Tim Whalen , Site Acquisition
c/o New Cingular Wireless, PCS LLC
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (781) 375 8318
twhalen@clinellc.com

February 11, 2016

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

RE: Notice of Exempt Modification // Site Number: CT2168
23 Wayne Road, Wallingford, CT 06492 (Name: MT TOM WALLINGFORD)
N 41.4627419 // W -072.941881

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 78-foot level of the existing 80-foot monopole tower at 23 Wayne Road, Wallingford, CT. The tower is owned by AT&T. The property is owned by Stephen Tripp. AT&T now intends to replace three (3) of its existing antennas with 3 new LTE (700/1900 band) antennas for its LTE upgrade. These antennas would be installed at the 78-foot level of the tower. AT&T also intends to install three (3) remote radio units and (1) raycap surge suppressor.

The current proposal involves an antenna swap only (three for three); no antennas will be added..

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 the office of William W. Dickinson, Jr, Mayor for the Town of Wallingford, as well as the property owner and tower owner, Stephen Tripp.

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 February 11, 2016 by ComEx Consultants, a structural analysis dated December 29, 2015 by ComEx Consultants and an Emissions Analysis Report dated January 7, 2016 by EBI Consulting.

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 ComEx consulting, dated January 19, 2016.

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,

_____

Tim Whalen, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (781) 375-8313
twhalen@centerlincommunications.com

Attachments

cc: Office of William W. Dickinson, Jr, Mayor for the Town of Wallingford
New Cingular Wireless PCS, LLC - as tower owner
Stephen Tripp, individual - as property owner

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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

AT&T Existing Facility

Site ID: CT2168

Mt Tom Wallingford
23 Wayne Rd
Wallingford, CT 05942

January 7, 2016

EBI Project Number: 6616000022

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	16.23 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

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January 7, 2016

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

Emissions Analysis for Site: **CT2168 – Mt Tom Wallingford**

EBI Consulting was directed to analyze the proposed AT&T facility located at **23 Wayne Rd, Wallingford, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 public 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 public 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 done for the proposed AT&T Wireless antenna facility located at **23 Wayne Rd, Wallingford, 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.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (WCS Band – 2300 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (PCS Band – 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. 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. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Powerwave 7770.00, CCI OPA-65R-LCUU-H6 and the KMW AM-X-CD-16-65-00T-RET** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **78 feet** above ground level (AGL).

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

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AT&T Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00	Make / Model:	Powerwave 7770.00
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	78 feet	Height (AGL):	78 feet	Height (AGL):	78 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	**1.92**	Antenna B1 MPE%	**1.92**	Antenna C1 MPE%	**1.92**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd
Height (AGL):	78 feet	Height (AGL):	78 feet	Height (AGL):	78 feet
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	5,263.78	ERP (W):	5,263.78	ERP (W):	5,263.78
Antenna A2 MPE%	**4.21**	Antenna B2 MPE%	**4.21**	Antenna C2 MPE%	**4.21**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	78 feet	Height (AGL):	78 feet	Height (AGL):	78 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	6,614.85	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A3 MPE%	**6.64**	Antenna B3 MPE%	**6.64**	Antenna C3 MPE%	**6.64**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**12.77 %**
PageNet	2.28 %
BAM / Verizon	0.00 %
Land Mobile Radio	0.73 %
Amateur Radio	0.30 %
Amateur Radio	0.15 %
Site Total MPE %:	**16.23 %**

AT&T Sector 1 Total:	12.77 %
AT&T Sector 2 Total:	12.77 %
AT&T Sector 3 Total:	12.77 %
Site Total:	16.23 %

AT&T _ Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	78	5.74	850	567	1.01 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	78	9.10	1900	1000	0.91 %
AT&T 850 MHz GSM	2	527.38	78	7.31	850	567	1.29 %
AT&T 2300 MHz (WCS) LTE	2	2104.51	78	29.19	2300	1000	2.92 %
AT&T 700 MHz UMTS	2	1297.63	78	18.00	700	467	3.85 %
AT&T 1900 MHz (PCS) LTE	2	2009.79	78	27.88	1900	1000	2.79 %
						Total:	12.77 %

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Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector 1:	12.77 %
Sector 2:	12.77 %
Sector 3 :	12.77 %
AT&T Maximum Total (per sector):	12.77 %
Site Total:	16.23 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.23%** of the allowable FCC established general public 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.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

STRUCTURAL ANALYSIS REPORT
SELF-SUPPORT TOWER

Prepared For:

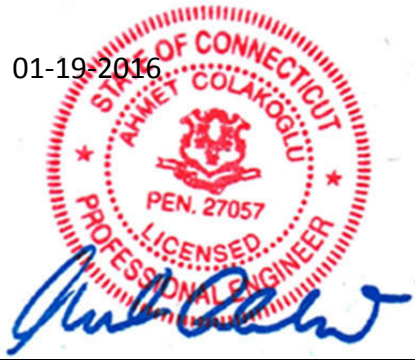
Com-Ex Consultants, LLC
115 Route 46 – Suite E39
Mountain Lakes, NJ 07046

Structure Rating:

Tower: **99.7% (Pass)**

Sincerely,
Destek Engineering, LLC

01-19-2016



Ahmet Colakoglu, PE
Connecticut Professional Engineer
License No: 27057

Site ID: CT2168
Site Name: MT TOM WALLINGFORD
FA Code: 10035084
23 Wayne Road
Wallingford, CT 06492

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

CONTENTS

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

1.0 SUBJECT AND REFERENCES

The purpose of this analysis is to evaluate the structural capacity of the existing 90 feet tall self-support tower located at 23 Wayne Road, Wallingford, New Haven County, CT 06492 for the additions and alterations proposed by AT&T.

The structural analysis is based on the following information provided to Destek Engineering, LLC (Destek):

- Structural Analysis Report prepared by URS, project No. 36924399.00000, dated 05/24/2010.
- Construction Drawings provided by Com-Ex, dated 09/29/2015.
- RFDS provided by Com-Ex Consultants, dated 06/16/2015.

1.1 STRUCTURE

The subject structure is a 3-sided, 90'-0" tall self-support tower formed by 5 sections. The top section of the tower is a 10 foot pole; the lower 4 sections are X-braced with solid round diagonals. The lower 4 sections are 3.5 feet wide at the top and 5 feet wide at the base. Please refer to the software output in Appendix A for tower geometry, member sizes, and other details.

2.0 EXISTING AND PROPOSED APPURTENANCES

The analysis is based on the following existing and proposed appurtenances:

Existing AT&T Appurtenance Configuration:

RAD CENTER (FT)	ANTENNA & TMA	MOUNT	FEED LINES
78	(6) Powerwave 7770 (3) KMW AM-X-CD-16-65-00T-RET (12) Kathrein 782-10250 -Dixplexers (6) TT19 08BP111-001 – TMAs (6) RRUS-11 (6) RRUW	(3) Sector Mounts	(12) 7/8" (1) 5/8" (2) #8 DC power conductors (3) Fiber Cable
	(1) DC6	(1) Leg Mount	

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Proposed and Final AT&T Appurtenances:

RAD CENTER (FT)	ANTENNA & TMA	MOUNT	FEED LINES
78	(3) Powerwave 7770 (3) KMW AM-X-CD-16-65-00T-RET (3) CCI OPA-65R-LCUU-H6 (12) Kathrein 782-10250 -Dixplexers (6) TT19 08BP111-001 – TMAs (6) RRUS-11 (6) RRUW (3) RRUS-32	(3) Sector Mounts	(12) 7/8” (1) 5/8” (2) #8 DC power conductors (3) Fiber Cable (2) DC Trunk
	(1) DC6 (1) DC/Fiber Squid	(2) Leg Mount	

Existing Appurtenances by Others:

RAD CENTER CARRIER (FT)	ANTENNA & TMA	MOUNT
88 Unknown	(1) 7’ Whip	(1) Pole Mount
73 Verizon	(1) 4’ Dish	(1) Dish Mount
73 Unknown	(1) 4’ Dish	(1) Leg Mount
65 Unknown	(1) 8’ Whip (1) 7’ Whip (1) 4’ Whip	(2) 6’ Side Arm
65 Unknown	(1) 4’ Dish	(1) Dish Mount
65 Verizon	(1) 20” Dish	(1) Leg Mount
55 Unknown	(1) 10’ Yagi (1) 2’ Yagi (1) Reflector	(3) Side Arm

***** In this analysis it is conservatively assumed that all cables from the other carriers extend to the top of the tower due to lack of information. Based on the URS report, there are (16) 7/8” and (2) EW52 located at the south leg, (6) 1 1/4” and (4) 7/8” located at the northwest leg (see attached feedline plan for details).

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3.0 CODES AND LOADING

The Monopole was analyzed per *TIA/EIA-222-F* as referenced by *2005 Connecticut State Building Code with 2009 Addendum,* International Code Council. The following wind loading was used in compliance with the standard for New Haven County:

- Basic wind speed 85 mph (W) without ice
- Basic wind speed 73.6 mph (W_i) with 1/2" radial ice.

The following load combinations were used with wind blowing at 0^o, 60^o and 90^o, measured from a line normal to the face of the tower.

- $D + W_o$
- $D + W_i + I$

D: Dead Load
W_o: Wind Load, without ice
W_i: Wind Load with ice
I: Ice Gravity Load

4.0 STANDARD CONDITIONS FOR ENGINEERING SERVICES ON EXISTING STRUCTURES

The analysis is based on the information provided to Destek and is assumed to be current and correct. Unless otherwise noted, the structure is assumed to be in good condition, free of defects and can achieve theoretical strength.

It is assumed that the structure has been maintained and shall be maintained during its service. The superstructure and the foundation system are assumed to be designed with proper engineering practice and fabricated, constructed and erected in accordance with the design documents. Destek will accept no liability which may arise due to any existing deficiency in design, material, fabrication, erection, construction, etc. or lack of maintenance.

The analysis does not include a qualification of the mounts attached on the structure or their connections. The analysis is performed to verify the capacity of the main structural members, which is the current practice in the tower industry.

The analysis results presented in this report are only applicable for the previously mentioned existing and proposed appurtenances. Any deviation of the appurtenances and appurtenance placement will require Destek to generate an additional structural analysis. Additionally, the proposed linear appurtenances should be placed per recommendations of this report.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

5.0 ANALYSIS AND ASSUMPTIONS

The tower was analyzed by utilizing tnxTower, a non-linear 3-Dimensional finite element software, a product of Tower Numerics, Inc. Software output for this analysis is provided in Appendix-A of this report.

6.0 RESULTS AND CONCLUSION

Based on an analysis per TIA/EIA-222-F, the existing tower is found to have **adequate** structural capacity for the proposed changes by AT&T. For the aforementioned load combinations and as a maximum, tower legs between 0 and 20 feet were found stressed to **99.7%** of their capacity. The top pole, tower diagonals and tower horizontals are stressed to **18.2%, 62.3%** and **71.3%** of their structural capacities as a maximum. The foundation is also found to have **adequate** structural capacity for the proposed loads.

Reactions Comparison:

	Destek Analysis	Previous URS Analysis
Leg Compression (kips)	163.2	106.6
Leg Uplift (kips)	150.9	96.8
Total Shear (kips)	9.8	7.1
Tower Overturning (kip-ft)	683.0	444.0

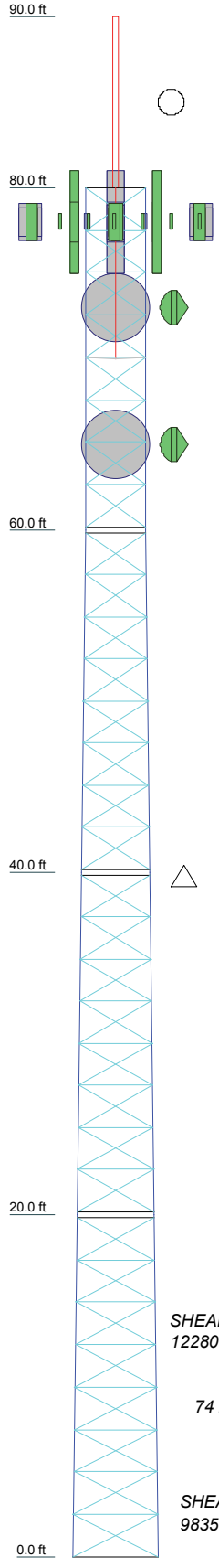
Therefore, the proposed alterations and additions by AT&T **can** be implemented as intended, with the conditions outlined in this report.

Should you have any questions about this report, please contact Ahmet Colakoglu at (770) 693-0835 or acolakoglu@destekengineering.com.

DESTEK ENGINEERING, LLC
1281 Kennestone Circle, Ste 100, Marietta, GA 30066 -Tel: (770) 693-0835

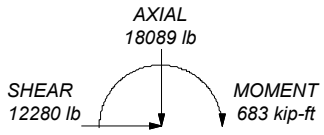
APPENDIX A
SOFTWARE OUTPUT

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Bottom Girts	Horizontals	Face Width (ft)	# Panels @ (ft)	Weight (lb)
L1	P4x.237	A53-B-35	N.A.	N.A.	N.A.	N.A.	N.A.	0.375	N.A.	108.0
T1	SR 1 1/2	A572-50	SR 3/4	A572-50	L3 1/2x3 1/2x5/16	SR 3/4	SR 3/4	3.5	8 @ 2.47917	990.6
T2	SR 2	A572-50	SR 7/8	A572-50	SR 7/8	SR 7/8	SR 7/8	4	16 @ 2.45833	1249.0
T3	SR 2 1/4	A572-50	SR 7/8	A572-50	SR 1	SR 1	SR 7/8	4.5	8 @ 2.47917	1544.9
T4	SR 2 1/2	A572-50	SR 7/8	A572-50	SR 1	SR 1	SR 7/8	5	8 @ 2.47917	1766.2
										5618.7

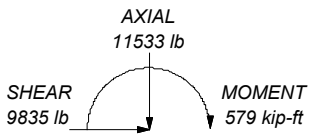


MAX. CORNER REACTIONS AT BASE:
DOWN: 163211 lb
SHEAR: 7229 lb

UPLIFT: -150862 lb
SHEAR: 23082 lb



TORQUE 1 kip-ft
74 mph WIND - 0.5000 in ICE



TORQUE 2 kip-ft
REACTIONS - 85 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10'x1" dia Yagi	88	OPA-65R-LCUU-H6 w/ Mount Pipe	78
7770.00 w/ Mount Pipe	78	OPA-65R-LCUU-H6 w/ Mount Pipe	78
7770.00 w/ Mount Pipe	78	OPA-65R-LCUU-H6 w/ Mount Pipe	78
7770.00 w/ Mount Pipe	78	RRUS 32	78
AM-X-CD-16-65-00T-RET	78	RRUS 32	78
AM-X-CD-16-65-00T-RET	78	RRUS 32	78
AM-X-CD-16-65-00T-RET	78	DC6-48-60-0-8F	78
(4) 782-10250	78	3' stand-off	73
(4) 782-10250	78	8' Whip	73 - 65
(4) 782-10250	78	4' Dish	73
TT19-08BP111-001	78	2' Dish	73
TT19-08BP111-001	78	7' Whip	72 - 65
TT19-08BP111-001	78	4' Whip	69 - 65
(2) RRUS 11	78	3' stand-off	65
(2) RRUS 11	78	6 ' side arm	65 - 55
(2) RRUS 11	78	6 ' side arm	65 - 55
(2) RRUW	78	4' Dish	65
(2) RRUW	78	2' Dish	65
(2) RRUW	78	side arm mount	55
DC6-48-60-18-8F	78	side arm mount	55
3' stand-off	78	10'x1" dia Yagi	55
3' stand-off	78	3' 10 Element Yagi	55
3' stand-off	78	side arm mount	55

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 99.7%

Destek Engineering, LLC
1281 Kennestone Circle, Suite 100
Marietta, GA 30066
Phone: (770) 693-0835
FAX:

Job: ***MT TOM WALLINGFORD***			
Project: ***1529213***			
Client: Com-Ex	Drawn by: Ahmet Colakoglu	App'd:	
Code: TIA/EIA-222-F	Date: 01/19/16	Scale: NTS	
Path: Y:\2015\29 - Com-Ex Consultants\1529213 - CT2168 - 15070-EMP\tnx\CT2168.eri		Dwg No. E-1	

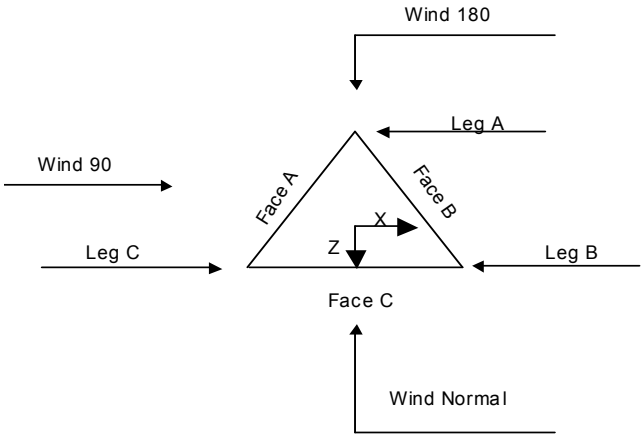
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 90.00 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 3.50 ft at the top and 5.00 ft at the base.
An index plate is provided at the 3x free standing -tower connection.
There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in New Haven County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.0664.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	√ Include Angle Block Shear Check
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	Include Shear-Torsion Interaction
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination	Use TIA-222-G Tension Splice Capacity Exemption	



Triangular Tower

Pole Section Geometry

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L1	90.00-80.00	10.00	P4x.237	A53-B-35 (35 ksi)	10.00

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 90.00-80.00				1	1	1		

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	80.00-60.00			3.50	1	20.00
T2	60.00-40.00			3.50	1	20.00
T3	40.00-20.00			4.00	1	20.00
T4	20.00-0.00			4.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	80.00-60.00	2.48	X Brace	No	Yes	0.0000	2.0000
T2	60.00-40.00	2.46	X Brace	No	Yes	2.0000	2.0000
T3	40.00-20.00	2.46	X Brace	No	Yes	2.0000	2.0000
T4	20.00-0.00	2.48	X Brace	No	Yes	2.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 80.00-60.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 60.00-40.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 40.00-20.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T4 20.00-0.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 80.00-60.00	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 60.00-40.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 40.00-20.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T4 20.00-0.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 80.00-60.00	None	Flat Bar		A36	Solid Round	3/4	A572-50

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T2 60.00-40.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(50 ksi) A572-50 (50 ksi)
T3 40.00-20.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(50 ksi) A572-50 (50 ksi)
T4 20.00-0.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Solid Round	7/8	(50 ksi) A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 80.00-60.00	Yes	No	1	1 1	1 1	1 1	1 1	0.75 0.75	1 1	1 1
T2 60.00-40.00	Yes	No	1	1 1	1 1	1 1	1 1	0.75 0.75	1 1	1 1
T3 40.00-20.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 20.00-0.00	Yes	No	1	1 1	1 1	1 1	1 1	0.75 0.75	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 60.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 40.00-20.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
T4 20.00-0.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 80.00-60.00	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 60.00-40.00	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 40.00-20.00	Flange	0.7500 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 20.00-0.00	Flange	1.7500 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A(7/8")	A	No	Ar (Leg)	80.00 - 6.00	0.0000	0.1	4	2	1.5000	1.1100		0.54
FXL-1480(1 1/4")	A	No	Ar (Leg)	80.00 - 6.00	0.0000	0.2	6	3	1.5500	1.5700		0.66

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***												
EW52(ELLIPTICAL)	C	Yes	Ar (CfAe)	80.00 - 6.00	1.2500	0.45	2	1	1.7400	1.7426		0.59
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	80.00 - 6.00	-0.5000	-0.4	8	4	1.5000	1.1100		0.54
LDF5-50A(7/8")	C	Yes	Ar (CfAe)	80.00 - 6.00	0.0000	0.35	8	4	1.5000	1.1100		0.54
***												
LDF5-50A(7/8")	A	Yes	Ar (CfAe)	80.00 - 6.00	0.0000	-0.35	12	6	1.5000	1.1100		0.54
LDF4.5-50(5/8")	A	Yes	Ar (CfAe)	80.00 - 6.00	0.0000	-0.2	1	1	0.8650	0.8650		0.15
DC Power Cable	A	Yes	Ar (CfAe)	80.00 - 6.00	0.0000	-0.15	2	2	0.8750	0.8750		2.00
DC Trunk + Fiber cable	C	Yes	Ar (CfAe)	80.00 - 6.00	0.0000	0	5	5	0.5000 0.0000	0.8750		2.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	90.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T1	80.00-60.00	A	27.008	0.000	0.000	0.000	335.00
		B	11.550	0.000	0.000	0.000	0.00
		C	24.996	0.000	0.000	0.000	396.40
T2	60.00-40.00	A	27.008	0.000	0.000	0.000	335.00
		B	11.550	0.000	0.000	0.000	0.00
		C	24.996	0.000	0.000	0.000	396.40
T3	40.00-20.00	A	27.008	0.000	0.000	0.000	335.00
		B	11.550	0.000	0.000	0.000	0.00
		C	24.996	0.000	0.000	0.000	396.40
T4	20.00-0.00	A	18.906	0.000	0.000	0.000	234.50
		B	8.085	0.000	0.000	0.000	0.00
		C	17.497	0.000	0.000	0.000	277.48

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	90.00-80.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T1	80.00-60.00	A	0.500	47.217	2.917	0.000	0.000	855.78
		B		19.883	0.000	0.000	0.000	0.00
		C		35.829	9.167	0.000	0.000	844.21
T2	60.00-40.00	A	0.500	47.217	2.917	0.000	0.000	855.78
		B		19.883	0.000	0.000	0.000	0.00
		C		35.829	9.167	0.000	0.000	844.21
T3	40.00-20.00	A	0.500	47.217	2.917	0.000	0.000	855.78
		B		19.883	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C		35.829	9.167	0.000	0.000	844.21
T4	20.00-0.00	A	0.500	33.052	2.042	0.000	0.000	599.04
		B		13.918	0.000	0.000	0.000	0.00
		C		25.081	6.417	0.000	0.000	590.95

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
L1	90.00-80.00		0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000
			0.000	0.000	0.000	0.000
T1	80.00-60.00	A	1.334	6.215	0.225	0.441
		B	0.000	0.000	0.000	0.000
		C	2.156	9.245	0.365	0.656
T2	60.00-40.00	A	1.586	6.651	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	2.565	9.893	0.000	0.000
T3	40.00-20.00	A	1.565	6.528	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	2.531	9.711	0.000	0.000
T4	20.00-0.00	A	1.078	4.497	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	1.744	6.689	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	90.00-80.00	0.0000	0.0000	0.0000	0.0000
T1	80.00-60.00	-2.5493	1.4024	-2.2486	0.9465
T2	60.00-40.00	-3.0233	1.6539	-2.5941	1.0877
T3	40.00-20.00	-3.2192	1.7554	-2.7802	1.1695
T4	20.00-0.00	-2.8303	1.5414	-2.4489	1.0342

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
side arm mount	A	From Leg	1.00 0.00	0.0000	55.00	No Ice 1/2" Ice	1.92 2.58	1.92 2.58	69.00 92.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00						
side arm mount	B	From Leg	1.00	0.0000	55.00	No Ice	1.92	1.92	69.00
			0.00			1/2" Ice	2.58	2.58	92.00
			0.00						
side arm mount	C	From Leg	1.00	0.0000	55.00	No Ice	1.92	1.92	69.00
			0.00			1/2" Ice	2.58	2.58	92.00
			0.00						
4' Whip	B	From Leg	5.00	0.0000	69.00 - 65.00	No Ice	0.89	0.89	70.00
			0.00			1/2" Ice	1.14	1.14	78.00
			0.00						
7' Whip	B	From Leg	5.00	0.0000	72.00 - 65.00	No Ice	1.75	1.75	10.00
			0.00			1/2" Ice	2.45	2.45	23.00
			0.00						
8' Whip	A	From Leg	5.00	0.0000	73.00 - 65.00	No Ice	2.00	2.00	20.00
			0.00			1/2" Ice	2.83	2.83	35.00
			0.00						
6 ' side arm	B	From Leg	2.50	0.0000	55.00 - 65.00	No Ice	7.20	7.20	225.00
			0.00			1/2" Ice	9.30	9.30	295.00
			0.00						
6 ' side arm	A	From Leg	2.50	0.0000	55.00 - 65.00	No Ice	7.20	7.20	225.00
			0.00			1/2" Ice	9.30	9.30	295.00
			0.00						
10'x1" dia Yagi	B	From Leg	2.00	0.0000	55.00	No Ice	2.00	2.00	30.00
			0.00			1/2" Ice	3.02	3.02	46.00
			0.00						
3' 10 Element Yagi	A	From Leg	2.00	0.0000	55.00	No Ice	1.18	1.18	50.00
			0.00			1/2" Ice	2.00	2.00	65.00
			0.00						
10'x1" dia Yagi	B	From Leg	2.00	0.0000	88.00	No Ice	1.74	1.74	37.00
			0.00			1/2" Ice	2.60	2.60	53.00
			0.00						
3' stand-off	A	From Leg	1.50	0.0000	73.00	No Ice	1.00	2.00	50.00
			0.00			1/2" Ice	1.20	2.70	75.00
			0.00						
3' stand-off	A	From Leg	1.50	0.0000	65.00	No Ice	1.00	2.00	50.00
			0.00			1/2" Ice	1.20	2.70	75.00
			0.00						
***									
7770.00 w/ Mount Pipe	A	From Leg	0.75	0.0000	78.00	No Ice	6.12	4.25	55.38
			0.00			1/2" Ice	6.63	5.01	102.81
			0.00						
7770.00 w/ Mount Pipe	B	From Leg	0.75	0.0000	78.00	No Ice	6.12	4.25	55.38
			0.00			1/2" Ice	6.63	5.01	102.81
			0.00						
7770.00 w/ Mount Pipe	C	From Leg	0.75	0.0000	78.00	No Ice	6.12	4.25	55.38
			0.00			1/2" Ice	6.63	5.01	102.81
			0.00						
AM-X-CD-16-65-00T-RET	A	From Leg	0.75	0.0000	78.00	No Ice	8.26	4.64	48.50
			0.00			1/2" Ice	8.81	5.09	95.00
			0.00						
AM-X-CD-16-65-00T-RET	B	From Leg	0.75	0.0000	78.00	No Ice	8.26	4.64	48.50
			0.00			1/2" Ice	8.81	5.09	95.00
			0.00						
AM-X-CD-16-65-00T-RET	C	From Leg	0.75	0.0000	78.00	No Ice	8.26	4.64	48.50
			0.00			1/2" Ice	8.81	5.09	95.00
			0.00						
(4) 782-10250	A	From Leg	0.75	0.0000	78.00	No Ice	0.52	0.27	6.40

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00 0.00			1/2" Ice	0.63	0.36	10.06
(4) 782-10250	B	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	0.52 0.63	0.27 0.36	6.40 10.06
(4) 782-10250	C	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	0.52 0.63	0.27 0.36	6.40 10.06
TT19-08BP111-001	A	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	16.00 21.80
TT19-08BP111-001	B	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	16.00 21.80
TT19-08BP111-001	C	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	0.64 0.76	0.52 0.62	16.00 21.80
(2) RRUS 11	A	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	50.70 71.50
(2) RRUS 11	B	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	50.70 71.50
(2) RRUS 11	C	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.25 3.49	1.37 1.55	50.70 71.50
(2) RRUW	A	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.67 3.94	1.62 1.83	44.10 66.53
(2) RRUW	B	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.67 3.94	1.62 1.83	44.10 66.53
(2) RRUW	C	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.67 3.94	1.62 1.83	44.10 66.53
DC6-48-60-18-8F	A	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	2.57 2.80	2.57 2.80	18.90 41.46
3' stand-off	A	From Leg	1.50 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	50.00 75.00
3' stand-off	B	From Leg	1.50 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	50.00 75.00
3' stand-off	C	From Leg	1.50 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	50.00 75.00
PROPOSED OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	10.60 11.27	7.18 8.36	98.55 175.48
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	10.60 11.27	7.18 8.36	98.55 175.48
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	10.60 11.27	7.18 8.36	98.55 175.48

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRUS 32	A	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.33 3.60	1.98 2.21	55.12 77.39
RRUS 32	B	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.33 3.60	1.98 2.21	55.12 77.39
RRUS 32	C	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	3.33 3.60	1.98 2.21	55.12 77.39
DC6-48-60-0-8F	A	From Leg	0.75 0.00 0.00	0.0000	78.00	No Ice 1/2" Ice	2.57 2.80	2.57 2.80	18.90 41.46

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
4' Dish	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		65.00	4.00	No Ice 1/2" Ice	12.57 13.10	140.00 160.00
4' Dish	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		73.00	4.00	No Ice 1/2" Ice	12.57 13.10	140.00 160.00
2' Dish	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		73.00	2.00	No Ice 1/2" Ice	3.14 3.41	150.00 170.00
2' Dish	B	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		65.00	2.00	No Ice 1/2" Ice	3.14 3.41	150.00 170.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice

Comb. No.	Description
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	90 - 80	Pole	Max Tension	24	0.00	-0.00	-0.00
			Max. Compression	14	-191.55	-0.10	-0.06
			Max. Mx	18	-187.11	-1.17	-0.05
			Max. My	21	-187.10	-0.10	-1.13
			Max. Vy	5	181.96	-1.13	-0.04
			Max. Vx	8	181.99	-0.07	-1.10
			Max. Torque	22			0.13
T1	80 - 60	Leg	Max Tension	8	26704.50	0.01	0.43
			Max. Compression	19	-31363.32	0.02	-0.01
			Max. Mx	23	-22081.71	0.52	-0.34
			Max. My	21	18589.66	-0.02	-0.64
			Max. Vy	23	-2679.97	-0.01	-0.00
			Max. Vx	15	-3198.30	0.01	-0.01
		Diagonal	Max Tension	12	2691.76	0.00	0.00
			Max. Compression	19	-3120.58	0.00	0.00
			Max. Mx	17	2430.28	-0.00	0.00
			Max. My	6	-1943.06	0.00	-0.00
			Max. Vy	17	-3.14	-0.00	0.00
			Max. Vx	6	0.36	0.00	0.00
		Horizontal	Max Tension	17	1354.07	0.00	0.00
			Max. Compression	6	-786.65	0.00	0.00
			Max. Mx	14	491.98	0.00	0.00
			Max. My	18	154.27	0.00	-0.00
			Max. Vy	14	-3.97	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	25	0.01	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	20	-6753.92	0.00	0.00
			Max. Mx	14	-1.59	-0.02	0.00
			Max. My	18	-6624.10	0.00	0.00
			Max. Vy	14	17.88	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	893.55	0.00	0.00
			Max. Compression	6	-588.56	0.00	0.00
			Max. Mx	14	263.57	0.00	0.00
			Max. My	18	154.03	0.00	-0.00
			Max. Vy	14	-3.97	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Pole Socket	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-331.75	0.00	0.00
			Max. Mx	5	-146.57	-0.73	-0.03
			Max. My	8	-146.52	-0.06	-0.69
			Max. Vy	5	-73.69	-0.73	-0.03
			Max. Vx	8	-69.84	-0.06	-0.69
		Pole Socket Support	Max Tension	15	1747.35	0.39	0.01
			Max. Compression	6	-543.25	0.00	0.00
			Max. Mx	19	1746.97	0.39	-0.02
			Max. My	15	146.93	0.05	-1.81
			Max. Vy	19	192.88	0.39	-0.02
			Max. Vx	15	-892.86	0.05	-1.81
T2	60 - 40	Leg	Max Tension	21	67099.59	0.38	-0.02
			Max. Compression	19	-74831.25	0.10	-0.01
			Max. Mx	21	58707.27	-0.74	0.02
			Max. My	18	-2411.33	-0.08	0.40
			Max. Vy	19	-4061.35	0.10	-0.01
			Max. Vx	24	1570.62	-0.05	-0.30
		Diagonal	Max Tension	25	2926.17	0.00	0.00
			Max. Compression	19	-3744.42	0.00	0.00
			Max. Mx	19	1177.34	-0.01	-0.00
			Max. My	12	-1925.58	0.00	0.00
			Max. Vy	19	5.12	-0.01	-0.00
			Max. Vx	12	0.51	0.00	0.00
		Horizontal	Max Tension	21	2234.95	0.00	0.00
			Max. Compression	6	-1388.83	0.00	0.00
			Max. Mx	14	622.98	0.01	0.00
			Max. My	18	320.32	0.00	-0.00
			Max. Vy	14	-5.68	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	17	644.05	0.00	0.00
			Max. Compression	6	-277.45	0.00	0.00
			Max. Mx	14	326.19	0.00	0.00
			Max. My	18	164.07	0.00	-0.00
			Max. Vy	14	-5.06	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	1178.50	0.00	0.00
			Max. Compression	6	-819.32	0.00	0.00
			Max. Mx	14	180.67	0.01	0.00
			Max. My	18	96.89	0.00	-0.00
			Max. Vy	14	5.77	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
T3	40 - 20	Leg	Max Tension	21	109814.09	0.44	-0.00
			Max. Compression	19	-119757.57	0.14	0.01
			Max. Mx	19	-74832.77	0.78	0.04
			Max. My	24	-3347.53	0.00	-0.56
			Max. Vy	19	-4059.21	0.78	0.04
			Max. Vx	24	2102.18	-0.03	-0.10
		Diagonal	Max Tension	25	3612.94	0.00	0.00
			Max. Compression	19	-3799.34	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	19	2233.40	-0.01	-0.00
			Max. My	6	-3201.06	0.00	-0.00
			Max. Vy	19	5.45	-0.01	-0.00
			Max. Vx	6	0.43	0.00	-0.00
		Horizontal	Max Tension	21	1571.67	0.00	0.00
			Max. Compression	19	-1312.37	0.00	0.00
			Max. Mx	14	119.59	0.01	0.00
			Max. My	18	98.43	0.00	-0.00
			Max. Vy	14	-6.40	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Top Girt	Max Tension	21	783.35	0.00	0.00
			Max. Compression	6	-455.02	0.00	0.00
			Max. Mx	14	232.19	0.01	0.00
			Max. My	18	117.86	0.00	-0.00
			Max. Vy	14	-7.19	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	1661.95	0.00	0.00
			Max. Compression	19	-1290.00	0.00	0.00
			Max. Mx	14	191.27	0.01	0.00
			Max. My	18	241.59	0.00	-0.00
			Max. Vy	14	-8.07	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
T4	20 - 0	Leg	Max Tension	21	146267.48	0.36	-0.00
			Max. Compression	23	-161261.10	0.42	-0.02
			Max. Mx	19	-154121.06	1.10	0.02
			Max. My	24	-4083.42	0.44	-0.53
			Max. Vy	21	3883.89	-0.85	0.01
			Max. Vx	24	2102.64	-0.08	-0.45
		Diagonal	Max Tension	25	4977.93	0.00	0.00
			Max. Compression	19	-3985.68	0.00	0.00
			Max. Mx	21	2306.69	-0.01	-0.00
			Max. My	19	-3965.97	0.00	-0.00
			Max. Vy	21	-5.73	-0.01	-0.00
			Max. Vx	19	0.42	0.00	-0.00
		Horizontal	Max Tension	21	2130.31	0.00	0.00
			Max. Compression	23	-2253.31	0.00	0.00
			Max. Mx	14	-555.59	0.01	0.00
			Max. Vy	14	-7.13	0.00	0.00
			Max. Vx	18	-0.00	0.00	0.00
		Top Girt	Max Tension	21	663.29	0.00	0.00
			Max. Compression	6	-409.56	0.00	0.00
			Max. Mx	14	200.26	0.01	0.00
			Max. My	18	159.23	0.00	-0.00
			Max. Vy	14	-8.08	0.00	0.00
			Max. Vx	18	0.00	0.00	0.00
		Bottom Girt	Max Tension	14	7402.38	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	7402.38	0.01	0.00
			Max. Vy	14	8.97	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	23	163210.54	-6324.07	3501.99
	Max. H_x	10	135499.19	5537.28	-3348.48

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_z	17	-147175.98	-19782.33	11597.79
	Min. Vert	17	-147175.98	-19782.33	11597.79
	Min. H_x	17	-147175.98	-19782.33	11597.79
	Min. H_z	10	135499.19	5537.28	-3348.48
Leg B	Max. Vert	19	163097.54	6320.07	3504.45
	Max. H_x	25	-148469.40	19825.82	11621.21
	Max. H_z	25	-148469.40	19825.82	11621.21
	Min. Vert	25	-148469.40	19825.82	11621.21
	Min. H_x	6	136023.84	-5515.64	-3405.69
	Min. H_z	6	136023.84	-5515.64	-3405.69
Leg A	Max. Vert	15	162586.58	-4.39	-7243.92
	Max. H_x	24	4826.10	391.43	-15127.83
	Max. H_z	2	135592.37	60.26	6467.34
	Min. Vert	21	-150862.10	1.15	-23082.08
	Min. H_x	18	4717.37	-396.65	-15132.29
	Min. H_z	21	-150862.10	1.15	-23082.08

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	11532.89	-0.03	0.01	-0.02	-0.96	0.00
Dead+Wind 0 deg - No Ice	11532.88	-18.92	-9719.53	-570.49	0.33	0.52
Dead+Wind 30 deg - No Ice	11532.88	4795.53	-8335.45	-488.34	-281.71	-0.53
Dead+Wind 60 deg - No Ice	11532.88	8246.83	-4715.81	-275.23	-483.09	-1.33
Dead+Wind 90 deg - No Ice	11532.88	9565.30	93.71	6.47	-560.67	-1.73
Dead+Wind 120 deg - No Ice	11532.88	8404.38	4912.82	288.87	-494.12	-1.71
Dead+Wind 150 deg - No Ice	11532.88	4926.04	8512.50	500.61	-290.85	-1.26
Dead+Wind 180 deg - No Ice	11532.88	-5.37	9784.30	574.93	-0.62	-0.50
Dead+Wind 210 deg - No Ice	11532.88	-4926.88	8476.83	498.14	288.93	0.38
Dead+Wind 240 deg - No Ice	11532.88	-8406.61	4892.26	287.44	492.32	1.19
Dead+Wind 270 deg - No Ice	11532.88	-9612.29	85.50	5.89	562.00	1.72
Dead+Wind 300 deg - No Ice	11532.88	-8319.78	-4751.73	-277.76	486.22	1.83
Dead+Wind 330 deg - No Ice	11532.88	-4857.46	-8389.16	-492.11	284.06	1.42
Dead+Ice+Temp	18089.19	-0.00	0.00	0.58	0.57	0.00
Dead+Wind 0 deg+Ice+Temp	18089.17	-15.41	-12238.51	-677.91	1.63	-0.02
Dead+Wind 30 deg+Ice+Temp	18089.18	6050.62	-10488.43	-580.43	-334.53	-0.79
Dead+Wind 60 deg+Ice+Temp	18089.18	10419.37	-5971.02	-329.19	-575.97	-1.27
Dead+Wind 90 deg+Ice+Temp	18089.18	12083.41	73.40	5.68	-668.39	-1.38
Dead+Wind 120 deg+Ice+Temp	18089.17	10604.96	6160.87	342.70	-587.48	-1.14
Dead+Wind 150 deg+Ice+Temp	18089.18	6153.91	10627.23	591.29	-341.81	-0.63
Dead+Wind 180 deg+Ice+Temp	18089.18	-4.37	12217.40	679.36	0.85	0.02
Dead+Wind 210 deg+Ice+Temp	18089.18	-6154.60	10598.18	589.27	342.96	0.67
Dead+Wind 240 deg+Ice+Temp	18089.17	-10606.78	6144.12	341.54	588.72	1.16
Dead+Wind 270 deg+Ice+Temp	18089.18	-12121.69	66.71	5.21	672.19	1.37
Dead+Wind 300 deg+Ice+Temp	18089.18	-10478.78	-6000.28	-331.25	581.25	1.25
Dead+Wind 330 deg+Ice+Temp	18089.18	-6101.06	-10532.17	-583.51	339.17	0.77
Dead+Wind 0 deg - Service	11532.92	-9.41	-4843.00	-284.29	-0.32	0.26
Dead+Wind 30 deg - Service	11532.89	2389.46	-4153.30	-243.35	-140.87	-0.26
Dead+Wind 60 deg - Service	11532.89	4109.14	-2349.74	-137.15	-241.22	-0.66
Dead+Wind 90 deg - Service	11532.89	4766.09	46.70	3.23	-279.87	-0.86
Dead+Wind 120 deg - Service	11532.93	4187.71	2447.93	143.94	-246.70	-0.85
Dead+Wind 150 deg - Service	11532.89	2454.49	4241.52	249.45	-145.41	-0.63
Dead+Wind 180 deg - Service	11532.89	-2.68	4875.21	286.47	-0.79	-0.25
Dead+Wind 210 deg - Service	11532.89	-2454.91	4223.74	248.21	143.49	0.19
Dead+Wind 240 deg - Service	11532.93	-4188.82	2437.68	143.23	244.83	0.59

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Dead+Wind 270 deg - Service	11532.89	-4789.51	42.60	2.94	279.55	0.85
Dead+Wind 300 deg - Service	11532.89	-4145.49	-2367.64	-138.41	241.80	0.91
Dead+Wind 330 deg - Service	11532.89	-2420.32	-4180.06	-245.22	141.07	0.71

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	lb	lb	lb	lb	lb	lb	
1	0.00	-11532.89	-0.00	0.03	11532.89	-0.01	0.000%
2	-18.92	-11532.89	-9720.04	18.92	11532.88	9719.53	0.003%
3	4795.79	-11532.89	-8335.90	-4795.53	11532.88	8335.45	0.003%
4	8247.27	-11532.89	-4716.06	-8246.83	11532.88	4715.81	0.003%
5	9565.81	-11532.89	93.72	-9565.30	11532.88	-93.71	0.003%
6	8404.82	-11532.89	4913.08	-8404.38	11532.88	-4912.82	0.003%
7	4926.31	-11532.89	8512.96	-4926.04	11532.88	-8512.50	0.003%
8	-5.36	-11532.89	9784.82	5.37	11532.88	-9784.30	0.003%
9	-4927.14	-11532.89	8477.28	4926.88	11532.88	-8476.83	0.003%
10	-8407.05	-11532.89	4892.52	8406.61	11532.88	-4892.26	0.003%
11	-9612.80	-11532.89	85.50	9612.29	11532.88	-85.50	0.003%
12	-8320.22	-11532.89	-4751.98	8319.78	11532.88	4751.73	0.003%
13	-4857.72	-11532.89	-8389.60	4857.46	11532.88	8389.16	0.003%
14	0.00	-18089.19	-0.00	0.00	18089.19	-0.00	0.000%
15	-15.41	-18089.19	-12239.06	15.41	18089.17	12238.51	0.003%
16	6050.95	-18089.19	-10488.97	-6050.62	18089.18	10488.43	0.003%
17	10419.94	-18089.19	-5971.35	-10419.37	18089.18	5971.02	0.003%
18	12084.04	-18089.19	73.38	-12083.41	18089.18	-73.40	0.003%
19	10605.43	-18089.19	6161.14	-10604.96	18089.17	-6160.87	0.002%
20	6154.22	-18089.19	10627.80	-6153.91	18089.18	-10627.23	0.003%
21	-4.37	-18089.19	12218.07	4.37	18089.18	-12217.40	0.003%
22	-6154.90	-18089.19	10598.74	6154.60	18089.18	-10598.18	0.003%
23	-10607.25	-18089.19	6144.39	10606.78	18089.17	-6144.12	0.002%
24	-12122.32	-18089.19	66.69	12121.69	18089.18	-66.71	0.003%
25	-10479.35	-18089.19	-6000.61	10478.78	18089.18	6000.28	0.003%
26	-6101.39	-18089.19	-10532.71	6101.06	18089.18	10532.17	0.003%
27	-9.43	-11532.89	-4843.20	9.41	11532.92	4843.00	0.002%
28	2389.60	-11532.89	-4153.53	-2389.46	11532.89	4153.30	0.002%
29	4109.37	-11532.89	-2349.87	-4109.14	11532.89	2349.74	0.002%
30	4766.36	-11532.89	46.70	-4766.09	11532.89	-46.70	0.002%
31	4187.87	-11532.89	2448.04	-4187.71	11532.93	-2447.93	0.002%
32	2454.63	-11532.89	4241.75	-2454.49	11532.89	-4241.52	0.002%
33	-2.67	-11532.89	4875.48	2.68	11532.89	-4875.21	0.002%
34	-2455.05	-11532.89	4223.97	2454.91	11532.89	-4223.74	0.002%
35	-4188.98	-11532.89	2437.79	4188.82	11532.93	-2437.68	0.002%
36	-4789.77	-11532.89	42.60	4789.51	11532.89	-42.60	0.002%
37	-4145.72	-11532.89	-2367.77	4145.49	11532.89	2367.64	0.002%
38	-2420.45	-11532.89	-4180.29	2420.32	11532.89	4180.06	0.002%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	13	0.00000001	0.00011362

2	Yes	16	0.00000001	0.00008771
3	Yes	16	0.00000001	0.00008793
4	Yes	16	0.00000001	0.00008813
5	Yes	16	0.00000001	0.00008792
6	Yes	16	0.00000001	0.00008764
7	Yes	16	0.00000001	0.00008771
8	Yes	16	0.00000001	0.00008786
9	Yes	16	0.00000001	0.00008763
10	Yes	16	0.00000001	0.00008747
11	Yes	16	0.00000001	0.00008771
12	Yes	16	0.00000001	0.00008795
13	Yes	16	0.00000001	0.00008781
14	Yes	16	0.00000001	0.00000000
15	Yes	16	0.00000001	0.00009748
16	Yes	16	0.00000001	0.00009775
17	Yes	16	0.00000001	0.00009797
18	Yes	16	0.00000001	0.00009761
19	Yes	16	0.00000001	0.00009720
20	Yes	16	0.00000001	0.00009740
21	Yes	16	0.00000001	0.00009769
22	Yes	16	0.00000001	0.00009742
23	Yes	16	0.00000001	0.00009721
24	Yes	16	0.00000001	0.00009761
25	Yes	16	0.00000001	0.00009797
26	Yes	16	0.00000001	0.00009773
27	Yes	16	0.00000001	0.00008920
28	Yes	16	0.00000001	0.00008936
29	Yes	16	0.00000001	0.00008944
30	Yes	16	0.00000001	0.00008934
31	Yes	16	0.00000001	0.00008918
32	Yes	16	0.00000001	0.00008910
33	Yes	16	0.00000001	0.00008903
34	Yes	16	0.00000001	0.00008883
35	Yes	16	0.00000001	0.00008871
36	Yes	16	0.00000001	0.00008880
37	Yes	16	0.00000001	0.00008899
38	Yes	16	0.00000001	0.00008910

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T4	20	Leg	A325N	1.7500	2	73133.70	105831.00	0.691 ✔	1.333	Bolt Tension

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
L1	90 - 80 (1)	P4x.237	10.00	0.00	0.0 K=1.00	21.000	3.1741	-187.05	66655.00	0.003
T1	80 - 60 (314)	P4x.237	10.00	0.00	79.5 K=1.00	15.103	3.1741	-200.56	47936.80	0.004

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	90 - 80 (1)	P4x.237	1.18	-4.422	23.100	0.191	0.00	0.000	23.100	0.000
T1	80 - 60 (314)	P4x.237	0.73	-2.712	23.100	0.117	0.00	0.000	23.100	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	90 - 80 (1)	P4x.237	0.003	0.191	0.000	0.194 ✔	1.066	H1-3 ✔
T1	80 - 60 (314)	P4x.237	0.004	0.117	0.000	0.122 ✔	1.333	H1-3 ✔

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	1 1/2	20.00	2.48	79.3 K=1.00	19.145	1.7672	-31363.30	33832.60	0.927
T2	60 - 40	2	20.00	2.46	59.0 K=1.00	22.886	3.1416	-74831.20	71899.80	1.041
T3	40 - 20	2 1/4	20.00	2.46	52.4 K=1.00	23.964	3.9761	-119758.00	95283.90	1.257
T4	20 - 0	2 1/2	20.00	2.48	47.6 K=1.00	24.720	4.9087	-161261.00	121342.00	1.329

Leg Bending Design Data (Compression)

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	80 - 60	1 1/2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T2	60 - 40	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T3	40 - 20	2 1/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T4	20 - 0	2 1/2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Leg Interaction Design Data (Compression)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	80 - 60	1 1/2	0.927	0.000	0.000	0.927 ✔	1.333	H1-3 ✔
T2	60 - 40	2	1.041	0.000	0.000	1.041 ✔	1.333	H1-3 ✔
T3	40 - 20	2 1/4	1.257	0.000	0.000	1.257 ✔	1.333	H1-3 ✔
T4	20 - 0	2 1/2	1.329	0.000	0.000	1.329 ✔	1.333	H1-3 ✔

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	3/4	3.89	1.95	124.5 K=1.00	9.628	0.4418	-3120.58	4253.61	0.734 ✔
T2	60 - 40	7/8	4.25	2.14	117.4 K=1.00	10.828	0.6013	-3744.42	6511.07	0.575 ✔
T3	40 - 20	7/8	5.10	2.46	134.9 K=1.00	8.206	0.6013	-3799.34	4934.48	0.770 ✔
T4	20 - 0	7/8	5.06	2.54	139.6 K=1.00	7.666	0.6013	-3826.71	4609.75	0.830 ✔

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	3/4	3.50	3.38	162.0 K=0.75	5.690	0.4418	-786.65	2513.82	0.313 ✔
T2	60 - 40	7/8	3.93	3.77	155.0 K=0.75	6.215	0.6013	-1388.83	3736.92	0.372 ✔
T3	40 - 20	7/8	4.43	4.25	233.0 K=1.00	2.751	0.6013	-1312.37	1654.44	0.793 ✔
T4	20 - 0	KL/R > 200 (C) - 175 7/8	4.94	4.73	194.6 K=0.75	3.944	0.6013	-2253.31	2371.39	0.950 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	L3 1/2x3 1/2x5/16	3.50	3.38	89.3 K=1.52	14.282	2.0900	-6753.92	29849.50	0.226 ✔
T2	60 - 40	7/8	3.50	3.34	183.1 K=1.00	4.455	0.6013	-277.45	2678.85	0.104 ✔
T3	40 - 20	1	4.00	3.82	183.2 K=1.00	4.449	0.7854	-455.02	3494.54	0.130 ✔
T4	20 - 0	1	4.50	4.30	206.2 K=1.00	3.512	0.7854	-409.56	2758.44	0.148 ✔
		KL/R > 200 (C) - 241								

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	3/4	3.50	3.38	216.0 K=1.00	3.201	0.4418	-588.56	1414.02	0.416 ✔
		KL/R > 200 (C) - 10								
T2	60 - 40	7/8	4.00	3.83	210.1 K=1.00	3.384	0.6013	-819.32	2035.08	0.403 ✔
		KL/R > 200 (C) - 88								
T3	40 - 20	1	4.50	4.31	206.8 K=1.00	3.492	0.7854	-1290.00	2742.46	0.470 ✔
		KL/R > 200 (C) - 166								

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	1 1/2	20.00	0.17	5.3	30.000	1.7672	26704.50	53014.40	0.504
T2	60 - 40	2	20.00	0.17	4.0	30.000	3.1416	67099.60	94247.80	0.712
T3	40 - 20	2 1/4	20.00	0.17	3.6	30.000	3.9761	109814.00	119282.00	0.921
T4	20 - 0	2 1/2	20.00	2.48	47.6	30.000	4.9087	146267.00	147262.00	0.993

Leg Bending Design Data (Tension)

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	80 - 60	1 1/2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T2	60 - 40	2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T3	40 - 20	2 1/4	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000
T4	20 - 0	2 1/2	0.00	0.000	37.500	0.000	0.00	0.000	37.500	0.000

Leg Interaction Design Data (Tension)

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	80 - 60	1 1/2	0.504	0.000	0.000	0.504 ✔	1.333	H2-1 ✔
T2	60 - 40	2	0.712	0.000	0.000	0.712 ✔	1.333	H2-1 ✔
T3	40 - 20	2 1/4	0.921	0.000	0.000	0.921 ✔	1.333	H2-1 ✔
T4	20 - 0	2 1/2	0.993	0.000	0.000	0.993 ✔	1.333	H2-1 ✔

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	3/4	3.89	1.95	124.5	30.000	0.4418	2691.76	13253.60	0.203 ✔
T2	60 - 40	7/8	4.25	2.14	117.4	30.000	0.6013	2926.18	18039.60	0.162 ✔
T3	40 - 20	7/8	5.10	2.46	134.9	30.000	0.6013	3612.94	18039.60	0.200 ✔
T4	20 - 0	7/8	5.11	2.57	141.1	30.000	0.6013	4977.93	18039.60	0.276 ✔

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	3/4	3.50	3.38	216.0	30.000	0.4418	1354.07	13253.60	0.102 ✔
T2	60 - 40	7/8	3.93	3.77	206.7	30.000	0.6013	2234.95	18039.60	0.124

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T3	40 - 20	7/8	4.43	4.25	233.0	30.000	0.6013	1571.67	18039.60	0.087 ✔
T4	20 - 0	7/8	4.88	4.67	256.1	30.000	0.6013	2130.31	18039.60	0.118 ✔

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	L3 1/2x3 1/2x5/16	3.50	3.38	37.5	21.600	2.0900	0.01	45144.00	0.000 ✔
T2	60 - 40	7/8	3.50	3.34	183.1	30.000	0.6013	644.05	18039.60	0.036 ✔
T3	40 - 20	1	4.00	3.82	183.2	30.000	0.7854	783.35	23561.90	0.033 ✔
T4	20 - 0	1	4.50	4.30	206.2	30.000	0.7854	663.29	23561.90	0.028 ✔

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	80 - 60	3/4	3.50	3.38	216.0	30.000	0.4418	893.55	13253.60	0.067 ✔
T2	60 - 40	7/8	4.00	3.83	210.1	30.000	0.6013	1178.50	18039.60	0.065 ✔
T3	40 - 20	1	4.50	4.31	206.8	30.000	0.7854	1661.95	23561.90	0.071 ✔
T4	20 - 0	1	5.00	4.79	230.0	30.000	0.7854	7402.38	23561.90	0.314* ✔

* DL controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	90 - 80	Pole	P4x.237	1	-187.05	71080.90	18.2	Pass
T1	80 - 60	Leg	1 1/2	3	-31363.30	45098.86	69.5	Pass
T2	60 - 40	Leg	2	81	-74831.20	95842.43	78.1	Pass
T3	40 - 20	Leg	2 1/4	159	-119758.00	127013.43	94.3	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T4	20 - 0	Leg	2 1/2	236	-161261.00	161748.88	99.7	Pass
T1	80 - 60	Diagonal	3/4	13	-3120.58	5670.06	55.0	Pass
T2	60 - 40	Diagonal	7/8	91	-3744.42	8679.26	43.1	Pass
T3	40 - 20	Diagonal	7/8	169	-3799.34	6577.66	57.8	Pass
T4	20 - 0	Diagonal	7/8	256	-3826.71	6144.80	62.3	Pass
T1	80 - 60	Horizontal	3/4	19	-786.65	3350.92	23.5	Pass
T2	60 - 40	Horizontal	7/8	97	-1388.83	4981.31	27.9	Pass
T3	40 - 20	Horizontal	7/8	175	-1312.37	2205.37	59.5	Pass
T4	20 - 0	Horizontal	7/8	252	-2253.31	3161.06	71.3	Pass
T1	80 - 60	Top Girt	L3 1/2x3 1/2x5/16	6	-6753.92	39789.38	17.0	Pass
T2	60 - 40	Top Girt	7/8	85	-277.45	3570.91	7.8	Pass
T3	40 - 20	Top Girt	1	163	-455.02	4658.22	9.8	Pass
T4	20 - 0	Top Girt	1	241	-409.56	3677.00	11.1	Pass
T1	80 - 60	Bottom Girt	3/4	10	-588.56	1884.89	31.2	Pass
T2	60 - 40	Bottom Girt	7/8	88	-819.32	2712.76	30.2	Pass
T3	40 - 20	Bottom Girt	1	166	-1290.00	3655.70	35.3	Pass
T4	20 - 0	Bottom Girt	1	242	7402.38	23561.90	31.4	Pass
T1	80 - 60	Pole Socket	P4x.237	314	-200.56	63899.75	9.1	Pass
							Summary	
						Pole (L1)	18.2	Pass
						Leg (T4)	99.7	Pass
						Diagonal (T4)	62.3	Pass
						Horizontal (T4)	71.3	Pass
						Top Girt (T1)	17.0	Pass
						Bottom Girt (T3)	35.3	Pass
						Pole Socket (T1)	9.1	Pass
						Bolt Checks	51.8	Pass
						RATING =	**99.7**	**Pass**

PROJECT INFORMATION

SCOPE OF WORK:

- AT&T ANTENNAS: REMOVE (1) EXISTING ANTENNA PER SECTOR FOR A TOTAL OF ANTENNAS. INSTALL (1) NEW ANTENNA PER SECTOR FOR A TOTAL OF (3) NEW ANTENNAS. RRU'S: (1) NEW RRU PER SECTOR FOR (3) SECTORS, FOR A TOTAL OF (3) NEW RRU'S; (4) EXISTING RRU'S PER SECTOR TO REMAIN, FOR A TOTAL OF (12) EXISTING RRU'S.

SITE ADDRESS:	23 WAYNE ROAD WALLINGFORD, CT 06492	
LATITUDE:	41.4627419	41° 27' 45.87"N
LONGITUDE:	−72.941881	−72° 50' 30.79"W
USID:	4563	
TOWER OWNER:	TBD	
TYPE OF SITE:	MONOPOLE/INDOOR EQUIPMENT	
TOWER HEIGHT: RAD CENTER:	80'−0"± 78'−0"±	
CURRENT USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY	
PROPOSED USE:	UNMANNED WIRELESS TELECOMMUNICATIONS FACILITY	

DRAWING INDEX

		REV.
T−1	TITLE SHEET	0
GN−1	GROUNDING & GENERAL NOTES	0
A−1	COMPOUND LAYOUT	0
A−2	EQUIPMENT LAYOUT	0
A−3	ANTENNA & RRU LAYOUTS & ELEVATIONS	0
A−4	DETAILS	0
A−5	ANTENNA MOUNTING DETAILS	0
G−1	GROUNDING, ONE−LINE DIAGRAM & DETAILS	0

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN, ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AMD MAY IMPOSE CHANGES OR SITE MODIFICATIONS.

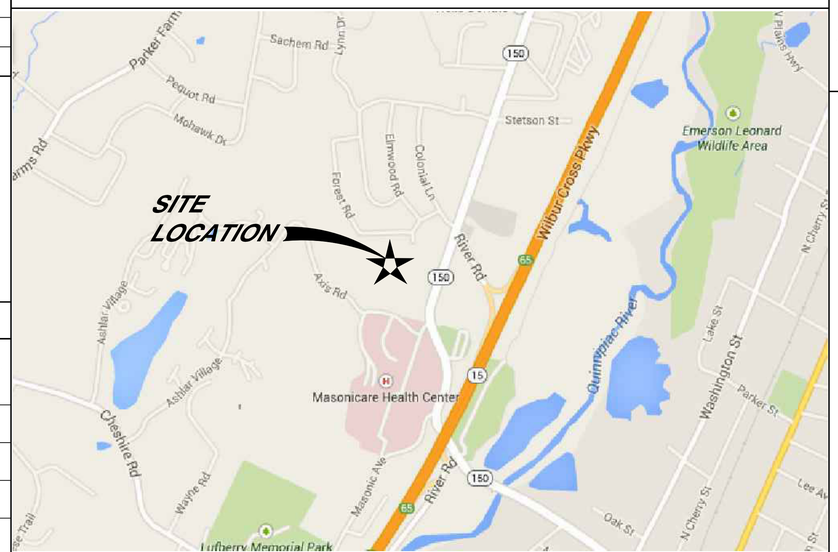
DISCIPLINE:	NAME:	DATE:
SITE ACQUISITION:		
CONSTRUCTION MANAGER:		
AT&T PROJECT MANAGER:		

at&t MOBILITY

FA CODE: 10035084
SITE NUMBER: CT2168
SITE NAME: MT TOM WALLINGFORD

VICINITY MAP

1. HEAD WEST ON COCHITUATE RD TOWARD SPEEN STREET (0.3 MI). 2. TAKE THE RAMP TO I−90 E/MASSPIKE W/SPRINGFIELD/BOSTON (0.6 MI). 3. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR INTERSTATE 90 W/MASSACHUSETTS TURNPIKE/WORCESTER/SPRINGFIELD AND MERGE ONTO I−90 W/MASSACHUSETTS TURNPIKE (38.3 MI). 4. TAKE EXIT 9 TO MERGE ONTO I−84 TOWARD US−20/HARTFORD/NEW YORK CITY (73.9 MI). 5. TAKE EXIT 20 TO MERGE ONTO US−44 WEST. 6. CONTINUE ON US−44 W. DRIVE TO PRESTIGE PARK RD IN EAST HARTFORD (2.5 MI). DESTINATION WILL BE ON YOUR LEFT.



PROJECT TEAM

CLIENT REPRESENTATIVE
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: DAVID COOPER
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EMAIL: dcooper@empiretelecomm.com

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EMAIL: nbarile@comexconsultants.com

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CONTACT: CAMERON SYME
PHONE: 508−596−7146
EMAIL: cs6970@att.com

CONSTRUCTION MANAGEMENT:
COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD, BILLERICA, MA 01821
CONTACT: GRZEGORZ "GREG" DORMAN
PHONE: 484−683−1750
EMAIL: gdorman@empiretelecomm.com

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 REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CONNECTICUT ONE CALL SYSTEM, INC. 1-800-922-4455 STOP · CALL BEFORE YOU DIG!

CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800−922−4455 OR DIAL 811

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SITE NUMBER: CT2168
SITE NAME: MT TOM WALLINGFORD
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WALLINGFORD, CT 06492
NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/11/16	ISSUED AS FINAL	JMW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: CJT | DRAWN BY: PV

SEAL: STATE OF CONNECTICUT · NICHOLAS D. BARILE · No. 28643 · REGISTERED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NUMBER 28643

AT&T

DRAWING TITLE: TITLE SHEET

JOB NUMBER	DRAWING NUMBER	REV
15070−EMP	T−1	0

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. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

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 WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER 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 AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – EMPIRE TELECOM
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

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 (EMPIRE TELECOM).

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. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. 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.

8. 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. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. 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.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF 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.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. 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). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. 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.

17. 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 MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE 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 REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. 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.
   - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
   - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
   - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. 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, THIRTEENTH EDITION
   - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
   - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
   - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
   - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
   - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
   - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. 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.

22. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

23. INFORMATION SHOWN ON THIS SET OF DRAWINGS TAKEN FROM PLANS PREPARED BY CENTEK ENGINEERING, INC. FOR A RECENT MODIFICATION DATED: 03/02/2012. CONTRACTOR TO NOTIFY ENGINEER IF DISCREPANCIES EXIST PRIOR TO COMMENCING WITH CONSTRUCTION.

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SITE NUMBER: CT2168
SITE NAME: MT TOM WALLINGFORD

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NEW HAVEN COUNTY

at&t MOBILITY
550 COCHITUATE ROAD
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/11/16	ISSUED AS FINAL	JMW	NDB	NDB

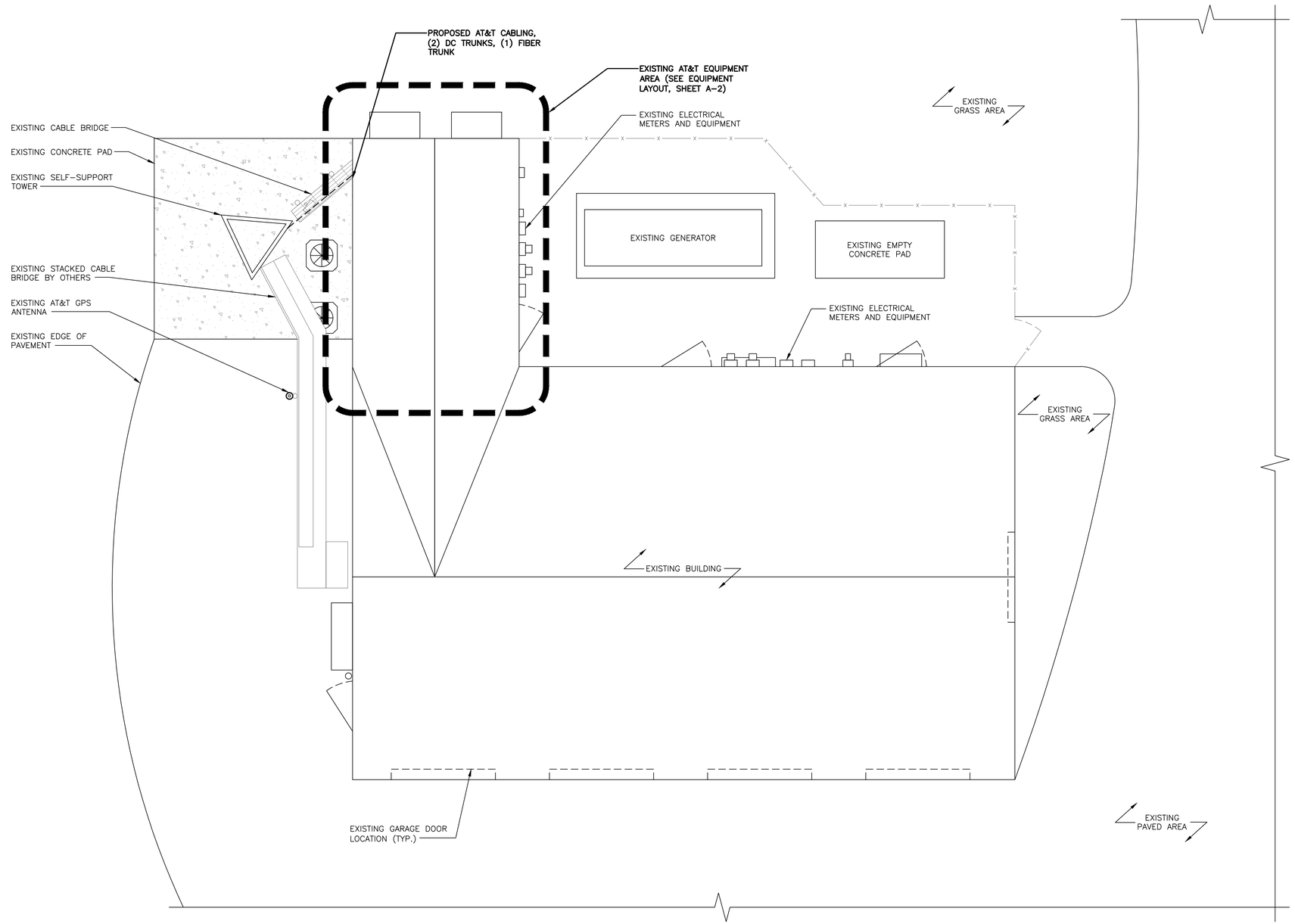
SCALE: AS SHOWN | DESIGNED BY: CJT | DRAWN BY: PV

SEAL:
STATE OF CONNECTICUT
THOMAS D. DUFFY
No. 28643
REGISTERED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LIC. NO. 28643

AT&T

DRAWING TITLE:
GROUNDING & GENERAL NOTES

JOB NUMBER	DRAWING NUMBER	REV
15070-EMP	GN-1	0



NORTH

COMPOUND LAYOUT

SCALE: 1" = 4'-0"

4 0 2 4 8 16

(IN FEET)

1/4 Inch = 1 Foot

NOTE:
CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA AND SUBMIT TO THE ENGINEER ANY DISCREPANCIES FROM THE DRAWINGS.

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/11/16	ISSUED AS FINAL	JMW	NDB	NDB

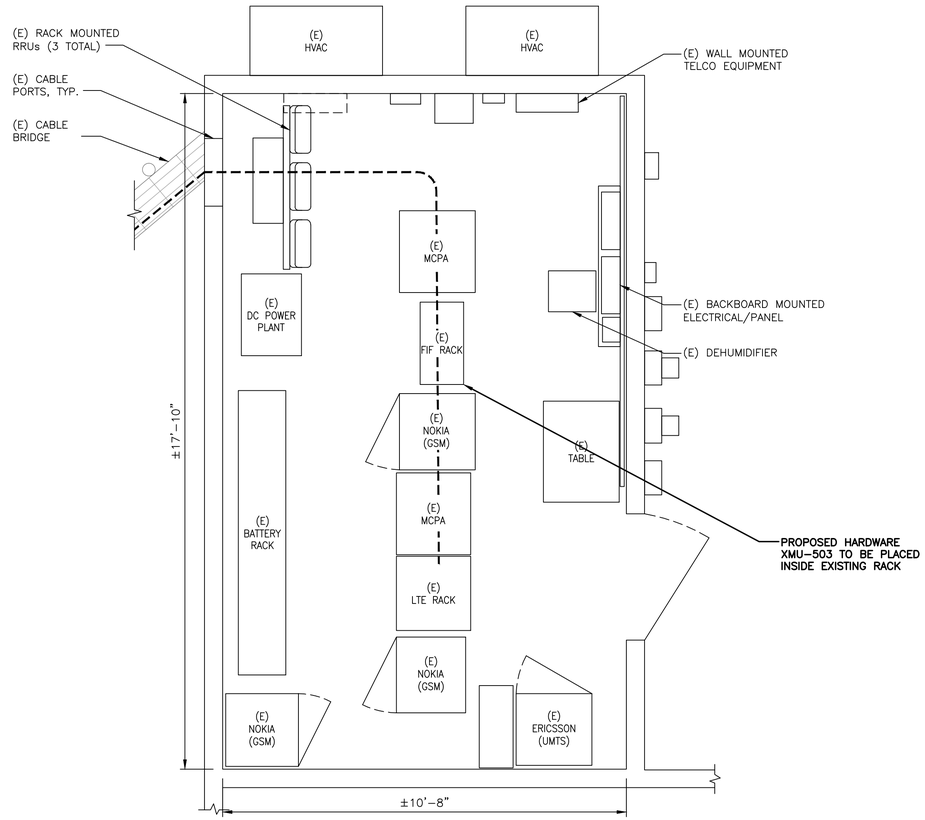
SCALE: AS SHOWN | DESIGNED BY: CJT | DRAWN BY: PV

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARLOW
No. 28643
REGISTERED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE:
COMPOUND LAYOUT

JOB NUMBER	DRAWING NUMBER	REV
15070-EMP	A-1	0



PROPOSED EQUIPMENT LAYOUT

SCALE: 1" = 2'-0"

2 0 1 2 4 8

(IN FEET)
1/2 Inch = 1 Foot

NO GROUND EQUIPMENT MODIFICATIONS ARE BEING MADE AS PART OF THIS SCOPE. EXISTING GROUND EQUIPMENT CONFIGURATION TO REMAIN.

NORTH

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NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/11/16	ISSUED AS FINAL	JMW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: CJT | DRAWN BY: PV

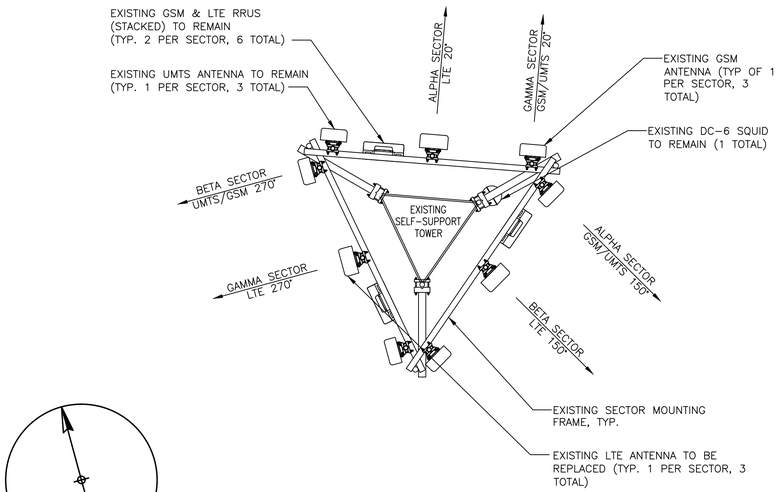
SEAL: STATE OF CONNECTICUT DOUGLAS D. BRUSH No. 28643 REGISTERED PROFESSIONAL ENGINEER

PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

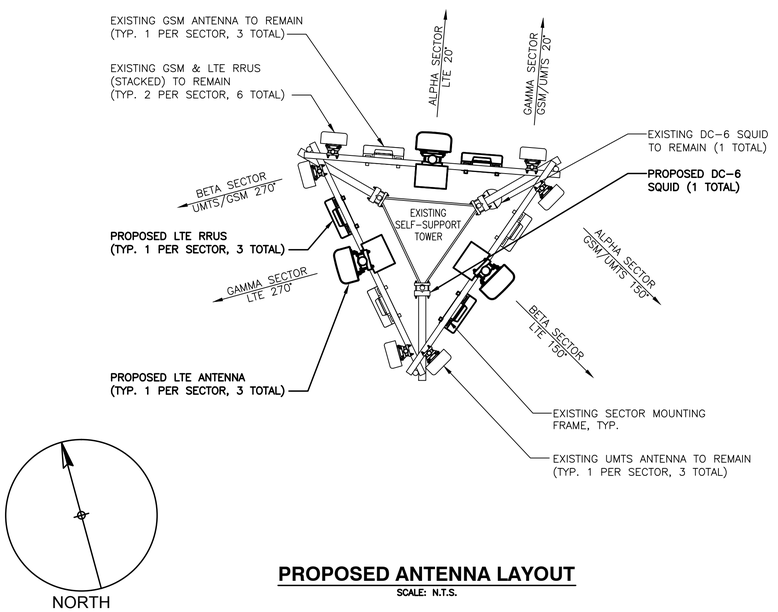
DRAWING TITLE:
EQUIPMENT LAYOUTS

JOB NUMBER	DRAWING NUMBER	REV
15070-EMP	A-2	0



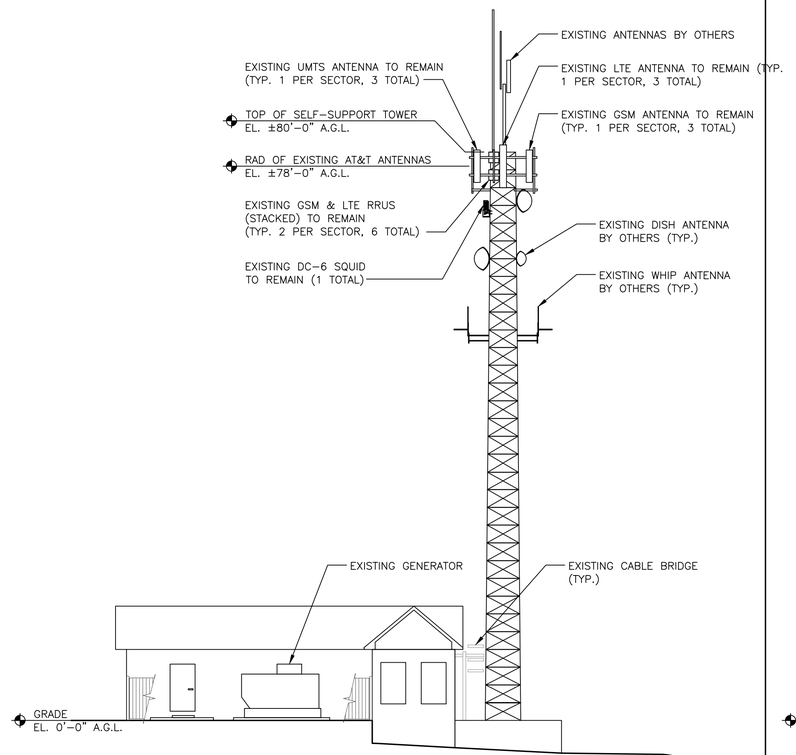
EXISTING ANTENNA LAYOUT

SCALE: N.T.S.



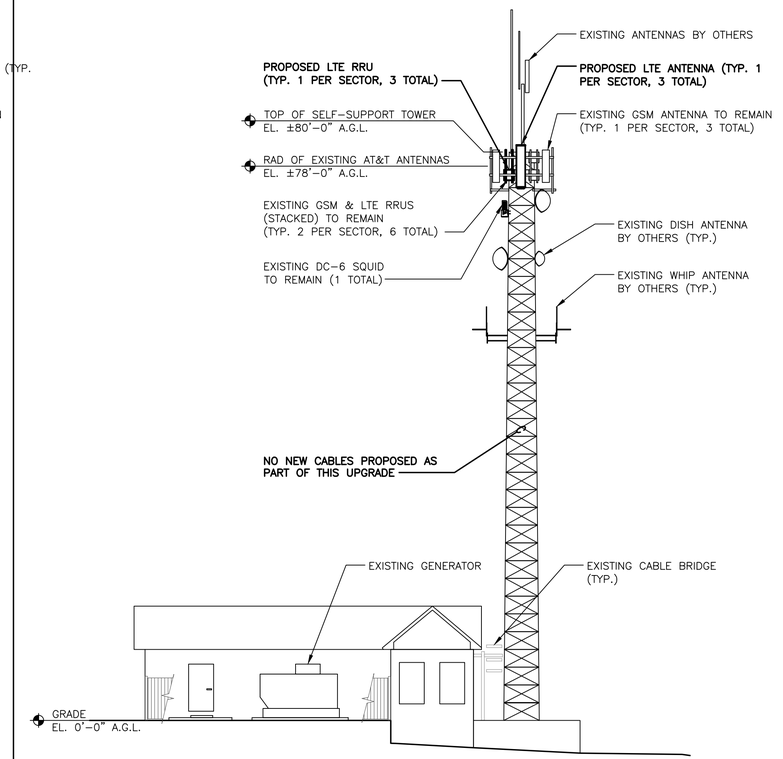
PROPOSED ANTENNA LAYOUT

SCALE: N.T.S.



EXISTING TOWER ELEVATION

SCALE: NTS



PROPOSED TOWER ELEVATION

SCALE: NTS

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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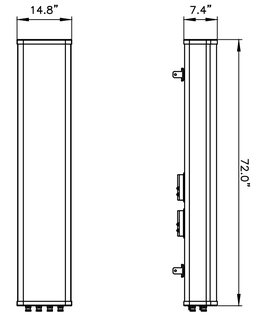
SCALE: AS SHOWN | DESIGNED BY: CJT | DRAWN BY: PV

SEAL: STATE OF CONNECTICUT — NICHOLAS B. BARLOW — No. 28643 — LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: ANTENNA & RRU LAYOUTS & ELEVATIONS

JOB NUMBER	DRAWING NUMBER	REV
15070-EMP	A-3	0



FRONT VIEW

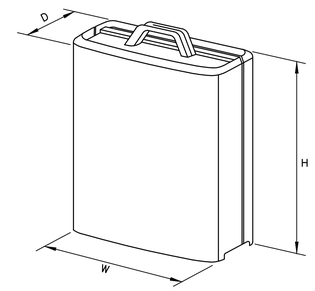
SIDE VIEW

BOTTOM VIEW

MANUFACTURER	CCI
MODEL	OPA-65R-LCUU-H6
WEIGHT	73.0 LBS

ANTENNA DETAIL

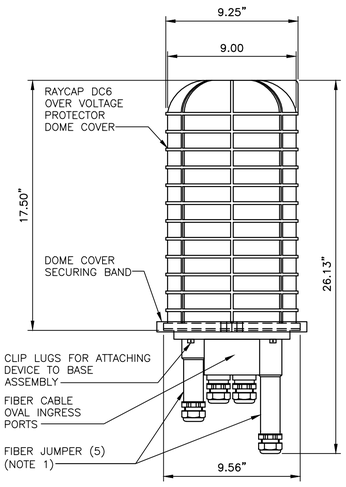
SCALE: N.T.S.



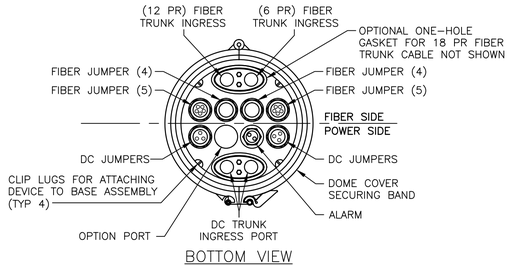
MODEL	L x W x H	WEIGHT
RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUW	25" x 15" x 6.7"	58 LBS
RRUS-32	29.9" x 13.3" x 9.5"	77 LBS

RRUS DETAIL

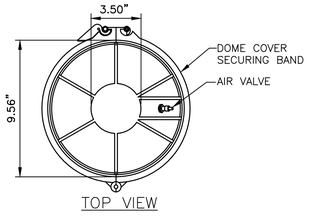
SCALE: N.T.S.



SIDE VIEW



BOTTOM VIEW



TOP VIEW

NOTES:

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

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SITE NUMBER: CT2168
SITE NAME: MT TOM WALLINGFORD

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NEW HAVEN COUNTY

at&t MOBILITY
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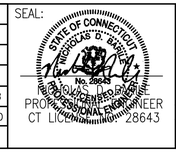
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02/11/16	ISSUED AS FINAL	JMW	NDB	NDB

SCALE: AS SHOWN | DESIGNED BY: CJT | DRAWN BY: PV

SEAL:



PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: DETAILS

JOB NUMBER	DRAWING NUMBER	REV
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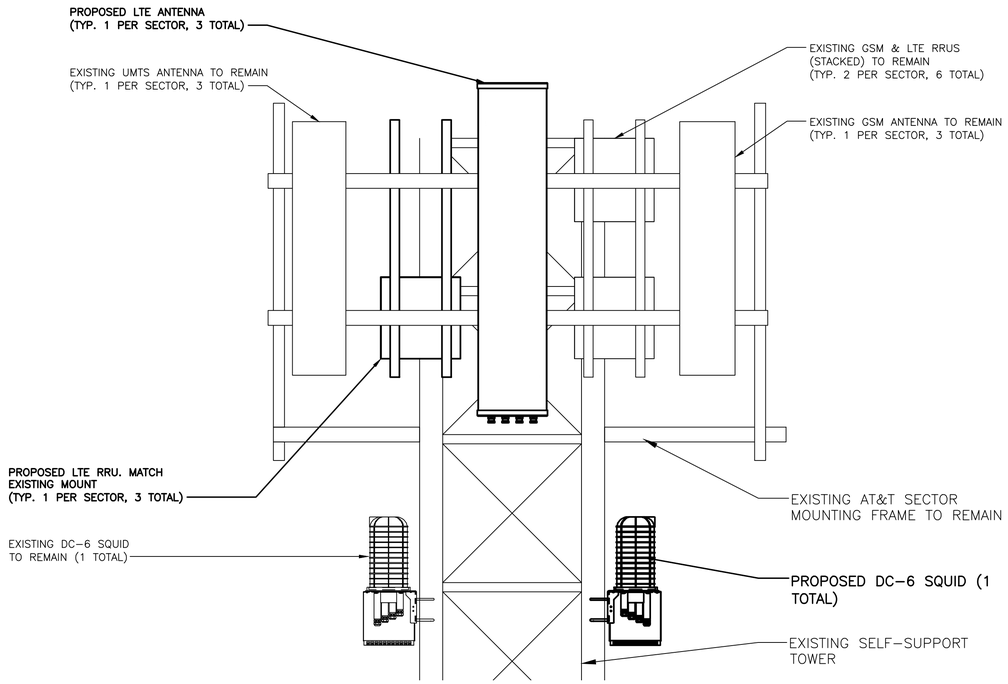
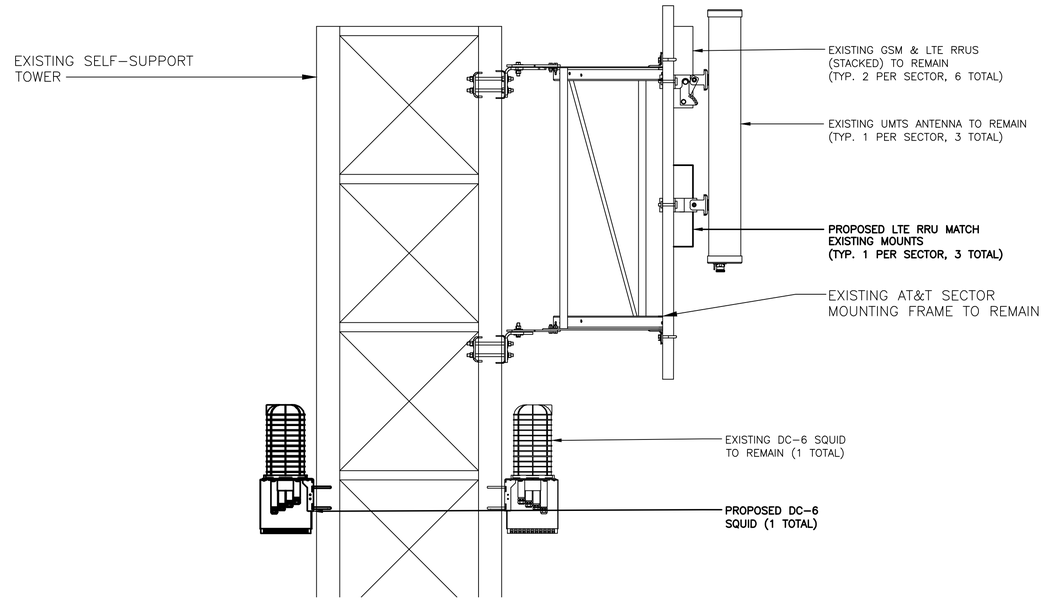


PROPOSED ANTENNA MOUNTING DETAIL (FRONT VIEW)

SCALE: N.T.S.



PROPOSED ANTENNA MOUNTING DETAIL (SIDE VIEW)

SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	–	–	–
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	POWERWAVE	7770	55"x11"x5"
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	–	–	–
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	POWERWAVE	7770	55"x11"x5"
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	–	–	–
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	POWERWAVE	7770	55"x11"x5"

FINAL ANTENNA SCHEDULE

SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	POWERWAVE	7770	55"x11"x5"
	A2	–	–	–
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	**CCI**	**OPA-65R-LCUU-H6**	**72"X14.8"X7.4"**
BETA	B1	POWERWAVE	7770	55"x11"x5"
	B2	–	–	–
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	**CCI**	**OPA-65R-LCUU-H6**	**72"X14.8"X7.4"**
GAMMA	G1	POWERWAVE	7770	55"x11"x5"
	G2	–	–	–
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	**CCI**	**OPA-65R-LCUU-H6**	**72"X14.8"X7.4"**

PROPOSED RRU SCHEDULE

SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	**ERICSSON**	**RRUS-32**	**29.9"x13.3"x9.5"**		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUW (EXISTING)	25.0"x15.0"x6.7"		
	ERICSSON	RRUW (EXISTING)	25.0"x15.0"x6.7"		
BETA	**ERICSSON**	**RRUS-32**	**29.9"X13.3"X9.5"**		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUW (EXISTING)	25.0"x15.0"x6.7"		
	ERICSSON	RRUW (EXISTING)	25.0"x15.0"x6.7"		
GAMMA	**ERICSSON**	**RRUS-32**	**29.9"X13.3"X9.5"**		
	ERICSSON	RRUS-11 (EXISTING)	19.7"x16.9"x7.2"		
	ERICSSON	RRUW (EXISTING)	25.0"x15.0"x6.7"		
	ERICSSON	RRUW (EXISTING)	25.0"x15.0"x6.7"		

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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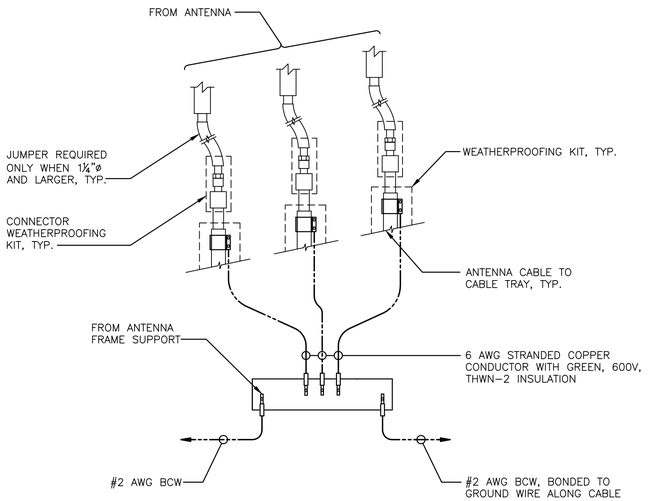
SCALE: AS SHOWN | DESIGNED BY: CJT | DRAWN BY: PV

SEAL:
STATE OF CONNECTICUT
NICHOLAS D. BARLOW
No. 28643
REGISTERED
PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

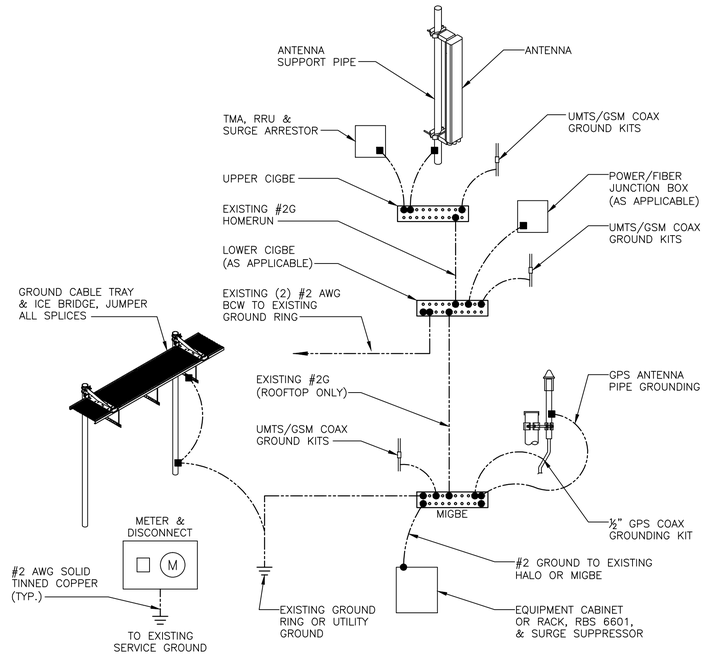
DRAWING TITLE:
ANTENNA MOUNTING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15070-EMP	A-5	0



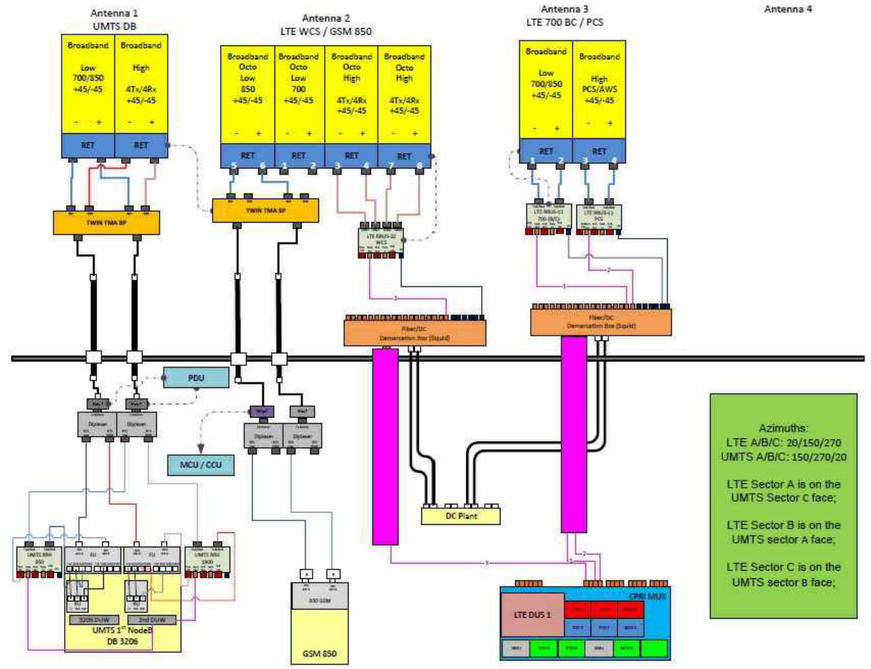
GROUND WIRE TO GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



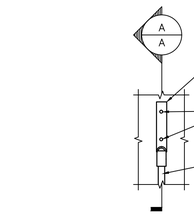
GROUNDING RISER DIAGRAM

SCALE: N.T.S.

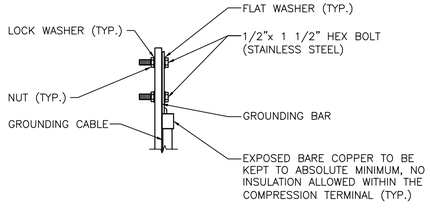


TYPICAL PLUMBING DIAGRAM (PER SECTOR)

SCALE: N.T.S.



ELEVATION



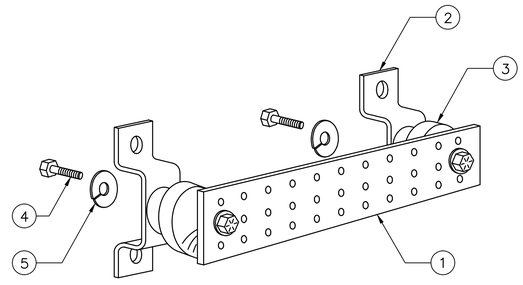
SECTION "A–A"

NOTE:

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

TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"–11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

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

SCALE: N.T.S.

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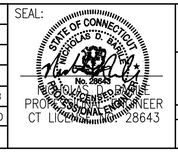

PROFESSIONAL ENGINEER
CT LICENSE NO. 28643

AT&T

DRAWING TITLE: GROUNDING, ONE-LINE DIAGRAM & DETAILS

JOB NUMBER	DRAWING NUMBER	REV
15070-EMP	G-1	0