

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT** CTS468  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.  
 NORWICH, CT 06360

**OFFICIAL USE**

Certified Mail Fee	\$3.45	0821 02
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$2.26	
Total Postage and Fees	\$8.46	

Postmark Here  
 FEB 26 2018  
 02/26/2018

Sent To  
 The Honorable Peter A. Nystrom  
 Mayor, City of Norwich  
 Norwich City Hall  
 100 Broadway  
 Norwich, CT 06360

PS Form 3800, April 2015 PSN 7530-02-000-9047

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT** CTS468  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.  
 NORWICH, CT 06360

**OFFICIAL USE**

Certified Mail Fee	\$3.45	0821 02
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$2.26	
Total Postage and Fees	\$8.46	

Postmark Here  
 FEB 26 2018  
 02/26/2018

Sent To  
 John L. Salomone  
 City Manager, City of Norwich  
 Norwich City Hall  
 100 Broadway  
 Norwich, CT 06360

PS Form 3800, April 2015 PSN 7530-02-000-9047

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT** CTS468  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.  
 NORWICH, CT 06360

**OFFICIAL USE**

Certified Mail Fee	\$3.45	0821 02
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$2.26	
Total Postage and Fees	\$8.46	

Postmark Here  
 FEB 26 2018  
 02/26/2018

Sent To  
 Deanna Rhodes  
 City Planner  
 City of Norwich  
 23 Union Street  
 Norwich, CT 06360

PS Form 3800, April 2015 PSN 7530-02-000-9047

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT** CTS468  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.  
 NORWICH, CT 06360

**OFFICIAL USE**

Certified Mail Fee	\$3.45	0821 02
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$2.26	
Total Postage and Fees	\$8.46	

Postmark Here  
 FEB 26 2018  
 02/26/2018

Sent To  
 Richard Shuck  
 Zoning Enforcement Officer  
 City of Norwich  
 23 Union Street  
 Norwich, CT 06360

PS Form 3800, April 2015 PSN 7530-02-000-9047

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT** CTS468  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.  
 COLCHESTER, CT 06415

**OFFICIAL USE**

Certified Mail Fee	\$3.45	0821 02
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$2.26	
Total Postage and Fees	\$8.46	

Postmark Here  
 FEB 26 2018  
 02/26/2018

Sent To  
 Cordless Data Transfer  
 Attn: Mark LeGault  
 600 Old Hartford Road  
 Colchester, CT 06415

PS Form 3800, April 2015 PSN 7530-02-000-9047

**U.S. Postal Service™**  
**CERTIFIED MAIL® RECEIPT** CTS468  
*Domestic Mail Only*

For delivery information, visit our website at [www.usps.com](http://www.usps.com)®.  
 COLCHESTER, CT 06415

**OFFICIAL USE**

Certified Mail Fee	\$3.45	0821 02
Extra Services & Fees (check box, add fee as appropriate)	\$2.75	
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00	
<input type="checkbox"/> Return Receipt (electronic)	\$0.00	
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00	
<input type="checkbox"/> Adult Signature Required	\$0.00	
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00	
Postage	\$2.26	
Total Postage and Fees	\$8.46	

Postmark Here  
 FEB 26 2018  
 02/26/2018

Sent To  
 Mr. James C. Irwin and  
 Mrs. LaVerne G. Irwin  
 c/o Cordless Data Transfer  
 600 Old Hartford Road  
 Colchester, CT 06415

PS Form 3800, April 2015 PSN 7530-02-000-9047

**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:

The Honorable Peter A. Nystrom  
Mayor, City of Norwich  
Norwich City Hall  
100 Broadway  
Norwich, CT 06360

2. Article Number (Transfer from service label)

7016 2140 0000 9458 6245

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature  
X *[Signature]*  Agent  Addressee

B. Received by (Printed Name) C. Date of Delivery  
FEB 28 2015 NORWICH

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

3. Service Type  Priority Mail Express®  
 Adult Signature  Registered Mail™  
 Adult Signature Restricted Delivery  Registered Mail Restricted Delivery  
 Certified Mail®  Return Receipt for Merchandise  
 Certified Mail Restricted Delivery  Signature Confirmation™  
 Collect on Delivery  Signature Confirmation Restricted Delivery  
 Collect on Delivery Restricted Delivery  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:

John L. Salomone  
City Manager, City of Norwich  
Norwich City Hall  
100 Broadway  
Norwich, CT 06360

2. Article Number (Transfer from service label)

7016 2140 0000 9458 6252

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature  
X *[Signature]*  Agent  Addressee

B. Received by (Printed Name) C. Date of Delivery  
FEB 28 2015 NORWICH

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

3. Service Type  Priority Mail Express®  
 Adult Signature  Registered Mail™  
 Adult Signature Restricted Delivery  Registered Mail Restricted Delivery  
 Certified Mail®  Return Receipt for Merchandise  
 Certified Mail Restricted Delivery  Signature Confirmation™  
 Collect on Delivery  Signature Confirmation Restricted Delivery  
 Collect on Delivery Restricted Delivery  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:

Deanna Rhodes  
City Planner  
City of Norwich  
23 Union Street  
Norwich, CT 06360

2. Article Number (Transfer from service label)

7016 2140 0000 9458 6269

**COMPLETE THIS SECTION ON DELIVERY**

A. Signature  
X *[Signature]*  Agent  Addressee

B. Received by (Printed Name) C. Date of Delivery  
FEB 28 2015 NORWICH

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

3. Service Type  Priority Mail Express®  
 Adult Signature  Registered Mail™  
 Adult Signature Restricted Delivery  Registered Mail Restricted Delivery  
 Certified Mail®  Return Receipt for Merchandise  
 Certified Mail Restricted Delivery  Signature Confirmation™  
 Collect on Delivery  Signature Confirmation Restricted Delivery  
 Collect on Delivery Restricted Delivery  Signature Confirmation Restricted Delivery

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

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	<p>A. Signature  <input checked="" type="checkbox"/> <i>[Signature]</i> <input type="checkbox"/> Agent  <input type="checkbox"/> Addressee</p>	
1. Article Addressed to:	B. Received by (Printed Name)	C. Date of Delivery
Richard Shuck Zoning Enforcement Officer City of Norwich 23 Union Street Norwich, CT 06360		
	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No	
	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery	
2. Article Number (Transfer from service label)	7016 2140 0000 9458 6276 Restricted Delivery	
PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt		

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	<p>A. Signature  <input checked="" type="checkbox"/> <i>[Signature]</i> <input type="checkbox"/> Agent  <input type="checkbox"/> Addressee</p>	
1. Article Addressed to:	B. Received by (Printed Name)	C. Date of Delivery
Cordless Data Transfer Attn: Mark LeGault 600 Old Hartford Road Colchester, CT 06415	Kate LeGault	3/9/18
	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No	
	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery	
2. Article Number (Transfer from service label)	7016 2140 0000 9458 6283 Restricted Delivery	
PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt		

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY	
<ul style="list-style-type: none"> <li>Complete items 1, 2, and 3.</li> <li>Print your name and address on the reverse so that we can return the card to you.</li> <li>Attach this card to the back of the mailpiece, or on the front if space permits.</li> </ul>	<p>A. Signature  <input checked="" type="checkbox"/> <i>[Signature]</i> <input type="checkbox"/> Agent  <input type="checkbox"/> Addressee</p>	
1. Article Addressed to:	B. Received by (Printed Name)	C. Date of Delivery
Mr. James C. Irwin and Mrs. LaVerne G. Irwin c/o Cordless Data Transfer 600 Old Hartford Road Colchester, CT 06415	Kate LeGault	3-2-18
	D. Is delivery address different from item 1? <input type="checkbox"/> Yes If YES, enter delivery address below: <input type="checkbox"/> No	
	<p>3. Service Type</p> <input type="checkbox"/> Adult Signature <input type="checkbox"/> Priority Mail Express® <input type="checkbox"/> Adult Signature Restricted Delivery <input type="checkbox"/> Registered Mail™ <input type="checkbox"/> Certified Mail® <input type="checkbox"/> Registered Mail Restricted Delivery <input type="checkbox"/> Certified Mail Restricted Delivery <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Collect on Delivery <input type="checkbox"/> Signature Confirmation™ <input type="checkbox"/> Collect on Delivery Restricted Delivery <input type="checkbox"/> Signature Confirmation Restricted Delivery	
2. Article Number (Transfer from service label)	7016 2140 0000 9458 6290 Restricted Delivery	
PS Form 3811, July 2015 PSN 7530-02-000-9053 Domestic Return Receipt		



February 26, 2018

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

Regarding: Notice of Exempt Modification  
Property Address: 2 Hinckley Hill Road, Norwich, CT 06360  
AT&T Site: CT5468/FA 10071188

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 150-foot self-support tower at the above-referenced address, latitude 41.5136919, longitude -72.0633969. Said self-support tower is owned by Cordless Data Transfer, Mr. James C. Irwin and Mrs. LaVerne G. Irwin.

AT&T desires to modify its existing telecommunications facility adding (3) antenna, swapping (3) antenna, adding (2) surge arrestors and accompanying feedlines, adding (9) remote-radio heads ("RRHs") and swapping (3) RRHs. The centerline height of the existing antennas is and will remain at 115 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 Peter A. Nystrom, Mayor, John L. Salomone, City Manager, Deanna Rhodes, City Planner, and Richard Shuck, Zoning Enforcement Officer of the City of Norwich. A copy of this letter is also being sent to the tower and property owners, Cordless Data Transfer, and Mr. James C. Irwin and Mrs. LaVerne G. Irwin via Cordless Data Transfer.

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 and swapped will be installed at the existing height of 115 feet on the 150-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 Fred A. Nudd Corporation dated January 14, 2018).

For the foregoing reasons, AT&T respectfully requests that the proposed remote-radio head 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 Peter A. Nystrom, Mayor, City of Norwich  
John L. Salomone, City Manager, City of Norwich  
Deanna Rhodes, City Planner, City of Norwich  
Richard Shuck, Zoning Enforcement Officer, City of Norwich  
Cordless Data Transfer  
Mr. James C. Irwin and Mrs. LaVerne G. Irwin

# Exhibit 1

## 2 HINCKLEY HILL RD REAR

**Location** 2 HINCKLEY HILL RD REAR

**Mblu** 119/ 1/ 1/ 1/

**Acct#** 0052410001

**Owner** IRWIN JAMES C +

**Assessment** \$194,700

**Appraisal** \$278,100

**PID** 5166

**Building Count** 1

### Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2013	\$107,400	\$170,700	\$278,100

Assessment			
Valuation Year	Improvements	Land	Total
2013	\$75,200	\$119,500	\$194,700

### Parcel Addresses

Additional Addresses			
Line Number	Address	City, State Zip	Type
1	70 HAMMOND AVE		Primary

### Owner of Record

**Owner** IRWIN JAMES C +  
IRWIN LAVERNE G  
**Address** 890 NORTH GRANADA DR  
CHANDLER, AZ 85226

**Sale Price** \$0  
**Certificate**  
**Book & Page** 2379/0094  
**Sale Date** 05/08/2007  
**Instrument** 1A

### Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
IRWIN JAMES C +	\$0		2379/0094	1A	05/08/2007
IRWIN JAMES C + LAVERENE G	\$0		0532/0280	1A	05/01/1980

### Building Information

#### Building 1 : Section 1

**Year Built:**

**Building Photo**

**Living Area:** 0  
**Replacement Cost:** \$0  
**Building Percent Good:**  
**Replacement Cost Less Depreciation:** \$0

Building Attributes	
Field	Description
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	
Fireplace (s)	
Whirlpool	
park	



(http://images.vgsi.com/photos/NorwichCTPhotos//\00\01\40\66

### Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

### Extra Features

Extra Features	Legend
No Data for Extra Features	

### Land

Land Use

Land Use Valuation

**Land Use**

**Use Code** 431V  
**Description** TEL REL TW M00  
**Zone** R40  
**Neighborhood**  
**Alt Land Appr Category** No

**Land Line Valuation**

**Size (Acres)** 3.59  
**Frontage** 0  
**Depth** 0  
**Assessed Value** \$119,500  
**Appraised Value** \$170,700

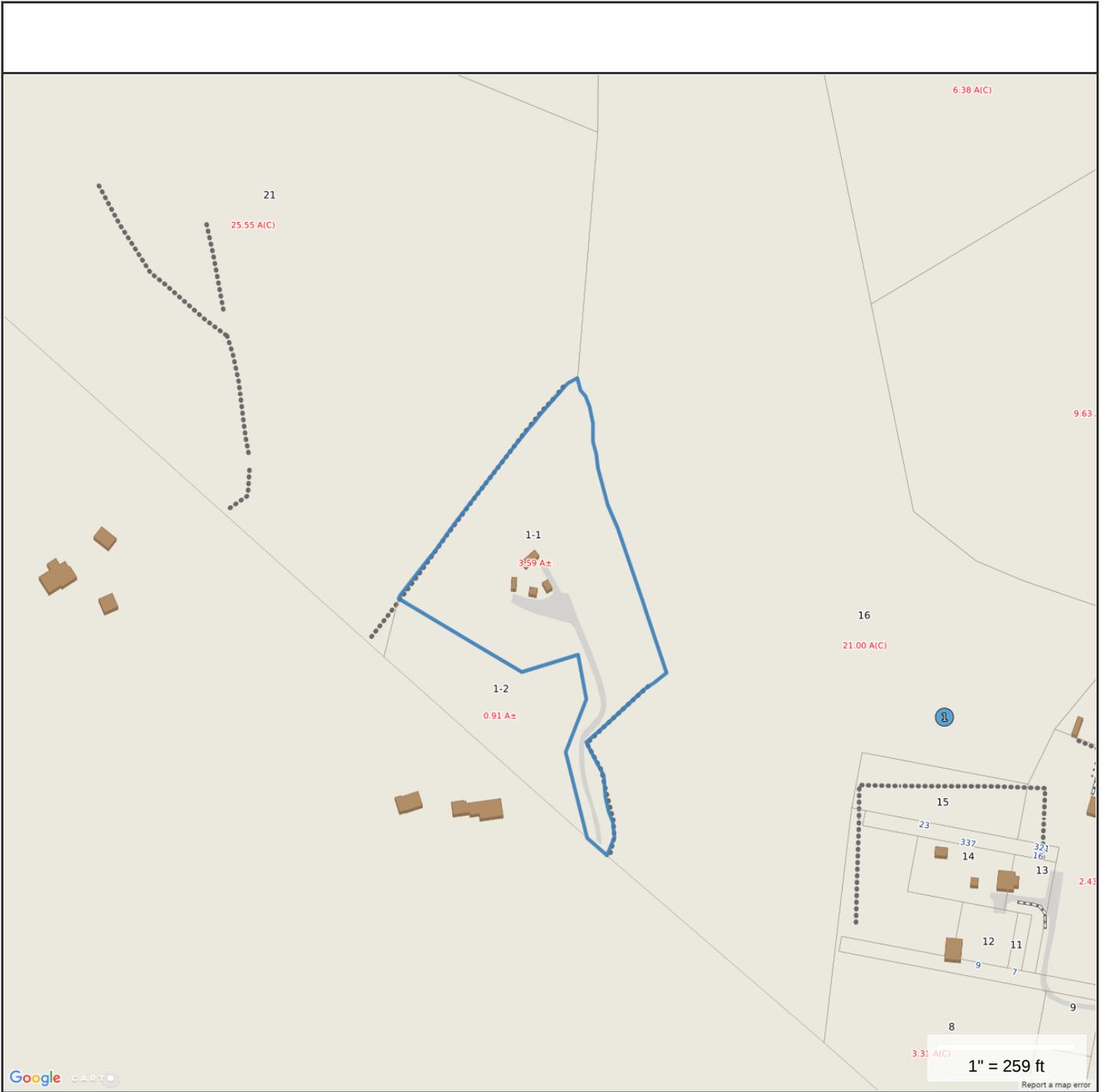
**Outbuildings**

<b>Outbuildings</b>						<b>Legend</b>
<b>Code</b>	<b>Description</b>	<b>Sub Code</b>	<b>Sub Description</b>	<b>Size</b>	<b>Value</b>	<b>Bldg #</b>
SHD4	Shed Comm. Wd.			128 S.F.	\$2,600	1
SHD5	Shed Comm Mas			360 S.F.	\$10,800	1
TWR	CELL TOWER			150 UNITS	\$94,000	1

**Valuation History**

<b>Appraisal</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2016	\$107,400	\$170,700	\$278,100
2015	\$107,400	\$170,700	\$278,100
2012	\$0	\$23,000	\$23,000

<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2016	\$75,200	\$119,500	\$194,700
2015	\$75,200	\$119,500	\$194,700
2012	\$0	\$16,000	\$16,000



Google CARTO

1" = 259 ft  
Report a map error

**Property Information**

**Property ID** 119-001-001.000-0001  
**Location** 2 HINCKLEY HILL RD REAR  
**Owner** IRWIN JAMES C +



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

City of Norwich, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Parcels updated 10/1/2016  
Properties updated 02/25/2018

## Exhibit 2



# WIRELESS COMMUNICATIONS FACILITY CT5468 - LTE 3C/4C/5C/RETRO & BWE NORWICH SE 2 HINCKLEY HILL ROAD NORWICH, CT 06365

### 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:	TO:
500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	2 HINCKLEY HILL ROAD NORWICH, CONNECTICUT
1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.31 MI
2. TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3. TURN LEFT ONTO WEST ST	0.16 MI
4. TURN LEFT TO MERGE ONTO I-91 N TOWARD HARTFORD	4.44 MI
5. MERGE ONTO CT-3 N via EXIT 25 TOWARD GLASTONBURY	2.34 MI
6. MERGE ONTO CT-2 E TOWARD NORWICH	20.08 MI
7. KEEP LEFT TO TAKE CT-2 E TOWARD NORWICH	13.79 MI
8. TAKE THE CT-2 E/CT-32 S EXIT TOWARD NORWICH	0.07 MI
9. TURN SLIGHT LEFT ONTO WASHINGTON ST/CT-32/CT-2	0.45 MI
10. STAY STRAIGHT TO GO ON BROADWAY	0.58 MI
11. TURN SLIGHT RIGHT ONTO UNION ST.	0.36 MI
12. TURN SLIGHT RIGHT ONTO BROADWAY	0.11 MI
13. TURN LEFT ONTO MAIN ST/CT-2. CONTINUE TO FOLLOW CT-2	1.03 MI
14. TURN SLIGHT RIGHT ONTO PALMER STREET EXT.	0.56 MI
15. STAY STRAIGHT TO GO ONTO MIDDLE RD.	0.15 MI
16. TURN SLIGHT RIGHT ONTO HINCKLEY HILL RD.	0.00 MI

### VICINITY MAP

SCALE: 1" = 1000'



### PROJECT SUMMARY

1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
  - A. REMOVE AND REPLACE EXISTING LTE ANTENNA FOR PROPOSED LTE OCTO-PORT ANTENNA, (1) PER SECTOR. (POS. 4)
  - B. INSTALL (3) TWELVE-PORT ANTENNAS AT POSITION 3 ON PROPOSED PIPE MAST MOUNTED TO LATTICE TOWER MOUNT
  - C. REMOVE AND REPLACE (3) EXISTING RRUS-11'S FOR (3) NEW RRUS-32 B2
  - D. INSTALL (3) NEW RRUS-32'S BEHIND PROPOSED POSITION 3 ANTENNA
  - E. INSTALL (3) NEW RRUS-32 B66'S BEHIND PROPOSED POSITION 3 ANTENNA
  - F. INSTALL (3) NEW RRUS-B14 4478'S ON LATTICE TOWER MOUNT
  - G. INSTALL (2) NEW SURGE ARRESTORS
  - H. DECOMMISSION (2) NOKIA GSM CABINETS WITHIN EXISTING EQUIPMENT COMPOUND AREA
  - I. REMOVE AND REPLACE EXISTING DUL FOR A NEW 5216 UNIT WITHIN EXISTING PURCELL EXISTING CABINET AND INSTALL (2) NEW XMU UNITS.
  - J. DECOMMISSION AND REMOVE (2) EXISTING RXAIT EQUIPMENT CABINETS WITHIN EXISTING EQUIPMENT COMPOUND AREA.

### PROJECT INFORMATION

AT&T SITE NUMBER:	CT5468
AT&T SITE NAME:	NORWICH SE
SITE ADDRESS:	2 HINCKLEY HILL ROAD NORWICH, CT 06365
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067
ENGINEER:	CENTEX ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-30'-53.41" N LONGITUDE: 72°-03'-42.17" W GROUND ELEVATION: ±315' 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 DETAILS	0
C-1	COMPOUND PLAN AND ELEVATION	0
C-2	EQUIPMENT LAYOUT PLANS	0
C-3	LTE 3C/4C/5C/RETRO & BWE EQUIPMENT DETAILS	0
C-4	LTE 3C/4C/5C/RETRO & BWE EQUIPMENT DETAILS	0
E-1	LTE SCHEMATIC DIAGRAM AND NOTES	0
E-2	LTE WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0

PROFESSIONAL ENGINEER SEAL



**CENTEX** engineering  
Centered on Solutions™  
(203) 488-0360  
(203) 488-8387 Fax  
63-2 North Branford Road  
Branford, CT 06405  
www.CentexEng.com

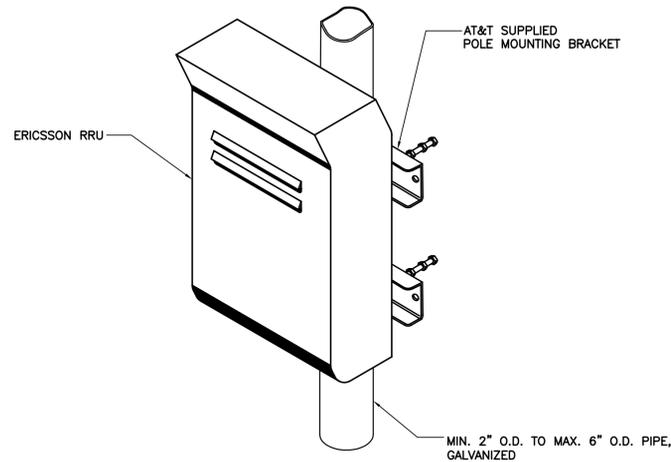
AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
**NORWICH SE**  
**CT5468 - LTE 3C/4C/5C/RETRO & BWE**  
2 HINCKLEY HILL ROAD  
NORWICH, CT 06365

DATE: 08/28/17  
SCALE: AS NOTED  
JOB NO. 17004.38

TITLE SHEET

**T-1**  
Sheet No. 1 of 9

REV. DATE DRAWN BY CHK'D BY CAG CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION

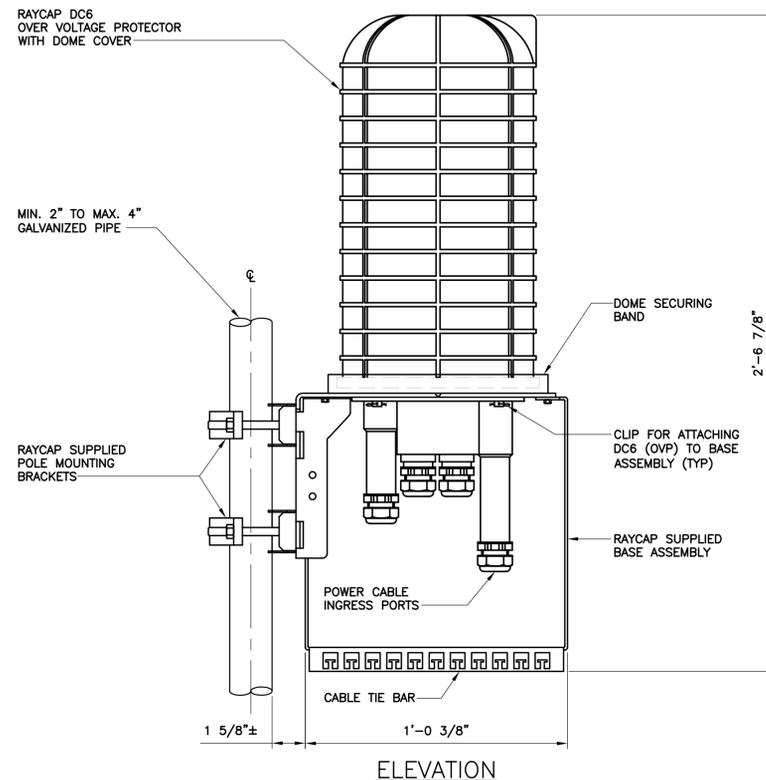


ISOMETRIC VIEW

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 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 RAYCAP DC6 MOUNTING DETAIL  
SCALE: 3" = 1'-0"

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): 105-120 MPH (3 SECOND GUST)
  - RISK CATEGORY: II (BASED ON IBC TABLE 1604.5)
  - NOMINAL DESIGN SPEED (OTHER STRUCTURE): 93 MPH (V<sub>50</sub>) (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.

PROFESSIONAL ENGINEER SEAL

at&t  
EMPIRE telecom

CENTER engineering  
Centered on Solutions™  
203) 488-0360  
203) 488-8387 Fax  
63.2 North Branford Road  
Branford, CT 06405  
www.CenterEng.com

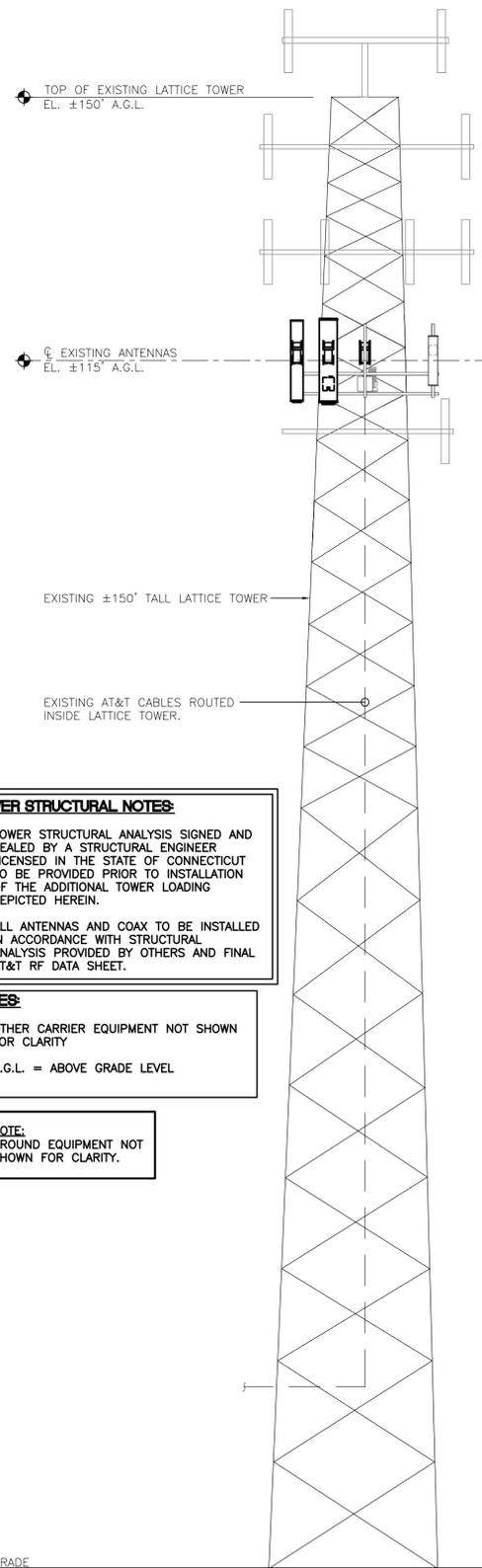
AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
**NORWICH SE**  
CT5468 - L TE 3C/4C/5C/RETRO & BWE  
2 HINCKLEY HILL ROAD  
NORWICH, CT 06365

DATE: 08/28/17  
SCALE: AS NOTED  
JOB NO. 17004.38

NOTES, SPECIFICATIONS AND DETAILS

N-1

Sheet No. 2 of 9



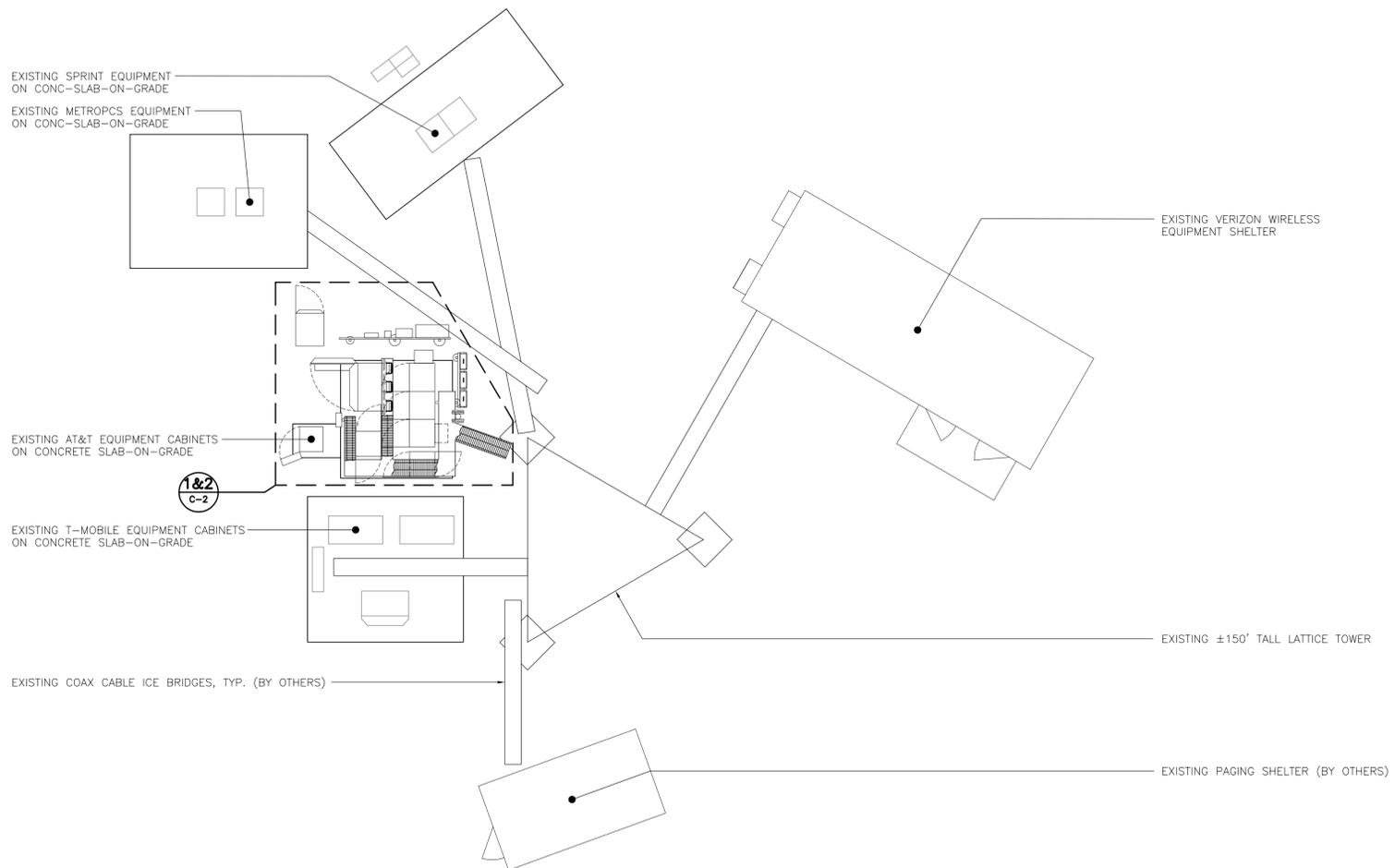
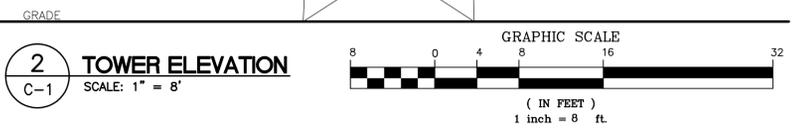
**TOWER STRUCTURAL NOTES:**

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 OTHERS AND FINAL AT&T RF DATA SHEET.

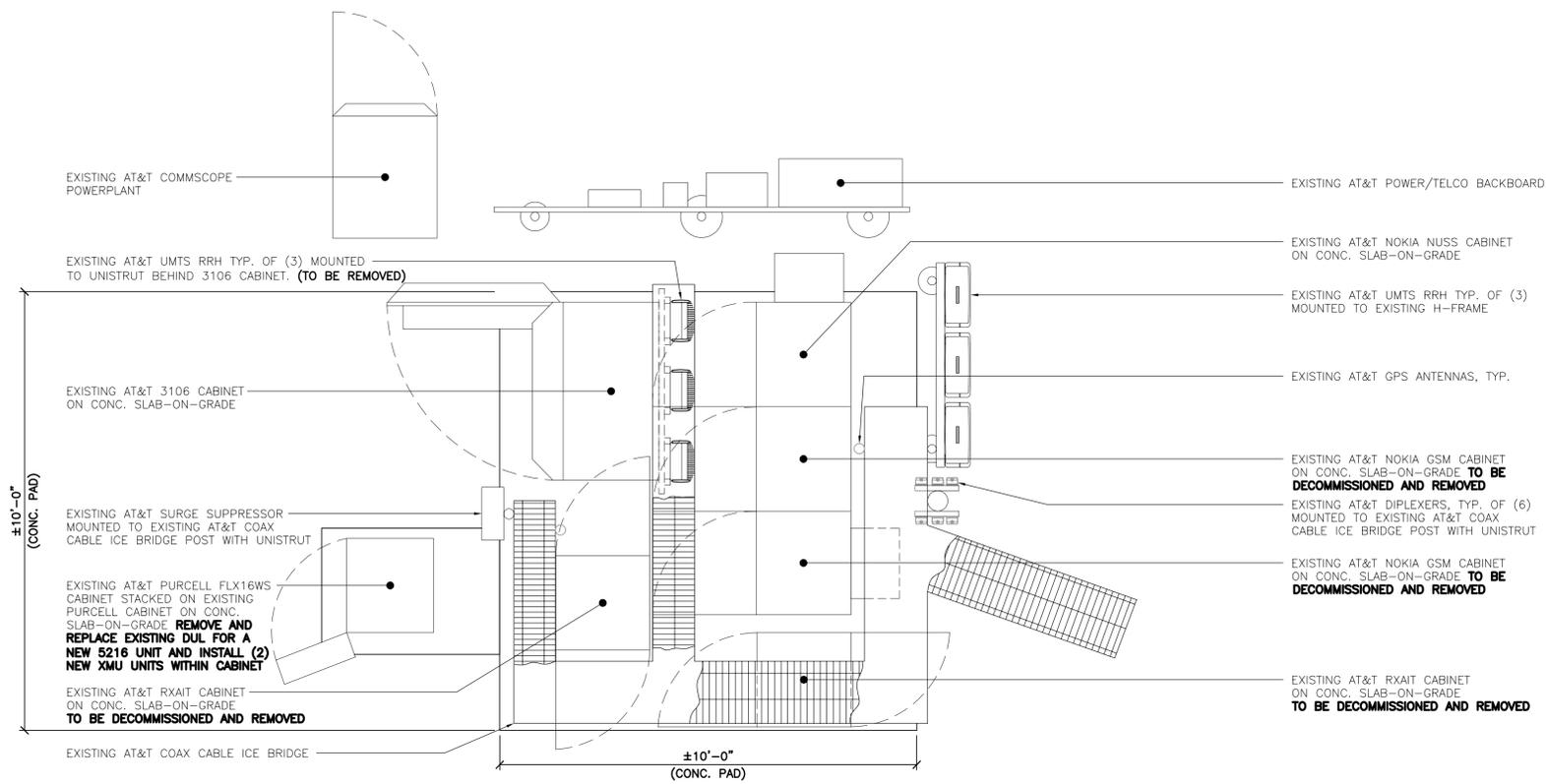
**NOTES:**

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

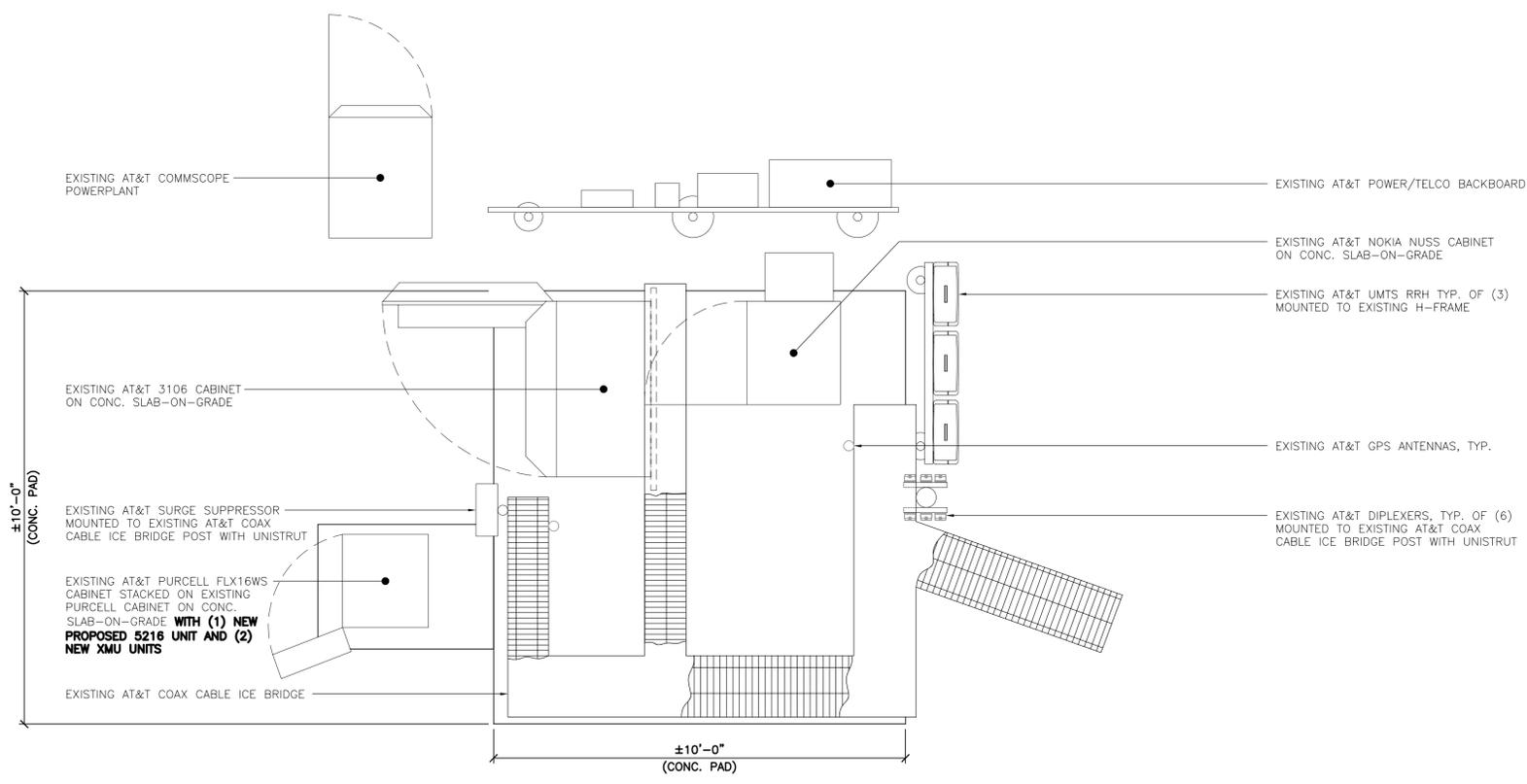
**NOTE:**  
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.



PROFESSIONAL ENGINEER SEAL	
 	CAG: [ ] DRAWN BY: KAW DATE: 12/13/17 REV: 0 CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
 Centek on Solutions (203) 488-0580 (203) 488-8387 Fax 63.2 North Branford Road Branford, CT 06405 www.CentekEng.com	<b>AT&amp;T MOBILITY</b> WIRELESS COMMUNICATIONS FACILITY <b>NORWICH SE</b> <b>CT5468 - LTE 3C/4C/5C/RETRO &amp; BWE</b> 2 HINCKLEY HILL ROAD NORWICH, CT 06365
DATE: 08/28/17	SCALE: AS NOTED
JOB NO. 17004.38	
COMPOUND PLAN AND ELEVATION	
<b>C-1</b> Sheet No. 3 of 9	



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



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

REV.	DATE	DRAWN BY	CHECK'D BY	DESCRIPTION
0	12/13/17	KAW	CAG	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION



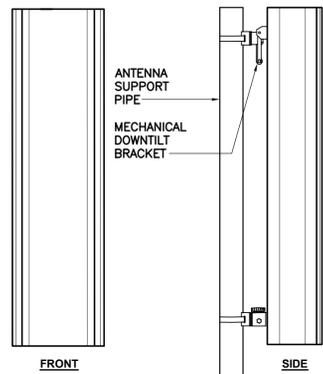
**CENITEK** engineering  
 Centered on Solutions™  
 (203) 488-0580  
 (203) 488-8387 Fax  
 63-2 North Branford Road  
 Branford, CT 06405  
 www.CenitekEng.com

**AT&T MOBILITY**  
 WIRELESS COMMUNICATIONS FACILITY  
**NORWICH SE**  
**CT5468 - LTE 3C/4C/5C/RETRO & BWE**  
 2 HINCKLEY HILL ROAD  
 NORWICH, CT 06365

DATE: 08/28/17  
 SCALE: AS NOTED  
 JOB NO. 17004.38

EQUIPMENT LAYOUT PLANS

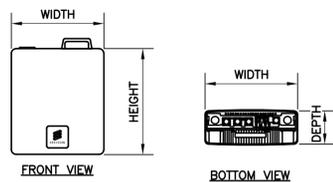
**C-2**  
 Sheet No. 4 of 9



ALPHA ANTENNAS		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: OPA-65R-LCUU-H8	92.7"L x 14.4"W x 7"D	88 LBS.
MAKE: KMW MODEL: EPBQ-654L8H8-L2	96"L x 21"W x 6.3"D	86 LBS.

BETA/GAMMA ANTENNAS		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: CCI MODEL: OPA-65R-LCUU-H8	92.7"L x 14.4"W x 7"D	88 LBS.
MAKE: KMW MODEL: EPBQ-654L8H6-L2	73"L x 21"W x 6.3"D	73 LBS.

**3 PROPOSED ANTENNA DETAIL**  
SCALE: 1/2" = 1'-0"

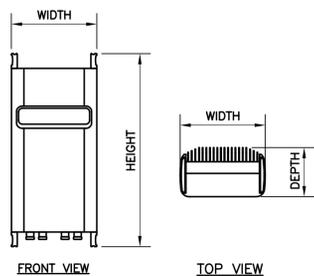


**B14 4478**

RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: B14 4478	14.9"L x 13.1"W x 7.3"D	60 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.

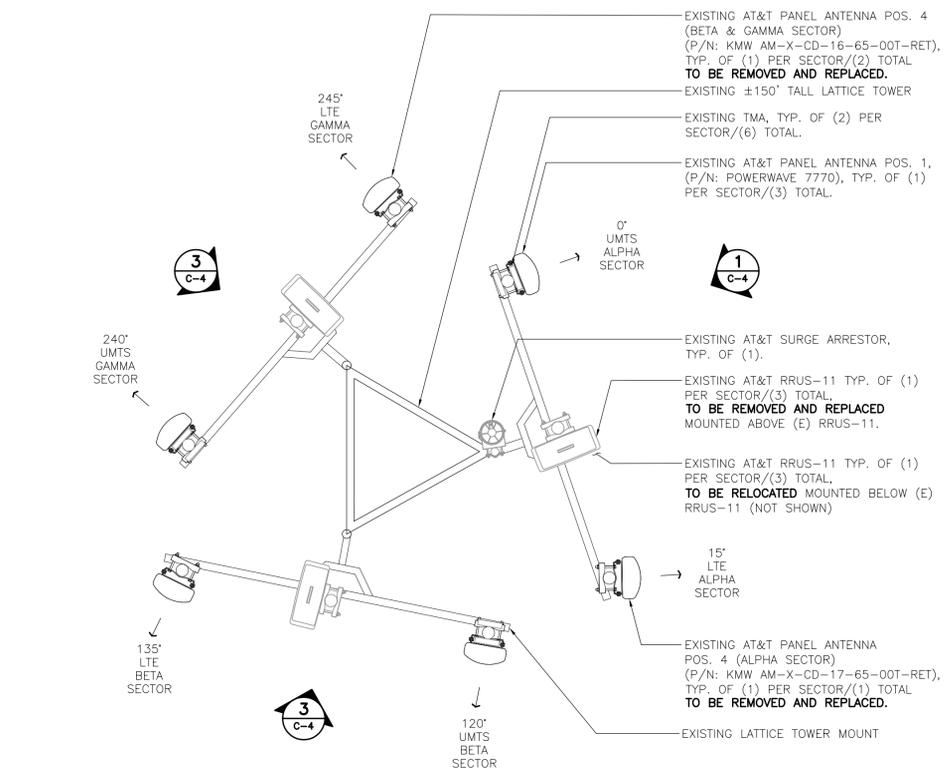
**4 ERICSSON B14 4478 DETAIL**  
SCALE: 1" = 1'-0"



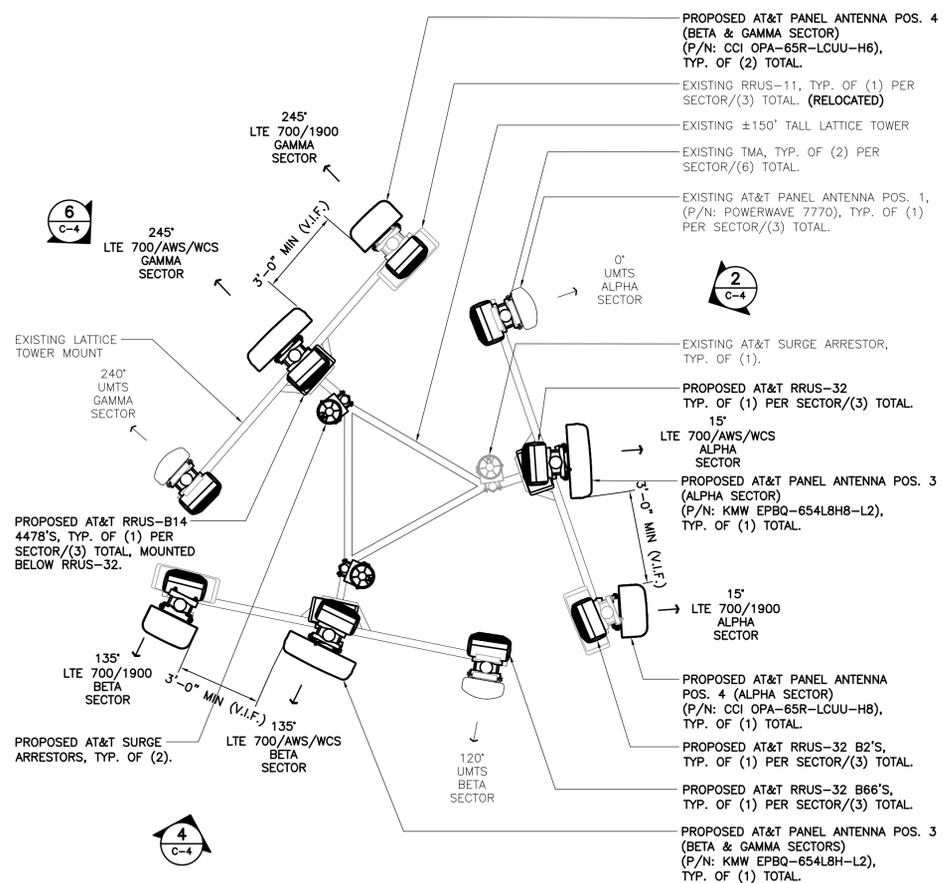
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRU32 B66	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRU32 B2	27.17"H x 12.05"W x 7.01"D	52.91 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
MAKE: ERICSSON MODEL: RRU32	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.

**5 ERICSSON REMOTE RADIO UNITS**  
SCALE: 1" = 1'-0"



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



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

PROFESSIONAL ENGINEER SEAL

at&t  
EMPIRE telecom

CENTER engineering  
Centered on Solutions™  
(203) 488-0880  
(203) 488-8387 Fax  
63.2 North Branford Road  
Branford, CT 06405  
www.CenterEng.com

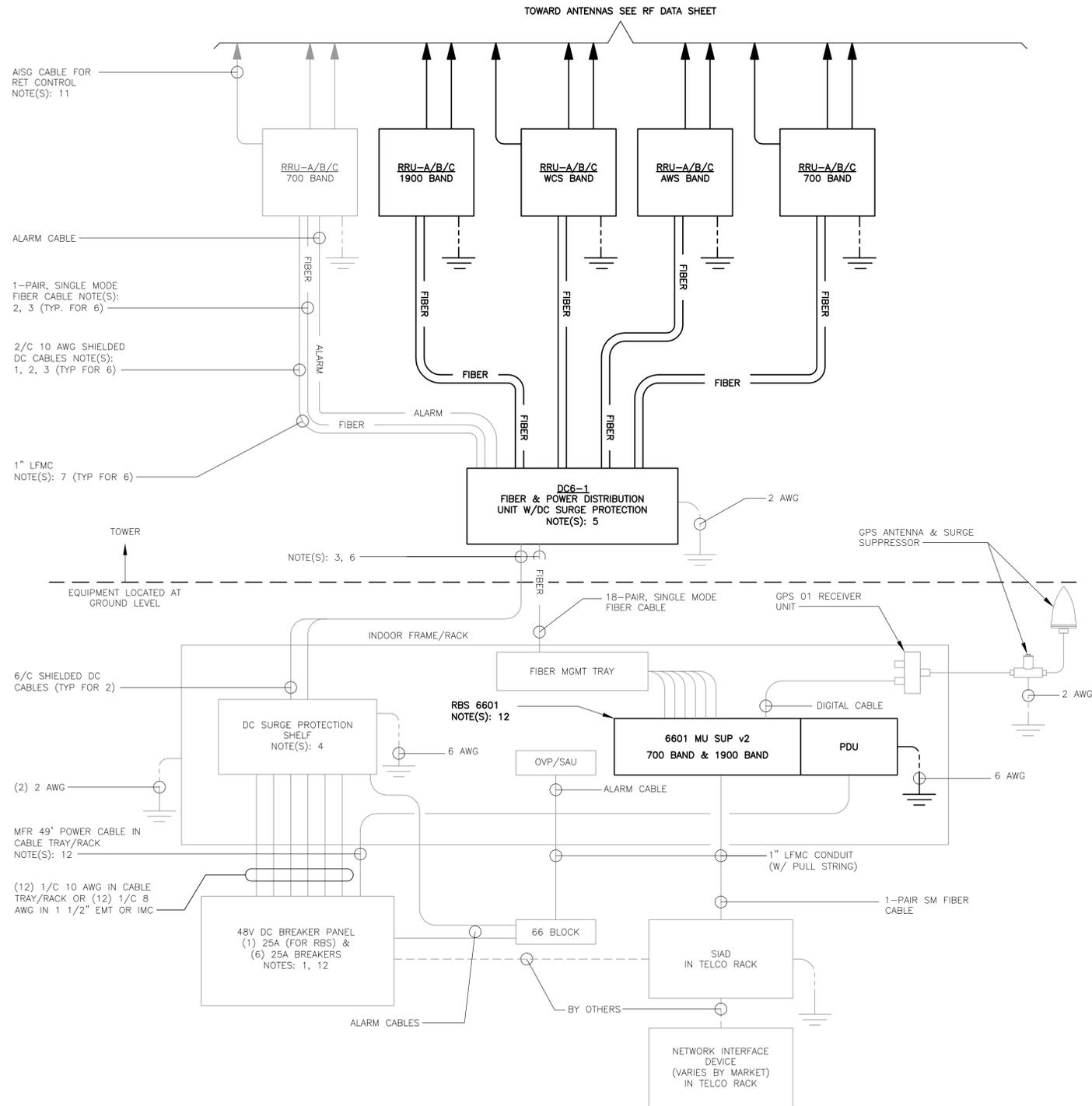
AT&T MOBILITY  
WIRELESS COMMUNICATIONS FACILITY  
**NORWICH SE**  
CT5468 - LTE 3C/4C/5C/RETRO & BWE  
2 HINCKLEY HILL ROAD  
NORWICH, CT 06365

DATE: 08/28/17  
SCALE: AS NOTED  
JOB NO. 17004.38

LTE 3C/4C/5C/RETRO & BWE EQUIPMENT DETAILS

C-3  
Sheet No. 5 of 9





**1 LTE SCHEMATIC DIAGRAM**  
E-1 NOT TO SCALE

**LTE SCHEMATIC DIAGRAM NOTES:**

- 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.
- LEAVE COILED AND PROTECTED UNTIL TERMINATED.
- DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
- DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
- FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
- 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.
- CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
- 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.
- 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.
- FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
- RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
- 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.

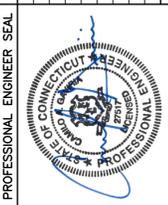
**ELECTRICAL NOTES**

- 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.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
- CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
- MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
- 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.
- 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.
- 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.
- PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
- 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.
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
- 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.
- 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.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- 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.
- 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.
- 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.
- GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
- 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**

- 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:
  - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
  - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
  - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- 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.
- 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.
- CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

REV.	0	12/13/17	KAW	CAG	CONSTRUCTION DRAWINGS	ISSUED FOR CONSTRUCTION
DATE						
BY						
CHK'D						

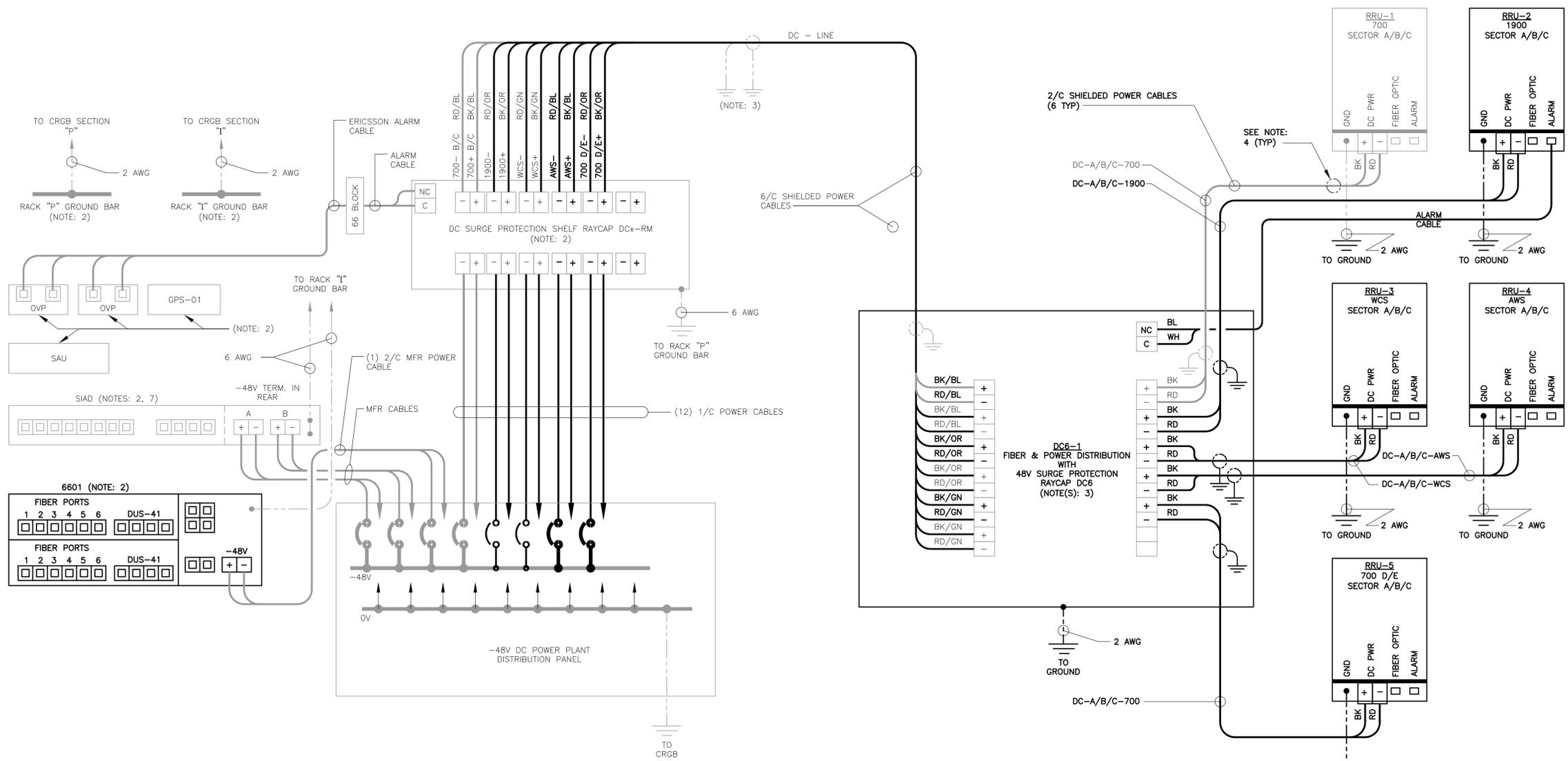


**CENTEX** engineering  
Centered on Solutions™  
203-488-0360  
203-488-8387 Fax  
63-2 North Branford Road  
Branford, CT 06405  
www.CentexEng.com

**AT&T MOBILITY**  
WIRELESS COMMUNICATIONS FACILITY  
**NORWICH SE**  
CT5468 - LTE 3C/4C/5C/RETRO & BWE  
2 HINCKLEY HILL ROAD  
NORWICH, CT 06365

DATE: 08/28/17  
SCALE: AS NOTED  
JOB NO. 17004.38

LTE SCHEMATIC  
DIAGRAM  
AND NOTES



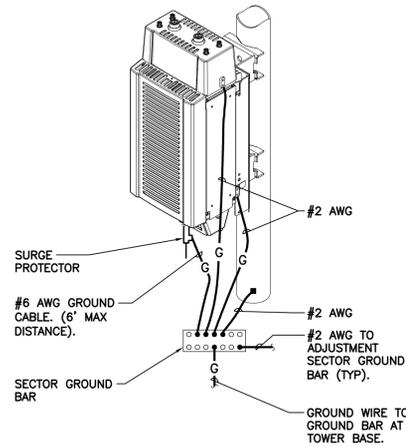
**1** LTE WIRING DIAGRAM  
E-2 NOT TO SCALE

**LTE WIRING DIAGRAM NOTES:**

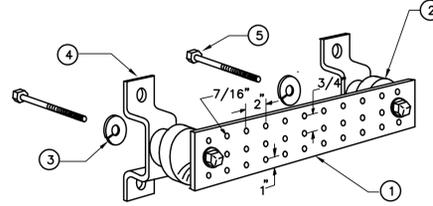
1. LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED 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.

PROFESSIONAL ENGINEER SEAL	DATE: 08/28/17
	SCALE: AS NOTED
 	JOB NO. 17004.38
 Centered on Solutions™ (203) 488-0580 (203) 488-8387 Fax 63.2 North Branford Road Branford, CT 06405 www.CentekEng.com	AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY <b>NORWICH SE</b> <b>CT5468 - LTE 3C/4C/5C/RETRO &amp; BWE</b> 2 HINCKLEY HILL ROAD NORWICH, CT 06365
CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION DRAWN BY: CHK'D BY: DESCRIPTION DATE: 12/13/17 REV: 0	DATE: 08/28/17 SCALE: AS NOTED JOB NO. 17004.38
<b>E-2</b> Sheet No. 8 of 9	

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



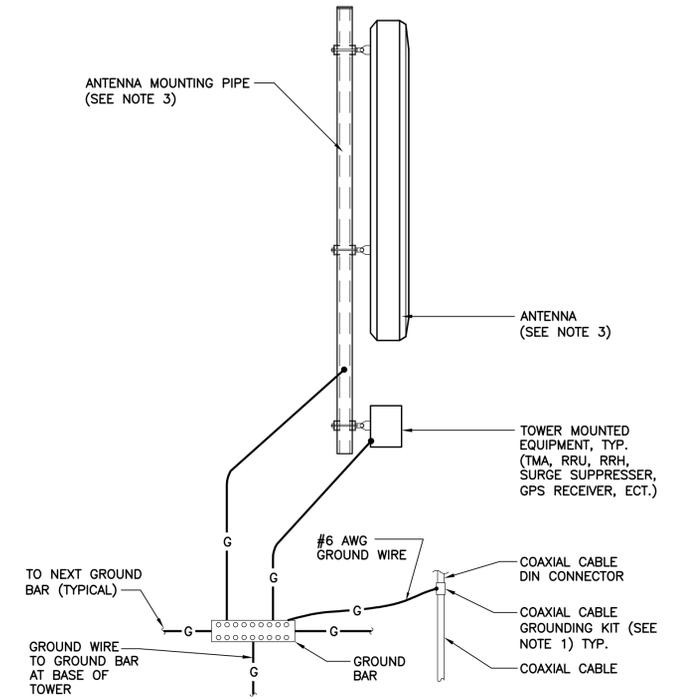
**4 RRU POLE MOUNT GROUNDING**  
 E-3 NOT TO SCALE



**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. CAT. NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

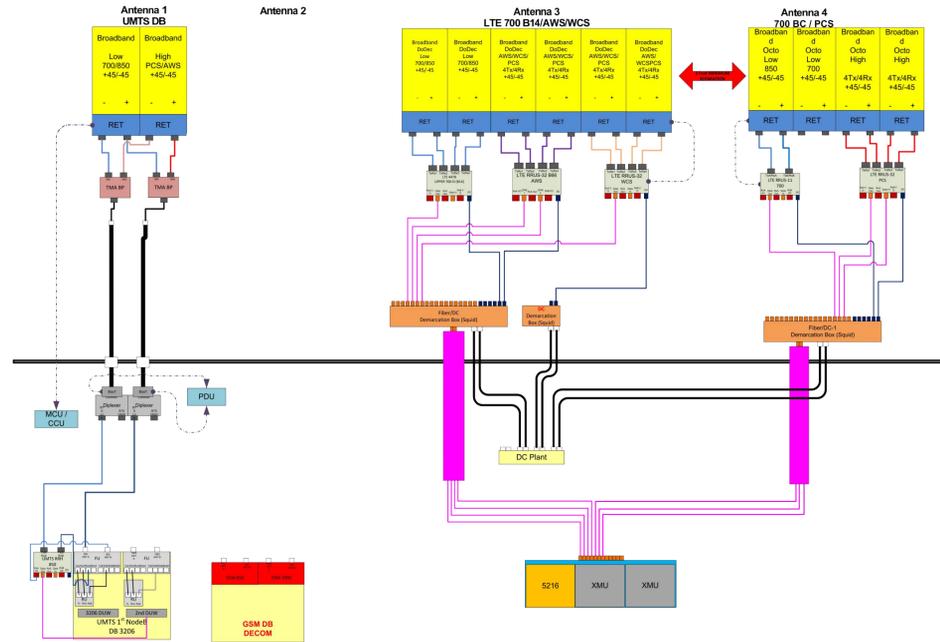
**3 GROUND BAR DETAIL**  
 E-3 NOT TO SCALE



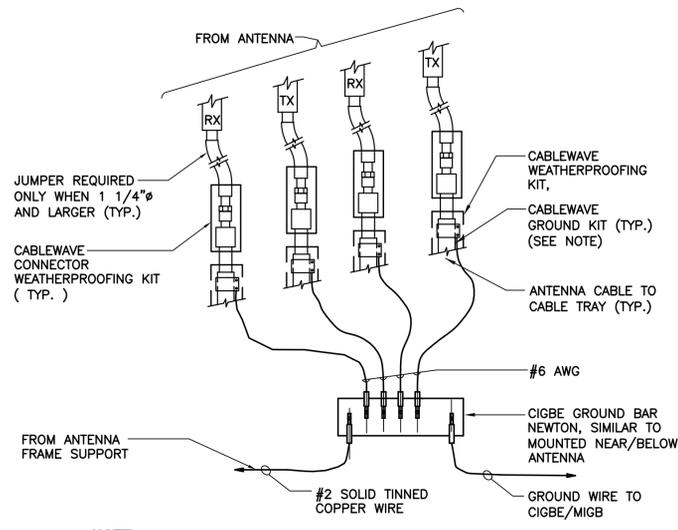
**NOTES:**

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



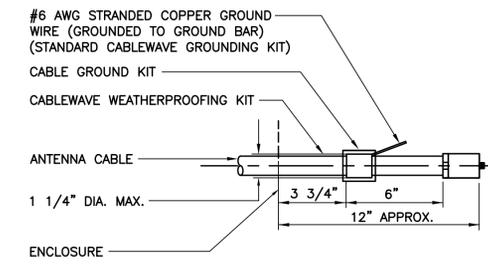
**7 RF PLUMBING DIAGRAM**  
 E-3 NOT TO SCALE



**NOTE:**

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

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



**NOTE:**

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

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



**CENTEK** engineering  
 Centered on Solutions™  
 (203) 489-0360  
 (203) 489-8387 Fax  
 63.2 North Branford Road  
 Branford, CT 06405  
 www.CentekEng.com

**AT&T MOBILITY**  
 WIRELESS COMMUNICATIONS FACILITY  
**NORWICH SE**  
 CT5468 - LTE 3C/4C/5C/RETRO & BWE  
 2 HINCKLEY HILL ROAD  
 NORWICH, CT 06365

DATE: 08/28/17  
 SCALE: AS NOTED  
 JOB NO. 17004.38

TYPICAL ELECTRICAL DETAILS

**E-3**

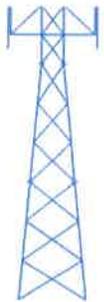
## Exhibit 3



# FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577  
ONTARIO, NY 14519  
(315) 524-2531 FAX (315) 524-4249

[www.nuddtowers.com](http://www.nuddtowers.com)



Mark LeGault  
Cordless Data Transfer, Inc.  
600 Old Hartford Road  
Colchester, CT 06415  
January 14, 2017

Fred A. Nudd Job Number: 117-23243.6

Location: 2 Hinkley Hill Road, Norwich, CT 06360, New London County (Lat. & Long: 41-30-53.45, -72-03-42.08)

Subject: Structural Analysis of a 150 ft Self-Supporting Tower

Fred A. Nudd Corporation has completed a three-dimensional, finite element model structural analysis of the above noted self-supporting tower. This tower was analyzed considered appurtenance loads noted in the appurtenance loading table on the following page. The design loading criteria and strength design are per the ANSI/TIA-222-G standard, which is the recommended design standard per the 2012 International Building Code (Sec. 1609 & 3108), , and the 2016 Connecticut State Building Code. Tower and foundation dimensions have been taken from original design drawings by Fred A. Nudd Corporation (Drawing Number 99-6864-1 & 99-6864-2R, dated July 22, 1999 & November 20, 1999). Onsite subsurface conditions were taken from a geotechnical report by Coneco (Project Number C104.0CDT, dated November 15, 1999). The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new Sprint and AT&T equipment installed at a rad center of 140 ft 115 ft above ground level (AGL), respectively. The new equipment to be installed, which included antennas, coax, mounts and associated hardware are listed on the following page in the appurtenance loading table.

Results of the analysis indicate the tower will be able to the support the design loads noted in the appurtenance loading table on the following page. Specific section design loads, capacities and stress ratios are provided on the following pages. Maximum member usage was found to be 83%. Detailed calculation of the applied forces and member capacities, considering combinations of existing and proposed equipment, are provided in the following pages.

The tower base foundation was analyzed using soil properties from the aforementioned geotechnical report. Based on this analysis, the foundation is capable of supporting the existing and proposed equipment. Detailed calculation of the applied forces and member capacities are provided in the following pages.

In conclusion, the tower superstructure and substructure can support the listed existing and proposed appurtenance loading.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,

Fred. A. Nudd Corporation



**Code Design Criteria**

ANSI/TIA-222-G

Windspeed = 104 mph, 3-second gust,  $V_{asd}$  / 132 mph, 3-second gust,  $V_{ult}$

Exposure = B

Radial Ice = 0.75 inch

Ice Windspeed = 50 mph, 3-second gust

Structure Class = II

Topographic Category = 1

$S_s < 1.0$ , thus seismic loading does not need to be considered

**Appurtenance Loading (1) – Currently installed equipment on tower**

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
150	T-Mobile	(3) Ericsson AIR32 B66A/B2A (3) Commscope DBXNH-6565B-A2M (3) Ericsson KRY 112 144/2	(3) 12 ft Boom / Frame	(12) 1-5/8 (1) 1-5/8 Fiber
140	Sprint	(1) KMW ET-X-TU-42-15-37-18-IR-RA (1) RFS APXVSP18-C-A20 (1) RFS APXV9ERR18-C-A20 (3) Alcatel Lucent 4X45 65 RRU (3) Alcatel Lucent 2X50W RRU (3) Alcatel Lucent 1900 MHz RRH, 65 MHz (3) RFS IBC1900BB-3	(3) 12 ft Boom / Frame	(3) 1-1/4 Hybriflex
127.5	Verizon	(4) RFS APL868013 (6) RFS FD9R6004/2C-3L (2) RFS APL866513 (1) RFS DB-T1-6Z-8AB-0Z (3) Commscope LNX-6514DS-1AM (3) Commscope HBXX-9014DS-VTM (3) Commscope HBXX-6517DS-A2M (3) Alcatel Lucent RH_2x60-AWS (3) Alcatel Lucent RH_2x60-700U (3) Alcatel Lucent RH_2x60-PCS	(3) 12 ft Boom / Frame	(6) 1-5/8 (2) 1-5/8 Fiber Cable
115	AT&T Mobility	(3) Powerwave 7770.00 (6) Powerwave LGP21401 (1) Powerwavce P65-17-XLH-RR (1) KMW AM-X-CD-16-65-00T-RET (6) Ericsson RRUS11 (1) Raycap DC6-48-60-18-8F	(3) 10 ft Boom / Frame	(12) 1-1/4 (2) 0.65 DC (1) 1.34 Fiber

- Height measurement taken as distance from top of base foundation to center of appurtenance.

**Appurtenance Loading (2) – New Sprint equipment to replace all Sprint equipment noted above**

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
140	Sprint	(3) RFS APXV9ERR18-C-A20 (6) Alcatel Lucent 4x45W, 1900 MHz (3) Alcatel Lucent TD-RRH8x200-25 (6) Alcatel Lucent RRH 2x50, 800 Mhz (3) Commscope DT465B-2XR	(3) 12 ft Boom / Frame	(4) 1-1/4 Hybrid

- Height measurement taken as distance from top of base foundation to center of appurtenance.
- Additional coax to be installed anywhere on the tower.

**Appurtenance Loading (3) – New AT&T equipment to replace all AT&T equipment noted above**

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
115	AT&T	(3) Powerwave 7770 (3) KMW EPBQ-654L8H8-L2 (3) CCI OPA-65R-LCUU-H8 (3) Ericsson RRUS-11 (9) Ericsson RRUS-32 (3) Ericsson B14 4478 (6) Powerwave LGP21401 (2) Raycap DC6-48-60-18-8F (1) Raycap DC6-48-60-0-8F	(3) 12 ft Boom / Frame	(12) 1-1/4 (6) 3/4 DC (2) 3/8 Fiber

- Height measurement taken as distance from top of base foundation to center of appurtenance.
- Additional coax to be installed anywhere on the tower.

**Maximum Member Usage**

Member	1	1 + 2	1 + 3	1 + 2 + 3
Leg	64	68	67	73
Diagonal	79	80	81	83
Horizontal	2	2	2	2
Splice/Connection Bolts	79	80	81	83

- Percentage equal to or less than 100% denote member stress levels are satisfactory for loading.
- Percentage greater than 100% indicates member strengthening is required.

**Foundation Reaction Usage**

Reaction	1	1 + 2	1 + 3	1 + 2 + 3
Compression / Leg	58	60	60	63
Uplift / Leg	46	48	48	51
Shear / Leg	36	37	37	38

- Percentage equal to or less than 100% denote member stress levels are satisfactory for loading.
- Percentage greater than 100% indicates member strengthening is required.



<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 1 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

## Tower Input Data

The main tower is a 3x free standing tower with an overall height of 150.00 ft above the ground line.  
 The base of the tower is set at an elevation of 0.00 ft above the ground line.  
 The face width of the tower is 6.00 ft at the top and 18.00 ft at the base.  
 This tower is designed using the TIA-222-G standard.  
 The following design criteria apply:

- Tower is located in New London County, Connecticut.
- Basic wind speed of 104 mph.
- Structure Class II.
- Exposure Category B.
- Topographic Category 1.
- Crest Height 0.00 ft.
- Nominal ice thickness of 0.7500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Weld together tower sections have flange connections..
- Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
- Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
- Welds are fabricated with ER-70S-6 electrodes..
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in tower member design is 1.
- Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

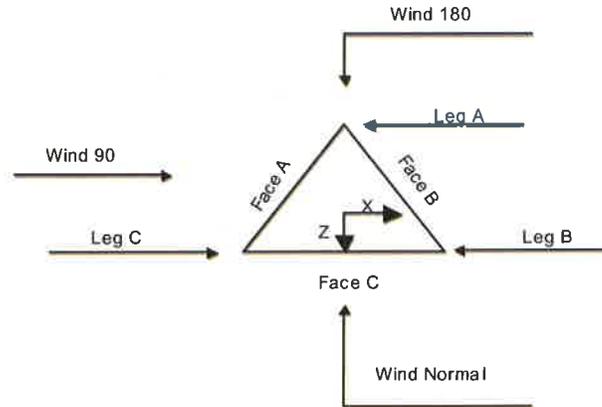
## Options

- Consider Moments - Legs
- Consider Moments - Horizontals
- Consider Moments - Diagonals
- Use Moment Magnification
- √ Use Code Stress Ratios
- √ Use Code Safety Factors - Guys
- Escalate Ice
- Always Use Max Kz
- Use Special Wind Profile
- √ Include Bolts In Member Capacity
- Leg Bolts Are At Top Of Section
- Secondary Horizontal Braces Leg
- Use Diamond Inner Bracing (4 Sided)
- Add IBC 6D+W Combination

- Distribute Leg Loads As Uniform
- Assume Legs Pinned
- √ Assume Rigid Index Plate
- √ Use Clear Spans For Wind Area
- √ Use Clear Spans For KL/r
- Retension Guys To Initial Tension
- Bypass Mast Stability Checks
- √ Use Azimuth Dish Coefficients
- √ Project Wind Area of Appurt.
- Autocalc Torque Arm Areas
- SR Members Have Cut Ends
- Sort Capacity Reports By Component
- Triangulate Diamond Inner Bracing

- Treat Feedline Bundles As Cylinder
  - Use ASCE 10 X-Brace Ly Rules
  - Calculate Redundant Bracing Forces
  - Ignore Redundant Members in FEA
  - SR Leg Bolts Resist Compression
  - All Leg Panels Have Same Allowable
  - Offset Girt At Foundation
  - √ Consider Feedline Torque
  - Include Angle Block Shear Check
- Poles**
- Include Shear-Torsion Interaction
  - Always Use Sub-Critical Flow
  - Use Top Mounted Sockets

<b>RISA Tower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 2 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN



**Triangular Tower**

### Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	150.00-140.00			6.00	1	10.00
T2	140.00-120.00			6.00	1	20.00
T3	120.00-100.00			6.00	1	20.00
T4	100.00-80.00			8.00	1	20.00
T5	80.00-60.00			10.00	1	20.00
T6	60.00-40.00			12.00	1	20.00
T7	40.00-20.00			14.00	1	20.00
T8	20.00-0.00			16.00	1	20.00

### Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	150.00-140.00	4.33	X Brace	No	No	8.0000	8.0000
T2	140.00-120.00	4.67	X Brace	No	No	8.0000	8.0000
T3	120.00-100.00	4.67	X Brace	No	No	8.0000	8.0000
T4	100.00-80.00	6.25	X Brace	No	No	7.5000	7.5000
T5	80.00-60.00	6.25	X Brace	No	No	7.5000	7.5000
T6	60.00-40.00	6.25	X Brace	No	No	7.5000	7.5000
T7	40.00-20.00	9.33	X Brace	No	No	8.0000	8.0000

<b>RISA Tower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 3 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T8	20.00-0.00	9.33	X Brace	No	No	8.0000	8.0000

### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 150.00-140.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 140.00-120.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 120.00-100.00	Pipe	P4x.237	A500M-54 (54 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 100.00-80.00	Pipe	P5x.258	A500M-54 (54 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 80.00-60.00	Pipe	P6x.28	A500M-54 (54 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T6 60.00-40.00	Pipe	P8x.322	A500M-54 (54 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 40.00-20.00	Pipe	P8x.5	A500M-54 (54 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 20.00-0.00	Pipe	P8x.5	A500M-54 (54 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 150.00-140.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T2 140.00-120.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T3 120.00-100.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T4 100.00-80.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T5 80.00-60.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T6 60.00-40.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T7 40.00-20.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T8 20.00-0.00	Solid Round		A572-50 (50 ksi)	Solid Round	9/16	A572-50 (50 ksi)

### Tower Section Geometry (cont'd)

<b>RISA</b> Tower  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 4 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor $A_f$	Adjust. Factor $A_r$	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft <sup>2</sup>	in					in	in
T1 130.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

### Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors <sup>1</sup>						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1 150.00-140.00	Yes	No	1	1	1	1	1	1	1	1
T2 140.00-120.00	Yes	No	1	1	1	1	1	1	1	1
T3 120.00-100.00	Yes	No	1	1	1	1	1	1	1	1
T4 100.00-80.00	Yes	No	1	1	1	1	1	1	1	1
T5 80.00-60.00	Yes	No	1	1	1	1	1	1	1	1
T6 60.00-40.00	Yes	No	1	1	1	1	1	1	1	1
T7 40.00-20.00	Yes	No	1	1	1	1	1	1	1	1
T8 20.00-0.00	Yes	No	1	1	1	1	1	1	1	1

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

### Tower Section Geometry (cont'd)

<h1 style="color: red; margin: 0;">RISATower</h1> <p style="font-size: small; margin-top: 10px;">Phone: FAX:</p>	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 5 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 150.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

### Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.										
T1 150.00-140.00	Flange	0.7500	4	0.5000	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 140.00-120.00	Flange	1.0000	4	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T3 120.00-100.00	Flange	1.0000	6	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T4 100.00-80.00	Flange	1.0000	8	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T5 80.00-60.00	Flange	1.2500	8	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T6 60.00-40.00	Flange	1.2500	8	0.6250	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T7 40.00-20.00	Flange	1.2500	8	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T8 20.00-0.00	Flange	1.5000	8	0.7500	1	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		F1554-36		A325N											

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF7-50A (1-5/8 FOAM (T-Mobile)	C	No	Ar (CaAa)	150.00 - 5.00	0.0000	0.25	12	9	1.9800	1.9800		0.82
1 1/4 (Sprint)	A	No	Ar (CaAa)	140.00 - 5.00	0.0000	0.25	4	4	1.5500	1.5500		0.66
LDF7-50A	B	No	Ar (CaAa)	127.50 - 5.00	0.0000	0.25	6	6	1.9800	1.9800		0.82

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 6 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(1-3/8 FOAM) (Verizon) LDF6-50A	C	No	Ar (CaAa)	115.00 - 5.00	0.0000	0.25	12	6	1.5300	1.5300		0.66
(1-1/4 FOAM) (AT&T) Safety Line 3/8	C	No	Ar (CaAa)	150.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22
Feedline Ladder (Af)	C	No	Ar (CaAa)	150.00 - 0.00	0.0000	0.25	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Ar (CaAa)	115.00 - 0.00	0.0000	0.25	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	B	No	Ar (CaAa)	127.50 - 0.00	0.0000	0.25	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	A	No	Ar (CaAa)	140.00 - 0.00	0.0000	0.25	1	1	3.0000	3.0000		8.40
DC (AT&T) Fiber	C	No	Ar (CaAa)	115.00 - 5.00	0.0000	0.25	6	6	0.7500 0.6300	0.0000		0.15
(AT&T) 3" Rigid Conduit	C	No	Ar (CaAa)	115.00 - 0.00	0.0000	0.25	2	2	0.3750 0.6300	0.0000		0.15
(AT&T) LDF7-50A	C	No	Ar (CaAa)	115.00 - 0.00	0.0000	0.25	1	1	2.0000	3.0000		2.80
(1-5/8 FOAM) (Verizon) LDF7-50A	B	No	Ar (CaAa)	127.50 - 5.00	0.0000	0.25	2	2	1.9800	1.9800		0.82
(1-5/8 FOAM) (T-Mobile)	C	No	Ar (CaAa)	150.00 - 5.00	0.0000	0.25	1	1	1.9800	1.9800		0.82

### Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight lb
T1	150.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	29.115	0.000	192.80
T2	140.00-120.00	A	0.000	0.000	18.400	0.000	220.80
		B	0.000	0.000	14.130	0.000	112.20
		C	0.000	0.000	58.230	0.000	385.60
T3	120.00-100.00	A	0.000	0.000	18.400	0.000	220.80
		B	0.000	0.000	37.680	0.000	299.20
		C	0.000	0.000	95.130	0.000	690.40
T4	100.00-80.00	A	0.000	0.000	18.400	0.000	220.80
		B	0.000	0.000	37.680	0.000	299.20
		C	0.000	0.000	107.430	0.000	792.00
T5	80.00-60.00	A	0.000	0.000	18.400	0.000	220.80
		B	0.000	0.000	37.680	0.000	299.20
		C	0.000	0.000	107.430	0.000	792.00
T6	60.00-40.00	A	0.000	0.000	18.400	0.000	220.80
		B	0.000	0.000	37.680	0.000	299.20
		C	0.000	0.000	107.430	0.000	792.00
T7	40.00-20.00	A	0.000	0.000	18.400	0.000	220.80
		B	0.000	0.000	37.680	0.000	299.20
		C	0.000	0.000	107.430	0.000	792.00
T8	20.00-0.00	A	0.000	0.000	15.300	0.000	207.60

<b>RISATower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	7 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

Tower Section	Tower Elevation ft	Face	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight lb
		B	0.000	0.000	29.760	0.000	266.40
		C	0.000	0.000	83.260	0.000	693.10

### Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	$A_R$ ft <sup>2</sup>	$A_F$ ft <sup>2</sup>	$C_{AA}$ In Face ft <sup>2</sup>	$C_{AA}$ Out Face ft <sup>2</sup>	Weight lb
T1	150.00-140.00	A	1.739	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	63.684	0.000	1237.10
T2	140.00-120.00	A	1.720	0.000	0.000	50.725	0.000	873.69
		B		0.000	0.000	39.172	0.000	625.06
		C		0.000	0.000	127.026	0.000	2454.14
T3	120.00-100.00	A	1.692	0.000	0.000	50.429	0.000	861.65
		B		0.000	0.000	103.982	0.000	1644.32
		C		0.000	0.000	211.118	0.000	4001.13
T4	100.00-80.00	A	1.658	0.000	0.000	50.081	0.000	847.54
		B		0.000	0.000	103.419	0.000	1617.93
		C		0.000	0.000	237.766	0.000	4459.64
T5	80.00-60.00	A	1.617	0.000	0.000	49.655	0.000	830.43
		B		0.000	0.000	102.730	0.000	1585.83
		C		0.000	0.000	235.862	0.000	4378.02
T6	60.00-40.00	A	1.564	0.000	0.000	49.102	0.000	808.42
		B		0.000	0.000	101.835	0.000	1544.48
		C		0.000	0.000	233.390	0.000	4273.01
T7	40.00-20.00	A	1.486	0.000	0.000	48.299	0.000	776.89
		B		0.000	0.000	100.535	0.000	1485.05
		C		0.000	0.000	229.794	0.000	4122.43
T8	20.00-0.00	A	1.331	0.000	0.000	37.863	0.000	614.27
		B		0.000	0.000	76.302	0.000	1104.50
		C		0.000	0.000	177.014	0.000	3092.14

### Feed Line Center of Pressure

Section	Elevation ft	$CP_X$ in	$CP_Z$ in	$CP_X$ Ice in	$CP_Z$ Ice in
T1	150.00-140.00	-3.1280	4.1252	-2.4718	3.4222
T2	140.00-120.00	-1.7879	2.0517	-1.3555	1.6185
T3	120.00-100.00	-1.3601	3.0181	-0.8769	2.2458
T4	100.00-80.00	-1.9508	3.8862	-1.3039	2.9444
T5	80.00-60.00	-2.2696	4.4518	-1.5525	3.4610
T6	60.00-40.00	-2.5506	4.9493	-1.7863	3.9502
T7	40.00-20.00	-2.9597	5.6974	-2.0969	4.6168
T8	20.00-0.00	-3.0799	5.7606	-2.2929	4.9116

### Shielding Factor Ka

<b>RISA Tower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 8 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T1	1	LDF7-50A (1-5/8 FOAM)	140.00 - 150.00	0.6000	0.6000
T1	5	Safety Line 3/8	140.00 - 150.00	0.6000	0.6000
T1	6	Feedline Ladder (Af)	140.00 - 150.00	0.6000	0.6000
T1	14	LDF7-30A (1-3/8 FOAM)	140.00 - 150.00	0.6000	0.6000
T2	1	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.6000
T2	2	1 1/4	120.00 - 140.00	0.6000	0.6000
T2	3	LDF7-50A (1-5/8 FOAM)	120.00 - 127.50	0.6000	0.6000
T2	5	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T2	6	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T2	8	Feedline Ladder (Af)	120.00 - 127.50	0.6000	0.6000
T2	9	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T2	13	LDF7-50A (1-5/8 FOAM)	120.00 - 127.50	0.6000	0.6000
T2	14	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.6000
T3	1	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T3	2	1 1/4	100.00 - 120.00	0.6000	0.6000
T3	3	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T3	4	LDF6-50A (1-1/4 FOAM)	100.00 - 115.00	0.6000	0.6000
T3	5	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T3	6	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T3	7	Feedline Ladder (Af)	100.00 - 115.00	0.6000	0.6000
T3	8	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T3	9	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T3	10	DC	100.00 - 115.00	0.6000	0.6000
T3	11	Fiber	100.00 - 115.00	0.6000	0.6000
T3	12	3" Rigid Conduit	100.00 - 115.00	0.6000	0.6000
T3	13	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T3	14	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T4	1	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T4	2	1 1/4	80.00 - 100.00	0.6000	0.6000
T4	3	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T4	4	LDF6-50A (1-1/4 FOAM)	80.00 - 100.00	0.6000	0.6000
T4	5	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T4	6	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T4	7	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000

<b>RISATower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	9 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T4	8	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T4	9	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T4	10	DC	80.00 - 100.00	0.6000	0.6000
T4	11	Fiber	80.00 - 100.00	0.6000	0.6000
T4	12	3" Rigid Conduit	80.00 - 100.00	0.6000	0.6000
T4	13	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T4	14	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T5	1	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T5	2	1 1/4	60.00 - 80.00	0.6000	0.6000
T5	3	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T5	4	LDF6-50A (1-1/4 FOAM)	60.00 - 80.00	0.6000	0.6000
T5	5	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T5	6	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T5	7	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T5	8	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T5	9	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T5	10	DC	60.00 - 80.00	0.6000	0.6000
T5	11	Fiber	60.00 - 80.00	0.6000	0.6000
T5	12	3" Rigid Conduit	60.00 - 80.00	0.6000	0.6000
T5	13	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T5	14	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T6	1	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T6	2	1 1/4	40.00 - 60.00	0.6000	0.6000
T6	3	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T6	4	LDF6-50A (1-1/4 FOAM)	40.00 - 60.00	0.6000	0.6000
T6	5	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T6	6	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T6	7	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T6	8	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T6	9	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T6	10	DC	40.00 - 60.00	0.6000	0.6000
T6	11	Fiber	40.00 - 60.00	0.6000	0.6000
T6	12	3" Rigid Conduit	40.00 - 60.00	0.6000	0.6000
T6	13	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T6	14	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T7	1	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T7	2	1 1/4	20.00 - 40.00	0.6000	0.6000
T7	3	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T7	4	LDF6-50A (1-1/4 FOAM)	20.00 - 40.00	0.6000	0.6000
T7	5	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T7	6	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T7	7	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T7	8	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T7	9	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T7	10	DC	20.00 - 40.00	0.6000	0.6000
T7	11	Fiber	20.00 - 40.00	0.6000	0.6000
T7	12	3" Rigid Conduit	20.00 - 40.00	0.6000	0.6000
T7	13	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T7	14	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T8	1	LDF7-50A (1-5/8 FOAM)	5.00 - 20.00	0.6000	0.6000
T8	2	1 1/4	5.00 - 20.00	0.6000	0.6000
T8	3	LDF7-50A (1-5/8 FOAM)	5.00 - 20.00	0.6000	0.6000
T8	4	LDF6-50A (1-1/4 FOAM)	5.00 - 20.00	0.6000	0.6000
T8	5	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T8	6	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T8	7	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T8	8	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T8	9	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T8	10	DC	5.00 - 20.00	0.6000	0.6000
T8	11	Fiber	5.00 - 20.00	0.6000	0.6000
T8	12	3" Rigid Conduit	0.00 - 20.00	0.6000	0.6000
T8	13	LDF7-50A (1-5/8 FOAM)	5.00 - 20.00	0.6000	0.6000

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 10 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T8	14	LDF7-30A (1-5/8 FOAM)	3.00 - 20.00	0.6000	0.6000

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight lb	
Nudd 12' boom	C	From Leg	1.00	0.0000	150.00	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 12' boom	A	From Leg	1.00	0.0000	150.00	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 12' boom	B	From Leg	1.00	0.0000	150.00	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 12' boom	C	From Leg	1.00	0.0000	127.50	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 12' boom	A	From Leg	1.00	0.0000	127.50	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 12' boom	B	From Leg	1.00	0.0000	127.50	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 10' boom	C	From Leg	1.00	0.0000	115.00	No Ice	15.50	9.30	255.00
			0.00			1/2" Ice	19.60	19.60	367.00
			0.00			1" Ice	24.00	24.00	512.00
Nudd 10' boom	C	From Leg	1.00	0.0000	115.00	No Ice	15.50	9.30	255.00
			0.00			1/2" Ice	19.60	19.60	367.00
			0.00			1" Ice	24.00	24.00	512.00
Nudd 10' boom	A	From Leg	1.00	0.0000	115.00	No Ice	15.50	9.30	255.00
			0.00			1/2" Ice	19.60	19.60	367.00
			0.00			1" Ice	24.00	24.00	512.00
Nudd 12' boom (Sprint)	A	From Leg	1.00	0.0000	140.00	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 12' boom (Sprint)	B	From Leg	1.00	0.0000	140.00	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Nudd 12' boom (Sprint)	C	From Leg	1.00	0.0000	140.00	No Ice	17.10	9.30	254.00
			0.00			1/2" Ice	21.40	21.40	376.00
			0.00			1" Ice	26.00	26.00	534.00
Alcatel Lucent 1900 MHz RRH (Sprint)	A	From Leg	4.00	0.0000	140.00	No Ice	2.58	2.54	60.00
			0.00			1/2" Ice	2.77	2.73	86.50
			0.00			1" Ice	2.96	1.00	110.20
Alcatel Lucent 1900 MHz RRH (Sprint)	B	From Leg	4.00	0.0000	140.00	No Ice	2.91	3.80	60.00
			0.00			1/2" Ice	3.11	4.03	86.50
			0.00			1" Ice	3.33	4.27	110.20
Alcatel Lucent 1900 MHz RRH	C	From Leg	4.00	0.0000	140.00	No Ice	2.91	3.80	60.00
			0.00			1/2" Ice	3.11	4.03	86.50

<h1 style="color: red; margin: 0;">RISATower</h1> <p style="font-size: small; margin-top: 10px;">Phone: FAX:</p>	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 11 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C.A.A.		Weight
			Horz	Lateral			Front	Side	
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(Sprint)			0.00						
RFS IBC1900BB-3	A	From Leg	4.00		0.0000	140.00	1" Ice 3.33	4.27	110.20
(Sprint)			0.00				No Ice 1.41	0.63	22.00
			0.00				1/2" Ice 1.55	0.74	31.00
			0.00				1" Ice 1.71	0.87	42.20
RFS IBC1900BB-3	B	From Leg	4.00		0.0000	140.00	No Ice 1.41	0.63	22.00
(Sprint)			0.00				1/2" Ice 1.55	0.74	31.00
			0.00				1" Ice 1.71	0.87	42.20
RFS IBC1900BB-3	C	From Leg	4.00		0.0000	140.00	No Ice 1.41	0.63	22.00
(Sprint)			0.00				1/2" Ice 1.55	0.74	31.00
			0.00				1" Ice 1.71	0.87	42.20
(2) RFS APL868013	C	From Leg	4.00		0.0000	127.50	No Ice 2.87	3.61	8.20
(Verizon)			0.00				1/2" Ice 3.17	3.92	33.60
			0.00				1" Ice 3.52	4.48	64.96
(2) RFS APL868013	A	From Leg	4.00		0.0000	127.50	No Ice 2.87	3.61	8.20
(Verizon)			0.00				1/2" Ice 3.17	3.92	33.60
			0.00				1" Ice 3.52	4.48	64.96
(2) RFS APL866513	B	From Leg	4.00		0.0000	127.50	No Ice 4.29	3.73	15.70
(Verizon)			0.00				1/2" Ice 4.62	4.05	47.00
			0.00				1" Ice 4.95	4.38	82.70
(2) RFS FD9R6004/2C-3L	C	From Leg	4.00		0.0000	127.50	No Ice 0.31	0.08	3.10
(Verizon)			0.00				1/2" Ice 0.38	0.12	5.40
			0.00				1" Ice 3.52	4.48	64.96
(2) RFS FD9R6004/2C-3L	A	From Leg	4.00		0.0000	127.50	No Ice 0.31	0.08	3.10
(Verizon)			0.00				1/2" Ice 0.38	0.12	5.40
			0.00				1" Ice 3.52	4.48	64.96
(2) RFS FD9R6004/2C-3L	B	From Leg	4.00		0.0000	127.50	No Ice 0.31	0.08	3.10
(Verizon)			0.00				1/2" Ice 0.38	0.12	5.40
			0.00				1" Ice 3.52	4.48	64.96
RFS DB-T1-6Z-8AB-0Z	C	From Leg	4.00		0.0000	12.75 - 127.50	No Ice 4.80	2.00	10.00
(Verizon)			0.00				1/2" Ice 5.04	2.17	46.10
			0.00				1" Ice 5.28	2.34	82.20
Commscope	A	From Leg	4.00		0.0000	127.50	No Ice 8.17	5.41	38.80
LNx-6514DS-VTM			0.00				1/2" Ice 8.63	5.88	89.30
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	B	From Leg	4.00		0.0000	127.50	No Ice 8.17	5.41	38.80
LNx-6514DS-VTM			0.00				1/2" Ice 8.63	5.88	89.30
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	C	From Leg	4.00		0.0000	127.50	No Ice 8.17	5.41	38.80
LNx-6514DS-VTM			0.00				1/2" Ice 8.63	5.88	89.30
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	A	From Leg	4.00		0.0000	127.50	No Ice 5.42	3.28	29.80
HBXX-9014DS-VTM			0.00				1/2" Ice 5.74	3.60	65.10
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	B	From Leg	4.00		0.0000	127.50	No Ice 5.42	3.28	29.80
HBXX-9014DS-VTM			0.00				1/2" Ice 5.74	3.60	65.10
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	C	From Leg	4.00		0.0000	127.50	No Ice 5.42	3.28	29.80
HBXX-9014DS-VTM			0.00				1/2" Ice 5.74	3.60	65.10
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	A	From Leg	4.00		0.0000	127.50	No Ice 8.53	5.24	43.00
HBXX-6517DS-A2M			0.00				1/2" Ice 9.00	5.74	93.50
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	B	From Leg	4.00		0.0000	127.50	No Ice 8.53	5.24	43.00
HBXX-6517DS-A2M			0.00				1/2" Ice 9.00	5.74	93.50
(Verizon)			0.00				1" Ice 3.52	4.48	64.96
Commscope	C	From Leg	4.00		0.0000	127.50	No Ice 8.53	5.24	43.00
HBXX-6517DS-A2M			0.00				1/2" Ice 9.00	5.74	93.50

<b>RISA Tower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	12 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>1</sub> Front	C <sub>A</sub> A <sub>1</sub> Side	Weight
			ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
(Verizon)			0.00			3.52	4.48	64.96
Alcatel Lucent RH_2x60-AWS	A	From Leg	4.00	0.0000	127.50	No Ice 1.88	1.24	44.00
(Verizon)			0.00			1/2" Ice 2.03	1.37	60.00
Alcatel Lucent RH_2x60-AWS	B	From Leg	4.00	0.0000	127.50	No Ice 1.88	1.24	44.00
(Verizon)			0.00			1/2" Ice 2.03	1.37	60.00
Alcatel Lucent RH_2x60-AWS	C	From Leg	4.00	0.0000	127.50	No Ice 1.88	1.24	44.00
(Verizon)			0.00			1/2" Ice 2.03	1.37	60.00
Alcatel Lucent RH_2x60-70OU	A	From Leg	4.00	0.0000	127.50	No Ice 2.16	1.62	44.00
(Verizon)			0.00			1/2" Ice 2.33	1.77	63.60
Alcatel Lucent RH_2x60-70OU	B	From Leg	4.00	0.0000	127.50	No Ice 2.16	1.62	44.00
(Verizon)			0.00			1/2" Ice 2.33	1.77	63.60
Alcatel Lucent RH_2x60-70OU	C	From Leg	4.00	0.0000	127.50	No Ice 2.16	1.62	44.00
(Verizon)			0.00			1/2" Ice 2.33	1.77	63.60
Alcatel Lucent RH_2x60-PCS	A	From Leg	4.00	0.0000	127.50	No Ice 1.84	1.34	46.00
(Verizon)			0.00			1/2" Ice 2.00	1.48	62.60
Alcatel Lucent RH_2x60-PCS	B	From Leg	4.00	0.0000	127.50	No Ice 1.84	1.34	46.00
(Verizon)			0.00			1/2" Ice 2.00	1.48	62.60
Alcatel Lucent RH_2x60-PCS	C	From Leg	4.00	0.0000	127.50	No Ice 1.84	1.34	46.00
(Verizon)			0.00			1/2" Ice 2.00	1.48	62.60
Ericsson AIR 32 B66AA/B2A	A	From Leg	4.00	0.0000	150.00	No Ice 6.51	4.71	100.00
(T-Mobile)			0.00			1/2" Ice 6.87	5.07	145.80
Ericsson AIR 32 B66AA/B2A	B	From Leg	4.00	0.0000	150.00	No Ice 6.51	4.71	100.00
(T-Mobile)			0.00			1/2" Ice 6.87	5.07	145.80
Ericsson AIR 32 B66AA/B2A	C	From Leg	4.00	0.0000	150.00	No Ice 6.51	4.71	100.00
(T-Mobile)			0.00			1/2" Ice 6.87	5.07	145.80
Commscope DBXHN-6565B-A2M	A	From Leg	4.00	0.0000	150.00	No Ice 8.17	3.13	46.30
(T-Mobile)			0.00			1/2" Ice 8.63	3.60	96.80
Commscope DBXHN-6565B-A2M	B	From Leg	4.00	0.0000	150.00	No Ice 8.17	3.13	46.30
(T-Mobile)			0.00			1/2" Ice 8.63	3.60	96.80
Commscope DBXHN-6565B-A2M	C	From Leg	4.00	0.0000	150.00	No Ice 8.17	3.13	46.30
(T-Mobile)			0.00			1/2" Ice 8.63	3.60	96.80
(2) Ericsson KRY112/2	A	From Leg	4.00	0.0000	150.00	No Ice 0.35	0.16	11.00
(T-Mobile)			0.00			1/2" Ice 0.42	0.21	14.10
(2) Ericsson KRY112/2	B	From Leg	4.00	0.0000	150.00	No Ice 0.35	0.16	11.00
(T-Mobile)			0.00			1/2" Ice 0.42	0.21	14.10
(2) Ericsson KRY112/2	C	From Leg	4.00	0.0000	150.00	No Ice 0.35	0.16	11.00
(T-Mobile)			0.00			1/2" Ice 0.42	0.21	14.10
Commscope DT465B-2XR	A	From Leg	4.00	0.0000	140.00	No Ice 9.22	5.87	50.00
(Sprint)			0.00			1/2" Ice 10.14	6.79	172.40

<h1 style="color: red; margin: 0;">RISATower</h1> <p style="font-size: small; margin-top: 10px;">Phone: FAX:</p>	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 13 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight lb	
Commscope DT465B-2XR (Sprint)	B	From Leg	0.00	0.0000	140.00	1" Ice	11.07	7.70	320.70
			4.00			No Ice	9.22	5.87	30.00
			0.00			1/2" Ice	10.14	6.79	172.40
Commscope DT465B-2XR (Sprint)	C	From Leg	0.00	0.0000	140.00	1" Ice	11.07	7.70	320.70
			4.00			No Ice	9.22	5.87	30.00
			0.00			1/2" Ice	10.14	6.79	172.40
(2) Alcatel Lucent 4x45 (Sprint)	A	From Leg	0.00	0.0000	140.00	1" Ice	11.07	7.70	320.70
			4.00			No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.92	1.96	94.30
(2) Alcatel Lucent 4x45 (Sprint)	B	From Leg	0.00	0.0000	140.00	1" Ice	3.35	2.33	150.90
			4.00			No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.92	1.96	94.30
(2) Alcatel Lucent 4x45 (Sprint)	C	From Leg	0.00	0.0000	140.00	1" Ice	3.35	2.33	150.90
			4.00			No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.92	1.96	94.30
Alcatel Lucent 8x200-25 (Sprint)	A	From Leg	0.00	0.0000	140.00	1" Ice	3.35	2.33	150.90
			4.00			No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.50	1.88	127.80
Alcatel Lucent 8x200-25 (Sprint)	B	From Leg	0.00	0.0000	140.00	1" Ice	4.99	2.26	200.50
			4.00			No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.50	1.88	127.80
Alcatel Lucent 8x200-25 (Sprint)	C	From Leg	0.00	0.0000	140.00	1" Ice	4.99	2.26	200.50
			4.00			No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.50	1.88	127.80
RFS APXV9ERR18-C-A20 (Sprint)	A	From Leg	0.00	0.0000	140.00	1" Ice	4.99	2.26	200.50
			4.00			No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.93	6.73	172.10
RFS APXV9ERR18-C-A20 (Sprint)	B	From Leg	0.00	0.0000	140.00	1" Ice	9.86	7.64	307.60
			4.00			No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.93	6.73	172.10
RFS APXV9ERR18-C-A20 (Sprint)	C	From Leg	0.00	0.0000	140.00	1" Ice	9.86	7.64	307.60
			4.00			No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.93	6.73	172.10
(2) Alcatel Lucent RRH2x50 (Sprint)	A	From Leg	0.00	0.0000	140.00	1" Ice	9.86	7.64	307.60
			4.00			No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.64	1.68	79.60
Powerwave 7770.00 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	3.05	2.04	129.60
			4.00			No Ice	5.51	2.93	35.00
			0.00			1/2" Ice	6.21	3.64	105.10
Powerwave 7770.00 (AT&T)	B	From Leg	0.00	0.0000	115.00	1" Ice	6.93	4.33	195.10
			4.00			No Ice	5.51	2.93	35.00
			0.00			1/2" Ice	6.21	3.64	105.10
Powerwave 7770.00 (AT&T)	C	From Leg	0.00	0.0000	115.00	1" Ice	6.93	4.33	195.10
			4.00			No Ice	5.51	2.93	35.00
			0.00			1/2" Ice	6.21	3.64	105.10
KMW EPBQ-654L8H8-L2 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	6.93	4.33	195.10
			4.00			No Ice	18.09	7.03	200.00
			0.00			1/2" Ice	19.31	8.35	394.70
KMW EPBQ-654L8H8-L2 (AT&T)	B	From Leg	0.00	0.0000	115.00	1" Ice	20.55	9.57	622.90
			4.00			No Ice	18.09	7.03	200.00
			0.00			1/2" Ice	19.31	8.35	394.70
KMW EPBQ-654L8H8-L2 (AT&T)	C	From Leg	0.00	0.0000	115.00	1" Ice	20.55	9.57	622.90
			4.00			No Ice	18.09	7.03	200.00
			0.00			1/2" Ice	19.31	8.35	394.70
CCI OPA-65R-LCUU-H8 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	20.55	9.57	622.90
			4.00			No Ice	12.76	7.48	70.90
			0.00			1/2" Ice	13.94	8.72	223.30

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis		<b>Page</b> 14 of 34	
	<b>Project</b> 117-23243.6		<b>Date</b> 23:47:29 01/14/18	
	<b>Client</b> CDT		<b>Designed by</b> FAN	

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>Front</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>Side</sub> ft <sup>2</sup>	Weight lb	
CCI OPA-65R-LCUU-H8 (AT&T)	B	From Leg	0.00	0.0000	115.00	1" Ice	15.11	9.90	47.00
			4.00			No Ice	12.76	7.48	70.90
			0.00			1/2" Ice	13.94	8.72	223.30
CCI OPA-65R-LCUU-H8 (AT&T)	C	From Leg	0.00	0.0000	115.00	1" Ice	15.11	9.90	47.00
			4.00			No Ice	12.76	7.48	70.90
			0.00			1/2" Ice	13.94	8.72	223.30
Ericsson RRUS11 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	15.11	9.90	47.00
			4.00			No Ice	2.78	1.19	55.00
			0.00			1/2" Ice	3.16	1.47	99.60
Ericsson RRUS11 (AT&T)	B	From Leg	0.00	0.0000	115.00	1" Ice	3.57	1.79	157.10
			4.00			No Ice	2.78	1.19	55.00
			0.00			1/2" Ice	3.16	1.47	99.60
Ericsson RRUS11 (AT&T)	C	From Leg	0.00	0.0000	115.00	1" Ice	3.57	1.79	157.10
			4.00			No Ice	2.78	1.19	55.00
			0.00			1/2" Ice	3.16	1.47	99.60
(3) Ericsson RRUS32 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	3.57	1.79	157.10
			4.00			No Ice	2.06	0.50	22.00
			0.00			1/2" Ice	2.39	0.72	49.80
(3) Ericsson RRUS32 (AT&T)	B	From Leg	0.00	0.0000	115.00	1" Ice	2.75	0.97	88.20
			4.00			No Ice	2.06	0.50	22.00
			0.00			1/2" Ice	2.39	0.72	49.80
(3) Ericsson RRUS32 (AT&T)	C	From Leg	0.00	0.0000	115.00	1" Ice	2.75	0.97	88.20
			4.00			No Ice	2.06	0.50	22.00
			0.00			1/2" Ice	2.39	0.72	49.80
Ericsson B14 4478 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	2.75	0.97	88.20
			4.00			No Ice	1.84	1.06	50.00
			0.00			1/2" Ice	2.15	1.31	84.40
Ericsson B14 4478 (AT&T)	B	From Leg	0.00	0.0000	115.00	1" Ice	2.50	1.61	130.10
			4.00			No Ice	1.84	1.06	50.00
			0.00			1/2" Ice	2.15	1.31	84.40
Ericsson B14 4478 (AT&T)	C	From Leg	0.00	0.0000	115.00	1" Ice	2.50	1.61	130.10
			4.00			No Ice	1.84	1.06	50.00
			0.00			1/2" Ice	2.15	1.31	84.40
(2) Powerwave LGP21401 (A1&1)	A	From Leg	0.00	0.0000	115.00	1" Ice	2.50	1.61	130.10
			4.00			No Ice	1.67	0.47	31.00
			0.00			1/2" Ice	1.96	0.67	55.30
(2) Powerwave LGP21401 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	2.30	0.90	89.40
			4.00			No Ice	1.67	0.47	31.00
			0.00			1/2" Ice	1.96	0.67	55.30
(2) Powerwave LGP21401 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	2.30	0.90	89.40
			4.00			No Ice	1.67	0.47	31.00
			0.00			1/2" Ice	1.96	0.67	55.30
(2) Alcatel Lucent RRH2x50 (Sprint)	B	From Leg	0.00	0.0000	140.00	1" Ice	2.30	0.90	89.40
			4.00			No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.64	1.68	79.60
(2) Alcatel Lucent RRH2x50 (Sprint)	C	From Leg	0.00	0.0000	140.00	1" Ice	3.05	2.04	129.60
			4.00			No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.64	1.68	79.60
Raycap DC6-48-60 (AT&T)	A	From Leg	0.00	0.0000	115.00	1" Ice	3.05	2.04	129.60
			4.00			No Ice	1.28	1.28	31.80
			0.00			1/2" Ice	1.64	1.64	80.10
Raycap DC6-48-60 (AT&T)	B	From Leg	0.00	0.0000	115.00	1" Ice	2.04	2.04	141.90
			4.00			No Ice	1.28	1.28	31.80
			0.00			1/2" Ice	1.64	1.64	80.10
Raycap DC6-48-60 (AT&T)	C	From Leg	0.00	0.0000	115.00	1" Ice	2.04	2.04	141.90
			4.00			No Ice	1.28	1.28	31.80
			0.00			1/2" Ice	1.64	1.64	80.10

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 15 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C <sub>AA</sub> A <sub>A</sub> Front	C <sub>AA</sub> A <sub>A</sub> Side	Weight
			ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb
			0.00		1" Ice	2.04	2.04	141.90

### Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> A <sub>A</sub> In Face	C <sub>AA</sub> A <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 150.00-140.00	145.00	1.099	26	62.396	A	4.993	4.792	4.792	48.97	0.000	0.000
					B	4.993	4.792		48.97	0.000	0.000
					C	4.993	4.792		48.97	29.115	0.000
T2 140.00-120.00	130.00	1.065	25	124.792	A	9.730	9.583	9.583	49.62	18.400	0.000
					B	9.730	9.583		49.62	14.130	0.000
					C	9.730	9.583		49.62	58.230	0.000
T3 120.00-100.00	110.00	1.016	24	147.509	A	10.623	15.025	15.025	58.58	18.400	0.000
					B	10.623	15.025		58.58	37.680	0.000
					C	10.623	15.025		58.58	95.130	0.000
T4 100.00-80.00	90.00	0.959	23	189.283	A	12.997	18.574	18.574	58.83	18.400	0.000
					B	12.997	18.574		58.83	37.680	0.000
					C	12.997	18.574		58.83	107.430	0.000
T5 80.00-60.00	70.00	0.892	21	231.055	A	18.030	22.120	22.120	55.09	18.400	0.000
					B	18.030	22.120		55.09	37.680	0.000
					C	18.030	22.120		55.09	107.430	0.000
T6 60.00-40.00	50.00	0.811	19	274.393	A	20.444	28.798	28.798	58.48	18.400	0.000
					B	20.444	28.798		58.48	37.680	0.000
					C	20.444	28.798		58.48	107.430	0.000
T7 40.00-20.00	30.00	0.701	16	314.393	A	19.628	28.798	28.798	59.47	18.400	0.000
					B	19.628	28.798		59.47	37.680	0.000
					C	19.628	28.798		59.47	107.430	0.000
T8 20.00-0.00	10.00	0.7	16	354.393	A	21.673	28.798	28.798	57.06	15.300	0.000
					B	21.673	28.798		57.06	29.760	0.000
					C	21.673	28.798		57.06	85.260	0.000

### Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation	z	K <sub>z</sub>	q <sub>z</sub>	t <sub>z</sub>	A <sub>G</sub>	F a c e	A <sub>F</sub>	A <sub>R</sub>	A <sub>leg</sub>	Leg %	C <sub>AA</sub> A <sub>A</sub> In Face	C <sub>AA</sub> A <sub>A</sub> Out Face
ft	ft		psf	in	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 150.00-140.00	145.00	1.099	6	1.7393	65.295	A	4.993	20.499	10.589	41.54	0.000	0.000
						B	4.993	20.499		41.54	0.000	0.000
						C	4.993	20.499		41.54	63.684	0.000
T2	130.00	1.065	6	1.7204	130.526	A	9.730	37.793	21.053	44.30	50.725	0.000

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 16 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	t <sub>z</sub> in	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>
140.00-120.00						B	9.730	37.793		44.30	39.172	0.000
						C	9.730	37.793		44.30	127.026	0.000
T3 120.00-100.00	110.00	1.016	6	1.6919	153.156	A	10.623	44.297	26.323	47.93	50.429	0.000
						B	10.623	44.297		47.93	103.982	0.000
						C	10.623	44.297		47.93	211.118	0.000
T4 100.00-80.00	90.00	0.959	5	1.6583	194.818	A	12.997	46.890	29.648	49.51	50.081	0.000
						B	12.997	46.890		49.51	103.419	0.000
						C	12.997	46.890		49.51	237.766	0.000
T5 80.00-60.00	70.00	0.892	5	1.6171	236.453	A	18.030	52.357	32.919	46.77	49.635	0.000
						B	18.030	52.357		46.77	102.730	0.000
						C	18.030	52.357		46.77	235.862	0.000
T6 60.00-40.00	50.00	0.811	4	1.5636	279.612	A	20.444	60.551	39.240	48.45	49.102	0.000
						B	20.444	60.551		48.45	101.835	0.000
						C	20.444	60.551		48.45	233.390	0.000
T7 40.00-20.00	30.00	0.701	4	1.4858	319.352	A	19.628	55.384	38.720	51.62	48.299	0.000
						B	19.628	55.384		51.62	100.535	0.000
						C	19.628	55.384		51.62	229.794	0.000
T8 20.00-0.00	10.00	0.7	4	1.3312	358.836	A	21.673	54.173	37.687	49.69	37.863	0.000
						B	21.673	54.173		49.69	76.302	0.000
						C	21.673	54.173		49.69	177.014	0.000

### Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K <sub>Z</sub>	q <sub>z</sub> psf	A <sub>G</sub> ft <sup>2</sup>	F a c e	A <sub>F</sub> ft <sup>2</sup>	A <sub>R</sub> ft <sup>2</sup>	A <sub>leg</sub> ft <sup>2</sup>	Leg %	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>
T1 150.00-140.00	145.00	1.099	9	62.396	A	4.993	4.792	4.792	48.97	0.000	0.000
					B	4.993	4.792		48.97	0.000	0.000
					C	4.993	4.792		48.97	29.115	0.000
T2 140.00-120.00	130.00	1.065	8	124.792	A	9.730	9.583	9.583	49.62	18.400	0.000
					B	9.730	9.583		49.62	14.130	0.000
					C	9.730	9.583		49.62	58.230	0.000
T3 120.00-100.00	110.00	1.016	8	147.509	A	10.623	15.025	15.025	58.58	18.400	0.000
					B	10.623	15.025		58.58	37.680	0.000
					C	10.623	15.025		58.58	95.130	0.000
T4 100.00-80.00	90.00	0.959	8	189.283	A	12.997	18.574	18.574	58.83	18.400	0.000
					B	12.997	18.574		58.83	37.680	0.000
					C	12.997	18.574		58.83	107.430	0.000
T5 80.00-60.00	70.00	0.892	7	231.055	A	18.030	22.120	22.120	55.09	18.400	0.000
					B	18.030	22.120		55.09	37.680	0.000
					C	18.030	22.120		55.09	107.430	0.000
T6 60.00-40.00	50.00	0.811	6	274.393	A	20.444	28.798	28.798	58.48	18.400	0.000
					B	20.444	28.798		58.48	37.680	0.000
					C	20.444	28.798		58.48	107.430	0.000
T7 40.00-20.00	30.00	0.701	5	314.393	A	19.628	28.798	28.798	59.47	18.400	0.000
					B	19.628	28.798		59.47	37.680	0.000
					C	19.628	28.798		59.47	107.430	0.000
T8 20.00-0.00	10.00	0.7	5	354.393	A	21.673	28.798	28.798	57.06	15.300	0.000
					B	21.673	28.798		57.06	29.760	0.000
					C	21.673	28.798		57.06	85.260	0.000

<b>RISA Tower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 17 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

**Tower Forces - No Ice - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1 150.00-140.00	192.80	421.53	A	0.157	2.747	26	1	1	7.716	849.93	84.99	C
			B	0.157	2.747				7.716			
			C	0.157	2.747				7.716			
T2 140.00-120.00	718.60	791.76	A	0.155	2.754	25	1	1	15.174	2030.87	102.54	C
			B	0.155	2.754				15.174			
			C	0.155	2.754				15.174			
T3 120.00-100.00	1210.40	1140.72	A	0.174	2.686	24	1	1	18.716	2864.29	143.21	C
			B	0.174	2.686				18.716			
			C	0.174	2.686				18.716			
T4 100.00-80.00	1312.00	1485.02	A	0.167	2.711	23	1	1	22.320	3042.67	152.13	C
			B	0.167	2.711				22.320			
			C	0.167	2.711				22.320			
T5 80.00-60.00	1312.00	1986.33	A	0.174	2.686	21	1	1	28.506	3118.68	155.93	C
			B	0.174	2.686				28.506			
			C	0.174	2.686				28.506			
T6 60.00-40.00	1312.00	2680.91	A	0.179	2.666	19	1	1	32.950	3015.74	150.79	C
			B	0.179	2.666				32.950			
			C	0.179	2.666				32.950			
T7 40.00-20.00	1312.00	3829.48	A	0.154	2.757	16	1	1	31.934	2608.86	130.44	C
			B	0.154	2.757				31.934			
			C	0.154	2.757				31.934			
T8 20.00-0.00	1167.10	3948.61	A	0.142	2.8	16	1	1	33.820	2420.89	121.04	C
			B	0.142	2.8				33.820			
			C	0.142	2.8				33.820			
Sum Weight:	8536.90	16284.35						OTM	1450335.4 0 lb-ft	19971.93		

**Tower Forces - No Ice - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1 150.00-140.00	192.80	421.53	A	0.157	2.747	26	0.8	1	6.717	789.64	78.96	C
			B	0.157	2.747				6.717			
			C	0.157	2.747				6.717			
T2 140.00-120.00	718.60	791.76	A	0.155	2.754	25	0.8	1	13.228	1936.67	96.83	C
			B	0.155	2.754				13.228			
			C	0.155	2.754				13.228			
T3 120.00-100.00	1210.40	1140.72	A	0.174	2.686	24	0.8	1	16.592	2748.37	137.42	C
			B	0.174	2.686				16.592			
			C	0.174	2.686				16.592			
T4 100.00-80.00	1312.00	1485.02	A	0.167	2.711	23	0.8	1	19.721	2907.50	145.38	C
			B	0.167	2.711				19.721			
			C	0.167	2.711				19.721			
T5 80.00-60.00	1312.00	1986.33	A	0.174	2.686	21	0.8	1	24.900	2945.75	147.29	C
			B	0.174	2.686				24.900			
			C	0.174	2.686				24.900			
T6 60.00-40.00	1312.00	2680.91	A	0.179	2.666	19	0.8	1	28.861	2838.95	141.95	C
			B	0.179	2.666				28.861			
			C	0.179	2.666				28.861			

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 18 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
T7 40.00-20.00	1312.00	3829.48	C	0.179	2.666	16	0.8	1	28.861	2437.19	122.86	C
			A	0.154	2.757		0.8	1	28.009			
			B	0.154	2.757		0.8	1	28.009			
T8 20.00-0.00	1167.10	3948.61	A	0.142	2.8	16	0.8	1	29.485	2250.95	112.55	C
			B	0.142	2.8		0.8	1	29.485			
			C	0.142	2.8		0.8	1	29.485			
Sum Weight:	8536.90	16284.35					OTM	1374635.9 7 lb-ft	18875.02			

**Tower Forces - No Ice - Wind 90 To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
T1 150.00-140.00	192.80	421.53	A	0.157	2.747	26	0.85	1	6.967	804.71	80.47	C
			B	0.157	2.747		0.85	1	6.967			
			C	0.157	2.747		0.85	1	6.967			
T2 140.00-120.00	718.60	791.76	A	0.155	2.754	25	0.85	1	13.714	1965.22	98.26	C
			B	0.155	2.754		0.85	1	13.714			
			C	0.155	2.754		0.85	1	13.714			
T3 120.00-100.00	1210.40	1140.72	A	0.174	2.686	24	0.85	1	17.123	2777.35	138.87	C
			B	0.174	2.686		0.85	1	17.123			
			C	0.174	2.686		0.85	1	17.123			
T4 100.00-80.00	1312.00	1485.02	A	0.167	2.711	23	0.85	1	20.371	2941.29	147.06	C
			B	0.167	2.711		0.85	1	20.371			
			C	0.167	2.711		0.85	1	20.371			
T5 80.00-60.00	1312.00	1986.33	A	0.174	2.686	21	0.85	1	25.802	2988.98	149.45	C
			B	0.174	2.686		0.85	1	25.802			
			C	0.174	2.686		0.85	1	25.802			
T6 60.00-40.00	1312.00	2680.91	A	0.179	2.666	19	0.85	1	29.883	2883.15	144.16	C
			B	0.179	2.666		0.85	1	29.883			
			C	0.179	2.666		0.85	1	29.883			
T7 40.00-20.00	1312.00	3829.48	A	0.154	2.757	16	0.85	1	28.990	2495.10	124.76	C
			B	0.154	2.757		0.85	1	28.990			
			C	0.154	2.757		0.85	1	28.990			
T8 20.00-0.00	1167.10	3948.61	A	0.142	2.8	16	0.85	1	30.569	2293.44	114.67	C
			B	0.142	2.8		0.85	1	30.569			
			C	0.142	2.8		0.85	1	30.569			
Sum Weight:	8536.90	16284.35					OTM	1393560.8 2 lb-ft	19149.25			

**Tower Forces - With Ice - Wind Normal To Face**

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C <sub>F</sub>	q <sub>z</sub> psf	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub> ft <sup>2</sup>	F lb	w plf	Ctrl. Face
-------------------------	------------------	-------------------	---------	---	----------------	-----------------------	----------------	----------------	-----------------------------------	---------	----------	------------

<b>RISATower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	19 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1 150.00-140.00	1237.10	1673.10	A	0.39	2.083	6	1	1	17.951	384.19	38.42	C
			B	0.39	2.083		1	1	17.951			
			C	0.39	2.083		1	1	17.951			
T2 140.00-120.00	3952.89	3115.53	A	0.364	2.139	6	1	1	33.216	991.07	49.55	C
			B	0.364	2.139		1	1	33.216			
			C	0.364	2.139		1	1	33.216			
T3 120.00-100.00	6507.10	3797.93	A	0.359	2.152	6	1	1	38.057	1414.40	70.72	C
			B	0.359	2.152		1	1	38.057			
			C	0.359	2.152		1	1	38.057			
T4 100.00-80.00	6925.11	4440.73	A	0.307	2.277	5	1	1	41.190	1456.72	72.84	C
			B	0.307	2.277		1	1	41.190			
			C	0.307	2.277		1	1	41.190			
T5 80.00-60.00	6794.28	5602.28	A	0.298	2.302	5	1	1	49.350	1430.21	71.51	C
			B	0.298	2.302		1	1	49.350			
			C	0.298	2.302		1	1	49.350			
T6 60.00-40.00	6625.91	6731.16	A	0.29	2.324	4	1	1	56.519	1356.75	67.84	C
			B	0.29	2.324		1	1	56.519			
			C	0.29	2.324		1	1	56.519			
T7 40.00-20.00	6384.37	7409.58	A	0.235	2.484	4	1	1	51.831	1152.96	57.65	C
			B	0.235	2.484		1	1	51.831			
			C	0.235	2.484		1	1	51.831			
T8 20.00-0.00	4810.91	7299.43	A	0.211	2.558	4	1	1	52.907	1003.63	50.18	C
			B	0.211	2.558		1	1	52.907			
			C	0.211	2.558		1	1	52.907			
Sum Weight:	43237.67	40069.74						OTM	683812.12 lb-ft	9189.93		

**Tower Forces - With Ice - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1 150.00-140.00	1237.10	1673.10	A	0.39	2.083	6	0.8	1	16.952	373.62	37.36	C
			B	0.39	2.083		0.8	1	16.952			
			C	0.39	2.083		0.8	1	16.952			
T2 140.00-120.00	3952.89	3115.53	A	0.364	2.139	6	0.8	1	31.270	970.56	48.53	C
			B	0.364	2.139		0.8	1	31.270			
			C	0.364	2.139		0.8	1	31.270			
T3 120.00-100.00	6507.10	3797.93	A	0.359	2.152	6	0.8	1	35.932	1392.93	69.65	C
			B	0.359	2.152		0.8	1	35.932			
			C	0.359	2.152		0.8	1	35.932			
T4 100.00-80.00	6925.11	4440.73	A	0.307	2.277	5	0.8	1	38.591	1430.48	71.52	C
			B	0.307	2.277		0.8	1	38.591			
			C	0.307	2.277		0.8	1	38.591			
T5 80.00-60.00	6794.28	5602.28	A	0.298	2.302	5	0.8	1	45.744	1395.95	69.80	C
			B	0.298	2.302		0.8	1	45.744			
			C	0.298	2.302		0.8	1	45.744			
T6 60.00-40.00	6625.91	6731.16	A	0.29	2.324	4	0.8	1	52.430	1321.13	66.06	C
			B	0.29	2.324		0.8	1	52.430			
			C	0.29	2.324		0.8	1	52.430			
T7 40.00-20.00	6384.37	7409.58	A	0.235	2.484	4	0.8	1	47.905	1121.38	56.07	C
			B	0.235	2.484		0.8	1	47.905			
			C	0.235	2.484		0.8	1	47.905			

<b>RISATower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	20 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T8 20.00-0.00	4810.91	7299.43	A	0.211	2.558	4	0.8	1	48.573	967.74	48.39	C
			B	0.211	2.558		0.8	1	48.573			
			C	0.211	2.558		0.8	1	48.573			
Sum Weight:	43237.67	40069.74						OTM	669404.94 lb-ft	8973.79		

**Tower Forces - With Ice - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1 150.00-140.00	1237.10	1673.10	A	0.39	2.083	6	0.85	1	17.202	376.26	37.63	C
			B	0.39	2.083		0.85	1	17.202			
			C	0.39	2.083		0.85	1	17.202			
T2 140.00-120.00	3952.89	3115.53	A	0.364	2.139	6	0.85	1	31.757	975.69	48.78	C
			B	0.364	2.139		0.85	1	31.757			
			C	0.364	2.139		0.85	1	31.757			
T3 120.00-100.00	6507.10	3797.93	A	0.359	2.152	6	0.85	1	36.463	1398.29	69.91	C
			B	0.359	2.152		0.85	1	36.463			
			C	0.359	2.152		0.85	1	36.463			
T4 100.00-80.00	6925.11	4440.73	A	0.307	2.277	5	0.85	1	39.240	1437.04	71.85	C
			B	0.307	2.277		0.85	1	39.240			
			C	0.307	2.277		0.85	1	39.240			
T5 80.00-60.00	6794.28	5602.28	A	0.298	2.302	5	0.85	1	46.646	1404.51	70.23	C
			B	0.298	2.302		0.85	1	46.646			
			C	0.298	2.302		0.85	1	46.646			
T6 60.00-40.00	6625.91	6731.16	A	0.29	2.324	4	0.85	1	53.452	1330.04	66.50	C
			B	0.29	2.324		0.85	1	53.452			
			C	0.29	2.324		0.85	1	53.452			
T7 40.00-20.00	6384.37	7409.58	A	0.235	2.484	4	0.85	1	48.886	1129.28	56.46	C
			B	0.235	2.484		0.85	1	48.886			
			C	0.235	2.484		0.85	1	48.886			
T8 20.00-0.00	4810.91	7299.43	A	0.211	2.558	4	0.85	1	49.656	976.71	48.84	C
			B	0.211	2.558		0.85	1	49.656			
			C	0.211	2.558		0.85	1	49.656			
Sum Weight:	43237.67	40069.74						OTM	673006.73 lb-ft	9027.82		

**Tower Forces - Service - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1 150.00-140.00	192.80	421.53	A	0.157	2.747	9	1	1	7.716	282.89	28.29	C
			B	0.157	2.747		1	1	7.716			
			C	0.157	2.747		1	1	7.716			
T2	718.60	791.76	A	0.155	2.754	8	1	1	15.174	682.61	34.13	C

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 21 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
140.00-120.00			B	0.155	2.754		1	1	15.174			
			C	0.155	2.754		1	1	15.174			
T3	1210.40	1140.72	A	0.174	2.686	8	1	1	18.716	953.33	47.67	C
120.00-100.00			B	0.174	2.686		1	1	18.716			
			C	0.174	2.686		1	1	18.716			
T4	1312.00	1485.02	A	0.167	2.711	8	1	1	22.320	1012.72	50.64	C
100.00-80.00			B	0.167	2.711		1	1	22.320			
			C	0.167	2.711		1	1	22.320			
T5	1312.00	1986.33	A	0.174	2.686	7	1	1	28.506	1038.02	51.90	C
80.00-60.00			B	0.174	2.686		1	1	28.506			
			C	0.174	2.686		1	1	28.506			
T6	1312.00	2680.91	A	0.179	2.666	6	1	1	32.950	1003.76	50.19	C
60.00-40.00			B	0.179	2.666		1	1	32.950			
			C	0.179	2.666		1	1	32.950			
T7	1312.00	3829.48	A	0.154	2.757	5	1	1	31.934	868.33	43.42	C
40.00-20.00			B	0.154	2.757		1	1	31.934			
			C	0.154	2.757		1	1	31.934			
T8	20.00-0.00	1167.10	A	0.142	2.8	5	1	1	33.820	805.77	40.29	C
			B	0.142	2.8		1	1	33.820			
			C	0.142	2.8		1	1	33.820			
Sum Weight:	8536.90	16284.35						OTM	482729.98 lb-ft	6647.46		

**Tower Forces - Service - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1	192.80	421.53	A	0.157	2.747	9	0.8	1	6.717	262.82	26.28	C
150.00-140.00			B	0.157	2.747		0.8	1	6.717			
			C	0.157	2.747		0.8	1	6.717			
T2	718.60	791.76	A	0.155	2.754	8	0.8	1	13.228	644.60	32.23	C
140.00-120.00			B	0.155	2.754		0.8	1	13.228			
			C	0.155	2.754		0.8	1	13.228			
T3	1210.40	1140.72	A	0.174	2.686	8	0.8	1	16.592	914.77	45.74	C
120.00-100.00			B	0.174	2.686		0.8	1	16.592			
			C	0.174	2.686		0.8	1	16.592			
T4	1312.00	1485.02	A	0.167	2.711	8	0.8	1	19.721	967.73	48.39	C
100.00-80.00			B	0.167	2.711		0.8	1	19.721			
			C	0.167	2.711		0.8	1	19.721			
T5	1312.00	1986.33	A	0.174	2.686	7	0.8	1	24.900	980.46	49.02	C
80.00-60.00			B	0.174	2.686		0.8	1	24.900			
			C	0.174	2.686		0.8	1	24.900			
T6	1312.00	2680.91	A	0.179	2.666	6	0.8	1	28.861	944.92	47.25	C
60.00-40.00			B	0.179	2.666		0.8	1	28.861			
			C	0.179	2.666		0.8	1	28.861			
T7	1312.00	3829.48	A	0.154	2.757	5	0.8	1	28.009	817.85	40.89	C
40.00-20.00			B	0.154	2.757		0.8	1	28.009			
			C	0.154	2.757		0.8	1	28.009			
T8	20.00-0.00	1167.10	A	0.142	2.8	5	0.8	1	29.485	749.21	37.46	C
			B	0.142	2.8		0.8	1	29.485			
			C	0.142	2.8		0.8	1	29.485			
Sum Weight:	8536.90	16284.35						OTM	457534.16	6282.37		

<b>RISA Tower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	22 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	

**Tower Forces - Service - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>F</sub>	q <sub>z</sub>	D <sub>F</sub>	D <sub>R</sub>	A <sub>E</sub>	F	w	Ctrl. Face
ft	lb	lb				psf			ft <sup>2</sup>	lb	plf	
T1 150.00-140.00	192.80	421.53	A	0.157	2.747	9	0.85	1	6.967	267.84	26.78	C
			B	0.157	2.747		0.85	1	6.967			
			C	0.157	2.747		0.85	1	6.967			
T2 140.00-120.00	718.60	791.76	A	0.155	2.754	8	0.85	1	13.714	654.11	32.71	C
			B	0.155	2.754		0.85	1	13.714			
			C	0.155	2.754		0.85	1	13.714			
T3 120.00-100.00	1210.40	1140.72	A	0.174	2.686	8	0.85	1	17.123	924.41	46.22	C
			B	0.174	2.686		0.85	1	17.123			
			C	0.174	2.686		0.85	1	17.123			
T4 100.00-80.00	1312.00	1485.02	A	0.167	2.711	8	0.85	1	20.371	978.98	48.95	C
			B	0.167	2.711		0.85	1	20.371			
			C	0.167	2.711		0.85	1	20.371			
T5 80.00-60.00	1312.00	1986.33	A	0.174	2.686	7	0.85	1	25.802	994.85	49.74	C
			B	0.174	2.686		0.85	1	25.802			
			C	0.174	2.686		0.85	1	25.802			
T6 60.00-40.00	1312.00	2680.91	A	0.179	2.666	6	0.85	1	29.883	959.63	47.98	C
			B	0.179	2.666		0.85	1	29.883			
			C	0.179	2.666		0.85	1	29.883			
T7 40.00-20.00	1312.00	3829.48	A	0.154	2.757	5	0.85	1	28.990	830.47	41.52	C
			B	0.154	2.757		0.85	1	28.990			
			C	0.154	2.757		0.85	1	28.990			
T8 20.00-0.00	1167.10	3948.61	A	0.142	2.8	5	0.85	1	30.569	763.35	38.17	C
			B	0.142	2.8		0.85	1	30.569			
			C	0.142	2.8		0.85	1	30.569			
Sum Weight:	8536.90	16284.35						OTM	463833.11 lb-ft	6373.64		

**Force Totals**

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M <sub>x</sub>	Sum of Overturning Moments, M <sub>z</sub>	Sum of Torques
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Leg Weight	10129.62					
Bracing Weight	6154.73					
Total Member Self-Weight	16284.35			11535.77	10513.67	
Total Weight	32268.85			11535.77	10513.67	
Wind 0 deg - No Ice		81.10	-28129.64	-2501715.82	2203.54	-5253.55
Wind 30 deg - No Ice		13677.38	-23689.07	-2119990.80	-1219080.05	-1000.18
Wind 60 deg - No Ice		24321.29	-14135.05	-1252286.81	-2160063.21	3536.94
Wind 90 deg - No Ice		27214.30	-81.10	3225.65	-2434280.20	6814.36

<h1 style="margin: 0;">RISATower</h1> <p style="font-size: small; margin-top: 10px;">Phone: FAX:</p>	Job	Page
	Project	Date
	Client	Designed by
	150' SS Tower Norwich, CT. Analysis	23 of 34
	117-23243.6	23:47:29 01/14/18
	CDT	FAN

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M <sub>x</sub> lb-ft	Sum of Overturning Moments, M <sub>z</sub> lb-ft	Sum of Torques lb-ft
Wind 120 deg - No Ice		24240.19	13994.59	1260964.79	-2151753.09	8790.48
Wind 150 deg - No Ice		13336.92	23607.97	2134752.22	-1204686.48	7814.54
Wind 180 deg - No Ice		-81.10	28129.64	2524787.37	18823.79	5253.55
Wind 210 deg - No Ice		-13677.38	23689.07	2143062.35	1240107.38	1000.18
Wind 240 deg - No Ice		-24321.29	14135.05	1275358.35	2181090.55	-3536.94
Wind 270 deg - No Ice		-27214.30	81.10	19845.90	2455307.53	-6814.36
Wind 300 deg - No Ice		-24240.19	-13994.59	-1237893.24	2172780.42	-8790.48
Wind 330 deg - No Ice		-13536.92	-23607.97	-2111680.67	1225713.82	-7814.54
Member Ice	23785.39					
Total Weight Ice	117112.05			68628.88	49693.32	
Wind 0 deg - Ice		2.86	-13087.04	-1126812.42	49576.96	-2242.56
Wind 30 deg - Ice		6441.66	-11194.76	-957354.09	-539906.53	-1003.34
Wind 60 deg - Ice		11294.80	-6546.00	-529192.54	-980764.96	511.83
Wind 90 deg - Ice		12878.36	-2.86	68512.52	-1129304.84	1837.24
Wind 120 deg - Ice		11291.94	6541.04	666248.76	-980648.60	2754.39
Wind 150 deg - Ice		6436.70	11191.89	1094495.49	-539704.99	2840.58
Wind 180 deg - Ice		-2.86	13087.04	1264070.18	49809.68	2242.56
Wind 210 deg - Ice		-6441.66	11194.76	1094611.85	639293.17	1003.34
Wind 240 deg - Ice		-11294.80	6546.00	666450.30	1080151.60	-511.83
Wind 270 deg - Ice		-12878.36	2.86	68745.24	1228691.48	-1837.24
Wind 300 deg - Ice		-11291.94	-6541.04	-528991.00	1080035.25	-2754.39
Wind 330 deg - Ice		-6436.70	-11191.89	-957237.73	639091.63	-2840.58
Total Weight	32268.85			11535.77	10513.67	
Wind 0 deg - Service		26.99	-9362.68	-837845.50	-674.03	-1748.59
Wind 30 deg - Service		4552.38	-7884.68	-710792.06	-407166.35	-332.90
Wind 60 deg - Service		8095.10	-4704.71	-421985.25	-720363.41	1177.23
Wind 90 deg - Service		9058.01	-26.99	-4100.19	-811633.86	2268.09
Wind 120 deg - Service		8068.11	4657.96	414526.00	-717597.47	2925.83
Wind 150 deg - Service		4505.63	7857.68	705357.62	-402375.59	2600.99
Wind 180 deg - Service		-26.99	9362.68	835177.01	4857.86	1748.59
Wind 210 deg - Service		-4552.38	7884.68	708123.56	411350.18	332.90
Wind 240 deg - Service		-8095.10	4704.71	419316.76	724547.24	-1177.23
Wind 270 deg - Service		-9058.01	26.99	1431.70	815817.68	-2268.09
Wind 300 deg - Service		-8068.11	-4657.96	-417194.50	721781.29	-2925.83
Wind 330 deg - Service		-4505.63	-7857.68	-708026.11	406559.42	-2600.99

## 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

<b>RISA Tower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 24 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Comb. No.	Description
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
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 Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	272806.66	23814.42	-13543.39
	Max. H <sub>x</sub>	18	272806.66	23814.42	-13543.39
	Max. H <sub>z</sub>	5	-208750.54	-18078.01	12445.05
	Min. Vert	7	-240181.19	-21809.66	12390.38
	Min. H <sub>x</sub>	7	-240181.19	-21809.66	12390.38
	Min. H <sub>z</sub>	18	272806.66	23814.42	-13543.39
Leg B	Max. Vert	10	269916.79	-23819.74	-13214.11
	Max. H <sub>x</sub>	23	-239754.99	21844.03	12093.41
	Max. H <sub>z</sub>	23	-239754.99	21844.03	12093.41
	Min. Vert	23	-239754.99	21844.03	12093.41
	Min. H <sub>x</sub>	10	269916.79	-23819.74	-13214.11
	Min. H <sub>z</sub>	10	269916.79	-23819.74	-13214.11
Leg A	Max. Vert	2	270928.95	-287.75	27361.05
	Max. H <sub>x</sub>	21	8156.43	2882.53	568.14
	Max. H <sub>z</sub>	2	270928.95	-287.75	27361.05
	Min. Vert	15	-241871.06	274.43	-25113.60
	Min. H <sub>x</sub>	9	9866.39	-2904.15	726.10
	Min. H <sub>z</sub>	15	-241871.06	274.43	-25113.60

<b>RISA Tower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	25 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

## Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>y</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>y</sub> lb-ft	Torque lb-ft
Dead Only	32268.85	0.00	-0.00	11538.53	10517.42	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	38722.62	129.76	-45006.84	-4022153.66	-636.93	-8489.63
0.9 Dead+1.6 Wind 0 deg - No Ice	29041.96	129.76	-45007.00	-4021880.76	-3804.10	-8468.15
1.2 Dead+1.6 Wind 30 deg - No Ice	38722.62	21883.48	-37902.00	-3409204.07	-1961954.76	-1640.14
0.9 Dead+1.6 Wind 30 deg - No Ice	29041.96	21883.57	-37902.14	-3409488.89	-1963292.10	-1628.83
1.2 Dead+1.6 Wind 60 deg - No Ice	38722.62	37393.59	-21738.24	-1954940.59	-3367859.56	5664.59
0.9 Dead+1.6 Wind 60 deg - No Ice	29041.96	37393.73	-21738.32	-1956579.92	-3367881.18	5663.24
1.2 Dead+1.6 Wind 90 deg - No Ice	38722.62	43542.27	-129.73	570.54	-3913494.44	10952.72
0.9 Dead+1.6 Wind 90 deg - No Ice	29041.96	43542.43	-129.73	-2895.36	-3913010.93	10939.05
1.2 Dead+1.6 Wind 120 deg - No Ice	38722.62	38783.80	22391.04	2020385.87	-3459696.20	14155.39
0.9 Dead+1.6 Wind 120 deg - No Ice	29041.96	38783.94	22391.13	2015044.57	-3459653.46	14137.12
1.2 Dead+1.6 Wind 150 deg - No Ice	38722.62	21658.80	37772.21	3423641.99	-1938822.28	12606.46
0.9 Dead+1.6 Wind 150 deg - No Ice	29041.96	21658.87	37772.35	3416982.96	-1940179.67	12581.45
1.2 Dead+1.6 Wind 180 deg - No Ice	38722.62	-129.75	43251.73	3928437.07	26042.04	8487.72
0.9 Dead+1.6 Wind 180 deg - No Ice	29041.96	-129.75	43251.90	3921303.16	22852.73	8466.91
1.2 Dead+1.6 Wind 210 deg - No Ice	38722.62	-21883.53	37901.97	3436952.84	1987314.89	1639.90
0.9 Dead+1.6 Wind 210 deg - No Ice	29041.96	-21883.61	37902.11	3430283.25	1982296.65	1628.63
1.2 Dead+1.6 Wind 240 deg - No Ice	38722.62	-38913.55	22615.79	2043459.37	3498392.41	-5665.71
0.9 Dead+1.6 Wind 240 deg - No Ice	29041.96	-38913.69	22615.87	2038097.24	3491975.43	-5664.24
1.2 Dead+1.6 Wind 270 deg - No Ice	38722.62	-43542.27	129.78	27247.46	3938834.73	-10953.22
0.9 Dead+1.6 Wind 270 deg - No Ice	29041.96	-43542.43	129.78	23760.30	3931994.99	-10939.61
1.2 Dead+1.6 Wind 300 deg - No Ice	38722.62	-37263.83	-21513.50	-1931811.47	3379876.25	-14152.27
0.9 Dead+1.6 Wind 300 deg - No Ice	29041.96	-37263.97	-21513.58	-1933469.20	3373552.66	-14130.12
1.2 Dead+1.6 Wind 330 deg - No Ice	38722.62	-21658.73	-37772.24	-3395839.86	1964236.09	-12605.63
0.9 Dead+1.6 Wind 330 deg - No Ice	29041.96	-21658.82	-37772.38	-3396135.41	1959236.29	-12580.63
1.2 Dead+1.0 Ice+1.0 Temp	123565.82	0.05	-0.04	71555.05	52562.00	-0.52
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	123565.81	2.91	-13086.22	-1140780.24	52557.63	-2347.34
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	123565.81	6441.27	-11194.05	-968936.64	-545332.92	-1048.92
1.2 Dead+1.0 Wind 60 deg+1.0	123565.81	11106.92	-6437.53	-527366.90	-979835.09	536.63

<b>RISATower</b>  Phone: FAX:	Job	150' SS Tower Norwich, CT. Analysis	Page	26 of 34
	Project	117-23243.6	Date	23:47:29 01/14/18
	Client	CDT	Designed by	FAN

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>y</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>y</sub> lb-ft	Torque lb-ft
Ice+1.0 Temp						
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	123565.81	12877.55	-2.89	71562.89	-1143141.23	1925.68
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	123565.81	11291.25	6540.57	677809.31	-992339.87	2884.20
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	123565.81	6436.33	11191.10	1112177.96	-543136.31	2974.41
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	123565.81	-2.81	12869.99	1269566.85	52783.45	2346.08
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	123565.81	-6441.18	11193.96	1112291.42	650671.07	1048.77
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	123565.81	-11294.01	6545.53	678007.62	1097789.08	-536.90
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	123565.81	-12877.45	2.83	71794.94	1248475.94	-1925.66
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	123565.81	-11103.96	-6432.58	-527163.23	1085058.72	-2882.70
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	123565.81	-6436.21	-11191.19	-968817.91	650476.75	-2974.45
Dead+Wind 0 deg - Service	32268.85	26.99	-9362.57	-827535.78	7779.43	-1763.22
Dead+Wind 30 deg - Service	32268.85	4552.33	-7884.58	-700098.57	-399975.90	-343.51
Dead+Wind 60 deg - Service	32268.85	7778.83	-4522.11	-397758.11	-692260.69	1178.16
Dead+Wind 90 deg - Service	32268.85	9057.91	-26.99	8790.73	-805700.09	2280.67
Dead+Wind 120 deg - Service	32268.85	8068.02	4657.91	428710.81	-711362.03	2941.58
Dead+Wind 150 deg - Service	32268.85	4505.58	7857.59	720450.03	-395170.81	2615.39
Dead+Wind 180 deg - Service	32268.85	-26.99	8997.47	825399.81	13326.67	1762.84
Dead+Wind 210 deg - Service	32268.85	-4552.33	7884.58	723222.20	421080.26	343.41
Dead+Wind 240 deg - Service	32268.85	-8095.01	4704.66	433513.08	735239.69	-1178.40
Dead+Wind 270 deg - Service	32268.85	-9057.90	26.99	14336.68	826803.83	-2280.54
Dead+Wind 300 deg - Service	32268.85	-7751.83	-4475.36	-392953.56	710591.30	-2941.08
Dead+Wind 330 deg - Service	32268.85	-4505.57	-7857.59	-697324.15	416277.24	-2615.35

## Solution Summary

Load Comb.	Sum of Applied Forces				Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb		
1	0.00	-32268.85	-0.00	-0.00	32268.85	0.00	0.000%	
2	129.76	-38722.62	-45007.43	-129.76	38722.62	45006.84	0.001%	
3	129.76	-29041.97	-45007.43	-129.76	29041.96	45007.00	0.001%	
4	21883.81	-38722.62	-37902.51	-21883.48	38722.62	37902.00	0.001%	
5	21883.81	-29041.97	-37902.51	-21883.57	29041.96	37902.14	0.001%	
6	37394.13	-38722.62	-21738.56	-37393.59	38722.62	21738.24	0.001%	
7	37394.13	-29041.97	-21738.56	-37393.73	29041.96	21738.32	0.001%	
8	43542.88	-38722.62	-129.76	-43542.27	38722.62	129.73	0.001%	
9	43542.88	-29041.97	-129.76	-43542.43	29041.96	129.73	0.001%	
10	38784.30	-38722.62	22391.34	-38783.80	38722.62	-22391.04	0.001%	
11	38784.30	-29041.97	22391.34	-38783.94	29041.96	-22391.13	0.001%	
12	21659.07	-38722.62	37772.75	-21658.80	38722.62	-37772.21	0.001%	
13	21659.07	-29041.97	37772.75	-21658.87	29041.96	-37772.35	0.001%	
14	-129.76	-38722.62	43252.37	129.75	38722.62	-43251.73	0.001%	
15	-129.76	-29041.97	43252.37	129.75	29041.96	-43251.90	0.001%	
16	-21883.81	-38722.62	37902.51	21883.53	38722.62	-37901.97	0.001%	
17	-21883.81	-29041.97	37902.51	21883.61	29041.96	-37902.11	0.001%	
18	-38914.06	-38722.62	22616.09	38913.55	38722.62	-22615.79	0.001%	
19	-38914.06	-29041.97	22616.09	38913.69	29041.96	-22615.87	0.001%	
20	-43542.88	-38722.62	129.76	43542.27	38722.62	-129.78	0.001%	
21	-43542.88	-29041.97	129.76	43542.43	29041.96	-129.78	0.001%	

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 27 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
22	-37264.38	-38722.62	-21513.81	37263.83	38722.62	21513.90	0.001%
23	-37264.38	-29041.97	-21513.81	37263.97	29041.96	21513.98	0.001%
24	-21639.07	-38722.62	-37772.73	21638.73	38722.62	37772.24	0.001%
25	-21639.07	-29041.97	-37772.73	21638.82	29041.96	37772.38	0.001%
26	0.00	-123563.82	-0.00	-0.05	123563.82	0.04	0.000%
27	2.86	-123563.82	-13087.04	-2.91	123563.81	13086.22	0.001%
28	6441.66	-123563.82	-11194.76	-6441.27	123563.81	11194.03	0.001%
29	11107.62	-123563.82	-6437.93	-11106.92	123563.81	6437.33	0.001%
30	12878.36	-123563.82	-2.86	-12877.55	123563.81	2.89	0.001%
31	11291.94	-123563.82	6341.04	-11291.25	123563.81	-6540.57	0.001%
32	6436.70	-123563.82	11191.89	-6436.33	123563.81	-11191.10	0.001%
33	-2.86	-123563.82	12870.90	2.81	123563.81	-12869.99	0.001%
34	-6441.66	-123563.82	11194.76	6441.18	123563.81	-11193.96	0.001%
35	-11294.80	-123563.82	6346.00	11294.01	123563.81	-6545.53	0.001%
36	-12878.36	-123563.82	2.86	12877.45	123563.81	-2.83	0.001%
37	-11104.76	-123563.82	-6432.97	11103.96	123563.81	6432.58	0.001%
38	-6436.70	-123563.82	-11191.89	6436.21	123563.81	11191.19	0.001%
39	26.99	-32268.85	-9362.68	-26.99	32268.85	9362.57	0.000%
40	4552.38	-32268.85	-7884.68	-4552.33	32268.85	7884.58	0.000%
41	7778.92	-32268.85	-4522.17	-7778.83	32268.85	4522.11	0.000%
42	9058.01	-32268.85	-26.99	-9057.91	32268.85	26.99	0.000%
43	8068.11	-32268.85	4657.96	-8068.02	32268.85	-4657.91	0.000%
44	4505.63	-32268.85	7857.68	-4505.58	32268.85	-7857.59	0.000%
45	-26.99	-32268.85	8997.58	26.99	32268.85	-8997.47	0.000%
46	-4552.38	-32268.85	7884.68	4552.33	32268.85	-7884.58	0.000%
47	-8095.10	-32268.85	4704.71	8095.01	32268.85	-4704.66	0.000%
48	-9058.01	-32268.85	26.99	9057.90	32268.85	-26.99	0.000%
49	-7751.93	-32268.85	-4475.41	7751.83	32268.85	4475.36	0.000%
50	-4505.63	-32268.85	-7857.68	4505.57	32268.85	7857.59	0.000%

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.0000001	0.0000001
2	Yes	4	0.0000001	0.00011615
3	Yes	4	0.0000001	0.00008419
4	Yes	4	0.0000001	0.00012001
5	Yes	4	0.0000001	0.00008794
6	Yes	4	0.0000001	0.00012364
7	Yes	4	0.0000001	0.00009145
8	Yes	4	0.0000001	0.00012012
9	Yes	4	0.0000001	0.00008807
10	Yes	4	0.0000001	0.00011616
11	Yes	4	0.0000001	0.00008424
12	Yes	4	0.0000001	0.00012024
13	Yes	4	0.0000001	0.00008816
14	Yes	4	0.0000001	0.00012372
15	Yes	4	0.0000001	0.00009151
16	Yes	4	0.0000001	0.00011994
17	Yes	4	0.0000001	0.00008790
18	Yes	4	0.0000001	0.00011593
19	Yes	4	0.0000001	0.00008403
20	Yes	4	0.0000001	0.00012009
21	Yes	4	0.0000001	0.00008800
22	Yes	4	0.0000001	0.00012389

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 28 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

23	Yes	4	0.0000001	0.00009161
24	Yes	4	0.0000001	0.00012028
25	Yes	4	0.0000001	0.00008813
26	Yes	4	0.0000001	0.00005100
27	Yes	4	0.0000001	0.00044825
28	Yes	4	0.0000001	0.00044169
29	Yes	4	0.0000001	0.00043902
30	Yes	4	0.0000001	0.00043946
31	Yes	4	0.0000001	0.00044497
32	Yes	4	0.0000001	0.00045274
33	Yes	4	0.0000001	0.00046003
34	Yes	4	0.0000001	0.00046330
35	Yes	4	0.0000001	0.00046461
36	Yes	4	0.0000001	0.00046426
37	Yes	4	0.0000001	0.00046210
38	Yes	4	0.0000001	0.00045576
39	Yes	4	0.0000001	0.00009718
40	Yes	4	0.0000001	0.00009770
41	Yes	4	0.0000001	0.00009824
42	Yes	4	0.0000001	0.00009745
43	Yes	4	0.0000001	0.00009676
44	Yes	4	0.0000001	0.00009770
45	Yes	4	0.0000001	0.00009849
46	Yes	4	0.0000001	0.00009785
47	Yes	4	0.0000001	0.00009718
48	Yes	4	0.0000001	0.00009809
49	Yes	4	0.0000001	0.00009893
50	Yes	4	0.0000001	0.00009819

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	150 - 140	3.104	47	0.1977	0.0184
T2	140 - 120	2.672	47	0.1959	0.0175
T3	120 - 100	1.854	47	0.1649	0.0145
T4	100 - 80	1.194	47	0.1256	0.0105
T5	80 - 60	0.712	47	0.0870	0.0075
T6	60 - 40	0.387	47	0.0539	0.0051
T7	40 - 20	0.177	47	0.0311	0.0028
T8	20 - 0	0.056	47	0.0156	0.0014

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Nudd 12' boom	47	3.104	0.1977	0.0184	313572
140.00	Nudd 12' boom	47	2.672	0.1959	0.0175	139521
127.50	Nudd 12' boom	47	2.147	0.1794	0.0158	37588
122.28	RFS DB-T1-6Z-8AB-0Z	47	1.941	0.1695	0.0149	28688
117.07	RFS DB-T1-6Z-8AB-0Z	47	1.745	0.1591	0.0140	25998
115.00	Nudd 10' boom	47	1.672	0.1551	0.0135	26042
111.85	RFS DB-T1-6Z-8AB-0Z	47	1.563	0.1489	0.0129	26213
106.64	RFS DB-T1-6Z-8AB-0Z	47	1.393	0.1387	0.0118	26502

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 29 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
101.42	RFS DB-T1-6Z-8AB-0Z	47	1.233	0.1284	0.0108	26813
96.20	RFS DB-T1-6Z-8AB-0Z	47	1.089	0.1182	0.0098	27301
90.99	RFS DB-T1-6Z-8AB-0Z	47	0.956	0.1079	0.0090	27902
85.77	RFS DB-T1-6Z-8AB-0Z	47	0.834	0.0979	0.0083	28330
80.56	RFS DB-T1-6Z-8AB-0Z	47	0.723	0.0880	0.0076	29402
75.34	RFS DB-T1-6Z-8AB-0Z	47	0.624	0.0786	0.0070	31765
70.13	RFS DB-T1-6Z-8AB-0Z	47	0.534	0.0696	0.0064	35133
64.91	RFS DB-T1-6Z-8AB-0Z	47	0.455	0.0611	0.0057	39300
59.69	RFS DB-T1-6Z-8AB-0Z	47	0.383	0.0534	0.0051	43847
54.48	RFS DB-T1-6Z-8AB-0Z	47	0.319	0.0465	0.0045	46480
49.26	RFS DB-T1-6Z-8AB-0Z	47	0.262	0.0404	0.0038	48816
44.05	RFS DB-T1-6Z-8AB-0Z	47	0.211	0.0349	0.0032	51399
38.83	RFS DB-T1-6Z-8AB-0Z	47	0.167	0.0300	0.0027	54138
33.61	RFS DB-T1-6Z-8AB-0Z	47	0.129	0.0257	0.0022	56870
28.40	RFS DB-T1-6Z-8AB-0Z	47	0.097	0.0218	0.0019	59853
23.18	RFS DB-T1-6Z-8AB-0Z	47	0.070	0.0179	0.0016	63262
17.97	RFS DB-T1-6Z-8AB-0Z	47	0.049	0.0141	0.0012	73329
12.75	RFS DB-T1-6Z-8AB-0Z	47	0.031	0.0101	0.0009	102547

### Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
T1	150 - 140	14.715	18	0.9338	0.0886
T2	140 - 120	12.671	18	0.9252	0.0842
T3	120 - 100	8.799	18	0.7794	0.0700
T4	100 - 80	5.674	18	0.5945	0.0506
T5	80 - 60	3.387	18	0.4120	0.0363
T6	60 - 40	1.844	18	0.2552	0.0248
T7	40 - 20	0.844	18	0.1472	0.0134
T8	20 - 0	0.271	18	0.0740	0.0065

### Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
150.00	Nudd 12' boom	18	14.715	0.9338	0.0886	70033
140.00	Nudd 12' boom	18	12.671	0.9252	0.0842	30757
127.50	Nudd 12' boom	18	10.188	0.8476	0.0760	8004
122.28	RFS DB-T1-6Z-8AB-0Z	18	9.210	0.8007	0.0719	6093
117.07	RFS DB-T1-6Z-8AB-0Z	18	8.287	0.7522	0.0673	5517
115.00	Nudd 10' boom	18	7.937	0.7330	0.0652	5526
111.85	RFS DB-T1-6Z-8AB-0Z	18	7.422	0.7039	0.0620	5562
106.64	RFS DB-T1-6Z-8AB-0Z	18	6.616	0.6558	0.0568	5623
101.42	RFS DB-T1-6Z-8AB-0Z	18	5.868	0.6076	0.0519	5689
96.20	RFS DB-T1-6Z-8AB-0Z	18	5.178	0.5593	0.0475	5787
90.99	RFS DB-T1-6Z-8AB-0Z	18	4.544	0.5110	0.0435	5906
85.77	RFS DB-T1-6Z-8AB-0Z	18	3.965	0.4634	0.0399	6029
80.56	RFS DB-T1-6Z-8AB-0Z	18	3.440	0.4169	0.0367	6205
75.34	RFS DB-T1-6Z-8AB-0Z	18	2.968	0.3720	0.0336	6705

<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 30 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
70.13	RFS DB-T1-6Z-8AB-0Z	18	2.343	0.3294	0.0306	7422
64.91	RFS DB-T1-6Z-8AB-0Z	18	2.163	0.2896	0.0277	8310
59.69	RFS DB-T1-6Z-8AB-0Z	18	1.825	0.2531	0.0246	9277
54.48	RFS DB-T1-6Z-8AB-0Z	18	1.521	0.2204	0.0215	9821
49.26	RFS DB-T1-6Z-8AB-0Z	18	1.249	0.1912	0.0183	10294
44.05	RFS DB-T1-6Z-8AB-0Z	18	1.009	0.1653	0.0154	10815
38.83	RFS DB-T1-6Z-8AB-0Z	18	0.799	0.1423	0.0128	11379
33.61	RFS DB-T1-6Z-8AB-0Z	18	0.618	0.1219	0.0108	11971
28.40	RFS DB-T1-6Z-8AB-0Z	18	0.465	0.1031	0.0090	12624
23.18	RFS DB-T1-6Z-8AB-0Z	18	0.337	0.0851	0.0075	13373
17.97	RFS DB-T1-6Z-8AB-0Z	18	0.233	0.0668	0.0059	15523
12.75	RFS DB-T1-6Z-8AB-0Z	18	0.151	0.0479	0.0043	21710

### Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria	
T1	150	Leg	A325N	0.7500	4	1236.07	29820.60	0.041	✓	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1705.87	7952.16	0.215	✓	1	Bolt Shear
T2	140	Leg	A325N	1.0000	4	9945.66	53014.40	0.188	✓	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6334.85	9787.50	0.647	✓	1	Member Bearing
T3	120	Leg	A325N	1.0000	6	13755.70	53014.40	0.259	✓	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6634.20	9787.50	0.678	✓	1	Member Bearing
T4	100	Leg	A325N	1.0000	8	15082.30	53014.40	0.284	✓	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7175.78	9787.50	0.733	✓	1	Member Bearing
T5	80	Leg	A325N	1.2500	8	19322.10	82835.00	0.233	✓	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7417.88	9787.50	0.758	✓	1	Member Bearing
T6	60	Leg	A325N	1.2500	8	23279.90	82835.00	0.281	✓	1	Bolt Tension
		Diagonal	A325N	0.6250	1	8102.48	9787.50	0.828	✓	1	Member Bearing
T7	40	Leg	A325N	1.2500	8	26947.60	82835.00	0.325	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	1	8988.72	14355.00	0.626	✓	1	Member Bearing
T8	20	Leg	F1554-36	1.5000	8	30369.50	57653.10	0.527	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	1	9429.93	14355.00	0.657	✓	1	Member Bearing

### Compression Checks

### Leg Design Data (Compression)

<b>RISA Tower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 31 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>u</sub> / φP <sub>n</sub>
T1	150 - 140	P2.5x 203	10.00	0.67	8.4 K=1.00	1.7040	-6343.62	82331.90	0.077 <sup>1</sup>
T2	140 - 120	P2.5x 203	20.00	4.67	39.1 K=1.00	1.7040	-39142.30	62849.30	0.623 <sup>1</sup>
T3	120 - 100	P4x 237	20.03	4.67	37.2 K=1.00	3.1741	-86765.70	138323.00	0.627 <sup>1</sup>
T4	100 - 80	P5x 258	20.03	6.26	40.0 K=1.00	4.2999	-133951.00	184163.00	0.727 <sup>1</sup>
T5	80 - 60	P6x 28	20.03	6.26	33.5 K=1.00	5.5813	-171372.00	248307.00	0.690 <sup>1</sup>
T6	60 - 40	P8x 322	20.03	6.26	25.6 K=1.00	8.3993	-207170.00	387660.00	0.534 <sup>1</sup>
T7	40 - 20	P8x 5	20.03	9.35	39.0 K=1.00	12.7627	-232686.00	550137.00	0.423 <sup>1</sup>
T8	20 - 0	P8x 5	20.03	9.35	39.0 K=1.00	12.7627	-264972.00	550137.00	0.482 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>u</sub> lb	φP <sub>n</sub> lb	Ratio P <sub>u</sub> / φP <sub>n</sub>
T1	150 - 140	L1 1/2x1 1/2x3/16	7.40	3.42	139.8 K=1.00	0.5273	-1644.62	6096.07	0.270 <sup>1</sup>
T2	140 - 120	L2x2x3/16	7.60	3.51	110.3 K=1.03	0.7150	-6285.55	12215.70	0.515 <sup>1</sup>
T3	120 - 100	L2x2x3/16	9.00	4.28	130.5 K=1.00	0.7150	-6585.27	9453.47	0.697 <sup>1</sup>
T4	100 - 80	L2 1/2x2 1/2x3/16	11.48	5.51	133.7 K=1.00	0.9020	-7097.17	11410.90	0.622 <sup>1</sup>
T5	80 - 60	L3x3x3/16	13.20	6.33	127.4 K=1.00	1.0900	-7487.52	14941.00	0.501 <sup>1</sup>
T6	60 - 40	L3x3x3/16	14.99	7.14	143.7 K=1.00	1.0900	-8214.75	11926.10	0.689 <sup>1</sup>
T7	40 - 20	L3 1/2x3 1/2x1/4	18.07	8.74	151.1 K=1.00	1.6900	-9098.83	16715.90	0.544 <sup>1</sup>
T8	20 - 0	L3 1/2x3 1/2x1/4	19.81	9.61	166.2 K=1.00	1.6900	-9604.27	13815.30	0.695 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Top Girt Design Data (Compression)

<b>RISA Tower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 32 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Section No.	Elevation	Size	L	L <sub>u</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	
T1	130 - 140	L3x3x1/4	6.00	5.76	118.4 K=1.01	1.4400	-391.71	22309.60	0.018 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Tension Checks

### Leg Design Data (Tension)

Section No.	Elevation	Size	L	L <sub>u</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	
T1	150 - 140	P2.5x.203	10.00	0.67	8.4	1.7040	4944.28	82816.80	0.060 <sup>1</sup>
T2	140 - 120	P2.5x.203	20.00	0.67	8.4	1.7040	39782.60	82816.80	0.480 <sup>1</sup>
T3	120 - 100	P4x.237	20.03	0.67	5.3	3.1741	82534.50	154259.00	0.535 <sup>1</sup>
T4	100 - 80	P5x.258	20.03	0.63	4.0	4.2999	120658.00	208974.00	0.577 <sup>1</sup>
T5	80 - 60	P6x.28	20.03	0.63	3.3	5.5813	154577.00	271254.00	0.570 <sup>1</sup>
T6	60 - 40	P8x.322	20.03	0.63	2.6	8.3993	186239.00	408204.00	0.456 <sup>1</sup>
T7	40 - 20	P8x.5	20.03	0.67	2.8	12.7627	215580.00	620268.00	0.348 <sup>1</sup>
T8	20 - 0	P8x.5	20.03	0.67	2.8	12.7627	242956.00	620268.00	0.392 <sup>1</sup>

<sup>1</sup> P<sub>u</sub> / φP<sub>n</sub> controls

### Diagonal Design Data (Tension)

Section No.	Elevation	Size	L	L <sub>u</sub>	Kl/r	A	P <sub>u</sub>	φP <sub>n</sub>	Ratio P <sub>u</sub> / φP <sub>n</sub>
	ft		ft	ft		in <sup>2</sup>	lb	lb	
T1	150 - 140	L1 1/2x1 1/2x3/16	7.40	3.42	93.4	0.3076	1705.87	13381.30	0.127 <sup>1</sup>
T2	140 - 120	L2x2x3/16	7.60	3.51	71.0	0.4308	6334.85	18739.00	0.338 <sup>1</sup>
T3	120 - 100	L2x2x3/16	9.00	4.28	86.0	0.4308	6634.20	18739.00	0.354 <sup>1</sup>
T4	100 - 80	L2 1/2x2 1/2x3/16	10.45	5.01	79.3	0.5710	7175.78	24839.90	0.289 <sup>1</sup>
T5	80 - 60	L3x3x3/16	12.11	5.79	75.7	0.7120	7417.88	30973.40	0.239 <sup>1</sup>



<b>RISATower</b>  Phone: FAX:	<b>Job</b> 150' SS Tower Norwich, CT. Analysis	<b>Page</b> 34 of 34
	<b>Project</b> 117-23243.6	<b>Date</b> 23:47:29 01/14/18
	<b>Client</b> CDT	<b>Designed by</b> FAN

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$\phi P_{allow}$ lb	% Capacity	Pass Fail
						(T6) Top Girt	1.8	Pass
						(T1) Bolt Checks	82.8	Pass
						RATING =	82.8	Pass

Site Name:  
Client:  
Project Number:  
Date:

Norwich, CT  
CDT  
117-23243.6  
1/14/2018

**Design Base Loads (Factored) - Design per TIA-222-G Standard**

Moment (Overturning) ( $M_u$ ):	0.0 k-ft
Shear/Leg ( $V_u$ ):	27.4 k
Compression/Leg ( $P_u$ ):	272.8 k
Uplift/Leg ( $T_u$ ):	241.9 k
Diameter of Caisson (d):	3.5 ft
Length of Caisson (l):	4.3 ft
Caisson Height Above Ground (h):	0.5 ft
Depth Below Ground Surface to Water Table (w):	100.0 ft
Unit Weight of Concrete:	150.0 pcf
Unit Weight of Soil:	135.0 pcf
Unit Weight of Water:	62.4 pcf
Ultimate Compressive Bearing Pressure:	60000 psf
Pullout Angle:	30.0 degrees
Rod Diameter:	1.00 in
Rod Ultimate Strength:	150 ksi
Rod Net Area:	0.85 in <sup>2</sup>
Number of Rods:	5
Diameter of Cored Hole:	3.00 in
Ultimate Grout / Rock Interface Bond Strength:	250 psi
Rod Embedment Length:	228 in
Rod Exposure Above Lock Off Nut in Foundation:	60 in
Rod Embedment Circle:	26 in
Free Stress Length:	150 in
Volume of Concrete:	41.7 ft <sup>3</sup>
Weight of Concrete (Buoyancy Effect Considered):	6.3 k
Compressive Bearing Resistance:	577.3 k
Pullout Weight:	2428.7 k
Rod Bond Strength:	918.9 k
Williams Rod Strength:	637.5 k
Maximum Lock Off Load:	95.6 k > Design Lock Off Load, OK
Nominal Uplift Capacity per Leg ( $\phi_s T_n$ ):	478.1 k
Nominal Compressive Capacity per Leg ( $\phi_s P_n$ ):	433.0 k
$T_u$ :	241.9 k
$P_u$ :	273.5 k
$T_u/\phi_s T_n$ :	0.51 Result: OK
$P_u/\phi_s P_n$ :	0.63 Result: OK

### Lateral Capacity

Depth (ft)		Ultimate Lateral Bearing Pressure (psf)	Increment (psf/ft)	$\gamma_{soil}$ (pcf)	Cohesion (psf)	$\phi$ (degree)
Top	Bottom					
0.0	0.5	0.0	100.0	100	0	0
0.5	1.0	47.9	100.0	100	0	0
1.0	1.5	100.0	100.0	100	0	0
1.5	2.5	41636.6	567.5	135	10000	38
2.5	3.0	42204.1	567.5	135	10000	38
3.0	3.5	42274.6	567.5	135	10000	38
3.5	3.9	42327.6	567.5	135	10000	38
3.9	3.8	42389.4	567.5	135	10000	38

Total Lateral Resistance:	461.1 k
Inflection Point (Below Ground Surface):	3.8 ft
Design Overturning Moment At Inflection Point ( $M_{uip}$ ):	118.7 k-ft
Nominal Moment Capacity per Leg ( $\phi_s M_n$ ):	310.4 k-ft
$M_{uip}/\phi_s M_n$ :	0.38 Result: OK

### Caisson Strength Capacity

Concrete Compressive Strength ( $f'_c$ ):	3000 psi
Vertical Steel Rebar Size #:	6
Vertical Steel Rebar Area:	0.44 in <sup>2</sup>
# of Vertical Steel Rebars:	23 Minimum # of vertical rebar met
Vertical Steel Rebar Yield Strength ( $F_y$ ):	60 ksi
Horizontal Tie / Stirrup Size #:	4
Horizontal Tie / Stirrup Area:	0.20 in <sup>2</sup>
Horizontal Tie / Stirrup Spacing:	12.0 in
Horizontal Tie / Stirrup Steel Yield Strength ( $F_y$ ):	40 ksi
Rebar Cage Diameter:	34.0 in
Strength Bending/Tension Reduction Factor ( $\phi_b$ ):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor ( $\phi_v$ ):	0.75 ACI318-05 - 9.3.2.3
Strength Compression/Bearing Reduction Factor ( $\phi_{p/B}$ ):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment ( $M_u$ ):	118.7 k-ft
Nominal Moment Capacity ( $\phi_B M_n$ ):	692.9 k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$ :	0.17 Result: OK
Design Shear ( $V_u$ ):	27.4 k
Nominal Shear Capacity ( $\phi_V V_n$ ):	158.6 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$ :	0.17 Result: OK
Design Tension ( $T_u$ ):	241.9 k
Nominal Tension Capacity ( $\phi_T T_n$ ):	546.5 k - ACI318-05 - 10.2
$T_u/\phi_T T_n$ :	0.44 Result: OK
Design Compression ( $P_u$ ):	272.8 k
Nominal Compression Capacity ( $\phi_P P_n$ ):	2145.5 k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$ :	0.13 Result: OK
Bending Reinforcement Ratio:	0.007 Reinforcement Ratio is Satisfactory - ACI318-05 - 10.8.4 & 10.9.1

## Exhibit 4



# Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5468

Norwich SE  
2 Hinckley Hill Road  
Preston, CT 6365

**September 6, 2017**

**Centerline Communications Project Number: 950006-069**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>15.12 %</b>



September 6, 2017

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

### Emissions Analysis for Site: **CT5468 – Norwich SE**

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

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

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

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



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

Additional details can be found in FCC OET 65.



## CALCULATIONS

Calculations were performed for the proposed AT&T Wireless antenna facility located at **2 Hinckley Hill Road, Preston, 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	2	30
LTE	700 MHz	4	60
LTE	2100 MHz (AWS)	2	60
LTE	2300 MHz (WCS)	2	60
LTE	1900 MHz (PCS)	2	60

*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	Powerwave 7770	115
A	2	KMW EPBQ-654L8H8-L2	115
A	3	CCI OPA-65R-LCUU-H8	115
B	1	Powerwave 7770	115
B	2	KMW EPBQ-654L8H8-L2	115
B	3	CCI OPA-65R-LCUU-H6	115
C	1	Powerwave 7770	115
C	2	KMW EPBQ-654L8H8-L2	115
C	3	CCI OPA-65R-LCUU-H6	115

*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	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.44
Antenna A2	KMW EPBQ-654L8H8-L2	700 MHz / 2100 MHz (AWS) / 2300 MHz (WCS)	14.65 / 15.35 / 15.4	6	360	11,774.97	4.77
Antenna A3	CCI OPA-65R-LCUU-H8	700 MHz / 1900 MHz (PCS)	12.55 / 14.85	4	240	5,824.55	2.51
Sector A Composite MPE%							<b>7.72</b>
Antenna B1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.44
Antenna B2	KMW EPBQ-654L8H8-L2	700 MHz / 2100 MHz (AWS) / 2300 MHz (WCS)	14.65 / 15.35 / 15.4	6	360	11,774.97	4.77
Antenna B3	CCI OPA-65R-LCUU-H6	700 MHz / 1900 MHz (PCS)	11.65 / 14.85	4	240	5,420.52	2.25
Sector B Composite MPE%							<b>7.46</b>
Antenna C1	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.44
Antenna C2	KMW EPBQ-654L8H8-L2	700 MHz / 2100 MHz (AWS) / 2300 MHz (WCS)	14.65 / 15.35 / 15.4	6	360	11,774.97	4.77
Antenna C3	CCI OPA-65R-LCUU-H6	700 MHz / 1900 MHz (PCS)	11.65 / 14.85	4	240	5,420.52	2.25
Sector C Composite MPE%							<b>7.46</b>

*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 sector with the largest calculated MPE% is Sector A. *Table 5* below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

<b>Site Composite MPE%</b>	
<b>Carrier</b>	<b>MPE%</b>
AT&T – Max Sector Value	<b>7.72 %</b>
Sprint	0.78 %
T-Mobile	2.83 %
Verizon Wireless	3.41 %
TSR Paging	0.20 %
Aquis Paging	0.18 %
<b>Site Total MPE %:</b>	<b>15.12 %</b>

*Table 4: All Carrier MPE Contributions*

AT&T Sector A Total:	7.72 %
AT&T Sector B Total:	7.46 %
AT&T Sector C Total:	7.46 %
Site Total:	15.12 %

*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 sector with the largest calculated MPE% is Sector A.

AT&T _ Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	115	2.51	850 MHz	567	0.44%
AT&T 700 MHz LTE (Antenna 2)	2	1,750.46	115	10.59	700 MHz	467	2.27%
AT&T 2100 MHz (AWS) LTE	2	2,056.61	115	12.45	2100 MHz (AWS)	1000	1.24%
AT&T 2300 MHz (WCS) LTE	2	2,080.42	115	12.59	2300 MHz (WCS)	1000	1.26%
AT&T 700 MHz LTE (Antenna 3)	2	1,079.32	115	6.53	700 MHz	467	1.40%
AT&T 1900 MHz (PCS) LTE	2	1,832.95	115	11.09	1900 MHz (PCS)	1000	1.11%
						<b>Total:</b>	<b>7.72%</b>

*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:	7.72 %
Sector B:	7.46 %
Sector C:	7.46 %
AT&T Maximum Total (per sector):	7.72 %
Site Total:	15.12 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **15.12 %** 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