



July 8, 2014

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

Regarding: Notice of Exempt Modification – Addition of 3 radio heads previously approved
Property Address: 2 Kaechele Place, Bridgeport, CT (the “Property”)
Applicant: New Cingular Wireless PCS, LLC (“AT&T”)

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 150 foot Monopole (“tower”) location on the Property. AT&T’s facility consists of nine (9) wireless telecommunications antenna at 154 feet. The tower was previously owned by AT&T and is now controlled by Crown Castle, LLC. The Council approved the previous application on December 9th 2011 reference number EM-CING-015-111107. This application (attached) granted AT&T the use of 6 radio heads at this location. The approval expired one year from the issue date. During that time AT&T made the changes to the site per the approval but only installed three (3) of the six (6) radio heads that they received approval. AT&T would now like to install the additional three(3) radio heads that were originally approved under EM-CING-015-111107.

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 Mayor, for the City of Bridgeport. A copy of this letter is also being sent to Crown Castle, LLC, the owner of the structure that AT&T is located.

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).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T’s additional, previously approved 3 radio heads will be installed at 154 foot level of the 150 foot monopole.
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 decibel 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 the Federal Communications Commission (FCC) safety



standard. An RF emissions calculation (attached) for AT&T's modified facility was provided in the application which led to the December 9th 2011 Decision.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by GPD GROUP dated September 23, 2011).

For the foregoing reasons AT&T respectfully requests that the proposed addition of 3 radio heads previously approved be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

A handwritten signature in cursive script that reads "David P. Cooper".

David P. Cooper
Director of Site Acquisition
Empire Telecom

CC: the Mayor, for the City of Bridgeport
Crown Castle, LLC

CT2106



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 9, 2011

Karina Fournier
Real Estate Consultant
New Cingular Wireless PCS, LLC
960 Turnpike Street, Suite 28
Canton, MA 02021

RE: **EM-CING-015-111107** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 2 Kaechele Place, Bridgeport, Connecticut.

Dear Ms. Fournier:

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:

- The tower and its foundation be modified in accordance with recommendations made in the Structural Analysis Report prepared by GDP Group dated September 23, 2011 and stamped by David Granger; and
- Prior to 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 tower and foundation will 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;
- Not less than 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;

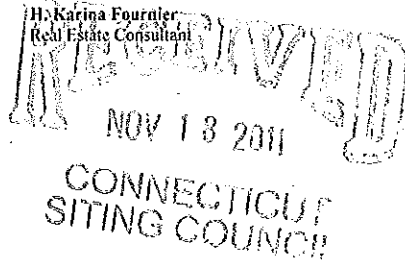
The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated November 3, 2011. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations 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





cingular

New Cingular Wireless PCS, LLC
960 Turnpike Street, Suite 28
Canton, MA 02021
Phone: (860) 796-3988
Fax: (617) 249-0819



November 18, 2011

Honorable Robert Stein, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051


Re: Request by New Cingular Wireless PCS, LLC for an Order Approving Shared Use of an Existing Tower located at 2 Kaechele Place Bridgeport, CT

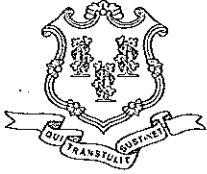
Dear Chairman Stein and Members of the Council:

Pursuant to Connecticut General Statutes Section 16-50aa, Cingular has requested an order approving shared use of the tower from the Connecticut Siting Council. The request should have been for an exempt modification pursuant to R.C.S.A 16-50j-73.

Please accept this letter as a request for the proper review. If you have any questions please contact me at 860-796-3988.

Sincerely,


H. Karina Fournier
Real Estate Consultant



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

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www.ct.gov/csc

November 9, 2011

The Honorable Bill Finch
Mayor
City of Bridgeport
City Hall Annex
999 Broad Street
Bridgeport, CT 06604

RE: **TS-CING-015-111107** -- New Cingular Wireless PCS, LLC Request for Approval of the Shared Use of an Existing tower at 2 Kaechele Place, Bridgeport, Connecticut.

Dear Mayor Finch:

The Connecticut Siting Council (Council) received this request for tower sharing, pursuant to Connecticut General Statutes § 16-50aa.

The Council will consider this item at the next meeting scheduled for December 1, 2011, at 1:00 p.m. in Hearing Room One, Ten Franklin Square, New Britain, Connecticut.

If you have any questions or comments regarding this proposal, please call me or inform the council by November 30, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Tower Sharing

c: Michael Nidoh, Planning Director, City of Bridgeport



at&t
Your world. Delivered.

cingular

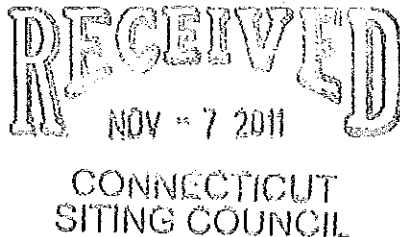
all

New Cingular Wireless PCS, LLC
960 Turnpike Street, Suite 28
Canton, MA 02021
Phone: (860) 796-3988
Fax: (617) 249-0819

Karina Fournier
Real Estate Consultant

November 3, 2011

Honorable Robert Stein, Chairman,
and Members of the Connecticut Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051



Re: Request by New Cingular Wireless PCS, LLC for an Order Approving Shared Use of an Existing tower at 2 Kaechele Place Bridgeport, CT.

Dear Chairman Stein and Members of the Council:

In order to accommodate technological changes, implement Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A Section 16-50j-73, of construction which 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 chief elected official of the municipality in which the affected cell site is located.

LTE is a new high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations of the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications 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 or altered. 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. The height of the overall structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the attachments
3. The proposed changes will not increase the noise level at the existing facility by six

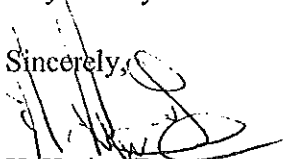
decibels or more.

4. LTE will utilize additional radio frequencies newly licensed by the FCC for cellular mobile communications. However, the changes 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.

For the foregoing reasons, New Cingular Wireless respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A Section 16-50j-72(b)(2).

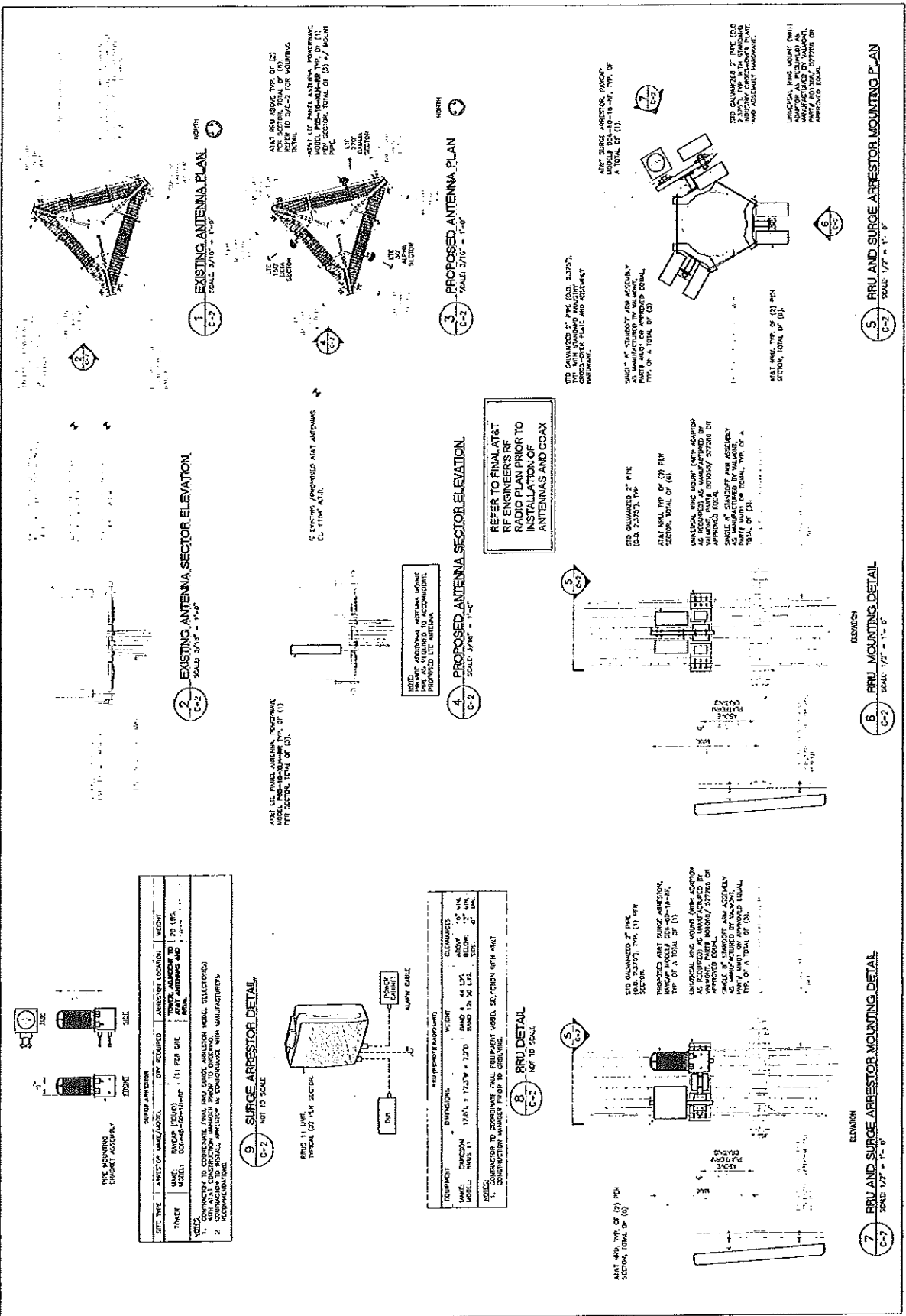
Please feel free to contact me at 860-796-3988 with questions concerning this matter. Thank you for your consideration.

Sincerely,



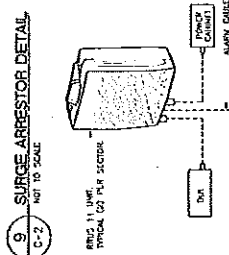
H. Karina Fournier
Real Estate Consultant

Attachments



SITE TYPE	ANTENNA MAKE/MODEL	DRY EQUIPMENT	ANTENNA LOCATION	WEIGHT
TRUCK	AVCAP (ROUND)	(1) PER SITE	TRUCK MOUNTED TO TRUCK	120 LBS.
	MODEL: DCP-44-60-10-4P			

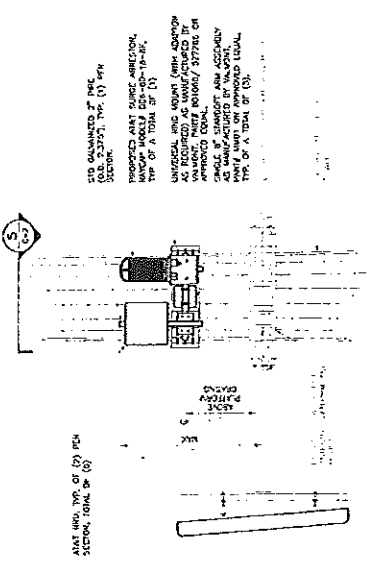
NOTES:
 1. ANTENNA TO BE MOUNTED ON THE TRUCK. ANTENNA MOUNTING SHALL BE PERFORMED BY THE CONTRACTOR.
 2. ANTENNA SHALL BE MOUNTED IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS.



EQUIPMENT	DIMENSIONS	WEIGHT	CLAIMANTS
AVCAP (ROUND)	17.8\"/>		

NOTES:
 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MOUNT DETAIL WITH AT&T ENGINEERS PRIOR TO CONSTRUCTION.

8. RRU DETAIL
 SCALE: 1/8" = 1'-0"
 NOT TO SCALE

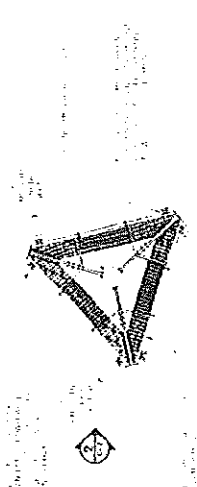


7. RRU AND SURGE ARRESTOR MOUNTING DETAIL
 SCALE: 1/8" = 1'-0"
 ELEVATION

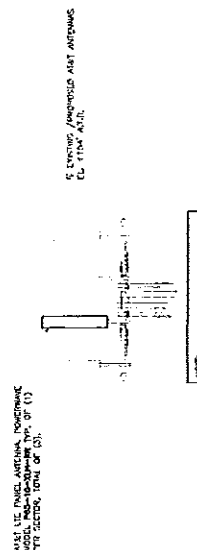
2. EXISTING ANTENNA SECTOR ELEVATION
 SCALE: 3/16" = 1'-0"
 C-2



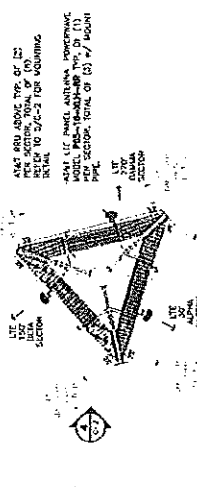
1. EXISTING ANTENNA PLAN
 SCALE: 3/16" = 1'-0"
 NORTH
 C-2



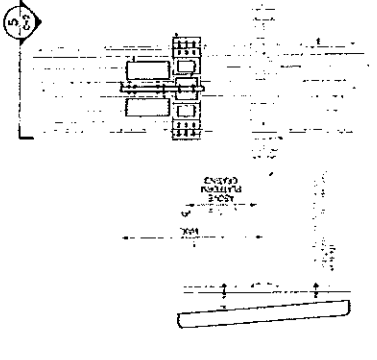
4. PROPOSED ANTENNA SECTOR ELEVATION
 SCALE: 3/16" = 1'-0"
 C-2



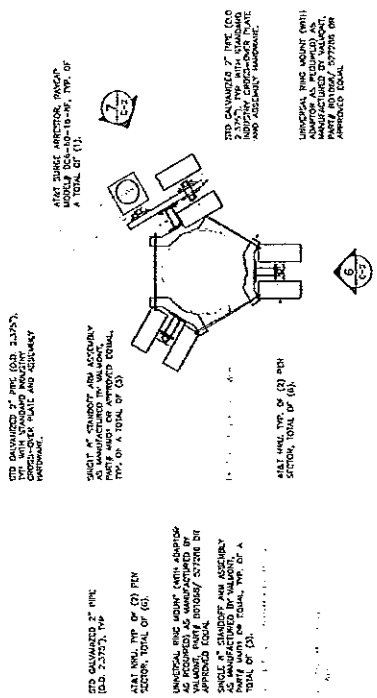
3. PROPOSED ANTENNA PLAN
 SCALE: 3/16" = 1'-0"
 NORTH
 C-2



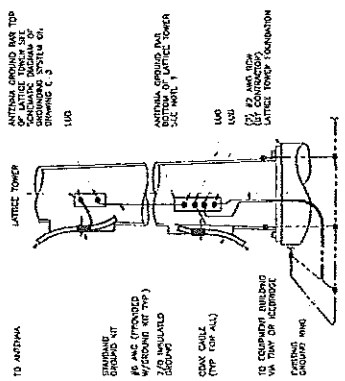
REFER TO FINAL AT&T RF ENGINEERS RF RADIO PLAN PRIOR TO INSTALLATION OF ANTENNAS AND COAX



6. RRU MOUNTING DETAIL
 SCALE: 1/8" = 1'-0"
 ELEVATION

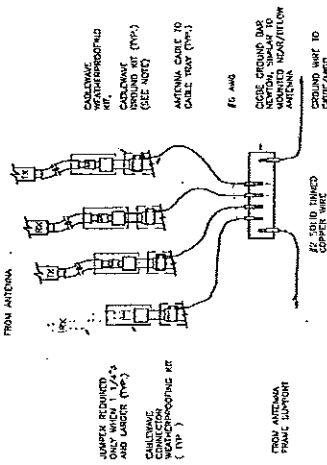


5. RRU AND SURGE ARRESTOR MOUNTING PLAN
 SCALE: 1/8" = 1'-0"
 C-2



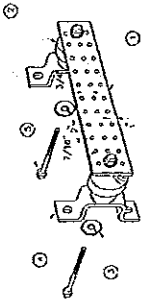
NOTE:
 1. NUMBER OF GROUND Wires MAY VARY ACCORDING TO THE TYPE OF TOWER.
 2. A SEPARATE GROUND BAR TO BE USED FOR ONE ANTENNA IF REQUIRED.

1. ANTENNA CABLE GROUNDING - MONOPOLE
 NOT TO SCALE



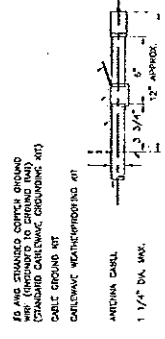
NOTE:
 1. DO NOT INSTALL CABLE GROUND KIT AT A DEEP AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND.

3. CONNECTION OF GROUND WIRES TO GROUND BAR
 NOT TO SCALE



LEGEND:
 1. FINISHED COPPER GROUND BAR, 1/4" x 4" x .075" NEWAL BRASS LUG CO. HOLE LOCATED TO MATCH INSULATOR. NEWTON INSTRUMENT CAT. NO. 2.
 2. INSULATOR, NEWTON INSTRUMENT CAT. NO. 2, 30T11-4.
 3. 3/16" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 30T13-40.
 4. 1/4" QUINCY BRACKET, NEWTON INSTRUMENT CO. CAT. NO. 30T14-4.
 5. STAINLESS STEEL SECURITY SCREWS.

2. GROUND BAR DETAIL
 NOT TO SCALE



TO AND STAINLESS COPPER GROUND WIRE (DISCONNECT TO GROUND BAR) CHAIN CABLE CONNECTION (TYP) CABLE GROUND KIT
 ANTENNA CABLE
 1 1/4" DIA. WIRE
 INSULATOR
 QUINCY BRACKET

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

4. ANTENNA CABLE GROUNDING DETAIL
 NOT TO SCALE

SUMMARY & RESULTS

The purpose of this analysis was to verify the existing structure. This report was commissioned by Mr. Marty Jelleme of AT&T.

The tower has been previously modified with (8) 2-1/2" diameter threaded rods from 0' – 50', (4) 2-1/2" diameter threaded rods from 50' – 95' and (3) 5" x 3/4" mod plates from 95' – 115'. In addition, triangular stiffener plates have been installed on the base plate and bridge stiffeners on the flange plate at 109'. Additional concrete has also been poured atop the existing foundation.

Modifications designed by GPD Group (Job #: 2011261.96, dated 9/23/11) consisted of reinforcing the pole from 94' – 109.75 and 110' – 123', adding bridge stiffeners around the flange connection at 109.75', and adding concrete to the existing foundation. These modifications were considered in this analysis. Refer to Appendix H for specific details.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	99.8%	Pass
Flange Plates	44.8%	Pass
Flange Bolts	33.9%	Pass
Bridge Stiffeners	69.0%	Pass
Base Plate	71.1%	Pass
Anchor Rods	86.3%	Pass
Foundation	68.4%	Pass

ANALYSIS METHOD

RISA Tower (Version 5.4.2.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is based solely on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Tower Mapping	GPD & MTSI, dated 2/23/11	Siterra
Foundation Exploration	FDH Project #: 08-09065E N1, dated 9/23/08	Siterra
Geotechnical Report	FDH Project #: 08-09065E G1, dated 9/23/08	Siterra
Modification Drawings	GPD Job #: 2008264.38, dated 10/16/08	Siterra
Previous Structural Analysis	GPD Group Job #: 2011267.22, dated 8/30/11	Siterra
Modification Drawings	GPD Job #: 2011261.96, dated 9/23/11	GPD

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the monopole. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The monopole shaft sizes and shape are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The antenna configuration is as supplied and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations. If no data is available, the foundation system is not verified. In the case of absent foundation data, it is the tower owner's responsibility to insure that the foundation system is adequate to support the structure with its new reactions.
6. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
7. All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
8. Tower Mounted Amplifiers are assumed to be installed behind the antennas.
9. All existing loading was obtained from the tower mapping by GPD & MTSI, dated 2/23/11, site photos and is assumed to be accurate.
10. No steel grade information was provided, therefore, steel grades are assumed based on previous engineering experience.
11. The threaded rod modifications are assumed to be installed through the base plate into the foundation, carrying forces directly into the foundation.
12. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
13. The existing loading elevation found in the mapping by GPD & MTSI, dated 2/23/11 was found to vary from the listed elevation within the provided NOCF. The existing and future elevations have been modeled based on the elevation reflected within the mapping.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD GROUP should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD GROUP has performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc. have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

APPENDIX B

RISA Tower Output File

RISA Tower GPD Group 520 South Main St., Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2102	Job	60393 BRIDGEPORT NORTH	Page	1 of 5
	Project	2011261.96	Date	11:26:59 09/21/11
	Client	AT&T Mobility	Designed by	kdavis

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Basic wind speed of 90 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 78 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _v A _s		Weight
							ft ² /ft	plf
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	150.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	144.00 - 8.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
9207 (5/16")	A	No	CaAa (Out Of Face)	141.00 - 8.00	6	No Ice	0.00	0.06
						1/2" Ice	0.00	0.57
2" Flex Conduit	A	No	CaAa (Out Of Face)	141.00 - 98.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	1.85
2" Flex Conduit	A	No	CaAa (Out Of Face)	141.00 - 98.00	1	No Ice	0.20	0.32
						1/2" Ice	0.30	1.85
2" Flex Conduit	A	No	CaAa (Out Of Face)	98.00 - 8.00	2	No Ice	0.00	0.32
						1/2" Ice	0.00	1.85
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	119.00 - 8.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	119.00 - 8.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
LDF4-50A (1/2 FOAM)	B	No	CaAa (Out Of Face)	119.00 - 8.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.84
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	99.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	B	No	CaAa (Out Of Face)	99.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
LDF4-50A (1/2 FOAM)	B	No	Inside Pole	101.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
2.5" threaded rod	A	No	CaAa (Out Of Face)	98.00 - 0.00	1	No Ice	0.25	0.00
						1/2" Ice	0.35	0.00
2.5" threaded rod	A	No	CaAa (Out Of Face)	98.00 - 52.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
2.5" threaded rod	A	No	CaAa (Out Of Face)	52.00 - 0.00	2	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
2.5" threaded rod	B	No	CaAa (Out Of Face)	98.00 - 52.00	1	No Ice	0.00	0.00
						1/2" Ice	0.00	0.00
2.5" threaded rod	B	No	CaAa (Out Of Face)	52.00 - 0.00	3	No Ice	0.00	0.00

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	CMA	Weight	
							ft ² /ft	plf
2.5" threaded rod	C	No	CaAa (Out Of Face)	98.00 - 52.00	1	1/2" Ice	0.00	0.00
							No Ice	0.00
2.5" threaded rod	C	No	CaAa (Out Of Face)	52.00 - 0.00	2	1/2" Ice	0.00	0.00
							No Ice	0.00
5" x 0.75" mod plate	B	No	CaAa (Out Of Face)	115.00 - 95.00	1	1/2" Ice	0.00	12.73
							No Ice	13.52
5" x 0.75" mod plate	C	No	CaAa (Out Of Face)	115.00 - 95.00	1	1/2" Ice	0.00	12.73
							No Ice	13.52
5"x1.75" Mod Plate	A	No	CaAa (Out Of Face)	109.75 - 94.00	1	1/2" Ice	0.00	0.00
							No Ice	0.00
5"x1.75" Mod Plate	B	No	CaAa (Out Of Face)	109.75 - 94.00	1	1/2" Ice	0.00	0.00
							No Ice	0.00
5"x1.75" Mod Plate	C	No	CaAa (Out Of Face)	109.75 - 94.00	1	1/2" Ice	0.00	0.00
							No Ice	0.00
5" x 1-1/4" Mod Plate	A	No	CaAa (Out Of Face)	125.00 - 110.00	1	1/2" Ice	0.00	0.00
							No Ice	0.00
5" x 1-1/4" Mod Plate	B	No	CaAa (Out Of Face)	125.00 - 110.00	1	1/2" Ice	0.00	0.00
							No Ice	0.00
5" x 1-1/4" Mod Plate	C	No	CaAa (Out Of Face)	125.00 - 110.00	1	1/2" Ice	0.00	0.00
							No Ice	0.00

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	CMA		Weight lb
			Horz ft	Vert ft			Front ft ²	Side ft ²	
10'-8" Central Platform w/ 42" tower extension 12' Omni	C	None			0.0000	153.00	No Ice	43.32	2500.00
							1/2" Ice	46.28	3250.00
							1/2" Ice	4.23	42.30
(2) RA21.7770.00	A	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	6.79	37.20
							1/2" Ice	7.28	74.53
							1/2" Ice	4.23	42.30
(2) RA21.7770.00	B	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	6.79	37.20
							1/2" Ice	7.28	74.53
							1/2" Ice	4.23	42.30
(2) RA21.7770.00	C	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	6.79	37.20
							1/2" Ice	7.28	74.53
							1/2" Ice	4.23	42.30
(4) TT19-08BP111-001	A	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	0.00	20.00
							1/2" Ice	0.00	21.80
							1/2" Ice	0.52	21.80
(4) TT19-08BP111-001	B	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	0.00	20.00
							1/2" Ice	0.00	21.80
							1/2" Ice	0.52	21.80
(4) TT19-08BP111-001	C	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	0.00	20.00
							1/2" Ice	0.00	21.80
							1/2" Ice	0.52	21.80
(2) 7020.00 RET	A	From Centroid-Le	3.00	0.00	30.0000	153.00	No Ice	0.12	2.20
							1/2" Ice	0.17	5.16
							1/2" Ice	0.28	5.16
(2) 7020.00 RET	B	From Centroid-Le	3.00	-2.50	30.0000	153.00	No Ice	0.12	2.20
							1/2" Ice	0.17	5.16
							1/2" Ice	0.28	5.16

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	Client	AT&T Mobility	Designed by	kdavis

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C ₁ A ₁ Front ft ²	C ₁ A ₁ Side ft ²	Weight lb	
(2) 7020.00 RET	C	g From Centroid-Le	-2.50 3.00 0.00	30.0000	153.00	No Ice 1/2" Ice	0.12 0.17	0.20 0.28	2.20 5.16
Valmont 13' Platform w/o rails (GPD)	C	g None	3.00	0.0000	138.00	No Ice 1/2" Ice	24.80 26.20	24.80 26.20	1500.00 2500.00
LLPX310R-V1	A	g From Centroid-Le	3.63 1.69 3.00	25.0000	138.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
LLPX310R-V1	B	g From Centroid-Le	3.63 1.69 3.00	25.0000	138.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
LLPX310R-V1	C	g From Centroid-Le	3.63 1.69 3.00	25.0000	138.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
RRH-2WB0	A	g From Centroid-Le	3.63 1.69 3.00	25.0000	138.00	No Ice 1/2" Ice	0.00 0.00	0.85 1.01	44.00 59.05
RRH-2WB0	B	g From Centroid-Le	3.63 1.69 3.00	25.0000	138.00	No Ice 1/2" Ice	0.00 0.00	0.85 1.01	44.00 59.05
RRH-2WB0	C	g From Centroid-Le	3.63 1.69 3.00	25.0000	138.00	No Ice 1/2" Ice	0.00 0.00	0.85 1.01	44.00 59.05
Horizon DUO	A	g From Centroid-Le	6.00 3.63 1.69	-90.0000	138.00	No Ice 1/2" Ice	0.55 0.65	0.34 0.43	7.00 11.78
Horizon DUO	C	g From Centroid-Le	6.00 3.63 1.69	-77.0000	138.00	No Ice 1/2" Ice	0.55 0.65	0.34 0.43	7.00 11.78
Power Box (2'x2'x8")	A	g From Centroid-Le	6.00 3.63 1.69	25.0000	138.00	No Ice 1/2" Ice	5.60 5.92	1.87 2.08	50.00 82.96
Pipe Mount 5'x2.375"	A	g From Centroid-Le	4.00 3.63 1.69	0.0000	138.00	No Ice 1/2" Ice	1.19 1.50	1.19 1.50	22.30 31.37
Pipe Mount 5'x2.375"	B	g From Centroid-Le	0.00 3.63 1.69	0.0000	138.00	No Ice 1/2" Ice	1.19 1.50	1.19 1.50	22.30 31.37
Pipe Mount 5'x2.375"	C	g From Centroid-Le	0.00 3.63 1.69	0.0000	138.00	No Ice 1/2" Ice	1.19 1.50	1.19 1.50	22.30 31.37
12' T-Arm (1)	A	g From Face	0.00 2.50 0.00	0.0000	119.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
12' T-Arm (1)	B	g From Face	0.00 2.50 0.00	0.0000	119.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
12' T-Arm (1)	C	g From Face	0.00 2.50 0.00	0.0000	119.00	No Ice 1/2" Ice	4.70 5.33	2.33 2.96	333.00 400.00
800 10504	A	g From Face	0.00 5.00 0.00	0.0000	119.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	17.64 35.71
800 10504	B	g From Face	0.00 5.00 0.00	0.0000	119.00	No Ice 1/2" Ice	3.35 3.70	1.87 2.20	17.64 35.71

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C ₁ A ₁		Weight	
			Horz	Lateral			Front	Side		
			Vert							
			ft		°	ft	ft'	ft'	lb	
800 10504	C	From Face	5.00		0.0000	119.00	No Ice	3.35	1.87	17.64
			0.00				1/2" Ice	3.70	2.20	35.71
860 10025	A	From Face	5.00		0.0000	119.00	No Ice	0.18	0.15	1.20
			0.00				1/2" Ice	0.25	0.21	2.85
860 10025	B	From Face	5.00		0.0000	119.00	No Ice	0.18	0.15	1.20
			0.00				1/2" Ice	0.25	0.21	2.85
860 10025	C	From Face	5.00		0.0000	119.00	No Ice	0.18	0.15	1.20
			0.00				1/2" Ice	0.25	0.21	2.85
12' T-Arm (1)	A	From Face	2.50		0.0000	99.00	No Ice	4.70	2.33	333.00
			0.00				1/2" Ice	5.33	2.96	400.00
12' T-Arm (1)	B	From Face	2.50		0.0000	99.00	No Ice	4.70	2.33	333.00
			0.00				1/2" Ice	5.33	2.96	400.00
12' T-Arm (1)	C	From Face	2.50		0.0000	99.00	No Ice	4.70	2.33	333.00
			0.00				1/2" Ice	5.33	2.96	400.00
(2) LPD-6513	A	From Face	5.00		0.0000	99.00	No Ice	6.42	5.15	28.00
			0.00				1/2" Ice	6.82	5.53	51.00
(2) LPD-6513	B	From Face	5.00		0.0000	99.00	No Ice	6.42	5.15	28.00
			0.00				1/2" Ice	6.82	5.53	51.00
(2) LPD-6513	C	From Face	5.00		0.0000	99.00	No Ice	6.42	5.15	28.00
			0.00				1/2" Ice	6.82	5.53	51.00
P65-16-XL-2	A	From Face	5.00		0.0000	99.00	No Ice	8.40	4.12	33.00
			0.00				1/2" Ice	8.95	4.56	77.53
P65-16-XL-2	B	From Face	5.00		0.0000	99.00	No Ice	8.40	4.12	33.00
			0.00				1/2" Ice	8.95	4.56	77.53
P65-16-XL-2	C	From Face	5.00		0.0000	99.00	No Ice	8.40	4.12	33.00
			0.00				1/2" Ice	8.95	4.56	77.53
MG D3-800TO	A	From Face	5.00		0.0000	99.00	No Ice	3.28	2.10	17.60
			0.00				1/2" Ice	3.61	2.42	36.86
MG D3-800TO	B	From Face	5.00		0.0000	99.00	No Ice	3.28	2.10	17.60
			0.00				1/2" Ice	3.61	2.42	36.86
MG D3-800TO	C	From Face	5.00		0.0000	99.00	No Ice	3.28	2.10	17.60
			0.00				1/2" Ice	3.61	2.42	36.86
(2) FD9R6004	A	From Face	5.00		0.0000	99.00	No Ice	0.00	0.25	3.00
			0.00				1/2" Ice	0.00	0.32	6.59
(2) FD9R6004	B	From Face	5.00		0.0000	99.00	No Ice	0.00	0.25	3.00
			0.00				1/2" Ice	0.00	0.32	6.59
(2) FD9R6004	C	From Face	5.00		0.0000	99.00	No Ice	0.00	0.25	3.00
			0.00				1/2" Ice	0.00	0.32	6.59

RISATower GPD Group 520 South Main St., Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2102	Job	60393 BRIDGEPORT NORTH	Page	5 of 5
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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft	°	°	ft	ft	ft ²	lb	
VHLP2-18	A	Paraboloid w/Shroud (HP)	From Centroid	3.63 1.69 6.00	-90.0000		138.00	2.17	No Ice 1/2" Ice	3.72 4.01	30.00 70.00
VHLP2-23	C	Paraboloid w/Shroud (HP)	From Centroid	3.63 1.69 6.00	-77.0000		138.00	2.17	No Ice 1/2" Ice	3.72 4.01	30.00 50.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
153.00	10'-8" Central Platform w/ 42" tower extension	28	40.006	2.5416	0.0143	12042
144.00	VHLP2-18	28	36.898	2.4334	0.0120	10034
138.00	Valmont 13' Platform w/o rails (GPD)	28	33.832	2.3271	0.0097	5017
119.00	12' T-Arm (1)	28	24.895	2.0233	0.0050	2713
99.00	12' T-Arm (1)	28	17.003	1.7420	0.0033	3446

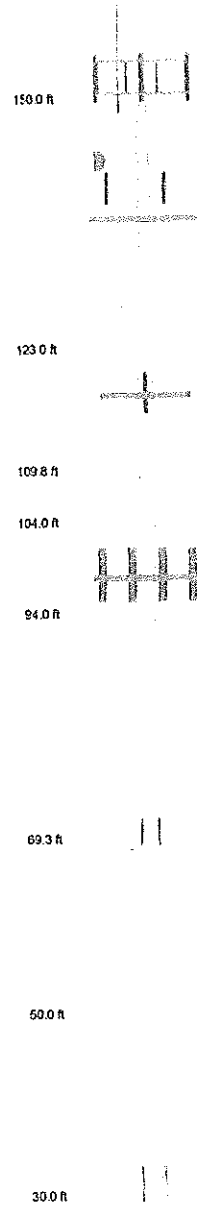
Section Capacity Table

Section No.	Elevation	Component Type	Size	Critical Element	P	SF*P _{allow}	% Capacity	Pass Fail	
	ft				lb	lb			
L1	150 - 123	Pole	TP20.4042x15x0.2188	1	-5156.07	739157.80	75.1	Pass	
L2	123 - 109.75	Pole & Reinf.	TP21x20.4042x0.5657	2	-8035.89	1935076.03	77.4	Pass	
L3	109.75 - 104	Pole & Reinf.	TP21.5597x21x0.7569	3	-9241.49	2635794.11	68.9	Pass	
L4	104 - 94	Pole & Reinf.	TP23.0497x21.5597x0.7113	4	-12377.40	2659841.43	85.0	Pass	
L5	94 - 69.25	Pole & Reinf.	TP27.0373x23.0497x0.6153	5	-16758.20	2671678.47	89.4	Pass	
L6	69.25 - 50	Pole & Reinf.	TP29.9068x25.3234x0.6226	6	-22391.60	3052063.33	99.8	Pass	
L7	50 - 30	Pole & Reinf.	TP32.8882x29.9068x0.8824	7	-27752.80	4639572.96	76.2	Pass	
L8	30 - 0	Pole & Reinf.	TP37.3602x30.5271x0.8622	8	-30283.40	4397580.15	82.9	Pass	
							Summary		
							Pole (L6)	99.8	Pass
							RATING =	99.8	Pass

APPENDIX C

Tower Elevation Drawing

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	27.00	12	0.2188	15.0000	20.4042	1131.4		
2	10.25	12	0.5657	20.4042	21.0000	1653.8		
3	5.75	12	0.7563	21.0000	21.5597	976.7		
4	10.00	12	0.7113	21.5597	23.0487	1682.9		
5	24.75	12	0.8153	3.00	23.0497	27.0373	4076.1	AS72-65
6	22.25	12	0.6226	25.3234	20.9068	4097.1		
7	20.00	12	0.8824	4.00	20.9068	32.8882	5800.7	
8	34.00	12	0.8822	30.5271	37.3602	10925.8	30148.5	



AXIAL
49442 lb

SHEAR 23228 lb MOMENT 2375249 lb-ft

TORQUE 1476 lb-ft
78 mph WIND - 0.5000 in ICE

AXIAL
41013 lb

SHEAR 28180 lb MOMENT 2828047 lb-ft

TORQUE 1769 lb-ft
REACTIONS - 90 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
10'-8" Central Platform w/ 42" tower extension	153	VHLP2-23	138
12' Omni	153	12' T-Arm (1)	119
(2) RA21.7770.00	153	800 10534	119
(2) RA21.7770.00	153	800 10534	119
(2) RA21.7770.00	153	800 10534	119
(4) TT19-03BP111-001	153	860 10025	119
(4) TT19-03BP111-001	153	860 10025	119
(4) TT19-03BP111-001	153	860 10025	119
(2) 7020.00 RET	153	12' T-Arm (1)	119
(2) 7020.00 RET	153	12' T-Arm (1)	99
(2) 7020.00 RET	153	12' T-Arm (1)	99
(2) 7020.00 RET	153	(2) LPD-6513	99
Vermont 13' Platform w/ rails (GPD)	138	(2) LPD-6513	99
LLPX310R-VI	138	(2) LPD-6513	99
LLPX310R-VI	138	P65-16-XL-2	99
LLPX310R-VI	138	P65-16-XL-2	99
RRH-2VVB0	138	P65-16-XL-2	99
RRH-2VVB0	138	MG D3-800TO	99
RRH-2VVB0	138	MG D3-800TO	99
RRH-2VVB0	138	MG D3-800TO	99
Horizon DUO	138	MG D3-800TO	99
Horizon DUO	138	(2) FDSR6004	99
Power Box (2x2x8')	138	(2) FDSR6004	99
Pipe Mount 5x2.375"	138	(2) FDSR6004	99
Pipe Mount 5x2.375"	138	12' T-Arm (1)	99
Pipe Mount 5x2.375"	138	12' T-Arm (1)	99
VHLP2-18	138		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

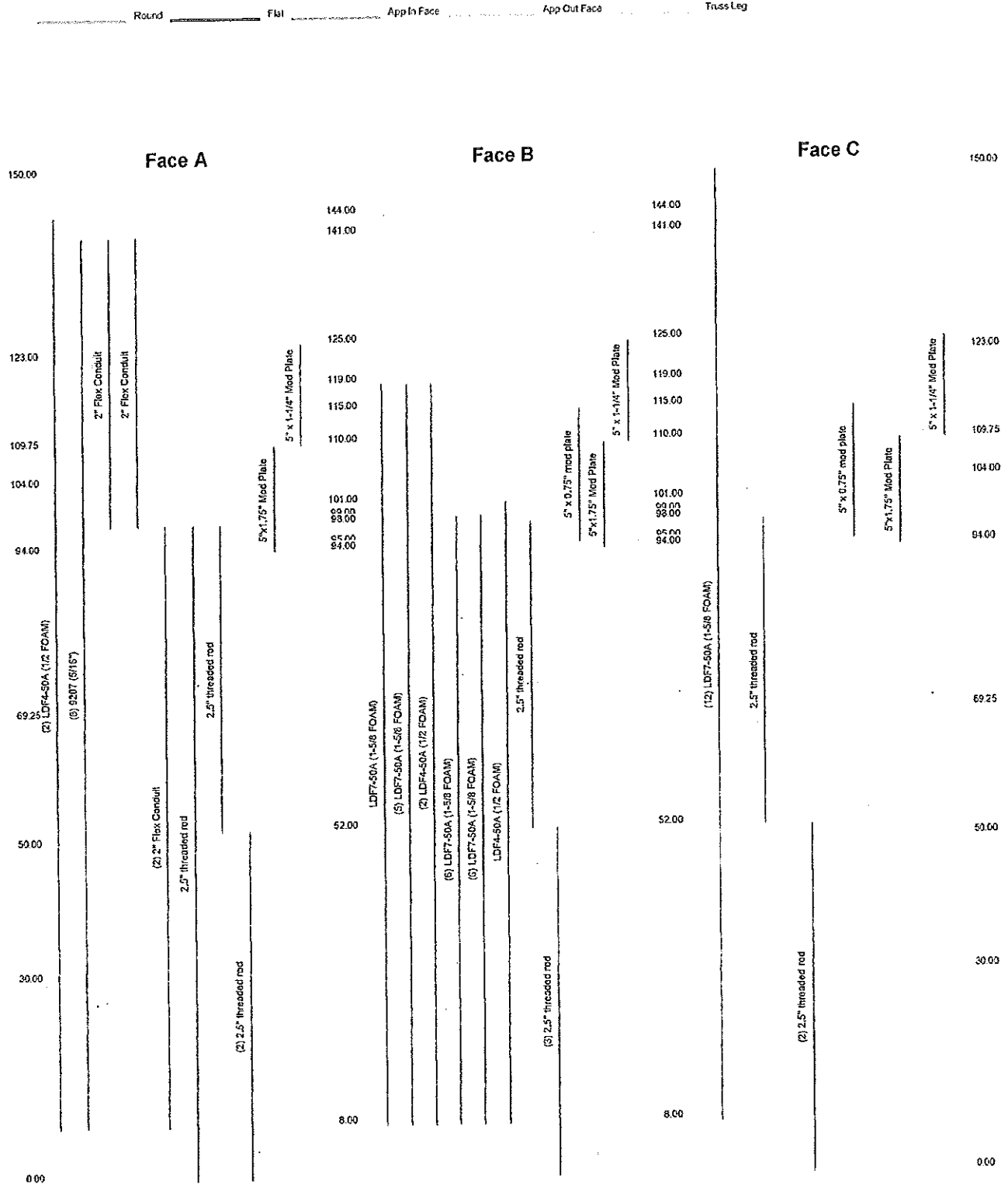
TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 78 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.

<p>GPD Group 520 South Main St., Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2102</p>	Job: 60393 BRIDGEPORT NORTH
	Project: 2011261.96
	Client: AT&T Mobility Drawn by: kdavis App'd: _____
	Code: TIA/EIA-222-F Date: 09/21/11 Scale: NTS
	Path: H:\2011\2011261.96\572-2102\60393.en Dwg No. E-1

Feedline Distribution Chart

0' - 150'

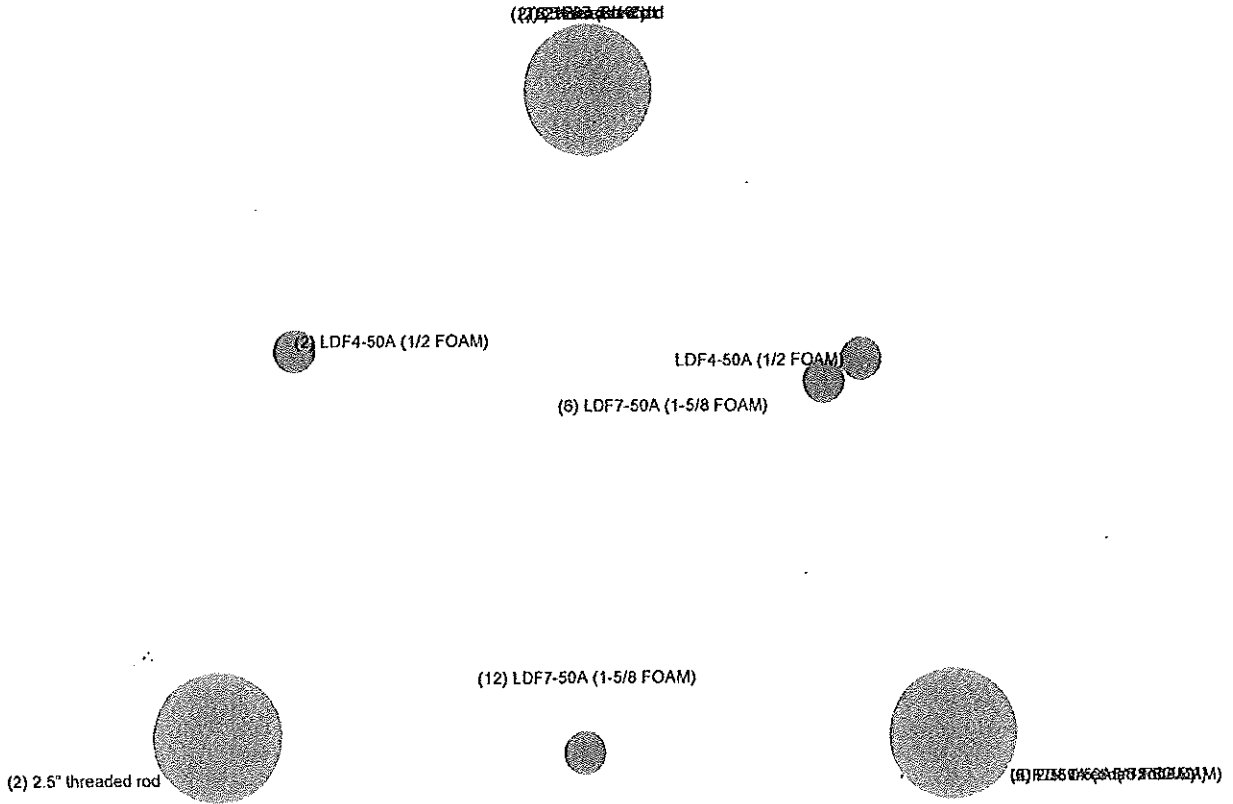


GPD Group		Job: 60393 BRIDGEPORT NORTH	
520 South Main St., Suite 2531		Project: 2011261.96	
Akron, OH 44311		Client: AT&T Mobility	
Phone: (330) 672-2100		Drawn by: kdavis	
FAX: (330) 672-2102		Date: 09/21/11	
		Scale: NTS	
		Dwg No. E-7	

**Feedline Plan
30'**

Round Flat App In Face App Out Face

Section @ 30'



GPD Group 520 South Main St., Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2102	Job: 60393 BRIDGEPORT NORTH
	Project: 2011261.98
	Client: AT&T Mobility Drawn by: kdavis App'd:
	Code: TIA/EIA-222-F Date: 09/21/11 Scale: NTS
	Path: H:\2011\2011261\66\AS\60393.dwg Dwg No. E-7

APPENDIX D

Base Plate and Anchor Rod Analysis



Anchor Rod and Base Plate Stresses
60393 BRIDGEPORT NORTH
2011261.96

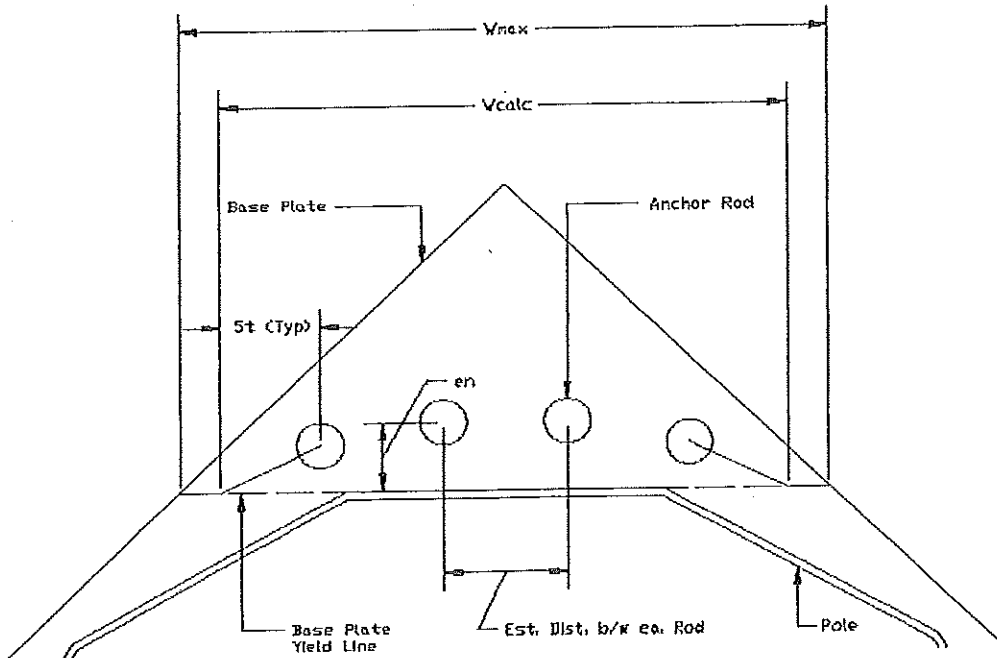
*Overturning Moment =	1245.10 k*ft
Axial Force =	41.01 k
Shear Force =	28.18 k

Acceptable Stress Ratio =	105.0%
---------------------------	--------

*Above reactions have been adjusted due to consideration of modifications. See attached hand calculations for determination of anchor rod forces in the analysis.

Anchor Rods	
Pole Diameter =	37.36 in
Number of Rods =	8
Type =	Upset Rod
Rod Yield Strength (Fy) =	75 ksi
ASIF =	1.333
Rod Circle =	43 in
Rod Diameter =	2.25 in
Net Tensile Area =	3.25 in ²
Max Tension on Rod =	168.37 kips
Max Compression on Rod =	178.62 kips
Allow. Rod Force =	195.00 kips
Anchor Rod Capacity =	86.3% OK

Base Plate	
Plate Strength (Fy) =	50 ksi
Plate Thickness =	2.75 in
Plate Width =	41 in
Est. Dist. b/w ea. Rod =	6 in
W _{calc} =	33.500 in
W _{max} =	20.623 in
W =	20.62 in
S =	25.99 in ³
f _b =	35.53 ksi
F _b =	50 ksi
Base Plate Capacity =	71.1% OK





GPD GROUP
Engineers • Architects • Planners

Job #: 2011261.96
Sheet No. 1 Of 1

Calculated By: _____ Date: 9/23/2011
Checked By: _____ Date: _____

ANCHOR ROD CALCULATIONS

© Basc

Moment from RISA (M) = 2828.05 kip-ft ASIF = 1.33
 Axial from RISA (P) = 41.01 kip

Inner Bolt Diameter = 2.25 in
 Inner Bolt Area (A_{inner}) = 3.98 in² Inner Bolt Circle (BC_{inner}) = 43 in
 Inner Bolt MOI ($I_{b,inner}$) = 1.26 in⁴ Total Area ($A_{tot,in}$) = 31.81 in²
 Number Inner Bolts (N_{inner}) = 8 Percent Total Area (η_{in}) = 44.8% Axial, Inner Bolts ($P * \eta_{in}$) = 18.35 kips

Outer Bolt Diameter = 2.5 in
 Outer Bolt Area (A_{outer}) = 4.91 in² Outer Bolt Circle (BC_{outer}) = 43 in
 Outer Bolt MOI ($I_{b,outer}$) = 1.92 in⁴ Total Area ($A_{tot,out}$) = 39.27 in²
 Number Outer Bolts (N_{outer}) = 8 Percent Total Area (η_{out}) = 55.2% Axial, Outer Bolts ($P * \eta_{out}$) = 22.66 kips

$$I_{inner} = 7361.83 \text{ in.}^4$$

$$I_{outer} = 9091.60 \text{ in.}^4$$

$$I_{tot} = \frac{16453.43 \text{ in.}^4}{(N_{inner} * A_{inner} * BC_{inner}^2 / 8 + N_{inner} * I_{b,inner}) + (N_{outer} * A_{outer} * BC_{outer}^2 / 8 + N_{outer} * I_{b,outer})}$$

$$F_{inner} = 178.62 \text{ kips}$$

$$F_{outer} = 220.51 \text{ kips}$$

$$F_{inner} = (M * (BC_{inner} / 2) * A_{inner}) / I_{total} + P * \eta_{in} / N_{inner}$$

$$F_{outer} = (M * (BC_{outer} / 2) * A_{outer}) / I_{total} + P * \eta_{out} / N_{outer}$$



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Job #: 2011261.96
Sheet No. 1 Of 1

Calculated By: _____ KMD Date: 9/23/2011
Checked By: _____ Date: _____

ANCHOR ROD CALCULATIONS

© Basc

Moment from RISA (M) = 2828.05 kip-ft ASIF = 1.33
Axial from RISA (P) = 41.01 kip

Inner Bolt Diameter = 2.25 in
Inner Bolt Area (A_{inner}) = 3.98 in² Inner Bolt Circle (BC_{inner}) = 43 in
Inner Bolt MOI ($I_{o,inner}$) = 1.26 in⁴ Total Area ($A_{tot,ir}$) = 31.81 in²
Number Inner Bolts (N_{inner}) = 8 Percent Total Area (η_{in}) = 44.8% Axial, Inner Bolts ($P * \eta_{in}$) = 18.35 kips

Outer Bolt Diameter = 2.5 in
Outer Bolt Area (A_{outer}) = 4.91 in² Outer Bolt Circle (BC_{outer}) = 43 in
Outer Bolt MOI ($I_{o,outer}$) = 1.92 in⁴ Total Area ($A_{tot,out}$) = 39.27 in²
Number Outer Bolts (N_{outer}) = 8 Percent Total Area (η_{out}) = 55.2% Axial, Outer Bolts ($P * \eta_{out}$) = 22.66 kips

$$I_{inner} = 7361.83 \text{ in.}^4$$

$$I_{outer} = 9091.60 \text{ in.}^4$$

$$I_{tot} = \frac{7361.83 + 9091.60}{16453.43} \text{ in.}^4$$

$$F_{inner} = 178.62 \text{ kips}$$

$$F_{outer} = 220.51 \text{ kips}$$

$$(N_{inner} * A_{inner} * BC_{inner}^2 / 8 + N_{inner} * I_{o,inner})$$

$$(N_{outer} * A_{outer} * BC_{outer}^2 / 8 + N_{outer} * I_{o,outer})$$

$$(I_{inner} + I_{outer} + I_{pt})$$

$$(M * (BC_{inner} / 2) * A_{inner}) / I_{total} + P * \eta_{in} / (N_{inner})$$

$$(M * (BC_{outer} / 2) * A_{outer}) / I_{total} + P * \eta_{out} / (N_{outer})$$



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Job #: 2011261.96
 Sheet No. 1 Of 1

Calculated By: _____ KMD Date: 9/23/2011
 Checked By: _____ Date: _____

ANCHOR ROD CALCULATIONS

© Base

Moment from RISA (M) = 2828.05 kip-ft ASIF = 1.33
 Axial from RISA (P) = 41.01 kip

Inner Bolt Diameter = 2.25 in
 Inner Bolt Area (A_{inner}) = 3.98 in²
 Inner Bolt MOI ($I_{o,inner}$) = 1.26 in⁴
 Number Inner Bolts (N_{inner}) = 8

Inner Bolt Circle (BC_{inner}) = 43 in
 Total Area ($A_{tot.in}$) = 31.81 in²
 Percent Total Area (η_{in}) = 44.8%
 Axial, Inner Bolts ($P * \eta_{in}$) = 18.35 kips

Outer Bolt Diameter = 2.5 in
 Outer Bolt Area (A_{outer}) = 4.91 in²
 Outer Bolt MOI ($I_{o,outer}$) = 1.92 in⁴
 Number Outer Bolts (N_{outer}) = 8

Outer Bolt Circle (BC_{outer}) = 43 in
 Total Area ($A_{tot.out}$) = 39.27 in²
 Percent Total Area (η_{out}) = 55.2%
 Axial, Outer Bolts ($P * \eta_{out}$) = 22.66 kips

$$I_{inner} = \frac{(N_{inner} * A_{inner} * BC_{inner}^2 / 8 + N_{inner} * I_{o,inner})}{(I_{inner} + I_{outer} + I_{pl})}$$

$$I_{outer} = \frac{(N_{outer} * A_{outer} * BC_{outer}^2 / 8 + N_{outer} * I_{o,outer})}{(I_{inner} + I_{outer} + I_{pl})}$$

$$I_{tot} = 16453.43 \text{ in.}^4$$

$$F_{inner} = \frac{M * (BC_{inner} / 2) * A_{inner} / I_{total} + P * \eta_{in} / N_{inner}}{(M * (BC_{outer} / 2) * A_{outer} / I_{total} + P * \eta_{out} / N_{outer})}$$

$$F_{outer} = \frac{178.62 \text{ kips}}{220.51 \text{ kips}}$$

APPENDIX E

Flange Bolt and Flange Plate Analysis



Existing Flange Connection @
60393 BRIDGEPORT NORTH
2011261.96

109.75'

O.T. Moment =	105.6 k/ft
Axial =	8.04 kips
Shear =	12.85 kips

Acceptable Stress Ratio =	100.0%
---------------------------	--------

Member sections have been adjusted due to consideration of bolt holes. See item (d) for details.
The design of the flange bolt forces used in the analysis.

Flange Bolts	
# Bolts =	12
Bolt Type =	A325
F_t =	44 ksi
ASIF =	1.333
Bolt Circle =	26 in
Bolt Diameter =	1 in
Tension & Shear (ASD, Section J3.5)	
F_u =	21 ksi
Nominal Area =	0.79 in ²
T_u =	1.36 kips
Applied Shear =	1.07 kips
Allowable Shear =	21.99 kips
$F_t'2 - 4.39(\sqrt{2})^{1/2}$ =	43.91 ksi
Allowable Bolt Stress =	59.54289 kips
B =	45.98 kips
Prying Action Check	
<small>N.A. for Stiffened Flange</small>	
Max Comp. on Bolt =	16.90 kips
Max Tension on Bolt =	15.56 kips
Shear Capacity =	4.95%
Tensile Capacity =	33.9%
Bolt Capacity =	33.9% OK

Pole Information	
Shaft Diam. (Upper) =	21 in
Thickness (Upper) =	0.21875 in
# of Sides (Upper) =	12
F_y (Upper) =	60 ksi
Shaft Diam. (Lower) =	21 in
Thickness (Lower) =	0.25 in
# of Sides (Lower) =	12
F_y (Lower) =	60 ksi

Upper Flange Plate	
Location =	External
Plate Strength (F_u) =	36 ksi
Plate Thickness =	1 in
Outer Diameter =	28.5 in
b =	6.31 in
Le =	3.00 in
f_u =	16.13 ksi
F_u =	36 ksi
UP Capacity =	44.8% OK

Lower Flange Plate	
Location =	External
Plate Strength (F_u) =	36 ksi
Plate Thickness =	1 in
Outer Diameter =	28.5 in
b =	6.31 in
Le =	3.00 in
f_u =	16.13 ksi
F_u =	36 ksi
LP Capacity =	44.8% OK

Upper Stiffeners	
Configuration =	Every Bolt
Thickness =	0.5 in
Width =	3 in
Notch =	0.75 in
Height =	5 in
Stiffener Strength (F_u) =	70 ksi
Weld Info. Known? =	No
Stiffener Vertical Force =	9.89 kips
Vert. Weld Capacity =	Not Verified kips
Horiz. Weld Capacity =	Not Verified kips
Stiffener Capacity =	24.9% kips
Controlling Capacity =	24.9% OK

Lower Stiffeners	
Configuration =	Every Bolt
Thickness =	0.5 in
Width =	3 in
Notch =	0.75 in
Height =	5 in
Stiffener Strength (F_u) =	70 ksi
Weld Info. Known? =	No
Stiffener Vertical Force =	9.32 kips
Vert. Weld Capacity =	Not Verified kips
Horiz. Weld Capacity =	Not Verified kips
Stiffener Capacity =	23.5% kips
Controlling Capacity =	23.5% OK



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Job #: 2011261.96

Sheet No. 1 Of 1

Calculated By: KMD Date: 9/23/2011

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BOLT AND BRIDGE STIFFENER CALCULATIONS @ 109.75'

Moment from RISA (M) = 381.01 kip-ft ASIF = 1.33
 Axial from RISA (P) = 8.04 kip

Inner Bolt Diameter = 1 in
 Inner Bolt Area ($A_{b,inner}$) = 0.79 in² Inner Bolt Circle (BC_{inner}) = 26 in
 Inner Bolt MOI ($I_{b,inner}$) = 0.05 in⁴ Total Area ($A_{tot,ib}$) = 9.42 in²
 Number Inner Bolts (N_{inner}) = 12 Percent Total Area (η_{in}) = 38.6% Axial, Inner Bolts ($P * \eta_{in}$) = 3.10 kips

Bridge Stiffener Width = 4.00 in
 Bridge Stiffener Thickness = 1.25 in
 Bridge Stiffener Unbraced Length = 12.00 in
 Bridge Stiffener Area (A_{pl}) = 5.00 in² Bridge Stiffener Circle (BC_{pl}) = 32.5 in
 Bridge Stiffener MOI (I_b) = 6.67 in⁴ Total Area ($A_{tot,pl}$) = 15.00 in²
 Number Bridge Stiffeners (N_{pl}) = 3 Percent Total Area (η_{pl}) = 61.4% Axial, Bridge Stiffener ($P * \eta_{pl}$) = 4.94 kips

$I_{inner} = 796.98 \text{ in.}^4$
 $I_{pl} = 2000.47 \text{ in.}^4$
 $I_{tot} = \frac{(N_{inner} * A_{inner} * BC_{inner}^2 / 8 + N_{inner} * I_{b,inner})}{(I_{inner} + I_{outer} + I_{pl})} = 2797.45 \text{ in.}^4$

$F_{inner} = \frac{(M * (BC_{inner} / 2) * A_{inner}) / I_{total} + P * \eta_{in} / N_{inner}}{(M * (BC_{pl} / 2) * A_{pl}) / I_{total} + P * \eta_{pl} / N_{pl}} = 16.9 \text{ kips}$
 $F_{pl} = 134.4 \text{ kips}$

$f_y = 50 \text{ ksi}$
 $E = 29000 \text{ ksi}$
 $K = 1.0$
 $KL/r = 10.392$
 $C_c = 107.00$
 $F_{a,pl} = 29.22 \text{ ksi}$
 $F_{allow,pl} = 194.81 \text{ kips}$
 Bridge Stiffener Rating = 69.0% OK

APPENDIX F

Modification Calculations

APPENDIX G

Foundation Calculations



Mat Foundation Analysis
60393 BRIDGEPORT NORTH
2011261.96

General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Rock
Foundation Type	Mono Pad
Pier Type	Square
Reinforcing Known	No
Max Capacity	1.05

Tower Reactions	
Moment, M	2976.05 k-ft
Axial, P	41.01 k
Shear, V	28.18 k

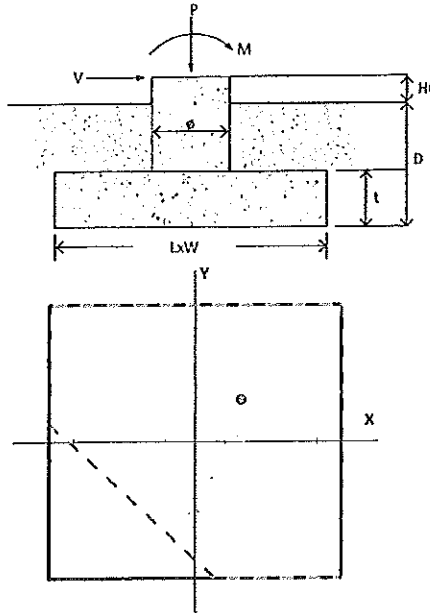
Pad & Pier Geometry		
Pier Width, ϕ	0	ft
Pad Length, L	24	ft
Pad Width, W	24	ft
Pad Thickness, t	5.5	ft
Depth, D	5.5	ft
Height Above Grade, HG	0.8	ft

Pad & Pier Reinforcing	
Rebar Fy	ksi
Concrete Fc'	ksi
Clear Cover	in
Reinforced Top & Bottom?	
Pad Reinforcing Size	
Pad Quantity Per Layer	
Pier Rebar Size	
Pier Quantity of Rebar	

Soil Properties	
Soil Type	Granular
Soil Unit Weight	120 pcf
Angle of Friction, ϕ	40 °
Bearing Type	Net
Ultimate Bearing	20 ksf
Water Table Depth	9999 ft
Frost Depth	3.5 ft

Bearing Summary			Load Case
Q _{xmax}	2.19	ksf	1D+1W
Q _{ymax}	2.20	ksf	1D+1W
Q _{max @ 45°}	2.77	ksf	1D+1W
Q _{(45) Gross}	10.33	ksf	
Controlling Capacity	26.9%	Pass	

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	2.21	≥1.5	1D+1W
FS(ot)y	2.19	≥1.5	1D+1W
Controlling Capacity	68.4%	Pass	



APPENDIX H

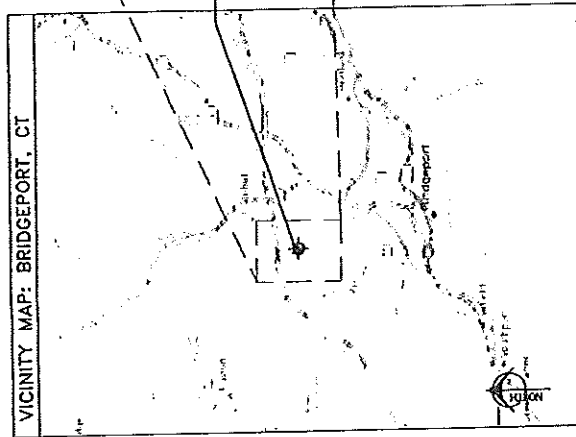
Modification Design Drawings

BRIDGEPORT NORTH

USID #: 60393

150' MODIFIED MONOPOLE

VICINITY MAP: BRIDGEPORT, CT



PROJECT SUMMARY	
TOWER OWNER:	AT&T MOBILITY
TOWER TYPE:	MONOPOLE
COVERING CODE:	TM/DM-222-F & 2003 IBC
SITE ADDRESS:	2 MADONNE PLACE FAIRFIELD, CT 06424
LATITUDE:	41° 13' 23.97" N
LONGITUDE:	73° 13' 0.397" W
OWNER CONTACT:	MR. MARTIN JELLENG 1000 UNIVERSITY BLVD ALPHARETTA, GA 30004 (770) 755-9124 - OFFICE (678) 755-8638 - CELL
ENGINEER CONTACT:	MR. KEVIN CLEMENTIS 12800 BEDFORD PKWY, SUITE 2030 ALPHARETTA, GA 30004 (678) 752-2300

REQUIRE NOTATION:
THE LISTED DRAWINGS REPRESENT REQUIRED MODIFICATIONS TO THE TOWER BY
INSTALLING MODIFICATION PLATES TO THE TOWER SHIRT, BRIDGE PLATE,
AROUND THE EXISTING FLANGE, AND A CONCRETE COLLAR TO THE FOUNDATION.

DATE	REVISION	DRAWING	INDEX
		TITLE SHEET	
		4-1 PROJECT NOTES	
		5-1 TOWER ELEVATION & FOUNDATION SCHEDULE	
		5-2 MODIFICATION DETAILS & SECTION	
		6-1 FOUNDATION MODIFICATION #	
		PARTIAL SITE PLAN	



TOWER OWNER



ENGINEERS



CPD GROUP

10025 NORTON
100 N. SOUTH MAIN STREET, SUITE 210, ALPHARETTA, GA 30004

CO-LOCATOR

SITE NAME

BRIDGEPORT NORTH

SITE NUMBER

USID #: 60393

CPD JOB NUMBER

2011261.96

DATE: 09/23/11

REVISION

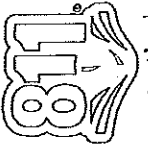
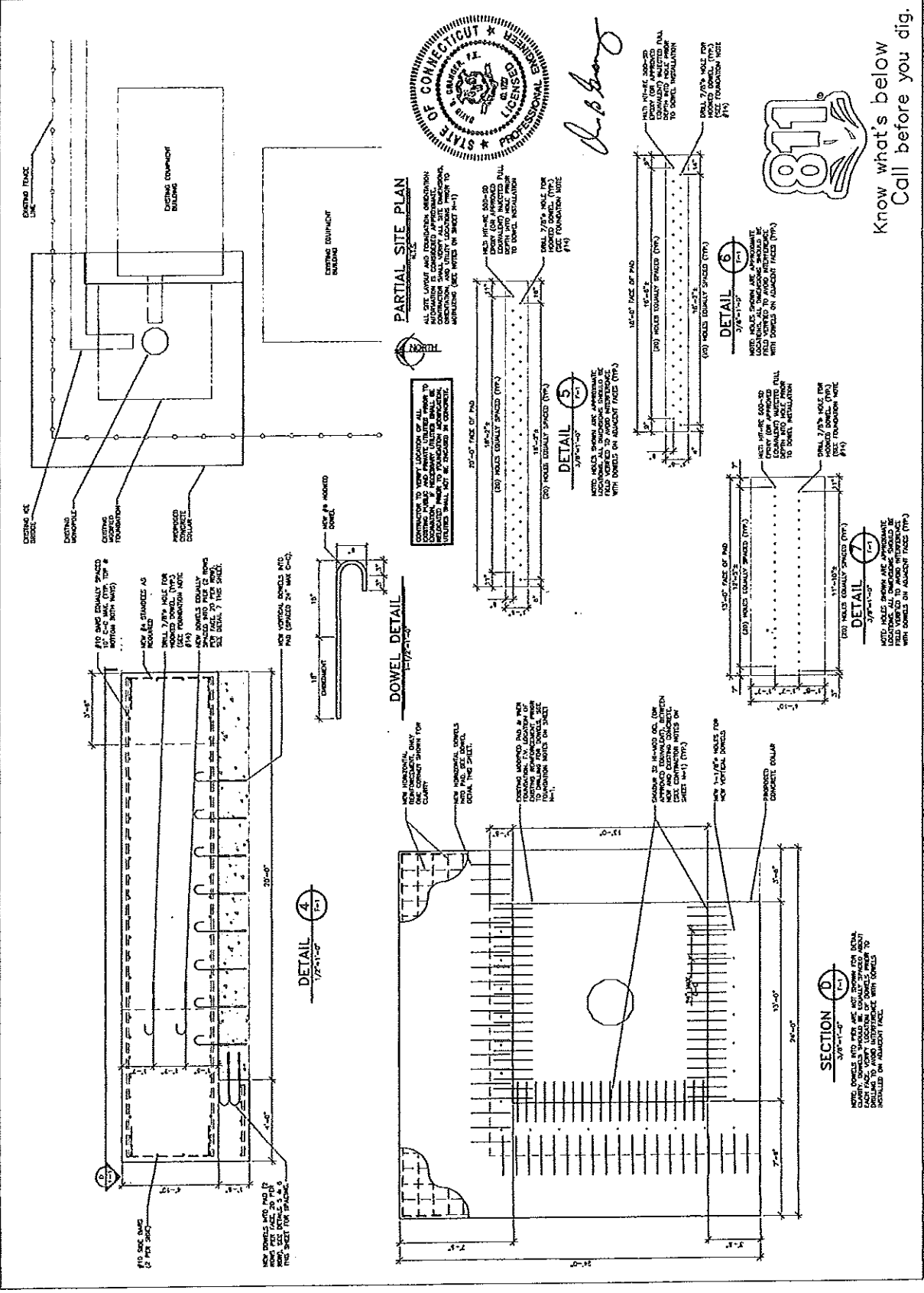
0

NO.	DESCRIPTION	DATE	BY

60393 - BRIDGEPORT NORTH
 2 KASCHKE PLACE
 BRIDGEPORT, CT 06606
 FOUNDATION MODIFICATIONS
 & PARTIAL SITE PLAN

NO.	DESCRIPTION	DATE	BY

2011261.96
 F-1



Know what's below dig.
 Call before you dig.



Exhibit 3



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

Calculated Radio Frequency Emissions



CT2106

2 Kaechele Place, Bridgeport, CT 06606

October 26, 2011

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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 existing monopole tower located at 2 Kaechele Place in Bridgeport, CT. Verizon, Clearwire and MetroPCS also have antennas mounted on the tower. The coordinates of the tower are 41-13-24 N, 73-13-0.4 W.

AT&T is proposing the following modifications:

- 1) Add UMTS PCS frequencies;
- 2) Install three 700 MHz LTE antennas (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:

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

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. All information for Verizon, Clearwire and MetroPCS comes directly from the current CSC database. 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 pattern 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
Verizon	100	869	9	289	0.0935	0.5793	16.14%
Verizon	100	1970	3	446	0.0481	1.0000	4.81%
Verizon	100	757	1	701	0.0252	0.5047	4.99%
Clearwire	110	2496	2	153	0.0091	1.0000	0.91%
Clearwire	110	18000	1	211	0.0063	1.0000	0.63%
MetroPCS	120	2130	7	881	0.1540	1.0000	15.40%
AT&T UMTS	154	880	1	500	0.0076	0.5867	0.13%
AT&T UMTS	154	1900	1	500	0.0076	1.0000	0.08%
AT&T LTE	154	734	1	500	0.0076	0.4893	0.15%
AT&T GSM	154	880	3	296	0.0135	0.5867	0.23%
AT&T GSM	154	1900	1	427	0.0065	1.0000	0.06%
						Total	43.54%

Table 1: Carrier Information¹

¹ Calculated values for AT&T include a -10 dB off-beam loss factor. Antenna specifics for Verizon, MetroPCS and Clearwire were unavailable and therefore do not include any off-beam loss factor.




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 and existing transmit antennas at the existing facility is below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 43.54% 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

October 26, 2011

Date