



July 8, 2019

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

Regarding: Notice of Exempt Modification – Antenna Modification
Property Address: 975 Mix Avenue, Hamden, CT 06514 (the “Property”)
Applicant: AT&T Mobility (“AT&T”, Site # CT2035)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 65-foot Steel Platform at the above-referenced address, latitude 41° 22’ 42.78”, longitude -72° 55’ 4.32”. Said Steel Platform is owned by Chestnut Hill North LLC.

AT&T desires to modify its existing telecommunications facility by Replacing (3) antennas and their associated cabling and ancillary equipment, add (6) remote-radio heads (“RRHs”), Replace (2) diplexers/ Combiners, and add (1) surge arrestor (squid). The centerline height of the existing antennas is and will remain at 61 feet.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to The Honorable Curt B. Leng as Mayor, Town of Hamden, Dan Kops as Town Planner and Zoning of Town of Hamden and Chestnut Hill North LLC the Tower/Property Owner.

The planned modifications to AT&T’s facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The added antennas and accessory equipment along with equipment to be swapped will be installed at the existing height of 61 feet on the 65-foot Steel Platform.
2. The proposed modifications will not involve any changes to ground-mounted equipment, and therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (enclosed) for AT&T's modified facility is herein provided.
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 AT&T's proposed modifications, please see enclosed structural analysis completed by Vertical Resources Group dated July 30, 2019.

For the foregoing reasons, AT&T respectfully requests that the proposed antennas and remote-radio head installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Nora Oliver

Nora Oliver
Site Acquisition Manager

Enclosures: Exhibit 1 – Field Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Analysis
Exhibit 4 – RF Emissions Analysis Report Evaluation

cc:
The Honorable Curt B. Leng, Mayor, Town of Hamden
Dan Kops, Town Planner and Zoning, Town of Hamden
Chestnut Hill North LLC the Tower/Property Owner.



TOWN OF HAMDEN, CONNECTICUT

GEOGRAPHIC & PROPERTY INFORMATION NETWORK



2750 DIXWELL AVENUE
HAMDEN, CT 06518
203-287-2500
E-MAIL: GENERAL INFORMATION

❖ MAIN MENU

[GIS HOME](#)

➤ GIS PROPERTY MAP SEARCH

[TOWN WIDE MAP GALLERY](#)

[TOWN GRID MAPS](#)

[INTERACTIVE MAPPING](#)

[HELP](#)

❖ SUMMARY PARCEL INFORMATION & MAP DOCUMENTS

Detailed Parcel Information

Parcel No
2628-101-00-0000

Unique ID
100226

Account
100226

Owner
CHESTNUT HILL NORTH LLC

Location
905 MIX AVE

MAILING ADDRESS
1621 STATE STREET
NEW HAVEN CT 06511



PROPERTY INFO DATA UPDATED

Nightly

CURRENT PARCEL COUNT

16,754 +/-

Scroll Down For Complete Property Detail

Click on the Google logo to go to Google Maps

Parcel Documents

[Create Parcel Map](#)

[Property Summary Card](#)

Full Size Assessor Maps

[Full Assessor Map](#)

Interactive GIS Maps of Property

[GO TO VIRTUAL EARTH BIRDS EYE!](#)

[GO TO INTERACTIVE MAP!](#)

Once in Interactive Map, Select Parcel and enter Abutters distance.

PARCEL VALUATIONS

	Appraised Value	Assessed Value
Buildings	9033700	6323590
Outbuildings	406600	284620
Improvements	9551100	6685770
Extra Features	110800	77560
Land	5845500	4091850
TOTAL:	15396600	10777620

PROPERTY INFORMATION

Land Acres	8.6
Land Use	APT Over 8
Land Class	C
Zoning	R5
Neighborhood	100
Lot Description	Rolling
Lot Setting	Urban
Lot Utilities	All Public
Street Description	Paved

SALE INFORMATION

Sale Date	10/29/2015
Sale Price	0
Book / Page	4265/ 086

BUILDING AREA

Gross Building Area	
Total Living Area	0

CONSTRUCTION DETAILS

Building Style	Apartments
Building Use	Comm/Ind
Number of Rooms	

Number of Bedrooms	
Number of Bathrooms	0
Number of Half Bathrooms	
Kitchen Style	
Stories	3
Roof Style	Flat
Roof Cover	T&G/Rubber
Primary Exterior Wall Type	Brick Veneer
Secondary Exterior Wall Type	
Primary Interior Wall Type	Drywall
Secondary Interior Wall Type	
Primary Floor Type	Carpet
Secondary Floor Type	
Heating Type	Hot Water
Heating Fuel	Gas
Air Conditioning Type	Central
Building Style	Apartments
Building Use	Comm/Ind
Number of Rooms	
Number of Bedrooms	
Number of Bathrooms	0
Number of Half Bathrooms	
Kitchen Style	
Stories	3
Roof Style	Flat
Roof Cover	T&G/Rubber
Primary Exterior Wall Type	Brick Veneer
Secondary Exterior Wall Type	
Primary Interior Wall Type	Drywall
Secondary Interior Wall Type	
Primary Floor Type	Carpet
Secondary Floor Type	
Heating Type	Hot Water
Heating Fuel	Gas
Air Conditioning Type	None
Building Style	Apartments
Building Use	Comm/Ind
Number of Rooms	
Number of Bedrooms	
Number of Bathrooms	0
Number of Half Bathrooms	
Kitchen Style	
Stories	3
Roof Style	Flat
Roof Cover	T&G/Rubber
Primary Exterior Wall Type	Brick Masonry
Secondary Exterior Wall Type	
Primary Interior Wall Type	Drywall
Secondary Interior Wall Type	
Primary Floor Type	Carpet
Secondary Floor Type	
Heating Type	Hot Water
Heating Fuel	Gas
Air Conditioning Type	None

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 Building Use
 All information is intended for your general knowledge only and is not a substitute for contacting the Town Hall or other
 Number of Rooms departments listed at this web site.

You should promptly consult the specific office or department with any questions. 0
 Use of this web site and any information you find through it is subject to the Disclaimer.
 Number of Bathrooms
 Number of Half Bathrooms

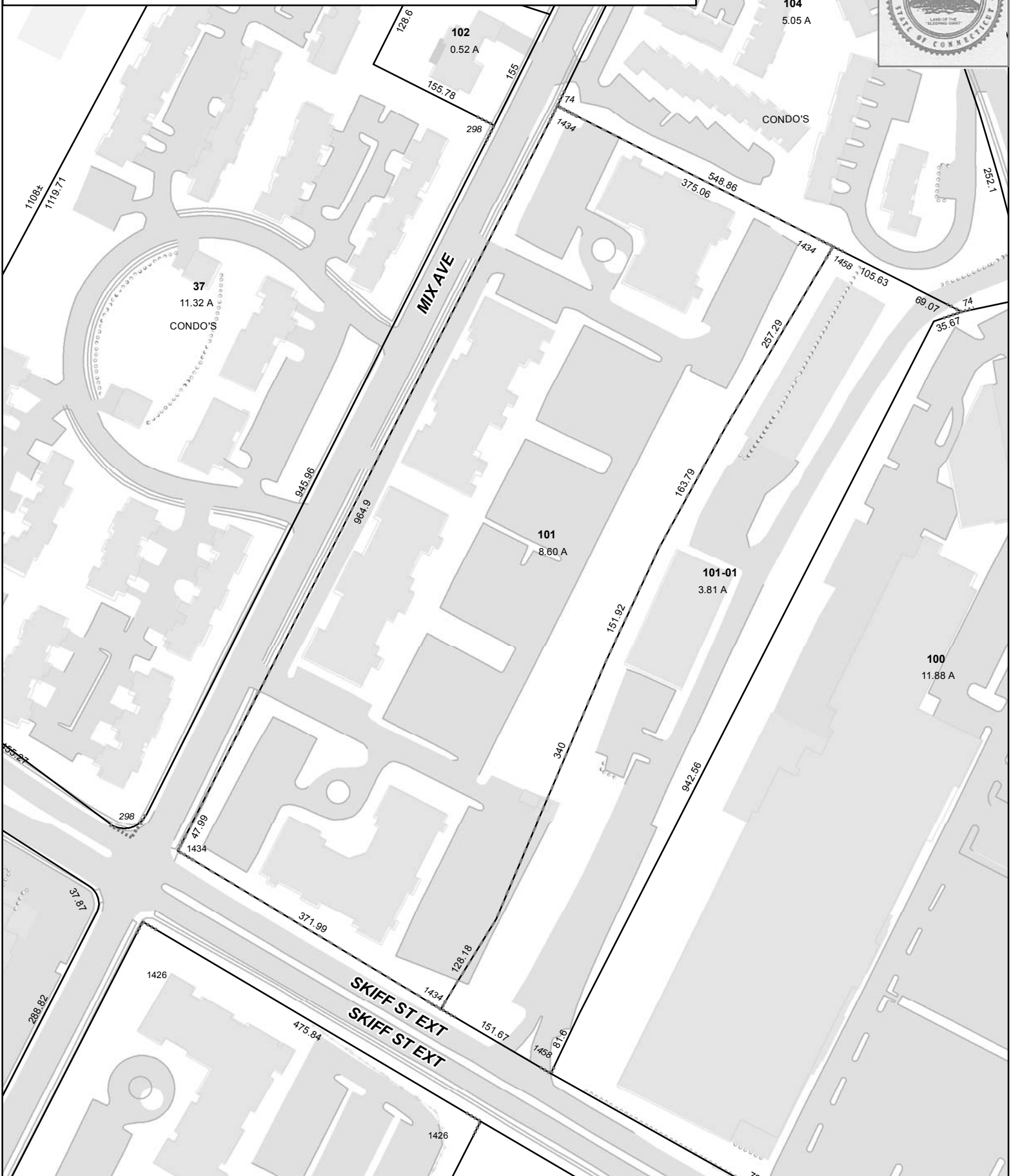
Kitchen Style	
Stories	3
Roof Style	Flat
Roof Cover	T&G/Rubber
Primary Exterior Wall Type	Brick Veneer
Secondary Exterior Wall Type	
Primary Interior Wall Type	Drywall
Secondary Interior Wall Type	
Primary Floor Type	Carpet
Secondary Floor Type	
Heating Type	Hot Water
Heating Fuel	Gas
Air Conditioning Type	Central

[Back](#) | [New Search](#) | [Town of Hamden](#)

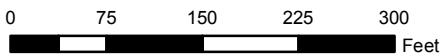
Town of Hamden, Connecticut - Assessment Parcel Map

Parcel: 2628-101-00-0000

Address: 905 MIX AVE






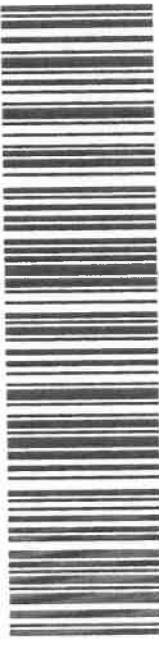
Approximate Scale: 1 inch = 150 feet



Map Produced: March 2018

Disclaimer: This map is for informational purposes only. All information is subject to verification by any user. The Town of Hamden and its mapping contractors assume no legal responsibility for the information contained herein.

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	<small>usps.com</small> \$7.35 US POSTAGE <small>Flat Rate Env</small>	9405 5036 9930 0070 5794 05 0073 5003 0020 6514 	
		07/29/2019 3 lb 0 oz Mailed from 01862 062S0000000309	
PRIORITY MAIL 2-DAY™			
NORA OLIVER EMPIRE TELECOM 16 ESQUIRE RD N BILLERICA MA 01862-2527		Expected Delivery Date: 07/31/19 0006	
Carrier -- Leave if No Response			
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> C008 </div>			
SHIP TO: CHESTNUT HILL NORTH LLC 975 MIX AVE HAMDEN CT 06514-5130			
USPS TRACKING #			
			
9405 5036 9930 0070 5794 05			
Electronic Rate Approved #038555749			



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071604 8/18-55

001000014

OD: 12/12 x 9 1/2

USPS.COM/PICKUP

* For Domestic shipments the maximum weight is 70 lbs. For international shipments the maximum weight is 4 lbs.

USPS Tracking® FAQs > (<https://www.usps.com/faqs/uspstracking-faqs.htm>)

Track Another Package +

[Remove X](#)

Tracking Number: 9405503699300070579405

Your item has been delivered to the original sender at 6:15 pm on August 12, 2019 in HAMDEN, CT 06514.



Delivered

August 12, 2019 at 6:15 pm
Delivered, To Original Sender
HAMDEN, CT 06514

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Tracking History



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PRIORITY MAIL 2-DAY™

Expected Delivery Date: 07/31/19

NORA OLIVER
EMPIRE TELECOM
16 ESQUIRE RD
N BILLERICA MA 01862-2527

0006

C052

Carrier -- Leave if No Response

SHIP TO:
CURT B LENG
MAYOR, TOWN OF HAMDEN
2750 DIXWELL AVE
HAMDEN CT 06518-3320

USPS TRACKING #



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EP14F Oct 2018
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Tracking Number: 9405503699300070579429

Your item was delivered in or at the mailbox at 10:08 am on August 2, 2019 in HAMDEN, CT 06518.



Delivered

August 2, 2019 at 10:08 am
Delivered, In/At Mailbox
HAMDEN, CT 06518

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<p>P</p> <p>usps.com \$7.35 9405 5036 9930 0070 5794 12 0073 5003 0020 6518</p> <p>US POSTAGE Flat Rate Env</p> 	<p>07/29/2019 3 lb 0 oz Mailed from 01862 062S00000000309</p>	
<p>PRIORITY MAIL 2-DAY™</p>		
<p>NORA OLIVER EMPIRE TELECOM 16 ESQUIRE RD N BILLERICA MA 01862-2527</p> <p>Expected Delivery Date: 07/31/19</p> <p>0006</p>		
<p>Carrier -- Leave if No Response</p> <p>C052</p> <p>SHIP TO: DAN KOPS TOWN PLANNER AND ZONING 2750 DIXWELL AVE HAMDEN CT 06518-3320</p>		
<p>USPS TRACKING #</p>  <p>9405 5036 9930 0070 5794 12</p>		
<p>Electronic Rate Approved #038555749</p>		

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Your item was delivered in or at the mailbox at 10:08 am on August 2, 2019 in HAMDEN, CT 06518.



Delivered

August 2, 2019 at 10:08 am
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HAMDEN, CT 06518

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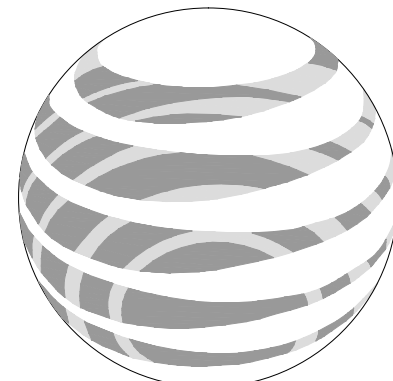
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PROJECT INFORMATION

SCOPE OF WORK
 UNMANNED COMMUNICATIONS FACILITY MODIFICATIONS INCLUDING:
 - (P) LTE700de/WCS CCI BSAM65RBUIH6K BETA TO REPLACE EXISTING IN POS #1 (1 TOT.)
 - (P) UMTS850 KATHREIN PANEL TO BE RELOCATED TO POSITION #2 WITH A2 MATCHING LTE (1 TOT.)
 - (P) LTE700b14/850/AWS CCI BSAM65RBUIH6K IN BETA SECTOR POS #3 TO REPLACE EXISTING (1 TOT.)
 - (P) LTE700bc/PCS CCI BSAM65RBUIH6K IN BETA SECTOR POS #4 TO REPLACE EXISTING (1 TOT.)
 - (P) LTE700de/WCS (E1,P1) RRUS-E2, (E1,P1) RRUS-32 ON DUAL SWIVEL MOUNTS BETA SEC. POS. #2
 - (P) LTE850/AWS (E1,P1) RRUS-4478b5, (E1,P1) RRUS-4426b66 ON DUAL SWIVEL MOUNT BETA SEC. POS. #3
 - (P) LTE700bc/PCS (E1,P1) RRUS-11, (E1,P1) RRUS-32b2 ON DUAL SWIVEL MOUNT BETA SEC. POS. #4
 - (P) NEW BETA SECTOR (1) DC/FIBER SURGE ARRESTOR DC6-48-60-18-8CEV
 - (P) NEW BETA SECTOR DUAL BAND COMBINERS DBCT108F1V921 TO REPLACE EXISTING UNITS 2 TOT.
 - (P) NEW BETA SECTOR 2-DC POWER LINES, NEW 1-FIBER
 - (P) IN SHELTER:
 -NEW BETA SECTOR 3rd RBS5216 -NEW BETA SECTOR 2x XMU'S
 -NEW UMTS HOME RUN LEAD FOR RET'S -NEW DC12 SURGE RACK INSTALL
 -NEW (24) TELCO FLEX RUNS FROM RAYCAP TO PP -NEW BETA SECTOR FIBER COIL BOX

SITE NUMBER: CT2035
SITE NAME: HAMDEN
SITE ADDRESS: 975 MIX AVE.
 HAMDEN, CT 06514
TOWER OWNER: CHESTNUT HILL NORTH LLC
 1621 STATE STREET
 NEW HAVEN, CT 06511
APPLICANT: AT&T MOBILITY
 550 COCHITUATE RD
 SUITES 13 & 14
 FRAMINGHAM, MA 01701
CONTACT: TEL 866-915-5600
COORDINATES LAT. N41°22'42.6"
 LONG. W72°55'04.5"
GROUND LEVEL: ±81
DEED REFERENCE: Book 4265, Pg 086
SITE PARCEL NO.: MAP 2628, LOT 101
CURRENT ZONING: R5
HORIZONTAL DATUM: (NAD) 1983



at&t
Mobility

SITE NUMBER: CT2035 FA: 10035036
SITE NAME: HAMDEN
PROJECT: LTE Split Sector BETA MRTCB035590

DRAWING INDEX

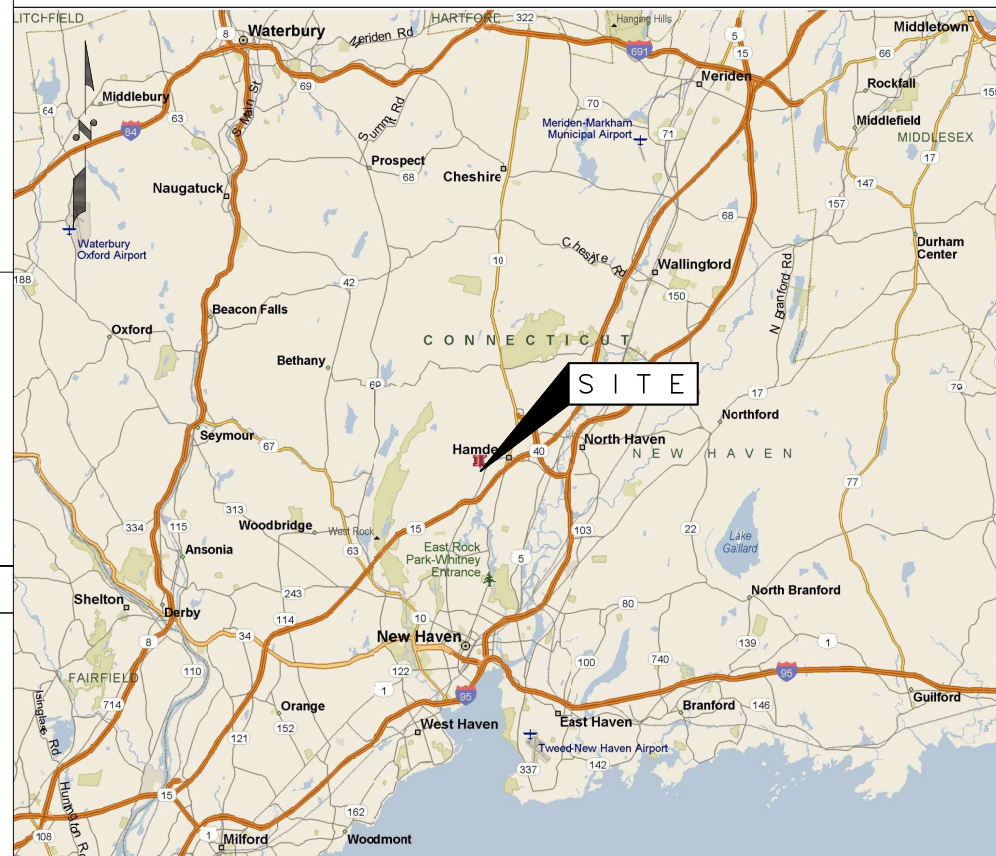
REV

01	TITLE SHEET	1
02	NOTES	1
03	SITE PLAN & EQUIPMENT PLAN	1
04	ELEVATION VIEW & ANTENNA LAYOUT	1
05	GROUNDING DETAILS	1

LOCATION MAP

DIRECTIONS: TAKE RAMP LEFT FOR I-91 SOUTH, CONINUE ON I-91 SOUTH. TAKE EXIT 17, CONTINUE ONTO CT-15 SOUTH TOWARD W. CROSS PKWY/E. MAIN ST. TAKE EXIT 60, CONTINUE ONTO CT-10 TOWARD NEW HAVEN/HAMDEN. TURN LEFT ONTO CT-10/DIXWELL AVE. TURN LEFT ONTO SKIFF ST. TURN RIGHT ONTO MIX AVE. ARRIVE AT 975 MIX AVE, HAMDEN, CT 06514

SITE ACCESS: LOCKED GATE



APPLICABLE BUILDING CODES AND STANDARDS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH PROJECT STANDARDS AND SPECIFICATIONS. SUBCONTRACTOR 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:
 INTERNATIONAL, CONNECTICUT STATE BUILDING CODE LATEST EDITION

ELECTRICAL CODE:
 NATIONAL ELECTRICAL CODE LATEST EDITION
 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, NINTH EDITION
 AMERICAN NATIONAL STANDARDS INSTITUTE/TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA) 222-F OR G AS APPLICABLE, STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
 TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS

INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM
 IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT

IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES IN LOW VOLTAGE AC POWER CIRCUITS (FOR LOCATION CATEGORY "C3" AND "HIGH SYSTEM EXPOSURE")

TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

ANSI T1.311, FOR TELECOM - DC POWER SYSTEMS - TELECOM, ENVIRONMENTAL PROTECTION

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.



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

CONTACT & UTILITY INFORMATION

CONTACT	CONTACT	COMPANY	PHONE NO.
ENGINEERING:	MIGUEL NOBRE	VRG	(508) 981-9590
SITE ACQUISITION:	DAVID COOPER	EMPIRE	(617) 639-4908
CONSTRUCTION:	GREG DORMAN	EMPIRE	(484) 683-1750
UTILITIES			
POWER:	WORK REQUEST GROUP	NATIONAL GRID	(800) 375-7405
TELCO:		VERIZON	(800) 941-9900

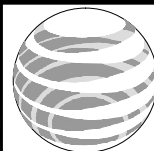


489 Washington Street
 Auburn, MA 01501
 Tel. (508) 981-9590
 Fax (508) 519-8939
 mnobre@verticalresourcesgrp.com



EMPIRE TELECOM USA, LLC
 16 ESQUIRE ROAD
 BILLERICA, MA 01821

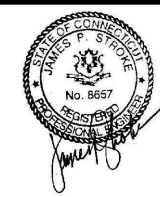
SITE NUMBER: CT2035
SITE NAME: HAMDEN
PROJECT: BETA SECTOR SPLIT
 975 MIX AVE.
 HAMDEN, CT 06514
 NEW HAVEN COUNTY



at&t
Mobility

550 COCHITUATE RD
 SUITES 13 & 14
 FRAMINGHAM, MA 01701

NO.	DATE	REVISION	BY	CHK	APP'D
△	06/10/19	GENERAL REVISIONS	G.A.M.		
△	03/29/19	FOR CONSTRUCTION	G.A.M.		
SCALE	DESIGNED BY: M.N.	DRAWN BY: G.A.M.			



AT&T MOBILITY

TITLE SHEET

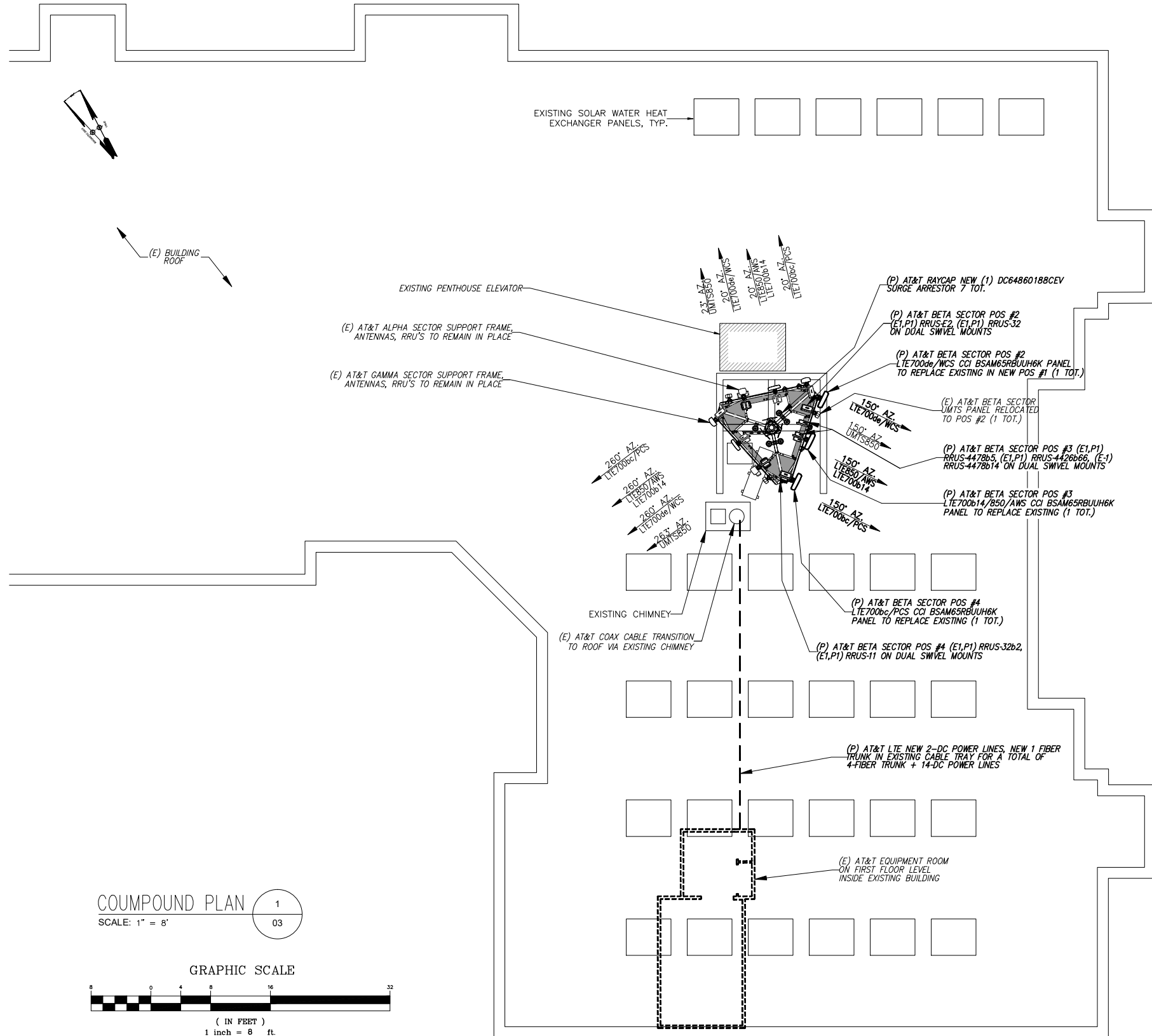
JOB NUMBER	DRAWING NUMBER	REV
CT2035-LTESplitSector	01	1

GENERAL NOTES

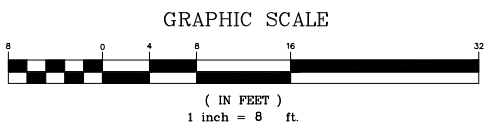
1. THE TYPE, DIMENSIONS, MOUNTING HARDWARE, AND THE POSITIONS OF ALL EQUIPMENT IN THE COMPOUND ARE SHOWN IN ILLUSTRATIVE FASHION. ACTUAL HARDWARE DETAILS AND FINAL LOCATIONS MAY DIFFER SLIGHTLY FROM WHAT IS SHOWN.

2. THE CELLULAR INSTALLATION IS AN UNMANNED PRIVATE AND SECURED COMPOUND. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

3. CONSTRUCTION, MAINTENANCE & OPERATION OF PROPOSED TOWER FACILITY WILL BE HELD IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE & FEDERAL REGULATIONS AND GUIDELINES.

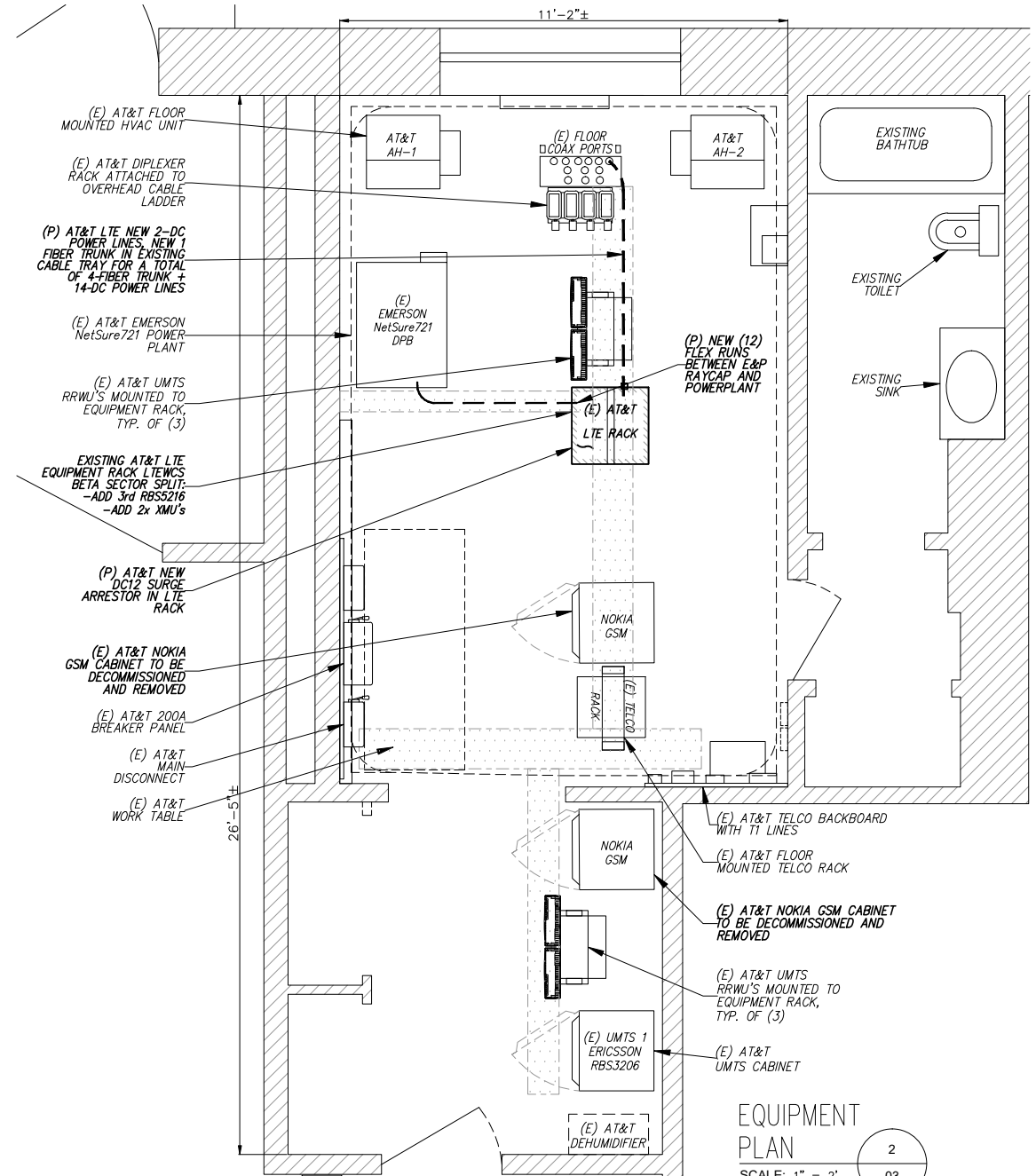


COMPOUND PLAN
SCALE: 1" = 8'



AT&T RF SYSTEM SCHEDULE

POSITION	SECTOR	STATUS	BAND	ANTENNA MAKE	ANTENNA MODEL	SIZE(INCHES) (LxWxH)	RAD CTR. FT. AGL	AZIMUTH	TMA DIPLEXER	REMOTE RADIOS	RADIO LOCATION	SIZE(INCHES) (LxWxH)	FEEDER TYPE	FEEDER LENGTH	RAYCAP
1	Alpha	EXISTING	UMTS850	KATHREIN	800-10121	54.5x10.3x5.9	±61'	23°	1-118088P110001 2-10221801	---	---	---	---	---	(E1)
2	Alpha	EXISTING	LTEWCS/PCS/700de	QUINTEL	Q5665122	72.0x12.0x9.6	±61'	20°	---	2 RRU5-32 2 RRU5-4478b 2 RRU5-4426	LOWER	27.2x12.1x7.0 20.2x18.2x7.5 18.5x13.4x5.8	---	---	DC6-48-60-18-8F (E1)
3	Alpha	EXISTING	LTE700b14/AWS/850	KATHREIN	800-10965	78.7x20.0x6.9	±61'	20°	2-48C1061F1612	1 RRU5-11	LOWER	19.7x17.0x7.2	---	---	DC6-48-60-0-8F (E1)
4	Alpha	EXISTING	LTE700bc	CCI	HPA65RBUH6	72.0x14.8x9.0	±61'	20°	---	1 RRU5-11	LOWER	19.7x17.0x7.2	---	---	DC6-48-60-0-8F (E1)
1	Beta	PROPOSED	LTEWCS/700de	CCI	BSAM65RBUH6K	72.0x28.5x9.7	±61'	150°	---	1 RRU5-32b2 1 RRU5-4478b5 1 RRU5-4426	LOWER	27.2x12.1x7.0 18.5x13.4x5.8 18.5x13.4x5.8	---	---	DC6-48-60-18-8CEV (E1)
2	Beta	EXISTING	UMTS850	KATHREIN	800-10121	54.5x10.3x5.9	±61'	150°	1-118088P110001 2-10221801	---	---	---	---	---	DC6-48-60-18-8F (E1)
3	Beta	PROPOSED	LTE700b14/AWS/850	CCI	BSAM65RBUH6K	72.0x28.5x9.7	±61'	150°	1-48C1061F1612 1-48C1061F1612	1 RRU5-4478b5 1 RRU5-4426 1 RRU5-4478b5	LOWER	18.5x13.4x5.8 18.5x13.4x5.8 18.5x13.4x5.8	---	---	DC6-48-60-0-8F (P1) DC6-48-60-18-8CEV (E1)
4	Beta	PROPOSED	LTE700bc/PCS	CCI	BSAM65RBUH6K	72.0x28.5x9.7	±61'	150°	---	1 RRU5-32b2 1 RRU5-4478b5 1 RRU5-4426	LOWER	27.2x12.1x7.0 18.5x13.4x5.8 18.5x13.4x5.8	---	---	DC6-48-60-18-8CEV (E1)
1	Gamma	EXISTING	UMTS850	KATHREIN	800-10121	54.5x10.3x5.9	±61'	263°	1-118088P110001 2-10221801	---	---	---	---	---	(E1)
2	Gamma	EXISTING	LTEWCS/PCS/700de	QUINTEL	Q5665122	72.0x12.0x9.6	±61'	260°	---	2 RRU5-32 2 RRU5-4478b 2 RRU5-4426	LOWER	27.2x12.1x7.0 20.2x18.2x7.5 18.5x13.4x5.8	---	---	DC6-48-60-18-8F (E1)
3	Gamma	EXISTING	LTE700b14/AWS/850	KATHREIN	800-10965	78.7x20.0x6.9	±61'	260°	2-48C1061F1612	1 RRU5-11	LOWER	19.7x17.0x7.2	---	---	DC6-48-60-0-8F (E1)
4	Gamma	EXISTING	LTE700bc	CCI	HPA65RBUH6	72.0x14.8x9.0	±61'	260°	---	1 RRU5-11	LOWER	19.7x17.0x7.2	---	---	DC6-48-60-0-8F (E1)



EQUIPMENT PLAN
SCALE: 1" = 2'



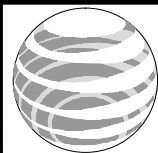
489 Washington Street
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Tel. (508) 981-9590
Fax (508) 519-8939
mnobre@verticalresourcesgrp.com



EMPIRE TELECOM USA, LLC
16 ESQUIRE ROAD
BILLERICA, MA 01821

SITE NUMBER: CT2035
SITE NAME: HAMDEN
PROJECT: BETA SECTOR SPLIT

975 MIX AVE.
HAMDEN, CT 06514
NEW HAVEN COUNTY



550 COCHITUATE RD
SUITES 13 & 14
FRAMINGHAM, MA 01701

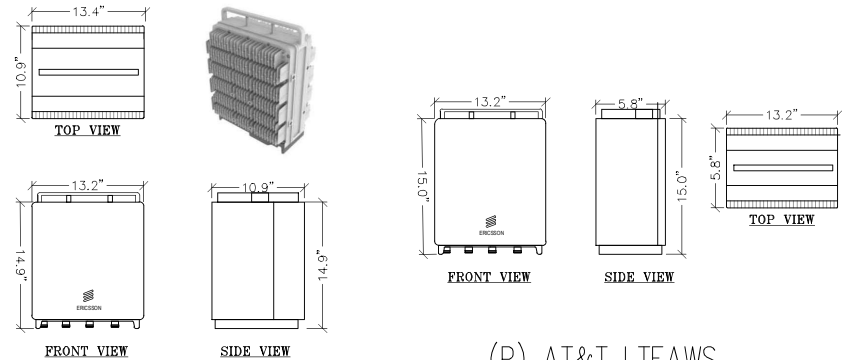
No.	DATE	REVISION	BY	CHK	APP'D
△	06/10/19	GENERAL REVISIONS	G.A.M.		
△	03/29/19	FOR CONSTRUCTION	G.A.M.		

SCALE DESIGNED BY: M.N. DRAWN BY: G.A.M.

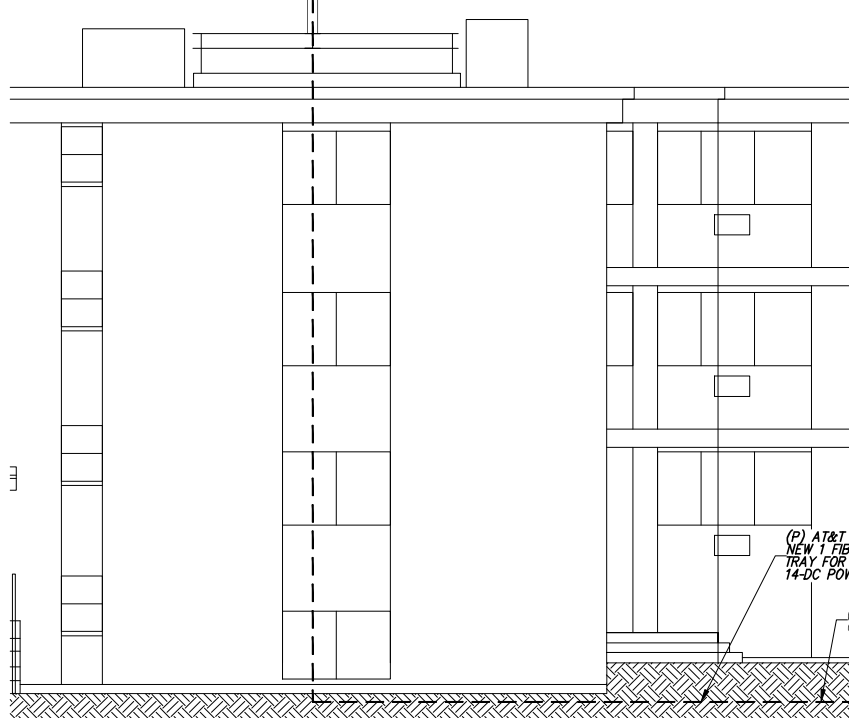
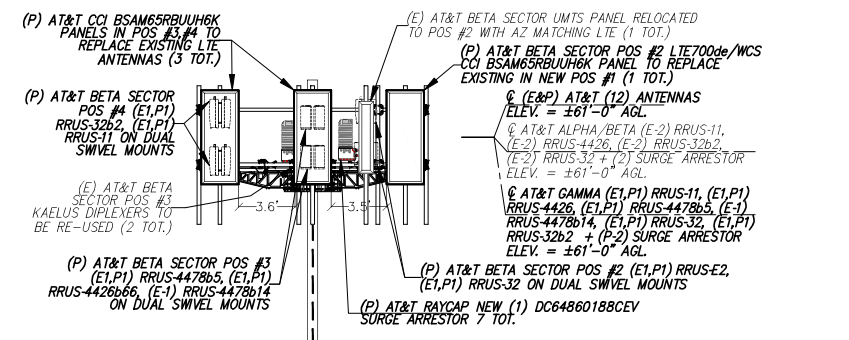


AT&T MOBILITY
SITE PLAN & EQUIPMENT PLAN

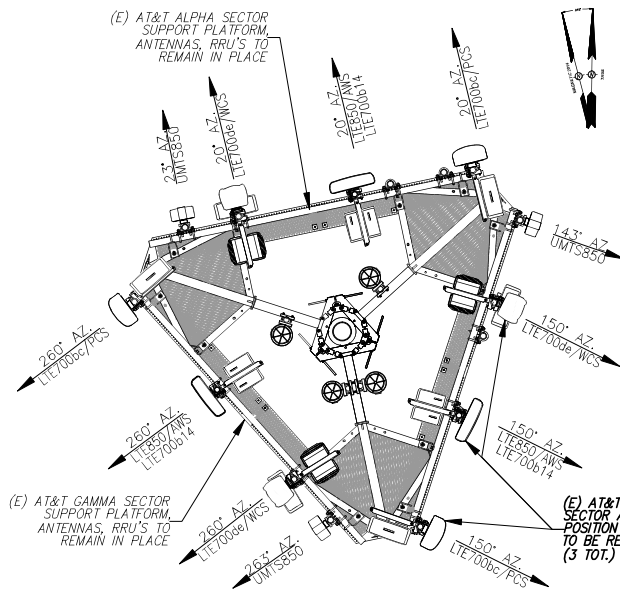
JOB NUMBER	DRAWING NUMBER	REV
CT2035-LTEsplitSector	03	1



(P) AT&T LTEPCS/AWS RRU-8843 (B2B66) SCALE: N.T.S. 2 04



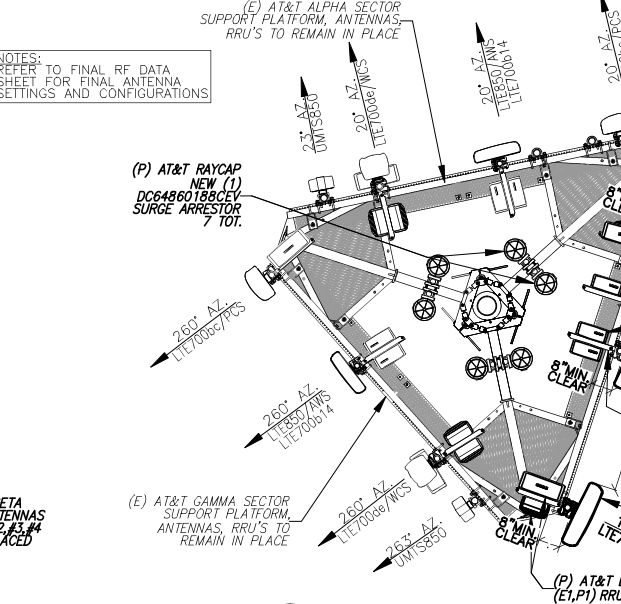
ELEVATION VIEW SCALE: 1" = 10' 1 04



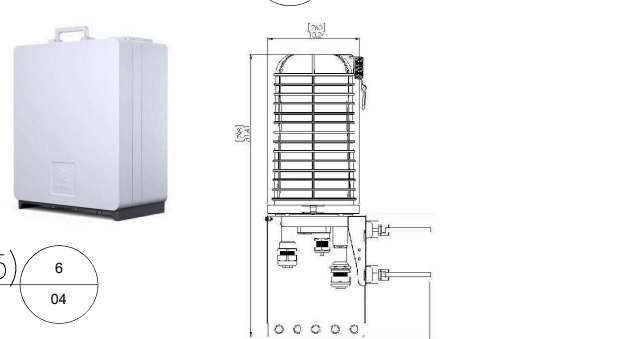
EXISTING ANTENNA MOUNTING PLAN VIEW SCALE: N.T.S. 4 04



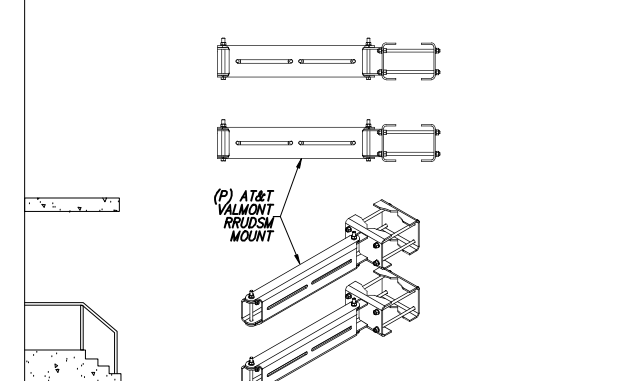
(P) AT&T LTE850 RRU-4478 (B5) SCALE: N.T.S. 6 04



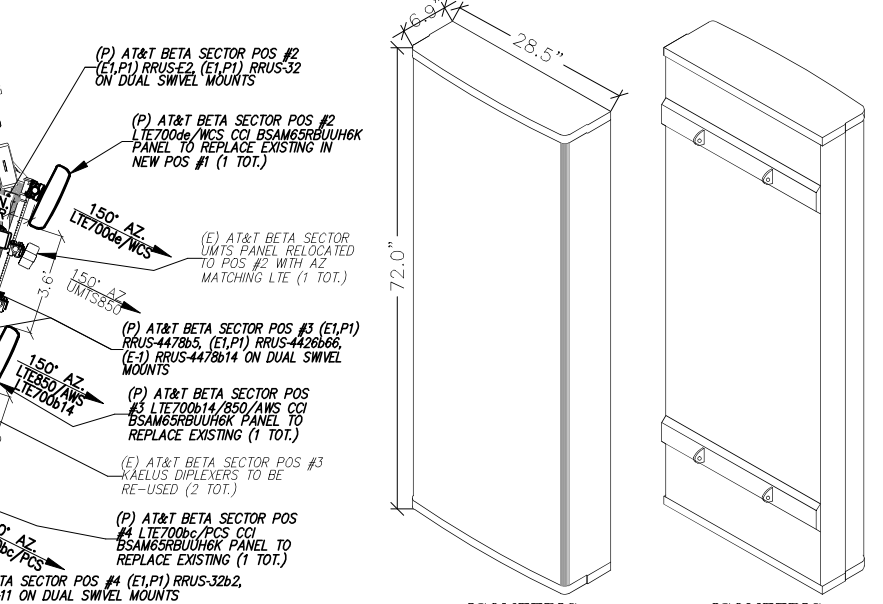
PROPOSED ANTENNA MOUNTING PLAN VIEW SCALE: N.T.S. 4 04



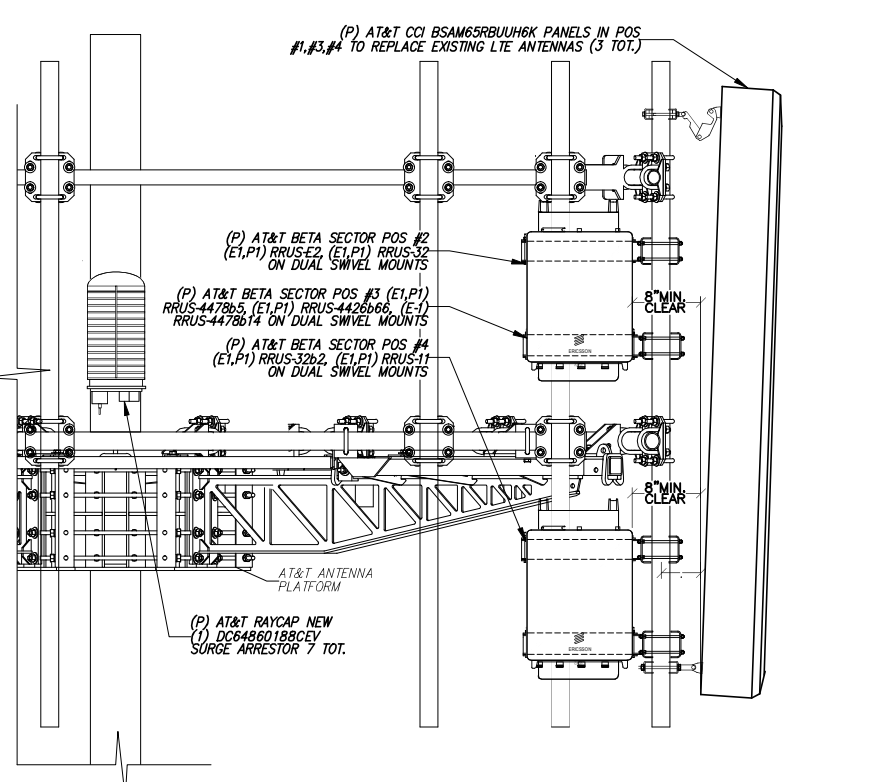
(P) RAYCAP SURGE SUPPRESSOR DC64860188CEV SCALE: N.T.S. 6 04



(P) AT&T RRU DUAL SWIVEL MOUNT SCALE: N.T.S. 7 04



LTE700/850/AWS/WCS/PCS CCI TWELVEPORT PANEL SCALE: N.T.S. 5 04



PROPOSED RRU'S & SURGE ARRESTOR MOUNTING DETAIL SCALE: N.T.S. 8 04

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SITE NUMBER: CT2035
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NEW HAVEN COUNTY

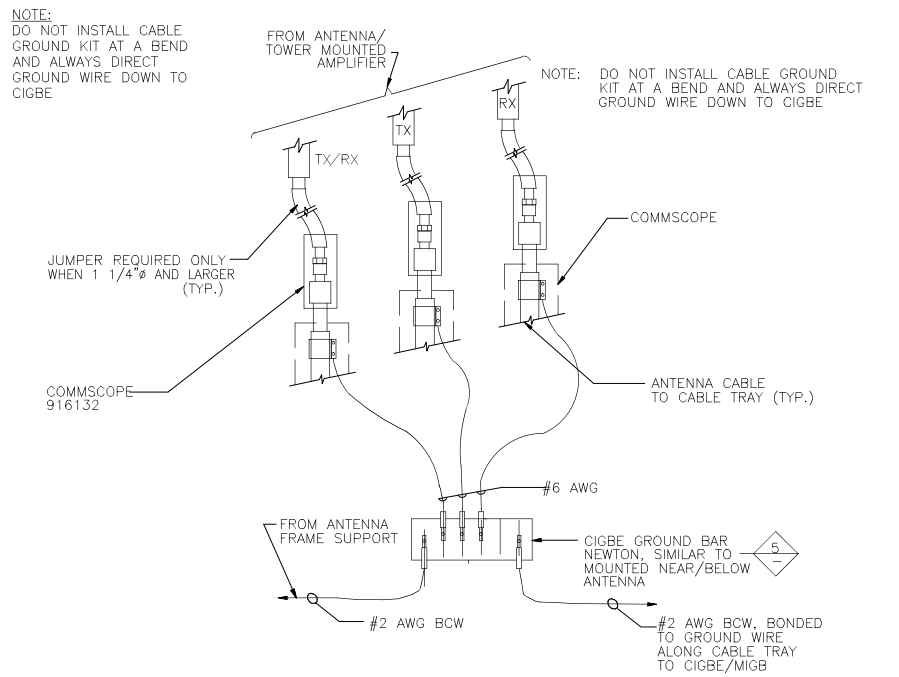
at&t
Mobility
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06/10/19	GENERAL REVISIONS	G.A.M.			
03/29/19	FOR CONSTRUCTION	G.A.M.			
No.	DATE	REVISION	BY	CHK	APP'D
SCALE	DESIGNED BY: M.N.	DRAWN BY: G.A.M.			

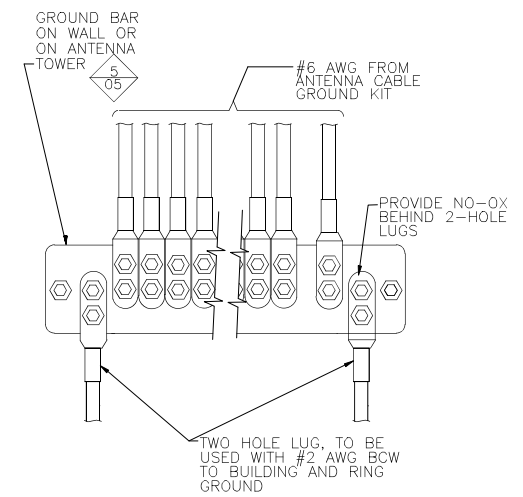


AT&T MOBILITY
ELEVATION VIEW & ANTENNA LAYOUT

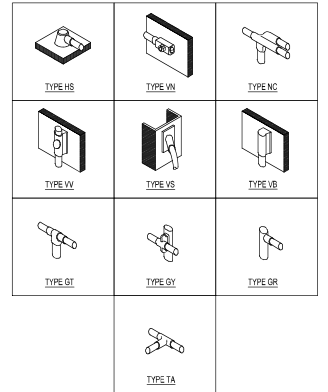
JOB NUMBER	DRAWING NUMBER	REV
CT2035-LTESplitSector	04	1



CONNECTION OF GROUND WIRES TO GROUNDING BAR (CIGBE)
SCALE: N.T.S.

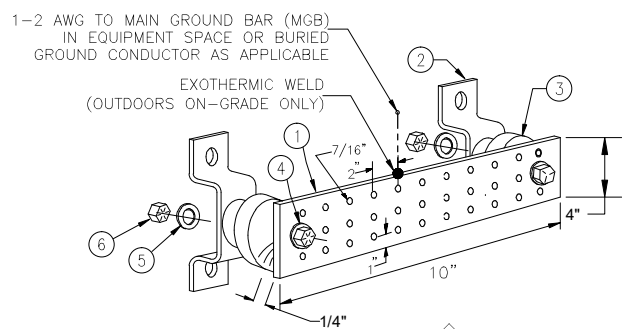


INSTALLATION OF GROUND WIRE TO GROUND BAR
SCALE: N.T.S.

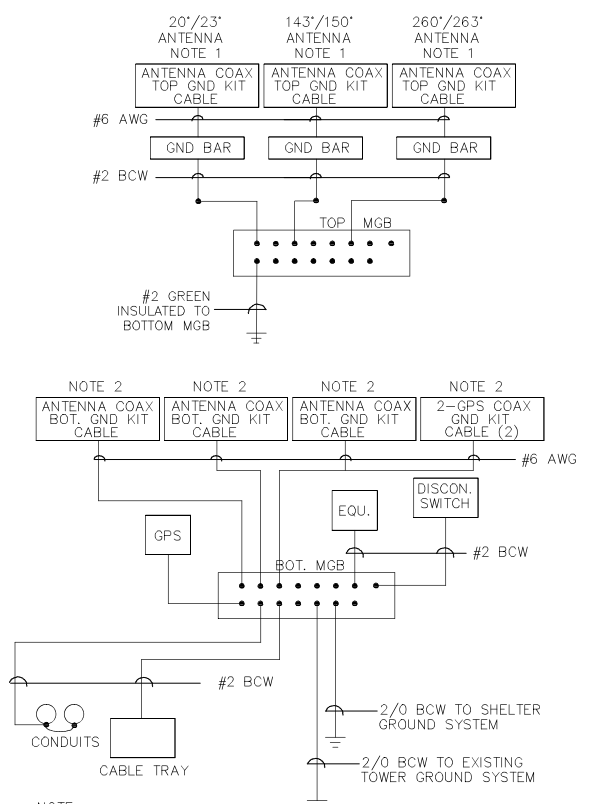


GROUNDING CONNECTION DETAIL
SCALE: N.T.S.

ITEM	REQ.	PART NO.	DESCRIPTION
1	1	1/4"x4"x12"	PRE DRILLED GND. BAR
2	2	A-6056	WALL MTG. BRKT.
3	2	3061-4	INSULATORS
4	2	3012-13	5/8"-11x4" H.H.C.S.
5	4	3015-8	5/8" LOCKWASHER
6	2	3014-8	5/8"-11 HEX NUT

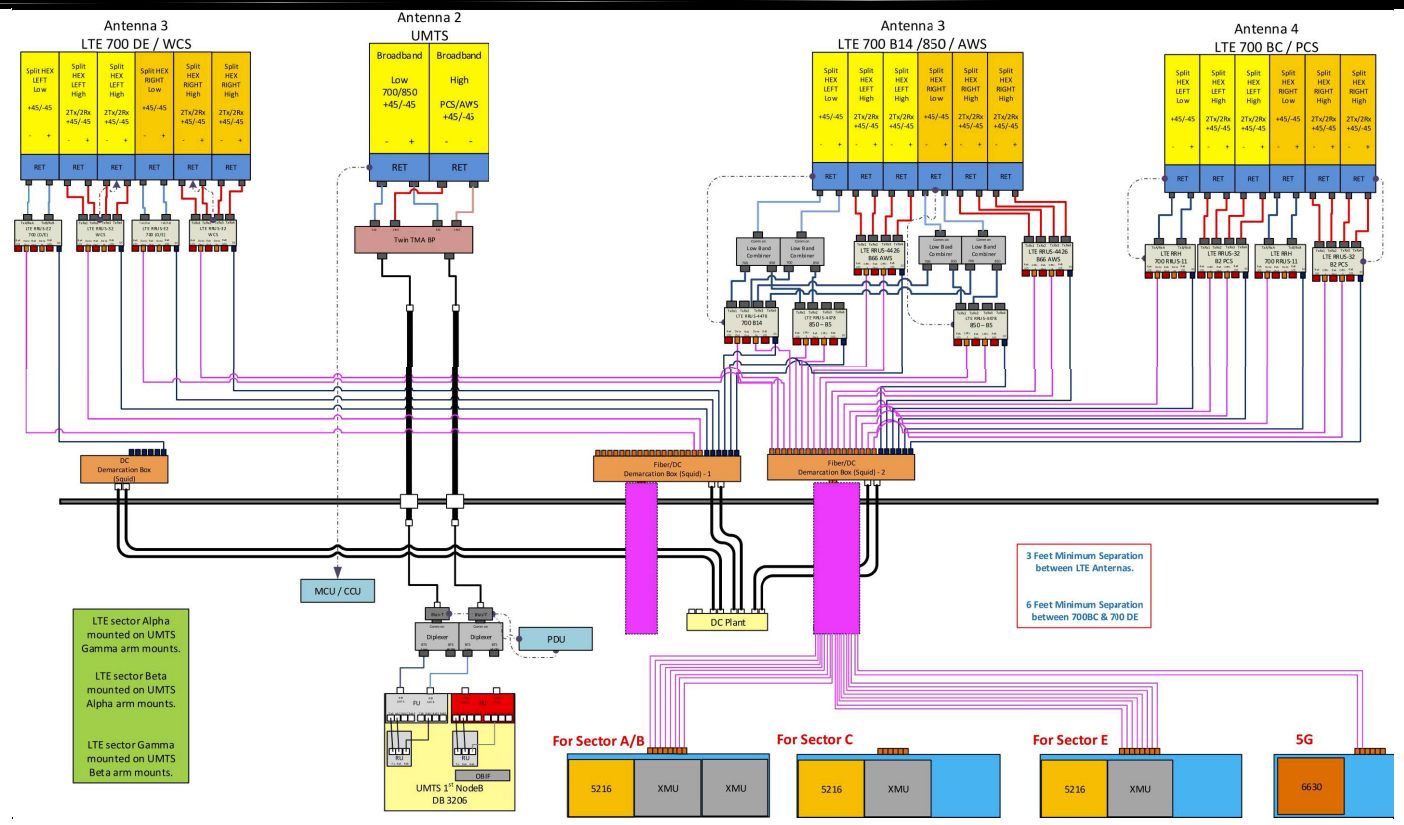


GROUND BAR DETAIL
SCALE: N.T.S.

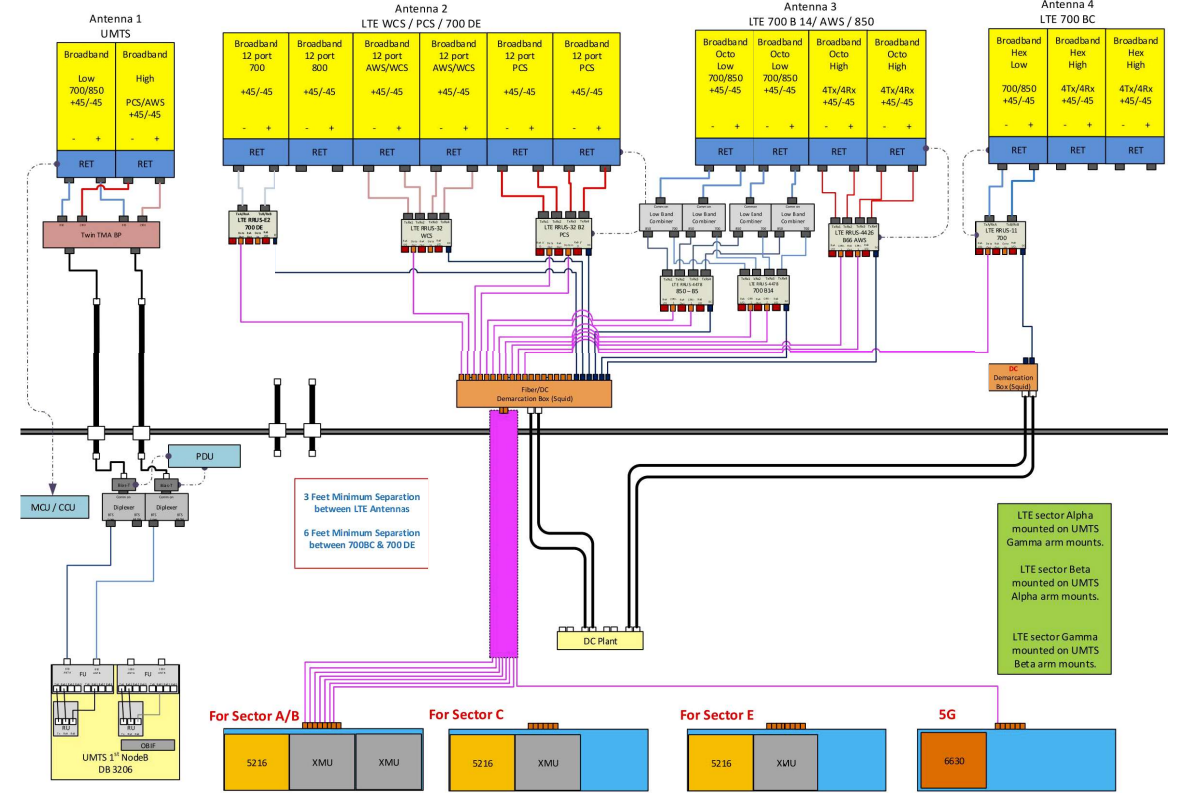


NOTE:
1. BOND ANTENNA GROUNDING KIT CABLE TO TOP CIGBE
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIGBE

SCHMATIC GROUNDING DIAGRAM
SCALE: N.T.S.



(P) BETA PLUMBING DIAGRAM
SCALE: N.T.S.



(E) ALPHA/GAMMA PLUMBING DIAGRAM
SCALE: N.T.S.

NOTE:
1. CONTRACTOR TO CONFIRM ALL PARTS
2. INSTALL ALL EQUIPMENT PER MANUFACTURERS RECOMMENDATIONS

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SITE NUMBER: CT2035
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PROJECT: BETA SECTOR SPLIT

975 MIX AVE.
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NEW HAVEN COUNTY

at&t
Mobility

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NO.	DATE	REVISION	BY	CHK	APP'D
1	06/10/19	GENERAL REVISIONS	G.A.M.		
2	03/29/19	FOR CONSTRUCTION	G.A.M.		

SCALE: DESIGNED BY: M.N. DRAWN BY: G.A.M.



AT&T MOBILITY

GROUNDING DETAILS

JOB NUMBER	DRAWING NUMBER	REV
CT2035-LTESplitSector	05	1

ANALYSIS REPORT

OF

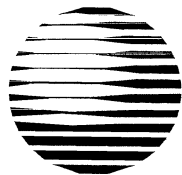
EXISTING BUILDING - ROOF MOUNTED SUPPORT MAST

AT

AT&T SITE #: CT2035

975 MIX AVE.
HAMDEN, CT 06514

FOR



at&t

550 COCHITUATE RD
SUITES 13 & 14
FRAMINGHAM, MA 01701

AND

 **EMPIRE** telecom

DATED
07-30-2019

Prepared By:
Vertical Resources Group, Inc.
489 Washington Street - Auburn, MA 01501

Preface

At the request of Empire Telecom Inc, we have reviewed the existing building's 3rd floor roof antenna mast, located at 975 Mix Ave, Hamden, CT for the proposed AT&T replacement of existing Beta sector (3) panels for new (3) CCI BSAM65RBUJH6k antennas with new (5) radios and (1) new surge arrestor on existing platform.

The report was executed on behalf of a Empire Telecom Inc purchase order dated February 2019.

We trust the analysis and recommendations presented herein will meet your requirements. However, please do not hesitate to contact us if you have any queries, or require any further information regarding this study.

Documents Examined

Site plans	<ul style="list-style-type: none"> • AT&T Construction Drawing site CT2035 dated 06-10-2019 • VRG design visit dated 02-2019
Project layout	<ul style="list-style-type: none"> • Site Plan layout per Centek Engineering Drawings site CT2035 Project LTE6C7C5G dated 11-29-2018.
Equipment Loading	<ul style="list-style-type: none"> • Equipment loading specifications provided by Empire dated March, 2019. Proposed antenna loading provided by AT&T RFDS dated 05-22-2019.

Design Parameters

Design Standard:	Connecticut Building Code 2018, International Building Code 2015, ASCE 7-12, EIA-222-G.
Ref. Wind Speed	125 Mph (CT BC ultimate gust), 97 Mph (nominal 3 sec gust IBC 1609.3.1) 95Mph (EIA-222-G), 3 sec. Gust Speed
Ref. Design Ice thickness	3/4"
Exposure Category:	'C'
Structure Class:	II
Gust Factor G:	1.1
Force Coefficient	Varies
Ground Snow Load Pg	50 psf

Design Assumptions

The present report assumes the following information:

- 1- The structure is in good, undamaged and non-corroded condition
- 2- AT&T Fiber & DC cables will be installed inside roof mounted cable tray and cable ladder.

In the event that any of these assumptions are incorrect we will need to be notified immediately in order to revise the results and recommendation herein.

Analysis Results

The existing building is a Class 2 CMU framed structure with exterior brick walls. Proposed AT&T Mobility radio equipment will be located on an existing ground floor equipment room. Existing/Proposed AT&T Mobility antenna panels are secured atop a 25.5' pipe mast on 3 sided 12' platform.

Alpha/Beta/Gamma antennas on 3 sided 12' platform induced forces resulting from dead & live loads are distributed to a 25.5' long vertical mast supported over two longitudinal W10x100 beams connected to two other W10x100 beams. Each will be resting atop 3rd floor interior support columns. The structure load distribution area generates bearing stresses which remain below design values in conformance with the requirements of Connecticut Building Code, IBC, ASCE 7 Minimum Design Loads for Buildings and other Structures.

- Proposed Building Roof Antenna Loading (appurtenances): install height of ±61'-0" Alpha/Beta/Gamma

(e) 3-Kathrein 800-10121 (UMTS850)	54.5"x10.3"x5.5"	44 Lbs	49 Lbs (ice)
(e) 2-Quintel QS665122 (LTE700de/WCS/PCS)	72.0"x12.0"x9.6"	111 Lbs	88 Lbs (ice)
(e) 2-Kathrein 800-10965 (LTE700b14/AWS/850)	78.7"x20.0"x6.9"	108 Lbs	117 Lbs (ice)
(e) 2-CCI HPA65BUUH6 (LTE700bc/pCS)	72.0"x14.8"x9.0"	51 Lbs	96 Lbs (ice)
(P) 3-CCI BSAM65RBUUH6k (LTE700/850/AWS/PCS)	72.0"x28.5"x9.7"	101 Lbs	155 Lbs (ice)
(e) 3-Powerwave TT1908BP111 (UMTS850)	9.9"x6.7"x5.4"	16 Lbs	9 Lbs (ice)
(e6,P2) Kaelus DBC0061F1V512 (LTE850/700)	8.0"x6.2"x6.4"	18 Lbs	8 Lbs (ice)
(e3,P1) Ericsson RRUS-11 (LTE700bc)	19.7"x17.0"x7.2"	51 Lbs	33 Lbs (ice)
(e3,P1) Ericsson RRUS-E2 (LTE700de)	20.4"x18.5"x6.1"	52 Lbs	33 Lbs (ice)
(e3,P1) Ericsson RRUS-32 (LTEWCS)	27.2"x12.1"x7.0"	53 Lbs	33 Lbs (ice)
(e3,P1) Ericsson RRUS-32b2 (LTEPCS)	27.2"x12.1"x7.0"	53 Lbs	33 Lbs (ice)
(e3,P1) Ericsson RRUS-4426 (LTEAWS)	14.9"x13.1"x5.8"	48 Lbs	19 Lbs (ice)
(e3,P1) Ericsson RRUS-4478b5 (LTE850)	18.1"x13.4"x8.3"	59 Lbs	27 Lbs (ice)
(e3) Ericsson RRUS-4478b14 (LTE700b14)	18.1"x13.4"x8.3"	59 Lbs	27 Lbs (ice)
(e-6,P-1) Raycap DC6-48-60-18-8F	24.0"x10.3"x10.3"	26 Lbs	39 Lbs (ice)
To be removed (e) 1-Quintel QS665122	72.0"x12.0"x9.6"	111Lbs	88 Lbs (ice)
To be removed (e) 1-Kathrein 800-10965	78.7"x20.0"x6.9"	108Lbs	117 Lbs (ice)
To be removed (e) 1-CCI HPA65RBUUH6	72.0"x14.8"x9.0"	51Lbs	96 Lbs (ice)

- Wind load on AT&T roof mounted components:

$$F=(q_z)(G_H)(C_A)(A_A) \quad G_H = 1.1 \text{ (ASCE7-10 26.9)} \quad C_A = \text{Table 2-8 (EIA-222-G 2.6.9.2)}$$

$$q_z=(0.00256)(K_Z)(K_{ZT})(K_D)(V^2)(I)$$

$$K_Z = 2.01*[61/900]^{2/9.5} = 1.14$$

$$K_D = 0.95 \quad V = 97 \text{ mph}$$

$$K_{ZT} = 1.0 \quad I = 1.0$$

$$q_z = 0.00256(1.14)(1.0)(0.95)(97)^2(1.0) = 26.0\text{Lbs/Ft}^2$$

$$F_B=(q_z)(G_H)(C_A)(A_A) = (26.0\text{Lbs/Ft}^2)(1.1)(C_A)(A_A) = 28.6\text{Lbs/Ft}^2 *C_A*A_A$$

$$F_I=(q_z)(G_H)(C_A)(A_A) = (6.9\text{Lbs/Ft}^2)(1.3)(C_A)(A_A) = 7.6\text{Lbs/Ft}^2 *C_A*A_A$$

Total Effective Projected Area Alpha/Gamma sectors:

$$EPA_A = \Sigma(C_A A_A) = 1.32(3.89^2) + 1.35(1*6.0^2) + 1.26(1*10.9^2) + 1.3(1*7.4^2) + 1.2(1*0.46^2) + 1.2(2*0.34^2) + 1.2(1*2.33^2) + 1.2(2*2.28^2) + 1.2(1*2.62^2) + 1.2(1*1.35^2) + 1.2(2*1.68^2) + 1.2(3*2.0^2)$$

$$EPA_A = \text{Alpha/Gamma } \Sigma(C_A A_A) = 59.8 \text{ SqFt}$$

Total Effective Projected Area Beta sector:

$$EPA_A = \Sigma(C_A A_A) = 1.32(1*3.89'^2) + 1.2(3*14.2'^2) + 1.2(1*0.46'^2) + 1.2(2*0.34'^2) + 1.2(2*2.33'^2) + 1.2(4*2.28'^2) + 1.2(2*2.62'^2) + 1.2(2*1.35'^2) + 1.2(3*1.68'^2) + 1.2(3*2.0'^2)$$

$$EPA_A = \text{Beta } \Sigma(C_A A_A) = 96.9 \text{ SqFt}$$

- Verification of existing building supported 25.5' long mast for AT&T loading:

Total Bare Weight Alpha/Beta/Gamma Sector Appurtenances	= 2790 Lbs
Total Ice Weight Alpha/Beta/Gamma Sector Appurtenances	= 2371 Lbs
Total Bare Weight Alpha/Beta/Gamma 12' 'F3P-12' Platform	= 1840 Lbs
Total Ice Weight Alpha/Beta/Gamma 12' 'F3P-12' Platform	= 2345 Lbs
Total bare weight to be supported by 25.5' long mast	= 4630 Lbs

- Verification of existing building supported 25.5' long mast for AT&T loading:

Applied wind load from antenna panels

$$F_{\text{Bare W 80010121}} = (28.6\text{Lbs/Ft}^2)(1.32*11.7'^2) = 441\text{Lbs}$$

$$F_{\text{Iced W 80010121}} = (7.6\text{Lbs/Ft}^2)(1.32*13.7'^2) = 137\text{Lbs}$$

$$F_{\text{Bare W QS665122}} = (28.6\text{Lbs/Ft}^2)(1.35*12.0'^2) = 463\text{Lbs}$$

$$F_{\text{Iced W QS665122}} = (7.6\text{Lbs/Ft}^2)(1.35*13.7'^2) = 140\text{Lbs}$$

$$F_{\text{Bare W 80010965}} = (28.6\text{Lbs/Ft}^2)(1.26*21.8'^2) = 785\text{Lbs}$$

$$F_{\text{Iced W 80010965}} = (7.6\text{Lbs/Ft}^2)(1.26*23.9'^2) = 228\text{Lbs}$$

$$F_{\text{Bare W HPA65RH6}} = (28.6\text{Lbs/Ft}^2)(1.30*14.8'^2) = 550\text{Lbs}$$

$$F_{\text{Iced W HPA65RH6}} = (7.6\text{Lbs/Ft}^2)(1.3*16.6'^2) = 164\text{Lbs}$$

$$F_{\text{Bare W BSAM65RH6}} = (28.6\text{Lbs/Ft}^2)(1.20*42.6'^2) = 1462\text{Lbs}$$

$$F_{\text{Iced W BSAM65RH6}} = (7.6\text{Lbs/Ft}^2)(1.20*45.9'^2) = 418\text{Lbs}$$

Applied wind load from 12' F3P-12 platform

$$F_{\text{Bare W F3P12H10}} = (28.6\text{Lbs/Ft}^2)(32.34'^2) = 924\text{Lbs}$$

$$F_{\text{Iced W F3P12H10}} = (7.6\text{Lbs/Ft}^2)(44.0'^2) = 334\text{Lbs}$$

Applied wind load from RRU units and TMA's and surge arrestors

$$F_{\text{Bare W RRU-E2/11}} = (28.6\text{Lbs/Ft}^2)(1.20*19.8'^2) = 679\text{Lbs}$$

$$F_{\text{Iced W RRU-E2/11}} = (7.6\text{Lbs/Ft}^2)(1.20*23.0'^2) = 209\text{Lbs}$$

$$F_{\text{Bare W RRU-32b2}} = (28.6\text{Lbs/Ft}^2)(1.20*18.2'^2) = 624\text{Lbs}$$

$$F_{\text{Iced W RRU-32b2}} = (7.6\text{Lbs/Ft}^2)(1.20*21.6'^2) = 197\text{Lbs}$$

$$F_{\text{Bare W RRU-4426}} = (28.6\text{Lbs/Ft}^2)(1.20*5.4'^2) = 185\text{Lbs}$$

$$F_{\text{Iced W RRU-4426}} = (7.6\text{Lbs/Ft}^2)(1.20*6.6'^2) = 60\text{Lbs}$$

$$F_{\text{Bare W RRU-4478}} = (28.6\text{Lbs/Ft}^2)(1.20*11.7'^2) = 401\text{Lbs}$$

$$F_{\text{Iced W RRU-4478}} = (7.6\text{Lbs/Ft}^2)(1.20*14.2'^2) = 130\text{Lbs}$$

$$F_{\text{Bare W DC6486018}} = (28.6\text{Lbs/Ft}^2)(1.20*10'^2) = 343\text{Lbs}$$

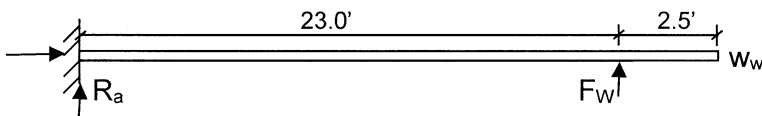
$$F_{\text{Bare W DC6486018}} = (7.6\text{Lbs/Ft}^2)(1.20*12.5'^2) = 114\text{Lbs}$$

$$F_{\text{Bare W TMA/DIPLXR}} = (28.6\text{Lbs/Ft}^2)(1.20*4.7'^2) = 151\text{Lbs}$$

$$F_{\text{Bare W TMA/DIPLXR}} = (7.6\text{Lbs/Ft}^2)(1.20*6.0'^2) = 55\text{Lbs}$$

- Verify existing 25'-6" long RHS18" ϕ x $\frac{3}{8}$ " support mast from wind, ice & dead load:

Considering RHS 18" ϕ x $\frac{3}{8}$ " mast $A = 19.4''^2$ $S_x = S_y = 83.8''^3$ of ASTM A500 Gr C



Max applied moment on $\pm 25'-6"$ long front RHS18" ϕ x $\frac{3}{8}$ " from wind, ice & dead load:

$$M_{F \text{ Bare Wind}} = 1.6*[(wl^2/2)] + 1.6*[F_{\text{Bare Wind Front}}*l]$$

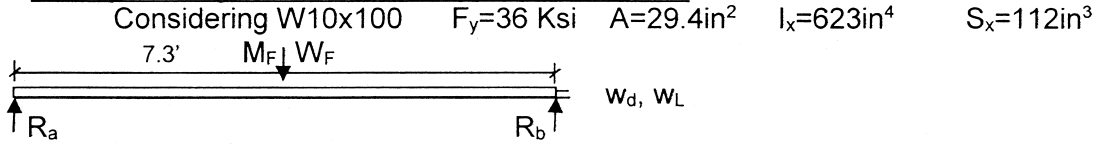
$$M_{F \text{ Bare Wind}} = 1.6*[(161184\text{LbsFt}) + (10436\text{LbsFt})] = 274592 \text{ LbsFt}$$

$$M_{R \text{ X \& Y AXIS}} = (\text{RHS18"} \phi \text{ ASTM A500GrC} = \Phi(S_x)(F_y) = (0.9)(83.8''^3)(46\text{Ksi}) = 289110 \text{ LbsFt}$$

$$M_{R \text{ X \& Y AXIS}} = 289110 \text{ LbsFt} > M_{F \text{ Bare Wind}} = 274592 \text{ LbsFt} \quad \text{OK!}$$

Existing building supported 25.5' long mast can support existing & proposed AT&T loads

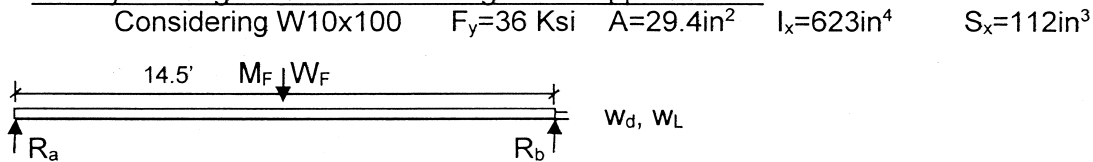
- Verify existing W10x100 7.3' support beams:



Udl on W10x100 from dead, live $W_d=100$ Lbs/Ft $W_L=25$ Lbs/Ft
 $W_{live} = 1.6(25 \text{ Lbs/Ft}) = 40$ Lbs/Ft $W_{dead} = 1.2(100 \text{ Lbs/Ft}) = 120$ Lbs/Ft
 $M_F = 13730$ LbsFt $W_F = 3860$ Lbs
 Reactions at supports $R_a=23525$ Lbs $R_b=23525$ Lbs
 Moment on W10x100 $M_{F_x} = (13730 \text{ LbsFt}) + (71073 \text{ LbsFt}) = 84803$ LbsFt
 Moment capacity of W10x100 beam = $M_r = 0.9 * F_y * S_x = 302400$ Lbs*Ft > $M_F = 84803$ Lbs*Ft **OK!**
 Verify deflection, max total allowable $\Delta = L/360 = 87.6''/360 = 0.24''$
 total $\Delta = [(5wL^4)/384EI] + [(WL^3)/48EI] = 0.036''$
 total $\Delta = 0.036'' < \text{max } \Delta = 0.24''$ **OK!**

*Existing AT&T 25'-6" RHS18"Ø mast support frame
 W10x100 can accommodate proposed loads*

- Verify existing W10x100 14.5' long main support beam:



Udl on W10x100 from dead, live $W_d=100$ Lbs/Ft $W_L=25$ Lbs/Ft
 $W_{live} = 1.6(25 \text{ Lbs/Ft}) = 40$ Lbs/Ft $W_{dead} = 1.2(100 \text{ Lbs/Ft}) = 120$ Lbs/Ft
 $W_F = 23525$ Lbs
 Reactions at supports $R_a=12922$ Lbs $R_b=12922$ Lbs
 Moment on W10x100 $M_{F_x} = (79396 \text{ LbsFt}) + (4205 \text{ LbsFt}) = 83806$ LbsFt
 Moment capacity of W10x100 beam = $M_r = 0.9 * F_y * S_x = 302400$ Lbs*Ft > $M_F = 83806$ Lbs*Ft **OK!**
 Verify deflection, max total allowable $\Delta = L/360 = 174''/360 = 0.48''$
 total $\Delta = [(5wL^4)/384EI] + [(WL^3)/48EI] = 0.16''$
 total $\Delta = 0.16'' < \text{max } \Delta = 0.48''$ **OK!**

*Existing AT&T 25'-6" RHS18"Ø mast support frame
 W10x100 can accommodate proposed loads*

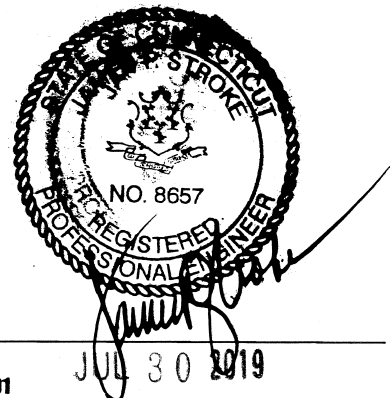
Conclusion

Based on these results, we can confirm that the present ±40' Tall building rooftop frame supported 25.5' tall antenna mast and associated AT&T Mobility mounts can accommodate AT&T existing & proposed loads outlined above in appurtenance loading, is in apparent agreement with the Connecticut State Building Code latest ed., EIA-222-G with respect to individual member capacities and seemingly requires no further action.

We trust the analysis and recommendations presented in this report will meet your requirements. However, please do not hesitate to contact us if you have any queries, or require any further information regarding this study.

Yours very truly,

Miguel Nobre, P.E.



APPENDIX 'A'

STANDARD ENGINEERING CONDITIONS

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL 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 necessary 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 fields and/or drawings in the possession of Vertical Resources Group., or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to Vertical Resources Group. 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; and we, therefore, assume that their 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 relevant revision of I.B.C. & ASCE 7.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Vertical Resources Group is not responsible for the conclusions, opinions and recommendations made by others based on upon the information we supply.



SITE SAFE
RF COMPLIANCE EXPERTS

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**Empire Telecom on behalf of
AT&T Mobility, LLC
Site FA – 10035036
Site ID – CT2035
USID – 61166
Site Name – Hamden
CT Siting Council
975 Mix Avenue
Hamden, CT 06514**

Latitude: N41-22-42.67
Longitude: W72-55-04.50
Structure Type: Rooftop

Report generated date: July 5, 2019
Report by: Nick Kutzke
Customer Contact: - New England Compliance

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

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1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Max Cumulative Simulated RFE Level on the Rooftop	<1% General Public Limit
Max Cumulative Simulated RFE Level on the Rooftop Walking Surface	<1% General Public Limit
Max Cumulative Simulated RFE Level on the Ground	<1% General Public Limit
Compliant per FCC Rules and Regulations?	Will Be Compliant
Compliant per AT&T Mobility, LLC's Policy?	No

The following documents were provided by the client and were utilized to create this report:

RFDS: NEW-ENGLAND_CONNECTICUT_CTV2035_2019-Cell-Site-RF-Modifications_Split-Se...

CD's: 10035036.CT2035.CD.LTESectorSplit.Rev1.06.10.2019


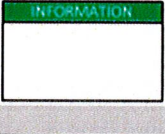







RF Powers Used: NEW-ENGLAND_CONNECTICUT_CTV2035_2019-Cell-Site-RF-Modifications_Split-Se...

1.2 Fall Arrest Anchor Point Summary

Fall Arrest Anchor & Parapet Info	Parapet Available (Y/N)	Parapet Height (Inches)	Fall Arrest Anchor Available (Y/N)
Roof Safety Info	Y	3"	N

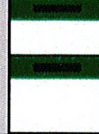
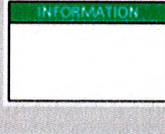







1.3 Signage Summary

a. Pre-Site Visit AT&T Signage (Existing Signage)

AT&T Signage Locations									
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2	Warning	Warning 2	Barriers
Access Point(s)	1				1				
Base of Pole						1			
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

Note: All existing signage was documented during a previous site visit 08/14/17.

b. Proposed AT&T Signage

AT&T Signage Locations									
	Information 1	Information 2	Notice	Notice 2	Caution	Caution 2	Warning	Warning 2	Barriers
Access Point(s)						1			
Alpha									
Beta									
Gamma									
Delta									
Epsilon									

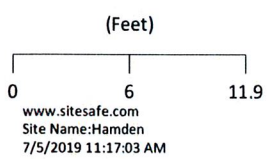
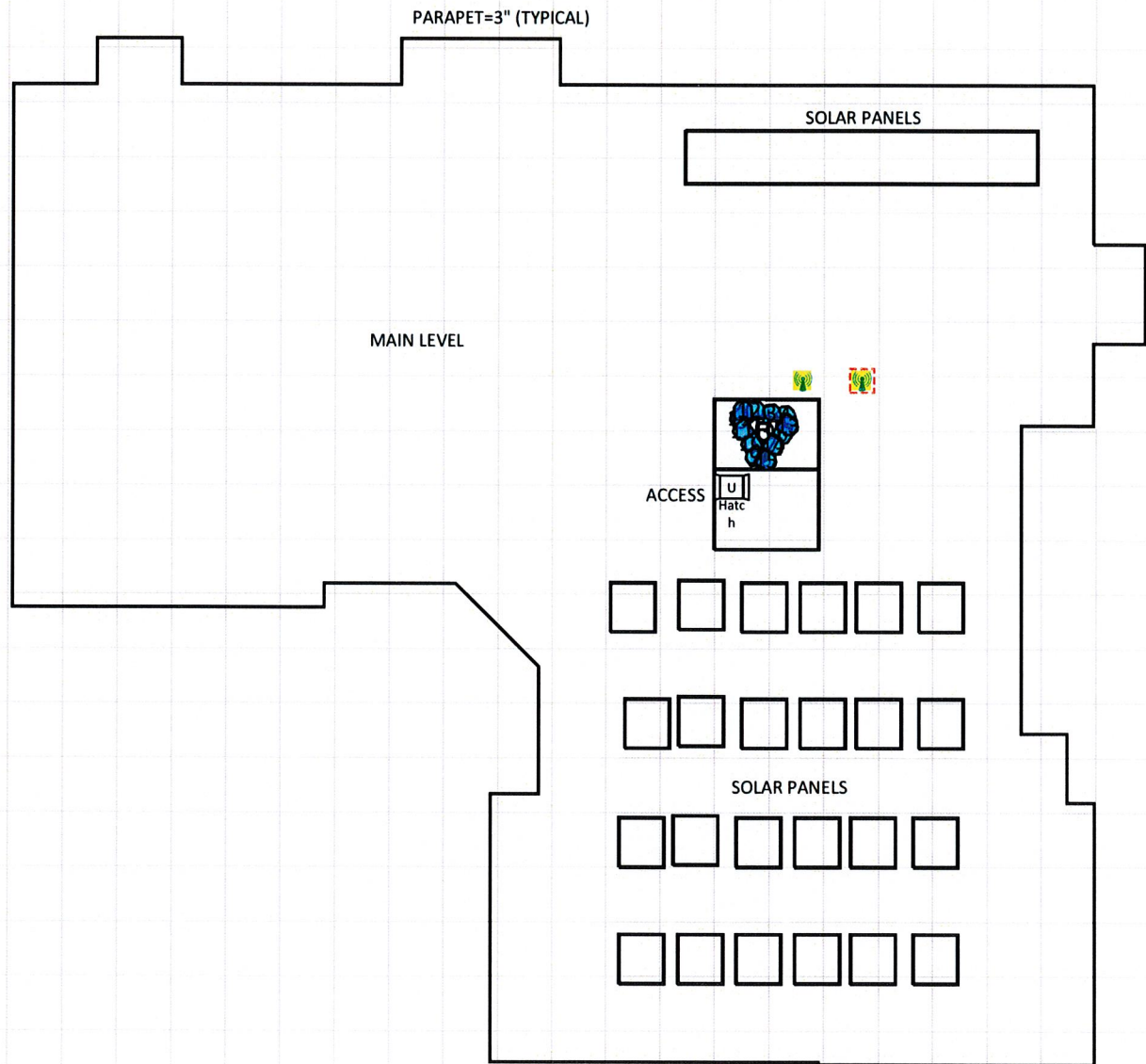


2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram

Site Scale Map For: Hamden



Carrier Identification							
AT&T MOBILITY LLC	VERIZON WIRELESS	T-MOBILE	SPRINT	UNKNOWN CARRIER			
Sign Legend							
Caution 1	Caution 2	Notice 2	Notice 1	Warning	Warning 2	Info 1	Info 2
Barrier				Proposed Barriers/ Signs			
RSP RF Safety Plan							



3 Antenna Inventory

The following antenna inventory was obtained by the customer and was utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z	MDT	EDT
1	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	UMTS	23	87.6	4.5	40	TPO	Watt	0	1	545.8	11.35	23.2'	1°	6°
2	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	2300	LTE	20	64	6	100	TPO	Watt	0	1	2857.6	14.56	22.5'	0°	3°
2	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	722	LTE	20	69	6	80	TPO	Watt	0	1	1119.7	11.46	22.5'	0°	3°
2	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	1900	LTE	20	68	6	160	TPO	Watt	0	1	4169.8	14.16	22.5'	0°	3°
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	850	LTE	20	61.7	6.6	80	TPO	Watt	0	1	1841.2	13.62	22.2'	0°	5°
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	737	LTE	20	63.9	6.6	160	TPO	Watt	0	1	2845.2	12.5	22.2'	0°	5°
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	2100	LTE	20	65.2	6.6	240	TPO	Watt	0	1	10671.2	16.48	22.2'	0°	3°
3	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	850	5G	20	61.7	6.6	80	TPO	Watt	0	1	1841.2	13.62	22.2'	0°	5°
4	AT&T MOBILITY LLC	Cci Antennas HPA-65R-BUU-H6	Panel	737	LTE	20	66.2	6	60	TPO	Watt	0	1	883.4	11.68	22.5'	0°	5°
5	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	722	LTE	150	33.8	6	80	TPO	Watt	0	1	2128.6	14.25	22.5'	0°	3°
5	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	2300	LTE	150	25.5	6	100	TPO	Watt	0	1	3845.9	15.85	22.5'	0°	3°
5	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	722	LTE	150	36.3	6	80	TPO	Watt	0	1	2128.6	14.25	22.5'	0°	3°
5	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	2300	LTE	150	23.6	6	100	TPO	Watt	0	1	3845.9	15.85	22.5'	0°	3°
6	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	UMTS	150	87.6	4.5	40	TPO	Watt	0	1	545.8	11.35	23.2'	1°	6°
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	850	LTE	150	31.8	6	80	TPO	Watt	0	1	2618.7	15.15	22.5'	0°	2°



Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z	MDT	EDT
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	763	LTE	150	33.8	6	160	TPO	Watt	0	1	4257.2	14.25	22.5'	0°	2°
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	2100	LTE	150	27.1	6	240	TPO	Watt	0	1	10120.7	16.25	22.5'	0°	3°
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	850	5G	150	31.8	6	80	TPO	Watt	0	1	2618.7	15.15	22.5'	0°	2°
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	850	LTE	150	31.9	6	80	TPO	Watt	0	1	2618.7	15.15	22.5'	0°	2°
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	763	LTE	150	36.3	6	160	TPO	Watt	0	1	4257.2	14.25	22.5'	0°	2°
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	2100	LTE	150	27.9	6	240	TPO	Watt	0	1	10120.7	16.25	22.5'	0°	3°
7	AT&T MOBILITY LLC (Proposed)	Cci Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	850	GSM	150	31.9	6	80	TPO	Watt	0	1	2618.7	15.15	22.5'	0°	2°
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	1900	LTE	150	33.9	6	160	TPO	Watt	0	1	6153.5	15.85	22.5'	0°	2°
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas BSA-M65R-BUU-H6 (R-Beam)	Panel	737	LTE	150	33.8	6	60	TPO	Watt	0	1	1596.4	14.25	22.5'	0°	2°
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	1900	LTE	150	32.3	6	160	TPO	Watt	0	1	6139.3	15.84	22.5'	0°	2°
8	AT&T MOBILITY LLC (Proposed)	CCI Antennas BSA-M65R-BUU-H6 (L-Beam)	Panel	737	LTE	150	36.3	6	60	TPO	Watt	0	1	1596.4	14.25	22.5'	0°	2°
9	AT&T MOBILITY LLC	Kathrein-Scala 800-10121	Panel	850	UMTS	263	87.6	4.5	40	TPO	Watt	0	1	545.8	11.35	23.2'	1°	6°
10	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	722	LTE	260	69	6	80	TPO	Watt	0	1	1119.7	11.46	22.5'	0°	3°
10	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	1900	LTE	260	68	6	160	TPO	Watt	0	1	4169.8	14.16	22.5'	0°	2°



Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Technology	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Power	Power Type	Power Unit	Misc Loss	TX Count	Total ERP (Watts)	Ant Gain (dBd)	Z	MDT	EDT
10	AT&T MOBILITY LLC	Quintel QS66512-2	Panel	2300	LTE	260	64	6	100	TPO	Watt	0	1	2857.6	14.56	22.5'	0°	2°
11	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	850	LTE	260	61.7	6.6	80	TPO	Watt	0	1	1841.2	13.62	22.2'	0°	10°
11	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	763	LTE	260	63.9	6.6	160	TPO	Watt	0	1	2845.2	12.5	22.2'	0°	10°
11	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	2100	LTE	260	65.2	6.6	240	TPO	Watt	0	1	10671.2	16.48	22.2'	0°	10°
11	AT&T MOBILITY LLC	Kathrein-Scala 800-10965	Panel	850	5G	260	61.7	6.6	160	TPO	Watt	0	1	3682.3	13.62	22.2'	0°	6°
12	AT&T MOBILITY LLC	CCI Antennas HPA-65R-BUU-H6	Panel	737	LTE	260	66.2	6	30	TPO	Watt	0	1	441.7	11.68	22.5'	0°	10°

Note: The Z reference indicates the bottom of the antenna height above the main site level unless otherwise indicated. Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

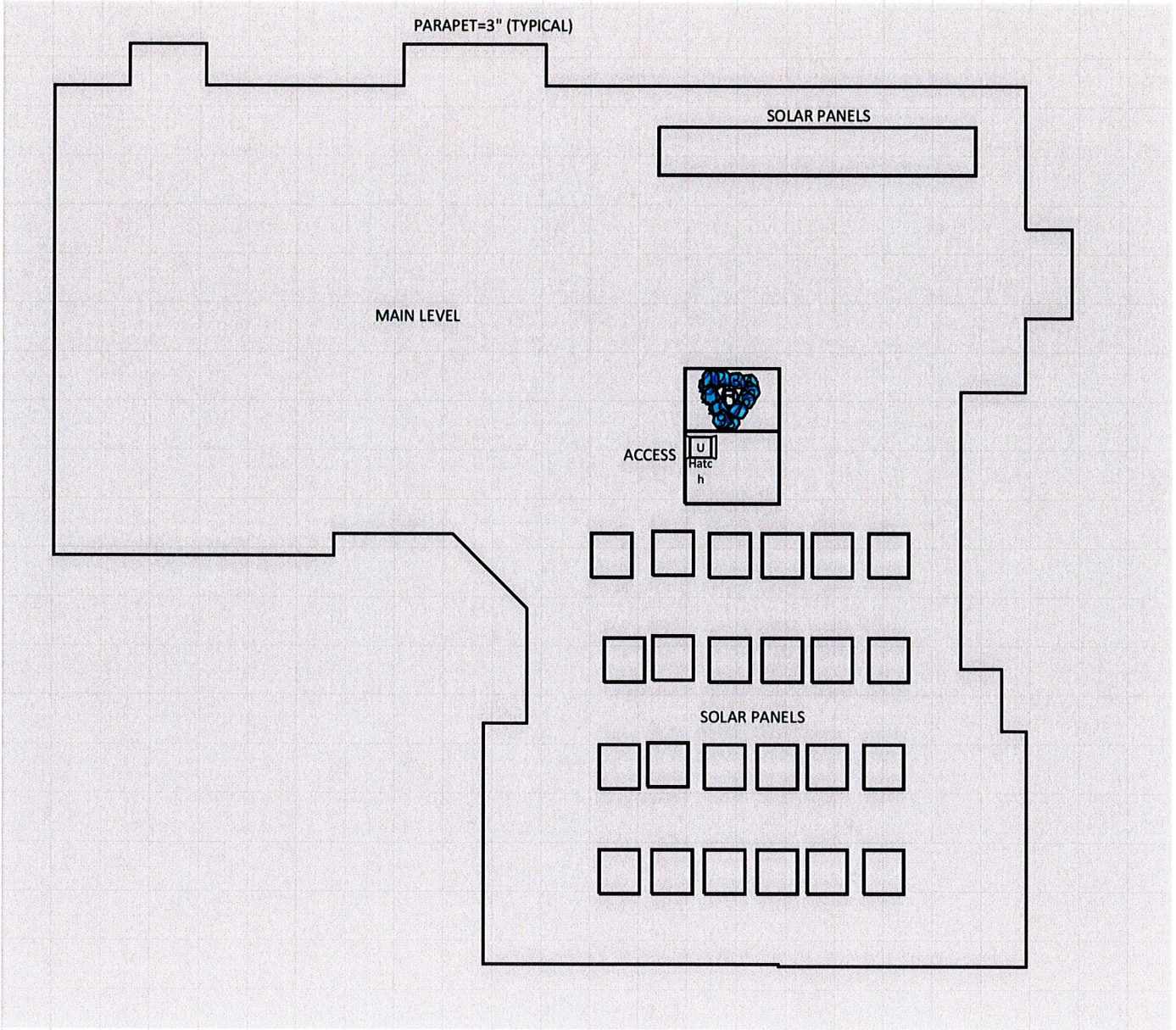
4 Emission Predictions

In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas. The total analyzed elevations in the below RF Exposure Simulations are listed below.

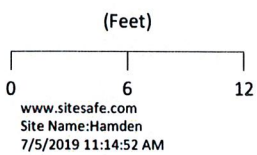
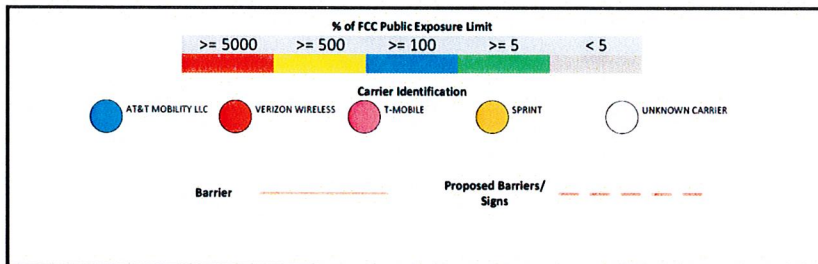
- MAIN LEVEL = 0'

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: Hamden



% of FCC Public Exposure Limit
Spatial average 0' - 6'



Sitesafe OET-65 Model
Near Field Boundary:
1.5 * Aperture
Reflection Factor: 1
Spatially Averaged



5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Base of Pole Location

(1) Yellow Caution 2B sign(s) required.

Recommended per AT&T Mobility, LLC's Policy:

Site Access Location

Sitesafe recommends that all AT&T Mobility, LLC signage be removed from all access points, as they are not required by AT&T Mobility, LLC's signage policy.

Base of Pole Location

Remove the existing Caution 2 sign(s) from this sector.

Notes:

- Any additional existing signage that conflicts with the proposed signage in this report should be removed per AT&T Signage Posting Rules.



6 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Site Safe, LLC, in Vienna, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Nick Kutzke.

July 5, 2019

A handwritten signature in black ink, appearing to read "Young Min Kim", written in a cursive style.

Young Min Kim



Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

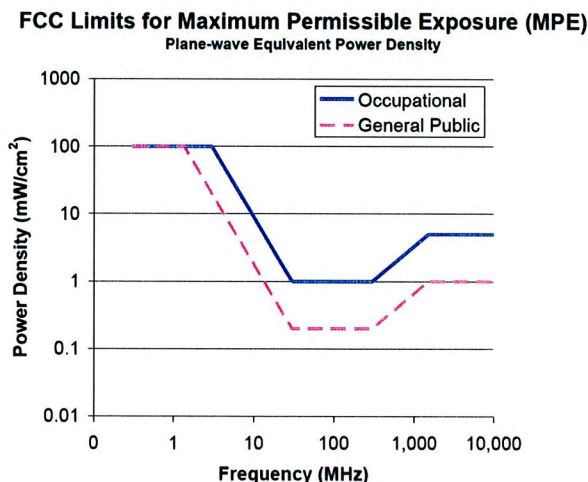
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to accessible areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:



Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f ²)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

*Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lockout/Tagout procedure aimed to control the unexpected energization or startup of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a worker's understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet-based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3 foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram: Section 4 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst-case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. Gray represents areas more than 20 times below the most conservative exposure limit. **Gray areas are accessible to anyone.**
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone.**
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers.**
- Yellow represents areas predicted to exceed Occupational MPE limits. **Yellow areas should be accessible only to RF trained workers able to assess current exposure levels.**
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

If trained occupational personnel require access to areas that are delineated as above 100% of the limit, Sitesafe recommends that they utilize the proper personal protection equipment (RF monitors), coordinate with the carriers to reduce or shutdown power, or make real-time power density measurements with the appropriate power density meter to determine real-time MPE levels. This will allow the personnel to ensure that their work area is within exposure limits.



Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Appendix F – Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible for taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site complies with FCC standards with regards to Human Exposure to Radio Frequency Electromagnetic Fields from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to a half-wave dipole antenna.

Gain (of an antenna) – The ratio of the maximum power in a given direction to the maximum power in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antenna as compared to an omnidirectional antenna.

General Population/Uncontrolled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **unaware** of the potential for exposure and who have no control over their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use its industry specific knowledge of antenna models to select a worst-case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with acceptable safety factor.



Occupational/Controlled Environment – Defined by the FCC as an area where RF exposure may occur to persons who are **aware** of the potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of RF exposure on humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency Exposure or Electromagnetic Fields – Electromagnetic waves that are propagated from antennas through space.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average energy a 6-foot tall human body will absorb while present in an electromagnetic field of energy.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.



Appendix G – References

The following references can be followed for further information about RF Health and Safety.

Site Safe, LLC

<http://www.sitesafe.com>

FCC Radio Frequency Safety

<http://www.fcc.gov/encyclopedia/radio-frequency-safety>

National Council on Radiation Protection and Measurements (NCRP)

<http://www.ncrponline.org>

Institute of Electrical and Electronics Engineers, Inc., (IEEE)

<http://www.ieee.org>

American National Standards Institute (ANSI)

<http://www.ansi.org>

Environmental Protection Agency (EPA)

<http://www.epa.gov/radtown/wireless-tech.html>

National Institutes of Health (NIH)

<http://www.niehs.nih.gov/health/topics/agents/emf/>

Occupational Safety and Health Agency (OSHA)

<http://www.osha.gov/SLTC/radiofrequencyradiation/>

International Commission on Non-Ionizing Radiation Protection (ICNIRP)

<http://www.icnirp.org>

World Health Organization (WHO)

<http://www.who.int/peh-emf/en/>

National Cancer Institute

<http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>

American Cancer Society (ACS)

http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?sitearea=PED

European Commission Scientific Committee on Emerging and Newly Identified Health Risks

http://ec.europa.eu/health/ph_risk/committees/04_scenihhr/docs/scenihhr_o_022.pdf

Fairfax County, Virginia Public School Survey

<http://www.fcps.edu/fts/safety-security/RFEESurvey/>

UK Health Protection Agency Advisory Group on Non-Ionizing Radiation

http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368

Norwegian Institute of Public Health

<http://www.fhi.no/dokumenter/545eea7147.pdf>