



10 INDUSTRIAL AVE,  
SUITE 3  
MAHWAH NJ 07430

PHONE: 201.684.0055  
FAX: 201.684.0066

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June 29, 2018

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

Notice of Exempt Modification  
150 E. Aurora Street, Waterbury, CT 06708  
Latitude- 41.5750000  
Longitude- -73.05830000

Dear Ms. Bachman,

T-Mobile currently maintains (9) existing antennas 105' level of the existing 109' smokestack at 150 E. Aurora Street in Waterbury, CT. The property is owned by 50 East Aurora Storage & Light MFG LLC. The smokestack structure is managed by American Tower Corporation. T-Mobile now intends to replace (3) of its existing antennas with (3) new 600/700/1900/2100 MHz antennas, to be placed at the 95' level of the smokestack. T-Mobile also intends to replace (3) remote radio heads and add (1) hybrid cable.

This facility was approved by the City of Waterbury. This was approved on June 27, 2006. The approval is enclosed.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. 16-50j-72(b)(2). In accordance with R.C.S.A. 16-50j-73, a copy of this letter is being sent to Neil O'Leary, Mayor of the City of Waterbury, James Sequin, City Planner of the City of Waterbury, as well as the property owner and American Tower Corporation.

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 modification will not result in an increase in the height of the existing structure
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, 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  
Transcend Wireless  
10 Industrial Ave., Suite 3  
Mahwah, New Jersey 07430  
908-447-4716  
[krichers@transcendwireless.com](mailto:krichers@transcendwireless.com)

cc: Neil O'Leary- as elected official  
James Sequin- as zoning official  
50 East Aurora Storage & Light MFG LLC - as property owner  
American Tower Corporation- as smokestack manager



DEPARTMENT OF PLANNING

CITY OF WATERBURY
235 GRAND STREET
WATERBURY, CONNECTICUT 06702
Tel. (203) 574-6818 Fax (203) 346-3949

no wetlands

James A. Sequin, AICP
City Planner

APPLICATION FOR A CERTIFICATE OF ZONING COMPLIANCE

(SHADED AREAS FOR STAFF USE)

ADDRESS: 150 E AURORA ST
TAX ID:

DATE: 1-7-08

APPLICANT:

Name: T-MOBILE / OMN. 2+
Address: 100 Filley ST
City, State, Zip: Bloomfield CT 06002
Phone: 516-807-1983 - Nick

PROPERTY OWNER:

Name: 150 E AURORA ST Storage
Address: 25350 Budd Rd
City, State, Zip: Spring TX 77380

AS BUILT PLAN ATTACHED? YES NO
A-2 SURVEY REQUIRED? YES NO
SITE VISIT REQUIRED? YES NO

ZONING DISTRICT: Fee: \$

CHANGE OF USE:

EXISTING USE:
PROPOSED USE:

\$75
called 1/9

TYPE OF IMPROVEMENT

- NEW PRINCIPAL STRUC
ADDITION
DECK
POOL
GARAGE
FENCE
SHED
SIGN
OTHER

Call center 110'

EARTH EXCAVATION

- CUT
FILL
REGRAVING

Cubic Yards

**COSTROTTA CONSTRUCTION  
MANAGEMENT INC.**

office (516) 223-5404  
fax (516) 223-5406  
cell (516) 807-1983

**DEVELOPMENT STANDARDS:**

- LOT SIZE (Sq. Ft.)
- FRONTAGE ON PAVED CITY STREET (Feet)
- BUILDING COVERAGE (Sq. Ft.)
- SIDE YARD (Feet)
- SIDE YARD (Feet)
- FRONT YARD (Feet)
- REAR YARD (Feet)
- NUMBER OF ONSITE PARKING SPACES

Provided	

99 Maple Place  
Freeport, NY 11520

**COMMISSION ACTIONS:**

VARIANCE Type:	<input checked="" type="checkbox"/> Not Needed	<input type="checkbox"/> Approved	<input type="checkbox"/> Pending
SPECIAL PERMIT Type:	<input checked="" type="checkbox"/> Not Needed	<input type="checkbox"/> Approved	<input type="checkbox"/> Pending
SPECIAL EXCEPTION Type:	<input checked="" type="checkbox"/> Not Needed	<input type="checkbox"/> Approved	<input type="checkbox"/> Pending

**IMPORTANT INFORMATION**

An application for a Certificate of Zoning compliance must be accompanied by a plot plan containing all the information necessary to enable the Zoning Administrator to decide whether the proposed building, alteration, addition, or use complies with all the provisions of these regulations.

The Zoning Administrator may rely on the information submitted above in making a determination of compliance. It is the responsibility of the applicant to assure the accuracy of all information submitted.

**NOTICE OF RIGHT TO ADVERTISE (CGS 8-3 (f))**

No building permit or certificate of occupancy shall be issued for a building, use or structure subject to the zoning regulations of a municipality without certification in writing by the official charged with the enforcement of such regulations that such building, use or structure is in conformity with such regulations or is a valid nonconforming use under such regulations. Such official shall inform the applicant for any such certification that such applicant may provide notice of such certification by either (1) publication in a newspaper having substantial circulation in such municipality stating that the certification has been issued, or (2) any other method provided for by local ordinance. Any such notice shall contain (A) a description of the building, use or structure, (B) the location of the building, use or structure, (C) the identity of the applicant, and (D) a statement that an aggrieved person may appeal to the zoning board of appeals in accordance within thirty days of the publication of the notice.

I certify that the information submitted herein is accurate to the best of my knowledge and that I have been informed of my right to advertise, at my own expense, notice of any certification received.

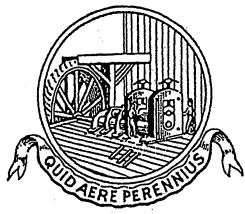
Signature: \_\_\_\_\_

Date: 1-7-08

Office Use Only

<b>CERTIFICATION</b>	
Date Rec'd: _____	Date Completed: _____
<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Denied
Reason for denial: _____	
Signature: _____	Date: _____
Land Use Officer: _____	

08



The City of Waterbury  
 DEPARTMENT OF INSPECTION  
 235 Grand Street, Waterbury, CT 06702  
 (203) 574-6832

PERMIT NUMBER  
 7285D

**Building Permit**

Date: 6-27-06

**Applicant:**  
 Company Name: Omnipoint Communications  
 Address: 100 Filley St  
 City/State/Zip: Bloomfield CT 06002

**Location of Work:**  
 Address: 150 East Aurora St

**Location of Owner:**  
 Owner's Name: 150 East Aurora Storage  
 Address: 25350 Budde Rd  
 City/State/Zip: Spring TX 77380

Leave is hereby granted to M. Omnipoint Communications  
 to erect a T-Mobile Antenna  
 as follows: Length          ft.; Width          ft.; No. of Stories         ; No. of Rooms           
 Building to be used as Commercial  
 Construction Classification          Use Group           
 Designed Live Load: 1<sup>st</sup>          2<sup>nd</sup>          3<sup>rd</sup>          Roof           
 Remarks:         

The conditions on which this permit is granted are, that the said building shall be erected in accordance with the laws of the State of Connecticut, and the ordinances of the City of Waterbury. If any of the statements of said applicant be not true, or if any change is made in said plans or specifications without the consent of the Building Inspector or his duly appointed agents, this permit shall be revocable.

Limited to six months from date. This permit may be sooner revoked for any violation of any ordinance, statute or order of constituted authority. This permit is subject to the condition that should there be any change in the ordinance or statutes or institution of proceedings to establish any building line or other improvements, before said building is completed, then no further work shall be done on said building thereafter conflicting with such new statute, order, ordinance, or institution of proceedings.

E. Bill Maveline  
 Building Official

ESTIMATED COST: \$ 150,000.00  
 Permit Fee: \$ 3,005.00  
 State Ed Fee: \$ 24.00  
 CO: \$ 25.00  
 CA: \$           
 Penalty Fee: \$           
 TOTAL AMOUNT: \$ 3,054.00





The City of Waterbury  
 DEPARTMENT OF INSPECTION  
 235 Grand Street, Waterbury, CT 06702  
 (203) 574-6832

Certificate Number

32492

# Certificate of Use and Occupancy

Date: \_\_\_\_\_

**This Certificate Must be Signed Before Building Can be Occupied.**

This is to certify that address 150 East Aurora St may be used for  
T-Mobile antenna and is in compliance with the  
 provisions of the State of Connecticut Basic Building Code.

Use Group (in accordance with provisions of Article 3): \_\_\_\_\_

Fire Grading (as defined in Table 902): \_\_\_\_\_

Maximum Live Load (as prescribed in Table 1106, p.s.f.): 1<sup>st</sup> \_\_\_\_\_ 2<sup>nd</sup> \_\_\_\_\_ 3<sup>rd</sup> \_\_\_\_\_

Permit No. 7285D

Date: 6-27-06

Special Building Permit Stipulations and Conditions:

\_\_\_\_\_  
 \_\_\_\_\_

Building Official

**REQUIRED?**

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No

Yes  No

**DEPARTMENT**

Zoning: 

Engineering: \_\_\_\_\_

City Plan: \_\_\_\_\_

Fire Marshal: Chris Bennett 1-7-08

Inland Wetlands: \_\_\_\_\_

Health Dept: \_\_\_\_\_

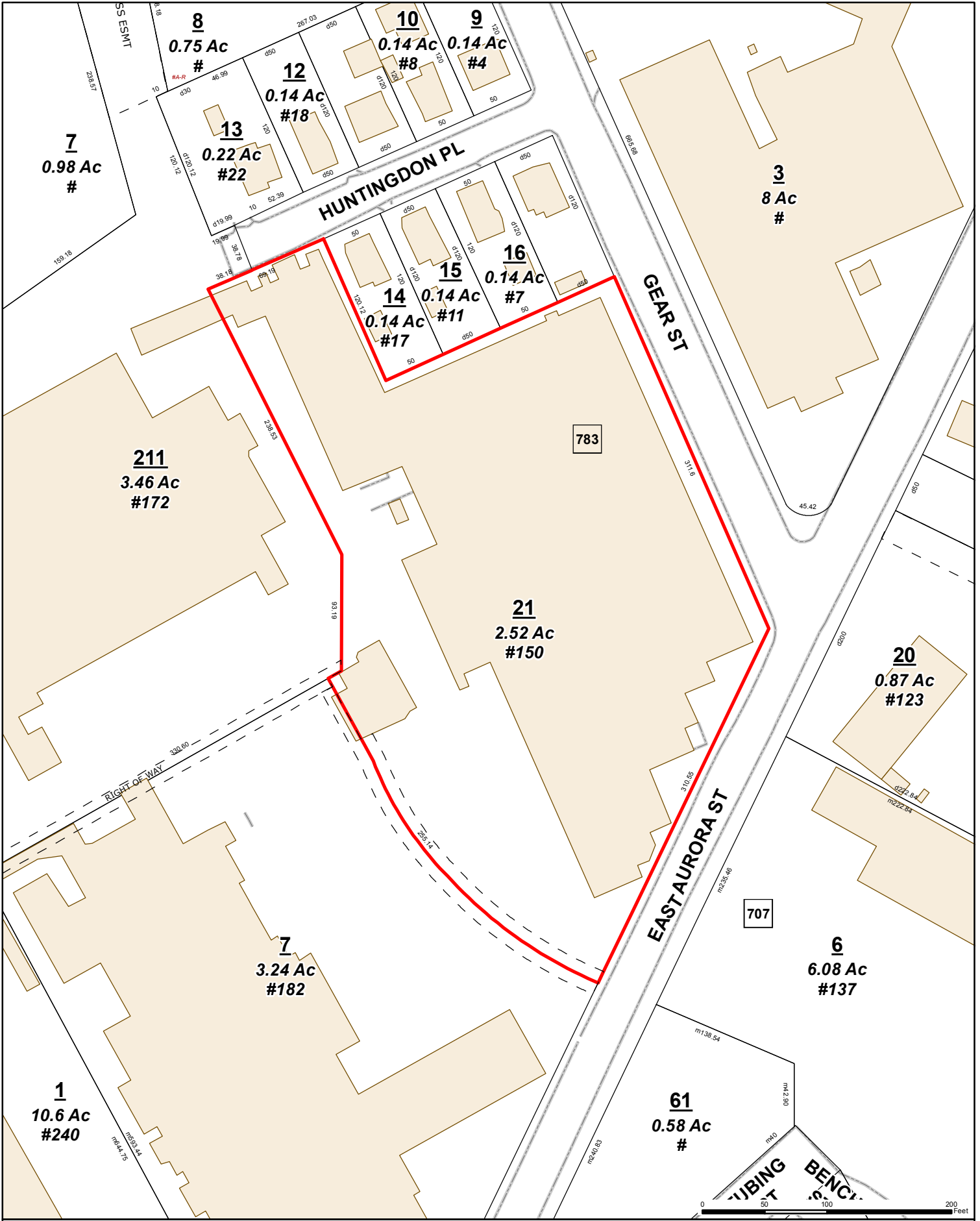
Traffic Dept: \_\_\_\_\_

Delinquent Tax: \_\_\_\_\_

Water Dept: \_\_\_\_\_

Waste Disposal: \_\_\_\_\_





**City of Waterbury**  
Public Works Department

MBL: **0143-0783-0021**  
ADDRESS: **150 EAST AURORA ST**

This map is for informational purposes only and has not been prepared for, or suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to verify the usability of the information. The City of Waterbury makes no warranties, express or implied, as to the use of the information obtained herein.



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 2017.

# CITY OF WATERBURY

Information on the Property Records for the Municipality of Waterbury was last updated on 6/23/2018.

## Parcel Information

Location:	150 EAST AURORA ST	Property Use:	Industrial	Primary Use:	Light Industrial
Unique ID:	014307830021	Map Block Lot:	0143-0783-0021	Acres:	2.55
490 Acres:	0.00	Zone:	IG	Volume / Page:	5612/ 341
Developers Map / Lot:		Census:			

## Value Information

	Appraised Value	Assessed Value
Land	235,620	164,930
Buildings	679,372	475,560
Detached Outbuildings	17,882	12,520
Total	932,874	653,010



# Owner's Information

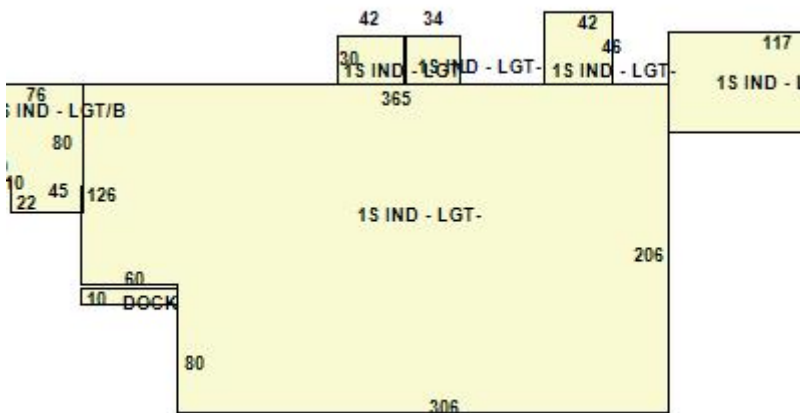
## Owner's Data

150 EAST AURORA STORAGE AND LIGHT MFG LL  
 25350 BUDDE RD  
 SPRING TX 77380

## Building 1



014307830021 04/11/2016



Category:	Industrial	Use:	Light Industrial	GLA:	87,293
Stories:	1.00	Construction:	Average	Year Built:	1942
Heating:	Forced Air	Fuel:	Gas	Cooling Percent:	0%

Siding:	Brick, Solid /Metal Siding	Roof Material:		Beds/Units:	0
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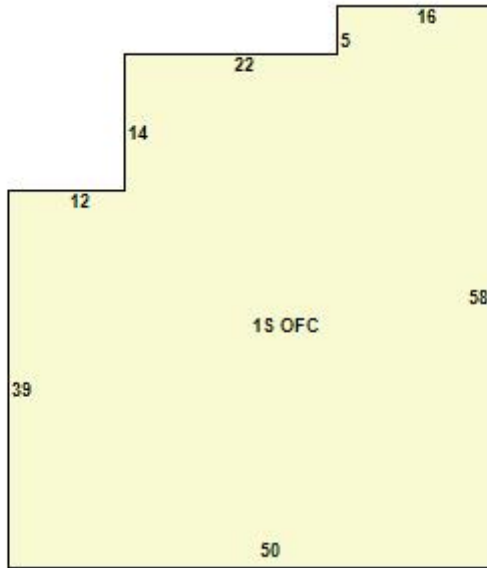
### Special Features

Freight Elevator Power	1
Sprinklers	87293

### Attached Components

Type:	Year Built:	Area:
Loading Dock Dock	1976	600
Loading Dock Steel Dock	1942	100
Metal Shed	1942	242

### Building 2



Category:	Industrial	Use:	Light Industrial	GLA:	2,562
Stories:	1.00	Construction:	Average	Year Built:	1976
Heating:	Hot Water	Fuel:	Gas	Cooling Percent:	0%
Siding:	Wood Siding	Roof Material:		Beds/Units:	0

### Special Features

Sprinklers	2562
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### Attached Components

## Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Chain Link Fencing	1942			1,440
Asphalt Paving	1942			14,000

## Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
150 EAST AURORA STORAGE AND LIGHT MFG LL	5612	341	12/16/2005	Additional Parcel	No	\$610,000
STEIN TRUSTEE LLC	5026	142	06/23/2004	Change of Name	No	\$0

## Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
2017.2530	Mechanical	09/19/2017		Open Permit	INSTALL 7 WASTE OIL HEATERS
2017.1176	Electrical	05/11/2017		Closed	REPLACE EXISTING ANTENNAS WITH 3 NEW ANTENNAS _ ADD 3 ANTENNAS & 1 FIBER OPTIC LINE
2016.0269	Commercial Addition	03/16/2016		Closed	ATTACH ANTENNAS TO EXISTING ARRAY ON SMOKESTACK
2016.0071	Plumbing	01/12/2016		Closed	REPLACE FAN COIL WITH FURNACE
2015.2806	Commercial Demolition	10/21/2015		Closed	DISMANTLE 6 8X10 GARAGES IN REAR OF PROPERTY
2014.2516	Electrical	09/17/2014		Closed	SERV FOR NEWVERIZON WIRELESS SHELTER FOR TOWER
2014.0906	Commercial Addition	05/14/2014		Closed	TELECOM TOWER ON 2 STORY BLDG

Information Published With Permission From The Assessor



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

T-Mobile Existing Facility

Site ID: CTNH334A

NH334/E Aurora Smokestack  
150 E. Aurora Street  
Waterbury, CT 06708

**June 19, 2018**

**EBI Project Number: 6218004584**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>8.60 %</b>



June 19, 2018

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

## Emissions Analysis for Site: **CTNH334A – NH334/E Aurora Smokestack**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **150 E. Aurora Street, Waterbury, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 600 MHz and 700 MHz Band are approximately  $400 \mu\text{W}/\text{cm}^2$  and  $467 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **150 E. Aurora Street, Waterbury, 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 for directional panel antennas, 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 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (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) 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.
- 6) 2 LTE channel (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.



- 7) 2 LTE channel (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 8) 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.
- 9) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.
- 10) The antennas used in this modeling are the **Ericsson AIR32 B66A/B2A & Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **RFS APXVAARR24\_43-U-NA20** for 600 MHz and 700 MHz channels. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.
- 11) The antenna mounting height centerlines of the proposed antennas are **105 feet & 95 feet** above ground level (AGL).
- 12) 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. There were no additional carriers listed at this facility.
- 13) All calculations were done with respect to uncontrolled / general population 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 B66A/B2A	Make / Model:	Ericsson AIR32 B66A/B2A	Make / Model:	Ericsson AIR32 B66A/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	105	Height (AGL):	105	Height (AGL):	105
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	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%	3.42	Antenna B1 MPE%	3.42	Antenna C1 MPE%	3.42
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	105	Height (AGL):	105	Height (AGL):	105
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	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	2.57	Antenna B2 MPE%	2.57	Antenna C2 MPE%	2.57
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	12.95/ 13.35 dBd	Gain:	12.95/ 13.35 dBd	Gain:	12.95/ 13.35 dBd
Height (AGL):	95	Height (AGL):	95	Height (AGL):	95
Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,481.08	ERP (W):	2,481.08	ERP (W):	2,481.08
Antenna A3 MPE%	2.60	Antenna B3 MPE%	2.60	Antenna C3 MPE%	2.60

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	8.60 %
No Additional Carriers Listed in the CSC Active MPE database	NA
<b>Site Total MPE %*:</b>	<b>8.60 %</b>

T-Mobile Sector A Total:	8.60 %
T-Mobile Sector B Total:	8.60 %
T-Mobile Sector C Total:	8.60 %
<b>Site Total:</b>	<b>8.60 %</b>



## T-Mobile Max Power Values (Per Sector)

T-Mobile Max Power Values (per sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	4	2,334.27	105	34.25	AWS - 2100 MHz	1000	3.42%
T-Mobile AWS - 2100 MHz UMTS	2	1,167.14	105	8.56	AWS - 2100 MHz	1000	0.86%
T-Mobile PCS - 1900 MHz UMTS	2	1,167.14	105	8.56	PCS - 1900 MHz	1000	0.86%
T-Mobile PCS - 1900 MHz GSM	2	1,167.14	105	8.56	PCS - 1900 MHz	1000	0.86%
T-Mobile 600 MHz LTE	2	591.73	95	5.37	600 MHz	400	1.34%
T-Mobile 700 MHz LTE	2	648.82	95	5.89	700 MHz	467	1.26%
						<b>Total*:</b>	<b>8.60%</b>

\*NOTE: Totals may vary by 0.01% due to summing of remainders

## Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	8.60 %
Sector B:	8.60 %
Sector C:	8.60 %
T-Mobile Per Sector Maximum (Per Sector):	8.60 %
Site Total:	8.60 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **8.60%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

**Structural Analysis Report**

*109-ft Existing Masonry Smokestack*

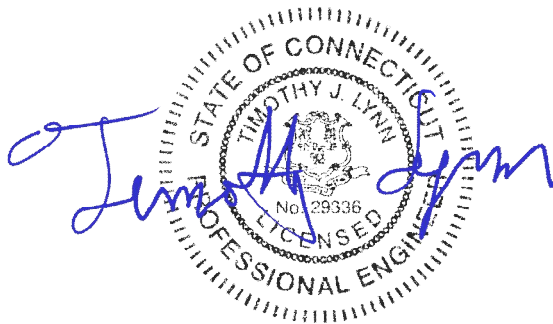
*T-Mobile Site Ref: CTNH334A*

*150 East Aurora Street  
Waterbury, CT 06708*

*Centek Project No. 18058.51*

~~*Date: June 5, 2018*~~

*Rev 1: June 12, 2018*



**Prepared for:**  
T-Mobile USA  
35 Griffin Road  
Bloomfield, CT 06002

*CENTEK Engineering, Inc.*

*Structural Analysis – 109-ft Existing Masonry Smokestack*

*T-Mobile Site Ref ~ CTNH334A*

*Waterbury, CT*

*Rev 1 ~ June 12, 2018*

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## Introduction

The purpose of this report is to summarize the results of the structural analysis of the equipment upgrade proposed by T-Mobile on the existing host masonry smokestack located in Waterbury, CT.

The host structure is a 109-ft tall masonry smokestack. The smokestack geometry and structural information was obtained from a structural report prepared by Infinigy dated March 9, 2016.

## Equipment Installation Summary

- T-MOBILE (Existing to Remain):  
Antennas: Three (3) Ericsson AIR21 panel antennas, three (3) Ericsson AIR32 panel antennas and three (3) TMAs mounted on steel frames with a RAD center elevation of +/- 105-ft AGL.
- T-MOBILE (Existing to Remove):  
Antennas: Three (3) Commscope LNX6515 panel antennas and three (3) Ericsson RRUS-11 remote radio heads mounted on steel frames with a RAD center elevation of +/- 105-ft AGL.
- T-MOBILE (Proposed):  
Antennas: Three (3) Ericsson 4449 B71 B12 remote radio heads mounted on pipe masts/banding with a RAD center elevation of +/- 105-ft AGL.
- T-MOBILE (Proposed):  
Antennas: Three (3) RFS APXVAARR24-43-U-NA20 panel antennas mounted on pipe masts/banding with a RAD center elevation of +/- 95-ft AGL.

## Design Loading

Loading was determined per the requirements of the 2015 International Building Code and ASCE 7-10 "Minimum Design Loads for Buildings and Other Structures".

Wind Speed:	Vult = 125 mph	<i>[Appendix N of the 2016 CT Building Code]</i>
Exposure Category:	B	
Risk Category	II	<i>[ASCE 7-10, Table 1.5-1]</i>

CENTEK Engineering, Inc.

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## Results

Smokestack:

Component	Stress Ratio (percentage of capacity)	Result
Compression	34.0%	PASS
Tension of Mortar	79.0%	PASS

## Conclusion and Recommendations

This analysis shows that the subject smokestack **is adequate** to support the proposed T-Mobile equipment upgrade.

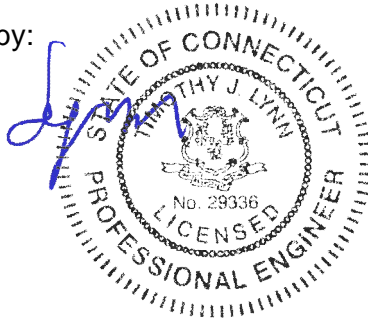
The analysis is based, in part on the information provided to this office by T-Mobile. If the existing conditions are different than the information in this report, CENTEK engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:



Timothy J. Lynn, PE  
Structural Engineer



*CEN TEK Engineering, Inc.*

*Structural Analysis – 109-ft Existing Masonry Smokestack*

*T-Mobile Site Ref ~ CTNH334A*

*Waterbury, CT*

*Rev 1 ~ June 12, 2018*

*Standard Conditions for Furnishing of  
Professional Engineering Services on  
Existing Structures*

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the “as new” condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



**Design Wind Load on Other Structures:**

(Based on IBC 2012, CSBC 2016 and ASCE 7-10)

Wind Speed =	$V := 125$ mph	(User Input)	(CSBC Appendix-N)
Risk Category =	$BC := II$	(User Input)	(IBC Table 1604.5)
Exposure Category =	$Exp := B$	(User Input)	
Structure Type =	$Structuretype := Round\_Chimney$	(User Input)	
Structure Height =	$Height := 110$ ft	(User Input)	
Horizontal Dimension of Structure =	$Width := 7.81$ ft	(User Input)	
<u>Terrain Exposure Constants:</u>			
Nominal Height of the Atmospheric Boundary Layer =	$z_g := \begin{cases} 1200 & \text{if } Exp = B = 1.2 \times 10^3 \\ 900 & \text{if } Exp = C \\ 700 & \text{if } Exp = D \end{cases}$		(Table 26.9-1)
3-Sec Gust Speed Power Law Exponent =	$\alpha := \begin{cases} 7 & \text{if } Exp = B = 7 \\ 9.5 & \text{if } Exp = C \\ 11.5 & \text{if } Exp = D \end{cases}$		(Table 26.9-1)
Integral Length Scale Factor =	$l := \begin{cases} 320 & \text{if } Exp = B = 320 \\ 500 & \text{if } Exp = C \\ 650 & \text{if } Exp = D \end{cases}$		(Table 26.9-1)
Integral Length Scale Power Law Exponent =	$E := \begin{cases} \frac{1}{3} & \text{if } Exp = B = 0.333 \\ \frac{1}{5} & \text{if } Exp = C \\ \frac{1}{8} & \text{if } Exp = D \end{cases}$		(Table 26.9-1)
Turbulence Intensity Factor =	$c := \begin{cases} 0.3 & \text{if } Exp = B = 0.3 \\ 0.2 & \text{if } Exp = C \\ 0.15 & \text{if } Exp = D \end{cases}$		(Table 26.9-1)
Exposure Constant =	$Z_{min} := \begin{cases} 30 & \text{if } Exp = B = 30 \\ 15 & \text{if } Exp = C \\ 7 & \text{if } Exp = D \end{cases}$		(Table 26.9-1)
Topographic Factor =	$K_{zt} := 1$		(Eq. 26.8-2)
Wind Directionality Factor =	$K_d := 0.95$		(Table 26.6-1)
Peak Factor for Background Response =	$g_Q := 3.4$		(Sec 26.9.4)
Peak Factor for Wind Response =	$g_v := 3.4$		(Sec 26.9.4)

Equivalent Height of Structure =

$$z := \begin{cases} Z_{\min} & \text{if } Z_{\min} > 0.6 \cdot \text{Height} \\ 0.6 \cdot \text{Height} & \text{otherwise} \end{cases} = 66 \quad (\text{Sec 26.9.4})$$

Intensity of Turbulence =

$$I_z := c \cdot \left( \frac{33}{z} \right)^{\left( \frac{1}{6} \right)} = 0.267 \quad (\text{Eq. 26.9-7})$$

Integral Length Scale of Turbulence =

$$L_z := l \cdot \left( \frac{z}{33} \right)^E = 403.175 \quad (\text{Eq. 26.9-9})$$

Background Response Factor =

$$Q := \sqrt{\frac{1}{1 + 0.63 \left( \frac{\text{Width} + \text{Height}}{L_z} \right)^{0.63}}} = 0.88 \quad (\text{Eq. 26.9-8})$$

Gust Response Factor =

$$G := 0.925 \cdot \left[ \frac{(1 + 1.7 \cdot g_Q \cdot I_z \cdot Q)}{1 + 1.7 \cdot g_V \cdot I_z} \right] = 0.858 \quad (\text{Eq. 26.9-6})$$

Velocity Pressure =

$$q_z := 0.00256 \cdot K_{zt} \cdot K_d \cdot V^2 = 38 \quad (\text{Eq. 29.3-1})$$

Force Coefficient =

$$C_f = 0.839 \quad (\text{Fig 29.5-1 - 29.5-3})$$

Ultimate Wind Pressure =

$$F := q_z \cdot G \cdot C_f = 27.4 \quad \text{psf}$$

Height Above Grade =

$$Z := 55 \quad \text{ft} \quad (\text{User Input})$$

Exposure Coefficient =

$$K_z := \begin{cases} 2.01 \left( \frac{Z}{z_g} \right)^{\left( \frac{2}{\alpha} \right)} & \text{if } 15 \leq Z \leq z_g \\ 2.01 \left( \frac{15}{z_g} \right)^{\left( \frac{2}{\alpha} \right)} & \text{if } Z < 15 \end{cases} = 0.83 \quad (\text{Table 29.3-1})$$

$$K_z = 0.833$$

Job : CTNH334A  
 Address: 150 East Aurora Waterbury, CT 06708  
 Description: Smokestack Evaluation

Project No. 18058.51 Sheet 1 of 2  
 Computed by TJL Date 6/5/18  
 Checked by CAG Date

	Wind Force (lb)	Weight (lb)	Height Above Base (ft)	Height (in)
T-Mobile	1000	1800	105	1260

Section	Top Dia (in)	Bot Dia (in)	Average Wall Thk (in)	Wall Thk @ Base (in)	Sect Height (in)	Area At Base (in <sup>2</sup> )	Tot. Vol (ft <sup>3</sup> )	Unit Weight (pcf)	Weight of Section (lb)	Total Weight (lb)	Axial Stress fa (psi)
1	77	110.4	13	17	1312.5	4985.692	2500.6382	125	312579.7697	314379.7697	63.1

Job : CTNH334A  
 Address: 150 East Aurora Waterbury, CT 06708  
 Description: Smokestack Evaluation

Project No. 18058.51 Sheet 2 of 2  
 Computed by TJL Date 6/5/18  
 Checked by CAG Date

Ultimate Wind Pressure (psf)	ASD Wind Pressure (psf)	KZ	Wind Area (sf)	Wind Force (lb)	Moment @ Base	Section Modulus @ Base	Bending Stress fb (psi)	Allowable Fa (psi)	Allowable Fb (psi)	fa/Fa+fb/Fb		ft	Ft	ft/Ft	
27	16.2	0.833	854.0	11524.9	8823202.756	101752.3738	86.7	375	500	0.34	OK	23.7	30	0.79	OK

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Section 1 - Site Information

**Site ID:** CTNH334A  
**Status:** Draft  
**Version:** 2.1  
**Project Type:** L600  
**Approved:** Not Approved  
**Approved By:** Not Approved  
**Last Modified:** 5/8/2018 1:48:42 PM  
**Last Modified By:** GSM1900\MLucey

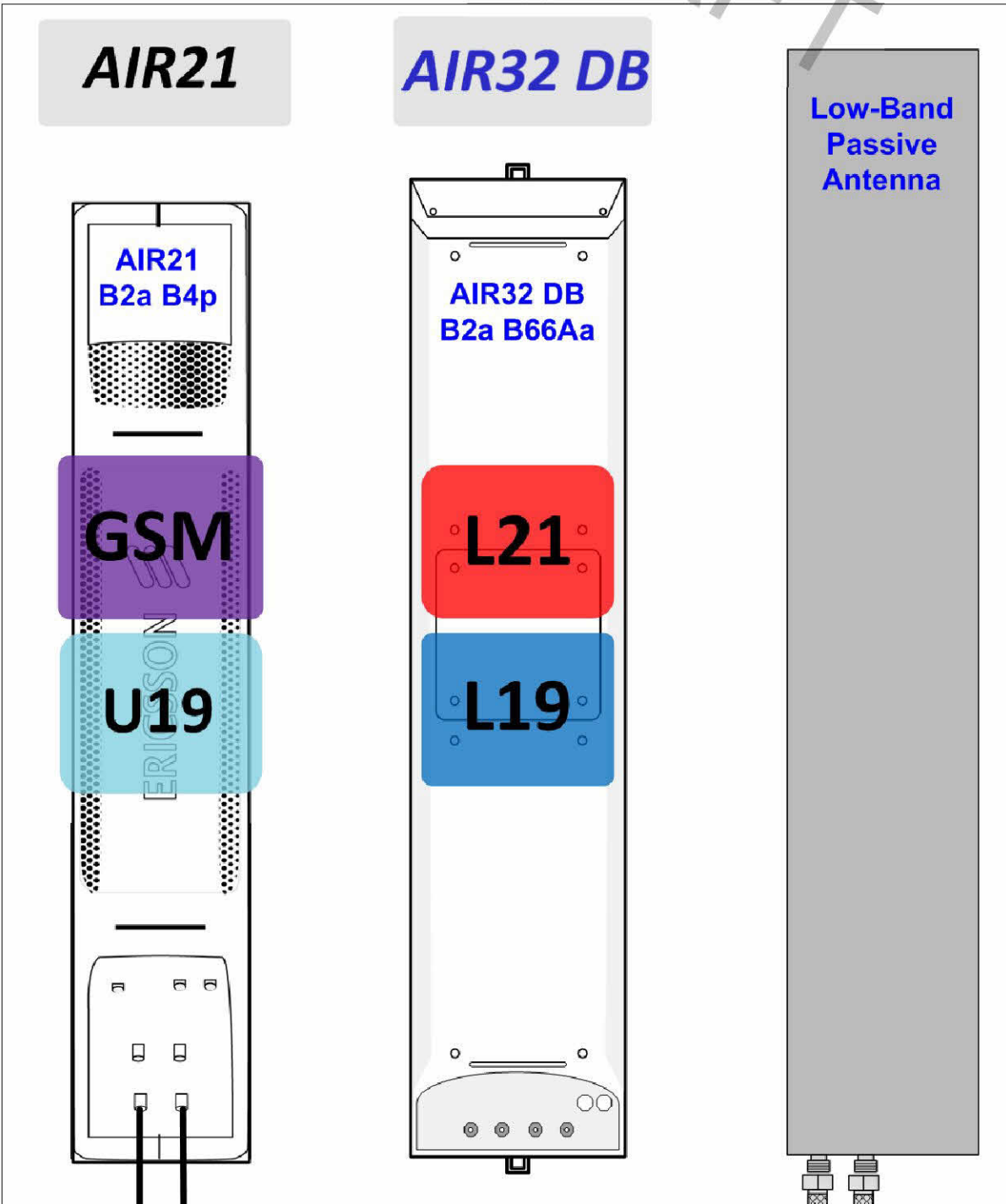
**Site Name:** NH334/E Aurora Smokestack  
**Site Class:** Smokestack  
**Site Type:** Structure Non Building  
**Solution Type:**  
**Plan Year:**  
**Market:** CONNECTICUT  
**Vendor:** Ericsson  
**Landlord:** Stein Trustee

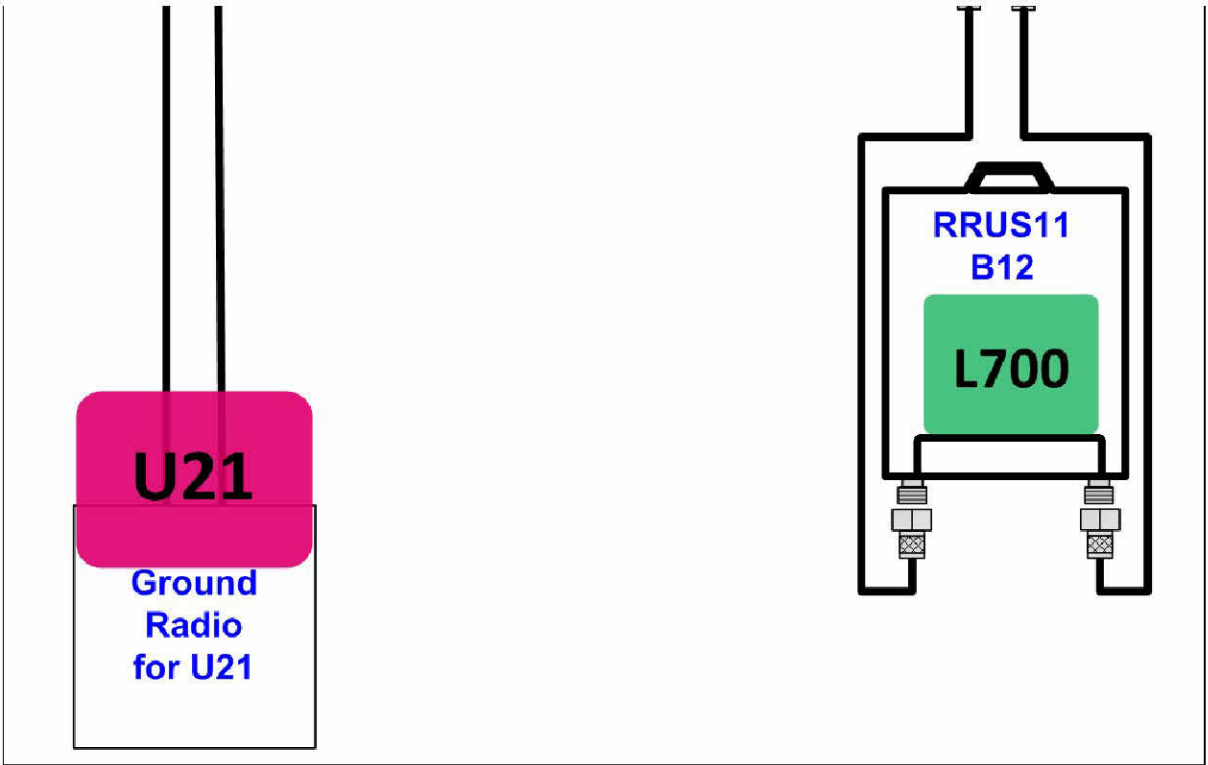
**Latitude:** 41.5750000000  
**Longitude:** -73.0583000000  
**Address:** 150 E. Aurora Street  
**City, State:** Waterbury, CT  
**Region:** NORTHEAST

<b>RAN Template:</b> 67D92DB Hybrid		<b>AL Template:</b> 67D92DB_2xAIR+1OP		
<b>Sector Count:</b> 3	<b>Antenna Count:</b> 9	<b>Coax Line Count:</b> 6	<b>TMA Count:</b> 3	<b>RRU Count:</b> 3

Section 2 - Existing Template Images

792DB.png

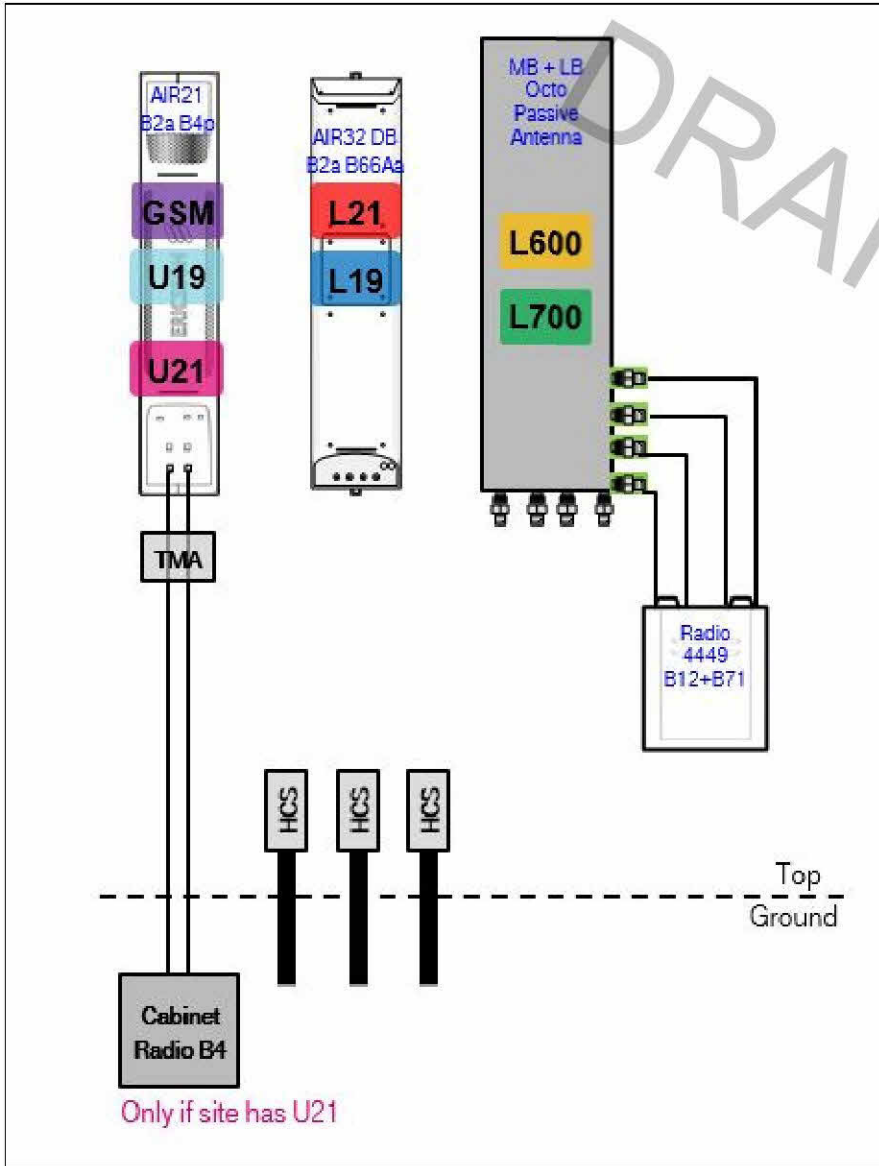




Notes:

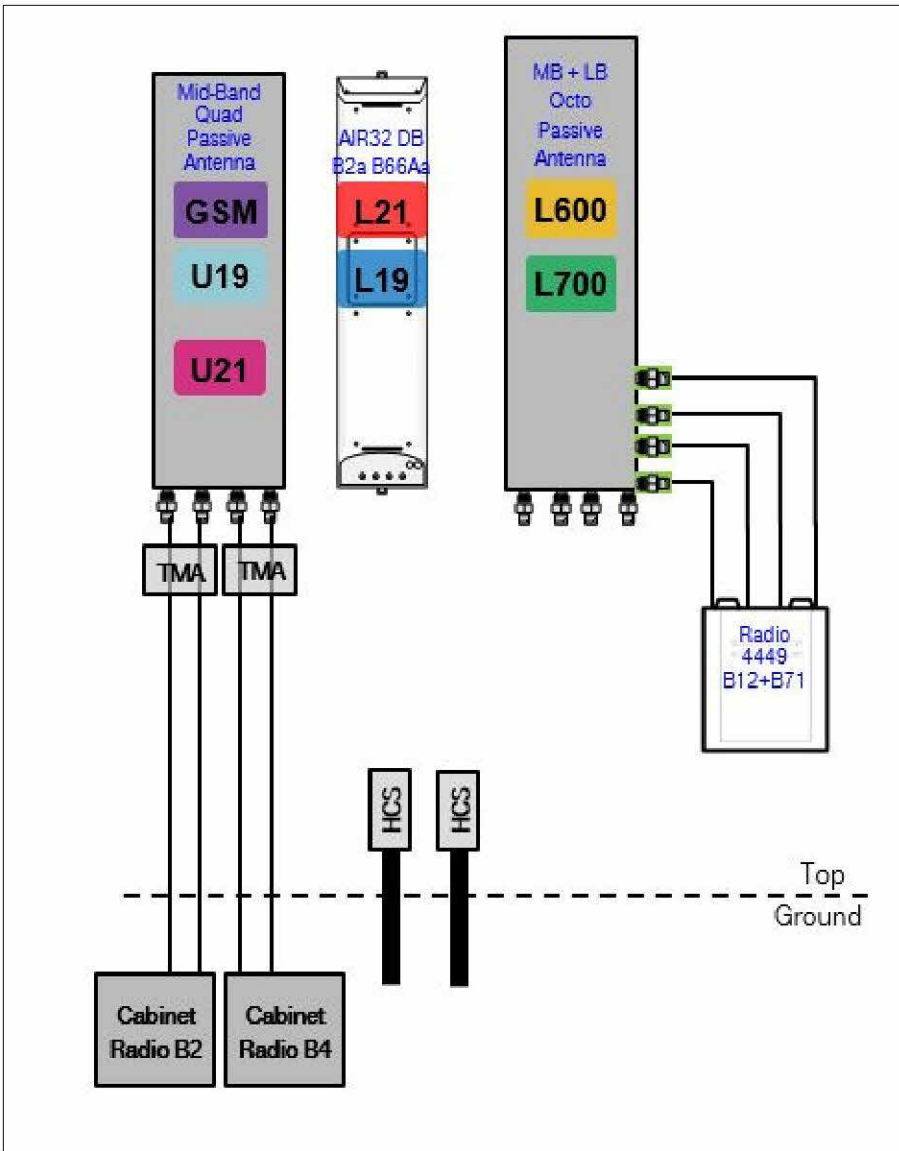
Section 3 - Proposed Template Images

67D92DB\_2xAIR+1OP.JPG



Notes:

67D94DB\_1xAIR+1QP+1OP.JPG



Notes:



Section 4 - Siteplan Images

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DRAFT

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Section 5 - RAN Equipment

**Existing RAN Equipment**

Template: 792DB Indoor

Enclosure	1	2
<b>Enclosure Type</b>	RBS 6201	Ancillary Equipment
<b>Baseband</b>	DUW30 U2100, DUW30 U1900, DUG20 G1900, DUS41 L2100, DUS41 L1900	
<b>Hybrid Cable System</b>		Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select AWG & Length*
<b>Multiplexer</b>	XMU L700	
<b>Radio</b>	RUS01 B4 (x6) U2100	

**Proposed RAN Equipment**

Template: 67D92DB Hybrid

Enclosure	1	2
<b>Enclosure Type</b>	RBS 6201	Ancillary Equipment
<b>Baseband</b>	BB 5216 L2100, L1900, L700, L600, DUW30 U2100, DUW30 U1900, DUG20 G1900	
<b>Hybrid Cable System</b>		Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select Length & AWG* Ericsson 6x12 HCS *Select AWG & Length*
<b>Multiplexer</b>	XMU	
<b>Radio</b>	RUS01 B4 (x6) U2100	

**RAN Scope of Work:**

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Section 6 - A&L Equipment

Existing Template: 792DB\_2xAIR+1DP  
Proposed Template: 67D92DB\_2xAIR+1OP

Sector 1 (Existing) view from behind

<b>Coverage Type</b>	A - Outdoor Macro						
<b>Antenna</b>	1		2			3	
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)			Andrew - LNX-6515DS-A1M (Dual)	
<b>Azimuth</b>	60		60			60	
<b>M. Tilt</b>							
<b>Height</b>	105		105			105	
<b>Ports</b>	P1	P2	P3	P4	P5	P6	P7
<b>Active Tech.</b>	U1900 G1900	U2100	L2100	L2100	L1900	L1900	L700
<b>Dark Tech.</b>							
<b>Restricted Tech.</b>							
<b>Decomm. Tech.</b>							
<b>E. Tilt</b>							
<b>Cables</b>	1-5/8" Coax (x2)						
<b>TMA's</b>	Generic Twin Style 1B - AWS (AtAntenna)						
<b>Diplexers / Combiners</b>							
<b>Radio</b>	RRUS11 B12 (At Antenna)						
<b>Sector Equipment</b>							

Unconnected Equipment:

Scope of Work:

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Sector 1 (Proposed) view from behind												
<b>Coverage Type</b>	A - Outdoor Macro											
<b>Antenna</b>	1			2			3					
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)					
<b>Azimuth</b>	60			60			60					
<b>M. Tilt</b>	0			0			0					
<b>Height</b>	105			105			105					
<b>Ports</b>	P1		P2		P3	P4	P5	P6	P7	P8	P9	P10
<b>Active Tech.</b>	U1900 G1900		U2100				L700 L600	L700 L600	L2100	L2100	L1900	L1900
<b>Dark Tech.</b>												
<b>Restricted Tech.</b>												
<b>Decomm. Tech.</b>												
<b>E. Tilt</b>	2		2		2		2		2		2	
<b>Cables</b>		CABLE 1 5/8IN FOAM PREMIUM (x2)					Coax Jumper (x2)	Coax Jumper (x2)				
<b>TMA's</b>		Generic Twin Style 1B - AWS (AtAntenna)										
<b>Diplexers / Combiners</b>												
<b>Radio</b>							Radio 4449 B71+B1 2 (At Antenna)					
<b>Sector Equipment</b>												
<b>Unconnected Equipment:</b>												
<b>Scope of Work:</b>												

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Sector 2 (Existing) view from behind							
<b>Coverage Type</b>	A - Outdoor Macro						
<b>Antenna</b>	1		2			3	
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)			Andrew - LNX-6515DS-A1M (Dual)	
<b>Azimuth</b>	180		180			180	
<b>M. Tilt</b>							
<b>Height</b>	105		105			105	
<b>Ports</b>	P1	P2	P3	P4	P5	P6	P7
<b>Active Tech.</b>	U1900 G1900	U2100	L2100	L2100	L1900	L1900	L700
<b>Dark Tech.</b>							
<b>Restricted Tech.</b>							
<b>Decomm. Tech.</b>							
<b>E. Tilt</b>							
<b>Cables</b>	1-5/8" Coax (x2)						
<b>TMA's</b>	Generic Twin Style 1B - AWS (AtAntenna)						
<b>Diplexers / Combiners</b>							
<b>Radio</b>	RRUS11 B12 (At Antenna)						
<b>Sector Equipment</b>							
<b>Unconnected Equipment:</b>							
<b>Scope of Work:</b>							

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Sector 2 (Proposed) view from behind												
<b>Coverage Type</b>	A - Outdoor Macro											
<b>Antenna</b>	1			2			3					
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)					
<b>Azimuth</b>	180			180			180					
<b>M. Tilt</b>	0			0			0					
<b>Height</b>	105			105			105					
<b>Ports</b>	P1		P2		P3	P4	P5	P6	P7	P8	P9	P10
<b>Active Tech.</b>	U1900	G1900	U2100				L700	L700	L2100	L2100	L1900	L1900
<b>Dark Tech.</b>							L600	L600				
<b>Restricted Tech.</b>												
<b>Decomm. Tech.</b>												
<b>E. Tilt</b>	2		2		2		2		2		2	
<b>Cables</b>			CABLE 1 5/8IN FOAM PREMIUM (x2)				Coax Jumper (x2)	Coax Jumper (x2)				
<b>TMA's</b>			Generic Twin Style 1B - AWS (AtAntenna)									
<b>Diplexers / Combiners</b>												
<b>Radio</b>							Radio 4449 B71+B1 2 (At Antenna)					
<b>Sector Equipment</b>												
<b>Unconnected Equipment:</b>												
<b>Scope of Work:</b>												

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Sector 3 (Existing) view from behind							
<b>Coverage Type</b>	A - Outdoor Macro						
<b>Antenna</b>	1		2			3	
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)			Andrew - LNX-6515DS-A1M (Dual)	
<b>Azimuth</b>	300		300			300	
<b>M. Tilt</b>							
<b>Height</b>	105		105			105	
<b>Ports</b>	P1	P2	P3	P4	P5	P6	P7
<b>Active Tech.</b>	U1900 G1900	U2100	L2100	L2100	L1900	L1900	L700
<b>Dark Tech.</b>							
<b>Restricted Tech.</b>							
<b>Decomm. Tech.</b>							
<b>E. Tilt</b>							
<b>Cables</b>	1-5/8" Coax (x2)						
<b>TMA's</b>	Generic Twin Style 1B - AWS (AtAntenna)						
<b>Diplexers / Combiners</b>							
<b>Radio</b>	RRUS11 B12 (At Antenna)						
<b>Sector Equipment</b>							
<b>Unconnected Equipment:</b>							
<b>Scope of Work:</b>							

<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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Sector 3 (Proposed) view from behind												
<b>Coverage Type</b>	A - Outdoor Macro											
<b>Antenna</b>	1			2			3					
<b>Antenna Model</b>	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)					
<b>Azimuth</b>	300			300			300					
<b>M. Tilt</b>	0			0			0					
<b>Height</b>	105			105			105					
<b>Ports</b>	P1		P2		P3	P4	P5	P6	P7	P8	P9	P10
<b>Active Tech.</b>	U1900	G1900	U2100				L700	L700	L2100	L2100	L1900	L1900
<b>Dark Tech.</b>							L600	L600				
<b>Restricted Tech.</b>												
<b>Decomm. Tech.</b>												
<b>E. Tilt</b>	2		2		2		2		2		2	
<b>Cables</b>			CABLE 1 5/8IN FOAM PREMIUM (x2)				Coax Jumper (x2)	Coax Jumper (x2)				
<b>TMA's</b>			Generic Twin Style 1B - AWS (AtAntenna)									
<b>Diplexers / Combiners</b>												
<b>Radio</b>							Radio 4449 B71+B1 2 (At Antenna )					
<b>Sector Equipment</b>												
<b>Unconnected Equipment:</b>												
<b>Scope of Work:</b>												



<b>RAN Template:</b> 67D92DB Hybrid	<b>A&amp;L Template:</b> 67D92DB_2xAIR+1OP	<b>Power System Template:</b> Custom
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**Section 7 - Power Systems Equipment**

**Existing Power Systems Equipment**

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**Proposed Power Systems Equipment**

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**Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 15/15/18/18dBi, 2.4m (8ft), VET, RET, 0-12°/0-12°/2-12°/2-12°**

**FEATURES / BENEFITS**

This antenna provides a 8 Port multi-band flexible platform for advanced use for flexible use in deployment scenarios for encompassing 600MHz, 700MHz, AWS & PCS applications.



- ➔ 24 Inch Width For Easier Zoning
- ➔ Field Replaceable (Integrated) AISG RET platform for reduced environmental exposure and long lasting quality
- ➔ Superior elevation pattern performance across the entire electrical down tilt range
- ➔ Includes three AISG RET motors - Includes 0.5m AISG jumper for optional daisy chain of two high band RET motors for one single AISG point of high band tilt control.
- ➔ Low band arrays driven by a single RET motor

**Technical Features**

**LOW BAND LEFT ARRAY (617-746 MHZ) [R1]**

Frequency Band	MHz	617-698	698-746
Gain	dBi	15.1	15.5
Horizontal Beamwidth @3dB	Deg	65	62
Vertical Beamwidth @3dB	Deg	11.4	10.4
Electrical Downtilt Range	Deg	0-12	0-12
Upper Side Lobe Suppression 0 to +20	dB	19	20
Front-to-Back, at +/-30°, Copolar	dB	25	24
Cross Polar Discrimination (XPD) @ Boresight	dB	19	19
Cross Polar Discrimination (XPD) @ +/-60	dB	5	3
3rd Order PIM 2 x 43dBm	dBc		-153
VSWR	-	1.5:1	1.5:1
Cross Polar Isolation	dB	25	25
Maximum Effective Power per Port	Watt	250	250

**LOW BAND RIGHT ARRAY (617-746 MHZ) [R2]**

Frequency Band	MHz	617-698	698-746
Gain	dBi	14.8	15.1
Horizontal Beamwidth @3dB	Deg	65	62
Vertical Beamwidth @3dB	Deg	11.4	10.3
Electrical Downtilt Range	Deg	0-12	0-12
Upper Side Lobe Suppression 0 to +20	dB	19	20
Front-to-Back, at +/-30°, Copolar	dB	25	23
Cross Polar Discrimination (XPD) @ Boresight	dB	19	19
Cross Polar Discrimination (XPD) @ +/-60	dB	5	3
3rd Order PIM 2 x 43dBm	dBc		-153
VSWR	-	1.5:1	1.5:1
Cross Polar Isolation	dB	25	25
Maximum Effective Power per Port	Watt	250	250



**Dual Slant Polarized Quad Band (8 Port) Antenna, 617-746/617-746/1695-2200/1695-2200MHz, 65deg, 15/15/18/18dBi, 2.4m (8ft), VET, RET, 0-12°/0-12°/2-12°/2-12°**

**ELECTRICAL SPECIFICATIONS**

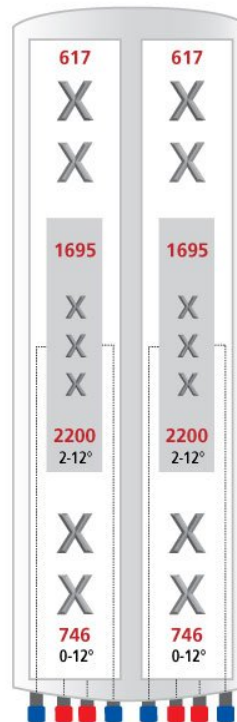
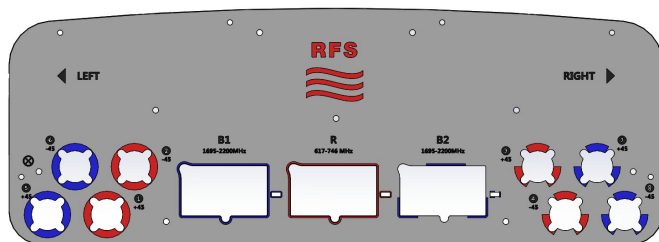
Impedance	Ohm	50.0
Polarization	Deg	±45°

**MECHANICAL SPECIFICATIONS**

Dimensions - H x W x D	mm (in)	2436 x 609 x 222 (95.9 x 24 x 8.7)
Weight (Antenna Only)	kg (lb)	58 (128)
Weight (Mounting Hardware only)	kg (lb)	11.5 (25.3)
Shipping Weight	kg (lb)	80 (176)
Connector type		8 x 4.3-10 female at bottom + 6 AISG connectors (3 male, 3 female)
Adjustment mechanism		Integrated RET solution AISG compliant (Field Replaceable) + Manual Override + External Tilt Indicator
Mounting Hardware Material		Galvanized steel
Radome Material / Color		Fiber Glass / Light Grey RAL7035

**TESTING AND ENVIRONMENTAL**

Temperature Range	°C (°F)	-40 to 60 (-40 to 140)
Lightning protection		IEC 61000-4-5
Survival/Rated Wind Velocity	km/h	241 (150)
Environmental		ETSI 300-019-2-4 Class 4.1E



**ORDERING INFORMATION**

Order No.	Configuration	Mounting Hardware	Mounting pipe Diameter	Shipping Weight
APXVAARR24_43-U-NA20	Field Replace RET included (3)	APM40-5E Beam tilt kit (included)	60-120mm	80 Kg





# WIRELESS COMMUNICATIONS FACILITY

## NH334/E AURORA SMOKESTACK

### SITE ID: CTNH334A

### 150 E AURORA ST WATERBURY, CT 06708

#### GENERAL NOTES

- ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT SUPPLEMENT, INCLUDING THE TIA/EIA-222 REVISION "G" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES." 2016 CONNECTICUT FIRE SAFETY CODE, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
- CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
- CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
- CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
- CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
- CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
- LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
- DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
- ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
- ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
- ANY AND ALL ERRORS, DISCREPANCIES, AND "MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE T-MOBILE CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO "EXTRA" WILL BE ALLOWED FOR MISSED ITEMS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
- CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
- COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
- CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

#### SITE DIRECTIONS

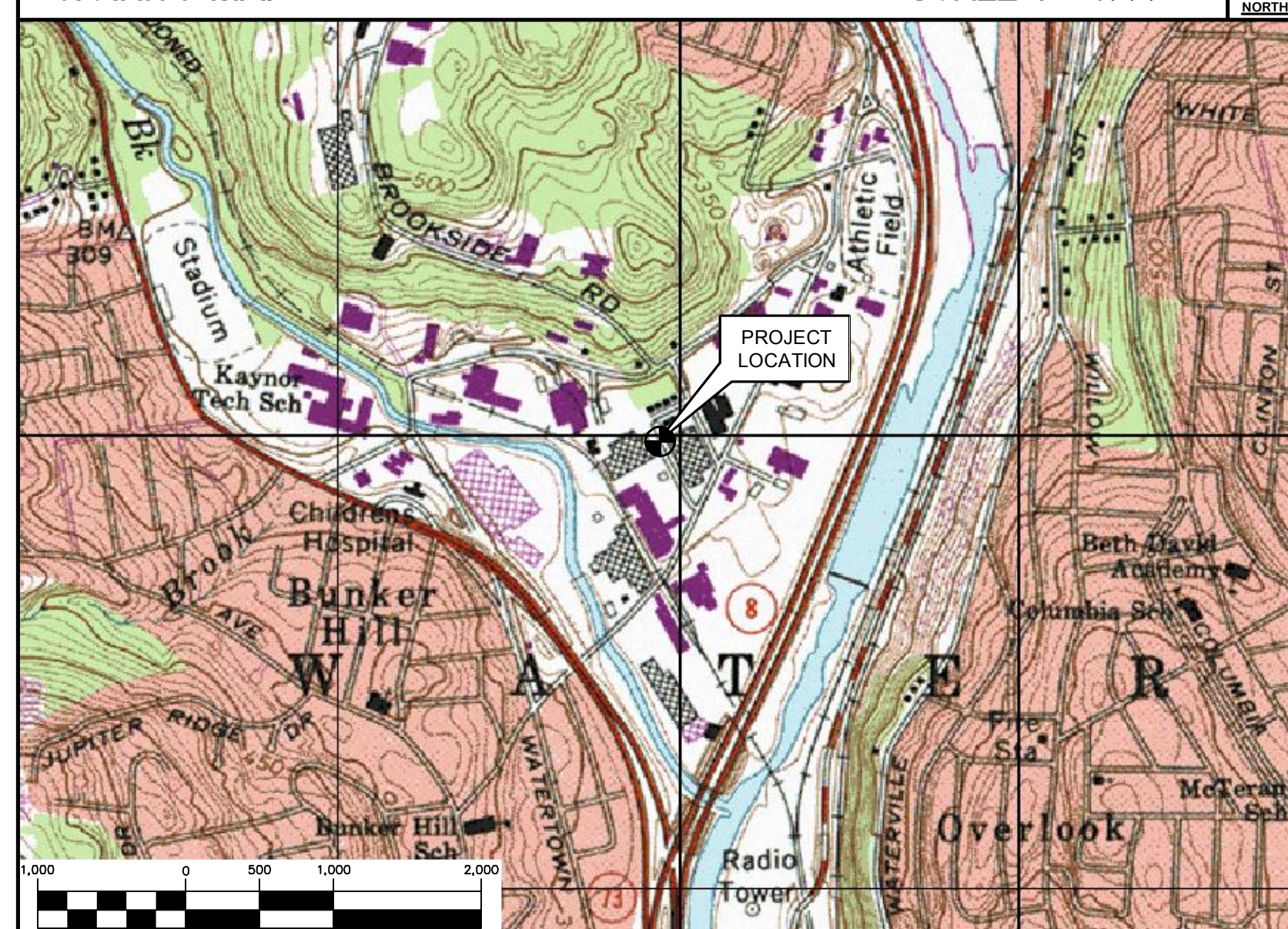
**FROM:** 35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002

**TO:** 150 E AURORA ST  
WATERBURY, CT 06708

- HEAD NORTHEAST ON GRIFFIN ROAD S TOWARD NEWBERRY RD. 0.6 MI.
- TURN RIGHT ONTO DAY HILL RD. 3.6 MI.
- USE THE RIGHT LANE TO MERGE ONTO I-91 S VIA THE RAMP TO HARTFORD. 0.4 MI.
- MERGE ONTO I-91 S. 6.9 MI.
- TAKE EXIT 32A-32B FOR I-84 W TOWARD. 0.5 MI.
- MERGE ONTO I-84. 30.0 MI.
- TAKE EXIT 20 TO MERGE ONTO CT-8 N TOWARD TORRINGTON. 1.1 MI.
- USE THE 2ND FROM THE LEFT LANE TO TAKE EXIT 35 FOR CT-73 TOWARD OAKVILLE/WATERTOWN. 0.4 MI.
- TURN RIGHT ONTO E AURORA ST. 0.1 MI.

#### VICINITY MAP

SCALE: 1" = 1000'



#### T-MOBILE RF CONFIGURATION

67D92DB\_2xAIR+10P

#### PROJECT SUMMARY

- THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
  - REMOVE EXISTING POSITION TWO (2) ANTENNA, TYPICAL OF (3)/(1) PER SECTOR.
  - INSTALL PROPOSED POSITION TWO (2) ANTENNA ON NEW BANDING AND PIPE MAST BELOW EXISTING ANTENNAS AT NEW CENTERLINE, TYPICAL OF (3)/(1) PER SECTOR.
  - REMOVE AND REPLACE EXISTING RRUS-11 B12, TYPICAL OF (1) PER SECTOR, TOTAL OF (3), WITH (3) NEW ERICSSON RADIO 4449 B71+B12.
  - INSTALL (1) PROPOSED 6X12 HYBRID CABLE WITHIN SMOKESTACK.

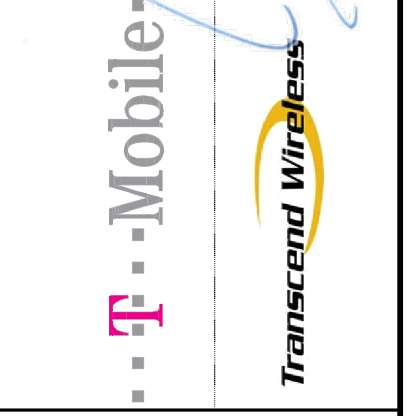
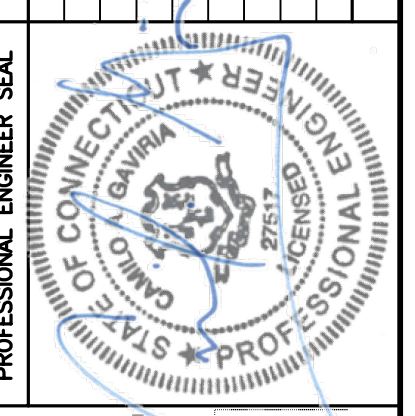
#### PROJECT INFORMATION

**SITE NAME:** NH334/E AURORA SMOKESTACK  
**SITE ID:** CTNH334A  
**SITE ADDRESS:** 150 E AURORA ST  
WATERBURY, CT 06708  
**APPLICANT:** T-MOBILE NORTHEAST, LLC  
35 GRIFFIN ROAD SOUTH  
BLOOMFIELD, CT 06002  
**CONTACT PERSON:** DAN REID (PROJECT MANAGER)  
TRANSCEND WIRELESS, LLC  
(203) 592-8291  
**ENGINEER:** CENTEK ENGINEERING, INC.  
63-2 NORTH BRANFORD RD.  
BRANFORD, CT 06405  
**PROJECT COORDINATES:** LATITUDE: 41°-34'-30.00" N  
LONGITUDE: 73°-03'-29.60" W  
GROUND ELEVATION: 290'± AMSL  
 SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

#### SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	DESIGN BASIS AND SITE NOTES	0
C-1	SITE LOCATION PLAN	0
C-2	COMPOUND PLAN AND ELEVATION	0
C-3	ANTENNA MOUNTING CONFIG.	0
E-1	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	BY	CHK'D BY	DESCRIPTION
0	06/29/18	LGI	DRAWN	ISSUED FOR CONSTRUCTION



**CEN TEK engineering**  
 203 498-0380  
 632 North Branford Road  
 Branford, CT 06405  
 www.CentekEng.com

**T-MOBILE NORTHEAST LLC**  
 WIRELESS COMMUNICATIONS FACILITY  
**NH334/E AURORA SMOKESTACK**  
**SITE ID: CTNH334A**  
 150 E AURORA STREET  
 WATERBURY, CT 06708

DATE: 06/04/18  
 SCALE: AS NOTED  
 JOB NO. 18058.51

TITLE SHEET

**T-1**  
 Sheet No. 1 of 6

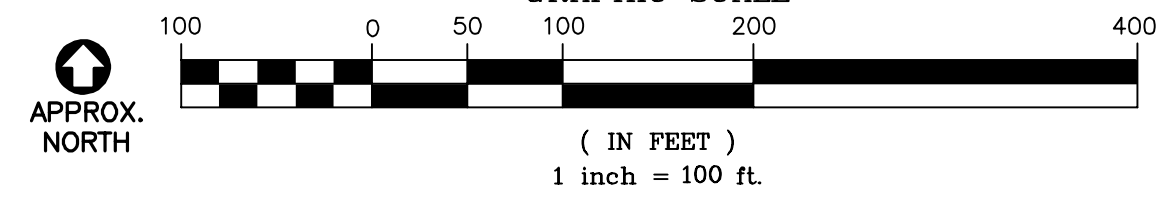




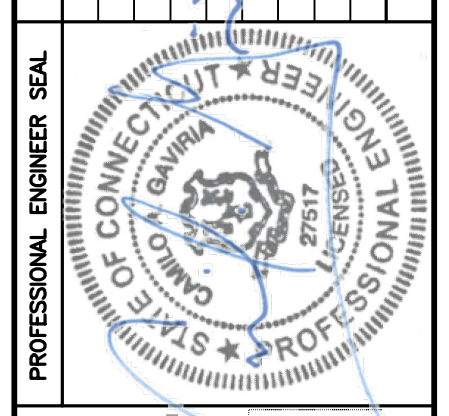




**1** SITE LOCATION PLAN  
 C-1 SCALE: 1" = 100'



REV.	DATE	BY	DESCRIPTION
0	06/29/18	LGI	ISSUED FOR CONSTRUCTION
		JUL	CONSTRUCTION DRAWINGS -
		CHK'D BY	DESCRIPTION



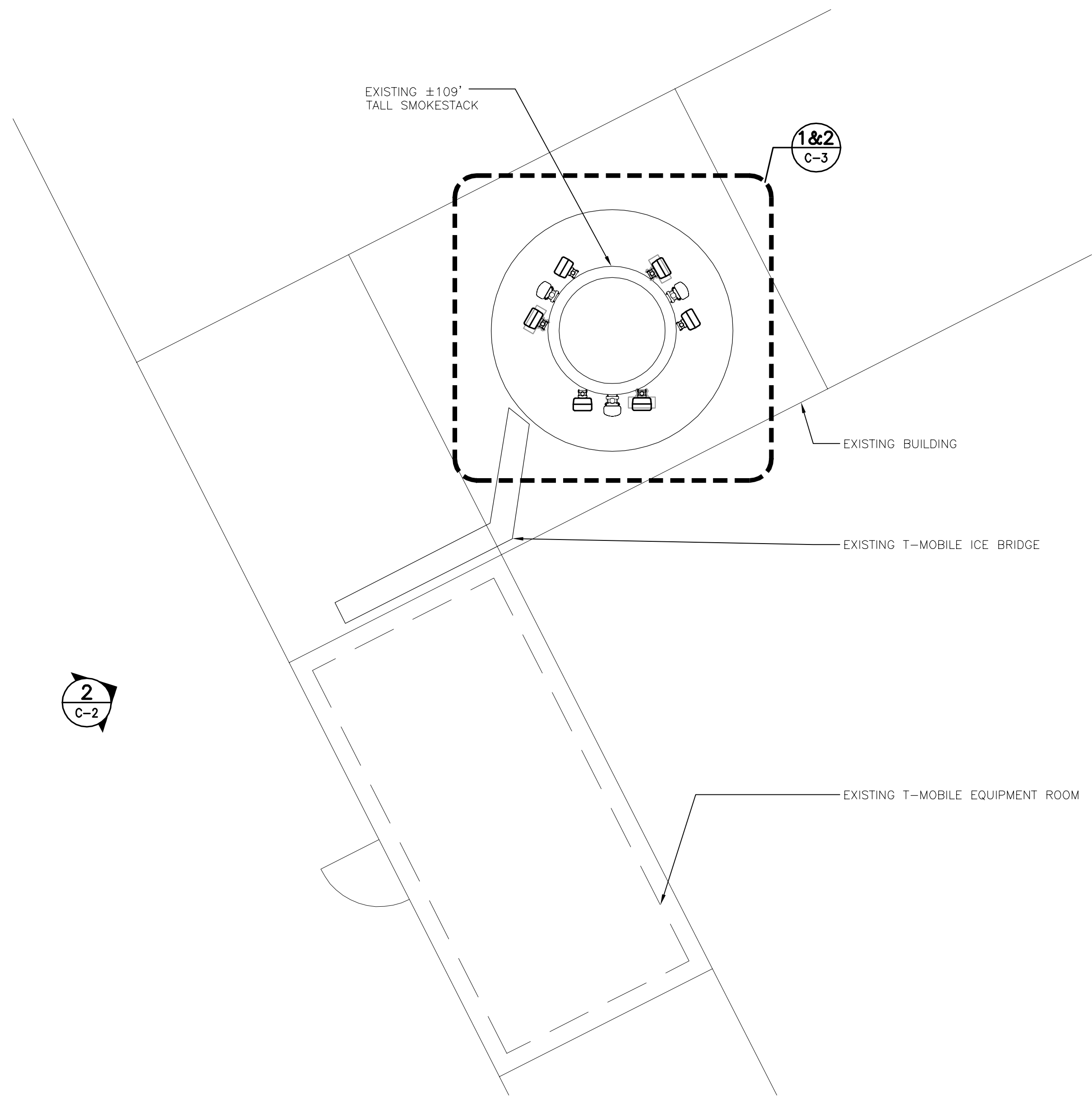
**CEN TEK** engineering  
 Centek on Solutions  
 (203) 498-0390  
 (203) 498-3397 Fax  
 622 North Branford Road  
 Branford, CT 06405  
 www.CenTekEng.com

**T-MOBILE NORTHEAST LLC**  
 WIRELESS COMMUNICATIONS FACILITY  
**NH334/E AURORA SMOKESTACK**  
**SITE ID: CTNH334A**  
 150 E AURORA STREET  
 WATERBURY, CT 06708

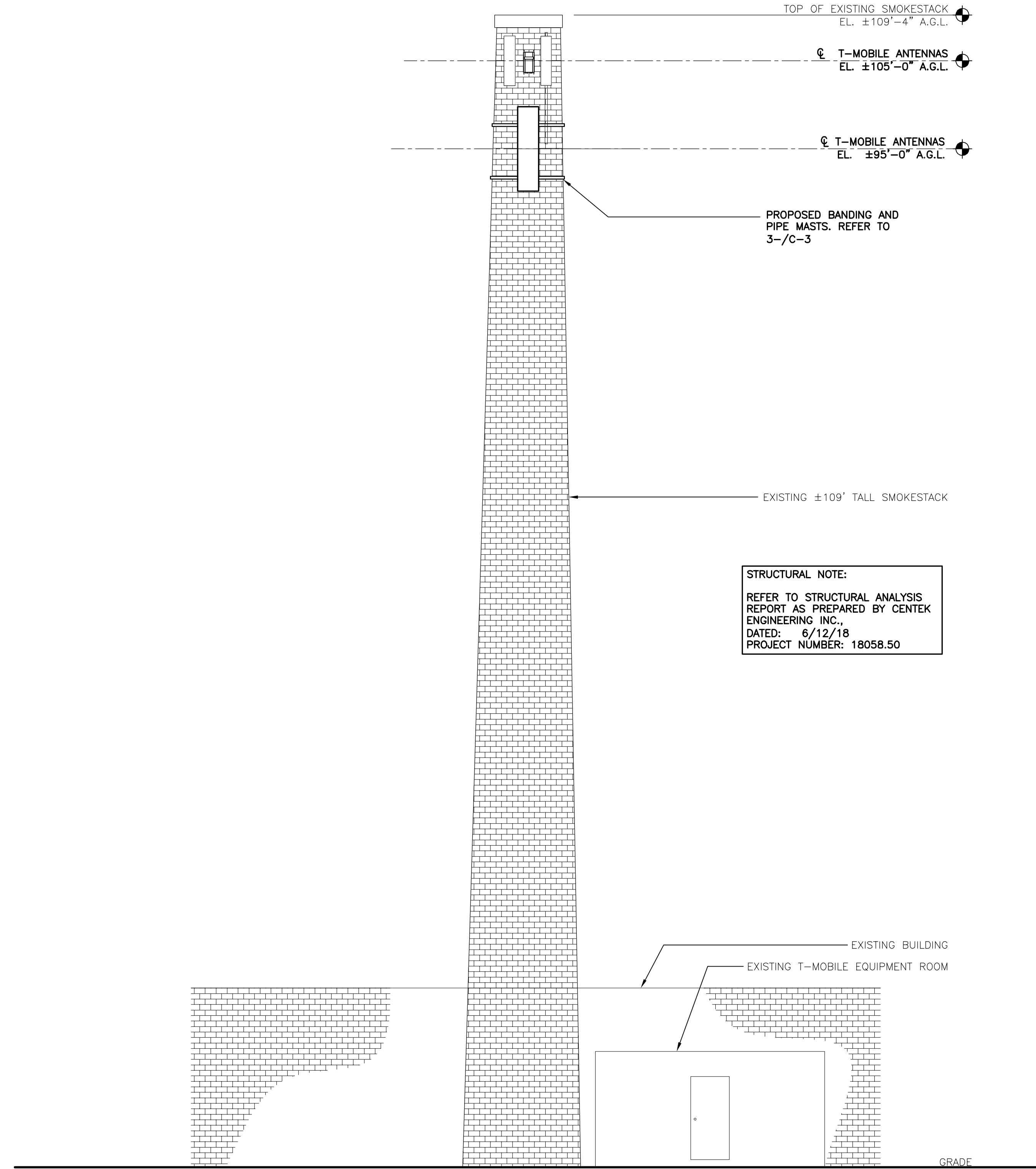
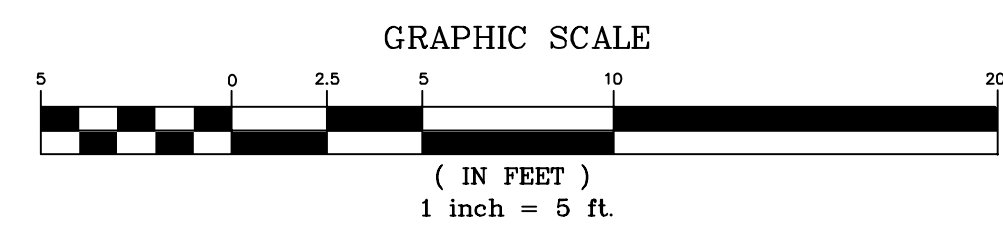
DATE: 06/04/18  
 SCALE: AS NOTED  
 JOB NO. 18058.51

SITE LOCATION PLAN

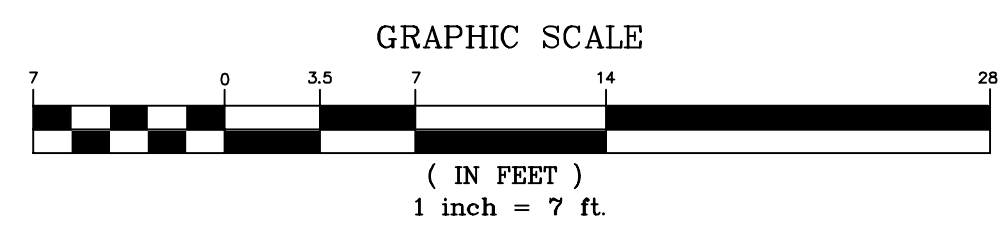
**C-1**  
 Sheet No. 3 of 6



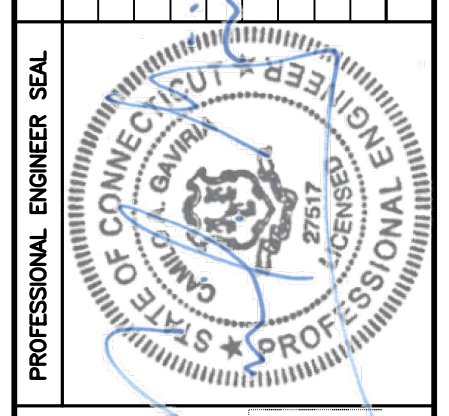
**1**  
C-2  
**COMPOUND PLAN**  
SCALE: 1" = 5'



**2**  
C-2  
**SMOKESTACK ELEVATION**  
SCALE: 1" = 7'



REV.	DATE	BY	CHK'D BY	DESCRIPTION
0	06/29/18	LGI	TJL	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION



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(203) 498-0390  
(203) 498-3397 Fax  
652 North Branford Road  
Branford, CT 06405  
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**T-MOBILE NORTHEAST LLC**  
WIRELESS COMMUNICATIONS FACILITY  
**NH334/E AURORA SMOKESTACK**  
**SITE ID: CTNH334A**  
150 E AURORA STREET  
WATERBURY, CT 06708

DATE: 06/04/18  
SCALE: AS NOTED  
JOB NO. 18058.51

COMPOUND PLAN  
AND ELEVATION

**C-2**  
Sheet No. 4 of 6



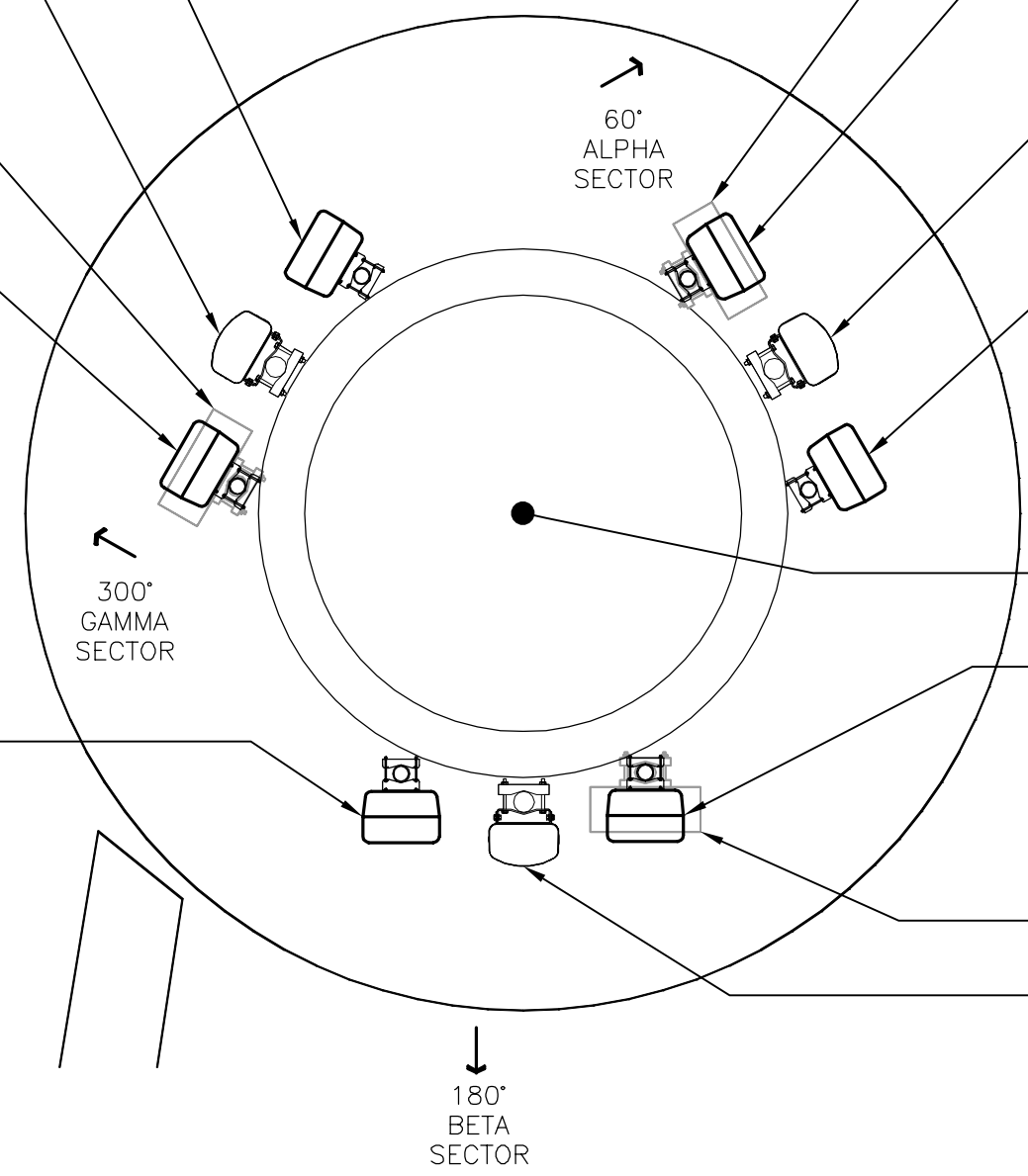
EXISTING T-MOBILE PANEL ANTENNA,  
POS. 3 TYP. OF (1)  
(MODEL: KRD901146-1\_B66A\_B2A)  
(DIMS: 56.65"H x 12.87"W x 8.66"D)  
TO REMAIN.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 2 TYP. OF (1)  
(MODEL: LNX-6515DS-A1M)  
(DIMS: 96.6"H x 11.9"W x 7.1"D)  
TO BE REMOVED AND REPLACED.

EXISTING T-MOBILE RRUS11-B12,  
TO BE REMOVED AND REPLACED.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 1 TYP. OF (1)  
(MODEL: KRC118023-1\_B2A\_B4P)  
(DIMS: 96.0"H x 11.9"W x 7.1"D)  
TO REMAIN.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 3 TYP. OF (1)  
(MODEL: KRD901146-1\_B66A\_B2A)  
(DIMS: 56.65"H x 12.87"W x 8.66"D)  
TO REMAIN.



**1 EXISTING ANTENNA CONFIGURATION**  
C-3 SCALE: 3/8" = 1'-0"



EXISTING T-MOBILE RRUS11-B12,  
TO BE REMOVED AND REPLACED.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 1 TYP. OF (1)  
(MODEL: KRC118023-1\_B2A\_B4P)  
(DIMS: 96.0"H x 11.9"W x 7.1"D)  
TO REMAIN.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 2 TYP. OF (1)  
(MODEL: LNX-6515DS-A1M)  
(DIMS: 96.6"H x 11.9"W x 7.1"D)  
TO BE REMOVED AND REPLACED.

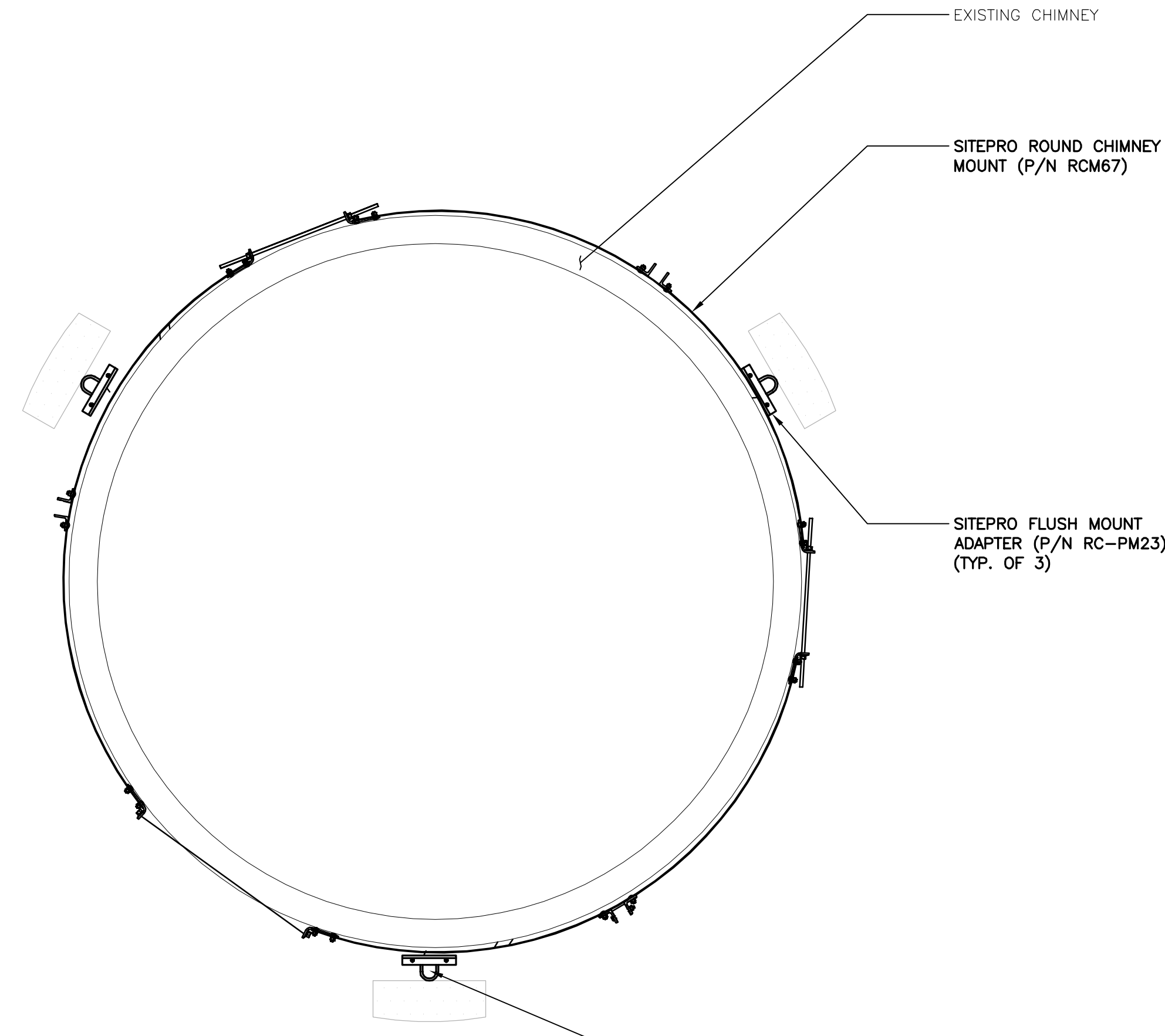
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POS. 3 TYP. OF (1)  
(MODEL: KRD901146-1\_B66A\_B2A)  
(DIMS: 56.65"H x 12.87"W x 8.66"D)  
TO REMAIN.

EXISTING ±109' TALL SMOKESTACK.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 1 TYP. OF (1)  
(MODEL: KRC118023-1\_B2A\_B4P)  
(DIMS: 96.0"H x 11.9"W x 7.1"D)  
TO REMAIN.

EXISTING T-MOBILE RRUS11-B12,  
TO BE REMOVED AND REPLACED.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 2 TYP. OF (1)  
(MODEL: LNX-6515DS-A1M)  
(DIMS: 96.6"H x 11.9"W x 7.1"D)  
TO BE REMOVED AND REPLACED.



**3 PROPOSED MOUNT PLAN**  
C-3 SCALE: 1/2" = 1'-0"

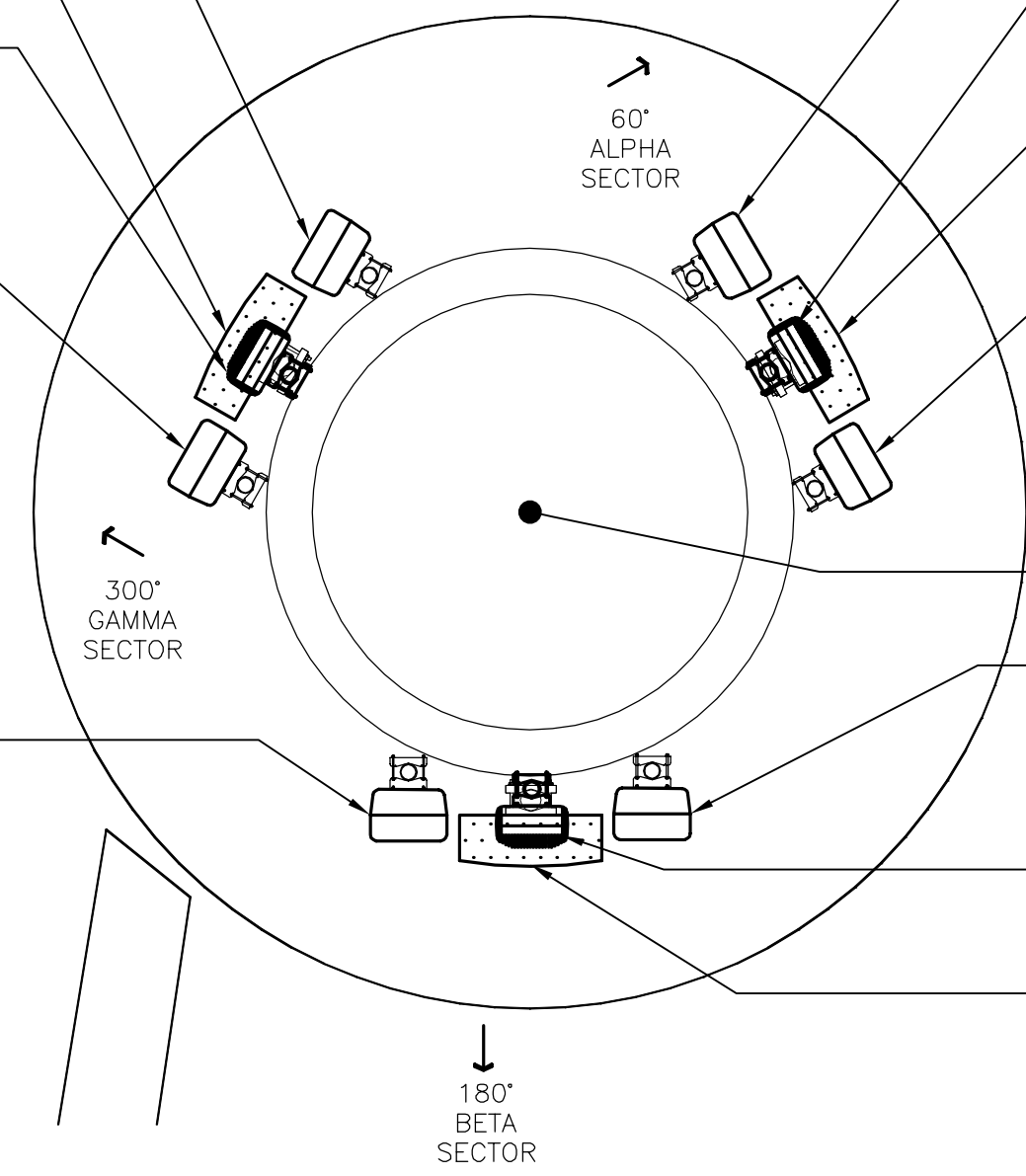
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POS. 3 TYP. OF (1)  
(MODEL: KRD901146-1\_B66A\_B2A)  
(DIMS: 56.65"H x 12.87"W x 8.66"D)

PROPOSED T-MOBILE PANEL ANTENNA,  
POS. 2, TYP. OF (1)  
(MODEL: APXVAARR24\_43-U-NA20)  
(DIMS: 95.9"H x 24.0" x 8.7"D)  
BELOW

PROPOSED T-MOBILE REMOTE RADIO UNIT,  
TYP. OF (1) PER SECTOR.  
(MODEL: ERICSSON RADIO 4449 B71+B12)

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 1 TYP. OF (1)  
(MODEL: KRC118023-1\_B2A\_B4P)  
(DIMS: 96.0"H x 11.9"W x 7.1"D)

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 3 TYP. OF (1)  
(MODEL: KRD901146-1\_B66A\_B2A)  
(DIMS: 56.65"H x 12.87"W x 8.66"D)



**2 PROPOSED ANTENNA CONFIGURATION**  
C-3 SCALE: 3/8" = 1'-0"



EXISTING T-MOBILE PANEL ANTENNA,  
POS. 1 TYP. OF (1)  
(MODEL: KRC118023-1\_B2A\_B4P)  
(DIMS: 96.0"H x 11.9"W x 7.1"D)

PROPOSED T-MOBILE REMOTE RADIO UNIT,  
TYP. OF (1) PER SECTOR.  
(MODEL: ERICSSON RADIO 4449 B71+B12)

PROPOSED T-MOBILE PANEL ANTENNA,  
POS. 2, TYP. OF (1)  
(MODEL: APXVAARR24\_43-U-NA20)  
(DIMS: 95.9"H x 24.0" x 8.7"D)  
BELOW

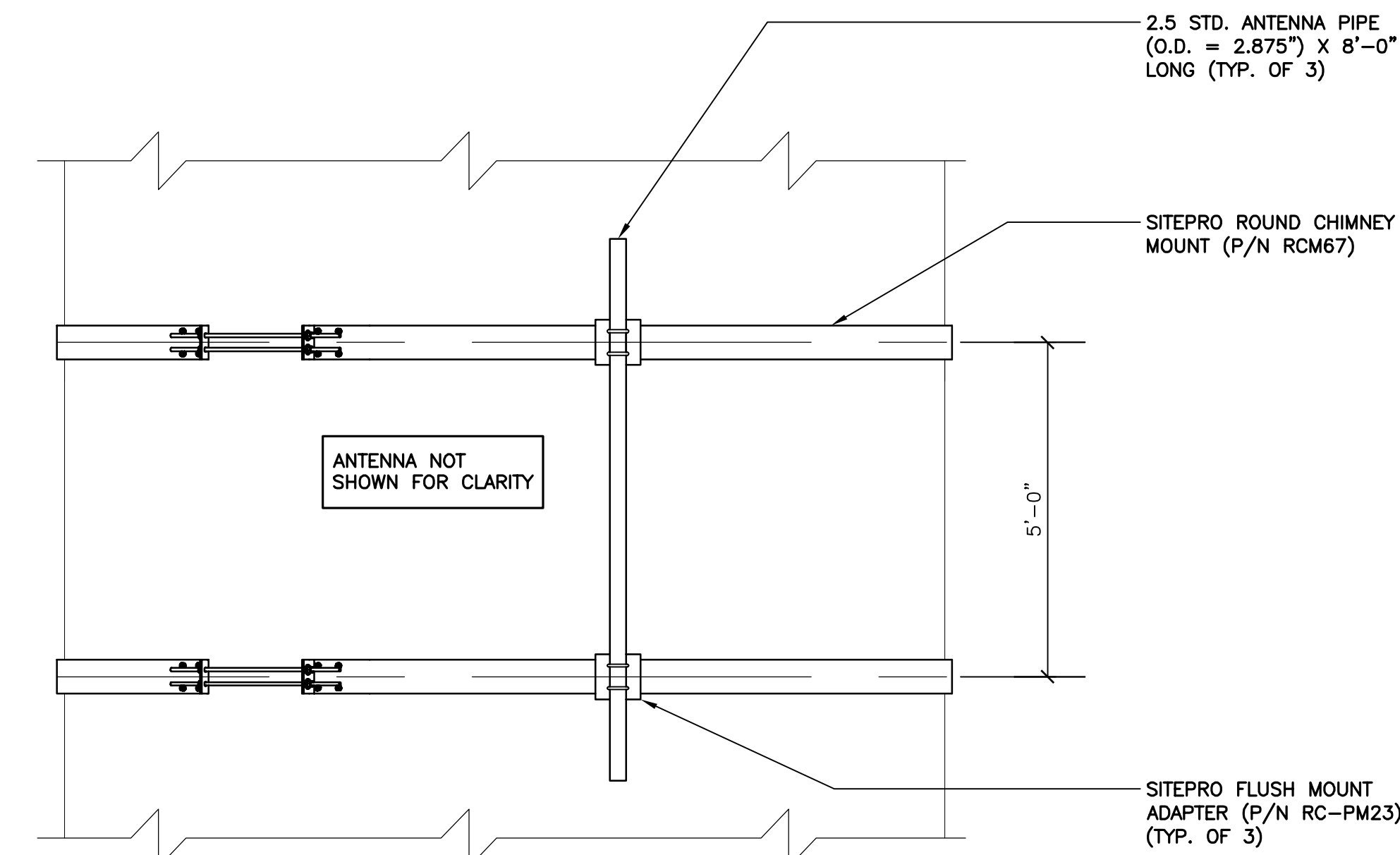
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POS. 3 TYP. OF (1)  
(MODEL: KRD901146-1\_B66A\_B2A)  
(DIMS: 56.65"H x 12.87"W x 8.66"D)

EXISTING ±109' TALL SMOKESTACK.

EXISTING T-MOBILE PANEL ANTENNA,  
POS. 1 TYP. OF (1)  
(MODEL: KRC118023-1\_B2A\_B4P)  
(DIMS: 96.0"H x 11.9"W x 7.1"D)

PROPOSED T-MOBILE REMOTE RADIO UNIT,  
TYP. OF (1) PER SECTOR.  
(MODEL: ERICSSON RADIO 4449 B71+B12)

PROPOSED T-MOBILE PANEL ANTENNA,  
POS. 2, TYP. OF (1)  
(MODEL: APXVAARR24\_43-U-NA20)  
(DIMS: 95.9"H x 24.0" x 8.7"D)  
BELOW



**4 PROPOSED MOUNT ELEVATION**  
C-3 SCALE: 1/2" = 1'-0"

REVISION	DATE	BY	CHK'D BY	DESCRIPTION
0	06/29/18	LGI		CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

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**Transcend Wireless**

**CENTEK engineering**  
Centered on Solutions  
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(203) 498-3397 Fax  
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Branford, CT 06405  
www.CentekEng.com

**T-MOBILE NORTHEAST LLC**  
WIRELESS COMMUNICATIONS FACILITY  
NH334/E AURORA SMOKESTACK  
SITE ID: CTNH334A  
150 E AURORA STREET  
WATERBURY, CT 06708

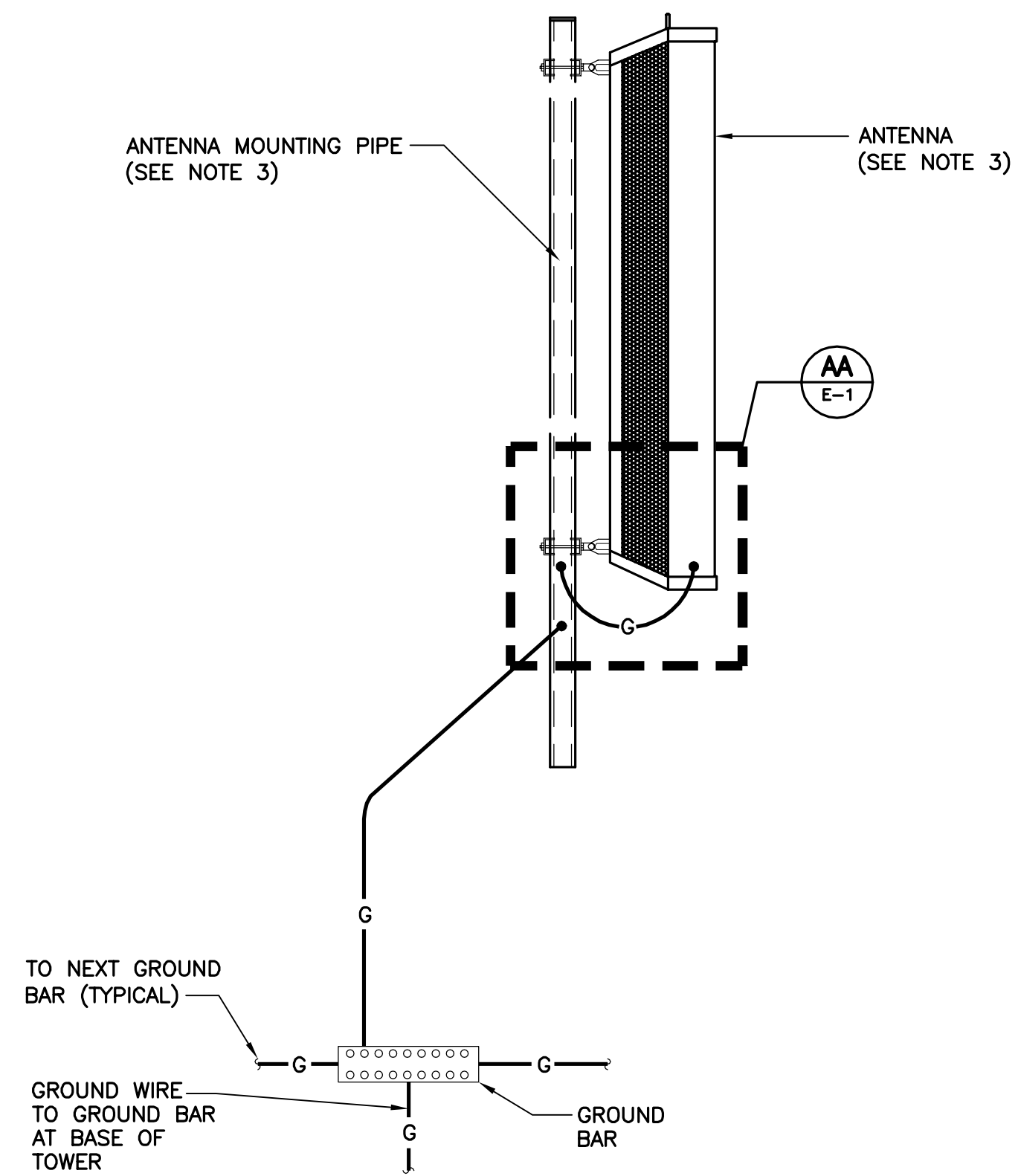
DATE: 06/04/18  
SCALE: AS NOTED  
JOB NO. 18058.51

ANTENNA MOUNTING CONFIGURATION

**C-3**

Sheet No. 5 of 6

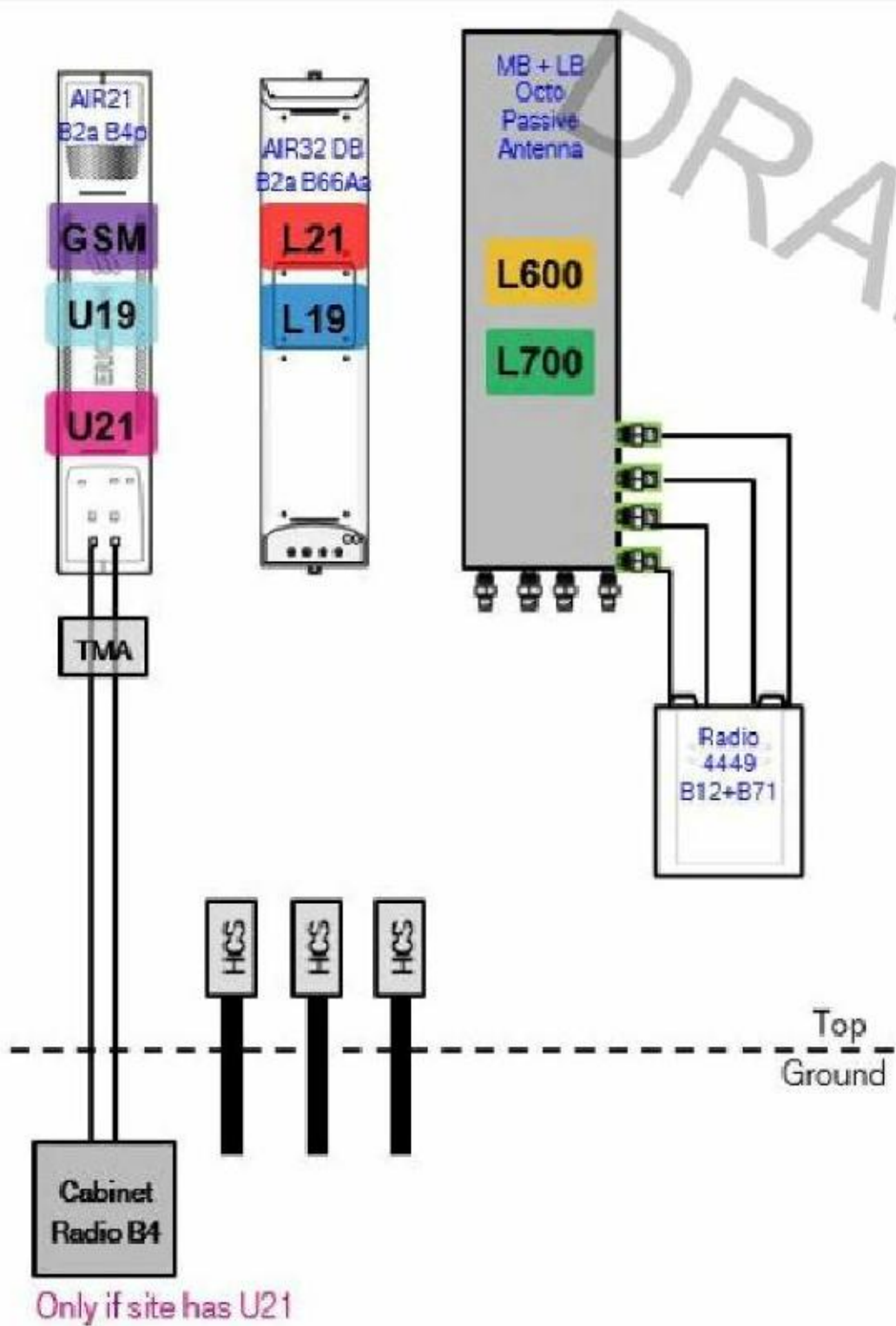




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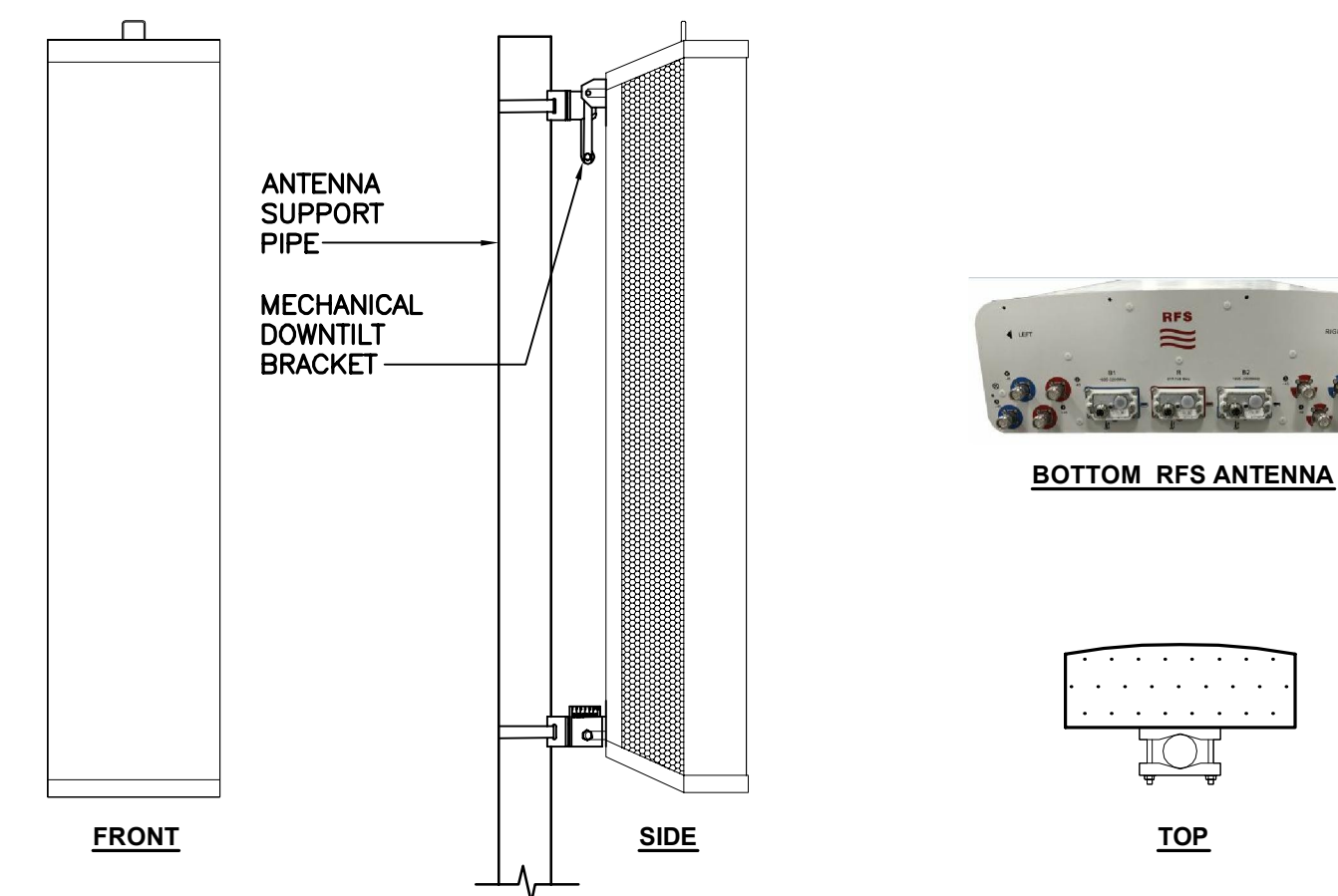
1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

**1 TYPICAL ANTENNA GROUNDING DETAIL**  
E-1 SCALE: NONE



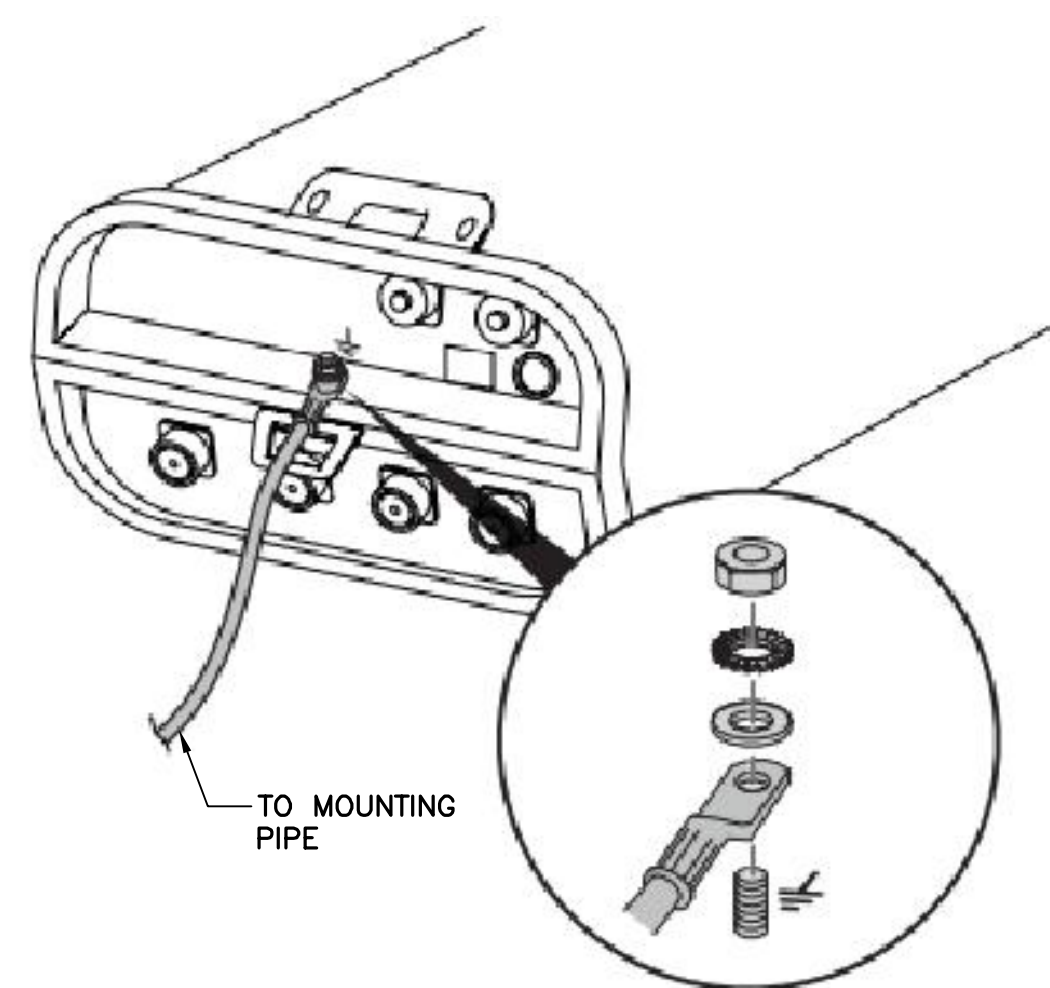
Only if site has U21

**2 PROPOSED PLUMBING DIAGRAM**  
E-1 SCALE: NONE

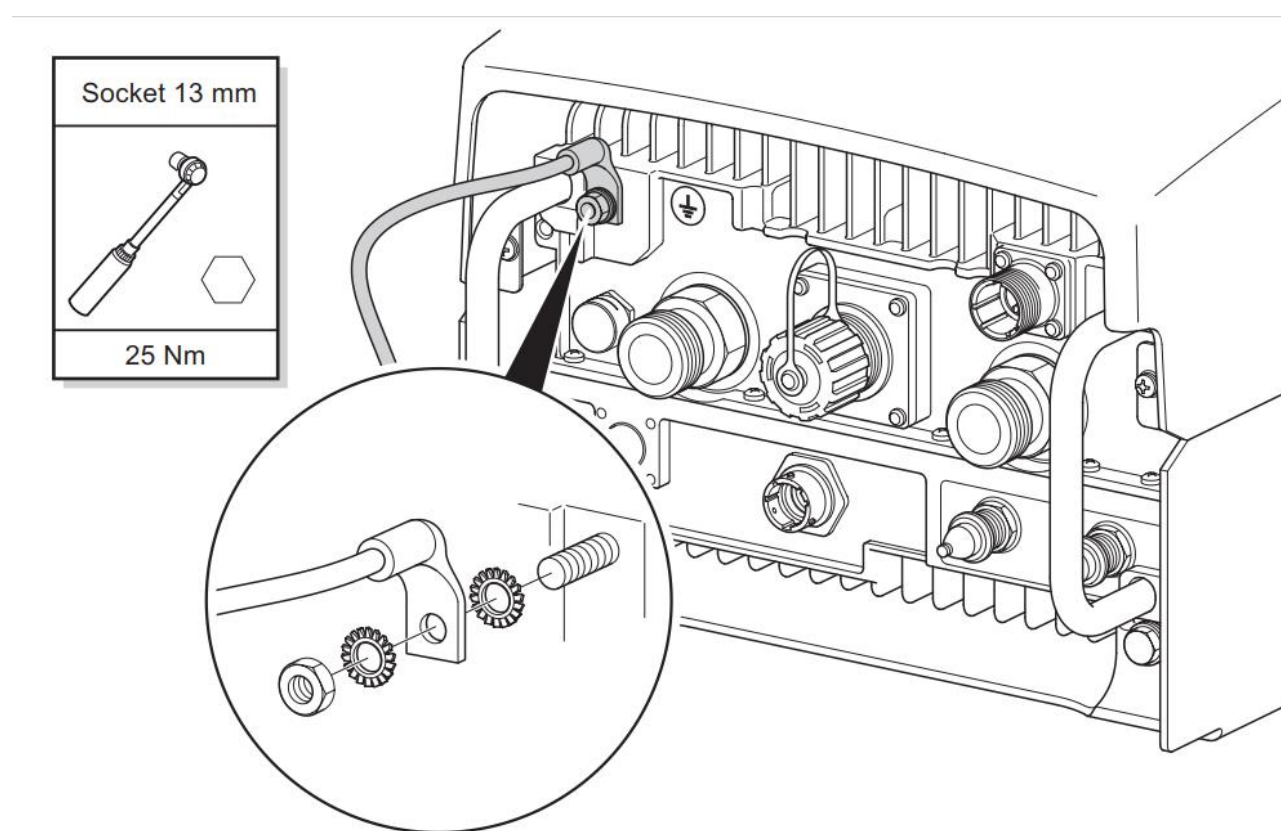


ALPHA/BETA/GAMMA ANTENNA		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: RFS MODEL: APXVAARR24_43-U-NA20	95.9"L x 24.0"W x 8.7"D	153 LBS.

**3 PROPOSED ANTENNA DETAIL**  
E-1 SCALE: NONE



**AA TYPICAL ANTENNA GROUNDING DETAIL**  
E-1 SCALE: NONE



**4 TYPICAL RRU GROUNDING DETAIL**  
E-1 NOT TO SCALE



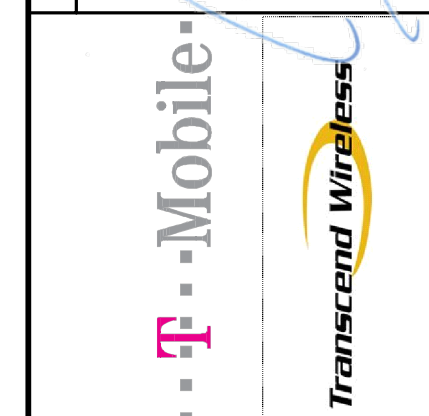
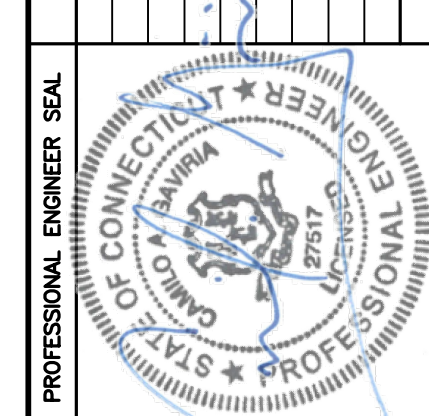
ISOMETRIC VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RADIO 4449 B71B12	14.9"L x 13.2"W x 10.4"D	74 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

**NOTES:**  
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH T-MOBILE CONSTRUCTION MANAGER PRIOR TO ORDERING.

**5 PROPOSED RRU DETAIL**  
E-1 SCALE: NONE

REV.	DATE	BY	CHK'D BY	DESCRIPTION
0	06/29/18	LGI		ISSUED FOR CONSTRUCTION



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**T-MOBILE NORTHEAST LLC**  
WIRELESS COMMUNICATIONS FACILITY  
**NH334/E AURORA SMOKESTACK**  
**SITE ID: CTNH334A**  
150 E AURORA STREET  
WATERBURY, CT 06708

DATE: 06/04/18  
SCALE: AS NOTED  
JOB NO. 18058.51

TYPICAL ELECTRICAL DETAILS