



1/23/2018

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

Regarding: Notice of Exempt Modification – Antenna Swap
Property Address: 131 Little City Road, Killingworth, CT
AT&T Site: CTL02016 / FA: 10035445

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 on an existing monopole at the above-referenced address. American Towers LLC c/o American Tower, Inc., owns said facility. The site consists of nine (9) wireless telecommunication antennas at an antenna centerline height of 276-feet on an existing 302 -foot monopole tower. AT&T now intends to remove (3) Powerwave panel antennas on position 4 all sectors, while retaining three (3) Powerwave 7770 panel antennas on position 1, all sectors; (2) AM-X-CD-16-65-00T-RET; and one (1) AM-X-CD-17-65-00T-RET. AT&T plans to install two (2) new QS66512-2 on position 2 all sectors and one (1) TPA-65R-LCUUUU-H8 (for a total of (9) panel antennas), at the 276-foot level. AT&T also intends to install three (3) RRU-32 B2, three (3) RRUS-32, and (1) DC/Fiber Surge suppression dome on the existing antenna masts.

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 Catherine Iino, First Selectman of the Town of Killingworth; Cathie S. Jefferson, Zoning Enforcement Officer of the Town of Killingworth, and American Tower, Inc., Property and Tower Owner.

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 115-foot level of the 125-foot monopole.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require an extension of the site boundary.
3. The proposed 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.
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).

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,

Ryan Lynch
Real Estate Specialist | Smartlink, LLC
85 Rangeway Road, Building 3, Suite 102
North Billerica, MA 01862

Enclosures

CC w/ enclosures:

Catherine Iino, First Selectman of the Town of Killingworth,
Cathie S. Jefferson, Zoning Enforcement Officer of the Town of Killingworth,
American Tower, Inc., Property and Tower Owner

Ryan Lynch

From: TrackingUpdates@fedex.com
Sent: Wednesday, January 17, 2018 10:23 AM
To: Ryan Lynch
Subject: FedEx Shipment 771218617229 Delivered

Your package has been delivered

Tracking # 771218617229

Ship date:
Tue, 1/16/2018

Ryan Lynch
Smartlink LLC
North Billerica, MA 01862
US



Delivery date:
Wed, 1/17/2018 10:20
am

ATTN: Cathie S. Jefferson
Town of Killingworth
323 Route 81
KILLINGWORTH, CT 06419
US



Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	771218617229
Status:	Delivered: 01/17/2018 10:20 AM Signed for By: DENISE
Signed for by:	DENISE
Delivery location:	Killingworth, CT
Service type:	FedEx Ground
Packaging type:	Package
Number of pieces:	1
Weight:	1.00 lb.
Standard transit:	1/17/2018

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Thank you for your business.

Ryan Lynch

From: TrackingUpdates@fedex.com
Sent: Wednesday, January 17, 2018 10:23 AM
To: Ryan Lynch
Subject: FedEx Shipment 771218569392 Delivered

Your package has been delivered

Tracking # 771218569392

Ship date:
Tue, 1/16/2018

Ryan Lynch
Smartlink LLC
North Billerica, MA 01862
US



Delivery date:
Wed, 1/17/2018 10:20
am

**Catherine lino, 1st
Selectwoman**
Town of Killingworth
323 Route 81
KILLINGWORTH, CT 06419
US



Shipment Facts

Our records indicate that the following package has been delivered.

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Thank you for your business.

Tracking Number: 9505510019668016163086

Remove X

Expected Delivery on

THURSDAY

18 JANUARY
2018 ⓘ

by
8:00pm ⓘ

Status

 **Delivered**

January 18, 2018 at 12:08 pm
DELIVERED, FRONT DESK/RECEPTION
WOBURN, MA 01801

Get Updates 

Delivered

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Tracking History 

Product Information 

See Less 

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2016.



Information on the Property Records for the Municipality of Killingworth was last updated on 11/25/2017.

Parcel Information

Location:	133 LITTLE CITY ROAD	Property Use:	Industrial	Primary Use:	Utility Building
Unique ID:	00042100	Map Block Lot:	06-11A	Acres:	4.00
490 Acres:	0.00	Zone:	R-2	Volume / Page:	0159/0722
Developers Map / Lot:		Census:	6401		

Value Information

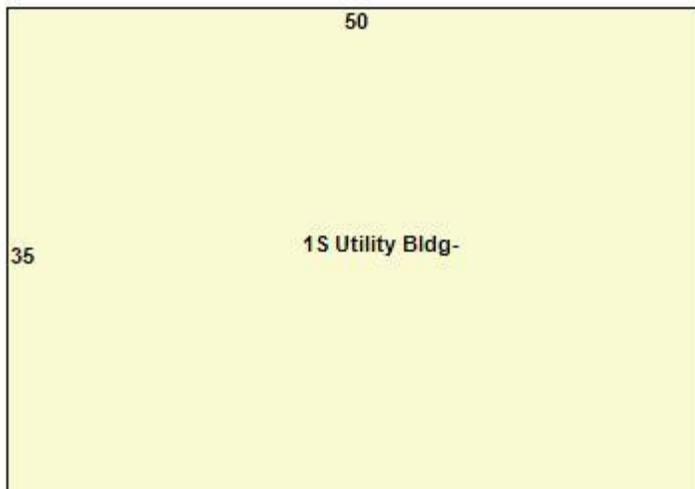
	Appraised Value	70% Assessed Value
Land	479,400	335,580
Buildings	99,711	69,800
Detached Outbuildings	227,557	159,290
Total	806,668	564,670

Owner's Information

Owner's Data

AMERICAN TOWERS INC
AMERICAN TOWERS CORPORATION
PO BOX 723597 SITE 88013
ATLANTA, GA 31139

Building 1



Category:	Industrial	Use:	Utility Building	GLA:	1,750
Stories:	1.00	Construction:	Good	Year Built:	1960
Heating:		Fuel:		Cooling Percent:	100%

Siding:	Pre-Cast Concrete	Roof Material:		Beds/Units:	0
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Special Features

Attached Components

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Fencing	1960	270	6	1,620
Paving	1960			2,000
Masonry Shed	1960	12	30	360
Radio Tower	1960			1

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
AMERICAN TOWERS INC	0159	0722	02/16/2000	Warranty Deed	Yes	\$243,058

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
13-169	Electrical	07/17/2013		Closed	STANDBY GENERATOR FOR CELL TOWER
13-086	Renovation	05/07/2013		Closed	CELL TOWER MODIFICATIONS
13-076	Renovation	04/11/2013		Closed	CELL TOWER MODIFICATIONS
12-117	Building	04/27/2012		Closed	REPLACE ALL 12 EXISTING ANTENNAS ON TOWER, REMOVE HORNS & REINFORCE TOWER FOUNDATION



1/3/2018

Memo: No Initial Zoning Decision Found

Upon consulting with Cathie Jefferson, Zoning Enforcement Officer for the Town of Killingworth, it was determined that no initial zoning decision for this tower could be found.

Ryan Lynch
Real Estate Specialist | Smartlink, LLC
85 Rangeway Road, Building 3, Suite 102
North Billerica, MA 01862



SITE SAFE
RF COMPLIANCE EXPERTS

®

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**SmartLink, LLC on behalf of AT&T
Mobility, LLC**

Site FA – 10035445

**Site ID – CT2016 (MRCTB025398-
MRCTB025390)**

USID – 59446

**Site Name – Killingworth - Little
City Road**

Site Compliance Report

**131 Little City Road
Killingworth, CT 06419**

Latitude: N41-25-43.57
Longitude: W72-36-13.74
Structure Type: Self-Support

Report generated date: November 17, 2017
Report by: Michelle Stone
Customer Contact: Ryan Lynch

**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?	No
RF Sign(s) @ access point(s)	None
RF Sign(s) @ antennas	None
Barrier(s) @ sectors	N/A
Max cumulative simulated RFE level on the Ground	<1% General Public Limit
FCC & AT&T Compliant?	Will Be Compliant

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

RFDS: NEW-ENGLAND_CONNECTICUT_CTL02016_2018-LTE-Multi-Carrier_LTE_sp656b_2051A0D6QG_10035445_59446_06-21-2017_Final-Approved_v2.00

CD's: 10035445_AE201_171025_CTL02016_REV1

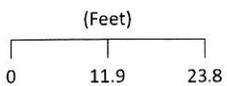
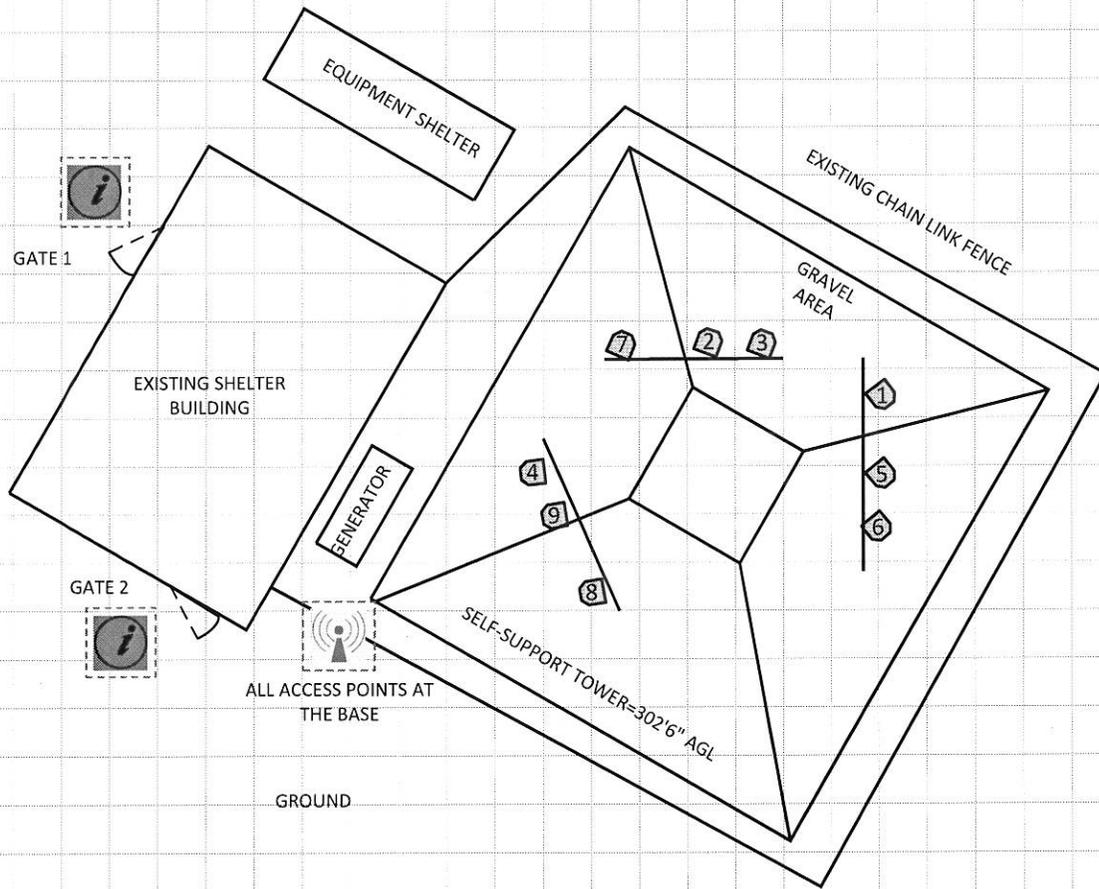
RF Powers Used: AT&T Engineering Defaults

2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- Elevation View

Site Scale Map For: Killingworth - Little City Road



www.sitesafe.com
 Site Name: Killingworth - Little City Road
 11/17/2017 3:42:09 PM

Carrier Identification				
Sign Legend				
Barrier		Proposed Barriers/ Signs		



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	Powerwave 7770	Panel	850	143	82	4.6	11.51	0	2	0	1132.6	137.7'	149.9'	273.7'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS46512-2	Panel	1900	20	68	4.3	13.15	0	0	1	1239.2	116.3'	157'	273.8'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS46512-2	Panel	2300	20	60	4.3	14.05	0	0	1	1524.6	116.3'	157'	273.8'
3	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	20	65	6	13.36	0	0	1	1300.6	123.3'	156.8'	273'
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	263	82	4.6	11.51	0	2	0	1132.6	93.3'	140'	273.7'
5	AT&T MOBILITY LLC (Proposed)	Quintel QS46512-2	Panel	1900	140	68	4.3	13.15	0	0	1	1239.2	138.9'	139.7'	273.8'
5	AT&T MOBILITY LLC (Proposed)	Quintel QS46512-2	Panel	2300	140	60	4.3	14.05	0	0	1	1524.6	138.9'	139.7'	273.8'
6	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	140	65	6	13.36	0	0	1	1300.6	138.3'	132.8'	273'
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	23	82	4.6	11.51	0	2	0	1132.6	104.9'	157.8'	273.7'
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	1900	260	68.2	8	13.86	0	0	1	1459.3	101'	124.5'	272'
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas TPA-65R-LCUUUU-H8	Panel	2300	260	65	8	14.36	0	0	1	1637.4	101'	124.5'	272'
9	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	260	65	6	13.36	0	0	1	1300.6	96.1'	134.4'	273'

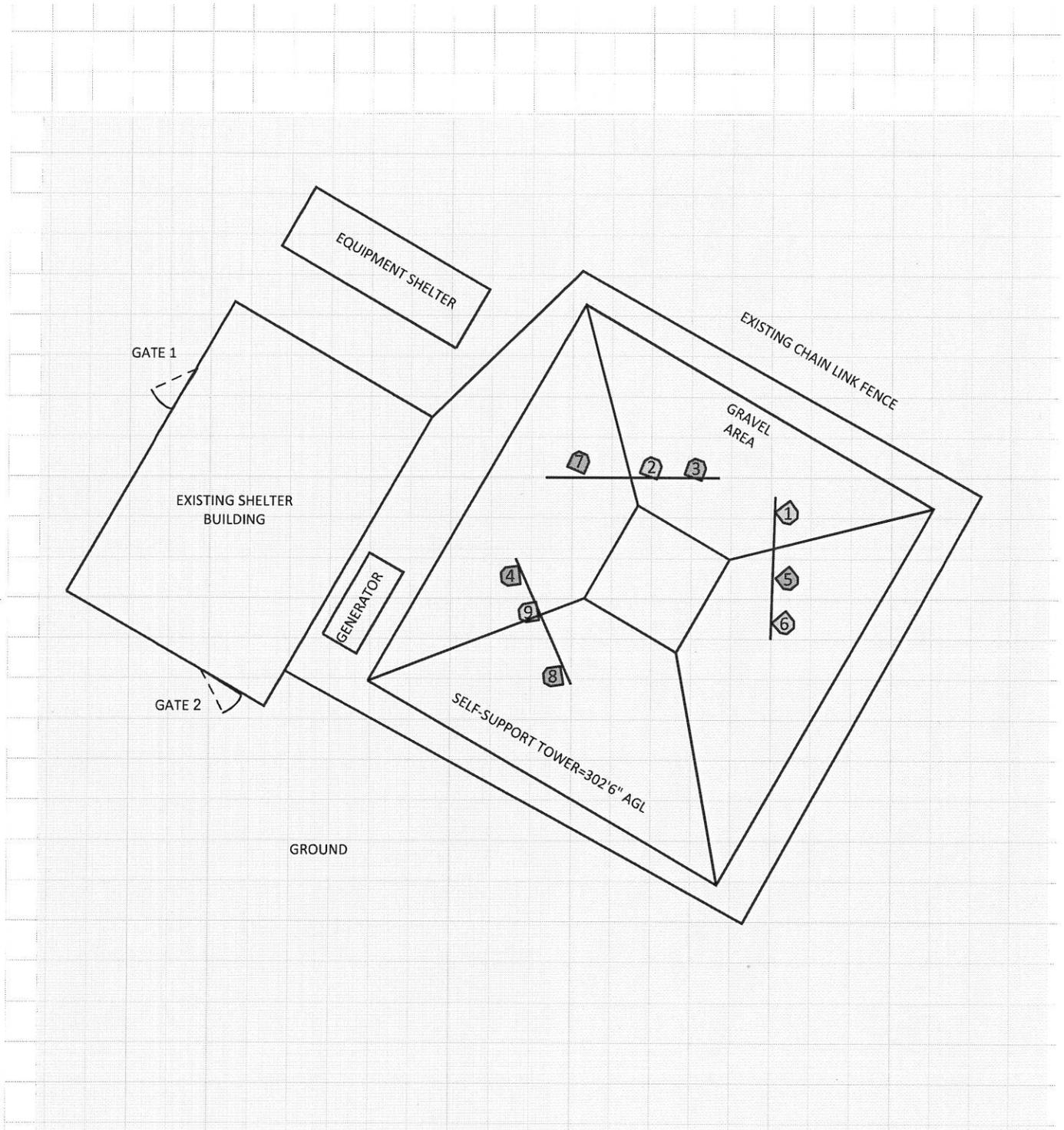
NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. The distance to the bottom 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

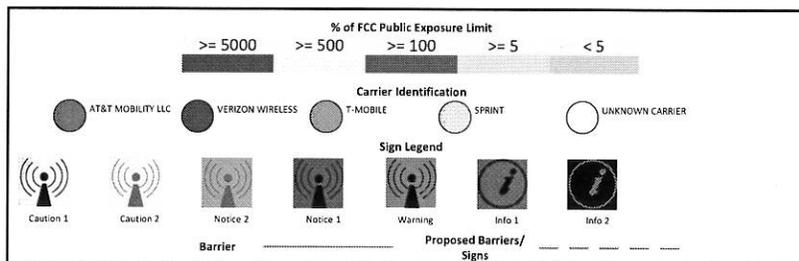
In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main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

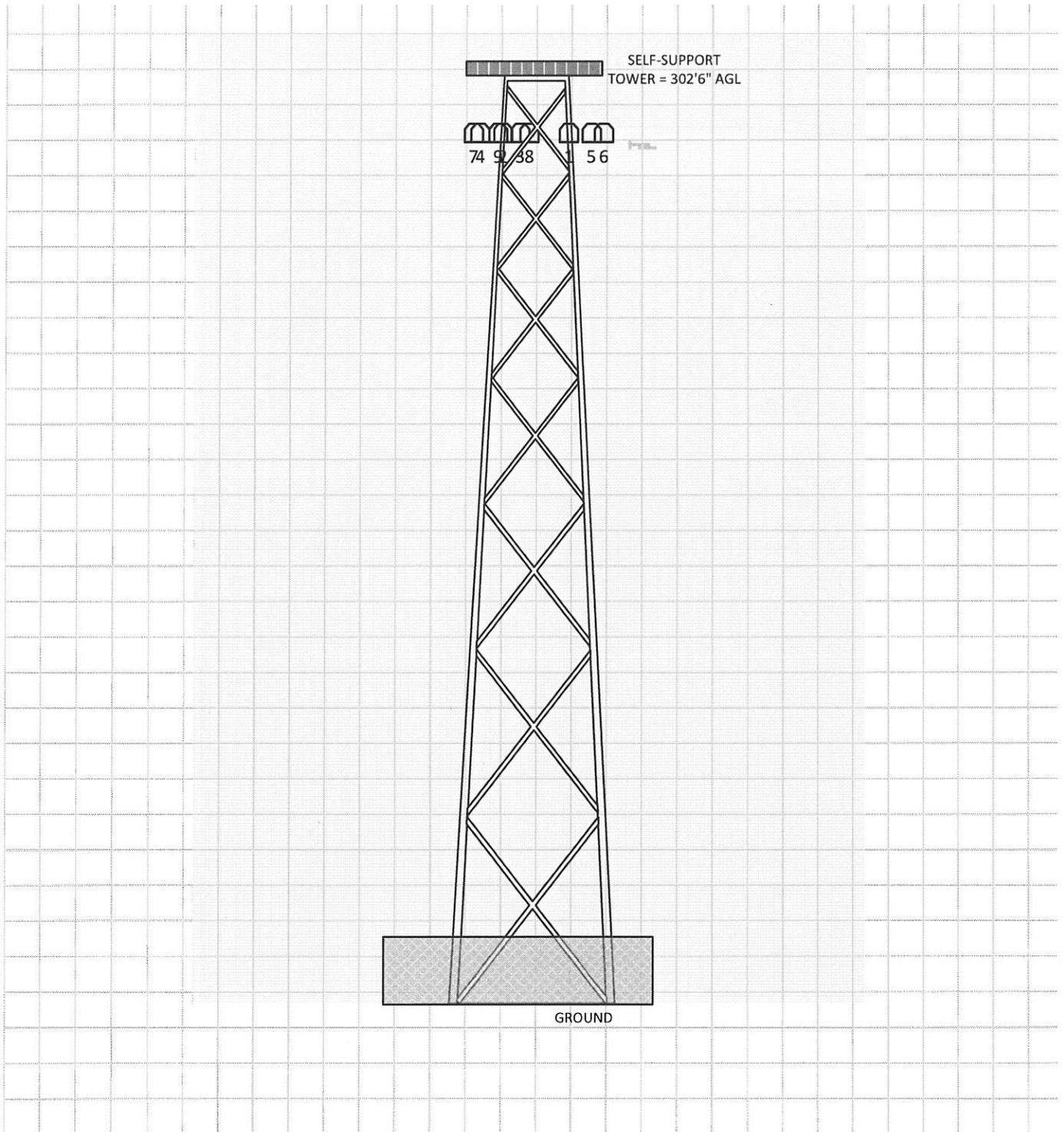
RF Exposure Simulation For: Killingworth - Little City Road



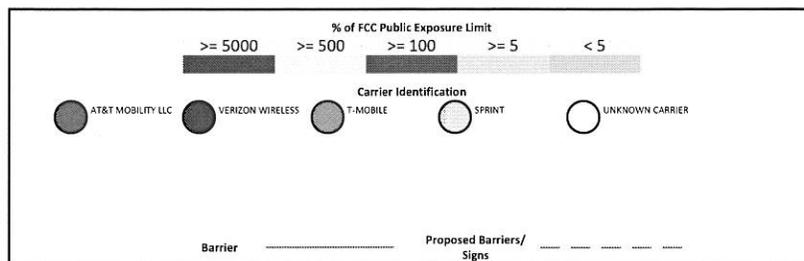
% of FCC Public Exposure Limit
Spatial average 0' - 6'



RF Exposure Simulation For: Killingworth - Little City Road Elevation View



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



(Feet)
0 23.8 47.5
www.sitesafe.com
Site Name: Killingworth - Little City Road
11/17/2017 3:47:55 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)



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:

All Site Access Gate(s)

Information 1 sign(s) required.

All Access Points at the Tower Base

Yellow Caution 2 sign(s) 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 Michelle Stone.

November 17, 2017

Dipesh Patel



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.

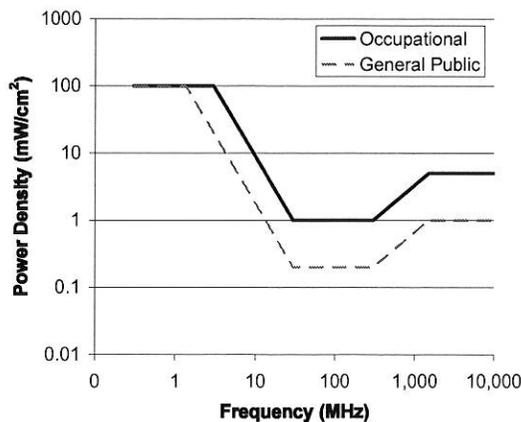
Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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)
Plane-wave Equivalent Power Density



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>



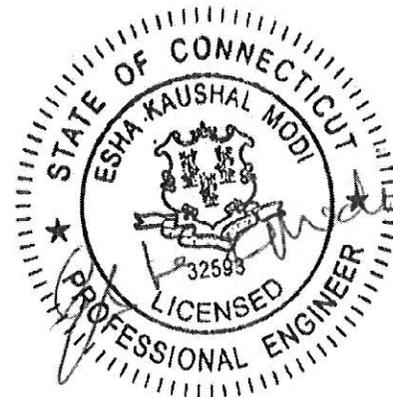
AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 302.5 ft Self Supported Tower
ATC Site Name : Killingworth, CT
ATC Site Number : 88013
Engineering Number : OAA712919_C3_01
Proposed Carrier : AT&T Mobility
Carrier Site Name : Killingworth Little City Road
Carrier Site Number : CTL02016 / 10035445
Site Location : Little City Road
Killingworth, CT 06419-1014
41.428800,-72.603800
County : Middlesex
Date : September 25, 2017
Max Usage : 95%
Result : Pass

Prepared By:
Annika A. Venning, E.I.
Structural Engineer I

Reviewed By:



Sep 27 2017 5:22 PM cosign

COA: PEC.0001553



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 302.5 ft self supported tower to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	Mapping by TEP Job #080167, dated February 1, 2008
Foundation Drawing	Mapping by Geotel Report #E08-150-F, dated February 20, 2008
Geotechnical Report	Geotel Report #E08-150-G, dated February 20, 2008
Modifications	ATC Project #50481632, dated November 12, 2012

Analysis

The tower was analyzed using Power Line System's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	100mph (3-Second Gust, Vasd) / 128 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



Existing and Reserved Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
272.0	272.0	6	LGP LGP21903	Sector Frame	(2) 0.76" 8 AWG 6 (12) 1 5/8" Coax (1) 0.39" Fiber Trunk	AT&T Mobility
		1	Raycap DC6-48-60-18-8F.			
		6	Powerwave LGP17201			
		3	Ericsson RRUS-11			
		3	Powerwave 7770.00			
		2	KMW AM-X-CD-16-65-00T-RET			
		1	Powerwave P65-17-XLH-RR			
259.0	259.0	6	Swedcom ALP 9011-DIN	Sector Frame	(6) 1 5/8" Coax	Sprint Nextel
191.0	191.0	1	Empty Mount	Platform w/ Handrails	-	--
171.0	171.0	6	RFS FD9R6004/2C-3L	Sector Frame	(2) 1 5/8" Hybriflex	Verizon
		3	Nokia B5 RRH4x40-850			
		3	Alcatel-Lucent RRH2X60-AWS			
		3	Alcatel-Lucent RRH2X60-1900			
		2	Raycap RC3DC-3315-PF-48			
		6	Antel LPA-80080/6CF			
		6	Commscope JAHH-65B-R3B			
145.0	145.0	6	TTA	Leg	(6) 1 5/8" Coax	Other
		3	36" x 6" Panel			

Equipment to be Removed

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
272.0	272.0	3	Powerwave 7770.00	-	-	AT&T Mobility

Proposed Equipment

Elevation ¹ (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
272.0	272.0	3	Kaelus DBC0061F1V51-2	Sector Frame	(2) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk (1) 3" conduit	AT&T Mobility
		1	Raycap DC6-48-60-18-8F			
		3	Ericsson RRUS 32 B2			
		3	Ericsson RRUS-32			
		2	Quintel QS66512-2			
		1	KMW AM-X-CD-17-65-00T-RET			
		1	CCI TPA-65R-LCUUUU-H8			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax stacked on top of existing AT&T Mobility coax.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	83%	Pass
Diagonals	94%	Pass
Lower Diagonals	69%	Pass
Horizontals	50%	Pass
Lower Horizontals	70%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	215.0	95%
Axial (Kips)	367.1	51%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.



Standard Conditions

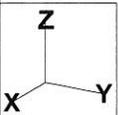
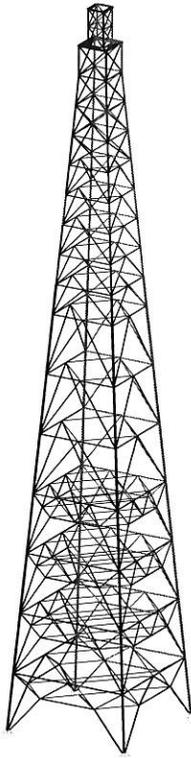
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Project Name : 98213 - Killingsworth, CT
 Project Notes:
 Project File : n:\12 - AT&T\001\2017.09.25 - AT&T - OAA712919\2017.09.25 - AT&T - OAA712919.txd
 Date run : 11:00:35 PM Monday, September 29, 2017
 By : Tower Version 14.00
 Licensed to : American Tower Corp.

Successfully performed nonlinear analysis

Member check option: ANSI/TIA 222-G-1
 Connection rupture check: Not Checked
 Crossing diagonal check: Fixed
 Included angle check: None
 Climbing load check: None
 Redundant members checked with Actual Force
 Loads from file: n:\12 - AT&T\001\2017.09.25 - AT&T - OAA712919\2017.09.25 - AT&T - OAA712919.txd

*** Analysis Results

Maximum element usage is 94.34% for Angle "D 9X" in Load case "W -90"

Summary of Joint Support Reactions For All Load Cases:

Load Case	Joint	Label	Long. Force (kips)	Tran. Force (kips)	Vert. Force (kips)	Shear Force (ft-k)	Tran. Moment (ft-k)	Long. Moment (ft-k)	Bending Moment (ft-k)	Vert. Moment (ft-k)	Found. Usage %
W 0	OP	39.73	-26.38	-260.36	47.71	-2.63	-1.78	1.89	-2.19	0.00	
W 0	OX	38.78	26.67	-261.33	47.03	3.54	-1.73	1.81	-2.18	0.00	
W 0	OXY	-10.77	120.32	25.61	4.41	0.81	0.88	-2.07	0.00	0.00	
W 0	OY	-23.76	10.48	120.00	25.97	-0.99	-1.97	2.93	-2.06	0.00	
W 180	OP	23.82	9.86	121.40	25.78	-0.98	-1.97	3.02	-2.09	0.00	
W 180	OX	-17.17	-10.02	-119.09	-25.25	0.45	0.91	2.87	-2.50	0.00	
W 180	OXY	36.72	25.92	-257.56	46.59	0.55	1.32	1.90	-2.21	0.00	
W 180	OY	39.89	-25.76	-261.76	47.41	-0.63	-1.99	1.99	-2.22	0.00	
W 45	OP	45.28	-16.12	-369.05	44.73	1.22	-1.0	1.64	-0.51	0.00	
W 45	OX	-17.77	-2.19	-72.41	17.91	2.33	-1.17	2.61	3.16	0.00	
W 45	OXY	-79.70	-79.22	215.30	41.67	2.17	-2.32	3.24	-0.91	0.00	
W 45	OY	-71.78	-1.83	-67.18	16.92	1.12	-2.22	2.49	-3.16	0.00	
W -45	OP	-18.51	2.42	-75.92	18.66	-2.00	-1.22	2.89	-3.17	0.00	
W -45	OX	-44.55	46.44	-363.53	44.36	-1.29	-1.06	1.67	-0.92	0.00	
W -45	OXY	-1.42	16.61	-166.83	35.67	-1.11	-1.18	2.44	3.16	0.00	
W -45	OY	-29.99	29.00	214.04	41.72	-2.26	-2.36	3.27	0.02	0.00	
W 90	OP	-25.97	-40.90	-270.91	46.37	1.88	0.71	2.01	2.21	0.00	
W 90	OX	13.08	-13.36	117.92	26.36	-0.62	1.77	3.02	-2.00	0.00	
W 90	OXY	-13.72	-22.63	112.78	25.04	2.79	-0.63	2.86	-2.08	0.00	
W 90	OY	46.62	-37.72	-257.04	46.17	1.70	-0.45	1.76	-2.18	0.00	
W 90	OP	8.97	24.42	125.95	26.36	-2.99	0.56	3.05	-2.07	0.00	
W 90	OX	-19.80	-16.86	-168.93	49.33	-1.92	0.71	2.58	-2.22	0.00	
W 90	OXY	26.33	37.96	-254.54	45.96	-1.72	-0.46	1.78	-2.18	0.00	
W 90	OY	-10.43	22.87	115.28	24.97	-1.82	-0.62	2.88	-2.09	0.00	
W 0 Ice	OP	-17.17	-10.02	-119.09	-25.25	0.45	0.91	2.87	-2.50	0.00	
W 0 Ice	OX	16.81	14.36	159.50	22.11	2.12	1.66	2.70	0.49	0.00	
W 0 Ice	OXY	1.99	4.73	-61.56	5.13	2.15	-2.65	3.41	0.50	0.00	
W 0 Ice	OY	-1.42	16.61	-166.83	35.67	-1.11	-1.18	2.44	3.16	0.00	
W 180 Ice	OP	-2.10	-5.65	-72.43	6.03	-2.17	2.78	3.53	0.52	0.00	
W 180 Ice	OX	-2.07	5.59	-70.45	6.05	2.14	2.77	3.50	-0.53	0.00	
W 180 Ice	OXY	16.73	13.40	-150.43	21.44	-2.44	-1.94	2.64	0.54	0.00	
W 180 Ice	OY	17.25	-13.44	-153.97	21.87	-2.18	-1.52	2.86	0.54	0.00	
W 45 Ice	OP	-18.82	-19.27	-197.97	26.94	-1.73	1.80	2.90	0.01	0.00	
W 45 Ice	OX	-11.47	-14.23	-160.37	32.53	0.19	1.68	3.12	1.76	0.00	
W 45 Ice	OXY	0.19	0.04	-36.87	0.19	2.56	-2.93	3.60	-0.01	0.00	
W 45 Ice	OY	7.28	-11.43	-108.32	13.25	-1.76	-2.51	3.06	-0.76	0.00	
W 45 Ice	OP	-12.19	17.34	121.21	21.44	-2.44	-1.94	2.64	0.54	0.00	
W 45 Ice	OX	-18.51	19.39	-182.23	26.00	1.68	1.90	2.47	-1.02	0.00	
W 45 Ice	OXY	7.03	11.31	-101.52	13.32	1.73	-2.51	3.05	0.77	0.00	
W 45 Ice	OY	0.43	16.61	-166.83	35.67	-0.62	-1.77	3.02	-2.00	0.00	
W 90 Ice	OP	-13.60	-17.65	-162.90	22.46	-1.89	-1.23	2.74	0.53	0.00	
W 90 Ice	OX	-5.19	2.31	-69.47	5.68	2.71	2.20	3.45	0.49	0.00	
W 90 Ice	OXY	4.99	1.86	-61.90	5.32	2.69	-2.12	3.42	-0.52	0.00	
W 90 Ice	OY	-11.0	-16.34	-162.89	-1.98	-1.64	-0.77	2.54	-0.43	0.00	
W 90 Ice	OP	-5.19	-2.23	-71.90	5.83	-2.75	2.20	3.52	-0.50	0.00	
W 90 Ice	OX	-13.70	17.73	-160.47	22.46	1.85	2.23	2.72	-0.59	0.00	
W 90 Ice	OXY	11.74	-16.26	-158.89	21.28	-1.60	-2.08	2.63	0.50	0.00	
W 90 Ice	OY	2.35	-1.94	-65.01	5.69	-3.72	-2.11	3.44	0.53	0.00	

Summary of Joint Support Reactions For All Load Cases in Direction of Leg:

Load Case	Support	Origin	Leg Force In (kips)	Residual Shear (kips)	Perpendicular Horizontal (kips)	Residual Shear Horizontal (kips)	Residual Shear Vertical (kips)	Total Long. Force (kips)	Total Tran. Force (kips)	Total Vert. Force (kips)
W 0	OP	L 1P	196.664	20.125	20.227	19.205	-6.895	-38.73	26.67	-264.20
W 0	OX	L 1X	196.664	20.125	20.227	19.205	-6.895	-38.73	26.67	-264.20
W 0	OXY	L 1Y	-132.181	14.235	14.335	14.225	1.767	-23.23	-10.77	120.32
W 0	OY	L 1Y	-132.181	14.235	14.335	14.225	1.767	-23.23	-10.77	120.32
W 180	OP	L 1P	115.201	25.936	25.936	15.335	-1.369	23.82	9.86	113.40
W 180	OX	L 1X	-125.043	24.731	24.731	-14.699	1.551	23.17	-10.02	113.20
W 180	OXY	L 1Y	205.496	20.497	20.599	-19.476	-6.601	36.72	25.92	-257.04
W 180	OY	L 1Y	205.496	20.497	20.599	-19.476	-6.601	36.72	25.92	-257.04
W 45	OP	L 1P	37.821	25.718	25.862	17.812	-8.750	-45.28	-46.22	-367.05
W 45	OX	L 1X	73.163	14.505	14.513	12.353	7.611	-17.77	-2.19	-72.41
W 45	OXY	L 1Y	-219.891	18.804	18.908	13.609	13.128	-98.70	-39.22	215.00
W 45	OY	L 1Y	68.534	13.569	13.575	6.792	11.759	-1.71	-16.83	-67.78
W 45	OP	L 1P	76.699	15.264	15.268	14.825	-9.299	-18.51	2.42	-75.92
W 45	OX	L 1X	368.288	25.755	25.755	17.341	-19.231	-44.55	46.44	-363.53
W 45	OXY	L 1Y	67.585	13.261	13.267	6.422	-11.609	-1.42	16.61	-166.83
W 45	OY	L 1Y	-117.245	16.967	16.967	13.969	-12.978	-29.99	29.00	214.04
W 90	OP	L 1P	174.401	19.910	19.908	-13.919	18.485	26.62	-37.72	-257.04
W 90	OX	L 1X	-119.832	15.532	15.582	-1.249	15.532	15.08	-24.36	117.92
W 90	OXY	L 1Y	-119.605	13.899	13.947	1.903	13.916	-11.72	-22.63	112.78
W 90	OY	L 1Y	190.397	19.910	19.908	-13.919	18.485	26.62	-37.72	-257.04
W -45	OP	L 1P	-117.861	15.742	15.792	-1.233	-15.744	9.92	24.42	-115.95
W -45	OX	L 1X	172.401	21.405	21.496	5.681	-20.731	-25.81	40.86	-268.93
W -45	OXY	L 1Y	257.387	19.891	19.985	-7.282	-18.617	26.33	37.96	-254.54
W -45	OY	L 1Y	-117.396	14.010	14.059	1.606	-13.943	-10.43	22.87	115.28
W 0 Ice	OP	L 1P	163.804	5.410	5.435	5.022	2.048	-17.17	-22.23	-162.37
W 0 Ice	OX	L 1X	163.804	5.410	5.435	5.022	2.048	-17.17	-22.23	-162.37
W 0 Ice	OXY	L 1Y	61.521	4.601	4.608	4.605	-2.422	-16.03	14.36	-159.80
W 0 Ice	OY	L 1Y	61.521	4.601	4.608	4.605	-2.422	-16.03	14.36	-159.80
W 180 Ice	OP	L 1P	64.201	2.603	2.610	0.060	0.060	2.18	-4.85	-64.03
W 180 Ice	OX	L 1X	72.636	3.321	3.329	-3.321	0.229	-2.13	-5.65	-72.43
W 180 Ice	OXY	L 1Y	151.819	3.024	3.024	-3.024	-0.413	-2.07	5.69	-70.45
W 180 Ice	OY	L 1Y	155.399	6.013	6.045	-5.730	1.911	17.25	-13.44	-153.97
W 45 Ice	OP	L 1P	39.296	7.009	7.048	6.784	-5.009	-16.83	-19.27	-197.97
W 45 Ice	OX	L 1X	115.094	3.504	3.521	3.521	1.128	-11.83	7.43	-114.29
W 45 Ice	OXY	L 1Y	36.485	3.703	3.724	2.557	2.707	0.19	0.04	-36.67
W 45 Ice	OY	L 1Y	179.314	6.416	6.423	2.903	5.318	9.23	-11.43	-113.32
W 45 Ice	OP	L 1P	117.836	3.722	3.723	3.430	-1.448	-12.19	-7.31	-117.03
W 45 Ice	OX	L 1X	187.021	7.176	7.215	6.645	-5.521	-18.51	19.39	-182.23
W 45 Ice	OXY	L 1Y	39.296	3.517	3.522	0.965	-3.414	7.03	11.21	-105.25
W 45 Ice	OY	L 1Y	39.296	3.751	3.772	2.523	-2.803	0.43	-0.15	-39.47
W 90 Ice	OP	L 1P	164.347	5.690	5.715	1.702	5.455	-13.90	-17.65	-162.90
W 90 Ice	OX	L 1X	69.638	2.922	2.931	2.931	2.891	-5.19	2.31	-69.47
W 90 Ice	OXY	L 1Y	117.836	3.722	3.723	3.430	-1.448	-12.19	-7.31	-117.03
W 90 Ice	OY	L 1Y	154.407	5.529	5.587	-2.646	4.387	14.10	-16.34	-152.99
W 90 Ice	OP	L 1P	72.362	3.146	3.154	0.006	-3.124	-5.35	-2.23	-71.90
W 90 Ice	OX	L 1X	161.922	6.935	6.961	1.687	-5.717	-13.70	17.73	-160.47
W 90 Ice	OXY	L 1Y	151.277	5.606	5.634	-2.520	-5.239	13.74	16.26	-149.88
W 90 Ice	OY	L 1Y	65.193	2.957	2.962	0.482	-2.923	5.35	-1.94	-65.01

Overturning Moment Summary For All Load Cases:

Load Case	Transverse Moment (ft-k)	Longitudinal Moment (ft-k)	Resultant Moment (ft-k)
W 0	120.081	20738.380	20739.328
W 180	120.126	-20023.605	20023.366
W 45	15294.453	12742.422	12288.467
W -45	-15256.341	12742.422	12288.465
W 90	22491.219	368.237	20494.528
W -90	-22525.123	368.301	20254.572
W 0 Ice	149.734	5771.951	5274.919
W 180 Ice	149.742	-4333.734	4336.306
W 45 Ice	3899.745	4220.039	5746.020
W -45 Ice	-3899.744	4220.039	5746.017
W 90 Ice	4951.684	469.370	4973.852
W -90 Ice	-4654.135	469.369	4677.7

Horiz 12	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	14.03	Comp	6.22	H 23P	6.421	W 90	78.111	0.000	2.000	0.000	9.057	0	0.000
Horiz 13	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	3.70	Tens	3.70	H 25P	2.890	W 0	78.111	0.000	0.000	0.000	16.242	0	0.000
Horiz 14	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	2.95	Tens	2.95	H 27P	2.373	W 0	78.111	0.000	0.000	0.000	14.371	0	0.000
Horiz 15	B/B L3.5*3*30.3125"	DAL	3.5X3X3.31	33.0	0.93	Tens	0.93	H 30P	1.068	W 45	114.939	0.000	0.000	0.000	12.800	0	0.000
Horiz 16	C15x33.9	CHN	C15x33.9	33.0	1.96	Tens	1.96	H 31P	5.813	W 0	298.812	0.000	0.000	0.000	12.500	0	0.000
Horiz 17	B/B L2.5*2*20.25"	DAL	2.5X2X2.25	33.0	6.78	Comp	2.00	H 34K	91.32		83.261	0.000	0.000	0.000	7.300	0	0.000
Horiz 18	B/B L2.5*2*20.25"	DAL	2.5X2X2.25	33.0	2.09	Comp	2.00	H 30K	0.202		83.261	0.000	0.000	0.000	7.300	0	0.000
Horiz 19	C15x33.9	CHN	C15x33.9	33.0	0.19	Tens	0.19	H 37P	0.587	W 0	298.812	0.000	0.000	0.000	7.300	0	0.000
LD 1	B/B L3.5*3*30.3125"	DAL	3.5X3.3X3.31	33.0	49.42	Comp	14.51	LD 1Y	12.468	W +45	85.536	0.000	0.000	0.000	15.000	0	0.000
LD 2	B/B L3.5*3*30.3125"	DAL	3.5X3.3X3.31	33.0	33.11	Comp	14.02	LD 3E	29.390	W +90	209.382	0.000	0.000	0.000	15.000	0	0.000
LD 4	B/B L3.5*3*30.3125"	DAL	3.5X3.3X3.31	33.0	69.39	Comp	19.84	LD 5Y	14.021	W +45	70.696	0.000	0.000	0.000	12.757	0	0.000
LD 5	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	59.41	Comp	25.31	LD 9P	29.768	W +90	78.111	0.000	0.000	0.000	10.146	0	0.000
LD 6	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	66.72	Comp	32.93	LD 11K	25.722	W +90	78.111	0.000	0.000	0.000	11.361	0	0.000
LD 7	B/B L3.5*3*30.3125"	DAL	3.5X3X3.31	33.0	42.00	Comp	21.74	LD 14Y	18.756	W +45	63.261	0.000	0.000	0.000	12.141	0	0.000
LD 8	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	56.87	Comp	25.59	LD 15P	18.986	W +90	78.111	0.000	0.000	0.000	9.916	0	0.000
LD 9	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	41.57	Comp	32.33	LD 17K	25.252	W +90	78.111	0.000	0.000	0.000	12.948	0	0.000
LD 10	B/B L3.5*3*30.3125"	DAL	3.5X3X3.31	33.0	35.87	Comp	21.04	LD 20Y	13.435	W +45	63.261	0.000	0.000	0.000	11.552	0	0.000
LD 11	B/B L3*2.5*20.25"	DAL	3X2.5X3.25	33.0	56.91	Comp	25.50	LD 21P	18.982	W +90	78.111	0.000	0.000	0.000	9.699	0	0.000
LD 12	B/B L3.5*3*30.3125"	DAL	3.5X3.3X3.31	33.0	48.92	Comp	24.90	LD 23K	21.998	W +90	100.386	0.000	0.000	0.000	11.336	0	0.000
LD 13	B/B L3*3.5*30.3125"	DAS	3.5X3X3.31	33.0	24.29	Comp	5.73	LD 1Y	10.211	W 0	178.200	0.000	0.000	0.000	14.962	0	0.000
LD 14	B/B L3*3.5*30.3125"	DAS	3.5X3X3.31	33.0	70.00	Comp	25.63	LD 4Y	15.892	W +45	130.386	0.000	0.000	0.000	13.452	0	0.000
LD 15	B/B L3*3.5*30.3125"	DAS	3.5X3X3.31	33.0	27.68	Comp	13.11	LD 6Y	15.568	W +45	114.939	0.000	0.000	0.000	12.412	0	0.000
LD 16	B/B L3*3.5*30.3125"	DAS	3.5X3X3.31	33.0	59.94	Comp	15.15	LD 8Y	14.088	W +45	82.861	0.000	0.000	0.000	11.373	0	0.000
DUM 1	Dummy Bracing Member	DUM	0.1X0.1X1	36.0	0.20	0.00	0.00	BR 1IX	0.650	W +45	0.324	0.000	0.000	0.000	22.370	0	0.000

*** Maximum Stress Summary for Each Load Case

Summary of Maximum Usages by Load Case:

Load Case	Maximum Element Usage #	Element Label	Element Type
K 0	86.78	C 10P	Angle
W 180	90.57	C 10Y	Angle
W 45	83.47	L 2P	Angle
W +45	84.37	L 2X	Angle
W 90	92.56	D 9P	Angle
W -90	94.34	D 9X	Angle
W 0 Ice	38.09	L 1P	Angle
W 180 Ice	35.79	L 1Y	Angle
W 45 Ice	43.66	L 1P	Angle
W +45 Ice	42.90	L 1X	Angle
W 90 Ice	38.20	L 1P	Angle
W -90 Ice	37.51	L 1X	Angle

*** Weight of structure (lbs):
 Weight of Angles*Section DLF: 187722.3
 Total: 187722.3

*** End of Report

Site # 88013
Name: Killingsworth, CT

Engineer: AAV
Date: 09/25/17

Windspeed: No Ice: 100 mph
Carried AT&T Ice: 50 mph

Taper: -0.149698
FW @ Base: 53.667 ft

Taper Change: 275 ft
FW @ Top: 12.5 ft

Joint Label	Symmetry Code	X Coord. (ft)	Y Coord. (ft)	Z Coord. (ft)	X Disp. Rest.	Y Disp. Rest.	Z Disp. Rest.	X Rot. Rest.	Y Rot. Rest.	Z Rot. Rest.	# Vert	Drop (ft)	Height (ft)	Type	Count	Z-Elev. (ft)	FW (ft)	# Sub-Brace
0	XY-Symmetry	26.8335	26.8335	0	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	3	8.333	25	1	1	0	53.667	2
1	XY-Symmetry	24.96227273	24.96227273	25	Free	Free	Free	Free	Free	Free	1	8.333	25	2	2	25	49.92454545	2
2	XY-Symmetry	23.09104545	23.09104546	50	Free	Free	Free	Free	Free	Free	1	8.333	25	3	3	50	46.18209091	5
3	XY-Symmetry	21.21981818	21.21981818	75	Free	Free	Free	Free	Free	Free	1	8.333	25	2	4	75	42.43963636	4
4	XY-Symmetry	19.34859091	19.34859091	100	Free	Free	Free	Free	Free	Free	1	8.333	25	2	5	100	38.69718182	2
5	XY-Symmetry	17.47736364	17.47736364	125	Free	Free	Free	Free	Free	Free	2	8.333	25	2	6	125	34.95472727	2
6	XY-Symmetry	15.60613637	15.60613637	150	Free	Free	Free	Free	Free	Free	2	8.333	25	2	7	150	31.21227273	2
7	XY-Symmetry	13.73490909	13.73490909	175	Free	Free	Free	Free	Free	Free	1	8.333	25	2	8	175	27.46981818	1
8	XY-Symmetry	12.79929546	12.79929546	187.5	Free	Free	Free	Free	Free	Free	1	8.333	25	2	9	187.5	25.59859091	1
9	XY-Symmetry	11.86368182	11.86368182	200	Free	Free	Free	Free	Free	Free	1	8.333	25	2	10	200	23.72736364	1
10	XY-Symmetry	10.92806818	10.92806818	212.5	Free	Free	Free	Free	Free	Free	1	8.333	25	2	11	212.5	21.85613636	1
11	XY-Symmetry	9.99245454	9.99245454	225	Free	Free	Free	Free	Free	Free	1	8.333	25	2	12	225	19.98490909	1
12	XY-Symmetry	9.05684091	9.05684091	237.5	Free	Free	Free	Free	Free	Free	1	8.333	25	2	13	237.5	18.11368182	1
13	XY-Symmetry	8.12127273	8.12127273	250	Free	Free	Free	Free	Free	Free	1	8.333	25	2	14	250	16.24245455	1
14	XY-Symmetry	7.185613635	7.185613635	262.5	Free	Free	Free	Free	Free	Free	1	8.333	25	2	15	262.5	14.37122727	1
15	XY-Symmetry	6.25	6.25	275	Free	Free	Free	Free	Free	Free	1	8.333	25	2	16	275	12.5	1
16	XY-Symmetry	6.25	6.25	287.5	Free	Free	Free	Free	Free	Free	1	8.333	0.1	X	17	287.5	12.5	1
17	XY-Symmetry	3.5	3.5	287.6	Free	Free	Free	Free	Free	Free	7	8.333	7.5	X	18	287.6	7	7
18	XY-Symmetry	3.5	3.5	295.1	Free	Free	Free	Free	Free	Free	7	8.333	7.5	X	19	295.1	7	7
19	XY-Symmetry	3.5	3.5	302.6	Free	Free	Free	Free	Free	Free	7	8.333	7.5	X	20	302.6	7	7
A1	Y-Symmetry	24.96227273	0	25	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	25	21.85613636	1
A2	X-Symmetry	0	24.96227273	25	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	25	21.85613636	1
A3	XY-Symmetry	23.09104545	7.697015152	50	Free	Free	Free	Free	Free	Free	1	8.333	25	2	2	50	16.24245455	1
A4	XY-Symmetry	7.697015152	23.09104545	50	Free	Free	Free	Free	Free	Free	1	8.333	25	2	2	50	16.24245455	1
A5	XY-Symmetry	21.21981818	7.073272727	75	Free	Free	Free	Free	Free	Free	1	8.333	25	2	2	75	12.5	1
A6	XY-Symmetry	7.073272727	21.21981818	75	Free	Free	Free	Free	Free	Free	1	8.333	25	2	2	75	12.5	1
A7	XY-Symmetry	19.34859091	6.449530303	100	Free	Free	Free	Free	Free	Free	1	8.333	25	2	2	100	7.185613635	1
A8	XY-Symmetry	6.449530303	19.34859091	100	Free	Free	Free	Free	Free	Free	1	8.333	25	2	2	100	7.185613635	1
A9	Y-Symmetry	17.47736364	0	125	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	125	12.5	1
A10	X-Symmetry	0	17.47736364	125	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	125	12.5	1
A11	Y-Symmetry	15.60613636	0	150	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	150	12.5	1
A12	X-Symmetry	0	15.60613636	150	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	150	12.5	1
A13	Y-Symmetry	13.73490909	0	175	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	175	12.5	1
A14	X-Symmetry	0	13.73490909	175	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	175	12.5	1
A15	Y-Symmetry	12.79929545	0	187.5	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	187.5	12.5	1
A16	X-Symmetry	0	12.79929545	187.5	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	187.5	12.5	1
A17	Y-Symmetry	11.86368182	0	200	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	200	12.5	1
A18	X-Symmetry	0	11.86368182	200	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	200	12.5	1
A19	Y-Symmetry	10.92806818	0	212.5	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	212.5	12.5	1
A20	X-Symmetry	0	10.92806818	212.5	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	212.5	12.5	1
A21	Y-Symmetry	9.99245454	0	225	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	225	12.5	1
A22	X-Symmetry	0	9.99245454	225	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	225	12.5	1
A23	Y-Symmetry	9.056840909	0	237.5	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	237.5	12.5	1
A24	X-Symmetry	0	9.056840909	237.5	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	237.5	12.5	1
H1	XY-Symmetry	25.5859902	12.48113636	16.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	16.667	16.667	1
H2	XY-Symmetry	12.48113636	25.5859902	16.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	16.667	16.667	1
H5	XY-Symmetry	23.71476293	13.45187081	41.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	41.667	41.667	1
H6	XY-Symmetry	13.45187081	23.71476293	41.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	41.667	41.667	1
H7	Y-Symmetry	23.71476293	0	41.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	41.667	41.667	1
H8	X-Symmetry	0	23.71476293	41.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	41.667	41.667	1
H9	XY-Symmetry	21.84353566	12.41231673	66.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	66.667	66.667	1
H10	XY-Symmetry	12.41231673	21.84353566	66.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	66.667	66.667	1
H11	Y-Symmetry	21.84353566	0	66.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	66.667	66.667	1
H12	X-Symmetry	0	21.84353566	66.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	66.667	66.667	1
H13	XY-Symmetry	19.97230838	11.37276266	91.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	91.667	91.667	1
H14	XY-Symmetry	11.37276266	19.97230838	91.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	91.667	91.667	1
H15	Y-Symmetry	19.97230838	0	91.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	91.667	91.667	1
H16	X-Symmetry	0	19.97230838	91.667	Free	Free	Free	Free	Free	Free	1	8.333	25	1	1	91.667	91.667	1

NOTES:
1: Built up Horiz. w/ A
2: Built up Horiz. w/ M
A: Typical A brace
X: Typical X brace
Drop: Use only for types 1 & 2
Sections: 19

Types:	Count	Z-Elev. (ft)	FW (ft)	# Sub-Brace
1	1	0	53.667	2
2	2	25	49.92454545	2
3	3	50	46.18209091	5
4	4	75	42.43963636	4
5	5	100	38.69718182	2
6	6	125	34.95472727	2
7	7	150	31.21227273	2
8	8	175	27.46981818	1
9	9	187.5	25.59859091	1
10	10	200	23.72736364	1
11	11	212.5	21.85613636	1
12	12	225	19.98490909	1
13	13	237.5	18.11368182	1
14	14	250	16.24245455	1
15	15	262.5	14.37122727	1
16	16	275	12.5	1
17	17	287.5	12.5	1
18	18	287.6	7.5	7
19	19	295.1	7.5	7
20	20	302.6	7.5	7

Legs

Site No.:	88013
Engineer:	AAV
Date:	09/25/2017
Carrier:	AT&T

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape ^[1]	Diameter or Length (in)	Thickness ^[2] (in)	F _y (ksi)
1	0.000-25.00	L	8	1.125	33
2	25.00-50.00	L	8	1.125	33
3	50.00-75.00	L	8	1.125	33
4	75.00-100.0	L	8	1.125	33
5	100.0-125.0	L	8	1.125	33
6	125.0-150.0	L	8	1	33
7	150.0-175.0	L	8	0.875	33
8	175.0-187.5	L	8	0.75	33
9	187.5-200.0	L	6	0.875	33
10	200.0-212.5	L	6	0.875	33
11	212.5-225.0	L	6	0.75	33
12	225.0-237.5	L	6	0.75	33
13	237.5-250.0	L	6	0.625	33
14	250.0-262.5	L	6	0.625	33
15	262.5-275.0	L	6	0.5625	33
16	275.0-287.5	L	6	0.5625	33
17	287.5-287.6	L	6	0.5625	33
18	287.6-295.1	L	6	0.5	33
19	295.1-302.6	L	6	0.5	33

Notes:

^[1] Type of Leg Shape: **R** = Round or **P** = Bent Plate or **S** = Schifferized Angle. **L** = Even Leg

^[2] For Solid Round Leg Shapes Thickness Equals Zero.

^[3] Adjust for Bent Plate Leg Shapes.

Diagonals

Site No.:	88013
Engineer:	AAV
Date:	09/25/2017
Carrier:	AT&T

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape ^[1]	Diameter ^[2] (in)	Web Length ^[3] (in)	Flange Length ^[3] (in)	Thickness (in)	F _y (ksi)	Is Diag. Tension Only? (Y/N)
1	0.000-25.00	2L		3.5	5	0.4375	33	
2	25.00-50.00	2L		3	4	0.3125	33	
3	50.00-75.00	2L		3	4	0.3125	33	
4	75.00-100.0	2L		3	4	0.3125	33	
5	100.0-125.0	2L		3	4	0.25	33	
6	125.0-150.0	2L		3	4	0.25	33	
7	150.0-175.0	2L		3	4	0.25	33	
8	175.0-187.5	2L		2.5	3	0.3125	33	
9	187.5-200.0	2L		2.5	2.5	0.25	33	
10	200.0-212.5	2L		2.5	2.5	0.25	33	
11	212.5-225.0	2L		2.5	2.5	0.25	33	
12	225.0-237.5	2L		2.5	2.5	0.25	33	
13	237.5-250.0	L		3	4	0.25	33	Y
14	250.0-262.5	L		3	4	0.25	33	Y
15	262.5-275.0	L		3	3.5	0.25	33	Y
16	275.0-287.5	L		3.5	3.5	0.25	33	Y
17	287.5-287.6	L		3.5	3.5	0.25	33	Y
18	287.6-295.1	L		3	2	0.25	33	Y
19	295.1-302.6	L		3	2	0.25	33	Y

Notes:

- ^[1] Type of Diagonal Shape: R = Round, L = Single-Angle or 2L = Double-Angle.
- ^[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.
- ^[3] Applies to Single-Angle and Double-Angle Shapes only.
- ^[4] Applies to Double-Angle Shapes only.
- ^[5] Applies to Single-Angle Shapes only.

Horizontals

Site No.:	88013
Engineer:	AAV
Date:	09/25/2017
Carrier:	AT&T

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape ^[1]	Diameter ^[2] (in)	Web Length ^[3] (in)	Flange Length ^[3] (in)	Thickness (in)	F _y (ksi)
1	0.000-25.00	2L		4	3.5	0.375	33
2	25.00-50.00	2L		4	3	0.375	33
3	50.00-75.00	2L		4	3	0.3125	33
4	75.00-100.0	2L		3.5	3	0.3125	33
5	100.0-125.0	2L		3.5	3	0.25	33
6	125.0-150.0	2L		3.5	2.5	0.25	33
7	150.0-175.0	2L		3	2.5	0.25	33
8	175.0-187.5	2L		3.5	2.5	0.3125	33
9	187.5-200.0	2L		2.5	2.5	0.25	33
10	200.0-212.5	2L		2.5	2.5	0.25	33
11	212.5-225.0	2L		2.5	2.5	0.25	33
12	225.0-237.5	2L		3	2.5	0.25	33
13	237.5-250.0	2L		3	2.5	0.25	33
14	250.0-262.5	2L		3	2.5	0.25	33
15	262.5-275.0	2L		3.5	3	0.3125	33
16	275.0-287.5	C		15	33.9		33
17	287.5-287.6	2L		2.5	2	0.25	33
18	287.6-295.1	2L		2.5	2	0.25	33
19	295.1-302.6	C		15	33.9		33

Notes:

^[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle, **2L** = Double-Angle, **C** = Channel, **W** = W Shape

^[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

^[3] Applies to Single-Angle and Double-Angle Shapes only.

^[4] Applies to Double-Angle Shapes only.

^[5] Applies to Single-Angle Shapes only.

Built-up Diagonals

Site No.:	88013
Engineer:	AAV
Date:	09/25/2017
Carrier:	AT&T

When inputting thickness values, include all decimal places.
Input diags. from left to center & from base section upward.

Tower Built-up Diag. #	Section Elevations (ft)	Type of Shape ⁽¹⁾	Diameter ⁽²⁾ (in)	Web Length ⁽³⁾ (in)	Flange Length ⁽³⁾ (in)	Thickness (in)	F _y (ksi)
1	0.000-25.00	2L		3.5	2.5	0.25	33
2	0.000-25.00	2L		5	3.5	0.4375	33
3	25.00-50.00	2L		3	2	0.25	33
4	25.00-50.00	2L		3	2.5	0.25	33
5	25.00-50.00	2L		3	2.5	0.25	33
6	50.00-75.00	2L		2.5	2	0.25	33
7	50.00-75.00	2L		3	2.5	0.25	33
8	50.00-75.00	2L		3	2.5	0.25	33
9	75.00-100.0	2L		2.5	2	0.25	33
10	75.00-100.0	2L		3	2.5	0.25	33
11	75.00-100.0	2L		3.5	3.5	0.25	33

Notes:

- ⁽¹⁾ Type of Diagonal Shape: R = Round, L = Single-Angle or 2L = Double-Angle.
- ⁽²⁾ Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.
- ⁽³⁾ Applies to Single-Angle and Double-Angle Shapes only.
- ⁽⁴⁾ Applies to Double-Angle Shapes only.
- ⁽⁵⁾ Applies to Single-Angle Shapes only.

Built-up Horizontals

Site No.:	88013
Engineer:	AAV
Date:	09/25/2017
Carrier:	AT&T

When inputting thickness values, include all decimal places.

Tower Section #	Section Elevations (ft)	Type of Shape ^[1]	Diameter ^[2] (in)	Web Length ^[3] (in)	Flange Length ^[3] (in)	Thickness (in)	F _y (ksi)	Is Horiz. Tension Only? (Y/N)
1	0.000-25.00	2L		3	3.5	0.5	33	
2	25.00-50.00	2L		3	4	0.25	33	Y
3	50.00-75.00	2L		3	3.5	0.3125	33	Y
4	75.00-100.0	2L		3	3.5	0.25	33	Y

Notes:

^[1] Type of Horizontal Shape: **R** = Round, **L** = Single-Angle or **2L** = Double-Angle.

^[2] Applies to Pipes and Solid Round Shapes only. For Solid Round Shapes Thickness Equals Zero.

^[3] Applies to Single-Angle and Double-Angle Shapes only.

^[4] Applies to Double-Angle Shapes only.

^[5] Applies to Single-Angle Shapes only.

Coax and Dishes (p. 1 of 2)

Orig by MED, Improved by ABL. Last update 6/25/13 MED

Site No.:	88013
Engineer:	AAV
Date:	09/25/17
Carrier:	AT&T

Dish Types		Joint Orientation	
S	Standard	XY	Y
R	Standard w/ Radome		
H	High Performance		
G	Grid	X	P

Dish Elevation (ft)	Dish Dia. (ft)	Dish Angle (deg)	Dish Type	Joint Orientation

Equipment Label	Attach Label	Equipment Property Set	EIA Antenna Orientation Angle

Description	From (ft)	To (ft)	Quantity	Shape	Width or Diameter (in)	Perimeter (in)	Unit Weight (lb/ft)	Part of Face Solidity Ratio (Yes/No)	Include in Wind Load (Yes/No)
LADDER	0	302	1	Flat	1.5	6.0	6	Yes	Yes
COAX CAGE1	8.3333	33.3333	1	Round	12	48.0	25	Yes	Yes
COAX CAGE2	8.3333	33.3333	1	Round	12	37.7	25	Yes	Yes
COAX CAGE3	8.3333	33.3333	1	Round	12	120.0	100	Yes	Yes
WG-1	15	275	1	Flat	1.5	6.0	6	No	No
AT&T-1	15	272	2	Round	0.39	1.2	0.07	Yes	Yes
AT&T-2	15	272	2	Round	0.76	2.4	0.53	Yes	Yes
AT&T-3	15	272	1	Flat	8.91	31.7	9.84	Yes	Yes
Sprint	17.5	255	1	Flat	4.455	19.8	4.92	No	No
WG-2	17.5	250	1	Flat	1.5	6.0	6	No	No
Verizon	15	168	1	Round	1.98	11.9	2.06	No	No
WG-3	15	168	1	Flat	1.5	6.0	6	No	No
Other	15	145	1	Flat	2.97	19.8	4.92	No	No
AT&T-4	15	272	2	Round	0.78	2.5	0.53	No	No
AT&T-5	15	272	1	Round	3.5	11.0	7.58	No	No

Site #: 88013
Name: AT&T

Engineer: AAV
Date: 09/25/17

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ
L 1	Leg S1		XY-Symmetry	0P	1P	1	4	0.33334	0.33334	0.33334
L 2	Leg S2		XY-Symmetry	1P	2P	1	4	0.33334	0.33334	0.33334
L 3	Leg S3		XY-Symmetry	2P	3P	1	4	0.16667	0.16667	0.16667
L 4	Leg S4		XY-Symmetry	3P	4P	1	4	0.22222667	0.22222667	0.22222667
L 5	Leg S5		XY-Symmetry	4P	5P	1	4	0.33333333	0.33333333	0.33333333
L 6	Leg S6		XY-Symmetry	5P	6P	1	4	0.33333333	0.33333333	0.33333333
L 7	Leg S7		XY-Symmetry	6P	7P	1	4	0.33333333	0.33333333	0.33333333
L 8	Leg S8		XY-Symmetry	7P	8P	1	4	0.5	0.5	0.5
L 9	Leg S9		XY-Symmetry	8P	9P	1	4	0.5	0.5	0.5
L 10	Leg S10		XY-Symmetry	9P	10P	1	4	0.5	0.5	0.5
L 11	Leg S11		XY-Symmetry	10P	11P	1	4	0.5	0.5	0.5
L 12	Leg S12		XY-Symmetry	11P	12P	1	4	0.5	0.5	0.5
L 13	Leg S13		XY-Symmetry	12P	13P	1	4	0.5	0.5	0.5
L 14	Leg S14		XY-Symmetry	13P	14P	1	4	0.5	0.5	0.5
L 15	Leg S15		XY-Symmetry	14P	15P	1	4	0.5	0.5	0.5
L 16	Leg S16		XY-Symmetry	15P	16P	1	4	0.5	0.5	0.5
L 17	Leg S17		XY-Symmetry	16P	17P	1	4	1	1	1
L 18	Leg S18		XY-Symmetry	17P	18P	1	4	1	1	1
L 19	Leg S19		XY-Symmetry	18P	19P	1	4	1	1	1
D 1	Diag S1		XY-Symmetry	0P	H2P	1	6	0.5	1	0.5
D 2	Diag S1		XY-Symmetry	0P	H1P	1	6	0.5	1	0.5
D 3	Diag S2		XY-Symmetry	1P	H6P	1	6	0.5	1	0.5
D 4	Diag S2		XY-Symmetry	1P	H5P	1	6	0.5	1	0.5
D 5	Diag S3		XY-Symmetry	2P	H10P	1	6	0.25	1	0.25
D 6	Diag S3		XY-Symmetry	2P	H9P	1	6	0.25	1	0.25
D 7	Diag S4		XY-Symmetry	3P	H14P	1	6	0.33333333	1	0.33333333
D 8	Diag S4		XY-Symmetry	3P	H13P	1	6	0.33333333	1	0.33333333
D 9	Diag S5		XY-Symmetry	4P	A9P	1	6	0.33333333	1	0.33333333
D 10	Diag S5		XY-Symmetry	4P	A10P	1	6	0.33333333	1	0.33333333
D 11	Diag S6		XY-Symmetry	5P	A11P	1	6	0.33333333	1	0.33333333
D 12	Diag S6		XY-Symmetry	5P	A12P	1	6	0.33333333	1	0.33333333
D 13	Diag S7		XY-Symmetry	6P	A13P	1	6	0.33333333	1	0.33333333
D 14	Diag S7		XY-Symmetry	6P	A14P	1	6	0.33333333	1	0.33333333
D 15	Diag S8		XY-Symmetry	7P	A15P	1	6	0.5	1	0.5
D 16	Diag S8		XY-Symmetry	7P	A16P	1	6	0.5	1	0.5
D 17	Diag S9		XY-Symmetry	8P	A17P	1	6	0.5	1	0.5
D 18	Diag S9		XY-Symmetry	8P	A18P	1	6	0.5	1	0.5
D 19	Diag S10		XY-Symmetry	9P	A19P	1	6	0.5	1	0.5
D 20	Diag S10		XY-Symmetry	9P	A20P	1	6	0.5	1	0.5
D 21	Diag S11		XY-Symmetry	10P	A21P	1	6	0.5	1	0.5
D 22	Diag S11		XY-Symmetry	10P	A22P	1	6	0.5	1	0.5
D 23	Diag S12		XY-Symmetry	11P	A23P	1	6	0.5	1	0.5
D 24	Diag S12		XY-Symmetry	11P	A24P	1	6	0.5	1	0.5
D 25	Diag S13		XY-Symmetry	12P	13Y	1	6	0.52	0.5	0.52
D 26	Diag S13		XY-Symmetry	12P	13X	1	6	0.52	0.5	0.52
D 27	Diag S14		XY-Symmetry	13P	14Y	1	6	0.52	0.5	0.52
D 28	Diag S14		XY-Symmetry	13P	14X	1	6	0.52	0.5	0.52
D 29	Diag S15		XY-Symmetry	14P	15Y	1	6	0.52	0.5	0.52
D 30	Diag S15		XY-Symmetry	14P	15X	1	6	0.52	0.5	0.52
D 31	Diag S16		XY-Symmetry	15P	16Y	1	6	0.52	0.5	0.52
D 32	Diag S16		XY-Symmetry	15P	16X	1	6	0.52	0.5	0.52
D 33	Diag S17		XY-Symmetry	16P	17Y	1	6	0.52	0.5	0.52
D 34	Diag S17		XY-Symmetry	16P	17X	1	6	0.52	0.5	0.52
D 35	Diag S18		XY-Symmetry	17P	18Y	1	6	0.52	0.5	0.52
D 36	Diag S18		XY-Symmetry	17P	18X	1	6	0.52	0.5	0.52
D 37	Diag S19		XY-Symmetry	18P	19Y	1	6	0.52	0.5	0.52
D 38	Diag S19		XY-Symmetry	18P	19X	1	6	0.52	0.5	0.52
H 1	Horiz 1		XY-Symmetry	1P	A1P	1	6	0.5	0.5	0.5
H 2	Horiz 1		XY-Symmetry	1P	A2P	1	6	0.5	0.5	0.5
H 3	Horiz 2		XY-Symmetry	2P	A3P	1	6	1	1	1
H 4	Horiz 2		XY-Symmetry	2P	A4P	1	6	1	1	1
H 5	Horiz 3		XY-Symmetry	3P	A5P	1	6	1	1	1

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ
H 6	Horiz 3		XY-Symmetry	3P	A6P	1	6	1	1	1
H 7	Horiz 4		XY-Symmetry	4P	A7P	1	6	1	1	1
H 8	Horiz 4		XY-Symmetry	4P	A8P	1	6	1	1	1
H 9	Horiz 5		XY-Symmetry	5P	A9P	1	6	1	1	1
H 10	Horiz 5		XY-Symmetry	5P	A10P	1	6	1	1	1
H 11	Horiz 6		XY-Symmetry	6P	A11P	1	6	1	1	1
H 12	Horiz 6		XY-Symmetry	6P	A12P	1	6	1	1	1
H 13	Horiz 7		XY-Symmetry	7P	A13P	1	6	1	1	1
H 14	Horiz 7		XY-Symmetry	7P	A14P	1	6	1	1	1
H 15	Horiz 8		XY-Symmetry	8P	A15P	1	6	1	1	1
H 16	Horiz 8		XY-Symmetry	8P	A16P	1	6	1	1	1
H 17	Horiz 9		XY-Symmetry	9P	A17P	1	6	1	1	1
H 18	Horiz 9		XY-Symmetry	9P	A18P	1	6	1	1	1
H 19	Horiz 10		XY-Symmetry	10P	A19P	1	6	1	1	1
H 20	Horiz 10		XY-Symmetry	10P	A20P	1	6	1	1	1
H 21	Horiz 11		XY-Symmetry	11P	A21P	1	6	1	1	1
H 22	Horiz 11		XY-Symmetry	11P	A22P	1	6	1	1	1
H 23	Horiz 12		XY-Symmetry	12P	A23P	1	6	1	1	1
H 24	Horiz 12		XY-Symmetry	12P	A24P	1	6	1	1	1
H 25	Horiz 13		Y-Symmetry	13P	13X	1	6	0.5	0.8	0.5
H 26	Horiz 13		X-Symmetry	13P	13Y	1	6	0.5	0.8	0.5
H 27	Horiz 14		Y-Symmetry	14P	14X	1	6	0.5	0.5	0.5
H 28	Horiz 14		X-Symmetry	14P	14Y	1	6	0.5	0.5	0.5
H 29	Horiz 15		Y-Symmetry	15P	15X	1	6	0.5	0.8	0.5
H 30	Horiz 15		X-Symmetry	15P	15Y	1	6	0.5	0.8	0.5
H 31	Horiz 16		Y-Symmetry	16P	16X	1	6	1	0.5	1
H 32	Horiz 16		X-Symmetry	16P	16Y	1	6	1	0.5	1
H 33	Horiz 17		Y-Symmetry	17P	17X	1	6	1	1	1
H 34	Horiz 17		X-Symmetry	17P	17Y	1	6	1	1	1
H 35	Horiz 18		Y-Symmetry	18P	18X	1	6	1	1	1
H 36	Horiz 18		X-Symmetry	18P	18Y	1	6	1	1	1
H 37	Horiz 19		Y-Symmetry	19P	19X	1	6	1	1	1
H 38	Horiz 19		X-Symmetry	19P	19Y	1	6	1	1	1
H 41	Horiz 2		Y-Symmetry	A3P	A3X	1	6	1	1	1
H 42	Horiz 2		X-Symmetry	A4P	A4Y	1	6	1	1	1
H 43	Horiz 3		Y-Symmetry	A5P	A5X	1	6	1	1	1
H 44	Horiz 3		X-Symmetry	A6P	A6Y	1	6	1	1	1
H 45	Horiz 4		Y-Symmetry	A7P	A7X	1	6	1	1	1
H 46	Horiz 4		X-Symmetry	A8P	A8Y	1	6	1	1	1
LH 1	LH 1		Y-Symmetry	H1P	H1X	1	6	0.5	1	0.5
LH 2	LH 1		X-Symmetry	H2P	H2Y	1	6	0.5	1	0.5
LH 3	LH 2		XY-Symmetry	H5P	H7P	1	6	1	2	1
LH 4	LH 2		XY-Symmetry	H6P	H8P	1	6	1	2	1
LH 5	LH 3		XY-Symmetry	H9P	H11P	1	6	1	2	1
LH 6	LH 3		XY-Symmetry	H10P	H12P	1	6	1	2	1
LH 7	LH 4		XY-Symmetry	H13P	H15P	1	6	1	2	1
LH 8	LH 4		XY-Symmetry	H14P	H16P	1	6	1	2	1
LD 1	LD 1		XY-Symmetry	H1P	1P	1	6	1	1	1
LD 2	LD 1		XY-Symmetry	H2P	1P	1	6	1	1	1
LD 3	LD 2		XY-Symmetry	H1P	A1P	1	6	1	1	1
LD 4	LD 2		XY-Symmetry	H2P	A2P	1	6	1	1	1
LD 7	LD 4		XY-Symmetry	H5P	2P	1	6	0.93	0.93	0.93
LD 8	LD 4		XY-Symmetry	H6P	2P	1	6	0.93	0.93	0.93
LD 9	LD 5		XY-Symmetry	H5P	A3P	1	6	0.86	0.86	0.86
LD 10	LD 5		XY-Symmetry	H6P	A4P	1	6	0.86	0.86	0.86
LD 11	LD 6		XY-Symmetry	A3P	H7P	1	6	0.89	0.89	0.89
LD 12	LD 6		XY-Symmetry	A4P	H8P	1	6	0.89	0.89	0.89
LD 13	LD 7		XY-Symmetry	H9P	3P	1	6	0.5	0.5	0.5
LD 14	LD 7		XY-Symmetry	H10P	3P	1	6	0.5	0.5	0.5
LD 15	LD 8		XY-Symmetry	H9P	A5P	1	6	0.87	0.87	0.87
LD 16	LD 8		XY-Symmetry	H10P	A6P	1	6	0.87	0.87	0.87
LD 17	LD 9		XY-Symmetry	A5P	H11P	1	6	0.86	0.86	0.86

Member Label	Group Label	Section Label	Symmetry Code	Origin Joint	End Joint	Ecc. Code	Rest. Code	Ratio RLX	Ratio RLY	Ratio RLZ
LD 18	LD 9		XY-Symmetry	A6P	H12P	1	6	0.86	0.86	0.86
LD 19	LD 10		XY-Symmetry	H13P	4P	1	6	0.5	0.5	0.5
LD 20	LD 10		XY-Symmetry	H14P	4P	1	6	0.5	0.5	0.5
LD 21	LD 11		XY-Symmetry	H13P	A7P	1	6	0.88	0.88	0.88
LD 22	LD 11		XY-Symmetry	H14P	A8P	1	6	0.88	0.88	0.88
LD 23	LD 12		XY-Symmetry	A7P	H15P	1	6	1	1	1
LD 24	LD 12		XY-Symmetry	A8P	H16P	1	6	1	1	1
BR 1	DUM 1		XY-Symmetry	A1P	A2P	1	4	1	1	1
BR 3	DUM 1		XY-Symmetry	A3P	A4P	1	4	1	1	1
BR 4	DUM 1		XY-Symmetry	A3P	A4XY	1	4	1	1	1
BR 5	DUM 1		XY-Symmetry	A5P	A6P	1	4	1	1	1
BR 6	DUM 1		XY-Symmetry	A5P	A6XY	1	4	1	1	1
BR 7	DUM 1		XY-Symmetry	A7P	A8P	1	4	1	1	1
BR 8	DUM 1		XY-Symmetry	A7P	A8XY	1	4	1	1	1
BR 9	DUM 1		XY-Symmetry	A9P	A10P	1	4	1	1	1
BR 11	DUM 1		XY-Symmetry	A11P	A12P	1	4	1	1	1
BR 13	DUM 1		XY-Symmetry	A13P	A14P	1	4	1	1	1
BR 15	DUM 1		XY-Symmetry	A15P	A16P	1	4	1	1	1
BR 17	DUM 1		XY-Symmetry	A17P	A18P	1	4	1	1	1
BR 19	DUM 1		XY-Symmetry	A19P	A20P	1	4	1	1	1
BR 21	DUM 1		XY-Symmetry	A21P	A22P	1	4	1	1	1
BR 23	DUM 1		XY-Symmetry	A23P	A24P	1	4	1	1	1
BR 61	DUM 1		XY-Symmetry	H1P	H2P	1	4	1	1	1
BR 62	DUM 1		XY-Symmetry	H1P	H2XY	1	4	1	1	1
BR 64	DUM 1		XY-Symmetry	H5P	H6P	1	4	1	1	1
BR 65	DUM 1		XY-Symmetry	H5P	H6XY	1	4	1	1	1
BR 66	DUM 1		XY-Symmetry	H7P	H8P	1	4	1	1	1
BR 67	DUM 1		XY-Symmetry	H9P	H10P	1	4	1	1	1
BR 68	DUM 1		XY-Symmetry	H9P	H10XY	1	4	1	1	1
BR 69	DUM 1		XY-Symmetry	H11P	H12P	1	4	1	1	1
BR 70	DUM 1		XY-Symmetry	H13P	H14P	1	4	1	1	1
BR 71	DUM 1		XY-Symmetry	H13P	H14XY	1	4	1	1	1
BR 72	DUM 1		XY-Symmetry	H15P	H16P	1	4	1	1	1

Task:	Determine Point Loads
Tower Height:	302.6 ft
Gh:	0.85
Wind Speed:	100 mph
Ice Wind Speed:	50
Ice Density:	56
Tower Type:	S

Ice Thick:	0.75 in
Topographic Category (1-4):	1
Exposure Category (B-D):	B
Structure Class (1-3):	2
Height of Crest (H) if Topo Cat. >1:	0 ft
Load Factor; Wind:	1.6
Load Factor; Dead:	1.2

Site No.:	88013
Engineer:	AAV
Date:	09/25/2017
Carrier:	AT&T

No.	Carrier	Elevation (ft)	Quantity	# of Azimuths	Manufacturer	Model	Height (ft)	Width (ft)	Depth (ft)	Weight (lbs/ea)	Flat/Round (F/R)	Reduction	C _A (ft ⁻²)	Weight (k)	Ka	
1	--	302.5	1	4	--	--	0.001	0.001	0.001	0.001	R	0.001	1.000	4.00	1	
2	--	287.5	1	4	--	Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	4.00	1	
3	--	268.75	1	4	--	Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	4.00	1	
4	--	237.5	1	1	--	Catwalk	0.001	0.001	0.001	0.001	R	0.001	1.000	45.00	2.50	1
5	--	212.5	1	1	--	Rest Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	15.00	0.50	1
6	--	200	1	2	--	Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	15.00	4.00	1
7	--	187.5	1	2	--	Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	45.00	2.50	1
8	--	187.5	2	2	--	Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	45.00	2.50	1
9	--	175	2	2	--	Horn Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	25.00	1.25	1
10	--	150	1	1	--	Horn Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	15.00	1.00	1
11	--	100	1	2	--	Rest Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	15.00	0.50	1
12	--	50	1	1	--	Platform	0.001	0.001	0.001	0.001	R	0.001	1.000	45.00	4.00	1
13	AT&T MOBILITY	272	6	3		LGP Allgon	6.3	4.4	3	5.5	F	0.500	14.40	0.40	0.8	
14	AT&T MOBILITY	272	3	3		Sector Frames	24	11	11	31.8	R	1.000	0.00	0.00	1	
15	AT&T MOBILITY	272	1	1		Raycap	DC6-48-60-18-8F	24	11	11	31.8	R	1.000	0.00	0.00	1
16	AT&T MOBILITY	272	6	3		Powerwave Allgon	LGP17201	13.9	14.4	3.7	31	F	0.500	14.40	0.40	0.8
17	AT&T MOBILITY	272	1	1		Ericsson	RRUS-11	25	18.2	6.7	55	F	0.670	0.00	0.00	1
18	AT&T MOBILITY	272	3	3		Powerwave Allgon	7770	55	11	5	35	F	0.500	14.40	0.40	0.8
19	AT&T MOBILITY	272	2	2		KMW	AM-X-CD-16-65-00T-RET	72	11.8	5.9	48.5	F	0.670	0.00	0.00	1
20	AT&T MOBILITY	272	1	1		Powerwave Allgon	P65-17-XLH-RR	96	12	6	59	F	0.670	0.00	0.00	1
21	AT&T MOBILITY	272	3	3	proposed	Kaelus	DBC0061FV51-2	8	6.5	6.2	25.5	F	0.500	14.40	0.40	0.8
22	AT&T MOBILITY	272	1	1	proposed	Raycap	DC6-48-60-18-8F ("Squid")	24	11	11	31.8	R	1.000	0.00	0.00	1
23	AT&T MOBILITY	272	3	3	proposed	Ericsson	RRUS 32 82	27.2	12.1	7	53	F	0.670	0.00	0.00	1
24	AT&T MOBILITY	272	1	1	proposed	Ericsson	RRUS-32 (77 lbs)	29.9	13.3	9.5	77	F	0.670	0.00	0.00	1
25	AT&T MOBILITY	272	2	2	proposed	Quintel	QS66512-2	72	12	9.6	111	F	0.740	0.00	0.00	1
26	AT&T MOBILITY	272	1	1	proposed	KMW	AM-X-CD-17-65-00T-RET (96" Height)	96	11.8	6	59.5	F	0.680	0.00	0.00	1
27	AT&T MOBILITY	272	1	1	proposed	CCI	TPA-65R-1CUUUU-H8	96	14.4	8.6	81.6	F	0.690	0.00	0.00	1
28	SPRINT NEXTEL	259	6	3		Swedcom ALP 9011-DIN	43	6.5	8	10	F	0.740	14.40	0.40	0.8	
29	SPRINT NEXTEL	259	3	3		Sector Frames	RFS FD9R6004/2C-3L	5.8	6.5	1.5	2.6	F	0.500	14.40	0.40	0.8
30	VERIZON	171	6	3		Sector Frames	Nokia B5 RRH4x40-850	13	12.2	6.9	48.5	F	0.500	14.40	0.40	0.8
31	VERIZON	171	1	1		Alcatel-Lucent	RRH2X60-AWS	20.1	11.2	7.6	44	F	0.500	0.00	0.00	1
32	VERIZON	171	3	3		Alcatel-Lucent	RRH2X60-1900	20.1	11.2	7.2	43	F	0.500	0.00	0.00	1
33	VERIZON	171	2	2		Raycap	RC3DC-3315-PF-48	28.9	15.7	10.3	32	F	0.670	0.00	0.00	1
34	VERIZON	171	1	1		Antel LPA-80080/6CF	70.9	5.5	13.2	21	F	0.650	0.00	0.00	1	
35	VERIZON	171	6	3		Commscope	JAHH-65B-R3B	72	13.8	8.2	60.6	F	0.690	0.00	0.00	1
36	UNKNOWN	145	6	3		TTA	36" x 6" Panel	12	12	6	10	F	0.500	0.00	0.00	1
37	UNKNOWN	145	1	1		--	--	--	--	--	--	0.001	0.00	0.00	1	
38	UNKNOWN	145	3	3		--	--	--	--	--	--	0.670	0.00	0.00	1	
39	UNKNOWN	145	1	1		--	--	--	--	--	--	0.001	0.00	0.00	1	
40	UNKNOWN	145	3	3		--	--	--	--	--	--	0.670	0.00	0.00	1	
41	UNKNOWN	145	1	1		--	--	--	--	--	--	0.001	0.00	0.00	1	
42	UNKNOWN	145	3	3		--	--	--	--	--	--	0.670	0.00	0.00	1	
43	UNKNOWN	145	1	1		--	--	--	--	--	--	0.001	0.00	0.00	1	
44	UNKNOWN	145	3	3		--	--	--	--	--	--	0.670	0.00	0.00	1	
45	UNKNOWN	145	1	1		--	--	--	--	--	--	0.001	0.00	0.00	1	
46	UNKNOWN	145	3	3		--	--	--	--	--	--	0.670	0.00	0.00	1	
47	UNKNOWN	145	1	1		--	--	--	--	--	--	0.001	0.00	0.00	1	
48	UNKNOWN	145	3	3		--	--	--	--	--	--	0.670	0.00	0.00	1	
49	UNKNOWN	145	1	1		--	--	--	--	--	--	0.001	0.00	0.00	1	
50	UNKNOWN	145	3	3		--	--	--	--	--	--	0.670	0.00	0.00	1	

No.	Elevation (ft)	C ₁ A _c (ft ²)	C ₂ A _c (ice) (ft ²)	Force (lb)	Force (ice) (lb)	Weight (lb)	Weight (ice) (lb)	60 Azi Mult.	Force mean	F (ice) mean	Height Flag	Sum of Forces (No I)	
												60 Azi.	180 Azi.
1	302.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00			
	302.5	60.00	81.00	2407.452	507.822	4800	6240	1.00	1324.10	279.30	1.5033058	2407.452442	
2	287.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5033068		
	287.5	60.00	81.00	2372.723	500.496	4800	6240	1.00	1305.00	275.27	1.5034783	2372.722747	
3	268.75	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5034793		
	268.75	45.00	60.75	1745.580	368.208	3000	3900	1.00	960.07	202.51	1.5037209	1745.580429	
4	237.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5037219		
	237.5	15.00	20.25	561.669	118.477	600	780	1.00	308.92	65.16	1.5042105	561.668513	
5	212.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5042115		
	212.5	15.00	20.25	544.100	114.771	4800	6240	1.00	299.26	63.12	1.5047059	544.1000191	
6	200	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5047069		
	200	45.00	60.75	1604.270	338.401	3000	3900	1.00	882.35	186.12	1.5050000	1604.269925	
7	187.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5050010		
	187.5	45.00	60.75	1574.959	332.218	3000	3900	1.00	866.23	182.72	1.5050010	1574.958937	
8	187.5	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5050020		
	187.5	50.00	67.50	1749.954	369.131	3000	3900	1.00	962.47	203.02	1.5053333	3324.913311	
9	175	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5053343		
	175	30.00	40.50	1029.478	217.156	2400	3120	1.00	566.21	119.44	1.5057143	1029.477964	
10	150	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5057153		
	150	15.00	20.25	492.560	103.899	600	780	1.00	270.91	57.14	1.5066667	492.5603002	
11	100	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5066677		
	100	45.00	60.75	1316.039	277.602	4800	6240	1.00	723.82	152.68	1.5100000	1316.03934	
12	50	0.00	0.00	0.000	0.000	0	0	1.00	0.00	0.00	1.5100010		
	50	15.00	20.25	359.865	75.909	600	780	1.00	197.93	41.75	1.5200000	359.8645335	
13	272	0.55	1.07	21.580	6.531	40	58	1.00	11.87	3.59	1.5200010		
	272	32.40	43.74	945.856	199.517	1440	1872	1.00	520.22	109.73	1.5200010	967.435869	
14	272	1.17	1.42	45.671	8.616	38	140	1.00	25.12	4.74	1.5200020		
	272	4.00	5.71	155.821	34.748	223	320	1.00	0.00	0.00	1.5036765	1013.106847	
15	272							1.00	85.70	19.11	1.5036775		
	272	6.10	8.16	237.320	49.637	198	358	1.00	0.00	0.00	1.5036765	1168.92792	
16	272							1.00	130.53	27.30	1.5036775		
	272	8.59	10.71	334.484	65.146	126	325	1.00	0.00	0.00	1.5036765	1406.248334	
17	272							1.00	183.97	35.83	1.5036775		
	272	8.60	10.19	334.833	61.964	116	385	1.00	0.00	0.00	1.5036765	1740.732744	
18	272							1.00	184.16	34.08	1.5036775		
	272	6.15	6.90	239.233	41.937	71	417	1.00	0.00	0.00	1.5036765	2075.566058	
19	272							1.00	131.58	23.07	1.5036775		
	272	0.58	0.89	22.524	5.393	92	130	1.00	0.00	0.00	1.5036765	2314.798944	
20	272							1.00	12.39	2.97	1.5036775		
	272	1.17	1.42	45.671	8.616	38	140	1.00	0.00	0.00	1.5036765	2337.32304	
21	272							1.00	25.12	4.74	1.5036775		
	272	4.41	6.10	171.664	37.112	191	326	1.00	0.00	0.00	1.5036765	2382.994018	
22	272							1.00	94.41	20.41	1.5036775		
	272	5.33	7.27	207.418	44.186	277	456	1.00	0.00	0.00	1.5036765	2554.657523	
23	272							1.00	114.08	24.30	1.5036775		
	272	9.63	11.42	374.834	69.467	266	600	1.00	0.00	0.00	1.5036765	2762.075564	
24	272							1.00	206.16	38.21	1.5036775		
	272	6.15	6.91	239.510	42.040	71	413	1.00	0.00	0.00	1.5036765	3136.909736	
25	272							1.00	131.73	23.12	1.5036775		
	272	7.34	8.32	285.718	50.599	98	522	1.00	0.00	0.00	1.5036765	3376.419416	
26	272							1.00	157.14	27.83	1.5036775		
	272	11.88	14.60	455.973	87.556	72	204	1.00	0.00	0.00	1.5036765	3662.137053	
27	259							1.00	250.79	48.16	1.5036775		
	259	32.40	43.74	932.714	196.744	1440	1872	1.00	512.99	108.21	1.5038610	1388.686346	
28	171	0.75	1.36	25.704	7.258	19	33	1.00	14.14	3.99	1.5038620		
	171	32.40	43.74	828.386	174.738	1440	1872	1.00	455.61	96.11	1.5058480	854.0902188	
29	171	1.59	2.32	54.067	12.345	175	254	1.00	29.74	6.79	1.5058490		
	171	2.25	3.20	76.743	17.047	158	257	1.00	0.00	0.00	1.5058480	908.1569182	
30	171							1.00	42.21	9.38	1.5058490		
	171	2.25	3.20	76.743	17.047	155	251	1.00	0.00	0.00	1.5058480	984.9002686	
31	171							1.00	42.21	9.38	1.5058490		
	171	4.05	5.45	138.178	29.027	77	220	1.00	0.00	0.00	1.5058480	1061.643619	
32	171							1.00	76.00	15.97	1.5058490		
	171	28.39	32.28	967.758	171.958	151	428	1.00	0.00	0.00	1.5058480	1199.82124	
33	171							1.00	532.27	94.58	1.5058490		
	171	30.18	36.21	1028.950	192.877	436	801	1.00	0.00	0.00	1.5058480	2167.579705	
34	171							1.00	565.92	106.08	1.5058490		
	171	3.60	5.32	117.075	27.011	72	125	1.00	0.00	0.00	1.5058480	3196.529675	
35	145							1.00	64.39	14.86	1.5058490		
	145							1.00	0.00	0.00	1.5068966	117.0749557	

Site Name: Killingworth, CT
 Site Number: 88013
 Engineering Number: OAA712919
 Engineer: Annika.Venning
 Date: 09/27/17

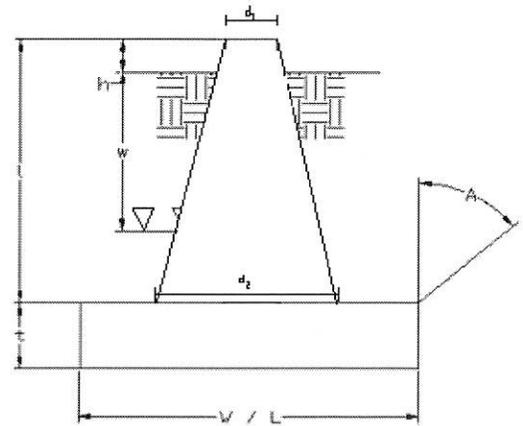
Program Last Updated: 9/27/2016
 American Tower Corporation

Foundation

Design Loads (Factored)

Compression/Leg: 367.05 k
 Uplift/Leg: 215.00 k

Face Width @ Top of Pier (d_1): 4.00 ft
 Face Width @ Bottom of Pier (d_2): 7.00 ft
 Total Length of Pier (l): 9.00 ft
 Height of Pedestal Above Ground (h): 0.67 ft
 Width of Pad (W): 11.00 ft
 Length of Pad (L): 11.00 ft
 Thickness of Pad (t): 2.00 ft
 Water Table Depth (w): 30.00 ft
 Unit Weight of Concrete: 150.0 pcf
 Unit Weight of Soil (Above Water Table): 122.6 pcf
 Unit Weight of Soil (Below Water Table): 55.0 pcf
 Friction Angle of Uplift (A): 30 °
 Ultimate Compressive Bearing Pressure: 8000 psf
 Ultimate Skin Friction: 0 psf



Volume Pier (Total): 279.00 ft³
 Volume Pad (Total): 242.00 ft³
 Volume Soil (Total): 1823.38 ft³
 Volume Pier (Buoyant): 0.00 ft³
 Volume Pad (Buoyant): 0.00 ft³
 Volume Soil (Buoyant): 0.00 ft³
 Weight Pier: 41.85 k
 Weight Pad: 36.30 k
 Weight Soil: 223.55 k

Ultimate Skin Friction: 0.00 k
 Difference in Soil Volume: 474.03 ft³
 Difference in Soil Volume: 183.01 ft³
 Difference in Soil Weight: 80.55 k

Uplift Check

ϕ s Uplift Resistance	Ratio	Result
226.27	0.95	OK

Axial Check

ϕ s Axial Resistance	Ratio	Result
726.00	0.51	OK



PROJECT: LTE 2C/3C
 SITE NUMBER: CTL02016
 FA NUMBER: 10035445
 PTN NUMBER: 2051A0D6QG
 PACE NUMBER: MRCTB025390, MRCTB25398
 ATC#: 88013
 SITE NAME: KILLINGWORTH-LITTLE CITY ROAD
 SITE ADDRESS: 131 LITTLE CITY ROAD
 KILLINGWORTH, CT 06419

550 COCHITUATE ROAD
 SUITE 550 13 AND 14
 FRAMINGHAM, MA 01701

1362 MELLON ROAD
 SUITE 140
 HANOVER, MD 21076

1100 E. WOODFIELD ROAD, SUITE 500
 SCHAUMBURG, ILLINOIS 60173
 TEL: 847-908-8400
 COA# PEC.0001444
 www.FullertonEngineering.com

PROJECT INFORMATION

SITE NAME: KILLINGWORTH-LITTLE CITY ROAD
SITE NUMBER: CTL02016
SITE ADDRESS: 131 LITTLE CITY ROAD
 KILLINGWORTH, CT 06419
FA NUMBER: 10035445
PTN NUMBER: 2051A0D6QG
PACE NUMBER: MRCTB025390, MRCTB25398
USID NUMBER: 59446
ATC NUMBER: 88013

APPLICANT: AT&T WIRELESS
 550 COCHITUATE ROAD SUITE 550 13 AND 14
 FRAMINGHAM, MA 01701

TOWER OWNER: AMERICAN TOWER CORPORATION
 111 SHILOH ST
 PITTSBURGH, PA 15211

JURISDICTION: TOWN OF KILLINGWORTH
COUNTY: MIDDLESEX
SITE COORDINATES FROM (RFDS):
LATITUDE: 41.42877°
LONGITUDE: -72.6038161°
GROUND ELEV.: 656'
PROPOSED USE: TELECOMMUNICATIONS FACILITY

AT&T RF MANAGER: DEEPAK RATHORE
PHONE: (860) 965-3068
EMAIL: dr701e@att.com

SCOPE OF WORK

LTE 850 WILL BE 2C/3C AT THE SITE WITH BRONZE CONFIGURATION. PROPOSED 2C/3C PROJECT SCOPE HEREIN BASED ON RFDS ID # 1833303, VERSION 2.00 LAST UPDATED 09/14/17.

- (3) NEW ANTENNAS TO REPLACE (3) EXISTING ANTENNAS
- (6) NEW RRUS-32
- (1) NEW RAYCAP UNIT
- (1) FIBER CABLE AND (2) DC POWER CABLES
- UPGRADE DUL TO 5216 AND ADD XMU

- CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF AT&T SUPPLIED MATERIAL.
- ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.

APPLICABLE BUILDING CODES AND STANDARDS

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.

BUILDING CODE: 2012 INTERNATIONAL BUILDING CODE
 2016 CONNECTICUT STATE BUILDING CODE SUPPLEMENT

ELECTRICAL CODE: 2014 NATIONAL ELECTRIC CODE

- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- ADA ACCESS REQUIREMENTS ARE NOT REQUIRED.
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE

REV	DATE	DESCRIPTION	BY
0	09/26/17	90% REVIEW	EB
1	10/25/17	FOR PERMIT	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

SITE LOCATION MAP



DRAWING INDEX

T1	TITLE SHEET
SP1	NOTES AND SPECIFICATIONS
SP2	NOTES AND SPECIFICATIONS
A1	COMPOUND PLAN
A2	EQUIPMENT PLAN
A3	ELEVATIONS
A4	ANTENNA PLANS
A5	EQUIPMENT DETAILS
A6	ANTENNA & CABLE CONFIGURATION
A7	CABLE NOTES AND COLOR CODING
A8	GROUNDING DETAILS

PROJECT CONSULTANTS

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DIRECTIONS

SCAN QR CODE FOR LINK TO SITE LOCATION MAP



NOTE: DRAWING SCALES ARE FOR 11"x17" SHEETS UNLESS OTHERWISE NOTED

SITE NAME
KILLINGWORTH-LITTLE CITY ROAD

SITE NUMBER:
CTL02016

SITE ADDRESS
**131 LITTLE CITY ROAD
 KILLINGWORTH, CT 06419**

SHEET NAME
TITLE SHEET

SHEET NUMBER
T1

THESE DRAWINGS ARE THE PROPERTY OF FULLERTON ENGINEERING CONSULTANTS, INC. IT IS FOR THE EXCLUSIVE USE OF THIS PROJECT. ANY RE-USE OF THIS DRAWING WITHOUT THE EXPRESSED WRITTEN CONSENT OF FULLERTON ENGINEERING CONSULTANTS, INC. IS PROHIBITED.

GENERAL CONSTRUCTION

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR/CM – SMARTLINK
OWNER – AT&T WIRELESS
2. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND AT&T PROJECT SPECIFICATIONS.
3. GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
4. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
5. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.
10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFIRM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
11. GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
12. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMAN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.
13. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.
14. WORK PREVIOUSLY COMPLETED IS REPRESENTED BY LIGHT SHADED LINES AND NOTES. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.
15. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
16. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
17. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
18. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.
19. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.

20. THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.
21. THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OT 2-A:10-B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.
22. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.
23. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED OR OTHERWISE DISCONNECTED 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.
24. 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.
25. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.
26. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
27. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE-APPROVED BY THE LOCAL JURISDICTION.
28. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
29. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.
30. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.
31. CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
32. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS REQUIRED).
33. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.
34. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
35. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION AT&T MOBILITY GROUNDING STANDARD "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM/GPRS WIRELESS SITES" AND "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING". IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.
36. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.
37. CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
38. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
39. NO WHITE STROBE LIGHTS ARE PERMITTED. LIGHTING IF REQUIRED, WILL MEET FAA STANDARDS AND REQUIREMENTS.

ANTENNA MOUNTING

40. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL

- CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
41. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.
 42. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
 43. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
 44. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
 45. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
 46. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50-OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.
 47. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/- 0.5% AS DEFINED BY THE RFDS. REFER TO ND-00246.
 48. JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.
 49. CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.
 50. TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.

TORQUE REQUIREMENTS

51. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
52. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.

FIBER & POWER CABLE MOUNTING

53. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.
54. THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES. A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.
55. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

62. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.
63. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
64. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION.
65. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN

TRANSMISSION LINE SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'-0".

66. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC.
67. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
68. CONTRACTOR SHALL GROUND ALL EQUIPMENT INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES, AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED WIREMEN IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATION AND RECOMMENDATION.
69. CONTRACTOR SHALL PROVIDE STRAIN-RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES, COAX CABLES, AND RET CONTROL CABLES. CABLE STRAIN-RELIEFS AND CABLE SUPPORTS SHALL BE APPROVED FOR THE PURPOSE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.
70. CONTRACTOR TO VERIFY THAT EXISTING COAX HANGERS ARE STACKABLE SNAP IN HANGERS. IF EXISTING HANGERS ARE NOT STACKABLE SNAP IN HANGERS THE CONTRACTOR SHALL REPLACE EXISTING HANGERS WITH NEW SNAP IN HANGERS IF APPLICABLE.

GENERAL CABLE AND EQUIPMENT NOTES

71. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMA'S, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
72. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.
73. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
74. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
75. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
A. TEMPERATURE SHALL BE ABOVE 50° F.
B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS
76. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
A. GROUNDING AT THE ANTENNA LEVEL.
B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.
77. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.



550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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REV	DATE	DESCRIPTION	BY
0	09/26/17	90% REVIEW	EB
1	10/25/17	FOR PERMIT	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.



SITE NAME
**KILLINGWORTH-LITTLE
CITY ROAD**

SITE NUMBER:
CTL02016

SITE ADDRESS
**131 LITTLE CITY ROAD
KILLINGWORTH, CT 06419**

SHEET NAME
**NOTES AND
SPECIFICATIONS**

SHEET NUMBER
SP1

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NOTICE

Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC General Population Exposure Limits.

Follow all posted signs and site guidelines for working in a RF environment.

Ref: 47CFR 1.1307(b)

CAUTION

Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC Occupational Exposure Limits.

Obey all posted signs and site guidelines for working in a RF environment.

Ref: 47CFR 1.1307(b)



ALERTING SIGN
(FOR CELL SITE BATTERIES)



ALERTING SIGN
(FOR DIESEL FUEL)



ALERTING SIGN
(FOR PROPANE)

550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701

1362 MELLON ROAD
SUITE 140
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FULLERTON
ENGINEERING · DESIGN

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ALERTING SIGNS

WARNING!

DANGER DO NOT TOUCH TOWER!

SERIOUS "RF" BURN HAZARD!

MAINTAIN AN ADEQUATE CLEARANCE BETWEEN TOWER SUPPORTS AND GUY WIRES

FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN A RADIO FREQUENCY ENVIRONMENT COULD RESULT IN SERIOUS INJURY. CONTACT CURRENT MAY EXCEED LIMITS PRESCRIBED IN ANSI, IEEE C95.1-1992 FOR CONTROLLED ENVIRONMENTS.

PROPERTY OF AT&T

AUTHORIZED PERSONNEL ONLY

IN CASE OF EMERGENCY, OR PRIOR TO PERFORMING MAINTENANCE ON THIS SITE, CALL 800-638-2822 AND REFERENCE CELL SITE NUMBER _____

ALERTING SIGN

INFO SIGN #4

INFORMATION

AT&T operates telecommunications antennas at this location. Remain at least 3 feet away from any antenna and obey all posted signs.

Contact the owner(s) of the antenna(s) before working closer than 3 feet from the antenna.

Contact AT&T at _____ prior to performing any maintenance or repairs near AT&T antennas. This is Site # _____

Contact the management office if this door/hatch/gate is found unlocked.

INFORMACION

En esta propiedad se ubican antenas de telecomunicaciones operadas por AT&T. Favor mantener una distancia de no menos de 3 pies y obedecer todos los avisos.

Comuníquese con el propietario o los propietarios de las antenas antes de trabajar o caminar a una distancia de menos de 3 pies de la antena.

Comuníquese con AT&T _____ antes de realizar cualquier mantenimiento o reparaciones cerca de la antena de AT&T.

Esta es la estación base maestra. Favor comunicarse con la oficina de la administración del edificio si esta puerta o compuerta se encuentra sin candado.

INFO SIGN #1

INFORMATION

ACTIVE ANTENNAS ARE MOUNTED

ON THE OUTSIDE OF THIS BUILDING

BEHIND THIS PANEL

ON THIS STRUCTURE

STAY BACK A MINIMUM OF 3 FEET FROM THESE ANTENNAS

Contact AT&T at _____ and follow their instructions prior to performing any maintenance or repairs closer than 3 feet from the antennas.

This is AT&T site # _____

INFO SIGN #2

STAY BACK 3 FEET FROM ANTENNA



GENERAL SIGNAGE GUIDELINES

STRUCTURE TYPE	INFO SIGN #1	INFO SIGN #2	INFO SIGN #3	INFO SIGN #4	STRIPING	NOTICE SIGN	CAUTION SIGN
TOWERS							
MONOPOLE/MONOPINE/MONOPALM	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	CLIMBING SIDE OF THE TOWER	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			AT THE HEIGHT OF THE FIRST CLIMBING STEP, MIN 9 FT ABOVE GROUND
SEC TOWERS/TOWERS WITH HIGH VOLTAGE	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	CLIMBING SIDE OF THE TOWER	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			
LIGHT POLES/FLAG POLES	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			
UTILITY WOOD POLES (JPA)	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS		IF GP MAX VALUE OF MPE AT ANTENNA LEVEL IS: 0-99%: NOTICE SIGN; OVER 99%: CAUTION SIGN AT NO LESS THAN 3FT BELOW ANTENNA AND 9FT ABOVE GROUND	
MICROCELLS MOUNTED ON NON-JPA POLES	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS		NOTICE OR CAUTION SIGN AT NO LESS THAN 9FT ABOVE GROUND; ONLY IF THE EXPOSURE EXCEEDS 90% OF THE GENERAL PUBLIC EXPOSURE AT EXPOSURE AT 6FT ABOVE GROUND OR AT OUTSIDE OF SURFACE OF ADJACENT BUILDING	
TOWERS							
AT ALL ACCESS POINTS TO THE ROOF	X			X			
ON ANTENNAS	X		X	X			
CONCEALED ANTENNAS	X	X		X			
ANTENNAS MOUNTED FACING OUTSIDE THE BUILDING	X	X		X			
ANTENNAS ON SUPPORT STRUCTURE	X	X		X			
ROOFVIEW GRAPH							
RADIATION AREA IS WITHIN 3FT FROM ANTENNA	X	ADJACENT TO EACH ANTENNA		X		EITHER NOTICE OR CAUTION SIGN (BASED ON ROOFVIEW RESULTS) AT ANTENNA /BARRIER	
RADIATION AREA IS BEYOND 3FT FROM ANTENNA	X	ADJACENT TO EACH ANTENNA		X	DIAGONAL, YELLOW STRIPING AS TO ROOFVIEW GRAPH		
CHURCH STEEPLES	ACCESS TO STEEPLE	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO STEEPLE			CAUTION SIGN AT THE ANTENNAS
WATER STATIONS	ACCESS TO LADDER	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO LADDER			CAUTION SIGN BESIDE INFO SIGN #1, MIN. 9FT ABOVE GROUND

NOTES FOR ROOFTOP SITES:

- EITHER NOTICE OR CAUTION SIGNS NEED TO BE POSTED AT EACH SECTOR AS CLOSE AS POSSIBLE TO: THE OUTER EDGE OF THE STRIPED OFF AREA OR THE OUTER ANTENNAS OF THE SECTOR
- IF ROOFVIEWS SHOWS: ONLY BLUE = NOTICE SIGN, BLUE AND YELLOW = CAUTION SIGN, ONLY YELLOW = CAUTION SIGN TO BE INSTALLED
- SHOULD THE REQUIRED STRIPING AREAS INTERFERE WITH ANY STRUCTURE OR EQUIPMENT (A/C, VENTS, ROOF HATCH, DOORS, OTHER ANTENNAS, DISHES, ETC.). PLEASE NOTIFY AT&T TO MODIFY THE STRIPING AREA, PRIOR TO STARTING THE WORK.

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SITE NAME
KILLINGWORTH-LITTLE CITY ROAD

SITE NUMBER:
CTL02016

SITE ADDRESS
**131 LITTLE CITY ROAD
KILLINGWORTH, CT 06419**

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP2

SIGNAGE GUIDELINES CHART

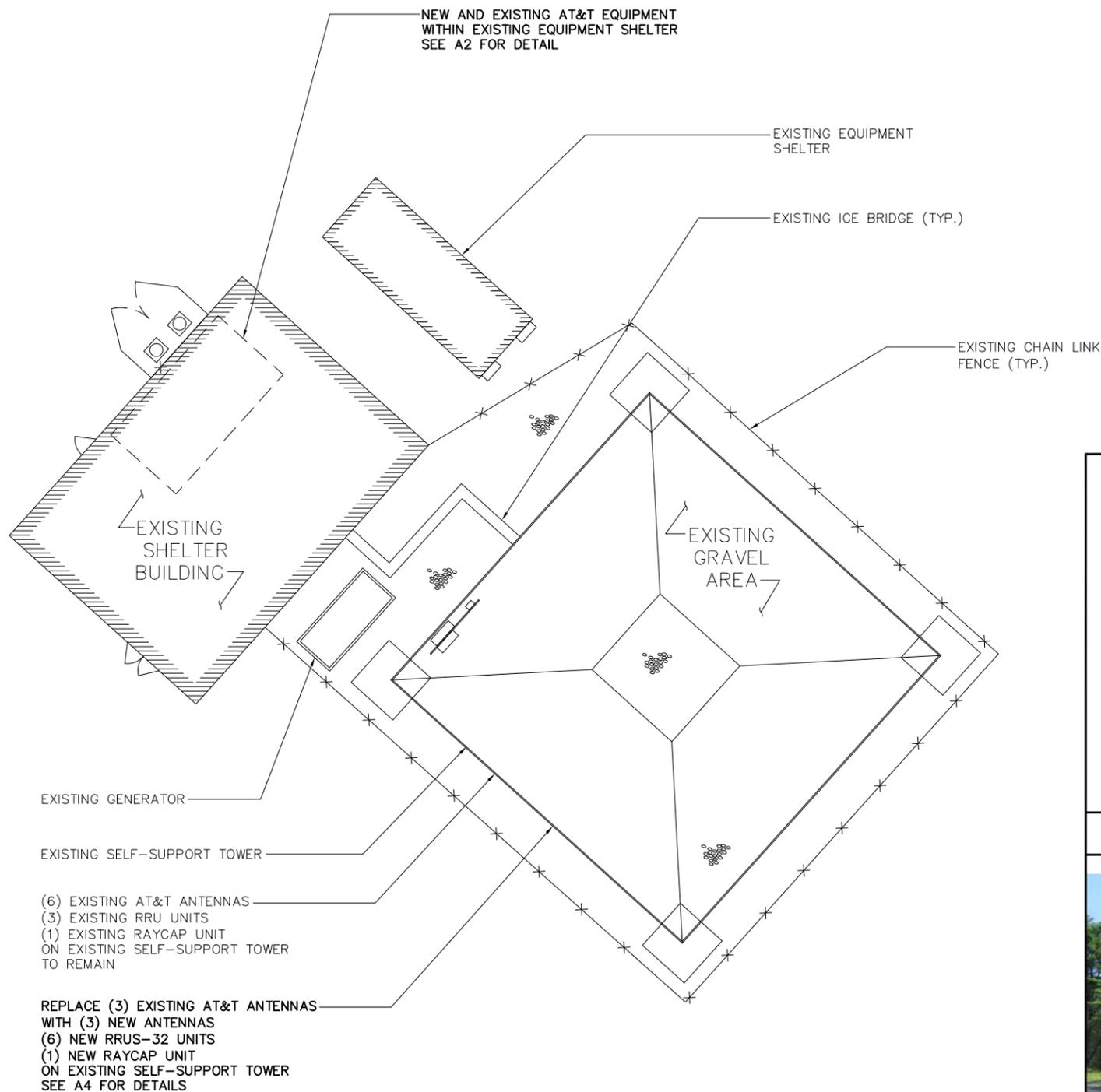
INFO SIGN #3

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
BTS	BASE TRANSMISSION STATION
CL	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DWG	DRAWING
FT	FOOT(FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
(E)	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
FIF	FACILITY INTERFACE FRAME
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE COMMUNICATION
LTE	LONG TERM EVOLUTION
MAX	MAXIMUM
MCPA	MULTI-CARRIER POWER AMPLIFIER
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTS	MANUAL TRANSFER SWITCH
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
PPC	POWER PROTECTION CABINET
PL	PROPERTY LINE
RBS	RADIO BASED STATION
RET	REMOTE ELECTRIC TILT
RRU	REMOTE RADIO UNIT
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S), #	POUND(S)
SF	SQUARE FOOT
STL	STEEL
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELE-COMMUNICATION SYSTEM
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

SYMBOLS

	REVISION
	WORK POINT
	UTILITY POLE
	COMPRESSED STONE
	BRICK
	CONCRETE
	EARTH
	GRAVEL
	MASONRY
	STEEL
	CENTERLINE
	PROPERTY LINE
	LEASE LINE
	EASEMENT LINE
	CHAIN LINK FENCE
	WOOD FENCE
	BELOW GRADE ELECTRIC
	BELOW GRADE TELEPHONE
	OVERHEAD ELECTRIC/TELEPHONE
	SECTION REFERENCE



SITE PHOTO 1 SCALE: N.T.S. 2



SITE PHOTO 2 SCALE: N.T.S. 3



550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701



1362 MELLON ROAD
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SITE NUMBER:
CTL02016

SITE ADDRESS
**131 LITTLE CITY ROAD
KILLINGWORTH, CT 06419**

SHEET NAME
COMPOUND PLAN

SHEET NUMBER
A1

COMPOUND PLAN

SCALE: 1" = 20'-0" 1

SITE PHOTO 2

SCALE: N.T.S. 3

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SITE NAME

**KILLINGWORTH-LITTLE
CITY ROAD**

SITE NUMBER:

CTL02016

SITE ADDRESS

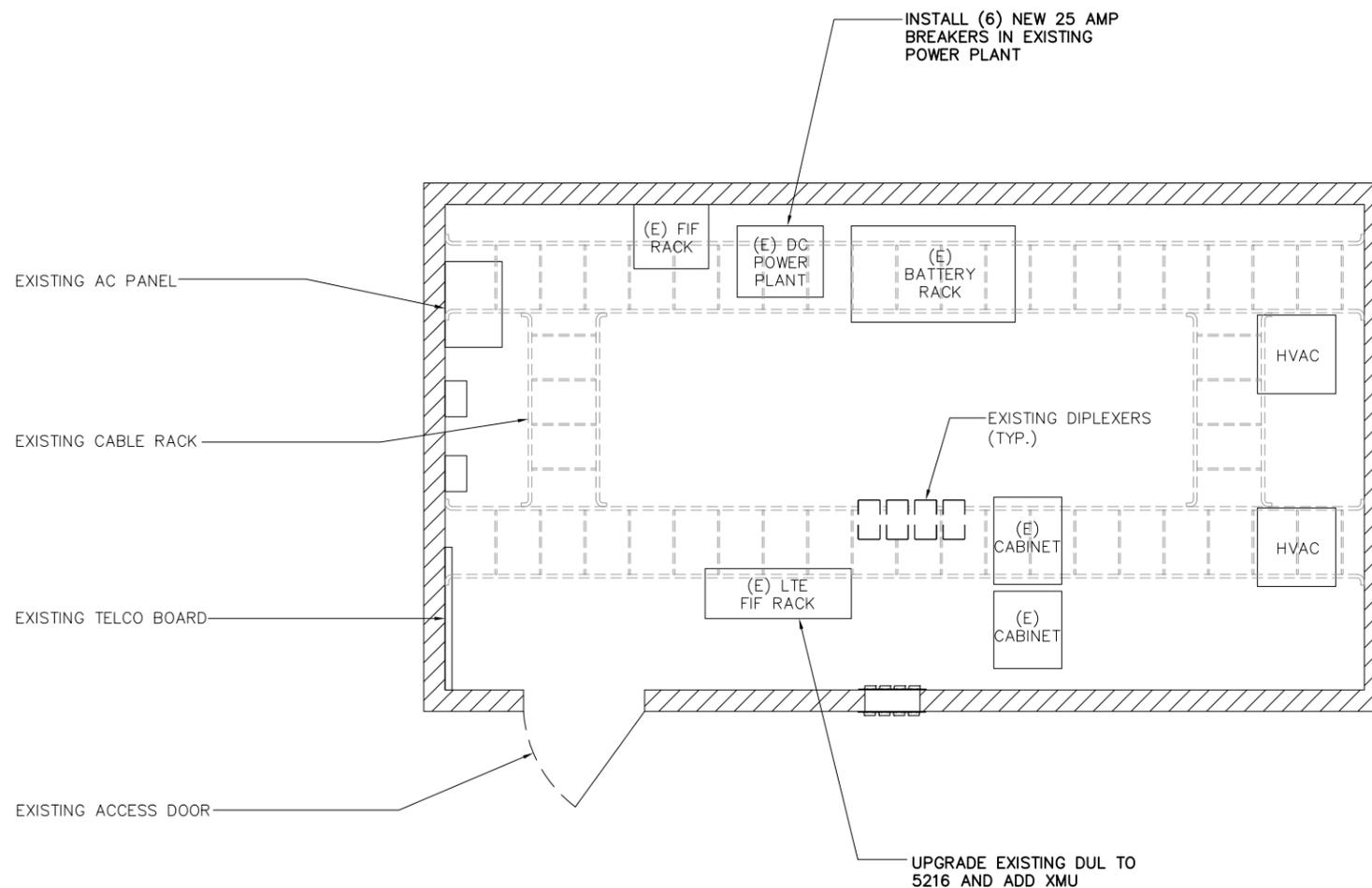
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KILLINGWORTH, CT 06419

SHEET NAME

**EQUIPMENT
PLAN**

SHEET NUMBER

A2



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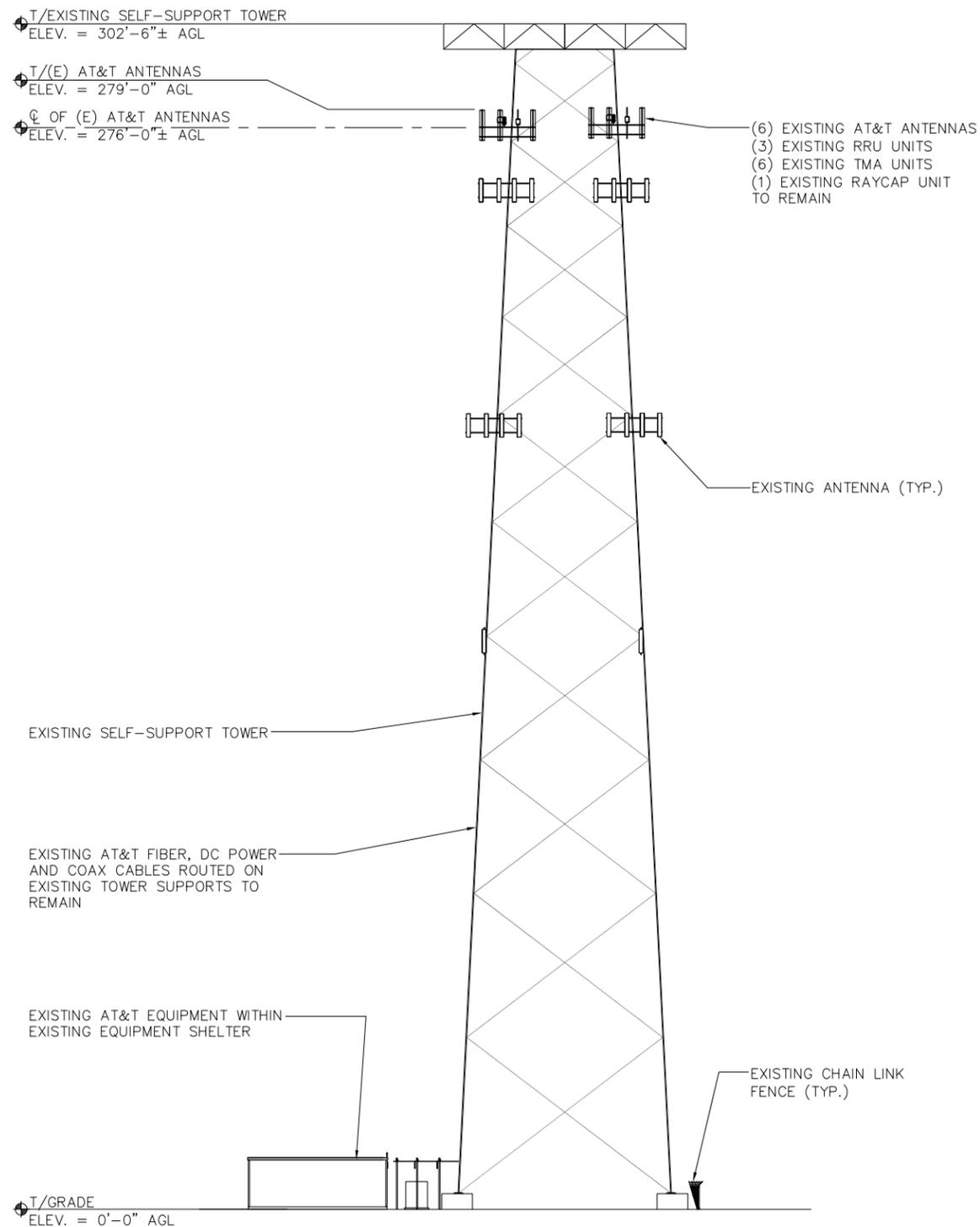
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SHEET NAME
ELEVATIONS

SHEET NUMBER
A3

NOTES:

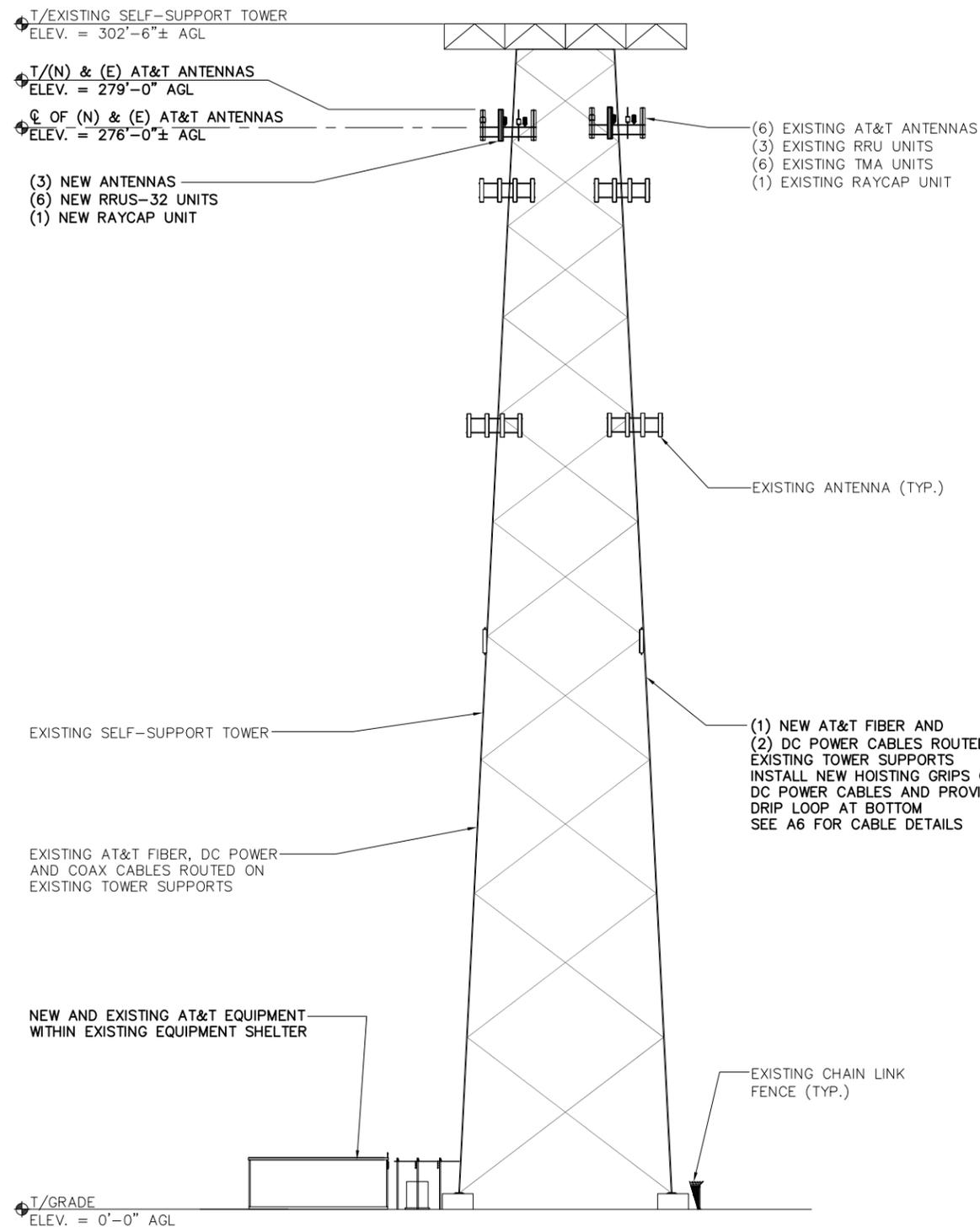
1. CALCULATIONS FOR THE STRUCTURE AND ANTENNA MOUNTS WERE PREPARED BY OTHERS AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CABLES NOT SHOWN FOR CLARITY



EXISTING ELEVATION

SCALE: 1/32" = 1'-0"

1

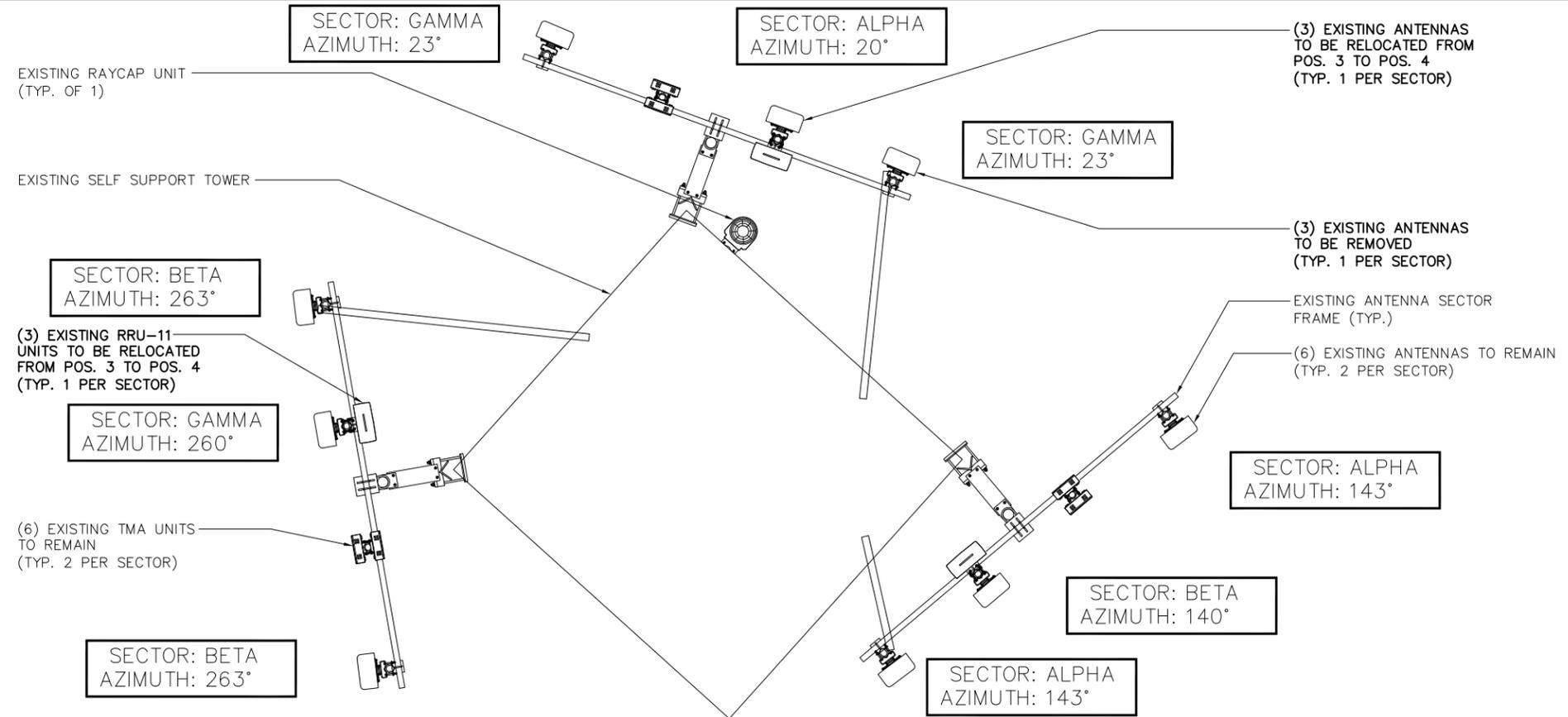


NEW ELEVATION

SCALE: 1/32" = 1'-0"

2

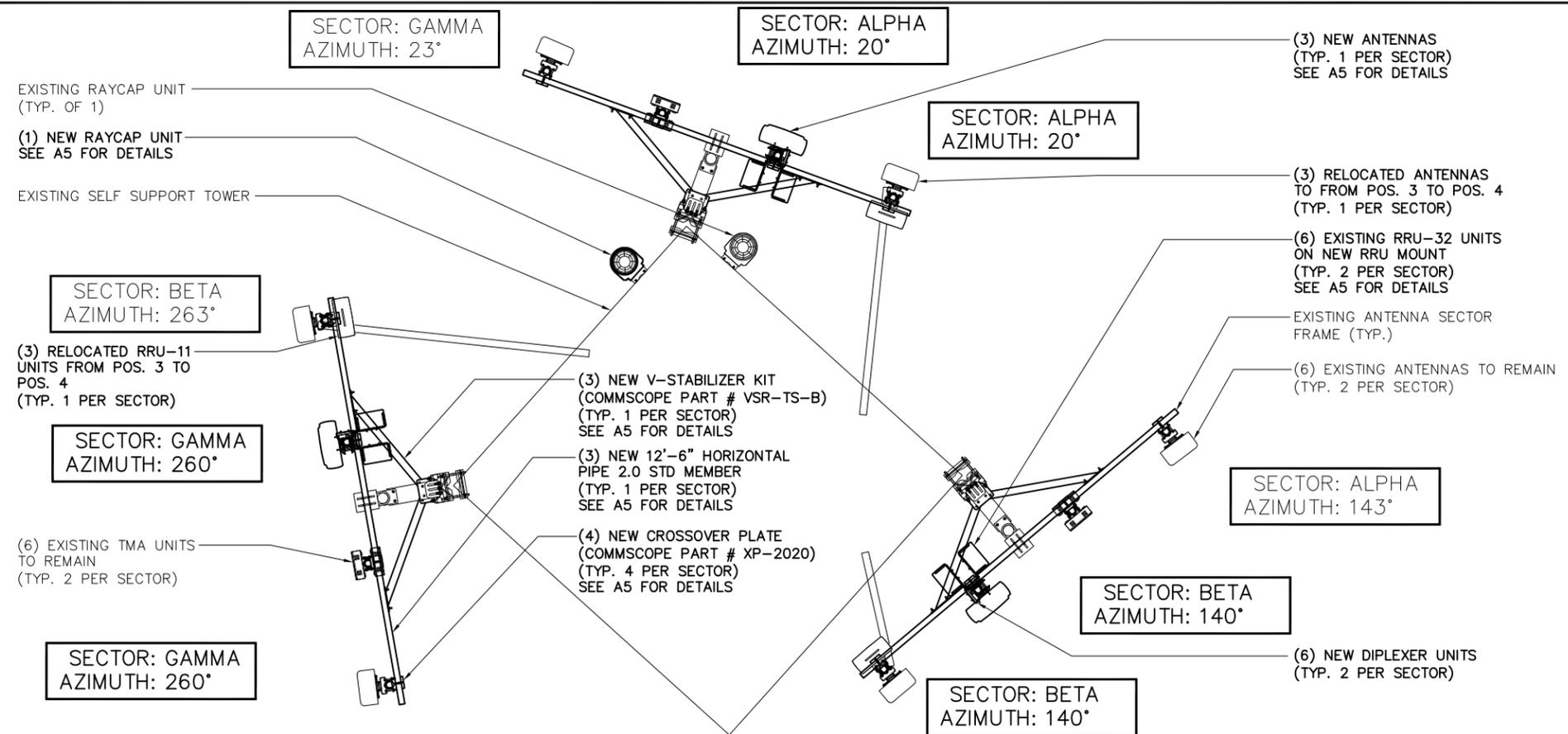
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EXISTING ANTENNA PLAN

SCALE: 3/16" = 1'-0" 1

NOTE:
3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNAS
6 FEET MINIMUM SEPARATION BETWEEN 700BC & 700 DE



FINAL ANTENNA PLAN

SCALE: 3/16" = 1'-0" 2



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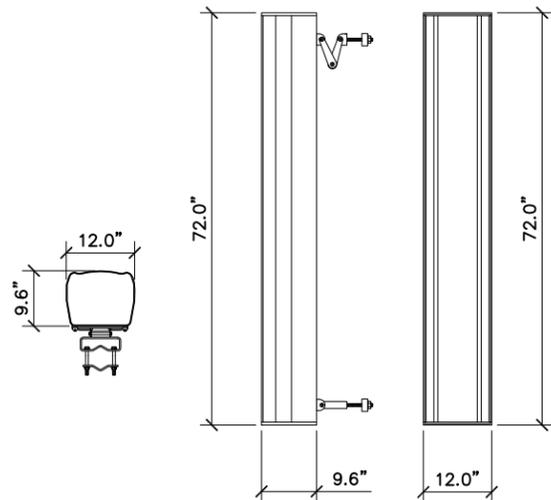
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CTL02016

SITE ADDRESS
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KILLINGWORTH, CT 06419**

SHEET NAME
ANTENNA PLANS

SHEET NUMBER
A4

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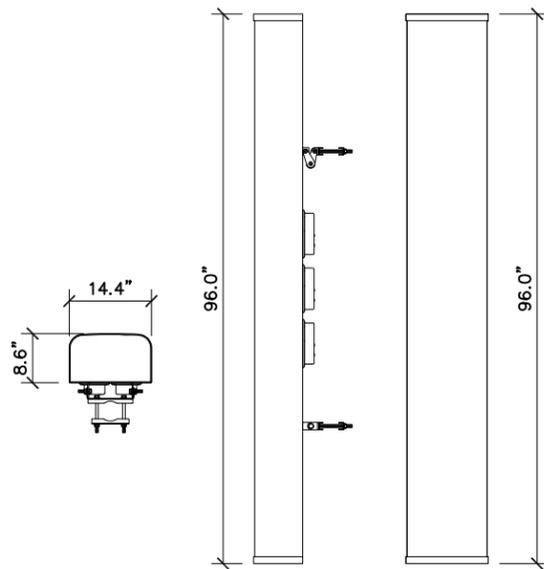


PLAN VIEW SIDE VIEW FRONT VIEW

QUINTEL – QS66512-2
 MULTISERVE MULTIBAND 12 PORT ANTENNA WITH QILT AND INTERNAL RET

FREQUENCY RANGE 2x698-806 MHz
 2x824-894 MHz
 4x1850-1990 MHz
 4x1695-1780 +2110-2400 MHz

ANTENNA 111 Lbs
 BRACKET 15 Lbs
 TOTAL WEIGHT 126 Lbs



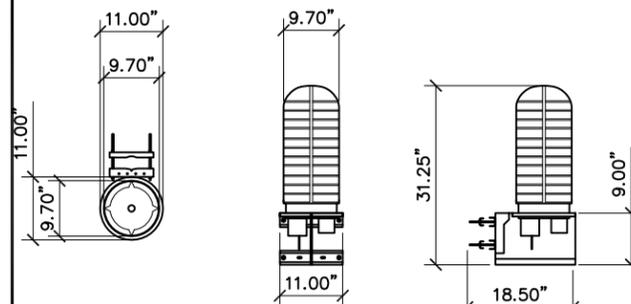
PLAN VIEW SIDE VIEW FRONT VIEW

CCI ANTENNA TPA-65R-LCUUUU-H8
 12 PORT MULTI-BAND ANTENNA

FREQUENCY RANGE 2 LOW BAND PORTS, 698-798 MHz
 2 LOW BAND PORTS, 824-896 MHz
 8 HIGH BAND PORTS, 1695-2360 MHz

ANTENNA W/ RET SYSTEM 81.6 Lbs
 BRACKET 12.6 Lbs
 TOTAL 94.2 Lbs

NOMINAL OPERATING VOLTAGE: 48 VDC
 NOMINAL DISCHARGE CURRENT: 20 kA 8/20ms
 MAXIMUM DISCHARGE CURRENT: 60 kA 8/20ms
 MAXIMUM CONTINUOUS OPERATING VOLTAGE: 75 VDC
 VOLTAGE PROTECTION RATING: 400 V
 WIND LOADING: 150 MPH SUSTAINED (105.7 lbs)
 195 MPH GUST (213.6 lbs)

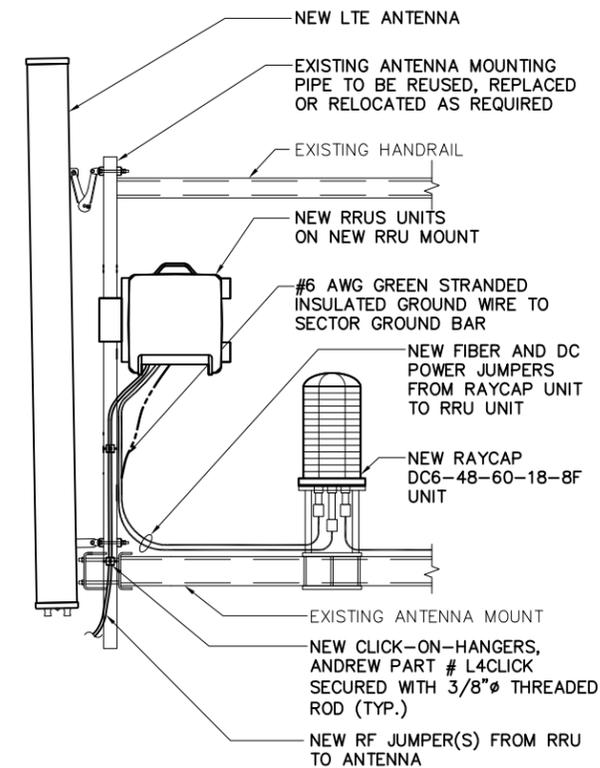


PLAN VIEW FRONT VIEW SIDE VIEW

RAYCAP – DC6-48-60-0-8F
 TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION

UNIT WEIGHT 32.8 Lbs

CONTRACTOR TO USE "THREAD LUBRICANT" ON MOUNTING BOLTS DURING INSTALLATION ON EXISTING STRUCTURAL MEMBER



ANTENNA SCHEMATIC SCALE: N.T.S. 4

at&t
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smartlink
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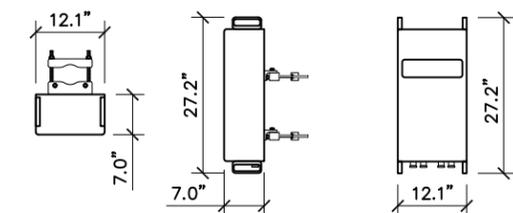
SITE NAME
KILLINGWORTH-LITTLE CITY ROAD

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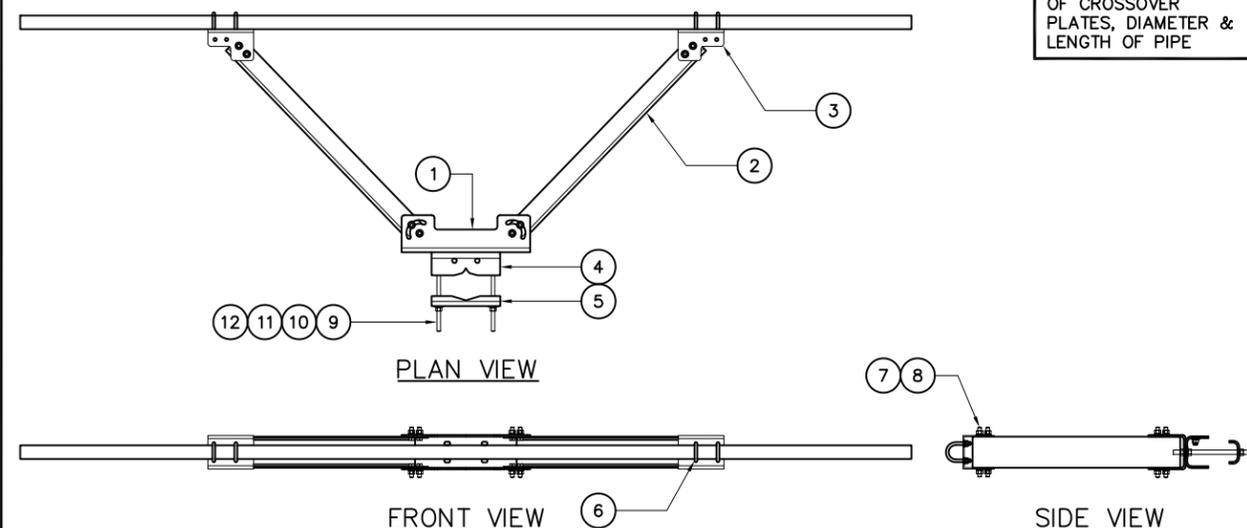
SHEET NAME
EQUIPMENT DETAILS

SHEET NUMBER
A5



PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON – RRUS 32 B30
 UNIT WEIGHT 60 Lbs



NOTES:
 REFER TO ANTENNA LAYOUT FOR NUMBER OF CROSSOVER PLATES, DIAMETER & LENGTH OF PIPE

ITEM	PART NO.	DESCRIPTION	QTY.
1	MTC340501	MOUNT CHANNEL	1
2	MTC340502	SUPPORT ARM	2
3	MTC340503	MOUNT CHANNEL	2
4	SMU208004	MOUNT	4
5	SMU208006	CLAMP PLATE	1
6	GUB-4240	1/2" x 2-1/2" x 4" GALV. U-BOLT	4
7	GB-0405	1/2" x 2" GALV. BOLT KIT	16
8	GWF-04	1/2" GALV. FLAT WASHER	16
9	MT-384-16	3/4" x 16" GALV. THREADED ROD	2
10	GWF-06	3/4" GALV. FLAT WASHER	4
11	GWL-06	3/4" GALV. LOCK WASHER	4
12	GN-06	3/4" GALV. HEX NUT	6

V-STABILIZER TOWER KIT
 (COMMSCOPE #VSR-TS-B)

TOTAL WEIGHT: 125.35 lbs
 W/O PIPE

RRU SPEC SCALE: N.T.S. 5

NEW V-STABILIZER KIT SCALE: N.T.S. 6

NOT USED SCALE: N.T.S. 7

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KILLINGWORTH-LITTLE CITY ROAD

SITE NUMBER:
CTL02016

SITE ADDRESS
**131 LITTLE CITY ROAD
KILLINGWORTH, CT 06419**

SHEET NAME
ANTENNA & CABLE CONFIGURATION

SHEET NUMBER
A6

FINAL ANTENNA CONFIGURATION AND CABLE SCHEDULE SUPPLIED BY AT&T WIRELESS, FROM RF CONFIG. DATED (09/14/17)										
SECTOR	ANTENNA NUMBER	ANTENNA STATUS & TYPE	ANTENNA MODEL NUMBER	ANTENNA VENDOR	TMA/RRU UNIT	AZIMUTH	ANTENNA CL FROM GROUND	CABLE FEEDER		RAYCAP UNIT
								TYPE	LENGTH	
ALPHA	A-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	143°	276'-0"	1-5/8"φ LDF7-50A	350'-0"	(1) (E) DC6-48-60-18-8F UNIT (1) (N) DC6-48-60-18-8F UNIT
	A-2	-	-	-	-	-	-	-	-	
	A-3	(N) LTE2C/3C ANTENNA	QS66512-2	QUINTEL	(2) NEW RRUS-32 UNITS	20°	276'-0"	(1) NEW FIBER CABLE	350'-0"	
	A-4	(E) LTE1C ANTENNA	AM-X-CD-16-65-00T-RET	KMW	(1) EXISTING RRUS-11 UNIT	20°	276'-0"	(1) EXISTING FIBER CABLE	350'-0"	
BETA	B-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	263°	276'-0"	1-5/8"φ LDF7-50A	350'-0"	
	B-2	-	-	-	-	-	-	-	-	
	B-3	(N) LTE2C/3C ANTENNA	QS66512-2	QUINTEL	(2) NEW RRUS-32 UNITS	140°	276'-0"	SEE ANTENNA A-3 FOR CABLE TYPE AND LENGTH		
	B-4	(E) LTE1C ANTENNA	AM-X-CD-16-65-00T-RET	KMW	(1) EXISTING RRUS-11 UNIT	140°	276'-0"	SEE ANTENNA A-4 FOR CABLE TYPE AND LENGTH		
GAMMA	C-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	23°	276'-0"	1-5/8"φ LDF7-50A	350'-0"	
	C-2	-	-	-	-	-	-	-	-	
	C-3	(N) LTE2C/3C ANTENNA	TPA-65R-LCUUUU-H8	CCI	(2) NEW RRUS-32 UNITS	260°	276'-0"	SEE ANTENNA A-3 FOR CABLE TYPE AND LENGTH		
	C-4	(E) LTE1C ANTENNA	AM-X-CD-16-65-00T-RET	KMW	(1) EXISTING RRUS-11 UNIT	260°	276'-0"	SEE ANTENNA A-4 FOR CABLE TYPE AND LENGTH		

LEGEND
(N) - NEW
(E) - EXISTING

1. CONTRACTOR IS TO REFER TO AT&T'S MOST CURRENT RADIO FREQUENCY DATA SHEET (RFDS) PRIOR TO CONSTRUCTION.
2. THE SIZE, HEIGHT, AND DIRECTION OF THE ANTENNAS SHALL BE ADJUSTED TO ACHIEVE THE AZIMUTHS SPECIFIED AND LIMIT SHADOWING AND TO MEET THE SYSTEM REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY THE HEIGHT OF THE ANTENNA WITH THE AT&T WIRELESS PROJECT MANAGER.
4. VERIFY TYPE AND SIZE OF TOWER LEG PRIOR TO ORDERING ANY ANTENNA MOUNT.
5. UNLESS NOTED OTHERWISE THE CONTRACTOR MUST PROVIDE ALL MATERIAL NECESSARY.
6. ANTENNA AZIMUTHS ARE DEGREES OFF OF TRUE NORTH, BEARING CLOCKWISE, IN WHICH ANTENNA FACE IS DIRECTED. ALL ANTENNAS (AND SUPPORTING STRUCTURES AS PRACTICAL) SHALL BE ACCURATELY ORIENTED IN THE SPECIFIED DIRECTION.
7. CONTRACTOR SHALL VERIFY ALL RF INFORMATION PRIOR TO CONSTRUCTION.
8. SWEEP TEST SHALL BE PERFORMED BY GENERAL CONTRACTOR AND SUBMITTED TO AT&T WIRELESS CONSTRUCTION SPECIALIST. TEST SHALL BE PERFORMED PER AT&T WIRELESS STANDARDS.
9. CABLE LENGTHS WERE DETERMINED BASED ON THE DESIGN DRAWING. CONTRACTOR TO VERIFY ACTUAL LENGTH DURING PRE-CONSTRUCTION WALK.
10. CONTRACTOR TO USE ROSENBERGER FIBER LINE HANGER COMPONENTS (OR ENGINEER APPROVED EQUAL).

ANTENNA AND CABLING NOTES

SCALE: N.T.S. 1

RF, DC, & COAX CABLE MARKING LOCATIONS TABLE	
NO	LOCATIONS
1	EACH TOP-JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
2	EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH (1) SET OF 3/4" WIDE COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
3	CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER.
4	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER.
5	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER.

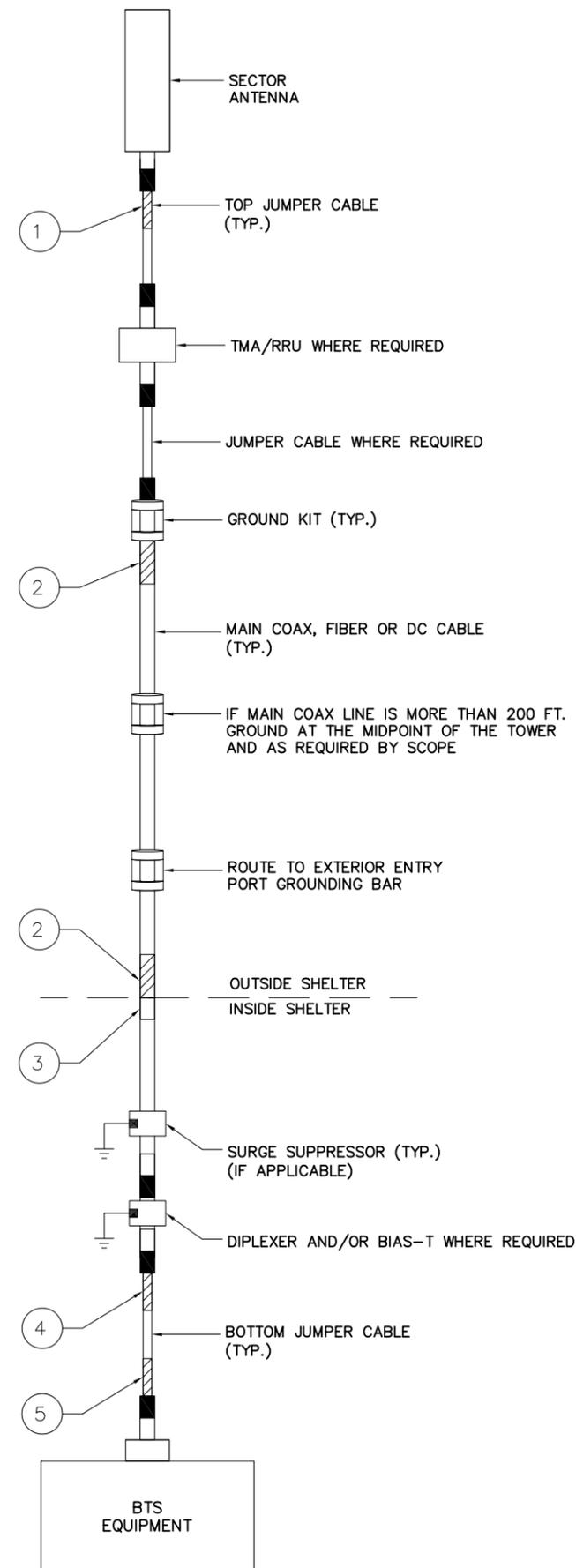
CABLE MARKING DIAGRAM

SCALE: N.T.S. 2

1. THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE.
2. THE STANDARD IS BASED ON EIGHT COLORED TAPES-RED, BLUE, GREEN, YELLOW, ORANGE, BROWN, WHITE, AND VIOLET. THESE TAPES MUST BE 3/4" WIDE & UV RESISTANT SUCH AS SCOTCH 35 VINYL ELECTRICAL COLOR CODING TAPE AND SHOULD BE READILY AVAILABLE TO THE ELECTRICIAN OR CONTRACTOR ON SITE.
3. USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE COLOR CHART".
4. WHEN AN EXISTING COAXIAL LINE THAT IS INTENDED TO BE A SHARED LINE BETWEEN TECHNOLOGIES IS ENCOUNTERED, THE CONTRACTOR SHALL REMOVE THE EXISTING COLOR CODING SCHEME AND REPLACE IT WITH THE COLOR CODING STANDARD. IN THE ABSENCE OF AN EXISTING COLOR CODING AND TAGGING SCHEME, OR WHEN INSTALLING PROPOSED COAXIAL CABLES, THIS GUIDELINE SHALL BE IMPLEMENTED AT THAT SITE REGARDLESS OF TECHNOLOGY.
5. ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) THREE WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID UNRAVELING.
6. ALL COLOR BANDS INSTALLED AT THE TOP OF THE TOWER SHALL BE A MINIMUM OF 3" WIDE, AND SHALL HAVE A MINIMUM OF 3/4" OF SPACE BETWEEN EACH COLOR.
7. ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
8. IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE NEW TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

CABLE MARKING NOTES

SCALE: N.T.S. 3



CABLE COLOR CODING DIAGRAM

SCALE: N.T.S. 4



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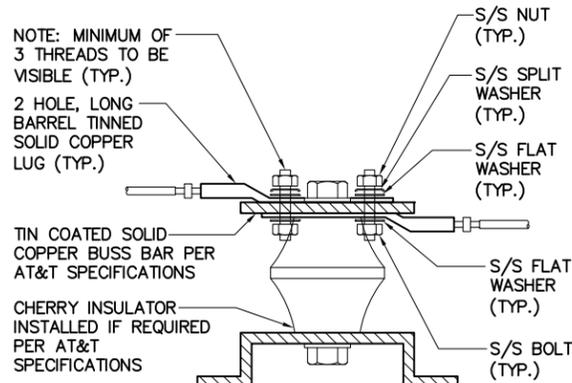
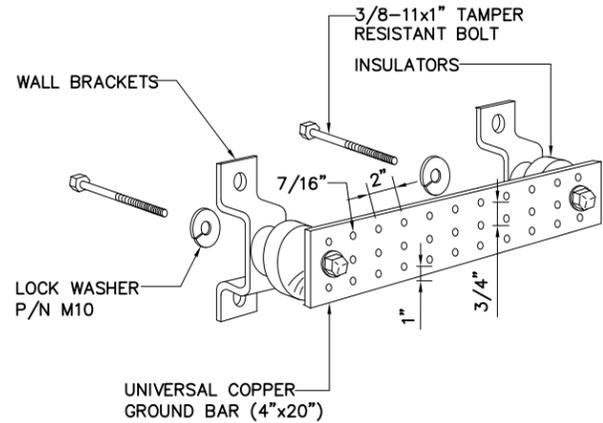
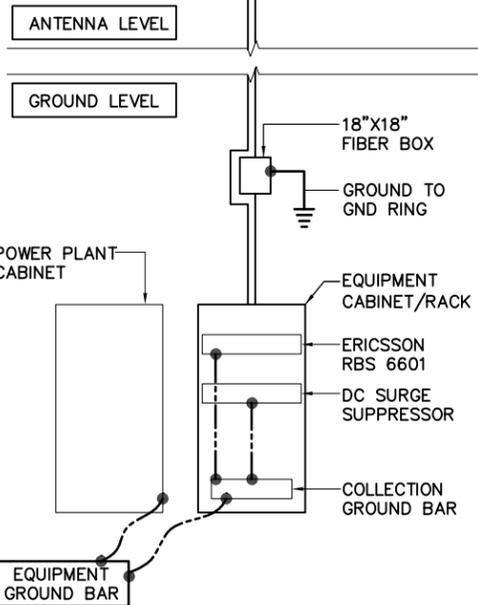
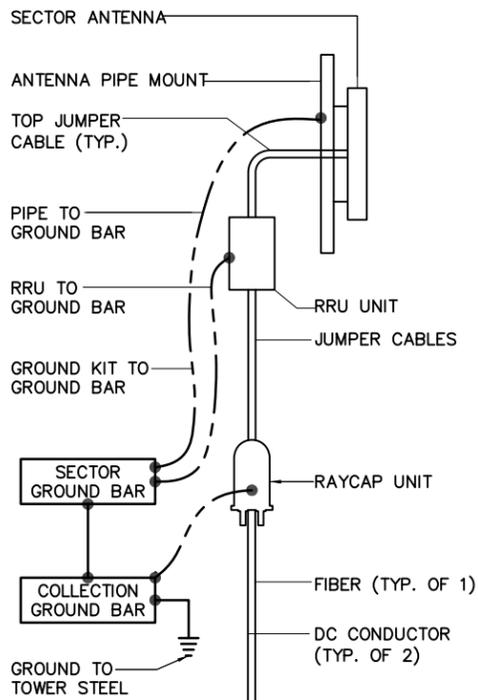
SITE NUMBER:
CTL02016

SITE ADDRESS
**131 LITTLE CITY ROAD
KILLINGWORTH, CT 06419**

SHEET NAME
CABLE NOTES AND COLOR CODING

SHEET NUMBER
A7

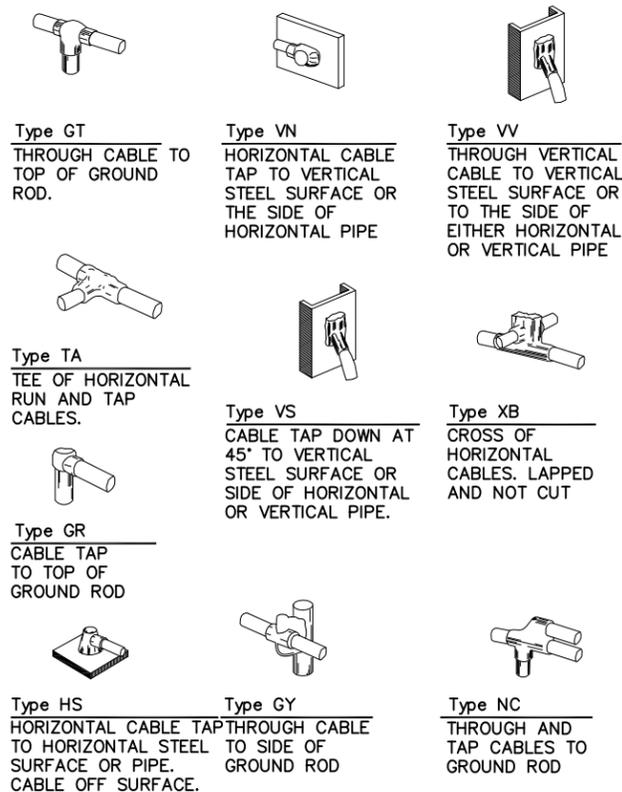
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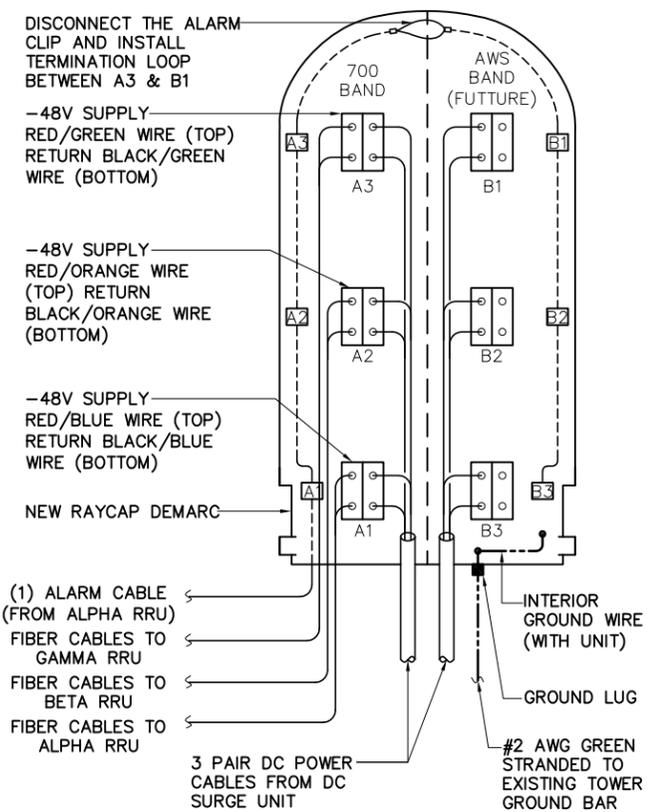
- NOTES:
1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
 2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
 3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

GROUND BAR DETAIL SCALE: N.T.S. 2

LUG DETAIL SCALE: N.T.S. 3



EXOTHERMIC WELD DETAILS SCALE: N.T.S. 4



RAYCAP DC POWER AND ALARM DET. SCALE: N.T.S. 5

NOT USED SCALE: N.T.S. 6

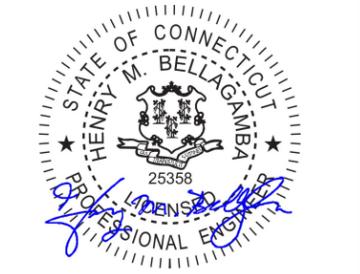
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SUITE 550 13 AND 14
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smartlink
1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076

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REV	DATE	DESCRIPTION	BY
0	09/26/17	90% REVIEW	EB
1	10/25/17	FOR PERMIT	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.



SITE NAME
KILLINGWORTH-LITTLE
CITY ROAD

SITE NUMBER:
CTL02016

SITE ADDRESS
131 LITTLE CITY ROAD
KILLINGWORTH, CT 06419

SHEET NAME
GROUNDING
DETAILS

SHEET NUMBER
A8

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