Northeast Utilities

107 Selden Street, Berlin, CT 06037
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-2036

John R. Morissette
Project Manager
Transmission Siting

July 10, 2013

Robert Stein, Chairman
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: TS-CL&P-085-121127
Notice of Completion

Dear Chairman Stein:

The Connecticut Light and Power Company ("CL&P") received approval from the Connecticut Siting Council ("Council") on December 18, 2012 for the Shared Use of an Existing Telecommunications Facility ("Tower Share") located at 230 Guinea Road, Monroe, Connecticut (TS-CL&P-085-121127). In its December 18, 2012 letter acknowledging the above, the Council included conditions regarding the work undertaken pursuant to Tower Share. CL&P submits this letter to provide notice that CL&P has complied with the Council's conditions as follows:

- The proposed coax shall be installed in accordance with the recommendations made by the Structural Analysis Report prepared by GPD Group dated August 28, 2012 and stamped by David Granger. Attachment A to this letter includes a statement of compliance from its Structural Engineer.
- Not more than 45 days following completion of the antenna installation, CL&P shall provide documentation certified by a professional engineer that its installation complied with the engineer's recommendations. Attachment A to this letter includes a statement of compliance from its Structural Engineer.
- Not more than 45 days following completion of the proposed installation, the Council shall be notified in writing that the installation has been completed. CL&P completed its installation on June 28, 2013; this letter provides notice of completion of the installation.

If you have any questions or comments, please call me at (860)665-2036.

Sincerely,

John R. Morissette

Attachment A – Letter from CENTEK Engineering

Attachment A

CENTEK

Centered on Solutions

June 25, 2013

Mr. Michael Carbary
Northeast Utilities
107 Selden Street
Berlin, Connecticut 06037

Re: Existing Telecommunications Facility Tower Modification Certification Letter

Project:	**NU ~Monroe** 230 Guinea Road Monroe, CT
Tower Owner:	**AT&T Towers** 5405 Windward Pkwy. Alpharetta, GA 30004
Engineer:	**GPD Group** 1117 Perimeter Center West, Suite W303, Atlanta, GA 30338

Centek Project No.: 12098.006

Dear Mr. Carbary,

We are providing this "Existing Telecommunications Facility Tower Modification Certification Letter" with regard to the antenna installation by Northeast Utilities at the above referenced project.

The following are the basis for substantiating compliance with the design documents prepared by GPD Group:

- Review of the GPD structural analysis dated 03/13/2013.
- Field observations by Centek personnel of the coax installation on 06/20/2013 which determined all coax lines were installed in general compliance with the structural analysis report prepared by GPD on 03/13/2013.

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,

STATE OF CONNECTICUT
CARLO F. CENTORE
No. 16694
LICENSED
PROFESSIONAL ENGINEER

Carlo F. Centore, PE
Principal ~Structural Engineer

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 18, 2012

John R. Morissette
Manager – Transmission Siting and Permitting
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

RE: **TS-CL&P-085-121127** – The Connecticut Light and Power Company Request for an Order to Approve the Shared Use of an Existing Telecommunications Facility located at 230 Guinea Road, Monroe, Connecticut.

Dear Mr. Morissette:

At a public meeting held December 13, 2012, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures with the following conditions:

- The proposed coax shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by GPD Group dated August 28, 2012 and stamped by David Granger;
- Not more than 45 days following completion of the antenna installation, CL&P shall provide documentation certified by a professional engineer that its installation complied with the engineer's recommendation;
- Any deviation from the proposed installation as specified in the original tower share request and supporting materials with the Council shall render this decision invalid;
- Any material changes to the proposed installation as specified in the original tower share request and supporting materials filed with the Council shall require an explicit request for modification to the Council pursuant to Connecticut General Statutes § 16-50aa, including 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;
- Not less than 45 days after completion of the proposed installation, the Council shall be notified in writing that the installation 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.

This decision is under the exclusive jurisdiction of the Council. This facility has 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. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

CSC
CONNECTICUT SITING COUNCIL

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. Please be advised that the validity of this action shall expire one year from the date of this letter.

The proposed shared use is to be implemented as specified in your letter dated November 27, 2012, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Robert Stein

Robert Stein
Chairman

RS/CDM/jbw

c: The Honorable Stephen Vavrek, First Selectman, Town of Monroe
David Killeen, Planning Administrator, Town of Monroe
Christopher B. Fisher, Esq., AT&T

TS-CL&P-085-121127

Connecticut Light & Power
A Northeast Utilities Company

lden Street, Berlin, CT 06037
ast Utilities Service Company
)x 270
Hartford, CT 06141-0270
(860) 665-2036

John R. Morissette
Manager – Transmission Siting and Permitting

November 27, 2012

ORIGINAL

Robert Stein, Chairman
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

Dear Chairman Stein:

Attached are an original and twenty (20) copies of a Request for Tower Sharing submitted on behalf of The Connecticut Light and Power Company ("CL&P"). This filing requests that the Council approve the proposed tower sharing on an existing telecommunications tower in Monroe pursuant to the exemption provided under Sections 16-50j-88 to 16-50j-90 of the Regulations of Connecticut State Agencies.

Also attached is a check for the filing fee in the amount of $625.

The First Selectman of the Town of Monroe has been informed of the requested approval of sharing this tower in Monroe.

Sincerely,

John R. Morissette
Manager – Transmission Siting and Permitting

Attachments: Request for Tower Sharing
Check

cc: Steve Vavrek
First Selectman
Monroe Town Hall
7 Fan Hill Road
Monroe, CT 06468

THE CONNECTICUT LIGHT AND POWER COMPANY

REQUEST FOR TOWER SHARING ON AN EXISTING TELECOMMUNICATIONS FACILITY IN THE TOWN OF MONROE, CONNECTICUT

A. Introduction:

Pursuant to Regulations of Connecticut State Agencies ("RCSA") §§16-50j-88 to 16-50j-90, and Connecticut General Statutes ("CGS") §16-50k, Northeast Utilities Service Company ("NUSCo") as agent for its corporate affiliate, The Connecticut Light and Power Company ("CL&P"), hereby requests approval of the Connecticut Siting Council (the "Council") for tower sharing on an existing wireless telecommunications facility located at 230 Guinea Road, Monroe, CT (the "Property"). Specifically, CL&P proposes to collocate on an existing tower that is owned and maintained by AT&T Towers ("AT&T"). NUSCo submits that no certificate of environmental compatibility and public need pursuant to CGS §16-50k ("Certificate") is required because the proposed tower sharing would satisfy the requirements set out in RCSA §§16-50j-88 to 16-50j-90 and therefore would qualify for exemption.

B. Background:

CL&P is in the process of expanding its 900 MHz Distribution Supervisory Control and Data Acquisition ("DSCADA") system throughout Connecticut. This system allows for a more reliable electrical distribution system and enhanced public safety by means of remotely operating line disconnect equipment where connected to reclosures/switching equipment. AT&T currently owns and operates a telecommunications tower, located at 230 Guinea Road in Monroe, CT. The total height of the existing lattice tower, including appurtenances, is 240 feet above ground level ("AGL").

C. Description of the "Project":

CL&P proposes to install one (1) 10-foot by 12-foot prefabricated equipment shelter on a concrete foundation, one (1) 15-kW diesel generator with a sound enclosure and an 80 gallon sub-base[1] diesel fuel tank mounted on a 4-foot by 7-foot concrete pad, and two (2) 5-foot omnidirectional antennas, one upright and one inverted, on the existing tower on a side-arm mount located at a height of 185 feet AGL. All installations would be located within the existing chain-link fenced

[1] Generator base, sub-base, or belly tank is a UL 142 fuel tank that is built into the frame of a generator support typically as part of a packaged unit that includes an enclosure.

compound. For elevation and location drawings of the proposed installations, please see Attachment 1*: Project Plans,* dated September 13, 2012.

AT&T Towers has agreed to CL&P's proposed installations and is entering into a lease agreement with CL&P to allow for such installations and to provide necessary associated rights to CL&P to access the Property. Please see Attachment 2: *Letter of Authorization from the AT&T Towers,* dated October 2, 2012, stating its agreement with CL&P's proposed shared use of its existing telecommunications tower on the Property.

A structural loading analysis has been performed to ensure that the tower and foundation would be structurally capable of supporting the loading from the proposed antenna systems. A detailed structural analysis for the proposed tower modifications is included as Attachment 3: *Structural Analysis Report*, dated August 28, 2012.

D. The proposed installations would satisfy the criteria for tower sharing because:

1) Wetlands and Watercourses

There are no wetlands or watercourses located on or near the location of the proposed installations; therefore, the Project would not have an adverse effect on wetlands or watercourses.

2) Soil Erosion, Sediment Control, and Soil Remediation

To the extent needed during the Project, CL&P would apply soil erosion and sediment control practices pursuant to the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control.*

3) Wildlife and Vegetation

The Project would not have a significant adverse effect on wildlife or vegetation as its scope is limited to the area within the existing chain-link fence compound.

4) Noise

The proposed generator is designed for quiet operation and would not significantly increase the noise levels to the areas surrounding the facility during its operation. Further, CL&P would not operate the generator continuously; it would only be operated during power outages and daytime routine testing. Sound specifications for the generator can be seen in Attachment 4: *Generator Set Data Sheet*, provided by Kohler Power Systems, Inc.

5) Safety and Health

The proposed installations would not create any safety or health hazards to persons or property.

CL&P does not anticipate the need for specific traffic control measures during construction on the Property or equipment and materials delivery. Subsequent to completion of construction, the proposed installations would not generate any additional traffic to the area other than continued periodic maintenance visits.

The Project would have minimal impact on the air quality of the telecommunications facility. The proposed generator would run once a week for testing purposes and during times of power outages. The generator engine is certified by the Environmental Protection Agency ("EPA") to conform to Tier 4 non-road emissions regulations.

Radio-signal emissions from the proposed equipment, after installation on the Property, would not exceed the total radio-frequency ("RF") electromagnetic power density level permitted by the Federal Communications Commission ("FCC"). To ensure compliance with the applicable standard, CL&P commissioned C Squared Systems to perform a calculated power-density analysis for the proposed CL&P antenna installation using the methodology prescribed by the FCC's Office of Engineering and Technology Bulletin No. 65, Edition 97-01 (August 1997). The analysis verifies that even with the planned addition of the CL&P installations, composite emissions from the facility would be well below the maximum power density levels as outlined by the FCC in OET Bulletin 65 Ed. 97-01. The highest expected percent of Maximum Permissible Exposure, at ground level, is 12.8% of the FCC limit. Please refer to Attachment 5: *Calculated Radio Frequency Emissions Report* dated August 15, 2012, for details of the analysis.

6) Visual

The Project would have minimal visual impact due to the dimensions and heights of the proposed antennas on the existing lattice tower. The planned CL&P 10-foot by 12-foot equipment shelter would be located within the existing compound, which is surrounded by trees and is well buffered from neighboring residents.

7) Forests and Parks

The Property contains no areas of recreation or public interest administered by any federal, state, local, or private agencies.

E. Schedule:

Construction of the proposed installation would begin as soon as practical after issuance of the requested approval of tower sharing by the Council and would be less than eight months in duration. CL&P anticipates that construction would be completed by the summer of 2013.

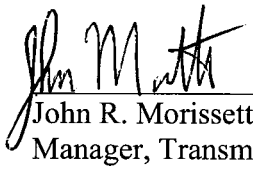
F. Conclusion:

RCSA §16-50j-88 indicates that no Certificate is needed for proposed sharing of a telecommunications facility that the Council determines satisfies the criteria set out in RCSA §§16-50j-88 to 16-50j-90. Based on the factors set forth above, NUSCo respectfully submits that the installations of antennas and equipment to this existing telecommunications facility would be technically, legally, environmentally and economically feasible and would satisfy the criteria of RCSA §§16-50j-88 to 16-50j-90 for exemption from the requirement for a Certificate. Accordingly, NUSCo requests that the Council issue an order approving CL&P's proposed tower sharing pursuant to RCSA §16-50j-88.

G. Communications regarding this Petition for a Declaratory Ruling should be directed to:

Mr. John R. Morissette
Manager, Transmission Siting and Permitting
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
Telephone: (860) 665-2036

NORTHEAST UTILITIES SERVICE COMPANY

By: 
John R. Morissette
Manager, Transmission Siting and Permitting

Attachments:

- Attachment 1: Project Plans
- Attachment 2: Letter of Authorization from the AT&T Towers
- Attachment 3: Structural Analysis Report
- Attachment 4: Generator Set Data Sheet
- Attachment 5: Radio Frequency Exposure Report

ATTACHMENT 1

SITE DIRECTIONS

FROM: 107 SELDEN STREET
BERLIN, CONNECTICUT

TO: 230 GUINEA R(
MONROE, CONN

1. Depart Selden St toward US-5 N / CT-15 N / Berlin Tpke
2. Turn left onto US-5 S / CT-15 S / Berlin Tpke
3. Keep right to stay on US-5 S / N Broad St
4. Keep straight onto US-5 / N Broad St
5. Take ramp right for I-691 West toward Waterbury
6. At exit 1, take ramp left for I-84 West toward Danbury / Waterbury
7. At exit 11, take ramp right toward New Haven / Derby
8. Turn right onto Mile Hill Rd / Wasserman Way
9. Turn right onto CT-34
10. Bear right onto Toddy Hill Rd
11. Road name changes to Botsford Hill Rd
12. Turn left onto CT-25 / S Main St
13. Turn right onto Bear Hills Rd
14. Turn left onto Pine Tree Hill Rd
15. Road name changes to Guinea Rd
16. Arrive at 230 Guinea Rd, Monroe, CT 06468

OAD
6468

ILITIES SYSTEM
TREET
037

ILITIES SYSTEM
25

-20'-30.670"
'-16'-28.297"
ITION: ±600' AMSL

GENERAL NOTES

1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY NORTHEAST U

PROJECT SCOPE

1. THE PROPOSED SCOPE OF WORK GENERALLY INCLUDES THE INSTALLATI PREFABRICATED ±10' x ±12' EQUIPMENT SHELTER AND 15 kW DIESEL GENERATOR ON PROPOSED CONCRETE FOUNDATIONS WITHIN THE EXISTIN COMPOUND.
2. TWO (2) OMINIDIRECTIONAL ANTENNAS ARE PROPOSED TO BE INSTALLED ARM MOUNTED AT ±185'-0" ABOVE THE EXISTING TOWER BASE.
3. NO CHANGES ARE PROPOSED TO THE EXISTING UTILITIES SERVICING THE THIS TIME.

	0
	0

0	9/13/12	DEB	CFC	CSC
A	8/13/12	DEB	CFC	CLIENT REVIEW
REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION

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

PROFESSIONAL ENGINEER SEAL

Northeast Utilities System

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

NORTHEAST UTILITIES SYSTEM

WIRELESS COMMUNICATIONS FACILITY

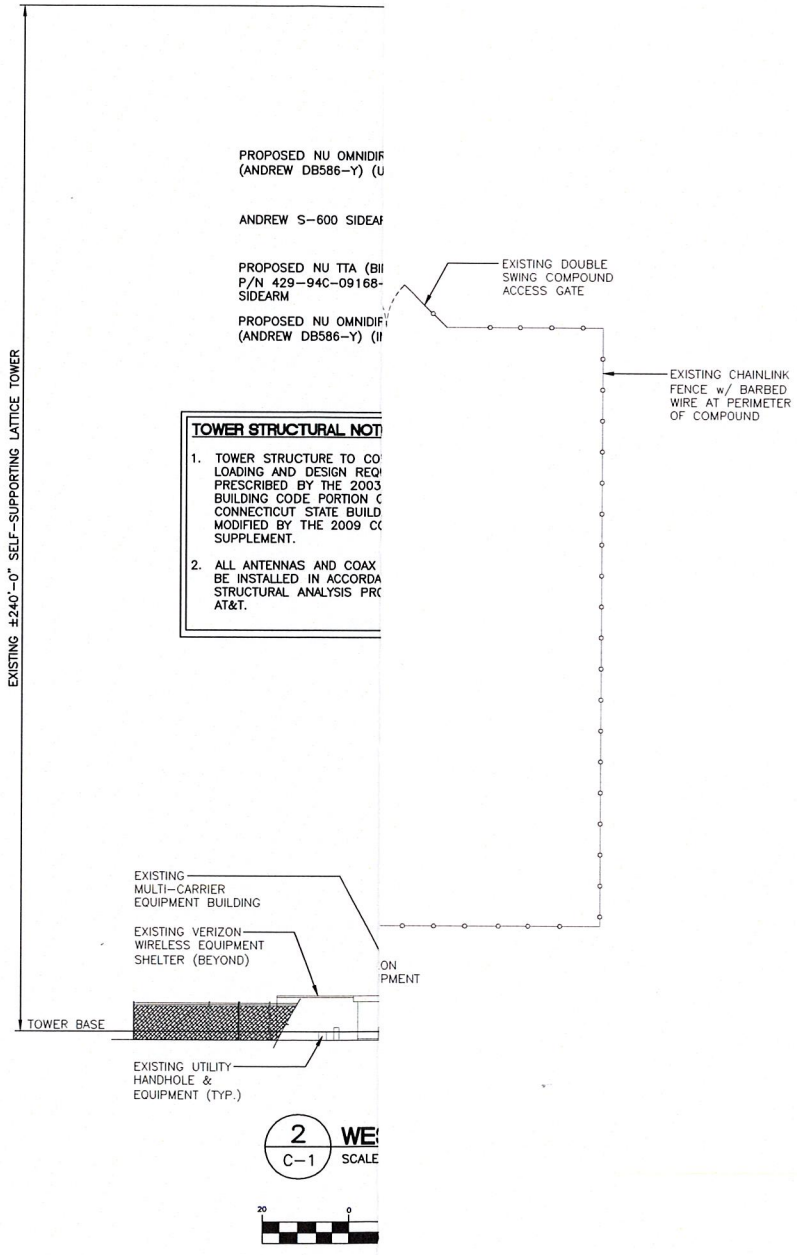
MONROE

230 GUINEA ROAD
MONROE, CT 06468

DATE: 8/9/12
SCALE: AS NOTED
JOB NO. 12087

TITLE SHEET

T-1



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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	9/13/12	DEB	CFC	CSC
A	8/13/12	DEB	CFC	CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

STATE OF CONNECTICUT LICENSED PROFESSIONAL ENGINEER

Northeast Utilities System

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

NORTHEAST UTILITIES SYSTEM

WIRELESS COMMUNICATIONS FACILITY

MONROE

230 GUINEA ROAD
MONROE, CT 06468

DATE:	8/9/12
SCALE:	AS NOTED
JOB NO.	12087

COMPOUND PLAN AND ELEVATION

C-1

Sheet No. 2 of 2

ATTACHMENT 2

AT&T Towers
5405 Windward Pkwy.
Building 1, Floor 2, Cube 1291B
Alpharetta, GA 30004

T: 770-708-6085
F: 770-708-6232
www.atttowers.com

October 2, 2012

Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Letter of Authorization – AT&T FA# 10035068

Ladies and Gentlemen,

The undersigned is the owner of the telecommunications tower facility located at 230 Guinea Road in Monroe, Connecticut (the "Telecommunications Tower"). By this letter, the undersigned wishes to indicate The Connecticut Light and Power Company and any of its subsidiaries or affiliates, together with their employees or agents, has our authority and consent to seek approval from the Connecticut Siting Council and/or the town of Monroe including a building permit, zoning relief, and site plan review, in connection with the co-location of telecommunications equipment on the Telecommunications Tower.

Sincerely,

By: Bruce K. Nicholson

Name: Bruce Nicholson

Title: Sales Manager

ATTACHMENT 3

AT&T Towers
5405 Windward Pkwy
Alpharetta, GA 30004
(770) 708-6100

Kevin Clements
1117 Perimeter Center West, Suite W303
Atlanta, GA 30338
(678) 781-5061
kclements@gpdgroup.com

GPD# 2012856.99 Rev. 1
August 28, 2012

STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**Site USID:**	**60427**
	Site FA:	**10035068**
	Site Name:	**MONROE-GUINEA ROAD**
	AT&T Project:	**Northeast Utilities Co-location 4-12-2012**
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F, ASCE 7, 2003 IBC & 2005 CTBC** **85-mph w/ 0″ ice** **38-mph w/ 3/4″ of ice**
SITE DATA:		**230 Guinea Road, Monroe, CT 06468, Fairfield County** **Latitude 41° 20' 30.670″ N, Longitude 73° 16' 28.297" W** **Market: New England** **240′ Rohn Self Support Tower**

Ms. Charlotte Malone,

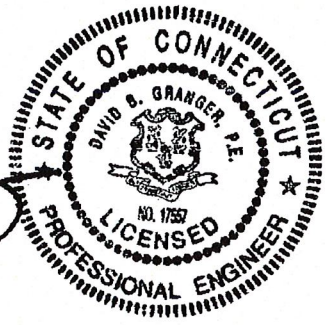
GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	97.8%	Pass
Foundation Ratio with Proposed Equipment:	88.8%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and AT&T. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



David B. Granger, P.E.
Connecticut #: 17557

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing structure is capable of carrying the proposed loading configuration as specified by Northeast Utilities to AT&T. This report was commissioned by Ms. Charlotte Malone of AT&T.

Modifications designed by GPD Job #: 2009268.80 Rev. A, dated 10/20/09, have been considered in this analysis.

The proposed coax to 185' shall be placed on Face B next to Leg A in a single row in order for the analysis results to be valid. Refer to Appendix C for the proposed coax layout.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Legs	86.4%	Pass
Diagonals	97.8%	Pass
Horizontals	66.4%	Pass
Member Bolts	97.3%	Pass
Anchor Rods	58.8%	Pass
Foundation	88.8%	Pass

ANALYSIS METHOD

TNX Tower (Version 6.0.4.0), 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 solely based on this information.

DOCUMENTS PROVIDED

Document	Remarks	Source
Preliminary Tower Summary	Northeast Utilities Co-location Document, uploaded 5/8/2012	Siterra
Site Lease Application	Northeast Utilities Application, dated 3/30/2012	Siterra
Tower Design	Not Provided	N/A
Foundation Design	Not Provided	N/A
Foundation Investigation	WEI Project # 2009-901, dated 9/16/2009	Siterra
Geotechnical Investigation	WEI Project # 2009-901, dated 9/16/2009	Siterra
Previous Structural Analysis	GPD Group Job #: 2012767.37, dated 6/21/2012	Siterra
Tower Mapping	GPD & Patriot Towers Job #: 2009269.52, dated 9/9/2009	Siterra
Modification Drawings	GPD Job #: 2009268.80 Rev. A, dated 10/20/09	Siterra

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. 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 tower member 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.
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. All existing loading was obtained from the previous structural analysis by GPD Project #: 2012767.37, dated 6/21/2012, site photos and the provided preliminary tower summary form and is assumed to be accurate.
9. The proposed Tower Mounted Amplifiers are assumed to be installed behind antennas.
10. The existing AT&T loading as found in the preliminary tower summary differs from the tower mapping by GPD & Patriot Towers, dated 9/9/09. The existing AT&T loading is based on the tower mapping.
11. The proposed coax to 185' shall be placed on Face B next to Leg A in a single row in order for the analysis results to be valid. Refer to Appendix C for the proposed coax layout.
12. The AT&T future coax sizes and quantity along with the squid have been assumed based on previous LTE experience.
13. Leg A is assumed to be at 0 degrees based on satellite imagery.

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 not performed a recent 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

Tower Analysis Summary Form

General Info

Site Name	MONROE-GUINEA ROAD
Site Number	60427
FA Number	10035068
Date of Analysis	8/28/2012
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	SST	
Tower Height (top of steel AGL)	240'	
Tower Manufacturer	Rohn	
Tower Model	n/a	
Tower Design	Rohn File #: 25692JC	7/5/1990
Foundation Design	n/a	
Geotech Investigation	WEI Project No. 2009-901	9/16/2009
Previous Analysis	GPD Job #: 2012767.37	6/21/2012
Tower Mapping	GPD & Patriot Towers Job # 2009269.52	9/9/2009
Modification Drawings	GPD Job#: 2009268.80 rev. A	10/20/2009
Foundation Mapping	WEI Project No. 2009-901	9/16/2009

Design Parameters

Design Code Used	TIA/EIA-222-F, 2003 IBC, ASCE 7 & 2005 CTBC
Location of Tower (County, State)	Fairfield, CT
Basic Wind Speed (mph)	85
Ice Thickness (in)	0.75
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	97.8%
Anchor Rod (%)	58.8%
Foundation (%)	88.8%
Foundation Adequate?	Yes

Steel Yield Strength (ksi)

Leg	50
Diagonals	50/36
Horizontals	50/36
Member Bolts	A325
Anchor Rods	A354-BC

Modifications designed by GPD Job #: 2009268.80 Rev. A, dated 10/20/09, have been considered in this analysis.

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
Unknown	240	238	1	Omni	Unknown	8' Omni		3	unknown	6' Standoffs	1	Unknown	1/2"	Face C
Unknown	240	240	1	FM	Unknown	FM Antenna				on the same mount				
AT&T Mobility	236	236	6	Panel	Powerwave	RA21.7770.00	19/138/253	3	unknown	10' T-Frames	12	Unknown	1-5/8"	Face C
AT&T Mobility	236	236	6	Diplexer	Powerwave	LGP13519				on same mounts				
AT&T Mobility	236	236	6	TMA	Powerwave	LGP21401				on same mounts				
Nextel	226	226	9	Panel	Decibel	DB844H90E-XY	40/160/280	3	unknown	10' T-Frames	9	Unknown	1-5/8"	Face A
Verizon Wireless	215	218	3	Panel	Antel	BXA-171085-8BF	30/160/270	3	unknown	6'x10' Boom Gate	15	Unknown	1-5/8"	Face B
Verizon Wireless	215	218	6	Panel	Antel	LPA-80080-6CF	30/160/270			on same mounts	3	Unknown	1-5/8"	Face C
Verizon Wireless	215	218	2	Panel	Antel	BXA-70063-6CF_2	30/270			on same mounts				
Verizon Wireless	215	218	1	Panel	Antel	BXA-70063-4CF	160			on same mounts				
AT&T Mobility	201	207	2	Omni	unknown	12' Omni		2	unknown	4' Standoffs	2	Unknown	7/8"	Face A

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
Northeast Utilities	185	188.12	1	Omni	Andrew	DB586-Y		1	Andrew	S-600 Standoff	1	Unknown	7/8"	Face B
Northeast Utilities	185	185	1	TMA	Bird Tech.	429-94C-09168-T				on the same mount	1	Unknown	1/2"	Face B
Northeast Utilities	184	181.89	1	Omni	Andrew	DB586-Y				on the same mount	1	Unknown	7/8"	Face B

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Leg/Face
AT&T Mobility	236	236	3	Panel	Powerwave	P65-16-XLH-RR	19/138/253			on the existing mounts	2	DC Power	3/4"	Face C
AT&T Mobility	236	236	6	RRU	Ericsson	RRUS 11				on the existing mounts	1	Fiber	1/2"	Face C
AT&T Mobility	236	236	1	Squid	Raycap	DC6-48-60-18-8F				on the existing mounts				

Note: The future loading is in addition to the existing loading at the same elevation.

APPENDIX B

TNX Tower Output File

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 242.00 ft above the ground line.
The base of the tower is set at an elevation of 2.00 ft above the ground line.
The face width of the tower is 6.56 ft at the top and 30.18 ft at the base.
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 85 mph.
Nominal ice thickness of 0.7500 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 38 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 tower member 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 Round Or Flat

Description	*Face or Leg*	*Allow Shield*	*Component Type*	*Placement ft*	*Face Offset in*	*Lateral Offset (Frac FW)*	*#*	*# Per Row*	*Clear Spacing in*	*Width or Diameter in*	*Perimeter in*	*Weight plf*
Climbing Ladder	C	No	Af (Leg)	200.00 - 8.00	0.0000	0	1	1	0.2500	0.0000	0.5000	7.90
Safety Line 3/8	C	No	Af (Leg)	200.00 - 8.00	0.0000	0	1	1	0.2500	0.3750	1.1800	0.22
Step Pegs	A	No	Ar (Leg)	200.00 - 8.00	0.0000	0	1	1	0.8000	0.0000		2.72
Step Pegs	B	No	Ar (Leg)	140.00 - 8.00	0.0000	0	1	1	0.8000	0.0000		2.72
Step Pegs	C	No	Ar (Leg)	140.00 - 8.00	0.0000	0	1	1	0.8000	0.0000		2.72
Step Pegs	A	No	Ar (Leg)	240.00 - 200.00	0.0000	0	1	1	0.8000	0.8000		2.72
Feedline Ladder (Af)	A	Yes	Af (CfAe)	226.00 - 8.00	0.0000	-0.4	1	1	3.0000	3.0000	12.0000	8.40
LDF5-50A (7/8 FOAM)	A	Yes	Ar (CfAe)	201.00 - 8.00	0.0000	-0.45	2	2	1.0000	1.0900		0.33
LDF7-50A (1-5/8 FOAM)	A	Yes	Ar (CfAe)	226.00 - 8.00	0.0000	-0.4	9	9	1.0000	1.9800		0.82
Feedline Ladder (Af)	B	Yes	Af (CfAe)	215.00 - 8.00	0.0000	-0.4	1	1	3.0000	3.0000	12.0000	8.40
LDF7-50A (1-5/8 FOAM)	B	Yes	Ar (CfAe)	215.00 - 8.00	0.0000	-0.4	15	9	1.0000	1.9800		0.82
1/2" Fiber Cable	C	Yes	Ar (CfAe)	236.00 - 8.00	4.0000	-0.4	1	1	0.6300	0.0000		0.15
3/4" DC Power Line	C	Yes	Ar (CfAe)	236.00 - 8.00	4.0000	-0.38	2	2	0.7500	0.0000		0.33
Feedline Ladder (Af)	C	Yes	Af (CfAe)	236.00 - 8.00	0.0000	-0.4	1	1	3.0000	3.0000	12.0000	8.40
LDF7-50A (1-5/8 FOAM)	C	Yes	Ar (CfAe)	215.00 - 8.00	0.0000	-0.4	15	9	1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	C	Yes	Ar (CfAe)	236.00 - 215.00	0.0000	-0.4	12	6	1.0000	1.9800		0.82
3/4" Conduit	C	Yes	Ar (CfAe)	240.00 - 8.00	0.0000	0.48	1	1	0.7500	0.7500		0.50
LDF4-50A (1/2 FOAM)	C	Yes	Ar (CfAe)	242.00 - 10.00	0.0000	-0.43	1	1	0.6300	0.6300		0.15

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF5-50A (7/8 FOAM)	B	Yes	Ar (CfAe)	185.00 - 10.00	0.0000	-0.49	2	2	1.0000	1.0900		0.33
LDF4-50A (1/2 FOAM)	B	Yes	Ar (CfAe)	185.00 - 10.00	0.0000	-0.47	1	1	0.6300	0.6300		0.15

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Flash Beacon	C	None		0.0000	240.00	No Ice	3.00	3.00	100.00
						1/2" Ice	4.50	4.50	150.00
						1" Ice	6.00	6.00	200.00
						2" Ice	9.00	9.00	300.00
						4" Ice	15.00	15.00	500.00
MTS 72" HD Standoff	A	From Leg	3.00 0.00 0.00	0.0000	240.00	No Ice	2.24	5.32	115.00
						1/2" Ice	3.19	7.69	158.73
						1" Ice	4.14	10.06	202.46
						2" Ice	6.04	14.80	289.92
						4" Ice	9.84	24.28	464.84
MTS 72" HD Standoff	B	From Leg	3.00 0.00 0.00	0.0000	240.00	No Ice	2.24	5.32	115.00
						1/2" Ice	3.19	7.69	158.73
						1" Ice	4.14	10.06	202.46
						2" Ice	6.04	14.80	289.92
						4" Ice	9.84	24.28	464.84
MTS 72" HD Standoff	C	From Leg	3.00 0.00 0.00	0.0000	240.00	No Ice	2.24	5.32	115.00
						1/2" Ice	3.19	7.69	158.73
						1" Ice	4.14	10.06	202.46
						2" Ice	6.04	14.80	289.92
						4" Ice	9.84	24.28	464.84
8' Omni	B	From Leg	3.00 0.00 -4.00	0.0000	242.00	No Ice	1.60	1.60	20.00
						1/2" Ice	2.42	2.42	32.45
						1" Ice	3.24	3.24	50.14
						2" Ice	4.23	4.23	101.86
						4" Ice	6.32	6.32	274.93
FM Antenna	B	From Leg	3.00 0.00 0.00	0.0000	242.00	No Ice	0.79	0.79	10.00
						1/2" Ice	0.91	0.91	18.78
						1" Ice	1.04	1.04	29.51
						2" Ice	1.32	1.32	57.57
						4" Ice	2.00	2.00	145.59
10' T-Frame	A	From Leg	0.50 0.00 0.00	19.0000	236.00	No Ice	8.83	3.05	268.16
						1/2" Ice	12.37	7.13	388.19
						1" Ice	15.91	9.21	508.22
						2" Ice	22.99	19.37	748.28
						4" Ice	37.15	31.69	1228.40
10' T-Frame	B	From Leg	0.50 0.00 0.00	18.0000	236.00	No Ice	8.83	3.05	268.16
						1/2" Ice	12.37	7.13	388.19
						1" Ice	15.91	9.21	508.22
						2" Ice	22.99	19.37	748.28
						4" Ice	37.15	31.69	1228.39
10' T-Frame	C	From Leg	0.50 0.00 0.00	13.0000	236.00	No Ice	8.83	3.05	268.16
						1/2" Ice	12.37	7.13	388.19
						1" Ice	15.91	9.21	508.22
						2" Ice	22.99	19.37	748.28
						4" Ice	37.15	31.69	1228.39

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) RA21.7770.00 w/ 2"x5.5' mountpipe	A	From Leg	1.00 0.00 0.00	19.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.80 7.30 7.81 8.85 11.05	4.78 5.57 6.30 7.83 11.15	60.08 109.47 168.93 310.94 716.48
(2) RA21.7770.00 w/ 2"x5.5' mountpipe	B	From Leg	1.00 0.00 0.00	18.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.80 7.30 7.81 8.85 11.05	4.78 5.57 6.30 7.83 11.15	60.08 109.47 168.93 310.94 716.48
(2) RA21.7770.00 w/ 2"x5.5' mountpipe	C	From Leg	1.00 0.00 0.00	13.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.80 7.30 7.81 8.85 11.05	4.78 5.57 6.30 7.83 11.15	60.08 109.47 168.93 310.94 716.48
(2) LGP21401	A	From Leg	1.00 0.00 0.00	19.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	14.10 21.26 30.32 54.89 135.29
(2) LGP21401	B	From Leg	1.00 0.00 0.00	18.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	14.10 21.26 30.32 54.89 135.29
(2) LGP21401	C	From Leg	1.00 0.00 0.00	13.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	14.10 21.26 30.32 54.89 135.29
(2) LGP13519	A	From Leg	1.00 0.00 0.00	19.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	5.30 8.02 11.91 23.96 70.63
(2) LGP13519	B	From Leg	1.00 0.00 0.00	18.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	5.30 8.02 11.91 23.96 70.63
(2) LGP13519	C	From Leg	1.00 0.00 0.00	13.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.34 0.42 0.51 0.73 1.25	0.21 0.28 0.36 0.55 1.03	5.30 8.02 11.91 23.96 70.63
P65-16-XLH-RR w/ 2"x5.5' mountpipe	A	From Leg	1.00 0.00 0.00	19.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.40 8.95 9.51 10.65 13.03	6.01 6.85 7.65 9.29 12.80	83.08 142.71 213.12 379.18 841.36
P65-16-XLH-RR w/ 2"x5.5' mountpipe	B	From Leg	1.00 0.00 0.00	18.0000	236.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.40 8.95 9.51 10.65 13.03	6.01 6.85 7.65 9.29 12.80	83.08 142.71 213.12 379.18 841.36
P65-16-XLH-RR w/ 2"x5.5' mountpipe	C	From Leg	1.00 0.00	13.0000	236.00	No Ice 1/2" Ice	8.40 8.95	6.01 6.85	83.08 142.71

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00				1" Ice	9.51	7.65	213.12
							2" Ice	10.65	9.29	379.18
							4" Ice	13.03	12.80	841.36
(2) RRUS-11	A	From Leg	1.00		19.0000	236.00	No Ice	2.94	1.25	50.00
			0.00				1/2" Ice	3.17	1.41	69.32
			0.00				1" Ice	3.41	1.59	91.56
							2" Ice	3.91	1.96	145.56
							4" Ice	5.02	2.82	297.12
(2) RRUS-11	B	From Leg	1.00		18.0000	236.00	No Ice	2.94	1.25	50.00
			0.00				1/2" Ice	3.17	1.41	69.32
			0.00				1" Ice	3.41	1.59	91.56
							2" Ice	3.91	1.96	145.56
							4" Ice	5.02	2.82	297.12
(2) RRUS-11	C	From Leg	1.00		13.0000	236.00	No Ice	2.94	1.25	50.00
			0.00				1/2" Ice	3.17	1.41	69.32
			0.00				1" Ice	3.41	1.59	91.56
							2" Ice	3.91	1.96	145.56
							4" Ice	5.02	2.82	297.12
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	1.00		19.0000	236.00	No Ice	1.47	1.47	32.80
			0.00				1/2" Ice	1.67	1.67	50.52
			0.00				1" Ice	1.88	1.88	70.72
							2" Ice	2.33	2.33	119.24
							4" Ice	3.38	3.38	252.92
10' T-Frame	A	From Leg	0.50		0.0000	226.00	No Ice	8.83	3.05	268.16
			0.00				1/2" Ice	12.37	7.13	388.19
			0.00				1" Ice	15.91	9.21	508.22
							2" Ice	22.99	19.37	748.28
							4" Ice	37.15	31.69	1228.40
10' T-Frame	B	From Leg	0.50		0.0000	226.00	No Ice	8.83	3.05	268.16
			0.00				1/2" Ice	12.37	7.13	388.19
			0.00				1" Ice	15.91	9.21	508.22
							2" Ice	22.99	19.37	748.28
							4" Ice	37.15	31.69	1228.40
10' T-Frame	C	From Leg	0.50		0.0000	226.00	No Ice	8.83	3.05	268.16
			0.00				1/2" Ice	12.37	7.13	388.19
			0.00				1" Ice	15.91	9.21	508.22
							2" Ice	22.99	19.37	748.28
							4" Ice	37.15	31.69	1228.40
(3) DB844H90E-XY w/ Mount Pipe	A	From Leg	1.00		40.0000	226.00	No Ice	3.10	4.65	29.21
			0.00				1/2" Ice	3.44	5.27	64.92
			0.00				1" Ice	3.81	5.91	108.59
							2" Ice	4.60	7.24	214.71
							4" Ice	6.27	10.26	526.46
(3) DB844H90E-XY w/ Mount Pipe	B	From Leg	1.00		40.0000	226.00	No Ice	3.10	4.65	29.21
			0.00				1/2" Ice	3.44	5.27	64.92
			0.00				1" Ice	3.81	5.91	108.59
							2" Ice	4.60	7.24	214.71
							4" Ice	6.27	10.26	526.46
(3) DB844H90E-XY w/ Mount Pipe	C	From Leg	1.00		40.0000	226.00	No Ice	3.10	4.65	29.21
			0.00				1/2" Ice	3.44	5.27	64.92
			0.00				1" Ice	3.81	5.91	108.59
							2" Ice	4.60	7.24	214.71
							4" Ice	6.27	10.26	526.46
Rohn 12' Boom Gate	A	From Leg	1.73		30.0000	215.00	No Ice	15.35	14.00	557.70
			1.00				1/2" Ice	21.29	20.81	741.30
			0.00				1" Ice	27.23	27.62	924.90
							2" Ice	39.11	41.24	1292.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Offsets: ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
								4" Ice	62.87	68.48	2026.50
Rohn 12' Boom Gate	B	From Leg	1.53	1.29	0.00	40.0000	215.00	No Ice	15.35	14.00	557.70
								1/2" Ice	21.29	20.81	741.30
								1" Ice	27.23	27.62	924.90
								2" Ice	39.11	41.24	1292.10
								4" Ice	62.87	68.48	2026.50
Rohn 12' Boom Gate	C	From Leg	1.73	1.00	0.00	30.0000	215.00	No Ice	15.35	14.00	557.70
								1/2" Ice	21.29	20.81	741.30
								1" Ice	27.23	27.62	924.90
								2" Ice	39.11	41.24	1292.10
								4" Ice	62.87	68.48	2026.50
BXA-171085-8BF w/ Mount Pipe	A	From Leg	3.46	2.00	3.00	30.0000	215.00	No Ice	3.41	3.58	32.40
								1/2" Ice	3.88	4.38	64.64
								1" Ice	4.35	5.06	106.00
								2" Ice	5.36	6.47	208.30
								4" Ice	7.52	9.64	522.07
BXA-171085-8BF w/ Mount Pipe	B	From Leg	3.06	2.57	3.00	40.0000	215.00	No Ice	3.41	3.58	32.40
								1/2" Ice	3.88	4.38	64.64
								1" Ice	4.35	5.06	106.00
								2" Ice	5.36	6.47	208.30
								4" Ice	7.52	9.64	522.07
BXA-171085-8BF w/ Mount Pipe	C	From Leg	3.46	2.00	3.00	30.0000	215.00	No Ice	3.41	3.58	32.40
								1/2" Ice	3.88	4.38	64.64
								1" Ice	4.35	5.06	106.00
								2" Ice	5.36	6.47	208.30
								4" Ice	7.52	9.64	522.07
(2) LPA-80080/6CF w/ Mount Pipe	A	From Leg	3.46	2.00	3.00	30.0000	215.00	No Ice	4.35	10.51	42.90
								1/2" Ice	4.79	11.56	104.60
								1" Ice	5.25	12.49	177.42
								2" Ice	6.17	14.40	348.65
								4" Ice	8.11	18.43	824.28
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	3.06	2.57	3.00	40.0000	215.00	No Ice	4.35	10.51	42.90
								1/2" Ice	4.79	11.56	104.60
								1" Ice	5.25	12.49	177.42
								2" Ice	6.17	14.40	348.65
								4" Ice	8.11	18.43	824.28
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	3.46	2.00	3.00	30.0000	215.00	No Ice	4.35	10.51	42.90
								1/2" Ice	4.79	11.56	104.60
								1" Ice	5.25	12.49	177.42
								2" Ice	6.17	14.40	348.65
								4" Ice	8.11	18.43	824.28
BXA-70063-6CF-2 w/Mount Pipe	A	From Leg	3.46	2.00	3.00	30.0000	215.00	No Ice	7.77	5.18	39.33
								1/2" Ice	8.31	6.11	93.42
								1" Ice	8.86	6.92	158.45
								2" Ice	9.99	8.59	313.53
								4" Ice	12.35	12.13	754.65
BXA-70063-4CF w/ Mount Pipe	B	From Leg	3.06	2.57	3.00	40.0000	215.00	No Ice	5.75	4.24	44.64
								1/2" Ice	6.26	4.91	90.62
								1" Ice	6.78	5.59	144.67
								2" Ice	7.85	7.06	275.42
								4" Ice	10.14	10.28	646.88
BXA-70063-6CF-2 w/Mount Pipe	C	From Leg	3.46	2.00	3.00	30.0000	215.00	No Ice	7.77	5.18	39.33
								1/2" Ice	8.31	6.11	93.42
								1" Ice	8.86	6.92	158.45
								2" Ice	9.99	8.59	313.53
								4" Ice	12.35	12.13	754.65
MTS 48" Antenna Standoff	B	From Leg	1.00			0.0000	201.00	No Ice	2.97	4.03	70.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	4.39	6.12	106.38
			0.00			1" Ice	5.81	8.21	142.76
						2" Ice	8.65	12.39	215.52
						4" Ice	14.33	20.75	361.04
MTS 48" Antenna Standoff	C	From Leg	1.00	0.0000	201.00	No Ice	2.97	4.03	70.00
			0.00			1/2" Ice	4.39	6.12	106.38
			0.00			1" Ice	5.81	8.21	142.76
						2" Ice	8.65	12.39	215.52
						4" Ice	14.33	20.75	361.04
12' Omni	B	From Leg	2.00	0.0000	201.00	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.23	4.23	42.30
			6.00			1" Ice	5.47	5.47	72.34
						2" Ice	7.69	7.69	156.25
						4" Ice	10.71	10.71	423.63
12' Omni	C	From Leg	2.00	0.0000	201.00	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.23	4.23	42.30
			6.00			1" Ice	5.47	5.47	72.34
						2" Ice	7.69	7.69	156.25
						4" Ice	10.71	10.71	423.63
Side Light	A	From Leg	1.00	0.0000	120.00	No Ice	0.33	0.33	7.00
			0.00			1/2" Ice	0.47	0.47	7.05
			0.00			1" Ice	0.60	0.60	7.10
						2" Ice	0.87	0.87	7.20
						4" Ice	1.40	1.40	7.40
Side Light	B	From Leg	1.00	0.0000	120.00	No Ice	0.33	0.33	7.00
			0.00			1/2" Ice	0.47	0.47	7.05
			0.00			1" Ice	0.60	0.60	7.10
						2" Ice	0.87	0.87	7.20
						4" Ice	1.40	1.40	7.40
Side Light	C	From Leg	1.00	0.0000	120.00	No Ice	0.33	0.33	7.00
			0.00			1/2" Ice	0.47	0.47	7.05
			0.00			1" Ice	0.60	0.60	7.10
						2" Ice	0.87	0.87	7.20
						4" Ice	1.40	1.40	7.40
17' Side Light Mount	A	From Face	0.00	0.0000	120.00	No Ice	2.27	2.27	62.00
			0.00			1/2" Ice	3.42	3.42	1152.47
			0.00			1" Ice	4.58	4.58	2263.97
						2" Ice	6.93	6.93	4550.64
						4" Ice	11.78	11.78	9382.99
17' Side Light Mount	C	From Face	0.00	0.0000	120.00	No Ice	2.27	2.27	62.00
			0.00			1/2" Ice	3.42	3.42	1152.47
			0.00			1" Ice	4.58	4.58	2263.97
						2" Ice	6.93	6.93	4550.64
						4" Ice	11.78	11.78	9382.99
MTS 36" Antenna Standoff	B	From Leg	1.50	0.0000	185.00	No Ice	2.97	3.51	62.00
			0.00			1/2" Ice	4.39	5.33	94.35
			0.00			1" Ice	5.81	7.15	126.70
						2" Ice	8.65	10.79	191.40
						4" Ice	14.33	18.07	320.80
DB586-Y	B	From Leg	3.00	0.0000	185.00	No Ice	1.01	1.01	8.25
			0.00			1/2" Ice	1.28	1.28	16.59
			3.12			1" Ice	1.56	1.56	28.01
						2" Ice	2.14	2.14	60.71
						4" Ice	3.53	3.53	169.83
DB586-Y	B	From Leg	3.00	0.0000	185.00	No Ice	1.01	1.01	8.25
			0.00			1/2" Ice	1.28	1.28	16.59
			-3.12			1" Ice	1.56	1.56	28.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
429-94C-09168-T	B	From Leg	3.00 0.00 0.00	0.0000	185.00	2" Ice 4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.14 3.53 1.17 1.34 1.52 1.91 2.79	2.14 3.53 1.17 1.34 1.52 1.91 2.79	60.71 169.83 20.00 30.01 42.30 74.44 174.52

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
242.00	8' Omni	35	7.839	0.3149	0.0115	324812
240.00	Flash Beacon	35	7.705	0.3142	0.0115	324812
236.00	10' T-Frame	35	7.439	0.3127	0.0113	270677
226.00	10' T-Frame	35	6.775	0.3073	0.0107	101470
215.00	Rohn 12' Boom Gate	35	6.059	0.2960	0.0098	49814
201.00	MTS 48" Antenna Standoff	35	5.192	0.2740	0.0081	29113
185.00	MTS 36" Antenna Standoff	35	4.296	0.2433	0.0059	27028
120.00	Side Light	35	1.667	0.1336	0.0018	42059

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	242	Leg	A325N	0.7500	4	2784.25	19438.60	0.143 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	3156.90	3806.25	0.829 ✔	1.333	Member Block Shear
		Top Girt	A325N	0.5000	1	80.48	3806.25	0.021 ✔	1.333	Member Block Shear
T2	222	Leg	A325N	0.8750	4	9675.67	26458.10	0.366 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	4571.23	3806.25	1.201 ✔	1.333	Member Block Shear
		Top Girt	A325N	0.5000	1	429.86	3806.25	0.113 ✔	1.333	Member Block Shear
T3	202	Leg	A325N	0.8750	4	16173.40	26458.00	0.611 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	5073.76	4123.34	1.230 ✔	1.333	Bolt Shear
T4	182	Leg	A325N	1.0000	4	22211.00	34557.50	0.643 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	5349.69	4123.34	1.297 ✔	1.333	Bolt Shear
T5	162	Leg	A325N	1.0000	4	27786.30	34557.50	0.804 ✔	1.333	Bolt Tension
		Diagonal	A325X	0.5000	1	5625.48	5437.50	1.035 ✔	1.333	Member Bearing
T6	142	Leg	A325N	1.0000	6	21773.20	34557.50	0.630 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.6250	1	6692.68	6442.72	1.039 ✔	1.333	Bolt Shear
T7	122	Leg	A325N	1.0000	6	25208.80	34557.50	0.729 ✔	1.333	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.6250	1	7294.29	6442.72	1.132 ✓	1.333	Bolt Shear
T8	102	Leg	A325N	1.0000	6	28598.70	34557.50	0.828 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	7967.18	9277.52	0.859 ✓	1.333	Bolt Shear
T9	82	Leg	A325N	1.0000	6	31955.30	34557.50	0.925 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	8662.36	9277.52	0.934 ✓	1.333	Bolt Shear
T10	62	Leg	A325N	1.0000	8	26455.90	34557.40	0.766 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	1	9390.54	9277.52	1.012 ✓	1.333	Bolt Shear
T11	42	Leg	A325N	1.0000	8	26635.40	34555.40	0.771 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	5497.45	9277.52	0.593 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	4431.85	9277.52	0.478 ✓	1.333	Bolt Shear
T12	22	Leg	A354-BC	1.0000	10	25395.00	32397.70	0.784 ✓	1.333	Bolt Tension
		Diagonal	A325N	0.7500	3	5315.00	9277.52	0.573 ✓	1.333	Bolt Shear
		Horizontal	A325N	0.7500	2	4523.60	9277.52	0.488 ✓	1.333	Bolt Shear

Section Capacity Table

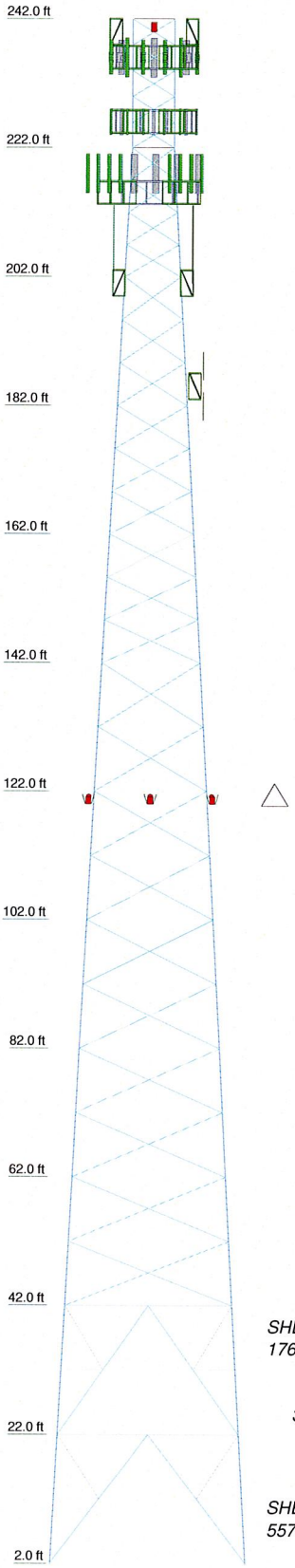
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	242 - 222	Leg	ROHN 2.5 STD	1	-14257.20	55076.63	25.9	Pass
T2	222 - 202	Leg	ROHN 3 EH	37	-45457.80	96050.91	47.3	Pass
T3	202 - 182	Leg	ROHN 3.5 EH	67	-74246.50	110260.29	67.3	Pass
T4	182 - 162	Leg	ROHN 4 EH	88	-101788.00	139062.55	73.2	Pass
T5	162 - 142	Leg	ROHN 5 EH	109	-128022.00	206280.41	62.1	Pass
T6	142 - 122	Leg	ROHN 5 EH	130	-151212.00	177435.62	85.2	Pass
T7	122 - 102	Leg	ROHN 6 EH	145	-176671.00	264284.57	66.8	Pass
T8	102 - 82	Leg	ROHN 6 EH	160	-202423.00	264284.57	76.6	Pass
T9	82 - 62	Leg	ROHN 6 EH	175	-228286.00	264284.57	86.4	Pass
T10	62 - 42	Leg	ROHN 8 EHS	190	-254388.00	332522.17	76.5	Pass
T11	42 - 22	Leg	ROHN 8 EHS	205	-260022.00	332522.17	78.2	Pass
T12	22 - 2	Leg	ROHN 8 EH	238	-311011.00	435619.05	71.4	Pass
T1	242 - 222	Diagonal	L1 3/4x1 3/4x3/16	7	-3212.82	7821.62	41.1	Pass
T2	222 - 202	Diagonal	L1 3/4x1 3/4x3/16	43	-4320.90	4417.18	97.8	Pass
T3	202 - 182	Diagonal	L2 1/2x2 1/2x3/16	70	-5073.76	8132.31	62.4	Pass
T4	182 - 162	Diagonal	L2 1/2x2 1/2x1/4	91	-5349.69	8014.73	66.7	Pass
T5	162 - 142	Diagonal	L2 1/2x2 1/2x1/4	113	-5685.70	6273.35	90.6	Pass
T6	142 - 122	Diagonal	L3x3x1/4	134	-6692.68	7441.73	89.9	Pass
T7	122 - 102	Diagonal	L3 1/2x3 1/2x1/4	149	-7294.29	10077.20	72.4	Pass
T8	102 - 82	Diagonal	L4x4x5/16	164	-7967.18	15666.21	50.9	Pass
T9	82 - 62	Diagonal	L4x4x5/16	179	-8662.36	13308.66	65.1	Pass
T10	62 - 42	Diagonal	L4x4x5/16	194	-9390.54	11574.75	81.1	Pass
T11	42 - 22	Diagonal	Rohn 2.5 EHH	212	-16492.30	26597.75	62.0	Pass
T12	22 - 2	Diagonal	ROHN 3 STD	245	-15945.00	26710.79	59.7	Pass
T11	42 - 22	Horizontal	ROHN 2.5 STD	208	-8863.70	13355.46	66.4	Pass
T12	22 - 2	Horizontal	ROHN 3 STD	257	-9047.20	22365.74	40.5	Pass
T1	242 - 222	Top Girt	L1 3/4x1 3/4x3/16	5	-79.61	2708.74	2.9	Pass
T2	222 - 202	Top Girt	L1 3/4x1 3/4x3/16	41	-428.53	2708.74	15.8	Pass
T11	42 - 22	Redund Horz 1 Bracing	ROHN 1.5 STD	210	-4510.18	11292.50	39.9	Pass
T12	22 - 2	Redund Horz 1	ROHN 1.5 STD	243	-5394.62	9692.24	55.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T11	42 - 22	Bracing Redund Diag 1 Bracing	ROHN 2 STD	211	-4053.84	7705.17	52.6	Pass
T12	22 - 2	Redund Diag 1 Bracing	ROHN 2 STD	263	-4573.26	7307.29	62.6	Pass
T11	42 - 22	Redund Hip 1 Bracing	ROHN 1.5 STD	233	-44.11	10226.11	0.4	Pass
T12	22 - 2	Redund Hip 1 Bracing	ROHN 1.5 STD	266	-38.21	8723.63	0.4	Pass
T11	42 - 22	Redund Hip Diagonal Bracing	ROHN 1.5 STD	232	-28.29	1379.58	2.1	Pass
T12	22 - 2	Redund Hip Diagonal Bracing	ROHN 1.5 STD	267	-28.33	1263.45	2.2	Pass
T11	42 - 22	Inner Bracing	ROHN 2 STD	237	-8.70	4122.03	0.6	Pass
T12	22 - 2	Inner Bracing	ROHN 2 STD	268	-8.60	3514.81	0.6	Pass
							Summary	
						Leg (T9)	86.4	Pass
						Diagonal (T2)	97.8	Pass
						Horizontal (T11)	66.4	Pass
						Top Girt (T2)	15.8	Pass
						Redund Horz 1 Bracing (T12)	55.7	Pass
						Redund Diag 1 Bracing (T12)	62.6	Pass
						Redund Hip 1 Bracing (T12)	0.4	Pass
						Redund Hip Diagonal Bracing (T12)	2.2	Pass
						Inner Bracing (T11)	0.6	Pass
						Bolt Checks	97.3	Pass
						RATING =	**97.8**	**Pass**

APPENDIX C

Tower Elevation Drawing

Section	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EH	ROHN 8 EHS			ROHN 6 EH		ROHN 5 EH		ROHN 4 EH	ROHN 3.5 EH	ROHN 3 EH	ROHN 2.5 STD
Leg Grade						A572-50						
Diagonals	ROHN 3 STD	Rohn 2.5 EHH		L4x4x5/16		L3 1/2x3 1/2x1/4	L3x3x1/4	L2 1/2x2 1/2x1/4		L2 1/2x2 1/2x3/16	L1 3/4x1 3/4x3/16	
Diagonal Grade				A572-50						A36		
Top Girts						N.A.					L1 3/4x1 3/4x3/16	
Horizontals	ROHN 3 STD	ROHN 2.5 STD					N.A.					
Red. Horizontals		ROHN 1.5 STD					N.A.					
Red. Diagonals		ROHN 2 STD					N.A.					
Red. Hips		ROHN 1.5 STD					N.A.					
Inner Bracing		ROHN 2 STD					N.A.					
Face Width (ft)	30.1771	28.0303	25.8835	23.7367	21.59	19.4432	17.2964	15.1496	13.0028	10.8561	8.70928	6.5625
# Panels @ (ft)	1 @ 19.9167		1 @ 20		10 @ 10				9 @ 6.66667		4 @ 5	5 @ 4
Weight (lb)	37974.5	5356.7	5394.3	4840.4	4354.6	4154.2	3321.1	2489.7	2505.0	1992.9	1477.2	1178.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
8' Omni	242	(3) DB844H90E-XY w/ Mount Pipe	226
FM Antenna	242	(3) DB844H90E-XY w/ Mount Pipe	226
MTS 72" HD Standoff	240	(3) DB844H90E-XY w/ Mount Pipe	226
MTS 72" HD Standoff	240	Rohn 12' Boom Gate	215
Flash Beacon	240	Rohn 12' Boom Gate	215
MTS 72" HD Standoff	240	Rohn 12' Boom Gate	215
10' T-Frame	236	BXA-171085-8BF w/ Mount Pipe	215
10' T-Frame	236	BXA-171085-8BF w/ Mount Pipe	215
10' T-Frame	236	BXA-171085-8BF w/ Mount Pipe	215
(2) RA21.7770.00 w/ 2"x5.5' mountpipe	236	(2) LPA-80080/6CF w/ Mount Pipe	215
(2) RA21.7770.00 w/ 2"x5.5' mountpipe	236	(2) LPA-80080/6CF w/ Mount Pipe	215
(2) RA21.7770.00 w/ 2"x5.5' mountpipe	236	(2) LPA-80080/6CF w/ Mount Pipe	215
(2) LGP21401	236	BXA-70063-6CF-2 w/Mount Pipe	215
(2) LGP21401	236	BXA-70063-4CF w/ Mount Pipe	215
(2) LGP21401	236	BXA-70063-6CF-2 w/Mount Pipe	215
(2) LGP13519	236	MTS 48" Antenna Standoff	201
(2) LGP13519	236	MTS 48" Antenna Standoff	201
(2) LGP13519	236	12' Omni	201
P65-16-XLH-RR w/ 2"x5.5' mountpipe	236	12' Omni	201
P65-16-XLH-RR w/ 2"x5.5' mountpipe	236	MTS 36" Antenna Standoff	185
P65-16-XLH-RR w/ 2"x5.5' mountpipe	236	DB586-Y	185
(2) RRUS-11	236	DB586-Y	185
(2) RRUS-11	236	429-94C-09168-T	185
(2) RRUS-11	236	17' Side Light Mount	120
DC6-48-60-18-8F Surge Suppression Unit	236	Side Light	120
		Side Light	120
10' T-Frame	226	Side Light	120
10' T-Frame	226	17' Side Light Mount	120
10' T-Frame	226		

MATERIAL STRENGTH

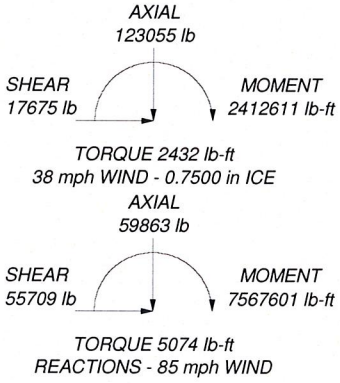
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 97.8%

MAX. CORNER REACTIONS AT BASE:
DOWN: 309522 lb
SHEAR: 33482 lb

UPLIFT: -252656 lb
SHEAR: 28778 lb

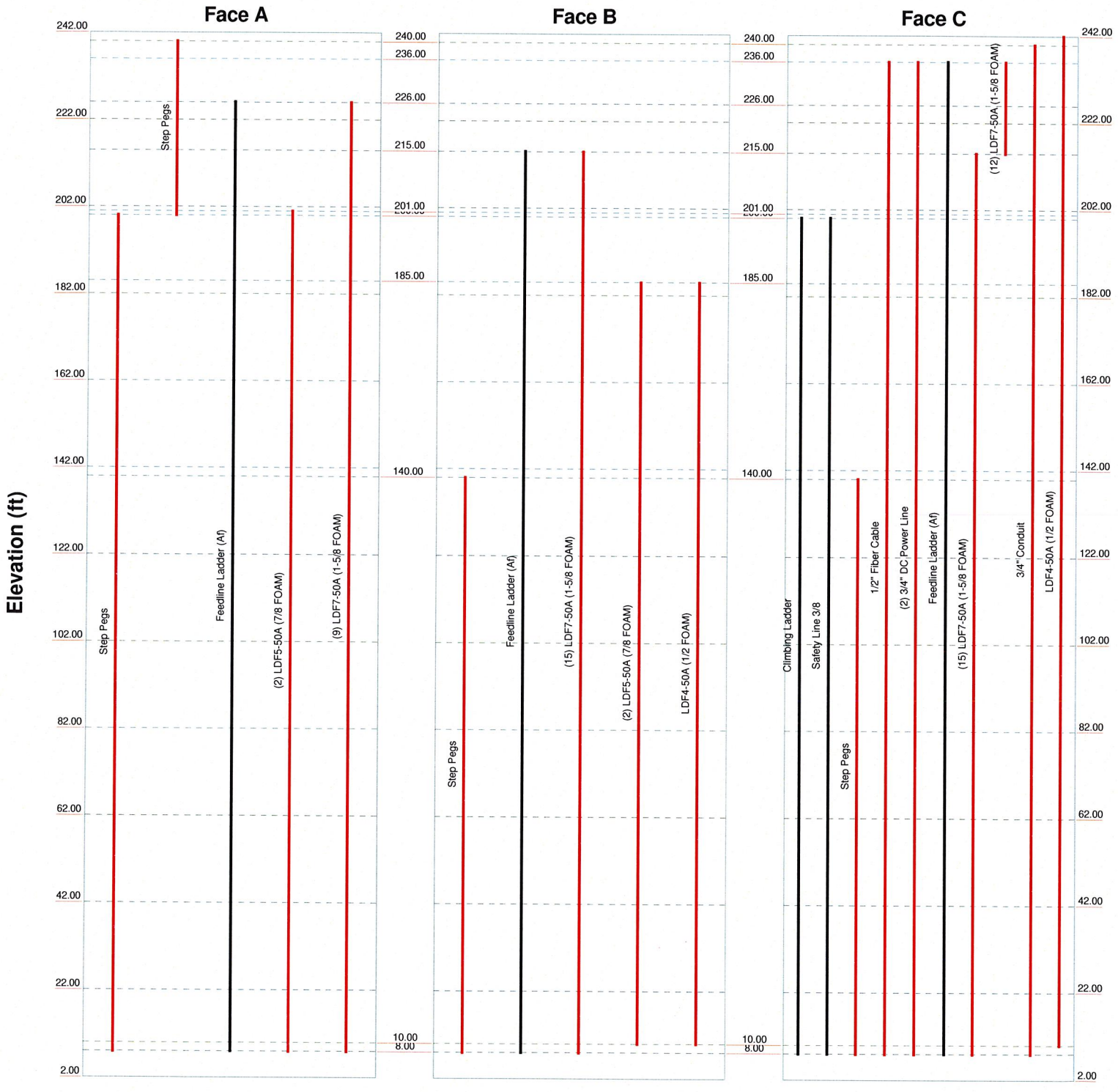


GPD GROUP
520 S. Main St., Suite 2531
Akron, OH 44311
Phone: (614) 210-0751
FAX: (614) 210-0752

Job: 60427 MONROE-GUINEA ROAD			
Project: 2012856.99 Rev. 1			
Client: AT&T Mobility	Drawn by: kdavis	App'd:	
Code: TIA/EIA-222-F	Date: 08/28/12	Scale: NTS	
Path: O:\2012\2012856\99\TNX\60427.eri		Dwg No. E-1	

Feedline Distribution Chart
2' - 242'

Round | Flat | App In Face | App Out Face | Truss Leg



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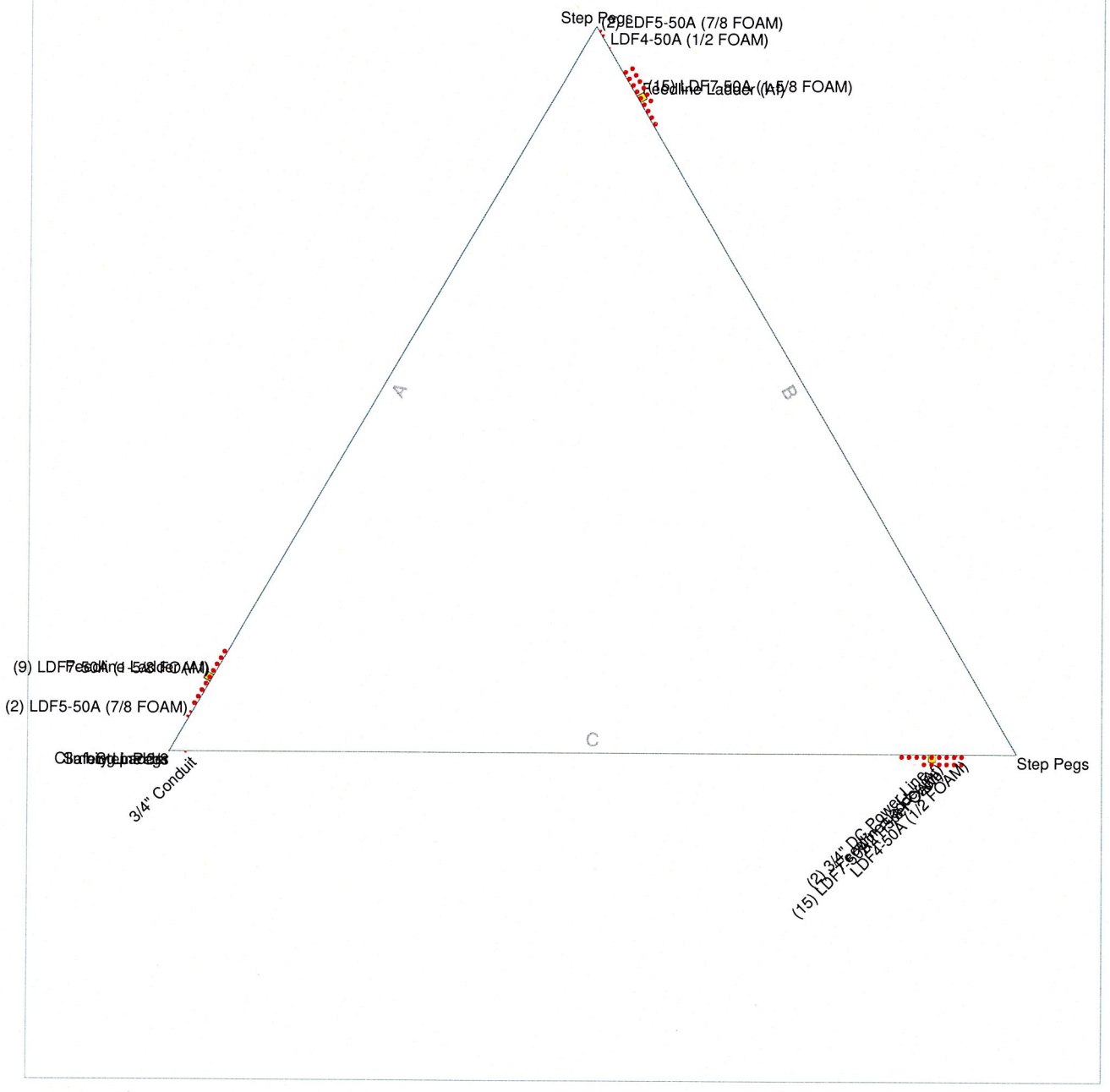
Project: 2012856.99 Rev. 1			
Client: AT&T Mobility	Drawn by: kdavis	App'd:	
Code: TIA/EIA-222-F	Date: 08/28/12	Scale: NTS	
Path: O:\2012\2012856\99\TNX\60427.eri		Dwg No. E-7	

Feedline Plan
22'

Round Flat App In Face App Out Face

Section @ 22'



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Job: 60427 MONROE-GUINEA ROAD			
Project: 2012856.99 Rev. 1			
Client: AT&T Mobility	Drawn by: kdavis	App'd:	
Code: TIA/EIA-222-F	Date: 08/28/12	Scale: NTS	
Path: O:\2012\2012856\99\TNX\60427.eri		Dwg No. E-7	

APPENDIX D

Foundation Analysis

520 South Main Street • Suite 2531 • Akron, Ohio 44311• PHONE 330-572-2100 • FAX 330-572-2101

GPD GROUP
Engineers • Architects • Planners

2012856.99 Rev. 1
Sheet No__1__Of__1__

Calculated By KMD Date 8/28/2012
Checked By __Date

Individual Pad and Pier Uplift Check

TIA/EIA-222-F

RISA REACTIONS

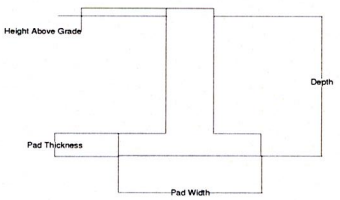
Uplift	**252.66**	k

PAD & PIER DIMENSIONS

Pier Shape	**Circular**	
Pier Height Above Grade	**2.00**	ft
Pier Diameter/Width	**4.00**	ft
Pad Width	**16.00**	ft
Pad Length	**16.00**	ft
Pad Thickness	**3.00**	ft
Depth to Bottom of Pad	**9.00**	ft

SOIL PROPERTIES

Soil Type	**Granular**	
Water Table Depth	**99.0**	ft
Average Friction Angle	**34.0**	



Soil Layer	Soil Layer Thickness (ft)		Soil Unit Weight (kcf)	Concrete Dry Unit Weight (kcf)	Soil Weight (k)	Vertical Shear Resistance (k)	Frictional Resistance (k)
1 (neglected)	**3.50**		**0.120**	**0.150**	193.88	0.00	0.00
2	**2.50**		**0.120**	**0.150**	90.36	0.00	0.00
3	**3.00**		**0.120**	**0.150**	0.00	0.00	76.17
					0.00	0.00	0.00
					0.00	0.00	0.00
					0.00	0.00	0.00
					0.00	0.00	0.00
					0.00	0.00	0.00
					0.00	0.00	0.00
					0.00	0.00	0.00
Totals	9				284.24	0.00	76.17

CALCULATIONS

Wc=	130.28	k
(Wc+Ws)/1.5 + (Vr+Fr)/2 or Ws/2+Wc/1.25+(Vr+Fr)/2)	284.43	k
Capacity=	**88.8% OK**	

GPD GROUP

Mat Foundation Analysis
60427 Monroe-Guinea Road
2012856.99 Rev. 1

General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Rock
Foundation Type	Mono Pad
Pier Type	Round
Reinforcing Known	No
Max Capacity	1

Tower Reactions		
Moment, M	0	k-ft
Axial, P	309.52	k
Shear, V	33.48	k

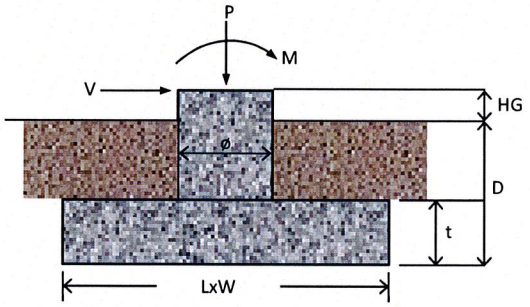
Pad & Pier Geometry		
Pier Diameter, ø	4	ft
Pad Length, L	16	ft
Pad Width, W	16	ft
Pad Thickness, t	3	ft
Depth, D	9	ft
Height Above Grade, HG	2	ft

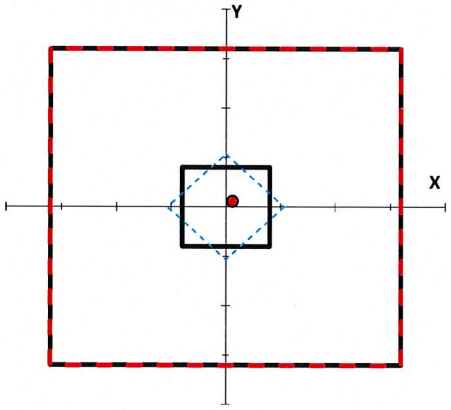
Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete Fc'	3	ksi
Clear Cover		in
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 7	
Pad Quantity Per Layer		
Pier Rebar Size	# 8	
Pier Quantity of Rebar		

Soil Properties		
Soil Type	Granular	
Soil Unit Weight	120	pcf
Angle of Friction, ø	34	°
Bearing Type	Net	
Ultimate Bearing	60	ksf
Water Table Depth	99	ft
Frost Depth	3.5	ft

Bearing Summary			Load Case
Qxmax	2.43	ksf	1D+1W
Qymax	2.43	ksf	1D+1W
Qmax @ 45°	2.93	ksf	1D+1W
$Q_{(all)\ Gross}$	30.54	ksf	
Controlling Capacity	**9.6%**	**Pass**	

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	300.40	≥1.5	1D+1W
FS(ot)y	300.40	≥1.5	1D+1W
Controlling Capacity	**0.5%**	**Pass**	





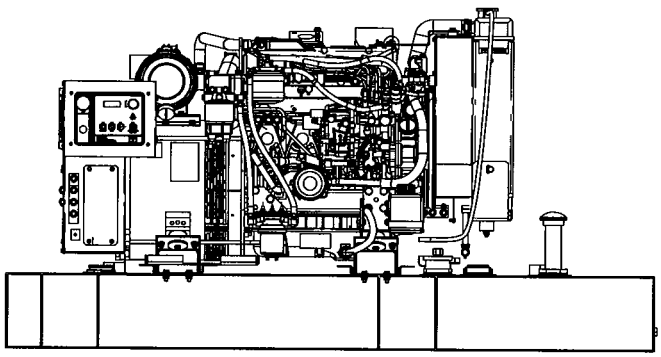
ATTACHMENT 4

Model: 15REOZDC

KOHLER POWER SYSTEMS

Compact Diesel

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED



Shown with available subbase fuel tank.

Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The generator set is CSA certified, file #LR 955.
- UL 2200 listing is available.
- The generator set engine is certified by the Environmental Protection Agency (EPA) to conform to Tier 4 nonroad emissions regulations.
- The generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all systems and components. Two- and five-year extended warranties are also available.
- Four-point mounting with vibration isolators.
- The brushless, rotating-field alternator has broadrange reconnectability.
- Voltage regulation of ±0.25%.
- Sustained short-circuit capability.
- Customer connection box with field-connection terminal blocks.
- Single-side access.
- Enclosure features:
  - Weather and sound enclosures are available.
  - All weather and sound enclosures are rated for 150 mph winds.
  - Enclosures reduce sound levels and protect the generator set from the elements, animal intrusion, and unwanted entry.
  - Enclosures have a fade-, scratch-, and corrosion-resistant Kohler cream beige finish with lockable, flush- mounted door latches.
  - Acoustic insulation meets UL 94 HF1 flammability classification.

Generator Set Ratings

				130 °C Rise Standby Rating		105 °C Rise Prime Rating	
Alternator	**Voltage**	**Hz**	**Ph**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**
4H7	120/240	60	1	15/15	62.5	13.5/13.5	56.3
	120/208	60	3	15.0/18.8	52.1	13.5/16.9	46.9
	120/240	60	1	15.0/15.0	62.5	13.5/13.5	56.3
	120/240	60	3	15.0/18.8	45.2	13.5/16.9	40.7
4J7	127/220	60	3	15.0/18.8	49.3	13.5/16.9	44.4
	139/240	60	3	15.0/18.8	45.2	13.5/16.9	40.7
	220/380	60	3	15.0/18.8	28.5	13.5/16.9	25.7
	277/480	60	3	15.0/18.8	22.6	13.5/16.9	20.3

RATINGS: All three-phase units are rated at 0.8 power factor. *Standby Ratings:* Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. *Prime Power Ratings:* Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Kohler® generator set distributor for availability. GENERAL GUIDELINES FOR DERATING: *ALTITUDE:* Derate 0.8% per 100 m (328 ft.) elevation above 200 m (656 ft.). *TEMPERATURE:* Derate 6.0% per 10°C (18°F) temperature above 25°C (77°F).

Alternator Specifications

Specifications		Alternator
Manufacturer		Kohler
Type		4-Pole, Rotating-Field
Exciter type		Brushless
Leads: quantity, type		
4H7		4
4J7		12, Reconnectable
Voltage regulator		Solid State
Insulation:		
Material		Class H
Temperature rise in 25°C ambient		130°C
Bearings, quantity		1
Coupling		Flexible Disc
Amortisseur windings		Full
Voltage regulation, no-load to full-load		±0.25%
One-step load acceptance		100% of Rating
Peak motor starting kVA (35% dip for voltages below):		
240 V	4H7 (4 lead)	51 (60 Hz)
240 V	4J7 (12 lead)	75 (60 Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Rotors dynamically balanced to minimize vibration.
- Copper windings to ensure minimal heat buildup. Insulation meeting NEMA standards for class H insulation.
- Generator direct connected to the engine.
- Sealed precision ball bearings with a precision-machined steel sleeve in the end bracket to prevent shaft misalignment and extend bearing life.
- 100% of rated standby current unbalanced load capability.

Application Data

Engine

Engine Specifications	60 Hz
Manufacturer	Yanmar
Engine: model, type	3TNV84T
Cylinder arrangement	3 Inline
Displacement, L (cu. in.)	1.496 (91.3)
Bore and stroke, mm (in.)	84 x 90 (3.31 x 3.54)
Compression ratio	19.0:1
Combustion system	Direct Injection
Main bearings: quantity, type	4, Replaceable Sleeve
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	19.0 (25.5)
Cylinder head material	Cast Iron
Crankshaft material	Forged Steel
Connecting rod material	Forged Carbon Steel
Governor: type, make	Mechanical, Yanmar
Frequency regulation:	
No-load to full-load	±2.5%
Steady state	±0.33%
Frequency	Mechanically Adjustable
Air cleaner type	Dry

Exhaust

Exhaust System	60 Hz
Exhaust flow at rated kW, m^3/min. (cfm)	3.9 (138)
Exhaust temperature at rated kW, °C (°F)	570 (1058)
Maximum allowable back pressure, kPa (in. Hg)	7.9 (2.3)
Exhaust outlet size at engine hookup	1.5 NPT

Engine Electrical

Engine Electrical System	60 Hz
Battery-charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	12
Ampere rating	70
Starter motor rated voltage (DC)	12
Battery recommended cold cranking amps (CCA):	
Qty., CCA for 0°C (-18°F)	One, 650
Battery voltage (DC)	12

Fuel

Fuel System	60 Hz
Fuel supply line	1/4 NPT
Fuel return line, mm (in.)	8 (0.31)
Maximum lift, m (ft.)	1 (3.3)
Fuel pump	Electric
Fuel filter	5 Micron
Fuel/water separator	Yes
Recommended fuel	Diesel Fuel ASTM D975 No. 2-D

Lubrication

Lubricating System	60 Hz
Type	Pressure
Oil pan capacity with filter, L (qt.)	4.7 (5.0)
Oil filter	Full flow, Cartridge
Oil cooler	Water-Cooled

Application Data

Cooling

Cooling System	60 Hz
Ambient temperature, °C (°F)	50 (122) *
Type	Liquid
Capacity, engine only, L (qt.)	2.0 (2.1)
Engine jacket water flow, Lpm (gpm)	33.0 (8.7)
Capacity with unit-mounted radiator, L (qt.)	9.1 (9.6)
Heat rejected to cooling water at rated kW, Btu/min.	813
Fan diameter, unit-mounted radiator, mm (in.)	409 (16.1)
Fan, kW (HP)	0.6 (0.75)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)

* Enclosure with enclosed silencer reduces ambient temperature capability by 5°C (9°F).

Cooling System	60 Hz
Exhaust manifold type	Dry
Connection sizes	
Water inlet, mm (in.)	28 (1.1)
Water outlet, mm (in.)	28 (1.1)
Static head, maximum, m (ft.)	4 (13.1)

Operation Requirements

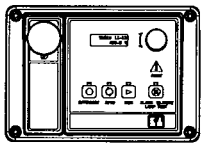
Air Requirements	60 Hz
Radiator min. cooling air, m^3/min. (cfm)	30 (1050)
Alternator min. cooling air, m^3/min. (cfm)	6 (210)
Radiator min. cooling air, m^3/min. (cfm)	30 (1050)
Combustion air, m^3/min. (cfm)	1.8 (62)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	13.3 (757)
Alternator, kW (Btu/min.)	2.6 (150)

Fuel Consumption	60 Hz	
Diesel, Lph (gph), at % load	**Standby Rating**	
100%	5.0	(1.3)
75%	3.8	(1.0)
50%	3.6	(1.0)
25%	1.8	(0.5)
Diesel, Lph (gph), at % load	**Prime Rating**	
100%	4.5	(1.2)
75%	3.7	(1.0)
50%	3.2	(0.8)
25%	1.6	(0.4)

Sound

Acoustic Data with Sound Enclosure	60 Hz
Average dBA at 7 meters:	
100% load	68
75% load	68
No load	68

Controller



Decision-Maker® 3000 Controller
Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or modem configuration
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-100 for additional controller features and accessories.

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KohlerPower.com

Kohler Power Systems
Asia Pacific Headquarters
7 Jurong Pier Road
Singapore 619159
Phone (65) 6264-6422, Fax (65) 6264-6455

Additional Standard Features

- Battery Rack and Cables
- Decision-Maker® 3000 Controller
- Fuel/Water Separator
- Oil Drain Extension
- Oil Pressure Sender

Available Accessories

Cooling Systems

- ❑ Remote Radiator Setup (radiator sold separately)
- ❑ Unit-Mounted Radiator w/Pusher Fan (included with enclosures)

Cooling System Accessories

- ❑ Block Heater (recommended for ambient temperatures below 0°C [32°F])
- ❑ Coolant Added (N/A with remote radiator)
- ❑ Radiator Duct Flange (open units only)
- ❑ Remote Radiator, 12V

Enclosures (with enclosed silencer)

- ❑ Sound Enclosure (rated for 150 mph wind load)
- ❑ Weather Enclosure (rated for 150 mph wind load)

Open Units

- ❑ Exhaust Silencer (kit GM41678-KP3) (engine-mounted)

Electrical System

- ❑ Battery
- ❑ Battery Charger, 6 Amp
- ❑ Battery Charger, 10 Amp
- ❑ Battery Charger, 10 Amp with alarms (required for NFPA 110)
- ❑ Battery Heater (recommended for ambient temperatures below 0°C [32°F])
- ❑ Electronic Governor (isochronous, with ±0.25% steady-state frequency regulation)
- ❑ Emergency Stop Switch, Remote
- ❑ Line Circuit Breaker
- ❑ Preheat Kit (recommended for ambient temperatures below 5°C [41°F])

Engine

- ❑ Auxiliary Fuel Pump
- ❑ Flexible Fuel Lines

Fuel Tank and Mounting (must select one)

- ❑ Skid only
- ❑ 40 Gallon Subbase Tank and Mounting
- ❑ 80 Gallon Subbase Tank and Mounting

Fuel Tank Accessories

- ❑ Inner Tank Leak Alarm

Controller Accessories

- ❑ Communication Products and PC Software
- ❑ Input/Output Module
- ❑ Remote Serial Annunciator
- ❑ Run Relay

Maintenance and Literature

- ❑ General Maintenance Literature Kit
- ❑ NFPA 110 Literature Kit
- ❑ Overhaul Literature Kit
- ❑ Production Literature Kit

Warranty

- ❑ Five-Year Comprehensive Warranty
- ❑ Two-Year Extended Warranty
- ❑ Five-Year Extended Warranty

Miscellaneous Accessories

- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

Dimensions and Weights

Open Units with Radiator:

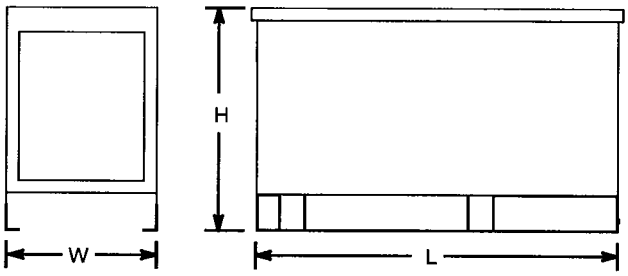
Dimensions, L x W x H, mm (in.):
with skid only: 1730 x 860 x 873 (68.1 x 33.9 x 34.4)
with 40 gal. tank: 1730 x 860 x 924 (68.1 x 33.9 x 36.4)
with 80 gal. tank: 1730 x 860 x 1102 (68.1 x 33.9 x 43.4)

Weight, wet, max., kg (lb.):
with skid only:
with 40 gal. tank: 674 (1485)
with 80 gal. tank: 841 (1855)

Enclosed Units:

Dimensions, L x W x H, mm (in.):
with 40 gal. tank: 1730 x 862 x 1075 (68.1 x 34.0 x 42.3)
with 80 gal. tank: 1730 x 862 x 1250 (68.1 x 34.0 x 49.2)

Weight, wet, max., kg (lb.):
with 40 gal. tank: 862 (1900)
with 80 gal. tank: 975 (2150)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

DISTRIBUTED BY:

ATTACHMENT 5

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

Calculated Radio Frequency Emissions

Northeast Utilities

(Monroe, CT)

230 Guinea Road, Monroe, CT 06468

August 15, 2012

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3. RF Exposure Prediction Methods 2
4. Calculation Results 3
5. Conclusion 4
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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed installation of Northeast Utilities System's omnidirectional antennas, mounted on the lattice tower located at 230 Guinea Road, Monroe, CT. The coordinates of the tower are 41° 20' 30.659" N, 73° 16' 28.307" W.

Northeast Utilities System is proposing the following installation:

1) Install two 900 MHz omnidirectional antennas (one transmit, one receive).

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. Please refer to Attachment C for the vertical pattern of the proposed Northeast Utilities System's antenna. The calculated results for Northeast Utilities System 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
PageNet		931.5			0.0127	0.6210	2.05%
RAW Mobile Data		936			0.0008	0.6240	0.13%
Nextel	222	858			0.0142	0.5720	2.48%
Verizon	218	869	9	295	0.0201	0.5793	3.47%
Verizon	218	1970	3	181	0.0041	1.0000	0.41%
AT&T UMTS	236	880	2	565	0.0073	0.5867	1.24%
AT&T UMTS	236	1900	2	875	0.0113	1.0000	1.13%
AT&T GSM	236	880	1	296	0.0019	0.5867	0.33%
AT&T LTE	236	734	1	1117	0.0072	0.4893	1.47%
Northeast Utilities	181	935.2375	2	240	0.0005	0.6235	0.08%
						Total	**12.80%**

Table 1: Carrier Information[1] [2]

[1] The existing CSC filing should be updated with Northeast Utilities System's technologies and values provided in Table 1. 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. Where the antenna heights, number of transmitters, and transmitted watts are unknown, the %MPE values were taking from the existing CSC filing.

[2] Antenna height listed for Northeast Utilities System is in reference to the Centek Engineering Zoning Drawings dated August 13, 2012.

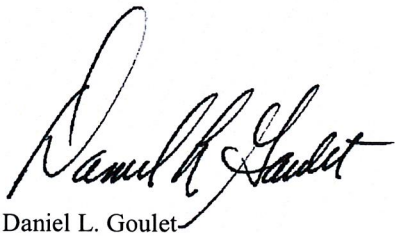
5. Conclusion

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 **12.8% 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

August 15, 2012
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[3]

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[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)
0.3-1.34	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)

[3] 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

[4] 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

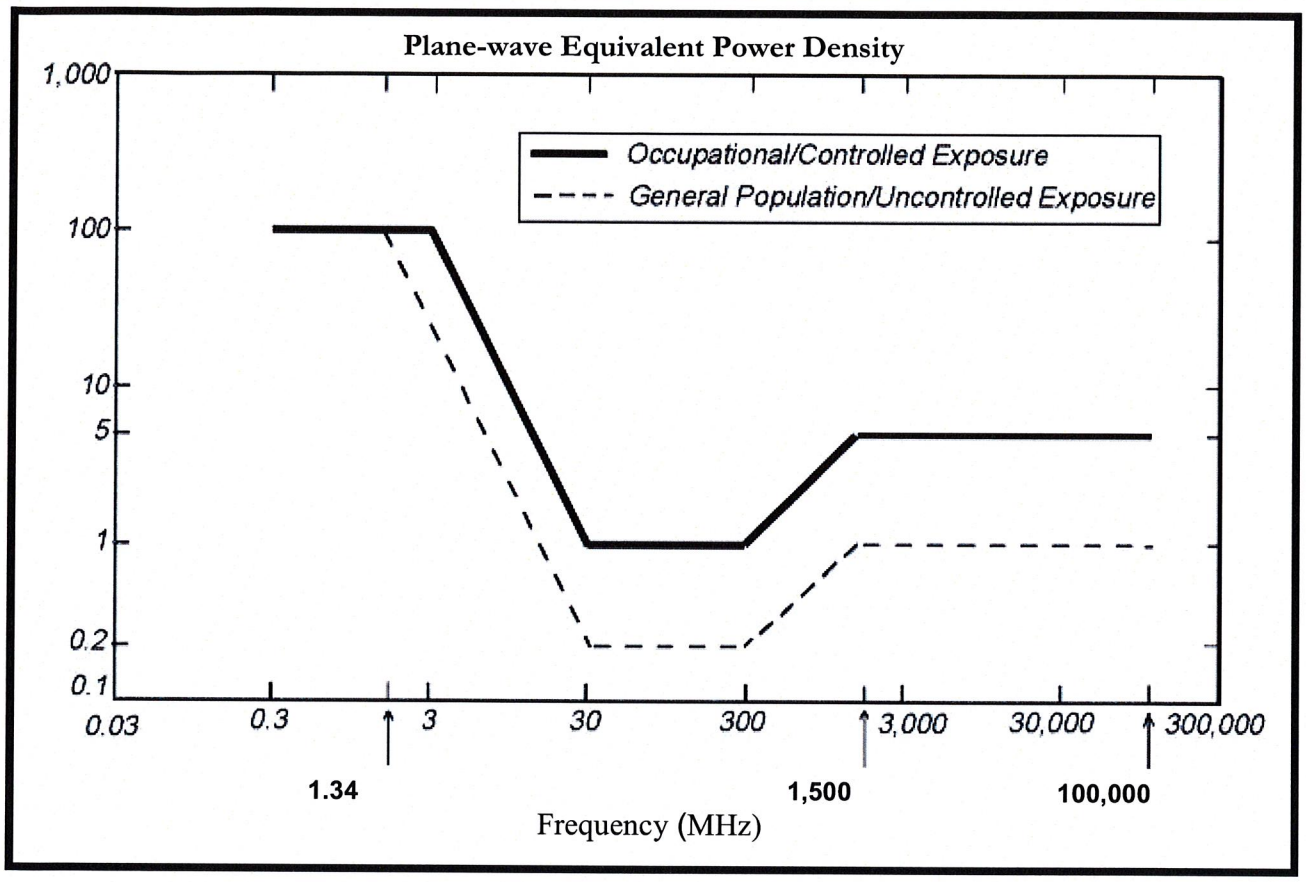


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: Northeast Utilities System Antenna Data Sheets and Electrical Patterns

900 MHz

Manufacturer:	Andrew
Model #:	DB586-Y
Frequency Band:	890-960 MHz
Gain:	6.0 dBd
Azimuth Beamwidth:	360°
Elevation Beamwidth:	18°
Polarization:	Vertical
Size L x UO :	59.0" x 1.5"