

Centek Engineering, Inc. 63-2 North Branford Road Branford, Connecticut 06405 Phone: (203) 488-0580 Fax: (203) 488-8587

Steven L. Levine Real Estate Consultant

HAND DELIVERED June 7, 2013

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

Re: Request by New Cingular Wireless PCS, LLC for an Order Approving Shared Use of an Existing Tower Located at 87 West Quasset Road, Woodstock, CT (Owner, Verizon Wireless)

Dear Chairman Stein and Members of the Council:

Centek Engineering, Inc. is pleased to submit this application on behalf of New Cingular Wireless PCS, LLC ("AT&T").

Pursuant to Connecticut General Statutes (C.G.S.) Section 16-50aa, AT&T hereby requests an order from the Connecticut Siting Council ("Council") approving the proposed shared use by AT&T of an existing tower at 87 West Quasset Road, Woodstock, Connecticut. AT&T operates under licenses issued by the Federal Communications Commission ("FCC") to provide cellular and PCS mobile telephone service in Windham County, which includes the area to be served by AT&T's proposed installation.

A copy of this letter is being sent to the 1st Selectman of the Town of Woodstock.

#### **Existing Facility**

The Woodstock facility is located at 87 West Quasset Road. Site coordinates (NAD83) are N41° 55' 47.18" and W71° 59' 21.54".

The facility is owned by Verizon Wireless, while the underlying land is owned by Quasset Hill Farm LLC.

The existing facility was originally approved in Siting Council Docket 415 on November 17, 2011.

The existing facility consists of a 150-foot self-supporting monopole tower within a 50' x 50' compound surrounded by a chain link fence.

Verizon Wireless also operates wireless communications equipment at the facility.

#### Proposed Shared Use of the Tower

As shown on the attached drawings and as further described below, AT&T proposes to install up to nine (9) Andrew SBNH-1D6565C panel antennas and up to three (3) Ericsson KRC-118 054/1 panel antennas, or their functional equivalents, at a centerline height of 138 feet above ground level. AT&T also proposes to place a 12' x 20' prefabricated concrete equipment shelter and a diesel-fueled emergency electric power generator at the base of the tower within the existing compound. There will be no increase in area to the existing compound or to the height of the existing tower as a result of this application.

Attached to this Notice are the following: Location Map, Tower Profile and Compound Drawings, and a Structural Analysis Report demonstrating that the tower is structurally capable of supporting the proposed AT&T telecommunications equipment at the proposed height of 138 feet above ground level.

#### **Statutory Considerations**

AT&T requests the Council to find that the proposed shared use of the tower facility satisfies the criteria stated in C.G.S. §16-50aa, and to issue an order approving the proposed use.

C.G.S. §16-50aa provides that, upon written request for approval of a proposed shared use, "If the Council finds that the proposed shared use of the facility is technically, legally, environmentally and economically feasible and meets public safety concerns, the Council shall issue an order approving such shared use" (C.G.S §16-50aa(c)(1)).

The shared use of the tower satisfies the criteria in C.G.S §16-50aa as follows:

- A. <u>Technical Feasibility.</u> The tower will be structurally sound and capable of supporting the proposed shared use of the AT&T antennas at 138 feet AGL. The proposed shared use of this tower is therefore technically feasible.
- B. <u>Legal Feasibility</u>. Under C.G.S §16-50aa, the Council has been authorized to issue an order approving the proposed shared use of a tower facility such as the facility located at West Quasset Road in Woodstock (C.G.S §16-50aa(c) (1)). Under the authority vested in the Council by C.G.S §16-50aa, an order approving the shared use of the tower would satisfy AT&T's Siting Council obligations and permit it to obtain a building permit for the proposed installation.
- C. **Environmental Feasibility.** The proposed shared use of this tower facility would have a minimal environmental effect for the following reasons:

- 1. The proposed installation would not increase noise levels at the existing facility by six decibels or more.
- 2. The proposed installation would have an insignificant incremental visual impact and would not cause any significant change or alteration in the physical or environmental characteristics of the property. The addition of the proposed antennas would not increase the height of the tower. AT&T's equipment will be housed in an equipment shelter, and all construction will occur in the existing equipment compound.
- 3. Operation of the additional antennas will not increase the total radio frequency electromagnetic radiation power density, measured at the tower base, to or above the standard adopted by the State of Connecticut and the FCC. The cumulative "worst-case" power density would be 24 % of the ANSI/IEEE standard, as calculated for mixed frequency sites. Therefore, total power density levels resulting from AT&T's use of the tower facility would be within applicable standards.

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm²)	Standard Limits (mW/cm²)	Percent of Limit
Other Users *							17.40
AT&T UMTS	138	880 - 894	2	427	0.0161	0.5867	2.75
AT&T UMTS	138	1900 Band	2	500	0.0189	1.0000	1.89
AT&T LTE	138	740 - 746	1	500	0.0094	0.4933	1.91
Total							24.0%

<sup>\*</sup> Per CSC records.

- 4. The proposed installation would not require any water or sanitary facilities, or generate air emissions or discharges to water bodies. After construction is completed (approximately six weeks), the proposed installation would not generate any vehicular traffic other than periodic maintenance visits. The proposed use of the facility would therefore have a minimal environmental effect, and is environmentally feasible.
- D. **Economic Feasibility.** AT&T has entered into an agreement with Verizon Wireless to share use of the tower. The proposed facility sharing is therefore economically feasible.
- E. <u>Public Safety Concerns</u>. As stated above, the existing tower is structurally capable of supporting AT&T's proposed antennas, and radio frequency emissions fall well below State and Federal safety standards. AT&T is not aware of any other public safety concerns relative to the proposed sharing of the tower. In fact, the provision of new or improved wireless coverage in the area is expected to enhance the safety and welfare of Woodstock's residents.

#### **Conclusion**

For the reasons discussed above, the proposed shared use of the existing tower at West Quasset Road in Woodstock satisfies the criteria stated in C.G.S. §16-50aa and advances the General Assembly's and the Council's goal of preventing the proliferation of communication towers in Connecticut. AT&T therefore respectfully requests that the Council issue an order approving the proposed shared use. Thank you for your attention to this matter.

Please call Mr. Mark Appleby in AT&T's Rocky Hill office at (860) 513-7536 should you have any questions concerning this tower sharing request. Thank you for your consideration in this matter.

Sincerely,

Steven L. Levine

Real Estate Consultant

cc:

Honorable Allan D. Walker, Jr., 1st Selectman, Town of Woodstock

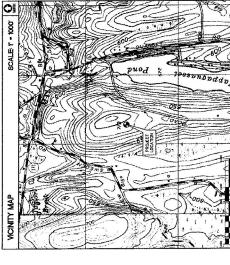
Michele G. Briggs, Manager of Real Estate, AT&T

Attachments



# WIRELESS COMMUNICATIONS FACILITY 87 WEST QUASSET ROAD WOODSTOCK, CT WOODSTOCK S1003





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PROJECT SUMMARY	MARY
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SITE NAME:	WOODSTOCK
SITE ADDRESS:	87 WEST QUASSET ROAD WOODSTOCK, CT
LESSEE/APPLICANT:	AT&T MOBILITY SOO ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 08067
CONTACT PERSON:	BRTON NOTAWISK! (GONSTRUCTION WANGER) ATAZI MABELITY / NEW CINCULAR WIRELESS PCS. /SAN COMMUNICATIONS (860) 513-7223.
ENGINEER:	CENTEK ENGINEERING, INC. 83-2 NORTH BRAINTORD RD. BRAINTORD, CT. 08405
PROJECT COORDINATES:	LATRUDE: 41"—55"—47.18" N LONGITUDE: 71"—59"—21.54" W GROUND ELEVATION: 692"± AMSL

at&t

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## SITE INFORMATION

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(203) 489-0990 (203) 489-8597 Fee 69-2 North Wearford Road Branford, CT 06405

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87 WEST QUASSET ROAD WOODSTOCK, CT

SILE NAME: WOODSTOCK

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1	TIME SHEET	-
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S-1	SHELTER FOUNDATION PLAN AND DETAILS	-
S-2	STRUCTURAL SPECIFICATIONS	-
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E-2	UTILITY PLAN, RISER DIAGRAM AND DETAILS	-
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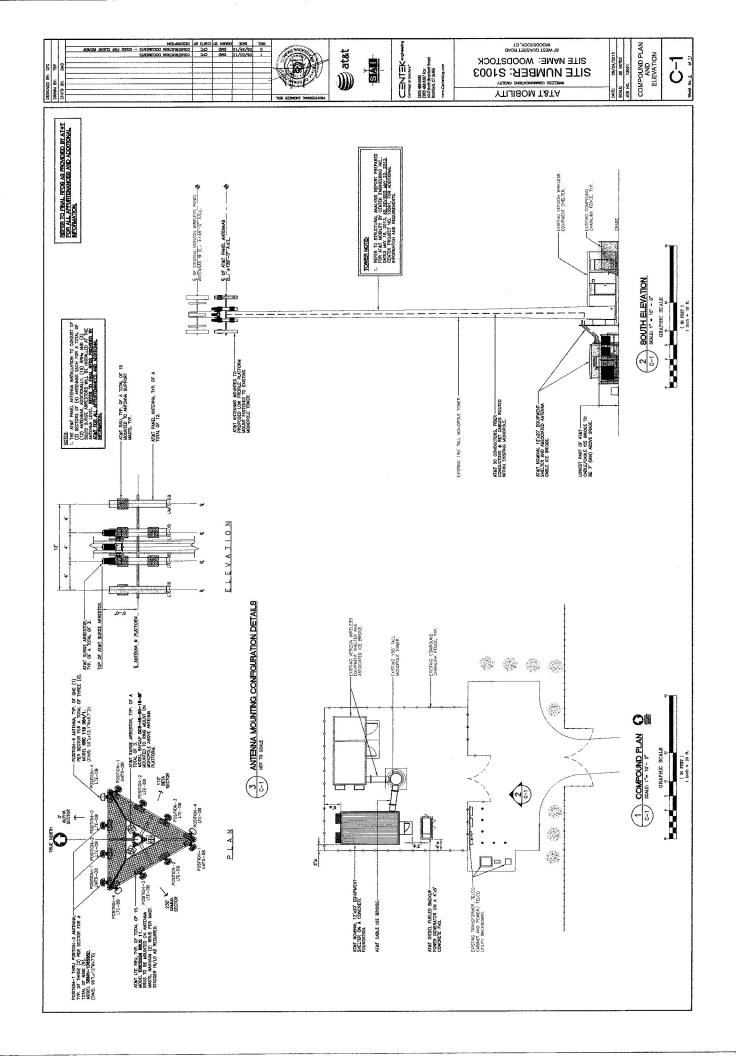
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CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER AND ALL METHODS AND PROVISIONS FOR ALL EXCANATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

- ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECEFICATIONS.





Centek Engineering, Inc. 63-2 North Branford Road Branford, Connecticut 06405 Phone: (203) 488-0580 Fax: (203) 488-8587

Steven L. Levine Real Estate Consultant

June 7, 2013

Honorable Allan D. Walker, Jr. 1<sup>st</sup> Selectman, Town of Woodstock Town Office Building 415 Rte. 169 Woodstock, Connecticut 06281-3039

Re: Request by New Cingular Wireless PCS, LLC for an Order Approving Shared Use of an Existing Tower Located at 87 West Quasset Road, Woodstock, CT (Owner, Verizon Wireless)

Dear Mr. Walker:

Centek Engineering, Inc. is pleased to submit this notice on behalf of New Cingular Wireless PCS, LLC ("AT&T").

Consistent with the State of Connecticut's statutory policy of encouraging tower sharing, AT&T intends to install cellular antennas and equipment at an existing, multicarrier telecommunications tower at 87 West Quasset Road in Woodstock.

The facility is owned and operated by Verizon Wireless under a lease with the property owners.

Pursuant to Connecticut General Statutes Section 16-50aa, AT&T has requested an order approving shared use of the tower from the Connecticut Siting Council.

As required by Section 16-50j-73 of the Regulations of Connecticut State Agencies, we are providing you with copies of this letter and the attached letter to the Siting Council as notice of AT&T's plans.

The accompanying letter fully describes AT&T's proposal. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please contact the undersigned at 860-830-0380 or Ms. Melanie Bachman, Acting Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine Real Estate Consultant

Enclosure



### Structural Analysis Report

150-ft Existing EEI Monopole (Extendable to 170-ft)

Proposed AT&T Mobility
Antenna Upgrade

AT&T Site Ref: s1003

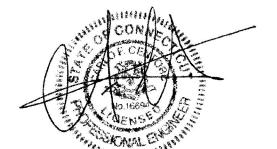
87 West Quasset Road Woodstock, CT

Centek Project No. 13091

Date: May 16, 2013

Rev 1: May 20, 2013

Rev 2: May 23, 2013



Prepared for:



AT&T Mobility 500 Enterprise Drive, Suite 3A Rocky Hill, CT 06067

#### Introduction

The purpose of this report is to summarize the results of the non-linear,  $P-\Delta$  structural analysis of the antenna upgrade proposed by AT&T Mobility on the existing monopole (tower) located in Woodstock, CT.

The host tower is a 150-ft tall (extendable to 170-ft), three-section, eighteen sided, tapered monopole, originally designed and manufactured by Engineered Endeavors Inc.; project no. 16757 dated November 29, 2011. The tower geometry, structure member sizes and foundation system information were obtained from the aforementioned EEI design documents.

Antenna and appurtenance information were obtained from visual verification from grade conducted by Centek personnel on April 30, 2013 and an AT&T RF data sheet.

The tower consists of three (3) tapered vertical steel sections conforming to ASTM A572-65. The vertical tower sections are slip joint connected. The diameter of the pole (flat-flat) is 30.29-in at the top and 60.50-in at the base.

AT&T proposes the installation of twelve (12) panel antennas, fifteen (15) Remote Radio Units (RRU's) and three (3) surge arrestors mounted on a low profile platform to the existing monopole. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

#### Antenna and Appurtenance Summary

The existing, proposed and future loads considered in this analysis consist of the following:

- VERIZON (EXISTING):
  - Antennas: Six (6) Antel LPA-80063-8CF, six (6) Antel LPA-185063-12CF and three (3) Antel BXA-70063-6CF panel antennas mounted on one (1) low profile platform with a RAD center elevation of 147-ft above grade level.
  - <u>Coax Cables:</u> Eighteen (18) 1-5/8"  $\varnothing$  coax cables running on the inside of the existing tower.
- VERIZON (RESERVED):
  - Antennas: Three (3) Alcatel-Lucent RRH2x40-AWS Remote Radio Heads, three (3) Alcatel-Lucent RRH2x40-07-U Remote Radio Heads and one (1) RFS DB-T1-6Z-8AB-0Z main distribution flush mounted with a RAD center elevation of 149-ft above grade level.
  - Coax Cables: One (1) 1-5/8" Ø fiber line running on the inside of the existing tower.
- AT&T (PROPOSED):
  - <u>Antennas</u>: Nine (9) Andrew SBNH-1D6565C and three (3) KRC-118 panel antennas mounted on one (1) low profile platform with a RAD center elevation of 138-ft above grade level.
- AT&T (PROPOSED):
  - <u>Antennas</u>: Fifteen (15) Ericsson RRUS-11 and three (3) Raycap DC6-48-60-18-8F surge arrestor mounted to one (1) universal ring mount with an elevation of 138-ft above grade level.
  - <u>Coax Cables:</u> One (1) fiber cable and six (6) dc control cables running inside of the existing tower.

REPORT SECTION 1-1

#### Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents or reinforcement drawings.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All existing coax cables to be installed as indicated in this report.

REPORT SECTION 1-2

#### Analysis

The existing tower was analyzed using a comprehensive computer program entitled tnxTower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower shaft, and the model assumes that the shaft members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for the controlling basic wind speed (fastest mile) with no ice and a 75% reduction of wind force with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix K of the CSBC<sup>1</sup> and the wind speed data available in the TIA/EIA-222-F-96 Standard. The higher of the two wind speeds is utilized in preparation on the tower analysis.

#### Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice on the tower structure and its components.

Basic Wir	ıd
Speed:	

Windham; v = 85 mph (fastest mile)

[Section 16 of TIA/EIA-222-F-96]
[Appendix K of the 2005 CT

Woodstock; v = 100 mph (3 second gust) equivalent to v = 80 mph

(fastest mile)

[Appendix K of the 2005 CT Building Code Supplement]

TIA-EIA-222-F wind speed controls.

Load Cases:

Load Case 1; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and

rotation.

[Section 2.3.16 of TIA/EIA-222-F-

96]

Load Case 2; 74 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The

74 mph wind speed velocity

represents 75% of the wind pressure generated by the 85 mph wind

speed.

[Section 2.3.16 of TIA/EIA-222-F-

961

Load Case 3; Seismic - not checked

[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type

REPORT SECTION 1-3

<sup>&</sup>lt;sup>1</sup> The 2005 Connecticut State Building Code as amended by the 2009 CT State Supplement. (CSBC)

#### Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

 Calculated stresses were found to be within allowable limits. In Load Case 1, per tnxTower "Section Capacity Table", this tower was found to be at 54.6% of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Pole Shaft (L3)	1.00'-47.99'	54.6%	PASS

#### Foundation and Anchors

The existing foundation consists of a 7.5-ft square x 4-ft long reinforced concrete pier on a 30-ft square x 3-ft thick reinforced concrete pad. The sub-grade conditions used in the analysis of the existing foundation were obtained from the aforementioned EEI design documents; job no; 16757, dated October 29, 2011. The base of the tower is connected to the foundation by means of (24)  $2.25^{\circ}\%$ , ASTM A615-75 anchor bolts embedded approximately 5-ft into the concrete foundation structure.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

■ The tower base reactions developed from the governing Load Case 1 were used in the verification of the foundation and its anchors:

Location	Vector	Proposed Reactions
	Shear	30 kips
Base	Compression	43 kips
	Moment	3280 kip-ft

The foundation was found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2 (FS) (1)	Proposed Loading (FS) <sup>(1)</sup>	Result
Reinforced Concrete Pad and Pier	OTM <sup>(2)</sup>	2.0	3.46	PASS

Note 1: FS denotes Factor of Safety.

Note 2: OTM denotes Overturning Moment

The anchor bolts and base plate were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Combined Compression and Bending	50.4%	PASS
Base Plate	Bending	40.2%	PASS

#### Conclusion and Recommendations

This analysis shows that the subject tower <u>is adequate</u> to support the proposed modified antenna configuration.

The analysis is based, in part, on the information provided to this office by AT&T Mobility. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE

Principal ~ Structural Engineer

Prepared by:

Timothy J. Lynn, EIT Structural Engineer

Section		2	
Length (fl)	53.99	63.88	53.88
Number of Sides	18	18	81
Thickness (in)	0.5000	0.4375	0.3125
Socket Length (ft)		7.00	5.75
Top Dia (in)	49.0602	39,8913	30.2900
Bot Dia (in)	60.5000	51.4200	41,8500
Grade		A572-85	
Weight (K) 33.9	15.8	11.5	6.5
TORQUE 5 kip-ft REACTIONS - 85 mph WIND	AXIAL 50 K SHEAR 2637 kip-l TORQUE 4 kip-ft 74 mph WIND - 0.5000 in ICE AXIAL 43 K SHEAR 30 K MOMENT 3280 kip-l	1. To 2. To 3. Do 4. W 5. Co ar 6. To St 7. W 8. To	RRH2 RRH2 RRH2 RRH2 RRH2 RRH2 RRH2 RRH2

#### **DESIGNED APPURTENANCE LOADING**

TYPE	ELEVATION	TYPE	ELEVATION	
RRH2x40-AWS (Verizon - Reserved)	149	SBNH-1D6565C (ATI - Proposed)	138	
RRH2x40-07-U (Verizon - Reserved)	149	SBNH-1D6565C (ATT - Proposed)	138	
RRH2x40-AWS (Verizon - Reserved)	149	SBNH-1D6565C (ATI - Proposed)	138	
RRH2x40-07-U (Verizon - Reserved)	149	KRC 118 054/1 (ATI - Proposed)	138	
RRH2x40-AWS (Verizon - Reserved)	149	(5) RRUS-11 (ATI - Proposed)	138	
RRH2x40-07-U (Verizon - Reserved)	149	(5) RRUS-11 (ATI - Proposed)	138	
DB-T1-6Z-8AB-0Z (Verizon - Reserved)	149	(5) RRUS-11 (ATI - Proposed)	138	
BXA-70063/6CF (Verizon - Existing)	147	DC6-48-60-18-8F Surge Arrestor (ATI -	138 138 138	
LPA-185063/12CF (Verizon - Existing)	147	Proposed)		
LPA-80063-8CF (Verizon - Existing)	147	DC6-48-60-18-8F Surge Arrestor (ATI -		
LPA-80063-8CF (Verizon - Existing)	147	Proposed)		
LPA-185063/12CF (Verizon - Existing)	147	DC6-48-60-18-8F Surge Arrestor (ATI - Proposed)		
BXA-70063/6CF (Verizon - Existing)	147	EEI 12-ft Low Profile Platform (ATI -	138	
LPA-185063/12CF (Verizon - Existing)	147	Proposed)		
LPA-80063-8CF (Verizon - Existing)	147	Valmont Uni-Tri Bracket (ATI -	138	
EEI 12-ft Low Profile Platform (Verizon	147	Proposed)		
- Existing)		SBNH-1D6565C (ATI - Proposed)	138	
LPA-80063-8CF (Verizon - Existing)	147	SBNH-1D6565C (ATI - Proposed)	138	
LPA-185063/12CF (Verizon - Existing)	147	SBNH-1D6565C (ATI - Proposed)	138	
BXA-70063/6CF (Verizon - Existing)	147	KRC 118 054/1 (ATI - Proposed)	138	
LPA-185063/12CF (Verizon - Existing)	147	SBNH-1D6565C (ATI - Proposed)	138	
LPA-80063-8CF (Verizon - Existing)	147	SBNH-1D6565C (ATT - Proposed)	138	
LPA-80063-8CF (Verizon - Existing)	147	SBNH-1D6565C (ATT - Proposed)	138	
LPA-185063/12CF (Verizon - Existing)	147			
KRC 118 054/1 (ATI - Proposed)	138			

**MATERIAL STRENGTH** 

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

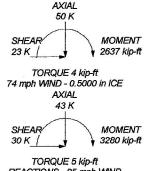
#### **TOWER DESIGN NOTES**

- ower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard. ower is also designed for a 74 mph basic wind with 0.50 in ice. effections are based upon a 50 mph wind.

  Veld together tower sections have flange connections.

  onnections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.

  over members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 tenderds.
- andards.
- /elds are fabricated with ER-70S-6 electrodes. OWER RATING: 54.6%



Centek Engineering Inc.	<sup>Job:</sup> 13091 - s1003				
63-2 North Branford Rd.	Project: 150' EEI Monopole - 87 West Quasset Rd., Woodstock, CT				
Branford, CT 06405	Client: AT&T Mobility	Drawn by: TJL	App'd:		
Phone: (203) 488-0580	Code: TIA/EIA-222-F	Date: 05/23/13	Scale: NTS		
FAX: (203) 488-8587	Path: J.Jobs\1309100.W/Engineering\Structural\	Rev (2) Calcs ERA150' EEI Monopole Woodstock CT.	Dwg No. E-1		