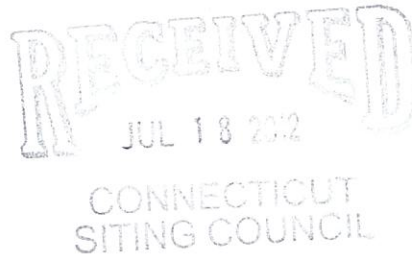


280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

July 16, 2012



Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Antenna Swap**
49 South Road, Bolton, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 110-foot level on the existing 120-foot tower at the above-referenced address. The tower is owned by AT&T. The Council approved Cellco’s use of the existing tower in 2005. Cellco now intends to modify its installation by replacing six (6) of its existing antennas with six (6) model LPA-80063/4CF cellular antennas. Cellco also intends to install three (3) model BXA-70063/6CF LTE antennas, for a total of fifteen (15) antennas, all at the 110-foot level on the tower. Cellco also intends to install six additional coax cables inside the monopole. Attached behind Tab 1 are the specifications for the proposed replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Robert R. Morra, First Selectman of the Town of Bolton. A copy of this letter is also being sent to Leonard and Cheryl Giglio, owners of the property on which the tower is located.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the overall height of the existing tower. Cellco’s new antennas will be located at the same 110-foot level on the existing 120-foot tower.



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Linda Roberts
July 16, 2012
Page 2

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundaries.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for Cellco's modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower and foundation, with certain structural modifications, can support Cellco's proposed modifications. Tower modification drawings are included as part of the Structural Analysis Report. (See Tab 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Robert R. Morra, Bolton First Selectman
Leonard and Cheryl Giglio
Sandy M. Carter



LPA-80063/4CF

When ordering replace "___" with connector type.

Mechanical specifications

Length	1205 mm	47.4 in
Width	386 mm	15.2 in
Depth	335 mm	13.2 in
Depth with z-bracket	375 mm	14.8 in
4) Weight	9.1 kg	20.0 lbs
Wind Area		
Fore/Aft	0.47 m ²	5.0 ft ²
Side	0.40 m ²	4.4 ft ²
Rated Wind Velocity (Safety factor 2.0)	>265 km/hr >165 mph	
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	665 N	149.5 lbs
Side	577 N	129.6 lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting and Downtilting

Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in). If the lock-down brace is used, the maximum diameter is Ø88.9 mm (3.5 in)

Mounting Bracket and Downtilt Bracket Kit #21699999

Electrical specifications

Frequency Range	806-960 MHz
Impedance	50Ω
3) Connector(s)	NE or E-DIN 1 port / center
1) VSWR	≤ 1.4:1
Polarization	Vertical
1) Gain	13 dBd
2) Power Rating	500 W
1) Half Power Angle	
H-Plane	63°
E-Plane	15°
1) Electrical Downtilt	0°
1) Null Fill	10%
Lightning Protection	Direct Ground

1) Typical values.

2) Power rating limited by connector only.

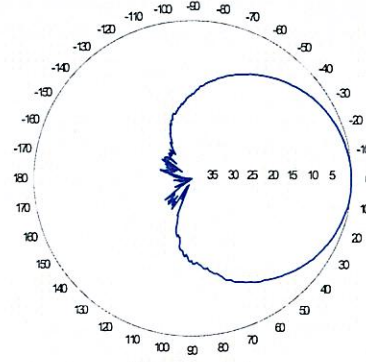
3) NE indicates an elongated N connector.

E-DIN indicates an elongated DIN connector.

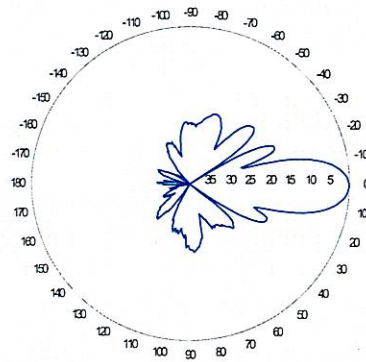
4) The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

Radiation pattern¹⁾



Horizontal

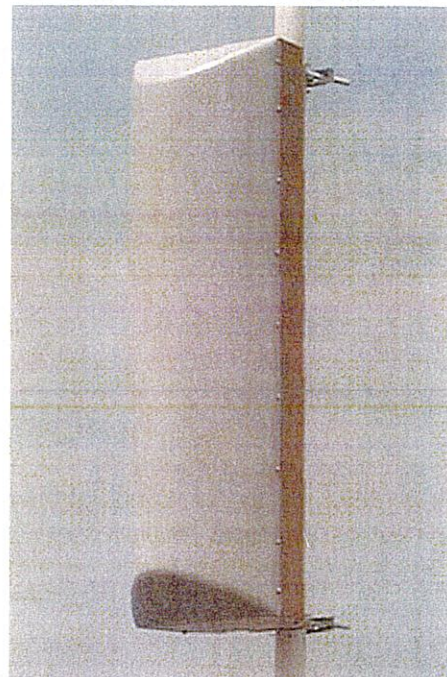


Vertical

Featuring upper side lobe suppression.

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back ratio.



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

This Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

CF Denotes a Center-Fed Connector.

806-960 MHz



Revision Date: 6/17/08

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

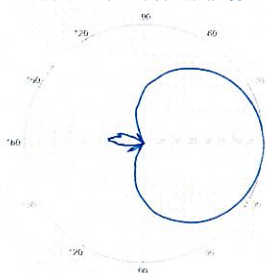
Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz			
Frequency bands	696-806 MHz		806-900 MHz	
Polarization	±45°			
Horizontal beamwidth	65°		63°	
Vertical beamwidth	13°		11°	
Gain	14.0 dBd (16.1 dBi)		14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10			
Impedance	50Ω			
VSWR	≤1.35:1			
Upper sidelobe suppression (0°)	-18.3 dB		-18.2 dB	
Front-to-back ratio (+/-30°)	-33.4 dB		-36.3 dB	
Null fill	5% (-26.02 dB)			
Isolation between ports	< -25 dB			
Input power with EDIN connectors	500 W			
Input power with NE connectors	300 W			
Lightning protection	Direct Ground			
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)			
Mechanical Characteristics				
Dimensions Length x Width x Depth	1804 x 285 x 132 mm		71.0 x 11.2 x 5.2 in	
Depth with z-brackets	172 mm		6.8 in	
Weight without mounting brackets	7.9 kg		17 lbs	
Survival wind speed	> 201 km/hr		> 125 mph	
Wind area	Front: 0.51 m ²	Side: 0.24 m ²	Front: 5.5 ft ²	Side: 2.6 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 759 N	Side: 391 N	Front: 169 lbf	Side: 89 lbf
Mounting Options	Part Number	Fits Pipe Diameter		Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm	1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP			

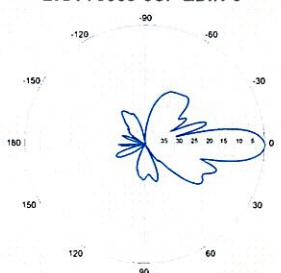


BXA-70063-6CF-EDIN-X



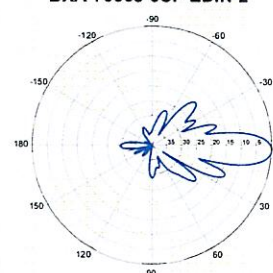
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

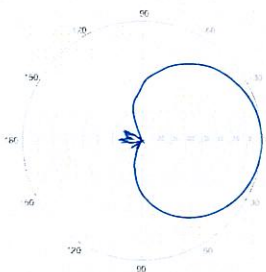


0° | Vertical | 750 MHz

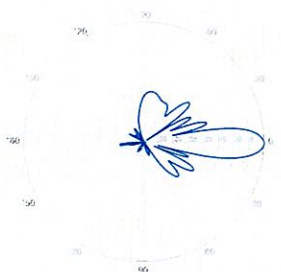
BXA-70063-6CF-EDIN-2



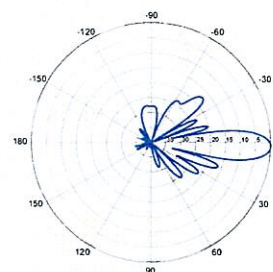
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



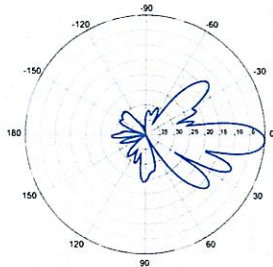
2° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

BXA-70063-6CF-EDIN-X

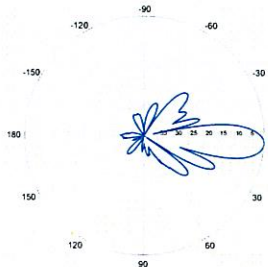
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



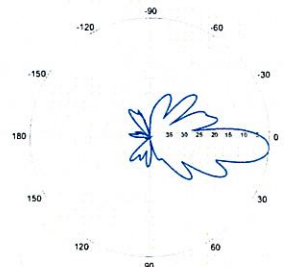
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

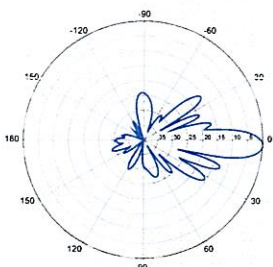


4° | Vertical | 750 MHz

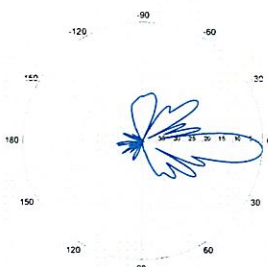
BXA-70063-6CF-EDIN-5



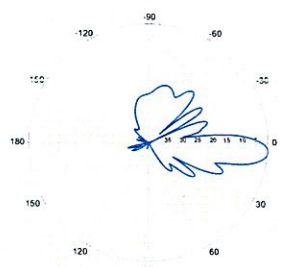
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

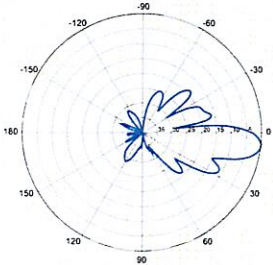


4° | Vertical | 850 MHz



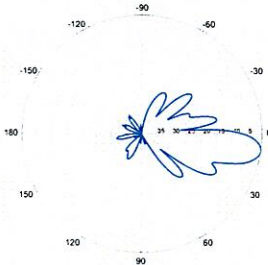
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



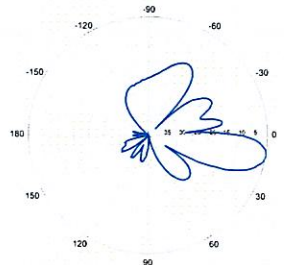
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

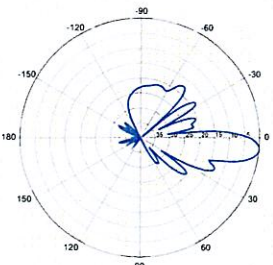


8° | Vertical | 750 MHz

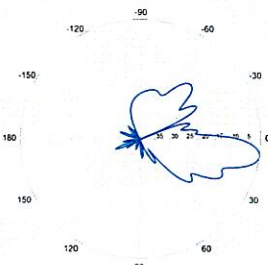
BXA-70063-6CF-EDIN-10



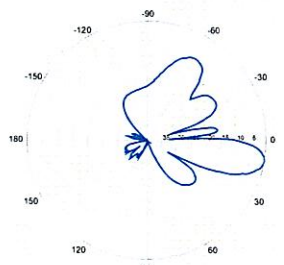
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

Site Name: Bolton E		General	Power	Density					
Tower Height: Verizon @ 110ft									
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total	
*Cingular UMTS	1	500	120	0.0125	880	0.5867	2.13%		
*Cingular GSM	2	427	120	0.0213	1900	1.0000	2.13%		
*Cingular GSM	4	296	120	0.0296	880	0.5867	5.04%		
*Pocket	3	631	99	0.0694	2130	1.0000	6.94%		
Verizon PCS	7	294	110	0.0612	1970	1.0000	6.12%		
Verizon Cellular	9	314	110	0.0840	869	0.5793	14.50%		
Verizon AWS	1	736	110	0.0219	2145	1.0000	2.19%		
Verizon 700	1	821	110	0.0244	698	0.4653	5.24%		
								44.29%	
* Source: Siting Council									



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



Kevin Clements
1117 Perimeter Center W, Suite W303
Atlanta, GA 30338
(678) 781-5062
kclements@gpdgroup.com

GPD# 2012768.47
July 10, 2012

STRUCTURAL ANALYSIS REPORT WITH MODIFICATION DESIGN

AT&T DESIGNATION:
Site USID: 27066
Site FA: 10070938
Site Name: BOLTON
AT&T Project: Verizon Modification 9-15-2011

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

Ms. Charlotte Malone,

GPD is pleased to submit this Structural Analysis Report with Modification Design 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:

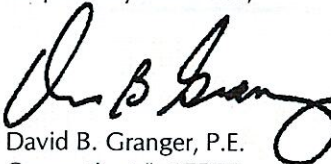
Analysis Results

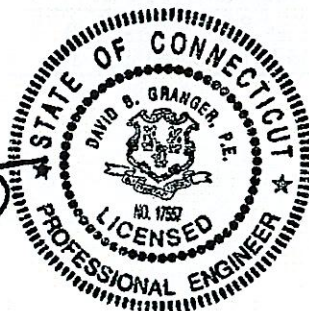
Tower Stress Level with Proposed Equipment:	98.6%	Pass
Foundation Ratio with Proposed Equipment:	99.5%	Pass

Note: In order for the analysis results to be valid for the proposed, existing, and reserved loading in Appendix A, the modifications referenced in the design drawings by GPD (Project #: 2012768.47, dated 7/10/12) must be installed.

We at GPD appreciate the opportunity of providing our continuing professional services to you and AT&T. 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 Verizon to AT&T. This report was commissioned by Ms. Charlotte Malone of AT&T.

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 modifications designed by GPD (Project #: 2012768.47, dated 7/10/12) were considered in the analysis. They consist of installing reinforcing plates to the monopole shaft.

The proposed coax shall be banded flush to the outside of the tower in a single row to 110' in order for the analysis results to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Tower	98.6%	Pass
Base Plate	67.6%	Pass
Anchor Rods	85.3%	Pass
Foundation	97.6%	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 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	Verizon Co-location Document, uploaded 9/28/11	Siterra
Site Lease Application	Verizon Application, dated 5/1/12	Siterra
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 Job #: 2012765.87, dated 5/24/12	Siterra
Modification Drawings	GPD Job #: 2011712.28 Rev. A, dated 1/6/12	Siterra
Post-Modification Inspection	GPD Project #: 2011536.00, dated 2/27/12	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 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 (Project #: 2012765.87, dated 5/24/12), site photos and the provided notice of co-location form, and the provided equipment modification form 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 (Project #: 2012765.87, dated 5/24/12).
12. The elevations of the existing loading were found to vary between the equipment modification form and the previous structural analysis by GPD (Project #: 2012765.87, dated 5/24/12). The elevations of the existing loading have been modeled based on the previous structural analysis.
13. The proposed coax shall be banded flush to the outside of the tower in a single row to 110' in order for the analysis results to be valid.

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

Tower Analysis Summary Form

General Info	
Site Name	BOLTON
Site Number	27066
FA Number	10070938
Date of Analysis	7/10/2012
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	PennSummit		
Tower Model	NIA		
Original Tower Drawings	PJF Job #: 29203-0231 Rev. 2		9/16/2003
Foundation Design	PJF Job #: 29203-0231 Rev. 2		9/16/2009
Original Tower Calculations	NIA		
Geotech Report	VN Engineers Project #: 23-112		8/14/2003
Previous Structural Analysis	GPD Project #: 2012765.87		5/24/2012
Modification Drawings	GPD Project #: 2011712.28 Rev. A		1/6/2012

Design Parameters	
Design Code Used	TIA/EIA-222-F, 2003 IBC
Location of Tower (County, State)	2005 CTBC & ASCE 7-05
Basic Wind Speed (mph)	Iolland, CT
Ice Thickness (in)	85 (fastest-mile)
Structure Classification (I, II, III)	1
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)	
Existing/Reserved + Future + Proposed Condition	
Tower (%)	98.6%
Tower Base (%)	85.3%
Foundation (%)	97.6%
Foundation Adequate?	Yes

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

All modifications designed by GPD (Project #: 2012768.47, dated 7/10/12) were considered in the analysis. They consist of installing reinforcing plates to the monopole shaft.

Existing / Reserved Loading

Antenna										Mount				Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Attachment Internal/External	Size	Model	Quantity	Attachment Internal/External	Size	Model
AT&T Mobility	116	118	6	Panel	Powerwave	7770.00	0120/240	1	Unknown	12.5' LP Platform	Internal	1-5/8"	Unknown	12	Internal	1-5/8"	Unknown
AT&T Mobility	116	118	3	Panel	KMW	AM-X-CD-16-65-00T				on the same mount	Internal	7/8"	DC Power	2	Internal	7/8"	DC Power
AT&T Mobility	116	118	6	TMA	Powerwave	LGP 21401				on the same mount	Internal	1/2"	Fiber Cable	1	Internal	1/2"	Fiber Cable
AT&T Mobility	116	116	6	RRH	Powerwave	LGP 21503				on the same mount	Internal	3/8"	RET Cable	1	Internal	3/8"	RET Cable
AT&T Mobility	116	116	1	DC Unit	Ericsson	RBS 6601				on the same mount							
AT&T Mobility	116	116	1	DC Unit	Raycap	DCG-48-60-18-8F				on the same mount							
Verizon	108	110	6	Panel	Antel	LPA-185063/0CF 2	307150/270	1	Unknown	12.5' LP Platform	Internal	1-5/8"	Unknown	12	Internal	1-5/8"	Unknown
Verizon	108	110	6	Panel	Antel	LPD-6513	307150/270			on the same mount							
Pocket Communications	99	99	3	Panel	Kathrein	742-213	307150/270	3	Unknown	Pipe	Internal	1-5/8"	Unknown	6	Internal	1-5/8"	Unknown

Note: Prior to installation of the proposed loading, (6) LPD-6513 antennas @ 110' shall be removed. The remaining equipment shall be reused.

Proposed Loading

Antenna										Mount				Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Attachment Internal/External	Size	Model	Quantity	Attachment Internal/External	Size	Model
Verizon	108	110	6	Panel	Antel	LPA-80063-4CF	307150/270			on the existing mount	Internal	1-5/8"	LDF7-50A	6	Internal	1-5/8"	LDF7-50A
Verizon	108	110	3	Panel	Antel	BXA-70063-6CF 2	307150/270			on the existing mount	External						

Note: The proposed loading configuration shall replace the loading at the same elevation.

Note: The proposed coax shall be banded flush to the outside of the tower in a single row to 110' in order for the analysis results to be valid.

Future Loading

Antenna										Mount				Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Attachment Internal/External	Size	Model	Quantity	Attachment Internal/External	Size	Model
AT&T Mobility	116	118	3	Panel	KMW	AM-X-CD-16-65-00T				on the existing mount	Internal						

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

APPENDIX B

TNX-Tower Output File

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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
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	118.00 - 8.00	12	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
7/8" DC Power Cable	A	No	Inside Pole	118.00 - 8.00	2	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
						2" Ice	0.00	0.60
						4" Ice	0.00	0.60
1/2" Fiber Cable	A	No	Inside Pole	118.00 - 8.00	1	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
RET Cable	A	No	Inside Pole	118.00 - 8.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
						1" Ice	0.00	0.08
						2" Ice	0.00	0.08
						4" Ice	0.00	0.08
LDF7-50A (1-5/8 FOAM)	C	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
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	C	No	CaAa (Out Of Face)	110.00 - 8.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
						1" Ice	0.40	4.46
						2" Ice	0.60	10.54
						4" Ice	1.00	30.04
LDF7-50A (1-5/8 FOAM)	C	No	CaAa (Out Of Face)	110.00 - 8.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		$C_A A_A$ ft ² /ft	Weight plf
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	99.00 - 8.00	6	1" Ice	0.00	4.46
						2" Ice	0.00	10.54
						4" Ice	0.00	30.04
						No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
Climbing Pegs	C	No	CaAa (Out Of Face)	120.00 - 8.00	1	2" Ice	0.00	0.82
						4" Ice	0.00	0.82
						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
Safety Line 3/8	C	No	CaAa (Out Of Face)	120.00 - 8.00	1	4" Ice	0.82	20.59
						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	C	No	CaAa (Out Of Face)	33.00 - 0.50	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
						No Ice	0.21	0.00
5" x 1-1/4" Mod Plate	C	No	CaAa (Out Of Face)	41.25 - 33.00	1	1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
						2" Ice	0.65	0.00
						4" Ice	1.10	0.00
						No Ice	0.17	0.00
						1/2" Ice	0.28	0.00
4.5"x1" Mod Plate	C	No	CaAa (Out Of Face)	59.00 - 41.33	1	1" Ice	0.39	0.00
						2" Ice	0.61	0.00
						4" Ice	1.06	0.00
						No Ice	0.21	0.00
						1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
4" x 1-1/4" Mod Plate	C	No	CaAa (Out Of Face)	62.50 - 59.00	1	2" Ice	0.65	0.00
						4" Ice	1.10	0.00
						No Ice	0.21	0.00
						1/2" Ice	0.32	0.00
						1" Ice	0.43	0.00
						2" Ice	0.65	0.00

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

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
(2) 7770.00 w/Mount Pipe	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.88 6.31 6.75 7.66 9.58	4.10 4.73 5.37 6.70 9.87	0.06 0.11 0.16 0.29 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 1/2" Ice 1" Ice 2" Ice 4" Ice	5.88 6.31 6.75 7.66 9.58	4.10 4.73 5.37 6.70 9.87	0.06 0.11 0.16 0.29 0.65
(2) LGP21401	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
(2) LGP21401	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
(2) LGP21401	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
(2) LGP21903 Diplexer	A	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.18 0.25 0.32 0.49 0.94	0.01 0.01 0.02 0.03 0.07
(2) LGP21903 Diplexer	B	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.18 0.25 0.32 0.49 0.94	0.01 0.01 0.02 0.03 0.07
(2) LGP21903 Diplexer	C	From Centroid-Le g	4.00 0.00 2.00	0.0000	116.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.18 0.25 0.32 0.49 0.94	0.01 0.01 0.02 0.03 0.07
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	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.33 7.98 8.57 9.80 12.41	6.14 7.13 7.97 9.71 13.40	0.07 0.13 0.20 0.37 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 1/2" Ice 1" Ice 2" Ice 4" Ice	7.33 7.98 8.57 9.80 12.41	6.14 7.13 7.97 9.71 13.40	0.07 0.13 0.20 0.37 0.83
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	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.33 7.98 8.57 9.80 12.41	6.14 7.13 7.97 9.71 13.40	0.07 0.13 0.20 0.37 0.83
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Centroid-Le	4.00 0.00	0.0000	116.00	No Ice 1/2" Ice	7.33 7.98	6.14 7.13	0.07 0.13

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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
		g	2.00			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
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	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
(2) RBS 6601	A	From Centroid-Le g	4.00 0.00 0.00	0.0000	116.00	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
						2" Ice 1.19	0.91	0.09
						4" Ice 1.97	1.55	0.21
(2) RBS 6601	B	From Centroid-Le g	4.00 0.00 0.00	0.0000	116.00	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
						2" Ice 1.19	0.91	0.09
						4" Ice 1.97	1.55	0.21
(2) RBS 6601	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	116.00	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
						2" Ice 1.19	0.91	0.09
						4" Ice 1.97	1.55	0.21
DC6-48-60-18-8F Surge Suppression Unit	C	From Centroid-Le g	4.00 0.00 0.00	0.0000	116.00	No Ice 1.47	1.47	0.03
						1/2" Ice 1.67	1.67	0.05
						1" Ice 1.88	1.88	0.07
						2" Ice 2.33	2.33	0.12
						4" Ice 3.38	3.38	0.25
MTS 12.5' LP Platform	C	None		0.0000	108.00	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) LPA-185063/8CF_2 w/ mount pipe	A	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	No Ice 3.77	4.41	0.03
						1/2" Ice 4.43	5.44	0.07
						1" Ice 4.98	6.21	0.12
						2" Ice 6.12	7.83	0.24
						4" Ice 8.54	11.28	0.59
(2) LPA-185063/8CF_2 w/ mount pipe	B	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	No Ice 3.77	4.41	0.03
						1/2" Ice 4.43	5.44	0.07
						1" Ice 4.98	6.21	0.12
						2" Ice 6.12	7.83	0.24
						4" Ice 8.54	11.28	0.59
(2) LPA-185063/8CF_2 w/ mount pipe	C	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	No Ice 3.77	4.41	0.03
						1/2" Ice 4.43	5.44	0.07
						1" Ice 4.98	6.21	0.12
						2" Ice 6.12	7.83	0.24
						4" Ice 8.54	11.28	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	7.27	0.04
						1/2" Ice 7.73	7.98	0.10
						1" Ice 8.22	8.69	0.18
						2" Ice 9.22	10.18	0.34

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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) LPA-80063-4CF w/ mount pipe	B	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	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
(2) LPA-80063-4CF w/ mount pipe	C	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	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
BXA-70063-6CF_2 w/Mount Pipe	A	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	4" Ice	11.36	0.80
						No Ice	7.77	0.04
						1/2" Ice	8.31	0.09
						1" Ice	8.86	0.16
						2" Ice	9.99	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	0.75
						No Ice	7.77	0.04
						1/2" Ice	8.31	0.09
						1" Ice	8.86	0.16
						2" Ice	9.99	0.31
BXA-70063-6CF_2 w/Mount Pipe	C	From Centroid-Le g	4.00 0.00 2.00	30.0000	108.00	4" Ice	12.35	0.75
						No Ice	7.77	0.04
						1/2" Ice	8.31	0.09
						1" Ice	8.86	0.16
						2" Ice	9.99	0.31
742-213 w/Mount Pipe	A	From Leg	1.00 0.00 0.00	30.0000	99.00	4" Ice	12.35	0.75
						No Ice	5.42	0.05
						1/2" Ice	5.95	0.09
						1" Ice	6.47	0.14
						2" Ice	7.54	0.27
742-213 w/Mount Pipe	B	From Leg	1.00 0.00 0.00	30.0000	99.00	4" Ice	9.76	0.68
						No Ice	5.42	0.05
						1/2" Ice	5.95	0.09
						1" Ice	6.47	0.14
						2" Ice	7.54	0.27
742-213 w/Mount Pipe	C	From Leg	1.00 0.00 0.00	30.0000	99.00	4" Ice	9.76	0.68
						No Ice	5.42	0.05
						1/2" Ice	5.95	0.09
						1" Ice	6.47	0.14
						2" Ice	7.54	0.27
						4" Ice	9.76	0.68

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
116.00	MTS 12.5' LP Platform	35	27.693	2.1755	0.0024	15386
108.00	MTS 12.5' LP Platform	35	24.030	2.0984	0.0021	6410
99.00	742-213 w/Mount Pipe	35	20.056	1.9875	0.0017	3662

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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	-5.49	738.72	81.7	Pass
L2	83 - 61	Pole	TP27.4776x23.6893x0.25	2	-8.44	1123.18	98.6	Pass
L3	61 - 57.5	Pole	TP28.0028x27.4776x0.425	3	-9.02	1933.97	61.3*	Pass
L4	57.5 - 41.25	Pole	TP30.441x28.0028x0.409	4	-11.12	1988.82	72.6*	Pass
L5	41.25 - 31.25	Pole	TP31.4411x29.0603x0.533	5	-14.51	2718.32	61.8*	Pass
L6	31.25 - 18.75	Pole	TP33.3167x31.4411x0.456	6	-17.04	2472.54	66.5*	Pass
L7	18.75 - 18.25	Pole	TP33.3917x33.3167x0.473	7	-17.15	2569.25	73.2*	Pass
L8	18.25 - 0	Pole	TP36.13x33.3917x0.443	8	-20.75	2608.65	73.1*	Pass
							Summary	
							Pole (L2)	98.6 Pass
							RATING =	98.6 Pass

*Refer to Appendix D for calculations supporting the % capacity used.

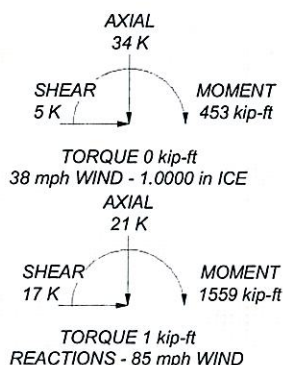
APPENDIX C

Tower Elevation Drawing

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

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: 98.6%



 GPD GROUP Consulting Engineers	GPD Group		Job: 27066 Bolton		
	520 South Main St., Suite 2531		Project: 2012768.47		
	Akron, OH 44311		Client: AT&T Mobility	Drawn by: tbowman	App'd:
	Phone: (330) 572-2100		Code: TIA/EIA-222-F	Date: 07/09/12	Scale: NTS
FAX: (330) 572-2101		Path: 120121201276847.mxd 27066 an			
		Dwg No. E-			

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

REF Cable
(2) 7/8" DC Power Cable
(12) LDF7-50A (1-5/8" FOAM)
(12) LDF7-50A (1-5/8" FOAM)
(12) LDF7-50A (1-5/8" FOAM)

 GPD GROUP Consulting Engineers	GPD Group 520 South Main St.; Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101		Job: 27066 Bolton Project: 2012768.47	
	Client: AT&T Mobility Drawn by: tbowman App'd: Code: TIA/EIA-222-F Date: 07/09/12 Scale: NTS Path: O:\2012\2012768\47\tmx\27066.eri Dwg No. E-7			

APPENDIX D

Additional Calculations

Code =	TIA/EIA-222-F
AISF=	1.333
Max Capacity=	1.05
# of Sides =	18

Geometry																
Shape	Quantity	Section	Elevation (ft)	Pole Flat-Flat (in)	Wall t (in)	Fy (ksi)	K	Conn Spacing (in)	Reactions				Output		Capacities	
									Moment (k-ft)	Axial (k)	Shear (k)	Torsion (k-ft)	Equivalent t (in)	Pole	Reinforcement	Pass/Fail
Plate 4x1.25	3	L2	61	27.4776	0.25	65	0.8	18	614.42	8.44	13.51	0	0.453	55.7%	80.7%	Pass
Plate 4.5x1	3	L3	57.5	28.0028	0.25	65	0.8	18	662.14	9.02	13.76	0	0.425	61.3%	83.7%	Pass
Plate 4.5x1	3	L4	45	29.8783	0.25	65	0.8	18	839.35	11.12	14.59	0	0.412	70.1%	95.5%	Pass
Plate 4.5x1	3	L4	41.25	30.441	0.25	65	0.8	18	894.64	12.36	14.9	0	0.409	72.6%	98.7%	Pass
Plate 5x1.25	3	L5	31.25	31.4411	0.3125	65	0.8	18	1046.75	14.51	15.53	0	0.533	61.8%	81.4%	Pass
Plate 5x1	4	L6	18.75	33.3167	0.3125	65	0.8	18	1245.35	17.04	16.25	0	0.522	66.5%	86.8%	Pass
Plate 5x1	3	L7	18.25	33.3917	0.3125	65	0.8	18	1253.48	17.15	16.27	0	0.473	73.2%	95.5%	Pass
Plate 5x1	4	L8	0	36.13	0.3125	65	0.8	18	1559.04	20.75	17.22	0	0.503	73.1%	95.2%	Pass



Anchor Rod and Base Plate Stresses **27066 Bolton** **2012768.47**

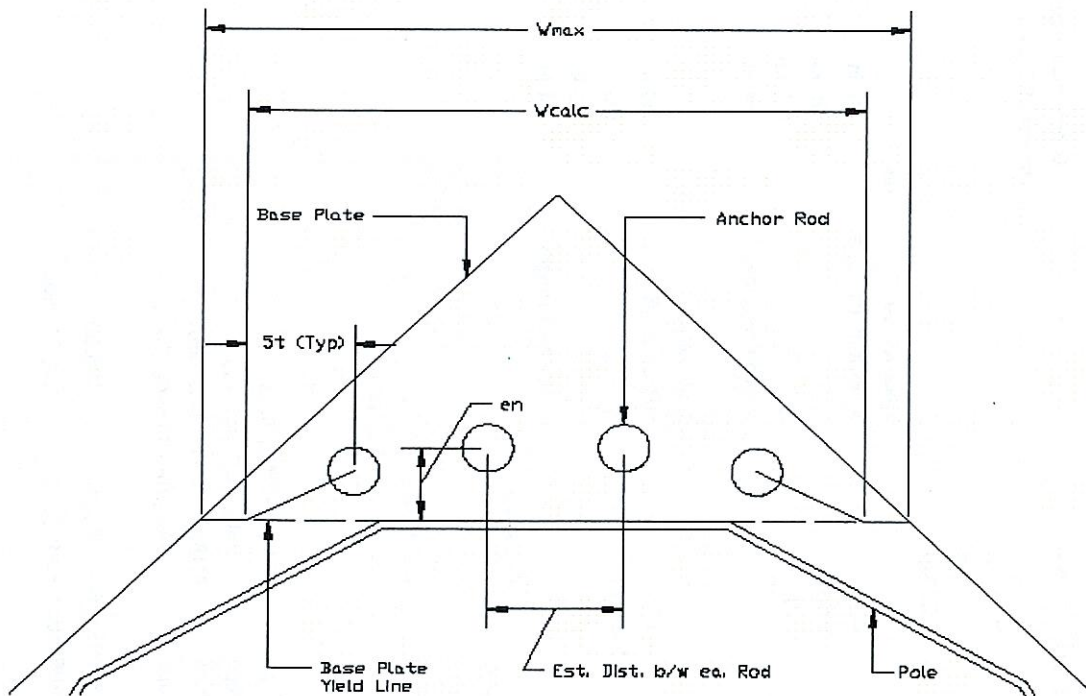
*Overturning Moment =	1124.20 k*ft
Axial Force =	16.32 k
Shear Force =	17.22 k

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 =	158.33 kips
Max Compression on Rod =	162.41 kips
Allow. Rod Force =	195.00 kips
Anchor Rod Capacity =	81.2% 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 =	38.41 ksi
Fb =	55 ksi
Base Plate Capacity =	69.8% OK



**GPD GROUP**

Engineers • Architects • Planners

Job # 2012768.47

Calculated By TB date 7/10/2012Sheet No. 1 Of 1**ANCHOR ROD TRANSFORMATION**

AISF

1.33

Moment from RISA (M) =

1559.04 kip-ft

Axial from RISA (A) =

20.75 kip

Shear from RISA (V) =

17.22 Kip

Existing Bolt Diameter

2.25 in.

Existing Bolt Area (A_{ex}) =3.2500 in.²

Number Existing Bolts (nE)

8

Modified Bolt Diameter

1.75 in.

Modified Bolt Area (A_{mod}) =2.4053 in.²

Number Modified Bolts (nM)

3

n =

0.99

 $nA_{mod} =$ 2.38 in.²(U_{ex}/U_{mod}) $I_{ex} =$ 5733.00 in.⁴ $I_{mod} =$ 2228.73 in.⁴ $I_{total} =$ 7961.73 in.⁴ $(nE \cdot A_{ex} \cdot BC_{ex}^2 / 8)$ $(nM \cdot nA_{mod} \cdot BC_{mod}^2 / 8)$ $f_{ex} =$

160.37 kips

 $f_{mod} =$

139.66 kips

 $AX_{ex} =$

2.04 kips

 $AX_{mod} =$

1.49 kips

Total =

20.8

Allowable Tension Existing Rods (f_{tex}) = 195.00 kipsAllowable Tension Modification Rods (f_{tmod}) = 158.75 kips

Existing Rod Rating =

81.2% ($f_{ex} \cdot A_{ex} / f_{tex}$)

Modification Rod Rating =

87.0% ($f_{mod} \cdot A_{mod} / f_{tmod}$)Concrete Strength
Diameter of Caisson/Pier3000 PSI
72 in.Rebar Size
Rebar Cover#11
3.0 in.

Grade A615-J

Bolt Circle (BC_{ex}) =

42 in.

Fy

75 ksi

Fu

100 ksi

Embedment Length

84 in.

 l/d (Rebar)

77.2

g

12

Top Cover

3

D

1

 h_{ef}

111.36

Unbraced Length (U_{ex}) =

85.0000

Grade A615-J

Bolt Circle (BC_{mod}) =

50 in.

Fy

105 ksi

Fu

150 ksi

Embedment Length

84 in.

 l/d (Rebar)

77.2

g

8

Top Cover

3

D

2

 h_{ef}

108.69333

Unbraced Length (U_{mod}) =

86.0000

162.41



Client: AT&T Mobility
Site ID: 27066
Site Name: Bolton
Location: Tolland County, CT
Loading Type: Wind

CAISSON ANALYSIS WORKSHEET

Job No.: 2012768.47
Sheet No.: 1 Of 1
Made By: TB Date: 7/10/2012
Chk'd By: JS Date: 7/10/2012
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 = 1559.04 ft-k
Axial = 20.75 kips
Shear = 17.22 kips

PILE TYPE 2 ANALYSIS FOR REINFORCING CAPACITY

M_n = 44501.11 in-k
 M_n = 3708.43 ft-k

Load Factor = 1.3
 ϕ (flexure) = 0.9

$\phi M_n / LF$ = 2567.37 ft-k

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

Moment = 1636.7 ft-k (max. moment along caisson)

REINFORCING STEEL CAPACITY

Capacity = $\frac{\text{Moment from Caisson}}{\phi M_n / LF} = \frac{1636.70 \text{ ft-k}}{2567.37 \text{ ft-k}} = 63.8\% \text{ O.K.}$

SOIL CAPACITY FROM CAISSON PROGRAM USING ADDITIONAL SAFETY FACTORS

ADDITIONAL SAFETY FACTOR FROM CAISSON = 2.01

Capacity = $\frac{\text{Safety Factor of 2}}{\text{Additional Safety Factor}} = \frac{2.00}{2.01} = 99.5\% \text{ O.K.}$

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

*** ANALYSIS IDENTIFICATION : 27066 Bolton
NOTES : 2012768.47

*** 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 (degrees)	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) = 1559.0 VERTICAL (k) = 20.8 SHEAR (k) = 17.2
ADDITIONAL SAFETY FACTOR AGAINST SOIL FAILURE = 2.01

*** 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	8.23	67.6		3.255	442.50	10.53
S	14.23	5.77	67.6		3.255	-470.61	17.25

*** 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	35.3	3140.4	17.5	1562.4
2.00	35.3	3210.9	17.5	1597.5
4.00	31.6	3281.1	15.7	1632.4
6.00	-28.1	3289.7	-14.0	1636.7
8.00	-111.0	3153.2	-55.2	1568.8
10.00	-209.8	2835.0	-104.4	1410.5
12.00	-324.4	2303.5	-161.4	1146.0
14.00	-454.8	1526.9	-226.3	759.6
16.00	-340.1	701.3	-169.2	348.9
18.00	-178.0	180.6	-88.5	89.9

	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) =	20.8	USABLE MOMENT CAP. (ft-k) =	1659.2		
*** 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) = 733.9					

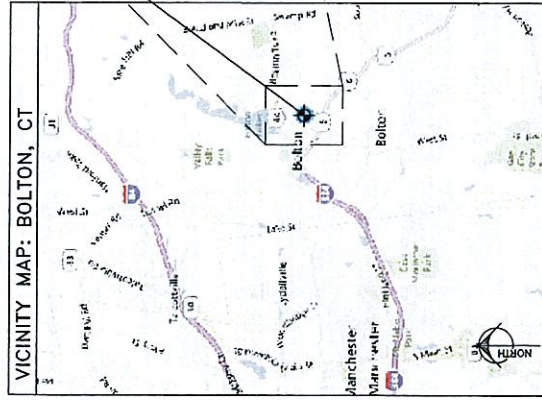
APPENDIX E

Modification Design Drawings

BOLTON

USID #: 27066

120' MODIFIED PENNSUMMIT MONOPOLE



PROJECT SUMMARY		DRAWING INDEX
TOWER OWNER:	AT&T MOBILITY	T-01 TITLE SHEET
TOWER TYPE:	MONOPOLE	N-01 PROJECT NOTES
GOVERNING CODE:	TA/DA-222-F, 2003 IBC, 2005 CTBC, & ASCE 7-05	S-01 TOWER ELEVATION & MODIFICATION SCHEDULE
LATITUDE:	41° 47' 20.371" N	S-02 MODIFICATION SECTIONS & DETAILS
LONGITUDE:	72° 25' 45.116" W	S-03 MODIFICATION PLATE DETAILS
OWNER CONTACT:	MR. MARTIN JELLEME 5405 WINDWARD PKWY SUITE 200 ROCKY HILL, CT 06067 (770) 708-6124 OFFICE (678) 735-8085 CELL	M-01 MODIFICATION INSPECTION CHECKLIST
ENGINEER CONTACT:	MR. KEVIN CLEMENTS 1117 PERIMETER CENTER SUITE 100 ATLANTA, GA 30338 (678) 781-5061	
PROJECT OVERVIEW: THE LISTED DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER BY INSTALLING NEW MODIFICATION PLATES TO THE TOWER SHAFT.		

CO-LOCATOR:



Kevin Clements

REV	DATE	DESCRIPTION

TITLE SHEET
27066 BOLTON
49 SOUTH ROAD
BOLTON, CT 06043

DESIGNED BY	DATE
PERMIT	DATE
CONSTRUCTION	DATE
RECORD	DATE
PROJECT MANAGER	DATE
DATE	DATE

JOB NO.
2012768.47

T-01

GENERAL NOTES

- [illegible]

CONTRACTOR NOTES

MODIFICATION PLATE NOTES



Ch. B. Brown

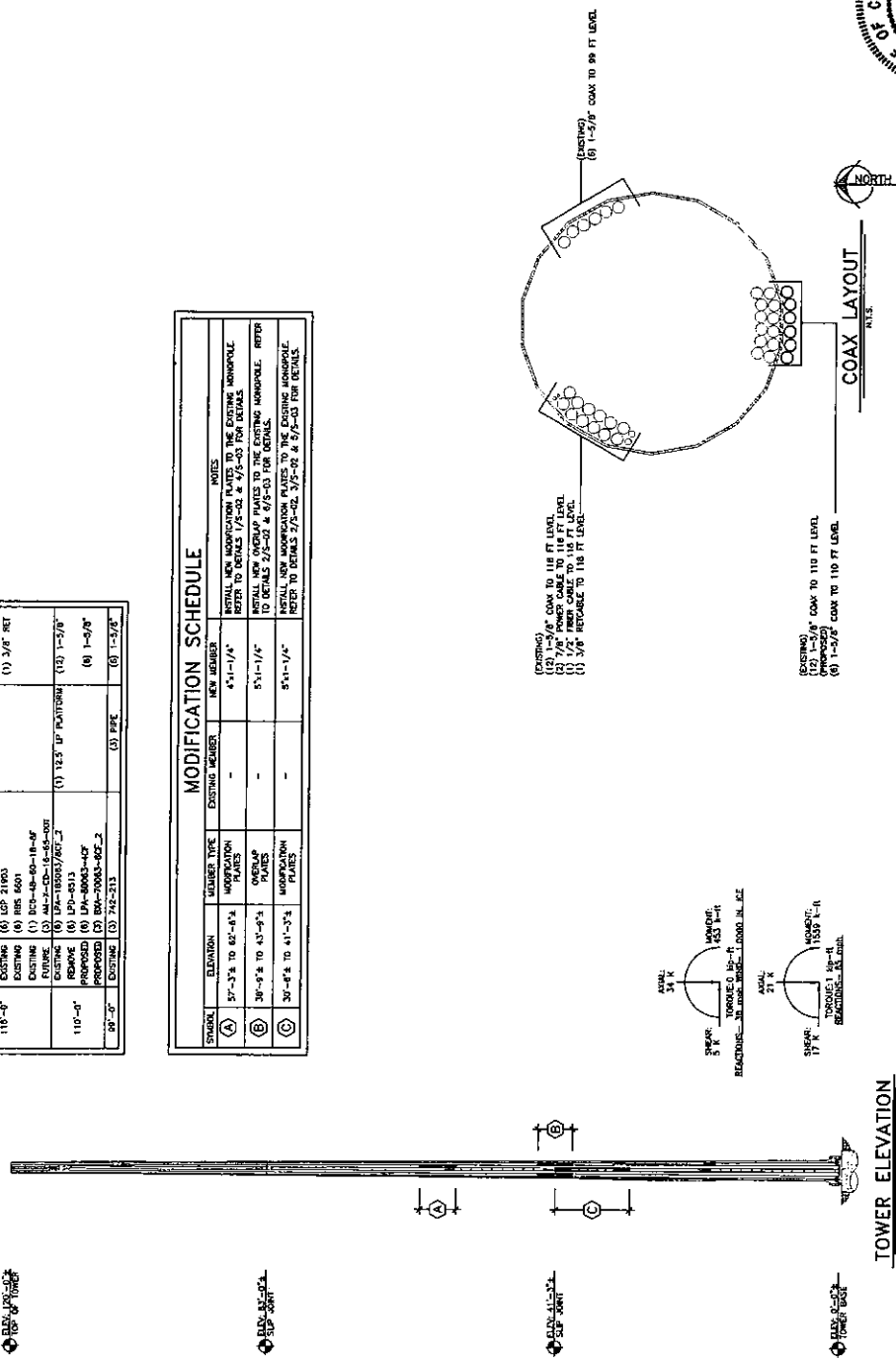
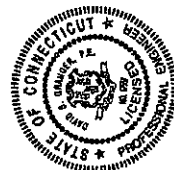
ISSUED FOR:	DATE
PERMIT	07/10/12
BO	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	OWNER
CH	TAB

2012768.47
ACB NO.

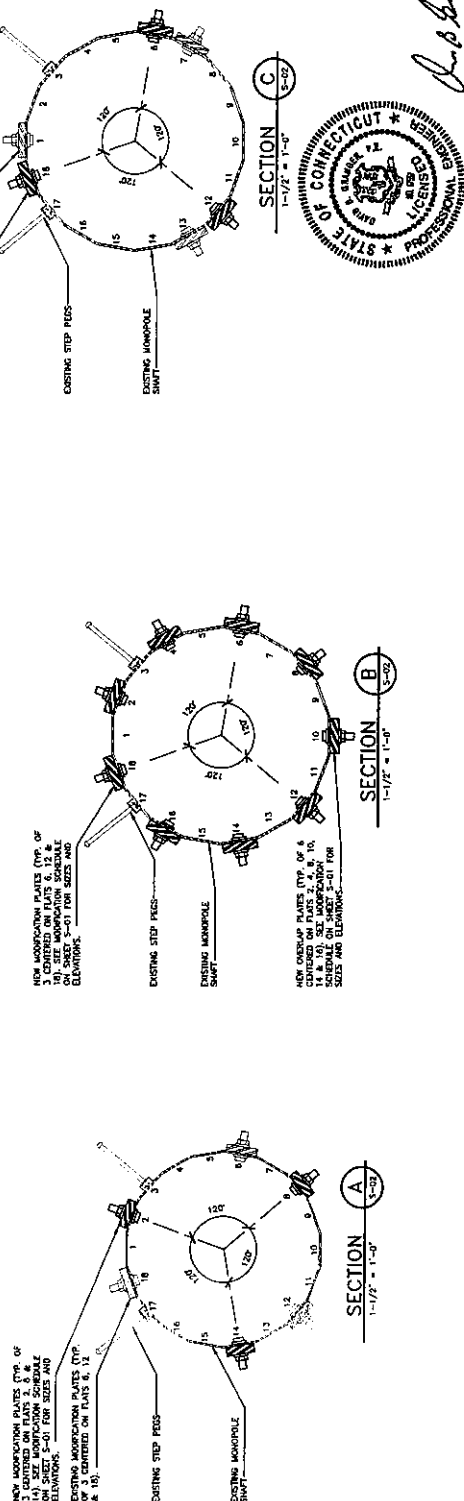
8-01

Robert



ANTENNA SCHEDULE				
FLAVIUM	STATUS	ANTENNA	MOBT	COAX
110 - 0"	EXISTING	(6) 7770-30	(1) 12.5' UP PLATFORM	(1) 1-3/4"
	EXISTING	(3) AM-1-CO-115-65-00T		(2) 7/8" POWER
	EXISTING	(6) LOT 2140 TMA		(1) 1/2" FIBER
	EXISTING	(6) LOT 2190		(1) 3/8" RET
	EXISTING	(6) RIB 5601		
110 - 0"	EXISTING	(1) BCL-46-50-18-4F		
	EXISTING	(6) 7770-30	(1) 12.5' UP PLATFORM	(1) 1-3/4"
	EXISTING	(6) 19A-1900/1905-50T		
	REMOVE PROPOSED	(6) LPD-2013		
	REMOVE PROPOSED	(6) LPM-8006-4CF		
99 - 0"	EXISTING	(3) BCL-7000-405-2		(6) 1-3/4"
	EXISTING	(3) 742-213	(3) RFE	

MODIFICATION SCHEDULE			
SHEET	ELEVATION	GABRIEL TYPE MODIFICATION PLATES	EXISTING MEMBER NOTES
(A)	57'-3 1/2" to 60'-4 1/2"	MODIFICATION PLATES	* 5'-11/16"
(B)	36'-9 1/2" to 43'-9 1/2"	MODIFICATION PLATES	INSTALL NEW MODIFICATION PLATES TO THE EXISTING MONOPOLE REFER TO DETAILS 1/5-52 & 1/5-53 FOR DETAILS.
(C)	30'-6 1/2" to 41'-3 1/2"	MODIFICATION PLATES	5'-11/16" INSTALL NEW MODIFICATION PLATES TO THE EXISTING MONOPOLE. REFER TO DETAILS 2/5-52, 3/5-52 & 4/5-53 FOR DETAILS.



REV	DATE	DESCRIPTION

MODIFICATION PLATE
DETAILS

27066 BOLTON
 43 SOUTH ROAD
 BOLTON, CT 06043

ISSUED FOR:	
PERMIT:	
NO:	
CONTRACT:	
RECORD:	
PROJECT NUMBER:	
DATE:	
BY:	
TITLE:	

2012768.47

S-03

