

CONNECTICUT SITING COUNCIL
NOTICE OF INTENT TO MODIFY AN EXISTING TOWER FACILITY
EXEMPT MODIFICATION EM-AT&T-021-120613B

Public Utility Environmental Standards
Regulations of Connecticut

6-50g - 16-50aa
50j-73

TO BE COMPLETED BY FILER

Date: 6/4/12

Filer Name and Contact Information

Name: Stephanie Wenderoth

Address: Nexlink Global Services; Suite A Building 2
800 Marshall Phelps Road, Windsor, CT 06095

Phone Number: 401.477.2938

Wireless Carrier: AT&T

Tower Owner: AT&T

Tower Site Address: 49 South Road, Bolton, CT

Municipality and Name of Chief Elected Official Provided A Copy Of This Notice:
Joyce Stille; Administrative Officer

Description of Exempt Modification (including antenna and equipment changes):
Add 3 LTE Antennas, new conduit, RRUs and surge arrestor.

Attachments

- ☒ Plans
- ☒ Power density calculations if applicable
- ☒ Tower structural report if applicable
- ☒ \$625.00 Filing Fee

If required:

Municipality w/i 2,500' & Name of Chief Elected Official Provided A Copy Of This Notice:

Underlying Property Owner Provided A Copy Of This Notice:

FOR STAFF USE ONLY

- _____ Modification will not result in an increase in tower height
- _____ Modification is within existing site boundaries
- _____ Modification will not increase noise levels at the site boundary by 6 dbA or more, or to levels that exceed State & local criteria
- _____ Modification will meet FCC and DEEP MPE limits



- ___ Modification will not result in significant adverse change in physical or environmental characteristics of the site
- ___ Modification will not impair the structural integrity of the facility as determined by PE
- ___ If yes to all of the above, approval of acknowledgement letter

June 4, 2012

VIA Hand Delivery

Ms. Linda Roberts, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: AT&T Mobility - Notice of Exempt Modification
99 Day Hill Road, Bolton CT

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of AT&T Mobility ("AT&T"). AT&T is enhancing the capabilities of its wireless system in Connecticut by implementing LTE technology. In order to do so, AT&T will modify antenna and equipment configurations at a number of existing sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Town Manager of Windsor.

AT&T plans to modify the existing facility at 99 Day Hill Road, owned by Leonard & Cheryl Giglio (coordinates 41-47-20.371 N, 72-25-45.116 W). Attached are drawings depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. Also included is a power density calculation 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-1 2(b)(2).

1. The height of the overall structure will be unaffected. The existing antennas will remain and AT&T will add three (3) new antennas, six (6) RRU's and one (1) surge arrestor. Additionally, AT&T will install one (1) fiber cable and two (2) DC control cables within the existing monopole.
2. The proposed changes will not extend the site boundaries. AT&T will install additional equipment in the existing equipment shelter. Thus, there will be no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed change 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 environment as calculated for a mixed frequency site. As indicated in the attached

power density calculations, AT&T's operations at the site will result in a power density of 2.38%; the combined site operations will result in a total power density of 20.90%.

Please feel free to call me with any questions or concerns regarding this matter.
Thank you for your consideration.

Respectfully submitted,



AT&T Mobility
Stephanie Wenderoth, Consultant
wenderoths@nexlinkgs.com
401.477.2938

Cc: Joyce Stille; Administrative Officer, 222 Bolton Center Road, Bolton, CT 06043



Nexlink Global Services
800 Marshall Phelps Rd
Windsor, CT 06095
(860) 640-4837



Jason Cheronis
520 South Main St, Suite 2531
Akron, OH 44311
(330) 572-2137
jcheronis#@gpdgroup.com

GPD# 2012801.02
April 23, 2012

STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	Site USID:	27066
	Site FA:	10070938
	Site Name:	BOLTON
	AT&T Project:	MOD LTE W3 012312
ANALYSIS CRITERIA:	Codes:	TIA/EIA-222-F, 2003 IBC, 2005 CT State Building Code & ASCE 7-05
		85-mph fastest mile with 0" ice
		38-mph fastest mile with 1" ice
SITE DATA:		49 South Road, Bolton, CT 06043, Tolland County
		Latitude 41° 47' 20.371"N, Longitude 72° 25' 45.116"W
		Market: New England
		120' Modified PennSummit Monopole

Mr. Mark Roberts,

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 addition of the following proposed loading configuration:

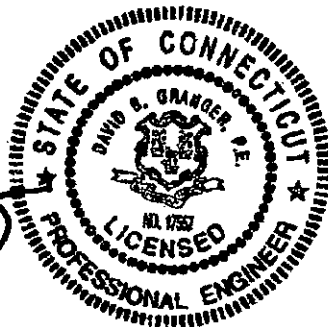
Analysis Results

Tower Stress Level with Proposed Equipment:	96.9%	Pass
Foundation Ratio with Proposed Equipment:	94.8%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and NexLink. If you have any questions 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, in its modified state, is capable of carrying the proposed loading configuration as specified by AT&T to Nexlink. This report was commissioned by Mr. Mark Roberts of Nexlink.

Modifications designed by GPD Group (Job #: 2011712.28 Rev. A, dated 1/6/12) consisted of adding flat plate reinforcement to the pole from 0' – 33' and 41.3' – 59', as well as adding anchor rods to the tower base. These modifications were considered in this analysis.

All proposed coax shall be installed internally.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Tower	96.9%	Pass
Base Plate	63.5%	Pass
Anchor Rods	77.5%	Pass
Foundation	94.8%	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 rigorous structural analysis. This analysis is based solely on this information and is being provided without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Preliminary Tower Summary	Not Provided	N/A
Site Lease Application	Not Provided	N/A
Original Tower Drawings	PJF Job #: 29203-0231 Rev. 2, dated 9/16/03	Siterra
Foundation Drawing	PJF Job #: 29203-0231 Rev. 2, dated 9/16/03	Siterra
Geotechnical Report	VN Engineers Project #: 23-112, dated 8/14/03	Siterra
Previous Structural Analysis	GPD Group Job #: 2011712.28, dated 1/9/12	Siterra
Modification Drawings	GPD Group Job #: 2011712.28 Rev. A, dated 1/6/12	GPD

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 rigorous 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 prior structural modifications, if any, are assumed to be as per data supplied/available, to have been properly installed and to be fully effective.
9. All existing loading was obtained from the previous structural analysis by GPD Group (Job #: 2011712.28, dated 1/9/12), site photos and the provided preliminary tower summary, and is assumed to be accurate.
10. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
11. The existing AT&T diplexers are based on the previous analysis by GPD Group (Job #: 2011712.28, dated 1/9/12).
12. The elevation of the existing equipment was found to differ from the Equipment Modification Form. The existing and proposed elevations have been modeled based on the existing centerline elevations.
13. The diameter of the existing coax was found to differ between the EMF and previous structural analysis by GPD. The existing coax was modeled with a diameter of 1-1/4" as specified in the previous structural analysis.

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 and existing 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 disclaim 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

General Info	
Site Name	BOLTON
Site Number	27066
FA Number	10070938
Date of Analysis	4/23/2012
Company Performing Analysis	QPD

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	120'	
Tower Manufacturer	PennSummit	
Tower Model	N/A	
Original Tower Drawings	P/J Job #: 29203-0231 Rev. 2	9/16/2003
Foundation Design	P/J Job #: 29203-0231 Rev. 2	9/16/2009
Original Tower Calculations	N/A	
Geotech Report	VN Engineers Project #: 23-112	8/14/2003
Previous Structural Analysis	GPD Job #: 2011712.28	1/9/2012
Modification Drawings	GPD Job #: 2011712.28 Rev. A	1/6/2012

Steel Yield Strength (ksi)	
Pole	65
Base Plate	55
Anchor Rods	75/105

Design Parameters		2005 CT Bldg Code & ASCE7-05
Design Code Used		TAI/EIA-222-F, 2003 IBC
Location of Tower (County, State)		Tolland, CT
Basic Wind Speed (mpit)		85 fastest mile
Ice Thickness (in)		1
Structure Classification (I, II, III)		
Exposure Category (B, C, D)		
Topographic Category (1 to 5)		

Modifications designed by GPD Group (Job #: 2011712.28 Rev. A, dated 1/6/12) consisted of adding flat plate reinforcement to the pole from 0° - 33° and 41.3° - 59°, as well as adding anchor rods to the tower base. These modifications were considered in this analysis.

Analysis Results (% Maximum Usage)	
Existing/Reserved + Future + Proposed Condition	
Tower (%)	96.9%
Tower Base (%)	77.5%
Foundation (%)	94.8%
Foundation Adequate?	Yes

Existing / Proposed Location			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	116	118	6	Panel	Powerwave	7770.00	0/120/240	1	Unknown	12.5" LP Platform	12	Unknown	1-1/4"	Internal
AT&T Mobility	116	118	6	TMA	Powerwave	LGP 21401				on the same mount				
AT&T Mobility	116	118	6	Diplexer	Powerwave	LGP 21903				on the same mount				
Verizon	108	110	6	Panel	Antel	LPA-185063/8CF_2	30/150/270	1	Unknown	12.5" LP Platform	18	Unknown	1-5/8"	Internal
Verizon	108	110	6	Panel	Antel	LPA-80063-4CF	30/150/270			on the same mount				
Verizon	108	110	3	Panel	Antel	BXA-70063-4CF_2	30/150/270			on the same mount				
Pocket Communications	99	99	3	Panel	Kathrein	742-213	30/150/270	3	Unknown	Pipe	6	Unknown	1-5/8"	Internal

Proposed Loading

Antenna Owner	Mount Height (ft)	Antenna				Mount		Transmission Line						
		Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Internal/External
AT&T Mobility	116	118	3	Panel	KMW	AIM-X-CD-16-65-00T	0/120/240				3	DC Fiber	1/2"	Internal
AT&T Mobility	116	118	1	RRH	Ericsson	RBS 6601				on the existing mount				
AT&T Mobility	116	118	1	Surge	Flarcap	DC6-48-60-18-8F				on the same mount				

Future Loading

[illegible]

APPENDIX B

TNX-Tower Output File

tnxTower GPD Group 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	27066 BOLTON	Page	1 of 6
	Project	2012801.02	Date	12:47:35 04/23/12
	Client	NexLink	Designed by	BH

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 Tolland County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 1.0000 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 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 _A A _A ft ² /ft	Weight plf
LDF6-50A(1-1/4")	A	No	Inside Pole	118.00 - 8.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
LDF7-50A(1-5/8")	C	No	Inside Pole	110.00 - 8.00	18	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A(1-5/8")	B	No	Inside Pole	99.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
Climbing Pegs	C	No	CaAa (Out Of Face)	120.00 - 8.00	1	No Ice	0.01	0.31
						1/2" Ice	0.12	0.71
						1" Ice	0.22	1.71
						2" Ice	0.41	5.56
						4" Ice	0.82	20.59
Safety Line 3/8	C	No	CaAa (Out Of Face)	120.00 - 8.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
						2" Ice	0.44	2.34
						4" Ice	0.84	4.46
5" x 1" Mod Plate	A	No	CaAa (Out Of Face)	33.00 - 20.50	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
						2" Ice	0.61	0.00
						4" Ice	1.06	0.00
4.5" x 1" Mod Plate	A	No	CaAa (Out Of Face)	59.00 - 43.00	1	No Ice	0.17	0.00
						1/2" Ice	0.28	0.00

tnxTower GPD Group 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	27066 BOLTON	Page	2 of 6
	Project	2012801.02	Date	12:47:35 04/23/12
	Client	NexLink	Designed by	BH

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
5" x 1" Mod Plate	C	No	CaAa (Out Of Face)	33.00 - 0.00	1	1" Ice	0.39	0.00
						2" Ice	0.61	0.00
						4" Ice	1.06	0.00
						No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
4.5" x 1" Mod Plate	C	No	CaAa (Out Of Face)	59.00 - 43.00	1	2" Ice	0.61	0.00
						4" Ice	1.06	0.00
						No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
						2" Ice	0.61	0.00
5" x 1" Mod Plate	A	No	CaAa (Out Of Face)	20.50 - 0.00	1	4" Ice	1.06	0.00
						No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
						1" Ice	0.39	0.00
						2" Ice	0.61	0.00
						4" Ice	1.06	0.00
1/2" Fiber Cable	C	No	Inside Pole	118.00 - 8.00	3	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
MTS 12.5' LP Platform	C	None		0.0000	116.00	No Ice	14.66	14.66	1.25
						1/2" Ice	18.87	18.87	1.48
						1" Ice	23.08	23.08	1.71
						2" Ice	31.50	31.50	2.18
						4" Ice	48.34	48.34	3.10
(2) 7770.00 w/Mount Pipe	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice	5.88	4.10	0.06
						1/2" Ice	6.31	4.73	0.11
						1" Ice	6.75	5.37	0.16
						2" Ice	7.66	6.70	0.29
						4" Ice	9.58	9.87	0.65
(2) 7770.00 w/Mount Pipe	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice	5.88	4.10	0.06
						1/2" Ice	6.31	4.73	0.11
						1" Ice	6.75	5.37	0.16
						2" Ice	7.66	6.70	0.29
						4" Ice	9.58	9.87	0.65
(2) 7770.00 w/Mount Pipe	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice	5.88	4.10	0.06
						1/2" Ice	6.31	4.73	0.11
						1" Ice	6.75	5.37	0.16
						2" Ice	7.66	6.70	0.29
						4" Ice	9.58	9.87	0.65
(2) LGP21401	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
(2) LGP21401	B	From	4.00	0.0000	116.00	No Ice	1.29	0.23	0.01

tnxTower GPD Group 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	27066 BOLTON	Page	3 of 6
	Project	2012801.02	Date	12:47:35 04/23/12
	Client	NexLink	Designed by	BH

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
(2) LGP21401	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	1/2" Ice	1.45	0.02
						1" Ice	1.61	0.03
						2" Ice	1.97	0.05
						4" Ice	2.79	0.14
						No Ice	1.29	0.01
						1/2" Ice	1.45	0.02
						1" Ice	1.61	0.03
						2" Ice	1.97	0.05
(2) LGP21903 Diplexer	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	4" Ice	2.79	0.14
						No Ice	0.00	0.01
						1/2" Ice	0.00	0.01
						1" Ice	0.43	0.02
						2" Ice	0.62	0.03
						4" Ice	1.10	0.07
						No Ice	0.00	0.01
						1/2" Ice	0.00	0.01
(2) LGP21903 Diplexer	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	1" Ice	0.43	0.02
						2" Ice	0.62	0.03
						4" Ice	1.10	0.07
						No Ice	0.00	0.01
						1/2" Ice	0.00	0.01
						1" Ice	0.43	0.02
						2" Ice	0.62	0.03
						4" Ice	1.10	0.07
(2) LGP21903 Diplexer	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice	0.00	0.01
						1/2" Ice	0.00	0.01
						1" Ice	0.43	0.02
						2" Ice	0.62	0.03
						4" Ice	1.10	0.07
						No Ice	0.00	0.01
						1/2" Ice	0.00	0.01
						1" Ice	0.43	0.02
MTS 12.5' LP Platform	C	None		0.0000	108.00	2" Ice	0.62	0.03
						4" Ice	1.10	0.07
						No Ice	14.66	1.25
						1/2" Ice	18.87	1.48
						1" Ice	23.08	1.71
						2" Ice	31.50	2.18
						4" Ice	48.34	3.10
						No Ice	3.77	0.03
(2) LPA-185063/8CF_2 w/ mount pipe	A	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	1/2" Ice	4.43	0.07
						1" Ice	4.98	0.12
						2" Ice	6.12	0.24
						4" Ice	8.54	0.59
						No Ice	3.77	0.03
						1/2" Ice	4.43	0.07
						1" Ice	4.98	0.12
						2" Ice	6.12	0.24
(2) LPA-185063/8CF_2 w/ mount pipe	B	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	4" Ice	8.54	0.59
						No Ice	3.77	0.03
						1/2" Ice	4.43	0.07
						1" Ice	4.98	0.12
						2" Ice	6.12	0.24
						4" Ice	8.54	0.59
						No Ice	3.77	0.03
						1/2" Ice	4.43	0.07
(2) LPA-185063/8CF_2 w/ mount pipe	C	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	1" Ice	4.98	0.12
						2" Ice	6.12	0.24
						4" Ice	8.54	0.59
						No Ice	3.77	0.03
						1/2" Ice	4.43	0.07
						1" Ice	4.98	0.12
						2" Ice	6.12	0.24
						4" Ice	8.54	0.59
(2) LPA-80063-4CF w/ mount pipe	A	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	No Ice	7.26	0.04
						1/2" Ice	7.73	0.10
						1" Ice	8.22	0.18
						2" Ice	9.22	0.34
						4" Ice	11.36	0.80
						No Ice	7.26	0.04
						1/2" Ice	7.73	0.10
						1" Ice	8.22	0.18
(2) LPA-80063-4CF w/ mount pipe	B	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	2" Ice	9.22	0.34
						4" Ice	11.36	0.80
						No Ice	7.26	0.04
						1/2" Ice	7.73	0.10
						1" Ice	8.22	0.18
						2" Ice	9.22	0.34
						4" Ice	11.36	0.80
						No Ice	7.26	0.04
(2) LPA-80063-4CF w/ mount pipe	C	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	1/2" Ice	7.73	0.10
						1" Ice	8.22	0.18

tnxTower GPD Group 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job		Page
	27066 BOLTON		4 of 6
	Project		Date
	2012801.02		12:47:35 04/23/12
	Client		Designed by
	NexLink		BH

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
BXA-70063-6CF_2 w/Mount Pipe	A	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	2" Ice	9.22	10.18	0.34
						4" Ice	11.36	13.42	0.80
						No Ice	7.77	5.18	0.04
						1/2" Ice	8.31	6.11	0.09
						1" Ice	8.86	6.92	0.16
						2" Ice	9.99	8.59	0.31
BXA-70063-6CF_2 w/Mount Pipe	B	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	4" Ice	12.35	12.13	0.75
						No Ice	7.77	5.18	0.04
						1/2" Ice	8.31	6.11	0.09
						1" Ice	8.86	6.92	0.16
						2" Ice	9.99	8.59	0.31
						4" Ice	12.35	12.13	0.75
BXA-70063-6CF_2 w/Mount Pipe	C	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	No Ice	7.77	5.18	0.04
						1/2" Ice	8.31	6.11	0.09
						1" Ice	8.86	6.92	0.16
						2" Ice	9.99	8.59	0.31
						4" Ice	12.35	12.13	0.75
						No Ice	5.42	4.63	0.05
742-213 w/Mount Pipe	A	From Leg	1.00 0.00 0.00	30.0000	99.00	1/2" Ice	5.95	6.02	0.09
						1" Ice	6.47	6.93	0.14
						2" Ice	7.54	8.78	0.27
						4" Ice	9.76	12.68	0.68
						No Ice	5.42	4.63	0.05
						1/2" Ice	5.95	6.02	0.09
742-213 w/Mount Pipe	B	From Leg	1.00 0.00 0.00	30.0000	99.00	1" Ice	6.47	6.93	0.14
						2" Ice	7.54	8.78	0.27
						4" Ice	9.76	12.68	0.68
						No Ice	5.42	4.63	0.05
						1/2" Ice	5.95	6.02	0.09
						1" Ice	6.47	6.93	0.14
742-213 w/Mount Pipe	C	From Leg	1.00 0.00 0.00	30.0000	99.00	2" Ice	7.54	8.78	0.27
						4" Ice	9.76	12.68	0.68
						No Ice	5.42	4.63	0.05
						1/2" Ice	5.95	6.02	0.09
						1" Ice	6.47	6.93	0.14
						2" Ice	7.54	8.78	0.27
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	4" Ice	9.76	12.68	0.68
						No Ice	7.33	6.14	0.07
						1/2" Ice	7.98	7.13	0.13
						1" Ice	8.57	7.97	0.20
						2" Ice	9.80	9.71	0.37
						4" Ice	12.41	13.40	0.83
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice	7.33	6.14	0.07
						1/2" Ice	7.98	7.13	0.13
						1" Ice	8.57	7.97	0.20
						2" Ice	9.80	9.71	0.37
						4" Ice	12.41	13.40	0.83
						No Ice	7.33	6.14	0.07
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	1/2" Ice	7.98	7.13	0.13
						1" Ice	8.57	7.97	0.20
						2" Ice	9.80	9.71	0.37
						4" Ice	12.41	13.40	0.83
						No Ice	1.47	1.47	0.03
						1/2" Ice	1.67	1.67	0.05
DC6-48-60-18-8F Surge Suppression Unit	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	116.00	1" Ice	1.88	1.88	0.07
						2" Ice	2.33	2.33	0.12
						4" Ice	3.38	3.38	0.25
						No Ice	0.55	0.40	0.02
						1/2" Ice	0.70	0.52	0.03
						1" Ice	0.86	0.64	0.05
RBS 6601	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	116.00	2" Ice	1.19	0.91	0.09
						4" Ice	1.97	1.55	0.21

tnxTower GPD Group 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	27066 BOLTON	Page	5 of 6
	Project	2012801.02	Date	12:47:35 04/23/12
	Client	NexLink	Designed by	BH

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load	Deflection	Tilt	Twist	Radius of Curvature
ft		Comb.	in	°	°	ft
116.00	MTS 12.5' LP Platform	27	26.130	2.0279	0.0025	17523
108.00	MTS 12.5' LP Platform	27	22.707	1.9623	0.0021	7301
99.00	742-213 w/Mount Pipe	27	18.987	1.8677	0.0017	4171

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _u	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P
	ft		ft	ft		ksi	in ²	K	K	P _a
L1	120 - 83 (1)	TP24.552x19x0.1875	37.00	0.00	0.0	39.000	14.2097	-5.24	554.18	0.009
L2	83 - 57.5 (2)	TP28.0028x23.6893x0.25	28.75	0.00	0.0	39.000	22.0218	-8.45	858.85	0.010
L3	57.5 - 41.25 (3)	TP30.441x28.0028x0.412	16.25	0.00	0.0	39.000	38.5328	-10.49	1502.78	0.007
L4	41.25 - 31.25 (4)	TP31.4411x29.0543x0.3125	13.75	0.00	0.0	39.000	30.8757	-12.93	1204.15	0.011
L5	31.25 - 19.75 (5)	TP33.3167x31.4411x0.474	11.50	0.00	0.0	39.000	49.4111	-15.26	1927.03	0.008
L6	19.75 - 18.75 (6)	TP33.3167x33.2647x0.3125	1.00	0.00	0.0	39.000	32.7360	-15.41	1276.71	0.012
L7	18.75 - 0 (7)	TP36.13x33.2647x0.4809	18.75	0.00	0.0	39.000	54.4140	-19.27	2122.14	0.009

Pole Bending Design Data

Section No.	Elevation	Size	Actual M _x	Actual f _{bx}	Allow. F _{bx}	Ratio f _{bx}	Actual M _y	Actual f _{by}	Allow. F _{by}	Ratio f _{by}
	ft		kip-ft	ksi	ksi	F _{bx}	kip-ft	ksi	ksi	F _{by}
L1	120 - 83 (1)	TP24.552x19x0.1875	256.19	36.720	39.000	0.942	0.00	0.000	39.000	0.000
L2	83 - 57.5 (2)	TP28.0028x23.6893x0.25	585.47	46.638	39.000	1.196	0.00	0.000	39.000	0.000
L3	57.5 - 41.25 (3)	TP30.441x28.0028x0.412	743.72	32.047	39.000	0.822	0.00	0.000	39.000	0.000
L4	41.25 - 31.25 (4)	TP31.4411x29.0543x0.3125	929.08	47.111	39.000	1.208	0.00	0.000	39.000	0.000
L5	31.25 - 19.75 (5)	TP33.3167x31.4411x0.474	1091.82	32.932	39.000	0.844	0.00	0.000	39.000	0.000
L6	19.75 - 18.75 (6)	TP33.3167x33.2647x0.3125	1106.34	49.876	39.000	1.279	0.00	0.000	39.000	0.000
L7	18.75 - 0 (7)	TP36.13x33.2647x0.4809	1389.20	35.021	39.000	0.898	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V	Actual f _v	Allow. F _v	Ratio f _v	Actual T	Actual f _{vt}	Allow. F _{vt}	Ratio f _{vt}
	ft		K	ksi	ksi	F _v	kip-ft	ksi	ksi	F _{vt}
L1	120 - 83 (1)	TP24.552x19x0.1875	10.64	0.749	26.000	0.058	0.01	0.001	26.000	0.000
L2	83 - 57.5 (2)	TP28.0028x23.6893x0.25	12.26	0.557	26.000	0.043	0.02	0.001	26.000	0.000
L3	57.5 - 41.25 (3)	TP30.441x28.0028x0.412	13.08	0.339	26.000	0.026	0.04	0.001	26.000	0.000

tnxTower GPD Group 520 South Main Street, Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	27066 BOLTON	Page	6 of 6
	Project	2012801.02	Date	12:47:35 04/23/12
	Client	NexLink	Designed by	BH

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L4	41.25 - 31.25 (4)	TP31.4411x29.0543x0.3125	13.82	0.448	26.000	0.034	0.05	0.001	26.000	0.000
L5	31.25 - 19.75 (5)	TP33.3167x31.4411x0.474	14.50	0.293	26.000	0.023	0.06	0.001	26.000	0.000
L6	19.75 - 18.75 (6)	TP33.3167x33.2647x0.3125	14.56	0.445	26.000	0.034	0.06	0.001	26.000	0.000
L7	18.75 - 0 (7)	TP36.13x33.2647x0.4809	15.64	0.287	26.000	0.022	0.09	0.001	26.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P P_a	Ratio f_{bx} F_{bx}	Ratio f_{by} F_{by}	Ratio f_v F_v	Ratio f_{vt} F_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	120 - 83 (1)	0.009	0.942	0.000	0.058	0.000	0.952	1.333	H1-3+VT ✓
L2	83 - 57.5 (2)	0.010	1.196	0.000	0.043	0.000	1.206	1.333	H1-3+VT ✓
L3	57.5 - 41.25 (3)	0.007	0.822	0.000	0.026	0.000	0.829	1.333	H1-3+VT ✓
L4	41.25 - 31.25 (4)	0.011	1.208	0.000	0.034	0.000	1.219	1.333	H1-3+VT ✓
L5	31.25 - 19.75 (5)	0.008	0.844	0.000	0.023	0.000	0.852	1.333	H1-3+VT ✓
L6	19.75 - 18.75 (6)	0.012	1.279	0.000	0.034	0.000	1.291	1.333	H1-3+VT ✓
L7	18.75 - 0 (7)	0.009	0.898	0.000	0.022	0.000	0.907	1.333	H1-3+VT ✓

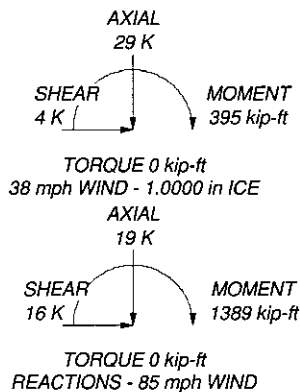
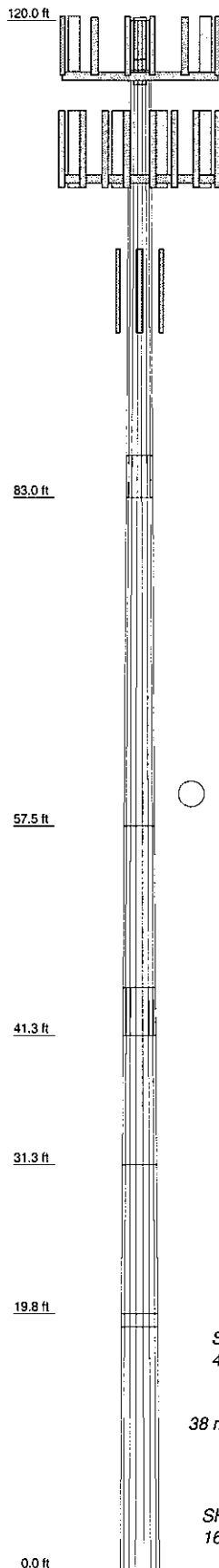
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF* P_{allow} K	% Capacity	Pass Fail
L1	120 - 83	Pole	TP24.552x19x0.1875	1	-5.24	738.72	71.4	Pass
L2	83 - 57.5	Pole	TP28.0028x23.6893x0.25	2	-8.45	1144.85	90.5	Pass
L3	57.5 - 41.25	Pole	TP30.441x28.0028x0.412	3	-10.49	2003.21	62.2	Pass
L4	41.25 - 31.25	Pole	TP31.4411x29.0543x0.3125	4	-12.93	1605.13	91.4	Pass
L5	31.25 - 19.75	Pole	TP33.3167x31.4411x0.474	5	-15.26	2568.73	64.0	Pass
L6	19.75 - 18.75	Pole	TP33.3167x33.2647x0.3125	6	-15.41	1701.85	96.9	Pass
L7	18.75 - 0	Pole	TP36.13x33.2647x0.4809	7	-19.27	2828.81	68.1	Pass
							Summary	
							Pole (L6)	96.9 Pass
							RATING =	96.9 Pass

APPENDIX C

Tower Elevation Drawing

Section	1	2	3	4	5	6	7	
Length (ft)	37.00	28.75	16.25	13.75	11.50	1.00	18.75	
Number of Sides	18	18	18	18	18	18	18	
Thickness (in)	0.1875	0.2500	0.4120	0.3125	0.4740	0.3125	0.4809	
Socket Length (ft)	3.25		3.75				33.2647	
Top Dia (in)	19.0000	23.6893	28.0028	29.0543	31.4411	33.2647	36.1300	
Bot Dia (in)	24.5620	28.0028	30.4410	31.4411	33.3167	33.3167		
Grade			A607-65					
Weight (K)	1.6	2.0	2.1	1.4	1.9	0.1	3.3	12.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
MTS 12.5' LP Platform	116	DC6-48-60-18-8F Surge Suppression Unit	116
(2) 7770.00 w/Mount Pipe	116	RBS 6601	116
(2) 7770.00 w/Mount Pipe	116	(2) LPA-80063-4CF w/ mount pipe	108
(2) 7770.00 w/Mount Pipe	116	(2) LPA-80063-4CF w/ mount pipe	108
(2) LGP21401	116	BXA-70063-6CF_2 w/Mount Pipe	108
(2) LGP21401	116	BXA-70063-6CF_2 w/Mount Pipe	108
(2) LGP21401	116	BXA-70063-6CF_2 w/Mount Pipe	108
(2) LGP21903 Diplexer	116	MTS 12.5' LP Platform	108
(2) LGP21903 Diplexer	116	(2) LPA-185063/BCF_2 w/ mount pipe	108
(2) LGP21903 Diplexer	116	(2) LPA-185063/BCF_2 w/ mount pipe	108
AM-X-CD-16-65-00T-RET w/ Mount Pipe	116	(2) LPA-185063/BCF_2 w/ mount pipe	108
AM-X-CD-16-65-00T-RET w/ Mount Pipe	116	742-213 w/Mount Pipe	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	116	742-213 w/Mount Pipe	99
		742-213 w/Mount Pipe	99

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Tolland 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 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 96.9%

0' - 120'

Round

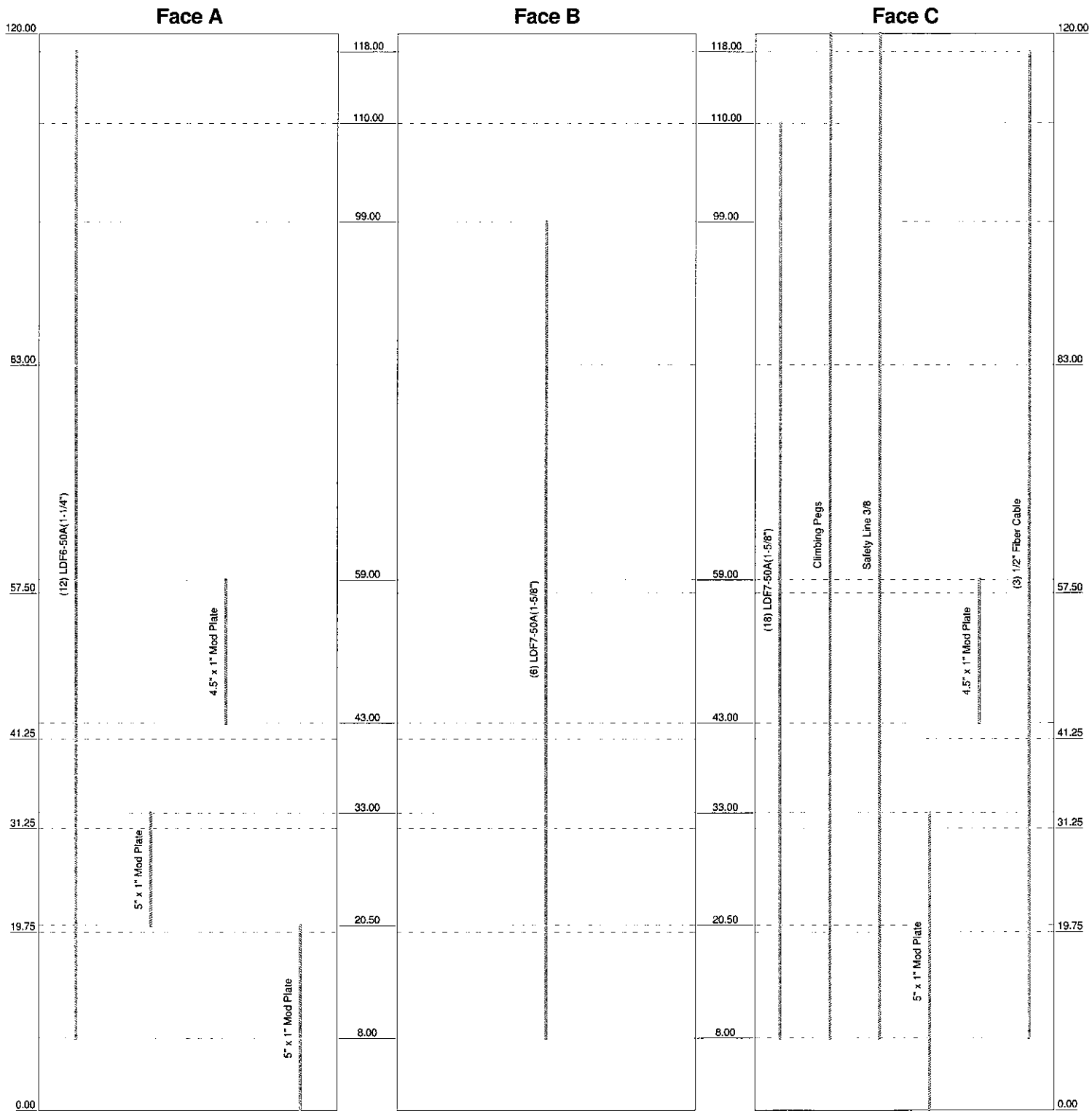
Flat

App In Face

App Out Face

Truss Leg

Elevation (ft)



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

Job: 27066 BOLTON			
Project: 2012801.02			
Client: NexLink		Drawn by: BH	App'd:
Code: TIA/EIA-222-F		Date: 04/23/12	Scale: N
Path: O:\2012\2012801.02\2012801.02\27066 Bolton.dwg			Dwg No.



COAX PLACEMENT

NOT TO SCALE

SHEET
1 OF 1

27066 BOLTON
NexLink

JOB NO.
2012801.02
DATE
4/23/2012

GPD GROUP

ENGINEERS • ARCHITECTS • PLANNERS

520 South Main Street • Suite 2531 • Akron Ohio 44311-1010 • Tel: 330-572-2100 • Fax: 330-572-2101


APPENDIX D

Modified Pole Calculations

Reinforced Monopole Analysis

27066 Bolton

GPD #: 2012801.02



GPD GROUP
DESIGN • ANALYSIS • CONSTRUCTION

Code =	TIA/EIA-222-F
AISF=	1,333
Max Capacity=	1
# of Sides =	18

	Shape	Qty	Section	Geometry				Reactions				Output			Capacities		
				Elevation (ft)	Plate Diameter (in)	Plate Thickness (in)	Radius (in)	Moment (k-ft)	Asial (k)	Shear (k)	Torsion (k-ft)	Equivalent (in)	Poles	Prallmentent	Prallmentent	Prallmentent	Prallmentent
Plate 4.5x1		3	L3	45	29.8783	0.25	65	743.64	10.46	13.08	0.00	0.412	62.2%	85.4%	85.4%	85.4%	Pass
Plate 5x1		3	L5	18.75	33.3167	0.3125	65	1106.22	15.37	14.55	0.00	0.474	64.8%	85.3%	85.3%	85.3%	Pass
Plate 5x1		4	L6	0	36.13	0.3125	65	1389.08	19.22	15.64	0.00	0.481	68.6%	89.3%	89.3%	89.3%	Pass

APPENDIX E

Base Plate & Anchor Rod Analysis

**GPD ASSOCIATES**

Engineers • Architects • Planners

Job 2012801.02

Sheet No. 1 Of 1

Calculated By BRH date 4/23/2012

GPD ASSOCIATES**ANCHOR ROD TRANSFORMATION**

	AISF	1.33	Concrete Strength Diameter of Caisson/Pier	3000 PSI 72 in.	Rebar Size Rebar Cover	#11 3.0 in.
Moment from RISA (M) =	1389.00 kip-ft					
Axial from RISA (A) =	19 kip					
Shear from RISA (V) =	16 Kip					
Existing Bolt Diameter	2.25 in.	Grade A615-J	Yes	ℓ_d (Rebar)	77.2	
Existing Bolt Area (A_{ex}) =	3.2500 in. ²	Bolt Circle (BC_{ex}) =	42 in.	g	12	Unbraced Length (U_{ex}) = 85.0000
Number Existing Bolts (nE)	8	Fy	75 ksi	Top Cover	3	
		Fu	100 ksi	D	1	
		Embedment Length	84 in.	h_{ef}	111.36	
Modified Bolt Diameter	1.75 in.	Grade A615-J	No	ℓ_d (Rebar)	77.2	
Modified Bolt Area (A_{mod}) =	2.4053 in. ²	Bolt Circle (BC_{mod}) =	50 in.	g	8	Unbraced Length (U_{mod}) = 86.0000
Number Modified Bolts (nM)	3	Fy	105 ksi	Top Cover	3	
		Fu	150 ksi	D	2	
		Embedment Length	84 in.	h_{ef}	108.69333	
n =	0.99					
nA_{mod} =	2.38 in. ²					
I_{ex} =	5733.00 in. ⁴					
I_{mod} =	2228.73 in. ⁴					
I_{total} =	7961.73 in. ⁴					
f_{ex} =	142.88 kips					
f_{mod} =	124.42 kips					
AX_{ex} =	1.86 kips					
AX_{mod} =	1.36 kips					
Total =	19.0					

Allowable Tension Existing Rods (f_{tex}) = 195.00 kipsAllowable Tension Modification Rods (f_{tmod}) = 158.75 kipsExisting Rod Rating = 72.3% ($f_{ex} A_{ex} / f_{tex}$)Modification Rod Rating = 77.5% ($f_{mod} A_{mod} / f_{tmod}$)



Anchor Rod and Base Plate Stresses **27066 BOLTON** **2012801.02**

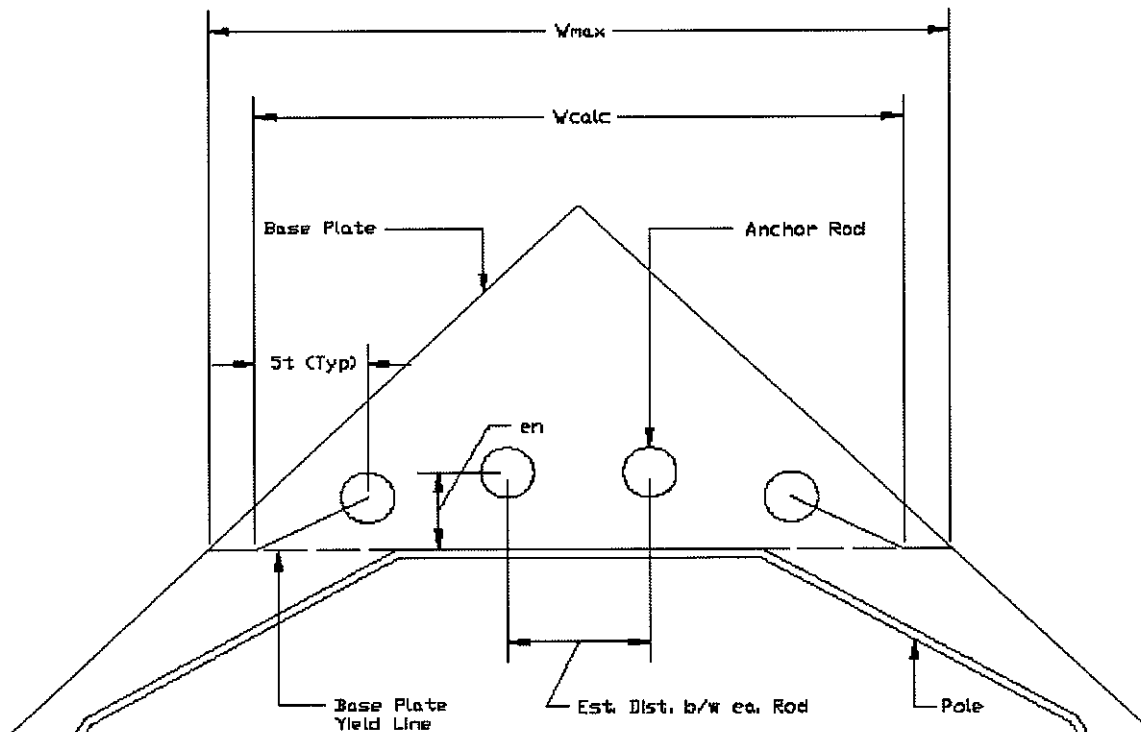
*Overturning Moment =	1018.25 k*ft
Axial Force =	19.00 k
Shear Force =	16.00 k

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

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

Anchor Rods	
Pole Diameter =	36.13 in
Number of Rods =	8
Type =	Upset Rod
Rod Yield Strength (Fy) =	75 ksi
ASIF =	1.333
Rod Circle =	42 in
Rod Diameter =	2.25 in
Net Tensile Area =	3.25 in ²
Max Tension on Rod =	142.88 kips
Max Compression on Rod =	147.63 kips
Allow. Rod Force =	195.00 kips
Anchor Rod Capacity =	73.3% OK


Base Plate	
Plate Strength (Fy) =	55 ksi
Plate Thickness =	2.5 in
Plate Width =	41 in
Est. Dist. b/w ea. Rod =	6 in
W _{calc} =	31.000 in
W _{max} =	21.853 in
w =	21.85 in
S =	22.76 in ³
fb =	34.92 ksi
Fb =	55 ksi
Base Plate Capacity =	63.5% OK



APPENDIX F

Foundation Analysis

CAISSON ANALYSIS WORKSHEET

 GPD GROUP <small>GEOTECHNICAL, PILING, SPECIALTIES, BRIDGE & DAMS, INC.</small>	Client: AT&T Mobility	Job No.: 2012801.02
	Site ID: 27066	Sheet No: 1 Of 1
	Site Name: BOLTON	Made By: BH Date: 4/23/2012
	Location: Tolland County, CT	Chk'd By: F Date: 4/23/2012
	Loading Type: Wind	Code: F

FOUNDATION DATA

Diameter = 6 ft
 Length = 20 ft
 Rebar Size = #11
 # of bars = 16
 Tie Size = #5
 Clear Cover = 4 inches
 Edge to Bar Center = 5.33 inches
 f'c = 3 ksi

RISA Reactions (Service)

Moment = 1389 ft-k
 Axial = 19 kips
 Shear = 16 kips

PILE TYPE 2 ANALYSIS FOR REINFORCING CAPACITY

Mn = 44501.11 in-k
 Mn = 3708.43 ft-k

Load Factor = 1.3
 ϕ (flexure) = 0.9

ϕMn/LF = 2567.37 ft-k

MOMENT FROM CAISSON PROGRAM USING ADJUSTED S.F. AND ACTUAL CAISSON LENGTH

Moment = 1578.3 ft-k (max. moment along caisson)

REINFORCING STEEL CAPACITY

Capacity = $\frac{\text{Moment from Caisson}}{\phi M_n / LF} = \frac{1578.30 \text{ ft-k}}{2567.37 \text{ ft-k}} = 61.5\% \text{ O.K.}$

SOIL CAPACITY FROM CAISSON PROGRAM USING ADDITIONAL SAFETY FACTORS

ADDITIONAL SAFETY FACTOR FROM CAISSON = 2.11

Capacity = $\frac{\text{Safety Factor of 2}}{\text{Additional Safety Factor}} = \frac{2.00}{2.11} = 94.8\% \text{ O.K.}$

Bolton.lpo

LPILE Plus for windows, Version 5.0 (5.0.39)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

(c) 1985-2007 by Ensoft, Inc.
All Rights Reserved

This program is licensed to:

BHoffman
GPD Group

Path to file locations: \\akrn01\data\Telecom_TOWER ANALYSIS TEAM
FOLDER\TRAINING\Brad Hoffman\LPILE\
Name of input data file: .lpd
Name of output file: .lpo
Name of plot output file: .lpp
Name of runtime file: .lpr

Time and Date of Analysis

Date: April 23, 2012 Time: 11:54:42

Problem Title

New LPILE Plus 5.0 Data File

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 2:
- Computation of Ultimate Bending Moment of Cross Section (Section Design)

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Number of sections = 1

Pile Section No. 1

The sectional shape is a circular drilled shaft (bored pile).

Outside Diameter = 72.0000 in

Material Properties:

Compressive Strength of Concrete = 3.000 kip/in**2
 Yield Stress of Reinforcement = 60. kip/in**2
 Modulus of Elasticity of Reinforcement = 29000. kip/in**2
 Number of Reinforcing Bars = 16
 Area of Single Bar = 1.56000 in**2
 Number of Rows of Reinforcing Bars = 9
 Area of Steel = 24.960 in**2
 Area of Shaft = 4071.504 in**2
 Percentage of Steel Reinforcement = .613 percent
 Cover Thickness (edge to bar center) = 5.330 in

Unfactored Axial Squash Load Capacity = 11816.29 kip

Distribution and Area of Steel Reinforcement

Row Number	Area of Reinforcement in**2	Distance to Centroidal Axis in
1	1.560	30.670
2	3.120	28.335
3	3.120	21.687
4	3.120	11.737
5	3.120	0.000
6	3.120	-11.737
7	3.120	-21.687
8	3.120	-28.335
9	1.560	-30.670

Axial Thrust Force = 19220.00 lbs

Unfactored (Nominal) Moment Capacity at Concrete Strain of 0.003 = 44506.67330 in-kip

The analysis ended normally.

* PIER FOUNDATIONS ANALYSIS AND DESIGN - (C) 1995, POWER LINE SYSTEMS, INC.*

*** ANALYSIS IDENTIFICATION : 27066 Bolton
NOTES : 2012801.02

*** PIER PROPERTIES CONCRETE STRENGTH (ksi) = 3.00 STEEL STRENGTH (ksi) = 60.00
DIAMETER (ft) = 6.000 DISTANCE FROM TOP OF PIER TO GROUND LEVEL (ft) = 0.50

*** SOIL PROPERTIES	LAYER	TYPE	THICKNESS (ft)	DEPTH AT TOP OF LAYER (ft)	DENSITY (pcf)	CU (psf)	KP	PHI (degrees)
	1	C	2.50	0.00	100.0	0.0		
	2	C	0.83	2.50	130.0	0.0		
	3	S	2.17	3.33	130.0		3.255	32.00
	4	S	20.00	5.50	67.6		3.255	32.00

*** DESIGN (FACTORED) LOADS AT TOP OF PIER MOMENT (ft-k) = 1389.0 VERTICAL (k) = 19.0 SHEAR (k) = 16.0
ADDITIONAL SAFETY FACTOR AGAINST SOIL FAILURE = 2.09

*** CALCULATED PIER LENGTH (ft) = 20.000

*** CHECK OF SOILS PROPERTIES AND ULTIMATE RESISTING FORCES ALONG PIER

TYPE	TOP OF LAYER BELOW TOP OF PIER (ft)	THICKNESS (ft)	DENSITY (pcf)	CU (psf)	KP	FORCE (k)	ARM (ft)
C	0.50	2.50	100.0	0.0		0.00	1.75
C	3.00	0.83	130.0	0.0		0.00	3.42
S	3.83	2.17	130.0		3.255	63.37	5.02
S	6.00	8.22	67.6		3.255	441.95	10.52
S	14.22	5.78	67.6		3.255	-471.16	17.24

*** SHEAR AND MOMENTS ALONG PIER

DISTANCE BELOW TOP OF PIER (ft)	WITH THE ADDITIONAL SAFETY FACTOR		WITHOUT ADDITIONAL SAFETY FACTOR	
	SHEAR (k)	MOMENT (ft-k)	SHEAR (k)	MOMENT (ft-k)
0.00	34.2	3155.9	16.3	1510.0
2.00	34.2	3224.3	16.3	1542.7
4.00	30.6	3292.3	14.6	1575.3
6.00	-29.2	3298.7	-14.0	1578.3
8.00	-112.1	3160.0	-53.6	1512.0
10.00	-210.9	2839.6	-100.9	1358.7
12.00	-325.5	2305.9	-155.7	1103.3
14.00	-455.9	1527.1	-218.2	730.7
16.00	-340.1	701.3	-162.7	335.6
18.00	-178.0	180.6	-85.2	86.4
20.00	0.0	-0.0	0.0	-0.0

*** TOTAL REINFORCEMENT PCT = 0.30 REINFORCEMENT AREA (in^2) = 12.21

*** USABLE AXIAL CAP. (k) = 19.0 USABLE MOMENT CAP. (ft-k) = 1656.4

*** US Standard Re-Bars (Select one of the following):

62 BARS #4	(AREA = 0.20 in^2	DIA = 0.500 in)	AT SPACING (in) =	3.14
40 BARS #5	(AREA = 0.31 in^2	DIA = 0.625 in)	AT SPACING (in) =	4.87
28 BARS #6	(AREA = 0.44 in^2	DIA = 0.750 in)	AT SPACING (in) =	6.96
21 BARS #7	(AREA = 0.60 in^2	DIA = 0.875 in)	AT SPACING (in) =	9.28
16 BARS #8	(AREA = 0.79 in^2	DIA = 1.000 in)	AT SPACING (in) =	12.17
13 BARS #9	(AREA = 1.00 in^2	DIA = 1.128 in)	AT SPACING (in) =	14.98
10 BARS #10	(AREA = 1.27 in^2	DIA = 1.270 in)	AT SPACING (in) =	19.48
8 BARS #11	(AREA = 1.56 in^2	DIA = 1.410 in)	AT SPACING (in) =	24.35
6 BARS #14	(AREA = 2.25 in^2	DIA = 1.693 in)	AT SPACING (in) =	32.46

*** PRESSURE UNDER CAISSON DUE TO DESIGN AXIAL LOAD (psf) = 672.0



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

Calculated Radio Frequency Emissions



CT5819 – Bolton

299 Hop River Road, Bolton, CT 06043

(a.k.a. 49 South Road)

May 25, 2012

Table of Contents

1. Introduction.....	1
2. FCC Guidelines for Evaluating RF Radiation Exposure Limits.....	1
3. RF Exposure Prediction Methods.....	2
4. Calculation Results	3
5. Conclusion	4
6. Statement of Certification.....	4
Attachment A: References	5
Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)	6
Attachment C: AT&T Antenna Data Sheets and Electrical Patterns.....	8

List of Tables

Table 1: Carrier Information.....	3
Table 2: FCC Limits for Maximum Permissible Exposure (MPE)	6

List of Figures

Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE).....	7
---	---

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 299 Hop River Road in Bolton, CT. The coordinates of the tower are 41-47-20.35 N, 72-25-45.23 W.

AT&T is proposing the following modifications:

- 1) Install three 700 MHz LTE antennas (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

3. RF Exposure Prediction Methods

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

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

Where:

EIRP = Effective Isotropic Radiated Power

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

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
Cingular UITS	120	880	1	500	0.0125	0.5867	2.13%
Cingular GSM	120	1900	2	427	0.0213	1.0000	2.13%
Cingular GSM	120	880	1	296	0.0256	0.5867	5.04%
Pocket	99	2130	3	631	0.0694	1.0000	6.94%
Verizon	107	869	9	200	0.0565	0.5793	9.76%
Verizon	107	1900	3	200	0.0188	1.0000	1.88%
AT&T UITS	118	880	2	565	0.0029	0.5867	0.50%
AT&T UITS	118	1900	2	875	0.0045	1.0000	0.45%
AT&T LTE	118	734	1	1313	0.0034	0.4893	0.69%
AT&T GSM	118	880	1	283	0.0007	0.5867	0.12%
AT&T GSM	118	1900	4	525	0.0054	1.0000	0.54%
						Total	20.90%

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 3/29/2012. 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 Report dated 4/23/2012.


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 **20.90% 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

May 25, 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 Exposure⁴

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 Exposure⁵

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.

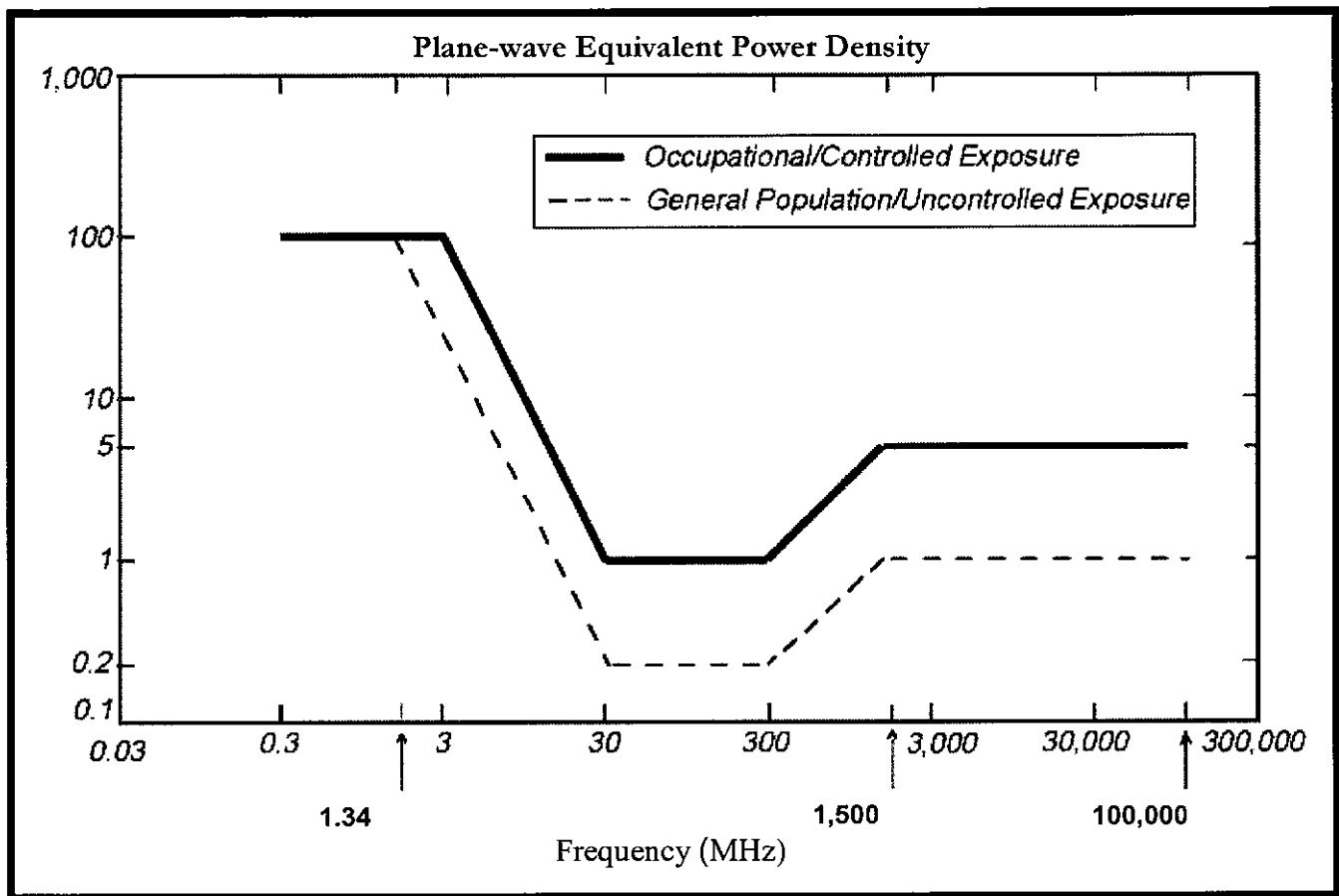
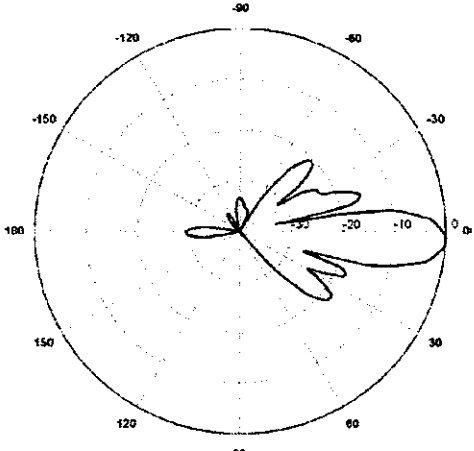
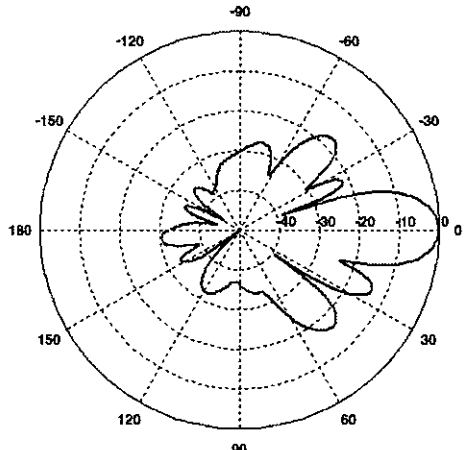
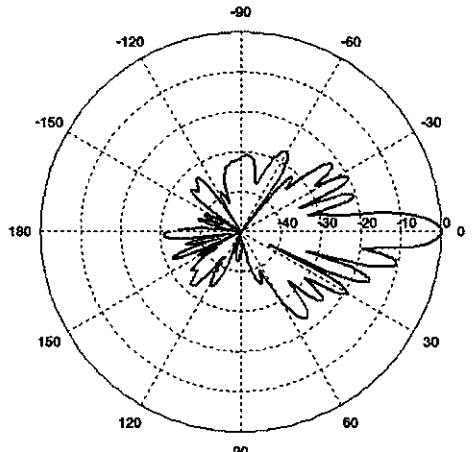


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

<p>700 MHz</p> <p>Manufacturer: KMW Model #: AM-X-CD-16-65-00T-RET Frequency Band: 698-806 MHz Gain: 13.4 dBd Vertical Beamwidth: 12.3 ° Horizontal Beamwidth: 65° Polarization: Dual Slant ±45° Size L x W x D: 72.0" x 11.8" x 5.9"</p>	
<p>850 MHz</p> <p>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"</p>	
<p>1900 MHz</p> <p>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"</p>	

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS: 49 SOUTH ROAD
BOLTON, CT 06043
LATITUDE: 41.7889 N 41° 47' 20.37" N
LONGITUDE: 72.4292 W 72° 25' 45.11" W
JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE: TELECOMMUNICATIONS FACILITY
PROPOSED USE: TELECOMMUNICATIONS FACILITY



SITE NUMBER: CT5819
SITE NAME: BOLTON

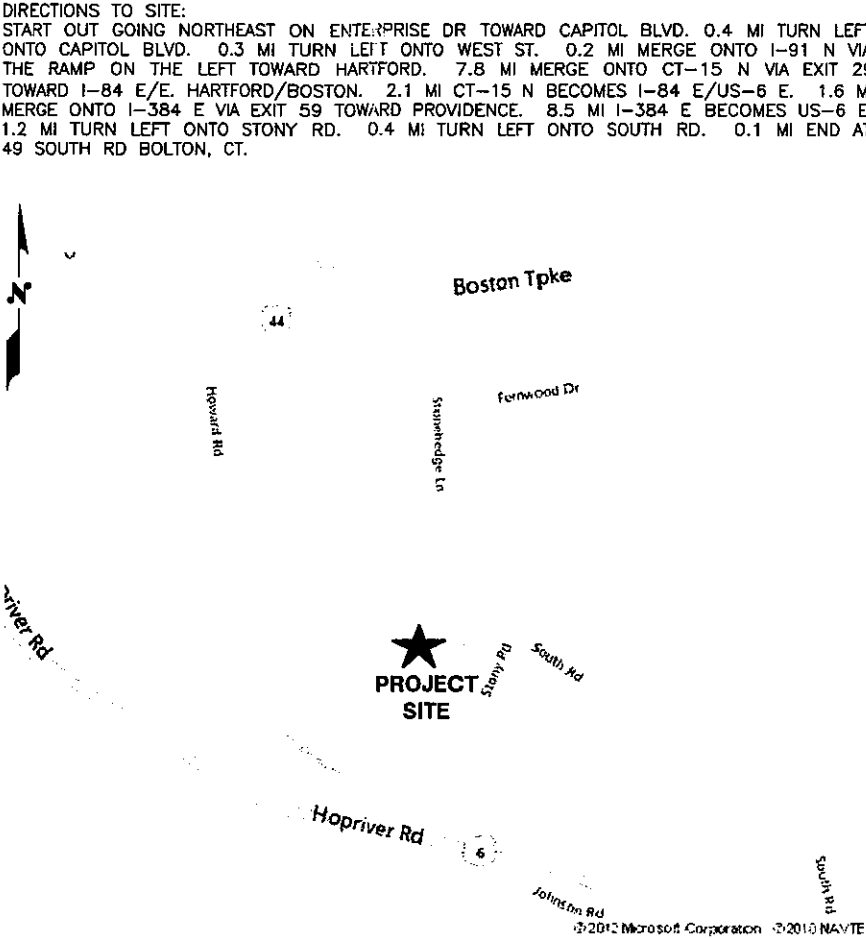
DRAWING INDEX

REV

T-1 TITLE SHEET
GN-1 GENERAL NOTES
A-1 COMPOUND & EQUIPMENT PLAN
A-2 ANTENNA PLAN AND ELEVATION
A-3 DETAILS
A-4 DETAILS
G-1 PLUMBING DIAGRAM & GROUNDING DETAILS

1
1
1
1
1
1
1

VICINITY MAP



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS



BEFORE YOU DIG



CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

				AT&T			
				TITLE SHEET (LTE)			
1	04/18/12	ISSUED FOR CONSTRUCTION	NB	DC	DPH	5819.01	T-1
0	04/11/12	ISSUED FOR REVIEW	NB	DC	DPH		
NO.	DATE	REVISIONS	BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER
SCALE: AS SHOWN				DESIGNED BY: HC		DRAWN BY: NB	
				PROFESSIONAL ENGINEER		1	

GROUNDING NOTES

GENERAL NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OFF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

- FOR THE PURPOSE OF THE CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
- CONTRACTOR - NEXLINK
SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
OWNER - AT&T MOBILITY
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
 3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
 4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
 5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
 6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
 7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
 8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
 9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
 10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
 11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
 12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
 13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
 14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 ($F_y = 36$ ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E ($F_y = 36$ ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS
ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
- AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
- MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;
- TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL
- ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE		
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED	TYP	TYPICAL



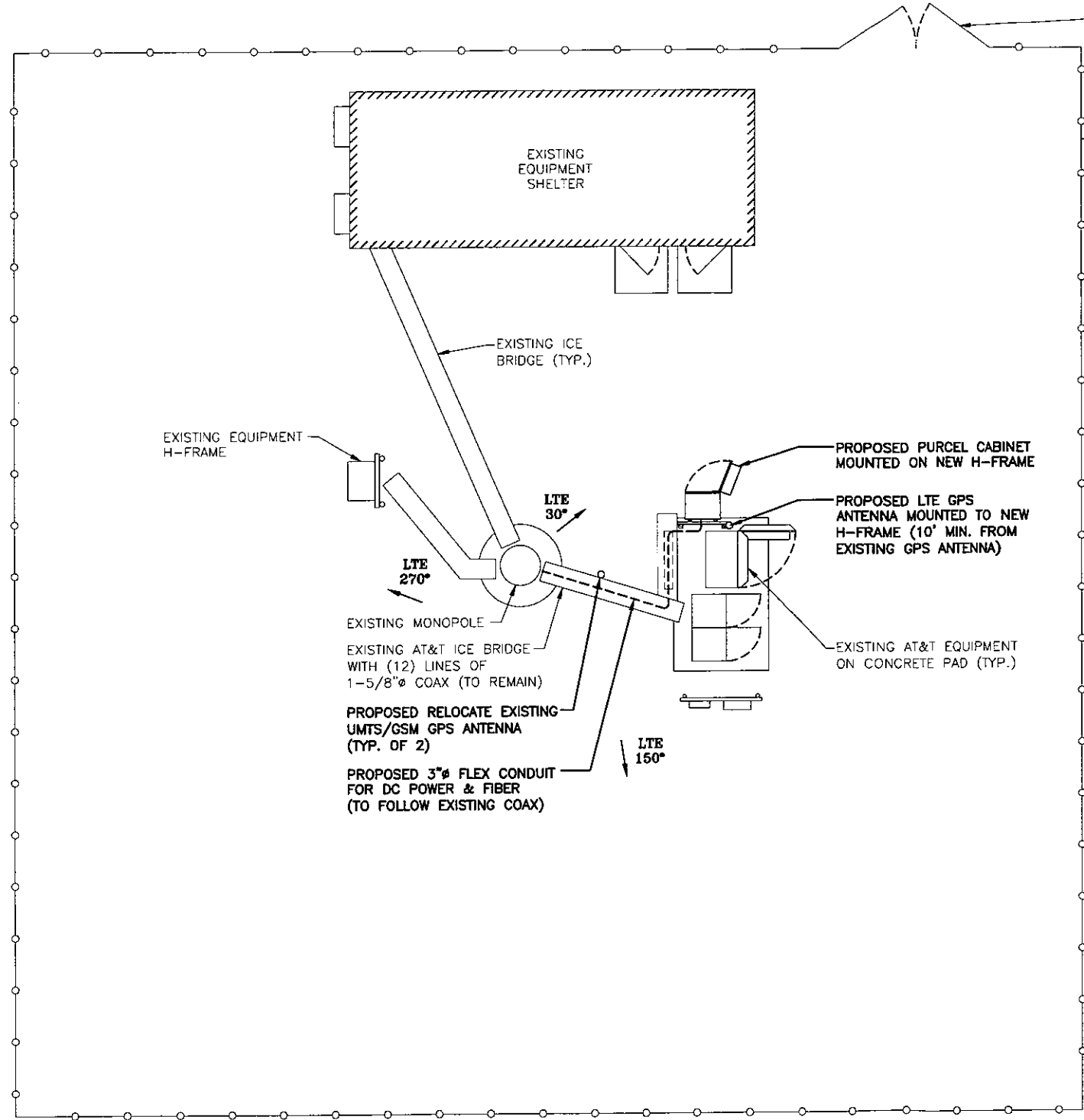
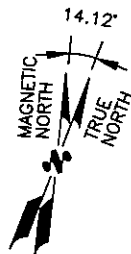
SITE NUMBER: CT5819
SITE NAME: BOLTON

49 SOUTH RD
BOLTON, CT 06043
TOLLAND COUNTY



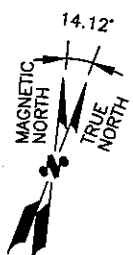
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

										AT&T									
1 04/18/12 ISSUED FOR CONSTRUCTION										GENERAL NOTES (LTE)									
0 04/11/12 ISSUED FOR REVIEW																			
NO. DATE REVISIONS										BY CHK APP'D									
SCALE: AS SHOWN										DESIGNED BY: HC									
DRAWN BY: NB										JOB NUMBER 5649.01									
										DRAWING NUMBER GN-1									



COMPOUND PLAN

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



EXISTING ACCESS GATE

EXISTING CHAIN LINK FENCE (TYP.)

EXISTING DIPLEXER RACK

PROPOSED RELOCATE EXISTING UMS/GSM GPS ANTENNA (TYP. OF 2)

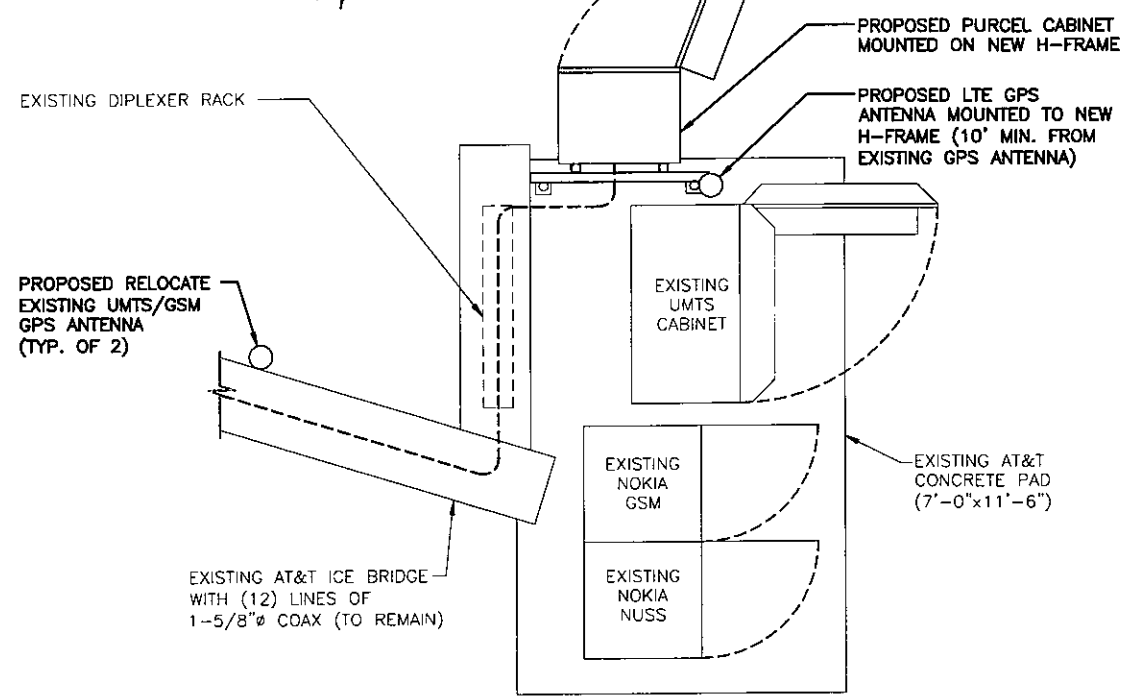
EXISTING AT&T ICE BRIDGE WITH (12) LINES OF 1-5/8" COAX (TO REMAIN)

NOTE:

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

NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



EQUIPMENT PLAN

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



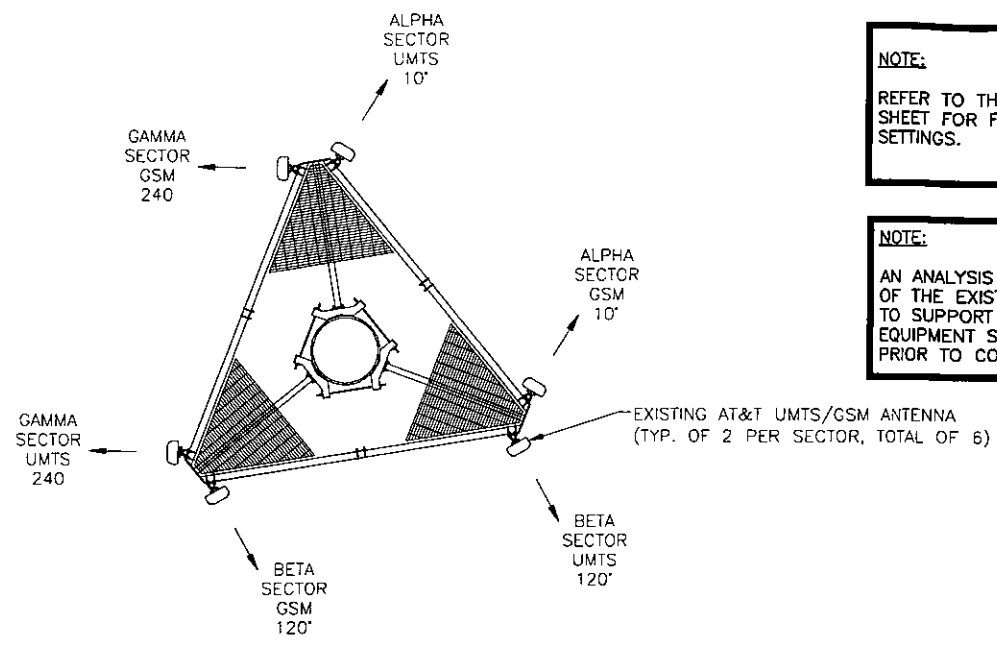
Hudson Design Group
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

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

SITE NUMBER: CT5819
SITE NAME: BOLTON
49 SOUTH RD
BOLTON, CT 06043
TOLLAND COUNTY

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

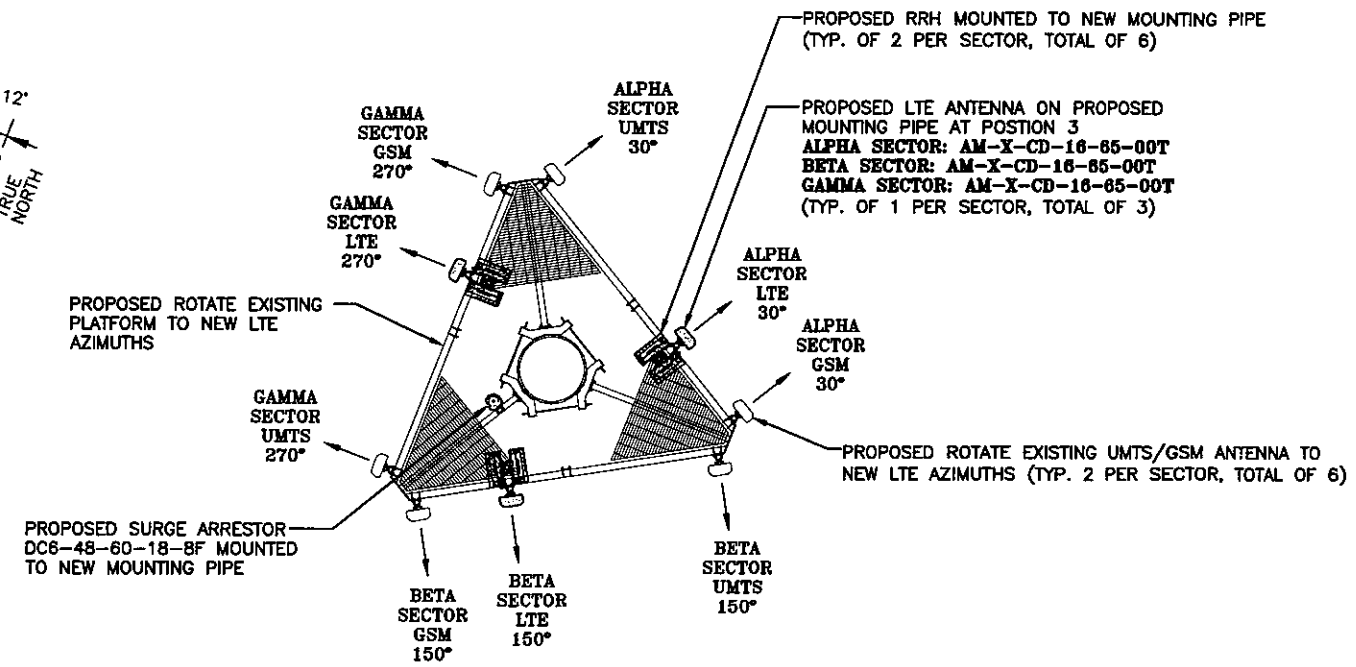
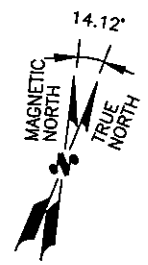
				AT&T			
				COMPOUND & EQUIPMENT PLAN (LTE)			
1	04/18/12	ISSUED FOR CONSTRUCTION		NB	DC	DPH	
0	04/11/12	ISSUED FOR REVIEW					
NO.	DATE	REVISIONS	BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER
						5819.01	A-1
SCALE: AS SHOWN				DESIGNED BY: HC		DRAWN BY: NB	
				DATE OF CONNECTION: 04/18/12		PROFESSIONAL ENGINEER: 0604178	
						REV	
						1	



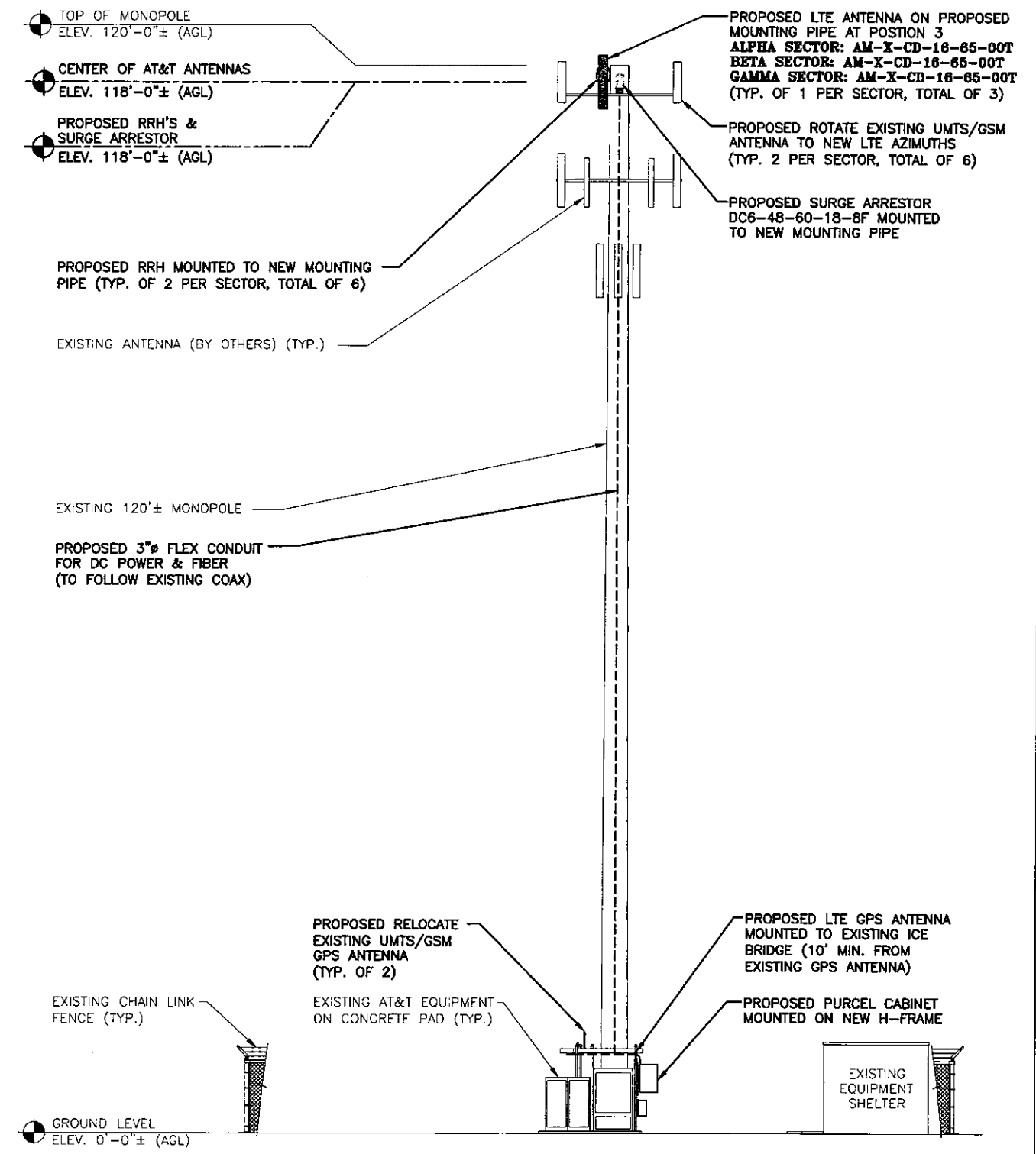
EXISTING UMTS/GSM ANTENNA PLAN
SCALE: N.T.S.

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



PROPOSED LTE ANTENNA PLAN
SCALE: N.T.S.



EAST ELEVATION
SCALE: 1/8"=1'-0"



Hudson
Design Group, Inc.

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: CT5819
SITE NAME: BOLTON

49 SOUTH RD
BOLTON, CT 06043
TOLLAND COUNTY

at&t

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

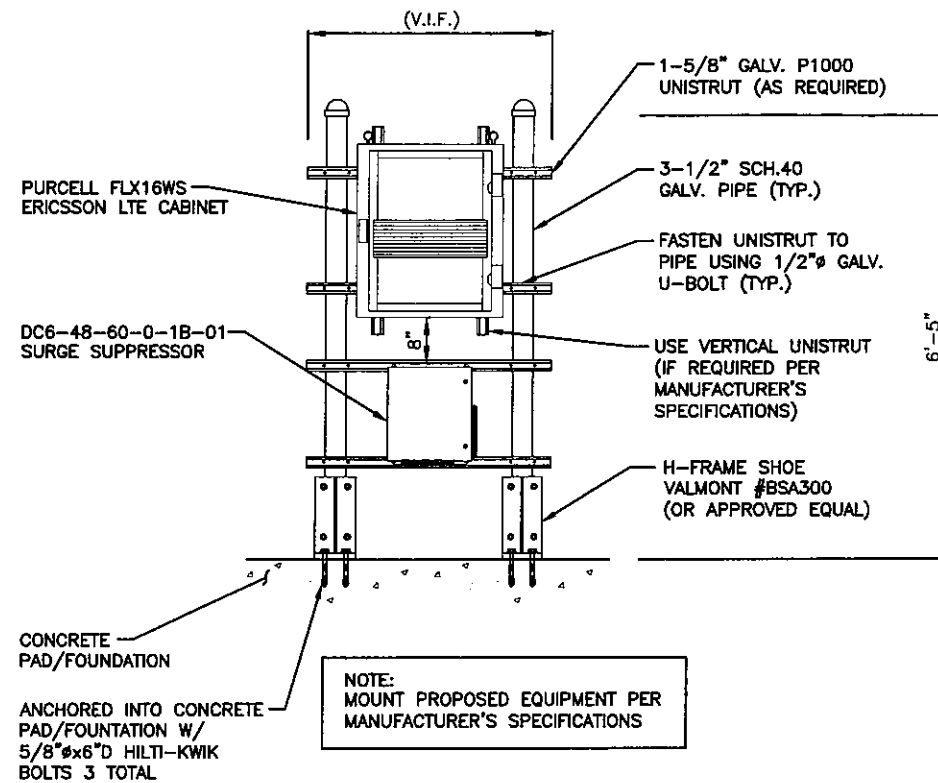
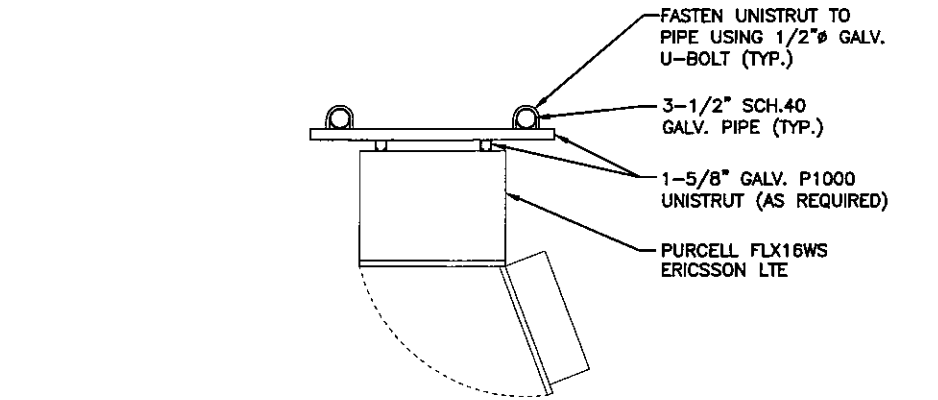
				AT&T			
				ANTENNA PLAN AND ELEVATION (LTE)			
1	04/18/12	ISSUED FOR CONSTRUCTION	BY: [Signature]	NO. 24178	JOB NUMBER	DRAWING NUMBER	REV
0	04/11/12	ISSUED FOR REVIEW	BY: [Signature]		5549.01	A-2	1
SCALE: AS SHOWN				DESIGNED BY: HC	DRAWN BY: NB		

NOTE:

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

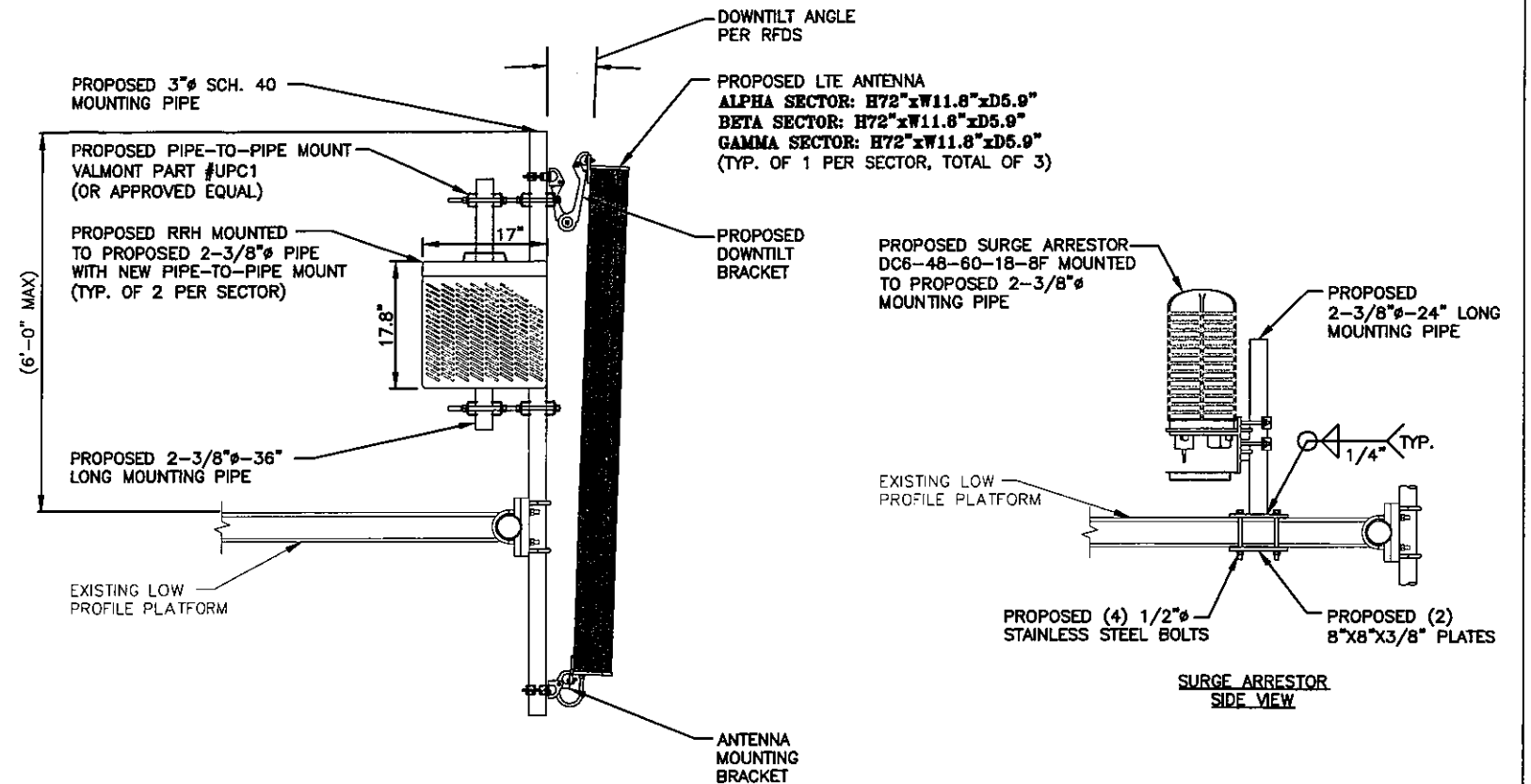
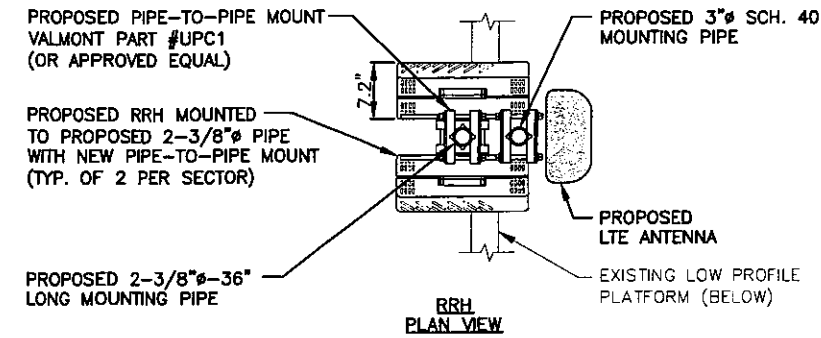
NOTE:

AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



PROPOSED EQUIPMENT MOUNTING DETAIL

SCALE: N.T.S.



PROPOSED LTE ANTENNA, RRH & SURGE ARRESTOR MOUNTING DETAIL

SCALE: N.T.S.

Hudson
Design Group, Inc.

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



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

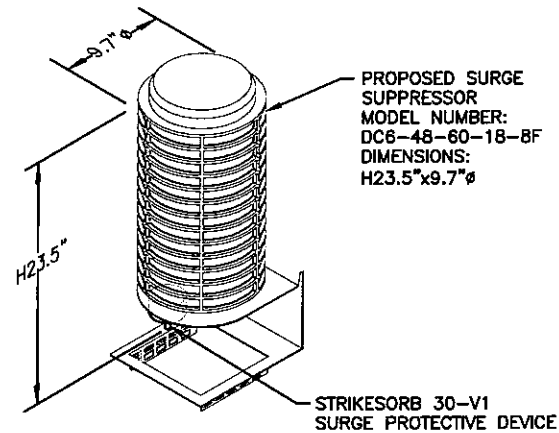
SITE NUMBER: CT5819
SITE NAME: BOLTON

49 SOUTH RD
BOLTON, CT 06043
TOLLAND COUNTY



500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

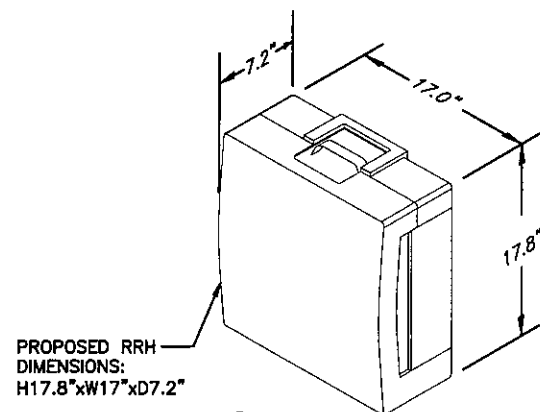
				AT&T			
				DETAILS (LTE)			
NO.	DATE	REVISIONS	BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER
1	04/18/12	ISSUED FOR CONSTRUCTION	DPH			5419.01	A-3
0	04/11/12	ISSUED FOR REVIEW	NB	DC	DPH		
SCALE: AS SHOWN				DESIGNED BY: HC		DRAWN BY: NB	
				PROFESSIONAL ENGINEER		1	



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

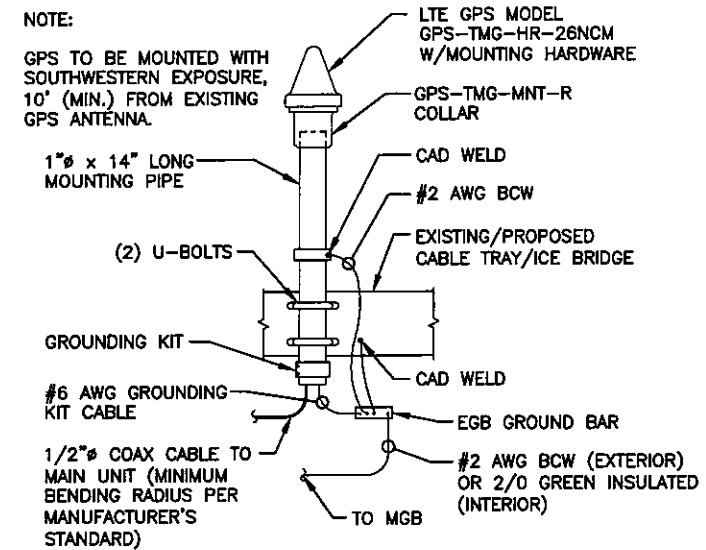
SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S
SPECIFICATIONS.

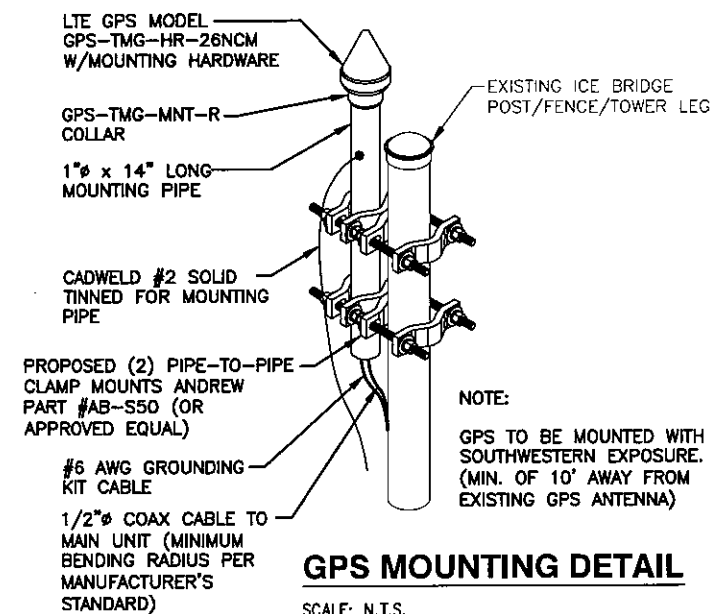
RRH DETAIL

SCALE: N.T.S.



GPS MOUNTING DETAIL

SCALE: N.T.S.



GPS MOUNTING DETAIL

SCALE: N.T.S.

NOTE:

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

NOTE:

AN ANALYSIS FOR THE CAPACITY
OF THE EXISTING STRUCTURES
TO SUPPORT THE PROPOSED
EQUIPMENT SHALL BE DETERMINED
PRIOR TO CONSTRUCTION.

Hudson
Design Group, Inc.

1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5566



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

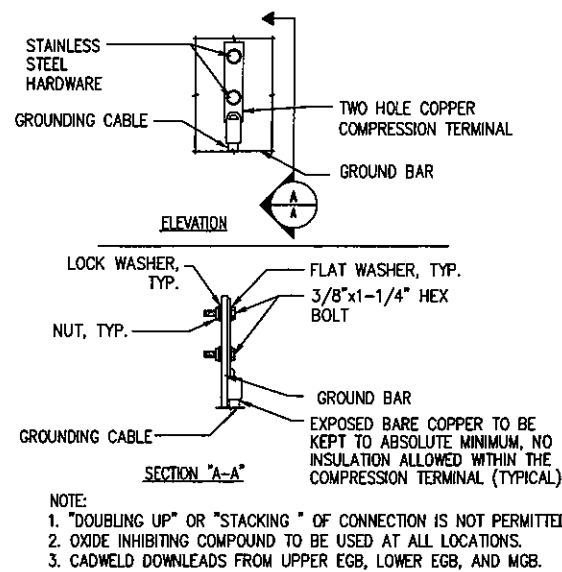
SITE NUMBER: CT5819
SITE NAME: BOLTON

49 SOUTH RD
BOLTON, CT 06043
TOLLAND COUNTY



500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

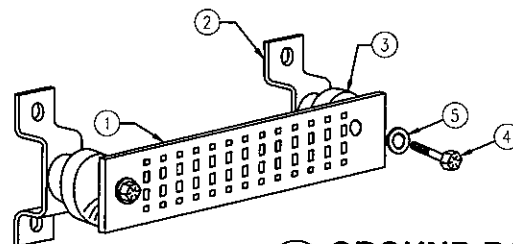
				AT&T			
				DETAILS (LTE)			
1	04/18/12	ISSUED FOR CONSTRUCTION		NB	DC	DPH	
0	04/11/12	ISSUED FOR REVIEW					
NO.	DATE	REVISIONS	BY	CHK	APP'D		
SCALE: AS SHOWN		DESIGNED BY: HC	DRAWN BY: NB				
				JOB NUMBER	DRAWING NUMBER	REV	
				5519.01	A-4	1	



TYPICAL GROUND BAR CONNECTION DETAIL

1
N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
①	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
②	2		WALL MTG. BRKT.
③	2		INSULATORS
④	4		5/8"-11x1" H.H.C.S.
⑤	4		5/8 LOCKWASHER



2
N.T.S.

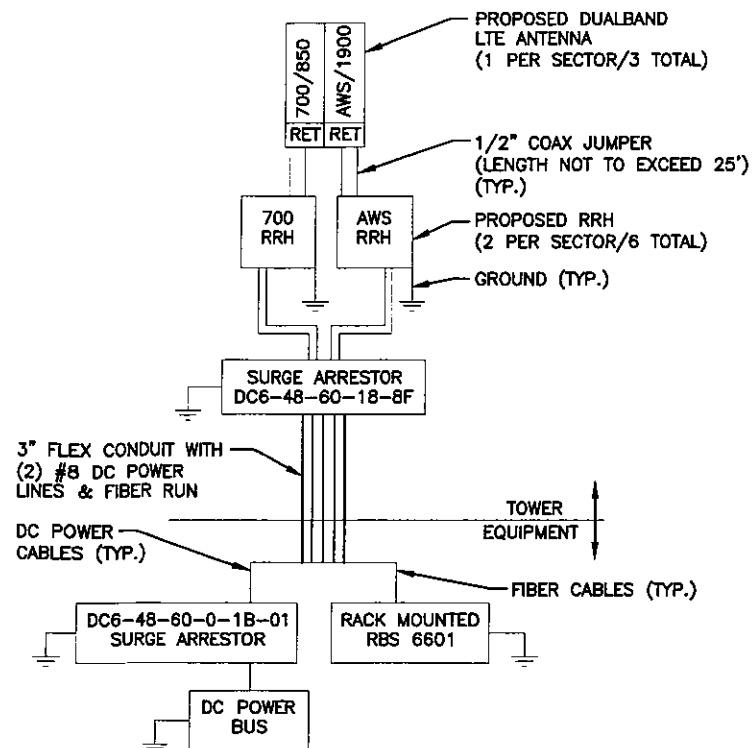
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" - SURGE PRODUCERS

CABLE ENTRY PORTS (HATCH PLATES) (#2)
 GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
 TELCO GROUND BAR
 COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
 +24V POWER SUPPLY RETURN BAR (#2)
 -48V POWER SUPPLY RETURN BAR (#2)
 RECTIFIER FRAMES.

SECTION "A" - SURGE ABSORBERS

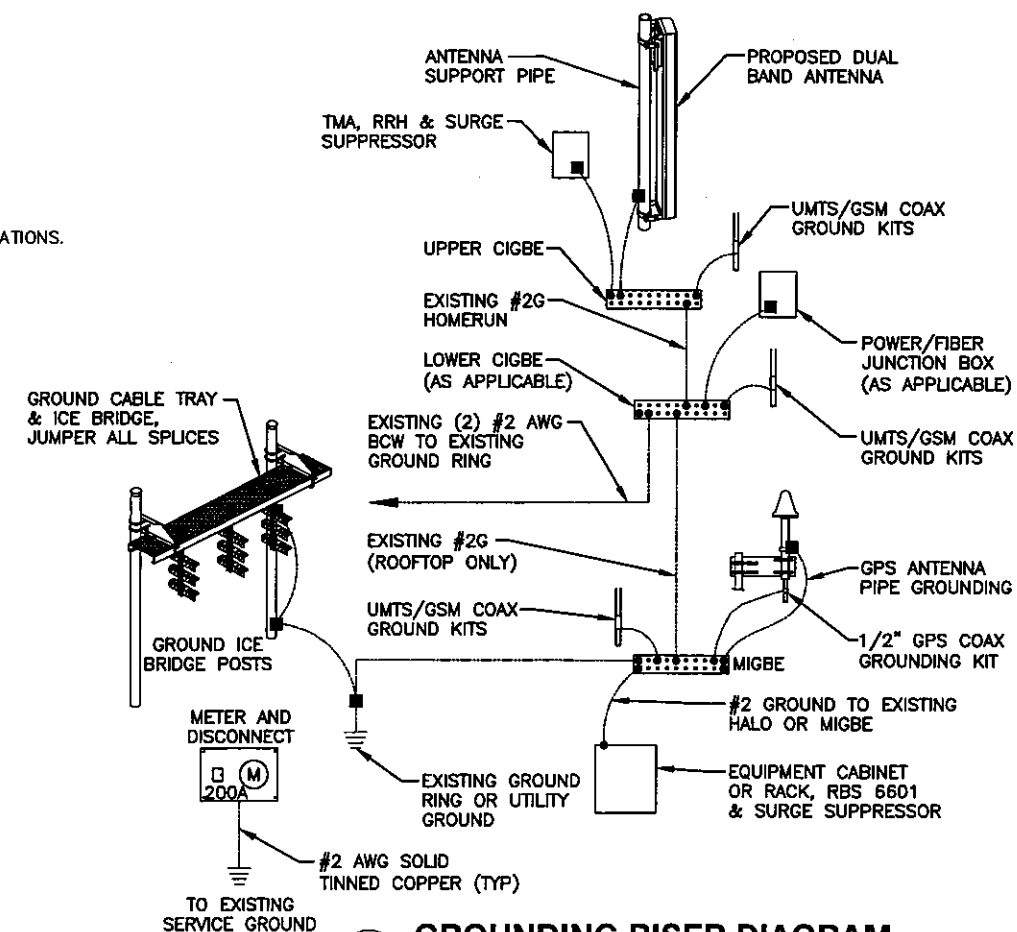
INTERIOR GROUND RING (#2)
 EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
 METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
 BUILDING STEEL (IF AVAILABLE) (#2)



NOTES:

- CONTRACTOR TO CONFIRM ALL PARTS.
- INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

3
N.T.S.



4
N.T.S.

Hudson
Design Group, Inc.

1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5566

NEXLINK
GLOBAL SERVICES

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

SITE NUMBER: CT5819
SITE NAME: BOLTON

49 SOUTH RD
 BOLTON, CT 06043
 TOLLAND COUNTY

at&t

500 ENTERPRISE DRIVE, SUITE 3A
 ROCKY HILL, CT 06067

										AT&T									
										No 24178									
1 04/18/12 ISSUED FOR CONSTRUCTION										ACCORDING DIAGRAM & GROUNDING DETAILS (LTE)									
0 04/11/12 ISSUED FOR REVIEW																			
NO. DATE REVISIONS										BY CHK APP'D									
SCALE: AS SHOWN										DESIGNED BY: HC									
DRAWN BY: NB										5819.01									
										DRAWING NUMBER G-1									