SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Steven P. Schiller, AICP
City Planner, City of New Britain
27 West Main Street
New Britain, CT 06051

9590 9402 1864 6104 9541 90

2. Article Number *(Transfer from service label)*

7016 2140 0000 9458 6375

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

David Zajac
Zoning Enforcement Officer/Building Inspector
27 West Main Street
New Britain, CT 06051

9590 9402 1864 6104 9543 05

2. Article Number *(Transfer from service label)*

7016 2140 0000 9458 6368

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Paul Pedicone
Project Manager
Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

9590 9402 1864 6104 9543 29

2. Article Number *(Transfer from service label)*

7016 2140 0000 9458 6658

COMPLETE THIS SECTION ON DELIVERY

A. Signature

X

☐ Agent
☐ Addressee

B. Received by *(Printed Name)* | C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type

- ☐ Adult Signature
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail®
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery
- ☐ Collect on Delivery Restricted Delivery
- ☐ Priority Mail Express®
- ☐ Registered Mail™
- ☐ Registered Mail Restricted Delivery
- ☐ Return Receipt for Merchandise
- ☑ Signature Confirmation™
- ☐ Signature Confirmation Restricted Delivery

PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt

ALERT: AS OF APRIL 30, USPS.COM WILL NO LONGER SUPPORT OUTDATED BROWSERS. TO…

USPS Tracking®

FAQs > (http://faq.usps.com/?articleId=220900)

Track Another Package +

Tracking Number: 70162140000094586382

Remove ×

Your item was delivered to an individual at the address at 9:45 am on May 1, 2018 in NEW BRITAIN, CT 06051.

Delivered

May 1, 2018 at 9:45 am
Delivered, Left with Individual
NEW BRITAIN, CT 06051

Get Updates

Text & Email Updates

Tracking History

May 1, 2018, 9:45 am
Delivered, Left with Individual
NEW BRITAIN, CT 06051
Your item was delivered to an individual at the address at 9:45 am on May 1, 2018 in NEW BRITAIN, CT 06051.

April 30, 2018, 9:44 pm
Arrived at USPS Regional Facility
SPRINGFIELD MA NETWORK DISTRIBUTION CENTER

April 30, 2018, 7:11 am
Arrived at USPS Regional Facility

SPRINGFIELD MA NETWORK DISTRIBUTION CENTER

April 14, 2018
In Transit to Next Facility

April 13, 2018
In Transit to Next Facility

April 12, 2018
In Transit to Next Facility

April 11, 2018, 7:04 pm
Departed Post Office
BILLERICA, MA 01821

April 11, 2018, 5:21 pm
USPS in possession of item
BILLERICA, MA 01821

Product Information

See Less

Can’t find what you’re looking for?

Go to our FAQs section to find answers to your tracking questions.

FAQs (http://faq.usps.com/?articleId=220900)

The easiest tracking number is the one you don't have to know.

With Informed Delivery®, you never have to type in another tracking number. Sign up to:

- See images* of incoming mail.
- Automatically track the packages you're expecting.
- Set up email and text alerts so you don't need to enter tracking numbers.
- Enter USPS Delivery Instructions™ for your mail carrier.

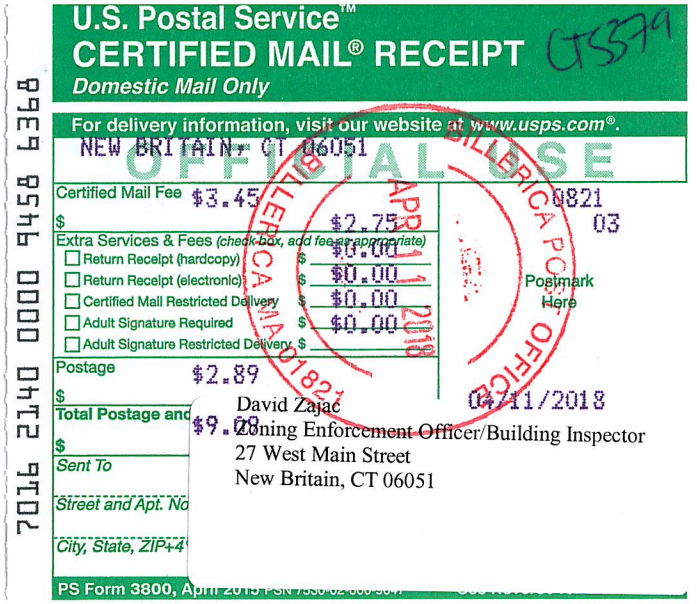
Sign Up

(https://reg.usps.com/entreg/RegistrationAction_input?app=UspsTools&appURL=https%3A%2F%2Ftools.usps.com%2Fgo

*NOTE: Black and white (grayscale) images show the outside, front of letter-sized envelopes and mailpieces that are processed through USPS automated equipment.

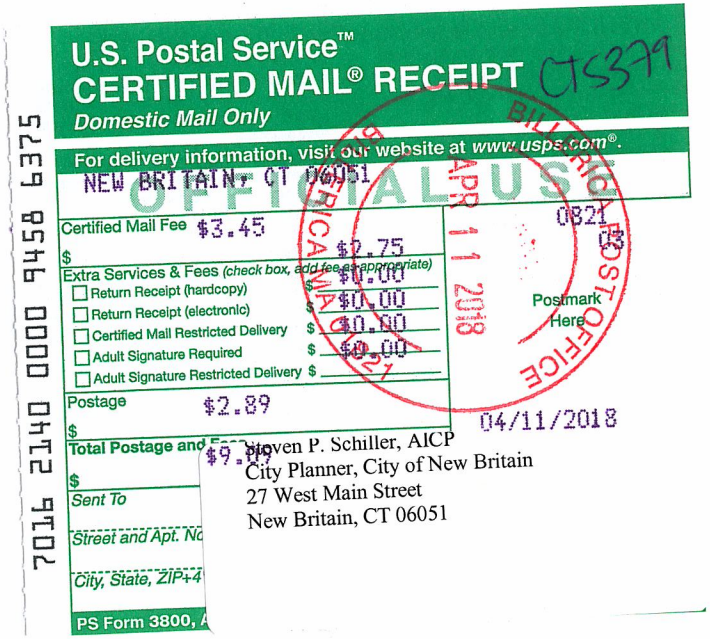
U.S. Postal Service™
CERTIFIED MAIL® RECEIPT CT5379
Domestic Mail Only
For delivery information, visit our website at www.usps.com®.
NEW BRITAIN, CT 06051
OFFICIAL USE
Certified Mail Fee $3.45
$2.75
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $0.00
☐ Return Receipt (electronic) $0.00
☐ Certified Mail Restricted Delivery $0.00
☐ Adult Signature Required $0.00
☐ Adult Signature Restricted Delivery $
Postage $2.89
Total Postage and Fees $9.09
Sent To
Street and Apt. No.
City, State, ZIP+4
PS Form 3800,
APR 11 2018
BILLERICA POST OFFICE
BILLERICA, MA 01821
0821
03
Postmark Here
04/11/2018
7016 2140 0000 9458 6382

Honorable Erin E. Stewart
Mayor, City of New Britain
27 West Main Street
New Britain, CT 06051



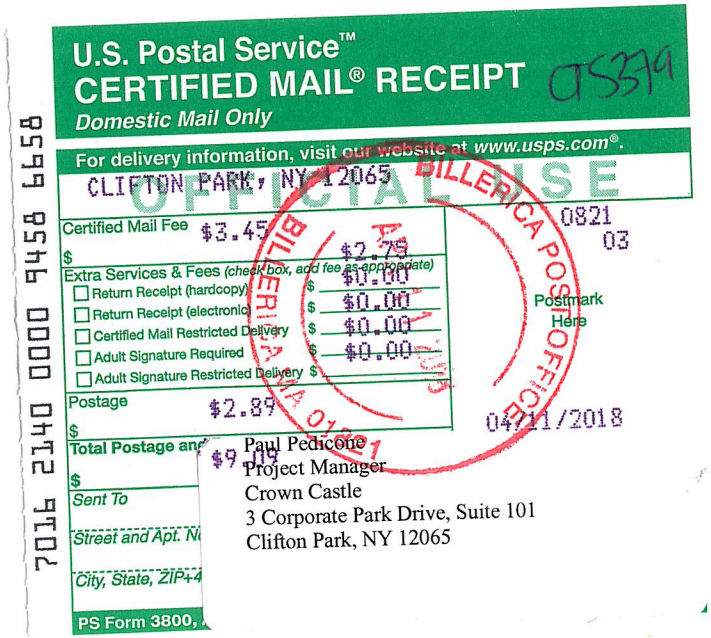
U.S. Postal Service™
CERTIFIED MAIL® RECEIPT CT5379
Domestic Mail Only
For delivery information, visit our website at www.usps.com®.
NEW BRITAIN, CT 06051
OFFICIAL USE
Certified Mail Fee $3.45
$2.75
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $0.00
☐ Return Receipt (electronic) $0.00
☐ Certified Mail Restricted Delivery $0.00
☐ Adult Signature Required $0.00
☐ Adult Signature Restricted Delivery $
Postage $2.89
Total Postage and Fees $9.09
Sent To
Street and Apt. No.
City, State, ZIP+4
PS Form 3800, April 2015
APR 11 2018
BILLERICA POST OFFICE
BILLERICA, MA 01821
0821
03
Postmark Here
04/11/2018
7016 2140 0000 9458 6368

David Zajac
Zoning Enforcement Officer/Building Inspector
27 West Main Street
New Britain, CT 06051



U.S. Postal Service™
CERTIFIED MAIL® RECEIPT CT5379
Domestic Mail Only
For delivery information, visit our website at www.usps.com®.
NEW BRITAIN, CT 06051
OFFICIAL USE
Certified Mail Fee $3.45
$2.75
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $0.00
☐ Return Receipt (electronic) $0.00
☐ Certified Mail Restricted Delivery $0.00
☐ Adult Signature Required $0.00
☐ Adult Signature Restricted Delivery $
Postage $2.89
Total Postage and Fees $9.09
Sent To
Street and Apt. No.
City, State, ZIP+4
PS Form 3800,
APR 11 2018
BILLERICA POST OFFICE
BILLERICA, MA 01821
0821
03
Postmark Here
04/11/2018
7016 2140 0000 9458 6375

Steven P. Schiller, AICP
City Planner, City of New Britain
27 West Main Street
New Britain, CT 06051



U.S. Postal Service™
CERTIFIED MAIL® RECEIPT CT5379
Domestic Mail Only
For delivery information, visit our website at www.usps.com®.
CLIFTON PARK, NY 12065
OFFICIAL USE
Certified Mail Fee $3.45
$2.75
Extra Services & Fees (check box, add fee as appropriate)
☐ Return Receipt (hardcopy) $0.00
☐ Return Receipt (electronic) $0.00
☐ Certified Mail Restricted Delivery $0.00
☐ Adult Signature Required $0.00
☐ Adult Signature Restricted Delivery $
Postage $2.89
Total Postage and Fees $9.09
Sent To
Street and Apt. No.
City, State, ZIP+4
PS Form 3800,
APR 11 2018
BILLERICA POST OFFICE
BILLERICA, MA 01821
0821
03
Postmark Here
04/11/2018
7016 2140 0000 9458 6658

Paul Pedicone
Project Manager
Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

EMPIRE telecom

April 11, 2018

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

Regarding:	Notice of Exempt Modification – Equipment Upgrades
Property Address:	167 Coccomo Circle a/k/a 175 Lester Street, New Britain, CT 06051
AT&T Site:	CT5379/FA# 10091781

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 188-foot monopole tower at the above-referenced address, latitude 41.6898919, longitude -72.7583989. Said monopole tower is owned by Crown Castle.

AT&T desires to modify its existing telecommunications facility by installing six (6) additional remote-radio heads ("RRH") and one (1) additional surge arrestor and accompanying feedlines as detailed in the enclosed plans. The centerline height of the existing antennas is and will remain at 189 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 Erin E. Stewart, Mayor of the City of New Britain, Steven P. Schiller, AICP, City Planner of the City of New Britain and David Zajac, Zoning Enforcement Officer/Building Inspector of the City of New Britain. A copy of this letter is also being sent to owner, Crown Castle.

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 equipment to be added will be installed at the existing height of 189 feet on the 188-foot tower.

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 Crown Castle dated February 6, 2018).

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

Sincerely,

Jennifer Iliades

Jennifer Iliades
Site Acquisition Specialist

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

cc: The Honorable Erin E. Stewart, Mayor, City of New Britain
Steven P. Schiller, AICP, City Planner, City of New Britain
David Zajac, Zoning Enforcement Officer/Building Inspector, City of New Britain
Crown Castle

Exhibit 1

167 COCCOMO CIR

Location	167 COCCOMO CIR	**Mblu**	A5D/ 22/ / /
Acct#	15950167	**Owner**	CROWN ATLANTIC COMPANY LLC
Assessment	$58,380	**Appraisal**	$83,400
PID	10590	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$47,400	$36,000	$83,400
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$33,180	$25,200	$58,380

Owner of Record

Owner	CROWN ATLANTIC COMPANY LLC	**Sale Price**	$90,000
Co-Owner		**Certificate**	
Address	4017 WASHINGTON RD PMB 353 MCMURRAY, PA 15317	**Book & Page**	1359/ 428
		Sale Date	02/13/2001

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
CROWN ATLANTIC COMPANY LLC	$90,000		1359/ 428	02/13/2001
BALAVENDER JOHN S +	$44,000		1284/ 180	08/26/1998
	$0		1281/ 173	07/15/1998
	$0		770/ 808	10/29/1981
CLARA MARY DOUCETTE	$0		725/ 121	03/02/1977

Building Information

Building 1 : Section 1

Year Built:	1918
Living Area:	624
Replacement Cost:	$105,398

Building Percent Good: 45

Replacement Cost Less Depreciation: $47,400

Building Attributes	
Field	**Description**
Style	Conventional
Model	Residential
Grade	C
Stories	1 1/4 Stories
Occupancy	1
Exterior Wall 1	Aluminum Sidin
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Plaster
Interior Wall 2	
Interior Flr 1	Carpet
Interior Flr 2	
Central Heat Sys	Yes
AC Type	None
Total Bedrooms	2 Bedrooms
Total Full Baths	1
Total Half Baths	0
Total Xtra Fixtrs	0
Total Rooms	4
Bath Style	Average
Kitchen Style	Average
Whirlpool Tub	
Fireplaces	
Rec Room Finish	
Rec Room Qual	
Bsmt Garages	
Bldg Nbhd	104A

Building Photo

(http://images.vgsi.com/photos/NewBritainCTPhotos//\00\02\86/

Building Layout

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	624	624
EAU	Attic, Expansion, Unfinished	624	0
FEP	Enclosed Porch	66	0
FOP	Open Porch	50	0
URB	Unfin Raised Basement	624	0
		1,988	624

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	1010
Description	Single Family
Zone	I2
Neighborhood	104
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0.32
Depth	
Assessed Value	$25,200
Appraised Value	$36,000

Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

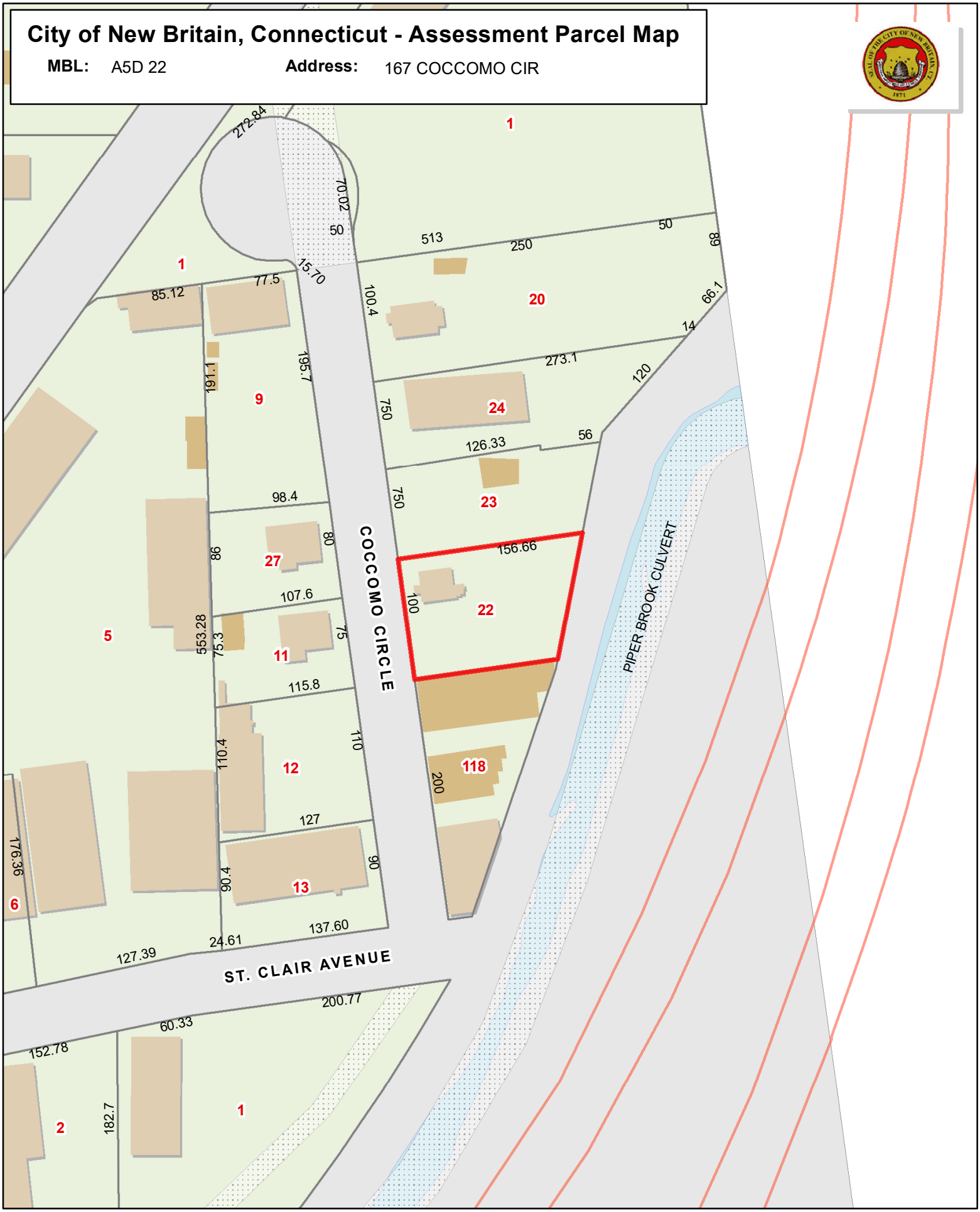
Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$39,900	$32,800	$72,700
2015	$39,900	$32,800	$72,700
2014	$39,900	$32,800	$72,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$27,930	$22,960	$50,890
2015	$27,930	$22,960	$50,890
2014	$27,930	$22,960	$50,890

City of New Britain, Connecticut - Assessment Parcel Map

MBL: A5D 22 **Address:** 167 COCCOMO CIR



Approximate Scale:

1 inch = 100 feet

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

Map Produced Feb 2017

Exhibit 2

WIRELESS COMMUNICATIONS FACILITY
CT5379 - LTE 4C-850/5C-AWS
NEW BRITAIN EAST
CROWN CASTLE SITE NO.: 803175
167 COCCOMO CIRCLE
(a.k.a 178 LESTER STREET)
NEW BRITAIN, CT 06051

GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2016 CONNECTICUT FIRE SAFETY CODE AND, NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. 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.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. 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.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED" ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. 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.
20. 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 PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. 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: 500 ENTERPRISE DRIVE, ROCKY HILL, CONNECTICUT

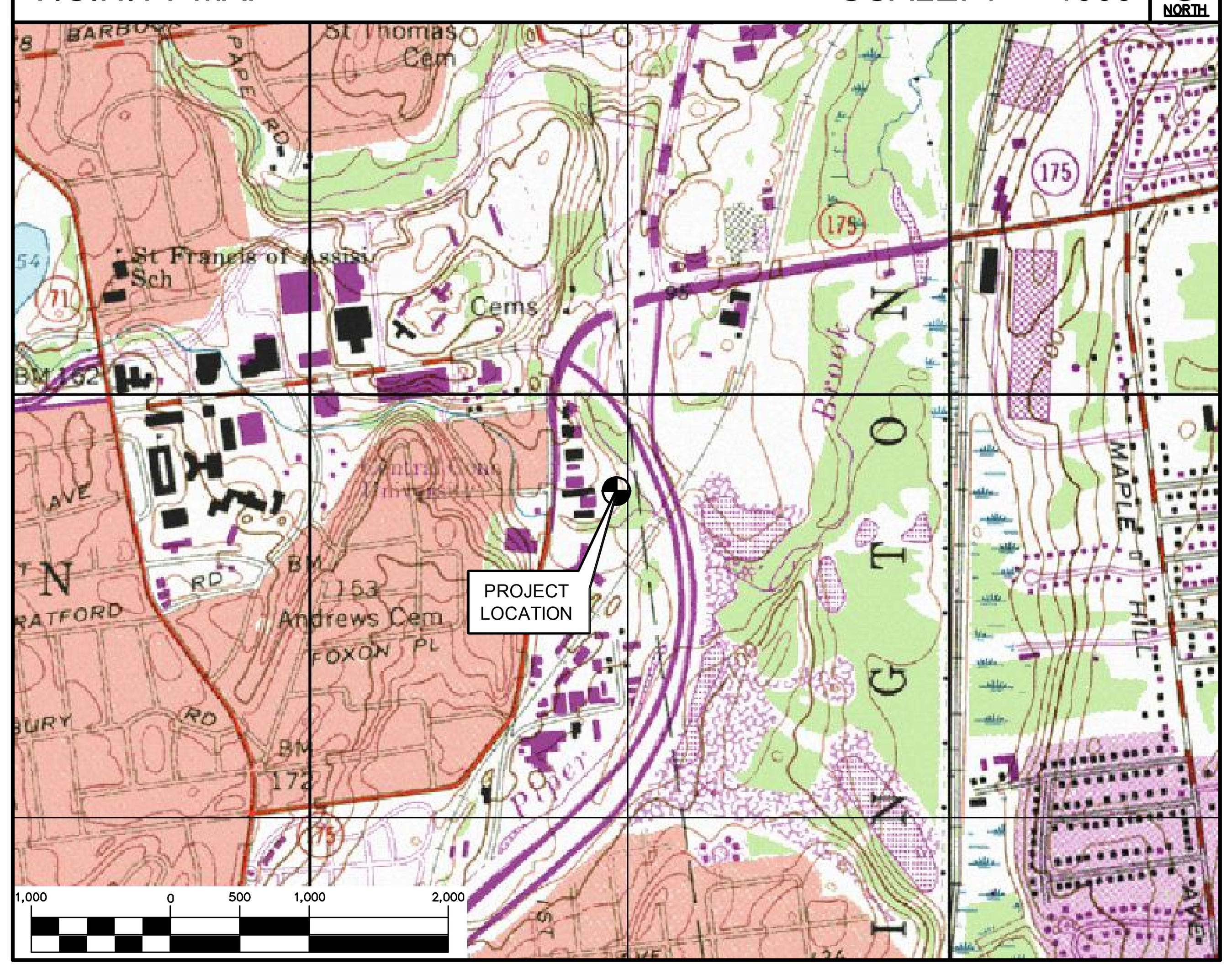
TO: 178 LESTER STREET, NEW BRITAIN, CONNECTICUT

1.	HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.30 MI
2.	TURN LEFT ONTO CAPITAL BLVD	0.20 MI
3.	TURN LEFT ONTO WEST ST	0.30 MI
4.	TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	1.40 MI
5.	TAKE EXIT 22N TO MERGE ONTO CT-9 N TOWARD NEW BRITAIN	8.50 MI
6.	TAKE EXIT 29 FOR CT-175 TOWARD NEWINGTON	0.20 MI
7.	TURN LEFT ONTO CT-175 W/CEDAR ST	0.70 MI
8.	TURN LEFT ONTO ST. CLAIR AVE	0.20 MI
9.	ST. CLAIR AVE TURNS SLIGHTLY LEFT AND BECOMES COCCOMO CIR/LESTER ST	407 FT

VICINITY MAP

SCALE: 1" = 1000'

NORTH



PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
   A. AT ANTENNA SECTORS:
      - INSTALL (3) NEW RRUS-32 B66 BEHIND EXISTING POSITION 4 ANTENNA
      - INSTALL (3) NEW RRUS-12 BEHIND EXISTING POSITION 2 ANTENNA
      - INSTALL (1) SURGE ARRESTOR
      - INSTALL (6) SWIVEL RRU MOUNTS TO ACCOMMODATE ADDITIONAL RRUS BEHIND POSITION 2 & 4 ANTENNA
   B. WORK WITHTIN EXISTING AT&T COMPOUND
      - INSTALL (1) ADDITIONAL XMU UNIT WITHIN EXISTING PURCELL CABINET
      - REMOVE AND REPLACE EXISTING DUL DUS AND UPGRADE FOR A PROPOSED 5216 UNIT WITHIN EXISTING PURCELL CABINET
      - DECOMMISSION AND REMOVE EXISTING NOKIA GSM CABINET
      - DECOMMISSION AND REMOVE EXISTING RXAIT CABINET

PROJECT INFORMATION

AT&T SITE NUMBER:	CT5379
AT&T SITE NAME:	NEW BRITAIN EAST
SITE ADDRESS:	CROWN CASTLE SITE NO.: 803175 167 COCCOMO CIRCLE (a.k.a 178 LESTER STREET) NEW BRITAIN, CT 06051
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-41'-11.89" N LONGITUDE: 72°-45'-27.80" W GROUND ELEVATION: ±238' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE	0
C-1	PLANS AND ELEVATION	0
C-2	LTE 4C-850/5C-AWS ANTENNA LAYOUT PLANS	0
C-3	DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAW/JR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

EMPIRE telecom

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NEW BRITAIN EAST
CT5379 - LTE 4C-850/5C-AWS
167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

DATE: 03/05/18
SCALE: AS NOTED
JOB NO. 18000.27

TITLE SHEET

T-1

Sheet No. 1 of 8

NOTES AND SPECIFICATIONS

DESIGN BASIS:

GOVERNING CODE: 2012 INTERNATIONAL BUILDING (IBC) AS MODIFIED BY THE 2016 CT STATE BUILDING CODE AND AMENDMENTS.

1. DESIGN CRITERIA:

- WIND LOAD: PER TIA 222 G (ANTENNA MOUNTS): 90–105 MPH (3 SECOND GUST)
- RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
- NOMINAL DESIGN SPEED (OTHER STRUCTURE): 97 MPH (Vasd) (EXPOSURE B/IMPORTANCE FACTOR 1.0 BASED ON ASCE 7–10) PER 2012 INTERNATIONAL BUILDING CODE (IBC) AS MODIFIED BY THE 2016 CONNECTICUT STATE BUILDING CODE.
- SEISMIC LOAD (DOES NOT CONTROL): PER ASCE 7–10 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE GOVERNING BUILDING CODE.
2. 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.
3. BEFORE BEGINNING THE WORK, THE CONTRACTOR IS RESPONSIBLE FOR MAKING SUCH INVESTIGATIONS CONCERNING PHYSICAL CONDITIONS (SURFACE AND SUBSURFACE) AT OR CONTIGUOUS TO THE SITE WHICH MAY AFFECT PERFORMANCE AND COST OF THE WORK.
4. DIMENSIONS AND DETAILS SHALL BE CHECKED AGAINST EXISTING FIELD CONDITIONS.
5. THE CONTRACTOR SHALL VERIFY AND COORDINATE THE SIZE AND LOCATION OF ALL OPENINGS, SLEEVES AND ANCHOR BOLTS AS REQUIRED BY ALL TRADES.
6. ALL DIMENSIONS, ELEVATIONS, AND OTHER REFERENCES TO EXISTING STRUCTURES, SURFACE, AND SUBSURFACE CONDITIONS ARE APPROXIMATE. NO GUARANTEE IS MADE FOR THE ACCURACY OR COMPLETENESS OF THE INFORMATION SHOWN. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS, ELEVATIONS, ANGLES WITH EXISTING CONDITIONS AND WITH ARCHITECTURAL AND SITE DRAWINGS BEFORE PROCEEDING WITH ANY WORK.
7. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL NOTIFY THE OWNER OF ANY CONDITIONS WHICH ARE IN CONFLICT OR OTHERWISE NOT CONSISTENT WITH THE CONSTRUCTION DOCUMENTS AND SHALL NOT PROCEED WITH SUCH WORK UNTIL THE CONFLICT IS SATISFACTORILY RESOLVED.
8. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING AND MAINTAINING ADEQUATE SHORING, BRACING, AND BARRICADES AS MAY BE REQUIRED FOR THE PROTECTION OF EXISTING PROPERTY, CONSTRUCTION WORKERS, AND FOR PUBLIC SAFETY.
9. 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. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH NORTHEAST UTILITIES
10. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER FOUNDATION REMEDIATION WORK IS COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIEDOWNS, WHICH MIGHT BE NECESSARY.
11. 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.
12. SHOP DRAWINGS, CONCRETE MIX DESIGNS, TEST REPORTS, AND OTHER SUBMITTALS PERTAINING TO STRUCTURAL WORK SHALL BE FORWARDED TO THE OWNER FOR REVIEW BEFORE FABRICATION AND/OR INSTALLATION IS MADE. SHOP DRAWINGS SHALL INCLUDE ERECTION DRAWINGS AND COMPLETE DETAILS OF CONNECTIONS AS WELL AS MANUFACTURER'S SPECIFICATION DATA WHERE APPROPRIATE. SHOP DRAWINGS SHALL BE CHECKED BY THE CONTRACTOR AND BEAR THE CHECKER'S INITIALS BEFORE BEING SUBMITTED FOR REVIEW.
13. NO DRILLING WELDING OR TAPING ON EVERSOURCE OWNED EQUIPMENT.
14. REFER TO DRAWING T1 FOR ADDITIONAL NOTES AND REQUIREMENTS.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI)
   C. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   D. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   E. PIPE---ASTM A53 (FY = 35 KSI)
   F. CONNECTION BOLTS---ASTM A325-N
   G. U-BOLTS---ASTM A36
   H. ANCHOR RODS---ASTM F 1554
   I. WELDING ELECTRODE---ASTM E 70XX

2. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.
3. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.
4. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.
5. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.
6. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.
7. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.
8. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
9. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".
10. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.
11. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.
12. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.
13. LOCK WASHER ARE NOT PERMITTED FOR A325 STEEL ASSEMBLIES.
14. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.
15. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.
16. FABRICATE BEAMS WITH MILL CAMBER UP.
17. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.
18. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
19. INSPECTION AND TESTING OF ALL WELDING AND HIGH STRENGTH BOLTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY.
20. FOUR COPIES OF ALL INSPECTION TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER WITHIN TEN (10) WORKING DAYS OF THE DATE OF INSPECTION.

PAINT NOTES

PAINTING SCHEDULE:

1. ANTENNA PANELS:
   A. SHERWIN WILLIAMS POLANE-B
   B. COLOR TO BE MATCHED WITH EXISTING TOWER STRUCTURE.
2. COAXIAL CABLES:
   A. ONE COAT OF DTM BONDING PRIMER (2-5 MILS. DRY FINISH)
   B. TWO COATS OF DTM ACRYLIC PRIMER/FINISH (2.5-5 MILS. DRY FINISH)
   C. COLOR TO BE FIELD MATCHED WITH EXISTING STRUCTURE.

EXAMINATION AND PREPARATION:

1. DO NOT APPLY PAINT IN SNOW, RAIN, FOG OR MIST OR WHEN RELATIVE HUMIDITY EXCEEDS 85%. DO NOT APPLY PAINT TO DAMP OR WET SURFACES.
2. VERIFY THAT SUBSTRATE CONDITIONS ARE READY TO RECEIVE WORK. EXAMINE SURFACE SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.
3. TEST SHOP APPLIED PRIMER FOR COMPATIBILITY WITH SUBSEQUENT COVER MATERIALS.
4. PERFORM PREPARATION AND CLEANING PROCEDURE IN STRICT ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS FOR EACH SUBSTRATE CONDITION.
5. CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION. REMOVE EXISTING COATINGS THAT EXHIBIT LOOSE SURFACE DEFECTS.
6. IMPERVIOUS SURFACE: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TRI-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.
7. ALUMINUM SURFACE SCHEDULED FOR PAINT FINISH: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH-PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.
8. FERROUS METALS: CLEAN UNGALVANIZED FERROUS METAL SURFACES THAT HAVE NOT BEEN SHOP COATED; REMOVE OIL, GREASE, DIRT, LOOSE MILL SCALE, AND OTHER FOREIGN SUBSTANCES. USE SOLVENT OR MECHANICAL CLEANING METHODS THAT COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL'S (SSPC) RECOMMENDATIONS. TOUCH UP BARE AREAS AND SHOP APPLIED PRIME COATS THAT HAVE BEEN DAMAGED. WIRE BRUSH, CLEAN WITH SOLVENTS RECOMMENDED BY PAINT MANUFACTURER, AND TOUCH UP WITH THE SAME PRIMER AS THE SHOP COAT.
9. GALVANIZED SURFACES: CLEAN GALVANIZED SURFACES WITH NON-PETROLEUM-BASED SOLVENTS SO SURFACE IS FREE OF OIL AND SURFACE CONTAMINANTS. REMOVE PRETREATMENT FROM GALVANIZED SHEET METAL FABRICATED FROM COIL STOCK BY MECHANICAL METHODS.
10. ANTENNA PANELS: REMOVE ALL OIL, DUST, GREASE, DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION. PANELS MUST BE WIPED WITH METHYL ETHYL KETONE (MEK).
11. COAXIAL CABLES: REMOVE ALL OIL, DUST, GREASE. DIRT, AND OTHER FOREIGN MATERIAL TO ENSURE ADEQUATE ADHESION.

CLEANING:

1. COLLECT WASTE MATERIAL, WHICH MAY CONSTITUTE A FIRE HAZARD, PLACE IN CLOSED METAL CONTAINERS AND REMOVE DAILY FROM SITE.

APPLICATION:

1. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
2. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY.
3. APPLY EACH COAT TO UNIFORM FINISH.
4. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.
5. SAND METAL LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.
6. VACUUM CLEAN SURFACES FREE OF LOOSE PARTICLES. USE TACK CLOTH JUST PRIOR TO APPLYING NEXT COAT.
7. ALLOW APPLIED COAT TO DRY BEFORE NEXT COAT IS APPLIED.

COMPLETED WORK:

1. SAMPLES: PREPARE 24" X 24" SAMPLE AREA FOR REVIEW.
2. MATCH APPROVED SAMPLES FOR COLOR, TEXTURE AND COVERAGE. REMOVE REFINISH OR REPAINT WORK NOT IN COMPLIANCE WITH SPECIFIED REQUIREMENTS.

ANTENNA AND APPURTENANCE SCHEDULE

ANTENNAS								APPURTENANCES			
SECTOR	POSITION	AZIMUTH	DOWNTILT (M)	MAKE & MODEL	RAD CENTER (AGL)	TECHNOLOGY	STATUS	TMA (QTY)	DIPLEXERS (QTY)	RRU (QTY)	FEEDER TYPE
ALPHA	POS. 1	70°	0°	KATHREIN 800-10121	190'	UMTS 850/1900	REMAIN	POWERWAVE: LGP 21401 (2)	POWERWAVE / LGP 21901 (2)		1 5/8"ø COAX (QTY OF 2)
ALPHA	POS. 2	70°	0°	CCI OPA-65R-LCUU-H4	190'	LTE 850/WCS	REMAIN			RRUS-12 (1), RRUS-32 (1)	FIBER AND DC POWER
ALPHA	POS. 4	70°	0°	QUINTEL QS46512-2	190'	LTE 700/1900/AWS	REMAIN			RRUS-11 (1), RRUS-32 B2 (1), RRUS-32 B66 (1)	FIBER AND DC POWER
BETA	POS. 1	200°	0°	KATHREIN 800-10121	190'	UMTS 850/1900	REMAIN	POWERWAVE: LGP 21401 (2)	POWERWAVE / LGP 21901 (2)		1 5/8"ø COAX (QTY OF 2)
BETA	POS. 2	200°	0°	CCI OPA-65R-LCUU-H6	190'	LTE 850/WCS	REMAIN			RRUS-12 (1), RRUS-32 (1)	FIBER AND DC POWER
BETA	POS. 4	200°	0°	QUINTEL QS66512-2	190'	LTE 700/1900/AWS	REMAIN			RRUS-11 (1), RRUS-32 B2 (1), RRUS-32 B66 (1)	FIBER AND DC POWER
GAMMA	POS. 1	320°	0°	KATHREIN 800-10121	190'	UMTS 850/1900	REMAIN	POWERWAVE: LGP 21401 (2)	POWERWAVE / LGP 21901 (2)		1 5/8"ø COAX (QTY OF 2)
GAMMA	POS. 2	320°	0°	CCI OPA-65R-LCUU-H6	190'	LTE 850/WCS	REMAIN			RRUS-12 (1), RRUS-32 (1)	FIBER AND DC POWER
GAMMA	POS. 4	320°	0°	QUINTEL QS66512-2	190'	LTE 700/1900/AWS	REMAIN			RRUS-11 (1), RRUS-32 B2 (1), RRUS-32 B66 (1)	FIBER AND DC POWER

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAWJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT · CAMILO GAVIRIA · 27517 · LICENSED PROFESSIONAL ENGINEER

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

NEW BRITAIN EAST

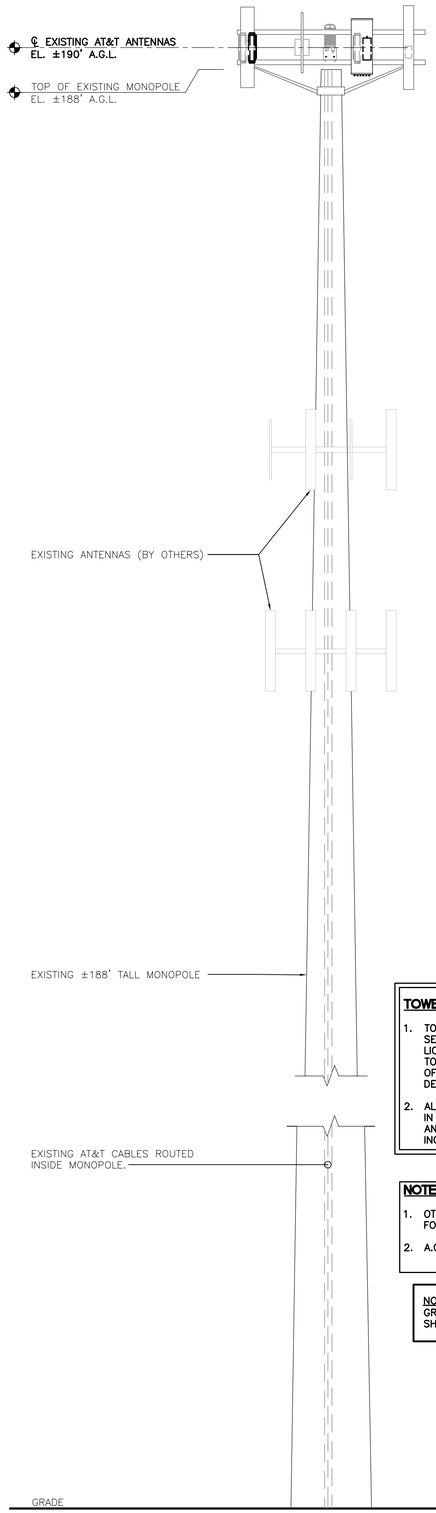
CT5379 - LTE 4C-850/5C-AWS

167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

DATE: 03/05/18
SCALE: AS NOTED
JOB NO. 18000.27

NOTES, SPECIFICATIONS & ANTENNA SCHEDULE

N-1



TOWER STRUCTURAL NOTES:

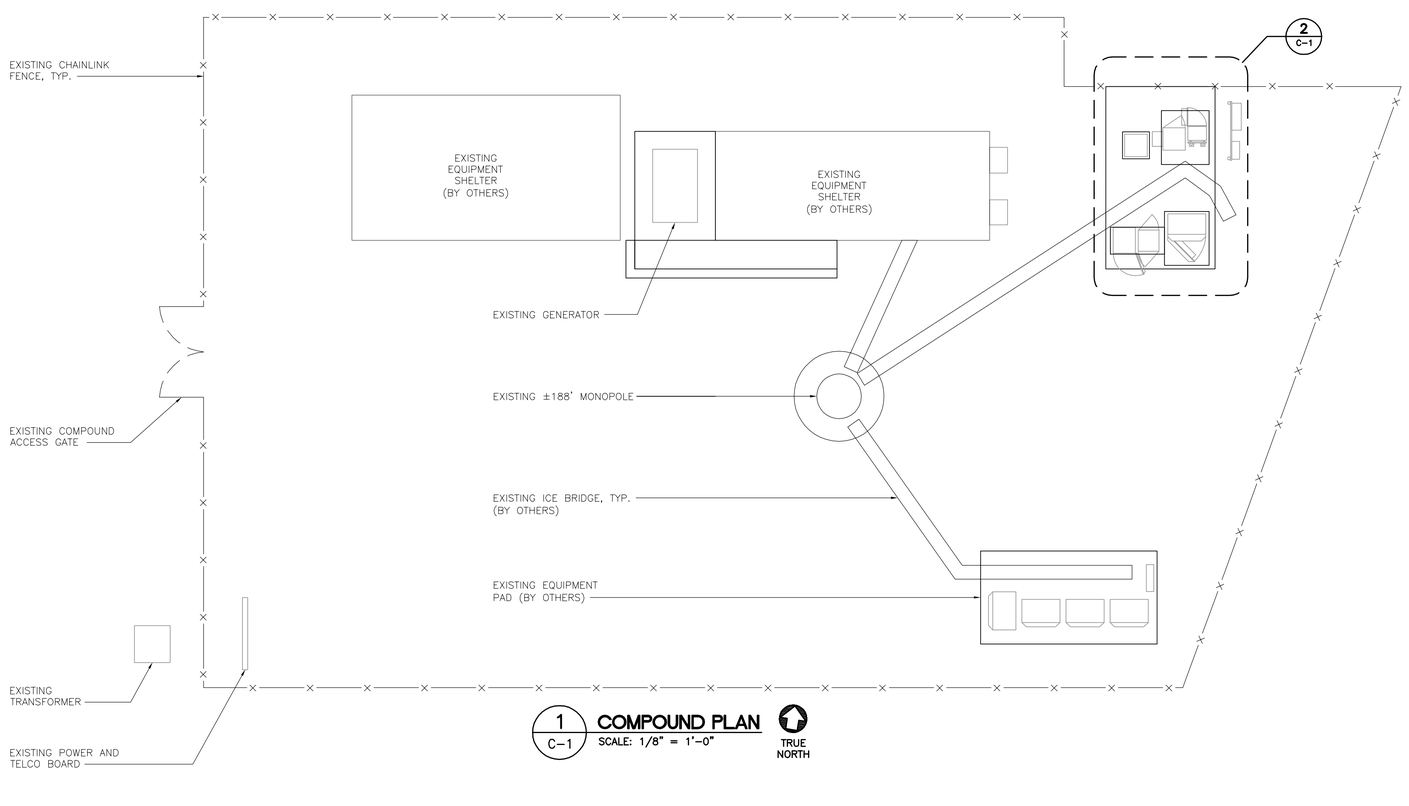
1. TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
2. ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

NOTES:

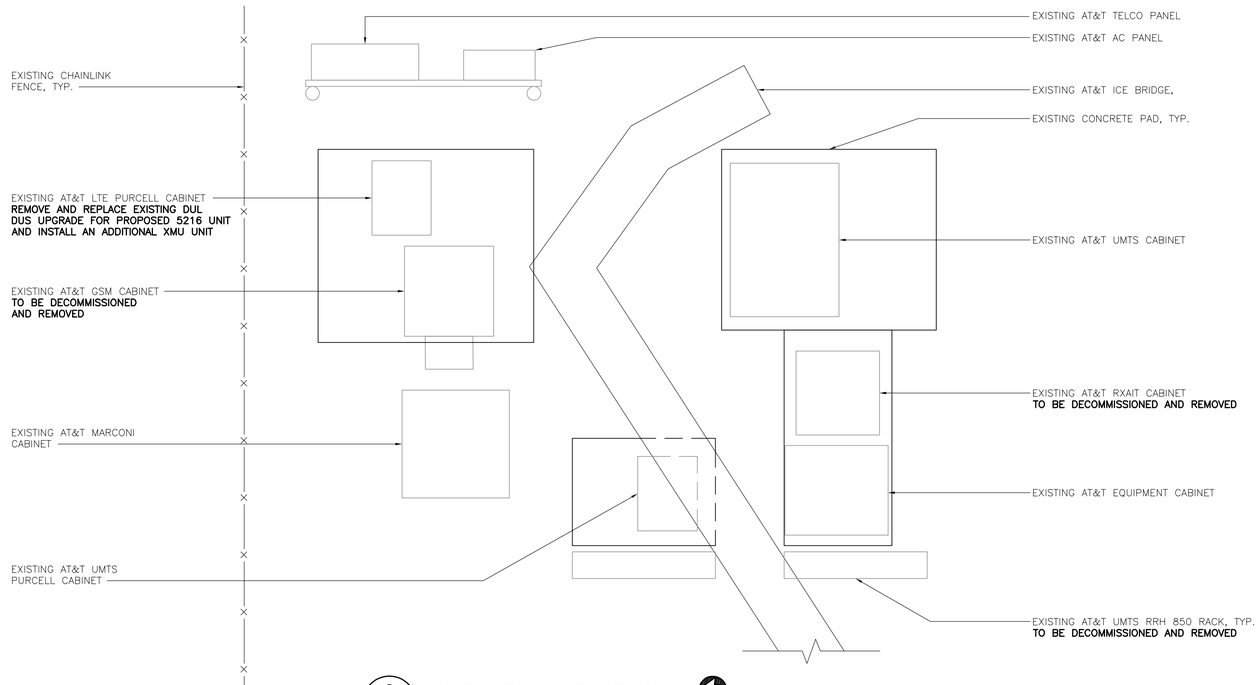
1. OTHER CARRIER EQUIPMENT NOT SHOWN FOR CLARITY
2. A.G.L. = ABOVE GRADE LEVEL

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

3 / C-1 **TOWER ELEVATION - PROPOSED**
SCALE: 3/16 = 1'-0"



1 / C-1 **COMPOUND PLAN**
SCALE: 1/8" = 1'-0"
TRUE NORTH



2 / C-1 **EQUIPMENT LAYOUT PLAN**
SCALE: 1/4" = 1'-0"
TRUE NORTH

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAWJR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY

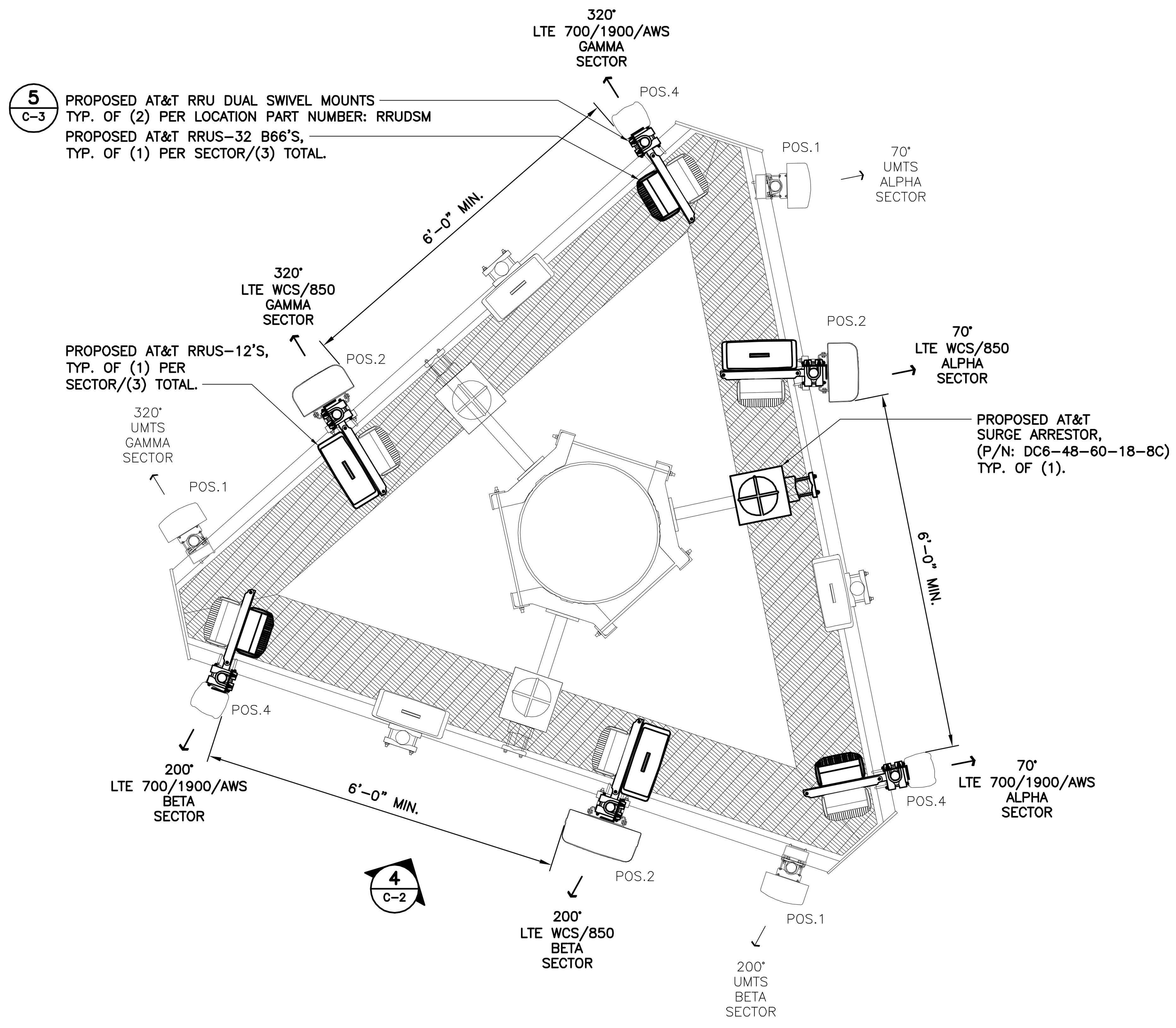
NEW BRITAIN EAST
CT5379 - LTE 4C-850/5C-AWS
167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

DATE: 03/05/18
SCALE: AS NOTED
JOB NO. 18000.27

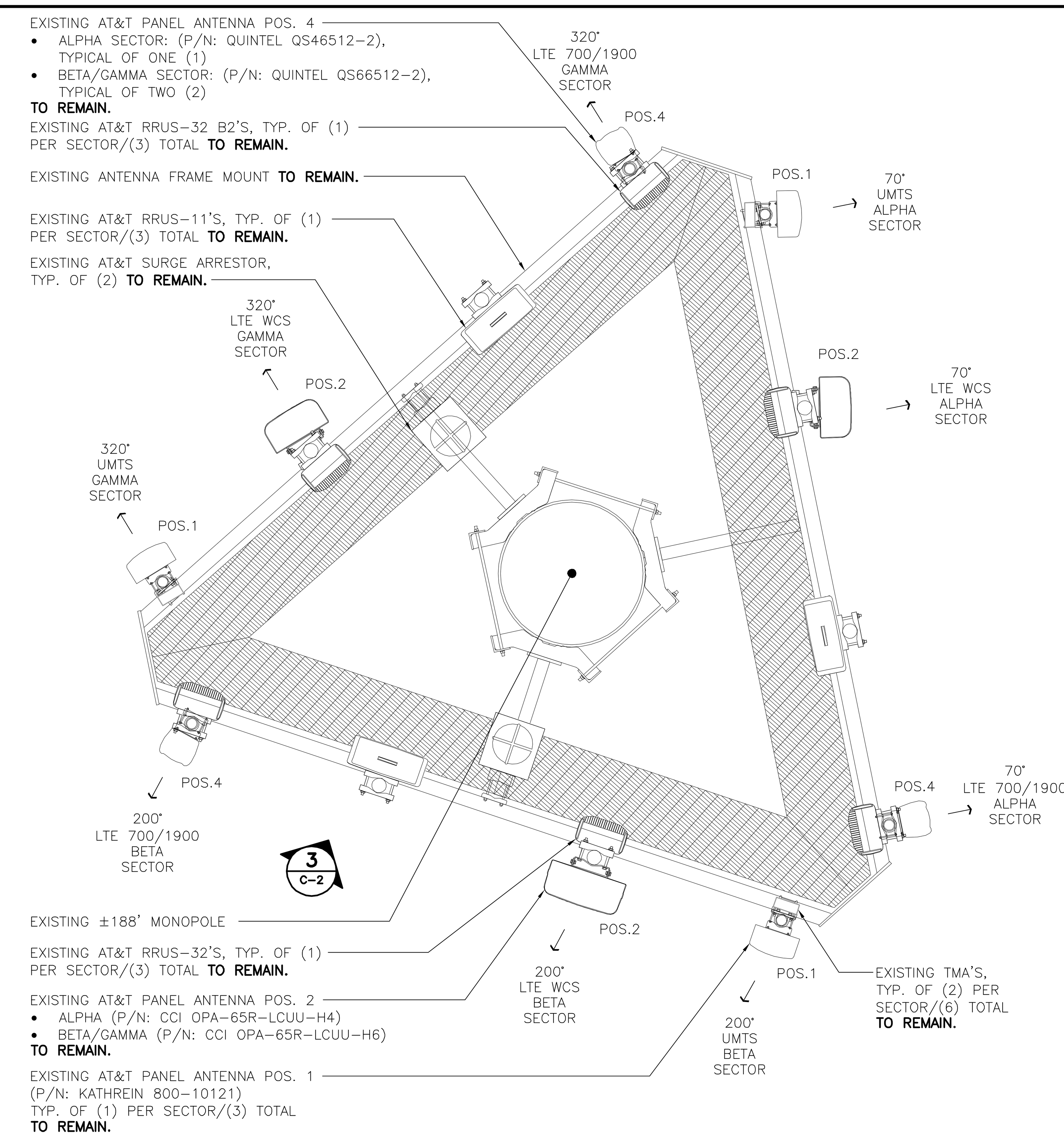
PLANS AND ELEVATION

C-1

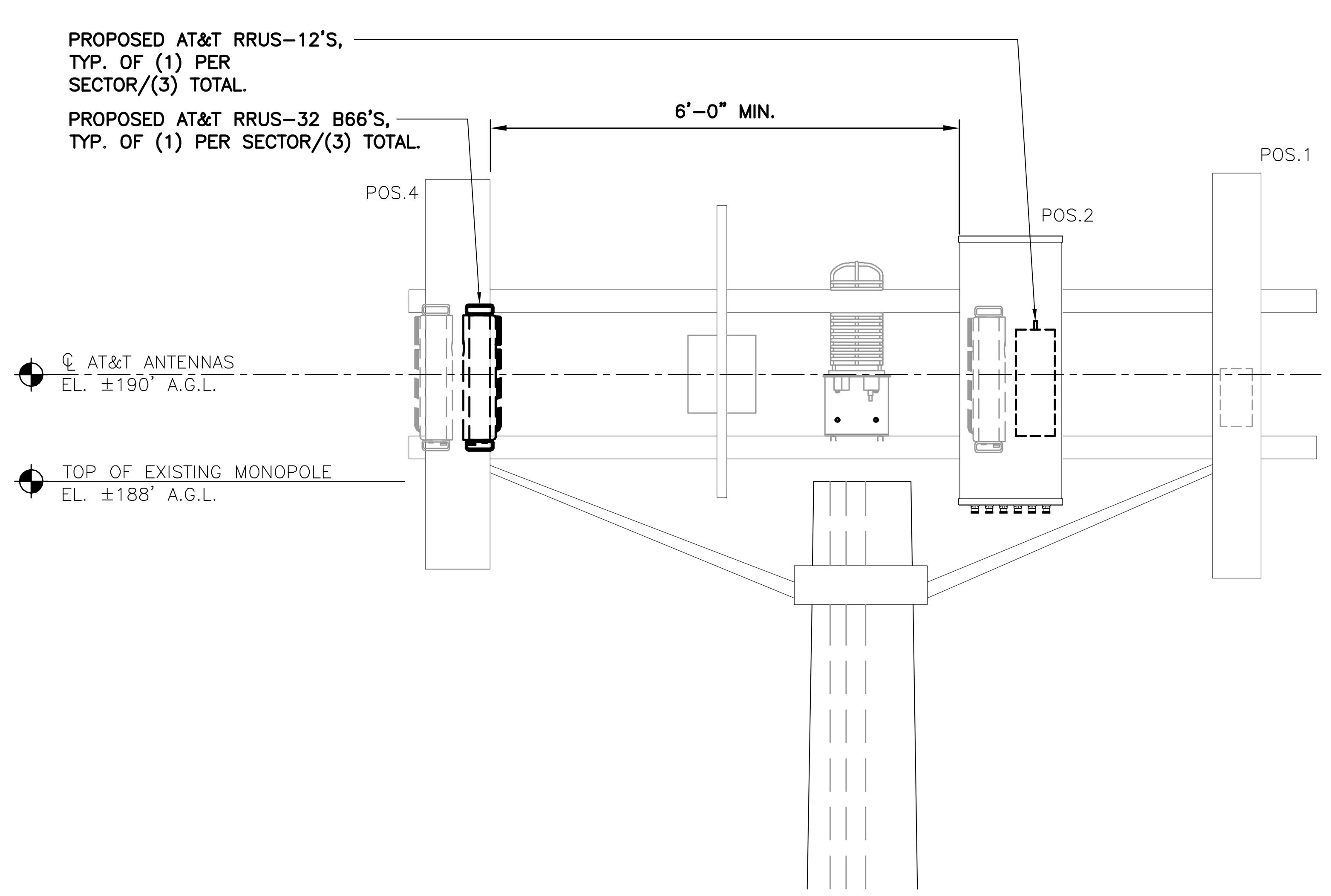
Sheet No. 3 of 8



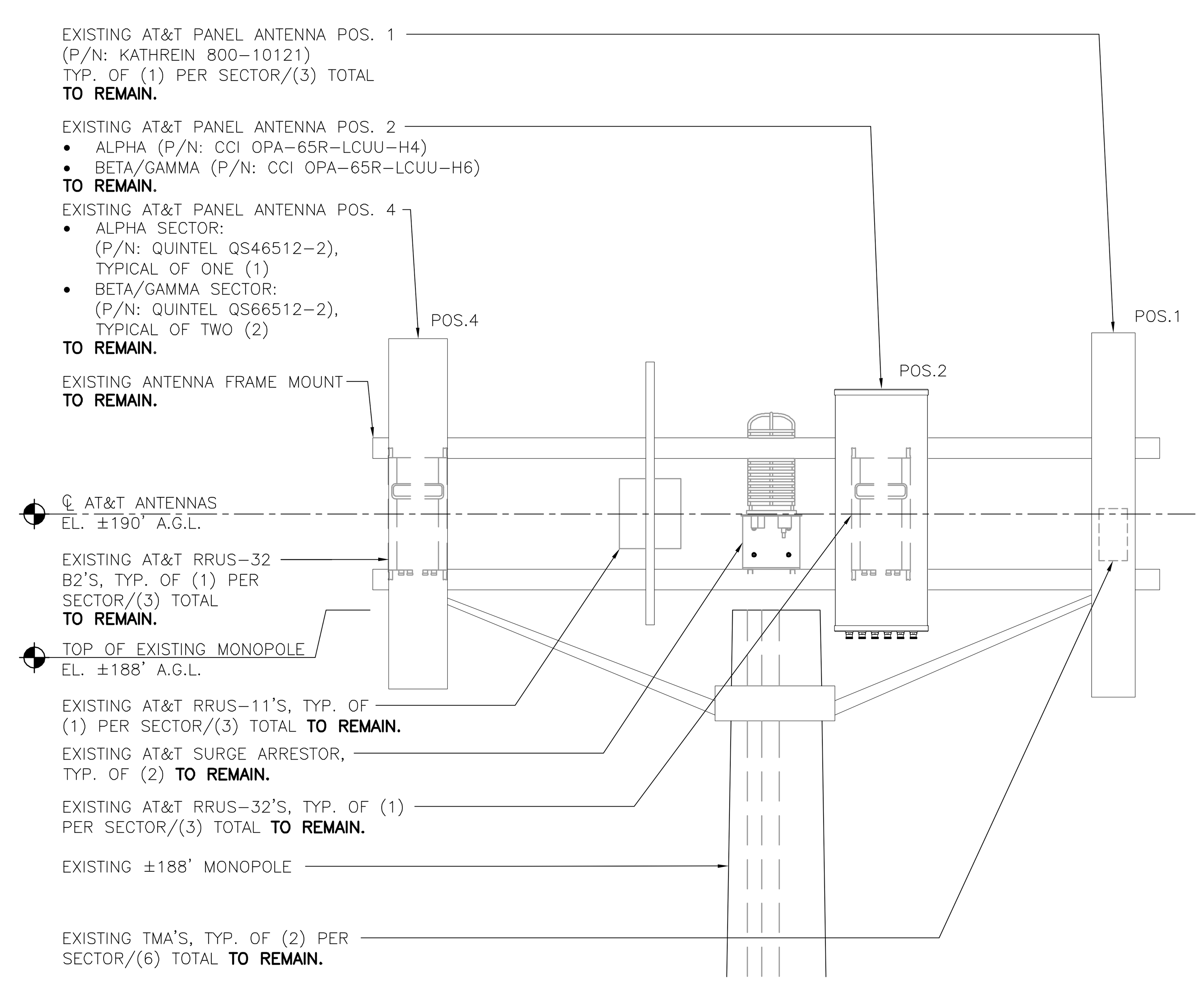
2 C-2 **PROPOSED ANTENNA PLAN**
SCALE: 1/2" = 1'-0"
NORTH



1 C-2 **EXISTING ANTENNA PLAN**
SCALE: 1/2" = 1'-0"
NORTH



4 C-2 **PROPOSED ANTENNA ELEVATION (TYPICAL)**
SCALE: 1/2" = 1'-0"



3 C-2 **EXISTING ANTENNA ELEVATION (TYPICAL)**
SCALE: 1/2" = 1'-0"

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAW/JR	DMD	CONSTRUCTION DRAWINGS – ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

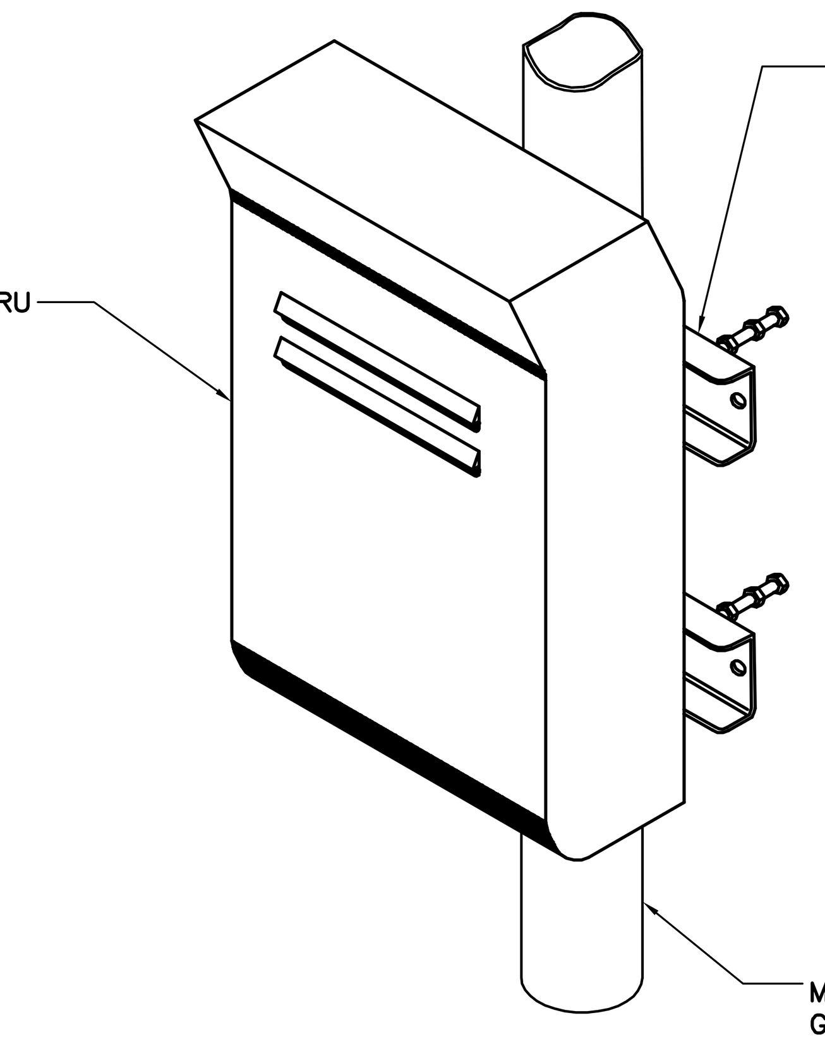
CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NEW BRITAIN EAST
CT5379 - LTE 4C-850/5C-AWS
167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

DATE: 03/05/18
SCALE: AS NOTED
JOB NO. 18000.27

LTE 4C 850/5C
AWS ANTENNA
LAYOUTS

C-2



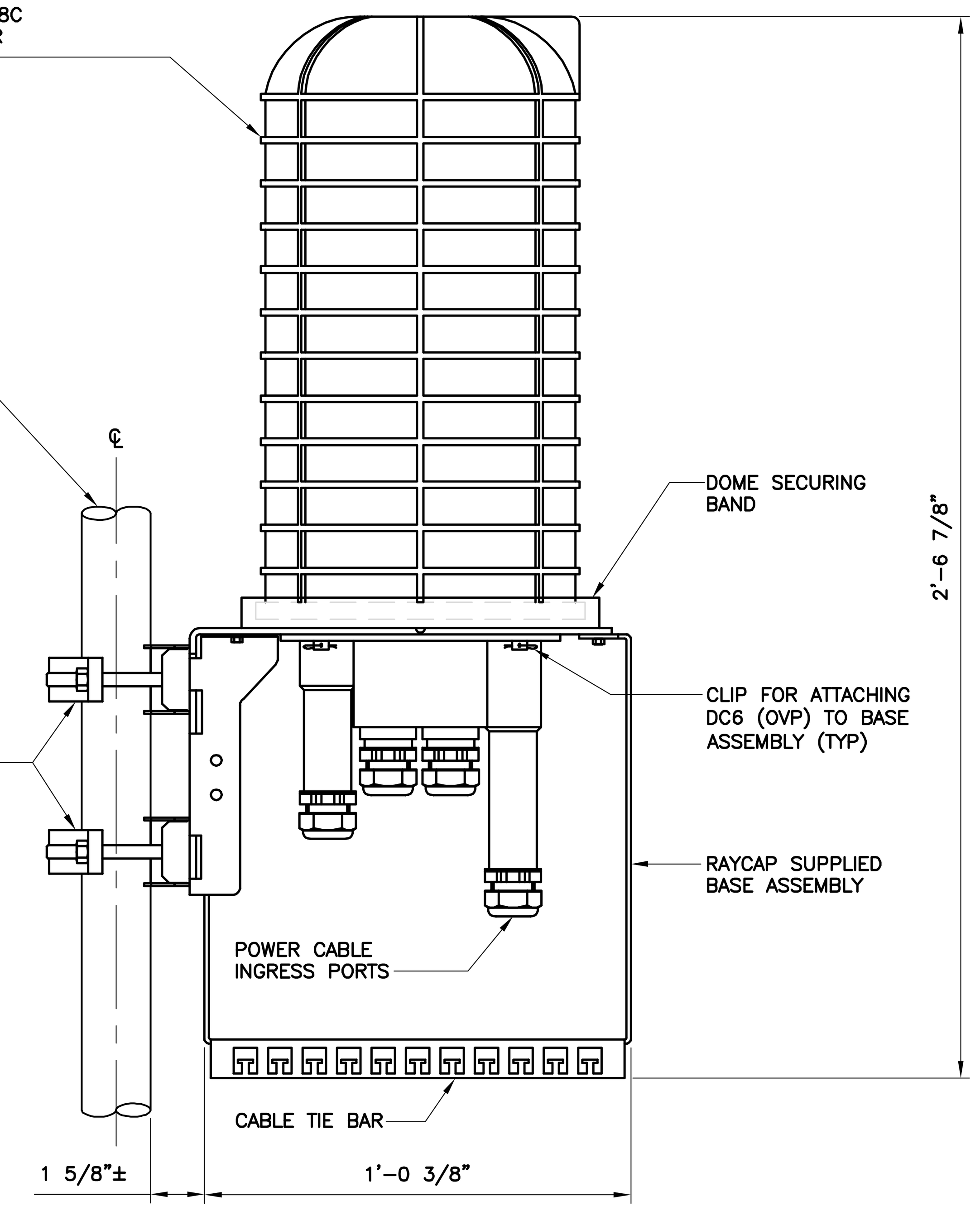
ISOMETRIC VIEW

NOTES:

1. AT&T SHALL SUPPLY RRU, AND RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL SUPPLY POLE/PIPE AND INSTALL ALL MOUNTING HARDWARE INCLUDING ERICSSON RRU POLE-MOUNTING BRACKET. CONTRACTOR SHALL INSTALLS RRU AND MAKES CABLE TERMINATIONS.
2. NO PAINTING OF THE RRU OR SOLAR SHIELD IS ALLOWED.

1 / C-3 TYPICAL RRUS MOUNTING DETAILS

SCALE: NTS



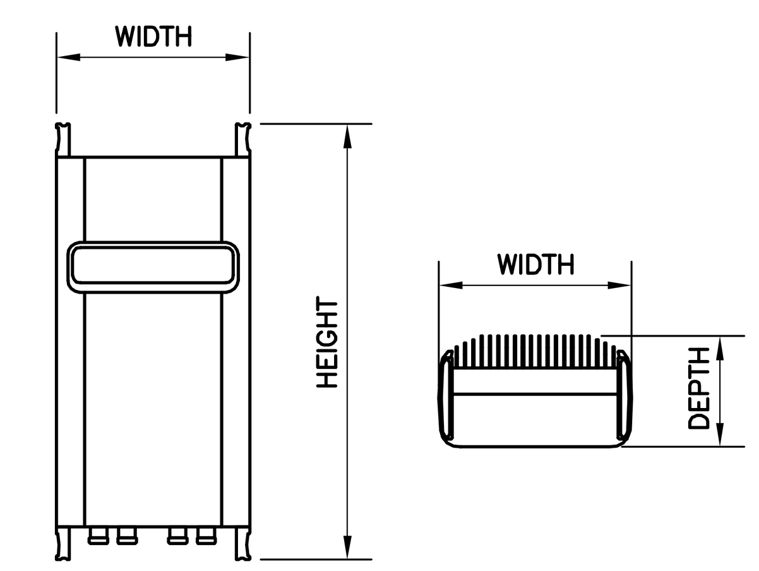
ELEVATION

NOTES:

1. RAYCAP VIA AT&T SUPPLIES THE DC6 OVER VOLTAGE PROTECTOR AND PIPE MOUNTING BRACKETS. SUBCONTRACTOR SHALL SUPPLY THE PIPE.

2 / C-3 RAYCAP DC6 MOUNTING DETAIL

SCALE: 3" = 1'-0"



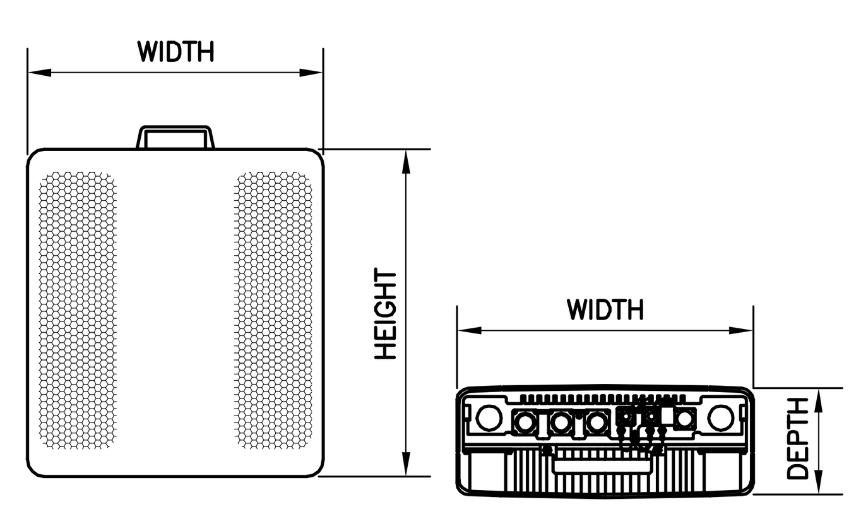
FRONT VIEW TOP VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-32 B66	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

3 / C-3 ERICSSON RRUS 32 B66 DETAIL

SCALE: 1" = 1'-0"



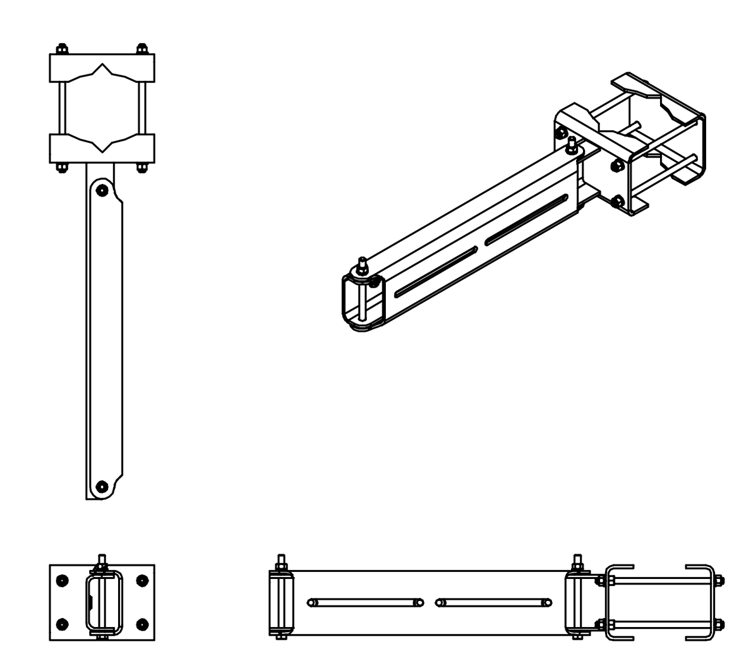
FRONT VIEW BOTTOM VIEW

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 12	20.4"L x 18.5"W x 7.5"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

4 / C-3 ERICSSON RRUS 12 DETAIL

SCALE: 1" = 1'-0"



RRU DUAL SWIVEL MOUNT		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SITE PRO 1 PART NO.: RRUDSM	27.75"L x 6.5"W x 4.7"D	39.4 LBS.

5 / C-3 RRH DUAL SWIVEL MOUNT DETAIL

NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAK/JR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

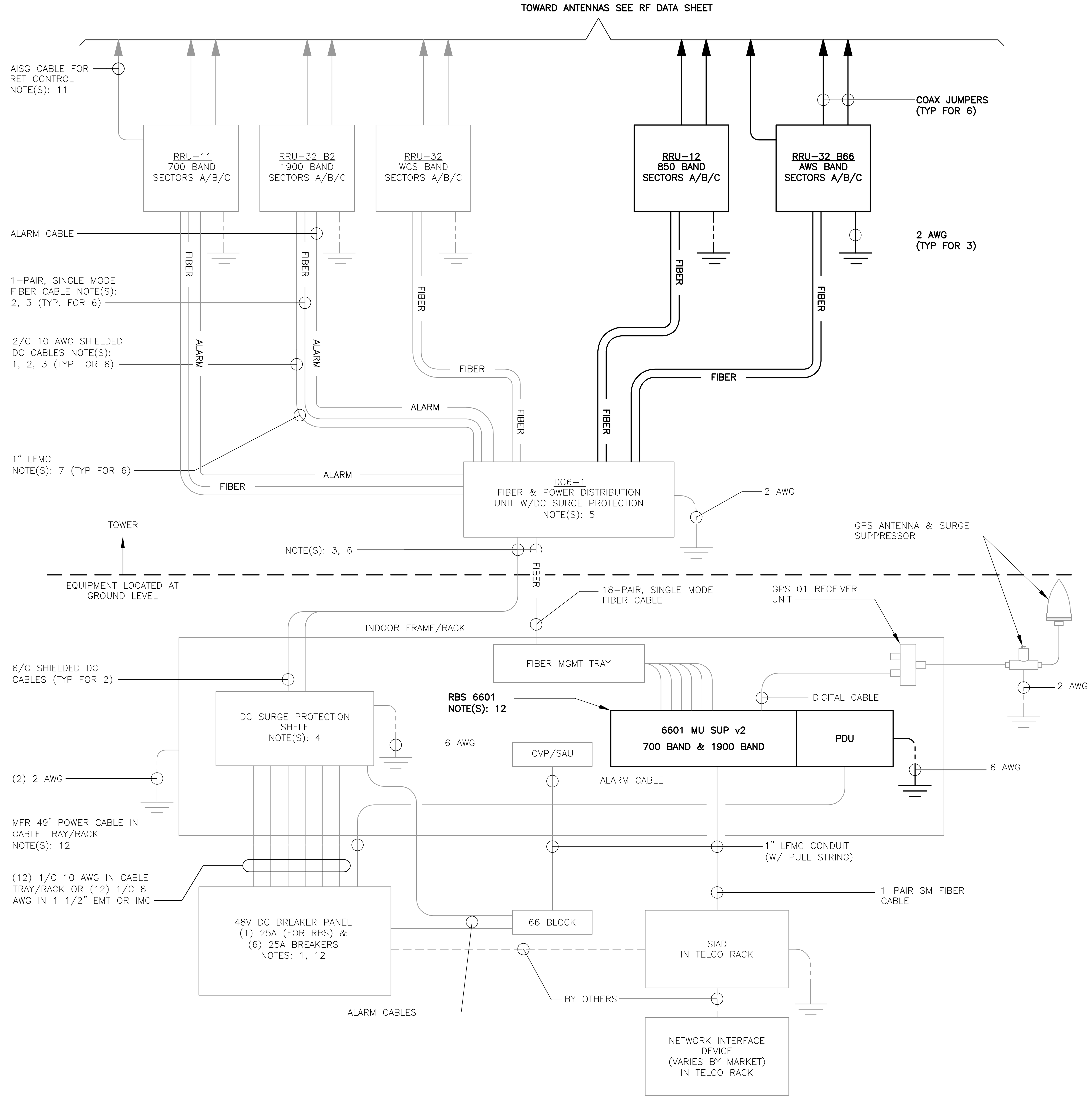
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NEW BRITAIN EAST
CT5379 - LTE 4C-850/5C-AWS
167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

DATE: 03/05/18
SCALE: AS NOTED
JOB NO. 18000.27

DETAILS

C-3

Sheet No. 5 of 8



1 / E-1 **LTE SCHEMATIC DIAGRAM**

NOT TO SCALE

LTE SCHEMATIC DIAGRAM NOTES:

1. BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
2. LEAVE COILED AND PROTECTED UNTIL TERMINATED.
3. DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
4. DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
5. FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
6. SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
7. CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
8. SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194™, COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/ 75°C WET INSTALLATION.
9. GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
10. FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
11. RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
12. RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

ELECTRICAL NOTES

1. PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
2. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
3. CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
4. MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
5. PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
6. CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
7. ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
8. PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
9. ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS. #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION:
10. MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
11. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
12. THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
15. THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
16. DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
17. ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
18. GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
19. EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
20. CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

A. CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:

   TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM.

   THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:

   1. TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
   2. CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
   3. GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.

B. TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.

C. THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.

D. CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAWJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

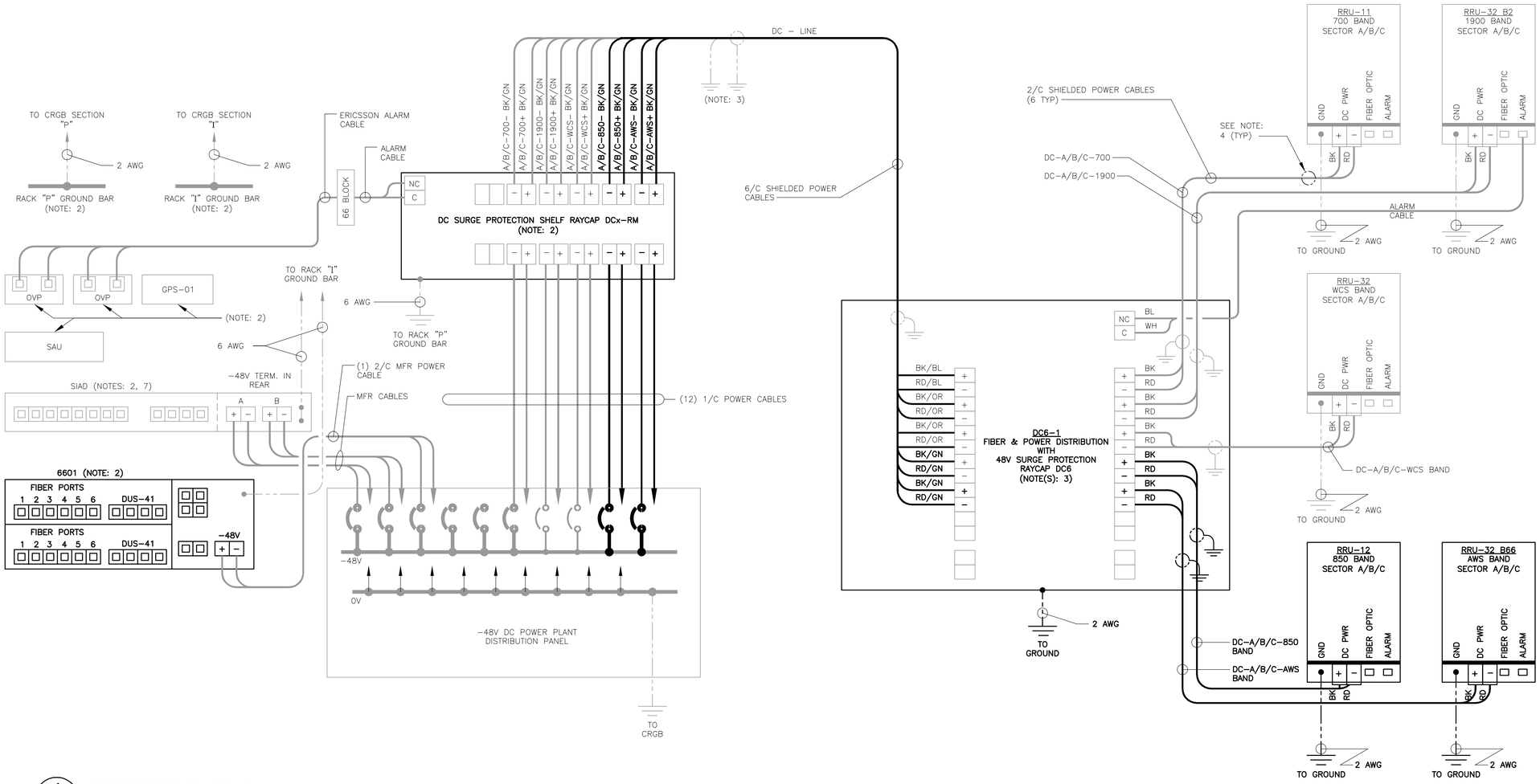
CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NEW BRITAIN EAST
CT5379 - LTE 4C-850/5C-AWS
167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

DATE: 03/05/18
SCALE: AS NOTED
JOB NO. 18000.27

LTE SCHEMATIC DIAGRAM AND NOTES

E-1



1 / E-2 LTE WIRING DIAGRAM

NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
2. INSTALL ON BASEBAND EQUIPMENT RACK.
3. THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
4. CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
5. SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAWJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t

EMPIRE telecom

CENTEK engineering
Centered on Solutions℠
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY

NEW BRITAIN EAST

CT5379 - LTE 4C-850/5C-AWS

167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

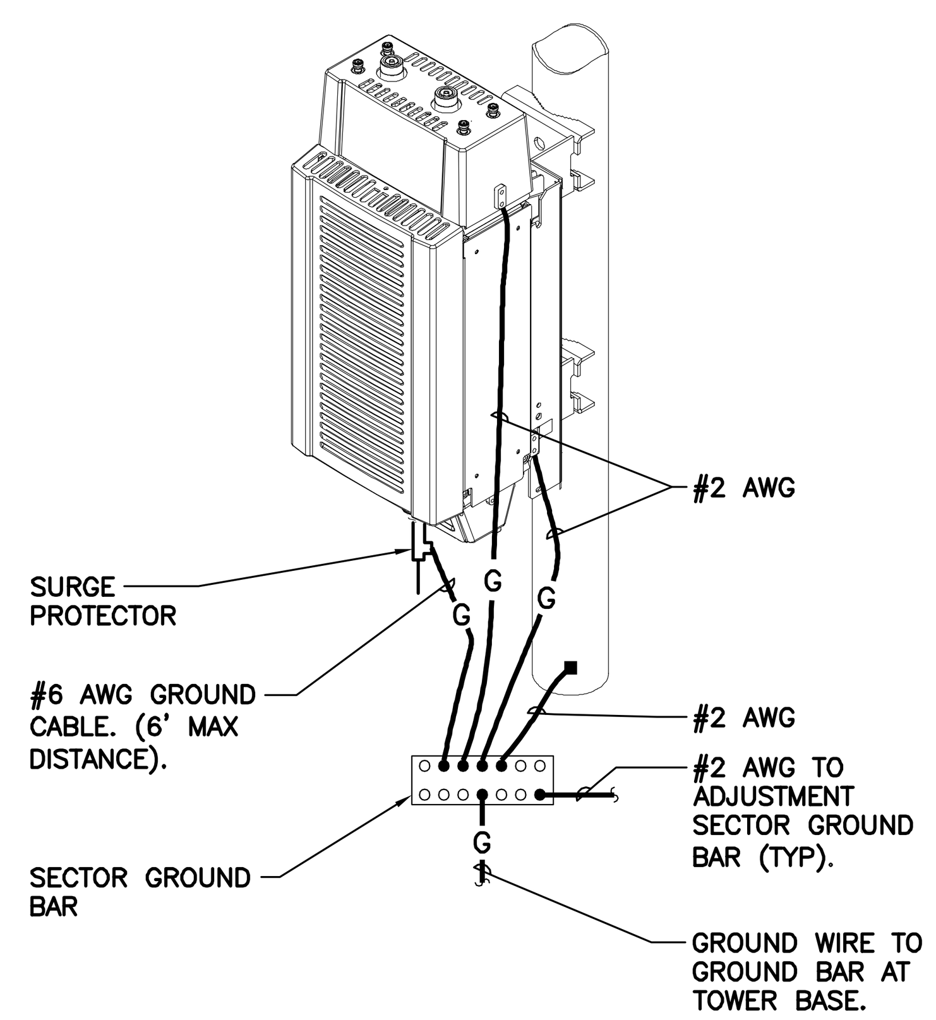
DATE:	03/05/18
SCALE:	AS NOTED
JOB NO.	18000.27

LTE WIRING DIAGRAM

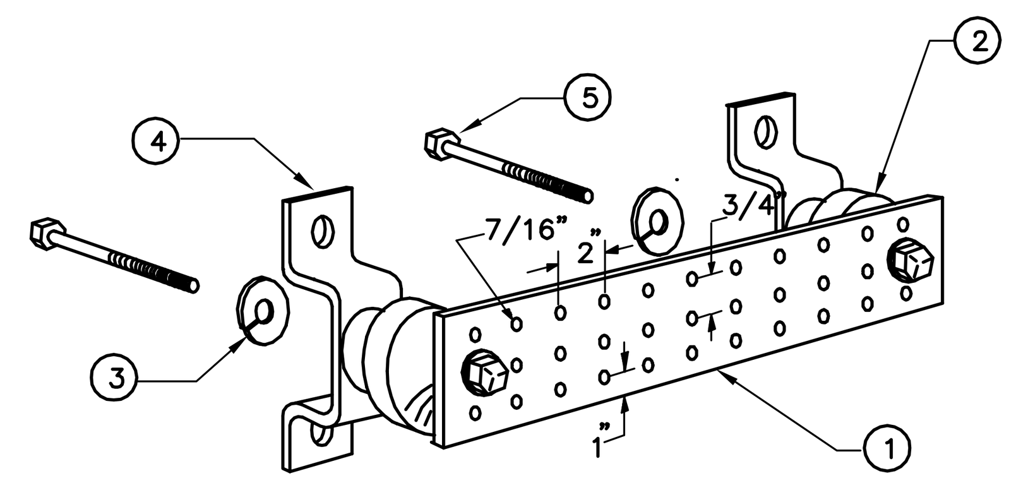
E-2

Sheet No. 7 of 8

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
1. AT TOP OF THE CABINET
2. AT RIGHT SIDE OF THE CABINET.



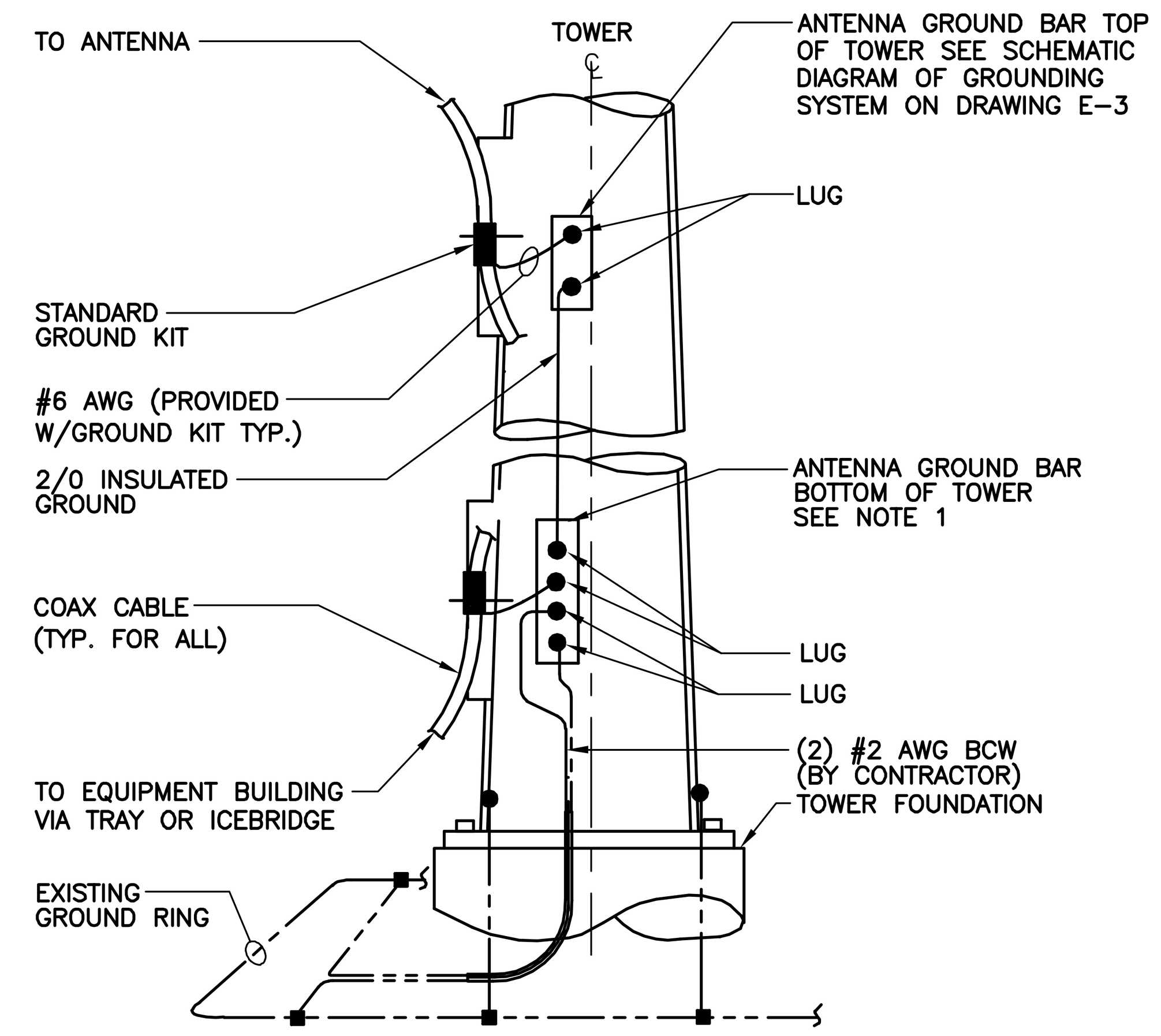
4 / E-3 **RRU POLE MOUNT GROUNDING**
NOT TO SCALE



LEGEND

1. TINNED COPPER GROUND BAR, 1/4"x 4"x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG .
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3. 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. 4. CAT NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

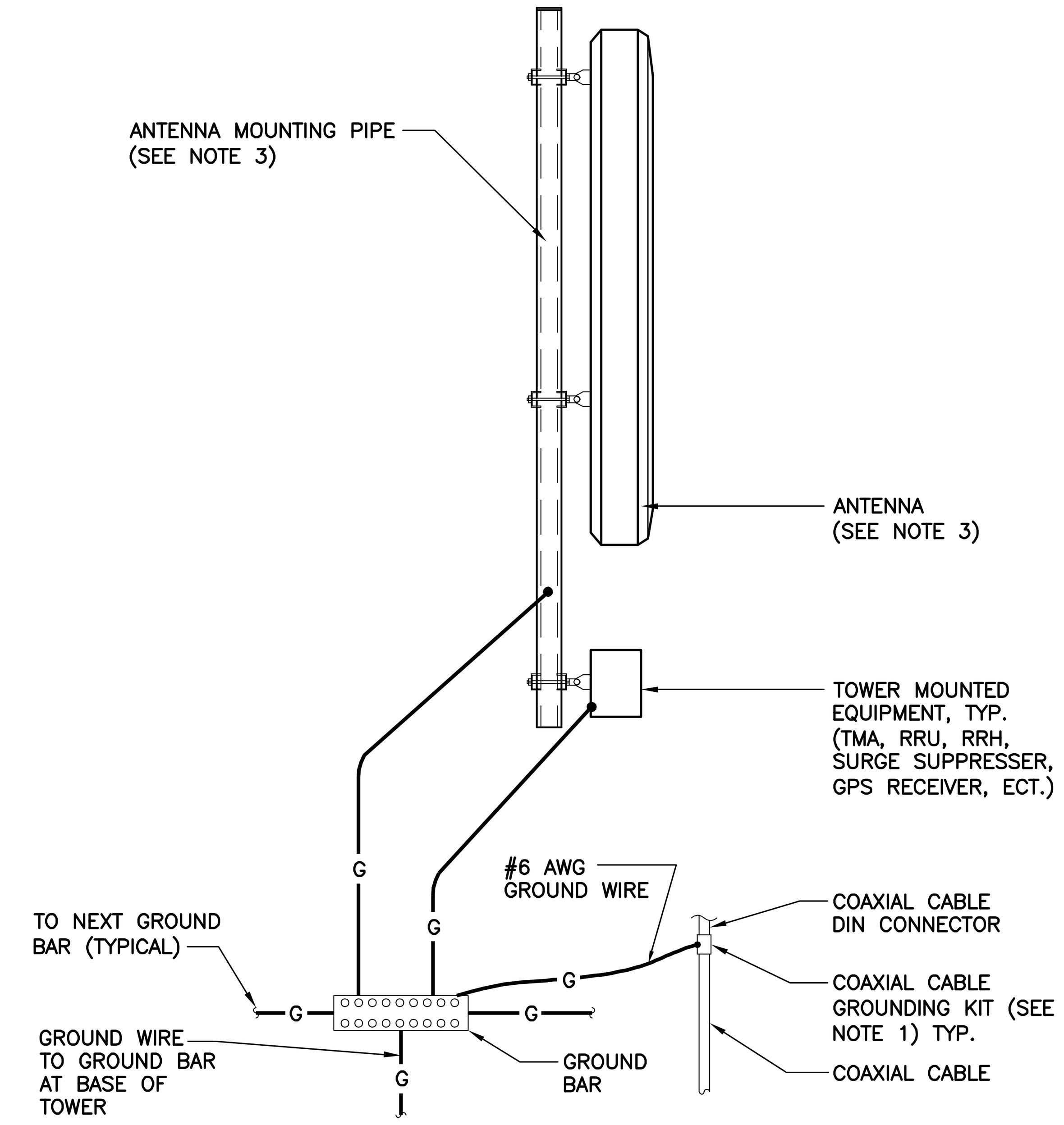
3 / E-3 **GROUND BAR DETAIL**
NOT TO SCALE



NOTES:

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

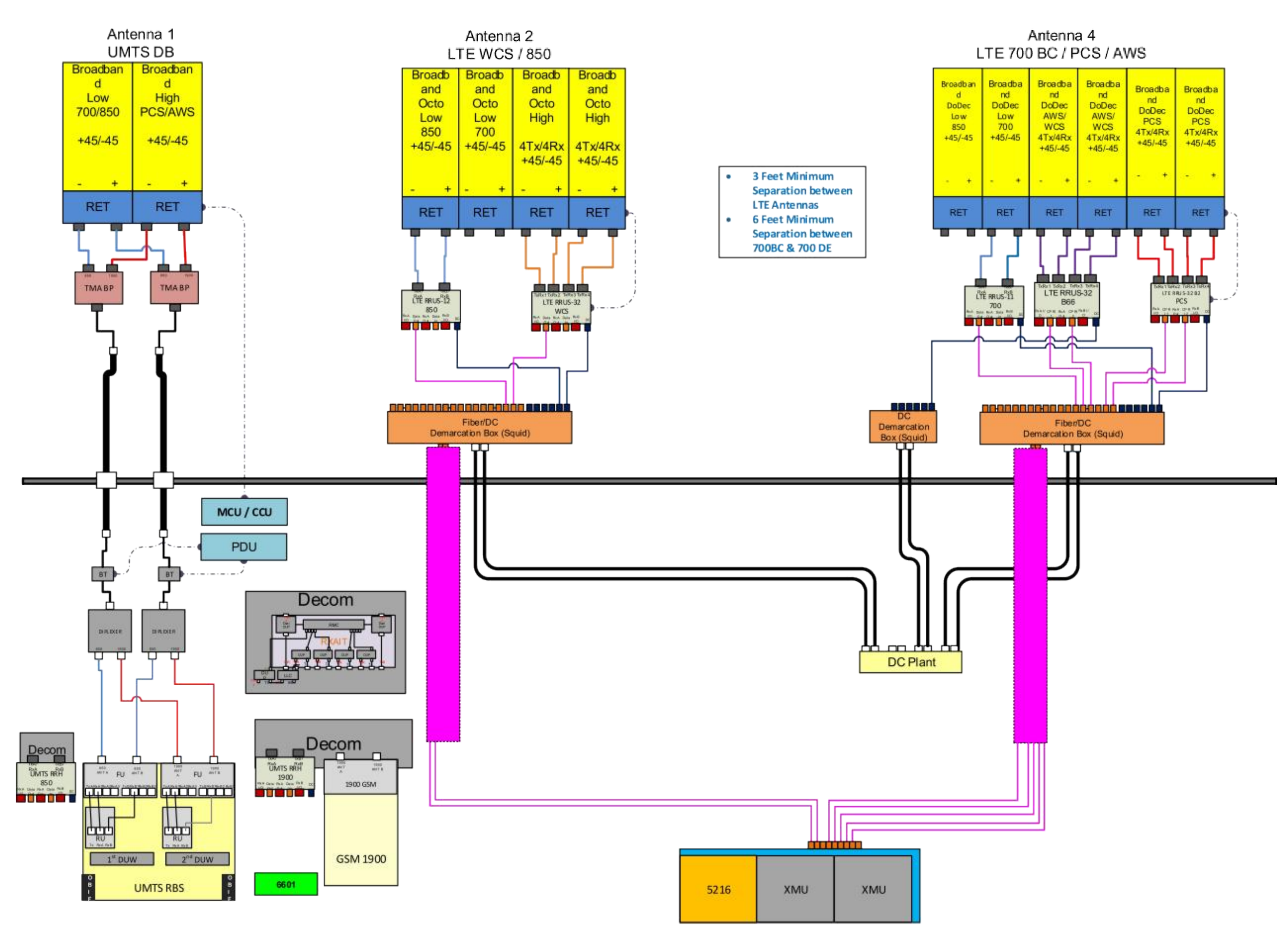
2 / E-3 **ANTENNA CABLE GROUNDING - TOWER**
NOT TO SCALE



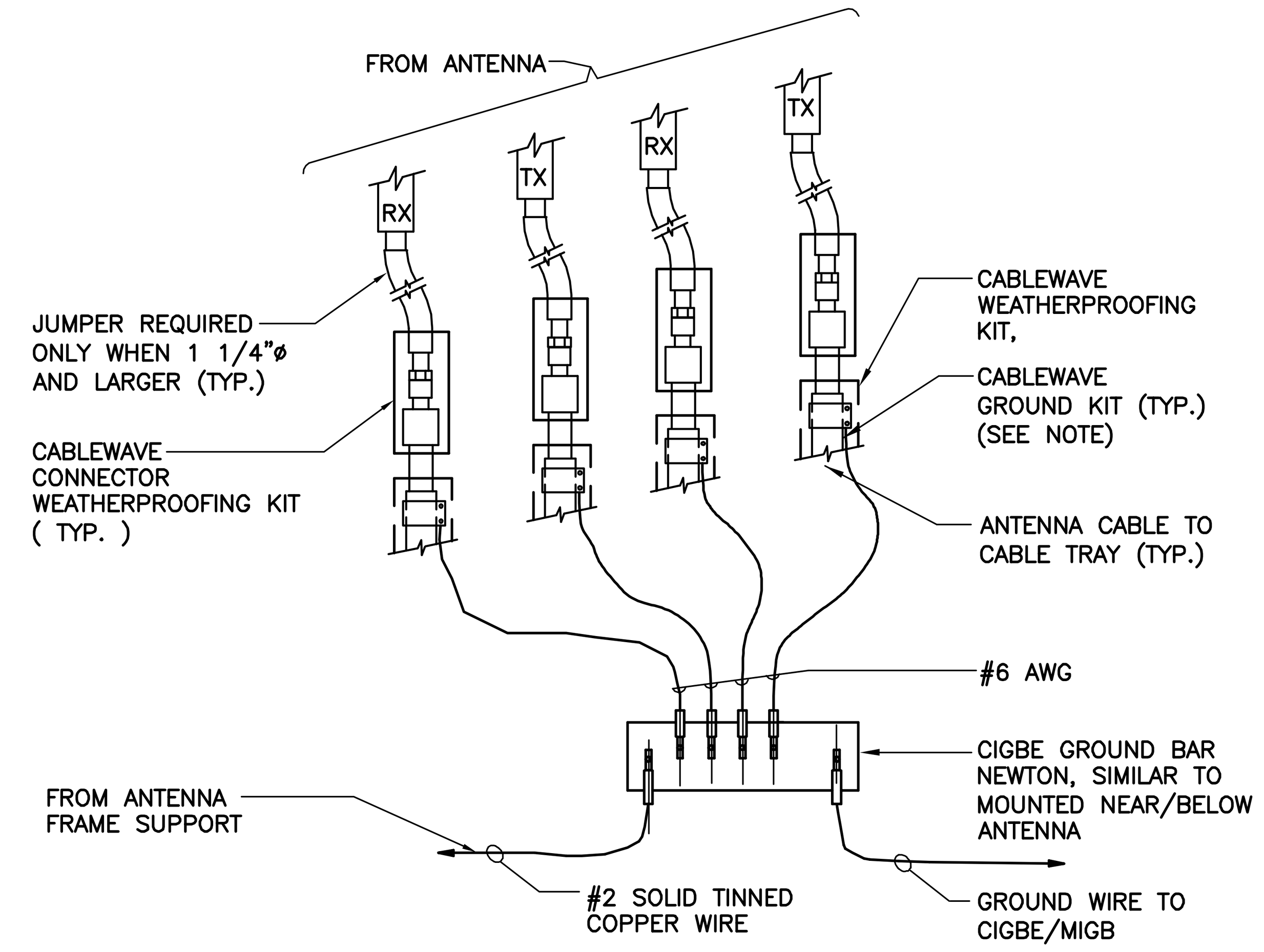
NOTES:

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 / E-3 **TYPICAL ANTENNA GROUNDING DETAIL**
NOT TO SCALE



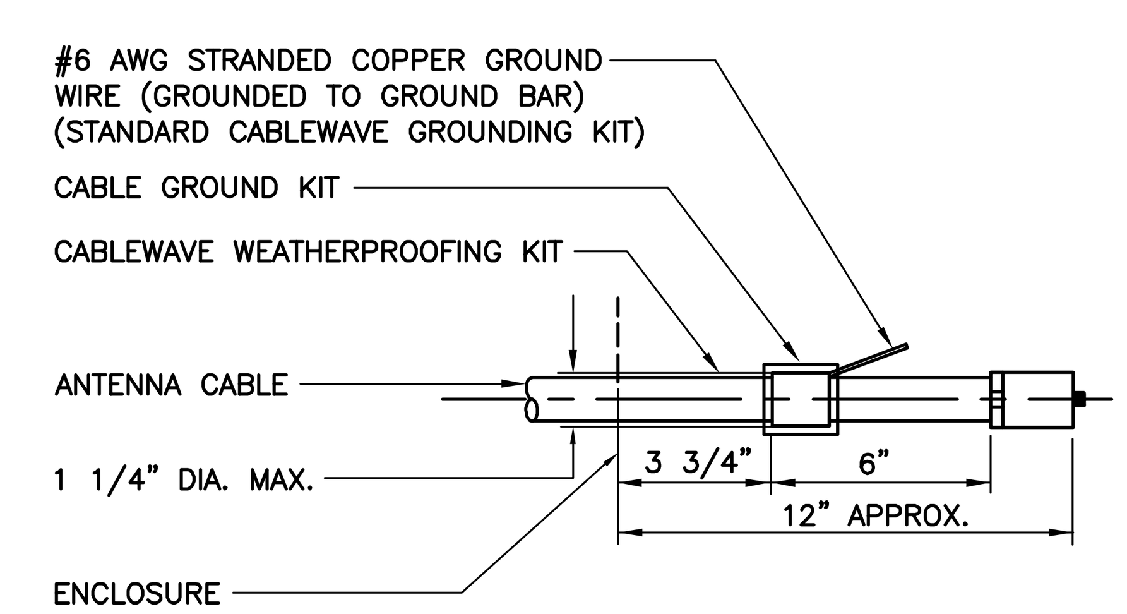
7 / E-3 **RF PLUMBING DIAGRAM**
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

6 / E-3 **CONNECTION OF GROUND WIRES TO GROUND BAR**
NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

5 / E-3 **ANTENNA CABLE GROUNDING DETAIL**
NOT TO SCALE

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	03/18/18	KAMJR	DMD	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER SEAL

at&t
EMPIRE telecom

CENTEK engineering
Centered on Solutions™
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
NEW BRITAIN EAST
CT5379 - LTE 4C-850/5C-AWS
167 COCCOMO CIRCLE (a.k.a. 178 LESTER ST)
NEW BRITAIN, CT 06051

DATE: 03/05/18
SCALE: AS NOTED
JOB NO. 18000.27

TYPICAL ELECTRICAL DETAILS

E-3

Sheet No. 8 of 8

Exhibit 3

Date: **February 06, 2018**

Chanhdara Ratsavong
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-9056

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5379
	Carrier Site Name:	10091781
Crown Castle Designation:	**Crown Castle BU Number:**	803175
	Crown Castle Site Name:	CT NEW BRITAIN 3 CAC 803175
	Crown Castle JDE Job Number:	481238
	Crown Castle Work Order Number:	1520538
	Crown Castle Application Number:	423199 Rev. 4
Engineering Firm Designation:	**Crown Castle Project Number:**	1520538
Site Data:	**167 Coccomo, New Britain, Hartford County, CT** **Latitude *41° 41' 11.8"*, Longitude *-72° 45' 27.8"*** **188 Foot - Monopole Tower**	

Dear Chanhdara Ratsavong,

Crown Castle is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1520538, in accordance with application 423199, revision 4.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Crown Castle* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Luis Zarate / VDL

Respectfully submitted by:

STATE OF CONNECTICUT
TERRY P. STYRAN
31522
LICENSED
PROFESSIONAL ENGINEER
2/7/2018

Terry P. Styran, P.E.
Senior Project Engineer

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 188 ft Monopole tower designed by SUMMIT in November of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
188.0	189.0	6	kathrein	860 10025	4 1 1	3/4 3/8 2''Conduit	-
		3	ericsson	RRUS 32 B30			
		3	ericsson	RRUS 12			
		3	ericsson	RRUS 32 B2			
		3	ericsson	RRUS 32 B66			
		2	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe			
		2	quintel technology	QS66512-2 w/ Mount Pipe			
		1	quintel technology	QS46512-2 w/ Mount Pipe			
		1	cci antennas	OPA-65R-LCUU-H4 w/ Mount Pipe			
		1	raycap	DC6-48-60-0-8F			
		1	raycap	DC6-48-60-18-8F			

Table 2 - Existing Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
188.0	189.0	3	kathrein	800 10121 w/ Mount Pipe	-	-	1
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	1	1-5/8	2
		1	kmw communications	AM-X-CD-14-65-00T-RET w/ Mount Pipe			
	188.0	3	ericsson	RRUS-11	6 2 1 1	1-5/8 3/4 3/8 2''Conduit	1
		6	powerwave technologies	LGP21401			
		3	ericsson	RRUS-11			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Miscellaneous [NA 507-3]			
		1	tower mounts	Platform Mount [LP 1201-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
160.0	163.0	3	commscope	LNX-6515DS-VTM w/ Mount Pipe	13	1-5/8	1
		3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	RRUS 11 B12			
		1	rfs celwave	ATMAA1412D-1A20			
	160.0	2	rfs celwave	ATMAA1412D-1A20			
		1	tower mounts	Platform Mount [LP 601-1]			
145.0	150.0	1	gps	GPS_A	14 1	1-5/8 1/2	1
	145.0	6	andrew	SBNHH-1D65B w/ Mount Pipe			
		3	antel	BXA-80063/6 w/ Mount Pipe			
		3	alcatel lucent	RRH2X60-AWS			
		3	alcatel lucent	RRH2X60-PCS			
		3	alcatel lucent	RRH2x60-700			
		2	antel	BXA-171063-12CF-EDIN-2 w/ Mount Pipe			
		1	antel	BXA-171063-8BF-EDIN-2 w/ Mount Pipe			
		1	raycap	RHSDC-3315-PF-48			
		1	tower mounts	Platform Mount [LP 601-1]			

Notes:
1) Existing Equipment
2) Equipment to Be Removed; Not Considered in This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
188	188	12	generic	1' x 5' x 3" Panel	-	-
177	177	12	generic	1' x 5' x 3" Panel	-	-
162	162	12	generic	1' x 5' x 3" Panel	-	-
147	147	12	generic	1' x 5' x 3" Panel	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clough, Harbor & Associates	679661	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, LLC / Paul J Ford and Company	679659	CCISITES

Document	Remarks	Reference	Source
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, LLC / Paul J Ford and Company	6709261	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	188 - 137	Pole	TP32.711x22x0.25	1	-13.66	1738.73	63.8	Pass
L2	137 - 90.25	Pole	TP42.03x31.3184x0.3125	2	-23.99	2768.52	89.3	Pass
L3	90.25 - 44.5	Pole	TP51.014x40.3023x0.375	3	-37.83	4014.89	88.3	Pass
L4	44.5 - 0	Pole	TP59.61x48.8988x0.5	4	-60.89	6652.09	69.3	Pass
							Summary	
						Pole (L2)	89.3	Pass
						Rating =	89.3	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	78.9	Pass
1	Base Plate	0	74.2	Pass
1	Base Foundation (Structure)	0	57.9	Pass
1	Base Foundation (Soil Interaction)	0	77.1	Pass

Structure Rating (max from all components) =	89.3%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

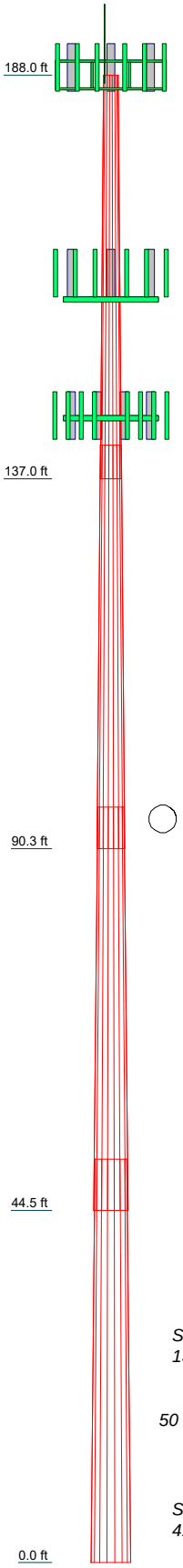
4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	51.00	18	0.2500	4.25	22.0000	32.7110	A607-65	3.7
2	51.00	18	0.3125	5.25	31.3184	42.0300		6.3
3	51.00	18	0.3750	6.50	40.3023	51.0140		9.4
4	51.00	18	0.5000		48.8988	59.6100		14.8
								34.1



ALL REACTIONS ARE FACTORED

AXIAL 109 K
SHEAR 13 K
MOMENT 1858 kip-ft
TORQUE 0 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 61 K
SHEAR 41 K
MOMENT 5525 kip-ft
TORQUE 1 kip-ft
REACTIONS - 97 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod 3/4" x 8'	188	RRUS 11 B12	160
Top Hat 2' 3" x 31.83"	188	RRUS 11 B12	160
800 10121 w/ Mount Pipe	188	RRUS 11 B12	160
800 10121 w/ Mount Pipe	188	ATMAA1412D-1A20	160
800 10121 w/ Mount Pipe	188	ATMAA1412D-1A20	160
(2) LGP21401	188	ATMAA1412D-1A20	160
(2) LGP21401	188	8' x 2" Mount Pipe	160
(2) LGP21401	188	8' x 2" Mount Pipe	160
RRUS-11	188	8' x 2" Mount Pipe	160
RRUS-11	188	Platform Mount [LP 601-1]	160
RRUS-11	188	(2) SBNHH-1D65B w/ Mount Pipe	145
DC6-48-60-18-8F	188	(2) SBNHH-1D65B w/ Mount Pipe	145
OPA-65R-LCUU-H4 w/ Mount Pipe	188	(2) SBNHH-1D65B w/ Mount Pipe	145
OPA-65R-LCUU-H6 w/ Mount Pipe	188	BXA-171063-8BF-EDIN-2 w/ Mount Pipe	145
OPA-65R-LCUU-H6 w/ Mount Pipe	188		
QS46512-2 w/ Mount Pipe	188	BXA-171063-12CF-EDIN-2 w/ Mount Pipe	145
QS66512-2 w/ Mount Pipe	188		
QS66512-2 w/ Mount Pipe	188	BXA-171063-12CF-EDIN-2 w/ Mount Pipe	145
(2) 860 10025	188		
(2) 860 10025	188	BXA-80063/6 w/ Mount Pipe	145
(2) 860 10025	188	BXA-80063/6 w/ Mount Pipe	145
RRUS 32 B30	188	BXA-80063/6 w/ Mount Pipe	145
RRUS 32 B30	188	GPS_A	145
RRUS 32 B30	188	RRH2X60-AWS	145
RRUS 12	188	RRH2X60-AWS	145
RRUS 12	188	RRH2X60-AWS	145
RRUS 12	188	RRH2X60-PCS	145
RRUS 32 B2	188	RRH2X60-PCS	145
RRUS 32 B2	188	RRH2X60-PCS	145
RRUS 32 B2	188	RRH2x60-700	145
RRUS 32 B66	188	RRH2x60-700	145
RRUS 32 B66	188	RRH2x60-700	145
RRUS 32 B66	188	RHSDC-3315-PF-48	145
DC6-48-60-18-8F	188	4' x 2" Pipe Mount	145
DC6-48-60-0-8F	188	4' x 2" Pipe Mount	145
Miscellaneous [NA 509-3]	188	4' x 2" Pipe Mount	145
Miscellaneous [NA 507-3]	188	Platform Mount [LP 601-1]	145
Platform Mount [LP 1201-1]	188	Side Arm Mount [SO 701-3]	133
AIR -32 B2A/B66AA w/ Mount Pipe	160	1" Dia x 3.5-ft	100
AIR -32 B2A/B66AA w/ Mount Pipe	160	1" Dia x 3.5-ft	100
AIR -32 B2A/B66AA w/ Mount Pipe	160	1" Dia x 3.5-ft	100
LNX-6515DS-VTM w/ Mount Pipe	160	1" Dia x 3.5-ft	70
LNX-6515DS-VTM w/ Mount Pipe	160	1" Dia x 3.5-ft	70
LNX-6515DS-VTM w/ Mount Pipe	160	1" Dia x 3.5-ft	70
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160	1" Dia x 3.5-ft	40
		1" Dia x 3.5-ft	40
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160	1" Dia x 3.5-ft	40
		1" Dia x 3.5-ft	10
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	160	1" Dia x 3.5-ft	10
		1" Dia x 3.5-ft	10

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 89.3%

CROWN CASTLE
The Foundation for a Wireless World

Crown Castle
2000 Corporate Dr.
Canonsburg, PA 15317
Phone: (724) 416 - 2536
FAX: (724) 416 - 4536

Job: ***BU 803175***			
Project: ***WO 1520538***			
Client: Crown Castle	Drawn by: vlarson	App'd:	
Code: TIA-222-G	Date: 02/06/18	Scale: NTS	
Path: R:\SA Models - Letters\Work Area\LZarate\WIP\803175 WO1520538\QA_VDL\803175.eri		Dwg No. E-1	

Tower Input Data

There is a pole section.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 97 mph.
3) Structure Class II.
4) Exposure Category C.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 1.0000 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	188.00-137.00	51.00	4.25	18	22.0000	32.7110	0.2500	1.0000	A607-65 (65 ksi)
L2	137.00-90.25	51.00	5.25	18	31.3184	42.0300	0.3125	1.2500	A607-65 (65 ksi)
L3	90.25-44.50	51.00	6.50	18	40.3023	51.0140	0.3750	1.5000	A607-65 (65 ksi)
L4	44.50-0.00	51.00		18	48.8988	59.6100	0.5000	2.0000	A607-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.3394	17.2586	1031.4832	7.7212	11.1760	92.2945	2064.3237	8.6310	3.4320	13.728
	33.2156	25.7578	3429.0204	11.5237	16.6172	206.3538	6862.5527	12.8813	5.3171	21.269
L2	32.7080	30.7540	3735.3226	11.0071	15.9098	234.7819	7475.5603	15.3799	4.9620	15.879
	42.6784	41.3785	9098.0688	14.8097	21.3512	426.1143	18208.1091	20.6932	6.8473	21.911
L3	42.0437	47.5235	9571.6471	14.1742	20.4736	467.5120	19155.8888	23.7663	6.4332	17.155
	51.8010	60.2731	19526.7966	17.9768	25.9151	753.4907	39079.2871	30.1423	8.3185	22.183
L4	51.0393	76.8089	22730.9631	17.1816	24.8406	915.0736	45491.8362	38.4117	7.7262	15.452
	60.5296	93.8076	41409.2395	20.9841	30.2819	1367.4593	82872.9664	46.9127	9.6114	19.223

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 188.00-137.00				1	1	1			
L2 137.00-90.25				1	1	1			
L3 90.25-44.50				1	1	1			
L4 44.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
***										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
145								
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	145.00 - 0.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
LCF12-50J(1/2)	B	No	Inside Pole	145.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LCF158-50J(1-5/8)	B	No	Inside Pole	145.00 - 0.00	12	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
160								
MLE HYBRID 9POWER/18FIBER RL 2(1-5/8)	C	No	Inside Pole	160.00 - 0.00	2	No Ice	0.00	1.07
						1/2" Ice	0.00	1.07
						1" Ice	0.00	1.07
LCF158-50J(1-5/8)	C	No	Inside Pole	160.00 - 0.00	11	No Ice	0.00	0.92
						1/2" Ice	0.00	0.92
						1" Ice	0.00	0.92
188								
2" Rigid Conduit	B	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
2" Rigid Conduit	B	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	2.80
						1/2" Ice	0.00	2.80
						1" Ice	0.00	2.80
LDF7-50A(1-5/8)	B	No	Inside Pole	188.00 - 0.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FB-L98B-002-75000(3/8)	B	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	188.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
FB-L98B-002-75000(3/8)	B	No	Inside Pole	188.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	188.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
WR-VG86ST-BRD(3/4)	B	No	Inside Pole	188.00 - 0.00	2	No Ice	0.00	0.58
						1/2" Ice	0.00	0.58
						1" Ice	0.00	0.58
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	188.00-137.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.83
		C	0.000	0.000	0.000	0.000	0.28
L2	137.00-90.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	1.31
		C	0.000	0.000	0.000	0.000	0.57
L3	90.25-44.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	1.28
		C	0.000	0.000	0.000	0.000	0.56
L4	44.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	1.24
		C	0.000	0.000	0.000	0.000	0.55

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	188.00-137.00	A	2.344	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.83
		C		0.000	0.000	0.000	0.000	0.28
L2	137.00-90.25	A	2.262	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	1.31
		C		0.000	0.000	0.000	0.000	0.57
L3	90.25-44.50	A	2.147	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	1.28
		C		0.000	0.000	0.000	0.000	0.56
L4	44.50-0.00	A	1.925	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	1.24
		C		0.000	0.000	0.000	0.000	0.55

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	188.00-137.00	0.0000	0.0000	0.0000	0.0000
L2	137.00-90.25	0.0000	0.0000	0.0000	0.0000
L3	90.25-44.50	0.0000	0.0000	0.0000	0.0000
L4	44.50-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lighting Rod 3/4" x 8'	C	From Leg	0.00 0.00 4.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	0.60 1.41 2.25	0.60 1.41 2.25	0.03 0.04 0.05
Top Hat 2' 3" x 31.83"	C	None		0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.98 4.47 4.77	2.98 4.47 4.77	0.10 0.17 0.25
****** **188**									
800 10121 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
800 10121 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
800 10121 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	5.39 5.81 6.23	4.60 5.35 6.05	0.07 0.11 0.17
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.21 0.27 0.35	0.01 0.02 0.03
RRUS-11	A	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
RRUS-11	B	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRUS-11	C	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.09
DC6-48-60-18-8F	A	From Leg	4.00 0.00 0.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	0.79 1.27 1.45	0.79 1.27 1.45	0.02 0.04 0.05
OPA-65R-LCUU-H4 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	6.18 6.57 6.98	4.55 5.16 5.78	0.08 0.13 0.19
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	7.18 8.36 9.26	0.10 0.18 0.26
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	9.90 10.47 11.01	7.18 8.36 9.26	0.10 0.18 0.26
QS46512-2 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	5.79 6.21 6.62	5.88 6.58 7.25	0.12 0.18 0.24
QS66512-2 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
QS66512-2 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	8.37 8.93 9.46	8.46 9.66 10.55	0.14 0.21 0.30
(2) 860 10025	A	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26	0.12 0.17 0.23	0.00 0.00 0.01
(2) 860 10025	B	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26	0.12 0.17 0.23	0.00 0.00 0.01
(2) 860 10025	C	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26	0.12 0.17 0.23	0.00 0.00 0.01
RRUS 32 B30	A	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS 32 B30	B	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS 32 B30	C	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.57 1.76 1.95	0.06 0.08 0.10
RRUS 12	A	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS 12	B	From Leg	4.00 0.00 1.00	0.0000	188.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	0.06 0.08 0.11
RRUS 12	C	From Leg	4.00	0.0000	188.00	No Ice	3.15	1.29	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	3.36	1.44	0.08
			1.00			1" Ice	3.59	1.60	0.11
RRUS 32 B2	A	From Leg	4.00	0.0000	188.00	No Ice	2.73	1.67	0.05
			0.00			1/2" Ice	2.95	1.86	0.07
			1.00			1" Ice	3.18	2.05	0.10
RRUS 32 B2	B	From Leg	4.00	0.0000	188.00	No Ice	2.73	1.67	0.05
			0.00			1/2" Ice	2.95	1.86	0.07
			1.00			1" Ice	3.18	2.05	0.10
RRUS 32 B2	C	From Leg	4.00	0.0000	188.00	No Ice	2.73	1.67	0.05
			0.00			1/2" Ice	2.95	1.86	0.07
			1.00			1" Ice	3.18	2.05	0.10
RRUS 32 B66	A	From Leg	4.00	0.0000	188.00	No Ice	2.74	1.67	0.05
			0.00			1/2" Ice	2.96	1.86	0.07
			1.00			1" Ice	3.19	2.05	0.10
RRUS 32 B66	B	From Leg	4.00	0.0000	188.00	No Ice	2.74	1.67	0.05
			0.00			1/2" Ice	2.96	1.86	0.07
			1.00			1" Ice	3.19	2.05	0.10
RRUS 32 B66	C	From Leg	4.00	0.0000	188.00	No Ice	2.74	1.67	0.05
			0.00			1/2" Ice	2.96	1.86	0.07
			1.00			1" Ice	3.19	2.05	0.10
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	188.00	No Ice	0.79	0.79	0.02
			0.00			1/2" Ice	1.27	1.27	0.04
			1.00			1" Ice	1.45	1.45	0.05
DC6-48-60-0-8F	B	From Leg	4.00	0.0000	188.00	No Ice	0.92	0.92	0.03
			0.00			1/2" Ice	1.46	1.46	0.05
			1.00			1" Ice	1.64	1.64	0.07
Miscellaneous [NA 509-3]	C	None		0.0000	188.00	No Ice	11.84	11.84	0.28
						1/2" Ice	16.96	16.96	0.30
						1" Ice	22.08	22.08	0.32
Miscellaneous [NA 507-3]	C	None		0.0000	188.00	No Ice	18.50	18.50	0.51
						1/2" Ice	26.40	26.40	0.70
						1" Ice	34.30	34.30	0.90
Platform Mount [LP 1201-1]	C	None		0.0000	188.00	No Ice	23.10	23.10	2.10
						1/2" Ice	26.80	26.80	2.50
						1" Ice	30.50	30.50	2.90
160									
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	6.75	6.07	0.15
			0.00			1/2" Ice	7.20	6.87	0.21
			3.00			1" Ice	7.65	7.58	0.28
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	6.75	6.07	0.15
			0.00			1/2" Ice	7.20	6.87	0.21
			3.00			1" Ice	7.65	7.58	0.28
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	6.75	6.07	0.15
			0.00			1/2" Ice	7.20	6.87	0.21
			3.00			1" Ice	7.65	7.58	0.28
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			3.00			1" Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/	B	From Leg	4.00	0.0000	160.00	No Ice	11.68	9.84	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	12.40	11.37	0.17
			3.00			1" Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	11.68 12.40 13.14	9.84 11.37 12.91	0.08 0.17 0.27
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	6.33 6.78 7.21	5.64 6.43 7.13	0.11 0.17 0.23
RRUS 11 B12	A	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	B	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
RRUS 11 B12	C	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	2.83 3.04 3.26	1.18 1.33 1.48	0.05 0.07 0.10
ATMAA1412D-1A20	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.41 0.50 0.59	1.00 1.13 1.26	0.01 0.02 0.03
ATMAA1412D-1A20	B	From Leg	4.00 0.00 3.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.41 0.50 0.59	1.00 1.13 1.26	0.01 0.02 0.03
ATMAA1412D-1A20	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	0.41 0.50 0.59	1.00 1.13 1.26	0.01 0.02 0.03
8' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
8' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice 1" Ice	1.90 2.73 3.40	1.90 2.73 3.40	0.03 0.04 0.06
Platform Mount [LP 601-1]	C	None		0.0000	160.00	No Ice 1/2" Ice 1" Ice	28.47 33.59 38.71	28.47 33.59 38.71	1.12 1.51 1.91
145									
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
(2) SBNHH-1D65B w/	B	From Leg	4.00	0.0000	145.00	No Ice	8.39	7.08	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			0.00			1/2" Ice	8.95	8.28	0.15
			0.00			1" Ice	9.48	9.19	0.22
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	8.39 8.95 9.48	7.08 8.28 9.19	0.08 0.15 0.22
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.18 3.56 3.93	3.35 3.97 4.60	0.03 0.06 0.10
BXA-171063-12CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	5.03 5.58 6.10	5.29 6.46 7.35	0.04 0.09 0.14
BXA-171063-12CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	5.03 5.58 6.10	5.29 6.46 7.35	0.04 0.09 0.14
BXA-80063/6 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	7.82 8.37 8.89	5.41 6.56 7.42	0.04 0.10 0.17
BXA-80063/6 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	7.82 8.37 8.89	5.41 6.56 7.42	0.04 0.10 0.17
BXA-80063/6 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	7.82 8.37 8.89	5.41 6.56 7.42	0.04 0.10 0.17
GPS_A	A	From Leg	4.00 0.00 5.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	0.26 0.32 0.39	0.26 0.32 0.39	0.00 0.00 0.01
RRH2X60-AWS	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-AWS	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-AWS	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2X60-PCS	A	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	B	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2X60-PCS	C	From Leg	4.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	2.20 2.39 2.59	1.72 1.90 2.09	0.06 0.08 0.10
RRH2x60-700	A	From Leg	0.00 0.00 0.00	0.0000	145.00	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-700	B	From Leg	0.00 0.00	0.0000	145.00	No Ice 1/2"	3.50 3.76	1.82 2.05	0.06 0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			Ice	4.03	2.29	0.11
						1" Ice			
RRH2x60-700	C	From Leg	0.00	0.0000	145.00	No Ice	3.50	1.82	0.06
			0.00			1/2"	3.76	2.05	0.08
			0.00			Ice	4.03	2.29	0.11
						1" Ice			
RHSDC-3315-PF-48	A	From Leg	4.00	0.0000	145.00	No Ice	3.36	2.19	0.03
			0.00			1/2"	3.60	2.39	0.06
			0.00			Ice	3.84	2.61	0.09
						1" Ice			
4' x 2" Pipe Mount	A	From Leg	4.00	0.0000	145.00	No Ice	0.79	0.79	0.03
			0.00			1/2"	1.03	1.03	0.04
			0.00			Ice	1.28	1.28	0.04
						1" Ice			
4' x 2" Pipe Mount	B	From Leg	4.00	0.0000	145.00	No Ice	0.79	0.79	0.03
			0.00			1/2"	1.03	1.03	0.04
			0.00			Ice	1.28	1.28	0.04
						1" Ice			
4' x 2" Pipe Mount	C	From Leg	4.00	0.0000	145.00	No Ice	0.79	0.79	0.03
			0.00			1/2"	1.03	1.03	0.04
			0.00			Ice	1.28	1.28	0.04
						1" Ice			
Platform Mount [LP 601-1]	C	None		0.0000	145.00	No Ice	28.47	28.47	1.12
						1/2"	33.59	33.59	1.51
						Ice	38.71	38.71	1.91
						1" Ice			
Detuner									
Side Arm Mount [SO 701-3]	C	None		0.0000	133.00	No Ice	2.83	2.83	0.20
						1/2"	3.92	3.92	0.24
						Ice	5.01	5.01	0.28
						1" Ice			
***									
1" Dia x 3.5-ft	A	From Leg	1.50	0.0000	100.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01
						1" Ice			
1" Dia x 3.5-ft	B	From Leg	1.50	0.0000	100.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01
						1" Ice			
1" Dia x 3.5-ft	C	From Leg	1.50	0.0000	100.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01
						1" Ice			
*****									
1" Dia x 3.5-ft	A	From Leg	1.50	0.0000	70.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01
						1" Ice			
1" Dia x 3.5-ft	B	From Leg	1.50	0.0000	70.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01
						1" Ice			
1" Dia x 3.5-ft	C	From Leg	1.50	0.0000	70.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01
						1" Ice			
*****									
1" Dia x 3.5-ft	A	From Leg	1.50	0.0000	40.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01
						1" Ice			
1" Dia x 3.5-ft	B	From Leg	1.50	0.0000	40.00	No Ice	0.00	0.37	0.00
			0.00			1/2"	0.00	0.68	0.01
			0.00			Ice	0.00	0.90	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
1" Dia x 3.5-ft	C	From Leg	1.50 0.00 0.00	0.0000	40.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.37 0.68 0.90	0.00 0.01 0.01
*****									
1" Dia x 3.5-ft	A	From Leg	1.50 0.00 0.00	0.0000	10.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.37 0.68 0.90	0.00 0.01 0.01
1" Dia x 3.5-ft	B	From Leg	1.50 0.00 0.00	0.0000	10.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.37 0.68 0.90	0.00 0.01 0.01
1" Dia x 3.5-ft	C	From Leg	1.50 0.00 0.00	0.0000	10.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.37 0.68 0.90	0.00 0.01 0.01
***									

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp

Comb. No.	Description
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	188 - 137	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.87	-0.56	0.07
			Max. Mx	8	-13.66	-709.73	0.15
			Max. My	2	-13.67	-0.15	706.79
			Max. Vy	8	26.60	-709.73	0.15
			Max. Vx	2	-26.59	-0.15	706.79
			Max. Torque	8			-1.21
L2	137 - 90.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-60.01	-0.56	0.07
			Max. Mx	8	-23.99	-2043.43	0.11
			Max. My	2	-23.99	-0.17	2040.03
			Max. Vy	8	31.58	-2043.43	0.11
			Max. Vx	2	-31.57	-0.17	2040.03
			Max. Torque	8			-1.10
L3	90.25 - 44.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-79.07	-0.56	0.07
			Max. Mx	8	-37.83	-3554.35	0.09
			Max. My	2	-37.83	-0.18	3550.52
			Max. Vy	8	36.21	-3554.35	0.09
			Max. Vx	2	-36.20	-0.18	3550.52
			Max. Torque	8			-1.09
L4	44.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-108.79	-0.56	0.07
			Max. Mx	8	-60.89	-5525.03	0.10
			Max. My	2	-60.89	-0.18	5520.78
			Max. Vy	8	40.72	-5525.03	0.10
			Max. Vx	2	-40.71	-0.18	5520.78
			Max. Torque	8			-1.09

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	33	108.79	0.00	-12.82
	Max. H_x	21	45.69	40.67	-0.00
	Max. H_z	3	45.69	-0.00	40.67
	Max. M_x	2	5520.78	-0.00	40.67
	Max. M_z	8	5525.03	-40.67	0.00
	Max. Torsion	20	1.08	40.67	-0.00
	Min. Vert	7	45.69	-35.23	20.33
	Min. H_x	9	45.69	-40.67	0.00
	Min. H_z	15	45.69	0.00	-40.67
	Min. M_x	14	-5520.73	0.00	-40.67
	Min. M_z	20	-5524.75	40.67	-0.00

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Torsion	8	-1.08	-40.67	0.00

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	50.77	0.00	0.00	-0.02	-0.10	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	60.92	0.00	-40.67	-5520.78	-0.18	0.21
0.9 Dead+1.6 Wind 0 deg - No Ice	45.69	0.00	-40.67	-5444.70	-0.14	0.21
1.2 Dead+1.6 Wind 30 deg - No Ice	60.92	20.34	-35.22	-4781.16	-2762.63	0.73
0.9 Dead+1.6 Wind 30 deg - No Ice	45.69	20.34	-35.22	-4715.29	-2724.52	0.72
1.2 Dead+1.6 Wind 60 deg - No Ice	60.92	35.23	-20.33	-2760.44	-4784.86	1.05
0.9 Dead+1.6 Wind 60 deg - No Ice	45.69	35.23	-20.33	-2722.40	-4718.87	1.04
1.2 Dead+1.6 Wind 90 deg - No Ice	60.92	40.67	-0.00	-0.10	-5525.03	1.08
0.9 Dead+1.6 Wind 90 deg - No Ice	45.69	40.67	-0.00	-0.08	-5448.82	1.08
1.2 Dead+1.6 Wind 120 deg - No Ice	60.92	35.23	20.33	2760.27	-4784.84	0.83
0.9 Dead+1.6 Wind 120 deg - No Ice	45.69	35.23	20.33	2722.26	-4718.85	0.82
1.2 Dead+1.6 Wind 150 deg - No Ice	60.92	20.34	35.22	4781.05	-2762.58	0.35
0.9 Dead+1.6 Wind 150 deg - No Ice	45.69	20.34	35.22	4715.19	-2724.46	0.35
1.2 Dead+1.6 Wind 180 deg - No Ice	60.92	-0.00	40.67	5520.73	-0.09	-0.22
0.9 Dead+1.6 Wind 180 deg - No Ice	45.69	-0.00	40.67	5444.66	-0.05	-0.21
1.2 Dead+1.6 Wind 210 deg - No Ice	60.92	-20.34	35.22	4781.09	2762.38	-0.72
0.9 Dead+1.6 Wind 210 deg - No Ice	45.69	-20.34	35.22	4715.24	2724.34	-0.71
1.2 Dead+1.6 Wind 240 deg - No Ice	60.92	-35.23	20.33	2760.35	4784.61	-1.04
0.9 Dead+1.6 Wind 240 deg - No Ice	45.69	-35.23	20.33	2722.33	4718.69	-1.03
1.2 Dead+1.6 Wind 270 deg - No Ice	60.92	-40.67	0.00	-0.01	5524.75	-1.08
0.9 Dead+1.6 Wind 270 deg - No Ice	45.69	-40.67	0.00	0.01	5448.62	-1.08
1.2 Dead+1.6 Wind 300 deg - No Ice	60.92	-35.23	-20.33	-2760.36	4784.54	-0.84
0.9 Dead+1.6 Wind 300 deg - No Ice	45.69	-35.23	-20.33	-2722.33	4718.63	-0.83
1.2 Dead+1.6 Wind 330 deg - No Ice	60.92	-20.34	-35.22	-4781.11	2762.28	-0.36
0.9 Dead+1.6 Wind 330 deg - No Ice	45.69	-20.34	-35.22	-4715.24	2724.25	-0.36
1.2 Dead+1.0 Ice+1.0 Temp	108.79	0.00	0.00	-0.07	-0.56	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	108.79	0.00	-12.82	-1858.15	-0.75	0.09
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	108.79	6.40	-11.10	-1609.22	-927.87	0.23
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	108.79	11.08	-6.41	-929.13	-1606.58	0.31
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	108.79	12.80	-0.00	-0.09	-1855.00	0.31

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	108.79	11.08	6.41	928.96	-1606.57	0.22
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	108.79	6.40	11.10	1609.07	-927.86	0.08
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	108.79	-0.00	12.82	1858.01	-0.72	-0.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	108.79	-6.40	11.10	1609.08	926.41	-0.23
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	108.79	-11.08	6.41	928.98	1605.11	-0.31
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	108.79	-12.80	0.00	-0.06	1853.53	-0.31
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	108.79	-11.08	-6.41	-929.11	1605.09	-0.22
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	108.79	-6.40	-11.10	-1609.21	926.38	-0.08
Dead+Wind 0 deg - Service	50.77	0.00	-8.70	-1173.89	-0.12	0.05
Dead+Wind 30 deg - Service	50.77	4.35	-7.54	-1016.64	-587.51	0.16
Dead+Wind 60 deg - Service	50.77	7.54	-4.35	-586.97	-1017.49	0.23
Dead+Wind 90 deg - Service	50.77	8.70	-0.00	-0.03	-1174.87	0.24
Dead+Wind 120 deg - Service	50.77	7.54	4.35	586.91	-1017.49	0.18
Dead+Wind 150 deg - Service	50.77	4.35	7.54	1016.57	-587.49	0.08
Dead+Wind 180 deg - Service	50.77	-0.00	8.70	1173.85	-0.10	-0.05
Dead+Wind 210 deg - Service	50.77	-4.35	7.54	1016.58	587.27	-0.16
Dead+Wind 240 deg - Service	50.77	-7.54	4.35	586.92	1017.27	-0.23
Dead+Wind 270 deg - Service	50.77	-8.70	0.00	-0.01	1174.64	-0.24
Dead+Wind 300 deg - Service	50.77	-7.54	-4.35	-586.95	1017.25	-0.18
Dead+Wind 330 deg - Service	50.77	-4.35	-7.54	-1016.63	587.26	-0.08

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-50.77	0.00	0.00	50.77	0.00	0.000%
2	0.00	-60.92	-40.67	-0.00	60.92	40.67	0.000%
3	0.00	-45.69	-40.67	-0.00	45.69	40.67	0.000%
4	20.34	-60.92	-35.22	-20.34	60.92	35.22	0.000%
5	20.34	-45.69	-35.22	-20.34	45.69	35.22	0.000%
6	35.23	-60.92	-20.33	-35.23	60.92	20.33	0.000%
7	35.23	-45.69	-20.33	-35.23	45.69	20.33	0.000%
8	40.67	-60.92	-0.00	-40.67	60.92	0.00	0.000%
9	40.67	-45.69	-0.00	-40.67	45.69	0.00	0.000%
10	35.23	-60.92	20.33	-35.23	60.92	-20.33	0.000%
11	35.23	-45.69	20.33	-35.23	45.69	-20.33	0.000%
12	20.34	-60.92	35.22	-20.34	60.92	-35.22	0.000%
13	20.34	-45.69	35.22	-20.34	45.69	-35.22	0.000%
14	-0.00	-60.92	40.67	0.00	60.92	-40.67	0.000%
15	-0.00	-45.69	40.67	0.00	45.69	-40.67	0.000%
16	-20.34	-60.92	35.22	20.34	60.92	-35.22	0.000%
17	-20.34	-45.69	35.22	20.34	45.69	-35.22	0.000%
18	-35.23	-60.92	20.33	35.23	60.92	-20.33	0.000%
19	-35.23	-45.69	20.33	35.23	45.69	-20.33	0.000%
20	-40.67	-60.92	0.00	40.67	60.92	-0.00	0.000%
21	-40.67	-45.69	0.00	40.67	45.69	-0.00	0.000%
22	-35.23	-60.92	-20.33	35.23	60.92	20.33	0.000%
23	-35.23	-45.69	-20.33	35.23	45.69	20.33	0.000%
24	-20.34	-60.92	-35.22	20.34	60.92	35.22	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
25	-20.34	-45.69	-35.22	20.34	45.69	35.22	0.000%
26	0.00	-108.79	0.00	0.00	108.79	0.00	0.000%
27	0.00	-108.79	-12.82	-0.00	108.79	12.82	0.000%
28	6.40	-108.79	-11.10	-6.40	108.79	11.10	0.000%
29	11.08	-108.79	-6.41	-11.08	108.79	6.41	0.000%
30	12.80	-108.79	-0.00	-12.80	108.79	0.00	0.000%
31	11.08	-108.79	6.41	-11.08	108.79	-6.41	0.000%
32	6.40	-108.79	11.10	-6.40	108.79	-11.10	0.000%
33	-0.00	-108.79	12.82	0.00	108.79	-12.82	0.000%
34	-6.40	-108.79	11.10	6.40	108.79	-11.10	0.000%
35	-11.08	-108.79	6.41	11.08	108.79	-6.41	0.000%
36	-12.80	-108.79	0.00	12.80	108.79	-0.00	0.000%
37	-11.08	-108.79	-6.41	11.08	108.79	6.41	0.000%
38	-6.40	-108.79	-11.10	6.40	108.79	11.10	0.000%
39	0.00	-50.77	-8.70	-0.00	50.77	8.70	0.000%
40	4.35	-50.77	-7.54	-4.35	50.77	7.54	0.000%
41	7.54	-50.77	-4.35	-7.54	50.77	4.35	0.000%
42	8.70	-50.77	-0.00	-8.70	50.77	0.00	0.000%
43	7.54	-50.77	4.35	-7.54	50.77	-4.35	0.000%
44	4.35	-50.77	7.54	-4.35	50.77	-7.54	0.000%
45	-0.00	-50.77	8.70	0.00	50.77	-8.70	0.000%
46	-4.35	-50.77	7.54	4.35	50.77	-7.54	0.000%
47	-7.54	-50.77	4.35	7.54	50.77	-4.35	0.000%
48	-8.70	-50.77	0.00	8.70	50.77	-0.00	0.000%
49	-7.54	-50.77	-4.35	7.54	50.77	4.35	0.000%
50	-4.35	-50.77	-7.54	4.35	50.77	7.54	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00002345
3	Yes	4	0.00000001	0.00055401
4	Yes	6	0.00000001	0.00024067
5	Yes	6	0.00000001	0.00006726
6	Yes	6	0.00000001	0.00023624
7	Yes	6	0.00000001	0.00006570
8	Yes	5	0.00000001	0.00007127
9	Yes	4	0.00000001	0.00087095
10	Yes	6	0.00000001	0.00024114
11	Yes	6	0.00000001	0.00006742
12	Yes	6	0.00000001	0.00023788
13	Yes	6	0.00000001	0.00006628
14	Yes	5	0.00000001	0.00002340
15	Yes	4	0.00000001	0.00055392
16	Yes	6	0.00000001	0.00023692
17	Yes	6	0.00000001	0.00006596
18	Yes	6	0.00000001	0.00024165
19	Yes	6	0.00000001	0.00006760
20	Yes	5	0.00000001	0.00007135
21	Yes	4	0.00000001	0.00087147
22	Yes	6	0.00000001	0.00023672
23	Yes	6	0.00000001	0.00006588
24	Yes	6	0.00000001	0.00023969
25	Yes	6	0.00000001	0.00006693
26	Yes	4	0.00000001	0.00000001
27	Yes	6	0.00000001	0.00028292
28	Yes	6	0.00000001	0.00059758
29	Yes	6	0.00000001	0.00059042
30	Yes	6	0.00000001	0.00028292
31	Yes	6	0.00000001	0.00059721
32	Yes	6	0.00000001	0.00059395
33	Yes	6	0.00000001	0.00028303
34	Yes	6	0.00000001	0.00059012
35	Yes	6	0.00000001	0.00059667

36	Yes	6	0.00000001	0.00028238
37	Yes	6	0.00000001	0.00058975
38	Yes	6	0.00000001	0.00059359
39	Yes	4	0.00000001	0.00011218
40	Yes	5	0.00000001	0.00006238
41	Yes	4	0.00000001	0.00097011
42	Yes	4	0.00000001	0.00013071
43	Yes	5	0.00000001	0.00006267
44	Yes	4	0.00000001	0.00098760
45	Yes	4	0.00000001	0.00011219
46	Yes	4	0.00000001	0.00097663
47	Yes	5	0.00000001	0.00006302
48	Yes	4	0.00000001	0.00013062
49	Yes	4	0.00000001	0.00097441
50	Yes	5	0.00000001	0.00006162

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	188 - 137	38.463	42	1.9303	0.0036
L2	141.25 - 90.25	20.941	42	1.5541	0.0011
L3	95.5 - 44.5	8.760	42	0.9449	0.0004
L4	51 - 0	2.305	42	0.4197	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.00	Lighting Rod 3/4" x 8'	42	38.463	1.9303	0.0036	39340
160.00	AIR -32 B2A/B66AA w/ Mount Pipe	42	27.569	1.7315	0.0019	7024
145.00	(2) SBNHH-1D65B w/ Mount Pipe	42	22.199	1.5940	0.0012	4574
133.00	Side Arm Mount [SO 701-3]	42	18.313	1.4574	0.0009	4251
100.00	1" Dia x 3.5-ft	42	9.703	1.0068	0.0004	4443
70.00	1" Dia x 3.5-ft	42	4.433	0.6233	0.0002	4642
40.00	1" Dia x 3.5-ft	42	1.479	0.3168	0.0001	6093
10.00	1" Dia x 3.5-ft	42	0.247	0.0746	0.0000	24370

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	188 - 137	180.637	8	9.0821	0.0166
L2	141.25 - 90.25	98.460	8	7.3159	0.0050
L3	95.5 - 44.5	41.217	8	4.4489	0.0019
L4	51 - 0	10.845	8	1.9755	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.00	Lighting Rod 3/4" x 8'	8	180.637	9.0821	0.0166	8734
160.00	AIR -32 B2A/B66AA w/ Mount	8	129.557	8.1494	0.0088	1553

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	Pipe					
145.00	(2) SBNHH-1D65B w/ Mount Pipe	8	104.365	7.5037	0.0056	1007
133.00	Side Arm Mount [SO 701-3]	8	86.121	6.8614	0.0039	930
100.00	1" Dia x 3.5-ft	8	45.653	4.7406	0.0020	956
70.00	1" Dia x 3.5-ft	8	20.858	2.9342	0.0011	991
40.00	1" Dia x 3.5-ft	8	6.959	1.4909	0.0004	1296
10.00	1" Dia x 3.5-ft	8	1.160	0.3508	0.0001	5178

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	188 - 137 (1)	TP32.711x22x0.25	51.00	0.00	0.0	25.0495	-13.66	1738.73	0.008
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	51.00	0.00	0.0	40.2848	-23.99	2768.52	0.009
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	51.00	0.00	0.0	58.6481	-37.83	4014.89	0.009
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	51.00	0.00	0.0	93.8076	-60.89	6652.09	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	188 - 137 (1)	TP32.711x22x0.25	709.73	1128.63	0.629	0.00	1128.63	0.000
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	2043.43	2312.57	0.884	0.00	2312.57	0.000
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	3554.35	4069.02	0.874	0.00	4069.02	0.000
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	5525.02	8080.78	0.684	0.00	8080.78	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	188 - 137 (1)	TP32.711x22x0.25	26.60	869.37	0.031	1.10	2260.03	0.000
L2	137 - 90.25 (2)	TP42.03x31.3184x0.3125	31.58	1384.26	0.023	1.09	4630.81	0.000
L3	90.25 - 44.5 (3)	TP51.014x40.3023x0.375	36.21	2007.45	0.018	1.09	8147.98	0.000
L4	44.5 - 0 (4)	TP59.61x48.8988x0.5	40.72	3326.05	0.012	1.08	16181.33	0.000

Pole Interaction Design Data

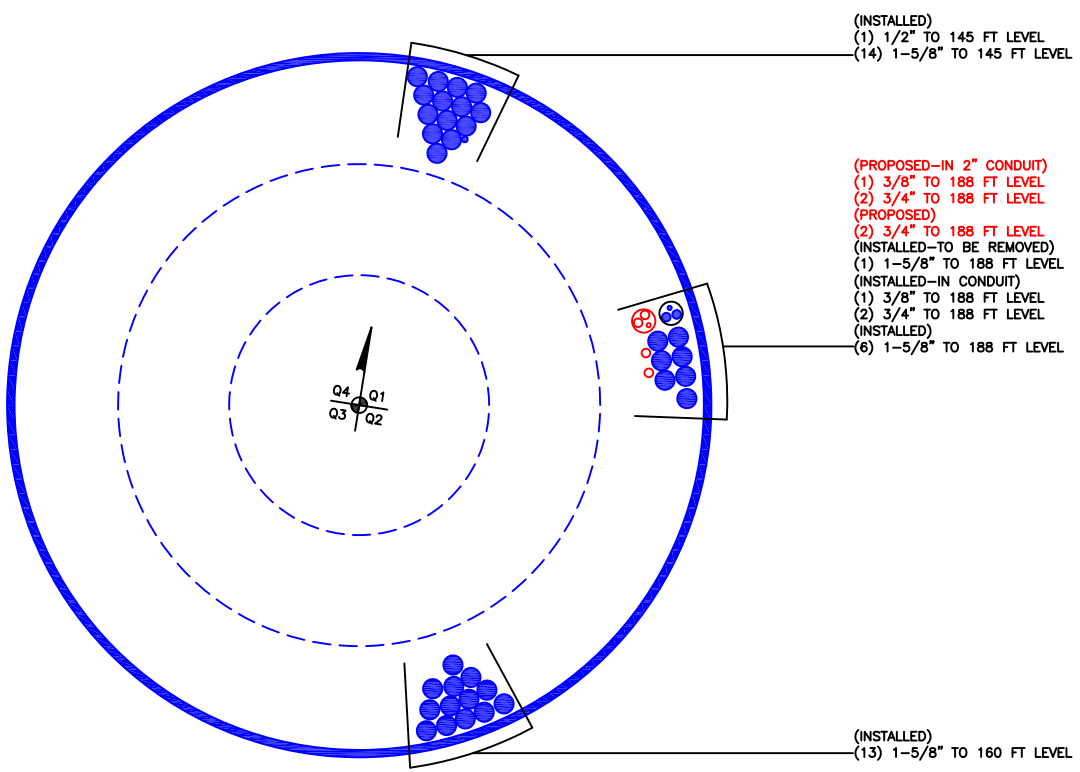
Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	188 - 137 (1)	0.008	0.629	0.000	0.031	0.000	0.638	1.000	4.8.2
L2	137 - 90.25 (2)	0.009	0.884	0.000	0.023	0.000	0.893	1.000	4.8.2
L3	90.25 - 44.5 (3)	0.009	0.874	0.000	0.018	0.000	0.883	1.000	4.8.2
L4	44.5 - 0 (4)	0.009	0.684	0.000	0.012	0.000	0.693	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	188 - 137	Pole	TP32.711x22x0.25	1	-13.66	1738.73	63.8	Pass
L2	137 - 90.25	Pole	TP42.03x31.3184x0.3125	2	-23.99	2768.52	89.3	Pass
L3	90.25 - 44.5	Pole	TP51.014x40.3023x0.375	3	-37.83	4014.89	88.3	Pass
L4	44.5 - 0	Pole	TP59.61x48.8988x0.5	4	-60.89	6652.09	69.3	Pass
							Summary	
						Pole (L2)	89.3	Pass
						RATING =	**89.3**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 803175 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions:
1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *803175*
Site Name: *CT NEW BRITAIN 3 CAC 803*
App #: *423199 Rev. 4*

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	67	in
Anchor Spacing:	6.125	in

Plate Data		
W=Side:	66	in
Thick:	3	in
Grade:	50	ksi
Clip Distance:	14	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	59.61	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	5525	ft-kips
Factored Axial, Pu:	61	kips
Factored Shear, Vu:	41	kips

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	205.0	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	78.9%	**Pass**

Base Plate Results — Flexural Check

Base Plate Stress:	33.4	ksi
PL Design Bending Strength, Φ*Fy:	45.0	ksi
Base Plate Stress Ratio:	74.2%	**Pass**

PL Ref. Data
Yield Line (in):
33.73
Max PL Length:
33.73

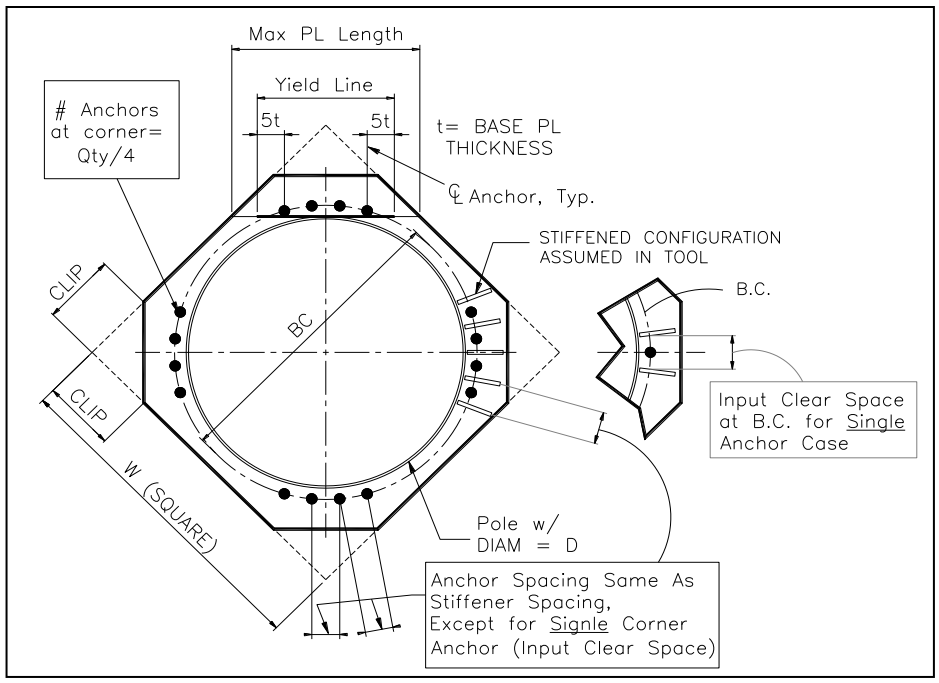
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check:	N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

Pier and Pad Foundation

BU # :	803175
Site Name:	CT NEW BRITAIN
App. Number:	423199 Rev. 4

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?: ☐

Superstructure Analysis Reactions

Compression, P_{comp}:	61	kips
Base Shear, Vu_comp:	41	kips
Moment, M_u:	5525	ft-kips
Tower Height, **H**:	188	ft
BP Dist. Above Fdn, bp_{dist}:	3.5	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	8.0	ft
Ext. Above Grade, **E**:	0.50	ft
Pier Rebar Size, **Sc**:	11	
Pier Rebar Quantity, **mc**:	36	
Pier Tie/Spiral Size, **St**:	5	
Pier Tie/Spiral Quantity, **mt**:	12	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	4	in

Pad Properties

Depth, **D**:	7.0	ft
Pad Width, **W**:	26.0	ft
Pad Thickness, **T**:	3.0	ft
Pad Rebar Size, **Sp**:	11	
Pad Rebar Quantity, **mp**:	35	
Pad Clear Cover, cc_{pad}:	4	in

Material Properties

Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	3000	psi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	120	pcf
Ultimate Gross Bearing, Qult:	18.000	ksf
Cohesion, **Cu**:	1.250	ksf
Friction Angle, φ:	0	degrees
SPT Blow Count, N_{blows}:	11	
Base Friction, μ:	0.3	
Neglected Depth, **N**:	4.50	
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	N	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	295.64	41.00	**13.9%**	**Pass**
Bearing Pressure (ksf)	13.50	3.79	**28.1%**	**Pass**
*Overturning (kip*ft)*	7581.63	5844.46	**77.1%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	9856.86	5709.50	**57.9%**	**Pass**
Pier Compression (kip)	30551.04	112.84	**0.4%**	**Pass**
*Pad Flexure (kip*ft)*	6836.89	2483.04	**36.3%**	**Pass**
Pad Shear - 1-way (kips)	766.05	381.54	**49.8%**	**Pass**
Pad Shear - 2-way (ksi)	0.16	0.00	**0.0%**	**Pass**

Soil Rating:	**77.1%**
Structural Rating:	**57.9%**

CCISeismic - Design Category

Per *2012/2015 IBC*

Site BU:	803175
Work Order:	1520538
Application:	423199 Rev. 4

	Degrees	Minutes	Seconds		
Site Latitude =	41	41	11.79	41.6866	degrees
Site Longitude =	-72	45	27.79	-72.7577	degrees
Ground Supported Structure =	Yes				
Structure Class =	II			*(Table 2-1)*	
Site Class =	D - Stiff Soil			*(Table 2-11)*	

Spectral response acceleration short periods, S_S =	0.183	USGS Seismic Tool
Spectral response acceleration 1 s period, S_1 =	0.064	

Importance Factor, I =	1.0	*(Table 2-3)*
Acceleration-based site coefficient, F_a =	1.6	*(Table 2-12)*
Velocity-based site coefficient, F_v =	2.4	*(Table 2-13)*

Design spectral response acceleration short period, S_{DS} =	0.195	*(2.7.6)*
Design spectral response acceleration 1 s period, S_{D1} =	0.102	*(2.7.6)*

Seismic Design Category - Short Period Response =	B	*ASCE 7-05 Table 11.6-1*
Seismic Design Category - 1s Period Response =	B	*ASCE 7-05 Table 11.6-2*

Worst Case Seismic Design Category =	B	*ASCE 7-05 Tables 11.6-1 and 6-2*

Exhibit 4

Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5379
FA#: 10091781

New Britain East
178 Lester Street
New Britain, CT 06051

March 15, 2018

Centerline Communications Project Number: 950006-107

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**8.46 %**

March 15, 2018

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

Emissions Analysis for Site: **CT5379 – New Britain East**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **178 Lester Street, New Britain, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **178 Lester Street, New Britain, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
UMTS	850 MHz	1	30
UMTS	1900 MHz (PCS)	1	30
LTE	850 MHz	2	40
LTE	2300 MHz (WCS)	4	30
LTE	700 MHz	2	40
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	4	30

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Kathrein 800-10121	189
A	2	CCI OPA-65R-LCUU-H4	189
A	3	Quintel QS46512-2	189
B	1	Kathrein 800-10121	189
B	2	CCI OPA-65R-LCUU-H6	189
B	3	Quintel QS66512-2	189
C	1	Kathrein 800-10121	189
C	2	CCI OPA-65R-LCUU-H6	189
C	3	Quintel QS66512-2	189

Table 2: Antenna Data

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

RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	2	60	1,235.72	0.17
Antenna A2	CCI OPA-65R-LCUU-H4	850 MHz / 2300 MHz (WCS)	11.15 / 14.65	6	200	4,543.45	0.57
Antenna A3	Quintel QS46512-2	700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	10.55 / 13.15 / 13.85	10	360	7,124.55	0.88
						Sector A Composite MPE%	**1.62**
Antenna B1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	2	60	1,235.72	0.17
Antenna B2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS)	12.45 / 15.45	6	200	5,615.36	0.72
Antenna B3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	10.85 / 13.85 / 14.35	10	360	8,122.77	0.99
						Sector B Composite MPE%	**1.88**
Antenna C1	Kathrein 800-10121	850 MHz / 1900 MHz (PCS)	11.45 / 14.35	2	60	1,235.72	0.17
Antenna C2	CCI OPA-65R-LCUU-H6	850 MHz / 2300 MHz (WCS)	12.45 / 15.45	6	200	5,615.36	0.72
Antenna C3	Quintel QS66512-2	700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	10.85 / 13.85 / 14.35	10	360	8,122.77	0.99
						Sector C Composite MPE%	**1.88**

Table 3: AT&T Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sectors with the largest calculated MPE% are Sectors B & C. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max Sector Value	**1.88 %**
T-Mobile	2.32 %
Verizon Wireless	4.26 %
Site Total MPE %:	**8.46 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	1.62 %
AT&T Sector B Total:	1.88 %
AT&T Sector C Total:	1.88 %
Site Total:	8.46 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sectors with the largest calculated MPE% are Sectors B & C.

AT&T _ Frequency Band / Technology Max Power Values (Sectors B & C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	1	418.91	189	0.45	850 MHz	567	0.08%
AT&T 1900 MHz (PCS) UMTS	1	816.81	189	0.88	1900 MHz (PCS)	1000	0.09%
AT&T 850 MHz LTE	2	703.17	189	1.51	850 MHz	567	0.27%
AT&T 2300 MHz (WCS) LTE	4	1,052.26	189	4.52	2300 MHz (WCS)	1000	0.45%
AT&T 700 MHz LTE	2	486.47	189	1.04	700 MHz	467	0.22%
AT&T 1900 MHz (PCS) LTE	4	970.64	189	4.17	1900 MHz (PCS)	1000	0.42%
AT&T 2100 MHz (AWS) LTE	4	816.81	189	3.51	2100 MHz (AWS)	1000	0.35%
						Total:	**1.88%**

Table 6: AT&T Maximum Sector MPE Power Values

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	1.62 %
Sector B:	1.88 %
Sector C:	1.88 %
AT&T Maximum Total (per sector):	1.88 %
Site Total:	8.46 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.46 %** 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.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767