

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-286-4007
jandrews@empiretelecomm.com

February 9, 2018

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

NOTICE OF EXEMPT MODIFICATION

324 Montevideo Road, Avon, CT 06001

Lat: 41-48-42.45 (41.81179167)
Long: 72-47-55.45 (-72.79873611)

Dear Ms. Bachman:

AT&T Wireless currently maintains nine (9) antennas at the 70-foot level of an existing 60-foot lattice tower located at 324 Montevideo Road, in Avon, CT. The tower is owned by the Talcott Mountain Science Center for Student Involvement, Inc. The property is owned by the Talcott Mountain Science Center for Student Involvement, Inc. AT&T Wireless now seeks to install three (3) additional antennas, install six (6) new Remote Radio Units ("RRU"), repurpose three (3) existing UMTS RRUS-11 850 to LTE 850, install a new surge suppression dome, upgrade the DUS, add one (1) XMU, and install six (6) new DC cables. The proposed antennas, suppression dome, and RRUs will be mounted at the 70-foot level and completely enclosed within the existing Doppler Radar Dome, located atop the existing tower.

The tower is located within the Town of Bloomfield, CT. AT&T's prior building permit was issued by the Town of Bloomfield. The address of "324 Montevideo Road" cannot be searched on the Bloomfield GIS mapping system. The Bloomfield Building Department advised me that they now use 0 Talcott Mountain Science Center Road as the address of the tower. A copy of the prior building permit is enclosed for your reference, as are satellite photos of the property and tower from the Avon GIS website.

The facility was approved by the Connecticut Siting Council in EM-AT&T-004-160128 on March 14, 2016. Six (6) conditions were enumerated in the Council's decision: 1) Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid; 2) Any material changes to the modification as proposed shall require the filing of a new notice with the Council; 3) Within 45 days after the completion of construction the Council shall be notified in writing that the construction has been completed; 4) Any nonfunctioning antenna and associated

antenna mounting equipment on this facility owned and operated by AT&T Mobility, LLC shall be removed within 60 days of the date the antenna ceased to function; 5) the validity of the action shall expire one year from the date of the letter; 6) The applicant may file a request an extension of time beyond the one year deadline provided that such a request is submitted to the Council not less than 60 days prior to the expiration.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies section 16-50j-73 for construction that constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2). In accordance with RCSA section 16-50j-73, a copy of this letter and attachments is being sent to the Honorable Suzette DeBeatham-Brown, Mayor of Bloomfield; Jose Giner, the Director of the Bloomfield Planning & Zoning Department, as well as the Talcott Mountain Science Center for Student Involvement, Inc., the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities expressly provided for in RCSA section 50j-72(b)(2).

1. The proposed modifications will not result in an increase in height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that will exceed state and local limits.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under RCSA section 16-50j-72(b)(2).

Respectfully submitted,



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o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-286-4007
jandrews@empiretelecomm.com

Enclosures

cc: Honorable Suzette DeBeatham-Brown, Mayor of Bloomfield
Jose Giner, the Director of the Bloomfield Planning & Zoning Department
Talcott Mountain Science Center for Student Involvement, Inc., property owner and tower owner.

February 9, 2018

Jose Giner, Director Planning & Zoning Department
Town Hall
800 Bloomfield Avenue
Bloomfield, CT 06002-0337

RE: AT&T Wireless Modifications to Telecommunication Facility –
324 Montevideo Road, Avon, CT 06001

Dear Mr. Giner:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunication facility. AT&T Wireless currently maintains nine (9) antennas at the 70-foot level of an existing 60-foot lattice tower located at 324 Montevideo Road, in Avon, CT. The tower is owned by the Talcott Mountain Science Center for Student Involvement, Inc. The property is owned by the Talcott Mountain Science Center for Student Involvement, Inc.

The tower is located within the Town of Bloomfield, CT. AT&T's prior building permit was issued by the Town of Bloomfield.

AT&T Wireless now seeks to install three (3) additional antennas, install six (6) new Remote Radio Units ("RRU"), repurpose three (3) existing UMTS RRUS-11 850 to LTE 850, install a new surge suppression dome, upgrade the DUS, add one (1) XMU, and install six (6) new DC cables. The proposed antennas, suppression dome, and RRUs will be mounted at the 70-foot level and completely enclosed within the existing Doppler Radar Dome, located atop the existing tower.

This letter is intended to serve as the required notice to the municipality's Planning and Community Development Department. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

The enclosed letter and documents to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,



Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
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Enclosures

cc: Melanie Bachman, Connecticut Siting Council

February 9, 2018

The Talcott Mountain Science Center for Student Involvement Inc.
324 Montevideo Road
Avon, CT 06001
ATTN: Jonathan Craig

RE: AT&T Wireless Modifications to Telecommunication Facility –
324 Montevideo Road, Avon, CT 06001

Dear Mr. Craig:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless (“AT&T”) will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains nine (9) antennas at the 70-foot level of an existing 60-foot lattice tower located at 324 Montevideo Road, in Avon, CT. The tower is owned by the Talcott Mountain Science Center for Student Involvement, Inc. The property is owned by the Talcott Mountain Science Center for Student Involvement, Inc.

The tower is located within the Town of Bloomfield, CT. AT&T’s prior building permit was issued by the Town of Bloomfield.

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This letter is intended to serve as the required notice to the property owner and to the tower owner. As required by the Regulations of Connecticut State Agencies (“RCSA”) section 16-50j-73, the Connecticut Siting Council (“CSC”) has been notified of the proposed changes and will review AT&T’s proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

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Enclosures

cc: Melanie Bachman, Connecticut Siting Council

February 9, 2018

The Honorable Suzette DeBeatham-Brown
Town Hall
800 Bloomfield Avenue
Bloomfield, CT 06002-0337

RE: AT&T Wireless Modifications to Telecommunication Facility –
324 Montevideo Road, Avon, CT 06001

Dear Mayor DeBeatham-Brown :

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains nine (9) antennas at the 70-foot level of an existing 60-foot lattice tower located at 324 Montevideo Road, in Avon, CT. The tower is owned by the Talcott Mountain Science Center for Student Involvement, Inc. The property is owned by the Talcott Mountain Science Center for Student Involvement, Inc.

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This letter is intended to serve as the required notice to the municipality. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

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Respectfully submitted,



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Enclosures

cc: Melanie Bachman, Connecticut Siting Council

CT1330 2AP
VT6469 BOK

CHIEF-
BILL #

SIMPSONVILLE
10400 SHAKER DR
SIMPSONVILLE
MD

21150-9998
2384960572

02/12/2018 (800)275-8777 2:56 PM

Product Description	Sale Qty	Final Price
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Prepaid Mail	1	
(Weight: 2 lbs. 14.30 oz.)		
(Destination: BETHLEHEM, PA 18020)		
(Acceptance Date: 02/12/2018 14:52:52)		
(Label #: 4201802094019108995354251 37070)		

Prepaid Mail	1	
(Weight: 1 lbs. 5.30 oz.)		
(Destination: PARCEL RETURN SERVICE, DC 56901)		
(Acceptance Date: 02/12/2018 14:53:08)		
(Label #: 4205690192023901019235693 49825)		

PM 2-Day	1	\$6.70
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Window FR Env
(Domestic) *CT1330 owner*
(AVON, CT 06001)
(Flat Rate)
(Expected Delivery Date)
(Wednesday 02/14/2018)
(USPS Tracking #)
(9505 5103 9196 8043 2276 09) ✓

Insurance	1	\$0.00
(Up to \$50.00 included)		

PM 2-Day	1	\$6.70
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Flat Rate Env
(Domestic) *CT 1330 Meyer*
(BLOOMFIELD, CT 06002)
(Flat Rate)
(Expected Delivery Date)
(Wednesday 02/14/2018)
(USPS Tracking #)
(9505 5103 9196 8043 2276 16) ✓

Insurance	1	\$0.00
(Up to \$50.00 included)		

PM 2-Day	1	\$6.70
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Flat Rate Env
(Domestic) *CT1330 DP2*
(BLOOMFIELD, CT 06002)
(Flat Rate)
(Expected Delivery Date)
(Wednesday 02/14/2018)
(USPS Tracking #)
(9505 5103 9196 8043 2276 23) ✓

Insurance	1	\$0.00
(Up to \$50.00 included)		

\$1.21

mother package +

Tracking Number: 9505510391968043227623

On Time

Expected Delivery on

WEDNESDAY

14 FEBRUARY 2018

by

8:00pm

Status

Delivered

February 14, 2018 at 12:46 pm
Delivered, In/At Mailbox
BLOOMFIELD, CT 06002

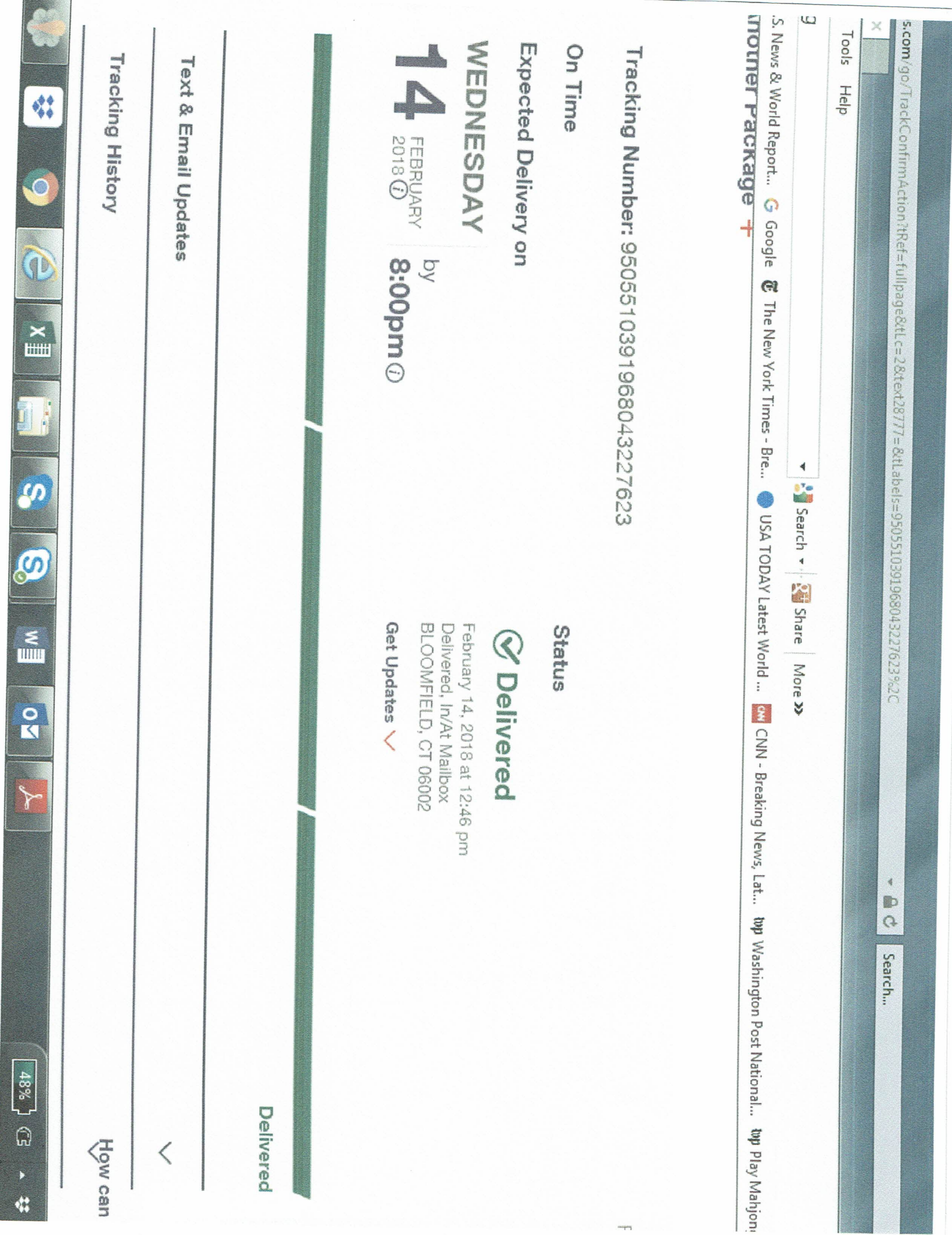
Get Updates

Delivered

Text & Email Updates

Tracking History

How can



Tools Help

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- Google
- The New York Times - Bre...
- USA TODAY Latest World ...
- CNN - Breaking News, Lat...
- Washington Post National...
- Play Matjonn...

CT 1330 Meyer

mother Package +

Tracking Number: 9505510391968043227616

On Time

Expected Delivery on

WEDNESDAY

14 FEBRUARY 2018

by 8:00pm

Status

Delivered

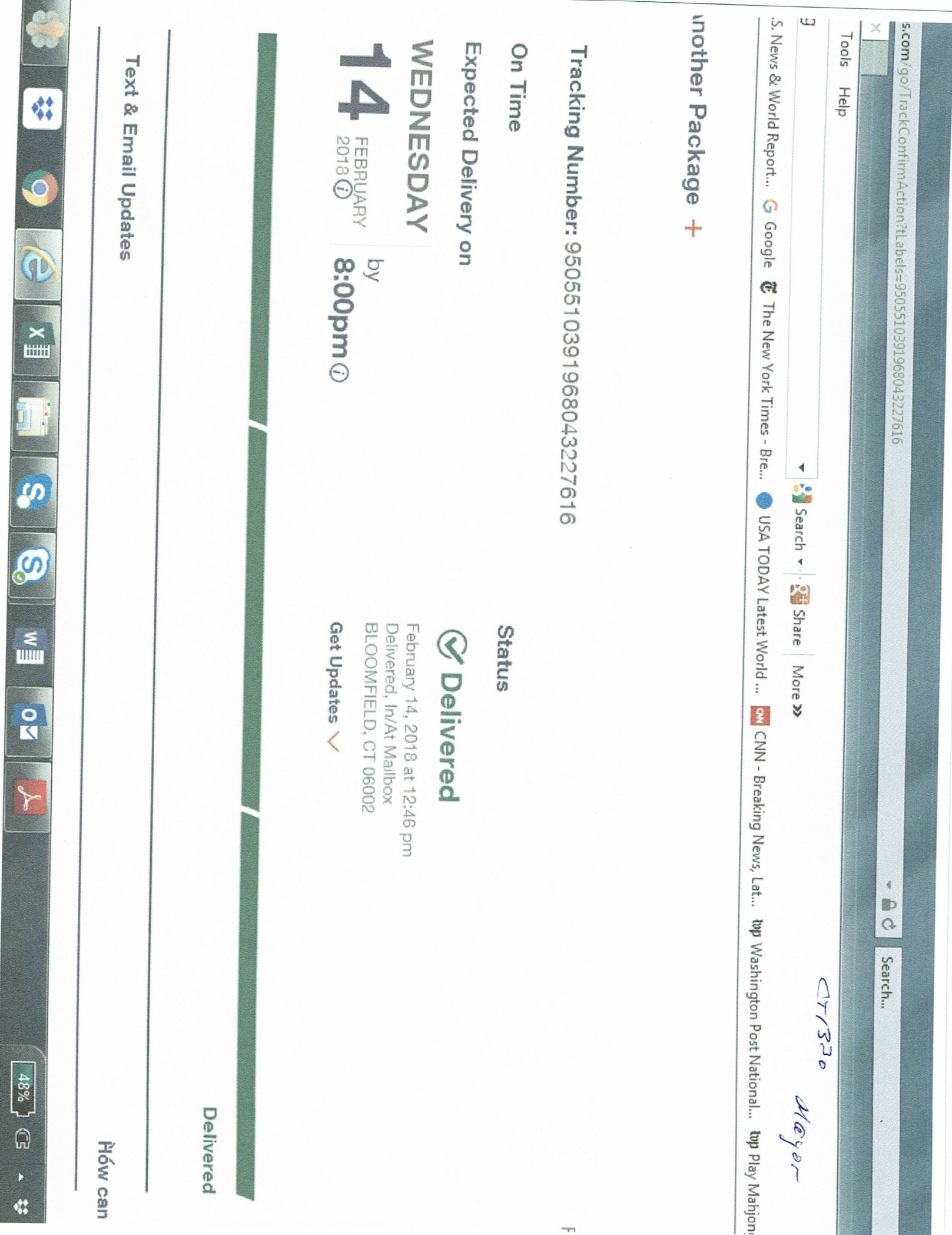
February 14, 2018 at 12:46 pm
Delivered, In/At Mailbox
BLOOMFIELD, CT 06002

Get Updates

Delivered

Text & Email Updates

How can



Tools Help

CT/350 Owner

another Package +

Tracking Number: 9505510391968043227609

On Time

Expected Delivery on

WEDNESDAY

14 FEBRUARY 2018

by 8:00pm

Status

Delivered

February 14, 2018 at 12:19 pm
Delivered, In/At Mailbox
AVON, CT 06001
Get Updates

Delivered

Text & Email Updates

Tracking History

Windows taskbar with icons for Start, Internet Explorer, Task View, File Explorer, Microsoft Store, OneDrive, Word, Outlook, and Adobe Reader. System tray shows 'Tracker Pamela STANFIELD changed 3 files' and 'How can I help you?' search bar.



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT1330

FA: 10141394

Avon - Montevideo Road

324 Montevideo Road

Avon, CT 06001

February 1, 2018

Centerline Communications Project Number: 950006-091

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	52.10 %



February 1, 2018

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT1330 – Avon - Montevideo Road**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **324 Montevideo Road, Avon, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.



CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **324 Montevideo Road, Avon, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS – Antenna 1	850 MHz	1	30
UMTS – Antenna 1	1900 MHz (PCS)	1	30
LTE – Antenna 2	850 MHz	2	30
LTE - Antenna 2	2300 MHz (WCS)	4	30
LTE – Antenna 3	700 MHz (Band 14)	4	30
LTE – Antenna 3	2100 MHz (AWS)	4	30
LTE – Antenna 4	700 MHz	2	30
LTE – Antenna 4	1900 MHz (PCS)	4	30

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Commscope SBNH-1D6565C	70
A	2	CCI OPA-65R-LCUU-H8	70
A	3	Kathrein 800-10966	70
A	4	CCI TPA-65R-LCUUUU-H8	70
B	1	Commscope SBNH-1D6565C	70
B	2	CCI OPA-65R-LCUU-H8	70
B	3	Kathrein 800-10966	70
B	4	CCI TPA-65R-LCUUUU-H8	70
C	1	Commscope SBNH-1D6565C	70
C	2	CCI OPA-65R-LCUU-H8	70
C	3	Kathrein 800-10966	70
C	4	CCI TPA-65R-LCUUUU-H8	70

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.



RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Commscope SBNH-1D6565C	850 MHz / 1900 MHz (PCS)	14.45 / 15.85	2	60	1,989.61	2.31
Antenna A2	CCI OPA-65R-LCUU-H8	850 MHz / 2300 MHz (WCS)	13.35 / 14.95	6	180	5,048.93	5.30
Antenna A3	Kathrein 800-10966	700 MHz / 2100 MHz (AWS)	13.55 / 16.15	8	240	7,662.74	9.45
Antenna A4	CCI TPA-65R-LCUUUU-H8	700 MHz / 1900 MHz (PCS)	12.95 / 13.75	6	180	4,029.10	4.72
Sector A Composite MPE%							21.78
Antenna B1	Commscope SBNH-1D6565C	850 MHz / 1900 MHz (PCS)	14.45 / 15.85	2	60	1,989.61	2.31
Antenna B2	CCI OPA-65R-LCUU-H8	850 MHz / 2300 MHz (WCS)	13.35 / 14.95	6	180	5,048.93	5.30
Antenna B3	Kathrein 800-10966	700 MHz / 2100 MHz (AWS)	13.55 / 16.15	8	240	7,662.74	9.45
Antenna B4	CCI TPA-65R-LCUUUU-H8	700 MHz / 1900 MHz (PCS)	12.95 / 13.75	6	180	4,029.10	4.72
Sector B Composite MPE%							21.78
Antenna C1	Commscope SBNH-1D6565C	850 MHz / 1900 MHz (PCS)	14.45 / 15.85	2	60	1,989.61	2.31
Antenna C2	CCI OPA-65R-LCUU-H8	850 MHz / 2300 MHz (WCS)	13.35 / 14.95	6	180	5,048.93	5.30
Antenna C3	Kathrein 800-10966	700 MHz / 2100 MHz (AWS)	13.55 / 16.15	8	240	7,662.74	9.45
Antenna C4	CCI TPA-65R-LCUUUU-H8	700 MHz / 1900 MHz (PCS)	12.95 / 13.75	6	180	4,029.10	4.72
Sector C Composite MPE%							21.78

Table 3: AT&T Emissions Levels



The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Sector Value	21.78 %
Verizon Wireless	30.32 %
Site Total MPE %:	52.10 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	21.78 %
AT&T Sector B Total:	21.78 %
AT&T Sector C Total:	21.78 %
Site Total:	52.10 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	1	835.84	70	7.34	850 MHz	567	1.29%
AT&T 1900 MHz (PCS) UMTS	1	1,153.78	70	10.13	1900 MHz (PCS)	1000	1.01%
AT&T 850 MHz LTE	2	648.82	70	11.39	850 MHz	567	2.01%
AT&T 2300 MHz (WCS) LTE	4	937.82	70	32.93	2300 MHz (WCS)	1000	3.29%
AT&T 700 MHz LTE	4	679.39	70	23.85	700 MHz	467	5.11%
AT&T 2100 MHz (AWS) LTE	4	1,236.29	70	43.40	2100 MHz (AWS)	1000	4.34%
AT&T 700 MHz LTE	2	591.73	70	10.39	700 MHz	467	2.22%
AT&T 1900 MHz (PCS) LTE	4	711.41	70	24.98	1900 MHz (PCS)	1000	2.50%
						Total:	21.78%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	21.78 %
Sector B:	21.78 %
Sector C:	21.78 %
AT&T Maximum Total (per sector):	21.78 %
Site Total:	52.10 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **52.10 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is written over a light blue horizontal line.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767



SITE NAME: AVON-MONTEVIDEO ROAD
PROJECT: LTE - 4C/5C/6C
FA NUMBER: 10141394
SITE NUMBER: CTL01330
324 MONTEVIDEO ROAD
AVON, CT 06001
HARTFORD COUNTY
FIRSTNET

PROJECT TEAM	
CLIENT REPRESENTATIVE	
COMPANY:	EMPIRE TELECOM
ADDRESS:	16 ESQUIRE ROAD
CITY, STATE, ZIP:	BILLERICA, MA 01862
CONTACT:	DAVID COOPER
E-MAIL:	DCOOPER@EMPIRETEL.COM
ENGINEER	
COMPANY:	MASER CONSULTING CONNECTICUT
ADDRESS:	331 NEWMAN SPRINGS ROAD, SUITE 203
CITY, STATE, ZIP:	RED BANK, NJ 07701
CONTACT:	MICHAEL CLEARY
PHONE:	(856) 717-0412 x4105
E-MAIL:	MICLEARY@MASERCONSULTING.COM
RF ENGINEER	
COMPANY:	NEW CINGULAR WIRELESS PCS, LLC
ADDRESS:	550 COCHITUATE ROAD
CITY, STATE, ZIP:	FRAMINGHAM, MA 01701
CONTACT:	RAHI MUDDIN MOHAMMED
E-MAIL:	RX855W@ATT.COM

SITE INFORMATION	
APPLICANT/LESSEE	
NEW CINGULAR WIRELESS PCS, LLC 550 COCHITUATE RD. FRAMINGHAM, MA 01701	
TOWER OWNER:	
NAME:	THE TALCOTT MOUNTAIN SCIENCE CENTER FOR STUDENT INVOLVEMENT, INC.
ADDRESS:	324 MONTEVIDEO ROAD
CITY, STATE, ZIP:	AVON, CT 06001
LATITUDE:	41.811797° N
LONGITUDE:	72.798767° W
LAT/LONG. TYPE:	NAD 83
AREA OF CONSTRUCTION:	EXISTING EQUIPMENT SHELTER AND TOWER WITH DOME
ZONING/JURISDICTION:	TOWN OF AVON
CURRENT USE/PROPOSED USE:	UNMANNED TELECOMMUNICATIONS FACILITY
HANDICAP REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.
CONSTRUCTION TYPE:	IIB
USE GROUP:	U



DRIVING DIRECTIONS	
DIRECTIONS FROM AT&T OFFICE AT 550 COCHITUATE ROAD, FRAMINGHAM, MA:	
TURN LEFT ON COCHITUATE ROAD. USE THE RIGHT LANE TO TAKE THE RAMP TO I-90 EAST/MASSPIKE WEST/SPRINGFIELD/BOSTON. KEEP LEFT AT THE FORK. FOLLOW SIGNS FOR INTERSTATE 90 WEST/MASSACHUSETTS TURNPIKE/WORCHESTER/SPRINGFIELD AND MERGE ONTO I-90 WEST/MASSACHUSETTS TURNPIKE. USE THE RIGHT 2 LANES TO TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY. KEEP RIGHT TO STAY ON I-84. TAKE EXIT 48 TOWARD ASYLUM STREET. MERGE ONTO GARDEN STREET. TURN RIGHT ONTO ASYLUM AVENUE. TURN RIGHT ONTO N MAIN STREET. TURN LEFT ONTO US-44 WEST/ALBANY AVENUE. TURN RIGHT ONTO PARSONS WAY. TURN LEFT ONTO OKOLICA LANE. TURN RIGHT ONTO MONTEVIDEO ROAD.	

CODE COMPLIANCE	
ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.	
1. 2016 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2012 IBC	7. IATIA-222 REVISION G
2. 2014 NATIONAL ELECTRICAL CODE-NFPA 70	8. TIA 607 FOR GROUNDING
3. 2012 NFPA 101	9. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
4. LIGHTNING PROTECTION CODE 2011	10. IEEE C2 LATEST EDITION
5. AMERICAN CONCRETE INSTITUTE 318	11. TELCORDIA GR-1275
6. AMERICAN INSTITUTE OF STEEL CONSTRUCTION 360-10	12. ANSI T1.311

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

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

SHEET	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
A-1	COMPOUND AND EQUIPMENT PLAN
A-2	ELEVATION VIEW, DETAILS AND ANTENNA SCHEDULE
A-3	ANTENNA LAYOUTS
A-4	DETAILS
A-5	DETAILS
A-6	RF PLUMBING DIAGRAMS
G-1	GROUNDING DETAILS

PROJECT DESCRIPTION/SCOPE OF WORK	
THIS PROJECT WILL BE COMPRISED OF:	
<ul style="list-style-type: none"> INSTALL (3) NEW AT&T ANTENNAS, (1) PER SECTOR INSTALL (3) NEW RRUS-B14 4478, (1) PER SECTOR INSTALL (3) NEW RRUS-32 B66, (1) PER SECTOR REPURPOSE EXISTING UMTS RRUS-11 850 TO LTE 850, (1) PER SECTOR INSTALL (1) NEW DC-6 SURGE SUPPRESSION DOME UPGRADE DUS TO (2) 5216 AND ADD IDLE ADD (1) XMU INSTALL (2) 6/C DC CABLES 	

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

16 ESQUIRE ROAD
BILLERICA, MA 01862

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SCALE:	JOB NUMBER:
AS SHOWN	17963018A
0	02/05/18 FOR CONSTRUCTION AJC MPC
1	01/15/18 ISSUED FOR REVIEW JLK RA
REV	DATE DESCRIPTION DRAWN CHECKED BY

PETROS E. SOLIKALAS
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN 32577

IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFESSIONAL ENGINEER, TO SIGN THIS DOCUMENT.

SITE NAME:

AVON-MONTEVIDEO ROAD
FA#:10141394
SITE #: CT1330

324 MONTEVIDEO ROAD
AVON, CT 06001
HARTFORD COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1



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NEW CINGULAR WIRELESS PCS, LLC
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FRAMINGHAM, MA 01701



16 ESQUIRE ROAD
BILLERICA, MA 01862



SCALE: AS SHOWN JOB NUMBER: 17963018A

0	02/05/18	FOR CONSTRUCTION	AJC	MPC
1	01/15/18	ISSUED FOR REVIEW	JLK	RA
REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY



IT IS A VIOLATION OF LAW FOR ANY PERSON UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFESSIONAL ENGINEER, TO REPRODUCE THIS DOCUMENT.

SITE NAME:

AVON-MONTEVIDEO ROAD
FA#:10141394
SITE #: CT1330
324 MONTEVIDEO ROAD
AVON, CT 06001
HARTFORD COUNTY



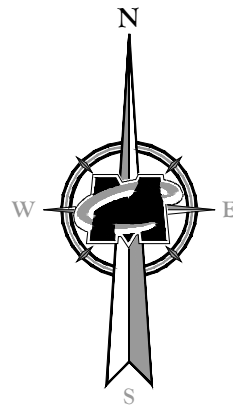
SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
GN-1

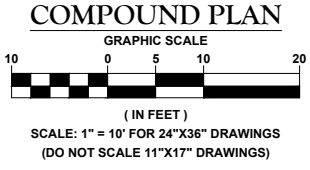
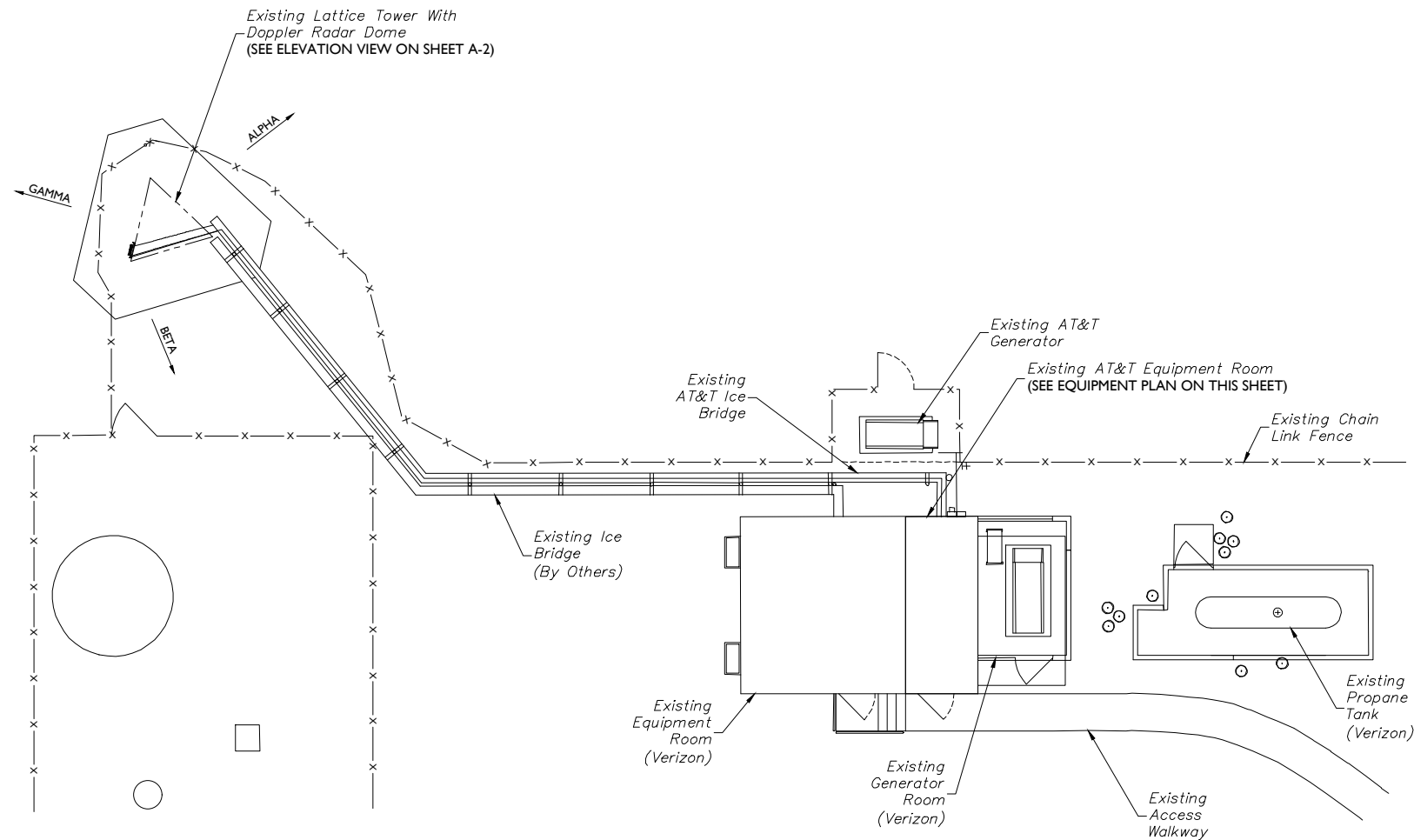
GENERAL NOTES:

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

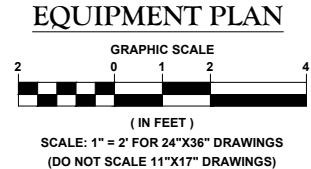
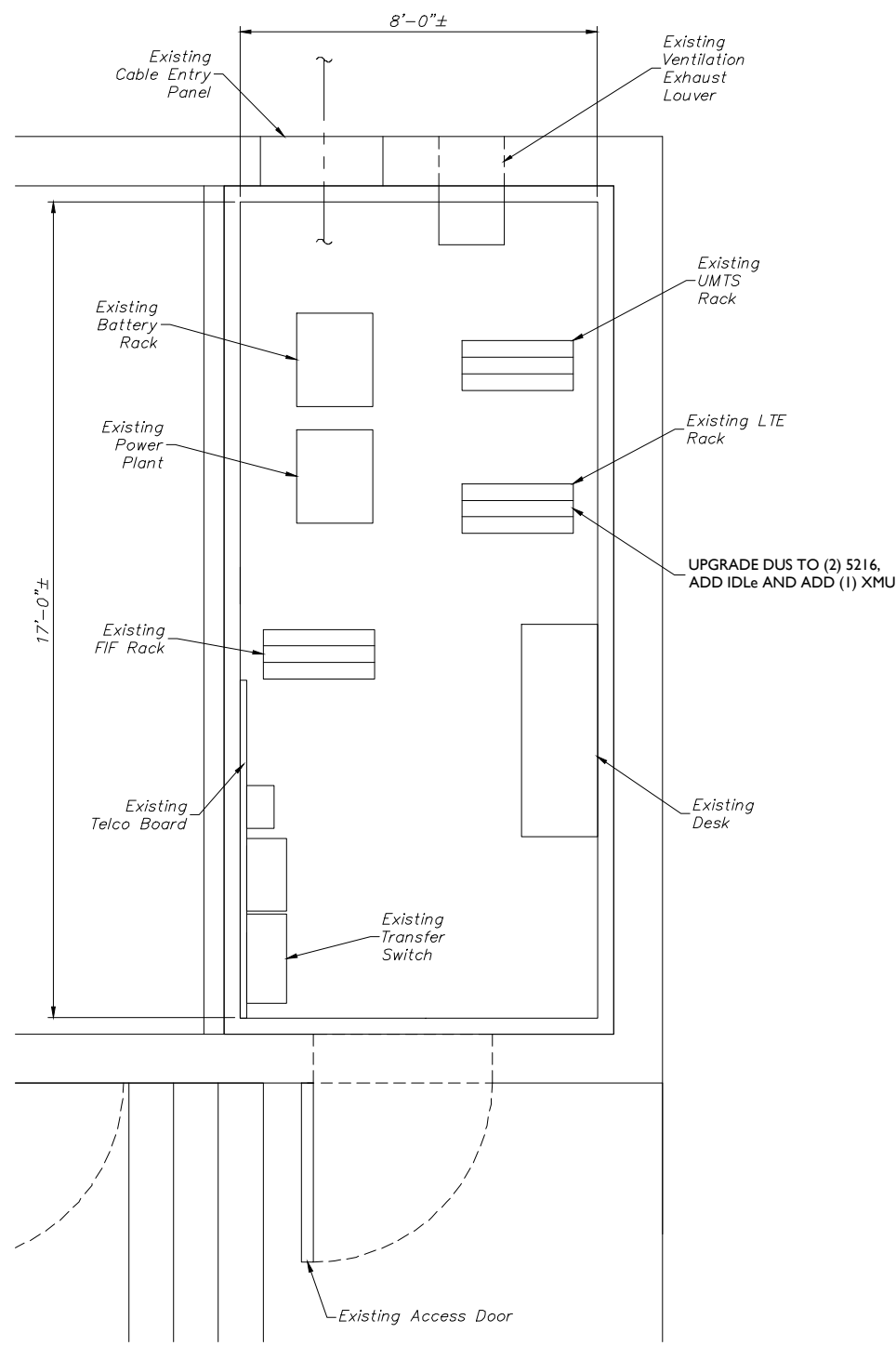
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE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



NOTE:
 SITE INFORMATION OBTAINED FROM THE FOLLOWING:
 A. PLAN ENTITLED "AVON - MONTEVIDEO ROAD" PREPARED BY MASER CONSULTING P.A., LAST REVISED 04/10/17.
 B. LIMITED FIELD OBSERVATION BY MASER CONSULTING P.A. ON 09/30/2015.



NOTE:
 THESE PLANS WERE DESIGNED WITH THE ASSUMPTION THAT THE PREVIOUS PLANS PREPARED BY MASER CONSULTING CONNECTICUT DATED 04/10/2017 WILL BE COMPLETED PRIOR TO THE CURRENT SCOPE OF WORK BEING INSTALLED. ANY CHANGES IN PREVIOUS DESIGN SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.



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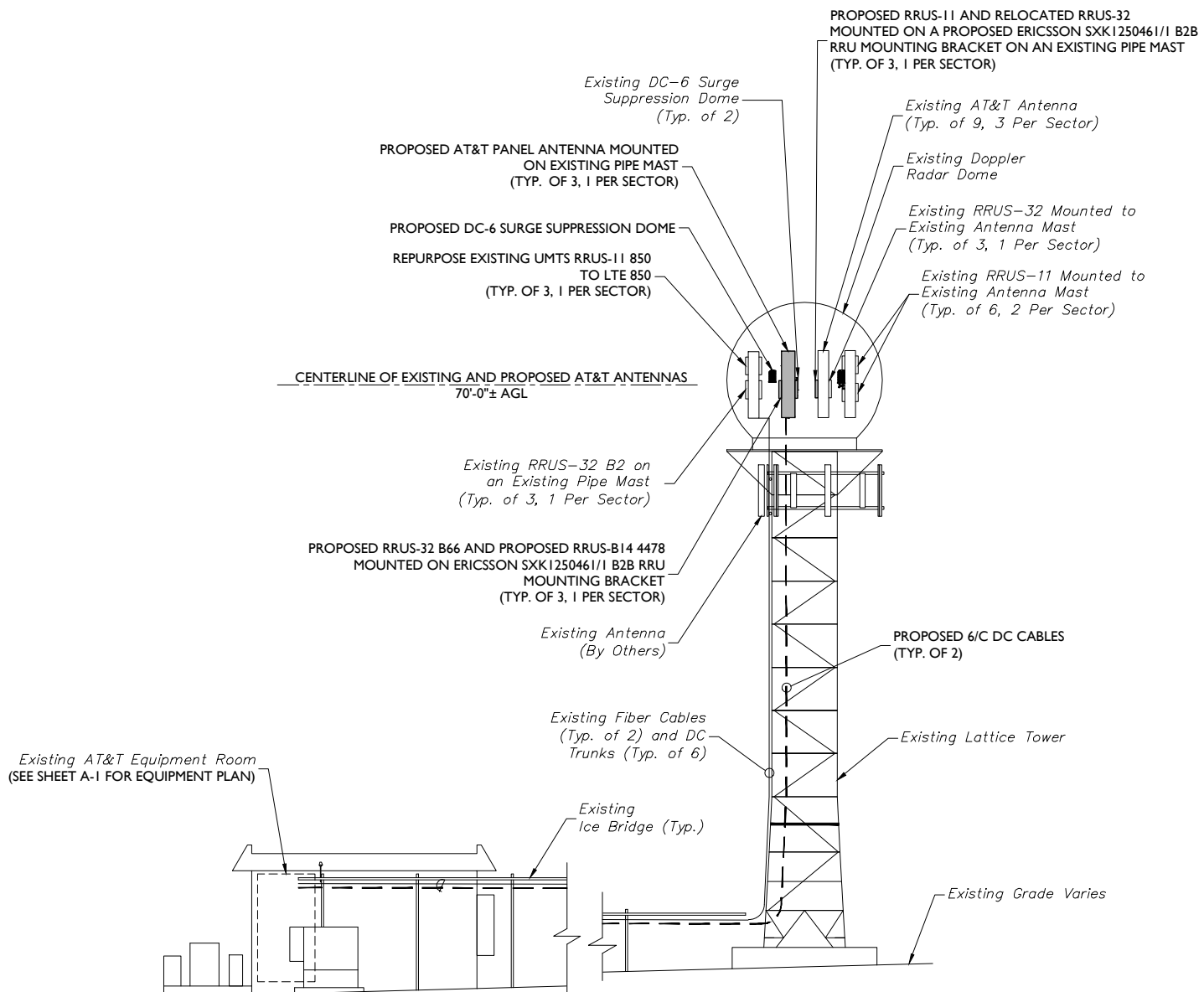
RETROS E. SOLIKALAS
 CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.32577
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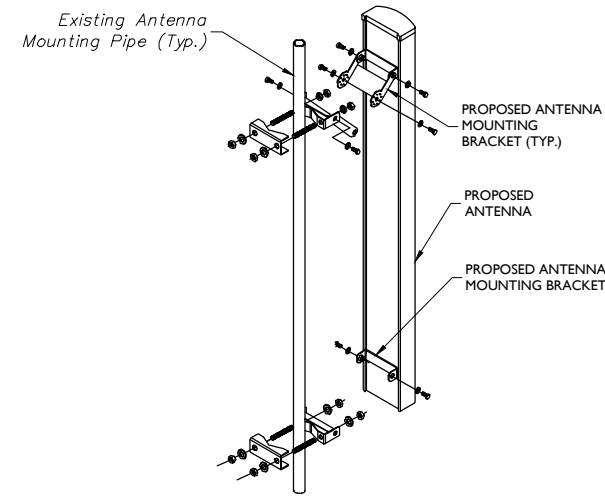
SHEET TITLE:
COMPOUND AND EQUIPMENT PLAN
 SHEET NUMBER:
A-1

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

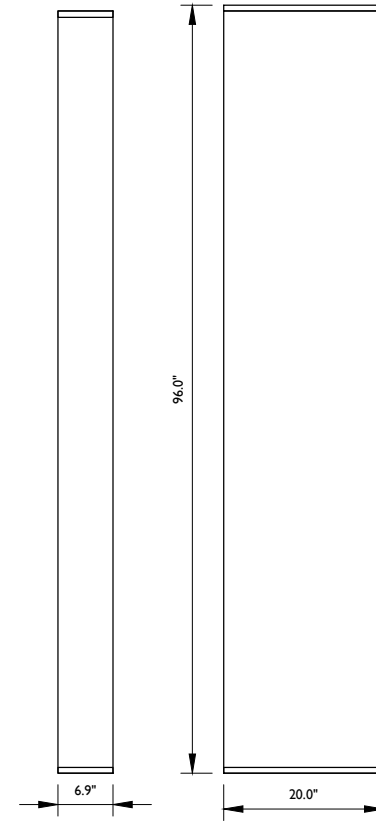


PROPOSED ANTENNA AND RRUS CONFIGURATION													
SECTOR	EXISTING ANTENNA CONFIGURATION	PROPOSED ANTENNA CONFIGURATION	TECHNOLOGY	ANTENNA STATUS	HEIGHT (ft)	WIDTH (ft)	DEPTH (ft)	WEIGHT (lbs)	ANTENNA AZIMUTH	ANT. CL. ELEV (ft)	RRUS CONFIGURATION	STATUS	
ALPHA	A1	AndrewSBNH-1D6565C	AndrewSBNH-1D6565C	UMTS	REMAIN	96.40	11.90	7.10	60.80	90°	70'	(2)RRUS-11	REMAIN
	A2	CCIOPA-65R-LCUU-H8	CCIOPA-65R-LCUU-H8	LTE	REMAIN	92.70	14.40	7.00	88.00	90°	70'	(1) RRUS-32 (1) RRUS-11	REMAIN REPURPOSED
	A3	-	Kathrein 800-10966	LTE	NEW	96.00	20.00	6.90	114.60	90°	70'	(1) RRUS-B14 4478 (1) RRUS-32 B66	NEW NEW
	A4	CCITPA-65R-LCUUUU-H8	CCITPA-65R-LCUUUU-H8	LTE	REMAIN	96.00	14.40	8.60	75.00	90°	70'	(1) RRUS-11 (1)RRUS-32 B2	REMAIN REMAIN
BETA	B1	AndrewSBNH-1D6565C	AndrewSBNH-1D6565C	UMTS	REMAIN	96.40	11.90	7.10	35.00	210°	70'	(2)RRUS-11	REMAIN
	B2	CCIOPA-65R-LCUU-H8	CCIOPA-65R-LCUU-H8	LTE	REMAIN	92.70	14.40	7.00	88.00	210°	70'	(1) RRUS-32 (1) RRUS-11	REMAIN REPURPOSED
	B3	-	Kathrein 800-10966	LTE	NEW	96.00	20.00	6.90	114.60	210°	70'	(1) RRUS-B14 4478 (1) RRUS-32 B66	NEW NEW
	B4	CCITPA-65R-LCUUUU-H8	CCITPA-65R-LCUUUU-H8	LTE	REMAIN	96.00	14.40	8.60	75.00	210°	70'	(1) RRUS-11 (1)RRUS-32 B2	REMAIN REMAIN
GAMMA	C1	AndrewSBNH-1D6565C	AndrewSBNH-1D6565C	UMTS	REMAIN	96.40	11.90	7.10	35.00	330°	70'	(2)RRUS-11	REMAIN
	C2	CCIOPA-65R-LCUU-H8	CCIOPA-65R-LCUU-H8	LTE	REMAIN	92.70	14.40	7.00	88.00	330°	70'	(1) RRUS-32 (1) RRUS-11	REMAIN REPURPOSED
	C3	-	Kathrein 800-10966	LTE	NEW	96.00	20.00	6.90	114.60	330°	70'	(1) RRUS-B14 4478 (1) RRUS-32 B66	NEW NEW
	C4	CCITPA-65R-LCUUUU-H8	CCITPA-65R-LCUUUU-H8	LTE	REMAIN	96.00	14.40	8.60	75.00	330°	70'	(1) RRUS-11 (1)RRUS-32 B2	REMAIN REMAIN

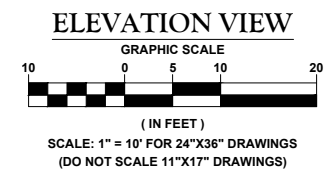
ANTENNA SCHEDULE



ANTENNA MOUNTING DETAIL
NOT TO SCALE



ANTENNA DETAIL
NOT TO SCALE



NOTE:

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- THE STRUCTURE ELEVATION IS SHOWN FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REFLECT AS-BUILT FIELD CONDITIONS FOR ALL EXISTING INVENTORY LOADING/ANTENNAS/APURTENANCES ON STRUCTURE. REFER TO THE LATEST STRUCTURAL ANALYSIS FOR EXISTING STRUCTURE LOADING AND THE PROPOSED METHOD OF ATTACHMENT OF THE PROPOSED ANTENNAS/CABLES.
- THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

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SHEET TITLE:
ELEVATION VIEW, DETAILS AND ANTENNA SCHEDULE

SHEET NUMBER:
A-2



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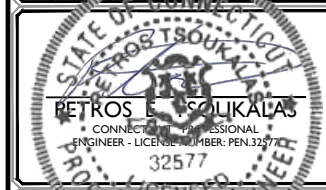


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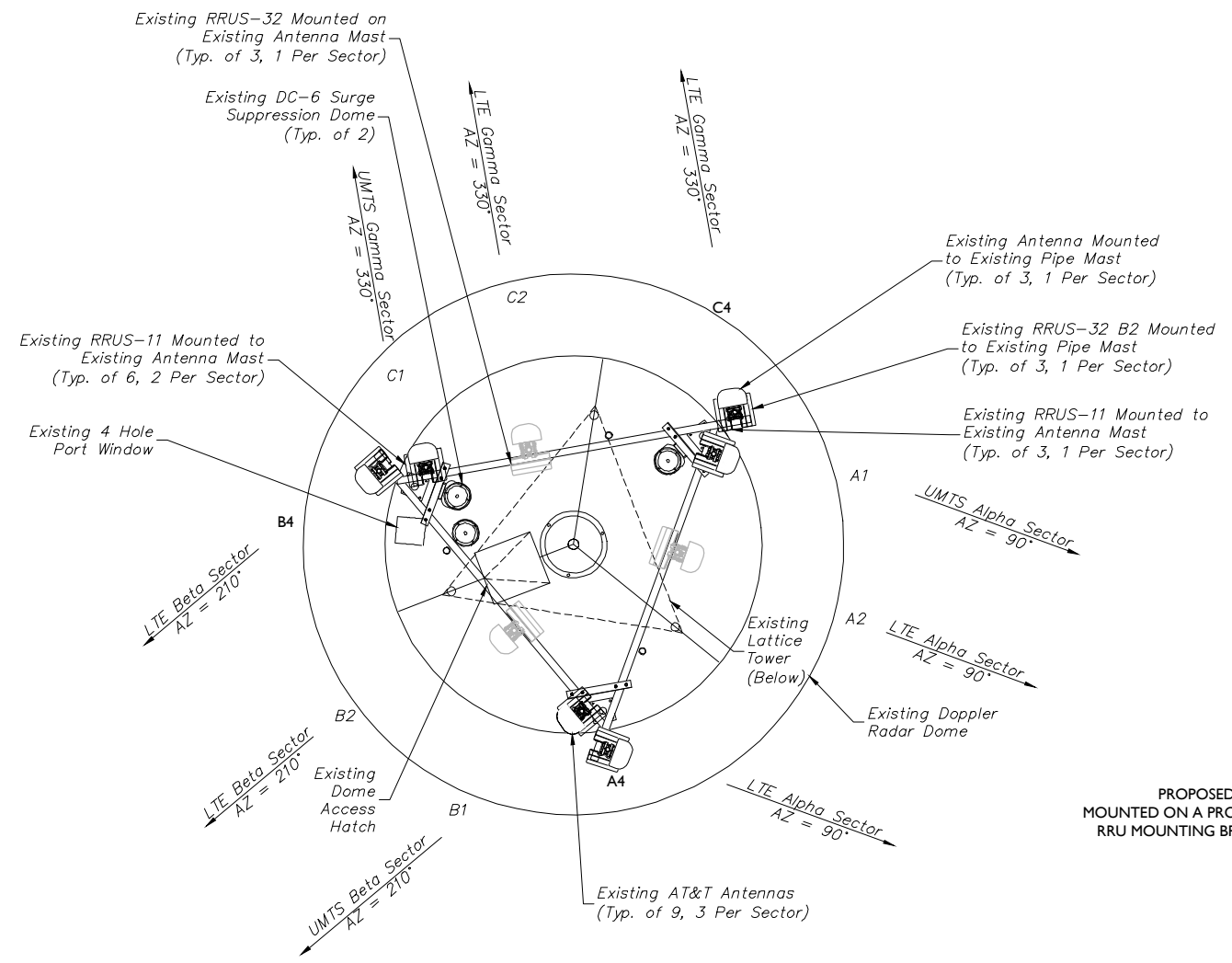
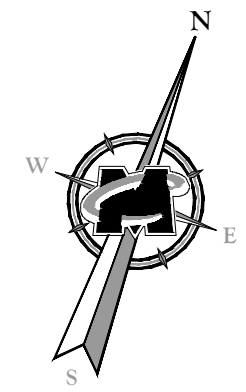
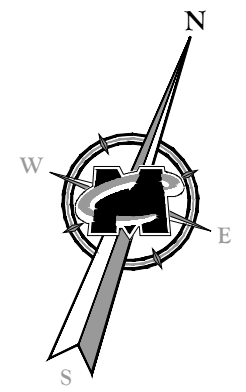
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SHEET TITLE:
ANTENNA LAYOUTS

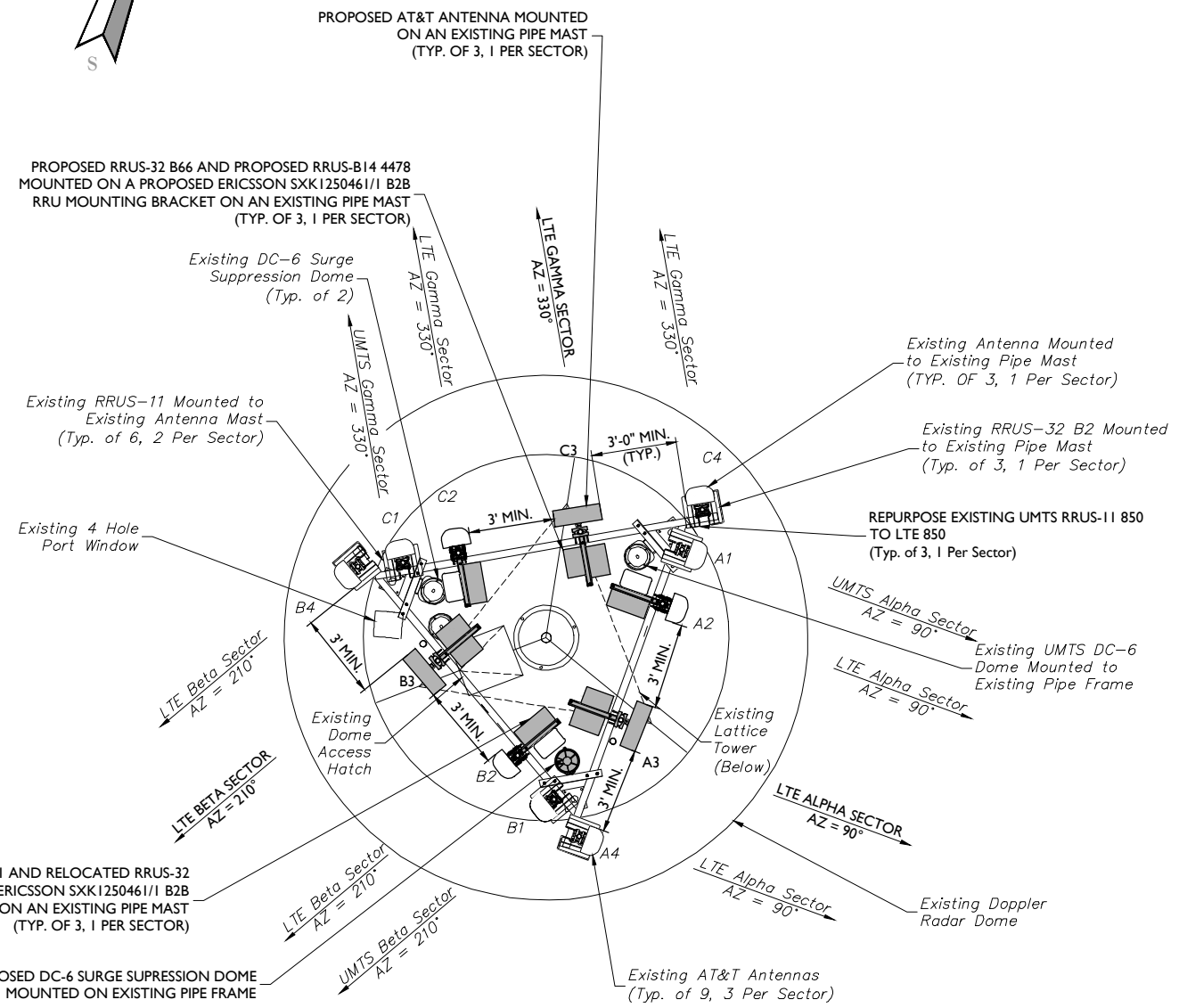
SHEET NUMBER:
A-3

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

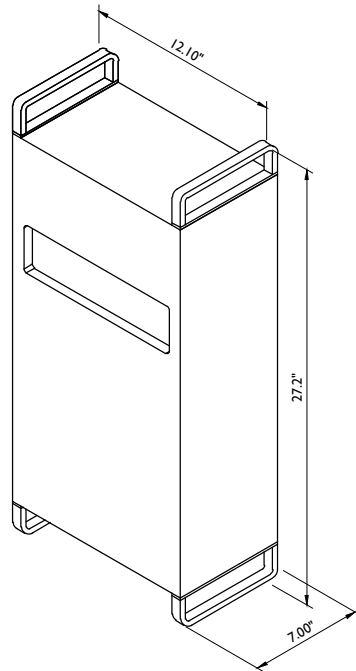
NOTE:
 CONTRACTOR TO SHIFT EXISTING ANTENNAS AS NEEDED TO MEET REQUIRED ANTENNA SEPARATION.



EXISTING - ANTENNA LAYOUT
 NOT TO SCALE



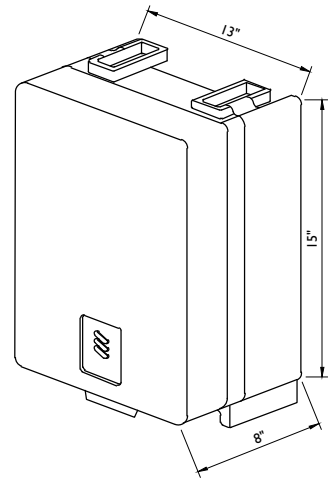
PROPOSED - ANTENNA LAYOUT
 NOT TO SCALE



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

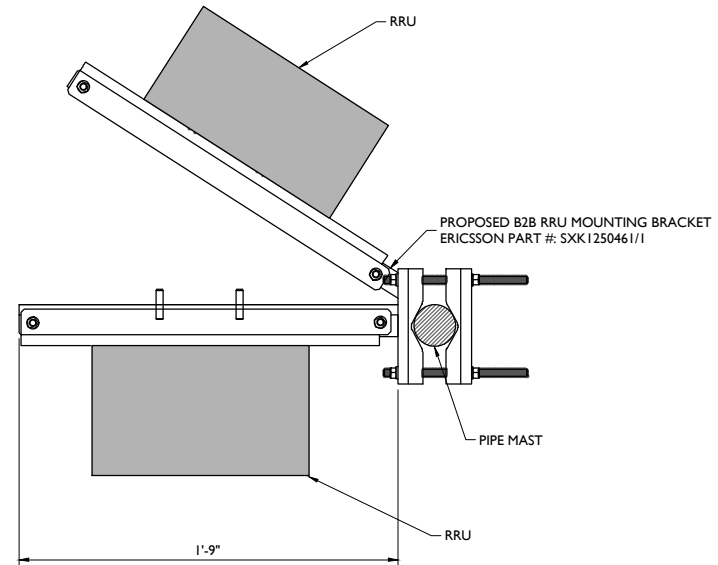
WEIGHT: 53 LBS

RRUS-32 B66 DETAIL
NOT TO SCALE



DIMENSIONS (H X W X D): 15"H X 13"W X 8"D (INCLUDES SUNSHIELD)
WEIGHT: 60 LBS

RRU-4478-B14 DETAIL
NOT TO SCALE



RRU MOUNTING DETAIL
NOT TO SCALE



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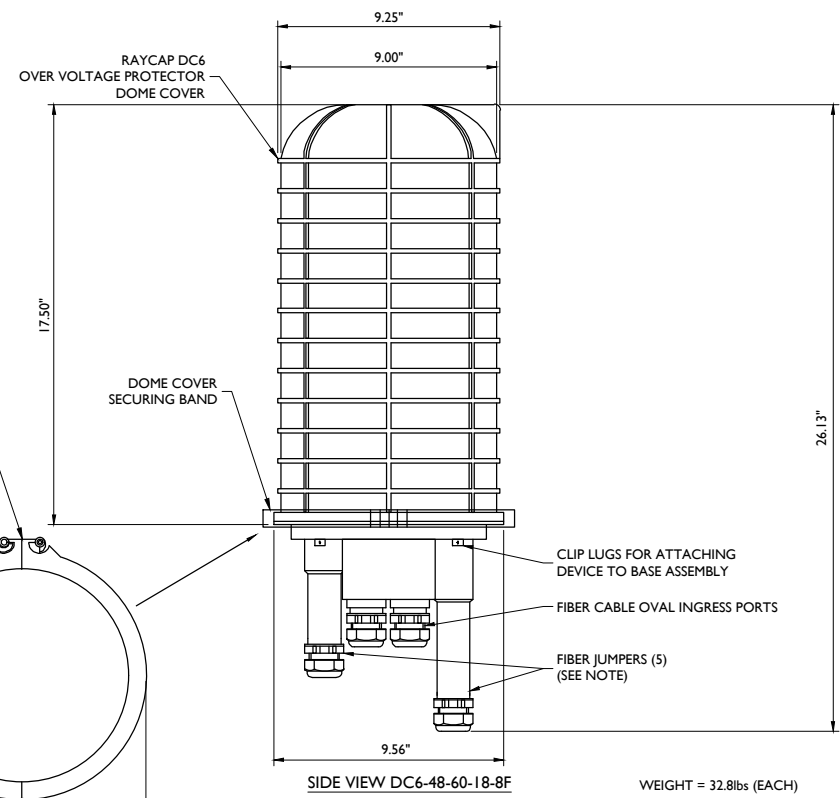
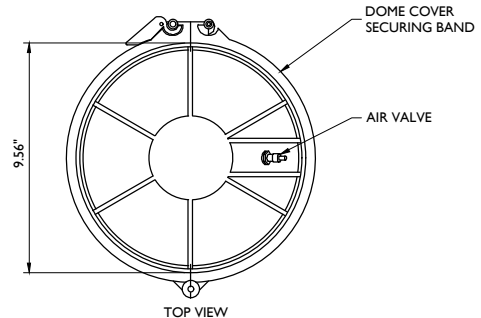
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SHEET TITLE:

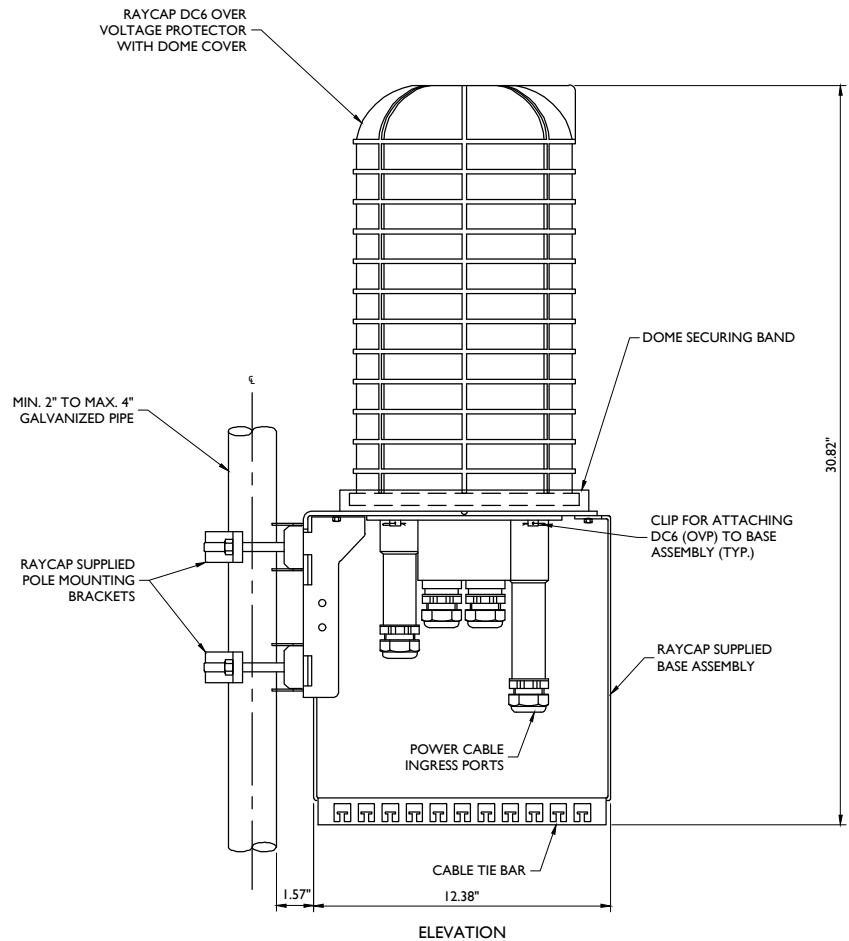
DETAILS

SHEET NUMBER:

A-4

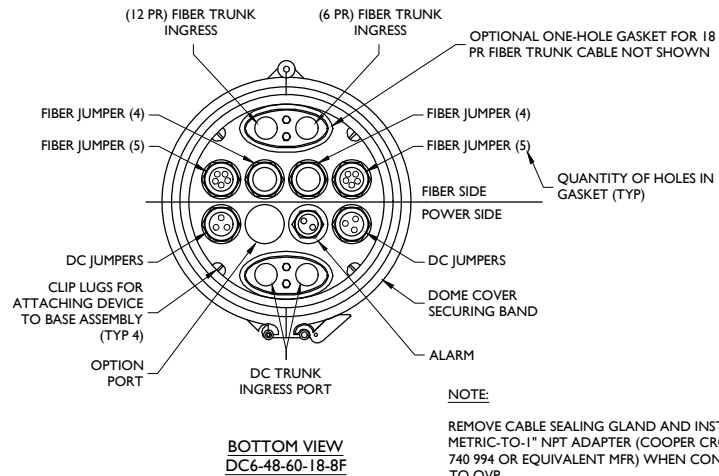
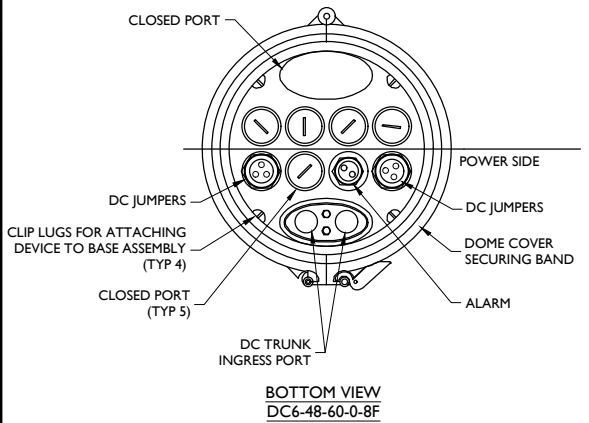


WEIGHT = 32.8lbs (EACH)



NOTES:
RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

**RAYCAP DC6-48-60-18-8F & DC6-48-60-0-8F
DC POWER OVER VOLTAGE PROTECTOR (OVP)
POLE MOUNT BASE ASSEMBLY**
NOT TO SCALE



NOTE:
REMOVE CABLE SEALING GLAND AND INSTALL M32x1.5 METRIC-TO-1" NPT ADAPTER (COOPER CROUSE-HINES P/N CAP 740 994 OR EQUIVALENT MFR) WHEN CONNECTING CONDUIT TO OVP.

DC6 SURGE SUPPRESSION DOME DETAIL
NOT TO SCALE

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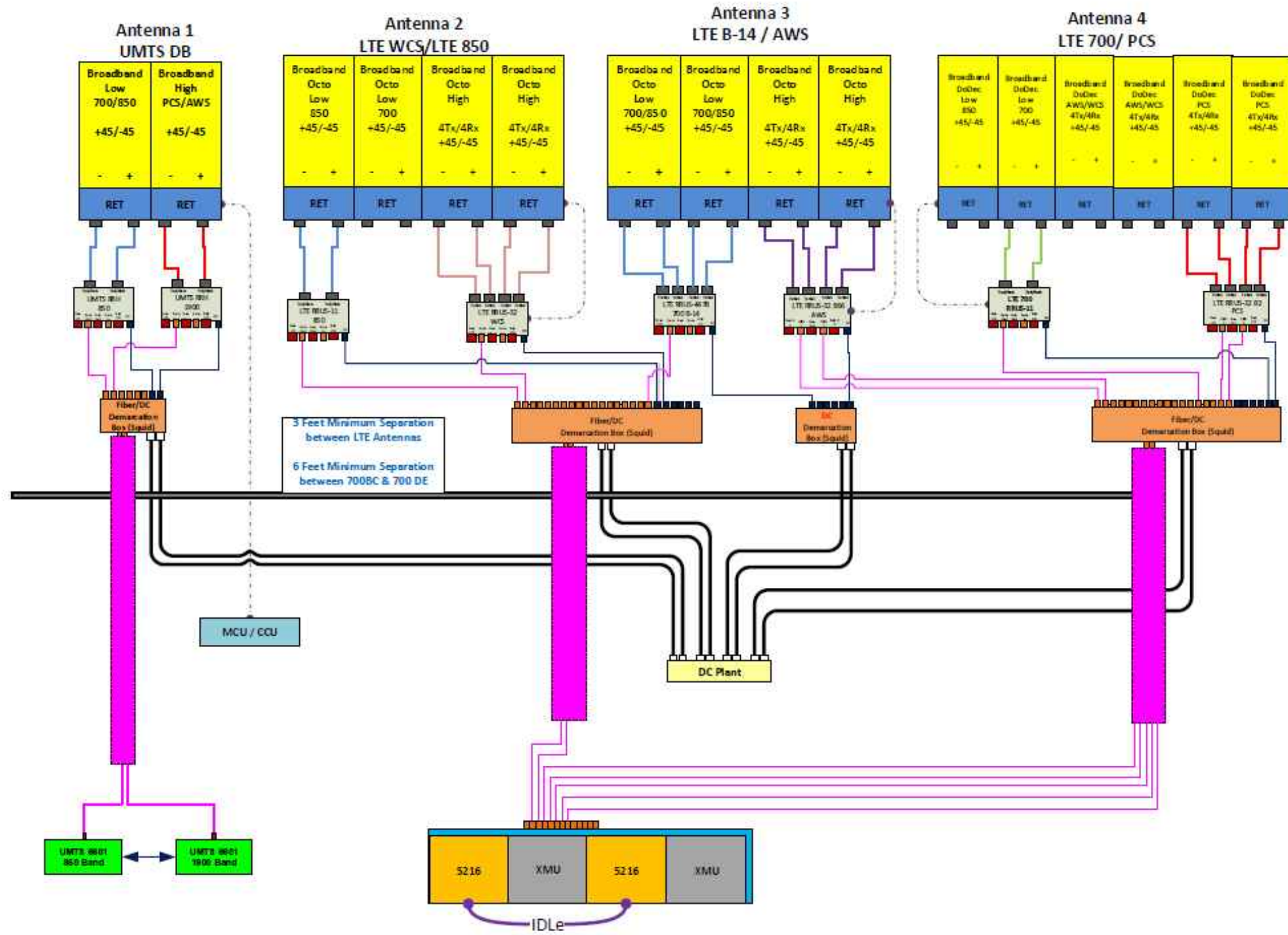
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ALL SECTORS

BASED ON: "NEW-ENGLAND_CONNECTICUT_CTL01330_2018-LTE-Next-Carrier_LTE_ak975u_2051A0ACJX_10141394_139386_05-11-2017_Final-RF-Approval_v3.00" Last Updated: 10/05/2017.

RF PLUMBING DIAGRAMS



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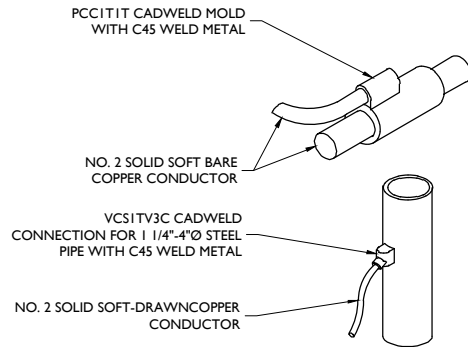
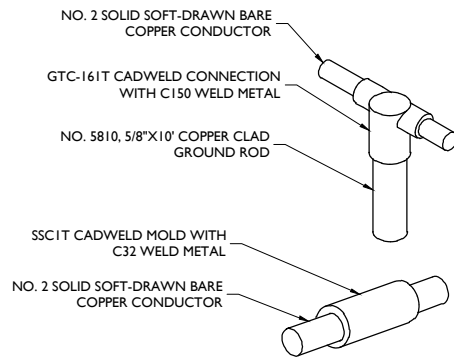
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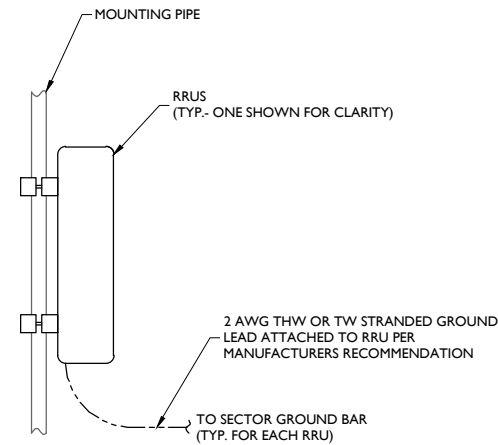
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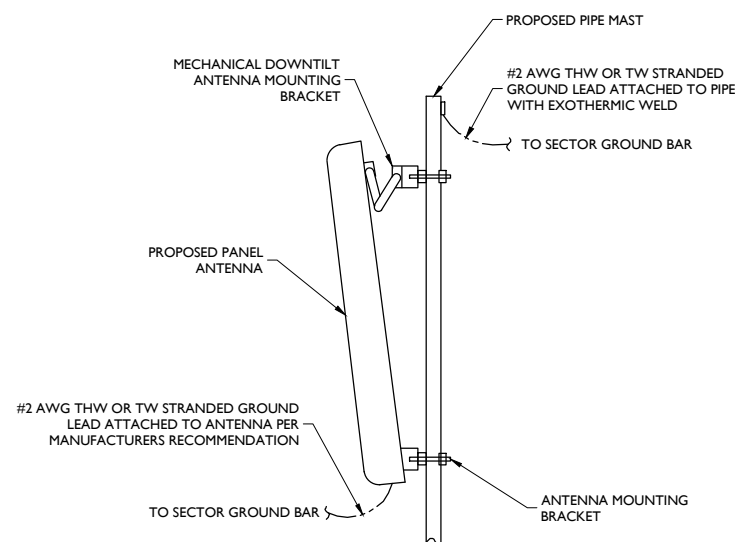
A-6



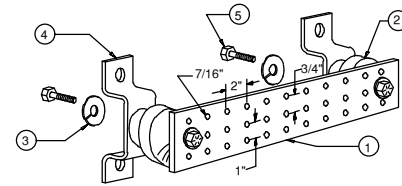
CADWELD DETAILS
NOT TO SCALE



RRU GROUNDING DETAIL
NOT TO SCALE



ANTENNA GROUNDING
NOT TO SCALE



LEGEND

- 1- TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
- 2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
- 3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8
- 4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056
- 5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1
- 6- EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

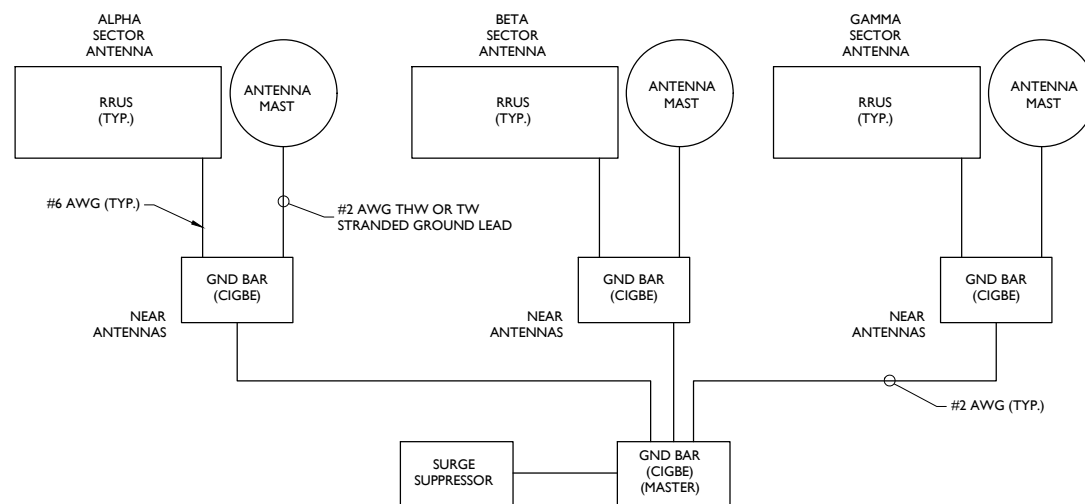
SECTION "P" - SURGE PRODUCERS

- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES.

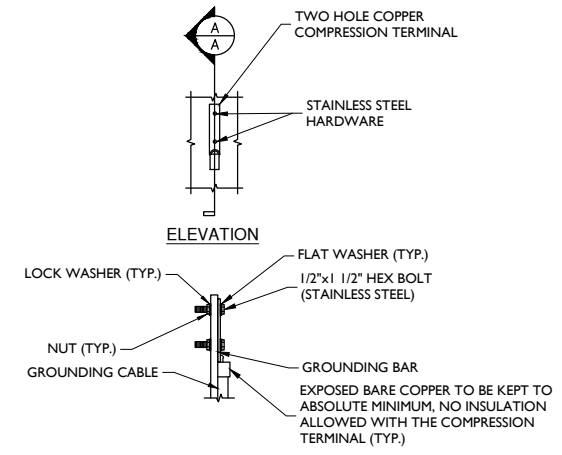
SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

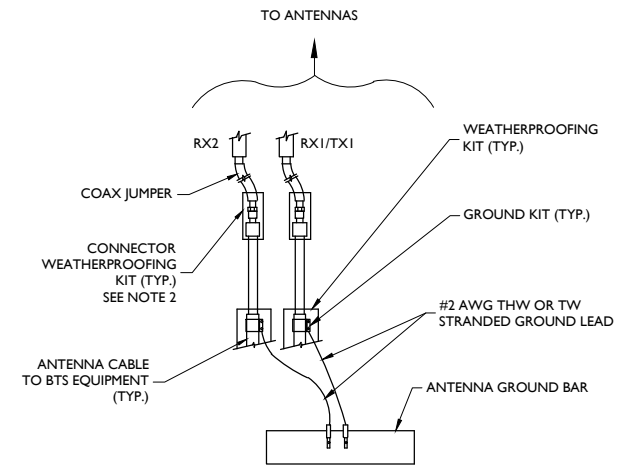
MASTER GROUND BAR
NOT TO SCALE



SCHEMATIC DIAGRAM GROUNDING SYSTEM



TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



NOTES:

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

TYPICAL GROUND WIRE TO GROUNDING BAR
NOT TO SCALE

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Self-Support Tower Analysis

FOR
CT1330 – Avon Montevideo Road

FA Number: 10141394
324 Montevideo Road
Avon, CT 06001
Hartford County

LTE 4C - MRCTB022434 / LTE 5C – MRCTB024053 / LTE 6C – MTCTB026596

Tower and Foundation Utilizations: Acceptable & 93.3%

January 25, 2018

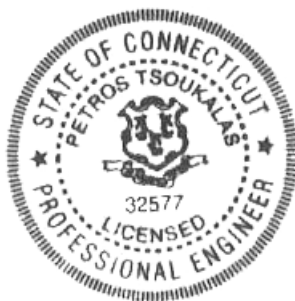
Prepared For

AT&T

550 Cochituate Road
Framingham, MA 01701

Prepared By

Maser Consulting P.A.
2000 Midlantic Drive, Suite 100
Mount Laurel, NJ 08054
856.797.0412



Petros E. Tsoukalas, P.E.
Geographic Discipline Leader
Connecticut License No. 32557





Objective:

The objective of this report is to determine the capacity of the existing 59.5' self-support tower structure at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

Introduction:

Maser Consulting Connecticut has performed limited field observations on April 16, 2016 to verify the existing condition of the structure and to locate and quantify the existing wireless appurtenances from the ground. This structural analysis is only valid for the appurtenances on the existing self-support tower at the time of the site visit. Additionally, Maser Consulting Connecticut has reviewed the following documents in completing this report:

- Previous Structural Analysis Tower Modification Report prepared by Maser Consulting Connecticut, dated May 2, 2017
- Previous Construction Drawings prepared by Maser Consulting Connecticut, dated April 10, 2017
- RFDS 1765191 provided by Empire, dated October 5, 2017

Maser Consulting Connecticut has included all non-AT&T loading in the previous referenced structural analysis report. No tower and appurtenance mapping has been conducted to confirm the loading presented in the previous structural analysis report. Also, the results of this analysis are only valid for the appurtenances installed on the tower at the time of the site visit by Maser Consulting Connecticut. This report is based upon this information, as well as the information obtained in the field.

Discrete and Linear Appurtenances:

Maser Consulting Connecticut understands the existing and proposed AT&T loading on the tower to be as follows:

Quantity	Manufacturer	Antenna/ Appurtenance	Status	Sector
3	Commscope	SBNH-1D6565C	Existing	Alpha, Beta, & Gamma
3	CCI	OPA-65R-LCUU-H8	Existing	Alpha, Beta, & Gamma
3	Kathrein	80010966	Proposed	Alpha, Beta, & Gamma
3	CCI	TPA-65R-LCUUUU-H8	Existing	Alpha, Beta, & Gamma
6	Ericsson	RRUS 11	Existing	Alpha, Beta, & Gamma
3	Ericsson	RRUS 32	Existing	Alpha, Beta, & Gamma
3	Ericsson	RRUS 4478 B14	Proposed	Alpha, Beta, & Gamma
3	Ericsson	RRUS 32 B66	Proposed	Alpha, Beta, & Gamma
3	Ericsson	RRUS 32 B2	Existing	Alpha, Beta, & Gamma
3	Raycap	DC6-48-60-18-8F	Existing	Alpha, Beta, & Gamma

Note: The overall antenna loading is found in the appendix A of this report.

Codes, Standards and Loading:

Maser Consulting Connecticut utilized the following codes and standards:

- 2016 CT State Building Code and All Subsequent Amendments, Incorporating IBC 2012
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-EIA-222-G
 - Basic Wind Speed – 98 mph (3 Second Gust)
 - Service Wind Speed – 60 mph
 - Ice Wind Speed – 40 mph (1" Ice)
 - Topographic Category – 4
 - Crest Height – 742'
 - Exposure Category – B

Analysis Approach & Assumptions:

The analysis approach used in this structural analysis is based on the premise that if the existing self-support tower is structurally adequate to support the existing and proposed equipment per the aforementioned codes and standards, or if the increase in the forces in the structure are deemed to be negligible or acceptable, then the proposed equipment can be installed as intended. TNX, a 3D finite element modeling and analysis program, was used to determine the capacity and usage of the existing antenna support frame.

All the existing and proposed **AT&T** equipment is shielded from wind loading to the RF transparent dome on top of the tower. Only the dead load of the **AT&T** equipment was considered in this analysis.

The following assumptions were utilized in this report:

- Structural Steel Pipes are constructed of A53 Grade B Steel.
- The existing tower is constructed to plumb and is properly maintained with no structural deficiencies and deteriorations.
- It is assumed that the telecommunication equipment supports, antenna supports, and existing structure have been designed by a registered licensed professional engineer for the existing loads acting on the structure, as required by all applicable codes, prior to the proposed modifications listed within this report.
- It is assumed that information provided by the client regarding the structure itself, the antenna models, feed lines, and other relevant information is current and correct.
- It is assumed all other existing appurtenances, antennas, cables, etc. belonging to others have been installed and supported per code and per specifications so as not to damage any existing structural support members, and that any contributing loads from adjacent equipment has been taken into consideration for their design.
- The tower and foundation modifications have been installed as intended as shown in the referenced construction drawings



Calculations:

The Tower Analysis calculations are found in **Appendix A** of this report.

Conclusion:

Maser Consulting Connecticut has determined that the existing 59.5' tall structural steel galvanized self-support tower has **ACCEPTABLE** capacity to support the existing and proposed loading per the aforementioned codes and standards. It has been calculated that the maximum stress ratio is **100.3%**, which occurs in the tower legs, between elevations 6.3-13.1" above grade. Therefore, the proposed **AT&T** equipment **CAN** be installed on the existing self-support tower as intended.

Additionally, the modified foundation has been determined to be structurally **ADEQUATE** to support the existing and proposed loading. The foundation has been determined to be stressed to a maximum of **93.3%** of its structural capacity.

Maser Consulting Connecticut reserves the right to amend this report if additional information about the self-support tower and foundation is provided. The conclusions reached by Maser Consulting Connecticut in this report are only valid for the discrete and linear appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

Sincerely,

Maser Consulting Connecticut

Petros E Tsoukalas P.E.
Geographic Discipline Leader

Lauren Luzier
Engineer

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
SBNH-1D6565C (att)	70	RRUS 32 B66 (att)	70
SBNH-1D6565C (att)	70	RRUS 32 B66 (att)	70
SBNH-1D6565C (att)	70	80010966 w/ 8' pipe (att)	70
TPA-65R-LCUUUU-H8 (att)	70	80010966 w/ 8' pipe (att)	70
TPA-65R-LCUUUU-H8 (att)	70	80010966 w/ 8' pipe (att)	70
TPA-65R-LCUUUU-H8 (att)	70	18-ft doppler	68.5
CCI OPA-65R-LCUU-H8 (att)	70	Andrew 10' Platform	68
CCI OPA-65R-LCUU-H8 (att)	70	SBNHH-1D65B (verizon)	55
CCI OPA-65R-LCUU-H8 (att)	70	(3) RRH 2x60 (verizon)	55
(2) RRUS-11 (att)	70	(3) RRH 2x60 (verizon)	55
(2) RRUS-11 (att)	70	LPA-80063-6CF-EDIN-5 (verizon)	55
(2) RRUS-11 (att)	70	SBNHH-1D65B (verizon)	55
RRUS 32 (att)	70	SBNHH-1D65B (verizon)	55
RRUS 32 (att)	70	SBNHH-1D65B (verizon)	55
RRUS 32 (att)	70	APX75-866514 (verizon)	55
RRUS 32 B2 (att)	70	BXA-70063-6CF-EDIN-X (verizon)	55
RRUS 32 B2 (att)	70	LPA-80063-6CF-EDIN-5 (verizon)	55
RRUS 32 B2 (att)	70	Verizon Sector Frame (verizon)	55
(3) DC6-48-06-18-8F (att)	70	Verizon Sector Frame (verizon)	55
RRUS 4478 (att)	70	LPA-80063-6CF-EDIN-5 (verizon)	55
RRUS 4478 (att)	70	LPA-80063-6CF-EDIN-5 (verizon)	55
RRUS 4478 (att)	70	RHSDC-3315-PF-48 (verizon)	51
RRUS 32 B66 (att)	70	RHSDC-3315-PF-48 (verizon)	51

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi
A53-B-35	35 ksi	63 ksi			

TOWER DESIGN NOTES

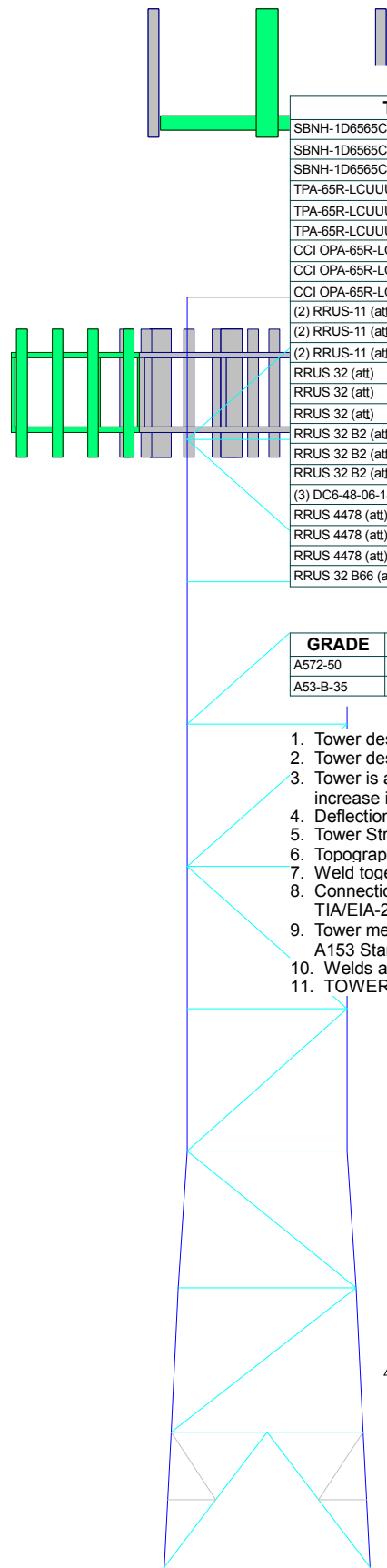
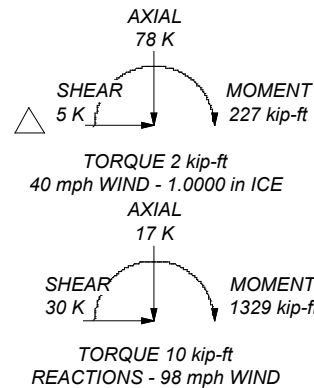
1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 98 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 4 with Crest Height of 742.00 ft
7. Weld together tower sections have flange connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER-70S-6 electrodes.
11. TOWER RATING: 100.3%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:

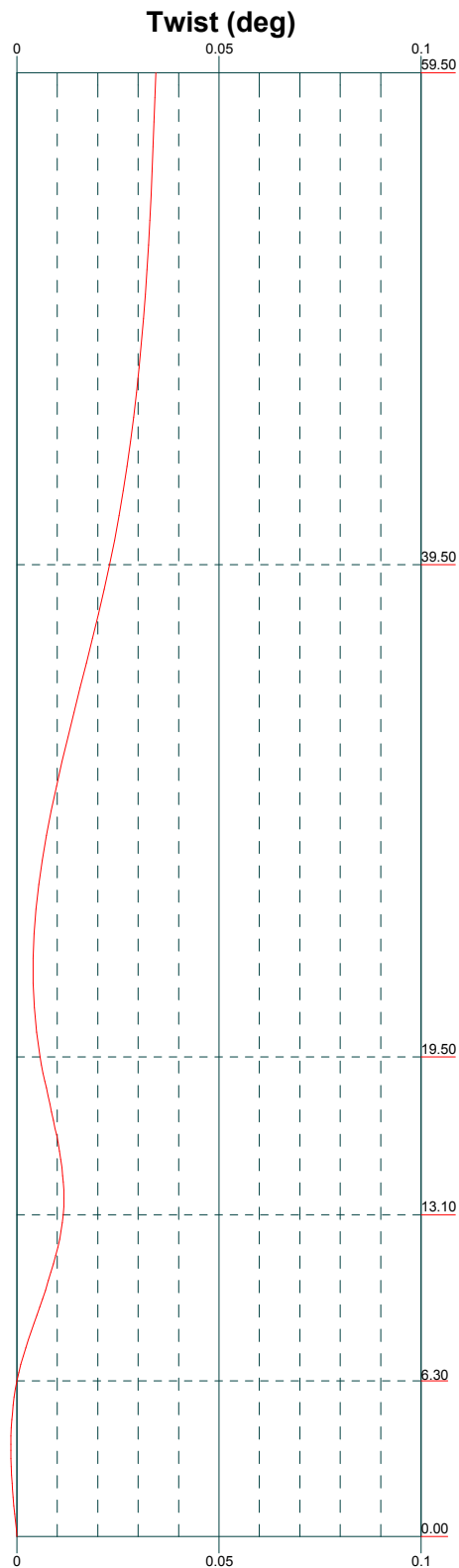
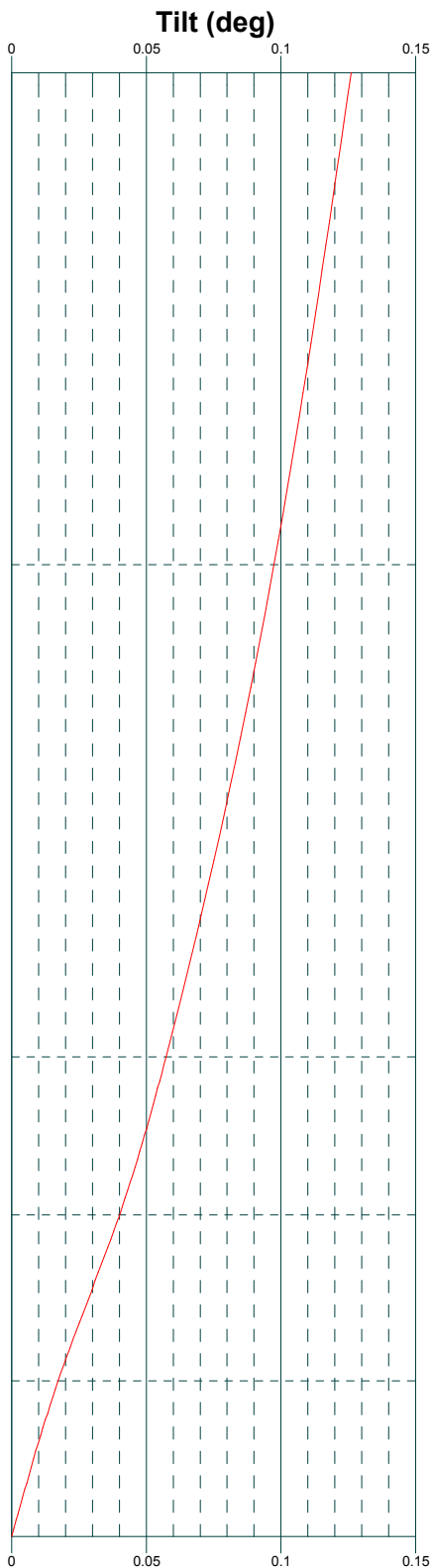
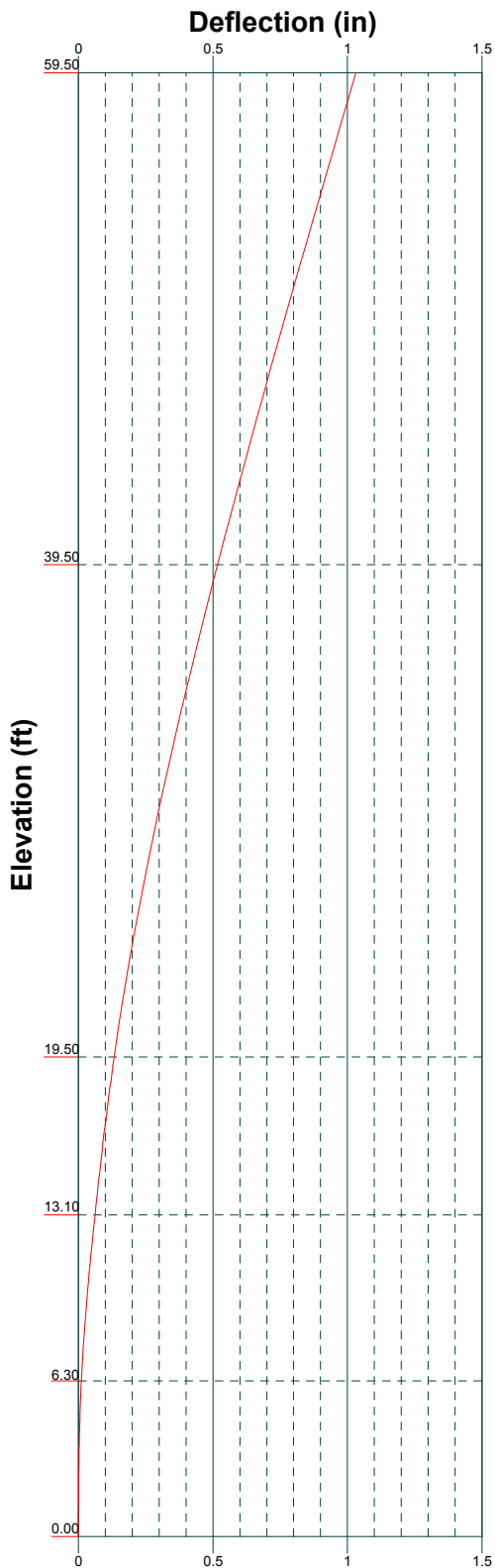
DOWN: 164 K
SHEAR: 18 K

UPLIFT: -150 K
SHEAR: 16 K



Section	T1	T2	T3
Legs	L1 Rohn 3.5 STD	L2 A572-50	L3 Rohn 3.5 STD
Leg Grade			
Diagonals	P2.5x.203	ROHN 2.5 STD	L3x3x3/16
Diagonal Grade	A53-B-35		A36
Top Girts	L3x5x1/4	N.A.	L3x3x1/4
Horizontals	L2 1/2x2 1/2x1/4	L3x3x3/8	L2x2x3/16
Red. Horizontals			L2x2x3/16
Red. Diagonals			L2x2x3/16
Face Width (ft)	7.58333	7.58333	9.02179
# Panels @ (ft)	6 @ 6.66667	1 @ 6.4	1 @ 6.3
Weight (K)	1.4	0.6	0.7

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2000 Midlantic Drive, Suite 100		Project: 16946029A	
Mt. Laurel, NJ		Client: AT&T	Drawn by:
Phone: 856 797-0412		Code: TIA-222-G	Date: 01/18/18
FAX: 856 722-1120		Path:	App'd:
		Scale: NTS	
		Dwg No. E-1	

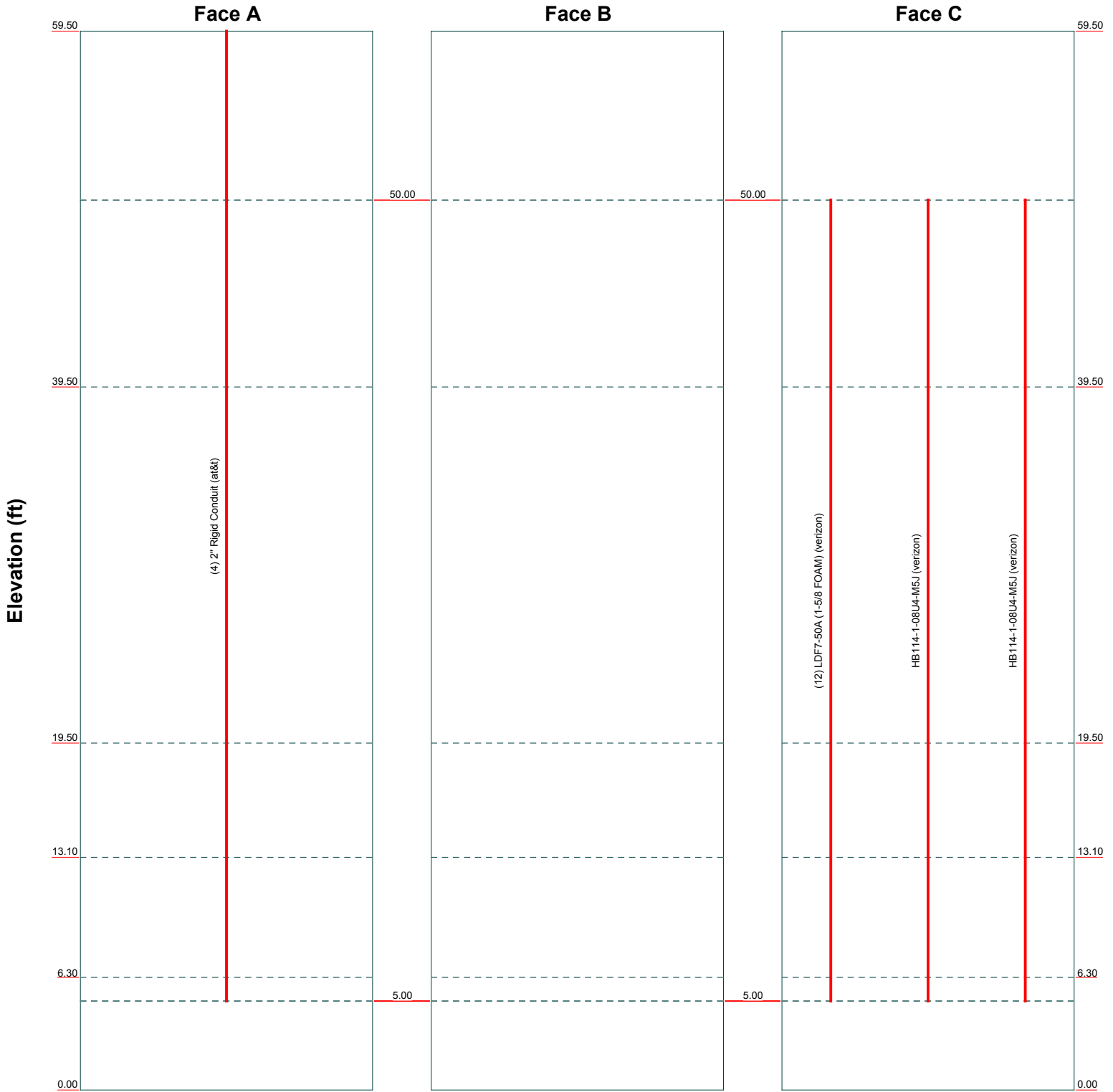


<p>Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120</p>			Job: CTL01330 Avon - Montevideo Road		
			Project: 16946029A		
Client: AT&T		Drawn by:		App'd:	
Code: TIA-222-G		Date: 01/25/18		Scale: NTS	
Path:		<small>\\maserconsulting.com\it\Projects\2017\17963000A\17963018A\Structural\Tower Analysis\TNC\Self_Support</small>		Dwg No. E-5	

Feed Line Distribution Chart

0' - 59'6"

— Round
 — Flat
 — App In Face
 — App Out Face
 — Truss Leg



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Project: 16946029A		
Client: AT&T	Drawn by:	App'd:
Code: TIA-222-G	Date: 01/25/18	Scale: NTS
Path:	Dwg No. E-7	

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	Project 16946029A	Date 15:51:29 01/25/18
	Client AT&T	Designed by

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 59.50 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 7.58 ft at the top and 9.71 ft at the base.

There is a 3 sided latticed pole with a face width of 7.58 ft.

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

The following design criteria apply:

Basic wind speed of 98 mph.

Structure Class II.

Exposure Category B.

Topographic Category 4.

Crest Height 742.00 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 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Weld together tower sections have flange connections..

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

Welds are fabricated with ER-70S-6 electrodes..

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in latticed pole member design is 1.

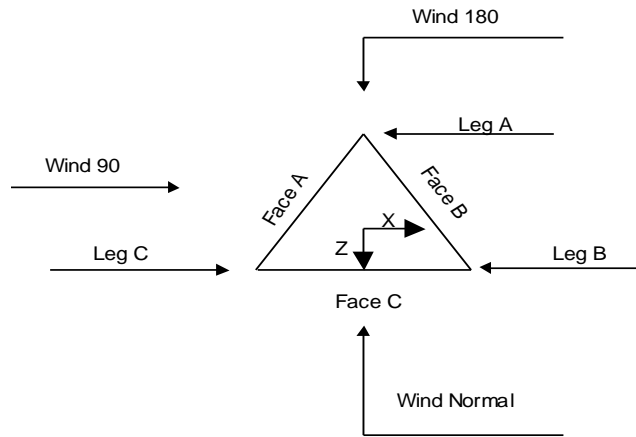
Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r Retension Guys To Initial Tension Bypass Mast Stability Checks Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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	Project 16946029A	Date 15:51:29 01/25/18
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Triangular Tower

3 Sided Latticed Pole 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>
L1	59.50-39.50			7.58	1	20.00
L2	39.50-19.50			7.58	1	20.00

3 Sided Latticed Pole 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>
L1	59.50-39.50	6.67	K Brace Left	No	Yes	0.0000	0.0000
L2	39.50-19.50	6.67	K Brace Left	No	Yes	0.0000	0.0000

3 Sided Latticed Pole Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
<i>ft</i>						
L1 59.50-39.50	Pipe	Rohn 3.5 STD	A572-50	Pipe	P2.5x.203	A53-B-35

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	Project	16946029A	Date	15:51:29 01/25/18
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Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
			X	X	X	X	X	X	X	X
ft				Y	Y	Y	Y	Y	Y	Y
L1 59.50-39.50	Yes	Yes	1	1	1	1	1	1	1	1
L2 39.50-19.50	Yes	Yes	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.

3 Sided Latticed Pole Section Geometry (cont'd)

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
L1 59.50-39.50	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
L2 39.50-19.50	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

3 Sided Latticed Pole 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.
L1 59.50-39.50	Flange	0.8750	4	0.7500	0	0.6250	2	0.6250	0	0.6250	0	0.5000	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
L2 39.50-19.50	Flange	0.8750	4	0.5000	0	0.6250	0	0.6250	0	0.6250	0	0.7500	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	19.50-13.10			7.58	1	6.40
T2	13.10-6.30			8.28	1	6.80
T3	6.30-0.00			9.02	1	6.30

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	Project 16946029A	Date 15:51:29 01/25/18
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Tower Section Geometry (cont'd)

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	19.50-13.10	6.40	K Brace Right	No	Yes	0.0000	0.0000
T2	13.10-6.30	6.80	K Brace Left	No	Yes	0.0000	0.0000
T3	6.30-0.00	6.30	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 19.50-13.10	Arbitrary Shape	3.5 STD with 4.5x0.237 HSS Half Pipe	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A53-B-35 (35 ksi)
T2 13.10-6.30	Arbitrary Shape	3.5 STD with 4.5x0.237 HSS Half Pipe	A572-50 (50 ksi)	Pipe	ROHN 2.5 STD	A53-B-35 (35 ksi)
T3 6.30-0.00	Arbitrary Shape	3.5 STD with 4.5x0.237 HSS Half Pipe	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 19.50-13.10	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T2 13.10-6.30	None	Flat Bar		A36 (36 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T3 6.30-0.00	None	Flat Bar		A36 (36 ksi)	Double Equal Angle	2L2x2x3/16	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Redundant Bracing Grade	Redundant Type	Redundant Size	K Factor
T3 6.30-0.00	A36 (36 ksi)	Horizontal (1) Diagonal (1)	Equal Angle Equal Angle	1 1

Tower Section Geometry (cont'd)

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	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

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	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
T1 19.50-13.10	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T2 13.10-6.30	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000	36.0000
T3 6.30-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	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 19.50-13.10	Yes	Yes	1	1	1	1	1	1	1	1	1
T2 13.10-6.30	Yes	Yes	1	1	1	1	1	1	1	1	1
T3 6.30-0.00	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)

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 19.50-13.10	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 13.10-6.30	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 6.30-0.00	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 19.50-13.10	Flange	0.7500 A325N	0	0.7500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0

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	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

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.
T2 13.10-6.30	Flange	0.7500	0	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.5000	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 6.30-0.00	Flange	0.7500	0	0.7500	0	0.6250	0	0.6250	0	0.6250	0	0.5000	1	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

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
LDF7-50A (1-5/8 FOAM) (verizon)	C	No	Ar (CaAa)	50.00 - 5.00	1.0000	-0.38	12	6	1.0000 1.9800	1.9800		0.82
2" Rigid Conduit (at&t)	A	No	Ar (CaAa)	59.50 - 5.00	0.0000	-0.41	4	4	1.0000 2.0000	2.0000		2.80
HB114-1-08U 4-M5J (verizon)	C	No	Ar (CaAa)	50.00 - 5.00	1.0000	-0.41	1	1	1.9800	2.0000		1.61
HB114-1-08U 4-M5J (verizon)	C	No	Ar (CaAa)	50.00 - 5.00	3.0000	-0.24	1	1	1.9800	2.0000		1.61

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 K
L1	59.50-39.50	A	0.000	0.000	16.000	0.000	0.22
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	29.148	0.000	0.14
L2	39.50-19.50	A	0.000	0.000	16.000	0.000	0.22
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	55.520	0.000	0.26
T1	19.50-13.10	A	0.000	0.000	5.120	0.000	0.07
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	17.766	0.000	0.08
T2	13.10-6.30	A	0.000	0.000	5.440	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	18.877	0.000	0.09
T3	6.30-0.00	A	0.000	0.000	1.040	0.000	0.01
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	3.609	0.000	0.02

Feed Line/Linear Appurtenances Section Areas - With Ice

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	8 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

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 K
L1	59.50-39.50	A	2.877	0.000	0.000	46.152	0.000	1.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	49.720	0.000	1.37
L2	39.50-19.50	A	2.761	0.000	0.000	45.383	0.000	1.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	92.995	0.000	2.52
T1	19.50-13.10	A	2.620	0.000	0.000	14.225	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	29.097	0.000	0.77
T2	13.10-6.30	A	2.497	0.000	0.000	14.838	0.000	0.31
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	30.298	0.000	0.78
T3	6.30-0.00	A	2.239	0.000	0.000	2.727	0.000	0.05
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	5.546	0.000	0.14

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	59.50-39.50	0.7978	3.7366	0.3278	2.1488
L2	39.50-19.50	2.6176	4.5457	1.5341	2.9756
T1	19.50-13.10	2.7191	4.6981	1.5843	3.0984
T2	13.10-6.30	2.9568	5.0620	1.7159	3.3662
T3	6.30-0.00	1.0834	1.8456	0.4949	0.9919

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
L1	1	LDF7-50A (1-5/8 FOAM)	39.50 - 50.00	0.6000	0.5915
L1	2	2" Rigid Conduit	39.50 - 59.50	0.6000	0.5915
L1	3	HB114-1-08U4-M5J	39.50 - 50.00	0.6000	0.5915
L1	4	HB114-1-08U4-M5J	39.50 - 50.00	0.6000	0.5915
L2	1	LDF7-50A (1-5/8 FOAM)	19.50 - 39.50	0.6000	0.6000
L2	2	2" Rigid Conduit	19.50 - 39.50	0.6000	0.6000
L2	3	HB114-1-08U4-M5J	19.50 - 39.50	0.6000	0.6000
L2	4	HB114-1-08U4-M5J	19.50 - 39.50	0.6000	0.6000
T1	1	LDF7-50A (1-5/8 FOAM)	13.10 - 19.50	0.6000	0.6000
T1	2	2" Rigid Conduit	13.10 - 19.50	0.6000	0.6000
T1	3	HB114-1-08U4-M5J	13.10 - 19.50	0.6000	0.6000
T1	4	HB114-1-08U4-M5J	13.10 - 19.50	0.6000	0.6000
T2	1	LDF7-50A (1-5/8 FOAM)	6.30 - 13.10	0.6000	0.6000
T2	2	2" Rigid Conduit	6.30 - 13.10	0.6000	0.6000
T2	3	HB114-1-08U4-M5J	6.30 - 13.10	0.6000	0.6000
T2	4	HB114-1-08U4-M5J	6.30 - 13.10	0.6000	0.6000
T3	1	LDF7-50A (1-5/8 FOAM)	5.00 - 6.30	0.6000	0.5593
T3	2	2" Rigid Conduit	5.00 - 6.30	0.6000	0.5593
T3	3	HB114-1-08U4-M5J	5.00 - 6.30	0.6000	0.5593
T3	4	HB114-1-08U4-M5J	5.00 - 6.30	0.6000	0.5593

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	9 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight
			Horz Lateral	Vert					
Verizon Sector Frame (verizon)	B	From Face	0.50	0.0000	55.00	No Ice	6.20	3.80	0.15
			0.00			1/2" Ice	8.80	5.40	0.30
			0.00			1" Ice	11.40	7.00	0.45
Verizon Sector Frame (verizon)	A	From Face	0.50	0.0000	55.00	No Ice	6.20	3.80	0.15
			0.00			1/2" Ice	8.80	5.40	0.30
			0.00			1" Ice	11.40	7.00	0.45
LPA-80063-6CF-EDIN-5 (verizon)	B	From Face	0.50	0.0000	55.00	No Ice	9.57	8.55	0.03
			6.00			1/2" Ice	10.03	9.01	0.10
			0.00			1" Ice	10.50	9.47	0.18
LPA-80063-6CF-EDIN-5 (verizon)	B	From Face	0.50	0.0000	55.00	No Ice	9.57	8.55	0.03
			-6.00			1/2" Ice	10.03	9.01	0.10
			0.00			1" Ice	10.50	9.47	0.18
LPA-80063-6CF-EDIN-5 (verizon)	A	From Face	0.50	0.0000	55.00	No Ice	9.57	8.55	0.03
			-8.75			1/2" Ice	10.03	9.01	0.10
			0.00			1" Ice	10.50	9.47	0.18
SBNHH-1D65B (verizon)	B	From Face	0.50	0.0000	55.00	No Ice	8.20	6.89	0.07
			4.00			1/2" Ice	8.70	7.95	0.14
			0.00			1" Ice	9.19	8.81	0.22
SBNHH-1D65B (verizon)	B	From Face	0.50	0.0000	55.00	No Ice	8.20	6.89	0.07
			-4.00			1/2" Ice	8.70	7.95	0.14
			0.00			1" Ice	9.19	8.81	0.22
SBNHH-1D65B (verizon)	A	From Face	0.50	0.0000	55.00	No Ice	8.20	6.89	0.07
			-6.75			1/2" Ice	8.70	7.95	0.14
			0.00			1" Ice	9.19	8.81	0.22
SBNHH-1D65B (verizon)	A	From Face	0.50	0.0000	55.00	No Ice	8.20	6.89	0.07
			1.25			1/2" Ice	8.70	7.95	0.14
			0.00			1" Ice	9.19	8.81	0.22
APX75-866514 (verizon)	A	From Face	0.50	0.0000	55.00	No Ice	9.67	4.71	0.04
			0.00			1/2" Ice	10.18	5.21	0.09
			0.00			1" Ice	10.70	5.71	0.15
BXA-70063-6CF-EDIN-X (verizon)	A	From Face	0.50	0.0000	55.00	No Ice	14.41	5.72	0.04
			-2.75			1/2" Ice	14.92	6.17	0.12
			0.00			1" Ice	15.44	6.63	0.21
LPA-80063-6CF-EDIN-5 (verizon)	B	From Face	0.50	0.0000	55.00	No Ice	9.57	8.55	0.03
			3.25			1/2" Ice	10.03	9.01	0.10
			0.00			1" Ice	10.50	9.47	0.18
SBNH-1D6565C (at&t)	A	From Face	4.00	0.0000	70.00	No Ice	11.45	7.70	0.07
			0.00			1/2" Ice	12.06	8.29	0.13
			0.00			1" Ice	12.69	8.89	0.21
SBNH-1D6565C (at&t)	B	From Face	4.00	0.0000	70.00	No Ice	11.45	7.70	0.07
			0.00			1/2" Ice	12.06	8.29	0.13
			0.00			1" Ice	12.69	8.89	0.21
SBNH-1D6565C (at&t)	C	From Face	4.00	0.0000	70.00	No Ice	11.45	7.70	0.07
			0.00			1/2" Ice	12.06	8.29	0.13
			0.00			1" Ice	12.69	8.89	0.21
TPA-65R-LCUUUU-H8 (at&t)	A	From Face	4.00	0.0000	70.00	No Ice	13.30	8.82	0.08
			0.00			1/2" Ice	13.90	9.42	0.15

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	10 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral						Vert
TPA-65R-LCUUUU-H8 (at&t)	B	From Face	0.00		0.0000	70.00	1" Ice	14.50	10.03	0.24
			4.00				No Ice	13.30	8.82	0.08
			0.00				1/2" Ice	13.90	9.42	0.15
			0.00				1" Ice	14.50	10.03	0.24
TPA-65R-LCUUUU-H8 (at&t)	C	From Face	4.00		0.0000	70.00	No Ice	13.30	8.82	0.08
			0.00				1/2" Ice	13.90	9.42	0.15
			0.00				1" Ice	14.50	10.03	0.24
			0.00				1" Ice	14.50	10.03	0.24
CCI OPA-65R-LCUU-H8 (at&t)	A	From Face	4.00		0.0000	70.00	No Ice	12.76	7.48	0.06
			0.00				1/2" Ice	13.34	8.06	0.14
			0.00				1" Ice	13.93	8.64	0.22
			0.00				1" Ice	13.93	8.64	0.22
CCI OPA-65R-LCUU-H8 (at&t)	B	From Face	4.00		0.0000	70.00	No Ice	12.76	7.48	0.06
			0.00				1/2" Ice	13.34	8.06	0.14
			0.00				1" Ice	13.93	8.64	0.22
			0.00				1" Ice	13.93	8.64	0.22
CCI OPA-65R-LCUU-H8 (at&t)	C	From Face	4.00		0.0000	70.00	No Ice	12.76	7.48	0.06
			0.00				1/2" Ice	13.34	8.06	0.14
			0.00				1" Ice	13.93	8.64	0.22
			0.00				1" Ice	13.93	8.64	0.22
(2) RRUS-11 (at&t)	A	From Face	4.00		0.0000	70.00	No Ice	2.52	1.02	0.06
			0.00				1/2" Ice	2.72	1.16	0.07
			0.00				1" Ice	2.92	1.30	0.10
			0.00				1" Ice	2.92	1.30	0.10
(2) RRUS-11 (at&t)	B	From Face	4.00		0.0000	70.00	No Ice	2.52	1.02	0.06
			0.00				1/2" Ice	2.72	1.16	0.07
			0.00				1" Ice	2.92	1.30	0.10
			0.00				1" Ice	2.92	1.30	0.10
(2) RRUS-11 (at&t)	C	From Face	4.00		0.0000	70.00	No Ice	2.52	1.02	0.06
			0.00				1/2" Ice	2.72	1.16	0.07
			0.00				1" Ice	2.92	1.30	0.10
			0.00				1" Ice	2.92	1.30	0.10
RRUS 32 (at&t)	A	From Face	4.00		0.0000	70.00	No Ice	3.31	2.42	0.09
			0.00				1/2" Ice	3.56	2.64	0.12
			0.00				1" Ice	3.81	2.86	0.15
			0.00				1" Ice	3.81	2.86	0.15
RRUS 32 (at&t)	B	From Face	4.00		0.0000	70.00	No Ice	3.31	2.42	0.09
			0.00				1/2" Ice	3.56	2.64	0.12
			0.00				1" Ice	3.81	2.86	0.15
			0.00				1" Ice	3.81	2.86	0.15
RRUS 32 (at&t)	C	From Face	4.00		0.0000	70.00	No Ice	3.31	2.42	0.09
			0.00				1/2" Ice	3.56	2.64	0.12
			0.00				1" Ice	3.81	2.86	0.15
			0.00				1" Ice	3.81	2.86	0.15
RRUS 32 B2 (at&t)	A	From Face	4.00		0.0000	70.00	No Ice	3.31	2.42	0.07
			0.00				1/2" Ice	3.56	2.64	0.10
			0.00				1" Ice	3.81	2.86	0.13
			0.00				1" Ice	3.81	2.86	0.13
RRUS 32 B2 (at&t)	B	From Face	4.00		0.0000	70.00	No Ice	3.31	2.42	0.07
			0.00				1/2" Ice	3.56	2.64	0.10
			0.00				1" Ice	3.81	2.86	0.13
			0.00				1" Ice	3.81	2.86	0.13
RRUS 32 B2 (at&t)	C	From Face	4.00		0.0000	70.00	No Ice	3.31	2.42	0.07
			0.00				1/2" Ice	3.56	2.64	0.10
			0.00				1" Ice	3.81	2.86	0.13
			0.00				1" Ice	3.81	2.86	0.13
(3) DC6-48-06-18-8F (at&t)	A	From Face	4.00		0.0000	70.00	No Ice	1.20	1.20	0.03
			0.00				1/2" Ice	1.88	1.88	0.05
			0.00				1" Ice	2.09	2.09	0.08
			0.00				1" Ice	2.09	2.09	0.08
(3) RRH 2x60 (verizon)	A	From Face	1.00		0.0000	55.00	No Ice	0.90	1.42	0.06
			-4.00				1/2" Ice	0.95	1.58	0.08
			0.00				1" Ice	1.05	1.74	0.10
			0.00				1" Ice	1.05	1.74	0.10
(3) RRH 2x60 (verizon)	C	From Face	1.00		0.0000	55.00	No Ice	0.90	1.42	0.06
			-4.00				1/2" Ice	0.95	1.58	0.08
			0.00				1" Ice	1.05	1.74	0.10
			0.00				1" Ice	1.05	1.74	0.10
RHSDC-3315-PF-48 (verizon)	A	From Face	0.00		0.0000	51.00	No Ice	4.33	2.56	0.03
			0.00				1/2" Ice	4.61	2.79	0.06
			0.00				1" Ice	4.89	3.02	0.09
			0.00				1" Ice	4.89	3.02	0.09
RHSDC-3315-PF-48 (verizon)	C	From Face	0.00		0.0000	51.00	No Ice	4.33	2.56	0.03
			0.00				1/2" Ice	4.61	2.79	0.06
			0.00				1" Ice	4.89	3.02	0.09
			0.00				1" Ice	4.89	3.02	0.09

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job CTL01330 Avon - Montevideo Road	Page 11 of 31
	Project 16946029A	Date 15:51:29 01/25/18
	Client AT&T	Designed by

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	K
18-ft doppler	C	None	0.00		0.0000	68.50	1" Ice 4.89 No Ice 127.00	3.02 127.00	0.09 2.00
Andrew 10' Platform	C	None			0.0000	68.00	1/2" Ice 127.80	127.80	4.00
							1" Ice 128.40	128.40	6.00
							No Ice 54.00	54.00	2.20
RRUS 4478 (at&t)	A	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 72.00	72.00	3.30
							1" Ice 90.00	90.00	4.40
							No Ice 2.02	1.25	0.06
RRUS 4478 (at&t)	B	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 2.20	1.40	0.08
							1" Ice 2.39	1.55	0.10
							No Ice 2.02	1.25	0.06
RRUS 4478 (at&t)	C	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 2.20	1.40	0.08
							1" Ice 2.39	1.55	0.10
							No Ice 2.02	1.25	0.06
RRUS 32 B66 (at&t)	A	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 2.20	1.40	0.08
							1" Ice 2.39	1.55	0.10
							No Ice 3.01	2.18	0.07
RRUS 32 B66 (at&t)	B	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 3.24	2.38	0.09
							1" Ice 3.48	2.59	0.12
							No Ice 3.01	2.18	0.07
RRUS 32 B66 (at&t)	C	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 3.24	2.38	0.09
							1" Ice 3.48	2.59	0.12
							No Ice 3.01	2.18	0.07
80010966 w/ 8' pipe (at&t)	A	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 17.99	10.82	0.27
							1" Ice 18.63	12.09	0.40
							No Ice 17.36	9.40	0.16
80010966 w/ 8' pipe (at&t)	B	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 17.99	10.82	0.27
							1" Ice 18.63	12.09	0.40
							No Ice 17.36	9.40	0.16
80010966 w/ 8' pipe (at&t)	C	From Face	4.00	0.0000	70.00	70.00	1/2" Ice 17.99	10.82	0.27
							1" Ice 18.63	12.09	0.40
							No Ice 17.36	9.40	0.16

Tower Pressures - No Ice

$G_H = 0.850$ (base tower), 0.850 (upper structure)

Section Elevation	z	K _Z	q _z	A _G	F _a	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²	c	ft ²	ft ²	ft ²		ft ²	ft ²
L1 59.50-39.50	49.50	0.808	43	158.333	A	4.833	20.272	13.333	53.11	16.000	0.000
					B	4.833	20.272			0.000	0.000
					C	4.833	20.272			29.148	0.000
L2 39.50-19.50	29.50	0.7	38	158.750	A	20.417	6.905	15.000	54.90	16.000	0.000
					B	20.417	6.905			0.000	0.000
					C	20.417	6.905			54.90	55.520
T1 19.50-13.10	16.30	0.7	39	53.035	A	6.612	2.327	4.809	53.81	5.120	0.000

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	12 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²
T2 13.10-6.30	9.70	0.7	39	61.241	B	6.612	2.327	5.110	53.81	0.000	0.000
					C	6.612	2.327		53.81	17.766	0.000
					A	7.087	2.523		53.18	5.440	0.000
					B	7.087	2.523		53.18	0.000	0.000
T3 6.30-0.00	3.15	0.7	40	61.234	C	7.087	2.523	4.734	53.18	18.877	0.000
					A	11.835	0.000		40.00	1.040	0.000
					B	11.835	0.000		40.00	0.000	0.000
					C	11.835	0.000		40.00	3.609	0.000

Tower Pressure - With Ice

$G_H = 0.850$ (base tower), 0.850 (upper structure)

Section Elevation ft	z ft	K _Z	q _z psf	t _z in	A _G ft ²	F a c e ft ²	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 59.50-39.50	49.50	0.808	7	2.8768	167.923	A	4.833	63.764	32.512	47.40	46.152	0.000
						B	4.833	63.764		47.40	0.000	0.000
						C	4.833	63.764		47.40	49.720	0.000
L2 39.50-19.50	29.50	0.7	6	2.7608	167.953	A	32.687	30.136	27.270	43.41	45.383	0.000
						B	32.687	30.136		43.41	0.000	0.000
						C	32.687	30.136		43.41	92.995	0.000
T1 19.50-13.10	16.30	0.7	6	2.6204	55.834	A	10.346	9.717	8.544	42.59	14.225	0.000
						B	10.346	9.717		42.59	0.000	0.000
						C	10.346	9.717		42.59	29.097	0.000
T2 13.10-6.30	9.70	0.7	7	2.4969	64.075	A	10.867	10.194	8.891	42.21	14.838	0.000
						B	10.867	10.194		42.21	0.000	0.000
						C	10.867	10.194		42.21	30.298	0.000
T3 6.30-0.00	3.15	0.7	7	2.2393	63.589	A	14.977	13.047	7.876	28.10	2.727	0.000
						B	14.977	13.047		28.10	0.000	0.000
						C	14.977	13.047		28.10	5.546	0.000

Tower Pressure - Service

$G_H = 0.850$ (base tower), 0.850 (upper structure)

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 _A A _A In Face ft ²	C _A A _A Out Face ft ²
L1 59.50-39.50	49.50	0.808	16	158.333	A	4.833	20.272	13.333	53.11	16.000	0.000
					B	4.833	20.272		53.11	0.000	0.000
					C	4.833	20.272		53.11	29.148	0.000
L2 39.50-19.50	29.50	0.7	14	158.750	A	20.417	6.905	15.000	54.90	16.000	0.000
					B	20.417	6.905		54.90	0.000	0.000
					C	20.417	6.905		54.90	55.520	0.000
T1 19.50-13.10	16.30	0.7	15	53.035	A	6.612	2.327	4.809	53.81	5.120	0.000
					B	6.612	2.327		53.81	0.000	0.000
					C	6.612	2.327		53.81	17.766	0.000
T2 13.10-6.30	9.70	0.7	15	61.241	A	7.087	2.523	5.110	53.18	5.440	0.000
					B	7.087	2.523		53.18	0.000	0.000

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job CTL01330 Avon - Montevideo Road	Page 13 of 31
	Project 16946029A	Date 15:51:29 01/25/18
	Client AT&T	Designed by

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
T3 6.30-0.00	3.15	0.7	15	61.234	C	7.087	2.523		53.18	18.877	0.000
					A	11.835	0.000	4.734	40.00	1.040	0.000
					B	11.835	0.000		40.00	0.000	0.000
					C	11.835	0.000		40.00	3.609	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	F _a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 59.50-39.50	0.36	1.41	A	0.159	2.74	43	1	1	15.427	2.51	125.31	C
			B	0.159	2.74		1	1	15.427			
			C	0.159	2.74		1	1	15.427			
L2 39.50-19.50	0.49	1.90	A	0.172	2.692	38	1	1	24.354	3.50	174.91	C
			B	0.172	2.692		1	1	24.354			
			C	0.172	2.692		1	1	24.354			
T1 19.50-13.10	0.16	0.57	A	0.169	2.704	39	1	1	7.937	1.16	181.02	C
			B	0.169	2.704		1	1	7.937			
			C	0.169	2.704		1	1	7.937			
T2 13.10-6.30	0.16	0.62	A	0.157	2.746	39	1	1	8.519	1.26	185.77	C
			B	0.157	2.746		1	1	8.519			
			C	0.157	2.746		1	1	8.519			
T3 6.30-0.00	0.03	0.68	A	0.193	2.619	40	1	1	11.835	1.14	180.18	C
			B	0.193	2.619		1	1	11.835			
			C	0.193	2.619		1	1	11.835			
Sum Weight:	1.20	5.18						OTM	261.97 kip-ft	9.56		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F _a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 59.50-39.50	0.36	1.41	A	0.159	2.74	43	0.8	1	14.460	2.41	120.53	C
			B	0.159	2.74		0.8	1	14.460			
			C	0.159	2.74		0.8	1	14.460			
L2 39.50-19.50	0.49	1.90	A	0.172	2.692	38	0.8	1	20.270	3.14	157.18	C
			B	0.172	2.692		0.8	1	20.270			
			C	0.172	2.692		0.8	1	20.270			
T1 19.50-13.10	0.16	0.57	A	0.169	2.704	39	0.8	1	6.615	1.04	162.63	C
			B	0.169	2.704		0.8	1	6.615			
			C	0.169	2.704		0.8	1	6.615			
T2 13.10-6.30	0.16	0.62	A	0.157	2.746	39	0.8	1	7.101	1.13	166.74	C
			B	0.157	2.746		0.8	1	7.101			
			C	0.157	2.746		0.8	1	7.101			
T3 6.30-0.00	0.03	0.68	A	0.193	2.619	40	0.8	1	9.468	0.93	147.12	C
			B	0.193	2.619		0.8	1	9.468			
			C	0.193	2.619		0.8	1	9.468			
Sum Weight:	1.20	5.18						OTM	242.94	8.66		

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job CTL01330 Avon - Montevideo Road	Page 14 of 31
	Project 16946029A	Date 15:51:29 01/25/18
	Client AT&T	Designed by

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	K	K				psf			ft ²	K	plf	
									kip-ft			

Tower Forces - No Ice - Wind 90 To Face

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	K	K				psf			ft ²	K	plf	
L1 59.50-39.50	0.36	1.41	A	0.159	2.74	43	0.85	1	14.702	2.43	121.72	C
			B	0.159	2.74		0.85	1	14.702			
			C	0.159	2.74		0.85	1	14.702			
L2 39.50-19.50	0.49	1.90	A	0.172	2.692	38	0.85	1	21.291	3.23	161.62	C
			B	0.172	2.692		0.85	1	21.291			
			C	0.172	2.692		0.85	1	21.291			
T1 19.50-13.10	0.16	0.57	A	0.169	2.704	39	0.85	1	6.945	1.07	167.23	C
			B	0.169	2.704		0.85	1	6.945			
			C	0.169	2.704		0.85	1	6.945			
T2 13.10-6.30	0.16	0.62	A	0.157	2.746	39	0.85	1	7.456	1.17	171.49	C
			B	0.157	2.746		0.85	1	7.456			
			C	0.157	2.746		0.85	1	7.456			
T3 6.30-0.00	0.03	0.68	A	0.193	2.619	40	0.85	1	10.060	0.98	155.38	C
			B	0.193	2.619		0.85	1	10.060			
			C	0.193	2.619		0.85	1	10.060			
Sum Weight:	1.20	5.18						OTM	247.70 kip-ft	8.88		

Tower Forces - With Ice - Wind Normal To Face

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	K	K				psf			ft ²	K	plf	
L1 59.50-39.50	2.41	6.42	A	0.409	2.047	7	1	1	45.640	0.90	45.19	C
			B	0.409	2.047		1	1	45.640			
			C	0.409	2.047		1	1	45.640			
L2 39.50-19.50	3.52	6.85	A	0.374	2.118	6	1	1	51.534	1.03	51.62	C
			B	0.374	2.118		1	1	51.534			
			C	0.374	2.118		1	1	51.534			
T1 19.50-13.10	1.07	2.10	A	0.359	2.15	6	1	1	16.366	0.34	52.42	C
			B	0.359	2.15		1	1	16.366			
			C	0.359	2.15		1	1	16.366			
T2 13.10-6.30	1.09	2.16	A	0.329	2.222	7	1	1	17.069	0.36	52.97	C
			B	0.329	2.222		1	1	17.069			
			C	0.329	2.222		1	1	17.069			
T3 6.30-0.00	0.19	2.90	A	0.441	1.989	7	1	1	23.519	0.29	45.68	C
			B	0.441	1.989		1	1	23.519			
			C	0.441	1.989		1	1	23.519			
Sum Weight:	8.29	20.44						OTM	85.07 kip-ft	2.92		

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	15 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 59.50-39.50	2.41	6.42	A	0.409	2.047	7	0.8	1	44.673	0.89	44.60	C
			B	0.409	2.047		0.8	1	44.673			
			C	0.409	2.047		0.8	1	44.673			
L2 39.50-19.50	3.52	6.85	A	0.374	2.118	6	0.8	1	44.996	0.96	47.90	C
			B	0.374	2.118		0.8	1	44.996			
			C	0.374	2.118		0.8	1	44.996			
T1 19.50-13.10	1.07	2.10	A	0.359	2.15	6	0.8	1	14.297	0.31	48.61	C
			B	0.359	2.15		0.8	1	14.297			
			C	0.359	2.15		0.8	1	14.297			
T2 13.10-6.30	1.09	2.16	A	0.329	2.222	7	0.8	1	14.895	0.33	49.04	C
			B	0.329	2.222		0.8	1	14.895			
			C	0.329	2.222		0.8	1	14.895			
T3 6.30-0.00	0.19	2.90	A	0.441	1.989	7	0.8	1	20.524	0.25	40.39	C
			B	0.441	1.989		0.8	1	20.524			
			C	0.441	1.989		0.8	1	20.524			
Sum Weight:	8.29	20.44						OTM	81.52 kip-ft	2.75		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 59.50-39.50	2.41	6.42	A	0.409	2.047	7	0.85	1	44.915	0.89	44.75	C
			B	0.409	2.047		0.85	1	44.915			
			C	0.409	2.047		0.85	1	44.915			
L2 39.50-19.50	3.52	6.85	A	0.374	2.118	6	0.85	1	46.631	0.98	48.83	C
			B	0.374	2.118		0.85	1	46.631			
			C	0.374	2.118		0.85	1	46.631			
T1 19.50-13.10	1.07	2.10	A	0.359	2.15	6	0.85	1	14.814	0.32	49.56	C
			B	0.359	2.15		0.85	1	14.814			
			C	0.359	2.15		0.85	1	14.814			
T2 13.10-6.30	1.09	2.16	A	0.329	2.222	7	0.85	1	15.439	0.34	50.02	C
			B	0.329	2.222		0.85	1	15.439			
			C	0.329	2.222		0.85	1	15.439			
T3 6.30-0.00	0.19	2.90	A	0.441	1.989	7	0.85	1	21.273	0.26	41.71	C
			B	0.441	1.989		0.85	1	21.273			
			C	0.441	1.989		0.85	1	21.273			
Sum Weight:	8.29	20.44						OTM	82.41 kip-ft	2.79		

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job CTL01330 Avon - Montevideo Road	Page 16 of 31
	Project 16946029A	Date 15:51:29 01/25/18
	Client AT&T	Designed by

Tower Forces - Service - Wind Normal To Face

Section Elevation <i>ft</i>	Add Weight <i>K</i>	Self Weight <i>K</i>	F a c e	<i>e</i>	C_F	q_z <i>psf</i>	D_F	D_R	A_E <i>ft²</i>	F <i>K</i>	w <i>plf</i>	Ctrl. Face
L1 59.50-39.50	0.36	1.41	A	0.159	2.74	16	1	1	15.427	0.94	46.97	C
			B	0.159	2.74		1	1	15.427			
			C	0.159	2.74		1	1	15.427			
L2 39.50-19.50	0.49	1.90	A	0.172	2.692	14	1	1	24.354	1.31	65.56	C
			B	0.172	2.692		1	1	24.354			
			C	0.172	2.692		1	1	24.354			
T1 19.50-13.10	0.16	0.57	A	0.169	2.704	15	1	1	7.937	0.43	67.86	C
			B	0.169	2.704		1	1	7.937			
			C	0.169	2.704		1	1	7.937			
T2 13.10-6.30	0.16	0.62	A	0.157	2.746	15	1	1	8.519	0.47	69.64	C
			B	0.157	2.746		1	1	8.519			
			C	0.157	2.746		1	1	8.519			
T3 6.30-0.00	0.03	0.68	A	0.193	2.619	15	1	1	11.835	0.43	67.54	C
			B	0.193	2.619		1	1	11.835			
			C	0.193	2.619		1	1	11.835			
Sum Weight:	1.20	5.18						OTM	98.20 kip-ft	3.58		

Tower Forces - Service - Wind 60 To Face

Section Elevation <i>ft</i>	Add Weight <i>K</i>	Self Weight <i>K</i>	F a c e	<i>e</i>	C_F	q_z <i>psf</i>	D_F	D_R	A_E <i>ft²</i>	F <i>K</i>	w <i>plf</i>	Ctrl. Face
L1 59.50-39.50	0.36	1.41	A	0.159	2.74	16	0.8	1	14.460	0.90	45.18	C
			B	0.159	2.74		0.8	1	14.460			
			C	0.159	2.74		0.8	1	14.460			
L2 39.50-19.50	0.49	1.90	A	0.172	2.692	14	0.8	1	20.270	1.18	58.92	C
			B	0.172	2.692		0.8	1	20.270			
			C	0.172	2.692		0.8	1	20.270			
T1 19.50-13.10	0.16	0.57	A	0.169	2.704	15	0.8	1	6.615	0.39	60.96	C
			B	0.169	2.704		0.8	1	6.615			
			C	0.169	2.704		0.8	1	6.615			
T2 13.10-6.30	0.16	0.62	A	0.157	2.746	15	0.8	1	7.101	0.42	62.50	C
			B	0.157	2.746		0.8	1	7.101			
			C	0.157	2.746		0.8	1	7.101			
T3 6.30-0.00	0.03	0.68	A	0.193	2.619	15	0.8	1	9.468	0.35	55.15	C
			B	0.193	2.619		0.8	1	9.468			
			C	0.193	2.619		0.8	1	9.468			
Sum Weight:	1.20	5.18						OTM	91.07 kip-ft	3.24		

Tower Forces - Service - Wind 90 To Face

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	17 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Section Elevation ft	Add Weight K	Self Weight K	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F K	w plf	Ctrl. Face
L1 59.50-39.50	0.36	1.41	A	0.159	2.74	16	0.85	1	14.702	0.91	45.63	C
			B	0.159	2.74		0.85	1	14.702			
			C	0.159	2.74		0.85	1	14.702			
L2 39.50-19.50	0.49	1.90	A	0.172	2.692	14	0.85	1	21.291	1.21	60.58	C
			B	0.172	2.692		0.85	1	21.291			
			C	0.172	2.692		0.85	1	21.291			
T1 19.50-13.10	0.16	0.57	A	0.169	2.704	15	0.85	1	6.945	0.40	62.68	C
			B	0.169	2.704		0.85	1	6.945			
			C	0.169	2.704		0.85	1	6.945			
T2 13.10-6.30	0.16	0.62	A	0.157	2.746	15	0.85	1	7.456	0.44	64.28	C
			B	0.157	2.746		0.85	1	7.456			
			C	0.157	2.746		0.85	1	7.456			
T3 6.30-0.00	0.03	0.68	A	0.193	2.619	15	0.85	1	10.060	0.37	58.24	C
			B	0.193	2.619		0.85	1	10.060			
			C	0.193	2.619		0.85	1	10.060			
Sum Weight:	1.20	5.18						OTM	92.85 kip-ft	3.33		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M _x kip-ft	Sum of Overturning Moments, M _z kip-ft	Sum of Torques kip-ft
Leg Weight	2.30					
Bracing Weight	2.88					
Total Member Self-Weight	5.18					
Total Weight	14.21			2.85	1.57	
Wind 0 deg - No Ice		-0.19	-18.17	-797.60	11.85	-0.77
Wind 30 deg - No Ice		8.84	-15.05	-672.86	-396.67	2.31
Wind 60 deg - No Ice		15.30	-8.47	-378.96	-694.37	4.81
Wind 90 deg - No Ice		18.00	0.19	13.12	-812.72	6.16
Wind 120 deg - No Ice		16.27	9.25	411.97	-721.12	5.91
Wind 150 deg - No Ice		9.16	15.24	688.83	-414.47	3.85
Wind 180 deg - No Ice		0.19	17.26	784.26	-8.70	0.93
Wind 210 deg - No Ice		-8.84	15.05	678.55	399.82	-2.31
Wind 240 deg - No Ice		-16.08	8.92	394.17	713.99	-5.15
Wind 270 deg - No Ice		-18.00	-0.19	-7.43	815.87	-6.16
Wind 300 deg - No Ice		-15.49	-8.80	-396.76	707.79	-5.74
Wind 330 deg - No Ice		-9.16	-15.24	-683.14	417.62	-3.85
Member Ice	15.26					
Total Weight Ice	75.09			19.83	2.16	
Wind 0 deg - Ice		-0.03	-4.91	-188.06	3.74	-0.31
Wind 30 deg - Ice		2.40	-4.13	-157.11	-100.71	0.57
Wind 60 deg - Ice		4.15	-2.35	-80.97	-176.83	1.30
Wind 90 deg - Ice		4.85	0.03	21.42	-206.32	1.70
Wind 120 deg - Ice		4.33	2.48	125.15	-181.49	1.65
Wind 150 deg - Ice		2.45	4.16	198.36	-103.46	1.13
Wind 180 deg - Ice		0.03	4.74	224.18	0.57	0.32
Wind 210 deg - Ice		-2.40	4.13	196.77	105.02	-0.57
Wind 240 deg - Ice		-4.30	2.43	122.40	184.22	-1.34
Wind 270 deg - Ice		-4.85	-0.03	18.24	210.64	-1.70
Wind 300 deg - Ice		-4.18	-2.40	-83.72	182.73	-1.63
Wind 330 deg - Ice		-2.45	-4.16	-158.70	107.77	-1.13

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	<p>Project</p> <p>16946029A</p>	<p>Date</p> <p>15:51:29 01/25/18</p>
	<p>Client</p> <p>AT&T</p>	<p>Designed by</p>

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Total Weight	14.21			2.85	1.57	
Wind 0 deg - Service		-0.07	-6.81	-299.68	4.91	-0.29
Wind 30 deg - Service		3.31	-5.64	-252.93	-148.23	0.87
Wind 60 deg - Service		5.73	-3.17	-142.76	-259.82	1.80
Wind 90 deg - Service		6.75	0.07	4.21	-304.18	2.31
Wind 120 deg - Service		6.10	3.47	153.71	-269.84	2.22
Wind 150 deg - Service		3.43	5.71	257.49	-154.90	1.44
Wind 180 deg - Service		0.07	6.47	293.27	-2.80	0.35
Wind 210 deg - Service		-3.31	5.64	253.64	150.33	-0.87
Wind 240 deg - Service		-6.03	3.34	147.04	268.10	-1.93
Wind 270 deg - Service		-6.75	-0.07	-3.50	306.29	-2.31
Wind 300 deg - Service		-5.80	-3.30	-149.43	265.77	-2.15
Wind 330 deg - Service		-3.43	-5.71	-256.78	157.01	-1.44

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	19 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

<i>Comb. No.</i>	<i>Description</i>
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Condition</i>	<i>Gov. Load Comb.</i>	<i>Axial K</i>	<i>Major Axis Moment kip-ft</i>	<i>Minor Axis Moment kip-ft</i>	
L1	59.5 - 39.5	Latticed Pole Leg	Max Tension	23	45.66	-0.24	0.09	
			Max. Compression	10	-52.12	-0.39	-0.03	
			Max. Mx	20	12.18	-2.39	-0.19	
			Max. My	2	6.94	0.22	-2.15	
			Max. Vy	20	3.30	-0.00	-0.00	
			Max. Vx	2	3.20	0.00	-0.00	
			Latticed Pole Diagonal	Max Tension	8	16.94	0.00	0.00
				Max. Compression	20	-16.91	0.00	0.00
				Max. Mx	34	1.20	0.26	0.00
				Max. My	10	0.31	0.00	-0.00
		Max. Vy		34	-0.10	0.00	0.00	
		Latticed Pole Horizontal	Max. Vx	10	0.00	0.00	0.00	
			Max Tension	6	2.88	0.00	0.00	
			Max. Compression	19	-2.87	0.00	0.00	
			Max. Mx	35	0.13	-0.20	0.00	
			Max. My	8	2.81	0.00	-0.00	
			Max. Vy	35	0.10	0.00	0.00	
			Max. Vx	8	0.00	0.00	0.00	
			Latticed Pole Top Girt	Max Tension	22	4.00	0.00	0.00
				Max. Compression	10	-3.88	0.00	0.00
Max. Mx	35			0.34	-0.28	0.00		
Max. My	8	-3.34		0.00	-0.00			
Max. Vy	35	0.15		0.00	0.00			
L2	39.5 - 19.5	Latticed Pole Leg	Max Tension	23	106.55	-0.27	-0.40	
			Max. Compression	10	-115.94	0.65	-0.79	
			Max. Mx	8	84.04	-0.80	0.04	
			Max. My	8	-104.07	0.32	-1.03	
			Max. Vy	10	0.20	-0.76	-0.42	
			Max. Vx	8	0.28	0.32	-1.03	
			Latticed Pole Diagonal	Max Tension	8	21.75	0.00	0.00
		Max. Compression		20	-21.76	0.00	0.00	
		Max. Mx		34	2.74	0.25	0.00	
		Max. My		10	1.44	0.00	-0.00	
		Latticed Pole	Max. Vy	34	-0.10	0.00	0.00	
			Max. Vx	10	0.00	0.00	0.00	
			Max Tension	20	13.26	0.00	0.00	

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	20 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft		
		Horizontal							
T1	19.5 - 13.1	Leg	Max. Compression	8	-13.31	0.00	0.00		
			Max. Mx	26	0.12	-0.23	0.00		
			Max. My	8	-13.31	0.00	-0.00		
			Max. Vy	26	0.12	0.00	0.00		
			Max. Vx	8	0.00	0.00	0.00		
			Max Tension	23	121.73	-0.63	0.58		
			Max. Compression	10	-132.29	0.48	0.81		
			Max. Mx	8	106.28	-0.80	0.04		
		Diagonal	Max. My	8	-112.70	0.32	-1.03		
			Max. Vy	10	-0.20	-0.76	-0.42		
			Max. Vx	8	-0.32	0.32	-1.03		
			Max Tension	21	12.58	0.00	0.00		
			Max. Compression	8	-12.60	0.00	0.00		
			Max. Mx	32	1.37	0.25	0.00		
			Max. My	18	1.46	0.00	0.00		
			Max. Vy	32	-0.10	0.00	0.00		
T2	13.1 - 6.3	Horizontal	Max. Vx	18	-0.00	0.00	0.00		
			Max Tension	7	3.29	0.00	0.00		
			Max. Compression	18	-4.03	0.00	0.00		
			Max. Mx	26	-0.53	-0.20	0.00		
			Max. My	35	-1.27	0.00	0.01		
			Max. Vy	26	0.11	0.00	0.00		
			Max. Vx	35	0.00	0.00	0.00		
			Max Tension	23	135.24	-0.45	-0.59		
		Leg	Max. Compression	10	-147.19	-0.18	-0.69		
			Max. Mx	11	67.84	-0.65	-0.07		
			Max. My	6	-79.20	-0.37	-1.41		
			Max. Vy	24	0.22	0.64	0.55		
			Max. Vx	6	0.35	-0.37	-1.41		
			Max Tension	9	12.79	0.00	0.00		
			Max. Compression	20	-12.69	0.00	0.00		
			Max. Mx	34	1.51	0.28	0.00		
T3	6.3 - 0	Diagonal	Max. My	10	1.79	0.00	-0.00		
			Max. Vy	34	-0.10	0.00	0.00		
			Max. Vx	10	-0.00	0.00	0.00		
			Max Tension	18	0.63	0.00	0.00		
			Max. Compression	9	-0.95	0.00	0.00		
			Max. Mx	35	0.15	-0.23	0.00		
			Max. My	32	0.27	0.00	0.01		
			Max. Vy	35	0.11	0.00	0.00		
		Leg	Max. Vx	32	-0.00	0.00	0.00		
			Max Tension	23	138.58	0.07	0.53		
			Max. Compression	10	-151.73	2.31	0.18		
			Max. Mx	10	-151.67	2.31	0.18		
			Max. My	6	-78.19	-0.37	-1.41		
			Max. Vy	10	-0.84	2.31	0.18		
			Max. Vx	6	-0.66	-0.37	-1.41		
			Max Tension	9	9.27	0.12	0.00		
T3	6.3 - 0	Diagonal	Max. Compression	20	-9.23	0.00	0.00		
			Max. Mx	18	-6.10	-0.20	-0.00		
			Max. My	35	-1.43	-0.04	0.01		
			Max. Vy	18	-0.06	0.00	0.00		
			Max. Vx	36	0.00	0.00	0.00		
			Max Tension	21	9.72	-0.01	-0.01		
			Max. Compression	8	-10.31	-0.02	-0.01		
			Max. Mx	22	0.73	-0.07	-0.01		
		Horizontal	Max. My	30	-1.85	-0.06	-0.02		
			Max. Vy	33	-0.07	-0.07	-0.02		
			Max. Vx	30	0.01	0.00	0.00		
			Max Tension	8	1.22	0.00	0.00		
			Redund Horz 1						

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	21 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Bracing	Max. Compression	21	-1.46	0.00	0.00
			Max. Mx	28	0.33	-0.01	0.00
			Max. My	35	0.42	0.00	0.00
			Max. Vy	36	-0.02	0.00	0.00
			Max. Vx	35	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	21	1.33	0.00	0.00
			Max. Compression	8	-1.09	0.00	0.00
			Max. Mx	35	-0.26	-0.02	0.00
			Max. My	31	0.18	0.00	0.00
			Max. Vy	35	0.02	0.00	0.00
			Max. Vx	31	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	160.78	15.34	-8.21
	Max. H _x	18	160.78	15.34	-8.21
	Max. H _z	5	-125.35	-11.53	7.75
	Min. Vert	7	-146.46	-14.20	7.57
	Min. H _x	7	-146.46	-14.20	7.57
	Min. H _z	18	160.78	15.34	-8.21
Leg B	Max. Vert	10	163.78	-15.58	-8.40
	Max. H _x	23	-150.15	14.46	7.75
	Max. H _z	25	-129.56	11.91	7.90
	Min. Vert	23	-150.15	14.46	7.75
	Min. H _x	10	163.78	-15.58	-8.40
	Min. H _z	10	163.78	-15.58	-8.40
Leg A	Max. Vert	2	157.64	-0.11	17.16
	Max. H _x	21	5.93	1.82	0.46
	Max. H _z	2	157.64	-0.11	17.16
	Min. Vert	15	-144.74	0.12	-15.87
	Min. H _x	9	2.01	-1.84	0.19
	Min. H _z	15	-144.74	0.12	-15.87

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	14.21	0.00	-0.00	2.85	1.58	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	17.05	-0.30	-29.07	-1277.63	18.39	-1.25
0.9 Dead+1.6 Wind 0 deg - No Ice	12.79	-0.30	-29.07	-1277.48	17.90	-1.24
1.2 Dead+1.6 Wind 30 deg - No Ice	17.05	14.14	-24.08	-1078.38	-635.69	3.68
0.9 Dead+1.6 Wind 30 deg - No Ice	12.79	14.14	-24.08	-1078.39	-635.67	3.68
1.2 Dead+1.6 Wind 60 deg - No Ice	17.05	24.47	-13.55	-607.97	-1112.47	7.68

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	22 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

<i>Load Combination</i>	<i>Vertical</i> K	<i>Shear_x</i> K	<i>Shear_z</i> K	<i>Overturning Moment, M_x</i> kip-ft	<i>Overturning Moment, M_z</i> kip-ft	<i>Torque</i> kip-ft
Ice						
0.9 Dead+1.6 Wind 60 deg - No Ice	12.79	24.47	-13.55	-608.34	-1112.07	7.68
1.2 Dead+1.6 Wind 90 deg - No Ice	17.05	28.80	0.30	19.80	-1301.89	9.86
0.9 Dead+1.6 Wind 90 deg - No Ice	12.79	28.80	0.30	18.93	-1301.34	9.85
1.2 Dead+1.6 Wind 120 deg - No Ice	17.05	26.03	14.80	658.15	-1154.92	9.47
0.9 Dead+1.6 Wind 120 deg - No Ice	12.79	26.03	14.80	656.78	-1154.48	9.47
1.2 Dead+1.6 Wind 150 deg - No Ice	17.05	14.66	24.38	1101.68	-664.37	6.18
0.9 Dead+1.6 Wind 150 deg - No Ice	12.79	14.66	24.38	1099.95	-664.32	6.17
1.2 Dead+1.6 Wind 180 deg - No Ice	17.05	0.30	27.62	1254.64	-14.68	1.49
0.9 Dead+1.6 Wind 180 deg - No Ice	12.79	0.30	27.62	1252.79	-15.13	1.49
1.2 Dead+1.6 Wind 210 deg - No Ice	17.05	-14.14	24.08	1085.22	639.47	-3.71
0.9 Dead+1.6 Wind 210 deg - No Ice	12.79	-14.14	24.08	1083.51	638.50	-3.71
1.2 Dead+1.6 Wind 240 deg - No Ice	17.05	-25.73	14.27	629.64	1142.18	-8.26
0.9 Dead+1.6 Wind 240 deg - No Ice	12.79	-25.73	14.27	628.29	1140.81	-8.26
1.2 Dead+1.6 Wind 270 deg - No Ice	17.05	-28.80	-0.30	-13.13	1305.71	-9.90
0.9 Dead+1.6 Wind 270 deg - No Ice	12.79	-28.80	-0.30	-13.98	1304.20	-9.89
1.2 Dead+1.6 Wind 300 deg - No Ice	17.05	-24.78	-14.07	-636.50	1132.80	-9.20
0.9 Dead+1.6 Wind 300 deg - No Ice	12.79	-24.78	-14.07	-636.86	1131.43	-9.20
1.2 Dead+1.6 Wind 330 deg - No Ice	17.05	-14.66	-24.38	-1094.86	668.07	-6.18
0.9 Dead+1.6 Wind 330 deg - No Ice	12.79	-14.66	-24.38	-1094.86	667.06	-6.17
1.2 Dead+1.0 Ice+1.0 Temp	77.93	0.00	-0.00	20.73	2.59	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	77.93	-0.03	-4.91	-189.55	4.21	-0.31
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	77.93	2.40	-4.13	-158.30	-101.47	0.58
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	77.93	4.15	-2.35	-81.27	-178.52	1.31
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	77.93	4.85	0.03	22.33	-208.35	1.72
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	77.93	4.33	2.48	127.25	-183.18	1.67
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	77.93	2.45	4.16	201.35	-104.29	1.14
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	77.93	0.03	4.74	227.49	0.97	0.33
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	77.93	-2.40	4.13	199.75	106.66	-0.58
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	77.93	-4.30	2.43	124.47	186.74	-1.35
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	77.93	-4.85	-0.03	19.12	213.53	-1.72
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	77.93	-4.18	-2.40	-84.05	185.33	-1.64

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	23 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	77.93	-2.45	-4.16	-159.90	109.47	-1.14
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	14.21	-0.07	-6.81	-297.12	5.44	-0.29
Dead+Wind 30 deg - Service	14.21	3.31	-5.64	-250.46	-147.72	0.87
Dead+Wind 60 deg - Service	14.21	5.73	-3.17	-140.30	-259.37	1.80
Dead+Wind 90 deg - Service	14.21	6.75	0.07	6.71	-303.72	2.31
Dead+Wind 120 deg - Service	14.21	6.10	3.47	156.18	-269.29	2.22
Dead+Wind 150 deg - Service	14.21	3.43	5.71	260.02	-154.42	1.45
Dead+Wind 180 deg - Service	14.21	0.07	6.47	295.83	-2.29	0.35
Dead+Wind 210 deg - Service	14.21	-3.31	5.64	256.16	150.88	-0.87
Dead+Wind 240 deg - Service	14.21	-6.03	3.34	149.50	268.59	-1.93
Dead+Wind 270 deg - Service	14.21	-6.75	-0.07	-1.01	306.88	-2.31
Dead+Wind 300 deg - Service	14.21	-5.80	-3.30	-146.98	266.39	-2.15
Dead+Wind 330 deg - Service	14.21	-3.43	-5.71	-254.32	157.57	-1.45

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-14.21	0.00	-0.00	14.21	0.00	0.000%
2	-0.30	-17.05	-29.07	0.30	17.05	29.07	0.010%
3	-0.30	-12.79	-29.07	0.30	12.79	29.07	0.008%
4	14.14	-17.05	-24.08	-14.14	17.05	24.08	0.009%
5	14.14	-12.79	-24.08	-14.14	12.79	24.08	0.007%
6	24.48	-17.05	-13.55	-24.47	17.05	13.55	0.009%
7	24.48	-12.79	-13.55	-24.47	12.79	13.55	0.007%
8	28.80	-17.05	0.30	-28.80	17.05	-0.30	0.010%
9	28.80	-12.79	0.30	-28.80	12.79	-0.30	0.008%
10	26.03	-17.05	14.80	-26.03	17.05	-14.80	0.010%
11	26.03	-12.79	14.80	-26.03	12.79	-14.80	0.008%
12	14.66	-17.05	24.39	-14.66	17.05	-24.38	0.010%
13	14.66	-12.79	24.39	-14.66	12.79	-24.38	0.008%
14	0.30	-17.05	27.62	-0.30	17.05	-27.62	0.009%
15	0.30	-12.79	27.62	-0.30	12.79	-27.62	0.007%
16	-14.14	-17.05	24.08	14.14	17.05	-24.08	0.010%
17	-14.14	-12.79	24.08	14.14	12.79	-24.08	0.008%
18	-25.73	-17.05	14.27	25.73	17.05	-14.27	0.010%
19	-25.73	-12.79	14.27	25.73	12.79	-14.27	0.008%
20	-28.80	-17.05	-0.30	28.80	17.05	0.30	0.009%
21	-28.80	-12.79	-0.30	28.80	12.79	0.30	0.007%
22	-24.78	-17.05	-14.07	24.78	17.05	14.07	0.009%
23	-24.78	-12.79	-14.07	24.78	12.79	14.07	0.007%
24	-14.66	-17.05	-24.39	14.66	17.05	24.38	0.010%
25	-14.66	-12.79	-24.39	14.66	12.79	24.38	0.008%
26	0.00	-77.93	0.00	-0.00	77.93	0.00	0.000%
27	-0.03	-77.93	-4.91	0.03	77.93	4.91	0.003%
28	2.40	-77.93	-4.13	-2.40	77.93	4.13	0.003%
29	4.15	-77.93	-2.35	-4.15	77.93	2.35	0.003%
30	4.85	-77.93	0.03	-4.85	77.93	-0.03	0.003%
31	4.33	-77.93	2.48	-4.33	77.93	-2.48	0.004%
32	2.45	-77.93	4.16	-2.45	77.93	-4.16	0.004%
33	0.03	-77.93	4.74	-0.03	77.93	-4.74	0.004%
34	-2.40	-77.93	4.13	2.40	77.93	-4.13	0.004%
35	-4.30	-77.93	2.43	4.30	77.93	-2.43	0.004%
36	-4.85	-77.93	-0.03	4.85	77.93	0.03	0.004%
37	-4.18	-77.93	-2.40	4.18	77.93	2.40	0.003%

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	24 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
38	-2.45	-77.93	-4.16	2.45	77.93	4.16	0.003%
39	-0.07	-14.21	-6.81	0.07	14.21	6.81	0.004%
40	3.31	-14.21	-5.64	-3.31	14.21	5.64	0.004%
41	5.73	-14.21	-3.17	-5.73	14.21	3.17	0.004%
42	6.75	-14.21	0.07	-6.75	14.21	-0.07	0.004%
43	6.10	-14.21	3.47	-6.10	14.21	-3.47	0.004%
44	3.43	-14.21	5.71	-3.43	14.21	-5.71	0.004%
45	0.07	-14.21	6.47	-0.07	14.21	-6.47	0.004%
46	-3.31	-14.21	5.64	3.31	14.21	-5.64	0.004%
47	-6.03	-14.21	3.34	6.03	14.21	-3.34	0.004%
48	-6.75	-14.21	-0.07	6.75	14.21	0.07	0.004%
49	-5.80	-14.21	-3.30	5.80	14.21	3.30	0.004%
50	-3.43	-14.21	-5.71	3.43	14.21	5.71	0.004%

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	0.00028815
3	Yes	4	0.0000001	0.00022146
4	Yes	4	0.0000001	0.00025575
5	Yes	4	0.0000001	0.00018974
6	Yes	4	0.0000001	0.00024223
7	Yes	4	0.0000001	0.00017599
8	Yes	4	0.0000001	0.00027778
9	Yes	4	0.0000001	0.00021120
10	Yes	4	0.0000001	0.00029212
11	Yes	4	0.0000001	0.00022548
12	Yes	4	0.0000001	0.00025968
13	Yes	4	0.0000001	0.00019385
14	Yes	4	0.0000001	0.00024079
15	Yes	4	0.0000001	0.00017457
16	Yes	4	0.0000001	0.00027515
17	Yes	4	0.0000001	0.00020890
18	Yes	4	0.0000001	0.00028701
19	Yes	4	0.0000001	0.00022025
20	Yes	4	0.0000001	0.00025311
21	Yes	4	0.0000001	0.00018669
22	Yes	4	0.0000001	0.00023874
23	Yes	4	0.0000001	0.00017268
24	Yes	4	0.0000001	0.00027298
25	Yes	4	0.0000001	0.00020698
26	Yes	4	0.0000001	0.00008924
27	Yes	4	0.0000001	0.00058845
28	Yes	4	0.0000001	0.00057460
29	Yes	4	0.0000001	0.00059236
30	Yes	4	0.0000001	0.00063125
31	Yes	4	0.0000001	0.00066789
32	Yes	4	0.0000001	0.00068356
33	Yes	4	0.0000001	0.00069261
34	Yes	4	0.0000001	0.00069905
35	Yes	4	0.0000001	0.00069764
36	Yes	4	0.0000001	0.00067507
37	Yes	4	0.0000001	0.00064396
38	Yes	4	0.0000001	0.00061247

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	25 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

39	Yes	4	0.00000001	0.00021904
40	Yes	4	0.00000001	0.00021157
41	Yes	4	0.00000001	0.00020910
42	Yes	4	0.00000001	0.00021739
43	Yes	4	0.00000001	0.00022034
44	Yes	4	0.00000001	0.00021276
45	Yes	4	0.00000001	0.00020887
46	Yes	4	0.00000001	0.00021645
47	Yes	4	0.00000001	0.00021938
48	Yes	4	0.00000001	0.00021215
49	Yes	4	0.00000001	0.00020885
50	Yes	4	0.00000001	0.00021590

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	59.5 - 39.5	1.031	43	0.1242	0.0336
L2	39.5 - 19.5	0.517	43	0.0994	0.0216
T1	19.5 - 13.1	0.133	43	0.0568	0.0083
T2	13.1 - 6.3	0.062	43	0.0381	0.0094
T3	6.3 - 0	0.011	43	0.0182	0.0025

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
70.00	SBNH-1D6565C	43	1.031	0.1242	0.0336	159715
68.50	18-ft doppler	43	1.031	0.1242	0.0336	159715
68.00	Andrew 10' Platform	43	1.031	0.1242	0.0336	159715
55.00	Verizon Sector Frame	43	0.911	0.1193	0.0316	159715
51.00	RHSDC-3315-PF-48	43	0.806	0.1147	0.0296	93950

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	59.5 - 39.5	4.410	10	0.5293	0.1145
L2	39.5 - 19.5	2.211	10	0.4253	0.0794
T1	19.5 - 13.1	0.567	10	0.2426	0.0352
T2	13.1 - 6.3	0.265	10	0.1628	0.0288
T3	6.3 - 0	0.048	11	0.0779	0.0108

Critical Deflections and Radius of Curvature - Design Wind

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job CTL01330 Avon - Montevideo Road	Page 26 of 31
	Project 16946029A	Date 15:51:29 01/25/18
	Client AT&T	Designed by

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
70.00	SBNH-1D6565C	10	4.410	0.5293	0.1145	38024
68.50	18-ft doppler	10	4.410	0.5293	0.1145	38024
68.00	Andrew 10' Platform	10	4.410	0.5293	0.1145	38024
55.00	Verizon Sector Frame	10	3.897	0.5090	0.1081	38024
51.00	RHSDC-3315-PF-48	10	3.447	0.4902	0.1020	22367

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load Allowable	Allowable Ratio	Criteria	
L1	59.5	Latticed Pole Leg	A325N	0.8750	4	11.41	40.59	0.281	✓	1	Bolt Tension
		Latticed Pole Horizontal	A325N	0.5000	1	2.88	7.95	0.362	✓	1	Bolt Shear
		Latticed Pole Top Girt	A325N	0.6250	2	2.00	12.43	0.161	✓	1	Bolt Shear
L2	39.5	Latticed Pole Leg	A325N	0.8750	4	26.64	40.59	0.656	✓	1	Bolt Tension
		Latticed Pole Horizontal	A325N	0.7500	1	13.31	17.89	0.744	✓	1	Bolt Shear
T1	19.5	Diagonal	A325N	0.7500	1	12.60	17.89	0.704	✓	1	Bolt Shear
		Horizontal	A325N	0.5000	1	4.03	7.95	0.507	✓	1	Bolt Shear
T2	13.1	Diagonal	A325N	0.7500	1	12.79	17.89	0.715	✓	1	Bolt Shear
		Horizontal	A325N	0.5000	1	0.95	7.95	0.119	✓	1	Bolt Shear
T3	6.3	Horizontal	A325N	0.5000	1	9.72	13.89	0.699	✓	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	Mast Stability Index	P _u K	φP _n K	Ratio P _u / φP _n
L1	59.5 - 39.5	Rohn 3.5 STD	20.00	6.67	59.8 K=1.00	2.6795	1.00	-52.12	92.80	0.562 ¹
L2	39.5 - 19.5	3.5 STD with 4.5x0.237 HSS Half Pipe	20.00	6.67	61.4 K=1.00	4.3485	1.00	-115.94	148.60	0.780 ¹
T1	19.5 - 13.1	3.5 STD with 4.5x0.237 HSS Half Pipe	6.41	6.41	59.0 K=1.00	4.3485	1.00	-132.29	151.69	0.872 ¹
T2	13.1 - 6.3	3.5 STD with 4.5x0.237 HSS Half Pipe	6.81	6.81	62.7 K=1.00	4.3485	1.00	-147.19	146.79	1.003 ¹ ✗

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	27 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	Mast Stability Index	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T3	6.3 - 0	4.8.1 (1.00 CR) - 53 3.5 STD with 4.5x0.237 HSS Half Pipe	6.31	3.16	29.0 K=1.00	4.3485	1.00	-151.73	183.98	0.825 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 K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	59.5 - 39.5	P2.5x.203	10.10	9.65	122.3 K=1.00	1.7040	-16.91	24.97	0.677 ¹ ✓
L2	39.5 - 19.5	P2.5x.203	10.10	9.60	121.6 K=1.00	1.7040	-21.76	25.19	0.864 ¹ ✓
T1	19.5 - 13.1	ROHN 2.5 STD	10.19	9.71	123.0 K=1.00	1.7040	-12.60	24.74	0.509 ¹ ✓
T2	13.1 - 6.3	ROHN 2.5 STD	11.01	10.53	133.4 K=1.00	1.7040	-12.69	21.60	0.587 ¹ ✓
T3	6.3 - 0	L3x3x3/16	7.96	7.65	108.9 K=1.11	1.0900	-9.23	18.67	0.495 ¹ ✓

¹ P_u / φP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	59.5 - 39.5	L2 1/2x2 1/2x1/4	7.58	7.04	172.1 K=1.00	1.1900	-2.87	9.08	0.316 ¹ ✓
L2	39.5 - 19.5	L3x3x3/8	7.58	6.98	142.7 K=1.00	2.1100	-13.31	23.42	0.568 ¹ ✓
T1	19.5 - 13.1	L3x3x1/4	7.58	7.00	141.9 K=1.00	1.4400	-4.03	16.16	0.250 ¹ ✓
T2	13.1 - 6.3	L3x3x1/4	8.28	7.70	156.0 K=1.00	1.4400	-0.95	13.36	0.071 ¹ ✓
T3	6.3 - 0	2L2x2x3/16	9.02	6.38	91.2 K=1.00	1.4300	-10.31	35.05	0.294 ¹ ✓

¹ P_u / φP_n controls

Top Girt Design Data (Compression)

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job CTL01330 Avon - Montevideo Road	Page 28 of 31
	Project 16946029A	Date 15:51:29 01/25/18
	Client AT&T	Designed by

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	59.5 - 39.5	L3x5x1/4	7.58	6.85	122.5 K=0.99	1.9400	-3.88	26.25	0.148 ¹ ✓

¹ P_u / φP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T3	6.3 - 0	L2x2x3/16	2.26	2.07	91.5 K=1.45	0.7150	-1.46	14.91	0.098 ¹ ✓

¹ P_u / φP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T3	6.3 - 0	L2x2x3/16	3.78	3.44	112.4 K=1.07	0.7150	-1.09	11.92	0.091 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 K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	59.5 - 39.5	Rohn 3.5 STD	20.00	6.67	59.8	2.6795	45.66	120.58	0.379 ¹ ✓
L2	39.5 - 19.5	3.5 STD with 4.5x0.237 HSS Half Pipe	20.00	6.67	61.4	4.3485	106.55	195.68	0.545 ¹ ✓
T1	19.5 - 13.1	3.5 STD with 4.5x0.237 HSS Half Pipe	6.41	6.41	59.0	4.3485	121.73	195.68	0.622 ¹ ✓
T2	13.1 - 6.3	3.5 STD with 4.5x0.237 HSS Half Pipe 4.8.1 (1.00 CR) - 53	6.81	6.81	62.7	4.3485	135.24	195.68	0.691 ¹ ✓

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	29 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
T3	6.3 - 0	3.5 STD with 4.5x0.237 HSS Half Pipe	6.31	3.16	29.0	4.3485	138.58	195.68	0.708 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 K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	59.5 - 39.5	P2.5x.203	10.10	9.65	122.3	1.7040	16.94	53.68	0.316 ¹ ✓
L2	39.5 - 19.5	P2.5x.203	10.10	9.60	121.6	1.7040	21.75	53.68	0.405 ¹ ✓
T1	19.5 - 13.1	ROHN 2.5 STD	10.19	9.71	123.0	1.7040	12.58	53.68	0.234 ¹ ✓
T2	13.1 - 6.3	ROHN 2.5 STD	11.01	10.53	133.4	1.7040	12.79	53.68	0.238 ¹ ✓
T3	6.3 - 0	L3x3x3/16	7.96	7.65	97.7	1.0900	9.27	35.32	0.263 ¹ ✓

¹ P_u / φP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u K	φP _n K	Ratio $\frac{P_u}{\phi P_n}$
L1	59.5 - 39.5	L2 1/2x2 1/2x1/4	7.58	7.04	113.1	0.7753	2.88	33.73	0.085 ¹ ✓
L2	39.5 - 19.5	L3x3x3/8	7.58	6.98	95.3	1.3364	13.26	58.13	0.228 ¹ ✓
T1	19.5 - 13.1	L3x3x1/4	7.58	7.00	93.0	0.9628	3.29	46.94	0.070 ¹ ✓
T2	13.1 - 6.3	L3x3x1/4	8.28	7.70	102.0	0.9628	0.63	46.94	0.014 ¹ ✓
T3	6.3 - 0	2L2x2x3/16	9.02	6.38	92.6	0.8967	9.72	43.72	0.222 ¹ ✓

¹ P_u / φP_n controls

Top Girt Design Data (Tension)

tnxTower Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120	Job	CTL01330 Avon - Montevideo Road	Page	30 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	59.5 - 39.5	L3x5x1/4	7.58	6.85	101.0	1.3144	4.00	57.18	0.070 ¹ ✓

¹ $P_u / \phi P_n$ controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	6.3 - 0	L2x2x3/16	2.26	2.07	40.2	0.7150	1.22	23.17	0.052 ¹ ✓

¹ $P_u / \phi P_n$ controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	6.3 - 0	L2x2x3/16	3.78	3.44	66.9	0.7150	1.33	23.17	0.058 ¹ ✓

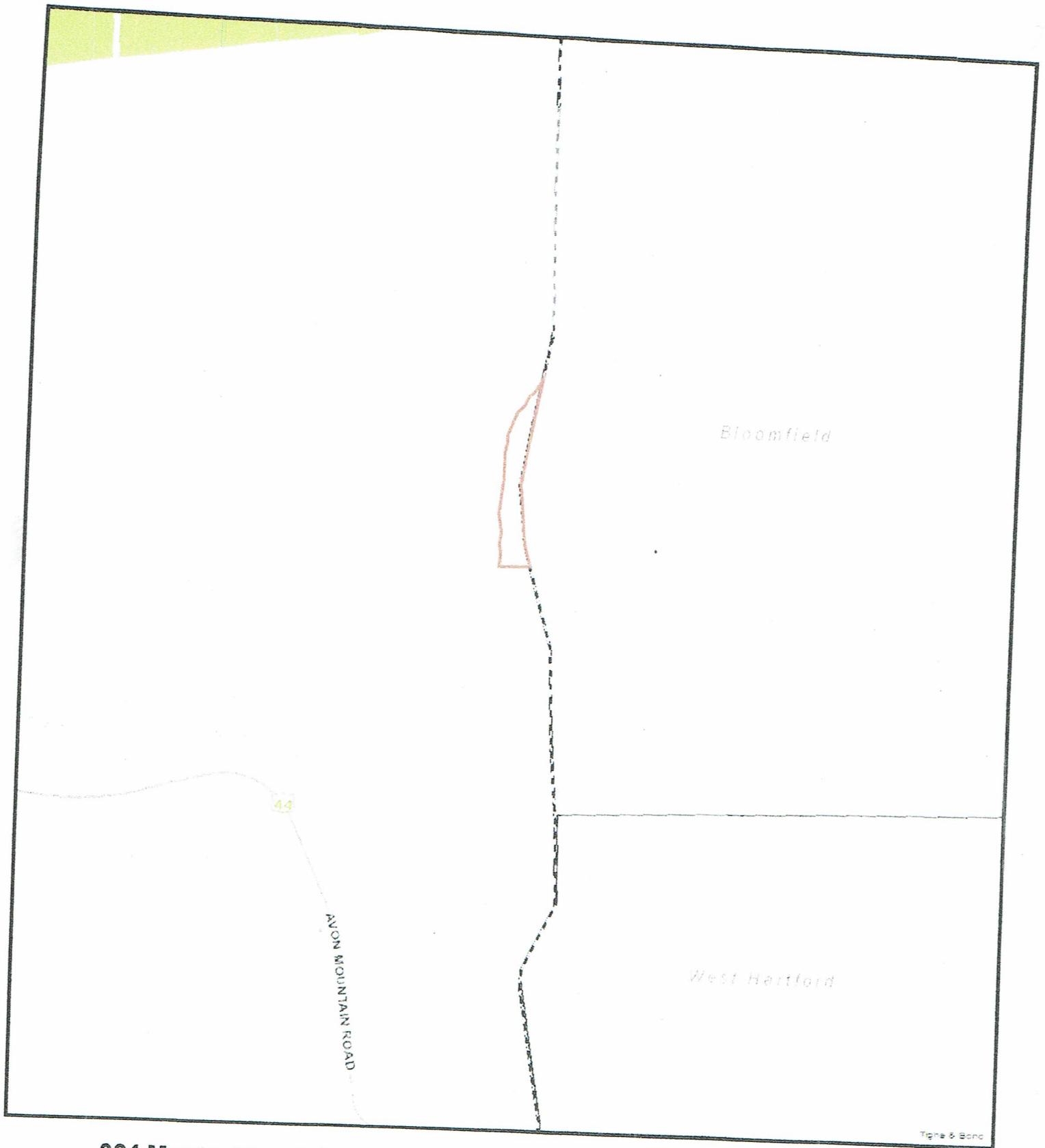
¹ $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	59.5 - 39.5	Latticed Pole Leg	Rohn 3.5 STD	2	-52.12	92.80	56.2	Pass
L2	39.5 - 19.5	Latticed Pole Leg	3.5 STD with 4.5x0.237 HSS Half Pipe	23	-115.94	148.60	78.0	Pass
L1	59.5 - 39.5	Latticed Pole Diagonal	P2.5x.203	7	-16.91	24.97	67.7	Pass
L2	39.5 - 19.5	Latticed Pole Diagonal	P2.5x.203	28	-21.76	25.19	86.4	Pass
L1	59.5 - 39.5	Latticed Pole Horizontal	L2 1/2x2 1/2x1/4	16	-2.87	9.08	31.6	Pass
L2	39.5 - 19.5	Latticed Pole Horizontal	L3x3x3/8	25	-13.31	23.42	56.8	Pass
L1	59.5 - 39.5	Latticed Pole Top Girt	L3x5x1/4	4	-3.88	26.25	14.8	Pass
T1	19.5 - 13.1	Leg	3.5 STD with 4.5x0.237 HSS Half Pipe	44	-132.29	151.69	87.2	Pass
T2	13.1 - 6.3	Leg	3.5 STD with 4.5x0.237 HSS Half Pipe	53	-147.19	146.79	100.3	Fail ✗

<p>tnxTower</p> <p>Maser Consulting 2000 Midlantic Drive, Suite 100 Mt. Laurel, NJ Phone: 856 797-0412 FAX: 856 722-1120</p>	Job	CTL01330 Avon - Montevideo Road	Page	31 of 31
	Project	16946029A	Date	15:51:29 01/25/18
	Client	AT&T	Designed by	

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
T3	6.3 - 0	Leg	3.5 STD with 4.5x0.237 HSS Half Pipe	62	-151.73	183.98	82.5	Pass	
T1	19.5 - 13.1	Diagonal	ROHN 2.5 STD	49	-12.60	24.74	50.9	Pass	
T2	13.1 - 6.3	Diagonal	ROHN 2.5 STD	58	-12.69	21.60	58.7	Pass	
T3	6.3 - 0	Diagonal	L3x3x3/16	65	-9.23	18.67	49.5	Pass	
T1	19.5 - 13.1	Horizontal	L3x3x1/4	48	-4.03	16.16	25.0	Pass	
T2	13.1 - 6.3	Horizontal	L3x3x1/4	55	-0.95	13.36	7.1	Pass	
T3	6.3 - 0	Horizontal	2L2x2x3/16	64	-10.31	35.05	29.4	Pass	
T3	6.3 - 0	Redund Horz 1 Bracing	L2x2x3/16	73	-1.46	14.91	9.8	Pass	
T3	6.3 - 0	Redund Diag 1 Bracing	L2x2x3/16	74	-1.09	11.92	9.1	Pass	
							Summary		
							Latticed Pole Leg (L2)	78.0	Pass
							Latticed Pole Diagonal (L2)	86.4	Pass
							Latticed Pole Horizontal (L2)	56.8	Pass
							Latticed Pole Top Girt (L1)		
							Leg (T2)	100.3	Fail X
							Diagonal (T2)	58.7	Pass
							Horizontal (T3)	29.4	Pass
							Redund Horz 1 Bracing (T3)	9.8	Pass
							Redund Diag 1 Bracing (T3)	9.1	Pass
							Bolt Checks	74.4	Pass
							RATING =	100.3	Fail X



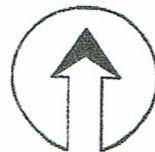
324 Montevideo Rd., Avon

2/7/2018 12:21:10 PM

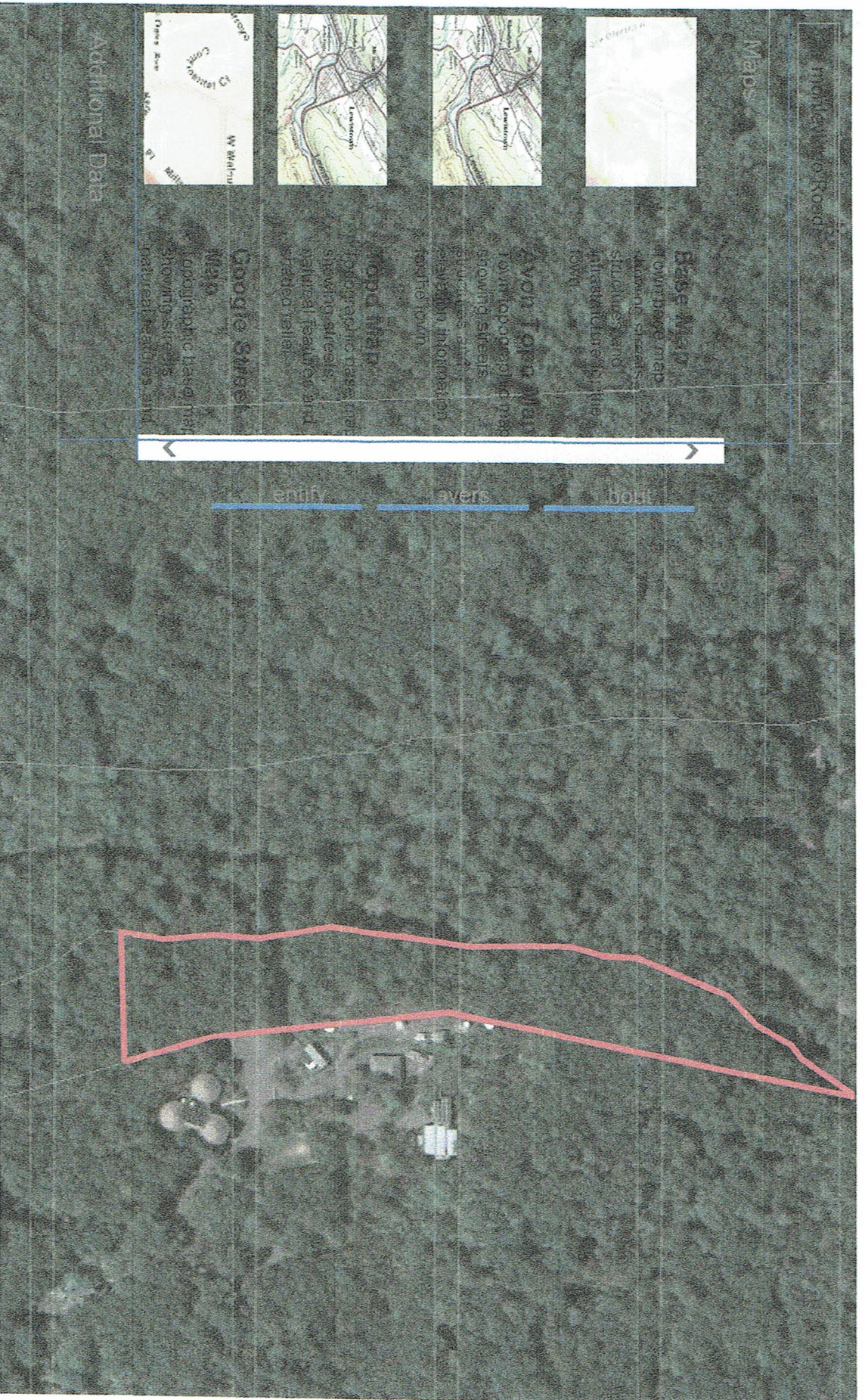
Scale: 1"=1000'

Scale is approximate

The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.



Tipha & Bond



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