



June 4, 2018

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

Regarding: Notice of Exempt Modification – Swap of (3) antennas and (6) diplexers and addition of (3) radios and (1) squid

Property Address: 151 Sand Hill Road, South Windsor, CT (the “Property”, AT&T Site # CT1139)

Applicant: AT&T Mobility (“AT&T”)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 187 foot Monopole (“tower”) at the above-referenced address, latitude 41.8359919, longitude -72.5519989. AT&T’s facility consists of nine (9) wireless telecommunications antennas at 170 feet. The tower is controlled and owned by the Town of South Windsor and managed by SBA Communications. Assessor’s information is attached hereto.

AT&T desires to modify its existing telecommunications facility by swapping three (3) antennas and six (6) diplexers and adding three (3) remote radio units and one (1) squid. The centerline height of said antennas is and will remain at 170 feet.

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). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor of the Town of South Windsor, the Chief Building Inspector of the Town of South Windsor, and the Zoning Enforcement Officer of the Town of South Windsor. Notice is also being sent to the Town of South Windsor as owner of the property and SBA Communications as the site manager of the property.

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 planned modifications will not result in an increase in the height of the existing structure. AT&T’s antennas and associated lines will be installed at 170 foot level of the 187 foot tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.



3. The proposed modification will not increase the noise level at the facility by six decibel 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. An RF emissions calculation is attached.
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. (Please see attached Structural Analysis completed by Tower Engineering Solutions dated March 23, 2018).

For the foregoing reasons AT&T respectfully requests that the swap of antennas and diplexers and addition of remote radio heads and squid be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Nicole Caplan
Site Acquisition Specialist
Empire Telecom

CC: The Honorable Dr. M. Saud Anwar, Mayor, Town of South Windsor
Christopher J. Dougan, Chief Building Inspector, Town of South Windsor
Pamela A. Oliva, Zoning Enforcement Officer, Town of South Windsor
The Town of South Windsor, c/o Matthew Galligan, Town Manager of South Windsor, Property Owner
SBA Communications, c/o Carla Shorter

16 Esquire Road, Billerica, MA 01862 Phone 978-284-3906 Email: ncaplan@empiretelecomm.com

151 SAND HILL ROAD

Location 151 SAND HILL ROAD

Mblu 76/ 8/ / /

Acct# 79800151

Owner SOUTH WINDSOR TOWN OF 56

Assessment \$2,174,200

Appraisal \$3,105,900

PID 9762

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$2,789,300	\$316,600	\$3,105,900
Assessment			
Valuation Year	Improvements	Land	Total
2015	\$1,952,600	\$221,600	\$2,174,200

Owner of Record

Owner SOUTH WINDSOR TOWN OF 56
Co-Owner POLICE FACILITY
Address SAND HILL RD
 SOUTH WINDSOR, CT 06074

Sale Price \$0
Certificate
Book & Page 184/ 171
Sale Date 01/01/1845
Instrument 00

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
SOUTH WINDSOR TOWN OF 56	\$0		184/ 171	00	01/01/1845

Building Information

Building 1 : Section 1

Year Built: 1984
Living Area: 10,142
Replacement Cost: \$3,074,294
Building Percent 88
Good:
Replacement Cost
Less Depreciation: \$2,705,400

Building Photo

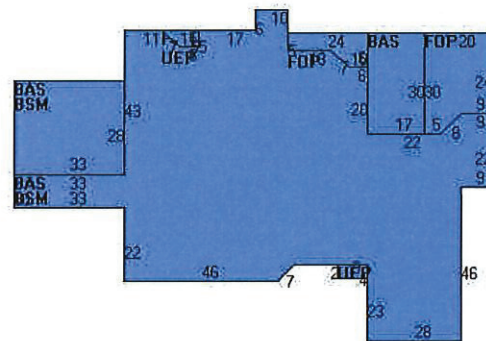
Building Attributes	
Field	Description
STYLE	Jail

MODEL	Comm/Ind
Grade	B
Stories:	1.00
Occupancy	1
Exterior Wall 1	Brick Veneer
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Quarry Tile
Interior Floor 2	Carpet
Heating Fuel	Oil
Heating Type	Forced Hot Air
% Central Air	100
Foundation	Poured Conc
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	58
% Wet Sprinkler	100
% Dry Sprinkler	
1st Floor Use	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
% Finished	100
Class	C
Wall Height	9



(http://images.vgsi.com/photos/SouthWindsorCTPhotos/\00\00\71\25.JPG)

Building Layout



Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	8,900	8,900
FUS	Finished Upper Story	1,242	1,242
BSM	Basement	8,390	0
FOP	Open Porch	690	0
UEP	Unfin. Enclosed Porch	78	0
		19,300	10,142

Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
ELV1	Elevator Pass	2 STOPS	\$38,700	1
SPR1	Sprinklers-Wet	9632 S.F.	\$6,800	1

Land

Land Use

Use Code 920
Description Exempt Comm

Land Line Valuation

Size (Acres) 5.31
Frontage 0

Zone RR
Neighborhood C400
Alt Land Appr No
Category

Depth 0
Assessed Value \$221,600
Appraised Value \$316,600

Outbuildings

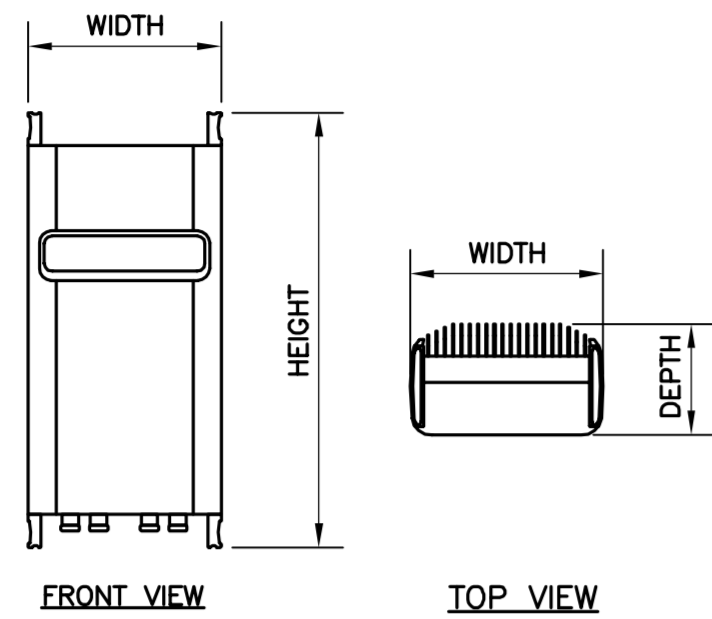
Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
PAV1	Paving	AS	Asphalt	42000 S.F.	\$31,500	1
LT1	Lights			10 UNITS	\$6,900	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$2,789,300	\$316,600	\$3,105,900
2014	\$2,789,300	\$316,600	\$3,105,900
2014	\$2,789,300	\$316,600	\$3,105,900

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$1,952,600	\$221,600	\$2,174,200
2014	\$1,952,600	\$221,600	\$2,174,200
2014	\$1,952,600	\$221,600	\$2,174,200

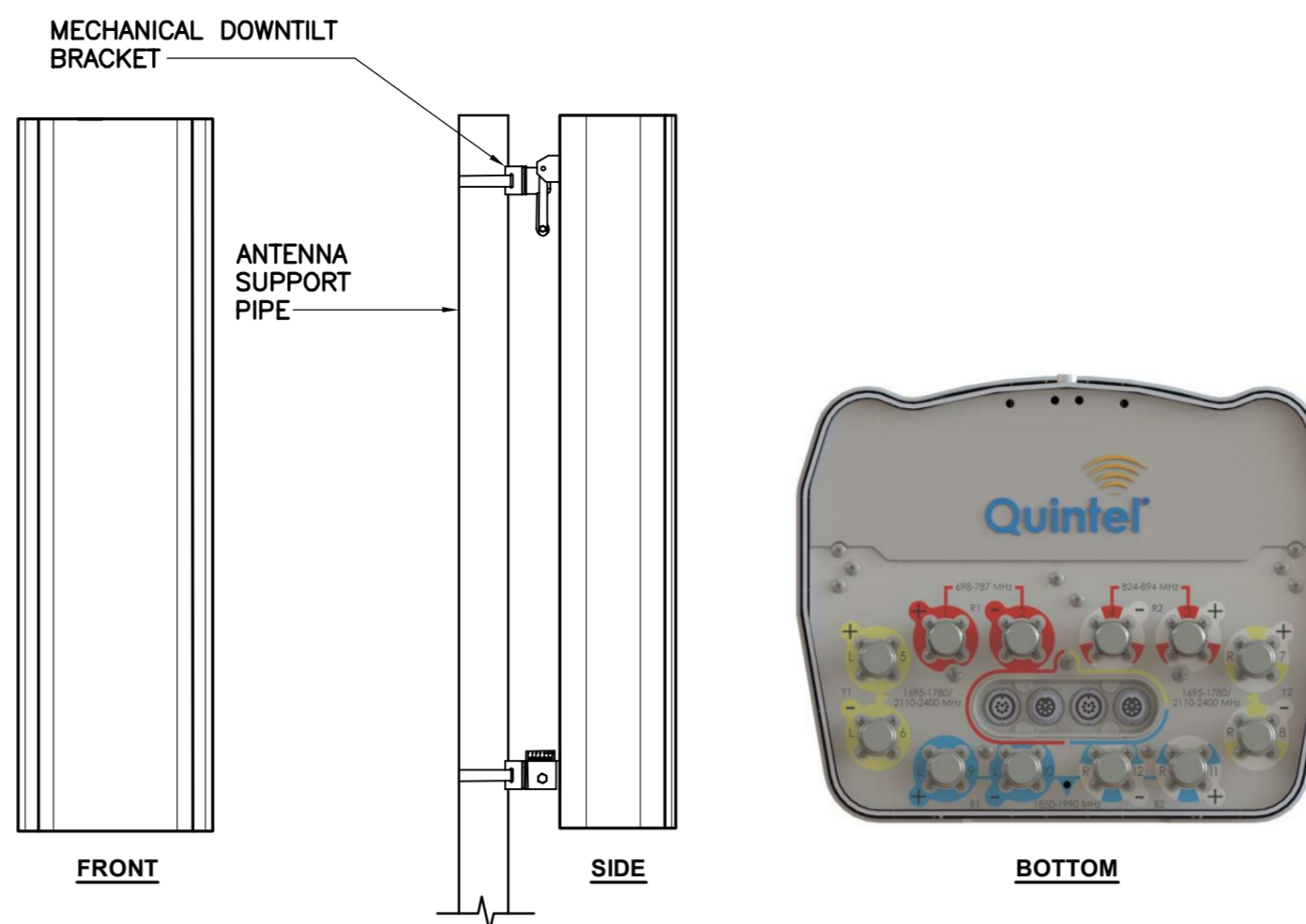
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RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRU-32	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

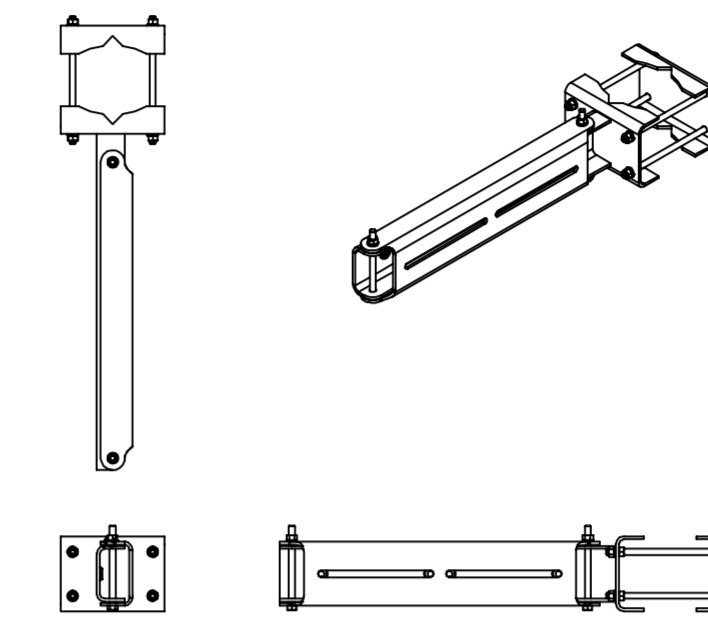
NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

1 ERICSSON RRU 32 DETAIL
SCALE: 1" = 1'-0"



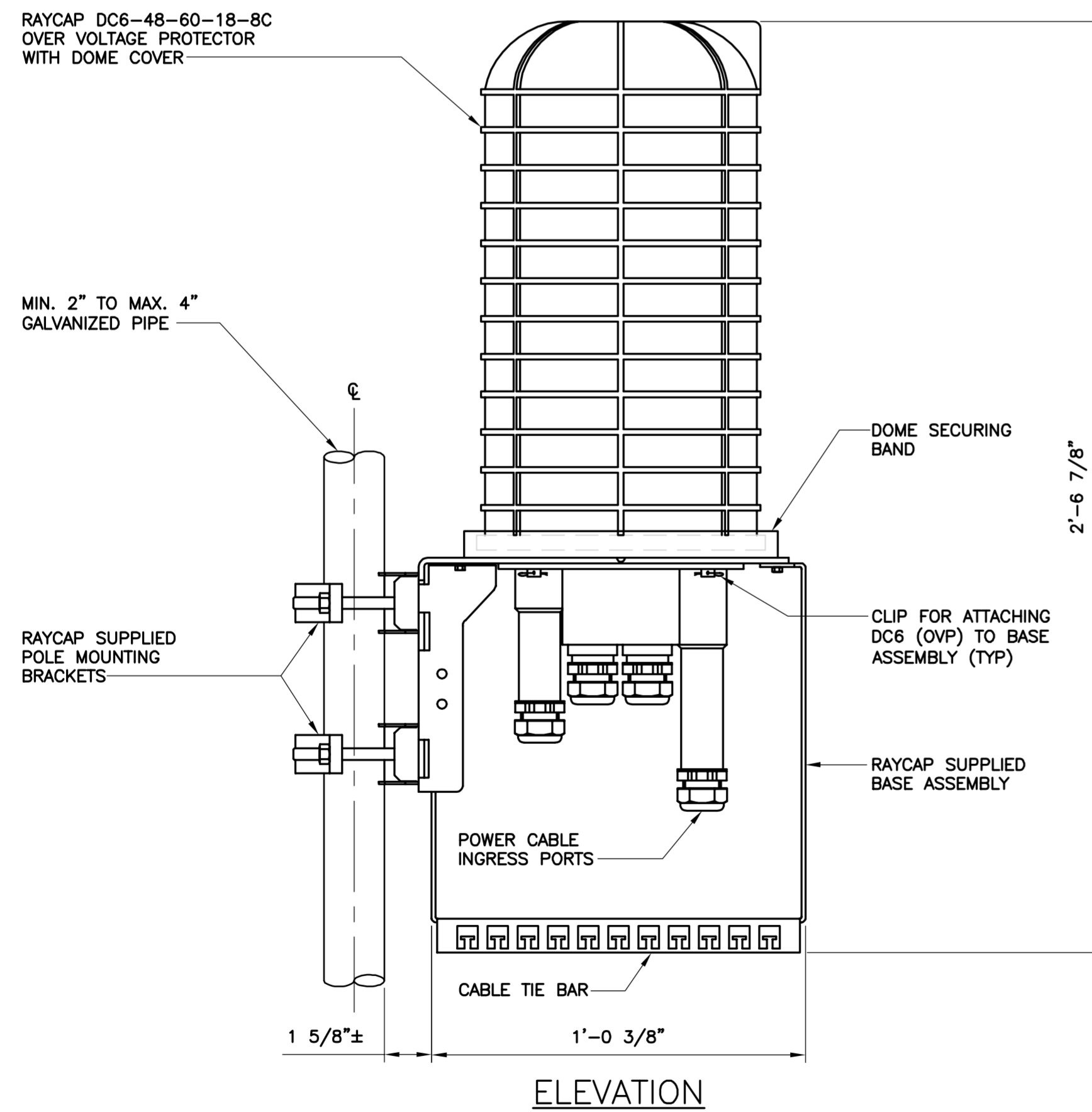
ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: QUINTEL MODEL: QS66512-2	72.0"H x 12.0"W x 9.6"D	111.0-LBS

2 PROPOSED ANTENNA DETAIL
SCALE: NTS



RRU DUAL SWIVEL MOUNT		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SITE PRO 1 PART NO.: RRU DSM	27.75"L x 6.5"W x 4.7"D	39.4 LBS.

3 RRU DUAL SWIVEL MOUNT DETAIL
NOT TO SCALE



NOTES:
1. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

4 RAYCAP DC6 MOUNTING DETAIL
SCALE: 3" = 1'-0"

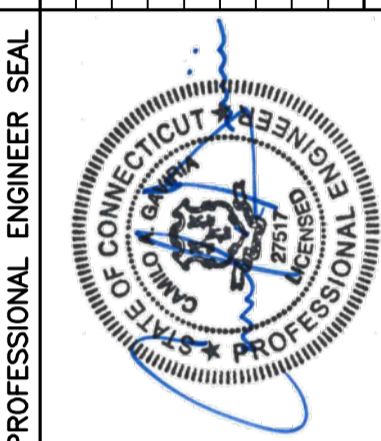


LOW BAND COMBINER

DIPLEXER 700/850		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: KAELUS MODEL: DBC0061F1V51-2	8"H x 6.45"W x 6.2"D	18.3 LBS.

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

5 KAELUS DBC0061F1V51-2 DETAIL
SCALE: NOT TO SCALE



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(203) 488-0380
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63-2 North Branford Road
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AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
SOUTH WINDSOR SAND HILL RD
CT1189 - LTE 8C WCS
151 SAND HILL ROAD
SOUTH WINDSOR, CT 06074

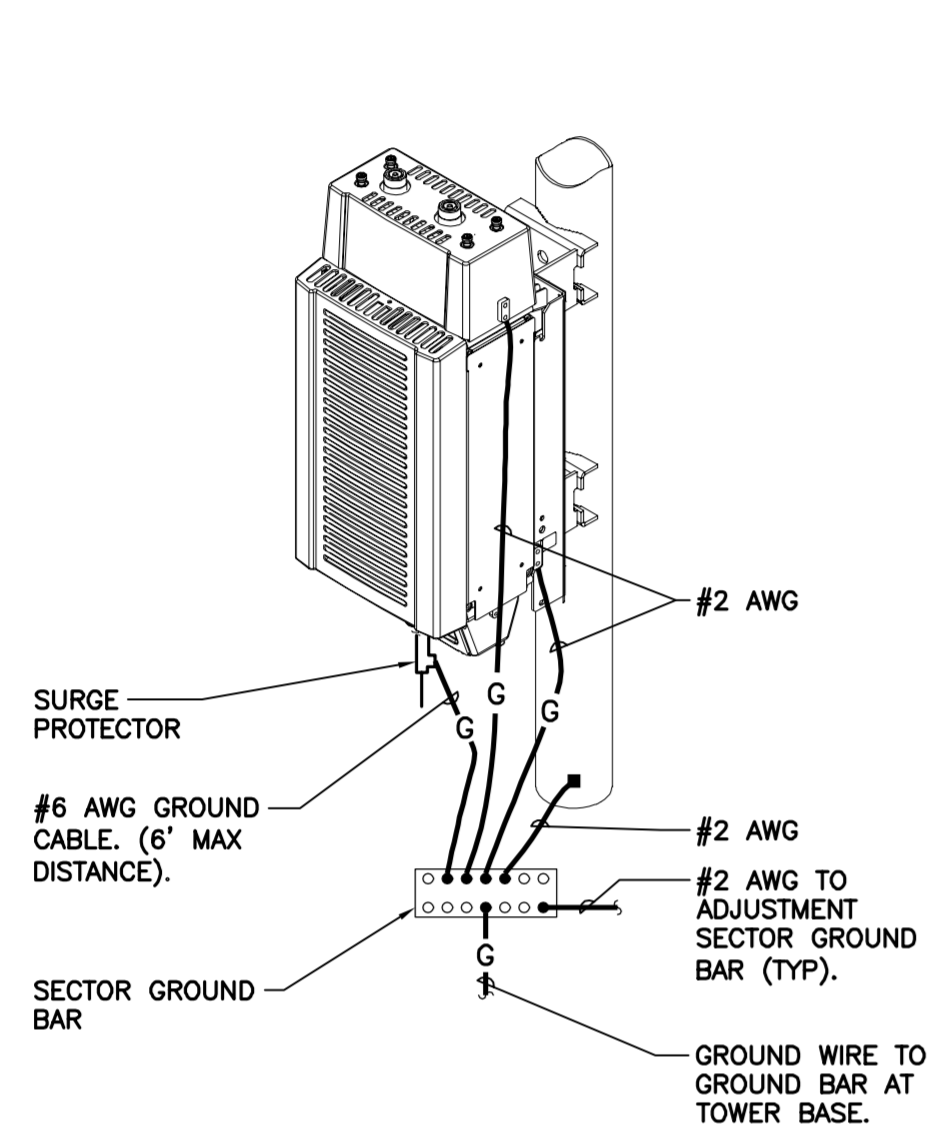
DATE: 04/05/18
SCALE: AS NOTED
JOB NO. 18000.34

DETAILS

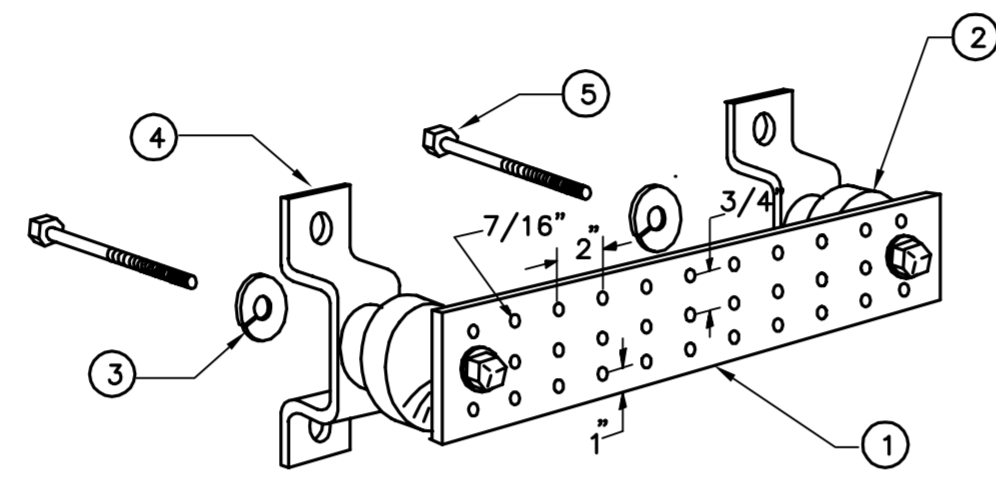
C-3
Sheet No. 5 of 8

REV.	DATE	BY	CHK'D	DESCRIPTION
0	04/19/18	KAJUR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
 1. AT TOP OF THE CABINET
 2. AT RIGHT SIDE OF THE CABINET.



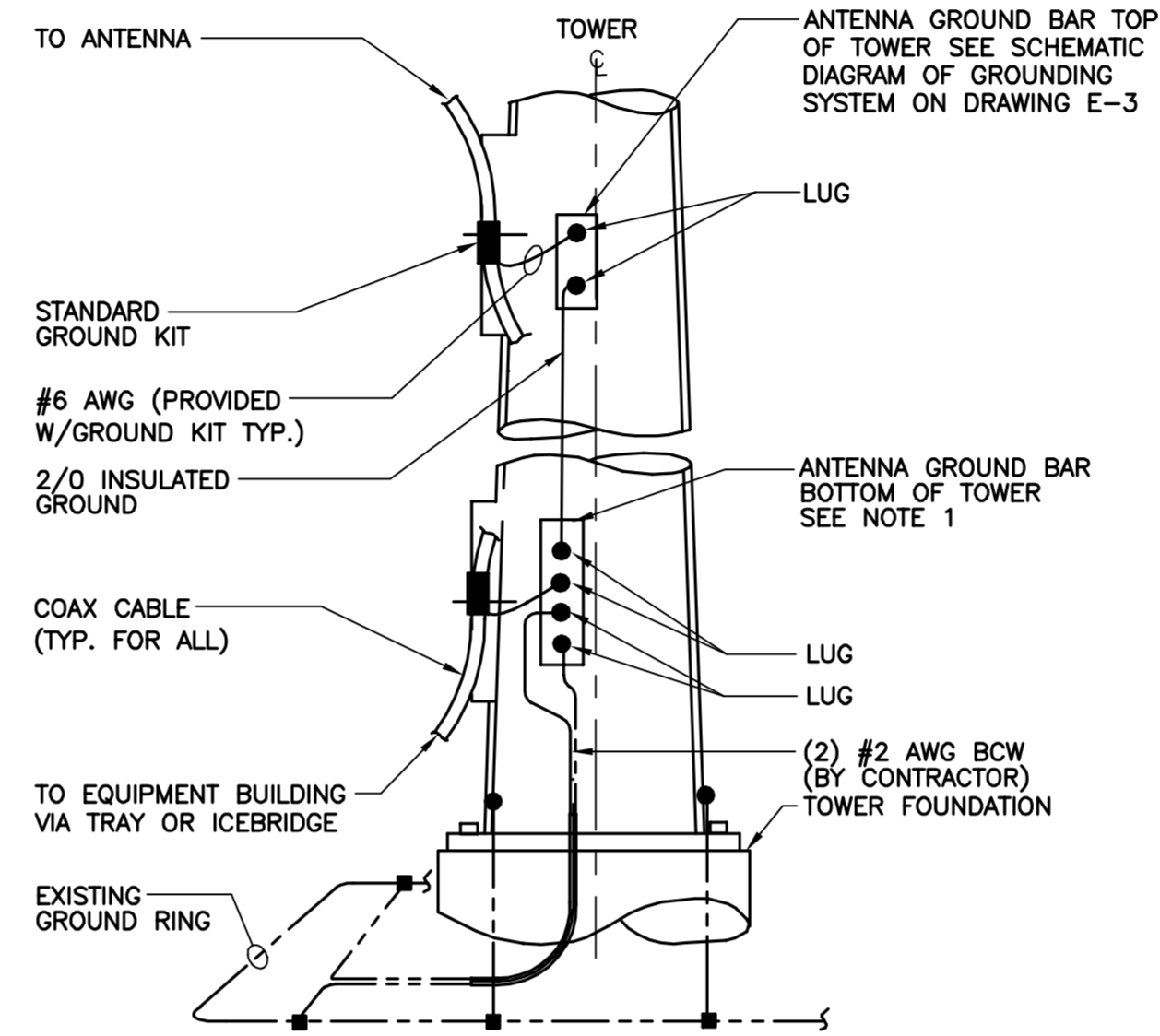
4 RRU POLE MOUNT GROUNDED
 E-3 NOT TO SCALE



LEGEND

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

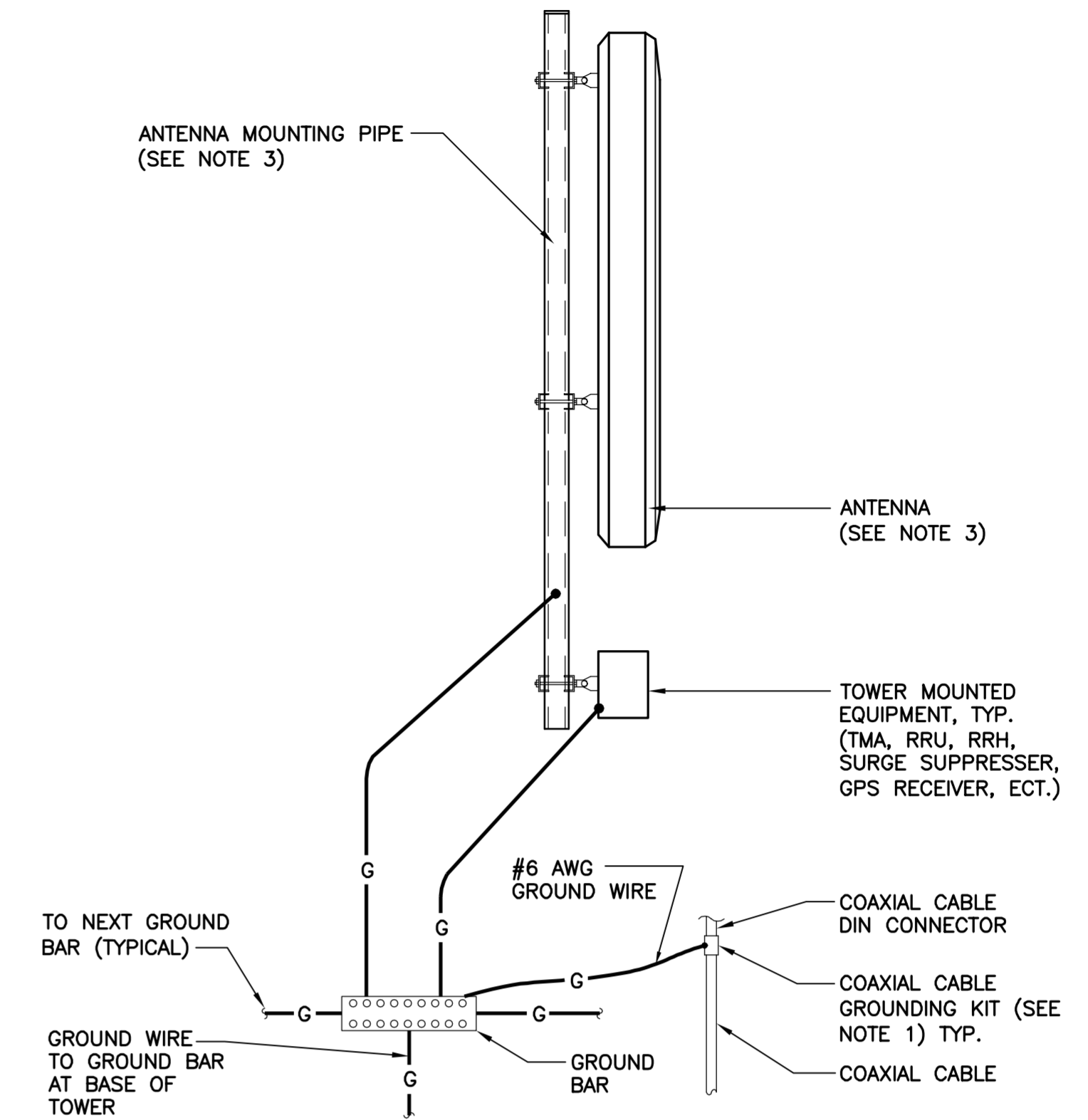
3 GROUND BAR DETAIL
 E-3 NOT TO SCALE



NOTES:

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

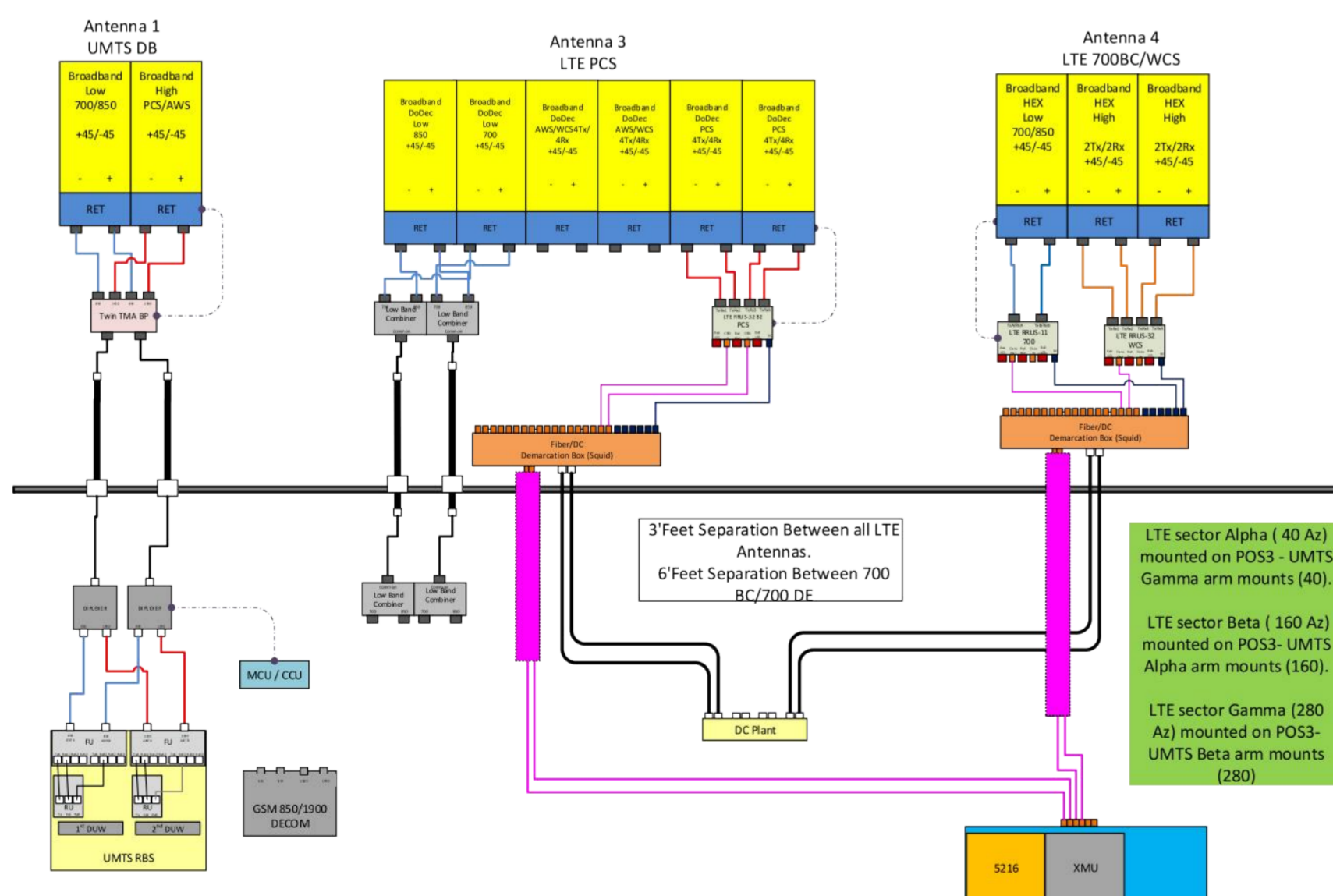
2 ANTENNA CABLE GROUNDED - TOWER
 E-3 NOT TO SCALE



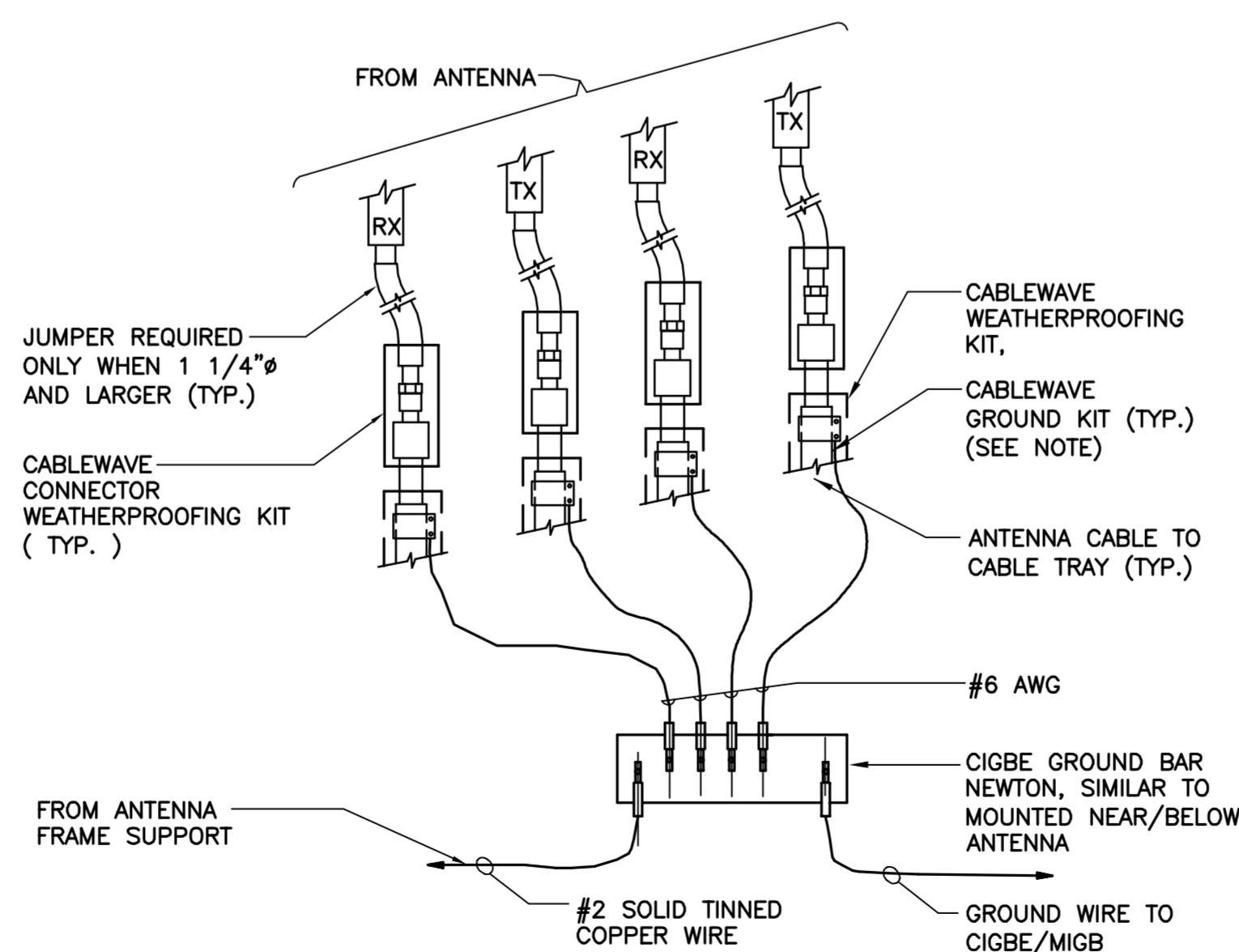
NOTES:

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

1 TYPICAL ANTENNA GROUNDED DETAIL
 E-3 NOT TO SCALE



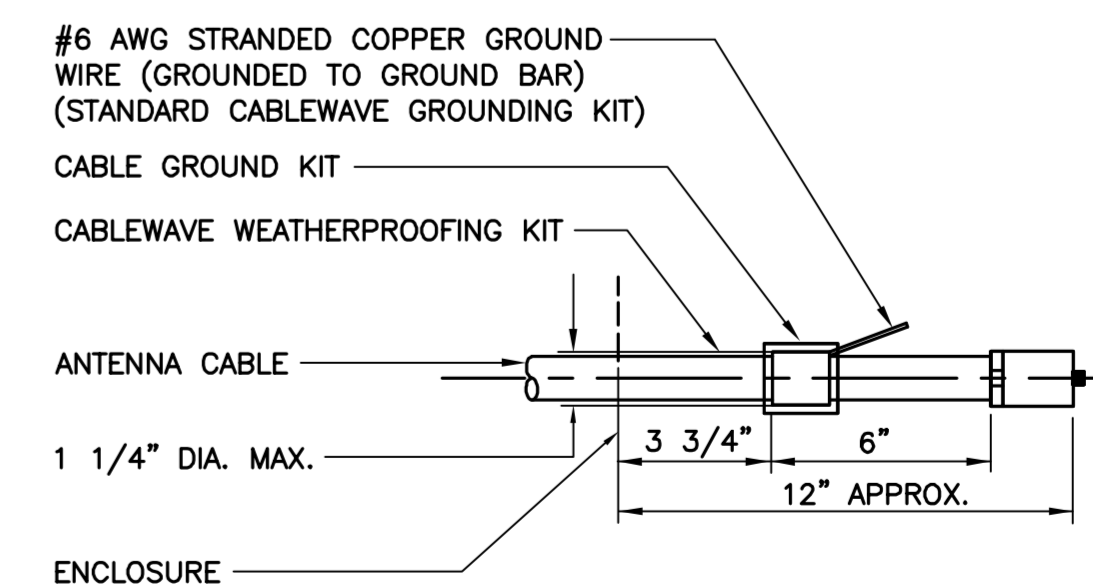
7 RF PLUMBING DIAGRAM
 E-3 NOT TO SCALE



NOTE:

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

6 CONNECTION OF GROUND WIRES TO GROUND BAR
 E-3 NOT TO SCALE



NOTE:

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

5 ANTENNA CABLE GROUNDED DETAIL
 E-3 NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	04/19/18	KAWUR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION



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AT&T MOBILITY
 WIRELESS COMMUNICATIONS FACILITY
SOUTH WINDSOR SAND HILL RD
 CT1189 - LTE 8C WCS
 151 SAND HILL ROAD
 SOUTH WINDSOR, CT 06074

DATE: 04/05/18
 SCALE: AS NOTED
 JOB NO. 18000.34

TYPICAL ELECTRICAL DETAILS



Tower Engineering Solutions

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

Structural Analysis Report

Existing 187 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT07824-S

Customer Site Name: South Windsor

Carrier Name: AT&T

Carrier Site ID / Name: CT1139 / S. Windsor-Sand Hill Rd

Site Location: 151 Sand Hill Road

South Windsor, Connecticut

Hartford County

Latitude: 41.836000

Longitude: -72.552000

Analysis Result:

Max Structural Usage: 61.9% [Pass]

Max Foundation Usage: 83.0% [Pass]

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

Report Prepared By: Stevie Long





Tower Engineering Solutions

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

Structural Analysis Report

Existing 187 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT07824-S

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Introduction

The purpose of this report is to summarize the analysis results on the 187 ft SABRE Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Drawing prepared by Sabre, Job #02-10062 dated 11/1/01
Foundation Drawing	Foundation Drawing prepared by Sabre, Job #02-10062 dated 10/11/01
Geotechnical Report	Geotechnical Report prepared by Dr. Clarence Welti, dated 9/29/00
Modification Drawings	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 125.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 97.0$ mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.178$, $S_1 = 0.064$

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	187.0	1	Telewave - ANT450F6 - Whip	Low Profile Platform	(4) 1/2" (3) 7/8"	Town of South Windsor
2		2	Telewave - ANT900D6-9 - Whip			
3		2	Decibel - DB201 - Whip			
4		2	Scala - MF-900B - Dish			
-	170.0	3	Powerwave - 7770 - Panel	Low Profile Platform w/ HRK12	(12) 1 5/8" (1) 1/2" with (2) 3/4" DC (1) 1/2" Fiber inside (1) 3" Conduit	AT&T
-		3	CCI - HPA-65R-BUU-H6 - Panel			
-		3	KMW - AM-X-CD-6500T-RET - Panel			
-		6	CCI - DTMABP7819VG12A - TMA/TTA			
-		6	Ericsson - RRUS 11 - RRU			
-		3	Ericsson - RRUS-32 B2 - RRU			
-		12	Kathrein - 782 10250 - Diplexer			
-		1	Nokia - CS72188.01 - LMU			
-		3	CSS - DBC-750 - Combiners			
-		1	Raycap - DC6-48-60-18-8F - Surge Suppressor			
-	3	Commscope - ABT-DFDM-ADBH - Bias T's				
17	160.0	3	Ericsson - AIR 21 B2A B4P - Panel	Platform w/ Hand Rail	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
18		3	Ericsson - AIR 21 B4A B2P - Panel			
19		3	Commscope - LNX-6515DS - Panel			
20		3	Ericsson - Double TMA 17/21 - TMA/TTA			
21		3	Ericsson - S11B12 - RRU			
22	140.0	1	RFS - DB-T1-6Z-8AB-0Z - Surge Suppressor	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Hybrid (1) 1/2"	Verizon
23		6	RFS - FD9R6004/2C-3L - Diplexer			
24		6	Commscope - HBXX-6517DS-A2M - Panel			
25		6	Alcatel Lucent - KS24019 - GPS			
26		3	Commscope - LNX-6514DS-A1M - Panel			
27		3	Commscope - LNX-6514DS-VTM - Panel			
28		3	Alcatel Lucent - RRH2x40-07-U - RRU			
29	3	Alcatel Lucent - RRH2x60-1900 - RRU				
30	130.0	3	Alcatel Lucent - 1900MHz - RRH	Low Profile Platform	(1) 0.7" Fiber (3) 1-1/4"	Sprint
31		3	Alcatel Lucent - 800 MHz - RRH			
32		3	Alcatel Lucent - 800MHz - Filter			
33		4	RFS - ACU-A20-N - RET			
34		3	RFS - APXVSP18-C-A20 - Panel			
35		3	RFS - APXVTM14-C-120 - Panel			
36		3	RF Filters			
37		3	Alcatel Lucent - TD-RRH8x20-25 - RRU			
38	92.0	1	Telewave - ANT150D3 - Whip	Low Profile Platform	(6) 1/2"	Town of South Windsor
39		1	Telewave - ANT4506-9 - Whip			
40		1	Telewave - ANT450Y10-WR - Yagi			
41		1	Decibel - DB205 - Whip			
42		2	Scala - MF-900B - Dish			

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
5	170.0	3	Powerwave - 7770 - Panel	Low Profile Platform w/ HRK12	(12) 1 5/8" Coax (4) 3/4" DC Power (2) 1/2" Fiber (2) 3" Conduit	AT&T
6		3	Cci - HPA-65R-BUU-H6 - Panel			
7		3	Quintel - QS66512-2 - Panel			
8		1	Nokia - CS72188.01 LMU - Omni			
9		3	Cci - DTMABP7819VG12A TMA			
10		6	Kaelus - DBC0061F1V51-2 - Diplexer			
11		3	Ericsson - RRUS-11			
12		3	Ericsson - RRUS-32 B2			
13		3	Ericsson - RRUS-32			
14		3	Css - DBC-750 - Combiner			
15		2	Raycap - DC6-48-60-18-8F - DC SS			
16		3	Commscope - ABT-DFDM-ADBH -BIAS-T			

All transmission lines are considered running inside of the pole shafts.

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	61.9%	58.8%	52.8%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	6540.5	47.9	82.8
Analysis Reactions	5642.5	44.8	74.6
Factored Reactions*	8829.6	64.7	111.7
% of Design Reactions	63.9%	69.3%	66.8%

* 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):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
187.0	MF-900B - Dish	Town of South Windso	0.002	1.239
92.0	MF-900B - Dish	Town of South Windso	0.000	0.721

It is recommended that the carriers review the twist and sway values of the microwave dishes.

Conclusions

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

Standard Conditions

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

Usage Diagram - Max Ratio 61.91% at 0.0ft

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)

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

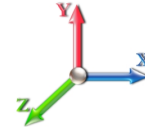
3/23/2018



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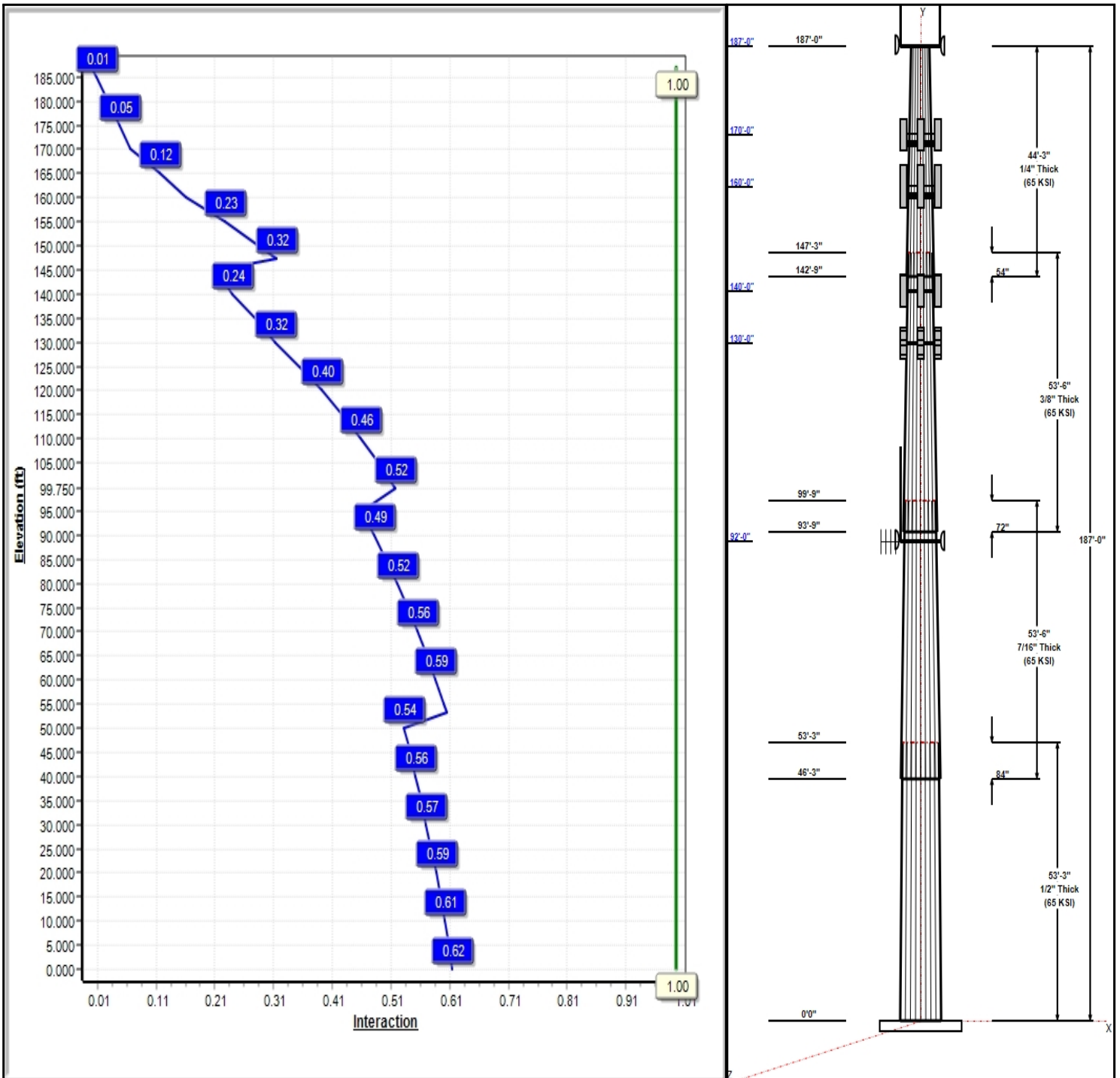
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 97 mph Wind



Iterations: 25

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Structure: CT07824-S-SBA

Type: Tapered
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.00 (ft)

Base Shape: 18 Sided
Taper: 0.22997

3/23/2018

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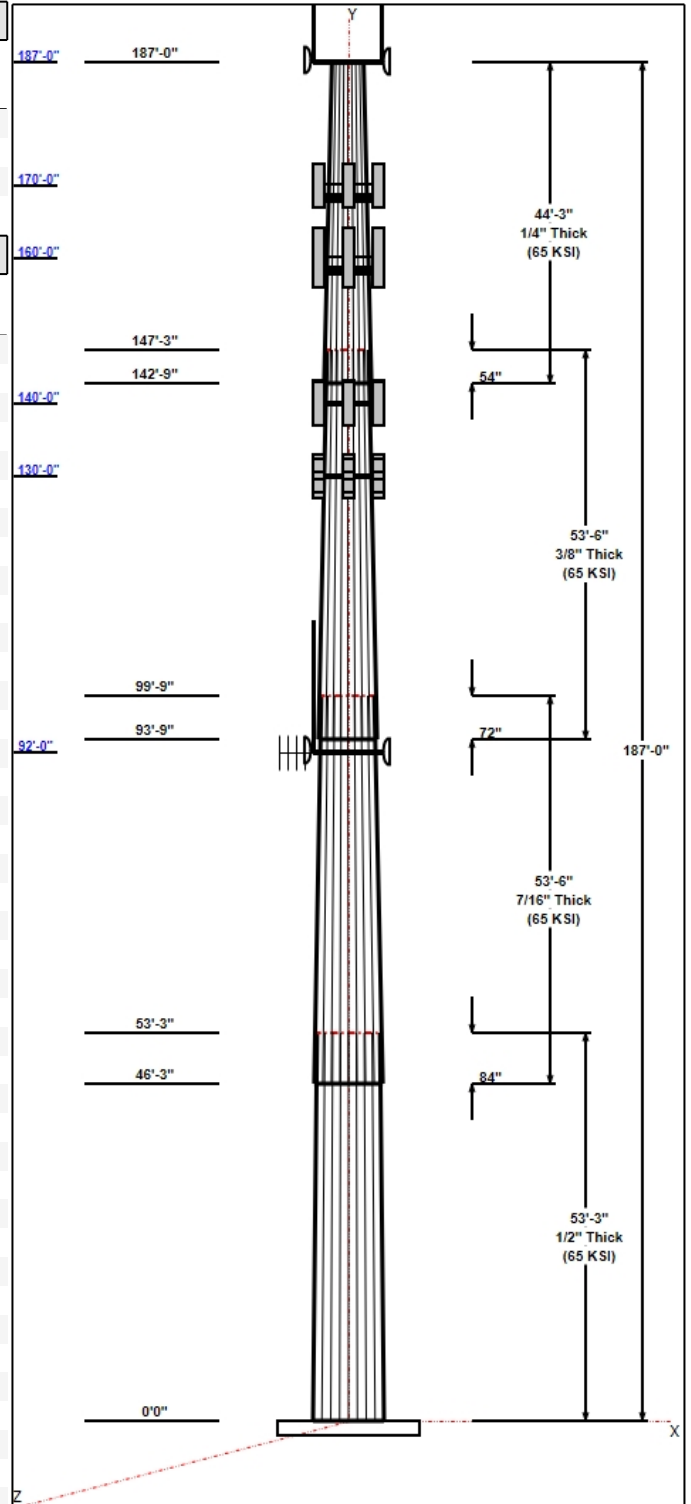


Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	52.63	64.88	0.500		0.22997	65
2	53.50	42.82	55.12	0.438	Slip	0.22997	65
3	53.50	32.64	44.95	0.375	Slip	0.22997	65
4	44.25	24.00	34.18	0.250	Slip	0.22997	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
187.00	187.00	2	MF-900B	Town of South
187.00	189.04	2	ANT900D6-9	Town of South
187.00	190.92	1	ANT450F6	Town of South
187.00	191.75	2	DB201	Town of South
187.00	187.00	1	Low Profile Platform	Town of South
187.00	187.00	1	6' Lightning rod	
170.00	170.00	3	Ericsson - RRUS-32 B2	AT&T
170.00	170.00	3	Quintel - QS66512-2	AT&T
170.00	170.00	6	Kaelus -	AT&T
170.00	170.00	3	Ericsson - RRUS-32	AT&T
170.00	170.00	3	Cci - HPA-65R-BUU-H6	AT&T
170.00	170.00	1	Nokia - CS72188.01 LMU -	AT&T
170.00	170.00	1	Low Profile Platform w/	AT&T
170.00	170.00	3	Powerwave - 7770	AT&T
170.00	170.00	3	Cci - DTMABP7819VG12A	AT&T
170.00	170.00	3	Ericsson - RRUS-11	AT&T
170.00	170.00	3	Css - DBC-750 - Combiner	AT&T
170.00	170.00	2	Raycap -	AT&T
170.00	170.00	3	Commscope -	AT&T
160.00	160.00	3	S11B12	T-Mobile
160.00	160.00	1	Platform w/ Hand Rail	T-Mobile
160.00	160.00	3	AIR 21 B2A B4P	T-Mobile
160.00	160.00	3	AIR 21 B4A B2P	T-Mobile
160.00	160.00	3	LNx-6515DS	T-Mobile
160.00	160.00	3	Double TMA 17/21	T-Mobile
140.00	140.00	3	LNx-6514DS-VTM	Verizon
140.00	140.00	6	FD9R6004/2C-3L	Verizon
140.00	140.00	1	DB-T1-6Z-8AB-0Z	Verizon
140.00	140.00	6	KS-24019	Verizon
140.00	140.00	1	Low Profile Platform	Verizon
140.00	140.00	6	HBXX-6517DS-A2M	Verizon
140.00	140.00	3	LNx-6514DS-A1M	Verizon
140.00	140.00	3	RRH2x40-07-U	Verizon
140.00	140.00	3	RRH2x60-1900	Verizon
130.00	130.00	3	APXVSP18-C-A20	Sprint
130.00	130.00	3	APXVTM14-C-120	Sprint
130.00	130.00	3	TD-RRH8x20-25	Sprint
130.00	130.00	3	1900MHz RRH	Sprint
130.00	130.00	3	800 MHz RRH	Sprint
130.00	130.00	3	800MHz Filter	Sprint
130.00	130.00	3	RF Filters	Sprint
130.00	130.00	4	ACU-A20-N	Sprint
130.00	130.00	1	Low Profile Platform	Sprint
92.00	92.00	2	MF-900B	Town of South
92.00	95.00	1	ANT4506-9	Town of South



Structure: CT07824-S-SBA

Type: Tapered
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.00 (ft)

Base Shape: 18 Sided
Taper: 0.22997

3/23/2018

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92.00	97.00	1	ANT150D3	Town of South
92.00	92.00	1	ANT450Y10-WR	Town of South
92.00	101.00	1	DB205	Town of South
92.00	92.00	1	Low Profile Platform	Town of South

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	187.00	Inside	1/2" Coax	Town of South
0.00	187.00	Inside	7/8" Coax	Town of South
0.00	170.00	Inside	1 5/8" Coax	AT&T
0.00	170.00	Inside	1/2" Fiber	AT&T
0.00	170.00	Inside	3" Conduit	AT&T
0.00	170.00	Inside	3/4" DC Power	AT&T
0.00	160.00	Inside	1 5/8" Coax	T-Mobile
0.00	160.00	Inside	1 5/8" Hybrid	T-Mobile
0.00	140.00	Inside	1 5/8" Coax	Verizon
0.00	140.00	Inside	1 5/8" Hybrid	Verizon
0.00	140.00	Inside	1/2" Coax	Verizon
0.00	130.00	Inside	0.7" Fiber	Sprint
0.00	130.00	Inside	1-1/4" Hybrid	Sprint
0.00	92.00	Inside	1/2" Coax	Town of South

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
26	2.25" 18J	75.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	78.0	60.0	Round

Reactions

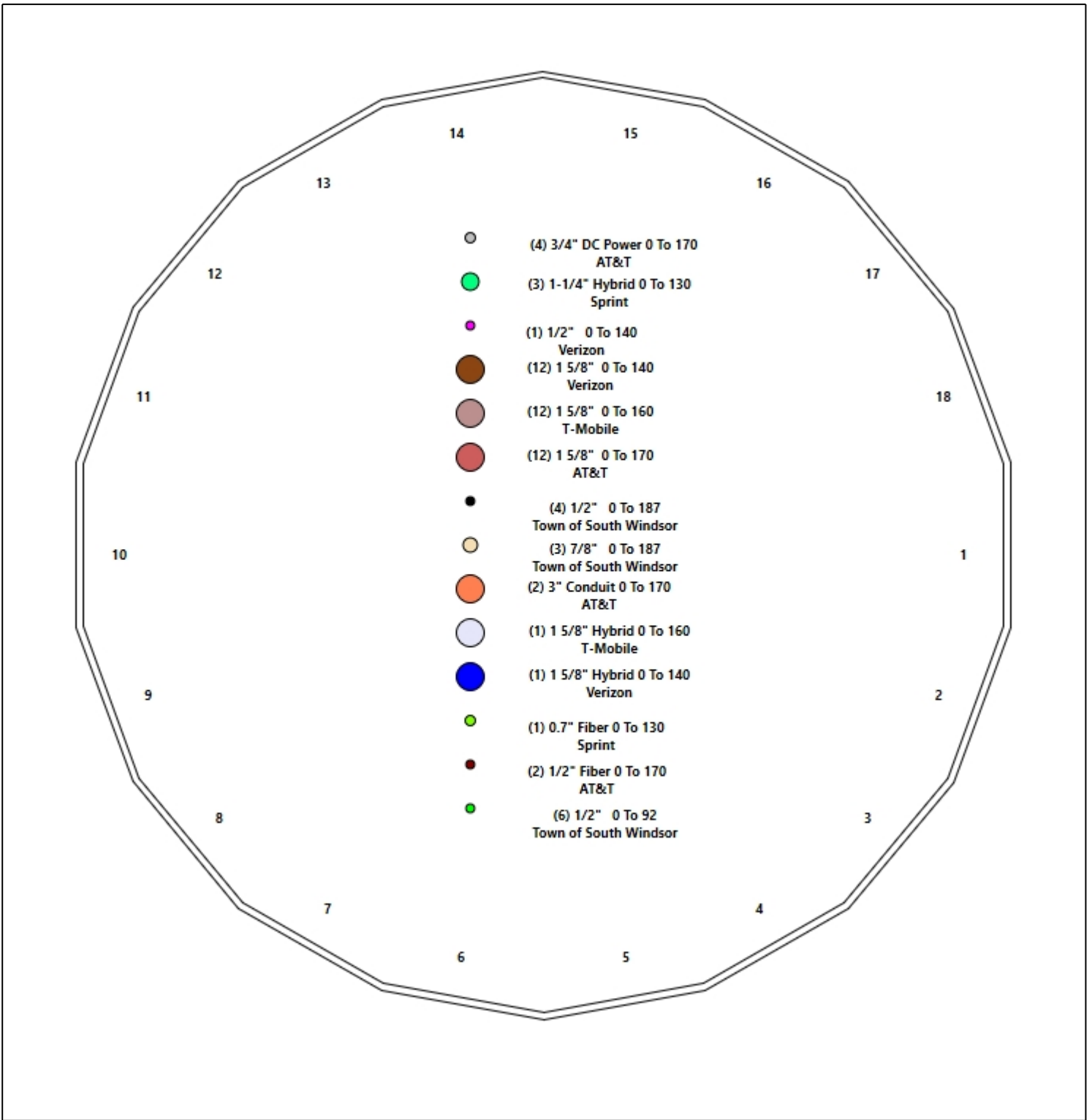
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	5642.5	44.8	74.6
0.9D + 1.6W 97 mph Wind	5582.6	44.8	56.0
1.2D + 1.0Di + 1.0Wi 50 mph Wind	2020.0	15.2	120.9
1.2D + 1.0E	164.4	1.4	74.7
0.9D + 1.0E	162.5	1.4	56.0
1.0D + 1.0W 60 mph Wind	1341.1	10.7	62.2

Structure: CT07824-S-SBA - Coax Line Placement

Type: Monopole
Site Name: South Windsor
Height: 187.00 (ft)

3/23/2018

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Shaft Properties

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
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	18	53.250	0.5000	65		0.00	16,752
2	18	53.500	0.4375	65	Slip	84.00	12,268
3	18	53.500	0.3750	65	Slip	72.00	8,324
4	18	44.250	0.2500	65	Slip	54.00	3,445
Total Shaft Weight:							40,789

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	64.88	0.00	102.1	53501.66	21.47	129.76	52.63	53.25	82.73	28410.2	17.15	105.2	0.229973
2	55.12	46.25	75.93	28683.85	20.80	125.99	42.82	99.75	58.84	13351.6	15.85	97.86	0.229973
3	44.95	93.75	53.05	13313.85	19.72	119.85	32.64	147.25	38.40	5051.60	13.94	87.04	0.229973
4	34.18	142.7	26.92	3914.66	22.69	136.71	24.00	187.00	18.84	1343.00	15.52	96.00	0.229973

Load Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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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	187.00	MF-900B	2	13.00	3.45	1.00	166.21	36.699	1.00	1.00	0.00
2	187.00	ANT900D6-9	2	11.00	0.98	1.00	62.89	4.260	1.00	0.00	2.04
3	187.00	ANT450F6	1	21.00	1.86	1.00	87.88	5.722	1.00	0.00	3.92
4	187.00	DB201	2	25.00	3.54	1.00	174.30	18.389	1.00	0.00	4.75
5	187.00	Low Profile Platform	1	1500.00	22.00	1.00	3285.07	46.087	1.00	0.00	0.00
6	187.00	6' Lightning rod	1	6.50	0.38	1.00	56.01	1.863	1.00	0.00	0.00
7	170.00	Ericsson - RRUS-32 B2	3	60.00	3.01	0.81	213.50	4.051	0.83	0.00	0.00
8	170.00	Quintel - QS66512-2	3	111.00	8.13	0.92	437.09	9.926	0.92	0.00	0.00
9	170.00	Kaelus - DBC0061F1V51-2 -	6	25.40	0.43	0.67	45.04	0.815	0.67	0.00	0.00
10	170.00	Ericsson - RRUS-32	3	53.00	2.74	0.67	182.09	3.752	0.67	0.00	0.00
11	170.00	Cci - HPA-65R-BUU-H6	3	51.00	9.66	0.85	405.64	11.544	0.85	0.00	0.00
12	170.00	Nokia - CS72188.01 LMU - Omni	1	0.32	0.12	1.00	2.86	0.393	1.00	0.00	0.00
13	170.00	Low Profile Platform w/ HRK12	1	1700.00	27.70	1.00	3704.00	57.741	1.00	0.00	0.00
14	170.00	Powerwave - 7770	3	35.00	5.50	0.73	232.43	6.972	0.75	0.00	0.00
15	170.00	Cci - DTMAPB7819VG12A - TMA	3	19.18	1.14	0.67	53.62	2.180	0.67	0.00	0.00
16	170.00	Ericsson - RRUS-11	3	55.00	2.52	0.76	185.27	3.427	0.75	0.00	0.00
17	170.00	Css - DBC-750 - Combiner	3	4.88	0.51	0.67	18.16	1.225	0.67	0.00	0.00
18	170.00	Raycap - DC6-48-60-18-8F - DC SS	2	32.80	1.47	1.00	118.95	2.416	1.00	0.00	0.00
19	170.00	Commscope - ABT-DFDM-ADBH -	3	1.14	0.05	0.98	4.26	0.310	0.98	0.00	0.00
20	160.00	S11B12	3	51.00	2.52	0.71	180.25	3.421	0.72	0.00	0.00
21	160.00	Platform w/ Hand Rail	1	1600.00	32.00	1.00	4419.67	69.496	1.00	0.00	0.00
22	160.00	AIR 21 B2A B4P	3	91.50	6.09	0.83	333.58	7.597	0.83	0.00	0.00
23	160.00	AIR 21 B4A B2P	3	90.30	6.09	0.83	332.38	7.597	0.83	0.00	0.00
24	160.00	LNx-6515DS	3	50.30	11.46	0.84	355.70	15.832	0.84	0.00	0.00
25	160.00	Double TMA 17/21	3	11.00	0.41	0.72	25.48	1.048	0.75	0.00	0.00
26	140.00	LNx-6514DS-VTM	3	33.10	8.09	0.80	264.61	11.794	0.82	0.00	0.00
27	140.00	FD9R6004/2C-3L	6	3.10	0.36	0.75	13.74	0.947	0.77	0.00	0.00
28	140.00	DB-T1-6Z-8AB-OZ	1	21.40	4.10	1.00	178.58	5.162	1.00	0.00	0.00
29	140.00	KS-24019	6	0.50	0.12	1.00	9.31	0.392	1.00	0.00	0.00
30	140.00	Low Profile Platform	1	1500.00	22.00	1.00	3234.45	45.404	1.00	0.00	0.00
31	140.00	HBXX-6517DS-A2M	6	40.80	8.55	0.77	274.35	12.418	0.79	0.00	0.00
32	140.00	LNx-6514DS-A1M	3	38.40	8.17	0.83	271.99	11.911	0.85	0.00	0.00
33	140.00	RRH2x40-07-U	3	50.70	2.23	0.78	128.60	3.637	0.80	0.00	0.00
34	140.00	RRH2x60-1900	3	19.50	1.51	0.90	106.39	2.266	0.91	0.00	0.00
35	130.00	APXVSP18-C-A20	3	57.00	8.02	0.83	284.37	11.695	0.85	0.00	0.00
36	130.00	APXVTM14-C-120	3	56.00	6.34	0.79	280.65	7.834	0.81	0.00	0.00
37	130.00	TD-RRH8x20-25	3	70.00	4.05	0.69	225.04	5.146	0.71	0.00	0.00
38	130.00	1900MHz RRH	3	44.00	3.80	0.88	187.59	5.628	0.89	0.00	0.00
39	130.00	800 MHz RRH	3	53.00	2.49	0.92	150.29	3.994	0.93	0.00	0.00
40	130.00	800MHz Filter	3	8.80	0.78	0.69	32.01	1.631	0.71	0.00	0.00
41	130.00	RF Filters	3	15.50	0.93	0.67	61.42	1.512	0.69	0.00	0.00
42	130.00	ACU-A20-N	4	1.00	0.14	0.79	6.65	0.530	0.81	0.00	0.00
43	130.00	Low Profile Platform	1	1500.00	22.00	1.00	3221.74	45.232	1.00	0.00	0.00
44	92.00	MF-900B	2	13.00	3.45	1.00	155.80	34.440	1.00	1.00	0.00
45	92.00	ANT4506-9	1	18.00	2.77	1.00	122.90	6.622	1.00	0.00	3.00
46	92.00	ANT150D3	1	18.00	2.18	1.00	110.97	12.978	1.00	0.00	5.00
47	92.00	ANT450Y10-WR	1	5.00	0.49	1.00	30.77	1.927	1.00	0.00	0.00
48	92.00	DB205	1	38.00	1.80	1.00	111.64	9.860	1.00	0.00	9.00
49	92.00	Low Profile Platform	1	1500.00	22.00	1.00	3163.75	44.450	1.00	0.00	0.00
Totals:			127	13,431.52			40,025.02				

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		

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	187.00	(4) 1/2" Coax	0.00	Inside
0.00	187.00	(3) 7/8" Coax	0.00	Inside
0.00	170.00	(12) 1 5/8" Coax	0.00	Inside
0.00	170.00	(2) 1/2" Fiber	0.00	Inside
0.00	170.00	(2) 3" Conduit	0.00	Inside
0.00	170.00	(4) 3/4" DC Power	0.00	Inside
0.00	160.00	(12) 1 5/8" Coax	0.00	Inside
0.00	160.00	(1) 1 5/8" Hybrid	0.00	Inside
0.00	140.00	(12) 1 5/8" Coax	0.00	Inside
0.00	140.00	(1) 1 5/8" Hybrid	0.00	Inside
0.00	140.00	(1) 1/2" Coax	0.00	Inside
0.00	130.00	(1) 0.7" Fiber	0.00	Inside
0.00	130.00	(3) 1-1/4" Hybrid	0.00	Inside
0.00	92.00	(6) 1/2" Coax	0.00	Inside

Shaft Section Properties

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.5000	64.880	102.167	53501.7	21.47	129.76	76.1	1624.	0.0
5.00		0.5000	63.730	100.343	50685.8	21.06	127.46	76.6	1566.	1722.7
10.00		0.5000	62.580	98.518	47970.6	20.66	125.16	77.1	1509.	1691.7
15.00		0.5000	61.430	96.693	45354.1	20.25	122.86	77.6	1454.	1660.6
20.00		0.5000	60.281	94.868	42834.5	19.85	120.56	78.1	1399.	1629.6
25.00		0.5000	59.131	93.044	40410.0	19.44	118.26	78.5	1346.	1598.6
30.00		0.5000	57.981	91.219	38078.8	19.04	115.96	79.0	1293.	1567.5
35.00		0.5000	56.831	89.394	35839.0	18.63	113.66	79.5	1242.	1536.5
40.00		0.5000	55.681	87.569	33688.7	18.23	111.36	80.0	1191.	1505.4
45.00		0.5000	54.531	85.744	31626.3	17.82	109.06	80.4	1142.	1474.4
46.25	Bot - Section 2	0.5000	54.244	85.288	31124.2	17.72	108.49	80.6	1130.	363.7
50.00		0.5000	53.381	83.920	29649.8	17.41	106.76	80.9	1094.	2040.8
53.25	Top - Section 1	0.4375	53.509	73.694	26224.3	20.16	122.31	0.0	0.0	1742.2
55.00		0.4375	53.106	73.135	25632.3	19.99	121.39	77.9	950.7	437.2
60.00		0.4375	51.957	71.538	23989.8	19.53	118.76	78.4	909.4	1230.7
65.00		0.4375	50.807	69.941	22419.1	19.07	116.13	79.0	869.1	1203.6
70.00		0.4375	49.657	68.345	20918.5	18.60	113.50	79.5	829.7	1176.4
75.00		0.4375	48.507	66.748	19486.4	18.14	110.87	80.1	791.2	1149.2
80.00		0.4375	47.357	65.151	18121.2	17.68	108.24	80.6	753.7	1122.1
85.00		0.4375	46.207	63.555	16821.3	17.21	105.62	81.2	717.0	1094.9
90.00		0.4375	45.057	61.958	15585.1	16.75	102.99	81.7	681.3	1067.7
92.00		0.4375	44.597	61.319	15108.1	16.56	101.94	81.9	667.2	419.5
93.75	Bot - Section 3	0.4375	44.195	60.761	14698.7	16.40	101.02	82.1	655.1	363.5
95.00		0.4375	43.908	60.361	14410.9	16.29	100.36	82.2	646.4	482.5
99.75	Top - Section 2	0.3750	43.565	51.405	12115.2	19.07	116.17	0.0	0.0	1804.8
100.00		0.3750	43.508	51.337	12066.9	19.05	116.02	79.0	546.3	43.7
105.00		0.3750	42.358	49.968	11127.3	18.51	112.95	79.6	517.4	861.8
110.00		0.3750	41.208	48.600	10237.8	17.97	109.89	80.3	489.3	838.5
115.00		0.3750	40.058	47.231	9397.1	17.42	106.82	80.9	462.0	815.2
120.00		0.3750	38.908	45.862	8603.6	16.88	103.76	81.5	435.5	791.9
125.00		0.3750	37.758	44.494	7856.2	16.34	100.69	82.2	409.8	768.7
130.00		0.3750	36.608	43.125	7153.3	15.80	97.62	82.5	384.9	745.4
135.00		0.3750	35.459	41.757	6493.6	15.26	94.56	82.5	360.7	722.1
140.00		0.3750	34.309	40.388	5875.9	14.72	91.49	82.5	337.3	698.8
142.75	Bot - Section 4	0.3750	33.676	39.635	5553.4	14.42	89.80	82.5	324.8	374.4
145.00		0.3750	33.159	39.020	5298.5	14.18	88.42	82.5	314.7	505.6
147.25	Top - Section 3	0.2500	33.141	26.098	3567.2	21.96	132.57	0.0	0.0	497.8
150.00		0.2500	32.509	25.597	3365.4	21.52	130.04	76.1	203.9	241.9
155.00		0.2500	31.359	24.684	3018.2	20.71	125.44	77.0	189.6	427.7
160.00		0.2500	30.209	23.772	2695.7	19.90	120.84	78.0	175.8	412.2
165.00		0.2500	29.059	22.859	2397.1	19.09	116.24	79.0	162.5	396.7
170.00		0.2500	27.910	21.947	2121.4	18.27	111.64	79.9	149.7	381.2
175.00		0.2500	26.760	21.035	1867.7	17.46	107.04	80.9	137.5	365.6
180.00		0.2500	25.610	20.122	1635.0	16.65	102.44	81.8	125.7	350.1
185.00		0.2500	24.460	19.210	1422.5	15.84	97.84	82.5	114.5	334.6
187.00		0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	129.5

40789.2

Wind Loading - Shaft

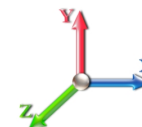
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	490.97	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	482.27	0.650	0.000	5.00	27.207	17.68	605.4	0.0	2067.3
10.00		1.00	0.85	19.450	21.40	473.57	0.650	0.000	5.00	26.721	17.37	594.6	0.0	2030.0
15.00		1.00	0.86	19.690	21.66	467.73	0.650	0.000	5.00	26.234	17.05	590.9	0.0	1992.8
20.00		1.00	0.91	20.851	22.94	472.30	0.650	0.000	5.00	25.748	16.74	614.2	0.0	1955.5
25.00		1.00	0.95	21.810	23.99	473.83	0.650	0.000	5.00	25.261	16.42	630.3	0.0	1918.3
30.00		1.00	0.99	22.632	24.90	473.30	0.650	0.000	5.00	24.775	16.10	641.4	0.0	1881.0
35.00		1.00	1.02	23.356	25.69	471.27	0.650	0.000	5.00	24.288	15.79	649.0	0.0	1843.8
40.00		1.00	1.05	24.004	26.40	468.10	0.650	0.000	5.00	23.802	15.47	653.6	0.0	1806.5
45.00		1.00	1.07	24.593	27.05	464.02	0.650	0.000	5.00	23.315	15.15	656.0	0.0	1769.2
46.25	Bot - Section 2	1.00	1.08	24.732	27.21	462.88	0.650	0.000	1.25	5.753	3.74	162.8	0.0	436.5
50.00		1.00	1.10	25.133	27.65	459.20	0.650	0.000	3.75	17.353	11.28	499.0	0.0	2449.0
53.25	Top - Section 1	1.00	1.11	25.462	28.01	455.72	0.650	0.000	3.25	14.818	9.63	431.6	0.0	2090.7
55.00		1.00	1.12	25.633	28.20	461.35	0.650	0.000	1.75	7.894	5.13	231.5	0.0	524.6
60.00		1.00	1.14	26.099	28.71	455.44	0.650	0.000	5.00	22.226	14.45	663.6	0.0	1476.9
65.00		1.00	1.16	26.535	29.19	449.07	0.650	0.000	5.00	21.739	14.13	659.9	0.0	1444.3
70.00		1.00	1.18	26.946	29.64	442.30	0.650	0.000	5.00	21.253	13.81	655.1	0.0	1411.7
75.00		1.00	1.19	27.335	30.07	435.16	0.650	0.000	5.00	20.766	13.50	649.4	0.0	1379.1
80.00		1.00	1.21	27.704	30.47	427.70	0.650	0.000	5.00	20.280	13.18	642.7	0.0	1346.5
85.00		1.00	1.23	28.056	30.86	419.96	0.650	0.000	5.00	19.793	12.87	635.3	0.0	1313.9
90.00		1.00	1.24	28.391	31.23	411.95	0.650	0.000	5.00	19.307	12.55	627.1	0.0	1281.3
92.00	Appurtenance(s)	1.00	1.25	28.522	31.37	408.68	0.650	0.000	2.00	7.586	4.93	247.5	0.0	503.4
93.75	Bot - Section 3	1.00	1.25	28.634	31.50	405.79	0.650	0.000	1.75	6.574	4.27	215.4	0.0	436.2
95.00		1.00	1.25	28.713	31.58	403.70	0.650	0.000	1.25	4.739	3.08	155.7	0.0	579.0
99.75	Top - Section 2	1.00	1.27	29.006	31.91	395.67	0.650	0.000	4.75	17.730	11.52	588.3	0.0	2165.7
100.00		1.00	1.27	29.021	31.92	402.17	0.650	0.000	0.25	0.921	0.60	30.6	0.0	52.4
105.00		1.00	1.28	29.318	32.25	393.54	0.650	0.000	5.00	18.165	11.81	609.2	0.0	1034.2
110.00		1.00	1.29	29.604	32.56	384.72	0.650	0.000	5.00	17.678	11.49	598.7	0.0	1006.2
115.00		1.00	1.31	29.880	32.87	375.72	0.650	0.000	5.00	17.192	11.17	587.7	0.0	978.3
120.00		1.00	1.32	30.147	33.16	366.56	0.650	0.000	5.00	16.705	10.86	576.1	0.0	950.3
125.00		1.00	1.33	30.405	33.45	357.25	0.650	0.000	5.00	16.219	10.54	564.1	0.0	922.4
130.00	Appurtenance(s)	1.00	1.34	30.655	33.72	347.79	0.650	0.000	5.00	15.732	10.23	551.7	0.0	894.4
135.00		1.00	1.35	30.898	33.99	338.20	0.650	0.000	5.00	15.246	9.91	538.9	0.0	866.5
140.00	Appurtenance(s)	1.00	1.36	31.133	34.25	328.48	0.650	0.000	5.00	14.759	9.59	525.7	0.0	838.6
142.75	Bot - Section 4	1.00	1.37	31.260	34.39	323.08	0.650	0.000	2.75	7.910	5.14	282.9	0.0	449.3
145.00		1.00	1.37	31.362	34.50	318.63	0.650	0.000	2.25	6.458	4.20	231.7	0.0	606.8
147.25	Top - Section 3	1.00	1.37	31.464	34.61	314.17	0.650	0.000	2.25	6.359	4.13	228.9	0.0	597.3
150.00		1.00	1.38	31.586	34.74	313.50	0.650	0.000	2.75	7.638	4.97	276.0	0.0	290.2
155.00		1.00	1.39	31.803	34.98	303.45	0.650	0.000	5.00	13.511	8.78	491.6	0.0	513.3
160.00	Appurtenance(s)	1.00	1.40	32.015	35.22	293.29	0.650	0.000	5.00	13.025	8.47	477.0	0.0	494.7
165.00		1.00	1.41	32.222	35.44	283.04	0.650	0.000	5.00	12.538	8.15	462.2	0.0	476.0
170.00	Appurtenance(s)	1.00	1.42	32.424	35.67	272.69	0.650	0.000	5.00	12.052	7.83	447.0	0.0	457.4
175.00		1.00	1.43	32.621	35.88	262.25	0.650	0.000	5.00	11.565	7.52	431.6	0.0	438.8
180.00		1.00	1.43	32.814	36.10	251.72	0.650	0.000	5.00	11.079	7.20	415.9	0.0	420.1
185.00		1.00	1.44	33.003	36.30	241.11	0.650	0.000	5.00	10.592	6.88	399.9	0.0	401.5
187.00	Appurtenance(s)	1.00	1.45	33.077	36.38	236.84	0.650	0.000	2.00	4.101	2.67	155.2	0.0	155.4

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals: 187.00

21,582.7

48,947.1

Discrete Appurtenance Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

Topography: 1

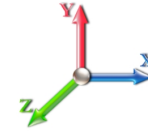
Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

3/23/2018
 Page: 11



Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	187.00	ANT450F6	1	33.221	36.543	1.00	1.00	1.86	25.20	0.000	3.917	108.75	0.00	425.95
2	187.00	MF-900B	2	33.077	36.385	1.00	1.00	6.90	31.20	2.015	0.000	401.69	505.98	0.00
3	187.00	ANT900D6-9	2	33.152	36.468	1.00	1.00	1.96	26.40	0.000	2.042	114.36	0.00	233.49
4	187.00	6' Lightning rod	1	33.077	36.385	1.00	1.00	0.38	7.80	0.000	0.000	22.12	0.00	0.00
5	187.00	DB201	2	33.251	36.576	1.00	1.00	7.08	60.00	0.000	4.750	414.34	0.00	1968.11
6	187.00	Low Profile Platform	1	33.077	36.385	1.00	1.00	22.00	1800.00	0.000	0.000	1280.75	0.00	0.00
7	170.00	Cci - HPA-65R-BUU-H6	3	32.424	35.666	0.64	0.75	18.47	183.60	0.000	0.000	1054.27	0.00	0.00
8	170.00	Nokia - CS72188.01 LMU	1	32.424	35.666	1.00	1.00	0.12	0.38	0.000	0.000	6.85	0.00	0.00
9	170.00	Ericsson - RRUS-32 B2	3	32.424	35.666	0.61	0.75	5.49	216.00	0.000	0.000	313.05	0.00	0.00
10	170.00	Quintel - QS66512-2	3	32.424	35.666	0.69	0.75	16.83	399.60	0.000	0.000	960.36	0.00	0.00
11	170.00	Kaelus -	6	32.424	35.666	0.50	0.75	1.30	182.88	0.000	0.000	73.98	0.00	0.00
12	170.00	Ericsson - RRUS-32	3	32.424	35.666	0.50	0.75	4.13	190.80	0.000	0.000	235.71	0.00	0.00
13	170.00	Powerwave - 7770	3	32.424	35.666	0.55	0.75	9.03	126.00	0.000	0.000	515.52	0.00	0.00
14	170.00	Css - DBC-750 -	3	32.424	35.666	0.50	0.75	0.77	17.57	0.000	0.000	43.87	0.00	0.00
15	170.00	Commscope -	3	32.424	35.666	0.73	0.75	0.11	4.10	0.000	0.000	6.29	0.00	0.00
16	170.00	Raycap -	2	32.424	35.666	1.00	1.00	2.94	78.72	0.000	0.000	167.77	0.00	0.00
17	170.00	Low Profile Platform w/	1	32.424	35.666	1.00	1.00	27.70	2040.00	0.000	0.000	1580.72	0.00	0.00
18	170.00	Ericsson - RRUS-11	3	32.424	35.666	0.57	0.75	4.31	198.00	0.000	0.000	245.91	0.00	0.00
19	170.00	Cci -	3	32.424	35.666	0.50	0.75	1.72	69.05	0.000	0.000	98.07	0.00	0.00
20	160.00	Double TMA 17/21	3	32.015	35.216	0.54	0.75	0.67	39.60	0.000	0.000	37.48	0.00	0.00
21	160.00	LNx-6515DS	3	32.015	35.216	0.63	0.75	21.56	181.08	0.000	0.000	1214.61	0.00	0.00
22	160.00	AIR 21 B4A B2P	3	32.015	35.216	0.62	0.75	11.32	325.08	0.000	0.000	637.74	0.00	0.00
23	160.00	AIR 21 B2A B4P	3	32.015	35.216	0.62	0.75	11.32	329.40	0.000	0.000	637.74	0.00	0.00
24	160.00	Platform w/ Hand Rail	1	32.015	35.216	1.00	1.00	32.00	1920.00	0.000	0.000	1803.08	0.00	0.00
25	160.00	S11B12	3	32.015	35.216	0.56	0.80	4.27	183.60	0.000	0.000	240.59	0.00	0.00
26	140.00	RRH2x60-1900	3	31.133	34.247	0.72	0.80	3.26	70.20	0.000	0.000	178.72	0.00	0.00
27	140.00	RRH2x40-07-U	3	31.133	34.247	0.62	0.80	4.17	182.52	0.000	0.000	228.74	0.00	0.00
28	140.00	LNx-6514DS-A1M	3	31.133	34.247	0.66	0.80	16.27	138.24	0.000	0.000	891.76	0.00	0.00
29	140.00	HBXX-6517DS-A2M	6	31.133	34.247	0.62	0.80	31.60	293.76	0.000	0.000	1731.55	0.00	0.00
30	140.00	Low Profile Platform	1	31.133	34.247	1.00	1.00	22.00	1800.00	0.000	0.000	1205.48	0.00	0.00
31	140.00	KS-24019	6	31.133	34.247	0.75	0.75	0.54	3.60	0.000	0.000	29.59	0.00	0.00
32	140.00	DB-T1-6Z-8AB-0Z	1	31.133	34.247	0.75	0.75	3.07	25.68	0.000	0.000	168.49	0.00	0.00
33	140.00	FD9R6004/2C-3L	6	31.133	34.247	0.56	0.75	1.22	22.32	0.000	0.000	66.58	0.00	0.00
34	140.00	LNx-6514DS-VTM	3	31.133	34.247	0.60	0.75	14.56	119.16	0.000	0.000	797.92	0.00	0.00
35	130.00	TD-RRH8x20-25	3	30.655	33.720	0.55	0.80	6.71	252.00	0.000	0.000	361.85	0.00	0.00
36	130.00	1900MHz RRH	3	30.655	33.720	0.70	0.80	8.03	158.40	0.000	0.000	433.00	0.00	0.00
37	130.00	APXVTM14-C-120	3	30.655	33.720	0.63	0.80	12.02	201.60	0.000	0.000	648.54	0.00	0.00
38	130.00	APXVSP18-C-A20	3	30.655	33.720	0.66	0.80	15.98	205.20	0.000	0.000	861.94	0.00	0.00
39	130.00	RF Filters	3	30.655	33.720	0.54	0.80	1.50	55.80	0.000	0.000	80.68	0.00	0.00
40	130.00	800 MHz RRH	3	30.655	33.720	0.74	0.80	5.50	190.80	0.000	0.000	296.63	0.00	0.00
41	130.00	800MHz Filter	3	30.655	33.720	0.55	0.80	1.29	31.68	0.000	0.000	69.69	0.00	0.00
42	130.00	ACU-A20-N	4	30.655	33.720	0.63	0.80	0.35	4.80	0.000	0.000	19.09	0.00	0.00
43	130.00	Low Profile Platform	1	30.655	33.720	1.00	1.00	22.00	1800.00	0.000	0.000	1186.95	0.00	0.00
44	92.00	Low Profile Platform	1	28.522	31.374	1.00	1.00	22.00	1800.00	0.000	0.000	1104.36	0.00	0.00
45	92.00	DB205	1	29.082	31.990	0.80	0.80	1.44	45.60	0.000	9.000	73.70	0.00	663.34
46	92.00	ANT450Y10-WR	1	28.522	31.374	0.80	0.80	0.39	6.00	0.000	0.000	19.68	0.00	0.00
47	92.00	ANT150D3	1	28.838	31.722	0.80	0.80	1.74	21.60	0.000	5.000	88.52	0.00	442.58

Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 12
	Struct Class: II	



48	92.00 ANT4506-9	1	28.713	31.584	0.80	0.80	2.22	21.60	0.000	3.000	111.99	0.00	335.96
49	92.00 MF-900B	2	28.522	31.374	0.80	0.80	5.52	31.20	2.887	0.000	277.09	499.96	0.00
Totals:												16,117.82	23,148.17

Total Applied Force Summary

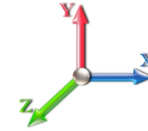
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 25

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		605.39	2375.46	0.00	0.00
10.00		594.56	2338.21	0.00	0.00
15.00		590.95	2300.95	0.00	0.00
20.00		614.16	2263.69	0.00	0.00
25.00		630.27	2226.44	0.00	0.00
30.00		641.45	2189.18	0.00	0.00
35.00		648.96	2151.93	0.00	0.00
40.00		653.62	2114.67	0.00	0.00
45.00		655.96	2077.42	0.00	0.00
46.25		162.77	513.53	0.00	0.00
50.00		498.95	2680.12	0.00	0.00
53.25		431.64	2290.99	0.00	0.00
55.00		231.48	632.47	0.00	0.00
60.00		663.59	1785.04	0.00	0.00
65.00		659.92	1752.44	0.00	0.00
70.00		655.15	1719.84	0.00	0.00
75.00		649.39	1687.25	0.00	0.00
80.00		642.74	1654.65	0.00	0.00
85.00		635.28	1622.05	0.00	0.00
90.00		627.08	1589.45	0.00	0.00
92.00	(7) attachments	1922.87	2552.65	499.96	1441.88
93.75		215.36	542.03	0.00	0.00
95.00		155.66	654.61	0.00	0.00
99.75		588.34	2453.00	0.00	0.00
100.00		30.58	67.56	0.00	0.00
105.00		609.24	1336.57	0.00	0.00
110.00		598.71	1308.63	0.00	0.00
115.00		587.65	1280.68	0.00	0.00
120.00		576.12	1252.74	0.00	0.00
125.00		564.13	1224.80	0.00	0.00
130.00	(26) attachments	4510.09	4097.14	0.00	0.00
135.00		538.88	1149.34	0.00	0.00
140.00	(32) attachments	5824.49	3776.88	0.00	0.00
142.75		282.88	559.52	0.00	0.00
145.00		231.69	696.94	0.00	0.00
147.25		228.89	687.51	0.00	0.00
150.00		276.01	400.47	0.00	0.00
155.00		491.57	713.68	0.00	0.00
160.00	(16) attachments	5048.27	3673.82	0.00	0.00
165.00		462.18	594.95	0.00	0.00
170.00	(37) attachments	5749.40	4283.02	0.00	0.00
175.00		431.59	451.97	0.00	0.00
180.00		415.88	433.34	0.00	0.00
185.00		399.91	414.72	0.00	0.00
187.00	(9) attachments	2497.18	2111.27	505.98	2627.55

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	<u>44,730.86</u>	<u>74,683.61</u>	<u>1,005.95</u>	<u>4,069.43</u>
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Calculated Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

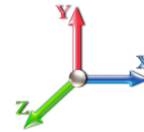
3/23/2018
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Load Case: 1.2D + 1.6W 97 mph Wind

Iterations 25

Dead Load Factor 1.20
Wind Load Factor 1.60



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	-74.62	-44.83	-0.99	-5642.4	-0.01	5642.47	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.619
5.00	-72.14	-44.41	-0.99	-5418.3	-0.01	5418.33	6919.93	3459.96	17978.0	9002.40	0.08	-0.147	0.000	0.612
10.00	-69.68	-43.99	-0.99	-5196.3	-0.01	5196.30	6836.37	3418.19	17435.4	8730.69	0.31	-0.296	0.000	0.606
15.00	-67.27	-43.56	-0.99	-4976.3	-0.01	4976.37	6751.25	3375.63	16896.9	8461.01	0.71	-0.447	0.000	0.598
20.00	-64.90	-43.10	-0.99	-4758.5	-0.01	4758.59	6664.57	3332.28	16362.6	8193.47	1.26	-0.599	0.000	0.591
25.00	-62.56	-42.61	-0.99	-4543.1	-0.01	4543.10	6576.31	3288.16	15832.7	7928.16	1.97	-0.754	0.000	0.583
30.00	-60.27	-42.10	-0.99	-4330.0	-0.01	4330.05	6486.49	3243.25	15307.6	7665.22	2.84	-0.910	0.000	0.574
35.00	-58.01	-41.58	-0.99	-4119.5	-0.02	4119.54	6395.11	3197.55	14787.5	7404.75	3.88	-1.068	0.000	0.566
40.00	-55.80	-41.04	-0.99	-3911.6	-0.02	3911.66	6302.15	3151.08	14272.4	7146.85	5.08	-1.227	0.000	0.556
45.00	-53.67	-40.43	-0.99	-3706.4	-0.02	3706.47	6207.63	3103.82	13762.8	6891.65	6.45	-1.388	0.000	0.547
46.25	-53.10	-40.33	-0.99	-3655.9	-0.02	3655.94	6183.76	3091.88	13636.3	6828.29	6.82	-1.430	0.000	0.544
50.00	-50.35	-39.86	-0.99	-3504.7	-0.02	3504.70	6111.55	3055.77	13258.8	6639.26	8.00	-1.552	0.000	0.536
53.25	-48.02	-39.44	-0.99	-3375.1	-0.02	3375.15	5153.03	2576.51	11233.0	5624.85	9.09	-1.660	0.000	0.610
55.00	-47.31	-39.28	-1.00	-3306.1	-0.02	3306.14	5126.51	2563.25	11089.7	5553.12	9.71	-1.718	0.000	0.605
60.00	-45.43	-38.71	-1.00	-3109.7	-0.02	3109.72	5049.68	2524.84	10683.1	5349.50	11.61	-1.896	0.000	0.591
65.00	-43.58	-38.12	-1.00	-2916.1	-0.02	2916.19	4971.29	2485.64	10280.5	5147.92	13.69	-2.075	-0.001	0.575
70.00	-41.77	-37.53	-1.00	-2725.5	-0.02	2725.58	4891.33	2445.66	9882.29	4948.49	15.96	-2.254	-0.001	0.560
75.00	-40.00	-36.94	-1.00	-2537.9	-0.03	2537.92	4809.80	2404.90	9488.55	4751.33	18.41	-2.433	-0.001	0.543
80.00	-38.26	-36.34	-1.00	-2353.2	-0.03	2353.22	4726.70	2363.35	9099.56	4556.54	21.06	-2.611	-0.001	0.525
85.00	-36.56	-35.75	-1.00	-2171.5	-0.03	2171.50	4642.04	2321.02	8715.55	4364.25	23.89	-2.789	-0.001	0.506
90.00	-34.93	-35.12	-1.00	-1992.7	-0.03	1992.77	4555.82	2277.91	8336.73	4174.56	26.90	-2.965	-0.001	0.485
92.00	-32.44	-33.10	-0.50	-1921.1	0.00	1921.10	4520.89	2260.44	8186.70	4099.44	28.16	-3.036	-0.001	0.476
93.75	-31.88	-32.88	-0.50	-1863.1	-0.01	1863.18	4490.12	2245.06	8056.16	4034.07	29.28	-3.099	-0.001	0.469
95.00	-31.17	-32.75	-0.50	-1822.0	-0.01	1822.07	4468.02	2234.01	7963.33	3987.58	30.10	-3.143	-0.001	0.464
99.75	-28.71	-32.07	-0.50	-1666.5	-0.01	1666.51	3653.35	1826.67	6478.28	3243.96	33.31	-3.307	-0.001	0.522
100.00	-28.59	-32.08	-0.50	-1658.4	-0.01	1658.49	3649.96	1824.98	6463.57	3236.59	33.49	-3.316	-0.001	0.521
105.00	-27.19	-31.48	-0.50	-1498.0	-0.01	1498.08	3581.25	1790.63	6171.38	3090.28	37.06	-3.502	-0.001	0.493
110.00	-25.83	-30.88	-0.50	-1340.6	-0.01	1340.66	3510.98	1755.49	5883.11	2945.93	40.82	-3.683	-0.001	0.463
115.00	-24.50	-30.29	-0.50	-1186.2	-0.02	1186.25	3439.14	1719.57	5598.97	2803.65	44.77	-3.859	-0.001	0.431
120.00	-23.20	-29.69	-0.50	-1034.8	-0.02	1034.81	3365.73	1682.87	5319.21	2663.56	48.90	-4.027	-0.001	0.396
125.00	-21.94	-29.10	-0.50	-886.35	-0.02	886.35	3290.76	1645.38	5044.03	2525.77	53.20	-4.186	-0.001	0.358
130.00	-18.13	-24.34	-0.50	-740.85	-0.03	740.85	3204.00	1602.00	4758.48	2382.78	57.66	-4.333	-0.001	0.317
135.00	-16.97	-23.76	-0.50	-619.14	-0.03	619.14	3102.32	1551.16	4459.76	2233.19	62.27	-4.468	-0.002	0.283
140.00	-13.64	-17.67	-0.50	-500.36	-0.03	500.36	3000.64	1500.32	4170.72	2088.46	67.02	-4.591	-0.002	0.244
142.75	-13.09	-17.36	-0.50	-451.76	-0.03	451.76	2944.72	1472.36	4015.87	2010.92	69.68	-4.654	-0.002	0.229
145.00	-12.40	-17.08	-0.50	-412.70	-0.03	412.70	2898.96	1449.48	3891.36	1948.57	71.88	-4.704	-0.002	0.216
147.25	-11.72	-16.81	-0.50	-374.27	-0.03	374.27	1774.96	887.48	2399.50	1201.53	74.11	-4.752	-0.002	0.318
150.00	-11.31	-16.52	-0.50	-328.05	-0.04	328.05	1752.91	876.46	2323.79	1163.62	76.86	-4.806	-0.002	0.289
155.00	-10.62	-15.99	-0.50	-245.47	-0.04	245.47	1711.62	855.81	2187.55	1095.40	81.95	-4.927	-0.002	0.231
160.00	-7.38	-10.65	-0.50	-165.54	-0.04	165.54	1668.76	834.38	2053.31	1028.18	87.16	-5.024	-0.002	0.166
165.00	-6.82	-10.14	-0.50	-112.30	-0.04	112.30	1624.34	812.17	1921.31	962.08	92.46	-5.097	-0.003	0.121
170.00	-3.06	-4.04	-0.50	-61.58	-0.04	61.58	1578.35	789.17	1791.75	897.21	97.82	-5.149	-0.003	0.071
175.00	-2.65	-3.57	-0.50	-41.40	-0.04	41.40	1530.79	765.40	1664.88	833.68	103.23	-5.184	-0.003	0.051
180.00	-2.25	-3.11	-0.50	-23.56	-0.04	23.56	1481.67	740.83	1540.90	771.60	108.66	-5.208	-0.004	0.032
185.00	-1.88	-2.68	-0.50	-7.99	-0.05	7.99	1427.20	713.60	1416.30	709.20	114.12	-5.222	-0.004	0.013
187.00	0.00	-2.50	-0.51	-2.63	0.00	2.63	1400.09	700.04	1362.73	682.38	116.30	-5.224	-0.004	0.004

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	490.97	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	482.27	0.650	0.000	5.00	27.207	17.68	605.4	0.0	1550.5
10.00		1.00	0.85	19.450	21.40	473.57	0.650	0.000	5.00	26.721	17.37	594.6	0.0	1522.5
15.00		1.00	0.86	19.690	21.66	467.73	0.650	0.000	5.00	26.234	17.05	590.9	0.0	1494.6
20.00		1.00	0.91	20.851	22.94	472.30	0.650	0.000	5.00	25.748	16.74	614.2	0.0	1466.6
25.00		1.00	0.95	21.810	23.99	473.83	0.650	0.000	5.00	25.261	16.42	630.3	0.0	1438.7
30.00		1.00	0.99	22.632	24.90	473.30	0.650	0.000	5.00	24.775	16.10	641.4	0.0	1410.8
35.00		1.00	1.02	23.356	25.69	471.27	0.650	0.000	5.00	24.288	15.79	649.0	0.0	1382.8
40.00		1.00	1.05	24.004	26.40	468.10	0.650	0.000	5.00	23.802	15.47	653.6	0.0	1354.9
45.00		1.00	1.07	24.593	27.05	464.02	0.650	0.000	5.00	23.315	15.15	656.0	0.0	1326.9
46.25	Bot - Section 2	1.00	1.08	24.732	27.21	462.88	0.650	0.000	1.25	5.753	3.74	162.8	0.0	327.4
50.00		1.00	1.10	25.133	27.65	459.20	0.650	0.000	3.75	17.353	11.28	499.0	0.0	1836.7
53.25	Top - Section 1	1.00	1.11	25.462	28.01	455.72	0.650	0.000	3.25	14.818	9.63	431.6	0.0	1568.0
55.00		1.00	1.12	25.633	28.20	461.35	0.650	0.000	1.75	7.894	5.13	231.5	0.0	393.5
60.00		1.00	1.14	26.099	28.71	455.44	0.650	0.000	5.00	22.226	14.45	663.6	0.0	1107.7
65.00		1.00	1.16	26.535	29.19	449.07	0.650	0.000	5.00	21.739	14.13	659.9	0.0	1083.2
70.00		1.00	1.18	26.946	29.64	442.30	0.650	0.000	5.00	21.253	13.81	655.1	0.0	1058.8
75.00		1.00	1.19	27.335	30.07	435.16	0.650	0.000	5.00	20.766	13.50	649.4	0.0	1034.3
80.00		1.00	1.21	27.704	30.47	427.70	0.650	0.000	5.00	20.280	13.18	642.7	0.0	1009.9
85.00		1.00	1.23	28.056	30.86	419.96	0.650	0.000	5.00	19.793	12.87	635.3	0.0	985.4
90.00		1.00	1.24	28.391	31.23	411.95	0.650	0.000	5.00	19.307	12.55	627.1	0.0	961.0
92.00	Appurtenance(s)	1.00	1.25	28.522	31.37	408.68	0.650	0.000	2.00	7.586	4.93	247.5	0.0	377.5
93.75	Bot - Section 3	1.00	1.25	28.634	31.50	405.79	0.650	0.000	1.75	6.574	4.27	215.4	0.0	327.1
95.00		1.00	1.25	28.713	31.58	403.70	0.650	0.000	1.25	4.739	3.08	155.7	0.0	434.3
99.75	Top - Section 2	1.00	1.27	29.006	31.91	395.67	0.650	0.000	4.75	17.730	11.52	588.3	0.0	1624.3
100.00		1.00	1.27	29.021	31.92	402.17	0.650	0.000	0.25	0.921	0.60	30.6	0.0	39.3
105.00		1.00	1.28	29.318	32.25	393.54	0.650	0.000	5.00	18.165	11.81	609.2	0.0	775.6
110.00		1.00	1.29	29.604	32.56	384.72	0.650	0.000	5.00	17.678	11.49	598.7	0.0	754.7
115.00		1.00	1.31	29.880	32.87	375.72	0.650	0.000	5.00	17.192	11.17	587.7	0.0	733.7
120.00		1.00	1.32	30.147	33.16	366.56	0.650	0.000	5.00	16.705	10.86	576.1	0.0	712.7
125.00		1.00	1.33	30.405	33.45	357.25	0.650	0.000	5.00	16.219	10.54	564.1	0.0	691.8
130.00	Appurtenance(s)	1.00	1.34	30.655	33.72	347.79	0.650	0.000	5.00	15.732	10.23	551.7	0.0	670.8
135.00		1.00	1.35	30.898	33.99	338.20	0.650	0.000	5.00	15.246	9.91	538.9	0.0	649.9
140.00	Appurtenance(s)	1.00	1.36	31.133	34.25	328.48	0.650	0.000	5.00	14.759	9.59	525.7	0.0	628.9
142.75	Bot - Section 4	1.00	1.37	31.260	34.39	323.08	0.650	0.000	2.75	7.910	5.14	282.9	0.0	337.0
145.00		1.00	1.37	31.362	34.50	318.63	0.650	0.000	2.25	6.458	4.20	231.7	0.0	455.1
147.25	Top - Section 3	1.00	1.37	31.464	34.61	314.17	0.650	0.000	2.25	6.359	4.13	228.9	0.0	448.0
150.00		1.00	1.38	31.586	34.74	313.50	0.650	0.000	2.75	7.638	4.97	276.0	0.0	217.7
155.00		1.00	1.39	31.803	34.98	303.45	0.650	0.000	5.00	13.511	8.78	491.6	0.0	385.0
160.00	Appurtenance(s)	1.00	1.40	32.015	35.22	293.29	0.650	0.000	5.00	13.025	8.47	477.0	0.0	371.0
165.00		1.00	1.41	32.222	35.44	283.04	0.650	0.000	5.00	12.538	8.15	462.2	0.0	357.0
170.00	Appurtenance(s)	1.00	1.42	32.424	35.67	272.69	0.650	0.000	5.00	12.052	7.83	447.0	0.0	343.0
175.00		1.00	1.43	32.621	35.88	262.25	0.650	0.000	5.00	11.565	7.52	431.6	0.0	329.1
180.00		1.00	1.43	32.814	36.10	251.72	0.650	0.000	5.00	11.079	7.20	415.9	0.0	315.1
185.00		1.00	1.44	33.003	36.30	241.11	0.650	0.000	5.00	10.592	6.88	399.9	0.0	301.1
187.00	Appurtenance(s)	1.00	1.45	33.077	36.38	236.84	0.650	0.000	2.00	4.101	2.67	155.2	0.0	116.5

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals: 187.00

21,582.7

36,710.3

Discrete Appurtenance Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

Topography: 1

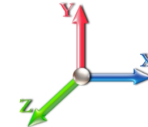
Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

3/23/2018
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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	187.00	ANT450F6	1	33.221	36.543	1.00	1.00	1.86	18.90	0.000	3.917	108.75	0.00	425.95
2	187.00	MF-900B	2	33.077	36.385	1.00	1.00	6.90	23.40	2.015	0.000	401.69	505.98	0.00
3	187.00	ANT900D6-9	2	33.152	36.468	1.00	1.00	1.96	19.80	0.000	2.042	114.36	0.00	233.49
4	187.00	6' Lightning rod	1	33.077	36.385	1.00	1.00	0.38	5.85	0.000	0.000	22.12	0.00	0.00
5	187.00	DB201	2	33.251	36.576	1.00	1.00	7.08	45.00	0.000	4.750	414.34	0.00	1968.11
6	187.00	Low Profile Platform	1	33.077	36.385	1.00	1.00	22.00	1350.00	0.000	0.000	1280.75	0.00	0.00
7	170.00	Cci - HPA-65R-BUU-H6	3	32.424	35.666	0.64	0.75	18.47	137.70	0.000	0.000	1054.27	0.00	0.00
8	170.00	Nokia - CS72188.01 LMU	1	32.424	35.666	1.00	1.00	0.12	0.29	0.000	0.000	6.85	0.00	0.00
9	170.00	Ericsson - RRUS-32 B2	3	32.424	35.666	0.61	0.75	5.49	162.00	0.000	0.000	313.05	0.00	0.00
10	170.00	Quintel - QS66512-2	3	32.424	35.666	0.69	0.75	16.83	299.70	0.000	0.000	960.36	0.00	0.00
11	170.00	Kaelus -	6	32.424	35.666	0.50	0.75	1.30	137.16	0.000	0.000	73.98	0.00	0.00
12	170.00	Ericsson - RRUS-32	3	32.424	35.666	0.50	0.75	4.13	143.10	0.000	0.000	235.71	0.00	0.00
13	170.00	Powerwave - 7770	3	32.424	35.666	0.55	0.75	9.03	94.50	0.000	0.000	515.52	0.00	0.00
14	170.00	Css - DBC-750 -	3	32.424	35.666	0.50	0.75	0.77	13.18	0.000	0.000	43.87	0.00	0.00
15	170.00	Commscope -	3	32.424	35.666	0.73	0.75	0.11	3.08	0.000	0.000	6.29	0.00	0.00
16	170.00	Raycap -	2	32.424	35.666	1.00	1.00	2.94	59.04	0.000	0.000	167.77	0.00	0.00
17	170.00	Low Profile Platform w/	1	32.424	35.666	1.00	1.00	27.70	1530.00	0.000	0.000	1580.72	0.00	0.00
18	170.00	Ericsson - RRUS-11	3	32.424	35.666	0.57	0.75	4.31	148.50	0.000	0.000	245.91	0.00	0.00
19	170.00	Cci -	3	32.424	35.666	0.50	0.75	1.72	51.79	0.000	0.000	98.07	0.00	0.00
20	160.00	Double TMA 17/21	3	32.015	35.216	0.54	0.75	0.67	29.70	0.000	0.000	37.48	0.00	0.00
21	160.00	LNx-6515DS	3	32.015	35.216	0.63	0.75	21.56	135.81	0.000	0.000	1214.61	0.00	0.00
22	160.00	AIR 21 B4A B2P	3	32.015	35.216	0.62	0.75	11.32	243.81	0.000	0.000	637.74	0.00	0.00
23	160.00	AIR 21 B2A B4P	3	32.015	35.216	0.62	0.75	11.32	247.05	0.000	0.000	637.74	0.00	0.00
24	160.00	Platform w/ Hand Rail	1	32.015	35.216	1.00	1.00	32.00	1440.00	0.000	0.000	1803.08	0.00	0.00
25	160.00	S11B12	3	32.015	35.216	0.56	0.80	4.27	137.70	0.000	0.000	240.59	0.00	0.00
26	140.00	RRH2x60-1900	3	31.133	34.247	0.72	0.80	3.26	52.65	0.000	0.000	178.72	0.00	0.00
27	140.00	RRH2x40-07-U	3	31.133	34.247	0.62	0.80	4.17	136.89	0.000	0.000	228.74	0.00	0.00
28	140.00	LNx-6514DS-A1M	3	31.133	34.247	0.66	0.80	16.27	103.68	0.000	0.000	891.76	0.00	0.00
29	140.00	HBXX-6517DS-A2M	6	31.133	34.247	0.62	0.80	31.60	220.32	0.000	0.000	1731.55	0.00	0.00
30	140.00	Low Profile Platform	1	31.133	34.247	1.00	1.00	22.00	1350.00	0.000	0.000	1205.48	0.00	0.00
31	140.00	KS-24019	6	31.133	34.247	0.75	0.75	0.54	2.70	0.000	0.000	29.59	0.00	0.00
32	140.00	DB-T1-6Z-8AB-0Z	1	31.133	34.247	0.75	0.75	3.07	19.26	0.000	0.000	168.49	0.00	0.00
33	140.00	FD9R6004/2C-3L	6	31.133	34.247	0.56	0.75	1.22	16.74	0.000	0.000	66.58	0.00	0.00
34	140.00	LNx-6514DS-VTM	3	31.133	34.247	0.60	0.75	14.56	89.37	0.000	0.000	797.92	0.00	0.00
35	130.00	TD-RRH8x20-25	3	30.655	33.720	0.55	0.80	6.71	189.00	0.000	0.000	361.85	0.00	0.00
36	130.00	1900MHz RRH	3	30.655	33.720	0.70	0.80	8.03	118.80	0.000	0.000	433.00	0.00	0.00
37	130.00	APXVTM14-C-120	3	30.655	33.720	0.63	0.80	12.02	151.20	0.000	0.000	648.54	0.00	0.00
38	130.00	APXVSP18-C-A20	3	30.655	33.720	0.66	0.80	15.98	153.90	0.000	0.000	861.94	0.00	0.00
39	130.00	RF Filters	3	30.655	33.720	0.54	0.80	1.50	41.85	0.000	0.000	80.68	0.00	0.00
40	130.00	800 MHz RRH	3	30.655	33.720	0.74	0.80	5.50	143.10	0.000	0.000	296.63	0.00	0.00
41	130.00	800MHz Filter	3	30.655	33.720	0.55	0.80	1.29	23.76	0.000	0.000	69.69	0.00	0.00
42	130.00	ACU-A20-N	4	30.655	33.720	0.63	0.80	0.35	3.60	0.000	0.000	19.09	0.00	0.00
43	130.00	Low Profile Platform	1	30.655	33.720	1.00	1.00	22.00	1350.00	0.000	0.000	1186.95	0.00	0.00
44	92.00	Low Profile Platform	1	28.522	31.374	1.00	1.00	22.00	1350.00	0.000	0.000	1104.36	0.00	0.00
45	92.00	DB205	1	29.082	31.990	0.80	0.80	1.44	34.20	0.000	9.000	73.70	0.00	663.34
46	92.00	ANT450Y10-WR	1	28.522	31.374	0.80	0.80	0.39	4.50	0.000	0.000	19.68	0.00	0.00
47	92.00	ANT150D3	1	28.838	31.722	0.80	0.80	1.74	16.20	0.000	5.000	88.52	0.00	442.58

Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 19
	Struct Class: II	



48	92.00 ANT4506-9	1	28.713	31.584	0.80	0.80	2.22	16.20	0.000	3.000	111.99	0.00	335.96
49	92.00 MF-900B	2	28.522	31.374	0.80	0.80	5.52	23.40	2.887	0.000	277.09	499.96	0.00
Totals:										12,088.37	23,148.17		

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

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		605.39	1781.60	0.00	0.00
10.00		594.56	1753.65	0.00	0.00
15.00		590.95	1725.71	0.00	0.00
20.00		614.16	1697.77	0.00	0.00
25.00		630.27	1669.83	0.00	0.00
30.00		641.45	1641.89	0.00	0.00
35.00		648.96	1613.95	0.00	0.00
40.00		653.62	1586.00	0.00	0.00
45.00		655.96	1558.06	0.00	0.00
46.25		162.77	385.15	0.00	0.00
50.00		498.95	2010.09	0.00	0.00
53.25		431.64	1718.24	0.00	0.00
55.00		231.48	474.35	0.00	0.00
60.00		663.59	1338.78	0.00	0.00
65.00		659.92	1314.33	0.00	0.00
70.00		655.15	1289.88	0.00	0.00
75.00		649.39	1265.43	0.00	0.00
80.00		642.74	1240.98	0.00	0.00
85.00		635.28	1216.54	0.00	0.00
90.00		627.08	1192.09	0.00	0.00
92.00	(7) attachments	1922.87	1914.49	499.96	1441.88
93.75		215.36	406.52	0.00	0.00
95.00		155.66	490.96	0.00	0.00
99.75		588.34	1839.75	0.00	0.00
100.00		30.58	50.67	0.00	0.00
105.00		609.24	1002.43	0.00	0.00
110.00		598.71	981.47	0.00	0.00
115.00		587.65	960.51	0.00	0.00
120.00		576.12	939.56	0.00	0.00
125.00		564.13	918.60	0.00	0.00
130.00	(26) attachments	4510.09	3072.85	0.00	0.00
135.00		538.88	862.01	0.00	0.00
140.00	(32) attachments	5824.49	2832.66	0.00	0.00
142.75		282.88	419.64	0.00	0.00
145.00		231.69	522.70	0.00	0.00
147.25		228.89	515.63	0.00	0.00
150.00		276.01	300.35	0.00	0.00
155.00		491.57	535.26	0.00	0.00
160.00	(16) attachments	5048.27	2755.36	0.00	0.00
165.00		462.18	446.21	0.00	0.00
170.00	(37) attachments	5749.40	3212.27	0.00	0.00
175.00		431.59	338.98	0.00	0.00
180.00		415.88	325.01	0.00	0.00
185.00		399.91	311.04	0.00	0.00
187.00	(9) attachments	2497.18	1583.45	505.98	2627.55

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	<u>44,730.86</u>	<u>56,012.71</u>	<u>1,005.95</u>	<u>4,069.43</u>
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Calculated Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

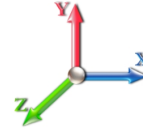
3/23/2018
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Load Case: 0.9D + 1.6W 97 mph Wind

Iterations 24

Dead Load Factor 0.90
Wind Load Factor 1.60



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	-55.95	-44.80	-0.99	-5582.5	-0.01	5582.55	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.610
5.00	-54.06	-44.33	-0.99	-5358.5	-0.01	5358.54	6919.93	3459.96	17978.0	9002.40	0.08	-0.145	0.000	0.603
10.00	-52.20	-43.87	-0.99	-5136.8	-0.01	5136.87	6836.37	3418.19	17435.4	8730.69	0.31	-0.293	0.000	0.596
15.00	-50.36	-43.40	-0.99	-4917.5	-0.01	4917.54	6751.25	3375.63	16896.9	8461.01	0.70	-0.442	0.000	0.589
20.00	-48.55	-42.90	-0.99	-4700.5	-0.01	4700.56	6664.57	3332.28	16362.6	8193.47	1.24	-0.593	0.000	0.581
25.00	-46.78	-42.37	-0.99	-4486.0	-0.01	4486.07	6576.31	3288.16	15832.7	7928.16	1.94	-0.745	0.000	0.573
30.00	-45.03	-41.83	-0.99	-4274.2	-0.01	4274.22	6486.49	3243.25	15307.6	7665.22	2.81	-0.899	0.000	0.565
35.00	-43.32	-41.27	-0.99	-4065.0	-0.01	4065.07	6395.11	3197.55	14787.5	7404.75	3.83	-1.055	0.000	0.556
40.00	-41.63	-40.70	-0.99	-3858.7	-0.01	3858.72	6302.15	3151.08	14272.4	7146.85	5.02	-1.212	0.000	0.547
45.00	-40.02	-40.08	-0.99	-3655.2	-0.01	3655.21	6207.63	3103.82	13762.8	6891.65	6.38	-1.371	0.000	0.537
46.25	-39.58	-39.96	-1.00	-3605.1	-0.01	3605.11	6183.76	3091.88	13636.3	6828.29	6.74	-1.412	0.000	0.535
50.00	-37.51	-39.49	-1.00	-3455.2	-0.01	3455.25	6111.55	3055.77	13258.8	6639.26	7.90	-1.533	0.000	0.527
53.25	-35.75	-39.06	-1.00	-3326.9	-0.01	3326.92	5153.03	2576.51	11233.0	5624.85	8.98	-1.639	0.000	0.599
55.00	-35.20	-38.89	-1.00	-3258.5	-0.02	3258.57	5126.51	2563.25	11089.7	5553.12	9.59	-1.696	0.000	0.594
60.00	-33.77	-38.29	-1.00	-3064.1	-0.02	3064.14	5049.68	2524.84	10683.1	5349.50	11.47	-1.872	0.000	0.580
65.00	-32.36	-37.68	-1.00	-2872.7	-0.02	2872.71	4971.29	2485.64	10280.5	5147.92	13.52	-2.048	-0.001	0.565
70.00	-30.98	-37.07	-1.00	-2684.3	-0.02	2684.31	4891.33	2445.66	9882.29	4948.49	15.76	-2.224	-0.001	0.549
75.00	-29.63	-36.46	-1.00	-2498.9	-0.02	2498.95	4809.80	2404.90	9488.55	4751.33	18.18	-2.400	-0.001	0.532
80.00	-28.31	-35.86	-1.00	-2316.6	-0.02	2316.63	4726.70	2363.35	9099.56	4556.54	20.79	-2.576	-0.001	0.515
85.00	-27.02	-35.25	-1.00	-2137.3	-0.03	2137.36	4642.04	2321.02	8715.55	4364.25	23.58	-2.751	-0.001	0.496
90.00	-25.78	-34.62	-1.00	-1961.1	-0.03	1961.13	4555.82	2277.91	8336.73	4174.56	26.56	-2.924	-0.001	0.476
92.00	-23.93	-32.62	-0.50	-1890.4	0.00	1890.45	4520.89	2260.44	8186.70	4099.44	27.80	-2.995	-0.001	0.467
93.75	-23.51	-32.41	-0.50	-1833.3	0.00	1833.36	4490.12	2245.06	8056.16	4034.07	28.91	-3.056	-0.001	0.460
95.00	-22.97	-32.27	-0.50	-1792.8	0.00	1792.85	4468.02	2234.01	7963.33	3987.58	29.71	-3.100	-0.001	0.455
99.75	-21.12	-31.61	-0.50	-1639.5	-0.01	1639.58	3653.35	1826.67	6478.28	3243.96	32.88	-3.261	-0.001	0.512
100.00	-21.02	-31.61	-0.50	-1631.6	-0.01	1631.68	3649.96	1824.98	6463.57	3236.59	33.05	-3.269	-0.001	0.510
105.00	-19.95	-31.01	-0.50	-1473.6	-0.01	1473.62	3581.25	1790.63	6171.38	3090.28	36.57	-3.452	-0.001	0.483
110.00	-18.92	-30.41	-0.50	-1318.5	-0.01	1318.58	3510.98	1755.49	5883.11	2945.93	40.28	-3.631	-0.001	0.453
115.00	-17.91	-29.81	-0.50	-1166.5	-0.01	1166.54	3439.14	1719.57	5598.97	2803.65	44.18	-3.804	-0.001	0.422
120.00	-16.93	-29.22	-0.50	-1017.4	-0.02	1017.48	3365.73	1682.87	5319.21	2663.56	48.25	-3.969	-0.001	0.387
125.00	-15.98	-28.64	-0.50	-871.37	-0.02	871.37	3290.76	1645.38	5044.03	2525.77	52.49	-4.125	-0.001	0.350
130.00	-13.19	-23.94	-0.50	-728.19	-0.02	728.19	3204.00	1602.00	4758.48	2382.78	56.88	-4.270	-0.001	0.310
135.00	-12.32	-23.37	-0.50	-608.47	-0.03	608.47	3102.32	1551.16	4459.76	2233.19	61.42	-4.403	-0.002	0.277
140.00	-9.92	-17.36	-0.50	-491.62	-0.03	491.62	3000.64	1500.32	4170.72	2088.46	66.10	-4.523	-0.002	0.239
142.75	-9.51	-17.05	-0.50	-443.89	-0.03	443.89	2944.72	1472.36	4015.87	2010.92	68.72	-4.586	-0.002	0.224
145.00	-8.99	-16.79	-0.50	-405.52	-0.03	405.52	2898.96	1449.48	3891.36	1948.57	70.89	-4.634	-0.002	0.211
147.25	-8.48	-16.52	-0.50	-367.75	-0.03	367.75	1774.96	887.48	2399.50	1201.53	73.08	-4.681	-0.002	0.311
150.00	-8.18	-16.24	-0.50	-322.31	-0.03	322.31	1752.91	876.46	2323.79	1163.62	75.79	-4.735	-0.002	0.282
155.00	-7.66	-15.72	-0.50	-241.13	-0.04	241.13	1711.62	855.81	2187.55	1095.40	80.81	-4.854	-0.002	0.225
160.00	-5.33	-10.46	-0.50	-162.55	-0.04	162.55	1668.76	834.38	2053.31	1028.18	85.94	-4.949	-0.002	0.161
165.00	-4.91	-9.96	-0.50	-110.26	-0.04	110.26	1624.34	812.17	1921.31	962.08	91.16	-5.021	-0.003	0.118
170.00	-2.22	-3.96	-0.50	-60.43	-0.04	60.43	1578.35	789.17	1791.75	897.21	96.44	-5.071	-0.003	0.069
175.00	-1.92	-3.50	-0.50	-40.65	-0.04	40.65	1530.79	765.40	1664.88	833.68	101.77	-5.105	-0.003	0.050
180.00	-1.63	-3.06	-0.50	-23.16	-0.04	23.16	1481.67	740.83	1540.90	771.60	107.12	-5.130	-0.004	0.031
185.00	-1.35	-2.63	-0.50	-7.89	-0.04	7.89	1427.20	713.60	1416.30	709.20	112.50	-5.143	-0.004	0.012
187.00	0.00	-2.50	-0.51	-2.63	0.00	2.63	1400.09	700.04	1362.73	682.38	114.65	-5.145	-0.004	0.004

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Iterations 25

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		1.00	0.85	5.168	5.68	0.00	1.200	1.410	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	1.687	5.00	28.613	34.34	195.2	691.1	2758.4
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.792	5.00	28.214	33.86	192.5	722.5	2752.6
15.00		1.00	0.86	5.232	5.76	0.00	1.200	1.860	5.00	27.784	33.34	191.9	737.5	2730.3
20.00		1.00	0.91	5.540	6.09	0.00	1.200	1.912	5.00	27.341	32.81	199.9	744.7	2700.2
25.00		1.00	0.95	5.795	6.37	0.00	1.200	1.953	5.00	26.889	32.27	205.7	747.2	2665.4
30.00		1.00	0.99	6.013	6.61	0.00	1.200	1.988	5.00	26.431	31.72	209.8	746.5	2627.6
35.00		1.00	1.02	6.206	6.83	0.00	1.200	2.017	5.00	25.969	31.16	212.7	743.6	2587.4
40.00		1.00	1.05	6.378	7.02	0.00	1.200	2.044	5.00	25.505	30.61	214.7	739.0	2545.5
45.00		1.00	1.07	6.534	7.19	0.00	1.200	2.068	5.00	25.038	30.05	216.0	732.9	2502.2
46.25 Bot - Section 2		1.00	1.08	6.571	7.23	0.00	1.200	2.073	1.25	6.185	7.42	53.6	182.8	619.3
50.00		1.00	1.10	6.678	7.35	0.00	1.200	2.089	3.75	18.659	22.39	164.5	552.9	3001.9
53.25 Top - Section 1		1.00	1.11	6.765	7.44	0.00	1.200	2.102	3.25	15.957	19.15	142.5	475.9	2566.5
55.00		1.00	1.12	6.811	7.49	0.00	1.200	2.109	1.75	8.509	10.21	76.5	255.2	779.8
60.00		1.00	1.14	6.934	7.63	0.00	1.200	2.127	5.00	23.998	28.80	219.7	720.4	2197.2
65.00		1.00	1.16	7.050	7.76	0.00	1.200	2.144	5.00	23.526	28.23	218.9	710.8	2155.1
70.00		1.00	1.18	7.160	7.88	0.00	1.200	2.159	5.00	23.052	27.66	217.9	700.7	2112.4
75.00		1.00	1.19	7.263	7.99	0.00	1.200	2.174	5.00	22.578	27.09	216.5	690.0	2069.1
80.00		1.00	1.21	7.361	8.10	0.00	1.200	2.188	5.00	22.103	26.52	214.8	678.8	2025.3
85.00		1.00	1.23	7.454	8.20	0.00	1.200	2.201	5.00	21.627	25.95	212.8	667.2	1981.1
90.00		1.00	1.24	7.544	8.30	0.00	1.200	2.214	5.00	21.151	25.38	210.6	655.2	1936.5
92.00 Appurtenance(s)		1.00	1.25	7.578	8.34	0.00	1.200	2.218	2.00	8.326	9.99	83.3	260.1	763.5
93.75 Bot - Section 3		1.00	1.25	7.608	8.37	0.00	1.200	2.222	1.75	7.223	8.67	72.5	226.1	662.3
95.00		1.00	1.25	7.629	8.39	0.00	1.200	2.225	1.25	5.202	6.24	52.4	163.3	742.3
99.75 Top - Section 2		1.00	1.27	7.707	8.48	0.00	1.200	2.236	4.75	19.500	23.40	198.4	609.3	2775.0
100.00		1.00	1.27	7.711	8.48	0.00	1.200	2.237	0.25	1.014	1.22	10.3	32.0	84.5
105.00		1.00	1.28	7.790	8.57	0.00	1.200	2.248	5.00	20.038	24.05	206.0	627.8	1661.9
110.00		1.00	1.29	7.866	8.65	0.00	1.200	2.258	5.00	19.560	23.47	203.1	614.5	1620.8
115.00		1.00	1.31	7.939	8.73	0.00	1.200	2.268	5.00	19.082	22.90	200.0	601.1	1579.3
120.00		1.00	1.32	8.010	8.81	0.00	1.200	2.277	5.00	18.603	22.32	196.7	587.3	1537.6
125.00		1.00	1.33	8.079	8.89	0.00	1.200	2.287	5.00	18.124	21.75	193.3	573.4	1495.7
130.00 Appurtenance(s)		1.00	1.34	8.145	8.96	0.00	1.200	2.296	5.00	17.645	21.17	189.7	559.2	1453.6
135.00		1.00	1.35	8.210	9.03	0.00	1.200	2.304	5.00	17.166	20.60	186.0	544.8	1411.3
140.00 Appurtenance(s)		1.00	1.36	8.272	9.10	0.00	1.200	2.313	5.00	16.686	20.02	182.2	530.2	1368.8
142.75 Bot - Section 4		1.00	1.37	8.306	9.14	0.00	1.200	2.317	2.75	8.972	10.77	98.4	287.2	736.5
145.00		1.00	1.37	8.333	9.17	0.00	1.200	2.321	2.25	7.328	8.79	80.6	235.2	842.0
147.25 Top - Section 3		1.00	1.37	8.360	9.20	0.00	1.200	2.324	2.25	7.231	8.68	79.8	232.2	829.5
150.00		1.00	1.38	8.392	9.23	0.00	1.200	2.329	2.75	8.706	10.45	96.4	279.3	569.6
155.00		1.00	1.39	8.450	9.30	0.00	1.200	2.336	5.00	15.458	18.55	172.4	492.8	1006.0
160.00 Appurtenance(s)		1.00	1.40	8.506	9.36	0.00	1.200	2.343	5.00	14.978	17.97	168.2	477.5	972.2
165.00		1.00	1.41	8.561	9.42	0.00	1.200	2.351	5.00	14.497	17.40	163.8	462.2	938.2
170.00 Appurtenance(s)		1.00	1.42	8.615	9.48	0.00	1.200	2.358	5.00	14.016	16.82	159.4	446.7	904.1
175.00		1.00	1.43	8.667	9.53	0.00	1.200	2.364	5.00	13.535	16.24	154.9	431.0	869.8
180.00		1.00	1.43	8.719	9.59	0.00	1.200	2.371	5.00	13.055	15.67	150.2	415.2	835.4
185.00		1.00	1.44	8.769	9.65	0.00	1.200	2.378	5.00	12.573	15.09	145.5	399.3	800.8
187.00 Appurtenance(s)		1.00	1.45	8.789	9.67	0.00	1.200	2.380	2.00	4.894	5.87	56.8	157.2	312.6

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals: 187.00

7,287.0

72,087.1

Discrete Appurtenance Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

Topography: 1

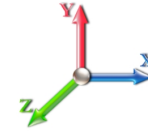
Code: EIA/TIA-222-G 3/23/2018
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II



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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)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	187.00	ANT450F6	1	8.827	9.710	1.00	1.00	5.72	78.08	0.000	3.917	55.56	0.00	217.61
2	187.00	MF-900B	2	8.789	9.668	1.00	1.00	73.40	273.22	2.015	0.000	709.59	1430.1	0.00
3	187.00	ANT900D6-9	2	8.809	9.690	1.00	1.00	8.52	108.38	0.000	2.042	82.55	0.00	168.53
4	187.00	6' Lightning rod	1	8.789	9.668	1.00	1.00	1.86	52.01	0.000	0.000	18.01	0.00	0.00
5	187.00	DB201	2	8.835	9.718	1.00	1.00	36.78	295.81	0.000	4.750	357.43	0.00	1697.79
6	187.00	Low Profile Platform	1	8.789	9.668	1.00	1.00	46.09	3285.07	0.000	0.000	445.54	0.00	0.00
7	170.00	Cci - HPA-65R-BUU-H6	3	8.615	9.477	0.64	0.75	22.08	1247.51	0.000	0.000	209.22	0.00	0.00
8	170.00	Nokia - CS72188.01 LMU	1	8.615	9.477	1.00	1.00	0.39	1.50	0.000	0.000	3.72	0.00	0.00
9	170.00	Ericsson - RRUS-32 B2	3	8.615	9.477	0.62	0.75	7.57	676.50	0.000	0.000	71.69	0.00	0.00
10	170.00	Quintel - QS66512-2	3	8.615	9.477	0.69	0.75	20.55	1377.88	0.000	0.000	194.71	0.00	0.00
11	170.00	Kaelus -	6	8.615	9.477	0.50	0.75	2.46	279.73	0.000	0.000	23.29	0.00	0.00
12	170.00	Ericsson - RRUS-32	3	8.615	9.477	0.50	0.75	5.66	578.07	0.000	0.000	53.59	0.00	0.00
13	170.00	Powerwave - 7770	3	8.615	9.477	0.56	0.75	11.77	718.30	0.000	0.000	111.50	0.00	0.00
14	170.00	Css - DBC-750 -	3	8.615	9.477	0.50	0.75	1.85	50.80	0.000	0.000	17.50	0.00	0.00
15	170.00	Commscope -	3	8.615	9.477	0.74	0.75	0.69	12.21	0.000	0.000	6.50	0.00	0.00
16	170.00	Raycap -	2	8.615	9.477	1.00	1.00	4.83	203.89	0.000	0.000	45.78	0.00	0.00
17	170.00	Low Profile Platform w/	1	8.615	9.477	1.00	1.00	57.74	3944.00	0.000	0.000	547.19	0.00	0.00
18	170.00	Ericsson - RRUS-11	3	8.615	9.477	0.56	0.75	5.78	588.80	0.000	0.000	54.81	0.00	0.00
19	170.00	Cci -	3	8.615	9.477	0.50	0.75	3.29	149.63	0.000	0.000	31.14	0.00	0.00
20	160.00	Double TMA 17/21	3	8.506	9.357	0.56	0.75	1.76	76.61	0.000	0.000	16.46	0.00	0.00
21	160.00	LNx-6515DS	3	8.506	9.357	0.63	0.75	29.92	911.84	0.000	0.000	279.99	0.00	0.00
22	160.00	AIR 21 B4A B2P	3	8.506	9.357	0.62	0.75	14.24	1051.32	0.000	0.000	133.23	0.00	0.00
23	160.00	AIR 21 B2A B4P	3	8.506	9.357	0.62	0.75	14.24	1055.64	0.000	0.000	133.23	0.00	0.00
24	160.00	Platform w/ Hand Rail	1	8.506	9.357	1.00	1.00	69.50	4139.67	0.000	0.000	650.28	0.00	0.00
25	160.00	S11B12	3	8.506	9.357	0.57	0.80	5.88	571.36	0.000	0.000	55.01	0.00	0.00
26	140.00	RRH2x60-1900	3	8.272	9.099	0.73	0.80	4.95	330.88	0.000	0.000	45.03	0.00	0.00
27	140.00	RRH2x40-07-U	3	8.272	9.099	0.64	0.80	6.98	365.82	0.000	0.000	63.54	0.00	0.00
28	140.00	LNx-6514DS-A1M	3	8.272	9.099	0.68	0.80	24.30	687.51	0.000	0.000	221.10	0.00	0.00
29	140.00	HBXX-6517DS-A2M	6	8.272	9.099	0.63	0.80	47.09	1392.63	0.000	0.000	428.47	0.00	0.00
30	140.00	Low Profile Platform	1	8.272	9.099	1.00	1.00	45.40	3234.45	0.000	0.000	413.15	0.00	0.00
31	140.00	KS-24019	6	8.272	9.099	0.75	0.75	1.77	45.67	0.000	0.000	16.07	0.00	0.00
32	140.00	DB-T1-6Z-8AB-0Z	1	8.272	9.099	0.75	0.75	3.87	153.16	0.000	0.000	35.23	0.00	0.00
33	140.00	FD9R6004/2C-3L	6	8.272	9.099	0.58	0.75	3.28	72.34	0.000	0.000	29.87	0.00	0.00
34	140.00	LNx-6514DS-VTM	3	8.272	9.099	0.61	0.75	21.76	663.69	0.000	0.000	198.01	0.00	0.00
35	130.00	TD-RRH8x20-25	3	8.145	8.960	0.57	0.80	8.77	717.13	0.000	0.000	78.56	0.00	0.00
36	130.00	1900MHz RRH	3	8.145	8.960	0.71	0.80	12.02	495.58	0.000	0.000	107.72	0.00	0.00
37	130.00	APXVTM14-C-120	3	8.145	8.960	0.65	0.80	15.23	875.54	0.000	0.000	136.45	0.00	0.00
38	130.00	APXVSP18-C-A20	3	8.145	8.960	0.68	0.80	23.86	738.81	0.000	0.000	213.75	0.00	0.00
39	130.00	RF Filters	3	8.145	8.960	0.55	0.80	2.50	193.57	0.000	0.000	22.43	0.00	0.00
40	130.00	800 MHz RRH	3	8.145	8.960	0.74	0.80	8.92	419.36	0.000	0.000	79.88	0.00	0.00
41	130.00	800MHz Filter	3	8.145	8.960	0.57	0.80	2.78	86.30	0.000	0.000	24.90	0.00	0.00
42	130.00	ACU-A20-N	4	8.145	8.960	0.65	0.80	1.37	22.20	0.000	0.000	12.32	0.00	0.00
43	130.00	Low Profile Platform	1	8.145	8.960	1.00	1.00	45.23	3221.74	0.000	0.000	405.26	0.00	0.00
44	92.00	Low Profile Platform	1	7.578	8.336	1.00	1.00	44.45	3163.75	0.000	0.000	370.54	0.00	0.00
45	92.00	DB205	1	7.727	8.500	0.80	0.80	7.89	102.64	0.000	9.000	67.04	0.00	603.39
46	92.00	ANT450Y10-WR	1	7.578	8.336	0.80	0.80	1.54	25.97	0.000	0.000	12.85	0.00	0.00
47	92.00	ANT150D3	1	7.662	8.429	0.80	0.80	10.38	93.67	0.000	5.000	87.51	0.00	437.53

Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 26
	Struct Class: II	



48	92.00 ANT4506-9	1	7.629	8.392	0.80	0.80	5.30	102.90	0.000	3.000	44.45	0.00	133.36
49	92.00 MF-900B	2	7.578	8.336	0.80	0.80	55.10	252.39	2.887	0.000	459.35	1326.0	0.00
Totals:										39,185.53	7,880.98		

Total Applied Force Summary

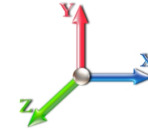
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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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

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		195.19	3066.57	0.00	0.00
10.00		192.47	3060.76	0.00	0.00
15.00		191.88	3038.47	0.00	0.00
20.00		199.94	3008.37	0.00	0.00
25.00		205.68	2973.62	0.00	0.00
30.00		209.80	2935.72	0.00	0.00
35.00		212.73	2895.55	0.00	0.00
40.00		214.73	2853.63	0.00	0.00
45.00		215.96	2810.33	0.00	0.00
46.25		53.65	696.34	0.00	0.00
50.00		164.48	3233.02	0.00	0.00
53.25		142.50	2766.85	0.00	0.00
55.00		76.50	887.68	0.00	0.00
60.00		219.67	2505.40	0.00	0.00
65.00		218.94	2463.28	0.00	0.00
70.00		217.86	2420.54	0.00	0.00
75.00		216.46	2377.26	0.00	0.00
80.00		214.77	2333.49	0.00	0.00
85.00		212.81	2289.29	0.00	0.00
90.00		210.62	2244.69	0.00	0.00
92.00	(7) attachments	1125.02	4628.12	1326.09	1174.28
93.75		72.53	768.13	0.00	0.00
95.00		52.39	817.94	0.00	0.00
99.75		198.38	3062.28	0.00	0.00
100.00		10.32	99.60	0.00	0.00
105.00		206.04	1964.34	0.00	0.00
110.00		203.09	1923.17	0.00	0.00
115.00		199.97	1881.74	0.00	0.00
120.00		196.69	1840.06	0.00	0.00
125.00		193.27	1798.15	0.00	0.00
130.00	(26) attachments	1270.98	8526.27	0.00	0.00
135.00		186.02	1694.14	0.00	0.00
140.00	(32) attachments	1632.66	8597.76	0.00	0.00
142.75		98.37	846.69	0.00	0.00
145.00		80.60	932.17	0.00	0.00
147.25		79.79	919.73	0.00	0.00
150.00		96.44	679.77	0.00	0.00
155.00		172.42	1206.45	0.00	0.00
160.00	(16) attachments	1436.38	8979.04	0.00	0.00
165.00		163.83	1057.12	0.00	0.00
170.00	(37) attachments	1530.03	10851.79	0.00	0.00
175.00		154.86	882.98	0.00	0.00
180.00		150.24	848.57	0.00	0.00
185.00		145.54	814.04	0.00	0.00
187.00	(9) attachments	1725.45	4410.40	1430.12	2083.93

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	15,167.96	120,891.2 9	2,756.20	3,258.21
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Calculated Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

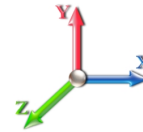
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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 25

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	-120.8	-15.23	-2.75	-2019.9	-0.03	2019.96	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.235
5.00	-117.8	-15.14	-2.75	-1943.8	-0.03	1943.83	6919.93	3459.96	17978.0	9002.40	0.03	-0.053	0.000	0.233
10.00	-114.7	-15.05	-2.75	-1868.1	-0.03	1868.15	6836.37	3418.19	17435.4	8730.69	0.11	-0.106	0.000	0.231
15.00	-111.6	-14.96	-2.75	-1792.9	-0.03	1792.91	6751.25	3375.63	16896.9	8461.01	0.25	-0.160	0.000	0.228
20.00	-108.6	-14.85	-2.75	-1718.1	-0.03	1718.13	6664.57	3332.28	16362.6	8193.47	0.45	-0.216	0.000	0.226
25.00	-105.6	-14.74	-2.75	-1643.8	-0.03	1643.87	6576.31	3288.16	15832.7	7928.16	0.71	-0.271	0.000	0.223
30.00	-102.7	-14.61	-2.75	-1570.1	-0.03	1570.19	6486.49	3243.25	15307.6	7665.22	1.02	-0.328	-0.001	0.221
35.00	-99.81	-14.48	-2.75	-1497.1	-0.03	1497.12	6395.11	3197.55	14787.5	7404.75	1.40	-0.385	-0.001	0.218
40.00	-96.94	-14.35	-2.75	-1424.7	-0.03	1424.71	6302.15	3151.08	14272.4	7146.85	1.83	-0.443	-0.001	0.215
45.00	-94.13	-14.17	-2.75	-1352.9	-0.03	1352.98	6207.63	3103.82	13762.8	6891.65	2.33	-0.502	-0.001	0.212
46.25	-93.42	-14.16	-2.75	-1335.2	-0.03	1335.27	6183.76	3091.88	13636.3	6828.29	2.46	-0.517	-0.001	0.211
50.00	-90.18	-14.03	-2.75	-1282.1	-0.03	1282.18	6111.55	3055.77	13258.8	6639.26	2.88	-0.562	-0.001	0.208
53.25	-87.41	-13.90	-2.75	-1236.5	-0.03	1236.59	5153.03	2576.51	11233.0	5624.85	3.28	-0.601	-0.001	0.237
55.00	-86.51	-13.88	-2.75	-1212.2	-0.03	1212.26	5126.51	2563.25	11089.7	5553.12	3.50	-0.623	-0.001	0.235
60.00	-83.99	-13.73	-2.75	-1142.8	-0.04	1142.84	5049.68	2524.84	10683.1	5349.50	4.19	-0.688	-0.001	0.230
65.00	-81.52	-13.58	-2.75	-1074.1	-0.04	1074.18	4971.29	2485.64	10280.5	5147.92	4.95	-0.754	-0.001	0.225
70.00	-79.08	-13.42	-2.75	-1006.3	-0.04	1006.31	4891.33	2445.66	9882.29	4948.49	5.77	-0.820	-0.002	0.220
75.00	-76.69	-13.25	-2.75	-939.23	-0.04	939.23	4809.80	2404.90	9488.55	4751.33	6.67	-0.886	-0.002	0.214
80.00	-74.35	-13.09	-2.75	-872.97	-0.04	872.97	4726.70	2363.35	9099.56	4556.54	7.63	-0.952	-0.002	0.207
85.00	-72.05	-12.92	-2.75	-807.54	-0.04	807.54	4642.04	2321.02	8715.55	4364.25	8.66	-1.018	-0.002	0.201
90.00	-69.80	-12.72	-2.75	-742.96	-0.04	742.96	4555.82	2277.91	8336.73	4174.56	9.76	-1.083	-0.002	0.193
92.00	-65.19	-11.54	-1.43	-716.35	-0.02	716.35	4520.89	2260.44	8186.70	4099.44	10.22	-1.110	-0.003	0.189
93.75	-64.42	-11.47	-1.43	-696.16	-0.02	696.16	4490.12	2245.06	8056.16	4034.07	10.64	-1.133	-0.003	0.187
95.00	-63.59	-11.45	-1.43	-681.82	-0.02	681.82	4468.02	2234.01	7963.33	3987.58	10.93	-1.150	-0.003	0.185
99.75	-60.53	-11.22	-1.43	-627.46	-0.02	627.46	3653.35	1826.67	6478.28	3243.96	12.11	-1.211	-0.003	0.210
100.00	-60.42	-11.24	-1.43	-624.65	-0.02	624.65	3649.96	1824.98	6463.57	3236.59	12.17	-1.215	-0.003	0.210
105.00	-58.45	-11.07	-1.43	-568.43	-0.02	568.43	3581.25	1790.63	6171.38	3090.28	13.48	-1.285	-0.003	0.200
110.00	-56.52	-10.89	-1.43	-513.10	-0.03	513.10	3510.98	1755.49	5883.11	2945.93	14.87	-1.354	-0.003	0.190
115.00	-54.63	-10.71	-1.43	-458.66	-0.03	458.66	3439.14	1719.57	5598.97	2803.65	16.32	-1.422	-0.003	0.180
120.00	-52.78	-10.52	-1.43	-405.14	-0.03	405.14	3365.73	1682.87	5319.21	2663.56	17.85	-1.487	-0.004	0.168
125.00	-50.98	-10.33	-1.43	-352.54	-0.03	352.54	3290.76	1645.38	5044.03	2525.77	19.44	-1.550	-0.004	0.155
130.00	-42.48	-8.87	-1.43	-300.87	-0.03	300.87	3204.00	1602.00	4758.48	2382.78	21.09	-1.609	-0.004	0.140
135.00	-40.79	-8.67	-1.43	-256.52	-0.04	256.52	3102.32	1551.16	4459.76	2233.19	22.81	-1.664	-0.004	0.128
140.00	-32.24	-6.81	-1.43	-213.15	-0.04	213.15	3000.64	1500.32	4170.72	2088.46	24.58	-1.716	-0.005	0.113
142.75	-31.39	-6.70	-1.43	-194.42	-0.04	194.42	2944.72	1472.36	4015.87	2010.92	25.58	-1.743	-0.005	0.107
145.00	-30.46	-6.60	-1.43	-179.35	-0.04	179.35	2898.96	1449.48	3891.36	1948.57	26.40	-1.764	-0.005	0.103
147.25	-29.54	-6.51	-1.43	-164.49	-0.04	164.49	1774.96	887.48	2399.50	1201.53	27.24	-1.785	-0.005	0.154
150.00	-28.86	-6.41	-1.43	-146.60	-0.04	146.60	1752.91	876.46	2323.79	1163.62	28.27	-1.809	-0.005	0.143
155.00	-27.65	-6.22	-1.43	-114.56	-0.04	114.56	1711.62	855.81	2187.55	1095.40	30.20	-1.865	-0.006	0.121
160.00	-18.72	-4.50	-1.43	-83.46	-0.04	83.46	1668.76	834.38	2053.31	1028.18	32.18	-1.911	-0.007	0.092
165.00	-17.67	-4.31	-1.43	-60.94	-0.05	60.94	1624.34	812.17	1921.31	962.08	34.20	-1.949	-0.007	0.074
170.00	-6.88	-2.42	-1.43	-39.36	-0.05	39.36	1578.35	789.17	1791.75	897.21	36.26	-1.979	-0.008	0.048
175.00	-6.00	-2.23	-1.43	-27.28	-0.05	27.28	1530.79	765.40	1664.88	833.68	38.35	-2.001	-0.009	0.037
180.00	-5.16	-2.05	-1.43	-16.12	-0.05	16.12	1481.67	740.83	1540.90	771.60	40.45	-2.018	-0.010	0.024
185.00	-4.35	-1.88	-1.43	-5.84	-0.05	5.85	1427.20	713.60	1416.30	709.20	42.57	-2.027	-0.012	0.011
187.00	0.00	-1.73	-1.43	-2.08	0.00	2.08	1400.09	700.04	1362.73	682.38	43.42	-2.029	-0.012	0.003

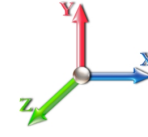
Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E					Iterations 21
Gust Response Factor	1.10			Sds 0.12	Ss 0.18
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1 0.04	S1 0.06
Wind Load Factor	0.00	Structure Frequency	0.31	SA 0.01	Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.01	0.00	0.00	
5.00		1722.7	0.00	0.03	0.02	25.00	
10.00		1691.6	0.01	0.05	0.03	32.55	
15.00		1660.6	0.01	0.06	0.03	36.10	
20.00		1629.6	0.02	0.07	0.04	37.68	
25.00		1598.5	0.04	0.07	0.04	38.26	
30.00		1567.5	0.05	0.07	0.04	38.39	
35.00		1536.4	0.07	0.07	0.04	38.36	
40.00		1505.4	0.09	0.07	0.04	38.34	
45.00		1474.3	0.11	0.07	0.04	38.37	
46.25	Bot - Section 2	363.74	0.12	0.07	0.03	9.52	
50.00		2040.8	0.14	0.07	0.03	54.30	
53.25	Top - Section 1	1742.2	0.16	0.07	0.03	46.97	
55.00		437.17	0.17	0.07	0.03	11.86	
60.00		1230.7	0.20	0.06	0.02	33.77	
65.00		1203.5	0.23	0.06	0.02	32.85	
70.00		1176.3	0.27	0.05	0.02	31.01	
75.00		1149.2	0.31	0.04	0.01	27.78	
80.00		1122.0	0.35	0.03	0.01	22.68	
85.00		1094.9	0.40	0.02	0.01	15.35	
90.00		1067.7	0.44	0.00	0.01	5.94	
92.00	Appurtenance(s)	2024.4	0.46	0.00	0.01	3.44	
93.75	Bot - Section 3	363.48	0.48	-0.01	0.01	-0.66	
95.00		482.50	0.49	-0.01	0.01	-2.09	
99.75	Top - Section 2	1804.7	0.54	-0.03	0.01	-24.60	
100.00		43.70	0.55	-0.03	0.01	-0.62	
105.00		861.80	0.60	-0.05	0.01	-19.13	
110.00		838.51	0.66	-0.07	0.02	-23.37	
115.00		815.23	0.72	-0.09	0.03	-25.24	
120.00		791.94	0.78	-0.11	0.05	-25.07	
125.00		768.66	0.85	-0.12	0.07	-23.21	
130.00	Appurtenance(s)	3162.2	0.92	-0.12	0.09	-84.52	
135.00		722.09	0.99	-0.11	0.13	-15.43	
140.00	Appurtenance(s)	2911.7	1.06	-0.09	0.17	-41.28	
142.75	Bot - Section 4	374.42	1.10	-0.07	0.19	-3.53	
145.00		505.63	1.14	-0.04	0.21	-2.60	
147.25	Top - Section 3	497.77	1.18	-0.02	0.24	-0.24	
150.00		241.87	1.22	0.02	0.27	1.39	
155.00		427.74	1.30	0.12	0.34	7.91	
160.00	Appurtenance(s)	2894.5	1.39	0.26	0.42	96.04	
165.00		396.69	1.47	0.44	0.51	19.77	
170.00	Appurtenance(s)	3470.0	1.56	0.67	0.62	237.65	
175.00		365.64	1.66	0.96	0.75	32.62	
180.00		350.12	1.75	1.33	0.90	39.23	
185.00		334.60	1.85	1.78	1.07	45.85	
187.00	Appurtenance(s)	1754.9	1.89	1.98	1.14	259.08	

Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals: 54,220.8

1,066.4

Total Wind: 44,730.9

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

Calculated Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

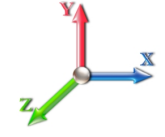
Topography: 1

Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

3/23/2018
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Load Case: 1.2D + 1.0E										Iterations 21	
Gust Response Factor	1.10						Sds	0.12		Ss	0.18
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.04					S1	0.06
Wind Load Factor	0.00	Structure Frequency	0.31	SA	0.01	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	-74.68	-1.36	0.00	-164.37	0.00	164.37	7001.91	3500.96	18524.4	9276.01	0.00	0.00	0.00	0.028
5.00	-72.31	-1.34	0.00	-157.57	0.00	157.57	6919.93	3459.96	17978.0	9002.40	0.00	0.00	0.00	0.028
10.00	-69.97	-1.31	0.00	-150.86	0.00	150.86	6836.37	3418.19	17435.4	8730.69	0.01	-0.01	0.00	0.028
15.00	-67.67	-1.28	0.00	-144.30	0.00	144.30	6751.25	3375.63	16896.9	8461.01	0.02	-0.01	0.00	0.027
20.00	-65.40	-1.25	0.00	-137.89	0.00	137.89	6664.57	3332.28	16362.6	8193.47	0.04	-0.02	0.00	0.027
25.00	-63.18	-1.21	0.00	-131.65	0.00	131.65	6576.31	3288.16	15832.7	7928.16	0.06	-0.02	0.00	0.026
30.00	-60.99	-1.18	0.00	-125.58	0.00	125.58	6486.49	3243.25	15307.6	7665.22	0.08	-0.03	0.00	0.026
35.00	-58.84	-1.15	0.00	-119.68	0.00	119.68	6395.11	3197.55	14787.5	7404.75	0.11	-0.03	0.00	0.025
40.00	-56.72	-1.11	0.00	-113.96	0.00	113.96	6302.15	3151.08	14272.4	7146.85	0.15	-0.04	0.00	0.025
45.00	-54.64	-1.07	0.00	-108.41	0.00	108.41	6207.63	3103.82	13762.8	6891.65	0.19	-0.04	0.00	0.025
46.25	-54.13	-1.07	0.00	-107.07	0.00	107.07	6183.76	3091.88	13636.3	6828.29	0.20	-0.04	0.00	0.024
50.00	-51.45	-1.01	0.00	-103.07	0.00	103.07	6111.55	3055.77	13258.8	6639.26	0.23	-0.05	0.00	0.024
53.25	-49.16	-0.97	0.00	-99.78	0.00	99.78	5153.03	2576.51	11233.0	5624.85	0.26	-0.05	0.00	0.027
55.00	-48.53	-0.96	0.00	-98.09	0.00	98.09	5126.51	2563.25	11089.7	5553.12	0.28	-0.05	0.00	0.027
60.00	-46.74	-0.93	0.00	-93.31	0.00	93.31	5049.68	2524.84	10683.1	5349.50	0.34	-0.06	0.00	0.027
65.00	-44.99	-0.89	0.00	-88.69	0.00	88.69	4971.29	2485.64	10280.5	5147.92	0.40	-0.06	0.00	0.026
70.00	-43.27	-0.87	0.00	-84.21	0.00	84.21	4891.33	2445.66	9882.29	4948.49	0.46	-0.07	0.00	0.026
75.00	-41.58	-0.84	0.00	-79.88	0.00	79.88	4809.80	2404.90	9488.55	4751.33	0.54	-0.07	0.00	0.025
80.00	-39.93	-0.82	0.00	-75.68	0.00	75.68	4726.70	2363.35	9099.56	4556.54	0.62	-0.08	0.00	0.025
85.00	-38.31	-0.81	0.00	-71.59	0.00	71.59	4642.04	2321.02	8715.55	4364.25	0.70	-0.08	0.00	0.025
90.00	-36.72	-0.80	0.00	-67.56	0.00	67.56	4555.82	2277.91	8336.73	4174.56	0.79	-0.09	0.00	0.024
92.00	-34.16	-0.79	0.00	-65.96	0.00	65.96	4520.89	2260.44	8186.70	4099.44	0.83	-0.09	0.00	0.024
93.75	-33.62	-0.79	0.00	-64.57	0.00	64.57	4490.12	2245.06	8056.16	4034.07	0.86	-0.09	0.00	0.023
95.00	-32.97	-0.80	0.00	-63.57	0.00	63.57	4468.02	2234.01	7963.33	3987.58	0.89	-0.10	0.00	0.023
99.75	-30.51	-0.79	0.00	-59.80	0.00	59.80	3653.35	1826.67	6478.28	3243.96	0.98	-0.10	0.00	0.027
100.00	-30.45	-0.79	0.00	-59.60	0.00	59.60	3649.96	1824.98	6463.57	3236.59	0.99	-0.10	0.00	0.027
105.00	-29.11	-0.80	0.00	-55.63	0.00	55.63	3581.25	1790.63	6171.38	3090.28	1.10	-0.11	0.00	0.026
110.00	-27.80	-0.80	0.00	-51.65	0.00	51.65	3510.98	1755.49	5883.11	2945.93	1.22	-0.12	0.00	0.025
115.00	-26.52	-0.80	0.00	-47.67	0.00	47.67	3439.14	1719.57	5598.97	2803.65	1.34	-0.12	0.00	0.025
120.00	-25.27	-0.80	0.00	-43.68	0.00	43.68	3365.73	1682.87	5319.21	2663.56	1.47	-0.13	0.00	0.024
125.00	-24.04	-0.80	0.00	-39.70	0.00	39.70	3290.76	1645.38	5044.03	2525.77	1.61	-0.14	0.00	0.023
130.00	-19.95	-0.79	0.00	-35.71	0.00	35.71	3204.00	1602.00	4758.48	2382.78	1.76	-0.14	0.00	0.021
135.00	-18.80	-0.79	0.00	-31.76	0.00	31.76	3102.32	1551.16	4459.76	2233.19	1.91	-0.15	0.00	0.020
140.00	-15.02	-0.78	0.00	-27.82	0.00	27.82	3000.64	1500.32	4170.72	2088.46	2.07	-0.16	0.00	0.018
142.75	-14.46	-0.78	0.00	-25.67	0.00	25.67	2944.72	1472.36	4015.87	2010.92	2.16	-0.16	0.00	0.018
145.00	-13.76	-0.78	0.00	-23.92	0.00	23.92	2898.96	1449.48	3891.36	1948.57	2.24	-0.16	0.00	0.017
147.25	-13.08	-0.78	0.00	-22.17	0.00	22.17	1774.96	887.48	2399.50	1201.53	2.31	-0.17	0.00	0.026
150.00	-12.67	-0.78	0.00	-20.03	0.00	20.03	1752.91	876.46	2323.79	1163.62	2.41	-0.17	0.00	0.024
155.00	-11.96	-0.77	0.00	-16.15	0.00	16.15	1711.62	855.81	2187.55	1095.40	2.59	-0.18	0.00	0.022
160.00	-8.29	-0.66	0.00	-12.31	0.00	12.31	1668.76	834.38	2053.31	1028.18	2.78	-0.18	0.00	0.017
165.00	-7.69	-0.64	0.00	-9.01	0.00	9.01	1624.34	812.17	1921.31	962.08	2.97	-0.19	0.00	0.014
170.00	-3.41	-0.39	0.00	-5.81	0.00	5.81	1578.35	789.17	1791.75	897.21	3.17	-0.19	0.00	0.009
175.00	-2.96	-0.35	0.00	-3.87	0.00	3.87	1530.79	765.40	1664.88	833.68	3.38	-0.20	0.00	0.007
180.00	-2.52	-0.31	0.00	-2.10	0.00	2.10	1481.67	740.83	1540.90	771.60	3.58	-0.20	0.00	0.004
185.00	-2.11	-0.27	0.00	-0.53	0.00	0.53	1427.20	713.60	1416.30	709.20	3.79	-0.20	0.00	0.002
187.00	0.00	-0.26	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	3.87	-0.20	0.00	0.000

Calculated Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



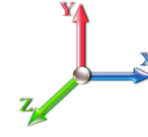
Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0E					Iterations 21
Gust Response Factor	1.10			Sds 0.12	Ss 0.18
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1 0.04	S1 0.06
Wind Load Factor	0.00	Structure Frequency	0.31	SA 0.01	Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.01	0.00	0.00	
5.00		1722.7	0.00	0.03	0.02	25.00	
10.00		1691.6	0.01	0.05	0.03	32.55	
15.00		1660.6	0.01	0.06	0.03	36.10	
20.00		1629.6	0.02	0.07	0.04	37.68	
25.00		1598.5	0.04	0.07	0.04	38.26	
30.00		1567.5	0.05	0.07	0.04	38.39	
35.00		1536.4	0.07	0.07	0.04	38.36	
40.00		1505.4	0.09	0.07	0.04	38.34	
45.00		1474.3	0.11	0.07	0.04	38.37	
46.25	Bot - Section 2	363.74	0.12	0.07	0.03	9.52	
50.00		2040.8	0.14	0.07	0.03	54.30	
53.25	Top - Section 1	1742.2	0.16	0.07	0.03	46.97	
55.00		437.17	0.17	0.07	0.03	11.86	
60.00		1230.7	0.20	0.06	0.02	33.77	
65.00		1203.5	0.23	0.06	0.02	32.85	
70.00		1176.3	0.27	0.05	0.02	31.01	
75.00		1149.2	0.31	0.04	0.01	27.78	
80.00		1122.0	0.35	0.03	0.01	22.68	
85.00		1094.9	0.40	0.02	0.01	15.35	
90.00		1067.7	0.44	0.00	0.01	5.94	
92.00	Appurtenance(s)	2024.4	0.46	0.00	0.01	3.44	
93.75	Bot - Section 3	363.48	0.48	-0.01	0.01	-0.66	
95.00		482.50	0.49	-0.01	0.01	-2.09	
99.75	Top - Section 2	1804.7	0.54	-0.03	0.01	-24.60	
100.00		43.70	0.55	-0.03	0.01	-0.62	
105.00		861.80	0.60	-0.05	0.01	-19.13	
110.00		838.51	0.66	-0.07	0.02	-23.37	
115.00		815.23	0.72	-0.09	0.03	-25.24	
120.00		791.94	0.78	-0.11	0.05	-25.07	
125.00		768.66	0.85	-0.12	0.07	-23.21	
130.00	Appurtenance(s)	3162.2	0.92	-0.12	0.09	-84.52	
135.00		722.09	0.99	-0.11	0.13	-15.43	
140.00	Appurtenance(s)	2911.7	1.06	-0.09	0.17	-41.28	
142.75	Bot - Section 4	374.42	1.10	-0.07	0.19	-3.53	
145.00		505.63	1.14	-0.04	0.21	-2.60	
147.25	Top - Section 3	497.77	1.18	-0.02	0.24	-0.24	
150.00		241.87	1.22	0.02	0.27	1.39	
155.00		427.74	1.30	0.12	0.34	7.91	
160.00	Appurtenance(s)	2894.5	1.39	0.26	0.42	96.04	
165.00		396.69	1.47	0.44	0.51	19.77	
170.00	Appurtenance(s)	3470.0	1.56	0.67	0.62	237.65	
175.00		365.64	1.66	0.96	0.75	32.62	
180.00		350.12	1.75	1.33	0.90	39.23	
185.00		334.60	1.85	1.78	1.07	45.85	
187.00	Appurtenance(s)	1754.9	1.89	1.98	1.14	259.08	

Seismic Segment Forces (Factored)

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals: 54,220.8

1,066.4

Total Wind: 44,730.9

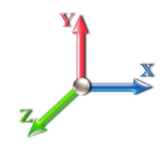
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.0E										Iterations 21	
Gust Response Factor	1.10						Sds	0.12		Ss	0.18
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.04					S1	0.06
Wind Load Factor	0.00	Structure Frequency	0.31	SA	0.01	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	-56.01	-1.36	0.00	-162.50	0.00	162.50	7001.91	3500.96	18524.4	9276.01	0.00	0.00	0.00	0.026
5.00	-54.23	-1.34	0.00	-155.71	0.00	155.71	6919.93	3459.96	17978.0	9002.40	0.00	0.00	0.00	0.025
10.00	-52.48	-1.31	0.00	-149.01	0.00	149.01	6836.37	3418.19	17435.4	8730.69	0.01	-0.01	0.00	0.025
15.00	-50.75	-1.28	0.00	-142.47	0.00	142.47	6751.25	3375.63	16896.9	8461.01	0.02	-0.01	0.00	0.024
20.00	-49.05	-1.24	0.00	-136.08	0.00	136.08	6664.57	3332.28	16362.6	8193.47	0.04	-0.02	0.00	0.024
25.00	-47.38	-1.21	0.00	-129.87	0.00	129.87	6576.31	3288.16	15832.7	7928.16	0.06	-0.02	0.00	0.024
30.00	-45.74	-1.17	0.00	-123.83	0.00	123.83	6486.49	3243.25	15307.6	7665.22	0.08	-0.03	0.00	0.023
35.00	-44.13	-1.14	0.00	-117.98	0.00	117.98	6395.11	3197.55	14787.5	7404.75	0.11	-0.03	0.00	0.023
40.00	-42.54	-1.10	0.00	-112.29	0.00	112.29	6302.15	3151.08	14272.4	7146.85	0.15	-0.04	0.00	0.022
45.00	-40.98	-1.06	0.00	-106.79	0.00	106.79	6207.63	3103.82	13762.8	6891.65	0.19	-0.04	0.00	0.022
46.25	-40.60	-1.05	0.00	-105.46	0.00	105.46	6183.76	3091.88	13636.3	6828.29	0.20	-0.04	0.00	0.022
50.00	-38.59	-1.00	0.00	-101.51	0.00	101.51	6111.55	3055.77	13258.8	6639.26	0.23	-0.04	0.00	0.022
53.25	-36.87	-0.95	0.00	-98.25	0.00	98.25	5153.03	2576.51	11233.0	5624.85	0.26	-0.05	0.00	0.025
55.00	-36.40	-0.94	0.00	-96.58	0.00	96.58	5126.51	2563.25	11089.7	5553.12	0.28	-0.05	0.00	0.024
60.00	-35.06	-0.91	0.00	-91.86	0.00	91.86	5049.68	2524.84	10683.1	5349.50	0.33	-0.05	0.00	0.024
65.00	-33.74	-0.88	0.00	-87.30	0.00	87.30	4971.29	2485.64	10280.5	5147.92	0.39	-0.06	0.00	0.024
70.00	-32.45	-0.85	0.00	-82.89	0.00	82.89	4891.33	2445.66	9882.29	4948.49	0.46	-0.07	0.00	0.023
75.00	-31.19	-0.83	0.00	-78.63	0.00	78.63	4809.80	2404.90	9488.55	4751.33	0.53	-0.07	0.00	0.023
80.00	-29.95	-0.80	0.00	-74.50	0.00	74.50	4726.70	2363.35	9099.56	4556.54	0.61	-0.08	0.00	0.023
85.00	-28.73	-0.79	0.00	-70.47	0.00	70.47	4642.04	2321.02	8715.55	4364.25	0.69	-0.08	0.00	0.022
90.00	-27.54	-0.79	0.00	-66.52	0.00	66.52	4555.82	2277.91	8336.73	4174.56	0.78	-0.09	0.00	0.022
92.00	-25.62	-0.78	0.00	-64.95	0.00	64.95	4520.89	2260.44	8186.70	4099.44	0.82	-0.09	0.00	0.022
93.75	-25.22	-0.78	0.00	-63.58	0.00	63.58	4490.12	2245.06	8056.16	4034.07	0.85	-0.09	0.00	0.021
95.00	-24.73	-0.78	0.00	-62.61	0.00	62.61	4468.02	2234.01	7963.33	3987.58	0.87	-0.09	0.00	0.021
99.75	-22.89	-0.78	0.00	-58.90	0.00	58.90	3653.35	1826.67	6478.28	3243.96	0.97	-0.10	0.00	0.024
100.00	-22.83	-0.78	0.00	-58.71	0.00	58.71	3649.96	1824.98	6463.57	3236.59	0.98	-0.10	0.00	0.024
105.00	-21.83	-0.78	0.00	-54.81	0.00	54.81	3581.25	1790.63	6171.38	3090.28	1.08	-0.11	0.00	0.024
110.00	-20.85	-0.78	0.00	-50.90	0.00	50.90	3510.98	1755.49	5883.11	2945.93	1.20	-0.11	0.00	0.023
115.00	-19.89	-0.78	0.00	-47.00	0.00	47.00	3439.14	1719.57	5598.97	2803.65	1.32	-0.12	0.00	0.023
120.00	-18.95	-0.78	0.00	-43.09	0.00	43.09	3365.73	1682.87	5319.21	2663.56	1.45	-0.13	0.00	0.022
125.00	-18.03	-0.78	0.00	-39.18	0.00	39.18	3290.76	1645.38	5044.03	2525.77	1.59	-0.13	0.00	0.021
130.00	-14.96	-0.78	0.00	-35.27	0.00	35.27	3204.00	1602.00	4758.48	2382.78	1.73	-0.14	0.00	0.019
135.00	-14.10	-0.78	0.00	-31.39	0.00	31.39	3102.32	1551.16	4459.76	2233.19	1.88	-0.15	0.00	0.019
140.00	-11.26	-0.77	0.00	-27.51	0.00	27.51	3000.64	1500.32	4170.72	2088.46	2.04	-0.15	0.00	0.017
142.75	-10.84	-0.77	0.00	-25.39	0.00	25.39	2944.72	1472.36	4015.87	2010.92	2.13	-0.16	0.00	0.016
145.00	-10.32	-0.77	0.00	-23.66	0.00	23.66	2898.96	1449.48	3891.36	1948.57	2.20	-0.16	0.00	0.016
147.25	-9.81	-0.77	0.00	-21.93	0.00	21.93	1774.96	887.48	2399.50	1201.53	2.28	-0.16	0.00	0.024
150.00	-9.51	-0.77	0.00	-19.82	0.00	19.82	1752.91	876.46	2323.79	1163.62	2.38	-0.17	0.00	0.022
155.00	-8.97	-0.76	0.00	-15.99	0.00	15.99	1711.62	855.81	2187.55	1095.40	2.55	-0.17	0.00	0.020
160.00	-6.21	-0.65	0.00	-12.20	0.00	12.20	1668.76	834.38	2053.31	1028.18	2.74	-0.18	0.00	0.016
165.00	-5.77	-0.63	0.00	-8.93	0.00	8.93	1624.34	812.17	1921.31	962.08	2.93	-0.19	0.00	0.013
170.00	-2.56	-0.39	0.00	-5.77	0.00	5.77	1578.35	789.17	1791.75	897.21	3.13	-0.19	0.00	0.008
175.00	-2.22	-0.35	0.00	-3.84	0.00	3.84	1530.79	765.40	1664.88	833.68	3.33	-0.19	0.00	0.006
180.00	-1.89	-0.31	0.00	-2.09	0.00	2.09	1481.67	740.83	1540.90	771.60	3.53	-0.20	0.00	0.004
185.00	-1.58	-0.26	0.00	-0.53	0.00	0.53	1427.20	713.60	1416.30	709.20	3.74	-0.20	0.00	0.002
187.00	0.00	-0.26	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	3.82	-0.20	0.00	0.000

Calculated Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

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Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
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



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	303.70	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	298.31	0.650	0.000	5.00	27.207	17.68	144.8	0.0	1722.7
10.00		1.00	0.85	7.442	8.19	292.93	0.650	0.000	5.00	26.721	17.37	142.2	0.0	1691.7
15.00		1.00	0.86	7.534	8.29	289.32	0.650	0.000	5.00	26.234	17.05	141.3	0.0	1660.6
20.00		1.00	0.91	7.978	8.78	292.15	0.650	0.000	5.00	25.748	16.74	146.9	0.0	1629.6
25.00		1.00	0.95	8.345	9.18	293.09	0.650	0.000	5.00	25.261	16.42	150.7	0.0	1598.6
30.00		1.00	0.99	8.659	9.53	292.76	0.650	0.000	5.00	24.775	16.10	153.4	0.0	1567.5
35.00		1.00	1.02	8.936	9.83	291.51	0.650	0.000	5.00	24.288	15.79	155.2	0.0	1536.5
40.00		1.00	1.05	9.184	10.10	289.55	0.650	0.000	5.00	23.802	15.47	156.3	0.0	1505.4
45.00		1.00	1.07	9.410	10.35	287.02	0.650	0.000	5.00	23.315	15.15	156.9	0.0	1474.4
46.25 Bot - Section 2		1.00	1.08	9.463	10.41	286.32	0.650	0.000	1.25	5.753	3.74	38.9	0.0	363.7
50.00		1.00	1.10	9.616	10.58	284.04	0.650	0.000	3.75	17.353	11.28	119.3	0.0	2040.8
53.25 Top - Section 1		1.00	1.11	9.742	10.72	281.89	0.650	0.000	3.25	14.818	9.63	103.2	0.0	1742.2
55.00		1.00	1.12	9.807	10.79	285.37	0.650	0.000	1.75	7.894	5.13	55.4	0.0	437.2
60.00		1.00	1.14	9.986	10.98	281.72	0.650	0.000	5.00	22.226	14.45	158.7	0.0	1230.7
65.00		1.00	1.16	10.153	11.17	277.78	0.650	0.000	5.00	21.739	14.13	157.8	0.0	1203.6
70.00		1.00	1.18	10.310	11.34	273.59	0.650	0.000	5.00	21.253	13.81	156.7	0.0	1176.4
75.00		1.00	1.19	10.459	11.50	269.17	0.650	0.000	5.00	20.766	13.50	155.3	0.0	1149.2
80.00		1.00	1.21	10.600	11.66	264.56	0.650	0.000	5.00	20.280	13.18	153.7	0.0	1122.1
85.00		1.00	1.23	10.734	11.81	259.77	0.650	0.000	5.00	19.793	12.87	151.9	0.0	1094.9
90.00		1.00	1.24	10.863	11.95	254.81	0.650	0.000	5.00	19.307	12.55	150.0	0.0	1067.7
92.00 Appurtenance(s)		1.00	1.25	10.913	12.00	252.79	0.650	0.000	2.00	7.586	4.93	59.2	0.0	419.5
93.75 Bot - Section 3		1.00	1.25	10.956	12.05	251.00	0.650	0.000	1.75	6.574	4.27	51.5	0.0	363.5
95.00		1.00	1.25	10.986	12.08	249.71	0.650	0.000	1.25	4.739	3.08	37.2	0.0	482.5
99.75 Top - Section 2		1.00	1.27	11.098	12.21	244.74	0.650	0.000	4.75	17.730	11.52	140.7	0.0	1804.8
100.00		1.00	1.27	11.104	12.21	248.77	0.650	0.000	0.25	0.921	0.60	7.3	0.0	43.7
105.00		1.00	1.28	11.218	12.34	243.43	0.650	0.000	5.00	18.165	11.81	145.7	0.0	861.8
110.00		1.00	1.29	11.327	12.46	237.97	0.650	0.000	5.00	17.678	11.49	143.2	0.0	838.5
115.00		1.00	1.31	11.432	12.58	232.40	0.650	0.000	5.00	17.192	11.17	140.5	0.0	815.2
120.00		1.00	1.32	11.534	12.69	226.74	0.650	0.000	5.00	16.705	10.86	137.8	0.0	791.9
125.00		1.00	1.33	11.633	12.80	220.98	0.650	0.000	5.00	16.219	10.54	134.9	0.0	768.7
130.00 Appurtenance(s)		1.00	1.34	11.729	12.90	215.13	0.650	0.000	5.00	15.732	10.23	131.9	0.0	745.4
135.00		1.00	1.35	11.822	13.00	209.19	0.650	0.000	5.00	15.246	9.91	128.9	0.0	722.1
140.00 Appurtenance(s)		1.00	1.36	11.912	13.10	203.18	0.650	0.000	5.00	14.759	9.59	125.7	0.0	698.8
142.75 Bot - Section 4		1.00	1.37	11.961	13.16	199.84	0.650	0.000	2.75	7.910	5.14	67.6	0.0	374.4
145.00		1.00	1.37	12.000	13.20	197.09	0.650	0.000	2.25	6.458	4.20	55.4	0.0	505.6
147.25 Top - Section 3		1.00	1.37	12.038	13.24	194.33	0.650	0.000	2.25	6.359	4.13	54.7	0.0	497.8
150.00		1.00	1.38	12.085	13.29	193.92	0.650	0.000	2.75	7.638	4.97	66.0	0.0	241.9
155.00		1.00	1.39	12.168	13.39	187.70	0.650	0.000	5.00	13.511	8.78	117.6	0.0	427.7
160.00 Appurtenance(s)		1.00	1.40	12.249	13.47	181.42	0.650	0.000	5.00	13.025	8.47	114.1	0.0	412.2
165.00		1.00	1.41	12.328	13.56	175.08	0.650	0.000	5.00	12.538	8.15	110.5	0.0	396.7
170.00 Appurtenance(s)		1.00	1.42	12.406	13.65	168.67	0.650	0.000	5.00	12.052	7.83	106.9	0.0	381.2
175.00		1.00	1.43	12.481	13.73	162.22	0.650	0.000	5.00	11.565	7.52	103.2	0.0	365.6
180.00		1.00	1.43	12.555	13.81	155.70	0.650	0.000	5.00	11.079	7.20	99.5	0.0	350.1
185.00		1.00	1.44	12.627	13.89	149.14	0.650	0.000	5.00	10.592	6.88	95.6	0.0	334.6
187.00 Appurtenance(s)		1.00	1.45	12.656	13.92	146.50	0.650	0.000	2.00	4.101	2.67	37.1	0.0	129.5

Wind Loading - Shaft

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Struct Class: II	Page: 39



Totals:	187.00	5,161.1	40,789.2
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Discrete Appurtenance Forces

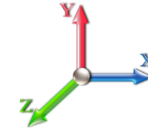
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	187.00	ANT450F6	1	12.711	13.982	1.00	1.00	1.86	21.00	0.000	3.917	26.01	0.00	101.86
2	187.00	MF-900B	2	12.656	13.921	1.00	1.00	6.90	26.00	2.015	0.000	96.06	193.60	0.00
3	187.00	ANT900D6-9	2	12.685	13.953	1.00	1.00	1.96	22.00	0.000	2.042	27.35	0.00	55.84
4	187.00	6' Lightning rod	1	12.656	13.921	1.00	1.00	0.38	6.50	0.000	0.000	5.29	0.00	0.00
5	187.00	DB201	2	12.722	13.995	1.00	1.00	7.08	50.00	0.000	4.750	99.08	0.00	470.64
6	187.00	Low Profile Platform	1	12.656	13.921	1.00	1.00	22.00	1500.00	0.000	0.000	306.27	0.00	0.00
7	170.00	Cci - HPA-65R-BUU-H6	3	12.406	13.646	0.64	0.75	18.47	153.00	0.000	0.000	252.11	0.00	0.00
8	170.00	Nokia - CS72188.01 LMU	1	12.406	13.646	1.00	1.00	0.12	0.32	0.000	0.000	1.64	0.00	0.00
9	170.00	Ericsson - RRUS-32 B2	3	12.406	13.646	0.61	0.75	5.49	180.00	0.000	0.000	74.86	0.00	0.00
10	170.00	Quintel - QS66512-2	3	12.406	13.646	0.69	0.75	16.83	333.00	0.000	0.000	229.65	0.00	0.00
11	170.00	Kaelus -	6	12.406	13.646	0.50	0.75	1.30	152.40	0.000	0.000	17.69	0.00	0.00
12	170.00	Ericsson - RRUS-32	3	12.406	13.646	0.50	0.75	4.13	159.00	0.000	0.000	56.37	0.00	0.00
13	170.00	Powerwave - 7770	3	12.406	13.646	0.55	0.75	9.03	105.00	0.000	0.000	123.28	0.00	0.00
14	170.00	Css - DBC-750 -	3	12.406	13.646	0.50	0.75	0.77	14.64	0.000	0.000	10.49	0.00	0.00
15	170.00	Commscope -	3	12.406	13.646	0.73	0.75	0.11	3.42	0.000	0.000	1.50	0.00	0.00
16	170.00	Raycap -	2	12.406	13.646	1.00	1.00	2.94	65.60	0.000	0.000	40.12	0.00	0.00
17	170.00	Low Profile Platform w/	1	12.406	13.646	1.00	1.00	27.70	1700.00	0.000	0.000	378.00	0.00	0.00
18	170.00	Ericsson - RRUS-11	3	12.406	13.646	0.57	0.75	4.31	165.00	0.000	0.000	58.80	0.00	0.00
19	170.00	Cci -	3	12.406	13.646	0.50	0.75	1.72	57.54	0.000	0.000	23.45	0.00	0.00
20	160.00	Double TMA 17/21	3	12.249	13.474	0.54	0.75	0.67	33.00	0.000	0.000	8.96	0.00	0.00
21	160.00	LNx-6515DS	3	12.249	13.474	0.63	0.75	21.56	150.90	0.000	0.000	290.45	0.00	0.00
22	160.00	AIR 21 B4A B2P	3	12.249	13.474	0.62	0.75	11.32	270.90	0.000	0.000	152.50	0.00	0.00
23	160.00	AIR 21 B2A B4P	3	12.249	13.474	0.62	0.75	11.32	274.50	0.000	0.000	152.50	0.00	0.00
24	160.00	Platform w/ Hand Rail	1	12.249	13.474	1.00	1.00	32.00	1600.00	0.000	0.000	431.18	0.00	0.00
25	160.00	S11B12	3	12.249	13.474	0.56	0.80	4.27	153.00	0.000	0.000	57.53	0.00	0.00
26	140.00	RRH2x60-1900	3	11.912	13.103	0.72	0.80	3.26	58.50	0.000	0.000	42.74	0.00	0.00
27	140.00	RRH2x40-07-U	3	11.912	13.103	0.62	0.80	4.17	152.10	0.000	0.000	54.70	0.00	0.00
28	140.00	LNx-6514DS-A1M	3	11.912	13.103	0.66	0.80	16.27	115.20	0.000	0.000	213.25	0.00	0.00
29	140.00	HBXX-6517DS-A2M	6	11.912	13.103	0.62	0.80	31.60	244.80	0.000	0.000	414.07	0.00	0.00
30	140.00	Low Profile Platform	1	11.912	13.103	1.00	1.00	22.00	1500.00	0.000	0.000	288.27	0.00	0.00
31	140.00	KS-24019	6	11.912	13.103	0.75	0.75	0.54	3.00	0.000	0.000	7.08	0.00	0.00
32	140.00	DB-T1-6Z-8AB-0Z	1	11.912	13.103	0.75	0.75	3.07	21.40	0.000	0.000	40.29	0.00	0.00
33	140.00	FD9R6004/2C-3L	6	11.912	13.103	0.56	0.75	1.22	18.60	0.000	0.000	15.92	0.00	0.00
34	140.00	LNx-6514DS-VTM	3	11.912	13.103	0.60	0.75	14.56	99.30	0.000	0.000	190.81	0.00	0.00
35	130.00	TD-RRH8x20-25	3	11.729	12.902	0.55	0.80	6.71	210.00	0.000	0.000	86.53	0.00	0.00
36	130.00	1900MHz RRH	3	11.729	12.902	0.70	0.80	8.03	132.00	0.000	0.000	103.54	0.00	0.00
37	130.00	APXVTM14-C-120	3	11.729	12.902	0.63	0.80	12.02	168.00	0.000	0.000	155.09	0.00	0.00
38	130.00	APXVSP18-C-A20	3	11.729	12.902	0.66	0.80	15.98	171.00	0.000	0.000	206.12	0.00	0.00
39	130.00	RF Filters	3	11.729	12.902	0.54	0.80	1.50	46.50	0.000	0.000	19.29	0.00	0.00
40	130.00	800 MHz RRH	3	11.729	12.902	0.74	0.80	5.50	159.00	0.000	0.000	70.93	0.00	0.00
41	130.00	800MHz Filter	3	11.729	12.902	0.55	0.80	1.29	26.40	0.000	0.000	16.66	0.00	0.00
42	130.00	ACU-A20-N	4	11.729	12.902	0.63	0.80	0.35	4.00	0.000	0.000	4.57	0.00	0.00
43	130.00	Low Profile Platform	1	11.729	12.902	1.00	1.00	22.00	1500.00	0.000	0.000	283.84	0.00	0.00
44	92.00	Low Profile Platform	1	10.913	12.004	1.00	1.00	22.00	1500.00	0.000	0.000	264.09	0.00	0.00
45	92.00	DB205	1	11.127	12.240	0.80	0.80	1.44	38.00	0.000	9.000	17.63	0.00	158.63
46	92.00	ANT450Y10-WR	1	10.913	12.004	0.80	0.80	0.39	5.00	0.000	0.000	4.71	0.00	0.00
47	92.00	ANT150D3	1	11.034	12.137	0.80	0.80	1.74	18.00	0.000	5.000	21.17	0.00	105.84

Discrete Appurtenance Forces

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 41
	Struct Class: II	



48	92.00 ANT4506-9	1	10.986	12.085	0.80	0.80	2.22	18.00	0.000	3.000	26.78	0.00	80.34
49	92.00 MF-900B	2	10.913	12.004	0.80	0.80	5.52	26.00	2.887	0.000	66.26	191.29	0.00
Totals:										13,431.52			
											5,535.48		

Total Applied Force Summary

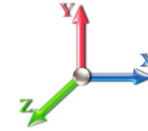
Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 23

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		144.77	1979.55	0.00	0.00
10.00		142.18	1948.50	0.00	0.00
15.00		141.31	1917.46	0.00	0.00
20.00		146.87	1886.41	0.00	0.00
25.00		150.72	1855.37	0.00	0.00
30.00		153.39	1824.32	0.00	0.00
35.00		155.19	1793.27	0.00	0.00
40.00		156.30	1762.23	0.00	0.00
45.00		156.86	1731.18	0.00	0.00
46.25		38.92	427.94	0.00	0.00
50.00		119.32	2233.43	0.00	0.00
53.25		103.22	1909.16	0.00	0.00
55.00		55.36	527.06	0.00	0.00
60.00		158.69	1487.53	0.00	0.00
65.00		157.81	1460.37	0.00	0.00
70.00		156.67	1433.20	0.00	0.00
75.00		155.29	1406.04	0.00	0.00
80.00		153.70	1378.87	0.00	0.00
85.00		151.92	1351.71	0.00	0.00
90.00		149.96	1324.54	0.00	0.00
92.00	(7) attachments	459.82	2127.21	191.29	344.80
93.75		51.50	451.69	0.00	0.00
95.00		37.22	545.51	0.00	0.00
99.75		140.69	2044.16	0.00	0.00
100.00		7.31	56.30	0.00	0.00
105.00		145.69	1113.81	0.00	0.00
110.00		143.17	1090.52	0.00	0.00
115.00		140.53	1067.24	0.00	0.00
120.00		137.77	1043.95	0.00	0.00
125.00		134.90	1020.67	0.00	0.00
130.00	(26) attachments	1078.51	3414.28	0.00	0.00
135.00		128.86	957.79	0.00	0.00
140.00	(32) attachments	1392.83	3147.40	0.00	0.00
142.75		67.65	466.27	0.00	0.00
145.00		55.41	580.78	0.00	0.00
147.25		54.74	572.92	0.00	0.00
150.00		66.00	333.72	0.00	0.00
155.00		117.55	594.74	0.00	0.00
160.00	(16) attachments	1207.21	3061.51	0.00	0.00
165.00		110.52	495.79	0.00	0.00
170.00	(37) attachments	1374.87	3569.19	0.00	0.00
175.00		103.21	376.64	0.00	0.00
180.00		99.45	361.12	0.00	0.00
185.00		95.63	345.60	0.00	0.00
187.00	(9) attachments	597.16	1759.39	193.60	628.33

Total Applied Force Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Totals:	<u>10,696.61</u>	<u>62,236.34</u>	<u>384.89</u>	<u>973.13</u>
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Calculated Forces

Structure: CT07824-S-SBA
Site Name: South Windsor
Height: 187.00 (ft)
Base Elev: 1.000 (ft)
Gh: 1.1

Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

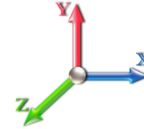
3/23/2018
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Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 23

Dead Load Factor 1.00
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	-62.23	-10.72	-0.38	-1341.1	0.00	1341.11	7001.91	3500.96	18524.4	9276.01	0.00	0.000	0.000	0.153
5.00	-60.25	-10.61	-0.38	-1287.5	0.00	1287.53	6919.93	3459.96	17978.0	9002.40	0.02	-0.035	0.000	0.152
10.00	-58.29	-10.50	-0.38	-1234.5	0.00	1234.50	6836.37	3418.19	17435.4	8730.69	0.07	-0.070	0.000	0.150
15.00	-56.37	-10.39	-0.38	-1182.0	0.00	1182.00	6751.25	3375.63	16896.9	8461.01	0.17	-0.106	0.000	0.148
20.00	-54.48	-10.27	-0.38	-1130.0	0.00	1130.05	6664.57	3332.28	16362.6	8193.47	0.30	-0.142	0.000	0.146
25.00	-52.61	-10.15	-0.38	-1078.6	0.00	1078.68	6576.31	3288.16	15832.7	7928.16	0.47	-0.179	0.000	0.144
30.00	-50.78	-10.03	-0.38	-1027.9	0.00	1027.92	6486.49	3243.25	15307.6	7665.22	0.67	-0.216	0.000	0.142
35.00	-48.98	-9.90	-0.38	-977.79	0.00	977.79	6395.11	3197.55	14787.5	7404.75	0.92	-0.254	0.000	0.140
40.00	-47.22	-9.76	-0.38	-928.31	0.00	928.31	6302.15	3151.08	14272.4	7146.85	1.21	-0.291	0.000	0.137
45.00	-45.48	-9.61	-0.38	-879.51	0.00	879.51	6207.63	3103.82	13762.8	6891.65	1.53	-0.330	0.000	0.135
46.25	-45.05	-9.59	-0.38	-867.49	0.00	867.49	6183.76	3091.88	13636.3	6828.29	1.62	-0.339	0.000	0.134
50.00	-42.81	-9.48	-0.38	-831.53	0.00	831.53	6111.55	3055.77	13258.8	6639.26	1.90	-0.369	0.000	0.132
53.25	-40.90	-9.37	-0.38	-800.74	0.00	800.74	5153.03	2576.51	11233.0	5624.85	2.16	-0.394	0.000	0.150
55.00	-40.37	-9.33	-0.38	-784.33	0.00	784.33	5126.51	2563.25	11089.7	5553.12	2.31	-0.408	0.000	0.149
60.00	-38.88	-9.19	-0.38	-737.66	0.00	737.66	5049.68	2524.84	10683.1	5349.50	2.76	-0.450	0.000	0.146
65.00	-37.41	-9.05	-0.38	-691.69	0.00	691.69	4971.29	2485.64	10280.5	5147.92	3.25	-0.493	0.000	0.142
70.00	-35.97	-8.91	-0.38	-646.44	0.00	646.44	4891.33	2445.66	9882.29	4948.49	3.79	-0.535	0.000	0.138
75.00	-34.56	-8.77	-0.38	-601.90	0.00	601.90	4809.80	2404.90	9488.55	4751.33	4.37	-0.577	0.000	0.134
80.00	-33.18	-8.62	-0.38	-558.07	0.00	558.07	4726.70	2363.35	9099.56	4556.54	5.00	-0.620	0.000	0.130
85.00	-31.82	-8.48	-0.38	-514.96	0.00	514.96	4642.04	2321.02	8715.55	4364.25	5.67	-0.662	0.000	0.125
90.00	-30.50	-8.33	-0.38	-472.57	0.00	472.57	4555.82	2277.91	8336.73	4174.56	6.39	-0.704	0.000	0.120
92.00	-28.37	-7.85	-0.19	-455.57	0.00	455.57	4520.89	2260.44	8186.70	4099.44	6.69	-0.721	0.000	0.117
93.75	-27.92	-7.80	-0.19	-441.84	0.00	441.84	4490.12	2245.06	8056.16	4034.07	6.95	-0.735	0.000	0.116
95.00	-27.37	-7.77	-0.19	-432.09	0.00	432.09	4468.02	2234.01	7963.33	3987.58	7.15	-0.746	0.000	0.114
99.75	-25.33	-7.61	-0.19	-395.20	0.00	395.20	3653.35	1826.67	6478.28	3243.96	7.91	-0.785	0.000	0.129
100.00	-25.27	-7.61	-0.19	-393.30	0.00	393.30	3649.96	1824.98	6463.57	3236.59	7.95	-0.787	0.000	0.128
105.00	-24.15	-7.47	-0.19	-355.26	0.00	355.26	3581.25	1790.63	6171.38	3090.28	8.80	-0.831	0.000	0.122
110.00	-23.06	-7.32	-0.19	-317.93	0.00	317.93	3510.98	1755.49	5883.11	2945.93	9.69	-0.874	0.000	0.115
115.00	-21.99	-7.18	-0.19	-281.31	0.00	281.31	3439.14	1719.57	5598.97	2803.65	10.63	-0.916	0.000	0.107
120.00	-20.94	-7.04	-0.19	-245.40	0.00	245.40	3365.73	1682.87	5319.21	2663.56	11.61	-0.955	0.000	0.098
125.00	-19.92	-6.90	-0.19	-210.19	0.00	210.19	3290.76	1645.38	5044.03	2525.77	12.63	-0.993	-0.001	0.089
130.00	-16.52	-5.77	-0.19	-175.68	0.00	175.68	3204.00	1602.00	4758.48	2382.78	13.69	-1.028	-0.001	0.079
135.00	-15.56	-5.63	-0.19	-146.82	0.00	146.82	3102.32	1551.16	4459.76	2233.19	14.79	-1.060	-0.001	0.071
140.00	-12.44	-4.19	-0.19	-118.65	0.00	118.65	3000.64	1500.32	4170.72	2088.46	15.91	-1.089	-0.001	0.061
142.75	-11.97	-4.11	-0.19	-107.13	0.00	107.13	2944.72	1472.36	4015.87	2010.92	16.55	-1.104	-0.001	0.057
145.00	-11.39	-4.05	-0.19	-97.87	0.00	97.87	2898.96	1449.48	3891.36	1948.57	17.07	-1.116	-0.001	0.054
147.25	-10.82	-3.99	-0.19	-88.76	0.00	88.76	1774.96	887.48	2399.50	1201.53	17.60	-1.127	-0.001	0.080
150.00	-10.49	-3.92	-0.19	-77.80	0.00	77.80	1752.91	876.46	2323.79	1163.62	18.25	-1.140	-0.001	0.073
155.00	-9.89	-3.79	-0.19	-58.21	0.00	58.21	1711.62	855.81	2187.55	1095.40	19.46	-1.169	-0.001	0.059
160.00	-6.86	-2.52	-0.19	-39.25	0.00	39.25	1668.76	834.38	2053.31	1028.18	20.70	-1.192	-0.001	0.042
165.00	-6.36	-2.41	-0.19	-26.62	0.00	26.62	1624.34	812.17	1921.31	962.08	21.96	-1.209	-0.001	0.032
170.00	-2.82	-0.96	-0.19	-14.59	0.00	14.59	1578.35	789.17	1791.75	897.21	23.23	-1.222	-0.001	0.018
175.00	-2.45	-0.85	-0.19	-9.81	0.00	9.81	1530.79	765.40	1664.88	833.68	24.51	-1.230	-0.001	0.013
180.00	-2.09	-0.74	-0.19	-5.59	0.00	5.59	1481.67	740.83	1540.90	771.60	25.81	-1.236	-0.001	0.009
185.00	-1.75	-0.64	-0.19	-1.90	0.00	1.90	1427.20	713.60	1416.30	709.20	27.10	-1.239	-0.002	0.004
187.00	0.00	-0.60	-0.19	-0.63	0.00	0.63	1400.09	700.04	1362.73	682.38	27.62	-1.239	-0.002	0.001

Final Analysis Summary

Structure: CT07824-S-SBA	Code: EIA/TIA-222-G	3/23/2018
Site Name: South Windsor	Exposure: C	
Height: 187.00 (ft)	Crest Height: 0.00	
Base Elev: 1.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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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 97 mph Wind	44.8	0.00	74.62	0.01	0.99	5642.47
0.9D + 1.6W 97 mph Wind	44.8	0.00	55.95	0.01	0.99	5582.55
1.2D + 1.0Di + 1.0Wi 50 mph Wind	15.2	0.00	120.88	0.03	2.75	2019.96
1.2D + 1.0E	1.4	0.00	74.68	0.00	0.00	164.37
0.9D + 1.0E	1.4	0.00	56.01	0.00	0.00	162.50
1.0D + 1.0W 60 mph Wind	10.7	0.00	62.23	0.00	0.38	1341.11

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 97 mph Wind	-74.62	-44.83	-0.99	-5642.4	-0.01	-5642.4	7001.91	3500.9	18524.4	9276.01	0.00	0.619
0.9D + 1.6W 97 mph Wind	-55.95	-44.80	-0.99	-5582.5	-0.01	-5582.5	7001.91	3500.9	18524.4	9276.01	0.00	0.610
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-87.41	-13.90	-2.75	-1236.5	-0.03	-1236.5	5153.03	2576.5	11233.0	5624.85	53.25	0.237
1.2D + 1.0E	-74.68	-1.36	0.00	-164.37	0.00	-164.37	7001.91	3500.9	18524.4	9276.01	0.00	0.028
0.9D + 1.0E	-56.01	-1.36	0.00	-162.50	0.00	-162.50	7001.91	3500.9	18524.4	9276.01	0.00	0.026
1.0D + 1.0W 60 mph Wind	-62.23	-10.72	-0.38	-1341.1	0.00	-1341.1	7001.91	3500.9	18524.4	9276.01	0.00	0.153



Monopole Mat Foundation Design

Date
3/23/2018

Customer Name:	AT&T	EIA/TIA Standard:	EIA-222-G
Site Name:		Structure Height (Ft.):	187
Site Number:	CT07824-S-SBA	Engineer Name:	Rama K.
Engr. Number:	49825	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations

Structure Type:

Monopole

Analysis or Design?

Analysis

Base Reactions (Factored):

Axial Load (Kips):	74.6	Shear Force (Kips):	44.8
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5642.5

Allowable overstress %: 5.0%

Foundation Geometries:

Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	12.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	24.5	Width of Pad (ft.):	24.5

Final Length of pad (ft)	24.5	Final width of pad (ft):	24.5
Control Value for Cell D18:	0	Control Value for Cell F18:	0

Material Properties and Rebar Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	6.0	
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):	42	Qty. of Rebar in Pad (W):	42
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Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	42	Qty. of Rebar in Pad (W):	42
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Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

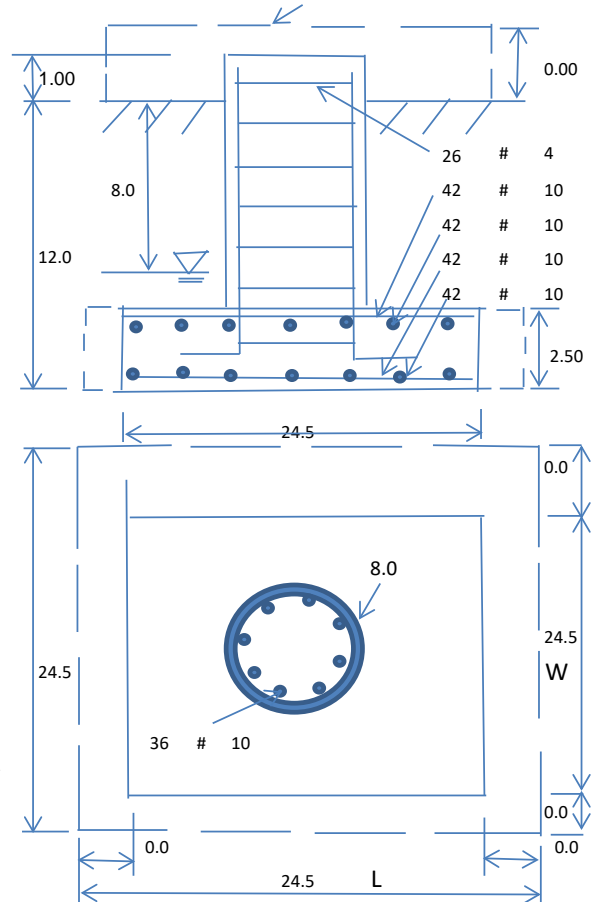
Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	50.0	Pcf	Angle from Top of Pad:	30
Water Table B.G.S. (ft):	8.0	Unit Weight of Water:	62.4	pcf	Angle from Bottm of Pad:	25
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Reduction factor on the maximum soil bearing pressure:	1.00
Consider soil hori. force for O.T.M.:	No					

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	4399.88	Total Dry Soil Weight (Kips):	527.99
Total Buoyant Soil Volume (cu. Ft.):	889.38	Total Buoyant Soil Weight (Kips):	44.47
Total Effective Soil Weight (Kips):	572.45	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	452.39	Total Dry Concrete Weight (Kips):	67.86
Total Buoyant Concrete Volume (cu. Ft.):	1576.02	Total Buoyant Concrete Weight (Kips):	138.06
Total Effective Concrete Weight (Kips):	205.92	Total Vertical Load on Base (Kips):	852.99

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	4978	<	Allowable Factored Soil Bearing (psf):	6000	0.83	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9460.1	>	Design Factored Momont (kips-ft):	6225	0.66	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.52					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):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	8929.3	> Design Factored Moment (Mu, Kips-Ft)	6112.9	0.68	OK!
Calculated Shear Capacity (Kips):	993.9	> Design Factored Shear (Kips):	44.8	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):	74.6	0.01	OK!
Moment & Axial Strength Combination(Pu/Pn+Mu/Mn):	0.69	OK! Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	735.6	> One-Way Factored Shear (L-D. Kips):	410.8	0.56	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	735.6	> One-Way Factored Shear (W-D., Kips)	410.8	0.56	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	800.1	> One-Way Factored Shear (C-C, Kips):	646.4	0.81	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0069	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0069		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	5946.5	> Moment at Bottom (L-Direct. K-Ft):	1243.0	0.21	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5946.5	> Moment at Bottom (W-Direct. K-Ft):	1243.0	0.21	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	8246.5	> Moment at Bottom (C-C Dir. K-Ft):	1757.8	0.21	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0069	OK! Upper Steel Reinf. Ratio (W-Direct.):	0.0069		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	5946.5	> Moment at the top (L-Dir Kips-Ft):	784.4	0.13	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	5946.5	> Moment at the top (W-Dir Kips-Ft):	784.4	0.13	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	8246.5	> Moment at the top (C-C Direc. K-Ft):	588.4	0.07	OK!



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1139

FA#: 10035389

South Windsor Sand Hill Rd
151 Sand Hill Road
South Windsor, CT 06074

May 22, 2018

Centerline Communications Project Number: 950006-122

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	8.55 %



May 22, 2018

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

Emissions Analysis for Site: **CT1139 – South Windsor Sand Hill Rd**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **151 Sand Hill Road, South Windsor, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.



CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **151 Sand Hill Road, South Windsor, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	2	30
UMTS	1900 MHz (PCS)	2	30
LTE	1900 MHz (PCS)	4	40
LTE	700 MHz	2	40
LTE	2300 MHz (WCS)	4	30

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Powerwave 7770	170
A	2	Quintel QS66512-2	170
A	3	CCI HPA-65R-BUU-H6	170
B	1	Powerwave 7770	170
B	2	Quintel QS66512-2	170
B	3	CCI HPA-65R-BUU-H6	170
C	1	Powerwave 7770	170
C	2	Quintel QS66512-2	170
C	3	CCI HPA-65R-BUU-H6	170

Table 2: Antenna Data

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



RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.37
Antenna A2	Quintel QS66512-2	1900 MHz (PCS)	13.85	4	160	3,882.58	0.52
Antenna A3	CCI HPA-65R-BUU-H6	700 MHz / 2300 MHz (WCS)	11.95 / 15.25	6	200	5,272.99	0.90
Sector A Composite MPE%							1.79
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.37
Antenna B2	Quintel QS66512-2	1900 MHz (PCS)	13.85	4	160	3,882.58	0.52
Antenna B3	CCI HPA-65R-BUU-H6	700 MHz / 2300 MHz (WCS)	11.95 / 15.25	6	200	5,272.99	0.90
Sector B Composite MPE%							1.79
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	4	120	2,140.89	0.37
Antenna C2	Quintel QS66512-2	1900 MHz (PCS)	13.85	4	160	3,882.58	0.52
Antenna C3	CCI HPA-65R-BUU-H6	700 MHz / 2300 MHz (WCS)	11.95 / 15.25	6	200	5,272.99	0.90
Sector C Composite MPE%							1.79

Table 3: AT&T Emissions Levels



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	1.79 %
Town	0.77 %
Sprint	0.83 %
MetroPCS	0.22 %
Clearwire	0.09 %
Nextel	0.28 %
Verizon Wireless	2.87 %
T-Mobile	1.70 %
Site Total MPE %:	8.55 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	1.79 %
AT&T Sector B Total:	1.79 %
AT&T Sector C Total:	1.79 %
Site Total:	8.55 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	170	1.11	850 MHz	567	0.20%
AT&T 1900 MHz (PCS) UMTS	2	656.33	170	1.75	1900 MHz (PCS)	1000	0.18%
AT&T 1900 MHz (PCS) LTE	4	970.64	170	5.19	1900 MHz (PCS)	1000	0.52%
AT&T 700 MHz LTE	2	626.70	170	1.68	700 MHz	467	0.36%
AT&T 2300 MHz (WCS) LTE	4	1,004.90	170	5.37	2300 MHz (WCS)	1000	0.54%
						Total:	1.79%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	1.79 %
Sector B:	1.79 %
Sector C:	1.79 %
AT&T Maximum Total (per sector):	1.79 %
Site Total:	8.55 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **8.55 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

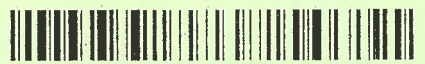
A handwritten signature in black ink, appearing to read 'Scott Heffernan', is positioned above the printed name.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Town of South Windsor
 Attn: Matthew Galligan, Town Manager
 1540 Sullivan Ave
 South Windsor, CT 06074



9590 9402 3535 7305 4992 70

2. Article Number (Transfer from service label)
 7016 3010 0000 7829 1643

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 X *R. Thompson* Agent Addressee

B. Received by (Printed Name) _____ C. Date of Delivery
 6/11/18

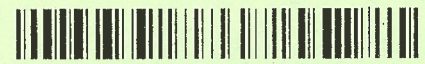
D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type Priority Mail Express®
 Adult Signature Registered Mail™
 Adult Signature Restricted Delivery Registered Mail Restricted Delivery
 Certified Mail® Return Receipt for Merchandise
 Certified Mail Restricted Delivery Signature Confirmation™
 Collect on Delivery Signature Confirmation™
 Collect on Delivery Restricted Delivery Signature Confirmation™
 Insured Insured (over \$500)

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Christopher Degen, Chief Building Inspector
 Town of South Windsor
 1540 Sullivan Ave
 South Windsor, CT 06074



9590 9402 3535 7305 4993 48

2. Article Number (Transfer from service label)
 7016 3010 0000 7829 1629

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 X *R. Thompson* Agent Addressee

B. Received by (Printed Name) _____ C. Date of Delivery
 6/11/18

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type Priority Mail Express®
 Adult Signature Registered Mail™
 Adult Signature Restricted Delivery Registered Mail Restricted Delivery
 Certified Mail® Return Receipt for Merchandise
 Certified Mail Restricted Delivery Signature Confirmation™
 Collect on Delivery Signature Confirmation™
 Collect on Delivery Restricted Delivery Signature Confirmation™
 Insured Insured (over \$500)

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 SBA Communications Corp
 Attn: Carla Shorter
 8051 Congress Ave
 Boca Raton, FL 33487-1307



9590 9402 3535 7305 4993 62

2. Article Number (Transfer from service label)
 7016 3010 0000 7829 1650

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 Agent
 Addressee

B. Received by (Printed Name) _____ C. Date of Delivery
 6-11-18

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
- Adult Signature
 - Adult Signature Restricted Delivery
 - Certified Mail®
 - Certified Mail Restricted Delivery
 - Collect on Delivery
 - Collect on Delivery Restricted Delivery
 - Insured Mail
 - Insured Mail Restricted Delivery (over \$500)
 - Priority Mail Express®
 - Registered Mail™
 - Registered Mail Restricted Delivery
 - Return Receipt for Merchandise
 - Signature Confirmation™
 - Signature Confirmation Restricted Delivery

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 The Honorable Dr. M. Saïd Anwar
 Mayor, Town of South Windsor
 1540 Sullivan Ave
 South Windsor, CT 06074



9590 9402 3535 7305 4993 55

2. Article Number (Transfer from service label)
 7016 3010 0000 7829 1612

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 Agent
 Addressee

B. Received by (Printed Name) _____ C. Date of Delivery
 6/11/18

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

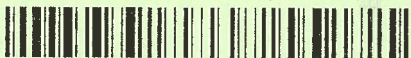
3. Service Type
- Adult Signature
 - Adult Signature Restricted Delivery
 - Certified Mail®
 - Certified Mail Restricted Delivery
 - Collect on Delivery
 - Collect on Delivery Restricted Delivery
 - Insured Mail
 - Insured Mail Restricted Delivery (over \$500)
 - Priority Mail Express®
 - Registered Mail™
 - Registered Mail Restricted Delivery
 - Return Receipt for Merchandise

Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Pamela Oliva, Zoning Enforcement Officer
 Town of South Windsor
 1540 Sullivan Ave
 South Windsor, CT 06074



9590 9402 3535 7305 4993 31

2. Article Number (Transfer from service label)
 7016 3010 0000 7829 1636

PS Form 3811, July 2015 PSN 7530-02-000-9053

COMPLETE THIS SECTION ON DELIVERY

A. Signature
 Agent
 Addressee

B. Received by (Printed Name) _____ C. Date of Delivery
 6/11/18

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
- Adult Signature
 - Adult Signature Restricted Delivery
 - Certified Mail®
 - Certified Mail Restricted Delivery
 - Collect on Delivery
 - Collect on Delivery Restricted Delivery
 - Insured Mail
 - Insured Mail Restricted Delivery (over \$500)
 - Priority Mail Express®
 - Registered Mail™
 - Registered Mail Restricted Delivery
 - Return Receipt for Merchandise