



Aaron Meyers, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 W. Center St., Floor 3
West Bridgewater, MA 02379
Mobile: (774) 420-4202
ameyers@clinellc.com

DATE November 26, 2018

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

**RE: Notice of Exempt Modification // Site Number: CT2167
273 Boom Bridge Road, North Stonington, CT 06359 (Site Name: North Stonington)
N 41.42880 // W -71.80911**

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC (“AT&T”) currently maintains nine (9) antennas at the 180-foot level of the existing 180-foot Monopole tower at 273 Boom Bridge Road, North Stonington, CT 06359. The tower is owned by Wireless Solutions, LLC. The property is owned by Lewis David Babcock, LLC. AT&T now intends to add three (3) Antennas, six (6) Remote Radio Units, one (1) Surge Arrestor, and one (1) GPS Antenna for its LTE upgrade. This equipment would be installed at the 180-foot level of the tower.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Michael A. Urgo, First Selectman, as well as the tower owner, Wireless Solutions, LLC, and the ground owner, Lewis David Babcock, LLC.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

Attached to accommodate this filing are construction drawings dated October 1, 2018 by Hudson Design Group, LLC, a structural analysis dated November 14, 2018 by Hudson Design Group, LLC, a mount analysis dated November 9, 2018 by Hudson Design Group, LLC, and an Emissions Analysis Report dated November 19, 2018 by Centerline Communications, LLC.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the 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 exceed state and local criteria.
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 as shown in the attached structural analysis by Hudson Design Group, LLC, dated November 14, 2018.

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

Sincerely,



Aaron Meyers, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
750 W. Center St., Floor 3
West Bridgewater, MA 02379
Mobile: (774) 420-4202
ameyers@centerlincommunications.com

Attachments

cc: Michael A. Urgo, First Selectman - as elected official
Wireless Solutions, LLC – as tower owner
Lewis David Babcock, LLC – as property owner
Juliet Hodge – as Planning, Development & Zoning Official



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2167

FA#: 10035072

Pawcatuck - Boom Bridge Rd
273 Boom Bridge Road
North Stonington, CT 6359

November 19, 2018

Centerline Communications Project Number: 950012-187

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	10.02 %



November 19, 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: **CT2167 – Pawcatuck - Boom Bridge Rd**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **273 Boom Bridge Road, North Stonington, 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 **273 Boom Bridge Road, North Stonington, 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)
LTE	700 MHz	2	40
LTE	700 MHz (Band 14)	2	40
LTE	850 MHz	2	40
LTE	1900 MHz (PCS)	4	40
5G	850 MHz	2	25
UMTS	850 MHz	2	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 and 1900 MHz (PCS) 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	Powerwave P65-17-XLH-RR	180
A	2	CCI TPA-65R-LCUUUU-H8	180
A	3	Powerwave 7770	180
B	1	Powerwave P65-17-XLH-RR	180
B	2	CCI TPA-65R-LCUUUU-H8	180
B	3	Powerwave 7770	180
C	1	Commscope SBNH-1D6565C	180
C	2	CCI TPA-65R-LCUUUU-H8	180
C	3	Powerwave 7770	180

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	Powerwave P65-17-XLH-RR	700 MHz	14.3	2	80	2,153.23	0.55
Antenna A2	CCI TPA-65R-LCUUUU-H8	700 MHz (Band 14) / 850 MHz / 1900 MHz (PCS)	12.95 / 13.45 / 13.75	10	370	8,249.16	1.45
Antenna A3	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.17
Sector A Composite MPE%							2.18
Antenna B1	Powerwave P65-17-XLH-RR	700 MHz	14.3	2	80	2,153.23	0.55
Antenna B2	CCI TPA-65R-LCUUUU-H8	700 MHz (Band 14) / 850 MHz / 1900 MHz (PCS)	12.95 / 13.45 / 13.75	10	370	8,249.16	1.45
Antenna B3	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.17
Sector B Composite MPE%							2.18
Antenna C1	Commscope SBNH-1D6565C	700 MHz	13.65	2	80	1,853.92	0.47
Antenna C2	CCI TPA-65R-LCUUUU-H8	700 MHz (Band 14) / 850 MHz / 1900 MHz (PCS)	12.95 / 13.45 / 13.75	10	370	8,249.16	1.45
Antenna C3	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.17
Sector C Composite MPE%							2.10

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, the sectors with the largest calculated MPE% are Sectors A & B. *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 Values (Sectors A & B)	2.18 %
Sprint	2.25 %
T-Mobile	3.73 %
Verizon Wireless	1.86 %
Site Total MPE %:	10.02 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	2.18 %
AT&T Sector B Total:	2.18 %
AT&T Sector C Total:	2.10 %
Site Total:	10.02 %

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, the sectors with the largest calculated MPE% are Sectors A & B.

AT&T _ Frequency Band / Technology Max Power Values (Sectors A & B)	# 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 700 MHz LTE) – Antenna 1	2	1,076.61	180	2.56	700 MHz	467	0.55%
AT&T 700 MHz LTE (Band 14) – Antenna 2	2	788.97	180	1.87	700 MHz	467	0.40%
AT&T 850 MHz LTE) – Antenna 2	2	885.24	180	2.10	850 MHz	567	0.37%
AT&T 1900 MHz (PCS) LTE) – Antenna 2	4	948.55	180	4.51	1900 MHz (PCS)	1000	0.45%
AT&T 850 MHz 5G) – Antenna 2	2	553.27	180	1.31	850 MHz	567	0.23%
AT&T 850 MHz UMTS) – Antenna 3	2	414.12	180	0.98	850 MHz	567	0.17%
						Total:	2.18%

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:	2.18 %
Sector B:	2.18 %
Sector C:	2.10 %
AT&T Maximum Total (Sectors A & B):	2.18 %
Site Total:	10.02 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **10.02 %** 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



November 9, 2018



Centerline Communications, LLC
97 Ryan Drive Suite 1
Raynham, MA 02767

RE: Site Number: CT2167 (LTE 2C-3C-4C)
FA Number: 10035072
PACE Number: MRCTB030927
PT Number: 2051A0GHZ9
Site Name: PAWCATUCK-BOOM BRIDGE RD
Site Address: 273 Boom Bridge Road
North Stonington, CT 06359

To Whom It May Concern:

Hudson Design Group LLC (HDG) has been authorized by Centerline Communications, LLC to perform a mount analysis on the existing AT&T antenna/RRH mount to determine its capability of supporting the following loading:

- (2) P65-17-XLH-RR Antennas (96.0"x12.0"x6.0" – Wt. = 59 lbs. /each)
- (1) SBNH-1D6565C Antennas (96.4"x11.9"x7.1" – Wt. = 61 lbs. /each)
- (3) 7770 Antennas (55.0"x11.0"x5.0" - Wt. = 35 lbs. /each)
- (3) RRUS-11 RRH's (19.7"x17.0"x7.2" – Wt. = 51 lbs. /each)
- (3) CM1007-DBPXC-003 TMA's (4.9"x9.0"x3.3" – Wt. = 19 lbs. /each)
- (1) Squid Surge Arrestor (24.0"x9.7"Φ – Wt. = 33 lbs.) (tower mounted)
- **(3) TPA-65R-LCUUUU-H8 Antennas (96.0"x14.4"x8.6" – Wt. = 75 lbs. /each)**
- **(3) 4415 B25 RRH's (15.0"x13.2"x5.4" – Wt. = 44 lbs. /each)**

**Proposed equipment shown in bold*

No original structural design documents or fabrication drawings were available for the existing mounts. HDG's subconsultant, ProVertic LLC, conducted a survey climb and mapping of the existing AT&T antenna mounts on October 30, 2018.

Mount Analysis Methods:

- This analysis was conducted in accordance with EIA/TIA-222-G, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, the International Building Code 2015 with 2018 Connecticut State Building Code Amendments and AT&T Mount Technical Directive – R9.
- HDG considers this mount to be asymmetrical and has applied wind loads in 30 degree increments all around the mount. Per TIA-222-G Annex B, the max basic wind speed for this site is equal to 120 mph with a max basic wind speed with ice of 50 mph. Per the AT&T Mount Technical Directive and Appendix N of the Connecticut State Building Code, an ultimate wind speed of 135 mph converted to a nominal wind speed of 105 mph was used for this analysis.
- HDG considers this site to be exposure category C; tower is located large, flat, open, terrain/grasslands.
- HDG considers this site to be topographic category 1; tower is located in flat terrain.
- The mount has been analyzed with load combinations consisting of 250 lbs live load using a service wind speed of 30 mph wind on the worst case antenna. Analysis performed on each antenna pipe to determine worst case location; worst case location was antenna position 1.
- The mount has been analyzed with load combinations consisting of a 250 lbs live load in a worst case location on the mount.
- The proposed mount is secured to the existing tower with brackets and thru bolts. The connection is considered OK by visual inspection.

Based on our evaluation, we have determined that the existing mount **IS NOT CAPABLE** of supporting the proposed installation. HDG recommends the following modifications:

- **Center the new and existing antennas on the existing mount (typ. of 3 per sector, total of 9).**
- **Relocate the existing 2-1/2" std. (2.88" O.D.) pipe brace, secure to existing mount and tower (typ. of 1 per sector, total of 3).**
- **Install new 2-1/2" std. (2.88" O.D.) pipe brace, secure to the existing mount and tower (typ. of 1 per sector, total of 3).**

	Component	Controlling Load Case	Stress Ratio	Pass/Fail
Existing Mount Rating	50	LC11	145%	FAIL
Proposed Mount Rating	39	LC1	94%	PASS

Reference Documents:

- Mount mapping report prepared by ProVertic LLC.

This determination was based on the following limitations and assumptions:

1. HDG is not responsible for any modifications completed prior to and hereafter which HDG was not directly involved.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
4. The existing mount has been adequately secured to the tower structure per the mount manufacturer's specifications.
5. All components pertaining to AT&T's mounts must be tightened and re-plumbed prior to the installation of new appurtenances.
6. HDG performed a localized analysis on the mount itself and not on the supporting tower structure.

Please feel free to contact our office should you have any questions.

Respectfully Submitted,
Hudson Design Group LLC



Michael Cabral
Structural Dept. Head



Daniel P. Hamm, PE
Principal

FIELD PHOTOS:







HUDSON
Design Group LLC

**Wind & Ice
Calculations**

Date: 11/9/2018
 Project Name: PAWCATUCK-BOOM BRIDGE RD
 Project Number: CT2167
 Designed By: JN Checked By: MSC



2.6.5.2 Velocity Pressure Coeff:

$$K_z = 2.01 (z/z_g)^{2/\alpha}$$

$K_z =$ **1.432** $z =$ 180 (ft)
 $z_g =$ 900 (ft)
 $\alpha =$ 9.5

$K_{zmin} \leq K_z \leq 2.01$

Table 2-4

Exposure	Z_g	α	K_{zmin}	K_e
B	1200 ft	7.0	0.70	0.9
C	900 ft	9.5	0.85	1.0
D	700 ft	11.5	1.03	1.1

2.6.6.4 Topographic Factor:

Table 2-5

Topo. Category	K_t	f
2	0.43	1.25
3	0.53	2.0
4	0.72	1.5

$$K_{zt} = [1 + (K_e K_t / K_h)]^2$$

$$K_h = e^{(fz/H)}$$

$K_{zt} =$ **#DIV/0!**

$K_h =$ **#DIV/0!**

(If Category 1 then $K_{zt} = 1.0$)

$K_e =$ 0 (from Table 2-4)

$K_t =$ 0 (from Table 2-5)

$f =$ 0 (from Table 2-5)

$z =$ 180

$H =$ 0 (Ht. of the crest above surrounding terrain)

$K_{zt} =$ 1.00

$K_{iz} =$ 1.18 (from Sec. 2.6.8)

Category = 1

2.6.8 Design Ice Thickness

Max Ice Thickness =

$t_i =$ 0.75 in

$$t_{iz} = 2.0 * t_i * I * K_{iz} * (K_{zt})^{0.35}$$

$t_{iz} =$ 1.78 in

Date: 11/9/2018
 Project Name: PAWCATUCK-BOOM BRIDGE RD
 Project Number: CT2167
 Designed By: JN Checked By: MSC



2.6.7 Gust Effect Factor

2.6.7.1 Self Supporting Lattice Structures

Gh = 1.0 Latticed Structures > 600 ft

Gh = 0.85 Latticed Structures 450 ft or less

Gh = 0.85 + 0.15 [h/150 - 3.0] h= ht. of structure

h= 180 Gh= 0.85

2.6.7.2 Guyed Masts Gh= 0.85

2.6.7.3 Pole Structures Gh= 1.1

2.6.9 Appurtenances Gh= 1.0

2.6.7.4 Structures Supported on Other Structures

(Cantilevered tubular or latticed spines, pole, structures on buildings (ht. : width ratio > 5)

Gh= 1.35 Gh= 1.00

2.6.9.2 Design Wind Force on Appurtenances

State Code Ultimate Design Wind Speed: V_{ult} = 135 mph

Nomial Design Wind Speed, V_{asd} = V_{ult} V(0.6) V_{asd} = 105 mph

V_{asd} per the AT&T Mount Technical Directive and Connecticut Supplement, Latest Addition.

Per TIA-222-G, V_{min} = 105 mph V_{max} = 120 mph

F = q_z*Gh*(EPA)_A

q_z = 0.00256*K_z*K_{zt}*K_d*V_{max}²*I

q_z = 38.40

q_{z (ice)} = 8.71

q_{z (30)} = 3.14

K_z = 1.432

K_{zt} = 1.0

K_d = 0.95

V_{asd} = 105 mph

V_{max (ice)} = 50 mph

V₃₀ = 30 mph

I = 1.0

Table 2-2

Structure Type	Wind Direction Probability Factor, Kd
Latticed structures with triangular, square or rectangular cross sections	0.85
Tubular pole structures, latticed structures with other cross sections, appurtenances	0.95

Determine Ca:

Table 2-8

Force Coefficients (Ca) for Appurtenances				
Member Type		Aspect Ratio ≤ 2.5	Aspect Ratio = 7	Aspect Ratio ≥ 25
		Ca	Ca	Ca
Flat		1.2	1.4	2.0
Round	C < 32 (Subcritical)	0.7	0.8	1.2
	32 ≤ C ≤ 64 (Transitional)	$3.76/(C^{0.485})$	$3.37/(C^{0.415})$	$38.4/(C^{1.0})$
	C > 64 (Supercritical)	0.5	0.6	0.6

Aspect Ratio is the overall length/width ratio in the plane normal to the wind direction.
 (Aspect ratio is independent of the spacing between support points of a linear appurtenance,
 Note: Linear interpolation may be used for aspect ratios other than those shown.

Ice Thickness = **1.78 in** **Angle = 0 (deg)** **Equivalent Angle = 180 (deg)**

Appurtenances	Height	Width	Depth	Flat Area	Aspect Ratio	Ca	Force (lbs)	Force (lbs) (w/ Ice)	Force (lbs) (30 mph)
P65-17-XLH-RR Antenna	96.0	12.0	6.0	8.00	8.00	1.43	440	134	36
SBNH-1D6565C Antenna	96.4	11.9	7.1	7.97	8.10	1.44	440	134	36
TPA-65R-LCUUUU-H8 Antenna	96.0	14.4	8.6	9.60	6.67	1.39	511	150	42
7770 Antenna	55.0	11.0	5.0	4.20	5.00	1.31	212	68	17
RRUS-11 RRH	19.7	17.0	7.2	2.33	1.16	1.20	107	35	9
RRUS-11 RRH (Shielded)	19.7	2.6	7.2	0.36	7.58	1.42	19	12	2
4415 B25 RRH	15.0	13.2	5.4	1.38	1.14	1.20	63	23	5
4415 B25 RRH (Shielded)	15.0	0.0	5.4	0.00	0.00	1.20	0	0	0
CM1007-DBPXBC-003 TMA	4.9	9.0	3.3	0.31	0.54	1.20	14	8	1
Surge Arrestor	24.0	9.7	9.7	1.62	2.47	0.70	43	15	4

Date: 11/9/2018

Project Name: PAWCATUCK-BOOM BRIDGE RD

Project Number: CT2167

Designed By: JN Checked By: MSC



WIND LOADS

Angle = 30 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 210 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Aspect Ratio	Aspect Ratio	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-17-XLH-RR Antenr	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	440	261	396
SBNH-1D6565C Anteni	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	440	296	404
TPA-65R-LCUUUU-H8 /	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	511	339	468
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	212	112	187
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	107	46	92
RRUS-11 RRH (Shielde	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	54	46	52
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	63	26	54
4415 B25 RRH (Shielde	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	32	26	30
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	14	5	12

WIND LOADS WITH ICE:

P65-17-XLH-RR Antenr	99.6	15.6	9.6	10.75	6.61	6.40	10.42	1.37	1.51	129	87	118
SBNH-1D6565C Anteni	100.0	15.5	10.7	10.73	7.40	6.47	9.38	1.38	1.48	129	95	120
TPA-65R-LCUUUU-H8 /	99.6	18.0	12.2	12.41	8.40	5.54	8.19	1.34	1.44	144	105	135
7770 Antenna	58.6	14.6	8.6	5.92	3.48	4.02	6.84	1.27	1.39	65	42	60
RRUS-11 RRH	23.3	20.6	10.8	3.32	1.74	1.13	2.16	1.20	1.20	35	18	31
RRUS-11 RRH (Shielde	23.3	10.3	10.8	1.66	1.74	2.26	2.16	1.20	1.20	17	18	18
4415 B25 RRH	18.6	16.8	9.0	2.16	1.15	1.11	2.07	1.20	1.20	23	12	20
4415 B25 RRH (Shielde	18.6	8.4	9.0	1.08	1.15	2.21	2.07	1.20	1.20	11	12	11
CM1007-DBPXBC-003	8.5	12.6	6.9	0.74	0.40	0.67	1.23	1.20	1.20	8	4	7

WIND LOADS AT 30 MPH:

P65-17-XLH-RR Antenr	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	36	21	32
SBNH-1D6565C Anteni	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	36	24	33
TPA-65R-LCUUUU-H8 /	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	42	28	38
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	17	9	15
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	7
RRUS-11 RRH (Shielde	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	4	4	4
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	4
4415 B25 RRH (Shielde	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	3	2	2
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	1	0	1

Date: 11/9/2018

Project Name: PAWCATUCK-BOOM BRIDGE RD

Project Number: CT2167

Designed By: JN Checked By: MSC



WIND LOADS

Angle = 60 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 240 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	440	261	306
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	440	296	332
TPA-65R-LCUUUU-H8	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	511	339	382
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	212	112	137
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	107	46	61
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	80	46	54
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	63	26	35
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	48	26	32
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	14	5	7

WIND LOADS WITH ICE:

P65-17-XLH-RR Antenn	99.6	15.6	9.6	10.75	6.61	6.40	10.42	1.37	1.51	129	87	97
SBNH-1D6565C Antenn	100.0	15.5	10.7	10.73	7.40	6.47	9.38	1.38	1.48	129	95	104
TPA-65R-LCUUUU-H8	99.6	18.0	12.2	12.41	8.40	5.54	8.19	1.34	1.44	144	105	115
7770 Antenna	58.6	14.6	8.6	5.92	3.48	4.02	6.84	1.27	1.39	65	42	48
RRUS-11 RRH	23.3	20.6	10.8	3.32	1.74	1.13	2.16	1.20	1.20	35	18	22
RRUS-11 RRH (Shielded)	23.3	15.4	10.8	2.49	1.74	1.51	2.16	1.20	1.20	26	18	20
4415 B25 RRH	18.6	16.8	9.0	2.16	1.15	1.11	2.07	1.20	1.20	23	12	15
4415 B25 RRH (Shielded)	18.6	12.6	9.0	1.62	1.15	1.48	2.07	1.20	1.20	17	12	13
CM1007-DBPXBC-003	8.5	12.6	6.9	0.74	0.40	0.67	1.23	1.20	1.20	8	4	5

WIND LOADS AT 30 MPH:

P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	36	21	25
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	36	24	27
TPA-65R-LCUUUU-H8	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	42	28	31
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	17	9	11
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	5
RRUS-11 RRH (Shielded)	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	7	4	4
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	3
4415 B25 RRH (Shielded)	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	4	2	3
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	1	0	1

Date: 11/9/2018

Project Name: PAWCATUCK-BOOM BRIDGE RD

Project Number: CT2167

Designed By: JN Checked By: MSC



WIND LOADS

Angle = 90 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 270 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	440	261	261
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	440	296	296
TPA-65R-LCUUUU-H8	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	511	339	339
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	212	112	112
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	107	46	46
RRUS-11 RRH (Shielded)	19.7	2.6	7.2	0.36	0.99	0.00	2.74	1.20	1.21	16	46	46
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	63	26	26
4415 B25 RRH (Shielded)	15.0	0.0	5.4	0.00	0.56	0.00	2.78	1.20	1.21	0	26	26
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	14	5	5

WIND LOADS WITH ICE:

P65-17-XLH-RR Antenn	99.6	15.6	9.6	10.75	6.61	6.40	10.42	1.37	1.51	129	87	87
SBNH-1D6565C Antenn	100.0	15.5	10.7	10.73	7.40	6.47	9.38	1.38	1.48	129	95	95
TPA-65R-LCUUUU-H8	99.6	18.0	12.2	12.41	8.40	5.54	8.19	1.34	1.44	144	105	105
7770 Antenna	58.6	14.6	8.6	5.92	3.48	4.02	6.84	1.27	1.39	65	42	42
RRUS-11 RRH	23.3	20.6	10.8	3.32	1.74	1.13	2.16	1.20	1.20	35	18	18
RRUS-11 RRH (Shielded)	23.3	6.2	10.8	0.99	1.74	3.78	2.16	1.26	1.20	11	18	18
4415 B25 RRH	18.6	16.8	9.0	2.16	1.15	1.11	2.07	1.20	1.20	23	12	12
4415 B25 RRH (Shielded)	18.6	3.6	9.0	0.46	1.15	5.22	2.07	1.32	1.20	5	12	12
CM1007-DBPXBC-003	8.5	12.6	6.9	0.74	0.40	0.67	1.23	1.20	1.20	8	4	4

WIND LOADS AT 30 MPH:

P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	36	21	21
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	36	24	24
TPA-65R-LCUUUU-H8	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	42	28	28
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	17	9	9
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	4
RRUS-11 RRH (Shielded)	19.7	2.6	7.2	0.36	0.99	0.00	2.74	1.20	1.21	1	4	4
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	2
4415 B25 RRH (Shielded)	15.0	0.0	5.4	0.00	0.56	0.00	2.78	1.20	1.21	0	2	2
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	1	0	0

Date: 11/9/2018

Project Name: PAWCATUCK-BOOM BRIDGE RD

Project Number: CT2167

Designed By: JN Checked By: MSC



WIND LOADS

Angle = 120 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 300 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	440	261	306
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	440	296	332
TPA-65R-LCUUUU-H8 /	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	511	339	382
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	212	112	137
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	107	46	61
RRUS-11 RRH (Shielder	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	80	46	54
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	63	26	35
4415 B25 RRH (Shielder	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	48	26	32
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	14	5	7

WIND LOADS WITH ICE:

P65-17-XLH-RR Antenn	99.6	15.6	9.6	10.75	6.61	6.40	10.42	1.37	1.51	129	87	97
SBNH-1D6565C Antenn	100.0	15.5	10.7	10.73	7.40	6.47	9.38	1.38	1.48	129	95	104
TPA-65R-LCUUUU-H8 /	99.6	18.0	12.2	12.41	8.40	5.54	8.19	1.34	1.44	144	105	115
7770 Antenna	58.6	14.6	8.6	5.92	3.48	4.02	6.84	1.27	1.39	65	42	48
RRUS-11 RRH	23.3	20.6	10.8	3.32	1.74	1.13	2.16	1.20	1.20	35	18	22
RRUS-11 RRH (Shielder	23.3	15.4	10.8	2.49	1.74	1.51	2.16	1.20	1.20	26	18	20
4415 B25 RRH	18.6	16.8	9.0	2.16	1.15	1.11	2.07	1.20	1.20	23	12	15
4415 B25 RRH (Shielder	18.6	12.6	9.0	1.62	1.15	1.48	2.07	1.20	1.20	17	12	13
CM1007-DBPXBC-003	8.5	12.6	6.9	0.74	0.40	0.67	1.23	1.20	1.20	8	4	5

WIND LOADS AT 30 MPH:

P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	36	21	25
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	36	24	27
TPA-65R-LCUUUU-H8 /	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	42	28	31
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	17	9	11
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	5
RRUS-11 RRH (Shielder	19.7	12.8	7.2	1.74	0.99	1.55	2.74	1.20	1.21	7	4	4
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	3
4415 B25 RRH (Shielder	15.0	9.9	5.4	1.03	0.56	1.52	2.78	1.20	1.21	4	2	3
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	1	0	1

Date: 11/9/2018
 Project Name: PAWCATUCK-BOOM BRIDGE RD
 Project Number: CT2167
 Designed By: JN Checked By: MSC



WIND LOADS

Angle = 150 (deg)

Ice Thickness = 1.78 in.

Equivalent Angle = 330 (deg)

WIND LOADS WITH NO ICE:

Appurtenances	Height	Width	Depth	Flat Area (normal)	Flat Area (side)	Ratio (normal)	Ratio (side)	Ca (normal)	Ca (side)	Force (lbs) (normal)	Force (lbs) (side)	Force (lbs) (angle)
P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	440	261	396
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	440	296	404
TPA-65R-LCUUUU-H8	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	511	339	468
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	212	112	187
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	107	46	92
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	54	46	52
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	63	26	54
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	32	26	30
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	14	5	12

WIND LOADS WITH ICE:

P65-17-XLH-RR Antenn	99.6	15.6	9.6	10.75	6.61	6.40	10.42	1.37	1.51	129	87	118
SBNH-1D6565C Antenn	100.0	15.5	10.7	10.73	7.40	6.47	9.38	1.38	1.48	129	95	120
TPA-65R-LCUUUU-H8	99.6	18.0	12.2	12.41	8.40	5.54	8.19	1.34	1.44	144	105	135
7770 Antenna	58.6	14.6	8.6	5.92	3.48	4.02	6.84	1.27	1.39	65	42	60
RRUS-11 RRH	23.3	20.6	10.8	3.32	1.74	1.13	2.16	1.20	1.20	35	18	31
RRUS-11 RRH (Shielded)	23.3	10.3	10.8	1.66	1.74	2.26	2.16	1.20	1.20	17	18	18
4415 B25 RRH	18.6	16.8	9.0	2.16	1.15	1.11	2.07	1.20	1.20	23	12	20
4415 B25 RRH (Shielded)	18.6	8.4	9.0	1.08	1.15	2.21	2.07	1.20	1.20	11	12	11
CM1007-DBPXBC-003	8.5	12.6	6.9	0.74	0.40	0.67	1.23	1.20	1.20	8	4	7

WIND LOADS AT 30 MPH:

P65-17-XLH-RR Antenn	96.0	12.0	6.0	8.00	4.00	8.00	16.00	1.43	1.70	36	21	32
SBNH-1D6565C Antenn	96.4	11.9	7.1	7.97	4.75	8.10	13.58	1.44	1.62	36	24	33
TPA-65R-LCUUUU-H8	96.0	14.4	8.6	9.60	5.73	6.67	11.16	1.39	1.54	42	28	38
7770 Antenna	55.0	11.0	5.0	4.20	1.91	5.00	11.00	1.31	1.53	17	9	15
RRUS-11 RRH	19.7	17.0	7.2	2.33	0.99	1.16	2.74	1.20	1.21	9	4	7
RRUS-11 RRH (Shielded)	19.7	8.5	7.2	1.16	0.99	2.32	2.74	1.20	1.21	4	4	4
4415 B25 RRH	15.0	13.2	5.4	1.38	0.56	1.14	2.78	1.20	1.21	5	2	4
4415 B25 RRH (Shielded)	15.0	6.6	5.4	0.69	0.56	2.27	2.78	1.20	1.21	3	2	2
CM1007-DBPXBC-003	4.9	9.0	3.3	0.31	0.11	0.54	1.48	1.20	1.20	1	0	1

Date: 11/9/2018

Project Name: PAWCATUCK-BOOM BRIDGE RD

Project Number: CT2167

Designed By: JN Checked By: MSC



HUDSON
Design Group LLC

ICE WEIGHT CALCULATIONS

Thickness of ice: 1.78 in.
Density of ice: 56 pcf

P65-17-XLH-RR Antenna

Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 12.0
Depth (in): 6.0
Total weight of ice on object: 264 lbs
Weight of object: 59 lbs
Combined weight of ice and object: 323 lbs

SBNH-1D6565C Antenna

Weight of ice based on total radial SF area:
Height (in): 96.4
Width (in): 11.9
Depth (in): 7.1
Total weight of ice on object: 273 lbs
Weight of object: 61 lbs
Combined weight of ice and object: 334 lbs

TPA-65R-LCUUUU-H8 Antenna

Weight of ice based on total radial SF area:
Height (in): 96.0
Width (in): 14.4
Depth (in): 8.6
Total weight of ice on object: 323 lbs
Weight of object: 75 lbs
Combined weight of ice and object: 398 lbs

7770 Antenna

Weight of ice based on total radial SF area:
Height (in): 55.0
Width (in): 11.0
Depth (in): 5.0
Total weight of ice on object: 138 lbs
Weight of object: 35 lbs
Combined weight of ice and object: 173 lbs

RRUS-11 RRH

Weight of ice based on total radial SF area:
Height (in): 19.7
Width (in): 17.0
Depth (in): 7.2
Total weight of ice on object: 72 lbs
Weight of object: 51 lbs
Combined weight of ice and object: 123 lbs

4415 B25 RRH

Weight of ice based on total radial SF area:
Height (in): 15.0
Width (in): 13.2
Depth (in): 5.4
Total weight of ice on object: 44 lbs
Weight of object: 44 lbs
Combined weight of ice and object: 88 lbs

CM1007-DBPXC-003 TMA

Weight of ice based on total radial SF area:
Height (in): 4.9
Width (in): 9.0
Depth (in): 3.3
Total weight of ice on object: 10 lbs
Weight of object: 19 lbs
Combined weight of ice and object: 29 lbs

Squid Surge Arrestor

Weight of ice based on total radial SF area:
Depth (in): 24.0
Diameter(in): 9.7
Total weight of ice on object: 50 lbs
Weight of object: 33 lbs
Combined weight of ice and object: 83 lbs

1-1/4" Pipe

Per foot weight of ice:
diameter (in): 1.66
Per foot weight of ice on object: 7 plf

2" pipe

Per foot weight of ice:
diameter (in): 2.38
Per foot weight of ice on object: 9 plf

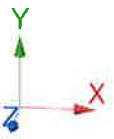
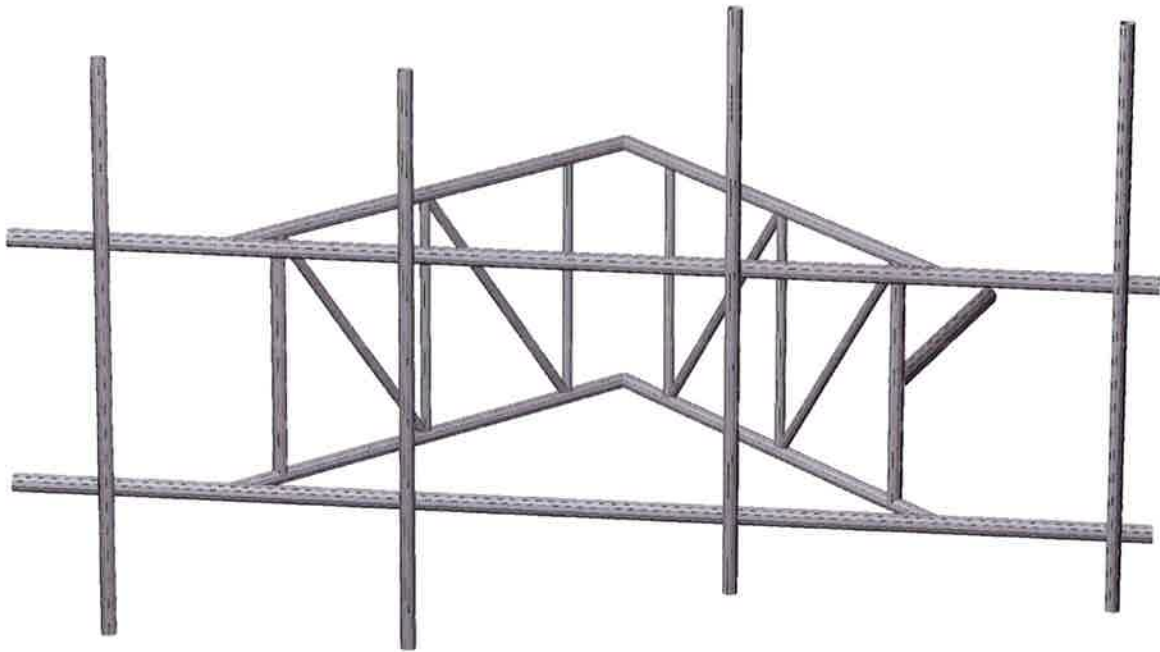
2-1/2" pipe

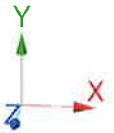
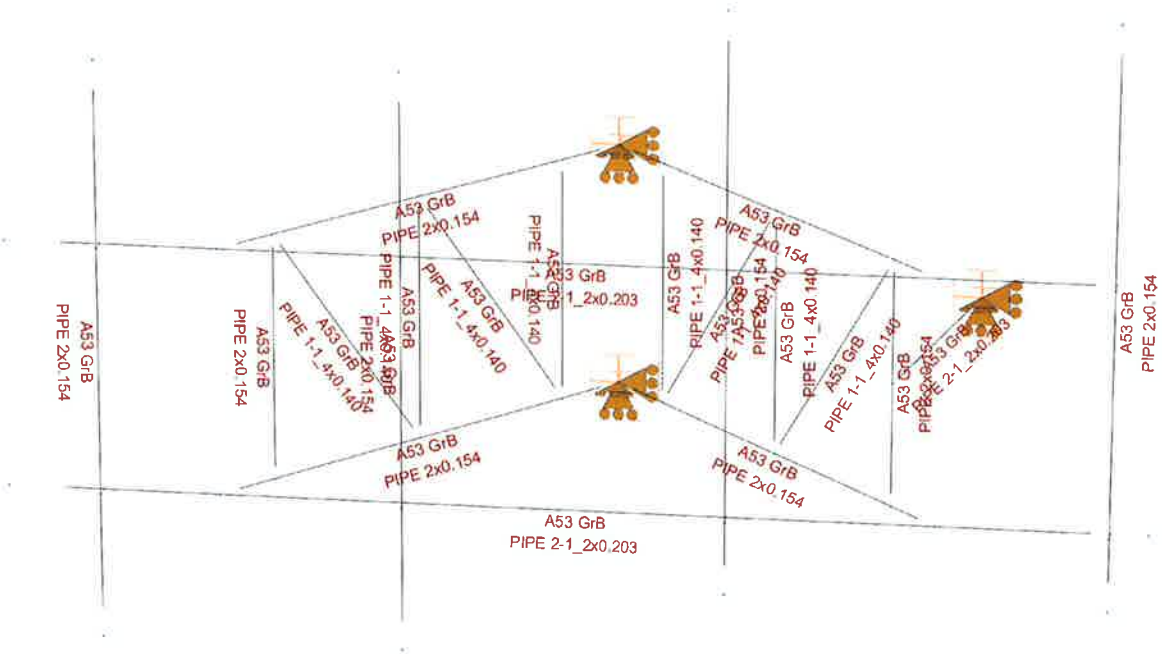
Per foot weight of ice:
diameter (in): 2.88
Per foot weight of ice on object: 10 plf



HUDSON
Design Group LLC

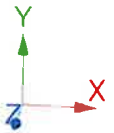
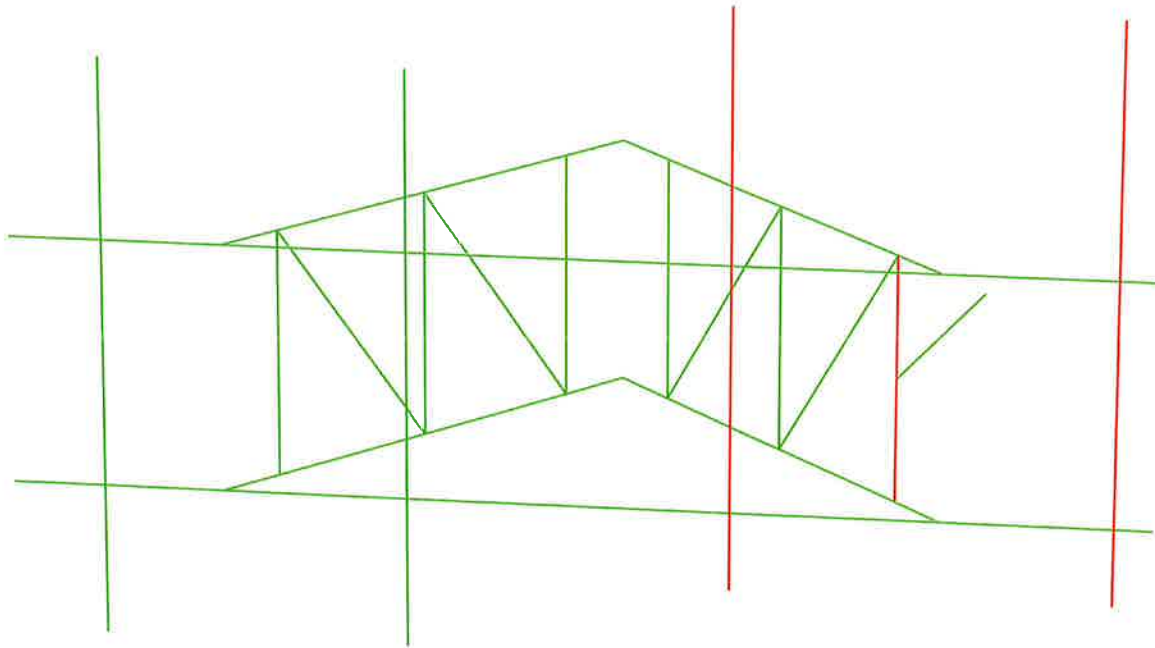
**Mount Calculations
(Existing Conditions)**

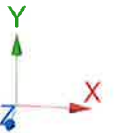
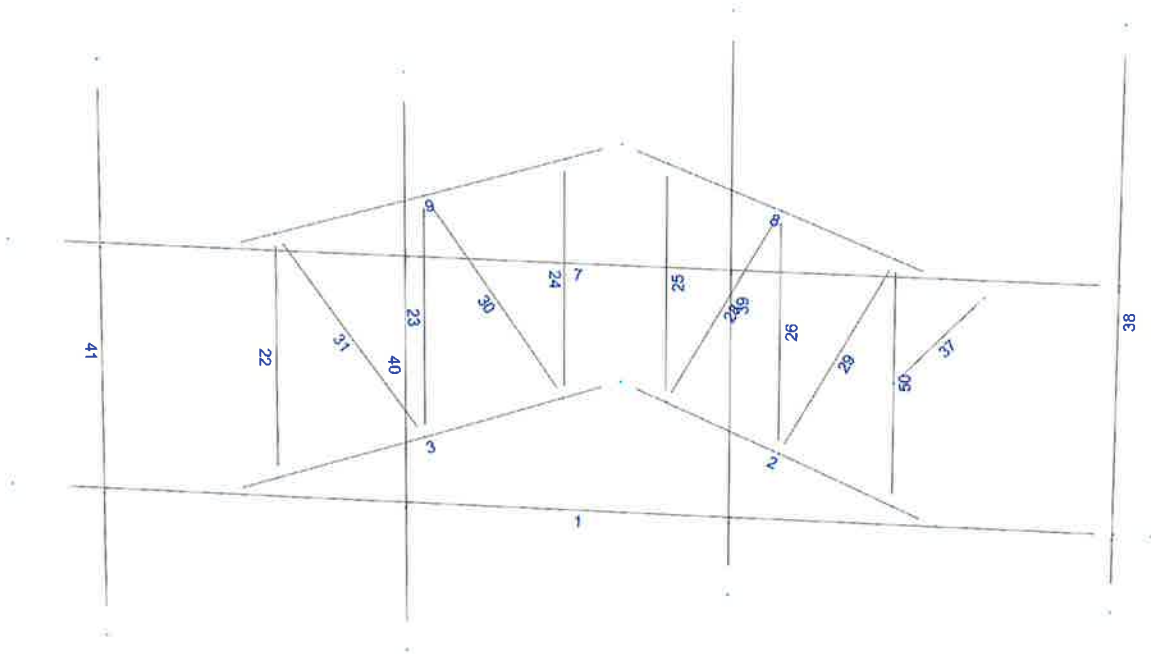




Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





Current Date: 11/9/2018 3:33 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2167\LTE 2C-3C-4C\CT2167 (LTE 2C-3C-4C).etz\

Load data

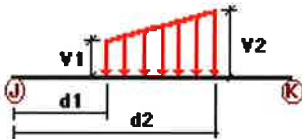
GLOSSARY

Comb : Indicates if load condition is a load combination

Load Conditions

Condition	Description	Comb.	Category
D	Dead Load	No	DL
Wo	Wind Load (NO ICE)	No	WIND
W30	WL 30deg	No	WIND
W60	WL 60deg	No	WIND
W90	WL 90deg	No	WIND
W120	WL 120deg	No	WIND
W150	WL 150deg	No	WIND
Di	Ice Load	No	LL
WI0	WL ICE 0deg	No	WIND
WI30	WL ICE 30deg	No	WIND
WI60	WL ICE 60deg	No	WIND
WI90	WL ICE 90deg	No	WIND
WI120	WL ICE 120deg	No	WIND
WI150	WL ICE 150deg	No	WIND
WL0	WL 30 mph 0deg	No	WIND
WL30	WL 30 mph 30deg	No	WIND
WL60	WL 30 mph 60deg	No	WIND
WL90	WL 30 mph 90deg	No	WIND
WL120	WL 30 mph 120deg	No	WIND
WL150	WL 30 mph 150deg	No	WIND
LL1	250 lb Live Load on Left End	No	LL
LL2	250 lb Live Load on Center	No	LL
LL3	250 lb Live Load on Right End	No	LL
LLa1	250 lb Live Load on Antenna 1	No	LL
LLa2	250 lb Live Load on Antenna 2	No	LL
LLa3	250 lb Live Load on Antenna 3	No	LL

Distributed force on members

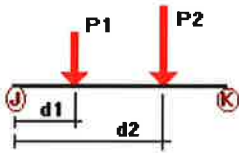


Condition	Member	Dir1	Val1 [Kip/ft]	Val2 [Kip/ft]	Dist1 [ft]	%	Dist2 [ft]	%
Wo	1	z	-0.011	0.00	0.00	No	0.00	No
	2	z	-0.009	0.00	0.00	No	0.00	No
	3	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.011	0.00	0.00	No	0.00	No
	8	z	-0.009	0.00	0.00	No	0.00	No
	9	z	-0.009	0.00	0.00	No	0.00	No
	22	z	-0.009	0.00	0.00	No	0.00	No
	23	z	-0.006	0.00	0.00	No	0.00	No
	24	z	-0.006	0.00	0.00	No	0.00	No
	25	z	-0.006	0.00	0.00	No	0.00	No
	26	z	-0.006	0.00	0.00	No	0.00	No
	28	z	-0.006	0.00	0.00	No	0.00	No
	29	z	-0.006	0.00	0.00	No	0.00	No
	30	z	-0.006	0.00	0.00	No	0.00	No
	31	z	-0.006	0.00	0.00	No	0.00	No
37	z	-0.011	0.00	0.00	No	0.00	No	
40	z	-0.009	0.00	0.00	No	0.00	No	
50	z	-0.009	0.00	0.00	No	0.00	No	
W30	1	z	-0.011	0.00	0.00	No	0.00	No
	2	z	-0.009	0.00	0.00	No	0.00	No
	3	z	-0.009	0.00	0.00	No	0.00	No
	7	z	-0.011	0.00	0.00	No	0.00	No
	8	z	-0.009	0.00	0.00	No	0.00	No
	9	z	-0.009	0.00	0.00	No	0.00	No
	22	z	-0.009	0.00	0.00	No	0.00	No
	23	z	-0.006	0.00	0.00	No	0.00	No
	24	z	-0.006	0.00	0.00	No	0.00	No
	25	z	-0.006	0.00	0.00	No	0.00	No
	26	z	-0.006	0.00	0.00	No	0.00	No
	28	z	-0.006	0.00	0.00	No	0.00	No
	29	z	-0.006	0.00	0.00	No	0.00	No
	30	z	-0.006	0.00	0.00	No	0.00	No
	31	z	-0.006	0.00	0.00	No	0.00	No
37	z	-0.011	0.00	0.00	No	0.00	No	
38	z	-0.009	0.00	0.00	No	0.00	No	
39	z	-0.009	0.00	0.00	No	0.00	No	
40	z	-0.009	0.00	0.00	No	0.00	No	
41	z	-0.009	0.00	0.00	No	0.00	No	
50	z	-0.009	0.00	0.00	No	0.00	No	
W60	1	x	-0.011	0.00	0.00	No	0.00	No
	2	x	-0.009	0.00	0.00	No	0.00	No
	3	x	-0.009	0.00	0.00	No	0.00	No
	7	x	-0.011	0.00	0.00	No	0.00	No
	8	x	-0.009	0.00	0.00	No	0.00	No
	9	x	-0.009	0.00	0.00	No	0.00	No
	22	x	-0.009	0.00	0.00	No	0.00	No
	23	x	-0.006	0.00	0.00	No	0.00	No
	24	x	-0.006	0.00	0.00	No	0.00	No
	25	x	-0.006	0.00	0.00	No	0.00	No
	26	x	-0.006	0.00	0.00	No	0.00	No
	28	x	-0.006	0.00	0.00	No	0.00	No
	29	x	-0.006	0.00	0.00	No	0.00	No
	30	x	-0.006	0.00	0.00	No	0.00	No
	31	x	-0.006	0.00	0.00	No	0.00	No
37	x	-0.011	0.00	0.00	No	0.00	No	
38	x	-0.009	0.00	0.00	No	0.00	No	
39	x	-0.009	0.00	0.00	No	0.00	No	
40	x	-0.009	0.00	0.00	No	0.00	No	
41	x	-0.009	0.00	0.00	No	0.00	No	
50	x	-0.009	0.00	0.00	No	0.00	No	

W90	2	x	-0.009	0.00	0.00	No	0.00	No
	3	x	-0.009	0.00	0.00	No	0.00	No
	8	x	-0.009	0.00	0.00	No	0.00	No
	9	x	-0.009	0.00	0.00	No	0.00	No
	22	x	-0.009	0.00	0.00	No	0.00	No
	23	x	-0.006	0.00	0.00	No	0.00	No
	24	x	-0.006	0.00	0.00	No	0.00	No
	25	x	-0.006	0.00	0.00	No	0.00	No
	26	x	-0.006	0.00	0.00	No	0.00	No
	28	x	-0.006	0.00	0.00	No	0.00	No
	29	x	-0.006	0.00	0.00	No	0.00	No
	30	x	-0.006	0.00	0.00	No	0.00	No
	31	x	-0.006	0.00	0.00	No	0.00	No
	37	x	-0.011	0.00	0.00	No	0.00	No
	38	x	-0.009	0.00	0.00	No	0.00	No
	39	x	-0.009	0.00	0.00	No	0.00	No
	40	x	-0.009	0.00	0.00	No	0.00	No
	41	x	-0.009	0.00	0.00	No	0.00	No
	50	x	-0.009	0.00	0.00	No	0.00	No
	W120	1	x	-0.011	0.00	0.00	No	0.00
2		x	-0.009	0.00	0.00	No	0.00	No
3		x	-0.009	0.00	0.00	No	0.00	No
7		x	-0.011	0.00	0.00	No	0.00	No
8		x	-0.009	0.00	0.00	No	0.00	No
9		x	-0.009	0.00	0.00	No	0.00	No
22		x	-0.009	0.00	0.00	No	0.00	No
23		x	-0.006	0.00	0.00	No	0.00	No
24		x	-0.006	0.00	0.00	No	0.00	No
25		x	-0.006	0.00	0.00	No	0.00	No
26		x	-0.006	0.00	0.00	No	0.00	No
28		x	-0.006	0.00	0.00	No	0.00	No
29		x	-0.006	0.00	0.00	No	0.00	No
30		x	-0.006	0.00	0.00	No	0.00	No
31		x	-0.006	0.00	0.00	No	0.00	No
37		x	-0.011	0.00	0.00	No	0.00	No
38		x	-0.009	0.00	0.00	No	0.00	No
39		x	-0.009	0.00	0.00	No	0.00	No
40		x	-0.009	0.00	0.00	No	0.00	No
41		x	-0.009	0.00	0.00	No	0.00	No
50	x	-0.009	0.00	0.00	No	0.00	No	
W150	1	z	0.011	0.00	0.00	No	0.00	No
	2	z	0.009	0.00	0.00	No	0.00	No
	3	z	0.009	0.00	0.00	No	0.00	No
	7	z	0.011	0.00	0.00	No	0.00	No
	8	z	0.009	0.00	0.00	No	0.00	No
	9	z	0.009	0.00	0.00	No	0.00	No
	22	z	0.009	0.00	0.00	No	0.00	No
	23	z	0.006	0.00	0.00	No	0.00	No
	24	z	0.006	0.00	0.00	No	0.00	No
	25	z	0.006	0.00	0.00	No	0.00	No
	26	z	0.006	0.00	0.00	No	0.00	No
	28	z	0.006	0.00	0.00	No	0.00	No
	29	z	0.006	0.00	0.00	No	0.00	No
	30	z	0.006	0.00	0.00	No	0.00	No
31	z	0.006	0.00	0.00	No	0.00	No	
37	z	0.011	0.00	0.00	No	0.00	No	
38	z	0.009	0.00	0.00	No	0.00	No	
39	z	0.009	0.00	0.00	No	0.00	No	
40	z	0.009	0.00	0.00	No	0.00	No	
41	z	0.009	0.00	0.00	No	0.00	No	

Di	50	z	0.009	0.00	0.00	No	0.00	No
	1	y	-0.01	0.00	0.00	No	0.00	No
	2	y	-0.009	0.00	0.00	No	0.00	No
	3	y	-0.009	0.00	0.00	No	0.00	No
	7	y	-0.01	0.00	0.00	No	0.00	No
	8	y	-0.009	0.00	0.00	No	0.00	No
	9	y	-0.009	0.00	0.00	No	0.00	No
	22	y	-0.009	0.00	0.00	No	0.00	No
	23	y	-0.007	0.00	0.00	No	0.00	No
	24	y	-0.007	0.00	0.00	No	0.00	No
	25	y	-0.007	0.00	0.00	No	0.00	No
	26	y	-0.007	0.00	0.00	No	0.00	No
	28	y	-0.007	0.00	0.00	No	0.00	No
	29	y	-0.007	0.00	0.00	No	0.00	No
	30	y	-0.007	0.00	0.00	No	0.00	No
	31	y	-0.007	0.00	0.00	No	0.00	No
	37	y	-0.01	0.00	0.00	No	0.00	No
	38	y	-0.009	0.00	0.00	No	0.00	No
	39	y	-0.009	0.00	0.00	No	0.00	No
	40	y	-0.009	0.00	0.00	No	0.00	No
41	y	-0.009	0.00	0.00	No	0.00	No	
50	y	-0.009	0.00	0.00	No	0.00	No	

Concentrated forces on members



Condition	Member	Dir1	Value1 [Kip]	Dist1 [ft]	%	
D	38	y	-0.031	0.50	No	
		y	-0.031	7.50	No	
	39	y	-0.038	0.50	No	
		y	-0.038	7.50	No	
		y	-0.051	5.50	No	
	41	y	-0.044	1.50	No	
		y	-0.018	0.50	No	
		y	-0.018	4.50	No	
	Wo	38	y	-0.019	4.00	No
			z	-0.22	0.50	No
39		z	-0.22	7.50	No	
		z	-0.256	0.50	No	
41		z	-0.256	7.50	No	
		z	-0.019	5.50	No	
W30	38	2	-0.106	0.50	No	
		2	-0.106	4.50	No	
	39	2	-0.202	0.50	No	
		2	-0.202	7.50	No	
		2	-0.234	0.50	No	
	41	2	-0.234	7.50	No	
		2	-0.052	5.50	No	
	41	2	-0.03	1.50	No	
		2	-0.094	0.50	No	

		2	-0.094	4.50	No
		2	-0.012	4.00	No
W60	38	2	-0.166	0.50	No
		2	-0.166	7.50	No
	39	2	-0.191	0.50	No
		2	-0.191	7.50	No
		2	-0.054	5.50	No
		2	-0.032	1.50	No
	41	2	-0.069	0.50	No
		2	-0.069	4.50	No
		2	-0.007	4.00	No
W90	38	x	-0.148	0.50	No
		x	-0.148	7.50	No
	39	x	-0.17	0.50	No
		x	-0.17	7.50	No
		x	-0.046	5.50	No
		x	-0.026	1.50	No
	41	x	-0.057	0.50	No
		x	-0.057	4.50	No
		x	-0.005	4.00	No
W120	38	3	0.166	0.50	No
		3	0.166	7.50	No
	39	3	0.191	0.50	No
		3	0.191	7.50	No
		3	0.054	5.50	No
		3	0.032	1.50	No
	41	3	0.069	0.50	No
		3	0.069	4.50	No
		3	0.007	4.00	No
W150	38	3	0.202	0.50	No
		3	0.202	7.50	No
	39	3	0.234	0.50	No
		3	0.234	7.50	No
		3	0.052	5.50	No
		3	0.03	1.50	No
	41	3	0.094	0.50	No
		3	0.094	4.50	No
		3	0.012	4.00	No
Di	38	y	-0.137	0.50	No
		y	-0.137	7.50	No
	39	y	-0.162	0.50	No
		y	-0.162	7.50	No
		y	-0.072	5.50	No
		y	-0.044	1.50	No
	41	y	-0.069	0.50	No
		y	-0.069	4.50	No
		y	-0.01	4.00	No
W10	38	z	-0.068	0.50	No
		z	-0.068	7.50	No
	39	z	-0.075	0.50	No
		z	-0.075	7.50	No
		z	-0.035	5.50	No
		z	-0.023	1.50	No
	41	z	-0.034	0.50	No
		z	-0.034	4.50	No
		z	-0.008	4.00	No
W130	38	2	-0.061	0.50	No
		2	-0.061	7.50	No
	39	2	-0.068	0.50	No
		2	-0.068	7.50	No

		2	-0.031	5.50	No
		2	-0.02	1.50	No
	41	2	-0.03	0.50	No
		2	-0.03	4.50	No
		2	-0.007	4.00	No
WI60	38	2	-0.052	0.50	No
		2	-0.052	7.50	No
	39	2	-0.058	0.50	No
		2	-0.058	7.50	No
		2	-0.022	5.50	No
		2	-0.015	1.50	No
	41	2	-0.024	0.50	No
		2	-0.024	4.50	No
		2	-0.005	4.00	No
WI90	38	x	-0.048	0.50	No
		x	-0.048	7.50	No
	39	x	-0.053	0.50	No
		x	-0.053	7.50	No
		x	-0.018	5.50	No
		x	-0.012	1.50	No
	41	x	-0.022	0.50	No
		x	-0.022	4.50	No
		x	-0.004	4.00	No
WI120	38	3	0.052	0.50	No
		3	0.052	7.50	No
	39	3	0.058	0.50	No
		3	0.058	7.50	No
		3	0.022	5.50	No
		3	0.015	1.50	No
	41	3	0.024	0.50	No
		3	0.024	4.50	No
		3	0.005	4.00	No
WI150	38	3	0.061	0.50	No
		3	0.061	7.50	No
	39	3	0.068	0.50	No
		3	0.068	7.50	No
		3	0.031	5.50	No
		3	0.02	1.50	No
	41	3	0.03	0.50	No
		3	0.03	4.50	No
		3	0.007	4.00	No
WL0	38	z	-0.018	0.50	No
		z	-0.018	7.50	No
	39	z	-0.021	0.50	No
		z	-0.021	7.50	No
		z	-0.009	5.50	No
		z	-0.006	1.50	No
	41	z	-0.009	0.50	No
		z	-0.009	4.50	No
		z	-0.002	4.00	No
WL30	38	2	-0.017	0.50	No
		2	-0.017	7.50	No
	39	2	-0.02	0.50	No
		2	-0.02	7.50	No
		2	-0.008	5.50	No
		2	-0.005	1.50	No
	41	2	-0.008	0.50	No
		2	-0.008	4.50	No
		2	-0.001	4.00	No
WL60	38	2	-0.014	0.50	No

		2	-0.014	7.50	No
	39	2	-0.016	0.50	No
		2	-0.016	7.50	No
		2	-0.005	5.50	No
		2	-0.003	1.50	No
	41	2	-0.006	0.50	No
		2	-0.006	4.50	No
		2	-0.001	4.00	No
WL90	38	x	-0.013	0.50	No
		x	-0.013	7.50	No
	39	x	-0.014	0.50	No
		x	-0.014	7.50	No
		x	-0.004	5.50	No
		x	-0.003	1.50	No
	41	x	-0.005	0.50	No
		x	-0.005	4.50	No
		x	-0.001	4.00	No
WL120	38	3	0.014	0.50	No
		3	0.014	7.50	No
	39	3	0.016	0.50	No
		3	0.016	7.50	No
		3	0.005	5.50	No
		3	0.003	1.50	No
	41	3	0.006	0.50	No
		3	0.006	4.50	No
		3	0.001	4.00	No
WL150	38	3	0.017	0.50	No
		3	0.017	7.50	No
	39	3	0.02	0.50	No
		3	0.02	7.50	No
		3	0.008	5.50	No
		3	0.005	1.50	No
	41	3	0.008	0.50	No
		3	0.008	4.50	No
		3	0.001	4.00	No
LL1	7	y	-0.25	100.00	Yes
LL2	7	y	-0.25	50.00	Yes
LL3	7	y	-0.25	0.00	Yes
LLa1	38	y	-0.25	50.00	Yes
LLa2	39	y	-0.25	50.00	Yes
LLa3	41	y	-0.25	50.00	Yes

Self weight multipliers for load conditions

Condition	Description	Self weight multiplier			
		Comb.	MultX	MultY	MultZ
D	Dead Load	No	0.00	-1.00	0.00
Wo	Wind Load (NO ICE)	No	0.00	0.00	0.00
W30	WL 30deg	No	0.00	0.00	0.00
W60	WL 60deg	No	0.00	0.00	0.00
W90	WL 90deg	No	0.00	0.00	0.00
W120	WL 120deg	No	0.00	0.00	0.00
W150	WL 150deg	No	0.00	0.00	0.00
Di	Ice Load	No	0.00	0.00	0.00
WIO	WL ICE 0deg	No	0.00	0.00	0.00

WI30	WL ICE 30deg	No	0.00	0.00	0.00
WI60	WL ICE 60deg	No	0.00	0.00	0.00
WI90	WL ICE 90deg	No	0.00	0.00	0.00
WI120	WL ICE 120deg	No	0.00	0.00	0.00
WI150	WL ICE 150deg	No	0.00	0.00	0.00
WL0	WL 30 mph 0deg	No	0.00	0.00	0.00
WL30	WL 30 mph 30deg	No	0.00	0.00	0.00
WL60	WL 30 mph 60deg	No	0.00	0.00	0.00
WL90	WL 30 mph 90deg	No	0.00	0.00	0.00
WL120	WL 30 mph 120deg	No	0.00	0.00	0.00
WL150	WL 30 mph 150deg	No	0.00	0.00	0.00
LL1	250 lb Live Load on Left End	No	0.00	0.00	0.00
LL2	250 lb Live Load on Center	No	0.00	0.00	0.00
LL3	250 lb Live Load on Right End	No	0.00	0.00	0.00
LLa1	250 lb Live Load on Antenna 1	No	0.00	0.00	0.00
LLa2	250 lb Live Load on Antenna 2	No	0.00	0.00	0.00
LLa3	250 lb Live Load on Antenna 3	No	0.00	0.00	0.00

Earthquake (Dynamic analysis only)

Condition	a/g	Ang. [Deg]	Damp. [%]
D	0.00	0.00	0.00
Wo	0.00	0.00	0.00
W30	0.00	0.00	0.00
W60	0.00	0.00	0.00
W90	0.00	0.00	0.00
W120	0.00	0.00	0.00
W150	0.00	0.00	0.00
Di	0.00	0.00	0.00
WI0	0.00	0.00	0.00
WI30	0.00	0.00	0.00
WI60	0.00	0.00	0.00
WI90	0.00	0.00	0.00
WI120	0.00	0.00	0.00
WI150	0.00	0.00	0.00
WL0	0.00	0.00	0.00
WL30	0.00	0.00	0.00
WL60	0.00	0.00	0.00
WL90	0.00	0.00	0.00
WL120	0.00	0.00	0.00
WL150	0.00	0.00	0.00
LL1	0.00	0.00	0.00
LL2	0.00	0.00	0.00
LL3	0.00	0.00	0.00
LLa1	0.00	0.00	0.00
LLa2	0.00	0.00	0.00
LLa3	0.00	0.00	0.00

Current Date: 11/9/2018 3:33 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2167\LTE 2C-3C-4C\CT2167 (LTE 2C-3C-4C).etx\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+1.6Wo
LC2=1.2D+1.6W30
LC3=1.2D+1.6W60
LC4=1.2D+1.6W90
LC5=1.2D+1.6W120
LC6=1.2D+1.6W150
LC7=1.2D-1.6Wo
LC8=1.2D-1.6W30
LC9=1.2D-1.6W60
LC10=1.2D-1.6W90
LC11=1.2D-1.6W120
LC12=1.2D-1.6W150
LC13=0.9D+1.6Wo
LC14=0.9D+1.6W30
LC15=0.9D+1.6W60
LC16=0.9D+1.6W90
LC17=0.9D+1.6W120
LC18=0.9D+1.6W150
LC19=0.9D-1.6Wo
LC20=0.9D-1.6W30
LC21=0.9D-1.6W60
LC22=0.9D-1.6W90
LC23=0.9D-1.6W120
LC24=0.9D-1.6W150
LC25=1.2D+Di+W10
LC26=1.2D+Di+W130
LC27=1.2D+Di+W160
LC28=1.2D+Di+W190
LC29=1.2D+Di+W120
LC30=1.2D+Di+W150
LC31=1.2D+Di-W10
LC32=1.2D+Di-W130
LC33=1.2D+Di-W160
LC34=1.2D+Di-W190
LC35=1.2D+Di-W120
LC36=1.2D+Di-W150
LC37=0.9D
LC38=1.2D+1.6LL1
LC39=1.2D+1.6LL2
LC40=1.2D+1.6LL3
LC41=1.2D+W10+LLa1
LC42=1.2D+W130+LLa1
LC43=1.2D+W160+LLa1
LC44=1.2D+W190+LLa1
LC45=1.2D+W120+LLa1
LC46=1.2D+W150+LLa1
LC47=1.2D-W10+LLa1
LC48=1.2D-W130+LLa1
LC49=1.2D-W160+LLa1
LC50=1.2D-W190+LLa1
LC51=1.2D-W120+LLa1
LC52=1.2D-W150+LLa1

LC53=1.2D+WL0+LLa2
 LC54=1.2D+WL30+LLa2
 LC55=1.2D+WL60+LLa2
 LC56=1.2D+WL90+LLa2
 LC57=1.2D+WL120+LLa2
 LC58=1.2D+WL150+LLa2
 LC59=1.2D-WL0+LLa2
 LC60=1.2D-WL30+LLa2
 LC61=1.2D-WL60+LLa2
 LC62=1.2D-WL90+LLa2
 LC63=1.2D-WL120+LLa2
 LC64=1.2D-WL150+LLa2
 LC65=1.2D+WL0+LLa3
 LC66=1.2D+WL30+LLa3
 LC67=1.2D+WL60+LLa3
 LC68=1.2D+WL90+LLa3
 LC69=1.2D+WL120+LLa3
 LC70=1.2D+WL150+LLa3
 LC71=1.2D-WL0+LLa3
 LC72=1.2D-WL30+LLa3
 LC73=1.2D-WL60+LLa3
 LC74=1.2D-WL90+LLa3
 LC75=1.2D-WL120+LLa3
 LC76=1.2D-WL150+LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 1-1_4x0.140	23	LC30 at 0.00%	0.07	OK	Eq. Sec. D2
		24	LC30 at 100.00%	0.15	OK	Eq. H1-1b
		25	LC34 at 100.00%	0.20	OK	Eq. H1-1b
		26	LC5 at 100.00%	0.16	OK	Eq. H1-1b
		28	LC11 at 100.00%	0.22	OK	Eq. H1-1b
		29	LC5 at 100.00%	0.45	OK	Eq. H1-1b
		30	LC30 at 0.00%	0.14	OK	Sec. E1
		31	LC38 at 0.00%	0.13	OK	Sec. E1
	PIPE 2-1_2x0.203	1	LC6 at 18.75%	0.53	OK	Eq. H1-1b
		7	LC12 at 18.75%	0.91	OK	Eq. H1-1b
		37	LC11 at 100.00%	0.30	OK	Eq. H1-1b
	PIPE 2x0.154	2	LC5 at 12.50%	0.53	OK	Eq. H3-6
		3	LC5 at 0.00%	0.40	OK	Eq. H1-1b
		8	LC12 at 0.00%	0.67	OK	Eq. H1-1b
		9	LC5 at 0.00%	0.43	OK	Eq. H1-1b
		22	LC38 at 100.00%	0.24	OK	Eq. H1-1b
		38	LC1 at 43.75%	1.20	N.G.	Eq. H1-1b
		39	LC1 at 43.75%	1.40	N.G.	Eq. H1-1b
		40	LC6 at 72.92%	0.24	OK	Eq. H1-1b
		41	LC1 at 31.25%	0.39	OK	Eq. H1-1b
		50	LC11 at 46.88%	1.45	N.G.	Eq. H1-1b

Current Date: 11/9/2018 3:33 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2167\LTE 2C-3C-4C\CT2167 (LTE 2C-3C-4C).et3\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	7.50	0.00	0.00	0
3	-7.50	0.00	0.00	0
4	0.00	0.00	-4.75	0
8	4.70	0.00	0.00	0
9	-4.70	0.00	0.00	0
14	7.50	3.42	0.00	0
15	-7.50	3.42	0.00	0
16	0.00	3.42	-4.75	0
20	4.70	3.42	0.00	0
21	-4.70	3.42	0.00	0
51	-4.0617	3.42	-0.6451	0
80	-2.379	3.42	-2.3457	0
109	-0.6963	3.42	-4.0463	0
110	-4.0617	0.00	-0.6451	0
111	-2.379	0.00	-2.3457	0
112	-0.6963	0.00	-4.0463	0
124	0.6963	3.42	-4.0463	0
153	2.379	3.42	-2.3457	0
182	4.0617	3.42	-0.6451	0
183	4.0617	0.00	-0.6451	0
184	2.379	0.00	-2.3457	0

185	0.6963	0.00	-4.0463	0
193	5.00	1.71	-4.00	0
194	4.0617	1.71	-0.6451	0
199	7.00	-1.00	0.20	0
200	7.00	7.00	0.20	0
205	2.00	-1.00	0.20	0
206	2.00	7.00	0.20	0
211	-6.25	-2.00	0.20	0
212	-6.25	6.00	0.20	0
217	-2.25	-2.00	0.20	0
218	-2.25	6.00	0.20	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
4	1	1	1	1	1	1
16	1	1	1	1	1	1
193	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	2	3		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
2	8	4		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
3	4	9		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	14	15		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
8	20	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	16	21		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
22	51	110		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
23	80	111		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
24	109	112		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
25	124	185		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
26	153	184		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
28	185	153		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
29	184	182		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
30	112	80		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
31	111	51		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
37	193	194		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
38	200	199		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
39	206	205		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
40	218	217		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
41	212	211		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
50	182	183		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00

Orientation of local axes

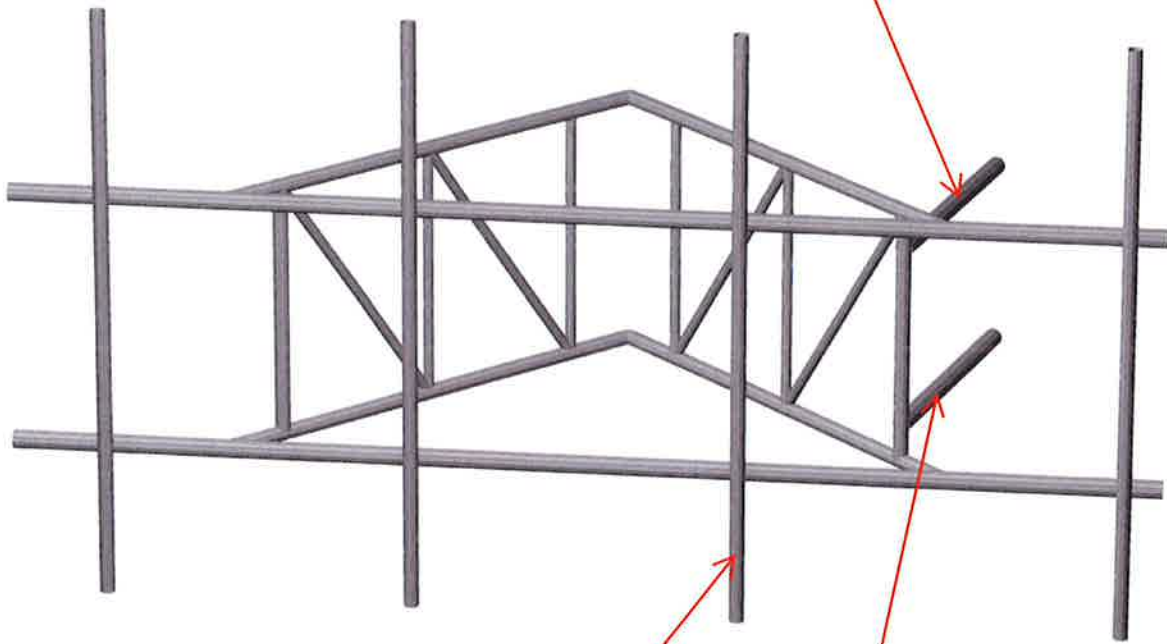
Member	Rotation [Deg]	Axes23	NX	NY	NZ
38	45.00	0	0.00	0.00	0.00
39	45.00	0	0.00	0.00	0.00
40	45.00	0	0.00	0.00	0.00
41	45.00	0	0.00	0.00	0.00
50	45.00	0	0.00	0.00	0.00



HUDSON
Design Group LLC

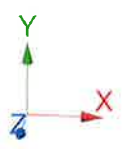
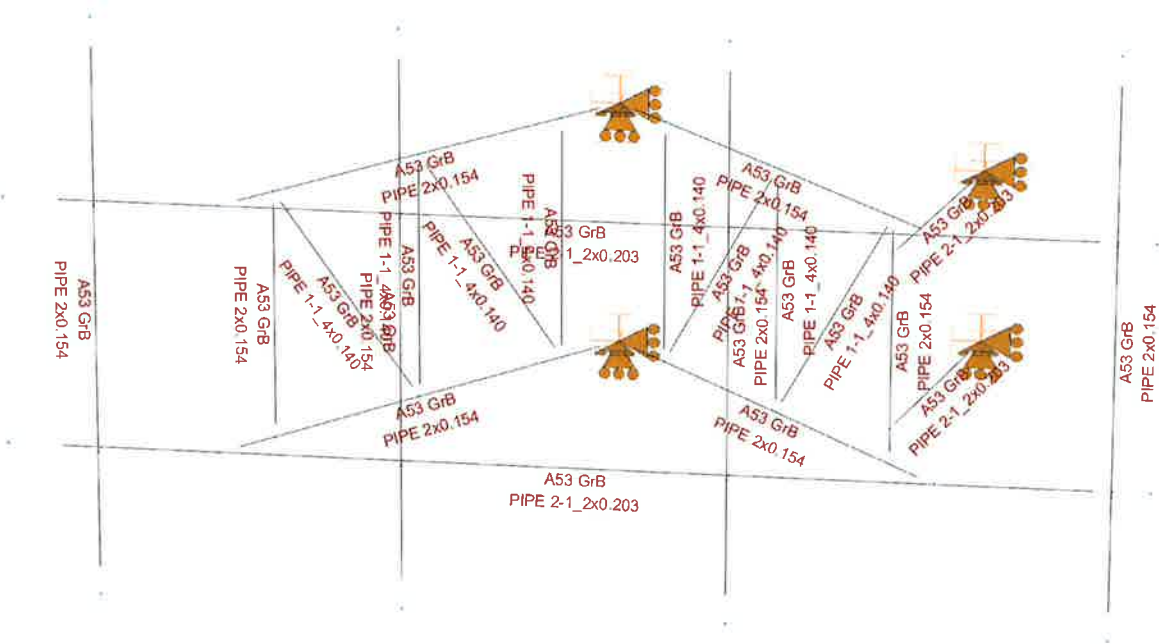
**Mount Calculations
(Proposed Conditions)**

INSTALL NEW 2-1/2" STD. (2.88" O.D.) PIPE BRACE, SECURE TO THE EXISTING MOUNT AND TOWER (TYP. OF 1 PER SECTOR, TOTAL OF 3).



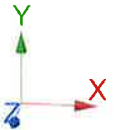
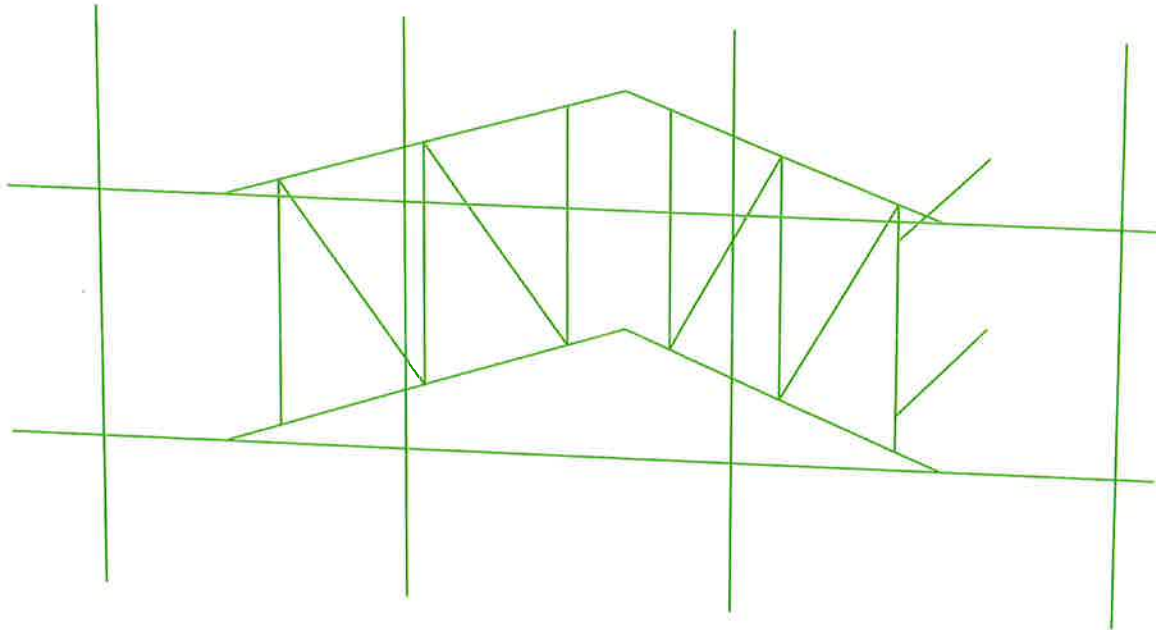
CENTER THE NEW AND EXISTING ANTENNAS ON THE EXISTING MOUNT (TYP. OF 3 PER SECTOR, TOTAL OF 9).

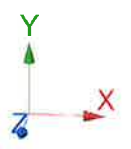
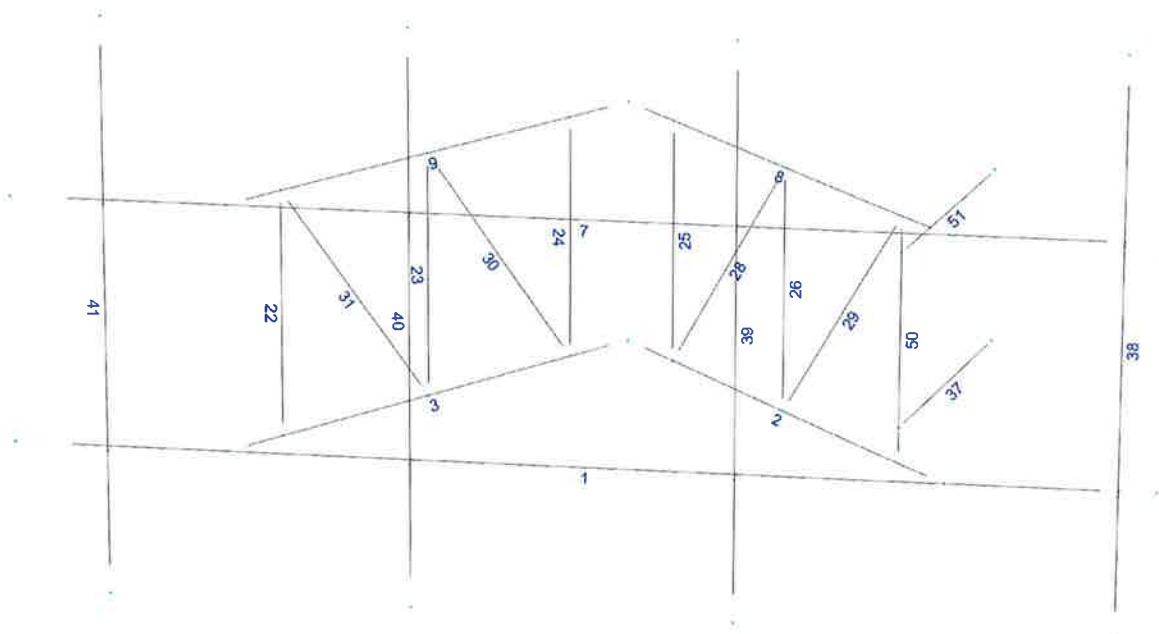
RELOCATE THE EXISTING 2-1/2" STD. (2.88" O.D.) PIPE BRACE, SECURE TO EXISTING MOUNT AND TOWER (TYP. OF 1 PER SECTOR, TOTAL OF 3).



Design status

- Not designed
- Error on design
- Design O.K.
- With warnings





Current Date: 11/9/2018 3:34 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2167\LTE 2C-3C-4C\CT2167 (LTE 2C-3C-4C) (MOD).etz\

Steel Code Check

Report: Summary - Group by member

Load conditions to be included in design :

LC1=1.2D+1.6Wo
LC2=1.2D+1.6W30
LC3=1.2D+1.6W60
LC4=1.2D+1.6W90
LC5=1.2D+1.6W120
LC6=1.2D+1.6W150
LC7=1.2D-1.6Wo
LC8=1.2D-1.6W30
LC9=1.2D-1.6W60
LC10=1.2D-1.6W90
LC11=1.2D-1.6W120
LC12=1.2D-1.6W150
LC13=0.9D+1.6Wo
LC14=0.9D+1.6W30
LC15=0.9D+1.6W60
LC16=0.9D+1.6W90
LC17=0.9D+1.6W120
LC18=0.9D+1.6W150
LC19=0.9D-1.6Wo
LC20=0.9D-1.6W30
LC21=0.9D-1.6W60
LC22=0.9D-1.6W90
LC23=0.9D-1.6W120
LC24=0.9D-1.6W150
LC25=1.2D+Di+W10
LC26=1.2D+Di+W130
LC27=1.2D+Di+W160
LC28=1.2D+Di+W190
LC29=1.2D+Di+W120
LC30=1.2D+Di+W150
LC31=1.2D+Di-W10
LC32=1.2D+Di-W130
LC33=1.2D+Di-W160
LC34=1.2D+Di-W190
LC35=1.2D+Di-W120
LC36=1.2D+Di-W150
LC37=0.9D
LC38=1.2D+1.6LL1
LC39=1.2D+1.6LL2
LC40=1.2D+1.6LL3
LC41=1.2D+WL0+LLa1
LC42=1.2D+WL30+LLa1
LC43=1.2D+WL60+LLa1
LC44=1.2D+WL90+LLa1
LC45=1.2D+WL120+LLa1
LC46=1.2D+WL150+LLa1
LC47=1.2D-WL0+LLa1
LC48=1.2D-WL30+LLa1
LC49=1.2D-WL60+LLa1
LC50=1.2D-WL90+LLa1
LC51=1.2D-WL120+LLa1
LC52=1.2D-WL150+LLa1

LC53=1.2D+WL0+LLa2
 LC54=1.2D+WL30+LLa2
 LC55=1.2D+WL60+LLa2
 LC56=1.2D+WL90+LLa2
 LC57=1.2D+WL120+LLa2
 LC58=1.2D+WL150+LLa2
 LC59=1.2D-WL0+LLa2
 LC60=1.2D-WL30+LLa2
 LC61=1.2D-WL60+LLa2
 LC62=1.2D-WL90+LLa2
 LC63=1.2D-WL120+LLa2
 LC64=1.2D-WL150+LLa2
 LC65=1.2D+WL0+LLa3
 LC66=1.2D+WL30+LLa3
 LC67=1.2D+WL60+LLa3
 LC68=1.2D+WL90+LLa3
 LC69=1.2D+WL120+LLa3
 LC70=1.2D+WL150+LLa3
 LC71=1.2D-WL0+LLa3
 LC72=1.2D-WL30+LLa3
 LC73=1.2D-WL60+LLa3
 LC74=1.2D-WL90+LLa3
 LC75=1.2D-WL120+LLa3
 LC76=1.2D-WL150+LLa3

Description	Section	Member	Ctrl Eq.	Ratio	Status	Reference
	PIPE 1-1_4x0.140	23	LC30 at 0.00%	0.07	OK	Eq. Sec. D2
		24	LC28 at 100.00%	0.14	OK	Eq. H1-1b
		25	LC32 at 100.00%	0.19	OK	Eq. H1-1b
		26	LC30 at 0.00%	0.09	OK	Eq. Sec. D2
		28	LC26 at 0.00%	0.18	OK	Sec. E1
		29	LC6 at 100.00%	0.24	OK	Eq. H1-1b
		30	LC26 at 0.00%	0.14	OK	Sec. E1
		31	LC38 at 0.00%	0.13	OK	Sec. E1
	PIPE 2-1_2x0.203	1	LC7 at 18.75%	0.60	OK	Eq. H1-1b
		7	LC12 at 18.75%	0.66	OK	Eq. H1-1b
		37	LC5 at 100.00%	0.28	OK	Eq. H1-1b
		51	LC11 at 100.00%	0.32	OK	Eq. H1-1b
	PIPE 2x0.154	2	LC30 at 100.00%	0.48	OK	Eq. H1-1b
		3	LC26 at 0.00%	0.34	OK	Eq. H1-1b
		8	LC5 at 12.50%	0.52	OK	Eq. H1-1b
		9	LC36 at 0.00%	0.30	OK	Eq. H1-1b
		22	LC38 at 100.00%	0.24	OK	Eq. H1-1b
		38	LC1 at 31.25%	0.80	OK	Eq. H1-1b
		39	LC1 at 31.25%	0.94	OK	Eq. H1-1b
		40	LC7 at 33.33%	0.19	OK	Eq. H1-1b
		41	LC1 at 31.25%	0.39	OK	Eq. H1-1b
		50	LC5 at 14.58%	0.64	OK	Eq. H3-6

Current Date: 11/9/2018 3:34 PM

Units system: English

File name: W:\STRUCTURAL DEPARTMENT\ANALYSIS SOFTWARE\RAM Elements\RAM Projects\AT&T\CT\CT2167\LTE 2C-3C-4C\CT2167 (LTE 2C-3C-4C) (MOD).etx\

Geometry data

GLOSSARY

Cb22, Cb33	: Moment gradient coefficients
Cm22, Cm33	: Coefficients applied to bending term in interaction formula
d0	: Tapered member section depth at J end of member
DJX	: Rigid end offset distance measured from J node in axis X
DJY	: Rigid end offset distance measured from J node in axis Y
DJZ	: Rigid end offset distance measured from J node in axis Z
DKX	: Rigid end offset distance measured from K node in axis X
DKY	: Rigid end offset distance measured from K node in axis Y
DKZ	: Rigid end offset distance measured from K node in axis Z
dL	: Tapered member section depth at K end of member
Ig factor	: Inertia reduction factor (Effective Inertia/Gross Inertia) for reinforced concrete members
K22	: Effective length factor about axis 2
K33	: Effective length factor about axis 3
L22	: Member length for calculation of axial capacity
L33	: Member length for calculation of axial capacity
LB pos	: Lateral unbraced length of the compression flange in the positive side of local axis 2
LB neg	: Lateral unbraced length of the compression flange in the negative side of local axis 2
RX	: Rotation about X
RY	: Rotation about Y
RZ	: Rotation about Z
TO	: 1 = Tension only member 0 = Normal member
TX	: Translation in X
TY	: Translation in Y
TZ	: Translation in Z

Nodes

Node	X [ft]	Y [ft]	Z [ft]	Rigid Floor
2	7.50	0.00	0.00	0
3	-7.50	0.00	0.00	0
4	0.00	0.00	-4.75	0
8	4.70	0.00	0.00	0
9	-4.70	0.00	0.00	0
14	7.50	3.42	0.00	0
15	-7.50	3.42	0.00	0
16	0.00	3.42	-4.75	0
20	4.70	3.42	0.00	0
21	-4.70	3.42	0.00	0
51	-4.0617	3.42	-0.6451	0
80	-2.379	3.42	-2.3457	0
109	-0.6963	3.42	-4.0463	0
110	-4.0617	0.00	-0.6451	0
111	-2.379	0.00	-2.3457	0
112	-0.6963	0.00	-4.0463	0
124	0.6963	3.42	-4.0463	0
153	2.379	3.42	-2.3457	0
182	4.0617	3.42	-0.6451	0
183	4.0617	0.00	-0.6451	0
184	2.379	0.00	-2.3457	0

185	0.6963	0.00	-4.0463	0
193	5.00	0.50	-4.00	0
194	4.0617	0.50	-0.6451	0
199	7.00	-2.00	0.20	0
200	7.00	6.00	0.20	0
205	2.00	-2.00	0.20	0
206	2.00	6.00	0.20	0
211	-6.25	-2.00	0.20	0
212	-6.25	6.00	0.20	0
217	-2.25	-2.00	0.20	0
218	-2.25	6.00	0.20	0
219	5.00	2.92	-4.00	0
220	4.0617	2.92	-0.6451	0

Restraints

Node	TX	TY	TZ	RX	RY	RZ
4	1	1	1	1	1	1
16	1	1	1	1	1	1
193	1	1	1	1	1	1
219	1	1	1	1	1	1

Members

Member	NJ	NK	Description	Section	Material	d0 [in]	dL [in]	Ig factor
1	2	3		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
2	8	4		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
3	4	9		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
7	14	15		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
8	20	16		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
9	16	21		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
22	51	110		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
23	80	111		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
24	109	112		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
25	124	185		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
26	153	184		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
28	185	153		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
29	184	182		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
30	112	80		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
31	111	51		PIPE 1-1_4x0.140	A53 GrB	0.00	0.00	0.00
37	193	194		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00
38	200	199		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
39	206	205		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
40	218	217		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
41	212	211		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
50	182	183		PIPE 2x0.154	A53 GrB	0.00	0.00	0.00
51	219	220		PIPE 2-1_2x0.203	A53 GrB	0.00	0.00	0.00

Orientation of local axes

Member	Rotation [Deg]	Axes23	NX	NY	NZ
38	45.00	0	0.00	0.00	0.00
39	45.00	0	0.00	0.00	0.00
40	45.00	0	0.00	0.00	0.00
41	45.00	0	0.00	0.00	0.00
50	45.00	0	0.00	0.00	0.00

STRUCTURAL ANALYSIS REPORT

For

CT2167

PAWCATUCK – BOOM BRIDGE ROAD

273 BOOM BRIDGE ROAD
NORTH STONINGTON, CT 06359

Antennas Mounted to the Tower



Prepared for:



Dated: November 14, 2018

Prepared by:



HUDSON
Design Group LLC

45 Beechwood Drive
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com



Kai Wang 11/14/2018



HUDSON
Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 180' guyed tower supporting the proposed AT&T antennas located at elevation 180' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

Record drawings of the existing tower were not available for our use. The previous structural analysis report prepared by Maser Consulting, dated June 6, 2018, was available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower and foundation **are in conformance** with the ANSI/TIA-222-G Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **76.3%** - (Legs at Tower Section T8 from EL.20' to EL.40' Controlling).



APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
<i>AT&T</i>	(3) Powerwave 7770 Antennas	180'	T - Frame
<i>AT&T</i>	(2) P65-17-XLH-RR Antennas	180'	T - Frame
<i>AT&T</i>	(1) SBNH-1D6565C Antenna	180'	T - Frame
<i>AT&T</i>	(3) DTMABP7819VG12A	180'	T - Frame
<i>AT&T</i>	(3) RRUS-11	180'	T - Frame
<i>AT&T</i>	(1) DC6-48-60-18-8F	180'	Tower Leg
<i>AT&T</i>	(3) TPA-65R-LCUUUU-H8 Antennas	180'	T - Frame
<i>AT&T</i>	(6) DBC0061F1V51-2	180'	T - Frame
<i>AT&T</i>	(3) B25 4415	180'	T - Frame
	(3) NNVV-65B-R4 Antennas	152'	T - Frame
	(3) APXVTM14 Antennas	152'	T - Frame
	(3) TD-RRH8x20-25	152'	T - Frame
	(6) RRH-800	152'	T - Frame
	(3) RRH-1900	152'	T - Frame
	(3) BXA-70063 Antennas	136'	T - Frame
	(3) BXA-171085 Antennas	136'	T - Frame
	(6) LPA-80080 Antennas	136'	T - Frame
	(3) FD9R6004	136'	T - Frame
	(3) AIR 21 B4A B2P Antennas	120'	Side Mount Standoff
	(3) KRC118 057/1 Antennas	120'	Side Mount Standoff
	(3) RRUS-11	120'	Side Mount Standoff
	(3) TMA	120'	Side Mount Standoff
	GPS	98'	Side Mount Standoff

**Proposed AT&T Appurtenances shown in Bold.*

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
<i>AT&T</i>	(12) 1 5/8" Cables	180'	Face of Tower
<i>AT&T</i>	(2) DC Power Cables	180'	Face of Tower
<i>AT&T</i>	(1) Fiber Cable	180'	Face of Tower

**Proposed AT&T Coax Cables shown in Bold.*



ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Notes/Comments
Legs	76.3 %	20 – 40	PASS	Controlling
Diagonals	61.7 %	40 – 60	PASS	
Horizontals	11.2 %	0 – 5	PASS	
Top Girts	12.2 %	20 – 40	PASS	
Bottom Girt	12.9 %	40 – 60	PASS	
Guy	72.1 %	132.2	PASS	
Pull Off	15.6 %	162.5	PASS	
Torque Arm	37.7 %	162.5	PASS	

FOUNDATION ANALYSIS RESULTS SUMMARY:

Tower Mast	Previous Design Reactions	Analysis Reactions	Pass/Fail	Comments
AXIAL	222.8 k	171.0 k	PASS	
SHEAR	3.6 k	1.8 k	PASS	

Inner Guy Anchor	Previous Design Reactions	Analysis Reactions	Pass/Fail	Comments
UPLIFT	27.8 k	17.0 k	PASS	
SHEAR	38.6 k	23.7 k	PASS	

Middle Guy Anchor	Previous Design Reactions	Analysis Reactions	Pass/Fail	Comments
UPLIFT	42.8 k	29.2 k	PASS	
SHEAR	41.2 k	27.9 k	PASS	

Outer Guy Anchor	Previous Design Reactions	Analysis Reactions	Pass/Fail	Comments
UPLIFT	19.7 k	12.9 k	PASS	
SHEAR	20.7 k	13.2 k	PASS	



HUDSON
Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures
2. Connecticut State Building Code
County: New London
City/Town: North Stonington
Wind Load: 105 mph (3 second gust)
Structural Class: II
Exposure Category: C
Topographic Category: 1
Crest Height: 0 ft.
Ice Thickness: 0.75 inch
3. Approximate height above grade to proposed antennas: 180'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The tower dimensions, member sizes and material strength are as indicated in the previous structural analysis report prepared by Maser Consulting, dated June 6, 2018.
2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Maser Consulting, dated June 6, 2018. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.
3. The tower and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.
5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, diplexers and RRHs be mounted on the existing T-frame supported by the tower.

Reference HDG's Latest Construction Drawings for all component and connection requirements (attached).



HUDSON
Design Group LLC

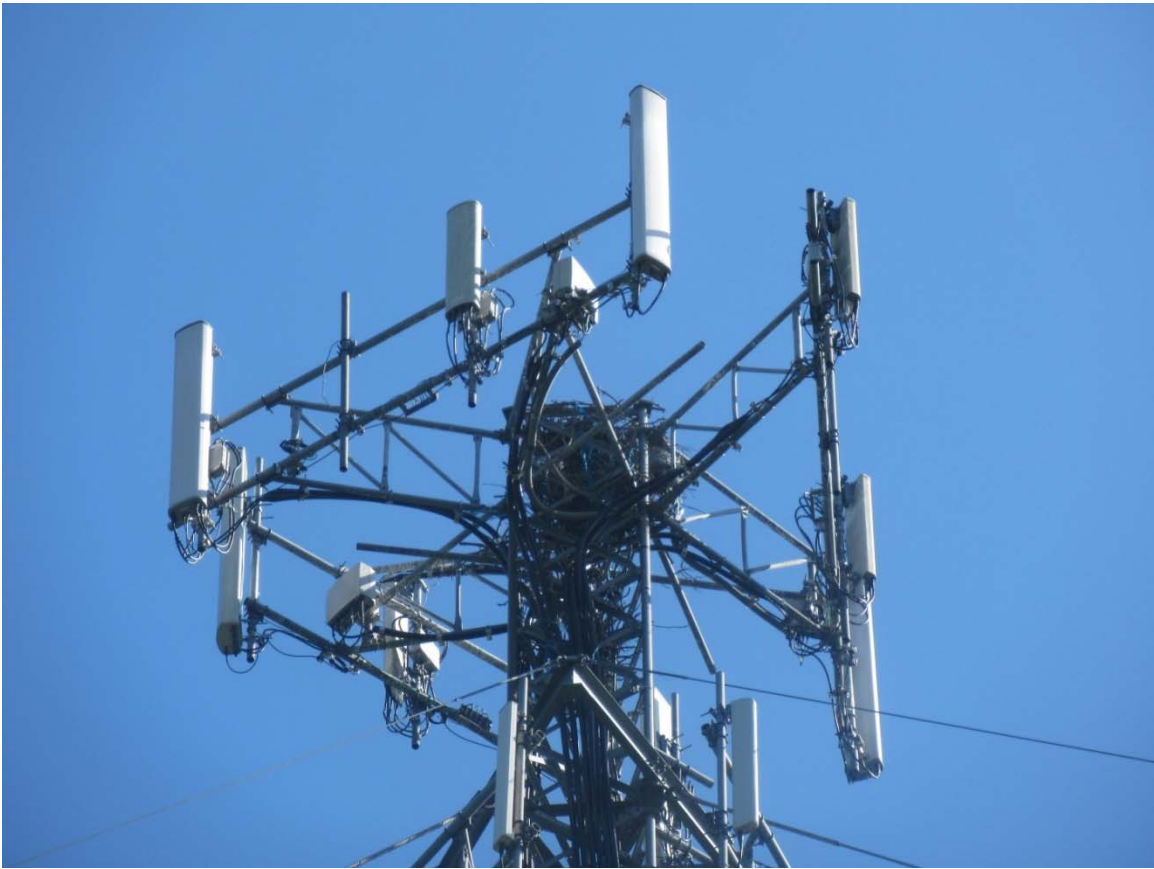


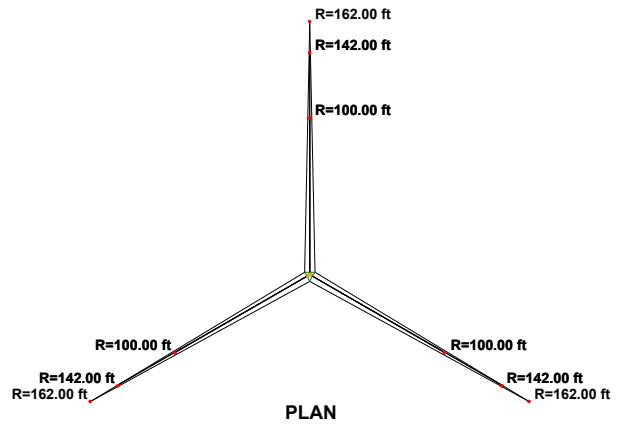
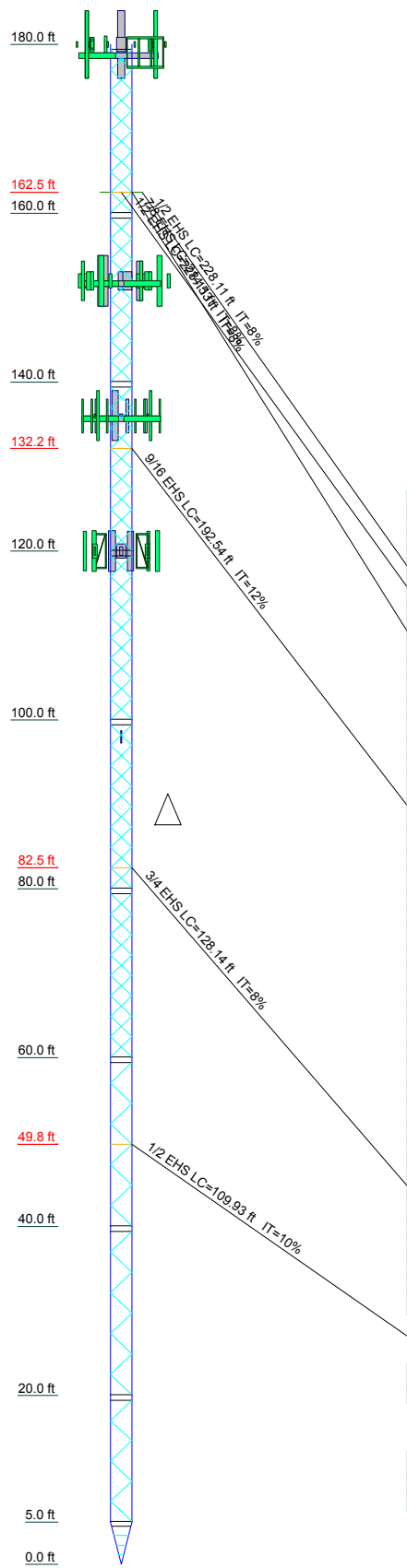
Photo 1: Photo illustrating the Tower with Appurtenances shown.



HUDSON
Design Group LLC

CALCULATIONS

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs	ROHN 2.5 X-STR									
Leg Grade	A572-50									
Diagonals	ROHN TS1.5x11 ga									
Diagonal Grade	A36									
Top Girts	ROHN TS1.5x11 ga									
Bottom Girts	ROHN TS1.5x11 ga									
Horizontals	N.A.									
Top Guy Pull-Offs	2L2x2x1/4x3/8									
Face Width (ft)	64 @ 2.40885									
# Panels @ (ft)	6 @ 2.37847									
Weight (lb)	7628.5									
	1696.7	851.9	710.3	851.9	723.6	851.9	620.6	568.2	517.3	276.1
	180.0 ft	160.0 ft	140.0 ft	120.0 ft	100.0 ft	80.0 ft	60.0 ft	40.0 ft	20.0 ft	0.0 ft



DESIGNED APPURTENANCE LOADING

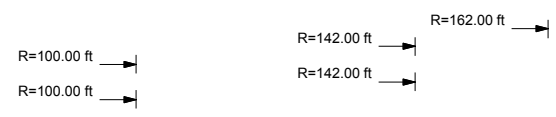
TYPE	ELEVATION	TYPE	ELEVATION
Powerwave 7770 w/mount pipe	180	APXVTM14 w/mount pipe	152
Powerwave 7770 w/mount pipe	180	TD-RRH8x20-25	152
Powerwave 7770 w/mount pipe	180	(2) RRH-800	152
Powerwave P65-17-XLH-RR w/mount pipe	180	PIROD 15' T-Frame	136
Powerwave P65-17-XLH-RR w/mount pipe	180	PIROD 15' T-Frame	136
SBNH-1D6565C w/mount pipe	180	PIROD 15' T-Frame	136
TMA DTMAPB7819VG12A	180	BXA-70063-6CF-EDIN w/mount pipe	136
TMA DTMAPB7819VG12A	180	BXA-171085-8BF-EDIN w/mount pipe	136
TMA DTMAPB7819VG12A	180	LPA-80080-4CF w/mount pipe	136
Ericsson RRUS-11	180	LPA-80080-4CF w/mount pipe	136
Ericsson RRUS-11	180	FD9R6004 Diplexer	136
Ericsson RRUS-11	180	BXA-70063-6CF-EDIN w/mount pipe	136
DC6-48-60-18-8F	180	BXA-171085-8BF-EDIN w/mount pipe	136
TPA-65R-LCUUUU-H8 w/mount pipe (ATI - Proposed)	180	LPA-80080-4CF w/mount pipe	136
TPA-65R-LCUUUU-H8 w/mount pipe	180	LPA-80080-4CF w/mount pipe	136
TPA-65R-LCUUUU-H8 w/mount pipe	180	FD9R6004 Diplexer	136
(2) DBC0061F1V51-2	180	BXA-70063-6CF-EDIN w/mount pipe	136
(2) DBC0061F1V51-2	180	BXA-171085-8BF-EDIN w/mount pipe	136
(2) DBC0061F1V51-2	180	LPA-80080-4CF w/mount pipe	136
(2) DBC0061F1V51-2	180	LPA-80080-4CF w/mount pipe	136
B25 4415	180	FD9R6004 Diplexer	136
B25 4415	180	Pirot 4' Side Mount Standoff (1)	120
B25 4415	180	Pirot 4' Side Mount Standoff (1)	120
B25 4415	180	Pirot 4' Side Mount Standoff (1)	120
PIROD 15' Rotatable Platform (Lattice)	179	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	120
PIROD 15' T-Frame	179	KRC118 057/1 antenna w/mount pipe	120
PIROD 15' T-Frame (ATI - Existing)	179	Ericsson RRUS-11	120
PIROD 15' T-Frame	152	Gen. TMA	120
PIROD 15' T-Frame	152	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	120
PIROD 15' T-Frame	152	Gen. TMA	120
NNVV-65B-R4 w/ Mount Pipe	152	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	120
APXVTM14 w/mount pipe	152	KRC118 057/1 antenna w/mount pipe	120
TD-RRH8x20-25	152	Ericsson RRUS-11	120
(2) RRH-800	152	Gen. TMA	120
RRH-1900	152	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	120
NNVV-65B-R4 w/ Mount Pipe	152	Gen. TMA	120
APXVTM14 w/mount pipe	152	KRC118 057/1 antenna w/mount pipe	120
TD-RRH8x20-25	152	Ericsson RRUS-11	120
(2) RRH-800	152	Gen. TMA	120
RRH-1900	152	1' Side Mount Standoff	98
NNVV-65B-R4 w/ Mount Pipe	152	GPS	98

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L4x4x1/4	B	4 @ 1.125

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A53-B-42	42 ksi	63 ksi
A36	36 ksi	58 ksi			



Hudson Design Group LLC Job: **CT2167 North Stonington, CT**
 45 Beechwood Drive
 North Andover, MA 01845
 Phone: (978) 557-5553
 FAX: (978) 336-5586

Project: **180 ft Guyed Tower**
 Client: AT&T
 Code: TIA-222-G
 Path:

Drawn by: kw
 Date: 11/14/18
 App'd:
 Scale: NTS
 Dwg No. E-1

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job CT2167 North Stonington, CT	Page 1 of 15
	Project 180 ft Guyed Tower	Date 09:24:26 11/14/18
	Client AT&T	Designed by kw

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 180.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 3.42 ft at the top and tapered at the base.

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

The following design criteria apply:

Tower is located in New London County, Connecticut.

Basic wind speed of 105 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Pressures are calculated at each section.

Safety factor used in guy 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.

Tower Section Geometry

Tower Section	Tower Elevation <i>ft</i>	Assembly Database	Description	Section Width <i>ft</i>	Number of Sections	Section Length <i>ft</i>
T1	180.00-160.00			3.42	1	20.00
T2	160.00-140.00			3.42	1	20.00
T3	140.00-120.00			3.42	1	20.00
T4	120.00-100.00			3.42	1	20.00
T5	100.00-80.00			3.42	1	20.00
T6	80.00-60.00			3.42	1	20.00
T7	60.00-40.00			3.42	1	20.00
T8	40.00-20.00			3.42	1	20.00
T9	20.00-5.00			3.42	1	15.00
T10	5.00-0.00			3.42	1	5.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation <i>ft</i>	Diagonal Spacing <i>ft</i>	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset <i>in</i>	Bottom Girt Offset <i>in</i>
T1	180.00-160.00	2.41	X Brace	No	No	7.3750	1.3750
T2	160.00-140.00	2.41	X Brace	No	No	7.3750	1.3750
T3	140.00-120.00	2.41	X Brace	No	No	7.3750	1.3750

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job CT2167 North Stonington, CT	Page 2 of 15
	Project 180 ft Guyed Tower	Date 09:24:26 11/14/18
	Client AT&T	Designed by kw

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T4	120.00-100.00	2.41	X Brace	No	No	7.3750	1.3750
T5	100.00-80.00	2.41	X Brace	No	No	7.3750	1.3750
T6	80.00-60.00	2.41	X Brace	No	No	7.3750	1.3750
T7	60.00-40.00	2.41	K Brace Right	No	No	7.3750	1.3750
T8	40.00-20.00	2.41	K Brace Right	No	No	7.3750	1.3750
T9	20.00-5.00	2.38	K Brace Right	No	No	7.3750	1.3750
T10	5.00-0.00	1.13	X Brace	No	Yes	6.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 180.00-160.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T2 160.00-140.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T3 140.00-120.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T4 120.00-100.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T5 100.00-80.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T6 80.00-60.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T7 60.00-40.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T8 40.00-20.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T9 20.00-5.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T10 5.00-0.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
ft						
T1 180.00-160.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Equal Angle	L2x2x1/4	A36 (36 ksi)
T2 160.00-140.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T3 140.00-120.00	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T4 120.00-100.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T5 100.00-80.00	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T6 80.00-60.00	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x11 ga	A53-B-42 (42 ksi)
T7 60.00-40.00	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	CT2167 North Stonington, CT	Page	3 of 15
	Project	180 ft Guyed Tower	Date	09:24:26 11/14/18
	Client	AT&T	Designed by	kw

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T8 40.00-20.00	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)
T9 20.00-5.00	Pipe	ROHN TS1.5x16 ga	A53-B-42 (42 ksi)	Equal Angle	L3x3x1/2	A36 (36 ksi)
T10 5.00-0.00	Equal Angle	L4x4x1/4	A36 (36 ksi)	Equal Angle	L4x4x1/4	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
T10 5.00-0.00	None	Solid Round		A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T10 5.00-0.00	Equal Angle	L4x4x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Guy Data

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %	
162.523	EHS	A	1/2	2152.00	8%	21000	0.517	227.97	162.00	0.0000	0.00	100%
		B	1/2	2152.00	8%	21000	0.517	227.97	162.00	0.0000	0.00	100%
		C	1/2	2152.00	8%	21000	0.517	227.97	162.00	0.0000	0.00	100%
132.159	EHS	A	9/16	4200.00	12%	21000	0.671	192.35	142.00	0.0000	0.00	100%
		B	9/16	4200.00	12%	21000	0.671	192.35	142.00	0.0000	0.00	100%
		C	9/16	4200.00	12%	21000	0.671	192.35	142.00	0.0000	0.00	100%
82.5234	EHS	A	3/4	4664.00	8%	19000	1.155	128.05	100.00	0.0000	0.00	100%
		B	3/4	4664.00	8%	19000	1.155	128.05	100.00	0.0000	0.00	100%
		C	3/4	4664.00	8%	19000	1.155	128.05	100.00	0.0000	0.00	100%
162.523	EHS	A	7/8	6376.00	8%	19000	1.581	214.38	142.00	0.0000	0.00	100%
		B	7/8	6376.00	8%	19000	1.581	214.38	142.00	0.0000	0.00	100%
		C	7/8	6376.00	8%	19000	1.581	214.38	142.00	0.0000	0.00	100%
49.75	EHS	A	1/2	2690.00	10%	21000	0.517	109.83	100.00	0.0000	0.00	100%
		B	1/2	2690.00	10%	21000	0.517	109.83	100.00	0.0000	0.00	100%
		C	1/2	2690.00	10%	21000	0.517	109.83	100.00	0.0000	0.00	100%

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job CT2167 North Stonington, CT	Page 4 of 15
	Project 180 ft Guyed Tower	Date 09:24:26 11/14/18
	Client AT&T	Designed by kw

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
162.523	Torque Arm	6.83	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
132.159	Corner						
82.5234	Corner						
162.523	Corner						
49.75	Corner						

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap	Pull-Off Grade	Pull-Off Type	Pull-Off Size
162.52	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
132.16	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	4x3/8
82.52	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Double Equal Angle	2L2x2x1/4x3/8
162.52	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Double Equal Angle	2L2x2x1/4x3/8
49.75	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	4x3/8

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	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)	A	No	No	Ar (CaAa)	152.00 - 7.00	0.0000	0.15	6	6	0.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	136.00 - 7.00	0.0000	0	12	6	0.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	136.00 - 7.00	0.0000	0.28	3	3	0.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	No	No	Ar (CaAa)	136.00 - 7.00	0.0000	0.28	3	3	0.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	A	No	No	Ar (CaAa)	120.00 - 7.00	0.0000	0.1	12	6	0.0000	1.9800		0.82
LDF4-50A (1/2 FOAM)	A	No	No	Ar (CaAa)	98.00 - 7.00	0.0000	0.4	1	1	0.0000	0.6300		0.15
LCF114-50J (1-1/4 FOAM)	A	No	No	Ar (CaAa)	177.00 - 7.00	0.0000	0.15	1	1	0.0000	1.5800		0.70
LDF6-50A (1-1/4 FOAM)	A	No	No	Ar (CaAa)	152.00 - 7.00	0.0000	0	4	4	0.0000	1.5500		0.66
***** 1 5/8 (AT&T - Existing)	C	No	No	Ar (CaAa)	180.00 - 7.00	0.0000	0.3	12	6	0.0000	1.9800		1.04
FB-L98B-002	A	No	No	Ar (CaAa)	180.00 -	2.0000	0.25	1	1	0.0000	0.4000		0.25

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job		CT2167 North Stonington, CT		Page		5 of 15	
	Project		180 ft Guyed Tower		Date		09:24:26 11/14/18	
	Client		AT&T		Designed by		kw	

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	# Rows	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
WR-VG122S T-BRDA	A	No	No	Ar (CaAa)	180.00 - 7.00	2.0000	0.3	2	2	0.0000	0.4000		0.25

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb	
PiROD 15' T-Frame (AT&T - Existing)	A	From Leg	2.50	0.0000	179.00	No Ice	15.00	15.00	500.00
			0.00			1/2" Ice	20.60	20.60	650.00
			0.00			1" Ice	26.20	26.20	800.00
PiROD 15' Rotatable Platform (Lattice)	B	From Leg	2.50	0.0000	179.00	No Ice	24.90	24.90	1810.00
			0.00			1/2" Ice	30.70	30.70	2435.00
			0.00			1" Ice	36.50	36.50	3060.00
PiROD 15' T-Frame	C	From Leg	2.50	0.0000	179.00	No Ice	15.00	15.00	500.00
			0.00			1/2" Ice	20.60	20.60	650.00
			0.00			1" Ice	26.20	26.20	800.00
Powerwave 7770 w/mount pipe	A	From Leg	4.50	0.0000	180.00	No Ice	5.65	4.10	57.25
			0.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	B	From Leg	4.50	0.0000	180.00	No Ice	5.65	4.10	57.25
			0.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
Powerwave 7770 w/mount pipe	C	From Leg	4.50	0.0000	180.00	No Ice	5.65	4.10	57.25
			0.00			1/2" Ice	6.03	4.75	103.17
			0.00			1" Ice	6.42	5.42	155.38
Powerwave P65-17-XLH-RR w/mount pipe	A	From Leg	4.50	0.0000	180.00	No Ice	11.75	9.39	122.11
			0.00			1/2" Ice	12.47	10.90	212.11
			0.00			1" Ice	13.18	12.24	313.12
Powerwave P65-17-XLH-RR w/mount pipe	B	From Leg	4.50	0.0000	180.00	No Ice	11.75	9.39	122.11
			0.00			1/2" Ice	12.47	10.90	212.11
			0.00			1" Ice	13.18	12.24	313.12
SBNH-1D6565C w/mount pipe	C	From Leg	4.50	0.0000	180.00	No Ice	11.69	10.29	113.11
			0.00			1/2" Ice	12.40	11.81	206.76
			0.00			1" Ice	13.11	13.16	311.52
TMA DTMABP7819VG12A	A	From Leg	3.50	0.0000	180.00	No Ice	0.98	0.34	19.20
			0.00			1/2" Ice	1.10	0.42	26.50
			0.00			1" Ice	1.23	0.51	35.65
TMA DTMABP7819VG12A	B	From Leg	3.50	0.0000	180.00	No Ice	0.98	0.34	19.20
			0.00			1/2" Ice	1.10	0.42	26.50
			0.00			1" Ice	1.23	0.51	35.65
TMA DTMABP7819VG12A	C	From Leg	3.50	0.0000	180.00	No Ice	0.98	0.34	19.20
			0.00			1/2" Ice	1.10	0.42	26.50
			0.00			1" Ice	1.23	0.51	35.65
Ericsson RRUS-11	A	From Leg	3.50	0.0000	180.00	No Ice	2.79	1.19	50.70
			0.00			1/2" Ice	3.00	1.34	71.57
			0.00			1" Ice	3.21	1.50	95.48
Ericsson RRUS-11	B	From Leg	3.50	0.0000	180.00	No Ice	2.79	1.19	50.70
			0.00			1/2" Ice	3.00	1.34	71.57
			0.00			1" Ice	3.21	1.50	95.48
Ericsson RRUS-11	C	From Leg	3.50	0.0000	180.00	No Ice	2.79	1.19	50.70

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job		CT2167 North Stonington, CT		Page		6 of 15	
	Project		180 ft Guyed Tower		Date		09:24:26 11/14/18	
	Client		AT&T		Designed by		kw	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
			0.00						
			0.00			1/2" Ice	3.00	1.34	71.57
			0.00			1" Ice	3.21	1.50	95.48
DC6-48-60-18-8F	C	From Leg	1.00		0.0000	180.00	No Ice	0.79	20.00
			0.00				1/2" Ice	1.27	35.12
			0.00				1" Ice	1.45	52.57

TPA-65R-LCUUUU-H8 w/mount pipe (AT&T - Proposed)	A	From Leg	4.50		0.0000	180.00	No Ice	13.77	118.50
			0.00				1/2" Ice	14.58	224.27
			0.00				1" Ice	15.39	340.43
TPA-65R-LCUUUU-H8 w/mount pipe	B	From Leg	4.50		0.0000	180.00	No Ice	13.77	118.50
			0.00				1/2" Ice	14.58	224.27
			0.00				1" Ice	15.39	340.43
TPA-65R-LCUUUU-H8 w/mount pipe	C	From Leg	4.50		0.0000	180.00	No Ice	13.77	118.50
			0.00				1/2" Ice	14.58	224.27
			0.00				1" Ice	15.39	340.43
(2) DBC0061F1V51-2	A	From Leg	3.50		0.0000	180.00	No Ice	0.41	26.00
			0.00				1/2" Ice	0.50	31.30
			0.00				1" Ice	0.59	38.14
(2) DBC0061F1V51-2	B	From Leg	3.50		0.0000	180.00	No Ice	0.41	26.00
			0.00				1/2" Ice	0.50	31.30
			0.00				1" Ice	0.59	38.14
(2) DBC0061F1V51-2	C	From Leg	3.50		0.0000	180.00	No Ice	0.41	26.00
			0.00				1/2" Ice	0.50	31.30
			0.00				1" Ice	0.59	38.14
B25 4415	A	From Leg	3.50		0.0000	180.00	No Ice	1.65	60.00
			0.00				1/2" Ice	1.81	74.37
			0.00				1" Ice	1.98	91.23
B25 4415	B	From Leg	3.50		0.0000	180.00	No Ice	1.65	60.00
			0.00				1/2" Ice	1.81	74.37
			0.00				1" Ice	1.98	91.23
B25 4415	C	From Leg	3.50		0.0000	180.00	No Ice	1.65	60.00
			0.00				1/2" Ice	1.81	74.37
			0.00				1" Ice	1.98	91.23

PiROD 15' T-Frame	A	From Leg	2.00		0.0000	152.00	No Ice	15.00	500.00
			0.00				1/2" Ice	20.60	650.00
			0.00				1" Ice	26.20	800.00
PiROD 15' T-Frame	B	From Leg	2.00		0.0000	152.00	No Ice	15.00	500.00
			0.00				1/2" Ice	20.60	650.00
			0.00				1" Ice	26.20	800.00
PiROD 15' T-Frame	C	From Leg	2.00		0.0000	152.00	No Ice	15.00	500.00
			0.00				1/2" Ice	20.60	650.00
			0.00				1" Ice	26.20	800.00
NNVV-65B-R4 w/ Mount Pipe	A	From Leg	3.50		0.0000	152.00	No Ice	12.51	102.95
			-3.00				1/2" Ice	13.11	193.58
			0.00				1" Ice	13.67	292.74
APXVTM14 w/mount pipe	A	From Leg	3.50		0.0000	152.00	No Ice	6.65	91.90
			3.00				1/2" Ice	7.14	147.31
			0.00				1" Ice	7.60	209.47
TD-RRH8x20-25	A	From Leg	3.50		0.0000	152.00	No Ice	4.05	70.00
			1.00				1/2" Ice	4.30	97.15
			0.00				1" Ice	4.56	127.83
(2) RRH-800	A	From Leg	3.50		0.0000	152.00	No Ice	2.13	64.00
			-1.00				1/2" Ice	2.32	91.74
			0.00				1" Ice	2.51	122.88
RRH-1900	A	From Leg	3.50		0.0000	152.00	No Ice	2.32	60.00
			0.00				1/2" Ice	2.53	88.32

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	CT2167 North Stonington, CT	Page	7 of 15
	Project	180 ft Guyed Tower	Date	09:24:26 11/14/18
	Client	AT&T	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Vert	Lateral						°
			ft	ft	ft						
NNVV-65B-R4 w/ Mount Pipe	B	From Leg	0.00			0.0000	152.00	1" Ice	2.74	3.60	120.15
			3.50					No Ice	12.51	7.41	102.95
			-3.00					1/2" Ice	13.11	8.60	193.58
			0.00					1" Ice	13.67	9.50	292.74
APXVTM14 w/mount pipe	B	From Leg	3.50			0.0000	152.00	No Ice	6.65	5.03	91.90
			3.00					1/2" Ice	7.14	5.89	147.31
			0.00					1" Ice	7.60	6.63	209.47
			3.50					No Ice	4.05	1.53	70.00
TD-RRH8x20-25	B	From Leg	1.00			0.0000	152.00	1/2" Ice	4.30	1.71	97.15
			0.00					1" Ice	4.56	1.90	127.83
			3.50					No Ice	2.13	2.76	64.00
			-1.00					1/2" Ice	2.32	2.96	91.74
(2) RRH-800	B	From Leg	0.00			0.0000	152.00	1" Ice	2.51	3.18	122.88
			3.50					No Ice	2.32	3.14	60.00
			0.00					1/2" Ice	2.53	3.36	88.32
			0.00					1" Ice	2.74	3.60	120.15
NNVV-65B-R4 w/ Mount Pipe	C	From Leg	3.50			0.0000	152.00	No Ice	12.51	7.41	102.95
			-3.00					1/2" Ice	13.11	8.60	193.58
			0.00					1" Ice	13.67	9.50	292.74
			3.50					No Ice	6.65	5.03	91.90
APXVTM14 w/mount pipe	C	From Leg	3.00			0.0000	152.00	1/2" Ice	7.14	5.89	147.31
			0.00					1" Ice	7.60	6.63	209.47
			3.50					No Ice	4.05	1.53	70.00
			1.00					1/2" Ice	4.30	1.71	97.15
TD-RRH8x20-25	C	From Leg	0.00			0.0000	152.00	1" Ice	4.56	1.90	127.83
			3.50					No Ice	2.13	2.76	64.00
			-1.00					1/2" Ice	2.32	2.96	91.74
			0.00					1" Ice	2.51	3.18	122.88
(2) RRH-800	C	From Leg	3.50			0.0000	152.00	No Ice	2.32	3.14	60.00
			0.00					1/2" Ice	2.53	3.36	88.32
			0.00					1" Ice	2.74	3.60	120.15
			0.00					No Ice	15.00	15.00	500.00
PiROD 15' T-Frame	A	From Leg	2.00			0.0000	136.00	1/2" Ice	20.60	20.60	650.00
			0.00					1" Ice	26.20	26.20	800.00
			2.00					No Ice	15.00	15.00	500.00
			0.00					1/2" Ice	20.60	20.60	650.00
PiROD 15' T-Frame	B	From Leg	0.00			0.0000	136.00	1" Ice	26.20	26.20	800.00
			2.00					No Ice	15.00	15.00	500.00
			0.00					1/2" Ice	20.60	20.60	650.00
			0.00					1" Ice	26.20	26.20	800.00
PiROD 15' T-Frame	C	From Leg	2.00			0.0000	136.00	No Ice	15.00	15.00	500.00
			0.00					1/2" Ice	20.60	20.60	650.00
			0.00					1" Ice	26.20	26.20	800.00
			3.00					No Ice	7.83	5.82	42.55
BXA-70063-6CF-EDIN w/mount pipe	A	From Leg	-1.00			0.0000	136.00	1/2" Ice	8.39	6.99	103.53
			0.00					1" Ice	8.91	7.87	172.25
			3.00					No Ice	3.17	3.34	28.75
			1.00					1/2" Ice	3.54	3.95	60.81
BXA-171085-8BF-EDIN w/mount pipe	A	From Leg	0.00			0.0000	136.00	1" Ice	3.91	4.58	98.34
			3.00					No Ice	2.87	6.59	30.25
			-4.00					1/2" Ice	3.24	7.22	76.66
			0.00					1" Ice	3.62	7.87	129.00
LPA-80080-4CF w/mount pipe	A	From Leg	3.00			0.0000	136.00	No Ice	2.87	6.59	30.25
			4.00					1/2" Ice	3.24	7.22	76.66
			0.00					1" Ice	3.62	7.87	129.00
			3.00					No Ice	0.31	0.08	2.60
FD9R6004 Diplexer	A	From Leg	0.00			0.0000	136.00	1/2" Ice	0.39	0.12	4.90
			0.00					1" Ice	0.47	0.17	8.29
			0.00					No Ice	7.83	5.82	42.55
			3.00					0.0000	136.00		
BXA-70063-6CF-EDIN	B	From Leg	3.00			0.0000	136.00	No Ice	7.83	5.82	42.55

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job		CT2167 North Stonington, CT		Page		8 of 15	
	Project		180 ft Guyed Tower		Date		09:24:26 11/14/18	
	Client		AT&T		Designed by		kw	

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
w/mount pipe			-1.00			1/2" Ice	8.39	6.99	103.53
			0.00			1" Ice	8.91	7.87	172.25
BXA-171085-8BF-EDIN	B	From Leg	3.00	0.0000	136.00	No Ice	3.17	3.34	28.75
w/mount pipe			1.00			1/2" Ice	3.54	3.95	60.81
			0.00			1" Ice	3.91	4.58	98.34
LPA-80080-4CF w/mount pipe	B	From Leg	3.00	0.0000	136.00	No Ice	2.87	6.59	30.25
			-4.00			1/2" Ice	3.24	7.22	76.66
			0.00			1" Ice	3.62	7.87	129.00
LPA-80080-4CF w/mount pipe	B	From Leg	3.00	0.0000	136.00	No Ice	2.87	6.59	30.25
			4.00			1/2" Ice	3.24	7.22	76.66
			0.00			1" Ice	3.62	7.87	129.00
FD9R6004 Diplexer	B	From Leg	3.00	0.0000	136.00	No Ice	0.31	0.08	2.60
			0.00			1/2" Ice	0.39	0.12	4.90
			0.00			1" Ice	0.47	0.17	8.29
BXA-70063-6CF-EDIN	C	From Leg	3.00	0.0000	136.00	No Ice	7.83	5.82	42.55
w/mount pipe			-1.00			1/2" Ice	8.39	6.99	103.53
			0.00			1" Ice	8.91	7.87	172.25
BXA-171085-8BF-EDIN	C	From Leg	3.00	0.0000	136.00	No Ice	3.17	3.34	28.75
w/mount pipe			1.00			1/2" Ice	3.54	3.95	60.81
			0.00			1" Ice	3.91	4.58	98.34
LPA-80080-4CF w/mount pipe	C	From Leg	3.00	0.0000	136.00	No Ice	2.87	6.59	30.25
			-4.00			1/2" Ice	3.24	7.22	76.66
			0.00			1" Ice	3.62	7.87	129.00
LPA-80080-4CF w/mount pipe	C	From Leg	3.00	0.0000	136.00	No Ice	2.87	6.59	30.25
			4.00			1/2" Ice	3.24	7.22	76.66
			0.00			1" Ice	3.62	7.87	129.00
FD9R6004 Diplexer	C	From Leg	3.00	0.0000	136.00	No Ice	0.31	0.08	2.60
			0.00			1/2" Ice	0.39	0.12	4.90
			0.00			1" Ice	0.47	0.17	8.29

Pirod 4' Side Mount Standoff (1)	A	From Leg	2.00	0.0000	120.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff (1)	B	From Leg	2.00	0.0000	120.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
Pirod 4' Side Mount Standoff (1)	C	From Leg	2.00	0.0000	120.00	No Ice	2.72	2.72	50.00
			0.00			1/2" Ice	4.91	4.91	89.00
			0.00			1" Ice	7.10	7.10	128.00
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00	0.0000	120.00	No Ice	6.43	5.75	112.30
			1.50			1/2" Ice	6.91	6.61	170.21
			0.00			1" Ice	7.37	7.33	234.94
KRC118 057/1 antenna w/mount pipe	A	From Leg	4.00	0.0000	120.00	No Ice	7.91	6.72	145.90
			-1.50			1/2" Ice	8.40	7.59	215.37
			0.00			1" Ice	8.87	8.34	292.11
Ericsson RRUS-11	A	From Leg	3.00	0.0000	120.00	No Ice	2.79	1.19	50.70
			0.00			1/2" Ice	3.00	1.34	71.57
			0.00			1" Ice	3.21	1.50	95.48
Gen. TMA	A	From Leg	3.00	0.0000	120.00	No Ice	0.58	0.40	13.20
			0.00			1/2" Ice	0.69	0.49	18.38
			0.00			1" Ice	0.80	0.59	25.16
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00	0.0000	120.00	No Ice	6.43	5.75	112.30
			1.50			1/2" Ice	6.91	6.61	170.21
			0.00			1" Ice	7.37	7.33	234.94
KRC118 057/1 antenna w/mount pipe	B	From Leg	4.00	0.0000	120.00	No Ice	7.91	6.72	145.90
			-1.50			1/2" Ice	8.40	7.59	215.37
			0.00			1" Ice	8.87	8.34	292.11

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	CT2167 North Stonington, CT	Page	9 of 15
	Project	180 ft Guyed Tower	Date	09:24:26 11/14/18
	Client	AT&T	Designed by	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
Ericsson RRUS-11	B	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 2.79 1/2" Ice 3.00 1" Ice 3.21	1.19 1.34 1.50	50.70 71.57 95.48
Gen. TMA	B	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 0.58 1/2" Ice 0.69 1" Ice 0.80	0.40 0.49 0.59	13.20 18.38 25.16
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 1.50 0.00	0.0000	120.00	No Ice 6.43 1/2" Ice 6.91 1" Ice 7.37	5.75 6.61 7.33	112.30 170.21 234.94
KRC118 057/1 antenna w/mount pipe	C	From Leg	4.00 -1.50 0.00	0.0000	120.00	No Ice 7.91 1/2" Ice 8.40 1" Ice 8.87	6.72 7.59 8.34	145.90 215.37 292.11
Ericsson RRUS-11	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 2.79 1/2" Ice 3.00 1" Ice 3.21	1.19 1.34 1.50	50.70 71.57 95.48
Gen. TMA	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 0.58 1/2" Ice 0.69 1" Ice 0.80	0.40 0.49 0.59	13.20 18.38 25.16

1' Side Mount Standoff	A	From Leg	0.50 0.00 0.00	0.0000	98.00	No Ice 1.00 1/2" Ice 1.50 1" Ice 2.00	1.00 1.50 2.00	30.00 50.00 70.00
GPS	A	From Leg	1.00 0.00 0.00	0.0000	98.00	No Ice 0.21 1/2" Ice 0.31 1" Ice 0.42	0.21 0.31 0.42	5.00 7.52 11.31

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586</p>	Job	CT2167 North Stonington, CT	Page	10 of 15
	Project	180 ft Guyed Tower	Date	09:24:26 11/14/18
	Client	AT&T	Designed by	kw

Comb. No.	Description
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	23	171020.26	296.61	-268.60
	Max. H _x	12	106547.16	1579.52	908.75
	Max. H _z	13	123563.58	922.11	1023.59
	Max. M _x	1	0.00	-16.25	-11.00
	Max. M _z	1	0.00	-16.25	-11.00
	Max. Torsion	5	2710.10	-1625.25	265.63
	Min. Vert	1	71345.54	-16.25	-11.00
	Min. H _x	5	124293.53	-1625.25	265.63
	Min. H _z	8	105876.73	-24.36	-1574.87
	Min. M _x	1	0.00	-16.25	-11.00
	Min. M _z	1	0.00	-16.25	-11.00
Guy C @ 162 ft Elev 0 ft Azimuth 240 deg	Min. Torsion	11	-2704.92	1578.62	266.54
	Max. Vert	10	-777.88	-486.25	280.76
Guy B @ 162 ft Elev 0 ft Azimuth 120 deg	Max. H _x	10	-777.88	-486.25	280.76
	Max. H _z	3	-12717.81	-11154.97	6707.35
	Min. Vert	3	-12717.81	-11154.97	6707.35
	Min. H _x	5	-12660.03	-11336.71	6279.01
	Min. H _z	10	-777.88	-486.25	280.76
Guy A @ 162 ft Elev 0 ft Azimuth 0 deg	Max. Vert	6	-768.80	478.57	276.22
	Max. H _x	11	-12578.72	11266.35	6239.20
	Max. H _z	13	-12844.56	11264.55	6771.24
	Min. Vert	13	-12844.56	11264.55	6771.24
	Min. H _x	6	-768.80	478.57	276.22
Guy C @ 142 ft Elev 0 ft	Min. H _z	6	-768.80	478.57	276.22
	Max. Vert	2	-764.84	-0.14	-548.69
	Max. H _x	11	-7233.67	504.75	-7253.81
	Max. H _z	2	-764.84	-0.14	-548.69
	Min. Vert	7	-12940.45	-232.56	-13236.36
Guy C @ 142 ft Elev 0 ft	Min. H _x	5	-7260.65	-505.11	-7280.55
	Min. H _z	7	-12940.45	-232.56	-13236.36
	Max. Vert	10	-780.63	-449.88	259.74

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586</p>	<p style="text-align: center;">Job</p> <p style="text-align: center;">CT2167 North Stonington, CT</p>	<p style="text-align: center;">Page</p> <p style="text-align: center;">11 of 15</p>
	<p style="text-align: center;">Project</p> <p style="text-align: center;">180 ft Guyed Tower</p>	<p style="text-align: center;">Date</p> <p style="text-align: center;">09:24:26 11/14/18</p>
	<p style="text-align: center;">Client</p> <p style="text-align: center;">AT&T</p>	<p style="text-align: center;">Designed by</p> <p style="text-align: center;">kw</p>

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Azimuth 240 deg	Max. H _x	10	-780.63	-449.88	259.74
	Max. H _z	3	-28589.70	-23484.21	13977.11
	Min. Vert	5	-28892.58	-24149.01	13519.21
	Min. H _x	5	-28892.58	-24149.01	13519.21
	Min. H _z	10	-780.63	-449.88	259.74
Guy B @ 142 ft Elev 0 ft	Max. Vert	6	-769.75	441.22	254.70
Azimuth 120 deg	Max. H _x	11	-28839.20	24120.66	13503.51
	Max. H _z	13	-29153.11	23974.08	14267.96
	Min. Vert	13	-29153.11	23974.08	14267.96
	Min. H _x	6	-769.75	441.22	254.70
	Min. H _z	6	-769.75	441.22	254.70
Guy A @ 142 ft Elev 0 ft	Max. Vert	2	-769.60	-0.05	-509.97
Azimuth 0 deg	Max. H _x	11	-14924.79	675.86	-14135.67
	Max. H _z	2	-769.60	-0.05	-509.97
	Min. Vert	7	-29218.05	-370.10	-27936.58
	Min. H _x	5	-14965.71	-676.27	-14169.76
	Min. H _z	7	-29218.05	-370.10	-27936.58
Guy C @ 100 ft Elev 0 ft	Max. Vert	10	-58.64	-75.09	43.35
Azimuth 240 deg	Max. H _x	10	-58.64	-75.09	43.35
	Max. H _z	5	-16864.34	-20469.23	11627.21
	Min. Vert	5	-16864.34	-20469.23	11627.21
	Min. H _x	5	-16864.34	-20469.23	11627.21
	Min. H _z	10	-58.64	-75.09	43.35
Guy B @ 100 ft Elev 0 ft	Max. Vert	6	-55.36	70.56	40.71
Azimuth 120 deg	Max. H _x	11	-16995.47	20617.88	11711.07
	Max. H _z	11	-16995.47	20617.88	11711.07
	Min. Vert	11	-16995.47	20617.88	11711.07
	Min. H _x	6	-55.36	70.56	40.71
	Min. H _z	6	-55.36	70.56	40.71
Guy A @ 100 ft Elev 0 ft	Max. Vert	2	-62.45	-0.02	-92.99
Azimuth 0 deg	Max. H _x	11	-8631.60	313.76	-12148.81
	Max. H _z	2	-62.45	-0.02	-92.99
	Min. Vert	7	-15780.06	-155.16	-21987.80
	Min. H _x	5	-8562.93	-312.64	-12056.60
	Min. H _z	7	-15780.06	-155.16	-21987.80

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	71345.54	16.25	11.00	0.00	0.00	-4.40
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	129986.29	16.71	-942.49	0.00	0.00	-1233.45
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	120862.06	865.24	-878.29	0.00	0.00	801.76

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586</p>	<p style="text-align: center;">Job</p> <p style="text-align: center;">CT2167 North Stonington, CT</p>	<p style="text-align: center;">Page</p> <p style="text-align: center;">12 of 15</p>
	<p style="text-align: center;">Project</p> <p style="text-align: center;">180 ft Guyed Tower</p>	<p style="text-align: center;">Date</p> <p style="text-align: center;">09:24:26 11/14/18</p>
	<p style="text-align: center;">Client</p> <p style="text-align: center;">AT&T</p>	<p style="text-align: center;">Designed by</p> <p style="text-align: center;">kw</p>

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	105805.82	1501.24	-835.12	0.00	0.00	-578.98
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	124293.53	1625.25	-265.63	0.00	0.00	-2710.10
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	131989.51	1109.23	639.29	0.00	0.00	-1191.58
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	123566.87	457.16	1350.05	0.00	0.00	1657.12
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	105876.73	24.36	1574.87	0.00	0.00	1349.70
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	120866.83	-328.62	1193.99	0.00	0.00	-808.00
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	129888.60	-954.81	578.62	0.00	0.00	567.25
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	124296.94	-1578.62	-266.54	0.00	0.00	2704.92
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	106547.16	-1579.52	-908.75	0.00	0.00	1283.92
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	123563.58	-922.11	-1023.59	0.00	0.00	-1663.86
1.2 Dead+1.0 Ice+1.0 Temp+Guy	168211.36	50.70	68.63	0.00	0.00	-0.82
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	171009.04	49.56	-299.68	0.00	0.00	-213.92
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	170548.47	219.62	-249.84	0.00	0.00	-3.73
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	170246.11	380.60	-117.91	0.00	0.00	-306.17
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	170557.37	472.44	85.20	0.00	0.00	-689.90
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	171012.00	424.02	283.63	0.00	0.00	-376.14
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	170530.80	260.92	398.12	0.00	0.00	199.96
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	170221.15	53.69	416.32	0.00	0.00	209.59
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy	170531.41	-141.59	374.78	0.00	0.00	1.00
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy	171020.26	-296.61	268.60	0.00	0.00	304.81
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy	170591.35	-368.92	82.00	0.00	0.00	688.62
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy	170284.98	-301.76	-133.36	0.00	0.00	373.20
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy	170577.50	-133.00	-272.68	0.00	0.00	-204.88
Dead+Wind 0 deg - Service+Guy	71895.05	15.94	-377.11	0.00	0.00	-274.89
Dead+Wind 30 deg - Service+Guy	71946.73	205.27	-319.95	0.00	0.00	175.55
Dead+Wind 60 deg - Service+Guy	72027.89	370.30	-193.41	0.00	0.00	-128.30
Dead+Wind 90 deg - Service+Guy	71964.74	487.10	12.37	0.00	0.00	-603.43
Dead+Wind 120 deg - Service+Guy	71907.42	406.47	236.08	0.00	0.00	-267.72
Dead+Wind 150 deg - Service+Guy	71961.93	230.21	377.80	0.00	0.00	366.61
Dead+Wind 180 deg - Service+Guy	72037.52	16.65	389.24	0.00	0.00	272.91
Dead+Wind 210 deg - Service+Guy	71947.26	-175.51	340.61	0.00	0.00	-179.56

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job	CT2167 North Stonington, CT	Page	13 of 15
	Project	180 ft Guyed Tower	Date	09:24:26 11/14/18
	Client	AT&T	Designed by	kw

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Service+Guy						
Dead+Wind 240 deg - Service+Guy	71899.61	-346.37	220.77	0.00	0.00	124.64
Dead+Wind 270 deg - Service+Guy	71963.28	-454.40	12.71	0.00	0.00	599.23
Dead+Wind 300 deg - Service+Guy	72031.03	-365.25	-208.79	0.00	0.00	264.74
Dead+Wind 330 deg - Service+Guy	71956.94	-195.02	-356.94	0.00	0.00	-370.33

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	1.582	33	0.0812	0.0945
T2	160 - 140	1.335	33	0.0282	0.1005
T3	140 - 120	1.378	37	0.0158	0.1336
T4	120 - 100	1.328	36	0.0426	0.1894
T5	100 - 80	1.083	36	0.0793	0.2120
T6	80 - 60	0.738	36	0.0612	0.2325
T7	60 - 40	0.543	36	0.0406	0.2350
T8	40 - 20	0.415	30	0.0325	0.2122
T9	20 - 5	0.264	30	0.0505	0.1534
T10	5 - 0	0.069	30	0.0631	0.0917

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Powerwave 7770 w/mount pipe	33	1.582	0.0812	0.0945	48509
179.00	PiROD 15' T-Frame	33	1.567	0.0781	0.0945	48509
162.52	Guy	33	1.354	0.0322	0.0987	14072
162.52	Guy	33	1.354	0.0322	0.0987	14072
152.00	PiROD 15' T-Frame	37	1.321	0.0237	0.1095	26960
136.00	PiROD 15' T-Frame	37	1.386	0.0187	0.1448	21802
132.16	Guy	37	1.385	0.0227	0.1564	21011
120.00	PiROD 4' Side Mount Standoff (1)	36	1.328	0.0426	0.1894	19347
98.00	1' Side Mount Standoff	36	1.048	0.0800	0.2139	45652
82.52	Guy	36	0.776	0.0648	0.2304	23525
49.75	Guy	36	0.475	0.0337	0.2269	192815

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP _{allow} lb	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 2.5 X-STR	2	-52186.40	94406.90	55.3	Pass
T2	160 - 140	Leg	ROHN 2.5 X-STR	59	-47501.10	99948.70	47.5	Pass

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586</p>	Job	CT2167 North Stonington, CT	Page	14 of 15	
	Project	180 ft Guyed Tower		Date	09:24:26 11/14/18
	Client	AT&T		Designed by	kw

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T3	140 - 120	Leg	ROHN 2.5 X-STR	116	-55965.00	93565.90	59.8	Pass
T4	120 - 100	Leg	ROHN 2.5 X-STR	173	-56572.00	93538.10	60.5	Pass
T5	100 - 80	Leg	ROHN 2.5 X-STR	231	-59980.20	93448.60	64.2	Pass
T6	80 - 60	Leg	ROHN 2.5 X-STR	288	-58209.60	94406.90	61.7	Pass
T7	60 - 40	Leg	ROHN 2.5 X-STR	345	-54575.40	76169.70	71.6	Pass
T8	40 - 20	Leg	ROHN 2.5 X-STR	376	-58098.60	76169.70	76.3	Pass
T9	20 - 5	Leg	ROHN 2.5 X-STR	409	-58281.70	76718.10	76.0	Pass
T10	5 - 0	Leg	ROHN 2.5 X-STR	438	-62179.50	92200.30	67.4	Pass
T1	180 - 160	Diagonal	L2x2x1/4	15	-7424.20	22642.60	32.8	Pass
T2	160 - 140	Diagonal	ROHN TS1.5x11 ga	114	-5426.53	17104.70	31.7	Pass
T3	140 - 120	Diagonal	ROHN TS1.5x16 ga	154	-2559.03	8734.08	29.3	Pass
T4	120 - 100	Diagonal	ROHN TS1.5x11 ga	181	-3391.34	17104.70	19.8	Pass
T5	100 - 80	Diagonal	ROHN TS1.5x16 ga	244	-3740.69	8734.08	42.8	Pass
T6	80 - 60	Diagonal	ROHN TS1.5x11 ga	340	-2090.05	17104.70	12.2	Pass
T7	60 - 40	Diagonal	ROHN TS1.5x16 ga	361	-3664.35	5939.69	61.7	Pass
T8	40 - 20	Diagonal	ROHN TS1.5x16 ga	406	-3144.74	5939.69	52.9	Pass
T9	20 - 5	Diagonal	ROHN TS1.5x16 ga	419	-2299.57	5965.13	38.6	Pass
T10	5 - 0	Horizontal	L4x4x1/4	443	-285.51	49307.80	11.2	Pass
T1	180 - 160	Top Girt	L2x2x1/4	6	-1697.08	16296.10	10.4	Pass
T2	160 - 140	Top Girt	ROHN TS1.5x11 ga	63	-1502.16	13543.10	11.1	Pass
T3	140 - 120	Top Girt	ROHN TS1.5x16 ga	118	346.53	9931.96	3.5	Pass
T4	120 - 100	Top Girt	ROHN TS1.5x11 ga	175	984.21	19665.40	5.0	Pass
T5	100 - 80	Top Girt	ROHN TS1.5x16 ga	234	781.39	9931.96	7.9	Pass
T6	80 - 60	Top Girt	ROHN TS1.5x11 ga	291	1347.68	19665.40	6.9	Pass
T7	60 - 40	Top Girt	ROHN TS1.5x16 ga	348	-183.12	7043.68	2.6	Pass
T8	40 - 20	Top Girt	ROHN TS1.5x16 ga	379	-861.18	7043.68	12.2	Pass
T9	20 - 5	Top Girt	ROHN TS1.5x16 ga	414	660.70	9931.96	6.7	Pass
T10	5 - 0	Top Girt	L4x4x1/4	441	3061.73	62856.00	4.9	Pass
T1	180 - 160	Bottom Girt	L2x2x1/4	7	1939.36	30391.20	6.4	Pass
T2	160 - 140	Bottom Girt	ROHN TS1.5x11 ga	65	640.05	19665.40	3.3	Pass
T3	140 - 120	Bottom Girt	ROHN TS1.5x16 ga	123	645.84	9931.96	6.5	Pass
T4	120 - 100	Bottom Girt	ROHN TS1.5x11 ga	180	800.18	19665.40	4.1	Pass
T5	100 - 80	Bottom Girt	ROHN TS1.5x16 ga	237	737.76	9931.96	7.4	Pass
T6	80 - 60	Bottom Girt	ROHN TS1.5x11 ga	293	728.41	19665.40	3.7	Pass
T7	60 - 40	Bottom Girt	ROHN TS1.5x16 ga	349	-911.90	7043.68	12.9	Pass
T8	40 - 20	Bottom Girt	ROHN TS1.5x16 ga	383	515.64	9931.96	5.2	Pass
T9	20 - 5	Bottom Girt	L3x3x1/2	416	10536.70	89100.00	11.8	Pass
T1	180 - 160	Guy A@162.523	1/2	460	9539.62	16140.00	59.1	Pass
		Guy A@162.523	7/8	480	25915.50	47820.00	54.2	Pass
T3	140 - 120	Guy A@132.159	9/16	468	14899.20	21000.00	70.9	Pass
T5	100 - 80	Guy A@82.5234	3/4	474	19115.50	34980.00	54.6	Pass
T7	60 - 40	Guy A@49.75	1/2	486	8217.78	16140.00	50.9	Pass
T1	180 - 160	Guy B@162.523	1/2	455	9463.16	16140.00	58.6	Pass
		Guy B@162.523	7/8	479	25723.50	47820.00	53.8	Pass
T3	140 - 120	Guy B@132.159	9/16	467	15147.80	21000.00	72.1	Pass
T5	100 - 80	Guy B@82.5234	3/4	473	20484.90	34980.00	58.6	Pass
T7	60 - 40	Guy B@49.75	1/2	485	8969.64	16140.00	55.6	Pass
T1	180 - 160	Guy C@162.523	1/2	452	9319.64	16140.00	57.7	Pass
		Guy C@162.523	7/8	475	25484.40	47820.00	53.3	Pass
T3	140 - 120	Guy C@132.159	9/16	463	15045.70	21000.00	71.6	Pass
T5	100 - 80	Guy C@82.5234	3/4	469	20306.80	34980.00	58.1	Pass
T7	60 - 40	Guy C@49.75	1/2	481	8931.74	16140.00	55.3	Pass
T1	180 - 160	Top Guy	2L2x2x1/4x3/8	476	9497.49	60912.00	15.6	Pass
		Pull-Off@162.523						
T3	140 - 120	Top Guy	4x3/8	466	5770.71	48600.00	11.9	Pass
		Pull-Off@132.159						
T5	100 - 80	Top Guy	2L2x2x1/4x3/8	472	7850.62	60912.00	12.9	Pass
		Pull-Off@82.5234						
T7	60 - 40	Top Guy	4x3/8	483	4855.64	48600.00	10.0	Pass
		Pull-Off@49.75						
T1	180 - 160	Torque Arm	C12x20.7	454	2938.73	197316.00	37.7	Pass

tnxTower Hudson Design Group LLC 45 Beechwood Drive North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 336-5586	Job CT2167 North Stonington, CT	Page 15 of 15
	Project 180 ft Guyed Tower	Date 09:24:26 11/14/18
	Client AT&T	Designed by kw

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Top@162.523						
							Summary	
							Leg (T8)	76.3 Pass
							Diagonal (T7)	61.7 Pass
							Horizontal (T10)	11.2 Pass
							Top Girt (T8)	12.2 Pass
							Bottom Girt (T7)	12.9 Pass
							Guy A (T3)	70.9 Pass
							Guy B (T3)	72.1 Pass
							Guy C (T3)	71.6 Pass
							Top Guy	15.6 Pass
							Pull-Off (T1)	
							Torque Arm Top (T1)	37.7 Pass
							RATING =	76.3 Pass

PROJECT INFORMATION

SCOPE OF WORK: **ITEMS TO BE MOUNTED ON THE EXISTING TOWER:**

- NEW AT&T ANTENNAS (TPA-65R-LCUUUU-H8) @ POS. 2 (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW AT&T RRUS 4415 B25 (PCS) (TYP. OF 1 PER SECTOR, TOTAL OF 3).
- NEW LOW BAND COMBINERS (DBC0061F1V51-2) (TOTAL OF 3).

ITEMS TO BE MOUNTED AT EQUIPMENT LOCATION:

- NEW AT&T SURGE ARRESTORS (TSXDC-4310FM) (TOTAL OF 20).
- NEW AT&T RRUS: 4478 B5 (850) (TOTAL OF 3).
- NEW AT&T RRUS: B14 4478 (700) (TOTAL OF 2).
- INSTALL 6601 (TOTAL OF 2).
- SWAP (2) DUS WITH (2) 5216.
- REPLACE IDL2 WITH IDL.
- INSTALL LOW BAND COMBINERS DBC0061F1V51-2 (TOTAL OF 3).

ITEMS TO REMAIN:

- (6) ANTENNAS, (3) RRU'S, (3) TMA'S, (1) SURGE ARRESTOR, (12) COAX CABLES, (2) DC POWER & (1) FIBER RUN.

SQUID ALARMING (NOT TO BE DAISY CHAINED):

- THE 1ST SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED RRH/RRU ON THE ALPHA SECTOR, IN THE EVENT THE ALARM CABLE CANNOT BE CONNECTED TO ALPHA IT WILL BE ACCEPTABLE TO ALARM TO THE CLOSEST PHYSICAL SECTOR ON AN EXCEPTION BASIS).
- 2ND SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE BETA SECTOR.
- 3RD SQUID INSTALLED WILL BE ALARMED TO THE LOWEST BAND (OR FIRST INSTALLED) RRH/RRU ON THE GAMMA SECTOR.

SITE ADDRESS: 273 BOOM BRIDGE ROAD
NORTH STONINGTON, CT 06359

LATITUDE: 41.428798 N, 41' 25' 43.67" N
LONGITUDE: 71.809111 W, 71' 48' 32.79" W

TYPE OF SITE: GUYED TOWER/ INDOOR EQUIPMENT

STRUCTURE HEIGHT: 180'-0"±
RAD CENTER: 178'-0"±

CURRENT USE: TELECOMMUNICATIONS FACILITY
PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT2167

SITE NAME: PAWCATUCK-BOOM BRIDGE RD

FA CODE: 10035072

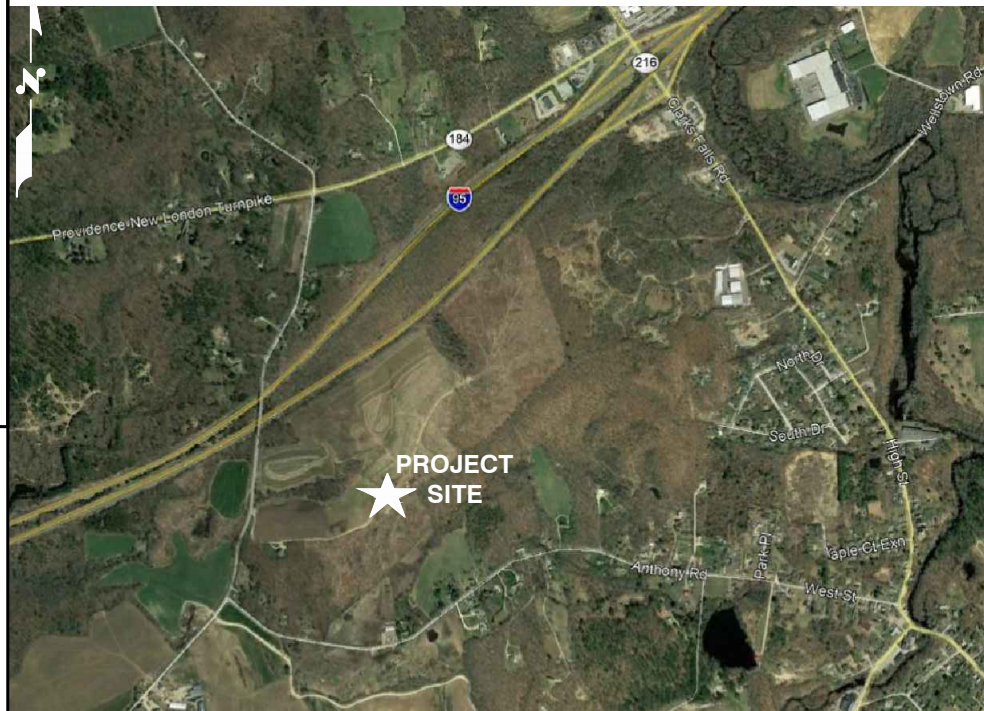
PACE ID: MRCTB030927, MRCTB031869, MRCTB031601

PROJECT: LTE 2C_3C_4C 2019 UPGRADE

VICINITY MAP

DIRECTIONS TO SITE:

START GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD 0.4 MI TURN LEFT ONTO CAPITOL BLVD 0.2 MI TURN LEFT ONTO WEST ST 0.3 MI TAKE RAMP LEFT FOR I-91 SOUTH 1.4 MI AT EXIT 22S, TAKE RAMP LEFT FOR CT-9 SOUTH TOWARD OLD SAYBROOK / MIDDLETOWN 5.5 MI KEEP STRAIGHT ONTO CT-9 SOUTH / CT-17 SOUTH 0.8 MI KEEP STRAIGHT ONTO CT-9 SOUTH 22.9 MI TAKE RAMP LEFT FOR I-95 NORTH / US-1 NORTH TOWARD NEW LONDON / PROVIDENCE 33.3 MI AT EXIT 93, TAKE RAMP RIGHT FOR CT-216 TOWARD CLARKS FALLS CT. / ASHAWAY R.I. 0.2 MI TURN LEFT ONTO CT-216 / CLARKS FALLS RD 0.1 MI TURN LEFT ONTO CT-184 / PROVIDENCE NEW LONDON TPKE 0.7 MI TURN LEFT ONTO BOOM BRIDGE RD 0.9 MI ARRIVE AT 273 BOOM BRIDGE RD, NORTH STONINGTON, CT 06359. SITE ENTRANCE WILL BE ON THE LEFT.



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	ANTENNA LAYOUTS & ELEVATION	1
A-3	DETAILS	1
SN-1	STRUCTURAL NOTES	1
S-1	MOUNT MODIFICATION DESIGN	1
RF-1	RF PLUMBING DIAGRAM	1
G-1	GROUNDING DETAILS	1

72 HOURS



CALL BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455

OR CALL 811

UNDERGROUND SERVICE ALERT

HGD HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

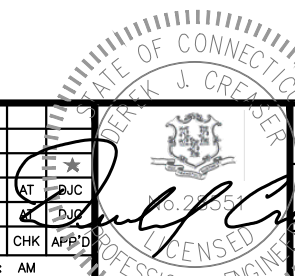
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2167
SITE NAME: PAWCATUCK-BOOM BRIDGE RD
273 BOOM BRIDGE ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	DJC
A	10/01/18	ISSUED FOR REVIEW	ET	AT	DJC

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AM



AT&T
TITLE SHEET
(LTE 2C/3C/4C)
SITE NUMBER: CT2167 DRAWING NUMBER: T-1 REV: 1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION 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.
2. 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.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. 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.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 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

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR – CENTERLINE
 SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER – AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. 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.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. 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.
9. 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.
10. 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.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. 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.
16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T SITES."
17. 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.
18. 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.
19. 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 TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE: IBC 2015 WITH 2018 CT STATE BUILDING CODE AMENDMENTS
 ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (NFPA 70-2017)

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

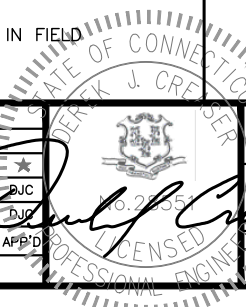
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2167
SITE NAME: PAWCATUCK-BOOM BRIDGE RD
 273 BOOM BRIDGE ROAD
 NORTH STONINGTON, CT 06359
 NEW LONDON COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	BJC
A	10/01/18	ISSUED FOR REVIEW	ET		DJG

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AM



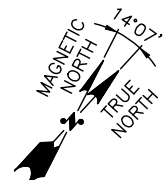
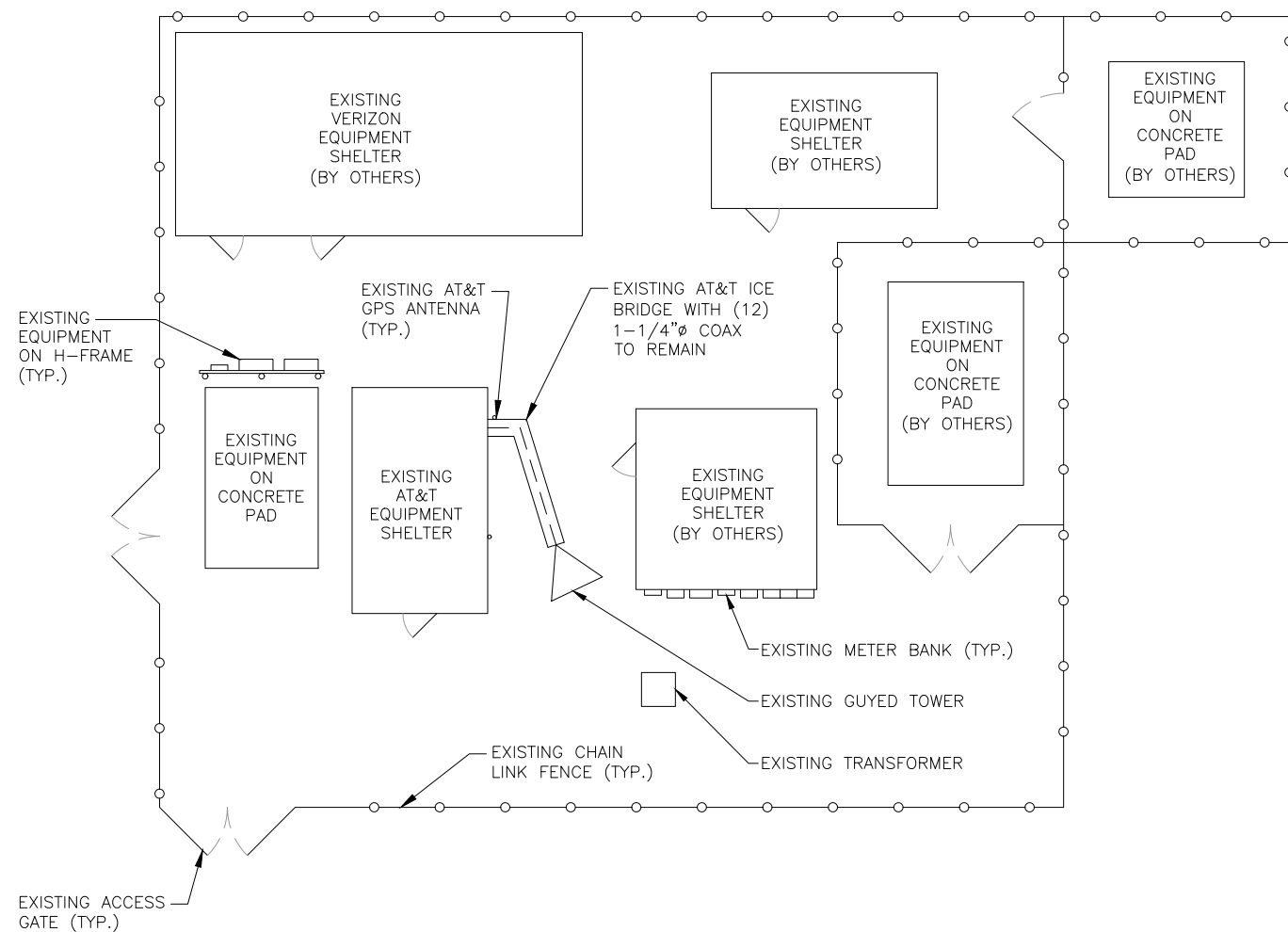
AT&T
 GENERAL NOTES
 (LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT2167	GN-1	1

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

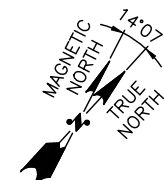
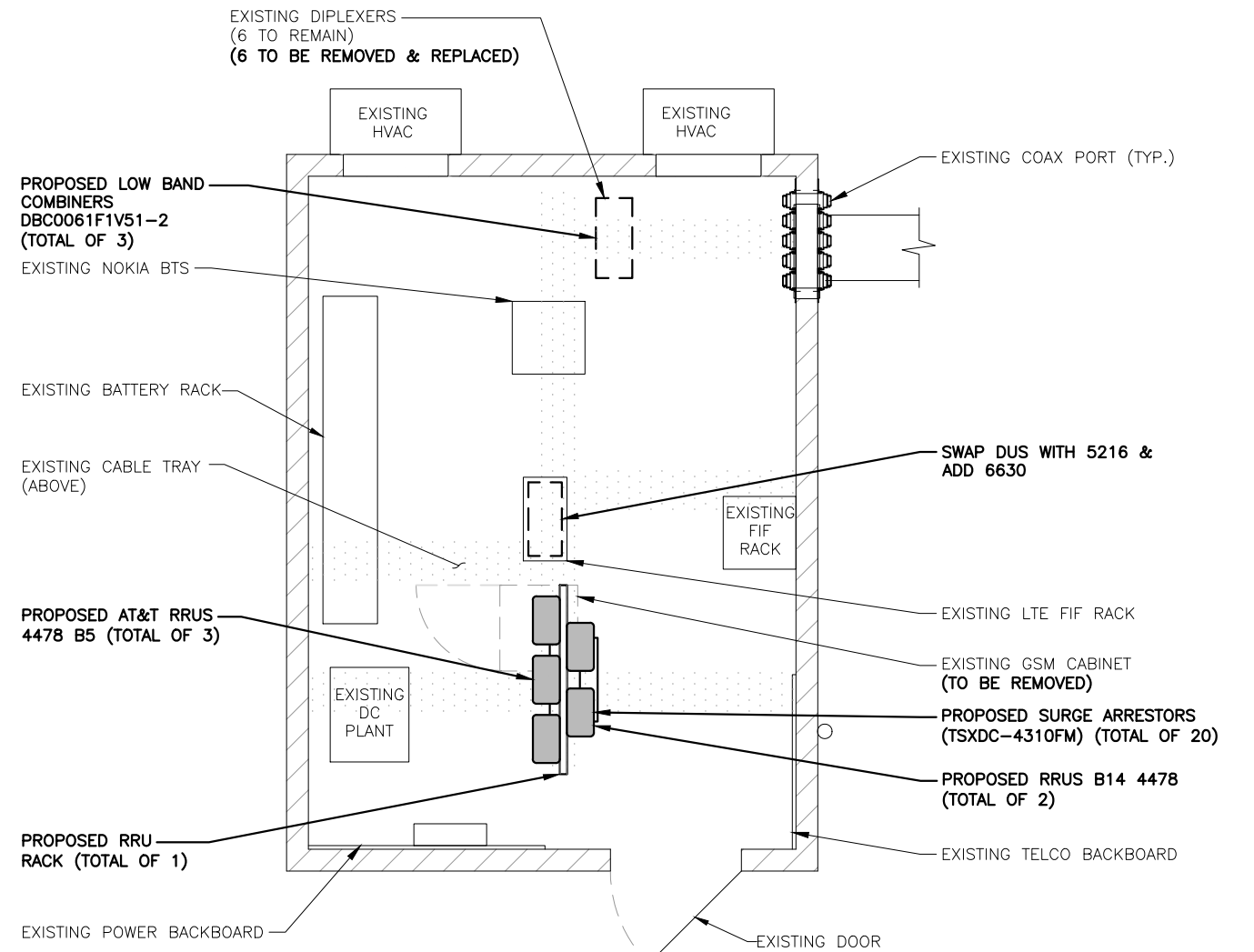
NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: NOVEMBER 09, 2018

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: NOVEMBER 14, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



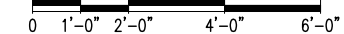
COMPOUND PLAN

22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"



EQUIPMENT PLAN

22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"



HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2167
SITE NAME: PAWCATUCK-BOOM BRIDGE RD
273 BOOM BRIDGE ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

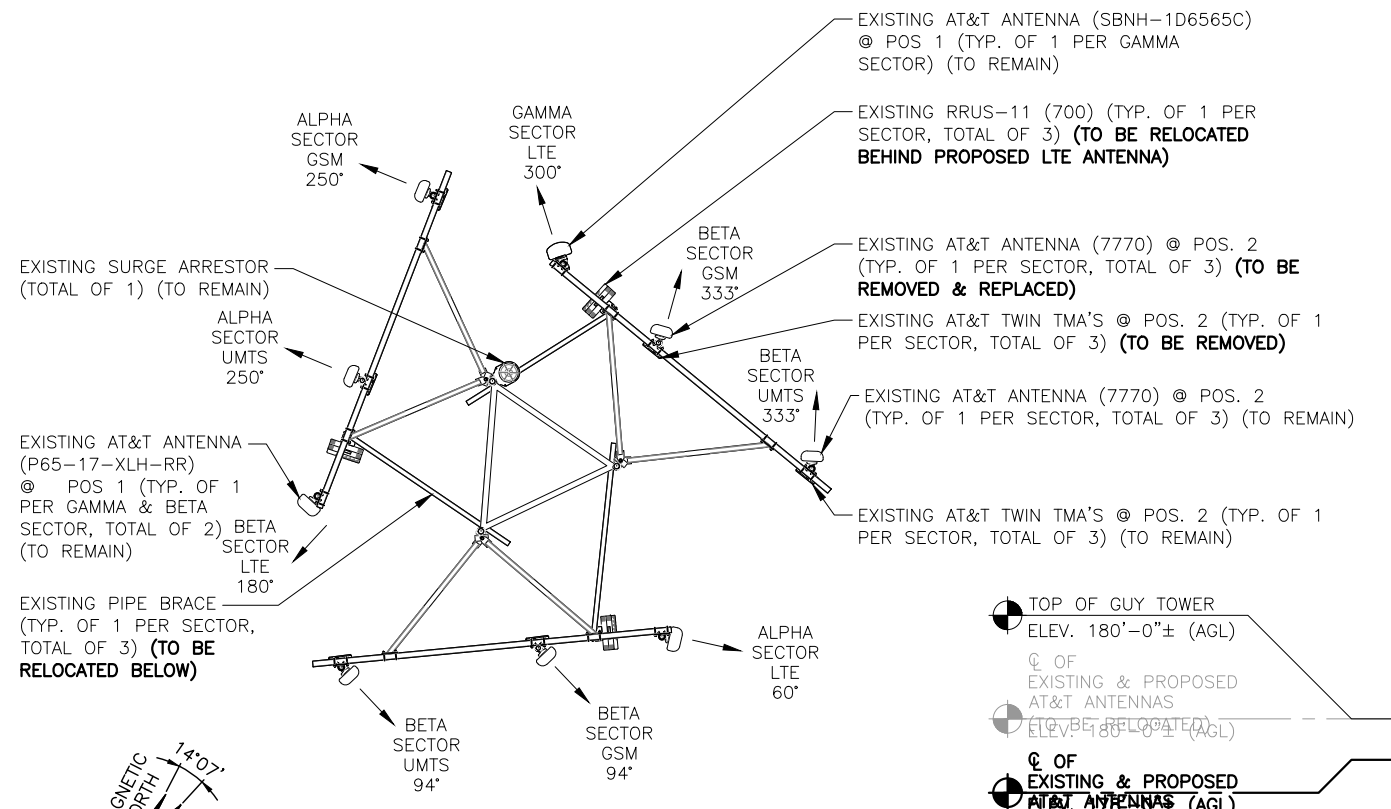
at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	DJC
A	10/01/18	ISSUED FOR REVIEW	ET		DJC

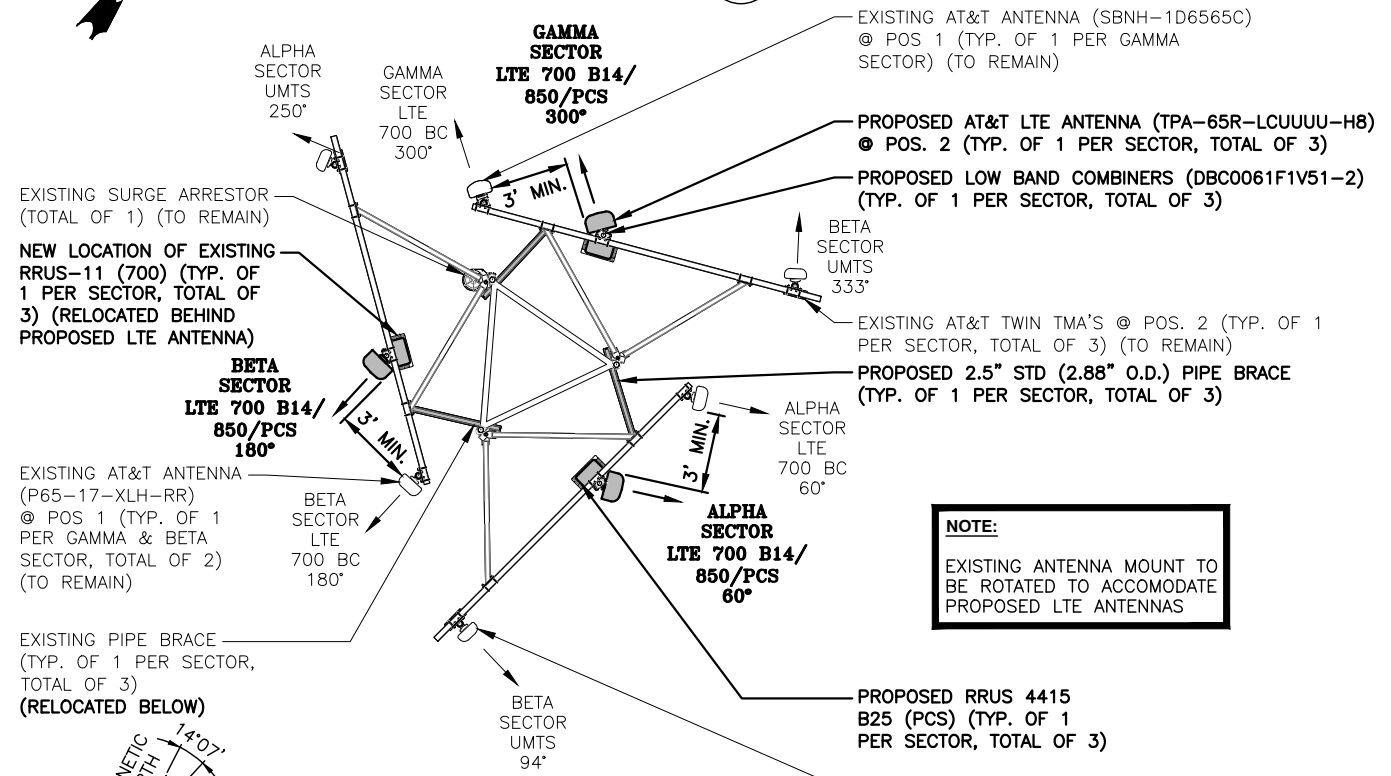
SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AM



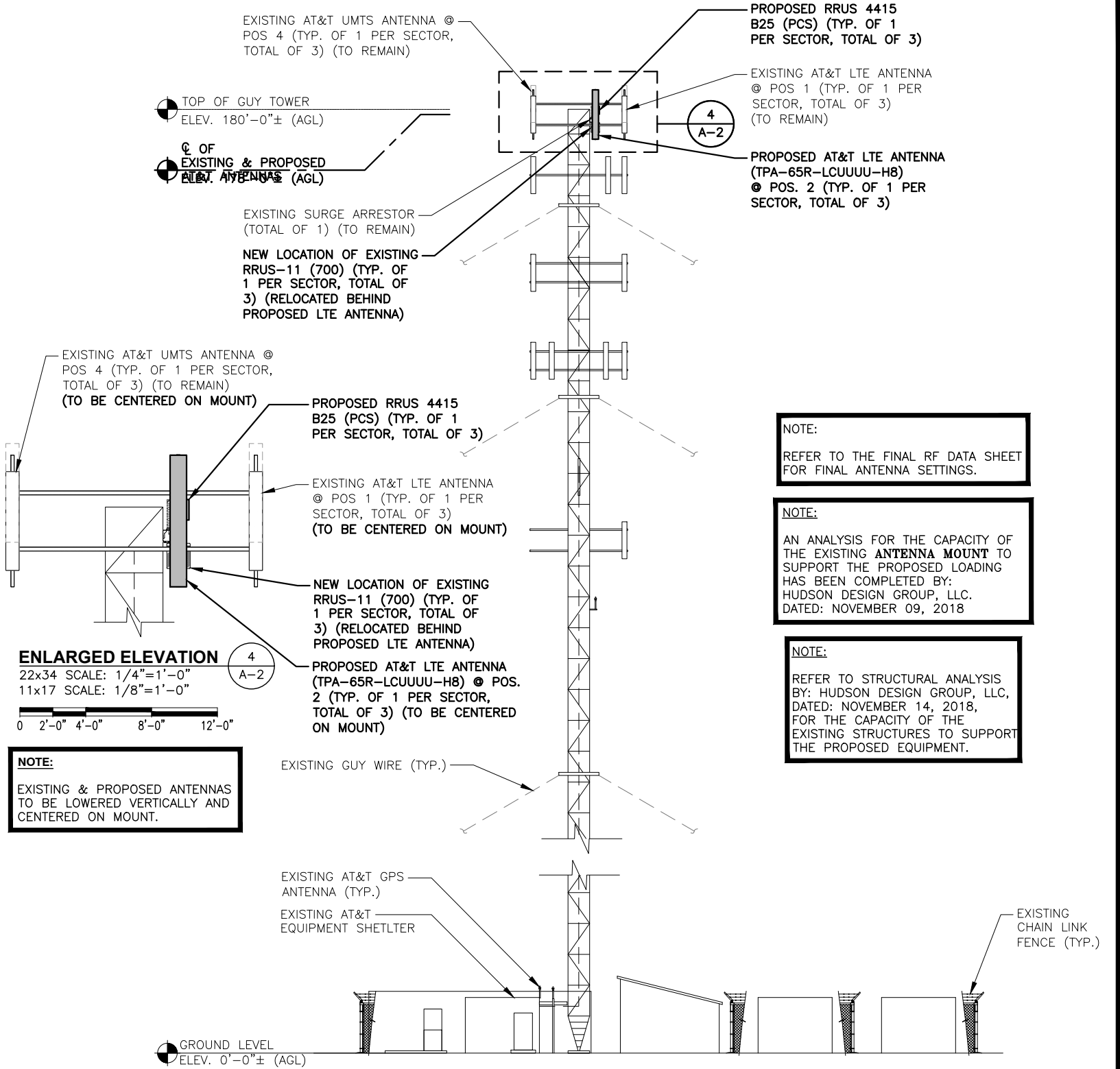
AT&T
COMPOUND & EQUIPMENT PLAN
(LTE 2C/3C/4C)
SITE NUMBER: CT2167 DRAWING NUMBER: A-1 REV: 1



EXISTING ANTENNA LAYOUT (1) A-2
SCALE: N.T.S.



PROPOSED ANTENNA LAYOUT (2) A-2
SCALE: N.T.S.



ENLARGED ELEVATION (4) A-2
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

NOTE:
EXISTING & PROPOSED ANTENNAS TO BE LOWERED VERTICALLY AND CENTERED ON MOUNT.

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: NOVEMBER 09, 2018

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: NOVEMBER 14, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

ELEVATION (3) A-2
22x34 SCALE: 3/32"=1'-0"
11x17 SCALE: 3/64"=1'-0"

HDG HUDSON Design Group LLC
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2167
SITE NAME: PAWCATUCK-BOOM BRIDGE RD
273 BOOM BRIDGE ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

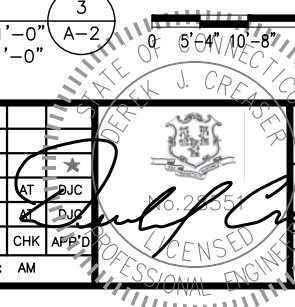
at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	JJC
A	10/01/18	ISSUED FOR REVIEW	ET	AT	JJC

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AM

AT&T
ANTENNA LAYOUT & ELEVATION
(LTE 2C/3C/4C)

SITE NUMBER	DRAWING NUMBER	REV
CT2167	A-2	1

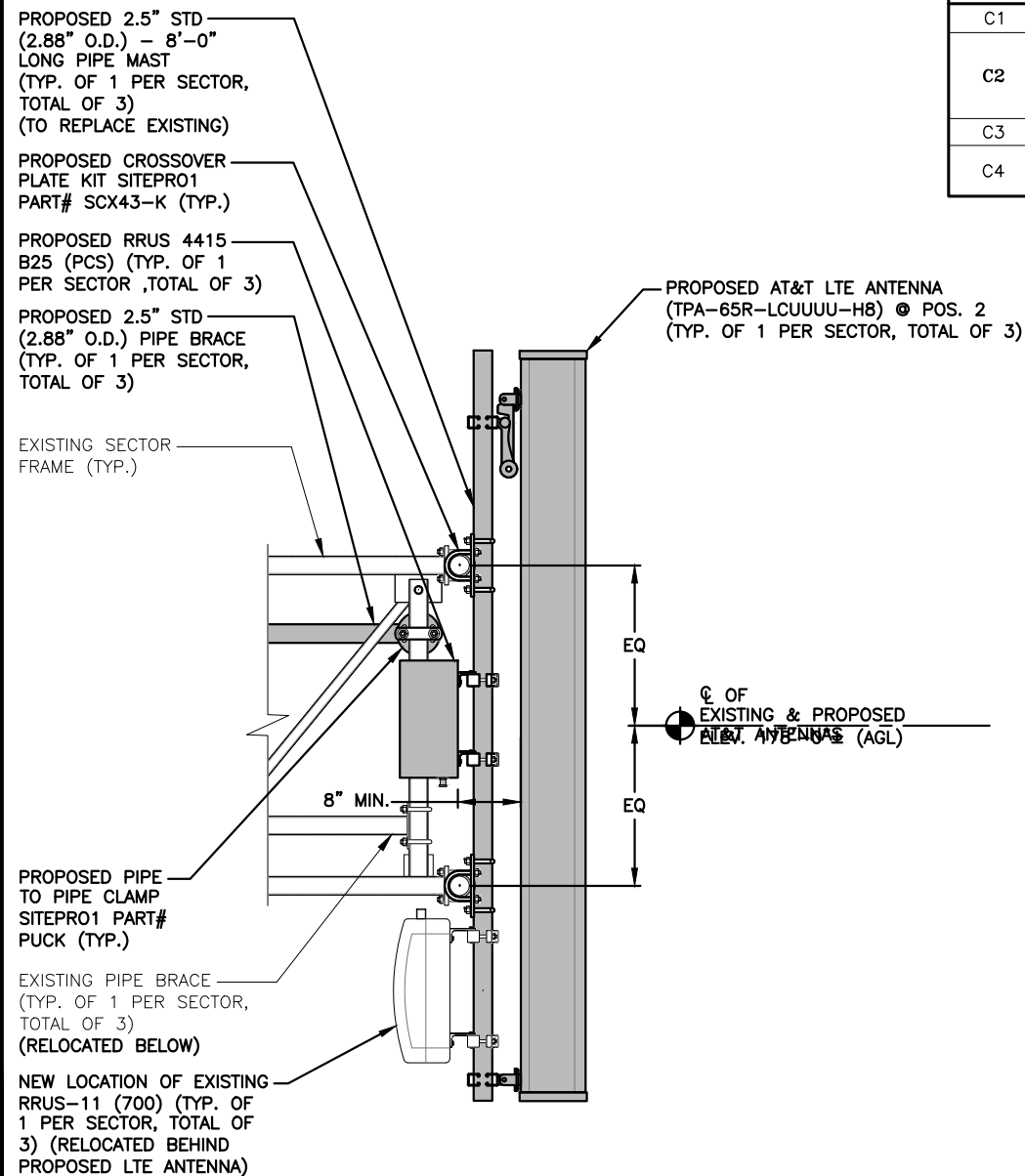


NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: NOVEMBER 14, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING ANTENNA MOUNT TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: NOVEMBER 09, 2018

ANTENNA SCHEDULE											
SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA Ø HEIGHT	AZIMUTH	TMA/DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP
A1	EXISTING	700 BC	P65-17-XLH-RR	96X12X6	178'±	60°	-	(E)(1) RRUS-11 (700)	-	-	(E) (1) RAYCAP DC6-48-60-18-8C
A2	PROPOSED	LTE 700 B14/850/PCS	TPA-65R-LCUUUU-H8	96X14.4X8.6	178'±	60°	(P)(G)(1) KAEIUS DBC0061F1V51-2 (P)(G)(1) KAEIUS DBC0061F1V51-2	(P)(G)(1) B14 4478 (700) (P)(G)(1) 4478 B5 (850) (P)(1) 4415 B25 (PCS)	15X13.2X7.4 15X13.2X7.4 15X13.2X5.4	(2) 1-5/8 COAX (LENGTH 200' ±)	
A3	-	-	-	-	-	-	-	-	-	-	
A4	EXISTING	UMTS	7770	55X11X5	178'±	250°	(E)(1) POWERWAVE CM1007-DBPXBC-003	-	-	(2) 1-5/8 COAX (LENGTH 200' ±)	
B1	EXISTING	700 BC	P65-17-XLH-RR	96X12X6	178'±	180°	-	(E)(1) RRUS-11 (700)	-	-	1
B2	PROPOSED	LTE 700 B14/850/PCS	TPA-65R-LCUUUU-H8	96X14.4X8.6	178'±	180°	(P)(G)(1) KAEIUS DBC0061F1V51-2 (P)(G)(1) KAEIUS DBC0061F1V51-2	(P)(G)(1) B14 4478 (700) (P)(G)(1) 4478 B5 (850) (P)(1) 4415 B25 (PCS)	15X13.2X7.4 15X13.2X7.4 15X13.2X5.4	(2) 1-5/8 COAX (LENGTH 200' ±)	
B3	-	-	-	-	-	-	-	-	-	-	
B4	EXISTING	UMTS	7770	55X11X5	178'±	333°	(E)(1) POWERWAVE CM1007-DBPXBC-003	-	-	(2) 1-5/8 COAX (LENGTH 200' ±)	
C1	EXISTING	700 BC	SBNH-1D6565C	96.4X11.9X7.1	178'±	300°	-	(E)(1) RRUS-11 (700)	-	-	1
C2	PROPOSED	LTE 700 B14/850/PCS	TPA-65R-LCUUUU-H8	96X14.4X8.6	178'±	300°	(P)(G)(1) KAEIUS DBC0061F1V51-2 (P)(G)(1) KAEIUS DBC0061F1V51-2	(SHARED) (P)(G)(1) 4478 B5 (850) (P)(1) 4415 B25 (PCS)	15X13.2X7.4 15X13.2X5.4	(2) 1-5/8 COAX (LENGTH 200' ±)	
C3	-	-	-	-	-	-	-	-	-	-	
C4	EXISTING	UMTS	7770	55X11X5	178'±	94°	(E)(1) POWERWAVE CM1007-DBPXBC-003	-	-	(2) 1-5/8 COAX (LENGTH 200' ±)	



PROPOSED LTE ANTENNA & RRH MOUNTING DETAIL 2

22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"



FINAL ANTENNA SCHEDULE 1

SCALE: N.T.S



RRU CHART				
QUANTITY	MODEL	L	W	D
3(E)	RRUS-11	15.0"	13.2"	7.4"
3(P)	4415 B25	15.0"	13.2"	5.4"
2(P)(G)	B14 4478	15.0"	13.2"	7.4"
3(P)(G)	4478 B5	15.0"	13.2"	7.4"

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS

NOTE:

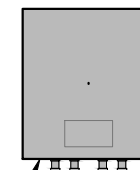
SEE RFDS FOR RRH FREQUENCY AND MODEL NUMBER

PROPOSED RRU REFER TO THE FINAL RFDS AND CHART FOR QUANTITY, MODEL AND DIMENSIONS

NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

PROPOSED RRU DETAIL 3

SCALE: N.T.S

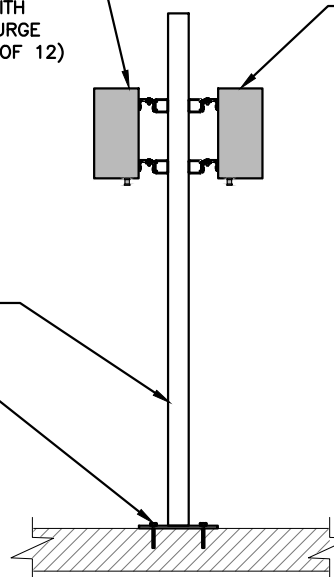


PROPOSED AT&T RRU 4478 B5 (TOTAL OF 3) WITH (TSXDC-4310FM) SURGE ARRESTORS (TOTAL OF 12)

PROPOSED RRU B14 4478 (TOTAL OF 2) WITH (TSXDC-4310FM) SURGE ARRESTORS (TOTAL OF 6)

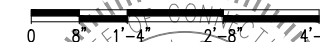
PROPOSED RRU RACK (TOTAL OF 1)

PROPOSED 5/8\"/>



PROPOSED RRU DETAIL 4

22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"



HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2167
SITE NAME: PAWCATUCK-BOOM BRIDGE RD
273 BOOM BRIDGE ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

at&t
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	BJC
A	10/01/18	ISSUED FOR REVIEW	ET	AT	DJG

SCALE: AS SHOWN
DESIGNED BY: AT
DRAWN BY: AM



AT&T
DETAILS
(LTE 2C/3C/4C)
SITE NUMBER: CT2167
DRAWING NUMBER: A-3
REV: 1

STRUCTURAL NOTES:

- DESIGN REQUIREMENTS ARE PER STATE BUILDING CODE AND APPLICABLE SUPPLEMENTS, INTERNATIONAL BUILDING CODE, EIA/TIA-222-G STRUCTURAL STANDARDS FOR STEEL ANTENNA, TOWERS AND ANTENNA SUPPORTING STRUCTURES.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND ENGINEER OF RECORD.
- DESIGN AND CONSTRUCTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
- STRUCTURAL STEEL SHALL CONFORM TO ASTM A992 (Fy=50 ksi), MISCELLANEOUS STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE INDICATED.
- STEEL PIPE SHALL CONFORM TO ASTM A500 "COLD-FORMED WELDED & SEAMLESS CARBON STEEL STRUCTURAL TUBING", GRADE B, OR ASTM A53 PIPE STEEL BLACK AND HOT-DIPPED ZINC-COATED WELDED AND SEAMLESS TYPE E OR S, GRADE B. PIPE SIZES INDICATED ARE NOMINAL. ACTUAL OUTSIDE DIAMETER IS LARGER.
- STRUCTURAL CONNECTION BOLTS SHALL BE HIGH STRENGTH BOLTS (BEARING TYPE) AND CONFORM TO ASTM A325 TYPE-X "HIGH STRENGTH BOLTS FOR STRUCTURAL JOINTS, INCLUDING SUITABLE NUTS AND PLAIN HARDENED WASHERS". ALL BOLTS SHALL BE 3/4" DIA UON.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
- ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
- FIELD WELDS, DRILL HOLES, SAW CUTS AND ALL DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED WITH AN ORGANIC ZINC REPAIR PAINT COMPLYING WITH REQUIREMENTS OF ASTM A780. GALVANIZING REPAIR PAINT SHALL HAVE 65 PERCENT ZINC BY WEIGHT, ZIRP BY DUNCAN GALVANIZING, GALVA BRIGHT PREMIUM BY CROWN OR EQUAL. THICKNESS OF APPLIED GALVANIZING REPAIR PAINT SHALL BE NOT LESS THAN 4 COATS (ALLOW TIME TO DRY BETWEEN COATS) WITH A RESULTING COATING THICKNESS REQUIRED BY ASTM A123 OR A153 AS APPLICABLE.
- CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES, APPEARANCE AND QUALITY OF WELDS, AND FOR METHODS USED IN CORRECTING WELDING. ALL WELDERS AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D.I. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "STEEL CONSTRUCTION MANUAL". 14TH EDITION.
- INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON-CONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE CONSTRUCTION MANAGER PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE CONSTRUCTION MANAGER APPROVAL.
- UNISTRUT SHALL BE FORMED STEEL CHANNEL STRUT FRAMING AS MANUFACTURED BY UNISTRUT CORP., WAYNE, MI OR EQUAL. STRUT MEMBERS SHALL BE 1 5/8"x1 5/8"x12GA, UNLESS OTHERWISE NOTED, AND SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
- EPOXY ANCHOR ASSEMBLY SHALL CONSIST OF STAINLESS STEEL ANCHOR ROD WITH NUTS & WASHERS. AN INTERNALLY THREADED INSERT, A SCREEN TUBE AND A EPOXY ADHESIVE. THE ANCHORING SYSTEM SHALL BE THE HILTI-HIT HY-270 AND OR HY-200 SYSTEMS (AS SPECIFIED IN DWG.) OR ENGINEERS APPROVED EQUAL.
- EXPANSION BOLTS SHALL CONFORM TO FEDERAL SPECIFICATION FF-S-325, GROUP II, TYPE 4, CLASS I, HILTI KWIK BOLT III OR APPROVED EQUAL. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- LUMBER SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AND THE NATIONAL FOREST PRODUCTS ASSOCIATION'S NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION. ALL LUMBER SHALL BE PRESSURE TREATED AND SHALL BE STRUCTURAL GRADE NO. 2 OR BETTER.
- WHERE ROOF PENETRATIONS ARE REQUIRED, THE CONTRACTOR SHALL CONTACT AND COORDINATE RELATED WORK WITH THE BUILDING OWNER AND THE EXISTING ROOF INSTALLER. WORK SHALL BE PERFORMED IN SUCH A MANNER AS TO NOT VOID THE EXISTING ROOF WARRANTY. ROOF SHALL BE WATERTIGHT.
- ALL FIBERGLASS MEMBERS USED ARE AS MANUFACTURED BY STRONGWELL COMPANY OF BRISTOL, VA 24203. ALL DESIGN CRITERIA FOR THESE MEMBERS IS BASED ON INFORMATION PROVIDED IN THE DESIGN MANUAL. ALL REQUIREMENTS PUBLISHED IN SAID MANUAL MUST BE STRICTLY ADHERED TO.
- NO MATERIALS TO BE ORDERED AND NO WORK TO BE COMPLETED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND APPROVED IN WRITING.
- SUBCONTRACTOR SHALL FIREPROOF ALL STEEL TO PRE-EXISTING CONDITIONS.

SPECIAL INSPECTIONS (REFERENCE IBC CHAPTER 17):

GENERAL: WHERE APPLICATION IS MADE FOR CONSTRUCTION, THE OWNER OR THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED IN THE INSPECTION CHECKLIST ABOVE.

THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AND ENGINEERS OF RECORD INVOLVED IN THE DESIGN OF THE PROJECT ARE PERMITTED TO ACT AS THE APPROVED AGENCY AND THEIR PERSONNEL ARE PERMITTED TO ACT AS THE SPECIAL INSPECTOR FOR THE WORK DESIGNED BY THEM, PROVIDED THOSE PERSONNEL MEET THE QUALIFICATION REQUIREMENTS.

STATEMENT OF SPECIAL INSPECTIONS: THE APPLICANT SHALL SUBMIT A STATEMENT OF SPECIAL INSPECTIONS PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE IN ACCORDANCE WITH SECTION 107.1 AS A CONDITION FOR ISSUANCE. THIS STATEMENT SHALL BE IN ACCORDANCE WITH SECTION 1705.

REPORT REQUIREMENT: SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS SHALL BE SUBMITTED.

SPECIAL INSPECTION CHECKLIST	
BEFORE CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
N/A	ENGINEER OF RECORD APPROVED SHOP DRAWINGS ¹
N/A	MATERIAL SPECIFICATIONS REPORT ²
N/A	FABRICATOR NDE INSPECTION
N/A	PACKING SLIPS ³
ADDITIONAL TESTING AND INSPECTIONS:	
DURING CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	STEEL INSPECTIONS
N/A	HIGH STRENGTH BOLT INSPECTIONS
N/A	HIGH WIND ZONE INSPECTIONS ⁴
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH, SLUMP TESTS AND PLACEMENT
N/A	POST INSTALLED ANCHOR VERIFICATION ⁵
N/A	GROUT VERIFICATION
N/A	CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
N/A	ON SITE COLD GALVANIZING VERIFICATION
N/A	GUY WIRE TENSION REPORT
ADDITIONAL TESTING AND INSPECTIONS:	
AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
REQUIRED	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWINGS ⁶
N/A	POST INSTALLED ANCHOR PULL-OUT TESTING
REQUIRED	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTES:

- REQUIRED FOR ANY NEW SHOP FABRICATED FRP OR STEEL.
- PROVIDED BY MANUFACTURER, REQUIRED IF HIGH STRENGTH BOLTS OR STEEL.
- PROVIDED BY GENERAL CONTRACTOR; PROOF OF MATERIALS.
- HIGH WIND ZONE INSPECTION CATB 120MPH OR CAT C,D 110MPH INSPECT FRAMING OF WALLS, ANCHORING, FASTENING SCHEDULE.
- ADHESIVE FOR REBAR AND ANCHORS SHALL HAVE BEEN TESTED IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308 FOR CRACKED CONCRETE AND SEISMIC APPLICATIONS. DESIGN ADHESIVE BOND STRENGTH HAS BEEN BASED ON ACI 355.4 TEMPERATURE CATEGORY B WITH INSTALLATIONS INTO DRY HOLES DRILLED USING A CARBIDE BIT INTO CRACKED CONCRETE THAT HAS CURED FOR AT LEAST 21 DAYS. ADHESIVE ANCHORS REQUIRING CERTIFIED INSTALLATIONS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER PER ACI 318-11 D.9.2.2. INSTALLATIONS REQUIRING CERTIFIED INSTALLERS SHALL BE INSPECTED PER ACI 318-11 D.8.2.4.
- AS REQUIRED; FOR ANY FIELD CHANGES TO THE ITEMS IN THIS TABLE.

NOTES:

- ALL CONNECTIONS TO BE SHOP WELDED & FIELD BOLTED USING 3/4"Ø A325-X BOLTS, UNLESS OTHERWISE NOTIFIED.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED BEFORE ORDERING MATERIAL.
- SHOP DRAWING ENGINEER REVIEW & APPROVAL REQUIRED PRIOR TO STEEL FABRICATION.
- VERIFICATION OF EXISTING ROOF CONSTRUCTION IS REQUIRED PRIOR TO THE INSTALLATION OF THE ROOF PLATFORM. ENGINEER OF RECORD IS TO APPROVE EXISTING CONDITIONS IN ORDER TO MOVE FORWARD.
- CENTERLINE OF PROPOSED STEEL PLATFORM SUPPORT COLUMNS TO BE CENTRALLY LOCATED OVER THE EXISTING BUILDING COLUMNS.
- EXISTING BRICK MASONRY COLUMNS/BEARING TO BE REPAIRED/REPLACED AT ALL PROPOSED PLATFORM SUPPORT POINTS. ENGINEER OF RECORD TO REVIEW AND APPROVE.

45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

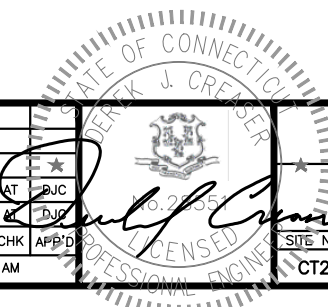
750 WEST CENTER STREET., SUITE #301
WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2167
SITE NAME: PAWCATUCK-BOOM BRIDGE RD

273 BOOM BRIDGE ROAD
NORTH STONINGTON, CT 06359
NEW LONDON COUNTY

550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	DJC
A	10/01/18	ISSUED FOR REVIEW	ET	AT	DJC
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: AT	DRAWN BY: AM		

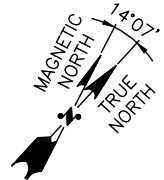
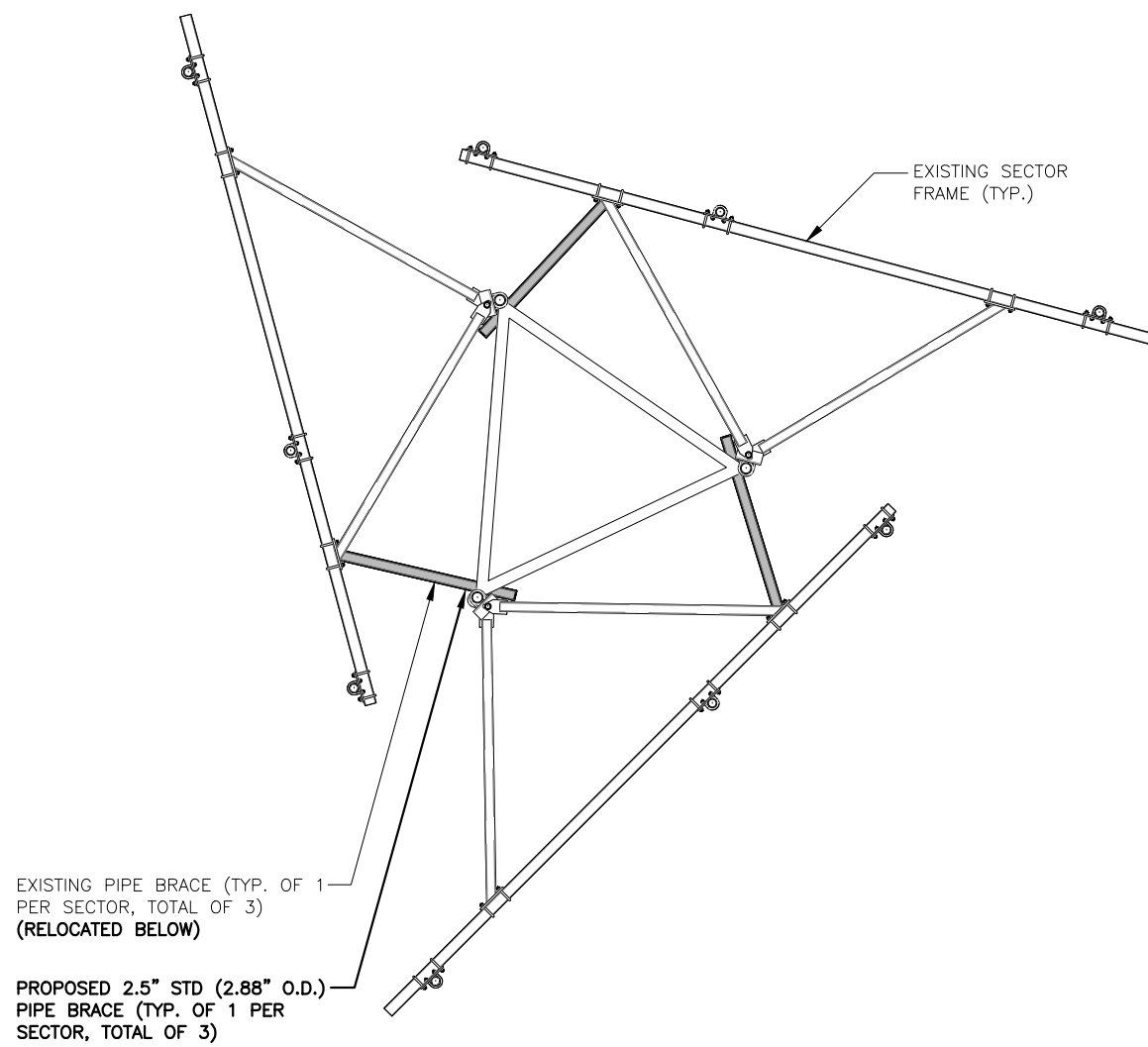


AT&T		
STRUCTURAL NOTES (LTE 2C/3C/4C)		
SITE NUMBER	DRAWING NUMBER	REV
CT2167	SN-1	1

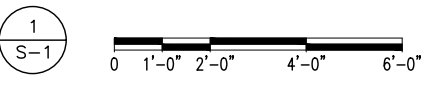
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING **ANTENNA MOUNT** TO SUPPORT THE PROPOSED LOADING HAS BEEN COMPLETED BY: HUDSON DESIGN GROUP, LLC. DATED: NOVEMBER 09, 2018

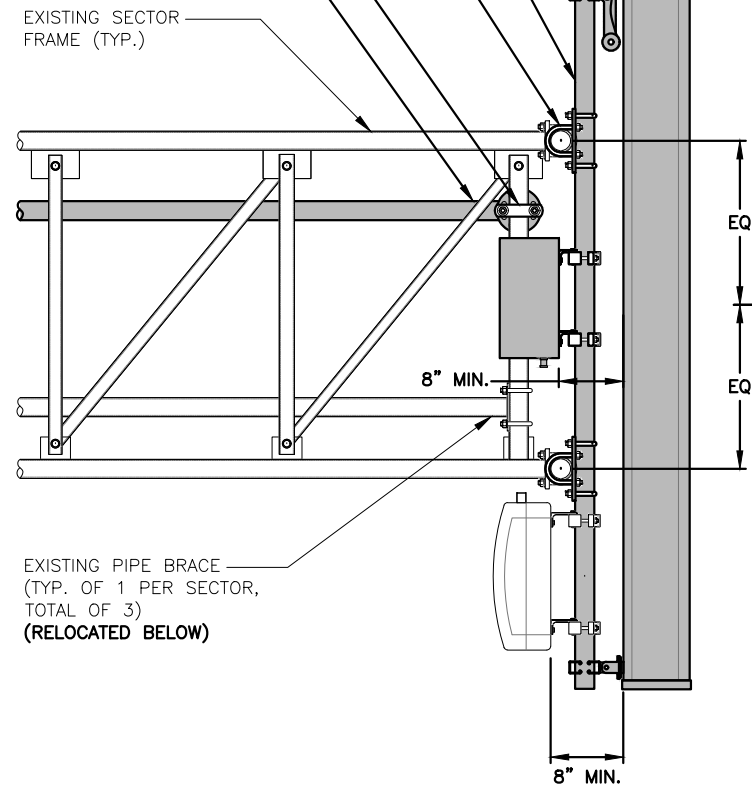
NOTE:
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC, DATED: NOVEMBER 14, 2018, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED MOUNT MODIFICATIONS PLAN
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"



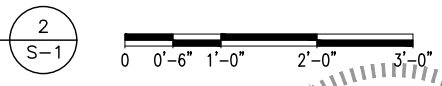
- PROPOSED 2.5" STD (2.88" O.D.) - 8'-0" LONG PIPE MAST (TYP. OF 1 PER SECTOR, TOTAL OF 3) (TO REPLACE EXISTING)
- PROPOSED CROSSOVER PLATE KIT SITEPRO1 PART# SCX43-K (TYP.)
- PROPOSED PIPE TO PIPE CLAMP SITEPRO1 PART# PUCK (TYP.)
- PROPOSED 2.5" STD (2.88" O.D.) PIPE BRACE (TYP. OF 1 PER SECTOR, TOTAL OF 3)



NOTE:
EXISTING & PROPOSED ANTENNAS TO BE LOWERED VERTICALLY AND CENTERED ON MOUNT.

CL OF EXISTING & PROPOSED AT&T ANTENNAS
ELEV. 178'-0"± (AGL)

PROPOSED MOUNT MODIFICATIONS DETAIL
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"



HDG HUDSON Design Group LLC
45 BEECHWOOD DRIVE NORTH ANDOVER, MA 01845
TEL: (978) 557-5553 FAX: (978) 336-5586

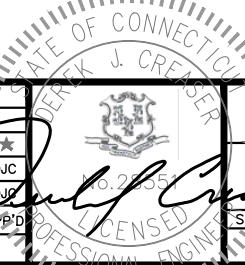
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET., SUITE #301 WEST BRIDGEWATER, MA 02379

SITE NUMBER: CT2167
SITE NAME: PAWCATUCK-BOOM BRIDGE RD
273 BOOM BRIDGE ROAD NORTH STONINGTON, CT 06359 NEW LONDON COUNTY

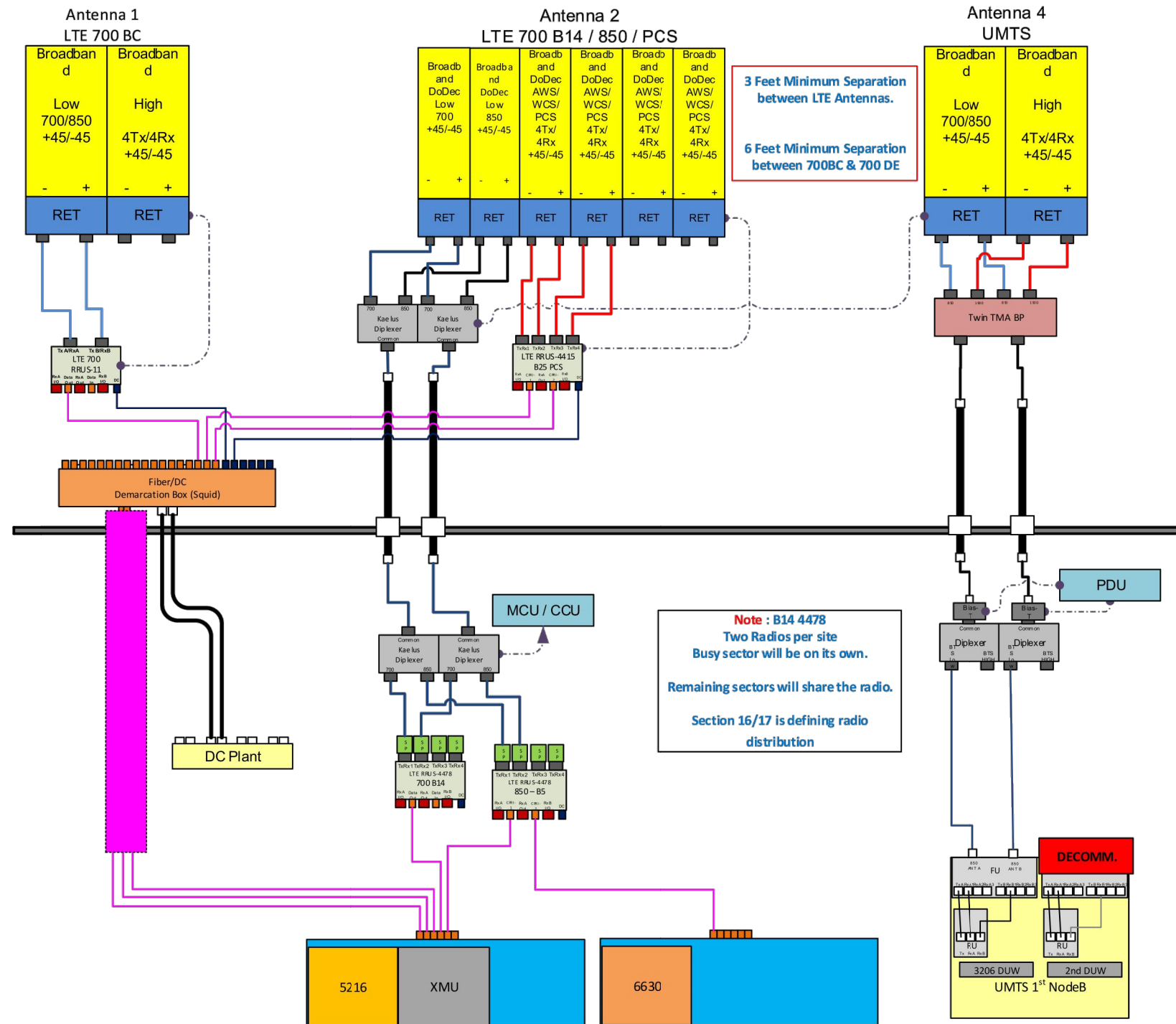
at&t
550 COCHITUATE ROAD FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	BJC
A	10/01/18	ISSUED FOR REVIEW	ET		DJG

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AM



AT&T
MOUNT MODIFICATION DESIGN (LTE 2C/3C/4C)
SITE NUMBER: CT2167 DRAWING NUMBER: S-1 REV: 1



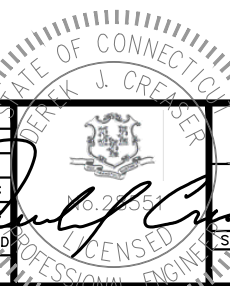
RF PLUMBING DIAGRAM 1
SCALE: N.T.S. RF-1

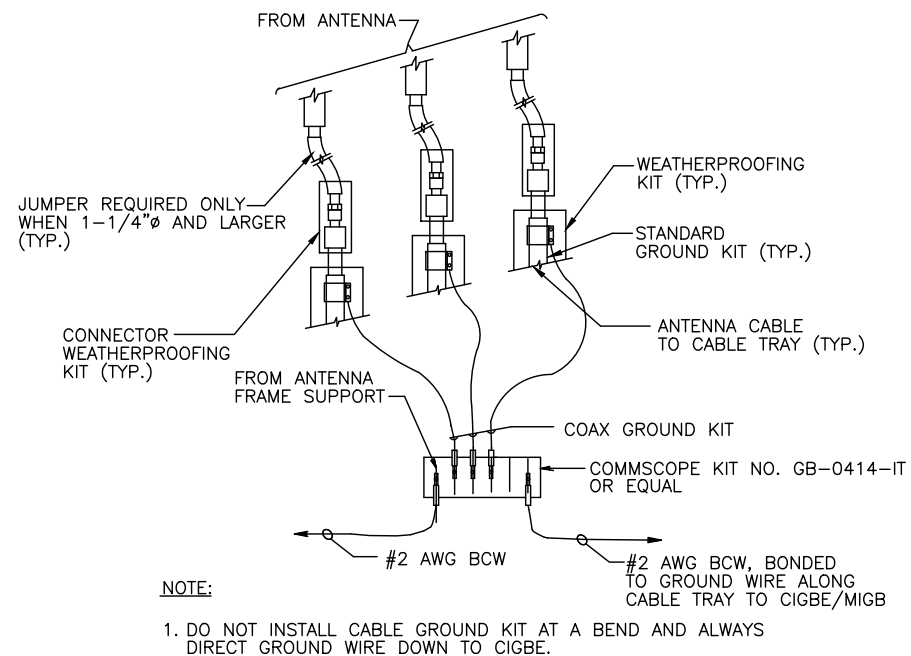
NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS

NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

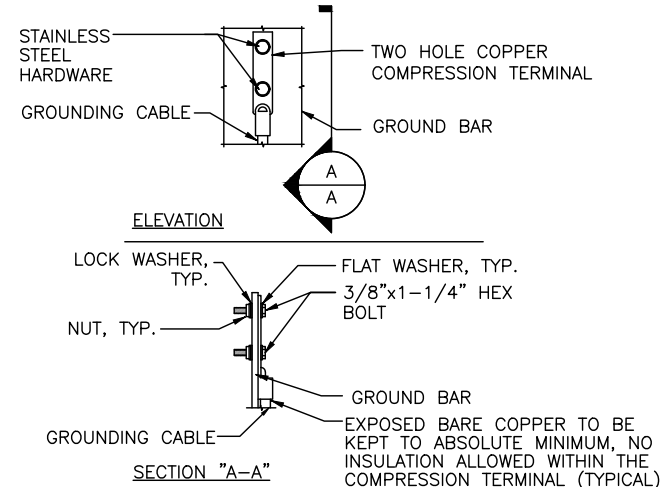
NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	JJC
A	10/01/18	ISSUED FOR REVIEW	ET	AT	DJC

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AM



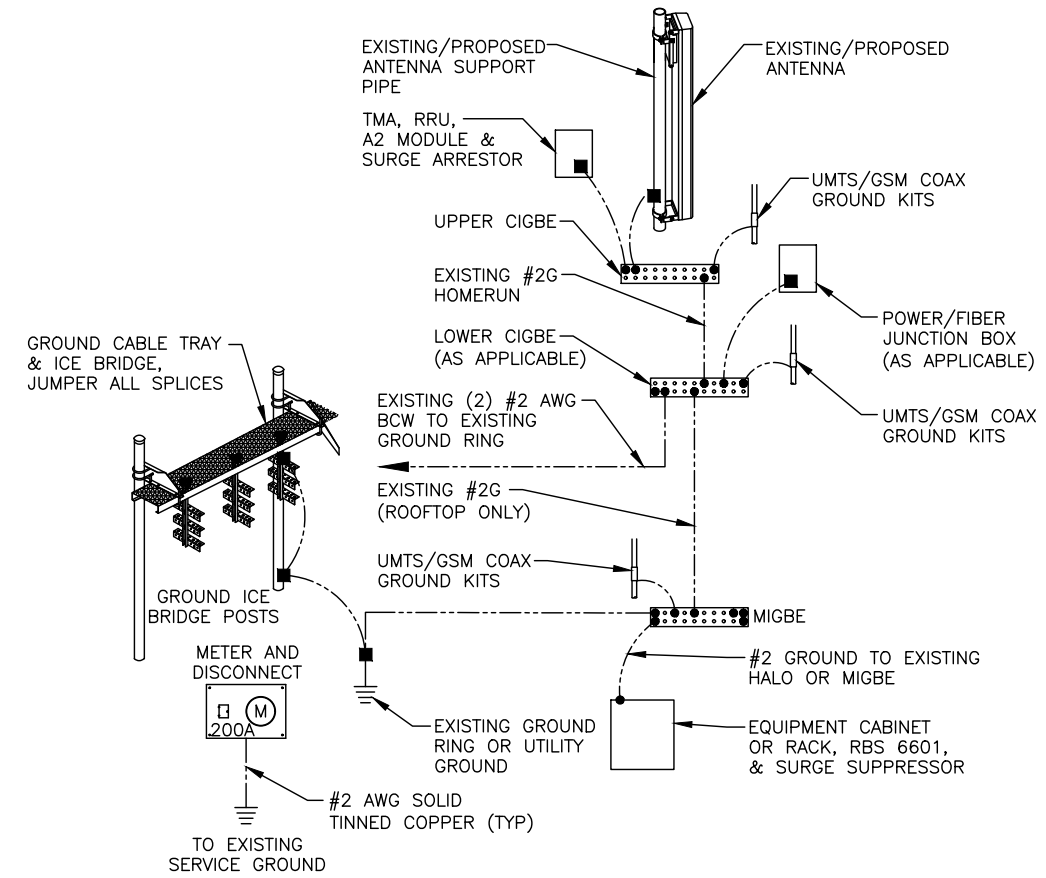


GROUND WIRE TO GROUND BAR CONNECTION DETAIL 1
SCALE: N.T.S. G-1



NOTE:
 1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATION.
 3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB

TYPICAL GROUND BAR CONNECTION DETAIL 3
SCALE: N.T.S. G-1



GROUNDING RISER DIAGRAM 2
SCALE: N.T.S. G-1

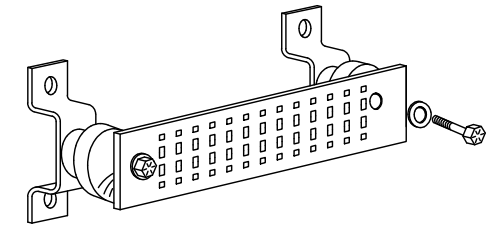
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

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

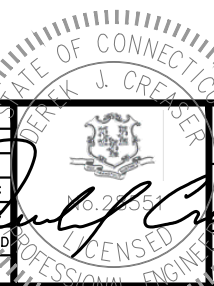
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)



GROUND BAR - DETAIL 4
SCALE: N.T.S. G-1

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	11/15/18	ISSUED FOR CONSTRUCTION	ET	AT	DJC
A	10/01/18	ISSUED FOR REVIEW	ET	AT	DJC

SCALE: AS SHOWN DESIGNED BY: AT DRAWN BY: AM



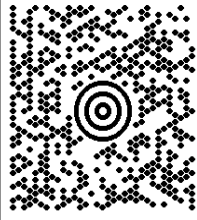
AT&T	
GROUNDING DETAILS (LTE 2C/3C/4C)	
SITE NUMBER	DRAWING NUMBER
CT2167	G-1
REV	1

DAVID FORD
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

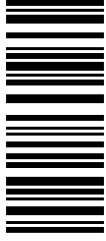
1 LBS

1 OF 1

SHIP TO:
LEWIS DAVID BABCOCK, LLC
273 BOOMBRIDGE ROAD
NORTH STONINGTON CT 06359

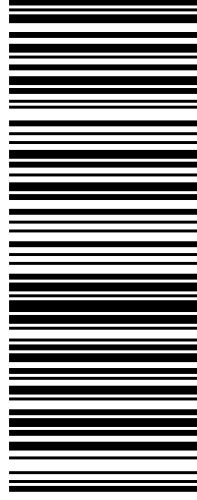


CT 063 0-02



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 2121 7213



BILLING: P/P



TM

XOL18.11.08 NV45 06.04.10/2018

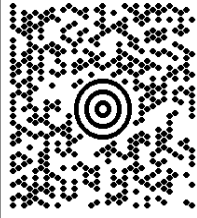
1 OF 1

1 LBS

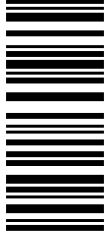
DAVID FORD
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

SHIP TO:

MICHAEL A. URGO
BOARD OF SELECTMAN
40 MAIN STREET
NORTH STONINGTON CT 06359

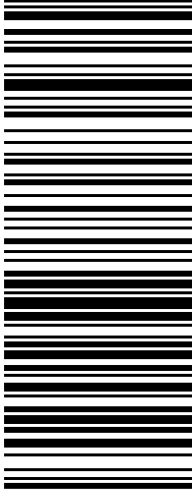


CT 063 0-02



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 3739 7384



BILLING: P/P



TM

XOL18.11.08 NV45 06.04.10/2018

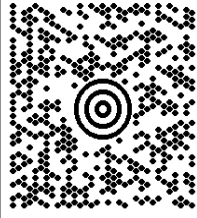
1 OF 1

1 LBS

DAVID FORD
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

SHIP TO:

KEN THOMAS
WIRELESS SOLUTIONS, LLC
PO BOX 374
UNCASVILLE CT 06382

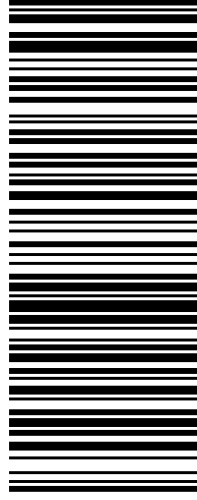


CT 063 0-03



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 2831 7601



BILLING: P/P



TM

XOL18.11.08 NV45 06.04.10/2018

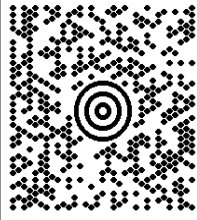
1 OF 1

1 LBS

DAVID FORD
CENTERLINE COMMUNICATIONS
750 WEST CENTER STREET
WEST BRIDGEWATER MA 02379

SHIP TO:

JULIET HODGE
PLANNING AND ZONING COMMISSION
40 MAIN STREET
NORTH STONINGTON CT 06359

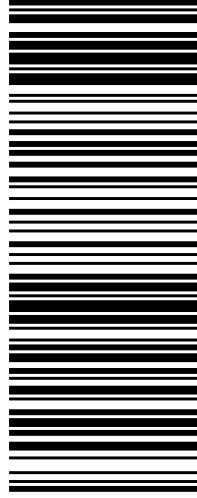


CT 063 0-02



UPS GROUND

TRACKING #: 1Z 9Y4 503 03 3401 0993



BILLING: P/P



TM

XOL18.11.08 NV45 06.04.10/2018