



August 8, 2016

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

Re: Notice of Exempt Modification – Antenna Swap
Property Address: 871 Hopmeadow Street Simsbury, CT 06070
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 six (6) wireless telecommunication antennas at an antenna center line height of 119-feet on an existing 140 –self-support tower, owned Simsbury Fire District located at 869-871 Hopmeadow Street Simsbury, CT 06070. AT&T now intends to remove (3) KMW AM-X-CD-16-65-00T-RET panel antennas on position Three, all sectors 3, while retaining three (3) Kathrein 800-10121 panel antennas on position (1) for, all sectors, and install three (3) new CCI Products HPA-65R-BUU-H8 on position two, all sectors (for a total of (6) panel antennas), at the 119-foot level. AT&T also intends to install 3 RRU-12's with A-2 modules on the existing antenna masts.

At a public meeting held November 7th, 2002, the Connecticut siting Council ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with the General Statutes 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the conditions the tower is reinforced according to the recommendations of Tectonic Engineering consultants and that a professional engineer certify to the council the successful completion of the needed reinforcements. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and Federal standards applicable to the frequencies now used on this tower.

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 Lisa L. Heavner, First Selectman and Robin Newton Code Compliance Officer of the town of Simsbury, Town of Simsbury 933 Hopmeadow Street Simsbury, CT 06070. A copy of this letter is also being sent to Simsbury Fire District-Tower/Land Owner- at 868 Hopmeadow Street, Simsbury, CT 06070

[85 Range way Rd Bldg. #3 Suite 102 North Billerica | MA 01862-2105](#)



The following is a list of subsequent decisions by the Connecticut siting council
:

TS-AT&T-128-021025 - AT&T Wireless PCS LLC, d/b/a AT&T Wireless request for an order to approve tower sharing at an existing telecommunications facility located 871 Hopmeadow Street, **Simsbury**, Connecticut.

EM-CING-128-071126 – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 871 Hopmeadow Street, **Simsbury**, Connecticut.

EM-CING-128-120518 – New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 871 Hopmeadow Street, **Simsbury**, 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 119-foot level of the 140-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,

David Barbagallo

Enclosures

CC w/enclosures:

| Lisa L. Heavner, First Selectman- Simsbury
Robin Newton Code Compliance Officer- Simsbury
Simsbury Fire District-Tower/Land Owner



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

Web Site: www.state.ct.us/csc/index.htm

November 8, 2002

Christopher B. Fisher, Esq.
Cuddy & Feder & Worby LLP
90 Maple Avenue
White Plains, NY 10601-5196

RECEIVED
FIRST SELECTMAN

NOV 12 2002

TOWN OF SIMSBURY
SIMSBURY, CT

RE: **TS-AT&T-128-021025** - AT&T Wireless PCS LLC, d/b/a AT&T Wireless request for an order to approve tower sharing at an existing telecommunications facility located 871 Hopmeadow Street, Simsbury, Connecticut.

Dear Attorney Fisher:

At a public meeting held November 7, 2002, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the conditions that the tower be reinforced according to the recommendations of Tectonic Engineering Consultants and that a professional engineer certify to the Council the successful completion of the needed reinforcements. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction.

The proposed shared use is to be implemented as specified in your letter dated October 24, 2002.

Thank you for your attention and cooperation.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/laf

c: Honorable Thomas E. Vincent, First Selectman, Town of Simsbury
Leonard D. Tolisano, Senior Planner, Town of Simsbury
Stephen J. Humes, Esq., LeBoeuf, Lamb, Greene & MacRae



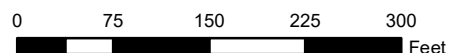
Town of Simsbury Parcel Map

Parcel:
Address 251 HOPMEADOW STREET

225.00' ³
833.58'
118.00' ²
111.34' ¹
727.34'
167'



1 inch = 150 feet



Disclaimer: This map is for informational purposes only All information is subject to verification by any user. The Town of Simsbury and its mapping contractors assume no legal responsibility for the information contained herein.

Map Produced: April 2016



A BUSINESS OF FDH VELOCITEL

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



Smartlink LLC on behalf of AT&T Mobility, LLC

Site FA – 10071237

Site ID – CT5397 (2C)

USID – 25992

Site Name – SIMSBURY NORTH
CENTRAL

Site Compliance Report

871 Hopemeadow Street
Simsbury, CT 06070

Latitude: N41-52-38.61
Longitude: W72-48-09.00
Structure Type: Self-Support

Report generated date: August 12, 2016
Report by: Leo Romero
Customer Contact: David Barbagallo

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

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1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	Yes
RF Sign(s) @ access point(s)	No
RF Sign(s) @ antennas	No
Barrier(s) @ sectors	No
Max cumulative simulated RFE level on the Ground Level	<1% General Public Limit at AT&T Mobility, LLC Alpha, Beta and Gamma Sectors
FCC & AT&T Compliant?	Will Be Compliant

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






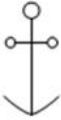
RFDS: NEW-ENGLAND_CONNECTICUT_CTV5397_2017-LTE-Next-Carrier_LTE-2C_om636a_PTN_10071237_25992_03-16-2016_Preliminary-Approved_v2.00

CD's: 10071237_AE201_160614_CTL05397_REVO

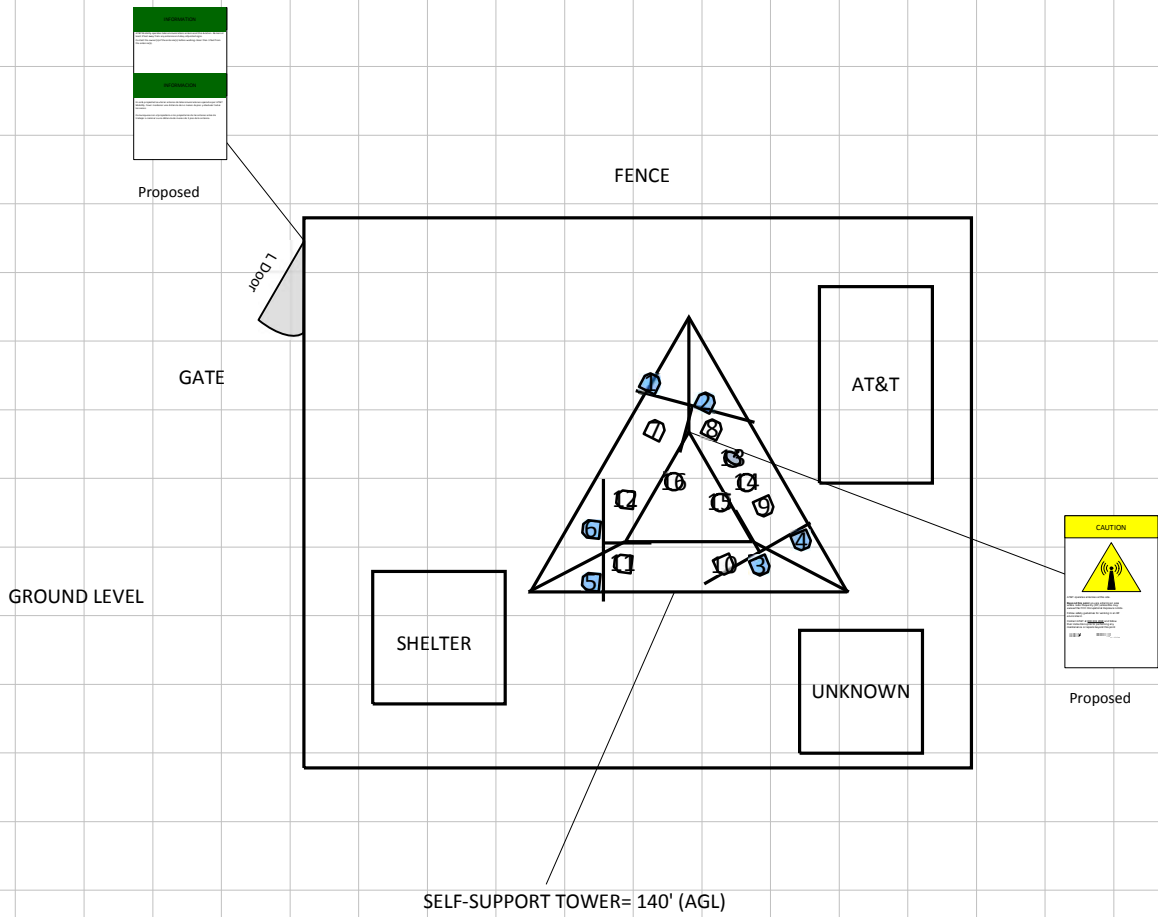
2 Scale Maps of Site

The following diagrams are included:

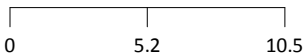
- Site Scale Map
- RF Exposure Diagram
- AT&T Mobility, LLC Contribution
- Elevation View

Scale Map Key		
 <p>Existing Sign</p>	 <p>Proposed Barrier</p>	 <p>GPS Reading</p>
 <p>Proposed Sign</p>	 <p>Existing Barrier</p>	 <p>Anchor Point</p>

Site Scale Map For: SIMSBURY NORTH CENTRAL



(Feet)



AT&T MOBILITY LLC	VERIZON WIRELESS	T-MOBILE	METROPCS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT

3 Antenna Inventory

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

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	2G GSM Radio(s)	3G UMTS Radio(s)	4G Radio(s)	Total ERP (Watts)	X	Y	Z (AGL)
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	50	87.6	4.5	11.35	1	0	0	149.6	74.2'	104.2'	116.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	50	87.6	4.5	11.35	0	3	0	774.6	74.2'	104.2'	116.7'
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	50	85.7	4.5	14.32	0	1	0	539.5	74.2'	104.2'	116.7'
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H8	Panel	737	50	64.9	7.7	13.26	0	0	1	1044.7	77.2'	103.1'	115.2'
2	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H8	Panel	1900	50	63.1	7.7	14.76	0	0	1	3380.6	77.2'	103.1'	115.2'
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	180	87.6	4.5	11.35	1	0	0	149.6	80.2'	94.2'	116.7'
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	180	87.6	4.5	11.35	0	3	0	774.6	80.2'	94.2'	116.7'
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	180	85.7	4.5	14.32	0	1	0	539.5	80.2'	94.2'	116.7'
4	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H8	Panel	737	180	64.9	7.7	13.26	0	0	1	1044.7	82.5'	95.6'	115.2'
4	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H8	Panel	1900	180	63.1	7.7	14.76	0	0	1	3380.6	82.5'	95.6'	115.2'
5	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	300	87.6	4.5	11.35	1	0	0	149.6	71'	93.3'	116.7'
5	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	300	87.6	4.5	11.35	0	3	0	774.6	71'	93.3'	116.7'
5	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	1900	300	85.7	4.5	14.32	0	1	0	539.5	71'	93.3'	116.7'
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	737	300	66.2	6	11.68	0	0	1	827.9	71'	96.2'	116'
6	AT&T MOBILITY LLC (Proposed)	CCI Antennas HPA-65R-BUU-H6	Panel	1900	300	61.1	6	14.53	0	0	1	3258.4	71'	96.2'	116'
7	UNKNOWN	Generic Panel	Panel	850	50	65	4.6	12.77	-	-	-	1135.4	74.5'	101.6'	135.7'
8	UNKNOWN	Generic Panel	Panel	1900	50	65	4.6	15.43	-	-	-	2094.8	77.6'	101.7'	135.7'
9	UNKNOWN	Generic Panel	Panel	850	180	65	4.6	12.77	-	-	-	1135.4	80.4'	97.4'	135.7'
10	UNKNOWN	Generic Panel	Panel	1900	180	65	4.6	15.43	-	-	-	2094.8	78.2'	94.2'	135.7'
11	UNKNOWN	Generic Panel	Panel	850	300	65	4.6	12.77	-	-	-	1135.4	72.7'	94.3'	135.7'
12	UNKNOWN	Generic Panel	Panel	1900	300	65	4.6	15.43	-	-	-	2094.8	72.8'	97.8'	135.7'
13	SIMSBURY FIRE DISTRICT	Generic Microwave	Aperture	17865	60.3	2	2	37.66	-	-	-	1109.1	78.7'	100.1'	108'
14	UNKNOWN	Generic Omni	Omni	150	0	360	19.3	5.47	-	-	-	100	79.5'	98.7'	98.4'
15	SIMSBURY VOLUNTEER AMBULANCE ASSOCIATION INC	Generic Omni	Omni	452	0	360	9.5	5.97	-	-	-	150	78'	97.6'	140.3'

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)
16	SIMSBURY FIRE DISTRICT	Generic Omni	Omni	453	0	360	9.5	5.97	-	-	-	30	75.5'	98.8'	140.3'

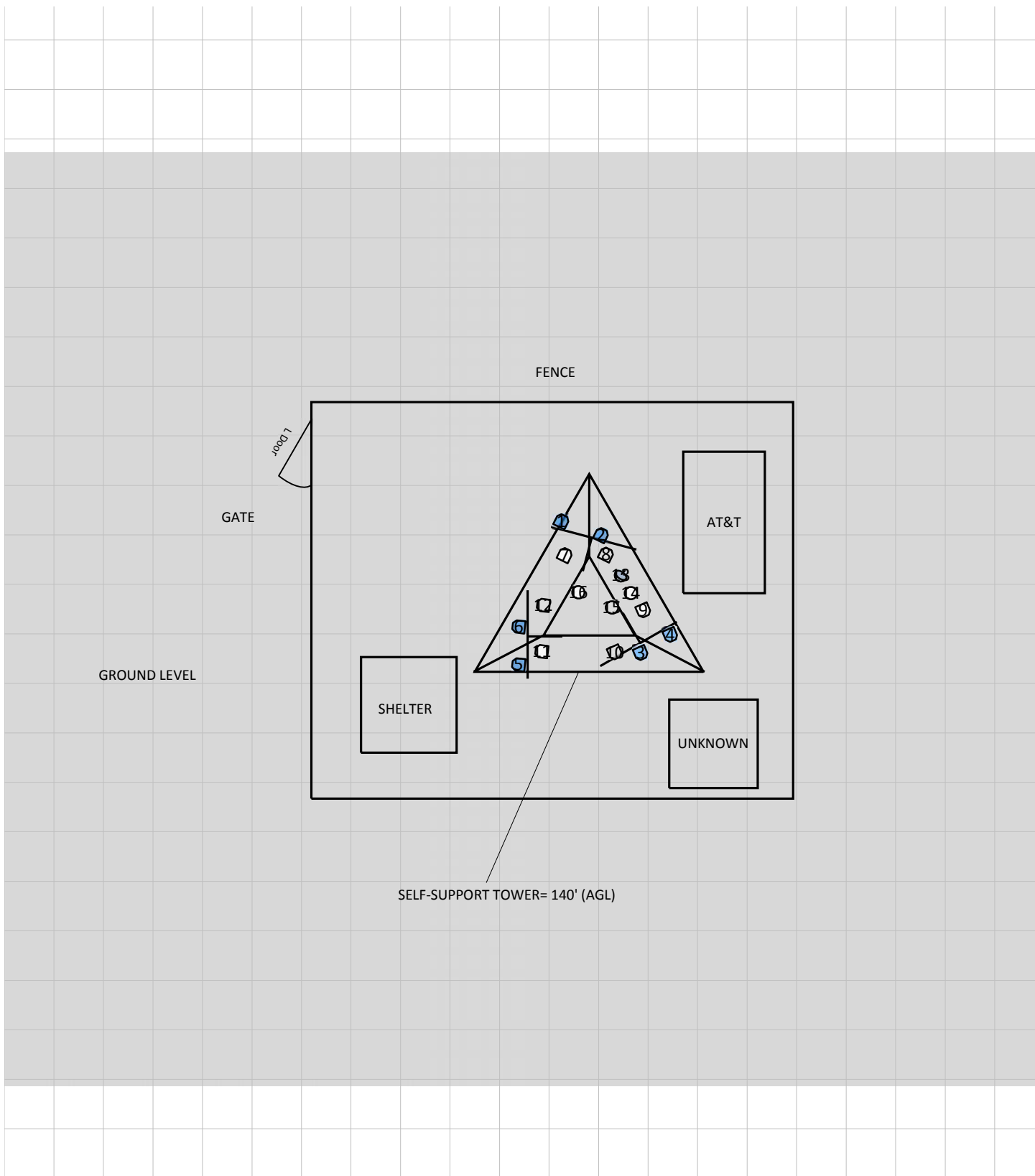
NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height **above ground level (AGL)**. The distance to the bottom of the antenna is calculated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

4 Emission Predictions

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

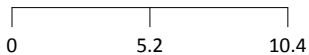
The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: SIMSBURY NORTH CENTRAL

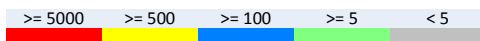


% of FCC Public Exposure Limit
Spatial average 0' - 6'

(Feet)



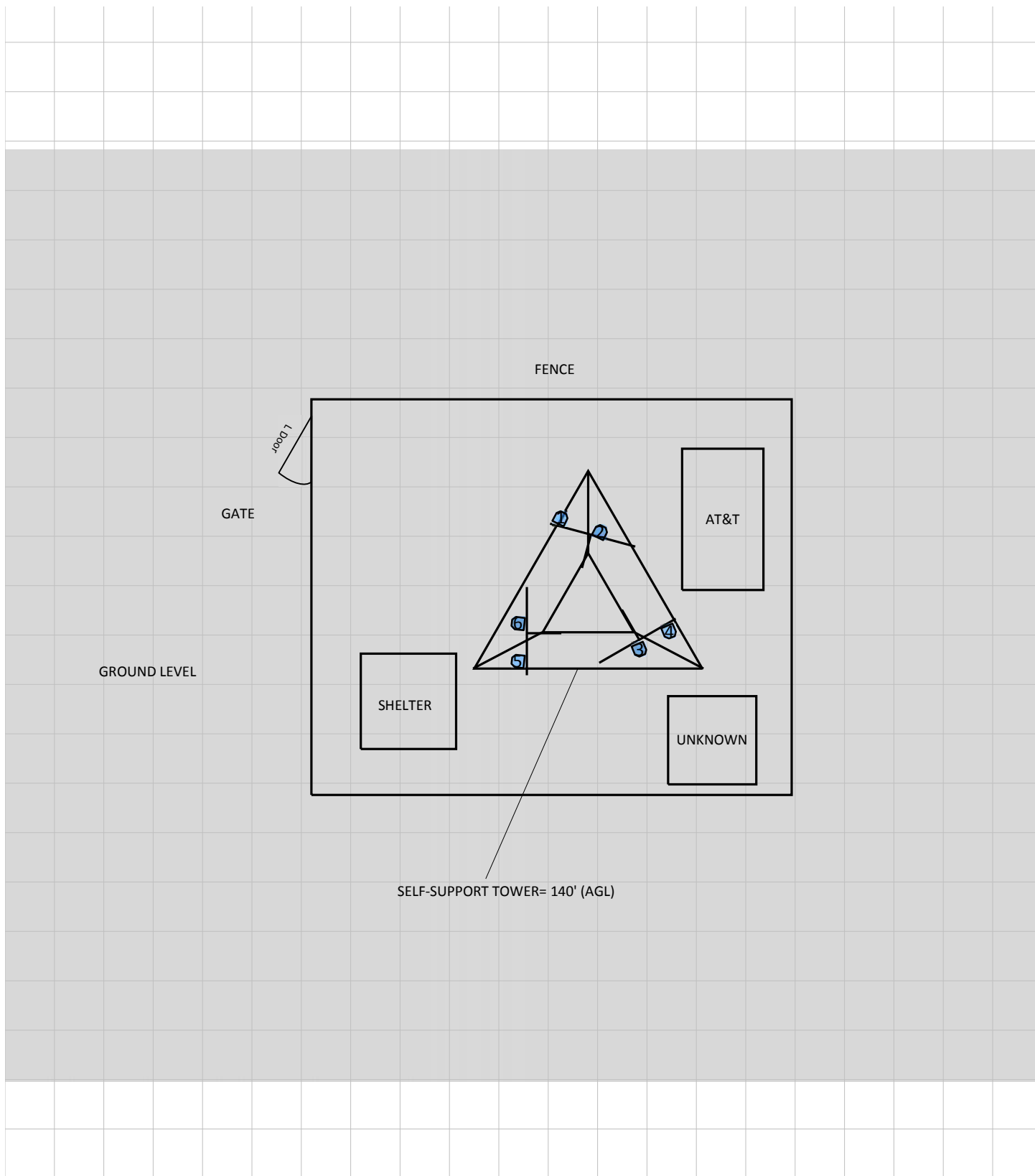
www.sitesafe.com
Site Name:SIMSBURY NORTH CENTRAL
8/12/2016 6:09:11 PM



AT&T MOBILITY LLC	VERIZON WIRELESS	T-MOBILE	METROPICS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT

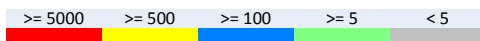
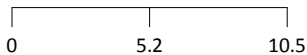
SitesafeTC Version:1.0.0.0 - 0.0.0.249
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: SIMSBURY NORTH CENTRAL AT&T Mobility, LLC Contribution



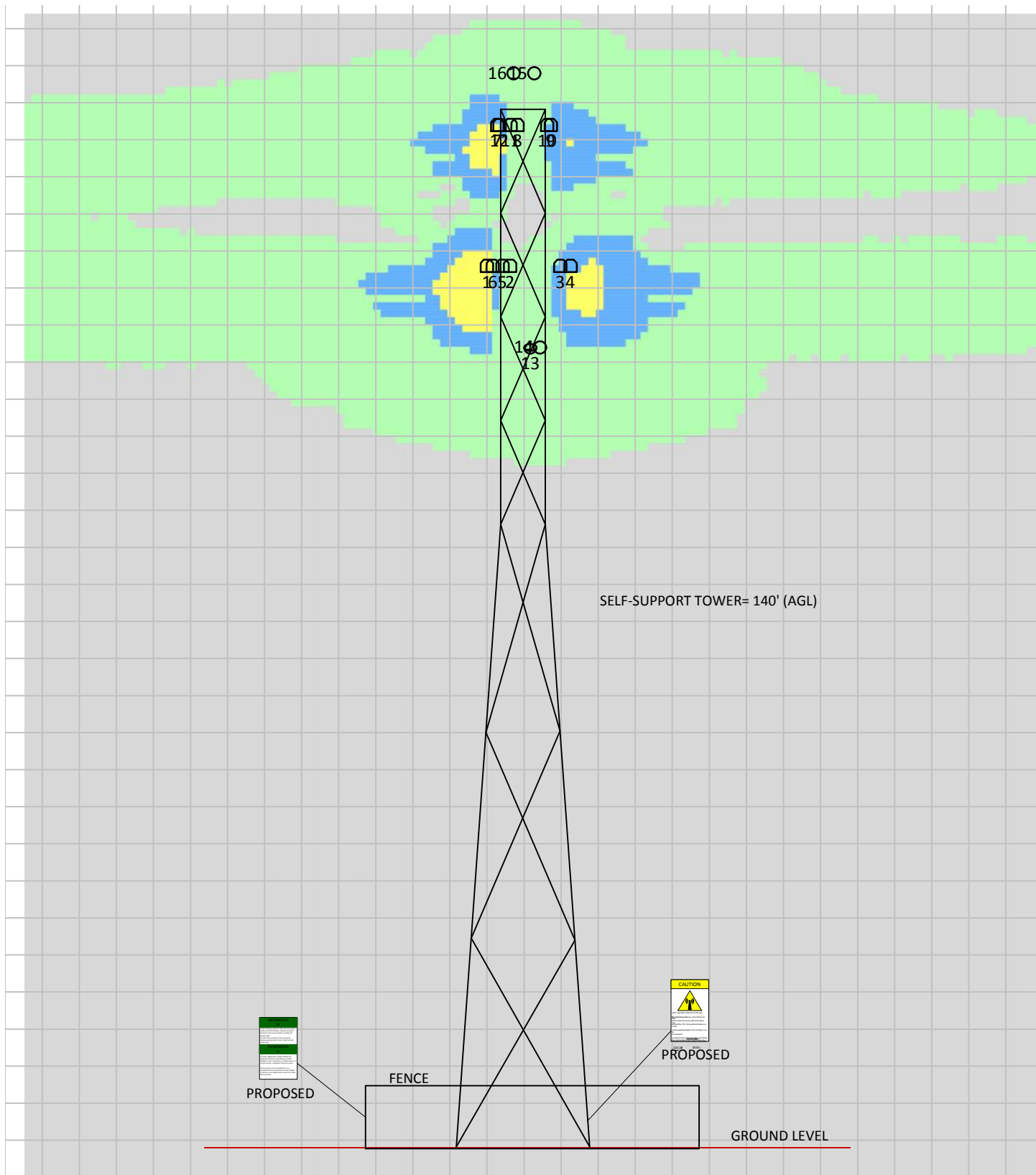
% of FCC Public Exposure Limit
Spatial average 0' - 6'

(Feet)

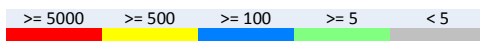
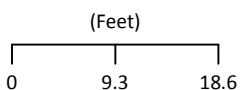


AT&T MOBILITY LLC	VERIZON WIRELESS	T-MOBILE	METROPCS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT
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RF Exposure Simulation For: SIMSBURY NORTH CENTRAL Elevation View



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



www.sitesafe.com
Site Name:SIMSBURY NORTH CENTRAL
8/12/2016 6:20:34 PM

AT&T MOBILITY LLC	VERIZON WIRELESS	T-MOBILE	METROPCS	CRICKET COMMUNICATIONS	CLEARWIRE	SPRINT
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SitesafeTC Version:1.0.0.0 - 0.0.0.249
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

5 Site Compliance

5.1 Site Compliance Statement

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

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

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

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

5.2 Actions for Site Compliance

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

AT&T Mobility, LLC will be compliant with the FCC rules and regulations.

Self-Support Tower Access Location

Yellow caution 2 sign required.

Compound Gate Location

Information 1 sign required.

6 Engineer Certification

The professional engineer whose seal appears on the cover of this document hereby certifies and affirms that:

I am registered as a Professional Engineer in the jurisdiction indicated in the professional engineering stamp on the cover of this document; and

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

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

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

August 12, 2016

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 Communication 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.

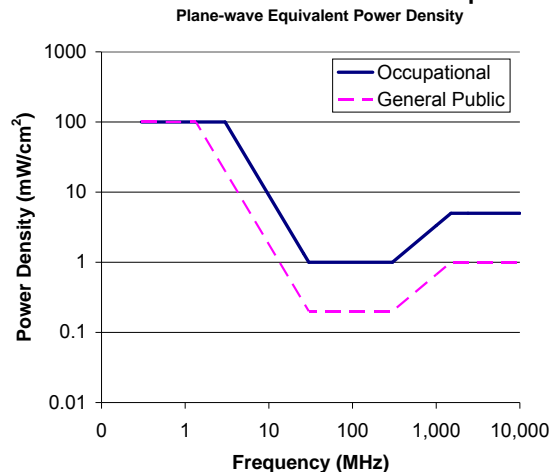
Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

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>

STRUCTURAL CALCULATIONS

Prepared for: Smartlink / AT&T LTE 2C

New Antenna Installation on Existing Self-Support Tower

Site No. CTL05397
FA No. 10071237
Simsbury North Central
871 Hopmeadow Street
Simsbury, CT 06070

May 4, 2017

Rev.II: Tower Modification Included

Henry M. Bellagamba, P.E.

Summary

The rigorous structural analysis was performed by Fullerton Engineering Consultants, as requested by the client, to determine the conformance of existing structure with the 2012 International Building Code and the industry standard, TIA-222-G (Structural Standard for Steel Antenna Supporting Structures and Antennas). The analysis considers the tower properties, existing antennas and proposed antennas and the required loading criteria.

Conclusion

- **The tower member stresses are in conformance for the loading considered provided that the modifications described below are applied.**
- **The tower foundation is in conformance for the loading considered.**
- Per Tower Mapping Report by High Tower Solutions, Inc., dated 11/21/2016 the tower modifications included in Structural Analysis Report dated 05/07/2012 prepared by Hudson Design Group, LLC. have been installed.

Analysis Data

The following is based on information provided by the client, field investigation, and other determination by Fullerton Engineering Consultants or third parties.

Configuration	140', 3-sided self-support tower with a 4.52' top and 12.64' bottom face width.
References	Tower Mapping Report by High Tower Solutions, Inc., dated 11/21/2016. Structural Analysis Report (revised) by Hudson Design Group, LLC., dated 05/07/2012. Structural Analysis Report by Paul J. Ford and Company, project #A00007-T204, dated 10/03/2007. Original Tower Drawings UNR-ROHN, Inc., file #31708AE, dated 11/08/1994.
Modification History	Per Modification Drawings included in Structural Analysis Report by Hudson Design Group, LLC., job #5397.01, dated 05/08/2012 and per Tower Mapping Report by High Tower Solutions, Inc., dated 11/21/2016 the following modifications were installed:
Legs	Installed (1) 1/3 Split-Pipe 3 X-Strong to existing (1) Pipe 2.5 STD main leg members from Elev. 80' to Elev. 92' AGL. Installed (1) PL1.5"x3/8" & (1) PL1.75"x1/2" to existing (1) Pipe 2.5 STD main leg members from Elev. 60' to Elev. 80' AGL.
Secondary Horizontals	Installed (1) L3x3x3/16 redundant horizontal members from Elev. 100' to Elev. 120' AGL. Installed (1) L3x3x3/16 redundant horizontal members from Elev. 80' to Elev. 88' AGL.

Installed (1) L2x2x3/16 redundant horizontal members from Elev. 64' to Elev. 76' AGL.

Installed (1) L3x3x3/16 redundant horizontal members from Elev. 50' to Elev. 64' AGL.

Installed (1) L2x2x3/16 redundant horizontal members from Elev. 40' to Elev. 50' AGL.

Installed (1) L3x3x3/16 redundant horizontal members from Elev. 6.67' to Elev. 40' AGL.

Installed (1) L2x2x3/16 redundant horizontal members from Elev. 0' to Elev. 6.67' AGL.

Appurtenance Loading Schedule

ELEV. (FT.=AGL)	APPURTENANCE	TRANSMISSION LINES
	Proposed AT&T	
119'	(2) CCI HPA-65R-BUU-H8 (1) CCI HPA-65R-BUU-H6 (3) RRUS-12 with A2 Module Mounted on existing (3) T-Arm Frames	
	Existing AT&T (to be removed prior antenna installation)	
119'	(3) Powerwave P65E-17-XLH-RRD Mounted on existing (3) T-Arm Frames	
	Existing AT&T (to remain)	
119'	(3) Kathrein 800-10121 (3) RRUS-11 (6) LGP 21400 TMA (1) Raycap DC6-48-60-18-8F Mounted on existing (3) T-Arm Frames	(1) 3/8" Fiber (2) 3/4" DC Power (6) 1-1/4" Coaxial
	Existing (to remain)	
147.42'	(1) 20' Whip Mounted on existing (1) stand-off mount frame	(1) 7/8" Coaxial
145.67'	(1) 15' Whip Mounted on existing (1) stand-off mount frame	(1) 7/8" Coaxial
141.42'	(1) 8' DiPole Mounted on existing (1) stand-off mount frame	(1) 7/8" Coaxial
136.25'	(3) EMS RR65-18-02DP (3) TMA's Mounted on existing (3) stand-off mount frame	(6) 1-5/8" Coaxial
115.67'	(1) 20' Whip Mounted on existing (1) stand-off mount frame	(1) 1-1/4" Coaxial
110.5'	(1) 2' Whip Mounted on existing (1) stand-off mount frame	(1) LMR-400
108.25'	(1) 2.5' DiPole	(1) LMR-400

	Mounted on existing (1) stand-off mount frame	
102'	(1) 3' Yagi Mounted on existing (1) stand-off mount frame	(1) LMR-400
99.92'	(1) Radiowave HP2-18EX dish (1) ODU (9"x9"x3") Mounted on existing (1) stand-off mount frame	(1) 0.32" black
94.25'	(1) 2.5' DiPole Mounted on existing (1) stand-off mount frame	(1) LMR-400
88.25'	(1) 3' Yagi Mounted on existing (1) stand-off mount frame	(1) LMR-400
63.75'	(1) GPS Mounted on tower leg	(1) 1/2" Coaxial
57'	(1) 6' Whip Mounted on existing (1) stand-off mount frame	(1) 1/2" Coaxial
52'	(1) 3' Yagi Mounted on tower leg	(1) 0.32" black

Results

The results of the structural analysis are summarized as follows:

Tower Mast

The tower leg members are **adequate** for new loads, with a maximum stress ratio of 98.7% @ Elev. 76'-80' AGL.

The tower main diagonal members are **adequate** for new loads, with a maximum stress ratio of 65.8% @ Elev. 60'-64' AGL.

The tower top girt members are **adequate** for new loads, with a maximum stress ratio of 4.2% @ Elev. 80' AGL.

The tower secondary horizontal members are **adequate** for new loads, with a maximum stress ratio of 39.7% @ Elev. 0'-6.67' AGL.

The tower main leg bolts are **adequate** for new loads, with a maximum stress ratio of 93.4% @ Elev. 80' AGL.

The tower main bracing bolts are **adequate** for new loads, with a maximum stress ratio of 99.3% @ Elev. 80'-84' AGL.

Anchor Bolts

The tower anchor bolts are **adequate** for new loads, with a maximum stress ratio of 78.3%, **provided that the modification described below is applied.**

Foundation

The tower foundation is **adequate** for new loads.

Tower Modification

Install /modify the following members before adding proposed loading:

- General Notes:**
- Prior of installing new tower legs reinforcement, remove existing bolt-on secondary horizontals, climbing pegs etc. all obstacles that stand in the way of new leg reinforcement. Remove/ Replace only one member at the time. All faces and sides of the tower shall be reinforced identically.
 - Prior of installing new diagonals, remove existing bolt-on diagonals. The new same size longer A325 diagonal bolts shall be installed to replace existing one. Remove/ Replace only one member at the time. All faces and sides of the tower shall be reinforced identically.

- Legs:**
- Install (1) 1/3 Split-Pipe 2.5 x-Strong to existing main leg members: Pipe 2 STD from Elev. 100' to Elev. 120' AGL. The Split -Pipe shall be attached with U-bolts 1/2"Ø and Back Plate 1/2" at 12" O.C. One U-Bolt is required at each end of reinforcement (typ.).
 - Install (1) 1/3 Split-Pipe 3 x-Strong to existing main leg members: Pipe 2.5 STD from Elev. 92' to Elev. 96' AGL. The Split -Pipe shall be attached with U-bolts 1/2"Ø and Back Plate 1/2" at 12" O.C. One U-Bolt is required at each end of reinforcement (typ.).
 - Remove existing L3x3x3/16 leg reinforcing (secondary horizontals) from Elev. 45' to Elev. 60' AGL.
 - Install (1) Half-Pipe 3 x-Strong to existing main leg members: Pipe 2.5 x-Strong from Elev. 45' to Elev. 60' AGL. The Half-Pipe shall be attached with U-bolts 1/2"Ø and Back Plate 1/2" at 12" O.C. One U-Bolt is required at each end of reinforcement (typ.).
 - Install new L3x3x3/16 secondary horizontals from Elev. 45' to Elev. 60' AGL. The new (1) 5/8"Ø A325N secondary horizontal bolts (@ ea. end) shall be installed to existing gusset plates (typ.).
 - Install (1) Flat bar 1 3/4"x1/2" to existing main leg members Pipe 2.5 x-Strong and next to existing reinforcement (1) Flat bar 1 1/2"x3/8" from Elev. 40' to Elev. 45' AGL. The Flat bar shall be 3/16" fillet welded with 2" length every 6".
 - Remove existing L3x3x3/16 leg reinforcing (secondary horizontals) from Elev. 1' to Elev. 40' AGL.
 - Install (1) Half-Pipe 4 x-Strong to existing main leg members: Pipe 3 x-Strong from Elev. 1' to Elev. 40' AGL. The Half-Pipe shall be attached with U-bolts 1/2"Ø and Back Plate 1/2" at 12" O.C. One U-Bolt is required at each end of reinforcement (typ.).
 - Install new L3x3x3/16 secondary horizontals from Elev. 1' to Elev. 40' AGL. The new (1) 5/8"Ø A325N secondary horizontal bolts (@ ea. end) shall be installed to existing gusset plates (typ.).

Leg Bolts:

- Install (4) 5/8"Ø A490N main leg bolts by replacing existing (4) 5/8"Ø A325N main leg bolts @ Elev. 80' AGL.
- Install (4) 3/4"Ø A490N main leg bolts by replacing existing (4) 5/8"Ø A325N main leg bolts @ Elev. 60' AGL. The leg bolts shall be installed in enlarged (4) 13/16"Ø holes (typ.).
- Install (4) 3/4"Ø A490N main leg bolts by replacing existing (4) 3/4"Ø A325N main leg bolts @ Elev. 40' AGL.

Diagonals:

- Install (1) L1-1/2x1-1/2x1/4 main diagonals by replacing existing (1) L1-1/2x1-1/2x1/8 main diagonals from Elev. 80' to Elev. 120' AGL. The new (1) 1/2"Ø A325N longer diagonal bolts (@ ea. end) shall be installed to existing gusset plates (typ.).

Anchor Bolts:

- Install additional (2) 7/8"Ø A354 anchor bolts to existing (4) 7/8"Ø A354 anchor bolts at tower base.

Assumptions

This analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. The analysis is based solely on the information supplied, and the results, in turn, are only as accurate as data extracted from this information. Fullerton has been instructed by the client to assume the information supplied is accurate, and Fullerton has made no independent determination of its accuracy. The exception to the previous statement is if Fullerton has been contracted by the client to provide an independent structural mapping report of the tower and related appurtenances, in which case Fullerton has made an independent determination of the accuracy of the information resulting from the mapping report.

- The tower member sizes and geometry are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and stated in the materials section.
- The existing tower is assumed to have been properly maintained in accordance with the TIA/EIA standard and/or its original manufacturer's recommendations. The existing tower is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The antenna configuration is as supplied and/or stated in the analysis section. It is assumed to be complete and accurate. All antennas, mounts, remote radios, cables and cable supports are assumed to be properly installed and supported as per the manufacturer's requirements.
- The antennas, mounts, remote radios, cables and cable supports and lines stated in the appurtenance loading schedule represent Fullerton's understanding of the overall antenna configuration. If the actual configuration is different than above, then this analysis is invalid. Please refer to this report for the projected wind areas used in the calculations for antennas and mounts. If variations or discrepancies are identified, please inform Fullerton.
- Some assumptions are made regarding antenna and mount sizes and their projected areas based on a best interpretation of the data supplied and a best knowledge of antenna type and industry practice.
- The existing foundation is assumed to be in good condition with no structural defects and with no deterioration to its member capacities.
- The soil parameters are as per data supplied, or as assumed, and stated in the calculations.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- All prior structural modifications, if any, are assumed to be as per date supplied/ available, to be properly installed and to be fully effective.

Scope and Limitations

The engineering services rendered by Fullerton Engineering Consultants, Inc. (Fullerton) in connection with this structural analysis are limited to an analysis of the structure, size and capacity of its members. Fullerton does not analyze the fabrication, including welding and connection capacities, except as included in this report.

The information and conclusions contained in this report were determined by application of the current engineering standards and analysis procedures and formulae, and Fullerton assumes no obligation to revise any of the information or conclusions contained in this report in the event such engineering and analysis procedures and formulae are hereafter modified or revised.

Fullerton makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication and erection deficiencies or the “as-built” condition of this tower. Fullerton will not be responsible whatsoever for or on account of consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report.

Installation procedures and loading are not within the scope of this report and should be performed and evaluated by a competent tower erection contractor.

Section I

Structural Calculations

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20' Whip	147.42	(2) Powerwave LGP2140X	119
15' Whip	145.67	(2) Powerwave LGP2140X	119
8' - 4 Element DiPole	141.42	Raycap DC6-48-60-18-8F	119
SO312-1	136.25	CCI HPA-65R-BUU-H8	119
2" STD x 5' Pipe Mount	136.25	CCI HPA-65R-BUU-H8	119
RR65-18-02DP w/Mount Pipe	136.25	CCI HPA-65R-BUU-H6	119
RR65-18-02DP w/Mount Pipe	136.25	RRUS-12 with A2 Module	119
TMA	136.25	RRUS-12 with A2 Module	119
SO312-1	136.25	RRUS-12 with A2 Module	119
2" STD x 5' Pipe Mount	136.25	20' Whip	115.67
TMA	136.25	2' Whip	110.5
RR65-18-02DP w/Mount Pipe	136.25	2.5' DiPole	108.25
TMA	136.25	SO312-1	104
SO312-1	136.25	Yagi (3 ft)	102
2" STD x 5' Pipe Mount	136.25	SO311-1	99.92
SM104-1	119	ODU	99.92
SM104-1	119	Radiowave HP2-18EX	99.92
SM104-1	119	2 STD x 20' Pipe mount	95
Kathrein 800-10121	119	2.5' DiPole	94.25
Kathrein 800-10121	119	Yagi (3 ft)	88.25
Kathrein 800-10121	119	SO311-1	85
RRUS-11	119	GPS	63.75
RRUS-11	119	6' Whip	57
RRUS-11	119	SO309-1	54
(2) Powerwave LGP2140X	119	Yagi (3 ft)	52

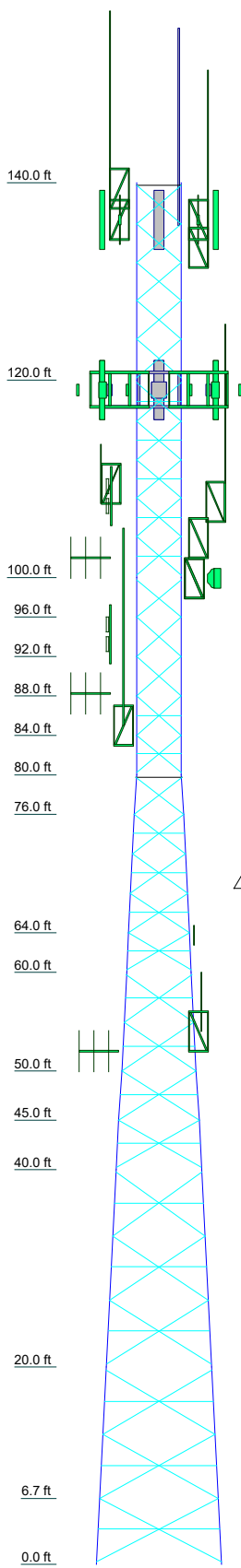
SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P2 STD w/ 1/3 Split-Pipe 2.5 XS	F	P2.5 XS + PL1.5"x3/8" .PL1.75"x1/2"
B	P2.5x.203	G	L1 1/2x1 1/2x1/8
C	P2.5STD w/ 1/3 Split-Pipe 3 XS	H	L2x2x3/16
D	P2.5STD + PL1.5"x3/8" .PL1.75"x1/2"	I	1 @ 3.75
E	P2.5 XS w/ 1/2 Split-Pipe 3 XS	J	1 @ 6.41667

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A618-50	50 ksi	70 ksi	A36	36 ksi	58 ksi

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16
Legs	P2x154	A	B	C	D	E	F	P3 XS w/ 1/2 Split-Pipe 4 XS								
Leg Grade	L1 1/2x1 1/2x1/8	A618-50														
Diagonals	L1 1/2x1 1/2x1/8	L1 1/2x1 1/2x1/4														
Diagonal Grade	L1 1/2x1 1/2x1/8	A36														
Top Girts	L1 1/2x1 1/2x1/8	N.A.														
Sec. Horizontals	N.A.	L3x3x3/16	N.A.	N.A.	L3x3x3/16	N.A.	L3x3x3/16	L2x2x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16	L3x3x3/16
Face Width (ft)	N.A.	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56
# Panels @ (ft)	10 @ 3.9	1101.2	170.6	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1
Weight (lb)	565.8	1101.2	170.6	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1	216.1

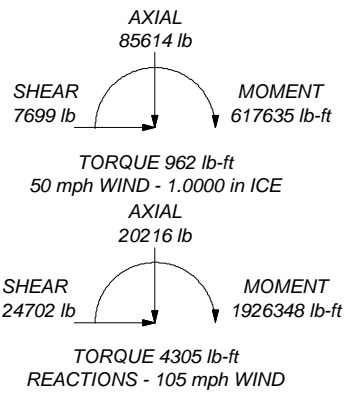


ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

DOWN: 182716 lb
SHEAR: 15970 lb

UPLIFT: -160890 lb
SHEAR: 14019 lb



<p>Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	Job: CTL05397 / Simsbury North Central
	Project: 140' Self-Support Tower
	Client: Smartlink / AT&T LTE 2C
	Code: TIA-222-G
	Path:
Drawn by: VY	App'd:
Scale: NTS	Page: 15 of 17
Dwg No. E-1	

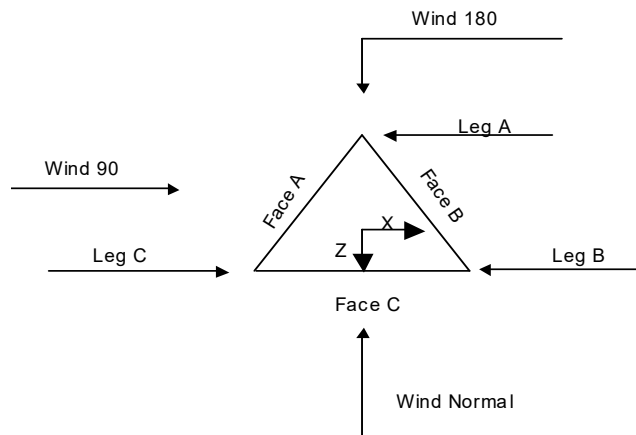
tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job CTL05397 / Simsbury North Central	Page 1 of 51
	Project 140' Self-Support Tower	Date 13:48:14 05/04/17
	Client Smartlink / AT&T LTE 2C	Designed by VY

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 140.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 4.52 ft at the top and 12.64 ft at the base.
This tower is designed using the TIA-222-G standard.

The following design criteria apply:

- Tower is located in Hartford County, Connecticut.
- Basic wind speed of 105 mph.
- Structure Class II.
- Exposure Category B.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Nominal ice thickness of 1.0000 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.



Triangular Tower

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Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	140.00-120.00			4.52	1	20.00
T2	120.00-100.00			4.52	1	20.00
T3	100.00-96.00			4.56	1	4.00
T4	96.00-92.00			4.56	1	4.00
T5	92.00-88.00			4.56	1	4.00
T6	88.00-84.00			4.56	1	4.00
T7	84.00-80.00			4.56	1	4.00
T8	80.00-76.00			4.56	1	4.00
T9	76.00-64.00			4.96	1	12.00
T10	64.00-60.00			6.16	1	4.00
T11	60.00-50.00			6.56	1	10.00
T12	50.00-45.00			7.58	1	5.00
T13	45.00-40.00			8.09	1	5.00
T14	40.00-20.00			8.60	1	20.00
T15	20.00-6.67			10.60	1	13.33
T16	6.67-0.00			11.96	1	6.67

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	140.00-120.00	3.90	X Brace	No	No	3.0000	3.0000
T2	120.00-100.00	3.90	X Brace	No	Yes	3.0000	3.0000
T3	100.00-96.00	3.75	X Brace	No	No	3.0000	0.0000
T4	96.00-92.00	4.00	X Brace	No	No	0.0000	0.0000
T5	92.00-88.00	4.00	X Brace	No	No	0.0000	0.0000
T6	88.00-84.00	4.00	X Brace	No	Yes	0.0000	0.0000
T7	84.00-80.00	3.75	X Brace	No	Yes	0.0000	3.0000
T8	80.00-76.00	3.75	X Brace	No	No	3.0000	0.0000
T9	76.00-64.00	4.00	X Brace	No	Yes	0.0000	0.0000
T10	64.00-60.00	3.75	X Brace	No	Yes	0.0000	3.0000
T11	60.00-50.00	4.88	X Brace	No	Yes	3.0000	0.0000
T12	50.00-45.00	5.00	X Brace	No	Yes	0.0000	0.0000
T13	45.00-40.00	4.75	X Brace	No	Yes	0.0000	3.0000
T14	40.00-20.00	6.49	X Brace	No	Yes	3.0000	3.5000
T15	20.00-6.67	6.51	X Brace	No	Yes	3.7500	0.0000
T16	6.67-0.00	6.42	X Brace	No	Yes	0.0000	3.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
<i>ft</i>						
T1 140.00-120.00	Pipe	P2x.154	A618-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 120.00-100.00	Arbitrary Shape	P2 STD w/ 1/3 Split-Pipe 2.5	A618-50	Equal Angle	L1 1/2x1 1/2x1/4	A36

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	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T3 100.00-96.00	Pipe	XS P2.5x.203	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/4	(36 ksi) A36
T4 96.00-92.00	Arbitrary Shape	P2.5STD w/ 1/3 Split-Pipe 3 XS	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/4	(36 ksi) A36
T5 92.00-88.00	Arbitrary Shape	P2.5STD w/ 1/3 Split-Pipe 3 XS	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/4	(36 ksi) A36
T6 88.00-84.00	Arbitrary Shape	P2.5STD w/ 1/3 Split-Pipe 3 XS	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/4	(36 ksi) A36
T7 84.00-80.00	Arbitrary Shape	P2.5STD w/ 1/3 Split-Pipe 3 XS	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/4	(36 ksi) A36
T8 80.00-76.00	Arbitrary Shape	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/8	(36 ksi) A36
T9 76.00-64.00	Arbitrary Shape	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/8	(36 ksi) A36
T10 64.00-60.00	Arbitrary Shape	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	(50 ksi) A618-50	Equal Angle	L1 1/2x1 1/2x1/8	(36 ksi) A36
T11 60.00-50.00	Arbitrary Shape	P2.5 XS w/ 1/2 Split-Pipe 3 XS	(50 ksi) A618-50	Double Equal Angle	2L1 1/2x1 1/2x1/8	(36 ksi) A36
T12 50.00-45.00	Arbitrary Shape	P2.5 XS w/ 1/2 Split-Pipe 3 XS	(50 ksi) A618-50	Double Equal Angle	2L1 1/2x1 1/2x1/8	(36 ksi) A36
T13 45.00-40.00	Arbitrary Shape	P2.5 XS + PL1.5"x3/8" & PL1.75"x1/2"	(50 ksi) A618-50	Double Equal Angle	2L1 1/2x1 1/2x1/8	(36 ksi) A36
T14 40.00-20.00	Arbitrary Shape	P3 XS w/ 1/2 Split-Pipe 4 XS	(50 ksi) A618-50	Double Equal Angle	2L1 3/4x1 3/4x1/8	(36 ksi) A36
T15 20.00-6.67	Arbitrary Shape	P3 XS w/ 1/2 Split-Pipe 4 XS	(50 ksi) A618-50	Double Equal Angle	2L2x2x1/8	(36 ksi) A36
T16 6.67-0.00	Arbitrary Shape	P3 XS w/ 1/2 Split-Pipe 4 XS	(50 ksi) A618-50	Double Equal Angle	2L2x2x1/8	(36 ksi) A36

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 140.00-120.00	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 80.00-76.00	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T2 120.00-100.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 88.00-84.00	Equal Angle	L3x3x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T7 84.00-80.00	Equal Angle	L3x3x3/16	A36	Solid Round		A572-50

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	<p>Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p>Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

Tower Elevation <i>ft</i>	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T9 76.00-64.00	Equal Angle	L2x2x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50
T10 64.00-60.00	Equal Angle	L3x3x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50
T11 60.00-50.00	Equal Angle	L3x3x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50
T12 50.00-45.00	Equal Angle	L3x3x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50
T13 45.00-40.00	Equal Angle	L2x2x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50
T14 40.00-20.00	Equal Angle	L3x3x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50
T15 20.00-6.67	Equal Angle	L3x3x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50
T16 6.67-0.00	Equal Angle	L3x3x3/16	(36 ksi) A36	Solid Round		(50 ksi) A572-50

Tower Section Geometry (cont'd)

Tower Elevation <i>ft</i>	Gusset Area (per face) <i>ft²</i>	Gusset Thickness <i>in</i>	Gusset Grade	Adjust. Factor <i>A_f</i>	Adjust. Factor <i>A_r</i>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals <i>in</i>	Double Angle Stitch Bolt Spacing Horizontals <i>in</i>	Double Angle Stitch Bolt Spacing Redundants <i>in</i>
T1 140.00-120.00	1.22	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 120.00-100.00	2.54	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 100.00-96.00	0.34	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 96.00-92.00	0.34	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 92.00-88.00	0.34	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 88.00-84.00	0.34	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T7 84.00-80.00	0.34	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 80.00-76.00	0.50	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 76.00-64.00	0.50	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 64.00-60.00	0.50	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 60.00-50.00	0.34	0.1875	A36 (36 ksi)	1	1	1.05	24.0000	36.0000	36.0000
T12 50.00-45.00	0.34	0.1875	A36 (36 ksi)	1	1	1.05	24.0000	36.0000	36.0000
T13 45.00-40.00	0.46	0.1875	A36 (36 ksi)	1	1	1.05	24.0000	36.0000	36.0000
T14 40.00-20.00	1.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T15 20.00-6.67	0.66	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
ft	ft ²	in							
T16 6.67-0.00	0.33	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹							
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace	
				X Y	X Y	X Y	X Y	X Y	X Y	X Y	
T1	Yes	Yes	1	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1	1
100.00-96.00				1	1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1	1
96.00-92.00				1	1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1	1
92.00-88.00				1	1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1	1
88.00-84.00				1	1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1	1
84.00-80.00				1	1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1	1
80.00-76.00				1	1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1	1
76.00-64.00				1	1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1	1
64.00-60.00				1	1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1	1
60.00-50.00				1	1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1	1
50.00-45.00				1	1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1	1
45.00-40.00				1	1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1	1
T15	Yes	Yes	1	1	1	1	1	1	1	1	1
20.00-6.67				1	1	1	1	1	1	1	1
T16 6.67-0.00	Yes	Yes	1	1	1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

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	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 100.00-96.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 96.00-92.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 92.00-88.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 88.00-84.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 84.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 80.00-76.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 76.00-64.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 64.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 60.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 50.00-45.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 45.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 20.00-6.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 6.67-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 140.00-120.00	Flange	0.6250	4	0.5000	1	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 120.00-100.00	Flange	0.6250	4	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	1
T3 100.00-96.00	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T4 96.00-92.00	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T5 92.00-88.00	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T6 88.00-84.00	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	1
T7 84.00-80.00	Flange	0.6250	4	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	1
T8 80.00-76.00	Flange	1.0000	0	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T9 76.00-64.00	Flange	1.0000	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1
T10 64.00-60.00	Flange	0.7500	4	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	1

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	7 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
				Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T11 60.00-50.00	Flange	1.0000 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T12 50.00-45.00	Flange	1.0000 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T13 45.00-40.00	Flange	0.7500 A490N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T14 40.00-20.00	Flange	0.8750 A325N	4	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T15 20.00-6.67	Flange	1.0000 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1
T16 6.67-0.00	Flange	1.0000 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	1

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	140.00 - 6.00	0.0000	0.44	3	3	1.0900	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	140.00 - 6.00	0.0000	0.35	6	6	1.9800	1.9800		0.82
3/4" DC power cable	B	No	Ar (CaAa)	119.00 - 6.00	0.0000	-0.36	2	2	0.7500	0.7500		0.40
3/8" Fiber	B	No	Ar (CaAa)	119.00 - 6.00	0.0000	-0.35	1	1	0.4000	0.4000		0.08
LDF6-50A (1-1/4 FOAM)	B	No	Ar (CaAa)	119.00 - 6.00	0.0000	-0.25	6	6	1.5500	1.5500		0.66
LDF6-50A (1-1/4 FOAM)	C	No	Ar (CaAa)	105.00 - 6.00	0.0000	0.45	1	1	1.5500	1.5500		0.66
LMR-400 (13/32 FOAM)	C	No	Ar (CaAa)	110.50 - 6.00	0.0000	0.5	1	1	0.4100	0.4100		0.07
LMR-400 (13/32 FOAM)	C	No	Ar (CaAa)	108.25 - 6.00	0.0000	0.5	1	1	0.4100	0.4100		0.07
LMR-400 (13/32 FOAM)	C	No	Ar (CaAa)	102.00 - 6.00	0.0000	0.5	1	1	0.4100	0.4100		0.07
LMR-400 (13/32 FOAM)	C	No	Ar (CaAa)	94.25 - 6.00	0.0000	0.5	1	1	0.4100	0.4100		0.07
LMR-400 (13/32 FOAM)	C	No	Ar (CaAa)	88.25 - 6.00	0.0000	0.5	1	1	0.4100	0.4100		0.07
0.32" Black Cable	C	No	Ar (CaAa)	99.92 - 6.00	0.0000	0.5	1	1	0.3200	0.3200		0.35
LDF4-50A (1/2 FOAM)	B	No	Ar (CaAa)	63.75 - 6.00	0.0000	0.48	1	1	0.6300	0.6300		0.15
LDF4-50A (1/2 FOAM)	C	No	Ar (CaAa)	57.00 - 6.00	0.0000	0.43	1	1	0.6300	0.6300		0.15
0.32" Black Cable	B	No	Ar (CaAa)	52.00 - 6.00	0.0000	0.33	1	1	0.3200	0.3200		0.35

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	8 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow or Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C _{AA} ft ² /ft	Weight plf
Climbing Pegs	A	No	CaAa (In Face)	140.00 - 13.50	0.0000	0.35	2	No Ice	0.01	0.31
								1/2" Ice	0.12	0.71
								1" Ice	0.23	1.11
Feedline Ladder (Af)	B	No	CaAa (In Face)	120.00 - 9.75	0.0000	-0.35	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60
Feedline Ladder (Af)	B	No	CaAa (In Face)	130.00 - 2.25	0.0000	0.35	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T1	140.00-120.00	A	0.000	0.000	0.400	0.000	12.40
		B	0.000	0.000	28.760	0.000	182.40
		C	0.000	0.000	6.540	0.000	19.80
T2	120.00-100.00	A	0.000	0.000	0.400	0.000	12.40
		B	0.000	0.000	65.040	0.000	526.36
		C	0.000	0.000	8.378	0.000	24.55
T3	100.00-96.00	A	0.000	0.000	0.080	0.000	2.48
		B	0.000	0.000	13.232	0.000	106.24
		C	0.000	0.000	2.668	0.000	8.81
T4	96.00-92.00	A	0.000	0.000	0.080	0.000	2.48
		B	0.000	0.000	13.232	0.000	106.24
		C	0.000	0.000	2.786	0.000	9.00
T5	92.00-88.00	A	0.000	0.000	0.080	0.000	2.48
		B	0.000	0.000	13.232	0.000	106.24
		C	0.000	0.000	2.889	0.000	9.14
T6	88.00-84.00	A	0.000	0.000	0.080	0.000	2.48
		B	0.000	0.000	13.232	0.000	106.24
		C	0.000	0.000	3.081	0.000	9.40
T7	84.00-80.00	A	0.000	0.000	0.080	0.000	2.48
		B	0.000	0.000	13.232	0.000	106.24
		C	0.000	0.000	3.081	0.000	9.40
T8	80.00-76.00	A	0.000	0.000	0.080	0.000	2.48
		B	0.000	0.000	13.232	0.000	106.24
		C	0.000	0.000	3.081	0.000	9.40
T9	76.00-64.00	A	0.000	0.000	0.240	0.000	7.44
		B	0.000	0.000	39.696	0.000	318.72
		C	0.000	0.000	9.243	0.000	28.20
T10	64.00-60.00	A	0.000	0.000	0.080	0.000	2.48
		B	0.000	0.000	13.468	0.000	106.80
		C	0.000	0.000	3.081	0.000	9.40
T11	60.00-50.00	A	0.000	0.000	0.200	0.000	6.20
		B	0.000	0.000	33.774	0.000	267.80
		C	0.000	0.000	8.143	0.000	24.55
T12	50.00-45.00	A	0.000	0.000	0.100	0.000	3.10
		B	0.000	0.000	17.015	0.000	135.30
		C	0.000	0.000	4.166	0.000	12.50
T13	45.00-40.00	A	0.000	0.000	0.100	0.000	3.10
		B	0.000	0.000	17.015	0.000	135.30
		C	0.000	0.000	4.166	0.000	12.50

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	<p>Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p>Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T14	40.00-20.00	A	0.000	0.000	0.400	0.000	12.40
		B	0.000	0.000	68.060	0.000	541.20
		C	0.000	0.000	16.665	0.000	50.00
T15	20.00-6.67	A	0.000	0.000	0.130	0.000	4.03
		B	0.000	0.000	43.831	0.000	334.90
		C	0.000	0.000	11.110	0.000	33.33
T16	6.67-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	3.811	0.000	43.94
		C	0.000	0.000	0.556	0.000	1.67

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} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T1	140.00-120.00	A	2.294	0.000	0.000	20.586	0.000	85.80
		B		0.000	0.000	78.031	0.000	1547.63
		C		0.000	0.000	28.831	0.000	387.49
T2	120.00-100.00	A	2.256	0.000	0.000	20.252	0.000	84.59
		B		0.000	0.000	190.631	0.000	3735.61
		C		0.000	0.000	44.369	0.000	589.34
T3	100.00-96.00	A	2.230	0.000	0.000	4.005	0.000	16.75
		B		0.000	0.000	38.832	0.000	752.52
		C		0.000	0.000	17.262	0.000	234.47
T4	96.00-92.00	A	2.221	0.000	0.000	3.988	0.000	16.69
		B		0.000	0.000	38.773	0.000	749.68
		C		0.000	0.000	18.609	0.000	249.74
T5	92.00-88.00	A	2.211	0.000	0.000	3.971	0.000	16.63
		B		0.000	0.000	38.711	0.000	746.74
		C		0.000	0.000	19.754	0.000	262.33
T6	88.00-84.00	A	2.201	0.000	0.000	3.954	0.000	16.57
		B		0.000	0.000	38.646	0.000	743.67
		C		0.000	0.000	21.940	0.000	287.04
T7	84.00-80.00	A	2.191	0.000	0.000	3.935	0.000	16.50
		B		0.000	0.000	38.579	0.000	740.49
		C		0.000	0.000	21.856	0.000	284.84
T8	80.00-76.00	A	2.180	0.000	0.000	3.916	0.000	16.43
		B		0.000	0.000	38.509	0.000	737.16
		C		0.000	0.000	21.769	0.000	282.56
T9	76.00-64.00	A	2.156	0.000	0.000	11.625	0.000	48.84
		B		0.000	0.000	115.076	0.000	2190.11
		C		0.000	0.000	64.748	0.000	833.07
T10	64.00-60.00	A	2.130	0.000	0.000	3.829	0.000	16.11
		B		0.000	0.000	40.026	0.000	749.66
		C		0.000	0.000	21.376	0.000	272.34
T11	60.00-50.00	A	2.105	0.000	0.000	9.461	0.000	39.88
		B		0.000	0.000	100.818	0.000	1871.26
		C		0.000	0.000	56.322	0.000	718.22
T12	50.00-45.00	A	2.074	0.000	0.000	4.663	0.000	19.69
		B		0.000	0.000	51.914	0.000	948.72
		C		0.000	0.000	28.552	0.000	361.27
T13	45.00-40.00	A	2.051	0.000	0.000	4.613	0.000	19.51
		B		0.000	0.000	51.685	0.000	938.84
		C		0.000	0.000	28.301	0.000	354.89
T14	40.00-20.00	A	1.981	0.000	0.000	17.833	0.000	75.79
		B		0.000	0.000	203.929	0.000	3635.34
		C		0.000	0.000	110.129	0.000	1342.85
T15	20.00-6.67	A	1.827	0.000	0.000	5.354	0.000	23.03

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	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T16	6.67-0.00	B		0.000	0.000	129.048	0.000	2167.76
		C		0.000	0.000	68.917	0.000	787.93
		A	1.590	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	8.910	0.000	175.73
		C		0.000	0.000	3.102	0.000	31.86

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	140.00-120.00	2.2964	1.4512	1.2323	0.1904
T2	120.00-100.00	1.8940	-0.6830	0.8423	-0.6596
T3	100.00-96.00	1.6579	-0.5712	0.2599	-0.3453
T4	96.00-92.00	1.5954	-0.5422	0.1552	-0.2767
T5	92.00-88.00	1.5627	-0.5246	0.0720	-0.2245
T6	88.00-84.00	1.4122	-0.4625	-0.0689	-0.1097
T7	84.00-80.00	1.4152	-0.4634	-0.0664	-0.1119
T8	80.00-76.00	1.4199	-0.4648	-0.0693	-0.1210
T9	76.00-64.00	1.6379	-0.5357	-0.0802	-0.1465
T10	64.00-60.00	1.8216	-0.5182	0.1106	-0.0537
T11	60.00-50.00	2.1084	-0.5595	0.0464	0.0570
T12	50.00-45.00	2.2659	-0.5637	0.1588	0.1536
T13	45.00-40.00	2.3474	-0.5835	0.1834	0.1623
T14	40.00-20.00	2.6762	-0.6640	0.2621	0.1760
T15	20.00-6.67	3.0241	-0.4489	0.4770	0.6741
T16	6.67-0.00	2.0613	0.6365	1.2900	0.8076

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	Climbing Pegs	120.00 - 140.00	0.6000	0.4468
T1	3	Feedline Ladder (Af)	120.00 - 130.00	0.6000	0.4468
T1	4	LDF5-50A (7/8 FOAM)	120.00 - 140.00	0.6000	0.4468
T1	5	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.4468
T2	1	Climbing Pegs	100.00 - 120.00	0.6000	0.3219
T2	2	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.3219
T2	3	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.3219
T2	4	LDF5-50A (7/8 FOAM)	100.00 - 120.00	0.6000	0.3219
T2	5	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.3219
T2	6	3/4" DC power cable	100.00 -	0.6000	0.3219

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	<p>Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p>Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	7	3/8" Fiber	119.00 - 100.00	0.6000	0.3219
T2	8	LDF6-50A (1-1/4 FOAM)	119.00 - 100.00	0.6000	0.3219
T2	9	LDF6-50A (1-1/4 FOAM)	105.00 - 100.00	0.6000	0.3219
T2	10	LMR-400 (13/32 FOAM)	110.50 - 100.00	0.6000	0.3219
T2	11	LMR-400 (13/32 FOAM)	108.25 - 100.00	0.6000	0.3219
T2	12	LMR-400 (13/32 FOAM)	102.00 - 96.00	0.6000	0.3219
T3	1	Climbing Pegs	96.00 - 100.00	0.6000	0.4573
T3	2	Feedline Ladder (Af)	96.00 - 100.00	0.6000	0.4573
T3	3	Feedline Ladder (Af)	96.00 - 100.00	0.6000	0.4573
T3	4	LDF5-50A (7/8 FOAM)	96.00 - 100.00	0.6000	0.4573
T3	5	LDF7-50A (1-5/8 FOAM)	96.00 - 100.00	0.6000	0.4573
T3	6	3/4" DC power cable	96.00 - 100.00	0.6000	0.4573
T3	7	3/8" Fiber	96.00 - 100.00	0.6000	0.4573
T3	8	LDF6-50A (1-1/4 FOAM)	96.00 - 100.00	0.6000	0.4573
T3	9	LDF6-50A (1-1/4 FOAM)	96.00 - 100.00	0.6000	0.4573
T3	10	LMR-400 (13/32 FOAM)	96.00 - 100.00	0.6000	0.4573
T3	11	LMR-400 (13/32 FOAM)	96.00 - 100.00	0.6000	0.4573
T3	12	LMR-400 (13/32 FOAM)	96.00 - 100.00	0.6000	0.4573
T3	15	0.32" Black Cable	96.00 - 99.92	0.6000	0.4573
T4	1	Climbing Pegs	92.00 - 96.00	0.6000	0.4430
T4	2	Feedline Ladder (Af)	92.00 - 96.00	0.6000	0.4430
T4	3	Feedline Ladder (Af)	92.00 - 96.00	0.6000	0.4430
T4	4	LDF5-50A (7/8 FOAM)	92.00 - 96.00	0.6000	0.4430
T4	5	LDF7-50A (1-5/8 FOAM)	92.00 - 96.00	0.6000	0.4430
T4	6	3/4" DC power cable	92.00 - 96.00	0.6000	0.4430
T4	7	3/8" Fiber	92.00 - 96.00	0.6000	0.4430
T4	8	LDF6-50A (1-1/4 FOAM)	92.00 - 96.00	0.6000	0.4430
T4	9	LDF6-50A (1-1/4 FOAM)	92.00 - 96.00	0.6000	0.4430
T4	10	LMR-400 (13/32 FOAM)	92.00 - 96.00	0.6000	0.4430
T4	11	LMR-400 (13/32 FOAM)	92.00 - 96.00	0.6000	0.4430
T4	12	LMR-400 (13/32 FOAM)	92.00 - 96.00	0.6000	0.4430
T4	13	LMR-400 (13/32 FOAM)	92.00 - 94.25	0.6000	0.4430
T4	15	0.32" Black Cable	92.00 - 96.00	0.6000	0.4430
T5	1	Climbing Pegs	88.00 - 92.00	0.6000	0.4449
T5	2	Feedline Ladder (Af)	88.00 - 92.00	0.6000	0.4449
T5	3	Feedline Ladder (Af)	88.00 - 92.00	0.6000	0.4449
T5	4	LDF5-50A (7/8 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	5	LDF7-50A (1-5/8 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	6	3/4" DC power cable	88.00 - 92.00	0.6000	0.4449
T5	7	3/8" Fiber	88.00 - 92.00	0.6000	0.4449
T5	8	LDF6-50A (1-1/4 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	9	LDF6-50A (1-1/4 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	10	LMR-400 (13/32 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	11	LMR-400 (13/32 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	12	LMR-400 (13/32 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	13	LMR-400 (13/32 FOAM)	88.00 - 92.00	0.6000	0.4449
T5	14	LMR-400 (13/32 FOAM)	88.00 - 88.25	0.6000	0.4449
T5	15	0.32" Black Cable	88.00 - 92.00	0.6000	0.4449
T6	1	Climbing Pegs	84.00 - 88.00	0.6000	0.3181
T6	2	Feedline Ladder (Af)	84.00 - 88.00	0.6000	0.3181
T6	3	Feedline Ladder (Af)	84.00 - 88.00	0.6000	0.3181
T6	4	LDF5-50A (7/8 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	5	LDF7-50A (1-5/8 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	6	3/4" DC power cable	84.00 - 88.00	0.6000	0.3181
T6	7	3/8" Fiber	84.00 - 88.00	0.6000	0.3181

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	<p>Job</p> <p style="text-align: center;">CTL05397 / Simsbury North Central</p>	<p>Page</p> <p style="text-align: center;">12 of 51</p>
	<p>Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p>Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	8	LDF6-50A (1-1/4 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	9	LDF6-50A (1-1/4 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	10	LMR-400 (13/32 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	11	LMR-400 (13/32 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	12	LMR-400 (13/32 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	13	LMR-400 (13/32 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	14	LMR-400 (13/32 FOAM)	84.00 - 88.00	0.6000	0.3181
T6	15	0.32" Black Cable	84.00 - 88.00	0.6000	0.3181
T7	1	Climbing Pegs	80.00 - 84.00	0.6000	0.3272
T7	2	Feedline Ladder (Af)	80.00 - 84.00	0.6000	0.3272
T7	3	Feedline Ladder (Af)	80.00 - 84.00	0.6000	0.3272
T7	4	LDF5-50A (7/8 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	5	LDF7-50A (1-5/8 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	6	3/4" DC power cable	80.00 - 84.00	0.6000	0.3272
T7	7	3/8" Fiber	80.00 - 84.00	0.6000	0.3272
T7	8	LDF6-50A (1-1/4 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	9	LDF6-50A (1-1/4 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	10	LMR-400 (13/32 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	11	LMR-400 (13/32 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	12	LMR-400 (13/32 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	13	LMR-400 (13/32 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	14	LMR-400 (13/32 FOAM)	80.00 - 84.00	0.6000	0.3272
T7	15	0.32" Black Cable	80.00 - 84.00	0.6000	0.3272
T8	1	Climbing Pegs	76.00 - 80.00	0.6000	0.3594
T8	2	Feedline Ladder (Af)	76.00 - 80.00	0.6000	0.3594
T8	3	Feedline Ladder (Af)	76.00 - 80.00	0.6000	0.3594
T8	4	LDF5-50A (7/8 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	5	LDF7-50A (1-5/8 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	6	3/4" DC power cable	76.00 - 80.00	0.6000	0.3594
T8	7	3/8" Fiber	76.00 - 80.00	0.6000	0.3594
T8	8	LDF6-50A (1-1/4 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	9	LDF6-50A (1-1/4 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	10	LMR-400 (13/32 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	11	LMR-400 (13/32 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	12	LMR-400 (13/32 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	13	LMR-400 (13/32 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	14	LMR-400 (13/32 FOAM)	76.00 - 80.00	0.6000	0.3594
T8	15	0.32" Black Cable	76.00 - 80.00	0.6000	0.3594
T9	1	Climbing Pegs	64.00 - 76.00	0.6000	0.4138
T9	2	Feedline Ladder (Af)	64.00 - 76.00	0.6000	0.4138
T9	3	Feedline Ladder (Af)	64.00 - 76.00	0.6000	0.4138
T9	4	LDF5-50A (7/8 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	5	LDF7-50A (1-5/8 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	6	3/4" DC power cable	64.00 - 76.00	0.6000	0.4138
T9	7	3/8" Fiber	64.00 - 76.00	0.6000	0.4138
T9	8	LDF6-50A (1-1/4 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	9	LDF6-50A (1-1/4 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	10	LMR-400 (13/32 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	11	LMR-400 (13/32 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	12	LMR-400 (13/32 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	13	LMR-400 (13/32 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	14	LMR-400 (13/32 FOAM)	64.00 - 76.00	0.6000	0.4138
T9	15	0.32" Black Cable	64.00 - 76.00	0.6000	0.4138
T10	1	Climbing Pegs	60.00 - 64.00	0.6000	0.4090
T10	2	Feedline Ladder (Af)	60.00 - 64.00	0.6000	0.4090
T10	3	Feedline Ladder (Af)	60.00 - 64.00	0.6000	0.4090
T10	4	LDF5-50A (7/8 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	5	LDF7-50A (1-5/8 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	6	3/4" DC power cable	60.00 - 64.00	0.6000	0.4090
T10	7	3/8" Fiber	60.00 - 64.00	0.6000	0.4090
T10	8	LDF6-50A (1-1/4 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	9	LDF6-50A (1-1/4 FOAM)	60.00 - 64.00	0.6000	0.4090

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	<p>Job</p> <p style="text-align: center;">CTL05397 / Simsbury North Central</p>	<p>Page</p> <p style="text-align: center;">13 of 51</p>
	<p>Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p>Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	10	LMR-400 (13/32 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	11	LMR-400 (13/32 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	12	LMR-400 (13/32 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	13	LMR-400 (13/32 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	14	LMR-400 (13/32 FOAM)	60.00 - 64.00	0.6000	0.4090
T10	15	0.32" Black Cable	60.00 - 64.00	0.6000	0.4090
T10	16	LDF4-50A (1/2 FOAM)	60.00 - 63.75	0.6000	0.4090
T11	1	Climbing Pegs	50.00 - 60.00	0.6000	0.5131
T11	2	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.5131
T11	3	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.5131
T11	4	LDF5-50A (7/8 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	5	LDF7-50A (1-5/8 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	6	3/4" DC power cable	50.00 - 60.00	0.6000	0.5131
T11	7	3/8" Fiber	50.00 - 60.00	0.6000	0.5131
T11	8	LDF6-50A (1-1/4 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	9	LDF6-50A (1-1/4 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	10	LMR-400 (13/32 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	11	LMR-400 (13/32 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	12	LMR-400 (13/32 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	13	LMR-400 (13/32 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	14	LMR-400 (13/32 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	15	0.32" Black Cable	50.00 - 60.00	0.6000	0.5131
T11	16	LDF4-50A (1/2 FOAM)	50.00 - 60.00	0.6000	0.5131
T11	17	LDF4-50A (1/2 FOAM)	50.00 - 57.00	0.6000	0.5131
T11	18	0.32" Black Cable	50.00 - 52.00	0.6000	0.5131
T12	1	Climbing Pegs	45.00 - 50.00	0.6000	0.5259
T12	2	Feedline Ladder (Af)	45.00 - 50.00	0.6000	0.5259
T12	3	Feedline Ladder (Af)	45.00 - 50.00	0.6000	0.5259
T12	4	LDF5-50A (7/8 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	5	LDF7-50A (1-5/8 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	6	3/4" DC power cable	45.00 - 50.00	0.6000	0.5259
T12	7	3/8" Fiber	45.00 - 50.00	0.6000	0.5259
T12	8	LDF6-50A (1-1/4 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	9	LDF6-50A (1-1/4 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	10	LMR-400 (13/32 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	11	LMR-400 (13/32 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	12	LMR-400 (13/32 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	13	LMR-400 (13/32 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	14	LMR-400 (13/32 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	15	0.32" Black Cable	45.00 - 50.00	0.6000	0.5259
T12	16	LDF4-50A (1/2 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	17	LDF4-50A (1/2 FOAM)	45.00 - 50.00	0.6000	0.5259
T12	18	0.32" Black Cable	45.00 - 50.00	0.6000	0.5259
T13	1	Climbing Pegs	40.00 - 45.00	0.6000	0.5558
T13	2	Feedline Ladder (Af)	40.00 - 45.00	0.6000	0.5558
T13	3	Feedline Ladder (Af)	40.00 - 45.00	0.6000	0.5558
T13	4	LDF5-50A (7/8 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	5	LDF7-50A (1-5/8 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	6	3/4" DC power cable	40.00 - 45.00	0.6000	0.5558
T13	7	3/8" Fiber	40.00 - 45.00	0.6000	0.5558
T13	8	LDF6-50A (1-1/4 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	9	LDF6-50A (1-1/4 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	10	LMR-400 (13/32 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	11	LMR-400 (13/32 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	12	LMR-400 (13/32 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	13	LMR-400 (13/32 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	14	LMR-400 (13/32 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	15	0.32" Black Cable	40.00 - 45.00	0.6000	0.5558
T13	16	LDF4-50A (1/2 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	17	LDF4-50A (1/2 FOAM)	40.00 - 45.00	0.6000	0.5558
T13	18	0.32" Black Cable	40.00 - 45.00	0.6000	0.5558
T14	1	Climbing Pegs	20.00 - 40.00	0.6000	0.6000

<p align="center">tnxTower</p> <p align="center">Fullerton Engineering Consultants</p> <p align="center">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	<p>Job</p> <p align="center">CTL05397 / Simsbury North Central</p>	<p>Page</p> <p align="center">14 of 51</p>
	<p>Project</p> <p align="center">140' Self-Support Tower</p>	<p>Date</p> <p align="center">13:48:14 05/04/17</p>
	<p>Client</p> <p align="center">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p align="center">VY</p>

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	2	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	3	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T14	4	LDF5-50A (7/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	5	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	6	3/4" DC power cable	20.00 - 40.00	0.6000	0.6000
T14	7	3/8" Fiber	20.00 - 40.00	0.6000	0.6000
T14	8	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	9	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	10	LMR-400 (13/32 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	11	LMR-400 (13/32 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	12	LMR-400 (13/32 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	13	LMR-400 (13/32 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	14	LMR-400 (13/32 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	15	0.32" Black Cable	20.00 - 40.00	0.6000	0.6000
T14	16	LDF4-50A (1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	17	LDF4-50A (1/2 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	18	0.32" Black Cable	20.00 - 40.00	0.6000	0.6000
T15	1	Climbing Pegs	13.50 - 20.00	0.6000	0.6000
T15	2	Feedline Ladder (Af)	9.75 - 20.00	0.6000	0.6000
T15	3	Feedline Ladder (Af)	6.67 - 20.00	0.6000	0.6000
T15	4	LDF5-50A (7/8 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	5	LDF7-50A (1-5/8 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	6	3/4" DC power cable	6.67 - 20.00	0.6000	0.6000
T15	7	3/8" Fiber	6.67 - 20.00	0.6000	0.6000
T15	8	LDF6-50A (1-1/4 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	9	LDF6-50A (1-1/4 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	10	LMR-400 (13/32 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	11	LMR-400 (13/32 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	12	LMR-400 (13/32 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	13	LMR-400 (13/32 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	14	LMR-400 (13/32 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	15	0.32" Black Cable	6.67 - 20.00	0.6000	0.6000
T15	16	LDF4-50A (1/2 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	17	LDF4-50A (1/2 FOAM)	6.67 - 20.00	0.6000	0.6000
T15	18	0.32" Black Cable	6.67 - 20.00	0.6000	0.6000
T16	3	Feedline Ladder (Af)	2.25 - 6.67	0.6000	0.6000
T16	4	LDF5-50A (7/8 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	5	LDF7-50A (1-5/8 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	6	3/4" DC power cable	6.00 - 6.67	0.6000	0.6000
T16	7	3/8" Fiber	6.00 - 6.67	0.6000	0.6000
T16	8	LDF6-50A (1-1/4 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	9	LDF6-50A (1-1/4 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	10	LMR-400 (13/32 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	11	LMR-400 (13/32 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	12	LMR-400 (13/32 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	13	LMR-400 (13/32 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	14	LMR-400 (13/32 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	15	0.32" Black Cable	6.00 - 6.67	0.6000	0.6000
T16	16	LDF4-50A (1/2 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	17	LDF4-50A (1/2 FOAM)	6.00 - 6.67	0.6000	0.6000
T16	18	0.32" Black Cable	6.00 - 6.67	0.6000	0.6000

Discrete Tower Loads

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	15 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
20' Whip	C	From Leg	2.00 0.00 0.00	0.0000	147.42	No Ice 5.00 1/2" Ice 7.03 1" Ice 9.07	5.00 7.03 9.07	50.00 86.96 136.55
RR65-18-02DP w/Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	136.25	No Ice 4.91 1/2" Ice 5.50 1" Ice 6.00	3.64 4.70 5.48	43.55 84.46 131.77
TMA	C	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 0.60 1/2" Ice 0.70 1" Ice 0.81	0.41 0.50 0.59	10.00 15.41 22.44
SO312-1	C	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 2.97 1/2" Ice 4.39 1" Ice 5.81	4.03 6.12 8.21	70.00 106.38 142.76
2" STD x 5' Pipe Mount	C	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 1.19 1/2" Ice 1.50 1" Ice 1.81	1.19 1.50 1.81	18.30 27.37 39.89
15' Whip	A	From Leg	2.00 0.00 0.00	0.0000	145.67	No Ice 3.00 1/2" Ice 4.53 1" Ice 6.07	3.00 4.53 6.07	30.00 53.14 85.79
RR65-18-02DP w/Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	136.25	No Ice 4.91 1/2" Ice 5.50 1" Ice 6.00	3.64 4.70 5.48	43.55 84.46 131.77
TMA	A	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 0.60 1/2" Ice 0.70 1" Ice 0.81	0.41 0.50 0.59	10.00 15.41 22.44
SO312-1	A	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 2.97 1/2" Ice 4.39 1" Ice 5.81	4.03 6.12 8.21	70.00 106.38 142.76
2" STD x 5' Pipe Mount	A	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 1.19 1/2" Ice 1.50 1" Ice 1.81	1.19 1.50 1.81	18.30 27.37 39.89
8' - 4 Element DiPole	B	From Leg	2.00 0.00 0.00	0.0000	141.42	No Ice 2.40 1/2" Ice 3.19 1" Ice 3.67	2.40 3.19 3.67	30.00 47.51 70.37
RR65-18-02DP w/Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	136.25	No Ice 4.91 1/2" Ice 5.50 1" Ice 6.00	3.64 4.70 5.48	43.55 84.46 131.77
TMA	B	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 0.60 1/2" Ice 0.70 1" Ice 0.81	0.41 0.50 0.59	10.00 15.41 22.44
SO312-1	B	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 2.97 1/2" Ice 4.39 1" Ice 5.81	4.03 6.12 8.21	70.00 106.38 142.76
2" STD x 5' Pipe Mount	B	From Leg	2.00 0.00 0.00	0.0000	136.25	No Ice 1.19 1/2" Ice 1.50 1" Ice 1.81	1.19 1.50 1.81	18.30 27.37 39.89
SM104-1	A	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 16.40 1/2" Ice 21.70 1" Ice 27.00	10.28 14.27 18.26	317.50 468.20 618.90
SM104-1	B	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 16.40 1/2" Ice 21.70 1" Ice 27.00	10.28 14.27 18.26	317.50 468.20 618.90
SM104-1	C	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 16.40 1/2" Ice 21.70 1" Ice 27.00	10.28 14.27 18.26	317.50 468.20 618.90
Kathrein 800-10121	A	From Leg	4.00 0.00 0.00	0.0000	119.00	No Ice 5.27 1/2" Ice 5.65 1" Ice 6.04	4.48 5.14 5.80	68.95 115.14 167.58

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	16 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
Kathrein 800-10121	B	From Leg	4.00	0.0000	119.00	No Ice	5.27	4.48	68.95
			0.00			1/2" Ice	5.65	5.14	115.14
			0.00			1" Ice	6.04	5.80	167.58
Kathrein 800-10121	C	From Leg	4.00	0.0000	119.00	No Ice	5.27	4.48	68.95
			0.00			1/2" Ice	5.65	5.14	115.14
			0.00			1" Ice	6.04	5.80	167.58
RRUS-11	A	From Leg	4.00	0.0000	119.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS-11	B	From Leg	4.00	0.0000	119.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS-11	C	From Leg	4.00	0.0000	119.00	No Ice	2.52	1.07	55.00
			0.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
(2) Powerwave LGP2140X	A	From Leg	4.00	0.0000	119.00	No Ice	0.75	0.49	13.55
			0.00			1/2" Ice	0.86	0.65	21.92
			0.00			1" Ice	0.99	0.83	32.63
(2) Powerwave LGP2140X	B	From Leg	4.00	0.0000	119.00	No Ice	0.75	0.49	13.55
			0.00			1/2" Ice	0.86	0.65	21.92
			0.00			1" Ice	0.99	0.83	32.63
(2) Powerwave LGP2140X	C	From Leg	4.00	0.0000	119.00	No Ice	0.75	0.49	13.55
			0.00			1/2" Ice	0.86	0.65	21.92
			0.00			1" Ice	0.99	0.83	32.63
Raycap DC6-48-60-18-8F	A	From Leg	0.00	0.0000	119.00	No Ice	0.83	0.83	22.00
			0.00			1/2" Ice	1.34	1.34	37.91
			0.00			1" Ice	1.52	1.52	56.21
20' Whip	B	From Leg	4.00	0.0000	115.67	No Ice	5.00	5.00	50.00
			0.00			1/2" Ice	7.03	7.03	86.96
			0.00			1" Ice	9.07	9.07	136.55
SO312-1	B	From Leg	2.00	0.0000	104.00	No Ice	2.97	4.03	70.00
			0.00			1/2" Ice	4.39	6.12	106.38
			0.00			1" Ice	5.81	8.21	142.76
SO311-1	C	From Leg	1.50	0.0000	85.00	No Ice	2.97	3.51	62.00
			0.00			1/2" Ice	4.39	5.33	94.35
			0.00			1" Ice	5.81	7.15	126.70
2 STD x 20' Pipe mount	C	From Leg	1.50	0.0000	95.00	No Ice	4.75	4.75	73.20
			0.00			1/2" Ice	6.78	6.78	108.61
			0.00			1" Ice	8.82	8.82	156.64
2' Whip	C	From Leg	3.00	0.0000	110.50	No Ice	0.36	0.36	10.00
			0.00			1/2" Ice	0.49	0.49	13.98
			0.00			1" Ice	0.63	0.63	19.58
2.5' DiPole	C	From Leg	3.00	0.0000	108.25	No Ice	0.41	0.41	10.00
			0.00			1/2" Ice	0.56	0.56	14.00
			0.00			1" Ice	0.71	0.71	18.00
Yagi (3 ft)	C	From Leg	3.00	0.0000	102.00	No Ice	2.08	2.08	30.00
			0.00			1/2" Ice	3.79	3.79	39.00
			0.00			1" Ice	5.50	5.50	48.00
SO311-1	B	From Leg	1.50	0.0000	99.92	No Ice	2.97	3.51	62.00
			0.00			1/2" Ice	4.39	5.33	94.35
			0.00			1" Ice	5.81	7.15	126.70
ODU	B	From Leg	1.50	0.0000	99.92	No Ice	0.40	1.07	10.00
			0.00			1/2" Ice	0.49	1.20	17.81
			0.00			1" Ice	0.59	1.34	27.53
2.5' DiPole	C	From Leg	3.00	0.0000	94.25	No Ice	0.41	0.41	10.00
			0.00			1/2" Ice	0.56	0.56	14.00
			0.00			1" Ice	0.71	0.71	18.00

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	17 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight
			Horz Lateral	Vert			Front	Side	
			ft	ft	°	ft	ft ²	ft ²	lb
Yagi (3 ft)	C	From Leg	3.00	0.00	0.0000	88.25	No Ice 2.08	2.08	30.00
			0.00	0.00			1/2" Ice 3.79	3.79	39.00
			0.00	0.00			1" Ice 5.50	5.50	48.00
GPS	B	From Leg	0.50	0.00	0.0000	63.75	No Ice 0.76	0.76	17.30
			0.00	0.00			1/2" Ice 1.02	1.02	27.45
			0.00	0.00			1" Ice 1.30	1.30	40.15
SO309-1	B	From Leg	0.50	0.00	0.0000	54.00	No Ice 2.82	2.20	40.00
			0.00	0.00			1/2" Ice 4.07	3.16	61.95
			0.00	0.00			1" Ice 5.32	4.12	83.90
6' Whip	B	From Leg	1.00	0.00	0.0000	57.00	No Ice 1.20	1.20	15.00
			0.00	0.00			1/2" Ice 1.80	1.80	24.39
			0.00	0.00			1" Ice 2.17	2.17	37.81
Yagi (3 ft)	C	From Leg	0.50	0.00	0.0000	52.00	No Ice 2.08	2.08	30.00
			0.00	0.00			1/2" Ice 3.79	3.79	39.00
			0.00	0.00			1" Ice 5.50	5.50	48.00
Proposed									
CCI HPA-65R-BUU-H8	A	From Leg	4.00	0.00	0.0000	119.00	No Ice 13.05	9.42	107.20
			0.00	0.00			1/2" Ice 13.66	10.82	202.07
			0.00	0.00			1" Ice 14.27	12.07	306.65
CCI HPA-65R-BUU-H8	B	From Leg	4.00	0.00	0.0000	119.00	No Ice 13.05	9.42	107.20
			0.00	0.00			1/2" Ice 13.66	10.82	202.07
			0.00	0.00			1" Ice 14.27	12.07	306.65
CCI HPA-65R-BUU-H6	C	From Leg	4.00	0.00	0.0000	119.00	No Ice 9.90	8.11	86.55
			0.00	0.00			1/2" Ice 10.47	9.30	168.03
			0.00	0.00			1" Ice 11.01	10.21	257.79
RRUS-12 with A2 Module	A	From Leg	4.00	0.00	0.0000	119.00	No Ice 3.15	1.85	74.20
			0.00	0.00			1/2" Ice 3.36	2.03	101.82
			0.00	0.00			1" Ice 3.59	2.22	132.86
RRUS-12 with A2 Module	B	From Leg	4.00	0.00	0.0000	119.00	No Ice 3.15	1.85	74.20
			0.00	0.00			1/2" Ice 3.36	2.03	101.82
			0.00	0.00			1" Ice 3.59	2.22	132.86
RRUS-12 with A2 Module	C	From Leg	4.00	0.00	0.0000	119.00	No Ice 3.15	1.85	74.20
			0.00	0.00			1/2" Ice 3.36	2.03	101.82
			0.00	0.00			1" Ice 3.59	2.22	132.86

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz Lateral	Vert						
				ft	ft	°	°	ft	ft	ft ²	lb
Radiowave HP2-18EX	B	Paraboloid w/Shroud (HP)	From Leg	3.00	0.00	0.0000		99.92	2.00	No Ice 3.14	27.00
				0.00	0.00					1/2" Ice 3.41	44.50
				0.00	0.00					1" Ice 3.68	62.01

Tower Pressures - No Ice

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	18 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

$$G_H = 0.850$$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft ²	F a c e	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
T1 140.00-120.00	130.00	1.065	26	94.358	A	8.896	7.917	7.917	47.09	0.400	0.000
					B	8.896	7.917		47.09	28.760	0.000
					C	8.896	7.917		47.09	6.540	0.000
T2 120.00-100.00	110.00	1.016	24	94.949	A	15.093	8.542	8.542	36.14	0.400	0.000
					B	15.093	8.542		36.14	65.040	0.000
					C	15.093	8.542		36.14	8.378	0.000
T3 100.00-96.00	98.00	0.983	24	19.198	A	1.742	1.917	1.917	52.38	0.080	0.000
					B	1.742	1.917		52.38	13.232	0.000
					C	1.742	1.917		52.38	2.668	0.000
T4 96.00-92.00	94.00	0.971	23	19.250	A	1.779	2.125	2.125	54.44	0.080	0.000
					B	1.779	2.125		54.44	13.232	0.000
					C	1.779	2.125		54.44	2.786	0.000
T5 92.00-88.00	90.00	0.959	23	19.250	A	1.776	2.125	2.125	54.47	0.080	0.000
					B	1.776	2.125		54.47	13.232	0.000
					C	1.776	2.125		54.47	2.889	0.000
T6 88.00-84.00	86.00	0.947	23	19.250	A	2.853	2.125	2.125	42.69	0.080	0.000
					B	2.853	2.125		42.69	13.232	0.000
					C	2.853	2.125		42.69	3.081	0.000
T7 84.00-80.00	82.00	0.934	22	19.250	A	2.815	2.125	2.125	43.02	0.080	0.000
					B	2.815	2.125		43.02	13.232	0.000
					C	2.815	2.125		43.02	3.081	0.000
T8 80.00-76.00	78.00	0.921	22	20.081	A	5.573	0.000	3.088	55.42	0.080	0.000
					B	5.573	0.000		55.42	13.232	0.000
					C	5.573	0.000		55.42	3.081	0.000
T9 76.00-64.00	70.00	0.892	21	69.843	A	17.340	0.000	9.265	53.43	0.240	0.000
					B	17.340	0.000		53.43	39.696	0.000
					C	17.340	0.000		53.43	9.243	0.000
T10 64.00-60.00	62.00	0.862	21	26.481	A	6.888	0.000	3.088	44.84	0.080	0.000
					B	6.888	0.000		44.84	13.468	0.000
					C	6.888	0.000		44.84	3.081	0.000
T11 60.00-50.00	55.00	0.833	20	73.620	A	7.884	5.843	5.843	42.57	0.200	0.000
					B	7.884	5.843		42.57	33.774	0.000
					C	7.884	5.843		42.57	8.143	0.000
T12 50.00-45.00	47.50	0.799	19	40.635	A	4.476	2.922	2.922	39.50	0.100	0.000
					B	4.476	2.922		39.50	17.015	0.000
					C	4.476	2.922		39.50	4.166	0.000
T13 45.00-40.00	42.50	0.774	19	43.011	A	7.994	0.000	3.861	48.30	0.100	0.000
					B	7.994	0.000		48.30	17.015	0.000
					C	7.994	0.000		48.30	4.166	0.000
T14 40.00-20.00	30.00	0.701	17	199.509	A	17.747	15.025	15.025	45.85	0.400	0.000
					B	17.747	15.025		45.85	68.060	0.000
					C	17.747	15.025		45.85	16.665	0.000
T15 20.00-6.67	13.33	0.7	17	155.405	A	14.587	10.017	10.017	40.71	0.130	0.000
					B	14.587	10.017		40.71	43.831	0.000
					C	14.587	10.017		40.71	11.110	0.000
T16 6.67-0.00	3.33	0.7	17	84.503	A	7.819	5.009	5.009	39.05	0.000	0.000
					B	7.819	5.009		39.05	3.811	0.000
					C	7.819	5.009		39.05	0.556	0.000

Tower Pressure - With Ice

$$G_H = 0.850$$

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	19 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 140.00-120.00	130.00	1.065	6	2.2939	102.005	A	8.896	47.531	23.209	41.13	20.586	0.000
						B	8.896	47.531		41.13	78.031	0.000
						C	8.896	47.531		41.13	28.831	0.000
T2 120.00-100.00	110.00	1.016	6	2.2559	102.469	A	15.093	54.393	23.581	33.94	20.252	0.000
						B	15.093	54.393		33.94	190.631	0.000
						C	15.093	54.393		33.94	44.369	0.000
T3 100.00-96.00	98.00	0.983	5	2.2300	20.685	A	1.742	9.484	4.890	43.56	4.005	0.000
						B	1.742	9.484		43.56	38.832	0.000
						C	1.742	9.484		43.56	17.262	0.000
T4 96.00-92.00	94.00	0.971	5	2.2207	20.731	A	1.779	9.768	5.086	44.05	3.988	0.000
						B	1.779	9.768		44.05	38.773	0.000
						C	1.779	9.768		44.05	18.609	0.000
T5 92.00-88.00	90.00	0.959	5	2.2111	20.724	A	1.776	9.728	5.073	44.10	3.971	0.000
						B	1.776	9.728		44.10	38.711	0.000
						C	1.776	9.728		44.10	19.754	0.000
T6 88.00-84.00	86.00	0.947	5	2.2010	20.718	A	2.853	11.274	5.060	35.82	3.954	0.000
						B	2.853	11.274		35.82	38.646	0.000
						C	2.853	11.274		35.82	21.940	0.000
T7 84.00-80.00	82.00	0.934	5	2.1906	20.711	A	2.815	11.119	5.046	36.21	3.935	0.000
						B	2.815	11.119		36.21	38.579	0.000
						C	2.815	11.119		36.21	21.856	0.000
T8 80.00-76.00	78.00	0.921	5	2.1797	21.536	A	7.514	6.282	5.029	36.46	3.916	0.000
						B	7.514	6.282		36.46	38.509	0.000
						C	7.514	6.282		36.46	21.769	0.000
T9 76.00-64.00	70.00	0.892	5	2.1562	74.160	A	23.099	20.375	15.025	34.56	11.625	0.000
						B	23.099	20.375		34.56	115.076	0.000
						C	23.099	20.375		34.56	64.748	0.000
T10 64.00-60.00	62.00	0.862	5	2.1302	27.903	A	8.784	7.707	4.985	30.23	3.829	0.000
						B	8.784	7.707		30.23	40.026	0.000
						C	8.784	7.707		30.23	21.376	0.000
T11 60.00-50.00	55.00	0.833	5	2.1048	77.133	A	7.884	29.674	12.872	34.27	9.461	0.000
						B	7.884	29.674		34.27	100.818	0.000
						C	7.884	29.674		34.27	56.322	0.000
T12 50.00-45.00	47.50	0.799	4	2.0742	42.366	A	4.476	15.611	6.385	31.79	4.663	0.000
						B	4.476	15.611		31.79	51.914	0.000
						C	4.476	15.611		31.79	28.552	0.000
T13 45.00-40.00	42.50	0.774	4	2.0512	44.723	A	10.277	9.588	6.144	30.93	4.613	0.000
						B	10.277	9.588		30.93	51.685	0.000
						C	10.277	9.588		30.93	28.301	0.000
T14 40.00-20.00	30.00	0.701	4	1.9810	206.121	A	17.747	60.276	28.254	36.21	17.833	0.000
						B	17.747	60.276		36.21	203.929	0.000
						C	17.747	60.276		36.21	110.129	0.000
T15 20.00-6.67	13.33	0.7	4	1.8267	159.470	A	14.587	40.747	18.150	32.80	5.354	0.000
						B	14.587	40.747		32.80	129.048	0.000
						C	14.587	40.747		32.80	68.917	0.000
T16 6.67-0.00	3.33	0.7	4	1.5903	86.273	A	7.819	19.178	8.549	31.67	0.000	0.000
						B	7.819	19.178		31.67	8.910	0.000
						C	7.819	19.178		31.67	3.102	0.000

Tower Pressure - Service

$G_H = 0.850$

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	20 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F _{a c e} ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 140.00-120.00	130.00	1.065	8	94.358	A B C	8.896 8.896 8.896	7.917 7.917 7.917	7.917	47.09 47.09 47.09	0.400 28.760 6.540	0.000 0.000 0.000
T2 120.00-100.00	110.00	1.016	8	94.949	A B C	15.093 15.093 15.093	8.542 8.542 8.542	8.542	36.14 36.14 36.14	0.400 65.040 8.378	0.000 0.000 0.000
T3 100.00-96.00	98.00	0.983	8	19.198	A B C	1.742 1.742 1.742	1.917 1.917 1.917	1.917	52.38 52.38 52.38	0.080 13.232 2.668	0.000 0.000 0.000
T4 96.00-92.00	94.00	0.971	8	19.250	A B C	1.779 1.779 1.779	2.125 2.125 2.125	2.125	54.44 54.44 54.44	0.080 13.232 2.786	0.000 0.000 0.000
T5 92.00-88.00	90.00	0.959	8	19.250	A B C	1.776 1.776 1.776	2.125 2.125 2.125	2.125	54.47 54.47 54.47	0.080 13.232 2.889	0.000 0.000 0.000
T6 88.00-84.00	86.00	0.947	7	19.250	A B C	2.853 2.853 2.853	2.125 2.125 2.125	2.125	42.69 42.69 42.69	0.080 13.232 3.081	0.000 0.000 0.000
T7 84.00-80.00	82.00	0.934	7	19.250	A B C	2.815 2.815 2.815	2.125 2.125 2.125	2.125	43.02 43.02 43.02	0.080 13.232 3.081	0.000 0.000 0.000
T8 80.00-76.00	78.00	0.921	7	20.081	A B C	5.573 5.573 5.573	0.000 0.000 0.000	3.088	55.42 55.42 55.42	0.080 13.232 3.081	0.000 0.000 0.000
T9 76.00-64.00	70.00	0.892	7	69.843	A B C	17.340 17.340 17.340	0.000 0.000 0.000	9.265	53.43 53.43 53.43	0.240 39.696 9.243	0.000 0.000 0.000
T10 64.00-60.00	62.00	0.862	7	26.481	A B C	6.888 6.888 6.888	0.000 0.000 0.000	3.088	44.84 44.84 44.84	0.080 13.468 3.081	0.000 0.000 0.000
T11 60.00-50.00	55.00	0.833	7	73.620	A B C	7.884 7.884 7.884	5.843 5.843 5.843	5.843	42.57 42.57 42.57	0.200 33.774 8.143	0.000 0.000 0.000
T12 50.00-45.00	47.50	0.799	6	40.635	A B C	4.476 4.476 4.476	2.922 2.922 2.922	2.922	39.50 39.50 39.50	0.100 17.015 4.166	0.000 0.000 0.000
T13 45.00-40.00	42.50	0.774	6	43.011	A B C	7.994 7.994 7.994	0.000 0.000 0.000	3.861	48.30 48.30 48.30	0.100 17.015 4.166	0.000 0.000 0.000
T14 40.00-20.00	30.00	0.701	5	199.509	A B C	17.747 17.747 17.747	15.025 15.025 15.025	15.025	45.85 45.85 45.85	0.400 68.060 16.665	0.000 0.000 0.000
T15 20.00-6.67	13.33	0.7	5	155.405	A B C	14.587 14.587 14.587	10.017 10.017 10.017	10.017	40.71 40.71 40.71	0.130 43.831 11.110	0.000 0.000 0.000
T16 6.67-0.00	3.33	0.7	5	84.503	A B C	7.819 7.819 7.819	5.009 5.009 5.009	5.009	39.05 39.05 39.05	0.000 3.811 0.556	0.000 0.000 0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F _{a c e} ft ²	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 140.00-120.00	242.62	477.73	A B	0.178 0.178	2.671 2.671	26	1 1	1 1	13.416 13.416	1229.26	61.46	B

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	21 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face	
T2 120.00-100.00	621.65	1042.81	C	0.178	2.671		1	1	13.416				
			A	0.249	2.441	24	1	1	20.087	1918.93	95.95	B	
			B	0.249	2.441		1	1	20.087				
			C	0.249	2.441		1	1	20.087				
T3 100.00-96.00	128.07	160.07	A	0.191	2.628	24	1	1	2.840	339.04	84.76	B	
			B	0.191	2.628		1	1	2.840				
			C	0.191	2.628		1	1	2.840				
			C	0.191	2.628		1	1	2.840				
T4 96.00-92.00	128.25	205.56	A	0.203	2.587	23	1	1	3.000	342.31	85.58	B	
			B	0.203	2.587		1	1	3.000				
			C	0.203	2.587		1	1	3.000				
			C	0.203	2.587		1	1	3.000				
T5 92.00-88.00	128.39	205.56	A	0.203	2.587	23	1	1	2.998	339.20	84.80	B	
			B	0.203	2.587		1	1	2.998				
			C	0.203	2.587		1	1	2.998				
			C	0.203	2.587		1	1	2.998				
T6 88.00-84.00	128.66	258.84	A	0.259	2.412	23	1	1	4.101	378.25	94.56	B	
			B	0.259	2.412		1	1	4.101				
			C	0.259	2.412		1	1	4.101				
			C	0.259	2.412		1	1	4.101				
T7 84.00-80.00	128.66	256.45	A	0.257	2.418	22	1	1	4.062	371.78	92.95	B	
			B	0.257	2.418		1	1	4.062				
			C	0.257	2.418		1	1	4.062				
			C	0.257	2.418		1	1	4.062				
T8 80.00-76.00	133.43	199.35	A	0.278	2.357	22	1	1	5.573	428.79	107.20	B	
			B	0.278	2.357		1	1	5.573				
			C	0.278	2.357		1	1	5.573				
			C	0.278	2.357		1	1	5.573				
T9 76.00-64.00	369.67	690.81	A	0.248	2.443	21	1	1	17.340	1300.74	108.39	B	
			B	0.248	2.443		1	1	17.340				
			C	0.248	2.443		1	1	17.340				
			C	0.248	2.443		1	1	17.340				
T10 64.00-60.00	134.00	265.82	A	0.26	2.408	21	1	1	6.888	464.61	116.15	B	
			B	0.26	2.408		1	1	6.888				
			C	0.26	2.408		1	1	6.888				
			C	0.26	2.408		1	1	6.888				
T11 60.00-50.00	306.36	834.22	A	0.186	2.642	20	1	1	11.228	927.61	92.76	B	
			B	0.186	2.642		1	1	11.228				
			C	0.186	2.642		1	1	11.228				
			C	0.186	2.642		1	1	11.228				
T12 50.00-45.00	158.71	436.61	A	0.182	2.657	19	1	1	6.146	471.37	94.27	B	
			B	0.182	2.657		1	1	6.146				
			C	0.182	2.657		1	1	6.146				
			C	0.182	2.657		1	1	6.146				
T13 45.00-40.00	161.47	409.76	A	0.186	2.644	19	1	1	7.994	532.46	106.49	B	
			B	0.186	2.644		1	1	7.994				
			C	0.186	2.644		1	1	7.994				
			C	0.186	2.644		1	1	7.994				
T14 40.00-20.00	626.57	2134.28	A	0.164	2.72	17	1	1	26.234	1739.66	86.98	B	
			B	0.164	2.72		1	1	26.234				
			C	0.164	2.72		1	1	26.234				
			C	0.164	2.72		1	1	26.234				
T15 20.00-6.67	387.42	1580.09	A	0.158	2.741	17	1	1	20.238	1257.29	94.30	B	
			B	0.158	2.741		1	1	20.238				
			C	0.158	2.741		1	1	20.238				
			C	0.158	2.741		1	1	20.238				
T16 6.67-0.00	53.19	818.58	A	0.152	2.765	17	1	1	10.640	457.02	68.55	B	
			B	0.152	2.765		1	1	10.640				
			C	0.152	2.765		1	1	10.640				
			C	0.152	2.765		1	1	10.640				
Sum Weight:	3837.11	10233.42						OTM	849650.37 lb-ft	12498.31			

Tower Forces - No Ice - Wind 60 To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	22 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 140.00-120.00	242.62	477.73	A	0.178	2.671	26	0.8	1	11.637	1126.06	56.30	C
			B	0.178	2.671		0.8	1	11.637			
			C	0.178	2.671		0.8	1	11.637			
T2 120.00-100.00	621.65	1042.81	A	0.249	2.441	24	0.8	1	17.069	1766.36	88.32	C
			B	0.249	2.441		0.8	1	17.069			
			C	0.249	2.441		0.8	1	17.069			
T3 100.00-96.00	128.07	160.07	A	0.191	2.628	24	0.8	1	2.492	320.69	80.17	C
			B	0.191	2.628		0.8	1	2.492			
			C	0.191	2.628		0.8	1	2.492			
T4 96.00-92.00	128.25	205.56	A	0.203	2.587	23	0.8	1	2.645	324.09	81.02	C
			B	0.203	2.587		0.8	1	2.645			
			C	0.203	2.587		0.8	1	2.645			
T5 92.00-88.00	128.39	205.56	A	0.203	2.587	23	0.8	1	2.643	321.22	80.31	C
			B	0.203	2.587		0.8	1	2.643			
			C	0.203	2.587		0.8	1	2.643			
T6 88.00-84.00	128.66	258.84	A	0.259	2.412	23	0.8	1	3.530	351.68	87.92	C
			B	0.259	2.412		0.8	1	3.530			
			C	0.259	2.412		0.8	1	3.530			
T7 84.00-80.00	128.66	256.45	A	0.257	2.418	22	0.8	1	3.499	345.86	86.47	C
			B	0.257	2.418		0.8	1	3.499			
			C	0.257	2.418		0.8	1	3.499			
T8 80.00-76.00	133.43	199.35	A	0.278	2.357	22	0.8	1	4.458	379.47	94.87	C
			B	0.278	2.357		0.8	1	4.458			
			C	0.278	2.357		0.8	1	4.458			
T9 76.00-64.00	369.67	690.81	A	0.248	2.443	21	0.8	1	13.872	1146.57	95.55	C
			B	0.248	2.443		0.8	1	13.872			
			C	0.248	2.443		0.8	1	13.872			
T10 64.00-60.00	134.00	265.82	A	0.26	2.408	21	0.8	1	5.510	406.31	101.58	C
			B	0.26	2.408		0.8	1	5.510			
			C	0.26	2.408		0.8	1	5.510			
T11 60.00-50.00	306.36	834.22	A	0.186	2.642	20	0.8	1	9.651	856.85	85.68	C
			B	0.186	2.642		0.8	1	9.651			
			C	0.186	2.642		0.8	1	9.651			
T12 50.00-45.00	158.71	436.61	A	0.182	2.657	19	0.8	1	5.250	432.62	86.52	C
			B	0.182	2.657		0.8	1	5.250			
			C	0.182	2.657		0.8	1	5.250			
T13 45.00-40.00	161.47	409.76	A	0.186	2.644	19	0.8	1	6.395	465.76	93.15	C
			B	0.186	2.644		0.8	1	6.395			
			C	0.186	2.644		0.8	1	6.395			
T14 40.00-20.00	626.57	2134.28	A	0.164	2.72	17	0.8	1	22.685	1601.74	80.09	C
			B	0.164	2.72		0.8	1	22.685			
			C	0.164	2.72		0.8	1	22.685			
T15 20.00-6.67	387.42	1580.09	A	0.158	2.741	17	0.8	1	17.320	1143.14	85.74	C
			B	0.158	2.741		0.8	1	17.320			
			C	0.158	2.741		0.8	1	17.320			
T16 6.67-0.00	53.19	818.58	A	0.152	2.765	17	0.8	1	9.076	395.31	59.30	C
			B	0.152	2.765		0.8	1	9.076			
			C	0.152	2.765		0.8	1	9.076			
Sum Weight:	3837.11	10233.42						OTM	777226.91 lb-ft	11383.73		

Tower Forces - No Ice - Wind 90 To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	23 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 140.00-120.00	242.62	477.73	A	0.178	2.671	26	0.85	1	12.082	1166.07	58.30	A
			B	0.178	2.671		0.85	1	12.082			
			C	0.178	2.671		0.85	1	12.082			
T2 120.00-100.00	621.65	1042.81	A	0.249	2.441	24	0.85	1	17.823	1818.05	90.90	A
			B	0.249	2.441		0.85	1	17.823			
			C	0.249	2.441		0.85	1	17.823			
T3 100.00-96.00	128.07	160.07	A	0.191	2.628	24	0.85	1	2.579	327.90	81.97	A
			B	0.191	2.628		0.85	1	2.579			
			C	0.191	2.628		0.85	1	2.579			
T4 96.00-92.00	128.25	205.56	A	0.203	2.587	23	0.85	1	2.734	331.24	82.81	A
			B	0.203	2.587		0.85	1	2.734			
			C	0.203	2.587		0.85	1	2.734			
T5 92.00-88.00	128.39	205.56	A	0.203	2.587	23	0.85	1	2.732	328.27	82.07	A
			B	0.203	2.587		0.85	1	2.732			
			C	0.203	2.587		0.85	1	2.732			
T6 88.00-84.00	128.66	258.84	A	0.259	2.412	23	0.85	1	3.673	360.85	90.21	A
			B	0.259	2.412		0.85	1	3.673			
			C	0.259	2.412		0.85	1	3.673			
T7 84.00-80.00	128.66	256.45	A	0.257	2.418	22	0.85	1	3.639	354.83	88.71	A
			B	0.257	2.418		0.85	1	3.639			
			C	0.257	2.418		0.85	1	3.639			
T8 80.00-76.00	133.43	199.35	A	0.278	2.357	22	0.85	1	4.737	394.25	98.56	A
			B	0.278	2.357		0.85	1	4.737			
			C	0.278	2.357		0.85	1	4.737			
T9 76.00-64.00	369.67	690.81	A	0.248	2.443	21	0.85	1	14.739	1192.25	99.35	A
			B	0.248	2.443		0.85	1	14.739			
			C	0.248	2.443		0.85	1	14.739			
T10 64.00-60.00	134.00	265.82	A	0.26	2.408	21	0.85	1	5.855	423.18	105.79	A
			B	0.26	2.408		0.85	1	5.855			
			C	0.26	2.408		0.85	1	5.855			
T11 60.00-50.00	306.36	834.22	A	0.186	2.642	20	0.85	1	10.045	880.09	88.01	A
			B	0.186	2.642		0.85	1	10.045			
			C	0.186	2.642		0.85	1	10.045			
T12 50.00-45.00	158.71	436.61	A	0.182	2.657	19	0.85	1	5.474	444.97	88.99	A
			B	0.182	2.657		0.85	1	5.474			
			C	0.182	2.657		0.85	1	5.474			
T13 45.00-40.00	161.47	409.76	A	0.186	2.644	19	0.85	1	6.795	485.01	97.00	A
			B	0.186	2.644		0.85	1	6.795			
			C	0.186	2.644		0.85	1	6.795			
T14 40.00-20.00	626.57	2134.28	A	0.164	2.72	17	0.85	1	23.572	1645.57	82.28	A
			B	0.164	2.72		0.85	1	23.572			
			C	0.164	2.72		0.85	1	23.572			
T15 20.00-6.67	387.42	1580.09	A	0.158	2.741	17	0.85	1	18.050	1177.90	88.34	A
			B	0.158	2.741		0.85	1	18.050			
			C	0.158	2.741		0.85	1	18.050			
T16 6.67-0.00	53.19	818.58	A	0.152	2.765	17	0.85	1	9.467	411.05	61.66	A
			B	0.152	2.765		0.85	1	9.467			
			C	0.152	2.765		0.85	1	9.467			
Sum Weight:	3837.11	10233.42						OTM	801560.98 lb-ft	11741.48		

Tower Forces - With Ice - Wind Normal To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	24 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 140.00-120.00	2138.92	3646.71	A	0.553	1.84	6	1	1	42.281	633.11	31.66	B
			B	0.553	1.84		1	1	42.281			
			C	0.553	1.84		1	1	42.281			
T2 120.00-100.00	4644.57	4867.84	A	0.678	1.776	6	1	1	57.419	834.38	41.72	B
			B	0.678	1.776		1	1	57.419			
			C	0.678	1.776		1	1	57.419			
T3 100.00-96.00	1041.78	746.91	A	0.543	1.851	5	1	1	8.157	185.02	46.26	B
			B	0.543	1.851		1	1	8.157			
			C	0.543	1.851		1	1	8.157			
T4 96.00-92.00	1054.02	740.85	A	0.557	1.837	5	1	1	8.474	183.91	45.98	B
			B	0.557	1.837		1	1	8.474			
			C	0.557	1.837		1	1	8.474			
T5 92.00-88.00	1063.47	737.58	A	0.555	1.839	5	1	1	8.435	183.98	45.99	B
			B	0.555	1.839		1	1	8.435			
			C	0.555	1.839		1	1	8.435			
T6 88.00-84.00	1084.90	1024.51	A	0.682	1.776	5	1	1	11.510	173.74	43.43	B
			B	0.682	1.776		1	1	11.510			
			C	0.682	1.776		1	1	11.510			
T7 84.00-80.00	1079.31	1005.87	A	0.673	1.777	5	1	1	11.282	171.84	42.96	B
			B	0.673	1.777		1	1	11.282			
			C	0.673	1.777		1	1	11.282			
T8 80.00-76.00	1088.96	915.74	A	0.641	1.784	5	1	1	11.956	182.91	45.73	B
			B	0.641	1.784		1	1	11.956			
			C	0.641	1.784		1	1	11.956			
T9 76.00-64.00	3124.36	3157.49	A	0.586	1.813	5	1	1	37.704	588.74	49.06	B
			B	0.586	1.813		1	1	37.704			
			C	0.586	1.813		1	1	37.704			
T10 64.00-60.00	1089.96	1209.33	A	0.591	1.81	5	1	1	14.102	201.67	50.42	B
			B	0.591	1.81		1	1	14.102			
			C	0.591	1.81		1	1	14.102			
T11 60.00-50.00	2662.45	3143.21	A	0.487	1.918	5	1	1	27.726	514.79	51.48	B
			B	0.487	1.918		1	1	27.726			
			C	0.487	1.918		1	1	27.726			
T12 50.00-45.00	1362.35	1658.42	A	0.474	1.936	4	1	1	14.686	261.01	52.20	B
			B	0.474	1.936		1	1	14.686			
			C	0.474	1.936		1	1	14.686			
T13 45.00-40.00	1356.05	1610.41	A	0.444	1.983	4	1	1	16.267	274.16	54.83	B
			B	0.444	1.983		1	1	16.267			
			C	0.444	1.983		1	1	16.267			
T14 40.00-20.00	5140.49	6817.66	A	0.379	2.108	4	1	1	55.139	985.15	49.26	B
			B	0.379	2.108		1	1	55.139			
			C	0.379	2.108		1	1	55.139			
T15 20.00-6.67	3033.31	4911.15	A	0.347	2.179	4	1	1	39.339	649.11	48.68	B
			B	0.347	2.179		1	1	39.339			
			C	0.347	2.179		1	1	39.339			
T16 6.67-0.00	233.02	2304.38	A	0.313	2.262	4	1	1	19.200	162.85	24.43	B
			B	0.313	2.262		1	1	19.200			
			C	0.313	2.262		1	1	19.200			
Sum Weight:	31197.93	38754.95						OTM	414193.05 lb-ft	6186.35		

Tower Forces - With Ice - Wind 60 To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	25 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 140.00-120.00	2138.92	3646.71	A	0.553	1.84	6	0.8	1	40.502	616.98	30.85	C
			B	0.553	1.84		0.8	1	40.502			
			C	0.553	1.84		0.8	1	40.502			
T2 120.00-100.00	4644.57	4867.84	A	0.678	1.776	6	0.8	1	54.400	809.20	40.46	C
			B	0.678	1.776		0.8	1	54.400			
			C	0.678	1.776		0.8	1	54.400			
T3 100.00-96.00	1041.78	746.91	A	0.543	1.851	5	0.8	1	7.809	182.09	45.52	C
			B	0.543	1.851		0.8	1	7.809			
			C	0.543	1.851		0.8	1	7.809			
T4 96.00-92.00	1054.02	740.85	A	0.557	1.837	5	0.8	1	8.118	180.98	45.24	C
			B	0.557	1.837		0.8	1	8.118			
			C	0.557	1.837		0.8	1	8.118			
T5 92.00-88.00	1063.47	737.58	A	0.555	1.839	5	0.8	1	8.079	181.08	45.27	C
			B	0.555	1.839		0.8	1	8.079			
			C	0.555	1.839		0.8	1	8.079			
T6 88.00-84.00	1084.90	1024.51	A	0.682	1.776	5	0.8	1	10.939	169.30	42.33	C
			B	0.682	1.776		0.8	1	10.939			
			C	0.682	1.776		0.8	1	10.939			
T7 84.00-80.00	1079.31	1005.87	A	0.673	1.777	5	0.8	1	10.719	167.52	41.88	C
			B	0.673	1.777		0.8	1	10.719			
			C	0.673	1.777		0.8	1	10.719			
T8 80.00-76.00	1088.96	915.74	A	0.641	1.784	5	0.8	1	10.453	171.50	42.87	C
			B	0.641	1.784		0.8	1	10.453			
			C	0.641	1.784		0.8	1	10.453			
T9 76.00-64.00	3124.36	3157.49	A	0.586	1.813	5	0.8	1	33.085	554.17	46.18	C
			B	0.586	1.813		0.8	1	33.085			
			C	0.586	1.813		0.8	1	33.085			
T10 64.00-60.00	1089.96	1209.33	A	0.591	1.81	5	0.8	1	12.345	189.00	47.25	C
			B	0.591	1.81		0.8	1	12.345			
			C	0.591	1.81		0.8	1	12.345			
T11 60.00-50.00	2662.45	3143.21	A	0.487	1.918	5	0.8	1	26.150	503.14	50.31	C
			B	0.487	1.918		0.8	1	26.150			
			C	0.487	1.918		0.8	1	26.150			
T12 50.00-45.00	1362.35	1658.42	A	0.474	1.936	4	0.8	1	13.791	254.61	50.92	C
			B	0.474	1.936		0.8	1	13.791			
			C	0.474	1.936		0.8	1	13.791			
T13 45.00-40.00	1356.05	1610.41	A	0.444	1.983	4	0.8	1	14.211	259.57	51.91	C
			B	0.444	1.983		0.8	1	14.211			
			C	0.444	1.983		0.8	1	14.211			
T14 40.00-20.00	5140.49	6817.66	A	0.379	2.108	4	0.8	1	51.590	960.91	48.05	C
			B	0.379	2.108		0.8	1	51.590			
			C	0.379	2.108		0.8	1	51.590			
T15 20.00-6.67	3033.31	4911.15	A	0.347	2.179	4	0.8	1	36.422	628.54	47.14	C
			B	0.347	2.179		0.8	1	36.422			
			C	0.347	2.179		0.8	1	36.422			
T16 6.67-0.00	233.02	2304.38	A	0.313	2.262	4	0.8	1	17.636	151.40	22.71	C
			B	0.313	2.262		0.8	1	17.636			
			C	0.313	2.262		0.8	1	17.636			
Sum Weight:	31197.93	38754.95						OTM	401067.31 lb-ft	5979.97		

Tower Forces - With Ice - Wind 90 To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	26 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 140.00-120.00	2138.92	3646.71	A	0.553	1.84	6	0.85	1	40.947	605.77	30.29	A
			B	0.553	1.84		0.85	1	40.947			
			C	0.553	1.84		0.85	1	40.947			
T2 120.00-100.00	4644.57	4867.84	A	0.678	1.776	6	0.85	1	55.155	789.77	39.49	A
			B	0.678	1.776		0.85	1	55.155			
			C	0.678	1.776		0.85	1	55.155			
T3 100.00-96.00	1041.78	746.91	A	0.543	1.851	5	0.85	1	7.896	175.53	43.88	A
			B	0.543	1.851		0.85	1	7.896			
			C	0.543	1.851		0.85	1	7.896			
T4 96.00-92.00	1054.02	740.85	A	0.557	1.837	5	0.85	1	8.207	174.73	43.68	A
			B	0.557	1.837		0.85	1	8.207			
			C	0.557	1.837		0.85	1	8.207			
T5 92.00-88.00	1063.47	737.58	A	0.555	1.839	5	0.85	1	8.168	174.88	43.72	A
			B	0.555	1.839		0.85	1	8.168			
			C	0.555	1.839		0.85	1	8.168			
T6 88.00-84.00	1084.90	1024.51	A	0.682	1.776	5	0.85	1	11.082	165.52	41.38	A
			B	0.682	1.776		0.85	1	11.082			
			C	0.682	1.776		0.85	1	11.082			
T7 84.00-80.00	1079.31	1005.87	A	0.673	1.777	5	0.85	1	10.860	163.64	40.91	A
			B	0.673	1.777		0.85	1	10.860			
			C	0.673	1.777		0.85	1	10.860			
T8 80.00-76.00	1088.96	915.74	A	0.641	1.784	5	0.85	1	10.829	168.98	42.24	A
			B	0.641	1.784		0.85	1	10.829			
			C	0.641	1.784		0.85	1	10.829			
T9 76.00-64.00	3124.36	3157.49	A	0.586	1.813	5	0.85	1	34.239	544.83	45.40	A
			B	0.586	1.813		0.85	1	34.239			
			C	0.586	1.813		0.85	1	34.239			
T10 64.00-60.00	1089.96	1209.33	A	0.591	1.81	5	0.85	1	12.784	186.44	46.61	A
			B	0.591	1.81		0.85	1	12.784			
			C	0.591	1.81		0.85	1	12.784			
T11 60.00-50.00	2662.45	3143.21	A	0.487	1.918	5	0.85	1	26.544	488.71	48.87	A
			B	0.487	1.918		0.85	1	26.544			
			C	0.487	1.918		0.85	1	26.544			
T12 50.00-45.00	1362.35	1658.42	A	0.474	1.936	4	0.85	1	14.015	247.68	49.54	A
			B	0.474	1.936		0.85	1	14.015			
			C	0.474	1.936		0.85	1	14.015			
T13 45.00-40.00	1356.05	1610.41	A	0.444	1.983	4	0.85	1	14.725	254.49	50.90	A
			B	0.444	1.983		0.85	1	14.725			
			C	0.444	1.983		0.85	1	14.725			
T14 40.00-20.00	5140.49	6817.66	A	0.379	2.108	4	0.85	1	52.477	932.86	46.64	A
			B	0.379	2.108		0.85	1	52.477			
			C	0.379	2.108		0.85	1	52.477			
T15 20.00-6.67	3033.31	4911.15	A	0.347	2.179	4	0.85	1	37.151	610.96	45.82	A
			B	0.347	2.179		0.85	1	37.151			
			C	0.347	2.179		0.85	1	37.151			
T16 6.67-0.00	233.02	2304.38	A	0.313	2.262	4	0.85	1	18.027	153.12	22.97	A
			B	0.313	2.262		0.85	1	18.027			
			C	0.313	2.262		0.85	1	18.027			
Sum Weight:	31197.93	38754.95						OTM	391625.00 lb-ft	5837.93		

Tower Forces - Service - Wind Normal To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	27 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 140.00-120.00	242.62	477.73	A	0.178	2.671	8	1	1	13.416	401.39	20.07	B
			B	0.178	2.671		1	1	13.416			
			C	0.178	2.671		1	1	13.416			
T2 120.00-100.00	621.65	1042.81	A	0.249	2.441	8	1	1	20.087	626.59	31.33	B
			B	0.249	2.441		1	1	20.087			
			C	0.249	2.441		1	1	20.087			
T3 100.00-96.00	128.07	160.07	A	0.191	2.628	8	1	1	2.840	110.71	27.68	B
			B	0.191	2.628		1	1	2.840			
			C	0.191	2.628		1	1	2.840			
T4 96.00-92.00	128.25	205.56	A	0.203	2.587	8	1	1	3.000	111.77	27.94	B
			B	0.203	2.587		1	1	3.000			
			C	0.203	2.587		1	1	3.000			
T5 92.00-88.00	128.39	205.56	A	0.203	2.587	8	1	1	2.998	110.76	27.69	B
			B	0.203	2.587		1	1	2.998			
			C	0.203	2.587		1	1	2.998			
T6 88.00-84.00	128.66	258.84	A	0.259	2.412	7	1	1	4.101	123.51	30.88	B
			B	0.259	2.412		1	1	4.101			
			C	0.259	2.412		1	1	4.101			
T7 84.00-80.00	128.66	256.45	A	0.257	2.418	7	1	1	4.062	121.40	30.35	B
			B	0.257	2.418		1	1	4.062			
			C	0.257	2.418		1	1	4.062			
T8 80.00-76.00	133.43	199.35	A	0.278	2.357	7	1	1	5.573	140.01	35.00	B
			B	0.278	2.357		1	1	5.573			
			C	0.278	2.357		1	1	5.573			
T9 76.00-64.00	369.67	690.81	A	0.248	2.443	7	1	1	17.340	424.73	35.39	B
			B	0.248	2.443		1	1	17.340			
			C	0.248	2.443		1	1	17.340			
T10 64.00-60.00	134.00	265.82	A	0.26	2.408	7	1	1	6.888	151.71	37.93	B
			B	0.26	2.408		1	1	6.888			
			C	0.26	2.408		1	1	6.888			
T11 60.00-50.00	306.36	834.22	A	0.186	2.642	7	1	1	11.228	302.89	30.29	B
			B	0.186	2.642		1	1	11.228			
			C	0.186	2.642		1	1	11.228			
T12 50.00-45.00	158.71	436.61	A	0.182	2.657	6	1	1	6.146	153.92	30.78	B
			B	0.182	2.657		1	1	6.146			
			C	0.182	2.657		1	1	6.146			
T13 45.00-40.00	161.47	409.76	A	0.186	2.644	6	1	1	7.994	173.87	34.77	B
			B	0.186	2.644		1	1	7.994			
			C	0.186	2.644		1	1	7.994			
T14 40.00-20.00	626.57	2134.28	A	0.164	2.72	5	1	1	26.234	568.05	28.40	B
			B	0.164	2.72		1	1	26.234			
			C	0.164	2.72		1	1	26.234			
T15 20.00-6.67	387.42	1580.09	A	0.158	2.741	5	1	1	20.238	410.54	30.79	B
			B	0.158	2.741		1	1	20.238			
			C	0.158	2.741		1	1	20.238			
T16 6.67-0.00	53.19	818.58	A	0.152	2.765	5	1	1	10.640	149.23	22.38	B
			B	0.152	2.765		1	1	10.640			
			C	0.152	2.765		1	1	10.640			
Sum Weight:	3837.11	10233.42						OTM	277436.86 lb-ft	4081.08		

Tower Forces - Service - Wind 60 To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	28 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
T1 140.00-120.00	242.62	477.73	A	0.178	2.671	8	0.8	1	11.637	367.69	18.38	C
			B	0.178	2.671		0.8	1	11.637			
			C	0.178	2.671		0.8	1	11.637			
T2 120.00-100.00	621.65	1042.81	A	0.249	2.441	8	0.8	1	17.069	576.77	28.84	C
			B	0.249	2.441		0.8	1	17.069			
			C	0.249	2.441		0.8	1	17.069			
T3 100.00-96.00	128.07	160.07	A	0.191	2.628	8	0.8	1	2.492	104.71	26.18	C
			B	0.191	2.628		0.8	1	2.492			
			C	0.191	2.628		0.8	1	2.492			
T4 96.00-92.00	128.25	205.56	A	0.203	2.587	8	0.8	1	2.645	105.83	26.46	C
			B	0.203	2.587		0.8	1	2.645			
			C	0.203	2.587		0.8	1	2.645			
T5 92.00-88.00	128.39	205.56	A	0.203	2.587	8	0.8	1	2.643	104.89	26.22	C
			B	0.203	2.587		0.8	1	2.643			
			C	0.203	2.587		0.8	1	2.643			
T6 88.00-84.00	128.66	258.84	A	0.259	2.412	7	0.8	1	3.530	114.83	28.71	C
			B	0.259	2.412		0.8	1	3.530			
			C	0.259	2.412		0.8	1	3.530			
T7 84.00-80.00	128.66	256.45	A	0.257	2.418	7	0.8	1	3.499	112.93	28.23	C
			B	0.257	2.418		0.8	1	3.499			
			C	0.257	2.418		0.8	1	3.499			
T8 80.00-76.00	133.43	199.35	A	0.278	2.357	7	0.8	1	4.458	123.91	30.98	C
			B	0.278	2.357		0.8	1	4.458			
			C	0.278	2.357		0.8	1	4.458			
T9 76.00-64.00	369.67	690.81	A	0.248	2.443	7	0.8	1	13.872	374.39	31.20	C
			B	0.248	2.443		0.8	1	13.872			
			C	0.248	2.443		0.8	1	13.872			
T10 64.00-60.00	134.00	265.82	A	0.26	2.408	7	0.8	1	5.510	132.67	33.17	C
			B	0.26	2.408		0.8	1	5.510			
			C	0.26	2.408		0.8	1	5.510			
T11 60.00-50.00	306.36	834.22	A	0.186	2.642	7	0.8	1	9.651	279.79	27.98	C
			B	0.186	2.642		0.8	1	9.651			
			C	0.186	2.642		0.8	1	9.651			
T12 50.00-45.00	158.71	436.61	A	0.182	2.657	6	0.8	1	5.250	141.26	28.25	C
			B	0.182	2.657		0.8	1	5.250			
			C	0.182	2.657		0.8	1	5.250			
T13 45.00-40.00	161.47	409.76	A	0.186	2.644	6	0.8	1	6.395	152.08	30.42	C
			B	0.186	2.644		0.8	1	6.395			
			C	0.186	2.644		0.8	1	6.395			
T14 40.00-20.00	626.57	2134.28	A	0.164	2.72	5	0.8	1	22.685	523.02	26.15	C
			B	0.164	2.72		0.8	1	22.685			
			C	0.164	2.72		0.8	1	22.685			
T15 20.00-6.67	387.42	1580.09	A	0.158	2.741	5	0.8	1	17.320	373.27	28.00	C
			B	0.158	2.741		0.8	1	17.320			
			C	0.158	2.741		0.8	1	17.320			
T16 6.67-0.00	53.19	818.58	A	0.152	2.765	5	0.8	1	9.076	129.08	19.36	C
			B	0.152	2.765		0.8	1	9.076			
			C	0.152	2.765		0.8	1	9.076			
Sum Weight:	3837.11	10233.42						OTM	253788.38 lb-ft	3717.14		

Tower Forces - Service - Wind 90 To Face

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	29 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 140.00-120.00	242.62	477.73	A	0.178	2.671	8	0.85	1	12.082	380.76	19.04	A
			B	0.178	2.671		0.85	1	12.082			
			C	0.178	2.671		0.85	1	12.082			
T2 120.00-100.00	621.65	1042.81	A	0.249	2.441	8	0.85	1	17.823	593.65	29.68	A
			B	0.249	2.441		0.85	1	17.823			
			C	0.249	2.441		0.85	1	17.823			
T3 100.00-96.00	128.07	160.07	A	0.191	2.628	8	0.85	1	2.579	107.07	26.77	A
			B	0.191	2.628		0.85	1	2.579			
			C	0.191	2.628		0.85	1	2.579			
T4 96.00-92.00	128.25	205.56	A	0.203	2.587	8	0.85	1	2.734	108.16	27.04	A
			B	0.203	2.587		0.85	1	2.734			
			C	0.203	2.587		0.85	1	2.734			
T5 92.00-88.00	128.39	205.56	A	0.203	2.587	8	0.85	1	2.732	107.19	26.80	A
			B	0.203	2.587		0.85	1	2.732			
			C	0.203	2.587		0.85	1	2.732			
T6 88.00-84.00	128.66	258.84	A	0.259	2.412	7	0.85	1	3.673	117.83	29.46	A
			B	0.259	2.412		0.85	1	3.673			
			C	0.259	2.412		0.85	1	3.673			
T7 84.00-80.00	128.66	256.45	A	0.257	2.418	7	0.85	1	3.639	115.86	28.97	A
			B	0.257	2.418		0.85	1	3.639			
			C	0.257	2.418		0.85	1	3.639			
T8 80.00-76.00	133.43	199.35	A	0.278	2.357	7	0.85	1	4.737	128.74	32.18	A
			B	0.278	2.357		0.85	1	4.737			
			C	0.278	2.357		0.85	1	4.737			
T9 76.00-64.00	369.67	690.81	A	0.248	2.443	7	0.85	1	14.739	389.31	32.44	A
			B	0.248	2.443		0.85	1	14.739			
			C	0.248	2.443		0.85	1	14.739			
T10 64.00-60.00	134.00	265.82	A	0.26	2.408	7	0.85	1	5.855	138.18	34.55	A
			B	0.26	2.408		0.85	1	5.855			
			C	0.26	2.408		0.85	1	5.855			
T11 60.00-50.00	306.36	834.22	A	0.186	2.642	7	0.85	1	10.045	287.38	28.74	A
			B	0.186	2.642		0.85	1	10.045			
			C	0.186	2.642		0.85	1	10.045			
T12 50.00-45.00	158.71	436.61	A	0.182	2.657	6	0.85	1	5.474	145.30	29.06	A
			B	0.182	2.657		0.85	1	5.474			
			C	0.182	2.657		0.85	1	5.474			
T13 45.00-40.00	161.47	409.76	A	0.186	2.644	6	0.85	1	6.795	158.37	31.67	A
			B	0.186	2.644		0.85	1	6.795			
			C	0.186	2.644		0.85	1	6.795			
T14 40.00-20.00	626.57	2134.28	A	0.164	2.72	5	0.85	1	23.572	537.33	26.87	A
			B	0.164	2.72		0.85	1	23.572			
			C	0.164	2.72		0.85	1	23.572			
T15 20.00-6.67	387.42	1580.09	A	0.158	2.741	5	0.85	1	18.050	384.62	28.85	A
			B	0.158	2.741		0.85	1	18.050			
			C	0.158	2.741		0.85	1	18.050			
T16 6.67-0.00	53.19	818.58	A	0.152	2.765	5	0.85	1	9.467	134.22	20.13	A
			B	0.152	2.765		0.85	1	9.467			
			C	0.152	2.765		0.85	1	9.467			
Sum Weight:	3837.11	10233.42						OTM	261734.20 lb-ft	3833.95		

Force Totals

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	<p>Job</p> <p style="text-align: center;">CTL05397 / Simsbury North Central</p>	<p>Page</p> <p style="text-align: center;">30 of 51</p>
	<p>Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p>Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M _x lb-ft	Sum of Overturning Moments, M _z lb-ft	Sum of Torques lb-ft
Leg Weight	4922.02					
Bracing Weight	5054.54					
Total Member Self-Weight	9976.56			-807.71	-5425.35	
Gusset Weight	256.87					
Total Weight	16846.92			-807.71	-5425.35	
Wind 0 deg - No Ice		-45.07	-14772.78	-1151861.37	-913.97	2391.35
Wind 30 deg - No Ice		7335.38	-12725.73	-998831.24	-580216.30	2640.06
Wind 60 deg - No Ice		12408.49	-7149.21	-562935.14	-981231.68	2062.00
Wind 90 deg - No Ice		14408.84	25.54	1751.77	-1134715.73	990.41
Wind 120 deg - No Ice		12710.45	7358.19	572746.46	-995011.18	-329.44
Wind 150 deg - No Ice		6215.48	10748.78	851305.04	-498131.78	-1182.24
Wind 180 deg - No Ice		30.01	13654.64	1077466.63	-8431.45	-2234.68
Wind 210 deg - No Ice		-7323.39	12732.65	997907.19	568168.11	-2640.06
Wind 240 deg - No Ice		-13384.36	7695.24	596405.77	1034162.35	-2095.57
Wind 270 deg - No Ice		-14424.60	-30.36	-3848.93	1125440.19	-996.90
Wind 300 deg - No Ice		-11758.67	-6808.69	-538927.96	922787.12	206.33
Wind 330 deg - No Ice		-6227.54	-10760.02	-854043.72	488485.86	1188.74
Member Ice	28521.52					
Gusset Ice	717.10					
Total Weight Ice	82244.43			2768.88	-20302.13	
Wind 0 deg - Ice		-8.81	-7025.71	-544361.01	-19577.69	105.67
Wind 30 deg - Ice		3675.04	-6371.64	-490841.00	-304945.09	595.90
Wind 60 deg - Ice		6487.16	-3746.77	-286735.83	-521218.60	884.23
Wind 90 deg - Ice		7244.11	2.69	2882.22	-581484.33	936.01
Wind 120 deg - Ice		5984.16	3461.08	272403.39	-486296.08	760.91
Wind 150 deg - Ice		3283.18	5691.87	450285.04	-278213.80	390.48
Wind 180 deg - Ice		4.09	6818.22	536661.61	-20555.30	-111.73
Wind 210 deg - Ice		-3671.29	6373.80	496595.21	263965.91	-595.90
Wind 240 deg - Ice		-6669.21	3846.43	298484.02	492313.68	-875.57
Wind 270 deg - Ice		-7249.04	-4.20	2504.72	541373.22	-938.05
Wind 300 deg - Ice		-5809.66	-3360.33	-260546.28	434746.37	-763.51
Wind 330 deg - Ice		-3286.96	-5695.39	-445098.96	237986.73	-388.45
Total Weight	16846.92			-807.71	-5425.35	
Wind 0 deg - Service		-14.72	-4823.77	-374612.35	1238.39	780.85
Wind 30 deg - Service		2395.23	-4155.34	-324643.32	-187921.55	862.06
Wind 60 deg - Service		4051.75	-2334.44	-182309.90	-318865.35	673.31
Wind 90 deg - Service		4704.93	8.34	2077.66	-368982.59	323.40
Wind 120 deg - Service		4150.35	2402.68	188524.91	-323364.78	-107.57
Wind 150 deg - Service		2029.55	3509.81	279482.81	-161118.44	-386.04
Wind 180 deg - Service		9.80	4458.66	353331.49	-1216.29	-729.69
Wind 210 deg - Service		-2391.31	4157.60	327352.90	187061.11	-862.06
Wind 240 deg - Service		-4370.40	2512.73	196250.39	339222.50	-684.27
Wind 270 deg - Service		-4710.07	-9.91	248.86	369027.51	-325.52
Wind 300 deg - Service		-3839.57	-2223.24	-174470.82	302855.08	67.37
Wind 330 deg - Service		-2033.48	-3513.48	-277365.76	161042.42	388.16

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	1.2D+1.6W (pattern 1) 0 deg - No Ice
4	1.2D+1.6W (pattern 2) 0 deg - No Ice
5	0.9 Dead+1.6 Wind 0 deg - No Ice
6	1.2 Dead+1.6 Wind 30 deg - No Ice

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	<p>Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p>Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p>Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p>Designed by</p> <p style="text-align: center;">VY</p>

<i>Comb. No.</i>	<i>Description</i>
7	1.2D+1.6W (pattern 1) 30 deg - No Ice
8	1.2D+1.6W (pattern 2) 30 deg - No Ice
9	0.9 Dead+1.6 Wind 30 deg - No Ice
10	1.2 Dead+1.6 Wind 60 deg - No Ice
11	1.2D+1.6W (pattern 1) 60 deg - No Ice
12	1.2D+1.6W (pattern 2) 60 deg - No Ice
13	0.9 Dead+1.6 Wind 60 deg - No Ice
14	1.2 Dead+1.6 Wind 90 deg - No Ice
15	1.2D+1.6W (pattern 1) 90 deg - No Ice
16	1.2D+1.6W (pattern 2) 90 deg - No Ice
17	0.9 Dead+1.6 Wind 90 deg - No Ice
18	1.2 Dead+1.6 Wind 120 deg - No Ice
19	1.2D+1.6W (pattern 1) 120 deg - No Ice
20	1.2D+1.6W (pattern 2) 120 deg - No Ice
21	0.9 Dead+1.6 Wind 120 deg - No Ice
22	1.2 Dead+1.6 Wind 150 deg - No Ice
23	1.2D+1.6W (pattern 1) 150 deg - No Ice
24	1.2D+1.6W (pattern 2) 150 deg - No Ice
25	0.9 Dead+1.6 Wind 150 deg - No Ice
26	1.2 Dead+1.6 Wind 180 deg - No Ice
27	1.2D+1.6W (pattern 1) 180 deg - No Ice
28	1.2D+1.6W (pattern 2) 180 deg - No Ice
29	0.9 Dead+1.6 Wind 180 deg - No Ice
30	1.2 Dead+1.6 Wind 210 deg - No Ice
31	1.2D+1.6W (pattern 1) 210 deg - No Ice
32	1.2D+1.6W (pattern 2) 210 deg - No Ice
33	0.9 Dead+1.6 Wind 210 deg - No Ice
34	1.2 Dead+1.6 Wind 240 deg - No Ice
35	1.2D+1.6W (pattern 1) 240 deg - No Ice
36	1.2D+1.6W (pattern 2) 240 deg - No Ice
37	0.9 Dead+1.6 Wind 240 deg - No Ice
38	1.2 Dead+1.6 Wind 270 deg - No Ice
39	1.2D+1.6W (pattern 1) 270 deg - No Ice
40	1.2D+1.6W (pattern 2) 270 deg - No Ice
41	0.9 Dead+1.6 Wind 270 deg - No Ice
42	1.2 Dead+1.6 Wind 300 deg - No Ice
43	1.2D+1.6W (pattern 1) 300 deg - No Ice
44	1.2D+1.6W (pattern 2) 300 deg - No Ice
45	0.9 Dead+1.6 Wind 300 deg - No Ice
46	1.2 Dead+1.6 Wind 330 deg - No Ice
47	1.2D+1.6W (pattern 1) 330 deg - No Ice
48	1.2D+1.6W (pattern 2) 330 deg - No Ice
49	0.9 Dead+1.6 Wind 330 deg - No Ice
50	1.2 Dead+1.0 Ice+1.0 Temp
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
55	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
56	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
58	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
63	Dead+Wind 0 deg - Service
64	Dead+Wind 30 deg - Service
65	Dead+Wind 60 deg - Service
66	Dead+Wind 90 deg - Service
67	Dead+Wind 120 deg - Service
68	Dead+Wind 150 deg - Service

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Comb. No.	Description
69	Dead+Wind 180 deg - Service
70	Dead+Wind 210 deg - Service
71	Dead+Wind 240 deg - Service
72	Dead+Wind 270 deg - Service
73	Dead+Wind 300 deg - Service
74	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	140 - 120	Leg	Max Tension	13	9532.13	113.75	-61.84
			Max. Compression	34	-10741.85	222.58	-120.80
			Max. Mx	34	-10741.85	222.58	-120.80
			Max. My	2	-10441.11	4.69	246.81
			Max. Vy	34	-1418.89	222.58	-120.80
			Max. Vx	2	-1555.78	4.69	246.81
		Diagonal	Max Tension	40	1314.98	0.00	0.00
			Max. Compression	16	-1313.22	0.00	0.00
			Max. Mx	55	412.47	14.42	-0.22
			Max. My	14	-1067.85	-0.77	-1.45
			Max. Vy	55	-20.68	14.42	-0.22
			Max. Vx	14	0.49	-0.77	-1.45
		Top Girt	Max Tension	29	53.81	0.00	0.00
			Max. Compression	34	-64.76	0.00	0.00
			Max. Mx	55	-43.75	-35.53	0.00
			Max. My	6	8.05	0.00	0.00
			Max. Vy	55	31.45	0.00	0.00
			Max. Vx	6	-0.00	0.00	0.00
T2	120 - 100	Leg	Max Tension	13	44771.28	-3.45	10.15
			Max. Compression	34	-49668.16	-1183.21	-67.51
			Max. Mx	34	-49668.16	-1183.21	-67.51
			Max. My	15	-454.80	-0.84	-348.44
			Max. Vy	34	-4666.53	-18.17	-14.63
			Max. Vx	30	-1842.17	-15.29	200.93
		Diagonal	Max Tension	14	4575.72	15.28	-9.83
			Max. Compression	38	-4627.72	0.00	0.00
			Max. Mx	14	2112.85	26.88	5.90
			Max. My	34	-4366.93	-18.80	11.67
			Max. Vy	55	-25.61	25.23	-3.77
			Max. Vx	34	3.92	-18.80	11.67
		Secondary Horizontal	Max Tension	34	868.54	-36.99	-7.95
			Max. Compression	13	-835.19	33.19	12.92
			Max. Mx	10	396.13	-60.39	-1.17
			Max. My	10	-833.57	33.34	13.00
			Max. Vy	53	-38.96	30.21	-5.10
			Max. Vx	10	5.71	0.00	0.00
T3	100 - 96	Leg	Max Tension	13	49355.26	92.44	-37.18
			Max. Compression	34	-54412.20	1046.33	-540.66
			Max. Mx	34	-49629.34	1046.33	-540.66
			Max. My	2	-48666.83	57.31	1138.48
			Max. Vy	34	-4315.25	1046.33	-540.66
			Max. Vx	2	-4657.63	57.31	1138.48
		Diagonal	Max Tension	38	4513.13	0.00	0.00
			Max. Compression	38	-4656.59	0.00	0.00
			Max. Mx	55	1106.76	28.13	0.11
			Max. My	6	-4008.18	-17.75	-2.82

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	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T4	96 - 92	Leg	Max. Vy	55	-26.51	28.13	0.11	
			Max. Vx	6	0.96	-17.75	-2.82	
			Max Tension	13	59264.96	98.64	14.02	
			Max. Compression	34	-65214.31	364.90	2.67	
			Max. Mx	37	-64427.04	365.22	2.91	
			Max. My	6	-2724.01	-7.51	-278.40	
			Max. Vy	37	-224.75	365.22	2.91	
		Diagonal	Max. Vx	6	160.18	-7.51	-278.40	
			Max Tension	38	4529.90	0.00	0.00	
			Max. Compression	38	-4583.20	0.00	0.00	
			Max. Mx	6	2415.15	22.03	-0.68	
			Max. My	30	-2837.36	5.15	2.69	
			Max. Vy	55	-23.86	21.14	0.33	
			Max. Vx	30	0.92	0.00	0.00	
T5	92 - 88	Leg	Max Tension	13	69003.77	-348.70	-4.52	
			Max. Compression	34	-75701.92	-82.63	-1.41	
			Max. Mx	37	-74792.20	365.22	2.92	
			Max. My	6	-2828.44	-0.93	-331.04	
			Max. Vy	34	203.60	364.90	2.67	
			Max. Vx	2	-125.58	34.07	284.97	
			Max Tension	38	4929.35	0.00	0.00	
		Diagonal	Max. Compression	38	-5065.43	0.00	0.00	
			Max. Mx	34	4442.13	25.19	0.68	
			Max. My	6	-4439.13	-15.94	-2.75	
			Max. Vy	55	-25.11	25.18	-0.29	
			Max. Vx	6	0.91	-15.94	-2.75	
			Max Tension	13	79609.51	-851.97	2.46	
			Max. Compression	34	-87330.94	-736.03	-4.38	
T6	88 - 84	Leg	Max. Mx	34	-87226.16	962.25	2.26	
			Max. My	6	-3011.22	-61.16	-854.43	
			Max. Vy	34	912.91	962.25	2.26	
			Max. Vx	6	581.51	-61.16	-854.43	
			Max Tension	38	5414.70	17.56	8.33	
			Max. Compression	38	-5506.20	0.00	0.00	
			Max. Mx	34	4514.62	30.98	-5.90	
		Diagonal	Max. My	34	-5238.33	-20.13	11.47	
			Max. Vy	54	-24.49	23.57	2.54	
			Max. Vx	34	3.81	-20.13	11.47	
			Secondary Horizontal	Max Tension	34	1512.62	-23.19	-10.85
				Max. Compression	34	-1512.62	0.00	0.00
				Max. Mx	30	1280.24	-29.04	-10.60
				Max. My	10	-826.78	20.28	14.24
Max. Vy	52	31.86		0.00	0.00			
Max. Vx	10	6.25		20.28	14.24			
Max Tension	13	97132.55		1149.36	58.59			
T7	84 - 80	Leg	Max. Compression	34	-106178.87	544.04	5.14	
			Max. Mx	34	-106178.53	-1281.60	-74.56	
			Max. My	6	-3030.59	-61.16	-854.43	
			Max. Vy	34	-7308.77	544.04	5.14	
			Max. Vx	30	-1558.70	33.05	198.19	
			Max Tension	10	6289.18	20.75	-4.55	
			Max. Compression	34	-6780.93	0.00	0.00	
		Diagonal	Max. Mx	34	3777.46	38.07	-9.95	
			Max. My	34	3032.28	37.59	12.02	
			Max. Vy	55	-26.83	30.19	4.20	
			Max. Vx	10	4.09	-29.78	-12.02	
			Secondary Horizontal	Max Tension	34	1699.36	29.54	-13.52
				Max. Compression	34	-1699.36	0.00	0.00
				Max. Mx	10	872.19	70.31	-10.12

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	34 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T8	80 - 76	Leg	Max. My	34	-1699.36	30.32	-14.00
			Max. Vy	53	53.91	66.02	-5.87
			Max. Vx	34	6.20	0.00	0.00
			Max Tension	13	98442.58	221.37	9.19
			Max. Compression	34	-107575.13	-276.33	-15.84
			Max. Mx	34	-106425.47	834.58	85.01
		Diagonal	Max. My	14	-2372.67	-19.55	1131.40
			Max. Vy	35	-1326.62	761.83	84.47
			Max. Vx	30	-1572.15	6.08	589.86
			Max Tension	13	2137.36	0.00	0.00
			Max. Compression	34	-2397.92	0.00	0.00
			Max. Mx	10	1368.19	15.90	0.60
		Top Girt	Max. My	34	-2394.86	-13.87	5.25
			Max. Vy	53	20.87	14.82	-1.55
			Max. Vx	34	-1.84	0.00	0.00
			Max Tension	12	77.91	0.00	0.00
			Max. Compression	18	-142.92	0.00	0.00
			Max. Mx	55	-140.28	-34.13	0.00
T9	76 - 64	Leg	Max. My	53	-127.79	0.00	0.99
			Max. Vy	55	29.78	0.00	0.00
			Max. Vx	53	-0.86	0.00	0.00
			Max Tension	13	108693.34	-559.28	4.62
			Max. Compression	34	-119442.48	641.10	-2.88
			Max. Mx	34	-111807.66	687.80	-5.55
		Diagonal	Max. My	14	-2486.05	-19.58	1131.40
			Max. Vy	34	-594.02	641.10	-2.88
			Max. Vx	6	-664.98	-20.39	-1125.89
			Max Tension	13	2280.65	10.15	-2.16
			Max. Compression	34	-2538.67	0.00	0.00
			Max. Mx	59	480.29	22.33	-1.36
		Secondary Horizontal	Max. My	34	1016.52	16.99	5.26
			Max. Vy	53	25.42	20.97	-0.46
			Max. Vx	10	1.74	-12.84	-5.21
			Max Tension	34	2071.39	0.00	0.00
			Max. Compression	34	-2071.39	5.23	-3.65
			Max. Mx	53	622.72	23.85	2.67
T10	64 - 60	Leg	Max. My	52	-145.24	20.40	6.86
			Max. Vy	53	32.11	23.85	2.67
			Max. Vx	54	-3.09	0.00	0.00
			Max Tension	13	114308.98	36.70	-12.39
			Max. Compression	34	-126002.93	-58.24	15.27
			Max. Mx	34	-126001.17	-737.76	-44.07
		Diagonal	Max. My	6	-3842.74	-25.55	-659.72
			Max. Vy	35	-2782.17	-11.90	14.89
			Max. Vx	31	-1251.89	-26.33	585.01
			Max Tension	39	2394.24	7.46	2.31
			Max. Compression	35	-2578.93	0.00	0.00
			Max. Mx	59	575.24	20.64	-0.43
		Secondary Horizontal	Max. My	34	-2564.73	-6.60	3.75
			Max. Vy	53	25.96	20.23	0.56
			Max. Vx	34	1.07	0.00	0.00
			Max Tension	34	2141.90	0.00	0.00
			Max. Compression	34	-2141.90	-6.75	-2.59
			Max. Mx	53	-604.27	-25.14	5.12
T11	60 - 50	Leg	Max. My	52	-160.07	13.61	9.27
			Max. Vy	59	-38.16	14.18	8.98
			Max. Vx	54	-4.01	0.00	0.00
			Max Tension	13	119977.82	520.59	-9.07
			Max. Compression	34	-132802.01	1163.31	-0.22

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	35 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft		
T12	50 - 45	Diagonal	Max. Mx	34	-132802.01	1163.31	-0.22		
			Max. My	30	-4377.72	-25.49	970.76		
			Max. Vy	35	-2674.05	656.23	73.58		
			Max. Vx	31	-1263.25	-26.01	899.84		
			Max Tension	39	2618.01	-16.81	-4.46		
			Max. Compression	34	-2904.85	0.00	0.00		
			Max. Mx	59	623.86	-37.27	3.51		
			Max. My	34	-2896.97	10.91	-10.18		
			Max. Vy	53	-38.82	-36.71	0.19		
			Max. Vx	34	-2.52	0.00	0.00		
			Max Tension	34	2303.19	0.00	0.00		
			Secondary Horizontal	Max. Compression	34	-2303.19	7.90	-9.26	
		Max. Mx		59	244.95	36.77	7.64		
		Max. My		6	-725.83	9.40	15.75		
		Max. Vy		59	-46.58	36.77	7.64		
		Max. Vx		54	-4.90	0.00	0.00		
		Max Tension		13	123815.99	545.65	-3.05		
		Max. Compression		34	-137424.96	1077.85	-1.82		
		Max. Mx		34	-137424.96	1077.85	-1.82		
		Max. My		6	-4489.77	-30.76	-574.34		
		Max. Vy		34	-780.75	1077.85	-1.82		
		Max. Vx		6	-347.62	-44.76	-559.89		
		Max Tension		13	2687.55	-18.33	5.50		
		T13	45 - 40	Diagonal	Max. Compression	34	-3055.44	0.00	0.00
Max. Mx	59				483.14	-42.60	3.50		
Max. My	34				1234.60	-23.74	-7.23		
Max. Vy	53				-41.08	-42.30	0.59		
Max. Vx	59				1.93	0.00	0.00		
Max Tension	34				2383.36	0.00	0.00		
Secondary Horizontal	Max. Compression				34	-2383.36	10.47	-7.95	
	Max. Mx				53	729.30	50.47	6.47	
	Max. My				52	-136.18	45.92	14.00	
	Max. Vy				53	53.35	50.47	6.47	
	Max. Vx				54	-4.85	0.00	0.00	
	Max Tension				13	130407.15	654.68	41.42	
	Max. Compression			34	-145316.52	53.74	6.65		
	Max. Mx			34	-145314.13	-807.43	-46.40		
	Max. My			6	-4810.63	-23.97	-699.42		
	Max. Vy			35	-3504.07	104.40	6.48		
	Max. Vx			31	-1421.07	-25.60	629.03		
	Max Tension			39	2785.72	-17.26	-1.93		
T14	40 - 20			Diagonal	Max. Compression	35	-2934.15	0.00	0.00
					Max. Mx	53	594.67	-42.22	3.80
					Max. My	54	-873.04	-33.92	5.87
					Max. Vy	53	-42.32	-42.22	3.80
					Max. Vx	54	2.34	0.00	0.00
					Max Tension	34	2470.51	0.00	0.00
		Secondary Horizontal	Max. Compression		34	-2470.51	4.97	-3.68	
			Max. Mx		61	-88.66	29.78	6.74	
			Max. My		52	-124.00	29.71	7.11	
			Max. Vy		61	-38.97	29.78	6.74	
			Max. Vx		54	-2.70	0.00	0.00	
			Max Tension		13	146567.26	1517.55	42.67	
			Max. Compression	34	-164912.90	-642.44	3.34		
			Max. Mx	34	-164908.04	-1864.54	-50.72		
			Max. My	6	-4817.81	-18.48	-1052.38		
			Max. Vy	35	-4226.07	-578.98	3.34		
			Max. Vx	31	-1589.72	-69.49	632.55		

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	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T15	20 - 6.6668	Diagonal	Max Tension	39	3560.50	-23.97	-3.68	
			Max. Compression	34	-3821.90	0.00	0.00	
			Max. Mx	53	458.71	-75.32	2.76	
			Max. My	34	-3447.12	4.83	-9.85	
			Max. Vy	53	-56.66	-75.32	2.76	
			Max. Vx	54	2.54	0.00	0.00	
			Secondary Horizontal	Max Tension	34	2787.78	0.00	0.00
				Max. Compression	34	-2787.78	8.95	-3.60
				Max. Mx	58	-124.12	79.88	18.31
				Max. My	53	-155.96	79.69	18.55
		Max. Vy		58	-66.09	79.88	18.31	
		Leg	Max. Vx	54	-5.10	0.00	0.00	
			Max Tension	13	153625.03	548.83	-3.26	
			Max. Compression	34	-173622.46	-1013.77	2.98	
			Max. Mx	34	-173562.23	1533.65	-1.60	
			Max. My	30	-6485.10	-65.63	1191.30	
			Max. Vy	35	-4083.07	696.78	60.85	
			Max. Vx	31	-1604.01	-63.86	1132.28	
			Diagonal	Max Tension	39	3378.54	-33.71	-3.88
				Max. Compression	34	-3669.91	0.00	0.00
Max. Mx	53			125.44	-100.87	5.59		
Max. My	34	-3504.23		0.21	-10.81			
Max. Vy	53	-65.88		-100.87	5.59			
Secondary Horizontal	Max. Vx	54	3.22	0.00	0.00			
	Max Tension	34	3011.13	0.00	0.00			
	Max. Compression	34	-3011.13	11.91	-3.58			
	Max. Mx	54	-207.31	106.86	18.83			
	Max. My	53	-182.63	106.28	18.97			
	Max. Vy	54	-71.29	106.86	18.83			
	Max. Vx	53	-4.82	0.00	0.00			
	Leg	Max Tension	13	161442.90	1106.47	35.97		
		Max. Compression	34	-183334.62	-0.00	-0.07		
		Max. Mx	34	-179164.03	1525.15	4.77		
Max. My		6	-6760.30	-99.64	-922.18			
Max. Vy		34	-5349.23	-0.00	-0.07			
Max. Vx		31	-1182.99	-0.01	-0.61			
Diagonal		Max Tension	13	3641.51	-30.05	-1.06		
		Max. Compression	34	-4278.76	0.00	0.00		
		Max. Mx	59	1596.48	-71.61	9.99		
		Max. My	59	1463.68	-71.47	-10.37		
	Max. Vy	54	-57.24	-71.28	-8.36			
Secondary Horizontal	Max. Vx	59	3.02	0.00	0.00			
	Max Tension	34	3107.25	0.00	0.00			
	Max. Compression	34	-3107.25	30.19	-2.73			
	Max. Mx	59	57.76	-61.56	14.05			
	Max. My	52	-328.67	30.15	14.59			
	Max. Vy	53	55.79	41.00	10.90			
	Max. Vx	54	-3.84	0.00	0.00			

Maximum Reactions

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	Job	CTL05397 / Simsbury North Central	Page	37 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	34	182716.13	13907.47	-7850.18
	Max. H _x	34	182716.13	13907.47	-7850.18
	Max. H _z	13	-160890.42	-12217.48	6875.88
	Min. Vert	13	-160890.42	-12217.48	6875.88
	Min. H _x	13	-160890.42	-12217.48	6875.88
	Min. H _z	34	182716.13	13907.47	-7850.18
Leg B	Max. Vert	18	175643.72	-13188.10	-7650.30
	Max. H _x	45	-152296.04	11492.37	6647.88
	Max. H _z	45	-152296.04	11492.37	6647.88
	Min. Vert	45	-152296.04	11492.37	6647.88
	Min. H _x	18	175643.72	-13188.10	-7650.30
	Min. H _z	18	175643.72	-13188.10	-7650.30
Leg A	Max. Vert	2	176327.48	183.96	15326.89
	Max. H _x	39	7273.93	894.95	534.34
	Max. H _z	2	176327.48	183.96	15326.89
	Min. Vert	29	-153373.22	-162.13	-13349.43
	Min. H _x	15	6449.24	-873.88	474.36
	Min. H _z	29	-153373.22	-162.13	-13349.43

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	16846.92	0.00	-0.00	-805.23	-5440.80	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	20216.30	-72.12	-23636.45	-1856413.21	680.95	3908.66
1.2D+1.6W (pattern 1) 0 deg - No Ice	20216.30	-72.12	-22441.52	-1697211.94	684.07	3897.95
1.2D+1.6W (pattern 2) 0 deg - No Ice	20216.30	-39.66	-14329.35	-1200563.63	-2582.15	3525.64
0.9 Dead+1.6 Wind 0 deg - No Ice	15162.23	-72.12	-23636.45	-1852650.12	2319.64	3887.15
1.2 Dead+1.6 Wind 30 deg - No Ice	20216.30	11736.61	-20361.17	-1609753.36	-933152.50	4304.59
1.2D+1.6W (pattern 1) 30 deg - No Ice	20216.30	11136.82	-19322.30	-1471353.14	-853239.76	4292.59
1.2D+1.6W (pattern 2) 30 deg - No Ice	20216.30	7122.11	-12353.88	-1041433.98	-606042.93	3454.28
0.9 Dead+1.6 Wind 30 deg - No Ice	15162.23	11736.61	-20361.17	-1606450.47	-929736.63	4285.35
1.2 Dead+1.6 Wind 60 deg - No Ice	20216.30	19853.59	-11438.74	-907114.25	-1579606.82	3347.15
1.2D+1.6W (pattern 1) 60 deg - No Ice	20216.30	18839.67	-10853.35	-829098.00	-1444473.09	3340.08
1.2D+1.6W (pattern 2) 60 deg - No Ice	20216.30	12049.77	-6943.88	-587309.43	-1024090.67	2343.86
0.9 Dead+1.6 Wind 60 deg - No Ice	15162.23	19853.59	-11438.74	-905143.49	-1574953.58	3335.34
1.2 Dead+1.6 Wind 90 deg - No Ice	20216.30	23054.15	40.85	3168.21	-1826976.76	1585.55
1.2D+1.6W (pattern 1) 90 deg - No Ice	20216.30	21890.36	40.85	3169.34	-1671860.93	1585.94
1.2D+1.6W (pattern 2) 90 deg - No Ice	20216.30	13977.94	22.47	1307.63	-1182798.77	689.99
0.9 Dead+1.6 Wind 90 deg - No Ice	15162.23	23054.15	40.85	3402.20	-1821859.63	1583.97

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	Job	CTL05397 / Simsbury North Central	Page	38 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
1.2 Dead+1.6 Wind 120 deg - No Ice	20216.30	20336.72	11773.11	923579.54	-1601729.74	-568.20
1.2D+1.6W (pattern 1) 120 deg - No Ice	20216.30	19310.73	11180.76	844650.57	-1465020.13	-562.95
1.2D+1.6W (pattern 2) 120 deg - No Ice	20216.30	12327.55	7134.75	596411.19	-1037850.02	-1155.17
0.9 Dead+1.6 Wind 120 deg - No Ice	15162.23	20336.72	11773.11	922065.26	-1597050.63	-558.87
1.2 Dead+1.6 Wind 150 deg - No Ice	20216.30	9944.77	17198.05	1372827.84	-800921.45	-1950.64
1.2D+1.6W (pattern 1) 150 deg - No Ice	20216.30	9433.23	16312.03	1254483.62	-732596.10	-1943.80
1.2D+1.6W (pattern 2) 150 deg - No Ice	20216.30	6048.35	10461.31	890163.08	-521719.79	-2077.71
0.9 Dead+1.6 Wind 150 deg - No Ice	15162.23	9944.77	17198.05	1370411.27	-797733.40	-1934.83
1.2 Dead+1.6 Wind 180 deg - No Ice	20216.30	48.01	21847.43	1737327.99	-11439.52	-3653.48
1.2D+1.6W (pattern 1) 180 deg - No Ice	20216.30	48.01	20726.80	1587872.07	-11436.80	-3643.46
1.2D+1.6W (pattern 2) 180 deg - No Ice	20216.30	26.40	13271.08	1124425.40	-9248.62	-3243.54
0.9 Dead+1.6 Wind 180 deg - No Ice	15162.23	48.01	21847.43	1734234.12	-9776.52	-3633.13
1.2 Dead+1.6 Wind 210 deg - No Ice	20216.30	-11717.43	20372.24	1608976.24	918019.93	-4304.14
1.2D+1.6W (pattern 1) 210 deg - No Ice	20216.30	-11117.64	19333.37	1470569.21	838117.79	-4292.25
1.2D+1.6W (pattern 2) 210 deg - No Ice	20216.30	-7111.56	12359.97	1040135.50	591811.36	-3454.05
0.9 Dead+1.6 Wind 210 deg - No Ice	15162.23	-11717.43	20372.24	1606151.30	917915.52	-4284.89
1.2 Dead+1.6 Wind 240 deg - No Ice	20216.30	-21414.98	12312.38	961703.82	1669113.86	-3403.51
1.2D+1.6W (pattern 1) 240 deg - No Ice	20216.30	-20336.71	11689.83	878810.17	1525543.72	-3395.94
1.2D+1.6W (pattern 2) 240 deg - No Ice	20216.30	-12972.89	7461.54	621348.80	1075872.74	-2427.13
0.9 Dead+1.6 Wind 240 deg - No Ice	15162.22	-21414.98	12312.38	960124.37	1667601.49	-3390.93
1.2 Dead+1.6 Wind 270 deg - No Ice	20216.30	-23079.37	-48.58	-5859.29	1816383.52	-1596.32
1.2D+1.6W (pattern 1) 270 deg - No Ice	20216.30	-21915.58	-48.58	-5858.22	1661266.37	-1596.72
1.2D+1.6W (pattern 2) 270 deg - No Ice	20216.30	-13991.81	-26.72	-3658.15	1171060.61	-695.95
0.9 Dead+1.6 Wind 270 deg - No Ice	15162.23	-23079.37	-48.58	-5608.36	1814566.64	-1594.70
1.2 Dead+1.6 Wind 300 deg - No Ice	20216.30	-18813.88	-10893.90	-868474.39	1489807.99	366.36
1.2D+1.6W (pattern 1) 300 deg - No Ice	20216.30	-17852.25	-10338.70	-794417.53	1361537.20	361.75
1.2D+1.6W (pattern 2) 300 deg - No Ice	20216.30	-11425.64	-6614.03	-562090.44	961916.15	957.06
0.9 Dead+1.6 Wind 300 deg - No Ice	15162.23	-18813.88	-10893.90	-866568.93	1488591.62	357.26
1.2 Dead+1.6 Wind 330 deg - No Ice	20216.30	-9964.07	-17216.03	-1376575.68	789720.65	1961.23
1.2D+1.6W (pattern 1) 330 deg - No Ice	20216.30	-9452.53	-16330.02	-1258231.61	721393.86	1954.36
1.2D+1.6W (pattern 2) 330 deg	20216.30	-6058.97	-10471.21	-893095.31	509644.54	2083.55

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	<p style="text-align: center;">Job</p> <p style="text-align: center;">CTL05397 / Simsbury North Central</p>	<p style="text-align: center;">Page</p> <p style="text-align: center;">39 of 51</p>
	<p style="text-align: center;">Project</p> <p style="text-align: center;">140' Self-Support Tower</p>	<p style="text-align: center;">Date</p> <p style="text-align: center;">13:48:14 05/04/17</p>
	<p style="text-align: center;">Client</p> <p style="text-align: center;">Smartlink / AT&T LTE 2C</p>	<p style="text-align: center;">Designed by</p> <p style="text-align: center;">VY</p>

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
- No Ice						
0.9 Dead+1.6 Wind 330 deg - No Ice	15162.23	-9964.07	-17216.03	-1373674.41	789833.66	1945.38
1.2 Dead+1.0 Ice+1.0 Temp	85613.81	-0.00	-0.00	2857.03	-22481.45	1.49
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	85613.81	-8.81	-7025.69	-564111.94	-21770.24	212.75
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	85613.81	3675.03	-6371.61	-508578.16	-317426.90	703.05
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	85613.81	6487.14	-3746.76	-297090.93	-541488.61	961.59
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	85613.81	7244.08	2.69	2962.81	-603977.90	959.64
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	85613.81	5984.14	3461.07	282265.75	-505407.64	728.08
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	85613.81	3283.17	5691.85	466731.94	-289864.08	312.09
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	85613.81	4.09	6818.20	556222.65	-22775.26	-216.60
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	85613.81	-3671.28	6373.78	514508.34	272020.90	-703.04
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	85613.81	-6669.19	3846.41	309194.35	508493.28	-954.34
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	85613.81	-7249.02	-4.20	2592.86	559460.78	-961.85
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	85613.81	-5809.64	-3360.32	-270061.70	449141.03	-731.14
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	85613.81	-3286.95	-5695.37	-461398.46	245208.86	-310.02
Dead+Wind 0 deg - Service	16846.92	-14.72	-4823.77	-379024.38	-3985.51	795.12
Dead+Wind 30 deg - Service	16846.92	2395.23	-4155.34	-328744.73	-194338.00	874.95
Dead+Wind 60 deg - Service	16846.92	4051.75	-2334.44	-185515.86	-326111.26	681.76
Dead+Wind 90 deg - Service	16846.92	4704.93	8.34	37.04	-376539.07	324.74
Dead+Wind 120 deg - Service	16846.92	4150.35	2402.68	187656.19	-330627.85	-114.31
Dead+Wind 150 deg - Service	16846.92	2029.55	3509.81	279217.08	-167380.67	-396.78
Dead+Wind 180 deg - Service	16846.92	9.80	4458.66	353522.14	-6456.46	-743.64
Dead+Wind 210 deg - Service	16846.92	-2391.31	4157.60	327364.59	183007.62	-874.95
Dead+Wind 240 deg - Service	16846.92	-4370.40	2512.73	195427.40	336115.19	-692.67
Dead+Wind 270 deg - Service	16846.92	-4710.07	-9.91	-1803.14	366125.11	-326.93
Dead+Wind 300 deg - Service	16846.92	-3839.57	-2223.24	-177635.08	299549.36	73.42
Dead+Wind 330 deg - Service	16846.92	-2033.48	-3513.48	-281198.15	156842.56	398.93

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	-0.00	-16846.92	-0.00	-0.00	16846.92	0.00	0.000%
2	-72.11	-20216.30	-23636.45	72.12	20216.30	23636.45	0.000%
3	-72.11	-20216.30	-22441.52	72.12	20216.30	22441.52	0.000%
4	-39.66	-20216.30	-14329.35	39.66	20216.30	14329.35	0.000%
5	-72.11	-15162.23	-23636.45	72.12	15162.23	23636.45	0.000%
6	11736.61	-20216.30	-20361.16	-11736.61	20216.30	20361.17	0.000%
7	11136.81	-20216.30	-19322.29	-11136.82	20216.30	19322.30	0.000%
8	7122.11	-20216.30	-12353.88	-7122.11	20216.30	12353.88	0.000%
9	11736.61	-15162.23	-20361.16	-11736.61	15162.23	20361.17	0.000%
10	19853.58	-20216.30	-11438.74	-19853.59	20216.30	11438.74	0.000%
11	18839.66	-20216.30	-10853.35	-18839.67	20216.30	10853.35	0.000%
12	12049.77	-20216.30	-6943.88	-12049.77	20216.30	6943.88	0.000%

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	Job	CTL05397 / Simsbury North Central	Page	40 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
13	19853.58	-15162.23	-11438.74	-19853.59	15162.23	11438.74	0.000%
14	23054.14	-20216.30	40.86	-23054.15	20216.30	-40.85	0.000%
15	21890.36	-20216.30	40.86	-21890.36	20216.30	-40.85	0.000%
16	13977.94	-20216.30	22.47	-13977.94	20216.30	-22.47	0.000%
17	23054.14	-15162.23	40.86	-23054.15	15162.23	-40.85	0.000%
18	20336.72	-20216.30	11773.11	-20336.72	20216.30	-11773.11	0.000%
19	19310.73	-20216.30	11180.76	-19310.73	20216.30	-11180.76	0.000%
20	12327.55	-20216.30	7134.75	-12327.55	20216.30	-7134.75	0.000%
21	20336.72	-15162.23	11773.11	-20336.72	15162.23	-11773.11	0.000%
22	9944.77	-20216.30	17198.05	-9944.77	20216.30	-17198.05	0.000%
23	9433.23	-20216.30	16312.03	-9433.23	20216.30	-16312.03	0.000%
24	6048.35	-20216.30	10461.31	-6048.35	20216.30	-10461.31	0.000%
25	9944.77	-15162.23	17198.05	-9944.77	15162.23	-17198.05	0.000%
26	48.01	-20216.30	21847.42	-48.01	20216.30	-21847.43	0.000%
27	48.01	-20216.30	20726.79	-48.01	20216.30	-20726.80	0.000%
28	26.41	-20216.30	13271.08	-26.40	20216.30	-13271.08	0.000%
29	48.01	-15162.23	21847.42	-48.01	15162.23	-21847.43	0.000%
30	-11717.43	-20216.30	20372.23	11717.43	20216.30	-20372.24	0.000%
31	-11117.64	-20216.30	19333.37	11117.64	20216.30	-19333.37	0.000%
32	-7111.56	-20216.30	12359.97	7111.56	20216.30	-12359.97	0.000%
33	-11717.43	-15162.23	20372.23	11717.43	15162.23	-20372.24	0.000%
34	-21414.98	-20216.30	12312.38	21414.98	20216.30	-12312.38	0.000%
35	-20336.71	-20216.30	11689.84	20336.71	20216.30	-11689.83	0.000%
36	-12972.89	-20216.30	7461.54	12972.89	20216.30	-7461.54	0.000%
37	-21414.98	-15162.23	12312.38	21414.98	15162.22	-12312.38	0.000%
38	-23079.36	-20216.30	-48.57	23079.37	20216.30	48.58	0.000%
39	-21915.58	-20216.30	-48.57	21915.58	20216.30	48.58	0.000%
40	-13991.81	-20216.30	-26.72	13991.81	20216.30	26.72	0.000%
41	-23079.36	-15162.23	-48.57	23079.37	15162.23	48.58	0.000%
42	-18813.88	-20216.30	-10893.90	18813.88	20216.30	10893.90	0.000%
43	-17852.25	-20216.30	-10338.70	17852.25	20216.30	10338.70	0.000%
44	-11425.64	-20216.30	-6614.03	11425.64	20216.30	6614.03	0.000%
45	-18813.88	-15162.23	-10893.90	18813.88	15162.23	10893.90	0.000%
46	-9964.07	-20216.30	-17216.03	9964.07	20216.30	17216.03	0.000%
47	-9452.52	-20216.30	-16330.02	9452.53	20216.30	16330.02	0.000%
48	-6058.97	-20216.30	-10471.21	6058.97	20216.30	10471.21	0.000%
49	-9964.07	-15162.23	-17216.03	9964.07	15162.23	17216.03	0.000%
50	-0.00	-85613.81	-0.00	0.00	85613.81	0.00	0.000%
51	-8.81	-85613.81	-7025.71	8.81	85613.81	7025.69	0.000%
52	3675.04	-85613.81	-6371.64	-3675.03	85613.81	6371.61	0.000%
53	6487.16	-85613.81	-3746.77	-6487.14	85613.81	3746.76	0.000%
54	7244.11	-85613.81	2.69	-7244.08	85613.81	-2.69	0.000%
55	5984.16	-85613.81	3461.08	-5984.14	85613.81	-3461.07	0.000%
56	3283.18	-85613.81	5691.87	-3283.17	85613.81	-5691.85	0.000%
57	4.09	-85613.81	6818.22	-4.09	85613.81	-6818.20	0.000%
58	-3671.29	-85613.81	6373.80	3671.28	85613.81	-6373.78	0.000%
59	-6669.21	-85613.81	3846.43	6669.19	85613.81	-3846.41	0.000%
60	-7249.04	-85613.81	-4.20	7249.02	85613.81	4.20	0.000%
61	-5809.66	-85613.81	-3360.33	5809.64	85613.81	3360.32	0.000%
62	-3286.96	-85613.81	-5695.39	3286.95	85613.81	5695.37	0.000%
63	-14.72	-16846.92	-4823.77	14.72	16846.92	4823.77	0.000%
64	2395.23	-16846.92	-4155.34	-2395.23	16846.92	4155.34	0.000%
65	4051.75	-16846.92	-2334.44	-4051.75	16846.92	2334.44	0.000%
66	4704.93	-16846.92	8.34	-4704.93	16846.92	-8.34	0.000%
67	4150.35	-16846.92	2402.68	-4150.35	16846.92	-2402.68	0.000%
68	2029.55	-16846.92	3509.81	-2029.55	16846.92	-3509.81	0.000%
69	9.80	-16846.92	4458.66	-9.80	16846.92	-4458.66	0.000%
70	-2391.31	-16846.92	4157.60	2391.31	16846.92	-4157.60	0.000%
71	-4370.40	-16846.92	2512.73	4370.40	16846.92	-2512.73	0.000%
72	-4710.07	-16846.92	-9.91	4710.07	16846.92	9.91	0.000%
73	-3839.57	-16846.92	-2223.24	3839.57	16846.92	2223.24	0.000%

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	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
74	-2033.48	-16846.92	-3513.48	2033.48	16846.92	3513.48	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00000123
3	Yes	4	0.0000001	0.00000130
4	Yes	4	0.0000001	0.00000140
5	Yes	4	0.0000001	0.00000125
6	Yes	4	0.0000001	0.00000278
7	Yes	4	0.0000001	0.00000222
8	Yes	4	0.0000001	0.00000187
9	Yes	4	0.0000001	0.00000253
10	Yes	4	0.0000001	0.00000193
11	Yes	4	0.0000001	0.00000186
12	Yes	4	0.0000001	0.00000169
13	Yes	4	0.0000001	0.00000164
14	Yes	4	0.0000001	0.00000231
15	Yes	4	0.0000001	0.00000192
16	Yes	4	0.0000001	0.00000165
17	Yes	4	0.0000001	0.00000218
18	Yes	4	0.0000001	0.00000109
19	Yes	4	0.0000001	0.00000121
20	Yes	4	0.0000001	0.00000134
21	Yes	4	0.0000001	0.00000117
22	Yes	4	0.0000001	0.00000170
23	Yes	4	0.0000001	0.00000167
24	Yes	4	0.0000001	0.00000170
25	Yes	4	0.0000001	0.00000142
26	Yes	4	0.0000001	0.00000184
27	Yes	4	0.0000001	0.00000183
28	Yes	4	0.0000001	0.00000177
29	Yes	4	0.0000001	0.00000146
30	Yes	4	0.0000001	0.00000278
31	Yes	4	0.0000001	0.00000222
32	Yes	4	0.0000001	0.00000188
33	Yes	4	0.0000001	0.00000252
34	Yes	4	0.0000001	0.00000127
35	Yes	4	0.0000001	0.00000128
36	Yes	4	0.0000001	0.00000132
37	Yes	4	0.0000001	0.00000139
38	Yes	4	0.0000001	0.00000229
39	Yes	4	0.0000001	0.00000192
40	Yes	4	0.0000001	0.00000167
41	Yes	4	0.0000001	0.00000216
42	Yes	4	0.0000001	0.00000181
43	Yes	4	0.0000001	0.00000182
44	Yes	4	0.0000001	0.00000175
45	Yes	4	0.0000001	0.00000142
46	Yes	4	0.0000001	0.00000170
47	Yes	4	0.0000001	0.00000168
48	Yes	4	0.0000001	0.00000171
49	Yes	4	0.0000001	0.00000142
50	Yes	4	0.0000001	0.00002175

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51	Yes	4	0.00000001	0.00018519
52	Yes	4	0.00000001	0.00019083
53	Yes	4	0.00000001	0.00019414
54	Yes	4	0.00000001	0.00019306
55	Yes	4	0.00000001	0.00019064
56	Yes	4	0.00000001	0.00018886
57	Yes	4	0.00000001	0.00018901
58	Yes	4	0.00000001	0.00018817
59	Yes	4	0.00000001	0.00018581
60	Yes	4	0.00000001	0.00018238
61	Yes	4	0.00000001	0.00017985
62	Yes	4	0.00000001	0.00018021
63	Yes	4	0.00000001	0.00000001
64	Yes	4	0.00000001	0.00000001
65	Yes	4	0.00000001	0.00000001
66	Yes	4	0.00000001	0.00000001
67	Yes	4	0.00000001	0.00000001
68	Yes	4	0.00000001	0.00000001
69	Yes	4	0.00000001	0.00000001
70	Yes	4	0.00000001	0.00000001
71	Yes	4	0.00000001	0.00000001
72	Yes	4	0.00000001	0.00000001
73	Yes	4	0.00000001	0.00000001
74	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140 - 120	5.792	71	0.3794	0.0290
T2	120 - 100	4.212	71	0.3671	0.0291
T3	100 - 96	2.739	71	0.3152	0.0250
T4	96 - 92	2.476	71	0.2969	0.0230
T5	92 - 88	2.229	71	0.2829	0.0215
T6	88 - 84	1.994	71	0.2666	0.0200
T7	84 - 80	1.773	71	0.2477	0.0185
T8	80 - 76	1.570	71	0.2263	0.0170
T9	76 - 64	1.383	71	0.2071	0.0142
T10	64 - 60	0.919	71	0.1545	0.0086
T11	60 - 50	0.791	71	0.1382	0.0069
T12	50 - 45	0.530	71	0.1057	0.0051
T13	45 - 40	0.424	71	0.0902	0.0043
T14	40 - 20	0.334	71	0.0749	0.0035
T15	20 - 6.6668	0.088	71	0.0360	0.0015
T16	6.6668 - 0.000133	0.012	71	0.0116	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.42	20' Whip	71	5.792	0.3794	0.0290	243850
145.67	15' Whip	71	5.792	0.3794	0.0290	243850
141.42	8' - 4 Element DiPole	71	5.792	0.3794	0.0290	243850
136.25	RR65-18-02DP w/Mount Pipe	71	5.494	0.3781	0.0291	243850

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	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
119.00	SM104-1	71	4.135	0.3659	0.0290	49699
115.67	20' Whip	71	3.878	0.3610	0.0288	34780
110.50	2' Whip	71	3.487	0.3507	0.0282	22995
108.25	2.5' DiPole	71	3.321	0.3450	0.0278	20039
104.00	SO312-1	71	3.015	0.3316	0.0266	16123
102.00	Yagi (3 ft)	71	2.875	0.3239	0.0259	14749
99.92	Radiowave HP2-18EX	71	2.734	0.3148	0.0250	13522
95.00	2 STD x 20' Pipe mount	71	2.413	0.2931	0.0226	13076
94.25	2.5' DiPole	71	2.366	0.2905	0.0223	13459
88.25	Yagi (3 ft)	71	2.008	0.2677	0.0201	13774
85.00	SO311-1	71	1.827	0.2528	0.0189	11391
63.75	GPS	71	0.911	0.1535	0.0085	15433
57.00	6' Whip	71	0.704	0.1275	0.0061	14352
54.00	SO309-1	71	0.625	0.1178	0.0056	16269
52.00	Yagi (3 ft)	71	0.576	0.1117	0.0053	17781

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	140 - 120	28.756	34	1.8841	0.1427
T2	120 - 100	20.898	34	1.8248	0.1431
T3	100 - 96	13.575	34	1.5654	0.1230
T4	96 - 92	12.272	34	1.4736	0.1133
T5	92 - 88	11.045	34	1.4039	0.1058
T6	88 - 84	9.880	34	1.3226	0.0983
T7	84 - 80	8.783	34	1.2287	0.0912
T8	80 - 76	7.775	34	1.1223	0.0836
T9	76 - 64	6.849	34	1.0274	0.0700
T10	64 - 60	4.552	34	0.7665	0.0423
T11	60 - 50	3.918	34	0.6855	0.0341
T12	50 - 45	2.621	34	0.5241	0.0249
T13	45 - 40	2.099	34	0.4474	0.0211
T14	40 - 20	1.650	34	0.3714	0.0173
T15	20 - 6.6668	0.433	34	0.1783	0.0072
T16	6.6668 - 0.000133	0.057	37	0.0577	0.0023

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
147.42	20' Whip	34	28.756	1.8841	0.1427	45201
145.67	15' Whip	34	28.756	1.8841	0.1427	45201
141.42	8' - 4 Element DiPole	34	28.756	1.8841	0.1427	45201
136.25	RR65-18-02DP w/Mount Pipe	34	27.271	1.8781	0.1432	45201
119.00	SM104-1	34	20.512	1.8187	0.1429	9927
115.67	20' Whip	34	19.235	1.7951	0.1419	7236
110.50	2' Whip	34	17.292	1.7443	0.1389	4796
108.25	2.5' DiPole	34	16.466	1.7155	0.1367	4182
104.00	SO312-1	34	14.947	1.6478	0.1310	3368

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Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
102.00	Yagi (3 ft)	34	14.253	1.6090	0.1273	3075
99.92	Radiowave HP2-18EX	34	13.549	1.5636	0.1228	2801
95.00	2 STD x 20' Pipe mount	34	11.959	1.4548	0.1112	2671
94.25	2.5' DiPole	34	11.727	1.4418	0.1098	2753
88.25	Yagi (3 ft)	34	9.951	1.3281	0.0988	2793
85.00	SO311-1	34	9.050	1.2537	0.0929	2311
63.75	GPS	34	4.511	0.7613	0.0418	3098
57.00	6' Whip	34	3.487	0.6322	0.0299	2911
54.00	SO309-1	34	3.095	0.5844	0.0274	3291
52.00	Yagi (3 ft)	34	2.851	0.5541	0.0261	3588

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	140	Leg	A325N	0.6250	4	2383.03	20708.70	0.115	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1314.98	3126.56	0.421	1	Member Block Shear
		Top Girt	A325N	0.5000	1	53.81	3126.56	0.017	1	Member Block Shear
T2	120	Leg	A325N	0.6250	4	11192.80	20708.70	0.540	1	Bolt Tension
		Diagonal	A325N	0.5000	1	4575.72	6198.75	0.738	1	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	868.53	7830.00	0.111	1	Gusset Bearing
T3	100	Diagonal	A325N	0.5000	1	4513.13	6253.13	0.722	1	Member Block Shear
T4	96	Diagonal	A325N	0.5000	1	4529.90	6253.13	0.724	1	Member Block Shear
T5	92	Diagonal	A325N	0.5000	1	4929.35	6253.13	0.788	1	Member Block Shear
T6	88	Diagonal	A325N	0.5000	1	5414.70	6253.13	0.866	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	1512.62	7830.00	0.193	1	Member Bearing
T7	84	Leg	A490N	0.6250	4	24283.10	26001.00	0.934	1	Bolt Tension
		Diagonal	A325N	0.5000	1	6289.18	6333.51	0.993	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	1699.36	7830.00	0.217	1	Member Bearing
T8	80	Diagonal	A325N	0.5000	1	2137.36	3126.56	0.684	1	Member Block Shear
T9	76	Diagonal	A325N	0.5000	1	2280.65	3126.56	0.729	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	2071.39	6830.86	0.303	1	Member Block Shear
T10	64	Leg	A490N	0.7500	4	28577.20	37441.40	0.763	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2394.24	3126.56	0.766	1	Member Block Shear
		Secondary Horizontal	A325N	0.6250	1	2141.90	7830.00	0.274	1	Member Bearing
T11	60	Diagonal	A325N	0.5000	1	2618.01	6198.75	0.422	1	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	2303.19	7830.00	0.294	1	Member Bearing
T12	50	Diagonal	A325N	0.5000	1	2687.55	6198.75	0.434	1	Gusset Bearing

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T13	45	Secondary Horizontal	A325N	0.6250	1	2383.36	7830.00	0.304	1	Gusset Bearing
		Leg	A490N	0.7500	4	32601.80	37441.40	0.871	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2785.72	6198.75	0.449	1	Gusset Bearing
T14	40	Secondary Horizontal	A325N	0.6250	1	2470.51	6830.86	0.362	1	Member Block Shear
		Leg	A325N	0.8750	4	36641.80	40589.10	0.903	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3560.50	6198.75	0.574	1	Gusset Bearing
T15	20	Secondary Horizontal	A325N	0.6250	1	2787.78	7830.00	0.356	1	Gusset Bearing
		Diagonal	A325N	0.5000	1	3378.54	6198.75	0.545	1	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	3011.13	7830.00	0.385	1	Gusset Bearing
T16	6.6668	Diagonal	A325N	0.5000	1	3641.51	6198.75	0.587	1	Gusset Bearing
		Secondary Horizontal	A325N	0.6250	1	3107.25	7830.00	0.397	1	Gusset Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio P _u / φP _n
T1	140 - 120	P2x.154	20.00	3.90	59.5	1.0745	-10741.90	37340.20	0.288 ¹
T2	120 - 100	P2 STD w/ 1/3 Split-Pipe 2.5 XS	20.00	1.95	31.2	1.5699	-49668.20	65787.00	0.755 ¹
T3	100 - 96	P2.5x.203	4.00	3.75	47.5	1.7040	-54412.20	65021.40	0.837 ¹
T4	96 - 92	P2.5STD w/ 1/3 Split-Pipe 3 XS	4.00	4.00	52.2	2.7094	-65214.30	99897.10	0.653 ¹
T5	92 - 88	P2.5STD w/ 1/3 Split-Pipe 3 XS	4.00	4.00	52.2	2.7094	-75701.90	99897.10	0.758 ¹
T6	88 - 84	P2.5STD w/ 1/3 Split-Pipe 3 XS	4.00	2.00	26.1	2.7094	-87330.90	115997.00	0.753 ¹
T7	84 - 80	P2.5STD w/ 1/3 Split-Pipe 3 XS	4.00	1.88	24.5	2.7094	-106179.00	116699.00	0.910 ¹
T8	80 - 76	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	4.01	3.76	61.7	3.1416	-107575.00	108991.90	0.987 ¹
T9	76 - 64	4.8.1 (1.01 CR) - 136 P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	12.02	2.08	34.2	3.1416	-119442.00	129784.00	0.920 ¹
T10	64 - 60	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	4.01	1.93	31.8	3.1416	-126003.00	131309.00	0.960 ¹
T11	60 - 50	P2.5 XS w/ 1/2 Split-Pipe 3 XS	10.02	2.53	32.8	3.7615	-132802.00	156438.00	0.849 ¹
T12	50 - 45	P2.5 XS w/ 1/2 Split-Pipe 3 XS	5.01	2.59	33.6	3.7615	-137425.00	155894.00	0.882 ¹
T13	45 - 40	P2.5 XS + PL1.5"x3/8" & PL1.75"x1/2"	5.01	2.45	39.2	3.6910	-145317.00	148474.00	0.979 ¹
T14	40 - 20	P3 XS w/ 1/2 Split-Pipe 4	20.03	3.37	36.1	5.4458	-164913.00	222740.00	0.740 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T15	20 - 6.6668	P3 XS w/ 1/2 Split-Pipe 4 XS	13.36	3.36	K=1.00 36.1	5.4458	-173622.00	222824.00	0.779 ¹
T16	6.6668 - 0.000133	P3 XS w/ 1/2 Split-Pipe 4 XS	6.68	3.30	K=1.00 35.4	5.4458	-183335.00	223576.00	0.820 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L1 1/2x1 1/2x1/8	5.97	2.75	113.6	0.3594	-1313.22	5905.06	0.222 ¹
T2	120 - 100	L1 1/2x1 1/2x1/4	6.00	2.76	K=1.02 115.1	0.6875	-4627.72	11095.50	0.417 ¹
T3	100 - 96	L1 1/2x1 1/2x1/4	5.90	2.69	K=1.01 113.0	0.6875	-4656.59	11374.30	0.409 ¹
T4	96 - 92	L1 1/2x1 1/2x1/4	6.07	2.77	K=1.02 115.4	0.6875	-4583.20	11055.70	0.415 ¹
T5	92 - 88	L1 1/2x1 1/2x1/4	6.07	2.76	K=1.01 115.1	0.6875	-5065.43	11091.60	0.457 ¹
T6	88 - 84	L1 1/2x1 1/2x1/4	6.07	2.76	K=1.01 115.1	0.6875	-5506.20	11091.60	0.496 ¹
T7	84 - 80	L1 1/2x1 1/2x1/4	5.90	2.68	K=1.01 112.7	0.6875	-6780.93	11409.50	0.594 ¹
T8	80 - 76	L1 1/2x1 1/2x1/8	6.07	2.90	K=1.02 118.1	0.3594	-2397.92	5590.20	0.429 ¹
T9	76 - 64	L1 1/2x1 1/2x1/8	7.18	3.46	K=1.01 140.2	0.3594	-2538.67	4128.11	0.615 ¹
T10	64 - 60	L1 1/2x1 1/2x1/8	7.37	3.55	K=1.00 143.9	0.3594	-2578.93	3919.72	0.658 ¹
T11	60 - 50	2L1 1/2x1 1/2x1/8	8.81	4.29	K=1.00 110.6	0.7188	-2834.16	12226.20	0.232 ¹
T12	50 - 45	2L1 1/2x1 1/2x1/8	9.30	4.54	K=1.00 117.1	0.7188	-3055.44	11320.10	0.270 ¹
T13	45 - 40	2L1 1/2x1 1/2x1/8	9.59	4.69	K=1.00 121.1	0.7188	-2934.15	10763.90	0.273 ¹
T14	40 - 20	2L1 3/4x1 3/4x1/8	12.13	5.96	K=1.00 131.1	0.8438	-3821.90	11063.70	0.345 ¹
T15	20 - 6.6668	2L2x2x1/8	13.33	6.56	K=1.00 125.8	0.9600	-3543.03	13428.40	0.264 ¹
T16	6.6668 - 0.000133	2L2x2x1/8	13.86	6.83	K=1.00 130.9	0.9600	-4278.76	12566.90	0.340 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	120 - 100	L3x3x3/16	4.56	4.11	86.2	1.0900	-835.19	23372.40	0.036 ¹
T6	88 - 84	L3x3x3/16	4.56	4.07	K=1.64 86.0	1.0900	-1512.62	23424.60	0.065 ¹
T7	84 - 80	L3x3x3/16	4.56	4.07	K=1.65 86.0	1.0900	-1699.36	23424.60	0.073 ¹
T9	76 - 64	L2x2x3/16	5.95	5.47	K=1.65 113.2	0.7150	-2071.39	11795.20	0.176 ¹
T10	64 - 60	L3x3x3/16	6.34	5.86	K=1.06 97.5	1.0900	-2141.90	21047.20	0.102 ¹
T11	60 - 50	L3x3x3/16	7.32	6.82	K=1.30 103.6	1.0900	-2303.19	19773.60	0.116 ¹
T12	50 - 45	L3x3x3/16	7.83	7.32	K=1.19 106.8	1.0900	-2383.36	19104.20	0.125 ¹
T13	45 - 40	L2x2x3/16	8.33	7.85	K=1.14 152.6	0.7150	-2470.51	6936.70	0.356 ¹
T14	40 - 20	L3x3x3/16	10.24	9.67	K=1.00 123.6	1.0900	-2787.78	15682.50	0.178 ¹
T15	20 - 6.6668	L3x3x3/16	11.62	11.06	K=1.00 141.3	1.0900	-3011.13	12335.00	0.244 ¹
T16	6.6668 - 0.000133	L3x3x3/16	12.28	11.72	K=1.00 149.7	1.0900	-3107.25	10984.30	0.283 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L1 1/2x1 1/2x1/8	4.52	4.11	166.7	0.3594	-64.76	2922.69	0.022 ¹
T8	80 - 76	L1 1/2x1 1/2x1/8	4.59	4.35	K=1.00 154.5 K=0.88	0.3594	-142.92	3402.37	0.042 ¹

¹ P_u / φP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	P2x.154	20.00	3.90	59.5	1.0745	9532.13	48353.90	0.197 ¹
T2	120 - 100	P2 STD w/ 1/3 Split-Pipe 2.5 XS	20.00	1.95	31.2	1.5699	44771.30	70645.00	0.634 ¹
T3	100 - 96	P2.5x.203	4.00	3.75	47.5	1.7040	49355.30	76682.30	0.644 ¹
T4	96 - 92	P2.5STD w/ 1/3 Split-Pipe 3	4.00	4.00	52.2	2.7094	59265.00	121921.00	0.486 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	92 - 88	XS P2.5STD w/ 1/3 Split-Pipe 3	4.00	4.00	52.2	2.7094	69003.80	121921.00	0.566 ¹
T6	88 - 84	XS P2.5STD w/ 1/3 Split-Pipe 3	4.00	2.00	26.1	2.7094	79609.50	121921.00	0.653 ¹
T7	84 - 80	XS P2.5STD w/ 1/3 Split-Pipe 3	4.00	1.88	24.5	2.7094	97132.50	121921.00	0.797 ¹
T8	80 - 76	XS P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	4.01	3.76	61.7	3.1416	98442.60	141370.00	0.696 ¹
T9	76 - 64	4.8.1 (1.01 CR) - 136 P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	12.02	2.08	34.2	3.1416	108693.00	141370.00	0.769 ¹
T10	64 - 60	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	4.01	1.93	31.8	3.1416	114309.00	141370.00	0.809 ¹
T11	60 - 50	P2.5 XS w/ 1/2 Split-Pipe 3	10.02	2.53	32.8	3.7615	119978.00	169268.00	0.709 ¹
T12	50 - 45	XS P2.5 XS w/ 1/2 Split-Pipe 3	5.01	2.59	33.6	3.7615	123816.00	169268.00	0.731 ¹
T13	45 - 40	XS P2.5 XS + PL1.5"x3/8" & PL1.75"x1/2"	5.01	2.45	39.2	3.6910	130407.00	166097.00	0.785 ¹
T14	40 - 20	XS P3 XS w/ 1/2 Split-Pipe 4	20.03	3.37	36.1	5.4458	146567.00	245059.00	0.598 ¹
T15	20 - 6.6668	XS P3 XS w/ 1/2 Split-Pipe 4	13.36	3.36	36.1	5.4458	153625.00	245059.00	0.627 ¹
T16	6.6668 - 0.000133	XS P3 XS w/ 1/2 Split-Pipe 4	6.68	3.30	35.4	5.4458	161443.00	245059.00	0.659 ¹

¹ P_u / φP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L1 1/2x1 1/2x1/8	5.97	2.75	73.6	0.2109	1314.98	9175.78	0.143 ¹
T2	120 - 100	L1 1/2x1 1/2x1/4	6.00	2.76	76.6	0.3984	4575.72	17332.00	0.264 ¹
T3	100 - 96	L1 1/2x1 1/2x1/4	5.90	2.69	74.8	0.3984	4513.13	17332.00	0.260 ¹
T4	96 - 92	L1 1/2x1 1/2x1/4	6.07	2.77	76.8	0.3984	4529.90	17332.00	0.261 ¹
T5	92 - 88	L1 1/2x1 1/2x1/4	6.07	2.76	76.6	0.3984	4929.35	17332.00	0.284 ¹
T6	88 - 84	L1 1/2x1 1/2x1/4	6.07	2.76	76.6	0.3984	5414.70	17332.00	0.312 ¹
T7	84 - 80	L1 1/2x1 1/2x1/4	5.90	2.68	74.5	0.3984	6289.18	17332.00	0.363 ¹
T8	80 - 76	L1 1/2x1 1/2x1/8	6.07	2.90	77.4	0.2109	2137.36	9175.78	0.233 ¹
T9	76 - 64	L1 1/2x1 1/2x1/8	7.18	3.46	92.0	0.2109	2280.65	9175.78	0.249 ¹
T10	64 - 60	L1 1/2x1 1/2x1/8	7.37	3.55	94.3	0.2109	2394.24	9175.78	0.261 ¹
T11	60 - 50	2L1 1/2x1 1/2x1/8	8.81	4.29	113.3	0.4219	2618.01	18351.60	0.143 ¹
T12	50 - 45	2L1 1/2x1 1/2x1/8	9.30	4.54	119.7	0.4219	2687.55	18351.60	0.146 ¹
T13	45 - 40	2L1 1/2x1 1/2x1/8	9.59	4.69	123.8	0.4219	2785.72	18351.60	0.152 ¹
T14	40 - 20	2L1 3/4x1 3/4x1/8	12.13	5.96	133.4	0.5156	3560.50	22429.70	0.159 ¹
T15	20 - 6.6668	2L2x2x1/8	13.33	6.56	127.8	0.6028	3378.54	26222.30	0.129 ¹
T16	6.6668 - 0.000133	2L2x2x1/8	13.86	6.83	132.9	0.6028	3641.51	26222.30	0.139 ¹

¹ P_u / φP_n controls

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job CTL05397 / Simsbury North Central	Page 49 of 51
	Project 140' Self-Support Tower	Date 13:48:14 05/04/17
	Client Smartlink / AT&T LTE 2C	Designed by VY

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	120 - 100	L3x3x3/16	4.56	4.11	55.6	0.7120	868.53	30973.40	0.028 ¹
T6	88 - 84	L3x3x3/16	4.56	4.07	55.0	0.7120	1512.62	30973.40	0.049 ¹
T7	84 - 80	L3x3x3/16	4.56	4.07	55.0	0.7120	1699.36	30973.40	0.055 ¹
T9	76 - 64	L2x2x3/16	5.95	5.47	111.1	0.4308	2071.39	18739.00	0.111 ¹
T10	64 - 60	L3x3x3/16	6.34	5.86	78.0	0.7120	2141.90	30973.40	0.069 ¹
T11	60 - 50	L3x3x3/16	7.32	6.82	90.2	0.7120	2303.19	30973.40	0.074 ¹
T12	50 - 45	L3x3x3/16	7.83	7.32	96.6	0.7120	2383.36	30973.40	0.077 ¹
T13	45 - 40	L2x2x3/16	8.33	7.85	157.3	0.4308	2470.51	18739.00	0.132 ¹
T14	40 - 20	L3x3x3/16	10.24	9.67	126.7	0.7120	2787.78	30973.40	0.090 ¹
T15	20 - 6.6668	L3x3x3/16	11.62	11.06	144.4	0.7120	3011.13	30973.40	0.097 ¹
T16	6.6668 - 0.000133	L3x3x3/16	12.28	11.72	152.8	0.7120	3107.25	30973.40	0.100 ¹

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	140 - 120	L1 1/2x1 1/2x1/8	4.52	4.11	111.5	0.2109	53.81	9175.78	0.006 ¹
T8	80 - 76	L1 1/2x1 1/2x1/8	4.59	4.35	112.1	0.3594	77.91	11643.80	0.007 ¹

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP _{allow} lb	% Capacity	Pass Fail
T1	140 - 120	Leg	P2x.154	1	-10741.90	37340.20	28.8	Pass
T2	120 - 100	Leg	P2 STD w/ 1/3 Split-Pipe 2.5 XS	37	-49668.20	65787.00	75.5	Pass
T3	100 - 96	Leg	P2.5x.203	85	-54412.20	65021.40	83.7	Pass
T4	96 - 92	Leg	P2.5STD w/ 1/3 Split-Pipe 3 XS	94	-65214.30	99897.10	65.3	Pass
T5	92 - 88	Leg	P2.5STD w/ 1/3 Split-Pipe 3 XS	103	-75701.90	99897.10	75.8	Pass
T6	88 - 84	Leg	P2.5STD w/ 1/3 Split-Pipe 3 XS	112	-87330.90	115997.00	75.3	Pass
T7	84 - 80	Leg	P2.5STD w/ 1/3 Split-Pipe 3 XS	124	-106179.00	116699.00	91.0	Pass
T8	80 - 76	Leg	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	136	-107575.00	108991.90	98.7	Pass
T9	76 - 64	Leg	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	148	-119442.00	129784.00	92.0	Pass
T10	64 - 60	Leg	P2.5STD + PL1.5"x3/8" & PL1.75"x1/2"	178	-126003.00	131309.00	96.0	Pass
T11	60 - 50	Leg	P2.5 XS w/ 1/2 Split-Pipe 3 XS	190	-132802.00	156438.00	84.9	Pass
T12	50 - 45	Leg	P2.5 XS w/ 1/2 Split-Pipe 3 XS	211	-137425.00	155894.00	88.2	Pass
T13	45 - 40	Leg	P2.5 XS + PL1.5"x3/8" & PL1.75"x1/2"	223	-145317.00	148474.00	97.9	Pass

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Fullerton Engineering Consultants</p> <p style="text-align: center;">1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com</p>	Job	CTL05397 / Simsbury North Central	Page	50 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T14	40 - 20	Leg	P3 XS w/ 1/2 Split-Pipe 4 XS	235	-164913.00	222740.00	74.0	Pass
T15	20 - 6.6668	Leg	P3 XS w/ 1/2 Split-Pipe 4 XS	265	-173622.00	222824.00	90.3 (b)	Pass
T16	6.6668 - 0.000133	Leg	P3 XS w/ 1/2 Split-Pipe 4 XS	286	-183335.00	223576.00	77.9	Pass
T1	140 - 120	Diagonal	L1 1/2x1 1/2x1/8	8	-1313.22	5905.06	82.0	Pass
T2	120 - 100	Diagonal	L1 1/2x1 1/2x1/4	40	-4627.72	11095.50	22.2	Pass
T3	100 - 96	Diagonal	L1 1/2x1 1/2x1/4	88	-4656.59	11374.30	42.1 (b)	Pass
T4	96 - 92	Diagonal	L1 1/2x1 1/2x1/4	97	-4583.20	11055.70	41.7	Pass
T5	92 - 88	Diagonal	L1 1/2x1 1/2x1/4	106	-5065.43	11091.60	73.8 (b)	Pass
T6	88 - 84	Diagonal	L1 1/2x1 1/2x1/4	115	-5506.20	11091.60	40.9	Pass
T7	84 - 80	Diagonal	L1 1/2x1 1/2x1/4	127	-6780.93	11409.50	72.2 (b)	Pass
T8	80 - 76	Diagonal	L1 1/2x1 1/2x1/8	142	-2397.92	5590.20	41.5	Pass
T9	76 - 64	Diagonal	L1 1/2x1 1/2x1/8	151	-2538.67	4128.11	45.7	Pass
T10	64 - 60	Diagonal	L1 1/2x1 1/2x1/8	181	-2578.93	3919.72	78.8 (b)	Pass
T11	60 - 50	Diagonal	2L1 1/2x1 1/2x1/8	193	-2834.16	12226.20	49.6	Pass
T12	50 - 45	Diagonal	2L1 1/2x1 1/2x1/8	214	-3055.44	11320.10	86.6 (b)	Pass
T13	45 - 40	Diagonal	2L1 1/2x1 1/2x1/8	226	-2934.15	10763.90	59.4	Pass
T14	40 - 20	Diagonal	2L1 3/4x1 3/4x1/8	238	-3821.90	11063.70	99.3 (b)	Pass
T15	20 - 6.6668	Diagonal	2L2x2x1/8	268	-3543.03	13428.40	42.9	Pass
T16	6.6668 - 0.000133	Diagonal	2L2x2x1/8	289	-4278.76	12566.90	68.4 (b)	Pass
T2	120 - 100	Secondary Horizontal	L3x3x3/16	46	-835.19	23372.40	61.5	Pass
T6	88 - 84	Secondary Horizontal	L3x3x3/16	121	-1512.62	23424.60	72.9 (b)	Pass
T7	84 - 80	Secondary Horizontal	L3x3x3/16	133	-1699.36	23424.60	65.8	Pass
T9	76 - 64	Secondary Horizontal	L2x2x3/16	159	-2071.39	11795.20	76.6 (b)	Pass
T10	64 - 60	Secondary Horizontal	L3x3x3/16	187	-2141.90	21047.20	23.2	Pass
T11	60 - 50	Secondary Horizontal	L3x3x3/16	199	-2303.19	19773.60	42.2 (b)	Pass
T12	50 - 45	Secondary Horizontal	L3x3x3/16	220	-2383.36	19104.20	27.0	Pass
T13	45 - 40	Secondary Horizontal	L2x2x3/16	232	-2470.51	6936.70	43.4 (b)	Pass
T14	40 - 20	Secondary Horizontal	L3x3x3/16	246	-2787.78	15682.50	27.3	Pass
T15	20 - 6.6668	Secondary Horizontal	L3x3x3/16	274	-3011.13	12335.00	44.9 (b)	Pass
T16	6.6668 - 0.000133	Secondary Horizontal	L3x3x3/16	295	-3107.25	10984.30	34.5	Pass
T1	140 - 120	Top Girt	L1 1/2x1 1/2x1/8	5	-64.76	2922.69	57.4 (b)	Pass
T8	80 - 76	Top Girt	L1 1/2x1 1/2x1/8	141	-142.92	3402.37	26.4	Pass

tnxTower Fullerton Engineering Consultants 1100 E. Woodfield Road, Suite 500 Schaumburg, IL 60173 Phone: (847) 908-8400 FAX: fax@fullertonengineering.com	Job	CTL05397 / Simsbury North Central	Page	51 of 51
	Project	140' Self-Support Tower	Date	13:48:14 05/04/17
	Client	Smartlink / AT&T LTE 2C	Designed by	VY

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail	
							Summary		
							Leg (T8)	98.7	Fail
							Diagonal (T10)	65.8	Fail
							Secondary Horizontal (T16)	39.7	Pass
							Top Girt (T8)	4.2	Pass
							Bolt Checks	99.3	Pass
							RATING =	99.3	Pass

Program Version 7.0.7.0 - 7/18/2016 File://files.fullertonengineering.com/PDrive/Dept 400/SMLINK-ATT-NEWEN 2/CTL05397/Structural/Tower Analysis/R2/Analysis/tnxTower/CTL05397_R2.eri

Section II

Foundation

Site No.: CTL05397
Site Name: Simsbury North Central
Prepared By: VY
Checked By: AJR

**Fullerton Engineering
Consultants, Inc.**

Date: 5/4/2017

Self Support Tower Anchor Rod Check

***Existing Anchor Rods are (4) 7/8"φ ASTM A354 Grade Bolts +
Additional Anchor Rods are (2) 7/8"φ ASTM A354 Grade Bolts***

$P_u := 182.716 \text{ kip}$ *Max Tension force for Detail type A, B, or C Connections*

$V_u := 15.97 \text{ kip}$ *Shear force Corresponding to Max Tension or Compression Force*

$F_{ub} := 125 \text{ ksi}$ *Steel Grade of Anchor Bolts*

$D_{bolt} := 0.875 \text{ in}$ *Diameter of Anchor Bolt*

$N_{bolt_{exist}} := 4$ *Number of Existing Anchor Bolts*

$N_{bolt_{add}} := 2$ *Number of Additional Anchor Bolts*

$N_{bolt} := N_{bolt_{exist}} + N_{bolt_{add}} = 6$ *Total Number of Anchor Bolts*

$\eta := 0.55$ *η is dependent on Anchor Rod Detail Type per Figure 4-4 TIA Rev. G*

$A_{net} := 0.75 \cdot \left(\frac{\pi}{4}\right) \cdot (D_{bolt})^2$ *$A_{net} = 0.45 \cdot \text{in}^2$ Net Area of Bolt taken as 0.75 x unthreaded Area*

$R_{nt} := F_{ub} \cdot A_{net}$ *$R_{nt} = 56.4 \cdot \text{kip}$ Nominal Tensile Strength of Anchor Rod per Section 4.9.6.1*

$$\text{StressRatio} := \frac{\left(P_u + \frac{V_u}{\eta}\right)}{N_{bolt} \cdot R_{nt}}$$
 Interaction Equation

$\text{StressRatio} = 78.3\%$ *<100%, Okay.*

$\text{AnchorBoltsCheck} = \text{"Anchor Bolts are adequate"}$

This check assumes the clear distance from the top of the concrete foundation to bottom leveling nut does not exceed the diameter of the anchor rod.

Site No.: CTL05397
Site Name: Simsbury North Central
Prepared By: VY
Checked By: AJR

Fullerton Engineering Consultants, Inc.

Date: 5/4/2017

Self-Supporting Tower Foundation - Concrete Mat

Foundation Dimension & Properties

$$\gamma_{\text{conc}} := 150 \text{pcf}$$

Density of Concrete

$$\gamma_{\text{soil}} := 120 \text{pcf}$$

Density of Soil

$$\text{top} := 6 \text{in}$$

Height of pier above grade

$$H_f := 4.5 \text{ft}$$

Mat Thickness

$$H_g := H_f - \text{top}$$

$$H_g = 4 \text{ft}$$

Depth from grade to the bottom of foundation

$$D := 18.0 \text{ft}$$

Side of Square shape of Foundation

$$A_1 := D^2$$

$$A_1 = 324 \text{ft}^2$$

Area of Square shape of Foundation

Soil Properties

$$P_{\text{allowable}} := 4.0 \text{ksf}$$

*Allowable Bearing Pressure -
Per Soil Report*

$$SF_b := 2$$

*Factor of Safety for Ultimate
Bearing Pressure*

$$P_{\text{ultimate}} := P_{\text{allowable}} \cdot SF_b$$

$$P_{\text{ultimate}} = 8000 \cdot \text{psf}$$

Ultimate Bearing Pressure

$$D_n := 1.0 \text{ft}$$

Soil Depth Neglected

$$D_w := \infty \cdot \text{ft}$$

Depth of Water

$$\phi_o := 0.75$$

*Soil Reduction Factor for
Overturning*

Factored Reactions (based on Tnx calculations)

Maximum Reactions (wind without ice load case)

$$P := 20.216 \text{kip}$$

Max Total Axial Reaction

$$V := 24.702 \text{kip}$$

Max Total Shear Reaction

$$M := 1926.348 \text{kip} \cdot \text{ft}$$

Max Total Moment Reaction

OTM Check

$$W_{\text{mat}} := \left[A_1 \cdot H_f + 3 \cdot D \cdot \left[(3 \text{ ft} + 2 \text{ ft}) \cdot \frac{0.5 \text{ ft}}{2} \right] \right] \cdot \gamma_{\text{conc}} \quad W_{\text{mat}} = 228.83 \cdot \text{kip} \quad \text{Weight of mat foundation}$$

$$W_{\text{soil}} := 0 \text{ kip} \quad \text{No Soil Weight above mat}$$

$$M_{\text{ot}} := M + (H_f) \cdot V \quad M_{\text{ot}} = 2037.51 \cdot \text{kip} \cdot \text{ft}$$

$$M_{\text{res}} := (P + 1.2 \cdot W_{\text{mat}} + W_{\text{soil}}) \cdot \frac{D}{2} \quad M_{\text{res}} = 2653.25 \cdot \text{kip} \cdot \text{ft}$$

$$\frac{M_{\text{ot}}}{\phi_o \cdot M_{\text{res}}} = 1 \quad \text{Acceptable}$$

OTMCheck = "Foundation is adequate for OTM,"

Soil Bearing Pressure Check

CASE 1: Entire Mat is in Positive Bearing

$$\phi_s := 0.75 \quad \text{Soil bearing resistance factor per TIA-222-G 9.4.1}$$

$$S_{\text{found}} := \frac{D^3}{6} = 972 \cdot \text{ft}^3 \quad \text{Square Mat Foundation Section Modulus}$$

$$P_{\text{soil}} := \left[\frac{P + 1.2 \cdot (W_{\text{mat}} + W_{\text{soil}})}{A_1} + \frac{M_{\text{ot}}}{S_{\text{found}}} \right] \quad P_{\text{soil}} = 3006.1 \cdot \text{psf}$$

$$\frac{P_{\text{soil}}}{\phi_s \cdot P_{\text{ultimate}}} = 0.501 \quad < 1. \text{ OK}$$

SoilCheck = "Foundation is adequate for soil bearing pressure."

CASE 2: Back Edge of Mat is Uplift

$$P_{\text{soil}} := \frac{P + 1.2 \cdot (W_{\text{mat}} + W_{\text{soil}})}{A_1} - \frac{M_{\text{ot}}}{S_{\text{found}}} \quad P_{\text{soil}} = -1186.31 \cdot \text{psf}$$

$$e := \frac{(M_{\text{ot}})}{P + 1.2 \cdot (W_{\text{mat}} + W_{\text{soil}})} \quad e = 6.91 \text{ ft} \quad \text{Eccentricity}$$

$$x := \left(\frac{D}{2} - e \right) \quad x = 2.09 \text{ ft} \quad \text{Bearing Width}$$

$$P_{\text{soil}} := \frac{2 \cdot [P + 1.2 \cdot (W_{\text{mat}} + W_{\text{soil}})]}{3 \cdot D \cdot x} \quad P_{\text{soil}} = 5227.65 \cdot \text{psf} \quad \text{Maximum Bearing Pressure}$$

$$\frac{P_{\text{soil}}}{\phi_s \cdot P_{\text{ultimate}}} = 0.871 \quad < 1. \text{ OK}$$

Site No.: CTL05397
Site Name: Simsbury North Central
Prepared By: VY
Checked By: AJR

**Fullerton Engineering
Consultants, Inc.**

Date: 5/4/2017

Check Lateral Capacity (*consevatively only sliding was considered*)

$$\phi_{lat} := 0.75$$

$$\mu := 0.3$$

$$S_{all} := [P + 0.9 \cdot (W_{mat} + W_{soil})] \cdot \mu$$

$$S_{all} = 67.85 \cdot \text{kip}$$

$$\frac{V}{\phi_{lat} \cdot S_{all}} = 0.49$$

$$< 1. \text{ OK}$$

*Soil Reduction Factor for Lateral
Coefficient of Friction - assumed*

Lateral Capacity

LateralCapacityCheck = "Lateral Capacity is adequate."



PROJECT: LTE 2C
 SITE NUMBER: CTL05397
 FA NUMBER: 10071237
 PTN NUMBER: 2051A066EH
 PACE NUMBER: MRCTB018178
 SITE NAME: SIMSBURY NORTH CENTRAL
 SITE ADDRESS: 871 HOPMEADOW STREET
 SIMSBURY, CT 06070



PROJECT INFORMATION

SITE NAME: SIMSBURY NORTH CENTRAL
SITE NUMBER: CTL05397
SITE ADDRESS: 871 HOPMEADOW STREET SIMSBURY, CT 06070
FA NUMBER: 10071237
PTN NUMBER: 2051A066EH
PACE NUMBER: MRCTB018178
USID NUMBER: 25992

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

OWNER: SIMSBURY FIRE DISTRICT

JURISDICTION: HARTFORD COUNTY
COUNTY: HARTFORD
SITE COORDINATES FROM (RFDS):
LATITUDE: 41.877392'
LONGITUDE: -72.802499'
GROUND ELEV.: 280'
PROPOSED USE: TELECOMMUNICATIONS FACILITY

AT&T RF MANAGER: CAMERON SYME
PHONE: (508) 596-7146
EMAIL: cS-6970@att.com

SCOPE OF WORK

LTE 1900 WILL BE 2C AT THE SITE WITH BRONZE STANDARD CONFIGURATION. PROPOSED 2C PROJECT SCOPE HEREIN BASED ON RFDS ID # 1123277, VERSION 2.00 LAST UPDATED 05/18/2016.

- (3) NEW ANTENNAS TO REPLACE (3) EXISTING ANTENNAS
- (3) NEW RRUS-12 W/ A-2 MODULES
- (3) NEW 25 AMP BREAKERS
- (1) NEW DUS
- (1) NEW XMU CARD

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

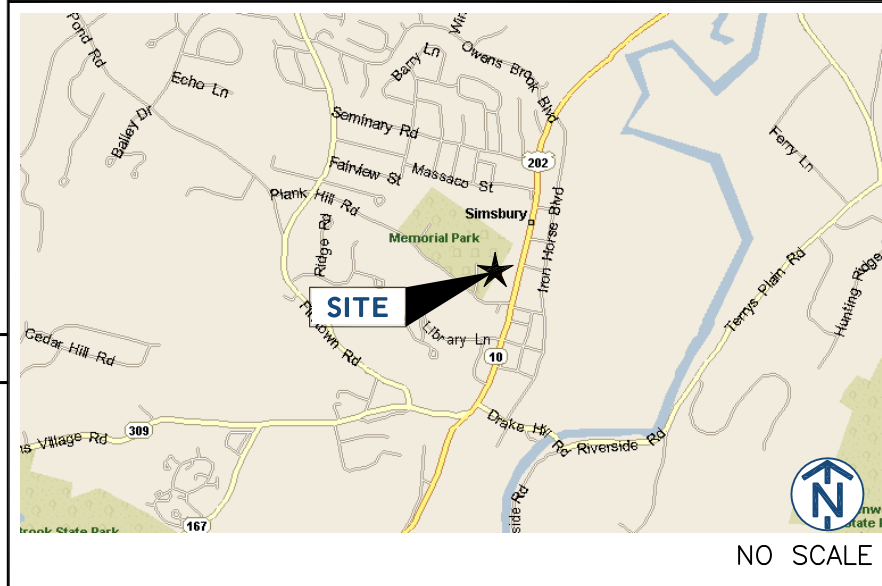
ELECTRICAL CODE: 2014 NATIONAL ELECTRIC CODE

- 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	06/14/16	90% REVIEW	VV
1	08/22/16	FOR PERMIT	KC
2	02/03/17	TOWER MOD	KC
3	03/13/17	TOWER REINFORCEMENT	RP
4	05/04/17	REVISION	MD

I HEREBY CERTIFY THAT THESE DRAWING 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



NO SCALE

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
S-1	STRUCTURAL NOTES
S-2	TOWER REINFORCEMENT PLAN
S-3	TOWER REINFORCEMENT DETAILS
S-4	TOWER REINFORCEMENT DETAILS
S-5	TOWER REINFORCEMENT DETAILS

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EMAIL: mark.donnely@smartlinkllc.com

DIRECTIONS

SCAN QR CODE FOR LINK TO SITE LOCATION MAP



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

SITE NAME
SIMSBURY NORTH CENTRAL

SITE NUMBER:
CTL05397

SITE ADDRESS
**871 HOPMEADOW STREET
SIMSBURY, CT 06070**

SHEET NAME
TITLE SHEET

SHEET NUMBER
T1

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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 OT 2-A:10-B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.
- 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.
 - RF CONNECTION BOTH SIDES OF THE CONNECTOR.
 - 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:
 - TEMPERATURE SHALL BE ABOVE 50° F.
 - PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
 - FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
 - 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.
 - GROUNDING AT THE ANTENNA LEVEL.
 - GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'-0", ADDITIONAL CABLE GROUNDING REQUIRED.
 - GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
 - GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
 - 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	06/14/16	90% REVIEW	VV
1	08/22/16	FOR PERMIT	KC
2	02/03/17	TOWER MOD	KC
3	03/13/17	TOWER REINFORCEMENT	RP
4	05/04/17	REVISION	MD

I HEREBY CERTIFY THAT THESE DRAWING 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

SIMSBURY NORTH
CENTRAL

SITE NUMBER:

CTL05397

SITE ADDRESS

871 HOPMEADOW STREET
SIMSBURY, CT 06070

SHEET NAME

NOTES AND
SPECIFICATIONS

SHEET NUMBER

SP1

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NOTICE

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

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

Ref: 47CFR 1.1307(b)

CAUTION

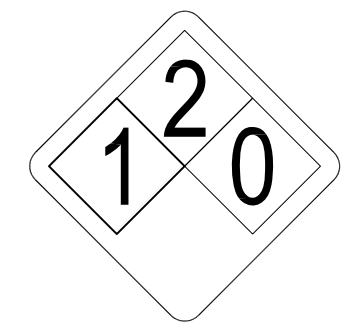
Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC Occupational Exposure Limits.

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

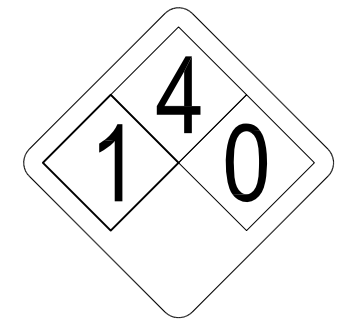
Ref: 47CFR 1.1307(b)



ALERTING SIGN
(FOR CELL SITE BATTERIES)



ALERTING SIGN
(FOR DIESEL FUEL)



ALERTING SIGN
(FOR PROPANE)

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

1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076

FULLERTON
ENGINEERING • DESIGN

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ALERTING SIGNS

WARNING!

DANGER DO NOT TOUCH TOWER!

SERIOUS "RF" BURN HAZARD!

MAINTAIN AN ADEQUATE CLEARANCE BETWEEN TOWER SUPPORTS AND GUY WIRES

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

PROPERTY OF AT&T

AUTHORIZED PERSONNEL ONLY

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

ALERTING SIGN

INFO SIGN #4

INFORMATION

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

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

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

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

INFORMACION

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

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

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

Esta es la estación base maestra. _____

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

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			EITHER NOTICE OR CAUTION SIGN (BASED ON ROOFVIEW RESULTS) AT ANTENNA /BARRIER
RADIATION AREA IS BEYOND 3FT FROM ANTENNA	X	ADJACENT TO EACH ANTENNA		X	DIAGONAL, YELLOW STRIPING AS TO ROOFVIEW GRAPH		
CHURCH STEEPLES	ACCESS TO STEEPLE	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO STEEPLE			CAUTION SIGN AT THE ANTENNAS
WATER STATIONS	ACCESS TO LADDER	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO LADDER			CAUTION SIGN BESIDE INFO SIGN #1, MIN. 9FT ABOVE GROUND

NOTES FOR ROOFTOP SITES:

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

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SITE NAME
SIMSBURY NORTH CENTRAL

SITE NUMBER:
CTL05397

SITE ADDRESS
**871 HOPMEADOW STREET
SIMSBURY, CT 06070**

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP2

SIGNAGE GUIDELINES CHART

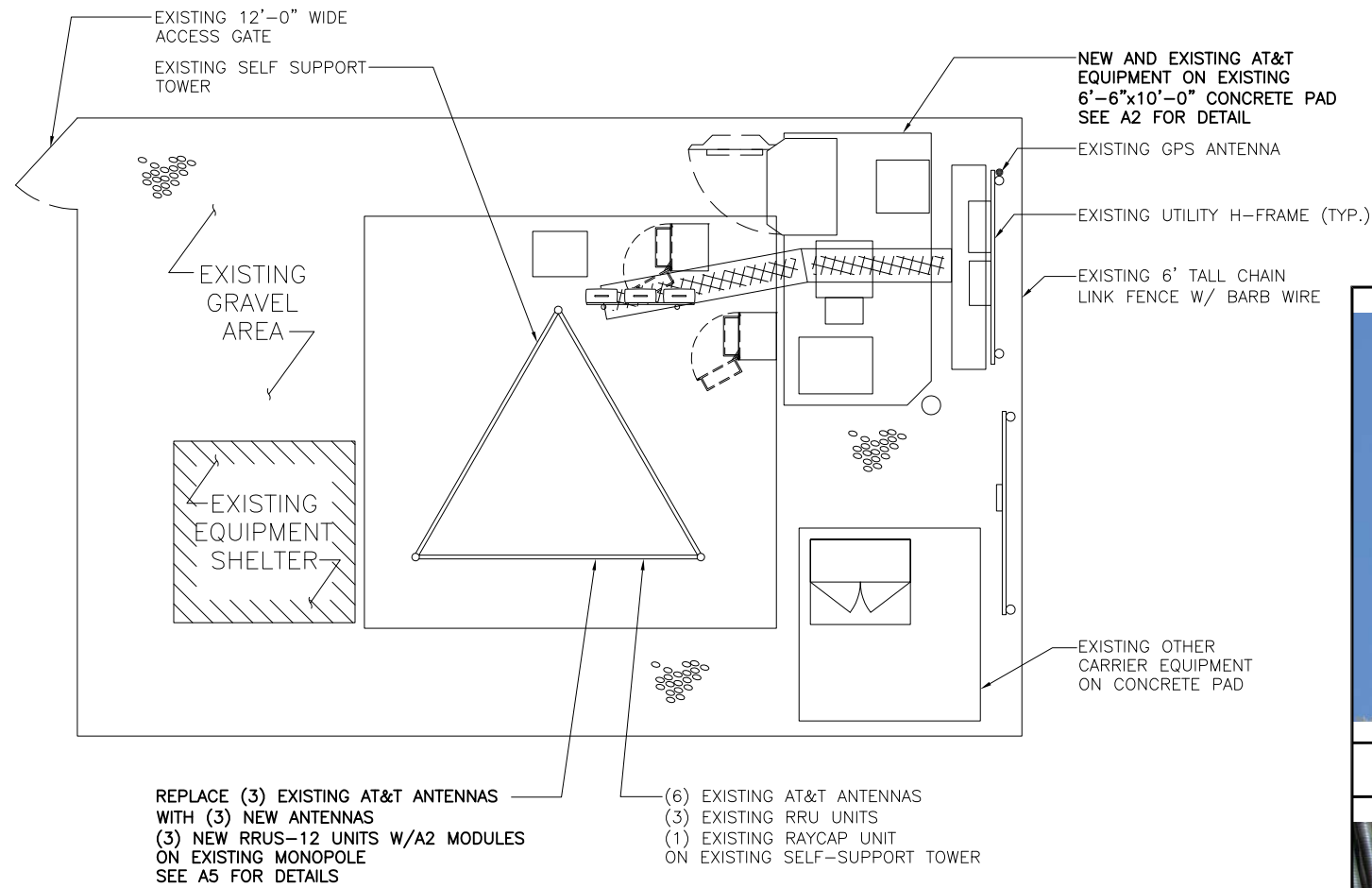
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ABBREVIATIONS

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

SYMBOLS

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



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



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



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SITE NUMBER:
CTL05397

SITE ADDRESS
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SIMSBURY, CT 06070**

SHEET NAME
COMPOUND PLAN

SHEET NUMBER
A1

COMPOUND PLAN

SCALE: 1/8" = 1'-0" 1



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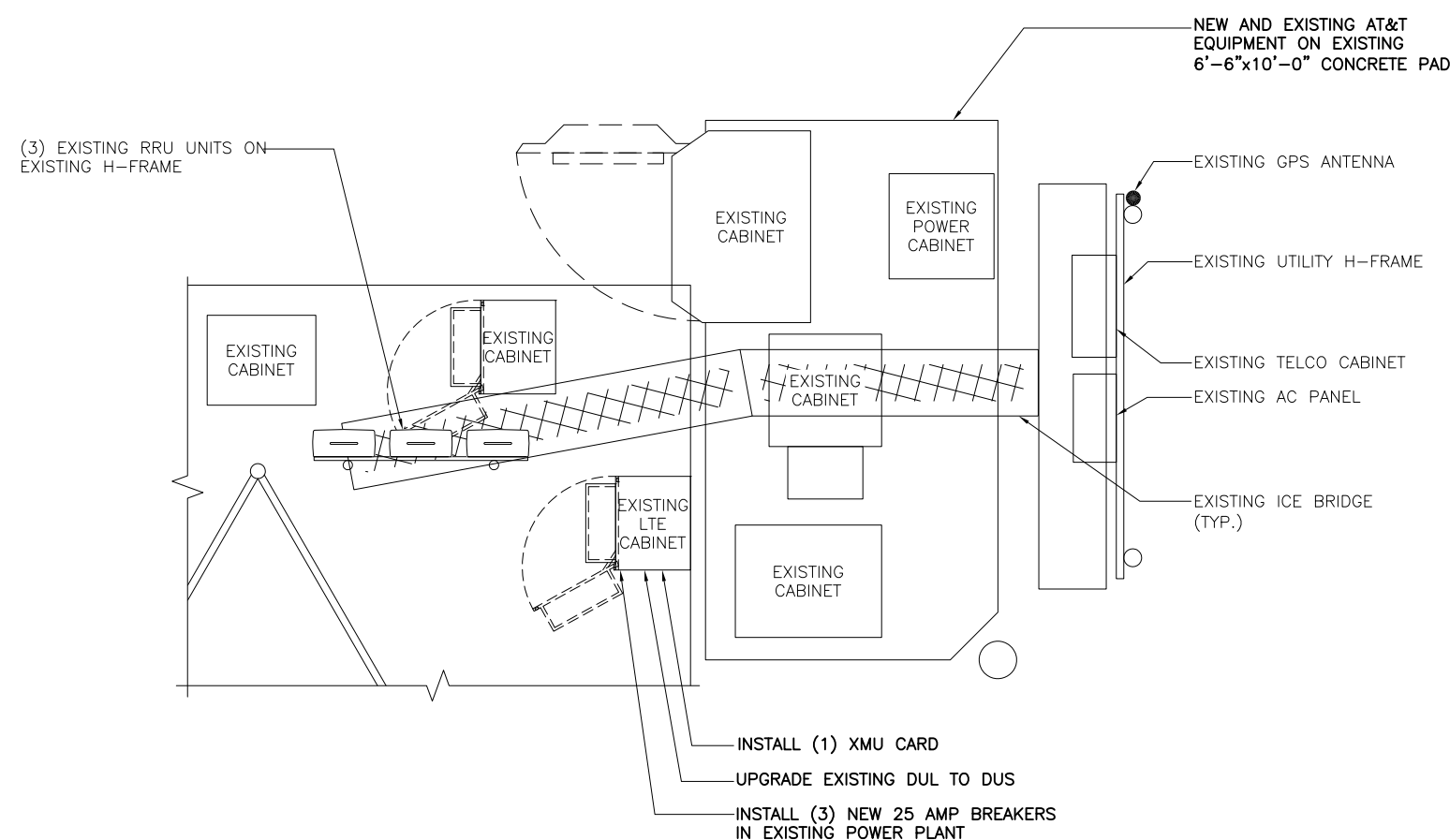
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SHEET NAME

**EQUIPMENT
PLAN**

SHEET NUMBER

A2





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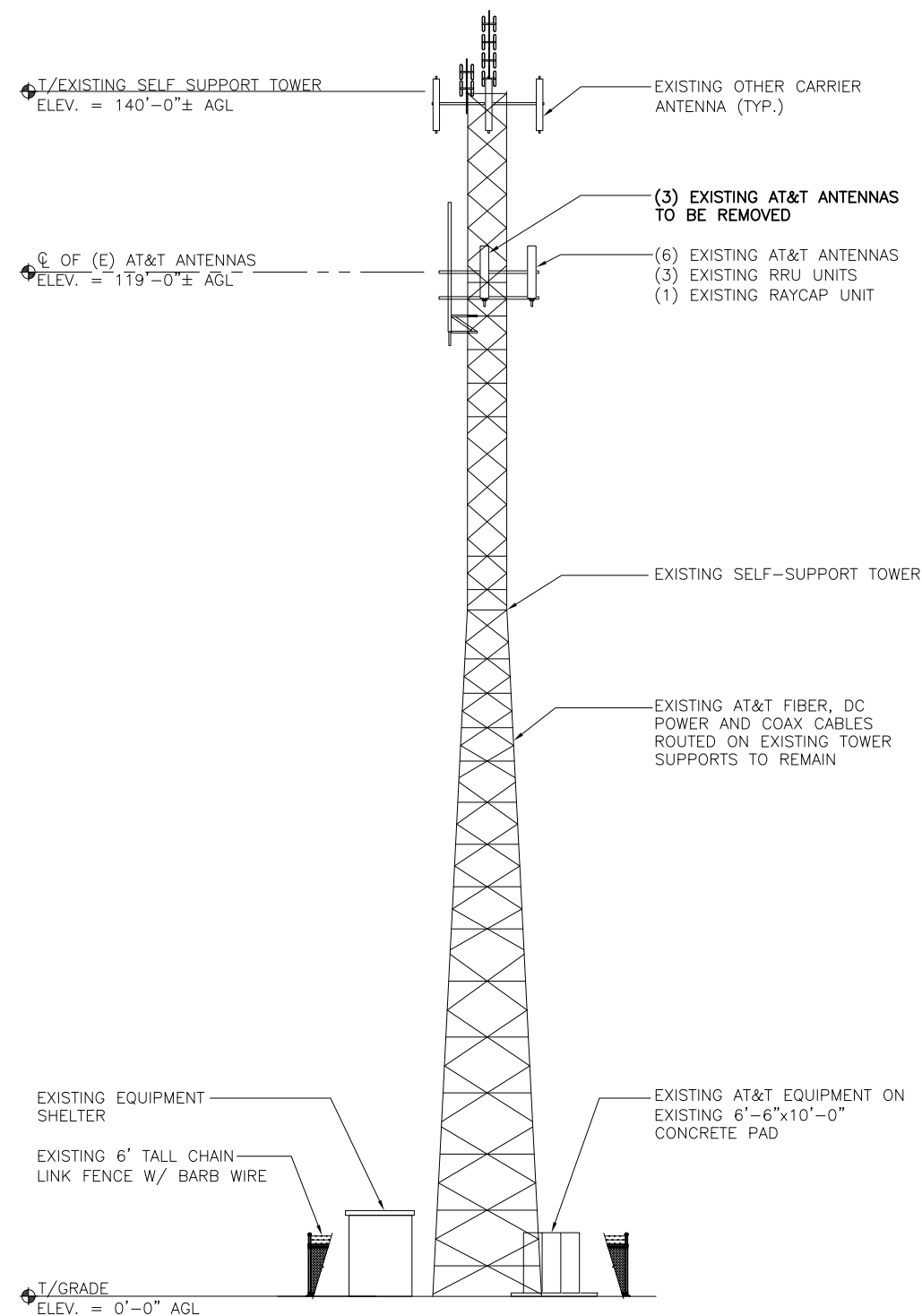
SITE ADDRESS
**871 HOPMEADOW STREET
SIMSBURY, CT 06070**

SHEET NAME
ELEVATIONS

SHEET NUMBER
A3

NOTES:

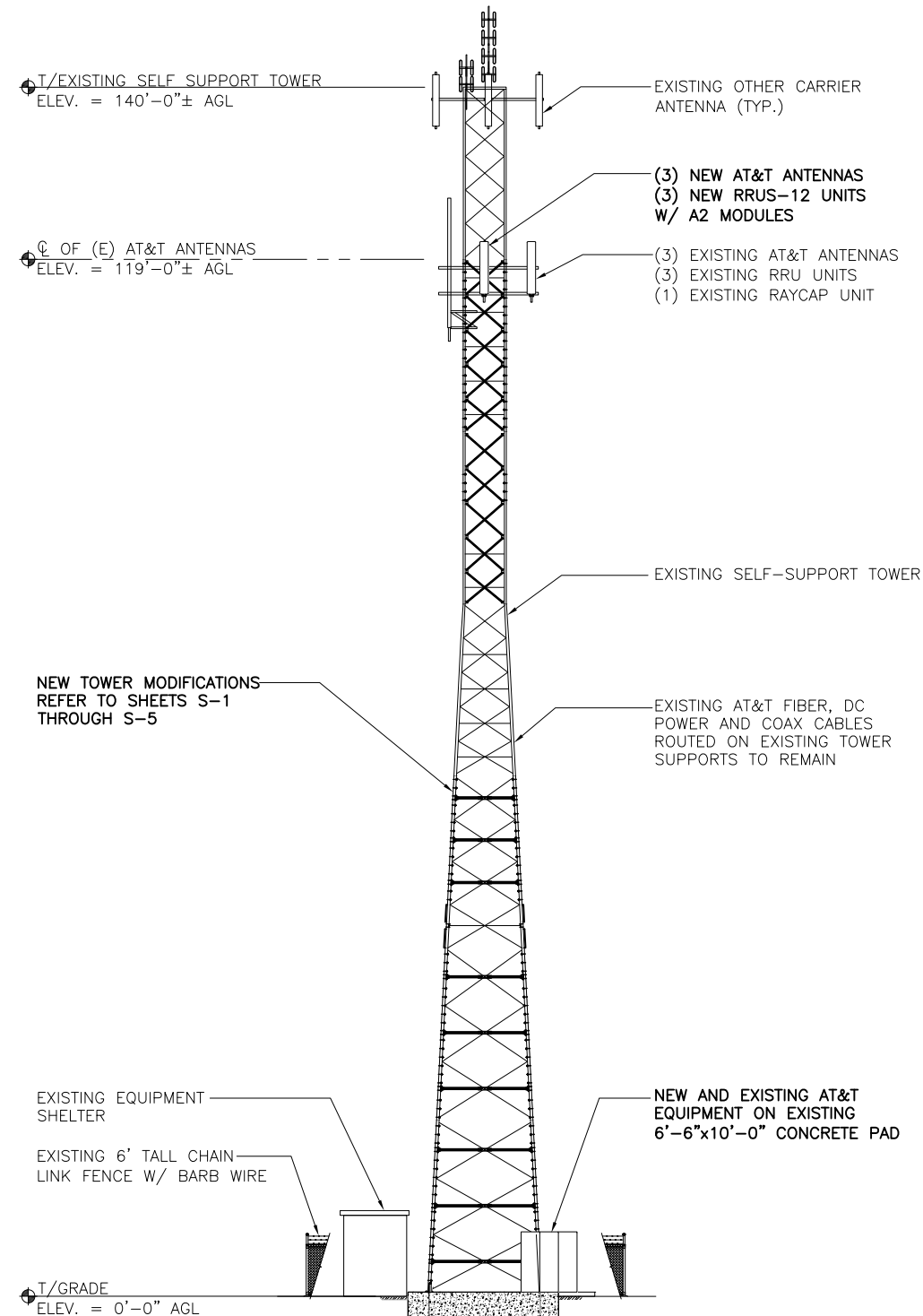
1. CALCULATIONS FOR THE STRUCTURE AND ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CABLES NOT SHOWN FOR CLARITY



EXISTING ELEVATION

SCALE: 1" = 20'-0"

1



NEW ELEVATION

SCALE: 1" = 20'-0"

2

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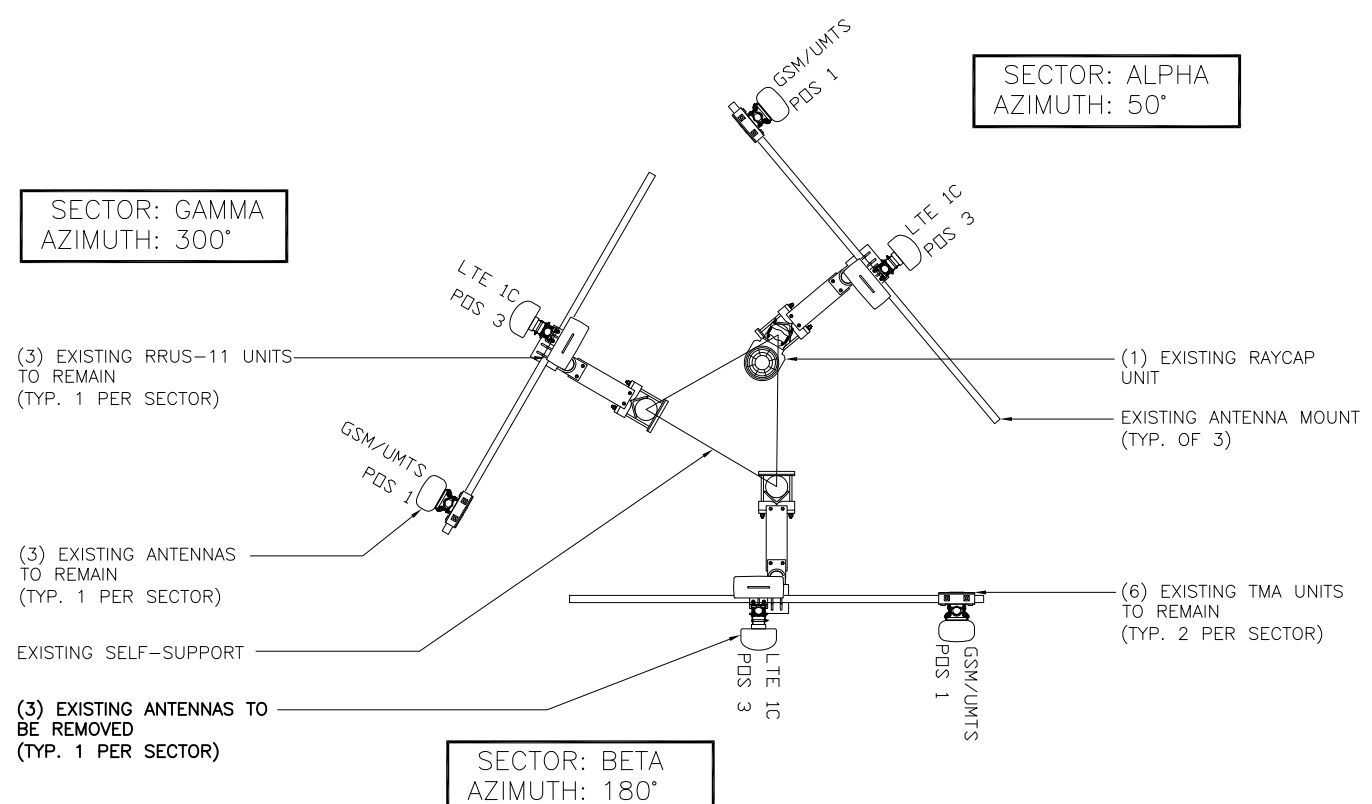
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SHEET NAME

**ANTENNA
PLANS**

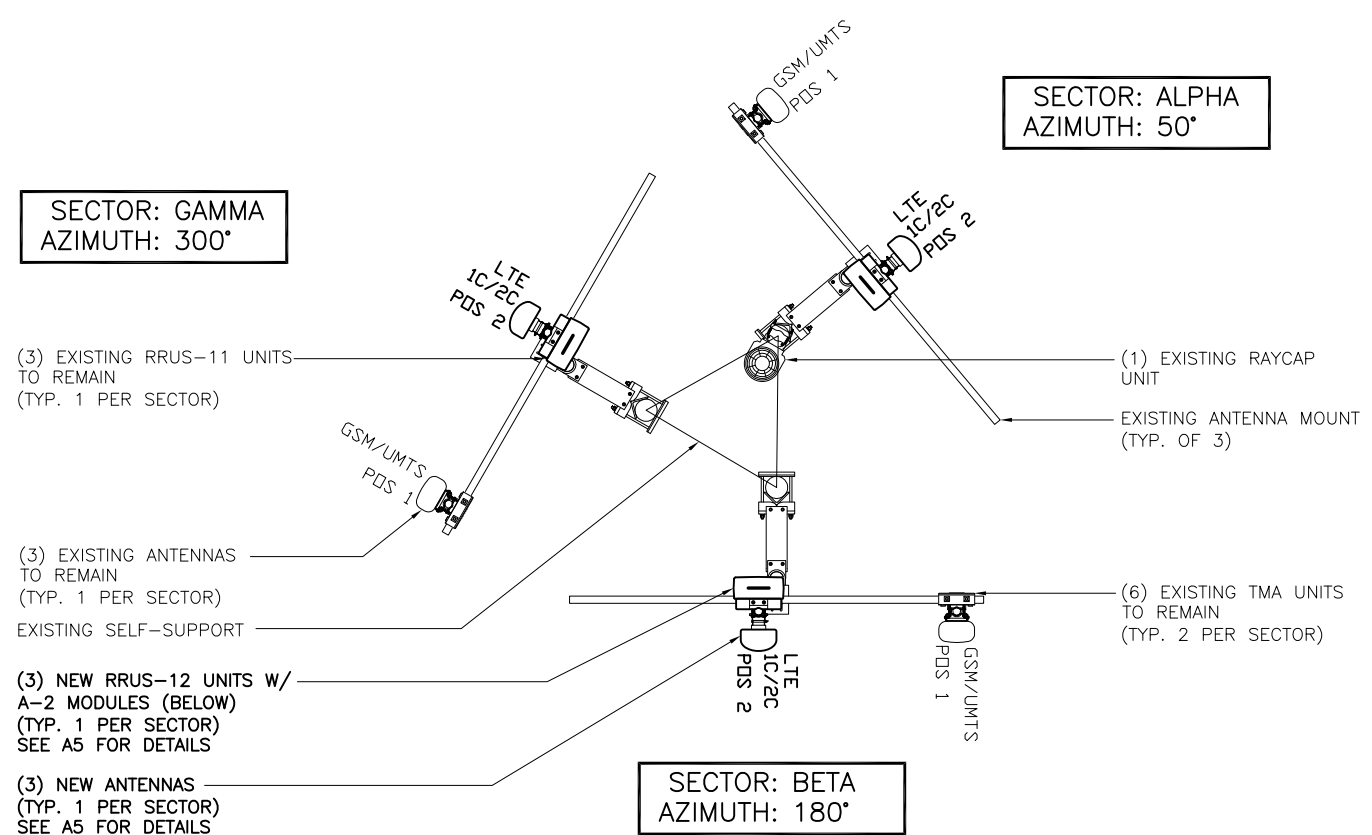
SHEET NUMBER

A4



EXISTING ANTENNA PLAN

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

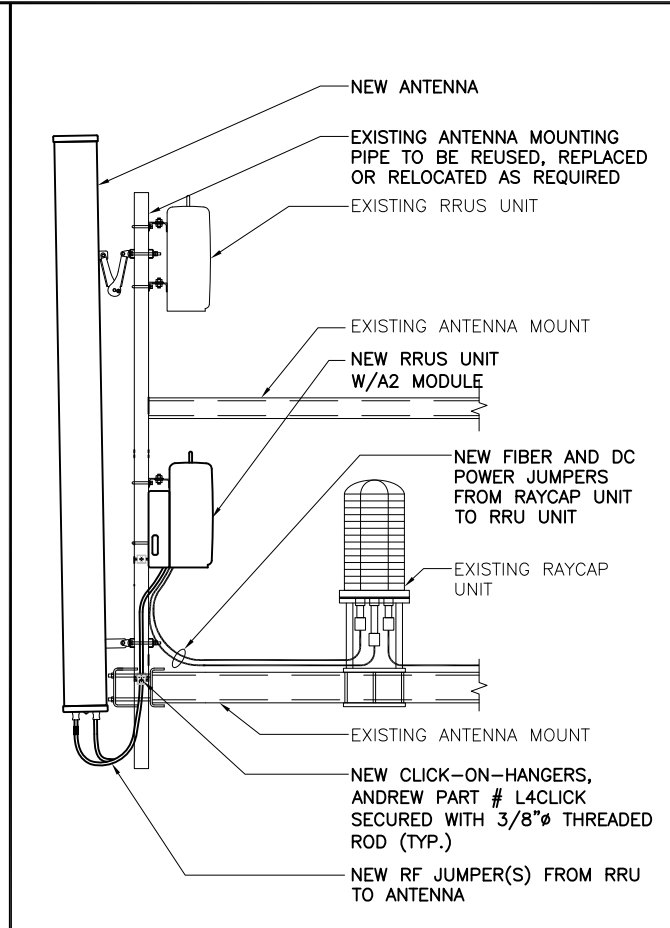
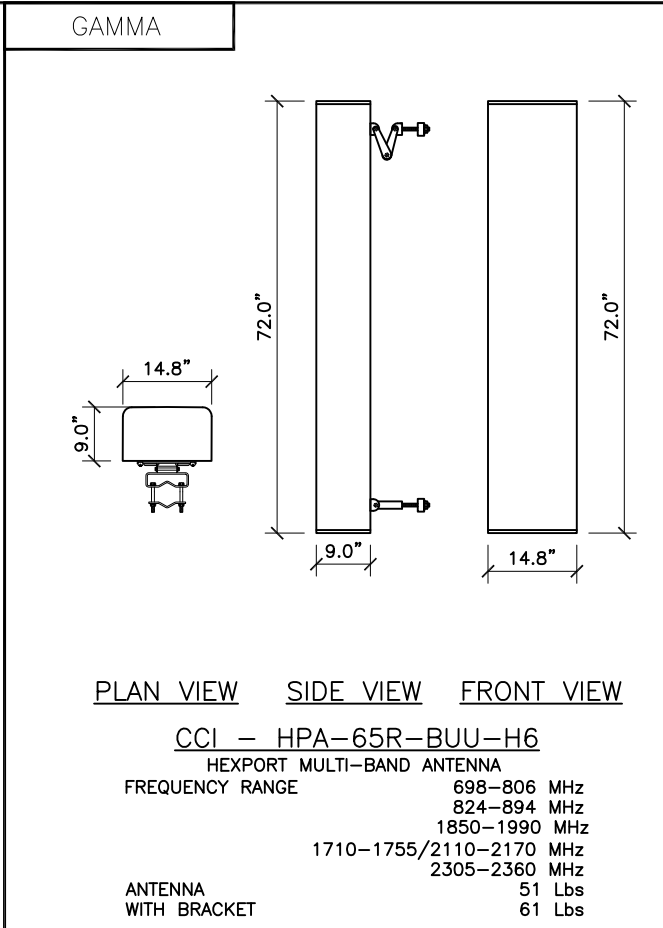
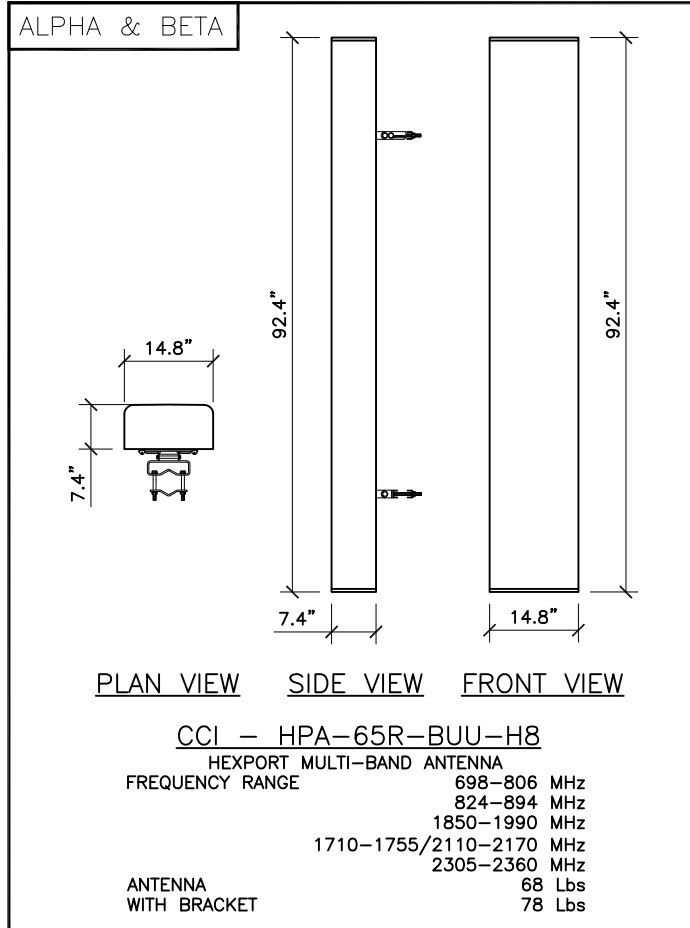


FINAL ANTENNA PLAN

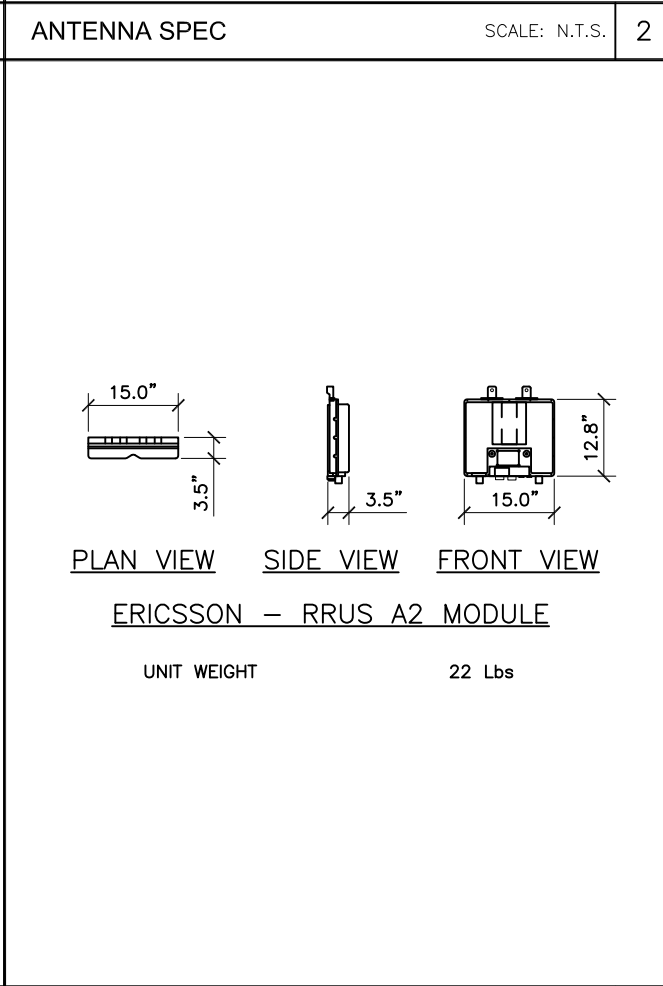
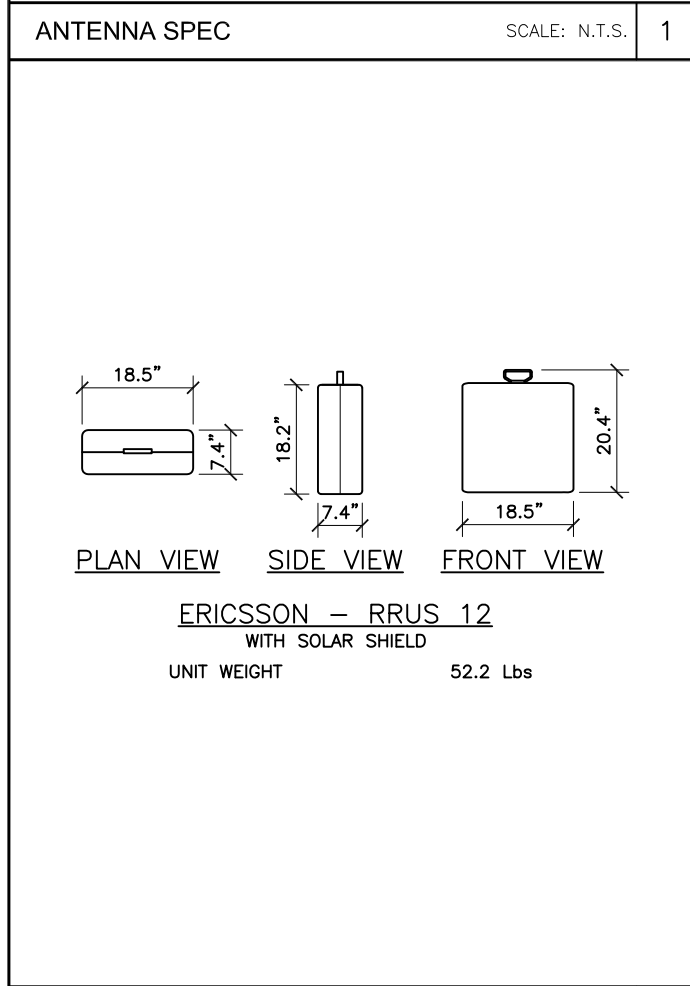
SCALE: 3/16" = 1'-0" 2



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ANTENNA SPEC	SCALE: N.T.S.	1	ANTENNA SPEC	SCALE: N.T.S.	2	ANTENNA SCHEMATIC	SCALE: N.T.S.	3	NOT USED	SCALE: N.T.S.	4
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RRU SPEC	SCALE: N.T.S.	5	A2 BOX SPEC	SCALE: N.T.S.	6	NOT USED	SCALE: N.T.S.	7	NOT USED	SCALE: N.T.S.	8
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SHEET NAME
EQUIPMENT DETAILS

SHEET NUMBER
A5

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SITE NUMBER:
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SITE ADDRESS
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SHEET NAME
ANTENNA & CABLE CONFIGURATION

SHEET NUMBER
A6

FINAL ANTENNA CONFIGURATION AND CABLE SCHEDULE SUPPLIED BY AT&T WIRELESS, FROM RF CONFIG. DATED (05/18/16)										
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) GSM/UMTS ANTENNA	800 10121	KATHREIN	(2) EXISTING TMA UNIT(S)	50°	119'-0"	1-1/4"Ø LDF6-50A	150'-0"	(1) (E) DC6-48-60-18-8F UNIT
	A-2	(N) LTE1C/2C ANTENNA	HPA-65R-BUU-H8	CCI	(1) EXISTING RRUS-11 UNIT AND (1) NEW RRUS-12 UNIT W/ A-2 MODULE	50°	119'-0"	(1) EXISTING FIBER CABLE (2) EXISTING DC POWER CABLES	150'-0"	
	A-3	-	-	-	-	-	-	-	-	
	A-4	-	-	-	-	-	-	-	-	
BETA	B-1	(E) GSM/UMTS ANTENNA	800 10121	KATHREIN	(2) EXISTING TMA UNIT(S)	180°	119'-0"	1-1/4"Ø LDF6-50A 1-1/4"Ø LDF6-50A	150'-0" 150'-0"	
	B-2	(N) LTE1C/2C ANTENNA	HPA-65R-BUU-H8	CCI	(1) EXISTING RRUS-11 UNIT AND (1) NEW RRUS-12 UNIT W/ A-2 MODULE	180°	119'-0"	SEE ANTENNA A-2 FOR CABLE TYPE AND LENGTH		
	B-3	-	-	-	-	-	-	-	-	
	B-4	-	-	-	-	-	-	-	-	
GAMMA	C-1	(E) GSM/UMTS ANTENNA	800 10121	KATHREIN	(2) EXISTING TMA UNIT(S)	300°	119'-0"	1-1/4"Ø LDF6-50A 1-1/4"Ø LDF6-50A	150'-0" 150'-0"	
	C-2	(N) LTE1C/2C ANTENNA	HPA-65R-BUU-H6	CCI	(1) EXISTING RRUS-11 UNIT AND (1) NEW RRUS-12 UNIT W/ A-2 MODULE	300°	119'-0"	SEE ANTENNA A-2 FOR CABLE TYPE AND LENGTH		
	C-3	-	-	-	-	-	-	-	-	
	C-4	-	-	-	-	-	-	-	-	

- CONTRACTOR IS TO REFER TO AT&T'S MOST CURRENT RADIO FREQUENCY DATA SHEET (RFDS) PRIOR TO CONSTRUCTION.
- 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.
- CONTRACTOR SHALL VERIFY THE HEIGHT OF THE ANTENNA WITH THE AT&T WIRELESS PROJECT MANAGER.
- VERIFY TYPE AND SIZE OF TOWER LEG PRIOR TO ORDERING ANY ANTENNA MOUNT.
- UNLESS NOTED OTHERWISE THE CONTRACTOR MUST PROVIDE ALL MATERIAL NECESSARY.
- 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.
- CONTRACTOR SHALL VERIFY ALL RF INFORMATION PRIOR TO CONSTRUCTION.
- 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.
- CABLE LENGTHS WERE DETERMINED BASED ON THE DESIGN DRAWING. CONTRACTOR TO VERIFY ACTUAL LENGTH DURING PRE-CONSTRUCTION WALK.
- 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.

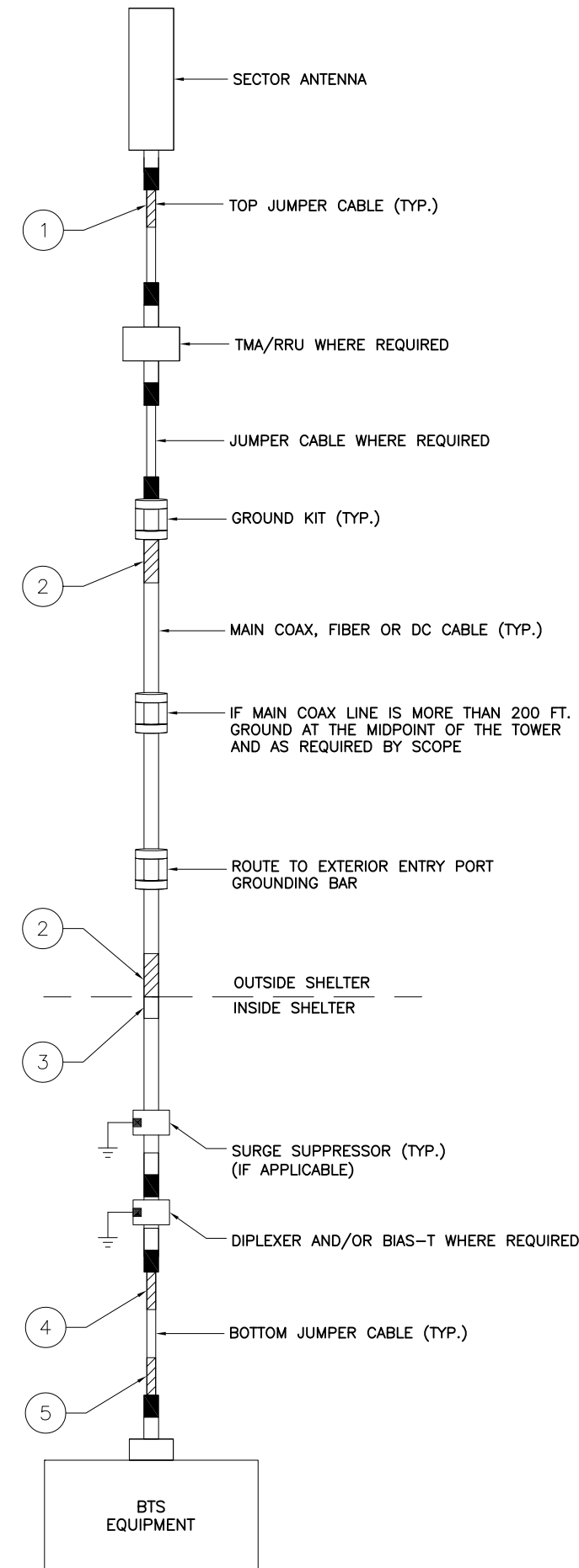
CABLE MARKING DIAGRAM

SCALE: N.T.S. 2

- THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE.
- 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.
- USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE COLOR CHART".
- 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.
- 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.
- 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.
- ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
- IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE NEW TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

CABLE MARKING NOTES

SCALE: N.T.S. 3



CABLE COLOR CODING DIAGRAM

SCALE: N.T.S. 4



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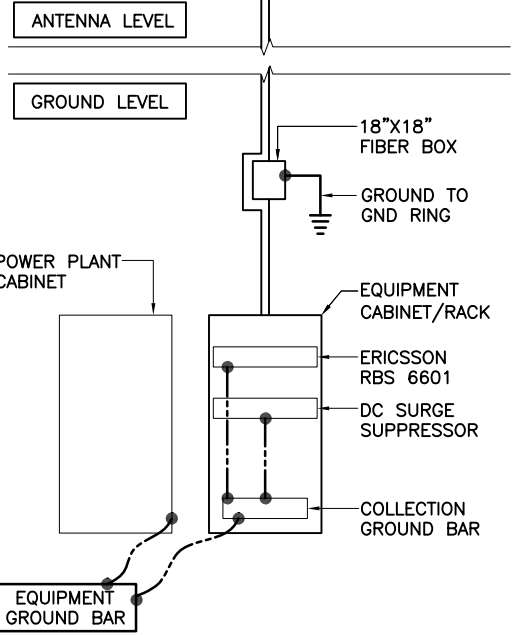
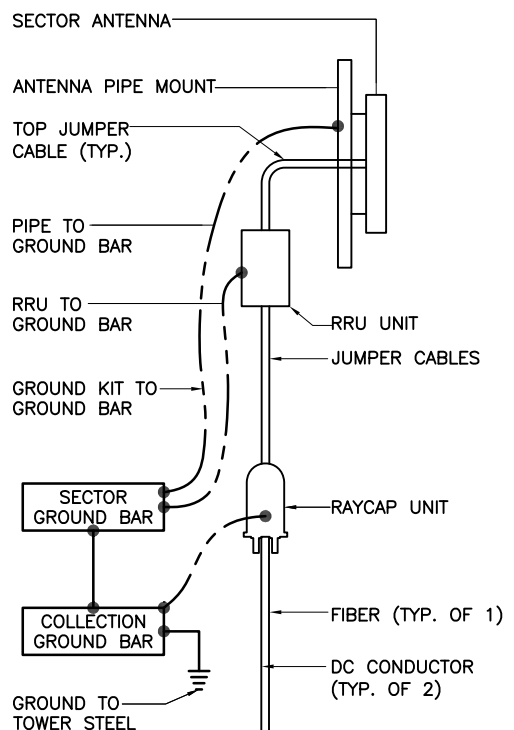
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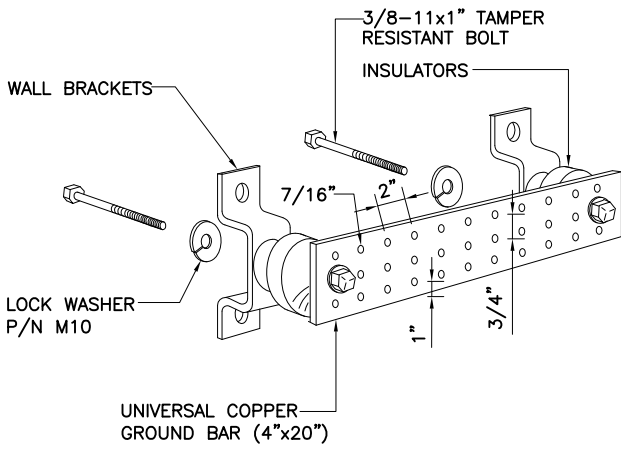
SHEET NAME
CABLE NOTES AND COLOR CODING

SHEET NUMBER
A7

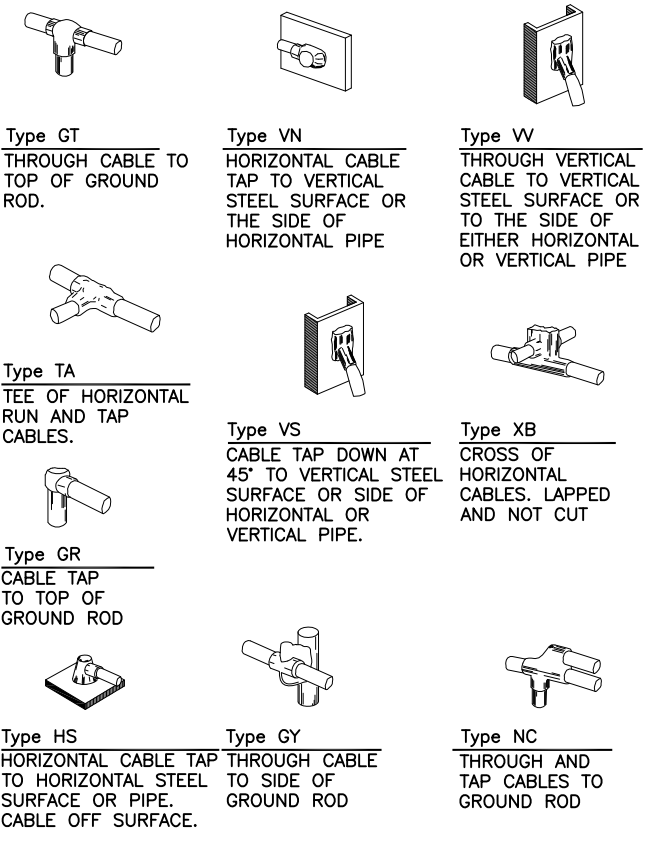
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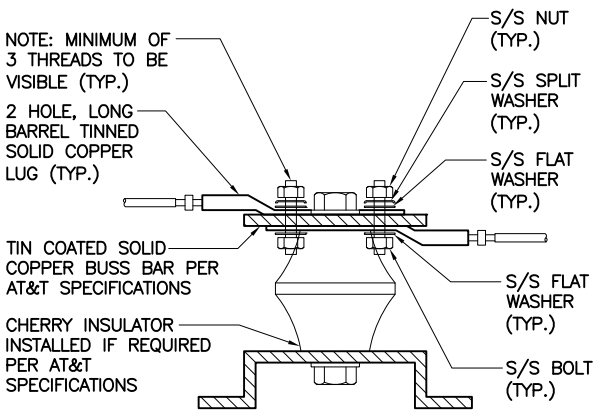
NOTE:
CONTRACTOR TO REINSTALL ALL TOWER GROUND LEAD WIRES AFTER COMPLETION OF TOWER MODIFICATION



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



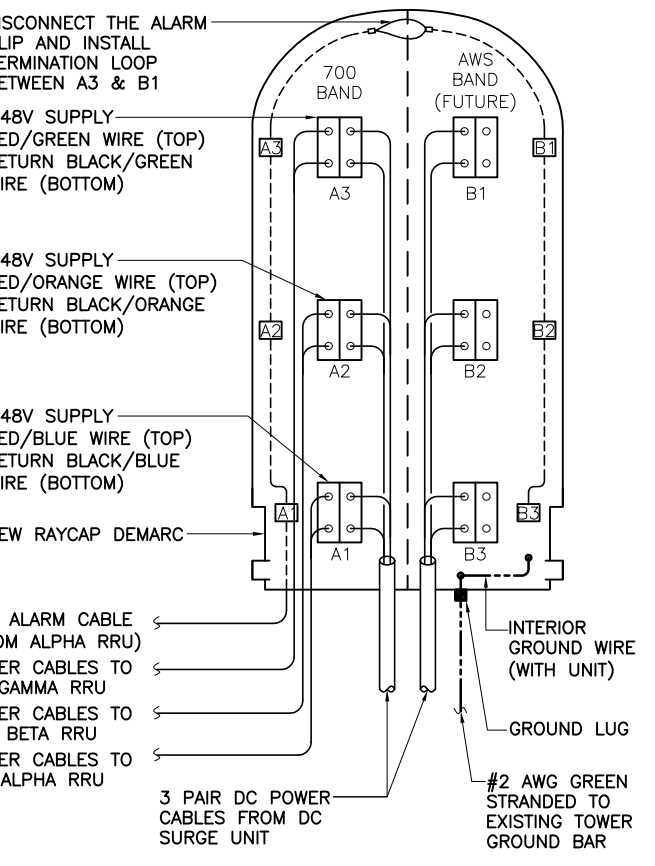
EXOTHERMIC WELD DETAILS SCALE: N.T.S. 4



NOTE: MINIMUM OF 3 THREADS TO BE VISIBLE (TYP.)
2 HOLE, LONG BARREL TINNED SOLID COPPER LUG (TYP.)
S/S NUT (TYP.)
S/S SPLIT WASHER (TYP.)
S/S FLAT WASHER (TYP.)
S/S FLAT WASHER (TYP.)
S/S BOLT (TYP.)
TIN COATED SOLID COPPER BUSS BAR PER AT&T SPECIFICATIONS
CHERRY INSULATOR INSTALLED IF REQUIRED PER AT&T SPECIFICATIONS

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

LUG DETAIL SCALE: N.T.S. 3



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

NOT USED SCALE: N.T.S. 6



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TEL: 847-908-8400
COA# PEC.0001444
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REV	DATE	DESCRIPTION	BY
0	06/14/16	90% REVIEW	VV
1	08/22/16	FOR PERMIT	KC
2	02/03/17	TOWER MOD	KC
3	03/13/17	TOWER REINFORCEMENT	RP
4	05/04/17	REVISION	MD

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SITE NAME
SIMSBURY NORTH CENTRAL

SITE NUMBER:
CTL05397

SITE ADDRESS
**871 HOPMEADOW STREET
SIMSBURY, CT 06070**

SHEET NAME
GROUNDING DETAILS

SHEET NUMBER
A8

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APPLICABLE CODES

- DESIGN, FABRICATION, CONSTRUCTION, AND ERECTION OF ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
 INTERNATIONAL BUILDING CODE, 2012 EDITION
 ANSI/TIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES
 ANSI/TIA-1019-A STANDARD FOR INSTALLATION, ALTERATIONS AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
 ANSI/AISC 360-10 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
 AWS D1.1 STRUCTURAL WELDING CODE

MANDATORY SUBMITTALS AND INSPECTIONS

- THE FOLLOWING PRE CONSTRUCTION ITEMS SHALL BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL TO THE ENGINEER OF RECORD PRIOR TO ORDERING OR FABRICATION OF ANY MATERIAL:
 SHOP DRAWINGS FOR:
 STRUCTURAL STEEL
 EPOXY ANCHOR RODS
- INTERNATIONAL BUILDING CODE CHAPTER 17 "SPECIAL INSPECTIONS AND TESTS", SECTION 1704 IS REQUIRED TO BE PERFORMED BY AN INDEPENDENT TESTING AGENCY EMPLOYED BY THE PROJECT MANAGER FOR THE FOLLOWING:
 STEEL INSTALLATION / HIGH STRENGTH BOLTS
 STRUCTURAL WELDING
- THE CONTRACTOR SHALL COORDINATE A FINAL INSPECTION WITH THE PROJECT MANAGER AFTER 100% COMPLETION OF THE INSTALLATION.

GENERAL

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS, AND RULES SET FORTH BY FEDERAL, STATE, AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE PROJECT. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION, OR RULE IS MENTIONED IN THESE SPECIFICATIONS.
- ALL WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS, PROJECT SPECIFICATIONS, AND THE CONSTRUCTION CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND STATE LAW AS DEFINED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
- THE CONTRACTOR SHALL HAVE AND MAINTAIN A VALID CONTRACTOR'S LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTOR PERFORMING THOSE TRADES SHALL BE LICENSED.
- THE CONTRACTOR SHALL PROVIDE THE NECESSARY CERTIFICATIONS OF ALL WORKERS ON THE TOWER TO THE OWNER OR THE PROJECT MANAGER UPON REQUEST.
- THE CONTRACTOR SHALL BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY AND THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED.
- PRIOR TO THE SUBMISSION OF THE BID, THE CONTRACTOR SHALL VISIT THE JOB SITE, VERIFY ALL DIMENSIONS, POTENTIAL SAFETY HAZARDS, AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
- DO NOT SCALE DRAWINGS. USE DIMENSIONS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
- ALL MATERIALS SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE DRAWINGS. ANY AND ALL SUBSTITUTIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE PROJECT MANAGER AND THE ENGINEER OF RECORD PRIOR TO PROCUREMENT.
- ALL MEANS AND METHODS OF CONSTRUCTION DEALING WITH TOWER CONSTRUCTION AND SAFETY, STEEL ERECTION, EXCAVATIONS, SCAFFOLDING, FORMWORK, AND WORK IN CONFINED SPACES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY BRACING AND/OR SHORING OF ALL STRUCTURAL AND NON-STRUCTURAL ELEMENTS DURING CONSTRUCTION UNTIL ALL STRUCTURAL ELEMENTS HAVE BEEN PROPERLY INSTALLED.
- THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT MANAGER IF ANY WIRELESS CARRIER DOWNTIME WILL BE REQUIRED FOR THE PROJECT. DO NOT PERFORM ANY WORK ON THE TOWER UNTIL ALL NECESSARY DOWNTIME HAS BEEN APPROVED.
- WORK IS TO BE CONTAINED TO THE SITE COMPOUND AREA ONLY. ANY OUTSIDE OR ADJACENT PROPERTY NEEDED FOR ACCESS OR TO COMPLETE THE WORK SHALL BE COORDINATED WITH THE PROJECT MANAGER PRIOR TO CONSTRUCTION.

STRUCTURAL NOTES

- THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SITE CONDITIONS AND UPON COMPLETION OF WORK REPAIR BACK TO ORIGINAL CONDITIONS ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.
- THE CONTRACTOR SHALL KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION, SUBJECT TO APPROVAL BY THE PROPERTY OWNER AND THE PROJECT MANAGER.
- THE CONTRACTOR SHALL PROVIDE ON-SITE TRASH RECEPTACLES FOR COLLECTION OF NON-TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.
- ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON-SITE.
- UNLESS NOTED OTHERWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS NECESSARY FOR CONSTRUCTION.
- INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS SHALL BE REPORTED TO THE PROJECT MANAGER AND ENGINEER, AND SHALL REQUIRE APPROVAL PRIOR TO PERFORMING ANY REMEDIAL OR CORRECTIVE ACTION.
- THE PROJECT MANAGER MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTOR'S WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING THE TESTS.
- THE CONTRACTOR SHALL MAINTAIN AND SUPPLY THE PROJECT MANAGER WITH AS-BUILT PLANS UPON COMPLETION OF THE PROJECT.

STRUCTURAL STEEL

- ALL STRUCTURAL STEEL IS TO BE NEW AND CONFORM TO THE FOLLOWING, UNLESS NOTED OTHERWISE ON THE DRAWINGS:
 ALL NEW REINFORCING STEEL SHALL BE:
 A618-50 (Fy = 50 KSI) PIPES
 A36 (Fy = 36 KSI) PLATES AND ANGLES
 ALL NEW BOLTS SHALL BE:
 A325X (Fy = 90 KSI)
 A490 (Fy = 130 KSI) MAIN LEG BOLTS
- ALL STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 AND A123, INCLUDING CONNECTION HARDWARE, (BOLTS, WASHERS, NUTS, AND PINS) PLATES, SPACERS AND FILLERS.
- ALL BOLTS SHALL HAVE LOCK WASHERS OR LOCKING DEVICES. DO NOT RE-USE BOLTS. BOLT THREADS ARE TO BE EXCLUDED FROM THE SHEARING PLANES. USE BEARING TYPE CONNECTIONS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE PRETENSIONED USING THE TURN-OF-THE-NUT METHOD.
- ALL U-BOLTS SHALL BE A307. ALL BOLTS SHALL BE HOT DIP GALVANIZED AND HAVE LOCK WASHERS OR LOCKING DEVICES. DO NOT RE-USE BOLTS.
- THE FINISHED DIAMETER OF BOLT HOLES SHALL NOT BE MORE THAN 1/16" LARGER THAN THE NOMINAL BOLT DIAMETER UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL PROVIDE ALL REQUIRED GUSSETS, SPACERS, FILLERS AND BATTEN PLATES.
- NO HOLES SHALL BE MADE IN ANY NEW OR EXISTING STRUCTURAL STEEL MEMBER OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.

EPOXY GROUTED REINFORCING ANCHOR RODS

- UNLESS OTHERWISE NOTED, REINFORCING ANCHOR RODS SHALL BE 150 KSI ALL-THREAD BAR CONFORMING TO ASTM A722.
- ALL REINFORCING ANCHOR RODS SHALL BE HOT DIP GALVANIZED PER ASTM A153. ALTERNATIVELY, ALL REINFORCING ANCHOR RODS MAY BE EPOXY COATED PER ASTM A775.
- THE CORE-DRILLED HOLES IN THE CONCRETE FOR THE ANCHOR RODS SHALL BE CLEAN AND DRY, AND OTHERWISE PROPERLY PREPARED ACCORDING TO THE ANCHOR ROD AND EPOXY MANUFACTURERS' INSTRUCTIONS, PRIOR TO PLACEMENT OF ANCHOR RODS AND EPOXY. CONTRACTOR SHALL FOLLOW ALL ANCHOR ROD AND EPOXY MANUFACTURER RECOMMENDATIONS REGARDING HANDLING OF RODS, EPOXY, ACCEPTABLE AMBIENT TEMPERATURE RANGE DURING INSTALLATION AND POST-INSTALLATION CURING, THE EFFECT OF TEMPERATURE ON EPOXY CURING TIME, PREPARATION OF HOLE, ETC.
- IF CONTRACTOR INTENDS TO USE A DIFFERENT EPOXY, A REQUEST INCLUDING THE EPOXY TECHNICAL DATA SHEET(S) SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW PRIOR TO CONSTRUCTION.

WELDING

- WELDING STRUCTURAL STEEL SHALL CONFORM TO AWS D1.1, E70XX ELECTRODES.
- WELDS NOT CALLED OUT ON DRAWINGS SHALL BE CONTINUOUS 1/4 INCH WELDS.
- ALL WELDERS SHALL BE AWS CERTIFIED TO THE LATEST EDITION OF THE AWS D1.1 WELDING CODE AND SHALL WELD ONLY IN THE POSITIONS AND USING ONLY THE PROCESSES FOR WHICH THEY ARE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
- ALL PERFORMED SHOP WELDS SHALL BE VISUALLY INSPECTED BY AN AWS CERTIFIED WELDING INSPECTOR.
- WELDING PROCEDURES MUST BE FOLLOWED EXPLICITLY. THIS MEANS USING THE CORRECT WELDING ELECTRODE TYPE AND SIZE, THE PROPER PREHEAT AND INTERPASS TEMPERATURE AND COMPLIANCE WITH ANY SPECIFIC INSTRUCTIONS WITH REGARD TO THE JOINT OR WELDMENT.
- ALL INDIVIDUALS WELDING MUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT INCLUDING BUT NOT LIMITED TO SHIELDING, HOOD AND ARM PROTECTION.
- OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A MAGNETIC DRILL AND ANY WELDED ITEMS REMOVED WITH A GRINDER.
- CONTRACTOR SHALL PROVIDE ADEQUATE PRE-HEAT IN ACCORDANCE WITH AWS 01.1 SPECIFICATIONS.
- INSTALL 3000°F (NFPA 701) FIRE BLANKET AROUND ALL COAX, & SHIELD COAX FROM ALL WELDING PROCEDURES. COAX SHALL BE PROTECTED AT EACH WELD ELEVATION AND PULLED, IF POSSIBLE, AWAY FROM AREA OF POLE BEING WELDED.
- WATER SHALL BE ON SITE, OF ADEQUATE AMOUNT, AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. WATER SHALL BE CAPABLE OF REACHING HEIGHT WHERE WELDING IS BEING PERFORMED. IN ADDITION, 10 LB. CLASS ABC MULTIPURPOSE FIRE EXTINGUISHERS FULLY CHARGED AND CAPABLE OF DISCHARGE WITHIN 30 SECONDS OF DETECTING A FIRE SHALL BE PROVIDED. FIRE EXTINGUISHERS SHALL BE STRATEGICALLY LOCATED AROUND COMPOUND AND IN THE AIR (I.E. ON THE MAN LIFT WHERE WELDING IS BEING PERFORMED).
- CLEAN ALL DEBRIS INSIDE AND AROUND COMPOUND AND TOWER PRIOR TO WELDING.
- NO FIELD WELDING PERMITTED, EXCEPT WHERE INDICATED ON THE DRAWINGS.
- ALL SURFACES SHALL BE DRY, CLEAN AND FREE FROM LOOSE SCALE, PAINT OR GREASE.

COLD GALVANIZING

- THE CONTRACTOR SHALL REPAIR ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW STEEL COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE WIRE BRUSHED, CLEARED AND REPAIRED WITH TWO (2) COATS OF ZINC RICH COLD GALVANIZING COMPOUND PER MANUFACTURER'S RECOMMENDATION.
- PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH TWO (2) COATS OF ZINC RICH COLD GALVANIZING COMPOUND AND MANUFACTURER'S RECOMMENDATIONS.



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SITE NUMBER:
CTL05397

SITE ADDRESS
 871 HOPMEADOW STREET
 SIMSBURY, CT 06070

SHEET NAME
STRUCTURAL NOTES

SHEET NUMBER
S-1

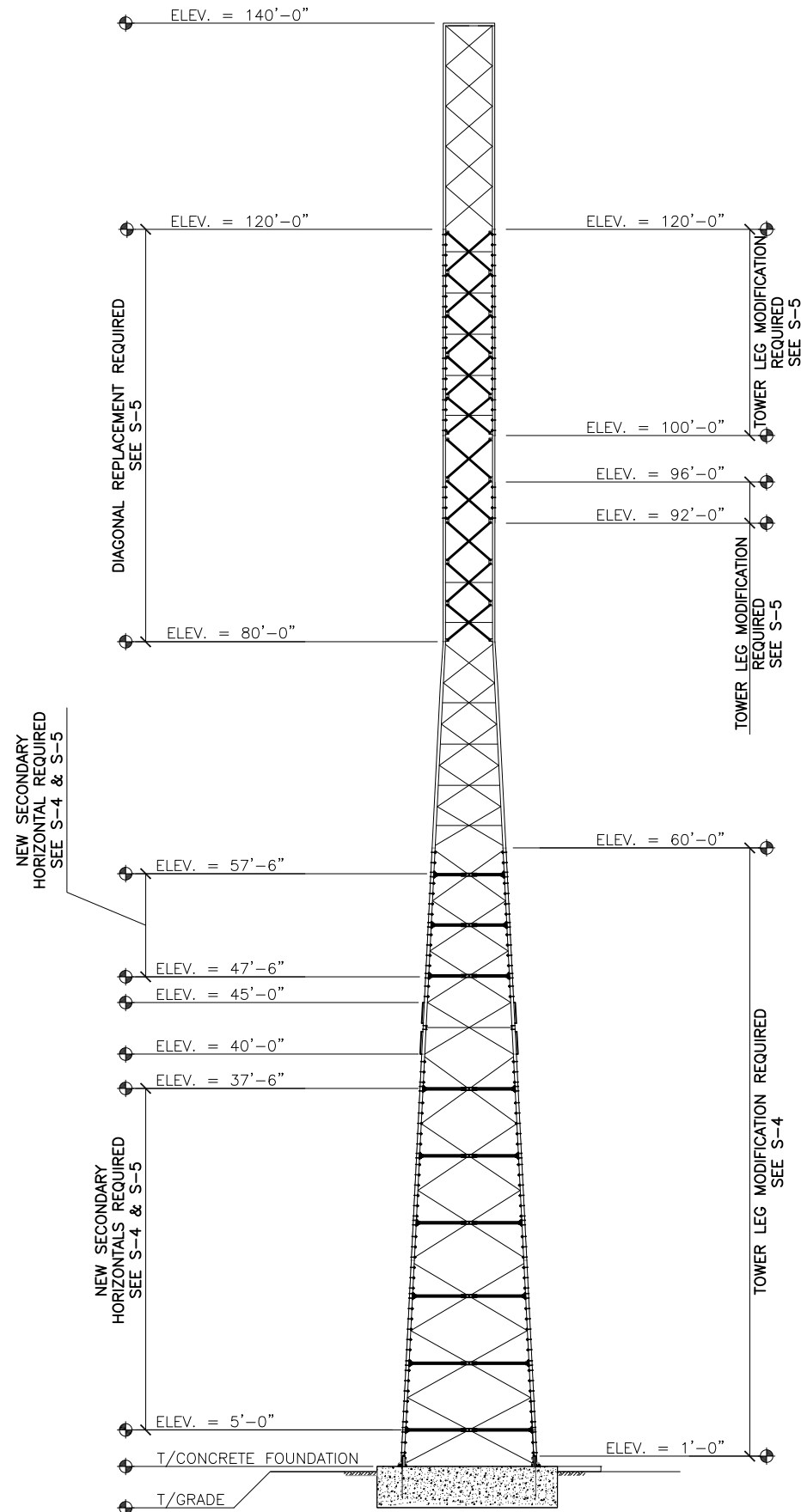
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NOTES:

1. STRUCTURAL CALCULATIONS FOR THE TOWER WERE PREPARED BY FULLERTON ENGINEERING, INC. AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE TOWER STRUCTURE FOR THE ADDITIONAL LOADS. THE CONTRACTOR WILL COORDINATE WITH PROJECT MANAGER TO OBTAIN A COPY.
2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER OF RECORD PRIOR TO FABRICATION OR THE START OF ANY WORK.
3. ANTENNAS, MOUNTS AND CABLING NOT SHOWN FOR CLARITY.

MANDATORY SUBMITTALS AND INSPECTIONS

1. THE FOLLOWING PRE CONSTRUCTION ITEMS SHALL BE SUBMITTED BY THE CONTRACTOR FOR REVIEW AND APPROVAL TO THE ENGINEER OF RECORD PRIOR TO ORDERING OR FABRICATION OF ANY MATERIAL:
SHOP DRAWINGS FOR:
STRUCTURAL STEEL
EPOXY ANCHOR RODS
2. INTERNATIONAL BUILDING CODE CHAPTER 17 "SPECIAL INSPECTIONS AND TESTS", SECTION 1704 IS REQUIRED TO BE PERFORMED BY AN INDEPENDENT TESTING AGENCY EMPLOYED BY THE PROJECT MANAGER FOR THE FOLLOWING:
STEEL INSTALLATION / HIGH STRENGTH BOLTS
STRUCTURAL WELDING
3. THE CONTRACTOR SHALL COORDINATE A FINAL INSPECTION WITH THE PROJECT MANAGER AFTER 100% COMPLETION OF THE INSTALLATION.



TOWER MODIFICATION		
ELEVATION	MEMBER	SHEET NUMBER
100'-0" TO 120'-0"	TOWER LEG REINFORCEMENT	SEE S-5
80'-0" TO 120'-0"	MAIN DIAGONAL REPLACEMENT	SEE S-5
92'-0" TO 96'-0"	TOWER LEG REINFORCEMENT	SEE S-5
80'-0"	REPLACE EXISTING MAIN LEG BOLTS	(4) 5/8"Ø A490N MAIN LEG BOLTS (TYP. EACH LEG) SEE S-5
60'-0"	REPLACE EXISTING MAIN LEG BOLTS	(4) 3/4"Ø A490N (TYP. MAIN LEG BOLTS EACH LEG) SEE S-4
45'-0" TO 60'-0"	TOWER LEG REINFORCEMENT	SEE S-4
45'-0" TO 60'-0"	TOWER LEG REINFORCEMENT	SEE S-4
47'-6" TO 57'-6"	NEW SECONDARY HORIZONTALS	SEE S-5
40'-0"	REPLACE EXISTING MAIN LEG BOLTS	(4) 3/4"Ø A490N (TYP. MAIN LEG BOLTS EACH LEG) SEE S-4
5'-0" TO 37'-6"	NEW SECONDARY HORIZONTALS	SEE S-5
1'-0" TO 40'-0"	TOWER LEG REINFORCEMENT	SEE S-4
0'-0" TO 1'-0"	TOWER ANCHORAGE REINFORCEMENT	SEE S-3



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SIMSBURY NORTH CENTRAL

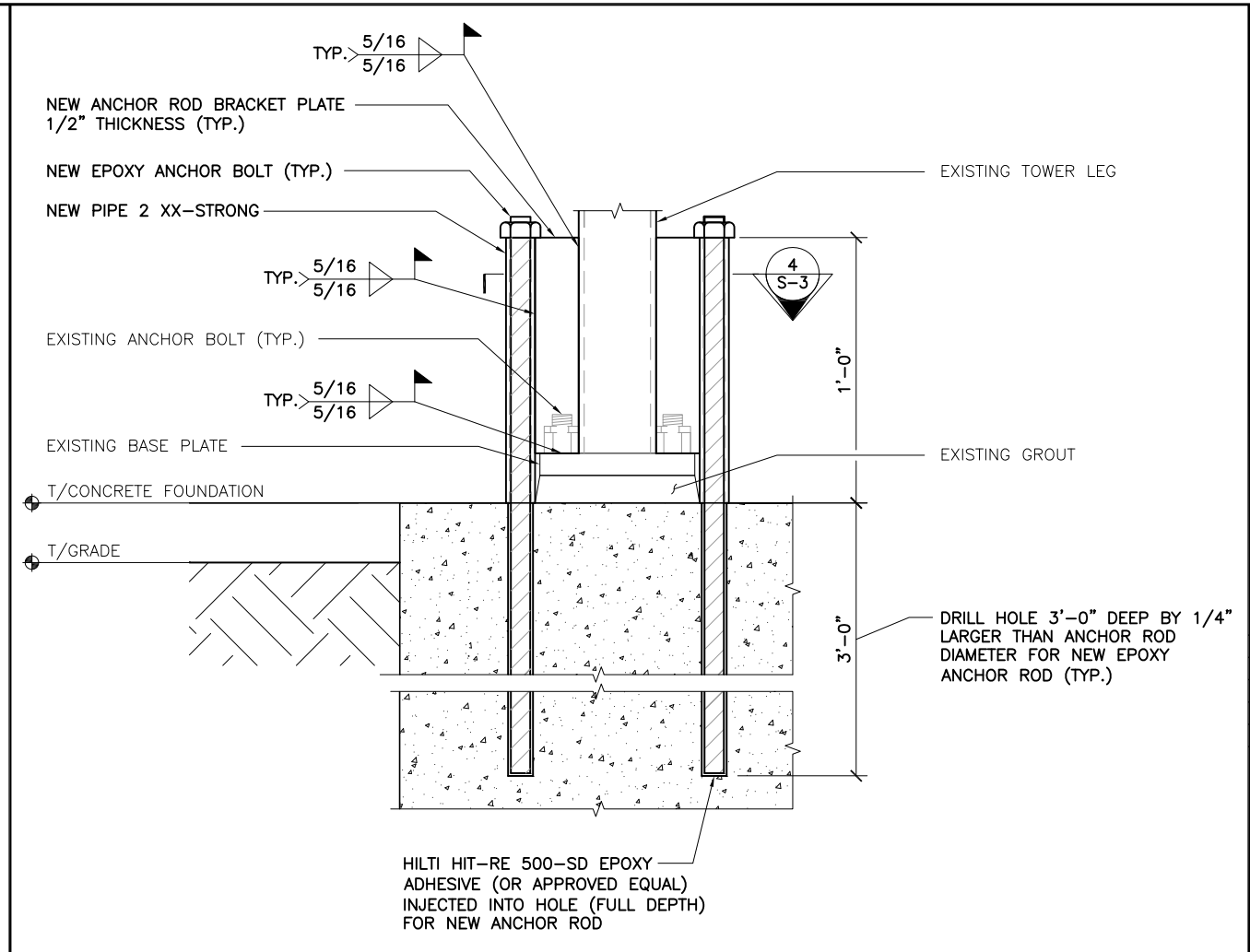
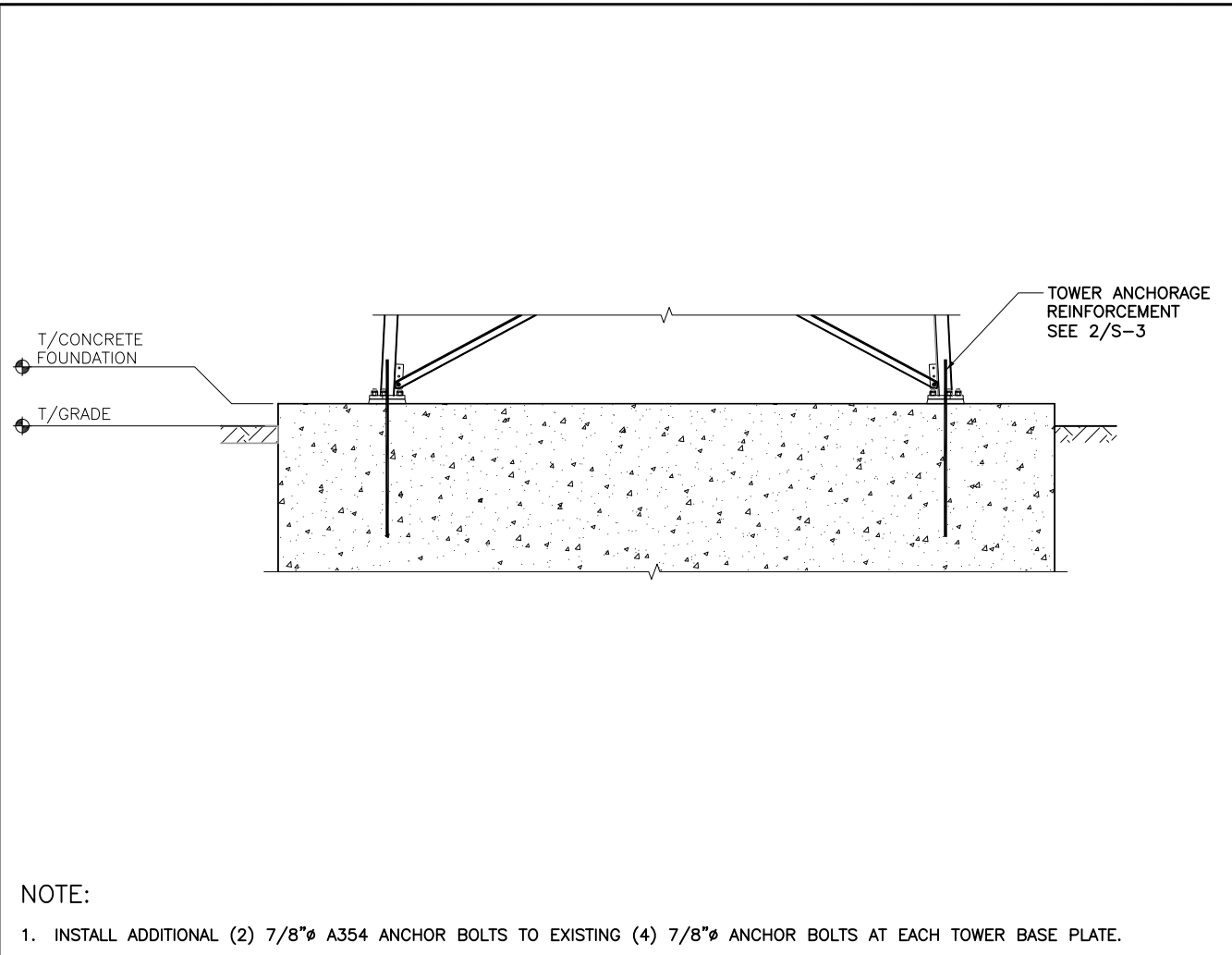
SITE NUMBER:
CTL05397

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871 HOPMEADOW STREET
SIMSBURY, CT 06070

SHEET NAME
TOWER REINFORCEMENT PLAN

SHEET NUMBER
S-2

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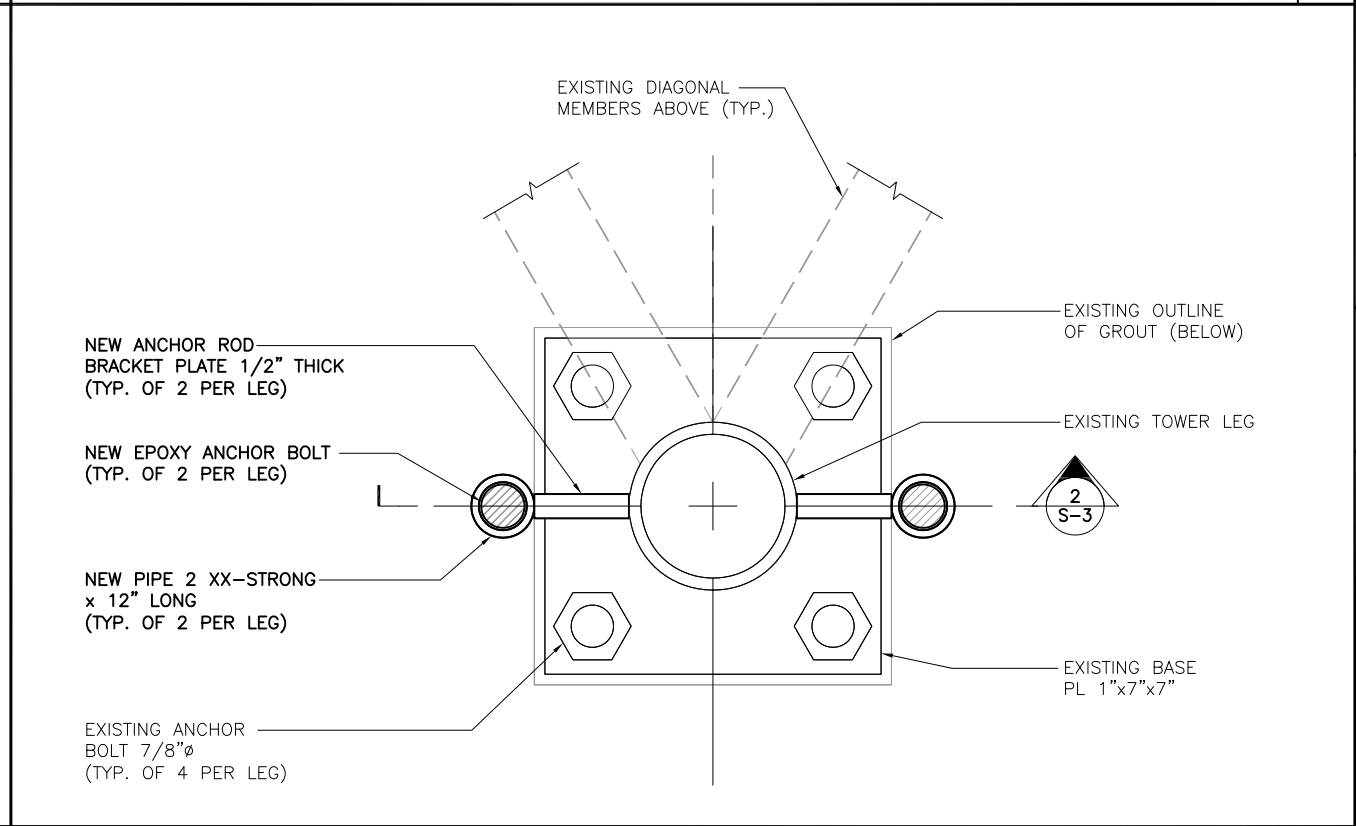
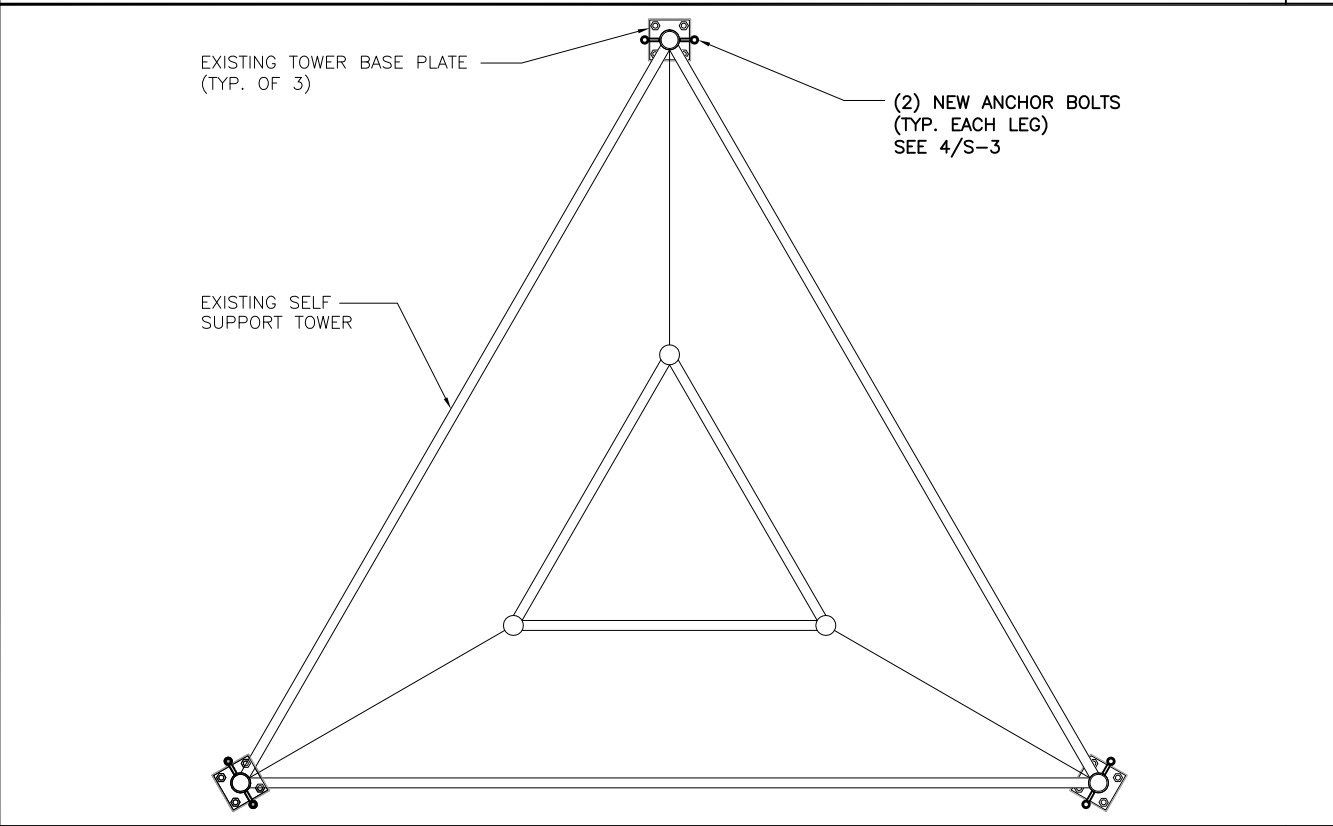
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TOWER MODIFICATION ELEVATION FROM 0'-0" TO 1'-0" SCALE: N.T.S. 1

TOWER ANCHORAGE REINFORCEMENT SCALE: N.T.S. 2



TOWER BASE PLAN SCALE: N.T.S. 3

TOWER BASE ANCHOR BOLT PLAN DETAIL SCALE: 3" = 1'-0" 4

SITE NAME
SIMSBURY NORTH CENTRAL

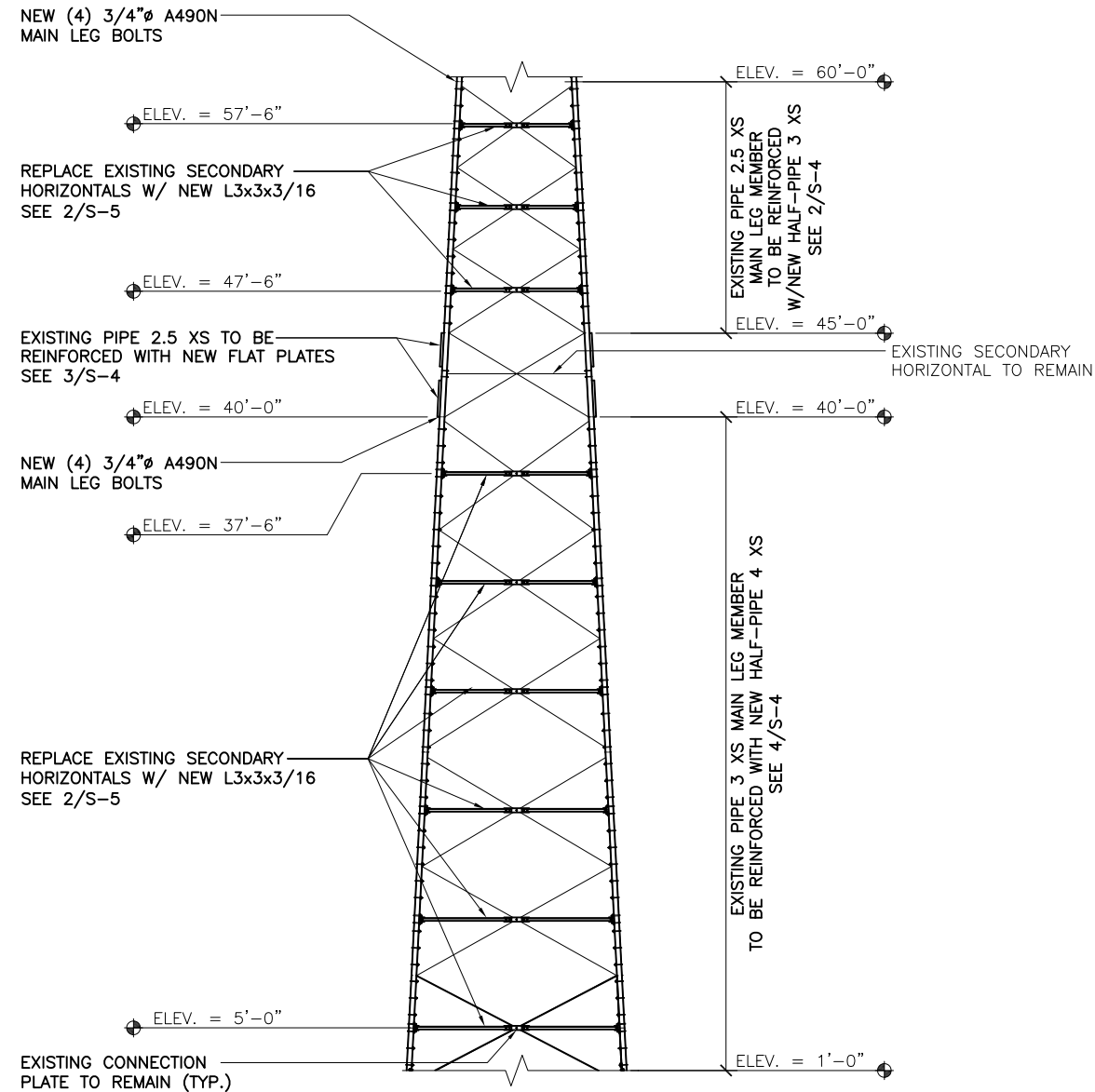
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SHEET NAME
TOWER REINFORCEMENT DETAILS

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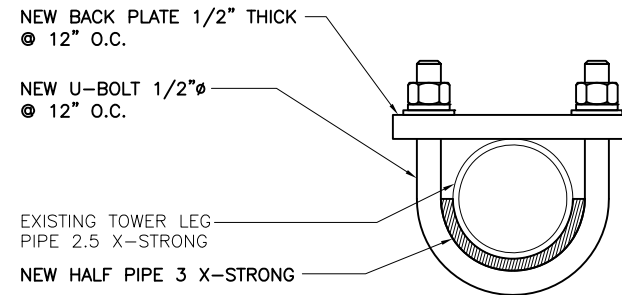
NOTES:

1. INSTALL HALF-PIPE 4 XS TO EXISTING MAIN LEG @ ELEV. 1'-0" TO 40'-0" AGL. THE HALF-PIPE SHALL BE ATTACHED USING 1/2" U-BOLTS AND 1/2" THICK BACK PLATE @ 12" O.C. AND @ EACH END OF REINFORCEMENT. SEE DETAIL 4/S-4.
2. INSTALL (4) 3/4" A490N MAIN LEG BOLTS BY REPLACING EXISTING (4) 5/8" A325N MAIN LEG BOLTS @ ELEV. 40' AGL. THE LEG BOLTS SHALL BE INSTALLED IN ENLARGED (4) 13/16" HOLES (TYP. EACH LEG)
3. INSTALL NEW VERTICAL PLATES 1/2"x1-3/4" TO EXISTING MAIN LEG AND NEXT TO EXISTING VERTICAL PLATES REINFORCEMENT @ ELEV. 40'-0" TO 45'-0" AGL. SEE DETAIL 3/S-4.
4. REPLACE EXISTING SECONDARY HORIZONTALS @ ELEV. 5'-0" TO 37'-6" AND 47'-6" TO 57'-6" AGL. WITH NEW L3X3X3/16 SECONDARY HORIZONTALS
5. INSTALL (1) NEW HALF-PIPE 3 XS TO EXISTING MAIN LEG @ ELEV. 45'-0" TO 60'-0" AGL. THE HALF-PIPE SHALL BE ATTACHED WITH 1/2" U-BOLTS AND 1/2" BACK PLATE AT 12" O.C. AND @ AT EACH END OF REINFORCEMENT. SEE DETAIL 2/S-4.
6. INSTALL (4) 3/4" A490N MAIN LEG BOLTS BY REPLACING EXISTING (4) 5/8" A325N MAIN LEG BOLTS @ ELEV. 60' AGL. THE LEG BOLTS SHALL BE INSTALLED IN ENLARGED (4) 13/16" HOLES (TYP. EACH LEG)

TOWER MODIFICATION ELEVATION FROM 1'-0" TO 60'-0"

SCALE: N.T.S.

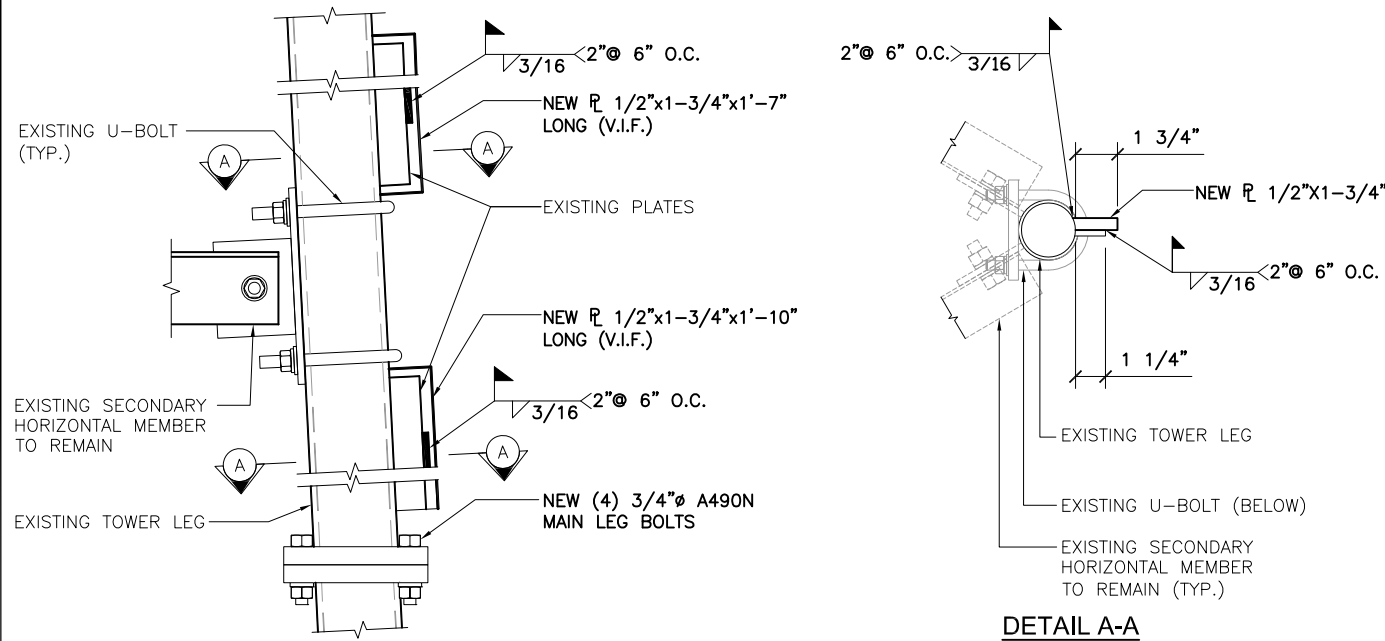
1



TOWER LEG REINFORCEMENT ELEVATION FROM 45'-0" TO 60'-0"

SCALE: N.T.S.

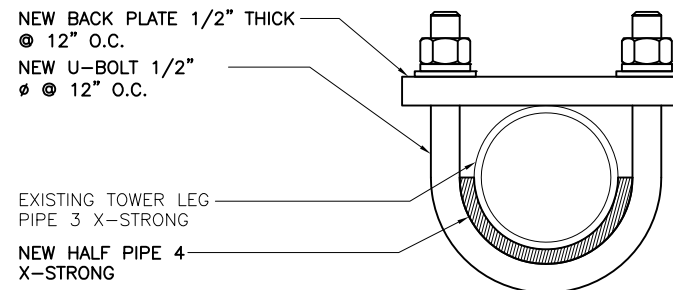
2



TOWER LEG REINFORCEMENT ELEVATION FROM 40'-0" TO 45'-0"

SCALE: N.T.S.

3



TOWER LEG REINFORCEMENT ELEVATION FROM 1'-0" TO 40'-0"

SCALE: N.T.S.

4



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**871 HOPMEADOW STREET
SIMSBURY, CT 06070**

SHEET NAME
TOWER REINFORCEMENT DETAILS

SHEET NUMBER
S-4

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REV	DATE	DESCRIPTION	BY
0	06/14/16	90% REVIEW	VV
1	08/22/16	FOR PERMIT	KC
2	02/03/17	TOWER MOD	KC
3	03/13/17	TOWER REINFORCEMENT	RP
4	05/04/17	REVISION	MD

I HEREBY CERTIFY THAT THESE DRAWING 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
SIMSBURY NORTH CENTRAL

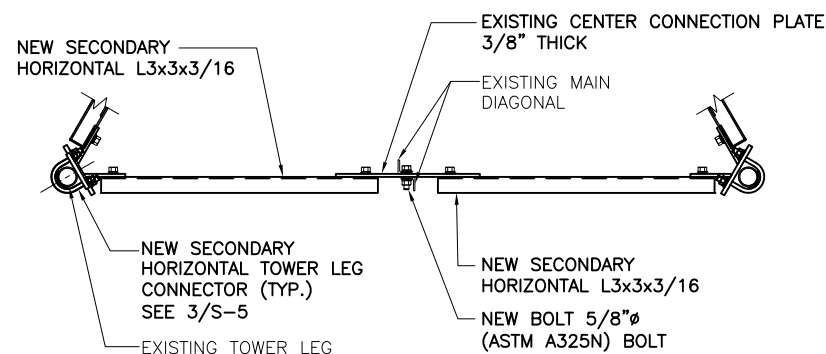
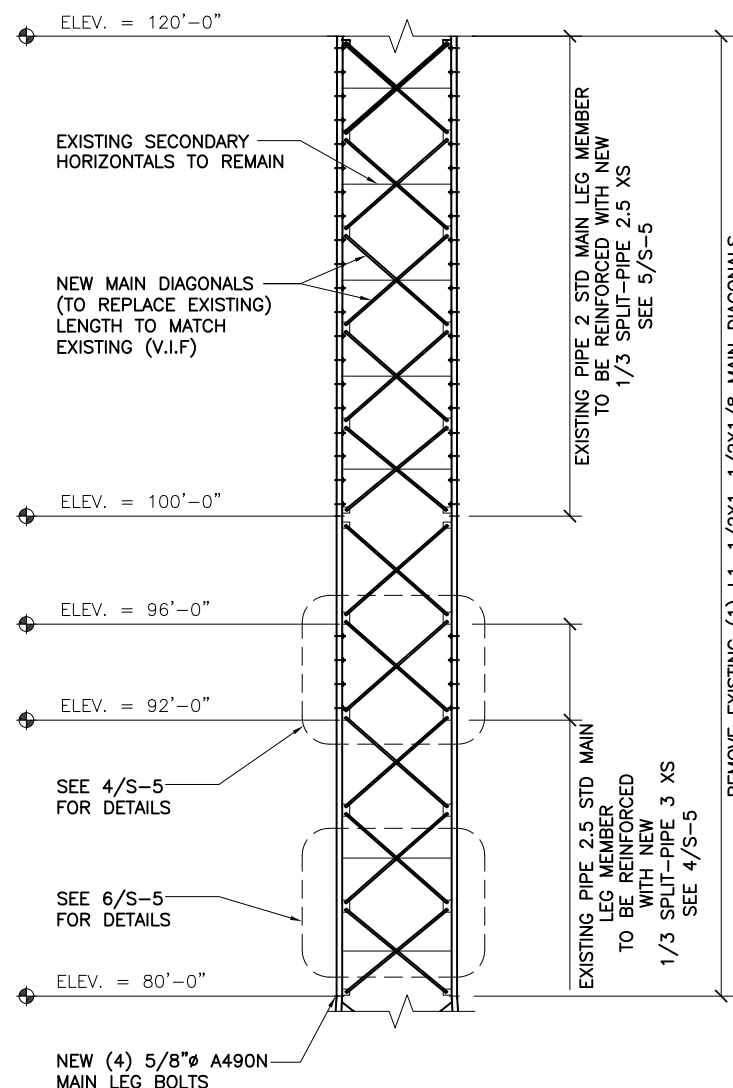
SITE NUMBER:
CTL05397

SITE ADDRESS
871 HOPMEADOW STREET
SIMSBURY, CT 06070

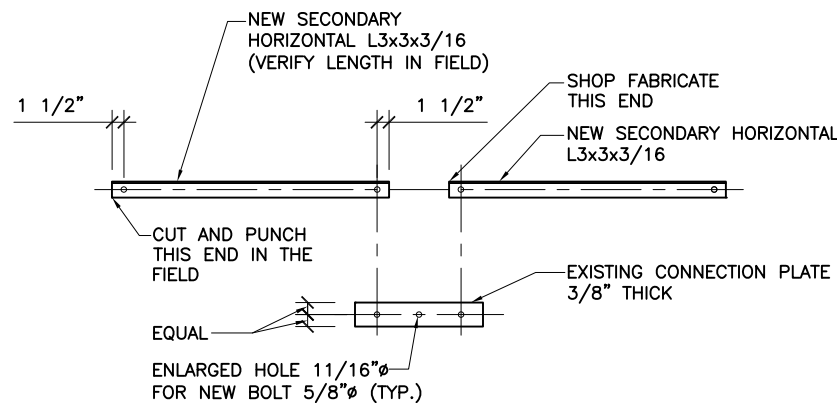
SHEET NAME
TOWER REINFORCEMENT DETAILS

SHEET NUMBER

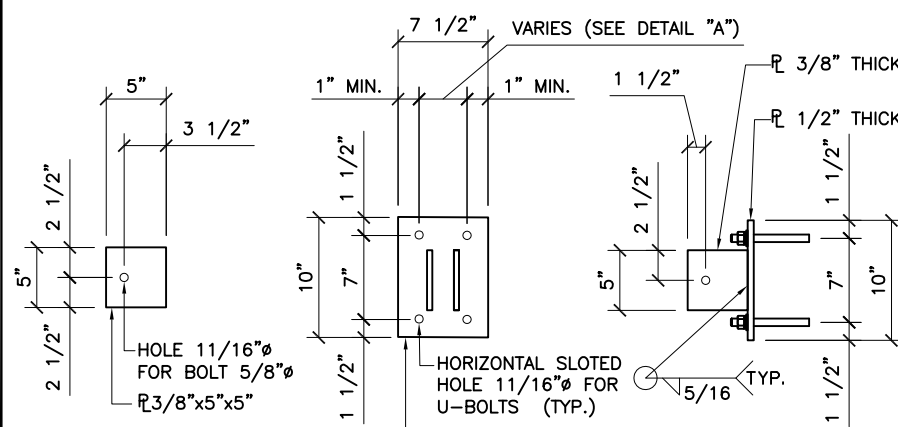
S-5



PLAN VIEW



HORIZONTAL AND PLATE DETAILS



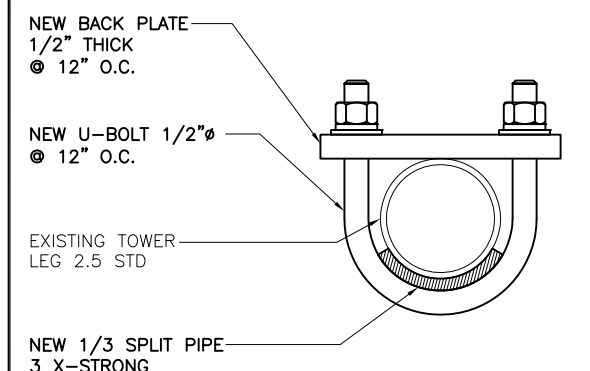
DETAIL A

WORKING POINT AT CENTER OF LEG
(2) U-BOLTS 1/2"

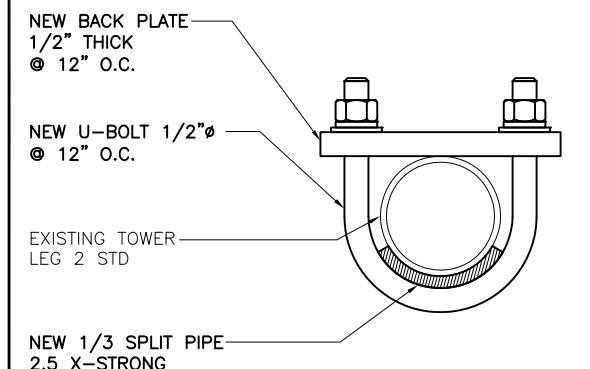
5" SECONDARY HORIZONTAL CONNECTOR ELEV. 10'-0" TO 35'-0"
4" SECONDARY HORIZONTAL CONNECTOR ELEV. 47'-6" TO 57'-6"

R 1/2" THICK
NEW U-BOLT 1/2" (TYP. OF 2 PER CONNECTION)

SECONDARY HORIZONTAL ELEVATION FROM 10'-0" TO 35'-0" AND 47'-6" TO 57'-6" SCALE: 1/2" = 1'-0" 2

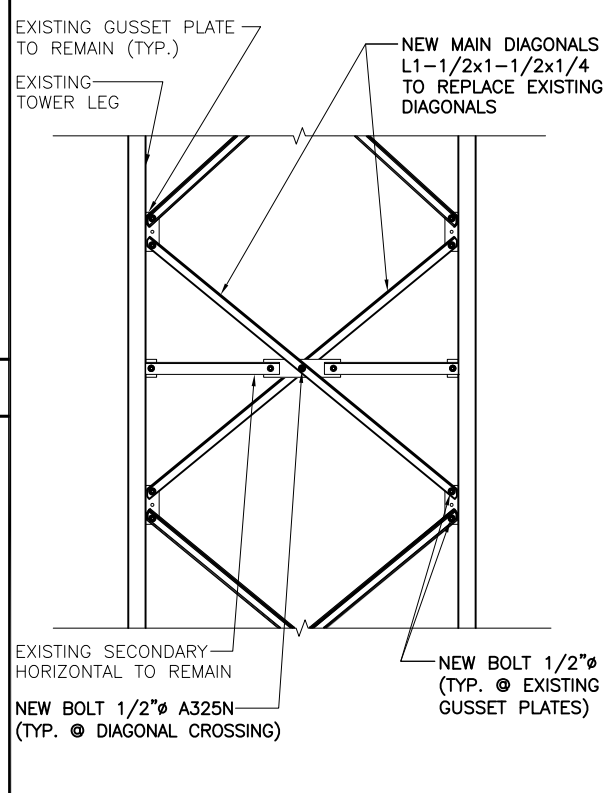


LEG REINFORCEMENT ELEV. FROM 92'-0" TO 96'-0" SCALE: N.T.S. 4

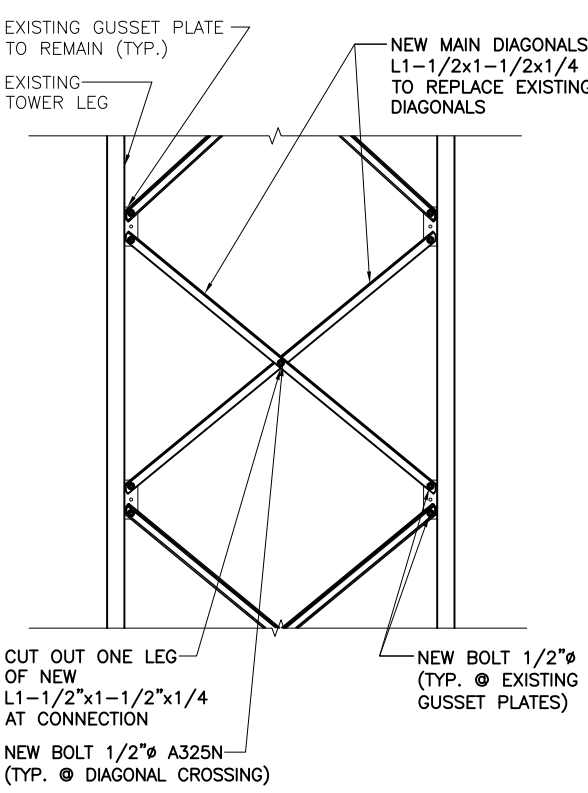


LEG REINFORCEMENT ELEV. FROM 100'-0" TO 120'-0" SCALE: N.T.S. 5

NEW SECONDARY HORIZONTAL TO TOWER LEG CONNECTOR DETAILS SCALE: 3/4" = 1'-0" 3



SECONDARY HORIZONTAL ELEV. 80'-0" TO 88'-0" & 100'-0" TO 120'-0" SCALE: 3/8" = 1'-0" 6



MAIN DIAGONAL REPLACEMENT ELEV. 88'-0" TO 100'-0" SCALE: 3/8" = 1'-0" 7

- NOTES:**
1. INSTALL NEW 1/3 SPLIT-PIPE 3 XS TO EXISTING MAIN LEG @ ELEV. 92' TO 96' AGL. THE SPLIT-PIPE SHALL BE ATTACHED WITH 1/2" U-BOLTS AND 1/2" BACK PLATE AT 12" O.C. ONE U-BOLT IS REQUIRED AT EACH END OF REINFORCEMENT. SEE DETAIL 4/S-5.
 2. INSTALL NEW 1/3 SPLIT-PIPE 2.5 XS TO EXISTING MAIN LEG @ ELEV. 100' TO 120' AGL. THE SPLIT-PIPE SHALL BE ATTACHED WITH 1/2" U-BOLTS AND 1/2" BACK PLATE AT 12" O.C. ONE U-BOLT IS REQUIRED AT EACH END OF REINFORCEMENT. SEE DETAIL 5/S-5.
 3. INSTALL L1-1/2X1-1/2X1/4 MAIN DIAGONALS BY REPLACING EXISTING L1-1/2X1-1/2X1/8 MAIN DIAGONALS @ ELEV. 80' TO 120' AGL. THE NEW LONGER BOLTS 1/2" A325N (@ EA. END) SHALL BE INSTALLED TO EXISTING GUSSET PLATE (TYP.).
 4. INSTALL (4) 5/8" A490N MAIN LEG BOLTS BY REPLACING EXISTING (4) 5/8" A325N MAIN LEG BOLTS @ ELEV. 80' AGL. (TYP. EACH LEG)

TOWER ELEVATION FROM 80'-0" TO 120'-0" SCALE: 1/8" = 1'-0" 1

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