



January 17th, 2018

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: 258 Ridge Rd. Madison, CT 06433
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 140-feet on an existing 150-foot monopole, owned by Crown Castle at 12 Gill St. Suite 5800, Woburn, MA 01801. AT&T now intends to swap (3) 6' KWM AM-X-CD-16-65-00T-RET for (3) 6'HPA-65R-BUU-H6 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 B2 on position [4] all sectors, for a total of (3) RRUs 32s B2 being added. All of the changes will take place on the existing antenna mount.

Per the attached Decision and Order, the construction of the above mentioned tower was approved by the Connecticut Siting Council on October 30th, 2008. 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. § 16-50j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to David Anderson, Town Planner, Town of Madison, 8 Campus Drive, Madison, CT 06443 and Tom Banisch, First Selectman, Town of Madison, 8 Campus Drive, Madison, CT 06443. Per above, the letter is being sent to the Town of Madison, CT, which happens to be the landlord. An additional copy is being sent 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-128-076-048-102-097-061221** - New Cingular Wireless PCS, LLC notice of intent to modify existing telecommunications facilities located at Grist Mill Road, Simsbury; 864 Opening Hill Road, **Madison**; 101 Burbank Road, Ellington; 273 Boombridge Road, North Stonington; and 5 Fairfield Drive, Newtown, Connecticut.
- **EM-CING-076-130107** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 258 Ridge Road, **Madison**, 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 140-foot level of the 150-foot monopole.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require an extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included 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:
David Anderson, Town Planner, Town of Madison
Tom Banisch, First Selectman, Town of Madison
Town of Madison, Land Owner
Crown Castle, Tower Company

DOCKET NO. 363 – Crown Communications Inc. application } Connecticut
for a Certificate of Environmental Compatibility and Public Need }
for the construction, maintenance and operation of a } Siting
telecommunications facility located at 258 Ridge Road, Madison, }
Connecticut. } Council

October 30, 2008

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Crown Communications Inc., hereinafter referred to as the Certificate Holder, for a telecommunications facility at 258 Ridge Road, Madison, Connecticut

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Omnipoint Communications, Inc. and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level. The tower and compound shall be moved approximately 50 feet to the north to avoid tree clearing.
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Madison for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.
3. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Madison public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.
7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.
8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Madison. Any proposed modifications to this Decision and Order shall likewise be so served.
9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
10. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.
11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in the *New Haven Register* and *The Source*.

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

The parties and intervenors to this proceeding are:

Applicant

Crown Communications, Inc.

Intervenor

Omnipoint Communications, Inc.

Its Representative

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

Its Representative

Julie Kohler, Esq.
Jesse Langer, Esq.
Cohen and Wolf, P.C.
1115 Broad Street
Bridgeport, CT 06604



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 – 10128137
USID – 101331
Site Name – Madison Ct Ridge
Road (MRCTB025437)
Site Compliance Report**

**252 Ridge Road
Madison, CT 06443**

Latitude: N41-18-33.00
Longitude: W72-36-50.82
Structure Type: Monopole

Report generated date: December 28, 2017
Report by: Young Kim
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.**

Sitesafe logo is a registered trademark of Site Safe, Inc. All rights reserved.



Table of Contents

1	GENERAL SITE SUMMARY.....	2
1.1	REPORT SUMMARY.....	2
2	SCALE MAPS OF SITE.....	3
3	ANTENNA INVENTORY	5
4	EMISSION PREDICTIONS	6
5	SITE COMPLIANCE	9
5.1	SITE COMPLIANCE STATEMENT	9
5.2	ACTIONS FOR SITE COMPLIANCE	9
6	REVIEWER CERTIFICATION	10
	APPENDIX A – STATEMENT OF LIMITING CONDITIONS	11
	APPENDIX B – REGULATORY BACKGROUND INFORMATION	12
	FCC RULES AND REGULATIONS	12
	OSHA STATEMENT.....	13
	APPENDIX C – SAFETY PLAN AND PROCEDURES.....	14
	APPENDIX D – RF EMISSIONS.....	15
	APPENDIX E – ASSUMPTIONS AND DEFINITIONS	16
	GENERAL MODEL ASSUMPTIONS	16
	USE OF GENERIC ANTENNAS.....	16
	DEFINITIONS	17
	APPENDIX F – REFERENCES	19

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	No
RF Sign(s) @ access point(s)	(1) Information 1 @ Gate (1) Caution 2 @ Monopole Base
RF Sign(s) @ antennas	None
Barrier(s) @ sectors	None
Max cumulative simulated RFE level on the Rooftop	<1% General Public Limit
Max simulated RFE level on the Ground	<1% General Public Limit
FCC & AT&T Compliant?	Will Be Compliant

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

RFDS: NEW-ENGLAND_CONNECTICUT_CTV1266_2018-LTE-Next-Carrier_LTE-2C_mm093q_2051A0DB5T_10128137_101331_06-27-2017_Preliminary-Approved_v1.00

CD's: 10128137_AE201_171026_CTL01266_REV1

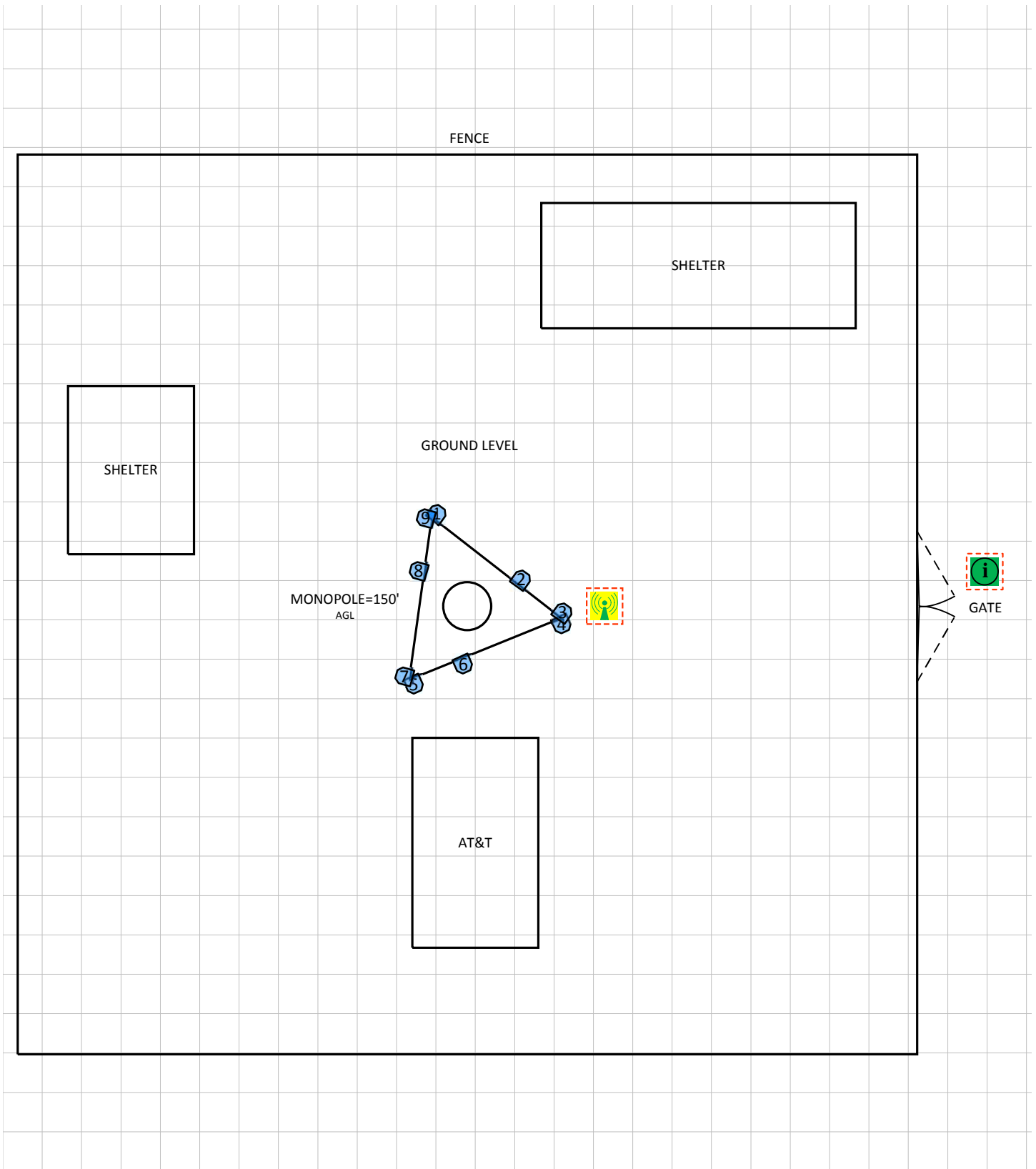
RF Powers Used: AT&T Engineering Defaults

2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- Elevation View – South

Site Scale Map For: Madison Ct Ridge Road



(Feet)
 0 6.5 13.1
 www.sitesafe.com
 Site Name: Madison Ct Ridge Road
 12/28/2017 10:40:23 AM

Carrier Identification

- AT&T MOBILITY LLC (Blue circle)
- VERIZON WIRELESS (Red circle)
- T-MOBILE (Pink circle)
- SPRINT (Yellow circle)
- UNKNOWN CARRIER (White circle)

Sign Legend

- Caution 1 (Yellow antenna icon)
- Caution 2 (Yellow antenna icon)
- Notice 2 (Blue antenna icon)
- Notice 1 (Blue antenna icon)
- Warning (Orange antenna icon)
- Info 1 (Green 'i' icon)
- Info 2 (Green 'i' icon)

Proposed Barriers/Signs

- Barrier (Red solid line)
- Proposed Barriers/Signs (Red dashed line)

3 Antenna Inventory

The following antenna inventory was obtained by the customer and utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	2G GSM Radio(s)	3G UMTS Radio(s)	4G Radio(s)	Total ERP (Watts)	X	Y	Z (AGL)
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	20	82	4.6	11.51	0	2	0	1132.6	63.3'	94.3'	137.7'
2	AT&T MOBILITY LLC (Decommissioned)	Powerwave 7770	Panel	850	20	82	4.6	11.51	0	0	0	0	71.4'	88.1'	137.7'
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	1900	20	61.1	6	14.53	0	0	2	4842.1	75.3'	85'	137'
3	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	737	20	66.2	6	11.68	0	0	1	1475.7	75.3'	85'	137'
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	140	82	4.6	11.51	0	2	0	1132.6	75.2'	83.8'	137.7'
5	AT&T MOBILITY LLC (Decommissioned)	Powerwave 7770	Panel	850	140	82	4.6	11.51	0	0	0	0	61.2'	78.1'	137.7'
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	1900	140	61.1	6	14.53	0	0	2	4842.1	65.9'	80'	137'
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	737	140	66.2	6	11.68	0	0	1	1475.7	65.9'	80'	137'
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	270	82	4.6	11.51	0	2	0	1132.6	60.2'	78.9'	137.7'
8	AT&T MOBILITY LLC (Decommissioned)	Powerwave 7770	Panel	850	270	82	4.6	11.51	0	0	0	0	61.6'	88.9'	137.7'
9	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	1900	270	61.1	6	14.53	0	0	2	4842.1	62.3'	93.9'	137'
9	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	737	270	66.2	6	11.68	0	0	1	1475.7	62.3'	93.9'	137'

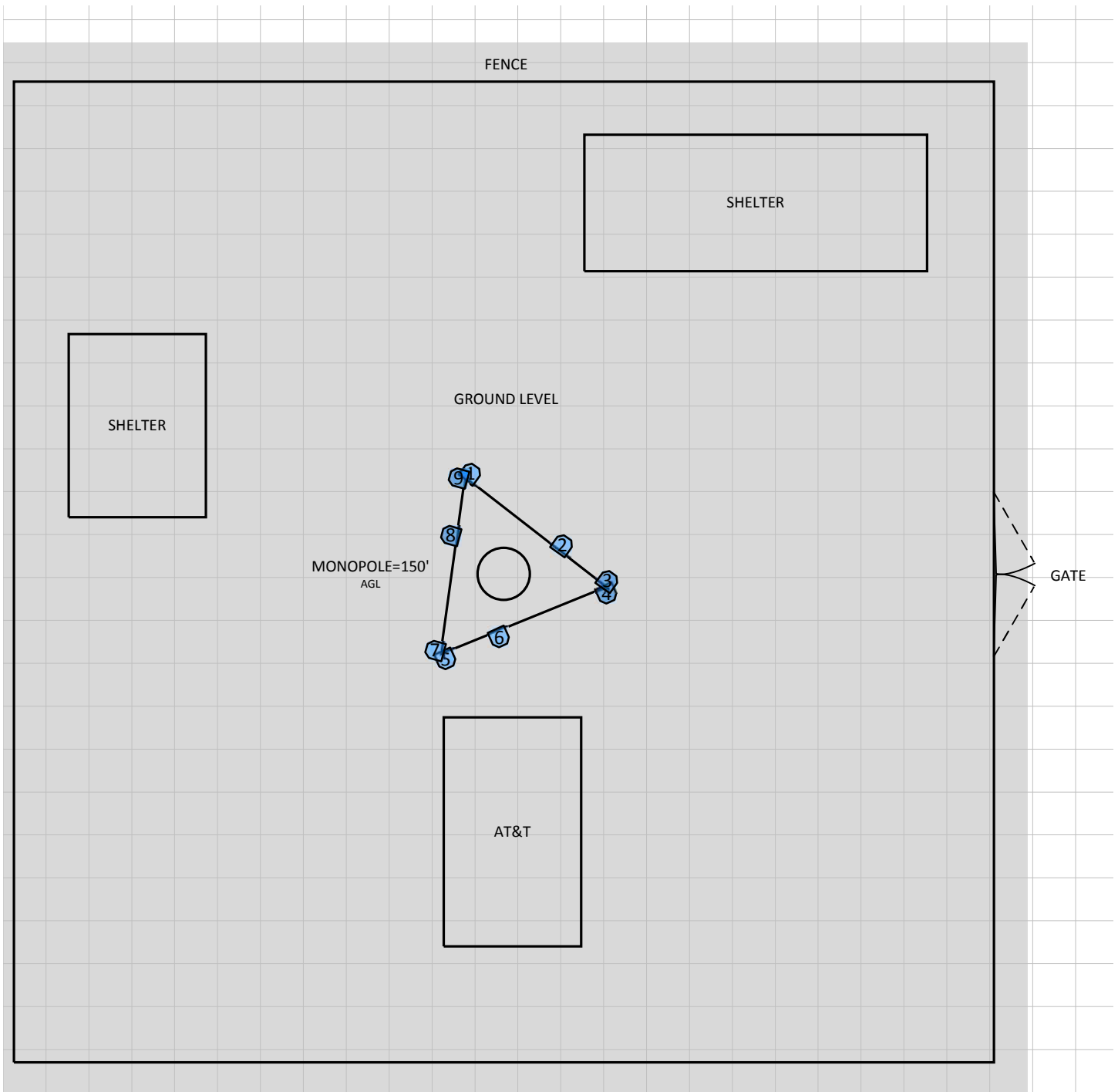
NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. The distance to the bottom of the antenna is calculated by subtracting half of the length of the antenna from the antenna centerline. Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed.

4 Emission Predictions

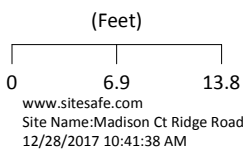
In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main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

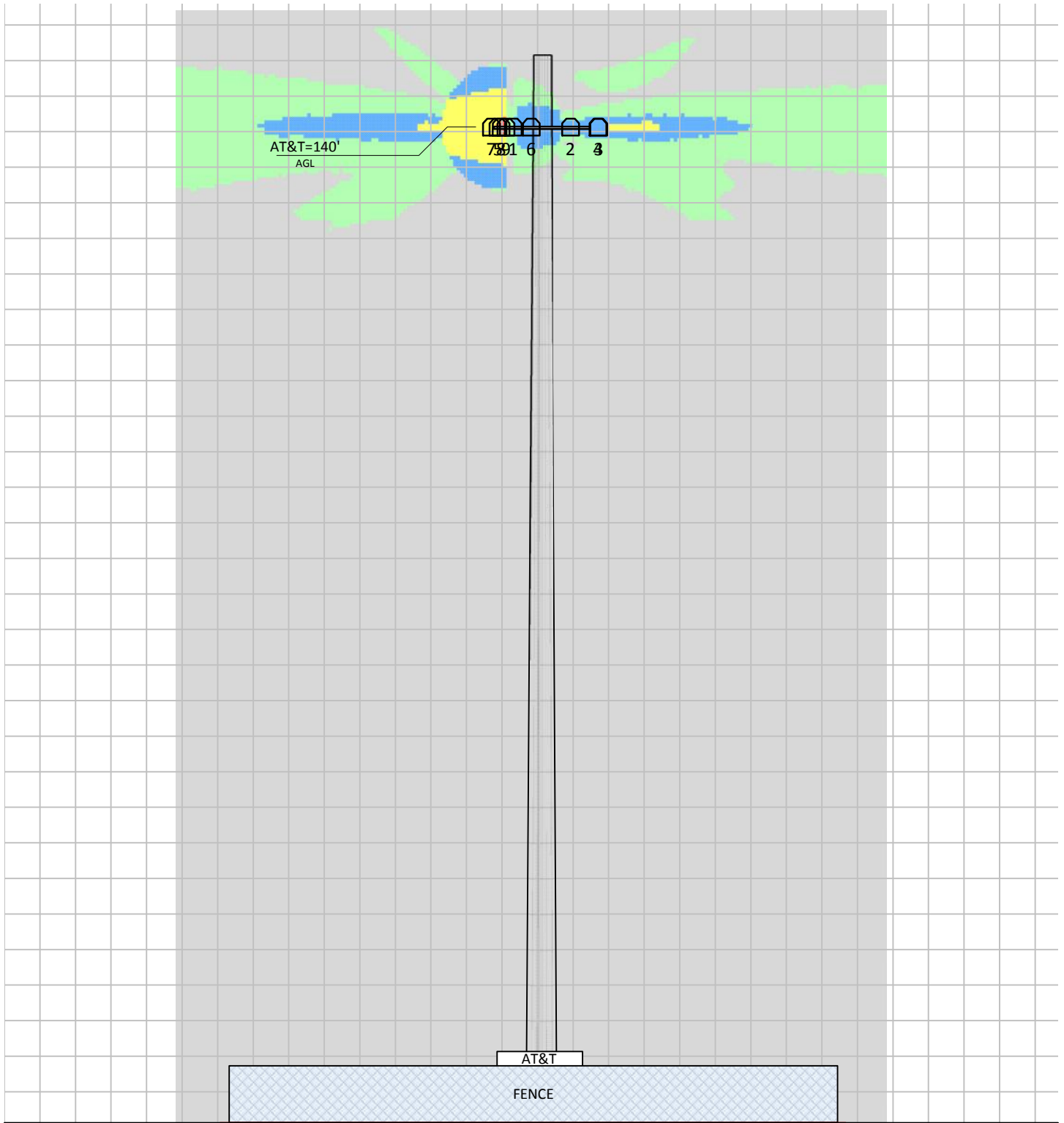
RF Exposure Simulation For: Madison Ct Ridge Road Composite View



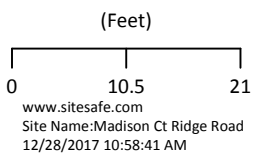
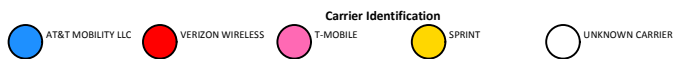
% of FCC Public Exposure Limit
Spatial average 0' - 6'



RF Exposure Simulation For: Madison Ct Ridge Road Elevation View – South



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



5 Site Compliance

5.1 Site Compliance Statement

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

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

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

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

5.2 Actions for Site Compliance

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

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

Gate

Information 1 sign required.

Site Access Location

Yellow caution 2 sign required.

Notes:

- Data concerning all other carriers on site was unavailable and therefore not included in this report.

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 Young Kim.

December 28, 2017

Appendix A – Statement of Limiting Conditions

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

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

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

Appendix B – Regulatory Background Information

FCC Rules and Regulations

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

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

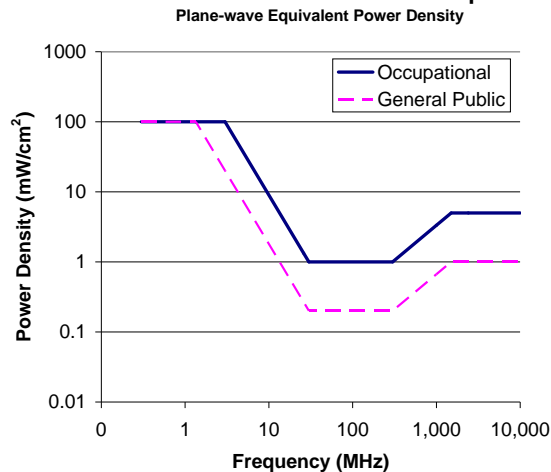
Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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

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

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

FCC Limits for Maximum Permissible Exposure (MPE)



Limits for Occupational/Controlled Exposure (MPE)

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

Limits for General Population/Uncontrolled Exposure (MPE)

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

f = frequency in MHz

*Plane-wave equivalent power density

OSHA Statement

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

(a) Each employer –

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

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

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

Appendix C – Safety Plan and Procedures

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

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

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

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

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

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

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

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

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

Appendix D – RF Emissions

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

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

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

Appendix E – Assumptions and Definitions

General Model Assumptions

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

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

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

Use of Generic Antennas

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

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

Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix F – References

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

Sitesafe, Inc.

<http://www.sitesafe.com>

FCC Radio Frequency Safety

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

National Council on Radiation Protection and Measurements (NCRP)

<http://www.ncrponline.org>

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

<http://www.ieee.org>

American National Standards Institute (ANSI)

<http://www.ansi.org>

Environmental Protection Agency (EPA)

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

National Institutes of Health (NIH)

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

Occupational Safety and Health Agency (OSHA)

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

International Commission on Non-Ionizing Radiation Protection (ICNIRP)

<http://www.icnirp.org>

World Health Organization (WHO)

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

National Cancer Institute

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

American Cancer Society (ACS)

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

European Commission Scientific Committee on Emerging and Newly Identified Health Risks

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

Fairfax County, Virginia Public School Survey

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

UK Health Protection Agency Advisory Group on Non-ionising Radiation

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

Norwegian Institute of Public Health

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

StartAntennaData

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

ID	Name	(MHz)	Trans	Trans	Coax	Coax	Other	Input	Calc	Mfg	Model	(ft)	(ft)	(ft)	Type	(ft)	dBd	BWdth	Uptime	ON
		Freq	Power	Count	Len	Type	Losses	Power	Power			X	Y	Z		Aper	Gain	Pt Dir	Profile	flag
1	AT&T MOBILITY LLC	850		40	2	0			80	Powerwave	7770	63.33	94.33	137.7085	Panel	4.583	11.51	82;20	100%	ON•
2	AT&T MOBILITY LLC (Decommissioned)	850		0	0	0			0	Powerwave	7770	71.37	88.07	137.7085	Panel	4.583	11.51	82;20	100%	ON•
3	AT&T MOBILITY LLC (Proposed)	1900	85.31000975		2	0		170.6200195		CCI Antennas	HPA-65R-BUU-H6	75.33	84.95	137	Panel	6	14.53	61.1;20	100%	ON•
3	AT&T MOBILITY LLC (Proposed)	737	100.2305555		1	0		100.2305555		CCI Antennas	HPA-65R-BUU-H6	75.33	84.95	137	Panel	6	11.68	66.2;20	100%	ON•
4	AT&T MOBILITY LLC	850		40	2	0			80	Powerwave	7770	75.23	83.82	137.7085	Panel	4.583	11.51	82;140	100%	ON•
5	AT&T MOBILITY LLC (Decommissioned)	850		0	0	0			0	Powerwave	7770	61.17	78.09	137.7085	Panel	4.583	11.51	82;140	100%	ON•
6	AT&T MOBILITY LLC (Proposed)	1900	85.31000975		2	0		170.6200195		CCI Antennas	HPA-65R-BUU-H6	65.86	80	137	Panel	6	14.53	61.1;140	100%	ON•
6	AT&T MOBILITY LLC (Proposed)	737	100.2305555		1	0		100.2305555		CCI Antennas	HPA-65R-BUU-H6	65.86	80	137	Panel	6	11.68	66.2;140	100%	ON•
7	AT&T MOBILITY LLC	850		40	2	0			80	Powerwave	7770	60.23	78.86	137.7085	Panel	4.583	11.51	82;270	100%	ON•
8	AT&T MOBILITY LLC (Decommissioned)	850		0	0	0			0	Powerwave	7770	61.6	88.91	137.7085	Panel	4.583	11.51	82;270	100%	ON•
9	AT&T MOBILITY LLC (Proposed)	1900	85.31000975		2	0		170.6200195		CCI Antennas	HPA-65R-BUU-H6	62.28	93.93	137	Panel	6	14.53	61.1;270	100%	ON•
9	AT&T MOBILITY LLC (Proposed)	737	100.2305555		1	0		100.2305555		CCI Antennas	HPA-65R-BUU-H6	62.28	93.93	137	Panel	6	11.68	66.2;270	100%	ON•

StartSymbolData

258 RIDGE RD

Location 258 RIDGE RD

Mblu 78/ 3/ / /

Acct# 00453700

Owner TOWN OF MADISON

Assessment \$106,900

Appraisal \$152,700

PID 4717

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$0	\$152,700	\$152,700

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$0	\$106,900	\$106,900

Owner of Record

Owner TOWN OF MADISON

Sale Price \$100,000

Co-Owner

Book & Page 660/ 162

Sale Date 06/16/1995

Instrument 15

Ownership History

Ownership History				
Owner	Sale Price	Book & Page	Instrument	Sale Date
TOWN OF MADISON	\$100,000	660/ 162	15	06/16/1995

Building Information

Building 1 : Section 1

Year Built:

Living Area: 0

Building Attributes	
Field	Description
Style	Vacant Land
Model	
Stories:	
Total Rooms:	

Fireplace(s)	
Xtra FPL Open	

Building Photo



(http://images.vgsi.com/photos/MadisonCTPhotos//\01\01\64\24

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 9035
Description Municipal Town
Zone RU-1

Land Line Valuation

Size (Acres) 3

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$0	\$152,700	\$152,700

Assessment

Valuation Year	Improvements	Land	Total
2016	\$0	\$106,900	\$106,900

(c) 2016 Vision Government Solutions, Inc. All rights reserved.

Date: **October 19, 2017**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277



Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-9056

Subject: **Structural Analysis Report**

Carrier Designation: **AT&T Mobility Co-Locate**
Carrier Site Number: CTL01266
Carrier Site Name: Madison CT - Ridge Road

Crown Castle Designation: **Crown Castle BU Number:** 5800059
Crown Castle Site Name: Ridge Road, Madison
Crown Castle JDE Job Number: 466808
Crown Castle Work Order Number: 1476743
Crown Castle Application Number: 412026 Rev. 1

Engineering Firm Designation: **Crown Castle Project Number:** 1476743

Site Data: **258 Ridge Road, MADISON, New Haven County, CT**
Latitude 41° 18' 33.3", Longitude -72° 36' 51.57"
150 Foot - Monopole Tower

Dear Charles McGuirt,

Crown Castle 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 1476743, in accordance with application 412026, 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 I and Table II 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 and Risk Category II were used in this analysis

All modifications and 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 *Crown Castle* 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: Emma McCarty / M.B

Respectfully submitted by:

Maham Barimani, P.E.
Senior Project Engineer

tnxTower Report - version 7.0.5.1



10-23-2017

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

Table 3 - Design Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Table 6 – Tower Component Stresses vs. Capacity – LC7

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by VALMONT in October of 2008. The tower was originally designed for a wind speed of 115 mph per TIA-222-G.

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.

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
140.0	140.0	3	cci antennas	HPA-65R-BUU-H6 w/ Mount Pipe	2	7/16	-
		3	ericsson	RRUS 32 B2			
		12	powerwave technologies	7020.00			
		6	powerwave technologies	LGP21901			

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
148.0	159.0	1	dbspectra	DS4C06F36D-D	-	-	1
	150.0	3	andrew	LNx-6515DS-A1M w/ Mount Pipe	2 13	7/8 1-5/8	1
		3	ericsson	RRUS 11 B12			
		3	ericsson	ERICSSON AIR 21 B2P w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B4P w/ Mount Pipe			
	148.0	148.0	1	tower mounts	Platform Mount [LP 303-1]		
tower mounts				Side Arm Mount [SO 102-3]			
141.0	141.0	3	ericsson	RRUS 11	-	-	1
		1	tower mounts	Side Arm Mount [SO 102-3]			
140.0	140.0	3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	2	1/2	3
		6	powerwave technologies	LGP21903			
		6	powerwave technologies	7770.00 w/ Mount Pipe	1 12	3/8 1-5/8	1
		6	powerwave technologies	LGP21401	1	2" conduit	

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					
		1	tower mounts	Platform Mount [LP 304-1]					
130.0	130.0	3	alcatel lucent	RRH2X60-PCS	1	1-5/8	2		
		6	commscope	SBNHH-1D65B w/ Mount Pipe					
		3	alcatel lucent	RRH2x60-700					
				3	alcatel lucent	RRH2X60-AWS	13	1-5/8	1
				6	decibel	DB846F65ZAXY w/ Mount Pipe			
				2	rfs celwave	DB-T1-6Z-8AB-0Z			
				1	tower mounts	Platform Mount [LP 304-1]			
124.0	124.0	1	kathrein	800 10251 w/ Mount Pipe	1 2	7/8 11/32	1		
		1	radiowaves	HP2-4.7NS					
		1	tower mounts	Side Arm Mount [SO 701-1]					
113.0	113.0	3	kathrein	800 10252 w/ Mount Pipe	3	7/8	1		
		1	tower mounts	T-Arm Mount [TA 702-1]					
105.0	105.0	1	rfi antennas	CSA40-67-DIN	2	7/8	2		
		1	sinclair	SC323					
		2	tower mounts	Side Arm Mount [SO 309-1]					

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment; Considered in Analysis
- 3) Equipment to be removed; Not Considered in 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)
150	150	12	allgon	7273	-	-
		2	decibel	DB616		
		6	generic	TMA		
140	140	12	antel	RWA-80017	-	-
		6	generic	TMA		
130	130	12	allgon	7273	-	-
		6	generic	TMA		
120	120	12	allgon	7273	-	-
		6	generic	TMA		
80	80	1	generic	4-FT STD. MICROWAVE	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	ANS Consultants, Inc.	2354009	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont	2354010	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont	2354011	CCISITES

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.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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
L1	150 - 110	Pole	TP39.633x28.4x0.25	1	-13.94	1945.82	27.6	Pass
L2	110 - 94.25	Pole	TP43.556x37.659x0.281	2	-17.89	2432.35	34.9	Pass
L3	94.25 - 46.25	Pole	TP56.472x41.449x0.375	3	-31.74	4251.93	38.8	Pass
L4	46.25 - 0	Pole	TP68.71x53.686x0.438	4	-54.87	6054.63	40.1	Pass
							Summary	
						Pole (L4)	40.1	Pass
						Rating =	40.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	35.6	Pass
1	Base Plate	0	29.6	Pass
1	Base Foundation Structure	0	43.3	Pass
1	Base Foundation Soil Interaction	0	32.1	Pass

Structure Rating (max from all components) =	43.3%
---	--------------

Notes:

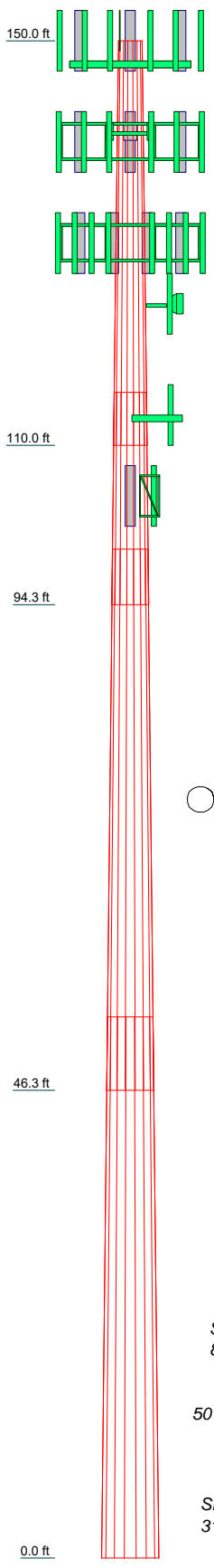
- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Section	1	2	3	4
Length (ft)	40.00	21.00	53.50	53.50
Number of Sides	18	18	18	18
Thickness (in)	0.250	0.281	0.375	0.438
Socket Length (ft)	5.25	5.50	7.25	7.25
Top Dia (in)	28.400	37.659	41.449	53.686
Bot Dia (in)	39.633	43.556	56.472	66.710
Grade			A572-65	
Weight (K)	3.6	2.6	10.5	15.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod 5/8" x 2'	150	(4) 7020.00	140
Pipe Mount [PM 601-1]	149	(4) 7020.00	140
Side Arm Mount [SO 102-3]	149	(4) 7020.00	140
ERICSSON AIR 21 B2P w/ Mount Pipe	148	(2) LGP21901	140
ERICSSON AIR 21 B2P w/ Mount Pipe	148	(2) LGP21901	140
ERICSSON AIR 21 B4P w/ Mount Pipe	148	(2) LGP21901	140
ERICSSON AIR 21 B4P w/ Mount Pipe	148	DC6-48-60-18-8F	140
ERICSSON AIR 21 B4P w/ Mount Pipe	148	RRUS 32 B2	140
LNX-6515DS-A1M w/ Mount Pipe	148	RRUS 32 B2	140
LNX-6515DS-A1M w/ Mount Pipe	148	RRUS 32 B2	140
LNX-6515DS-A1M w/ Mount Pipe	148	Platform Mount [LP 304-1]	140
KRY 112 144/1	148	(2) DB846F65ZAXY w/ Mount Pipe	130
KRY 112 144/1	148	(2) DB846F65ZAXY w/ Mount Pipe	130
KRY 112 144/1	148	(2) DB846F65ZAXY w/ Mount Pipe	130
RRUS 11 B12	148	(2) SBNHH-1D65B w/ Mount Pipe	130
RRUS 11 B12	148	(2) SBNHH-1D65B w/ Mount Pipe	130
RRUS 11 B12	148	(2) SBNHH-1D65B w/ Mount Pipe	130
DS4C06F36D-D	148	RRH2X60-AWS	130
ERICSSON AIR 21 B2P w/ Mount Pipe	148	RRH2X60-AWS	130
Platform Mount [LP 303-1]	148	RRH2X60-AWS	130
RRUS 11	141	RRH2x60-700	130
RRUS 11	141	RRH2x60-700	130
RRUS 11	141	RRH2x60-700	130
6' x 3" Horizontal Mount Pipe	141	(2) DB-T1-6Z-8AB-0Z	130
6' x 3" Horizontal Mount Pipe	141	RRH2X60-PCS	130
6' x 3" Horizontal Mount Pipe	141	RRH2X60-PCS	130
(2) 4' x 2" Pipe Mount	141	RRH2X60-PCS	130
(2) 4' x 2" Pipe Mount	141	RRH2X60-PCS	130
(2) 4' x 2" Pipe Mount	141	Platform Mount [LP 304-1]	130
(2) 4' x 2" Pipe Mount	141	800 10251 w/ Mount Pipe	124
Side Arm Mount [SO 102-3]	141	6' x 2" Mount Pipe	124
(2) 7770.00 w/ Mount Pipe	140	Side Arm Mount [SO 701-1]	124
(2) 7770.00 w/ Mount Pipe	140	HP2-4.7NS	124
(2) 7770.00 w/ Mount Pipe	140	T-Arm Mount [TA 702-1]	113
HPA-65R-BUU-H6 w/ Mount Pipe	140	(3) 800 10252 w/ Mount Pipe	113
HPA-65R-BUU-H6 w/ Mount Pipe	140	SC323	105
HPA-65R-BUU-H6 w/ Mount Pipe	140	Side Arm Mount [SO 309-1]	105
(2) LGP21401	140	Side Arm Mount [SO 309-1]	105
(2) LGP21401	140	CSA40-67-DIN	105
(2) LGP21401	140		105

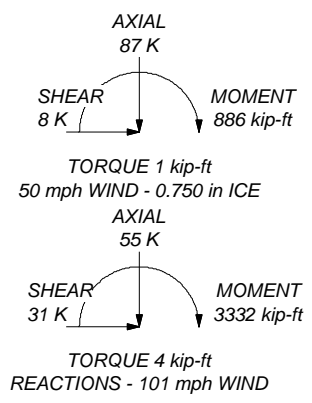
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 40.1%

ALL REACTIONS ARE FACTORED



Crown Castle
 2000 Corporate Drive
 Canonsburg, PA 15317
 The Foundation for A Wireless World
 Phone: (724) 416-9056
 FAX: (724) 416-2254

Job: **5800059**
 Project: **1476743**
 Client: Crown Castle
 Code: TIA-222-G
 Path: R:\ISA Models - Letters\Work Area\EMcCary\WIP\5800059 WO 1476743\5800059.en

Drawn by: emccarty
 Date: 10/19/17
 Scale: NTS
 Dwg No. E-1

App'd:
 App'd:

Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- 4) Tower is located in New Haven County, Connecticut.
- 5) Basic wind speed of 101 mph.
- 6) Structure Class II.
- 7) Exposure Category B.
- 8) Topographic Category 1.
- 9) Crest Height 0.00 ft.
- 10) Nominal ice thickness of 0.750 in.
- 11) Ice thickness is considered to increase with height.
- 12) Ice density of 56.00 pcf.
- 13) A wind speed of 50 mph is used in combination with ice.
- 14) Temperature drop of 50.00 °F.
- 15) Deflections calculated using a wind speed of 60 mph.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.
- 19) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|--|---|
| Consider Moments - Legs
Consider Moments - Horizontals
Consider Moments - Diagonals
Use Moment Magnification
✓ Use Code Stress Ratios
✓ Use Code Safety Factors - Guys
Escalate Ice
Always Use Max Kz
Use Special Wind Profile

Include Bolts In Member Capacity

Leg Bolts Are At Top Of Section
Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
SR Members Have Cut Ends
SR Members Are Concentric | Distribute Leg Loads As Uniform
Assume Legs Pinned
✓ Assume Rigid Index Plate
✓ Use Clear Spans For Wind Area
Use Clear Spans For KL/r
Retension Guys To Initial Tension
✓ Bypass Mast Stability Checks
✓ Use Azimuth Dish Coefficients
✓ Project Wind Area of Appurt.

Autocalc Torque Arm Areas

Add IBC .6D+W Combination
✓ Sort Capacity Reports By Component
Triangulate Diamond Inner Bracing
Treat Feed Line Bundles As Cylinder | Use ASCE 10 X-Brace Ly Rules
Calculate Redundant Bracing Forces
Ignore Redundant Members in FEA
SR Leg Bolts Resist Compression
All Leg Panels Have Same Allowable
Offset Girt At Foundation
✓ Consider Feed Line Torque
Include Angle Block Shear Check
Use TIA-222-G Bracing Resist.
Exemption
Use TIA-222-G Tension Splice
Exemption

<div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction
Always Use Sub-Critical Flow
Use Top Mounted Sockets |
|--|--|---|

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-110.00	40.00	5.25	18	28.400	39.633	0.250	1.000	A572-65 (65 ksi)
L2	110.00-94.25	21.00	5.50	18	37.659	43.556	0.281	1.125	A572-65 (65 ksi)
L3	94.25-46.25	53.50	7.25	18	41.449	56.472	0.375	1.500	A572-65 (65 ksi)
L4	46.25-0.00	53.50		18	53.686	68.710	0.438	1.750	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	28.838	22.337	2236.246	9.993	14.427	155.002	4475.435	11.171	4.558	18.234
	40.244	31.250	6123.656	13.981	20.134	304.152	12255.369	15.628	6.535	26.142
L2	39.737	33.366	5889.316	13.269	19.131	307.848	11786.380	16.686	6.133	21.806
	44.228	38.631	9139.882	15.363	22.126	413.075	18291.791	19.319	7.171	25.496
L3	43.657	48.888	10420.184	14.581	21.056	494.878	20854.080	24.449	6.635	17.693
	57.343	66.769	26545.722	19.914	28.688	925.332	53126.374	33.391	9.279	24.744
L4	56.582	73.942	26487.969	18.903	27.273	971.231	53010.792	36.978	8.679	19.837
	69.770	94.805	55829.000	24.237	34.905	1599.470	111731.46	47.411	11.323	25.881

1

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor Ar	Adjust. Factor Ar	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 150.00-110.00				1	1	1			
L2 110.00-94.25				1	1	1			
L3 94.25-46.25				1	1	1			
L4 46.25-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	Number Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
				ft			in	r in	r in	plf
**										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	CAAA	Weight
				ft		ft ² /ft	plf
148							
LDF5-50A(7/8)	A	No	Inside Pole	148.00 - 0.00	2	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
MLE Hybrid 9Power/18Fiber RL 2(1-5/8)	A	No	Inside Pole	148.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
LDF158-50A(1-5/8)	A	No	Inside Pole	148.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
140							
AVA7-50(1-5/8)	C	No	Inside Pole	140.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
2" Rigid Conduit	C	No	Inside Pole	140.00 - 2.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
FB-L98B-002-75000(3/8)	C	No	Inside Pole	140.00 - 0.00	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00
WR-VG122ST-BRDA(7/16)	C	No	Inside Pole	140.00 - 0.00	2	No Ice 1/2" Ice	0.00 0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight
						ft ² /ft	plf	
						1" Ice	0.00	0.14
130						No Ice	0.00	0.70
AVA7-50(1-5/8)	B	No	Inside Pole	130.00 - 0.00	12	1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	130.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
124						No Ice	0.00	0.33
LDF5-50A(7/8)	C	No	Inside Pole	124.00 - 0.00	1	1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
7921A(11/32)	C	No	Inside Pole	124.00 - 0.00	2	No Ice	0.00	0.50
						1/2" Ice	0.00	0.50
						1" Ice	0.00	0.50
113						No Ice	0.00	0.33
LDF5-50A(7/8)	C	No	Inside Pole	113.00 - 0.00	3	1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
105						No Ice	0.00	0.30
AVA5-50(7/8)	C	No	Inside Pole	105.00 - 0.00	2	1/2" Ice	0.00	0.30
						1" Ice	0.00	0.30
								**

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA}		Weight K
					In Face ft ²	Out Face ft ²	
L1	150.00-110.00	A	0.000	0.000	0.000	0.000	0.43
		B	0.000	0.000	0.000	0.000	0.22
		C	0.000	0.000	0.000	0.000	0.37
L2	110.00-94.25	A	0.000	0.000	0.000	0.000	0.18
		B	0.000	0.000	0.000	0.000	0.17
		C	0.000	0.000	0.000	0.000	0.22
L3	94.25-46.25	A	0.000	0.000	0.000	0.000	0.54
		B	0.000	0.000	0.000	0.000	0.53
		C	0.000	0.000	0.000	0.000	0.69
L4	46.25-0.00	A	0.000	0.000	0.000	0.000	0.52
		B	0.000	0.000	0.000	0.000	0.51
		C	0.000	0.000	0.000	0.000	0.66

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA}		Weight K
						In Face ft ²	Out Face ft ²	
L1	150.00-110.00	A	1.719	0.000	0.000	0.000	0.000	0.43
		B		0.000	0.000	0.000	0.000	0.22
		C		0.000	0.000	0.000	0.000	0.37
L2	110.00-94.25	A	1.679	0.000	0.000	0.000	0.000	0.18
		B		0.000	0.000	0.000	0.000	0.17
		C		0.000	0.000	0.000	0.000	0.22
L3	94.25-46.25	A	1.617	0.000	0.000	0.000	0.000	0.54
		B		0.000	0.000	0.000	0.000	0.53
		C		0.000	0.000	0.000	0.000	0.69
L4	46.25-0.00	A	1.444	0.000	0.000	0.000	0.000	0.52
		B		0.000	0.000	0.000	0.000	0.51
		C		0.000	0.000	0.000	0.000	0.66

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L1	150.00-110.00	0.000	0.000	0.000	0.000
L2	110.00-94.25	0.000	0.000	0.000	0.000
L3	94.25-46.25	0.000	0.000	0.000	0.000
L4	46.25-0.00	0.000	0.000	0.000	0.000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
------------------	-------------------------	-------------	-------------------------------	--------------------------	-----------------------

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Lighting Rod 5/8" x 2'	C	From Leg	0.00	0.00	150.00	No Ice	0.13	0.13	0.01
			0.00			1/2"	0.28		0.01
			1.00			Ice	0.41		0.01
						1" Ice			
148 DS4C06F36D-D	A	From Leg	4.00	0.00	148.00	No Ice	5.82	5.82	0.05
			0.00			1/2"	7.79		0.09
			11.00			Ice	9.78		0.15
						1" Ice			
ERICSSON AIR 21 B2P w/ Mount Pipe	A	From Leg	4.00	0.00	148.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78		0.17
			2.00			Ice	7.21		0.23
						1" Ice			
ERICSSON AIR 21 B2P w/ Mount Pipe	B	From Leg	4.00	0.00	148.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78		0.17
			2.00			Ice	7.21		0.23
						1" Ice			
ERICSSON AIR 21 B2P w/ Mount Pipe	C	From Leg	4.00	0.00	148.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78		0.17
			2.00			Ice	7.21		0.23
						1" Ice			
ERICSSON AIR 21 B4P w/ Mount Pipe	A	From Leg	4.00	0.00	148.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78		0.17
			2.00			Ice	7.21		0.23
						1" Ice			
ERICSSON AIR 21 B4P w/ Mount Pipe	B	From Leg	4.00	0.00	148.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78		0.17
			2.00			Ice	7.21		0.23
						1" Ice			
ERICSSON AIR 21 B4P w/ Mount Pipe	C	From Leg	4.00	0.00	148.00	No Ice	6.33	5.64	0.11
			0.00			1/2"	6.78		0.17
			2.00			Ice	7.21		0.23
						1" Ice			
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	4.00	0.00	148.00	No Ice	11.65	9.84	0.08
			0.00			1/2"	12.37		0.17

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
			2.00				Ice	13.10	12.92	0.27
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	4.00	0.00	148.00		1" Ice	11.65	9.84	0.08
			0.00				No Ice	12.37	11.37	0.17
			2.00				1/2"	13.10	12.92	0.27
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.00	0.00	148.00		1" Ice	11.65	9.84	0.08
			0.00				No Ice	12.37	11.37	0.17
			2.00				1/2"	13.10	12.92	0.27
KRY 112 144/1	A	From Leg	4.00	0.00	148.00		1" Ice	0.35	0.17	0.01
			0.00				No Ice	0.43	0.23	0.01
			2.00				1/2"	0.51	0.30	0.02
KRY 112 144/1	B	From Leg	4.00	0.00	148.00		1" Ice	0.35	0.17	0.01
			0.00				No Ice	0.43	0.23	0.01
			2.00				1/2"	0.51	0.30	0.02
KRY 112 144/1	C	From Leg	4.00	0.00	148.00		1" Ice	0.35	0.17	0.01
			0.00				No Ice	0.43	0.23	0.01
			2.00				1/2"	0.51	0.30	0.02
RRUS 11 B12	A	From Leg	4.00	0.00	148.00		1" Ice	2.83	1.18	0.05
			0.00				No Ice	3.04	1.33	0.07
			2.00				1/2"	3.26	1.48	0.10
RRUS 11 B12	B	From Leg	4.00	0.00	148.00		1" Ice	2.83	1.18	0.05
			0.00				No Ice	3.04	1.33	0.07
			2.00				1/2"	3.26	1.48	0.10
RRUS 11 B12	C	From Leg	4.00	0.00	148.00		1" Ice	2.83	1.18	0.05
			0.00				No Ice	3.04	1.33	0.07
			2.00				1/2"	3.26	1.48	0.10
Pipe Mount [PM 601-1]	A	From Leg	0.50	0.00	149.00		1" Ice	3.00	0.90	0.07
			0.00				No Ice	3.74	1.12	0.08
			2.00				1/2"	4.48	1.34	0.09
Side Arm Mount [SO 102-3]	C	None		0.00	149.00		1" Ice	3.00	3.00	0.08
							No Ice	3.48	3.48	0.11
							1/2"	3.96	3.96	0.14
Platform Mount [LP 303-1]	C	None		0.00	148.00		1" Ice	14.66	14.66	1.25
							No Ice	18.87	18.87	1.48
							1/2"	23.08	23.08	1.71
141 RRUS 11	A	From Leg	1.00	0.00	141.00		1" Ice	2.78	1.19	0.05
			0.00				No Ice	2.99	1.33	0.07
			0.00				1/2"	3.21	1.49	0.09
RRUS 11	B	From Leg	1.00	0.00	141.00		1" Ice	2.78	1.19	0.05
			0.00				No Ice	2.99	1.33	0.07
			0.00				1/2"	3.21	1.49	0.09
RRUS 11	C	From Leg	1.00	0.00	141.00		1" Ice	2.78	1.19	0.05
			0.00				No Ice	2.99	1.33	0.07
			0.00				1/2"	3.21	1.49	0.09
6' x 3" Horizontal Mount Pipe	A	From Leg	0.50	0.00	141.00		1" Ice	1.77	0.07	0.03
			0.00				No Ice	2.13	0.12	0.04
			0.00				1/2"	2.50	0.19	0.06
6' x 3" Horizontal Mount Pipe	B	From Leg	0.50	0.00	141.00		1" Ice	1.77	0.07	0.03
			0.00				No Ice	2.13	0.12	0.04

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral	Vert						ft
			ft	ft	ft	°	ft	ft ²	ft ²	K	
			0.00				Ice	2.50	0.19	0.06	
6' x 3" Horizontal Mount Pipe	C	From Leg	0.50			0.00	141.00	1" Ice	1.77	0.07	0.03
			0.00					No Ice	2.13	0.12	0.04
			0.00					1/2"	2.50	0.19	0.06
(2) 4' x 2" Pipe Mount	A	From Leg	0.50			0.00	141.00	1" Ice	0.79	0.79	0.03
			0.00					No Ice	1.03	1.03	0.04
			0.00					1/2"	1.28	1.28	0.04
(2) 4' x 2" Pipe Mount	B	From Leg	0.50			0.00	141.00	1" Ice	0.79	0.79	0.03
			0.00					No Ice	1.03	1.03	0.04
			0.00					1/2"	1.28	1.28	0.04
(2) 4' x 2" Pipe Mount	C	From Leg	0.50			0.00	141.00	1" Ice	0.79	0.79	0.03
			0.00					No Ice	1.03	1.03	0.04
			0.00					1/2"	1.28	1.28	0.04
Side Arm Mount [SO 102-3]	C	None				0.00	141.00	1" Ice	3.00	3.00	0.08
								No Ice	3.48	3.48	0.11
								1/2"	3.96	3.96	0.14
140 (2) 7770.00 w/ Mount Pipe	A	From Leg	4.00			0.00	140.00	1" Ice	5.75	4.25	0.06
			0.00					No Ice	6.18	5.01	0.10
			0.00					1/2"	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00			0.00	140.00	1" Ice	5.75	4.25	0.06
			0.00					No Ice	6.18	5.01	0.10
			0.00					1/2"	6.61	5.71	0.16
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00			0.00	140.00	1" Ice	5.75	4.25	0.06
			0.00					No Ice	6.18	5.01	0.10
			0.00					1/2"	6.61	5.71	0.16
HPA-65R-BUU-H6 w/ Mount Pipe	A	From Leg	4.00			0.00	140.00	1" Ice	9.90	8.11	0.08
			0.00					No Ice	10.47	9.30	0.16
			0.00					1/2"	11.01	10.21	0.25
HPA-65R-BUU-H6 w/ Mount Pipe	B	From Leg	4.00			0.00	140.00	1" Ice	9.90	8.11	0.08
			0.00					No Ice	10.47	9.30	0.16
			0.00					1/2"	11.01	10.21	0.25
HPA-65R-BUU-H6 w/ Mount Pipe	C	From Leg	4.00			0.00	140.00	1" Ice	9.90	8.11	0.08
			0.00					No Ice	10.47	9.30	0.16
			0.00					1/2"	11.01	10.21	0.25
(2) LGP21401	A	From Leg	4.00			0.00	140.00	1" Ice	1.10	0.21	0.01
			0.00					No Ice	1.24	0.27	0.02
			0.00					1/2"	1.38	0.35	0.03
(2) LGP21401	B	From Leg	4.00			0.00	140.00	1" Ice	1.10	0.21	0.01
			0.00					No Ice	1.24	0.27	0.02
			0.00					1/2"	1.38	0.35	0.03
(2) LGP21401	C	From Leg	4.00			0.00	140.00	1" Ice	1.10	0.21	0.01
			0.00					No Ice	1.24	0.27	0.02
			0.00					1/2"	1.38	0.35	0.03
(4) 7020.00	A	From Leg	4.00			0.00	140.00	1" Ice	0.10	0.17	0.00
			0.00					No Ice	0.15	0.24	0.01
			0.00					1/2"	0.20	0.31	0.01
(4) 7020.00	B	From Leg	4.00			0.00	140.00	1" Ice	0.10	0.17	0.00
			0.00					No Ice	0.15	0.24	0.01
			0.00					1/2"	0.15	0.24	0.01

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			0.00				Ice	0.20	0.31	0.01
							1" Ice			
(4) 7020.00	C	From Leg	4.00	0.00	140.00		No Ice	0.10	0.17	0.00
			0.00				1/2"	0.15	0.24	0.01
			0.00				Ice	0.20	0.31	0.01
							1" Ice			
(2) LGP21901	A	From Leg	4.00	0.00	140.00		No Ice	0.23	0.16	0.01
			0.00				1/2"	0.29	0.21	0.01
			0.00				Ice	0.36	0.28	0.01
							1" Ice			
(2) LGP21901	B	From Leg	4.00	0.00	140.00		No Ice	0.23	0.16	0.01
			0.00				1/2"	0.29	0.21	0.01
			0.00				Ice	0.36	0.28	0.01
							1" Ice			
(2) LGP21901	C	From Leg	4.00	0.00	140.00		No Ice	0.23	0.16	0.01
			0.00				1/2"	0.29	0.21	0.01
			0.00				Ice	0.36	0.28	0.01
							1" Ice			
DC6-48-60-18-8F	B	From Leg	4.00	0.00	140.00		No Ice	0.79	0.79	0.02
			0.00				1/2"	1.27	1.27	0.04
			0.00				Ice	1.45	1.45	0.05
							1" Ice			
RRUS 32 B2	A	From Leg	4.00	0.00	140.00		No Ice	2.73	1.67	0.05
			0.00				1/2"	2.95	1.86	0.07
			0.00				Ice	3.18	2.05	0.10
							1" Ice			
RRUS 32 B2	B	From Leg	4.00	0.00	140.00		No Ice	2.73	1.67	0.05
			0.00				1/2"	2.95	1.86	0.07
			0.00				Ice	3.18	2.05	0.10
							1" Ice			
RRUS 32 B2	C	From Leg	4.00	0.00	140.00		No Ice	2.73	1.67	0.05
			0.00				1/2"	2.95	1.86	0.07
			0.00				Ice	3.18	2.05	0.10
							1" Ice			
Platform Mount [LP 304-1]	C	None		0.00	140.00		No Ice	17.46	17.46	1.35
							1/2"	22.44	22.44	1.62
							Ice	27.42	27.42	1.90
							1" Ice			
130										
(2) DB846F65ZAXY w/ Mount Pipe	A	From Leg	4.00	0.00	130.00		No Ice	7.27	7.82	0.05
			0.00				1/2"	7.83	9.01	0.11
			0.00				Ice	8.35	9.91	0.19
							1" Ice			
(2) DB846F65ZAXY w/ Mount Pipe	B	From Leg	4.00	0.00	130.00		No Ice	7.27	7.82	0.05
			0.00				1/2"	7.83	9.01	0.11
			0.00				Ice	8.35	9.91	0.19
							1" Ice			
(2) DB846F65ZAXY w/ Mount Pipe	C	From Leg	4.00	0.00	130.00		No Ice	7.27	7.82	0.05
			0.00				1/2"	7.83	9.01	0.11
			0.00				Ice	8.35	9.91	0.19
							1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00	0.00	130.00		No Ice	8.39	7.08	0.08
			0.00				1/2"	8.95	8.28	0.15
			0.00				Ice	9.48	9.19	0.22
							1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00	0.00	130.00		No Ice	8.39	7.08	0.08
			0.00				1/2"	8.95	8.28	0.15
			0.00				Ice	9.48	9.19	0.22
							1" Ice			
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00	0.00	130.00		No Ice	8.39	7.08	0.08
			0.00				1/2"	8.95	8.28	0.15
			0.00				Ice	9.48	9.19	0.22
							1" Ice			
RRH2X60-AWS	A	From Leg	4.00	0.00	130.00		No Ice	3.50	1.82	0.06
			0.00				1/2"	3.76	2.05	0.08

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral	Vert						ft
			ft	ft	ft	°	ft	ft ²	ft ²	K	
			2.00				Ice	4.03	2.29	0.11	
RRH2X60-AWS	B	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	3.50	1.82	0.06	
			2.00				1/2"	3.76	2.05	0.08	
			2.00				Ice	4.03	2.29	0.11	
RRH2X60-AWS	C	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	3.50	1.82	0.06	
			2.00				1/2"	3.76	2.05	0.08	
			2.00				Ice	4.03	2.29	0.11	
RRH2x60-700	A	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	3.50	1.82	0.06	
			0.00				1/2"	3.76	2.05	0.08	
			0.00				Ice	4.03	2.29	0.11	
RRH2x60-700	B	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	3.50	1.82	0.06	
			0.00				1/2"	3.76	2.05	0.08	
			0.00				Ice	4.03	2.29	0.11	
RRH2x60-700	C	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	3.50	1.82	0.06	
			0.00				1/2"	3.76	2.05	0.08	
			0.00				Ice	4.03	2.29	0.11	
(2) DB-T1-6Z-8AB-0Z	C	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	4.80	2.00	0.04	
			0.00				1/2"	5.07	2.19	0.08	
			0.00				Ice	5.35	2.39	0.12	
RRH2X60-PCS	A	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	2.20	1.72	0.06	
			0.00				1/2"	2.39	1.90	0.08	
			0.00				Ice	2.59	2.09	0.10	
RRH2X60-PCS	B	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	2.20	1.72	0.06	
			0.00				1/2"	2.39	1.90	0.08	
			0.00				Ice	2.59	2.09	0.10	
RRH2X60-PCS	C	From Leg	4.00	0.00	130.00		1" Ice				
			0.00				No Ice	2.20	1.72	0.06	
			0.00				1/2"	2.39	1.90	0.08	
			0.00				Ice	2.59	2.09	0.10	
Platform Mount [LP 304-1]	C	None			130.00	0.00	1" Ice				
							No Ice	17.46	17.46	1.35	
							1/2"	22.44	22.44	1.62	
							Ice	27.42	27.42	1.90	
							1" Ice				
124	800 10251 w/ Mount Pipe	B	From Leg	3.00	0.00	124.00		No Ice	4.36	2.26	0.04
0.00							1/2"	4.70	2.77	0.08	
0.00							Ice	5.06	3.31	0.11	
	6' x 2" Mount Pipe	B	From Leg	1.50	0.00	124.00		1" Ice			
0.00							No Ice	1.43	1.43	0.02	
0.00							1/2"	1.92	1.92	0.03	
			0.00				Ice	2.29	2.29	0.05	
Side Arm Mount [SO 701-1]	B	From Leg	1.50	0.00	124.00		1" Ice				
			0.00				No Ice	0.85	1.67	0.07	
			0.00				1/2"	1.14	2.34	0.08	
			0.00				Ice	1.43	3.01	0.09	
							1" Ice				
113	(3) 800 10252 w/ Mount Pipe	B	From Leg	3.00	0.00	113.00		No Ice	6.53	3.62	0.04
0.00							1/2"	6.92	4.14	0.09	
0.00							Ice	7.31	4.67	0.15	
	T-Arm Mount [TA 702-1]	B	From Leg	1.50	0.00	113.00		1" Ice			
0.00							No Ice	2.78	2.23	0.11	
0.00							1/2"	3.39	2.43	0.14	
			0.00				Ice	4.00	2.63	0.17	
							1" Ice				

105

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	CAAA Front ft ²	CAAA Side ft ²	Weight K	
CSA40-67-DIN	B	From Leg	1.00	0.00	105.00	No Ice	10.60	10.60	0.07
			0.00			1/2"	16.44	16.44	0.20
			0.00			Ice	22.37	22.37	0.37
SC323	A	From Leg	1.00	0.00	105.00	No Ice	1.19	1.19	0.01
			0.00			1/2"	1.87	1.87	0.01
			0.00			Ice	2.39	2.39	0.03
Side Arm Mount [SO 309-1]	A	From Leg	0.50	0.00	105.00	No Ice	2.82	2.20	0.04
			0.00			1/2"	4.07	3.16	0.06
			0.00			Ice	5.32	4.12	0.08
Side Arm Mount [SO 309-1]	B	From Leg	0.50	0.00	105.00	No Ice	2.82	2.20	0.04
			0.00			1/2"	4.07	3.16	0.06
			0.00			Ice	5.32	4.12	0.08
						1" Ice			
**									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K	
**											
HP2-4.7NS	B	Paraboloid w/Shroud (HP)	From Leg	3.00	0.00		124.00	2.04	No Ice	3.27	0.03
				0.00					1/2" Ice	3.55	0.05
				0.00					1" Ice	3.82	0.06
**											

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice

Comb. No.	Description
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 110	Pole	Max Tension	8	0.00	0.00	-0.00
			Max. Compression	26	-31.52	-0.30	-0.73
			Max. Mx	8	-13.93	-405.49	0.36
			Max. My	14	-13.94	0.25	-407.02
			Max. Vy	20	-17.95	405.34	-0.79
			Max. Vx	2	-17.86	-0.49	406.63
			Max. Torque	5			-1.93
L2	110 - 94.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.85	-6.04	-3.62
			Max. Mx	8	-17.90	-712.29	-2.42
			Max. My	14	-17.91	-3.32	-709.53
			Max. Vy	20	-21.13	710.22	1.07
			Max. Vx	2	-20.84	1.32	708.07
			Max. Torque	5			-4.12
L3	94.25 - 46.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.66	-6.12	-3.67
			Max. Mx	8	-31.74	-1798.22	-10.70
			Max. My	14	-31.75	-12.14	-1783.57
			Max. Vy	20	-25.90	1797.88	9.84
			Max. Vx	2	-25.61	11.70	1782.49
			Max. Torque	5			-4.12
L4	46.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-87.20	-6.12	-3.67
			Max. Mx	20	-54.87	3324.81	19.92
			Max. My	14	-54.87	-22.19	-3294.84
			Max. Vy	20	-31.14	3324.81	19.92
			Max. Vx	2	-30.86	23.67	3294.21
			Max. Torque	5			-4.12

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	87.20	-0.00	-0.00
	Max. H _x	20	54.88	31.12	0.19
	Max. H _z	2	54.88	0.22	30.84
	Max. M _x	2	3294.21	0.22	30.84
	Max. M _z	8	3323.14	-31.08	-0.18
	Max. Torsion	17	4.12	15.39	-26.63
	Min. Vert	5	41.16	-15.42	26.61
	Min. H _x	8	54.88	-31.08	-0.18
	Min. H _z	14	54.88	-0.19	-30.83
	Min. M _x	14	-3294.84	-0.19	-30.83
	Min. M _z	20	-3324.81	31.12	0.19
	Min. Torsion	5	-4.12	-15.42	26.61

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	45.74	0.00	0.00	0.68	-1.23	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	54.88	-0.22	-30.84	-3294.21	23.67	3.89
0.9 Dead+1.6 Wind 0 deg - No Ice	41.16	-0.22	-30.84	-3277.32	23.94	3.90
1.2 Dead+1.6 Wind 30 deg - No Ice	54.88	15.42	-26.61	-2842.44	-1650.00	4.11
0.9 Dead+1.6 Wind 30 deg - No Ice	41.16	15.42	-26.61	-2827.88	-1641.05	4.12
1.2 Dead+1.6 Wind 60 deg - No Ice	54.88	26.86	-15.25	-1628.25	-2872.34	3.02
0.9 Dead+1.6 Wind 60 deg - No Ice	41.16	26.86	-15.25	-1620.00	-2857.05	3.03
1.2 Dead+1.6 Wind 90 deg - No Ice	54.88	31.08	0.18	20.17	-3323.14	1.15
0.9 Dead+1.6 Wind 90 deg - No Ice	41.16	31.08	0.18	19.87	-3305.51	1.15
1.2 Dead+1.6 Wind 120 deg - No Ice	54.88	26.99	15.54	1661.88	-2886.31	-0.95
0.9 Dead+1.6 Wind 120 deg - No Ice	41.16	26.99	15.54	1653.04	-2870.96	-0.95
1.2 Dead+1.6 Wind 150 deg - No Ice	54.88	15.69	26.76	2859.99	-1679.07	-2.79
0.9 Dead+1.6 Wind 150 deg - No Ice	41.16	15.69	26.76	2844.93	-1669.98	-2.79
1.2 Dead+1.6 Wind 180 deg - No Ice	54.88	0.19	30.83	3294.84	-22.19	-3.97
0.9 Dead+1.6 Wind 180 deg - No Ice	41.16	0.19	30.83	3277.52	-21.71	-3.97
1.2 Dead+1.6 Wind 210 deg - No Ice	54.88	-15.39	26.63	2846.21	1643.35	-4.11
0.9 Dead+1.6 Wind 210 deg - No Ice	41.16	-15.39	26.63	2831.21	1635.20	-4.12
1.2 Dead+1.6 Wind 240 deg - No Ice	54.88	-26.88	15.23	1626.56	2872.48	-2.94
0.9 Dead+1.6 Wind 240 deg - No Ice	41.16	-26.88	15.23	1617.89	2857.95	-2.95
1.2 Dead+1.6 Wind 270 deg - No Ice	54.88	-31.12	-0.19	-19.93	3324.81	-1.16
0.9 Dead+1.6 Wind 270 deg - No Ice	41.16	-31.12	-0.19	-20.05	3307.95	-1.16
1.2 Dead+1.6 Wind 300 deg - No Ice	54.88	-27.02	-15.56	-1662.51	2887.30	0.94
0.9 Dead+1.6 Wind 300 deg	41.16	-27.02	-15.56	-1654.10	2872.71	0.95

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
- No Ice						
1.2 Dead+1.6 Wind 330 deg	54.88	-15.72	-26.79	-2861.66	1679.64	2.79
- No Ice						
0.9 Dead+1.6 Wind 330 deg	41.16	-15.72	-26.79	-2847.02	1671.32	2.80
- No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	87.20	0.00	0.00	3.67	-6.12	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	87.20	-0.03	-8.34	-872.35	-2.43	1.20
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	87.20	4.17	-7.21	-753.50	-443.46	1.18
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	87.20	7.23	-4.15	-431.63	-765.41	0.81
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	87.20	8.36	0.02	6.44	-883.50	0.22
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	87.20	7.25	4.19	443.49	-767.01	-0.41
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	87.20	4.20	7.23	763.01	-447.21	-0.93
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	87.20	0.03	8.34	879.66	-9.23	-1.22
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	87.20	-4.16	7.22	761.45	430.17	-1.18
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	87.20	-7.24	4.14	438.48	753.48	-0.79
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	87.20	-8.37	-0.03	0.80	871.88	-0.22
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	87.20	-7.26	-4.19	-436.43	755.26	0.41
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	87.20	-4.21	-7.24	-756.16	435.37	0.93
Dead+Wind 0 deg - Service	45.74	-0.04	-6.09	-647.48	3.69	0.77
Dead+Wind 30 deg - Service	45.74	3.04	-5.25	-558.61	-325.55	0.81
Dead+Wind 60 deg - Service	45.74	5.30	-3.01	-319.76	-566.00	0.60
Dead+Wind 90 deg - Service	45.74	6.13	0.03	4.51	-654.68	0.23
Dead+Wind 120 deg - Service	45.74	5.33	3.07	327.45	-568.75	-0.19
Dead+Wind 150 deg - Service	45.74	3.10	5.28	563.14	-331.27	-0.55
Dead+Wind 180 deg - Service	45.74	0.04	6.08	648.68	-5.34	-0.79
Dead+Wind 210 deg - Service	45.74	-3.04	5.26	560.43	322.30	-0.81
Dead+Wind 240 deg - Service	45.74	-5.31	3.00	320.50	564.09	-0.58
Dead+Wind 270 deg - Service	45.74	-6.14	-0.04	-3.38	653.07	-0.23
Dead+Wind 300 deg - Service	45.74	-5.33	-3.07	-326.50	567.01	0.19
Dead+Wind 330 deg - Service	45.74	-3.10	-5.29	-562.39	329.44	0.55

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-45.74	0.00	0.00	45.74	0.00	0.000%
2	-0.22	-54.88	-30.84	0.22	54.88	30.84	0.000%
3	-0.22	-41.16	-30.84	0.22	41.16	30.84	0.000%
4	15.42	-54.88	-26.61	-15.42	54.88	26.61	0.000%
5	15.42	-41.16	-26.61	-15.42	41.16	26.61	0.000%
6	26.86	-54.88	-15.25	-26.86	54.88	15.25	0.000%
7	26.86	-41.16	-15.25	-26.86	41.16	15.25	0.000%
8	31.08	-54.88	0.18	-31.08	54.88	-0.18	0.000%
9	31.08	-41.16	0.18	-31.08	41.16	-0.18	0.000%
10	26.99	-54.88	15.54	-26.99	54.88	-15.54	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
11	26.99	-41.16	15.54	-26.99	41.16	-15.54	0.000%
12	15.69	-54.88	26.76	-15.69	54.88	-26.76	0.000%
13	15.69	-41.16	26.76	-15.69	41.16	-26.76	0.000%
14	0.19	-54.88	30.83	-0.19	54.88	-30.83	0.000%
15	0.19	-41.16	30.83	-0.19	41.16	-30.83	0.000%
16	-15.39	-54.88	26.63	15.39	54.88	-26.63	0.000%
17	-15.39	-41.16	26.63	15.39	41.16	-26.63	0.000%
18	-26.88	-54.88	15.23	26.88	54.88	-15.23	0.000%
19	-26.88	-41.16	15.23	26.88	41.16	-15.23	0.000%
20	-31.12	-54.88	-0.19	31.12	54.88	0.19	0.000%
21	-31.12	-41.16	-0.19	31.12	41.16	0.19	0.000%
22	-27.02	-54.88	-15.56	27.02	54.88	15.56	0.000%
23	-27.02	-41.16	-15.56	27.02	41.16	15.56	0.000%
24	-15.72	-54.88	-26.79	15.72	54.88	26.79	0.000%
25	-15.72	-41.16	-26.79	15.72	41.16	26.79	0.000%
26	0.00	-87.20	0.00	-0.00	87.20	-0.00	0.000%
27	-0.03	-87.20	-8.34	0.03	87.20	8.34	0.000%
28	4.17	-87.20	-7.21	-4.17	87.20	7.21	0.000%
29	7.23	-87.20	-4.15	-7.23	87.20	4.15	0.000%
30	8.36	-87.20	0.02	-8.36	87.20	-0.02	0.000%
31	7.25	-87.20	4.19	-7.25	87.20	-4.19	0.000%
32	4.20	-87.20	7.23	-4.20	87.20	-7.23	0.000%
33	0.03	-87.20	8.34	-0.03	87.20	-8.34	0.000%
34	-4.16	-87.20	7.22	4.16	87.20	-7.22	0.000%
35	-7.24	-87.20	4.14	7.24	87.20	-4.14	0.000%
36	-8.37	-87.20	-0.03	8.37	87.20	0.03	0.000%
37	-7.26	-87.20	-4.19	7.26	87.20	4.19	0.000%
38	-4.21	-87.20	-7.24	4.21	87.20	7.24	0.000%
39	-0.04	-45.74	-6.09	0.04	45.74	6.09	0.000%
40	3.04	-45.74	-5.25	-3.04	45.74	5.25	0.000%
41	5.30	-45.74	-3.01	-5.30	45.74	3.01	0.000%
42	6.13	-45.74	0.03	-6.13	45.74	-0.03	0.000%
43	5.33	-45.74	3.07	-5.33	45.74	-3.07	0.000%
44	3.10	-45.74	5.28	-3.10	45.74	-5.28	0.000%
45	0.04	-45.74	6.08	-0.04	45.74	-6.08	0.000%
46	-3.04	-45.74	5.26	3.04	45.74	-5.26	0.000%
47	-5.31	-45.74	3.00	5.31	45.74	-3.00	0.000%
48	-6.14	-45.74	-0.04	6.14	45.74	0.04	0.000%
49	-5.33	-45.74	-3.07	5.33	45.74	3.07	0.000%
50	-3.10	-45.74	-5.29	3.10	45.74	5.29	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00047140
3	Yes	4	0.00000001	0.00030983
4	Yes	5	0.00000001	0.00006389
5	Yes	5	0.00000001	0.00003046
6	Yes	5	0.00000001	0.00005156
7	Yes	5	0.00000001	0.00002429
8	Yes	4	0.00000001	0.00018630
9	Yes	4	0.00000001	0.00011870
10	Yes	5	0.00000001	0.00005560
11	Yes	5	0.00000001	0.00002619
12	Yes	5	0.00000001	0.00006245
13	Yes	5	0.00000001	0.00002964
14	Yes	4	0.00000001	0.00054843
15	Yes	4	0.00000001	0.00036018
16	Yes	5	0.00000001	0.00005046
17	Yes	5	0.00000001	0.00002379
18	Yes	5	0.00000001	0.00006123
19	Yes	5	0.00000001	0.00002912
20	Yes	4	0.00000001	0.00013593

21	Yes	4	0.00000001	0.00008467
22	Yes	5	0.00000001	0.00005883
23	Yes	5	0.00000001	0.00002784
24	Yes	5	0.00000001	0.00005317
25	Yes	5	0.00000001	0.00002505
26	Yes	4	0.00000001	0.00001318
27	Yes	5	0.00000001	0.00006588
28	Yes	5	0.00000001	0.00007181
29	Yes	5	0.00000001	0.00007153
30	Yes	5	0.00000001	0.00006704
31	Yes	5	0.00000001	0.00007268
32	Yes	5	0.00000001	0.00007306
33	Yes	5	0.00000001	0.00006701
34	Yes	5	0.00000001	0.00007095
35	Yes	5	0.00000001	0.00007092
36	Yes	5	0.00000001	0.00006527
37	Yes	5	0.00000001	0.00007026
38	Yes	5	0.00000001	0.00007019
39	Yes	4	0.00000001	0.00002384
40	Yes	4	0.00000001	0.00004098
41	Yes	4	0.00000001	0.00002790
42	Yes	4	0.00000001	0.00001370
43	Yes	4	0.00000001	0.00002813
44	Yes	4	0.00000001	0.00003700
45	Yes	4	0.00000001	0.00002480
46	Yes	4	0.00000001	0.00002983
47	Yes	4	0.00000001	0.00003639
48	Yes	4	0.00000001	0.00001341
49	Yes	4	0.00000001	0.00003100
50	Yes	4	0.00000001	0.00002811

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 110	8.45	43	0.49	0.00
L2	115.25 - 94.25	5.02	43	0.42	0.00
L3	99.75 - 46.25	3.73	43	0.36	0.00
L4	53.5 - 0	1.04	43	0.18	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Lighting Rod 5/8" x 2'	43	8.45	0.49	0.00	105693
149.00	Pipe Mount [PM 601-1]	43	8.34	0.49	0.00	105693
148.00	DS4C06F36D-D	43	8.24	0.49	0.00	105693
141.00	RRUS 11	43	7.52	0.48	0.00	58719
140.00	(2) 7770.00 w/ Mount Pipe	43	7.42	0.48	0.00	52847
130.00	(2) DB846F65ZAXY w/ Mount Pipe	43	6.42	0.46	0.00	26423
124.00	HP2-4.7NS	43	5.83	0.45	0.00	20325
113.00	(3) 800 10252 w/ Mount Pipe	43	4.82	0.42	0.00	15388
105.00	CSA40-67-DIN	43	4.15	0.39	0.00	15595

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 110	42.82	10	2.50	0.01
L2	115.25 - 94.25	25.48	10	2.14	0.01
L3	99.75 - 46.25	18.93	10	1.85	0.01
L4	53.5 - 0	5.30	22	0.91	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Lighting Rod 5/8" x 2'	10	42.82	2.50	0.01	20857
149.00	Pipe Mount [PM 601-1]	10	42.30	2.49	0.01	20857
148.00	DS4C06F36D-D	10	41.78	2.48	0.01	20857
141.00	RRUS 11	10	38.13	2.43	0.01	11587
140.00	(2) 7770.00 w/ Mount Pipe	10	37.62	2.42	0.01	10428
130.00	(2) DB846F65ZAXY w/ Mount Pipe	10	32.53	2.33	0.01	5213
124.00	HP2-4.7NS	10	29.58	2.27	0.01	4009
113.00	(3) 800 10252 w/ Mount Pipe	10	24.47	2.10	0.01	3034
105.00	CSA40-67-DIN	10	21.04	1.95	0.01	3091

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K	φP _n K	Ratio P _u / φP _n
L1	150 - 110 (1)	TP39.633x28.4x0.25	40.00	0.00	0.0	30.080	-13.94	1945.82	0.007
L2	110 - 94.25 (2)	TP43.556x37.659x0.281	21.00	0.00	0.0	37.252	-17.89	2432.35	0.007
L3	94.25 - 46.25 (3)	TP56.472x41.449x0.375	53.50	0.00	0.0	64.346	-31.74	4251.93	0.007
L4	46.25 - 0 (4)	TP68.71x53.686x0.438	53.50	0.00	0.0	94.805	-54.87	6054.63	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M _{ux} kip-ft	φM _{nx} kip-ft	Ratio M _{ux} / φM _{nx}	M _{uy} kip-ft	φM _{ny} kip-ft	Ratio M _{uy} / φM _{ny}
L1	150 - 110 (1)	TP39.633x28.4x0.25	407.20	1518.72	0.268	0.00	1518.72	0.000
L2	110 - 94.25 (2)	TP43.556x37.659x0.281	712.85	2089.54	0.341	0.00	2089.54	0.000
L3	94.25 - 46.25 (3)	TP56.472x41.449x0.375	1801.97	4731.10	0.381	0.00	4731.10	0.000
L4	46.25 - 0 (4)	TP68.71x53.686x0.438	3331.73	8512.42	0.391	0.00	8512.42	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L1	150 - 110 (1)	TP39.633x28.4x0.25	17.90	972.91	0.018	0.29	3041.16	0.000
L2	110 - 94.25 (2)	TP43.556x37.659x0.281	21.16	1216.17	0.017	0.95	4184.20	0.000
L3	94.25 - 46.25 (3)	TP56.472x41.449x0.375	25.93	2125.97	0.012	0.95	9473.75	0.000
L4	46.25 - 0 (4)	TP68.71x53.686x0.438	31.20	3027.31	0.010	0.94	17045.58	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 110 (1)	0.007	0.268	0.000	0.018	0.000	0.276	1.000	4.8.2
L2	110 - 94.25 (2)	0.007	0.341	0.000	0.017	0.000	0.349	1.000	4.8.2
L3	94.25 - 46.25 (3)	0.007	0.381	0.000	0.012	0.000	0.388	1.000	4.8.2
L4	46.25 - 0 (4)	0.009	0.391	0.000	0.010	0.000	0.401	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	150 - 110	Pole	TP39.633x28.4x0.25	1	-13.94	1945.82	27.6	Pass
L2	110 - 94.25	Pole	TP43.556x37.659x0.281	2	-17.89	2432.35	34.9	Pass
L3	94.25 - 46.25	Pole	TP56.472x41.449x0.375	3	-31.74	4251.93	38.8	Pass
L4	46.25 - 0	Pole	TP68.71x53.686x0.438	4	-54.87	6054.63	40.1	Pass
Summary								
Pole (L4)							40.1	Pass
RATING =							40.1	Pass

APPENDIX B
BASE LEVEL DRAWING



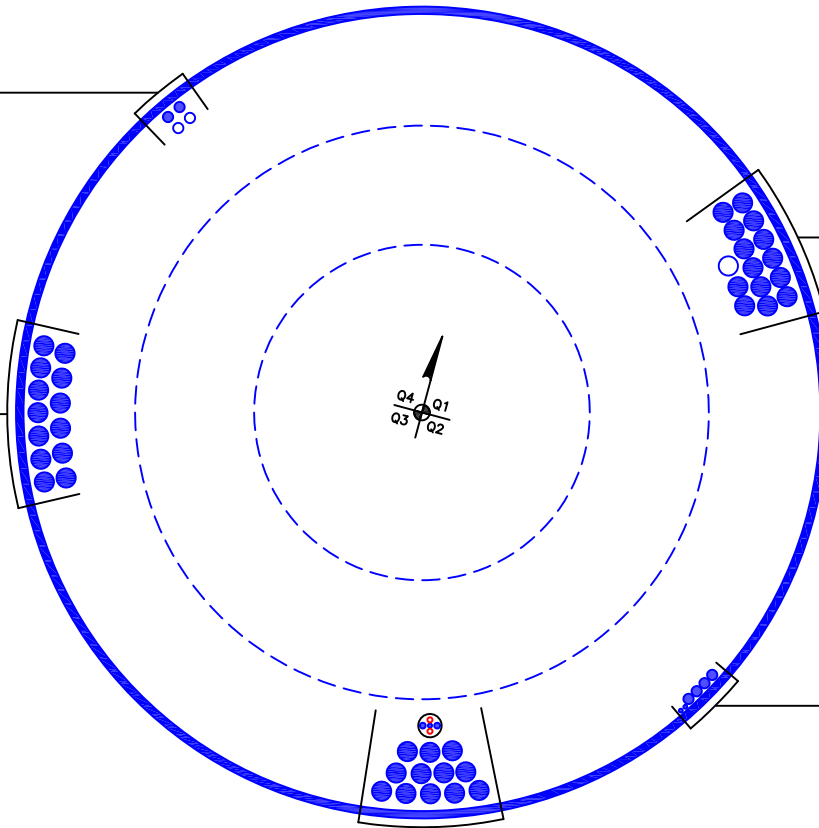
(RESERVED)
(2) 7/8" TO 105 FT LEVEL
(INSTALLED)
(2) 7/8" TO 148 FT LEVEL

(RESERVED)
(1) 1-5/8" TO 130 FT LEVEL
(13) 1-5/8" TO 130 FT LEVEL

(INSTALLED)
(13) 1-5/8" TO 148 FT LEVEL

(INSTALLED)
(3) 7/8" TO 113 FT LEVEL
(2) 11/32" TO 124 FT LEVEL
(1) 7/8" TO 124 FT LEVEL

(PROPOSED—IN 2" CONDUIT)
(2) 7/16" TO 140 FT LEVEL
(INSTALLED—IN 2" CONDUIT—TO BE REMOVED)
(2) 1/2" TO 140 FT LEVEL
(INSTALLED—IN 2" CONDUIT)
(1) 3/8" TO 140 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 140 FT LEVEL



APPENDIX C
ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

- Assumptions:**
- 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
 - 2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
 - 3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: 5800059
 Site Name: Ridge Road, Madison
 App #: 412026 Rev: 1

Anchor Rod Data

Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	76	in
Anchor Spacing:	6	in

Plate Data

W=Side:	77	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	12	in

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data

Diam:	68.71	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions

TIA Revision:	G	
Factored Moment, Mu:	3332	ft-kips
Factored Axial, Pu:	55	kips
Factored Shear, Vu:	31	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/ η): 92.6 Kips
 Axial Design Strength, $\Phi * F_u * A_{net}$: 260.0 Kips
 Anchor Rod Stress Ratio: 35.6% **Pass**

Base Plate Results

Base Plate Stress: 13.3 ksi
 PL Design Bending Strength, $\Phi * F_y$: 45.0 ksi
 Base Plate Stress Ratio: 29.6% **Pass**

Flexural Check

PL Ref. Data

Yield Line (in):	40.18
Max PL Length:	40.18

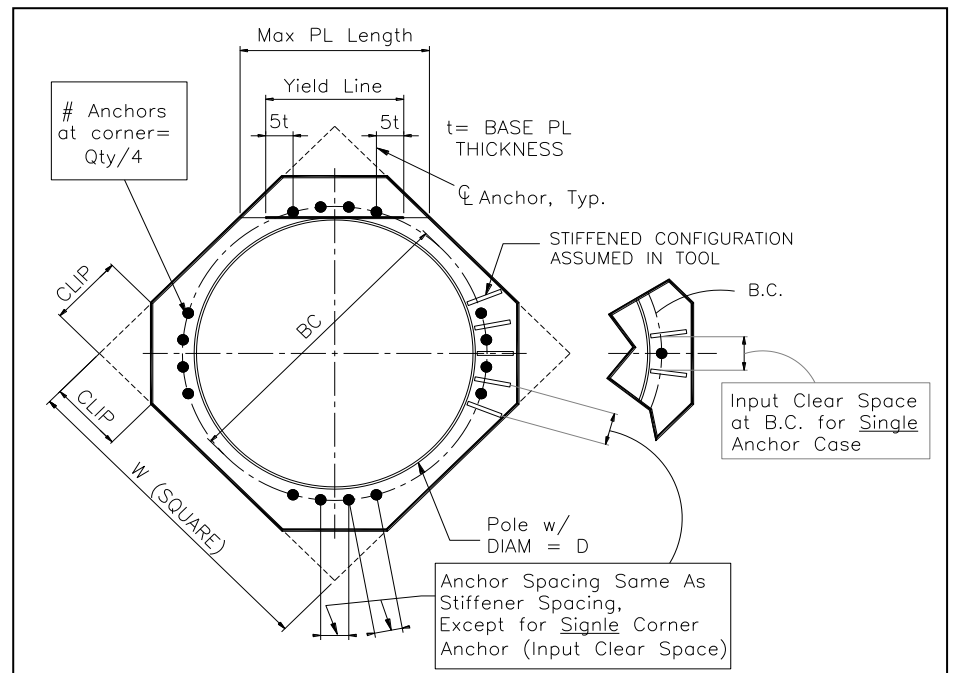
N/A - Unstiffened

Stiffener Results

Horizontal Weld : N/A
 Vertical Weld: N/A
 Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$: N/A
 Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$: N/A
 Plate Comp. (AISC Bracket): N/A

Pole Results

Pole Punching Shear Check: N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Drilled Pier Foundation



BU #:	5800059
Site Name:	Ridge Road, Madison
App. Number:	412026 Rev: 1

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	3332	
Axial Force (kips)	55	
Shear Force (kips)	31	

Material Properties		
Concrete Strength, f'c:	4	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	39	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
<i>From 0.5' above grade to 39' below grade</i>		
Pier Diameter	8	ft
Rebar Quantity	28	
Rebar Size	11	
Clear Cover to Ties	3	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity		
	Compression	Uplift
D _{v=0} (ft from TOC)	10.90	-
Soil Safety Factor	6.42	-
Max Moment (kip-ft)	3593.99	-
Rating	20.7%	-
Soil Vertical Capacity		
	Compression	Uplift
Skin Friction (kips)	649.44	-
End Bearing (kips)	226.19	-
Weight of Concrete (kips)	225.65	-
Total Capacity (kips)	875.63	-
Axial (kips)	280.65	-
Rating	32.1%	-
Reinforced Concrete Capacity		
	Compression	Uplift
Critical Depth (ft from TOC)	10.49	-
Critical Moment (kip-ft)	3593.45	-
Critical Moment Capacity	8299.59	-
Rating	43.3%	-
Soil Interaction Rating		32.1%
Structural Foundation Rating		43.3%

Soil Profile				
Groundwater Depth	7	ft	# of Layers	4

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	65	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	4	12	8	65	87.6	0.1	22	0.270	0.270					Silty
3	12	20	8	42.6	87.6	0.4	27	0.912	0.912				70	Cohesionless
4	20	39	19	62.6	87.6	0.2	31	1.315	1.315			6	85	Cohesionless

CCISeismic - Design Category

Per 2012/2015 IBC

Site BU: 5800059
 Work Order: 1476743
 Application: 412026 Rev. 1



	Degrees	Minutes	Seconds	
Site Latitude =	41	18	33.29	41.3092 degrees
Site Longitude =	-72	36	51.56	-72.6143 degrees
Ground Supported Structure =	Yes			
Structure Class =	II			(Table 2-1)
Site Class =	D - Stiff Soil			(Table 2-11)
Spectral response acceleration short periods, S_s =	0.172			USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.060			
Importance Factor, I =	1.0			(Table 2-3)
Acceleration-based site coefficient, F_a =	1.6			(Table 2-12)
Velocity-based site coefficient, F_v =	2.4			(Table 2-13)
Design spectral response acceleration short period, S_{DS} =	0.184			(2.7.6)
Design spectral response acceleration 1 s period, S_{D1} =	0.096			(2.7.6)
Seismic Design Category - Short Period Response =	B			ASCE 7-05 Table 11.6-1
Seismic Design Category - 1s Period Response =	B			ASCE 7-05 Table 11.6-2
Worst Case Seismic Design Category =	B			ASCE 7-05 Tables 11.6-1 and 6-2

USGS Design Maps Summary Report

User-Specified Input

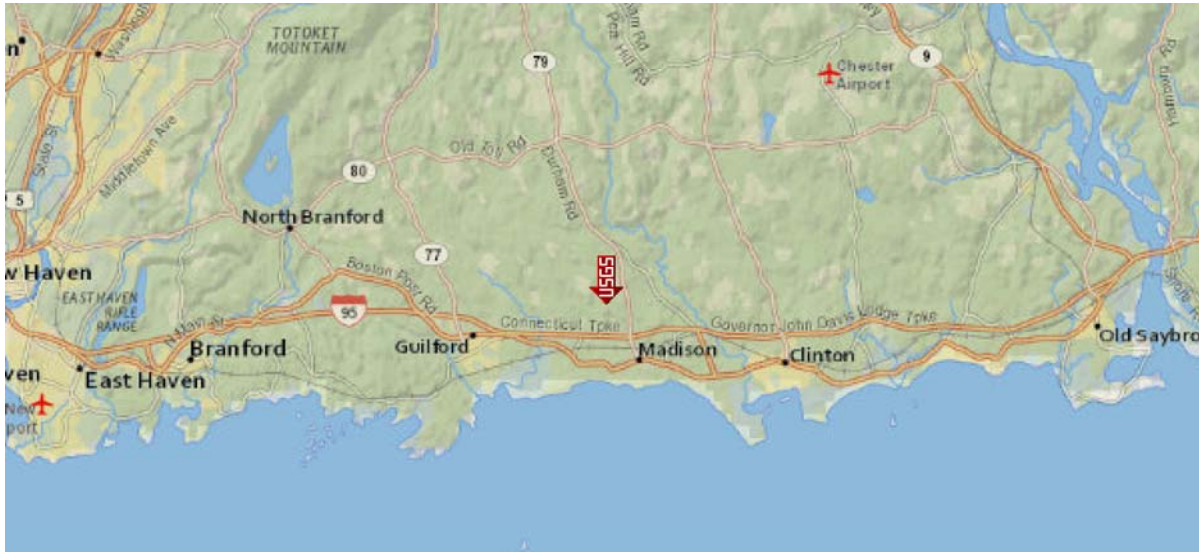
Report Title BU# 5800059
 Sat October 21, 2017 15:10:55 UTC

Building Code Reference Document 2012/2015 International Building Code
 (which utilizes USGS hazard data available in 2008)

Site Coordinates 41.30925°N, 72.61433°W

Site Soil Classification Site Class D – “Stiff Soil”

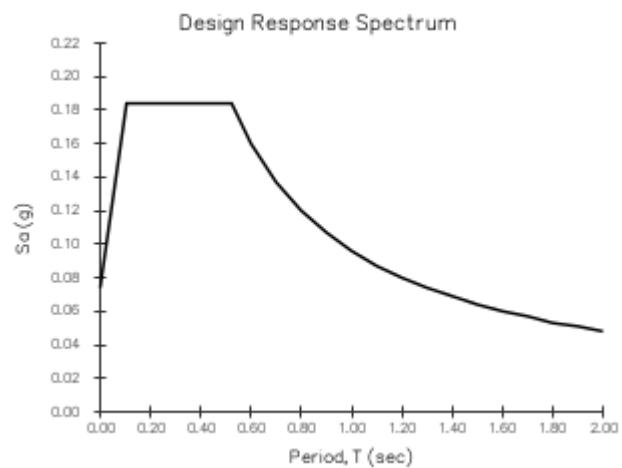
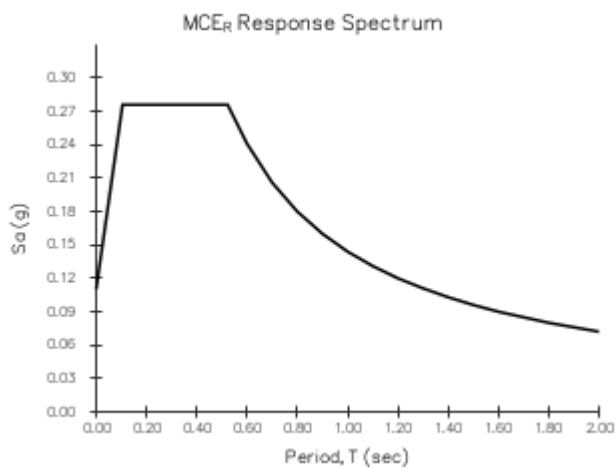
Risk Category I/II/III



USGS-Provided Output

$S_s = 0.172 \text{ g}$	$S_{MS} = 0.276 \text{ g}$	$S_{DS} = 0.184 \text{ g}$
$S_1 = 0.060 \text{ g}$	$S_{M1} = 0.144 \text{ g}$	$S_{D1} = 0.096 \text{ g}$

For information on how the S_s and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.



Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.



PROJECT: LTE 2C
SITE NUMBER: CTL01266
FA NUMBER: 10128137
PTN NUMBER: 2051A0DB5T
PACE NUMBER: MRCTB025437
CROWN BU#: 5800059
SITE NAME: MADISON - RIDGE ROAD
SITE ADDRESS: 258 RIDGE ROAD
 MADISON, CT 06433


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


 1362 MELLON ROAD
 SUITE 140
 HANOVER, MD 21076


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

PROJECT INFORMATION

SITE NAME: MADISON - RIDGE ROAD
SITE NUMBER: CTL01266
SITE ADDRESS: 258 RIDGE ROAD
 MADISON, CT 06433
FA NUMBER: 10128137
PTN NUMBER: 2051A0DB5T
PACE NUMBER: MRCTB025437
USID NUMBER: 101331
CROWN BU#: 5800059
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 MADISON
COUNTY: NEW HAVEN
SITE COORDINATES FROM (RFDS):
LATITUDE: 41.3091667°
LONGITUDE: -72.6141167°
GROUND ELEV.: 136'
PROPOSED USE: TELECOMMUNICATIONS FACILITY
AT&T RF MANAGER: DEEPAK RATHORE
PHONE: (860) 965-3068
EMAIL: dr701e@att.com

SCOPE OF WORK

LTE 850 WILL BE 2C AT THE SITE WITH BRONZE CONFIGURATION. PROPOSED 2C PROJECT SCOPE HEREIN BASED ON RFDS ID # 1847672, VERSION 1.00 LAST UPDATED 09/07/17.

- (3) NEW ANTENNAS TO REPLACE (3) EXISTING ANTENNAS
- (3) NEW RRUS-32
- UPGRADE DUS TO 5216 AND ADD XMU
- INSTALL NEW HANDRAIL KIT

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

APPLICABLE BUILDING CODES AND STANDARDS

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

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

ELECTRICAL CODE: 2014 NATIONAL ELECTRIC CODE

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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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

SITE LOCATION MAP



DIRECTIONS

SCAN QR CODE FOR LINK TO SITE LOCATION MAP



DRAWING INDEX

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

PROJECT CONSULTANTS

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

SITE NAME
MADISON - RIDGE ROAD

SITE NUMBER:
CTL01266

SITE ADDRESS
258 RIDGE ROAD
MADISON, CT 06433

SHEET NAME
TITLE SHEET

SHEET NUMBER
T1



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

GENERAL CONSTRUCTION

- FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
CONTRACTOR/CM – SMARTLINK
OWNER – AT&T WIRELESS
- ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND AT&T PROJECT SPECIFICATIONS.
- 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.
- 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.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
- 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.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
- 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.
- 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.
- GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
- 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.
- 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.
- 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.
- CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
- 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.
- THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
- GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.
- THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.

- 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.
- THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2-A OR 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
- 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.
- CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.
- CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
- 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).
- OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.
- NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
- 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.
- 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.
- CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
- 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.
- NO WHITE STROBE LIGHTS ARE PERMITTED. LIGHTING IF REQUIRED, WILL MEET FAA STANDARDS AND REQUIREMENTS.

ANTENNA MOUNTING

- DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANS/TIA-222 OR APPLICABLE LOCAL CODES.

- 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.
- 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.
- DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
- ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
- ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50-OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.
- 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.
- JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.
- CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.
- TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.

TORQUE REQUIREMENTS

- ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
- 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

- 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.
- 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.
- WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

- 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.
- CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
- CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION.
- ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'-0".

- ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC.
- CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.
- 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.
- 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.
- 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

- CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.
- ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.
- 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.
- 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
- 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.
- ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.



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



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME
MADISON - RIDGE ROAD

SITE NUMBER:
CTL01266

SITE ADDRESS
**258 RIDGE ROAD
MADISON, CT 06433**

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP1

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

NOTICE

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

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

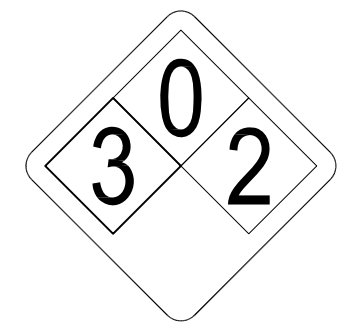
Ref: 47CFR 1.1307(b)

CAUTION

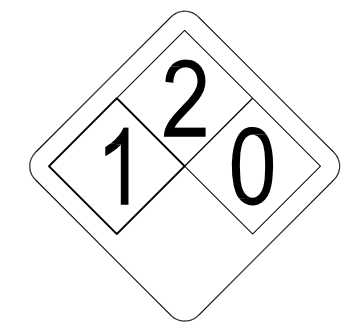
Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC Occupational Exposure Limits.

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

Ref: 47CFR 1.1307(b)



ALERTING SIGN
(FOR CELL SITE BATTERIES)



ALERTING SIGN
(FOR DIESEL FUEL)



ALERTING SIGN
(FOR PROPANE)

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

1362 MELLON ROAD
SUITE 140
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

ALERTING SIGNS

WARNING!

DANGER DO NOT TOUCH TOWER!

SERIOUS "RF" BURN HAZARD!

MAINTAIN AN ADEQUATE CLEARANCE BETWEEN TOWER SUPPORTS AND GUY WIRES

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

PROPERTY OF AT&T

AUTHORIZED PERSONNEL ONLY

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

ALERTING SIGN

INFO SIGN #4

INFORMATION

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

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

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

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

INFORMACION

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

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

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

Esta es la estación base maestra. _____

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

INFORMATION

ACTIVE ANTENNAS ARE MOUNTED

ON THE OUTSIDE OF THIS BUILDING

BEHIND THIS PANEL

ON THIS STRUCTURE

STAY BACK A MINIMUM OF 3 FEET FROM THESE ANTENNAS

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

This is AT&T site# _____

INFO SIGN #1

INFO SIGN #2

INFO SIGN #3

STAY BACK 3 FEET FROM ANTENNA

GENERAL SIGNAGE GUIDELINES

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

NOTES FOR ROOFTOP SITES:

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

SIGNAGE GUIDELINES CHART

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME
MADISON - RIDGE ROAD

SITE NUMBER:
CTL01266

SITE ADDRESS
**258 RIDGE ROAD
MADISON, CT 06433**

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP2

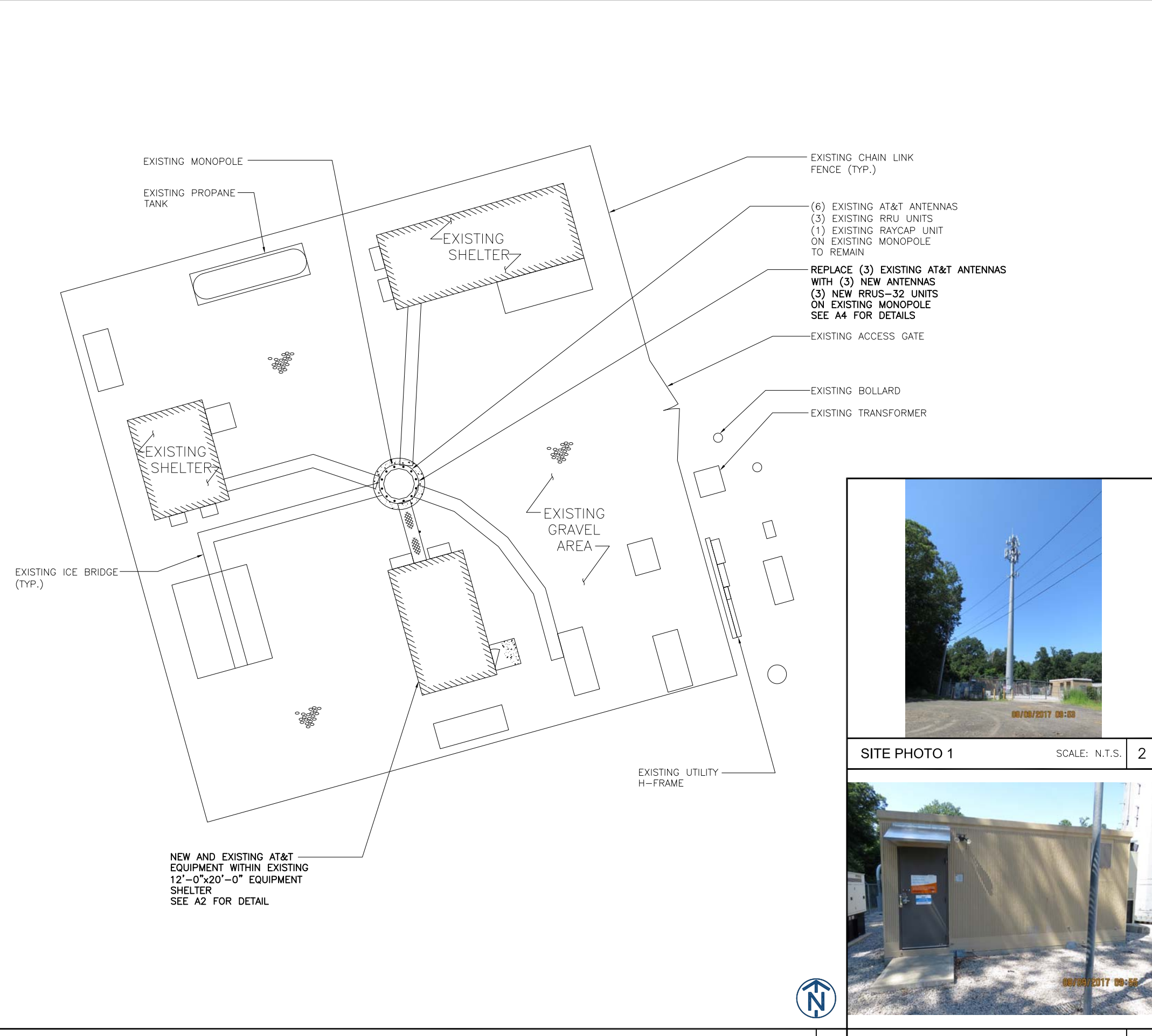
THESE DRAWINGS ARE THE PROPERTY OF FULLERTON ENGINEERING CONSULTANTS, INC. IT IS FOR THE EXCLUSIVE USE OF THIS PROJECT. ANY RE-USE OF THIS DRAWING WITHOUT THE EXPRESSED WRITTEN CONSENT OF FULLERTON ENGINEERING CONSULTANTS, INC. IS PROHIBITED.

ABBREVIATIONS

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

SYMBOLS

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



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



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME
MADISON - RIDGE ROAD



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

SITE NUMBER:
CTL01266



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

SITE ADDRESS
**258 RIDGE ROAD
MADISON, CT 06433**

SHEET NAME
COMPOUND PLAN

SHEET NUMBER
A1

COMPOUND PLAN

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

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



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



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME

MADISON - RIDGE ROAD

SITE NUMBER:

CTL01266

SITE ADDRESS

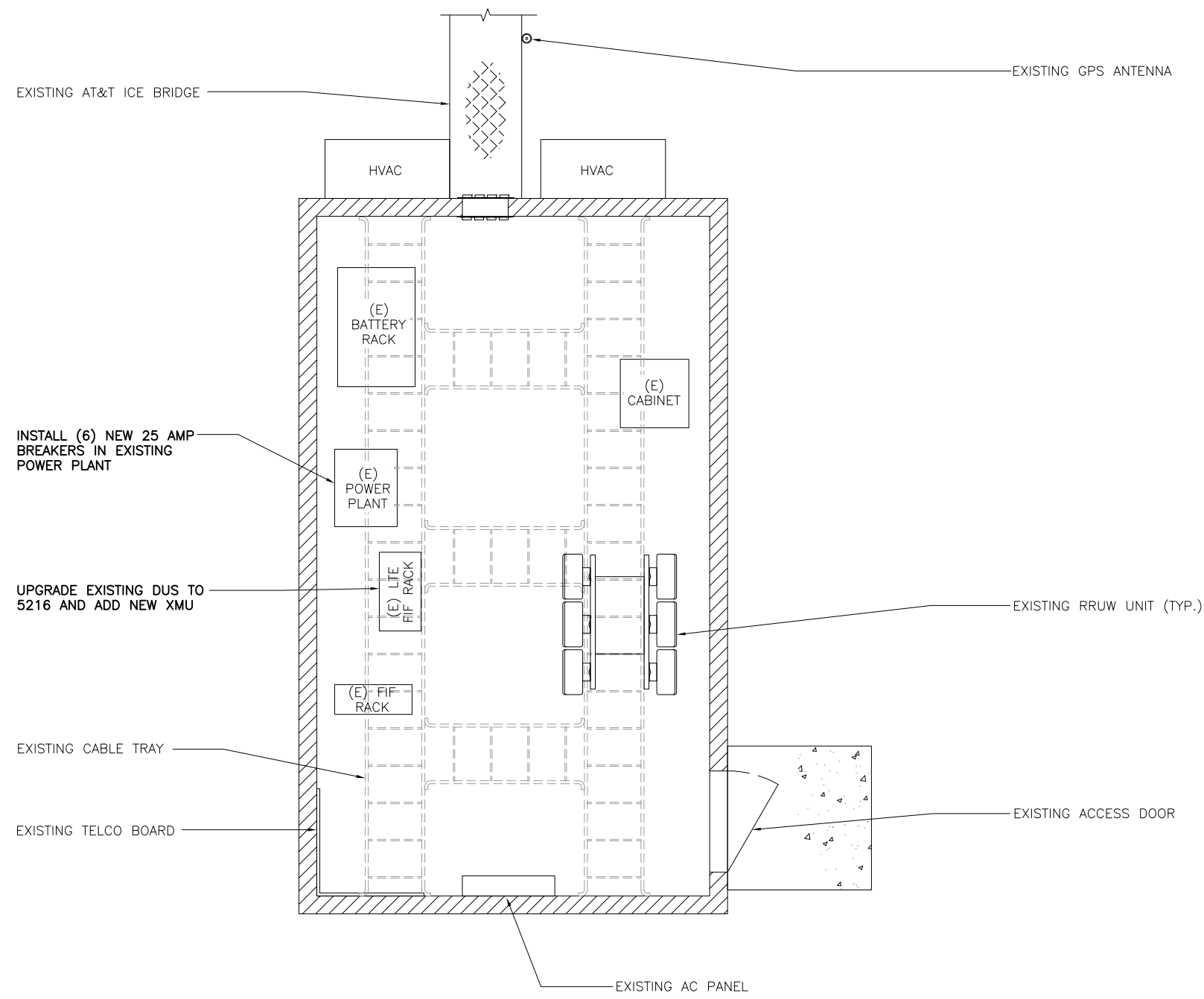
**258 RIDGE ROAD
MADISON, CT 06433**

SHEET NAME

EQUIPMENT PLAN

SHEET NUMBER

A2

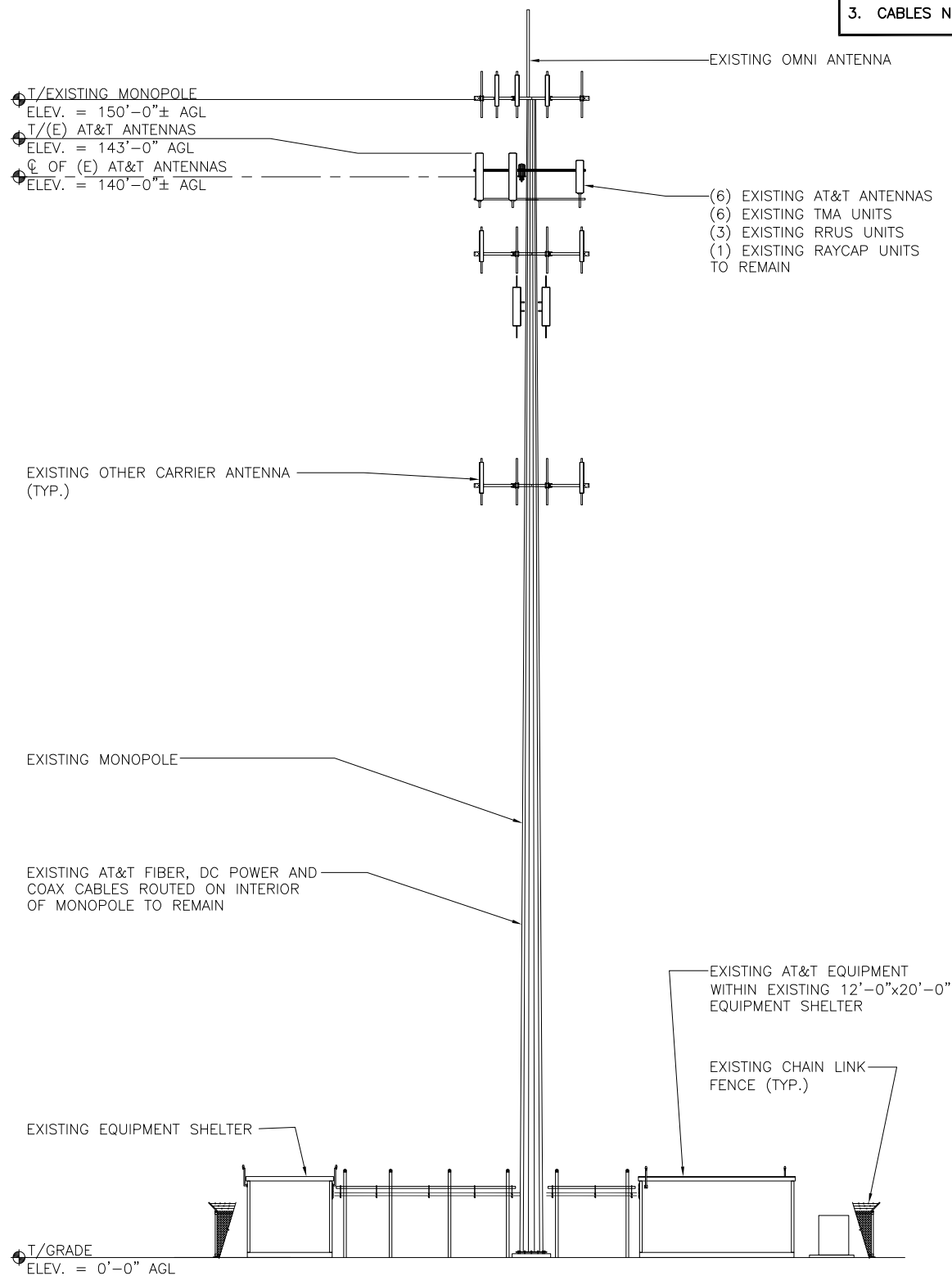


NOTES:

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

NOTES:

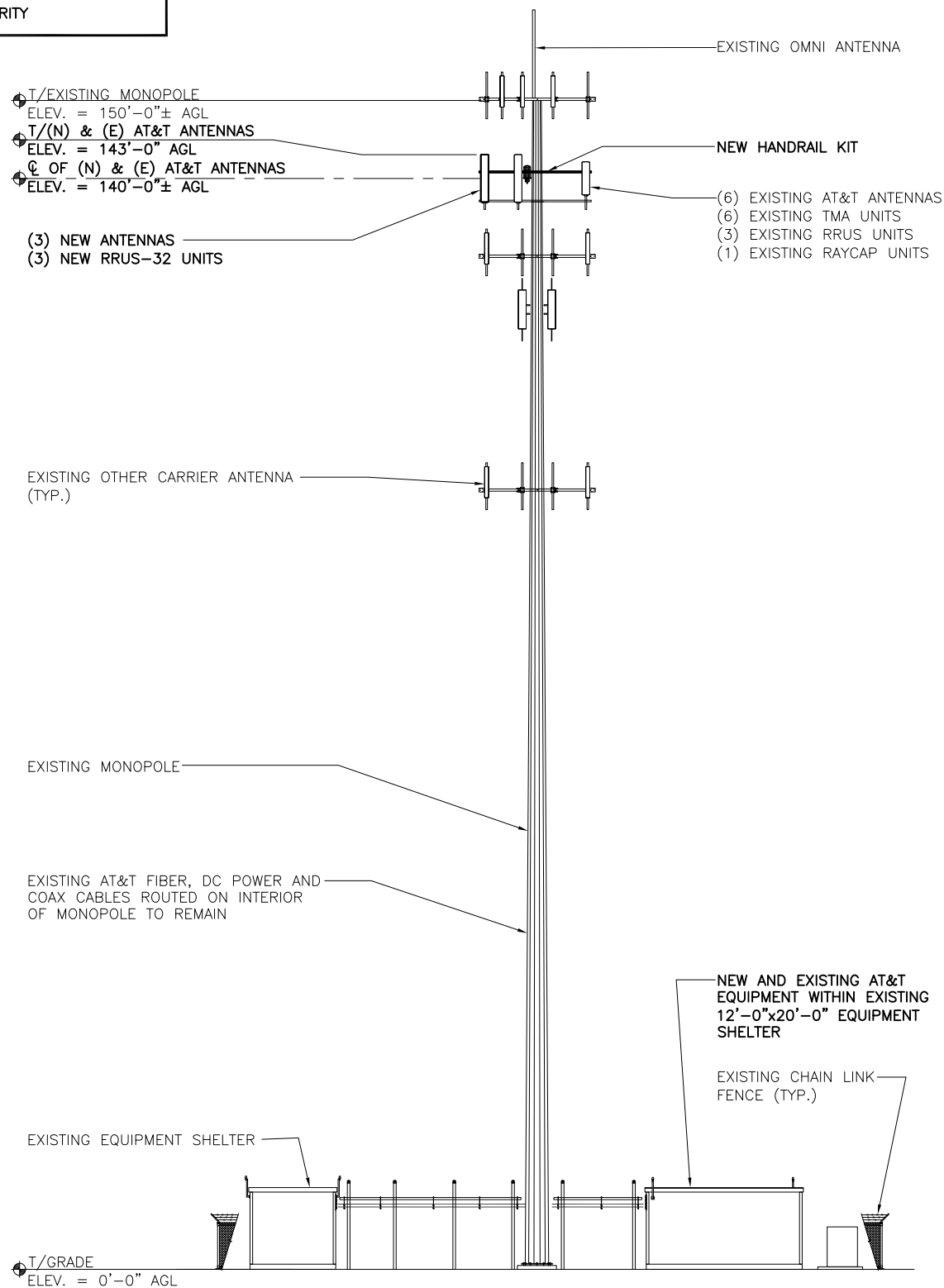
1. ALL EQUIPMENT (ANTENNAS, LINES, ETC.) TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE.
2. TAPE DROP FORMS AND PHOTOGRAPHS TO BE SUBMITTED PER CCI AND AT&T CLOSEOUT REQUIREMENTS.



EXISTING ELEVATION

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

1



NEW ELEVATION

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

2



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



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME

MADISON - RIDGE ROAD

SITE NUMBER:

CTL01266

SITE ADDRESS

258 RIDGE ROAD
MADISON, CT 06433

SHEET NAME

ELEVATIONS

SHEET NUMBER

A3



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



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME

MADISON - RIDGE ROAD

SITE NUMBER:

CTL01266

SITE ADDRESS

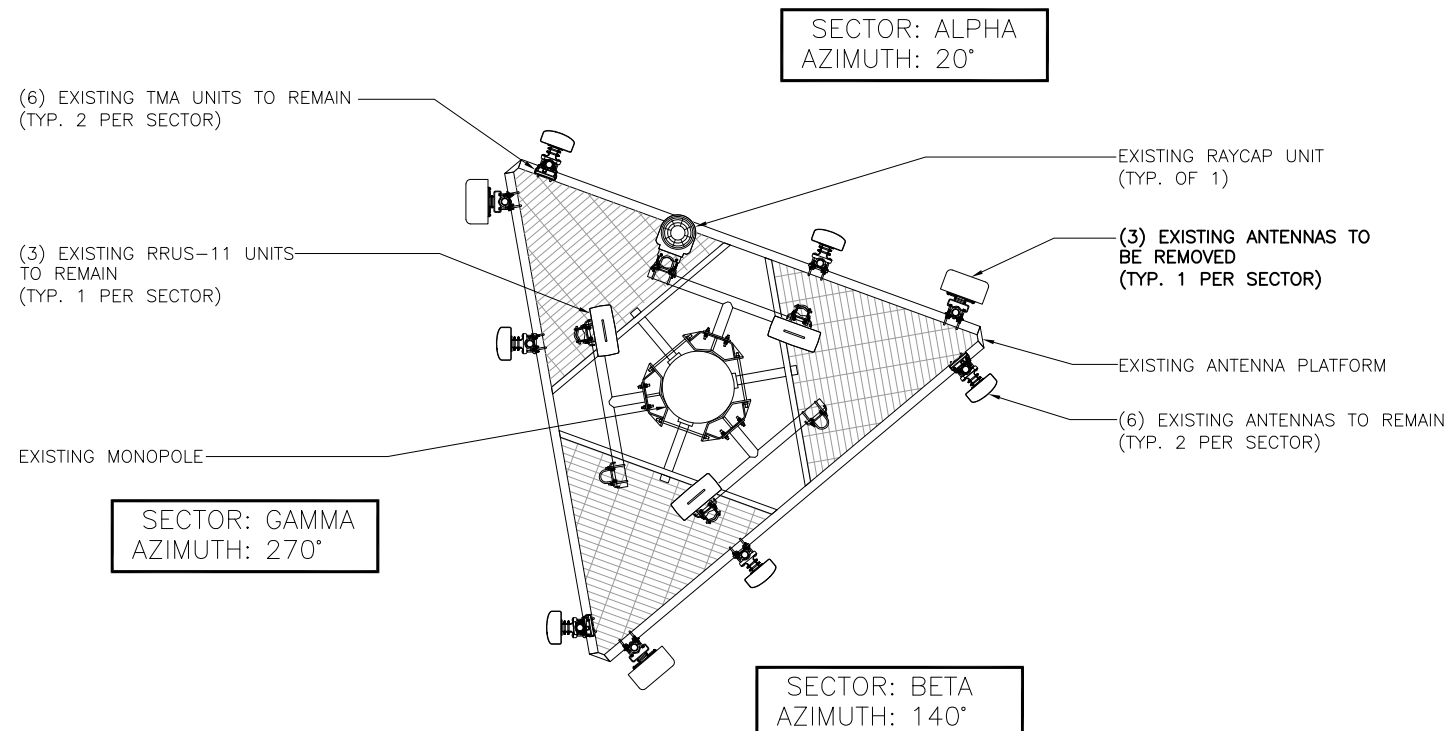
**258 RIDGE ROAD
MADISON, CT 06433**

SHEET NAME

ANTENNA PLANS

SHEET NUMBER

A4

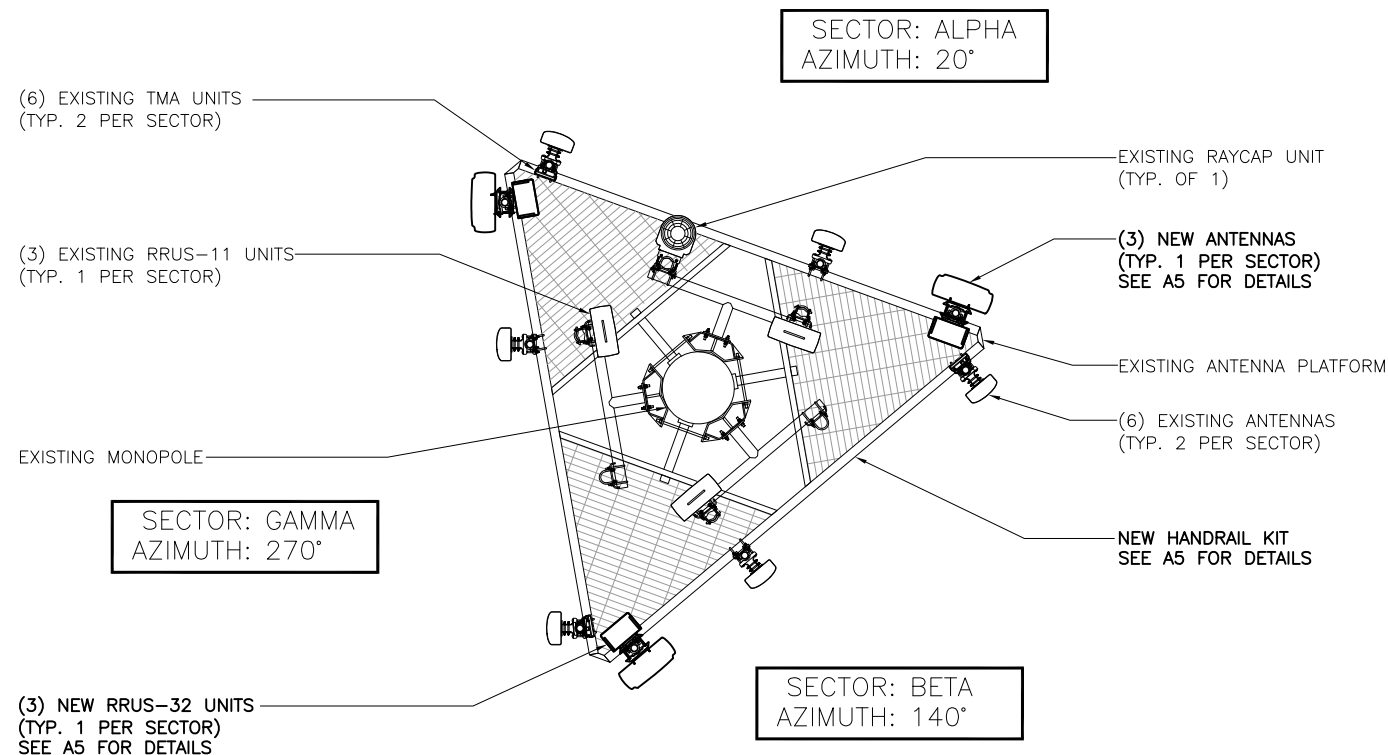


EXISTING ANTENNA PLAN

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

NOTES:

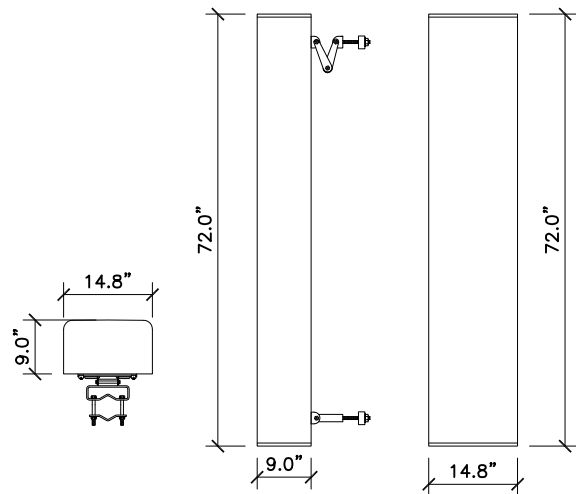
- EXISTING ANTENNA MOUNTING PIPE TO BE REUSED, RELOCATED OR REPLACED AS REQUIRED
- IF REQUIRED INSTALL NEW GALV. MOUNTING PIPE(S) 2.5 STD. (2-7/8" O.D.)



FINAL ANTENNA PLAN

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

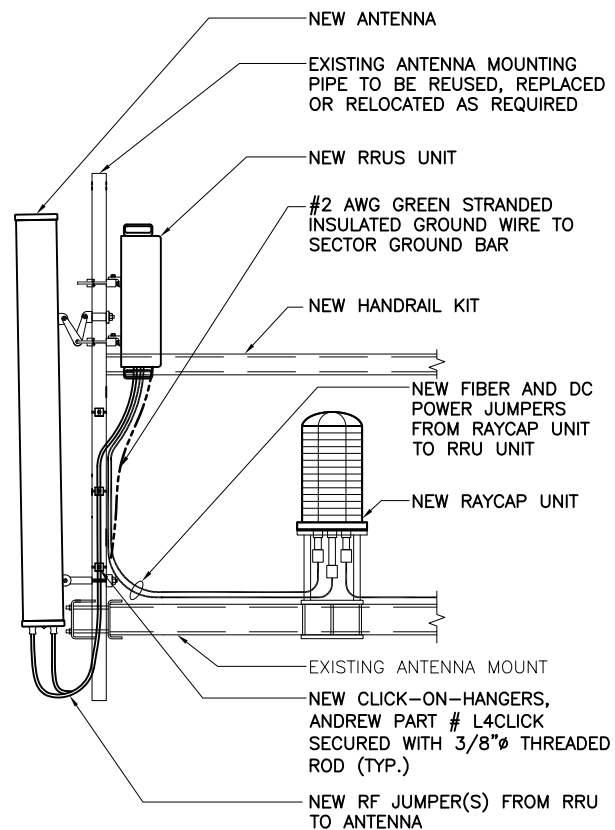




PLAN VIEW SIDE VIEW FRONT VIEW

CCI - HPA-65R-BUU-H6

HEXPOR MULTI-BAND ANTENNA
 FREQUENCY RANGE 698-806 MHz
 824-894 MHz
 1850-1990 MHz
 1710-1755/2110-2170 MHz
 2305-2360 MHz
 ANTENNA WITH BRACKET 51 Lbs
 61 Lbs

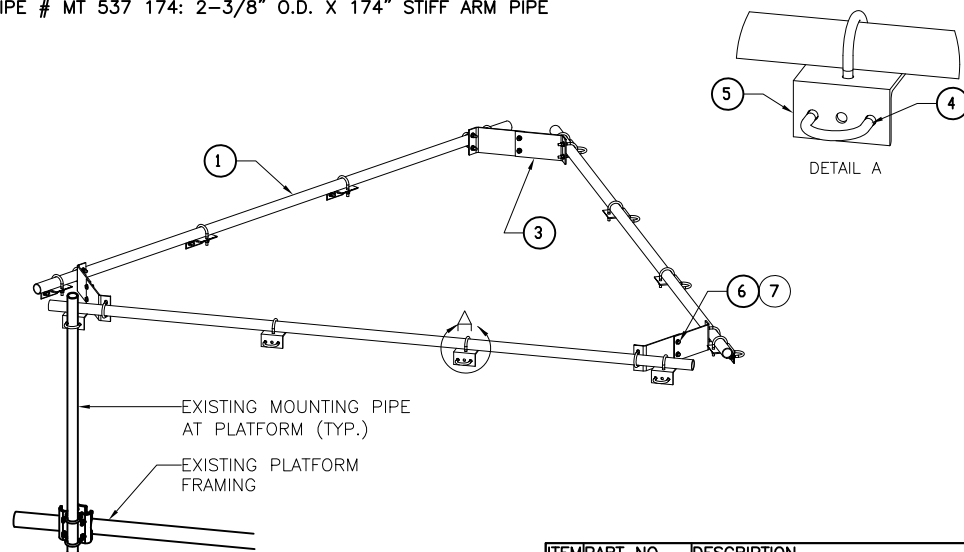


ANTENNA SCHEMATIC

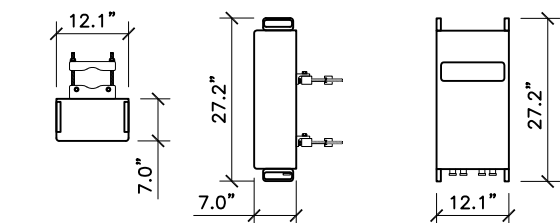
NOT USED

PRODUCT INFORMATION:

MFR: COMMSCOPE
 P/N: MT-195 SERIES OR APPROVED EQUIVALENT
 PRODUCT:
 1. MT195 12
 - PIPE # MT 651 150: 2-3/8" O.D. X 150" STIFF ARM PIPE
 2. MT195 14
 - PIPE # MT 537 174: 2-3/8" O.D. X 174" STIFF ARM PIPE



ITEM	PART NO.	DESCRIPTION	QTY.	WEIGHT
1	MT-XXX	Ø 2-3/8" O.D. PIPE (SEE TABLE)	3	-
2	MT195HK	HARDWARE KIT (ITEMS 3-7)	1	-
3	MT195.03	END PLATE	6	5.63 LBS
4	GUB-4240	1/2" X 2-1/2" X 4" GALV U-BOLT KIT	30	0.56 LBS
5	XA2020.01	CROSS OVER ANGLE	12	2.66 LBS
6	GB-04145	1/2" X 1-1/2" GALV BOLT KIT	6	0.13 LBS
7	GW-04	1/2" GALV FLAT WASHER	12	0.02 LBS



PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON - RRUS 32 B30

UNIT WEIGHT 60 Lbs

NOT USED

NEW HANDRAIL KIT DETAIL



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



1362 MELLON ROAD
 SUITE 140
 HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME

MADISON - RIDGE ROAD

SITE NUMBER:

CTL01266

SITE ADDRESS

**258 RIDGE ROAD
 MADISON, CT 06433**

SHEET NAME

EQUIPMENT DETAILS

SHEET NUMBER

A5

RRU SPEC

SCALE: N.T.S.

5

SCALE: N.T.S.

6

SCALE: N.T.S.

7

SCALE: N.T.S.

4



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



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME

MADISON - RIDGE ROAD

SITE NUMBER:

CTL01266

SITE ADDRESS

258 RIDGE ROAD
MADISON, CT 06433

SHEET NAME

ANTENNA & CABLE CONFIGURATION

SHEET NUMBER

A6

**FINAL ANTENNA CONFIGURATION AND CABLE SCHEDULE
SUPPLIED BY AT&T WIRELESS, FROM RF CONFIG. DATED (09/07/17)**

SECTOR	ANTENNA NUMBER	ANTENNA STATUS & TYPE	ANTENNA MODEL NUMBER	ANTENNA VENDOR	TMA/RRU UNIT	AZIMUTH	ANTENNA CL FROM GROUND	CABLE FEEDER		RAYCAP UNIT	
								TYPE	LENGTH		
ALPHA	A-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	20°	140'-0"	1-5/8"ø LDF7-50A	190'-0"	(1) (E) DC6-48-60-18-8F UNIT	
	A-2	-	-	-	-	-	-	-	-		
	A-3	(E) GSM ANTENNA	7770	POWERWAVE	-	-	20°	140'-0"	1-5/8"ø LDF7-50A		190'-0"
									1-5/8"ø LDF7-50A		190'-0"
A-4	(E) LTE1C & (N) 2C ANTENNA	HPA-65R-BUU-H6	CCI	(1) EXISTING RRUS-11 UNIT AND (1) NEW RRUS-32 UNIT	20°	140'-0"	(1) EXISTING FIBER CABLE	190'-0"			
							(2) EXISTING DC POWER CABLES	190'-0"			
BETA	B-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	140°	140'-0"	1-5/8"ø LDF7-50A	190'-0"		
	B-2	-	-	-	-	-	-	-	-		
	B-3	(E) GSM ANTENNA	7770	POWERWAVE	-	-	140°	140'-0"	1-5/8"ø LDF7-50A		190'-0"
									1-5/8"ø LDF7-50A		190'-0"
B-4	(E) LTE1C & (N) 2C ANTENNA	HPA-65R-BUU-H6	CCI	(1) EXISTING RRUS-11 UNIT AND (1) NEW RRUS-32 UNIT	140°	140'-0"	SEE ANTENNA A-4 FOR CABLE TYPE AND LENGTH				
GAMMA	C-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	270°	140'-0"	1-5/8"ø LDF7-50A	190'-0"		
	C-2	-	-	-	-	-	-	-	-		
	C-3	(E) GSM ANTENNA	7770	POWERWAVE	-	-	270°	140'-0"	1-5/8"ø LDF7-50A	190'-0"	
									1-5/8"ø LDF7-50A	190'-0"	
C-4	(E) LTE1C & (N) 2C ANTENNA	HPA-65R-BUU-H6	CCI	(1) EXISTING RRUS-11 UNIT AND (1) NEW RRUS-32 UNIT	270°	140'-0"	SEE ANTENNA A-4 FOR CABLE TYPE AND LENGTH				

LEGEND
(N) - NEW
(E) - EXISTING

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

ANTENNA AND CABLING NOTES

SCALE: N.T.S. 1

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

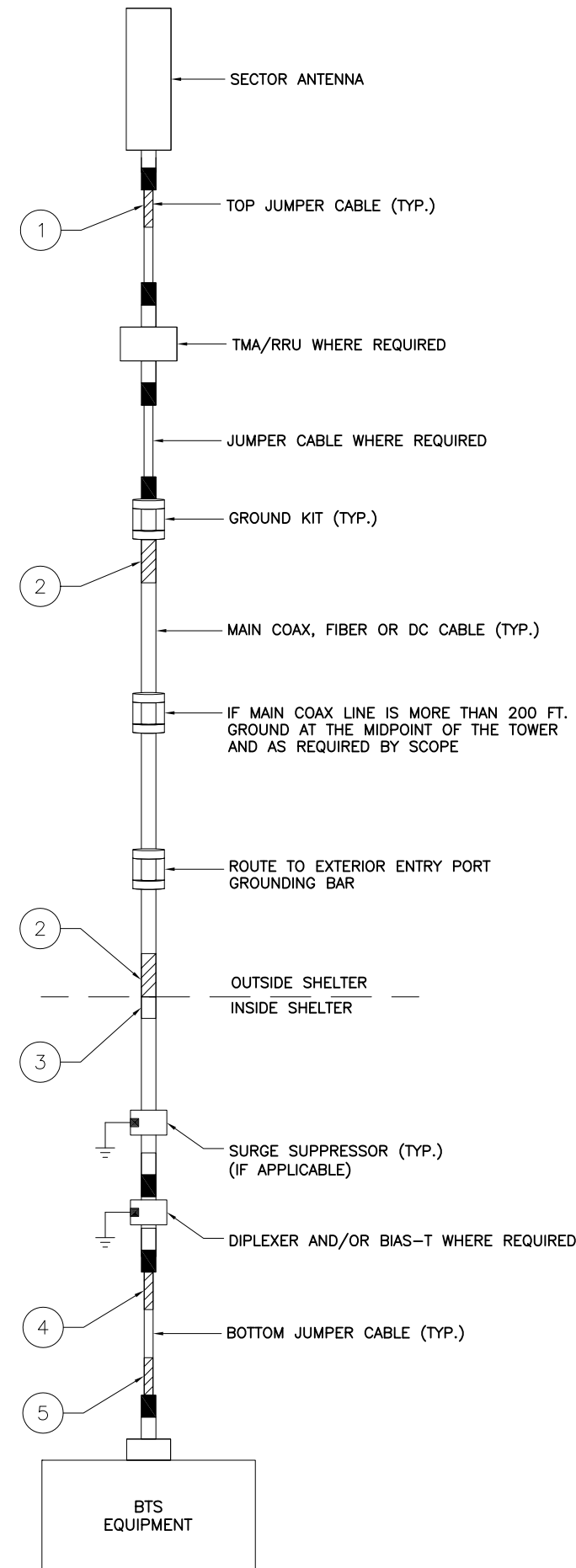
CABLE MARKING DIAGRAM

SCALE: N.T.S. 2

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

CABLE MARKING NOTES

SCALE: N.T.S. 3



CABLE COLOR CODING DIAGRAM

SCALE: N.T.S. 4



REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME
MADISON - RIDGE ROAD

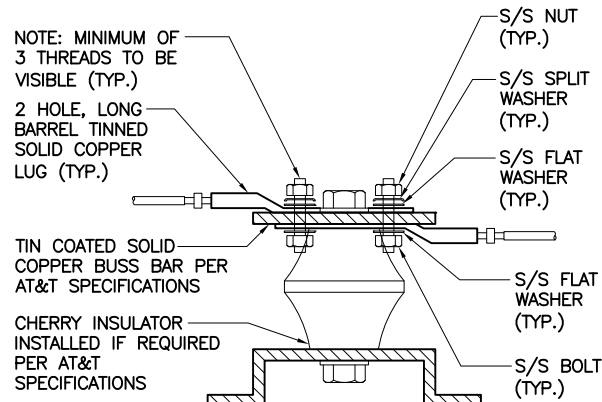
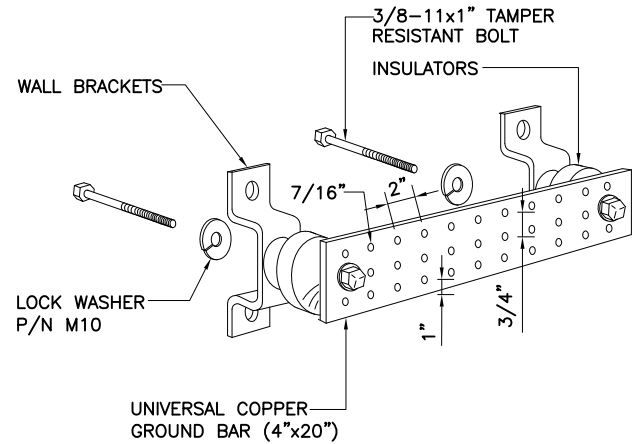
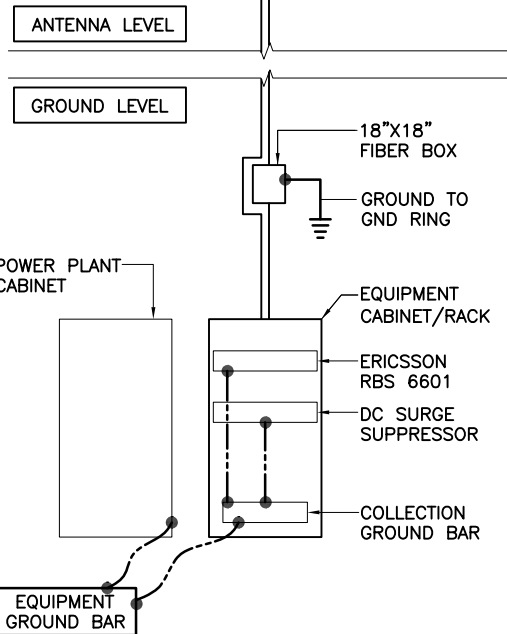
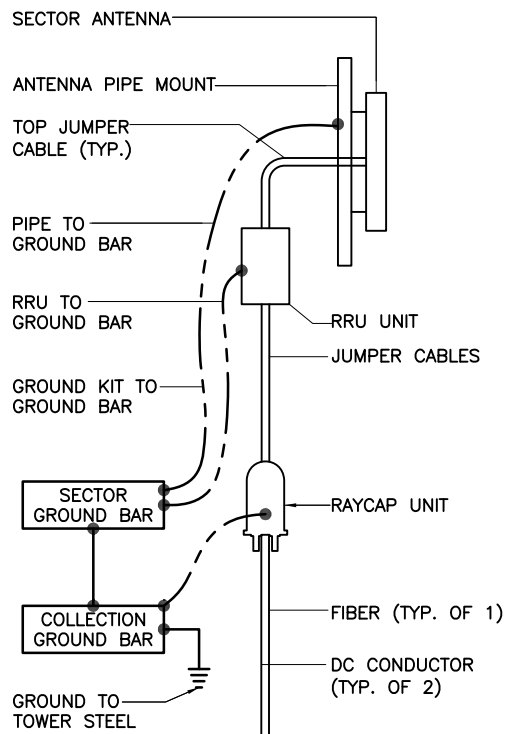
SITE NUMBER:
CTL01266

SITE ADDRESS
**258 RIDGE ROAD
MADISON, CT 06433**

SHEET NAME
**CABLE NOTES
AND COLOR
CODING**

SHEET NUMBER
A7

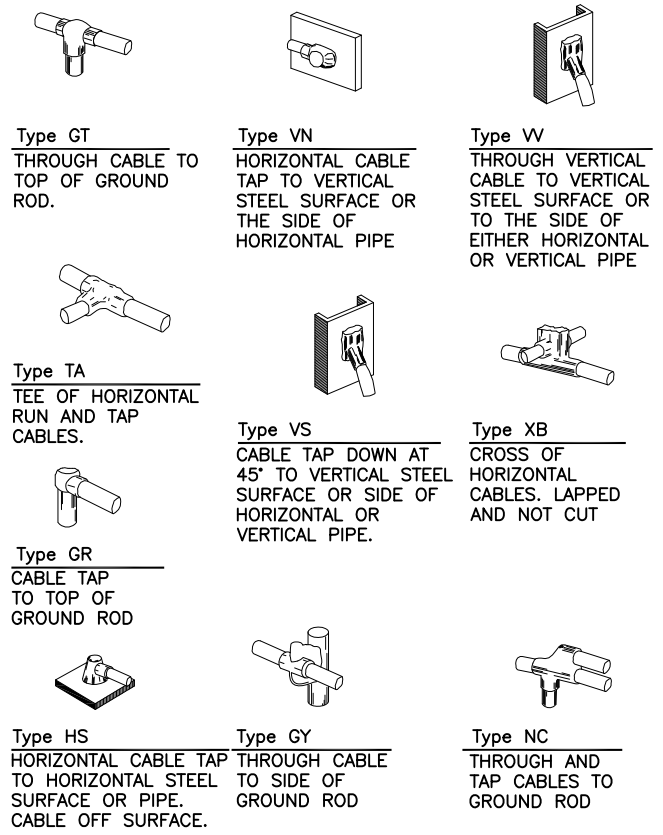
THESE DRAWINGS ARE THE PROPERTY OF FULLERTON ENGINEERING CONSULTANTS, INC. IT IS FOR THE EXCLUSIVE USE OF THIS PROJECT. ANY RE-USE OF THIS DRAWING WITHOUT THE EXPRESSED WRITTEN CONSENT OF FULLERTON ENGINEERING CONSULTANTS, INC. IS PROHIBITED.



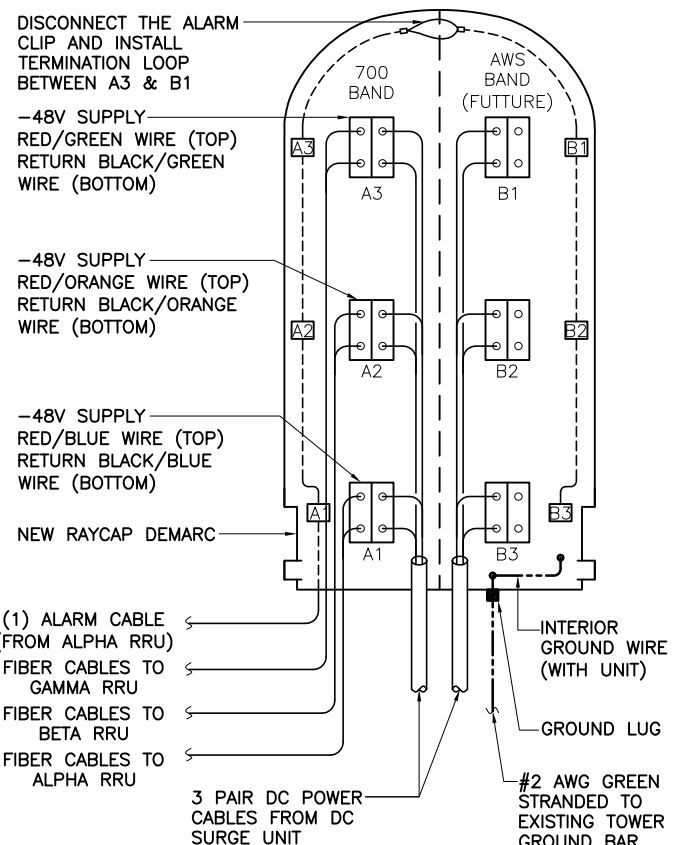
- NOTES:**
1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
 2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
 3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

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

LUG DETAIL SCALE: N.T.S. 3



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



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

NOT USED SCALE: N.T.S. 6



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



1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076



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

REV	DATE	DESCRIPTION	BY
0	10/18/17	90% REVIEW	EB
1	11/17/17	FOR PERMIT	EB
2	01/17/18	ADDRESS CHANGE	EB

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



SITE NAME

MADISON - RIDGE ROAD

SITE NUMBER:

CTL01266

SITE ADDRESS

258 RIDGE ROAD
MADISON, CT 06433

SHEET NAME

GROUNDING DETAILS

SHEET NUMBER

A8

GROUNDING SCHEMATIC SCALE: N.T.S. 1

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