December 17th, 2017

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

Re:	**Notice of Exempt Modification – Antenna Swap and RRU Add**
Property Address:	**539 Plains Rd. Haddam, CT 06438**
Applicant:	**AT&T Mobility, LLC**

Dear Ms. Bachman:

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

AT&T currently maintains a wireless telecommunications facility consisting of nine (9) wireless telecommunication antennas at an antenna center line height of 167-feet on an existing 181-foot monopole, owned by Crown Castle at 12 Gill St. Suite 5800, Woburn, MA 01801. AT&T now intends to swap (3) 4' Powerwave 7770 panel antennas for (3) 6' Quintel QS66512-2 Panel Antennas, each swap occurring in position [4], all sectors for a total of three (3) antennas being swapped. AT&T also wishes to add (1) RRUS-32 and (1) RRUS-32 B2 on position [4] all sectors, for a total of (6) RRUs 32s being added. Lastly, AT&T also intends to add (1) Raycap Squid as well as (2) DC Cables and (1) Fiber Cables to their configuration. All of the changes will take place on the existing antenna mount.

Per the attached letter, the construction of the monopole was approved on October 6th. 1986 by the Connecticut Siting Council. Please see attached for conditions.

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

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-5I0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to Jim Puska, Zoning Enforcement and Wetlands, Haddam Town Office Building, 30 Field Park Dr. Haddam, CT 06438 and Lizz Milardo, First Selectman, Haddam Town Office Building, 30 Field Park Dr. Haddam, CT 06438. A copy of this letter is also being sent to the property owner 539 Plains Rd. LLC, PMB353 4017 Washington Rd. McMurray PA 15317 and to the tower company, Crown Castle, 3 Corporate Park Drive, Suite 101, Clifton Park, NY 12065.

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

- **EM-CING-054-057-061-160-161-070815** - New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at 366 Three Mile Road, Glastonbury; Butternut Hollow Road, Greenwich; 599 Plains Road, **Haddam**; 111 Trask Road/426 River Road, Willington; and 128 Mather Street, Wilton, Connecticut.
- **EM-CING-061-081208 -** New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at Plains Road/Turkey Hill Road, **Haddam**, Connecticut.
- **EM-CING-061-121031A -** New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 525 Plains Road (Turkey Hill Road), **Haddam**, Connecticut.

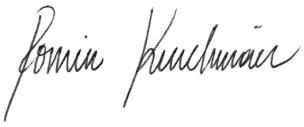
The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b) (2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 167-foot level of the 181-foot monopole.

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

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

Sincerely,



Romina Kirchmaier

CC w/enclosures:
Jim Puska, Zoning Enforcement and Wetlands, Town of Haddam
Lizz Milardo, First Selectman, Town of Haddam
539 Plains Rd. LLC, Land Owner
Crown Castle, Tower Company

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

1 CENTRAL PARK PLAZA • NEW BRITAIN, CONN. 06051

PHONE: 827-2604

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John C. Kelly
EXECUTIVE DIRECTOR
STANLEY J. MODZELESKY
EXECUTIVE ASSISTANT

October 7, 1986

Attorney Howard L. Slater
Byrne, Slater, Sandler, Shulman,
and Rouse, P.C.
330 Main Street
P.O. Box 3216
Hartford, Connecticut 06103

RE: Docket No. 58 - Hartford Cellular Company Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of facilities to provide cellular service in Hartford, Tolland, and Middlesex Counties. Development and Management Plans for Portland, Haddam, Somers, and Windsor tower sites.

Dear Attorney Slater:

At a meeting of the Siting Council held on October 6, 1986, the Council considered and approved the Development and Management Plans (D&M Plans) for the above-referenced tower sites. Please note that the Portland monopole must be painted to comply with Order No. 7 of the Decision and Order in Docket No. 58.

Enclosed for your reference is a copy of the Staff Report for these D&M Plans recommending the Council's approval.

This approval applies only to the D&M plans for the Haddam, Portland, Somers, and Windsor sites. Modifications to these D&M plans require advance Council notification and approval.

Contact Robert K. Erling of the Council Staff if you have any questions on this matter.

Very truly yours,

Gloria Dibble Pond
Chairperson

enclosure
GDP/RKE/cp

SITESAFE
RF COMPLIANCE EXPERTS
A BUSINESS OF FDH VELOCITEL

200 North Glebe Road, Suite 1000, Arlington, VA 22203-3728
703.276.1100 • 703.276.1169 fax
info@sitesafe.com • www.sitesafe.com

SmartLink, LLC on behalf of AT&T Mobility, LLC
Site FA – 10035057
Site ID – CT2165 (2C-3C)
USID – 59414
Site Name – Haddam-Plans Rd
Site Compliance Report

525 Plains Road
Haddam, CT 06438

Latitude: N41-26-34.97
Longitude: W72-30-22.40
Structure Type: Self-Support

Report generated date: December 4, 2017
Report by: Leo Romero
Customer Contact: Romina Kirchmaier

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

Table of Contents

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	Yes
RF Sign(s) @ access point(s)	No
RF Sign(s) @ antennas	No
Barrier(s) @ sectors	No
Max cumulative simulated RFE level on the Ground Level	<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_CTV2165_2018-LTE-Multi-Carrier_LTE_sp656b_2051A0D6QJ_10035057_59414_06-21-2017_Final-Approved_v1.00

CD's: 10035057_AE201_171103_CTL02165_REV1

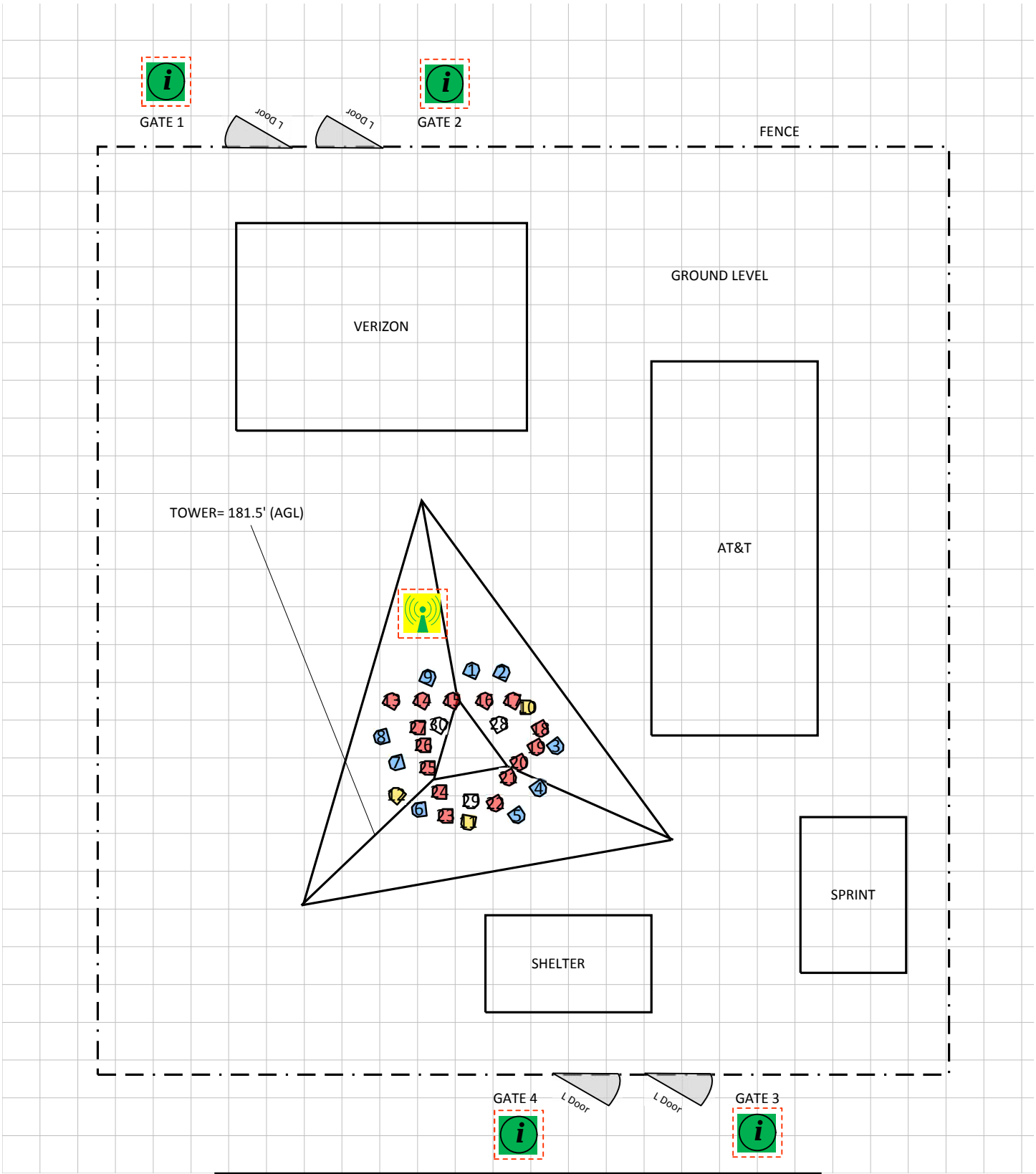
RF Powers Used: RFDS ERP Values

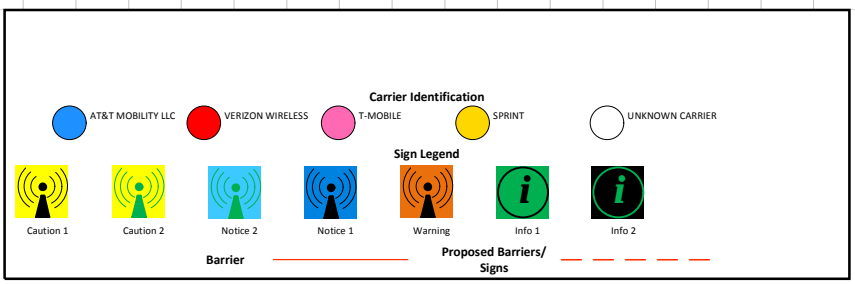
2 Scale Maps of Site

The following diagrams are included:

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

Site Scale Map For: Haddam-Plans Rd





(Feet)

0 4.6 9.1

www.sitesafe.com
Site Name:Haddam-Plans Rd
12/4/2017 5:29:43 PM

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	KMW AM-X-CD-16-65-00T	Panel	737	25	65	6	13.36	0	0	1	1475.7	61.5'	76.7'	164'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	25	68	6	14.16	0	0	1	3664.4	63.5'	76.6'	164'
2	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	25	64	6	14.56	0	0	1	1285.3	63.5'	76.6'	164'
3	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	143	82	4.6	11.51	0	1	0	401.5	67'	71.7'	164.7'
4	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	145	65	6	13.36	0	0	1	1475.7	65.9'	68.9'	164'
5	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	145	68	6	14.16	0	0	1	3664.4	64.5'	67.1'	164'
5	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	145	64	6	14.56	0	0	1	1285.3	64.5'	67.1'	164'
6	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	263	82	4.6	11.51	0	1	0	401.5	58'	67.5'	164.7'
7	AT&T MOBILITY LLC	Andrew DBXNH-6565B-VTM	Panel	737	255	67	6.1	13.07	0	0	1	1475.7	56.5'	70.6'	164'
8	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	1900	255	68	6	14.16	0	0	1	3664.4	55.5'	72.3'	164'
8	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	255	64	6	14.56	0	0	1	1285.3	55.5'	72.3'	164'
9	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	23	82	4.6	11.51	0	1	0	401.5	58.6'	76.3'	164.7'
10	SPRINT	KMW ETCR-654L12H6	Panel	862	90	68	7.1	12.86	-	-	-	772.8	65.1'	74.3'	146.5'
10	SPRINT	KMW ETCR-654L12H6	Panel	1900	90	60.58	7.1	16.66	-	-	-	2780.7	65.1'	74.3'	146.5'
11	SPRINT	KMW ETCR-654L12H6	Panel	862	190	68	7.1	12.86	-	-	-	772.8	61.2'	66.6'	146.5'
11	SPRINT	KMW ETCR-654L12H6	Panel	1900	190	60.58	7.1	16.66	-	-	-	2780.7	61.2'	66.6'	146.5'
12	SPRINT	KMW ETCR-654L12H6	Panel	862	310	68	7.1	12.86	-	-	-	772.8	56.4'	68.5'	146.5'
12	SPRINT	KMW ETCR-654L12H6	Panel	1900	310	60.58	7.1	16.66	-	-	-	2780.7	56.4'	68.5'	146.5'
13	VERIZON WIRELESS	Generic Panel	Panel	850	30	65	6.3	13.43	-	-	-	881.2	56.1'	74.7'	174.9'
14	VERIZON WIRELESS	Generic Panel	Panel	751	30	65	6.3	12.56	-	-	-	1081.8	58.2'	74.7'	174.9'
15	VERIZON WIRELESS	Generic Panel	Panel	1900	30	65	6.3	16.26	-	-	-	2536	60.2'	74.7'	174.9'
16	VERIZON WIRELESS	Generic Panel	Panel	2100	30	65	6.3	15.53	-	-	-	2143.6	62.3'	74.7'	174.9'
17	VERIZON WIRELESS	Generic Panel	Panel	850	30	65	6.3	13.43	-	-	-	881.2	64.2'	74.7'	174.9'
18	VERIZON WIRELESS	Generic Panel	Panel	850	150	65	6.3	13.43	-	-	-	881.2	66'	72.8'	174.9'
19	VERIZON WIRELESS	Generic Panel	Panel	751	150	65	6.3	12.56	-	-	-	1081.8	65.7'	71.6'	174.9'
20	VERIZON WIRELESS	Generic Panel	Panel	1900	150	65	6.3	16.26	-	-	-	2536	64.6'	70.6'	174.9'
21	VERIZON WIRELESS	Generic Panel	Panel	2100	150	65	6.3	15.53	-	-	-	2143.6	63.9'	69.6'	174.9'

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)
22	VERIZON WIRELESS	Generic Panel	Panel	850	150	65	6.3	13.43	-	-	-	881.2	63'	67.9'	174.9'
23	VERIZON WIRELESS	Generic Panel	Panel	850	270	65	6.3	13.43	-	-	-	881.2	59.7'	67.1'	174.9'
24	VERIZON WIRELESS	Generic Panel	Panel	751	270	65	6.3	12.56	-	-	-	1081.8	59.3'	68.7'	174.9'
25	VERIZON WIRELESS	Generic Panel	Panel	1900	270	65	6.3	16.26	-	-	-	2536	58.5'	70.3'	174.9'
26	VERIZON WIRELESS	Generic Panel	Panel	2100	270	65	6.3	15.53	-	-	-	2143.6	58.2'	71.8'	174.9'
27	VERIZON WIRELESS	Generic Panel	Panel	850	270	65	6.3	13.43	-	-	-	881.2	57.9'	72.9'	174.9'
28	UNKNOWN CARRIER	Generic Panel	Panel	1900	60	65	4.6	15.43	-	-	-	2094.8	63.3'	73.2'	132.7'
29	UNKNOWN CARRIER	Generic Panel	Panel	1900	180	65	4.6	15.43	-	-	-	2094.8	61.4'	68.1'	132.7'
30	UNKNOWN CARRIER	Generic Panel	Panel	1900	300	65	4.6	15.43	-	-	-	2094.8	59.2'	73.1'	132.7'

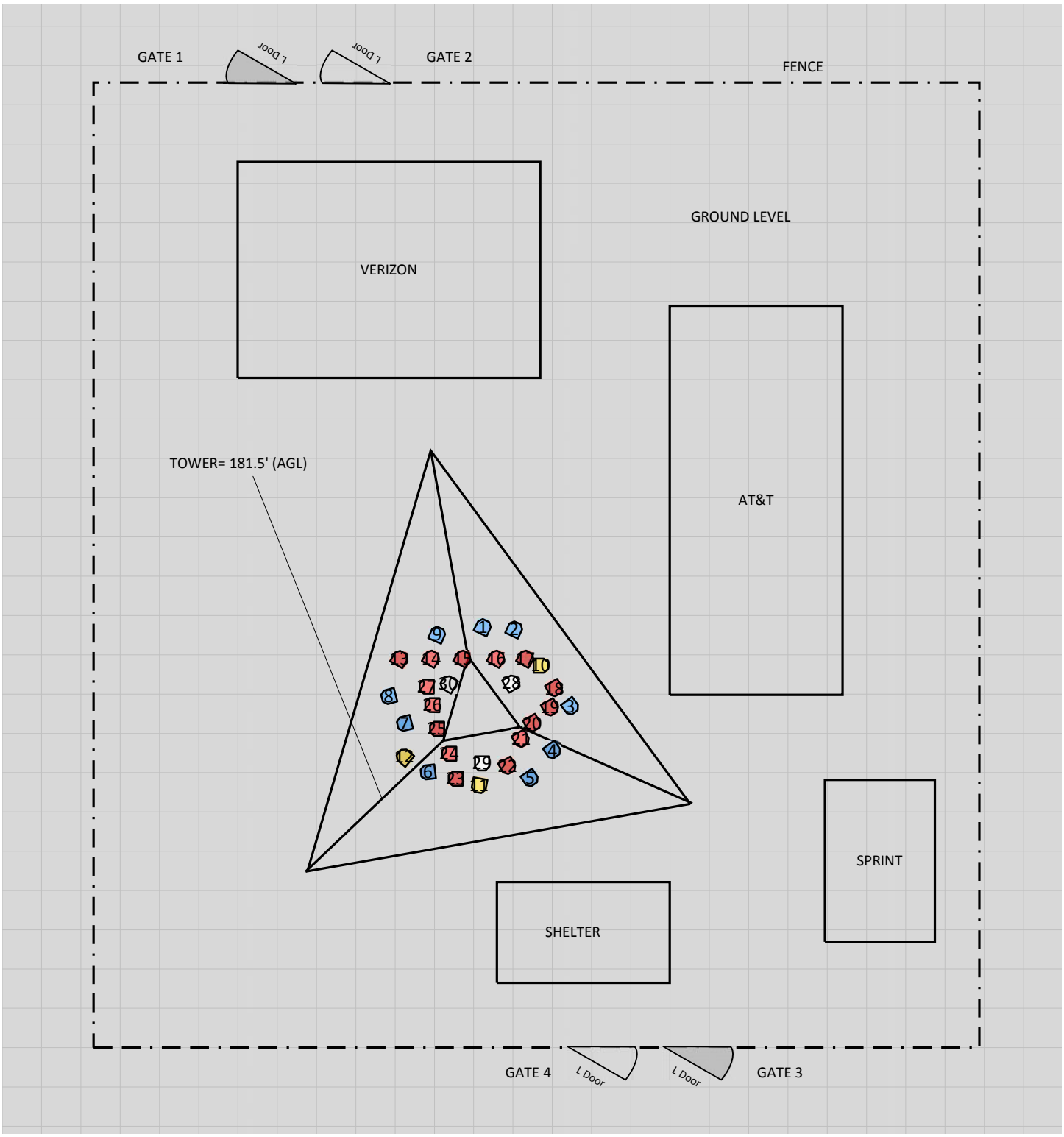
NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height **above ground level (AGL).** The distance to the bottom of the antenna is calculated 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: Haddam-Plans Rd



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

>= 5000 | >= 500 | >= 100 | >= 5 | < 5

Carrier Identification

AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

Barrier | Proposed Barriers

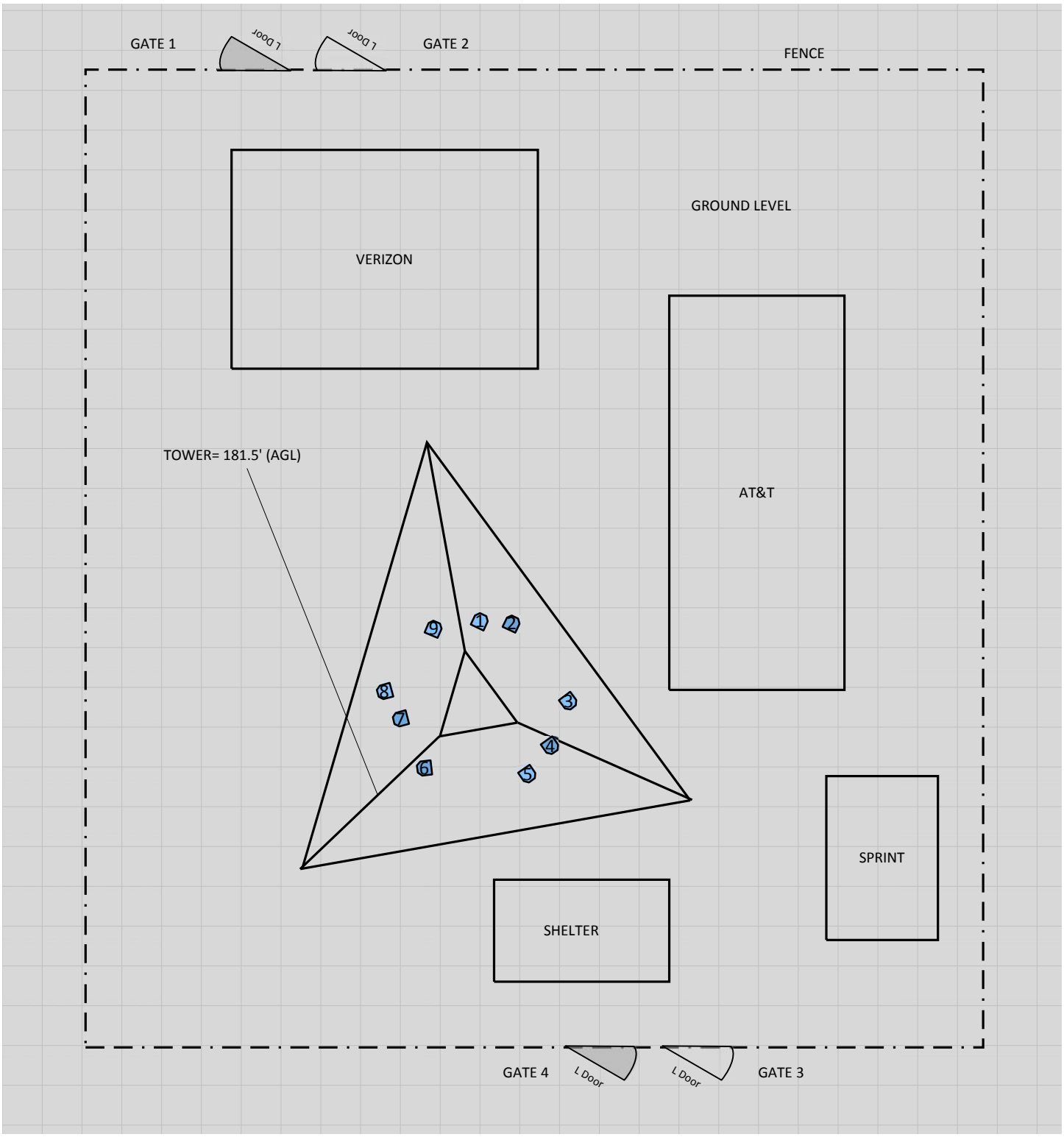
(Feet)

0 4.8 9.6

www.sitesafe.com
Site Name:Haddam-Plans Rd
12/4/2017 5:25:45 PM

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

RF Exposure Simulation For: Haddam-Plans Rd
AT&T Mobility, LLC Contribution



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

>= 5000 | >= 500 | >= 100 | >= 5 | < 5

Carrier Identification

AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

Barrier | Proposed Barriers

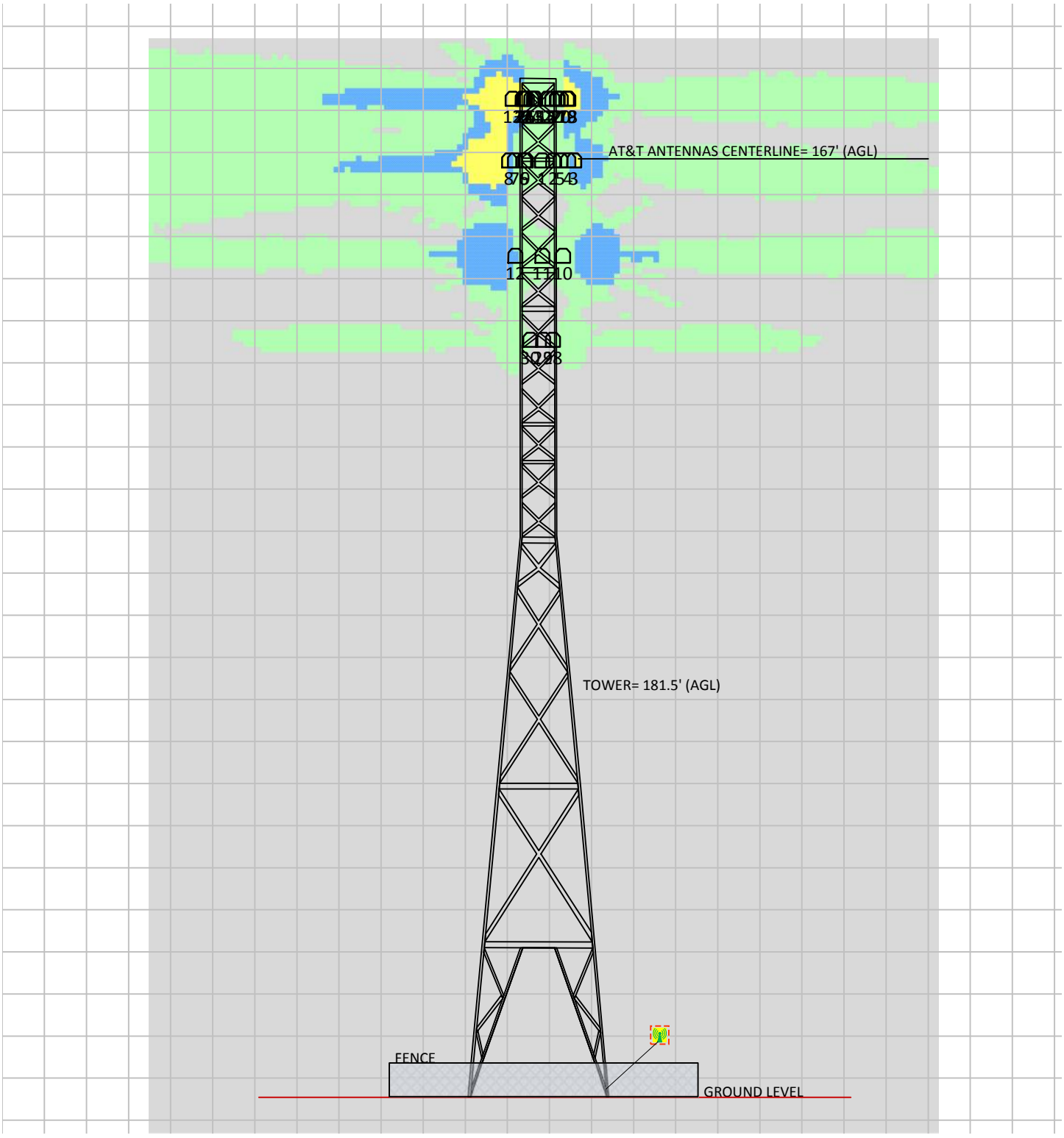
(Feet)

0 4.7 9.4

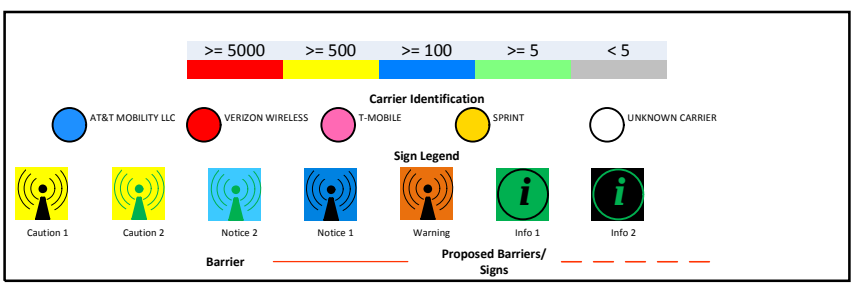
www.sitesafe.com
Site Name:Haddam-Plans Rd
12/4/2017 5:27:58 PM

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

RF Exposure Simulation For: Haddam-Plans Rd
Elevation View



% of FCC Public Exposure Limit



(Feet)

0 13.4 26.7

www.sitesafe.com
Site Name:Haddam-Plans Rd
12/4/2017 5:37:00 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:

Base of Tower

Caution 2 sign required (At all access points).

Compound Gates 1, 2, 3 and 4 Locations

Information 1 sign required at all compound gates.

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 Leo Romero.

December 4, 2017

Appendix A – Statement of Limiting Conditions

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

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

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

Appendix B – Regulatory Background Information

FCC Rules and Regulations

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

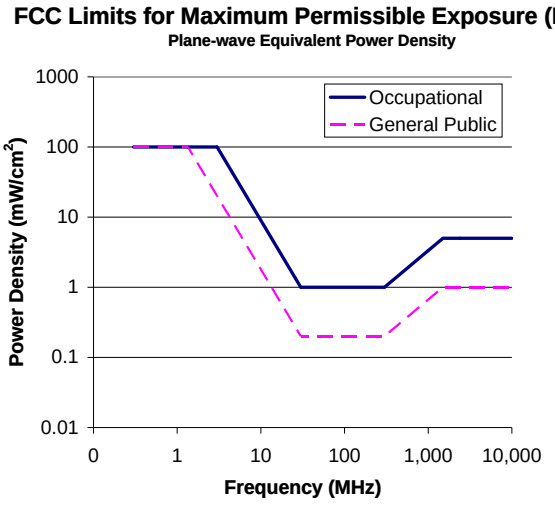
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible*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

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

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

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

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



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?siteareа=PED
European Commission Scientific Committee on Emerging and Newly Identified Health Risks
http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_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

StartAntennaData It is advisable to provide an ID (ant 1) for all antennas

ID	Name	(MHz) Freq	Trans Power	Trans Count	Coax Len	Coax Type	Other Losses	Input Power	Calc Power	Mfg	Model	(ft) X	(ft) Y	(ft) Z	Type	(ft) Aper	dBd Gain	BWdth Pt Dir	Uptime Profile	ON flag
1	AT&T MOB	737	68.07663	1	0			68.07663		KMW	AM-X-CD-1	61.45	76.73	164	Panel	6	13.36	65;25	100%	ON•
2	AT&T MOB	1900	140.6057	1	0			140.6057		Quintel	QS66512-2	63.45	76.59	164	Panel	6	14.16	68;25	100%	ON•
2	AT&T MOB	2300	44.97845	1	0			44.97845		Quintel	QS66512-2	63.45	76.59	164	Panel	6	14.56	64;25	100%	ON•
3	AT&T MOB	850	28.35865	1	0			28.35865		Powerwav	7770	67.02	71.67	164.7085	Panel	4.583	11.51	82;143	100%	ON•
4	AT&T MOB	737	68.07663	1	0			68.07663		KMW	AM-X-CD-1	65.88	68.88	164	Panel	6	13.36	65;145	100%	ON•
5	AT&T MOB	1900	140.6057	1	0			140.6057		Quintel	QS66512-2	64.45	67.1	164	Panel	6	14.16	68;145	100%	ON•
5	AT&T MOB	2300	44.97845	1	0			44.97845		Quintel	QS66512-2	64.45	67.1	164	Panel	6	14.56	64;145	100%	ON•
6	AT&T MOB	850	28.35865	1	0			28.35865		Powerwav	7770	57.95	67.49	164.7085	Panel	4.583	11.51	82;263	100%	ON•
7	AT&T MOB	737	72.77766	1	0			72.77766		Andrew	DBXNH-65	56.45	70.59	163.971	Panel	6.058	13.07	67;255	100%	ON•
8	AT&T MOB	1900	140.6057	1	0			140.6057		Quintel	QS66512-2	55.45	72.31	164	Panel	6	14.16	68;255	100%	ON•
8	AT&T MOB	2300	44.97845	1	0			44.97845		Quintel	QS66512-2	55.45	72.31	164	Panel	6	14.56	64;255	100%	ON•
9	AT&T MOB	850	28.35865	1	0			28.35865		Powerwav	7770	58.55	76.26	164.7085	Panel	4.583	11.51	82;23	100%	ON•
10	SPRINT	862	40	1	0			40		KMW	ETCR-654L	65.12	74.28	146.4625	Panel	7.075	12.86	68;90	100%	ON•
10	SPRINT	1900	60	1	0			60		KMW	ETCR-654L	65.12	74.28	146.4625	Panel	7.075	16.66	60.58;90	100%	ON•
11	SPRINT	862	40	1	0			40		KMW	ETCR-654L	61.21	66.64	146.4625	Panel	7.075	12.86	68;190	100%	ON•
11	SPRINT	1900	60	1	0			60		KMW	ETCR-654L	61.21	66.64	146.4625	Panel	7.075	16.66	60.58;190	100%	ON•
12	SPRINT	862	40	1	0			40		KMW	ETCR-654L	56.44	68.46	146.4625	Panel	7.075	12.86	68;310	100%	ON•
12	SPRINT	1900	60	1	0			60		KMW	ETCR-654L	56.44	68.46	146.4625	Panel	7.075	16.66	60.58;310	100%	ON•
13	VERIZON W	850	40	1	0			40		Generic	6 Ft./65 De	56.14	74.72	174.854	Panel	6.292	13.43	65;30	100%	ON•
14	VERIZON W	751	60	1	0			60		Generic	6 Ft./65 De	58.16	74.73	174.854	Panel	6.292	12.56	65;30	100%	ON•
15	VERIZON W	1900	60	1	0			60		Generic	6 Ft./65 De	60.16	74.73	174.854	Panel	6.292	16.26	65;30	100%	ON•
16	VERIZON W	2100	60	1	0			60		Generic	6 Ft./65 De	62.3	74.73	174.854	Panel	6.292	15.53	65;30	100%	ON•
17	VERIZON W	850	40	1	0			40		Generic	6 Ft./65 De	64.16	74.73	174.854	Panel	6.292	13.43	65;30	100%	ON•
18	VERIZON W	850	40	1	0			40		Generic	6 Ft./65 De	66	72.82	174.854	Panel	6.292	13.43	65;150	100%	ON•
19	VERIZON W	751	60	1	0			60		Generic	6 Ft./65 De	65.73	71.6	174.854	Panel	6.292	12.56	65;150	100%	ON•
20	VERIZON W	1900	60	1	0			60		Generic	6 Ft./65 De	64.59	70.6	174.854	Panel	6.292	16.26	65;150	100%	ON•
21	VERIZON W	2100	60	1	0			60		Generic	6 Ft./65 De	63.88	69.6	174.854	Panel	6.292	15.53	65;150	100%	ON•
22	VERIZON W	850	40	1	0			40		Generic	6 Ft./65 De	63.02	67.88	174.854	Panel	6.292	13.43	65;150	100%	ON•
23	VERIZON W	850	40	1	0			40		Generic	6 Ft./65 De	59.71	67.08	174.854	Panel	6.292	13.43	65;270	100%	ON•
24	VERIZON W	751	60	1	0			60		Generic	6 Ft./65 De	59.3	68.66	174.854	Panel	6.292	12.56	65;270	100%	ON•
25	VERIZON W	1900	60	1	0			60		Generic	6 Ft./65 De	58.52	70.26	174.854	Panel	6.292	16.26	65;270	100%	ON•
26	VERIZON W	2100	60	1	0			60		Generic	6 Ft./65 De	58.23	71.76	174.854	Panel	6.292	15.53	65;270	100%	ON•
27	VERIZON W	850	40	1	0			40		Generic	6 Ft./65 De	57.87	72.93	174.854	Panel	6.292	13.43	65;270	100%	ON•
28	UNKNOWN	1900	60	1	0			60		Generic	4 Ft./65 De	63.27	73.17	132.7	Panel	4.6	15.43	65;60	100%	ON•
29	UNKNOWN	1900	60	1	0			60		Generic	4 Ft./65 De	61.39	68.06	132.7	Panel	4.6	15.43	65;180	100%	ON•
30	UNKNOWN	1900	60	1	0			60		Generic	4 Ft./65 De	59.24	73.11	132.7	Panel	4.6	15.43	65;300	100%	ON•

StartSymbolData

539 PLAINS RD

Location	539 PLAINS RD	**Mblu**	63/ 022/ C/ /
Acct#	PT496400	**Owner**	539 PLAINS RD LLC
Assessment	$275,460	**Appraisal**	$393,510
PID	3240	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$206,010	$187,500	$393,510
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$144,210	$131,250	$275,460

Owner of Record

Owner	539 PLAINS RD LLC	**Sale Price**	$325,000
Co-Owner	C/O CROWN ATLANTIC CO	**Certificate**	
Address	PMB353 4017 WASHINGTON RD MCMURRAY, PA 15317	**Book & Page**	347/ 725
		Sale Date	10/25/2011
		Instrument	00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
539 PLAINS RD LLC	$325,000		347/ 725	00	10/25/2011
MICHAEL JACQUELINE A	$0		330/ 411	29	06/26/2009
PIONEER ENTERPRISES LLC	$0		308/ 256		12/21/2006
MICHAEL JACQUELINE	$0		284/ 001		10/26/2004
MICHAEL JACK & JACQUELINE	$0		90/ 198		12/02/1958

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0
Replacement Cost: $0

Building Percent Good:

Replacement Cost Less Depreciation: $0

Building Attributes	
Field	**Description**
Style	Outbuildings
Model	
Grade:	
Stories	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Full Bthrms:	
Half Baths:	
Extra Fixtures	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Extra Kitchens	
Fireplace(s)	
Extra Opening(s)	
Gas Fireplace(s)	
Blocked FPL(s)	
Woodstove(s)	
Bsmt Garage(s)	
SF Fin Bsmt	
FBM Quality	
Whirlpool	
Sauna	
Foundation	

Building Photo

(http://images.vgsi.com/photos2/HaddamCTPhotos//\00\00\57/5

Building Layout


Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	350
Description	Cell Tower
Zone	R-2A
Neighborhood	CELL
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.25
Frontage	
Depth	
Assessed Value	$131,250
Appraised Value	$187,500

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN1	FENCE-4' CHAIN			1200 L.F.	$10,800	1
SHDC	Cell Shed			315 S.F.	$85,050	1
SHDC	Cell Shed			312 S.F.	$84,240	1
SHDC	Cell Shed			96 S.F.	$25,920	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$206,010	$187,500	$393,510
2015	$206,010	$187,500	$393,510
2014	$8,890	$187,500	$196,390

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$144,210	$131,250	$275,460
2015	$144,210	$131,250	$275,460
2014	$6,230	$131,250	$137,480

October 17, 2017

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6607

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
btwo@btgrp.com

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CTL02165
	Carrier Site Name:	HADAM - PLAINS RD.
Crown Castle Designation:	**Crown Castle BU Number:**	806478
	Crown Castle Site Name:	HRT 080 953381
	Crown Castle JDE Job Number:	467053
	Crown Castle Work Order Number:	1474907
	Crown Castle Application Number:	412377 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	100140.003.01
Site Data:	**539 Plains Rd, Haddam, Middlesex County, CT** **Latitude *41° 26' 35"*, Longitude *-72° 30' 22.4"*** **180 Foot - Self Support Tower**	

Dear Charles McGuirt,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1094430, in accordance with application 412377, revision 1.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

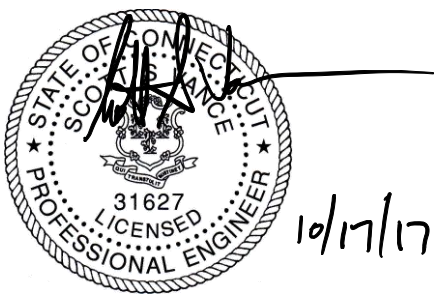
This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with Risk Category II was used in this analysis.

All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: James Lindsey

Respectfully submitted by: B&T Engineering, Inc.
COA: PEC.0001564 Expires: 02/10/2018



10/17/17

Scott S. Vance, P.E.

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 180 ft. self-support tower designed by Rohn in December of 1986. The original design code and design wind speed are not available. This tower has been modified multiple times and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 101 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
165.0	167.0	3	Ericsson	RRUS 32	2 1	7/16 3/8	--
		3	Ericsson	RRUS 32 B2			
		3	Powerwave Tech.	1001940			
		3	Powerwave Tech.	1001983			
		3	Quintel Technology	QS66512-2			
		1	Raycap	DC6-48-60-18-8F			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
182.0	186.0	1	--	19" Accelerator	6	1-5/8	1
		3	Ems Wireless	RR90-17-02DP			
	179.0	3	Ericsson	KRY 112 489/1			
178.0	178.0	3	Alcatel Lucent	RRH2X60-PCS	2	1-5/8	2
		3	Alcatel Lucent	RRH2x60-700			
		1	Rfs Celwave	DB-B1-6C-8AB-0Z			
		3	Alcatel Lucent	RRH2x60-AWS			
		9	Andrew	SBNHH-1D65B			
		6	Antel	LPA-80080/6CF	12 1	1-5/8 1-1/4	1
		1	Rfs Celwave	DB-T1-6Z-8AB-0Z			
		6	Rfs Celwave	FD9R6004/2C-3L			
		1	--	Sector Mount [SM 510-3]			
165.0	167.0	**3**	**Ericsson**	**RRUS-11**	**--**	**--**	**3**
		3	**Powerwave Tech.**	**7770.00**			
		1	Andrew	DBXNH-6565B-R2M	12 2 1	1-1/4 7/16 3/8	1
		3	Ericsson	RRUS-11			
		2	Kmw Comm.	AM-X-CD-16-65-00T-RET			
		3	Powerwave Tech.	7770.00			
		6	Powerwave Tech.	LGP21401			
		6	Powerwave Tech.	LGP21903			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	Raycap	DC6-48-60-18-8F			
	165.0	1	--	Sector Mount [SM 510-3]			
151.0	153.0	6	Decibel	DB980H90E-M	6	1-5/8	1
	151.0	1	--	Sector Mount [SM 502-3]			
133.0	133.0	3	Kathrein	742 213	6	1-5/8	1
		1	--	Pipe Mount [PM 601-3]			
51.0	51.0	1	--	Side Arm Mount [SO 203-1]	1	1/2	1
		1	Unknown	GPS			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed; Not Considered in This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180	180	4	Generic	3' Side Arm	--	--
		4	Generic	PD10017		
171	171	3	Generic	3' Side Arm	--	--
		6	Generic	PD1132		
161	161	2	Generic	6' Std. Dishes	--	--
100	100	1	Generic	6' Side Arm	--	--
		1	Generic	PD1109		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	AT&T Mobility Co-Locate, Rev. 1	412377	CCI Sites
Tower Manufacturer Drawing	Rohn, File No. 22087JC	1067089	CCI Sites
Modification Details	All-Points Technology, Job No. CT105441	1004663	CCI Sites
Tower Modification Drawing	Vertical Structures, Job No. 2008-004-124	1274944	CCI Sites
	Vertical Structures, Job No. 2008-004-059	1274944	CCI Sites
Post Modification Inspection	Vertical Structures, Job No. 2009-004-004	2393878	CCI Sites
Tower Modification Drawing	B+T Group, Project No. 100140.002.01	5864073	CCI Sites
Post Modification Inspection	TEP, Project No. 63731	6011748	CCI Sites
Foundation Drawing	Rohn, Drawing No. C821532	300985	CCI Sites
	FDH, Project No. 06-0884N	300985	CCI Sites
Geotechnical Report	FDH, Project No. 06-0884G	1240448	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 10/12/2017	CCI Sites

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Mount areas and weights are assumed based on photographs provided.
5) The existing base plate grout was considered in this analysis. Grout must be maintained and inspected periodically, and must be replaced if damaged or cracked. Refer to crown document ENG-BUL-10122, Tower Base Plate Grout Inspection and Classification.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	180 - 160	Leg	ROHN 2 STD	2	-30.857	36.842	83.8	Pass
T2	160 - 155	Leg	ROHN 2.5 EH	38	-40.945	74.429	55.0	Pass
T3	155 - 150	Leg	ROHN 2.5 EH	48	-51.877	74.427	69.7	Pass
T4	150 - 145	Leg	ROHN 2.5 EH	57	-61.684	74.427	82.9	Pass
T5	145 - 140	Leg	ROHN 2.5 EH	66	-72.346	93.410	77.4	Pass
T6	140 - 133.333	Leg	ROHN 3 EH	78	-83.495	94.342	88.5	Pass
T7	133.333 - 126.667	Leg	ROHN 3 EH	87	-96.683	123.118	78.5	Pass
T8	126.667 - 120	Leg	ROHN 3 EH	99	-108.795	132.667	82.0	Pass
T9	120 - 113.333	Leg	ROHN 3.5 EH	141	-122.406	153.863	79.6	Pass
T10	113.333 - 106.667	Leg	ROHN 3.5 EH	153	-134.851	153.899	87.6	Pass
T11	106.667 - 100	Leg	BT100140- Rohn 3.5EH w/ 2" SR	165	-148.071	233.100	63.5 78.7 (b)	Pass
T12	100 - 80	Leg	BT100140- Rohn 4EH w/ 2" SR	174	-184.868	273.880	67.5 75.0 (b)	Pass
T13	80 - 60	Leg	BT100140- Rohn 5EH w/ 2" SR (60-80)	195	-218.614	304.658	71.8 88.5 (b)	Pass
T14	60 - 40	Leg	BT100140- Rohn 5EH w/ 2" SR (40-60)	210	-252.803	383.362	65.9 67.8 (b)	Pass
T15	40 - 30	Leg	BT100140- Rohn 6EHS w/ 2" SR (30-40)	231	-272.233	358.430	76.0	Pass
T16	30 - 20	Leg	BT100140- Rohn 6EHS w/ 2" SR (20-30)	240	-288.351	419.367	68.8 76.8 (b)	Pass
T17	20 - 0	Leg	BT100140- Rohn 6EH w/ 2" SR	252	-324.727	417.299	77.8	Pass
T1	180 - 160	Diagonal	L2x2x1/4	9	-5.881	16.484	35.7 76.1 (b)	Pass
T2	160 - 155	Diagonal	L1 3/4x1 3/4x3/16	43	-5.029	6.736	74.7 85.7 (b)	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T3	155 - 150	Diagonal	L1 3/4x1 3/4x3/16	51	-5.058	6.100	82.9 89.9 (b)	Pass
T4	150 - 145	Diagonal	L2x2x1/4	60	-5.873	10.851	54.1 76.2 (b)	Pass
T5	145 - 140	Diagonal	2L1 3/4x1 3/4x3/16x3/16	69	-5.754	20.806	27.7 76.4 (b)	Pass
T6	140 - 133.333	Diagonal	2L2x2x3/16x1/2	81	-6.438	25.708	25.0 28.7 (b)	Pass
T7	133.333 - 126.667	Diagonal	2L2x2x3/16x1/2	90	-6.950	23.278	29.9 31.0 (b)	Pass
T8	126.667 - 120	Diagonal	2L2x2x3/16x1/2	108	-7.459	32.710	22.8 32.0 (b)	Pass
T9	120 - 113.333	Diagonal	2L2 1/2x2 1/2x3/16x1/2	144	-7.361	34.470	21.4 27.4 (b)	Pass
T10	113.333 - 106.667	Diagonal	2L2 1/2x2 1/2x3/16x1/2	156	-7.654	32.807	23.3 28.1 (b)	Pass
T11	106.667 - 100	Diagonal	2L2 1/2x2 1/2x3/16x1/2	168	-7.171	32.074	22.4 27.6 (b)	Pass
T12	100 - 80	Diagonal	2L3x3x3/16x1/2	177	-8.118	40.232	20.2 29.1 (b)	Pass
T13	80 - 60	Diagonal	2L3x3x3/16x1/4	198	-9.868	29.790	33.1 70.8 (b)	Pass
T14	60 - 40	Diagonal	2L3x3x1/4x1/4	213	-11.161	32.427	34.4 77.2 (b)	Pass
T15	40 - 30	Diagonal	2L3 1/2x3 1/2x1/4x1/4	234	-10.842	48.825	22.2 77.1 (b)	Pass
T16	30 - 20	Diagonal	2L3 1/2x3 1/2x1/4x1/4	243	-12.608	44.039	28.6 84.5 (b)	Pass
T17	20 - 0	Diagonal	L4x4x1/4	255	-12.144	15.735	77.2	Pass
T8	126.667 - 120	Horizontal	L2 1/2x2 1/2x1/4	107	-1.888	18.142	10.4 18.1 (b)	Pass
T5	145 - 140	Secondary Horizontal	L2x2x1/4	74	-1.255	13.715	9.1 17.5 (b)	Pass
T7	133.333 - 126.667	Secondary Horizontal	L2x2x1/4	95	-1.677	10.368	16.2	Pass
T9	120 - 113.333	Secondary Horizontal	L2 1/2x2 1/2x1/4	149	-2.123	15.857	13.4 20.3 (b)	Pass
T10	113.333 - 106.667	Secondary Horizontal	L2 1/2x2 1/2x1/4	161	-2.339	14.067	16.6 22.4 (b)	Pass
T14	60 - 40	Secondary Horizontal	L3x3x1/4	218	-4.385	9.934	44.1	Pass
T16	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	248	-5.001	13.032	38.4 47.9 (b)	Pass
T1	180 - 160	Top Girt	L2x2x1/8	6	-0.185	3.212	5.8 5.8 (b)	Pass
T8	126.667 - 120	Redund Horz 1 Bracing	L2x2x1/4	116	-1.888	18.470	10.2	Pass
T8	126.667 - 120	Redund Diag 1 Bracing	L2x2x1/4	129	-1.215	16.921	7.2	Pass
							Summary	
						Leg (T6)	88.5	Pass
						Diagonal (T3)	89.9	Pass
						Horizontal (T8)	18.1	Pass
						Secondary Horizontal (T16)	47.9	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Top Girt (T1)	5.8	Pass
						Redund Horz 1 Bracing (T8)	10.2	Pass
						Redund Diag 1 Bracing (T8)	7.2	Pass
						Bolt Checks	89.9	Pass
						Rating =	89.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	76.5	Pass
1	Base Foundation (Structural)	Base	17.0	Pass
1	Base Foundation (Soil Interaction)	Base	48.1	Pass

Structure Rating (max from all components) =	89.9%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the final load configuration. No modifications are required at this time.

PROJECT:	LTE 2C/3C
SITE NUMBER:	CTL02165
FA NUMBER:	10035057
PTN NUMBER:	2051A0D6QJ / 2051A0D6PG
PACE NUMBER:	MRCTB025381 / MRCTB025399
CROWN BU#:	806478
SITE NAME:	S. HADDAM
SITE ADDRESS:	539 PLAINS ROAD HADDAM, CT 06438

PROJECT INFORMATION

SITE NAME:	S. HADDAM
SITE NUMBER:	CTL02165
SITE ADDRESS:	539 PLAINS ROAD HADDAM, CT 06438
FA NUMBER:	10035057
PTN NUMBER:	2051A0D6QJ / 2051A0D6PG
PACE NUMBER:	MRCTB025381 / MRCTB025399
USID NUMBER:	59414
CROWN BU#:	806478
APPLICANT:	AT&T WIRELESS 550 COCHITUATE ROAD SUITE 550 13 AND 14 FRAMINGHAM, MA 01701
TOWER OWNER:	CROWN CASTLE INTERNATIONAL 12 GILL STREET, SUITE 5800 WOBURN, MA 01801
JURISDICTION:	TOWN OF HADDAM
COUNTY:	MIDDLESEX
SITE COORDINATES FROM	(RFDS)
LATITUDE:	41.4430481°
LONGITUDE:	-72.5062211°
GROUND ELEV.:	534'
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
AT&T RF MANAGER:	DEEPAK RATHORE
PHONE:	(860) 965-3068
EMAIL:	dr701e@att.com

PROJECT CONSULTANTS

PROJECT MANAGER:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	EDWARD WEISSMAN (917) 528-1857
EMAIL:	Edward.Weissman@smartlinkllc.com
SITE AQUISITION:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	SHARON KEEFE (978) 930-3918
EMAIL:	Sharon.Keefe@smartlinkllc.com
ENGINEER/ARCHITECT:	FULLERTON ENGINEERING
ADDRESS:	1100 E. WOODFIELD ROAD, SUITE 500 SCHAUMBURG, IL 60173
CONTACT:	MILEN DIMITROV (847) 908-8439
EMAIL:	MDimitrov@FullertonEngineering.com
CONSTRUCTION:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	MARK DONNELLY (617) 515-2080
EMAIL:	mark.donnelly@smartlinkllc.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 # 1833307, VERSION 1.00 LAST UPDATED 09/12/17.

- (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.

SITE LOCATION MAP

NO SCALE

DIRECTIONS

SCAN QR CODE FOR LINK
TO SITE LOCATION MAP

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

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

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

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

smartlink
1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076

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

REV	DATE	DESCRIPTION	BY
0	09/28/17	90% REVIEW	EB
1	11/03/17	FOR PERMIT	EB
2	01/23/18	ADDRESS CHANGE	MD

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
S. HADDAM

SITE NUMBER:
CTL02165

SITE ADDRESS
539 PLAINS ROAD
HADDAM, CT 06438

SHEET NAME
TITLE SHEET

SHEET NUMBER
T1

PROJECT# 2017.0278.0025

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, TMAS, 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.

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NAME
S. HADDAM

SITE NUMBER:
CTL02165

SITE ADDRESS
539 PLAINS ROAD
HADDAM, CT 06438

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP1

PROJECT# 2017.0278.0025

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.

at&t

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.

at&t

Ref: 47CFR 1.1307(b)

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/EEE C95.1-1992 FOR CONTROLLED ENVIRONMENTS.

at&t

ALERTING SIGN

PROPERTY OF AT&T

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_____

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 telecomunicationes operadas por AT&T. Favor mantener una distancia de no menos de 3 pies y obedecer todos los avisos.

Comuníquese con el propiertario o los propicatarios 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 antenas de AT&T.

Esta es la estacion base numero_____

Favor comunicarse con la oficina de la administracion del edificio si esta puerta o compuerta se encuentra sin candado.

at&t

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# _____

at&t

INFO SIGN #2

STAY BACK 3 FEET FROM ANTENNA

at&t

INFO SIGN #3

ALERTING SIGN
(FOR CELL SITE BATTERIES)

ALERTING SIGN
(FOR DIESEL FUEL)

ALERTING SIGN
(FOR PROPANE)

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:

1. 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
2. IF ROOFVIEWS SHOWS: ONLY BLUE = NOTICE SIGN, BLUE AND YELLOW = CAUTION SIGN, ONLY YELLOW = CAUTION SIGN TO BE INSTALLED
3. 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.

SIGNAGE GUIDELINES CHART

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NAME
S. HADDAM

SITE NUMBER:
CTL02165

SITE ADDRESS
539 PLAINS ROAD
HADDAM, CT 06438

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP2

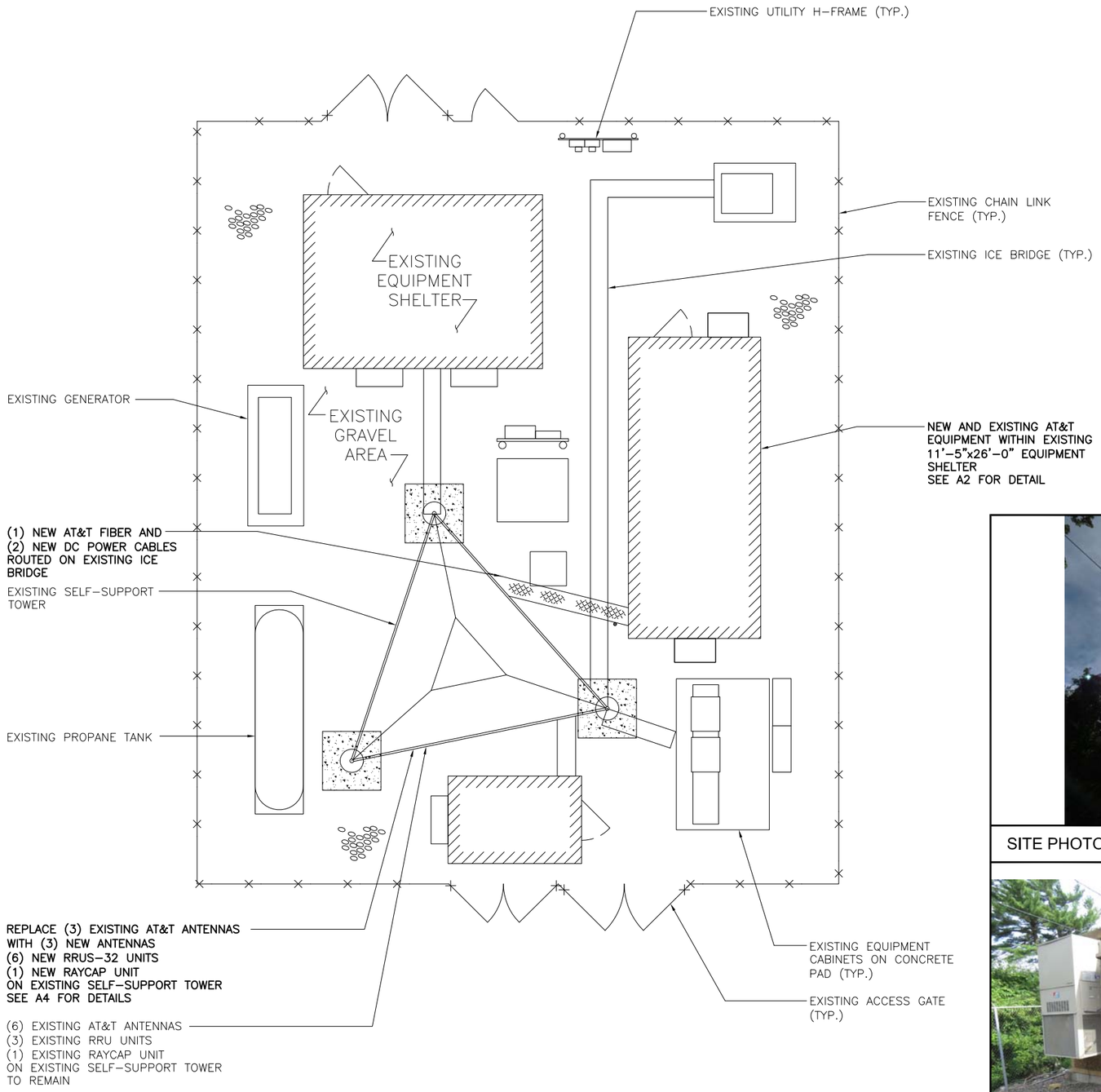
PROJECT# 2017.0278.0025

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
℄	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	PROPERY 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
- UE — BELOW GRADE ELECTRIC
- UT — BELOW GRADE TELEPHONE
- OE/OT — OVERHEAD ELECTRIC/TELEPHONE
- SECTION REFERENCE



COMPOUND PLAN — SCALE: 3/32" = 1'-0" | 1

SITE PHOTO 1 — SCALE: N.T.S. | 2

SITE PHOTO 2 — SCALE: N.T.S. | 3

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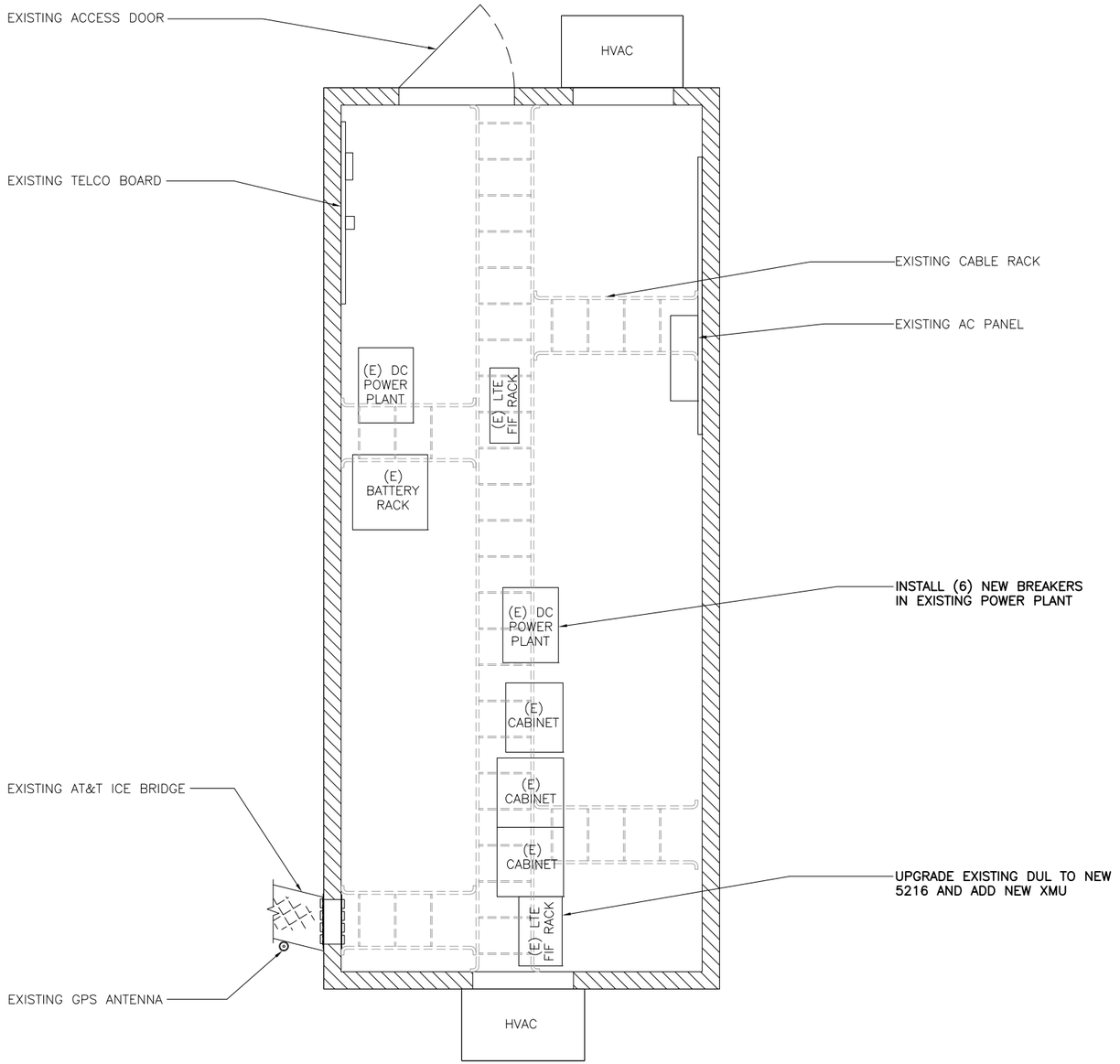
SITE NUMBER:
CTL02165

SITE ADDRESS
539 PLAINS ROAD
HADDAM, CT 06438

SHEET NAME
COMPOUND PLAN

SHEET NUMBER
A1

PROJECT# 2017.0278.0025



EQUIPMENT PLAN

SCALE: 1/4" = 1'-0"

1

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STATE OF CONNECTICUT
HENRY M. BELLAGAMBA
25358
LICENSED PROFESSIONAL ENGINEER

SITE NAME
S. HADDAM

SITE NUMBER:
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SITE ADDRESS
539 PLAINS ROAD
HADDAM, CT 06438

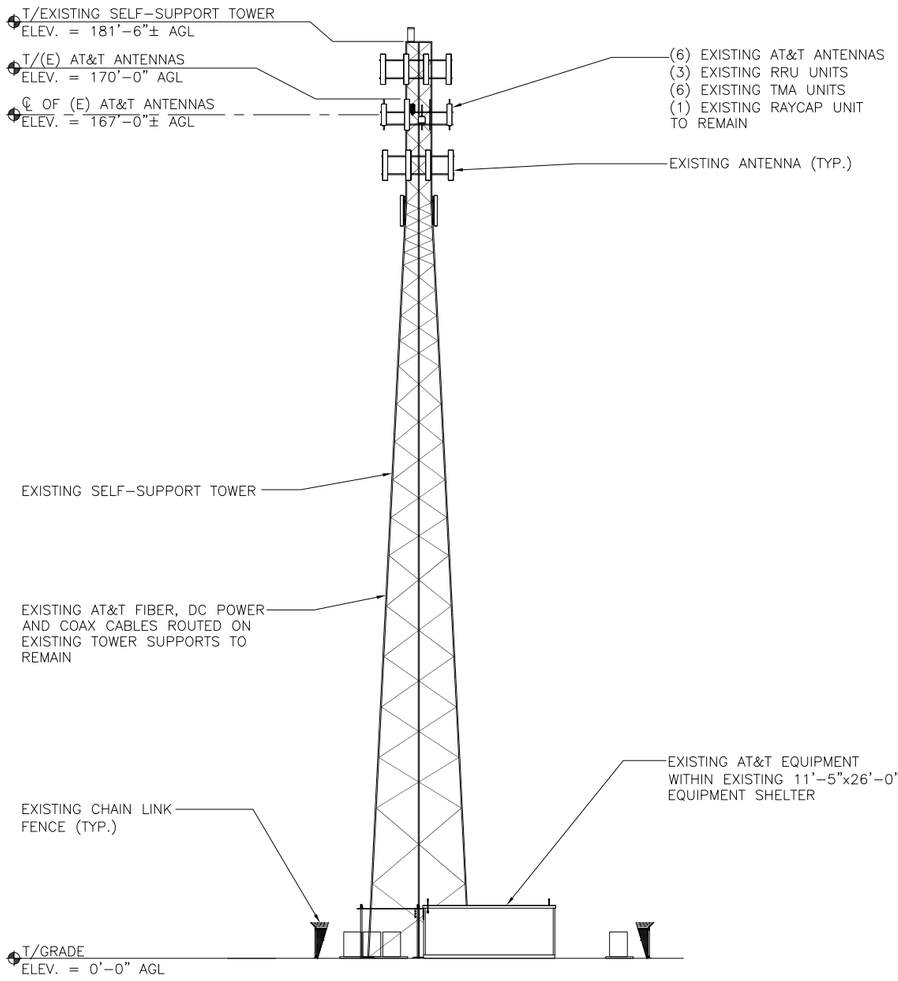
SHEET NAME
EQUIPMENT PLAN

SHEET NUMBER
A2

PROJECT# 2017.0278.0025

NOTES:

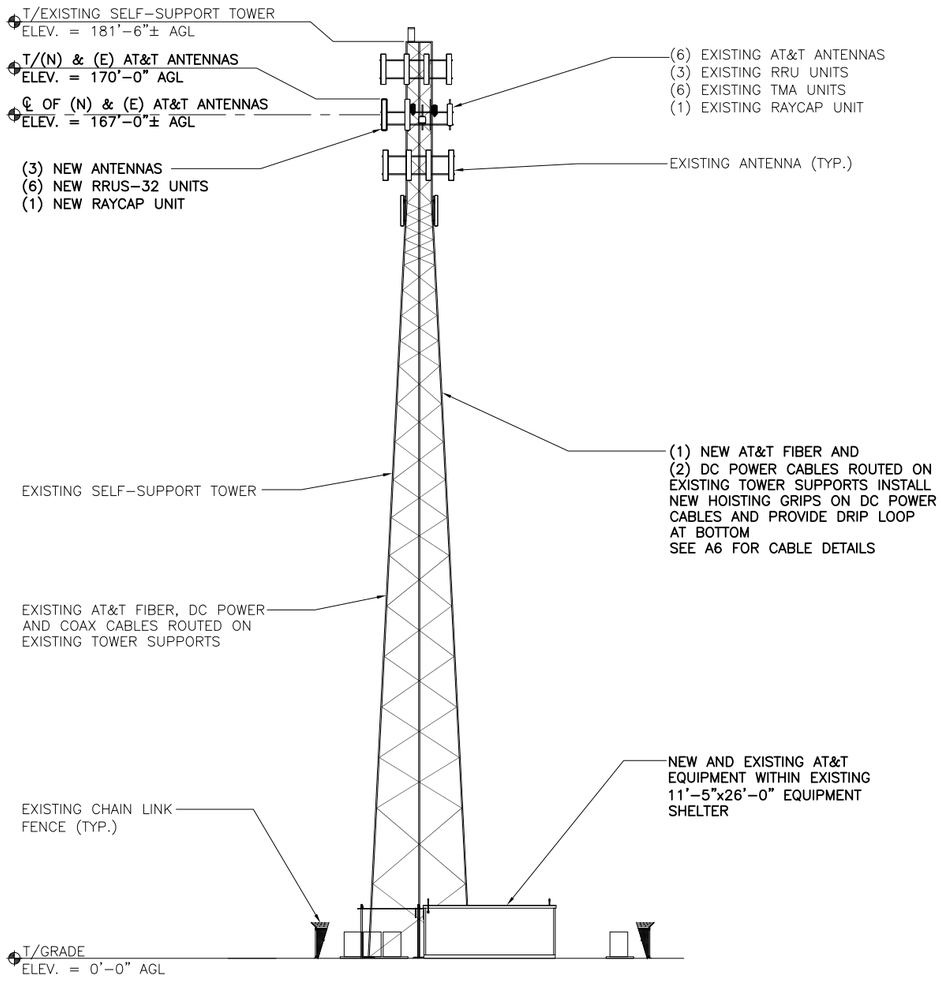
1. CALCULATIONS FOR THE STRUCTURE WERE PREPARED BY OTHERS AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CALCULATIONS FOR THE ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT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



EXISTING ELEVATION — SCALE: 1" = 30'-0" — 1

NOTES:

1. ALL EQUIPMENT (ANTENNAS, LINES, ETC.) TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE.
2. TAPE DROP FORMS AND PHOTOGRAPHS TO BE SUBMITTED PER CCI AND AT&T CLOSEOUT REQUIREMENTS.



NEW ELEVATION — SCALE: 1" = 30'-0" — 2

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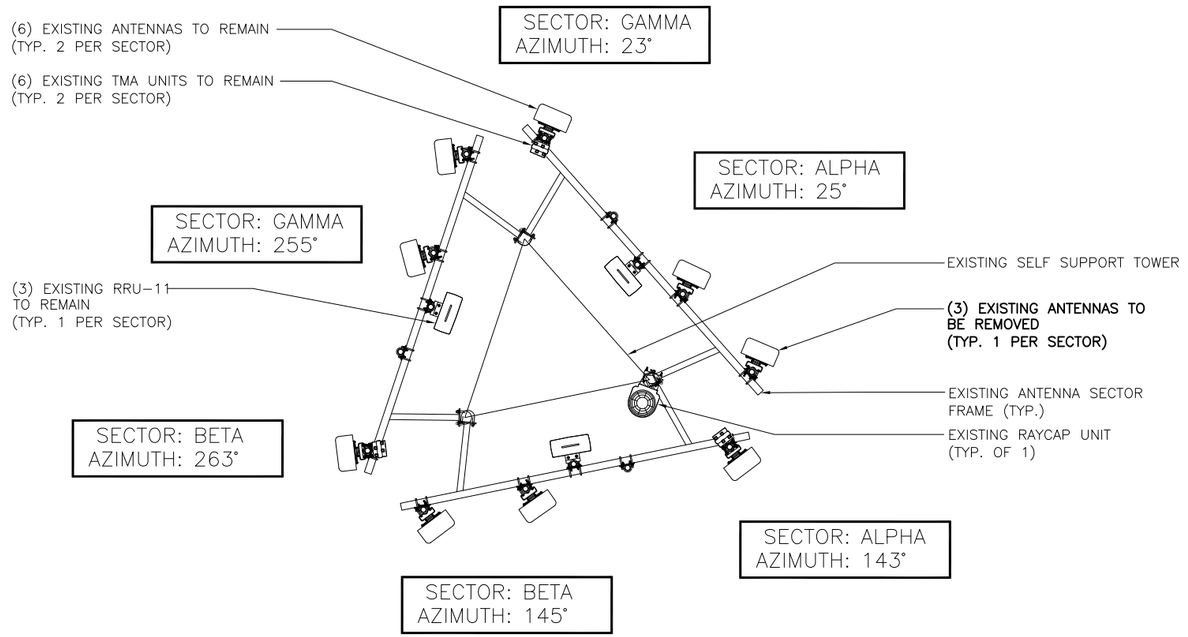
SHEET NAME
ELEVATIONS

SHEET NUMBER
A3

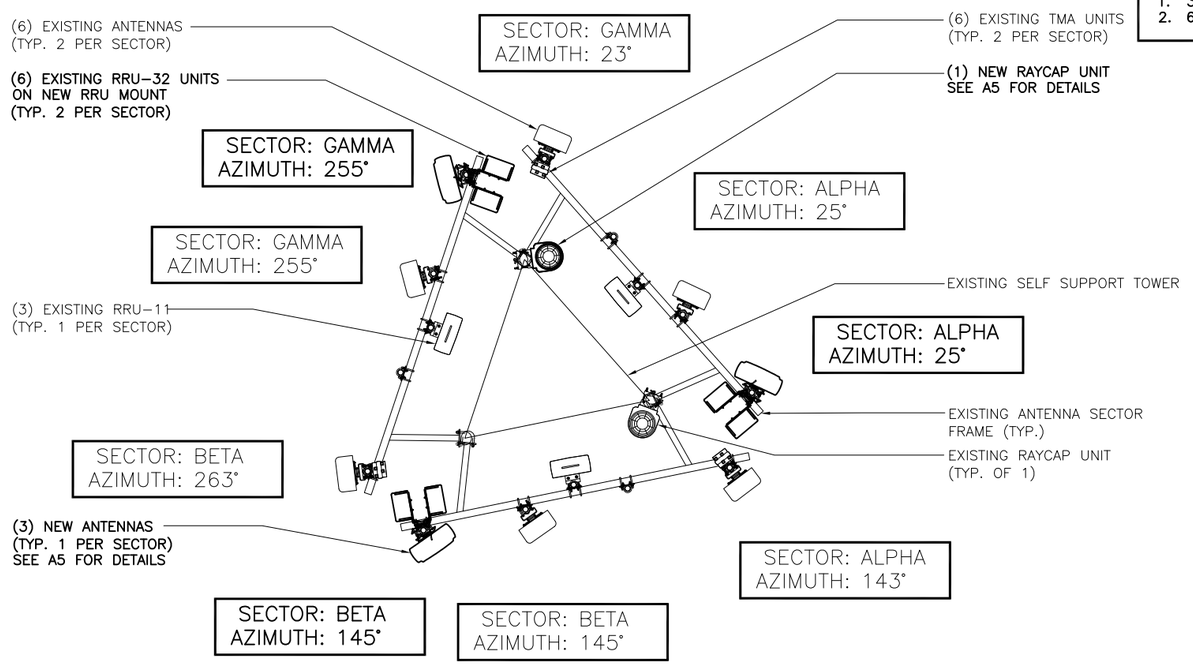
PROJECT# 2017.0278.0025



EXISTING ANTENNA PLAN

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

NOTES:
1. EXISTING ANTENNA MOUNTING PIPE TO BE REUSED, RELOCATED OR REPLACED AS REQUIRED
2. IF REQUIRED INSTALL NEW GALV. MOUNTING PIPE(S) 2.5 STD. (2-7/8" O.D.)



NOTES:
1. 3 FEET MINIMUM SEPARATION BETWEEN LTE ANTENNAS
2. 6 FEET MINIMUM SEPARATION BETWEEN 700DE & 700BC

FINAL ANTENNA PLAN

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

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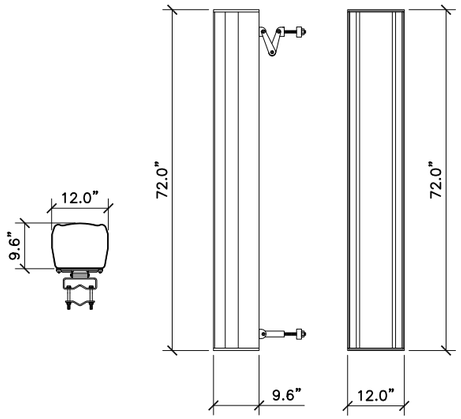
SHEET NAME
ANTENNA PLANS

SHEET NUMBER
A4

PROJECT# 2017.0278.0025



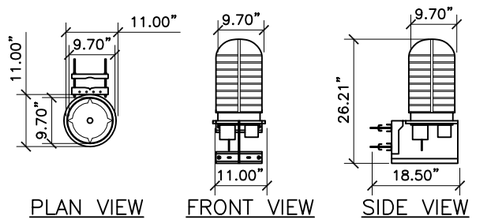
PLAN VIEW SIDE VIEW FRONT VIEW

QUINTEL – QS66512-2

MULTISERVE MULITBAND 12 PORT ANTENNA
WITH QTILT 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

ANTENNA SPEC SCALE: N.T.S. 1



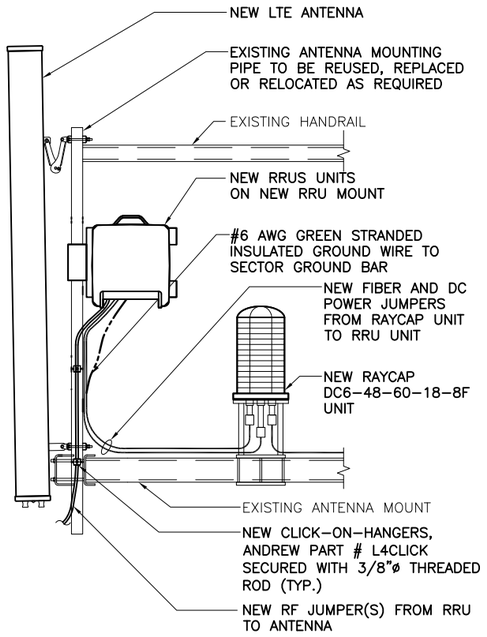
PLAN VIEW FRONT VIEW SIDE VIEW

RAYCAP – DC6-48-60-18-8F

TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION

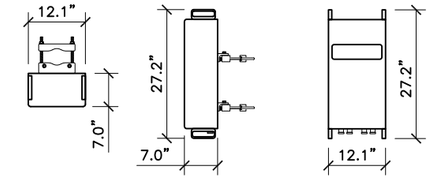
UNIT WEIGHT 32.8 Lbs

RAYCAP SPEC SCALE: N.T.S. 2



ANTENNA SCHEMATIC SCALE: N.T.S. 3

NOT USED SCALE: N.T.S. 4



PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON – RRUS 32 B30

UNIT WEIGHT 60 Lbs

RRU SPEC SCALE: N.T.S. 5

NOT USED SCALE: N.T.S. 6

NOT USED SCALE: N.T.S. 7

NOT USED SCALE: N.T.S. 8

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SHEET NAME
EQUIPMENT DETAILS

SHEET NUMBER
A5

PROJECT# 2017.0278.0025

FINAL ANTENNA CONFIGURATION AND CABLE SCHEDULE
SUPPLIED BY AT&T WIRELESS, FROM RF CONFIG. DATED (09/12/17)

SECTOR	ANTENNA NUMBER	ANTENNA STATUS & TYPE	ANTENNA MODEL NUMBER	ANTENNA VENDOR	TMA/RRU UNIT	AZIMUTH	ANTENNA CL FROM GROUND	CABLE FEEDER TYPE	CABLE FEEDER LENGTH	RAYCAP UNIT
ALPHA	A–1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	143°	167'–0"	7/8"ø LDF5–50A	200'–0"	(1) (E) DC6–48–60–18–8F UNIT (1) (N) DC6–48–60–18–8F UNIT
								7/8"ø LDF5–50A	200'–0"	
	A–2	–	–	–	–	–	–	–	–	
	A–3	(E) LTE1C ANTENNA	AM–X–CD–16–65 –00T–RET	KMW	(1) RRUS–11 UNIT	25°	167'–0"	(1) EXISTING FIBER CABLE	200'–0"	
								(2) EXISTING DC POWER CABLES	200'–0"	
	A–4	**(N) LTE2C/3C ANTENNA**	**QS66512–2**	**QUINTEL**	**(2) NEW RRUS–32 UNITS**	**25°**	**167'–0"**	**(1) NEW FIBER CABLE**	**200'–0"**	
								(2) NEW DC POWER CABLES	**200'–0"**	
BETA	B–1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	263°	167'–0"	7/8"ø LDF5–50A	200'–0"	
								7/8"ø LDF5–50A	200'–0"	
	B–2	–	–	–	–	–	–	–	–	
	B–3	(E) LTE1C ANTENNA	AM–X–CD–16–65 –00T–RET	KMW	(1) RRUS–11 UNIT	145°	167'–0"	SEE ANTENNA A–3 FOR CABLE TYPE AND LENGTH		
	B–4	**(N) LTE2C/3C ANTENNA**	**QS66512–2**	**QUINTEL**	**(2) NEW RRUS–32 UNITS**	**145°**	**167'–0"**	SEE ANTENNA A–4 FOR CABLE TYPE AND LENGTH		
GAMMA	C–1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	23°	167'–0"	7/8"ø LDF5–50A	200'–0"	
								7/8"ø LDF5–50A	200'–0"	
	C–2	–	–	–	–	–	–	–	–	
	C–3	(E) LTE1C ANTENNA	DBXNH–6565B–R2M	COMMSCOPE	(1) RRUS–11 UNIT	255°	167'–0"	SEE ANTENNA A–3 FOR CABLE TYPE AND LENGTH		
	C–4	**(N) LTE2C/3C ANTENNA**	**QS66512–2**	**QUINTEL**	**(2) NEW RRUS–32 UNITS**	**255°**	**167'–0"**	SEE ANTENNA A–4 FOR CABLE TYPE AND LENGTH		

ANTENNA & CABLE CONFIGURATION

SCALE: N.T.S.

1

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SHEET NAME
ANTENNA & CABLE CONFIGURATION

SHEET NUMBER
A6

PROJECT# 2017.0278.0025

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.

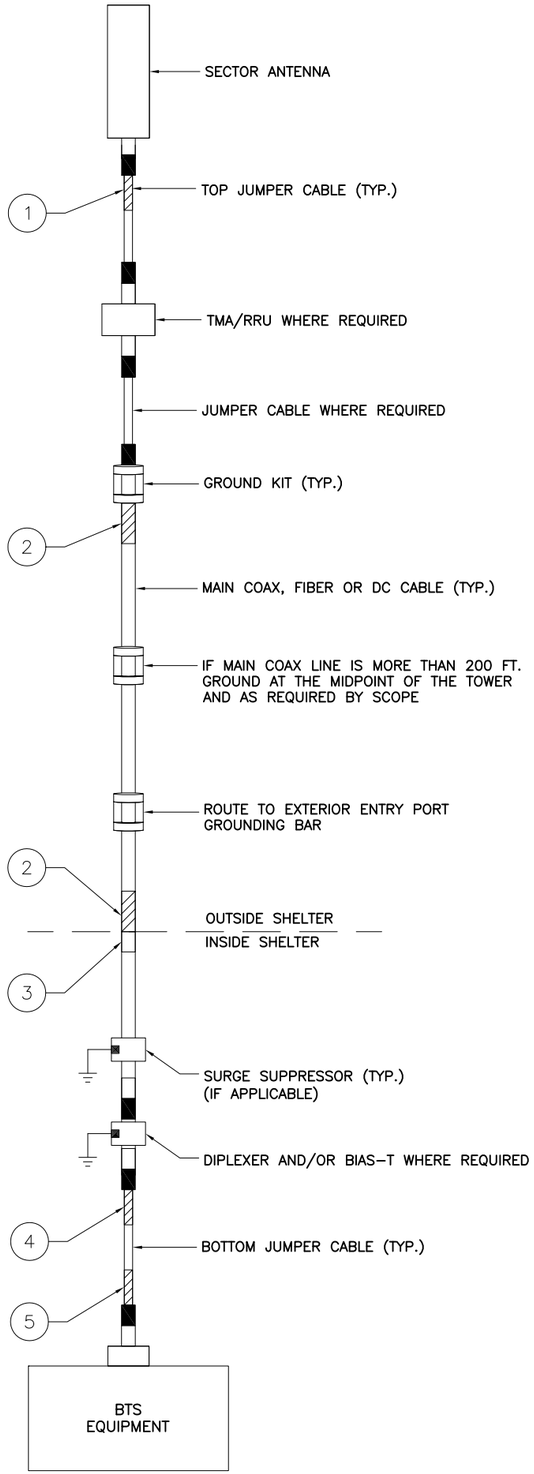
CABLE MARKING DIAGRAM

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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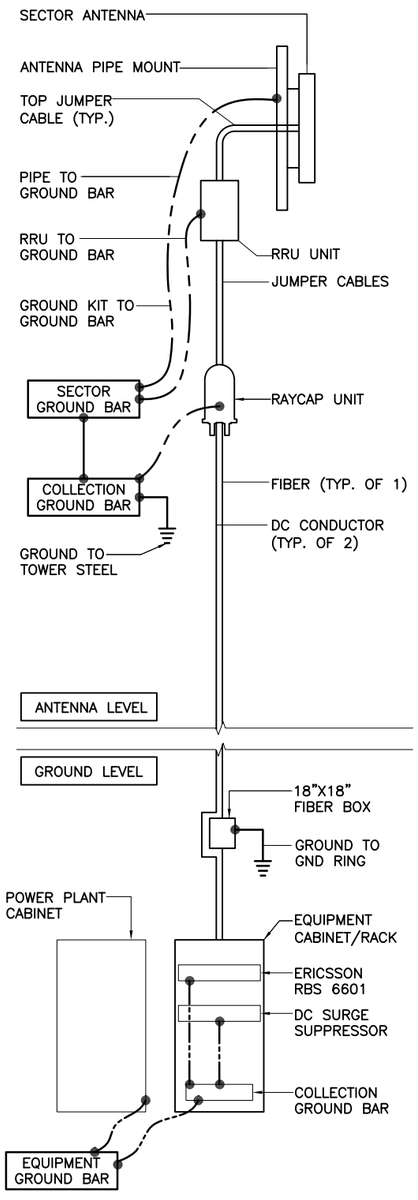
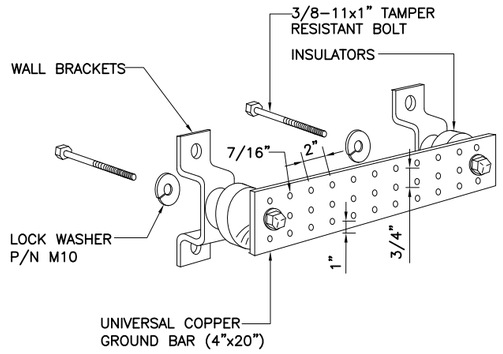
SHEET NAME
CABLE NOTES AND COLOR CODING

SHEET NUMBER
A7

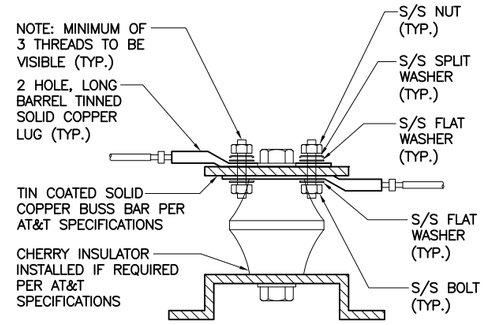
PROJECT# 2017.0278.0025



GROUNDING SCHEMATIC SCALE: N.T.S. 1



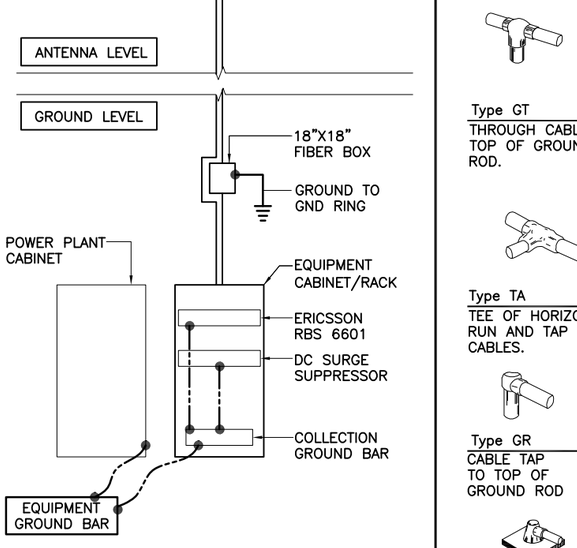
GROUND BAR DETAIL SCALE: N.T.S. 2



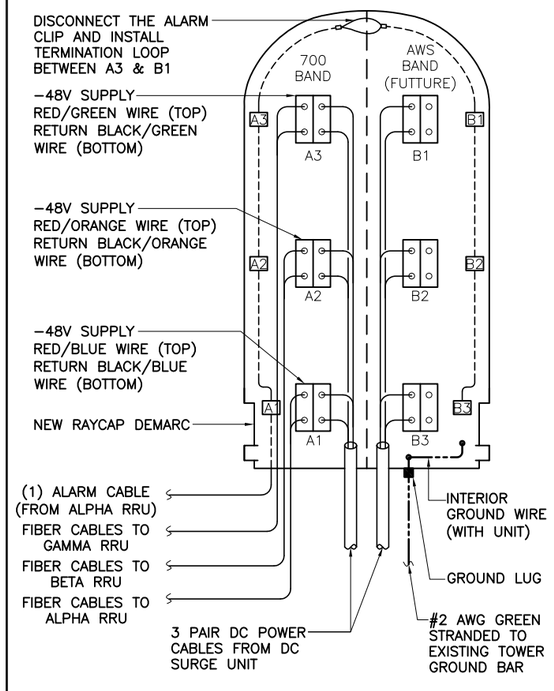
NOTES:

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.

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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