STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

December 29, 2015

Daniel M. Laub, Esq.
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

RE: **EM-CING-069-130123; EM-AT&T-060-130321; EM-CING-069-130130**
EM-CING-088-130109; TS-AT&T-004-131223; TS-AT&T-069-131216
EM-CING-128-130828; EM-CING-135-130910; EM-CING-156-130531
EM-CING-086-130712; TS-AT&T-101-131108; EM-CING-158-130703
EM-CING-073-130207; TS-AT&T-143-131227; EM-CING-103-130703
EM-CING-143-130122; EM-CING-104-130819; EM-CING-158-130326
TS-AT&T-164-131114; EM-CING-074-130322; EM-CING-003-130214
EM-CING-015-130531; EM-AT&T-089-131230; EM-AT&T-051-130408
EM-AT&T-118-131030

Dear Attorney Laub:

The Connecticut Siting Council (Council) is in receipt of your letter dated December 24, 2015, submitted on behalf of New Cingular Wireless PCS, LLC (AT&T), requesting an extension of time to submit notices of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council previously granted six extension of time to submit notices of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications on June 30, 2014; September 2, 2014; November 4, 2014; November 20, 2014; December 29, 2014; and February 24, 2015.

Therefore, the Council hereby denies an extension of time to submit notices of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications that were approved in 2013.

Any modifications to these facilities will require explicit notice to the Council pursuant to Regulations of Connecticut State Agencies Section 16-50j-73 and a filing fee.

Thank you for your attention to this matter.

Sincerely,

Melanie A. Bachman
Acting Executive Director

MAB/cm

CUDDY & FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Tel 914.761.1300 Fax 914.761.5372
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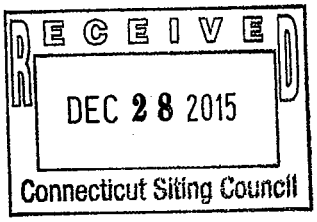
December 24, 2015



VIA EMAIL & FEDEX
Melanie Bachman, Esq.
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: New Cingular Wireless PCS, LLC (AT&T)
Exempt Modification/Tower Share Conditions
Notifications of Completion & Extension Requests

Dear Executive Director Bachman:

We are writing on behalf of our client, New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the Siting Council's requests for written notification of completion of construction and/or written notice of compliance with site-specific conditions for various modification filings made by AT&T and its vendors. Specifically, this letter addresses those sites related to the year 2013, listed in the attached correspondence. It is our understanding that these are the only sites remaining from 2013 that need an extension.

Accordingly, on behalf of AT&T and their vendors, we respectfully request an additional extension of time to June 30, 2016 for completion of all remaining 2013 non-tower sites.

Thank you once again for your continued consideration in this matter. Should you have any questions regarding the foregoing please do not hesitate to contact me.

Very truly yours,

Daniel M. Laub

Enclosures

cc: Michele Briggs, AT&T

C&F: 2961501.1

EM/TS #	Address	Town	Council Additional Conditions	Compliance with Council Additional Conditions Received	Notice of Completion Received	Decision Date	CSC Extension Granted
EM-CING-069-130123	1375 North Road	Dayville	Yes	No	No	3/8/2013	12/31/15
EM-AT&T-060-130321	370 Rockland Road	Guilford	Yes	No	No	4/5/2013	12/31/15
EM-CING-069-130130	246 East Franklin Street	Danielson	Yes	No	No	4/15/2013	12/31/15
EM-CING-088-130109	103 Eastside Boulevard	Naugatuck	N/A	N/A	No	4/15/2013	12/31/15
TS-AT&T-004-131223	376 Deercliff Road	Avon	N/A	N/A	No	6/28/2013	12/31/15
TS-AT&T-069-131216	1249 Hartford Pike	East Killingly	N/A	N/A	No	6/28/2013	12/31/15
EM-CING-128-130828	530 Brushy Hill Road	Simsbury	N/A	N/A	No	6/28/2013	12/31/15
EM-CING-135-130910	366 Old Long Ridge Road	Stamford	Yes	No	No	6/28/2013	12/31/15
EM-CING-156-130531	1 Burwell Road	West Haven	N/A	N/A	No	6/28/2013	12/31/15
EM-CING-086-130712	334 Route 85	Montville	Yes	No	No	7/12/2013	12/31/15
TS-AT&T-101-131108	50 Devine Street	North Haven	N/A	N/A	No	7/22/2013	12/31/15
EM-CING-158-130703	515 Post Road East	Westport	N/A	N/A	No	7/22/2013	12/31/15
EM-CING-073-130207	20 Mell Road	Lisbon	Yes	No	No	7/26/2013	12/31/15
TS-AT&T-143-131227	137 Wright Road	Torrington	Yes	No	No	7/26/2013	12/31/15
EM-CING-103-130703	177 West Rocks Road	Norwalk	N/A	N/A	No	8/8/2013	12/31/15
EM-CING-143-130122	1210 Highland Avenue	Torrington	Yes	No	No	8/16/2013	12/31/15
EM-CING-104-130819	39 Maennerchor Avenue	Norwich	Yes	No	No	8/23/2013	12/31/15
EM-CING-158-130326	880 Post Road East	Westport	Yes	No	No	9/13/2013	
TS-AT&T-164-131114	599 Matianuck Avenue	Windsor	N/A	N/A	No	9/27/2013	12/31/15
EM-CING-074-130322	438 BANTAM ROAD	LITCHFIELD	Yes	No	No	11/29/2013	
EM-CING-003-130214	353 Pumpkin Hill Road	Ashford	Yes	No	No	12/13/2013	
EM-CING-015-130531	1320 Chopsey Hill Road	Bridgeport	N/A	N/A	No	12/13/2013	
EM-AT&T-089-131230	One Hartford Square	New Britain	N/A	N/A	No	12/20/2013	
EM-AT&T-051-130408	280 Morehouse Drive	Fairfield	Yes	No	No	12/27/2013	
EM-AT&T-118-131030	845 Ethan Allen Highway	RIDGEFIELD	N/A	N/A	No	12/27/2013	

STATE OF CONNECTICUT

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February 24, 2015

Daniel M. Laub, Esq.
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

RE:

EM-CING-069-130123	**1375 North Rd., Dayville**
EM-CING-074-130220	**1291 Bantam Rd., Litchfield**
EM-CING-069-130130	**246 East Franklin St., Danielson**
EM-CING-143-130122	**1210 Highland Ave., Torrington**
EM-CING-104-130819	**39 Maennerchor Ave., Norwich**
EM-AT&T-060-130321	**370 Rockland Rd., Guilford**
EM-CING-088-130109	**103 Eastside Blvd., Naugatuck**
EM-CING-156-130531	**1 Burwell Road, West Haven**
EM-CING-169-130913	**40 Sherman Road, Woodstock**
EM-CING-186-130712	**1334 Route 85, Montville (Oakdale)**
EM-CING-158-130703	**515 Post Road East, Westport**
EM-CING-073-130207	**20 Mell Road, Lisbon**
EM-CING-103-130703	**177 West Rock Road, Norwalk**
EM-CING-158-130703	**515 Post Rd. East, Westport**
EM-CING-135-130910	**366 Old Long Ridge Rd., Stamford**

Dear Attorney Laub:

The Connecticut Siting Council (Council) is in receipt of your letter dated February 24, 2015, submitted on behalf of AT&T/New Cingular Wireless PCS, LLC, requesting an extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council hereby grants an extension of time until December 31, 2015, to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

This extension is granted with the understanding that the Council will be notified should AT&T/New Cingular Wireless PCS, LLC need additional time beyond 60 days to submit a notice of completion of construction and associated post modification inspection reports or decide not to proceed with construction.

Thank you for your attention to these matters.

Sincerely,

Melanie A. Bachman
Acting Executive Director

MAB/cm

CUDDY& FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Tel 914.761.1300 Fax 914.761.5372
www.cuddyfeder.com

February 24, 2015

VIA EMAIL & FEDEX
Melanie Bachman, Esq.
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: New Cingular Wireless PCS, LLC (AT&T)
Exempt Modification/Tower Share Conditions
Notifications of Completion & Extension Requests

Dear Executive Director Bachman:

We are writing on behalf of our client, New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the Siting Council's requests for written notification of completion of construction and/or written notice of compliance with site specific conditions for various modification filings made by AT&T and its vendors. Specifically, this letter addresses those sites related to the year 2013, which the Council previously indicated no receipt of completion/closeout letters. This letter addresses the latest status of all remaining sites (Quarters 1-3 of 2013) on the attachment to your email dated February 3, 2015 ("February List").

Since the date of our December 24, 2014 letter, we are advised that AT&T and its vendors have filed directly with the Council the attached close out letters for the following additional sites (copies enclosed for reference):

EM-CING-097-130322	24 Dinglebrook Rd	Newtown
EM-CING-150-130625	6 Mountain Rd	Washington
EM-CING-085-130531	500 Moosehill Rd	Monroe

We are further advised by AT&T that five (5) sites are complete but due to recent weather conditions additional time is needed for site visits to finalize PE certifications to accompany the completion letters on the following sites:

EM-CING-069-130123	1375 North Rd	Dayville
EM-CING-074-130220	1291 Bantam Rd	Litchfield
EM-CING-069-130130	246 East Franklin St	Danielson
EM-CING-143-130122	1210 Highland Ave	Torrington
EM-CING-104-130819	39 Maennerchor Ave	Norwich

On AT&T and their vendors' behalf, we respectfully request an additional extension of time to December 31, 2015 for these sites to be completed. However, please note that AT&T anticipates having these certifications completed very soon, field conditions permitting.

Additionally, the following sites which are set to expire on March 1, 2015 continue to be addressed by AT&T but require more time for completion. We respectfully request that these also be extended to December 31, 2015:

EM-AT&T-060-130321	370 Rockland	Guilford
EM-CING-088-130109	103 Eastside Blvd	Naugatuck
EM-CING-156-130531	1 Burwell Road	West Haven
EM-CING-169-130913	40 Sherman Road	Woodstock
EM-CING-186-130712	1334 Route 85	Montville (Oakdale)
EM-CING-158-130703	515 Post Road East	Westport
EM-CING-073-130207	20 Mell Road	Lisbon
EM-CING-103-130703	177 West Rock Road	Norwalk
EM-CING-158-130703	515 Post Rd	East Westport
EM-CING-135-130910	366 Old Long Ridge Rd.	Stamford

Thank you once again for your continued consideration in this matter. Should you have any questions regarding the foregoing please do not hesitate to contact me.

Very truly yours,

Daniel M. Laub

Enclosures

cc: Michele Briggs, AT&T
Christopher B. Fisher, Esq.
AT&T Consultant Team

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

RE: EM-CING-097-130322 Notice of Completion of Construction for New Cingular Wireless/ AT&T facility at 24 DINGLEBROOK LANE, NEWTOWN, CT (ATT NO. CT1271)

Dear Ms. Bachman:

The purpose of this letter is to notify you that construction activity associated with the above-referenced decision has been completed.

As part of the decision conditions, the coax was installed in accordance with the recommendation of the Structural Analysis by GPD Group dated March 11, 2013.

If you have any questions or need any additional information regarding this facility, please do not hesitate to contact me.

Sincerely,

Eric Campbell
SAI Communications
Agent for New Cingular Wireless/AT&T Mobility, Inc.
27 Northwestern Drive
Salem, New Hampshire 03079

Cc: Christine Vergati, Cuddy Feder (via US Mail and email)
SAI Construction (via email only)
Tim Burks, (via email only)

CENTEK engineering

Centered on Solutions℠

February 17, 2015

Mr. Eric Campbell
SAI Communications
260 Cedar Hill Street
Marlborough, Massachusetts 01752

Re: Tower Modification Certification

Project:	**AT&T CT1271** 24 Dinglebrook Lane, Newtown, CT
Tower Owner:	**AT&T Towers** 575 Morosgo Drive, Atlanta, GA
Engineer:	**GPD Group** 1117 Perimeter Center West, Suite W303, Atlanta, GA

Centek Project No.: 14042.017

CSC Exempt Mod Reference No.: EM-CING-097-130322

Dear Mr. Campbell,

We are providing this "Tower Modification Certification" with regard to the structural components at the above referenced project.

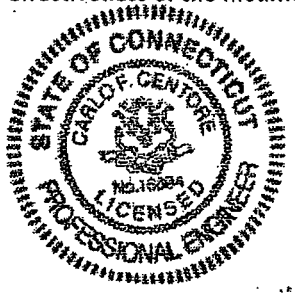
The following are the basis for substantiating compliance with the tower modification documents prepared by GPD Group (GPD Project Number: 2013723.99800.01):

- Review of the GPD Group Structural Analysis dated 03/11/2013.
- Review of the GPD Group Modification Drawings T-01,N-01 ,S-01 thru S-04 and MI-01 dated 03/11/2013.
- Review of the Centek Engineering Post Modification Report dated 11/02/2013.
- Field observations by Centek Engineering personnel on 10/03/2013 of the completed modifications which determined all modifications were installed in general compliance with the recommendations of the structural analysis report prepared by GPD Group on 03/11/2013.

The modification design prepared by GPD Group demonstrates the tower will not exceed 100 percent of the post construction structural rating. The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above. This certification is not a review of the adequacy or effectiveness of the modification/reinforcement solution.

Sincerely,

Carlo F. Centore, PE
Senior Project Manager



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

RE: EM-CING-150-130625 Notice of Completion of Construction for New Cingular Wireless/ AT&T facility at 6 MOUNTAIN RD, WASHINGTON, CT (ATT NO. CT2550)

Dear Ms. Bachman:

The purpose of this letter is to notify you that construction activity associated with the above-referenced decision has been completed.

As part of the decision conditions, the coax was installed in accordance with the recommendation of the Structural Analysis by Centek Eng. dated May 7 and August 19, 2013.

If you have any questions or need any additional information regarding this facility, please do not hesitate to contact me.

Sincerely,

Eric Campbell
SAI Communications
Agent for New Cingular Wireless/AT&T Mobility, Inc.
27 Northwestern Drive
Salem, New Hampshire 03079

Cc: Christine Vergati, Cuddy Feder (via US Mail and email)
SAI Construction (via email only)
Tim Burks, (via email only)

CENTEK engineering

Centered on Solutions℠

February 3, 2015

Mr. Eric Campbell
SAI Communications
27 Northwestern Drive
Salem, NH 03079

Re: Tower Modification Certification

Project:	**AT&T CT2550** 6 Mountain Road, Washington, CT
Tower Owner:	**Verizon Wireless** 99 East River Drive, East Hartford, CT
Engineer:	**Centek Engineering** 63-2 North Branford Road, Branford, CT

Centek Project No.: 14042.011

CSC Exempt Mod Reference No.: EM-CING-150-130625

Dear Mr. Campbell,

We are providing this "Tower Modification Certification" with regard to the structural components at the above referenced project.

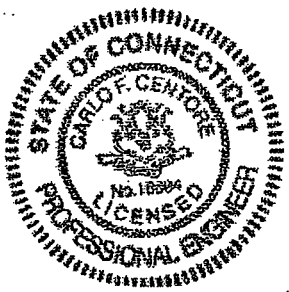
The following are the basis for substantiating compliance with the tower modification documents prepared by Centek Engineering (Centek Project Number: 13046.000):

- Review of the Centek Engineering Structural Analysis dated 05/07/2013 Rev-1.
- Review of the Centek Engineering Structural Analysis dated 08/19/2013 Rev-3.
- Review of the Centek Engineering Reinforcement Drawings T-1,N-1, N-2, MI-1 and thru S-1 thru S-3 dated 05/07/2013.
- Review of the Centek Engineering Post Modification Inspection Report dated 01/28/2014.
- Field observations by Centek Engineering personnel on 01/27/2014 of the completed modifications which determined all modifications were installed in general compliance with the recommendations of the structural analysis report prepared by Centek Engineering on 08/19/2013 Rev-3.

The modification design prepared by this office demonstrates the tower will not exceed 100 percent of the post construction structural rating. The work under this Contract has been reviewed and found, to the Engineer's best knowledge, information and belief, to be completed in general compliance with the documents referenced above.

Sincerely,

Carlo F. Centore, PE
Senior Project Manager



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

RE: EM-CING-085-130531 Notice of Completion of Construction & Commencement of Site Operations
New Cingular Wireless PCS, LLC / AT&T facility (AT&T No.CT2203) at
500 Moose Hill Road, Monroe, Connecticut

Dear Ms. Bachman:

On behalf of New Cingular Wireless PCS, LLC (AT&T), please accept this letter as our notification of the completion of site construction and the commencement of site operations.

If you have any questions or need any additional information regarding this facility, please do not hesitate to contact me.

Sincerely,

Eric Campbell
SAI Communications
Agent for New Cingular Wireless/AT&T Mobility, Inc.
27 Northwestern Drive
Salem, New Hampshire 03079

Cc: Melanie Bachman (via email and USPS)
Christine Vergati, Cuddy Feder (via email only)
Tim Burks, SAI (via email only)

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December 29, 2014

Christopher B. Fisher, Esq.
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, NY 10601

RE: EM-CING-069-130123 - 1375 North Road, Dayville
EM-AT&T-060-130321 - 370 Rockland Road, Guilford
EM-CING-074-130220 - 1291 Bantam Road, Litchfield
EM-CING-069-130130 - 246 East Franklin Street, Danielson
EM-CING-088-130109 - 103 Eastside Boulevard, Naugatuck
EM-CING-135-130910 - 366 Old Long Ridge Road, Stamford
EM-CING-156-130531 - 1 Burwell Road, West Haven
EM-CING-169-130913 - 40 Sherman Road, Woodstock
EM-CING-086-130712 - 334 Route 85, Montville
EM-CING-085-130531 - 500 Moosehill Road, Monroe
EM-CING-097-130322 - 24 Dinglebrook, Newtown
EM-CING-150-130625 - 6 Mountain Road, Washington
EM-CING-158-130703 - 515 Post Road East, Westport
EM-CING-073-130207 - 20 Mell Road, Lisbon
EM-CING-143-130122 - 1210 Highland Avenue, Torrington
EM-CING-103-130703 - 177 West Rocks Road, Norwalk
EM-CING-104-130819 - 39 Maennerchor Avenue, Norwich

Dear Attorney Fisher:

The Connecticut Siting Council (Council) is in receipt of your letter dated December 24, 2014, submitted on behalf of AT&T/New Cingular Wireless PCS, LLC, requesting an extension of time to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council hereby grants a 60-day extension of time until March 1, 2015, to submit a notice of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

This extension is granted with the understanding that the Council will be notified should AT&T/New Cingular Wireless PCS, LLC need additional time beyond 60 days to submit a notice of completion of construction and associated post modification inspection reports or decide not to proceed with construction.

Thank you for your attention to these matters.

Sincerely,

Melanie A. Bachman
Acting Executive Director

MAB/cm

CUDDY & FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
Tel 914.761.1300 Fax 914.761.5372
www.cuddyfeder.com

December 24, 2014

VIA EMAIL & FIRST CLASS MAIL
Melanie Bachman, Esq.
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: New Cingular Wireless PCS, LLC (AT&T)
Exempt Modification/Tower Share Conditions
Notifications of Completion & Extension Requests

Dear Executive Director Bachman:

We are writing once again behalf of our client, New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the Siting Council's requests for written notification of completion of construction and/or written notice of compliance with site specific conditions for various exempt modification filings made by AT&T and its vendors. Specifically, this letter addresses those items related to the year 2013 which the Council has received prior correspondence individually addressing various sites approved in different quarters of calendar year 2013. For purposes of efficiency this letter addresses the latest status of all sites (Quarters 1-3) as the attachment to your letter dated November 3, 2014 ("November List") included a listing of sites from Quarters 1-3.

Quarter 1, 2013

Since the date of our October 31st letter, we are advised that AT&T and its vendors have filed directly with the council close out letters for the following additional sites:

EM-AT&T-067-131230	107 Buck Road	Hebron
EM-CING-045-130103	2 Scott Road	East Lyme
EM-CING-057-130802	Old Greenwich Sta.	Old Greenwich
EM-CING-058-121031	131 Bishop Crossing	Griswold
EM-CING-137-121031	86 Voluntown Road	Pawcatuck
EM-CING-114-121114	5 Hinckley Hill Rd.	Preston

Quarter 2, 2013

Since the date of our October 31st letter, our information reflects that AT&T and its vendors have filed directly with the council a close out letter for the following additional site:

EM-CING-106-131114 1363 Boston Post Road Old Saybrook

Additionally, we are advised by AT&T that construction has been deferred on (3) Q2 sites:

CUDDY & FEDER LLP

TS-AT&T-004-131223 376 Deercliff Road Avon
TS-AT&T-069-131216 1249 Hartford Pike East Killingly
EM-CING-128-130828 530 Brushy Hill Road Simsbury.

On AT&T and their vendor's behalf, we respectfully request a one-year extension of time to December 31, 2015 for these three sites to be completed in accordance with the prior Exempt Modification Acknowledgement letters.

Quarter 3, 2013

As for the Quarter 3 sites listed we are writing to confirm your receipt of correspondence from AT&T's vendors for six (6) of the Q3 sites on the list you provided, as follows:

1.	EM-CING-135-130703	652 Glenbrook Rd	Stamford
2.	EM-CING-152-130201	126 Old Colchester Rd	Waterford
3.	EM-CING-166-130711	347 East Street	Wolcott
4.	EM-CING-100-130322	38 Lower Rd	North Canaan
5.	EM-CING-084-130305	111 Schoolhouse Rd	Milford
6.	EM-CING-031-130116	Mowhawk Mtn. Rd	Cornwall

Additionally, we are advised by AT&T that construction has been deferred on (3) Q3 sites:

TS-AT&T-101-131108 50 Devine Street North Haven
TS-AT&T-143-131227 137 Wright Rd Torrington
TS-AT&T-164-131114 599 Matianuck Avenue Windsor.

On AT&T and their vendor's behalf, we respectfully request a one-year extension of time to December 31, 2015 for these sites to be completed in accordance with the prior Exempt Modification Acknowledgement letters.

Process Moving Forward – Confirmation of Extensions

We are advised that other than the above noted deferrals AT&T's vendors are coordinating receipt of documentation from tower companies to certify compliance with conditions (i.e. P.E. certifications, etc.) for Q1, Q2 and Q3 sites. As per our recent telephone discussion, however, it appears that the Council's records do not reflect receipt of completion correspondence for sites which AT&T's vendors have a record of submitting. AT&T will revisit its records and coordinate submission of any outstanding completion correspondence with the Council.

CUDDY & FEDER LLP

Other than the deferred sites noted above, and to the extent an extension is required for any outstanding sites as per the Council's records, we respectfully request an extension to March 1, 2015 for all sites on the November list (2013 Q1, Q2, Q3) to submit notices of completion.

Thank you for your continued consideration in this matter.

Very truly yours,

Daniel M. Laub

cc: Michele Briggs, AT&T
Christopher B. Fisher, Esq.

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
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www.ct.gov/csc

February 8, 2013

Melanie Howlett
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-CING-143-130122** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut.

Dear Ms. Howlett:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Prior to antenna installation, the modifications identified in the Structural Analysis for SBA Network Services prepared by FDH Engineering dated October 12, 2012, and stamped by Christopher Murphy shall be implemented;
- Within 45 days following completion of the antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the structure and foundation do not exceed 100 percent of the post-construction structural rating.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated January 18, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General

Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Ryan J. Bingham, Mayor, City of Torrington
Martin Connor, City Planner, City of Torrington
SBA Communications

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

January 23, 2013

The Honorable Ryan J. Bingham
Mayor
City of Torrington
140 Main Street
Torrington, CT 06790-5245

RE: **EM-CING-143-130122** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 1210 Highland Avenue, Torrington, Connecticut.

Dear Mayor Bingham:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by February 6, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/cm

c: Martin Connor, City Planner, City of Torrington

EM-CING-143-130122

HPC Wireless Services
46 Mill Plain Rd.
Floor 2
Danbury, CT, 06811
P.: 203.797.1112

HPC WIRELESS SERVICES

ORIGINAL

January 18, 2013

RECEIVED
JAN 22 2013
CONNECTICUT
SITING COUNCIL

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

Re: New Cingular Wireless PCS, LLC – Exempt Modification
1210 Highland Avenue, Torrington

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"). AT&T is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies ("R.S.C.A."), of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Mayor of the City of Torrington.

AT&T plans to modify the existing wireless communications facility owned by SBA Communications, and located at 1210 Highland Avenue, Torrington (coordinates 41°-48'-09.32" N, 73°-09'-48.15" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration, subject to modifications detailed in the attached structural documentation. Also included is a power density report reflecting the modification to AT&T's operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. AT&T will add three (3) LTE panel antennas mounted to new pipes and attached to existing T-arms, at a centerline height of approximately 245'. Six (6) RRUs (remote radio units) will be mounted behind the LTEs on the existing T-arm sector mounts, and

one (1) Surge Arrestor will be mounted to the existing platform, all also at a centerline height of approximately 245'. AT&T will also place DC power and fiber runs from the equipment to the antennas along the existing coaxial cable run. These changes will not extend the height of the approximately 260' structure.

2. AT&T will place related equipment in the existing Equipment Shelter and mount a new GPS antenna to a second existing Ice Bridge Post. These changes will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six (6) decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately 0.58%; the combined site operations will result in a total power density of approximately 26.07%.

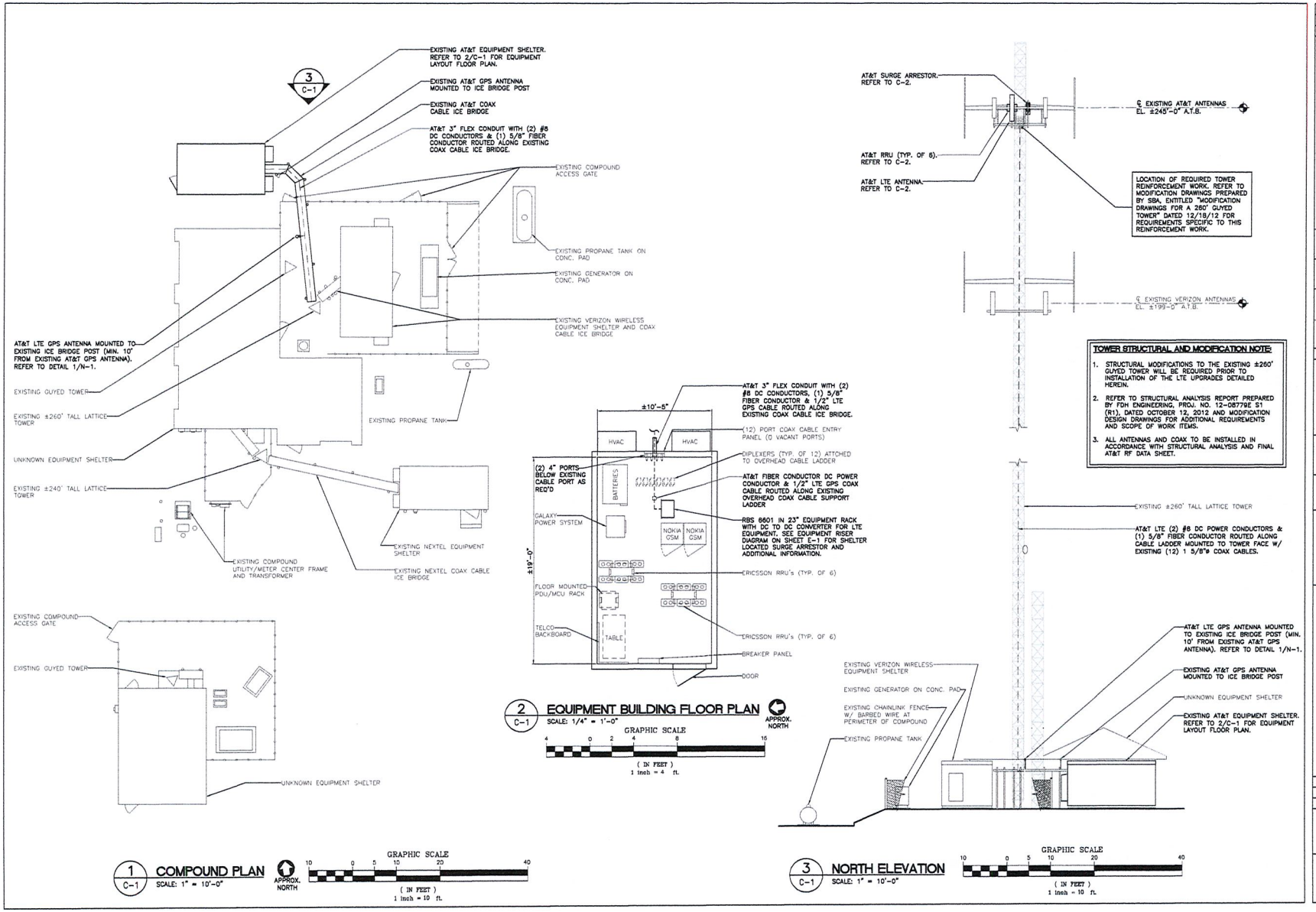
Please do not hesitate to contact me by phone at (203-610-1071), or by e-mail at mjhowlett@optonline.net, if there are any questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Melanie J. Howlett

Attachments

cc: Honorable Ryan J. Bingham, Mayor, City of Torrington
SBA Properties, Inc. (underlying property owner)



DESIGNED BY:	HMR
DRAWN BY:	HMR
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	CHK'D BY	
1	01/14/13	HMR	DEB	CONSTRUCTION - CLIENT REVIEW
0	8/27/12	HMR	DEB	CONSTRUCTION

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(203) 488-8587 Fax
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Branford, CT 06405
www.CentekEng.com

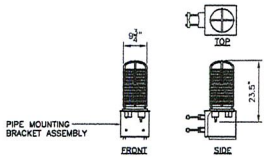
AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY LTE UPGRADE
CT1253
TORRINGTON HIGHLAND AVE
1310 HIGHLAND AVENUE
TORRINGTON, CT 06790

DATE:	8/27/12
SCALE:	AS NOTED
JOB NO.	12063.0038

PLANS AND ELEVATION

C-1

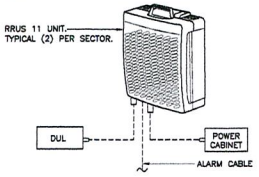
Sheet No. 3 of 5



SURGE ARRESTOR				
SITE TYPE	ARRESTOR MAKE/MODEL	QTY REQUIRED	ARRESTOR LOCATION	WEIGHT
TOWER	MAKE: RAYCAP (SQUID) MODEL: DC6-48-60-18-8F	(1) PER SITE	TOWER, ADJACENT TO AT&T ANTENNAS AND RRUs.	20 LBS. (WITHOUT MOUNT)

NOTES:
1. CONTRACTOR TO COORDINATE FINAL SURGE ARRESTOR MODEL SELECTION(S) WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.
2. CONTRACTOR TO INSTALL ARRESTOR IN CONFORMANCE WITH MANUFACTURERS RECOMMENDATIONS.

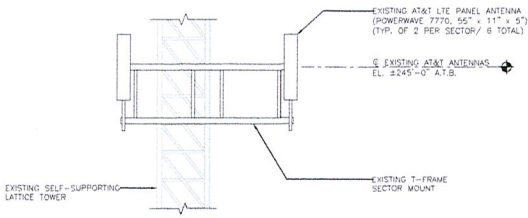
6 C-2 SURGE ARRESTOR DETAIL
NOT TO SCALE



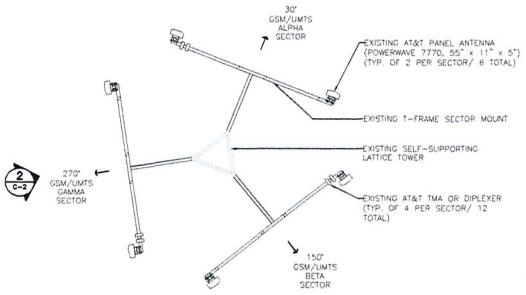
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS 11	17.8"L x 17.3"W x 7.2"D	BAND 4: 44 LBS. BAND 12: 50 LBS.	ABOVE: 18" MIN. BELOW: 12" MIN. SIDE: 0" MIN.

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

7 C-2 RRU DETAIL
NOT TO SCALE

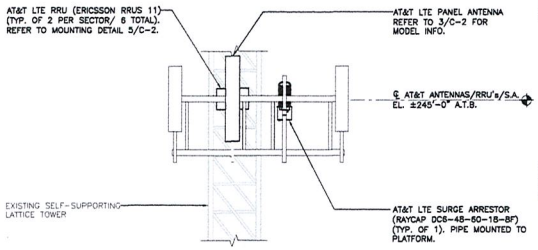


2 C-2 EXISTING ANTENNA SECTOR ELEVATION
SCALE: 1/4" = 1'-0"

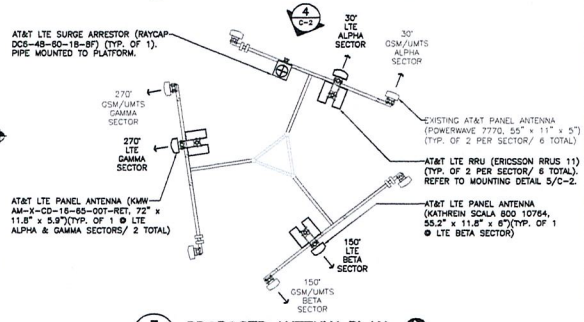


1 C-2 EXISTING ANTENNA PLAN
SCALE: 1/4" = 1'-0"

APPROX. NORTH



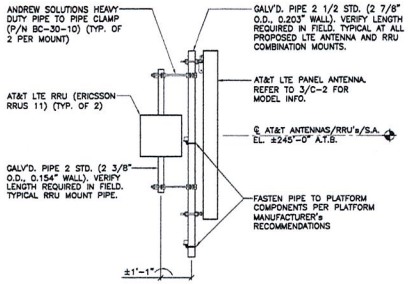
4 C-2 PROPOSED LTE ANTENNA SECTOR ELEVATION
SCALE: 1/4" = 1'-0"



3 C-2 PROPOSED ANTENNA PLAN
SCALE: 1/4" = 1'-0"

APPROX. NORTH

NOTES:
1. PROVIDE MOUNTING PIPES, CROSSOVERS & ASSOCIATED HARDWARE TO COMPLETE THE PROPOSED UPGRADE.
2. REFER TO STRUCTURAL ANALYSIS AND FINAL AT&T RFDS PRIOR TO INSTALLATION OF ANTENNAS AND COAX.



5 C-2 LTE ANTENNA/RRU MOUNT DETAILS
SCALE: 1/2" = 1'-0"

DESIGNED BY:	HMR
DRAWN BY:	HMR
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	CHK'D BY	
1	01/14/13	HMR	DEB	CONSTRUCTION - CLIENT REVIEW
0	8/27/12	HMR	DEB	CONSTRUCTION

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www.CentekEng.com

AT&T MOBILITY

WIRELESS COMMUNICATIONS FACILITY LTE UPGRADE

CT1253

TORRINGTON HIGHLAND AVE

1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

DATE:	8/27/12
SCALE:	AS NOTED
JOB NO.	12063.C038

LTE EQUIPMENT DETAILS

C-2

Sheet No. 4 of 6

FDH Engineering, Inc., 6521 Meridien Drive Raleigh, NC 27616, Ph. 919.755.1012

Structural Analysis for SBA Network Services, Inc.

260' Guyed Tower

SBA Site Name: Torrington 2
SBA Site ID: CT02303-A
AT&T Site ID: CT1253
AT&T Site Name: Torrington Highland Avenue

FDH Project Number 12-08779E S1 (R1)

Analysis Results

Tower Components	**111.6%**	**Insufficient**
Foundation	68.1%	Sufficient

Prepared By:

Daniel Chang, EI
Project Engineer

Reviewed By:

Christopher M Murphy, PE
President
CT PE License No. 25842

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
(919) 755-1012
info@fdh-inc.com

10/12/12

October 12, 2012

Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures and 2005 Connecticut Building Code

TABLE OF CONTENTS

EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the existing guyed tower located in Torrington, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F* and *2005 Connecticut Building Code*. Information pertaining to the existing/proposed antenna loading, current tower geometry, the member sizes, and foundation dimensions was obtained from:

- PiRod, Inc. (File No. A-107657) original design drawings dated September 23, 1996
- All-Points Technology Corporation, P.C. (Project No. CT122160) structural analysis report dated January 21, 2002
- FDH Engineering, Inc. (Project No. 05-0827E) Modification Drawings for a 260' Guyed Tower dated August 29, 2005
- FDH, Inc. (Job No. 12-07062T T1) TIA Inspection Report dated July 25, 2012
- FDH Engineering, Inc. (Project No. 12-08779E G1) Geotechnical Evaluation of Subsurface Conditions dated October 8, 2012
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* is 80 mph without ice and 28 mph with 1" radial ice. Ice is considered to increase in thickness with height.

Conclusions

With the existing and proposed antennas from AT&T in place at 245 ft, the tower does not meet the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code*. However, provided the foundations were constructed per the original design drawings (see PiRod File No. A-107657) and based on the given soil parameters (see FDH Project No. 12-08779E G1), the foundations should have the necessary capacity to support both the proposed and existing loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e., the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards and *2005 Connecticut Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. Coax lines must be installed as shown in **Figure 1**.
2. The existing TMAs and diplexers should be installed directly behind the proposed and existing panel antennas.
3. Reinforcement of the tower legs is required to support the existing and proposed loading. See the **Results** section of this report for locations.
4. Reinforcement of the tower diagonals is required to support the existing and proposed loading. See the **Results** section of this report for locations.

We would anticipate the construction cost for a turnkey design/build modification project of this nature to range in price from approximately $10,000 to $20,000 (which should include the engineering design fees, inspection fees, and construction fees).

APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

Table 1 - Appurtenance Loading

Existing Loading:

264	(1) Antel 11.5' x 2.5" omni	(1) 1-5/8"	39	---	258	(3) 10' Standoffs
269.5	(1) Telewave 21' x 2.5" omni	(1) 1-5/8"	38	---		
268.5	(1) 21' x 2.4" omni					
259	(1) 4" x 13.75" x 3" TMA					
251	(1) 14' x 2.5" omni (inverted)	(1) 7/8"	28	---		
266.5	(1) Radio Labs SRL480 omni	(1) 7/8"	29,32	---		
255	(1) 24" x 20" x 11" TMA	(1) 1/2"			255	Direct
245	(6) Powerwave 7770 w/ Mount Pipe (6) Powerwave LGP13519 TMAs (12) Powerwave LGP21401 TMAs	(12) 1-5/8"	15-26	AT&T	242.5	(3) 12.5' T-Frames
228.5	(1) 14' x 2.4" omni	(1) 1-5/8"	27	---	221.5	(1) 4.5' Standoff
226	(1) 11.5' x 2.4" omni	(1) 1-1/4"	44	---	226	(1) 13.5' x 2.4" Pipe Mount
225.5	(1) Celwave 458-2 Omni	(1) 1-1/4"	37	---	218	(3) 10' Standoffs
224.5	(1) 11.5' x 2.4" omni	---	---	---		
223	(1) Antel BCD 8706 NE omni	(1) 1-1/4"	47	Page Net		
222.5	(1) 7.5' x 2.4" omni	(1) 1-1/4"	30	---		
212	(1) Decibel 11.5' x 3" omni (inverted)	(1) 1-1/4"	46	---		
211.5	(1) Decibel 11' x 3" omni (inverted)	(1) 1-1/4" (1) 7/8"	11-12	---		
211	(1) Decibel 11' x 3" omni (inverted)	(2) 1-1/4"	9-10	Metro Comm		
209.5	(1) Decibel 14' x 3" omni (inverted)	(1) 7/8"	31	---		
203	(1) Decibel 731DG85V1EXM (2) 14" x 9" x 2.5" TMAs	---	---	---	203	(1) 63" x 2.4" Pipe Mount
202	(2) Clear Comm 7.5" x 4" x 4" TMAs					
199	(3) Antel BXA-80063/4CF w/ Mount Pipe (3) Antel BXA-185063/8CF w/ Mount Pipe	(12) 1-5/8"	3-8, 48-53	Verizon	198	(3) 10' T-Frames
183	(1) Andrew 11.5' x 3" omni	(1) 7/8"	45	---	177.5	(1) 48" Standoff
184	(1) Andrew PG1N0F-0090-310 omni	(1) 7/8"	36	---	178.5	(1) 27" Standoff
174.5	(1) 6.5" x 20.5" x 4.5" TMA				174.5	Direct
180	(1) Radio Labs SRL 6139 dipole	(1) 7/8"	41	---	175.5	(1) 36" Standoff
179.5	(1) 8' x 1" omni	(1) 1-1/4"	40			
174	(1) Scala 9 Element Yagi (27" x 7")	---	---	---		
174.5	(1) 22" x .75" GPS	(1) 1/2"	1	---	173.5	(1) 17" Standoff
173	(1) 13.5' x 1.8" omni	(1) 7/8"	14	---	167	(1) 72" Standoff
163.5	(1) Andrew 11'2" x 3" omni	(1) 1-1/4"	43	---	158.5	(1) 15" Standoff
166.5	(1) 8' x 1" omni	(1) 7/8"	42	Torrington PD	162.5	(1) 18" Standoff
147	(1) 11.5' x 2.4" omni	(1) 7/8"	35	American Mess	141.5	(1) 32" Standoff
118.5	(1) Shivley 20' x 2.5' 3 Bay FM	(1) 1-5/8"	13	WZBC 97.3	118.5	(4) 16" Standoffs
84.5	(1) Shivley 4' x 2.5' 1-Bay FM	(1) 7/8"	33	WAPJ 89.8	83.5	(1) 20" Standoff
66.5	(1) 12.5" x 9" TMA	(1) 1/2"	34	Marcus Comm.	66.5	Direct
64.5	(1) Radiowaves SP2-2.4NS Dish				64.5	Direct

Proposed Loading:

Antenna Elevation (ft)	Description	Coax and Lines	Coax No	Carrier	Mount Elevation (ft)	Mount Type
245	(6) Powerwave 7770 w/ Mount Pipe (2) KMW AM-X-CD-16-65-00T-RET w/ Mount Pipe (1) Kathrein 800 10764 w/ Mount Pipe (12) Powerwave LGP21401 TMAs (6) Ericsson RRUS-11 RRUs (1) Andrew ABT-DF-DMADBH Surge Arrestor (1) Raycap DC6-48-60-18-8F Surge Arrestor	(12) 1-5/8" (1) 7/16" Fiber Cable[1] (2) 3/4" DC Power[1]	15-26, 54	AT&T	242.5	(3) 12.5' T-Frames

1. Coax installed inside 3" Flex Conduit

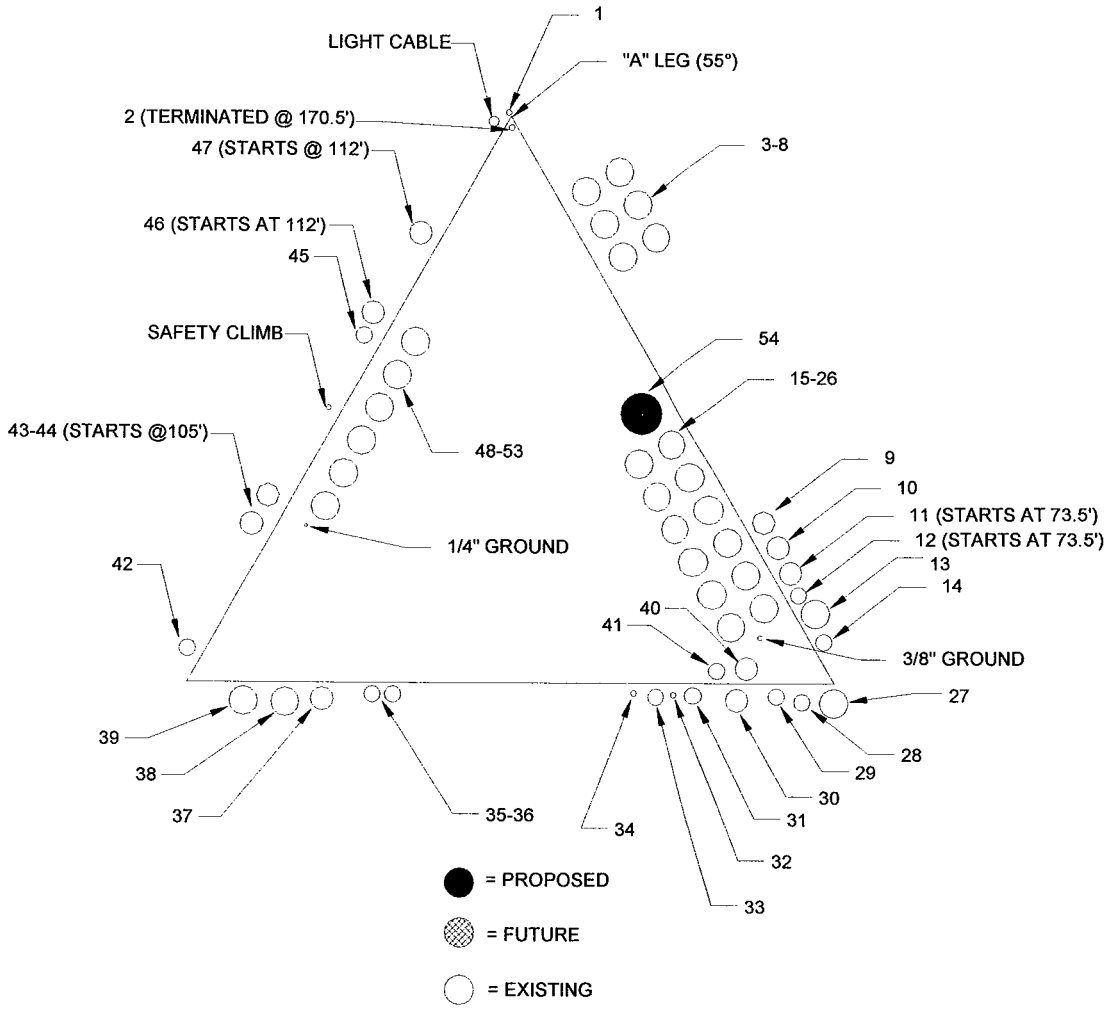


Figure 1 – Coax Layout

RESULTS

The following yield strength of steel for individual members was used for analysis:

Table 2 - Material Strength

Member Type	Yield Strength
Legs	50 ksi
Bracing	50 ksi & 36 ksi

Table 3 displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information

Table 3 - Summary of Working Percentage of Structural Components

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
T1	260 - 257	Leg	1 1/2	5.6	Pass
		Diagonal	9/16	18.9	Pass
		Top Girt	3/4	0.8	Pass
T2	257 - 254.667	Leg	1 1/2	8.6	Pass
		Diagonal	9/16	47.8	Pass
T3	254.667 - 252.333	Leg	1 1/2	13.0	Pass
		Diagonal	9/16	46.7	Pass
T4	252.333 - 250	Leg	1 1/2	17.0	Pass
		Diagonal	9/16	50.4	Pass
T5	250 - 247.667	Leg	1 1/2	21.8	Pass
		Diagonal	9/16	47.6	Pass
		Top Girt	3/4	3.0	Pass
T6	247.667 - 245.333	Leg	1 1/2	26.2	Pass
		Diagonal	9/16	60.0	Pass
T7	245.333 - 243	Leg	1 1/2	41.3	Pass
		Diagonal	9/16	78.3	Pass
		Top Girt	C3x6	12.3	Pass
T8	243 - 240	Leg	1 1/2	56.0	Pass
		Diagonal	9/16	**106.6**	**Fail**
		Top Girt	C3x6	24.0	Pass
		Bottom Girt	3/4	87.9	Pass
T9	240 - 220	Leg	1 1/2	55.8	Pass
		Diagonal	9/16	56.2	Pass
		Top Girt	3/4	39.3	Pass
		Bottom Girt	3/4	2.8	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
		Mid Girt	3/4	1.2	Pass
		Guy A@239.333	5/8	79.7	Pass
		Guy B@239.333	5/8	79.5	Pass
		Guy C@239.333	5/8	79.5	Pass
T10	220 - 200	Leg	1 1/2	80.2	Pass
		Diagonal	9/16	84.2	Pass
		Top Girt	3/4	1.9	Pass
		Bottom Girt	3/4	23.7	Pass
		Mid Girt	3/4	3.5	Pass
T11	200 - 197	Leg	1 1/2	94.7	Pass
		Diagonal	9/16	81.7	Pass
		Top Girt	3/4	71.2	Pass
T12	197 - 194.667	Leg	1 1/2	**111.6**	**Fail**
		Diagonal	9/16	68.5	Pass
		Top Girt	C3x6	28.3	Pass
T13	194.667 - 192.333	Leg	1 1/2	**110.5**	**Fail**
		Diagonal	9/16	68.5	Pass
		Top Girt	C3x6	21.9	Pass
		Guy A@194.667	1/2	73.0	Pass
		Guy B@194.667	1/2	72.0	Pass
		Guy C@194.667	1/2	73.2	Pass
		Torque Arm Top@194.667	L3x3x1/2	8.9	Pass
		Torque Arm Bottom@194.667	L3x3x1/2	12.4	Pass
T14	192.333 - 190	Leg	1 1/2	97.4	Pass
		Diagonal	9/16	74.3	Pass
		Top Girt	C3x6	24.0	Pass
T15	190 - 187.667	Leg	1 1/2	81.6	Pass
		Diagonal	9/16	86.2	Pass
		Top Girt	3/4	64.3	Pass
T16	187.667 - 185.333	Leg	1 1/2	74.6	Pass
		Diagonal	9/16	71.4	Pass
T17	185.333 - 183	Leg	1 1/2	67.7	Pass
		Diagonal	9/16	65.1	Pass
T18	183 - 180	Leg	1 1/2	66.3	Pass
		Diagonal	9/16	91.2	Pass
		Bottom Girt	3/4	17.6	Pass
T19	180 - 160	Leg	1 1/2	72.4	Pass
		Diagonal	9/16	93.7	Pass
		Top Girt	3/4	19.5	Pass
		Bottom Girt	3/4	0.7	Pass
		Mid Girt	3/4	1.1	Pass
T20	160 - 140	Leg	1 1/2	77.7	Pass
		Diagonal	9/16	66.9	Pass
		Top Girt	3/4	1.5	Pass
		Bottom Girt	3/4	15.1	Pass
		Mid Girt	3/4	1.1	Pass
T21	140 - 120	Leg	1 1/2	91.8	Pass
		Diagonal	9/16	72.4	Pass

Section No.	Elevation ft	Component Type	Size	% Capacity*	Pass Fail
		Top Girt	3/4	27.0	Pass
		Bottom Girt	3/4	10.4	Pass
		Mid Girt	3/4	2.4	Pass
		Guy A@139.333	1/2	76.5	Pass
		Guy B@139.333	1/2	76.4	Pass
		Guy C@139.333	1/2	76.6	Pass
T22	120 - 100	Leg	1 1/2	96.9	Pass
		Diagonal	9/16	58.6	Pass
		Top Girt	3/4	6.9	Pass
		Bottom Girt	3/4	8.1	Pass
		Mid Girt	3/4	1.3	Pass
T23	100 - 80	Leg	1 3/4	68.6	Pass
		Diagonal	5/8	88.8	Pass
		Top Girt	3/4	10.2	Pass
		Bottom Girt	3/4	23.4	Pass
		Mid Girt	3/4	2.0	Pass
T24	80 - 60	Leg	1 3/4	83.6	Pass
		Diagonal	5/8	91.5	Pass
		Top Girt	3/4	26.4	Pass
		Bottom Girt	3/4	21.8	Pass
		Mid Girt	3/4	47.5	Pass
		Guy A@70	1/2	56.8	Pass
		Guy B@70	1/2	55.6	Pass
		Guy C@70	1/2	56.8	Pass
		Torque Arm Top@70	L3x3x1/2	6.9	Pass
		Torque Arm Bottom@70	L3x3x1/2	7.3	Pass
T25	60 - 40	Leg	1 3/4	82.4	Pass
		Diagonal	5/8	64.4	Pass
		Top Girt	3/4	18.4	Pass
		Bottom Girt	3/4	7.0	Pass
		Mid Girt	3/4	2.3	Pass
T26	40 - 20	Leg	1 3/4	85.5	Pass
		Diagonal	5/8	27.6	Pass
		Top Girt	3/4	5.8	Pass
		Bottom Girt	3/4	1.5	Pass
		Mid Girt	3/4	2.4	Pass
T27	20 - 5.33334	Leg	1 3/4	87.6	Pass
		Diagonal	5/8	24.2	Pass
		Top Girt	3/4	3.5	Pass
		Mid Girt	3/4	5.2	Pass
T28	5.33334 - 0	Leg	1 3/4	89.4	Pass
		Diagonal	5/8	12.6	Pass
		Top Girt	3/4	63.3	Pass

* Capacities include 1/3 allowable stress increase for wind per *TIA/EIA-222-F*.

Table 4 - Maximum Base Reactions

	Current Analysis* *(TIA/EIA-222-F)*		Original Design *(TIA/EIA-222-F)*	
Reaction	Horizontal	Vertical	Horizontal	Vertical
Tower Base	2 k	142 k	4 k	87 k
Anchor	47 k	36 k	52 k	38 k

*Foundation adequate based on independent analysis.

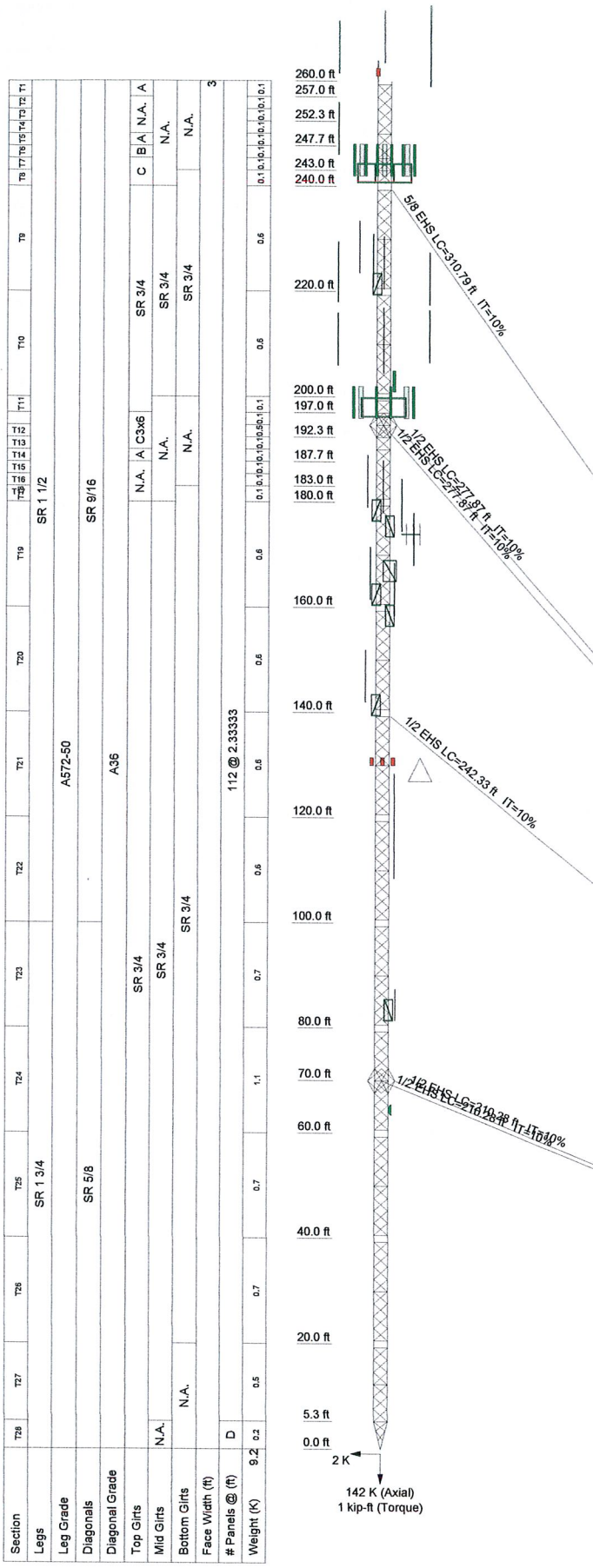
GENERAL COMMENTS

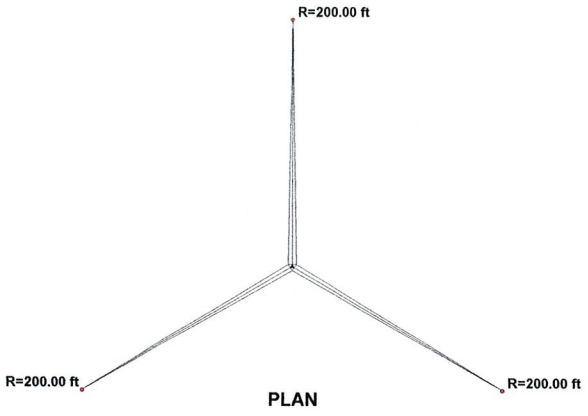
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

LIMITATIONS

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

APPENDIX





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	260	(3) 10' Standoffs	218
Flash Beacon Lighting	260	731DG85V1EXM w/ Mount Pipe	203
Telewave 21' x 2.5" omni	258	(2) Clear Comm 7.5" x 4" x 4" TMA	203
Antel 11.5' x 2.5" omni	258	(2) 14" x 9" x 2.5" TMA	203
Radio Labs SRL480 omni	258	BXA-80063/4CF w/ Mount Pipe	198
14' x 2.5" omni	258	BXA-80063/4CF w/ Mount Pipe	198
21' x 2.4" omni	258	BXA-80063/4CF w/ Mount Pipe	198
4" x 13.75" x 3" TMA	258	BXA-185063/8CF w/ Mount Pipe	198
(3) 10' Standoffs	258	BXA-185063/8CF w/ Mount Pipe	198
24" x 20" x 11" TMA	255	BXA-185063/8CF w/ Mount Pipe	198
(2) Powerwave 7770 w/ Mount Pipe	242.5	(3) 10' T-Frames	198
(2) Powerwave 7770 w/ Mount Pipe	242.5	Empty Mount Pipe	198
(2) Powerwave 7770 w/ Mount Pipe	242.5	Empty Mount Pipe	198
AM-X-CD-16-65-00T-RET w/ Mount Pipe	242.5	Empty Mount Pipe	198
AM-X-CD-16-65-00T-RET w/ Mount Pipe	242.5	PG1N0F-0090-310	178.5
800 10764 w/ Mount Pipe	242.5	27" Standoff	178.5
(4) LGP21401 TMA	242.5	Andrew 11.5' x 3" omni	177.5
(4) LGP21401 TMA	242.5	48" Standoff	177.5
(4) LGP21401 TMA	242.5	Scala 9 Element Yagi (27" x 7")	175.5
(2) RRUS-11	242.5	8' x 1" omni	175.5
(2) RRUS-11	242.5	Radio Labs SRL 6139	175.5
(2) RRUS-11	242.5	36" Standoff	175.5
Andrew ABT-DF-DMADBH Surge Arrestor	242.5	6.5" x 20.5" x 4.5" TMA	174.5
DC6-48-60-18-8F Surge Arrestor	242.5	22" x .75" GPS	173.5
(3) 12.5' T-Frames	242.5	17" Standoff	173.5
Empty Mount Pipe	242.5	13.5' x 1.8" omni	167
Empty Mount Pipe	242.5	72" Standoff	167
Empty Mount Pipe	242.5	8' x 1" omni	162.5
11.5' x 2.4" omni	226	18" Standoff	162.5
13.5' x 2.4" Pipe Mount	226	Andrew 11'2" x 3" omni	158.5
14' x 2.4" omni	221.5	15" Standoff	158.5
4.5' Standoff	221.5	11.5' x 2.4" omni	141.5
7.5' x 2.4" omni	218	15" Standoff	141.5
Decibel 11' x 3" omni	218	Sidemarker	130
Antel BCD 8706 NE omni	218	Sidemarker	130
11.5' x 2.4" omni	218	Sidemarker	130
Decibel 11' x 3" omni	218	Shivley 20' x 2.5' 3 Bay FM	118.5
Celwave 458-2 Omni	218	(4) 16" Standoffs	118.5
Decibel 14' x 3" omni	218	Shivley 4' x 2.5' 1-Bay FM	83.5
Decibel 11.5' x 3" omni	218	20" Standoff	83.5
		12.5" x 9" TMA	66.5
		Radiowaves SP2-2.4NS Dish	64.5

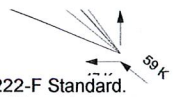
SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	SR 3/4	C	C3x6
B	N.A.	D	3 @ 1.77778

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES



1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 111.6%

FDH Engineering, Inc.
6521 Meridien Drive
Raleigh, NC 27616
Phone: (919) 755-1012
FAX: (919) 755-1031
Tower Analysis

Job: Torrington 2 CT02303-A		
Project: 12-08779E S1 (R1)		
Client: SBA Network Services	Drawn by: Daniel Chang	App'd:
Code: TIA/EIA-222-F	Date: 10/12/12	Scale: NTS
Path: \\FDH-SERVER\Projects\2012 Projects\8 - August\12-08779E\Torrington 2_CT\S1- SA_ATT\Analysis\R1\Torrington 2.eri		Dwg No. E-1

THE MODIFICATIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED BY FDH ENGINEERING, INC., PROJECT NO. 12-08779E S1 (R1) DATED OCTOBER 23, 2012.

THIS REPORT WAS BASED ON A SPECIFIC ANTENNA AND COAX CONFIGURATION PROVIDED BY THE TOWER OWNER, ANY CHANGE TO THIS INFORMATION MUST BE REVIEWED BY FDH ENGINEERING, INC.

ALL DIMENSIONS, MEASUREMENTS, QUANTITIES, PART NUMBERS AND COAX/ANTENNA PLACEMENTS TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO MATERIAL ORDERS AND CONSTRUCTION.

PROJECT DESCRIPTION:

MODIFICATION DRAWINGS FOR A 260' GUYED TOWER

SITE NAME:

TORRINGTON 2

SITE NUMBER:

CT02303-A

SITE ADDRESS:
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

COORDINATES:
LATITUDE: 41.8026°
LONGITUDE: -73.1647°

SHEET INDEX

SHT. NO.	DESCRIPTION
T-1	TITLE SHEET
N-1	POST CONSTRUCTION INSPECTION NOTES
N-2	GENERAL NOTES
S-1	MODIFICATION SCHEDULE
S-2	DIAGONAL REINFORCEMENT DETAILS I
S-3	DIAGONAL REINFORCEMENT DETAILS II
S-4	PULSE CHARTS

PREPARED BY:
FDH
6521 MERIDIEN DRIVE
RALEIGH, NC 27616
PHONE: 919-755-1012
FAX: 919-755-1031
ENGINEERING INNOVATION

PREPARED FOR:
SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC. NO. 25842

DRAWN BY:	JMR
CHECKED BY:	DMC
ENG APPV'D:	CMM
PROJECT NO:	12-08779E S3

SUBMITTALS

DATE	DESCRIPTION	REV
12/18/12	PRELIMINARY/REVIEW	A

SITE NAME:
TORRINGTON 2

SITE NUMBER:
CT02303-A

SITE ADDRESS:
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

PCI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED	REPORT ITEM
PRE-CONSTRUCTION	
X	PCI CHECKLIST DRAWING
N/A	EOR APPROVED SHOP DRAWINGS
N/A	FABRICATION INSPECTION
X	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
N/A	FABRICATOR NDE INSPECTION
N/A	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
CONSTRUCTION	
X	CONSTRUCTION INSPECTIONS
N/A	FOUNDATION INSPECTIONS
N/A	CONCRETE COMP. STRENGTH AND SLUMP TESTS
N/A	POST INSTALLED ANCHOR ROD VERIFICATION
N/A	BASE PLATE GROUT VERIFICATION
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION
N/A	EARTHWORK: LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
X	GUY WIRE TENSION REPORT
X	GC AS-BUILT DOCUMENTS
ADDITIONAL TESTING AND INSPECTIONS:	
POST-CONSTRUCTION	
X	PCI INSPECTOR REDLINE OR RECORD DRAWING(S)
N/A	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE PCI REPORT
N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE PCI REPORT

POST CONSTRUCTION INSPECTION NOTES:

GENERAL

1. THE POST CONSTRUCTION INSPECTION (PCI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).
2. THE PCI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE PCI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.
3. ALL PCI'S SHALL BE CONDUCTED BY A PCI INSPECTOR THAT IS APPROVED TO PERFORM ELEVATED WORK FOR FDH ENGINEERING, INC.
4. TO ENSURE THAT THE REQUIREMENTS OF THE PCI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE PCI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR FDH POINT OF CONTACT (PDC).
5. REFER TO CCR-01 : CONTRACTOR CLOSEOUT REQUIREMENTS FOR FURTHER DETAILS AND REQUIREMENTS.

PCI INSPECTOR

1. THE PCI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE PCI TO, AT A MINIMUM:
   - REVIEW THE REQUIREMENTS OF THE PCI CHECKLIST
   - WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
2. THE PCI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE PCI REPORT TO FDH.

CORRECTION OF FAILING PCI'S

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE PCI ("FAILED PCI"), THE GC SHALL WORK WITH FDH TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:
   - CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT PCI.
   - OR, WITH FDH'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE PCI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE PCI REPORT:
   - PRE-CONSTRUCTION GENERAL SITE CONDITION
   - PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
     - RAW MATERIALS
     - PHOTOS OF ALL CRITICAL DETAILS
     - FOUNDATION MODIFICATIONS
     - WELD PREPARATION
     - BOLT INSTALLATION AND TORQUE
     - FINAL INSTALLED CONDITION
     - SURFACE COATING REPAIR
   - POST CONSTRUCTION PHOTOGRAPHS
     - FINAL INFIELD CONDITION
2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

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PREPARED FOR:
SBA
5900 BROKEN SOUND PARKWAY, NW
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DATE	DESCRIPTION	REV
12/18/12	PRELIMINARY/REVIEW	A

SITE NAME:
TORRINGTON 2

SITE NUMBER:
CT02303-A

SITE ADDRESS:
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

SHEET TITLE
POST CONSTRUCTION INSPECTION NOTES

SHEET NUMBER
N-1

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS AND EXISTING CONDITIONS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO FDH ENGINEERING FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
3. INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO FDH ENGINEERING PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE FDH ENGINEERING APPROVAL.
4. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER THE COMPLETION OF THE PROJECT.
5. CONTRACTOR SHALL PROMPTLY REMOVE ANY & ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRECONSTRUCTION CONDITION.

CONTRACTOR QUALIFICATION NOTES:

1. ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE TIA/EIA 222-F "STRUCTURAL STANDARD FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
2. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, FDH ENGINEERING, INC. IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
3. ALL SUBMITTAL INFORMATION MUST BE SENT TO FDH ENGINEERING, INC. 6521 MERIDIEN DRIVE, RALEIGH NC, 27616, TEL. (919) 755-1012, FAX. (919) 755-1031, E-MAIL INFO@FDH-INC.COM. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM FDH ENGINEERING, INC. WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS FDH ENGINEERING, INC.

JOB SITE SAFETY & NOTES:

1. NEITHER THE PROFESSIONAL ACTIVITIES OF FDH ENGINEERING, INC. NOR THE PRESENCE OF FDH ENGINEERING, INC. OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE GENERAL CONTRACTOR AND OR SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTS THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

SUBSTITUTES AND/OR EQUALS:

1. IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL FIRST MAKE WRITTEN APPLICATION TO ENGINEER OF RECORD FOR ACCEPTANCE THEREOF, CERTIFYING THAT THE PROPOSED SUBSTITUTE WILL PERFORM ADEQUATELY THE FUNCTIONS AND ACHIEVE THE RESULTS CALLED FOR BY THE GENERAL DESIGN, BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION AND AVAILABLE MAINTENANCE, REPAIR AND REPLACEMENT SERVICE WILL BE INDICATED. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE INCLUDING COSTS OF REDESIGN AND CLAIMS OF OTHER CONTRACTORS AFFECTED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY ENGINEER OF RECORD IN EVALUATION OF THE PROPOSED SUBSTITUTE. ENGINEER OF RECORD MAY REQUIRE CONTRACTOR TO FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

STEEL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.

   *ALL STEEL ANGLE SHALL BE ASTM A36 (Fy=36KSI) UNLESS OTHERWISE SPECIFIED.

   *ALL STEEL PLATE SHALL BE ASTM A36 (Fy=36KSI) UNLESS OTHERWISE SPECIFIED.

   *ALL V-BOLTS TO BE MADE OF ASTM A36 (Fy=36KSI) UNLESS OTHERWISE SPECIFIED.
2. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE (UNLESS OTHERWISE NOTED).
3. ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE SPECIFIED. WHEN "X" TYPE BOLTS ARE USED, CONTRACTOR MAY BE REQUIRED TO STACK ADDITIONAL WASHERS TO OBTAIN PROPER SNUG TIGHT INSTALLATION. ALL NUTS SHALL BE HEAVY HEX UNLESS OTHERWISE NOTED.
4. ALL STEEL, AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH MULTIPLE COATS OF ZRC COLD GALVANIZING COMPOUND ACHEIVING A MINIMUM OF 4 MILS DRY FILM PER ASTM A 780.
5. ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED. CONTRACTOR IS REQUIRED TO PROVIDE FDH ENGINEERING, INC. WITH A PASSING CERTIFIED WELDING INSPECTION FOR ALL WELDS.
6. STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.

MISC. NOTES:

1. ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
2. CONTRACTOR FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

FABRICATION NOTES:

1. ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
2. NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.

GUY WIRE SPECIFICATIONS:

1. ADJUST INITIAL TENSION AS REQUIRED FOR TEMPERATURE CONDITIONS UPON INSTALLATION OF GUY WIRES. CONTACT ENGINEER OF RECORD IF NECESSARY.
2. UPON INSTALLATION OF NEW GUY WIRES, CONTRACTOR IS RESPONSIBLE FOR ENSURING PLUMB AND TENSION OF ALL GUY WIRES ARE WITHIN TIA/EIA-222-F SPECIFICATIONS.
3. ALL NEW GUY WIRE HARDWARE SHALL BE PROVIDED BY CONTRACTOR AS NOTED.
4. ANCHOR DROPOFFS AND RADII MAY VARY. CONTRACTOR TO PERFORM SITE VISIT PRIOR TO MATERIAL ORDERS.
5. CONTRACTOR MAY BE REQUIRED TO BORE EXISTING FAN PLATE AND/OR GUY LUG HOLES TO ENSURE PROPER FIT OF NEW HARDWARE. CONTRACTOR MUST CONTACT FDH PROJECT MANAGER PRIOR TO BORING FAN PLATE HOLES.

PREPARED BY:

FDH ENGINEERING INNOVATION

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RALEIGH, NC 27616
PHONE: 919-755-1012
FAX: 919-755-1031

PREPARED FOR:

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BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC. NO. 25842

DRAWN BY:	JMR
CHECKED BY:	DMC
ENG APPV'D:	CMM
PROJECT NO:	12-08779E S3

SUBMITTALS

DATE	DESCRIPTION	REV
12/18/12	PRELIMINARY/REVIEW	A

SITE NAME:
TORRINGTON 2

SITE NUMBER:
CT02303-A

SITE ADDRESS:
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
N-2

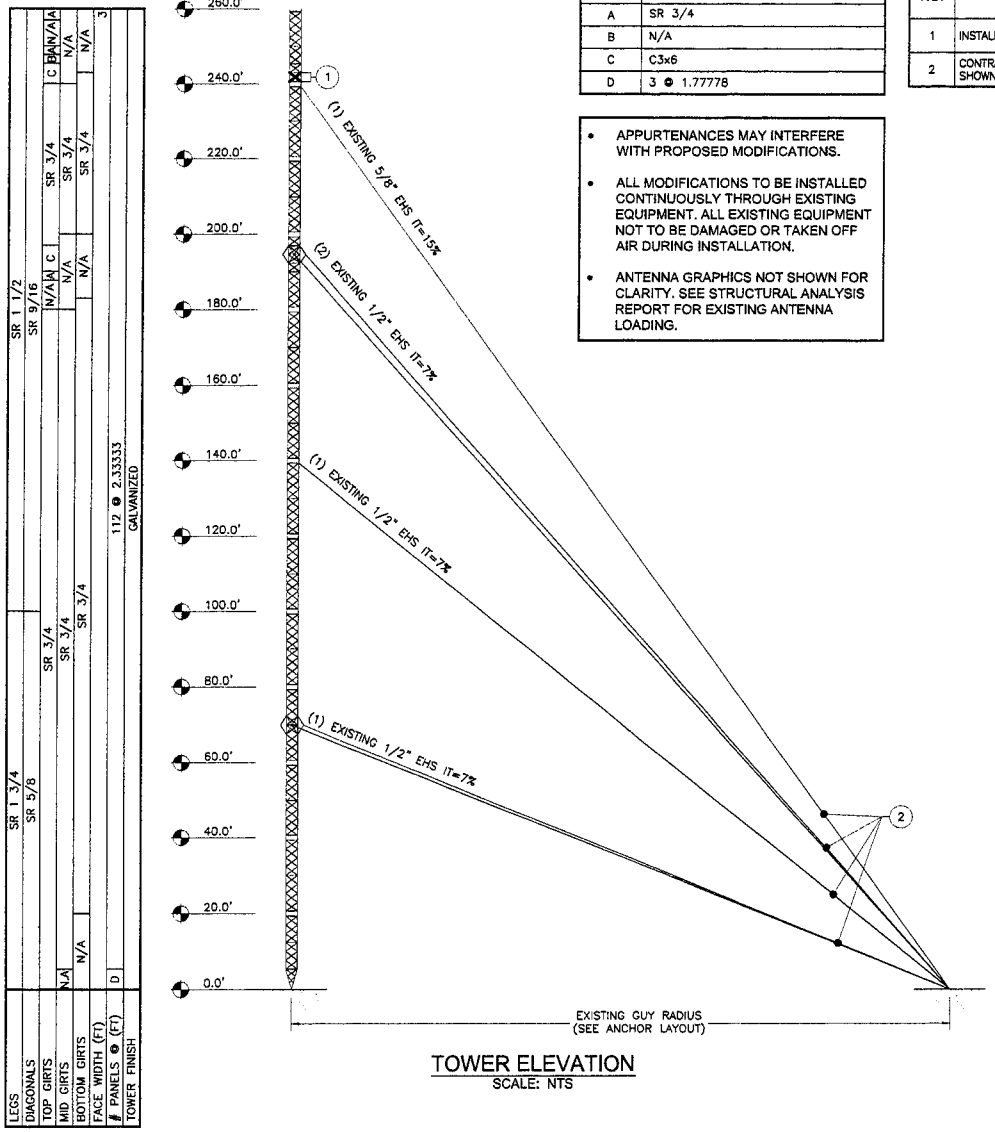
MEMBER SIZE KEY

MARK	SIZE
A	SR 3/4
B	N/A
C	C3x6
D	3 @ 1.77778

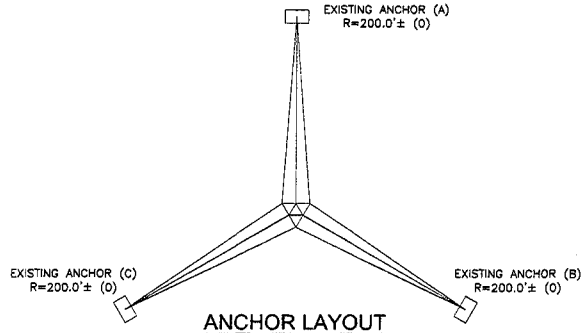
- APPURTENANCES MAY INTERFERE WITH PROPOSED MODIFICATIONS.
- ALL MODIFICATIONS TO BE INSTALLED CONTINUOUSLY THROUGH EXISTING EQUIPMENT. ALL EXISTING EQUIPMENT NOT TO BE DAMAGED OR TAKEN OFF AIR DURING INSTALLATION.
- ANTENNA GRAPHICS NOT SHOWN FOR CLARITY. SEE STRUCTURAL ANALYSIS REPORT FOR EXISTING ANTENNA LOADING.

TOWER MODIFICATION SCHEDULE

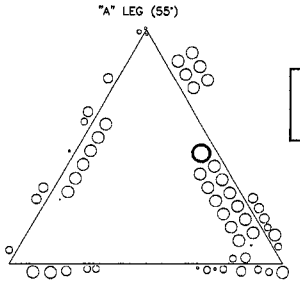
NO.	TYPE OF MODIFICATION	BOTTOM ELEV. (FT)	TOP ELEV. (FT)
1	INSTALLATION OF ANGLE DIAGONAL REINFORCEMENT. SEE S-2 AND S-3 FOR DETAILS.	240.7±	243.0±
2	CONTRACTOR TO PLUMB TOWER AND TENSION ALL GUY WIRES TO INITIAL TENSIONS (IT) AS SHOWN. SEE S-4 FOR DETAILS.	–	VARIES



TOWER ELEVATION
SCALE: NTS



ANCHOR LAYOUT
SCALE: NTS



COAX LAYOUT
SCALE: NTS

SEE STRUCTURAL ANALYSIS FOR COAX INFORMATION

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CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC. NO. 25842

DRAWN BY:	JMR
CHECKED BY:	DMC
ENG APPV'D:	CMM
PROJECT NO:	12-08779E S3

SUBMITTALS		
DATE	DESCRIPTION	REV
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SITE NAME:
TORRINGTON 2

SITE NUMBER:
CT02303-A

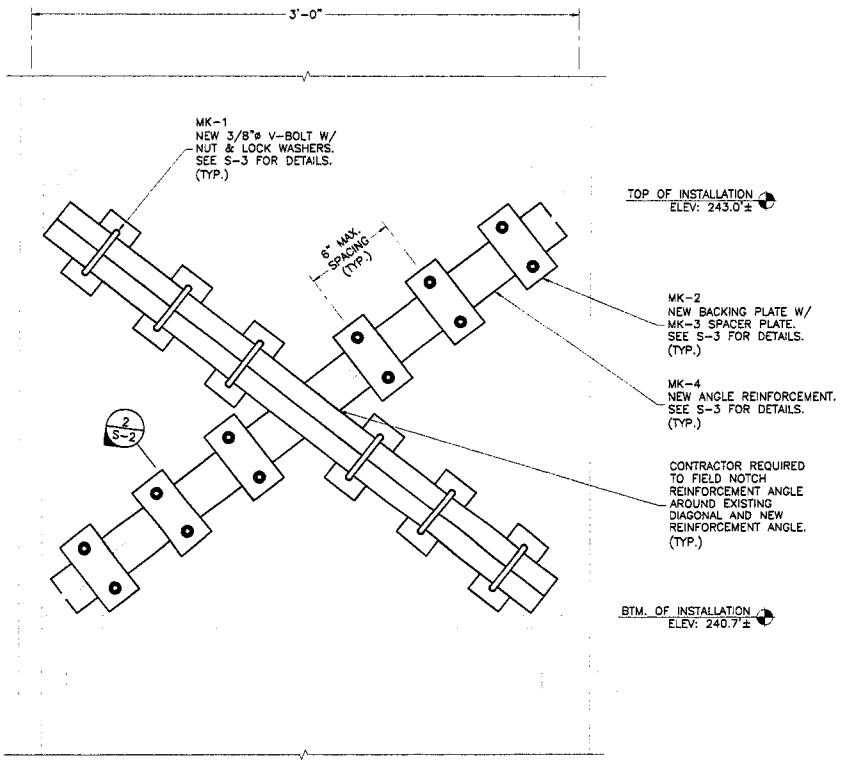
SITE ADDRESS:
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

SHEET TITLE
MODIFICATION SCHEDULE

SHEET NUMBER
S-1

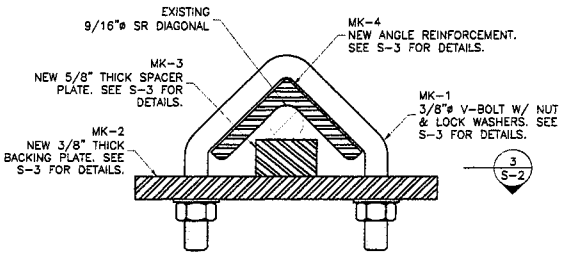
DIAGONAL REINFORCEMENT MATERIAL LIST

PART #	QTY.	DESCRIPTION
MK-1	36	3/8"ø V-BOLT
MK-2	36	3/8" THICK BACKING PLATE
MK-3	36	5/8" THICK SPACER PLATE
MK-4	6	L1 3/4X1 3/4X1/4
–	72	3/8"ø NUTS W/ LOCK WASHERS
1 BAY REQUIRES DIAGONAL REINFORCEMENT		



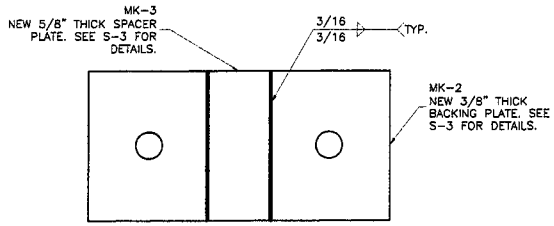
DIAGONAL REINFORCEMENT LAYOUT
ELEVATION VIEW

1 / S-2 ELEVATION
SCALE: 1 1/2" = 1'-0"



V-BRACKET ASSEMBLY AT 9/16"Ø SR DIAGONAL
SECTION VIEW

2 / S-2 SECTION
SCALE: 6" = 1'-0"



BACKING PLATE & SPACER PLATE ASSEMBLY
PLAN VIEW

3 / S-2 DETAIL
SCALE: 6" = 1'-0"

PREPARED BY:
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FOR BID ONLY

CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC. NO. 25842

DRAWN BY:	JMR
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ENG APPV'D:	CMM
PROJECT NO:	12-08779E S3

SUBMITTALS

DATE	DESCRIPTION	REV
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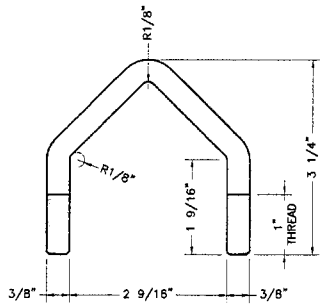
CT02303-A

SITE ADDRESS:
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

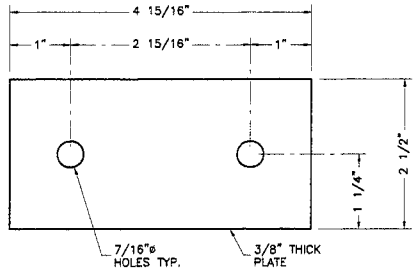
SHEET TITLE
DIAGONAL REINFORCEMENT DETAILS I

SHEET NUMBER
S-2



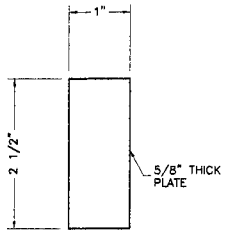
V-BOLT
FRONT VIEW

MK-1 / S-3 DETAIL
SCALE: 6" = 1'-0"



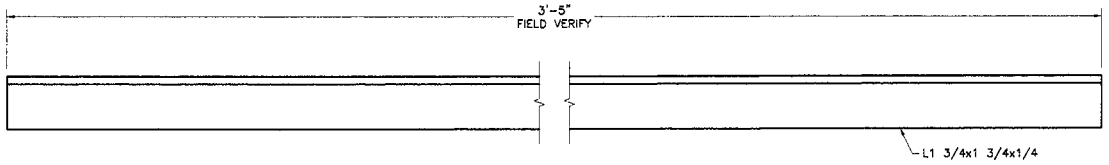
BACKING PLATE
FRONT VIEW

MK-2 / S-3 DETAIL
SCALE: 6" = 1'-0"



SPACER PLATE
FRONT VIEW

MK-3 / S-3 DETAIL
SCALE: 6" = 1'-0"



ANGLE REINFORCEMENT
FRONT VIEW

MK-4 / S-3 DETAIL
SCALE: 3" = 1'-0"

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FOR BID ONLY

CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC. NO. 25842

DRAWN BY:	JMR
CHECKED BY:	DMC
ENG APPV'D:	CMM
PROJECT NO:	12-08779E S3

SUBMITTALS

DATE	DESCRIPTION	REV
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CT02303-A

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TORRINGTON, CT 06790

SHEET TITLE
DIAGONAL REINFORCEMENT DETAILS II

SHEET NUMBER
S-3

GUY #	HEIGHT (ft.)	DIA. (in)	RADIUS (ft.)	ANCHOR ELEV. (ft.)	GUY LENGTH (ft.)
1	239.333	5/8" EHS	200	0	311.9

Initial Tension	Temp. (F)	Guy tension (kips)	(KN)	Time For 10 Pulses(Seconds)
15%	0	7.32	32.56	11.58
	10	7.16	31.85	11.71
	20	7.00	31.14	11.85
	30	6.84	30.43	11.98
	40	6.68	29.71	12.13
	50	6.52	29.00	12.28
	60	**6.36**	**28.29**	**12.43**
	70	6.20	27.58	12.59
	80	6.04	26.86	12.75
	90	5.88	26.15	12.93
	100	5.72	25.44	13.11

GUY #	HEIGHT (ft.)	DIA. (in)	RADIUS (ft.)	ANCHOR ELEV. (ft.)	GUY LENGTH (ft.)
2 & 3	194.667	1/2" EHS	200	0	279.1

Initial Tension	Temp. (F)	Guy tension (kips)	(KN)	Time For 10 Pulses(Seconds)
7%	0	2.65	11.78	13.74
	10	2.52	11.21	14.09
	20	2.39	10.65	14.46
	30	2.27	10.08	14.86
	40	2.14	9.51	15.30
	50	2.01	8.94	15.77
	60	**1.88**	**8.38**	**16.30**
	70	1.76	7.81	16.88
	80	1.63	7.24	17.53
	90	1.50	6.67	18.26
	100	1.37	6.10	19.09

GUY #	HEIGHT (ft.)	DIA. (in)	RADIUS (ft.)	ANCHOR ELEV. (ft.)	GUY LENGTH (ft.)
4	139.333	1/2" EHS	200	0	243.7

Initial Tension	Temp. (F)	Guy tension (kips)	(KN)	Time For 10 Pulses(Seconds)
7%	0	2.89	12.84	11.50
	10	2.72	12.10	11.84
	20	2.55	11.35	12.23
	30	2.39	10.61	12.65
	40	2.22	9.86	13.12
	50	2.05	9.12	13.64
	60	**1.88**	**8.38**	**14.24**
	70	1.72	7.63	14.91
	80	1.55	6.89	15.70
	90	1.38	6.14	16.62
	100	1.21	5.40	17.73

GUY #	HEIGHT (ft.)	DIA. (in)	RADIUS (ft.)	ANCHOR ELEV. (ft.)	GUY LENGTH (ft.)
5 & 6	70	1/2" EHS	200	0	211.9

Initial Tension	Temp. (F)	Guy tension (kips)	(KN)	Time For 10 Pulses(Seconds)
7%	0	3.21	14.29	9.48
	10	2.99	13.30	9.82
	20	2.77	12.32	10.20
	30	2.55	11.33	10.64
	40	2.33	10.35	11.13
	50	2.10	9.36	11.71
	60	**1.88**	**8.38**	**12.38**
	70	1.66	7.39	13.17
	80	1.44	6.41	14.15
	90	1.22	5.42	15.38
	100	1.00	4.43	17.01

PULSE CHARTS

1 / S-4 ANCHORS "A", "B", AND "C"

NTS

ANCHOR DROPOFFS AND RADII MAY VARY. CONTRACTOR TO PERFORM SITE VISIT PRIOR TO MATERIAL ORDERS.

THE CONTRACTOR SHALL CLEARLY LABEL ALL GUY WIRES AT GUY ANCHORS INDICATING THE PERCENT BREAKING STRENGTH THE GUY WIRES ARE TENSIONED. CONTACT TOWER OWNER FOR PREFERRED LABELING PROCEDURE.

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BOCA RATON, FL 33487
(800) 487-SITE

FOR BID ONLY

CHRISTOPHER M. MURPHY, PE
CONNECTICUT LIC. NO. 25842

DRAWN BY:	JMR
CHECKED BY:	DMC
ENG APPV'D:	CMM
PROJECT NO:	12-08779E S3

SUBMITTALS

DATE	DESCRIPTION	REV
12/18/12	PRELIMINARY/REVIEW	A

SITE NAME:
TORRINGTON 2

SITE NUMBER:
CT02303-A

SITE ADDRESS:
1210 HIGHLAND AVENUE
TORRINGTON, CT 06790

SHEET TITLE
PULSE CHARTS

SHEET NUMBER
S-4

C Squared Systems, LLC
65 Dartmouth Drive, Unit A3
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions

CT1253

(Torrington Highland Avenue)

1210 Highland Avenue, Torrington, CT 06790

January 14, 2013

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the guyed wire tower located at 1210 Highland Avenue in Torrington, CT. The coordinates of the tower are 41° 48' 9.42" N, 73° 9' 48.23" W.

AT&T is proposing the following modifications:

1) Install three multi-band (700/850/1900/2100 MHz) antennas for their LTE network (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical patterns of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
AT&T	*200*						
Cingular	*130*	*880*	*6*	*296*	*0.0378*	*0.5867*	*6.44%*
Cingular	*130*	*1930*	*3*	*427*	*0.0273*	*1.0000*	*2.73%*
Misc unidentified antennas	var.						AT&T took field measurements of power density levels on 2/8/2002
Nextel	200	851	9	100	0.0081	0.5673	
Marcus	60	5800	1	100	0.0100	1.0000	
Marcus	100	5800	1	100	0.0036	1.0000	
					Field Measurement		**25.50%**
AT&T UMTS	245	880	2	565	0.0007	0.5867	0.12%
AT&T UMTS	245	1900	2	875	0.0010	1.0000	0.10%
AT&T LTE	245	734	1	1615	0.0010	0.4893	0.20%
AT&T GSM	245	880	1	283	0.0002	0.5867	0.03%
AT&T GSM	245	1900	4	525	0.0013	1.0000	0.13%
						Total	**26.07%**

Table 1: Carrier Information[1] [2] [3]

[1] The existing CSC filing for AT&T and Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/26/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table. Blanks in Table 1 indicate where information is omitted in the CSC database.

[2] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

[3] Antenna height listed for AT&T is in reference to the FDH Engineering, Inc. Structural Analysis dated October 12, 2012.

5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **26.07% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.

Daniel L. Goulet
C Squared Systems, LLC

January 14, 2013
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[4]

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

(B) Limits for General Population/Uncontrolled Exposure[5]

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

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[4] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

[5] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

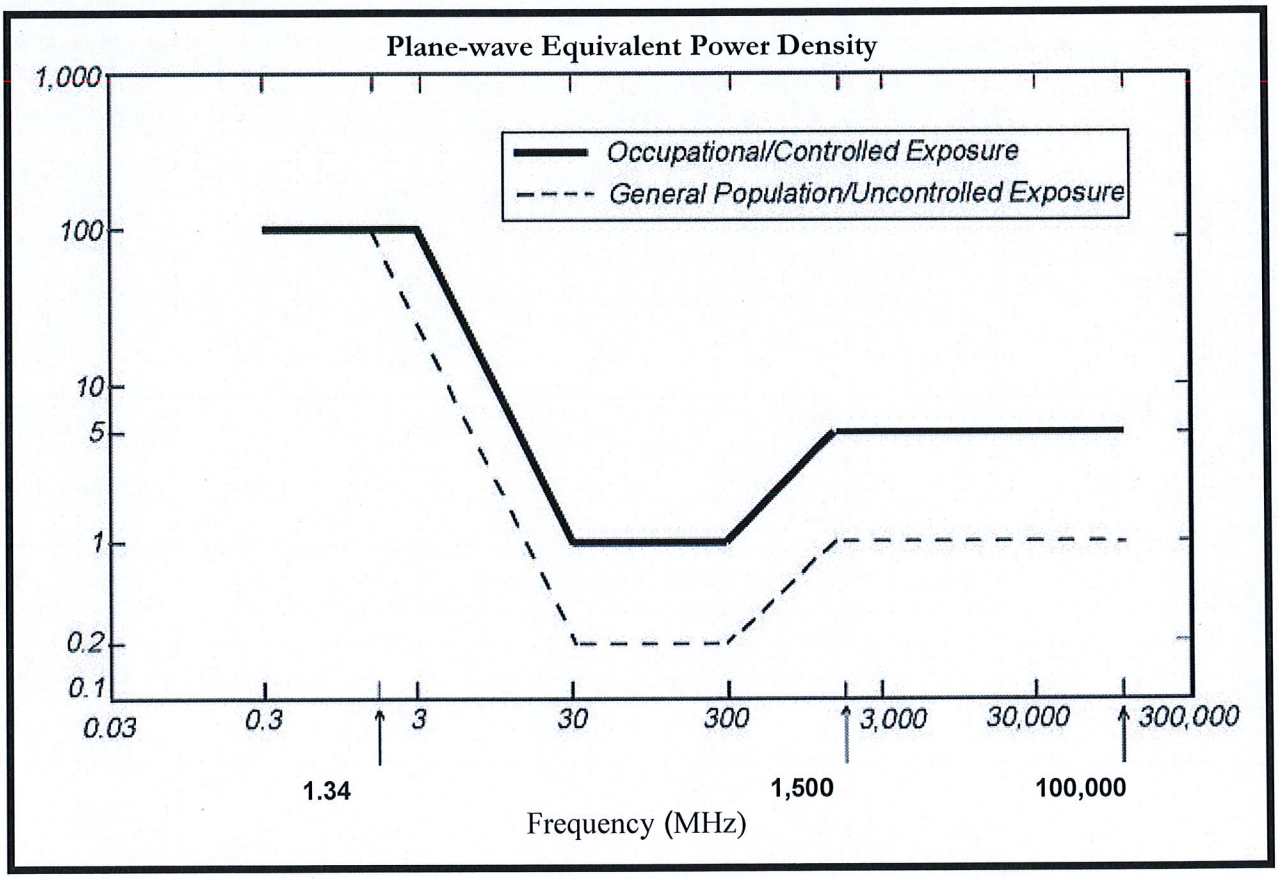
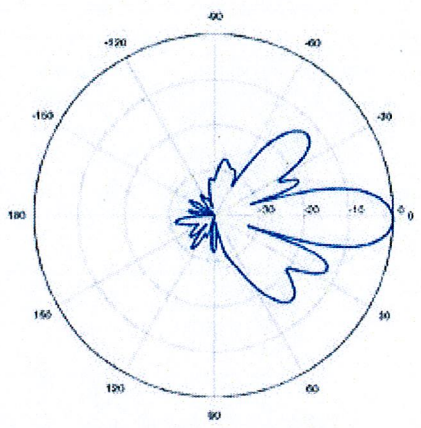


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

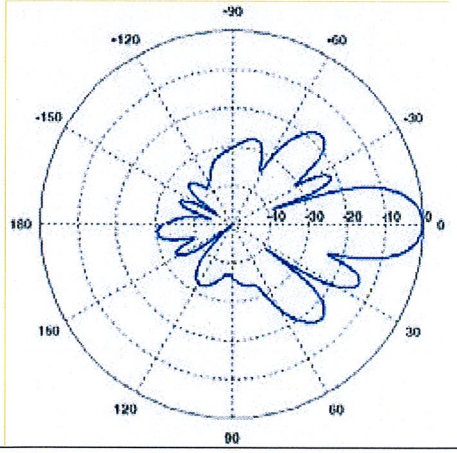
700 MHz

Manufacturer:	Kathrein Scala
Model #:	800 10764
Frequency Band:	698-806 MHz
Gain:	14.3 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	68°
Polarization:	± 45°
Size L x W x D:	55.2" x 11.8" x 6.0"



850 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	82°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"