

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

RECEIVED

MAR 07 2014

PUBLIC SERVICE  
COMMISSION

In the Matter of:

THE APPLICATION OF )  
NEW CINGULAR WIRELESS PCS, LLC )  
AND AMERICAN TOWERS LLC )  
FOR ISSUANCE OF A CERTIFICATE OF PUBLIC )  
CONVENIENCE AND NECESSITY TO CONSTRUCT )  
A WIRELESS COMMUNICATIONS FACILITY )  
IN THE COMMONWEALTH OF KENTUCKY )  
IN THE COUNTY OF WOLFE )

CASE NO.: 2014-00044

SITE NAME: HAZEL GREEN

\* \* \* \* \*

**APPLICATION FOR  
CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY  
FOR CONSTRUCTION OF A WIRELESS COMMUNICATIONS FACILITY**

New Cingular Wireless PCS, LLC, a Delaware limited liability company, d/b/a AT&T Mobility ("AT&T Mobility"), and American Towers LLC, a Delaware limited liability company d/b/a Delaware American Towers LLC ("Applicants"), by counsel, pursuant to (i) KRS §§ 278.020, 278.040, 278.650, 278.665, and other statutory authority, and the rules and regulations applicable thereto, and (ii) the Telecommunications Act of 1996, respectfully submit this Application requesting issuance of a Certificate of Public Convenience and Necessity ("CPCN") from the Kentucky Public Service Commission ("PSC") to construct, maintain, and operate a Wireless Communications Facility ("WCF") to serve the customers of AT&T Mobility with wireless communications services.

In support of this Application, Applicants respectfully provide and state the following information:

1. The complete name and address of the Applicants: New Cingular Wireless PCS, LLC, a Delaware limited liability company, d/b/a AT&T Mobility, having a local address of 601 West Chestnut Street, Louisville, Kentucky 40203; American Towers LLC, a Delaware limited liability company d/b/a Delaware American Towers LLC, having a mailing address of 10 Presidential Way, Woburn, Massachusetts 01801.

2. Applicants propose construction of an antenna tower for communications services, which is to be located in an area outside the jurisdiction of a planning commission, and Applicants submit this application to the PSC for a certificate of public convenience and necessity pursuant to KRS §§ 278.020(1), 278.040, 278.650, 278.665, and other statutory authority.

3. The Certificate of Authority filed with the Kentucky Secretary of State for AT&T Mobility was attached to a prior application and is part of the case record for PSC case number 2011-00473 and is hereby incorporated by reference. A certificate of formation for American Towers LLC is attached as part of **Exhibit A**.

4. AT&T Mobility operates on frequencies licensed by the Federal Communications Commission ("FCC") pursuant to applicable FCC requirements. A copy of the AT&T Mobility's FCC license to provide wireless services is attached to this Application or described as part of **Exhibit A**, and the facility will be constructed and operated in accordance with applicable FCC regulations. American Towers LLC will build, own and manage the tower and tower compound where AT&T Mobility will place its equipment building, antennas, radio electronics equipment and appurtenances.

5. The public convenience and necessity require the construction of the

proposed WCF. The construction of the WCF will bring or improve AT&T Mobility's services to an area currently not served or not adequately served by increasing coverage and/or capacity and thereby enhancing the public's access to innovative and competitive wireless communications services. The WCF will provide a necessary link in the AT&T Mobility communications network that is designed to meet the increasing demands for wireless services in Kentucky's wireless communications service area. The WCF is an integral link in AT&T Mobility's network design that must be in place to provide adequate coverage to the service area.

6. To address the above-described service needs, Applicants propose to construct a WCF at 84 Garry Sparks Drive, Campton, Kentucky 41301, (37°44'52.57" North latitude, 83°27'31.83" West longitude), on a parcel of land located entirely within the county referenced in the caption of this application. The property on which the WCF will be located is owned by Billye C. Adams pursuant to a Deed recorded at Deed Book 101, Page 762 in the office of the Wolfe County Clerk. The proposed WCF will consist of a 290-foot tall tower, with an approximately 9 foot tall lightning arrestor attached at the top, for a total height of 299-feet. The WCF will also include concrete foundations and a shelter or cabinets to accommodate the placement of the AT&T Mobility's radio electronics equipment and appurtenant equipment. The WCF equipment cabinet or shelter will be approved for use in the Commonwealth of Kentucky by the relevant building inspector. The WCF compound will be fenced and all access gate(s) will be secured. A description of the manner in which the proposed WCF will be constructed is attached as **Exhibit B** and **Exhibit C**.

7. A list of utilities, corporations, or persons with whom the proposed WCF is likely to compete is attached as **Exhibit D**, along with a map of suitable scale showing the location of the proposed new construction as well as the location of any like facilities located anywhere within the map area, along with a map key showing the owner of such other facilities.

8. The site development plan and a vertical profile sketch of the WCF signed and sealed by a professional engineer registered in Kentucky depicting the tower height, as well as a proposed configuration for the antennas has also been included as part of **Exhibit B**.

9. Foundation design plans signed and sealed by a professional engineer registered in Kentucky and a description of the standards according to which the tower was designed are included as part of **Exhibit C**.

10. Applicants have considered the likely effects of the installation of the proposed WCF on nearby land uses and values and have concluded that there is no more suitable location reasonably available from which adequate services can be provided, and that there are no reasonably available opportunities to co-locate the necessary antennas on an existing structure. When suitable towers or structures exist, AT&T Mobility attempts to co-locate on existing structures such as communications towers or other structures capable of supporting its facilities; however, no other suitable or available co-location site was found to be located in the vicinity of the site. A report detailing the site selection process for the subject site (including documentation as to why co-location is not possible for this site) is attached as **Exhibit E**.

11. A copy of the Determination of No Hazard to Air Navigation issued by the Federal Aviation Administration ("FAA") is attached as **Exhibit F**.

12. A copy of the Application for Kentucky Airport Zoning Commission ("KAZC") Approval to construct the tower is attached as **Exhibit G**.

13. A geotechnical engineering firm has performed soil boring(s) and subsequent geotechnical engineering studies at the WCF site. A copy of the geotechnical engineering report, signed and sealed by a professional engineer registered in the Commonwealth of Kentucky, is attached as **Exhibit H**. The name and address of the geotechnical engineering firm and the professional engineer registered in the Commonwealth of Kentucky who supervised the examination of this WCF site are included as part of this exhibit.

14. Clear directions to the proposed WCF site from the County seat are attached as **Exhibit I**. The name and telephone number of the preparer of **Exhibit I** are included as part of this exhibit.

15. Applicants, pursuant to a written agreement, have acquired the right to use the WCF site and associated property rights. A copy of the redacted agreement or an abbreviated agreement recorded with the County Clerk and a copy of the deed to the site parcel are attached as **Exhibit J**. The financial terms of the lease agreement are confidential and proprietary.

16. Personnel directly responsible for the design and construction of the proposed WCF are well qualified and experienced. The tower and foundation drawings for the proposed tower submitted as part of **Exhibit C** bear the signature and stamp of a

professional engineer registered in the Commonwealth of Kentucky. All tower designs meet or exceed the minimum requirements of applicable laws and regulations.

17. The Construction Manager for the proposed facility is Ron Rohr, and the identity and qualifications of each person directly responsible for design and construction of the proposed tower are contained **Exhibits B & C**.

18. As noted on the Survey attached as part of **Exhibit B**, the surveyor has determined that the site is not within any flood hazard area.

19. **Exhibit B** includes a map drawn to an appropriate scale that shows the location of the proposed tower and identifies every owner of real estate within 500 feet of the proposed tower (according to the records maintained by the County Property Valuation Administrator). Every structure and every easement within 500 feet of the proposed tower or within 200 feet of the access road including intersection with the public street system is illustrated in **Exhibit B**.

20. Applicants have notified every person who, according to the records of the County Property Valuation Administrator, owns property which is within 500 feet of the proposed tower or contiguous to the site property, by certified mail, return receipt requested, of the proposed construction. Each notified property owner has been provided with a map of the location of the proposed construction, the telephone number and address of the PSC, and has been informed of his or her right to request intervention. A list of the notified property owners and a copy of the form of the notice sent by certified mail to each landowner are attached as **Exhibit K** and **Exhibit L**, respectively.

21. Applicants have notified the applicable County Judge/Executive by certified

mail, return receipt requested, of the proposed construction. This notice included the PSC docket number under which the application will be processed and informed the County Judge/Executive of his/her right to request intervention. A copy of this notice is attached as **Exhibit M**.

22. Notice signs meeting the requirements prescribed by 807 KAR 5:063, Section 1(2) that measure at least 2 feet in height and 4 feet in width and that contain all required language in letters of required height, have been posted, one in a visible location on the proposed site and one on the nearest public road. Such signs shall remain posted for at least two weeks after filing of the Application, and a copy of the posted text is attached as **Exhibit N**. Notice of the location of the proposed facility has also been requested in a newspaper of general circulation in the county in which the WCF is proposed to be located.

23. The general area where the proposed facility is to be located contains large rural residential parcels and large forested parcels located near the Bert Combs Mountain Parkway.

24. The process that was used by the AT&T Mobility radio frequency engineers in selecting the site for the proposed WCF was consistent with the general process used for selecting all other existing and proposed WCF facilities within the proposed network design area. AT&T Mobility's radio frequency engineers have conducted studies and tests in order to develop a highly efficient network that is designed to handle voice and data traffic in the service area. The engineers determined an optimum area for the placement of the proposed facility in terms of elevation and location to provide the best quality service to customers in the service area. A radio frequency design search area prepared in reference

to these radio frequency studies was considered when searching for sites for antennas that would provide the coverage deemed necessary by AT&T Mobility. A map of the area in which the tower is proposed to be located which is drawn to scale and clearly depicts the necessary search area within which the site should be located pursuant to radio frequency requirements is attached as **Exhibit O**.

25. All Exhibits to this Application are hereby incorporated by reference as if fully set out as part of the Application.

26. All responses and requests associated with this Application may be directed to:

David A. Pike  
Pike Legal Group, PLLC  
1578 Highway 44 East, Suite 6  
P. O. Box 369  
Shepherdsville, KY 40165-0369  
Telephone: (502) 955-4400  
Telefax: (502) 543-4410  
Email: [dpike@pikelegal.com](mailto:dpike@pikelegal.com)

Patrick W. Turner  
General Attorney-Kentucky  
AT&T Kentucky  
1600 Williams Street  
Suite 5200  
Columbia, South Carolina 29201  
Telephone: (803) 401-2900  
Telefax: (803) 254-1731  
Email: [pt1285@att.com](mailto:pt1285@att.com)

Matthew Russell  
Attorney  
American Towers LLC  
10 Presidential Way  
Woburn, MA 01801  
Telephone: 781.926.7154  
Email: [matthew.russell@americantower.com](mailto:matthew.russell@americantower.com)

**WHEREFORE**, Applicants respectfully request that the PSC accept the foregoing Application for filing, and having met the requirements of KRS §§ 278.020(1), 278.650, and 278.665 and all applicable rules and regulations of the PSC, grant a Certificate of Public Convenience and Necessity to construct and operate the WCF at the location set forth herein.

Respectfully submitted,



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David A. Pike  
Pike Legal Group, PLLC  
1578 Highway 44 East, Suite 6  
P. O. Box 369  
Shepherdsville, KY 40165-0369  
Telephone: (502) 955-4400  
Telefax: (502) 543-4410  
Email: [dpike@pikelegal.com](mailto:dpike@pikelegal.com)  
Attorney for New Cingular Wireless PCS, LLC  
d/b/a AT&T Mobility

and

Matthew Russell  
10 Presidential Way  
Woburn, MA 01801  
Telephone: 781.926.7154  
Email: [matthew.russell@americantower.com](mailto:matthew.russell@americantower.com)  
Attorney for American Towers LLC d/b/a Delaware  
American Towers LLC

## LIST OF EXHIBITS

- A - FCC License Documentation
- B - Site Development Plan:
  - 500' Vicinity Map
  - Legal Descriptions
  - Flood Plain Certification
  - Site Plan
  - Vertical Tower Profile
- C - Tower and Foundation Design
- D - Competing Utilities, Corporations, or Persons List and Map of Like Facilities in Vicinity
- E - Co-location Report
- F - FAA
- G - Kentucky Airport Zoning Commission
- H - Geotechnical Report
- I - Directions to WCF Site
- J - Copy of Real Estate Agreement and Deed to Site Parcel
- K - Notification Listing
- L - Copy of Property Owner Notification
- M - Copy of County Judge/Executive Notice
- N - Copy of Posted Notices
- O - Copy of Radio Frequency Design Search Area



**EXHIBIT A**  
**FCC LICENSE DOCUMENTATION**

ULS License

## **AWS, 1710-1755/2110-2155 MHz bands License - WQGA823 - New Cingular Wireless PCS, LLC**

Call Sign	WQGA823	Radio Service	AW - AWS, 1710-1755/2110-2155 MHz bands
Status	Active	Auth Type	Regular
<b>Market</b>			
Market	CMA452 - Kentucky 10 - Powell	Channel Block	A
Submarket	0	Associated Frequencies (MHz)	001710.00000000-001720.00000000-002110.00000000-002120.00000000

**Dates**

Grant	11/29/2006	Expiration	11/29/2021
Effective	02/12/2014	Cancellation	

**Buildout Deadlines**

1st	2nd
-----	-----

**Notification Dates**

1st	2nd
-----	-----

**Licensee**

FRN	0003291192	Type	Limited Liability Company
-----	------------	------	---------------------------

**Licensee**

New Cingular Wireless PCS, LLC 3300 E. Renner Road, B3132 Richardson, TX 75082 ATTN Reginald Youngblood	P:(855)699-7073 F:(972)907-1131 E:FCCMW@att.com
--	---

**Contact**

AT&T Mobility LLC Michael P Goggin 1120 20th Street, NW - Suite 1000 Washington, DC 20036 ATTN Michael P. Goggin	P:(202)457-2055 F:(202)457-3073 E:michael.p.goggin@att.com
--	--

**Ownership and Qualifications**

Radio Service Type	Mobile
Regulatory Status	Common Carrier    Interconnected    Yes

**Alien Ownership**

The Applicant answered "No" to each of the Alien Ownership questions.

**Basic Qualifications**

The Applicant answered "No" to each of the Basic Qualification questions.

**Tribal Land Bidding Credits**

This license did not have tribal land bidding credits.

ULS License

**Cellular License - KNKN841 - NEW CINGULAR WIRELESS PCS, LLC**

Call Sign	KNKN841	Radio Service	CL - Cellular
Status	Active	Auth Type	Regular

**Market**

Market	CMA452 - Kentucky 10 - Powell	Channel Block	A
Submarket	0	Phase	2

**Dates**

Grant	08/30/2011	Expiration	10/01/2021
Effective	08/30/2013	Cancellation	

**Five Year Buildout Date**

02/05/1997

**Control Points**

**1** 1650 Lyndon Farms Court, LOUISVILLE, KY  
P: (502)329-4700

**Licensee**

FRN	0003291192	Type	Limited Liability Company
-----	------------	------	---------------------------

**Licensee**

NEW CINGULAR WIRELESS PCS, LLC 2200 N. Greenville Ave, 1W Richardson, TX 75082 ATTN Reginald Youngblood	P:(972)234-7003 F:(972)301-6893 E:FCCMW@att.com
--	---

**Contact**

AT&T MOBILITY LLC Michael P Goggin 1120 20th Street, NW - Suite 1000 Washington, DC 20036 ATTN Michael P. Goggin	P:(202)457-2055 F:(202)457-3073 E:michael.p.goggin@att.com
--	--

**Ownership and Qualifications**

Radio Service Type	Mobile
Regulatory Status	Common Carrier Interconnected Yes

**Alien Ownership**

The Applicant answered "No" to each of the Alien Ownership questions.

**Basic Qualifications**

The Applicant answered "No" to each of the Basic Qualification questions.

**Demographics**

Race		Gender	
Ethnicity			

ULS License

## PCS Broadband License - WPOI255 - NEW CINGULAR WIRELESS PCS, LLC

Call Sign	WPOI255	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular

### Market

Market	MTA026 - Louisville-Lexington-Evansvill	Channel Block	A
Submarket	19	Associated Frequencies (MHz)	001850.00000000-001865.00000000-001930.00000000-001945.00000000

### Dates

Grant	07/07/2005	Expiration	06/23/2015
Effective	11/24/2012	Cancellation	

### Buildout Deadlines

1st	06/23/2000	2nd	06/23/2005
-----	------------	-----	------------

### Notification Dates

1st	07/07/2000	2nd	02/17/2005
-----	------------	-----	------------

### Licensee

FRN	0003291192	Type	Limited Liability Company
-----	------------	------	---------------------------

### Licensee

NEW CINGULAR WIRELESS PCS, LLC 2200 N. Greenville Ave, 1W Richardson, TX 75082 ATTN Reginald Youngblood	P:(972)234-7003 F:(972)301-6893 E:FCCMW@att.com
--	---

### Contact

AT&T MOBILITY LLC Michael P Goggin 1120 20th Street, NW - Suite 1000 Washington, DC 20036 ATTN Michael P. Goggin	P:(202)457-2055 F:(202)457-3073 E:michael.p.goggin@att.com
--	--

### Ownership and Qualifications

Radio Service Type Mobile  
Regulatory Status Common Carrier Interconnected Yes

### Alien Ownership

The Applicant answered "No" to each of the Alien Ownership questions.

### Basic Qualifications

The Applicant answered "No" to each of the Basic Qualification questions.

### Tribal Land Bidding Credits

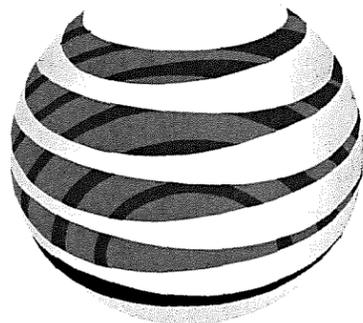
This license did not have tribal land bidding credits.



**EXHIBIT B**

**SITE DEVELOPMENT PLAN:**

**500' VICINITY MAP  
LEGAL DESCRIPTIONS  
FLOOD PLAIN CERTIFICATION  
SITE PLAN  
VERTICAL TOWER PROFILE**



# at&t

# AMERICAN TOWER CORPORATION

## AT&T SITE # 143953 / ATC SITE #: 281338 ATC SITE NAME: HAZEL GREEN

PROPOSED AT&T ANTENNAS MOUNTED ON A NEW 290' SELF-SUPPORT TOWER  
WITH AT&T CENTERLINE OF 285'  
(NOT TO EXCEED 299' IN OVERALL STRUCTURE HEIGHT)  
WITH PROPOSED COMMUNICATIONS EQUIPMENT ON GROUND.

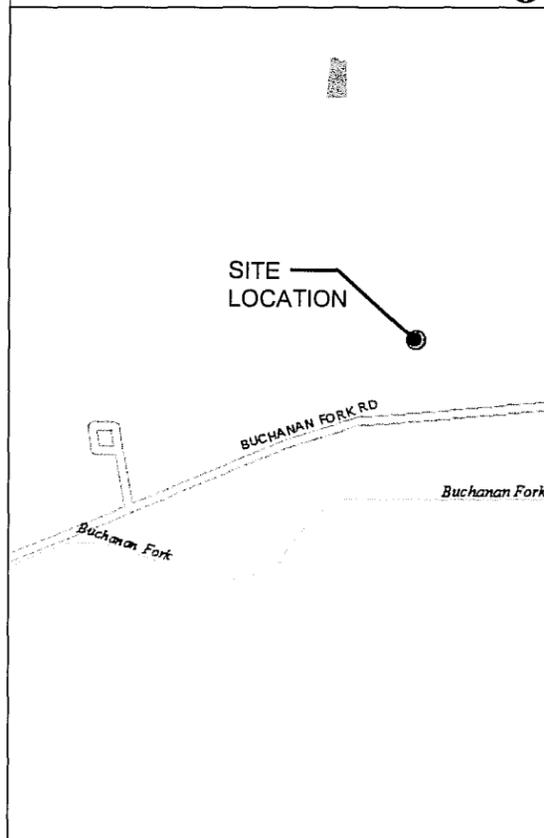
### CONSULTANT TEAM

PROJECT CONSULTANT: TERRA CONSULTING GROUP, LTD.  
600 BUSSE HIGHWAY  
PARK RIDGE, IL 60068  
(847) 698-6400

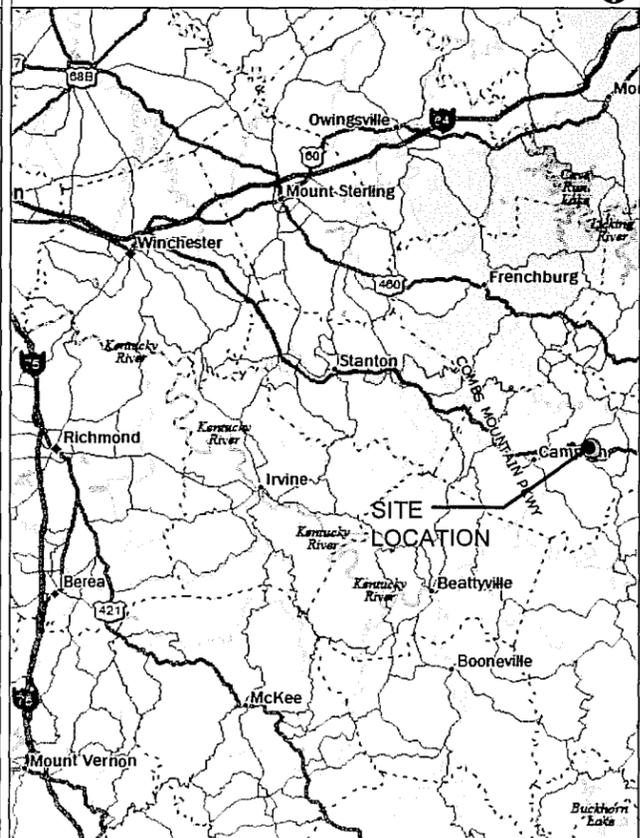
SURVEYOR: ROLLING & HOCEVAR  
257 SOUTH COURT ST. SUITE 6  
MEDINA, OHIO  
(330) 723-1828



### VICINITY MAP N.T.S.



### REGIONAL MAP N.T.S.



### PROJECT INFORMATION

ATC SITE #: 281338  
 ATC SITE NAME: HAZEL GREEN  
 P.I.N. #: 081-00-00-002.1  
 SITE ADDRESS: 84 GARRY SPARKS DRIVE  
 CAMPTON, KY 41301  
 JURISDICTION: WOLFE COUNTY  
 LATITUDE: N 37° 44' 52.57" (FROM 1-A)  
 LONGITUDE: W 83° 27' 31.83" (FROM 1-A)  
 TELCO COMPANY: TBD  
 POWER COMPANY: EAST KENTUCKY POWER  
 859-744-4812  
 CONSTRUCTION TYPE: RAW LAND  
 APPLICANT: AMERICAN TOWER CORPORATION  
 116 HUNTINGTON AVE  
 BOSTON, MA 02116  
 (617) 375-7500  
 CONTACT PERSON: KATHIE TAYLOR  
 PROJECT MANAGER  
 SITE DEVELOPMENT  
 (740) 603-5159  
 PROPERTY OWNER: BILLYE C. ADAMS  
 1723 BUCHANAN FORK ROAD  
 CAMPTON, KY 41301  
 606-668-3912

### SHEET INDEX

SHEET	DESCRIPTION	REVISION
T-1	TITLE SHEET	A, B
S1	ENLARGED COMPOUND PLAN	-
S2	EASEMENT DETAIL	-
S3	OVERALL SITE	-
S4	LEGAL DESCRIPTION	-
S5	LEGAL DESCRIPTION	-
S6	LEGAL DESCRIPTION	-
Z-1	LOCATION PLAN	A, B
Z-2	ENLARGED SITE PLAN	A
Z-3	SITE ELEVATION	A



NO	DATE	BY	DESCRIPTION
A	01/30/14	JLR	ISSUED FOR ZONING
B	02/24/14	JLR	REVISED PER CLIENT COMMENTS

AT&T# 143953  
ATC# 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON, KY 41301

DRAWN BY	JLR
CHECKED BY	TAZ
DATE	01/10/14
PROJECT #	70-004

SHEET TITLE  
**TITLE SHEET**

SHEET NUMBER  
**T-1**



CALL BEFORE YOU DIG - DRILL - BLAST  
CALL 811 OR 1-800-752-6007

REQUIRES NOTIFICATION TO ONE CALL SYSTEM 2 WORKING DAYS FOR CONSTRUCTION PHASE AND 10 WORKING DAYS FOR DESIGN PHASE BEFORE YOU EXCAVATE.

### DRIVING DIRECTIONS

FROM WOLFE COUNTY CLERK (10 COURT ST, CAMPTON KY):  
 HEAD SOUTH ON MARION ST TOWARD MAIN ST (187 FT) TAKE THE 1ST LEFT ONTO KY-191/MAIN ST CONTINUE TO FOLLOW KY-191 (1.1 MI) SLIGHT RIGHT TO STAY ON KY-191 (3.5 MI). SLIGHT RIGHT ONTO CO RD 1812 (1.0 MI). TAKE THE 1ST LEFT ONTO BUCHANAN FORK RD DESTINATION WILL BE ON THE LEFT.

### SPECIAL NOTES

**HANDICAPPED REQUIREMENTS:**  
FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION HANDICAPPED ACCESS REQUIREMENTS NOT REQUIRED

**PLUMBING REQUIREMENTS:**  
FACILITY HAS NO PLUMBING OR REFRIGERANTS

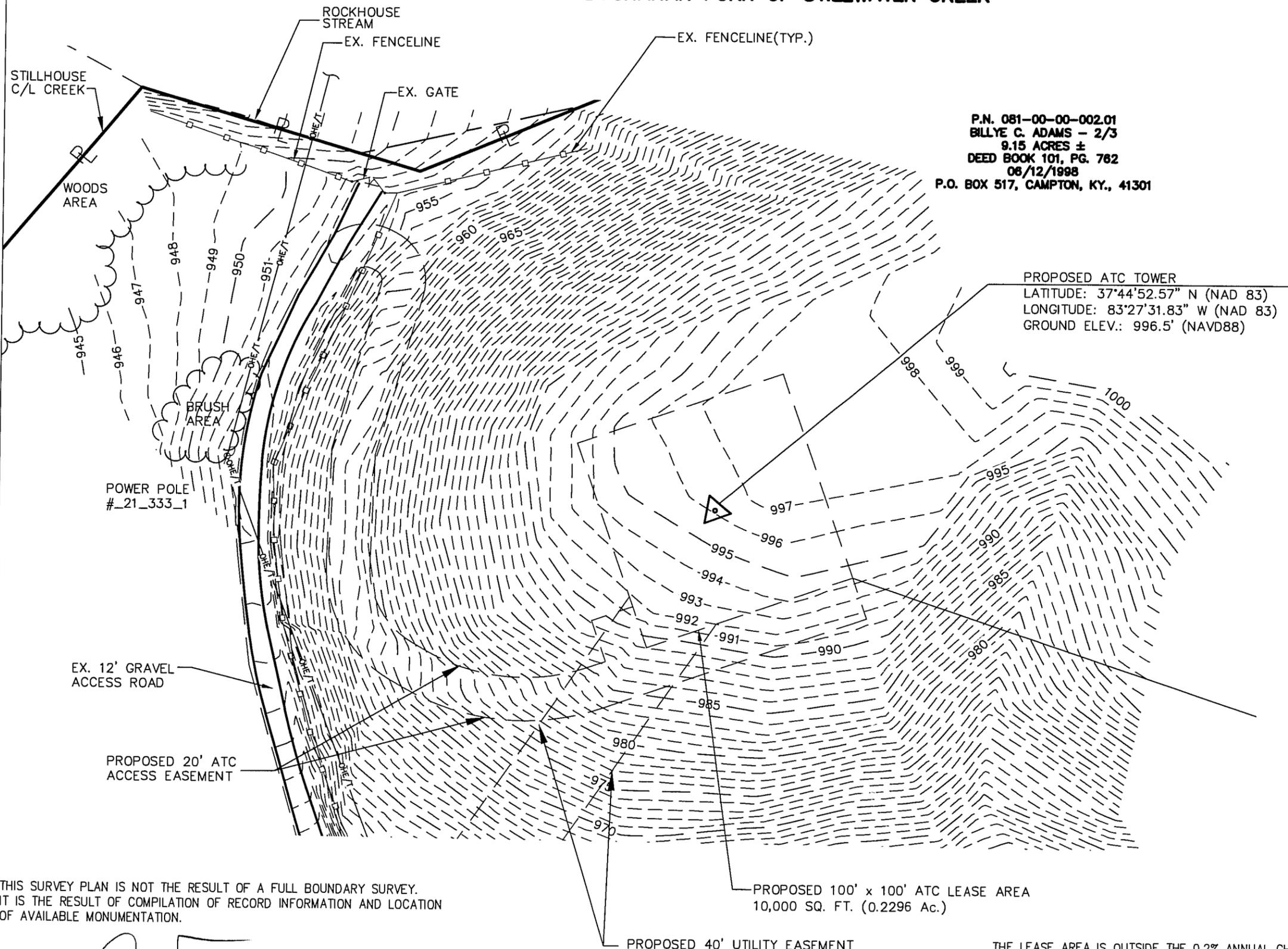
**FAA AND FCC REQUIREMENTS:**  
THIS FACILITY SHALL MEET OR EXCEED ALL FAA AND FCC REQUIREMENTS

**CONSTRUCTION REQUIREMENTS:**  
ALL WORK MUST CONFORM TO AMERICAN TOWER CORPORATION & AT&T CONSTRUCTION INSTALLATION STANDARDS & ALL APPLICABLE CODES AND ORDINANCES

### APPROVALS

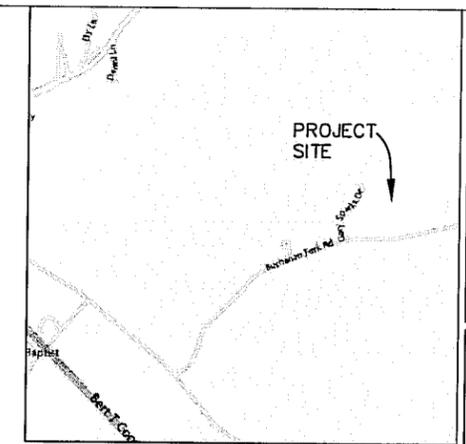
LANDLORD		OPERATIONS		TELCO APPROVAL	
SIGNATURE	DATE	SIGNATURE	DATE	SIGNATURE	DATE
RF ENGINEER		CONSTRUCTION FIELD MGR.		ELEC. APPROVAL	
SIGNATURE	DATE	SIGNATURE	DATE	SIGNATURE	DATE
ZONING		SITE ACQUISITION		LESSOR APPROVAL	
SIGNATURE	DATE	SIGNATURE	DATE	SIGNATURE	DATE

**SITUATED IN WOLFE COUNTY, KENTUCKY, AND ON WATERS OF THE  
BUCHANAN FORK OF STILLWATER CREEK**

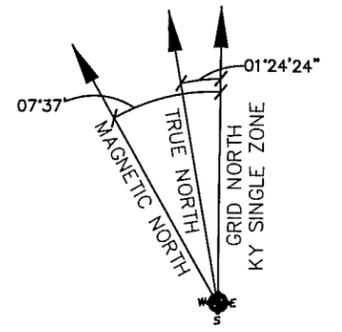


P.N. 081-00-00-002.01  
 BILLYE C. ADAMS - 2/3  
 9.15 ACRES ±  
 DEED BOOK 101, PG. 762  
 06/12/1998  
 P.O. BOX 517, CAMPTON, KY., 41301

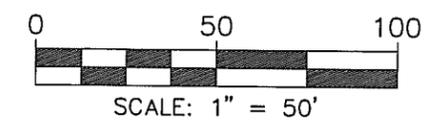
PROPOSED ATC TOWER  
 LATITUDE: 37°44'52.57" N (NAD 83)  
 LONGITUDE: 83°27'31.83" W (NAD 83)  
 GROUND ELEV.: 996.5' (NAVD88)



(NOT TO SCALE)  
VICINITY MAP



TRUE NORTH (NAD 83) AND ELEVATIONS  
 WERE ESTABLISHED FROM EXISTING GEODETIC  
 CONTROL MONUMENTATION USING G.P.S.



THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY.  
 IT IS THE RESULT OF COMPILATION OF RECORD INFORMATION AND LOCATION  
 OF AVAILABLE MONUMENTATION.

*Andrew G. Planet*  
 ANDREW G. PLANET, PLS #3912  
 2-24-2014  
 DATE

PROPOSED 100' x 100' ATC LEASE AREA  
 10,000 SQ. FT. (0.2296 Ac.)

THE LEASE AREA IS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.  
 THE LEASE AREA IS IN FLOOD ZONE "X" - PER FIRM COMMUNITY MAP  
 PANEL NUMBER 21025C0050C, EFFECTIVE DATE APRIL 2, 2008



NO.	DATE	BY	AGP
0			
1	01-31-14		
2			
3			
4			
5			
6			

AT&T SITE # 143953  
 ATC SITE # 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
 CAMPTON,  
 KENTUCKY, 41301

DRAWN BY: PRC  
 CHECKED BY: AGP  
 DATE: 11/21/2013  
 PROJECT #: 1008-168

SHEET TITLE  
**ENLARGED  
 COMPOUND PLAN**

SHEET NUMBER  
**S1**

**SITUATED IN WOLFE COUNTY, KENTUCKY, AND ON WATERS OF THE BUCHANAN FORK OF STILLWATER CREEK**

PROPOSED 100' x 100' ATC LEASE AREA  
10,000 SQ. FT. (0.2296 Ac.)

PROPOSED ATC TOWER  
LATITUDE: 37°44'52.57" N (NAD 83)  
LONGITUDE: 83°27'31.83" W (NAD 83)  
GROUND ELEV.: 996.5' (NAVD88)

P.N. 081-00-00-002.01  
BILLYE C. ADAMS - 2/3  
9.15 ACRES ±  
DEED BOOK 101, PG. 762  
08/12/1998  
P.O. BOX 517, CAMPTON, KY., 41301

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	94.57'	110.00'	49° 15' 28"	S 84° 31' 27" E	91.68'
C2	64.88'	60.00'	61° 57' 36"	S 28° 54' 55" E	61.77'
C3	6.89'	5.00'	79° 00' 12"	N 23° 37' 21" W	6.36'
C4	7.85'	5.00'	90° 00' 00"	S 71° 52' 33" W	7.07'
C5	104.98'	180.00'	33° 24' 59"	S 10° 10' 03" W	103.50'
C6	116.65'	200.00'	33° 24' 59"	S 10° 10' 03" W	115.00'
C7	39.27'	25.00'	90° 00' 00"	S 71° 52' 33" W	35.36'
C8	34.47'	25.00'	79° 00' 12"	N 23° 37' 21" W	31.81'
C9	43.26'	40.00'	61° 57' 36"	S 28° 54' 55" E	41.18'
C10	77.37'	90.00'	49° 15' 27"	S 84° 31' 27" E	75.01'

Parcel Line Table		
Line #	Length	Direction
L1	100.00'	S 70° 50' 50" W
L2	100.00'	N 19° 09' 10" W
L3	100.00'	N 70° 50' 50" E
L4	100.00'	S 19° 09' 10" E
L5	20.00'	S 19° 09' 10" E
L6	128.25'	S 70° 50' 50" W
L7	7.12'	N 59° 53' 43" W
L8	53.26'	N 2° 03' 52" E
L9	79.61'	N 15° 52' 45" E
L10	2.76'	N 63° 07' 27" W
L11	31.62'	S 26° 52' 33" W
L12	48.70'	S 6° 32' 26" E
L13	79.44'	S 16° 56' 41" E
L14	84.79'	S 21° 40' 59" E
L15	20.10'	S 74° 05' 47" W
L16	83.77'	N 21° 40' 59" W
L17	91.54'	N 15° 57' 03" W
L18	50.34'	N 6° 32' 26" W
L19	31.62'	N 26° 52' 33" E
L20	2.76'	S 63° 07' 27" E
L21	77.19'	S 15° 52' 45" W
L22	50.84'	S 2° 03' 52" W
L23	7.12'	S 59° 53' 43" E
L24	8.25'	N 70° 50' 50" E
L25	20.00'	N 19° 09' 10" W
L26	20.00'	N 70° 50' 50" E
L27	20.00'	S 19° 09' 10" E
L28	100.00'	N 70° 50' 50" E
L29	66.05'	S 70° 50' 50" W
L30	194.82'	S 34° 44' 56" W
L31	14.59'	S 19° 37' 20" E
L32	17.22'	S 81° 01' 18" W
L33	23.13'	S 74° 05' 47" W
L34	30.46'	N 19° 37' 20" W
L35	202.52'	N 34° 44' 56" E
L36	24.75'	S 19° 09' 10" E
L37	33.95'	N 70° 50' 50" E

**AMERICAN TOWER CORPORATION**  
1101 PERIMETER DRIVE, SUITE 226  
SCHAMBERG, IL 60173

**TERRA SURVEYING, INC.**  
500 Busse Highway  
Park Ridge, IL 60068  
Ph: 847/688-6400  
Fax: 847/688-6401

NO	DATE	BY	DESCRIPTION
1	01-31-14	AGP	UPDATE PER COMMENTS
2			
3			
4			
5			
6			

AT&T SITE # 143953  
ATC SITE # 281338

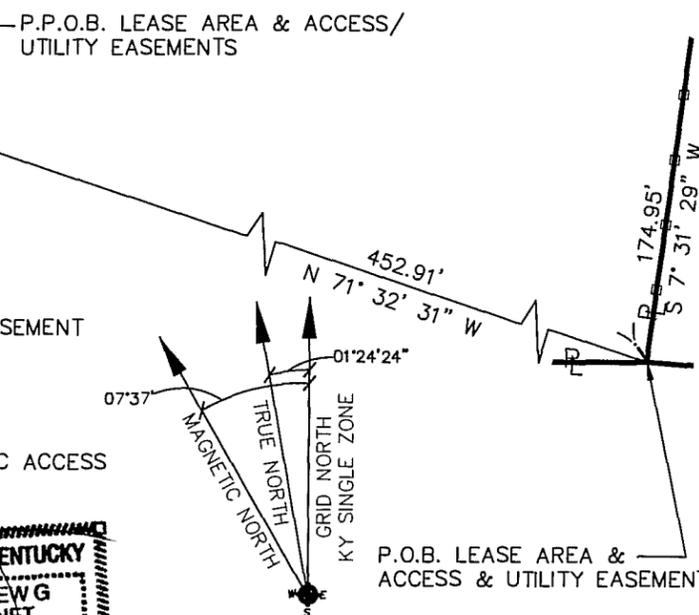
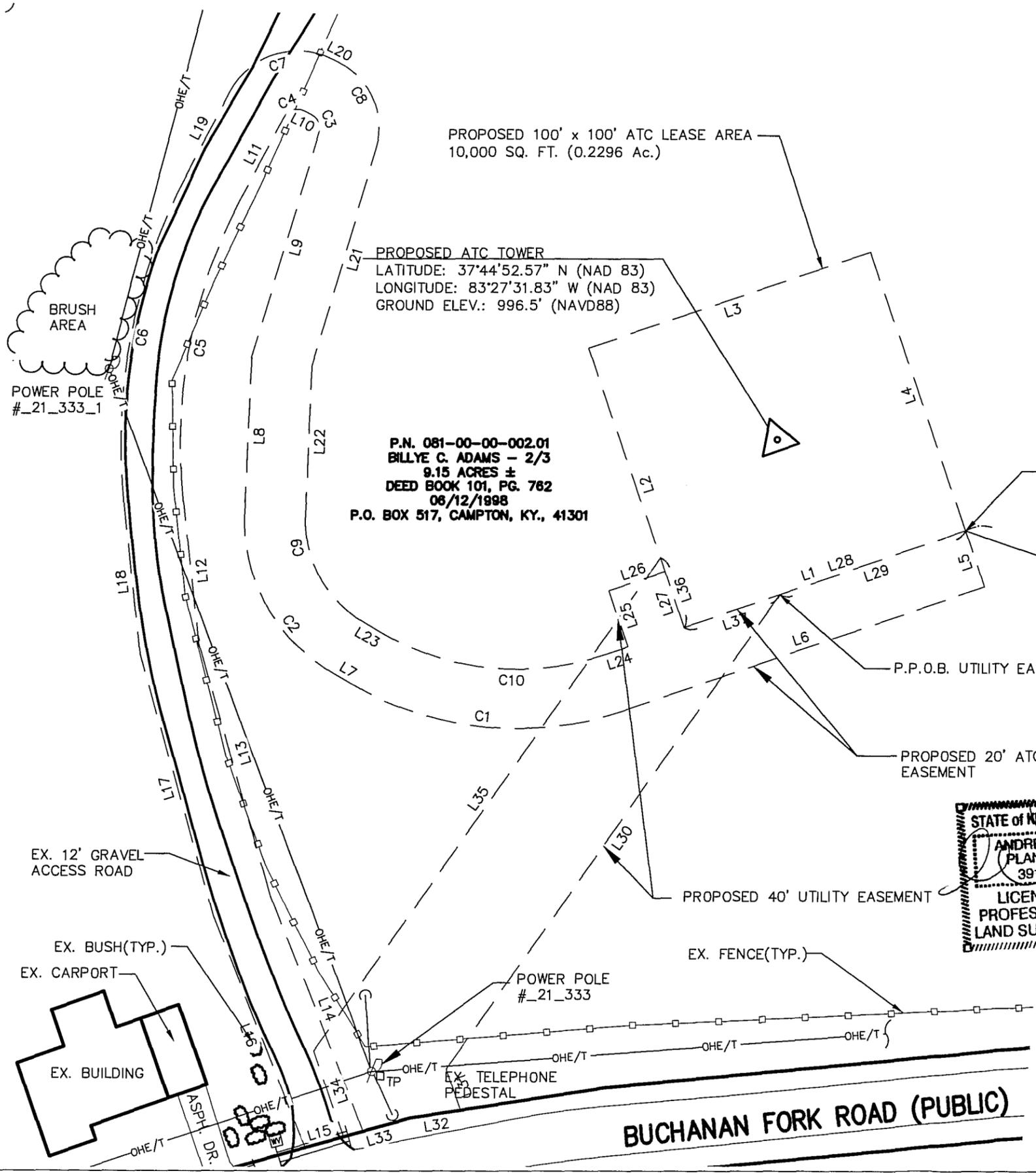
HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON,  
KENTUCKY, 41301

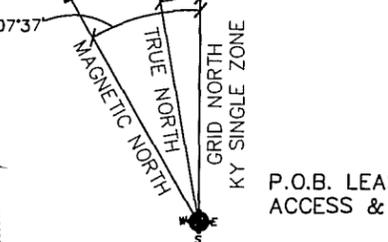
DRAWN BY: PRE  
CHECKED BY: AGP  
DATE: 11/21/2013  
PROJECT #: 1008-488

SHEET TITLE  
**EASEMENT  
DETAIL**

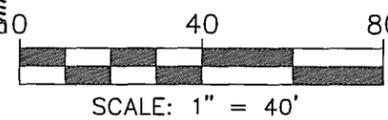
SHEET NUMBER  
**S2**



STATE OF KENTUCKY  
ANDREW G. PLANET  
3912  
LICENSED PROFESSIONAL LAND SURVEYOR



TRUE NORTH (NAD 83) AND ELEVATIONS WERE ESTABLISHED FROM EXISTING GEODETIC CONTROL MONUMENTATION USING G.P.S.



THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY. IT IS THE RESULT OF COMPILATION OF RECORD INFORMATION AND LOCATION OF AVAILABLE MONUMENTATION.

*[Signature]*  
ANDREW G. PLANET, PLS #3912  
DATE: 2-24-2014

**ROLLING HILLS SURVEYING, INC.**  
A Geospatial Group Affiliates  
CIVIL ENGINEERING SURVEYING  
257 SOUTH COURT ST. SUITE 8  
MEDINA, OHIO (330)723-1828  
FAX (330)723-6637

**SITUATED IN WOLFE COUNTY, KENTUCKY, AND ON WATERS OF THE BUCHANAN FORK OF STILLWATER CREEK**

PER WOLFE COUNTY FISCAL COURT LETTER DATED 12-13-2013 - WOLFE COUNTY HAS NO ZONING OR BUILDING ORDINANCES.

P.N. 081-00-00-004.00  
JOSEPH STANLEY PEYTON  
DEED BOOK 135, PG. 330  
08/09/2013  
7231 WHISPERING OAK DR., SYLVANIA, OH, 43560

P.N. 081-00-00-002.01  
BILLYE C. ADAMS - 2/3  
9.15 ACRES ±  
DEED BOOK 101, PG. 782  
06/12/1998  
P.O. BOX 517, CAMPTON, KY., 41301

P.N. 081-00-00-004.02  
BILLYE C. ADAMS  
DEED BOOK 84, PG. 703  
P.O. BOX 517  
CAMPTON, KY 41301

ADJOINING LAND OWNERS LISTED ARE ACCORDING TO THE RECORDS OF THE PROPERTY VALUATION ADMINISTRATOR AS FOUND AT THE WOLFE COUNTY PVA OFFICE. THIS INFORMATION WAS COMPILED ON 01-22-2014.

P.N. 081-00-00-003.01  
REBEKAHA PROFITT  
DEED BOOK 126, PG. 212  
797 BUCHANAN FORK ROAD, CAMPTON, KY., 41301

P.N. 070-00-00-028.01  
CHRIS BRYANT  
DEED BOOK 117, PG. 212  
08/09/2004  
5900 SOUTH KENTUCKY 15,  
CAMPTON, KY., 41301

STILLHOUSE C/L CREEK

POWER POLE # 21\_333\_1

EX. 12' GRAVEL ACCESS ROAD

P.P.O.B. UTILITY EASEMENT

275' ± CL TOWER TO CLOSEST RESIDENCE

EX. HOUSE

EX. 48" RCP  
18"FL.[N.] = 933.55  
18"FL.[S.] = 933.59

EX. CULVERT PIPE  
12"FL.[E.] = 938.04  
12"FL.[W.] = 938.15

**BUCHANAN FORK ROAD (PUBLIC)**

EX. TELEPHONE PEDESTAL

P.N. 081-00-00-002.00  
ALBERT CLAY CHAMBERS  
DEED BOOK 101, PG. 747  
06/12/1998  
255 TOWNSEND-DRAKE ROAD  
CAMPTON, KY., 41301

EX. CULVERT PIPE  
12"FL.[E.] = 938.49  
12"FL.[W.] = 938.79

PROPOSED 100' x 100' ATC LEASE AREA  
10,000 SQ. FT. (0.2296 Ac.)

P.P.O.B. LEASE AREA & ACCESS/  
UTILITY EASEMENTS

EX. BLDG.

PROPOSED ATC TOWER  
LATITUDE: 37°44'52.57" N (NAD 83)  
LONGITUDE: 83°27'31.83" W (NAD 83)  
GROUND ELEV.: 996.5' (NAVD88)

EX. BLDG.

P.O.B. LEASE AREA & ACCESS &  
UTILITY EASEMENTS

EX. BLDGS.

200' RADIUS -  
ACCESS/UTILITY

R500.0'

ROCKHOUSE STREAM

195'

440'

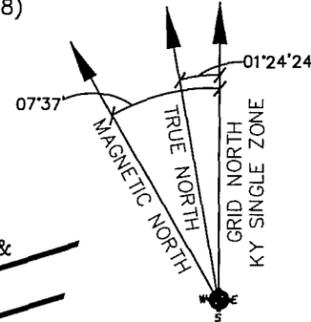
510'

210'

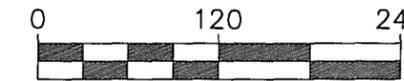
PROPOSED 20' ATC ACCESS &  
UTILITY EASEMENT

PROPOSED 40' UTILITY EASEMENT

STATE OF KENTUCKY  
ANDREW G. PLANET  
3912  
LICENSED PROFESSIONAL  
LAND SURVEYOR



TRUE NORTH (NAD 83) AND ELEVATIONS  
WERE ESTABLISHED FROM EXISTING GEDDETT  
CONTROL MONUMENTATION USING G.P.S.



SCALE: 1" = 120'

P.N. 081-00-00-002.01  
BILLYE C. ADAMS  
DEED BOOK 84, PG. 703  
P.O. BOX 517  
CAMPTON, KY 41301

THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY. IT IS THE RESULT OF COMPILATION OF RECORD INFORMATION AND LOCATION OF AVAILABLE MONUMENTATION.

*Andrew G. Planet*  
ANDREW G. PLANET, PLS #3912

2-24-2014  
DATE

ROLLING'S SURVEYING  
CIVIL ENGINEERING SURVEYING  
257 SOUTH COURT ST. SUITE 8  
MEDINA, OHIO (330)723-1828  
FAX (330)723-6637

**AMERICAN TOWER CORPORATION**  
1101 PERIMETER DRIVE, SUITE 225  
SCHLAUBURG, IL 60173

**TERRA CONSULTING GROUP, LTD.**  
600 Bluffside Highway  
P.O. Box 1180068  
Ph: 847/698-6400  
Fax: 847/698-6401

NO	DATE	BY	DESCRIPTION
0			
1	01-31-14	AGP	UPDATE PER COMMENTS
2	02-24-14	AGP	ADD ADDRESS PER COMMENTS
3			
4			
5			
6			

AT&T SITE # 143953  
ATC SITE # 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON,  
KENTUCKY, 41301

DRAWN BY: PRE  
CHECKED BY: AGP  
DATE: 11/21/2013  
PROJECT #: 1008-468

SHEET TITLE  
**OVERALL SITE**

SHEET NUMBER  
**S3**

PARENT PARCEL LEGAL DESCRIPTION:

SITUATED IN THE COUNTY OF WOLFE AND IN THE STATE OF KENTUCKY:  
PARENT PARCEL

A CERTAIN TRACT OR PARCEL OF LAND LYING AND BEING IN WOLFE COUNTY, KENTUCKY, AND SITUATED ON THE BUCHANAN FORK OF STILLWATER CREEK AND BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A WHITE OAK STANDING BY THE COUNTY ROAD SIDE NEAR A DRAIN AT THE TENANT HOUSE BELOW THE OLD BARN SITE; THENCE RUNNING A STRAIGHT LINE ACROSS THE BOTTOM TO A SET STONE AT THE CREEK AND DAISY AND HENRY CLAY CHAMBER'S LAND LINE; AND A CORNER TO ROBERT ROTHMAN HEIRS; THENCE RUNNING UP THE CREEK WITH HENRY CLAY CHAMBER'S LAND LINE TO THE LAND LINE OF WILLIE BUCHANAN; THENCE WITH HIS LAND LINE TO THE COUNTY ROAD; THENCE DOWN THE COUNTY ROAD TO THE W.H. CHAMBER'S LAND LINE; THENCE RUNNING UP THE OLD BARN BRANCH WITH WILLIE BUCHANAN AND JOHN BUCHANAN LINE TO JASPER CREECH'S LINE; THENCE WITH JASPER CREECH'S LINE TO THE TOP OF THE RIDGE TO A LOCUST TREE TO THE LAND LINE OF HENRY CLAY CHAMBER'S, WHICH IS A DIVISION OF THIS FARM; THENCE WITH THE DIVIDING RIDGE AND KATE ROSE'S LAND LINE TO A LOCUST TREE AND A CROSS FENCE AT ROBERT ROTHMAN'S LINE; THENCE RUNNING DOWN THE POINT WITH SAID CROSS FENCE AND ROBERT ROTHMAN'S LINE TO THE COUNTY ROAD; THENCE WITH SAID COUNTY ROAD TO THE PLACE OF BEGINNING.

SAVE AND EXCEPT:

A CERTAIN TRACT OR PARCEL OF LAND, LYING AND BEING IN WOLFE COUNTY, KENTUCKY, AND SITUATED ON THE BUCHANAN FORK OF STILLWATER CREEK, AND BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A STEEL STAKE ON THE NORTH SIDE OF THE RIGHT OF WAY OF BUCHANAN FORK ROAD AND GOING IN A NORTHERLY DIRECTION 450 FEET TO A STEEL STAKE; THENCE TURNING IN AN EASTERLY DIRECTION AND GOING 178 FEET TO A STEEL STAKE; THENCE TURNING IN A WESTERLY DIRECTION ALONG THE ROAD RIGHT OF WAY 298 FEET TO THE PLACE OF BEGINNING. EXCEPTED OUT OF THIS TRACT OF LAND IS THE FARM ACCESS RD. THAT LEADS TO THE FARM SURROUNDING THIS PROPERTY.

ALSO EXCEPT:

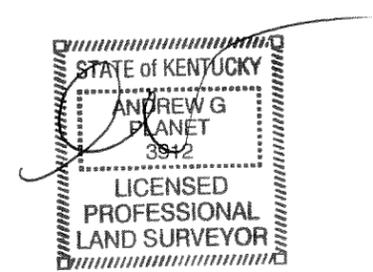
A CERTAIN TRACT OR PARCEL OF LAND LYING AND BEING ON THE WATERS OF BUCHANAN FORK OF STILLWATER CREEK, AND BEING BOUNDED AND DESCRIBED AS FOLLOWS:  
BEGINNING ON A SMALL PERSIMMON ON TOP OF DIVIDING RIDGE AT THE HEAD OF THE STILLHOUSE BRANCH AND OLD BARN HOLLOW; THENCE A SOUTHERN DIRECTION AND STRAIGHT LINE TO A SMALL MARKED LOCUST, OPPOSITE A DRAIN LEADING DOWN THE HILL; THENCE A NORTHWESTERLY DIRECTION DOWN THE HILL TO A POPLAR TREE MARKED AT THE HEAD OF A DRAIN; THENCE SAME DIRECTION WITH THE SAID DRAIN TO A WHITE OAK STANDING AT THE LANE END FENCE NEAR THE BOTTOM; THENCE RUNNING A NORTHERN DIRECTION AND WITH THE FENCE WHERE IT NOW RUNS AND LANE TO TWO SMALL HICKORIES MARKED AND STANDING BY THE FENCE; THENCE TURNING ACROSS THE BOTTOM A WESTERN DIRECTION AND STRAIGHT LINE TO A POPLAR TREE STANDING ON A BLUFF ABOVE THE BRANCH; THENCE RUNNING SAME DIRECTION UP THE POINT A STRAIGHT LINE TO A LARGE LOCUST TREE IN THE BENCH NEAR A BLUFF; THENCE A STRAIGHT LINE UP OVER THE BLUFF TO A SMALL MARKED BLACK OAK; THENCE SAME DIRECTION TO A SMALL MARKED WHITE OAK; THENCE A STRAIGHT LINE UP THE FLAT POINT TO A LOCUST TREE MARKED; THENCE A STRAIGHT LINE TO A STAKE AND WILD CHERRY TREE ON TOP OF THE RIDGE TO THE LAND LINE OF REBECCA EDWARDS; THENCE WITH THE DIVIDING RIDGE A NORTHERN DIRECTION AND RUNNING WITH THE OLD LAND LINE OF W.H. CHAMBERS DEEDS AND ADJOINING LAND OWNERS DEEDS AND WHERE THE LINES ARE NOW ESTABLISHED TO THE PLACE OF BEGINNING SO AS TO EXCLUDE THE PIECE OF LAND SET A SIDE FOR CARRIE WELLS.

THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY.  
IT IS THE RESULT OF COMPILATION OF RECORD INFORMATION AND LOCATION  
OF AVAILABLE MONUMENTATION.



ANDREW G. PLANET, PLS #3912

2-24-2014  
DATE



ALSO:

A CERTAIN TRACT OR PARCEL OF LAND LYING AND BEING IN WOLFE COUNTY, KENTUCKY, AND ON THE WATERS OF THE BUCHANAN FORK OF STILLWATER CREEK AND BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT A MARKED STEEL POST AT THE CORNER OF WILDA PROFITT LAND LINE AND NORTH SIDE OF BUCHANAN FORK COUNTY ROAD; THENCE RUNNING IN A STRAIGHT LINE NORTH TO A LARGE MARKED BEECH TREE STANDING ON TOP OF THE RIDGE; THENCE GOING EAST ALONG THE PROFITT LAND LINE TO THE CORNER OF BILLYE ADAMS AND WILDA PROFITT LAND LINES; THENCE CONTINUING ALONG THE ADAMS LINE TO A MARKED BIG TWIN HICKORY TREE; THENCE IN A NORTHWESTERLY DIRECTION OVER THE HILL TO A MARKED TREE AT THE FORKS OF ROCKHOUSE STREAM; THENCE TURNING WEST AND RUNNING WITH THE STREAM TO THE INTERSECTION OF ROCKHOUSE STREAM AND STILLHOUSE CREEK; THENCE TURNING SOUTH WITH STILLHOUSE CREEK TO BUCHANAN FORK COUNTY ROAD; THENCE GOING EAST ALONG THE NORTH OF THE COUNTY ROAD TO THE PLACE OF BEGINNING.

SAVE AND EXCEPT:

BEGINNING AT A SASSAFRAS TREE ON THE NORTH SIDE OF THE COUNTY ROAD LEADING UP THE BUCHANAN FORK OF STILLWATER CREEK, THENCE RUNNING A NORTHWARD DIRECTION UP THE HILL A STRAIGHT LINE TO A BEECH TREE ON THE CENTER OF THE POINT; THENCE RUNNING A NORTHEASTWARD DIRECTION WITH THE DIVIDE OF THE RIDGE TO CARRIE WELLS' LINE; THENCE A SOUTHERN DIRECTION AND WITH CARRIE WELLS' LINE DOWN THE HILL TO THE COUNTY ROAD TO A SET STONE; THENCE WITH SAID COUNTY ROAD A WESTERN DIRECTION TO A SASSAFRAS, THE PLACE OF BEGINNING, AND CONTAINING 15 ACRES, MORE OR LESS.  
TAX I.D. NUMBER: 081-00-00-002.01

SCHEDULE B - II ITEMS:

Commitment 01-13138954-01T  
Commitment Effective Date: 01/17/2014 at 7:00 AM

Items 1-5 are NOT survey related.

(6) RIGHT OF WAY IN FAVOR OF WOLFE COUNTY AND STATE OF KENTUCKY, RECORDED 05/10/1950 IN BOOK 58, PAGE 54 OF WOLFE COUNTY RECORDS.  
[Wholly within and establishes the Right-of-Way of Buchanan Fork Road. Does not effect Subject Parcel.]

(7) OIL AND GAS LEASE IN FAVOR OF CARL BURNETT, RECORDED ON 03/02/1972 IN LEASE BOOK 13, PAGE 339 OF WOLFE COUNTY RECORDS.  
[Document illegible. Appears to be blanket style lease. Unable to make any comment/determination as to effect.]

(8) OIL AND GAS LEASE IN FAVOR OF CARL BURNETT, WILLIAM C. ADAMS AND ALBERT CHAMBERS RECORDED ON 05/21/1973 IN LEASE BOOK 14, PAGE 64 OF WOLFE COUNTY RECORDS.  
[Document illegible. Appears to be blanket style lease. Unable to make any comment/determination as to effect.]

(9) COAL DEED IN FAVOR OF COLLINS AND MAY MINING CO, RECORDED 07/25/1977 IN MISC BOOK 7, PAGE 49 OF WOLFE COUNTY RECORDS.  
[Appears to be blanket style lease. Description sites a document not provided. Unable to make any comment/determination as to effect.]

(10) OIL AND GAS LEASE IN FAVOR OF C.J. HENDERSON RECORDED ON 10/04/1977 IN LEASE BOOK 17, PAGE 158 OF WOLFE COUNTY RECORDS.  
[Document illegible. Appears to be blanket style lease. Unable to make any comment/determination as to effect.]

(11) 12' ACCESS EASEMENT AS CONTAINED IN DEED RECORDED ON 06/12/1998 IN DEED BOOK 101, PAGE 762 OF WOLFE COUNTY RECORDS.  
[This is an exception of the 12-foot access road NOT an easement. Access road is not part of lands conveyed to Billye C. Adams, effects propose access easement.]



NO	DATE	BY	AGP
1	01-31-14		
2			
3			
4			
5			
6			

AT&T SITE # 143953  
ATC SITE # 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON,  
KENTUCKY, 41301

DRAWN BY:	PRE
CHECKED BY:	AGP
DATE:	11/21/2013
PROJECT #:	1008-468

SHEET TITLE  
LEGAL  
DESCRIPTION

SHEET NUMBER  
S4



CIVIL ENGINEERING SURVEYING  
257 SOUTH COURT ST. SUITE B  
MEDINA, OHIO (330)723-1828  
FAX (330)723-6637

**LEGAL DESCRIPTIONS:**

Legal Description for a 100' X 100' Lease Area  
Project No. 1008-468  
January 31, 2014

Situated in the County of Wolfe and in the State of Kentucky, also known as being a certain tract or parcel of land lying and being in Wolfe County, Kentucky and situated on Buchanan Fork of Stillwater Creek and being part of lands 2/3 conveyed to Billye C. Adams by deed dated June 12, 1998 as recorded in Deed Book 101, Page 762 of Wolfe County Records further bounded and described as follows:

Commencing at the Southwest corner of lands conveyed to Rebekaha Profitt by deed recorded in Deed Book 126, Page 212 of Wolfe County Records;

Thence, bearing North 71°32'31" West, a distance of 452.91 feet to an iron pin set and the TRUE PLACE OF BEGINNING of the Lease Area herein described;

Thence, bearing South 70°50'50" West, a distance of 100.00 feet to an iron pin set;

Thence at a right angle, bearing North 19°09'10" West, a distance of 100.00 feet to an iron pin set;

Thence at a right angle, bearing North 70°50'50" East, a distance of 100.00 feet to an iron pin set;

Thence at a right angle, bearing South 19°09'10" East, a distance of 100.00 feet to an iron pin set and the TRUE PLACE OF BEGINNING, containing 0.2296 acres of land, more or less but subject to all legal highways and all covenants and agreements of record.

Bearings are based on an assumed meridian and are used herein to indicate angles only.

This legal description was prepared based on a survey under the supervision of Andrew G. Planet, PLS #3912 by Rolling & Hocevar, Inc. in January 2014.

Legal Description for a 40-foot Utility Easement  
Project No. 1008-468  
January 31, 2014

Situated in the County of Wolfe and in the State of Kentucky, also known as being a certain tract or parcel of land lying and being in Wolfe County, Kentucky and situated on Buchanan Fork of Stillwater Creek and being part of lands 2/3 conveyed to Billye C. Adams by deed dated June 12, 1998 as recorded in Deed Book 101, Page 762 of Wolfe County Records further bounded and described as follows:

Commencing at the Southwest corner of lands conveyed to Rebekaha Profitt by deed recorded in Deed Book 126, Page 212 of Wolfe County Records;

Thence, bearing North 71°32'31" West, a distance of 452.91 feet to an iron pin set at the Southeast corner of an ATC Lease area;

Thence along the Southern line of said Lease Area, bearing South 70°50'50" West, a distance of 66.05 feet to a point thereon and the TRUE PLACE OF BEGINNING of the Easement Area herein described;

Thence, bearing South 34°44'56" West, a distance of 194.82 feet to a point;

Thence, bearing South 19°37'20" East, a distance of 14.59 feet to a point on the Northern line of Buchanan Fork Road;

Thence along the Northern line of Buchanan Fork Road, bearing South 81°01'18" West, a distance of 17.22 feet to an angle point therein;

Thence continuing along the Northern line of Buchanan Fork Road, bearing South 74°05'47" West, a distance of 23.13 feet to a point thereon;

Thence, bearing North 19°37'20" West, a distance of 30.46 feet to a point;

Thence, bearing North 34°44'56" East, a distance of 202.52 feet to a point on the Western line of aforesaid ATC Lease Area;

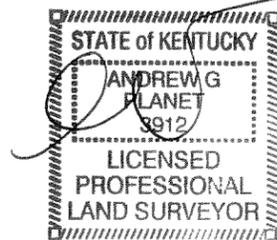
Thence along the Eastern line of said Lease Area, bearing South 19°09'10" East, a distance of 24.75 feet to an iron pin set at the Southwest corner of said Lease Area;

Thence along the Southern line of said Lease Area, bearing North 70°50'50" East, a distance of 33.95 feet to a point thereon and the TRUE PLACE OF BEGINNING, containing 0.1929 acres of land, more or less but subject to all legal highways and all covenants and agreements of record.

Bearings are based on an assumed meridian and are used herein to indicate angles only.

This legal description was prepared based on a survey under the supervision of Andrew G. Planet, PLS #3912 by Rolling & Hocevar, Inc. in January 2014.

THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY. IT IS THE RESULT OF COMPILATION OF RECORD INFORMATION AND LOCATION OF AVAILABLE MONUMENTATION.



*[Signature]*  
ANDREW G. PLANET, PLS #3912  
2-24-2014  
DATE



REVISIONS		BY	DATE	AGP
NO	DESCRIPTION			
1	UPDATE PER COMMENTS		01-31-14	
2				
3				
4				
5				
6				

AT&T SITE # 143953  
ATC SITE # 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON,  
KENTUCKY, 41301

DRAWN BY:	PRE
CHECKED BY:	AGP
DATE:	11/21/2013
PROJECT #:	1008-468

SHEET TITLE  
**LEGAL DESCRIPTION**

SHEET NUMBER  
**S5**



**LEGAL DESCRIPTIONS (continued):**

Legal Description for a 20-foot Access Easement  
Project No. 1008-468  
January 31, 2014

Situated in the County of Wolfe and in the State of Kentucky, also known as being a certain tract or parcel of land lying and being in Wolfe County, Kentucky and situated on Buchanan Fork of Stillwater Creek and being part of lands 2/3 conveyed to Bilye C. Adams by deed dated June 12, 1998 as recorded in Deed Book 101, Page 762 of Wolfe County Records and part of a twelve (12) foot access road to now or former Albert Chambers property as established by a previous land owners as excepted from said lands of Adams further bounded and described as follows:

Commencing at the Southwest corner of lands conveyed to Rebekaha Profitt by deed recorded in Deed Book 126, Page 212 of Wolfe County Records;

Thence, bearing North 71°32'31" West, a distance of 452.91 feet to an iron pin set at the Southeast corner of an ATC Lease area and the TRUE PLACE OF BEGINNING of the Easement Area herein described;

Thence along the Southern projection of the Eastern line of said Lease Area, bearing South 19°09'10" East, a distance of 20.00 feet to a point;

Thence at a right angle and parallel to the Southern line of said Lease Area, bearing South 70°50'50" West, a distance of 128.25 feet to a point;

Thence along a tangent curve to the right with a radius of 110.00 feet, a tangent length of 50.43 feet, the chord of which bears North 84°31'27" West for a distance of 91.68 feet, along said arc for a distance of 94.57 feet to a point;

Thence, bearing North 59°53'43" West, a distance of 7.12 feet to a point;

Thence along a tangent curve to the right with a radius of 60.00 feet, a tangent length of 36.02 feet, the chord of which bears North 28°54'55" West for a distance of 61.77 feet, along said arc for a distance of 64.88 feet to a point;

Thence, bearing North 02°03'52" East, a distance of 53.26 feet to a point;

Thence, bearing North 15°52'45" East, a distance of 79.61 feet to a point;

Thence along a tangent curve to the left with a radius of 5.00 feet, a tangent length of 4.12 feet, the chord of which bears North 23°37'21" West for a distance of 6.36 feet, along said arc for a distance of 6.89 feet to a point;

Thence, bearing North 63°07'27" West, a distance of 2.76 feet to a point;

Thence along a tangent curve to the left with a radius of 5.00 feet, a tangent length of 5.00 feet, the chord of which bears South 71°52'33" West for a distance of 7.07 feet, along said arc for a distance of 7.85 feet to a point;

Thence, bearing South 26°52'33" West, a distance of 31.62 feet to a point;

Thence along a tangent curve to the left with a radius of 180.00 feet, a tangent length of 54.03 feet, the chord of which bears South 10°10'03" West for a distance of 103.50 feet, along said arc for a distance of 104.98 feet to a point;

Thence, bearing South 06°32'26" East, a distance of 48.70 feet to a point;

Thence, bearing South 15°57'03" East, a distance of 88.90 feet to a point;

Thence, bearing South 21°40'59" East, a distance of 84.79 feet to a point on the Northern line of Buchanan Fork Road;

Thence along the Northern line of Buchanan Fork Road, bearing South 74°05'47" West, a distance of 20.10 feet to a point thereon;

Thence, bearing North 21°40'59" West, a distance of 83.77 feet to a point;

Thence, bearing North 15°57'03" West, a distance of 91.54 feet to a point;

Thence, bearing North 06°32'26" West, a distance of 50.34 feet to a point;

Thence along a tangent curve to the right with a radius of 200.00 feet, a tangent length of 60.03 feet, the chord of which bears North 10°10'03" East for a distance of 115.00 feet, along said arc for a distance of 116.65 feet to a point;

Thence, bearing North 26°52'33" East, a distance of 31.62 feet to a point;

Thence along a tangent curve to the right with a radius of 25.00 feet, a tangent length of 25.00 feet, the chord of which bears North 71°52'33" East for a distance of 35.36 feet, along said arc for a distance of 39.27 feet to a point;

Thence, bearing South 63°07'27" East, a distance of 2.76 feet to a point;

Thence along a tangent curve to the right with a radius of 25.00 feet, a tangent length of 20.61 feet, the chord of which bears South 23°37'21" East for a distance of 31.81 feet, along said arc for a distance of 34.47 feet to a point;

Thence, bearing South 15°52'45" West, a distance of 77.19 feet to a point;

Thence, bearing South 02°03'52" West, a distance of 50.84 feet to a point;

Thence along a tangent curve to the left with a radius of 40.00 feet, a tangent length of 24.02 feet, the chord of which bears South 28°54'55" East for a distance of 41.18 feet, along said arc for a distance of 43.26 feet to a point;

Thence, bearing South 59°53'43" East, a distance of 7.12 feet to a point;

Thence along a tangent curve to the left with a radius of 90.00 feet, a tangent length of 41.26 feet, the chord of which bears South 84°31'27" East for a distance of 75.01 feet, along said arc for a distance of 77.37 feet to a point;

Thence co-linear to and along a projection of the Southern line of the aforesaid ATC Lease Area, bearing North 70°50'50" East, a distance of 8.25 feet to a point;

Thence at a right angle and parallel to the Western line of said Lease Area, bearing North 19°09'10" West, a distance of 20.00 feet to a point;

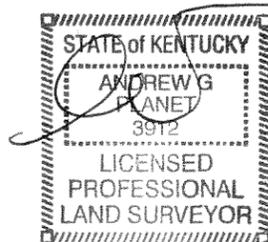
Thence at a right angle and parallel to the Southern line of said Lease Area, bearing North 70°50'50" East, a distance of 20.00 feet to a point on the Western line of said Lease Area;

Thence along Western line of said Lease Area, bearing South 19°09'10" East, a distance of 20.00 feet to an iron pin set at the Southwest corner of said Lease Area;

Thence along Southern line of said Lease Area, bearing North 70°50'50" East, a distance of 100.00 feet to an iron pin set at the Southeast corner of said Lease Area and the TRUE PLACE OF BEGINNING, containing 0.3854 acres of land, more or less but subject to all legal highways and all covenants and agreements of record.

Bearings are based on an assumed meridian and are used herein to indicate angles only.

This legal description was prepared based on a survey under the supervision of Andrew G. Planet, PLS #3912 by Rolling & Hocevar, Inc. in January 2014.



THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY.  
IT IS THE RESULT OF COMPILATION OF RECORD INFORMATION AND LOCATION  
OF AVAILABLE MONUMENTATION.

*[Signature]*  
ANDREW G. PLANET, PLS #3912

2-24-2014  
DATE



NO.	DESCRIPTION	DATE	BY	AGP	1	2	3	4	5	6
0										
1		01-31-14								
2										
3										
4										
5										
6										

AT&T SITE # 143953  
ATC SITE # 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON,  
KENTUCKY, 41301

DRAWN BY:	PRE
CHECKED BY:	AGP
DATE:	11/21/2013
PROJECT #:	1008-468

SHEET TITLE  
LEGAL DESCRIPTION

SHEET NUMBER  
S6

SITUATED IN WOLFE COUNTY, KENTUCKY, AND ON WATERS OF THE BUCHANAN FORK OF STILLWATER CREEK

P.N. 081-00-00-004.00  
 JOSEPH STANLEY PEYTON  
 DEED BOOK 135, PG. 330  
 08/09/2013  
 7231 WHISPERING OAK DR., SYLVANIA, OH, 43560

P.N. 081-00-00-002.01  
 BILLYE C. ADAMS - 2/3  
 9.15 ACRES ±  
 DEED BOOK 101, PG. 762  
 06/12/1998  
 P.O. BOX 517, CAMPTON, KY., 41301

P.N. 081-00-00-004.02  
 BILLYE C. ADAMS  
 DEED BOOK 84, PG. 703  
 P.O. BOX 517  
 CAMPTON, KY 41301

ADJOINING LAND OWNERS LISTED ARE ACCORDING TO THE RECORDS OF THE PROPERTY VALUATION ADMINISTRATOR AS FOUND AT THE WOLFE COUNTY PVA OFFICE. THIS INFORMATION WAS COMPILED ON 01-22-2014.

P.N. 081-00-00-003.01  
 REBEKAHA PROFFITT  
 DEED BOOK 126, PG. 212  
 797 BUCHANAN FORK ROAD, CAMPTON, KY., 41301

P.N. 070-00-00-028.01  
 CHRIS BRYANT  
 DEED BOOK 117, PG. 212  
 08/09/2004  
 5900 SOUTH KENTUCKY 15,  
 CAMPTON, KY., 41301

P.N. 070-00-00-028.01  
 CHRIS BRYANT  
 DEED BOOK 117, PG. 212  
 08/09/2004  
 5900 SOUTH KENTUCKY 15,  
 CAMPTON, KY., 41301

P.N. 081-00-00-002.00  
 ALBERT CLAY CHAMBERS  
 DEED BOOK 101, PG. 747  
 06/12/1998  
 255 TOWNSEND-DRAKE ROAD  
 CAMPTON, KY., 41301



**TERRA**  
 CONSULTING GROUP, LTD.  
 600 Busse Highway  
 Park Ridge, IL 60068  
 Ph: 847/698-6400  
 Fax: 847/698-6401

NO.	DESCRIPTION	DATE	BY
A	ISSUED FOR ZONING	01/30/14	JLR
B	REVISED PER CLIENT COMMENTS	02/24/14	JLR

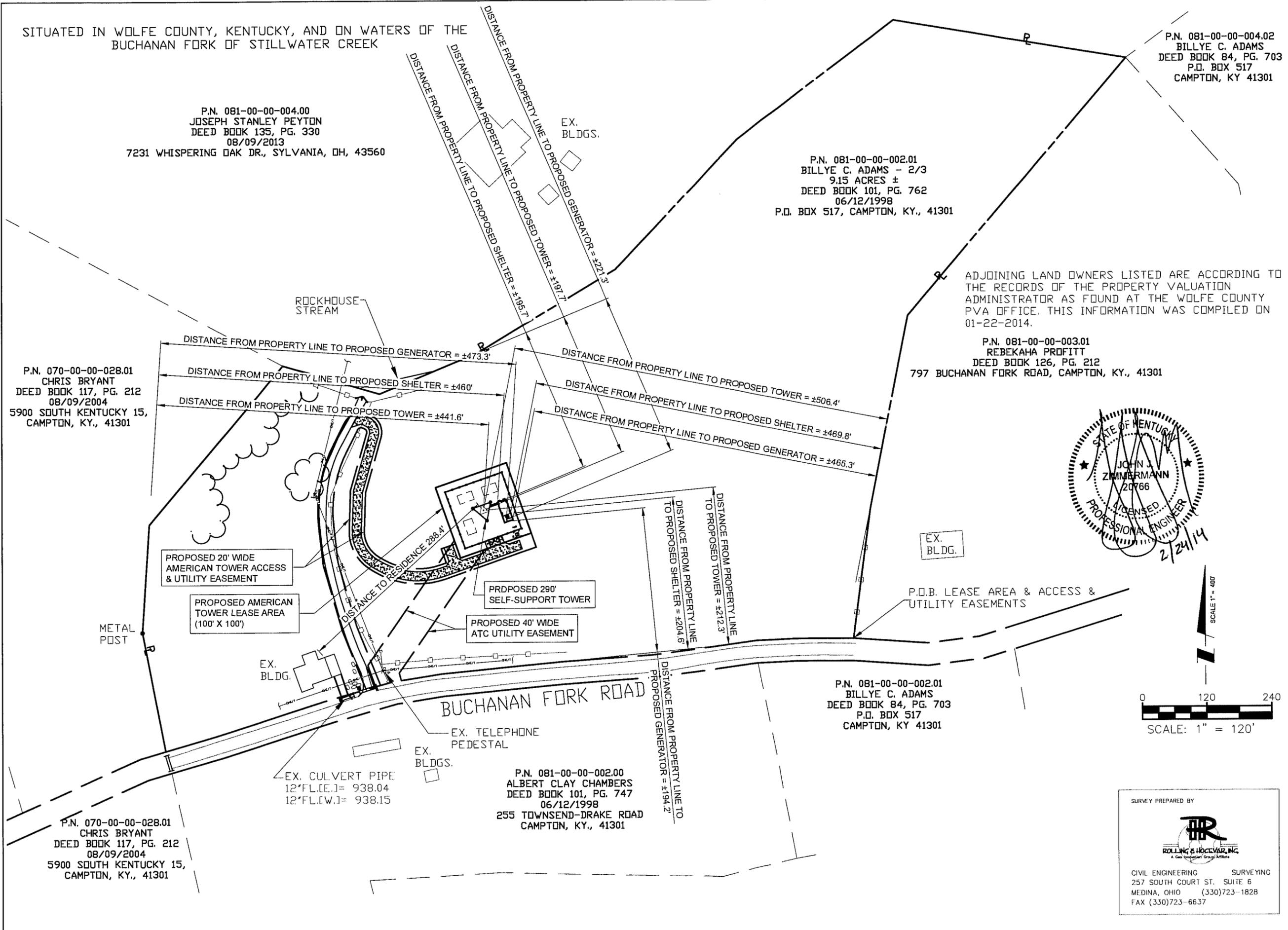
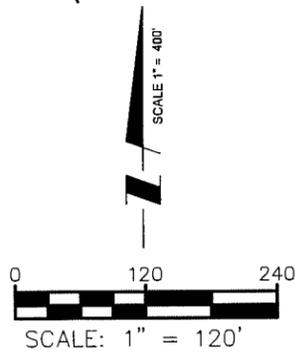
AT&T# 143953  
 ATC# 281338  
 HAZEL GREEN  
 84 GARRY SPARKS DRIVE  
 CAMPTON, KY 41301

DRAWN BY: JLR  
 CHECKED BY: TAZ  
 DATE: 01/10/14  
 PROJECT #: 70-004

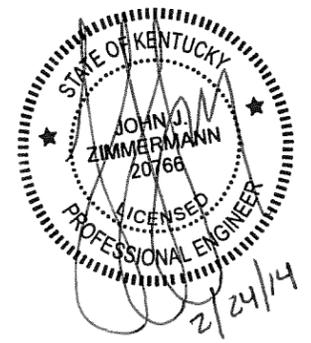
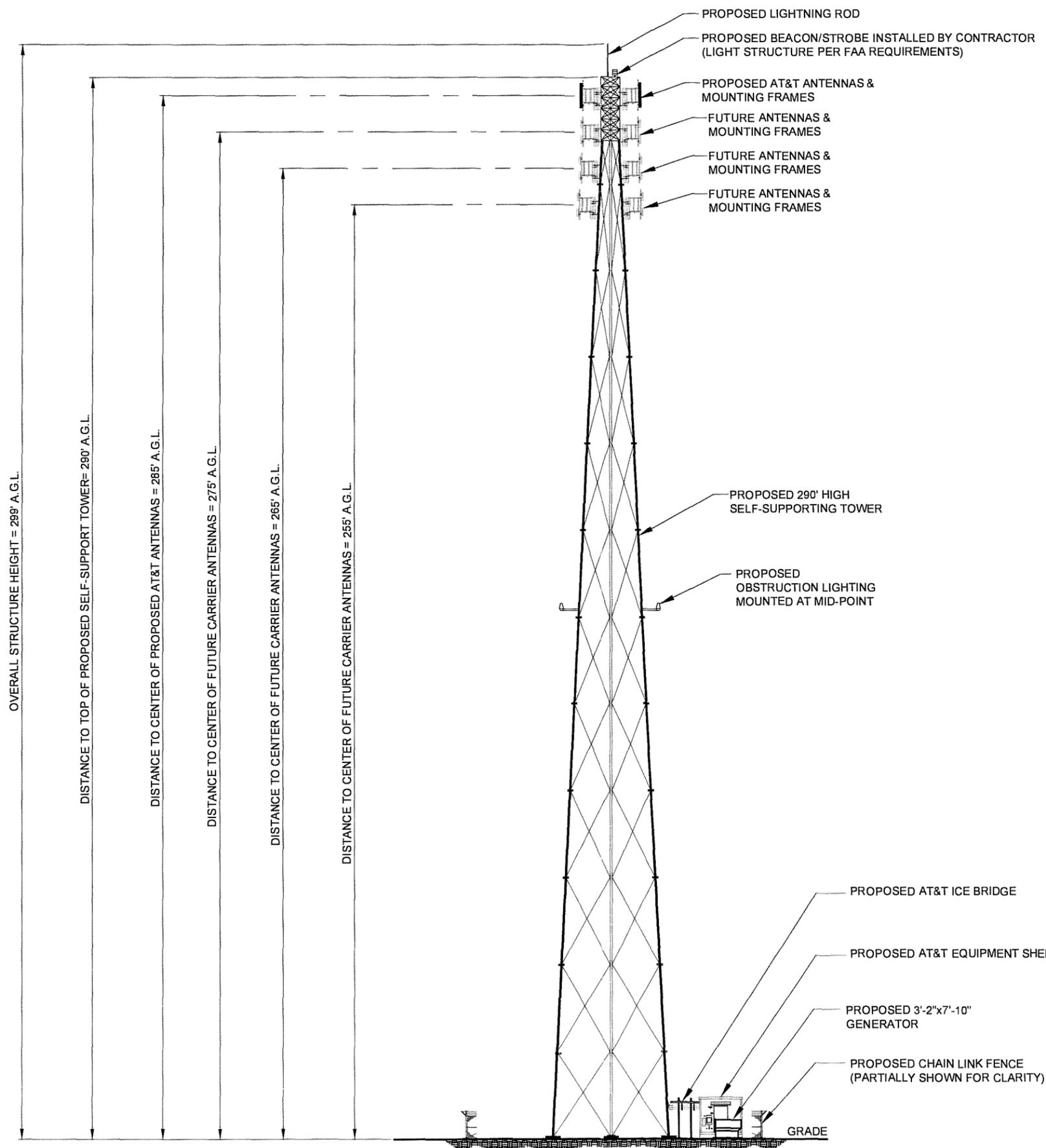
SHEET TITLE  
**LOCATION PLAN**

SHEET NUMBER  
**Z-1**

SURVEY PREPARED BY  
  
**ROLLING & HOCKVAR, INC.**  
 A Civil Engineering Group Affiliates  
 CIVIL ENGINEERING SURVEYING  
 257 SOUTH COURT ST. SUITE 6  
 MEDINA, OHIO (330)723-1828  
 FAX (330)723-6637







**1** SITE ELEVATION  
 SCALE: 3/8" = 1'-0"



**TERRA**  
 CONSULTING GROUP, LTD.  
 600 Busse Highway  
 Park Ridge, IL 60068  
 Ph: 847/698-6400  
 Fax: 847/698-6401

REVISIONS		DATE	BY
NO.	DESCRIPTION		
A	ISSUED FOR ZONING	01/30/14	JLR
B	REVISED PER CLIENT COMMENTS	02/24/14	JLR

AT&T# 143953  
 ATC# 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
 CAMPTON, KY 41301

DRAWN BY	JLR
CHECKED BY	TAZ
DATE	01/10/14
PROJECT #	70-004

SHEET TITLE  
 SITE ELEVATION

SHEET NUMBER  
**Z-3**



**EXHIBIT C**  
**TOWER AND FOUNDATION DESIGN**



11/7/13

Dear Commissioners:

The construction manager for the proposed new communications facility will be Ron Rohr. His contact information is 740-438-9710. Ron Rohr has been involved in the construction of communications facilities for over 17 years, and general construction for over 20 years.

Some of the notable and most recent projects are:

2010 - Present

American Tower Corporation – Construction Manager

- Successfully led the construction team on the 140 site, Southern Ohio Launch while maintaining a respectful and professional demeanor under difficult circumstances.
- Played a key part in the collaborating efforts to build the scope of work, pricing matrix, and close out documentation on several projects.
- Have cultivated a pool of responsible, dependable and quality driven GC's to work on ATC projects throughout the Midwest and Northeast Region.

1990 – 2009

Superior Concepts – Owner

- Contract Project and Construction Manager to multiple wireless carriers. Work included, but not limited to, permitting all the way through to final construction close outs. Also managed several DAS projects in shopping malls and residential areas.
- Equipment operator, cell site super intendant, regional foreman, etc...
- Carpentry, Construction and Consulting

Accreditations and Licenses

OSHA Electrical Safety  
Vallen Safety Knowledge Systems / Fall Protection  
Builders Exchange of Central Ohio / Estimating & Bid Preparation  
Amphenol Wireless Cable Connector Training  
Commscope Connector Training  
Andrew Connector Training  
Current OSHA Safety Training  
Current Haz Com Training  
FAA/FCC Training

Thank you,

Ron Rohr  
Construction Manager



**John J. Zimmermann, P.E. – President, Terra Consulting Group, Ltd.**

John J. Zimmermann has a 25-year career in the practice of land development engineering and civil infrastructure design. He founded Terra Consulting Group, Ltd. in 1994. Over his career Mr. Zimmermann has been involved with various aspects of land development on numerous engineering projects for the Illinois Department of Transportation, Communications & Utility companies, Municipalities, Park Districts, and the Development community. Mr. Zimmermann specializes in site planning and stormwater management applications as they relate to site development, transportation works and utility extensions.

Mr. Zimmermann is a 1987 graduate of Marquette University graduating with a Bachelor of Science degree. He is a registered Professional Engineer in 26 states.

Mr. Zimmermann has been affiliated with the American Society of Civil Engineers (ASCE) for over 30 years. He has served as President of the Illinois Section of ASCE and past chair of the Urban Planning and Development Group.



**Mike Stevens, Telecommunications Project Manager based in Cleveland Ohio, joined Terra Consulting Group in 2009. Mike has a 35 years experience in the Telephony, Wireless & Wireline telecommunications industry. Mike brings Terra valuable experience in facility construction and operation during his tenure at GTE, GTE Moblinet, Alltel and T-Mobile. Mike's primary responsibility is to manage Terra's operations in Ohio, Western Pennsylvania and Northern Kentucky. Mike will also be involved in site design and layout, sub-consultant operations, and permitting for Terra's telecommunication clients.**



### **Thomas A. Zimmermann, P.E.**

Thomas A. Zimmermann has been involved with the practice of land development engineering and civil infrastructure design since 1990. Mr. Zimmermann has over 16 years of experience in telecommunications infrastructure design. He joined Terra Consulting Group in 1995 and is currently the Vice President of Operations.

Before joining Terra Consulting Group in 1995, he worked in the field of environmental engineering with Dames & Moore. At Dames & Moore, he was performing environmental Phase I, Phase II reports and field investigations. He was involved with the environmental remediation of soil and groundwater due to leaking underground storage tanks, landfills, and contaminated industrial waste.

At Terra Consulting Group, Mr. Zimmermann has planned and designed various aspects of residential, commercial and industrial developments. He has been involved with feasibility studies, roadway design, site planning and layout, stormwater management and detention system design, storm sewer design, sanitary sewer design and watermain design.

In addition to traditional land development engineering, Mr. Zimmermann has been involved with over 4,000 wireless and broadcast telecommunication projects. He provides the necessary infrastructure design to zone and permit the telecommunications projects.

Mr. Zimmermann received his Bachelor Degree in Science in 1993 and Master's Degree in 1995 from the University of Illinois Urbana-Champaign. He has been affiliated with the American Society of Civil Engineers for 20 years. He is a registered Professional Engineer in Illinois, Michigan and Wisconsin with a license pending reciprocity review in Pennsylvania.

# RAPHAEL I. MOHAMED, MBA, PE, PEEng

6921 Palaver Lane  
Cary, NC 27519

(919) 244-5207 (Mobile)

raphael.mohamed@americantower.com

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## Profile Summary

Proven telecommunications manager with strong engineering and analytical skills. Certified Professional Engineer who applies top-tier graduate business school education to achieve goals for high-growth organizations. Yellow belt Six Sigma dedicated to continuous learning. Seeking a telecommunications strategic implementation position that will leverage my formal engineering and management education and my extensive wireless industry experience in an S&P 500 company.

Holds American, Canadian and EU passports. Fluent in English and French. Conversational Spanish and Portuguese.

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## Selected Accomplishments

- Led high-performing engineering team that produced over 17,000 engineering deliverables and achieved departmental revenue of \$30M+, operating profit margins in excess of 80%, and industry-leading cycle times for multi-year periods.
- Recruited and hired 15 engineers in 2 year period.
- Recipient of numerous individual and team recognition rewards including the All American, Hire Good People & Empower Them, Engineering Services Employee of the Quarter, Engineer of the Quarter, and Structural Engineering Team and Individual Awards.
- Created a guy anchor inspection business plan that mitigated tower portfolio risk and contributed to having no engineering-related tower collapses in over 12 years.
- Promoted 4 times in 12 years earning increased responsibility with each transition.
- Committee Sub-Chair for TIA-222-H: Plans, Assembly Tolerances, Marking, Maintenance and Condition Assessment

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## Professional Experience

### AMERICAN TOWER CORPORATION (S&P 500 Company), Cary, NC

#### Engineering Manager, US Tower Division

2005-Present

- Managed up to 27 structural /electrical engineers responsible for the safety and integrity of a US-based portfolio of  $\pm$  24,000 telecommunications towers.
- Attested to quality of engineering work by stamping engineering documents (PE letters, structural analyses, modification designs, jurisdictional letters, A&E drawings).
- Developed new relationships and maintained existing relationships with internal customers, major wireless providers (AT&T, Verizon, T-Mobile, Sprint/Nextel), construction field offices, engineering consultants and governmental municipal agencies.
- Led training initiatives and engineering process recommendations for international offices including Brazil, South Africa, Uganda, Ghana, India and Mexico. Assisted with structural analysis and modification designs for African and Latin American markets.
- Served as company subject matter expert at jurisdictional zoning meetings and industry conferences.

#### Senior Design Engineer

2004-2005

#### Senior Project Engineer

2002-2004

#### Project Engineer

2001-2002

#### Project Administrator

2000-2001

### MORRISON HERSHFIELD ENGINEERING CONSULTING, Atlanta, GA

#### Project Consultant, Telecommunications Division

2000-2001

- Served as an internal consultant for SpectraSite Communications that brought in over \$3M of revenue.

**MORRISON HERSHFIELD ENGINEERING CONSULTING, Toronto, ON, Canada**  
**Project Engineer, Structural Subdivision of Transportation Department** **1998-2000**

- Awarded new design proposals for over \$15M in construction contracts through prepared proposals to government agencies.
- Prevented budget overages and avoided delay in scheduling for completion of \$2M bridge rehabilitation project through on-site supervision of construction.
- Conducted structural site condition surveys including AutoCAD drawings of required remediation.

**HUANG & ASSOCIATES GEOTECHNICAL CONSULTING, Markham, ON, Canada**  
**Geotechnical Engineer** **1997**

- Provided general quality control on residential & commercial sites involving concrete/soils testing.
- Surveyed borehole locations.
- Conducted laboratory testing of soils (e.g. proctor/grading/moisture).

**BRISBIN BROOK BEYNON ARCHITECTS, Toronto, ON, Canada**  
**Co-op Student** **1993**

- Produced AutoCAD drawings for architects.
- Created computer-animated walkthroughs of models using 3D Studio.

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### **Education**

**DUKE UNIVERSITY, The Fuqua School of Business, Durham, NC**

Master of Business Administration. 2008. GPA: 3.83/4.00.

Relevant courses include Strategy, Managerial Effectiveness, Leadership, Managerial Accounting, and Operations.

**UNIVERSITY OF TORONTO, Ontario, Canada**

Bachelor of Applied Science, Civil Engineering. 1998. Honors.

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### **Certification**

**PROFESSIONAL ENGINEER DESIGNATION:** Active Licensure in 44 States and 1 Canadian Province

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### **Professional Development**

**Six Sigma Process Excellence Program:** Yellow Belt

**Leadership Courses:** Harvard Mentor Management Program, Center for Creative Leadership, MIT Managing Technical Professionals, American Management Association, Duke Managerial Effectiveness & Leadership and Development

**Professional Engineering Development Hours:** 15+ Hours Completed Annually

**Professional Society Memberships:** TIA/EIA Committee, National Council of Examiner for Engineers and Surveyors, American and Canadian Society of Civil Engineers, American Society of Civil Engineers, National Society of Professional Engineers, North Carolina Structural Engineers Association, International Association of Spatial Structures, American Management Association



**GRAVES & GRAVES CONSTRUCTION COMPANY, INC.**

*General Contractors*

POST OFFICE BOX 370 / PARSONS, TENNESSEE 38363  
TELEPHONE (731)847-6391

November 6, 2013

RE:

Dear Commissioners:

The General Contractor for the proposed new communications facility will be Graves and Graves Construction Company INC. Graves and Graves contact information is 1267 West Main Street; Parsons, TN 38363, Contact persons would be either Jon Graves or Kent Hamm and they can both be reached at (731)-847-6391. Graves and Graves Construction Company has been involved with construction of communication sites for over 30 years and a listing of recent job experience is attached.

Thank you,

  
Jon Graves President

**Graves and Graves Construction Co., INC****Construction Experience List**

Name of Project	Owner's Name	Contract Amount	Completion Date
<b>Mt. Jackson VA</b>	Verizon Business	526,008.00	10/19/2011
<b>Carson, MS</b>	Crown Castle	190,795.00	06/30/2011
<b>Gismonda, AR</b>	Verizon Wireless	192,917.00	12/07/2011
<b>Danzler</b>	American Tower	202,185.00	07/09/2012
<b>Lafayette Springs</b>	American Tower	204,536.00	06/29/2012
<b>Kimberlin Heights</b>	American Tower	206,110.00	09/27/2012
<b>Amity AR</b>	Verizon Wireless	192,034.00	08/08/2013
<b>Fisher Rd Paducah Ky</b>	American Tower	154,260.00	09/17/2013
<b>Newman KY</b>	American Tower	137,512.00	08/14/2013
<b>East Tallassee</b>	American Tower	145,791.00	05/23/2013



December 11, 2013

American Tower Corp.

Attn: Mr. Ron Rohr

SUBJECT: Valmont File #240568 Model V-31.0 x 290' Self Supporting Tower  
Site: #281338 Hazel Green – Campton, KY

Thank you for your inquiry concerning tower design codes and practices as they relate to your requested tower designs.

Valmont Structures has been designing and building guyed and self-supporting towers and monopoles since the early 1950's. During this time, we have sold thousands of towers ranging in height from as little as 50' high to in excess of 1400'. These towers were individually engineered to accommodate the loading requirements imparted by the design wind speed, ice considerations, antenna loading, and other factors dictated by the national code requirements existing at the time the tower was built.

The present National Tower code, the TIA-222-G, represents the latest refinement of specific minimum requirements for tower engineers and manufacturers to follow to help assure that the tower structure and its foundation are designed to meet the most realistic conditions for local weather while assuring that the tower is designed to stringent factors of safety.

The TIA-222-G code incorporates an escalating wind factor based on tower height. If 90 MPH 3 second gust is the basic design wind speed at the 10 meter height, then per the specification, this speed is then increased in stages up the tower. "Meeting the code" implies that the design will have all of the code requirements for safety factors intact at the wind speed specified. Thus, the ultimate survival speed would be considerably higher.

While failure is extremely rare in any kind of tower, it is especially so for self supported towers and monopoles. In fact, only if a tower or monopole were subjected to a direct hit from a tornado or the severest of hurricanes would failure be predicted, and then usually only if hit by flying debris.

We are aware of only a very few documented instances of a self supporting tower or monopole failure. Self supporting towers and monopoles can be designed such that the most common mode of failure is in the upper middle region of the tower, with the upper portion of the tower remaining connected and "bending and bowing over" against the base of the tower or pole. The fact that the wind is normally greater on the upper portion of the structure contributes to the likelihood of this type of failure.



Communications Division, Valmont Industries, Inc.

1545 Pidco Drive Plymouth, Indiana 46563-4005 USA

574-936-4221 Fax 574-936-6796 [www.valmont.com](http://www.valmont.com)



STRUCTURES

This particular Tower has a theoretical failure at the tower midpoint or above. The predicted mode of wind induced failure would be a buckling of the tower legs above the tower midpoint with the top sections of the tower folding over on to the intact base sections. This would then affect a "zero fall zone" at ground level.

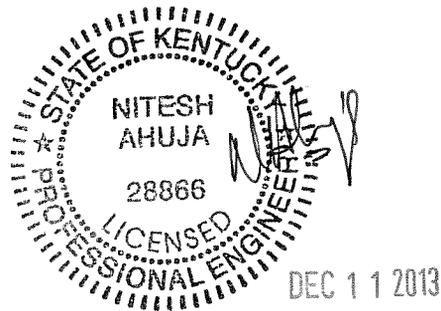
As Senior Project Engineer of the company and a registered P.E. in 20 states, I oversee all engineering and application of our towers. I am a graduate engineer from Auburn University and work in collaboration with other registered professional engineers on our staff.

Valmont Structures is an AISC approved shop. All Valmont Structures welders are AWS and CWB qualified. Mathematical and physical tests are performed routinely on tower sections and designs as required. Our total design, engineer and build process has been quality audited by our customers including public utilities, telephone companies, government agencies, and of course AISC.

We trust the above and the attached will be helpful to you. If you should need anything else, please let us know at your convenience.

Sincerely,

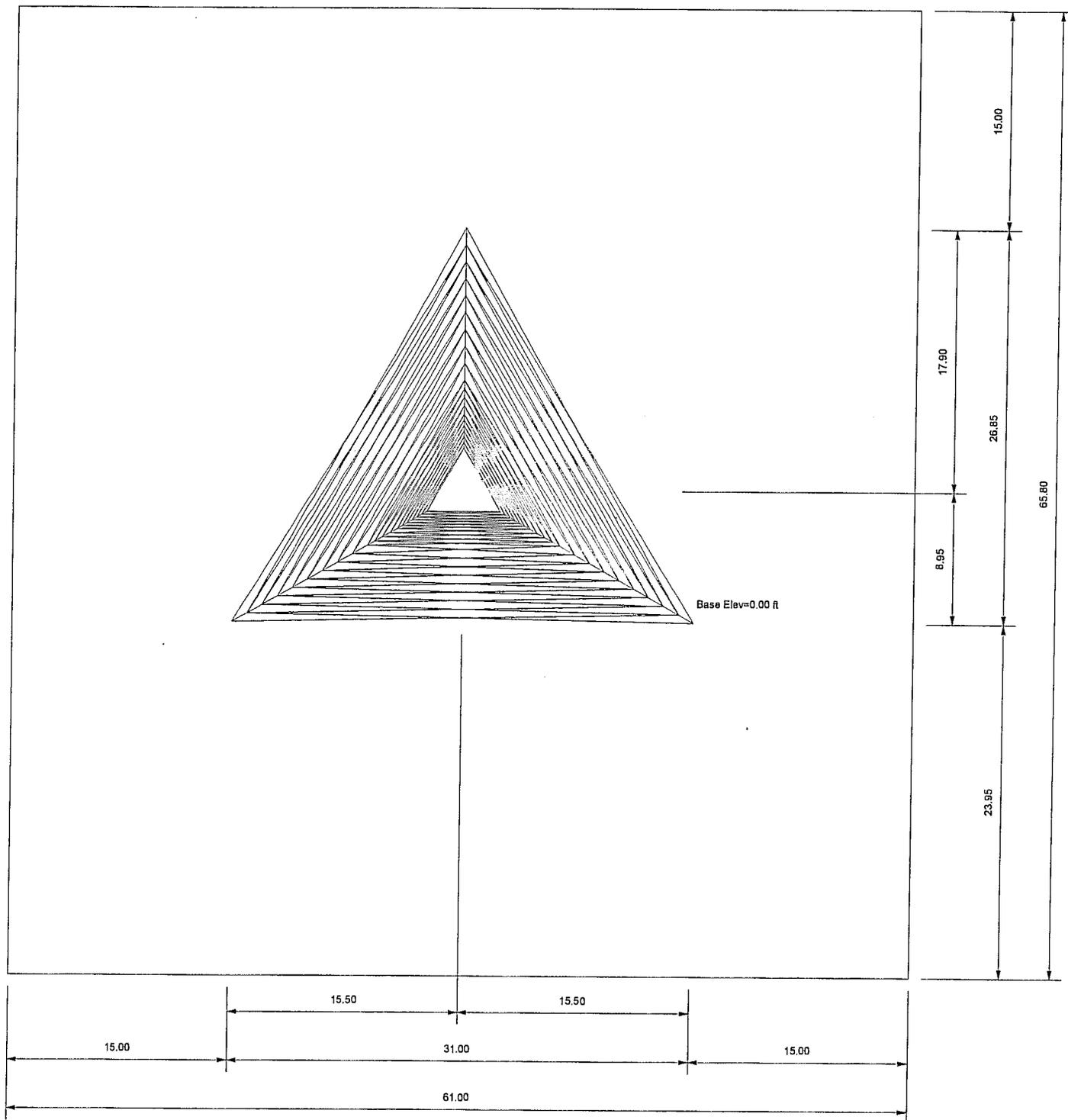
Nitesh Ahuja, P.E.  
Senior Project Engineer  
Ext. #5257



Communications Division, Valmont Industries, Inc.  
1545 Pidca Drive Plymouth, Indiana 46563-4005 USA  
574-936-4221 Fax 574-936-6796 www.valmont.com



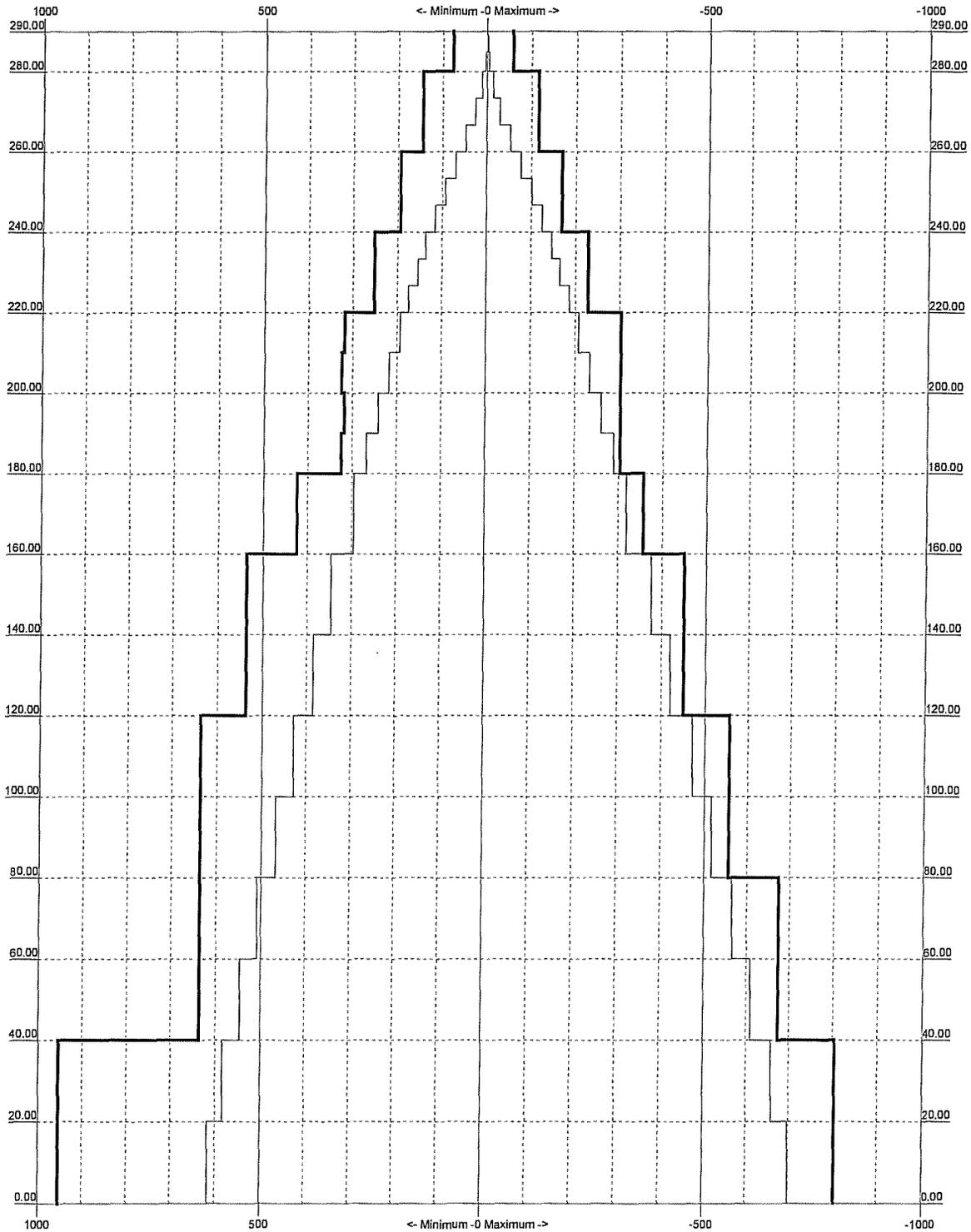
**Plot Plan**  
Total Area - 0.09 Acres



<b>Valmont</b> 1545 Pidco Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job: <b>240568</b>		
	Project: <b>V-31 x 290' - #281338 Hazel Green, KY</b>		
	Client: <b>American Tower Corp.</b>	Drawn by: <b>SKK</b>	App'd:
	Code: <b>TIA-222-G</b>	Date: <b>12/10/13</b>	Scale: <b>NTS</b>
	Path:		Dwg No.:

TIA-222-G - 90 mph/30 mph 0.7500 in Ice Exposure C

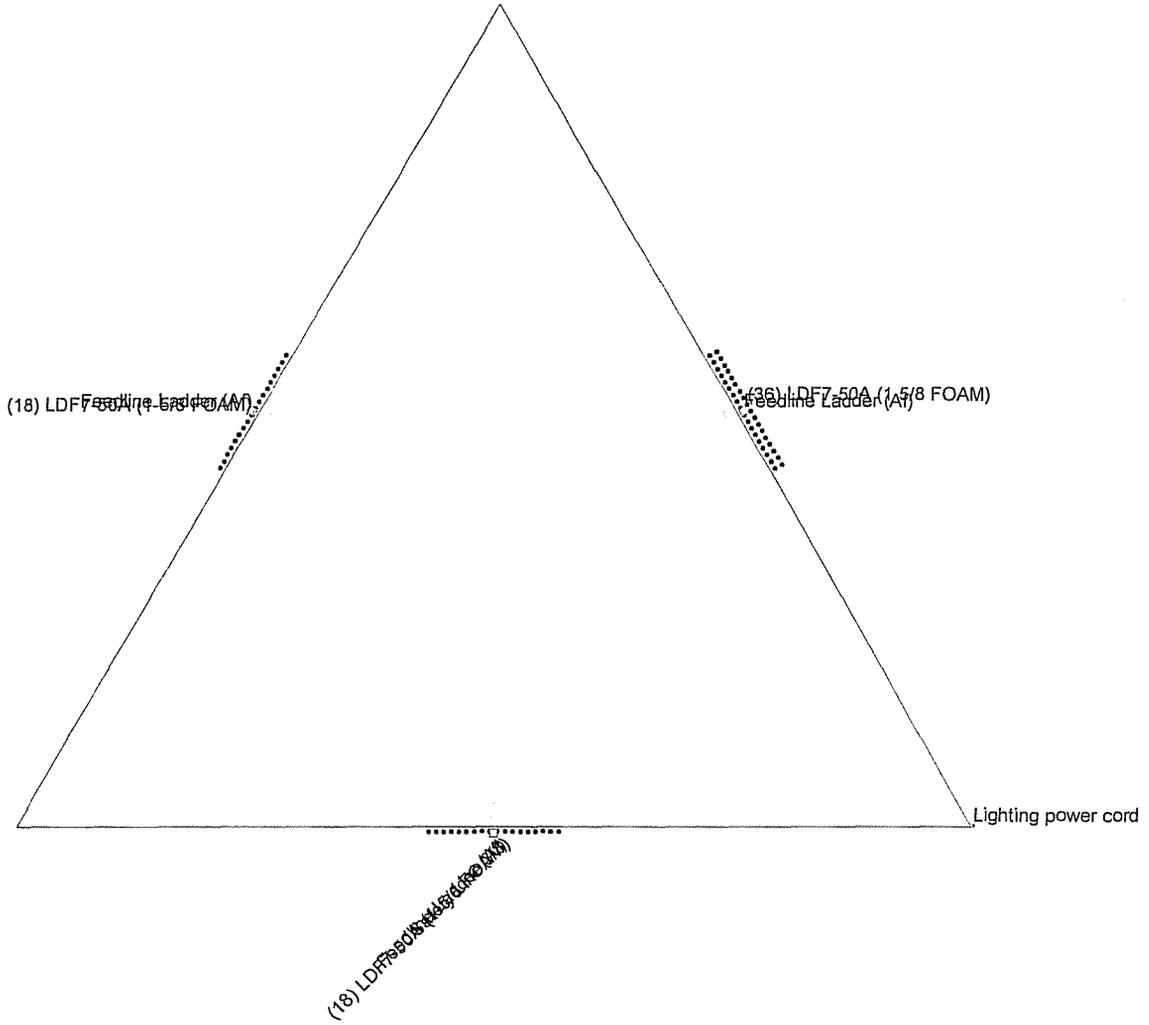
Leg Capacity ——— Leg Compression (K)



<b>Valmont</b> 1545 Pidco Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job: <b>240568</b>	Project: <b>V-31 x 290' - #281338 Hazel Green, KY</b>	
	Client: American Tower Corp.	Drawn by: SKK	App'd:
	Code: TIA-222-G	Date: 12/10/13	Scale: NTS
	Path:	Dwg No.:	

# Feedline Plan

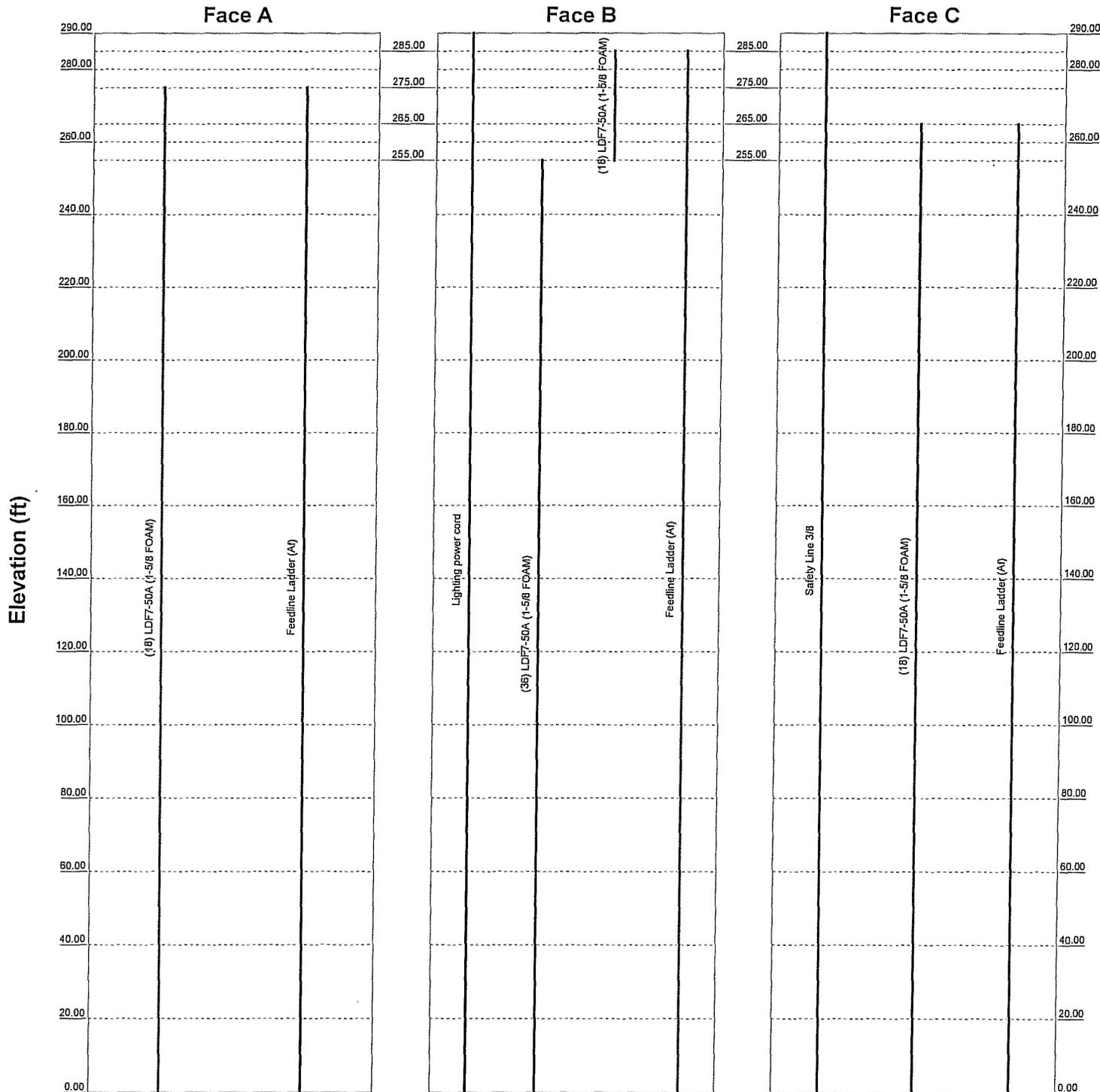
\_\_\_\_\_ Round \_\_\_\_\_ Flat \_\_\_\_\_ App In Face \_\_\_\_\_ App Out Face \_\_\_\_\_ Truss-Leg



<b>Valmont</b> 1545 Pidco Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job: <b>240568</b>		
	Project: <b>V-31 x 290' - #281338 Hazel Green, KY</b>		
	Client: American Tower Corp.	Drawn by: SKK	App'd:
	Code: TIA-222-G	Date: 12/10/13	Scale: NTS
Path:		Dwg No.:	

# Feedline Distribution Chart 0' - 290'

Round
Flat
App In Face
App Out Face
Truss Leg



<b>Valmont</b>		Job: <b>240568</b>	
1545 Pidco Drive Plymouth, IN		Project: <b>V-31 x 290' - #281338 Hazel Green, KY</b>	
Client: American Tower Corp.	Drawn by: SKK	App'd:	
Code: TIA-222-G	Date: 12/10/13	Scale: NTS	
Phone: 574-936-4221	FAX:	Path:	Dwg No.:

<b>inxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	1 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

<b>inxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	2 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

### Tower Input Data

The main tower is a 3x free standing tower with an overall height of 290.00 ft above the ground line. The base of the tower is set at an elevation of 0.00 ft above the ground line. The face width of the tower is 5.00 ft at the top and 31.00 ft at the base. This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Wolfe County, Kentucky.

Basic wind speed of 90 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 30 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

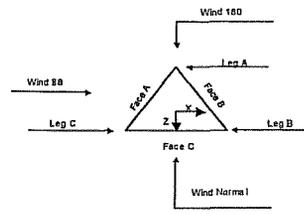
Zero fall zone radius.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in tower member design is 1.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.



Triangular Tower

### Options

- Consider Moments - Legs
- Consider Moments - Horizontals
- Consider Moments - Diagonals
- Use Moment Magnification
- Use Code Stress Ratios
- Use Code Safety Factors - Guys
- Exclude Ice
- Always Use Max Kz
- Use Special Wind Profile
- Include Bolts in Member Capacity
- Leg Bolts Area At Top of Section
- Secondary Horizontal Braces Leg
- Use Diamond Inner Bracing (4 Sides)
- Add IBC .6D+V Combination
- Distribute Leg Loads As Uniform Assume Legs Pinned
- Assume Rigid Index Plate
- Use Clear Spans For Wind Area
- Use Clear Spans For Kz/L
- Retention Guys To Initial Tension
- Bypass Mast Stability Checks
- Use Aircraft Disk Coefficients
- Project Wind Area of Appurt.
- Anticlock Torque Arm Areas
- SR Members Have Cut Ends
- Sort Capacity Reports By Component
- Triangulate Diamond Inner Bracing
- Treat Feedline Bundles As Cylinder
- Use ASCE 10 X-Brace Ly Rules
- Calculate Redundant Bracing Forces
- Ignore Redundant Members in FEA
- SR Leg Bolts Resist Compression
- All Leg Panels Have Same Allowables
- Offset Girt At Foundation
- Consider Feedline Torque
- Include Angle Block Shear Check
- Include Shear-Torsion Interaction
- Include Secondary Pallet
- Always Use Sub-Critical Flow
- Use Top Mounted Sockets

### Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	290.00-280.00		V-Series Leg	5.00	1	10.80
T2	280.00-260.00		V-Series Leg	5.00	1	28.80
T3	260.00-240.00		V-Series Leg	5.00	1	28.80
T4	240.00-220.00		V-Series Leg	7.00	1	20.00
T5	220.00-200.00		PIRod 12BD Truss Leg	9.00	1	28.00
T6	200.00-180.00		PIRod 12BD Truss Leg	11.00	1	28.00
T7	180.00-160.00		PIRod 12BDH Truss Leg	13.00	1	20.88
T8	160.00-140.00		PIRod 12BDH Truss Leg	15.00	1	20.00
T9	140.00-120.00		PIRod 12BDH Truss Leg	17.00	1	20.00
T10	120.00-100.00		PIRod 12BDH Truss Leg	19.00	1	20.00
T11	100.00-80.00		PIRod 12BDH Truss Leg	21.00	1	20.00
T12	80.00-60.00		PIRod 12BDH Truss Leg	23.00	1	20.00
T13	60.00-40.00		PIRod 12BDH Truss Leg	25.00	1	20.00
T14	40.00-20.00		PIRod 12BDH Truss Leg	27.00	1	20.00
T15	20.00-0.00		PIRod 12BDH Truss Leg	29.00	1	20.00

### Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	290.00-280.00		X-Brace	No	No	0.0000	0.0000
T2	280.00-260.00		X-Brace	No	No	0.0000	0.0000
T3	260.00-240.00		X-Brace	No	No	0.0000	0.0000
T4	240.00-220.00		X-Brace	No	No	0.0000	0.0000
T5	220.00-200.00		X-Brace	No	No	0.0000	0.0000
T6	200.00-180.00		X-Brace	No	No	0.0000	0.0000
T7	180.00-160.00		X-Brace	No	No	0.0000	0.0000
T8	160.00-140.00		X-Brace	No	No	0.0000	0.0000
T9	140.00-120.00		X-Brace	No	No	0.0000	0.0000
T10	120.00-100.00		X-Brace	No	No	0.0000	0.8800
T11	100.00-80.00		X-Brace	No	No	0.0000	0.8000
T12	80.00-60.00		X-Brace	No	No	0.0000	0.0000
T13	60.00-40.00		X-Brace	No	No	0.0000	0.0000
T14	40.00-20.00		X-Brace	No	No	0.0088	0.0000
T15	20.00-0.00		X-Brace	No	No	0.0000	0.8000

### Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 290.00-280.00	Equal Angle	L2x2x1/8	A36	Solid Round	A36	(16 ksi)

### Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A1	Adjust. Factor A2	Weight Mult.	Double Angle Spacing Diagonals	Double Angle Spacing Horizontals
ft	ft²	in					in	in
T1	0.00	8.2500	A36	1	1	1.05	36.0000	36.0000
T2	0.00	0.2508	A36	1	1	1.05	36.0000	36.0000
T3	0.00	0.3750	A36	1	1	1.05	36.0000	36.0000
T4	0.00	0.3750	A36	1	1	1.05	36.0000	36.0000
T5	0.00	0.3000	A36	1	1	1.05	36.0000	36.0000
T6	0.00	0.3000	A36	1	1	1.05	36.0000	36.0000
T7	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000
T8	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000
T9	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000
T10	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000
T11	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000
T12	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000
T13	0.00	0.6250	A36	1	1	1.85	36.0000	36.0000
T14	0.00	0.6250	A36	1	1	1.85	36.0000	36.0000
T15	0.00	0.6250	A36	1	1	1.05	36.0000	36.0000

### Tower Section Geometry (cont'd)

K Factors

<b>inxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	3 of 64
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	Client	American Tower Corp.	Designed by	SKK

<b>inxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	4 of 64
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Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	290.00-280.00	4.70	X-Brace	No	No	0.0000	0.0000
T2	280.00-260.00	6.67	X-Brace	No	No	0.0000	0.0000
T3	260.00-240.00	6.67	X-Brace	No	No	0.0000	0.0000
T4	240.00-220.00	6.67	X-Brace	No	No	0.0000	0.0000
T5	220.00-200.00	10.00	X-Brace	No	No	0.0000	0.0000
T6	200.00-180.00	10.00	X-Brace	No	No	0.0000	0.0000
T7	180.00-160.00	20.00	X-Brace	No	No	0.0000	0.0000
T8	160.00-140.00	28.80	X-Brace	No	No	0.0000	0.0000
T9	140.00-120.00	28.80	X-Brace	No	No	0.0000	0.0000
T10	120.00-100.00	20.00	X-Brace	No	No	0.0000	0.8800
T11	100.00-80.00	20.00	X-Brace	No	No	0.0000	0.8000
T12	80.00-60.00	20.00	X-Brace	No	No	0.0000	0.0000
T13	60.00-40.00	20.00	X-Brace	No	No	0.0000	0.0000
T14	40.00-20.00	20.00	X-Brace	No	No	0.0088	0.0000
T15	20.00-0.00	20.00	X-Brace	No	No	0.0000	0.8000

### Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 290.00-280.00	Pipe	P-2.18" - 0.75" conn.-10' -C-(PIrod 226172)	A572-50 (58 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T2 280.00-260.00	Pipe	P-4.80" - 0.75" conn.-20' -C-Trans-6B-(PIrod 226184)	A572-50 (58 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 260.00-240.00	Pipe	P-5.08" - 0.75" conn.-Trans-20' -C-(PIrod 226200)	A572-50 (58 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 240.00-220.00	Pipe	P-6.00" - 0.75" conn.-HBD-Trans-20' -C-(PIrod 229377)	A572-50 (58 ksi)	Equal Angle	L2 1/2x2 1/2x1/16	A36 (36 ksi)
T5 220.00-200.00	Truss Leg	#122G - 1.75" - 1.00" conn.-HBD-Trans (PIrod 229381)	A572-50 (58 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T6 200.00-180.00	Truss Leg	#122G - 1.75" - 1.00" conn.-HBD-Trans (PIrod 229388)	A572-50 (58 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 180.00-160.00	Truss Leg	#122G - 2.00" - 0.75" conn.-HBD-Trans (PIrod 208322)	A572-50 (58 ksi)	Double Equal Angle	2L3x3x3/16	A36 (36 ksi)
T8 160.00-140.00	Truss Leg	#122G - 2.25" - 0.875" conn. (PIrod 208334)	A572-50 (58 ksi)	Double Equal Angle	2L3x3x3/16	A36 (36 ksi)
T9 140.00-120.00	Truss Leg	#122G - 2.25" - 0.875" conn. (PIrod 208334)	A572-50 (58 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T10 120.00-100.00	Truss Leg	#122G - 2.50" - 0.875" conn. (PIrod 208335)	A572-50 (58 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T11 100.00-80.00	Truss Leg	#122G - 2.75" - 0.875" conn. (PIrod 208335)	A572-50 (58 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T12 80.00-60.00	Truss Leg	#122G - 2.75" - 0.875" conn. (PIrod 208337)	A572-50 (58 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T13 60.00-40.00	Truss Leg	#122G - 2.75" - 0.875" conn. (PIrod 208337)	A572-50 (58 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T14 40.00-20.00	Truss Leg	#122G - 3.00" - 0.875" conn.-Trans (PIrod 208338)	A572-50 (58 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T15 20.00-0.00	Truss Leg	#122G - 3.00" - 0.875" conn.-Trans (PIrod 208338)	A572-50 (58 ksi)	Double Equal Angle	2L4x4x1/4	A36 (36 ksi)



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Tower Section	Tower Elevation ft	Face	A <sub>1</sub>	A <sub>2</sub>	C <sub>1</sub> A <sub>1</sub> In Face ft <sup>2</sup>	C <sub>2</sub> A <sub>1</sub> Out Face ft <sup>2</sup>	Weight K
T3	260.00-240.00	B	0.808	0.000	83.020	0.000	0.47
		A	0.000	0.000	21.070	0.000	0.12
		C	0.000	0.008	81.280	0.000	0.46
		B	0.000	0.008	136.480	0.000	0.69
		C	0.000	0.000	82.038	0.000	0.47
T4	248.08-220.88	B	0.888	0.000	81.280	0.000	0.46
		A	0.000	0.000	154.300	0.000	0.76
		C	0.800	0.000	82.038	0.000	0.47
T5	220.88-200.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.008	0.000	154.300	0.000	0.76
		C	0.000	0.008	82.030	0.000	0.47
T6	200.00-188.80	A	0.000	0.000	81.280	0.000	0.46
		B	0.008	0.000	154.300	0.000	0.76
		C	0.000	0.008	82.030	0.000	0.47
T7	180.00-168.88	A	0.800	0.000	81.280	0.800	0.46
		B	0.888	0.000	154.300	0.800	0.76
		C	0.000	0.008	82.030	0.000	0.47
T8	160.80-140.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.800	0.76
		C	0.800	0.000	82.030	0.008	0.47
T9	140.00-120.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T10	120.80-100.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T11	100.00-80.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T12	80.00-60.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T13	60.00-40.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T14	40.00-20.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T15	20.00-0.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness In	A <sub>1</sub>	A <sub>2</sub>	C <sub>1</sub> A <sub>1</sub> In Face ft <sup>2</sup>	C <sub>2</sub> A <sub>1</sub> Out Face ft <sup>2</sup>	Weight K
T3	220.00-200.00	A	1.805	0.000	0.000	167.573	0.000	2.83
		B	0.000	0.000	0.000	159.383	0.000	2.78
		C	0.000	0.000	0.000	169.267	0.000	4.00
T6	200.00-188.80	A	1.787	0.008	0.000	167.553	0.008	2.81
		B	0.000	0.000	0.000	159.213	0.000	2.68
		C	0.000	0.000	0.000	169.021	0.000	3.98
T7	180.00-168.80	A	1.767	0.000	0.000	167.111	0.000	2.78
		B	0.000	0.000	0.000	159.025	0.000	2.66
		C	0.000	0.008	0.000	168.751	0.008	3.95
T8	160.80-140.00	A	1.745	0.000	0.000	166.845	0.000	2.76
		B	0.000	0.000	0.000	158.818	0.000	2.64
		C	0.000	0.000	0.000	168.490	0.000	3.92
T9	140.00-128.00	A	1.720	0.000	0.000	158.583	0.000	2.61
		B	0.000	0.000	0.000	158.110	0.000	3.89
		C	0.000	0.000	0.000	166.215	0.008	2.78
T10	120.88-100.00	A	1.692	0.000	0.000	158.314	0.000	2.58
		B	0.000	0.000	0.000	167.721	0.000	3.86
		C	0.000	0.000	0.000	165.832	0.000	2.67
T11	100.00-88.00	A	1.658	0.000	0.000	157.996	0.000	2.54
		B	0.000	0.000	0.000	167.261	0.000	3.81
		C	0.000	0.000	0.000	155.779	0.000	2.63
T12	80.00-60.00	A	1.617	0.000	0.000	157.608	0.000	2.49
		B	0.000	0.000	0.000	166.698	0.000	3.76
		C	0.000	0.008	0.000	164.826	0.008	2.58
T13	60.00-40.00	A	1.564	0.000	0.000	157.103	0.000	2.44
		B	0.000	0.000	0.000	165.967	0.000	3.70
		C	0.000	0.000	0.000	164.107	0.000	2.51
T14	40.00-20.00	A	1.486	0.000	0.000	156.509	0.000	2.35
		B	0.000	0.000	0.000	164.903	0.000	3.60
		C	0.000	0.000	0.000	163.062	0.000	2.42
T15	20.00-0.00	A	1.331	0.000	0.000	154.914	0.000	2.18
		B	0.000	0.000	0.000	162.795	0.000	3.41
		C	0.000	0.000	0.000	160.989	0.000	2.24

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness ft	A <sub>1</sub>	A <sub>2</sub>	C <sub>1</sub> A <sub>1</sub> In Face ft <sup>2</sup>	C <sub>2</sub> A <sub>1</sub> Out Face ft <sup>2</sup>	Weight K
T1	290.00-280.00	A	1.861	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	44.370	0.000	0.76	
		C	0.000	0.000	4.097	0.000	0.05	
T2	280.00-260.00	A	1.851	0.000	0.000	119.863	0.000	2.97
		B	0.000	0.000	168.961	0.000	2.88	
		C	0.000	0.000	48.108	0.000	0.79	
T3	260.00-240.00	A	1.837	0.000	0.000	159.684	0.000	2.74
		B	0.000	0.000	169.469	0.000	3.75	
		C	0.000	0.000	167.780	0.000	2.84	
T4	240.80-220.00	A	1.821	0.008	0.000	159.539	0.000	2.72
		B	0.000	0.000	169.495	0.000	4.02	

**Feed Line Center of Pressure**

Section	Elevation ft	CP <sub>x</sub> in	CP <sub>y</sub> in	CP <sub>x</sub> in	CP <sub>y</sub> in
T1	290.00-280.00	2.808	-1.3642	2.3997	-0.5658
T2	280.00-260.00	0.5133	-1.2391	0.5583	-0.9403
T3	260.00-240.00	0.8221	-0.4092	0.1940	0.1284
T4	240.00-220.00	1.2414	-0.2520	0.2250	0.1633
T5	220.00-200.00	1.4829	-0.7169	0.2732	0.1953
T6	200.00-180.00	1.7342	-0.8830	0.3160	0.2385
T7	180.00-160.00	1.9991	-1.0160	0.3587	0.2829
T8	160.00-140.00	2.2403	-1.1180	0.3963	0.3229
T9	140.00-120.00	2.4774	-1.2559	0.4314	0.3603
T10	120.00-100.00	2.7111	-1.3752	0.4638	0.3968
T11	100.00-80.00	2.9562	-1.4952	0.4969	0.4314
T12	80.00-60.00	3.1735	-1.6952	0.5286	0.4621
T13	60.00-40.00	3.4132	-1.7255	0.5552	0.4809
T14	40.00-20.00	3.6305	-1.8345	0.5781	0.5065
T15	20.00-0.00	3.8312	-1.9351	0.5708	0.4977

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**Shielding Factor Ka**

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T1	1	Safety Line 3/8	280.00 - 290.00	0.6000	0.3635
T1	2	Lighting power cord	280.00 - 290.00	0.6000	0.3635
T1	3	LDF7-50A (1-5/8 FOAM)	280.00 - 283.00	0.6000	0.5635
T1	7	Feedline Ladder (AD)	280.00 - 215.00	1.0000	1.0000
T2	1	Safety Line 3/8	260.00 - 280.00	0.6000	0.5797
T2	2	Lighting power cord	260.00 - 280.00	0.6000	0.5797
T2	3	LDF7-50A (1-5/8 FOAM)	260.00 - 265.00	0.6000	0.5797
T2	5	LDF7-50A (1-5/8 FOAM)	260.00 - 280.00	0.6000	0.5797
T2	6	LDF7-50A (1-5/8 FOAM)	260.00 - 273.80	0.6000	0.5797
T2	7	Feedline Ladder (AD)	260.00 - 280.00	1.0000	1.0000
T2	0	Feedline Ladder (AD)	260.00 - 280.00	1.0000	1.0000
T2	9	Feedline Ladder (AD)	260.00 - 273.80	1.0000	1.0000
T3	1	Safety Line 3/8	240.00 - 260.00	0.6000	0.6000
T3	2	Lighting power cord	240.00 - 260.00	0.6000	0.6000
T3	3	LDF7-50A (1-5/8 FOAM)	240.00 - 240.00	0.6000	0.6000
T3	4	LDF7-50A (1-5/8 FOAM)	240.00 - 255.00	0.6000	0.6000
T3	5	LDF7-50A (1-5/8 FOAM)	240.00 - 255.00	0.6000	0.6000
T3	6	LDF7-50A (1-5/8 FOAM)	240.00 - 260.00	0.6000	0.6000
T3	7	Feedline Ladder (AD)	240.00 - 260.00	1.0000	1.0000
T3	8	Feedline Ladder (AD)	240.00 - 260.00	1.0000	1.0000
T3	9	Feedline Ladder (AD)	240.00 - 260.00	1.0000	1.0000
T4	1	Safety Line 3/8	220.00 - 240.00	0.6000	0.6000
T4	2	Lighting power cord	220.00 - 240.00	0.6000	0.6000
T4	3	LDF7-50A (1-5/8 FOAM)	220.00 - 220.00	0.6000	0.6000
T4	4	LDF7-50A (1-5/8 FOAM)	220.00 - 240.00	0.6000	0.6000
T4	6	LDF7-50A (1-5/8 FOAM)	220.00 - 240.00	0.6000	0.6000
T4	7	Feedline Ladder (AD)	220.00 - 240.00	1.0000	1.0000
T4	8	Feedline Ladder (AD)	220.00 - 240.00	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K <sub>a</sub> No Ice	K <sub>a</sub> Ice
T4	9	Feedline Ladder (AD)	240.00 - 220.00	1.0000	1.0000
T3	1	Safety Line 3/8	200.00 - 220.00	0.6000	0.3863
T3	2	Lighting power cord	200.00 - 220.00	0.6000	0.3863
T3	3	LDF7-50A (1-5/8 FOAM)	200.00 - 200.00	0.6000	0.3863
T3	4	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.3863
T3	5	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.3863
T3	6	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.3863
T					

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	Client	American Tower Corp.	Designed by	SKK

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	Kc No Ice	Kc Ice
T8	8	Feedline Ladder (AD)	160.00 - 140.00	1.0000	1.0000
T8	9	Feedline Ladder (AD)	140.00 - 120.00	1.8000	1.8000
T9	1	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T9	2	Lighting power cord	120.00 - 148.88	0.6008	0.6008
T9	3	LDF7-50A (1-5/8 FOAM)	148.88 - 120.00	0.6000	0.6008
T9	4	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.6008
T9	6	LDF7-50A (1-5/8 FOAM)	140.00 - 120.00	0.6008	0.6008
T9	7	Feedline Ladder (AD)	120.00 - 140.08	1.0000	1.0000
T9	8	Feedline Ladder (AD)	140.08 - 120.80	1.0000	1.8000
T9	9	Feedline Ladder (AD)	120.80 - 100.80	1.0000	1.0000
T18	1	Safety Line 3/8	100.80 - 120.00	0.6000	0.6000
T18	2	Lighting power cord	100.80 - 120.00	0.6000	0.6000
T10	3	LDF7-50A (1-5/8 FOAM)	100.80 - 120.00	0.6008	0.6000
T10	4	LDF7-50A (1-5/8 FOAM)	120.00 - 128.00	0.6000	0.6000
T18	6	LDF7-50A (1-5/8 FOAM)	128.00 - 120.00	0.6008	0.6008
T18	7	Feedline Ladder (AD)	120.00 - 100.80	1.0000	1.8000
T10	8	Feedline Ladder (AD)	100.80 - 120.00	1.0000	1.0000
T10	9	Feedline Ladder (AD)	120.00 - 188.00	1.8000	1.0008
T11	1	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T11	2	Lighting power cord	80.00 - 100.08	0.6000	0.6000
T11	3	LDF7-50A (1-5/8 FOAM)	100.00 - 80.00	0.6000	0.6000
T11	4	LDF7-50A (1-5/8 FOAM)	80.00 - 188.08	0.6000	0.6000
T11	6	LDF7-50A (1-5/8 FOAM)	188.08 - 100.00	0.6000	0.6000
T11	7	Feedline Ladder (AD)	100.00 - 80.00	1.0000	1.8000
T11	8	Feedline Ladder (AD)	80.00 - 100.00	1.0000	1.0000
T11	9	Feedline Ladder (AD)	100.00 - 80.00	1.0000	1.0000
T12	1	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T12	2	Lighting power cord	60.00 - 80.00	0.6000	0.6000
T12	3	LDF7-50A (1-5/8 FOAM)	80.00 - 60.00	0.6000	0.6000
T12	4	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T12	6	LDF7-50A (1-5/8 FOAM)	80.00 - 60.00	0.6000	0.6000
T12	7	Feedline Ladder (AD)	60.00 - 80.00	1.0000	1.0000
T12	8	Feedline Ladder (AD)	80.00 - 60.00	1.0000	1.0000
T12	9	Feedline Ladder (AD)	60.00 - 80.00	1.0000	1.0000
T13	1	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T13	2	Lighting power cord	40.00 - 60.00	0.6008	0.6008
T13	3	LDF7-50A (1-5/8 FOAM)	60.00 - 40.00	0.6000	0.6000
T13	4	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6008	0.6000
T13	6	LDF7-50A (1-5/8 FOAM)	60.00 - 40.00	0.6000	0.6000
T13	7	Feedline Ladder (AD)	40.00 - 60.00	1.0000	1.0000
T13	8	Feedline Ladder (AD)	60.00 - 40.00	1.0000	1.0000
T13	9	Feedline Ladder (AD)	40.00 - 60.00	1.0000	1.0000
T14	1	Safety Line 3/8	20.00 - 48.00	0.6000	0.6008

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	Kc No Ice	Kc Ice
T14	2	Lighting power cord	20.00 - 40.00	0.6000	0.6000
T14	3	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	4	LDF7-50A (1-5/8 FOAM)	20.00 - 48.00	0.6000	0.6008
T14	6	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T14	7	Feedline Ladder (AD)	20.00 - 48.00	1.0008	1.0000
T14	8	Feedline Ladder (AD)	20.00 - 48.00	1.0000	1.0000
T14	9	Feedline Ladder (AD)	20.00 - 48.00	1.0000	1.0008
T15	1	Safety Line 3/8	8.00 - 20.00	0.6000	0.6008
T15	2	Lighting power cord	8.00 - 20.00	0.6000	0.6000
T15	3	LDF7-50A (1-5/8 FOAM)	8.00 - 20.00	0.6008	0.6000
T15	4	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T15	6	LDF7-50A (1-5/8 FOAM)	0.00 - 20.00	0.6000	0.6000
T15	7	Feedline Ladder (AD)	8.00 - 20.00	1.0000	1.0000
T15	8	Feedline Ladder (AD)	8.00 - 20.00	1.0000	1.0000
T15	9	Feedline Ladder (AD)	8.00 - 20.00	1.0008	1.0008

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offset: Horiz Lateral Vert ft	Animah Adjustment	Placement ft	CxLs Front ft²	CxLs Side ft²	Weight K	
Beacon	A	From Leg	0.80	0.0088	290.08	No Ice	2.40	2.40	0.07
			0.88		1/2" Ice	2.67	2.67	0.18	
			4.39		1" Ice	2.96	2.96	0.12	
Beacon Extender (4) R0362	A	From Leg	0.80	0.0080	290.80	No Ice	1.11	1.11	0.03
			0.90		1/2" Ice	1.32	1.32	0.04	
			2.21		1" Ice	1.54	1.53	0.05	
1/2" x 4" lightning rod	C	From Leg	0.00	0.0000	290.00	No Ice	0.20	0.28	0.01
			0.00		1/2" Ice	0.60	0.60	0.02	
			2.00		1" Ice	0.89	0.89	0.02	
ATC Loading	C	None		0.0080	285.80	No Ice	115.00	115.00	2.00
					1/2" Ice	135.00	135.00	3.00	
ATC Loading	C	None		0.0080	275.00	No Ice	115.00	115.00	2.00
					1/2" Ice	135.00	135.00	3.00	
ATC Loading	C	None		0.0080	265.00	No Ice	155.00	155.00	4.00
					1" Ice	155.00	155.00	4.00	
ATC Loading	C	None		0.0080	255.00	No Ice	135.00	135.00	3.00
					1" Ice	155.00	155.00	4.00	

**Truss-Leg Properties**

Section Elevation ft	z ft	Kz	gk	Ao	F a c	Ar	As	Asx	Leg %	CxLs In Face ft²	CxLs Out Face ft²	
228.88-208.88					B	12.313	25.512		67.45	154.300	0.080	
					B	12.313	25.512		67.45	82.830	0.080	
208.00-180.80	190.00	1.449	26	262.944	A	13.727	25.512	25.512	65.02	81.288	0.000	
					B	13.727	25.512		65.02	154.300	0.000	
					C	13.727	25.512		65.02	82.030	0.000	
180.00-160.00	T7	170.08	1.415	23	303.361	A	11.332	26.914	26.914	70.377	81.280	0.000
					B	11.332	26.914		70.377	154.300	0.000	
					C	11.332	26.914		70.377	82.030	0.000	
160.08-140.00	T8	150.00	1.378	24	343.778	A	11.896	28.486	28.486	78.54	81.288	0.000
					B	11.896	28.486		78.54	154.300	0.000	
					C	11.896	28.486		78.54	82.038	0.000	
140.00-120.00	T9	130.08	1.337	24	383.778	A	14.599	28.486	28.486	66.12	81.288	0.000
					B	14.599	28.486		66.12	154.300	0.000	
					C	14.599	28.486		66.12	82.030	0.000	
128.00-108.88	T10	110.00	1.291	23	424.196	A	15.376	30.111	30.111	66.20	82.890	0.000
					B	15.376	30.111		66.20	154.300	0.000	
					C	15.376	30.111		66.20	82.890	0.000	
100.00-80.80	T11	90.00	1.238	22	464.196	A	16.198	30.111	30.111	65.92	82.890	0.000
					B	16.198	30.111		65.92	154.300	0.000	
					C	16.198	30.111		65.92	82.030	0.000	
80.08-68.08	T12	70.00	1.174	21	504.613	A	17.860	32.655	32.655	65.68	81.280	0.000
					B	17.860	32.655		65.68	154.308	0.000	
					C	17.860	32.655		65.68	82.030	0.000	
60.00-48.80	T13	50.00	1.894	19	544.613	A	17.951	32.655	32.655	64.52	81.288	0.000
					B	17.951	32.655		64.52	154.300	0.000	
					C	17.951	32.655		64.52	82.030	0.000	
40.08-20.80	T14	30.00	0.982	17	585.830	A	18.881	34.449	34.449	64.59	81.280	0.000
					B	18.881	34.449		64.59	154.300	0.000	
					C	18.881	34.449		64.59	82.030	0.000	
T15 20.00-0.00	T15	10.80	0.85	15	625.030	A	22.678	34.449	34.449	60.31	81.280	0.000
					B	22.678	34.449		60.31	154.300	0.000	
					C	22.678	34.449		60.31	82.030	0.000	

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Section Designation	Area ft²	Area Ice ft²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area ft²
#122G-1.75' - 1.00' cona.-HBD-Trans (Pirod 229588)	2200.6087	5829.6191	0.84	2.29	7.6410	20.2417	7.2158
#122G-1.75' - 1.00' cona.-HBD-Trans (Pirod 229588)	2200.6087	5819.5175	0.84	2.28	7.6410	20.2067	7.2158
#122G-2.00' - 0.875' cona.-HBD-Trans (Pirod 288332)	2321.4820	5880.4093	0.99	2.31	8.8607	20.4181	9.2418
#122G-2.25' - 0.875' cona. (Pirod 208334)	2457.8620	5940.0560	1.17	2.34	8.5315	20.6252	11.9282
#122G-2.25' - 0.875' cona. (Pirod 208334)	2457.8620	5926.1283	1.17	2.33	8.5315	20.5768	11.9282
#122G-2.58' - 0.875' cona. (Pirod 208335)	2597.2622	5982.1016	1.37	2.35	9.0183	20.7712	14.7262
#122G-2.58' - 0.875' cona. (Pirod 208335)	2597.2622	5963.2118	1.37	2.33	9.0183	20.7856	14.7262
#122G-2.75' - 0.875' cona. (Pirod 208337)	2816.7341	6012.0820	1.63	2.35	9.7883	20.8753	17.8187
#122G-2.75' - 0.875' cona. (Pirod 208337)	2816.7341	5982.0189	1.63	2.32	9.7803	20.7789	17.8187
#122G-3.00' - 0.875' cona.-Trans (Pirod 288338)	2971.4468	6010.2486	1.87	2.31	10.3175	20.8689	21.2058
#122G-3.00' - 0.875' cona.-Trans (Pirod 208338)	2971.4460	5923.3735	1.87	2.23	10.3175	20.5673	21.2058

**Tower Pressures - No Ice**

$G_H = 0.850$

Section Elevation ft	z ft	Kz	gk	Ao	F a c	Ar	As	Asx	Leg %	CxLs In Face ft²	CxLs Out Face ft²	
290.00-280.00	T1	285.00	1.378	28	52.396	A	4.623	4.792	4.792	58.89	8.000	0.000
					B	4.623	4.792		58.89	21.190	0.000	
					C	4.623						

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Section Elevation	z	Kz	gz	tz	Ao	F a c	Ar	Aa	Au	Leg %	C <sub>A</sub> In Face	C <sub>A</sub> Out Face
ft	ft		psf	in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T6 200.00-180.00	190.00	1.449	3	1.7870	204.508	A 13.727 B 13.727 C 13.727	83.821 83.821 83.821	67.468 69.16 69.16	69.16 69.16 69.16	19.213 16.921 16.921	0.000 8.000 0.000	0.000
T7 180.00-160.00	170.00	1.415	3	1.7672	309.259	A 11.332 B 11.332 C 11.332	81.523 81.523 81.523	68.174 73.42 73.42	73.42 73.42 73.42	166.845 166.845 166.845	0.000 0.000 0.000	0.000
T8 160.00-140.00	150.00	1.378	3	1.7452	349.603	A 11.896 B 11.896 C 11.896	82.703 82.703 82.703	68.865 72.80 72.80	72.80 72.80 72.80	158.490 158.490 158.490	0.000 0.000 0.000	0.000
T9 140.00-120.00	130.00	1.337	3	1.7204	389.520	A 14.599 B 14.599 C 14.599	83.056 83.056 83.056	68.704 70.35 70.35	70.35 70.35 70.35	158.983 158.983 158.983	0.000 0.000 0.000	0.000
T10 120.00-100.00	110.00	1.291	3	1.6919	429.842	A 15.375 B 15.375 C 15.375	84.217 84.217 84.217	69.533 69.533 69.533	69.533 69.533 69.533	159.311 159.311 159.311	0.000 0.000 0.000	0.000
T11 100.00-80.00	90.00	1.238	2	1.6583	469.730	A 16.198 B 16.198 C 16.198	84.482 84.482 84.482	69.134 68.67 68.67	68.67 68.67 68.67	157.956 157.956 157.956	0.000 0.000 0.000	0.000
T12 80.00-60.00	70.00	1.174	2	1.6171	510.010	A 17.060 B 17.060 C 17.060	85.465 85.465 85.465	69.700 69.700 69.700	69.700 69.700 69.700	157.604 157.604 157.604	0.000 0.000 0.000	0.000
T13 60.00-40.00	50.00	1.094	2	1.5636	549.832	A 17.958 B 17.958 C 17.958	85.937 85.937 85.937	69.352 69.352 69.352	69.352 69.352 69.352	157.067 157.067 157.067	0.000 0.000 0.000	0.000
T14 40.00-20.00	30.00	0.982	2	1.4859	589.989	A 18.884 B 18.884 C 18.884	85.712 85.712 85.712	69.579 69.579 69.579	69.579 69.579 69.579	156.903 156.903 156.903	0.000 0.000 0.000	0.000
T15 20.00-0.00	10.00	0.85	2	1.3312	629.473	A 22.670 B 22.670 C 22.670	83.761 83.761 83.761	68.672 68.672 68.672	68.672 68.672 68.672	156.022 156.022 156.022	0.000 0.000 0.000	0.000

Section Elevation	z	Kz	gz	tz	Ao	F a c	Ar	Aa	Au	Leg %	C <sub>A</sub> In Face	C <sub>A</sub> Out Face
ft	ft		psf	in	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T6 200.00-180.00	190.00	1.415	11	303.361	A 13.727 B 13.727 C 13.727	25.512 25.512 25.512	63.02 63.02 63.02	63.02 63.02 63.02	63.02 63.02 63.02	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T7 180.00-160.00	170.00	1.378	11	343.778	A 11.896 B 11.896 C 11.896	26.914 26.914 26.914	70.37 70.37 70.37	70.37 70.37 70.37	70.37 70.37 70.37	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T8 160.00-140.00	150.00	1.337	11	383.778	A 14.599 B 14.599 C 14.599	28.486 28.486 28.486	70.54 70.54 70.54	70.54 70.54 70.54	70.54 70.54 70.54	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T9 140.00-120.00	130.00	1.291	10	424.196	A 15.375 B 15.375 C 15.375	30.111 30.111 30.111	66.20 66.20 66.20	66.20 66.20 66.20	66.20 66.20 66.20	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T10 120.00-100.00	110.00	1.238	10	464.196	A 16.198 B 16.198 C 16.198	30.111 30.111 30.111	65.82 65.82 65.82	65.82 65.82 65.82	65.82 65.82 65.82	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T11 100.00-80.00	90.00	1.174	9	504.613	A 17.060 B 17.060 C 17.060	32.655 32.655 32.655	65.68 65.68 65.68	65.68 65.68 65.68	65.68 65.68 65.68	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T12 80.00-60.00	70.00	1.094	9	544.613	A 17.958 B 17.958 C 17.958	32.655 32.655 32.655	65.68 65.68 65.68	65.68 65.68 65.68	65.68 65.68 65.68	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T13 60.00-40.00	50.00	0.982	8	585.030	A 18.884 B 18.884 C 18.884	34.449 34.449 34.449	64.32 64.32 64.32	64.32 64.32 64.32	64.32 64.32 64.32	154.300 154.300 154.300	0.000 0.000 0.000	0.000
T14 40.00-20.00	30.00	0.85	7	623.030	A 22.670 B 22.670 C 22.670	34.449 34.449 34.449	60.31 60.31 60.31	60.31 60.31 60.31	60.31 60.31 60.31	154.300 154.300 154.300	0.000 0.000 0.000	0.000

**Tower Pressure - Service**

$G_H = 0.850$

Section Elevation	z	Kz	gz	Ao	F a c	Ar	Aa	Au	Leg %	C <sub>A</sub> In Face	C <sub>A</sub> Out Face
ft	ft		psf	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>	ft <sup>2</sup>		ft <sup>2</sup>	ft <sup>2</sup>
T1 290.00-280.00	285.00	1.578	12	52.936	A 4.623 B 4.623 C 4.623	4.792 4.792 4.792	50.89 50.89 50.89	0.000 0.000 0.000	0.000 0.000 0.000	0.000 0.000 0.000	0.000
T2 280.00-260.00	270.00	1.56	12	101.900	A 7.169 B 7.169 C 7.169	15.000 15.000 15.000	67.66 67.66 67.66	0.000 0.000 0.000	0.000 0.000 0.000	0.000 0.000 0.000	0.000
T3 260.00-240.00	250.00	1.535	12	129.283	A 7.169 B 7.169 C 7.169	15.000 15.000 15.000	67.66 67.66 67.66	0.000 0.000 0.000	0.000 0.000 0.000	0.000 0.000 0.000	0.000
T4 240.00-220.00	230.00	1.508	12	171.054	A 11.361 B 11.361 C 11.361	22.120 22.120 22.120	66.07 66.07 66.07	0.000 0.000 0.000	0.000 0.000 0.000	0.000 0.000 0.000	0.000
T5 220.00-200.00	210.00	1.48	12	222.944	A 12.313 B 12.313 C 12.313	25.512 25.512 25.512	67.45 67.45 67.45	0.000 0.000 0.000	0.000 0.000 0.000	0.000 0.000 0.000	0.000
T6 190.00-180.00	190.00	1.449	11	262.944	A 13.727 B 13.727 C 13.727	25.512 25.512 25.512	65.02 65.02 65.02	0.000 0.000 0.000	0.000 0.000 0.000	0.000 0.000 0.000	0.000

**Tower Forces - No Ice - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F a c	e	C <sub>r</sub>	gz	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl Face
ft	K	K	ft <sup>2</sup>	ft		psf			ft <sup>2</sup>	K	psf	
T1 290.00-280.00	0.12	0.34	A 0.18 B 0.18 C 0.18	0.18	2.665	28	1	1	7.362 7.362 7.362	0.78	77.85	B
T2 280.00-260.00	0.93	1.01	A 0.206 B 0.206 C 0.206	2.575	27	1	1	15.202 15.202 15.202	2.82	140.82	B	
T3 260.00-240.00	1.62	1.28	A 0.206 B 0.206 C 0.206	2.575	27	1	1	16.892 16.892 16.892	4.19	289.45	B	
T4 240.00-220.00	1.69	1.73	A 0.196 B 0.196 C 0.196	2.61	27	1	1	21.436 21.436 21.436	4.68	220.03	B	
T5 220.00-200.00	1.59	3.09	A 0.17 B 0.17 C 0.17	2.7	26	1	1	23.257 23.257 23.257	4.67	233.26	B	
T6 200.00-180.00	1.69	3.15	A 0.149 B 0.149 C 0.149	2.774	26	1	1	24.399 24.399 24.399	4.67	233.78	B	
T7 180.00-160.00	1.69	4.03	A 0.126 B 0.126 C 0.126	2.861	25	1	1	22.284 22.284 22.284	4.48	224.13	B	

<b>inxTower</b> Valmont 1545 Pidas Drive Plymouth, IN Phone: 374-936-4211 FAX:	Job	240568	Page	19 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

<b>inxTower</b> Valmont 1545 Pidas Drive Plymouth, IN Phone: 374-936-4211 FAX:	Job	240568	Page	20 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Section Elevation	Add Weight	Self Weight	F a c	e	C <sub>r</sub>	gz	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl Face
ft	K	K	ft <sup>2</sup>	ft		psf			ft <sup>2</sup>	K	psf	
T8 160.00-140.00	1.69	4.62	A 0.117 B 0.117 C 0.117	2.895 2.895 2.895	24	1	1	23.372 23.372 23.372	4.45	222.32	B	
T9 140.00-120.00	1.69	5.32	A 0.112 B 0.112 C 0.112	2.915 2.915 2.915	24	1	1	26.008 26.008 26.008	4.48	223.90	B	
T10 120.00-100.00	1.69	6.01	A 0.107 B 0.107 C 0.107	2.935 2.935 2.935	23	1	1	27.367 27.367 27.367	4.41	220.52	B	
T11 100.00-80.00	1.69	6.11	A 0.1 B 0.1 C 0.1	2.965 2.965 2.965	22	1	1	28.090 28.090 28.090	4.28	214.14	B	
T12 80.00-60.00	1.69	7.02	A 0.099 B 0.099 C 0.099	2.97 2.97 2.97	21	1	1	29.941 29.941 29.941	4.16	208.06	B	
T13 60.00-40.00	1.69	7.13	A 0.093 B 0.093 C 0.093	2.993 2.993 2.993	19	1	1	30.760 30.760 30.760	3.93	196.40	B	
T14 40.00-20.00	1.69	7.96	A 0.091 B 0.091 C 0.091	3 3 3	17	1	1	32.364 32.364 32.364	3.60	190.08	B	
T15 20.00-0.00	1.69	8.45	A 0.091 B 0.091 C 0.091	2.999 2.999 2.999	15	1	1	36.133 36.133 36.133	3.26	165.05	B	
Sum Weight:	22.98	67.24						OTN 8465.48 kip-ft		58.78		

Section Elevation	Add Weight	Self Weight	F a c	e	C <sub>r</sub>	gz	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl Face
ft	K	K	ft <sup>2</sup>	ft		psf			ft <sup>2</sup>	K	psf	
T8 160.00-140.00	1.69	4.62	A 0.117 B 0.117									

<b>tnxTower</b> Valmont 1543 Pideo Drive Plymouth, IN Phone: 374-936-4221 FAX:	Job	240568	Page	21 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b> Valmont 1543 Pideo Drive Plymouth, IN Phone: 374-936-4221 FAX:	Job	240568	Page	22 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Section Elevation	Add Weight	Self Weight	F a e	e	C <sub>p</sub>	q <sub>z</sub>	D <sub>f</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K	e	e		psf			ft <sup>2</sup>	K	psf	
160.00-140.00	1.69	4.62	A	0.117	2.895	24	0.85	1	21.588	4.00	199.99	C
			B	0.117	2.895	0.85	1	21.588				
			C	0.117	2.895	0.85	1	21.588				
140.00-120.00	1.69	5.32	A	0.112	2.915	24	0.85	1	23.818	4.02	201.01	C
			B	0.112	2.915	0.85	1	23.818				
			C	0.112	2.915	0.85	1	23.818				
120.00-100.00	1.69	6.01	A	0.107	2.935	23	0.85	1	25.060	3.96	198.03	C
			B	0.107	2.935	0.85	1	25.060				
			C	0.107	2.935	0.85	1	25.060				
100.00-80.00	1.69	6.11	A	0.099	2.97	22	0.85	1	25.661	3.84	192.20	C
			B	0.099	2.97	0.85	1	25.661				
			C	0.099	2.97	0.85	1	25.661				
80.00-60.00	1.69	7.02	A	0.099	2.97	21	0.85	1	27.382	3.74	186.90	C
			B	0.099	2.97	0.85	1	27.382				
			C	0.099	2.97	0.85	1	27.382				
60.00-40.00	1.69	7.13	A	0.093	2.993	19	0.85	1	28.066	3.53	176.31	C
			B	0.093	2.993	0.85	1	28.066				
			C	0.093	2.993	0.85	1	28.066				
40.00-20.00	1.69	7.96	A	0.091	3	17	0.85	1	29.531	3.23	161.71	C
			B	0.091	3	0.85	1	29.531				
			C	0.091	3	0.85	1	29.531				
20.00-0.00	1.69	8.45	A	0.091	2.999	15	0.85	1	32.752	2.92	146.07	C
			B	0.091	2.999	0.85	1	32.752				
			C	0.091	2.999	0.85	1	32.752				
Sum Weight:	22.91	67.24						OTM1	7761.04		53.37	kip-ft

Section Elevation	Add Weight	Self Weight	F a e	e	C <sub>p</sub>	q <sub>z</sub>	D <sub>f</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K	e	e		psf			ft <sup>2</sup>	K	psf	
160.00-140.00	9.29	14.01	A	0.271	2.377	3	1	1	60.719	0.79	39.63	C
			B	0.271	2.377	0.85	1	1	60.719			
			C	0.271	2.377	0.85	1	1	60.719			
140.00-120.00	9.21	15.07	A	0.251	2.435	3	1	1	63.201	0.79	39.46	C
			B	0.251	2.435	0.85	1	1	63.201			
			C	0.251	2.435	0.85	1	1	63.201			
120.00-100.00	9.10	15.92	A	0.232	2.494	3	1	1	64.283	0.77	38.69	C
			B	0.232	2.494	0.85	1	1	64.283			
			C	0.232	2.494	0.85	1	1	64.283			
100.00-80.00	8.98	16.05	A	0.214	2.549	2	1	1	64.956	0.73	37.54	C
			B	0.214	2.549	0.85	1	1	64.956			
			C	0.214	2.549	0.85	1	1	64.956			
80.00-60.00	8.83	17.06	A	0.201	2.593	2	1	1	66.174	0.72	36.07	C
			B	0.201	2.593	0.85	1	1	66.174			
			C	0.201	2.593	0.85	1	1	66.174			
60.00-40.00	8.64	17.11	A	0.188	2.637	2	1	1	66.845	0.68	33.89	C
			B	0.188	2.637	0.85	1	1	66.845			
			C	0.188	2.637	0.85	1	1	66.845			
40.00-20.00	8.37	17.90	A	0.177	2.674	2	1	1	67.815	0.61	30.67	C
			B	0.177	2.674	0.85	1	1	67.815			
			C	0.177	2.674	0.85	1	1	67.815			
20.00-0.00	7.83	18.24	A	0.169	2.703	2	1	1	70.393	0.54	26.85	C
			B	0.169	2.703	0.85	1	1	70.393			
			C	0.169	2.703	0.85	1	1	70.393			
Sum Weight:	124.06	182.06						DTM	1498.59		10.30	kip-ft

**Tower Forces - With Ice - Wind Normal To Face**

Section Elevation	Add Weight	Self Weight	F a e	e	C <sub>p</sub>	q <sub>z</sub>	D <sub>f</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K	e	e		psf			ft <sup>2</sup>	K	psf	
290.00-280.00	0.81	1.56	A	0.437	1.996	3	1	1	17.420	0.17	16.77	B
			B	0.437	1.996	0.85	1	1	17.420			
			C	0.437	1.996	0.85	1	1	17.420			
280.00-260.00	5.74	3.24	A	0.42	2.025	3	1	1	33.371	0.57	28.56	B
			B	0.42	2.025	0.85	1	1	33.371			
			C	0.42	2.025	0.85	1	1	33.371			
260.00-240.00	9.33	3.72	A	0.388	2.087	3	1	1	36.030	0.71	35.55	B
			B	0.388	2.087	0.85	1	1	36.030			
			C	0.388	2.087	0.85	1	1	36.030			
240.00-220.00	9.57	4.81	A	0.351	2.169	3	1	1	42.701	0.74	37.19	B
			B	0.351	2.169	0.85	1	1	42.701			
			C	0.351	2.169	0.85	1	1	42.701			
220.00-200.00	9.51	11.95	A	0.414	2.038	3	1	1	65.236	0.82	46.94	C
			B	0.414	2.038	0.85	1	1	65.236			
			C	0.414	2.038	0.85	1	1	65.236			
200.00-180.00	9.45	12.18	A	0.363	2.142	3	1	1	65.773	0.83	41.41	C
			B	0.363	2.142	0.85	1	1	65.773			
			C	0.363	2.142	0.85	1	1	65.773			
180.00-160.00	9.37	13.26	A	0.3	2.295	3	1	1	60.166	0.80	40.05	C
			B	0.3	2.295	0.85	1	1	60.166			
			C	0.3	2.295	0.85	1	1	60.166			

**Tower Forces - With Ice - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F a e	e	C <sub>p</sub>	q <sub>z</sub>	D <sub>f</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K	e	e		psf			ft <sup>2</sup>	K	psf	
290.00-280.00	0.81	1.56	A	0.437	1.996	3	0.8	1	16.495	0.16	16.28	C
			B	0.437	1.996	0.85	0.8	1	16.495			
			C	0.437	1.996	0.85	0.8	1	16.495			
280.00-260.00	5.74	3.24	A	0.42	2.025	3	0.8	1	31.937	0.56	28.18	C
			B	0.42	2.025	0.85	0.8	1	31.937			
			C	0.42	2.025	0.85	0.8	1	31.937			
260.00-240.00	9.33	3.72	A	0.388	2.087	3	0.8	1	34.497	0.70	35.14	B
			B	0.388	2.087	0.85	0.8	1	34.497			
			C	0.388	2.087	0.85	0.8	1	34.497			
240.00-220.00	9.57	4.81	A	0.351	2.169	3	0.8	1	40.429	0.73	36.55	B
			B	0.351	2.169	0.85	0.8	1	40.429			
			C	0.351	2.169	0.85	0.8	1	40.429			
220.00-200.00	9.51	11.95	A	0.414	2.038	3	0.8	1	62.774	0.81	40.32	B
			B	0.414	2.038	0.85	0.8	1	62.774			
			C	0.414	2.038	0.85	0.8	1	62.774			
200.00-180.00	9.45	12.18	A	0.363	2.142	3	0.8	1	63.028	0.81	40.70	B
			B	0.363	2.142	0.85	0.8	1	63.028			
			C	0.363	2.142	0.85	0.8	1	63.028			
180.00-160.00	9.37	13.26	A	0.3	2.295	3	0.8	1	57.899	0.79	39.44	B
			B	0.3	2.295	0.85	0.8	1	57.899			
			C	0.3	2.295	0.85	0.8	1	57.899			

<b>tnxTower</b> Valmont 1543 Pideo Drive Plymouth, IN Phone: 374-936-4221 FAX:	Job	240568	Page	23 of 64
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	Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b> Valmont 1543 Pideo Drive Plymouth, IN Phone: 374-936-4221 FAX
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<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 374-936-4221 FAX:	Job	240568	Page	25 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>r</sub>	g <sub>r</sub>	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K				psf			ft <sup>2</sup>	K	plf	
T8	1.69	4.62	A	0.117	2.895	11	1	1	23.372	1.98	98.81	B
160.00-140.00			B	0.117	2.895				23.372			C
			C	0.117	2.895				23.372			
T9	1.69	5.32	A	0.112	2.915	10	1	1	26.808	1.99	99.31	B
140.00-120.80			B	0.112	2.915				26.808			C
			C	0.112	2.915				26.808			
T10	1.69	6.01	A	0.107	2.935	10	1	1	27.367	1.96	98.01	B
120.00-100.80			B	0.107	2.935				27.367			C
			C	0.107	2.935				27.367			
T11	1.69	6.11	A	0.1	2.965	10	1	1	28.090	1.90	95.17	B
100.00-80.00			B	0.1	2.965				28.090			C
			C	0.1	2.965				28.090			
T12	1.69	7.02	A	0.099	2.97	9	1	1	29.941	1.85	92.47	B
80.00-60.00			B	0.099	2.97				29.941			C
			C	0.099	2.97				29.941			
T13	1.69	7.13	A	0.093	2.993	9	1	1	30.760	1.75	87.29	B
60.80-40.08			B	0.093	2.993				30.760			C
			C	0.093	2.993				30.760			
T14	1.69	7.96	A	0.091	3	8	1	1	32.364	1.60	80.03	B
40.00-20.00			B	0.091	3				32.364			C
			C	0.091	3				32.364			
T15	1.69	8.45	A	0.091	2.999	7	1	1	36.153	1.45	72.47	B
20.00-0.00			B	0.091	2.999				36.153			C
			C	0.091	2.999				36.153			
Sum Weight:	22.98	67.24						OTM	3762.43	26.12		

<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 374-936-4221 FAX:	Job	240568	Page	26 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>r</sub>	g <sub>r</sub>	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K				psf			ft <sup>2</sup>	K	plf	
T8	1.69	4.62	A	0.117	2.895	11	0.8	1	20.993	1.91	95.63	C
160.00-140.00			B	0.117	2.895				20.993			
			C	0.117	2.895				20.993			
T9	1.69	5.32	A	0.112	2.915	10	0.8	1	23.088	1.91	95.72	C
140.00-120.00			B	0.112	2.915				23.088			
			C	0.112	2.915				23.088			
T10	1.69	6.01	A	0.107	2.935	10	0.8	1	24.292	1.88	94.13	C
120.00-100.80			B	0.107	2.935				24.292			
			C	0.107	2.935				24.292			
T11	1.69	6.11	A	0.1	2.965	10	0.8	1	24.851	1.82	91.22	C
100.00-80.00			B	0.1	2.965				24.851			
			C	0.1	2.965				24.851			
T12	1.69	7.02	A	0.099	2.97	9	0.8	1	26.529	1.77	88.51	C
80.00-60.00			B	0.099	2.97				26.529			
			C	0.099	2.97				26.529			
T13	1.69	7.13	A	0.093	2.993	9	0.8	1	27.168	1.67	83.37	C
60.80-40.00			B	0.093	2.993				27.168			
			C	0.093	2.993				27.168			
T14	1.69	7.96	A	0.091	3	8	0.8	1	28.587	1.53	76.33	C
40.00-20.00			B	0.091	3				28.587			
			C	0.091	3				28.587			
T15	1.69	8.45	A	0.091	2.999	7	0.8	1	31.619	1.37	68.62	C
20.00-0.00			B	0.091	2.999				31.619			
			C	0.091	2.999				31.619			
Sum Weight:	22.98	67.24						OTM	3635.31	25.15		

**Tower Forces - Service - Wind 60 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>r</sub>	g <sub>r</sub>	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K				psf			ft <sup>2</sup>	K	plf	
T1	0.12	8.34	A	0.18	2.665	12	0.8	1	6.437	0.32	32.01	C
290.00-280.00			B	0.18	2.665				6.437			
			C	0.18	2.665				6.437			
T2	0.93	1.01	A	8.206	2.575	12	0.8	1	13.768	1.21	60.67	C
280.00-260.00			B	0.206	2.575				13.768			
			C	0.206	2.575				13.768			
T3	1.62	1.28	A	0.203	2.586	12	0.8	1	15.358	1.82	91.06	C
250.00-240.00			B	0.203	2.586				15.358			
			C	0.203	2.586				15.358			
T4	1.69	1.73	A	0.196	2.61	12	0.8	1	15.164	1.99	99.26	C
240.00-220.00			B	0.196	2.61				15.164			
			C	0.196	2.61				15.164			
T5	1.69	3.09	A	0.17	2.7	12	0.8	1	20.794	2.81	100.39	C
220.00-200.00			B	0.17	2.7				20.794			
			C	0.17	2.7				20.794			
T6	1.69	3.15	A	0.149	2.774	11	0.8	1	21.653	2.00	100.19	C
200.00-180.88			B	0.149	2.774				21.653			
			C	0.149	2.774				21.653			
T7	1.69	4.03	A	0.126	2.861	11	0.8	1	20.818	1.93	96.56	C
180.00-160.00			B	0.126	2.861				20.818			
			C	0.126	2.861				20.818			

**Tower Forces - Service - Wind 90 To Face**

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>r</sub>	g <sub>r</sub>	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K				psf			ft <sup>2</sup>	K	plf	
T1	0.12	8.34	A	0.18	2.665	12	0.8	1	6.668	0.33	32.66	C
290.00-280.00			B	0.18	2.665				6.668			
			C	0.18	2.665				6.668			
T2	0.93	1.01	A	8.206	2.575	12	0.8	1	14.126	1.33	66.72	C
280.00-260.00			B	0.206	2.575				14.126			
			C	0.206	2.575				14.126			
T3	1.62	1.28	A	0.203	2.586	12	0.8	1	15.742	1.71	85.46	C
250.00-240.00			B	0.203	2.586				15.742			
			C	0.203	2.586				15.742			
T4	1.69	1.73	A	0.196	2.61	12	0.8	1	19.732	1.83	91.74	C
240.00-220.00			B	0.196	2.61				19.732			
			C	0.196	2.61				19.732			
T5	1.69	3.09	A	0.17	2.7	12	0.8	1	21.418	1.86	93.11	C
220.00-200.00			B	0.17	2.7				21.418			
			C	0.17	2.7				21.418			
T6	1.69	3.15	A	0.149	2.774	11	0.8	1	22.340	1.86	93.17	C
200.00-180.88			B	0.149	2.774				22.340			
			C	0.149	2.774				22.340			
T7	1.69	4.03	A	0.126	2.861	11	0.8	1	20.585	1.79	89.57	C
180.00-160.00			B	0.126	2.861				20.585			
			C	0.126	2.861				20.585			

<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 374-936-4221 FAX:	Job	240568	Page	27 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Section Elevation	Add Weight	Self Weight	F a c e	e	C <sub>r</sub>	g <sub>r</sub>	D <sub>r</sub>	D <sub>s</sub>	A <sub>e</sub>	F	w	Ctrl. Face
ft	K	K				psf			ft <sup>2</sup>	K	plf	
T8	1.69	4.62	A	0.117	2.895	11	0.85	1	21.588	1.76	88.89	C
160.00-140.00			B	0.117	2.895				21.588			
			C	0.117	2.895				21.588			

<b>tnxTower</b>		Job	240568	Page	29 of 64
Valmont 1545 Pickett Drive Plymouth, IN Phone: 374-936-4121 FAX:		Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
		Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b>		Job	240568	Page	30 of 64
Valmont 1545 Pickett Drive Plymouth, IN Phone: 374-936-4121 FAX:		Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
		Client	American Tower Corp.	Designed by	SKK

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F			OTM <sub>1</sub>			OTM <sub>2</sub>			Torque							
				K	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft					
T8	160.00-140.88	Wind 90	3.73	-1.46	-3.23	-519.61	313.80	0.78	3.73	-1.46	-3.23	-519.61	313.80	0.78	3.73	-1.46	-3.23	-519.61	313.80	0.78

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F			OTM <sub>1</sub>			OTM <sub>2</sub>			Torque							
				K	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft					
T13	68.00-48.00	Wind Normal	3.38	0.88	-3.38	-178.19	-2.06	8.96	3.38	0.88	-3.38	-178.19	-2.06	8.96	3.38	0.88	-3.38	-178.19	-2.06	8.96

**Mast Totals - No Ice**

Wind Azimuth °	F	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>1</sub>	OTM <sub>2</sub>	Torque
°	K	K	K	kip-ft	kip-ft	kip-ft
0	0.88	-50.12	-7209.38	-19.21	9.59	6.88
30	26.45	-48.82	-6623.24	-1836.95	6.88	9.59

<b>tnxTower</b>		Job	240568	Page	31 of 64
Valmont 1545 Pickett Drive Plymouth, IN Phone: 374-936-4121 FAX:		Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
		Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b>		Job	240568	Page	32 of 64
Valmont 1545 Pickett Drive Plymouth, IN Phone: 374-936-4121 FAX:		Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
		Client	American Tower Corp.	Designed by	SKK

**Mast Vectors - With Ice**

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F			OTM <sub>1</sub>			OTM <sub>2</sub>			Torque							
				K	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft					
T1	290.00-288.88	Wind Normal	0.13	8.80	-0.13	-18.08	-1.13	0.83	0.13	8.80	-0.13	-18.08	-1.13	0.83	0.13	8.80	-0.13	-18.08	-1.13	0.83

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F			OTM <sub>1</sub>			OTM <sub>2</sub>			Torque							
				K	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft					
T6	280.00-180.88	Wind Normal	8.81	-0.78	0.41	83.77	143.34	-0.02	8.81	-0.78	0.41	83.77	143.34	-0.02	8.81	-0.78	0.41	83.77	143.34	-0.02

<b>tnxTower</b>		Job	240568	Page	33 of 64
Valmont 1545 Piko Drive Plymouth, IN Phone: 314-936-4221 FAX:		Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
		Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b>		Job	240568	Page	34 of 64
Valmont 1545 Piko Drive Plymouth, IN Phone: 314-936-4221 FAX:		Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
		Client	American Tower Corp.	Designed by	SKK

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
				K	K	K	kip-ft	kip-ft	kip-ft
T11	100.80-80.00	270	Wind 90	0.76	-0.76	8.00	-2.52	25.76	-0.03
		308	Wind 60	0.76	-0.66	-3.88	-44.17	64.68	-0.01
		330	Wind 90	0.76	-0.66	-35.20	34.54	0.01	
		0	Wind Normal	0.75	0.00	-0.75	-70.34	-8.12	0.03
		30	Wind 90	0.73	0.37	-0.64	-49.93	-41.12	0.04
		60	Wind 60	0.73	0.63	-0.36	-35.48	-64.77	0.04
		90	Wind 90	0.73	0.75	0.08	-2.77	-11.12	0.03
		120	Wind Normal	0.75	8.65	8.65	31.01	-66.03	8.01
		150	Wind 90	0.74	0.47	0.64	54.92	-41.43	-0.01
		180	Wind 60	0.73	0.87	8.73	63.26	-8.12	-0.03
		210	Wind 90	0.73	-0.37	0.64	54.20	14.88	0.04
		240	Wind Normal	0.74	-0.64	8.37	30.70	49.86	-0.04
T12	88.00-60.00	270	Wind 90	0.73	-0.73	8.00	-2.77	57.88	-0.83
		308	Wind 60	0.73	-0.64	-0.37	-35.79	49.87	-0.01
		330	Wind 90	0.74	-0.37	-0.64	-60.47	25.19	0.01
		0	Wind Normal	0.72	8.00	-0.72	-53.55	-8.74	0.03
		30	Wind 90	0.78	8.35	-0.61	-45.73	-33.39	8.04
		60	Wind 60	0.78	8.74	-0.46	-31.80	-64.68	0.04
		90	Wind 90	0.70	0.78	0.00	-3.03	-18.83	0.03
		120	Wind Normal	0.72	0.62	0.36	22.20	-52.48	8.01
		150	Wind 90	0.71	8.35	0.36	48.84	-33.62	-0.81
		180	Wind 60	0.70	8.00	0.70	46.24	-8.74	8.03
		210	Wind 90	0.70	-0.35	0.61	39.64	15.90	-0.04
		240	Wind Normal	0.71	-0.62	0.36	21.97	34.60	-0.04
T13	68.00-48.00	270	Wind 90	0.78	-0.70	8.00	-3.09	40.54	8.03
		308	Wind 60	0.66	-0.61	-0.35	-27.69	33.94	-0.81
		330	Wind 90	0.71	-0.36	-0.62	-46.13	16.13	8.01
		0	Wind Normal	0.68	8.00	-0.68	-37.23	-9.34	8.03
		30	Wind 90	0.66	8.00	0.70	22.87	-2.88	8.04
		60	Wind 60	0.65	0.57	-0.33	-19.70	-37.68	8.04
		90	Wind 90	0.66	0.66	8.00	-3.34	-42.38	8.03
		120	Wind Normal	0.64	8.59	0.31	46.30	-31.65	-0.81
		150	Wind 90	0.67	8.33	0.58	25.54	-26.01	-0.81
		180	Wind 60	0.66	8.80	8.66	29.69	-9.34	-8.83
		210	Wind 90	0.66	-0.33	0.57	25.28	7.18	-0.84
		240	Wind Normal	0.67	-0.66	0.31	15.73	19.70	-0.81
T14	48.00-20.08	270	Wind 90	0.66	-0.66	8.00	-3.34	23.71	-0.02
		308	Wind 60	0.66	-0.57	-0.33	-19.83	19.27	-0.01
		330	Wind 90	0.67	-0.33	-0.58	-32.22	7.34	8.01
		0	Wind Normal	0.61	8.00	-0.61	-22.87	-0.88	8.04
		30	Wind 90	0.60	0.38	-0.52	-19.19	-18.84	8.04
		60	Wind 60	0.59	0.31	-0.36	-12.54	-24.24	8.04
		90	Wind 90	0.60	0.60	8.00	-3.67	-27.86	8.23
		120	Wind Normal	0.61	0.53	0.31	5.53	-25.81	8.81
		150	Wind 90	0.60	0.38	0.52	11.99	-18.92	-0.01
		180	Wind 60	0.60	0.80	0.60	14.23	-8.88	-0.82
		210	Wind 90	0.60	-0.33	11.84	0.52	-8.88	-0.82
		240	Wind Normal	0.61	-0.63	0.36	3.45	5.92	-0.04
T15	20.08-8.00	270	Wind 90	0.68	-0.68	8.00	-3.67	8.04	-0.83
		308	Wind 60	0.68	-0.59	-0.30	-12.62	5.63	-8.81
		330	Wind 90	0.69	-0.36	-0.53	-20.83	8.83	8.03
		0	Wind Normal	0.54	8.00	-0.54	-8.47	-10.26	8.03
		30	Wind 90	0.52	0.26	-0.45	-8.61	-12.87	0.03
		60	Wind 60	0.45	0.26	0.45	1.72	6.03	0.03
		90	Wind 90	0.52	0.82	0.08	-1.10	-15.47	0.82
		120	Wind Normal	0.54	0.47	0.27	-1.41	-14.92	0.81
		150	Wind 90	0.53	0.26	0.46	0.48	-12.89	-0.81
		180	Wind 60	0.53	0.00	0.26	1.10	-10.26	-0.82
		210	Wind 90	0.52	-0.26	0.45	0.41	-7.65	-0.03
		240	Wind Normal	0.53	-0.46	0.27	-1.44	-8.65	-0.03
270	Wind 90	0.52	-0.52	0.00	-4.10	-5.06	-0.02		

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
				K	K	K	kip-ft	kip-ft	kip-ft
T11	100.80-80.00	300	Wind 60	0.52	-0.45	-0.26	-6.70	-5.76	-0.01
		300	Wind 90	0.53	-0.26	-0.46	-8.65	-7.64	0.01
		300	Wind 90	0.53	-0.26	-0.46	-8.65	-7.64	0.01

### Mast Totals - With Ice

Wind Azimuth °	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
	K	K	kip-ft	kip-ft	kip-ft
0	0.00	-10.15	-1492.36	-89.11	0.37
30	5.01	-8.67	-1289.86	-84.76	8.43
60	8.66	-5.00	-763.18	-1159.67	0.37
90	10.89	8.08	-33.01	-1559.83	8.21
120	8.86	5.11	706.39	-1369.78	0.00
150	5.02	8.69	1217.63	-811.17	-8.21
180	0.88	9.95	1400.58	-89.11	-8.37
210	-5.01	8.67	1233.84	636.53	-0.43
240	-8.84	5.10	709.97	1197.76	-0.37
270	-18.09	0.80	-33.01	1381.60	-0.21
300	-8.68	-5.01	-759.52	1169.24	-0.00
330	-5.02	-8.69	-1283.65	632.94	0.21

### Mast Vectors - Service

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
				K	K	K	kip-ft	kip-ft	kip-ft
T1	290.88-288.00	8	Wind Normal	8.29	0.00	-0.29	-83.23	-0.17	8.07
		38	Wind 90	0.33	0.16	-0.28	-80.70	-46.70	8.05
		60	Wind 60	0.32	0.28	-0.16	-45.70	-79.18	0.81
		90	Wind 90	0.33	0.33	0.00	-0.09	-93.24	-0.84
		120	Wind Normal	0.29	8.25	8.15	41.48	-72.17	-0.86
		150	Wind 90	0.22	8.11	8.19	54.72	-31.81	-0.26
		180	Wind 60	0.27	8.00	8.27	75.67	-61.17	-8.06
		210	Wind 90	0.23	-0.16	0.28	80.52	-46.37	-0.85
		240	Wind Normal	0.35	-0.30	0.17	49.22	85.24	-0.81
		270	Wind 90	0.33	-0.33	8.00	-0.09	92.91	8.04
		300	Wind 60	0.27	-0.23	-0.13	-37.97	65.44	0.86
		330	Wind 90	0.22	-0.11	-0.19	-54.90	31.48	0.86
T2	280.08-260.80	8	Wind Normal	1.09	8.00	-1.89	-294.94	-0.17	0.85
		38	Wind 90	1.13	8.56	-0.98	-264.13	-152.40	-0.02
		60	Wind 60	1.21	1.85	-0.61	-164.26	-283.89	-0.88
		90	Wind 90	1.33	1.33	0.88	-8.45	-360.41	-0.14
		120	Wind Normal	1.20	1.04	1.61	161.28	-280.38	-0.13
		150	Wind 90	1.02	0.51	0.89	239.05	-139.45	-0.09
		180	Wind 60	1.05	0.08	1.85	283.67	-0.17	-0.02
		210	Wind 90	1.13	-0.56	0.98	263.22	152.06	0.05
		240	Wind Normal	1.20	-0.84	0.63	158.25	292.55	0.09
		270	Wind 90	1.33	-1.33	0.80	-0.46	368.18	0.14
		300	Wind 60	1.16	-1.80	-0.58	-157.82	271.80	0.13
		330	Wind 90	1.82	-0.51	-0.89	-239.97	138.11	0.89
T3	260.00-248.00	8	Wind Normal	1.61	8.00	-1.61	-491.76	-0.41	8.11
		30	Wind 90	1.71	8.85	-1.48	-378.27	-214.07	0.07

<b>tnxTower</b>		Job	240568	Page	35 of 64
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		Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b>		Job	240568	Page	36 of 64
Valmont 1545 Piko Drive Plymouth, IN Phone: 314-936-4221 FAX:		Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
		Client	American Tower Corp.	Designed by	SKK

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
				K	K	K	kip-ft	kip-ft	kip-ft
T4	240.08-220.08	60	Wind 60	1.82	1.58	-0.91	-223.88	-394.73	8.01
		90	Wind 90	1.71	1.71	8.00	-8.23	-427.71	-0.86
		120	Wind Normal	1.61	1.39	0.88	288.53	-848.17	-0.10
		150	Wind 90	1.60	8.20	1.39	462.30	-208.45	-0.12
		180	Wind 60	1.57	0.00	1.57	391.16	-0.43	-0.11
		210	Wind 90	1.71	-0.85	1.48	369.80	213.21	-0.07
		240	Wind Normal	1.66	-1.61	8.93	232.49	482.64	-0.01
		270	Wind 90	1.71	-1.71	8.00	-19.23	496.85	8.86
		300	Wind 60	1.57	-1.36	-0.78	-193.93	338.52	0.00
		330	Wind 90	1.60	-0.80	-1.39	-346.66	199.59	0.12
		0	Wind Normal	1.71	8.88	-1.71	-393.64	-0.71	8.18
		30	Wind 98	1.83	8.52	-1.59	-365.84	-211.70	8.12
T5	220.00-200.08	60	Wind 68	1.98	1.72	-0.99	-228.68	-396.12	0.01
		90	Wind 90	1.83	1.83	0.00	-0.38	-422.78	-0.10
		120	Wind Normal	1.71	1.48	1.43	196.24	-241.28	-0.17
		150	Wind 90	1.69	0.85	1.47	336.62	-195.28	-0.20
		180	Wind 60	1.65	0.08	1.65	379.17	-0.71	-0.17
		210	Wind 90	1.83	-0.92	1.50	365.87	218.29	-0.12
		240	Wind Normal	1.84	-1.77	1.04	234.76	406.91	0.01
		270	Wind 90	1.83	-1.83	0.00	-0.38	-421.28	0.10
		300	Wind 60	1.65	-1.43	-0.83	-190.16	328.00	0.16
		330	Wind 90	1.69	-0.85	-1.47	-337.39	158.86	0.20
		0	Wind Normal	1.74	8.80	-1.74	-366.88	-0.86	8.22
		30	Wind 90	1.86	0.93	-1.61	-339.12	-196.38	8.14
T6	200.08-180.80	68	Wind 60	2.01	1.74	-1.00	-211.29	-366.03	0.81
		90	Wind 90	1.86	1.86	0.00	-8.46	-391.90	-0.12
		120	Wind Normal	1.74	1.51	8.87	182.75	-318.19	-8.20

<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	37 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	38 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Section No.	Section Elevation	Wind Azimuth	Directionality	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque		
	ft	°		K	K	K	K	kip-ft	kip-ft	kip-ft		
T14	40.00-20.00	120	Wind Normal	1.50	1.30	0.75	36.46	-57.14	-0.40			
		150	Wind 90	1.46	8.73	1.27	62.26	-38.63	-0.47			
		180	Wind 60	1.42	8.00	1.42	70.12	-2.06	-0.41			
		210	Wind 90	1.57	-0.78	1.36	66.75	37.12	-0.27			
		240	Wind Normal	1.75	-1.91	0.87	45.53	73.53	-0.83			
		270	Wind 90	1.57	1.57	0.00	0.00	-1.11	76.30	0.23		
		300	Wind 60	1.42	-1.23	-0.71	-36.73	39.62	0.38			
		330	Wind 90	1.46	-0.73	-1.27	-64.49	34.53	0.47			
		0	Wind Normal	1.38	0.08	-1.38	-42.67	-2.21	0.42			
		30	Wind 90	1.44	8.72	1.24	-38.54	-23.78	0.27			
		60	Wind 60	1.53	1.32	-0.76	-24.89	-11.88	0.83			
		90	Wind 90	1.44	1.44	0.08	-1.19	-43.34	-1.22			
		120	Wind Normal	1.38	1.20	0.69	19.55	-38.15	-0.39			
		150	Wind 90	1.34	8.67	1.16	33.74	-22.38	-0.46			
		180	Wind 60	1.31	8.08	1.31	38.06	-2.21	-0.40			
		210	Wind 90	1.44	-0.72	1.24	36.15	19.33	-0.27			
		240	Wind Normal	1.60	-1.39	0.88	22.82	39.37	-0.83			
		270	Wind 90	1.44	-1.44	0.00	-1.19	40.91	-0.27			
300	Wind 60	1.31	-1.13	-0.63	-28.82	31.78	0.37					
330	Wind 90	1.34	-0.67	-1.16	-36.12	13.95	0.46					
0	Wind Normal	1.26	8.08	-1.26	-13.88	-2.37	0.48					
30	Wind 90	1.30	8.65	-1.12	-12.52	-8.86	0.23					
60	Wind 60	1.27	1.19	-0.69	-8.14	-14.23	-0.23					
90	Wind 90	1.38	1.30	0.88	10.55	-15.34	-0.31					
120	Wind Normal	1.26	1.89	0.63	5.03	-13.28	-0.38					
150	Wind 90	1.22	8.61	1.85	9.27	-8.45	-0.43					
180	Wind 60	1.18	8.80	1.18	14.56	-2.37	-0.38					
210	Wind 90	1.30	-0.65	1.12	9.97	4.13	-0.25					
240	Wind Normal	1.45	-1.26	0.77	5.97	18.19	-0.03					
270	Wind 90	1.30	-1.20	0.80	-1.27	10.62	0.21					
300	Wind 60	1.18	-1.03	-0.59	-7.19	7.89	0.35					
330	Wind 90	1.22	-0.61	-1.85	-11.82	3.72	0.43					

Description	Aiming Azimuth	Weight	Offset <sub>x</sub>	Offset <sub>y</sub>	z	K <sub>x</sub>	q <sub>x</sub>	C <sub>x</sub> C <sub>y</sub> Prod	C <sub>x</sub> C <sub>y</sub> Side	t
	°	lb	ft	ft	ft	lb	in	ft <sup>2</sup>	ft <sup>2</sup>	in
Beacon	0.0000	0.07	0.00	-2.89	294.39	1.589	28	2.40	2.40	2.40
Beacon Extender (4)	0.0000	0.00	0.00	-2.89	292.21	1.586	28	1.11	1.11	1.11
Ø30462		0.03								
1/2" x 4' lightning rod	240.0000	0.01	-2.50	1.44	292.00	1.586	28	3.20	0.20	0.20
ATC Loading	0.0000	2.00	0.00	0.00	245.00	1.578	28	115.00	115.00	115.00
ATC Loading	0.0000	2.00	0.00	0.00	275.00	1.566	28	115.00	115.00	115.00
ATC Loading	0.0008	2.00	0.00	8.88	265.80	1.534	27	115.88	115.00	115.00
ATC Loading	8.0000	2.00	0.00	8.00	255.88	1.541	27	115.00	115.00	115.00
Weight:		8.12								

**Discrete Appurtenance Vectors - No Ice**

Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	K	K	kip-ft	kip-ft	kip-ft
0	0.86	8.00	0.00	-0.86	-17.83	0.80	0.00
30	0.05	8.03	0.03	-0.85	-14.77	-8.41	-0.08
60	0.83	0.85	0.85	-0.83	-8.62	-14.56	-2.14
90	0.80	0.06	0.86	8.88	-0.21	-16.82	-1.16
120	0.83	0.85	0.85	0.83	8.20	-14.56	-1.14
150	8.85	0.03	8.83	0.85	14.35	-8.41	-0.08
180	0.86	0.00	8.88	0.86	16.61	0.80	0.00
210	0.05	0.03	-0.03	0.85	14.35	8.41	0.08
240	0.03	8.05	-0.05	0.83	8.20	14.56	0.14
270	0.00	0.06	-0.86	8.00	-0.21	16.82	1.16
300	0.83	0.05	-0.85	-0.83	-8.62	14.56	1.14
330	0.80	0.03	-0.83	-0.80	-14.77	8.41	0.08

Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	K	K	kip-ft	kip-ft	kip-ft
0	0.83	8.01	0.00	8.00	-0.03	-7.79	0.00
30	0.82	8.01	0.81	0.81	-0.82	-6.36	-1.85
60	0.81	8.02	0.02	-0.81	-3.54	-6.68	-0.87
90	0.09	0.03	0.03	8.00	-0.09	-7.71	-0.98
120	0.01	0.02	0.02	0.01	3.77	-6.68	-0.07
150	0.82	0.00	0.81	8.82	6.69	-1.85	-0.04
180	0.03	0.00	0.80	0.03	7.62	0.08	0.00
210	0.02	0.01	-0.81	0.02	6.59	3.85	0.04
240	0.01	0.01	-0.82	0.81	3.77	6.68	0.87
270	0.08	0.03	-0.83	0.00	-0.09	7.71	0.88
300	0.01	0.02	-0.02	-0.81	-1.34	6.68	0.07
330	0.02	0.81	-0.81	-0.02	-6.76	3.85	0.84

Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	K	K	kip-ft	kip-ft	kip-ft
0	0.00	0.00	0.00	-0.00	-1.37	0.84	-0.01
30	0.00	0.00	0.00	-1.18	-0.67	-8.66	-0.01
60	0.00	0.00	8.80	-0.80	-0.67	-1.17	0.88

**Mast Totals - Service**

Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft
0	8.00	-22.28	-3218.09	-19.21	4.26
30	11.75	-20.36	-2949.62	-1715.58	2.70
60	21.78	-12.89	-1828.39	-3167.48	0.21
90	23.72	0.80	-18.73	-3468.36	-2.38
120	19.39	11.19	1603.45	-2815.85	-4.09
150	10.88	18.84	2691.99	-1579.63	-4.69
180	8.00	21.31	3861.41	-194.61	-1.56
210	-11.76	20.36	2928.17	1677.56	-2.70
240	-22.62	13.06	1870.49	3239.15	-0.22
270	-23.72	0.00	-10.73	3430.14	2.38
300	-18.83	-10.71	-1851.34	2566.51	1.90
330	-10.88	-18.84	-2713.45	1541.28	4.69

**Discrete Appurtenance Pressures - No Ice** G<sub>H</sub> = 0.850

<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	39 of 64
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<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	40 of 64
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Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	K	K	kip-ft	kip-ft	kip-ft
90	0.00	0.00	0.00	0.00	0.00	0.00	0.81
120	8.00	0.00	8.00	0.00	0.02	-1.35	0.01
150	8.00	0.00	8.00	0.80	1.22	-8.66	0.81
180	0.00	0.00	0.80	0.80	1.41	0.04	0.01
210	0.00	0.00	-0.88	0.80	0.22	8.73	0.01
240	0.00	0.00	-0.00	0.00	8.71	1.24	0.00
270	0.00	0.00	-0.88	0.00	8.82	1.42	-0.01
300	0.00	0.00	-0.00	-0.67	1.24	-8.81	0.01
330	8.00	0.00	-0.00	-1.18	0.73	-0.01	-0.01

Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	K	K	kip-ft	kip-ft	kip-ft
188	2.68	0.00	0.00	2.58	709.41	0.00	0.80
210	2.68	8.00	-1.34	2.68	614.39	354.72	8.80
240	2.68	8.00	-2.32	1.34	354.72	614.39	-8.80
270	2.68	0.00	-2.68	0.00	709.41	0.00	0.80
300	2.68	0.00	-2.32	-1.34	-354.72	614.39	8.80
330	2.68	0.00	-1.34	-2.32	-614.39	354.72	0.80

Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	K	K	kip-ft	kip-ft	kip-ft
0	2.72	0.00	8.80	-2.72	-774.76	8.80	0.00
30	2.72	0.00	1.36	-2.32	-670.96	-387.38	0.00
60	2.72	0.00	2.35	-1.36	-387.38	-670.96	0.00
90	2.72	0.00	2.72	0.00	0.00	-774.76	0.80
120	2.72	0.00	2.35	1.36	387.38	-670.96	0.80
150	2.72	8.00	1.36	2.35	670.96	-387.38	0.00
180	2.72	8.00	0.00	2.72	774.76	8.80	0.00
210	2.72	0.00	-1.36	2.35	678.96	387.38	0.80
240	2.72	8.00	-2.35	1.36	387.38	670.96	0.80
270	2.72	0.00	-2.72	0.00	0.00	774.76	8.80
300	2.72	0.00	-2.35	-1.36	-387.38	670.96	0.00
330	2.72	0.00	-1.36	-2.35	-670.96	387.38	0.00

Wind Azimuth	F <sub>x</sub>	F <sub>y</sub>	V <sub>x</sub>	V <sub>y</sub>	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	K	K	kip-ft	kip-ft	kip-ft
0	2.66	0.00	8.08	-2.66	-677.16	8.00	0.00
30	2.66	0.00	1.33	-2.38	-586.44	-338.58	0.00
60	2.66	0.00	2.30	-1.33	-338.58	-586.44	0.00
90	2.66	0.00	2.66	0.00	0.00	-677.16	0.80
120	2.66	0.00	2.38	1.33	338.58	-586.44	0.00
150	2.66	8.					

<b>tnxTower</b> Valmont 1343 Pico Drive Plymouth, IN Phone: 374-936-4221 FAX:	Job	240568	Page	41 of 64
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	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Description	Aiming Azimuth	Weight	Offset <sub>x</sub>	Offset <sub>y</sub>	$\alpha$	$K_x$	$\rho$	$C_{Ac}$ Front	$C_{Ac}$ Side	$t_x$
	°	lb	ft	ft	ft		psf	ft <sup>2</sup>	ft <sup>2</sup>	in
1/2" x 4" lightning rod	240.0000	0.04	-2.50	1.44	292.00	1.586	3	1.26	1.26	1.8611
ATC Loading	0.0000	5.72	0.00	0.00	285.00	1.578	3	189.44	189.44	1.8609
ATC Loading	0.0000	5.71	0.00	0.00	275.00	1.566	3	189.17	189.17	1.8543
ATC Loading	0.0000	5.69	0.00	0.00	265.00	1.554	3	188.90	188.90	1.8474
ATC Loading	0.0000	5.68	0.00	0.00	255.00	1.541	3	188.61	188.61	1.8403
Sum		23.97								

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00
210	0.00	0.00	0.00	0.00	0.00	0.00	0.00
240	0.00	0.00	0.00	0.00	0.00	0.00	0.00
270	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	0.00	0.00	0.00	0.00	0.00	0.00	0.00
330	0.00	0.00	0.00	0.00	0.00	0.00	0.00

**Discrete Appurtenance Vectors - With Ice**

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.01	0.00	0.00	-0.01	-3.12	0.00	0.00
30	0.01	0.00	0.00	-0.01	-2.77	-1.33	-0.01
60	0.00	0.01	0.01	-0.00	-1.80	-2.30	-0.02
90	0.00	0.01	0.01	0.00	-0.47	-2.65	-0.03
120	0.00	0.01	0.01	0.00	0.86	-2.30	-0.02
150	0.01	0.00	0.00	0.01	1.83	-1.33	-0.01
180	0.01	0.00	0.00	0.01	2.18	0.00	0.00
210	0.01	0.00	0.00	0.01	1.83	1.33	0.01
240	0.00	0.01	0.01	0.00	0.86	2.30	0.02
270	0.00	0.01	0.01	-0.01	-0.47	2.65	0.03
300	0.00	0.01	0.01	-0.01	-1.80	2.30	0.02
330	0.01	0.00	0.00	-0.01	-2.77	1.33	0.01

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.50	0.00	0.00	0.00	-0.50	-141.80	0.80
30	0.50	0.00	0.25	-0.43	-122.81	-70.90	0.90
60	0.50	0.00	0.43	-0.25	-70.90	-122.81	0.80
90	0.50	0.00	0.50	0.00	0.00	-141.80	0.80
120	0.50	0.00	0.43	0.25	70.90	-122.81	0.80
150	0.50	0.00	0.25	0.43	122.81	-70.90	0.90
180	0.50	0.00	0.00	0.50	0.00	-141.80	0.80
210	0.50	0.00	-0.25	0.43	122.81	70.90	0.90
240	0.50	0.00	-0.43	0.25	70.90	122.81	0.80
270	0.50	0.00	-0.50	0.00	0.00	141.80	0.80
300	0.50	0.00	-0.43	-0.25	-70.90	122.81	0.80
330	0.50	0.00	-0.25	-0.43	-122.81	70.90	0.90

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.01	0.00	0.00	-0.01	-1.66	0.00	0.00
30	0.00	0.00	0.00	-0.01	-1.46	-0.73	-0.01
60	0.00	0.00	0.00	-0.00	-0.93	-1.26	-0.01
90	0.00	0.00	0.00	0.00	-0.20	-1.46	-0.01
120	0.00	0.00	0.00	0.00	0.54	-1.26	-0.01
150	0.00	0.00	0.00	0.00	1.07	-0.73	-0.01
180	0.01	0.00	0.00	0.01	1.27	0.00	0.00
210	0.00	0.00	0.00	0.00	1.07	0.73	0.01
240	0.00	0.01	0.01	0.00	0.54	1.26	0.01
270	0.00	0.00	0.00	0.00	-0.20	1.46	0.01
300	0.00	0.00	0.00	-0.00	-0.93	1.26	0.01
330	0.00	0.00	0.00	-0.00	-1.46	0.73	0.01

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.49	0.00	0.00	-0.49	-125.61	0.00	0.00
30	0.49	0.00	0.25	-0.43	-117.44	-67.81	0.00
60	0.49	0.00	0.43	-0.25	-67.81	-117.44	0.00
90	0.49	0.00	0.49	0.00	0.00	-125.61	0.00
120	0.49	0.00	0.43	0.25	67.81	-117.44	0.00
150	0.49	0.00	0.25	0.43	117.44	-67.81	0.00
180	0.49	0.00	0.00	0.49	0.00	-125.61	0.00
210	0.49	0.00	-0.25	0.43	117.44	67.81	0.00
240	0.49	0.00	-0.43	0.25	67.81	117.44	0.00
270	0.49	0.00	-0.49	0.00	0.00	125.61	0.00
300	0.49	0.00	-0.43	-0.25	-67.81	117.44	0.00
330	0.49	0.00	-0.25	-0.43	-117.44	67.81	0.00

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.00	0.00	0.00	-0.00	-0.92	0.00	-0.01
30	0.00	0.00	0.00	-0.00	-0.79	-0.39	-0.00
60	0.00	0.00	0.00	-0.00	-0.43	-0.73	0.00
90	0.00	0.00	0.00	0.00	0.00	-0.88	0.00
120	0.00	0.00	0.00	0.00	0.54	-0.73	0.01
150	0.00	0.00	0.00	0.00	1.07	-0.39	0.01

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.49	0.00	0.00	-0.49	-129.48	0.00	0.00
30	0.49	0.00	0.25	-0.43	-112.13	-64.74	0.00
60	0.49	0.00	0.43	-0.25	-64.74	-112.13	0.00
90	0.49	0.00	0.49	0.00	0.00	-129.48	0.00
120	0.49	0.00	0.43	0.25	64.74	-112.13	0.00
150	0.49	0.00	0.25	0.43	112.13	-64.74	0.00
180	0.49	0.00	0.00	0.49	0.00	-129.48	0.00
210	0.49	0.00	-0.25	0.43	112.13	64.74	0.00
240	0.49	0.00	-0.43	0.25	64.74	112.13	0.00

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	Client	American Tower Corp.	Designed by	SKK

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	Client	American Tower Corp.	Designed by	SKK

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
270	0.49	0.00	-0.49	0.00	0.00	129.48	0.00
300	0.49	0.00	-0.43	-0.24	-64.74	112.13	0.00
330	0.49	0.00	-0.24	-0.43	-112.13	64.74	0.00

Description	Aiming Azimuth	Weight	Offset <sub>x</sub>	Offset <sub>y</sub>	$\alpha$	$K_x$	$\rho$	$C_{Ac}$ Front	$C_{Ac}$ Side	$t_x$
	°	lb	ft	ft	ft		psf	ft <sup>2</sup>	ft <sup>2</sup>	in
ATC Loading	0.0000	2.00	0.00	0.00	265.00	1.534	12	115.00	115.00	11.00
ATC Loading	0.0000	2.00	0.00	0.00	255.00	1.541	12	115.00	115.00	11.00
Weight:		8.12								

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	OTM <sub>x</sub>	OTM <sub>y</sub>	Torque
°	K	K	kip-ft	kip-ft	kip-ft	kip-ft	kip-ft
0	0.48	0.00	0.00	-0.48	-123.40	0.00	0.00
30	0.48	0.00	0.24	-0.42	-106.87	-61.70	0.00
60	0.48	0.00	0.42	-0.24	-61.70	-106.87	0.00
90	0.48	0.00	0.48	0.00	0.00	-123.40	0.00
120	0.48	0.00	0.42	0.24	61.70	-106.87	0.00
150	0.48	0.00	0.24	0.42	106.87	-61.70	0.00
180	0.48	0.00	0.00	0.48	0.00	-123.40	0.00
210	0.48	0.00	-0.24	0.42	106.87	61.70	0.00
240	0.48	0.00	-0.42	0.24	61.70	106.87	0.00
270	0.48	0.00	-0.48	0.00	0.00	123.40	0.00
300	0.48	0.00	-0.42	-0.24	-61.70	106.87	0.00
330	0.48	0.00	-0.24	-0.42	-106.87	61.70	

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Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	$OTM_x$	$OTM_y$	Torque
K	K	K	K	K	kip-ft	kip-ft	kip-ft
270	0.00	0.00	-0.00	0.00	0.02	0.63	-0.00
300	0.00	0.00	-0.00	-0.00	-0.29	0.37	-0.81
330	0.00	0.00	-0.00	-0.00	-0.11	0.34	-0.01

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	$OTM_x$	$OTM_y$	Torque
K	K	K	K	K	kip-ft	kip-ft	kip-ft
0	1.21	0.00	0.00	-1.21	-344.34	0.00	0.00
30	1.21	0.00	0.60	-1.03	-298.20	-172.17	0.00
60	1.21	0.00	1.03	-0.60	-172.17	-298.20	0.00
90	1.21	0.00	1.21	0.00	0.00	-344.34	0.00
120	1.21	0.00	0.60	1.03	172.17	-298.20	0.00
150	1.21	0.00	0.00	1.21	298.20	-172.17	0.00
180	1.21	0.00	0.00	1.21	344.34	0.00	0.00
210	1.21	0.00	-0.60	1.03	298.20	172.17	0.00
240	1.21	0.00	-1.03	0.60	172.17	298.20	0.00
270	1.21	0.00	-1.21	0.00	0.00	344.34	0.00
300	1.21	0.00	-0.60	-1.03	-172.17	298.20	0.00
330	1.21	0.00	-0.00	-1.21	-298.20	172.17	0.00

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	$OTM_x$	$OTM_y$	Torque
K	K	K	K	K	kip-ft	kip-ft	kip-ft
0	1.20	0.00	0.00	-1.20	-329.77	0.00	0.00
30	1.20	0.00	0.60	-1.04	-283.59	-164.88	0.00
60	1.20	0.00	1.04	-0.60	-164.88	-283.59	0.00
90	1.20	0.00	1.20	0.00	0.00	-329.77	0.00
120	1.20	0.00	0.60	1.04	164.88	-283.59	0.00
150	1.20	0.00	0.00	1.20	283.59	-164.88	0.00
180	1.20	0.00	0.00	1.20	329.77	0.00	0.00
210	1.20	0.00	-0.60	1.04	283.59	164.88	0.00
240	1.20	0.00	-1.04	0.60	164.88	283.59	0.00
270	1.20	0.00	-1.20	0.00	0.00	329.77	0.00
300	1.20	0.00	-0.60	-1.04	-164.88	283.59	0.00
330	1.20	0.00	-0.00	-1.20	-283.59	164.88	0.00

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	$OTM_x$	$OTM_y$	Torque
K	K	K	K	K	kip-ft	kip-ft	kip-ft
0	1.19	0.00	0.00	-1.19	-313.31	0.00	0.00
30	1.19	0.00	0.59	-1.03	-273.06	-157.63	0.00
60	1.19	0.00	1.03	-0.59	-157.63	-273.06	0.00
90	1.19	0.00	1.19	0.00	0.00	-313.31	0.00
120	1.19	0.00	0.59	1.03	157.63	-273.06	0.00
150	1.19	0.00	0.00	1.19	273.06	-157.63	0.00
180	1.19	0.00	0.00	1.19	313.31	0.00	0.00
210	1.19	0.00	-0.59	1.03	273.06	157.63	0.00
240	1.19	0.00	-1.03	0.59	157.63	273.06	0.00
270	1.19	0.00	-1.19	0.00	0.00	313.31	0.00
300	1.19	0.00	-0.59	-1.03	-157.63	273.06	0.00
330	1.19	0.00	-0.00	-1.19	-273.06	157.63	0.00

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	Client	American Tower Corp.	Designed by	SKK

Wind Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M <sub>x</sub> kip-ft	Sum of Overturning Moments, M <sub>y</sub> kip-ft	Sum of Torques kip-ft
Wind 240 deg - No Ice	0.00	-60.20	34.81	5683.33	9848.93	-0.28
Wind 270 deg - No Ice	0.00	-64.21	0.00	-11.00	10671.10	5.60
Wind 300 deg - No Ice	0.00	-31.11	-29.31	4964.50	8560.33	0.96
Wind 330 deg - No Ice	0.00	-39.80	-51.78	-833.99	4936.37	10.66
Member Weights	114.82					
Total Weight	329.19					
Wind 0 deg - Ice	0.00	-12.13	-2023.36	-49.02		6.37
Wind 30 deg - Ice	6.00	-10.39	-1754.13	-182.33		6.40
Wind 60 deg - Ice	18.38	-5.99	-1031.40	-181.23		8.33
Wind 90 deg - Ice	12.07	0.00	-33.62	-2093.12		0.17
Wind 120 deg - Ice	10.57	6.18	973.47	-1833.34		-0.23
Wind 150 deg - Ice	6.01	16.40	1680.68	-1078.77		-0.22
Wind 180 deg - Ice	0.88	11.93	1933.53	-89.02		-0.36
Wind 210 deg - Ice	-6.00	16.39	1681.69	964.32		-0.48
Wind 240 deg - Ice	0.00	6.99	977.06	1661.52		-0.24
Wind 270 deg - Ice	-12.07	0.00	-33.62	1917.08		-0.17
Wind 300 deg - Ice	-10.40	-6.00	-1027.82	1632.99		8.03
Wind 330 deg - Ice	-6.01	-10.40	-1747.92	906.77		6.22
Total Weight	98.33		-11.00	-19.18		
Wind 0 deg - Service	0.00	-27.09	-4301.53	6.04		4.26
Wind 30 deg - Service	14.16	-24.33	-4066.64	-2347.68		2.63
Wind 60 deg - Service	23.94	-14.29	-2464.97	-4273.70		0.12
Wind 90 deg - Service	23.54	0.00	-0.28	-4731.20		-2.49
Wind 120 deg - Service	23.56	13.60	2264.84	-3923.27		-4.17
Wind 150 deg - Service	13.29	23.81	3829.91	-2211.32		-4.74
Wind 180 deg - Service	0.00	26.19	4373.84	-405		-0.04
Wind 210 deg - Service	-14.16	24.33	4066.64	2347.75		-2.63
Wind 240 deg - Service	-26.79	13.47	2331.88	4383.86		-0.13
Wind 270 deg - Service	-28.54	0.00	-0.28	4731.27		2.49
Wind 300 deg - Service	-22.72	-11.19	-2201.82	3813.24		1.98
Wind 330 deg - Service	-13.29	-23.81	-3829.66	2211.39		4.74

### Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice

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Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	$OTM_x$	$OTM_y$	Torque
K	K	K	K	K	kip-ft	kip-ft	kip-ft
0	1.18	0.00	0.00	-1.18	-300.96	0.00	0.00
30	1.18	0.00	0.59	-1.02	-260.64	-150.48	0.00
60	1.18	0.00	1.02	-0.59	-150.48	-260.64	0.00
90	1.18	0.00	1.18	0.00	0.00	-300.96	0.00
120	1.18	0.00	0.59	1.02	150.48	-260.64	0.00
150	1.18	0.00	0.00	1.18	260.64	-150.48	0.00
180	1.18	0.00	0.00	1.18	300.96	0.00	0.00
210	1.18	0.00	-0.59	1.02	260.64	150.48	0.00
240	1.18	0.00	-1.02	0.59	150.48	260.64	0.00
270	1.18	0.00	-1.18	0.00	0.00	300.96	0.00
300	1.18	0.00	-0.59	-1.02	-150.48	260.64	0.00
330	1.18	0.00	-0.00	-1.18	-260.64	150.48	0.00

### Discrete Appurtenance Totals - Service

Wind Azimuth	$F_x$	$F_y$	$V_x$	$V_y$	$OTM_x$	$OTM_y$	Torque
K	K	K	K	K	kip-ft	kip-ft	kip-ft
0	0.00	-4.82	-1302.16	0.04	-0.04	-0.01	
30	2.41	-4.17	-1127.74	-630.99	-0.06		
60	4.17	-2.41	-631.22	-1127.74	-0.09		
90	4.82	0.00	-0.28	-1301.83	-0.10		
120	2.41	4.17	630.46	-1127.43	-0.09		
150	2.41	4.17	1127.19	-630.99	-0.05		
180	0.00	4.82	1301.61	-0.00	0.01		
210	-2.41	4.17	1127.19	630.99	0.06		
240	-4.17	2.41	630.46	1127.50	0.09		
270	-4.82	0.00	-0.28	1301.92	0.10		
300	-2.41	-4.17	-631.22	1127.38	0.09		
330	-2.41	-4.17	-1127.74	630.99	0.05		

### Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M <sub>x</sub> kip-ft	Sum of Overturning Moments, M <sub>y</sub> kip-ft	Sum of Torques kip-ft
Leg Weight	47.24					
Bracing Weight	28.00					
Total Member Self-Weight	67.24					
Total Weight	98.33					
Wind 0 deg - No Ice	0.00	-60.20	34.81	-1013.81	-19.18	9.37
Wind 30 deg - No Ice	6.00	-10.39	-1754.13	-610.31	-331.23	1.93
Wind 60 deg - No Ice	18.38	-5.99	-1031.40	-555.34	-903.97	8.26
Wind 90 deg - No Ice	12.07	0.00	-33.62	-111.00	-10799.45	-5.60
Wind 120 deg - No Ice	10.57	6.18	973.47	3083.51	-884.60	-0.39
Wind 150 deg - No Ice	6.01	16.40	1680.68	1078.77	-806.91	-10.66
Wind 180 deg - No Ice	0.88	11.93	1933.53	89.02	9838.77	-0.12
Wind 210 deg - No Ice	-6.00	16.39	1681.69	964.32	5263.18	-0.91
Wind 240 deg - No Ice	-12.07	0.00	-33.62	-273.06	-157.63	0.00
Wind 270 deg - No Ice	-10.40	-6.00	-1027.82	1632.99	15	

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T3	260 - 248	Diagonal	Max. Vx	2	-1.20	0.01	1.62
			Max. Tension	23	9.43	0.04	0.00
			Max. Compression	12	-9.92	8.00	8.80
			Max. Mx	6	8.51	8.05	0.00
			Max. My	24	-7.83	-8.82	-8.02
			Max. Vy	27	-0.82	0.03	0.00
		Leg	Max. Vx	24	-0.01	0.00	0.80
			Max. Tension	7	114.91	0.00	-0.01
			Max. Compression	2	-124.88	2.59	-8.81
			Max. Mx	14	68.59	-3.83	0.02
			Max. My	8	-4.41	-0.83	2.23
			Max. Vy	14	1.93	-3.83	0.02
T4	248 - 220	Diagonal	Max. Vx	8	-1.11	-0.03	2.23
			Max. Tension	12	9.14	0.00	8.80
			Max. Compression	12	-9.43	0.00	0.00
			Max. Mx	4	4.83	0.85	0.00
			Max. My	22	-7.97	-0.81	-0.01
			Max. Vy	27	-0.03	0.03	0.00
		Leg	Max. Tension	7	172.58	-3.37	-0.80
			Max. Compression	2	-187.20	-5.87	-8.02
			Max. Mx	2	-187.28	-5.87	-8.02
			Max. My	8	-5.84	-0.86	2.38
			Max. Vy	2	1.38	3.65	-0.01
			Max. Vc	4	-0.57	0.86	-1.14
T3	220 - 288	Diagonal	Max. Tension	12	9.59	0.88	0.08
			Max. Compression	12	-9.65	0.00	0.00
			Max. Mx	4	4.12	0.89	-0.00
			Max. My	24	-9.57	-0.83	-0.03
			Max. Vy	28	-0.84	0.05	-0.80
			Max. Vc	24	0.81	0.80	0.80
		Leg	Max. Tension	7	216.92	-4.68	-0.01
			Max. Compression	2	-233.46	11.81	-0.85
			Max. Mx	2	-208.57	16.41	-0.86
			Max. My	8	-8.63	-0.28	11.31
			Max. Vy	18	-2.73	6.40	-0.02
			Max. Vc	8	-1.57	0.17	10.39
T6	200 - 188	Diagonal	Max. Tension	12	9.83	0.88	0.00
			Max. Compression	12	-18.84	8.88	0.00
			Max. Mx	2	6.65	0.12	-0.80
			Max. My	31	0.29	0.87	8.01
			Max. Vy	27	-8.05	0.89	0.00
			Max. Vc	31	-0.00	0.08	0.80
		Leg	Max. Tension	7	267.40	-4.38	-0.81
			Max. Compression	2	-285.31	8.77	-0.14
			Max. Mx	2	-260.35	15.74	-0.04
			Max. My	8	-10.82	-0.34	11.23
			Max. Vy	18	-1.67	13.72	-0.01
			Max. Vc	8	-1.10	-0.24	11.23
T7	180 - 168	Diagonal	Max. Tension	10	10.64	8.88	0.80
			Max. Compression	12	-10.78	0.88	0.80
			Max. Mx	4	3.13	0.13	0.80
			Max. My	24	-8.40	-0.86	-0.80
			Max. Vy	29	0.06	0.88	-0.81
			Max. Vc	24	8.01	0.88	0.80
		Leg	Max. Tension	7	296.12	3.36	-0.01
			Max. Compression	2	-319.52	22.16	-0.18
			Max. Mx	18	-318.68	22.18	-0.01
			Max. My	8	-12.36	8.16	12.43
			Max. Vy	18	-1.62	22.18	-0.01
			Max. Vc	16	-0.79	0.16	12.48

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	160 - 140	Diagonal	Max. Tension	23	16.53	0.00	0.00
			Max. Compression	10	-18.36	0.00	0.88
			Max. Mx	6	16.88	-0.26	-0.02
			Max. My	24	-16.46	0.05	0.07
			Max. Vy	29	-0.11	-0.23	-0.89
			Max. Vc	29	-0.01	0.88	8.88
		Leg	Max. Tension	7	346.75	8.88	-0.82
			Max. Compression	2	-376.50	22.13	-8.24
			Max. Mx	18	-375.57	22.16	-0.01
			Max. My	8	-15.64	-0.89	12.33
			Max. Vy	18	-1.84	22.16	-0.81
			Max. Vc	18	-0.51	-11.23	11.45
T9	140 - 120	Diagonal	Max. Tension	10	15.30	0.00	0.00
			Max. Compression	12	-16.41	0.88	8.00
			Max. Mx	29	1.72	-0.38	0.86
			Max. My	38	0.98	-0.30	0.86
			Max. Vy	29	-8.12	-0.38	-0.88
			Max. Vc	38	0.01	0.00	0.00
		Leg	Max. Tension	7	385.45	8.33	-0.01
			Max. Compression	2	-428.86	19.87	-0.17
			Max. Mx	18	-419.85	19.18	-8.88
			Max. My	8	-17.62	0.21	10.68
			Max. Vy	19	-1.23	19.82	-0.00
			Max. Vc	16	-0.68	0.21	10.59
T10	120 - 108	Diagonal	Max. Tension	23	15.84	0.80	0.80
			Max. Compression	18	-17.73	0.88	8.88
			Max. Mx	2	12.37	-0.45	0.04
			Max. My	30	0.66	-0.41	8.88
			Max. Vy	29	-8.17	-0.45	-0.88
			Max. Vc	38	0.01	0.88	0.00
		Leg	Max. Tension	7	429.39	5.88	-0.81
			Max. Compression	2	-472.54	18.57	-0.18
			Max. Mx	18	-471.44	18.58	0.80
			Max. My	4	-21.23	-0.16	-11.86
			Max. Vy	18	-1.47	18.68	0.00
			Max. Vc	16	-0.61	-0.16	11.64
T11	108 - 80	Diagonal	Max. Tension	12	16.07	0.80	0.80
			Max. Compression	12	-17.08	0.80	0.08
			Max. Mx	29	1.30	-0.53	-0.08
			Max. My	27	-0.23	-0.52	0.89
			Max. Vy	29	-0.19	-0.33	-0.88
			Max. Vc	31	-0.01	0.09	0.80
		Leg	Max. Tension	7	468.02	0.78	-0.88
			Max. Compression	2	-517.50	17.71	-0.15
			Max. Mx	18	-516.31	17.74	0.08
			Max. My	4	-23.91	0.42	-8.48
			Max. Vy	18	-1.19	17.74	0.00
			Max. Vc	16	-8.48	0.41	8.67
T12	80 - 60	Diagonal	Max. Tension	12	16.38	0.50	0.08
			Max. Compression	18	-18.23	0.88	0.80
			Max. Mx	29	1.42	-0.59	-0.89
			Max. My	38	0.81	-0.59	0.89
			Max. Vy	29	-0.21	-0.59	-0.89
			Max. Vc	38	8.01	8.00	0.80
		Leg	Max. Tension	7	509.19	1.91	-8.00
			Max. Compression	2	-566.83	15.18	-0.14
			Max. Mx	22	-581.20	-15.30	-0.15
			Max. My	4	-27.88	-0.49	-12.88
			Max. Vy	22	1.16	-15.38	-0.15
			Max. Vc	16	-0.72	-0.48	12.78
Diagonal	Max. Tension	12	17.22	0.88	8.00		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T13	60 - 40	Leg	Max. Compression	12	-18.07	0.08	8.00
			Max. Mx	29	8.71	-0.70	-8.10
			Max. My	27	-8.89	-0.69	8.10
			Max. Vy	29	-0.23	-0.78	-0.18
			Max. Vx	27	0.81	0.08	8.00
			Max. Tension	7	245.79	-0.06	-8.88
		Diagonal	Max. Compression	2	-610.55	16.93	-8.13
			Max. Mx	18	-689.19	16.96	8.80
			Max. My	24	-27.70	-0.78	6.84
			Max. Vy	18	-1.12	16.96	8.00
			Max. Vc	4	-8.39	-0.77	-6.80
			Max. Tension	13	17.86	0.80	0.80
T14	40 - 20	Leg	Max. Compression	2	-19.64	0.88	8.80
			Max. Mx	29	2.23	-0.74	-8.18
			Max. My	27	1.99	-0.73	8.10
			Max. Vy	28	-0.24	-0.74	-0.18
			Max. Vx	28	0.01	0.88	8.00
			Max. Tension	7	383.67	-0.53	-0.88
		Diagonal	Max. Compression	2	-659.36	12.73	-0.12
			Max. Mx	22	-573.39	-13.65	-8.15
			Max. My	4	-33.37	-0.66	-17.88
			Max. Vy	22	0.94	-13.65	-0.15
			Max. Vc	4	1.11	-0.76	-17.88
			Max. Tension	2	18.48	0.88	0.00
T15	20 - 0	Leg	Max. Compression	12	-18.63	0.80	8.80
			Max. Mx	29	-0.45	-0.87	8.13
			Max. My	28	-3.19	-0.86	8.13
			Max. Vy	28	-0.87	-0.87	8.13
			Max. Vx	28	8.02	0.80	8.88
			Max. Tension	7	618.28	-2.47	-0.00
		Diagonal	Max. Compression	10	-699.42	7.55	8.07
			Max. Mx	18	-697.89	7.55	8.00
			Max. My	4	-36.52	-1.11	-12.61
			Max. Vy	18	-0.58	7.56	0.88
			Max. Vc	4	-8.78	-1.11	-12.61
			Max. Tension	15	19.71	0.80	8.80
Diagonal	Max. Compression	2	-22.86	0.00	8.00		
	Max. Mx	38	3.28	-0.93	-8.13		
	Max. My	31	2.74	-0.93	-8.13		
	Max. Vy	30	-0.28	-0.93	-0.13		
	Max. Vx	31	-8.82	0.08	8.80		

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg A	Min. H, 18	723.24	-62.19	-36.25	
	Min. H, 18	723.24	-62.19	-36.25	
	Max. Vert, 2	723.24	0.38	71.58	
	Max. H, 21	29.96	4.95	2.19	
	Min. H, 2	723.24	0.38	71.58	
	Min. Vert, 15	-633.34	-0.27	-61.49	
	Min. H, 9	29.96	-4.93	2.19	
	Min. H, 15	-633.34	-0.27	-61.49	

**Tower Mast Reaction Summary**

Load Combination	Vertical K	Shear, K	Shear, K	Overswining Moment, k-ft	Overswining Moment, k-ft	Torque
Dead Only	98.33	-0.80	8.88	-18.88	-19.01	-0.80
1.2 Dead+1.6 Wind 8 deg - No Ice	118.80	-0.88	-111.38	-18360.55	-23.28	15.53
0.9 Dead+1.6 Wind 8 deg - No Ice	88.50	-0.88	-111.38	-18327.57	-17.47	15.48
1.2 Dead+1.6 Wind 30 deg - No Ice	118.00	51.36	-88.97	-14921.11	-8632.90	9.07
0.9 Dead+1.6 Wind 30 deg - No Ice	88.58	51.36	-88.96	-14892.70	-8612.36	9.83
1.2 Dead+1.6 Wind 60 deg - No Ice	118.80	93.44	-53.93	-8957.34	-15514.59	0.40
0.9 Dead+1.6 Wind 60 deg - No Ice	88.10					

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Load Combination	Vertical K	Shear K	Shear K	Overturning Moment, M <sub>k</sub> kip-ft	Overturning Moment, M <sub>k</sub> kip-ft	Torque kip-ft
0.9 Dead+1.6 Wind 300 deg - No Ice	88.50	-93.44	-53.95	-8939.51	15448.76	14.50
1.2 Dead+1.6 Wind 330 deg - No Ice	118.00	-51.36	-88.97	-14921.24	8586.52	17.96
0.9 Dead+1.6 Wind 330 deg - No Ice	88.50	-51.36	-88.96	-14892.82	8577.72	16.98
1.2 Dead+1.0 Ice+1.0 Temp	348.85	-0.80	0.00	-35.32	-91.08	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	348.85	-0.00	-12.28	-2114.46	-94.81	0.47
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	348.85	6.08	-10.53	-1822.65	-1125.95	8.47
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	348.85	10.46	-6.04	-1062.45	-1871.51	0.34
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	348.85	12.16	0.00	-36.67	-2157.09	0.13
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	348.85	18.63	6.14	1002.23	-1894.23	-0.12
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	348.85	6.08	10.53	1749.32	-1125.95	-0.33
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	348.85	-0.88	12.87	2814.98	-94.82	-8.46
1.2 Dead+1.0 Wind 218 deg+1.0 Ice+1.0 Temp	348.85	-6.88	10.53	1749.31	936.31	-0.47
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	348.85	-18.63	6.14	1002.22	1704.60	-0.35
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	348.85	-12.16	0.00	-36.68	1967.46	-0.13
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	348.85	-10.46	-6.04	-1862.46	1681.90	0.12
1.2 Dead+1.0 Wind 338 deg+1.0 Ice+1.0 Temp	348.85	-6.88	-10.53	-1822.65	936.33	0.33
Dead+Wind 8 deg - Service	98.33	-0.80	-30.94	-5102.42	-19.28	4.30
Dead+Wind 30 deg - Service	98.33	14.27	-24.71	-4148.84	-2407.77	2.68
Dead+Wind 60 deg - Service	98.33	23.95	-14.98	-2492.89	-4317.91	8.11
Dead+Wind 90 deg - Service	98.33	28.53	0.00	-111.88	-4796.25	-2.53
Dead+Wind 120 deg - Service	98.33	26.79	15.47	2534.60	-4428.51	-4.23
Dead+Wind 150 deg - Service	98.33	14.27	24.71	4125.92	-2487.76	-4.79
Dead+Wind 180 deg - Service	98.33	-4.00	29.97	4952.88	-19.28	-4.10
Dead+Wind 210 deg - Service	98.33	-14.27	-24.71	4125.92	2369.20	-2.58
Dead+Wind 240 deg - Service	98.33	-26.79	15.47	2534.60	4399.96	-0.12
Dead+Wind 270 deg - Service	98.33	-28.53	0.00	-11.09	4757.70	2.53
Dead+Wind 300 deg - Service	98.33	-23.95	-14.98	-2492.90	4279.36	4.64
Dead+Wind 338 deg - Service	98.33	-14.27	-24.71	-4148.85	2369.22	4.79

Load Comb	Sum of Applied Forces				Sum of Reactions				% Error
	PX K	PY K	PZ K	FX K	FX K	PY K	PZ K	FX K	
10	96.46	-118.08	53.69	-96.45	118.00	-53.69	-0.003%		
11	96.46	-88.30	53.69	-96.46	88.50	-53.69	0.003%		
12	51.36	-118.00	88.97	-51.36	118.00	-88.97	0.001%		
13	51.36	-88.50	88.97	-51.36	88.50	-88.96	0.003%		
14	0.00	-118.00	107.89	0.00	118.00	-107.89	0.081%		
15	0.00	-88.50	107.89	0.00	88.50	-107.89	0.081%		
16	-51.36	-118.00	88.97	51.36	-118.00	88.97	0.001%		
17	-51.36	-88.50	88.97	51.36	-88.50	-88.96	0.003%		
18	-96.46	-118.00	53.69	96.45	118.00	-53.69	0.003%		
19	-96.46	-88.50	53.69	96.46	88.50	-53.69	0.003%		
20	-102.73	-118.00	-0.00	102.73	118.00	-0.00	0.881%		
21	-102.73	-88.50	-0.00	102.73	88.50	-0.00	0.003%		
22	-93.44	-118.00	-53.95	93.44	118.00	53.95	0.001%		
23	-93.44	-88.50	-53.95	93.44	88.50	53.95	0.001%		
24	-51.36	-118.00	-88.97	51.36	118.00	88.97	0.001%		
25	-51.36	-88.50	-88.97	51.36	88.50	88.96	0.003%		
26	0.00	-348.85	0.00	0.00	348.85	-0.00	0.000%		
27	0.00	-348.85	-10.53	-6.08	348.85	10.53	0.000%		
28	6.08	-348.85	-10.53	-6.08	348.85	10.53	0.000%		
29	10.46	-348.85	-6.04	-10.46	348.85	6.04	0.000%		
30	12.16	-348.85	0.00	-12.16	348.85	-0.80	0.000%		
31	10.63	-348.85	6.14	-10.63	348.85	-6.14	0.800%		
32	6.08	-348.85	10.53	-6.08	348.85	-10.53	0.800%		
33	0.00	-348.85	12.08	0.00	348.85	-12.07	0.000%		
34	-6.08	-348.85	10.53	6.08	348.85	-10.53	0.000%		
35	-10.63	-348.85	6.14	10.63	348.85	-6.14	0.900%		
36	-12.16	-348.85	0.00	12.16	348.85	-0.80	0.000%		
37	-10.46	-348.85	-6.04	10.46	348.85	6.04	0.000%		
38	-6.08	-348.85	-18.53	6.08	348.85	10.53	8.000%		
39	0.80	-98.33	-30.94	0.80	98.33	30.94	0.801%		
40	14.27	-98.33	-24.71	-14.27	98.33	24.71	0.001%		
41	-28.54	-98.33	-14.98	28.54	98.33	-14.98	0.001%		
42	28.54	-98.33	0.00	-28.54	98.33	-0.00	0.881%		
43	26.79	-98.33	15.47	-26.79	98.33	-15.47	0.011%		
44	14.27	-98.33	24.71	-14.27	98.33	-24.71	0.011%		
45	0.00	-98.33	29.97	0.00	98.33	-29.97	0.011%		
46	-14.27	-98.33	24.71	14.27	98.33	-24.71	0.011%		
47	-26.79	-98.33	15.47	-26.79	98.33	-15.47	0.011%		
48	-28.54	-98.33	0.80	28.54	98.33	-0.80	0.011%		
49	-25.95	-98.33	-14.98	25.95	98.33	14.98	0.811%		
50	-14.27	-98.33	-24.71	14.27	98.33	24.71	0.801%		

### Solution Summary

Load Comb	Sum of Applied Forces				Sum of Reactions				% Error
	PX K	PY K	PZ K	FX K	FX K	PY K	PZ K	FX K	
1	0.00	-93.33	8.00	0.00	93.33	-8.00	-0.001%		
2	-0.88	-118.00	-111.38	0.00	118.00	111.38	0.003%		
3	8.08	-88.50	-111.38	0.00	88.50	111.38	0.003%		
4	51.36	-118.00	-88.97	-51.36	118.00	88.97	0.001%		
5	51.36	-88.50	-88.97	-51.36	88.50	88.96	0.003%		
6	93.44	-118.00	-53.95	-93.44	118.00	53.95	0.001%		
7	93.44	-88.50	-53.95	-93.44	88.50	53.95	0.001%		
8	102.73	-118.00	-0.00	-102.73	118.00	-0.00	0.001%		
9	102.73	-88.50	-0.00	-102.73	88.50	-0.00	0.803%		

### Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	12	0.00000001	0.0001358
2	Yes	12	0.00005388	0.0001488
3	Yes	12	0.00004811	0.0001542
4	Yes	13	8.00000001	0.0003534
5	Yes	12	0.00005231	0.00014631
6	Yes	13	8.00000001	0.0000816
7	Yes	13	0.00000001	0.00009330
8	Yes	12	0.00000001	0.0000534
9	Yes	12	0.00005231	0.00014632
10	Yes	12	8.00005308	0.00014839

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11	Yes	12	0.00004811	0.00013541
12	Yes	12	0.00000001	0.00005311
13	Yes	12	0.00005229	0.00014627
14	Yes	13	0.00000001	0.00005835
15	Yes	13	0.00000001	0.00005329
16	Yes	13	0.00000001	0.00005353
17	Yes	12	0.00005231	0.00014630
18	Yes	12	0.00005387	0.00014838
19	Yes	12	0.00004810	0.00013540
20	Yes	13	0.00000001	0.00005334
21	Yes	12	0.00005231	0.00014631
22	Yes	13	0.00000001	0.00005836
23	Yes	13	0.00000001	0.00005329
24	Yes	13	0.00005352	0.00005352
25	Yes	13	0.00005230	0.00014628
26	Yes	9	8.00000001	0.00009996
27	Yes	12	0.00000001	0.00014417
28	Yes	12	0.00000001	0.00014684
29	Yes	12	8.00000001	0.00014813
30	Yes	12	0.00000001	0.00014720
31	Yes	12	0.00000001	0.00014511
32	Yes	12	0.00000001	0.00014227
33	Yes	12	0.00000001	0.00013998
34	Yes	12	0.00000001	0.00013683
35	Yes	12	0.00000001	0.00013567
36	Yes	12	0.00000001	0.00013639
37	Yes	12	0.00000001	0.00013886
38	Yes	12	0.00000001	0.00014148
39	Yes	12	0.00000001	0.00014385
40	Yes	12	0.00000001	0.00014738
41	Yes	12	0.00000001	0.00014909
42	Yes	12	0.00000001	0.00014735
43	Yes	12	0.00000001	0.00014379
44	Yes	12	0.00000001	0.00014723
45	Yes	12	0.00000001	0.00014954
46	Yes	12	0.00000001	0.00014723
47	Yes	12	0.00000001	0.00014373
48	Yes	12	0.00000001	0.00014727
49	Yes	12	0.00000001	0.00014901
50	Yes	12	0.00000001	0.00014730

Section	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
T13	20'-0"	0.035	43	0.0193	0.0083

### Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appertenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
290.00	Beacon	39	14.426	0.5114	0.0136	38445
285.00	ATC Loading	39	13.897	0.5112	0.0131	38445
275.00	ATC Loading	39	12.810	0.5039	0.0119	38061
265.00	ATC Loading	39	11.692	0.4851	0.0104	49851
255.00	ATC Loading	39	10.596	0.4599	0.0088	16398

### Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
T1	290 - 280	51.835	2	1.8361	0.0492
T2	280 - 260	48.026	2	1.8298	0.0454
T3	260 - 240	48.044	2	1.7000	0.0347

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**Bolt Design Data**

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load Allowable	Allowable Ratio	Criteria
T1	290	Leg	A325N	0.7500	4	0.81	29.82	0.027	1	Bolt Tension
		Diagonal	A325N	0.7500	1	2.78	10.44	0.267	1	Member Bearing
		Top Girt	A325N	0.7500	1	0.51	10.77	0.048	1	Member Bearing
T2	280	Leg	A325N	0.7500	6	7.96	29.82	0.267	1	Bolt Tension
		Diagonal	A325N	0.7500	1	9.63	14.36	0.671	1	Gusset Bearing
T3	260	Leg	A325N	0.7500	8	14.36	29.82	0.482	1	Bolt Tension
		Diagonal	A325N	0.7500	1	9.43	15.66	0.602	1	Member Bearing
T4	248	Leg	A325N	1.0080	6	28.92	53.01	0.545	1	Bolt Tension
		Diagonal	A325N	0.7500	1	9.65	15.66	0.616	1	Member Bearing
T5	228	Leg	A325N	1.0080	6	36.15	53.01	0.682	1	Bolt Tension
		Diagonal	A325N	1.0000	1	9.83	15.83	0.621	1	Member Bearing
T6	200	Leg	A325N	1.0080	6	44.57	53.01	0.841	1	Bolt Tension
		Diagonal	A325N	1.0000	1	10.64	15.83	0.672	1	Member Bearing
T7	180	Leg	A325N	1.0000	12	24.68	33.01	0.745	1	Bolt Tension
		Diagonal	A325N	0.8750	1	16.53	31.32	0.528	1	Member Bearing
T8	160	Leg	A325N	1.0080	12	28.90	33.01	0.875	1	Bolt Tension
		Diagonal	A325N	0.8750	1	15.30	31.32	0.488	1	Member Bearing
T9	148	Leg	A325N	1.0080	12	32.12	53.01	0.606	1	Bolt Tension
		Diagonal	A325N	0.8750	1	15.84	41.76	0.379	1	Member Bearing
T10	320	Leg	A325N	1.0000	12	35.78	53.01	0.675	1	Bolt Tension
		Diagonal	A325N	0.8750	1	16.67	41.76	0.383	1	Member Bearing
T11	108	Leg	A325N	1.0080	12	39.00	53.01	0.736	1	Bolt Tension
		Diagonal	A325N	0.8750	1	16.58	41.76	0.397	1	Member Bearing
T12	80	Leg	A325N	1.0000	12	42.43	53.01	0.800	1	Bolt Tension
		Diagonal	A325N	0.8750	1	17.22	41.76	0.412	1	Member Bearing
T13	60	Leg	A325N	1.0000	12	45.48	53.81	0.858	1	Bolt Tension
		Diagonal	A325N	0.8750	1	17.86	41.76	0.428	1	Member Bearing
T14	40	Leg	A325N	1.2580	12	48.81	82.83	0.589	1	Bolt Tension
		Diagonal	A325N	0.8750	1	18.48	41.76	0.442	1	Member Bearing
T15	20	Leg	F1554-10	1.2500	12	51.52	86.29	0.597	1	Bolt Tension
		Diagonal	A325N	0.8750	1	19.71	41.76	0.472	1	Member Bearing

**Leg Design Data (Compression)**

Section No.	Elevation ft	Size	L ft	L <sub>e</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> K	φP <sub>n</sub> K	Ratio P <sub>n</sub> φP <sub>n</sub>
T1	290-280	P-2.50" x 0.75" conn-10' -C-(Pirod 226172)	18.00	4.79	68.7	1.7040	-4.57	58.58	0.078 <sup>1</sup>
T2	280-260	P-4.00" x 0.75" conn-20' -C-Trans-0B-0B-(Pirod 226184)	20.00	6.67	53.0	3.1741	-53.18	116.32	0.457 <sup>1</sup>
T3	260-240	P-5.00" x 0.75" conn-Trans-20'-C-(Pirod 226280)	20.03	6.68	42.7	4.2999	-124.80	169.37	0.737 <sup>1</sup>
T4	240-228	P-6.00" x 0.75" conn-11BD-Trans-28' -C-(Pirod 229377)	20.83	6.68	35.7	5.9813	-187.20	228.83	0.818 <sup>1</sup>
T5	220-200	#122Q-1.75" x 1.08" conn-11BD-Trans (Pirod 229388)	20.03	10.02	30.4	7.2158	-233.46	303.46	0.769 <sup>1</sup>
T6	200-180	#122Q-1.75" x 1.08" conn-11BD-Trans (Pirod 229388)	20.03	10.02	30.4	7.2158	-289.31	303.46	0.933 <sup>1</sup>
T7	180-160	#122Q-2.00" x 0.875" conn-11BD-Trans (Pirod 228332)	20.03	20.83	48.8	9.4248	-319.51	356.29	0.897 <sup>1</sup>
T8	160-148	#122Q-2.25" x 0.875" conn. (Pirod 208334)	20.03	28.83	48.8	11.9282	-376.59	451.13	0.833 <sup>1</sup>
T9	140-120	#122Q-2.25" x 0.875" conn. (Pirod 208334)	20.03	28.03	48.8	11.9282	-420.86	451.13	0.933 <sup>1</sup>
T10	120-180	#122Q-2.50" x 0.875" conn. (Pirod 208335)	20.03	20.83	48.7	14.7262	-472.54	557.27	0.848 <sup>1</sup>
T11	100-80	#122Q-2.50" x 0.875" conn. (Pirod 208335)	28.83	20.83	48.7	14.7262	-517.58	557.27	0.929 <sup>1</sup>
T12	80-60	#122Q-2.75" x 0.875" conn. (Pirod 208337)	28.03	28.83	48.6	17.8187	-566.86	674.68	0.840 <sup>1</sup>
T13	60-40	#122Q-2.75" x 0.875" conn. (Pirod 208337)	20.03	20.03	48.6	17.8187	-610.59	674.68	0.902 <sup>1</sup>
T14	40-28	#122Q-3.00" x 0.875" conn-Trans (Pirod 208336)	20.03	20.03	48.5	21.2057	-659.36	803.44	0.821 <sup>1</sup>
T15	20-0	#122Q-3.00" x 0.875" conn-Trans (Pirod 208336)	20.03	20.03	48.5	21.2057	-699.42	803.44	0.871 <sup>1</sup>

<sup>1</sup> P<sub>n</sub> / φP<sub>n</sub> controls

**Truss-Leg Diagonal Data**

Section No.	Elevation ft	Diagonal Size	L <sub>e</sub> ft	Kl/r	φP <sub>n</sub> K	A in <sup>2</sup>	P <sub>n</sub> K	φP <sub>n</sub> K	Stress Ratio
T5	220-200	0.5	1.40	94.1	324.71	8.1963	2.73	4.63	0.590
T6	200-180	0.5	1.40	94.1	324.71	0.1963	1.67	4.63	0.532
T7	180-160	0.5	1.39	93.2	424.12	0.1963	1.62	4.67	0.317

**Compression Checks**

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Section No.	Elevation ft	Diagonal Size	L <sub>e</sub> ft	Kl/r	φP <sub>n</sub> K	A in <sup>2</sup>	P <sub>n</sub> K	φP <sub>n</sub> K	Stress Ratio
T8	160-140	0.5	1.38	92.4	336.77	0.1963	1.84	4.71	0.381
T9	140-120	0.5	1.38	92.4	336.77	0.1963	1.25	4.71	0.265
T10	120-180	0.5	1.36	91.6	662.68	0.1963	1.47	4.75	0.311
T11	180-80	0.5	1.36	91.6	662.68	0.1963	1.19	4.75	0.232
T12	80-60	0.625	1.33	72.6	801.84	0.3868	1.16	8.74	0.133
T13	68-40	0.625	1.33	72.6	801.84	0.3868	1.12	8.74	0.128
T14	40-20	0.625	1.34	72.0	954.26	0.3868	1.16	8.78	0.146
T15	28-0	0.625	1.34	72.0	954.26	0.3068	0.75	10.97	0.082

Section No.	Elevation ft	Size	L ft	L <sub>e</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> K	φP <sub>n</sub> K	Ratio P <sub>n</sub> φP <sub>n</sub>
T1	290-280	L2x2x3/16	5.00	4.77	136.1	0.7190	-0.57	8.72	0.876 <sup>1</sup>

<sup>1</sup> P<sub>n</sub> / φP<sub>n</sub> controls

**Top Girt Design Data (Compression)**

Section No.	Elevation ft	Size	L ft	L <sub>e</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> K	φP <sub>n</sub> K	Ratio P <sub>n</sub> φP <sub>n</sub>
T1	290-280	L2x2x3/16	5.00	4.77	136.1	0.7190	-0.57	8.72	0.876 <sup>1</sup>

<sup>1</sup> P<sub>n</sub> / φP<sub>n</sub> controls

**Diagonal Design Data (Compression)**

Section No.	Elevation ft	Size	L ft	L <sub>e</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> K	φP <sub>n</sub> K	Ratio P <sub>n</sub> φP <sub>n</sub>
T1	290-288	L2x2x3/8	5.75	2.69	90.8	0.4844	-2.78	9.97	0.279 <sup>1</sup>
T2	280-260	L2x2x3/16	7.17	3.48	107.6	0.7150	-9.92	12.89	0.787 <sup>1</sup>
T3	268-248	L2x2x3/16	8.11	4.07	123.9	0.7150	-8.92	10.33	0.864 <sup>1</sup>
T4	240-220	L2 1/2x3 1/2x3/16	9.60	4.80	117.2	0.9020	-9.63	14.17	0.681 <sup>1</sup>
T5	220-208	L3x3x3/16	12.65	6.43	129.5	1.0908	-18.84	14.34	0.746 <sup>1</sup>
T6	200-188	L3x3x3/16	14.10	7.14	140.8	1.0900	-10.66	11.92	0.893 <sup>1</sup>
T7	188-160	2L3x3x3/16	22.66	11.95	152.8	2.1888	-18.36	21.10	0.870 <sup>1</sup>
T8	160-148	2L3x3x3/16	23.79	12.45	159.1	2.1808	-16.41	19.45	0.844 <sup>1</sup>
T9	140-120	2L3 1/2x3 1/2x1/4	25.03	13.82	143.2	3.3750	-17.75	37.20	0.477 <sup>1</sup>
T10	120-100	2L3 1/2x3 1/2x1/4	26.36	13.65	150.1	3.3750	-17.08	33.85	0.503 <sup>1</sup>
T11	100-80	2L3 1/2x3 1/2x1/4	27.77	14.33	157.5	3.3758	-18.23	30.72	0.593 <sup>1</sup>
T12	80-68	2L3 1/2x3 1/2x1/4	29.25	15.04	165.4	3.3758	-18.07	27.86	0.649 <sup>1</sup>
T13	60-40	2L3 1/2x3 1/2x1/4	38.78	15.80	173.7	3.3758	-19.64	25.27	0.777 <sup>1</sup>
T14	40-20	2L3 1/2x3 1/2x1/4	32.37	16.58	182.3	3.3750	-18.65	22.95	0.813 <sup>1</sup>
T15	20-0	2L4x4x1/4	34.01	17.38	166.9	3.8800	-22.06	31.48	0.870 <sup>1</sup>

**Tension Checks**

**Leg Design Data (Tension)**

Section No.	Elevation ft	Size	L ft	L <sub>e</sub> ft	Kl/r	A in <sup>2</sup>	P <sub>n</sub> K	φP <sub>n</sub> K	Ratio P <sub>n</sub> φP <sub>n</sub>
T1	290-280	P-2.50" x 0.75" conn-10' -C-(Pirod 226172)	18.00	4.79	68.7	1.7848	3.25	76.68	0.042 <sup>1</sup>
T2	280-260	P-4.00" x 0.75" conn-20' -C-Trans-0B-0B-(Pirod 226184)	20.08	6.67	53.0	3.1741	47.79	142.83	0.335 <sup>1</sup>
T3	268-240	P-5.00" x 0.75" conn-Trans-20'-C-(Pirod 226280)	20.83	6.68	42.7	4.2999	114.91	193.49	0.594 <sup>1</sup>
T4	240-228	P-6.00" x 0.75" conn-11BD-Trans-28' -C-(Pirod 229377)	20.03	6.68	35.7	5.9813	173.50	251.16	0.691 <sup>1</sup>
T5	220-200	#122Q-1.75" x 1.80" conn-11BD-Trans (Pirod 229388)	20.83	10.82	30.4	7.2158	216.92	324.71	0.668 <sup>1</sup>
T6	208-188	#122Q-1.75" x 1.88" conn-11BD-Trans (Pirod 229388)	20.03	10.82	30.4	7.2158	267.48	324.71	0.823 <sup>1</sup>
T7	180-168	#122Q-2.00" x 0.875" conn-11BD-Trans (Pirod 228332)	20.03	20.03	48.8	9.4248	296.12	424.12	0.698 <sup>1</sup>
T8	160-140	#122Q-2.25" x 0.875" conn. (Pirod 208334)	20.03	20.83	48.8	11.9282	346.75	536.77	0.646 <sup>1</sup>
T9	140-120	#122Q-2.25" x 0.875" conn. (Pirod 208334)	20.83	20.03	48.8	11.9282	385.43	536.77	0.718 <sup>1</sup>
T10	120-100	#122Q-2.50" x 0.875" conn. (Pirod 208335)	28.03	20.03	48.7	14.7262	429.39	662.68	0.648 <sup>1</sup>

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Section No.	Elevation	Size	L	L <sub>w</sub>	K/r	A	P <sub>s</sub>	φP <sub>s</sub>	Ratio
ft	ft	ft	ft	ft	in <sup>2</sup>	K	K	K	φP <sub>s</sub>
T11	188-80	#122G-2.50"-0.875" conn. (P/rod 208333)	20.03	20.03	48.7	14.7202	468.01	662.68	0.706 <sup>1</sup>
T12	80-60	#122G-2.75"-0.875" conn. (P/rod 288337)	20.03	20.03	48.6	17.8187	509.19	801.84	0.635 <sup>1</sup>
T13	68-48	#122G-2.75"-0.875" conn. (P/rod 288337)	20.03	20.03	48.6	17.8187	545.79	881.84	0.681 <sup>1</sup>
T14	40-28	#122G-3.00"-0.875" conn.-Trans (P/rod 208336)	20.03	20.03	48.5	21.2057	581.67	954.26	0.614 <sup>1</sup>
T15	20-8	#122G-3.00"-0.875" conn.-Trans (P/rod 208338)	20.03	20.03	48.5	21.2057	618.28	954.26	0.648 <sup>1</sup>

Section No.	Elevation	Size	L	L <sub>w</sub>	K/r	A	P <sub>s</sub>	φP <sub>s</sub>	Ratio
ft	ft	ft	ft	ft	in <sup>2</sup>	K	K	K	φP <sub>s</sub>
T2	280-260	L2x2x3/16	7.17	3.40	69.7	0.4132	9.63	17.97	0.536 <sup>1</sup>
T3	268-240	L2x2x3/16	7.66	3.85	78.6	0.4132	9.14	17.97	0.508 <sup>1</sup>
T4	248-220	L2 1/2x2 1/2x3/16	9.60	4.80	76.9	0.5535	9.59	24.08	0.398 <sup>1</sup>
T5	228-200	L3x3x3/16	12.65	6.43	84.7	0.6993	9.83	28.68	0.343 <sup>1</sup>
T6	200-180	L3x3x3/16	14.10	7.14	94.7	0.6993	18.64	28.68	0.371 <sup>1</sup>
T7	180-160	2L3x3x3/16	22.66	11.95	155.2	1.3537	16.53	58.89	0.281 <sup>1</sup>
T8	160-140	2L3x3x3/16	23.79	12.45	161.3	1.3537	15.28	58.89	0.260 <sup>1</sup>
T9	140-120	2L3 1/2x3 1/2x1/4	25.03	13.02	145.2	2.1563	15.84	93.80	0.169 <sup>1</sup>
T10	120-100	2L3 1/2x3 1/2x1/4	26.36	13.65	152.1	2.1563	16.97	93.80	0.171 <sup>1</sup>
T11	108-88	2L3 1/2x3 1/2x1/4	27.77	14.33	159.6	2.1563	16.58	93.80	0.177 <sup>1</sup>
T12	80-60	2L3 1/2x3 1/2x1/4	29.25	15.04	167.3	2.1563	17.22	93.88	0.184 <sup>1</sup>
T13	68-40	2L3 1/2x3 1/2x1/4	30.78	15.80	175.8	2.1563	17.86	93.88	0.190 <sup>1</sup>
T14	40-20	2L3 1/2x3 1/2x1/4	32.37	16.58	184.3	2.1563	18.48	93.80	0.197 <sup>1</sup>
T15	20-0	2L4x4x1/4	34.01	17.38	168.7	2.5330	19.71	110.27	0.179 <sup>1</sup>

<sup>1</sup> P<sub>s</sub> / φP<sub>s</sub> controls

<sup>1</sup> P<sub>s</sub> / φP<sub>s</sub> controls

**Truss-Leg Diagonal Data**

Section No.	Elevation	Diagonal Size	L <sub>d</sub>	K/r	φP <sub>s</sub>	A	P <sub>s</sub>	φP <sub>s</sub>	Stress Ratio
ft	ft	ft	ft	in <sup>2</sup>	K	K	K	K	φP <sub>s</sub>
T5	220-208	0.5	1.40	94.1	0.1963	2.73	4.63	0.590	0.362
T6	200-180	8.5	1.40	94.1	0.1963	1.67	4.63	0.347	0.347
T7	180-168	0.5	1.39	93.2	0.1963	1.62	4.67	0.391	0.285
T8	160-140	8.5	1.38	92.4	0.1963	1.84	4.71	0.391	0.311
T9	140-120	0.5	1.38	92.4	0.1963	1.25	4.71	0.311	0.292
T10	120-100	0.5	1.36	91.6	0.1963	1.47	4.73	0.311	0.282
T11	100-80	0.5	1.36	91.6	0.1963	1.19	4.73	0.282	0.133
T12	80-60	0.625	1.35	91.6	0.1963	1.16	4.74	0.133	0.128
T13	68-40	0.625	1.35	91.6	0.1963	1.12	4.74	0.128	0.116
T14	40-20	0.625	1.34	91.6	0.1963	1.16	4.78	0.116	0.082
T15	20-0	8.625	1.34	91.6	0.1963	0.75	10.97	0.082	

**Diagonal Design Data (Tension)**

Section No.	Elevation	Size	L	L <sub>w</sub>	K/r	A	P <sub>s</sub>	φP <sub>s</sub>	Ratio
ft	ft	ft	ft	ft	in <sup>2</sup>	K	K	K	φP <sub>s</sub>
T1	290-288	L2x2x1/8	5.75	2.69	55.1	0.2813	2.45	12.23	0.202 <sup>1</sup>

**Top Girt Design Data (Tension)**

Section No.	Elevation	Size	L	L <sub>w</sub>	K/r	A	P <sub>s</sub>	φP <sub>s</sub>	Ratio
ft	ft	ft	ft	ft	in <sup>2</sup>	K	K	K	φP <sub>s</sub>
T1	290-288	L2x2x3/16	5.00	4.47	92.6	0.4132	0.51	17.97	0.029 <sup>1</sup>

<sup>1</sup> P<sub>s</sub> / φP<sub>s</sub> controls

**Section Capacity Table**

Section No.	Elevation	Component Type	Size	Critical Element	P	φP <sub>s</sub>	% Capacity	Pass/Fail
T1	290-288	Leg	P-2.50"-0.75" conn.-18" (P/rod 226172)	3	-4.57	58.58	7.8	Pass

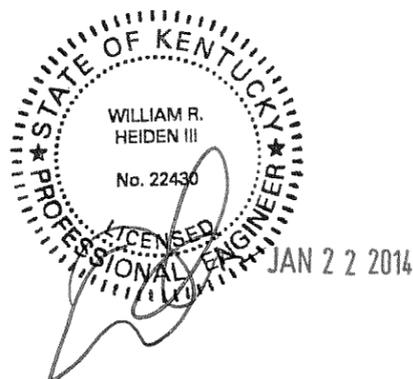
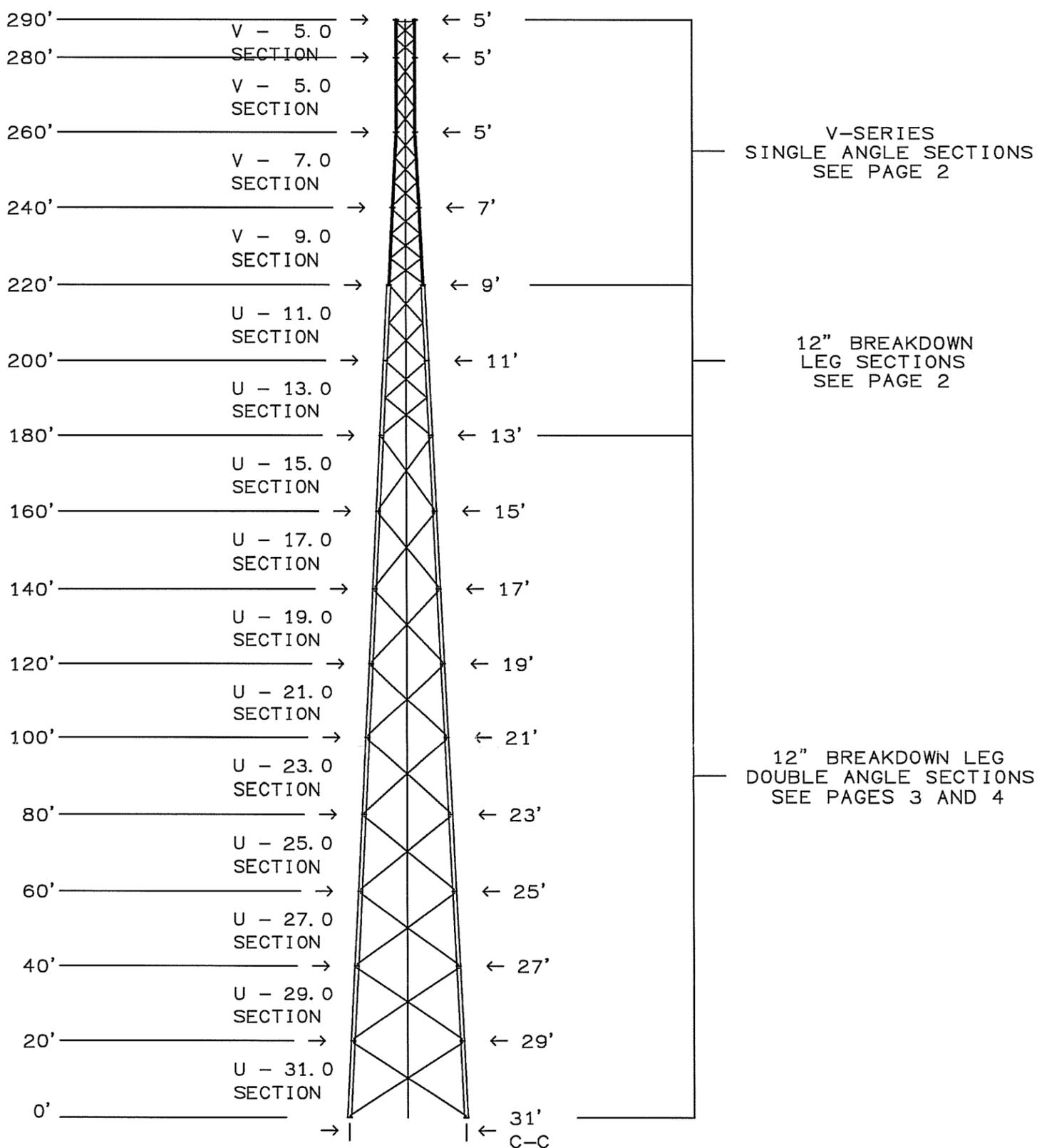
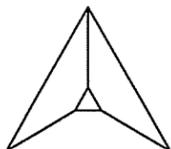
<sup>1</sup> P<sub>s</sub> / φP<sub>s</sub> controls

<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	63 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

<b>tnxTower</b> Valmont 1545 Pikes Drive Plymouth, IN Phone: 574-936-4221 FAX:	Job	240568	Page	64 of 64
	Project	V-31 x 290' - #281338 Hazel Green, KY	Date	13:31:40 12/10/13
	Client	American Tower Corp.	Designed by	SKK

Section No.	Elevation	Component Type	Size	Critical Element	P	φP <sub>s</sub>	% Capacity	Pass/Fail
T2	280-260	Leg	P-4.00"-0.75" conn.-20" (P/rod 226184)	21	-53.18	116.32	43.7	Pass
T3	268-248	Leg	P-5.00"-0.75" conn.-Trans-20" (P/rod 226208)	42	-124.80	169.37	73.7	Pass
T4	248-228	Leg	P-6.00"-0.75" conn.-HBD-Trans-20" (P/rod 229177)	63	-187.20	228.83	81.8	Pass
T5	220-208	Leg	#122G-1.75"-1.08" conn.-HBD-Trans (P/rod 229188)	84	-233.46	303.46	76.9	Pass
T6	200-180	Leg	#122G-1.75"-1.00" conn.-HBD-Trans (P/rod 229188)	99	-289.31	303.46	93.3	Pass
T7	188-160	Leg	#122G-2.00"-0.875" conn.-HBD-Trans (P/rod 208332)	114	-319.31	356.29	89.7	Pass
T8	160-140	Leg	#122G-2.25"-0.875" conn. (P/rod 208334)	123	-376.50	451.15	83.5	Pass
T9	140-120	Leg	#122G-2.25"-0.875" conn. (P/rod 208334)	132	-420.86	451.15	93.3	Pass
T10	128-108	Leg	#122G-2.50"-0.875" conn. (P/rod 208335)	141	-472.54	557.27	81.8	Pass
T11	100-80	Leg	#122G-2.58"-0.875" conn. (P/rod 208335)	150	-517.50	557.27	92.9	Pass
T12	80-68	Leg	#122G-2.75"-0.875" conn. (P/rod 288337)	159	-566.86	674.68	84.0	Pass
T13	60-40	Leg	#122G-2.75"-0.875" conn. (P/rod 288337)	168	-618.55	674.68	90.5	Pass
T14	40-20	Leg	#122G-3.00"-0.875" conn.-Trans (P/rod 208336)	177	-659.36	803.44	82.1	Pass
T15	20-0	Leg	#122G-3.00"-0.875" conn.-Trans (P/rod 208338)	185	-699.42	803.44	87.1	Pass
T1	290-288	Diagonal	L2x2x1/8	10	-2.78	9.97	27.9	Pass
T2	288-260	Diagonal	L2x2x3/16	24	-9.92	12.59	78.7	Pass
T3	268-240	Diagonal	L2x2x3/16	45	-8.92	10.33	86.4	Pass
T4	248-220	Diagonal	L2 1/2x2 1/2x3/16	66	-9.65	14.17	68.1	Pass
T5	228-200	Diagonal	L3x3x3/16	87	-10.84	14.54	74.6	Pass
T6	200-180	Diagonal	L3x3x3/16	103	-18.66	11.92	90.3	Pass
T7	188-160	Diagonal	2L3x3x3/16	117	-18.36	21.10	87.0	Pass
T8	160-140	Diagonal	2L3x3x3/16	126	-16.41	19.45	84.4	Pass
T9	148-128	Diagonal	2L3 1/2x3 1/2x1/4	135	-17.75	37.20	47.7	Pass
T10	128-100	Diagonal	2L3 1/2x3 1/2x1/4	144	-17.98	33.83	58.5	Pass
T11	108-88	Diagonal	2L3 1/2x3 1/2x1/4	153	-18.23	30.72	59.3	Pass
T12	80-68	Diagonal	2L3 1/2x3 1/2x1/4	162	-18.07	27.86	64.9	Pass
T13	60-40	Diagonal	2L3 1/2x3 1/2x1/4	172	-19.64	25.27	71.7	Pass
T14	48-28	Diagonal	2L3 1/2x3 1/2x1/4	180	-18.65	22.95	81.3	Pass
T15	20-8	Diagonal	2L4x4x1/4	190	-22.96	31.48	70.1	Pass
T1	290-288	Top Girt	L2x2x3/16	4	-8.67	8.72	7.6	Pass
Summary								
Leg (T6) 93.3 Pass								
Diagonal (T6) 89.5 Pass								
Top Girt (T1) 7.6 Pass								
Oath Checks 85.8 Pass								
RATING = 93.3 Pass								

Section No.	Elevation	Component Type	Size	Critical Element	P	φP <sub>s</sub>	% Capacity	Pass/Fail
T2	280-260	Leg	P-4.00"-0.75" conn.-20" (P/rod 226184)	21	-53.18	116.32	43.7	Pass
T3	268-248	Leg	P-5.00"-0.75" conn.-Trans-20" (P/rod 226208)	42	-124.80	169.37	73.7	Pass
T4	248-228	Leg	P-6.00"-0.75" conn.-HBD-Trans-20" (P/rod 229177)	63	-187.20	228.83	81.8	Pass
T5	220-208	Leg	#122G-1.75"-1.08" conn.-HBD-Trans (P/rod 229188)	84	-233.46	303.46	76.9	Pass
T6	200-180	Leg	#122G-1.75"-1.00" conn.-HBD-Trans (P/rod 229188)	99	-289.31	303.46	93.3	Pass
T7	188-160	Leg	#122G-2.00"-0.875" conn.-HBD-Trans (P/rod 208332)	114	-319.31	356.29	89.7	Pass
T8	160-140	Leg	#122G-2.25"-0.875" conn. (P/rod 208334)	123	-376.50	451.15	83.5	Pass
T9	140-120	Leg	#122G-2.25"-0.875" conn. (P/rod 208334)	132	-420.86	451.15	93.3	Pass
T10	128-108	Leg	#122G-2.50"-0.875" conn. (P/rod 208335)	141	-472.54	557.27	81.8	Pass
T11	100-80	Leg	#122G-2.58"-0.875" conn. (P/rod 208335)	150	-517.50	557.27	92.9	Pass
T12	80-68	Leg	#122G-2.75"-0.875" conn. (P/rod 288337)	159	-566.86	674.68	84.0	Pass
T13	60-40	Leg	#122G-2.75"-0.875" conn. (P/rod 288337)	168	-618.55	674.68	90.5	Pass
T14	40-20	Leg	#122G-3.00"-0.875" conn.-Trans (P/rod 208336)	177	-659.36	803.44	82.1	Pass
T15	20-0	Leg	#122G-3.00"-0.875" conn.-Trans (P/rod 208338)	185	-699.42	803.44	87.1	Pass
T1	290-288	Diagonal	L2x2x1/8	10	-2.78	9.97	27.9	Pass
T2	288-260	Diagonal	L2x2x3/16	24	-9.92</			



William R. Heiden III, KY Professional Engineer # 22430

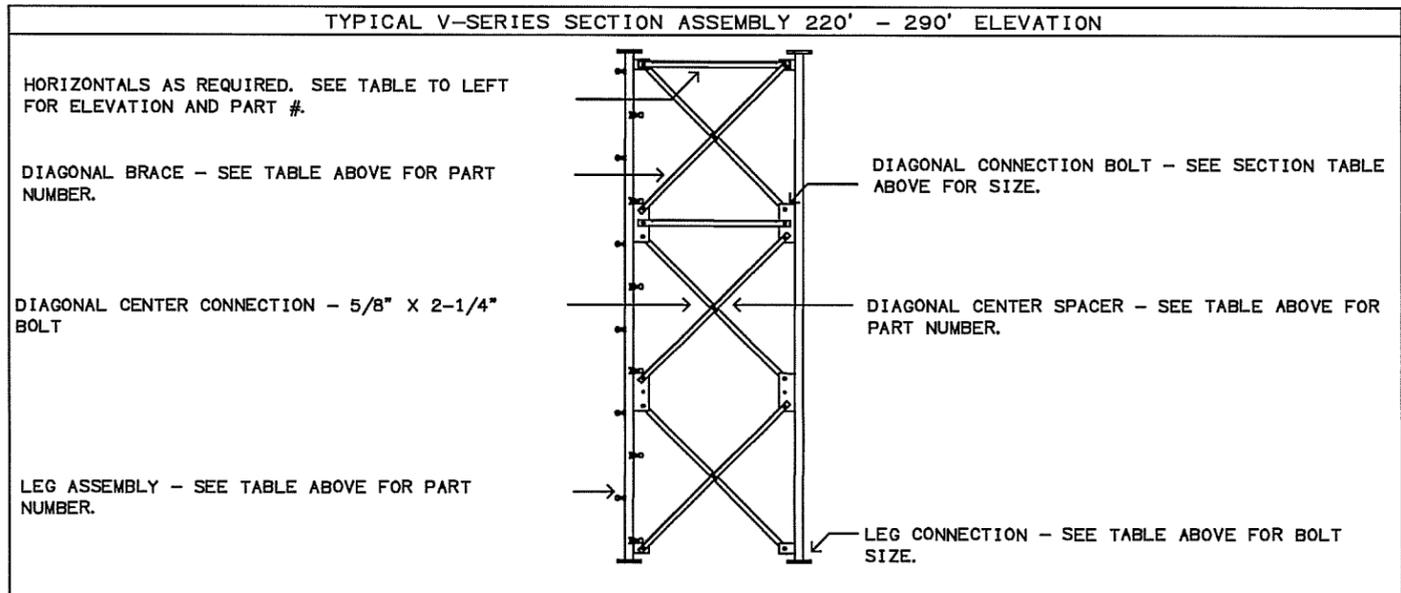
				AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'	
A	ADDED FOUNDATIONS	MS	01/20/2014	APPROVED/ENG.	M_S 1/20/2014
REV	DESCRIPTION OF REVISIONS	INI	DATE	APPROVED/FOUND.	N/A
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				DRAWN BY	M_S
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V-SERIES LEG SECTION DATA 220' - 290' ELEVATION																						
SECTION			LEG									DIAGONAL BRACE								HOR		
#	LENGTH	* WEIGHT	NOM SIZE	WALL	GRADE	CLIMBING			NON-CLIMB			CONNECT BOLT+		PART NUMBER **			ANGLE		CONNECT BOLT		CENTER	QTY
						QTY	PART#	QTY	PART#	DIAM	LENGTH	#1	#2	#3	FACE	THICK	DIAM	LENGTH	SPACER			
V- 5.0	10'	528#	2-1/2"	0.203	A572-50	1	226172	2	226173	3/4"	3-1/2"	227077	227077		2"	1/8"	3/4"	2-1/4"	116467	1		
V- 5.0	20'	1285#	4"	0.237	A572-50	1	226184	2	226185	3/4"	3-1/2"	227113	227113	227113	2"	3/16"	3/4"	2-1/4"	116467			
V- 7.0	20'	1609#	5"	0.258	A572-50	1	226200	2	226201	3/4"	3-1/2"	226190	226189	231342	2"	3/16"	3/4"	2-1/4"	116467			
V- 9.0	20'	2293#	6"	0.280	A572-50	3	229377			1"	4-3/4"	225035	225034	231345	2-1/2"	3/16"	3/4"	2-1/4"	116467			

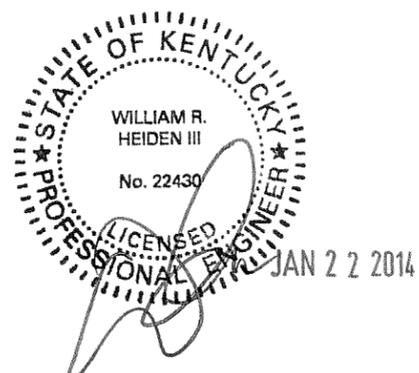
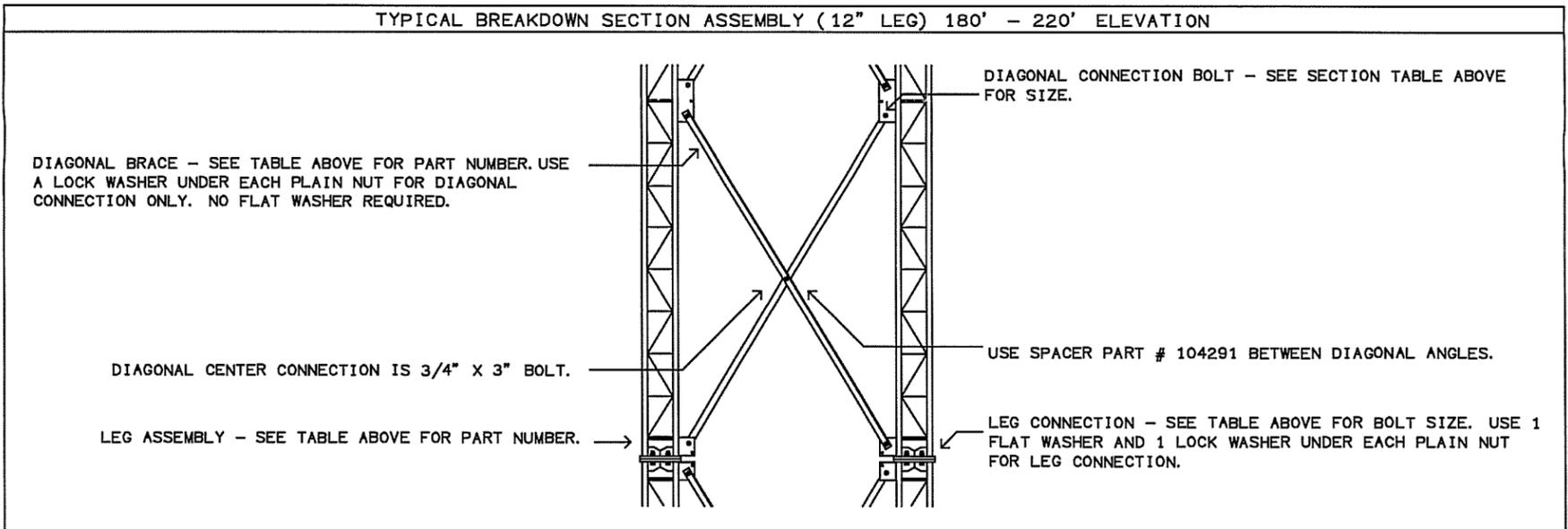
+ AT BOTTOM OF SECTION  
\* THE WEIGHTS LISTED ARE THEORETICAL. THE ACTUAL WEIGHTS WILL VARY. ALL WEIGHTS SHOULD BE CONFIRMED IN THE FIELD PRIOR TO ERECTION.  
\*\* PANELS ARE NUMBERED BEGINNING AT THE TOP OF THE SECTION.

HORIZONTAL DATA		
HORIZ HT	IN SEC#	HORIZ PART#
290	V- 5.0	227584



BREAKDOWN SECTION DATA (12" LEG) 180' - 220' ELEVATION														
SEC #	SECTION LENGTH	LEG SIZE	LEG PART#	TOP PART#	DIAG PART#	BOT PART#	DIAG FACE	DIAG THICK	DIAG ANGLE	SECTION WEIGHT	LEG CONNECT DIAM	LEG CONNECT LENGTH	DIAG CONNECT DIAM	DIAG CONNECT LENGTH
U-11.0	20'	1- 3/4"	229588	105568	105571		3"	3/16"	2990#	1"	4-3/4"	1"	2-1/4"	
U-13.0	20'	1- 3/4"	229588	105574	105576		3"	3/16"	3056#	1"	4-3/4"	1"	2-1/4"	

\* THE WEIGHTS LISTED ARE THEORETICAL. THE ACTUAL WEIGHTS WILL VARY. ALL WEIGHTS SHOULD BE CONFIRMED IN THE FIELD PRIOR TO ERECTION.  
+ USE 1 FLAT WASHER UNDER EACH LOCK WASHER FOR LEG CONNECTION ONLY.



William R. Heiden III, KY Professional Engineer # 22430

AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'			
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		2 OF 10	

BREAKDOWN SECTION LEG DATA (12" LEG WITH DOUBLE ANGLES) 0' - 180' ELEVATION

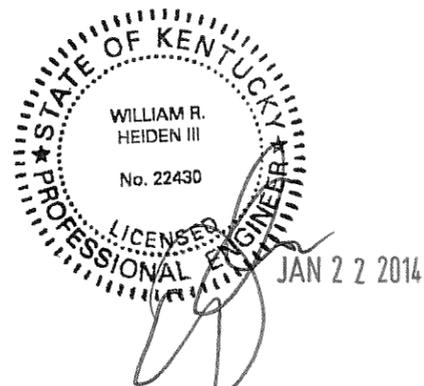
SECTION				LEG		LEG CONNECT @ BOTTOM+		
#	MODEL	LENGTH	WEIGHT*	SIZE	PART #	DIAM	LENGTH	#
9	U-15.0	20'	3953#	2 "	208332	1"	4-3/4"	12
8	U-17.0	20'	4615#	2- 1/4 "	208334	1"	4-3/4"	12
7	U-19.0	20'	5330#	2- 1/4 "	208334	1"	4-3/4"	12
6	U-21.0	20'	6016#	2- 1/2 "	208335	1"	4-3/4"	12
5	U-23.0	20'	6119#	2- 1/2 "	208335	1"	4-3/4"	12
4	U-25.0	20'	7007#	2- 3/4 "	208337	1"	4-3/4"	12
3	U-27.0	20'	7120#	2- 3/4 "	208337	1"	4-3/4"	12
2	U-29.0	20'	8229#	3 "	208336	1-1/4"	5"	12
1	U-31.0	20'	8349#	3 "	208338			

\* THE WEIGHTS LISTED ARE THEORETICAL. THE ACTUAL WEIGHTS WILL VARY. ALL WEIGHTS SHOULD BE CONFIRMED IN THE FIELD PRIOR TO ERECTION.  
 + QTY IS PER LEG. USE 1 LOCK WASHER AND 1 FLAT WASHER UNDER EACH PLAIN NUT.

BREAKDOWN SECTION DIAGONAL DATA (12" LEG WITH DOUBLE ANGLES) 0' - 180' ELEVATION

SECTION		DIAGONAL PART #			DIAG ANGLE		DIAG END BOLT		DIAG CENTER & SPACER BOLT		CENTER PLATE	SPACER	
#	MODEL	UPPER	LOWER	LONG	FACE	THICK	DIAM	LENGTH	DIAM	LENGTH	PART #	PART #	#*
9	U-15.0	215272	215276	215357	3"	3/16"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	5
8	U-17.0	215280	215284	215361	3"	3/16"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	6
7	U-19.0	215289	215293	215365	3-1/2"	1/4"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	7
6	U-21.0	215296	215300	215369	3-1/2"	1/4"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	8
5	U-23.0	215304	215308	215373	3-1/2"	1/4"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	8
4	U-25.0	215312	215316	215377	3-1/2"	1/4"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	8
3	U-27.0	215320	215324	215380	3-1/2"	1/4"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	8
2	U-29.0	215327	215330	215383	3-1/2"	1/4"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	8
1	U-31.0	215334	215337	215387	4"	1/4"	7/8"	2-1/2"	5/8"	2-1/4"	211833	104291	9

\* QUANTITY IS PER PANEL PER FACE. USE 1 LOCK WASHER UNDER EACH PLAIN NUT.



William R. Heiden III, KY Professional Engineer # 22430

AMERICAN TOWER CORP.  
 #281338 HAZEL GREEN, KY  
 V-31.0 X 290'

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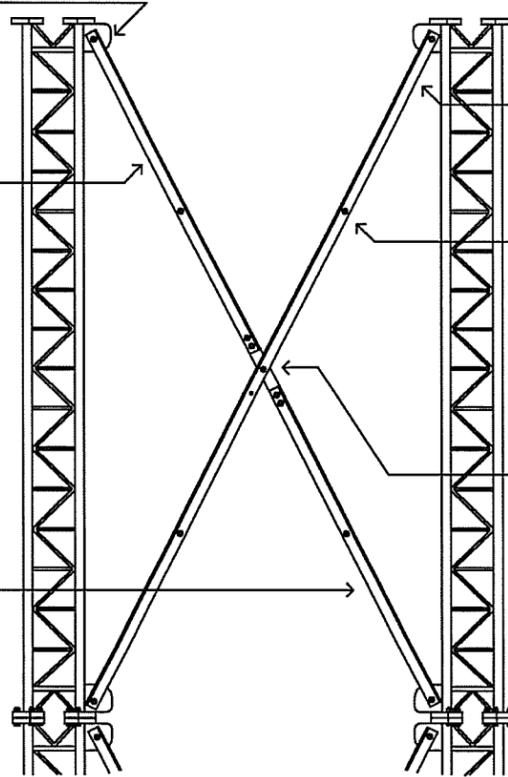
3 OF 10

TYPICAL BREAKDOWN SECTION ASSEMBLY (12" LEG WITH DOUBLE ANGLES) 0' - 180' ELEVATION

DIAGONAL END BOLTS - SEE DIAGONAL TABLE ON PAGE 3 FOR SIZE. NO FLAT WASHER REQUIRED.

"UPPER" DIAGONAL BRACES (BACK TO BACK ANGLES) - SEE TABLE ON PG. 3 FOR PART #.

"LOWER" DIAGONAL BRACES (BACK TO BACK ANGLES) - SEE TABLE ON PG. 3 FOR PART #.



"LONG" DIAGONAL BRACE (BACK TO BACK ANGLES) - SEE TABLE ON PG. 3 FOR PART #.

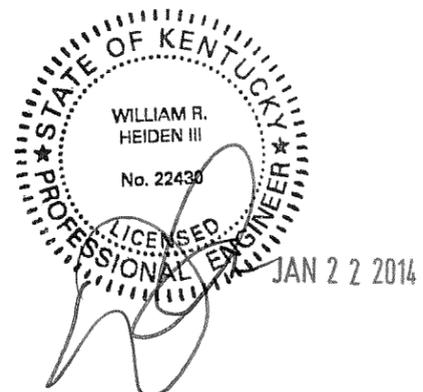
INTERMEDIATE DIAGONAL BOLTS WITH SPACER - SEE TABLE ON PG. 3 FOR SIZE, SPACER PART # AND NUMBER OF LOCATIONS PER PANEL ON EACH FACE. USE 1 SPACER PER BOLT. SEE DRAWING # 214823 FOR DETAILS.

DIAGONAL CENTER PLATE - SEE DIAGONAL TABLE ON PAGE 3 FOR PART # AND BOLT SIZE.

LEG CONNECTION - SEE TABLE ON PAGE 3 FOR BOLT SIZE. USE 1 LOCK WASHER AND 1 FLAT WASHER UNDER EACH PLAIN NUT FOR LEG CONNECTION.

ATTENTION ERECTOR:

- EXTRA CARE MUST BE TAKEN WHEN STANDING BREAKDOWN LEG SECTIONS FROM A FLAT "ASSEMBLY" POSITION ON THE GROUND TO AN UPRIGHT POSITION FOR STACKING. POOR RIGGING AND/OR LIFTING PROCEDURES MAY DAMAGE THE ANGLE BRACES AND/OR BREAKDOWN LEGS. IT IS THE RESPONSIBILITY OF THE TOWER CONTRACTOR TO ENSURE BREAKDOWN LEGS AND ANGLES ARE NOT DAMAGED DURING THE TOWER ASSEMBLY AND ERECTION.
- WHEN LIFTING ("FLYING") SINGLE PANEL TOWER SECTIONS TO PLACE THEM ON PREVIOUSLY ERECTED SECTIONS, A MINIMUM OF TWO (2) FULL SECTIONS (TYPICALLY 40') MUST BE ASSEMBLED TOGETHER TO PROVIDE ADEQUATE STABILITY TO THE TOWER LEGS AND ANGLE BRACES. IT IS THE RESPONSIBILITY OF THE TOWER CONTRACTOR TO ENSURE BREAKDOWN LEGS AND ANGLES ARE NOT DAMAGED DURING THE TOWER ASSEMBLY AND ERECTION.



William R. Heiden III, KY Professional Engineer # 22430

AMERICAN TOWER CORP.  
#281338 HAZEL GREEN, KY  
V-31.0 X 290'

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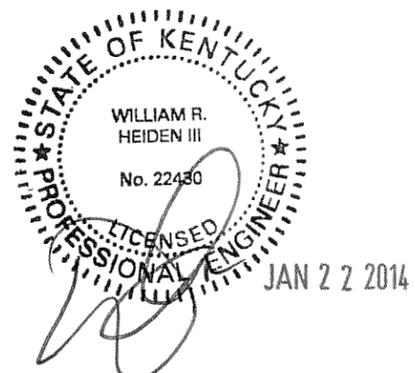
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PAGE 4 OF 10

GENERAL NOTES

1. TOWER DESIGN CONFORMS TO STANDARD TIA-222-G UTILIZING AN 90 MPH 3-SEC GUST BASIC WIND SPEED WITH A STRUCTURE CLASS OF II, TOPOGRAPHIC CATEGORY OF 1 AND EXPOSURE C CRITERIA WITH NO ICE.  
TOWER DESIGN CONFORMS TO STANDARD TIA-222-G UTILIZING AN 30 MPH 3-SEC GUST BASIC WIND SPEED WITH A STRUCTURE CLASS OF II, TOPOGRAPHIC CATEGORY OF 1 AND EXPOSURE C CRITERIA WITH .75" RADIAL ICE.  
TOWER MEETS THE REQUIREMENTS OF THE 2011 OHIO BUILDING CODE UTILIZING AN 115 MPH 3-SEC GUST BASIC WIND SPEED WITH A STRUCTURE CLASS OF II, TOPOGRAPHIC CATEGORY OF 1 AND EXPOSURE C CRITERIA WITH NO ICE PER ANSI/TIA-222-G.
2. NO TWIST AND SWAY LIMITATIONS SPECIFIED OR USED FOR THIS TOWER.
3. MATERIAL: (A) SOLID RODS TO ASTM A572 GRADE 50. (B) ANGLES TO ASTM A36. (C) PIPE TO ASTM A500 GRADE B. (D) STEEL PLATES TO ASTM A36. (E) CONNECTION BOLTS TO ASTM A325 OR ASTM A449 (Fu=120 KSI AND Fy=92 KSI) AND ANCHOR BOLTS TO ASTM F1554 (Fu=150 KSI AND Fy=105 KSI). (F) TOWER LEG PIPE TO BE ASTM A500 GRADE B/C WITH 50KSI MIN. YIELD STRENGTH
4. BASE REACTIONS PER TIA-222-G FOR 90 MPH BASIC WIND SPEED WITH NO ICE (REACTIONS INCLUDE TIA-222-G LOAD FACTORS): TOTAL WEIGHT = 118.0 KIPS. MAXIMUM COMPRESSION = 723.0 KIPS PER LEG. MOMENT = 18361.0 KIP-FT. MAXIMUM UPLIFT = 636.0 KIPS PER LEG. MAXIMUM SHEAR = 111.0 KIPS TOTAL.
5. BASE REACTIONS PER TIA-222-G FOR 30 MPH BASIC WIND SPEED WITH 0.75" RADIAL ICE (REACTIONS INCLUDE TIA-222-G LOAD FACTORS): TOTAL WEIGHT = 349.0 KIPS. MOMENT = 2157.0 KIP-FT. MAXIMUM SHEAR = 12.0 KIPS TOTAL.
6. FINISH: ALL BOLTS ARE GALVANIZED IN ACCORDANCE WITH ASTM A153 (HOT DIPPED) OR ASTM B695 CLASS 50 (MECHANICAL). ALL OTHER STRUCTURAL MATERIALS ARE GALVANIZED IN ACCORDANCE WITH ASTM 123.
7. ANTENNAS: 285' -135 SQ. FT. AREA WITH 3,000# WITH ICE/115 SQ. FT. AREA WITH 2,000# NO ICE AND (18) 1-5/8" LINES.  
275' -135 SQ. FT. AREA WITH 3,000# WITH ICE/115 SQ. FT. AREA WITH 2,000# NO ICE AND (18) 1-5/8" LINES.  
265' -135 SQ. FT. AREA WITH 3,000# WITH ICE/115 SQ. FT. AREA WITH 2,000# NO ICE AND (18) 1-5/8" LINES.  
255' -135 SQ. FT. AREA WITH 3,000# WITH ICE/115 SQ. FT. AREA WITH 2,000# NO ICE AND (18) 1-5/8" LINES.  
NOTE: (A) ELEVATIONS ARE TO THE BOTTOM OF THE ANTENNAS EXCEPT FOR MICROWAVE DISHES, WHICH ARE TO THE CENTERLINE. (B) ALL TRANSMISSION LINES MUST BE PLACED ON PIROD SUPPLIED LINE BRACKETS.
8. REMOVE FOUNDATION TEMPLATE PRIOR TO ERECTING TOWER. INSTALL BASE SECTION WITH MINIMUM OF 2" CLEARANCE ABOVE CONCRETE. SEE BASE SECTION PLACEMENT PAGE FOR MORE INFORMATION. PACK NON-SHRINK STRUCTURAL GROUT UNDER BASE SECTION AFTER LEVELING TOWER.
9. MIN. WELDS 5/16" UNLESS OTHERWISE SPECIFIED. ALL WELDING TO CONFORM TO AWS D1.1 SPECIFICATIONS .
10. THIS DRAWING DOES NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, SEQUENCES AND PROCEDURES.
11. ALL BOLTS AND NUTS MUST BE IN PLACE BEFORE THE ADJOINING SECTIONS ARE INSTALLED.
12. ALL STRUCTURAL BOLTS ARE TO BE TIGHTENED TO A SNUG TIGHT CONDITION AS DEFINED BY AISC SPECIFICATION UNLESS OTHERWISE NOTED.
13. ATTENTION TOWER ERECTOR: COAT ALL BOLT ASSEMBLIES THAT USE PIN LOCK NUTS WITH ZINC RICH COLD GALVANIZING COMPOUND AFTER FINAL TIGHTENING.
14. TIA-222-G GROUNDING FOR TOWER.
15. TOWER LIGHTING SUPPLIED BY OTHERS.



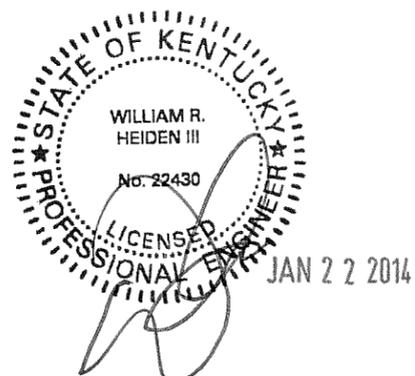
William R. Heiden III, KY Professional Engineer # 22430

				AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'		
A	ADDED FOUNDATIONS	MS	01/20/2014	APPROVED/ENG.	M_S	1/20/2014
REV	DESCRIPTION OF REVISIONS	INI	DATE	APPROVED/FOUND.	N/A	
				COPYRIGHT 2014		
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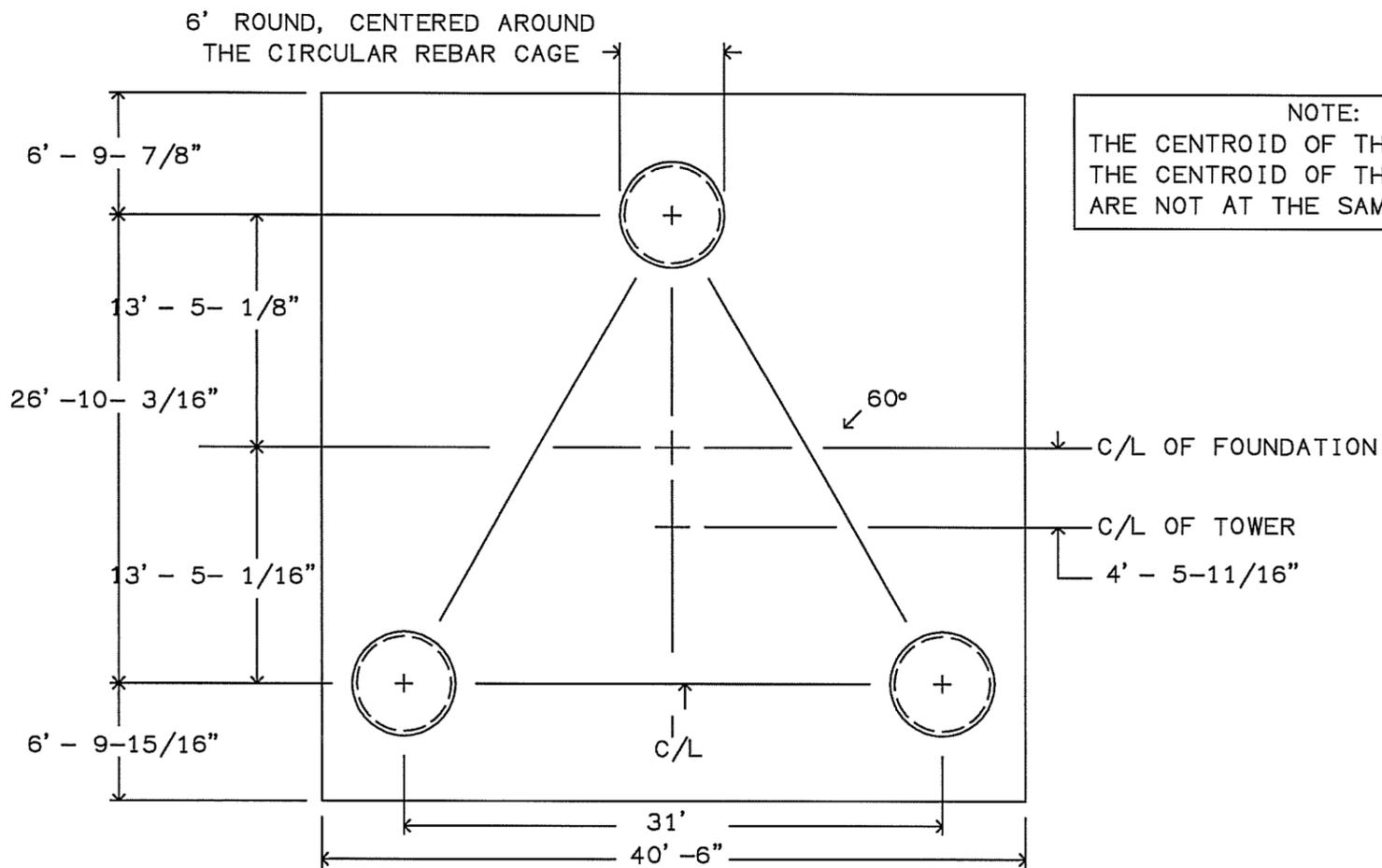
FOUNDATION NOTES

1. ULTIMATE SOIL PRESSURE ASSUMED TO BE 5000 PSF. ULTIMATE PASSIVE PRESSURE ASSUMED TO BE 500 LB PCF. THE PURCHASER & OWNER/CONTRACTOR MUST VERIFY THAT THE ACTUAL SITE SOIL PARAMETERS MEET OR EXCEED THE ASSUMED SOIL PARAMETERS PER THIS NOTE AND/OR SHOULD OBTAIN A SOIL REPORT TO DETERMINE THE SOIL CONDITIONS AT THE SITE. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE FOR THE ACTUAL SUBSURFACE CONDITIONS ENCOUNTERED.
2. CONCRETE TO BE 4000 PSI @ 28 DAYS. REINFORCING BAR TO CONFORM TO ASTM A615 GRADE 60 SPECIFICATIONS. CONCRETE INSTALLATION TO CONFORM TO ACI-318 (2008) BUILDING REQUIREMENTS FOR REINFORCED CONCRETE. ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH FREE OF WATER AND ALL FOREIGN OBJECTS AND MATERIALS. A MINIMUM OF THREE INCHES OF CONCRETE SHALL COVER ALL REINFORCEMENT. WELDING OF REBAR NOT PERMITTED.
3. A COLD JOINT IS PERMISSIBLE UPON CONSULTATION WITH PIROD. ALL COLD JOINTS SHALL BE COATED WITH BONDING AGENTS PRIOR TO SECOND POUR.
4. ALL FILL SHOULD BE PLACED IN LOOSE LEVEL LIFTS OF NO MORE THAN 12" THICK. FILL MATERIALS SHOULD BE CLEAN AND FREE OF ORGANIC AND FROZEN MATERIALS OR ANY OTHER DELETERIOUS MATERIALS. COMPACT FILL TO 97% OF STANDARD PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D698.
5. BENDING, STRAIGHTENING OR REALIGNING (HOT OR COLD) OF THE ANCHOR BOLTS BY ANY METHOD IS PROHIBITED.
6. CROWN TOP OF FOUNDATION FOR PROPER DRAINAGE.
7. IN THE ABSENCE OF A GEOTECHNICAL REPORT, THE FOLLOWING PRESUMPTIVE SOIL PARAMETERS WERE USED: AN ULTIMATE BEARING PRESSURE OF 5000 PSF, A COHESION OF 1000 PSF, A SOIL UNIT WEIGHT OF 110 PCF, AN ANGLE OF INTERNAL FRICTION OF 0 DEGREES AND NO GROUNDWATER ENCOUNTERED. THESE SOIL PARAMETERS ARE IN COMPLIANCE WITH THE REQUIREMENTS OF ANSI/TIA-222-G-2005 AND CAN BE FOUND IN ANNEX F OF THIS STANDARD.
8. ANY SOFT OR UNSTABLE SUBGRADE SOILS DETECTED DURING THE EXCAVATION SHOULD BE REMOVED AND REPLACED WITH COMPACTED FILL.



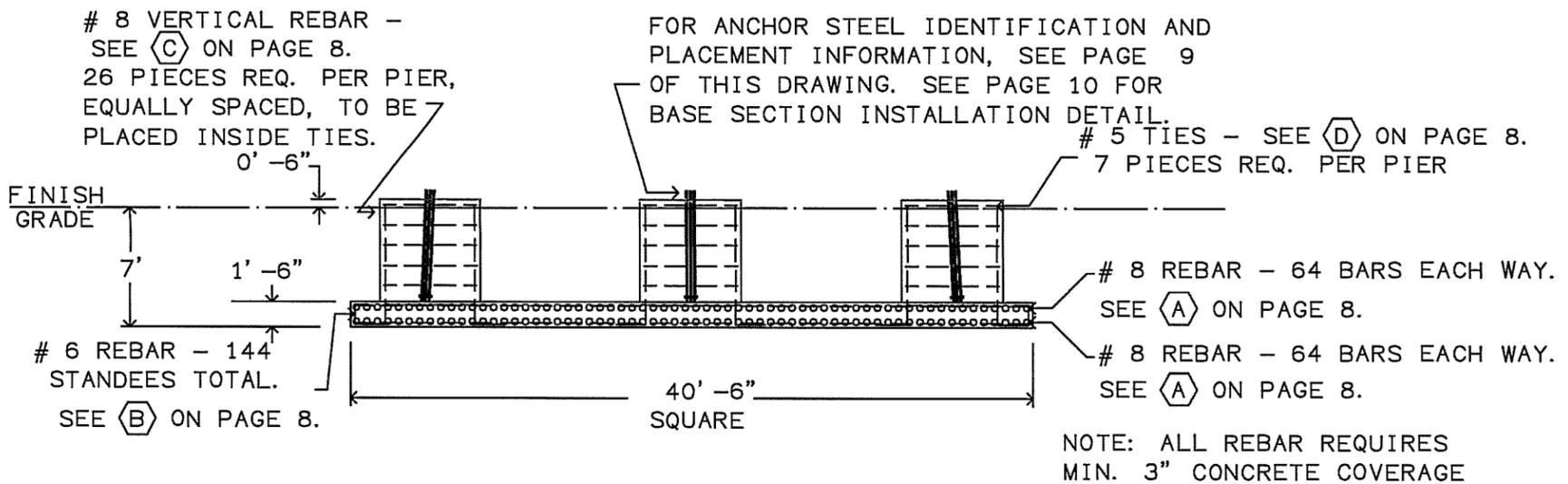
William R. Heiden III, KY Professional Engineer # 22430

				AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'		
A	ADDED FOUNDATIONS	MS	01/20/2014	APPROVED/ENG.	M_S	1/20/2014
REV	DESCRIPTION OF REVISIONS	INI	DATE	APPROVED/FOUND.	M_S	1/20/2014
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NOTE:  
THE CENTROID OF THE TOWER AND  
THE CENTROID OF THE FOUNDATION  
ARE NOT AT THE SAME POINT!

NOTE: THE FOUNDATIONS DEPICTED ON THIS DRAWING WERE DESIGNED PER ASSUMED SOIL PARAMETERS. ALTHOUGH IT IS OUR EXPECTATION THAT THE SOIL WILL EXHIBIT SUFFICIENT STRENGTH TO COMPLY WITH THE ASSUMED STRENGTHS, IT IS POSSIBLE THAT THE SOIL MAY NOT EXHIBIT THE REQUIRED STRENGTHS. THEREFORE, IT IS HIGHLY RECOMMENDED THAT THE ASSUMED PROPERTIES BE CONFIRMED BY A GEOTECHNICAL ENGINEER VIA A SOIL REPORT OR AN ON-SITE INSPECTION DURING INSTALLATION.



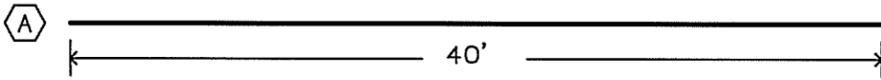
TOWER FOUNDATION

110.0 CUBIC YARDS CONCRETE REQUIRED  
FOR INSTALLATION SPECIFICATIONS AND  
ADDITIONAL INFORMATION, SEE PAGE 6  
OF THIS DRAWING.



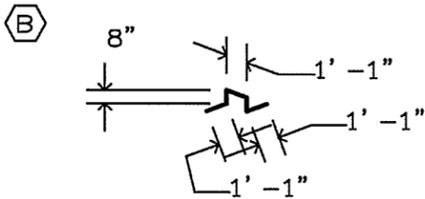
William R. Heiden III, KY Professional Engineer # 22430

				AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'		<b>valmont</b> STRUCTURES <small>1-877-467-4763 Plymouth, IN 1-888-880-9191 Salem, OR</small>
A	ADDED FOUNDATIONS	MS	01/20/2014	APPROVED/ENG.	M.S	
REV	DESCRIPTION OF REVISIONS	INI	DATE	APPROVED/FOUND.	M.S	1/20/2014
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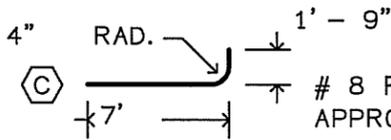


# 8 REBAR - 256 PIECES REQ. TOTAL  
 APPROX WT = 106.8# EACH, 27341# TOTAL

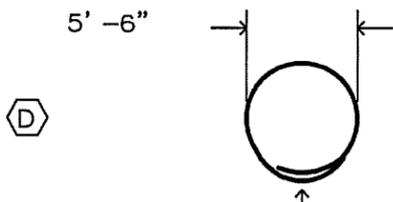
REBAR SUPPORTS MAY CONSIST OF ANY ACCEPTABLE MEANS OF SECURELY SUPPORTING THE TOP REINFORCEMENT GRID ABOVE THE BOTTOM REINFORCEMENT GRID WHILE MAINTAINING A SEPARATION OF 1' (OUTSIDE REBAR TO OUTSIDE REBAR).



# 6 REBAR - 144 PIECES REQUIRED TOTAL  
 TYPE 26 STANDEE PLACED BETWEEN REBAR GRIDS ON NOMINAL 4' SPACING THROUGHOUT  
 APPROX UNBENT LENGTH = 4' - 5 - 7/8"  
 APPROX WT = 6.7# EACH, 965# TOTAL



# 8 REBAR - 78 PIECES REQUIRED TOTAL  
 APPROX UNBENT LENGTH = 8' - 7 - 3/8"  
 APPROX WT = 23.0# EACH, 1794# TOTAL



# 5 REBAR - 21 PIECES REQUIRED TOTAL  
 APPROX UNBENT LENGTH = 19' - 2 - 1/2"  
 APPROX WT = 20.0# EACH, 420# TOTAL

LAP DIMENSION: 1'-11-1/8"  
 PLACE CIRCULAR TIES SO THAT LAPS ON ADJACENT TIES ARE 180 DEGREES APART. PLACE ONE TIE AT TOP OF PAD AND TWO TIES AT TOP OF PIER REBAR. EQUALLY SPACE REMAINING TIES ALONG PIER.

REBAR DETAIL

TOTAL APPROX REBAR WEIGHT = 30520#  
 REINFORCING BAR TO CONFORM TO  
 ASTM A615 GRADE 60 SPECIFICATIONS.



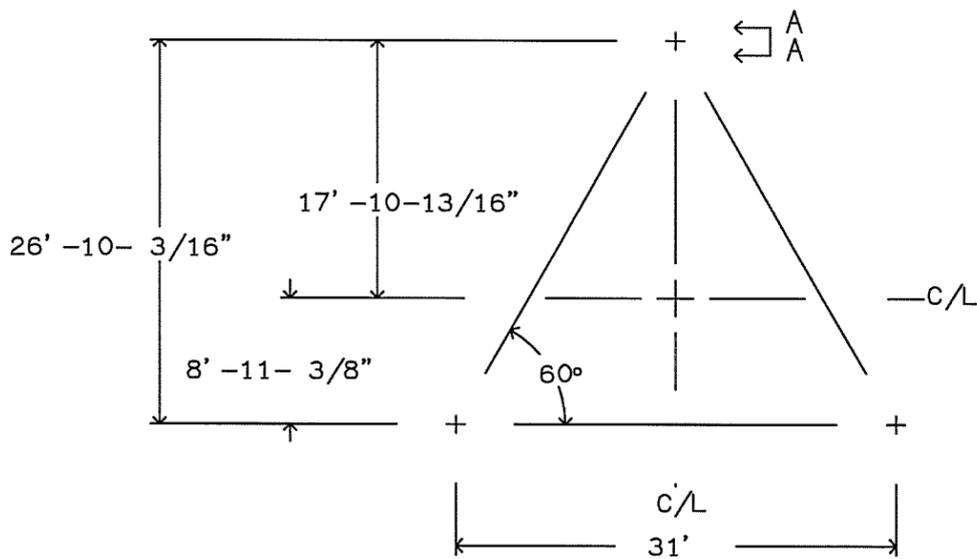
William R. Heiden III, KY Professional Engineer # 22430

				AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'		
A	ADDED FOUNDATIONS	MS	01/20/2014	APPROVED/ENG.	M_S	1/20/2014
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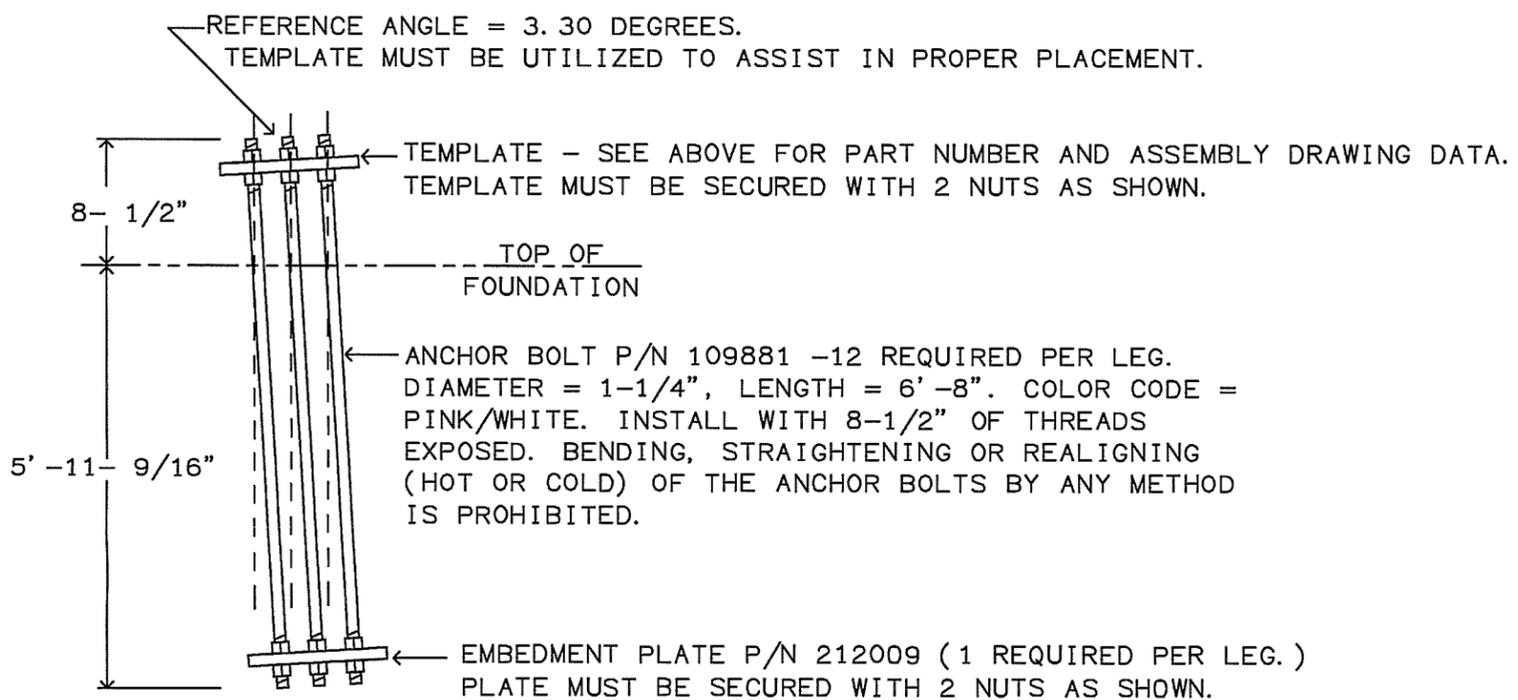


TEMPLATE ASSEMBLY P/N 216166 INCLUDES CORNER PLATE P/N 211904, IS REQUIRED FOR INSTALLATION AND MUST BE PLACED AS SHOWN. SEE DRAWING # 211875 FOR TEMPLATE ASSEMBLY DETAILS. SEE PAGE 7 FOR TOWER C/L LOCATION RELATIVE TO THE FOUNDATION LAYOUT. TEMPLATE PLACEMENT +/- 3". EACH LEG MUST BE CENTERED IN PIER WITHIN +/- 10% OF PIER DIAMETER. TEMPLATE MUST BE LEVEL +/- 1 DEGREE. INSTALL TEMPLATE WITH SUFFICIENT SPACE BENEATH (2" MINIMUM) TO PERMIT FINISHING OF CONCRETE AND TO FACILITATE TEMPLATE REMOVAL PRIOR TO TOWER ERECTION.

SEE PAGE 10 FOR BASE SECTION INSTALLATION DETAIL.

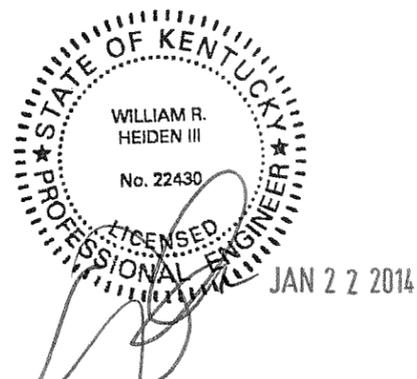


TOWER ANCHOR STEEL PLACEMENT - TOP VIEW



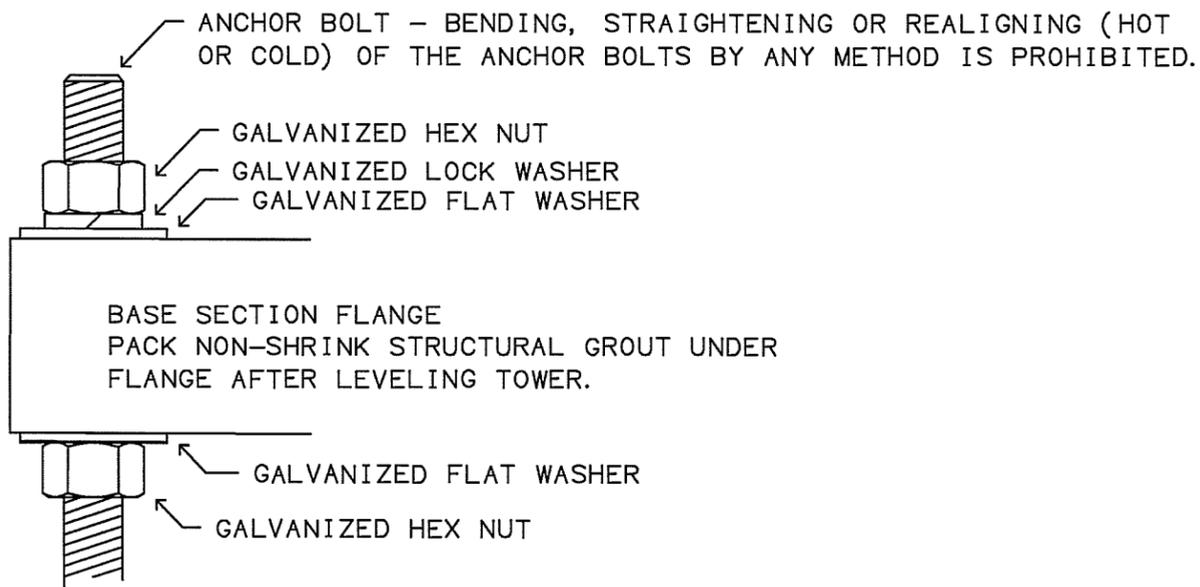
VIEW A - A - ANCHOR BOLT INSTALLATION DETAIL (NOT TO SCALE)

**ATTENTION CONTRACTOR INSTALLING THE ANCHOR BOLTS!**  
 1-1/4" DIAMETER ANCHOR BOLTS FOR TAPERED TOWER.  
 VERIFY THE PART NUMBERS AND SIZES FOR ALL COMPONENTS ON THIS PAGE AND PAGE 10.  
 IF THERE ARE ANY DISCREPANCIES, PLEASE NOTIFY PIROD, INC. PRIOR TO INSTALLATION!!

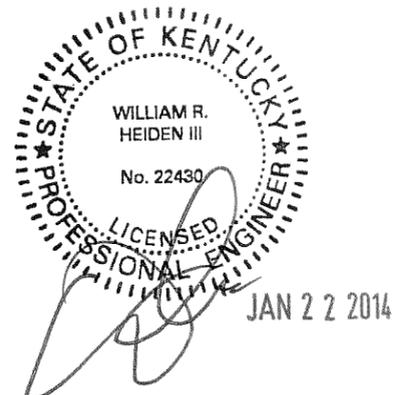


William R. Heiden III, KY Professional Engineer # 22430

				AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'		
A	ADDED FOUNDATIONS	MS	01/20/2014	APPROVED/ENG.	M_S	1/20/2014
REV	DESCRIPTION OF REVISIONS	INI	DATE	APPROVED/FOUND.	M_S	1/20/2014
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BASE SECTION INSTALLATION DETAIL



William R. Heiden III, KY Professional Engineer # 22430

				AMERICAN TOWER CORP. #281338 HAZEL GREEN, KY V-31.0 X 290'		
A	ADDED FOUNDATIONS	MS	01/20/2014	APPROVED/ENG.	M_S	1/20/2014
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## **FOUNDATION NOTES**

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- 1 IN THE ABSENCE OF A GEOTECHNICAL REPORT, THE FOLLOWING PRESUMPTIVE SOIL PARAMETERS WERE USED: AN ULTIMATE BEARING PRESSURE OF 5000 PSF, A COHESION OF 1000 PSF, A SOIL UNIT WEIGHT OF 110 PCF, AN ANGLE OF INTERNAL FRICTION OF 0 DEGREES AND NO GROUNDWATER ENCOUNTERED. THESE SOIL PARAMETERS ARE IN COMPLIANCE WITH THE REQUIREMENTS OF ANSI/TIA-222-G-2005 AND CAN BE FOUND IN ANNEX F OF THIS STANDARD.
- 2 ANY SOFT OR UNSTABLE SUBGRADE SOILS DETECTED DURING THE EXCAVATION SHOULD BE REMOVED AND REPLACED WITH COMPACTED FILL.

**UNIT BASE FOUNDATION (Load Case 2)**

ATC  
Hazel Green, KY

V- 31.0 290  
A- 240568

v.2.1

Reactions	stress ratio	99.0%	mark up:	1.0%
Shear, S:	111.00 kips	x 1.01 =	112.11 kips	
Moment, M:	18361.00 ft-kips	x 1.01 =	18544.61 ft-kips	
Compression / leg, C:	723.00 kips	x 1.01 =	730.23 kips	
Uplift / leg, U:	636.00 kips	x 1.01 =	642.36 kips	
Tower weight, W <sub>c</sub> :	118.00 kips	=	118.00 kips	

Soil per: Assumed as Clay Per TIA-222-G Annex F.

Ultimate bearing: 5.000 ksf  
Ultimate Pp: 0.396 kcf

**Load Case 2 = 0.9\*D + 1.0\*Dg + 1.6\*Wo**

**Physical Parameters:**

Concrete volume:	$V = T * W^2 + 3 * (d^2 / 4 * \pi) * (D + E - T)$	V =	110.0	cy
Concrete weight:	$W_c = V * \delta$	W <sub>c</sub> =	445.4	kips
Soil weight:	$W_s = (D - T) * (W^2 - 3 * (d^2 / 4 * \pi)) * \gamma$	W <sub>s</sub> =	941.0	kips
Total weight:	$P = W_c + W_s + W_t$	P =	1504.43	kips

**Passive Pressure:**

<i>P<sub>p</sub></i> coefficient:	$K_p = \text{TAN}(45 + \phi / 2)^2$	K <sub>p</sub> =	1.000	
	$P_{pn} = K_p * \gamma * N + 2 * C_o * \sqrt{(K_p)}$	P <sub>pn</sub> =	2.770	ksf
	$P_{pt} = K_p * \gamma * (D - T) + 2 * C_o * \sqrt{(K_p)}$	P <sub>pt</sub> =	2.605	ksf
	$P_{pb} = K_p * \gamma * D + 2 * C_o * \sqrt{(K_p)}$	P <sub>pb</sub> =	2.770	ksf
	$P_{ptop} = \text{IF}(N < (D - T), P_{pt}, P_{pn})$	P <sub>ptop</sub> =	2.8	ksf
	$P_p' = (P_{ptop} + P_{pb}) / 2$	P <sub>p</sub> ' =	2.770	ksf
Shear area:	$T_{pp} = 0$	T <sub>pp</sub> =	0.0	ft
	$A_{pp} = T_{pp} * W$	A <sub>pp</sub> =	0.00	ft <sup>2</sup>
Shear Capacity:	$S_{actual} = (P_p' * A_{pp} + \mu * P) * \phi_r$	S <sub>actual</sub> =	225.665	kips
$\phi_r = 0.75$				

Check	S <sub>actual</sub> =	225.66	kips	>=	S =	112.11	kips	OK
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**Overturning Moment Resistance at Toe:**

Wt of soil wedge:	$W_{sw} = D * (D * \text{TAN}(\phi)) / 2 * W * \gamma$	W <sub>sw</sub> =	0.0	kips
Dist. from leg to edge:	$O = (W - 0.866 * w) / 2$	O =	6.827	ft
Additional offset of Wt:	$O_a = (2 / 3 * 0.866 * w' + O) - W / 2$	O <sub>a</sub> =	4.474	ft
Resisting moments:	$M_{rwt} = P * W / 2 - W_t * O_a$	M <sub>rwt</sub> =	29936.74	ft-kips
	$M_{rp} = P_p' * A_{pp} * (D - N) / 3$	M <sub>rp</sub> =	0.00	ft-kips
	$M_{rsw} = W_{sw} * (W + D * \text{TAN}(\phi) / 3)$	M <sub>rsw</sub> =	0.00	ft-kips
Total resisting:	$M_{rt} = (M_{rwt} + M_{rp} + M_{rsw}) * \phi_r$	M <sub>rt</sub> =	22452.56	ft-kips
$\phi_r = 0.75$				
Total overturning:	$M_o = M + S * (D + E)$	M <sub>o</sub> =	19385.44	ft-kips

Check	M <sub>rt</sub> =	22452.56	ft-kips	>=	M <sub>o</sub> =	19385.44	ft-kips	OK
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**Bearing Resistance due to Pressure Distribution:**

Area of mat:	$\text{area} = W^2$	area =	1640.3	ft <sup>2</sup>
Section modulus:	$SM = W^3 / 6$	SM =	11071.7	ft <sup>3</sup>
Factored total weight:	$P' = W_t + 0.9 * (W_c + W_s)$	P' =	1365.8	kip
Pressure exerted:	$P_{pos} = P' / \text{area} + M_o / SM$	P <sub>pos</sub> =	2.584	ksf
	$P_{neg} = P' / \text{area} - M_o / SM$	P <sub>neg</sub> =	-0.918	ksf

Note: The stress resultant is NOT within the kern. Bearing area has been adjusted below.

Load eccentricity:	$e_c = M_o / P'$	e <sub>c</sub> =	14.19	ft
	$P_{adj} = 2 * P' / (3 * W * (W / 2 - e_c))$	P <sub>adj</sub> =	3.7	ksf
Adj. applied pressure:	$q_a = \text{IF}(P_{neg} >= 0, P_{pos}, P_{adj})$	q <sub>a</sub> =	3.712	ksf
$\phi_r = 0.75$				

Check	q <sub>a</sub> =	3.712	ksf	<=	B <sub>c</sub> * $\phi_r$ =	3.750	ksf	OK
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**Concrete Shear Strength:**

One way beam action at d<sub>l</sub> from tower

Effective depth:	$d_c = T - cc - db_p / 2$	d <sub>c</sub> =	14.500	in
Factored intensity:	$q_s = C / \text{area}$	q <sub>s</sub> =	0.445	ksf
Required shear:	$V_{n1} = q_s * (O - d_l / 2 - dc) * W / \phi_s$	V <sub>n1</sub> =	62.95	kips
$\phi_s = 0.75$ [ACI 9.3.2.3]				
Available shear:	$V_{c1} = 2 * \sqrt{F_c} * W * dc$	V <sub>c1</sub> =	891.38	kips
[ACI 12.2.4]				

Check	V <sub>c1</sub> =	891.38	kips	>=	V <sub>n1</sub> =	62.95	kips	OK
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Two way beam action at d, / 2 from tower

Perimeter:	$P_o = (d_i + d_c) * \pi$	$P_o = 22.65$	ft
Required shear: $\phi_s = 0.75$ [ACI 9.3.2.3]	$V_{n2} = q_s / \phi_s * (\text{area} - (d_i + d_c)^2 * \pi / 4)$	$V_{n2} = 949.42$	kips
Available shear: [ACI 12.2.2]	$V_{c2} = 4 * \sqrt{F'c} * P_o * d_c$	$V_{c2} = 996.84$	kips
<b>Check</b>	$V_{c2} = 996.84$ kips	$\geq$	$V_{n2} = 949.42$ kips <b>OK</b>

Column Compression Capacity:

Compression reaction: $\phi_c = 0.65$ [ACI 9.3.2.2]	$P_c = \phi_c * 0.8 * F'c * (d_i^2 / 4 * \pi)$	$P_c = 8468.7$	kips
<b>Check</b>	$P_c = 8468.73$ kips	$\geq$	$C = 730.23$ kips <b>OK</b>

Pier Reinforcement:

Cross-sectional area:	$A_g = d_i^2 * \pi / 4$	$A_g = 4071.50$	in <sup>2</sup>
Min. area of steel (pier): [ACI 10.9.1] & [ACI 10.8.4]	$A_{st,c} = A_g * 0.005$	$A_{st,c} = 20.36$	in <sup>2</sup>
Cage circle:	$d_o = d_i - 2 * c_c$	$d_o = 66.00$	in
Rebar:	$s_c = 8$ $m_c = 26$ $A_{s,c} = A_{b,c} * m_c$	$d_{b,c} = 1$ in $A_{b,c} = 0.79$ in <sup>2</sup>	
<b>Check</b>	$A_{s,c} = 20.54$ in <sup>2</sup>	$\geq$	$A_{st,c} = 20.36$ in <sup>2</sup> <b>OK</b>
Actual moment:	$M_{max} = (D - T + E) * S / 2$	$M_{max} = 336.33$	ft-kips
Pier moment capacity:	$M_{allow}$ per Maxmomnt.xls (see attached)	$M_{allow} = 452.85$	ft-kips
<b>Check</b>	$M_{allow} = 452.85$ ft-kips	$\geq$	$M_{max} = 336.33$ ft-kips <b>OK</b>
Bar separation:	$B_{s,c} = (d_o * \pi) / m_c - d_{b,c}$	$B_{s,c} = 6.97$	in
<b>Check</b>	11 $\geq$	$B_{s,c} = 6.97$ in	$\geq$ 4.5" <b>OK</b>

Vertical Rebar Development Length:

Reinforcement location: [ACI 12.2.4]	$\psi_{l,c} =$ if the space under the rebar > 12 in, use 1.3, else use 1.0	$\psi_{l,c} = 1.3$	
Epoxy coating: [ACI 12.2.4]	$\psi_{e,c} =$ if epoxy-coated bars are not used, use 1.0; but if epoxy-coated bars are used, then if $B_s < 6 * d_b$ or $c_c < 3 * d_b$ , use 1.5, else 1.2	$\psi_{e,c} = 1.0$	
Max term: [ACI 12.2.4]	$\psi_t \psi_{e,c} =$ the product of $\psi_t$ & $\psi_{e,c}$ , need not be taken larger than 1.7	$\psi_t \psi_{e,c} = 1.3$	
Reinforcement size: [ACI 12.2.4]	$\psi_{s,c} =$ if the bar size is 6 or less, then use 0.8, else use 1.0	$\psi_{s,c} = 1$	
Light weight concrete: [ACI 12.2.4]	$\lambda_c =$ if lightweight concrete is used, 1.3, else use 1.0	$\lambda_c = 1.0$	
Spacing/cover: [ACI 12.2.4]	$c_o =$ the smaller of: half the bar spacing or the concrete edge distance	$c_o = 3.50$	in
Transverse bars: [ACI 12.2.3]	$k_{tr,c} = 0$ (per simplification)	$k_{tr,c} = 0$	in
Max term: [ACI 12.2.3]	$c_c' = \text{MIN}(2.5, (c_c + k_{tr,c}) / d_{b,c})$	$c_c' = 2.500$	
Excess reinforcement: [ACI 12.2.5]	$R_c = M_{max} / M_{allow}$	$R_c = 0.74$	
Development (tensile): [ACI 12.2.2]	$L_{dt,c} = (3 / 40) * (F_y / \sqrt{F'c}) * (\psi_t \psi_{e,c} * \psi_{s,c} * \lambda_c * R_c / c_c') * d_{b,c}$	$L_{dt,c} = 27.48$	in
Minimum length: [ACI 12.2.1]	$L_{d,min} = 12$ inches	$L_{d,min} = 12.0$	in
Development length:	$L_{dt,c} = \text{MAX}(L_{d,min}, L_{dt,c})$	$L_{dt,c} = 27.48$	in
Development (comp.): [ACI 12.3.2]	$L_{dc,c} = 0.02 * d_{b,c} * F_y * R_c / \sqrt{F'c}$	$L_{dc,c} = 14.09$	in
Development length:	$L_{dc,c} = 0.0003 * d_{b,c} * F_y * R_c$	$L_{dc,c} = 13.37$	in
Development length:	$L_{dc,c} = \text{MAX}(8, L_{dc',c}, L_{dc'',c})$	$L_{dc,c} = 14.09$	in
Length available in pier:	$L_{vc} = D - T + E - c_c$	$L_{vc} = 69.0$	in
<b>Check</b>	$L_{vc} = 69.0$ in	$\geq$	$L_{dt,c} = 27.5$ in <b>OK</b>
<b>Check</b>	$L_{vc} = 69.0$ in	$\geq$	$L_{dc,c} = 14.1$ in <b>OK</b>
Length available in pad:	$L_{vp} = T - c_c$	$L_{vp} = 15.0$	in
<b>Check</b>	$L_{vp} = 15.0$ in	$\geq$	$L_{dt,c} = 27.5$ in <b>HOOKS</b>
<b>Check</b>	$L_{vp} = 15.0$ in	$\geq$	$L_{dc,c} = 14.1$ in <b>OK</b>

**Vertical Rebar Hook Ending:**

Bar size & clear cover: [ACI 12.5.3]	$\alpha_h$ if the bar size $\leq 11$ and side cc $\geq 2.5"$ , use 0.7, else use 1.0	$\psi_{t,h} = 0.7$
Epoxy coating: [ACI 12.5.2]	$\beta_h$ if epoxy-coated bars are used, use 1.2, else use 1.0	$\psi_{e,h} = 1.0$
Light weight concrete: [ACI 12.5.2]	$\lambda_h$ if lightweight concrete is used, 1.3, else use 1.0	$\lambda_h = 1.0$
Development (hook): [ACI 12.5.2]	$L_{dh} = 0.02 * \psi_{t,h} * \psi_{e,h} * \lambda_h * F_y / \sqrt{F'c} * db_c$	$L_{dh} = 13.3$ in
Minimum length: [ACI 12.5.1]	$L_{dh_{min}}$ the larger of: 8 * db or 6 in	$L_{dh_{min}} = 8.0$ in
Development length:	$L_{dh} = \text{MAX}(L_{dh_{min}}, L_{dh})$	$L_{dh} = 13.3$ in
Hook tail length:	$L_{h_{tail}} = 12 * db$ beyond the bend radius	$L_{h_{tail}} = 16.0$ in
Length available in pad:	$L_{h_{pad}} = (W - w' - di) / 2$	$L_{h_{pad}} = 21$ in
	<b>Check</b> $L_{vp} = 15.0$ in $\geq$ $L_{dh} = 13.3$ in	OK
	<b>Check</b> $L_{h_{pad}} = 21.0$ in $\geq$ $L_{dh_{tail}} = 16.0$ in	OK

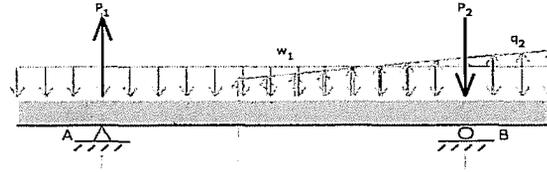
**Pier Ties:**

Minimum size: [ACI 7.10.5.1]	$s_{t_{min}} = \text{IF}(s_c \leq 10, 3, 4)$	$s_{t_{min}} = 3$
z factor:	$z = 0.5$ if the seismic zone is less than 2, else 1.0	$z = 0.5$
Tie parameters:	$s_t = 4$ $m_t = 7$	$d_{b,t} = 0.5$ in $A_{b,t} = 0.2$ in <sup>2</sup>
Allowable tie spacing:		
per vertical rebar [ACI 7.10.5.2] & [ACI 21.3.3.2]	$B_{s,t_{max1}} = 8 / z * db_c$	$B_{s,t_{max1}} = 16$ in
per tie size [ACI 7.10.5.2] & [ACI 21.3.3.2]	$B_{s,t_{max2}} = 24 / z * db_t$	$B_{s,t_{max2}} = 24$ in
per pier diameter [ACI 7.10.5.2] & [ACI 21.3.3.2]	$B_{s,t_{max3}} = di / (4 * z^2)$	$B_{s,t_{max3}} = 72$ in
per seismic zone [ACI 7.10.5.2] & [ACI 21.3.3.2]	$B_{s,t_{max4}} = 12"$ in active seismic zones, else 18"	$B_{s,t_{max4}} = 18$ in
	$B_{s,t_{max}} = \text{MIN}(B_{s,t_{max1}}, B_{s,t_{max2}}, B_{s,t_{max3}}, B_{s,t_{max4}})$	$B_{s,t_{max}} = 16$ in
	$m_{t_{min}} = (D - T + E) / B_{s,t_{max}} + 2$	$m_{t_{min}} = 6.5$
	<b>Check</b> $m_t = 7.0$ $\geq$ $m_{t_{min}} = 6.5$	OK

**Anchor Steel:**

A/S parameters:	$P_{as} = 109881$	$L_{as} = 80$ in
	$d_{as} = 1.25$ in	$E_{as} = 71.50$ in
Development available:	$L_{das}$ per Anchor Bolts (see attached)	$L_{das} = 46.50$ in
Required development:	$L_{das_{min}}$ per Anchor Bolts (see attached)	$L_{das_{min}} = 27.48$ in
	<b>Check</b> $L_{das} = 46.50$ in $\geq$ $L_{das_{min}} = 27.48$ in	OK
To bottom rebar grid:	$E_{as_{max}} = D + E - cc - 2 * db_p$	$E_{as_{max}} = 85$ in
	<b>Check</b> $E_{as} = 71.50$ in $\leq$ $E_{as_{max}} = 85.00$ in	OK
To top rebar grid:	$\text{rebar @} = D + E - T + cc$	$\text{rebar @} = 75.00$ in
	<b>Check</b> $75 + 6$ in $\geq$ $E_{as} = 71.50$ in or $\leq$ $75$ in	OK
Min. cage dia:	$d_{o_{min}}$ per ancsteel.xls (see attached)	$d_{o_{min}} = 36.20$ in
	<b>Check</b> $d_o = 66.00$ in $\geq$ $d_{o_{min}} = 36.20$ in	OK

**Pad Reactions:**



**MDSolids Geometry Input (Option 1)**

Total Beam Length:	$B_{L2\_1} = W$	$B_{L2\_1} =$	40.5	ft
Location of Left Support:	$S_{L2\_1} = 0$	$S_{L2\_1} =$	6.827	ft
Location of Right Support:	$S_{R2\_1} = W - 0$	$S_{R2\_1} =$	33.87	ft

**MDSolids Geometry Input (Option 2)**

Total Beam Length:	$B_{L2\_2} = W$	$B_{L2\_2} =$	40.5	ft
Location of Left Support:	$S_{L2\_2} = (W - w_1) / 2$	$S_{L2\_2} =$	4.75	ft
Location of Right Support:	$S_{R2\_2} = S_{L1\_2} + w_1$	$S_{R2\_2} =$	35.75	ft

**MDSolids Load Input (Option 1 & Option 2)**

Uplift:	$P_{2\_1} = U$	$P_{2\_1} =$	842.4	kips
Compression:	$P_{2\_2} = C$	$P_{2\_2} =$	730.23	kips
Weight of Overburden: (Distributed)	$w_{2\_1} = 0.9 * (W_o + W_s) / W$	$w_{2\_1} =$	30.81	kif
Distributed Soil Pressure: (Linearly Increasing)	$q_{2\_2L} = 0$	$q_{2\_2L} =$	0.00	kif
	$q_{2\_2R} = q_s * W$	$q_{2\_2R} =$	150.34	kif

*Applied over the beam starting at 0' and ending at W=40.5ft.*

*This linearly increasing load is applied from e=14.19ft to W=40.5ft*

**MDSolids Design Result**

Option 1:	$M_{max2\_1} = M_{max2\_1}$ (Max. Moment calculated from MDSolids for Option 1)	$M_{max2\_1} =$	2483.00	ft*kips
Option 2:	$M_{max2\_2} = M_{max2\_2}$ (Max. Moment calculated from MDSolids for Option 2)	$M_{max2\_2} =$	1247.00	ft*kips
Max moment:	$M_{maxp} = \text{Max}(M_{max2\_1}, M_{max2\_2})$	$M_{maxp} =$	2483.00	ft*kips
Required moment: <i>φt = 0.9 (ACI 9.3.2.1)</i>	$M_n = M_{maxp} / φt$	$M_n =$	2758.89	ft*kips



**THIS SPREADSHEET IS SET UP FOR A MAXIMUM OF 56 BARS.  
MAXIMUM FACTORED MOMENT OF A CIRCULAR SECTION**

Loading	
(negative for compression)	
Axial load =	642.36 kips

Foundation	
<i>Concrete</i>	
Pier diameter =	6.00 ft
Pier area =	4071.5 in <sup>2</sup>
<i>Reinforcement</i>	
Clear cover =	3.00 in
Cage diameter =	5.42 ft
Bar size =	8
Bar diameter =	1.000 in
Bar area =	0.785 in <sup>2</sup>
Number of bars =	26

Material Strengths		
Concrete compressive strength =	4000	psi
Reinforcement yield strength =	60000	psi
Modulus of elasticity =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

(per ACI 10.3.5 - OK)

Seismic	
Seismic Zone =	1
Are hooks required?	no

**Minimum Area of Steel**

Required area of steel = 20.36 in<sup>2</sup>  
 Actual area of steel = 20.42 in<sup>2</sup>      OK  
 Bar spacing = 6.97 in

**Axial Loading**

Load factor = 1.00  
 Reduction factor = 0.65575 (per ACI 9.3.1 & 2)  
 Factored axial load = 979.58 kips

**Neutral Axis**

Distance from extreme edge to neutral axis = 3.23 in  
 Equivalent compression zone factor = 0.85 (per ACI 10.2.7.3)  
 Distance from extreme edge to  
 Equivalent compression zone factor = 2.74 in  
 Distance from centroid to neutral axis = 32.77 in

**Compression Zone**

Area of steel in compression zone = 0.00 in<sup>2</sup>  
 Angle from centroid of pier to intersection of  
 equivalent compression zone and edge of pier = 22.52 deg  
 Area of concrete in compression = 50.85 in<sup>2</sup>  
 Force in concrete =  $0.85 * f'c * Acc$  = 172.89 kips (per ACI 10.3.6.2)  
 Total reinforcement forces = -1152.48 kips  
 Factored axial load = 979.58 kips  
 Force in concrete = -172.89 kips  
  
 Sum of the forces in concrete = 0.00 kips      OK

**Maximum Moment**

First moment of the concrete area in compression about the centroid = 1747.05 in<sup>3</sup>  
 Distance between centroid of concrete in compression and centroid of pier = 34.36 in  
 Moment of concrete in compression = 5939.97 in-kips  
 Total reinforcement moment = 2347.01 in-kips  
 Nominal moment strength of column = 8286.98 in-kips  
 Factored moment strength of column = 5434.16 in-kips      452.85 ft-kips

Maximum allowable moment of the pier =	452.85 ft-kips
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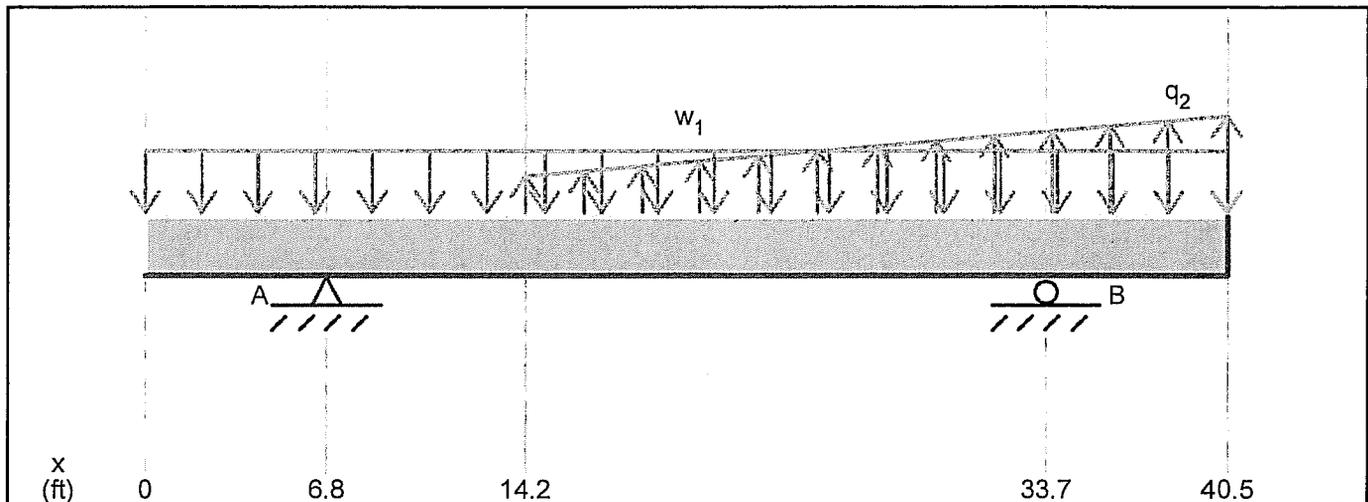
**Individual Bars**

Bar #	Angle from first bar (deg)	Distance to centroid (in)	Distance to neutral axis (in)	Distance to equivalent comp. zone (in)	Strain	Area of steel in compression (in <sup>2</sup> )	Axial force (kips)	Moment (in-kips)
1	0.00	0.00	-32.77	-33.26	-0.03045	0.00	-47.12	0.00
2	13.85	7.78	-24.99	-25.48	-0.02322	0.00	-47.12	-366.52
3	27.69	15.10	-17.67	-18.15	-0.01641	0.00	-47.12	-711.74
4	41.54	21.55	-11.22	-11.70	-0.01042	0.00	-47.12	-1015.59
5	55.38	26.75	-6.02	-6.51	-0.0056	0.00	-47.12	-1260.42
6	69.23	30.39	-2.38	-2.87	-0.00221	0.00	-47.12	-1432.00
7	83.08	32.26	-0.51	-0.99	-0.00047	0.00	-10.75	-346.85
8	96.92	32.26	-0.51	-0.99	-0.00047	0.00	-10.75	-346.85
9	110.77	30.39	-2.38	-2.87	-0.00221	0.00	-47.12	-1432.00
10	124.62	26.75	-6.02	-6.51	-0.0056	0.00	-47.12	-1260.42
11	138.46	21.55	-11.22	-11.70	-0.01042	0.00	-47.12	-1015.59
12	152.31	15.10	-17.67	-18.15	-0.01641	0.00	-47.12	-711.74
13	166.15	7.78	-24.99	-25.48	-0.02322	0.00	-47.12	-366.52
14	180.00	0.00	-32.77	-33.26	-0.03045	0.00	-47.12	0.00
15	193.85	-7.78	-40.55	-41.03	-0.03767	0.00	-47.12	366.52
16	207.69	-15.10	-47.87	-48.36	-0.04448	0.00	-47.12	711.74
17	221.54	-21.55	-54.32	-54.81	-0.05047	0.00	-47.12	1015.59
18	235.38	-26.75	-59.52	-60.00	-0.0553	0.00	-47.12	1260.42
19	249.23	-30.39	-63.16	-63.64	-0.05868	0.00	-47.12	1432.00
20	263.08	-32.26	-65.03	-65.52	-0.06042	0.00	-47.12	1520.36
21	276.92	-32.26	-65.03	-65.52	-0.06042	0.00	-47.12	1520.36
22	290.77	-30.39	-63.16	-63.64	-0.05868	0.00	-47.12	1432.00
23	304.62	-26.75	-59.52	-60.00	-0.0553	0.00	-47.12	1260.42
24	318.46	-21.55	-54.32	-54.81	-0.05047	0.00	-47.12	1015.59
25	332.31	-15.10	-47.87	-48.36	-0.04448	0.00	-47.12	711.74
26	346.15	-7.78	-40.55	-41.03	-0.03767	0.00	-47.12	366.52

DEVELOPMENT LENGTH CHECK OF PIER REINFORCEMENT			
Foundation:	Pier diameter = 6.0 ft	Cover between side of pier and cage = 3.00 in.	
	Cage diameter = 5.5 ft	Cover between top of pier and cage = 3.00 in.	
	Rebar size = 8	Compressive strength of concrete = 4000 psi	
	Number of bars = 64	Rebar yield strength = 60000 psi	
	Clear spacing = 6.60 in.		
	Are there hooks? n		
	Check Compression? n		
Anchor Steel:	Part number: 109881	Actual Bending Moment = 336.33 ft-kips	
	Embedment length = 71.5 in.	Allowable Bending Moment = 452.85 ft-kips	
	Bolt Diameter = 1.25"	Excess Reinforcement Ratio = 0.743	
Anchor Plate:	Part number: 212009		
	Plate width = 22 in.		
Required development length (compression) = 999.00 in.			
Required development length (tension) = 37.00 in.			
Required development length (tension) = 27.48 in.		(reduced)	
Available development length = 46.500 in.			
<b>OK</b>			
The length available in the pier for the development of the vertical reinforcement exceeds the required length (ACI 318-02, section 12.2).			

CHECK EMBEDMENT PLATE CLEARANCE IN THE PIER			
Foundation:	Pier diameter = 6.0 ft	Cover between side of pier and cage = 3.00 in.	
	Cage diameter = 5.5 ft	Minimum cover between A/S and cage = 3.00 in.	
Anchor Steel:	Part number: 109881	Angle of anchor steel in foundation = 3.3 degrees	
	Embedment length = 71.5 in.		
Anchor Plate:	Part number: 212009		
	Largest plate width = 22.00 in.		
	Bolt Diameter = 1.25 in.		
Minimum cage diameter = 36.20 in.			
Actual cage diameter = 66 in.			
<b>OK</b>			
The available space exceeds the minimum cage diameter required for anchor steel installed in the pier at an angle.			

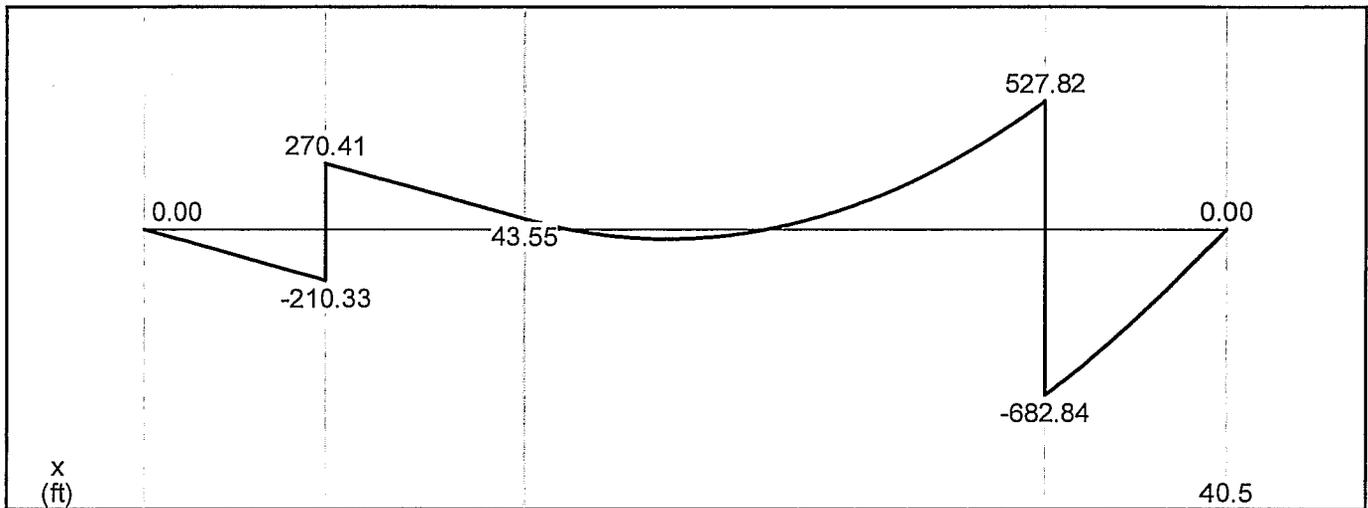
LC2- Option 1



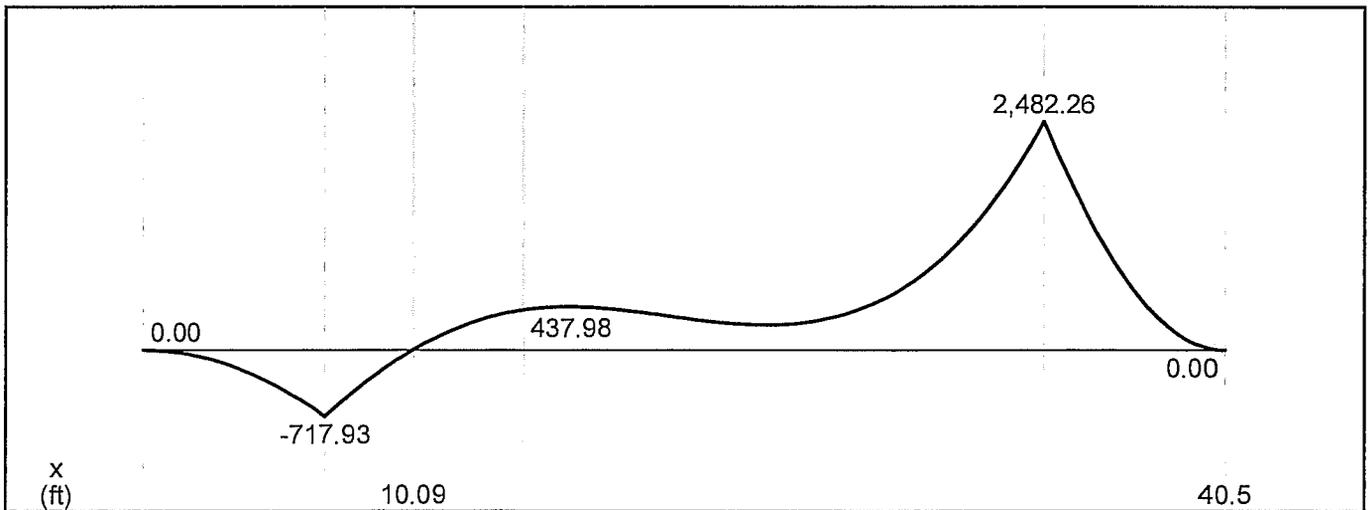
Load Diagram

$w_1 = 30.81$  kip/ft (down)  
 $q_2 = 0.0$  to  $150.34$  kip/ft (up)

$A_y = 480.74$  kip (up)  
 $B_y = 1,210.66$  kip (down)

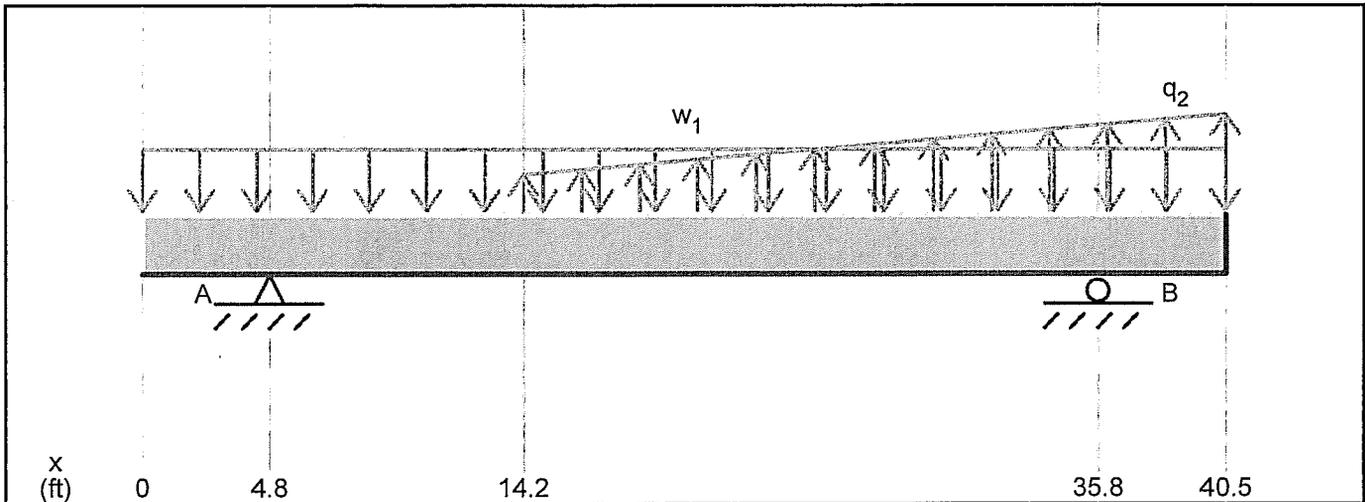


Shear Diagram (kip)



Moment Diagram (kip-ft)

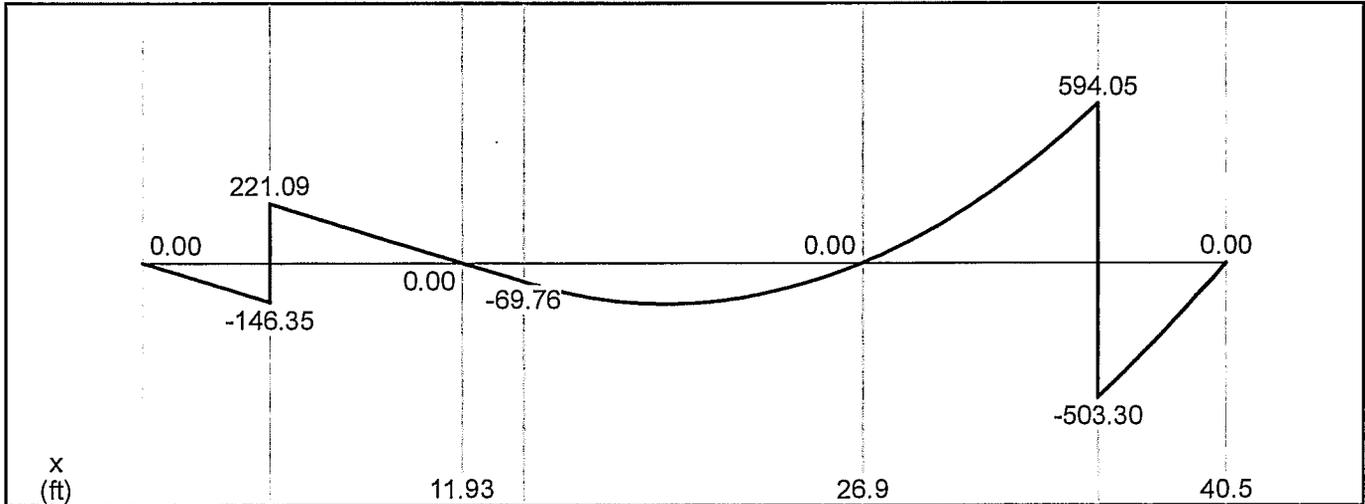
LC2- Option 2



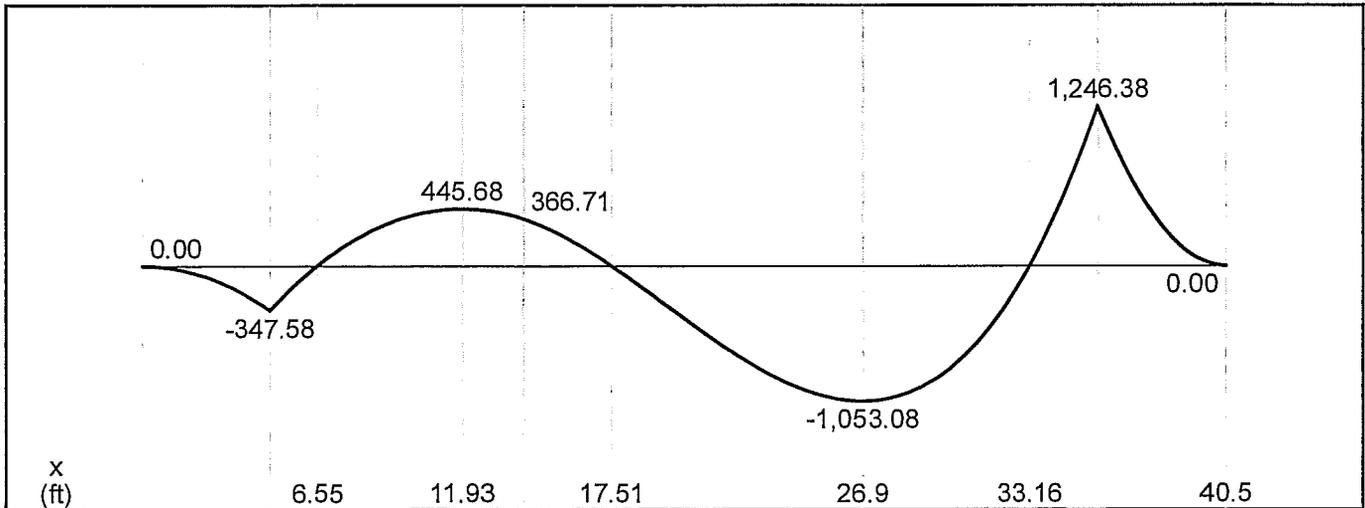
Load Diagram

$w_1 = 30.81$  kip/ft (down)  
 $q_2 = 0.0$  to  $150.34$  kip/ft (up)

$A_y = 367.44$  kip (up)  
 $B_y = 1,097.35$  kip (down)



Shear Diagram (kip)



Moment Diagram (kip-ft)

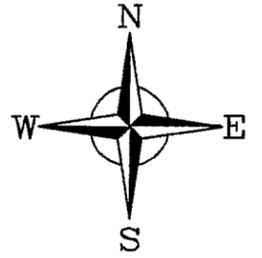


**EXHIBIT D**  
**COMPETING UTILITIES, CORPORATIONS, OR PERSONS LIST**  
**AND MAP OF LIKE FACILITIES IN VICINITY**

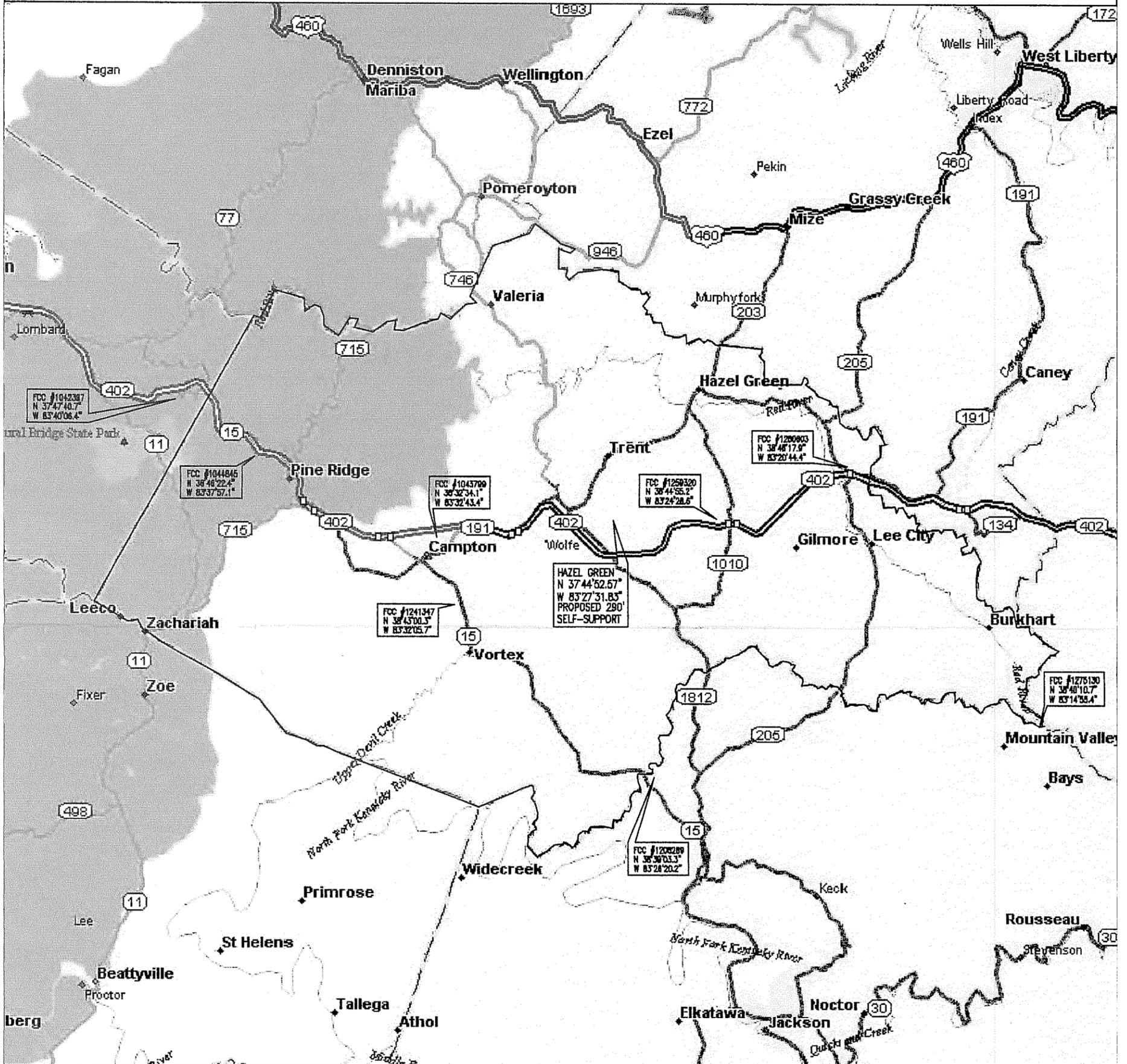
# WOLFE COUNTY, KENTUCKY

## AT&T SITE NAME: HAZEL GREEN

### TOWER LOCATION EXHIBIT



TOWERS DEPICTED ARE ALL KNOWN CONSTRUCTED TOWER SITES REGISTERED WITH THE FEDERAL COMMUNICATIONS COMMISSION IN WOLFE COUNTY, KENTUCKY



7.5 MINUTE U.S.G.S. QUADRANGLE MAP (NOT TO SCALE)

SEPTEMBER, 05 2013  
FSTAN PROJECT NO. 13-0008

Registration #	Status	File #	Owner Name
1043799	Constructed	A0796341	New Circular Wireless PCS, LLC
1044845	Constructed	A0548941	KENTUCKY, COMMONWEALTH OF DSA - KENTUCKY EMERGENCY WARNING SYSTEM KEWS
1241347	Constructed	A0856422	East Kentucky Network, LLC d/b/s Appalachian Wireless
1266320	Constructed	A0856445	East Kentucky Network, LLC d/b/s Appalachian Wireless
1276130	Constructed	A0840061	American Towers, LLC
1280603	Constructed	A0737491	East Kentucky Network, LLC d/b/s Appalachian Wireless
1042987	Constructed	A0856388	East Kentucky Network, LLC d/b/s Appalachian Wireless
1206299	Constructed	A0856404	East Kentucky Network, LLC d/b/s Appalachian Wireless



F.S. Land Company  
T. Alan Neal Company  
Land Surveyors and Consulting Engineers

P.O. Box 17546 2313/2315 Crittenden Drive, Louisville, KY. 40217  
Phone: (502) 635-5866 (502) 636-5111 Fax: (502) 636-5263



## Universal Licensing System

[FCC](#) > [WTB](#) > [ULS](#) > [Online Systems](#) > License Search

[FCC Site Map](#)

License Search

[HELP](#)

### Search Results

[New Search](#) [Refine Search](#) [Printable Page](#) [Query Download](#) [Map License](#)

#### Specified Search

State = **Kentucky**  
 County = **WOLFE**  
 Radio Service = **AW, CL, CW, WU**  
 Status = **Active**

Matches 1 - 35 (of 35 )

**PA** = Pending Application(s)  
**TP** = Termination Pending  
**L** = Lease

Page 1

	Call Sign/Lease ID	Name	FRN	Radio Service	Status	Expiration Date
1	<a href="#">KNKN809</a>	East Kentucky Network, LLC d/b/a Appalachian Wireless	0001786607	CL	Active	10/01/2021
2	<a href="#">KNKN841</a>	NEW CINGULAR WIRELESS PCS, LLC	0003291192	CL	Active	10/01/2021
3	<a href="#">KNLF252</a>	WIRELESSCO, L.P.	0002316545	CW	Active	06/23/2015
4	<b>PA</b> <a href="#">KNLH256</a>	Cellco Partnership	0003290673	CW	Active	04/28/2017
5	<b>PA</b> <a href="#">KNLH398</a>	Powertel Memphis Licenses, Inc.	0001832807	CW	Active	04/28/2017
6	<b>PA</b> <a href="#">KNLH399</a>	Powertel Memphis Licenses, Inc.	0001832807	CW	Active	04/28/2017
7	<a href="#">L000008141</a>	GTE Mobilnet of Florence, Alabama Incorporated	0001573518	WU	Active	06/13/2019
8	<a href="#">L000008142</a>	Topeka Cellular Telephone Company, Inc.	0005068713	WU	Active	06/13/2019
9	<a href="#">L000008150</a>	Tuscaloosa Cellular Partnership	0001573104	WU	Active	06/13/2019
10	<a href="#">L000008155</a>	Kentucky RSA No. 1 Partnership	0001836709	WU	Active	06/13/2019
11	<a href="#">L000008156</a>	Missouri RSA 2 Limited Partnership	0019468784	WU	Active	06/13/2019
12	<a href="#">L000008157</a>	Missouri RSA 4 Limited Partnership	0019468800	WU	Active	06/13/2019
13	<a href="#">L000008169</a>	St. Joseph CellTelCo	0005005541	WU	Active	06/13/2019
14	<a href="#">L000008489</a>	Illinois RSA 6 and 7 Limited Partnership	0002842334	WU	Active	06/13/2019
15	<a href="#">L000008492</a>	Alltel Central Arkansas Cellular Limited Partnership	0001722008	WU	Active	06/13/2019
16	<a href="#">L000008494</a>	Alltel Communications Wireless, Inc.	0020532149	WU	Active	06/13/2019
17	<a href="#">L000008505</a>	Arkansas RSA #2 (Searcy County) Cellular Limited Partnership	0004989638	AW	Active	06/13/2019
18	<a href="#">L000008506</a>	Arkansas RSA #2 (Searcy County) Cellular Limited Partnership	0004989638	WU	Active	06/13/2019
19	<a href="#">L000008543</a>	Missouri RSA #15 Limited Partnership	0002533610	AW	Active	06/13/2019
20	<a href="#">L000008544</a>	Missouri RSA #15 Limited Partnership	0002533610	WU	Active	06/13/2019
21	<a href="#">L000008574</a>	Northwest Arkansas RSA Limited Partnership	0001837178	WU	Active	06/13/2019
22	<a href="#">L000008622</a>	Southern Indiana RSA Limited Partnership	0001837269	AW	Active	06/13/2019
23	<a href="#">L000008624</a>	Southern Indiana RSA Limited Partnership	0001837269	WU	Active	06/13/2019
24	<a href="#">L000010763</a>	East Kentucky Network, LLC d/b/a Appalachian Wireless	0001786607	WU	Active	06/13/2019
25	<a href="#">WPOI255</a>	NEW CINGULAR WIRELESS PCS, LLC	0003291192	CW	Active	06/23/2015
26	<a href="#">WQCS428</a>	Cellco Partnership	0003290673	CW	Active	05/13/2015
27	<b>PA</b> <a href="#">WQCX683</a>	T-Mobile License LLC	0001565449	CW	Active	06/20/2015
28	<b>PA</b> <a href="#">WQDI527</a>	Cricket License Company, LLC	0018402123	CW	Active	09/06/2015
29	<b>PA</b> <a href="#">WQGA718</a> <b>L</b>	Cellco Partnership	0003290673	AW	Active	11/29/2021
30	<a href="#">WQGA823</a>	New Cingular Wireless PCS, LLC	0003291192	AW	Active	11/29/2021
31	<a href="#">WQGA840</a>	Cellco Partnership	0003290673	AW	Active	11/29/2021

2/7/2014

License Search - Search Results

31	<a href="#">WQGA940</a>	Cellco Partnership	0003290673	AW	Active	11/29/2021
32	<a href="#">WQGB377</a>	T-Mobile License LLC	0001565449	AW	Active	11/29/2021
33	<a href="#">WQGD755</a>	Cricket License Company, LLC	0018402123	AW	Active	12/18/2021
34	<a href="#">WQJQ692</a>	Cellco Partnership	0003290673	WU	Active	06/13/2019
35	<a href="#">WQSL582</a>	T-Mobile License LLC	0001565449	AW	Active	04/30/2022

Call Sign/Lease ID

Name

FRN

Radio Service Status

Expiration Date

Page 1

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By Call Sign  =

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Federal Communications Commission  
445 12th Street SW  
Washington, DC 20554

Phone: 1-877-480-3201  
TTY: 1-717-338-2824  
[Submit Help Request](#)



**EXHIBIT E  
CO-LOCATION REPORT**

2/28/2014

Kentucky Public Service Commission  
P.O. Box 615  
211 Sower Boulevard  
Frankfort, Kentucky 40602-0615

RE: Alternate Site Analysis Report  
Application for a Communications Facility  
Applicant: AT&T Mobility  
Site Location: Buchanan Fork Road, Campton, KY 41301  
Site Name: Hazel Green

Dear Commissioners:

This report is provided to explain the site development process used by the Applicant to identify the site selected for the new wireless communications facility proposed in the accompanying Application.

### **AT&T Mobility Site Development Process**

**Step 1: Problem Identification.** AT&T Mobility radio frequency engineers first identified a growing coverage and/or capacity gap in an area of Wolfe County near Campton, Kentucky.

**Step 2: Search Ring.** To help guide the site development team's task of identifying a suitable location for a new wireless communications facility site, AT&T Mobility's radio frequency engineers identified the geographic area where the antenna site must be located in order to close the gap and issued a map (called a Search Ring) that identified the general area in which a new site must be located. In this instance, the search ring has a radius of 3/4 mile from the search ring center coordinates (37.745722 N, -83.471379 W). A copy of the Search Ring for this site is attached as Exhibit A. The area contains large rural residential parcels and large forested parcels located near the Bert Combs Mountain Parkway.

**Step 3: Co-location Review.** The site development team first reviewed the area within the Search Ring for a suitable tall structure for co-location. In this case, there are no existing FCC-registered or other such structures within the search ring, or within 1 mile outside of the search ring.

**Step 4: Review of the Area's Zoning Classification.** Once the site development team determined that there are no available existing tall structures which are technically feasible and suitable for co-location, the team next reviewed local zoning requirements to identify parcels located within the search area that might be suitable from a land use perspective to host an antenna site. In this case, the selected site is located in an unincorporated portion of Wolfe County, and there is no applicable zoning district.

**Step 5: Preliminary Inspection and Assessment of Suitable Parcels.** Once suitable parcels are identified, the site development team visits the parcels and performs a preliminary inspection. The purpose of the preliminary inspection is: (1) to confirm the availability of sufficient land space for the proposed facility; (2) to identify a specific location for the facility on the parcel; (3) to identify any recognized environmental conditions that would disqualify the parcel from consideration; (4) to identify any construction issues that would disqualify the candidate; and, (5) to assess the potential impact of the facility on neighboring properties.

**Step 6: Candidate Evaluation and Selection.** After the preliminary site assessments were performed, the site development team evaluated potential locations based on the availability of ground space, topography, applicable environmental conditions, construction feasibility and the potential impact of the facility on neighboring properties. The owners of parcel 081-00-00-002.01 were interested in leasing ground space, and a site location on these parcels was confirmed to satisfy AT&T's radio frequency service objectives by AT&T's radio frequency engineer. Other suitable parcels may be available, but none are considered more suitable than the selected candidate.

**Step 7: Leasing and Due Diligence.** Once a suitable candidate was selected, lease negotiations were commenced and site due diligence steps were performed, as described below.

Leasehold Due Diligence:

- A Title Report was obtained and reviewed to ensure that there are no limitations on the landowner's capacity to lease and to address any title issues.
- A site survey was obtained to identify the location of parcel features, boundaries, easements and other encumbrances revealed by the title search.

Engineering Due Diligence:

- Utility access identified.
- Grounding plan designed.
- Geotechnical soil analysis performed to determine foundation requirements.
- Foundations designed to meet the Kentucky Building Code lateral and subjacent support requirements.
- Site plan developed.

Environmental Due Diligence:

A Phase I Environmental Site Assessment ("ESA") investigation was performed to establish the pre-existing types and amounts of contamination at a site, and to establish that the leaseholder is innocent of liability for the costs of performing environmental cleanup work that might arise from pollution or contamination of the site caused by a third party.

In addition to performing a Phase 1 ESA, the site was also evaluated for potential impacts under the National Environmental Policy Act (NEPA), submitted to the State Historic Preservation Office for review of potential impacts to historic structures or districts, and submitted to the registered Tribal Historic Preservation Office so that registered Native American nations had the opportunity to review potential impacts on native religious, ceremonial, or cultural resources.

Federal Regulatory Approvals

- Federal Aviation Administration (“FAA”) compliance.
- Federal Communication Commission (“FCC”) compliance.

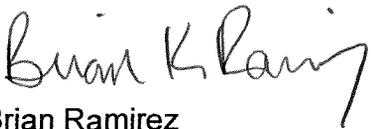
In this case, the selected site candidate satisfied the above criteria.

**Step 8: Application.** Once a lease is obtained and all site due diligence is completed, AT&T Mobility prepared and filed the accompanying uniform application to construct, maintain and operate a communications facility.

Conclusion

Applicant’s site identification and selection process aims to identify the least intrusive of all the technically feasible parcels in a service need area. In this case, the property meets the radio frequency site design objective and provides appropriate separation from other properties in the area.

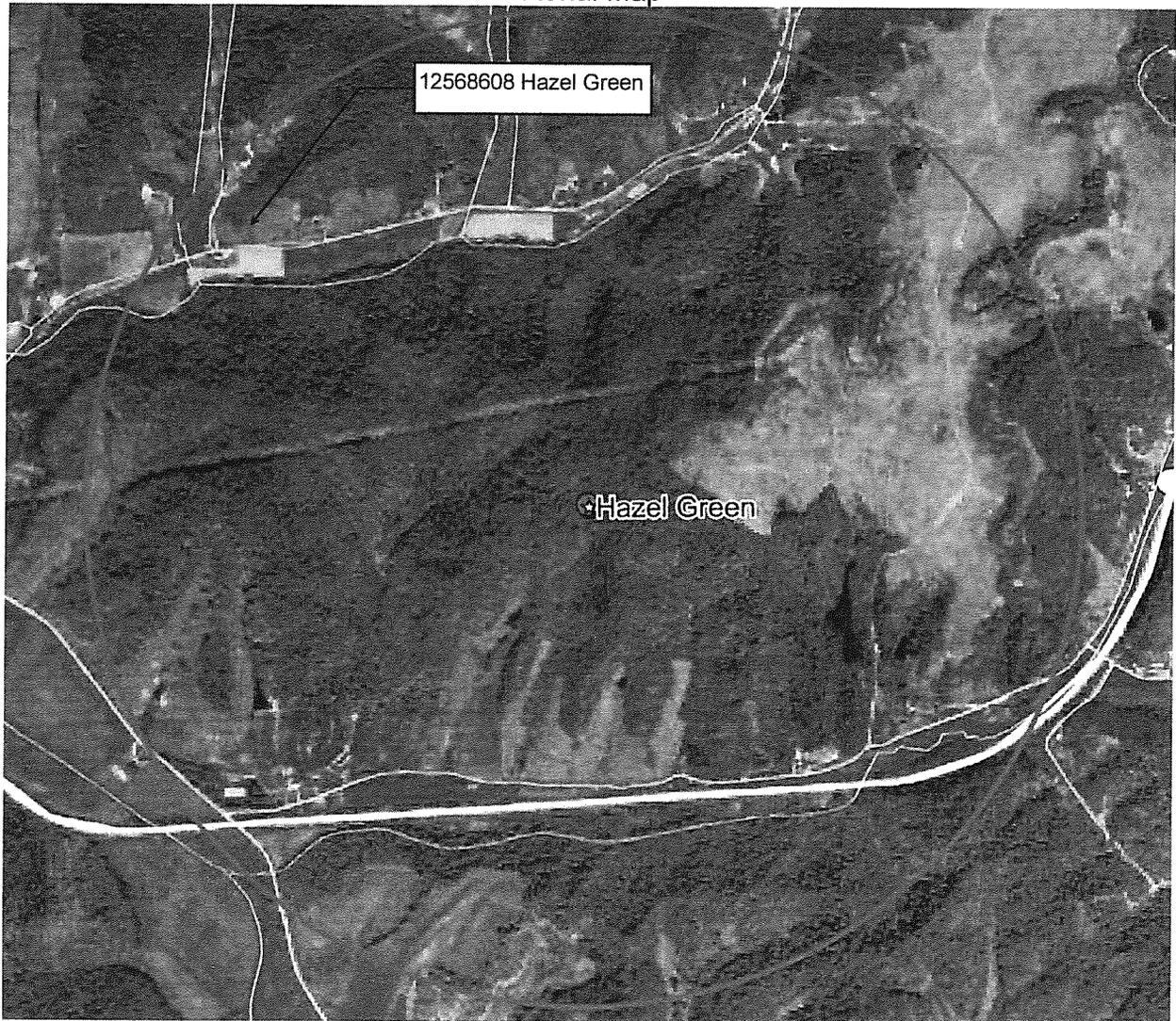
Sincerely,



Brian Ramirez  
Site Acquisition Agent  
PBM Wireless Services  
13714 Smokey Ridge Overlook  
Carmel, Indiana 46033  
(317) 225-6075

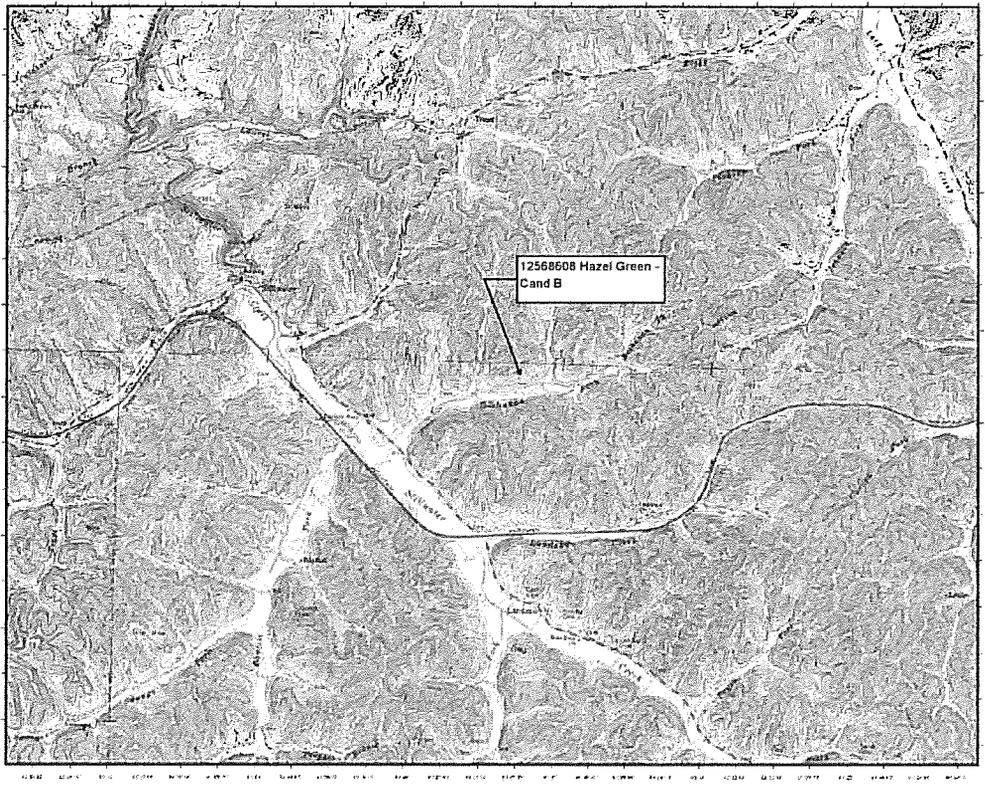
**Exhibit A**

Aerial Map



# EXHIBIT B

## Topographical Map



mytopo  
A WORLD OF MAPS

Vector Map



Ink & Map



THE WORLD'S LARGEST  
ONLINE MAP STORE



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**EXHIBIT F**  
**FAA**



Mail Processing Center  
 Federal Aviation Administration  
 Southwest Regional Office  
 Obstruction Evaluation Group  
 2601 Meacham Boulevard  
 Fort Worth, TX 76193

Aeronautical Study No.  
 2014-ASO-255-OE

Issued Date: 01/27/2014

FAA / FCC Department  
 American Towers, LLC  
 10 Presidential Way  
 Woburn, MA 01801

**\*\* DETERMINATION OF NO HAZARD TO AIR NAVIGATION \*\***

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Antenna Tower HAZEL GREEN KY (281338)  
 Location: CAMPTON, KY  
 Latitude: 37-44-52.57N NAD 83  
 Longitude: 83-27-31.83W  
 Heights: 997 feet site elevation (SE)  
 299 feet above ground level (AGL)  
 1296 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

As a condition to this Determination, the structure is marked/lighted in accordance with FAA Advisory circular 70/7460-1 K Change 2, Obstruction Marking and Lighting, a med-dual system - Chapters 4,8(M-Dual),&12.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part I)
- Within 5 days after the construction reaches its greatest height (7460-2, Part II)

This determination expires on 07/27/2015 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates , heights, frequency(ies) and power . Any changes in coordinates , heights, and frequencies or use of greater power will void this determination. Any future construction or alteration , including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

If we can be of further assistance, please contact our office at (847) 294-8084. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2014-ASO-255-OE.

**Signature Control No: 205237955-206606249**

( DNE )

Carole Bernacchi  
Technician

Attachment(s)  
Frequency Data

cc: FCC

Frequency Data for ASN 2014-ASO-255-OE

<b>LOW FREQUENCY</b>	<b>HIGH FREQUENCY</b>	<b>FREQUENCY UNIT</b>	<b>ERP</b>	<b>ERP UNIT</b>
698	806	MHz	1000	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1850	1910	MHz	1640	W
1930	1990	MHz	1640	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W



**EXHIBIT G**  
**KENTUCKY AIRPORT ZONING COMMISSION**

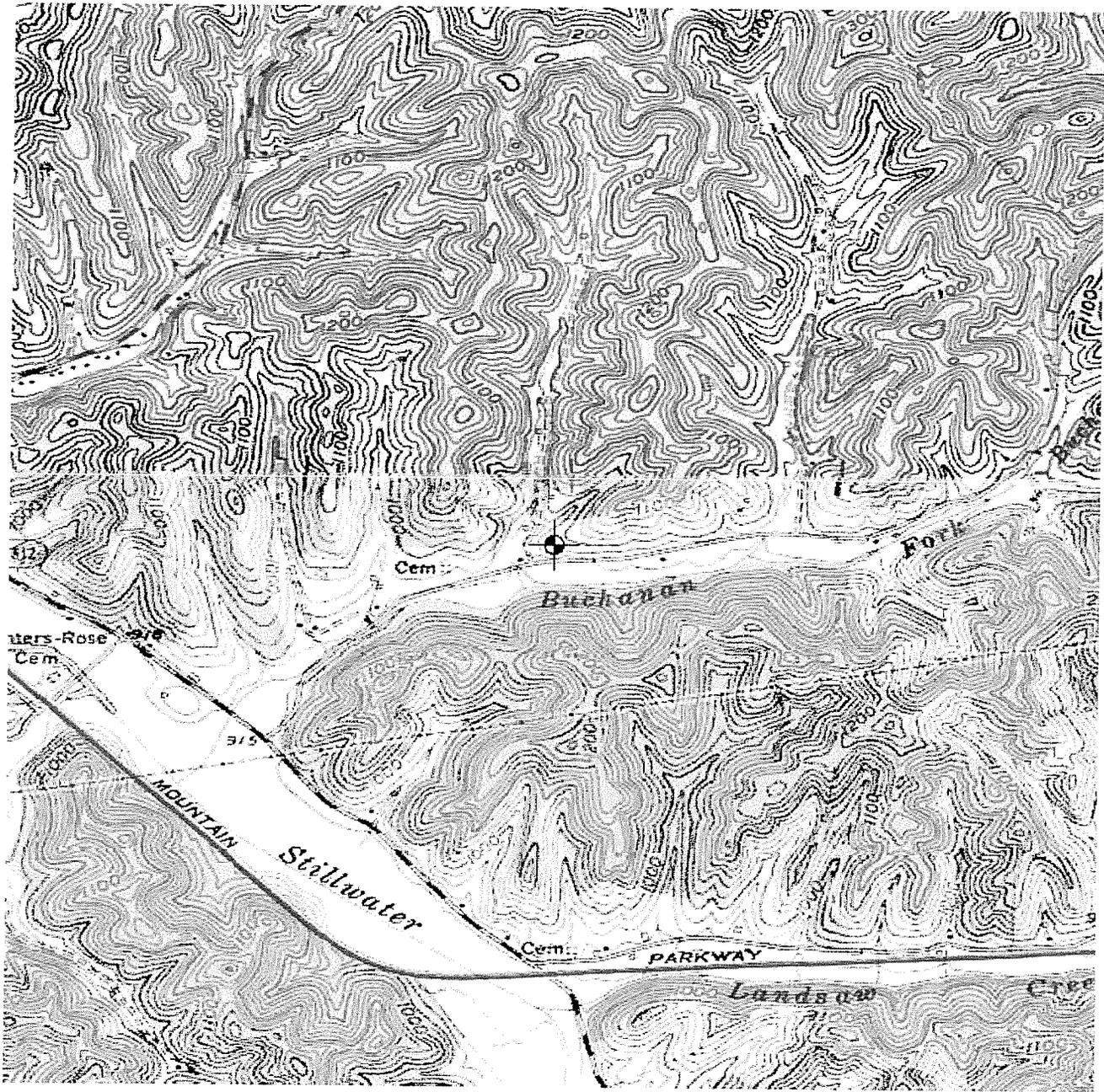


KENTUCKY AIRPORT ZONING COMMISSION

APPLICATION FOR PERMIT TO CONSTRUCT OR ALTER A STRUCTURE

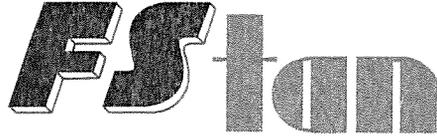
<b>APPLICANT (name)</b> American Towers, Inc		<b>PHONE</b> (781) 926-7126	<b>FAX</b>	<b>KY AERONAUTICAL STUDY #</b>	
<b>ADDRESS (street)</b> 10 Presidential Way		<b>CITY</b> Woburn		<b>STATE</b> MA	<b>ZIP</b> 01801
<b>APPLICANT'S REPRESENTATIVE (name)</b>		<b>PHONE</b>	<b>FAX</b>		
<b>ADDRESS (street)</b>		<b>CITY</b>		<b>STATE</b>	<b>ZIP</b>
<b>APPLICATION FOR</b> <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Alteration <input type="checkbox"/> Existing				<b>WORK SCHEDULE</b>	
<b>DURATION</b> <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary (months days )				Start End	
<b>TYPE</b> <input type="checkbox"/> Crane <input type="checkbox"/> Building		<b>MARKING/PAINTING/LIGHTING PREFERRED</b>			
<input checked="" type="checkbox"/> Antenna Tower		<input type="checkbox"/> Red Lights & Paint <input type="checkbox"/> White- medium intensity <input type="checkbox"/> White- high intensity			
<input type="checkbox"/> Power Line <input type="checkbox"/> Water Tank		<input checked="" type="checkbox"/> Dual- red & medium intensity white <input type="checkbox"/> Dual- red & high intensity white			
<input type="checkbox"/> Landfill <input type="checkbox"/> Other		<input type="checkbox"/> Other			
<b>LATITUDE</b> 37°44'52.57"		<b>LONGITUDE</b> 83°27'31.83"		<b>DATUM</b> <input checked="" type="checkbox"/> NAD83 <input type="checkbox"/> NAD27	
<input type="checkbox"/> Other					
<b>NEAREST KENTUCKY</b> City CAMPTON County WOLFE		<b>NEAREST KENTUCKY PUBLIC USE OR MILITARY AIRPORT</b>			
<b>SITE ELEVATION (AMSL, feet)</b> 997		<b>TOTAL STRUCTURE HEIGHT (AGL, feet)</b> 299		<b>CURRENT (FAA aeronautical study #)</b> 2014-ASO-255-OE	
<b>OVERALL HEIGHT (site elevation plus total structure height, feet)</b> 1296				<b>PREVIOUS (FAA aeronautical study #)</b>	
<b>DISTANCE (from nearest Kentucky public use or Military airport to structure)</b>				<b>PREVIOUS (KY aeronautical study #)</b>	
<b>DIRECTION (from nearest Kentucky public use or Military airport to structure)</b>					
<b>DESCRIPTION OF LOCATION (Attach USGS 7.5 minute quadrangle map or an airport layout drawing with the precise site marked and any certified survey.)</b> Please see map					
<b>DESCRIPTION OF PROPOSAL</b> Proposed tower					
<b>FAA Form 7460-1 (Has the "Notice of Construction or Alteration" been filed with the Federal Aviation Administration?)</b> <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, when? 01/10/2014					
<b>CERTIFICATION (I hereby certify that all the above entries, made by me, are true, complete, and correct to the best of my knowledge and belief.)</b>					
<b>PENALTIES (Persons failing to comply with KRS 183.861 to 183.990 and 602 KAR 050 are liable for fines and/or imprisonment as set forth in KRS 183.990(3). Noncompliance with FAA regulations may result in further penalties.)</b>					
<b>NAME</b> Katie Miller	<b>TITLE</b> Compliance	<b>SIGNATURE</b> Katie Miller		<b>DATE</b> 01/10/2014	
<b>COMMISSION ACTION</b>					
<input type="checkbox"/> Chairperson, KAZC					
<input type="checkbox"/> Administrator, KAZC					
<input type="checkbox"/> Approved	<b>SIGNATURE</b>				<b>DATE</b>
<input type="checkbox"/> Disapproved					

Digitally signed by Katie Miller  
DN: cn=Katie Miller, o=American Towers,  
inc, ou=FAA/TC, c=Kentucky,  
email=katie.miller@americantower.com,  
#1015  
Date: 2014.01.10 17:01:52 -0500





**EXHIBIT H  
GEOTECHNICAL REPORT**



**Land Surveyors & Consulting Engineers**

***GEOTECHNICAL ENGINEERING STUDY***

Proposed Hazel Green Tower  
N37° 44' 52.57" W83° 27' 31.83"  
84 Garry Sparks Drive,  
Campton, Wolfe County, Kentucky  
Project No. 13-8776

**FStan Land Surveyors &  
Consulting Engineers  
933 South 3<sup>rd</sup> Street  
Louisville, KY 40203  
Phone: (502) 636-5111  
Fax: (502) 636-5263**

**Prepared For:**

**Ms. Kathie Taylor  
American Tower Corporation  
10 Presidential Way  
Woburn, MA 01801**

**Date: January 23, 2014**



Land Surveyors and Consulting Engineers  
Formerly F.S. Land & T. Alan Neal Companies

---

January 23, 2014

Ms. Kathie Taylor  
American Tower Corporation  
10 Presidential Way  
Woburn, MA 01801

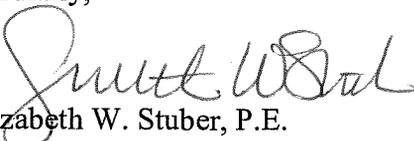
Re: Geotechnical Engineering Study  
Proposed 290-foot Self-support Tower with 9 foot Lighting Arrestor  
American Tower Corporation Site Name: Hazel Green  
N37° 44' 52.57" W83° 27' 31.83"  
84 Garry Sparks Drive, Campton, Wolfe County, Kentucky  
FStan Project No. 13-8776; AT&T NSB No. 143953; ATC No. 281338

Dear Ms. Taylor:

Transmitted herewith is our geotechnical engineering report for the referenced project. This report contains our findings, an engineering interpretation of these findings with respect to the available project characteristics, and recommendations to aid design and construction of the tower foundations.

We appreciate the opportunity to be of service to you on this project. If you have any questions regarding this report, please contact our office.

Cordially,

  
Elizabeth W. Stuber, P.E.  
Geotechnical Engineer  
Kentucky License No.: 21636



Copies submitted: (3) Ms. Kathie Taylor

## LETTER OF TRANSMITTAL

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### APPENDIX

BORING LOCATION PLAN  
GEOTECHNICAL BORING LOG  
SOIL SAMPLE CLASSIFICATION

GEOTECHNICAL ENGINEERING INVESTIGATION  
**Proposed 290-foot Self-support Tower with 9 foot Lighting Arrestor**  
American Tower Corporation Site Name: Hazel Green  
N37° 44' 52.57" W83° 27' 31.83"  
84 Garry Sparks Drive, Campton, Wolfe County, Kentucky  
FStan Project No. 13-8776; AT&T NSB No. 143953; ATC No. 281338

**1. PURPOSE AND SCOPE**

The purpose of this study was to determine the general subsurface conditions at the site of the proposed tower by drilling three soil test borings and to evaluate this data with respect to foundation concept and design for the proposed tower. Also included is an evaluation of the site with respect to potential construction problems and recommendations dealing with quality control during construction.

**2. PROJECT CHARACTERISTICS**

American Tower Corporation is proposing to construct a 290 feet tall self-support communications tower with a 9 foot lighting arrestor on property owned by Billie Adams located at N37° 44' 52.57"/W83° 27' 31.83", 84 Garry Sparks Drive, Campton, Wolfe County, Kentucky. The proposed lease area will be 100 feet x 100 feet with an access road winding from the site west and south to Buchanan Fork Road. The site is located near the top of a slope and is currently an undeveloped field in a rural area outside of town. Both surface and underground mining are common in far eastern Kentucky. A limited investigation of the area using information provided on the Kentucky Geological Survey website did not indicate that either type of mining has taken place on the Adams property. The topographical site relief within the lease area is about 9 feet. The elevation of the site is approximately 474 feet msl. Surface water runoff is directed by the topography toward the north. A detailed evaluation of long-term slope stability was beyond the scope of this study. The proposed tower location is shown on the Boring Location Plan in the Appendix.

Preliminary information provided us indicates that this project will consist of constructing a self-support communications tower 290 feet tall with a 9 foot lightning arrestor. We have assumed the following structural information:

- Compression = 450 kips
- Uplift (each leg) = 300 kips
- Total shear = 45 kips

The development will also include a small equipment shelter near the base of the tower. The wall and floor loads for the shelter are assumed to be less than 4 kip/ln.ft. and 200 lbs/sq.ft., respectively.

### **3. SUBSURFACE CONDITIONS**

The subsurface conditions were explored by drilling three test borings at the base of the proposed tower that was staked in the field by the project surveyor. The Geotechnical Soil Test Boring Logs, which are included in the Appendix, describes the materials and conditions encountered. A sheet defining the terms and symbols used on the boring log is also included in the Appendix. The general subsurface conditions disclosed by the test borings are discussed in the following paragraphs.

Only a thin veneer of topsoil was encountered at the existing ground surface. Below the topsoil, the borings encountered silty clay (CL) of low plasticity. At about 3.5 feet, the boring encountered highly weathered siltstone with some sandstone to the auger refusals between 13 and 15 feet. The SPT N-values in the clayey soils ranged from 7 to 9 blows per foot indicating a medium stiff consistency. Auger refusal is defined as the depth at which the boring can no longer be advanced using the current drilling method.

The refusal material was cored from 15 to 25 feet below the ground surface in Boring 1. Sandstone that was hard, moderately weathered, thin bedded and fine to course grained was encountered. A siltstone layer was encountered from about 18 to 19.5 feet. The recovery of the rock core was 93 percent and the RQD value was 77 percent. These values generally represent good to excellent quality rock from a foundation support viewpoint.

Observations made at the completion of soil drilling operations indicated the borings to be dry. It must be noted, however, that short-term water readings in test borings are not necessarily a reliable indication of the actual groundwater level. Furthermore, it must be emphasized that the groundwater level is not stationary, but will fluctuate seasonally.

Based on the limited subsurface conditions encountered at the site and using Table 1615.1.1 of the 2002 Kentucky Building Code, the site class is considered "B". Seismic design requirements for telecommunication towers are given in section 1622 of the code. A detailed seismic study was beyond the scope of this report.

#### **4. FOUNDATION DESIGN RECOMMENDATIONS**

The following design recommendations are based on the previously described project information, the subsurface conditions encountered in our borings, the results of our laboratory testing, empirical correlations for the soil types encountered, our analyses, and our experience. If there is any change in the project criteria or structure location, you should retain us to review our recommendations so that we can determine if any modifications are required. The findings of such a review can then be presented in a supplemental report or addendum.

We recommend FStan be retained to review the near-final project plans and specifications, pertaining to the geotechnical aspects of the project, prior to bidding and construction. We recommend this review to check that our assumptions and evaluations are appropriate based on the current project information provided to us, and to check that our foundation and earthwork recommendations were properly interpreted and implemented.

##### **4.1 Tower**

Our findings indicate that the proposed self-support tower can be supported on drilled piers or on a common mat foundation.

#### 4.1.1. Drilled Piers

Drilled piers that bear in the highly weathered siltstone below a depth of about 5 feet can be designed for a net allowable end bearing pressure of 20,000 pounds per square foot (psf). This can be increased to 40,000 psf for piers bearing in the sandstone bedrock below about 15 feet. The following table summarizes the recommended values for use in analyzing lateral and frictional resistance for the various strata encountered at the test boring. It is important to note that these values are estimated based on the standard penetration test results and soil types, and were not directly measured. The values provided for undrained shear strength and total unit weight are ultimate values and appropriate factors of safety should be used in conjunction with these values. If the piers will bear deeper than about 25 feet, a deeper boring should be drilled to determine the nature of the deeper material.

Depth Below Ground Surface, feet	Undrained Shear Strength, psf	Angle of Internal Friction, $\phi$ , degrees	Total Unit Weight, pcf	Allowable Passive Soil Pressure, psf/one foot of depth	Allowable Side Friction, psf
0 – 5	1,000	0	120	$750 + 40D$	200
5 – 15	10,000	0	135	$7,500 + 45(D-5)$	3000
15 - 25	20,000	0	135	$15,000 + 45(D-15)$	5000

Note: D = Depth below ground surface (in feet) to point at which the passive pressure is calculated.

It is important that the drilled piers be installed by an experienced, competent drilled pier contractor who will be responsible for properly installing the piers in accordance with industry standards and generally accepted methods, without causing deterioration of the subgrade. The recommendations contained herein relate only to the soil-pier interaction and do not account for the structural design of the piers.

#### **4.1.2. Mat Foundation**

As an alternative, the tower could be supported on a common mat foundation bearing at a depth of at least 3.5 feet in the highly weathered siltstone. A net allowable bearing pressure of up to 4,000 pounds per square foot may be used. These values may be increased by 30 percent for the maximum edge pressure under transient loads. A friction value of 0.30 may be used between the concrete and the underlying siltstone. The passive pressures given for the drilled pier foundation may be used to resist lateral forces.

It is important that the mat be designed with an adequate factor of safety with regard to overturning under the maximum design wind load.

#### **4.2. Equipment Building**

The equipment building may be supported on shallow spread footings bearing in the shallow weathered siltstone or silty clay and designed for a net allowable soil pressure of 2,500 pounds per square foot. The footings should be at least ten inches wide. If the footings bear on soil they should bear at a depth of at least 36 inches to minimize the effects of frost action. All existing topsoil or soft natural soil should be removed beneath footings.

The floor slab for the new equipment building may be subgrade supported on a properly prepared subgrade. The slab should be designed and adequately reinforced to resist the loads proposed. The exposed subgrade should be carefully inspected by probing and testing as needed. Any organic material still in place, frozen or excessively soft soil and other undesirable materials should be removed.

Once the subgrade has been properly prepared and evaluated, fill may be placed to attain the desired final grade. Any non-organic, naturally occurring, non-expansive soils can be used for structural fill, including those encountered on this site, pending evaluation by the geotechnical engineer.

All engineered fill should be compacted to a dry density of at least 98 percent of the standard Proctor maximum dry density (ASTM D698). The compaction should be accomplished by placing the fill in about eight inch loose lifts and mechanically compacting each lift to at least the specified density. Field tests should be performed on each lift as necessary to insure that adequate compaction is being achieved.

#### **4.3. Drainage and Groundwater Considerations**

Good site drainage must be provided. Surface run-off water should be drained away from the shelter building and not allowed to pond. It is recommended that all foundation concrete be placed the same day the excavation is made.

At the time of this investigation, groundwater was not encountered. Therefore, no special provisions regarding groundwater control are considered necessary for the proposed structures.

### **5. GENERAL CONSTRUCTION PROCEDURES AND RECOMMENDATIONS**

It is possible that variations in subsurface conditions will be encountered during construction. Although only minor variations that can be readily evaluated and adjusted for during construction are anticipated, it is recommended the geotechnical engineer or a qualified representative be retained to perform continuous inspection and review during construction of the soils-related phases of the work. This will permit correlation between the test boring data and the actual soil conditions encountered during construction.

#### **5.1 Drilled Piers**

The following recommendations are recommended for drilled pier construction:

- Clean the foundation bearing area so it is nearly level or suitably benched and is free of ponded water or loose material.
- Make provisions for ground water removal from the drilled shaft excavation. While the borings were dry prior to rock coring and significant seepage is not anticipated, the drilled pier contractor should have pumps on hand to remove water in the event seepage into the drilled pier is encountered.

- Specify concrete slumps ranging from 4 to 7 inches for the drilled shaft construction. These slumps are recommended to fill irregularities along the sides and bottom of the drilled hole, displace water as it is placed, and permit placement of reinforcing cages into the fluid concrete.
- Retain the geotechnical engineer to observe foundation excavations after the bottom of the hole is leveled, cleaned of any mud or extraneous material, and dewatered.
- Install a temporary protective steel casing to prevent sidewall collapse, prevent excessive mud and water intrusion, and to allow workers to safely enter, clean and inspect the drilled shaft.
- Clean the socket "face" prior to concrete placements. Cleaning will require hand cleaning or washing if a mud smear forms on the face of the rock. The geotechnical engineer should approve the rock socket surface prior to concrete placement.
- The protective steel casing may be extracted as the concrete is placed provided a sufficient head of concrete is maintained inside the steel casing to prevent soil or water intrusion into the newly placed concrete.
- Direct the concrete placement into the drilled hole through a centering chute to reduce side flow or segregation.

## **5.2 Fill Compaction**

All engineered fill placed adjacent to and above the tower foundation should be compacted to a dry density of at least 95 percent of the standard Proctor maximum dry density (ASTM D-698). This minimum compaction requirement should be increased to 98 percent for any fill placed below the tower foundation bearing elevation. Any fill placed beneath the tower foundation should be limited to well-graded sand and gravel or crushed stone. The compaction should be accomplished by placing the fill in about 8 inch (or less) loose lifts and mechanically compacting each lift to at least the specified minimum dry density. Field density tests should be performed on

each lift as necessary to insure that adequate moisture conditioning and compaction is being achieved.

Compaction by flooding is not considered acceptable. This method will generally not achieve the desired compaction and the large quantities of water will tend to soften the foundation soils.

### **5.3 Construction Dewatering**

There is a slight risk that groundwater may be encountered during drilled pier excavation. It is anticipated that any such seepage can be handled by conventional dewatering methods such as pumping from sumps. Dewatering of drilled pier excavations that extend below the groundwater level may be more difficult since pumping directly from the excavations could cause a deterioration of the bottom of the excavation. If the pier excavations are not dewatered, concrete should be placed by the tremie method.

## **6 FIELD INVESTIGATION**

Three soil test borings were drilled based on the tower center location established in the field by the project surveyor. Split-spoon samples were obtained by the Standard Penetration Test (SPT) procedure (ASTM D1586) in the test boring. The borings encountered auger refusal between 13 and 15 feet below the existing ground surface. A sample of the refusal material was cored in Boring 1 from 15 to 25 feet below the ground surface. The split-spoon samples were inspected and visually classified by a geotechnical engineer. Representative portions of the soil samples were sealed in glass jars and returned to our laboratory.

The boring logs are included in the Appendix along with a sheet defining the terms and symbols used on the logs and an explanation of the Standard Penetration Test (SPT) procedure. The logs present visual descriptions of the soil strata encountered, Unified System soil classifications, groundwater observations, sampling information, laboratory test results, and other pertinent field data and observations.

## **7 WARRANTY AND LIMITATIONS OF STUDY**

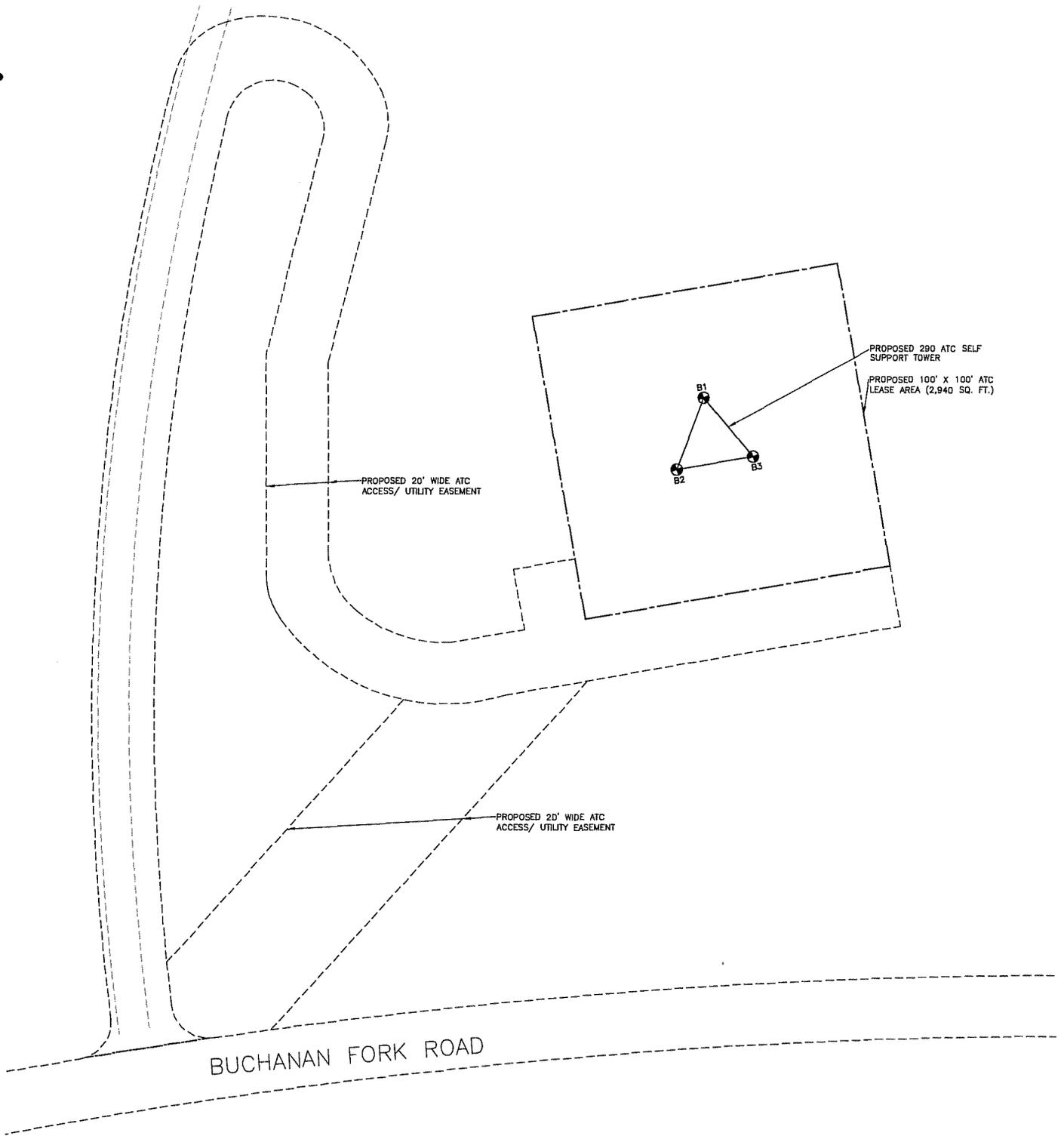
Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either express or implied. FStan is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploration and laboratory test data presented in this report.

A geotechnical study is inherently limited since the engineering recommendations are developed from information obtained from test borings, which depict subsurface conditions only at the specific locations, times and depths shown on the log. Soil conditions at other locations may differ from those encountered in the test borings, and the passage of time may cause the soil conditions to change from those described in this report.

The nature and extent of variation and change in the subsurface conditions at the site may not become evident until the course of construction. Construction monitoring by the geotechnical engineer or a representative is therefore considered necessary to verify the subsurface conditions and to check that the soils connected construction phases are properly completed. If significant variations or changes are in evidence, it may then be necessary to reevaluate the recommendations of this report. Furthermore, if the project characteristics are altered significantly from those discussed in this report, if the project information contained in this report is incorrect, or if additional information becomes available, a review must be made by this office to determine if any modification in the recommendations will be required.

**APPENDIX**

BORING LOCATION PLAN  
GEOTECHNICAL BORING LOG  
SOIL SAMPLE CLASSIFICATION



• BORING LOCATION

# BORING LOCATION PLAN

SITE NAME: HAZEL GREEN  
PROPOSED 290' SELF-SUPPORT TOWER  
W/ 9' LIGHTING ARRESTOR

NOT TO SCALE

FSTAN PROJECT #:

13-8776

DATE:

01-23-14



Formerly F.S. Land &  
T. Alan Neal Company

Land Surveyors and Consulting Engineers

2540 Ridgeman Court, Suite 102  
Louisville, KY 40299

Phone: (502) 635-5866 (502) 636-5111  
Fax: (502) 636-5283



F.S. Tan Land Consulting Engineers  
 P.O. Box 17546  
 Louisville, KY 40217  
 502-636-5111  
 502-636-5263

# Geotechnical Boring Log

Boring No: **B-1**

Client: American Tower Corporation	Project Number: 13-8776
Project: Proposed Hazel Green Tower	Drilling Firm: Hoosier Drilling
Location: N37° 44' 52.57" / W83° 27' 31.83"	Project Manager: Beth Stuber
Date Started: 1/21/2014	Total Depth of Boring: 25 ft
Date Completed: 1/21/2014	NA on rods
Boring Method: HSA-Manual Hammer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Legend	Material Description	Depth Scale ft	Sample Data						Remarks
				No.	Type	Blows	Rec. %	PP tsf	W %	
3.5		SILTY CLAY (CL) - medium stiff, moist, tan-brown mottled	1	SS	3-4-5	100				
5.0		SILTSTONE - very highly weathered, tan-gray mottled with black nodes	2	SS	10-25-35	100				
		- with brown to dar brown, highly weathered sandstone	3	SS	50	17				
			4	SS	50	17				
15.0		SANDSTONE - hard, moderately weathered, thin bedded with a siltstone layer from about 18 to 19.5 feet., gray to dark gray, fine to coarse.	5	SS	50	17				
			6	RC		93			RQD = 77 percent	
25.0		Bottom of Boring at 25 ft	25							

GEO TECHNICAL BORING LOG 13-8776.GPJ FSTAN.GDT 1/24/14



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 Louisville, KY 40217  
 502-636-5111  
 502-636-5263

# Geotechnical Boring Log

Boring No: **B-2**

Client: American Tower Corporation	Project Number: 13-8776
Project: Proposed Hazel Green Tower	Drilling Firm: Hoosier Drilling
Location: N37° 44' 52.57" / W83° 27' 31.83"	Project Manager: Beth Stuber
Date Started: 1/21/2014	Total Depth of Boring: 13 ft
Date Completed: 1/21/2014	NA on rods
Boring Method: HSA-Manual Hammer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Legend	Material Description	Depth Scale ft	Sample Data						Remarks
				No.	Type	Blows	Rec. %	PP tsf	W %	
0 - 3.5		SILTY CLAY (CL) - medium stiff, moist, tan-brown mottled	0	1	SS	3-4-3	100			
3.5 - 13.0		SILTSTONE - very highly weathered, tan-gray mottled with black nodes  - with brown to dar brown, highly weathered sandstone	5	2	SS	20-19-27	100			
			10	3	SS	50	11			
			10	4	SS	50	17			
13.0		Bottom of Boring at 13 ft	15							
			20							
			25							
			30							

GEOTECHNICAL BORING LOG 13-8776.GPJ FSTAN.GDT 1/24/14



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 Louisville, KY 40217  
 502-636-5111  
 502-636-5263

# Geotechnical Boring Log

Boring No: **B-3**

Client: American Tower Corporation	Project Number: 13-8776
Project: Proposed Hazel Green Tower	Drilling Firm: Hoosier Drilling
Location: N37° 44' 52.57" / W83° 27' 31.83"	Project Manager: Beth Stuber
Date Started: 1/21/2014	Total Depth of Boring: 13 ft
Date Completed: 1/21/2014	NA on rods
Boring Method: HSA-Manual Hammer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Legend	Material Description	Depth Scale ft	Sample Data						Remarks
				No.	Type	Blows	Rec. %	PP tsf	W %	
0 - 3.5		SILTY CLAY (CL) - medium stiff, moist, tan-brown mottled	1	SS	4-4-4	100				
3.5 - 13.0		SILTSTONE - very highly weathered, tan-gray mottled with black nodes  - with brown to dar brown, highly weathered sandstone	2	SS	23-29-31	100				
			3	SS	50	6				
			4	SS	50	11				
13.0		Bottom of Boring at 13 ft								

GEOTECHNICAL BORING LOG 13-8776.GPJ FSTAN.GDT 1/24/14

# SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	LETTER		
<b>COARSE GRAINED SOILS</b>  MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	<b>GRAVEL AND GRAVELLY SOILS</b>  MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	<b>CLEAN GRAVELS</b>  (LITTLE OR NO FINES)		<b>GW</b>	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		<b>GRAVELS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>GP</b>	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		<b>GRAVELS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>GM</b>	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	
		<b>GRAVELS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>GC</b>	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	
	<b>SAND AND SANDY SOILS</b>  MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	<b>CLEAN SANDS</b>  (LITTLE OR NO FINES)		<b>SW</b>	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		<b>CLEAN SANDS</b>  (LITTLE OR NO FINES)		<b>SP</b>	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES	
		<b>SANDS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>SM</b>	SILTY SANDS, SAND-SILT MIXTURES	
		<b>SANDS WITH FINES</b>  (APPRECIABLE AMOUNT OF FINES)		<b>SC</b>	CLAYEY SANDS, SAND-CLAY MIXTURES	
		<b>FINE GRAINED SOILS</b>  MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	<b>SILTS AND CLAYS</b>  LIQUID LIMIT LESS THAN 50		<b>ML</b>	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
					<b>CL</b>	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	<b>OL</b>			ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
<b>SILTS AND CLAYS</b>  LIQUID LIMIT GREATER THAN 50			<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS		
			<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY		
			<b>OH</b>	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS		
<b>HIGHLY ORGANIC SOILS</b>				<b>PT</b>	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS



**EXHIBIT I**  
**DIRECTIONS TO WCF SITE**

### Driving Directions to Proposed Tower Site at Hazel Green

1. Beginning at the Wolfe County Courthouse, located at 10 Court Street, Campton, Kentucky 41301, travel south on Marion Street toward Main Street and go approximately 187 feet.
2. Take the first left onto KY-191/Main Street, continue to follow KY-191 and go approximately 1.1 miles.
3. Take a slight right to stay on KY-191 and go approximately 3.5 miles.
4. Take a slight right onto County Road 1812 and go approximately 1.0 miles.
5. Take the first left onto Buchanan Fork Road and go approximately 0.7 miles.
6. The proposed site is on the left at 84 Garry Sparks Drive, Campton, KY 41301.
7. The site coordinates are
  - a. North 37 deg 44' 52.57"
  - b. West 83 deg 27' 31.83"



Prepared by:  
Joseph C. Ernwine  
Pike Legal Group PLLC  
1578 Highway 44 East, Suite 6  
P.O. Box 369  
Shepherdsville, KY 40165-3069  
Telephone: 502-955-4400 or 800-516-4293



**EXHIBIT J**  
**COPY OF REAL ESTATE AGREEMENT AND**  
**DEED TO SITE PARCEL**

Site Name: Hazel Green KY  
Site Number: 281338

## LEASE AGREEMENT

THIS LEASE AGREEMENT ("*Agreement*") is made effective as of the date of the latter signature hereof (the "*Execution Date*") and is by and between Landlord and American Tower.

### RECITALS

- A. WHEREAS, Landlord is the owner of that certain parcel of land (the "*Property*") located in the County of Wolfe, State of Kentucky, as more particularly described on Exhibit A;
- 
- B. WHEREAS, Landlord desires to grant to American Tower an option to lease from Landlord a portion of the Property (the "*Compound*"), together with easements for ingress and egress and the installation and maintenance of utilities (the "*Easement*" and together with the Compound, the "*Site*") both being approximately located as shown on Exhibit B; and

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, and other good and valuable consideration, the receipt, adequacy and sufficiency of all of which are hereby acknowledged, the parties hereto hereby agree as follows:

1. **Business and Defined Terms.** For the purposes of this Agreement, the following capitalized terms have the meanings set forth in this paragraph 1.

- (a) ***American Tower:*** American Towers LLC, a Delaware limited liability company d/b/a Delaware American Towers LLC
- (b) ***Notice Address of American Tower:*** American Towers LLC  
c/o American Tower Corporation  
10 Presidential Way  
Woburn, MA 01801  
Attn: Land Management
- with a copy to:*** American Towers LLC  
c/o American Tower Corporation  
116 Huntington Ave.  
Boston, MA 02116  
Attn: Law Department
- (c) ***Landlord:*** Billye C. Adams, a single person
- (d) ***Notice Address of Landlord:*** P.O. Box 517  
Campton, KY 41301
- (e) ***Initial Option Period:*** One (1) year.
- (f) ***Renewal Option Period(s):*** One (1) period of One (1) year.
- (g) ***Option Period:*** The Initial Option Period and any Renewal Option Period(s)

Site Name: Hazel Green KY  
Site Number: 281338

(h) **Option Consideration (Initial Option Period):** [REDACTED]

(i) **Option Extension Consideration (Renewal Option Period(s)):** [REDACTED]

(j) **Commencement Date:** The date specified in the written notice by American Tower to Landlord exercising the Option constitutes the Commencement Date of the Term.

(k) **Initial Term:** Five (5) years, commencing on the Commencement Date and continuing until midnight of the day immediately prior to the fifth anniversary of the Commencement Date.

(l) **Renewal Terms:** Each of the five (5) successive periods of five (5) years each, with the first Renewal Term commencing upon the expiration of the Initial Term and each subsequent Renewal Term commencing upon the expiration of the immediately preceding Renewal Term.

(m) **Term:** The Initial Term with any and all Renewal Terms

(n) **Rent:** The monthly amount of [REDACTED]

(o) **Increase Amount:** Rent will increase at the commencement of each Renewal Term by an amount equal to [REDACTED] of Rent for the previous five year period.

(p) **Increase Date:** The first date of each Renewal Term.

## 2. **Option to Lease.**

(a) **Grant of Option.** Landlord hereby gives and grants to American Tower and its assigns, an exclusive and irrevocable option to lease the Site during the Initial Option Period (the "**Option**").

(b) **Extension of Option.** The Initial Option Period will automatically be extended for each Renewal Option Period unless American Tower provides Landlord written notice of its intent not to extend the Option.

(c) **Consideration for Option.** Option Consideration is due and payable in full within 30 days of the Execution Date and American Tower will pay Landlord any Option Extension Consideration within 30 days of the commencement of any Renewal Option Period.

(d) **Option Period Inspections and Investigations.**

(i) During the Option Period, Landlord will provide American Tower with any keys or access codes necessary for access to the Property.

(ii) During the Option Period, American Tower and its officers, agents, employees and independent contractors may enter upon the Property to perform or cause to be performed test borings of the soil, environmental audits, engineering studies and to conduct a metes and bounds survey of the Site and/or the Property (the "**Survey**"), provided that American Tower will not unreasonably interfere with Landlord's use of the Property in conducting these activities. At American Tower's discretion, the legal description of the Site as shown on the Survey may replace **Exhibit B** of this Agreement and be added as **Exhibit B** of the Memorandum of Lease.

(iii) American Tower may not begin any construction activities on the Site during the Option Period other than those activities described in, or related to, this paragraph 2(d).

Site Name: Hazel Green KY  
Site Number: 281338

(e) Exercise of Option. American Tower may, in its sole discretion, exercise the Option by delivery of written notice to Landlord at any time during the Option Period. If American Tower exercises the Option then Landlord will lease the Site to American Tower subject to the terms and conditions of this Agreement. If American Tower does not exercise the Option, this Agreement will terminate.

3. Term.

(a) Initial Term. The Initial Term is as provided in paragraph 1(k).

~~(b) Renewal Terms. American Tower will have the right to extend this Agreement for each~~  
of the Renewal Terms. Each Renewal Term will be on the same terms and conditions provided in this Agreement except that Rent will escalate as provided in paragraph 4(b). This Agreement will automatically be renewed for each successive Renewal Term unless American Tower notifies Landlord in writing of American Tower's intention not to renew the Agreement at any time prior to the expiration of the Initial Term or the Renewal Term which is then in effect.

4. Consideration.

(a) American Tower will pay its first installment of Rent within thirty (30) days of the Commencement Date. Thereafter, Rent is due and payable in advance on the first day of each calendar month to Landlord at Landlord's Notice Address. Rent will be prorated for any partial months, including, the month in which the Commencement Date occurs.

(b) On the Increase Date, the Rent will increase by the Increase Amount.

(c) In the event American Tower makes an overpayment of Rent or any other fees or charges to Landlord during the Term of this Agreement, American Tower may, but will not be required, to treat any such overpayment amount as prepaid Rent and apply such amount as a credit against future Rent due to Landlord.

(d) American Tower will not be required to remit the payment of Rent to more than two recipients at any given time.

5. Use.

(a) American Tower will be permitted to use the Site for the purpose of constructing, maintaining, removing, replacing, securing and operating a communications facility, including, but not limited to, the construction or installation and maintenance of a telecommunications tower (the "*Tower*"), structural tower base(s), guy anchors, guy wires, communications equipment, one or more buildings or equipment cabinets, radio transmitting and receiving antennas, personal property and related improvements and facilities on the Compound (collectively, the "*Tower Facilities*"), to facilitate the use of the Site as a site for the transmission and receipt of communication signals including, but not limited to, voice, data and internet transmissions and for any other uses which are incidental to the transmission and receipt of communication signals (the "*Intended Use*").

(b) American Tower, at its sole discretion, will have the right, without prior notice or the consent of Landlord, to license or sublease all or a portion of the Site or the Tower Facilities to other parties (each, a "*Collocator*" and collectively, the "*Collocators*"). The Collocators will be entitled to modify the Tower Facilities and to erect additional improvements on the Compound including but not limited to antennas, dishes, cabling, additional buildings or shelters ancillary to the Intended Use. The Collocators will be entitled to all rights of ingress and egress to the Site and the right to install utilities on the Site that American Tower has under this Agreement.

Site Name: Hazel Green KY  
Site Number: 281338

**6. Tower Facilities.**

(a) American Tower will have the right, at American Tower's sole cost and expense, to erect the Tower Facilities which will be the exclusive property of American Tower throughout the Term as well as upon the expiration or termination of this Agreement.

(b) Landlord grants American Tower a non-exclusive easement in, over, across and through the Property and other real property owned by Landlord contiguous to the Site as may be reasonably required for construction, installation, maintenance, and operation of the Tower Facilities including: (i) ~~access to the Site for construction machinery and equipment,~~ (ii) ~~storage of construction materials and equipment during construction of the Tower Facilities,~~ and (iii) use of a staging area for construction, installation and removal of equipment. Notwithstanding the foregoing, if American Tower's construction equipment causes any damages to the Access Easement, as more particularly depicted in Exhibit B of this Agreement, American Tower shall be responsible to repair such damages within 90 days after the completion of the construction of Tower Facilities.

(c) American Tower may, at its sole expense, use any and all appropriate means of restricting access to the Compound or the Tower Facilities, including, without limitation, construction of a fence and may install and maintain identifying signs or other signs required by any governmental authority on or about the Site, including any access road to the Site.

(d) American Tower will maintain the Compound, including the Tower Facilities, in a reasonable condition throughout the Term. American Tower is not responsible for reasonable wear and tear or damage from casualty and condemnation. Landlord grants American Tower the right to clear all trees, undergrowth, or other obstructions and to trim, cut, and keep trimmed all tree limbs which may interfere with or fall upon the Tower Facilities or the Site. American Tower will remove all of the above-ground portions of the Tower Facilities within 180 days following the expiration or termination of this Agreement.

(e) If the Tower is a guyed tower, Landlord grants American Tower an easement in, over, across and through the Property or any other real property owned by Landlord as may be necessary to American Tower during the Term of this Agreement for the installation, maintenance, alteration, removal, relocation and replacement of and access to guy wires and guy wire anchors which may be required by American Tower at its sole discretion and located outside of the Site.

**7. Utilities.**

(a) American Tower will have the right to install utilities, at American Tower's expense, and to improve present utilities on the Property and the Site. American Tower will have the right to permanently place utilities on (or to bring utilities across or under) the Site to service the Compound and the Tower Facilities.

(b) If utilities necessary to serve the equipment of American Tower or the equipment of any Collocator cannot be located within the Site, Landlord agrees to allow the installation of utilities on the Property or other real property owned by Landlord without requiring additional compensation from American Tower or any Collocator. Landlord will, upon American Tower's request, execute a separate recordable written easement or lease to the utility company providing such service evidencing this right.

(c) American Tower and the Collocators each may install backup generator(s).

**8. Access**

Site Name: Hazel Green KY  
Site Number: 281338

(a) In the event that the Site loses access to a public right of way during the Term, Landlord and American Tower will amend this Agreement, at no imposed cost to either party, to provide access to a public way by: (i) amending the location of the Easement; or (ii) granting an additional easement to American Tower.

(b) To the extent damage (including wear and tear caused by normal usage) to the Easement or any other route contemplated hereunder intended to provide American Tower with access to the Site and the Tower Facilities is caused by Landlord or Landlord's tenants, licensees, invitees or agents, Landlord will repair the damage at its own expense.

(c) Landlord will maintain access to the Compound from a public way in a free and open condition so that no interference is caused to American Tower by Landlord or lessees, licensees, invitees or agents of Landlord. In the event that American Tower's or any Collocator's access to the Compound is impeded or denied by Landlord or Landlord's lessees, licensees, invitees or agents, without waiving any other rights that it may have at law or in equity, American Tower may at its sole discretion deduct from Rent due under this Agreement an amount equal to [REDACTED] per day for each day that such access is impeded or denied.

**9. Representations and Warranties of Landlord.** Landlord represents and warrants to American Tower and American Tower's successors and assigns:

(a) Landlord has the full right, power, and authority to execute this Agreement;

(b) There are no pending or threatened administrative actions, including bankruptcy or insolvency proceedings under state or federal law, suits, claims or causes of action against Landlord or which may otherwise affect the Property;

(c) The Property is not presently subject to an option, lease or other contract which may adversely affect Landlord's ability to fulfill its obligations under this Agreement, and the execution of this Agreement by Landlord will not cause a breach or an event of default of any other agreement to which Landlord is a party. Landlord agrees that it will not grant an option or enter into any contract or agreement which will have any adverse effect on the Intended Use or American Tower's rights under this Agreement;

(d) No licenses, rights of use, covenants, restrictions, easements, servitudes, subdivision rules or regulations, or any other encumbrances relating to the Property prohibit or will interfere with the Intended Use;

(e) Landlord has good and marketable fee simple title to the Site, the Property and any other property across which Landlord may grant an easement to American Tower or any Collocator, free and clear of all liens and encumbrances. Landlord covenants that American Tower will have the quiet enjoyment of the Compound during the term of this Agreement. If Landlord fails to keep the Site free and clear of any liens and encumbrances, American Tower will have the right, but not the obligation, to satisfy any such lien or encumbrance and to deduct the full amount paid by American Tower on Landlord's behalf from future installments of Rent;

(f) American Tower will at all times during this Agreement enjoy ingress, egress, and access from the Site 24 hours a day, 7 days a week, to an open and improved public road which is adequate to service the Site and the Tower Facilities; and

(g) These representations and warranties of Landlord survive the termination or expiration of this Agreement.

Site Name: Hazel Green KY  
Site Number: 281338

10. **Interference.** Landlord will not use, nor will Landlord permit its tenants, licensees, invitees or agents to use any portion of the Property in any way which interferes with the Intended Use, including, but not limited to, any use on the Property or surrounding property that causes electronic or physical obstruction or degradation of the communications signals from the Tower Facilities ("**Interference**"). Interference will be deemed a material breach of this Agreement by Landlord and Landlord will have the responsibility to terminate Interference immediately upon written notice from American Tower. Notwithstanding anything in this Agreement to the contrary, if the Interference does not cease or is not rectified as soon as possible, but in no event longer than 24 hours after American Tower's written notice to Landlord, Landlord acknowledges that continuing Interference will cause irreparable injury to American Tower, and American Tower will have the right, in addition to any other rights that it may have at law or in equity, to bring action to enjoin the Interference.

11. **Termination.** This Agreement may be terminated, without any penalty or further liability upon written notice as follows:

(a) By either party upon a default of any covenant or term of this Agreement by the other party which is not cured within 60 days of receipt of written notice of default (without, however, limiting any other rights available to the parties in law or equity); provided, that if the defaulting party commences efforts to cure the default within such period and diligently pursues such cure, the non-defaulting party may not terminate this Agreement as a result of that default.

(b) Upon 30 days' written notice by American Tower to Landlord if American Tower is unable to obtain, maintain, renew or reinstate any agreement, easement, permit, certificates, license, variance, zoning approval, or any other approval which may be required from any federal, state or local authority necessary to the construction and operation of the Tower Facilities or to the Intended Use (collectively, the "**Approvals**"); or

(c) Upon 30 days' written notice from American Tower to Landlord if the Site is or becomes unsuitable, in American Tower's sole, but reasonable judgment for use as a wireless communications facility by American Tower or by American Tower's licensee(s) or sublessee(s).

(d) In the event of termination by American Tower or Landlord pursuant to this provision, American Tower shall be relieved of all further liability hereunder.

12. **Taxes.**

(a) American Tower will pay any personal property taxes assessed on or attributable to the Tower Facilities. American Tower will reimburse Landlord for any increase to Landlord's real property taxes that are directly attributable to American Tower's Site and/or Tower Facilities upon receipt of the following: (1) a copy of Landlord's tax bill; (2) proof of payment; and (3) written documentation from the assessor of the amount attributable to American Tower. American Tower shall have no obligation to reimburse Landlord for any taxes paid by Landlord unless Landlord requests reimbursement within 12 months of the date said taxes were originally due. Additionally, as a condition precedent to Landlord having the right to receive reimbursement, Landlord shall, within 3 days of receipt of any notice from the taxing authority of any assessment or reassessment, provide American Tower with a copy of said notice. American Tower shall have the right to appeal any assessment or reassessment relating to the Site or Tower Facilities and Landlord shall either (i) designate American Tower as its attorney-in-fact as required to effect standing with the taxing authority, or (ii) join American Tower in its appeal.

Site Name: Hazel Green KY  
Site Number: 281338

(b) Landlord will pay when due all real property taxes and all other fees and assessments attributable to the Property, Compound and Easement. If Landlord fails to pay when due any taxes affecting the Property or the Site, American Tower will have the right, but not the obligation, to pay such taxes and either: (i) deduct the full amount of the taxes paid by American Tower on Landlord's behalf from future installments of Rent, or (ii) collect such taxes by any lawful means.

**13. Environmental Compliance.**

(a) Landlord represents and warrants that:

(i) No Hazardous Materials have been used, generated, stored or disposed of, on, under or about the Property in violation of any applicable law, regulation or administrative order (collectively, "*Environmental Laws*") by either Landlord or to Landlord's knowledge, any third party; and

(ii) To Landlord's knowledge, no third party been permitted to use, generate, store or dispose of any Hazardous Materials on, under, about or within the Property in violation of any Environmental Laws.

(b) Landlord will not, and will not permit any third party to use, generate, store or dispose of any Hazardous Materials on, under, about or within the Property in violation of any Environmental Laws.

(c) American Tower agrees that it will not use, generate, store or dispose of any Hazardous Material on, under, about or within the Site in violation of any applicable laws, regulations or administrative orders.

(d) The term "*Hazardous Materials*" means any: contaminants, oils, asbestos, PCBs, hazardous substances or wastes as defined by federal, state or local environmental laws, regulations or administrative orders or other materials the removal of which is required or the maintenance of which is prohibited or regulated by any federal, state or local government authority having jurisdiction over the Property.

**14. Indemnification.**

(a) General.

(i) Landlord, its heirs, grantees, successors, and assigns will exonerate, hold harmless, indemnify, and defend American Tower from any claims, obligations, liabilities, costs, demands, damages, expenses, suits or causes of action, including costs and reasonable attorney's fees, which may arise out of: (A) any injury to or death of any person; (B) any damage to property, if such injury, death or damage arises out of or is attributable to or results from the acts or omissions of Landlord, or Landlord's principals, employees, invitees, agents or independent contractors; or (C) any breach of any representation or warranty made by Landlord in this Agreement.

(ii) American Tower, its grantees, successors, and assigns will exonerate, hold harmless, indemnify, and defend Landlord from any claims, obligations, liabilities, costs, demands, damages, expenses, suits or causes of action, including costs and reasonable attorney's fees, which may arise out of: (A) any injury to or death of any person; (B) any damage to property, if such injury, death or damage arises out of or is attributable to or results from the negligent acts or omissions of American Tower, or American Tower's employees, agents or

Site Name: Hazel Green KY  
Site Number: 281338

independent contractors; or (C) any breach of any representation or warranty made by American Tower in this Agreement.

(b) Environmental Matters.

(i) Landlord, its heirs, grantees, successors, and assigns will indemnify, defend, reimburse and hold harmless American Tower from and against any and all damages arising from the presence of Hazardous Materials upon, about or beneath the Property or migrating to or from the Property or arising in any manner whatsoever out of the violation of any Environmental Laws, ~~which conditions exist or existed prior to or at the time of the execution of this Agreement or~~ which may occur at any time in the future through no fault of American Tower. Notwithstanding the obligation of Landlord to indemnify American Tower pursuant to this Agreement, Landlord will, upon demand of American Tower, and at Landlord's sole cost and expense, promptly take all actions to remediate the Property which are required by any federal, state or local governmental agency or political subdivision or which are reasonably necessary to mitigate environmental damages or to allow full economic use of the Site, which remediation is necessitated from the presence upon, about or beneath the Property of a Hazardous Material. Such actions include but not be limited to the investigation of the environmental condition of the Property, the preparation of any feasibility studies, reports or remedial plans, and the performance of any cleanup, remediation, containment, operation, maintenance, monitoring or actions necessary to restore the Property to the condition existing prior to the introduction of such Hazardous Material upon, about or beneath the Property notwithstanding any lesser standard of remediation allowable under applicable law or governmental policies.

(ii) American Tower, its grantees, successors, and assigns will indemnify, defend, reimburse and hold harmless Landlord from and against environmental damages caused by the presence of Hazardous Materials on the Compound in violation of any Environmental Laws and arising solely as the result of American Tower's activities after the execution of this Agreement.

**15. Right of First Refusal: Sale of Property.**

(a) During the Term, prior to selling the Site or any portion of or interest in the Property or the Site, including but not limited to a leasehold interest or easement, or otherwise transfer Landlord's interest in Rent, and prior to assigning the Rent or any portion of Rent to a third party, Landlord shall notify American Tower in writing of the sale price and terms offered by a third party (the "Offer"), together with a copy of the Offer. American Tower will have the right of first refusal to purchase the real property interest or Rent or portion of Rent being sold by Landlord to such third party on the same financial terms of the Offer. American Tower will exercise its right of first refusal within 30 days of receipt of Landlord's notice and if American Tower does not provide notice within 30 days, American Tower will be deemed to have not exercised its right of first refusal. If American Tower does not exercise its right of first refusal, section 15(b) of this Agreement will control the terms of the sale.

(b) Landlord may sell the Property or a portion thereof to a third party, provided: (i) the sale is made subject to the terms of this Agreement; and (ii) if the sale does not include the assignment of Landlord's full interest in this Agreement the purchaser must agree to perform, without requiring compensation from American Tower or any Collocator, any obligation of the Landlord under this Agreement, including Landlord's obligation to cooperate with American Tower as provided hereunder, which obligation Landlord would no longer have the legal right or ability to perform following the sale without requiring compensation from American Tower or any Collocator to be paid to such purchaser.

**16. Assignment.**

Site Name: Hazel Green KY

Site Number: 281338

(a) Any sublease, license or assignment of this Agreement that is entered into by Landlord or American Tower is subject to the provisions of this Agreement.

(b) Landlord may assign this Agreement in its entirety to any third party in conjunction with a sale of the Property in accordance with Paragraph 15 of this Agreement. Landlord will not otherwise assign less than Landlord's full interest in this Agreement without the prior written consent of American Tower.

(c) American Tower may assign this Agreement without prior notice to or the consent of Landlord. ~~Upon assignment, American Tower shall be relieved of all liabilities and obligations hereunder and Landlord shall look solely to the assignee for performance under this Agreement and all obligations hereunder.~~

(d) American Tower may mortgage or grant a security interest in this Agreement and the Tower Facilities, and may assign this Agreement and the Tower Facilities to any such mortgagees or holders of security interests including their successors and assigns (collectively, "*Secured Parties*"). If requested by American Tower, Landlord will execute such consent to such financing as may reasonably be required by Secured Parties. In addition, if requested by American Tower, Landlord agrees to notify American Tower and American Tower's Secured Parties simultaneously of any default by American Tower and to give Secured Parties the same right to cure any default as American Tower. If a termination, disaffirmance or rejection of the Agreement by American Tower pursuant to any laws (including any bankruptcy or insolvency laws) occurs, or if Landlord will terminate this Agreement for any reason, Landlord will give to Secured Parties prompt notice thereof and Secured Parties will have the right to enter upon the Compound during a 30-day period commencing upon Secured Parties' receipt of such notice for the purpose of removing any Tower Facilities. Landlord acknowledges that Secured Parties are third-party beneficiaries of this Agreement.

**17. Condemnation.** If a condemning authority takes all of the Site, or a portion sufficient in American Tower's sole judgment, to render the Site unsuitable for the Intended Use, this Agreement will terminate as of the date the title vests in the condemning authority. Landlord and American Tower will share in the condemnation proceeds in proportion to the values of their respective interests in the Site (which for American Tower includes, where applicable, the value of the Tower Facilities, moving expenses, prepaid rent and business dislocation expenses). If a condemning authority takes less than the entire Site such that the Site remains suitable for American Tower's Intended Use, the Rent payable under this Agreement will be reduced automatically by such percentage as the area so condemned bears to the Site as of the date the title vests in the condemning authority. A sale of all or part of the Site to a purchaser with the power of eminent domain in the face of the exercise of eminent domain power will be treated as a taking by condemnation for the purposes of this paragraph.

**18. Insurance.** American Tower will purchase and maintain in full force and effect throughout the Option Period and the Term such general liability and property damage policies as American Tower may deem necessary. Said policy of general liability insurance will at a minimum provide a combined single limit of \$1,000,000.

**19. Waiver of Damages.**

(a) In the event that American Tower does not exercise its Option: (i) Landlord's sole compensation and damages will be fixed and liquidated to the sums paid by American Tower to Landlord as consideration for the Option; and (ii) Landlord expressly waives any other remedies it may have for a breach of this Agreement including specific performance and damages for breach of contract.

Site Name: Hazel Green KY

Site Number: 281338

(b) Neither Landlord nor American Tower will be responsible or liable to the other party for any loss or damage arising from any claim to the extent attributable to any acts of omissions of other licensees or tower users occupying the Tower Facilities or vandalism or for any structural or power failures or destruction or damage to the Tower Facilities except to the extent caused by the negligence or willful misconduct of such party.

(c) EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, IN NO EVENT WILL LANDLORD OR AMERICAN TOWER BE LIABLE TO THE OTHER FOR, AND AMERICAN TOWER AND LANDLORD EACH HEREBY WAIVE THE RIGHT TO RECOVER INCIDENTAL, ~~CONSEQUENTIAL (INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, LOSS OF USE OR~~ LOSS OF BUSINESS OPPORTUNITY), PUNITIVE, EXEMPLARY AND SIMILAR DAMAGES.

**20. Confidentiality.** Landlord will not disclose to any third party the Rent payable by American Tower under this Agreement and will treat such information as confidential, except that Landlord may disclose such information to prospective buyers, prospective or existing lenders, Landlord's affiliates and attorneys, or as may be required by law or as may be necessary for the enforcement of Landlord's rights under the Agreement.

**21. Subordination Agreements.**

(a) If the Site is encumbered by a mortgage or deed of trust, within 30 days of receipt of a written request from American Tower, Landlord agrees to execute and obtain the execution by its lender of a non-disturbance and attornment agreement in the form provided by American Tower, to the effect that American Tower and American Tower's sublessees and licensees will not be disturbed in their occupancy and use of the Site by any foreclosure or to provide information regarding the mortgage to American Tower.

(b) Should a subordination, non-disturbance and attornment agreement be requested by Landlord or a lender working with Landlord on a loan to be secured by the Property and entered into subsequent to the Execution Date, American Tower will use good faith efforts to provide Landlord or Landlord's lender with American Tower's form subordination, non-disturbance and attornment agreement executed by American Tower within 30 days of such request.

**22. Notices.** All notices or demands by or from American Tower to Landlord, or Landlord to American Tower, required under this Agreement will be in writing and sent (United States mail postage pre-paid, certified with return receipt requested or by reputable national overnight carrier service, transmit prepaid) to the other party at the addresses set forth in paragraph 1 of this Agreement or to such other addresses as the parties may, from time to time, designate consistent with this paragraph 22, with such new notice address being effective 30 days after receipt by the other party. Notices will be deemed to have been given upon either receipt or rejection.

**23. Further Acts.**

(a) Within 15 days after receipt of a written request from American Tower, Landlord will execute any document necessary or useful to protect American Tower's rights under this Agreement or to facilitate the Intended Use including documents related to title, zoning and other Approvals, and will otherwise cooperate with American Tower in its exercise of its rights under this Agreement.

(b) American Tower will be entitled to liquidated damages for the revenue lost by American Tower as a result of any delay caused by Landlord's unwillingness to execute a document or to take any other action deemed necessary by American Tower to protect American Tower's leasehold rights or to

Site Name: Hazel Green KY  
Site Number: 281338

facilitate the Intended Use. As the actual amount of such lost revenue is difficult to determine, the parties agree that American Tower may deduct the amount of [REDACTED] per day from future installments of Rent for any delay to American Tower caused by Landlord's failure or unwillingness to act, such amount being an estimate of American Tower's lost revenue. American Tower's right to collect such liquidated damages will in no way affect American Tower's right to pursue any and all other legal and equitable rights and remedies permitted under applicable laws.

**24. Memorandum of Lease.** Simultaneously with the execution of this Agreement, the parties will enter into the Memorandum of Lease attached to this Agreement as Exhibit C which American Tower may record in the public records of the county of the Property. Landlord acknowledges and agrees that after Landlord signs the Memorandum of Lease but before American Tower records it, American Tower may add both: (a) a reference to the recording granting Landlord its interest in the Property; and (b) a legal description of the Site as Exhibit B. Landlord agrees to execute and return to American Tower a recordable Amended Memorandum of Lease in form supplied by American Tower if: (i) the information included in the Memorandum of Lease changes, or (ii) if it becomes clear that such information is incorrect or incomplete or if this Agreement is amended.

**25. Miscellaneous.**

(a) This Agreement runs with the Property and is binding upon and will inure to the benefit of the parties, their respective heirs, successors, personal representatives and assigns.

(b) American Tower may at American Tower's sole cost and expense procure an abstract of title or a commitment to issue a policy of title insurance (collectively "***Title***") on the Property.

(c) Landlord hereby waives any and all lien rights it may have, statutory or otherwise, in and to the Tower Facilities or any portion thereof, regardless of whether or not same is deemed real or personal property under applicable laws.

(d) The substantially prevailing party in any litigation arising hereunder is entitled to its reasonable attorney's fees and court costs, including appeals, if any.

(e) Each party agrees to furnish to the other, within 30 days after request, such estoppel information as the other may reasonably request.

(f) This Agreement constitutes the entire agreement and understanding of Landlord and American Tower with respect to the subject matter of this Agreement, and supersedes all offers, negotiations and other agreements. There are no representations or understandings of any kind not stated in this Agreement. Any amendments to this Agreement must be in writing and executed and delivered by Landlord and American Tower.

(g) If either Landlord or American Tower is represented by a real estate broker in this transaction, that party is fully responsible for any fees due such broker and will hold the other party harmless from any claims for commission by such broker.

(h) The Agreement will be construed in accordance with the laws of the state in which the Site is situated.

(i) If any term of the Agreement is found to be void or invalid, the remainder of this Agreement will continue in full force and effect.

Site Name: Hazel Green KY  
Site Number: 281338

(j) American Tower may obtain title insurance on its interest in the Site, and Landlord will cooperate by executing any documentation required by the title insurance company.

(k) This Agreement may be executed in two or more counterparts, all of which are considered one and the same agreement and become effective when one or more counterparts have been signed by each of the parties, it being understood that all parties need not sign the same counterpart.

(l) Landlord will not, during the Option Period or the Term, enter into any other lease, license, or other agreement for the same or similar purpose as the Intended Use, on or adjacent to the Property.

(m) Failure or delay on the part of either party to exercise any right, power or privilege hereunder will not operate as a waiver thereof and waiver of breach of any provision hereof under any circumstances will not constitute a waiver of any subsequent breach.

(n) The parties agree that irreparable damage would occur if any of the provisions of this Agreement were not performed in accordance with their specified terms or were otherwise breached. Therefore, the parties agree the parties will be entitled to an injunction(s) in any court in the state in which the Site is located to prevent breaches of the provisions of this Agreement and to enforce specifically the terms and provisions of the Agreement, this being in addition to any other remedy to which the parties are entitled at law or in equity.

(o) Each party executing this Agreement acknowledges that it has full power and authority to do so and that the person executing on its behalf has the authority to bind the party.

(p) The parties agree that a scanned or electronically reproduced copy or image of this Agreement will be deemed an original and may be introduced or submitted in any action or proceeding as competent evidence of the execution, terms and existence hereof notwithstanding the failure or inability to produce or tender an original, executed counterpart of this Agreement and without the requirement that the unavailability of such original, executed counterpart of this Agreement first be proven.

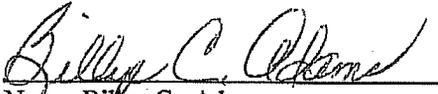
[SIGNATURES APPEAR ON NEXT PAGE]

Site Name: Hazel Green KY  
Site Number: 281338

IN WITNESS WHEREOF, Landlord and American Tower have each executed this Agreement as of the respective dates written below.

LANDLORD:

Billye C. Adams, a single person



Name: Billye C. Adams

Date: 01/31/14

**Acknowledgement**

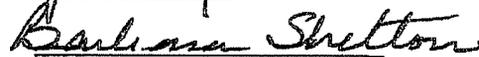
STATE OF KENTUCKY

COUNTY OF WOLFE

I, a Notary Public of the County and State aforesaid, certify that Billye C. Adams, a single person, came before me this day and acknowledged the execution of the foregoing instrument.

Witness my hand and official stamp or seal, this 31<sup>ST</sup> day of January, 2014.

[Affix Notary Seal]



Notary Public

My commission expires:

9/25/16





Site Name: Hazel Green KY  
Site Number: 281338

The following exhibits are attached to this Agreement and incorporated into this Agreement:

Exhibit A	Description or Depiction of Property
Exhibit B	Description or Depiction of Site
Exhibit C	Memorandum of Lease

Site Name: Hazel Green KY  
Site Number: 281338

EXHIBIT A

DESCRIPTION OR DEPICTION OF PROPERTY

The Property is described and/or depicted as follows:

---

Parent Parcel:

TRACT 1

That certain tract or parcel of land lying and being in Wolfe County, Kentucky, and on the waters of the Buchanan Fork of Stillwater Creek and bounded and described as follows:

Beginning at a Market steel post at the corner of Wilda Profitt land line and North side of Buchanan Fork County Road; thence running in a straight line North to a large marked beech tree standing on top of the ridge; thence going East along the Profitt land line to the corner of Billie Adams and Wilda Profitt land lines; thence continuing along the Adams line to a marked big twin hickory tree; thence in a Northwesterly direction over the hill to a marked tree at the forks of Rockhouse Stream; thence turning west and running with the stream to the intersection of Rockhouse Stream and Stillhouse Creek; thence turning South with Stillhouse Creek to Buchanan Fork County Road; thence going East along the North of the County Road to the place of beginning.

Excepted out of the property is twelve (12) foot access road to the Albert Chambers property. The road was established by previous land owners.

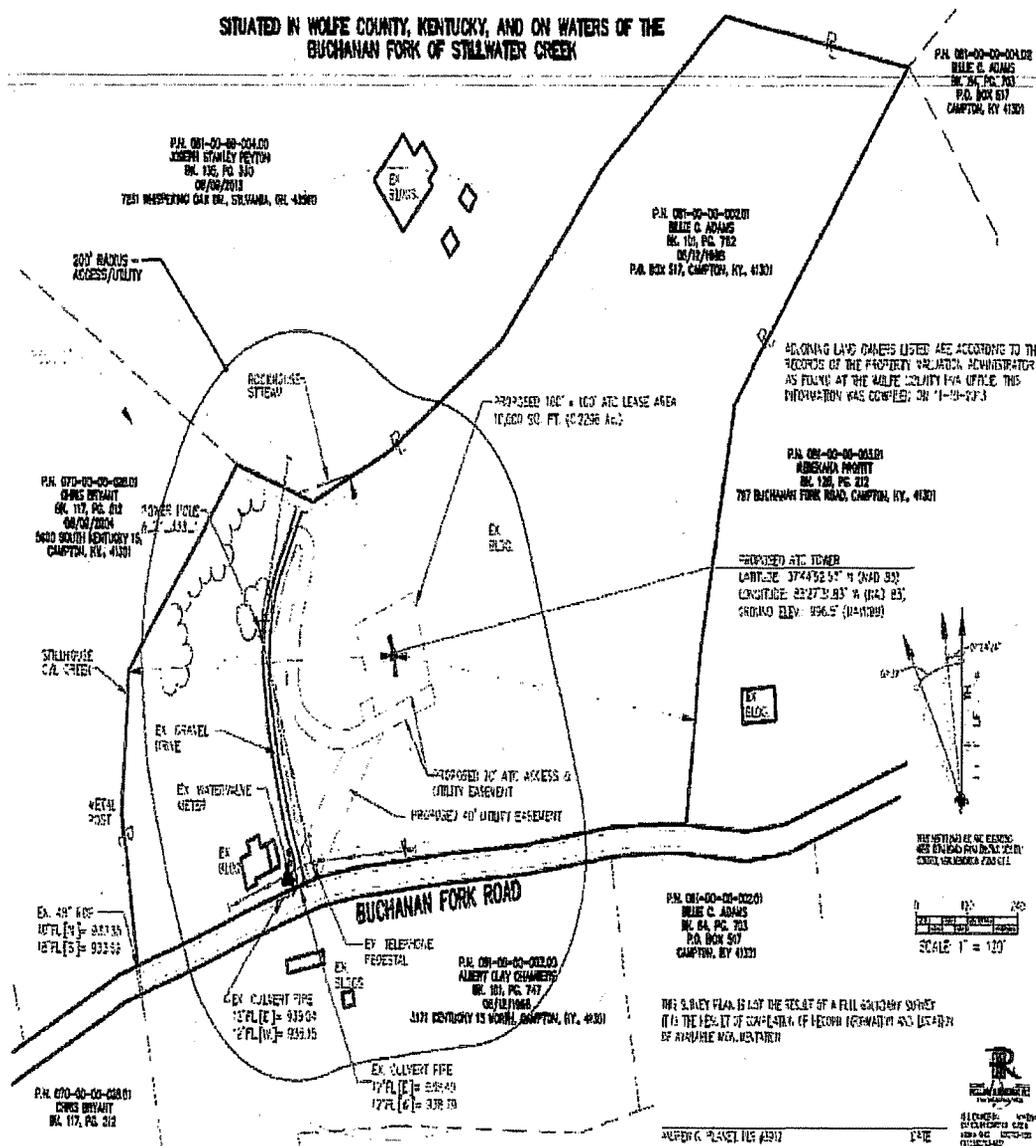
Parcel I.D. NUMBER: 081-00-00-002.01

Site Name: Hazel Green KY  
 Site Number: 281338

EXHIBIT B

DESCRIPTION OR DEPICTION OF SITE

Locations are approximate. American Tower may, at its option, replace this exhibit with a copy of the survey of the Site.



Site Name: Hazel Green KY  
Site Number: 281338

EXHIBIT C  
MEMORANDUM OF LEASE

[see following pages]

*DB101  
P 762*

**RECEIVED**

JUN 12 1998  
*12:55 pm*  
WOLFE COUNTY CLERK  
S. KENNETH LINDON  
*Sherry Hobbs*

GENERAL WARRANTY DEED

THIS DEED OF CONVEYANCE, by and between Wilda Chambers Profitt, widow, of 780 Buchanan Fork Road, Campton, Kentucky, 41301; and Albert Clay Chambers and Linda Chambers, his wife, of 255 Townsend-Drake Road, Campton, Kentucky, 41301, parties of the first part, and Billie H. Chambers Adams, of P.O. Box 10, Campton, Kentucky, 41301, party of the second part.

WITNESSETH: That said parties of the first part, for and in consideration of a division of jointly owned property, the sufficiency of which is being acknowledged, do hereby give, grant, and convey unto the party of the second part, her heirs and assigns, all of their undivided two-thirds (2/3rds) interest in and to the following described property,

to-wit:

A certain tract or parcel of land lying and being in Wolfe County, Kentucky, and on the waters of the Buchanan Fork of Stillwater Creek and bounded and described as follows:

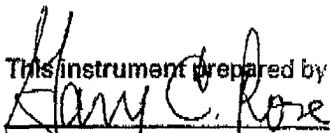
Beginning at a marked steel post at the corner of Wilda Profitt land line and North side of Buchanan Fork County Road; thence running in a straight line North to a large marked beech tree standing on top of the ridge; thence going East along the Profitt land line to the corner of Billye Adams and Wilda Profitt land lines; thence continuing along the Adams line to a marked big twin hickory tree; thence in a Northwesterly direction over the hill to a marked tree at the forks of Rockhouse Stream; thence turning west and running with the stream to the intersection of Rockhouse Stream and Stillhouse Creek; thence turning South with Stillhouse Creek to Buchanan Fork County Road; thence going East along the North of the County Road to the place of beginning.

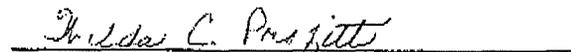
Excepted out of this property is a twelve (12) foot access road to the Albert Chambers property. The road was established by previous land owners.

Being all of first parties' undivided two-thirds (2/3rds) interest in a part of the same land conveyed to Daisy Chambers from Kate Rose, and others, by deed dated March 23, 1939, and of record in Deed Book 51, page 513; and being all of first parties' undivided two-thirds (2/3rds) interest in all of the same land conveyed to Daisy M. Chambers from Robert Rothman, and others, by deed dated March 21, 1940, and of record in Deed Book 52, page 421. First parties obtained title by devise from Daisy Marvin Chambers, see Will Book 5, page 87. Both instruments are of record in the Wolfe County Clerk's Office.

TO HAVE AND TO HOLD, the same together with all the appurtenances thereunto belonging unto the party of the second part, her heirs and assigns forever, with covenant of general warranty.

IN TESTIMONY WHEREOF, witness our signatures, this 12th day of June, 1998.

This instrument prepared by  
  
 GARY C. ROSE  
 ATTORNEY AT LAW  
 P.O. BOX 297  
 CAMPTON, KY 41301

  
 WILDA CHAMBERS PROFITT

  
 ALBERT CLAY CHAMBERS

  
 LINDA CHAMBERS



**EXHIBIT K  
NOTIFICATION LISTING**

**Hazel Green Landowner Notice List**

Billye C. Adams  
P.O. Box 517  
Campton, KY 41301

Joseph Stanley Peyton  
7231 Whispering Oak Drive  
Sylvania, OH 43560

Chris Bryant  
5900 South Kentucky 15  
Campton, KY 41301

Albert Clay Chambers  
255 Townsend-Drake Road  
Campton, KY 41301

Rebekaha Profitt  
797 Buchanan Fork Road  
Campton, KY 41301



**EXHIBIT L**  
**COPY OF PROPERTY OWNER NOTIFICATION**



1578 Highway 44 East, Suite 6  
P.O. Box 369  
Shepherdsville, KY 40165-0369  
Phone (502) 955-4400 or (800) 516-4293  
Fax (502) 543-4410 or (800) 541-4410

**Notice of Proposed Construction of  
Wireless Communications Facility  
Site Name: HAZEL GREEN**

Dear Landowner:

New Cingular Wireless PCS, LLC, a Delaware limited liability company, d/b/a AT&T Mobility and American Towers LLC, a Delaware limited liability company d/b/a Delaware American Towers have filed an application with the Kentucky Public Service Commission ("PSC") to construct a new wireless communications facility on a site located at 84 Garry Sparks Drive, Campton, KY 41301 (37°44'52.57" North latitude, 83°27'31.83" West longitude). The proposed facility will include a 290-foot tall antenna tower, plus a 9-foot lightning arrestor and related ground facilities. This facility is needed to provide improved coverage for wireless communications in the area.

This notice is being sent to you because the Wolfe County Property Valuation Administrator's records indicate that you may own property that is within a 500' radius of the proposed tower site or contiguous to the property on which the tower is to be constructed. You have a right to submit testimony to the Kentucky Public Service Commission ("PSC"), either in writing or to request intervention in the PSC's proceedings on the application. You may contact the PSC for additional information concerning this matter at: Kentucky Public Service Commission, Executive Director, 211 Sower Boulevard, P.O. Box 615, Frankfort, Kentucky 40602. Please refer to docket number 2014-00044 in any correspondence sent in connection with this matter.

We have attached a map showing the site location for the proposed tower. AT&T Mobility's radio frequency engineers assisted in selecting the proposed site for the facility, and they have determined it is the proper location and elevation needed to provide quality service to wireless customers in the area. Please feel free to contact us toll free at (800) 516-4293 if you have any comments or questions about this proposal.

Sincerely,  
David A. Pike  
Attorney for AT&T Mobility

enclosure

## Driving Directions to Proposed Tower Site at Hazel Green

1. Beginning at the Wolfe County Courthouse, located at 10 Court Street, Campton, Kentucky 41301, travel south on Marion Street toward Main Street and go approximately 187 feet.
2. Take the first left onto KY-191/Main Street, continue to follow KY-191 and go approximately 1.1 miles.
3. Take a slight right to stay on KY-191 and go approximately 3.5 miles.
4. Take a slight right onto County Road 1812 and go approximately 1.0 miles.
5. Take the first left onto Buchanan Fork Road and go approximately 0.7 miles.
6. The proposed site is on the left at 84 Garry Sparks Drive, Campton, KY 41301.
7. The site coordinates are
  - a. North 37 deg 44' 52.57"
  - b. West 83 deg 27' 31.83"



Prepared by:  
Joseph C. Ernwine  
Pike Legal Group PLLC  
1578 Highway 44 East, Suite 6  
P.O. Box 369  
Shepherdsville, KY 40165-3069  
Telephone: 502-955-4400 or 800-516-4293

**SITUATED IN WOLFE COUNTY, KENTUCKY, AND ON WATERS OF THE BUCHANAN FORK OF STILLWATER CREEK**

PER WOLFE COUNTY FISCAL COURT LETTER DATED 12-13-2013 - WOLFE COUNTY HAS NO ZONING OR BUILDING ORDINANCES.

P.N. 081-00-00-004.00  
JOSEPH STANLEY PEYTON  
DEED BOOK 135, PG. 330  
08/08/2013  
7231 WHISPERING OAK DR., SYLVANIA, OH, 43360

P.N. 081-00-00-002.01  
BILLIE H. CHAMBERS ADAMS - 2/3  
9.15 ACRES ±  
DEED BOOK 101, PG. 782  
08/12/1998  
P.O. BOX 517, CAMPTON, KY., 41301

P.N. 081-00-00-004.02  
BILLYE C. ADAMS  
DEED BOOK 84, PG. 703  
P.O. BOX 517  
CAMPTON, KY 41301

200' RADUS - ACCESS/UTILITY

R500.0'

P.N. 070-00-00-028.01  
CHRIS BRYANT  
DEED BOOK 117, PG. 212 POWER POLE # 21\_333\_1  
08/08/2004  
5800 SOUTH KENTUCKY 16,  
CAMPTON, KY, 41301

STILLHOUSE C/L CREEK

METAL POST

EX. 48" RCP  
18"FL.[N.] = 933.55  
18"FL.[S.] = 933.59

P.N. 070-00-00-028.01  
CHRIS BRYANT  
DEED BOOK 117, PG. 212

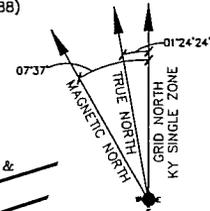
ROCKHOUSE STREAM

PROPOSED 100' x 100' ATC LEASE AREA  
10,000 SQ. FT. (0.2296 Ac.)

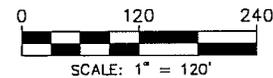
EX. BLDG. P.P.O.B. LEASE AREA & ACCESS/UTILITY EASEMENTS

P.N. 081-00-00-003.01  
REBEKAHA PROFFIT  
DEED BOOK 128, PG. 212  
797 BUCHANAN FORK ROAD, CAMPTON, KY., 41301

PROPOSED ATC TOWER  
LATITUDE: 37°44'52.57" N (NAD 83)  
LONGITUDE: 83°27'31.83" W (NAD 83)  
GROUND ELEV.: 996.5' (NAVD88)



TRUE NORTH (NAD 83) AND ELEVATIONS WERE ESTABLISHED FROM EXISTING GEODETIC CONTROL MONUMENTATION USING GPS.



EX. 12' GRAVEL ACCESS ROAD

P.P.C.B. UTILITY EASEMENT

2.75' ± CL TOWER TO CLOSEST RESIDENCE

EX. HOUSE

PROPOSED 20' ATC ACCESS & UTILITY EASEMENT

PROPOSED 40' UTILITY EASEMENT

**BUCHANAN FORK ROAD (PUBLIC)**

EX. TELEPHONE PEDESTAL

P.N. 081-00-00-002.00  
ALBERT CLAY CHAMBERS  
DEED BOOK 101, PG. 747  
08/12/1998  
255 TOWNSEND-DRAKE ROAD  
CAMPTON, KY., 41301

EX. CULVERT PIPE  
12"FL.[E.] = 938.04  
12"FL.[W.] = 938.15

EX. CULVERT PIPE  
12"FL.[E.] = 938.49  
12"FL.[W.] = 938.79

ADJOINING LAND OWNERS LISTED ARE ACCORDING TO THE RECORDS OF THE PROPERTY VALUATION ADMINISTRATOR AS FOUND AT THE WOLFE COUNTY PVA OFFICE. THIS INFORMATION WAS COMPILED ON D1-22-2014.

P.N. 081-00-00-002.01  
BILLYE C. ADAMS  
DEED BOOK 84, PG. 703  
P.O. BOX 517  
CAMPTON, KY 41301

THIS SURVEY PLAN IS NOT THE RESULT OF A FULL BOUNDARY SURVEY. IT IS THE RESULT OF COMPILATION OF RECORD INFORMATION AND LOCATION OF AVAILABLE MONUMENTATION.

ANDREW G. PLANET, PLS #3912

DATE



NO.	DATE	BY	DESCRIPTION
1	03/11/14	AGP	UPDATE PER COMMENT

AT&T SITE # 143953  
ATC SITE # 281338

HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON, KENTUCKY, 41301

DRAWN BY: PLE  
CHECKED BY: AGP  
DATE: 11/21/2013  
PROJECT #: K08-008

SHEET TITLE  
**OVERALL SITE**

SHEET NUMBER  
**S3**





**EXHIBIT M**  
**COPY OF COUNTY JUDGE/EXECUTIVE NOTICE**



1578 Highway 44 East, Suite 6  
P.O. Box 369  
Shepherdsville, KY 40165-0369  
Phone (502) 955-4400 or (800) 516-4293  
Fax (502) 543-4410 or (800) 541-4410

**VIA CERTIFIED MAIL**

Hon. Dennis Brooks  
Wolfe County Judge Executive  
10 Court Street  
P.O. Box 429  
Campton, KY 41301

RE: Notice of Proposal to Construct Wireless Communications Facility  
Kentucky Public Service Commission Docket No. 2014-00044  
Site Name: Hazel Green

Dear Judge Brooks:

New Cingular Wireless PCS, LLC, a Delaware limited liability company, d/b/a AT&T Mobility and American Towers LLC, a Delaware limited liability company d/b/a Delaware American Towers have filed an application with the Kentucky Public Service Commission ("PSC") to construct a new wireless communications facility on a site located at 84 Garry Sparks Drive, Campton, KY 41301 (37°44'52.57" North latitude, 83°27'31.83" West longitude). The proposed facility will include a 290-foot tall antenna tower, plus a 9-foot lightning arrestor and related ground facilities. This facility is needed to provide improved coverage for wireless communications in the area.

You have a right to submit comments to the PSC or to request intervention in the PSC's proceedings on the application. You may contact the PSC at: Executive Director, Public Service Commission, 211 Sower Boulevard, P.O. Box 615, Frankfort, Kentucky 40602. Please refer to docket number 2014-00044 in any correspondence sent in connection with this matter.

We have attached a map showing the site location for the proposed tower. AT&T Mobility's radio frequency engineers assisted in selecting the proposed site for the facility, and they have determined it is the proper location and elevation needed to provide quality service to wireless customers in the area. Please feel free to contact us with any comments or questions you may have.

Sincerely,

David A. Pike  
Attorney for AT&T Mobility  
enclosures

**Driving Directions to Proposed Tower Site at Hazel Green**

1. Beginning at the Wolfe County Courthouse, located at 10 Court Street, Campton, Kentucky 41301, travel south on Marion Street toward Main Street and go approximately 187 feet.
2. Take the first left onto KY-191/Main Street, continue to follow KY-191 and go approximately 1.1 miles.
3. Take a slight right to stay on KY-191 and go approximately 3.5 miles.
4. Take a slight right onto County Road 1812 and go approximately 1.0 miles.
5. Take the first left onto Buchanan Fork Road and go approximately 0.7 miles.
6. The proposed site is on the left at 84 Garry Sparks Drive, Campton, KY 41301.
7. The site coordinates are
  - a. North 37 deg 44' 52.57"
  - b. West 83 deg 27' 31.83"



Prepared by:  
Joseph C. Ernwine  
Pike Legal Group PLLC  
1578 Highway 44 East, Suite 6  
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PER WOLFE COUNTY FISCAL COURT LETTER DATED 12-13-2013 - WOLFE COUNTY HAS NO ZONING OR BUILDING ORDINANCES.

P.N. 061-00-00-004.00  
JOSEPH STANLEY PEYTON  
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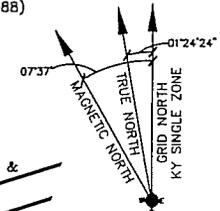
P.N. 061-00-00-004.02  
BILLYE C. ADAMS  
DEED BOOK 84, PG. 703  
P.O. BOX 517  
CAMPTON, KY 41301

P.N. 061-00-00-002.01  
BILLYE H. CHAMBERS ADAMS - 2/3  
9.15 ACRES ±  
DEED BOOK 101, PG. 762  
06/12/1998  
P.O. BOX 517, CAMPTON, KY., 41301

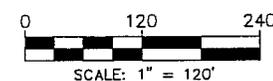
ADJOINING LAND OWNERS LISTED ARE ACCORDING TO THE RECORDS OF THE PROPERTY VALUATION ADMINISTRATOR AS FOUND AT THE WOLFE COUNTY PVA OFFICE. THIS INFORMATION WAS COMPILED ON 01-22-2014.

P.N. 061-00-00-003.01  
REBEKAHA PROFFIT  
DEED BOOK 128, PG. 212  
797 BUCHANAN FORK ROAD, CAMPTON, KY., 41301

PROPOSED ATC TOWER  
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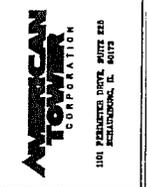


P.N. 061-00-00-002.01  
BILLYE C. ADAMS  
DEED BOOK 84, PG. 703  
P.O. BOX 517  
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ANDREW G. PLANET, PLS #3912

DATE



REVISIONS	DATE	BY	DESCRIPTION
1	01-22-14	ADP	UPDATE PER COMMENTS
2			
3			
4			
5			
6			

AT&T SITE # 143953  
ATC SITE # 281338

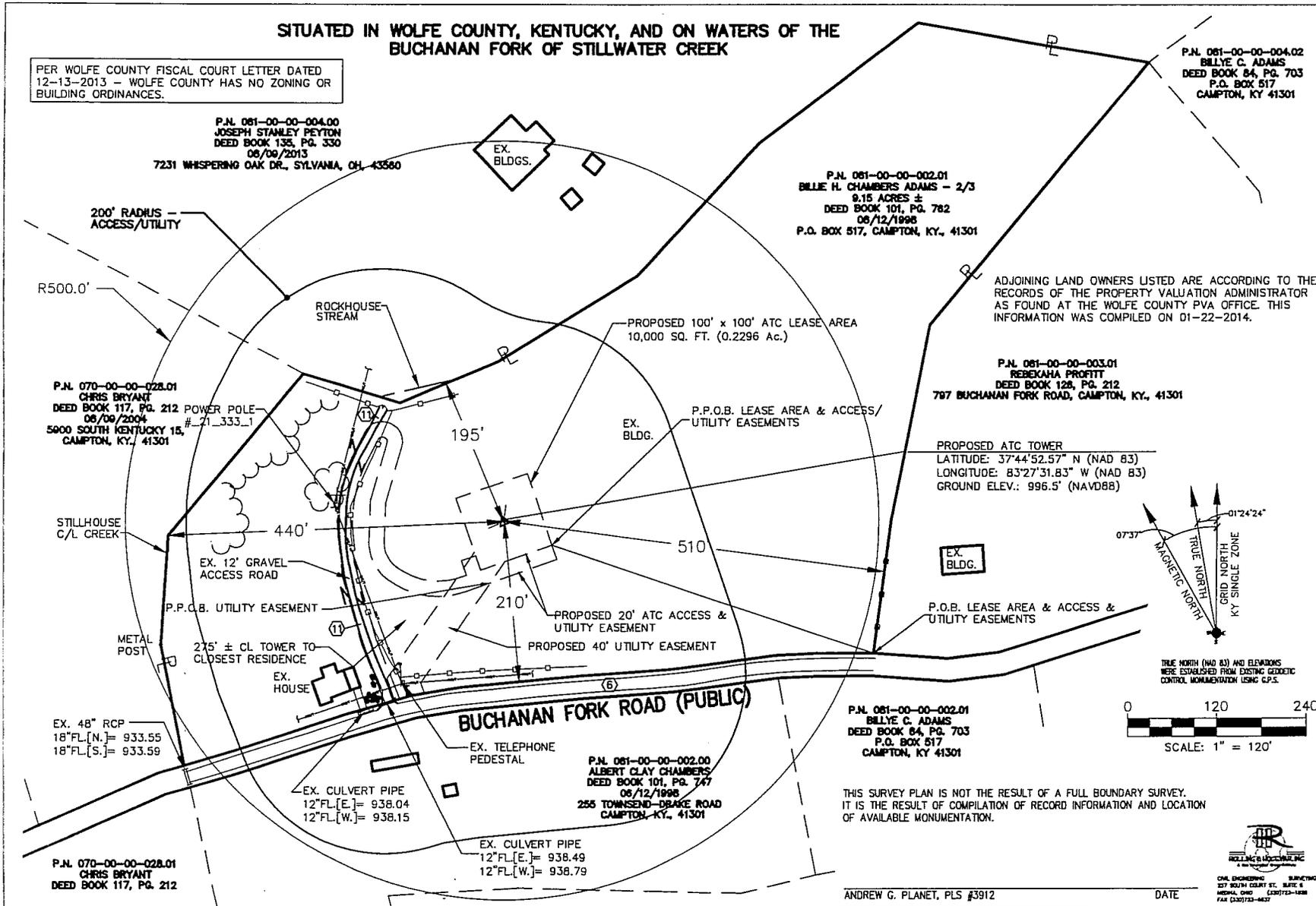
HAZEL GREEN

84 GARRY SPARKS DRIVE  
CAMPTON, KENTUCKY, 41301

DRAWN BY: PRE  
CHECKED BY: ADP  
DATE: 11/25/2013  
PROJECT #: 1006-484

SHEET TITLE  
OVERALL SITE

SHEET NUMBER  
S3



P.N. 070-00-00-028.01  
CHRIS BRYANT  
DEED BOOK 117, PG. 212  
06/09/2004  
5900 SOUTH KENTUCKY 15,  
CAMPTON, KY., 41301

STILLHOUSE  
C/L CREEK

EX. 12" GRAVEL  
ACCESS ROAD

P.P.C.B. UTILITY EASEMENT

275' ± CL TOWER TO  
CLOSEST RESIDENCE

EX. HOUSE

EX. 48" RCP  
18"FL.[N.] = 933.55  
18"FL.[S.] = 933.59

P.N. 070-00-00-028.01  
CHRIS BRYANT  
DEED BOOK 117, PG. 212

EX. CULVERT PIPE  
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DEED BOOK 101, PG. 747  
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255 TOWNSEND-DRAKE ROAD  
CAMPTON, KY., 41301

EX. CULVERT PIPE  
12"FL.[E.] = 938.49  
12"FL.[W.] = 938.79



**EXHIBIT N**  
**COPY OF POSTED NOTICES**

**SITE NAME: HAZEL GREEN**  
**NOTICE SIGNS**

The signs are at least (2) feet by four (4) feet in size, of durable material, with the text printed in black letters at least one (1) inch in height against a white background, except for the word "**tower**," which is at least four (4) inches in height.

New Cingular Wireless PCS, LLC d/b/a AT&T Mobility proposes to construct a telecommunications **tower** on this site. If you have questions, please contact Pike Legal Group, PLLC, P.O. Box 369, Shepherdsville, KY 40165 (800) 516-4293, or the Executive Director, Public Service Commission, 211 Sower Boulevard, PO Box 615, Frankfort, Kentucky 40602. Please refer to docket number Case No. 2014-00044 in your correspondence.

New Cingular Wireless PCS, LLC d/b/a AT&T Mobility proposes to construct a telecommunications **tower** near this site. If you have questions, please contact Pike Legal Group, PLLC, P.O. Box 369, Shepherdsville, KY 40165 (800) 516-4293, or the Executive Director, Public Service Commission, 211 Sower Boulevard, PO Box 615, Frankfort, Kentucky 40602. Please refer to docket number Case No. 2014-00044 in your correspondence.



**EXHIBIT O**  
**COPY OF RADIO FREQUENCY DESIGN SEARCH AREA**

