Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

June 14, 2016

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

Notice of Exempt Modification
99 Cedarwood Lane (Berlin Turnpike), Newington, CT
Latitude- 41.69428000
Longitude- -72.70856000

Dear Ms. Bachman,

T-Mobile currently maintains 6 existing antennas at the 163' level of the existing 170' guyed tower at 99 Cedarwood Lane, Newington, CT. The tower is owned by Callahan Acres, LLC. The property is owned by Callahan Acres, LLC. T-Mobile now intends to install 3 new 1900 antennas. These antennas would be installed at the same 163' level of the tower. T-Mobile also intends to install 1 new hybrid fiber line.

This tower was approved by the Town of Newington in Petition 447-75 on June 25, 1975. This approval did not come with conditions. The Town does not have a record of its approval of T-Mobile's facility. Please see enclosed correspondence with Craig Minor, Town Planner for Newington.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50j-73, for construction that constitutes an exempt modification to pursuant to R.C.S.A 16-50j-72(b) (2). In accordance with R.C.S.A 16-50j-72(b) (2), a copy of this letter is being sent to The Honorable Stephen Woods, Mayor of Town of Newington, as well as the property owner/tower owner.

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

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

For the foregoing reason, T-Mobile 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,

Kyle Richers

Kyle Richers
10 Industrial Ave, Suite 3
Mahwah, New Jersey 07430
908-447-4716
krichers@transcendwireless.com

Attachments:

Cc: The Honorable Stephen Woods, Mayor, Town of Newington
Callahan Acres, LLC c/o Fred Callahan

4293097

Please look for the following check security features before accepting this document. If not present, do not negotiate this document.

- Fluorescent artificial watermark should appear on the back of this check when it is held at a 45 degree angle or viewed under a UV light.
- Warning Bands.
- Enhanced laid lines on the back of this check should be in complete alignment or the check is not authentic.
- Microprinting under magnification on the front of this check should read: "VOIDMOBILE".
- Thermochromic heat sensitive "Secure" mark on back of check turns from orange to yellow when rubbed.

ENDORSE CHECK HERE

DO NOT WRITE / SIGN / STAMP BELOW THIS LINE

DEPOSITORY BANK ENDORSEMENT

Kyle Richers

From: Minor, Craig <CMinor@NewingtonCT.Gov>
Sent: Tuesday, June 14, 2016 2:08 PM
To: krichers@transcendwireless.com
Subject: RE: 99 Cedarwood Lane -- T-Mobile Tower -- CT11174A

Flag Status: Flagged

Kyle:

There is no "original" approval letter in our files from the Town to T-Mobile's predecessor, Omnipoint. The only letter we have that might be relevant is the 1975 site plan approval letter from the Town Plan and Zoning Commission to the property owner to build the tower.

Please let me know if I can be of any other assistance.

Craig Minor, AICP
Town Planner

From: Kyle Richers [mailto:krichers@transcendwireless.com]
Sent: Tuesday, June 07, 2016 9:13 AM
To: krichers@transcendwireless.com; Minor, Craig <CMinor@NewingtonCT.Gov>
Subject: RE: 99 Cedarwood Lane -- T-Mobile Tower -- CT11174A

Hi Craig,

Just wanted to follow up with you on our conversation yesterday, can you confirm that the Town of Newington does not have a copy of the original approval for the T-Mobile 99 Cedarwood Lane site?

Thanks

From: Kyle Richers [mailto:krichers@transcendwireless.com]
Sent: Monday, June 06, 2016 12:26 PM
To: cminor@newingtonct.gov
Cc: krichers@transcendwireless.com
Subject: 99 Cedarwood Lane -- T-Mobile Tower -- CT11174A

Good Afternoon Craig,

As per our conversation, please confirm the Town of Newington does not have a copy of the original approval of this T-Mobile tower site.

Thanks,

Kyle Richers
Transcend Wireless

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11174A

Callahan Tower_1
99 Cedarwood Lane
Newington, CT 06111

May 15, 2016

EBI Project Number: 6216002307

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	11.57 %

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

EBI Consulting
environmental | engineering | due diligence

May 15, 2016

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11174A – Callahan Tower_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **99 Cedarwood Lane, Newington, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile 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 limit for the 700 MHz Band is approximately 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS 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 T-Mobile Wireless antenna facility located at **99 Cedarwood Lane, Newington, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile 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 GSM 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

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 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 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

5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

6) Since some radios are ground mounted there are additional cabling losses accounted for the passive antennas. For each passive RF path the following losses were calculated. 1.07 dB of additional cable loss for all 700 MHz Channels and 1.98 dB of additional cable loss for all 1900 MHz channels. This is based on manufacturers Specifications for 192 feet of 1-5/8" coax cable on each path. The passive antennas on this site are the RFS APX16DWV-16DWV-S-E-A20 and the Commscope LNX-6515DS-VTM

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 **Ericsson AIR32 B4A/B2A** for 1900 MHz (PCS) and 2100 MHz (AWS) channels, **RFS APX16DWV-16DWV-S-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B4A/B2A** has a maximum gain of **15.9 dBd** at its main lobe. The **RFS APX16DWV-16DWV-S-E-A20** has a maximum gain of **16.3 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. 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 **163 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.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 B4A/B2A	Make / Model:	Ericsson AIR32 B4A/B2A	Make / Model:	Ericsson AIR32 B4A/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	163	Height (AGL):	163	Height (AGL):	163
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
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):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	1.36	Antenna B1 MPE%	1.36	Antenna C1 MPE%	1.36
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20	Make / Model:	RFS APX16DWV-16DWV-S-E-A20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	163	Height (AGL):	163	Height (AGL):	163
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
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):	3,244.75	ERP (W):	3,244.75	ERP (W):	3,244.75
Antenna A2 MPE%	0.47	Antenna B2 MPE%	0.47	Antenna C2 MPE%	0.47
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	163	Height (AGL):	163	Height (AGL):	163
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	676.27	ERP (W):	676.27	ERP (W):	676.27
Antenna A3 MPE%	0.21	Antenna B3 MPE%	0.21	Antenna C3 MPE%	0.21

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**2.05 %**
AT&T	2.47 %
Clearwire	0.10 %
Nextel	0.42 %
Carbone's Auto Body	6.45 %
Town of Wethersfield	0.08 %
Site Total MPE %:	**11.57 %**

T-Mobile Sector 1 Total:	2.05 %
T-Mobile Sector 2 Total:	2.05 %
T-Mobile Sector 3 Total:	2.05 %
Site Total:	11.57 %

T-Mobile _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
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**163**	**6.81**	**2100**	**1000**	**0.68 %**
T-Mobile 1900 MHz (PCS) LTE	**2**	**2334.27**	**163**	**6.81**	**1900**	**1000**	**0.68 %**
T-Mobile 1900 MHz (PCS) GSM	**2**	**811.19**	**163**	**2.37**	**1900**	**1000**	**0.24 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**811.19**	**163**	**2.37**	**1900**	**1000**	**0.24 %**
T-Mobile 700 MHz LTE	**1**	**676.27**	**163**	**0.63**	**700**	**467**	**0.21 %**
						Total:	**2.05%**

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 T-Mobile 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:

T-Mobile Sector	Power Density Value (%)
Sector 1:	2.05 %
Sector 2:	2.05 %
Sector 3:	2.05 %
T-Mobile Per Sector Maximum:	2.05 %
Site Total:	11.57 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.57%** 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.

STRUCTURAL ANALYSIS REPORT

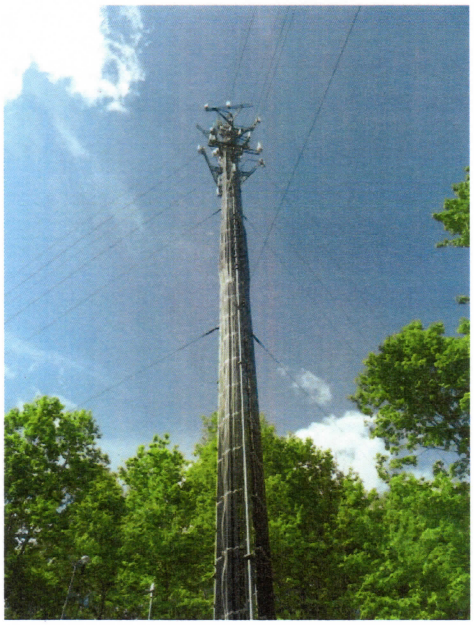
For

CT11174A

CALLAHAN TOWER_1

99 Cedarwood Lane
Newington, CT 06111

Antennas Mounted to the Tower



Prepared for:

Transcend Wireless

T··Mobile·

Dated: May 17, 2016

Prepared by:

Hudson Design Group LLC

1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
(P) 978.557.5553 (F) 978.336.5586
www.hudsondesigngroupllc.com

STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED PROFESSIONAL ENGINEER
5/17/2016

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by T-MOBILE to conduct a structural evaluation of the 170' guyed tower supporting the proposed T-MOBILE's antennas located at elevation 163' above the ground level.

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

Record drawings of the existing tower were not available for our use. This office conducted an on-site visual survey and tower mapping on May 11, 2012 to record dimensional properties of the existing tower and its appurtenances. The previous structural analysis report prepared by URS Corporation, dated August 22, 2014, was available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing tower and foundation **are in conformance** with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **94.7%** - (Leg at Tower Section T8 from EL.20' to EL.40' Controlling).

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	DB636-C	176'	Side Mount Standoff
	DB806-XT	174'	Side Mount Standoff
	DB874H120	171.5'	Side Mount Standoff
	Box 24"x6"x6"	171.5'	Side Mount Standoff
	SC2 Dish	167'	Tower Leg
T-MOBILE	(3) APX16DWV-16DWVS Antennas	163'	T - Frame
T-MOBILE	(3) LNX-6515DS-VTM Antennas	163'	T - Frame
T-MOBILE	(6) TMA	163'	T - Frame
T-MOBILE	***(3) AIR 32 B66Aa/B2a Antennas***	163'	T - Frame
	(2) VHLP2 Dish	146'	T - Frame
	VHLP800 Dish	146'	T - Frame
	(9) 844G65VTZASX Antennas	141.5'	T - Frame
	(3) LLPX310R Antennas	140.5'	T - Frame
	(3) RRUS-11	141.5'	T - Frame
	(6) Powerwave 7770 Antennas	120'	T - Frame
	(3) AM-X-CD-16-65-00 Antennas	120'	T - Frame
	(6) LGP 21400 TMA	120'	T - Frame
	(6) LGP 21900	120'	T - Frame
	(6) Powerwave 7020	120'	T - Frame
	(6) RRUS-11	120'	T - Frame
	Surge Arrestor DC6-48-60-18-8F	120'	Tower Leg
	(3) Panel Antennas	108'	Side Mount Standoff
	(2) GPS	50'	Tower Leg

Proposed T-MOBILE Appurtenances shown in Bold.

T-MOBILE EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
T-MOBILE	(18) 1 5/8" Cables	163'	Face of Tower
T-MOBILE	***(1) Fiber Cable***	163'	Face of Tower

Proposed T-MOBILE Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	**94.7 %**	20 – 40	PASS	**Controlling**
Diagonals	48.3 %	120 – 140	PASS	
Secondary Horizontal	13.9 %	120 – 140	PASS	
Top Girt	10.9 %	120 – 140	PASS	
Bottom Girt	52.9 %	5 – 20	PASS	
Mid Girt	30.7 %	40 – 60	PASS	
Guy	76.7 %	50	PASS	
Top Guy Pull-Off	22.0 %	152.4	PASS	
Top Torque Arm	91.4 %	132.5	PASS	

DESIGN CRITERIA:

1. EIA/TIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: Hartford
   Wind Load: 80 mph (fastest mile)
   100 mph (3 second gust)
   Nominal Ice Thickness: 1/2 inch

2. Approximate height above grade to proposed antennas: 163'

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

ASSUMPTIONS:

1. The tower and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

2. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer's requirements.

3. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

4. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

SUPPORT RECOMMENDATIONS:

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

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

ONGOING AND PERIODIC INSPECTION AND MAINTENANCE:

After the Contractor has successfully completed the installation and the work has been accepted, the Owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

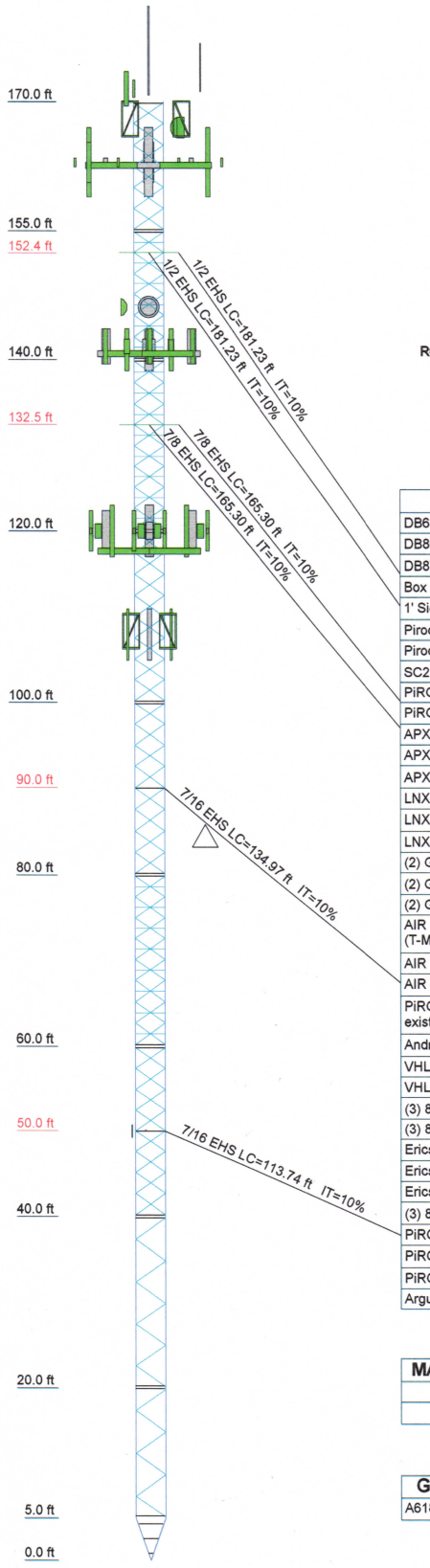
The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

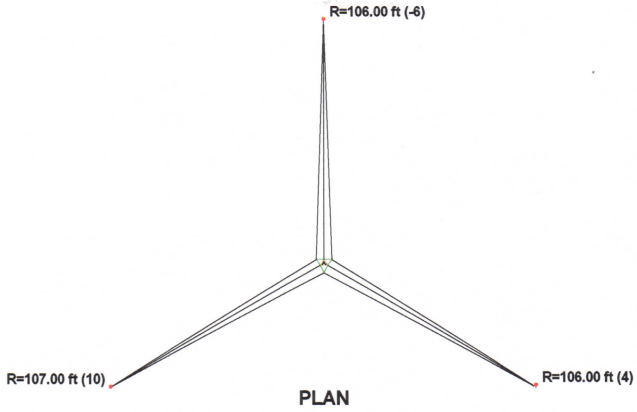
Photo 1: Photo illustrating the Tower with Appurtenances shown.

Hudson Design Group LLC

CALCULATIONS

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs			ROHN 2.5 STD		B	ROHN 2.5 STD	ROHN 2 STD	A	ROHN 2 STD	
Leg Grade					A618-50					
Diagonals	N.A.			P1.5x.0625				L1 3/4x1 3/4x1/8	ROHN 1.5 STD	P1.5x.0625
Diagonal Grade	N.A.			A618-50				A36	A618-50	
Top Girts	C		P1.5x.0625		L2 1/2x2 1/2x3/16		P1.5x.0625	L1 1/2x1 1/2x1/8	P1.5x.0625	
Mid Girts	C		N.A.	P1.5x.0625	N.A.	P1.5x.0625		N.A.		
Bottom Girts	C		P1.5x.0625		L2 1/2x2 1/2x3/16		P1.5x.0625	L1 3/4x1 3/4x1/8	P1.5x.0625	
Sec. Horizontals			N.A.		L2 1/2x2 1/2x3/16		N.A.	L1 3/4x1 3/4x1/4	SR 1	N.A.
Top Guy Pull-Offs					N.A.				L2x2x3/16	N.A.
Face Width (ft)										3.417
# Panels @ (ft)	D	6 @ 2.44444				48 @ 2.45833			12 @ 2.44444	
Weight (lb)	6367.1	230.9	353.3	464.6	571.5	790.9	571.5	433.1	1401.6	1220.2	329.5





PLAN

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB636-C	176	Argus LLPX310R w/mount pipe	140.5
DB806-XT	174	Argus LLPX310R w/mount pipe	140.5
DB874H120-SX	171.5	(2) Powerwave 7770 w/mount pipe	120
Box 24"x6"x6"	171.5	(2) Powerwave 7770 w/mount pipe	120
1' Side Mount Standoff	168	(2) Powerwave LGP21900	120
Pirod 5' Side Mount Standoff (1)	168	(2) Powerwave LGP21900	120
Pirod 5' Side Mount Standoff (1)	168	(2) Powerwave LGP21900	120
SC2	167	(2) Powerwave 7020.00 Dual Band RET	120
PiROD 12' T-Frame	163		
PiROD 12' T-Frame	163	(2) Powerwave 7020.00 Dual Band RET	120
APX16DWV-16DWVS w/mount pipe	163		
APX16DWV-16DWVS w/mount pipe	163	(2) Powerwave 7020.00 Dual Band RET	120
APX16DWV-16DWVS w/mount pipe	163		
LNX-6515DS-VTM w/ Mount Pipe	163	(2) Powerwave TMA LGP21400	120
LNX-6515DS-VTM w/ Mount Pipe	163	(2) Powerwave TMA LGP21400	120
LNX-6515DS-VTM w/ Mount Pipe	163	(2) Powerwave TMA LGP21400	120
(2) Gen. TMA	163	KMW AM-X-CD-16-65-00T-RET w/mount pipe	120
(2) Gen. TMA	163	KMW AM-X-CD-16-65-00T-RET w/mount pipe	120
(2) Gen. TMA	163		
AIR 32 B66Aa/B2a w/mount pipe (T-Mobile - proposed)	163	KMW AM-X-CD-16-65-00T-RET w/mount pipe	120
AIR 32 B66Aa/B2a w/mount pipe	163	(2) Ericsson RRUS-11	120
AIR 32 B66Aa/B2a w/mount pipe	163	(2) Ericsson RRUS-11	120
PiROD 12' T-Frame (T-Mobile - existing)	163	(2) Ericsson RRUS-11	120
		Surge Arrestor (DC6-48-60-18-8F) w/mount pipe	120
Andrew VHLP800-11	146		
VHLP2-180	146	(2) Powerwave 7770 w/mount pipe	120
VHLP2-180	146	PiROD 12' T-Frame	118
(3) 844G65VTZASX w/Mount Pipe	141.5	PiROD 12' T-Frame	118
(3) 844G65VTZASX w/Mount Pipe	141.5	PiROD 12' T-Frame (ATI)	118
Ericsson RRUS-11	141.5	1' Side Mount Standoff	108.4
Ericsson RRUS-11	141.5	1' Side Mount Standoff	108.4
Ericsson RRUS-11	141.5	1' Side Mount Standoff	108.4
(3) 844G65VTZASX w/Mount Pipe	141.5	Panel Antenna 6'x6"x3"	108
PiROD 12' T-Frame	141	Panel Antenna 6'x6"x3"	108
PiROD 12' T-Frame	141	Panel Antenna 6'x6"x3"	108
PiROD 12' T-Frame	141	(2) GPS	50
Argus LLPX310R w/mount pipe	140.5		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2 STD mod. (CT1145)	C	14x3/16
B	ROHN 2 STD mod 1. (CT1145)	D	3 @ 1.75

MATERIAL STRENGTH

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

R=106.00 ft

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Job: CT11174A Newington, CT		
Project: 170 ft Guyed Tower		
Client: T-MOBILE	Drawn by: kw	App'd:
Code: TIA/EIA-222-F	Date: 05/17/16	Scale: NTS
Path: C:\Users\kwang\Documents\HUDSON DESIGN GROUP\AAA\CT11174A Rev - GT (Transend Wireless - T-Mobile\CT11174A Rev\CT11174A Rev.en		Dwg No. E-1

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Tower Input Data

The main tower is a 3x guyed tower with an overall height of 170.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 2.
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.

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	170.00-155.00			3.42	1	15.00
T2	155.00-140.00			3.42	1	15.00
T3	140.00-120.00			3.42	1	20.00
T4	120.00-100.00			3.42	1	20.00
T5	100.00-80.00			3.42	1	20.00
T6	80.00-60.00			3.42	1	20.00
T7	60.00-40.00			3.42	1	20.00
T8	40.00-20.00			3.42	1	20.00
T9	20.00-5.00			3.42	1	15.00
T10	5.00-0.00			3.42	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	*Tower Elevation*	*Diagonal Spacing*	*Bracing Type*	*Has K Brace End Panels*	*Has Horizontals*	*Top Girt Offset*	*Bottom Girt Offset*
	ft	*ft*				*in*	*in*
T1	170.00-155.00	2.44	X Brace	No	No	2.0000	2.0000
T2	155.00-140.00	2.44	X Brace	No	Yes	2.0000	2.0000
T3	140.00-120.00	2.46	X Brace	No	Yes	2.0000	2.0000
T4	120.00-100.00	2.46	X Brace	No	No	2.0000	2.0000
T5	100.00-80.00	2.46	X Brace	No	No	2.0000	2.0000
T6	80.00-60.00	2.46	X Brace	No	Yes	2.0000	2.0000
T7	60.00-40.00	2.46	X Brace	No	No	2.0000	2.0000
T8	40.00-20.00	2.46	K Brace Right	No	No	2.0000	2.0000
T9	20.00-5.00	2.44	K Brace Right	No	No	2.0000	2.0000
T10	5.00-0.00	1.75	X Brace	No	Yes	9.0000	9.0000

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Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 170.00-155.00	Pipe	ROHN 2 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T2 155.00-140.00	Pipe	ROHN 2 STD	A618-50 (50 ksi)	Pipe	ROHN 1.5 STD	A618-50 (50 ksi)
T3 140.00-120.00	Pipe	ROHN 2 STD mod. (CT1145)	A618-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	ROHN 2 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T5 100.00-80.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T6 80.00-60.00	Pipe	ROHN 2 STD mod 1. (CT1145)	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T7 60.00-40.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T8 40.00-20.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T9 20.00-5.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T10 5.00-0.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe		A618-50 (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 170.00-155.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T2 155.00-140.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T3 140.00-120.00	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T5 100.00-80.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T6 80.00-60.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 60.00-40.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T8 40.00-20.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T9 20.00-5.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T10 5.00-0.00	Flat Bar	14x3/16	A36 (36 ksi)	Flat Bar	14x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

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Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T5 100.00-80.00	1	Pipe	P1.5x.0625	A572-50 (50 ksi)	Pipe		A572-50 (50 ksi)
T7 60.00-40.00	1	Pipe	P1.5x.0625	A572-50 (50 ksi)	Pipe		A572-50 (50 ksi)
T10 5.00-0.00	1	Flat Bar	14x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T2 155.00-140.00	Solid Round	1	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T3 140.00-120.00	Equal Angle	L1 3/4x1 3/4x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 80.00-60.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
152.389	EHS	A	1/2	2690.00	10%	21000	0.517	189.34	106.00	0.0000	-6.00	100%
		B	1/2	2690.00	10%	21000	0.517	181.07	106.00	0.0000	4.00	100%
		C	1/2	2690.00	10%	21000	0.517	176.79	107.00	0.0000	10.00	100%
132.458	EHS	A	7/8	7970.00	10%	19000	1.581	173.03	106.00	0.0000	-6.00	100%
		B	7/8	7970.00	10%	19000	1.581	165.15	106.00	0.0000	4.00	100%
		C	7/8	7970.00	10%	19000	1.581	161.19	107.00	0.0000	10.00	100%
90	EHS	A	7/16	2080.00	10%	21000	0.399	141.43	106.00	0.0000	-6.00	100%
		B	7/16	2080.00	10%	21000	0.399	134.86	106.00	0.0000	4.00	100%
		C	7/16	2080.00	10%	21000	0.399	131.91	107.00	0.0000	10.00	100%
50	EHS	A	7/16	2080.00	10%	21000	0.399	118.04	106.00	0.0000	-6.00	100%
		B	7/16	2080.00	10%	21000	0.399	113.65	106.00	0.0000	4.00	100%
		C	7/16	2080.00	10%	21000	0.399	112.29	107.00	0.0000	10.00	100%

Guy Data*(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
152.389	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
132.458	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7 mod (CT1145)
90	Corner						

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Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
50	Corner						

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
152.39	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2x2x3/16
132.46	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
90.00	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
50.00	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

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
1 1/4	A	Yes	Ar (CfAe)	141.00 - 6.00	0.0000	0.3	9	6	0.0000	1.5500		0.66
2" Rigid Conduit	A	Yes	Ar (CfAe)	141.00 - 6.00	0.0000	0	2	2	0.0000	2.0000		2.80
1/2	A	Yes	Ar (CfAe)	146.00 - 6.00	0.0000	-0.1	3	2	0.0000	0.5800		0.25
1 5/8	A	Yes	Ar (CfAe)	109.00 - 6.00	0.0000	-0.4	6	3	0.0000	1.8000		1.04
1 5/8	A	Yes	Ar (CfAe)	170.00 - 6.00	0.0000	-0.42	2	2	0.0000	1.8000		1.04
7/8	A	Yes	Ar (CfAe)	170.00 - 6.00	0.0000	-0.44	1	1	0.0000	1.1100		0.54
1/2	A	Yes	Ar (CfAe)	170.00 - 6.00	0.0000	-0.46	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	167.00 - 6.00	0.0000	-0.48	2	2	0.0000	0.5800		0.25
LMR-400 (13/32 FOAM) **********	B	Yes	Ar (CfAe)	50.00 - 6.00	0.0000	0	2	2	0.0000	0.4100		0.07
1 5/8 (T-Mobile - existing) **********	C	Yes	Ar (CfAe)	163.00 - 6.00	0.0000	-0.3	18	9	0.0000	1.8000		1.04
1 5/8 Fiber Cable (T-Mobile - proposed) **********	C	Yes	Ar (CfAe)	163.00 - 6.00	0.0000	0	1	1	0.0000	1.8000		1.04
7/8 (AT&T - existing)	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	-0.2	12	6	0.0000	1.1100		0.54
FB-L98B-002 (AT&T - proposed)	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	0.1	1	1	0.0000	0.4000		0.25
WR-VG122S T-BRDA (AT&T - proposed)	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	0.15	2	2	0.0000	0.4000		0.25

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Discrete Tower Loads

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		*C_AA_A Front* ft^2	*C_AA_A Side* ft^2	*Weight* lb
Pirod 5' Side Mount Standoff	A	From Leg	2.50	0.0000	168.00	No Ice	3.85	3.85	60.00
(1)			0.00			1/2" Ice	5.52	5.52	110.00
			0.00						
DB636-C	A	From Leg	5.00	0.0000	176.00	No Ice	2.51	2.51	30.00
			0.00			1/2" Ice	3.59	3.59	48.84
			0.00						
Pirod 5' Side Mount Standoff	B	From Leg	2.50	0.0000	168.00	No Ice	3.85	3.85	60.00
(1)			0.00			1/2" Ice	5.52	5.52	110.00
			0.00						
DB806-XT	B	From Leg	5.00	0.0000	174.00	No Ice	1.14	1.14	21.00
			0.00			1/2" Ice	1.68	1.68	29.93
			0.00						
1' Side Mount Standoff	C	From Leg	0.50	0.0000	168.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00						
DB874H120-SX	C	From Leg	1.00	0.0000	171.50	No Ice	5.60	2.48	14.00
			0.00			1/2" Ice	5.99	2.78	44.53
			0.00						
Box 24"x6"x6"	C	From Leg	0.00	0.0000	171.50	No Ice	1.40	1.40	15.00
			0.00			1/2" Ice	1.60	1.60	26.70
			0.00						
**********									
PiROD 12' T-Frame	A	From Leg	3.00	0.0000	163.00	No Ice	12.20	12.20	360.00
(T-Mobile - existing)			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
PiROD 12' T-Frame	B	From Leg	3.00	0.0000	163.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
PiROD 12' T-Frame	C	From Leg	3.00	0.0000	163.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
APX16DWV-16DWVS	A	From Leg	6.00	0.0000	163.00	No Ice	7.38	3.60	62.90
w/mount pipe			0.00			1/2" Ice	7.95	4.44	111.85
			0.00						
APX16DWV-16DWVS	B	From Leg	6.00	0.0000	163.00	No Ice	7.38	3.60	62.90
w/mount pipe			0.00			1/2" Ice	7.95	4.44	111.85
			0.00						
APX16DWV-16DWVS	C	From Leg	6.00	0.0000	163.00	No Ice	7.38	3.60	62.90
w/mount pipe			0.00			1/2" Ice	7.95	4.44	111.85
			0.00						
LNX-6515DS-VTM w/	A	From Leg	6.00	0.0000	163.00	No Ice	11.67	9.83	83.15
Mount Pipe			0.00			1/2" Ice	12.39	11.35	172.72
			0.00						
LNX-6515DS-VTM w/	B	From Leg	6.00	0.0000	163.00	No Ice	11.67	9.83	83.15
Mount Pipe			0.00			1/2" Ice	12.39	11.35	172.72
			0.00						
LNX-6515DS-VTM w/	C	From Leg	6.00	0.0000	163.00	No Ice	11.67	9.83	83.15
Mount Pipe			0.00			1/2" Ice	12.39	11.35	172.72
			0.00						
(2) Gen. TMA	A	From Leg	5.00	0.0000	163.00	No Ice	0.68	0.45	13.20
			0.00			1/2" Ice	0.80	0.56	18.38
			0.00						
(2) Gen. TMA	B	From Leg	5.00	0.0000	163.00	No Ice	0.68	0.45	13.20
			0.00			1/2" Ice	0.80	0.56	18.38

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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* lb
			0.00						
(2) Gen. TMA	C	From Leg	5.00	0.0000	163.00	No Ice	0.68	0.45	13.20
			0.00			1/2" Ice	0.80	0.56	18.38
			0.00						
**********									
AIR 32 B66Aa/B2a w/mount pipe	A	From Leg	6.00	0.0000	163.00	No Ice	7.40	6.21	153.90
			0.00			1/2" Ice	7.97	7.14	215.61
(T-Mobile - proposed)			0.00						
AIR 32 B66Aa/B2a w/mount pipe	B	From Leg	6.00	0.0000	163.00	No Ice	7.40	6.21	153.90
			0.00			1/2" Ice	7.97	7.14	215.61
			0.00						
AIR 32 B66Aa/B2a w/mount pipe	C	From Leg	6.00	0.0000	163.00	No Ice	7.40	6.21	153.90
			0.00			1/2" Ice	7.97	7.14	215.61
			0.00						
**********									
PiROD 12' T-Frame	A	From Leg	0.50	0.0000	141.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
PiROD 12' T-Frame	B	From Leg	0.50	0.0000	141.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
PiROD 12' T-Frame	C	From Leg	0.50	0.0000	141.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
(3) 844G65VTZASX w/Mount Pipe	A	From Leg	1.00	0.0000	141.50	No Ice	6.55	5.63	41.55
			0.00			1/2" Ice	7.25	6.73	98.42
			0.00						
(3) 844G65VTZASX w/Mount Pipe	B	From Leg	1.00	0.0000	141.50	No Ice	6.55	5.63	41.55
			0.00			1/2" Ice	7.25	6.73	98.42
			0.00						
(3) 844G65VTZASX w/Mount Pipe	C	From Leg	1.00	0.0000	141.50	No Ice	6.55	5.63	41.55
			0.00			1/2" Ice	7.25	6.73	98.42
			0.00						
Argus LLPX310R w/mount pipe	A	From Leg	1.00	0.0000	140.50	No Ice	4.94	2.81	43.60
			0.00			1/2" Ice	5.32	3.32	80.16
			0.00						
Argus LLPX310R w/mount pipe	B	From Leg	1.00	0.0000	140.50	No Ice	4.94	2.81	43.60
			0.00			1/2" Ice	5.32	3.32	80.16
			0.00						
Argus LLPX310R w/mount pipe	C	From Leg	1.00	0.0000	140.50	No Ice	4.94	2.81	43.60
			0.00			1/2" Ice	5.32	3.32	80.16
			0.00						
Ericsson RRUS-11	A	From Leg	1.00	0.0000	141.50	No Ice	3.26	1.38	50.70
			0.00			1/2" Ice	3.50	1.56	71.57
			0.00						
Ericsson RRUS-11	B	From Leg	1.00	0.0000	141.50	No Ice	3.26	1.38	50.70
			0.00			1/2" Ice	3.50	1.56	71.57
			0.00						
Ericsson RRUS-11	C	From Leg	1.00	0.0000	141.50	No Ice	3.26	1.38	50.70
			0.00			1/2" Ice	3.50	1.56	71.57
			0.00						
**********									
PiROD 12' T-Frame (AT&T)	A	From Leg	1.50	0.0000	118.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
PiROD 12' T-Frame	B	From Leg	1.50	0.0000	118.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00

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Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* ft ft ft	*Azimuth Adjustment* °	*Placement* ft		C_AA_A *Front* ft^2	C_AA_A *Side* ft^2	*Weight* lb
			0.00						
PiROD 12' T-Frame	C	From Leg	1.50	0.0000	118.00	No Ice	12.20	12.20	360.00
			0.00			1/2" Ice	17.60	17.60	490.00
			0.00						
(2) Powerwave 7770 w/mount pipe	A	From Leg	3.00	0.0000	120.00	No Ice	6.02	4.10	57.25
			0.00			1/2" Ice	6.47	4.75	103.17
			0.00						
(2) Powerwave 7770 w/mount pipe	B	From Leg	3.00	0.0000	120.00	No Ice	6.02	4.10	57.25
			0.00			1/2" Ice	6.47	4.75	103.17
			0.00						
(2) Powerwave 7770 w/mount pipe	C	From Leg	3.00	0.0000	120.00	No Ice	6.02	4.10	57.25
			0.00			1/2" Ice	6.47	4.75	103.17
			0.00						
(2) Powerwave LGP21900	A	From Leg	2.00	0.0000	120.00	No Ice	0.23	0.12	5.50
			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) Powerwave LGP21900	B	From Leg	2.00	0.0000	120.00	No Ice	0.23	0.12	5.50
			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) Powerwave LGP21900	C	From Leg	2.00	0.0000	120.00	No Ice	0.23	0.12	5.50
			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) Powerwave 7020.00 Dual Band RET	A	From Leg	3.00	0.0000	120.00	No Ice	0.40	0.20	2.20
			0.00			1/2" Ice	0.49	0.27	5.13
			0.00						
(2) Powerwave 7020.00 Dual Band RET	B	From Leg	3.00	0.0000	120.00	No Ice	0.40	0.20	2.20
			0.00			1/2" Ice	0.49	0.27	5.13
			0.00						
(2) Powerwave 7020.00 Dual Band RET	C	From Leg	3.00	0.0000	120.00	No Ice	0.40	0.20	2.20
			0.00			1/2" Ice	0.49	0.27	5.13
			0.00						
(2) Powerwave TMA LGP21400	A	From Leg	2.00	0.0000	120.00	No Ice	1.23	0.41	14.10
			0.00			1/2" Ice	1.38	0.52	21.29
			0.00						
(2) Powerwave TMA LGP21400	B	From Leg	2.00	0.0000	120.00	No Ice	1.23	0.41	14.10
			0.00			1/2" Ice	1.38	0.52	21.29
			0.00						
(2) Powerwave TMA LGP21400	C	From Leg	2.00	0.0000	120.00	No Ice	1.23	0.41	14.10
			0.00			1/2" Ice	1.38	0.52	21.29
			0.00						
KMW AM-X-CD-16-65-00T-RET w/mount pipe	A	From Leg	3.00	0.0000	120.00	No Ice	8.50	6.30	74.05
			0.00			1/2" Ice	9.15	7.48	139.04
			0.00						
KMW AM-X-CD-16-65-00T-RET w/mount pipe	B	From Leg	3.00	0.0000	120.00	No Ice	8.50	6.30	74.05
			0.00			1/2" Ice	9.15	7.48	139.04
			0.00						
KMW AM-X-CD-16-65-00T-RET w/mount pipe	C	From Leg	3.00	0.0000	120.00	No Ice	8.50	6.30	74.05
			0.00			1/2" Ice	9.15	7.48	139.04
			0.00						
(2) Ericsson RRUS-11	A	From Leg	2.00	0.0000	120.00	No Ice	3.26	1.38	50.70
			0.00			1/2" Ice	3.50	1.56	71.57
			0.00						
(2) Ericsson RRUS-11	B	From Leg	2.00	0.0000	120.00	No Ice	3.26	1.38	50.70
			0.00			1/2" Ice	3.50	1.56	71.57
			0.00						
(2) Ericsson RRUS-11	C	From Leg	2.00	0.0000	120.00	No Ice	3.26	1.38	50.70
			0.00			1/2" Ice	3.50	1.56	71.57

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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						
Surge Arrestor	A	From Leg	0.50	0.0000	120.00	No Ice	2.45	2.45	38.25
(DC6-48-60-18-8F) w/mount pipe			0.00			1/2" Ice	2.95	2.95	66.65
**********			0.00						
1' Side Mount Standoff	A	From Leg	0.50	0.0000	108.40	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00						
1' Side Mount Standoff	B	From Leg	0.50	0.0000	108.40	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00						
1' Side Mount Standoff	C	From Leg	0.50	0.0000	108.40	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00						
Panel Antenna 6'x6"x3"	A	From Leg	1.00	0.0000	108.00	No Ice	4.70	2.95	40.00
			0.00			1/2" Ice	5.15	3.38	64.24
			0.00						
Panel Antenna 6'x6"x3"	B	From Leg	1.00	0.0000	108.00	No Ice	4.70	2.95	40.00
			0.00			1/2" Ice	5.15	3.38	64.24
			0.00						
Panel Antenna 6'x6"x3"	C	From Leg	1.00	0.0000	108.00	No Ice	4.70	2.95	40.00
			0.00			1/2" Ice	5.15	3.38	64.24
			0.00						
**********									
(2) GPS	C	From Leg	0.50	0.0000	50.00	No Ice	0.21	0.21	5.00
			0.00			1/2" Ice	0.32	0.32	7.52
			0.00						

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
SC2	B	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000		167.00	2.33	No Ice	4.28	22.00
				0.00					1/2" Ice	4.59	42.00
				0.00							
Andrew VHLP800-11	A	Paraboloid w/Shroud (HP)	From Leg	1.00	0.0000		146.00	2.50	No Ice	6.00	49.00
				0.00					1/2" Ice	6.40	77.00
				0.00							
VHLP2-180	A	Paraboloid w/o Radome	From Leg	1.00	0.0000		146.00	2.00	No Ice	3.14	25.00
				0.00					1/2" Ice	3.41	42.49
				0.00							
VHLP2-180	C	Paraboloid w/o Radome	From Leg	1.00	0.0000		146.00	2.00	No Ice	3.14	25.00
				0.00					1/2" Ice	3.41	42.49
				0.00							

Load Combinations

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

Maximum Reactions

Location	*Condition*	*Gov. Load Comb.*	*Vertical lb*	*Horizontal, X lb*	*Horizontal, Z lb*
Mast	Max. Vert	22	113501.15	781.72	-1276.60
	Max. H_x	24	112841.36	1531.98	-12.14
	Max. H_z	15	112223.45	-16.71	1725.59
	Max. M_x	1	0.00	-6.04	16.70
	Max. M_z	1	0.00	-6.04	16.70
	Max. Torsion	13	402.40	682.16	1294.08
	Min. Vert	1	78512.45	-6.04	16.70
	Min. H_x	18	112187.03	-1564.19	-2.90
	Min. H_z	21	112428.69	-11.01	-1413.07
	Min. M_x	1	0.00	-6.04	16.70
	Min. M_z	1	0.00	-6.04	16.70
	Min. Torsion	7	-243.31	-781.50	-1213.11
Guy C @ 107 ft Elev 10 ft	Max. Vert	10	-1169.70	-748.68	431.84

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Azimuth 240 deg					
	Max. H_x	10	-1169.70	-748.68	431.84
	Max. H_z	17	-43227.20	-38081.65	21985.61
	Min. Vert	17	-43227.20	-38081.65	21985.61
	Min. H_x	17	-43227.20	-38081.65	21985.61
	Min. H_z	10	-1169.70	-748.68	431.84
Guy B @ 106 ft Elev 4 ft Azimuth 120 deg	Max. Vert	6	-1576.30	949.64	547.65
	Max. H_x	25	-45562.67	37748.98	21796.78
	Max. H_z	25	-45562.67	37748.98	21796.78
	Min. Vert	25	-45562.67	37748.98	21796.78
	Min. H_x	6	-1576.30	949.64	547.65
	Min. H_z	6	-1576.30	949.64	547.65
Guy A @ 106 ft Elev -6 ft Azimuth 0 deg	Max. Vert	2	-2391.75	0.18	-1560.35
	Max. H_x	24	-26723.18	1385.83	-22987.34
	Max. H_z	2	-2391.75	0.18	-1560.35
	Min. Vert	21	-48744.53	-1.23	-42969.49
	Min. H_x	18	-27345.29	-1379.65	-23446.46
	Min. H_z	21	-48744.53	-1.23	-42969.49

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	78512.45	6.04	-16.70	0.00	0.00	-68.78
Dead+Wind 0 deg - No Ice+Guy	88291.72	6.91	-1549.12	0.00	0.00	-315.68
Dead+Wind 30 deg - No Ice+Guy	87529.06	700.52	-1298.77	0.00	0.00	-161.42
Dead+Wind 60 deg - No Ice+Guy	85647.83	1219.75	-712.56	0.00	0.00	-57.86
Dead+Wind 90 deg - No Ice+Guy	87470.84	1479.28	34.22	0.00	0.00	30.84
Dead+Wind 120 deg - No Ice+Guy	89077.99	1347.47	751.25	0.00	0.00	168.51
Dead+Wind 150 deg - No Ice+Guy	88568.45	781.50	1213.11	0.00	0.00	243.31
Dead+Wind 180 deg - No Ice+Guy	85751.87	3.83	1370.24	0.00	0.00	171.66
Dead+Wind 210 deg - No Ice+Guy	88870.46	-771.87	1216.54	0.00	0.00	21.89
Dead+Wind 240 deg - No Ice+Guy	89851.12	-1334.97	753.12	0.00	0.00	-84.33
Dead+Wind 270 deg - No Ice+Guy	88142.99	-1464.67	40.29	0.00	0.00	-190.07
Dead+Wind 300 deg - No Ice+Guy	85822.44	-1203.36	-706.80	0.00	0.00	-335.48
Dead+Wind 330 deg - No Ice+Guy	87908.77	-682.16	-1294.08	0.00	0.00	-402.40
Dead+Ice+Temp+Guy	98523.19	11.35	-19.56	0.00	0.00	-86.14
Dead+Wind 0 deg+Ice+Temp+Guy	112223.45	16.71	-1725.59	0.00	0.00	-71.70

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Load Combination	*Vertical*	*Shear$_x$*	*Shear$_z$*	*Overturning Moment, M$_x$*	*Overturning Moment, M$_z$*	*Torque*
	lb	*lb*	*lb*	*lb-ft*	*lb-ft*	*lb-ft*
Dead+Wind 30 deg+Ice+Temp+Guy	112292.00	767.08	-1357.42	0.00	0.00	89.03
Dead+Wind 60 deg+Ice+Temp+Guy	111795.45	1289.51	-752.35	0.00	0.00	63.04
Dead+Wind 90 deg+Ice+Temp+Guy	112187.03	1564.19	2.90	0.00	0.00	-12.67
Dead+Wind 120 deg+Ice+Temp+Guy	112596.96	1514.83	831.52	0.00	0.00	32.88
Dead+Wind 150 deg+Ice+Temp+Guy	113268.90	804.93	1269.53	0.00	0.00	36.34
Dead+Wind 180 deg+Ice+Temp+Guy	112428.69	11.01	1413.07	0.00	0.00	-123.76
Dead+Wind 210 deg+Ice+Temp+Guy	113501.15	-781.72	1276.60	0.00	0.00	-285.18
Dead+Wind 240 deg+Ice+Temp+Guy	113049.60	-1494.18	841.31	0.00	0.00	-262.59
Dead+Wind 270 deg+Ice+Temp+Guy	112841.36	-1531.98	12.14	0.00	0.00	-187.95
Dead+Wind 300 deg+Ice+Temp+Guy	112196.40	-1252.30	-742.04	0.00	0.00	-238.81
Dead+Wind 330 deg+Ice+Temp+Guy	112719.57	-728.67	-1348.76	0.00	0.00	-242.22
Dead+Wind 0 deg - Service+Guy	79185.54	6.35	-584.76	0.00	0.00	-163.97
Dead+Wind 30 deg - Service+Guy	79257.30	283.72	-498.04	0.00	0.00	-110.39
Dead+Wind 60 deg - Service+Guy	79258.86	484.52	-291.50	0.00	0.00	-63.61
Dead+Wind 90 deg - Service+Guy	79038.75	564.89	-14.71	0.00	0.00	-17.46
Dead+Wind 120 deg - Service+Guy	78804.18	503.99	268.41	0.00	0.00	33.71
Dead+Wind 150 deg - Service+Guy	78730.41	288.64	462.88	0.00	0.00	55.79
Dead+Wind 180 deg - Service+Guy	78743.73	5.49	532.68	0.00	0.00	27.41
Dead+Wind 210 deg - Service+Guy	78679.45	-278.60	465.08	0.00	0.00	-26.88
Dead+Wind 240 deg - Service+Guy	78717.85	-495.08	271.09	0.00	0.00	-75.19
Dead+Wind 270 deg - Service+Guy	78914.44	-554.35	-12.16	0.00	0.00	-121.20
Dead+Wind 300 deg - Service+Guy	79142.24	-471.72	-289.92	0.00	0.00	-169.76
Dead+Wind 330 deg - Service+Guy	79184.59	-270.14	-497.35	0.00	0.00	-190.98

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	-22086.69	0.00	-0.28	22086.11	1.94	0.009%
2	25.01	-22177.93	-31593.11	-25.05	22177.89	31591.87	0.003%
3	15736.39	-22061.94	-27234.41	-15736.48	22061.90	27233.02	0.004%
4	27158.87	-21950.49	-15732.02	-27157.92	21950.47	15731.76	0.003%
5	31365.13	-22077.12	-43.03	-31364.17	22077.09	43.74	0.003%

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	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
6	27264.68	-22205.37	15892.67	-27263.61	22205.32	-15891.92	0.003%
7	15663.41	-22101.88	27344.06	-15662.04	22101.83	-27343.17	0.004%
8	45.96	-21995.47	31518.92	-47.25	21995.44	-31517.48	0.005%
9	-15606.68	-22111.47	27357.96	15605.71	22111.43	-27357.37	0.003%
10	-27211.80	-22222.92	15891.01	27210.96	22222.88	-15890.47	0.003%
11	-31355.16	-22096.29	-72.49	31354.40	22096.26	73.02	0.002%
12	-27139.68	-21968.04	-15774.00	27138.75	21968.03	15774.50	0.003%
13	-15716.52	-22071.52	-27253.22	15716.53	22071.48	27251.67	0.004%
14	-0.00	-37186.02	0.00	-1.03	37186.03	2.55	0.007%
15	8.52	-37366.98	-35783.21	-8.56	37366.92	35781.80	0.003%
16	17296.41	-37134.16	-29970.47	-17296.58	37134.12	29969.06	0.003%
17	29572.27	-36910.78	-17132.16	-29570.49	36910.74	17131.85	0.004%
18	34497.43	-37166.00	-27.83	-34496.44	37165.96	28.64	0.003%
19	30876.49	-37424.58	17979.59	-30875.28	37424.52	-17978.76	0.003%
20	17257.54	-37217.88	30080.85	-17256.09	37217.82	-30080.03	0.003%
21	49.58	-37005.10	34330.97	-50.70	37005.08	-34329.99	0.003%
22	-17190.86	-37237.92	30070.33	17189.80	37237.88	-30069.76	0.002%
23	-30820.21	-37461.30	17956.94	30819.25	37461.24	-17956.32	0.002%
24	-34488.99	-37206.08	-65.63	34488.18	37206.05	66.26	0.002%
25	-29569.36	-36947.50	-17187.73	29568.57	36947.49	17188.37	0.002%
26	-17300.70	-37154.21	-30007.26	17300.80	37154.16	30005.71	0.003%
27	9.77	-22122.33	-12341.06	-9.83	22122.32	12340.18	0.003%
28	6147.03	-22077.02	-10638.44	-6146.91	22077.01	10636.95	0.006%
29	10608.94	-22033.49	-6145.32	-10606.91	22033.47	6144.28	0.009%
30	12252.00	-22082.95	-16.81	-12250.52	22082.94	17.76	0.007%
31	10650.27	-22133.05	6208.07	-10649.25	22133.03	-6207.22	0.005%
32	6118.52	-22092.62	10681.27	-6117.02	22092.61	-10679.51	0.009%
33	17.95	-22051.06	12312.08	-18.04	22051.05	-12310.46	0.006%
34	-6096.36	-22096.36	10686.70	6095.60	22096.36	-10685.98	0.004%
35	-10629.61	-22139.90	6207.43	10628.15	22139.88	-6206.36	0.007%
36	-12248.11	-22090.44	-28.32	12247.38	22090.43	28.76	0.003%
37	-10601.44	-22040.34	-6161.72	10600.51	22040.33	6161.31	0.004%
38	-6139.27	-22080.76	-10645.79	6138.91	22080.75	10644.21	0.006%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 155	2.408	33	0.2036	0.0104
T2	155 - 140	1.808	33	0.1752	0.0094
T3	140 - 120	1.419	33	0.0824	0.0106
T4	120 - 100	1.366	33	0.0306	0.0199
T5	100 - 80	1.399	33	0.0106	0.0405
T6	80 - 60	1.327	33	0.0265	0.0571
T7	60 - 40	1.131	33	0.0626	0.0682
T8	40 - 20	0.859	33	0.0690	0.0724
T9	20 - 5	0.513	33	0.1036	0.0738
T10	5 - 0	0.134	33	0.1243	0.0408

Critical Deflections and Radius of Curvature - Service Wind

Hudson Design Group LLC
1600 Osgood Street Bldg. 20N Suite 3090
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 336-5586

Elevation *ft*	*Appurtenance*	*Gov. Load Comb.*	*Deflection* *in*	*Tilt* °	*Twist* °	*Radius of Curvature* *ft*
176.00	DB636-C	33	2.408	0.2036	0.0104	34640
174.00	DB806-XT	33	2.408	0.2036	0.0104	34640
171.50	DB874H120-SX	33	2.408	0.2036	0.0104	34640
168.00	Pirod 5' Side Mount Standoff (1)	33	2.323	0.2023	0.0100	34640
167.00	SC2	33	2.281	0.2016	0.0098	34640
163.00	PiROD 12' T-Frame	33	2.115	0.1973	0.0091	24742
152.39	Guy	33	1.719	0.1620	0.0096	10294
146.00	Andrew VHLP800-11	33	1.536	0.1213	0.0100	8092
141.50	(3) 844G65VTZASX w/Mount Pipe	33	1.443	0.0915	0.0104	7138
141.00	PiROD 12' T-Frame	33	1.434	0.0884	0.0105	7107
140.50	Argus LLPX310R w/mount pipe	33	1.426	0.0854	0.0105	7102
132.46	Guy	33	1.354	0.0468	0.0126	10215
120.00	(2) Powerwave 7770 w/mount pipe	33	1.366	0.0306	0.0199	57982
118.00	PiROD 12' T-Frame	33	1.372	0.0291	0.0216	93373
108.40	1' Side Mount Standoff	33	1.394	0.0158	0.0315	54352
108.00	Panel Antenna 6'x6"x3"	33	1.394	0.0152	0.0319	53495
90.00	Guy	33	1.379	0.0147	0.0495	37324
50.00	Guy	33	1.001	0.0660	0.0695	74097

Section Capacity Table

Section No.	*Elevation ft*	*Component Type*	*Size*	*Critical Element*	*P lb*	*SF*P$_{allow}$ lb*	*% Capacity*	*Pass Fail*
T1	170 - 155	Leg	ROHN 2 STD	2	-16326.90	37541.28	43.5	Pass
T2	155 - 140	Leg	ROHN 2 STD	47	-36901.10	40738.88	90.6	Pass
T3	140 - 120	Leg	ROHN 2 STD mod. (CT1145)	111	-56578.40	60357.17	93.7	Pass
T4	120 - 100	Leg	ROHN 2 STD	192	-34889.30	37500.09	93.0	Pass
T5	100 - 80	Leg	ROHN 2.5 STD	249	-42667.90	61355.59	69.5	Pass
T6	80 - 60	Leg	ROHN 2 STD mod 1. (CT1145)	309	-43329.50	50912.46	85.1	Pass
T7	60 - 40	Leg	ROHN 2.5 STD	390	-44704.20	60187.21	74.3	Pass
T8	40 - 20	Leg	ROHN 2.5 STD	450	-48034.50	50712.25	94.7	Pass
T9	20 - 5	Leg	ROHN 2.5 STD	483	-47554.50	50851.15	93.5	Pass
T10	5 - 0	Leg	ROHN 2.5 STD	508	-35270.80	44789.60	78.7	Pass
T1	170 - 155	Diagonal	P1.5x.0625	13	-2296.77	9353.13	24.6	Pass
T2	155 - 140	Diagonal	ROHN 1.5 STD	57	-3085.10	27803.31	11.1	Pass
T3	140 - 120	Diagonal	L1 3/4x1 3/4x1/8	157	-4129.75	8545.80	48.3	Pass
T4	120 - 100	Diagonal	P1.5x.0625	241	-2015.68	9348.02	21.6	Pass
T5	100 - 80	Diagonal	P1.5x.0625	277	-1087.44	9382.29	11.6	Pass
T6	80 - 60	Diagonal	P1.5x.0625	318	-1477.46	9349.74	15.8	Pass
T7	60 - 40	Diagonal	P1.5x.0625	444	-1258.23	9382.29	13.4	Pass
T8	40 - 20	Diagonal	P1.5x.0625	478	-1273.96	6182.23	20.6	Pass
T9	20 - 5	Diagonal	P1.5x.0625	493	-1812.94	6196.85	29.3	Pass
T2	155 - 140	Secondary Horizontal	1	63	-458.99	12477.49	3.7	Pass
T3	140 - 120	Secondary Horizontal	L1 3/4x1 3/4x1/4	171	-1864.07	13429.97	13.9	Pass
T6	80 - 60	Secondary Horizontal	L2 1/2x2 1/2x3/16	377	1128.64	25971.10	4.3	Pass
T1	170 - 155	Top Girt	P1.5x.0625	4	-45.53	7454.42	0.6	Pass
T2	155 - 140	Top Girt	P1.5x.0625	51	-171.96	7454.42	2.3	Pass
T3	140 - 120	Top Girt	L1 1/2x1 1/2x1/8	112	-487.68	4480.55	10.9	Pass
T4	120 - 100	Top Girt	P1.5x.0625	194	458.60	8467.57	5.4	Pass
T5	100 - 80	Top Girt	P1.5x.0625	251	440.81	11287.27	3.9	Pass
T6	80 - 60	Top Girt	L2 1/2x2 1/2x3/16	311	337.76	25971.10	1.3	Pass
T7	60 - 40	Top Girt	P1.5x.0625	392	726.91	11287.27	6.4	Pass
T8	40 - 20	Top Girt	P1.5x.0625	451	485.33	11287.27	4.3	Pass
T9	20 - 5	Top Girt	P1.5x.0625	484	249.25	11287.27	2.2	Pass
T10	5 - 0	Top Girt	14x3/16	511	2872.24	56700.00	5.1	Pass
T1	170 - 155	Bottom Girt	P1.5x.0625	9	-625.03	7454.42	8.4	Pass

Hudson Design Group LLC
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Phone: (978) 557-5553
FAX: (978) 336-5586

Job	Page
CT11174A Newington, CT	14 of 14
Project	**Date**
170 ft Guyed Tower	15:23:56 05/17/16
Client	**Designed by**
T-MOBILE	kw

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T2	155 - 140	Bottom Girt	P1.5x.0625	52	476.85	11287.27	4.2	Pass
T3	140 - 120	Bottom Girt	L1 3/4x1 3/4x1/8	116	827.41	12146.96	6.8	Pass
T4	120 - 100	Bottom Girt	P1.5x.0625	197	447.48	11287.27	4.0	Pass
T5	100 - 80	Bottom Girt	P1.5x.0625	254	708.97	11287.27	6.3	Pass
T6	80 - 60	Bottom Girt	L2 1/2x2 1/2x3/16	313	238.73	19483.20	1.2	Pass
T7	60 - 40	Bottom Girt	P1.5x.0625	396	570.87	11287.27	5.1	Pass
T8	40 - 20	Bottom Girt	P1.5x.0625	454	192.14	11287.27	1.7	Pass
T9	20 - 5	Bottom Girt	P1.5x.0625	487	4480.34	8467.57	52.9	Pass
T10	5 - 0	Bottom Girt	14x3/16	516	-878.17	45622.20	3.9	Pass
T5	100 - 80	Mid Girt	P1.5x.0625	256	2704.75	11287.27	24.0	Pass
T7	60 - 40	Mid Girt	P1.5x.0625	398	3465.67	11287.27	30.7	Pass
T10	5 - 0	Mid Girt	14x3/16	519	-70.55	4926.91	1.4	Pass
T2	155 - 140	Guy A@152.389	1/2	531	7326.51	13450.00	54.5	Pass
T3	140 - 120	Guy A@132.458	7/8	543	18525.40	39850.00	46.5	Pass
T5	100 - 80	Guy A@90	7/16	549	7236.31	10400.00	69.6	Pass
T7	60 - 40	Guy A@50	7/16	552	7980.73	10400.00	76.7	Pass
T2	155 - 140	Guy B@152.389	1/2	528	7215.78	13450.00	53.6	Pass
T3	140 - 120	Guy B@132.458	7/8	540	17915.00	39850.00	45.0	Pass
T5	100 - 80	Guy B@90	7/16	548	7030.02	10400.00	67.6	Pass
T7	60 - 40	Guy B@50	7/16	551	7747.15	10400.00	74.5	Pass
T2	155 - 140	Guy C@152.389	1/2	521	7131.61	13450.00	53.0	Pass
T3	140 - 120	Guy C@132.458	7/8	536	17480.00	39850.00	43.9	Pass
T5	100 - 80	Guy C@90	7/16	547	6869.13	10400.00	66.0	Pass
T7	60 - 40	Guy C@50	7/16	550	7573.14	10400.00	72.8	Pass
T2	155 - 140	Top Guy Pull-Off@152.389	L2x2x3/16	526	-2665.88	12603.70	22.0	Pass
T2	155 - 140	Torque Arm Top@152.389	C12x20.7	534	-410.66	99838.36	43.2	Pass
T3	140 - 120	Torque Arm Top@132.458	C12x20.7 mod (CT1145)	546	-3321.13	116487.67	91.4	Pass
							Summary	
						Leg (T8)	94.7	Pass
						Diagonal (T3)	48.3	Pass
						Secondary Horizontal (T3)	13.9	Pass
						Top Girt (T3)	10.9	Pass
						Bottom Girt (T9)	52.9	Pass
						Mid Girt (T7)	30.7	Pass
						Guy A (T7)	76.7	Pass
						Guy B (T7)	74.5	Pass
						Guy C (T7)	72.8	Pass
						Top Guy Pull-Off (T2)	22.0	Pass
						Torque Arm Top (T3)	91.4	Pass
						RATING =	**94.7**	**Pass**

Guyed Tower Pier and Pad Foundation

BU #: CT11174A
Site Name: CALLAHAN TOWER_1
App Number:

Design Reactions		
Shear, **S**:	1.7	kips
Compression, **Cn**:	113.5	kips
Tower Height, **H**:	170	ft

Pad Properties		
Depth, **D**:	4.5	ft
Pad Width, **W**:	9.5	ft
Pad Thickness, **T**:	2.75	ft
Ext. Above Grade, **E**:	0.5	ft
Neglected Depth, **N**:	0	ft

Pier Properties		
Pier Diameter, **Pd**:	2	ft

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δc**:	0.15	kcf
Clear Cover, **cc**:	3	in

Soil Properties		
Soil Unit Weight, **γ**:	0.120	kcf
Allowable Net Bearing, Bc:	4.000	ksf
Cohesion, **Co**:	0	ksf
Friction Angle, **Φ**:	30	deg
Passive Pressure, **Pp**:		pcf
Base Friction, **μ**:	0.45	
Seismic Zone, **z**:	1	

Design Checks

	Capacity/ Availability	Demand/ Limits	Check	%
Shear Capacity (kips)	39.24	1.70	**OK**	**4.3%**
Bearing (ksf):	4.00	1.37	**OK**	**34.4%**
Pad Shear - 1-way (kips)	370.74	40.07	**OK**	**10.8%**
Pad Shear - 2-way (kips)	1097.03	162.46	**OK**	**14.8%**

Not Run

Modification Checks

	Capacity/ Availability	Demand/ Limits	Check
Sleeve Rebar Area (in2):	15.8	2.26	**Not Used**
Sleeve Moment Capacity (k-ft):	278.66	3.83	**Not Run**
Sleeve Rebar Spacing (in):	N/a	12 > s > 4.5	**Not Used**
Sleeve Tie Spacing (in):	N/A	6 > s > 4.5	**Not Used**
Minimum Extra Thickness (in):	0	0	**Not Used**
Pad Rebar Area-short (in2):	14	0.00	**Not Used**
Pad Rebar Area-long (in2):	14	0.00	**Not Used**
Pad Rebar Spacing-short (in):	7.09	12 > s > 4.5	**Not Used**
Pad Rebar Spacing-long (in):	7.09	12 > s > 4.5	**Not Used**
End Cap Width (ft):	0	0	**Not Used**
End Cap Rebar Area (in2):	3.16	0	**Not Used**
Rebar Spacing (in):	-3	12 > s > 4.5	**Not Used**
Tie Spacing (in):	7.2	108 > s > 4.5	**Not Used**
Dowel Area (in2):	2.2	0.00	**Not Used**
Dowel Embedment (in):	9	6	**Not Used**
Shear Strength of Cone (kips):	21.78	23.76	**Not Used**
Dowel Edge Dist (in):	12	6.00	**Not Used**
Dowel Spacing (in):	22.5	18	**Not Used**
Dowel Edge Dist (vert) (in):	16.5	6.00	**Not Used**
Dowel Devel. Length (in):	-3.00	15.38	**Not Used**

Modifications

Pier Sleeve, ds:	0	in	**End Cap Width, Wec:**	0	ft
Revised Pier Diameter, **dx**:	2	ft	Revised Width, **Wx**:	9.5	ft
PS Rebar Size, **Ss**:	8		EC Rebar Size, **Sec**:	8	per side, top & bottom
Rebar Quanity, **ms**:	20	0	Rebar Quanity, **mec**:	4	0
Tie Size, **Sst**:	5		EC Tie Size, **Sect**:	4	per side
Tie Quanity, **mst**:	9	7	Tie Quanity, **mect**:	15	0
Pad Thickness, Te:		in	EC Dowel Size, **Secd**:	6	per side
Revised Pad Thickness, **Tx**:	2.75	ft	Dowel Quanity, **mecd**:	5	0
Rebar Size, **Se**:	9		Rows of Dowels, **Nd**:	1	
Rebar Quanity (long), **me**:	14	0	Dowel Depth, **decd**:	9	in
Rebar Quanity (short), **mex**:	14	0	Edge Distance, **eecd**:	12	in
Dowel Size, **Sed**:	4				
Dowel Quanity, **med**:	16	0			

Anchor Block Foundation

Checks capacity of anchor blocks with or without a berm for a guyed tower per TIA/EIA-222-F

BU#: CT11174A
Site Name: CALLAHAN TOWER_1
App Number:
Location:

Design Reactions		
Shear, **S**:	44.0	kips
Uplift, **Ua**:	43.2	kips
Resultant Force, **Rf**:	61.7	kips
Tower Height, **H**:	170.00	ft
Guy Anchor Radius, **R**:	107.00	ft

Guyed Anchor Properties		
Depth to Bottom of Deadman, **Da**:	8.8	ft
Anchor Width, **Wa**:	4.0	ft
Anchor Thickness, **Ta**:	1.8	ft
Anchor Length, **La**:	12.0	ft
Concrete Volume, **Vc**:	3.3	yd^3
Frost Depth, **Fd**:	0	ft

Material Properties		
Rebar Tensile, **Fy**:	60000	psi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δx**:	0.150	kcf
Clear Cover, **cc**:	3	in
Strength Reduction Factor, **φ**:	0.9	

Skin Friction		
Allowable Soil Friction, f_s =	0.3	ksf

Design Checks				
	Capacity/ Availability	***Demand/ Limits***	***Check***	***%***
Shear (kips):	51.76	44.00	**OK**	**85.0%**
Uplift Capacity 1 (kips):	69.57	43.20	**OK**	**62.1%**
Uplift Capacity 2 (kips):	84.25	43.20	**OK**	**51.3%**

Warning: Maximum soil depth is not equal to bottom of deadman.

Soil Properties	No. of Soil Layers?	2		
Layer	**φ, deg**	**c, ksf**	**δ, kcf**	**d, ft**
Berm	30	0.000	0.130	0.00
1	30	0.000	0.130	3.00
2	30	0.000	0.130	6.00
Backfill	30	0.000	0.120	☐ use

*key: φ = *Internal Angle of Friction*
δ = *Soil Unit Weight*
d = Depth to Bottom of Layer

SITE NUMBER: CT11174A

99 CEDARWOOD LANE (BERLIN TURNPIKE)
NEWINGTON, CT 06111
HARTFORD COUNTY

SITE NAME: CALLAHAN TOWER_1

RF DESIGN GUIDELINE: 794DB

T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T–MOBILE. 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.

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.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T–MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE–BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN ON BEHALF OF T–MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T–MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.

HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

PROJECT SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T–MOBILE EQUIPMENT INSTALLATION
ZONING JURISDICTION: (TOWN OF NEWINGTON)	BASED ON INFORMATION PROVIDED BY T–MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE–EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	99 CEDARWOOD LANE (BERLIN TURNPIKE) NEWINGTON, CT 06111
LATITUDE:	41° 41' 39.41" N
LONGITUDE:	72° 42' 30.82" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

DRIVING DIRECTIONS:

HEAD NORTHEAST ON GRIFFIN RD S AND TURN RIGHT ONTO DAY HILL RD. USE THE RIGHT LANE TO MERGE ONTO I–91 S. CONTINUE ON I–91 S FOR 9.6 MILES THEN TAKE EXIT 28 TO MERGE ONTO CT–15 S/US–5 S. CONTINUE ONTO CT–15 S/US–5 S/BERLIN TURNPIKE THEN TURN RIGHT ONTO CEDARWOOD LANE. TURN RIGHT TO CONTINUE ONTO CEDARWOOD LANE. DESTINATION WILL BE ON THE RIGHT.

ARRIVE AT 99 CEDARWOOD LANE (BERLIN TURNPIKE) NEWINGTON, CT 06111.

CALL BEFORE YOU DIG
CALL TOLL FREE 1–800–922–4455 OR CALL 811
UNDERGROUND SERVICE ALERT

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
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GN–1	GENERAL NOTES	1
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A–2	ANTENNA LAYOUT & ELEVATION	1
A–3	DETAILS	1
E–1	GROUNDING DIAGRAM	1

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

Transcend Wireless
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH, NJ 07430
TEL: (201) 684-0055
FAX:(201) 684-0066

Hudson Design Groupuc
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	04/28/16	ISSUED FOR PERMITTING	VP
0	04/25/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CT11174A
SITE NAME:
CALLAHAN TOWER_1
SITE ADDRESS:
99 CEDARWOOD LANE
(BERLIN TURNPIKE)
NEWINGTON, CT 06111
HARTFORD COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – TRANSCEND WIRELESS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

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

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 CT AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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

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

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

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

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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

ABBREVIATIONS

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

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STATE OF CONNECTICUT
DEREK J. CREASER
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	04/28/16	ISSUED FOR PERMITTING	VP
0	04/25/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CT11174A
SITE NAME:
CALLAHAN TOWER_1
SITE ADDRESS:
99 CEDARWOOD LANE
(BERLIN TURNPIKE)
NEWINGTON, CT 06111
HARTFORD COUNTY

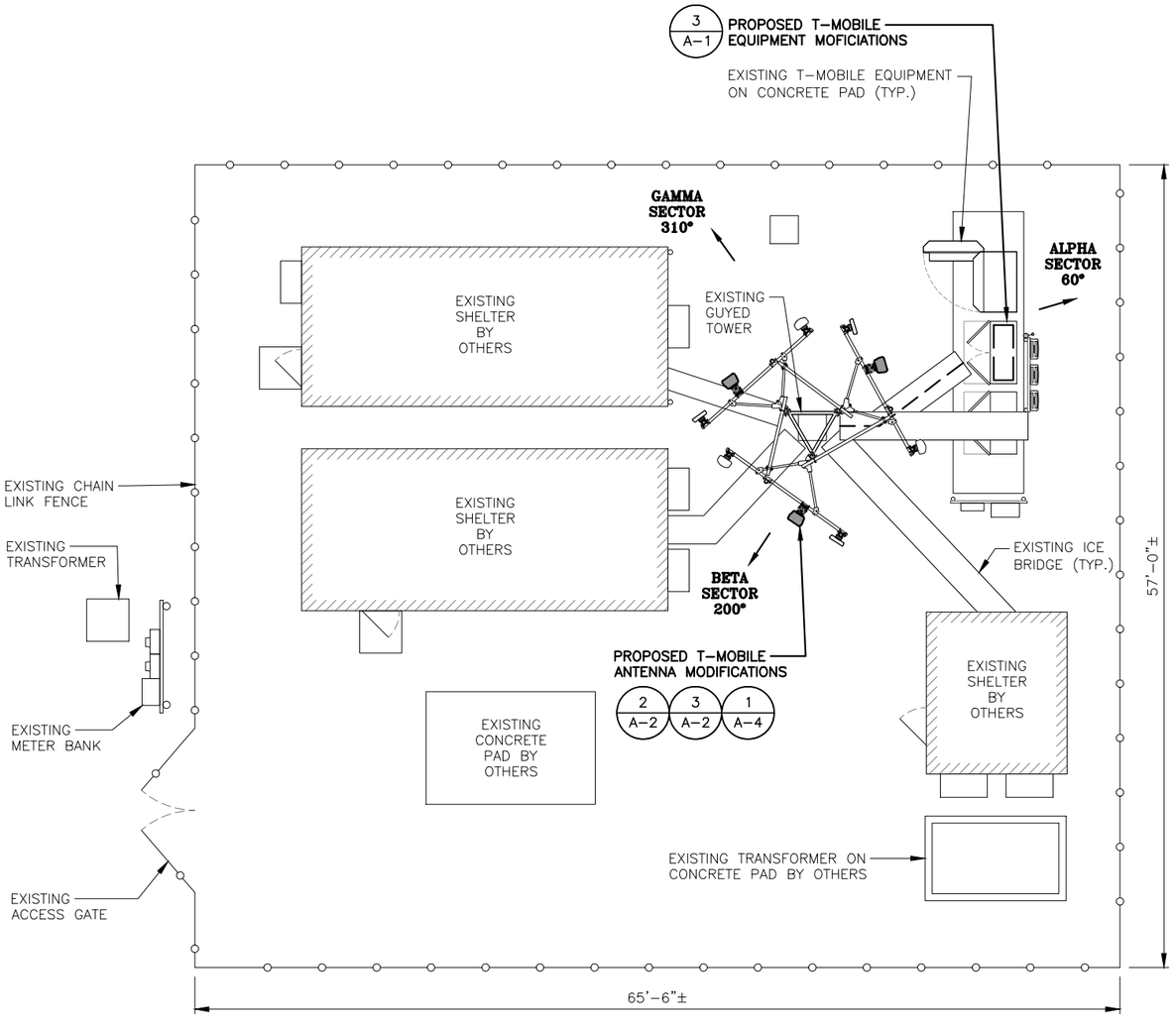
SHEET TITLE
GENERAL NOTES

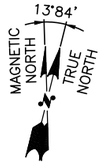
SHEET NUMBER
GN-1

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY HDG, DATED: MAY 03, 2016 TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

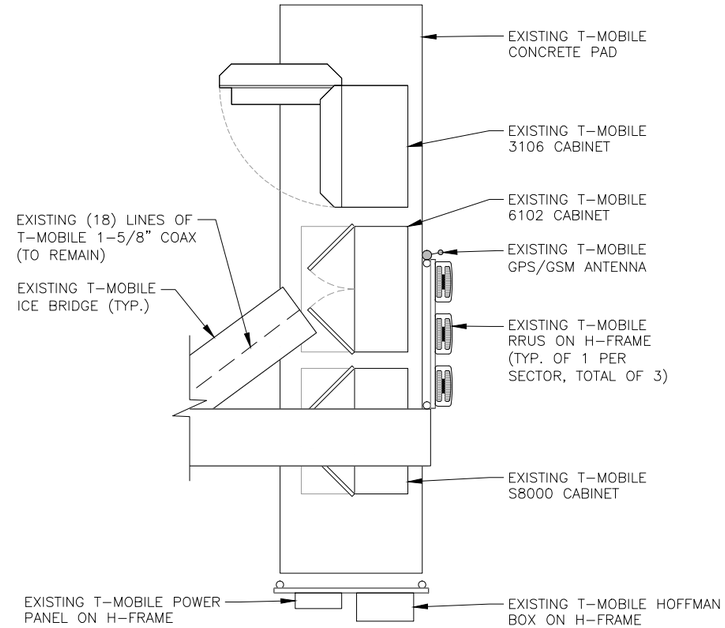
NOTE:

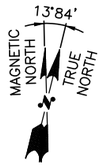
*RF DATA BASED ON PRELIMINARY INFORMATION. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



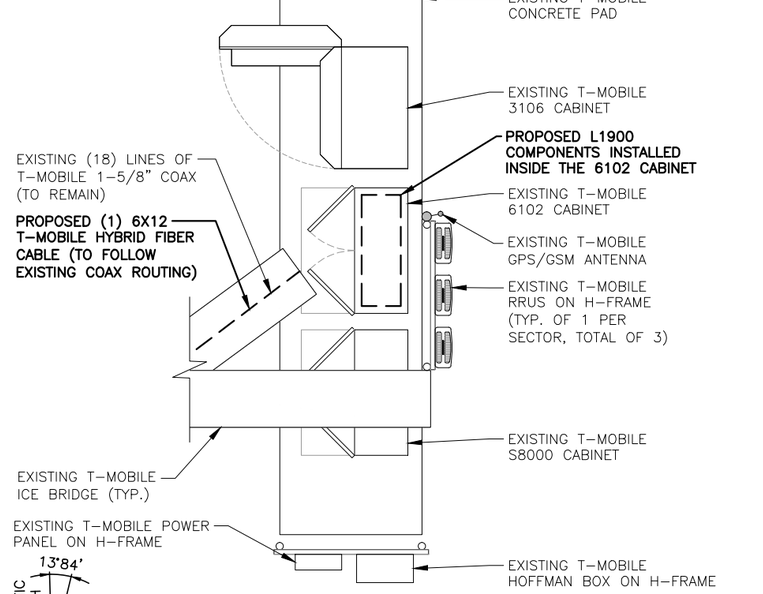


COMPOUND PLAN 1 A-1
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"
0 2'-8" 5'-4" 10'-8" 16'-0"





EXISTING EQUIPMENT PLAN 2 A-1
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"
0 1'-4" 2'-8" 5'-4" 8'-0"



PROPOSED EQUIPMENT PLAN 3 A-1
22x34 SCALE: 3/8"=1'-0"
11x17 SCALE: 3/16"=1'-0"
0 1'-4" 2'-8" 5'-4" 8'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29555
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

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SHEET TITLE
COMPOUND & EQUIPMENT PLAN

SHEET NUMBER
A-1

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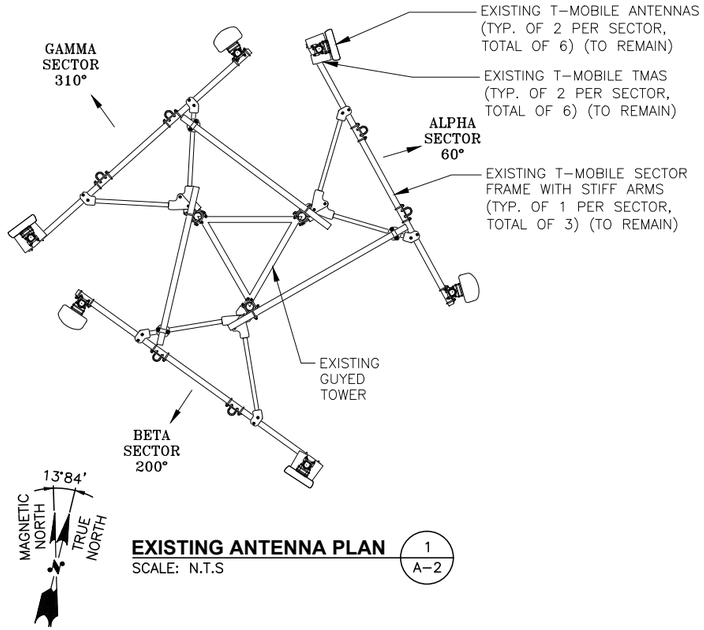
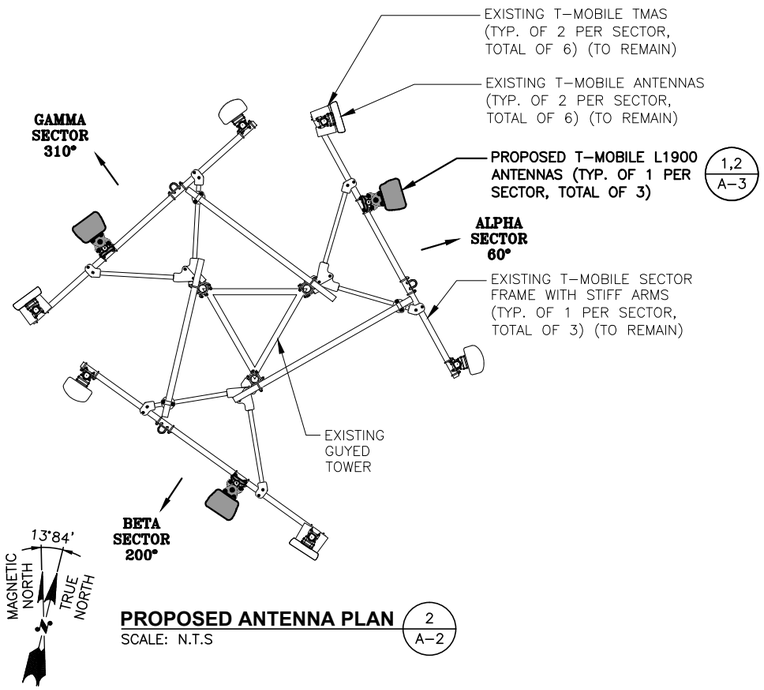
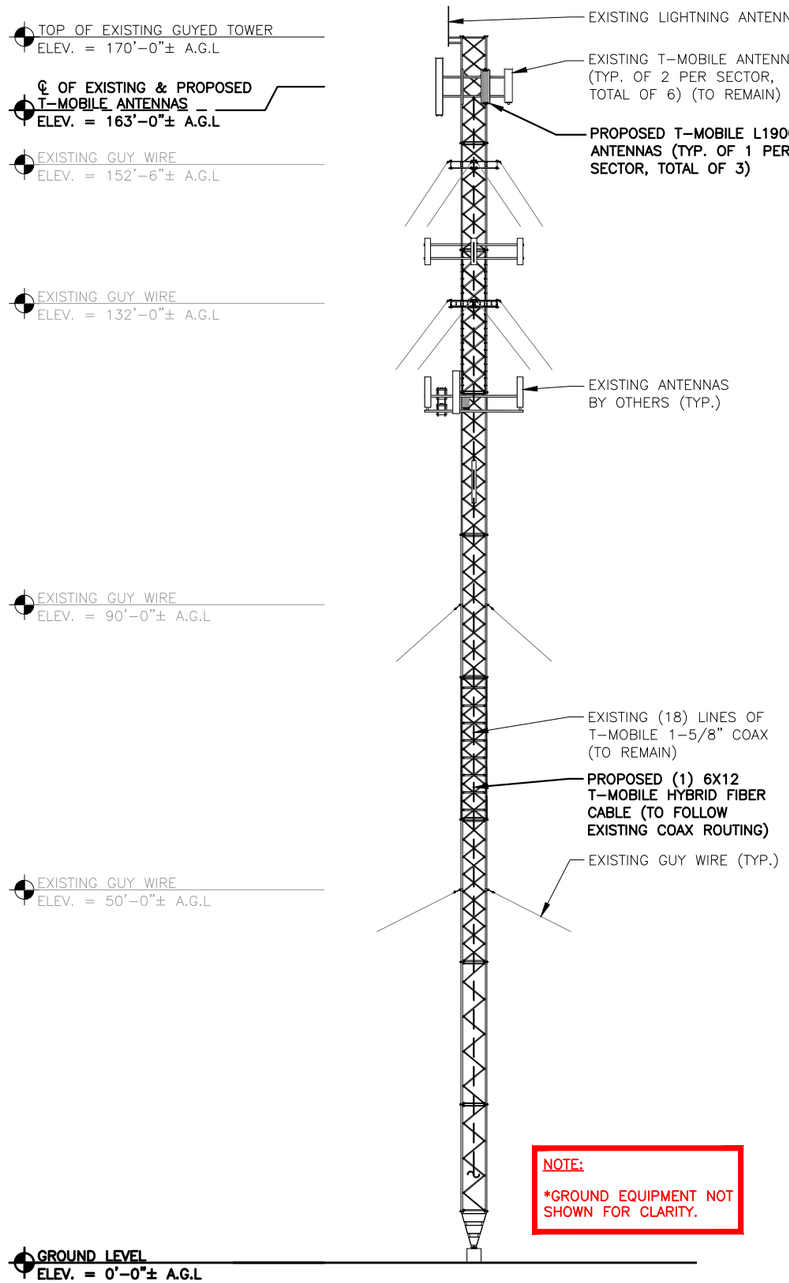


EXISTING ANTENNA PLAN (1 / A-2)
SCALE: N.T.S



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



NOTE:

*GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

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

0 5'-4" 10'-8" 21'-4" 32'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 25551
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

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(BERLIN TURNPIKE)
NEWINGTON, CT 06111
HARTFORD COUNTY

SHEET TITLE
ANTENNA LAYOUT & ELEVATION

SHEET NUMBER
A-2

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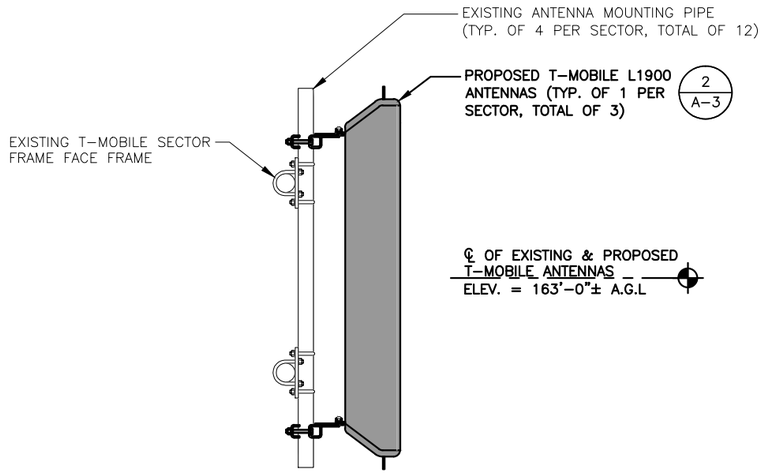
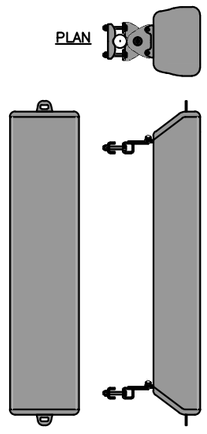


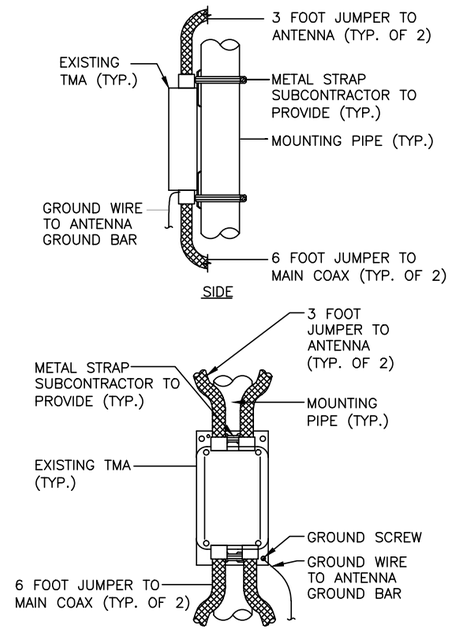
PROPOSED L1900 ANTENNA MOUNT 1 / A-3
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

L1900 ANTENNA DIMENSIONS	
MODEL #	AIR 32 B66Aa/B2a
MANUF.	ERICSSON
WIDTH	12.9"
DEPTH	8.7"
HEIGHT	56.6"
WEIGHT	132.2 LBS



L1900 ANTENNA DETAIL 2 / A-3
SCALE: N.T.S



TMA MOUNTING DETAIL 3 / A-3
SCALE: N.T.S

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APPROVED BY: DJC

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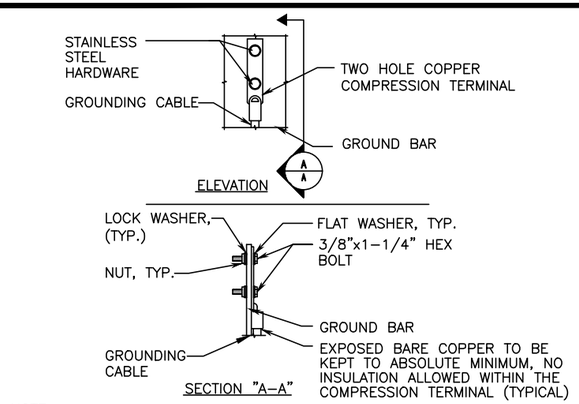
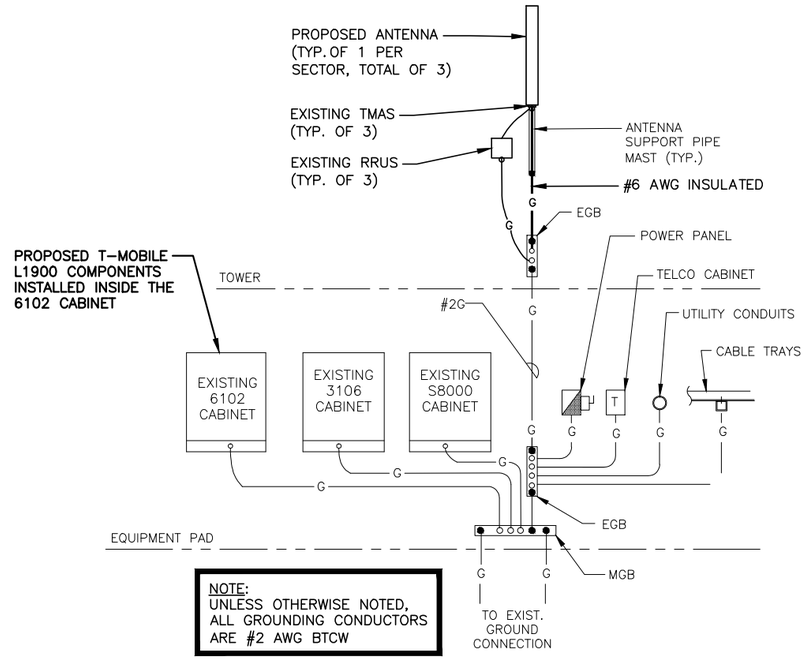
SHEET TITLE
DETAILS

SHEET NUMBER
A-3



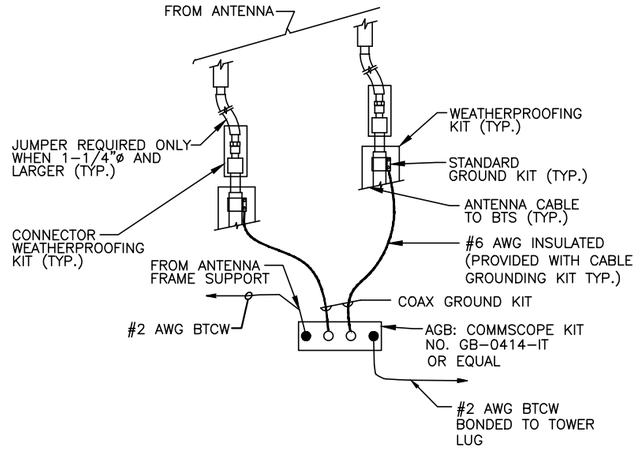
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER AGB/EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL 1/E-1
SCALE: N.T.S



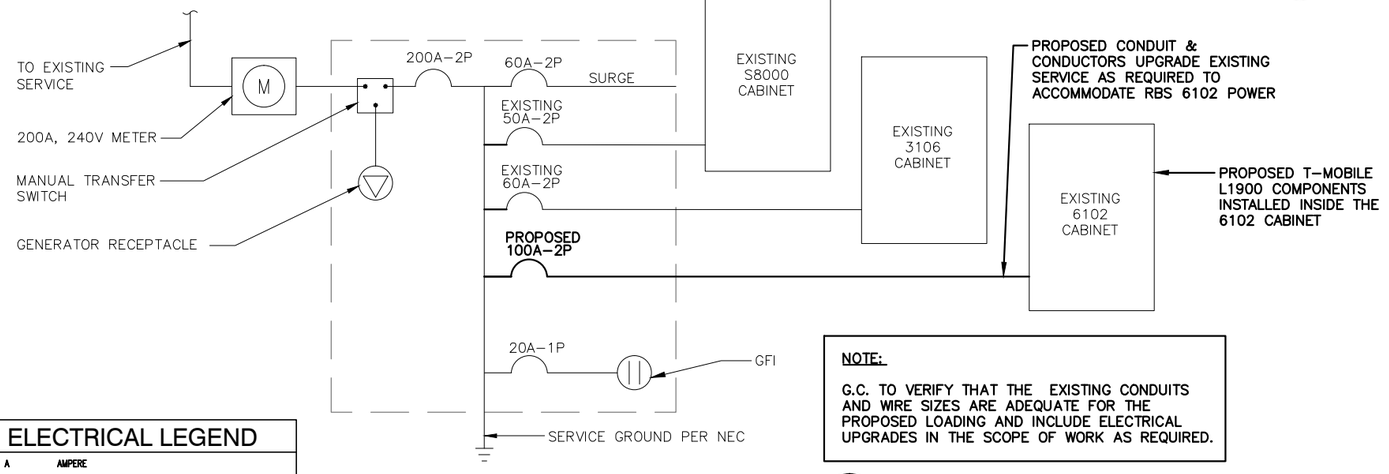
NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

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



NOTE:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

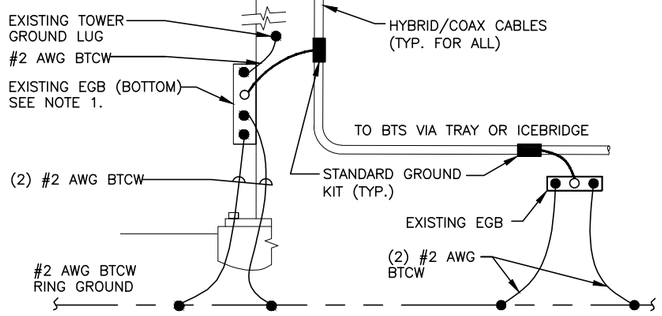
TOWER TOP CABLE GROUNDING DETAIL 3/E-1
SCALE: N.T.S



NOTE:

G.C. TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.

ONE LINE POWER DIAGRAM 4/E-1
SCALE: N.T.S



NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER. ANTENNA LOCATION AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

TOWER BOTTOM CABLE GROUNDING DETAIL 5/E-1
SCALE: N.T.S

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
	GROUND
MGB	MASTER GROUND BAR — ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	INSULATED GROUNDING CONDUCTOR(#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

ELECTRICAL & GROUNDING NOTES:

ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

Transcend Wireless
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH, NJ 07430
TEL: (201) 684-0055
FAX:(201) 684-0066

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 23567
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DJC

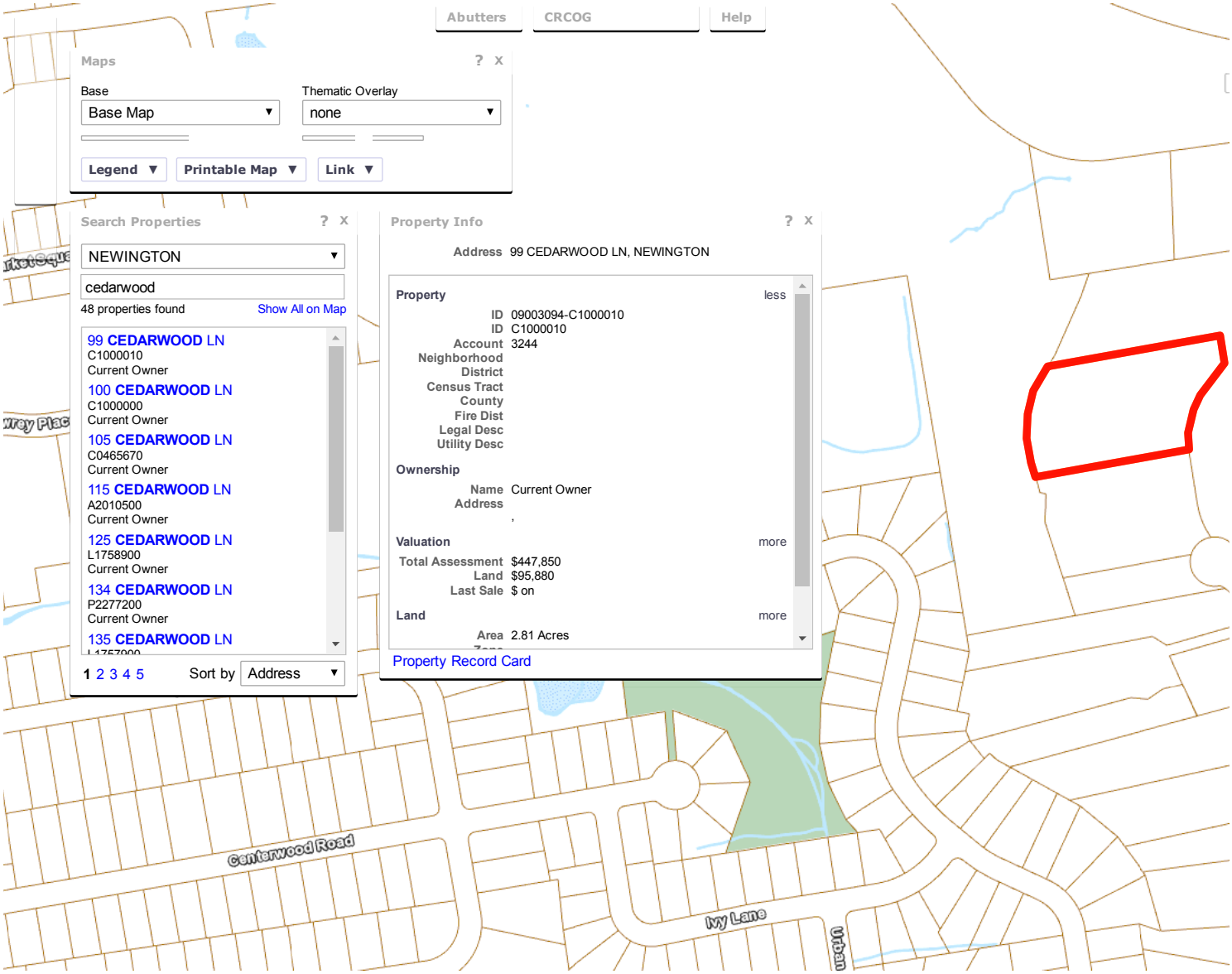
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	04/28/16	ISSUED FOR PERMITTING	VP
0	04/25/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CT11174A
SITE NAME:
CALLAHAN TOWER_1
SITE ADDRESS:
99 CEDARWOOD LANE
(BERLIN TURNPIKE)
NEWINGTON, CT 06111
HARTFORD COUNTY

SHEET TITLE
GROUNDING DIAGRAM

SHEET NUMBER
E-1



280 ft

Base Map: CRCOG Parcels

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2015.

Information on the Property Records for the Municipality of Newington was last updated on 6/18/2016.

Parcel Information

Location:	99 CEDARWOOD LN	Property Use:	Residential	Primary Use:	Residential
Unique ID:	C1000010	Map Block Lot:	17/480/000	Acres:	2.81
490 Acres:	0.00	Zone:	R-20	Volume / Page:	2117/0550
Developers Map / Lot:	N/E 2139 AKA 5	Census:			

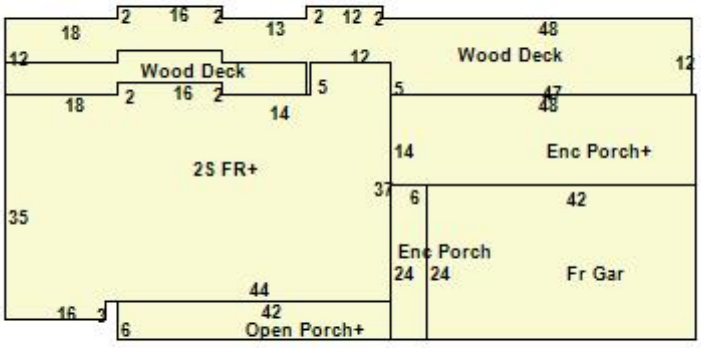
Value Information

	Appraised Value	70% Assessed Value
Land	145,955	102,170
Buildings	463,632	324,540
Detached Outbuildings	0	0
Total	609,587	426,710

Owner's Information

Owner's Data
CALLAHAN QUALIFIED PERSONAL RESIDENC THE CIOFFARI PAUL TRUSTEE 433 SOUTH MAIN ST STE 200 WEST HARTFORD CT 06110

Building 1



Building Use:	Single Family	Style:	Colonial	Living Area:	4,120
Stories:	2.00	Construction:	Wood Frame	Year Built:	1990
Total Rooms:	9	Bedrooms:	4	Full Baths:	3

Half Baths:	0	Fireplaces:	1	Heating:	Hot Water
Fuel:	Oil	Cooling Percent:	100	Basement Area:	2,060
Basement Finished Area:	500	Basement Garages:	0	Roof Material:	Asphalt
Siding:	Clapboards	Units:			

Special Features

Attached Components

Type:	Year Built:	Area:
Wood Deck	1990	235
Wood Deck	1990	1,248
Frame Garage	1990	1,008
Enclosed Porch	1990	672
Enclosed Porch	1990	144
Open Porch	1990	252

Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Cell Tower	2000	0.00	0.00	0

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
CALLAHAN QUALIFIED PERSONAL RESIDENC THE	2117	550	04/01/2013		No	$0
CALLAHAN FREDERICK H III	737	309	01/02/1990		No	$0

CALLAHAN FREDERICK H JR	245	222	01/10/1974		No	$0

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
B-14-704	Remodel	11/06/2014		Closed	REMOVAL RADIO EQUIPMENT ADD HAMS CABLES ANTENNAS
TB-14-597		09/15/2014		Closed	Structural Modification Tower to include Plumb & Tension
B-14-541		09/05/2014		Closed	INSTALL 3 RADIO HEADS
B-13-78	Remodel	03/07/2013		Closed	REPLACE ONE RADIO CABINET
76601		11/25/2008		Closed	3 ANTENNAS & 6 CABLES ON TOWER