



January 1, 2018

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

Re: Notice of Exempt Modification – Antenna Swap
Property Address: 1 Westerberg Drive, Farmington, CT 06032
Applicant: AT&T Mobility, LLC

Dear Ms. Bachman:

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

AT&T currently maintains a wireless telecommunications facility consisting of three (3) wireless telecommunication antennas at an antenna centerline height of 139-feet on an existing 156 -foot flagpole, owned by SBA 2012 TC Assets, LLC at 8051 Congress Ave, Boca Raton, FL 33481. AT&T now intends to remove (3) Powerwave P65-17-XLH-RR panel antennas, (3) CCI TMAs and replace them with (3) CCI TPA-65R-LCUUUU-H8 panel antennas, and (6) CCI TMAs. (for a total of (3) panel antennas and (6) TMAs), at the 139-foot level. AT&T also intends to install (3) RRUS-32 B66, and (3) RRUS-32, and (6) RRUS-12, and (1) Rack Mounted DC12 Surge Shelf, and (6) Triplexers to replace (12) proposed Penatplexers inside the existing equipment shelter.

This facility was unanimously approved on June 9th, 2004, by the Connecticut Siting Council with stipulations in the request of Sprint Spectrum, L.P. for a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes section 16-50k, for the construction, maintenance and operation of a wireless telecommunications facility located at 1 Westerberg Drive, Farmington, CT. Conditions of the structure approval by the Connecticut Siting Council were as follows: A. the tower shall be designed as a flagpole and shall [be] constructed no taller than 156 feet above the ground level to provide proposed telecommunications services to both public and private entities. B. the Certificate Holder shall prepare a Development and a Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. C. the certificate holder shall, prior to the commencement of operations, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. D. Upon the establishment of any new State or Federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.



E. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic. F. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower. reasons precluding such tower sharing. G. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. H. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function. I. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved.

The following is a list of subsequent decisions by the Connecticut Siting Council: **EM-CING-052-051007, EM-CING-052-120814.**

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-510j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to Kathleen A. Egan, Town Manager of Farmington, Town of Farmington, 1 Monteith Drive, Farmington, CT 06032. A copy of this letter is also being sent to Town of Farmington Treatment Plant, 1 Westerberg Dr, Farmington, CT 06032, owner of the property where the tower is located and the tower owner, SBA Communications Corporations at 8051 Congress Avenue, Boca Raton, FL 33487. The Zoning Enforcement Official for the Town of Farmington, Bruce C. Cyr, 1 Monteith Drive, Farmington, CT 06032, will also be receiving a copy.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 139-foot level of the 156-foot flagpole.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included in Tab 2.
5. The proposed modifications will not cause a change or alteration in the physical



or environmental characteristics of the site.

6. The tower and its foundation can support AT&T's proposed modifications.
(See Structural Analysis Report included in Tab 3).

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

Sincerely,

Haleluya Haile

Enclosures

CC w/enclosures:

| Town Manager - Kathleen A. Egan

Zoning Officer - Bruce C. Cyr

Property Owner – Town of Farmington Treatment Plant

Structure Owner - SBA Communications Corporation

Connecticut Siting Council

Decisions

DOCKET NO. 282 – Sprint Spectrum, L.P. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility in Farmington, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		June 9, 2004

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Sprint Spectrum, L.P. for the construction, maintenance and operation of a wireless telecommunications facility at 1 Westerberg Drive, Farmington, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be designed as a flagpole and shall be constructed no taller than 156 feet above ground level to provide the proposed telecommunications services to both public and private entities.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on all parties and intervenors, as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a. a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment building, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any municipal antennas, provided such antennas are compatible with the structural integrity of the tower.

7. If the facility does not initially provide wireless services within one year of completion of construction or ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
8. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and cease to function.
9. Unless otherwise approved by the Council, this Decision and Order shall be void if the facility authorized herein is not operational within one year of the effective date of this Decision and Order or within one year after all appeals to this Decision and Order have been resolved. Any request for extensions of the period shall be filed with the Council not later than sixty days prior to expiration date of the Certificate and shall be served on all parties and intervenors, as listed in the service list. Any proposed modifications to this Decision and Order shall likewise be so served.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the Hartford Courant and the Valley News.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

<p><u>Applicant</u></p> <p>Sprint Spectrum L.P. d/b/a Sprint PCS</p>	<p><u>Its Representative</u></p> <p>Thomas J. Regan Brown, Rudnick, Berlack, Israels, LLP City Place I 185 Asylum Avenue Hartford, CT 06103-3402 (860) 509-6500</p>
<p><u>Intervenor</u></p> <p>Omnipoint Facilities Network 2 L.L.C. ("T-Mobile")</p>	<p><u>Its Representative</u></p> <p>Stephen J. Humes LeBoeuf, Lamb, Greene & MacRae, LLP Goodwin Square 225 Asylum Street Hartford, CT 06103</p>
<p><u>Intervenor</u></p> <p>Nextel Communications of the Mid-Atlantic, Inc. d/b/a Nextel Communications</p>	<p><u>Its Representative</u></p> <p>Julie Donaldson Kohler, Esq. Hurwitz & Sagarin, LLC 147 N. Broad Street Milford, CT 06460 (203) 877-8000</p>

From: TrackingUpdates@fedex.com
To: [Haleluya Haile](#)
Subject: FedEx Shipment 771177067999 Delivered
Date: Thursday, January 11, 2018 10:18:20 AM

FedEx®

Your package has been delivered

Tracking # 771177067999

Ship date:
Tue, 1/9/2018

Haleluya Haile
Smartlink LLC
North Billerica, MA 01862
US

 **Delivered**

Delivery date:
Thu, 1/11/2018 10:10 am

Bruce C. Cyr
Zoning Enforcement Official
1 Monteith Drive
FARMINGTON, CT 06032
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	771177067999
Status:	Delivered: 01/11/2018 10:10 AM Signed for By: K.SACCU
Signed for by:	K.SACCU
Delivery location:	FARMINGTON, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx 2Day
Packaging type:	FedEx Envelope
Number of pieces:	1
Weight:	0.50 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	1/11/2018 by 4:30 pm

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 9:13 AM CST on 01/11/2018.

All weights are estimated.

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From: TrackingUpdates@fedex.com
To: [Haleluya Haile](#)
Subject: FedEx Shipment 771177041863 Delivered
Date: Thursday, January 11, 2018 10:14:03 AM

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Your package has been delivered

Tracking # 771177041863

Ship date:
Tue, 1/9/2018

Haleluya Haile
Smartlink LLC
North Billerica, MA 01862
US


Delivered

Delivery date:
Thu, 1/11/2018 10:10 am

Kathleen A. Egan
Town Manager
1 Monteith Drive
FARMINGTON, CT 06032
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	771177041863
Status:	Delivered: 01/11/2018 10:10 AM Signed for By: K.SACCU
Signed for by:	K.SACCU
Delivery location:	FARMINGTON, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx 2Day
Packaging type:	FedEx Envelope
Number of pieces:	1
Weight:	0.50 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	1/11/2018 by 4:30 pm

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From: TrackingUpdates@fedex.com
To: [Haleluya Haile](#)
Subject: FedEx Shipment 771177231537 Delivered
Date: Thursday, January 11, 2018 10:14:29 AM

FedEx®

Your package has been delivered

Tracking # 771177231537

Ship date:
Tue, 1/9/2018

Haleluya Haile
Smartlink LLC
North Billerica, MA 01862
US

Delivery date:
Thu, 1/11/2018 10:10 am

Carla Shorter
SBA Communications Corp.
8051 Congress Avenue
BOCA RATON, FL 33487
US

 **Delivered**

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	771177231537
Status:	Delivered: 01/11/2018 10:10 AM Signed for By: C.MILLER
Signed for by:	C.MILLER
Delivery location:	BOCA RATON, FL
Delivered to:	Shipping/Receiving
Service type:	FedEx 2Day
Packaging type:	FedEx Envelope
Number of pieces:	1
Weight:	0.50 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	1/11/2018 by 4:30 pm

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All weights are estimated.

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

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Thank you for your business.

From: TrackingUpdates@fedex.com
To: [Haleluya Haile](#)
Subject: FedEx Shipment 771177138149 Delivered
Date: Thursday, January 11, 2018 1:47:28 PM

FedEx®

Your package has been delivered

Tracking # 771177138149

Ship date:
Tue, 1/9/2018

Delivery date:
Thu, 1/11/2018 1:45 pm

Haleluya Haile
Smartlink LLC
North Billerica, MA 01862
US


Delivered

Property Owner
Town of Farmington Treatment
Plant
1 Westerberg Drive
FARMINGTON, CT 06032
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	771177138149
Status:	Delivered: 01/11/2018 1:45 PM Signed for By: K.SACCU
Reference:	CTL05251-Amd
Signed for by:	K.SACCU
Delivery location:	FARMINGTON, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx 2Day
Packaging type:	FedEx Envelope
Number of pieces:	1
Weight:	0.50 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	1/11/2018 by 8:00 pm

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All weights are estimated.

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

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

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Thank you for your business.

The values and data on this site are for the 2017 Revaluation Grand List.

Assessments are computed at 70% of the estimated market value of real property as of October 1, 2017. If you wish to review your property information and value, please call Tyler Technologies at (860) 675-2348 to make an appointment for an Informal Hearing. Please do not call the Assessor's Office.



Information on the Property Records for the Municipality of Farmington was last updated on 1/1/2018.

Parcel Information

Location:	1 WESTERBERG DR	Property Use:	Special Purpose	Primary Use:	Sewage Treatment Plant
Unique ID:	21350001	Map Block Lot:	0078 38	Acres:	28.00
490 Acres:	0.00	Zone:	CR	Volume / Page:	0148/0503
Developers Map / Lot:		Census:	4602-01		

Value Information

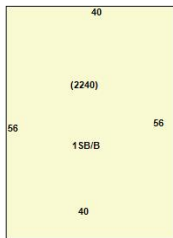
	Appraised Value	70% Assessed Value
Land	21,000,000	14,700,000
Buildings	20,612,289	14,428,600
Detached Outbuildings	49,309	34,520

Owner's Information

Owner's Data
FARMINGTON TOWN OF TREATMENT PLANT , 00000 , 00000

Total	41,661,598	29,163,120
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Building 1



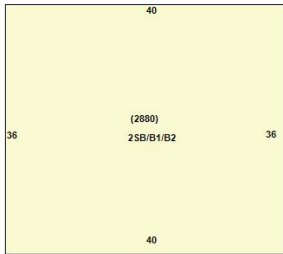
Category:	Office	Use:	Office/Warehouse	GLA:	2,240
Stories:	1.00	Construction:	Fire Resistant	Year Built:	1994
Heating:	FHA	Fuel:	Natural Gas	Cooling Percent:	50
Siding:	BR/CB	Roof Material:	Rolled	Beds/Units:	0

Special Features

Attached Components

Building 2

Photo Not Available



Category:	Office	Use:	Office/Warehouse	GLA:	4,320
Stories:	3.00	Construction:	Fire Resistant	Year Built:	1980
Heating:	FHA	Fuel:	Natural Gas	Cooling Percent:	75
Siding:	BR/CB	Roof Material:	Rolled	Beds/Units:	0

Special Features

Attached Components

Building 3

Photo Not Available



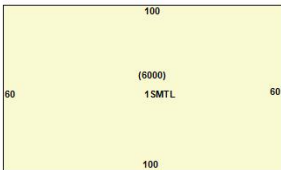
Category:	Office	Use:	Office/Warehouse	GLA:	4,443
Stories:	1.00	Construction:	Fire Resistant	Year Built:	1970
Heating:		Fuel:		Cooling Percent:	0
Siding:		Roof Material:		Beds/Units:	0

Special Features

Attached Components

Building 4

Photo Not Available



Category:	Industrial	Use:	Industrial	GLA:	6,000
Stories:	1.00	Construction:	Light Steel	Year Built:	1994
Heating:	None	Fuel:		Cooling Percent:	0
Siding:	Metal	Roof Material:	Asphalt	Beds/Units:	0

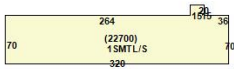
Special Features

Attached Components

Building 5

Photo Not Available

Category:	Industrial	Use:	Industrial	GLA:	22,700
Stories:	1.00	Construction:	Wood Joist	Year Built:	1994
Heating:	None	Fuel:		Cooling Percent:	0



Siding: Metal Roof Material: Asphalt Beds/Units: 0

Special Features

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Det FR/CB Garage	1994	0.00	0.00	450
Sewage Treatment Plant	1994	0.00	0.00	1
Paving	1994	0.00	0.00	24,000
Frame Shed	1994	0.00	0.00	360
Frame Shed	1994	0.00	0.00	576

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
28718	Mechanical	05/17/2016		Closed	Plumbing
28687	Central Air / Heat	05/05/2016		Closed	Htg/AC
28558	Electrical	03/22/2016		Closed	
35515		03/18/2016		Needs Visit	
26471		10/16/2015		Closed	Fire Suppression

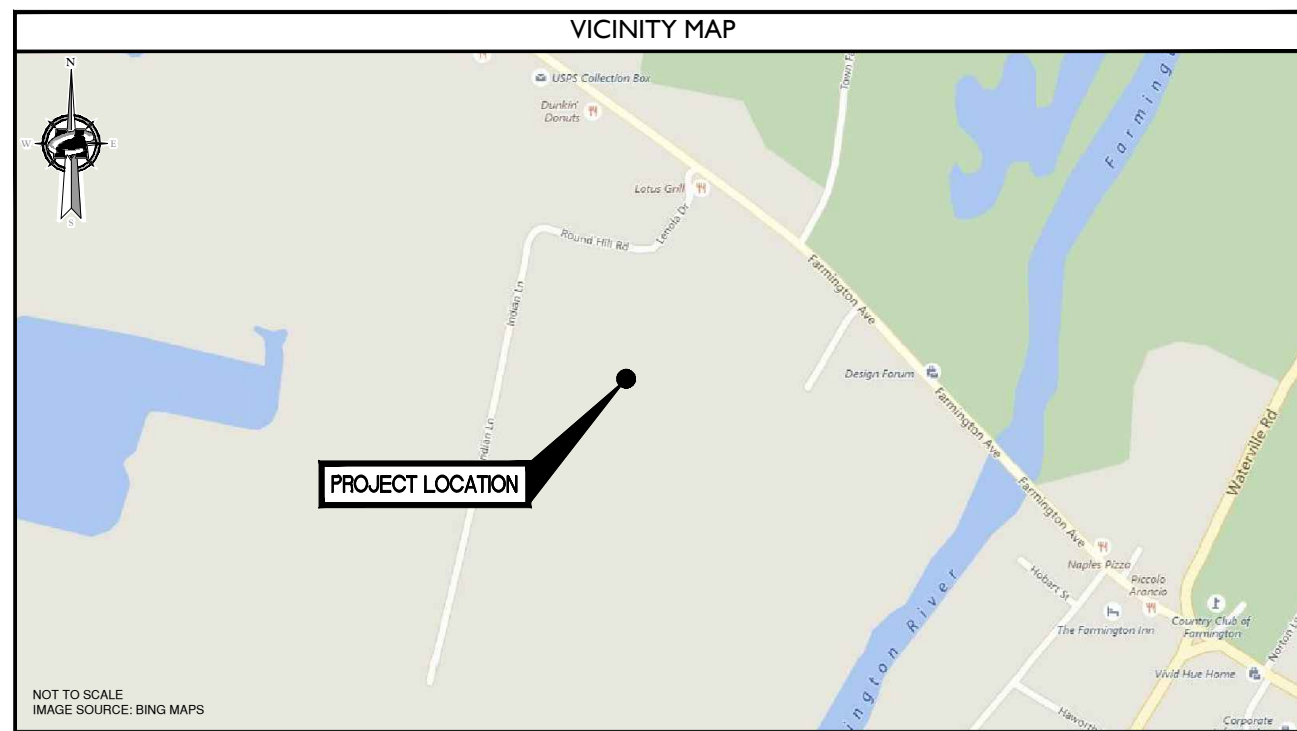
Information Published With Permission From The Assessor



SITE NAME: FARMINGTON WESTERBERG DRIVE
FA NUMBER: 10090928
SITE NUMBER: CTL01119

3C - MRCTB025245
4C- MRCTB025239
5C- MRCTB025122

I WESTERBERG DRIVE
FARMINGTON, CT 06032
HARTFORD COUNTY



PROJECT TEAM	
CLIENT REPRESENTATIVE	
COMPANY:	SMARTLINK, LLC
ADDRESS:	85 RANGEWAY ROAD, BUILDING 3, SUITE 102
CITY, STATE, ZIP:	NORTH BILLERICA, MA 01862-2105
CONTACT:	TODD OLIVER
PHONE:	(774) 369-3613
E-MAIL:	TODD.OLIVER@SMARTLINKLLC.COM
SITE ACQUISITION	
COMPANY:	SMARTLINK, LLC
ADDRESS:	85 RANGEWAY ROAD, BUILDING 3, SUITE 102
CITY, STATE, ZIP:	NORTH BILLERICA, MA 01862-2105
CONTACT:	TODD OLIVER
PHONE:	(774) 369-3613
E-MAIL:	TODD.OLIVER@SMARTLINKLLC.COM
ENGINEER	
COMPANY:	MASER CONSULTING CONNECTICUT
ADDRESS:	331 NEWMAN SPRINGS ROAD, SUITE 203
CITY, STATE, ZIP:	RED BANK, NJ 07701-5699
CONTACT:	PETROS TSOUKALAS
PHONE:	(856) 797-0412 x4102
E-MAIL:	PTSOUKALAS@MASERCONSULTING.COM
CONSTRUCTION MANAGER	
COMPANY:	SMARTLINK, LLC
ADDRESS:	85 RANGEWAY ROAD, BUILDING 3, SUITE 102
CITY, STATE, ZIP:	NORTH BILLERICA, MA 01862-2105
CONTACT:	MARK DONNELLY
PHONE:	(617) 515-2080
E-MAIL:	MARK.DONNELLY@SMARTLINKLLC.COM

SITE INFORMATION	
APPLICANT/LESSEE	
NEW CINGULAR WIRELESS PCS, LLC 550 COCHITUATE RD. FRAMINGHAM, MA 01701	
PROPERTY/TOWER OWNER:	
NAME:	SBA TOWERS
ADDRESS:	5900 BROKEN SOUND PARKWAY NORTHWEST
CITY, STATE, ZIP:	BOCA RATON, FL 33487
SITE ID#:	CT46141
LATITUDE:	41.7304839° N
LONGITUDE:	72.8354881° W
LAT./LONG. TYPE:	NAD 83
AREA OF CONSTRUCTION:	EXISTING EQUIPMENT SHELTER AND FLAGPOLE
ZONING/JURISDICTION:	TOWN OF FARMINGTON
CURRENT USE/PROPOSED USE:	UNMANNED TELECOMMUNICATIONS FACILITY
HANDICAP REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
CONSTRUCTION TYPE:	IIB
USE GROUP:	U

CODE COMPLIANCE	
ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.	
1. 2016 CONNECTICUT STATE BUILDING CODE INCORPORATING THE 2012 IBC	7. EIA/TIA-222 REVISION G
2. NATIONAL ELECTRIC CODE 2014	8. TIA 607 FOR GROUNDING
3. NATIONAL FIRE PROTECTION ASSOCIATION 70 - 2015	9. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
4. LIGHTNING PROTECTION CODE 2011	10. IEEE C2 LATEST EDITION
5. AMERICAN CONCRETE INSTITUTE 318	11. TELCORDIA GR-1275
6. AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10.	12. ANSI T1.311

GENERAL CONTRACTOR NOTES	
DO NOT SCALE DRAWINGS	
CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.	

GENERAL NOTES	
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE. NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.	

SHEET	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
A-1	COMPOUND AND EQUIPMENT LAYOUTS
A-2	ELEVATION VIEW, DETAILS AND ANTENNA SCHEDULE
A-3	ANTENNA LAYOUTS
A-4	DETAILS
A-5	RF PLUMBING DIAGRAMS
G-1	GROUNDING DETAILS

PROJECT DESCRIPTION/SCOPE OF WORK	
THIS PROJECT WILL BE COMPRISED OF:	
<ul style="list-style-type: none"> INSTALL (3) NEW ANTENNAS TO REPLACE (3) EXISTING ANTENNAS, (1) PER SECTOR INSTALL (3) NEW RRUS-32 B66, AT GRADE INSTALL (3) NEW RRUS-32, AT GRADE INSTALL (6) NEW RRUS-12, AT GRADE INSTALL (1) RACK MOUNTED DC12 SURGE SHELF INSTALL (1) XMU REPLACE (6) EXISTING TRIPLEXERS WITH (12) PROPOSED PENTAPLEXERS REPLACE (3) EXISTING TMA'S WITH (6) PROPOSED TMA'S 	
PROPOSED PROJECT SCOPE BASED ON RFDS ID# 1819479 VERSION 3.0, LAST UPDATED 09/26/2017.	

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 550 COCHITUATE ROAD
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85 RANGEWAY ROAD
 BUILDING 3, SUITE 102
 NORTH BILLERICA, MA 01862-2105
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PETROS TSOUKALAS
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FA# 10090928
SITE # CTL01119
I WESTERBERG DRIVE
FARMINGTON, CT 06032
HARTFORD COUNTY

RED BANK OFFICE
 331 Newman Springs Road
 Suite 203
 Red Bank, NJ 07701
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SHEET TITLE:	TITLE SHEET
SHEET NUMBER:	T-1

2/21/2018 Farmington Westerberg Drive Rev. C 17/06/18/2018

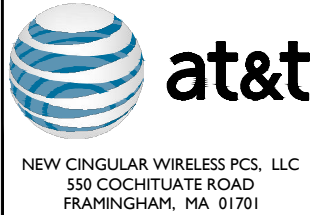
GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GE'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 50 HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
6. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH I-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.
22. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR - SMARTLINK
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)
23. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
24. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
25. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

26. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
27. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
28. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
29. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
30. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
31. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
32. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
33. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
34. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
35. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
36. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
37. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
38. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
39. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
40. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
41. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
42. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
43. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
44. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
45. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
46. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
47. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
48. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
49. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
50. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN ALERT OF DANGEROUS EXPOSURE LEVELS.

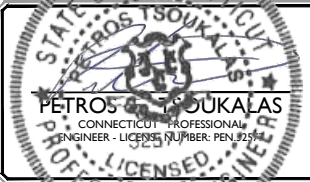


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SCALE:	JOB NUMBER:
AS SHOWN	17946062A

I	11/09/17	FOR CONSTRUCTION	AJC	PET
O	10/18/17		AJC	PET
REV	D	DESCRIPTION	BY	CHECKED



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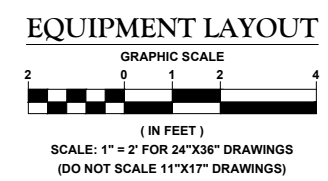
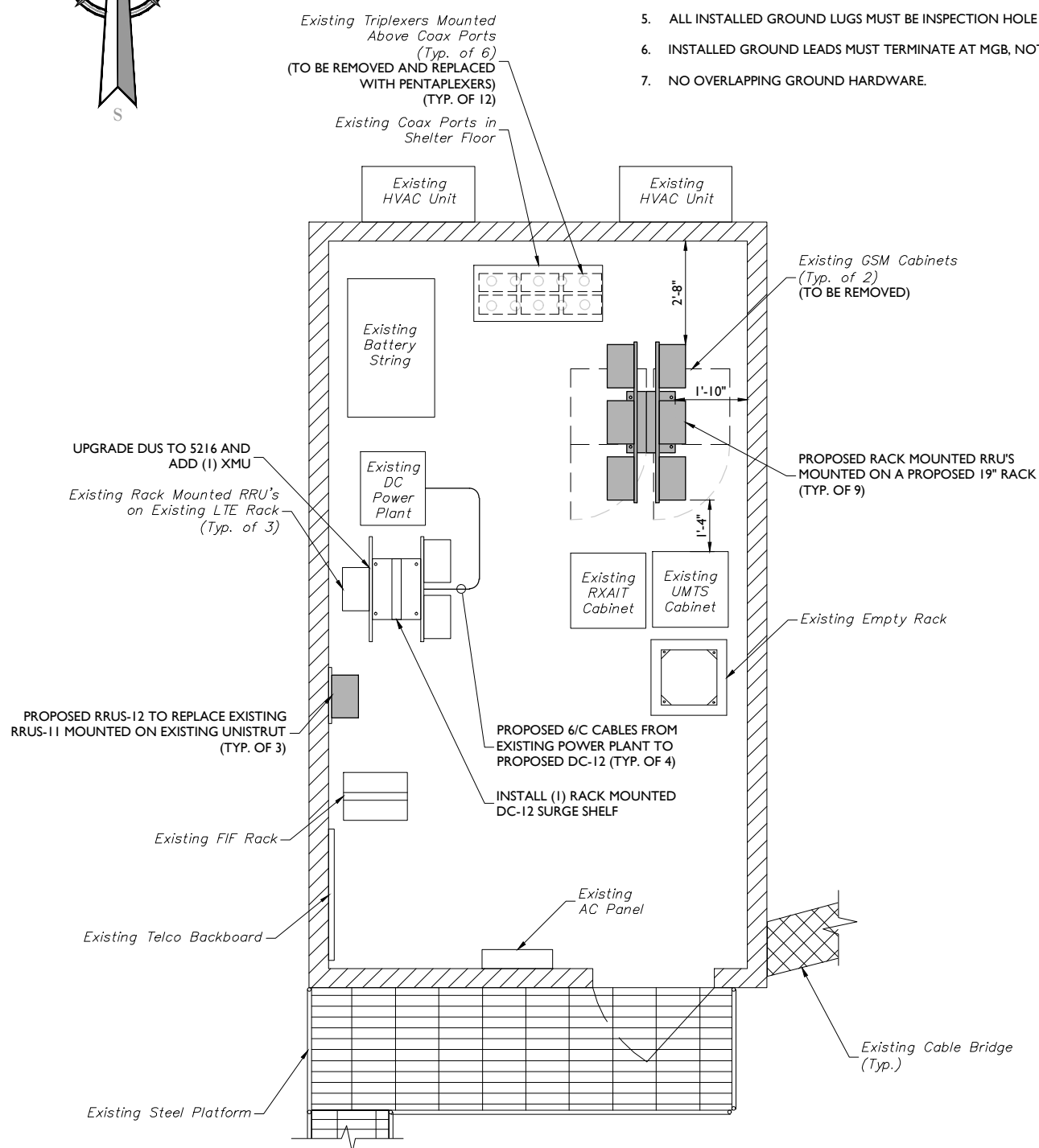
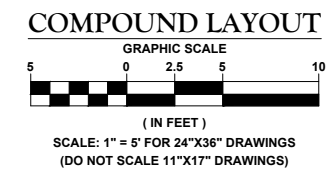
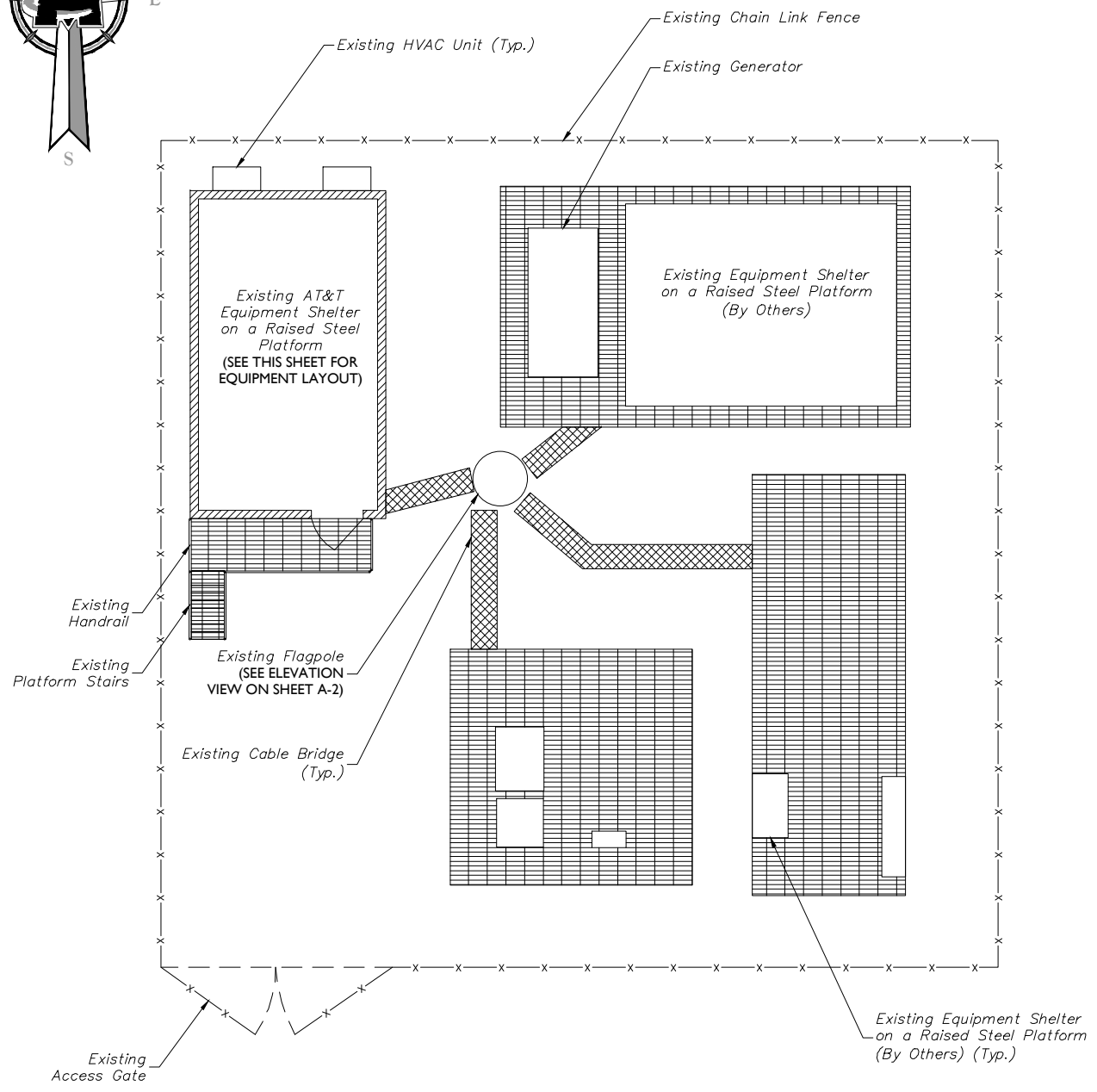
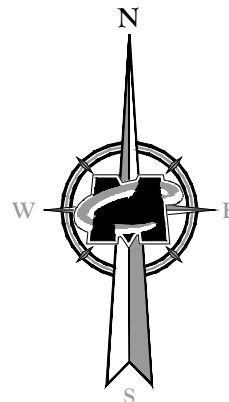
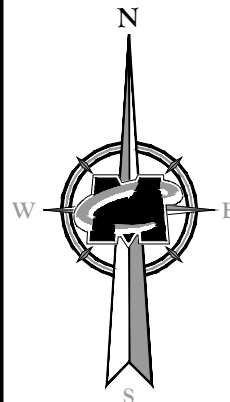
SITE NAME:
 FARMINGTON
 WESTERBERG DRIVE
 FA# 10090928
 SITE # CTL01119
 1 WESTERBERG DRIVE
 FARMINGTON, CT 06032
 HARTFORD COUNTY



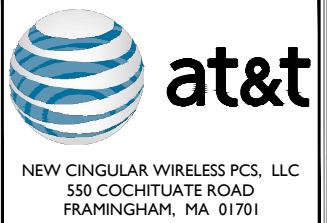
SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
GN-1

20230118 Farmington Westerberg Drive Rev L_CD_171014.dwg GNL by ACOA



- NOTES:**
1. THE CONDUIT ROUTING IS DIAGRAMMATICALLY SHOWN ON THE PLANS AND ARE ONLY APPROXIMATIONS. THE EXACT LOCATION AND ROUTING SHALL BE FIELD VERIFIED.
 2. ALL DISCONNECTS AND CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES, INDICATING THE CIRCUITS ORIGIN AND ALL EQUIPMENT TERMINATIONS.
 3. SUBCONTRACTOR SHALL PROVIDE ALL CONDUITS AND CIRCUITS AS REQUIRED FOR A COMPLETED SYSTEM AND SHALL BE IN COMPLIANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
 4. ALL NEW CABLING TO BE ROUTED ON EXISTING CABLE RACKS.
 5. ALL INSTALLED GROUND LUGS MUST BE INSPECTION HOLE LUGS.
 6. INSTALLED GROUND LEADS MUST TERMINATE AT MGB, NOT HALO.
 7. NO OVERLAPPING GROUND HARDWARE.



SCALE:	AS SHOWN	JOB NUMBER:	17946062A
REV	DATE	DESCRIPTION	BY
1	11/09/17	FOR CONSTRUCTION	AJC PET
0	10/18/17		AJC PET
		DESIGNED BY	AWN
		CHECKED BY	



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 SITE # CTL01119
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 FARMINGTON, CT 06032
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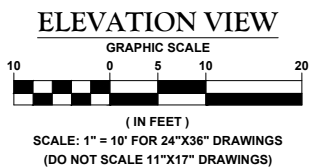
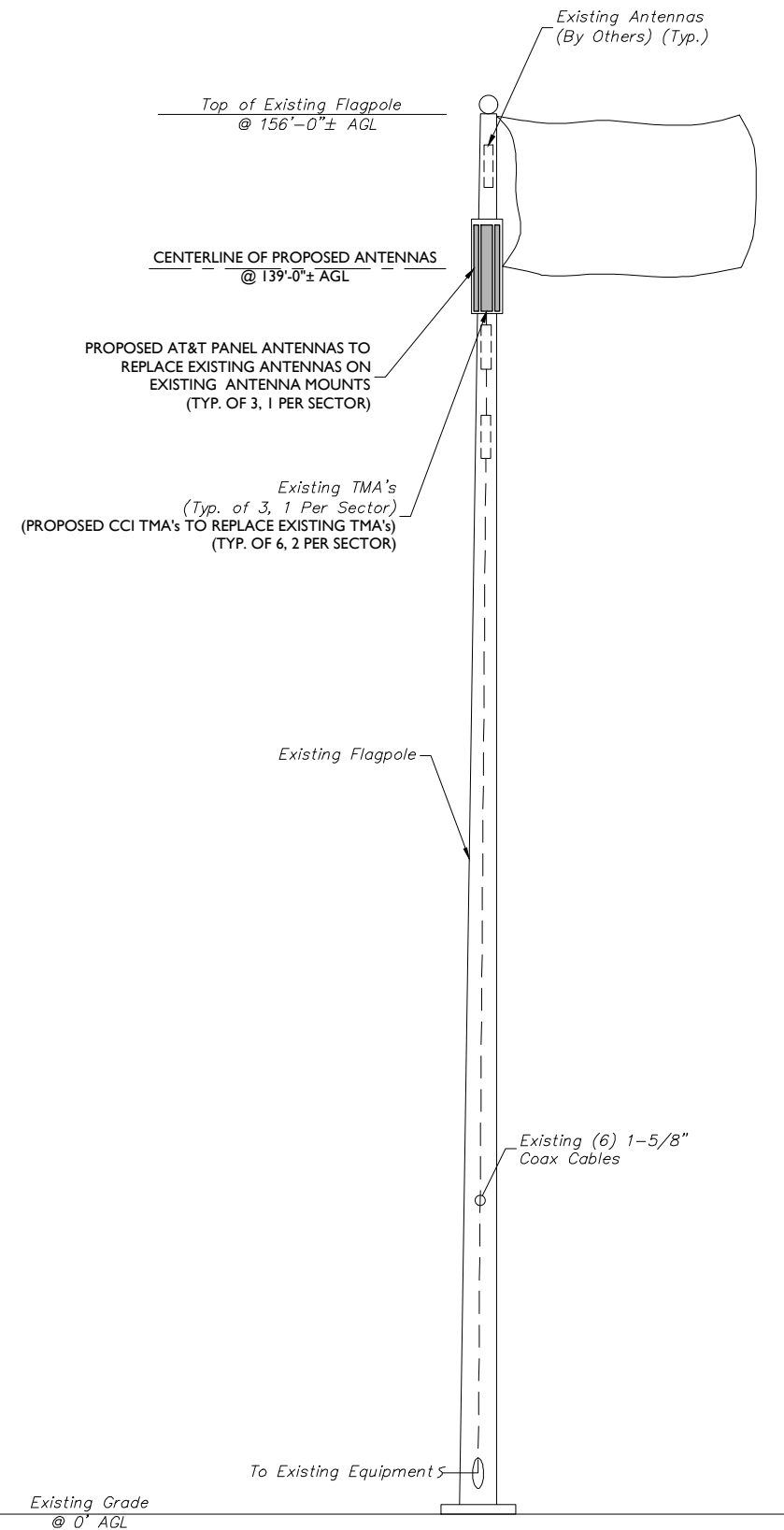


SHEET TITLE:
COMPOUND AND EQUIPMENT LAYOUTS

SHEET NUMBER:
A-1

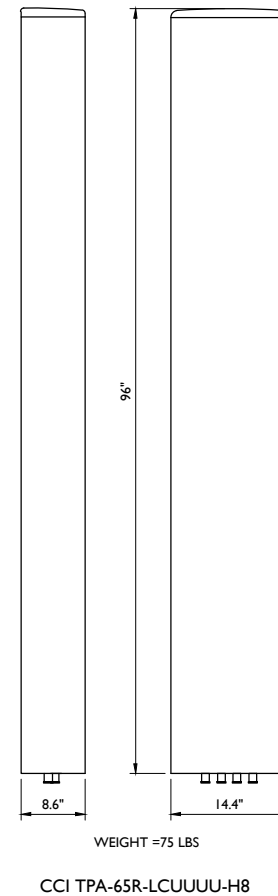
2/21/2018 Farmington Westerberg Drive, Rev. L_CD_171814.dwg (A-1) By: ACDA

ALL EQUIPMENT (ANTENNAS, LINES, ETC.) TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS PROVIDED BY SBA TOWERS

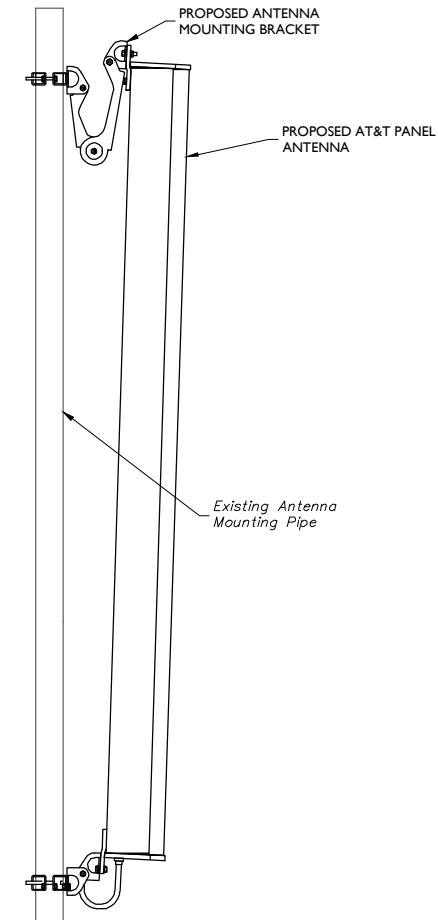


PROPOSED ANTENNA AND RRUS CONFIGURATION													
SECTOR	EXISTING ANTENNA CONFIGURATION	PROPOSED ANTENNA CONFIGURATION	TECHNOLOGY	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZMUTH	ANT. CL. ELEV. (ft.)	RRUS CONFIGURATION	STATUS	
ALPHA	A1	Powerwave P65-17-XLH-RR	CCI TPA-65R-LCUUUU-H8	LTE	NEW	96.00	14.40	8.60	94.20	30°	139'	(2) RRUS-12 (AT GRADE) (1) RRUS-32 (AT GRADE) (1) RUS 32-B66 (AT GRADE)	NEW NEW NEW
BETA	B1	Powerwave P65-17-XLH-RR	CCI TPA-65R-LCUUUU-H8	LTE	NEW	96.00	14.40	8.60	94.20	150°	139'	(2) RRUS-12 (AT GRADE) (1) RRUS-32 (AT GRADE) (1) RUS 32-B66 (AT GRADE)	NEW NEW NEW
GAMMA	C1	Powerwave P65-17-XLH-RR	CCI TPA-65R-LCUUUU-H8	LTE	NEW	96.00	14.40	8.60	94.20	270°	139'	(2) RRUS-12 (AT GRADE) (1) RRUS-32 (AT GRADE) (1) RUS 32-B66 (AT GRADE)	NEW NEW NEW

ANTENNA SCHEDULE



ANTENNA DETAIL
NOT TO SCALE



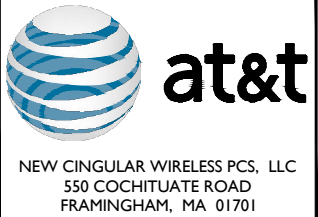
ANTENNA MOUNTING DETAIL
NOT TO SCALE

STRUCTURAL NOTES:

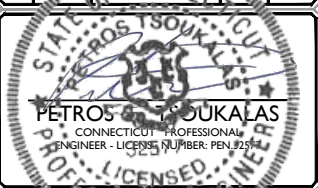
1. A STRUCTURAL ANALYSIS TO DETERMINE IF THE EXISTING STRUCTURE AND FOUNDATION CAN ADEQUATELY SUPPORT THE PROPOSED LOADING HAS NOT BEEN PREPARED/ANALYZED BY MASER AND IS TO BE PERFORMED BY OTHERS.
2. NO CONSTRUCTION OF THE PROPOSED LOADING SHOWN SHALL PROCEED UNTIL ADEQUACY OF EXISTING STRUCTURE AND FOUNDATION, INCLUDING THE PROPOSED AT&T ANTENNA MOUNTING CONFIGURATION SHOWN HEREIN, HAS BEEN CONFIRMED BY SMARTLINK.
3. THE STRUCTURE ELEVATION IS SHOWN FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REFLECT AS-BUILT FIELD CONDITIONS FOR ALL EXISTING INVENTORY LOADING/ANTENNAS/APURTANENCES ON STRUCTURE. REFER TO THE LATEST STRUCTURAL ANALYSIS FOR EXISTING STRUCTURE LOADING AND THE PROPOSED METHOD OF ATTACHMENT OF THE PROPOSED ANTENNAS/CABLES.
4. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APPURTANENCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.



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SCALE:	AS SHOWN	JOB NUMBER:	17946062A
REV	DATE	DESCRIPTION	BY
1	11/09/17	FOR CONSTRUCTION	AJC PET
0	10/18/17		AJC PET



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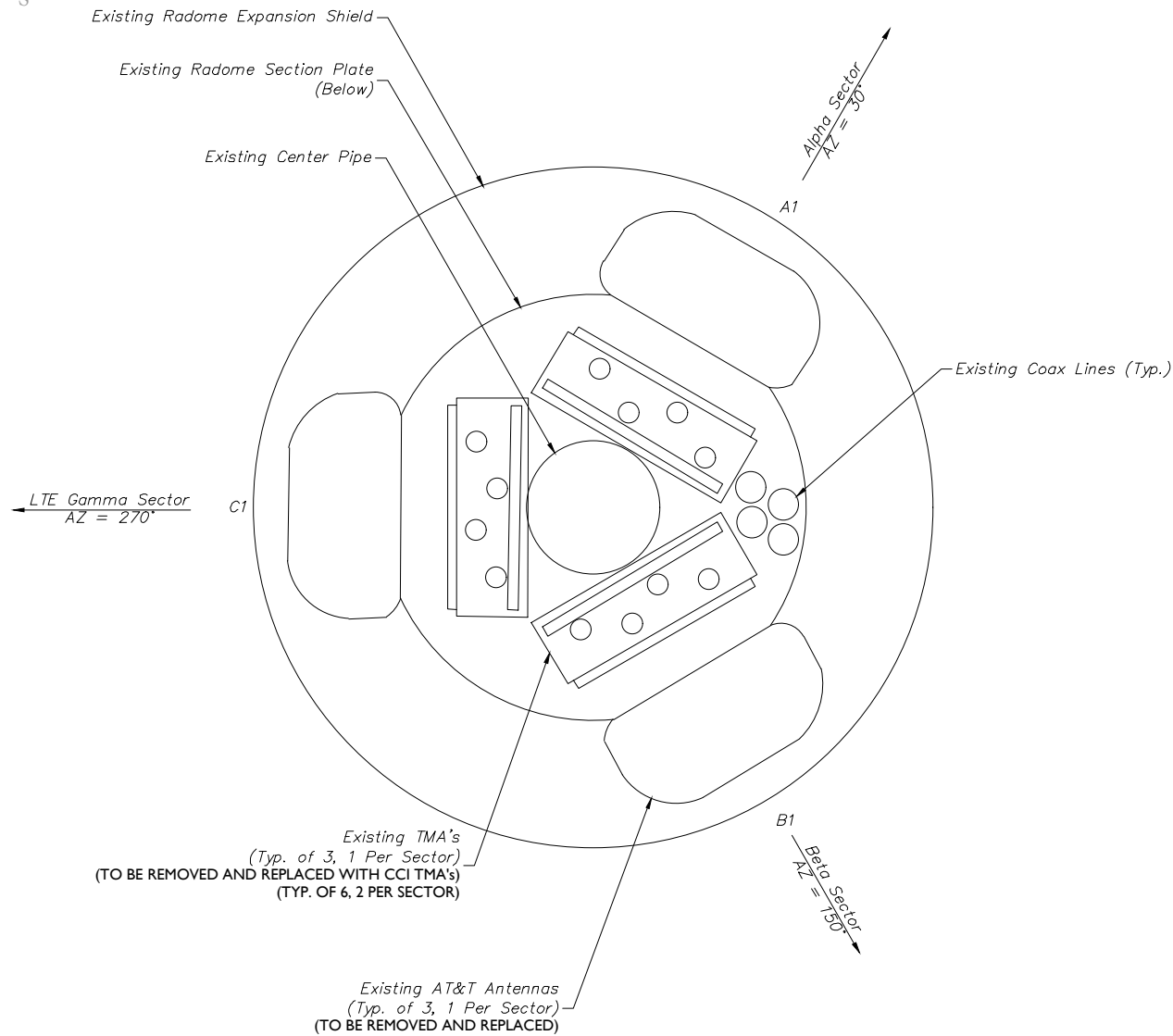
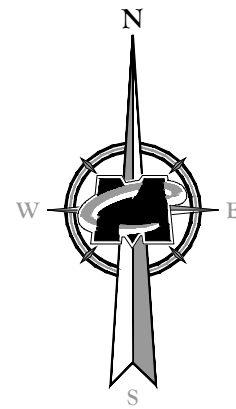
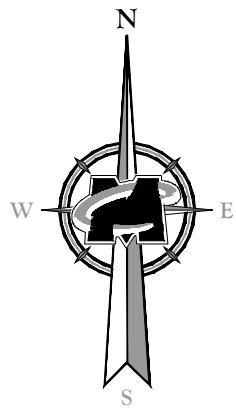
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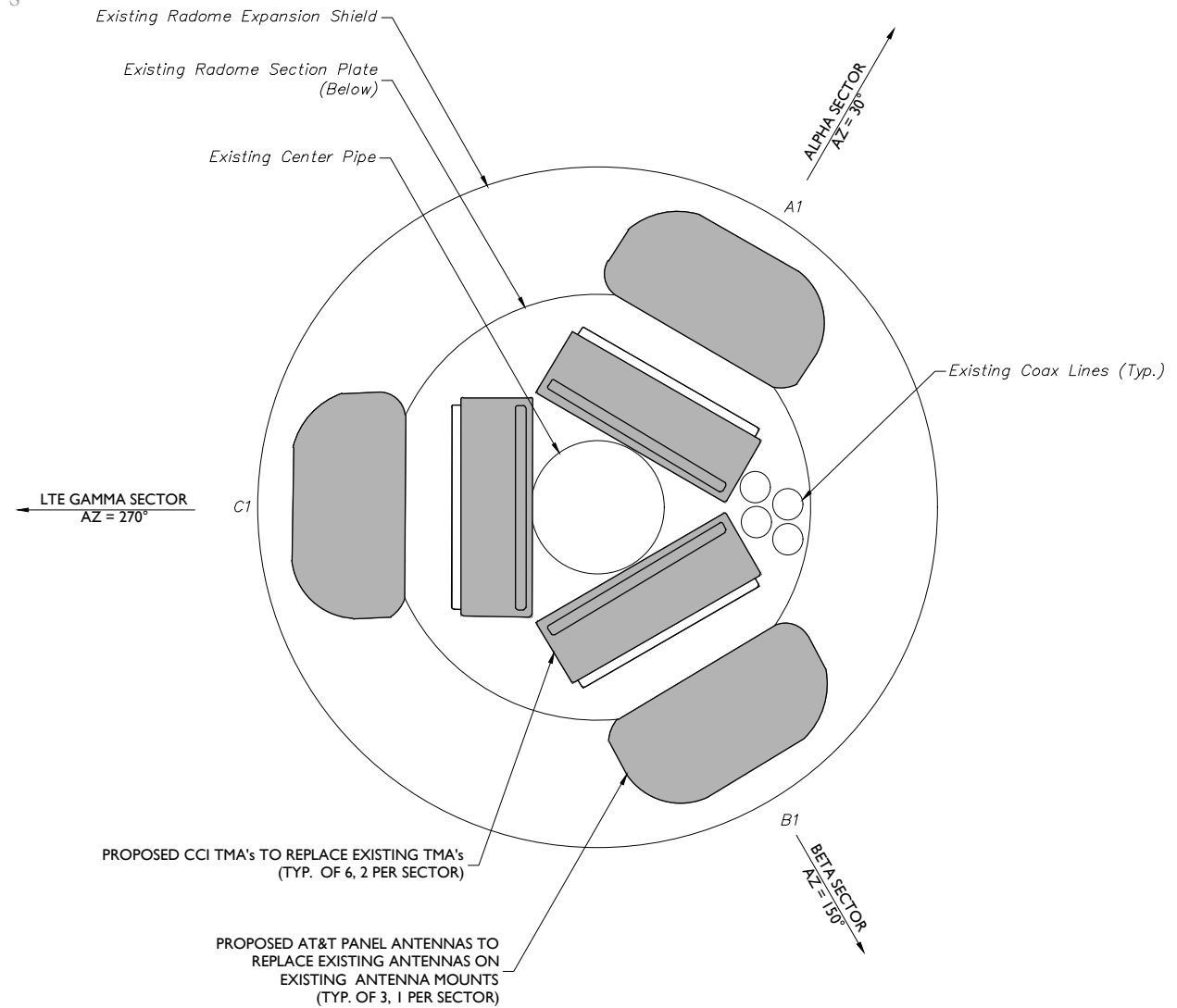
SHEET TITLE:
ELEVATION VIEW, DETAILS AND ANTENNA SCHEDULE

SHEET NUMBER:
A-2

2/21/2017 Farmington Westerberg Drive Rev L_CD_171014.dwg/2



EXISTING ANTENNA LAYOUT
NOT TO SCALE



PROPOSED ANTENNA LAYOUT
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NORTH BILLERICA, MA 01862-2105
TEL: (774) 369-3613



SCALE: AS SHOWN JOB NUMBER: 17946062A

REV	DATE	DESCRIPTION	BY	CHECKED BY
1	11/09/17	FOR CONSTRUCTION	AJC	PET
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SITE # CTL01119
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FARMINGTON, CT 06032
HARTFORD COUNTY

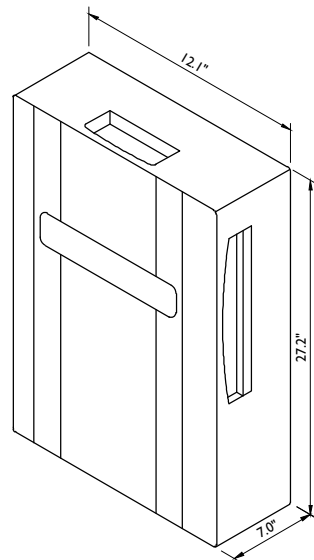


RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701
Phone: 732.383.1950
Fax: 732.383.1984
email: solutions@maserconsulting.com

SHEET TITLE:
ANTENNA LAYOUTS

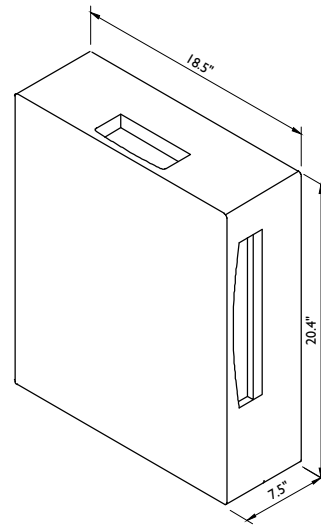
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A-3

2/CT10119 Farmington Westerberg Drive Rev L_CD_171014.dwg/A3 By: ACDA



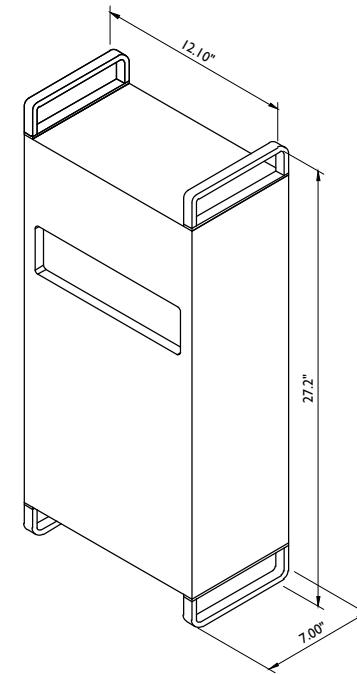
RRUS-32 DIMENSIONS (H X W X D): 27.2" X 12.1" X 7.0" (INCLUDES SUNSHIELD)
WEIGHT: 53 LBS

RRUS-32 DETAIL
NOT TO SCALE



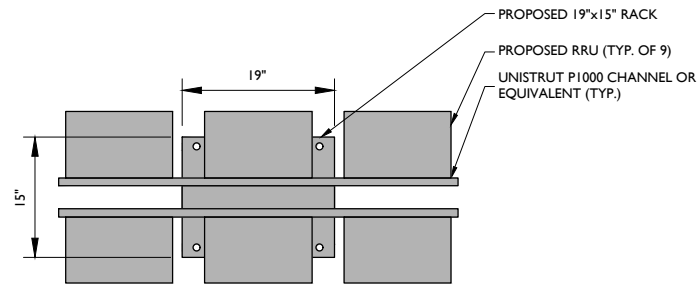
RRUS-12 DIMENSIONS (H X W X D): 20.4" X 18.5" X 7.5" (INCLUDES SUNSHIELD)
WEIGHT: 58 LBS

RRUS-12 DETAIL
NOT TO SCALE

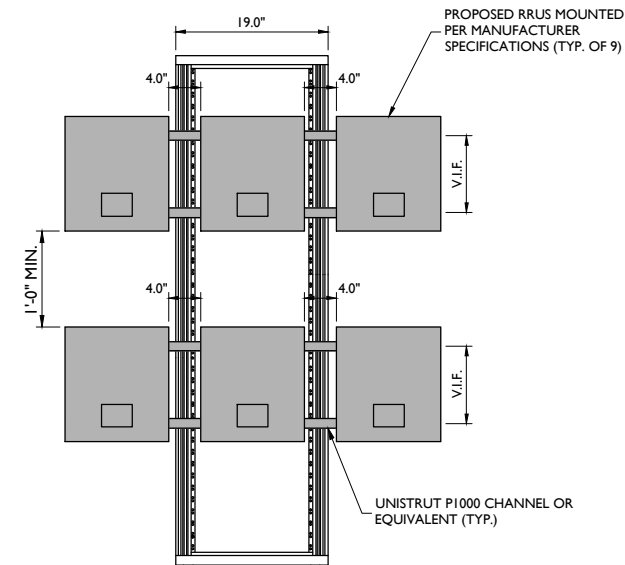


RRUS-32 B66 DIMENSIONS (H X W X D): 27.2" X 12.1" X 7.0" (INCLUDES HANDLES, FEET AND SUNSHIELD)
WEIGHT: 53 LBS

RRUS-32 B66 DETAIL
NOT TO SCALE



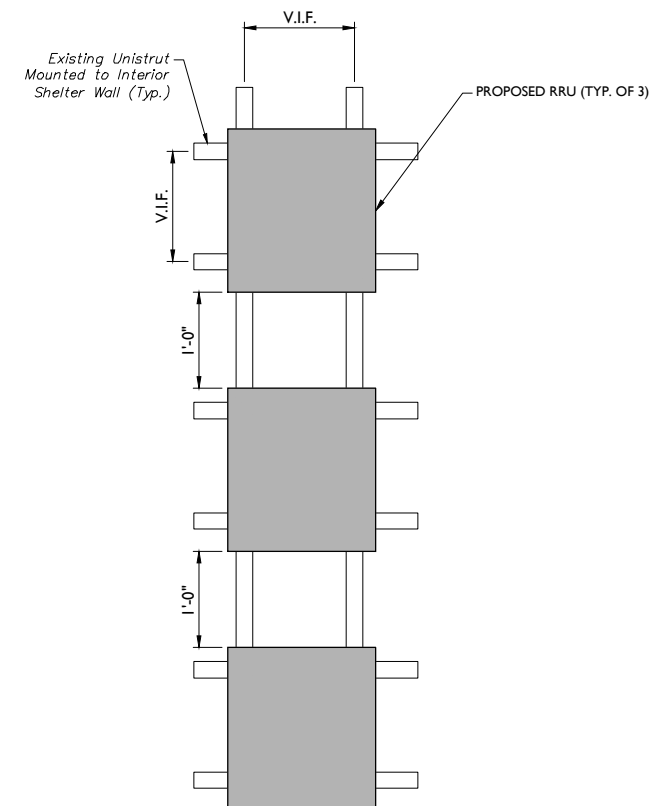
PLAN VIEW
TO SCALE



NOTES:

- MOUNT RRUS TO UNISTRUT WITH 3/8"Ø UNISTRUT BOLTING HARDWARE AND SPRING NUTS THROUGH EQUIPMENT MOUNTING HOLES. SUBCONTRACTOR SHALL SUPPLY.

RRU RACK MOUNTED DETAIL
NOT TO SCALE



RRU UNISTRUT MOUNTED DETAIL
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NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

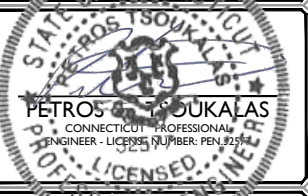


85 RANGEWAY ROAD
BUILDING 3, SUITE 102
NORTH BILLERICA, MA 01862-2105
TEL: (774) 369-3613



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SITE # CTL01119
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HARTFORD COUNTY



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331 Newman Springs Road
Suite 203
Red Bank, NJ 07701
Phone: 732.383.1950
Fax: 732.383.1984
email: solutions@maserconsulting.com

SHEET TITLE: DETAILS

SHEET NUMBER: A-4

2/CT10119 Farmington Westerberg Drive Rev. C 171014.dwg/A-4 By: AC204

at&t
 NEW CINGULAR WIRELESS PCS, LLC
 550 COCHITUATE ROAD
 FRAMINGHAM, MA 01701

smartlink
 85 RANGEWAY ROAD
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SCALE:	JOB NUMBER:
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REV	DATE	DESCRIPTION	BY	CHECKED BY
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PETROS TSOUKALAS
 CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN 9258
 REGISTERED PROFESSIONAL ENGINEER

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 SITE # CTL01119
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 FARMINGTON, CT 06032
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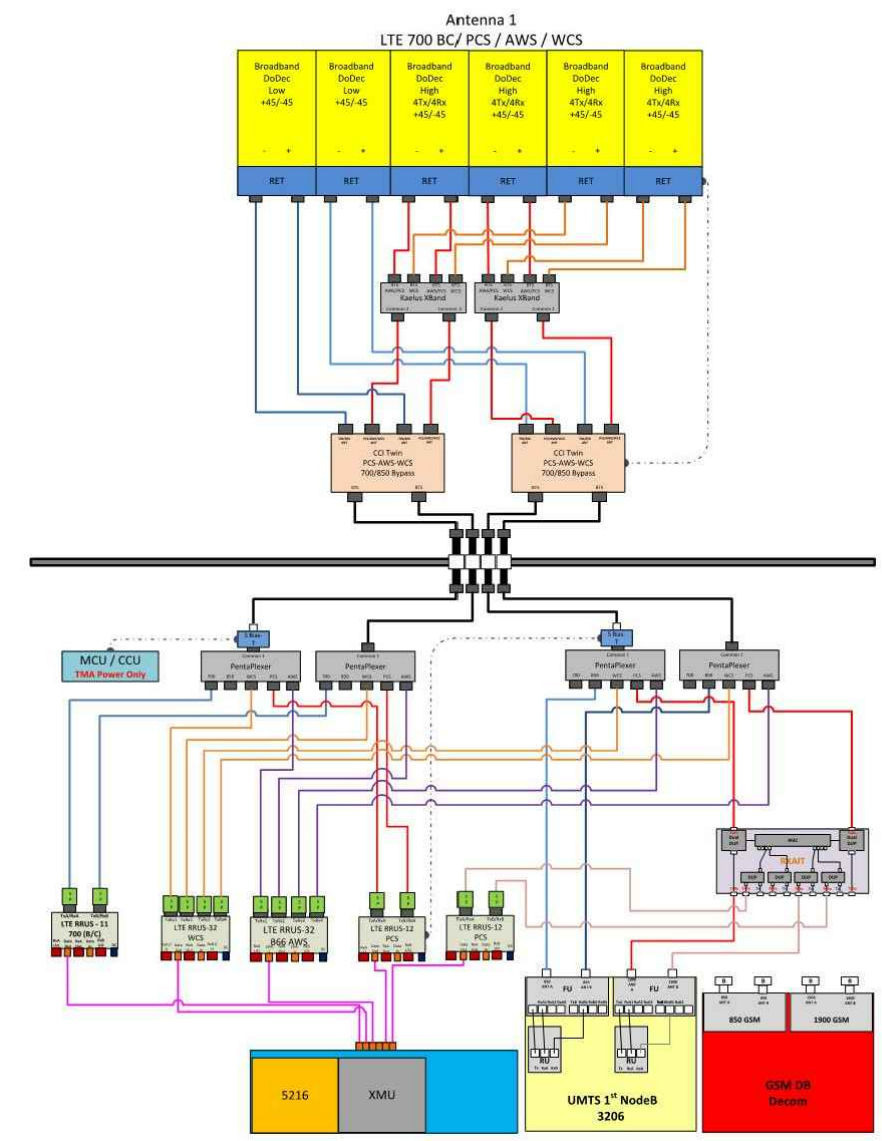
SHEET TITLE:
RF PLUMBING DIAGRAMS

SHEET NUMBER:
A-5

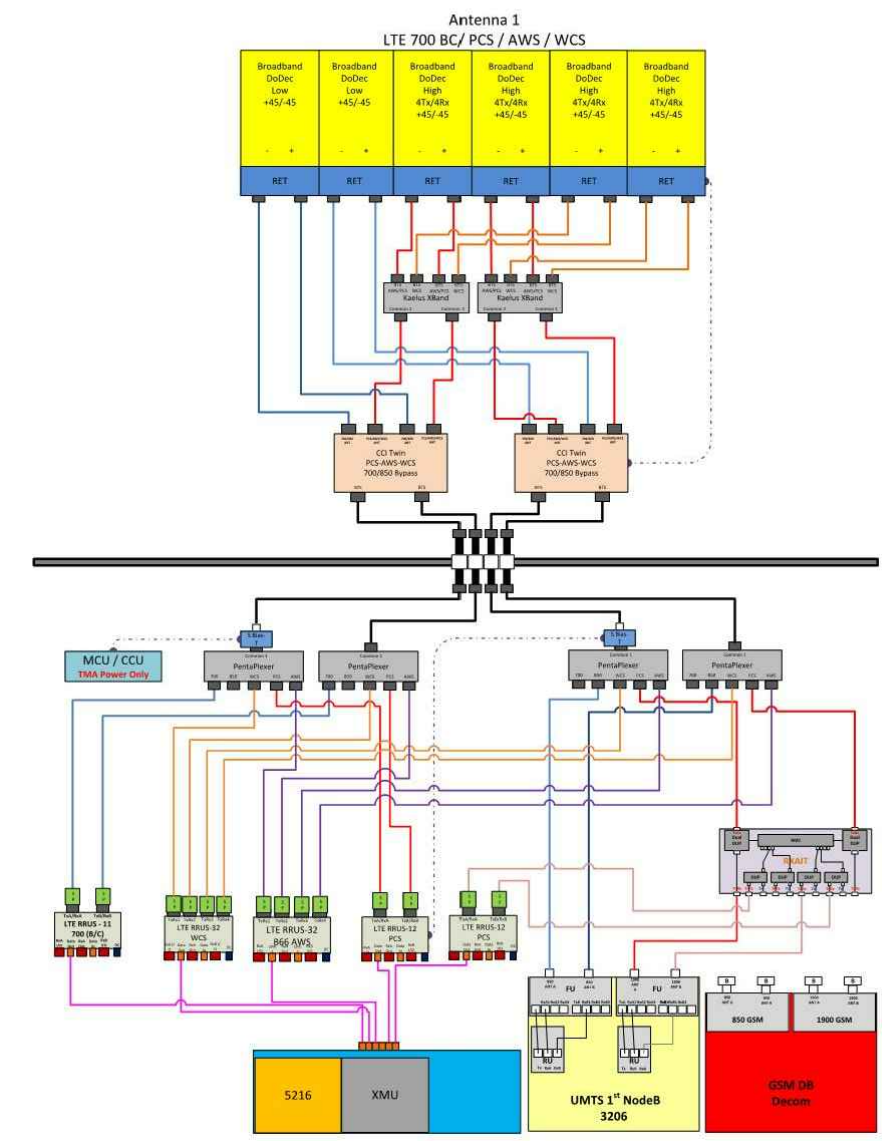
Diagram - Sector A/1 Diagram File Name - CT1119_A_B_C_WCS_AWS_4T4R_PCS_Rev2.vsd
 FARMINGTON
 Atoll Site Name - CTV1119 Location Name - WESTERBERG DRIVE Market - CONNECTICUT Market Cluster - NEW ENGLAND
 Comments:

Diagram - Sector B/2 Diagram File Name - CT1119_A_B_C_WCS_AWS_4T4R_PCS_Rev2.vsd
 FARMINGTON
 Atoll Site Name - CTV1119 Location Name - WESTERBERG DRIVE Market - CONNECTICUT Market Cluster - NEW ENGLAND
 Comments:

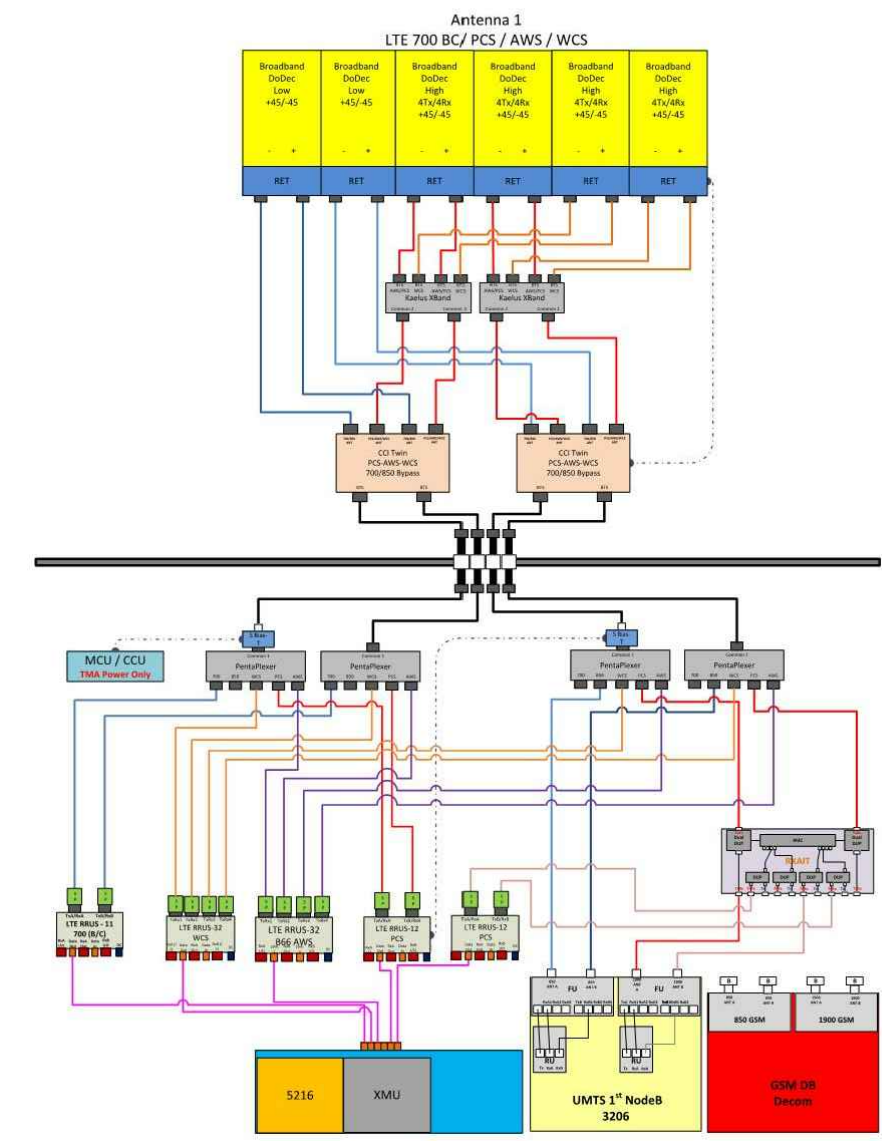
Diagram - Sector C/3 Diagram File Name - CT1119_A_B_C_WCS_AWS_4T4R_PCS_Rev2.vsd
 FARMINGTON
 Atoll Site Name - CTV1119 Location Name - WESTERBERG DRIVE Market - CONNECTICUT Market Cluster - NEW ENGLAND
 Comments:



ALPHA SECTOR



BETA SECTOR

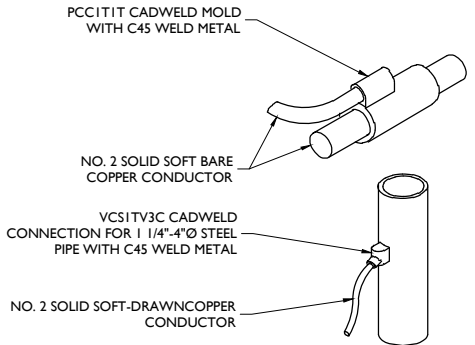
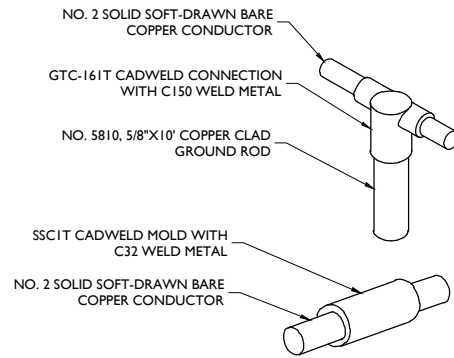


GAMMA SECTOR

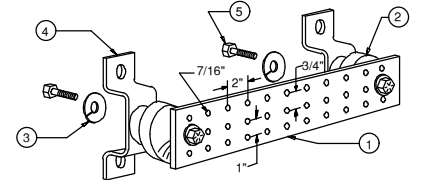
BASED ON RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTV1119_2018-LTE-Next-Carrier_LTE_mb497_2051A0D0BJ_10090928_84040_06-16-2017_Final-Approved_v3.00", LAST UPDATED 09/26/2017.

RF PLUMBING DIAGRAMS

2/CT1119/Farmington/Westerberg/Drive/Rev 1/CD_171014/dep/AS3 By: AC20A

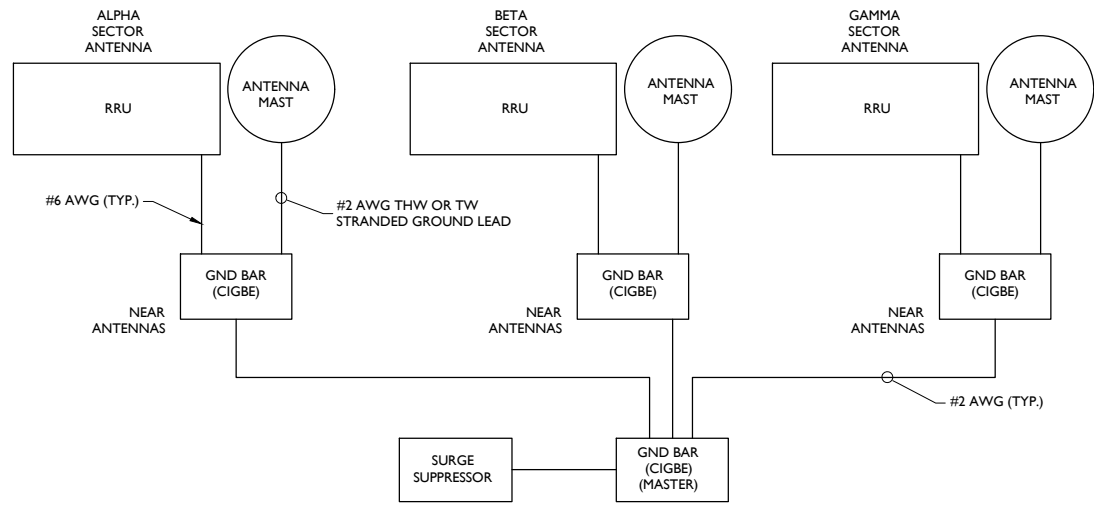


CADWELD DETAILS
NOT TO SCALE

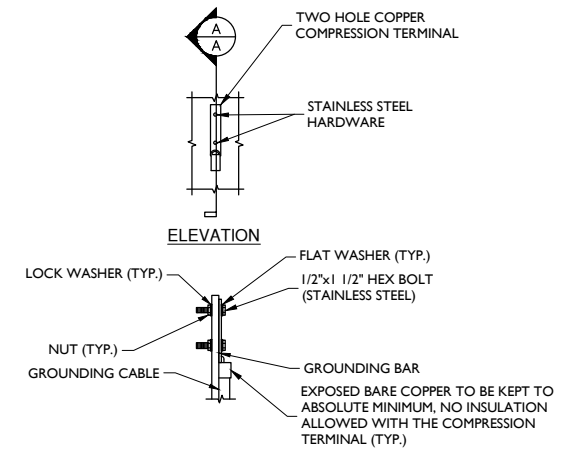


- LEGEND**
- 1- TINNY COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
 - 2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
 - 3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8
 - 4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056
 - 5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1
- 6- EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.
- SECTION "P" - SURGE PRODUCERS**
CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
-48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.
- SECTION "A" - SURGE ABSORBERS**
INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

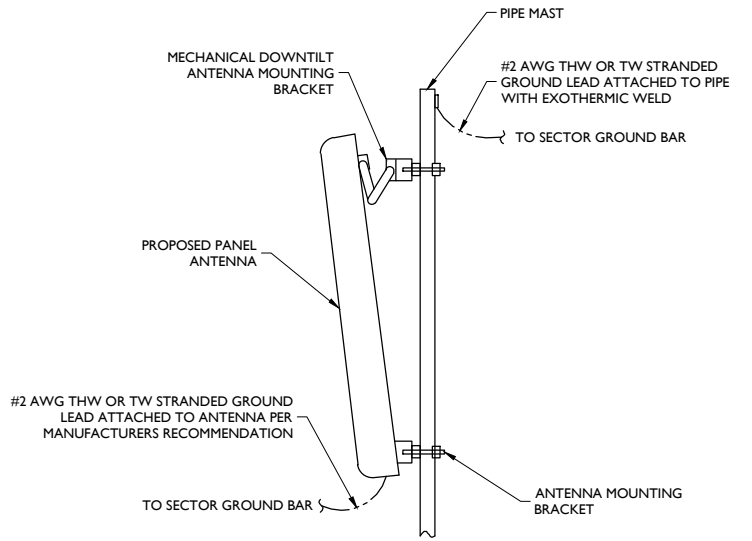
MASTER GROUND BAR
NOT TO SCALE



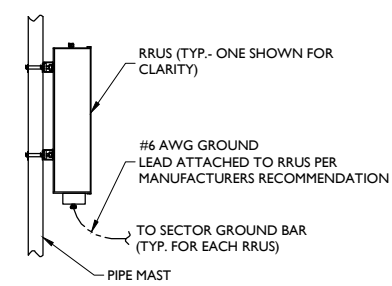
SCHEMATIC DIAGRAM GROUNDING SYSTEM



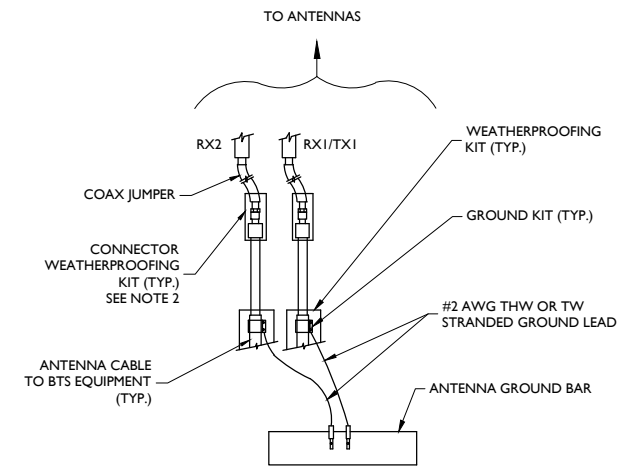
TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



ANTENNA GROUNDING
NOT TO SCALE



RRH GROUNDING
NOT TO SCALE



- NOTES:**
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
 2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

TYPICAL GROUND WIRE TO GROUNDING BAR
NOT TO SCALE

at&t
NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

smartlink
85 RANGWAY ROAD
BUILDING 3, SUITE 102
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SCALE:	JOB NUMBER:																																																																																																
AS SHOWN	17946062A																																																																																																
<table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>																																																																																																	
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PETROS TSOUKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN #25152
REGISTERED PROFESSIONAL ENGINEER

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SITE # CTL01119
1 WESTERBERG DRIVE
FARMINGTON, CT 06032
HARTFORD COUNTY

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Phone: 732.383.1950
Fax: 732.383.1984
email: solutions@maserconsulting.com

SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
G-1

2/21/2018 Farmington Westerberg Drive Rev 1_CD_17101046p01 By: ACDA

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Tower Engineering Solutions

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

Structural Analysis Report

Existing 155 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT46141-A

Customer Site Name: Water Treatment Plant 2, CT

Carrier Name: AT&T

Carrier Site ID / Name: CT1119 / Farmington Westerberg Drive

Site Location: 1 Westerberg Drive

Farmington, Connecticut

Hartford County

Latitude: 41.730499

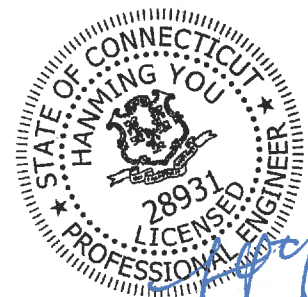
Longitude: -72.835500

Analysis Result:

Max Structural Usage: 78.5% [Pass]

Max Foundation Usage: 33% [Pass]

Report Prepared By : Jarryd Tibbetts



11/30/17



Tower Engineering Solutions

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8445 Freeport Parkway, Suite 375, Irving, Texas 75063

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Farmington, Connecticut

Hartford County

Latitude: 41.730499

Longitude: -72.835500

Analysis Result:

Max Structural Usage: 78.5% [Pass]

Max Foundation Usage: 33% [Pass]

Report Prepared By : Jarryd Tibbetts

Introduction

The purpose of this report is to summarize the analysis results on the 155 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 #05-07054 Rev B dated 9/2/04 Canister Drawing prepared by Stealth, Title #CUST-CELL-4C-80-40 Rev A dated 9/23/04
Foundation Drawing	Foundation Drawing prepared by Sabre, Job #05-07054 Rev B dated 9/2/04
Geotechnical Report	Geotechnical Report prepared by Clarence Welti Assoc, dated 6/18/04
Modification Drawings	Modification Drawing prepared by Stealth, Job #AT12-00957W-05R1 dated 9/18/12

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 125.0$ 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/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.183g$, $S_1 = 0.064g$

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	150.0	3	RFS - APXVSP18-C-A20 - Panel	Concealed (27" Canister)	(12) 1 5/8"	Sprint
2		4	RFS - ACU-A20-N - RET			
3	139.0	3	Powerwave - P65-17-XLH-RR - Panel	Concealed (36" Canister)	(6) 1 5/8"	AT&T
5		3	Powerwave - DTMABP7819VG12A - TMA/TTA			
8	129.0	3	RFS - APX18-206517S-C-A20 - Panel	Concealed (29" Canister)	(6) 1 5/8"	T-Mobile
9	127.0	6	RFS - CBC721-DF - Diplexers	Concealed (30" Canister)	(12) 1 5/8"	Verizon
10	122.0	3	Commscope - SBNHH-1D6565A - Panel			

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
4	139.0	3	CCI - TPA-65R-LCUUUU-H8 - Panel	Concealed (36" Canister)	(6) 1 5/8"	AT&T
6		6	CCI - DTMABP0723VG12A - TMA/TTA			
7		6	Kaelus - DBC0062F3V52-1 - Diplexer			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate	Flange
Max. Usage:	78.5%	67.9%	60.5%	66.5%
Pass/Fail	Pass	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	1230.0	13.2
Analysis Reactions	1395.3	16.3
Factored Reactions*	1660.5	17.8
% of Design Reactions	84.0%	91.5%

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

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.548 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The 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 78.45% at 0.0ft

Structure: CT46141-A-SBA
Site Name: Water Treatment Plant 2, CT
Height: 155.00 (ft)
Base Elev: 0.000 (ft)

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

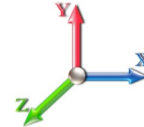
11/30/2017



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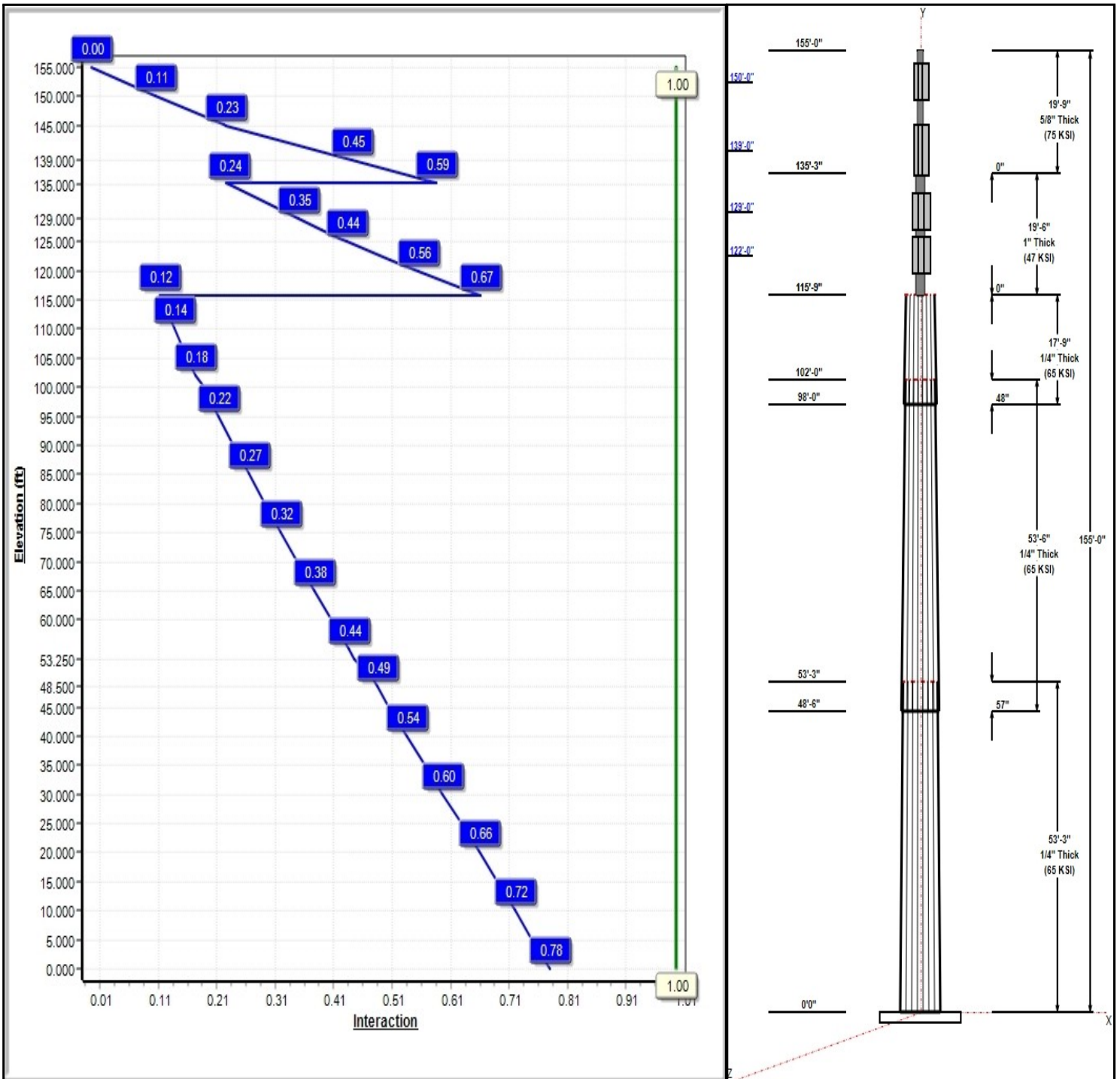
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 97 mph Wind



Iterations: 31

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Structure: CT46141-A-SBA

Type: Custom
Site Name: Water Treatment Plant 2, CT
Height: 155.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 16 Sided
Taper: 0.12674

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	36.92	43.67	0.250		0.12674	65
2	53.50	31.24	38.02	0.250	Slip	0.12674	65
3	17.75	30.00	32.25	0.250	Slip	0.12674	65
4	19.50	8.00	8.00	1.000	Butt	0.00000	47
5	19.75	5.00	5.00	0.625	Butt	0.00000	75

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
155.00	155.00	1	27" Canister	
155.00	155.00	1	Flag (20'x30')	
155.00	155.00	1	Truck Ball	
150.00	150.00	3	APXVSPP18-C-A20	Sprint
150.00	150.00	4	ACU-A20-N	Sprint
145.12	145.12	1	27" Canister & 36"	
139.00	139.00	3	TPA-65R-LCUUUU-H8	AT&T
139.00	139.00	6	DTMABP0723VG12A	AT&T
139.00	139.00	6	DBC0062F3V52-1	AT&T
135.25	135.25	1	36" Canister & 29"	
129.00	129.00	3	APX18-206517S-C-A20	T-Mobile
127.00	127.00	6	CBC721-DF	Verizon
125.50	125.50	1	29" Canister & 30"	
122.00	122.00	3	SBNHH-1D6565A	Verizon
115.75	115.75	1	30" Canister	

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	150.00	Inside	1 5/8" Coax	Sprint
0.00	139.00	Inside	1 5/8" Coax	AT&T
0.00	129.00	Inside	1 5/8" Coax	T-Mobile
0.00	122.00	Inside	1 5/8" Coax	Verizon

Anchor Bolts

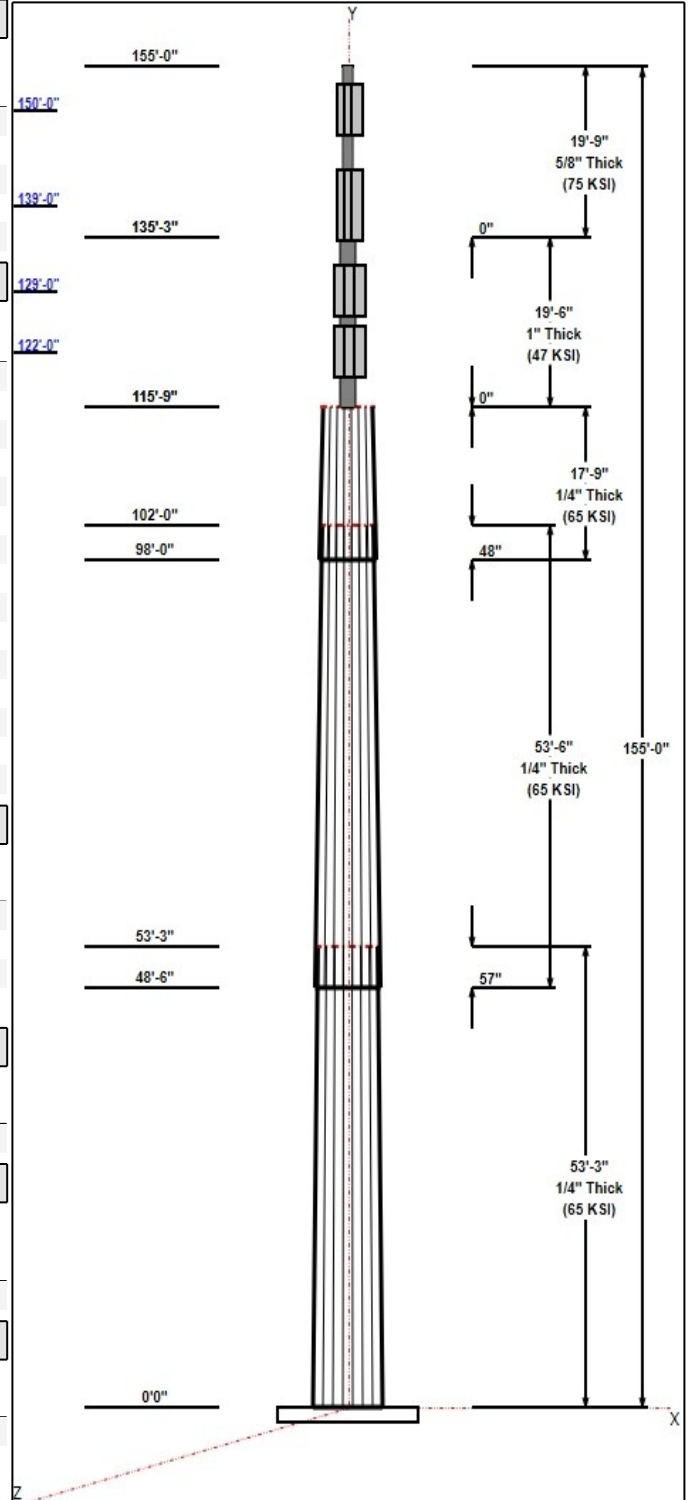
Qty	Specifications	Grade (ksi)	Arrangement
8	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.2500	47.0	60.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.0D + 1.0W 60 mph Wind	343.0	4.0	20.8



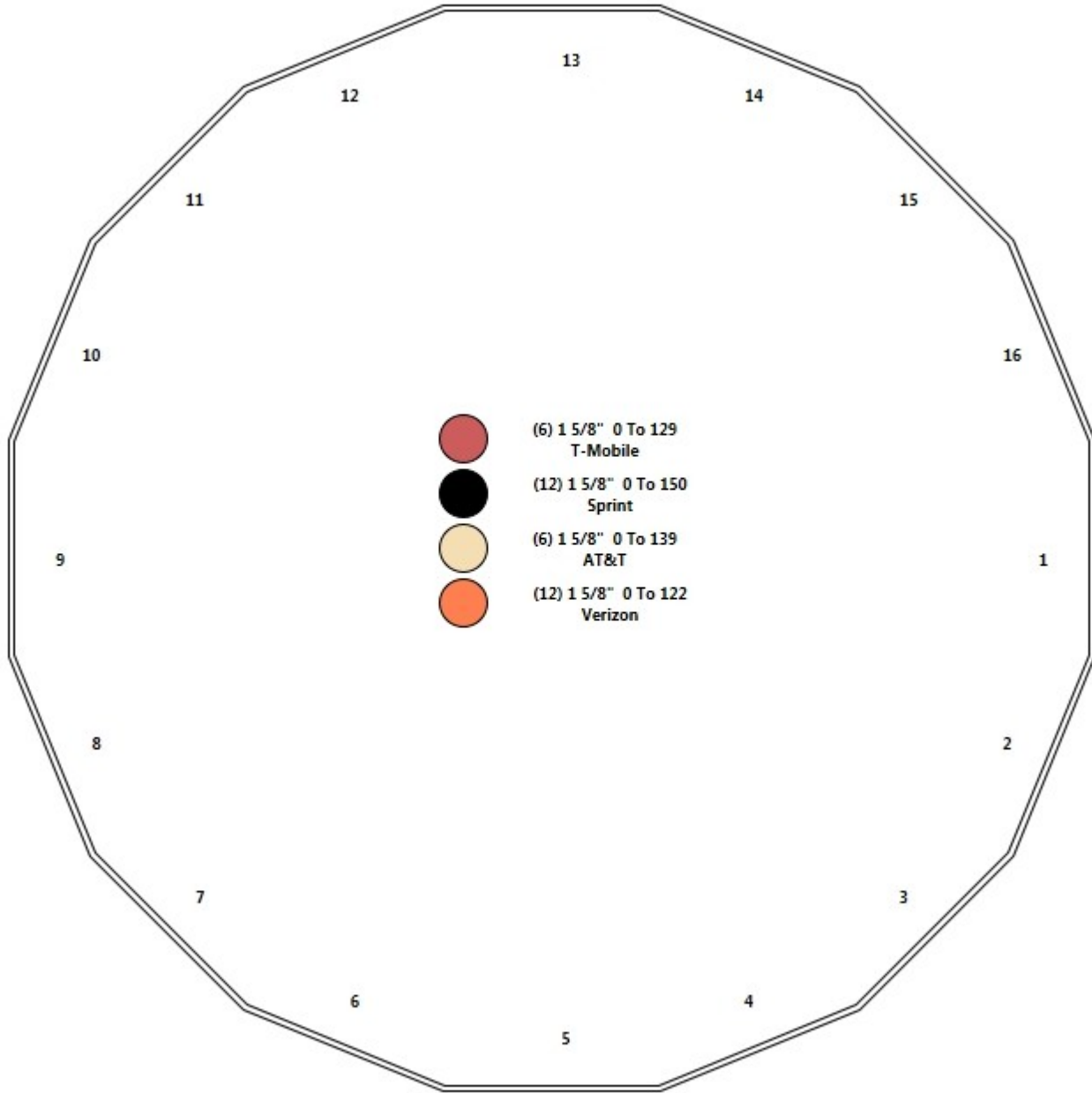
Structure: CT46141-A-SBA - Coax Line Placement

Type: Stealth
Site Name: Water Treatment Plant 2, CT
Height: 155.00 (ft)

11/30/2017



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Shaft Properties

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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	16	53.250	0.2500	65		0.00	5,787
2	16	53.500	0.2500	65	Slip	57.00	4,992
3	16	17.750	0.2500	65	Slip	48.00	1,487
4	R	19.500	1.0000	47	Flange	0.00	1,459
5	R	19.750	0.6250	75	Flange	0.00	577
Total Shaft Weight:							14,302

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	43.67	0.00	34.63	8247.35	33.15	174.68	36.92	53.25	29.25	4968.43	27.79	147.6	0.126739
2	38.02	48.50	30.12	5429.95	28.66	152.09	31.24	102.00	24.72	2999.31	23.27	124.9	0.126739
3	32.25	98.00	25.52	3301.26	24.07	129.00	30.00	115.75	23.73	2652.81	22.28	120.0	0.126739
4	8.00	115.7	21.99	134.80	0.00	8.00	8.00	135.25	21.99	134.80	0.00	8.00	0.000000
5	5.00	135.2	8.59	20.57	0.00	8.00	5.00	155.00	8.59	20.57	0.00	8.00	0.000000

Load Summary

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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	155.00	27" Canister	1	50.00	5.07	1.00	54.67	5.543	1.00	0.00	0.00
2	155.00	Flag (20'x30')	1	200.00	14.56	1.00	218.68	15.920	1.00	0.00	0.00
3	155.00	Truck Ball	1	50.00	3.77	1.00	54.67	4.122	1.00	0.00	0.00
4	150.00	APXVSP18-C-A20	3	57.00	0.00	1.00	287.47	0.000	1.00	0.00	0.00
5	150.00	ACU-A20-N	4	1.00	0.00	1.00	6.73	0.000	1.00	0.00	0.00
6	145.12	27" Canister & 36" Canister	1	100.00	12.37	1.00	109.28	13.518	1.00	0.00	0.00
7	139.00	TPA-65R-LCUUUU-H8	3	75.00	0.00	1.00	509.48	15.522	1.00	0.00	0.00
8	139.00	DTMABP0723VG12A	6	19.20	0.00	1.00	52.97	0.000	1.00	0.00	0.00
9	139.00	DBC0062F3V52-1	6	6.60	0.00	1.00	24.71	0.000	1.00	0.00	0.00
10	135.25	36" Canister & 29" Canister	1	100.00	12.55	1.00	109.21	13.706	1.00	0.00	0.00
11	129.00	APX18-206517S-C-A20	3	24.20	0.00	1.00	144.92	0.000	1.00	0.00	0.00
12	127.00	CBC721-DF	6	4.40	0.00	1.00	16.92	0.000	1.00	0.00	0.00
13	125.50	29" Canister & 30" Canister	1	100.00	10.75	1.00	109.14	11.733	1.00	0.00	0.00
14	122.00	SBNHH-1D6565A	3	47.40	0.00	1.00	328.78	9.909	1.00	0.00	0.00
15	115.75	30" Canister	1	50.00	5.50	1.00	54.53	5.999	1.00	0.00	0.00
Totals:			41	1,446.00			5,116.64				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	150.00	(12) 1 5/8" Coax	0.00	Inside
0.00	139.00	(6) 1 5/8" Coax	0.00	Inside
0.00	129.00	(6) 1 5/8" Coax	0.00	Inside
0.00	122.00	(12) 1 5/8" Coax	0.00	Inside

Shaft Section Properties

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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		0.2500	43.670	34.627	8247.4	33.15	174.68	65.1	370.5	0.0
5.00		0.2500	43.036	34.122	7891.5	32.65	172.15	65.6	359.7	584.8
10.00		0.2500	42.403	33.617	7546.0	32.15	169.61	66.2	349.1	576.3
15.00		0.2500	41.769	33.111	7210.8	31.64	167.08	66.8	338.6	567.7
20.00		0.2500	41.135	32.606	6885.6	31.14	164.54	67.3	328.3	559.1
25.00		0.2500	40.502	32.101	6570.4	30.63	162.01	67.9	318.2	550.5
30.00		0.2500	39.868	31.595	6264.9	30.13	159.47	68.5	308.2	541.9
35.00		0.2500	39.234	31.090	5969.1	29.63	156.94	69.1	298.4	533.3
40.00		0.2500	38.600	30.584	5682.7	29.12	154.40	69.6	288.8	524.7
45.00		0.2500	37.967	30.079	5405.7	28.62	151.87	70.2	279.3	516.1
48.50	Bot - Section 2	0.2500	37.523	29.725	5217.2	28.26	150.09	70.6	272.7	356.1
50.00		0.2500	37.333	29.574	5137.7	28.11	149.33	70.8	269.9	304.7
53.25	Top - Section 1	0.2500	37.421	29.644	5174.4	28.18	149.68	0.0	0.0	654.9
55.00		0.2500	37.199	29.467	5082.4	28.01	148.80	70.9	268.0	176.0
60.00		0.2500	36.566	28.962	4825.3	27.50	146.26	71.5	258.9	497.1
65.00		0.2500	35.932	28.456	4577.1	27.00	143.73	72.0	249.9	488.5
70.00		0.2500	35.298	27.951	4337.6	26.49	141.19	72.6	241.0	479.9
75.00		0.2500	34.665	27.446	4106.5	25.99	138.66	73.2	232.4	471.3
80.00		0.2500	34.031	26.940	3883.8	25.49	136.12	73.7	223.9	462.7
85.00		0.2500	33.397	26.435	3669.3	24.98	133.59	74.3	215.5	454.1
90.00		0.2500	32.764	25.930	3462.9	24.48	131.05	74.9	207.3	445.5
95.00		0.2500	32.130	25.424	3264.3	23.97	128.52	75.4	199.3	436.9
98.00	Bot - Section 3	0.2500	31.750	25.121	3148.9	23.67	127.00	75.8	194.5	258.0
100.00		0.2500	31.496	24.919	3073.5	23.47	125.98	76.0	191.4	343.3
102.00	Top - Section 2	0.2500	31.743	25.115	3146.8	23.66	126.97	0.0	0.0	340.5
105.00		0.2500	31.362	24.812	3034.2	23.36	125.45	76.1	189.8	254.8
110.00		0.2500	30.729	24.307	2852.6	22.86	122.91	76.7	182.1	417.9
115.00		0.2500	30.095	23.801	2678.3	22.35	120.38	77.3	174.6	409.3
115.75	Top - Section 3	0.2500	30.000	23.726	2652.8	22.28	120.00	77.4	173.5	60.6
115.75	Bot - Section 4	1.0000	8.000	21.991	134.8	5.57	30.00	47.0	33.7	
120.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	318.0
122.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
125.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	224.5
125.50		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	37.4
127.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	112.2
129.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	149.7
130.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	74.8
135.00		1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	374.2
135.25	Top - Section 4	1.0000	8.000	21.991	134.8	0.00	8.00	47.0	33.7	18.7
135.25	Bot - Section 5	0.6250	5.000	8.590	20.6	0.00	12.80	75.0	8.2	
139.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	109.6
140.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	29.2
145.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	146.2
145.12		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	3.5
150.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	142.6
155.00		0.6250	5.000	8.590	20.6	0.00	8.00	75.0	8.2	146.2

14302.3

Wind Loading - Shaft

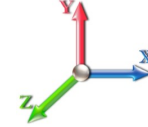
Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 31

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	331.83	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	327.01	0.750	0.000	5.00	18.418	13.81	472.9	0.0	701.8
10.00		1.00	0.85	19.450	21.40	322.19	0.750	0.000	5.00	18.148	13.61	466.0	0.0	691.5
15.00		1.00	0.85	19.450	21.40	317.38	0.750	0.000	5.00	17.879	13.41	459.0	0.0	681.2
20.00		1.00	0.90	20.638	22.70	321.96	0.750	0.000	5.00	17.610	13.21	479.7	0.0	670.9
25.00		1.00	0.95	21.630	23.79	324.54	0.750	0.000	5.00	17.341	13.01	495.1	0.0	660.5
30.00		1.00	0.98	22.477	24.72	325.65	0.750	0.000	5.00	17.072	12.80	506.5	0.0	650.2
35.00		1.00	1.01	23.218	25.54	325.72	0.750	0.000	5.00	16.802	12.60	515.0	0.0	639.9
40.00		1.00	1.04	23.880	26.27	324.99	0.750	0.000	5.00	16.533	12.40	521.2	0.0	629.6
45.00		1.00	1.07	24.479	26.93	323.64	0.750	0.000	5.00	16.264	12.20	525.5	0.0	619.3
48.50	Bot - Section 2	1.00	1.09	24.869	27.36	322.39	0.750	0.000	3.50	11.225	8.42	368.5	0.0	427.4
50.00		1.00	1.09	25.029	27.53	321.79	0.750	0.000	1.50	4.834	3.63	159.7	0.0	365.6
53.25	Top - Section 1	1.00	1.11	25.363	27.90	320.36	0.750	0.000	3.25	10.390	7.79	347.9	0.0	785.9
55.00		1.00	1.12	25.536	28.09	323.87	0.750	0.000	1.75	5.548	4.16	187.0	0.0	211.2
60.00		1.00	1.14	26.008	28.61	321.28	0.750	0.000	5.00	15.669	11.75	537.9	0.0	596.5
65.00		1.00	1.16	26.450	29.09	318.39	0.750	0.000	5.00	15.400	11.55	537.7	0.0	586.1
70.00		1.00	1.17	26.866	29.55	315.22	0.750	0.000	5.00	15.130	11.35	536.6	0.0	575.8
75.00		1.00	1.19	27.259	29.98	311.82	0.750	0.000	5.00	14.861	11.15	534.7	0.0	565.5
80.00		1.00	1.21	27.632	30.39	308.21	0.750	0.000	5.00	14.592	10.94	532.2	0.0	555.2
85.00		1.00	1.22	27.987	30.79	304.40	0.750	0.000	5.00	14.323	10.74	529.1	0.0	544.9
90.00		1.00	1.24	28.325	31.16	300.43	0.750	0.000	5.00	14.054	10.54	525.5	0.0	534.6
95.00		1.00	1.25	28.650	31.51	296.30	0.750	0.000	5.00	13.784	10.34	521.3	0.0	524.2
98.00	Bot - Section 3	1.00	1.26	28.838	31.72	293.75	0.750	0.000	3.00	8.141	6.11	309.9	0.0	309.6
100.00		1.00	1.27	28.961	31.86	292.03	0.750	0.000	2.00	5.459	4.09	208.7	0.0	411.9
102.00	Top - Section 2	1.00	1.27	29.082	31.99	290.28	0.750	0.000	2.00	5.416	4.06	207.9	0.0	408.6
105.00		1.00	1.28	29.260	32.19	292.29	0.750	0.000	3.00	8.043	6.03	310.6	0.0	305.8
110.00		1.00	1.29	29.548	32.50	287.79	0.750	0.000	5.00	13.189	9.89	514.4	0.0	501.4
115.00		1.00	1.30	29.826	32.81	283.17	0.750	0.000	5.00	12.920	9.69	508.7	0.0	491.1
115.75	Top - Section 3	1.00	1.31	29.866	32.85	282.47	0.750	0.000	0.75	1.915	1.44	75.5	0.0	72.8
120.00		1.00	1.32	30.094	33.10	74.16	0.600	0.000	4.25	2.833	1.70	90.0	0.0	381.6
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	74.29	0.600	0.000	2.00	1.333	0.80	42.5	0.0	179.6
125.00		1.00	1.33	30.354	33.39	74.48	0.600	0.000	3.00	2.000	1.20	64.1	0.0	269.4
125.50	Appurtenance(s)	1.00	1.33	30.379	33.42	74.51	0.600	0.000	0.50	0.333	0.20	10.7	0.0	44.9
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	74.60	0.600	0.000	1.50	1.000	0.60	32.2	0.0	134.7
129.00	Appurtenance(s)	1.00	1.34	30.556	33.61	74.73	0.600	0.000	2.00	1.333	0.80	43.0	0.0	179.6
130.00		1.00	1.34	30.605	33.67	74.79	0.600	0.000	1.00	0.667	0.40	21.5	0.0	89.8
135.00		1.00	1.35	30.850	33.93	75.08	0.600	0.000	5.00	3.333	2.00	108.6	0.0	449.0
135.25	Top - Section 4	1.00	1.35	30.862	33.95	75.10	0.600	0.000	0.25	0.167	0.10	5.4	0.0	22.4
139.00	Appurtenance(s)	1.00	1.36	31.040	34.14	47.07	0.816	0.000	3.75	1.563	1.27	69.6	0.0	131.5
140.00		1.00	1.36	31.087	34.20	47.11	0.815	0.000	1.00	0.417	0.34	18.6	0.0	35.1
145.00		1.00	1.37	31.317	34.45	47.28	0.812	0.000	5.00	2.083	1.69	93.3	0.0	175.4
145.12	Appurtenance(s)	1.00	1.37	31.323	34.45	47.29	0.812	0.000	0.12	0.050	0.04	2.2	0.0	4.2
150.00	Appurtenance(s)	1.00	1.38	31.541	34.70	47.45	0.809	0.000	4.88	2.033	1.65	91.3	0.0	171.2
155.00	Appurtenance(s)	1.00	1.39	31.760	34.94	47.62	0.806	0.000	5.00	2.083	1.68	93.9	0.0	175.4
Totals:									155.00			12,681.6		17,162.8

Discrete Appurtenance Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 31

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	155.00	Truck Ball	1	31.760	34.936	1.00	1.00	3.77	60.00	0.000	0.000	210.73	0.00	0.00
2	155.00	Flag (20'x30')	1	31.760	34.936	1.00	1.00	14.56	240.00	0.000	0.000	813.87	0.00	0.00
3	155.00	27" Canister	1	31.760	34.936	1.00	1.00	5.07	60.00	0.000	0.000	283.40	0.00	0.00
4	150.00	ACU-A20-N	4	31.541	34.696	1.00	1.00	0.00	4.80	0.000	0.000	0.00	0.00	0.00
5	150.00	APXVSP18-C-A20	3	31.541	34.696	1.00	1.00	0.00	205.20	0.000	0.000	0.00	0.00	0.00
6	145.12	27" Canister & 36"	1	31.323	34.455	1.00	1.00	12.37	120.00	0.000	0.000	681.93	0.00	0.00
7	139.00	DBC0062F3V52-1	6	31.040	34.144	1.00	1.00	0.00	47.52	0.000	0.000	0.00	0.00	0.00
8	139.00	DTMABP0723VG12A	6	31.040	34.144	1.00	1.00	0.00	138.24	0.000	0.000	0.00	0.00	0.00
9	139.00	TPA-65R-LCUUUU-H8	3	31.040	34.144	1.00	1.00	0.00	270.00	0.000	0.000	0.00	0.00	0.00
10	135.25	36" Canister & 29"	1	30.862	33.948	1.00	1.00	12.55	120.00	0.000	0.000	681.67	0.00	0.00
11	129.00	APX18-206517S-C-A20	3	30.556	33.611	1.00	1.00	0.00	87.12	0.000	0.000	0.00	0.00	0.00
12	127.00	CBC721-DF	6	30.455	33.501	1.00	1.00	0.00	31.68	0.000	0.000	0.00	0.00	0.00
13	125.50	29" Canister & 30"	1	30.379	33.417	1.00	1.00	10.75	120.00	0.000	0.000	574.78	0.00	0.00
14	122.00	SBNHH-1D6565A	3	30.199	33.219	1.00	1.00	0.00	170.64	0.000	0.000	0.00	0.00	0.00
15	115.75	30" Canister	1	29.866	32.853	1.00	1.00	5.50	60.00	0.000	0.000	289.11	0.00	0.00
Totals:									1,735.20			3,535.48		

Total Applied Force Summary

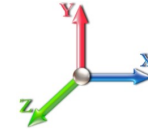
Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 31

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		472.86	926.46	0.00	0.00
10.00		465.95	916.14	0.00	0.00
15.00		459.04	905.82	0.00	0.00
20.00		479.73	895.50	0.00	0.00
25.00		495.11	885.19	0.00	0.00
30.00		506.50	874.87	0.00	0.00
35.00		514.96	864.55	0.00	0.00
40.00		521.15	854.23	0.00	0.00
45.00		525.54	843.91	0.00	0.00
48.50		368.46	584.60	0.00	0.00
50.00		159.70	433.04	0.00	0.00
53.25		347.85	931.88	0.00	0.00
55.00		187.00	289.82	0.00	0.00
60.00		537.92	821.10	0.00	0.00
65.00		537.66	810.78	0.00	0.00
70.00		536.57	800.47	0.00	0.00
75.00		534.73	790.15	0.00	0.00
80.00		532.22	779.83	0.00	0.00
85.00		529.12	769.51	0.00	0.00
90.00		525.46	759.19	0.00	0.00
95.00		521.29	748.88	0.00	0.00
98.00		309.91	444.37	0.00	0.00
100.00		208.68	501.77	0.00	0.00
102.00		207.89	498.47	0.00	0.00
105.00		310.63	440.59	0.00	0.00
110.00		514.41	726.06	0.00	0.00
115.00		508.65	715.74	0.00	0.00
115.75	(1) attachments	364.59	166.47	0.00	0.00
120.00		90.04	572.58	0.00	0.00
122.00	(3) attachments	42.52	440.09	0.00	0.00
125.00		64.11	359.25	0.00	0.00
125.50	(1) attachments	585.47	179.87	0.00	0.00
127.00	(6) attachments	32.16	211.30	0.00	0.00
129.00	(3) attachments	43.02	326.62	0.00	0.00
130.00		21.55	112.26	0.00	0.00
135.00		108.59	561.31	0.00	0.00
135.25	(1) attachments	687.10	148.07	0.00	0.00
139.00	(15) attachments	69.63	671.54	0.00	0.00
140.00		18.58	50.05	0.00	0.00
145.00		93.26	250.27	0.00	0.00
145.12	(1) attachments	684.17	126.01	0.00	0.00
150.00	(7) attachments	91.35	454.26	0.00	0.00
155.00	(3) attachments	1401.92	535.39	0.00	0.00
	Totals:	16,217.04	24,978.27	0.00	0.00

Calculated Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 10
	Struct Class: II	

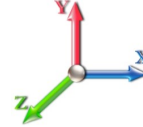


Load Case: 1.2D + 1.6W 97 mph Wind

Iterations 31

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	-24.94	-16.27	0.00	-1395.3	0.00	1395.30	2027.49	1013.74	3641.02	1807.56	0.00	0.000	0.000	0.784
5.00	-23.95	-15.89	0.00	-1313.9	0.00	1313.96	2015.42	1007.71	3566.22	1770.42	0.13	-0.234	0.000	0.754
10.00	-22.98	-15.51	0.00	-1234.5	0.00	1234.50	2002.83	1001.41	3491.15	1733.15	0.49	-0.463	0.000	0.724
15.00	-22.02	-15.13	0.00	-1156.9	0.00	1156.95	1989.72	994.86	3415.85	1695.77	1.10	-0.689	0.000	0.694
20.00	-21.08	-14.72	0.00	-1081.3	0.00	1081.31	1976.09	988.05	3340.37	1658.30	1.94	-0.910	0.000	0.663
25.00	-20.15	-14.28	0.00	-1007.7	0.00	1007.73	1961.94	980.97	3264.74	1620.75	3.01	-1.125	0.000	0.632
30.00	-19.23	-13.83	0.00	-936.33	0.00	936.33	1947.28	973.64	3189.01	1583.16	4.30	-1.336	0.000	0.602
35.00	-18.33	-13.35	0.00	-867.20	0.00	867.20	1932.09	966.05	3113.21	1545.53	5.81	-1.541	0.000	0.571
40.00	-17.45	-12.87	0.00	-800.44	0.00	800.44	1916.39	958.20	3037.39	1507.89	7.53	-1.739	0.000	0.540
45.00	-16.59	-12.36	0.00	-736.10	0.00	736.10	1900.17	950.08	2961.59	1470.26	9.45	-1.932	0.000	0.510
48.50	-16.00	-12.00	0.00	-692.83	0.00	692.83	1888.50	944.25	2908.57	1443.94	10.92	-2.063	0.000	0.488
50.00	-15.55	-11.85	0.00	-674.83	0.00	674.83	1883.43	941.71	2885.86	1432.66	11.58	-2.119	0.000	0.479
53.25	-14.62	-11.49	0.00	-636.33	0.00	636.33	1885.78	942.89	2896.38	1437.89	13.06	-2.237	0.000	0.450
55.00	-14.31	-11.32	0.00	-616.23	0.00	616.23	1879.83	939.91	2869.89	1424.73	13.89	-2.300	0.000	0.440
60.00	-13.49	-10.78	0.00	-559.64	0.00	559.64	1862.46	931.23	2794.28	1387.20	16.39	-2.464	0.000	0.411
65.00	-12.67	-10.25	0.00	-505.72	0.00	505.72	1844.57	922.28	2718.82	1349.74	19.05	-2.621	0.000	0.382
70.00	-11.87	-9.70	0.00	-454.49	0.00	454.49	1826.16	913.08	2643.55	1312.37	21.88	-2.771	0.000	0.353
75.00	-11.09	-9.15	0.00	-405.98	0.00	405.98	1807.23	903.62	2568.52	1275.12	24.86	-2.912	0.000	0.325
80.00	-10.32	-8.61	0.00	-360.21	0.00	360.21	1787.79	893.89	2493.75	1238.00	27.98	-3.044	0.000	0.297
85.00	-9.56	-8.06	0.00	-317.18	0.00	317.18	1767.82	883.91	2419.31	1201.05	31.23	-3.168	0.000	0.270
90.00	-8.82	-7.51	0.00	-276.90	0.00	276.90	1747.34	873.67	2345.22	1164.27	34.61	-3.284	0.000	0.243
95.00	-8.09	-6.95	0.00	-239.38	0.00	239.38	1726.34	863.17	2271.53	1127.68	38.10	-3.390	0.000	0.217
98.00	-7.66	-6.62	0.00	-218.52	0.00	218.52	1713.49	856.74	2227.52	1105.83	40.25	-3.450	0.000	0.202
100.00	-7.17	-6.39	0.00	-205.27	0.00	205.27	1704.82	852.41	2198.27	1091.31	41.70	-3.488	0.000	0.192
102.00	-6.68	-6.16	0.00	-192.49	0.00	192.49	1713.25	856.63	2226.72	1105.44	43.17	-3.525	0.000	0.178
105.00	-6.25	-5.83	0.00	-174.02	0.00	174.02	1700.21	850.10	2182.88	1083.67	45.40	-3.577	0.000	0.164
110.00	-5.55	-5.27	0.00	-144.89	0.00	144.89	1678.06	839.03	2110.21	1047.60	49.19	-3.652	0.000	0.142
115.00	-4.87	-4.72	0.00	-118.52	0.00	118.52	1655.39	827.70	2038.07	1011.78	53.05	-3.717	0.000	0.120
115.75	-4.72	-4.35	0.00	-114.97	0.00	114.97	1651.95	825.97	2027.30	1006.43	53.63	-3.727	0.000	0.117
115.75	-4.72	-4.35	0.00	-114.97	0.00	114.97	930.23	465.11	237.26	173.90	53.63	-3.727	0.000	0.666
120.00	-4.14	-4.24	0.00	-96.48	0.00	96.48	930.23	465.11	237.26	173.90	56.97	-3.775	0.000	0.559
122.00	-3.67	-4.20	0.00	-88.00	0.00	88.00	930.23	465.11	237.26	173.90	58.63	-4.164	0.000	0.510
125.00	-3.30	-4.12	0.00	-75.41	0.00	75.41	930.23	465.11	237.26	173.90	61.41	-4.681	0.000	0.437
125.50	-3.16	-3.53	0.00	-73.35	0.00	73.35	930.23	465.11	237.26	173.90	61.90	-4.760	0.000	0.425
127.00	-2.94	-3.49	0.00	-68.05	0.00	68.05	930.23	465.11	237.26	173.90	63.43	-4.984	0.000	0.395
129.00	-2.60	-3.43	0.00	-61.06	0.00	61.06	930.23	465.11	237.26	173.90	65.58	-5.256	0.000	0.354
130.00	-2.47	-3.41	0.00	-57.63	0.00	57.63	930.23	465.11	237.26	173.90	66.69	-5.381	0.000	0.334
135.00	-1.91	-3.26	0.00	-40.55	0.00	40.55	930.23	465.11	237.26	173.90	72.60	-5.900	0.000	0.235
135.25	-1.83	-2.57	0.00	-39.74	0.00	39.74	930.23	465.11	237.26	173.90	72.91	-5.921	0.000	0.231
135.25	-1.83	-2.57	0.00	-39.74	0.00	39.74	579.84	289.92	92.43	67.75	72.91	-5.921	0.000	0.590
139.00	-1.15	-2.43	0.00	-30.12	0.00	30.12	579.84	289.92	92.43	67.75	77.67	-6.197	0.000	0.447
140.00	-1.06	-2.43	0.00	-27.68	0.00	27.68	579.84	289.92	92.43	67.75	79.01	-6.597	0.000	0.411
145.00	-0.80	-2.31	0.00	-15.54	0.00	15.54	579.84	289.92	92.43	67.75	86.75	-8.092	0.000	0.231
145.12	-0.76	-1.62	0.00	-15.27	0.00	15.27	579.84	289.92	92.43	67.75	86.95	-8.117	0.000	0.227
150.00	-0.31	-1.47	0.00	-7.34	0.00	7.34	579.84	289.92	92.43	67.75	95.65	-8.880	0.000	0.109
155.00	0.00	-1.40	0.00	0.00	0.00	0.00	579.84	289.92	92.43	67.75	105.09	-9.134	0.000	0.000

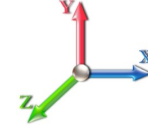
Wind Loading - Shaft

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 31

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	331.83	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	327.01	0.750	0.000	5.00	18.418	13.81	472.9	0.0	526.4
10.00		1.00	0.85	19.450	21.40	322.19	0.750	0.000	5.00	18.148	13.61	466.0	0.0	518.6
15.00		1.00	0.85	19.450	21.40	317.38	0.750	0.000	5.00	17.879	13.41	459.0	0.0	510.9
20.00		1.00	0.90	20.638	22.70	321.96	0.750	0.000	5.00	17.610	13.21	479.7	0.0	503.1
25.00		1.00	0.95	21.630	23.79	324.54	0.750	0.000	5.00	17.341	13.01	495.1	0.0	495.4
30.00		1.00	0.98	22.477	24.72	325.65	0.750	0.000	5.00	17.072	12.80	506.5	0.0	487.7
35.00		1.00	1.01	23.218	25.54	325.72	0.750	0.000	5.00	16.802	12.60	515.0	0.0	479.9
40.00		1.00	1.04	23.880	26.27	324.99	0.750	0.000	5.00	16.533	12.40	521.2	0.0	472.2
45.00		1.00	1.07	24.479	26.93	323.64	0.750	0.000	5.00	16.264	12.20	525.5	0.0	464.5
48.50	Bot - Section 2	1.00	1.09	24.869	27.36	322.39	0.750	0.000	3.50	11.225	8.42	368.5	0.0	320.5
50.00		1.00	1.09	25.029	27.53	321.79	0.750	0.000	1.50	4.834	3.63	159.7	0.0	274.2
53.25	Top - Section 1	1.00	1.11	25.363	27.90	320.36	0.750	0.000	3.25	10.390	7.79	347.9	0.0	589.4
55.00		1.00	1.12	25.536	28.09	323.87	0.750	0.000	1.75	5.548	4.16	187.0	0.0	158.4
60.00		1.00	1.14	26.008	28.61	321.28	0.750	0.000	5.00	15.669	11.75	537.9	0.0	447.3
65.00		1.00	1.16	26.450	29.09	318.39	0.750	0.000	5.00	15.400	11.55	537.7	0.0	439.6
70.00		1.00	1.17	26.866	29.55	315.22	0.750	0.000	5.00	15.130	11.35	536.6	0.0	431.9
75.00		1.00	1.19	27.259	29.98	311.82	0.750	0.000	5.00	14.861	11.15	534.7	0.0	424.1
80.00		1.00	1.21	27.632	30.39	308.21	0.750	0.000	5.00	14.592	10.94	532.2	0.0	416.4
85.00		1.00	1.22	27.987	30.79	304.40	0.750	0.000	5.00	14.323	10.74	529.1	0.0	408.7
90.00		1.00	1.24	28.325	31.16	300.43	0.750	0.000	5.00	14.054	10.54	525.5	0.0	400.9
95.00		1.00	1.25	28.650	31.51	296.30	0.750	0.000	5.00	13.784	10.34	521.3	0.0	393.2
98.00	Bot - Section 3	1.00	1.26	28.838	31.72	293.75	0.750	0.000	3.00	8.141	6.11	309.9	0.0	232.2
100.00		1.00	1.27	28.961	31.86	292.03	0.750	0.000	2.00	5.459	4.09	208.7	0.0	308.9
102.00	Top - Section 2	1.00	1.27	29.082	31.99	290.28	0.750	0.000	2.00	5.416	4.06	207.9	0.0	306.5
105.00		1.00	1.28	29.260	32.19	292.29	0.750	0.000	3.00	8.043	6.03	310.6	0.0	229.4
110.00		1.00	1.29	29.548	32.50	287.79	0.750	0.000	5.00	13.189	9.89	514.4	0.0	376.1
115.00		1.00	1.30	29.826	32.81	283.17	0.750	0.000	5.00	12.920	9.69	508.7	0.0	368.3
115.75	Top - Section 3	1.00	1.31	29.866	32.85	282.47	0.750	0.000	0.75	1.915	1.44	75.5	0.0	54.6
120.00		1.00	1.32	30.094	33.10	274.16	0.600	0.000	4.25	2.833	1.70	90.0	0.0	286.2
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	74.29	0.600	0.000	2.00	1.333	0.80	42.5	0.0	134.7
125.00		1.00	1.33	30.354	33.39	74.48	0.600	0.000	3.00	2.000	1.20	64.1	0.0	202.0
125.50	Appurtenance(s)	1.00	1.33	30.379	33.42	74.51	0.600	0.000	0.50	0.333	0.20	10.7	0.0	33.7
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	74.60	0.600	0.000	1.50	1.000	0.60	32.2	0.0	101.0
129.00	Appurtenance(s)	1.00	1.34	30.556	33.61	74.73	0.600	0.000	2.00	1.333	0.80	43.0	0.0	134.7
130.00		1.00	1.34	30.605	33.67	74.79	0.600	0.000	1.00	0.667	0.40	21.5	0.0	67.3
135.00		1.00	1.35	30.850	33.93	75.08	0.600	0.000	5.00	3.333	2.00	108.6	0.0	336.7
135.25	Top - Section 4	1.00	1.35	30.862	33.95	75.10	0.600	0.000	0.25	0.167	0.10	5.4	0.0	16.8
139.00	Appurtenance(s)	1.00	1.36	31.040	34.14	47.07	0.816	0.000	3.75	1.563	1.27	69.6	0.0	98.7
140.00		1.00	1.36	31.087	34.20	47.11	0.815	0.000	1.00	0.417	0.34	18.6	0.0	26.3
145.00		1.00	1.37	31.317	34.45	47.28	0.812	0.000	5.00	2.083	1.69	93.3	0.0	131.5
145.12	Appurtenance(s)	1.00	1.37	31.323	34.45	47.29	0.812	0.000	0.12	0.050	0.04	2.2	0.0	3.2
150.00	Appurtenance(s)	1.00	1.38	31.541	34.70	47.45	0.809	0.000	4.88	2.033	1.65	91.3	0.0	128.4
155.00	Appurtenance(s)	1.00	1.39	31.760	34.94	47.62	0.806	0.000	5.00	2.083	1.68	93.9	0.0	131.5
Totals:									155.00			12,681.6		12,872.1

Discrete Appurtenance Forces

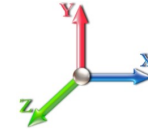
Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 31

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	155.00	Truck Ball	1	31.760	34.936	1.00	1.00	3.77	45.00	0.000	0.000	210.73	0.00	0.00
2	155.00	Flag (20'x30')	1	31.760	34.936	1.00	1.00	14.56	180.00	0.000	0.000	813.87	0.00	0.00
3	155.00	27" Canister	1	31.760	34.936	1.00	1.00	5.07	45.00	0.000	0.000	283.40	0.00	0.00
4	150.00	ACU-A20-N	4	31.541	34.696	1.00	1.00	0.00	3.60	0.000	0.000	0.00	0.00	0.00
5	150.00	APXVSP18-C-A20	3	31.541	34.696	1.00	1.00	0.00	153.90	0.000	0.000	0.00	0.00	0.00
6	145.12	27" Canister & 36"	1	31.323	34.455	1.00	1.00	12.37	90.00	0.000	0.000	681.93	0.00	0.00
7	139.00	DBC0062F3V52-1	6	31.040	34.144	1.00	1.00	0.00	35.64	0.000	0.000	0.00	0.00	0.00
8	139.00	DTMABP0723VG12A	6	31.040	34.144	1.00	1.00	0.00	103.68	0.000	0.000	0.00	0.00	0.00
9	139.00	TPA-65R-LCUUUU-H8	3	31.040	34.144	1.00	1.00	0.00	202.50	0.000	0.000	0.00	0.00	0.00
10	135.25	36" Canister & 29"	1	30.862	33.948	1.00	1.00	12.55	90.00	0.000	0.000	681.67	0.00	0.00
11	129.00	APX18-206517S-C-A20	3	30.556	33.611	1.00	1.00	0.00	65.34	0.000	0.000	0.00	0.00	0.00
12	127.00	CBC721-DF	6	30.455	33.501	1.00	1.00	0.00	23.76	0.000	0.000	0.00	0.00	0.00
13	125.50	29" Canister & 30"	1	30.379	33.417	1.00	1.00	10.75	90.00	0.000	0.000	574.78	0.00	0.00
14	122.00	SBNHH-1D6565A	3	30.199	33.219	1.00	1.00	0.00	127.98	0.000	0.000	0.00	0.00	0.00
15	115.75	30" Canister	1	29.866	32.853	1.00	1.00	5.50	45.00	0.000	0.000	289.11	0.00	0.00
Totals:									1,301.40			3,535.48		

Total Applied Force Summary

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 31

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		472.86	694.84	0.00	0.00
10.00		465.95	687.11	0.00	0.00
15.00		459.04	679.37	0.00	0.00
20.00		479.73	671.63	0.00	0.00
25.00		495.11	663.89	0.00	0.00
30.00		506.50	656.15	0.00	0.00
35.00		514.96	648.41	0.00	0.00
40.00		521.15	640.67	0.00	0.00
45.00		525.54	632.94	0.00	0.00
48.50		368.46	438.45	0.00	0.00
50.00		159.70	324.78	0.00	0.00
53.25		347.85	698.91	0.00	0.00
55.00		187.00	217.37	0.00	0.00
60.00		537.92	615.83	0.00	0.00
65.00		537.66	608.09	0.00	0.00
70.00		536.57	600.35	0.00	0.00
75.00		534.73	592.61	0.00	0.00
80.00		532.22	584.87	0.00	0.00
85.00		529.12	577.13	0.00	0.00
90.00		525.46	569.40	0.00	0.00
95.00		521.29	561.66	0.00	0.00
98.00		309.91	333.28	0.00	0.00
100.00		208.68	376.33	0.00	0.00
102.00		207.89	373.85	0.00	0.00
105.00		310.63	330.44	0.00	0.00
110.00		514.41	544.55	0.00	0.00
115.00		508.65	536.81	0.00	0.00
115.75	(1) attachments	364.59	124.85	0.00	0.00
120.00		90.04	429.44	0.00	0.00
122.00	(3) attachments	42.52	330.07	0.00	0.00
125.00		64.11	269.44	0.00	0.00
125.50	(1) attachments	585.47	134.91	0.00	0.00
127.00	(6) attachments	32.16	158.48	0.00	0.00
129.00	(3) attachments	43.02	244.96	0.00	0.00
130.00		21.55	84.20	0.00	0.00
135.00		108.59	420.98	0.00	0.00
135.25	(1) attachments	687.10	111.05	0.00	0.00
139.00	(15) attachments	69.63	503.65	0.00	0.00
140.00		18.58	37.54	0.00	0.00
145.00		93.26	187.70	0.00	0.00
145.12	(1) attachments	684.17	94.50	0.00	0.00
150.00	(7) attachments	91.35	340.69	0.00	0.00
155.00	(3) attachments	1401.92	401.54	0.00	0.00
	Totals:	16,217.04	18,733.70	0.00	0.00

Calculated Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



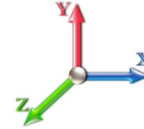
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Load Case: 0.9D + 1.6W 97 mph Wind

Iterations 31

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	-18.70	-16.26	0.00	-1378.7	0.00	1378.79	2027.49	1013.74	3641.02	1807.56	0.00	0.000	0.000	0.772
5.00	-17.94	-15.85	0.00	-1297.5	0.00	1297.51	2015.42	1007.71	3566.22	1770.42	0.12	-0.231	0.000	0.742
10.00	-17.20	-15.45	0.00	-1218.2	0.00	1218.25	2002.83	1001.41	3491.15	1733.15	0.49	-0.458	0.000	0.712
15.00	-16.47	-15.05	0.00	-1141.0	0.00	1141.00	1989.72	994.86	3415.85	1695.77	1.09	-0.680	0.000	0.681
20.00	-15.75	-14.62	0.00	-1065.7	0.00	1065.77	1976.09	988.05	3340.37	1658.30	1.92	-0.898	0.000	0.651
25.00	-15.04	-14.17	0.00	-992.68	0.00	992.68	1961.94	980.97	3264.74	1620.75	2.97	-1.110	0.000	0.620
30.00	-14.35	-13.70	0.00	-921.85	0.00	921.85	1947.28	973.64	3189.01	1583.16	4.24	-1.317	0.000	0.590
35.00	-13.66	-13.21	0.00	-853.36	0.00	853.36	1932.09	966.05	3113.21	1545.53	5.73	-1.519	0.000	0.559
40.00	-13.00	-12.72	0.00	-787.29	0.00	787.29	1916.39	958.20	3037.39	1507.89	7.43	-1.715	0.000	0.529
45.00	-12.35	-12.21	0.00	-723.70	0.00	723.70	1900.17	950.08	2961.59	1470.26	9.33	-1.904	0.000	0.499
48.50	-11.90	-11.84	0.00	-680.97	0.00	680.97	1888.50	944.25	2908.57	1443.94	10.77	-2.033	0.000	0.478
50.00	-11.57	-11.69	0.00	-663.21	0.00	663.21	1883.43	941.71	2885.86	1432.66	11.42	-2.088	0.000	0.469
53.25	-10.86	-11.33	0.00	-625.22	0.00	625.22	1885.78	942.89	2896.38	1437.89	12.88	-2.204	0.000	0.441
55.00	-10.63	-11.16	0.00	-605.39	0.00	605.39	1879.83	939.91	2869.89	1424.73	13.70	-2.266	0.000	0.431
60.00	-10.01	-10.62	0.00	-549.60	0.00	549.60	1862.46	931.23	2794.28	1387.20	16.16	-2.427	0.000	0.402
65.00	-9.40	-10.08	0.00	-496.49	0.00	496.49	1844.57	922.28	2718.82	1349.74	18.78	-2.581	0.000	0.373
70.00	-8.80	-9.54	0.00	-446.07	0.00	446.07	1826.16	913.08	2643.55	1312.37	21.56	-2.728	0.000	0.345
75.00	-8.21	-9.00	0.00	-398.36	0.00	398.36	1807.23	903.62	2568.52	1275.12	24.49	-2.866	0.000	0.317
80.00	-7.64	-8.45	0.00	-353.37	0.00	353.37	1787.79	893.89	2493.75	1238.00	27.57	-2.997	0.000	0.290
85.00	-7.07	-7.91	0.00	-311.11	0.00	311.11	1767.82	883.91	2419.31	1201.05	30.77	-3.118	0.000	0.263
90.00	-6.52	-7.36	0.00	-271.56	0.00	271.56	1747.34	873.67	2345.22	1164.27	34.09	-3.231	0.000	0.237
95.00	-5.98	-6.82	0.00	-234.74	0.00	234.74	1726.34	863.17	2271.53	1127.68	37.53	-3.335	0.000	0.212
98.00	-5.66	-6.50	0.00	-214.28	0.00	214.28	1713.49	856.74	2227.52	1105.83	39.65	-3.394	0.000	0.197
100.00	-5.29	-6.27	0.00	-201.28	0.00	201.28	1704.82	852.41	2198.27	1091.31	41.08	-3.431	0.000	0.188
102.00	-4.93	-6.04	0.00	-188.75	0.00	188.75	1713.25	856.63	2226.72	1105.44	42.52	-3.468	0.000	0.174
105.00	-4.61	-5.72	0.00	-170.62	0.00	170.62	1700.21	850.10	2182.88	1083.67	44.71	-3.519	0.000	0.160
110.00	-4.09	-5.18	0.00	-142.03	0.00	142.03	1678.06	839.03	2110.21	1047.60	48.44	-3.592	0.000	0.138
115.00	-3.59	-4.64	0.00	-116.15	0.00	116.15	1655.39	827.70	2038.07	1011.78	52.23	-3.656	0.000	0.117
115.75	-3.48	-4.27	0.00	-112.67	0.00	112.67	1651.95	825.97	2027.30	1006.43	52.81	-3.665	0.000	0.114
115.75	-3.48	-4.27	0.00	-112.67	0.00	112.67	930.23	465.11	237.26	173.90	52.81	-3.665	0.000	0.652
120.00	-3.04	-4.16	0.00	-94.54	0.00	94.54	930.23	465.11	237.26	173.90	56.09	-3.713	0.000	0.547
122.00	-2.68	-4.12	0.00	-86.22	0.00	86.22	930.23	465.11	237.26	173.90	57.72	-4.094	0.000	0.499
125.00	-2.40	-4.04	0.00	-73.87	0.00	73.87	930.23	465.11	237.26	173.90	60.46	-4.601	0.000	0.427
125.50	-2.30	-3.46	0.00	-71.85	0.00	71.85	930.23	465.11	237.26	173.90	60.94	-4.678	0.000	0.416
127.00	-2.14	-3.42	0.00	-66.67	0.00	66.67	930.23	465.11	237.26	173.90	62.45	-4.897	0.000	0.386
129.00	-1.88	-3.36	0.00	-59.83	0.00	59.83	930.23	465.11	237.26	173.90	64.55	-5.164	0.000	0.346
130.00	-1.78	-3.34	0.00	-56.47	0.00	56.47	930.23	465.11	237.26	173.90	65.65	-5.287	0.000	0.327
135.00	-1.36	-3.20	0.00	-39.75	0.00	39.75	930.23	465.11	237.26	173.90	71.45	-5.795	0.000	0.230
135.25	-1.31	-2.51	0.00	-38.95	0.00	38.95	930.23	465.11	237.26	173.90	71.76	-5.815	0.000	0.225
135.25	-1.31	-2.51	0.00	-38.95	0.00	38.95	579.84	289.92	92.43	67.75	71.76	-5.815	0.000	0.577
139.00	-0.80	-2.39	0.00	-29.55	0.00	29.55	579.84	289.92	92.43	67.75	76.43	-6.086	0.000	0.438
140.00	-0.73	-2.38	0.00	-27.16	0.00	27.16	579.84	289.92	92.43	67.75	77.74	-6.479	0.000	0.402
145.00	-0.53	-2.27	0.00	-15.25	0.00	15.25	579.84	289.92	92.43	67.75	85.35	-7.945	0.000	0.226
145.12	-0.52	-1.59	0.00	-14.97	0.00	14.97	579.84	289.92	92.43	67.75	85.55	-7.970	0.000	0.222
150.00	-0.18	-1.45	0.00	-7.24	0.00	7.24	579.84	289.92	92.43	67.75	94.09	-8.719	0.000	0.107
155.00	0.00	-1.40	0.00	0.00	0.00	0.00	579.84	289.92	92.43	67.75	103.36	-8.970	0.000	0.000

Wind Loading - Shaft

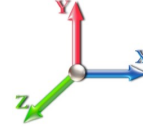
Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Iterations 30

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	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.656	5.00	19.798	23.76	135.1	460.7	1162.5
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.775	5.00	19.628	23.55	133.9	488.0	1179.5
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.848	5.00	19.420	23.30	132.5	501.7	1182.9
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.902	5.00	19.195	23.03	138.9	509.5	1180.3
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.945	5.00	18.962	22.75	143.9	513.8	1174.4
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.981	5.00	18.723	22.47	147.6	515.9	1166.1
35.00		1.00	1.01	6.169	6.79	0.00	1.200	2.012	5.00	18.479	22.17	150.5	516.3	1156.2
40.00		1.00	1.04	6.345	6.98	0.00	1.200	2.039	5.00	18.232	21.88	152.7	515.6	1145.2
45.00		1.00	1.07	6.504	7.15	0.00	1.200	2.063	5.00	17.983	21.58	154.4	513.8	1133.1
48.50	Bot - Section 2	1.00	1.09	6.608	7.27	0.00	1.200	2.079	3.50	12.437	14.92	108.5	358.5	785.9
50.00		1.00	1.09	6.650	7.32	0.00	1.200	2.085	1.50	5.355	6.43	47.0	155.3	521.0
53.25	Top - Section 1	1.00	1.11	6.739	7.41	0.00	1.200	2.098	3.25	11.527	13.83	102.5	335.3	1121.2
55.00		1.00	1.12	6.785	7.46	0.00	1.200	2.105	1.75	6.162	7.39	55.2	180.2	391.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	2.123	5.00	17.438	20.93	159.1	511.1	1107.5
65.00		1.00	1.16	7.028	7.73	0.00	1.200	2.140	5.00	17.183	20.62	159.4	507.0	1093.1
70.00		1.00	1.17	7.138	7.85	0.00	1.200	2.156	5.00	16.927	20.31	159.5	502.4	1078.3
75.00		1.00	1.19	7.243	7.97	0.00	1.200	2.171	5.00	16.670	20.00	159.4	497.5	1063.1
80.00		1.00	1.21	7.342	8.08	0.00	1.200	2.185	5.00	16.413	19.70	159.1	492.3	1047.5
85.00		1.00	1.22	7.436	8.18	0.00	1.200	2.198	5.00	16.155	19.39	158.6	486.8	1031.7
90.00		1.00	1.24	7.526	8.28	0.00	1.200	2.211	5.00	15.896	19.08	157.9	481.1	1015.6
95.00		1.00	1.25	7.612	8.37	0.00	1.200	2.223	5.00	15.637	18.76	157.1	475.1	999.3
98.00	Bot - Section 3	1.00	1.26	7.662	8.43	0.00	1.200	2.230	3.00	9.256	11.11	93.6	282.8	592.4
100.00		1.00	1.27	7.695	8.46	0.00	1.200	2.234	2.00	6.204	7.44	63.0	190.3	602.2
102.00	Top - Section 2	1.00	1.27	7.727	8.50	0.00	1.200	2.239	2.00	6.162	7.39	62.9	189.3	597.9
105.00		1.00	1.28	7.774	8.55	0.00	1.200	2.245	3.00	9.165	11.00	94.1	281.6	587.5
110.00		1.00	1.29	7.851	8.64	0.00	1.200	2.256	5.00	15.069	18.08	156.2	462.8	964.3
115.00		1.00	1.30	7.925	8.72	0.00	1.200	2.266	5.00	14.808	17.77	154.9	456.1	947.2
115.75	Top - Section 3	1.00	1.31	7.936	8.73	0.00	1.200	2.267	0.75	2.198	2.64	23.0	68.3	141.0
120.00		1.00	1.32	7.996	8.80	0.00	1.200	2.276	4.25	4.445	5.33	46.9	121.4	503.1
122.00	Appurtenance(s)	1.00	1.32	8.024	8.83	0.00	1.200	2.279	2.00	2.093	2.51	22.2	57.3	236.8
125.00		1.00	1.33	8.065	8.87	0.00	1.200	2.285	3.00	3.142	3.77	33.5	86.1	355.5
125.50	Appurtenance(s)	1.00	1.33	8.072	8.88	0.00	1.200	2.286	0.50	0.524	0.63	5.6	14.4	59.3
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	2.289	1.50	1.572	1.89	16.8	43.1	177.8
129.00	Appurtenance(s)	1.00	1.34	8.119	8.93	0.00	1.200	2.292	2.00	2.097	2.52	22.5	57.6	237.2
130.00		1.00	1.34	8.132	8.95	0.00	1.200	2.294	1.00	1.049	1.26	11.3	28.8	118.6
135.00		1.00	1.35	8.197	9.02	0.00	1.200	2.303	5.00	5.252	6.30	56.8	144.9	593.9
135.25	Top - Section 4	1.00	1.35	8.200	9.02	0.00	1.200	2.303	0.25	0.263	0.32	2.8	7.2	29.7
139.00	Appurtenance(s)	1.00	1.36	8.247	9.07	24.26	1.200	2.309	3.75	3.006	3.61	32.7	77.3	208.9
140.00		1.00	1.36	8.260	9.09	24.28	1.200	2.311	1.00	0.802	0.96	8.7	20.6	55.7
145.00		1.00	1.37	8.321	9.15	24.37	1.200	2.319	5.00	4.016	4.82	44.1	103.7	279.1
145.12	Appurtenance(s)	1.00	1.37	8.323	9.15	24.37	1.200	2.319	0.12	0.096	0.12	1.1	2.5	6.7
150.00	Appurtenance(s)	1.00	1.38	8.381	9.22	24.46	1.200	2.327	4.88	3.926	4.71	43.4	101.6	272.8
155.00	Appurtenance(s)	1.00	1.39	8.439	9.28	24.54	1.200	2.335	5.00	4.029	4.83	44.9	104.6	280.0
Totals:								155.00				3,913.5		29,583.4

Discrete Appurtenance Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 30

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	155.00	Truck Ball	1	8.439	9.283	1.00	1.00	4.12	114.67	0.000	0.000	38.26	0.00	0.00
2	155.00	Flag (20'x30')	1	8.439	9.283	1.00	1.00	15.92	240.12	0.000	0.000	147.78	0.00	0.00
3	155.00	27" Canister	1	8.439	9.283	1.00	1.00	5.54	114.67	0.000	0.000	51.46	0.00	0.00
4	150.00	ACU-A20-N	4	8.381	9.219	1.00	1.00	0.00	22.51	0.000	0.000	0.00	0.00	0.00
5	150.00	APXVSP18-C-A20	3	8.381	9.219	1.00	1.00	0.00	748.11	0.000	0.000	0.00	0.00	0.00
6	145.12	27" Canister & 36"	1	8.323	9.155	1.00	1.00	13.52	229.28	0.000	0.000	123.75	0.00	0.00
7	139.00	DBC0062F3V52-1	6	8.247	9.072	1.00	1.00	0.00	139.36	0.000	0.000	0.00	0.00	0.00
8	139.00	DTMABP0723VG12A	6	8.247	9.072	1.00	1.00	0.00	297.05	0.000	0.000	0.00	0.00	0.00
9	139.00	TPA-65R-LCUUUU-H8	3	8.247	9.072	1.00	1.00	46.57	1573.44	0.000	0.000	422.44	0.00	0.00
10	135.25	36" Canister & 29"	1	8.200	9.020	1.00	1.00	13.71	229.21	0.000	0.000	123.63	0.00	0.00
11	129.00	APX18-206517S-C-A20	3	8.119	8.931	1.00	1.00	0.00	370.09	0.000	0.000	0.00	0.00	0.00
12	127.00	CBC721-DF	6	8.092	8.901	1.00	1.00	0.00	90.62	0.000	0.000	0.00	0.00	0.00
13	125.50	29" Canister & 30"	1	8.072	8.879	1.00	1.00	11.73	229.14	0.000	0.000	104.18	0.00	0.00
14	122.00	SBNHH-1D6565A	3	8.024	8.826	1.00	1.00	29.73	1014.78	0.000	0.000	262.37	0.00	0.00
15	115.75	30" Canister	1	7.936	8.729	1.00	1.00	6.00	114.53	0.000	0.000	52.36	0.00	0.00
Totals:									5,527.58			1,326.23		

Total Applied Force Summary

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 30

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		135.06	1387.11	0.00	0.00
10.00		133.89	1404.14	0.00	0.00
15.00		132.48	1407.55	0.00	0.00
20.00		138.94	1404.99	0.00	0.00
25.00		143.85	1399.00	0.00	0.00
30.00		147.59	1390.75	0.00	0.00
35.00		150.48	1380.88	0.00	0.00
40.00		152.70	1369.80	0.00	0.00
45.00		154.40	1357.75	0.00	0.00
48.50		108.48	943.11	0.00	0.00
50.00		47.01	588.39	0.00	0.00
53.25		102.53	1267.21	0.00	0.00
55.00		55.18	469.98	0.00	0.00
60.00		159.07	1332.19	0.00	0.00
65.00		159.40	1317.75	0.00	0.00
70.00		159.50	1302.90	0.00	0.00
75.00		159.38	1287.69	0.00	0.00
80.00		159.06	1272.16	0.00	0.00
85.00		158.57	1256.34	0.00	0.00
90.00		157.92	1240.25	0.00	0.00
95.00		157.12	1223.93	0.00	0.00
98.00		93.62	727.18	0.00	0.00
100.00		63.01	692.09	0.00	0.00
102.00		62.85	687.77	0.00	0.00
105.00		94.06	722.24	0.00	0.00
110.00		156.16	1188.90	0.00	0.00
115.00		154.90	1171.84	0.00	0.00
115.75	(1) attachments	75.39	289.27	0.00	0.00
120.00		46.92	694.00	0.00	0.00
122.00	(3) attachments	284.54	1341.48	0.00	0.00
125.00		33.45	445.38	0.00	0.00
125.50	(1) attachments	109.76	303.38	0.00	0.00
127.00	(6) attachments	16.79	313.39	0.00	0.00
129.00	(3) attachments	22.48	667.23	0.00	0.00
130.00		11.26	141.11	0.00	0.00
135.00		56.83	706.22	0.00	0.00
135.25	(1) attachments	126.47	264.52	0.00	0.00
139.00	(15) attachments	455.17	2302.96	0.00	0.00
140.00		8.74	70.69	0.00	0.00
145.00		44.11	353.95	0.00	0.00
145.12	(1) attachments	124.81	237.77	0.00	0.00
150.00	(7) attachments	43.43	1116.53	0.00	0.00
155.00	(3) attachments	282.37	749.45	0.00	0.00
	Totals:	5,239.74	41,191.22	0.00	0.00

Calculated Forces

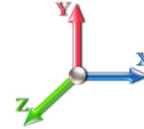
Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Iterations 30

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	-41.19	-5.27	0.00	-492.36	0.00	492.36	2027.49	1013.74	3641.02	1807.56	0.00	0.000	0.000	0.293
5.00	-39.79	-5.19	0.00	-466.01	0.00	466.01	2015.42	1007.71	3566.22	1770.42	0.04	-0.083	0.000	0.283
10.00	-38.38	-5.11	0.00	-440.06	0.00	440.06	2002.83	1001.41	3491.15	1733.15	0.17	-0.164	0.000	0.273
15.00	-36.97	-5.02	0.00	-414.52	0.00	414.52	1989.72	994.86	3415.85	1695.77	0.39	-0.245	0.000	0.263
20.00	-35.56	-4.92	0.00	-389.41	0.00	389.41	1976.09	988.05	3340.37	1658.30	0.69	-0.324	0.000	0.253
25.00	-34.15	-4.82	0.00	-364.79	0.00	364.79	1961.94	980.97	3264.74	1620.75	1.07	-0.402	0.000	0.243
30.00	-32.76	-4.70	0.00	-340.70	0.00	340.70	1947.28	973.64	3189.01	1583.16	1.53	-0.478	0.000	0.232
35.00	-31.37	-4.58	0.00	-317.19	0.00	317.19	1932.09	966.05	3113.21	1545.53	2.07	-0.553	0.000	0.221
40.00	-30.00	-4.45	0.00	-294.29	0.00	294.29	1916.39	958.20	3037.39	1507.89	2.69	-0.626	0.000	0.211
45.00	-28.64	-4.31	0.00	-272.03	0.00	272.03	1900.17	950.08	2961.59	1470.26	3.39	-0.697	0.000	0.200
48.50	-27.69	-4.21	0.00	-256.94	0.00	256.94	1888.50	944.25	2908.57	1443.94	3.91	-0.746	0.000	0.193
50.00	-27.10	-4.17	0.00	-250.63	0.00	250.63	1883.43	941.71	2885.86	1432.66	4.15	-0.766	0.000	0.189
53.25	-25.83	-4.06	0.00	-237.09	0.00	237.09	1885.78	942.89	2896.38	1437.89	4.69	-0.810	0.000	0.179
55.00	-25.36	-4.02	0.00	-229.98	0.00	229.98	1879.83	939.91	2869.89	1424.73	4.99	-0.834	0.000	0.175
60.00	-24.03	-3.87	0.00	-209.88	0.00	209.88	1862.46	931.23	2794.28	1387.20	5.90	-0.895	0.000	0.164
65.00	-22.71	-3.71	0.00	-190.55	0.00	190.55	1844.57	922.28	2718.82	1349.74	6.87	-0.954	0.000	0.154
70.00	-21.41	-3.55	0.00	-172.01	0.00	172.01	1826.16	913.08	2643.55	1312.37	7.90	-1.011	0.000	0.143
75.00	-20.12	-3.38	0.00	-154.27	0.00	154.27	1807.23	903.62	2568.52	1275.12	8.98	-1.064	0.000	0.132
80.00	-18.85	-3.22	0.00	-137.36	0.00	137.36	1787.79	893.89	2493.75	1238.00	10.13	-1.115	0.000	0.122
85.00	-17.59	-3.05	0.00	-121.28	0.00	121.28	1767.82	883.91	2419.31	1201.05	11.32	-1.162	0.000	0.111
90.00	-16.35	-2.87	0.00	-106.05	0.00	106.05	1747.34	873.67	2345.22	1164.27	12.56	-1.206	0.000	0.100
95.00	-15.13	-2.70	0.00	-91.68	0.00	91.68	1726.34	863.17	2271.53	1127.68	13.84	-1.247	0.000	0.090
98.00	-14.41	-2.59	0.00	-83.58	0.00	83.58	1713.49	856.74	2227.52	1105.83	14.63	-1.270	0.000	0.084
100.00	-13.71	-2.52	0.00	-78.39	0.00	78.39	1704.82	852.41	2198.27	1091.31	15.17	-1.284	0.000	0.080
102.00	-13.03	-2.45	0.00	-73.35	0.00	73.35	1713.25	856.63	2226.72	1105.44	15.71	-1.298	0.000	0.074
105.00	-12.31	-2.34	0.00	-66.02	0.00	66.02	1700.21	850.10	2182.88	1083.67	16.53	-1.318	0.000	0.068
110.00	-11.12	-2.16	0.00	-54.32	0.00	54.32	1678.06	839.03	2110.21	1047.60	17.93	-1.346	0.000	0.058
115.00	-9.95	-1.98	0.00	-43.51	0.00	43.51	1655.39	827.70	2038.07	1011.78	19.35	-1.371	0.000	0.049
115.75	-9.66	-1.90	0.00	-42.03	0.00	42.03	1651.95	825.97	2027.30	1006.43	19.57	-1.374	0.000	0.048
115.75	-9.66	-1.90	0.00	-42.03	0.00	42.03	930.23	465.11	237.26	173.90	19.57	-1.374	0.000	0.252
120.00	-8.97	-1.85	0.00	-33.95	0.00	33.95	930.23	465.11	237.26	173.90	20.80	-1.391	0.000	0.205
122.00	-7.63	-1.55	0.00	-30.25	0.00	30.25	930.23	465.11	237.26	173.90	21.41	-1.527	0.000	0.182
125.00	-7.18	-1.52	0.00	-25.60	0.00	25.60	930.23	465.11	237.26	173.90	22.43	-1.704	0.000	0.155
125.50	-6.88	-1.41	0.00	-24.84	0.00	24.84	930.23	465.11	237.26	173.90	22.61	-1.730	0.000	0.150
127.00	-6.57	-1.39	0.00	-22.73	0.00	22.73	930.23	465.11	237.26	173.90	23.16	-1.806	0.000	0.138
129.00	-5.90	-1.35	0.00	-19.95	0.00	19.95	930.23	465.11	237.26	173.90	23.94	-1.896	0.000	0.121
130.00	-5.76	-1.35	0.00	-18.60	0.00	18.60	930.23	465.11	237.26	173.90	24.34	-1.936	0.000	0.113
135.00	-5.05	-1.27	0.00	-11.87	0.00	11.87	930.23	465.11	237.26	173.90	26.46	-2.097	0.000	0.074
135.25	-4.79	-1.14	0.00	-11.56	0.00	11.56	930.23	465.11	237.26	173.90	26.57	-2.103	0.000	0.072
135.25	-4.79	-1.14	0.00	-11.56	0.00	11.56	579.84	289.92	92.43	67.75	26.57	-2.103	0.000	0.179
139.00	-2.51	-0.60	0.00	-7.29	0.00	7.29	579.84	289.92	92.43	67.75	28.25	-2.178	0.000	0.112
140.00	-2.43	-0.60	0.00	-6.69	0.00	6.69	579.84	289.92	92.43	67.75	28.72	-2.275	0.000	0.103
145.00	-2.08	-0.55	0.00	-3.68	0.00	3.68	579.84	289.92	92.43	67.75	31.30	-2.633	0.000	0.058
145.12	-1.85	-0.41	0.00	-3.62	0.00	3.62	579.84	289.92	92.43	67.75	31.37	-2.639	0.000	0.057
150.00	-0.73	-0.32	0.00	-1.60	0.00	1.60	579.84	289.92	92.43	67.75	34.17	-2.815	0.000	0.025
155.00	0.00	-0.28	0.00	0.00	0.00	0.00	579.84	289.92	92.43	67.75	37.15	-2.870	0.000	0.000

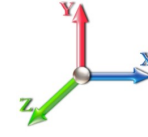
Seismic Segment Forces (Factored)

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 26
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	0.34	SA 0.01	Seismic Importance Factor 1.00



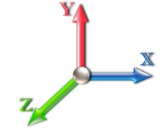
Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		584.85	0.00	0.03	0.02	8.54	
10.00		576.25	0.01	0.05	0.03	11.60	
15.00		567.65	0.02	0.06	0.04	12.89	
20.00		559.05	0.03	0.07	0.04	13.42	
25.00		550.46	0.05	0.07	0.04	13.63	
30.00		541.86	0.07	0.07	0.04	13.74	
35.00		533.26	0.10	0.07	0.04	13.85	
40.00		524.66	0.13	0.07	0.03	13.99	
45.00		516.06	0.16	0.07	0.03	14.10	
48.50	Bot - Section 2	356.13	0.19	0.06	0.03	9.84	
50.00		304.71	0.20	0.06	0.02	8.44	
53.25	Top - Section 1	654.89	0.22	0.06	0.02	18.10	
55.00		176.00	0.24	0.06	0.02	4.83	
60.00		497.05	0.28	0.05	0.01	12.88	
65.00		488.45	0.33	0.04	0.01	10.89	
70.00		479.85	0.39	0.02	0.01	7.55	
75.00		471.26	0.44	0.00	0.01	2.80	
80.00		462.66	0.50	-0.02	0.01	-2.72	
85.00		454.06	0.57	-0.04	0.01	-7.80	
90.00		445.46	0.64	-0.07	0.02	-11.44	
95.00		436.86	0.71	-0.09	0.03	-13.32	
98.00	Bot - Section 3	257.99	0.76	-0.10	0.04	-8.16	
100.00		343.26	0.79	-0.11	0.05	-10.88	
102.00	Top - Section 2	340.51	0.82	-0.12	0.06	-10.63	
105.00		254.84	0.87	-0.12	0.08	-7.55	
110.00		417.85	0.95	-0.12	0.11	-10.25	
115.00		409.25	1.04	-0.10	0.15	-6.79	
115.75	Top - Section 3	110.65	1.05	-0.09	0.16	-1.68	
120.00		318.03	1.13	-0.05	0.21	-1.87	
122.00	Appurtenance(s)	291.86	1.17	-0.02	0.23	-0.23	
125.00		224.49	1.23	0.03	0.28	1.72	
125.50	Appurtenance(s)	137.42	1.24	0.04	0.28	1.26	
127.00	Appurtenance(s)	138.65	1.27	0.08	0.31	1.93	
129.00	Appurtenance(s)	222.26	1.31	0.13	0.34	4.57	
130.00		74.83	1.33	0.16	0.36	1.80	
135.00		374.15	1.43	0.35	0.47	16.25	
135.25	Top - Section 4	118.71	1.44	0.36	0.47	5.28	
139.00	Appurtenance(s)	489.42	1.52	0.55	0.57	29.90	
140.00		29.23	1.54	0.61	0.59	1.92	
145.00		146.15	1.65	0.96	0.75	13.34	
145.12	Appurtenance(s)	103.51	1.66	0.96	0.75	9.52	
150.00	Appurtenance(s)	317.65	1.77	1.41	0.93	38.10	
155.00	Appurtenance(s)	446.15	1.89	1.98	1.14	67.77	
Totals:		15,748.3				291.2	Total Wind: 16,217.0

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

Calculated Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.0E										Iterations 26	
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	0.34	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	-24.98	-0.38	0.00	-37.49	0.00	37.49	2027.49	1013.74	3641.02	1807.56	0.00	0.00	0.00	0.033
5.00	-24.05	-0.38	0.00	-35.57	0.00	35.57	2015.42	1007.71	3566.22	1770.42	0.00	-0.01	-0.01	0.032
10.00	-23.14	-0.37	0.00	-33.68	0.00	33.68	2002.83	1001.41	3491.15	1733.15	0.01	-0.01	-0.01	0.031
15.00	-22.23	-0.36	0.00	-31.83	0.00	31.83	1989.72	994.86	3415.85	1695.77	0.03	-0.02	-0.02	0.030
20.00	-21.33	-0.35	0.00	-30.04	0.00	30.04	1976.09	988.05	3340.37	1658.30	0.05	-0.02	-0.02	0.029
25.00	-20.45	-0.34	0.00	-28.30	0.00	28.30	1961.94	980.97	3264.74	1620.75	0.08	-0.03	-0.03	0.028
30.00	-19.57	-0.32	0.00	-26.63	0.00	26.63	1947.28	973.64	3189.01	1583.16	0.12	-0.04	-0.04	0.027
35.00	-18.71	-0.31	0.00	-25.01	0.00	25.01	1932.09	966.05	3113.21	1545.53	0.16	-0.04	-0.04	0.026
40.00	-17.86	-0.30	0.00	-23.46	0.00	23.46	1916.39	958.20	3037.39	1507.89	0.21	-0.05	-0.05	0.025
45.00	-17.01	-0.28	0.00	-21.97	0.00	21.97	1900.17	950.08	2961.59	1470.26	0.26	-0.05	-0.05	0.024
48.50	-16.43	-0.27	0.00	-20.98	0.00	20.98	1888.50	944.25	2908.57	1443.94	0.30	-0.06	-0.06	0.023
50.00	-15.99	-0.27	0.00	-20.57	0.00	20.57	1883.43	941.71	2885.86	1432.66	0.32	-0.06	-0.06	0.023
53.25	-15.06	-0.25	0.00	-19.70	0.00	19.70	1885.78	942.89	2896.38	1437.89	0.36	-0.06	-0.06	0.022
55.00	-14.77	-0.24	0.00	-19.27	0.00	19.27	1879.83	939.91	2869.89	1424.73	0.39	-0.07	-0.07	0.021
60.00	-13.95	-0.23	0.00	-18.05	0.00	18.05	1862.46	931.23	2794.28	1387.20	0.46	-0.07	-0.07	0.021
65.00	-13.14	-0.22	0.00	-16.89	0.00	16.89	1844.57	922.28	2718.82	1349.74	0.53	-0.08	-0.08	0.020
70.00	-12.34	-0.21	0.00	-15.79	0.00	15.79	1826.16	913.08	2643.55	1312.37	0.62	-0.08	-0.08	0.019
75.00	-11.55	-0.21	0.00	-14.73	0.00	14.73	1807.23	903.62	2568.52	1275.12	0.70	-0.09	-0.09	0.018
80.00	-10.77	-0.21	0.00	-13.68	0.00	13.68	1787.79	893.89	2493.75	1238.00	0.80	-0.09	-0.09	0.017
85.00	-10.00	-0.21	0.00	-12.63	0.00	12.63	1767.82	883.91	2419.31	1201.05	0.89	-0.10	-0.10	0.016
90.00	-9.24	-0.21	0.00	-11.58	0.00	11.58	1747.34	873.67	2345.22	1164.27	1.00	-0.10	-0.10	0.015
95.00	-8.49	-0.21	0.00	-10.54	0.00	10.54	1726.34	863.17	2271.53	1127.68	1.10	-0.10	-0.10	0.014
98.00	-8.05	-0.21	0.00	-9.91	0.00	9.91	1713.49	856.74	2227.52	1105.83	1.17	-0.11	-0.11	0.014
100.00	-7.55	-0.21	0.00	-9.50	0.00	9.50	1704.82	852.41	2198.27	1091.31	1.22	-0.11	-0.11	0.013
102.00	-7.05	-0.21	0.00	-9.08	0.00	9.08	1713.25	856.63	2226.72	1105.44	1.26	-0.11	-0.11	0.012
105.00	-6.61	-0.21	0.00	-8.47	0.00	8.47	1700.21	850.10	2182.88	1083.67	1.33	-0.11	-0.11	0.012
110.00	-5.88	-0.20	0.00	-7.44	0.00	7.44	1678.06	839.03	2110.21	1047.60	1.45	-0.12	-0.12	0.011
115.00	-5.16	-0.20	0.00	-6.41	0.00	6.41	1655.39	827.70	2038.07	1011.78	1.58	-0.12	-0.12	0.009
115.75	-5.00	-0.20	0.00	-6.26	0.00	6.26	1651.95	825.97	2027.30	1006.43	1.60	-0.12	-0.12	0.009
115.75	-5.00	-0.20	0.00	-6.26	0.00	6.26	930.23	465.11	237.26	173.90	1.60	-0.12	-0.12	0.041
120.00	-4.43	-0.20	0.00	-5.40	0.00	5.40	930.23	465.11	237.26	173.90	1.71	-0.12	-0.12	0.036
122.00	-3.99	-0.20	0.00	-4.99	0.00	4.99	930.23	465.11	237.26	173.90	1.76	-0.15	-0.15	0.033
125.00	-3.63	-0.20	0.00	-4.38	0.00	4.38	930.23	465.11	237.26	173.90	1.86	-0.18	-0.18	0.029
125.50	-3.45	-0.20	0.00	-4.28	0.00	4.28	930.23	465.11	237.26	173.90	1.88	-0.18	-0.18	0.028
127.00	-3.24	-0.20	0.00	-3.98	0.00	3.98	930.23	465.11	237.26	173.90	1.94	-0.19	-0.19	0.026
129.00	-2.91	-0.19	0.00	-3.58	0.00	3.58	930.23	465.11	237.26	173.90	2.02	-0.21	-0.21	0.024
130.00	-2.80	-0.19	0.00	-3.39	0.00	3.39	930.23	465.11	237.26	173.90	2.07	-0.22	-0.22	0.022
135.00	-2.23	-0.18	0.00	-2.42	0.00	2.42	930.23	465.11	237.26	173.90	2.31	-0.25	-0.25	0.016
135.25	-2.09	-0.17	0.00	-2.38	0.00	2.38	930.23	465.11	237.26	173.90	2.33	-0.25	-0.25	0.016
135.25	-2.09	-0.17	0.00	-2.38	0.00	2.38	579.84	289.92	92.43	67.75	2.33	-0.25	-0.25	0.039
139.00	-1.42	-0.14	0.00	-1.74	0.00	1.74	579.84	289.92	92.43	67.75	2.53	-0.26	-0.26	0.028
140.00	-1.37	-0.14	0.00	-1.60	0.00	1.60	579.84	289.92	92.43	67.75	2.58	-0.29	-0.29	0.026
145.00	-1.11	-0.12	0.00	-0.92	0.00	0.92	579.84	289.92	92.43	67.75	2.94	-0.38	-0.38	0.016
145.12	-0.99	-0.11	0.00	-0.91	0.00	0.91	579.84	289.92	92.43	67.75	2.95	-0.38	-0.38	0.015
150.00	-0.53	-0.07	0.00	-0.36	0.00	0.36	579.84	289.92	92.43	67.75	3.36	-0.42	-0.42	0.006
155.00	0.00	-0.07	0.00	0.00	0.00	0.00	579.84	289.92	92.43	67.75	3.80	-0.43	-0.43	0.000

Calculated Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

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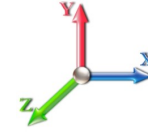
Seismic Segment Forces (Factored)

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 26
Gust Response Factor	1.10	Sds	0.12	Ss	0.18
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.04
Wind Load Factor	0.00	Structure Frequency	0.34	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	0.00	0.00	0.00	
5.00		584.85	0.00	0.03	0.02	8.54	
10.00		576.25	0.01	0.05	0.03	11.60	
15.00		567.65	0.02	0.06	0.04	12.89	
20.00		559.05	0.03	0.07	0.04	13.42	
25.00		550.46	0.05	0.07	0.04	13.63	
30.00		541.86	0.07	0.07	0.04	13.74	
35.00		533.26	0.10	0.07	0.04	13.85	
40.00		524.66	0.13	0.07	0.03	13.99	
45.00		516.06	0.16	0.07	0.03	14.10	
48.50	Bot - Section 2	356.13	0.19	0.06	0.03	9.84	
50.00		304.71	0.20	0.06	0.02	8.44	
53.25	Top - Section 1	654.89	0.22	0.06	0.02	18.10	
55.00		176.00	0.24	0.06	0.02	4.83	
60.00		497.05	0.28	0.05	0.01	12.88	
65.00		488.45	0.33	0.04	0.01	10.89	
70.00		479.85	0.39	0.02	0.01	7.55	
75.00		471.26	0.44	0.00	0.01	2.80	
80.00		462.66	0.50	-0.02	0.01	-2.72	
85.00		454.06	0.57	-0.04	0.01	-7.80	
90.00		445.46	0.64	-0.07	0.02	-11.44	
95.00		436.86	0.71	-0.09	0.03	-13.32	
98.00	Bot - Section 3	257.99	0.76	-0.10	0.04	-8.16	
100.00		343.26	0.79	-0.11	0.05	-10.88	
102.00	Top - Section 2	340.51	0.82	-0.12	0.06	-10.63	
105.00		254.84	0.87	-0.12	0.08	-7.55	
110.00		417.85	0.95	-0.12	0.11	-10.25	
115.00		409.25	1.04	-0.10	0.15	-6.79	
115.75	Top - Section 3	110.65	1.05	-0.09	0.16	-1.68	
120.00		318.03	1.13	-0.05	0.21	-1.87	
122.00	Appurtenance(s)	291.86	1.17	-0.02	0.23	-0.23	
125.00		224.49	1.23	0.03	0.28	1.72	
125.50	Appurtenance(s)	137.42	1.24	0.04	0.28	1.26	
127.00	Appurtenance(s)	138.65	1.27	0.08	0.31	1.93	
129.00	Appurtenance(s)	222.26	1.31	0.13	0.34	4.57	
130.00		74.83	1.33	0.16	0.36	1.80	
135.00		374.15	1.43	0.35	0.47	16.25	
135.25	Top - Section 4	118.71	1.44	0.36	0.47	5.28	
139.00	Appurtenance(s)	489.42	1.52	0.55	0.57	29.90	
140.00		29.23	1.54	0.61	0.59	1.92	
145.00		146.15	1.65	0.96	0.75	13.34	
145.12	Appurtenance(s)	103.51	1.66	0.96	0.75	9.52	
150.00	Appurtenance(s)	317.65	1.77	1.41	0.93	38.10	
155.00	Appurtenance(s)	446.15	1.89	1.98	1.14	67.77	
Totals:		15,748.3				291.2	Total Wind: 16,217.0

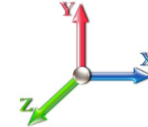
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.0E										Iterations 26
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 0.34			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	-18.73	-0.38	0.00	-37.00	0.00	37.00	2027.49	1013.74	3641.02	1807.56	0.00	0.00	0.00	0.030
5.00	-18.04	-0.38	0.00	-35.07	0.00	35.07	2015.42	1007.71	3566.22	1770.42	0.00	-0.01	0.029	
10.00	-17.35	-0.37	0.00	-33.19	0.00	33.19	2002.83	1001.41	3491.15	1733.15	0.01	-0.01	0.028	
15.00	-16.67	-0.36	0.00	-31.35	0.00	31.35	1989.72	994.86	3415.85	1695.77	0.03	-0.02	0.027	
20.00	-16.00	-0.34	0.00	-29.56	0.00	29.56	1976.09	988.05	3340.37	1658.30	0.05	-0.02	0.026	
25.00	-15.34	-0.33	0.00	-27.84	0.00	27.84	1961.94	980.97	3264.74	1620.75	0.08	-0.03	0.025	
30.00	-14.68	-0.32	0.00	-26.18	0.00	26.18	1947.28	973.64	3189.01	1583.16	0.12	-0.04	0.024	
35.00	-14.03	-0.31	0.00	-24.58	0.00	24.58	1932.09	966.05	3113.21	1545.53	0.16	-0.04	0.023	
40.00	-13.39	-0.29	0.00	-23.05	0.00	23.05	1916.39	958.20	3037.39	1507.89	0.20	-0.05	0.022	
45.00	-12.76	-0.28	0.00	-21.58	0.00	21.58	1900.17	950.08	2961.59	1470.26	0.26	-0.05	0.021	
48.50	-12.32	-0.27	0.00	-20.61	0.00	20.61	1888.50	944.25	2908.57	1443.94	0.30	-0.06	0.021	
50.00	-12.00	-0.26	0.00	-20.20	0.00	20.20	1883.43	941.71	2885.86	1432.66	0.32	-0.06	0.020	
53.25	-11.30	-0.24	0.00	-19.35	0.00	19.35	1885.78	942.89	2896.38	1437.89	0.36	-0.06	0.019	
55.00	-11.08	-0.24	0.00	-18.92	0.00	18.92	1879.83	939.91	2869.89	1424.73	0.38	-0.06	0.019	
60.00	-10.46	-0.23	0.00	-17.73	0.00	17.73	1862.46	931.23	2794.28	1387.20	0.45	-0.07	0.018	
65.00	-9.85	-0.22	0.00	-16.59	0.00	16.59	1844.57	922.28	2718.82	1349.74	0.53	-0.07	0.018	
70.00	-9.25	-0.21	0.00	-15.51	0.00	15.51	1826.16	913.08	2643.55	1312.37	0.61	-0.08	0.017	
75.00	-8.66	-0.21	0.00	-14.47	0.00	14.47	1807.23	903.62	2568.52	1275.12	0.69	-0.08	0.016	
80.00	-8.08	-0.21	0.00	-13.45	0.00	13.45	1787.79	893.89	2493.75	1238.00	0.78	-0.09	0.015	
85.00	-7.50	-0.20	0.00	-12.42	0.00	12.42	1767.82	883.91	2419.31	1201.05	0.88	-0.09	0.015	
90.00	-6.93	-0.20	0.00	-11.40	0.00	11.40	1747.34	873.67	2345.22	1164.27	0.98	-0.10	0.014	
95.00	-6.37	-0.20	0.00	-10.37	0.00	10.37	1726.34	863.17	2271.53	1127.68	1.09	-0.10	0.013	
98.00	-6.04	-0.20	0.00	-9.76	0.00	9.76	1713.49	856.74	2227.52	1105.83	1.15	-0.11	0.012	
100.00	-5.66	-0.20	0.00	-9.35	0.00	9.35	1704.82	852.41	2198.27	1091.31	1.20	-0.11	0.012	
102.00	-5.29	-0.20	0.00	-8.95	0.00	8.95	1713.25	856.63	2226.72	1105.44	1.24	-0.11	0.011	
105.00	-4.95	-0.20	0.00	-8.34	0.00	8.34	1700.21	850.10	2182.88	1083.67	1.31	-0.11	0.011	
110.00	-4.41	-0.20	0.00	-7.33	0.00	7.33	1678.06	839.03	2110.21	1047.60	1.43	-0.12	0.010	
115.00	-3.87	-0.20	0.00	-6.32	0.00	6.32	1655.39	827.70	2038.07	1011.78	1.55	-0.12	0.009	
115.75	-3.75	-0.20	0.00	-6.17	0.00	6.17	1651.95	825.97	2027.30	1006.43	1.57	-0.12	0.008	
115.75	-3.75	-0.20	0.00	-6.17	0.00	6.17	930.23	465.11	237.26	173.90	1.57	-0.12	0.040	
120.00	-3.32	-0.20	0.00	-5.32	0.00	5.32	930.23	465.11	237.26	173.90	1.68	-0.12	0.034	
122.00	-2.99	-0.20	0.00	-4.92	0.00	4.92	930.23	465.11	237.26	173.90	1.73	-0.14	0.031	
125.00	-2.72	-0.20	0.00	-4.32	0.00	4.32	930.23	465.11	237.26	173.90	1.83	-0.17	0.028	
125.50	-2.58	-0.20	0.00	-4.22	0.00	4.22	930.23	465.11	237.26	173.90	1.85	-0.18	0.027	
127.00	-2.43	-0.20	0.00	-3.92	0.00	3.92	930.23	465.11	237.26	173.90	1.91	-0.19	0.025	
129.00	-2.18	-0.19	0.00	-3.53	0.00	3.53	930.23	465.11	237.26	173.90	1.99	-0.21	0.023	
130.00	-2.10	-0.19	0.00	-3.34	0.00	3.34	930.23	465.11	237.26	173.90	2.04	-0.21	0.021	
135.00	-1.68	-0.17	0.00	-2.39	0.00	2.39	930.23	465.11	237.26	173.90	2.28	-0.24	0.016	
135.25	-1.56	-0.17	0.00	-2.34	0.00	2.34	930.23	465.11	237.26	173.90	2.29	-0.24	0.015	
135.25	-1.56	-0.17	0.00	-2.34	0.00	2.34	579.84	289.92	92.43	67.75	2.29	-0.24	0.037	
139.00	-1.06	-0.14	0.00	-1.72	0.00	1.72	579.84	289.92	92.43	67.75	2.49	-0.26	0.027	
140.00	-1.02	-0.13	0.00	-1.58	0.00	1.58	579.84	289.92	92.43	67.75	2.54	-0.28	0.025	
145.00	-0.84	-0.12	0.00	-0.91	0.00	0.91	579.84	289.92	92.43	67.75	2.89	-0.37	0.015	
145.12	-0.74	-0.11	0.00	-0.89	0.00	0.89	579.84	289.92	92.43	67.75	2.90	-0.37	0.014	
150.00	-0.40	-0.07	0.00	-0.35	0.00	0.35	579.84	289.92	92.43	67.75	3.30	-0.41	0.006	
155.00	0.00	-0.07	0.00	0.00	0.00	0.00	579.84	289.92	92.43	67.75	3.74	-0.43	0.000	

Calculated Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

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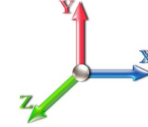
Wind Loading - Shaft

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 29

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	205.25	0.750	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	202.27	0.750	0.000	5.00	18.418	13.81	113.1	0.0	584.8
10.00		1.00	0.85	7.442	8.19	199.30	0.750	0.000	5.00	18.148	13.61	111.4	0.0	576.3
15.00		1.00	0.85	7.442	8.19	196.32	0.750	0.000	5.00	17.879	13.41	109.8	0.0	567.7
20.00		1.00	0.90	7.896	8.69	199.15	0.750	0.000	5.00	17.610	13.21	114.7	0.0	559.1
25.00		1.00	0.95	8.276	9.10	200.74	0.750	0.000	5.00	17.341	13.01	118.4	0.0	550.5
30.00		1.00	0.98	8.600	9.46	201.43	0.750	0.000	5.00	17.072	12.80	121.1	0.0	541.9
35.00		1.00	1.01	8.883	9.77	201.47	0.750	0.000	5.00	16.802	12.60	123.1	0.0	533.3
40.00		1.00	1.04	9.137	10.05	201.03	0.750	0.000	5.00	16.533	12.40	124.6	0.0	524.7
45.00		1.00	1.07	9.366	10.30	200.19	0.750	0.000	5.00	16.264	12.20	125.7	0.0	516.1
48.50	Bot - Section 2	1.00	1.09	9.515	10.47	199.42	0.750	0.000	3.50	11.225	8.42	88.1	0.0	356.1
50.00		1.00	1.09	9.576	10.53	199.05	0.750	0.000	1.50	4.834	3.63	38.2	0.0	304.7
53.25	Top - Section 1	1.00	1.11	9.704	10.67	198.16	0.750	0.000	3.25	10.390	7.79	83.2	0.0	654.9
55.00		1.00	1.12	9.770	10.75	200.33	0.750	0.000	1.75	5.548	4.16	44.7	0.0	176.0
60.00		1.00	1.14	9.951	10.95	198.73	0.750	0.000	5.00	15.669	11.75	128.6	0.0	497.1
65.00		1.00	1.16	10.120	11.13	196.94	0.750	0.000	5.00	15.400	11.55	128.6	0.0	488.5
70.00		1.00	1.17	10.279	11.31	194.98	0.750	0.000	5.00	15.130	11.35	128.3	0.0	479.9
75.00		1.00	1.19	10.430	11.47	192.88	0.750	0.000	5.00	14.861	11.15	127.9	0.0	471.3
80.00		1.00	1.21	10.572	11.63	190.64	0.750	0.000	5.00	14.592	10.94	127.3	0.0	462.7
85.00		1.00	1.22	10.708	11.78	188.29	0.750	0.000	5.00	14.323	10.74	126.5	0.0	454.1
90.00		1.00	1.24	10.838	11.92	185.83	0.750	0.000	5.00	14.054	10.54	125.7	0.0	445.5
95.00		1.00	1.25	10.962	12.06	183.28	0.750	0.000	5.00	13.784	10.34	124.7	0.0	436.9
98.00	Bot - Section 3	1.00	1.26	11.034	12.14	181.70	0.750	0.000	3.00	8.141	6.11	74.1	0.0	258.0
100.00		1.00	1.27	11.081	12.19	180.64	0.750	0.000	2.00	5.459	4.09	49.9	0.0	343.3
102.00	Top - Section 2	1.00	1.27	11.127	12.24	179.56	0.750	0.000	2.00	5.416	4.06	49.7	0.0	340.5
105.00		1.00	1.28	11.195	12.31	180.80	0.750	0.000	3.00	8.043	6.03	74.3	0.0	254.8
110.00		1.00	1.29	11.305	12.44	178.01	0.750	0.000	5.00	13.189	9.89	123.0	0.0	417.9
115.00		1.00	1.30	11.412	12.55	175.16	0.750	0.000	5.00	12.920	9.69	121.6	0.0	409.3
115.75	Top - Section 3	1.00	1.31	11.427	12.57	174.73	0.750	0.000	0.75	1.915	1.44	18.1	0.0	60.6
120.00		1.00	1.32	11.514	12.67	45.87	0.837	0.000	4.25	2.833	2.37	30.0	0.0	318.0
122.00	Appurtenance(s)	1.00	1.32	11.554	12.71	45.95	0.836	0.000	2.00	1.333	1.11	14.2	0.0	149.7
125.00		1.00	1.33	11.614	12.78	46.07	0.834	0.000	3.00	2.000	1.67	21.3	0.0	224.5
125.50	Appurtenance(s)	1.00	1.33	11.623	12.79	46.09	0.833	0.000	0.50	0.333	0.28	3.6	0.0	37.4
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	46.15	0.832	0.000	1.50	1.000	0.83	10.7	0.0	112.2
129.00	Appurtenance(s)	1.00	1.34	11.691	12.86	46.22	0.831	0.000	2.00	1.333	1.11	14.2	0.0	149.7
130.00		1.00	1.34	11.710	12.88	46.26	0.830	0.000	1.00	0.667	0.55	7.1	0.0	74.8
135.00		1.00	1.35	11.803	12.98	46.44	0.827	0.000	5.00	3.333	2.76	35.8	0.0	374.2
135.25	Top - Section 4	1.00	1.35	11.808	12.99	46.45	0.827	0.000	0.25	0.167	0.14	1.8	0.0	18.7
139.00	Appurtenance(s)	1.00	1.36	11.876	13.06	29.12	1.200	0.000	3.75	1.563	1.88	24.5	0.0	109.6
140.00		1.00	1.36	11.894	13.08	29.14	1.200	0.000	1.00	0.417	0.50	6.5	0.0	29.2
145.00		1.00	1.37	11.982	13.18	29.25	1.200	0.000	5.00	2.083	2.50	33.0	0.0	146.2
145.12	Appurtenance(s)	1.00	1.37	11.984	13.18	29.25	1.200	0.000	0.12	0.050	0.06	0.8	0.0	3.5
150.00	Appurtenance(s)	1.00	1.38	12.068	13.27	29.35	1.200	0.000	4.88	2.033	2.44	32.4	0.0	142.6
155.00	Appurtenance(s)	1.00	1.39	12.152	13.37	29.45	1.200	0.000	5.00	2.083	2.50	33.4	0.0	146.2
Totals:								155.00			3,113.6	14,302.3		

Discrete Appurtenance Forces

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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 29

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	155.00	Truck Ball	1	12.152	13.367	1.00	1.00	3.77	50.00	0.000	0.000	50.39	0.00	0.00
2	155.00	Flag (20'x30')	1	12.152	13.367	1.00	1.00	14.56	200.00	0.000	0.000	194.62	0.00	0.00
3	155.00	27" Canister	1	12.152	13.367	1.00	1.00	5.07	50.00	0.000	0.000	67.77	0.00	0.00
4	150.00	ACU-A20-N	4	12.068	13.275	1.00	1.00	0.00	4.00	0.000	0.000	0.00	0.00	0.00
5	150.00	APXVSP18-C-A20	3	12.068	13.275	1.00	1.00	0.00	171.00	0.000	0.000	0.00	0.00	0.00
6	145.12	27" Canister & 36"	1	11.984	13.183	1.00	1.00	12.37	100.00	0.000	0.000	163.07	0.00	0.00
7	139.00	DBC0062F3V52-1	6	11.876	13.064	1.00	1.00	0.00	39.60	0.000	0.000	0.00	0.00	0.00
8	139.00	DTMABP0723VG12A	6	11.876	13.064	1.00	1.00	0.00	115.20	0.000	0.000	0.00	0.00	0.00
9	139.00	TPA-65R-LCUUUU-H8	3	11.876	13.064	1.00	1.00	0.00	225.00	0.000	0.000	0.00	0.00	0.00
10	135.25	36" Canister & 29"	1	11.808	12.989	1.00	1.00	12.55	100.00	0.000	0.000	163.01	0.00	0.00
11	129.00	APX18-206517S-C-A20	3	11.691	12.860	1.00	1.00	0.00	72.60	0.000	0.000	0.00	0.00	0.00
12	127.00	CBC721-DF	6	11.653	12.818	1.00	1.00	0.00	26.40	0.000	0.000	0.00	0.00	0.00
13	125.50	29" Canister & 30"	1	11.623	12.786	1.00	1.00	10.75	100.00	0.000	0.000	137.45	0.00	0.00
14	122.00	SBNHH-1D6565A	3	11.554	12.710	1.00	1.00	0.00	142.20	0.000	0.000	0.00	0.00	0.00
15	115.75	30" Canister	1	11.427	12.570	1.00	1.00	5.50	50.00	0.000	0.000	69.13	0.00	0.00
Totals:									1,446.00			845.45		

Total Applied Force Summary

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

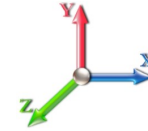


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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 29

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		113.08	772.05	0.00	0.00
10.00		111.42	763.45	0.00	0.00
15.00		109.77	754.85	0.00	0.00
20.00		114.72	746.25	0.00	0.00
25.00		118.40	737.66	0.00	0.00
30.00		121.12	729.06	0.00	0.00
35.00		123.14	720.46	0.00	0.00
40.00		124.62	711.86	0.00	0.00
45.00		125.67	703.26	0.00	0.00
48.50		88.11	487.17	0.00	0.00
50.00		38.19	360.87	0.00	0.00
53.25		83.18	776.57	0.00	0.00
55.00		44.72	241.52	0.00	0.00
60.00		128.63	684.25	0.00	0.00
65.00		128.57	675.65	0.00	0.00
70.00		128.31	667.05	0.00	0.00
75.00		127.87	658.46	0.00	0.00
80.00		127.27	649.86	0.00	0.00
85.00		126.53	641.26	0.00	0.00
90.00		125.65	632.66	0.00	0.00
95.00		124.66	624.06	0.00	0.00
98.00		74.11	370.31	0.00	0.00
100.00		49.90	418.14	0.00	0.00
102.00		49.71	415.39	0.00	0.00
105.00		74.28	367.16	0.00	0.00
110.00		123.01	605.05	0.00	0.00
115.00		121.64	596.45	0.00	0.00
115.75	(1) attachments	87.19	138.73	0.00	0.00
120.00		30.04	477.15	0.00	0.00
122.00	(3) attachments	14.16	366.74	0.00	0.00
125.00		21.30	299.37	0.00	0.00
125.50	(1) attachments	141.00	149.90	0.00	0.00
127.00	(6) attachments	10.67	176.09	0.00	0.00
129.00	(3) attachments	14.24	272.18	0.00	0.00
130.00		7.13	93.55	0.00	0.00
135.00		35.78	467.75	0.00	0.00
135.25	(1) attachments	164.80	123.39	0.00	0.00
139.00	(15) attachments	24.49	559.62	0.00	0.00
140.00		6.54	41.71	0.00	0.00
145.00		32.95	208.55	0.00	0.00
145.12	(1) attachments	163.86	105.01	0.00	0.00
150.00	(7) attachments	32.39	378.55	0.00	0.00
155.00	(3) attachments	346.20	446.15	0.00	0.00
	Totals:	3,959.06	20,815.23	0.00	0.00

Calculated Forces

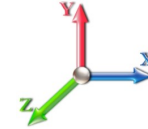
Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 29

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	-20.81	-3.97	0.00	-342.97	0.00	342.97	2027.49	1013.74	3641.02	1807.56	0.00	0.000	0.000	0.200
5.00	-20.04	-3.88	0.00	-323.12	0.00	323.12	2015.42	1007.71	3566.22	1770.42	0.03	-0.057	0.000	0.192
10.00	-19.27	-3.78	0.00	-303.75	0.00	303.75	2002.83	1001.41	3491.15	1733.15	0.12	-0.114	0.000	0.185
15.00	-18.51	-3.69	0.00	-284.84	0.00	284.84	1989.72	994.86	3415.85	1695.77	0.27	-0.169	0.000	0.177
20.00	-17.76	-3.59	0.00	-266.40	0.00	266.40	1976.09	988.05	3340.37	1658.30	0.48	-0.224	0.000	0.170
25.00	-17.02	-3.48	0.00	-248.47	0.00	248.47	1961.94	980.97	3264.74	1620.75	0.74	-0.277	0.000	0.162
30.00	-16.29	-3.37	0.00	-231.06	0.00	231.06	1947.28	973.64	3189.01	1583.16	1.06	-0.329	0.000	0.154
35.00	-15.57	-3.26	0.00	-214.21	0.00	214.21	1932.09	966.05	3113.21	1545.53	1.43	-0.379	0.000	0.147
40.00	-14.86	-3.14	0.00	-197.93	0.00	197.93	1916.39	958.20	3037.39	1507.89	1.85	-0.429	0.000	0.139
45.00	-14.15	-3.02	0.00	-182.23	0.00	182.23	1900.17	950.08	2961.59	1470.26	2.33	-0.476	0.000	0.131
48.50	-13.66	-2.93	0.00	-171.66	0.00	171.66	1888.50	944.25	2908.57	1443.94	2.69	-0.509	0.000	0.126
50.00	-13.30	-2.89	0.00	-167.27	0.00	167.27	1883.43	941.71	2885.86	1432.66	2.85	-0.523	0.000	0.124
53.25	-12.52	-2.81	0.00	-157.86	0.00	157.86	1885.78	942.89	2896.38	1437.89	3.22	-0.552	0.000	0.116
55.00	-12.28	-2.77	0.00	-152.94	0.00	152.94	1879.83	939.91	2869.89	1424.73	3.42	-0.567	0.000	0.114
60.00	-11.60	-2.64	0.00	-139.10	0.00	139.10	1862.46	931.23	2794.28	1387.20	4.04	-0.608	0.000	0.107
65.00	-10.92	-2.51	0.00	-125.90	0.00	125.90	1844.57	922.28	2718.82	1349.74	4.70	-0.647	0.000	0.099
70.00	-10.25	-2.38	0.00	-113.34	0.00	113.34	1826.16	913.08	2643.55	1312.37	5.40	-0.685	0.000	0.092
75.00	-9.60	-2.25	0.00	-101.42	0.00	101.42	1807.23	903.62	2568.52	1275.12	6.13	-0.720	0.000	0.085
80.00	-8.95	-2.12	0.00	-90.16	0.00	90.16	1787.79	893.89	2493.75	1238.00	6.90	-0.753	0.000	0.078
85.00	-8.31	-1.99	0.00	-79.55	0.00	79.55	1767.82	883.91	2419.31	1201.05	7.71	-0.784	0.000	0.071
90.00	-7.67	-1.86	0.00	-69.60	0.00	69.60	1747.34	873.67	2345.22	1164.27	8.55	-0.813	0.000	0.064
95.00	-7.05	-1.73	0.00	-60.30	0.00	60.30	1726.34	863.17	2271.53	1127.68	9.41	-0.840	0.000	0.058
98.00	-6.68	-1.65	0.00	-55.11	0.00	55.11	1713.49	856.74	2227.52	1105.83	9.94	-0.855	0.000	0.054
100.00	-6.26	-1.60	0.00	-51.81	0.00	51.81	1704.82	852.41	2198.27	1091.31	10.30	-0.864	0.000	0.051
102.00	-5.85	-1.54	0.00	-48.62	0.00	48.62	1713.25	856.63	2226.72	1105.44	10.67	-0.874	0.000	0.047
105.00	-5.48	-1.46	0.00	-43.99	0.00	43.99	1700.21	850.10	2182.88	1083.67	11.22	-0.887	0.000	0.044
110.00	-4.88	-1.33	0.00	-36.68	0.00	36.68	1678.06	839.03	2110.21	1047.60	12.16	-0.906	0.000	0.038
115.00	-4.29	-1.20	0.00	-30.02	0.00	30.02	1655.39	827.70	2038.07	1011.78	13.12	-0.922	0.000	0.032
115.75	-4.15	-1.11	0.00	-29.12	0.00	29.12	1651.95	825.97	2027.30	1006.43	13.26	-0.925	0.000	0.031
115.75	-4.15	-1.11	0.00	-29.12	0.00	29.12	930.23	465.11	237.26	173.90	13.26	-0.925	0.000	0.172
120.00	-3.67	-1.08	0.00	-24.39	0.00	24.39	930.23	465.11	237.26	173.90	14.09	-0.937	0.000	0.144
122.00	-3.30	-1.06	0.00	-22.23	0.00	22.23	930.23	465.11	237.26	173.90	14.51	-1.035	0.000	0.131
125.00	-3.00	-1.04	0.00	-19.04	0.00	19.04	930.23	465.11	237.26	173.90	15.20	-1.166	0.000	0.113
125.50	-2.85	-0.90	0.00	-18.52	0.00	18.52	930.23	465.11	237.26	173.90	15.32	-1.186	0.000	0.110
127.00	-2.68	-0.89	0.00	-17.17	0.00	17.17	930.23	465.11	237.26	173.90	15.70	-1.242	0.000	0.102
129.00	-2.40	-0.87	0.00	-15.39	0.00	15.39	930.23	465.11	237.26	173.90	16.24	-1.311	0.000	0.091
130.00	-2.31	-0.86	0.00	-14.52	0.00	14.52	930.23	465.11	237.26	173.90	16.52	-1.343	0.000	0.086
135.00	-1.84	-0.82	0.00	-10.20	0.00	10.20	930.23	465.11	237.26	173.90	17.99	-1.473	0.000	0.061
135.25	-1.72	-0.65	0.00	-10.00	0.00	10.00	930.23	465.11	237.26	173.90	18.07	-1.478	0.000	0.059
135.25	-1.72	-0.65	0.00	-10.00	0.00	10.00	579.84	289.92	92.43	67.75	18.07	-1.478	0.000	0.151
139.00	-1.16	-0.61	0.00	-7.56	0.00	7.56	579.84	289.92	92.43	67.75	19.26	-1.548	0.000	0.114
140.00	-1.12	-0.61	0.00	-6.94	0.00	6.94	579.84	289.92	92.43	67.75	19.60	-1.648	0.000	0.104
145.00	-0.91	-0.57	0.00	-3.88	0.00	3.88	579.84	289.92	92.43	67.75	21.54	-2.022	0.000	0.059
145.12	-0.81	-0.41	0.00	-3.81	0.00	3.81	579.84	289.92	92.43	67.75	21.59	-2.029	0.000	0.058
150.00	-0.43	-0.36	0.00	-1.82	0.00	1.82	579.84	289.92	92.43	67.75	23.77	-2.219	0.000	0.028
155.00	0.00	-0.35	0.00	0.00	0.00	0.00	579.84	289.92	92.43	67.75	26.14	-2.282	0.000	0.000

Final Analysis Summary

Structure: CT46141-A-SBA	Code: EIA/TIA-222-G	11/30/2017
Site Name: Water Treatment Plant 2, CT	Exposure: C	
Height: 155.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (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	16.3	0.00	24.94	0.00	0.00	1395.30
0.9D + 1.6W 97 mph Wind	16.3	0.00	18.70	0.00	0.00	1378.79
1.2D + 1.0Di + 1.0Wi 50 mph Wind	5.3	0.00	41.19	0.00	0.00	492.36
1.2D + 1.0E	0.4	0.00	24.98	0.00	0.00	37.49
0.9D + 1.0E	0.4	0.00	18.73	0.00	0.00	37.00
1.0D + 1.0W 60 mph Wind	4.0	0.00	20.81	0.00	0.00	342.97

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	-24.94	-16.27	0.00	-1395.3	0.00	-1395.3	2027.49	1013.7	3641.02	1807.56	0.00	0.784
0.9D + 1.6W 97 mph Wind	-18.70	-16.26	0.00	-1378.7	0.00	-1378.7	2027.49	1013.7	3641.02	1807.56	0.00	0.772
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-41.19	-5.27	0.00	-492.36	0.00	-492.36	2027.49	1013.7	3641.02	1807.56	0.00	0.293
1.2D + 1.0E	-5.00	-0.20	0.00	-6.26	0.00	-6.26	1651.95	825.97	2027.30	1006.43	115.75	0.041
0.9D + 1.0E	-3.75	-0.20	0.00	-6.17	0.00	-6.17	1651.95	825.97	2027.30	1006.43	115.75	0.040
1.0D + 1.0W 60 mph Wind	-20.81	-3.97	0.00	-342.97	0.00	-342.97	2027.49	1013.7	3641.02	1807.56	0.00	0.200



Pier Foundation Design For Monopole			Date
			11/30/2017
Customer Name:	AT&T	EIA/TIA Standard:	EIA-222-G
Site Name:	Water Treatment Plant 2, CT	Structure Height (Ft.):	155
Site Number:	CT46141-A-SBA	Engineer Name:	J. Tibbetts
Engr. Number:	43413	Engineer Login ID:	

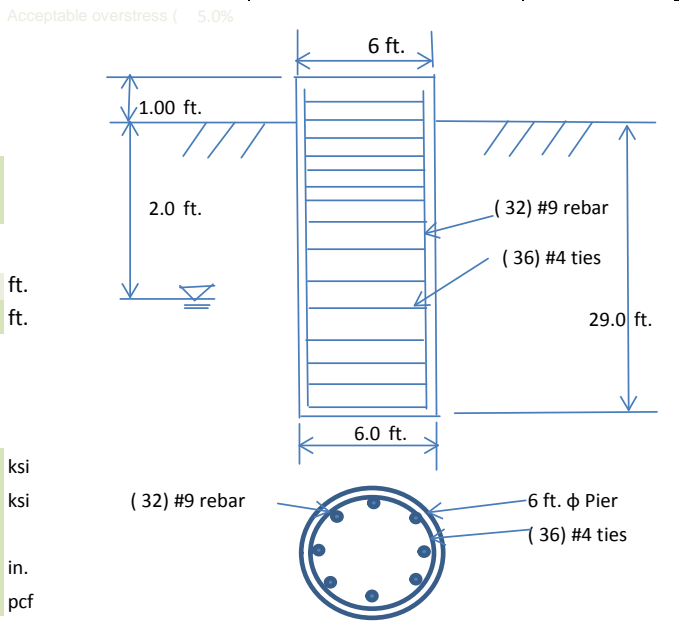
Foundation Info Obtained from: Drawings/Calculations
Structure Type: Monopole
Analysis or Design? Analysis

Base Reactions (Factored):
 Axial Load (Kips): 41.2 Shear Force (Kips): 16.3
 Uplift Force (Kips): 0.0 Moment (Kips-ft): 1395.3

Foundation Geometries:
 Mods required -Yes/No?: No ft.
 Diameter of Pier (ft.): 6.0 Depth of Base B. G. S.: 29.0 ft.
 Pier Height A. G. (ft.): 1.00

Material Properties and Reabr Info:
 Concrete Strength (psi): 4000 Steel Elastic Modulus: 29000 ksi
 Vertical bar yield (ksi): 60 Tie steel yield strength: 60 ksi
 Vertical Rebar Size #: 9 Tie / Stirrup Size #: 4
 Qty. of Vertical Rebars: 32 Tie Spacing: 12.0 in.
 Concrete Cover (in.): 3 Concrete unit weight: 150.0 pcf

Soil Design Parameters:
 Water Table B.G.S. (ft): 2.0 Unit weight of water: 62.4 psf
 Ratio of Uplift/Axial Skin Friction: 1.0 Pullout failure Angle: 30 (°)
 Skin Frictions are to be obtained from: Soil Report



Monopole Pier Foundation

Depth of Layers (ft)		γ_{soil} (pcf)	ϕ (°)	Cohesion (psf)	Ultimate Skin Friction (psf)	Ultimate Bearing (psf)	Soil Types					
Top	Bottom											
0.0	3.0	130	0	0			Sand					
3.0	30.0	130	34	0			Sand					
30.0	35.0	130										

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

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Soil Bearing Strength Reduction Factor:	0.75
Total Dry Soil Volume from Conical Failure (cu. Ft.):	2224	Dry Soil Weight from Conical Failure:	289 Kips
Total Buoyant Soil Volume from Conical Failure (cu. Ft.):	10837	Buoyant Soil Weight from Conical Failure (Ki)	944 Kips
Total Dry Concrete Volume (cu. Ft.):	85	Total Dry Concrete Weight:	12.7 Kips
Total Buoyant Concrete Volume (cu. Ft.):	763.4	Total Buoyant Concrete Weight:	66.87 Kips
Total Effective Concrete Weight (Kips):	79.6	Total Effective Soil Weight:	1233.0 Kips
Total Effective Vertical Load on Base (Kips):	47.0		

Check Soil Capacities:

Allowable Foundation Overturning Resistance (kips-ft.):	7490.5	>	Design Factored Moment (kips-ft):	1732	Usage	0.23	OK!
Factor of Safety of Passive Soil Resistance against Moment:	4.32	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

Reinforcing Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	1.00	Tie / Stirrup Area (sq. in./each):	0.20	Usage	
Calculated Moment Capacity (Mn, Kips-Ft):	4465.7	>	Design Factored Moment (Mu, K-Ft):	1463.5	0.33 OK!
Calculated Shear Capacity (Kips):	818.1	>	Design Factored Shear (Kips):	129.5	0.16 OK!
Calculated Tension Capacity (Tn, Kips):	1728.0	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	7142	>	Design Factored Axial Load (Pu Kips):	41.2	0.01 OK!
Moment & Axial Strength Combination:	0.33	OK!	Max. Allowable Tie/Stirrup Spacing:	12.00	in.
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI			





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**SmartLink, LLC on behalf of
AT&T Mobility, LLC
Site FA – 10090928
Site ID – CT1119 (MRCTB025245-
MRCTB025239-MRCTB025122)
USID – 84040
Site Name – Farmington
Westerberg Drive
Site Compliance Report**

**1 Westerberg Dr
Farmington, CT 06032**

Latitude: N41-43-49.74
Longitude: W72-50-07.76
Structure Type: Stealth Structure

Report generated date: December 27, 2017
Report by: Sam Cosgrove
Customer Contact: Haleluya Haile

**AT&T Mobility, LLC will be compliant when the
remediation recommended in Section 5.2 or
other appropriate remediation is implemented.**

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1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	Yes
RF Sign(s) @ access point(s)	(1) Information 1 and (1) Caution 2 @ Flagpole Base
RF Sign(s) @ antennas	None
Barrier(s) @ sectors	None
Max cumulative simulated RFE level on the Ground Level	<1% General Public Limit
FCC & AT&T Compliant?	Will Be Compliant

Note: The existing signage was documented at a previous site visit 05/15/14.

The following documents were provided by the client and were utilized to create this report:

RFDS: NEW-ENGLAND_CONNECTICUT_CTV1119_2018-LTE-Next-Carrier_LTE_mb497j_2051A0D...

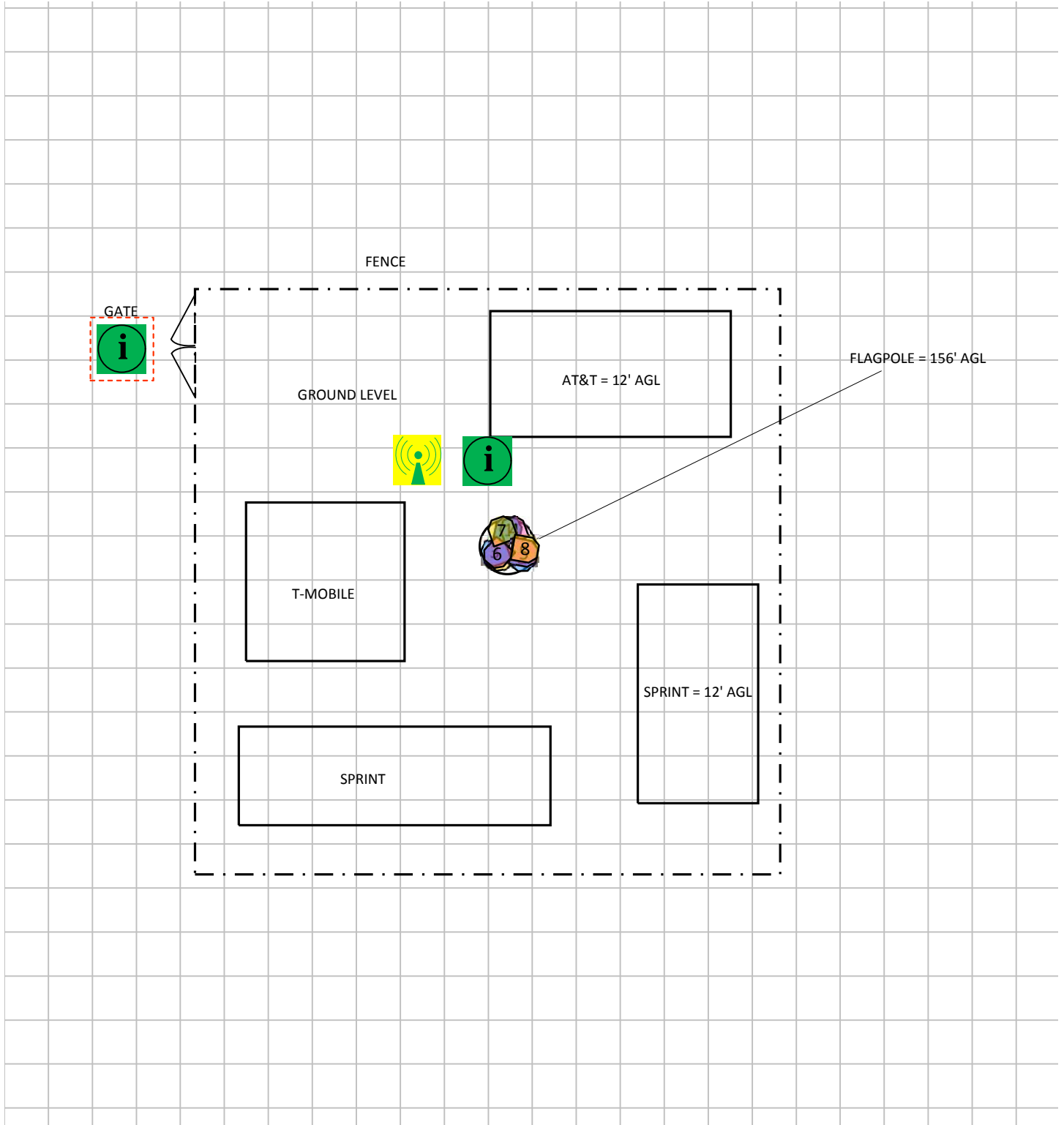
CD's: 10090928_AE201_171110_CTL01119_Rev 1_S&S

2 Scale Maps of Site

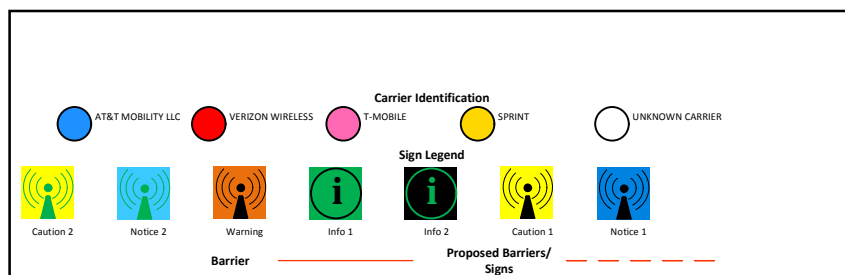
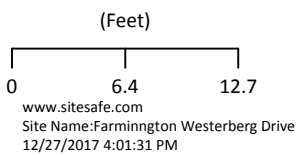
The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- AT&T Mobility, LLC Contribution
- Elevation View

Site Scale Map For: Farmington Westerberg Drive



% of FCC Public Exposure Limit
Spatial average 0' - 6'



3 Antenna Inventory

The following antenna inventory on this and the following page, were obtained by the customer and were utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	2G GSM Radio(s)	3G UMTS Radio(s)	4G Radio(s)	Total ERP (Watts)	X	Y	Z (AGL)
1	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	850	30	63	8	13.56	0	1	0	676.1	57.9'	88.5'	135'
1	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	1900	30	68.2	8	13.86	0	1	0	659.2	57.9'	88.5'	135'
1	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2100	30	65.2	8	13.96	0	0	1	3837.1	57.9'	88.5'	135'
1	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	737	30	61.9	8	13.56	0	0	1	1475.7	57.9'	88.5'	135'
1	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	1900	30	68.2	8	13.86	0	0	1	3664.4	57.9'	88.5'	135'
1	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	30	65	8	14.36	0	0	1	1285.3	57.9'	88.5'	135'
2	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	850	150	63	8	13.56	0	1	0	676.1	59.1'	86.2'	135'
2	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	1900	150	68.2	8	13.86	0	1	0	659.2	59.1'	86.2'	135'
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2100	150	65.2	8	13.96	0	0	1	3837.1	59.1'	86.2'	135'
2	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	737	150	61.9	8	13.56	0	0	1	1475.7	59.1'	86.2'	135'
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	1900	150	68.2	8	13.86	0	0	1	3664.4	59.1'	86.2'	135'
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	150	65	8	14.36	0	0	1	1285.3	59.1'	86.2'	135'
3	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	850	270	63	8	13.56	0	1	0	676.1	56.8'	86.7'	135'
3	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	1900	270	68.2	8	13.86	0	1	0	659.2	56.8'	86.7'	135'
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2100	270	65.2	8	13.96	0	0	1	3738.1	56.8'	86.7'	135'
3	AT&T MOBILITY LLC	CCI Antennas TPA-65R-LCUUUU-H8	Panel	737	270	61.9	8	13.56	0	0	1	1475.7	56.8'	86.7'	135'
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	1900	270	68.2	8	13.86	0	0	1	3664.4	56.8'	86.7'	135'
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	270	65	8	14.36	0	0	1	1285.3	56.8'	86.7'	135'
4	T-MOBILE	Generic 4 Ft./65 Deg.	Panel	1900	0	65	4.6	15.43	-	-	-	2094.8	58.4'	88.5'	142.7'
5	T-MOBILE	Generic 4 Ft./65 Deg.	Panel	1900	120	65	4.6	15.43	-	-	-	2094.8	59.3'	86.6'	142.7'
6	T-MOBILE	Generic 4 Ft./65 Deg.	Panel	1900	240	65	4.6	15.43	-	-	-	2094.8	57'	86.5'	142.7'
7	SPRINT	Generic 4 Ft./65 Deg.	Panel	1900	0	65	4.6	15.43	-	-	-	2094.8	57.4'	88.5'	130.7'
8	SPRINT	Generic 4 Ft./65 Deg.	Panel	1900	120	65	4.6	15.43	-	-	-	2094.8	59.4'	86.9'	130.7'
9	SPRINT	Generic 4 Ft./65 Deg.	Panel	1900	240	65	4.6	15.43	-	-	-	2094.8	57.2'	86.2'	130.7'

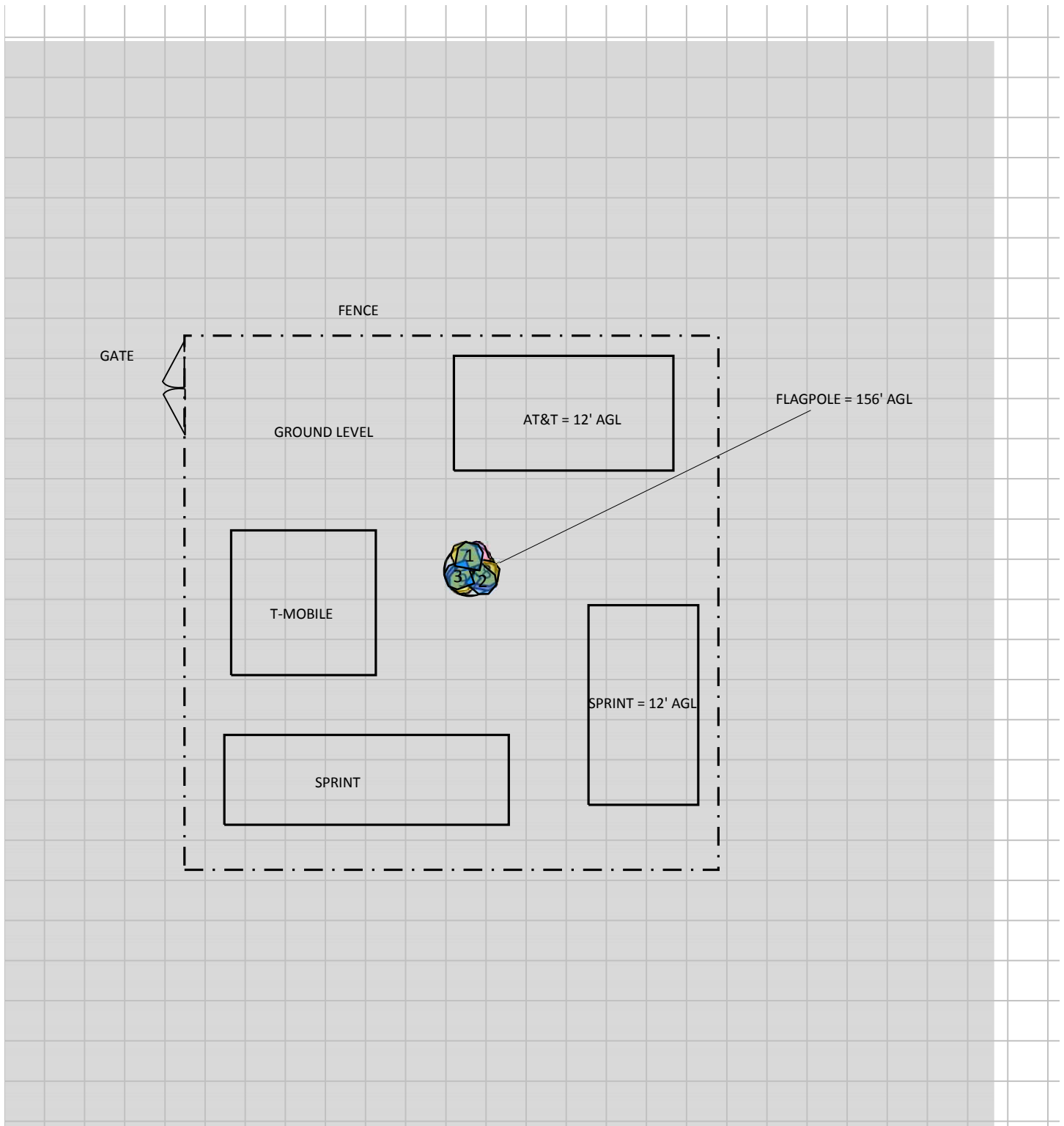
NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. The distance to the bottom of the antenna is calculated by subtracting half of the length of the antenna from the antenna centerline. Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

4 Emission Predictions

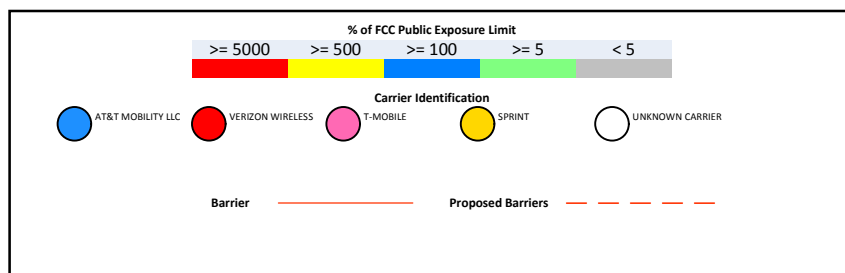
In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas.

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: Farmington Westerberg Drive



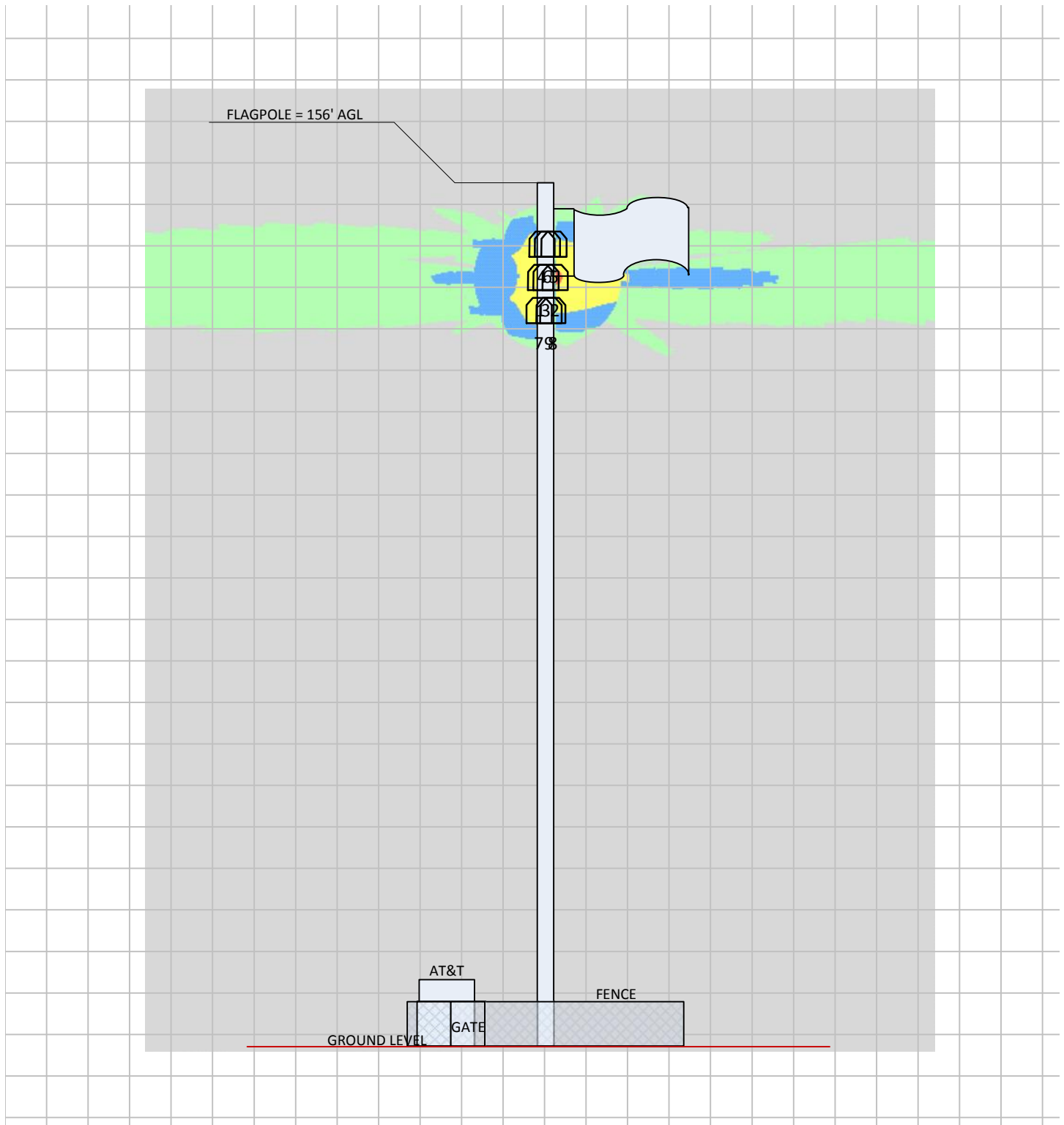
% of FCC Public Exposure Limit
Spatial average 0' - 6'



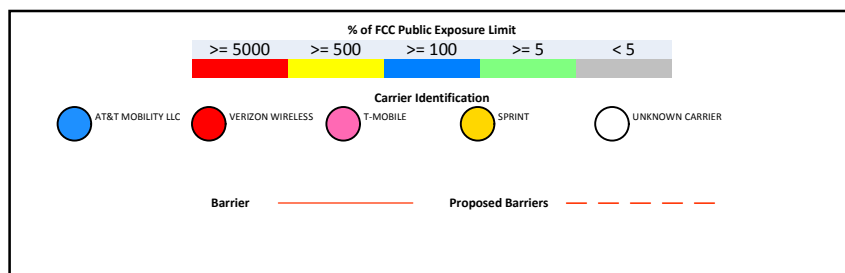
(Feet)
0 6.6 13.1
www.sitesafe.com
Site Name: Farmington Westerberg Drive
12/27/2017 3:50:38 PM

SitesafeTC Version: 1.0.0.0 - 0.0.0.266
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: Farmington Westerberg Drive Elevation View



% of FCC Public Exposure Limit
Spatial average 0' - 6'



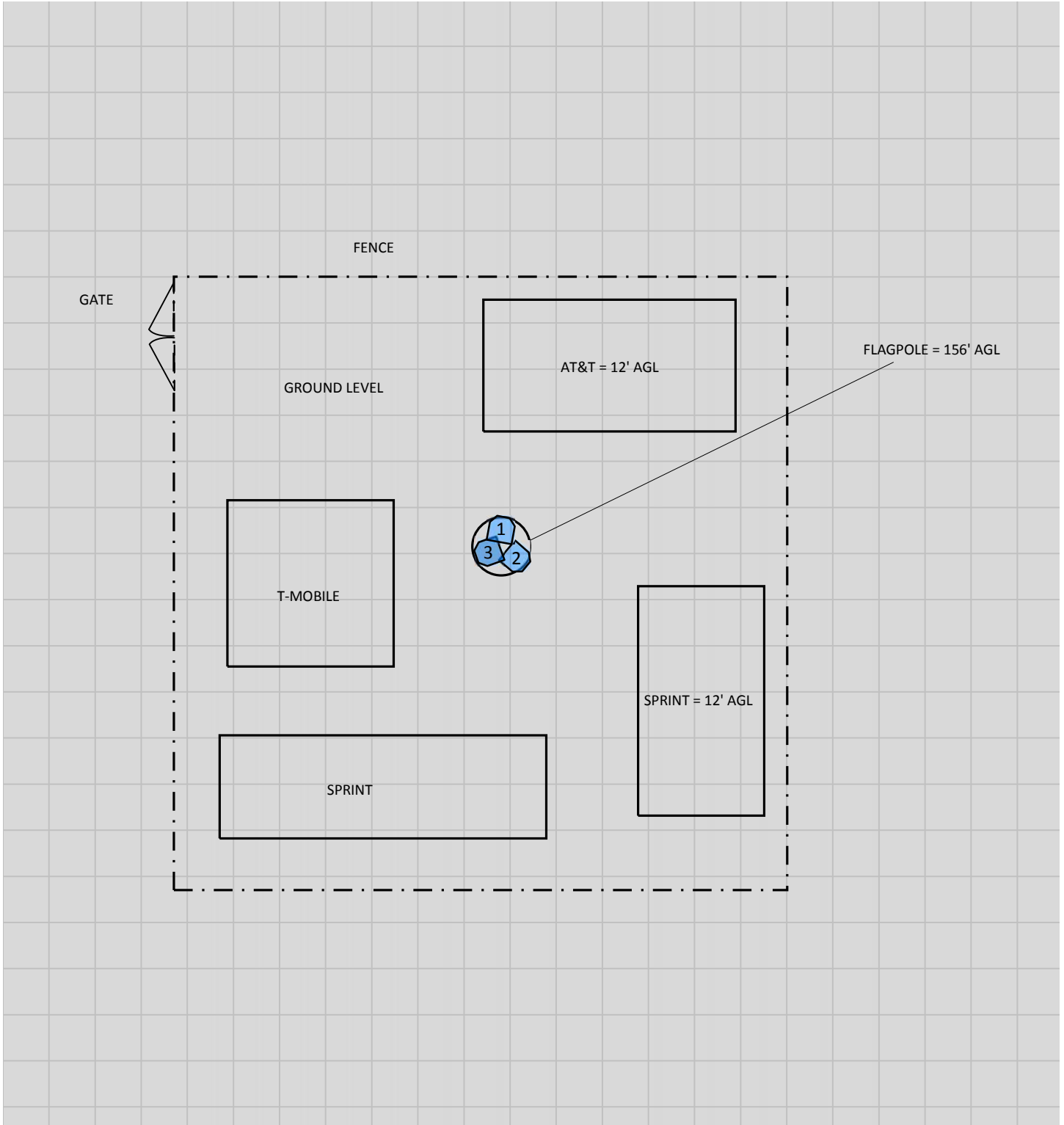
(Feet)

0 13.5 27

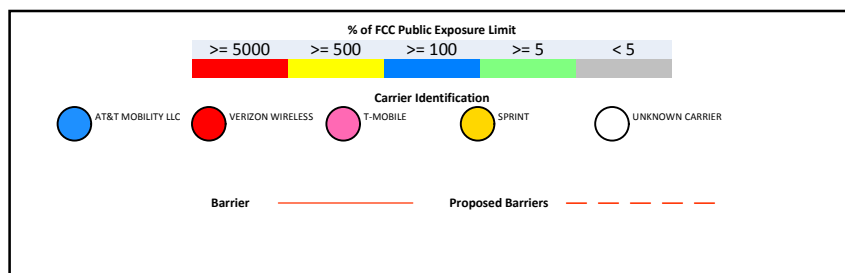
www.sitesafe.com
Site Name: Farmington Westerberg Drive
12/27/2017 4:00:03 PM

SitesafeTC Version: 1.0.0.0 - 0.0.0.266
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Single Level (0)

RF Exposure Simulation For: Farmington Westerberg Drive AT&T Mobility, LLC Contribution



% of FCC Public Exposure Limit
Spatial average 0' - 6'



(Feet)

0 6.1 12.2

www.sitesafe.com
Site Name: Farmington Westerberg Drive
12/27/2017 3:51:33 PM

SitesafeTC Version: 1.0.0.0 - 0.0.0.266
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Gate Location

Information 1 sign required.

6 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Sitesafe, Inc., in Arlington, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio-frequency Radiation; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Sam Cosgrove.

December 27, 2017

Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 (“OET Bulletin 65”), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

FCC regulations define two separate tiers of exposure limits: Occupational or “Controlled environment” and General Public or “Uncontrolled environment”. The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

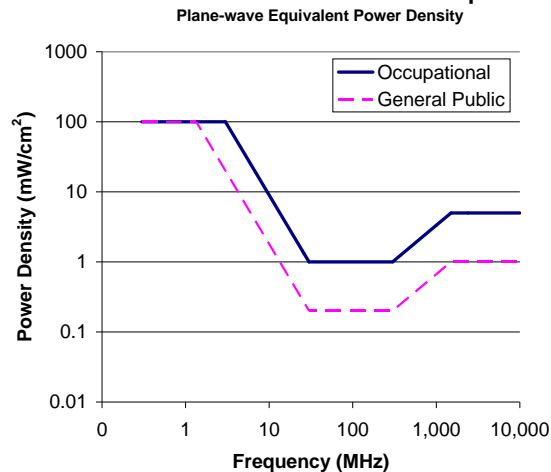
Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:

FCC Limits for Maximum Permissible Exposure (MPE)



Limits for Occupational/Controlled Exposure (MPE)

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

Limits for General Population/Uncontrolled Exposure (MPE)

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

f = frequency in MHz

*Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

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

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

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lock Out Tag Out procedure aimed to control the unexpected energization or start up of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3 foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram: Section 4 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. **Gray represents areas more than 20 times below the most conservative exposure limit.**
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone.**
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers.**
- Yellow represents areas predicted to exceed Occupational MPE limits. **Yellow areas should be accessible only to RF trained workers able to assess current exposure levels.**
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur, but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.

Gain (of an antenna) – The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antennas as compared to an omni directional antenna.

General Population/Uncontrolled Environment – Defined by the FCC, as an area where exposure to RF energy may occur to persons who are **unaware** of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The maximum levels of RF exposure a person may be exposed to without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are **aware** of the

potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of Radio Frequency radiation on Humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency (RF) – The frequencies of electromagnetic waves which are used for radio communications. Approximately 3 kHz to 300 GHz.

Radio Frequency Exposure (RFE) – The amount of RF power density that a person is or might be exposed to.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average power density an average sized human will be exposed to at a location.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.

Appendix F – References

The following references can be followed for further information about RF Health and Safety.

Sitesafe, Inc.

<http://www.sitesafe.com>

FCC Radio Frequency Safety

<http://www.fcc.gov/encyclopedia/radio-frequency-safety>

National Council on Radiation Protection and Measurements (NCRP)

<http://www.ncrponline.org>

Institute of Electrical and Electronics Engineers, Inc., (IEEE)

<http://www.ieee.org>

American National Standards Institute (ANSI)

<http://www.ansi.org>

Environmental Protection Agency (EPA)

<http://www.epa.gov/radtown/wireless-tech.html>

National Institutes of Health (NIH)

<http://www.niehs.nih.gov/health/topics/agents/emf/>

Occupational Safety and Health Agency (OSHA)

<http://www.osha.gov/SLTC/radiofrequencyradiation/>

International Commission on Non-Ionizing Radiation Protection (ICNIRP)

<http://www.icnirp.org>

World Health Organization (WHO)

<http://www.who.int/peh-emf/en/>

National Cancer Institute

<http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>

American Cancer Society (ACS)

http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?sitearea=PED

European Commission Scientific Committee on Emerging and Newly Identified Health Risks

http://ec.europa.eu/health/ph_risk/committees/04_scenihp/docs/scenihp_o_022.pdf

Fairfax County, Virginia Public School Survey

<http://www.fcps.edu/fts/safety-security/RFEESurvey/>

UK Health Protection Agency Advisory Group on Non-ionising Radiation

http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368

Norwegian Institute of Public Health

<http://www.fhi.no/dokumenter/545eea7147.pdf>