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

EM-CING-065-121116

November 14, 2012

ORIGINAL

RECEIVED
NOV 16 2012
CONNECTICUT
SITING COUNCIL

VIA OVERNIGHT COURIER

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

Re: New Cingular Wireless PCS, LLC – Exempt Modification
350 Hartland Boulevard, Hartland, Connecticut

Dear Ms. Roberts:

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

AT&T plans to modify the existing wireless communications facility owned by AT&T Corp. and located at 350 Hartland Boulevard, Hartland (coordinates 41°-58'-37.5" N, 72°-53'-16.3" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration, subject to modifications detailed in the attached structural documentation. Also included is a power density report reflecting the modification to AT&T's operations at the site.

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

1. AT&T will relocate one (1) existing GSM/UMTS antenna on the existing platform, and add three (3) LTE panel antennas mounted to new pipes and attached to the existing platform, all at a center line of approximately 120'. AT&T will also rotate the existing platform to match the LTE Azimuths. Six (6) RRHS (remote radio units) will be

placed on new mounts attached to the existing platform, and one (1) Surge Arrestor will be mounted to the existing platform support arm, all at a centerline height of approximately 120'. AT&T will also place DC power and fiber runs from the equipment to the antennas along the existing coaxial cable run. These changes will not extend the height of the approximately 120' structure.

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

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

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by C Squared Systems, LLC, AT&T's operations at the site will result in a power density of approximately 2.46%; the combined site operations will result in a total power density of approximately 31.18%.

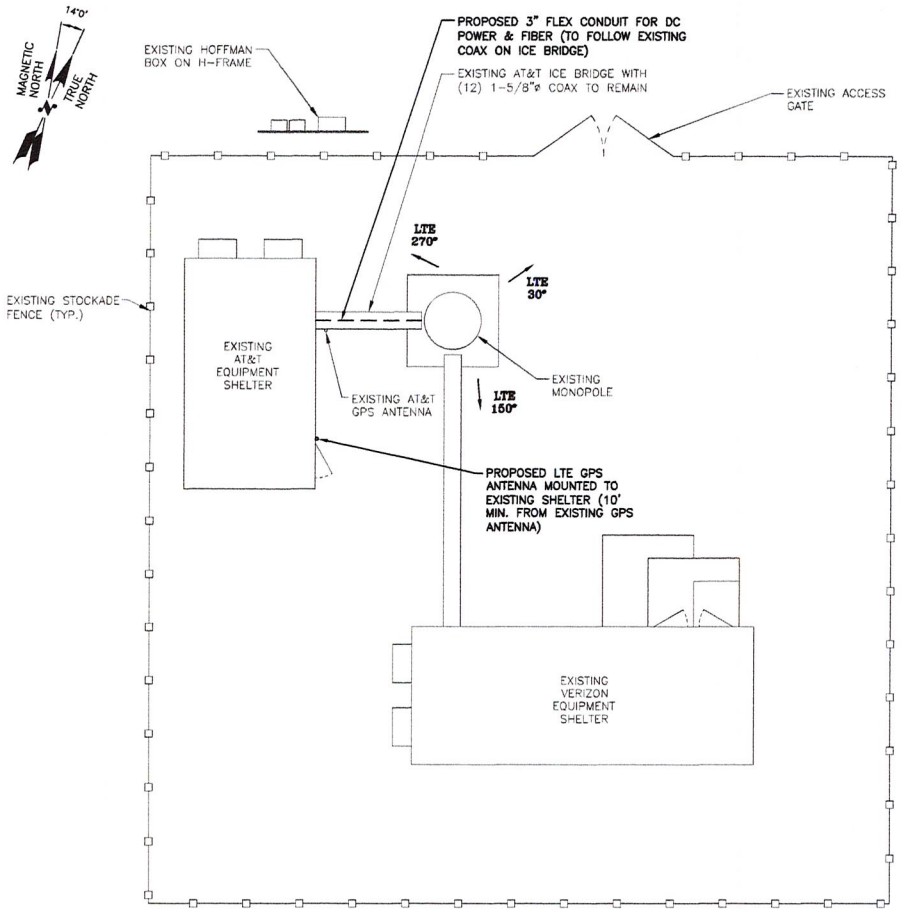
Please do not hesitate to contact me by phone at (203-610-1071), or by e-mail at mjhowlett@optonline.net, if there are any questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Melanie J. Howlett

Attachments

cc: Honorable Wade E. Cole, First Selectman, Town of Hartland
Marlene Jones (underlying property owner)

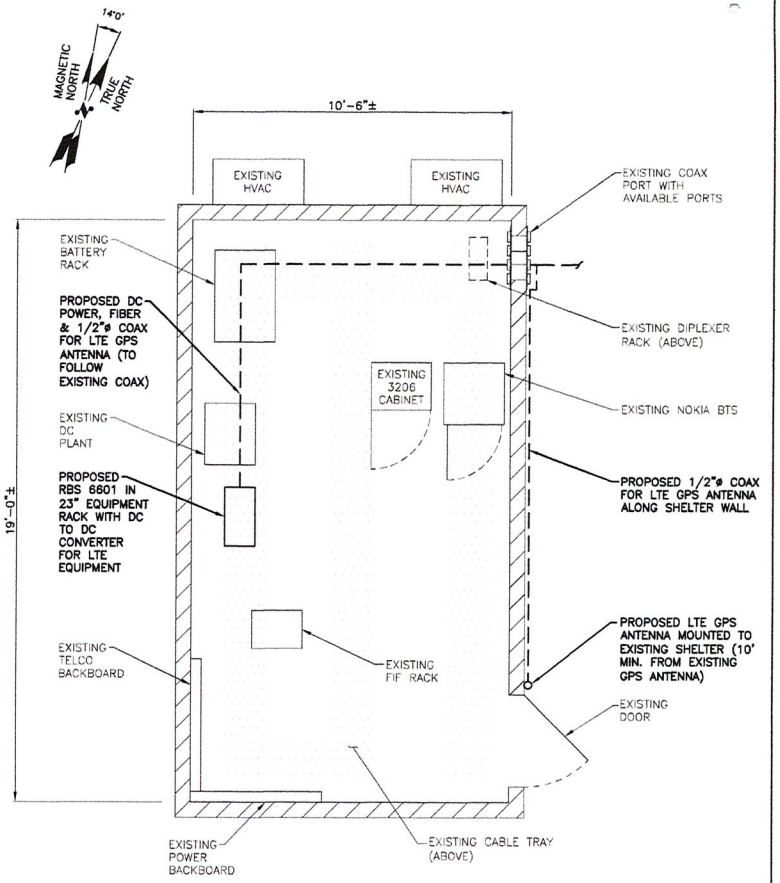


NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: GPD GROUP, DATED: OCTOBER 25, 2012, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



COMPOUND PLAN

SCALE: 3/16"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"

EQUIPMENT PLAN

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

0 1'-0" 2'-0" 4'-0" 6'-0"

Hudson Design Groupllc
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

NEXLINK GLOBAL SERVICES
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT#: 2A
WINDSOR, CT 06095

SITE NUMBER: CT1167
SITE NAME: HARTLAND - HARTLAND BOULEVARD
350 HARTLAND BOULEVARD
EAST HARTLAND, CT 06027
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	10/26/12	ISSUED FOR PERMITTING	RM	DC	DPH
0	08/21/12	ISSUED FOR REVIEW	RM	DC	DPH

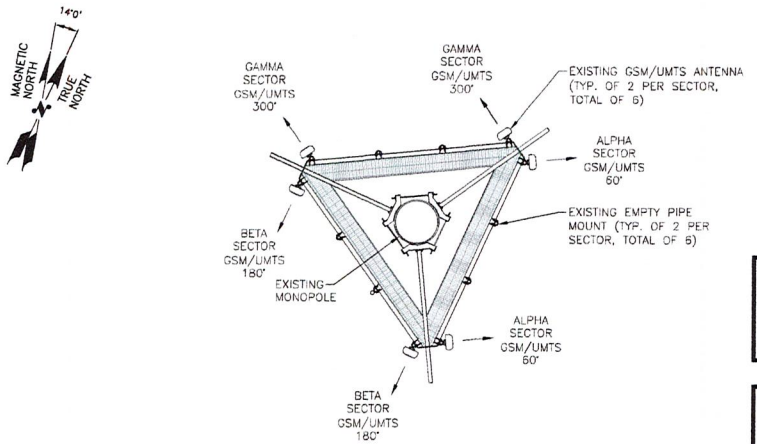
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RM

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 21715 — LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND AND EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1167.01	A-1	1



EXISTING GSM/UMTS ANTENNA PLAN

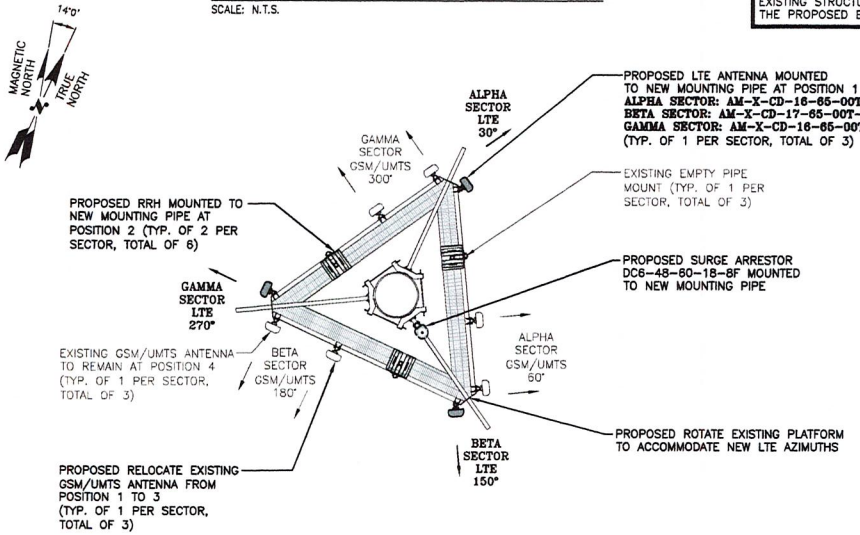
SCALE: N.T.S.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

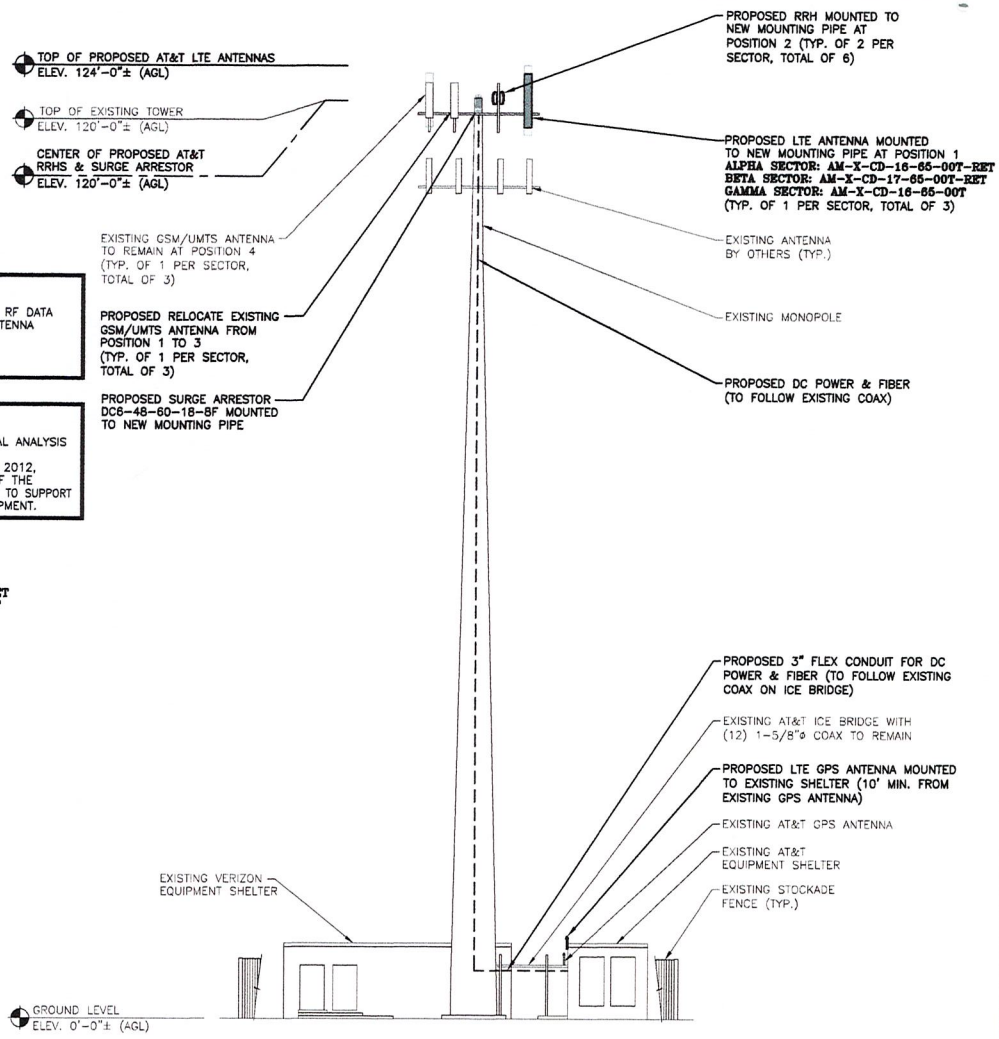
NOTE:

REFER TO STRUCTURAL ANALYSIS BY: GPD GROUP, DATED: OCTOBER 25, 2012, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.



NORTH ELEVATION

SCALE: 3/32"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
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WINDSOR, CT 06095

SITE NUMBER: CT1167
SITE NAME: HARTLAND - HARTLAND BOULEVARD
350 HARTLAND BOULEVARD
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at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
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0	08/21/12	ISSUED FOR REVIEW	RM	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RM

AT&T

ELEVATION & ANTENNA PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1167.01	A-2	1

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

Calculated Radio Frequency Emissions

CT1167

(Hartland - Hartland Boulevard)

350 Hartland Boulevard, East Hartland, CT 06027

(a.k.a. Hartland - 350 Hartland Blvd)

October 29, 2012

Table of Contents

List of Tables

List of Figures

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 350 Hartland Boulevard in East Hartland, CT. The coordinates of the tower are 41° 58' 37.27" N, 72° 53' 16.2" W.

AT&T is proposing the following modifications:

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

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

3. RF Exposure Prediction Methods

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

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical 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
New Cingular	*150*	*880*	*6*	*296*	*0.0284*	*0.5867*	*4.84%*
New Cingular	*150*	*1930*	*3*	*427*	*0.0205*	*1.0000*	*2.05%*
Verizon PCS	110	1970	11	268	0.0876	1.0000	8.76%
Verizon cellular	110	869	9	268	0.0717	0.5793	12.37%
Verizon AWS	110	2145	1	670	0.0199	1.0000	1.99%
Verizon LTE	110	698	1	875	0.0260	0.4653	5.59%
AT&T UMTS	120	880	2	565	0.0028	0.5867	0.48%
AT&T UMTS	120	1900	2	875	0.0044	1.0000	0.44%
AT&T LTE	120	734	1	1771	0.0044	0.4893	0.90%
AT&T GSM	120	880	1	283	0.0007	0.5867	0.12%
AT&T GSM	120	1900	4	525	0.0052	1.0000	0.52%
						Total	**31.18%**

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

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

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

[3] Antenna height listed for AT&T is in reference to the GPD Group Structural Analysis dated October 25, 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 **31.18% 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 29, 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[4]

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

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

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

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

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

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

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

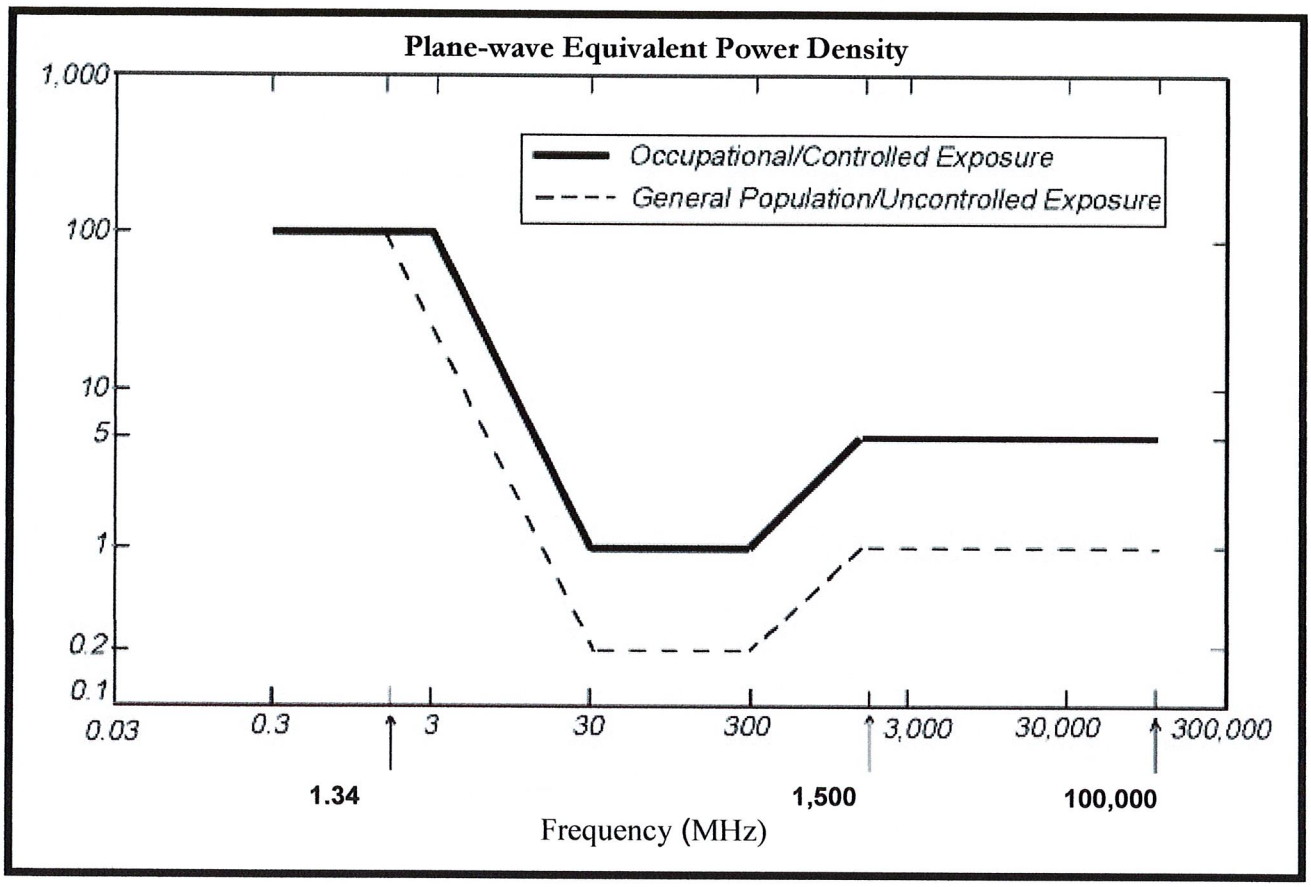
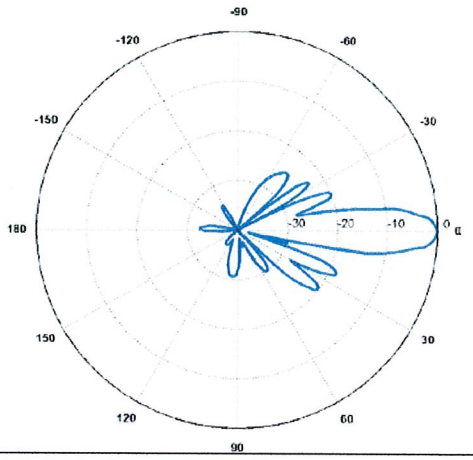


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

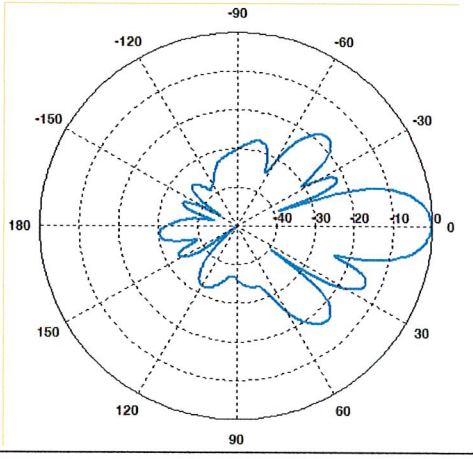
700 MHz

Manufacturer:	KMW
Model #:	AM-X-CD-17-65-00T-RET
Frequency Band:	698-806 MHz
Gain:	14.65 dBd
Vertical Beamwidth:	10°
Horizontal Beamwidth:	66°
Polarization:	Dual Slant ± 45°
Size L x W x D:	96.0" x 11.8" x 6.0"



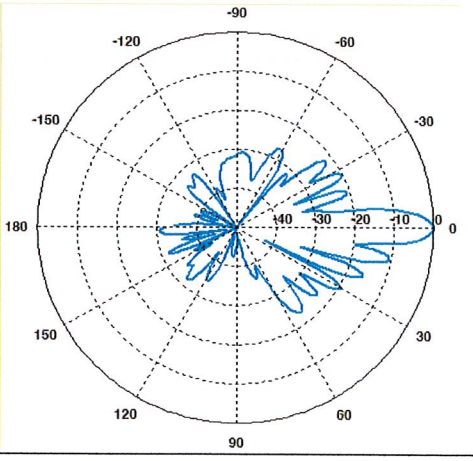
850 MHz

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



1900 MHz

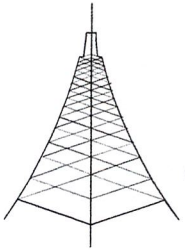
Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"

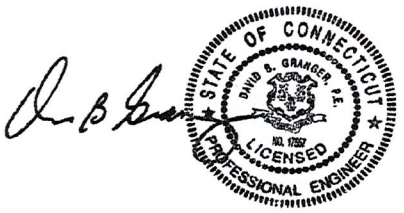


at&t

Letter of Explanation (LOE)

MUST be attached to any Structural Analysis





10/25/2012

Site Name: HARTLAND - HARTLAND BOULEVARD
Site Number: 93099
Engineer of Record: David B. Granger, P.E.

ALL STRUCTURES	Statement in COL A is Correct	VARIANCE from Col A	N/A	Alternate Value / Concept Used	Explanation	Yes	No	N/A	Comments / Reference
Structure Analyzed to F Code	X								
Note: ALL G analyses MUST be justified. A simple notation of jurisdiction requirement will suffice. F BUILT TOWERS in G Code jurisdictions MUST Have the new "5% Grace" Test Applied.G to be applied ONLY where this is exceeded. This 5% test applies to "like for like" only									
Guy Tensions Adjusted Within Code to Find Optimum tension / Minimum Reinforcement (Applies to Guyed Tower Failures Only). Note : AT&T requires a pulse chart for altered Tensions			X						
Antenna Azimuths Inputted Per AT&T Information Note Default Azimuths in PL	X								
All Yield Stresses > = 50 ksi (legs)			X						
All Yield Stresses > = 36 ksi (Diagonals and Horizontals))			X						
Structures Designated Class II (G Only)			X						
Exposure B Rating Used (Topography)			X						
K value for Slenderness ratio < 1.0			X						
Shielding of All Appurtenances Used when Appropriate PER 2.6.9.4 (G Code Only)			X						

0.75 Reduction "Shape" Factor (Figure 2.6) for platform mounts, 0.8 for T-Boom Mounts Used (G Only)			X						
Pipes and round Members have 1.0 Drag Factors. Note if Pipe is attached to flat antenna, these must be considered separately if differing Drag factors are Used			X						
Are Tower Diagonals Designed as "Tension Only"			X						
MODIFICATION SECTION	Statement in COL A is Correct	Deviation from Col A	N/A	Alternate Value / Concept Used	Explanation	Yes	No	N/A	Comments / Reference
Guyed									
Guyed Only: Reinforcement Recommendation accompanies Optimum Guy Tensioning Scenario.									
Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Self Supporting									
Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Monopole									
Compression Collars									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Foundation									
Guyed Anchor Failure: Berm Solution									
SS Foundation Pad and Pier Failure Berm									
SS Foundation Caisson / Concrete Cap									
Monopole: Cap									

Nexlink Global Services
800 Marshall Phelps Rd.
Windsor, CT 06095
(401) 477-2938

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
Kevin Clements
1117 Perimeter Center West, Suite W303
Atlanta, GA 30338
(678) 781-5061
kclements@gpdgroup.com

GPD #: 2012801.74
October 25, 2012

STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**Site USID:**	**93099**
	Site FA:	**10105847**
	Site Name:	**HARTLAND - HARTLAND BOULEVARD**
	AT&T Project:	**MOD LTE 082712**
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F, 2003 IBC, & ASCE 7-05**
		80 mph fastest-mile with 0" ice
		28 mph fastest-mile with 1" ice
SITE DATA:		**350 Hartland Blvd, East Hartland, CT 06027, Hartford County**
		Latitude 41° 58' 37.268" N, Longitude 72° 53' 16.195" W
		Market: NEW ENGLAND
		120' EEI Monopole

Ms. Stephanie Wenderoth,

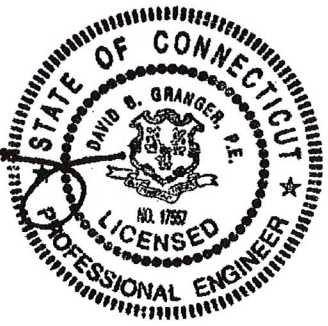
GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	25.3%	Pass
Foundation Ratio with Proposed Equipment:	28.3%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Nexlink Global Services. 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 AT&T Mobility to Nexlink Global Services. This report was commissioned by Ms. Stephanie Wenderoth of Nexlink Global Services.

The proposed DC and fiber cables shall be internal to the monopole in order for the results of this analysis to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	25.3%	Pass
Anchor Rods	15.0%	Pass
Base Plate	12.1%	Pass
Foundation	28.3%	Pass

ANALYSIS METHOD

tnxTower (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 and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Equipment Modification Form	AT&T Internal Loading Document, uploaded 08/27/12	Siterra
RF Data Sheet	Not Provided	N/A
Tower Design	EEI Project #: 14306-E01, dated 08/28/07	Siterra
Foundation Design	EEI Project #: 14306-E01, dated 08/28/07	Siterra
Geotechnical Report	Not Provided	N/A
Previous Structural Analysis	B&V Project #: 166951, dated 12/30/11	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 shapes 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. Tower Mounted Amplifiers are assumed to be installed behind antennas.
6. The soil parameters are as per data supplied or as assumed and stated in the calculations.
7. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
8. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
9. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
10. All prior structural modifications are assumed to be as per data supplied/available and to have been properly installed.
11. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3sf, and coax equal to the number of existing antennas without reserve.
12. All existing loading was obtained from site photos, the previous structural analysis, the provided Equipment Modification Form and is assumed to be accurate.
13. The existing loading found in site photos and the previous structural analysis by B&V Project #: 166951, dated 12/30/11, was found to vary from the listed loading within the provided Equipment Modification Form. The existing/reserved loading has been modeled based on the loading reflected within site photos and the previous structural analysis.
14. The proposed DC and fiber cables shall be internal to the monopole in order for the results of this analysis to be valid.
15. The proposed coax configuration is assumed based off of previous experience with similar LTE projects.

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 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 in excess of the specified code recommended amount, 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	HARTLAND - HARTLAND BOULEVARD
Site Number	93099
FA Number	10105847
Date of Analysis	10/25/2012
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)	MP	
Tower Height (top of steel AGL)	120'	
Tower Manufacturer	EEI	
Tower Model	n/a	
Tower Design	EEI Project #: 14306-E01	8/28/2007
Foundation Design	EEI Project #: 14306-E01	8/28/2007
Geotech Report	n/a	
Tower Mapping	n/a	
Previous Structural Analysis	B&V Project #: 166951	12/30/2011
Foundation Mapping	n/a	

Design Parameters	
Design Code Used	TIA/EIA-222-F 2003 IBC & ASCE 7-05
Location of Tower (County, State)	Hartford, CT
Basic Wind Speed (mph)	80 fastest-mile
Ice Thickness (in)	1
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 (%)	25.3%
Tower Base (%)	15.0%
Foundation (%)	28.3%
Foundation Adequate?	Yes

Steel Yield Strength (ksi)

Pole	65
Base Plate	50
Anchor Rods	75

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 Internal/External
AT&T Mobility	120	120	6	Panel	Powerwave	7770.00	30/150/270	1	Unknown	12' LP Platform	12	Unknown	1-5/8"	Internal
AT&T Mobility	120	120	6	TMA	Powerwave	LGP21401				behind the antennas				
Verizon Wireless	110	110	6	Panel	Antel	LPA-80080/6CF	0/120/240	1	Unknown	12.5' LP Platform	12	Unknown	1-5/8"	Internal
Verizon Wireless	110	110	3	Panel	Antel	BXA-171085-12BF	0/120/240			on the same mounts				
Verizon Wireless	110	110	3	Panel	Antel	BXA-70063-6CF-2	0/120/240			on the same mounts				
Verizon Wireless	110	110	6	Diplexer	RFS	FD9R6004/2C-3L				behind the antennas				

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 Internal/External
AT&T Mobility	120	120	2	Panel	KMW	AM-X-CD-16-65-00T	30/270			on the existing mounts	2	DC cable	7/8"	Internal
AT&T Mobility	120	120	1	Panel	KMW	AM-X-CD-17-65-00T	150							
AT&T Mobility	120	120	6	RRU	Ericsson	RBS 6601				on the existing mounts	1	Fiber	1/2"	Internal
AT&T Mobility	120	120	1	DC Box	Raycap	DC6-48-60-18-8F				on the existing mounts				

Note: The proposed equipment shall be installed in addition to the remaining existing/reserved loading at the same elevation.

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 Internal/External

APPENDIX B

tnxTower Output File

tnxTower	Job: 93099 HARTLAND - HARTLAND BOULEVARD	Page: 1 of 3
GPD Group 520 South Main Street, Ste 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Project: 2012801.74	Date: 09:53:06 10/25/12
	Client: Nexlink Global Services	Designed by: jperry

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 Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 1.0000 in.
Ice density of 56 pcf.
A wind speed of 28 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_AA_A ft^2/ft	Weight plf
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	120.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	110.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
7/8" DC Power Cable	C	No	Inside Pole	120.00 - 8.00	2	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
1/2" Fiber Cable	C	No	Inside Pole	120.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
Climbing Pegs	C	No	CaAa (Out Of Face)	120.00 - 10.00	1	No Ice	0.01	0.31
						1/2" Ice	0.12	0.71
						1" Ice	0.22	1.71
Safety Line 3/8	C	No	CaAa (Out Of Face)	120.00 - 10.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28

Discrete Tower Loads

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
Valmont 12' Hatched LP Platform	C	None		0.0000	120.00	No Ice	24.53	24.53	1335.00
						1/2" Ice	29.94	29.94	1646.00
						1" Ice	35.35	35.35	1957.00
Pipe Mount 8'x4.5"	A	From Centroid-Fa	4.00 0.00	-30.0000	120.00	No Ice	3.36	3.36	89.80
						1/2" Ice	3.84	3.84	115.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
		ce	0.00			1" Ice	4.33	4.33	145.71
Pipe Mount 8'x4.5"	B	From	4.00	-30.0000	120.00	No Ice	3.36	3.36	89.80
		Centroid-Fa	0.00			1/2" Ice	3.84	3.84	115.00
		ce	0.00			1" Ice	4.33	4.33	145.71
Pipe Mount 8'x4.5"	C	From	4.00	-30.0000	120.00	No Ice	3.36	3.36	89.80
		Centroid-Fa	0.00			1/2" Ice	3.84	3.84	115.00
		ce	0.00			1" Ice	4.33	4.33	145.71
(2) 7770.00 w/Mount Pipe	A	From	4.00	-30.0000	120.00	No Ice	5.88	4.10	61.54
		Centroid-Fa	0.00			1/2" Ice	6.31	4.73	107.08
		ce	0.00			1" Ice	6.75	5.37	160.39
(2) 7770.00 w/Mount Pipe	B	From	4.00	-30.0000	120.00	No Ice	5.88	4.10	61.54
		Centroid-Fa	0.00			1/2" Ice	6.31	4.73	107.08
		ce	0.00			1" Ice	6.75	5.37	160.39
(2) 7770.00 w/Mount Pipe	C	From	4.00	-30.0000	120.00	No Ice	5.88	4.10	61.54
		Centroid-Fa	0.00			1/2" Ice	6.31	4.73	107.08
		ce	0.00			1" Ice	6.75	5.37	160.39
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From	4.00	-30.0000	120.00	No Ice	7.33	6.14	73.53
		Centroid-Fa	0.00			1/2" Ice	7.98	7.13	134.57
		ce	0.00			1" Ice	8.57	7.97	204.89
AM-X-CD-17-65-00T-RET w/ Mount Pipe	B	From	4.00	-30.0000	120.00	No Ice	11.31	9.10	105.82
		Centroid-Fa	0.00			1/2" Ice	11.93	10.52	189.52
		ce	0.00			1" Ice	12.55	11.60	285.59
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From	4.00	-30.0000	120.00	No Ice	7.33	6.14	73.53
		Centroid-Fa	0.00			1/2" Ice	7.98	7.13	134.57
		ce	0.00			1" Ice	8.57	7.97	204.89
(2) LGP21401	A	From	4.00	-30.0000	120.00	No Ice	0.00	0.23	10.00
		Centroid-Fa	0.00			1/2" Ice	0.00	0.31	21.26
		ce	0.00			1" Ice	0.00	0.40	30.32
(2) LGP21401	B	From	4.00	-30.0000	120.00	No Ice	0.00	0.23	10.00
		Centroid-Fa	0.00			1/2" Ice	0.00	0.31	21.26
		ce	0.00			1" Ice	0.00	0.40	30.32
(2) LGP21401	C	From	4.00	-30.0000	120.00	No Ice	0.00	0.23	10.00
		Centroid-Fa	0.00			1/2" Ice	0.00	0.31	21.26
		ce	0.00			1" Ice	0.00	0.40	30.32
(2) RBS 6601	A	From	4.00	-30.0000	120.00	No Ice	0.55	0.40	22.00
		Centroid-Fa	0.00			1/2" Ice	0.70	0.52	34.88
		ce	0.00			1" Ice	0.86	0.64	50.27
(2) RBS 6601	B	From	4.00	-30.0000	120.00	No Ice	0.55	0.40	22.00
		Centroid-Fa	0.00			1/2" Ice	0.70	0.52	34.88
		ce	0.00			1" Ice	0.86	0.64	50.27
(2) RBS 6601	C	From	4.00	-30.0000	120.00	No Ice	0.55	0.40	22.00
		Centroid-Fa	0.00			1/2" Ice	0.70	0.52	34.88
		ce	0.00			1" Ice	0.86	0.64	50.27
DC6-48-60-18-8F Surge Suppression Unit	A	From	4.00	-30.0000	120.00	No Ice	1.47	1.47	32.80
		Centroid-Fa	0.00			1/2" Ice	1.67	1.67	50.52
		ce	0.00			1" Ice	1.88	1.88	70.72
MTS 12.5' LP Platform	C	None		0.0000	110.00	No Ice	14.66	14.66	1250.00
						1/2" Ice	18.87	18.87	1481.33
						1" Ice	23.08	23.08	1712.66
BXA-171085-12BF-2 w/ Mount Pipe	A	From	4.00	0.0000	110.00	No Ice	4.74	5.30	49.74
		Centroid-Fa	0.00			1/2" Ice	5.19	6.10	93.74
		ce	0.00			1" Ice	5.64	6.91	146.98
BXA-171085-12BF-2 w/ Mount Pipe	B	From	4.00	0.0000	110.00	No Ice	4.74	5.30	49.74
		Centroid-Fa	0.00			1/2" Ice	5.19	6.10	93.74
		ce	0.00			1" Ice	5.64	6.91	146.98
BXA-171085-12BF-2 w/ Mount Pipe	C	From	4.00	0.0000	110.00	No Ice	4.74	5.30	49.74
		Centroid-Fa	0.00			1/2" Ice	5.19	6.10	93.74

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
		ce	0.00			1" Ice	5.64	6.91	146.98
(2) LPA-80080/6CF w/ Mount Pipe	A	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	4.35 4.79	10.51 11.56	42.90 104.60
		ce	0.00			1" Ice	5.25	12.49	177.42
(2) LPA-80080/6CF w/ Mount Pipe	B	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	4.35 4.79	10.51 11.56	42.90 104.60
		ce	0.00			1" Ice	5.25	12.49	177.42
(2) LPA-80080/6CF w/ Mount Pipe	C	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	4.35 4.79	10.51 11.56	42.90 104.60
		ce	0.00			1" Ice	5.25	12.49	177.42
BXA-70063-6CF-2 w/ Mount Pipe	A	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	7.97 8.61	5.80 6.95	42.25 100.22
		ce	0.00			1" Ice	9.22	7.82	169.88
BXA-70063-6CF-2 w/ Mount Pipe	B	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	7.97 8.61	5.80 6.95	42.25 100.22
		ce	0.00			1" Ice	9.22	7.82	169.88
BXA-70063-6CF-2 w/ Mount Pipe	C	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	7.97 8.61	5.80 6.95	42.25 100.22
		ce	0.00			1" Ice	9.22	7.82	169.88
(2) FD9R6004/2C-3L	A	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	0.00 0.00	0.08 0.14	3.10 5.40
		ce	0.00			1" Ice	0.00	0.20	8.79
(2) FD9R6004/2C-3L	B	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	0.00 0.00	0.08 0.14	3.10 5.40
		ce	0.00			1" Ice	0.00	0.20	8.79
(2) FD9R6004/2C-3L	C	From Centroid-Face	4.00 0.00	0.0000	110.00	No Ice 1/2" Ice	0.00 0.00	0.08 0.14	3.10 5.40
		ce	0.00			1" Ice	0.00	0.20	8.79

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
120.00	Valmont 12' Hatched LP Platform	28	5.477	0.3900	0.0007	91668
110.00	MTS 12.5' LP Platform	28	4.670	0.3746	0.0005	45834

Section Capacity Table

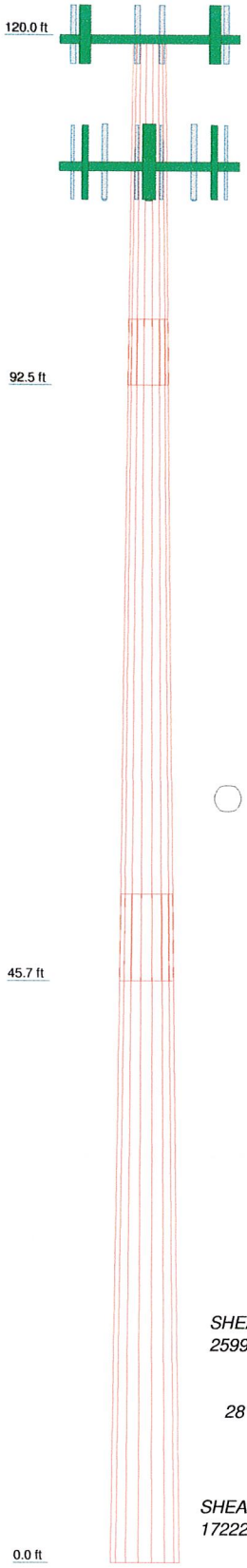
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	120 - 92.5091	Pole	TP37.3834x29.3x0.25	1	-6460.05	1469085.91	14.2	Pass
L2	92.5091 - 45.6861	Pole	TP50.5408x35.3627x0.375	2	-15564.90	2980987.78	22.3	Pass
L3	45.6861 - 0	Pole	TP63x47.8006x0.4375	3	-31623.40	4516417.09	25.3	Pass
						Summary		
						Pole (L3)	25.3	Pass
						RATING =	**25.3**	**Pass**

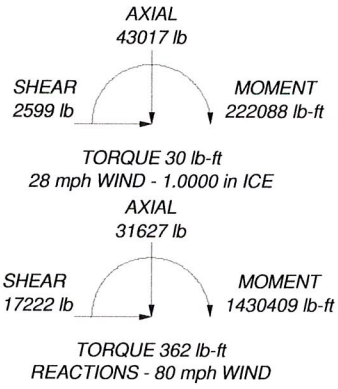
APPENDIX C

Tower Elevation Drawing

Section	1	2	3
Length (ft)	27.49	51.99	52.50
Number of Sides	18	18	18
Thickness (in)	0.2500	0.3750	0.4375
Socket Length (ft)	5.17	6.82	
Top Dia (in)	29.3000	35.3627	47.8006
Bot Dia (in)	37.3834	50.5408	63.0000
Grade	A572-65		
Weight (lb)	2456.4	8966.1	13635.8

Total Weight: 25058.3





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Valmont 12' Hatched LP Platform	120	(2) RBS 6601	120
Pipe Mount 8'x4.5"	120	(2) RBS 6601	120
Pipe Mount 8'x4.5"	120	DC6-48-60-18-8F Surge Suppression Unit	120
Pipe Mount 8'x4.5"	120		
(2) 7770.00 w/Mount Pipe	120	MTS 12.5' LP Platform	110
(2) 7770.00 w/Mount Pipe	120	BXA-171085-12BF-2 w/ Mount Pipe	110
(2) 7770.00 w/Mount Pipe	120	BXA-171085-12BF-2 w/ Mount Pipe	110
AM-X-CD-16-65-00T-RET w/ Mount Pipe	120	BXA-171085-12BF-2 w/ Mount Pipe	110
		(2) LPA-80080/6CF w/ Mount Pipe	110
AM-X-CD-17-65-00T-RET w/ Mount Pipe	120	(2) LPA-80080/6CF w/ Mount Pipe	110
		(2) LPA-80080/6CF w/ Mount Pipe	110
AM-X-CD-16-65-00T-RET w/ Mount Pipe	120	BXA-70063-6CF-2 w/ Mount Pipe	110
		BXA-70063-6CF-2 w/ Mount Pipe	110
(2) LGP21401	120	BXA-70063-6CF-2 w/ Mount Pipe	110
(2) LGP21401	120	(2) FD9R6004/2C-3L	110
(2) LGP21401	120	(2) FD9R6004/2C-3L	110
(2) RBS 6601	120	(2) FD9R6004/2C-3L	110

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

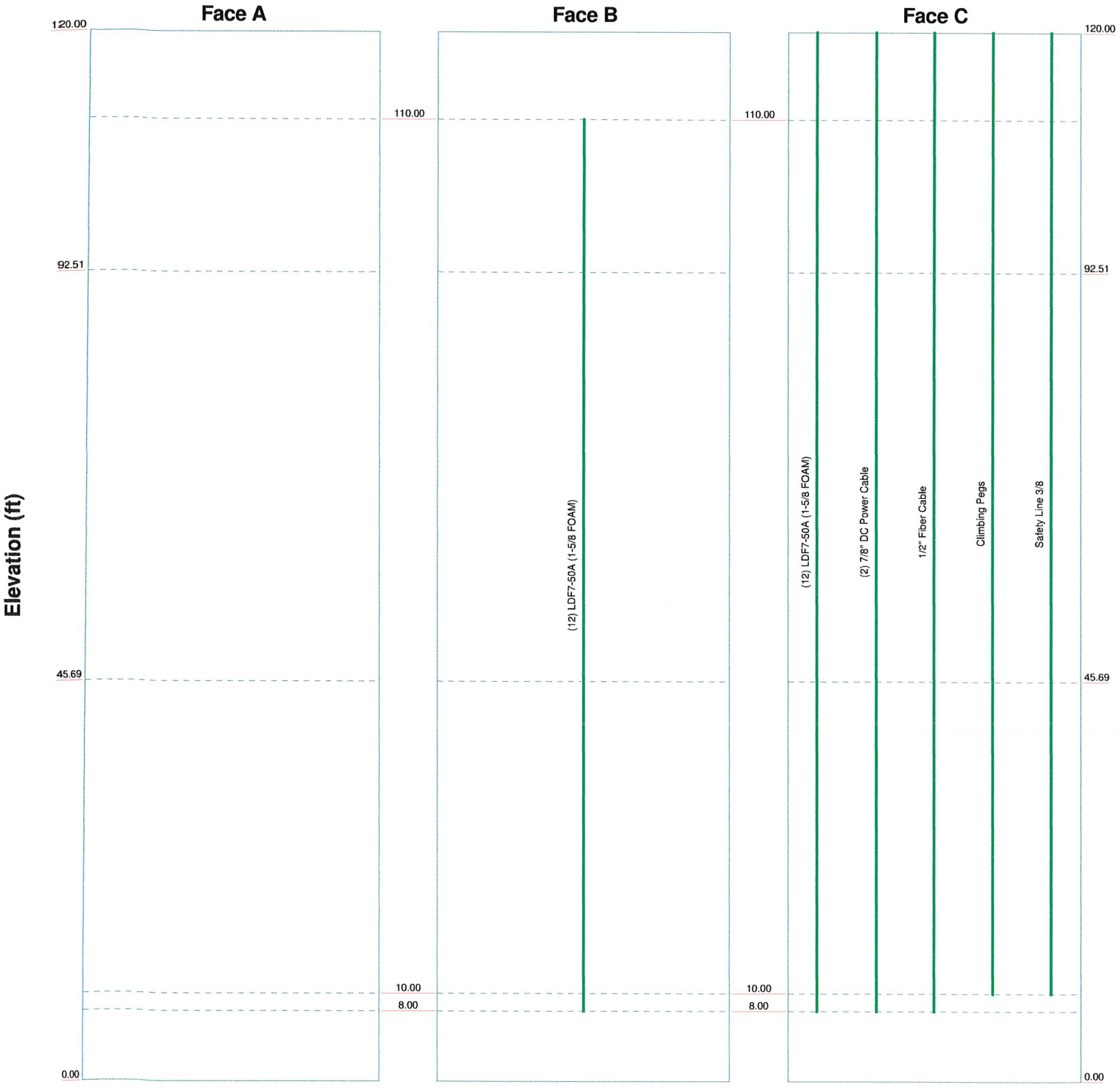
1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 25.3%

GPD Group
520 South Main Street, Ste 2531
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: 93099 HARTLAND - HARTLAND BOULEVARD			
Project: 2012801.74			
Client: Nexlink Global Services	Drawn by: jperry	App'd:	
Code: TIA/EIA-222-F	Date: 10/25/12	Scale: NTS	
Path: O:\2012\2012801\74\RISA\93099 HARTLAND - HARTLAND BOULEVARD.eri		Dwg No. E-1	

Feedline Distribution Chart
0' - 120'

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



GPD GROUP
GPD Group

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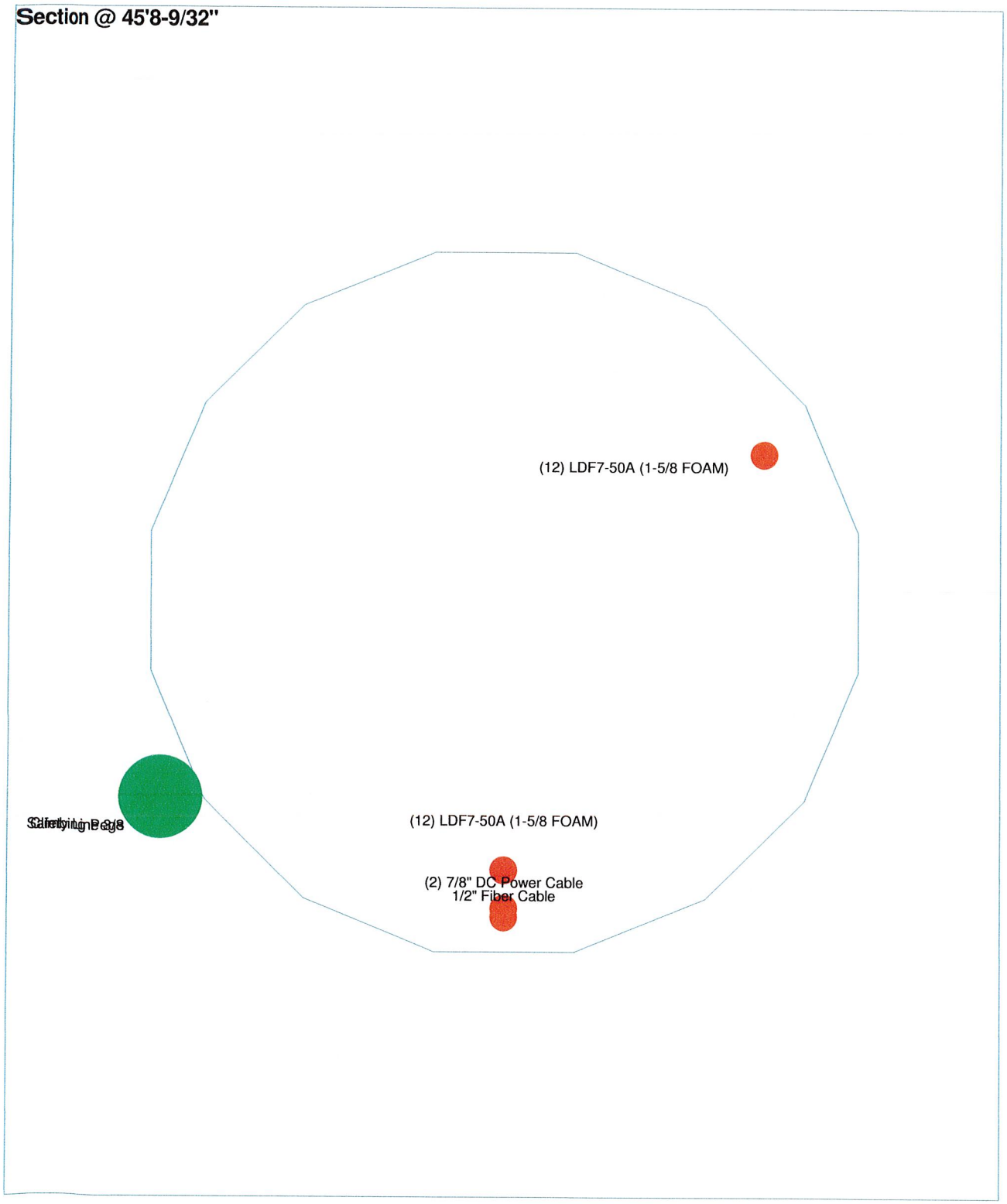
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: ***93099 HARTLAND - HARTLAND BOULEVARD***			
Project: ***2012801.74***			
Client: Nexlink Global Services	Drawn by: jperry	App'd:	
Code: TIA/EIA-222-F	Date: 10/25/12	Scale: NTS	
Path: O:\2012\2012801\74\RISA\93099 HARTLAND - HARTLAND BOULEVARD.eri		Dwg No. E-7	

Feedline Plan
45'8-9/32"

Round _____ Flat _____ App In Face _____ App Out Face _____



GPD GROUP
GPD Group

GPD Group
520 South Main Street, Ste 2531
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Phone: (330) 572-2100
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Job: ***93099 HARTLAND - HARTLAND BOULEVARD***			
Project: ***2012801.74***			
Client: Nexlink Global Services	Drawn by: jperry	App'd:	
Code: TIA/EIA-222-F	Date: 10/25/12	Scale: NTS	
Path: O:\2012\2012801\74\RISA\93099 HARTLAND - HARTLAND BOULEVARD.er		Dwg No. E-7	

APPENDIX D

Anchor Rod & Base Plate Analysis

GPD GROUP

Anchor Rod and Base Plate Stresses
93099 HARTLAND - HARTLAND BOULEVARD
2012801.74

Overturning Moment =	1430.41	k*ft
Axial Force =	31.63	k
Shear Force =	17.22	k

Acceptable Stress Ratio =	105.0%

Anchor Rods		
Number of Rods =	32	
Type =	Upset Rod	
Rod Yield Strength (Fy) =	75	ksi
ASIF =	1.333	
Rod Circle =	71	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in^2
Max Tension on Rod =	29.22	kips
Max Compression on Rod =	31.19	kips
Allow. Rod Force =	195.00	kips
Anchor Rod Capacity =	**15.0%**	**OK**

Base Plate		
Location =	External	
Plate Strength (F_y) =	50	ksi
Outside Diameter =	77	in
Plate Thickness =	3.5	in
wcalc =	32.74	in
wmax =	62.17	in
w =	32.74	in
S =	66.85	in^3
fb =	6.03	ksi
Fb =	50	ksi
BP Capacity =	**12.1%**	**OK**

Stiffeners		
Configuration =	None	
Thickness =	0.5	in
Width =	2	in
Notch =	0.5	in
Height =	3	in
Stiffener Strength (F_y) =	50	ksi
Clear Spacing b/w Stiffeners=	5	in
Weld Info. Known? =	Yes	
Vertical Weld Size =	0.25	in
Horiz. Weld Type =	Both	
Groove Angle =	45	deg
Groove Size =	0.1875	in
Fillet Size =	0.25	in
Weld Strength =	70	ksi
Stiffener Vertical Force =	#VALUE!	kips
Vert. Weld Capacity =	#VALUE!	kips
Horiz. Weld Capacity =	#VALUE!	kips
Stiffener Capacity =	#VALUE!	kips
Controlling Capacity =	**#VALUE!**	**###**

Pole		
Pole Diameter =	63	in
Number of Sides =	18	
Thickness =	0.4375	in
Pole Yield Strength =	65	ksi

APPENDIX E

Foundation Analysis

GPD GROUP

Caisson Analysis
93099 HARTLAND - HARTLAND BOULEVARD
2012801.74

General Info	
Code	TIA/EIA-222-F
Concrete Code	ACI 318-02
Seismic Design Category	D
Max Stress Ratio	1.05
Reinforcing Known?	Yes
Modified?	No

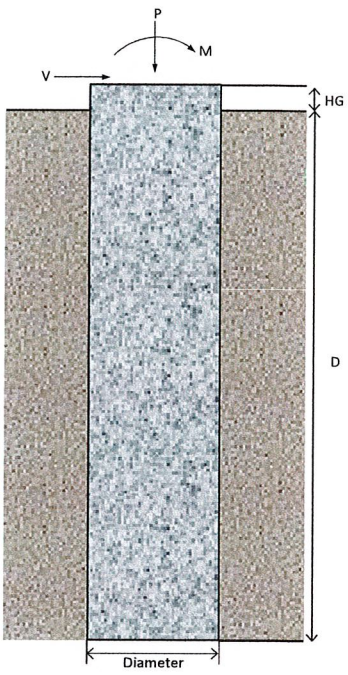
General Soil	
Ground Water	16.50 ft
Soil Depth to Neglect	3.00 ft

Reactions	
Moment, M	1430.41 k-ft
Axial, P	31.63 k
Shear, V	17.22 k

Pier Information		
Pier Diameter	8	ft
Pier Length Below Grade	31	ft
Distance Above Grade	1	ft
Vertical Bar Size	# 8	
Vertical Bar Quantity	48	
Tie Size	# 5	ft
fc' =	4	ksi
fy =	60	ksi
Clear Cover =	4	in

Soil Summary (Req. FS=2.0)		
Mu =	1430.41	k-ft
Mr =	17233.86	k-ft
FS =	12.05	
Capacity =	16.6%	Pass

Reinforcing Summary		
ϕMn =	7105.28	k-ft
Mu =	2007.35	k-ft
Min ρ =	0.00500	
Provided ρ =	0.00524	OK
Capacity =	28.3%	Pass



Soil Info

Layer	Soil Type	Thickness	γ, pcf	Cu, psf	ϕ	Kp	Top of Layer	Bot. of Layer
Layer 1	Sand	3	120	0	0	1.00	0.00	3.00
Layer 2	Sand	29	120	0	30	3.00	3.00	32.00
Layer 3	Clay					0.00	32.00	32.00
Layer 4	Clay					0.00	32.00	32.00
Layer 5	Clay					0.00	32.00	32.00
Layer 6	Sand					1.00	32.00	32.00
Layer 7	Sand					1.00	32.00	32.00
Layer 8	Clay					0.00	32.00	32.00
Layer 9	Sand					1.00	32.00	32.00
Layer 10	Clay					0.00	32.00	32.00