	951.20	0.00	0.00
85.00		799.72	934.26	0.00	0.00
90.00		792.19	917.31	0.00	0.00
92.83		444.15	512.29	0.00	0.00
95.00		342.11	635.85	0.00	0.00
98.92		615.35	1135.29	0.00	0.00
100.00		168.69	152.15	0.00	0.00
105.00		775.77	694.52	0.00	0.00
110.00		765.45	681.82	0.00	0.00
115.00		754.51	669.13	0.00	0.00
120.00		743.01	656.43	0.00	0.00
125.00		730.98	643.73	0.00	0.00
126.67		240.71	212.18	0.00	0.00
127.00	(1) attachments	440.01	98.72	740.45	-5881.24
130.00		434.11	606.18	0.00	0.00
132.00		287.09	400.27	0.00	0.00
135.00		425.85	309.52	0.00	0.00
140.00		700.89	508.53	0.00	0.00
145.00		687.05	498.64	0.00	0.00
147.00	(45) attachments	8171.13	3045.00	1038.94	0.00
150.00		401.38	244.11	0.00	0.00
155.00		658.16	398.93	0.00	0.00
159.00	(24) attachments	5933.86	2419.64	0.00	0.00
160.00		127.07	66.61	0.00	0.00
165.00		627.76	327.12	0.00	0.00
170.00		612.03	317.22	0.00	0.00
175.00		595.98	307.33	0.00	0.00

Total Applied Force Summary

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	(23) attachments	5316.20	2343.52	0.00	0.00
180.00	(1) attachments	379.17	174.64	0.00	0.00
Totals:		45,537.50	40,008.36	1,788.13	-5,881.24

Linear Appurtenance Segment Forces (Factored)

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	22.791	0.00	0.72
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	22.791	0.00	0.72
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	22.791	0.00	0.72
17.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.012	0.000	23.369	0.00	0.29
20.00	1/2" Coax	Yes	3.00	0.000	0.65	0.16	0.00	0.012	0.000	24.182	0.00	0.43
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	25.345	0.00	0.72
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	26.337	0.00	0.72
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	27.206	0.00	0.72
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	27.981	0.00	0.72
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	28.684	0.00	0.72
45.92	1/2" Coax	Yes	0.92	0.000	0.65	0.05	0.00	0.013	0.000	28.806	0.00	0.13
50.00	1/2" Coax	Yes	4.08	0.000	0.65	0.22	0.00	0.013	0.000	29.327	0.00	0.59
52.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.013	0.000	29.570	0.00	0.29
Totals:										0.0	0.0	7.5

Calculated Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 27

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	-39.94	-45.60	-1.75	-5502.2	-0.02	5502.22	5397.55	2698.78	12826.5	6367.63	0.00	0.000	0.000	0.662
5.00	-38.44	-44.98	-1.75	-5274.2	-0.02	5274.23	5344.66	2672.33	12495.2	6203.15	0.09	-0.173	0.000	0.648
10.00	-36.96	-44.36	-1.75	-5049.3	-0.02	5049.34	5290.67	2645.34	12165.4	6039.43	0.37	-0.346	0.000	0.635
15.00	-35.54	-43.71	-1.75	-4827.5	-0.02	4827.55	5235.58	2617.79	11837.2	5876.53	0.82	-0.519	0.000	0.621
17.00	-34.96	-43.47	-1.75	-4740.1	-0.02	4740.12	5213.23	2606.61	11706.5	5811.61	1.06	-0.590	0.000	0.615
17.00	-34.96	-43.47	-1.75	-4740.1	-0.02	4740.12	5213.23	2606.61	11706.5	5811.61	1.06	-0.590	0.000	0.615
20.00	-34.05	-43.12	-1.75	-4609.7	-0.02	4609.70	5179.37	2589.69	11510.9	5714.52	1.46	-0.694	0.000	0.814
25.00	-32.60	-42.47	-1.75	-4394.0	-0.02	4394.09	5122.07	2561.03	11186.5	5553.45	2.31	-0.927	0.000	0.798
30.00	-31.18	-41.79	-1.75	-4181.7	-0.02	4181.74	5063.65	2531.83	10864.1	5393.40	3.41	-1.160	-0.001	0.782
35.00	-29.78	-41.10	-1.75	-3972.7	-0.03	3972.77	5004.13	2502.07	10543.8	5234.42	4.75	-1.393	-0.001	0.765
40.00	-28.41	-40.38	-1.75	-3767.3	-0.03	3767.30	4943.51	2471.75	10225.9	5076.58	6.33	-1.627	-0.001	0.748
45.00	-27.13	-39.60	-1.75	-3565.4	-0.03	3565.41	4881.77	2440.89	9910.40	4919.94	8.16	-1.861	-0.001	0.731
45.92	-26.83	-39.50	-1.75	-3529.1	-0.03	3529.11	4870.34	2435.17	9852.83	4891.36	8.52	-1.905	-0.001	0.727
50.00	-25.05	-38.84	-1.75	-3367.8	-0.03	3367.81	4818.94	2409.47	9597.43	4764.57	10.24	-2.097	-0.001	0.712
52.00	-24.19	-38.50	-1.74	-3290.1	-0.03	3290.14	4793.49	2396.75	9472.99	4702.79	11.14	-2.192	-0.001	0.705
53.00	-23.74	-38.35	-1.74	-3251.6	-0.03	3251.64	3921.66	1960.83	7862.59	3903.32	11.60	-2.240	-0.001	0.839
55.00	-23.22	-38.08	-1.74	-3174.9	-0.04	3174.93	3903.31	1951.65	7765.73	3855.23	12.56	-2.335	-0.001	0.830
60.00	-22.07	-37.32	-1.74	-2984.5	-0.04	2984.52	3856.65	1928.33	7524.53	3735.49	15.14	-2.594	-0.001	0.805
65.00	-20.94	-36.54	-1.74	-2797.9	-0.04	2797.93	3808.89	1904.45	7284.80	3616.48	18.00	-2.852	-0.001	0.780
70.00	-19.84	-35.77	-1.75	-2615.2	-0.05	2615.21	3760.03	1880.02	7046.68	3498.27	21.12	-3.108	-0.002	0.753
75.00	-18.77	-34.98	-1.75	-2436.3	-0.05	2436.38	3710.06	1855.03	6810.28	3380.91	24.51	-3.361	-0.002	0.726
80.00	-17.72	-34.20	-1.75	-2261.4	-0.06	2261.46	3658.99	1829.49	6575.75	3264.48	28.16	-3.612	-0.002	0.698
85.00	-16.69	-33.41	-1.75	-2090.4	-0.06	2090.47	3606.81	1803.40	6343.20	3149.03	32.08	-3.860	-0.002	0.669
90.00	-15.73	-32.61	-1.75	-1923.4	-0.07	1923.41	3553.52	1776.76	6112.76	3034.63	36.25	-4.103	-0.002	0.639
92.83	-15.18	-32.16	-1.75	-1831.0	-0.07	1831.02	3522.83	1761.42	5983.17	2970.30	38.72	-4.241	-0.002	0.621
95.00	-14.49	-31.81	-1.75	-1761.3	-0.07	1761.33	3499.13	1749.56	5884.57	2921.35	40.67	-4.346	-0.003	0.607
98.92	-13.34	-31.14	-1.75	-1636.7	-0.08	1636.75	2350.25	1175.12	3954.81	1963.33	44.31	-4.530	-0.003	0.840
100.00	-13.11	-31.00	-1.76	-1603.0	-0.08	1603.02	2343.93	1171.97	3924.64	1948.36	45.34	-4.582	-0.003	0.829
105.00	-12.33	-30.23	-1.76	-1448.0	-0.09	1448.04	2314.11	1157.05	3785.67	1879.37	50.29	-4.869	-0.003	0.777
110.00	-11.58	-29.46	-1.76	-1296.9	-0.10	1296.92	2283.18	1141.59	3647.23	1810.64	55.54	-5.147	-0.003	0.722
115.00	-10.86	-28.70	-1.76	-1149.6	-0.10	1149.62	2251.15	1125.57	3509.45	1742.24	61.06	-5.412	-0.004	0.665
120.00	-10.16	-27.94	-1.77	-1006.1	-0.11	1006.15	2218.01	1109.01	3372.44	1674.22	66.86	-5.664	-0.004	0.606
125.00	-9.52	-27.17	-1.77	-866.47	-0.12	866.47	2183.77	1091.88	3236.35	1606.66	72.91	-5.899	-0.005	0.544
126.67	-9.31	-26.92	-1.77	-821.10	-0.12	821.10	2172.08	1086.04	3191.13	1584.21	74.99	-5.976	-0.005	0.523
127.00	-9.22	-26.48	-1.03	-812.21	-0.05	812.21	2169.76	1084.88	3182.20	1579.78	75.40	-5.991	-0.005	0.519
130.00	-8.62	-26.00	-1.03	-732.78	-0.05	732.78	2148.42	1074.21	3101.30	1539.62	79.20	-6.121	-0.005	0.481
132.00	-8.21	-25.69	-1.03	-680.69	-0.06	680.69	1502.55	751.27	2180.88	1082.68	81.78	-6.204	-0.005	0.635
135.00	-7.87	-25.25	-1.03	-603.72	-0.06	603.72	1491.20	745.60	2130.02	1057.43	85.71	-6.320	-0.005	0.577
140.00	-7.36	-24.52	-1.03	-477.46	-0.07	477.46	1471.39	735.69	2045.11	1015.28	92.43	-6.531	-0.006	0.476
145.00	-6.90	-23.80	-1.04	-354.85	-0.09	354.85	1450.46	725.23	1960.22	973.13	99.36	-6.708	-0.006	0.371
147.00	-4.81	-15.33	0.00	-307.25	0.03	307.25	1441.79	720.89	1926.30	956.30	102.17	-6.769	-0.006	0.325
150.00	-4.59	-14.91	0.00	-261.26	0.03	261.26	1428.44	714.22	1875.49	931.07	106.45	-6.850	-0.006	0.284
155.00	-4.25	-14.22	0.00	-186.71	0.02	186.71	1405.30	702.65	1791.05	889.15	113.67	-6.963	-0.006	0.213
159.00	-2.57	-8.03	0.00	-129.84	0.01	129.84	1386.00	693.00	1723.78	855.76	119.52	-7.032	-0.006	0.154
160.00	-2.51	-7.90	0.00	-121.80	0.01	121.80	1381.06	690.53	1707.02	847.43	120.99	-7.047	-0.006	0.146
165.00	-2.26	-7.24	0.00	-82.30	0.01	82.30	1355.72	677.86	1623.53	805.99	128.38	-7.108	-0.006	0.104
170.00	-2.02	-6.59	0.00	-46.10	0.00	46.10	1329.27	664.63	1540.71	764.87	135.83	-7.151	-0.006	0.062
175.00	-1.79	-5.97	0.00	-13.12	0.00	13.12	1301.71	650.86	1458.68	724.15	143.32	-7.172	-0.006	0.020

Calculated Forces

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	-0.13	-0.40	0.00	-1.19	0.00	1.19	1290.38	645.19	1426.13	707.99	146.32	-7.174	-0.006	0.002
180.00	0.00	-0.38	0.00	0.00	0.00	0.00	1273.05	636.53	1377.59	683.89	150.81	-7.175	-0.006	0.000

Wind Loading - Shaft

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1

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

10/24/2019



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

Dead Load Factor 1.20
Wind Load Factor 1.00



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	RB1		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00			1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	25.479	30.57	173.8	457.9	2086.7
10.00			1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.160	30.19	171.6	483.7	2086.2
15.00			1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	24.813	29.78	169.3	496.1	2072.2
17.00	RT1		1.00	0.87	5.299	5.83	0.00	1.200	1.404	2.00	9.821	11.79	68.7	199.7	822.7
20.00			1.00	0.90	5.483	6.03	0.00	1.200	1.427	3.00	14.625	17.55	105.9	301.5	1228.2
25.00			1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.088	28.91	182.7	505.7	2029.0
30.00			1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.717	28.46	187.0	506.5	2003.5
35.00			1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.343	28.01	190.1	505.8	1976.3
40.00			1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	22.967	27.56	192.4	503.8	1948.0
45.00			1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	22.589	27.11	193.9	500.9	1918.7
45.92	Bot - Section 2		1.00	1.07	6.532	7.19	0.00	1.200	1.550	0.92	4.099	4.92	35.3	91.7	348.8
50.00			1.00	1.09	6.650	7.32	0.00	1.200	1.564	4.08	18.369	22.04	161.2	412.1	2533.8
52.00	Appurtenance(s)		1.00	1.10	6.705	7.38	0.00	1.200	1.570	2.00	8.903	10.68	78.8	201.2	1228.5
53.00	Top - Section 1		1.00	1.11	6.732	7.41	0.00	1.200	1.573	1.00	4.429	5.31	39.4	100.4	611.1
55.00			1.00	1.12	6.785	7.46	0.00	1.200	1.579	2.00	8.812	10.57	78.9	200.2	672.9
60.00			1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	21.767	26.12	198.5	495.6	1661.5
65.00			1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	21.384	25.66	198.4	490.3	1633.6
70.00			1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	21.001	25.20	197.9	484.6	1605.4
75.00			1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	20.618	24.74	197.1	478.6	1576.7
80.00			1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	20.233	24.28	196.1	472.2	1547.7
85.00			1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	19.849	23.82	194.8	465.5	1518.5
90.00			1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	19.464	23.36	193.4	458.6	1488.9
92.83	Bot - Section 3		1.00	1.25	7.575	8.33	0.00	1.200	1.663	2.83	10.857	13.03	108.6	257.6	831.4
95.00			1.00	1.25	7.612	8.37	0.00	1.200	1.667	2.17	8.322	9.99	83.6	198.2	962.5
98.92	Top - Section 2		1.00	1.26	7.677	8.45	0.00	1.200	1.674	3.92	14.862	17.83	150.6	353.7	1716.5
100.00			1.00	1.27	7.695	8.46	0.00	1.200	1.676	1.08	4.068	4.88	41.3	97.5	258.6
105.00			1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	18.545	22.25	190.3	442.4	1175.7
110.00			1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	18.159	21.79	188.2	434.7	1151.0
115.00			1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	17.772	21.33	185.9	426.7	1126.2
120.00			1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	17.385	20.86	183.5	418.6	1101.2
125.00			1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	16.998	20.40	181.0	410.4	1076.0
126.67	Bot - Section 4		1.00	1.33	8.088	8.90	0.00	1.200	1.716	1.67	5.590	6.71	59.7	136.1	354.7
127.00	Appurtenance(s)		1.00	1.33	8.092	8.90	0.00	1.200	1.716	0.33	1.112	1.33	11.9	27.2	104.1
130.00			1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	10.031	12.04	107.7	244.1	937.3
132.00	Top - Section 3		1.00	1.34	8.158	8.97	0.00	1.200	1.723	2.00	6.620	7.94	71.3	161.6	618.5
135.00			1.00	1.35	8.197	9.02	0.00	1.200	1.727	3.00	9.787	11.74	105.9	238.7	536.5
140.00			1.00	1.36	8.260	9.09	0.00	1.200	1.733	5.00	16.021	19.23	174.7	389.7	876.0
145.00			1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	15.633	18.76	171.7	380.9	854.0
147.00	Appurtenance(s)		1.00	1.37	8.345	9.18	0.00	1.200	1.742	2.00	6.144	7.37	67.7	151.0	336.5
150.00			1.00	1.38	8.381	9.22	0.00	1.200	1.745	3.00	9.100	10.92	100.7	223.3	497.6
155.00			1.00	1.39	8.439	9.28	0.00	1.200	1.751	5.00	14.857	17.83	165.5	363.1	809.8
159.00	Appurtenance(s)		1.00	1.40	8.484	9.33	0.00	1.200	1.755	4.00	11.606	13.93	130.0	284.7	632.6
160.00			1.00	1.40	8.495	9.34	0.00	1.200	1.757	1.00	2.862	3.43	32.1	70.8	156.5
165.00			1.00	1.41	8.551	9.41	0.00	1.200	1.762	5.00	14.080	16.90	158.9	344.9	765.2
170.00			1.00	1.42	8.604	9.46	0.00	1.200	1.767	5.00	13.692	16.43	155.5	335.7	742.8
175.00			1.00	1.42	8.657	9.52	0.00	1.200	1.772	5.00	13.303	15.96	152.0	326.3	720.3

Wind Loading - Shaft

Structure: CT01365-S-SBA	Code:	EIA/TIA-222-G	10/24/2019	 ES <small>Tower Engineering Solutions</small>				
Site Name: Norwich 2 CT	Exposure:	C						
Height: 180.00 (ft)	Crest Height:	0.00						
Base Elev: 0.000 (ft)	Site Class:	D - Stiff Soil						
G_h: 1.1	Topography:	1	Struct Class: II					
			Page: 26					
177.00 Appurtenance(s)	1.00	1.43 8.678 9.55	0.00 1.200 1.774	2.00 5.212 6.25	59.7	129.0	282.9	
180.00 Appurtenance(s)	1.00	1.43 8.709 9.58	0.00 1.200 1.777	3.00 7.701 9.24	88.5	190.1	417.0	
			Totals: 180.00		6,531.6		53,640.2	

Discrete Appurtenance Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

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

10/24/2019



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations

25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor 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	180.00	Lightning Rod	1	8.709	9.579	1.00	1.00	2.28	21.33	0.000	0.000	21.82	0.00	0.00
2	177.00	1900MHz RRUs	3	8.678	9.546	0.46	0.80	7.13	397.76	0.000	0.000	68.08	0.00	0.00
3	177.00	APXVSPP18-C-A20	3	8.678	9.546	0.66	0.80	21.63	583.91	0.000	0.000	206.51	0.00	0.00
4	177.00	TD-RRH8x20-25	3	8.678	9.546	0.46	0.80	6.67	590.09	0.000	0.000	63.70	0.00	0.00
5	177.00	APXVTM14-C-120	3	8.678	9.546	0.63	0.80	14.17	692.52	0.000	0.000	135.25	0.00	0.00
6	177.00	ALU 800MHz External	3	8.678	9.546	0.46	0.80	1.97	70.49	0.000	0.000	18.77	0.00	0.00
7	177.00	ACU-A20-N	4	8.678	9.546	0.46	0.80	0.81	17.07	0.000	0.000	7.69	0.00	0.00
8	177.00	Platform w/ Hand Rail	1	8.678	9.546	1.00	1.00	60.39	3454.89	0.000	0.000	576.45	0.00	0.00
9	177.00	800 MHz RRUs	3	8.678	9.546	0.46	0.80	5.00	353.08	0.000	0.000	47.70	0.00	0.00
10	159.00	BXA-171085-8BF-EDIN-2	3	8.484	9.333	0.67	0.80	9.29	179.48	0.000	0.000	86.70	0.00	0.00
11	159.00	B25 RRH4x30	3	8.484	9.333	0.46	0.80	3.76	316.15	0.000	0.000	35.13	0.00	0.00
12	159.00	BXA-80080/4CF	3	8.484	9.333	0.61	0.80	12.19	284.98	0.000	0.000	113.78	0.00	0.00
13	159.00	DB-T1-6Z-8AB-0Z	2	8.484	9.333	0.60	0.90	6.85	334.80	0.000	0.000	63.92	0.00	0.00
14	159.00	B25 RRH4x30	3	8.484	9.333	0.46	0.80	3.76	316.15	0.000	0.000	35.13	0.00	0.00
15	159.00	RRH 4X45-PCS	3	8.484	9.333	0.46	0.80	5.45	390.38	0.000	0.000	50.83	0.00	0.00
16	159.00	Low Profile	1	8.484	9.333	1.00	1.00	39.76	2816.56	0.000	0.000	371.11	0.00	0.00
17	159.00	SBNHH-1D65B	6	8.484	9.333	0.62	0.80	35.12	1510.39	0.000	0.000	327.75	0.00	0.00
18	147.00	HPA-65R-BUU-H8	2	8.345	9.180	0.73	0.90	21.27	743.92	0.000	0.000	195.29	0.00	0.00
19	147.00	7770	3	8.345	9.180	0.58	0.80	11.50	530.52	0.000	0.000	105.55	0.00	0.00
20	147.00	Powerwave LGP21401	6	8.345	9.180	0.40	0.80	5.10	325.33	0.000	0.000	46.79	0.00	0.00
21	147.00	Raycap DC6-48-60-18-8F	2	8.345	9.180	0.60	0.90	1.64	172.60	2.383	0.000	15.02	35.80	0.00
22	147.00	Low Profile Platform	1	8.345	9.180	1.00	1.00	39.63	2806.27	0.000	0.000	363.75	0.00	0.00
23	147.00	HPA-65R-BUU-H6	1	8.345	9.180	1.00	1.00	11.02	308.72	2.383	0.000	101.19	241.14	0.00
24	147.00	Ericsson RRUS 4449	3	8.345	9.180	0.46	0.80	3.44	392.32	0.000	0.000	31.60	0.00	0.00
25	147.00	Kathrein 860 10025 RET	12	8.345	9.180	0.40	0.80	2.68	69.89	0.000	0.000	24.59	0.00	0.00
26	147.00	Ericsson RRUS 12	3	8.345	9.180	0.46	0.80	4.59	349.65	0.000	0.000	42.17	0.00	0.00
27	147.00	Ericsson RRUS-A2	3	8.345	9.180	0.46	0.80	3.87	160.73	0.000	0.000	35.56	0.00	0.00
28	147.00	DMP65R-BU6DA	2	8.345	9.180	0.73	0.90	20.70	764.15	0.000	0.000	189.98	0.00	0.00
29	147.00	DMP65R-BU8DA	4	8.345	9.180	0.62	0.80	48.51	1963.59	0.000	0.000	445.34	0.00	0.00
30	147.00	Ericsson RRUS 4478 B14	3	8.345	9.180	0.46	0.80	2.96	309.79	0.000	0.000	27.22	0.00	0.00
31	127.00	CS72188.01 LMU	1	7.881	8.669	1.00	1.00	11.46	150.24	3.022	-15.000	99.33	300.12	-1489.89
32	52.00	GPS	1	6.705	7.376	0.80	0.80	0.43	0.76	3.055	0.000	3.20	9.77	0.00

Totals: **21,378.53**

3,956.89

Total Applied Force Summary

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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

Dead Load Factor 1.20
Wind Load Factor 1.00



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
5.00		173.81	2293.17	0.00	0.00
10.00		171.64	2294.22	0.00	0.00
15.00		169.27	2281.27	0.00	0.00
17.00		68.69	906.50	0.00	0.00
20.00		105.86	1354.13	0.00	0.00
25.00		182.74	2239.53	0.00	0.00
30.00		186.96	2214.55	0.00	0.00
35.00		190.09	2187.90	0.00	0.00
40.00		192.36	2159.99	0.00	0.00
45.00		193.94	2131.08	0.00	0.00
45.92		35.34	387.73	0.00	0.00
50.00		161.25	2707.57	0.00	0.00
52.00	(1) attachments	82.00	1314.40	9.77	0.00
53.00		39.36	649.68	0.00	0.00
55.00		78.92	749.94	0.00	0.00
60.00		198.55	1854.24	0.00	0.00
65.00		198.38	1826.37	0.00	0.00
70.00		197.89	1798.08	0.00	0.00
75.00		197.11	1769.43	0.00	0.00
80.00		196.09	1740.46	0.00	0.00
85.00		194.83	1711.20	0.00	0.00
90.00		193.36	1681.67	0.00	0.00
92.83		108.57	940.63	0.00	0.00
95.00		83.63	1045.98	0.00	0.00
98.92		150.61	1867.47	0.00	0.00
100.00		41.32	300.36	0.00	0.00
105.00		190.31	1368.43	0.00	0.00
110.00		188.18	1343.75	0.00	0.00
115.00		185.91	1318.90	0.00	0.00
120.00		183.50	1293.88	0.00	0.00
125.00		180.96	1268.72	0.00	0.00
126.67		59.68	419.05	0.00	0.00
127.00	(1) attachments	111.20	267.05	300.12	-1489.89
130.00		107.67	1052.32	0.00	0.00
132.00		71.29	695.32	0.00	0.00
135.00		105.90	651.41	0.00	0.00
140.00		174.68	1067.72	0.00	0.00
145.00		171.71	1045.79	0.00	0.00
147.00	(45) attachments	1691.74	9310.70	276.94	0.00
150.00		100.67	548.73	0.00	0.00
155.00		165.50	895.03	0.00	0.00
159.00	(24) attachments	1214.31	6849.63	0.00	0.00
160.00		32.10	159.63	0.00	0.00
165.00		158.92	781.07	0.00	0.00
170.00		155.51	758.62	0.00	0.00
175.00		152.02	736.09	0.00	0.00

Total Applied Force Summary

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	(23) attachments	1183.85	6449.05	0.00	0.00
180.00	(1) attachments	110.35	438.33	0.00	0.00
Totals:		10,488.52	81,126.79	586.83	-1,489.89

Linear Appurtenance Segment Forces (Factored)

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

Page: 30



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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations

25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	1.31	0.00	0.011	0.000	5.168	0.00	13.70
10.00	1/2" Coax	Yes	5.00	0.000	0.65	1.38	0.00	0.011	0.000	5.168	0.00	15.33
15.00	1/2" Coax	Yes	5.00	0.000	0.65	1.43	0.00	0.011	0.000	5.168	0.00	16.38
17.00	1/2" Coax	Yes	2.00	0.000	0.65	0.58	0.00	0.012	0.000	5.299	0.00	6.69
20.00	1/2" Coax	Yes	3.00	0.000	0.65	0.88	0.00	0.012	0.000	5.483	0.00	10.31
25.00	1/2" Coax	Yes	5.00	0.000	0.65	1.49	0.00	0.012	0.000	5.747	0.00	17.83
30.00	1/2" Coax	Yes	5.00	0.000	0.65	1.51	0.00	0.012	0.000	5.972	0.00	18.38
35.00	1/2" Coax	Yes	5.00	0.000	0.65	1.53	0.00	0.012	0.000	6.169	0.00	18.86
40.00	1/2" Coax	Yes	5.00	0.000	0.65	1.55	0.00	0.012	0.000	6.345	0.00	19.29
45.00	1/2" Coax	Yes	5.00	0.000	0.65	1.56	0.00	0.013	0.000	6.504	0.00	19.67
45.92	1/2" Coax	Yes	0.92	0.000	0.65	0.29	0.00	0.013	0.000	6.532	0.00	3.62
50.00	1/2" Coax	Yes	4.08	0.000	0.65	1.29	0.00	0.013	0.000	6.650	0.00	16.35
52.00	1/2" Coax	Yes	2.00	0.000	0.65	0.63	0.00	0.013	0.000	6.705	0.00	8.06
Totals:										0.0	0.0	184.5

Calculated Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)

Base Elev: 0.000 (ft)

Gh: 1.1

Topography: 1

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

10/24/2019



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

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	-81.12	-10.52	-0.59	-1308.5	0.00	1308.57	5397.55	2698.78	12826.5	6367.63	0.00	0.000	0.000	0.167
5.00	-78.82	-10.40	-0.59	-1255.9	0.00	1255.99	5344.66	2672.33	12495.2	6203.15	0.02	-0.041	0.000	0.164
10.00	-76.52	-10.28	-0.59	-1203.9	0.00	1203.99	5290.67	2645.34	12165.4	6039.43	0.09	-0.082	0.000	0.161
15.00	-74.23	-10.14	-0.59	-1152.5	0.00	1152.59	5235.58	2617.79	11837.2	5876.53	0.20	-0.124	0.000	0.157
17.00	-73.32	-10.10	-0.59	-1132.3	0.00	1132.30	5213.23	2606.61	11706.5	5811.61	0.25	-0.141	0.000	0.156
17.00	-73.32	-10.10	-0.59	-1132.3	0.00	1132.30	5213.23	2606.61	11706.5	5811.61	0.25	-0.141	0.000	0.156
20.00	-71.96	-10.04	-0.59	-1102.0	0.00	1102.00	5179.37	2589.69	11510.9	5714.52	0.35	-0.166	0.000	0.207
25.00	-69.72	-9.92	-0.59	-1051.7	0.00	1051.78	5122.07	2561.03	11186.5	5553.45	0.55	-0.221	0.000	0.203
30.00	-67.49	-9.79	-0.59	-1002.1	0.00	1002.19	5063.65	2531.83	10864.1	5393.40	0.81	-0.277	0.000	0.199
35.00	-65.30	-9.65	-0.59	-953.24	0.00	953.24	5004.13	2502.07	10543.8	5234.42	1.13	-0.333	0.000	0.195
40.00	-63.13	-9.51	-0.59	-904.99	0.00	904.99	4943.51	2471.75	10225.9	5076.58	1.51	-0.389	0.000	0.191
45.00	-60.99	-9.33	-0.59	-857.45	0.00	857.45	4881.77	2440.89	9910.40	4919.94	1.95	-0.445	0.000	0.187
45.92	-60.60	-9.32	-0.59	-848.90	-0.01	848.90	4870.34	2435.17	9852.83	4891.36	2.04	-0.456	0.000	0.186
50.00	-57.89	-9.18	-0.59	-810.82	-0.01	810.82	4818.94	2409.47	9597.43	4764.57	2.45	-0.502	0.000	0.182
52.00	-56.57	-9.10	-0.58	-792.47	-0.01	792.47	4793.49	2396.75	9472.99	4702.79	2.66	-0.525	0.000	0.180
53.00	-55.92	-9.07	-0.58	-783.37	-0.01	783.37	3921.66	1960.83	7862.59	3903.32	2.77	-0.537	0.000	0.215
55.00	-55.16	-9.03	-0.58	-765.23	-0.01	765.23	3903.31	1951.65	7765.73	3855.23	3.00	-0.559	0.000	0.213
60.00	-53.30	-8.87	-0.58	-720.11	-0.01	720.11	3856.65	1928.33	7524.53	3735.49	3.62	-0.622	0.000	0.207
65.00	-51.47	-8.70	-0.58	-675.78	-0.01	675.78	3808.89	1904.45	7284.80	3616.48	4.31	-0.684	0.000	0.200
70.00	-49.67	-8.54	-0.58	-632.27	-0.01	632.27	3760.03	1880.02	7046.68	3498.27	5.06	-0.746	-0.001	0.194
75.00	-47.89	-8.37	-0.58	-589.59	-0.01	589.59	3710.06	1855.03	6810.28	3380.91	5.87	-0.807	-0.001	0.187
80.00	-46.14	-8.19	-0.58	-547.76	-0.01	547.76	3658.99	1829.49	6575.75	3264.48	6.75	-0.868	-0.001	0.180
85.00	-44.43	-8.02	-0.58	-506.80	-0.01	506.80	3606.81	1803.40	6343.20	3149.03	7.69	-0.928	-0.001	0.173
90.00	-42.74	-7.83	-0.58	-466.72	-0.01	466.72	3553.52	1776.76	6112.76	3034.63	8.69	-0.987	-0.001	0.166
92.83	-41.80	-7.73	-0.58	-444.53	-0.01	444.53	3522.83	1761.42	5983.17	2970.30	9.29	-1.021	-0.001	0.162
95.00	-40.75	-7.65	-0.58	-427.79	-0.01	427.79	3499.13	1749.56	5884.57	2921.35	9.76	-1.046	-0.001	0.158
98.92	-38.88	-7.48	-0.58	-397.83	-0.01	397.83	2350.25	1175.12	3954.81	1963.33	10.64	-1.091	-0.001	0.219
100.00	-38.58	-7.46	-0.58	-389.73	-0.01	389.73	2343.93	1171.97	3924.64	1948.36	10.89	-1.103	-0.001	0.217
105.00	-37.21	-7.29	-0.58	-352.41	-0.01	352.41	2314.11	1157.05	3785.67	1879.37	12.08	-1.173	-0.001	0.204
110.00	-35.86	-7.12	-0.58	-315.95	-0.01	315.95	2283.18	1141.59	3647.23	1810.64	13.34	-1.241	-0.001	0.190
115.00	-34.54	-6.94	-0.58	-280.37	-0.01	280.37	2251.15	1125.57	3509.45	1742.24	14.68	-1.306	-0.001	0.176
120.00	-33.24	-6.76	-0.58	-245.68	-0.01	245.68	2218.01	1109.01	3372.44	1674.22	16.08	-1.367	-0.001	0.162
125.00	-31.97	-6.57	-0.58	-211.88	-0.01	211.88	2183.77	1091.88	3236.35	1606.66	17.54	-1.424	-0.002	0.147
126.67	-31.55	-6.51	-0.58	-200.91	-0.01	200.91	2172.08	1086.04	3191.13	1584.21	18.04	-1.443	-0.002	0.141
127.00	-31.29	-6.40	-0.28	-198.76	0.00	198.76	2169.76	1084.88	3182.20	1579.78	18.14	-1.447	-0.002	0.140
130.00	-30.23	-6.28	-0.28	-179.57	0.00	179.57	2148.42	1074.21	3101.30	1539.62	19.06	-1.479	-0.002	0.131
132.00	-29.54	-6.20	-0.28	-167.00	0.00	167.00	1502.55	751.27	2180.88	1082.68	19.69	-1.499	-0.002	0.174
135.00	-28.89	-6.10	-0.28	-148.42	0.00	148.42	1491.20	745.60	2130.02	1057.43	20.64	-1.528	-0.002	0.160
140.00	-27.82	-5.92	-0.28	-117.93	-0.01	117.93	1471.39	735.69	2045.11	1015.28	22.27	-1.580	-0.002	0.135
145.00	-26.77	-5.73	-0.28	-88.35	-0.01	88.35	1450.46	725.23	1960.22	973.13	23.95	-1.623	-0.002	0.109
147.00	-27.51	-3.78	0.00	-76.89	0.00	76.89	1441.79	720.89	1926.30	956.30	24.63	-1.639	-0.002	0.093
150.00	-16.97	-3.67	0.00	-65.56	0.00	65.56	1428.44	714.22	1875.49	931.07	25.67	-1.659	-0.002	0.082
155.00	-16.08	-3.48	0.00	-47.21	0.00	47.21	1405.30	702.65	1791.05	889.15	27.42	-1.687	-0.002	0.065
159.00	-9.27	-2.07	0.00	-33.27	0.00	33.27	1386.00	693.00	1723.78	855.76	28.84	-1.705	-0.002	0.046
160.00	-9.11	-2.03	0.00	-31.20	0.00	31.20	1381.06	690.53	1707.02	847.43	29.20	-1.709	-0.002	0.043
165.00	-8.33	-1.85	0.00	-21.03	0.00	21.03	1355.72	677.86	1623.53	805.99	31.00	-1.724	-0.002	0.032
170.00	-7.58	-1.68	0.00	-11.76	0.00	11.76	1329.27	664.63	1540.71	764.87	32.81	-1.735	-0.002	0.021
175.00	-6.84	-1.50	0.00	-3.38	0.00	3.38	1301.71	650.86	1458.68	724.15	34.63	-1.741	-0.002	0.010

Calculated Forces

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	-0.43	-0.12	0.00	-0.37	0.00	0.37	1290.38	645.19	1426.13	707.99	35.36	-1.741	-0.002	0.001
180.00	0.00	-0.11	0.00	0.00	0.00	0.00	1273.05	636.53	1377.59	683.89	36.45	-1.741	-0.002	0.000

Seismic Segment Forces (Factored)

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

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Topography: 1

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Load Case: 1.2D + 1.0E



Gust Response Factor	1.10	Sds	0.18	Iterations	23
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.10
Wind Load Factor	0.00	Structure Frequency (f1)	0.31	SA	0.03

Ss	0.17
S1	0.06
Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	0.00	
5.00		1357.3	0.00	0.03	0.02	22.27	
10.00		1335.3	0.01	0.05	0.03	32.56	
15.00		1313.4	0.01	0.06	0.03	37.66	
17.00	RT1	519.20	0.02	0.06	0.04	15.47	
20.00		772.21	0.02	0.07	0.04	23.99	
25.00		1269.4	0.04	0.07	0.04	41.21	
30.00		1247.4	0.05	0.07	0.04	41.63	
35.00		1225.4	0.07	0.07	0.04	41.78	
40.00		1203.4	0.09	0.07	0.04	41.87	
45.00		1181.4	0.12	0.07	0.03	41.93	
45.92	Bot - Section 2	214.22	0.12	0.07	0.03	7.63	
50.00		1768.0	0.15	0.07	0.03	63.88	
52.00	Appurtenance(s)	856.26	0.16	0.07	0.03	31.12	
53.00	Top - Section 1	425.58	0.16	0.07	0.03	15.50	
55.00		393.91	0.18	0.07	0.03	14.40	
60.00		971.59	0.21	0.06	0.02	35.48	
65.00		952.77	0.25	0.06	0.02	33.97	
70.00		933.94	0.29	0.05	0.01	31.31	
75.00		915.12	0.33	0.04	0.01	27.11	
80.00		896.29	0.37	0.03	0.01	21.10	
85.00		877.46	0.42	0.01	0.01	13.21	
90.00		858.64	0.47	-0.01	0.01	3.86	
92.83	Bot - Section 3	478.20	0.50	-0.02	0.01	-0.98	
95.00		636.91	0.53	-0.03	0.01	-4.55	
98.92	Top - Section 2	1135.6	0.57	-0.04	0.01	-18.26	
100.00		134.26	0.58	-0.05	0.01	-2.47	
105.00		611.09	0.64	-0.07	0.02	-17.02	
110.00		596.98	0.71	-0.09	0.03	-20.56	
115.00		582.87	0.77	-0.11	0.05	-21.95	
120.00		568.77	0.84	-0.12	0.07	-21.27	
125.00		554.66	0.91	-0.12	0.09	-18.67	
126.67	Bot - Section 4	182.11	0.94	-0.12	0.10	-5.77	
127.00	Appurtenance(s)	99.09	0.94	-0.12	0.10	-3.09	
130.00		577.66	0.99	-0.11	0.12	-15.35	
132.00	Top - Section 3	380.71	1.02	-0.11	0.14	-8.69	
135.00		248.14	1.06	-0.09	0.17	-4.02	
140.00		405.24	1.14	-0.04	0.21	-1.04	
145.00		394.24	1.23	0.03	0.27	5.64	
147.00	Appurtenance(s)	3319.4	1.26	0.07	0.30	72.96	
150.00		228.63	1.31	0.14	0.35	7.88	
155.00		372.25	1.40	0.29	0.43	21.57	
159.00	Appurtenance(s)	2631.6	1.47	0.44	0.51	208.35	
160.00		71.37	1.49	0.48	0.53	6.05	
165.00		350.26	1.59	0.74	0.65	40.32	
170.00		339.27	1.69	1.07	0.79	50.53	

Seismic Segment Forces (Factored)

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
G_h: 1.1

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

10/24/2019



Topography: 1

Struct Class: II

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175.00	328.28	1.79	1.48	0.95	61.16
177.00 Appurtenance(s)	2598.6	1.83	1.67	1.03	525.70
180.00 Appurtenance(s)	194.05	1.89	1.98	1.14	44.12
Totals:	39,509.1			1,519.5	

Total Wind: **45,537.5**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 1.2D + 1.0E



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	-53.34	-1.69	0.00	-213.68	0.00	213.68	5397.55	2698.78	12826.5	6367.63	0.00	0.00	0.00	0.033
5.00	-51.52	-1.67	0.00	-205.26	0.00	205.26	5344.66	2672.33	12495.2	6203.15	0.00	-0.01	-0.01	0.032
10.00	-49.73	-1.64	0.00	-196.91	0.00	196.91	5290.67	2645.34	12165.4	6039.43	0.01	-0.01	-0.01	0.031
15.00	-47.96	-1.61	0.00	-188.70	0.00	188.70	5235.58	2617.79	11837.2	5876.53	0.03	-0.02	-0.02	0.031
17.00	-47.25	-1.60	0.00	-185.48	0.00	185.48	5213.23	2606.61	11706.5	5811.61	0.04	-0.02	-0.02	0.030
17.00	-47.25	-1.60	0.00	-185.48	0.00	185.48	5213.23	2606.61	11706.5	5811.61	0.04	-0.02	-0.02	0.030
20.00	-46.21	-1.58	0.00	-180.70	0.00	180.70	5179.37	2589.69	11510.9	5714.52	0.06	-0.03	-0.03	0.041
25.00	-44.49	-1.54	0.00	-172.82	0.00	172.82	5122.07	2561.03	11186.5	5553.45	0.09	-0.04	-0.04	0.040
30.00	-42.80	-1.50	0.00	-165.12	0.00	165.12	5063.65	2531.83	10864.1	5393.40	0.13	-0.05	-0.05	0.039
35.00	-41.14	-1.47	0.00	-157.59	0.00	157.59	5004.13	2502.07	10543.8	5234.42	0.19	-0.05	-0.05	0.038
40.00	-39.50	-1.43	0.00	-150.25	0.00	150.25	4943.51	2471.75	10225.9	5076.58	0.25	-0.06	-0.06	0.038
45.00	-37.89	-1.39	0.00	-143.09	0.00	143.09	4881.77	2440.89	9910.40	4919.94	0.32	-0.07	-0.07	0.037
45.92	-37.60	-1.39	0.00	-141.82	0.00	141.82	4870.34	2435.17	9852.83	4891.36	0.33	-0.08	-0.07	0.037
50.00	-35.32	-1.32	0.00	-136.16	0.00	136.16	4818.94	2409.47	9597.43	4764.57	0.40	-0.08	-0.08	0.036
52.00	-34.21	-1.29	0.00	-133.51	0.00	133.51	4793.49	2396.75	9472.99	4702.79	0.44	-0.09	-0.09	0.036
53.00	-33.66	-1.28	0.00	-132.22	0.00	132.22	3921.66	1960.83	7862.59	3903.32	0.46	-0.09	-0.09	0.042
55.00	-33.11	-1.27	0.00	-129.67	0.00	129.67	3903.31	1951.65	7765.73	3855.23	0.49	-0.09	-0.09	0.042
60.00	-31.75	-1.23	0.00	-123.34	0.00	123.34	3856.65	1928.33	7524.53	3735.49	0.60	-0.10	-0.041	
65.00	-30.42	-1.20	0.00	-117.17	0.00	117.17	3808.89	1904.45	7284.80	3616.48	0.71	-0.11	-0.040	
70.00	-29.10	-1.17	0.00	-111.15	0.00	111.15	3760.03	1880.02	7046.68	3498.27	0.83	-0.12	-0.040	
75.00	-27.81	-1.15	0.00	-105.27	0.00	105.27	3710.06	1855.03	6810.28	3380.91	0.97	-0.14	-0.039	
80.00	-26.55	-1.13	0.00	-99.52	0.00	99.52	3658.99	1829.49	6575.75	3264.48	1.12	-0.15	-0.038	
85.00	-25.30	-1.12	0.00	-93.87	0.00	93.87	3606.81	1803.40	6343.20	3149.03	1.28	-0.16	-0.037	
90.00	-24.08	-1.12	0.00	-88.27	0.00	88.27	3553.52	1776.76	6112.76	3034.63	1.45	-0.17	-0.036	
92.83	-23.39	-1.12	0.00	-85.11	0.00	85.11	3522.83	1761.42	5983.17	2970.30	1.55	-0.17	-0.035	
95.00	-22.54	-1.12	0.00	-82.69	0.00	82.69	3499.13	1749.56	5884.57	2921.35	1.63	-0.18	-0.035	
98.92	-21.03	-1.11	0.00	-78.32	0.00	78.32	2350.25	1175.12	3954.81	1963.33	1.78	-0.19	-0.049	
100.00	-20.83	-1.12	0.00	-77.12	0.00	77.12	2343.93	1171.97	3924.64	1948.36	1.83	-0.19	-0.048	
105.00	-19.90	-1.12	0.00	-71.54	0.00	71.54	2314.11	1157.05	3785.67	1879.37	2.03	-0.20	-0.047	
110.00	-18.99	-1.12	0.00	-65.95	0.00	65.95	2283.18	1141.59	3647.23	1810.64	2.25	-0.22	-0.045	
115.00	-18.10	-1.12	0.00	-60.36	0.00	60.36	2251.15	1125.57	3509.45	1742.24	2.49	-0.23	-0.043	
120.00	-17.22	-1.12	0.00	-54.76	0.00	54.76	2218.01	1109.01	3372.44	1674.22	2.74	-0.25	-0.040	
125.00	-16.37	-1.12	0.00	-49.17	0.00	49.17	2183.77	1091.88	3236.35	1606.66	3.01	-0.26	-0.038	
126.67	-16.08	-1.12	0.00	-47.30	0.00	47.30	2172.08	1086.04	3191.13	1584.21	3.10	-0.26	-0.037	
127.00	-15.95	-1.12	0.00	-46.93	0.00	46.93	2169.76	1084.88	3182.20	1579.78	3.12	-0.26	-0.037	
130.00	-15.14	-1.12	0.00	-43.58	0.00	43.58	2148.42	1074.21	3101.30	1539.62	3.29	-0.27	-0.035	
132.00	-14.61	-1.12	0.00	-41.34	0.00	41.34	1502.55	751.27	2180.88	1082.68	3.40	-0.28	-0.048	
135.00	-14.20	-1.12	0.00	-38.00	0.00	38.00	1491.20	745.60	2130.02	1057.43	3.58	-0.28	-0.045	
140.00	-13.52	-1.12	0.00	-32.42	0.00	32.42	1471.39	735.69	2045.11	1015.28	3.88	-0.30	-0.041	
145.00	-12.85	-1.11	0.00	-26.84	0.00	26.84	1450.46	725.23	1960.22	973.13	4.20	-0.31	-0.036	
147.00	-8.79	-1.01	0.00	-24.62	0.00	24.62	1441.79	720.89	1926.30	956.30	4.33	-0.32	-0.032	
150.00	-8.47	-1.01	0.00	-21.58	0.00	21.58	1428.44	714.22	1875.49	931.07	4.53	-0.32	-0.029	
155.00	-7.94	-0.98	0.00	-16.55	0.00	16.55	1405.30	702.65	1791.05	889.15	4.87	-0.33	-0.024	
159.00	-4.71	-0.76	0.00	-12.62	0.00	12.62	1386.00	693.00	1723.78	855.76	5.15	-0.34	-0.018	
160.00	-4.62	-0.75	0.00	-11.87	0.00	11.87	1381.06	690.53	1707.02	847.43	5.23	-0.34	-0.017	
165.00	-4.19	-0.71	0.00	-8.12	0.00	8.12	1355.72	677.86	1623.53	805.99	5.58	-0.35	-0.013	
170.00	-3.76	-0.65	0.00	-4.59	0.00	4.59	1329.27	664.63	1540.71	764.87	5.95	-0.35	-0.009	

Calculated Forces

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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175.00	-3.35	-0.59	0.00	-1.32	0.00	1.32	1301.71	650.86	1458.68	724.15	6.32	-0.35	0.004
177.00	-0.23	-0.05	0.00	-0.14	0.00	0.14	1290.38	645.19	1426.13	707.99	6.46	-0.35	0.000
180.00	0.00	-0.04	0.00	0.00	0.00	0.00	1273.05	636.53	1377.59	683.89	6.68	-0.35	0.000

Seismic Segment Forces (Factored)

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



Topography: 1

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Load Case: 0.9D + 1.0E



Gust Response Factor	1.10	Sds	0.18	Iterations	23
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.10
Wind Load Factor	0.00	Structure Frequency (f1)	0.31	SA	0.03

Ss 0.17
S1 0.06
Seismic Importance Factor 1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00	RB1	0.00	0.00	0.00	0.00	0.00	
5.00		1357.3	0.00	0.03	0.02	22.27	
10.00		1335.3	0.01	0.05	0.03	32.56	
15.00		1313.4	0.01	0.06	0.03	37.66	
17.00	RT1	519.20	0.02	0.06	0.04	15.47	
20.00		772.21	0.02	0.07	0.04	23.99	
25.00		1269.4	0.04	0.07	0.04	41.21	
30.00		1247.4	0.05	0.07	0.04	41.63	
35.00		1225.4	0.07	0.07	0.04	41.78	
40.00		1203.4	0.09	0.07	0.04	41.87	
45.00		1181.4	0.12	0.07	0.03	41.93	
45.92	Bot - Section 2	214.22	0.12	0.07	0.03	7.63	
50.00		1768.0	0.15	0.07	0.03	63.88	
52.00	Appurtenance(s)	856.26	0.16	0.07	0.03	31.12	
53.00	Top - Section 1	425.58	0.16	0.07	0.03	15.50	
55.00		393.91	0.18	0.07	0.03	14.40	
60.00		971.59	0.21	0.06	0.02	35.48	
65.00		952.77	0.25	0.06	0.02	33.97	
70.00		933.94	0.29	0.05	0.01	31.31	
75.00		915.12	0.33	0.04	0.01	27.11	
80.00		896.29	0.37	0.03	0.01	21.10	
85.00		877.46	0.42	0.01	0.01	13.21	
90.00		858.64	0.47	-0.01	0.01	3.86	
92.83	Bot - Section 3	478.20	0.50	-0.02	0.01	-0.98	
95.00		636.91	0.53	-0.03	0.01	-4.55	
98.92	Top - Section 2	1135.6	0.57	-0.04	0.01	-18.26	
100.00		134.26	0.58	-0.05	0.01	-2.47	
105.00		611.09	0.64	-0.07	0.02	-17.02	
110.00		596.98	0.71	-0.09	0.03	-20.56	
115.00		582.87	0.77	-0.11	0.05	-21.95	
120.00		568.77	0.84	-0.12	0.07	-21.27	
125.00		554.66	0.91	-0.12	0.09	-18.67	
126.67	Bot - Section 4	182.11	0.94	-0.12	0.10	-5.77	
127.00	Appurtenance(s)	99.09	0.94	-0.12	0.10	-3.09	
130.00		577.66	0.99	-0.11	0.12	-15.35	
132.00	Top - Section 3	380.71	1.02	-0.11	0.14	-8.69	
135.00		248.14	1.06	-0.09	0.17	-4.02	
140.00		405.24	1.14	-0.04	0.21	-1.04	
145.00		394.24	1.23	0.03	0.27	5.64	
147.00	Appurtenance(s)	3319.4	1.26	0.07	0.30	72.96	
150.00		228.63	1.31	0.14	0.35	7.88	
155.00		372.25	1.40	0.29	0.43	21.57	
159.00	Appurtenance(s)	2631.6	1.47	0.44	0.51	208.35	
160.00		71.37	1.49	0.48	0.53	6.05	
165.00		350.26	1.59	0.74	0.65	40.32	
170.00		339.27	1.69	1.07	0.79	50.53	

Seismic Segment Forces (Factored)

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
G_h: 1.1

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

10/24/2019



Topography: 1

Struct Class: II

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175.00	328.28	1.79	1.48	0.95	61.16
177.00 Appurtenance(s)	2598.6	1.83	1.67	1.03	525.70
180.00 Appurtenance(s)	194.05	1.89	1.98	1.14	44.12
Totals:	39,509.1			1,519.5	

Total Wind: **45,537.5**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



Topography: 1

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Load Case: 0.9D + 1.0E		Iterations	23
Gust Response Factor	1.10	Sds	0.18
Dead Load Factor	0.90	Seismic Load Factor	1.00
Wind Load Factor	0.00	Structure Frequency (f1)	0.31
		Sd1	0.10
		SA	0.03
		S1	0.06
		Seismic Importance 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	-40.01	-1.68	0.00	-211.31	0.00	211.31	5397.55	2698.78	12826.5	6367.63	0.00	0.00	0.031	
5.00	-38.64	-1.67	0.00	-202.88	0.00	202.88	5344.66	2672.33	12495.2	6203.15	0.00	-0.01	0.030	
10.00	-37.29	-1.64	0.00	-194.55	0.00	194.55	5290.67	2645.34	12165.4	6039.43	0.01	-0.01	0.029	
15.00	-35.97	-1.60	0.00	-186.36	0.00	186.36	5235.58	2617.79	11837.2	5876.53	0.03	-0.02	0.029	
17.00	-35.44	-1.59	0.00	-183.15	0.00	183.15	5213.23	2606.61	11706.5	5811.61	0.04	-0.02	0.029	
17.00	-35.44	-1.59	0.00	-183.15	0.00	183.15	5213.23	2606.61	11706.5	5811.61	0.04	-0.02	0.029	
20.00	-34.66	-1.57	0.00	-178.38	0.00	178.38	5179.37	2589.69	11510.9	5714.52	0.06	-0.03	0.038	
25.00	-33.37	-1.53	0.00	-170.53	0.00	170.53	5122.07	2561.03	11186.5	5553.45	0.09	-0.04	0.037	
30.00	-32.10	-1.50	0.00	-162.87	0.00	162.87	5063.65	2531.83	10864.1	5393.40	0.13	-0.04	0.037	
35.00	-30.85	-1.46	0.00	-155.39	0.00	155.39	5004.13	2502.07	10543.8	5234.42	0.18	-0.05	0.036	
40.00	-29.63	-1.42	0.00	-148.11	0.00	148.11	4943.51	2471.75	10225.9	5076.58	0.24	-0.06	0.035	
45.00	-28.42	-1.38	0.00	-141.01	0.00	141.01	4881.77	2440.89	9910.40	4919.94	0.32	-0.07	0.034	
45.92	-28.20	-1.37	0.00	-139.75	0.00	139.75	4870.34	2435.17	9852.83	4891.36	0.33	-0.07	0.034	
50.00	-26.49	-1.31	0.00	-134.14	0.00	134.14	4818.94	2409.47	9597.43	4764.57	0.40	-0.08	0.034	
52.00	-25.66	-1.28	0.00	-131.52	0.00	131.52	4793.49	2396.75	9472.99	4702.79	0.43	-0.09	0.033	
53.00	-25.25	-1.26	0.00	-130.25	0.00	130.25	3921.66	1960.83	7862.59	3903.32	0.45	-0.09	0.040	
55.00	-24.83	-1.25	0.00	-127.72	0.00	127.72	3903.31	1951.65	7765.73	3855.23	0.49	-0.09	0.039	
60.00	-23.82	-1.22	0.00	-121.46	0.00	121.46	3856.65	1928.33	7524.53	3735.49	0.59	-0.10	0.039	
65.00	-22.81	-1.19	0.00	-115.37	0.00	115.37	3808.89	1904.45	7284.80	3616.48	0.70	-0.11	0.038	
70.00	-21.83	-1.16	0.00	-109.44	0.00	109.44	3760.03	1880.02	7046.68	3498.27	0.82	-0.12	0.037	
75.00	-20.86	-1.13	0.00	-103.65	0.00	103.65	3710.06	1855.03	6810.28	3380.91	0.96	-0.13	0.036	
80.00	-19.91	-1.11	0.00	-97.99	0.00	97.99	3658.99	1829.49	6575.75	3264.48	1.10	-0.14	0.035	
85.00	-18.97	-1.10	0.00	-92.42	0.00	92.42	3606.81	1803.40	6343.20	3149.03	1.26	-0.16	0.035	
90.00	-18.06	-1.10	0.00	-86.92	0.00	86.92	3553.52	1776.76	6112.76	3034.63	1.43	-0.17	0.034	
92.83	-17.54	-1.10	0.00	-83.81	0.00	83.81	3522.83	1761.42	5983.17	2970.30	1.53	-0.17	0.033	
95.00	-16.91	-1.10	0.00	-81.43	0.00	81.43	3499.13	1749.56	5884.57	2921.35	1.61	-0.18	0.033	
98.92	-15.77	-1.10	0.00	-77.14	0.00	77.14	2350.25	1175.12	3954.81	1963.33	1.76	-0.19	0.046	
100.00	-15.62	-1.10	0.00	-75.95	0.00	75.95	2343.93	1171.97	3924.64	1948.36	1.80	-0.19	0.046	
105.00	-14.93	-1.10	0.00	-70.47	0.00	70.47	2314.11	1157.05	3785.67	1879.37	2.00	-0.20	0.044	
110.00	-14.24	-1.10	0.00	-64.98	0.00	64.98	2283.18	1141.59	3647.23	1810.64	2.22	-0.22	0.042	
115.00	-13.57	-1.10	0.00	-59.48	0.00	59.48	2251.15	1125.57	3509.45	1742.24	2.46	-0.23	0.040	
120.00	-12.92	-1.10	0.00	-53.98	0.00	53.98	2218.01	1109.01	3372.44	1674.22	2.70	-0.24	0.038	
125.00	-12.27	-1.10	0.00	-48.48	0.00	48.48	2183.77	1091.88	3236.35	1606.66	2.96	-0.26	0.036	
126.67	-12.06	-1.10	0.00	-46.65	0.00	46.65	2172.08	1086.04	3191.13	1584.21	3.05	-0.26	0.035	
127.00	-11.96	-1.10	0.00	-46.29	0.00	46.29	2169.76	1084.88	3182.20	1579.78	3.07	-0.26	0.035	
130.00	-11.36	-1.10	0.00	-42.99	0.00	42.99	2148.42	1074.21	3101.30	1539.62	3.24	-0.27	0.033	
132.00	-10.96	-1.10	0.00	-40.79	0.00	40.79	1502.55	751.27	2180.88	1082.68	3.35	-0.27	0.045	
135.00	-10.65	-1.10	0.00	-37.51	0.00	37.51	1491.20	745.60	2130.02	1057.43	3.53	-0.28	0.043	
140.00	-10.14	-1.10	0.00	-32.02	0.00	32.02	1471.39	735.69	2045.11	1015.28	3.83	-0.29	0.038	
145.00	-9.64	-1.09	0.00	-26.54	0.00	26.54	1450.46	725.23	1960.22	973.13	4.14	-0.31	0.034	
147.00	-6.59	-1.00	0.00	-24.35	0.00	24.35	1441.79	720.89	1926.30	956.30	4.27	-0.31	0.030	
150.00	-6.35	-0.99	0.00	-21.35	0.00	21.35	1428.44	714.22	1875.49	931.07	4.47	-0.32	0.027	
155.00	-5.95	-0.97	0.00	-16.38	0.00	16.38	1405.30	702.65	1791.05	889.15	4.81	-0.33	0.023	
159.00	-3.53	-0.75	0.00	-12.50	0.00	12.50	1386.00	693.00	1723.78	855.76	5.08	-0.33	0.017	
160.00	-3.47	-0.74	0.00	-11.76	0.00	11.76	1381.06	690.53	1707.02	847.43	5.15	-0.33	0.016	
165.00	-3.14	-0.70	0.00	-8.05	0.00	8.05	1355.72	677.86	1623.53	805.99	5.51	-0.34	0.012	
170.00	-2.82	-0.65	0.00	-4.54	0.00	4.54	1329.27	664.63	1540.71	764.87	5.86	-0.34	0.008	

Calculated Forces

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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175.00	-2.51	-0.58	0.00	-1.31	0.00	1.31	1301.71	650.86	1458.68	724.15	6.23	-0.35	0.004
177.00	-0.17	-0.05	0.00	-0.14	0.00	0.14	1290.38	645.19	1426.13	707.99	6.37	-0.35	0.000
180.00	0.00	-0.04	0.00	0.00	0.00	0.00	1273.05	636.53	1377.59	683.89	6.59	-0.35	0.000

Wind Loading - Shaft

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1

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

10/24/2019



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



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	RB1		1.00	0.85	7.442	8.19	272.60	0.750	0.000	0.00	0.000	0.00	0.0	0.0
5.00			1.00	0.85	7.442	8.19	268.26	0.750	0.000	5.00	24.444	18.33	150.1	0.0
10.00			1.00	0.85	7.442	8.19	263.91	0.750	0.000	5.00	24.051	18.04	147.7	0.0
15.00			1.00	0.85	7.442	8.19	259.56	0.750	0.000	5.00	23.658	17.74	145.2	0.0
17.00	RT1		1.00	0.87	7.631	8.39	261.07	0.750	0.000	2.00	9.353	7.01	58.9	0.0
20.00			1.00	0.90	7.896	8.69	262.89	0.750	0.000	3.00	13.912	10.43	90.6	0.0
25.00			1.00	0.95	8.276	9.10	264.55	0.750	0.000	5.00	22.872	17.15	156.2	0.0
30.00			1.00	0.98	8.600	9.46	265.00	0.750	0.000	5.00	22.479	16.86	159.5	0.0
35.00			1.00	1.01	8.883	9.77	264.59	0.750	0.000	5.00	22.086	16.56	161.9	0.0
40.00			1.00	1.04	9.137	10.05	263.52	0.750	0.000	5.00	21.693	16.27	163.5	0.0
45.00			1.00	1.07	9.366	10.30	261.93	0.750	0.000	5.00	21.300	15.97	164.6	0.0
45.92	Bot - Section 2		1.00	1.07	9.406	10.35	261.59	0.750	0.000	0.92	3.862	2.90	30.0	0.0
50.00			1.00	1.09	9.576	10.53	259.92	0.750	0.000	4.08	17.305	12.98	136.7	0.0
52.00	Appurtenance(s)		1.00	1.10	9.656	10.62	259.01	0.750	0.000	2.00	8.380	6.29	66.8	0.0
53.00	Top - Section 1		1.00	1.11	9.694	10.66	258.54	0.750	0.000	1.00	4.167	3.12	33.3	0.0
55.00			1.00	1.12	9.770	10.75	261.60	0.750	0.000	2.00	8.286	6.21	66.8	0.0
60.00			1.00	1.14	9.951	10.95	258.98	0.750	0.000	5.00	20.440	15.33	167.8	0.0
65.00			1.00	1.16	10.120	11.13	256.10	0.750	0.000	5.00	20.047	15.03	167.4	0.0
70.00			1.00	1.17	10.279	11.31	252.99	0.750	0.000	5.00	19.654	14.74	166.7	0.0
75.00			1.00	1.19	10.430	11.47	249.69	0.750	0.000	5.00	19.261	14.45	165.7	0.0
80.00			1.00	1.21	10.572	11.63	246.21	0.750	0.000	5.00	18.868	14.15	164.6	0.0
85.00			1.00	1.22	10.708	11.78	242.57	0.750	0.000	5.00	18.475	13.86	163.2	0.0
90.00			1.00	1.24	10.838	11.92	238.79	0.750	0.000	5.00	18.082	13.56	161.7	0.0
92.83	Bot - Section 3		1.00	1.25	10.909	12.00	236.59	0.750	0.000	2.83	10.072	7.55	90.6	0.0
95.00			1.00	1.25	10.962	12.06	234.87	0.750	0.000	2.17	7.720	5.79	69.8	0.0
98.92	Top - Section 2		1.00	1.26	11.055	12.16	231.72	0.750	0.000	3.92	13.769	10.33	125.6	0.0
100.00			1.00	1.27	11.081	12.19	234.06	0.750	0.000	1.08	3.766	2.82	34.4	0.0
105.00			1.00	1.28	11.195	12.31	229.94	0.750	0.000	5.00	17.142	12.86	158.3	0.0
110.00			1.00	1.29	11.305	12.44	225.71	0.750	0.000	5.00	16.749	12.56	156.2	0.0
115.00			1.00	1.30	11.412	12.55	221.38	0.750	0.000	5.00	16.356	12.27	154.0	0.0
120.00			1.00	1.32	11.514	12.67	216.97	0.750	0.000	5.00	15.963	11.97	151.6	0.0
125.00			1.00	1.33	11.614	12.78	212.47	0.750	0.000	5.00	15.570	11.68	149.2	0.0
126.67	Bot - Section 4		1.00	1.33	11.646	12.81	210.95	0.750	0.000	1.67	5.113	3.83	49.1	0.0
127.00	Appurtenance(s)		1.00	1.33	11.653	12.82	210.65	0.750	0.000	0.33	1.017	0.76	9.8	0.0
130.00			1.00	1.34	11.710	12.88	207.90	0.750	0.000	3.00	9.171	6.88	88.6	0.0
132.00	Top - Section 3		1.00	1.34	11.748	12.92	206.04	0.750	0.000	2.00	6.045	4.53	58.6	0.0
135.00			1.00	1.35	11.803	12.98	205.84	0.750	0.000	3.00	8.925	6.69	86.9	0.0
140.00			1.00	1.36	11.894	13.08	201.14	0.750	0.000	5.00	14.577	10.93	143.0	0.0
145.00			1.00	1.37	11.982	13.18	196.36	0.750	0.000	5.00	14.184	10.64	140.2	0.0
147.00	Appurtenance(s)		1.00	1.37	12.017	13.22	194.44	0.750	0.000	2.00	5.564	4.17	55.2	0.0
150.00			1.00	1.38	12.068	13.27	191.53	0.750	0.000	3.00	8.227	6.17	81.9	0.0
155.00			1.00	1.39	12.152	13.37	186.64	0.750	0.000	5.00	13.398	10.05	134.3	0.0
159.00	Appurtenance(s)		1.00	1.40	12.217	13.44	182.68	0.750	0.000	4.00	10.436	7.83	105.2	0.0
160.00			1.00	1.40	12.233	13.46	181.69	0.750	0.000	1.00	2.570	1.93	25.9	0.0
165.00			1.00	1.41	12.313	13.54	176.68	0.750	0.000	5.00	12.612	9.46	128.1	0.0
170.00			1.00	1.42	12.390	13.63	171.63	0.750	0.000	5.00	12.219	9.16	124.9	0.0
175.00			1.00	1.42	12.466	13.71	166.53	0.750	0.000	5.00	11.826	8.87	121.6	0.0

Wind Loading - Shaft

Structure: CT01365-S-SBA	Code:	EIA/TIA-222-G	10/24/2019	 Tower Engineering Solutions
Site Name: Norwich 2 CT	Exposure:	C		
Height: 180.00 (ft)	Crest Height:	0.00		
Base Elev: 0.000 (ft)	Site Class:	D - Stiff Soil		
G_h: 1.1	Topography:	I	Struct Class: II	
			Page: 42	
177.00 Appurtenance(s)	1.00	1.43 12.496	13.75 164.47 0.750	0.000 2.00 4.620 3.47 47.6 0.0 128.2
180.00 Appurtenance(s)	1.00	1.43 12.540	13.79 161.38 0.750	0.000 3.00 6.813 5.11 70.5 0.0 189.0
			Totals:	180.00 5,450.0 31,491.9

Discrete Appurtenance Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor 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	180.00	Lightning Rod	1	12.540	13.794	1.00	1.00	0.50	5.00	0.000	0.000	6.90	0.00	0.00
2	177.00	1900MHz RRUs	3	12.496	13.746	0.46	0.80	5.20	132.00	0.000	0.000	71.46	0.00	0.00
3	177.00	APXVSPP18-C-A20	3	12.496	13.746	0.66	0.80	15.98	171.00	0.000	0.000	219.60	0.00	0.00
4	177.00	TD-RRH8x20-25	3	12.496	13.746	0.46	0.80	5.54	210.00	0.000	0.000	76.16	0.00	0.00
5	177.00	APXVTM14-C-120	3	12.496	13.746	0.63	0.80	12.02	168.00	0.000	0.000	165.23	0.00	0.00
6	177.00	ALU 800MHz External	3	12.496	13.746	0.46	0.80	1.07	26.40	0.000	0.000	14.67	0.00	0.00
7	177.00	ACU-A20-N	4	12.496	13.746	0.46	0.80	0.26	4.00	0.000	0.000	3.51	0.00	0.00
8	177.00	Platform w/ Hand Rail	1	12.496	13.746	1.00	1.00	32.00	1600.00	0.000	0.000	439.86	0.00	0.00
9	177.00	800 MHz RRUs	3	12.496	13.746	0.46	0.80	3.41	159.00	0.000	0.000	46.82	0.00	0.00
10	159.00	BXA-171085-8BF-EDIN-2	3	12.217	13.439	0.67	0.80	5.93	31.50	0.000	0.000	79.65	0.00	0.00
11	159.00	B25 RRH4x30	3	12.217	13.439	0.46	0.80	2.93	153.00	0.000	0.000	39.34	0.00	0.00
12	159.00	BXA-80080/4CF	3	12.217	13.439	0.61	0.80	8.76	42.90	0.000	0.000	117.66	0.00	0.00
13	159.00	DB-T1-6Z-8AB-0Z	2	12.217	13.439	0.60	0.90	5.79	37.80	0.000	0.000	77.79	0.00	0.00
14	159.00	B25 RRH4x30	3	12.217	13.439	0.46	0.80	2.93	153.00	0.000	0.000	39.34	0.00	0.00
15	159.00	RRH 4X45-PCS	3	12.217	13.439	0.46	0.80	3.71	180.00	0.000	0.000	49.82	0.00	0.00
16	159.00	Low Profile	1	12.217	13.439	1.00	1.00	22.00	1500.00	0.000	0.000	295.65	0.00	0.00
17	159.00	SBNHH-1D65B	6	12.217	13.439	0.62	0.80	30.25	243.60	0.000	0.000	406.54	0.00	0.00
18	147.00	HPA-65R-BUU-H8	2	12.017	13.219	0.73	0.90	18.92	136.00	0.000	0.000	250.16	0.00	0.00
19	147.00	7770	3	12.017	13.219	0.58	0.80	9.64	105.00	0.000	0.000	127.37	0.00	0.00
20	147.00	Powerwave LGP21401	6	12.017	13.219	0.40	0.80	3.10	114.00	0.000	0.000	40.92	0.00	0.00
21	147.00	Raycap DC6-48-60-18-8F	2	12.017	13.219	0.60	0.90	1.11	65.60	2.383	0.000	14.67	34.95	0.00
22	147.00	Low Profile Platform	1	12.017	13.219	1.00	1.00	22.00	1500.00	0.000	0.000	290.81	0.00	0.00
23	147.00	HPA-65R-BUU-H6	1	12.017	13.219	1.00	1.00	9.66	51.00	2.383	0.000	127.69	304.29	0.00
24	147.00	Ericsson RRUS 4449	3	12.017	13.219	0.46	0.80	2.69	219.00	0.000	0.000	35.62	0.00	0.00
25	147.00	Kathrein 860 10025 RET	12	12.017	13.219	0.40	0.80	0.86	14.40	0.000	0.000	11.42	0.00	0.00
26	147.00	Ericsson RRUS 12	3	12.017	13.219	0.46	0.80	3.69	174.00	0.000	0.000	48.82	0.00	0.00
27	147.00	Ericsson RRUS-A2	3	12.017	13.219	0.46	0.80	2.54	66.00	0.000	0.000	33.63	0.00	0.00
28	147.00	DMP65R-BU6DA	2	12.017	13.219	0.73	0.90	14.08	158.80	0.000	0.000	186.17	0.00	0.00
29	147.00	DMP65R-BU8DA	4	12.017	13.219	0.62	0.80	31.42	382.80	0.000	0.000	415.28	0.00	0.00
30	147.00	Ericsson RRUS 4478 B14	3	12.017	13.219	0.46	0.80	2.26	178.20	0.000	0.000	29.84	0.00	0.00
31	127.00	CS72188.01 LMU	1	11.348	12.483	1.00	1.00	6.41	35.00	3.022	-15.000	80.02	241.78	-1200.25
32	52.00	GPS	1	9.656	10.621	0.80	0.80	0.09	0.20	3.055	0.000	0.93	2.86	0.00

Totals: 8,017.20 3,843.38

Total Applied Force Summary

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



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
5.00		150.07	1518.78	0.00	0.00
10.00		147.66	1496.79	0.00	0.00
15.00		145.25	1474.80	0.00	0.00
17.00		58.88	583.76	0.00	0.00
20.00		90.63	869.05	0.00	0.00
25.00		156.16	1430.82	0.00	0.00
30.00		159.48	1408.83	0.00	0.00
35.00		161.86	1386.84	0.00	0.00
40.00		163.52	1364.85	0.00	0.00
45.00		164.59	1342.86	0.00	0.00
45.92		29.97	243.81	0.00	0.00
50.00		136.71	1899.88	0.00	0.00
52.00	(1) attachments	67.69	920.82	2.86	0.00
53.00		33.32	457.70	0.00	0.00
55.00		66.79	458.15	0.00	0.00
60.00		167.80	1132.19	0.00	0.00
65.00		167.37	1113.37	0.00	0.00
70.00		166.67	1094.54	0.00	0.00
75.00		165.73	1075.72	0.00	0.00
80.00		164.57	1056.89	0.00	0.00
85.00		163.21	1038.06	0.00	0.00
90.00		161.67	1019.24	0.00	0.00
92.83		90.64	569.21	0.00	0.00
95.00		69.82	706.50	0.00	0.00
98.92		125.58	1261.44	0.00	0.00
100.00		34.43	169.06	0.00	0.00
105.00		158.32	771.69	0.00	0.00
110.00		156.21	757.58	0.00	0.00
115.00		153.98	743.47	0.00	0.00
120.00		151.64	729.37	0.00	0.00
125.00		149.18	715.26	0.00	0.00
126.67		49.12	235.75	0.00	0.00
127.00	(1) attachments	89.80	109.69	241.78	-1200.25
130.00		88.59	673.54	0.00	0.00
132.00		58.59	444.74	0.00	0.00
135.00		86.91	343.92	0.00	0.00
140.00		143.04	565.04	0.00	0.00
145.00		140.21	554.04	0.00	0.00
147.00	(45) attachments	1667.58	3383.34	339.24	0.00
150.00		81.91	271.23	0.00	0.00
155.00		134.32	443.25	0.00	0.00
159.00	(24) attachments	1210.99	2688.49	0.00	0.00
160.00		25.93	74.01	0.00	0.00
165.00		128.11	363.46	0.00	0.00
170.00		124.91	352.47	0.00	0.00
175.00		121.63	341.48	0.00	0.00

Total Applied Force Summary

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	(23) attachments	1084.94	2603.91	0.00	0.00
180.00	(1) attachments	77.38	194.05	0.00	0.00
Totals:		9,293.37	44,453.74	583.88	-1,200.25

Linear Appurtenance Segment Forces (Factored)

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	7.442	0.00	0.80
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	7.442	0.00	0.80
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.011	0.000	7.442	0.00	0.80
17.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.012	0.000	7.631	0.00	0.32
20.00	1/2" Coax	Yes	3.00	0.000	0.65	0.16	0.00	0.012	0.000	7.896	0.00	0.48
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	8.276	0.00	0.80
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	8.600	0.00	0.80
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	8.883	0.00	0.80
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.012	0.000	9.137	0.00	0.80
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	9.366	0.00	0.80
45.92	1/2" Coax	Yes	0.92	0.000	0.65	0.05	0.00	0.013	0.000	9.406	0.00	0.15
50.00	1/2" Coax	Yes	4.08	0.000	0.65	0.22	0.00	0.013	0.000	9.576	0.00	0.65
52.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.013	0.000	9.656	0.00	0.32
Totals:										0.0	0.0	8.3

Calculated Forces

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

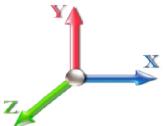
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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 24

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	-44.45	-9.31	-0.58	-1129.0	0.00	1129.06	5397.55	2698.78	12826.5	6367.63	0.00	0.000	0.000	0.141
5.00	-42.93	-9.18	-0.58	-1082.5	0.00	1082.53	5344.66	2672.33	12495.2	6203.15	0.02	-0.035	0.000	0.138
10.00	-41.42	-9.06	-0.58	-1036.6	0.00	1036.62	5290.67	2645.34	12165.4	6039.43	0.08	-0.071	0.000	0.135
15.00	-39.95	-8.93	-0.58	-991.32	0.00	991.32	5235.58	2617.79	11837.2	5876.53	0.17	-0.107	0.000	0.132
17.00	-39.36	-8.88	-0.58	-973.47	0.00	973.47	5213.23	2606.61	11706.5	5811.61	0.22	-0.121	0.000	0.131
17.00	-39.36	-8.88	-0.58	-973.47	0.00	973.47	5213.23	2606.61	11706.5	5811.61	0.22	-0.121	0.000	0.131
20.00	-38.49	-8.81	-0.58	-946.82	0.00	946.82	5179.37	2589.69	11510.9	5714.52	0.30	-0.143	0.000	0.173
25.00	-37.05	-8.68	-0.58	-902.77	0.00	902.77	5122.07	2561.03	11186.5	5553.45	0.47	-0.190	0.000	0.170
30.00	-35.63	-8.55	-0.58	-859.36	0.00	859.36	5063.65	2531.83	10864.1	5393.40	0.70	-0.238	0.000	0.166
35.00	-34.24	-8.41	-0.58	-816.62	0.00	816.62	5004.13	2502.07	10543.8	5234.42	0.97	-0.286	0.000	0.163
40.00	-32.87	-8.26	-0.58	-774.58	0.00	774.58	4943.51	2471.75	10225.9	5076.58	1.30	-0.334	0.000	0.159
45.00	-31.52	-8.11	-0.58	-733.26	0.00	733.26	4881.77	2440.89	9910.40	4919.94	1.68	-0.382	0.000	0.156
45.92	-31.28	-8.09	-0.58	-725.83	0.00	725.83	4870.34	2435.17	9852.83	4891.36	1.75	-0.391	0.000	0.155
50.00	-29.37	-7.95	-0.58	-692.80	0.00	692.80	4818.94	2409.47	9597.43	4764.57	2.10	-0.431	0.000	0.152
52.00	-28.45	-7.89	-0.58	-676.89	0.00	676.89	4793.49	2396.75	9472.99	4702.79	2.29	-0.450	0.000	0.150
53.00	-27.99	-7.86	-0.58	-669.00	0.00	669.00	3921.66	1960.83	7862.59	3903.32	2.38	-0.460	0.000	0.179
55.00	-27.53	-7.80	-0.58	-653.29	0.00	653.29	3903.31	1951.65	7765.73	3855.23	2.58	-0.480	0.000	0.177
60.00	-26.39	-7.65	-0.58	-614.28	0.00	614.28	3856.65	1928.33	7524.53	3735.49	3.11	-0.533	0.000	0.171
65.00	-25.27	-7.50	-0.58	-576.02	0.00	576.02	3808.89	1904.45	7284.80	3616.48	3.70	-0.586	0.000	0.166
70.00	-24.17	-7.34	-0.58	-538.55	0.00	538.55	3760.03	1880.02	7046.68	3498.27	4.34	-0.639	-0.001	0.160
75.00	-23.09	-7.18	-0.58	-501.85	0.00	501.85	3710.06	1855.03	6810.28	3380.91	5.04	-0.691	-0.001	0.155
80.00	-22.03	-7.02	-0.58	-465.95	0.00	465.95	3658.99	1829.49	6575.75	3264.48	5.79	-0.743	-0.001	0.149
85.00	-20.99	-6.87	-0.58	-430.83	0.00	430.83	3606.81	1803.40	6343.20	3149.03	6.59	-0.794	-0.001	0.143
90.00	-19.97	-6.70	-0.58	-396.50	0.00	396.50	3553.52	1776.76	6112.76	3034.63	7.45	-0.844	-0.001	0.136
92.83	-19.40	-6.61	-0.58	-377.51	0.00	377.51	3522.83	1761.42	5983.17	2970.30	7.96	-0.872	-0.001	0.133
95.00	-18.69	-6.54	-0.58	-363.19	-0.01	363.19	3499.13	1749.56	5884.57	2921.35	8.36	-0.894	-0.001	0.130
98.92	-17.43	-6.40	-0.58	-337.57	-0.01	337.57	2350.25	1175.12	3954.81	1963.33	9.11	-0.932	-0.001	0.179
100.00	-17.25	-6.38	-0.58	-330.63	-0.01	330.63	2343.93	1171.97	3924.64	1948.36	9.33	-0.943	-0.001	0.177
105.00	-16.48	-6.22	-0.58	-298.75	-0.01	298.75	2314.11	1157.05	3785.67	1879.37	10.35	-1.002	-0.001	0.166
110.00	-15.72	-6.07	-0.58	-267.64	-0.01	267.64	2283.18	1141.59	3647.23	1810.64	11.43	-1.059	-0.001	0.155
115.00	-14.97	-5.91	-0.58	-237.31	-0.01	237.31	2251.15	1125.57	3509.45	1742.24	12.57	-1.114	-0.001	0.143
120.00	-14.24	-5.76	-0.58	-207.74	-0.01	207.74	2218.01	1109.01	3372.44	1674.22	13.76	-1.166	-0.001	0.131
125.00	-13.53	-5.60	-0.58	-178.95	-0.01	178.95	2183.77	1091.88	3236.35	1606.66	15.01	-1.215	-0.002	0.118
126.67	-13.29	-5.55	-0.58	-169.59	-0.01	169.59	2172.08	1086.04	3191.13	1584.21	15.44	-1.230	-0.002	0.113
127.00	-13.18	-5.46	-0.34	-167.76	0.00	167.76	2169.76	1084.88	3182.20	1579.78	15.52	-1.234	-0.002	0.112
130.00	-12.51	-5.36	-0.34	-151.37	0.00	151.37	2148.42	1074.21	3101.30	1539.62	16.31	-1.260	-0.002	0.104
132.00	-12.06	-5.30	-0.34	-140.62	0.00	140.62	1502.55	751.27	2180.88	1082.68	16.84	-1.277	-0.002	0.138
135.00	-11.72	-5.21	-0.34	-124.74	0.00	124.74	1491.20	745.60	2130.02	1057.43	17.65	-1.302	-0.002	0.126
140.00	-11.15	-5.06	-0.34	-98.68	-0.01	98.68	1471.39	735.69	2045.11	1015.28	19.04	-1.345	-0.002	0.105
145.00	-10.60	-4.92	-0.34	-73.36	-0.01	73.36	1450.46	725.23	1960.22	973.13	20.46	-1.382	-0.002	0.083
147.00	-7.26	-3.17	0.00	-63.53	0.00	63.53	1441.79	720.89	1926.30	956.30	21.05	-1.394	-0.002	0.071
150.00	-6.99	-3.08	0.00	-54.02	0.00	54.02	1428.44	714.22	1875.49	931.07	21.93	-1.411	-0.002	0.063
155.00	-6.55	-2.94	0.00	-38.61	0.00	38.61	1405.30	702.65	1791.05	889.15	23.42	-1.434	-0.002	0.048
159.00	-3.89	-1.66	0.00	-26.86	0.00	26.86	1386.00	693.00	1723.78	855.76	24.63	-1.449	-0.002	0.034
160.00	-3.81	-1.63	0.00	-25.19	0.00	25.19	1381.06	690.53	1707.02	847.43	24.93	-1.452	-0.002	0.032
165.00	-3.45	-1.50	0.00	-17.02	0.00	17.02	1355.72	677.86	1623.53	805.99	26.46	-1.464	-0.002	0.024
170.00	-3.11	-1.36	0.00	-9.54	0.00	9.54	1329.27	664.63	1540.71	764.87	28.00	-1.473	-0.002	0.015
175.00	-2.77	-1.23	0.00	-2.71	0.00	2.71	1301.71	650.86	1458.68	724.15	29.54	-1.478	-0.002	0.006

Calculated Forces

Structure: CT01365-S-SBA

Code: EIA/TIA-222-G

10/24/2019

Site Name: Norwich 2 CT

Exposure: C

Height: 180.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: D - Stiff Soil

Gh: 1.1

Topography: 1

Struct Class: II

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177.00	-0.19	-0.08	0.00	-0.25	0.00	0.25	1290.38	645.19	1426.13	707.99	30.16	-1.478	-0.002	0.000
180.00	0.00	-0.08	0.00	0.00	0.00	0.00	1273.05	636.53	1377.59	683.89	31.09	-1.478	-0.002	0.000

Final Analysis Summary

Structure: CT01365-S-SBA
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

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

10/24/2019



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Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	45.6	0.00	53.27	0.03	1.74	5559.08
0.9D + 1.6W 105 mph Wind	45.6	0.00	39.94	0.02	1.75	5502.22
1.2D + 1.0Di + 1.0Wi 50 mph Wind	10.5	0.00	81.12	0.00	0.59	1308.57
1.2D + 1.0E	1.7	0.00	53.34	0.00	0.00	213.68
0.9D + 1.0E	1.7	0.00	40.01	0.00	0.00	211.31
1.0D + 1.0W 60 mph Wind	9.3	0.00	44.45	0.00	0.58	1129.06

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 105 mph Wind	-18.55	-31.57	-1.75	-1663.4	-0.08	-1663.4	2350.25	1175.1	3954.81	1963.33	98.92	0.856
0.9D + 1.6W 105 mph Wind	-13.34	-31.14	-1.75	-1636.7	-0.08	-1636.7	2350.25	1175.1	3954.81	1963.33	98.92	0.840
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-38.88	-7.48	-0.58	-397.83	-0.01	-397.83	2350.25	1175.1	3954.81	1963.33	98.92	0.219
1.2D + 1.0E	-21.03	-1.11	0.00	-78.32	0.00	-78.32	2350.25	1175.1	3954.81	1963.33	98.92	0.049
0.9D + 1.0E	-15.77	-1.10	0.00	-77.14	0.00	-77.14	2350.25	1175.1	3954.81	1963.33	98.92	0.046
1.0D + 1.0W 60 mph Wind	-17.43	-6.40	-0.58	-337.57	-0.01	-337.57	2350.25	1175.1	3954.81	1963.33	98.92	0.179

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Lower Termination			Upper Termination			Max Member					
			VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	Vn (kips)	Num Req'd	Num Actual	MQ/I (kips)	Vn (kips)	Num Req'd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	
0.0	17.0	(3) PLT-7.5"x1.25"(1.25"hole)	295.3	5.32	37.1	409.4	37.1	12	14	389.7	37.1	11	14	409.37	516.9	468.75	0.873

Base Plate Summary

Structure: CT01365-S-SB
Site Name: Norwich 2 CT
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

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

10/24/2019

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Reactions		Base Plate		Anchor Bolts	
Original Design		Yield (ksi):	60.00	Bolt Circle:	66.55
Moment (kip-ft):	4948.00	Width (in):	72.55	Number Bolts:	20.00
Axial (kip):	54.00	Style:	Polygon	Bolt Type:	2.25" 18J
Shear (kip):	38.80	Polygon Sides:	16.00	Bolt Diameter (in):	2.25
Analysis		Clip Length (in):	0.00	Yield (ksi):	75.00
Moment (kip-ft):	5559.08	Effective Len (in):	14.16	Ultimate (ksi):	100.00
Axial (kip):	81.12	Moment (kip-in):	813.18	Arrangement:	Radial
Shear (kip):	45.62	Allow Stress (ksi):	81.00	Cluster Dist (in):	0.00
		Applied Stress (ksi):	0.00	Start Angle (deg):	0.00
Moment Design %:	112.35	Stress Ratio:	0.56	Compression	
				Force (kip):	165.01
				Allowable (kip):	260.00
				Ratio:	0.65
				Tension	
				Force (kip):	156.89
				Allowable (kip):	260.00
				Ratio:	0.62

	Monopole Mat Foundation Design			Date 10/24/2019
	Customer Name:	AT&T	EIA/TIA Standard:	EIA-222-G
	Site Name:		Structure Height (Ft.):	180
	Site Number:	CT01365-S-SBA	Engineer Name:	D. Zhou
	Engr. Number:	88257	Engineer Login ID:	

Foundation Info Obtained from:

Structure Type: Monopole

Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	53.3	Shear Force (Kips):	45.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5559.1

Allowable overstress %: 5.0%

Foundation Geometries:

Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	11.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft.):	2.50
Length of Pad (ft.):	22.5	Width of Pad (ft.):	22.5

Final Length of pad (ft) 22.5 Final width of pad (ft): 22.5

Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	10	
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):	20	Qty. of Rebar in Pad (W):	20	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	20	Qty. of Rebar in Pad (W):	20	

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft.):	7.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	10000	Ultimate Skin Friction:	175	Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	Angle from Top of Pad: 30
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00	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.):	3191.89	Total Dry Soil Weight (Kips):	398.99
Total Buoyant Soil Volume (cu. Ft.):	743.18	Total Buoyant Soil Weight (Kips):	37.16
Total Effective Soil Weight (Kips):	436.15	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	376.99	Total Dry Concrete Weight (Kips):	56.55
Total Buoyant Concrete Volume (cu. Ft.):	1341.02	Total Buoyant Concrete Weight (Kips):	117.47
Total Effective Concrete Weight (Kips):	174.02	Total Vertical Load on Base (Kips):	663.44

Check Soil Capacities:

Calculated Maximum Net Soil Pressure under the base (psf):	6970	< Allowable Factored Soil Bearing (psf):	7500	0.93	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	6747.3	> Design Factored Moment (kips-ft):	6083	0.90	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.11	OK!			

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		
Load/ Capacity Ratio					
(1) Concrete Pier:					
Vertical Steel Rebar Area (sq. in./each):	1.27	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	8888.9	> Design Factored Moment (Mu, Kips-Ft):	5969.5	0.67	OK!
Calculated Shear Capacity (Kips):	845.4	> Design Factored Shear (Kips):	45.6	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	2468.9	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	12716.4	> Design Factored Axial Load (Pu Kips):	53.3	0.00	OK!
Moment & Axial Strength Combination:	0.67	OK! Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	675.6	> One-Way Factored Shear (L-D. Kips):	402.1	0.60	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	675.6	> One-Way Factored Shear (W-D., Kips)	402.1	0.60	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	583.2	> One-Way Factored Shear (C-C, Kips):	399.6	0.69	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0036	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0036		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2919.8	> Moment at Bottom (L-Dir. K-Ft):	1710.4	0.59	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2919.8	> Moment at Bottom (W-Dir. K-Ft):	1710.4	0.59	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	4084.1	> Moment at Bottom (C-C Dir. K-Ft):	2418.9	0.59	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0036	OK! Upper Steel Reinf. Ratio (W-Dir.):	0.0036		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	2919.8	> Moment at the top (L-Dir K-Ft):	687.8	0.24	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	2919.8	> Moment at the top (W-Dir K-Ft):	687.8	0.24	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	4084.1	> Moment at the top (C-C Dir. K-Ft):	655.0	0.16	OK!

(3).Check Punching Shear Capacity due to Moment in the Pier:

Moment transferred by punching shear:	2223.6	k-ft.	Max. factored shear stress v_{u_CD} :	5.1	Psi
Max. factored shear stress v_{u_AB} :	13.7	Psi	Factored shear Strength ϕv_n :	189.7	Psi
Max. factored shear stress v_u :	13.7	Psi	Check Usage of Punching Shear Capacity:	0.07	OK!



Non-Ionizing Radiation Report

Compiled For: Smartlink on behalf of AT&T

Site Name: Norwich Plain Hill Road

Site FA: 10035339

Site ID: CTL02026

300 Plain Hill Road, Norwich, CT 06280

Latitude: 41.578186 Longitude: -72.103666

Structure Type: Monopole

Report Date: October 4, 2019



Status: AT&T will be compliant with FCC rules on RF Exposure with the signage recommendation in section 4 of this report.

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1. Executive Summary:

Smartlink on behalf of AT&T has contracted Infinigy Solutions, LLC to determine whether the site Norwich Plain Hill Road located at 300 Plain Hill Road in Norwich, CT Will Be Compliant with all Federal Communications Commission (FCC) rules and regulations for radio frequency (RF) exposure as indicated in **47CFR§1.1310**.

The report incorporates a theoretical RF field analysis in accordance with the FCC Rules and Regulations for all individuals classified as "Occupational or Controlled" and "General Public or Uncontrolled" (see Appendix A and B).

This document and the conclusions herein are based on information provided by Smartlink on behalf of AT&T.

As a result of the analysis, **AT&T Will Be Compliant with FCC rules with the installation of signage recommended in section 4.**

Engineering assumptions were made regarding the collation operator(s). The assumptions were made based upon typical deployment configurations and practices of the operator(s).

All Carriers, All Bands Cumulative Exposure %		
Uncontrolled / General Population	Exposure values at the site (mW/cm ²)	0.0179
	% Exposure	2.12%
Controlled / Occupational	Exposure values at the site (mW/cm ²)	0.0149
	% Exposure	0.45%

2. Site Summary:

Site Information	
Site Name: Norwich Plain Hill Road	
Site Address: 300 Plain Hill Road, Norwich, CT 06280	
Site Type: Monopole	
Compliance Status	Will Be Compliant
Mitigation Required	No
Signage Required	Yes
Barriers Required	No
Access Locked	No
Area Controlled or Uncontrolled	Uncontrolled

3. Site Compliance

This report also incorporates overview of the site information:

- Antenna Inventory Table
- Calculation Tables showing exposure for each carrier transmit frequency
- Total exposure for all carriers existing and proposed at ground level considering the centerline of all antennas and horizontal distance from the tower.
- Maximum Effective Radiated Power Assumed as Worst Case for Calculations used in this study
- Calculations based on flat ground around base of the structure

4. Site Compliance Recommendations

Infinigy recommends the following upon the installation of antennas at the site:

Base of tower

Caution 2 sign.

Note: The above signage recommendation is moot if there is an existing caution 2 sign at the base of the tower.

5. Antenna Inventory Table

Ant ID	Sector	Operator	Antenna manufacturer	Antenna Model	Operating Frequency	Rad Ctr (Ft)	Total ERP Power (Watts)
1	Alpha	AT&T	Powerwave	7770	850	147	286
2	Alpha	AT&T	CCI	HPA65R-BU8	850	147	129
3a	Alpha	AT&T	CCI	DMP65R-BU6DA	700	147	2951
3b	Alpha	AT&T	CCI	DMP65R-BU6DA	1900	147	3664
4a	Alpha	AT&T	CCI	DMP65R-BU8D	700	147	1475
4b	Alpha	AT&T	CCI	DMP65R-BU8D	850	147	1000
4c	Alpha	AT&T	CCI	DMP65R-BU8D	850	147	1000
5	Beta	AT&T	Powerwave	7770	850	147	286
6	Beta	AT&T	CCI	HPA65R-BU8	850	147	144
7a	Beta	AT&T	CCI	DMP65R-BU8D	700	147	2951
7b	Beta	AT&T	CCI	DMP65R-BU8D	1900	147	3664
8a	Beta	AT&T	CCI	DMP65R-BU8D	700	147	1475
8b	Beta	AT&T	CCI	DMP65R-BU8D	850	147	1000
8c	Beta	AT&T	CCI	DMP65R-BU8D	850	147	1000
9	Gamma	AT&T	Powerwave	7770	850	147	286
10	Gamma	AT&T	CCI	HPA65R-BU8	850	147	129
11a	Gamma	AT&T	CCI	DMP65R-BU6DA	700	147	2951
11b	Gamma	AT&T	CCI	DMP65R-BU6DA	1900	147	3664
12a	Gamma	AT&T	CCI	DMP65R-BU8D	700	147	1475
12b	Gamma	AT&T	CCI	DMP65R-BU8D	850	147	1000
12c	Gamma	AT&T	CCI	DMP65R-BU8D	850	147	1000
10	Alpha	Verizon Wireless	Commscope	NNH-65C-R2B	700	159	1497
11	Alpha	Verizon Wireless	Commscope	NNH-65C-R2B	2100	159	1990
12	Alpha	Verizon Wireless	Commscope	NNH-65C-R2B	1900	159	1799
13	Alpha	Verizon Wireless	Commscope	NNH-65C-R2B	850	159	1493

Ant ID	Sector	Operator	Antenna manufacturer	Antenna Model	Operating Frequency	Rad Ctr (Ft)	Total ERP Power (Watts)
14	Beta	Verizon Wireless	Commscope	NNH-65C-R2B	700	159	1497
15	Beta	Verizon Wireless	Commscope	NNH-65C-R2B	2100	159	1990
16	Beta	Verizon Wireless	Commscope	NNH-65C-R2B	1900	159	1799
17	Beta	Verizon Wireless	Commscope	NNH-65C-R2B	850	159	1493
18	Gamma	Verizon Wireless	Commscope	NNH-65C-R2B	700	159	1497
19	Gamma	Verizon Wireless	Commscope	NNH-65C-R2B	2100	159	1990
20	Gamma	Verizon Wireless	Commscope	NNH-65C-R2B	1900	159	1799
21	Gamma	Verizon Wireless	Commscope	NNH-65C-R2B	850	159	1493
22	Alpha	Sprint	RFS	APXVAARR18_N43-U-NA20	1900	177	1605
23a	Alpha	Sprint	Commscope	DT465B-2XR-V2	850	177	1774
23b	Alpha	Sprint	Commscope	DT465B-2XR-V2	2500	177	1835
24	Beta	Sprint	RFS	APXVAARR18_N43-U-NA20	1900	177	1605
25a	Beta	Sprint	Commscope	DT465B-2XR-V2	850	177	1774
25b	Beta	Sprint	Commscope	DT465B-2XR-V2	2500	177	1835
26	Gamma	Sprint	RFS	APXVAARR18_N43-U-NA20	1900	177	1605
27a	Gamma	Sprint	Commscope	DT465B-2XR-V2	850	177	1774
27b	Gamma	Sprint	Commscope	DT465B-2XR-V2	2500	177	1835

6. RF Guidelines

To ensure safety of company workers, the following points need to be taken into consideration and implemented at wireless sites in accordance with the Carriers policies:

- a) Worksite: Any employee at the site should avoid working directly in front of the antenna or in areas predicted to exceed general population exposure limits by 100%. Workers should insist that the transmitters be switched off during the work period.
- b) RF Safety Training and Awareness: All employees working in areas exceeding the general population limits should have a basic awareness of RF safety measures. Videos, classroom lectures and online courses are all appropriate training methods on these topics.
- c) Site Access: Restricting access to transmitting antenna locations is one of the most important elements of RF safety. This can be done with:
 - Locked doors/gates/ladder access
 - Alarmed doors
 - Restrictive barriers
- d) Three-foot Buffer: There is an inverse relationship between the strength of the field and the distance from the antenna. The RF field diminishes with distance from the antenna. Workers should maintain a three-foot distance from the antennas.
- e) Antennas: Workers should always assume that the antenna is transmitting and should never stop right in front of the antenna. If someone must pass by an antenna, he/she should move quickly, thus reducing RF exposure.

Attachment 1: AT&T Exposure Analysis

AT&T 700 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.5
	Exposure values at the site (mW/cm ²)	0.0033
	% Exposure	0.67%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.3
	Exposure values at the site (mW/cm ²)	0.0033
	% Exposure	0.14%

AT&T 850 MHz UMTS		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.6
	Exposure values at the site (mW/cm ²)	0.0002
	% Exposure	0.04%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.8
	Exposure values at the site (mW/cm ²)	0.0002
	% Exposure	0.01%

AT&T 850 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.6
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.14%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.8
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.03%

AT&T 850 MHz 5G		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.6
	Exposure values at the site (mW/cm ²)	0.0008
	% Exposure	0.13%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.8
	Exposure values at the site (mW/cm ²)	0.0008
	% Exposure	0.03%

AT&T 1900 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0028
	% Exposure	0.28%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0028
	% Exposure	0.06%

Attachment 2: Verizon Wireless Exposure Analysis

Verizon Wireless 700 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.5
	Exposure values at the site (mW/cm ²)	0.0010
	% Exposure	0.19%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.3
	Exposure values at the site (mW/cm ²)	0.0010
	% Exposure	0.04%

Verizon Wireless 850 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.6
	Exposure values at the site (mW/cm ²)	0.0010
	% Exposure	0.16%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	2.8
	Exposure values at the site (mW/cm ²)	0.0010
	% Exposure	0.03%

Verizon Wireless 1900 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0012
	% Exposure	0.12%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0012
	% Exposure	0.02%

Verizon Wireless 2100 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm^2)	1.0
	Exposure values at the site (mW/cm^2)	0.0013
	% Exposure	0.13%
Controlled / Occupational	FCC's Exposure limits(mW/cm^2)	5.0
	Exposure values at the site (mW/cm^2)	0.0013
	% Exposure	0.03%

Attachment 3: Sprint Exposure Analysis

Sprint 862 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	0.6
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.16%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.0188%

Sprint 1900 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.09%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0009
	% Exposure	0.0171%

Sprint 2500 MHz LTE		
Uncontrolled / General Population	FCC's exposure limits (mW/cm ²)	1.0
	Exposure values at the site (mW/cm ²)	0.0010
	% Exposure	0.10%
Controlled / Occupational	FCC's Exposure limits(mW/cm ²)	5.0
	Exposure values at the site (mW/cm ²)	0.0010
	% Exposure	0.0195%

Attachment 4: Combined Exposure Analysis for each Carrier

AT&T All Bands		
Uncontrolled / General Population	Exposure values at the site (mW/cm ²)	0.0079
	% Exposure	1.25%
Controlled / Occupational	Exposure values at the site (mW/cm ²)	0.0079
	% Exposure	0.27%

Verizon Wireless All Bands		
Uncontrolled / General Population	Exposure values at the site (mW/cm ²)	0.0044
	% Exposure	0.60%
Controlled / Occupational	Exposure values at the site (mW/cm ²)	0.0044
	% Exposure	0.13%

Sprint All Bands		
Uncontrolled / General Population	Exposure values at the site (mW/cm ²)	0.0028
	% Exposure	0.34%
Controlled / Occupational	Exposure values at the site (mW/cm ²)	0.0028
	% Exposure	0.06%

7. Appendix A: FCC Guidelines

FCC Policies

The Federal Communications Commission (FCC) in 1996 implemented regulations and policies for analysis of RF propagation to evaluate RF emissions. All the analysis and results of this report are compared with FCC's (Federal Communications Commission) rules to determine whether a site is compliant for Occupational/Controlled or General Public/Uncontrolled exposure. All the analysis of RF propagation is done in terms of a percentage. The limits primarily indicate the power density and are generally expressed in terms of milliwatts per centimeter square, mW/cm².

FCC guidelines incorporate two separate tiers of exposure limits that are dependent on the scenario/ situation in which that exposure takes place or the status of the individuals who are subjected to that exposure. The decision as to which tier is applied to a scenario is based on the following definitions:

Occupational / Controlled

These limits apply in situations when someone is exposed to RF energy through his/her occupation, is fully aware of the harmful effects of the RF exposure and has an ability to exercise control over this exposure. Occupational / controlled exposure limits also apply when 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. limits for Occupational/Controlled exposure can be found on Table 1(A).

General Population / Uncontrolled

These limits apply to situations in which the general public may be exposed or in which persons who are exposed because of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure to RF. Therefore, members of the general public would always be considered under this category, for example, in the case of a telecommunications tower that exposes people in a nearby residential area. Exposure limits for General Population/Uncontrolled can be found on Table 1(B).

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

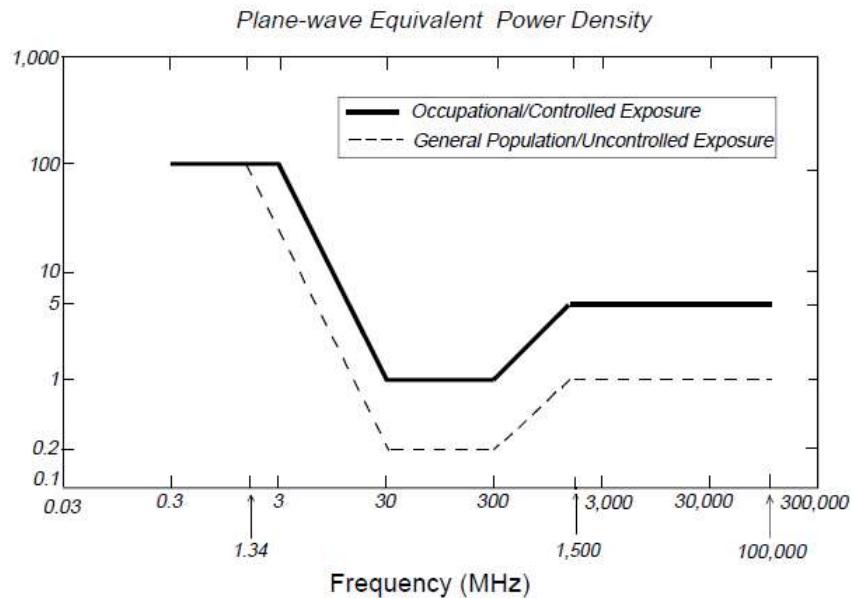
(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

Figure 1. FCC Limits for Maximum Permissible Exposure (MPE)



OSHA Statement:

The objective of the OSHA Act is to ensure the safety and health of the working men and women by enforcing certain standards. The act also assists and encourages the states in their efforts to ensure safe and healthy working conditions through means of research, information, education and training in the field of occupational safety and health and for other purposes.

According to OSHA Act section 5, important duties to be considered are:

(a) Each employer

- 1) Shall furnish to each of his employees' employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious harm to his employees
- 2) Shall comply with occupational safety and health standards promulgated under this act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

8. Appendix B: Preparer Certification

I, Tim Harris, preparer of this report, certify that I am fully trained and aware of the rules and regulations of both the Federal Communications Commission and the Occupational Safety and Health Administration regarding Human Exposure to Radio Frequency Radiation. In addition, I have been trained in 1) RF safety and 2) RF modeling using RoofView modeling software.

I certify that the information contained in this report is true and correct to the best of my knowledge.

Timothy A. Harris

Signature

10/4/2019

Date

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Monday, November 4, 2019 3:32 PM
To: Kristina Cottone
Subject: FedEx Shipment 776842948479 Delivered

Your package has been delivered

Tracking # 776842948479

Ship date:
Fri, 11/1/2019

Kristina Cottone
Smartlink LLC
NORTH BILLERICA, MA 01862
US

Delivery date:
Mon, 11/4/2019 3:30 pm

Kelvin H. Scott & Frances S. Scott
KELVIN H. SCOTT & FRANCES S. SCOTT
300 PLAIN HILL RD
NORWICH, CT 06360940100
US

Delivered

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: [776842948479](#)

Status: Delivered: 11/04/2019 3:30 PM

Reference: CTL02026 - Norwich

Delivery location: Norwich, CT

Service type: FedEx Ground

Packaging type: Package

Number of pieces: 1

Weight: 1.00 lb.

Standard transit: 11/4/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 2:32 PM CST on 11/04/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Tuesday, November 5, 2019 12:28 PM
To: Kristina Cottone
Subject: FedEx Shipment 776842969801 Delivered

Your package has been delivered

Tracking # 776842969801

Ship date:
Fri, 11/1/2019

Kristina Cottone
Smartlink LLC
NORTH BILLERICA, MA 01862
US

Delivery date:
Tue, 11/5/2019 12:23
pm

Carla Shorter
SBA COMMUNICATIONS
CORP.
8051 CONGRESS AVE
BOCA RATON, FL
33487131099
US

Delivered

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	<u>776842969801</u>
Status:	Delivered: 11/05/2019 12:23 PM Signed for By: MILLER
Reference:	CTL02026 - Norwich
Signed for by:	MILLER
Service type:	FedEx Ground
Packaging type:	Package
Number of pieces:	1
Weight:	1.00 lb.
Standard transit:	11/6/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 11:28 AM CST on 11/05/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Monday, November 4, 2019 11:09 AM
To: Kristina Cottone
Subject: FedEx Shipment 776842917458 Delivered

Your package has been delivered

Tracking # 776842917458

Ship date: Fri, 11/1/2019	Delivery date: Mon, 11/4/2019 11:07 am
Kristina Cottone Smartlink LLC NORTH BILLERICA, MA 01862 US	Peter A. Nystrom CITY OF NORWICH 100 BROADWAY NORWICH, CT 06360443199 US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	776842917458
Status:	Delivered: 11/04/2019 11:07 AM Signed for By: JJOSH
Reference:	CTL02026 - Norwich
Signed for by:	JJOSH
Delivery location:	Norwich, CT
Service type:	FedEx Ground
Packaging type:	Package
Number of pieces:	1
Weight:	1.00 lb.
Standard transit:	11/4/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 10:08 AM CST on 11/04/2019.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Kristina Cottone

From: TrackingUpdates@fedex.com
Sent: Monday, November 4, 2019 11:13 AM
To: Kristina Cottone
Subject: FedEx Shipment 776842889947 Delivered

Your package has been delivered

Tracking # 776842889947

Ship date:
Fri, 11/1/2019

Kristina Cottone
Smartlink LLC
NORTH BILLERICA, MA 01862
US

Delivery date:
Mon, 11/4/2019 11:10
am

Jim Troeger- Building
Enforcement
JIM TROEGER- BUILDING
ENFORCEMENT
23 UNION ST
NORWICH, CT 06360441623
US

Delivered

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number: 776842889947

Status: Delivered: 11/04/2019 11:10
AM Signed for By: RSHUK

Reference: CTL02026 - Norwich

Signed for by: RSHUK

Delivery location: Norwich, CT

Service type: FedEx Ground

Packaging type: Package

Number of pieces: 1

Weight: 1.00 lb.

Standard transit: 11/4/2019

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 10:12 AM CST on 11/04/2019.

All weights are estimated.

SHEET INDEX

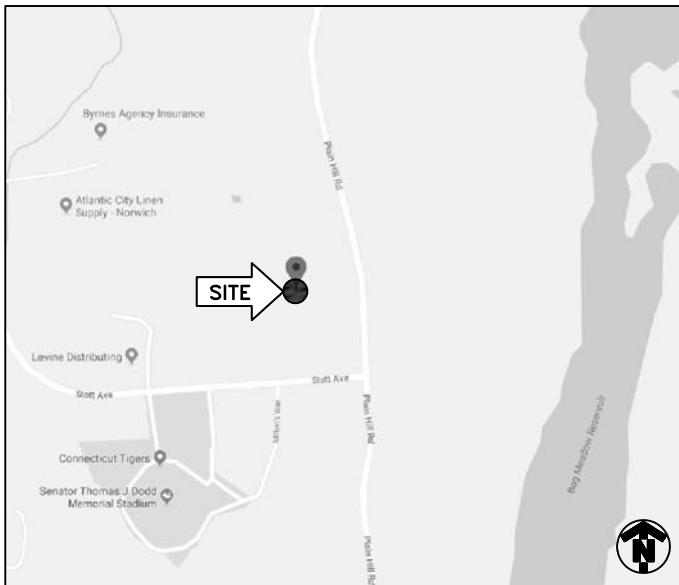
NO.	DESCRIPTION
T1	TITLE SHEET
C1	GENERAL NOTES
C2	OVERALL SITE PLAN
C2A	ENLARGED SITE PLAN
C3	ELEVATION VIEW
C4	ANTENNA ORIENTATION PLAN
C5	EQUIPMENT DETAILS
C6	PLUMBING DIAGRAM
C7	GROUNDING DETAILS

DRIVING DIRECTIONS

FROM 550 COCHITIATE RD.:

GET ON I-90 WEST/MASSACHUETTS TURNPIKE. HEAD NORTHWEST TOWARD LEGGATT MCCALL CONN. TURN LEFT ONTO LEGGATT MCCALL CONN. CONTINUE ONTO BURR STREET. TURN LEFT ONTO COCHITIATE ROAD. USE THE RIGHT LANE TO TAKE THE RAMP TO I-90 EAST/MASSPIKE WEST/SPRINGFIELD/BOSTON. KEEP LEFT AT THE FORK. FOLLOW SIGNS FOR I-90 WEST/MASSACHUETTS TURNPIKE/WORCESTER/SPRINGFIELD AND MERGE ONTO I-90 WEST/MASSACHUETTS TURNPIKE. FOLLOW I-90 WEST/MASSACHUETTS TURNPIKE AND I-395 SOUTH TO WEST TOWN STREET IN NORWICH. TAKE EXIT 14 FROM I-395 SOUTH. MERGE ONTO I-90 WEST/MASSACHUETTS TURNPIKE. TAKE EXIT 10 TOWARD MA-12 NORTH/AUBURN/WORCESTER. KEEP RIGHT AT THE FORK. FOLLOW SIGNS FOR I-395 SOUTH/US-20 EAST/NORWICH CT AND MERGE ONTO I-395 SOUTH. TAKE EXIT 14 TOWARD CT-2 WEST/CT-32 NORTH/HARTFORD/COLCHESTER. DRIVE TO PLAIN HILL ROAD. TURN RIGHT ONTO WEST TOWN STREET. TURN RIGHT ONTO HUNTINGTON AVE. CONTINUE ONTO PLAIN HILL ROAD.

LOCATION MAP



PROJECT LTE 3C/4C/RETROFIT

SITE NAME NORWICH PLAIN HILL ROAD

CELL SITE ID

CTL02026

FA SITE NUMBER

10035339

PACE ID

MRCTB040760/MRCTB040401/MRCTB040381

SITE ADDRESS

300 PLAIN HILL ROAD
NORWICH, CT 06360

STRUCTURE TYPE

MONOPOLE

PROJECT TEAM



PROJECT MANAGER

1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

ENGINEER

SCOPE OF WORK (PER LTE RFDS, DATED 07/31/2019 V3.00):

- HANDICAP ACCESS REQUIREMENTS ARE NOT REQUIRED.
 - FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
 - FACILITY HAS NO PLUMBING OR REFRIGERANTS.
 - THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REGULATORY REQUIREMENTS.
 - ALL NEW MATERIAL SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE. EQUIPMENT, ANTENNAS/RRU AND CABLES FURNISHED BY OWNER AND INSTALLED BY CONTRACTOR.
- TOWER**
- REMOVE (3) PANEL ANTENNAS
 - INSTALL (6) PANEL ANTENNAS
 - REMOVE (3) RRUS-11 B12
 - INSTALL (3) B14 4478
 - INSTALL (3) 4449 B5/B12
 - INSTALL (1) DC6 SQUID WITH (1) FIBER AND (2) DC CABLES
- GROUND**
- SWAP BB WITH (2) 6630
 - ADD IDLE CABLE
 - RETAIN XMU

PROJECT SUMMARY

SITE NAME:	NORWICH PLAIN HILL ROAD
CELL SITE ID:	CTL02026
FA SITE #:	10035339
SITE ADDRESS:	300 PLAIN HILL ROAD NORWICH, CT 06360
COUNTY:	NEW LONDON
SITE COORDINATES:	
LATITUDE:	41.5781861° N
LONGITUDE:	72.1036661° W
RAD CENTER	±147' (AGL)
LANDLORD:	SBA COMMUNICATIONS
APPLICANT:	AT&T MOBILITY 550 COCHITIATE RD. FRAMINGHAM, MA 01701
CLIENT REPRESENTATIVE:	SMARTLINK, LLC 85 RANGEWAY RD., BUILDING 3, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	SHARON KEEFE (978) 930-3918
ENGINEER:	INFINIGY 1033 WATERVLIET SHAKER ROAD ALBANY, NY 12205
CONTACT:	ALEX WELLER (518) 690-0790
BUILDING CODE:	2018 CT STATE BUILDING CODE 2015 INTERNATIONAL BUILDING CODE ANSI/TIA-222 G 2015 INTERNATIONAL PLUMBING CODE 2015 INTERNATIONAL MECHANICAL CODE 2015 INTERNATIONAL ENERGY CONSERVATION CODE 2017 NFPA 70
ELECTRICAL CODE:	NATIONAL ELECTRICAL CODE (LATEST EDITION)

INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793



STATE OF CONNECTICUT
JOINT STAFF STATEMENT
10/14/2019
24705
LICENSED
BY THE STATE OF CONNECTICUT
TO OPERATE AN AMATEUR RADIO STATION
TO THIS DOCUMENT IS A VIOLATION OF
APPLICABLE STATE AND/OR LOCAL LAWS

1	ISSUED FOR PERMIT	BMM	10/11/19
0	ISSUED FOR REVIEW	BMM	10/02/19
No.	Submittal / Revision	App'd	Date
Drawn:	BMM	Date:	10/02/19
Designed:	ASW	Date:	10/02/19
Checked:	AJD	Date:	10/02/19

Project Number:
499-006

Project Title:
NORWICH PLAIN
HILL ROAD
CTL02026
FA# 10035339
300 PLAIN HILL ROAD
NORWICH, CT 06360

Prepared For:



Drawing Scale:
AS NOTED
Date:
10/11/19

Drawing Title:

TITLE PAGE

Drawing Number:

T1



GENERAL NOTES

PART 1 – GENERAL REQUIREMENTS

- 1.1 THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
 A. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
 B. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
 C. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE - "NEC").
 D. AND NFPA 101 (LIFE SAFETY CODE).
 E. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM).
 F. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE).
- 1.2 DEFINITIONS:
 A: WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
 B: COMPANY: AT&T CORPORATION
 C: ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
 D: CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
 E: THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
- 1.3 POINT OF CONTACT: COMMUNICATION BETWEEN THE COMPANY AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE COMPANY SITE DEVELOPMENT SPECIALIST OR OTHER PROJECT COORDINATOR APPOINTED TO MANAGE THE PROJECT FOR THE COMPANY.
- 1.4 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
- 1.5 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES, AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
 A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
- 1.6 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.
- 1.7 NOTICE TO PROCEED:
 A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED.
 B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE AT&T WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – EXECUTION

- 2.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE, POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.
- 2.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.
- 2.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITHE, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

- 2.4 COMPANY FURNISHED MATERIAL AND EQUIPMENT: ALL HANDLING, STORAGE AND INSTALLATION OF COMPANY FURNISHED MATERIAL AND EQUIPMENT SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
 A. CONTRACTOR SHALL PURCHASE ALL OTHER REQUIRED WORK RELATED MATERIALS NOT PROVIDED BY AT&T TO SUCCESSFULLY CONSTRUCT A WIRELESS FACILITY.
- 2.5 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.
- 2.6 EXISTING CONDITIONS: NOTIFY THE COMPANY REPRESENTATIVE OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

PART 3 – RECEIPT OF MATERIAL & EQUIPMENT

- 3.1 RECEIPT OF MATERIAL AND EQUIPMENT: CONTRACTOR IS RESPONSIBLE FOR AT&T PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
 A. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
 B. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
 C. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
 D. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO AT&T OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
 E. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
 F. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

PART 4 – GENERAL REQUIREMENTS FOR CONSTRUCTION

- 4.1 CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- 4.2 EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- 4.3 CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 A. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
 B. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- 4.4 CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION.
- 4.5 CONDUCT TESTING AS REQUIRED HEREIN.

PART 5 – TESTS AND INSPECTIONS

- 5.1 TESTS AND INSPECTIONS:
 A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
 B. CONTRACTOR SHALL COORDINATE TEST AND INSPECTION SCHEDULES WITH COMPANY'S REPRESENTATIVE WHO MUST BE ON SITE TO WITNESS SUCH TESTS AND INSPECTIONS.
 C. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
 D. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
 E. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.

- F. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
- G. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

PART 6 – TRENCHING AND BACKFILLING

- 6.1 TRENCHING AND BACKFILLING: THE CONTRACTOR SHALL PERFORM ALL EXCAVATION OF EVERY DESCRIPTION AND OF WHATEVER SUBSTANCES ENCOUNTERED, TO THE DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR AS OTHERWISE SPECIFIED.
 A. PROTECTION OF EXISTING UTILITIES: THE CONTRACTOR SHALL CHECK WITH THE LOCAL UTILITIES AND THE RESPECTIVE UTILITY LOCATOR COMPANIES PRIOR TO STARTING EXCAVATION OPERATIONS IN EACH RESPECTIVE AREA TO ASCERTAIN THE LOCATIONS OF KNOWN UTILITY LINES. THE LOCATIONS, NUMBER AND TYPES OF EXISTING UTILITY LINES DETAILED ON THE CONSTRUCTION DRAWINGS ARE APPROXIMATE AND DO NOT REPRESENT EXACT INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ALL LINES DAMAGED DURING EXCAVATION AND ALL ASSOCIATED OPERATIONS. ALL UTILITY LINES UNCOVERED DURING THE EXCAVATION OPERATIONS, SHALL BE PROTECTED FROM DAMAGE DURING EXCAVATION AND ASSOCIATED OPERATIONS. ALL REPAIRS SHALL BE APPROVED BY THE UTILITY COMPANY.
- B. HAND DIGGING: UNLESS APPROVED IN WRITING OTHERWISE, ALL DIGGING WITHIN AN EXISTING CELL SITE COMPOUND IS TO BE DONE BY HAND.
- C. DURING EXCAVATION, MATERIAL SUITABLE FOR BACKFILLING SHALL BE STOCKPILED IN AN ORDERLY MANNER A SUFFICIENT DISTANCE FROM THE BANKS OF THE TRENCH TO AVOID OVERLOADING AND TO PREVENT SLIDES OR CAVE-INS. ALL EXCAVATED MATERIALS NOT REQUIRED OR SUITABLE FOR BACKFILL SHALL BE REMOVED AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
- D. GRADING SHALL BE DONE AS MAY BE NECESSARY TO PREVENT SURFACE WATER FROM FLOWING INTO TRENCHES OR OTHER EXCAVATIONS, AND ANY WATER ACCUMULATING THEREIN SHALL BE REMOVED BY PUMPING OR BY OTHER APPROVED METHOD.

- E. SHEETING AND SHORING SHALL BE DONE AS NECESSARY FOR THE PROTECTION OF THE WORK AND FOR THE SAFETY OF PERSONNEL. UNLESS OTHERWISE INDICATED, EXCAVATION SHALL BE BY OPEN CUT, EXCEPT THAT SHORT SECTIONS OF A TRENCH MAY BE TUNNELED IF, THE CONDUIT CAN BE SAFELY AND PROPERLY INSTALLED AND BACKFILL CAN BE PROPERLY TAMPED IN SUCH TUNNEL SECTIONS. EARTH EXCAVATION SHALL COMPRIZE ALL MATERIALS AND SHALL INCLUDE CLAY, SILT, SAND, MUCK, GRAVEL, HARDPAN, LOOSE SHALE, AND LOOSE STONE.
- F. TRENCHES SHALL BE OF NECESSARY WIDTH FOR THE PROPER LAYING OF THE CONDUIT OR CABLE, AND THE BANKS SHALL BE AS NEARLY VERTICAL AS PRACTICABLE. THE BOTTOM OF THE TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF THE CONDUIT OR CABLE ON UNDISTURBED SOIL AT EVERY POINT ALONG ITS ENTIRE LENGTH. EXCEPT WHERE ROCK IS ENCOUNTERED, CARE SHALL BE TAKEN NOT TO EXCAVATE BELOW THE DEPTHS INDICATED. WHERE ROCK EXCAVATIONS ARE NECESSARY, THE ROCK SHALL BE EXCAVATED TO A MINIMUM OVER DEPTH OF 6 INCHES BELOW THE TRENCH DEPTHS INDICATED ON THE CONSTRUCTION DRAWINGS OR SPECIFIED. OVER DEPTHS IN THE ROCK EXCAVATION AND UNAUTHORIZED OVER DEPTHS SHALL BE THOROUGHLY BACK FILLED AND TAMPED TO THE APPROPRIATE GRADE. WHENEVER WET OR OTHERWISE UNSTABLE SOIL THAT IS INCAPABLE OF PROPERLY SUPPORTING THE CONDUIT OR CABLE IS ENCOUNTERED IN THE BOTTOM OF THE TRENCH, SUCH SOLID SHALL BE REMOVED TO A MINIMUM OVER DEPTH OF 6 INCHES AND THE TRENCH BACKFILLED TO THE PROPER GRADE WITH EARTH OF OTHER SUITABLE MATERIAL, AS HEREINAFTER SPECIFIED.

- G. BACKFILLING OF TRENCHES, TRENCHES SHALL NOT BE BACKFILLED UNTIL ALL SPECIFIED TESTS HAVE BEEN PERFORMED AND ACCEPTED. WHERE COMPAKTED BACKFILL IS NOT INDICATED THE TRENCHES SHALL BE CAREFULLY BACKFILLED WITH SELECT MATERIAL SUCH AS EXCAVATED SOILS THAT ARE FREE OF ROOTS, SOD, RUBBISH OR STONES, DEPOSITED IN 6 INCH LAYERS AND THOROUGHLY AND CAREFULLY RAMMED UNTIL THE CONDUIT OR CABLE HAS A COVER OF NOT LESS THAN 1 FOOT. THE REMAINDER OF THE BACKFILL MATERIAL SHALL BE GRANULAR IN NATURE AND SHALL NOT CONTAIN ROOTS, SOD, RUBBISH, OR STONES OF 2-1/2 INCH MAXIMUM DIMENSION. BACKFILL SHALL BE CAREFULLY PLACED IN THE TRENCH AND IN 1 FOOT LAYERS AND EACH LAYER TAMPED. SETTLING THE BACKFILL WITH WATER WILL BE PERMITTED. THE SURFACE SHALL BE GRADED TO A REASONABLE UNIFORMITY AND THE MOUNDING OVER THE TRENCHES LEFT IN A UNIFORM AND NEAT CONDITION.

SYMBOL	DESCRIPTION
—	CIRCUIT BREAKER
□	NON-FUSIBLE DISCONNECT SWITCH
■	FUSIBLE DISCONNECT SWITCH
□	SURFACE MOUNTED PANEL BOARD
T	TRANSFORMER
M	KILOWATT HOUR METER
JB	JUNCTION BOX
PB	PULL BOX TO NEC/TELCO STANDARDS
—	UNDERGROUND UTILITIES
●	EXOTHERMIC WELD CONNECTION
■	MECHANICAL CONNECTION
— OR —	GROUND ROD
— OR —	GROUND ROD WITH INSPECTION SLEEVE
—	GROUND BAR
—	120AC DUPLEX RECEPTACLE
G —	GROUND CONDUCTOR
— — — —	DC POWER AND FIBER OPTIC TRUNK CABLES
— — — —	DC POWER CABLES
#	REPRESENTS DETAIL NUMBER
#	REF. DRAWING NUMBER



INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Waterline Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793



10/11/2019
24705
LICENSED
CONTRACTOR
TO THIS CONTRACT IS A VALIDATION OF
APPLICABLE STATE AND/OR LOCAL LAWS

Project Title:
NORWICH PLAIN
HILL ROAD
CTL02026
FA# 10035339
300 PLAIN HILL ROAD
NORWICH, CT 06360

Prepared For:


Drawing Scale:
AS NOTED
Date:
10/11/19

Drawing Title:
CD

GENERAL NOTES

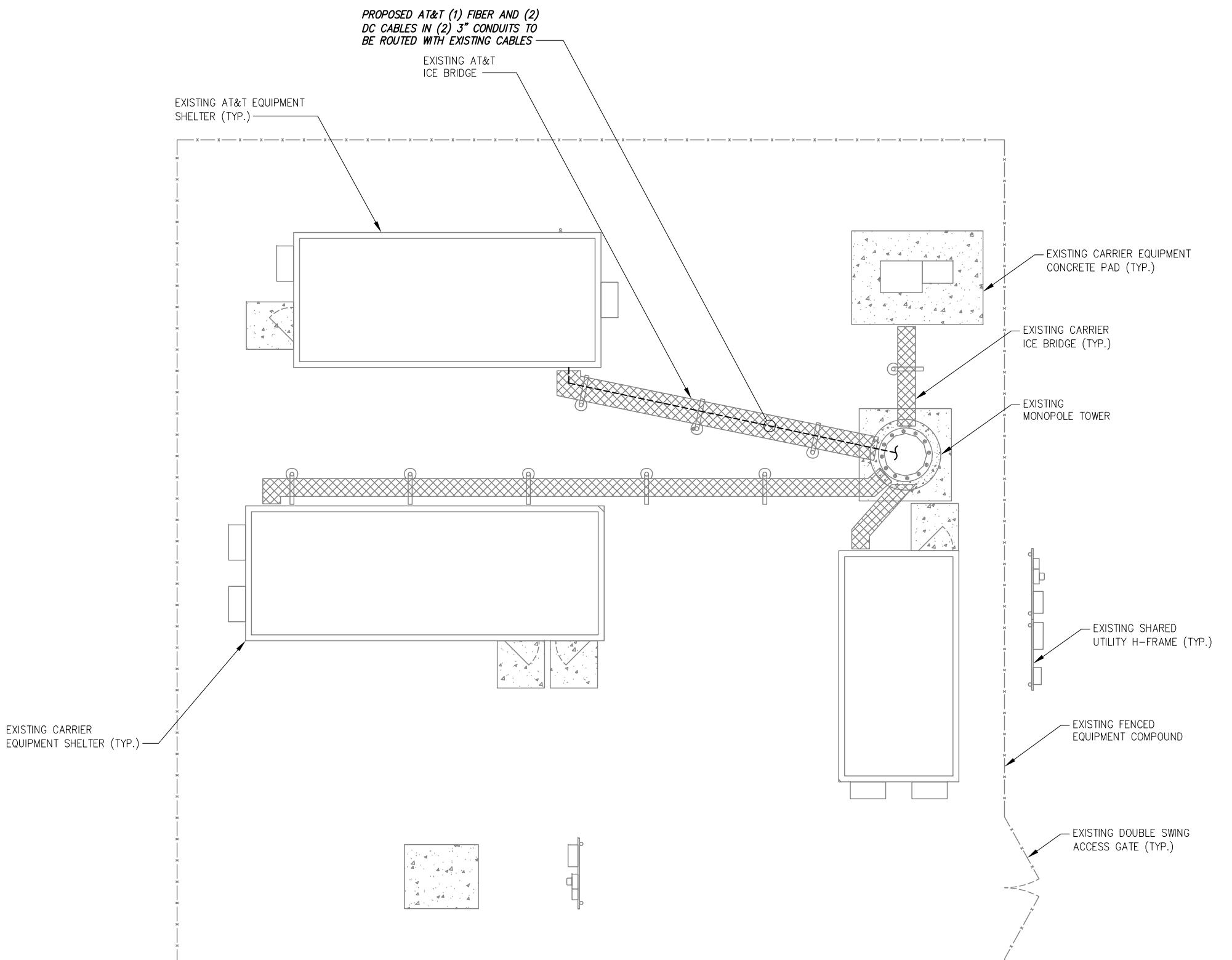
Drawing Number:
C1



[Signature]
STATE OF CONNECTICUT
JOHN S. STELZER
10/11/2019
24705
PROFESSIONAL ENGINEER
THIS SIGNATURE IS A VOWEL OF
NOT THE DRAWING IS A VOWEL OF
APPLICABLE STATE AND/OR LOCAL LAWS



CD



N
TRUE NORTH
1 SITE PLAN
SCALE: AS NOTED

BASEMAPPING PREPARED FROM A SITE WALK
PERFORMED BY INFINIGY ENGINEERING AND
PROVIDED INFORMATION, AND DOES NOT
REPRESENT AN ACTUAL FIELD SURVEY.

GRAPHIC SCALE:
20' 10' 0 10' 20'
SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

C2

**OVERALL
SITE PLAN**

Drawing Number

C2

Drawing Title

CD

Drawing Scale:

AS NOTED

Date:

10/11/19

Drawing Number



STATE OF CONNECTICUT
JOHN S. STEPHENS
10/11/2019
24705
LICENSED
OFFICE OF COMMUNICATIONS
TO THIS DRAWING IS SUBJECT TO THE PROVISIONS OF
APPLICABLE STATE AND/OR LOCAL LAWS

1 ISSUED FOR PERMIT BMM 10/11/19
0 ISSUED FOR REVIEW BMM 10/02/19
No. Submittal / Revision App'd Date
Drawn: BMM Date: 10/02/19
Designed: ASW Date: 10/02/19
Checked: AJD Date: 10/02/19

Project Number:
499-006

Project Title:
NORWICH PLAIN
HILL ROAD
CTL0206
FA# 10035339
300 PLAIN HILL ROAD
NORWICH, CT 06360

Prepared For:



Drawing Scale:
AS NOTED
Date:
10/11/19

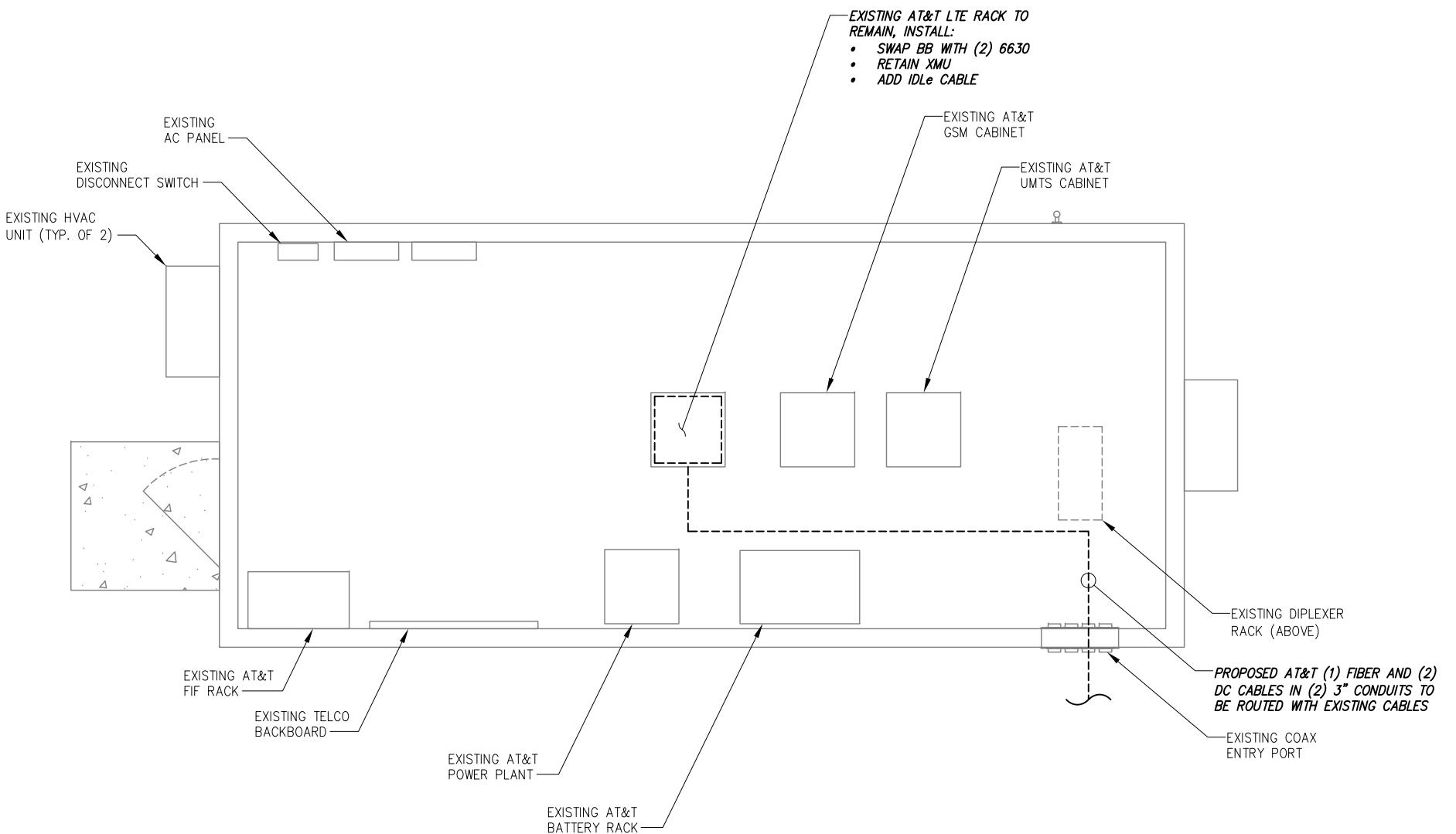
CD

Drawing Title

ENLARGED
SITE PLAN

Drawing Number

C2A



BASEMAPPING PREPARED FROM A SITE WALK
PERFORMED BY INFINIGY ENGINEERING AND
PROVIDED INFORMATION, AND DOES NOT
REPRESENT AN ACTUAL FIELD SURVEY.

TRUE NORTH

2 ENLARGED EQUIPMENT PLAN
SCALE: AS NOTED

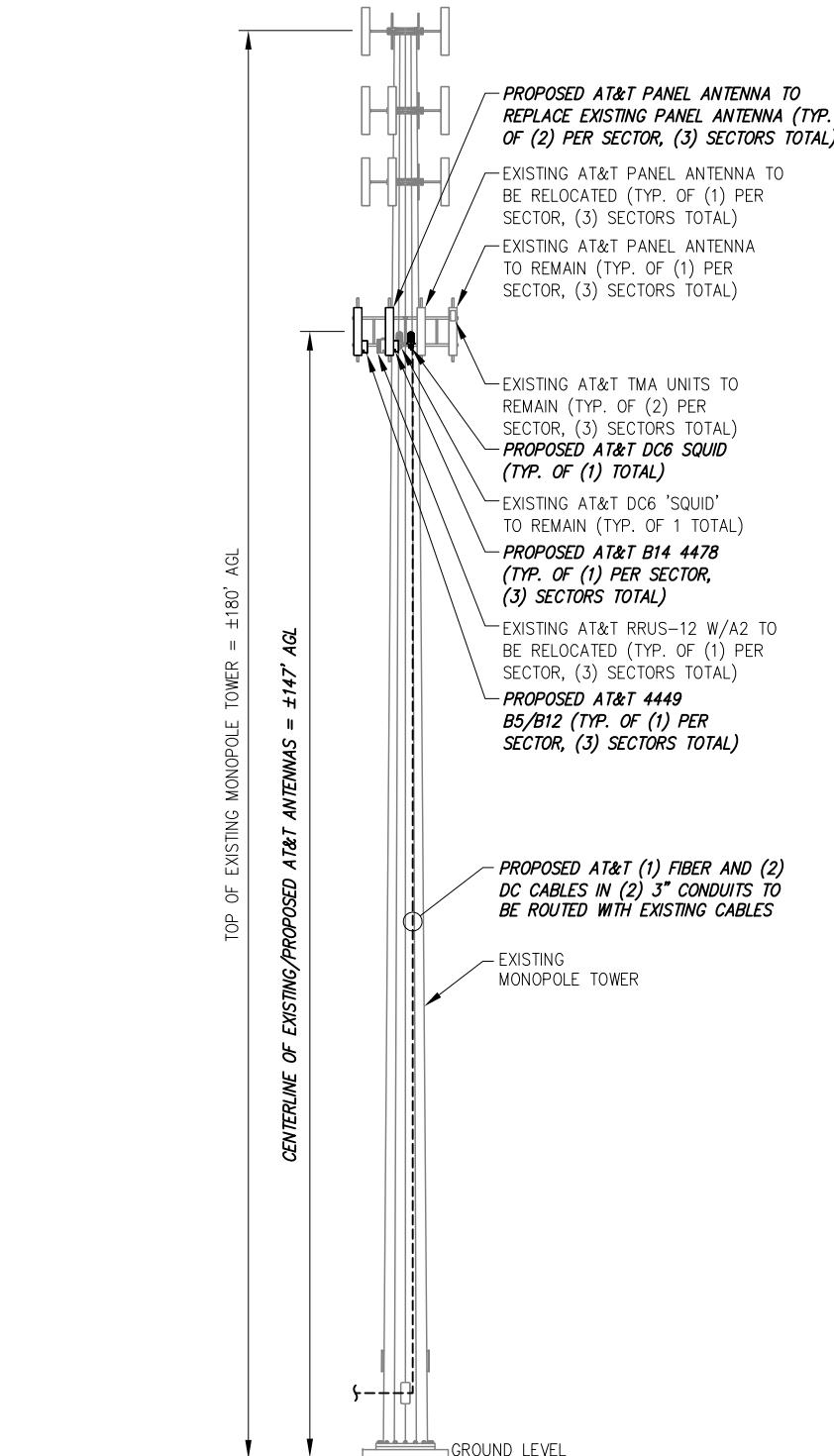
GRAPHIC SCALE:
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

NOTE:

- INFINIGY ENGINEERING HAS NOT EVALUATED THE TOWER LOADING FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY REGARDING ITS EXISTING OR PROPOSED LOADING. FINAL INSTALLATION TO COMPLY STRUCTURAL ANALYSIS.
- FOR ADDITIONAL STRUCTURAL INFORMATION PERTAINING TO THE ANTENNA MOUNT, SEE 'MOUNT ANALYSIS REPORT' COMPLETED BY INFINIGY, DATED 10/04/19.

NOTE:

- 3' MINIMUM SEPARATION BETWEEN ALL LTE ANTENNAS
- 6' MINIMUM SEPARATION BETWEEN 700 BC/700 DE ANTENNAS



FINAL ANTENNA CONFIGURATION & CABLE SCHEDULE BASED ON LTE RFDS DATED 07/31/19, V 3.00

SECTOR	ANTENNA POSITION	ANTENNA STATUS & TECHNOLOGY	ANTENNA MANF/MODEL	TMA/DIPLEXER	RRUS	AZIMUTH	ANTENNA @ HEIGHT	CABLE FEEDER		RAYCAP UNIT
								TYPE	LENGTH	
ALPHA	A-1	(E) UMTS 850	POWERWAVE 7770	(2) (E) LGP21401	--	143°	±147'	(2) (E) 1-5/8" COAX CABLES	±200'	(1) (E) DC6 SQUID (1) (P) DC6 SQUID
	A-2	(E) LTE	CCI HPA-65R-BUU-H6	--	--	143°	±147'	(2) (E) 1-5/8" COAX CABLES	±200'	
	A-3	(P) LTE 700/1900	CCI DMP65R-BU6DA	--	(1) (E) RRUS-12 W/A2 (1) (P) B14 4478	24°	±147'	(1) (E) FIBER CABLE (2) (E) DC CABLES	--	
	A-4	(P) LTE 700/850/5G 850	CCI DMP65R-BU6DA	--	(1) (P) 4449 B5/B12	24°	±147'	SEE A-3 FOR CABLE INFORMATION	--	
BETA	B-1	(E) UMTS 850	POWERWAVE 7770	(2) (E) LGP21401	--	263°	±147'	(2) (E) 1-5/8" COAX CABLES	±200'	(1) (E) DC6 SQUID (1) (P) DC6 SQUID
	B-2	(E) LTE	CCI HPA-65R-BUU-H8	--	--	263°	±147'	(2) (E) 1-5/8" COAX CABLES	±200'	
	B-3	(P) LTE 700/1900	CCI DMP65R-BU8DA	--	(1) (E) RRUS-12 W/A2 (1) (P) B14 4478	143°	±147'	(1) (P) FIBER CABLE (2) (P) DC CABLES	--	
	B-4	(P) LTE 700/850/5G 850	CCI DMP65R-BU8DA	--	(1) (P) 4449 B5/B12	143°	±147'	SEE A-3 FOR CABLE INFORMATION	--	
GAMMA	G-1	(E) UMTS 850	POWERWAVE 7770	(2) (E) LGP21401	--	24°	±147'	(2) (E) 1-5/8" COAX CABLES	±200'	(1) (E) DC6 SQUID (1) (P) DC6 SQUID
	G-2	(E) LTE	CCI HPA-65R-BUU-H8	--	--	24°	±147'	(2) (E) 1-5/8" COAX CABLES	±200'	
	G-3	(P) LTE 700/1900	CCI DMP65R-BU8DA	--	(1) (E) RRUS-12 W/A2 (1) (P) B14 4478	263°	±147'	SEE A-3 FOR CABLE INFORMATION	--	
	G-4	(P) LTE 700/850/5G 850	CCI DMP65R-BU8DA	--	(1) (P) 4449 B5/B12	263°	±147'	SEE A-3 FOR CABLE INFORMATION	--	

2 AT&T ANTENNA SCHEDULE
--- NOT TO SCALE

INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Waterfront Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793

at&t

STATE OF CONNECTICUT
JOHN S. STEVENS
10/11/2019
24705
PROFESSIONAL ENGINEER
UNIVERSAL REGISTRATION FOR LICENSURE
TO THIS EQUIPMENT IS IN VIOLATION OF
APPLICABLE STATE AND/OR LOCAL LAWS

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Checked:	AJD	Date: 10/02/19
Project Number:	499-006	
Project Title:	NORWICH PLAIN HILL ROAD CTL02026 FA# 10035339 300 PLAIN HILL ROAD NORWICH, CT 06360	

Prepared For:
smartlink

Drawing Scale:
AS NOTED
Date:
10/11/19

Drawing Title:
ELEVATION VIEW

Drawing Number:

C3



at&t

John S. Steele, P.E.
STATE OF CONNECTICUT
JOHN S. STEELE, P.E.
107-142979
24705
LICENSED PROFESSIONAL ENGINEER
NOTICE: OPERATION OF THIS EQUIPMENT IS A VIOLATION OF APPLICABLE STATE AND/OR LOCAL LAWS



CD

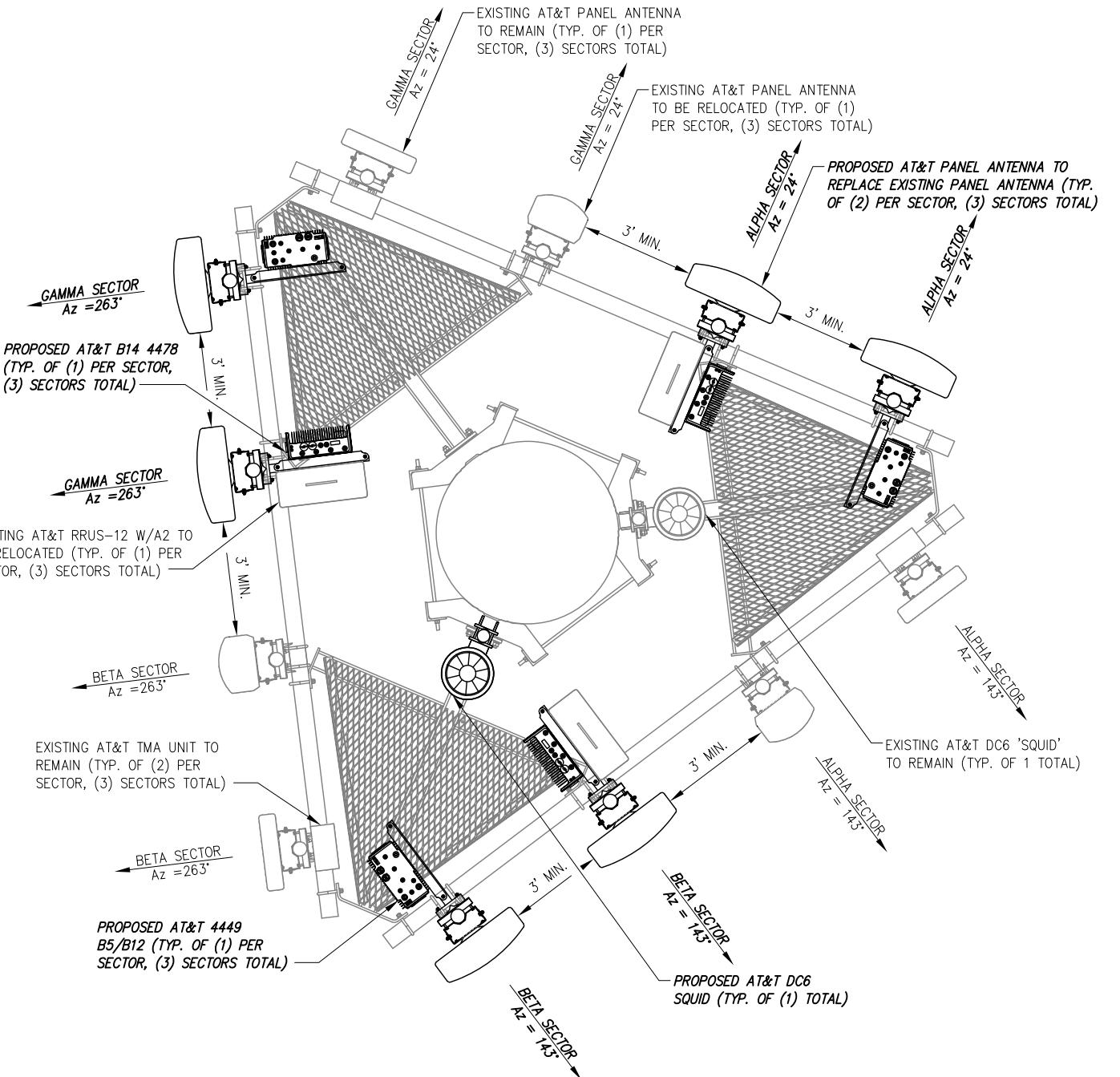
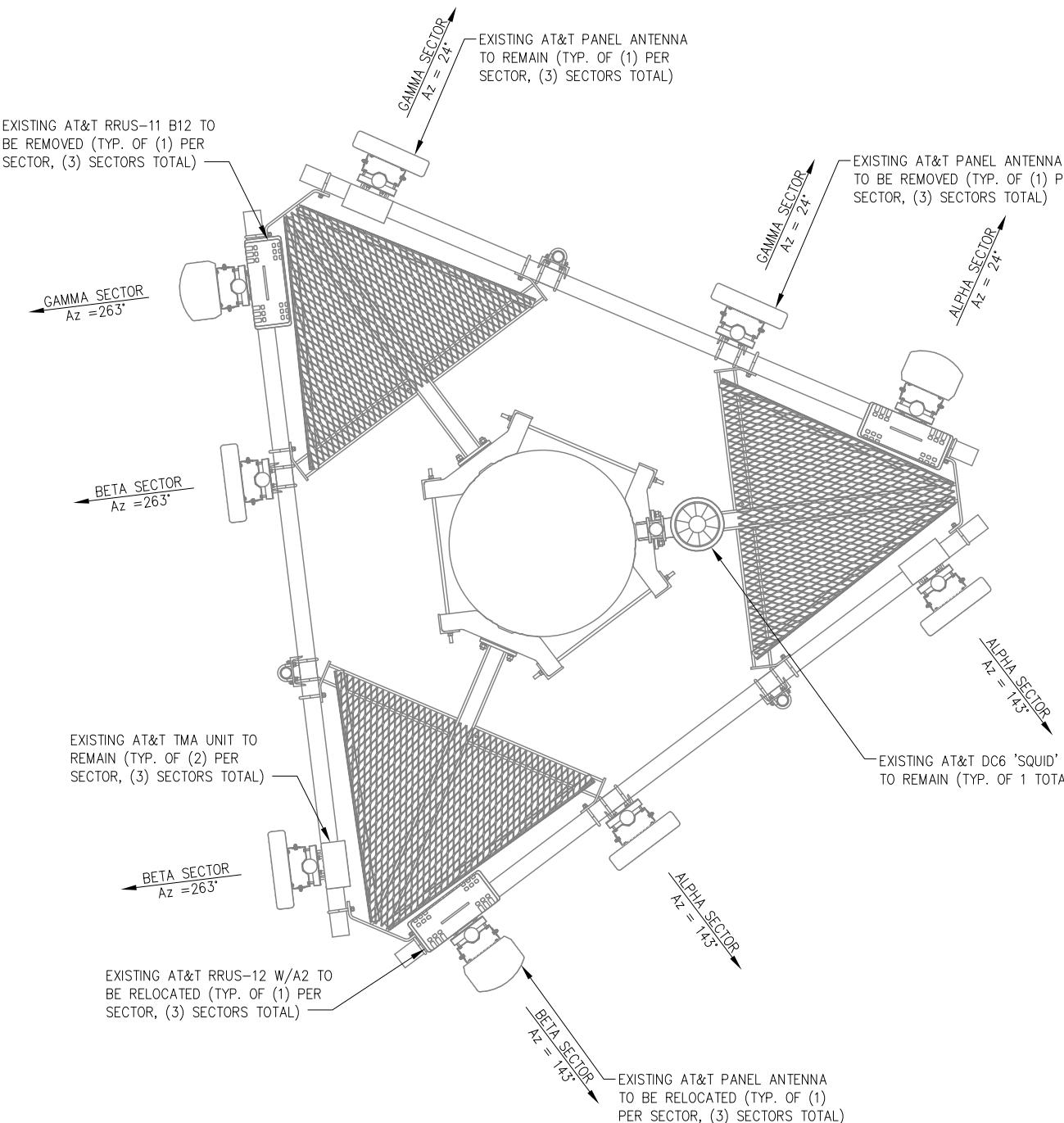
Drawing Scale:
AS NOTED
Date:
10/11/19
Drawing Title:
**ANTENNA
ORIENTATION
PLAN**
Drawing Number
C4

NOTE:

- 3' MINIMUM SEPARATION BETWEEN ALL LTE ANTENNAS
- 6' MINIMUM SEPARATION BETWEEN 700 BC/700 DE ANTENNAS

NOTE:

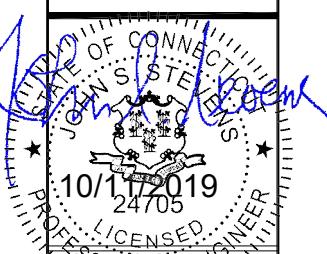
- INFINIGY ENGINEERING HAS NOT EVALUATED THE TOWER LOADING FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY REGARDING ITS EXISTING OR PROPOSED LOADING. FINAL INSTALLATION TO COMPLY STRUCTURAL ANALYSIS.
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C4



at&t



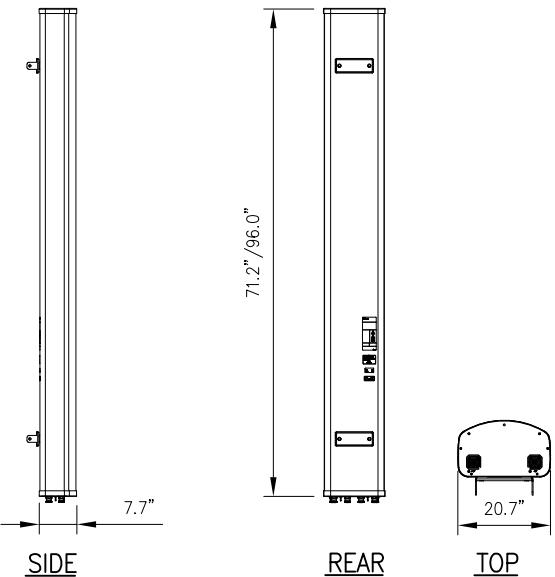
10/11/2019
24705
LICENSED
PROFESSIONAL ENGINEER
NO. 24705
NOTICE OF PRACTICE
IN THE STATE OF CONNECTICUT
THIS IS TO CERTIFY THAT THE PRACTICE OF THIS PROFESSIONAL IS IN ACCORDANCE WITH APPLICABLE STATE AND/OR LOCAL LAWS



CD

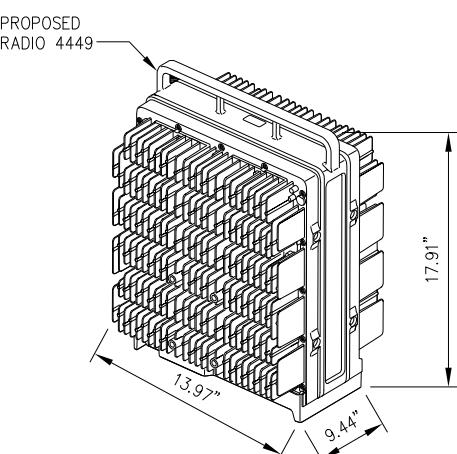
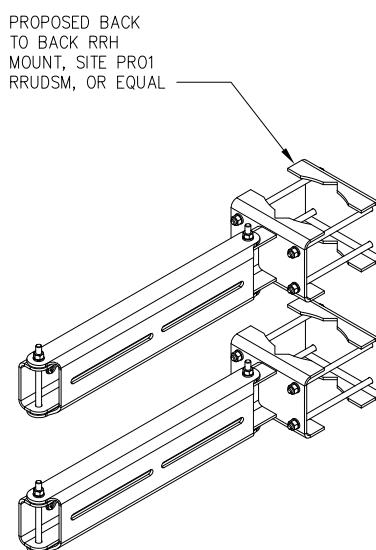
EQUIPMENT
DETAILS

C5



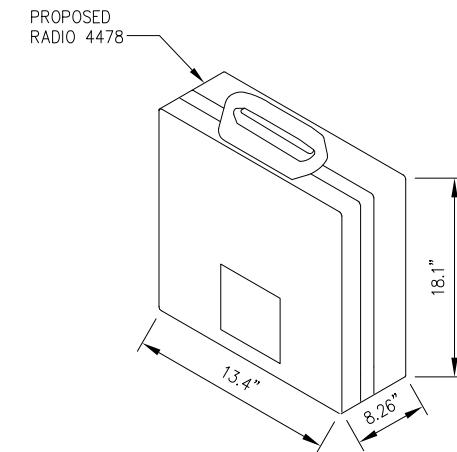
CCI MODEL NO.:	DMP65R-BU6A/DMP65R-BU8DA
RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GRAY
DIMENSIONS, HxWxD:	71.2"x20.7"x7.7"/96.0"x20.7"x7.7"
WEIGHT, W/	79.4 LBS/95.7 LBS
PRE-MOUNTED BRACKETS:	7-16 DIN FEMALE
CONNECTOR:	

1 ANTENNA DETAIL
--- NOT TO SCALE



RADIO 4449 SPECIFICATIONS

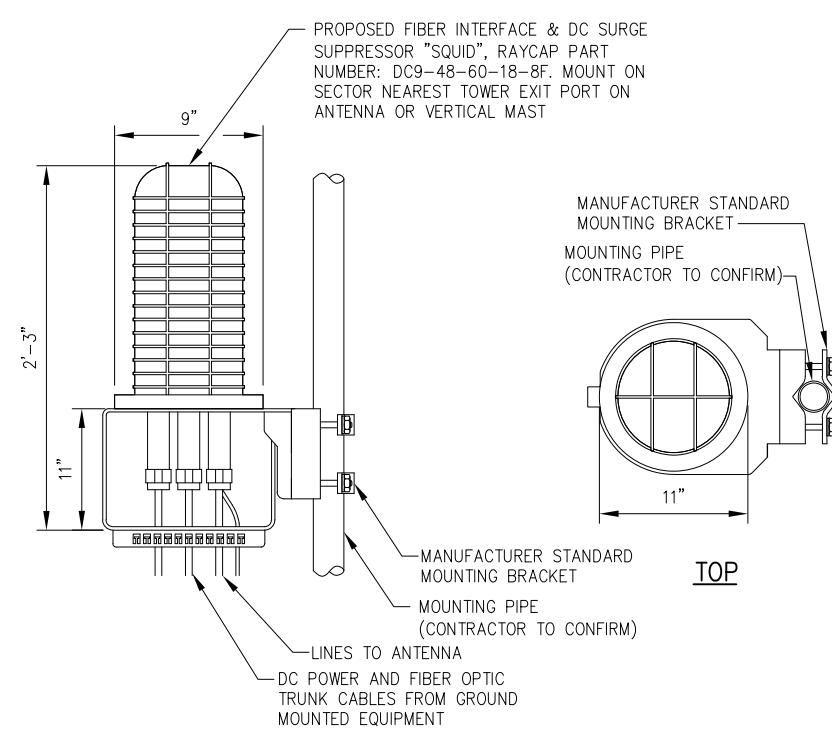
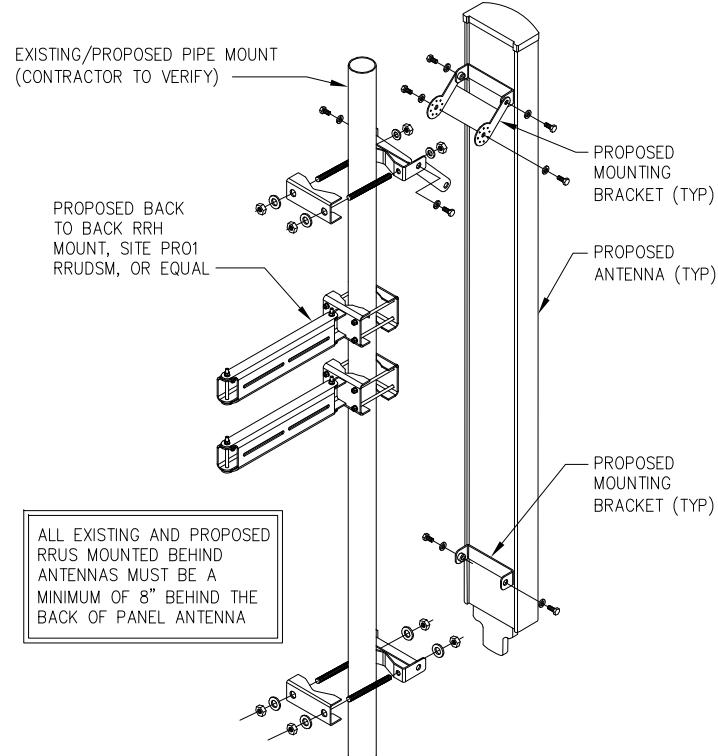
- HxWxD, (INCHES) : 17.91"x13.97"x9.44"
- WEIGHT (LBS) : 70.54
- COLOR : GRAY



RADIO 4478-B14 SPECIFICATIONS

- HxWxD, (INCHES) : 18.1"x13.4"x8.26"
- WEIGHT (LBS) : 59.5
- COLOR : GRAY
- MOUNTING BRACKET: SXK1250244/1

2 ERICSSON RADIO 4449 DETAIL
--- NOT TO SCALE



4 BACK TO BACK PIPE MOUNT DETAIL
--- NOT TO SCALE

5 ANTENNA MOUNTING DETAIL
--- NOT TO SCALE

6 SQUID DETAIL
--- NOT TO SCALE

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Project Number: 499-006

Project Title: NORWICH PLAIN HILL ROAD CTL02026 FA# 10035339 300 PLAIN HILL ROAD NORWICH, CT 06360

Prepared For:

smartlink

Drawing Scale: AS NOTED
Date: 10/11/19

Drawing Title:

EQUIPMENT DETAILS

Drawing Number C5



JOHN S. STEENS
10/11/2019
24705
LICENSED
COMMUNICATIONS ENGINEER
THIS DOCUMENT IS A COMPLIANCE TO APPLICABLE STATE AND/OR LOCAL LAWS

1	ISSUED FOR PERMIT	BMM	10/11/19
0	ISSUED FOR REVIEW	BMM	10/02/19
No.	Submittal / Revision	App'd	Date
Drawn: <u>BMM</u> Date: <u>10/02/19</u>			
Designed: <u>ASW</u> Date: <u>10/02/19</u>			
Checked: <u>AJD</u> Date: <u>10/02/19</u>			
Project Number: <u>499-006</u>			
Project Title: NORWICH PLAIN HILL ROAD			
CTL02026			
FA# 10035339			
300 PLAIN HILL ROAD NORWICH, CT 06360			

Prepared For:



Drawing Scale:
AS NOTED
Date:
10/11/19

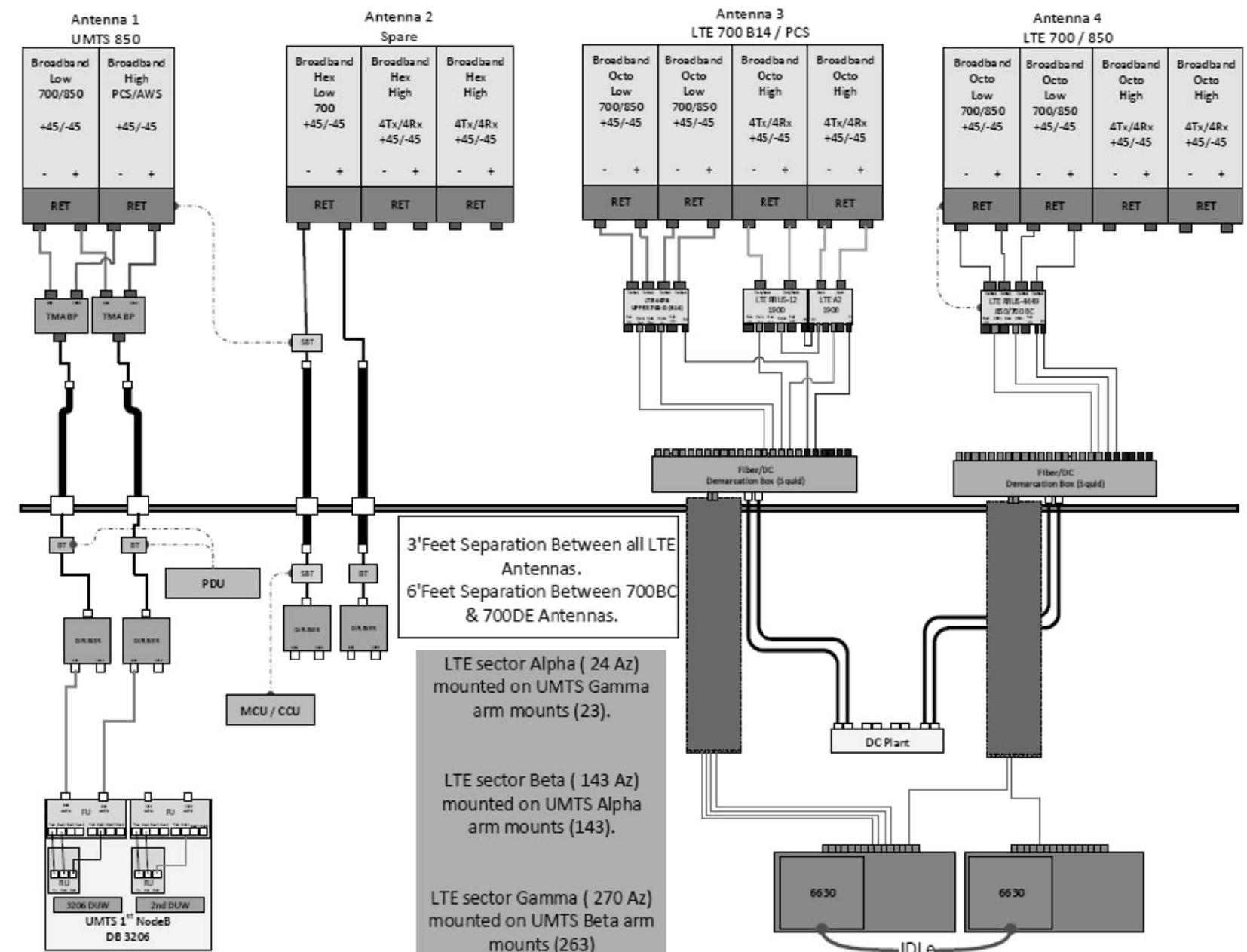
Drawing Title

PLUMBING DIAGRAM

Drawing Number

C6

*BASED ON LTE RFDS,
DATED 07/31/2019, V3.00

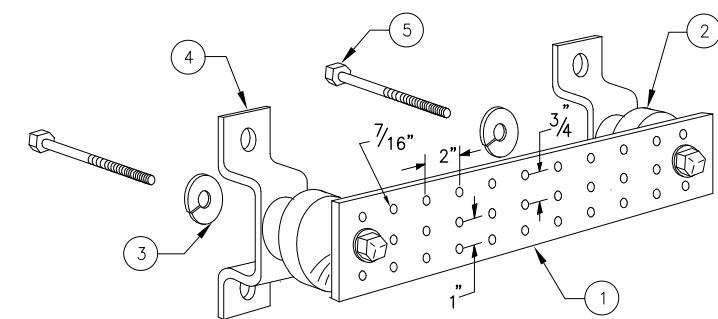


ALPHA/BETA/GAMMA

1 PLUMBING DIAGRAM (FINAL CONFIGURATION)
-- NOT TO SCALE

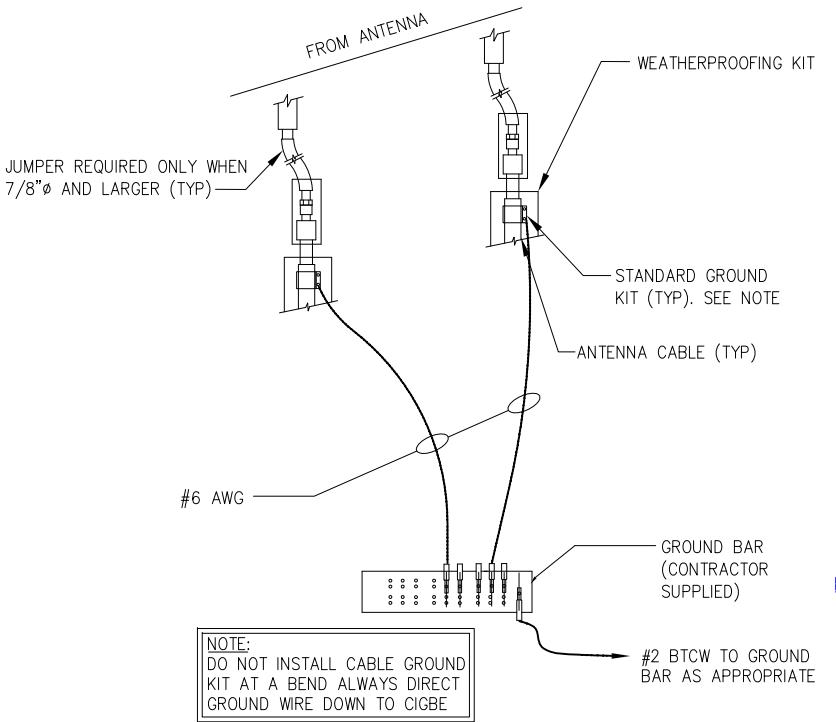
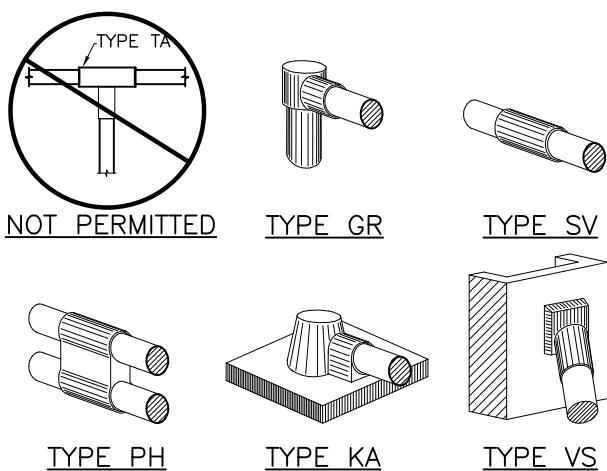
Drawing Number

C6



LEGEND

- 1 - SOLID TINNED COPPER GROUND BAR, 1/4"x 4"x 20" MIN., NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
- 2 - INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
- 3 - 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8
- 4 - WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056
- 5 - 5/8-11 X 1" H.H.C.S. BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1
- 6 - GROUND BAR SHALL BE SIZED TO ACCOMMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY
- 7 - GROUND BARS SHALL NEITHER BE FIELD FABRICATED NOR NEW HOLES DRILLED
- 8 - GROUND LUGS SHALL MATCH THE HOLE SPACING ON THE BAR
- 9 - HARDWARE DIAMETER SHALL BE MINIMUM 3/8"



CONNECTION OF GROUND WIRES TO GROUNDING BARS @ ANTENNAS

