COMMONWEALTH OF KENTUCKY
BEFORE THE 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	)	CASE NO.: 2013-00386
CONVENIENCE AND NECESSITY TO CONSTRUCT	)	
A WIRELESS COMMUNICATIONS FACILITY	)	
IN THE COMMONWEALTH OF KENTUCKY	)	
IN THE COUNTY OF OHIO	)	

SITE NAME: MCHENRY

* * * * * * *

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 116 Huntington Avenue, Boston, MA 02116.

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 93 Pearl Lane, Beaver Dam, KY 42320 (37°23'01.78" North latitude, 86°55'03.72" 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 Charles and Mary Brumley pursuant to a Deed recorded at Deed Book 299, Page 241 in the office of the Ohio County Clerk. The proposed WCF will consist of a 255-foot tall tower, with an approximately 10-foot tall lightning arrestor attached at the top, for a total height of 265-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 Application for 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 agreement or an abbreviated agreement recorded with the County Clerk is attached as **Exhibit J**.

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 a scale of no less than 1 inch equals 200 feet 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 published 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 is not zoned and sparsely populated.

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: pikelegal@aol.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

Matthew Russell
Attorney
American Towers LLC
116 Huntington Avenue
Boston, MA 01226
Telephone: 781.926.7154
Email: 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,

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: pikelegal@aol.com
Attorney for New Cingular Wireless PCS, LLC
d/b/a AT&T Mobility

and

Matthew Russell
116 Huntington Avenue
Boston, MA 01226
Telephone: 781.926.7154
Email: 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

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

Universal Licensing System

ULS License

PCS Broadband License - WQNE326 - New Cingular Wireless PCS, LLC

HELP

Call Sign	WQNE326	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular

Market

Market	MTA026 - Louisville-Lexington-Evansvill	Channel Block	B
Submarket	4	Associated Frequencies (MHz)	001870.00000000-001885.00000000 001950.00000000-001965.00000000

Dates

Grant	12/21/2010	Expiration	06/23/2015
Effective	11/24/2012	Cancellation	

Buildout Deadlines

1st	2nd

Notification Dates

1st	2nd

Licensee

FRN	0003291192 (View Ownership Filing)	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.

Demographics

Race

Ethnicity Gender

ULS Help	ULS Glossary - FAQ - Online Help - Technical Support - Licensing Support
ULS Online Systems	CORES - ULS Online Filing - License Search - Application Search - Archive License Search
About ULS	Privacy Statement - About ULS - ULS Home
Basic Search	By Call Sign = SEARCH

FCC | Wireless | ULS | CORES

Help | Tech Support

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

Phone: 1-877-480-3201
TTY: 1-717-338-2824
Submit Help Request

ULS License

PCS Broadband License - WPTJ404 - NEW CINGULAR WIRELESS PCS, LLC

Call Sign	WPTJ404	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular

Market

Market	BTA338 - Owensboro, KY	Channel Block	C
Submarket	7	Associated Frequencies (MHz)	001895.00000000-001910.00000000 001975.00000000-001990.00000000

Dates

Grant	10/29/2009	Expiration	09/29/2019
Effective	11/24/2012	Cancellation	

Buildout Deadlines

1st	09/29/2004	2nd	09/29/2009

Notification Dates

1st	10/22/2001	2nd	10/22/2001

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.

Demographics

Race

Ethnicity

Gender

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.

Demographics

Race

Ethnicity

Gender

ULS License

PCS Broadband License - KNLH652 - New Cingular Wireless PCS, LLC

This license has pending applications: 0005924646

Call Sign	KNLH652	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular

Market

Market	BTA338 - Owensboro, KY	Channel Block	F
Submarket	0	Associated Frequencies (MHz)	001890.00000000-001895.00000000 001970.00000000-001975.00000000

Dates

Grant	03/19/2009	Expiration	04/28/2017
Effective	11/24/2012	Cancellation	

Buildout Deadlines

1st	04/28/2002	2nd	

Notification Dates

1st	04/26/2002	2nd	

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

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Michael P Goggin
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ATTN Michael P. Goggin

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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.

Demographics

Race

Ethnicity

Gender

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE DO HEREBY CERTIFY THAT THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF CONVERSION OF A DELAWARE CORPORATION UNDER THE NAME OF "AMERICAN TOWERS, INC." TO A DELAWARE LIMITED LIABILITY COMPANY, CHANGING ITS NAME FROM "AMERICAN TOWERS, INC." TO "AMERICAN TOWERS LLC", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF JUNE, A.D. 2011, AT 11:54 O'CLOCK A.M.

AND I DO HEREBY FURTHER CERTIFY THAT THE EFFECTIVE DATE OF THE AFORESAID CERTIFICATE OF CONVERSION IS THE THIRTIETH DAY OF JUNE, A.D. 2011, AT 11:59 O'CLOCK P.M.

Jeffrey W. Bullock, Secretary of State

2525871 8100V

110780451

AUTHENTICATION: 8874959

DATE: 06-30-11

You may verify this certificate online at corp.delaware.gov/authver.shtml

State of Delaware
Secretary of State
Division of Corporations
Delivered 11:54 AM 06/30/2011
FILED 11:54 AM 06/30/2011
SRV 110780451 - 2525871 FILE

STATE OF DELAWARE
CERTIFICATE OF CONVERSION
FROM A CORPORATION TO A
LIMITED LIABILITY COMPANY PURSUANT TO
SECTION 18-214 OF THE LIMITED LIABILITY ACT

1.) The jurisdiction where the Corporation first formed is Delaware.

2.) The jurisdiction immediately prior to filing this Certificate is Delaware.

3.) The date the corporation first formed is July 19, 1995.

4.) The name of the Corporation immediately prior to filing this Certificate is American Towers, Inc.

5.) The name of the Limited Liability Company as set forth in the Certificate of Formation is American Towers LLC.

6.) The effective date of this Certificate of Conversion is the 30th of June, 2011 at 11:59 p.m.

IN WITNESS WHEREOF, the undersigned have executed this Certificate on the 29 day of June, 2011 A.D.

By: _____
Authorized Person

Name: Michael John McCormack
Print or Type

Delaware

The First State

I, JEFFREY W. BULLOCK, SECRETARY OF STATE OF THE STATE OF DELAWARE DO HEREBY CERTIFY THAT THE ATTACHED IS A TRUE AND CORRECT COPY OF CERTIFICATE OF FORMATION OF "AMERICAN TOWERS LLC" FILED IN THIS OFFICE ON THE THIRTIETH DAY OF JUNE, A.D. 2011, AT 11:54 O'CLOCK A.M.

AND I DO HEREBY FURTHER CERTIFY THAT THE EFFECTIVE DATE OF THE AFORESAID CERTIFICATE OF FORMATION IS THE THIRTIETH DAY OF JUNE, A.D. 2011, AT 11:59 O'CLOCK P.M.

Jeffrey W. Bullock, Secretary of State

2525871 8100V

AUTHENTICATION: 8874959

110780451

DATE: 06-30-11

You may verify this certificate online at corp.delaware.gov/authver.shtml

State of Delaware
Secretary of State
Division of Corporations
Delivered 11:54 AM 06/30/2011
FILED 11:54 AM 06/30/2011
SRV 110780451 - 2525871 FILE

CERTIFICATE OF FORMATION

OF

AMERICAN TOWERS LLC

1. The name of the limited liability company is American Towers LLC.

2. The address of its registered office in the State of Delaware is Corporation Trust Center, 1209 Orange Street, in the City of Wilmington, Delaware 19801. The name of its registered agent at such address is The Corporation Trust Company.

3. The effective date of this Certificate of Formation is June 30, 2011 at 11:59 p.m.

IN WITNESS WHEREOF, the undersigned have executed this Certificate of Formation of American Towers LLC this 29 day of June, 2011.

By: _____
Authorized Person

Michael John McCormack

EXHIBIT B

SITE DEVELOPMENT PLAN:

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

STATE OF KENTUCKY
WALTER C. MARTIN
11/1/2013
2450
LICENSED PROFESSIONAL ENGINEER

AMERICAN TOWER CORPORATION

SITE NAME:
McHenry

SITE NUMBER:
ATC #281331/ AT&T #143428

NEW 255' SELF SUPPORT TOWER W/ 10' LIGHTING ARRESTOR INSTALLED WITHIN NEW 80' X 80' FENCED TELECOMMUNICATIONS FACILITY

SITE INFORMATION

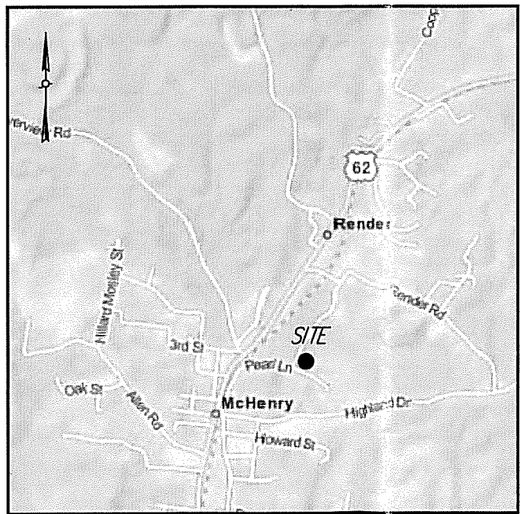
SITE NAME:	McHENRY
SITE NUMBER:	143428
SITE ADDRESS	93 PEARL LANE BEAVER DAM, KENTUCKY 42320
JURISDICTION:	OHIO COUNTY
TAX ACCOUNT ID:	N.A.
MAP/PARCEL:	118-112 & 113 & 115
PARCEL SIZE/COMPOUND SIZE	100' X 100'
SITE COORDINATES:	37° 23' 01.78" 86° 55' 03.72"
GROUND ELEVATION:	+/- 436
STRUCTURE TYPE:	SELF SUPPORT TOWER
STRUCTURE HEIGHT:	255' SELF SUPPORT TOWER
GROUND LANDLORD ADDRESS:	CHARLES & MARY BRUMLEY 93 PEARL LANE BEAVER DAM, KY 42320
LANDLORD NAME:	CHARLES & MARY BRUMLEY
LANDLORD ADDRESS:	93 PEARL LANE BEAVER DAM, KY 42320
APPLICANT:	AMERICAN TOWER CORPORATION 116 HUNTINGTON AVE. BOSTON, MA 02116
APPLICANT PHONE:	(617) 375-7500

CODE ANALYSIS

BUILDING CODE:	IBC 2010 KY BLDG Code 2007
ELECTRICAL CODE:	NEC 2005
FIRE SAFETY CODE:	NFPA 101
USE GROUP:	U (UTILITY)
CONSTRUCTION TYPE:	11B

PROJECT DESCRIPTION

1. NEW 100' X 100' LEASED/ 80' x 80' FENCED TELECOMMUNICATIONS FACILITY TO BE INSTALLED.
2. NEW 255' SELF SUPPORT TOWER TO BE INSTALLED WITHIN FENCED TELECOMMUNICATIONS FACILITY.
3. NEW ELECTRICAL SERVICE TO BE INSTALLED.
4. NEW TELEPHONE SERVICE TO BE INSTALLED.



AREA MAP

DIRECTIONS

START OUT GOING SOUTHEAST ON S. MAIN ST/US-231 FROM THE OHIO COUNTY COURTHOUSE IN HARTFORD, KY TOWARD W WASHINGTON ST. CONTINUE TO FOLLOW S MAIN ST. TURN RIGHT ONTO US-62. TURN LEFT ONTO RENDER ROAD. TURN RIGHT ONTO PEARL LANE. 93 PEARL LANE IS ON YOUR RIGHT.

AERIAL VIEW

SHEET INDEX

DRAWING SHEET	DRAWING TITLE
T-1	TITLE SHEET
S-1	500' ADJOINERS AND ABUTTERS
S-2	SITE SURVEY
C-1	COMPOUND PLAN
C1-1	DIM. TO PROPERTY LINES
C-2	TOWER ELEVATION

AMERICAN TOWER REVIEW

THE FOLLOWING PARITES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS

ATC R.F.:_____ DATE:_____

ATC ZONING:_____ DATE:_____

ATC S.A.:_____ DATE:_____

ATC P & T:_____ DATE:_____

ATC CONST.:_____ DATE:_____

ATC A&E MGR.:_____ DATE:_____

PROPERTY OWNER:_____ DATE:_____

at&t

AMERICAN TOWER CORPORATION

FStan
Formerly F.S. Land & T. Alan Neal Company
Land Surveyors and Consulting Engineers
435 E Warnock Street
Louisville, KY 40217
Phone: (502) 635-2666 (502) 635-3111

PROPERTY OWNER:
CHARLES & MARY BRUMLEY
93 PEARL LANE
BEAVER DAM, KY 42320

SITE ADDRESS:
93 PEARL LANE
BEAVER DAM, KY 42320

SITE NUMBER:
ATC #281331/ AT&T #143428

REVISIONS
07-01-13 REVISED LEASE AREA
08-26-13 REVISED DRAWINGS

DATE COMPILED: 08-26-13

SITE NAME: McHENRY

TITLE SHEET

DATE: 06-20-13
CHECKED BY: FS II
DRAWN BY: SMF

FSTAN PROJECT NO.:
13-8572

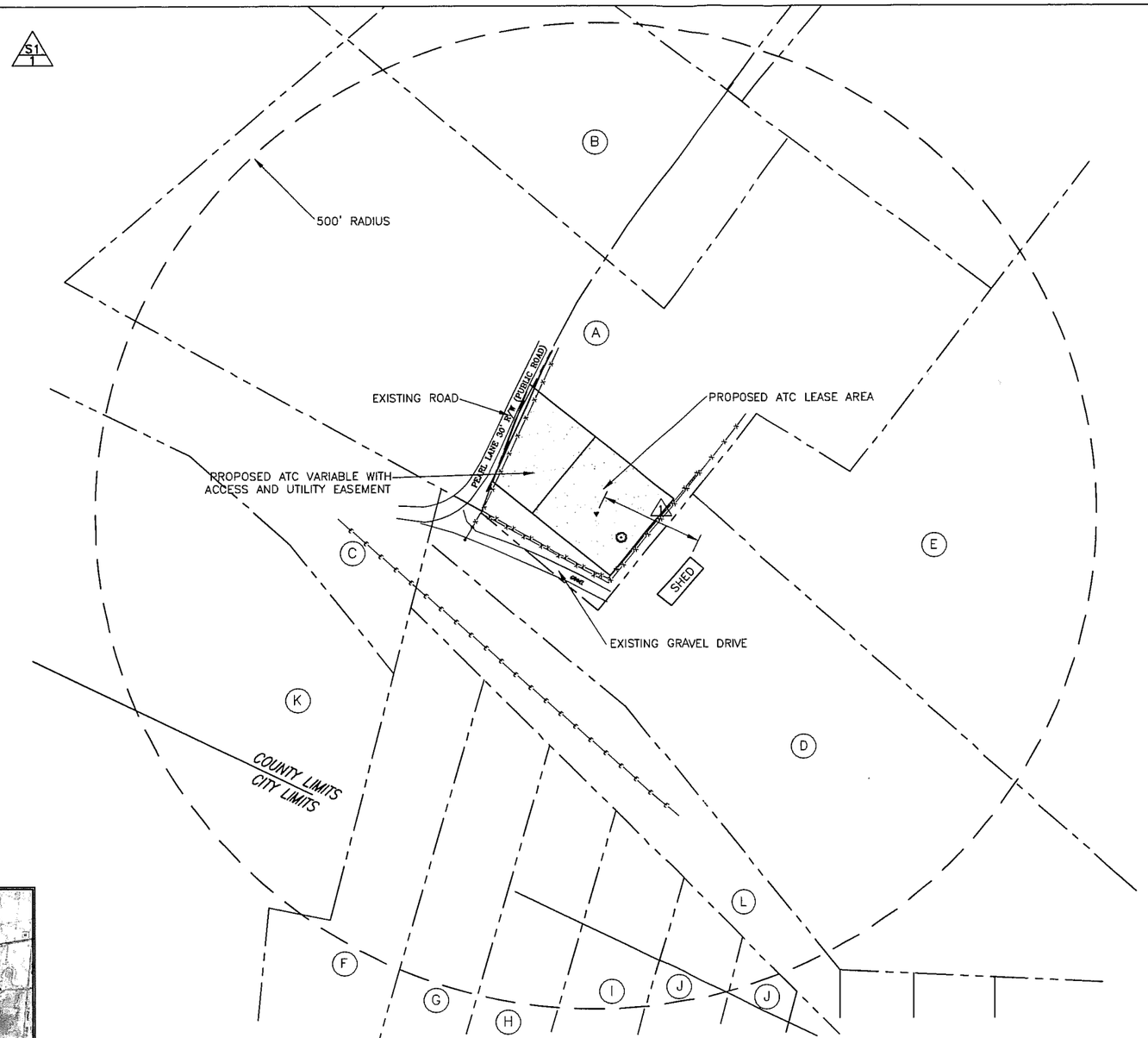
T-1

SHEET 1

- S1/1 – VICINITY AND 500' STRUCTURAL MAP
- S1/2 – ABUTTING PROPERTY OWNERS
- S1/3 – U.S.G.S. QUAD MAP

SHEET 2

- S2/1 – LEASE AREA
- S2/2 – LEGAL DESCRIPTIONS
- S2/3 – FLOOD ZONE DATA



GRID NORTH

TRUE NORTH

-00° 43' 01"

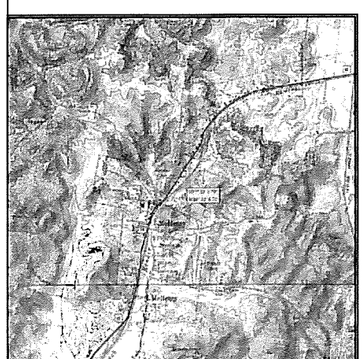
GRID NORTH BY G.P.S. OBSERVATION, ±10 SECONDS

NORTH IS BASED ON THE KENTUCKY STATE PLANE COORDINATE SYSTEM, SINGLE ZONE AND WAS DETERMINED BY COMPUTATION FROM G.P.S. OBSERVATION ON JUNE 12, 2013.

TOWER TO STRUCTURE DIST.	
1	103'±

0' 120' 240'

(IN FEET)
SCALE: 1" = 120'



S1/3 QUAD MAP
SCALE: 1"=2000'

U.S.G.S. 7 1/2 MINUTE QUAD MAP OF (QUAD MAP NAME)

* ADJOINING LAND OWNERS LISTED ARE BASED ON PROPERTY VALUATION ADMINISTRATION ("PVA") RECORDS ISSUED BY A REPRESENTATIVE FROM OHIO COUNTY, TO BE IN COMPLIANCE WITH ALL STATUTORY AND REGULATORY REQUIREMENTS BEFORE THE KENTUCKY PUBLIC SERVICE COMMISSION AND FOR TELECOMMUNICATION USE ONLY.

S1/2

(A.) 118-112 & 113 & 115
BRUMLEY CHARLES & MARY
93 PEARL LANE
BEAVER DAM, KY 42320
ZONING: NO ZONING

(B.) 118-114
SIMPSON AUDLEY
C/O NORA M CREW
2731 TERESA ST
PORTAGE IN 46368
ZONING: NO ZONING

(C.) 118-106G-1
HINES EDWARD
P O BOX 139
MCHENRY KY 42354
ZONING: NO ZONING

(D.) 118-116
ALLEN CHARLES S
& ALICE M
PO BOX 157
MCHENRY KY 42354
ZONING: NO ZONING

(E.) 118-106
HINES SAMUEL C
445 3RD ST
MCHENRY KY 42354
ZONING: NO ZONING

(F.) 129-4A-1
ALLEN CHARLES S
& ALICE M
PO BOX 157
MCHENRY KY 42354
ZONING: NO ZONING

(G.) 129-4A-2
ALLEN CHARALES S
& ALICE M
PO BOX 157
MCHENRY KY 42354
ZONING: NO ZONING

(H.) 129-4A-3
PHARIS JIMMY & ROBIN
2292 HIGHLAND DR
BEAVER DAM KY 42320
ZONING: NO ZONING

(I.) 129-4A-4
BREWSTER PAUL
& REGINA CLEAVER
2272 HIGHLAND DR
BEAVER DAM KY 42320
ZONING: NO ZONING

(J.) 129-4A-5
ALLEN CHARLES S
& ALICE M
PO BOX 157
MCHENRY KY 42354
ZONING: NO ZONING

(K.) 129-4
GOFF ROGER W&
REBECCA (LIFE ESTATE)
2416 HIGHLAND DR.
ZONING: NO ZONING

(L.) 118-106G-1
HINES EDWARD
PO BOX 139
MCHENERY, KY 42354
ZONING: NO ZONING

AMERICAN TOWER CORPORATION

FStan
Formerly F.S. Land & T. Alan Neal Company
Land Surveyors and Consulting Engineers
426 E Warnock Street
Louisville, KY 40217
Phone: (502) 635-5866 (502) 636-5111
Fax: (502) 636-5263

SITE NUMBER:
ATC #281331/ AT&T #143428

SITE NAME:
McHENRY

SITE ADDRESS:
93 PEARL LANE
BEAVER DAM, KY 42320

LEASE AREA:
10,000 SQ.FT.

PROPERTY OWNER:
BRUMLEY, CHARLES & MARY
93 PEARL LANE
BEAVER DAM, KY 42320

MAP NUMBER:
118

PARCEL NUMBER:
112, 113 & 115

SOURCE OF TITLE:
DEED 299, PAGE 241

DWG BY:	CHKD BY:	DATE:
SMF	FSM	06.20.13

FSTAN PROJECT NO.:
13-8570

SHEET 1 OF 2

REVISIONS:

REVISED LEASE AREA 07-01-13

DATE COMPILED: 08-21-13

McHENRY
ATC #281331/ AT&T #143428
SITE ADDRESS: 93 PEARL LANE
BEAVER DAM, KY 42320
OWNER ADDRESS: 93 PEARL LANE
BEAVER DAM, KY 42320

SHEET 2

S2/1 – LEASE AREA

S2/2 – LEGAL DESCRIPTIONS

S2/3 – FLOOD ZONE DATA

COORDINATE POINT LOCATION

NAD 1983
LATITUDE: 37° 23' 01.78"
LONGITUDE: 86° 55' 03.72"
NAVD 1988
ELEVATION: 441'±
STATE PLANE COORDINATE SINGLE ZONE
(BLUE MARBLE GEOGRAPHIC
CALCULATOR VERSION 3.0)
NORTHING: 3665459.4590
EASTING: 4581994.4400

PROJECT BENCHMARK

NORTH: 3665468.2110
EAST: 4581870.1720
ELEVATION: 435.64'
LOCATION: SET IRON ROD NW 11.5' OF THE NORTH END OF ACCESS ESMT.

SURVEYORS NOTES

SOURCE OF BEARING IS A G.P.S. OBSERVATION ON JUNE 12, 2013.

SITE SHOWN SUBJECT TO RIGHT OF WAYS AND EASEMENTS SHOWN HEREON OR NOT.

SOURCE OF ROTATION BASED ON SURVEY PERFORMED BY SMR ENGINEERING & ENVIRONMENTAL SERVICES, INC., DATED MAY 4, 1995.

NO SEARCH OF PUBLIC RECORDS HAS BEEN PERFORMED BY THIS FIRM TO DETERMINE ANY DEFECTS AND/OR AMBIGUITIES IN THE TITLE OF THE PARENT TRACT.

THIS DRAWING DOES NOT REPRESENT A BOUNDARY SURVEY.

EXISTING CONTOURS ARE AT ONE FOOT INTERVALS.

SYMBOL LEGEND

- WOOD POWER POLE
- CONCRETE POWER POLE
- METAL TRAFFIC POLE
- LIGHT POLE
- GUY POLE
- TELEPHONE PEDESTAL
- GUY ANCHOR
- MANHOLE
- WATER VALVE
- WATER METER
- FIRE HYDRANT
- ELECTRIC BOX
- F.P. FENCE POST
- XXX.XX SPOT ELEVATION
- SET #5 REBAR (UNLESS OTHERWISE NOTED)
- EXISTING #5 REBAR (UNLESS OTHERWISE NOTED)

ABBREVIATIONS

EP	EDGE OF PAVEMENT
ROW	RIGHT OF WAY
℄	CENTERLINE
RCP	REINFORCED CONCRETE PIPE
CONC	CONCRETE
CMP	CORRUGATED METAL PIPE
℞	SUBJECT PROPERTY LINE
TC	TOP OF CURB
BC	BOTTOM OF CURB
POB	POINT OF BEGINNING
IPC	IRON PIN CAPPED

LINE LEGEND

- —E—E—E— OVERHEAD ELECTRIC
- —G—G—G— UNDERGROUND GAS LINE
- —W—W—W— UNDERGROUND WATER LINE
- —E/T—E/T—E/T— OVERHEAD ELECTRIC & TELEPHONE LINE
- —T—T—T— OVERHEAD TELEPHONE LINE
- —D—D—D— DRAINAGE/STORM SEWER LINE
- —X—X—X— EXISTING FENCE
- —XX—XX—XX— PROPOSED FENCE
- SUBJECT PROPERTY BOUNDARY
- RIGHT OF WAY CENTERLINE

NOTE: SYMBOLS, ABBREVIATIONS, AND LINESTYLES DO NOT NECESSARILY APPEAR ON DRAWING(S). USE ONLY AS APPLICABLE

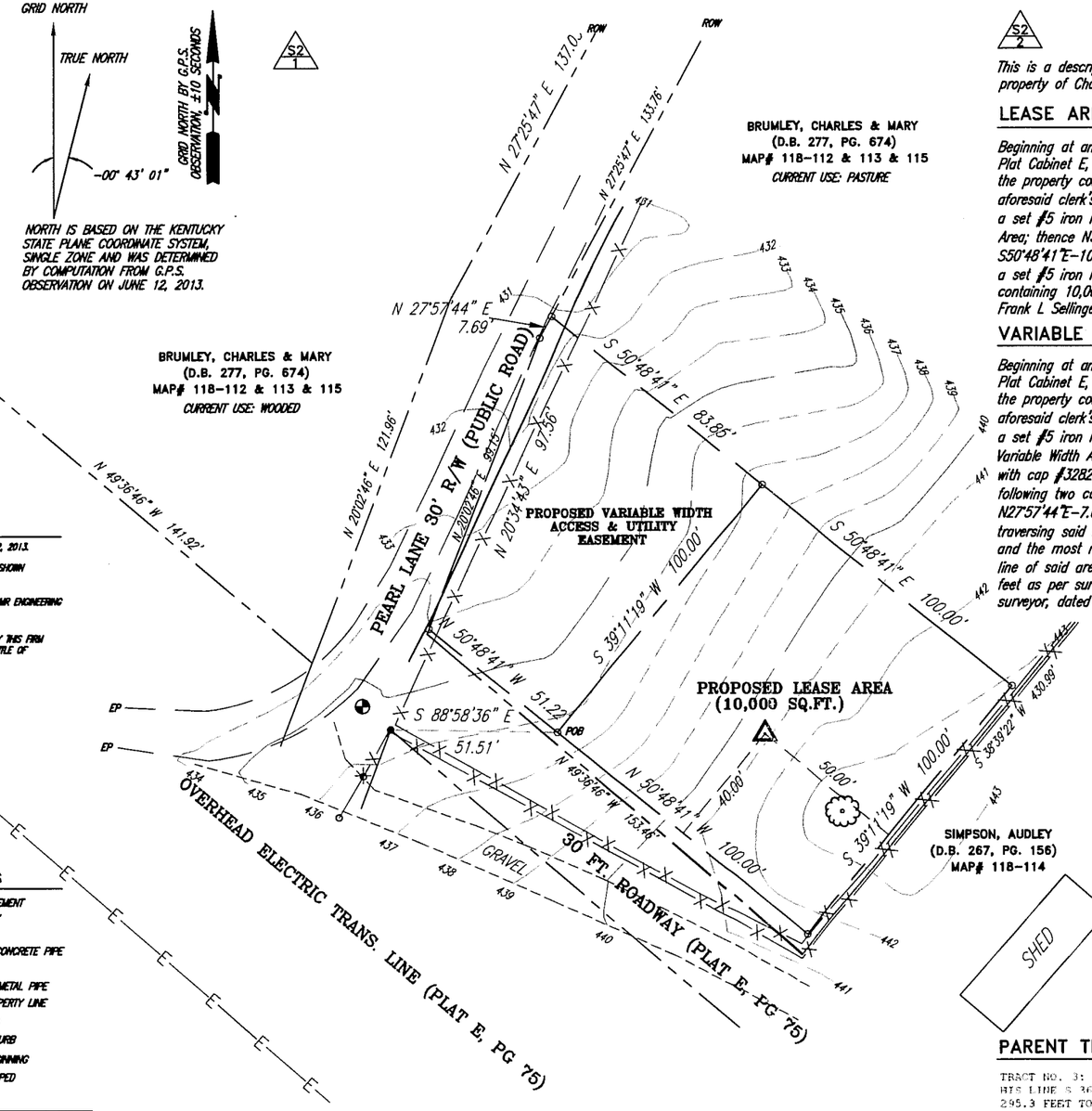
GRID NORTH

TRUE NORTH

-00° 43' 01"

GRID NORTH BY G.P.S. OBSERVATION, ±10 SECONDS

NORTH IS BASED ON THE KENTUCKY STATE PLANE COORDINATE SYSTEM, SINGLE ZONE AND WAS DETERMINED BY COMPUTATION FROM G.P.S. OBSERVATION ON JUNE 12, 2013.



0' 40' 80'

(IN FEET)

SCALE: 1" = 40'

S2/2

LEGAL DESCRIPTIONS:

This is a description for American Tower Corporation, of a lease area to be located on the property of Charles & Mary Brumley, which is further described as follows:

LEASE AREA

Beginning at an existing iron rod found at the south west corner of a 30' Roadway found in Plat Cabinet E, Slide 75 of the Office of the Clerk, Ohio County Kentucky; said Plat being the property conveyed to Charles and Mary Brumley in Deed Book 299, Page 241 in the aforesaid clerk's office; thence traversing said Roadway and Property S88°58'36"E-51.51' to a set #5 iron road with cap #3282 and the True Point Of Beginning of the proposed Lease Area; thence N39°11'19"E-100.00' to a set #5 iron road with cap #3282; thence S50°48'41"E-100.00' to a set #5 iron road with cap #3282; thence S39°11'19"W-100.00' to a set #5 iron road with cap #3282; thence N50°48'41"W-100.00' to the point of beginning, containing 10,000 square feet as per survey by FStan Land Surveyors & Consulting Engineers, Frank L Sellinger, II, surveyor, dated June 18th, 2013.

VARIABLE WIDTH ACCESS & UTILITY EASEMENT

Beginning at an existing iron rod found at the south west corner of a 30' Roadway found in Plat Cabinet E, Slide 75 of the Office of the Clerk, Ohio County Kentucky; said Plat being the property conveyed to Charles and Mary Brumley in Deed Book 299, Page 241 in the aforesaid clerk's office; thence traversing said Roadway and Property S88°58'36"E-51.51' to a set #5 iron road with cap #3282 and the True Point Of Beginning of the proposed Variable Width Access & Utility Easement; thence N50°48'41"W-51.22' to a set #5 iron road with cap #3282 and the south margin of Pearl Lane; thence following said margin for the following two calls: N20°34'43"E-97.56' to a set #5 iron road with cap #3282 and N27°57'44"E-7.69' to a set #5 iron road with cap #3282; thence leaving said margin and traversing said Brumley Property S50°48'41"E-83.85' to a set #5 iron road with cap #3282 and the most northern corner of said Proposed Lease Area; thence following the north west line of said area S39°11'19"W-100.00' to the point of beginning, containing 6801.9 square feet as per survey by FStan Land Surveyors & Consulting Engineers, Frank L Sellinger, II, surveyor, dated June 18th, 2013.

SURVEYOR'S REVIEW OF "SPECIAL EXCEPTIONS"

NOTES CORRESPONDING TO THE OLD REPUBLIC NATIONAL TITLE INS. CO., "COMMITMENT FOR TITLE INSURANCE", COMMITMENT 01-13086506-01T, EFFECTIVE DATE: 06/06/2013 AT 7:00 AM.

(6) Reservation of Minerals as contained in Deed Recorded 04/09/1973, in Book 202, Page 441 of the Ohio County Records..
(Does apply to the Proposed Lease Area and the Variable Width Access & Utility Easement)

(7) Reservation of Minerals as contained in Deed Recorded 04/09/1973, in Book 202, Page 443 of the Ohio County Records..
(Does not apply to the Proposed Lease Area or the Variable Width Access & Utility Easement)

(8) Subject to Covenants, Restrictions, Reservations, Easements, and Rights of Way and Building Setbacks as shown on the Plat, as recorded in Plat Book E, Page 75 of Ohio County Records. (Does apply to the Proposed Lease Area and the Variable Width Access & Utility Easement)

PARENT TRACT DESCRIPTION (PROVIDED) PARCEL A/TRACT 3

TRACT NO. 3: BEGINNING AT AN IRON STAKE, CORNER TO L.D. HOWARD AND RUNNING WITH HIS LINE S 36-45 W 461.0 FEET TO AN IRON STAKE; THENCE LEAVING HOWARD S 53-15 E 295.3 FEET TO AN IRON STAKE; THENCE N 36-45 E 461.0 FEET TO AN IRON STAKE; THENCE N 53-15 W 295.3 FEET TO THE BEGINNING.

UNDERGROUND UTILITIES
CALL 2 WORKING DAYS
BEFORE YOU DIG
INDIANA 1-800-382-5544
KENTUCKY 1-800-752-6007
OHIO 1-800-362-2764
UTILITIES PROTECTION SERVICE
NON-MEMBERS MUST CALL DIRECTLY

The utility information shown on this plat, prepared by FSTAN was obtained from existing records and or by field locations. It is the contractor's responsibility to verify their existence and location, and to contact the appropriate utility company for field locations.

LAND SURVEYOR'S CERTIFICATE

TYPE "A" SURVEY: UNADJUSTED TRAVERSE CLOSURE BETTER THAN 1 IN 10,000.

TO ALL PARTIES INTERESTED IN TITLE TO PREMISES SURVEYED
I hereby certify that this plat and survey were made under my supervision, and that the angular and linear measurements, as witnessed by monuments shown hereon, are true and correct to the best of my knowledge and belief.
This survey and plat meets or exceeds the minimum standards of the governing authorities.
This property is subject to any recorded easements or right of ways not shown hereon.

Frank L. Sellinger, II *KY. Reg. No. 3282*

"WIRELESS COMMUNICATION SITE SURVEY"

OWNER APPROVAL: _____ DATE: _____

TENANT APPROVAL: _____ DATE: _____

S2/3

I HAVE REVIEWED THE HISTORIC FLOOD INSURANCE RATE MAPS (FIRM) MAP NO. 21183C0165 C EFFECTIVE DATED 9-29-1989 AND THE LEASE DOES NOT APPEAR TO BE IN A FLOOD PRONE AREA. THE LEASE AREA IS LOCATED IN ZONE (X).

AMERICAN TOWER CORPORATION

FStan
Formerly F.S. Land & T. Alan Neal Company
Land Surveyors and Consulting Engineers
428 E Warnock Street
Louisville, KY 40217
Phone: (502) 635-5866 (502) 636-5111
Fax: (502) 636-5263

SITE NUMBER: ATC #281331/ AT&T #143428

SITE NAME: McHENRY

SITE ADDRESS: 93 PEARL LANE BEAVER DAM, KY 42320

LEASE AREA: 10,000 SQ.FT.

PROPERTY OWNER: BRUMLEY, CHARLES & MARY 93 PEARL LANE BEAVER DAM, KY 42320

MAP NUMBER: 118

PARCEL NUMBER: 112, 113 & 115

SOURCE OF TITLE: DEED 299, PAGE 241

DWG BY:	CHKD BY:	DATE:
JMW	FSSR	06.18.13

FSTAN PROJECT NO.: 13-8570

SHEET 2 OF 2

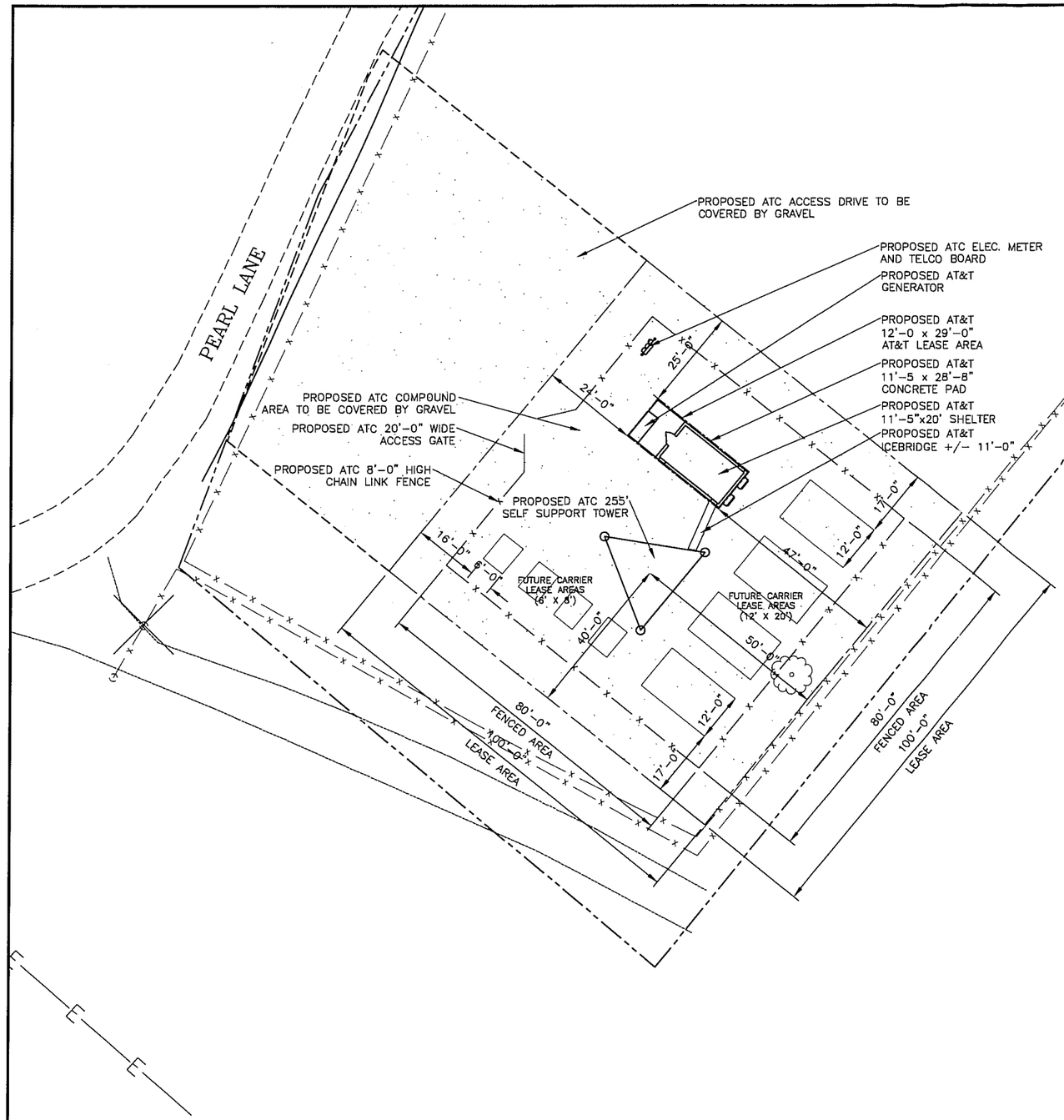
REVISIONS:

06.27.13 ADD DESCRIPTIONS

DATE COMPILED: 06-21-13

VACANT LAND

McHENRY
ATC #281331/ AT&T #143428
SITE ADDRESS: 93 PEARL LANE
BEAVER DAM, KY 42320
OWNER ADDRESS: 93 PEARL LANE
BEAVER DAM, KY 42320



COMPOUND PLAN

SCALE: 1"=30'

STATE OF KENTUCKY
WALTER C. MARTIN
11/1/2013
2450
LICENSED PROFESSIONAL ENGINEER

GENERAL NOTES

1.) THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITY COMPANIES OR OTHER PUBLIC AUTHORITIES.

2.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSEPCTIONS THAT MAY BE REQUIRED BY ANY FEDERAL , STATE, COUNTY OR MUNICIPAL AUTHORITIES.

3.) THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS ERRORS, OR OMISSIONS PRIOR O THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK MINOR OMISSIONS OR ERRORS IN THE BID PROJECT IN ACCORDANCE WITH THE OVERALL INTENT OF THESE DRAWINGS.

4.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.

5.) THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

6.) THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

7.) THIS PLAN WAS PREPARED USING AN APPROVED PLAN ENTITLED SITE PLAN BY FSTAN DATED 05-13-13 AND SHOULD NOT BE CONSTRUED AS AN ACCURATE SURVEY.

8.) THE PROPOSED FACILITY WILL CAUSE ON A "DE MINIMUM" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.

9.) NO NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.

10.) THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION (THERE IS NO HANDICAP ACCESS REQUIRED)

11.) THE FACILITY IS UNMANNED AND DOES NOT REQUIRED POTABLE WATER OR SANITARY SERVICE.

12.) POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.

13.) CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.

14.) MOUNTS AND ANTENNA ARE DESIGNED TO MEET EIA/TIA-222-G AS PER IBC 2009 REQUIREMENTS.

15.) ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.

16.) CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.

17.) IF ANY PIPING EXIST BENEATH THE SITE AREA, CONTRACTOR MUST LOCATE IT AND CONTACT OWNERS REPRESENTATIVE.

18.) CONSTRUCTION TO COMMENCE UPON COMPLETION OF A PASSING STRUCTURAL ANALYSIS. STRUCTURAL ANALYSIS TO BE PERFORMED BY OTHERS.

at&t

AMERICAN TOWER CORPORATION

FSTan
Formerly F.S. Land & T. Alan Neal Company
Land Surveyors and Consulting Engineers
428 E Warnock Street
Louisville, KY 40217
Phone: (502) 635-5868 (502) 635-5111

PROPERTY OWNER:
CHARLES & MARY BRUMLEY
93 PEARL LANE
BEAVER DAM, KY 42320

SITE ADDRESS:
93 PEARL LANE
BEAVER DAM, KY 42320

SITE NUMBER:
ATC #281331/ AT&T #143428

REVISIONS
REVISED LEASE AREA 07-01-13

DATE COMPILED: 06-21-13

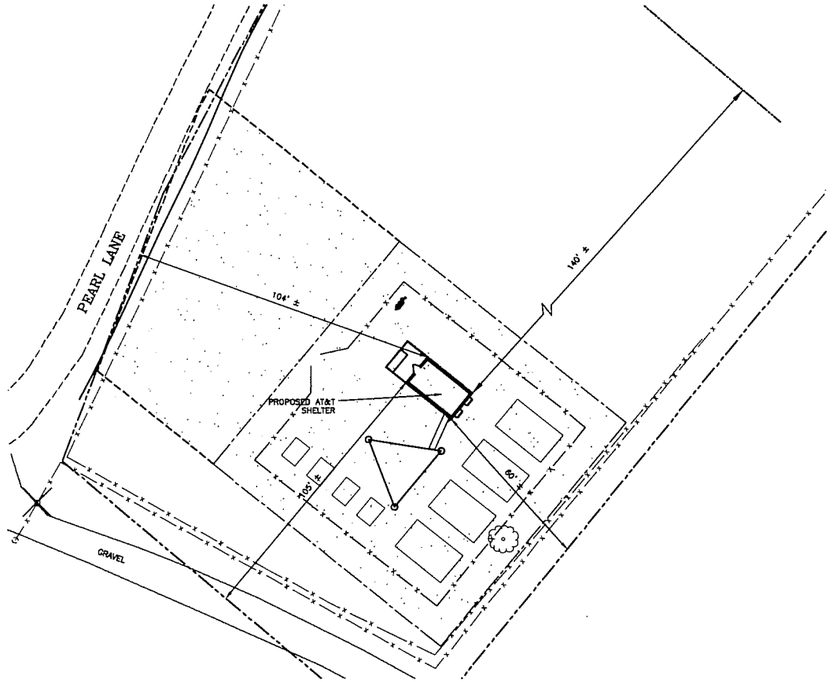
SITE NAME: McHENRY

COMPOUND PLAN

DRAWN BY: SMF
CHECKED BY: FS II
DATE: 06-20-13

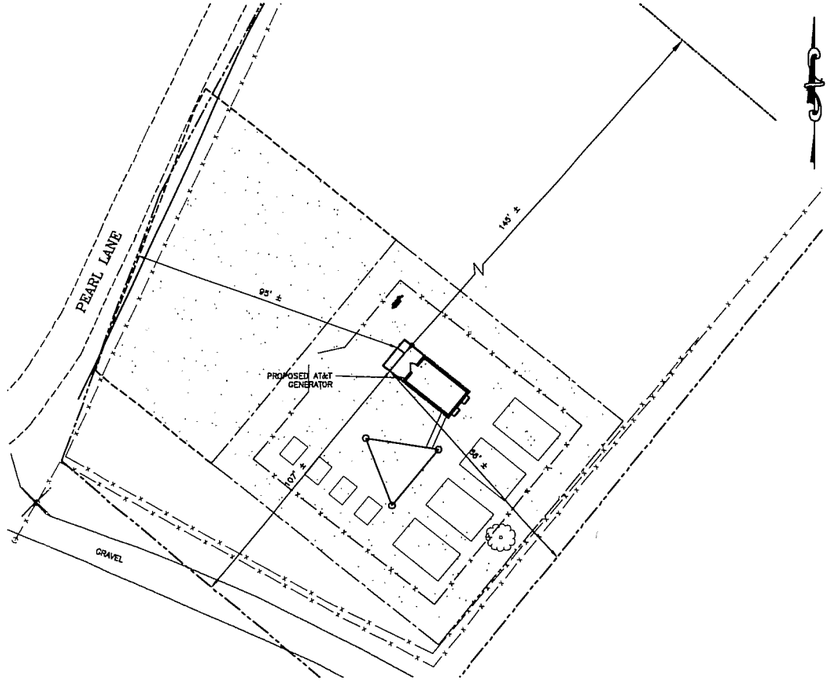
FSTAN PROJECT NO.:
13-8572

C-1



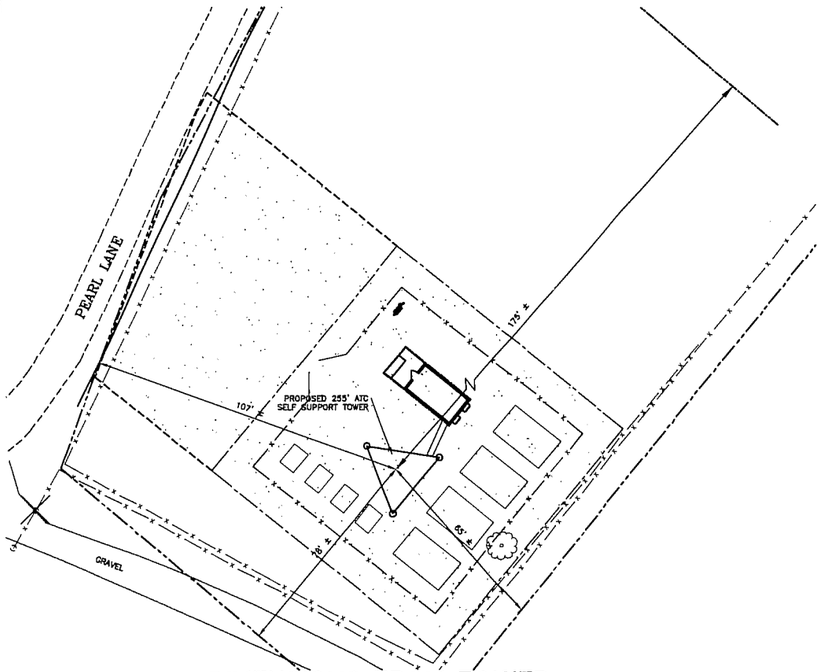
DIMENSIONS FROM SHELTER TO PROPERTY LINES

SCALE: 1"=50'



DIMENSIONS FROM GENERATOR TO PROPERTY LINES

SCALE: 1"=50'



DIMENSIONS FROM TOWER TO PROPERTY LINES

SCALE: 1"=50'

STATE OF KENTUCKY
WALTER C. MARTIN
11/1/2013
2450
LICENSED PROFESSIONAL ENGINEER

at&t

AMERICAN TOWER CORPORATION

FSTAN

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

Land Surveyors and Consulting Engineers

428 E Warnock Street
Louisville, KY 40217

Phone: (502) 635-0806 (502) 636-5111

PROPERTY OWNER:
CHARLES & MARY BRUMLEY
93 PEARL LANE
BEAVER DAM, KY 42320

SITE ADDRESS:
93 PEARL LANE
BEAVER DAM, KY 42320

SITE NUMBER:
ATC #281331/ AT&T #143428

REVISIONS
REVISED LEASE AREA 07-01-13

DATE COMPILED: 06-21-13

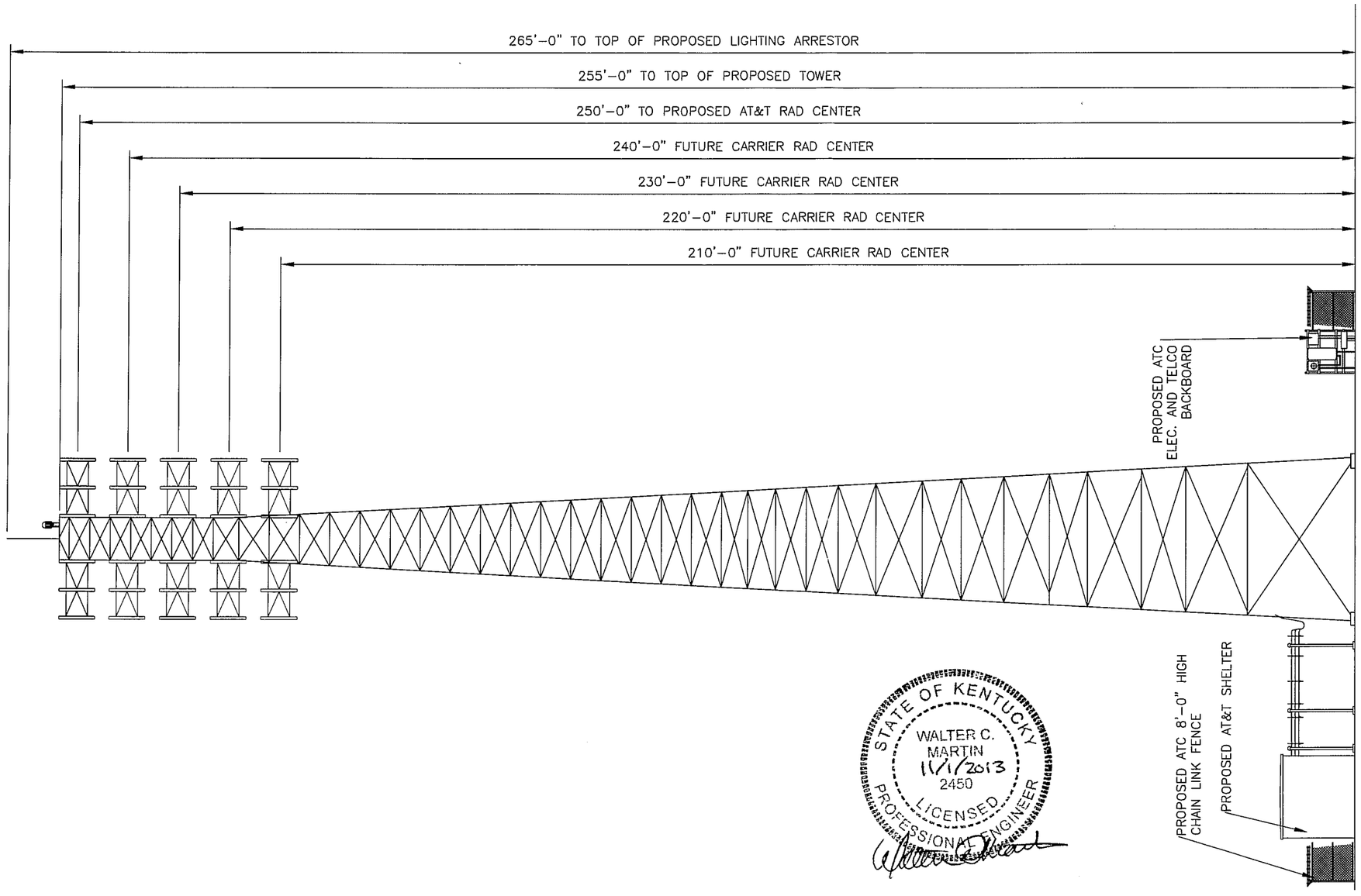
SITE NAME: McHENRY

DIMENSIONS TO PROPERTY LINES

DRAWN BY: SMF
CHECKED BY: FS II
DATE: 06-20-13

FSTAN PROJECT NO.: 13-8572

C1-1



STATE OF KENTUCKY
WALTER C. MARTIN
11/1/2013
2450
LICENSED PROFESSIONAL ENGINEER

TOWER ELEVATION

NOT TO SCALE

NOTE:
THE ELEVATIONS SHOWN ON THIS SHEET ARE FOR PICTORIAL PURPOSES ONLY. THIS DESIGN WAS PROVIDED BY OTHERS. REFER TO TOWER PLANS FOR TOWER DESIGN.

at&t

AMERICAN TOWER CORPORATION

FSTan
Formerly F.S. Land & T. Alan Neal Company
Land Surveyors and Consulting Engineers
426 E Warnock Street
Louisville, KY 40217
Phone: (502) 636-0066 (502) 636-5111

PROPERTY OWNER:
CHARLES & MARY BRUMLEY
93 PEARL LANE
BEAVER DAM, KY 42320

SITE ADDRESS:
93 PEARL LANE
BEAVER DAM, KY 42320

SITE NUMBER:
ATC #281331 / AT&T #143428

REVISIONS
REVISED LEASE AREA 07-01-13

DATE COMPILED: 06-21-13

SITE NAME: McHENRY

TOWER ELEVATION

DRAWN BY: SMF | CHECKED BY: FS II | DATE: 06-20-13

FSTAN PROJECT NO.: 13-8572

C-2

EXHIBIT C
TOWER AND FOUNDATION DESIGN

valmont
STRUCTURES

October 29, 2013

Mr. Tony Lucas
American Tower Corp.

Reference: Valmont #227145 V-27.0 x 255' Self-Supporting Tower
Site Name: #281331 McHenry Site – Beaver Dam, KY - Ohio County

Dear Mr. Lucas:

Thank you for your inquiry concerning tower design codes and practices as they relate to your tower design in Beaver Dam, KY.

Valmont has been designing and building guyed, self-supporting towers and monopoles since the early 1950's. During this time, we have sold thousands of structures ranging in height from as little as 50' high to in excess of 1400'. These structures 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 ANSI/TIA-222-G Standard represents the latest refinement of specific minimum requirements for tower engineers and manufacturers to follow to help assure that the tower structure and its foundations are designed to meet the most realistic conditions for local weather while assuring that the tower is designed to stringent factors of safety. This tower is designed to 90 MPH (no ice) and 30 MPH (3/4" ice) per ANSI/TIA-222-G with Class II, Topographical category 1 and Exposure C criteria.

The "G" version of the code incorporates an escalating wind factor based on tower height. Thus 90 mph is the basic design wind speed at the 10 meter height. This speed is then increased in stages up the tower. "Meeting the code" implies that the design quoted has all of the code requirements for safety factors intact at the wind speed specified. Thus, the ultimate survival speed would be considerably higher. Again, adding ice to the design loading also adds a further safety factor, in effect, to the final tower strength.

Americas Lighting and Communication Structures
Valmont Industries, Inc. 1545 Pidco Drive Plymouth, Indiana 46563-1354 USA
574-936-4221 877-467-4763 Fax 574-936-6796 valmont.com valmont-towers.com

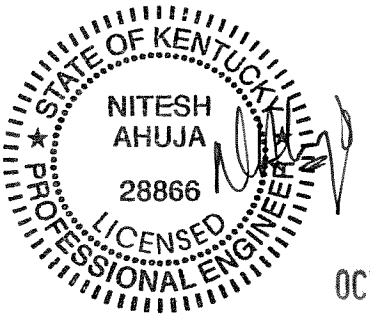
valmont
STRUCTURES

While failure is extremely rare in any kind of tower, it is especially so for monopoles and self-supporting towers. In fact, only if a self-supporting tower were subjected to a direct hit from a tornado or the severest of hurricanes would failure be predicted. We are aware of very few instances of self-supporting tower failure. The most common mode of failure would be in the middle region of the tower, with the upper portion of the tower remaining connected and "bowing over" against the base of the tower. The fact that the wind is normally greater on the upper portion of the structure contributes to the likelihood of this type of failure. Thus, if a failure condition is reached, it should be reached in the upper middle region of the tower first. This tower has a theoretical failure point to bow over or fall within a 130' point radius or 50% of the total tower height, using the total given loading & the design wind speed.

As Senior Project Engineer of the company and a registered P.E. in 18 states, I oversee all engineering and applications of our towers. Valmont Structures is an AISC approved shop. All Valmont Structures welders are AWS 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.

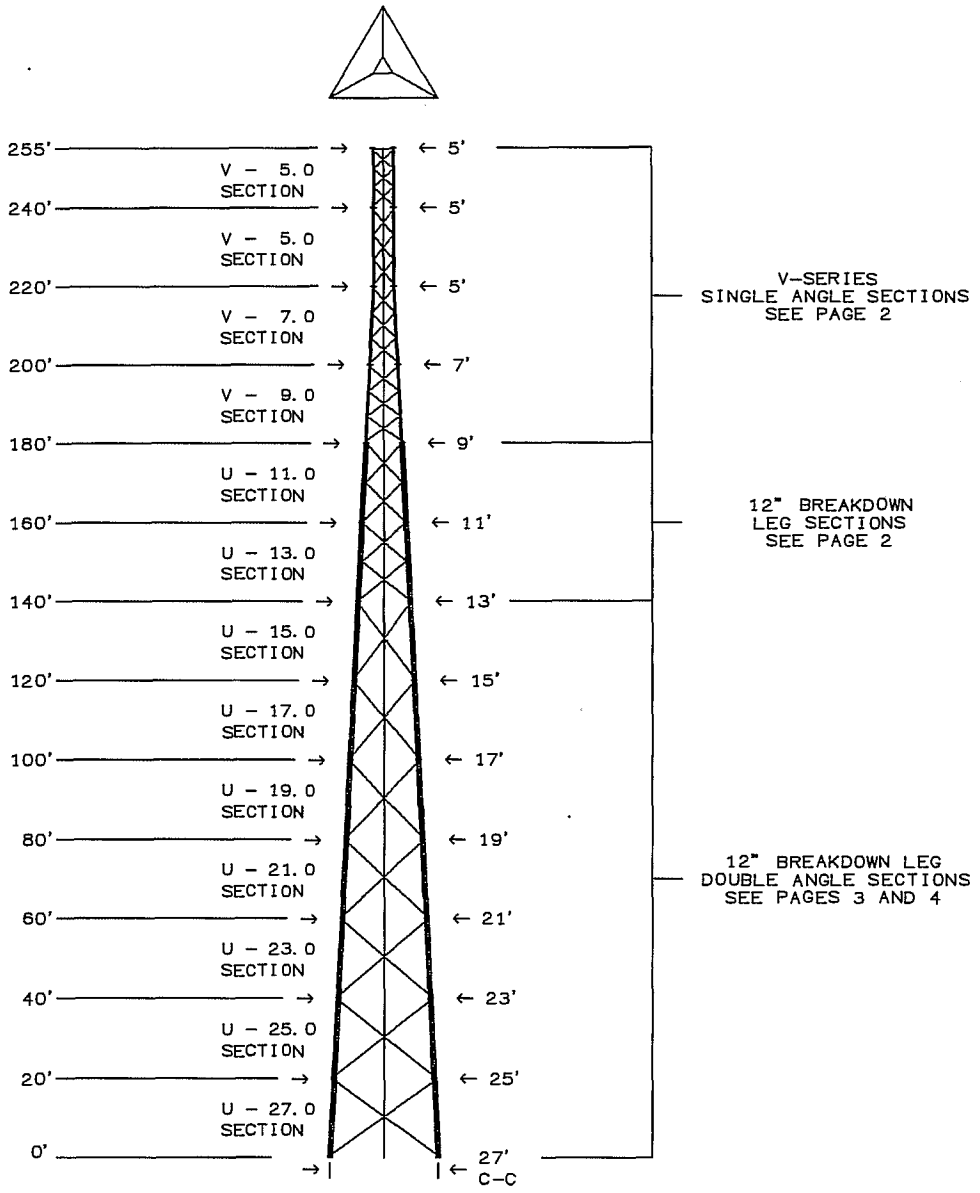
Sincerely,



OCT 2 9 2013

Nitesh Ahuja
Senior Project Engineer
Extension #5257

Americas Lighting and Communication Structures
Valmont Industries, Inc. 1545 Pidco Drive Plymouth, Indiana 46563-1354 USA
574-936-4221 877-467-4763 Fax 574-936-6796 valmont.com valmont-towers.com



STATE OF KENTUCKY
NITESH AHUJA
28866
LICENSED PROFESSIONAL ENGINEER

JUL 3 1 2013

Nitesh Ahuja, KY Professional Engineer #28866

AMERICAN TOWER CORP.
281331 MCHENRY, KY
V-27.0 X 255'

KENTUCKY C. O. A. 1542			
APPROVED/ENG.	MVC	7/31/2013	
APPROVED/FOUND.	N/A		
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valmont STRUCTURES
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DRAWING NO. 249472

PAGE 1 OF 7

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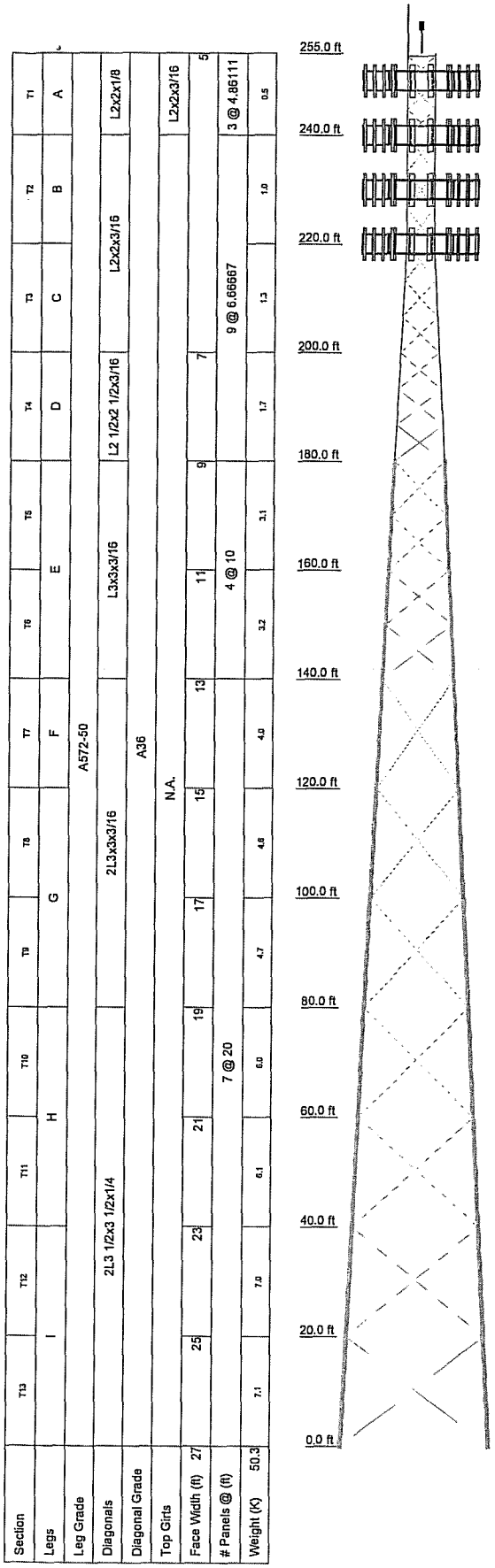


DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon	255	ATC Loading	240
Beacon Extender (4') 803062	255	ATC Loading	230
5/8" x 10' lightning rod	255	ATC Loading	220
ATC Loading	250		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	P- 2.50" - 0.75" conn.-15' -C-(Pirod 226169)	F	#12ZG -2.00" - 0.875" conn.-HBD-Trans (Pirod 208332)
B	P- 4.00"- 0.75" conn.-20' -C-Trans-6B-4B-(Pirod 226184)	G	#12ZG -2.25" - 0.875" conn. (Pirod 208334)
C	P- 5.00"- 0.75" conn.-Trans-20' -C-(Pirod 226200)	H	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)
D	P- 6.00"- 0.75" conn.-HBD-Trans-20' -C-(Pirod [illegible])	I	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

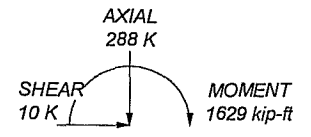
TOWER DESIGN NOTES

1. Tower is located in Ohio County, Kentucky.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 90 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 30 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 99.8%

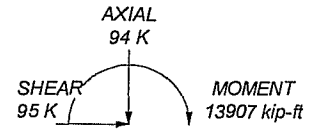
△

ALL REACTIONS ARE FACTORED

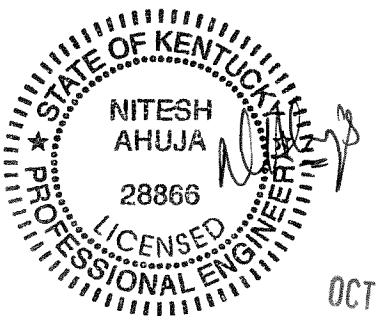
MAX. CORNER REACTIONS AT BASE:
DOWN: 626 K
UPLIFT: -557 K
SHEAR: 62 K



TORQUE 0 kip-ft
30 mph WIND - 0.7500 in ICE



TORQUE 12 kip-ft
REACTIONS - 90 mph WIND



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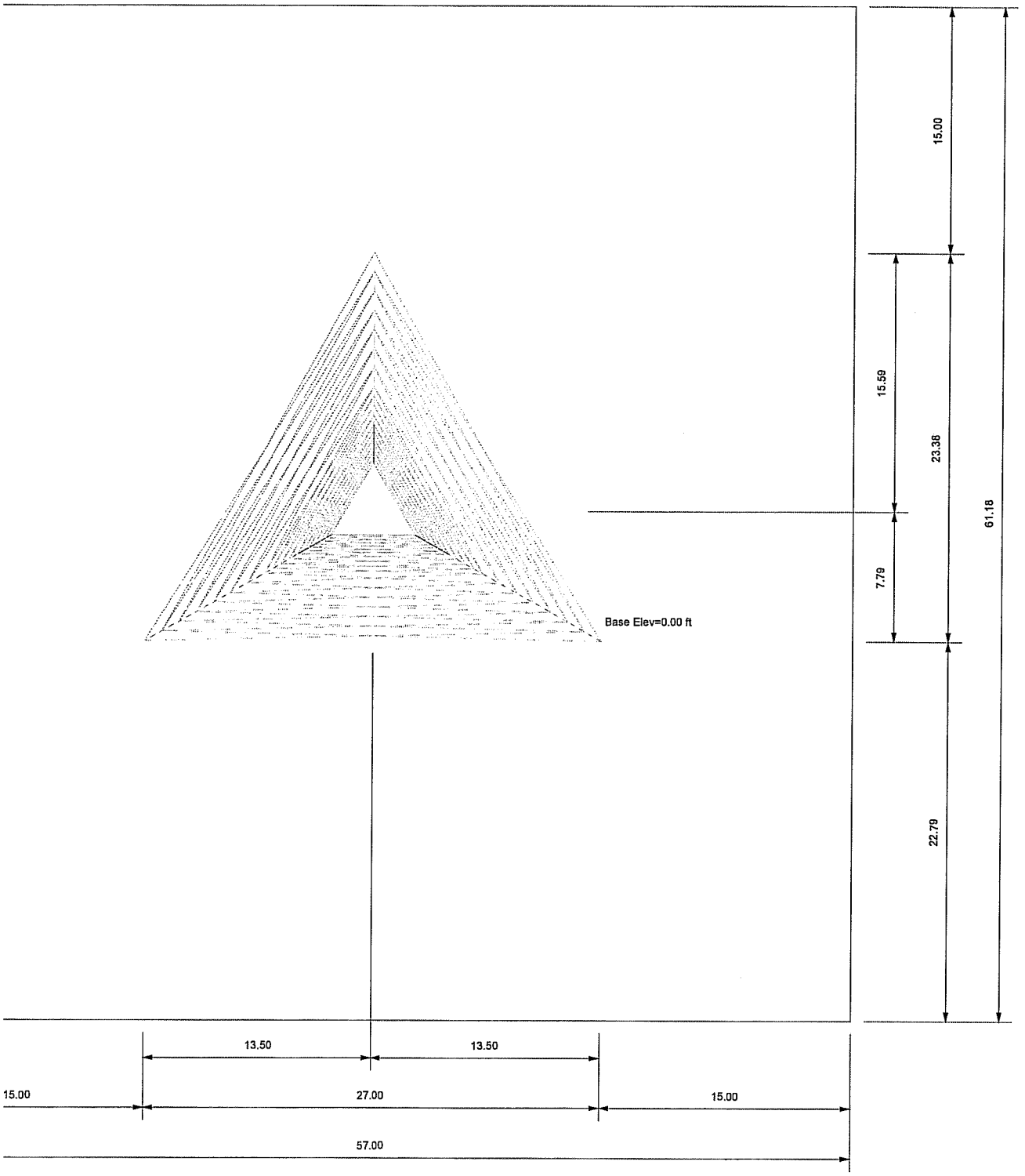
10-29-13

valmont STRUCTURES Valmont Industries Inc. - Speciality Structures Group	1545 Pidco Drive Plymouth, IN 46563 Phone: (574) 936-4221 FAX: (574) 936-6458	Job: 227145 Project: V-27 x 255' - #281331 McHenry, KY Client: American Tower Corp. Drawn by: na1 App'd: Code: TIA-222-G Date: 10/29/13 Scale: NTS Path: Dwg No. E-1

Plot Plan
Total Area - 0.08 Acres



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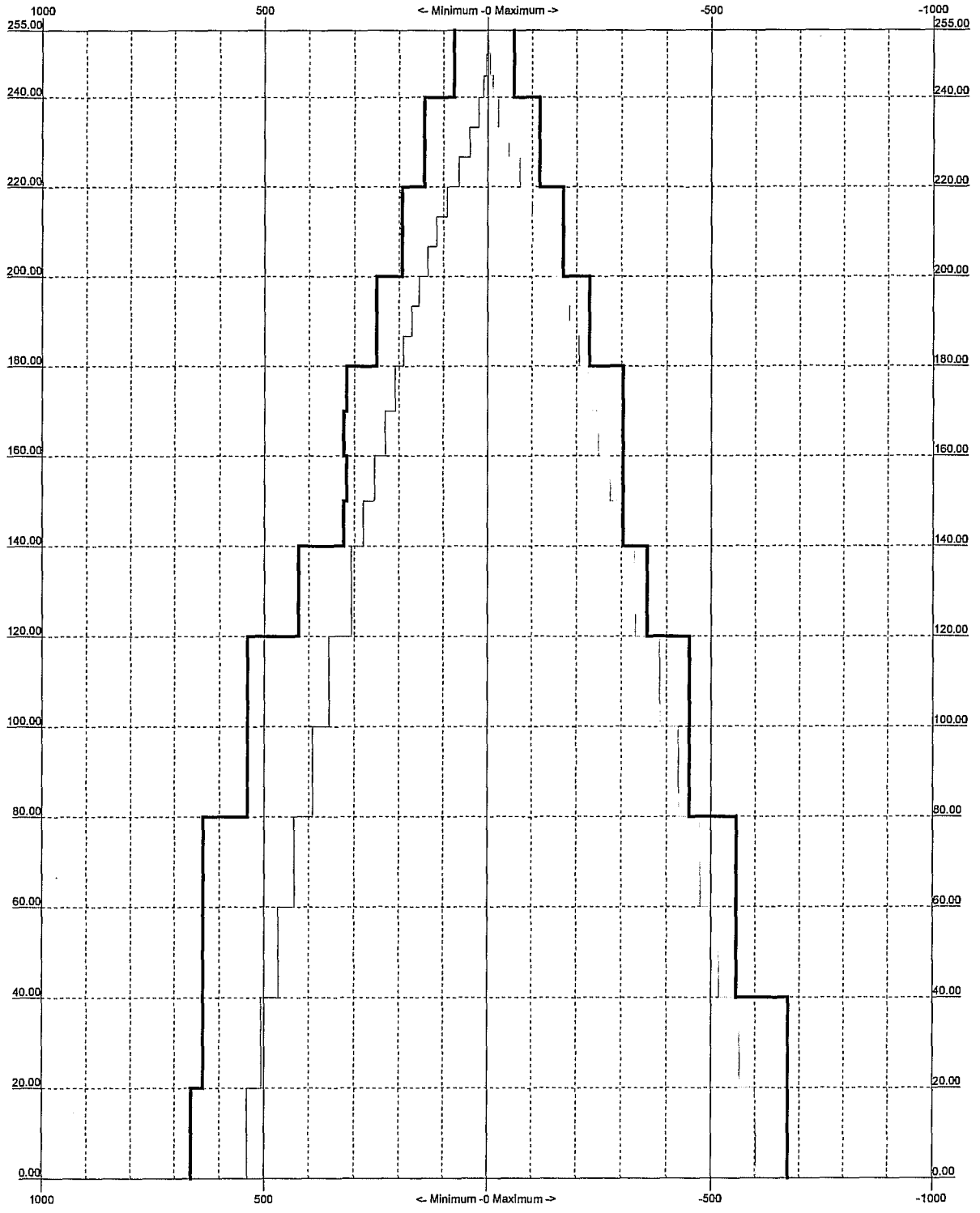
Project: V-27 x 255' - #281331 McHenry, KY			
Client: American Tower Corp.	Drawn by: na1	App'd:	
Code: TIA-222-G	Date: 10/29/13	Scale: NTS	
Path:		Dwg No. E-2	

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

Leg Capacity ——— **Leg Compression (K)**



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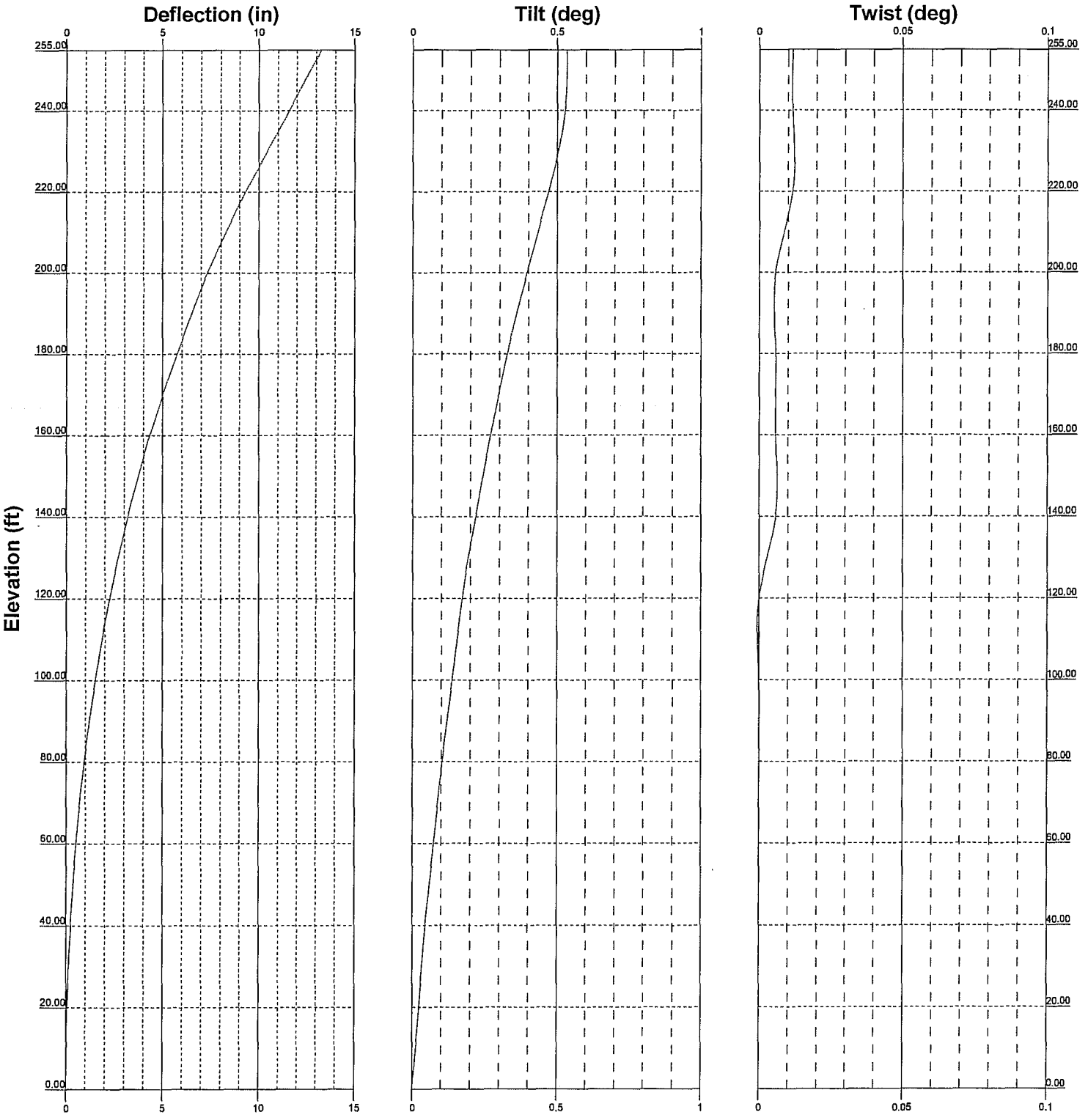
Project: V-27 x 255' - #281331 McHenry, KY			
Client: American Tower Corp.	Drawn by: na1	App'd:	
Code: TIA-222-G	Date: 10/29/13	Scale: NTS	
Path:		Dwg No. E-3	

TIA-222-G - Service - 60 mph

Maximum Values



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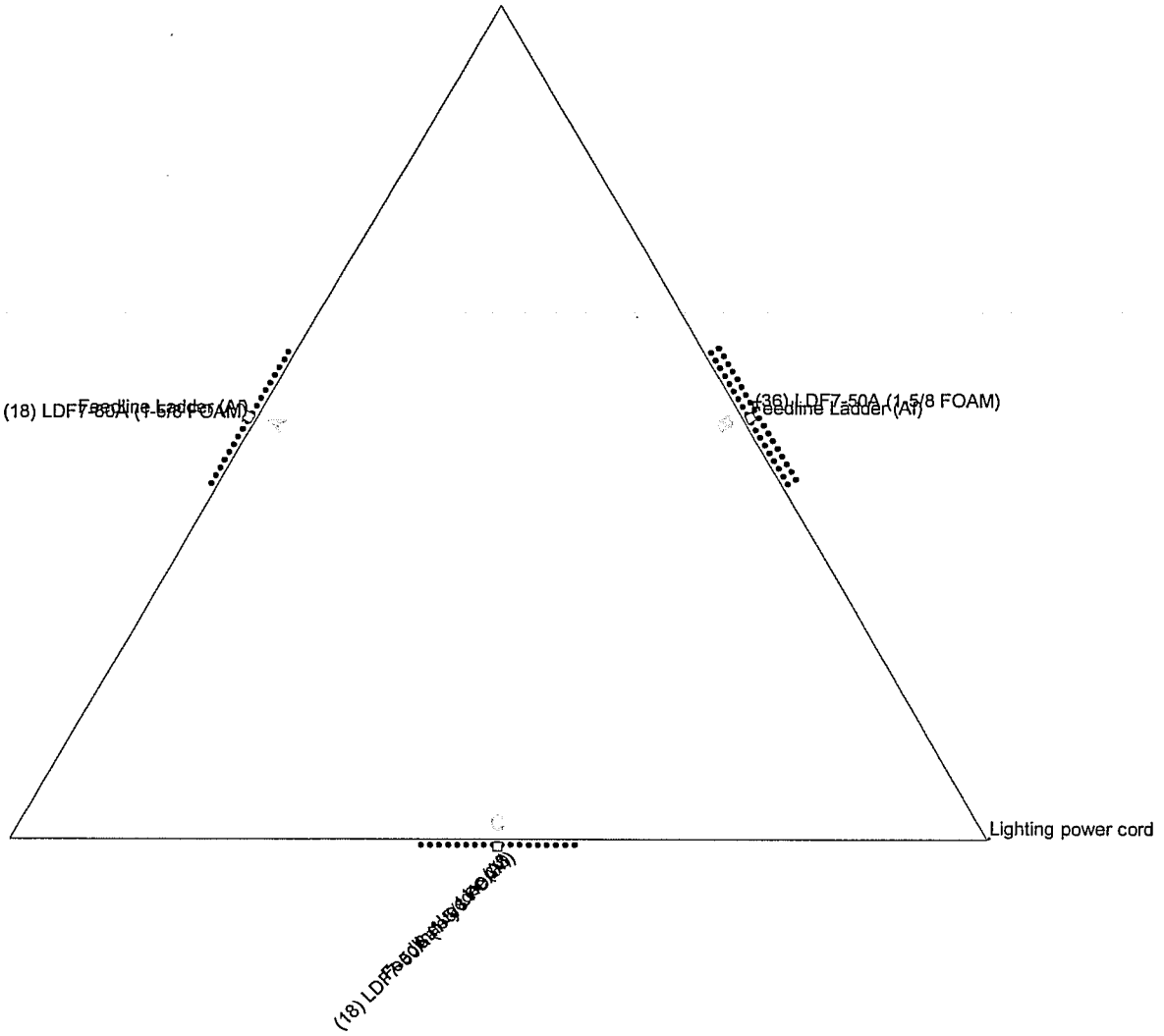
Job: 227145			
Project: V-27 x 255' - #281331 McHenry, KY			
Client: American Tower Corp.	Drawn by: na1		App'd:
Code: TIA-222-G	Date: 10/29/13		Scale: NTS
Path:			Dwg No. E-5

Feedline Plan

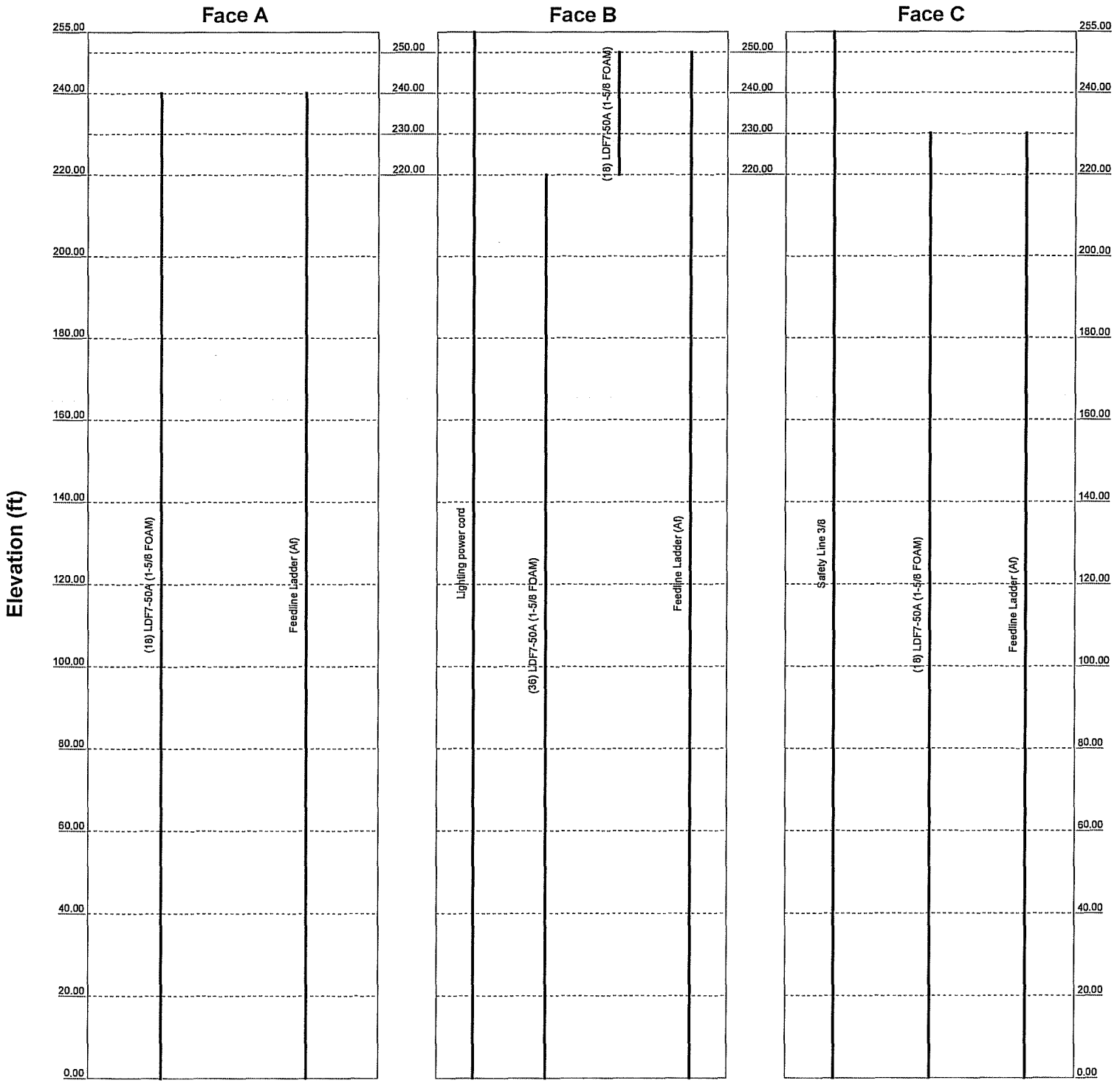
_____ Round _____ Flat _____ App In Face _____ App Out Face _____ Truss-Leg



valmont STRUCTURES Valmont Industries Inc. - Speciality Structures Group	1545 Pidco Drive Plymouth, IN 46563 Phone: (574) 936-4221 FAX: (574) 936-6458	Job: 227145	
		Project: V-27 x 255' - #281331 McHenry, KY	
		Client: American Tower Corp. Drawn by: na1	App'd:
		Code: TIA-222-G Date: 10/29/13	Scale: NTS
		Path:	Dwg No. E-7

Feedline Distribution Chart
0' - 255'

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



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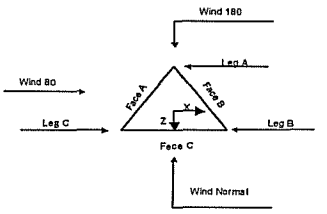
Client: American Tower Corp.	Drawn by: na1	App'd:	
Code: TIA-222-G	Date: 10/29/13	Scale: NTS	
Path:		Dwg No. E-7	

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 255.00 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 27.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:
Tower is located in Ohio 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.
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.

Options

Consider Moments - Legs
Consider Moments - Horizontals
Consider Moments - Diagonals
Use Moment Magnification
√ Use Code Stress Ratios
√ Use Code Safety Factors - Guys
Escalate Ice
Always Use Max Kz
Use Special Wind Profile
√ Include Bolts In Member Capacity
Leg Bolts Are At Top Of Section
Secondary Horizontal Braces Leg
Use Diamond Inner Bracing (4 Sided)
Add IBC .6D+W Combination
Distribute Leg Loads As Uniform
Assume Legs Pinned
√ Assume Rigid Index Plate
√ Use Clear Spans For Wind Area
√ Use Clear Spans For KL/r
√ Retension Guys To Initial Tension
Bypass Mast Stability Checks
√ Use Azimuth Dish Coefficients
√ Project Wind Area of Appurt.
Autocalc 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 Allowable
Offset Girt At Foundation
√ Consider Feedline Torque
Include Angle Block Shear Check
Poles
Include Shear-Torsion Interaction
Always Use Sub-Critical Flow
Use Top Mounted Sockets



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	255.00-240.00		V-Series Leg	5.00	1	15.00
T2	240.00-220.00		V-Series Leg	5.00	1	20.00
T3	220.00-200.00		V-Series Leg	5.00	1	20.00
T4	200.00-180.00		V-Series Leg	7.00	1	20.00
T5	180.00-160.00		PiRod 12BD Truss Leg	9.00	1	20.00
T6	160.00-140.00		PiRod 12BD Truss Leg	11.00	1	20.00
T7	140.00-120.00		PiRod 12BDH Truss Leg	13.00	1	20.00
T8	120.00-100.00		PiRod 12BDH Truss Leg	15.00	1	20.00
T9	100.00-80.00		PiRod 12BDH Truss Leg	17.00	1	20.00
T10	80.00-60.00		PiRod 12BDH Truss Leg	19.00	1	20.00
T11	60.00-40.00		PiRod 12BDH Truss Leg	21.00	1	20.00
T12	40.00-20.00		PiRod 12BDH Truss Leg	23.00	1	20.00
T13	20.00-0.00		PiRod 12BDH Truss Leg	25.08	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	255.00-240.00	4.86	X Brace	No	No	5.0000	0.0000
T2	240.00-220.00	6.67	X Brace	No	No	0.0000	8.0000

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
T3	220.00-200.00	6.67	X Brace	No	No	0.0000	0.0000
T4	200.00-180.00	6.67	X Brace	No	No	0.0000	0.0000
T5	180.00-160.00	10.00	X Brace	No	No	0.0000	0.0000
T6	160.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T7	140.00-120.00	20.00	X Brace	No	No	0.0000	0.0000
T8	120.00-100.00	20.00	X Brace	No	No	0.0000	0.0000
T9	100.00-80.00	20.00	X Brace	No	No	0.0000	0.0000
T10	80.00-60.00	20.00	X Brace	No	No	0.0000	0.0000
T11	60.00-40.00	20.00	X Brace	No	No	0.0000	0.0000
T12	40.00-20.00	20.00	X Brace	No	No	0.0000	0.0000
T13	20.00-0.00	20.00	X Brace	No	No	8.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 255.00-240.00	Pipe	P- 2.50" - 0.75" conn.-15' -C-(Pirod 226169)	A572-50 (50 ksi)	Equal Angle	L2x2x1/8	A36 (36 ksi)
T2 240.00-220.00	Pipe	P- 4.00"- 0.75" conn.-20' -C-Trans-6B-4B-(Pirod 226184)	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T3 220.00-200.00	Pipe	P- 5.00"- 0.75" conn.-Trans-20' -C-(Pirod 226200)	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T4 200.00-180.00	Pipe	P- 6.00"- 0.75" conn.-HBD-Trans-20' -C-(Pirod 229377)	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 180.00-160.00	Truss Leg	#12ZG -1.75" - 1.00" conn.-HBD-Trans (Pirod 229588)	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T6 160.00-140.00	Truss Leg	#12ZG -1.75" - 1.00" conn.-HBD-Trans (Pirod 229588)	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 140.00-120.00	Truss Leg	#12ZG -2.00" - 0.875" conn.-HBD-Trans (Pirod 208332)	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16	A36 (36 ksi)
T8 120.00-100.00	Truss Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16	A36 (36 ksi)
T9 100.00-80.00	Truss Leg	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	A572-50 (50 ksi)	Double Equal Angle	2L3x3x3/16	A36 (36 ksi)
T10 80.00-60.00	Truss Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T11 60.00-40.00	Truss Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T12 40.00-20.00	Truss Leg	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)
T13 20.00-0.00	Truss Leg	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x1/4	A36 (36 ksi)

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
ft						
T1 255.00-240.00	Equal Angle	L2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft²	in					in	in
T1 255.00-240.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T2 240.00-220.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T3 220.00-200.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T4 200.00-180.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T5 180.00-160.00	0.00	0.5000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T6 160.00-140.00	0.00	0.5000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T7 140.00-120.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T8 120.00-100.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T9 100.00-80.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T10 80.00-60.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T11 60.00-40.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T12 40.00-20.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000
T13 20.00-0.00	0.00	0.6250	A36 (36 ksi)	1	1	1.05	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
ft															
T1 255.00-240.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 240.00-220.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 220.00-200.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
200.00-180.00				1	1	1	1	1	1	1	1	1	1	1	1
T3 180.00-160.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 168.80-140.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 148.00-120.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T8 128.00-100.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 100.00-80.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T10 80.80-60.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T11 60.00-40.80	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T12 48.00-20.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T13 20.80-0.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1

[1]Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

Tower Section Geometry (cont'd)

Tower Elevation ft	Truss-Leg K Factors: Truss-Legs Used As Leg Members: Leg Panels	X Brace Diagonals	Z Brace Diagonals	Truss-Legs Used As Inner Members: Leg Panels	X Brace Diagonals	Z Brace Diagonals
T5 180.80-160.00	1	0.5	0.7	1	0.5	0.7
T6 160.00-140.00	1	0.5	0.7	1	0.5	0.7
T7 140.00-120.00	1	0.5	0.7	1	0.5	0.7
T8 120.00-100.00	1	0.5	0.7	1	0.5	0.7
T9 100.00-80.00	1	0.5	0.7	1	0.5	0.7
T10 80.00-60.00	1	0.5	0.7	1	0.5	0.7
T11 60.00-40.00	1	0.5	0.7	1	0.5	0.7
T12 40.00-20.00	1	0.5	0.7	1	0.5	0.7
T13 20.00-0.00	1	0.5	0.7	1	0.5	0.7

Tower Section Geometry (cont'd)

Tower Elevation ft	Connection Offsets: Diagonal: Vert. Top in	Horiz. Top in	Vert. Bot. in	Horiz. Bot. in	K-Bracing: Vert. Top in	Horiz. Top in	Vert. Bot. in	Horiz. Bot. in
T9 100.00-80.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T10 80.00-60.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T11 60.00-40.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T12 40.80-20.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000
T13 20.00-0.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg: Bolt Size in	Leg: No.	Diagonal: Bolt Size in	Diagonal: No.	Top Girt: Bolt Size in	Top Girt: No.	Bottom Girt: Bolt Size in	Bottom Girt: No.	Mid Girt: Bolt Size in	Mid Girt: No.	Long Horizontal: Bolt Size in	Long Horizontal: No.	Short Horizontal: Bolt Size in	Short Horizontal: No.
T1 255.00-240.00	Flange	0.7500 A325N	4	0.7500 A325N	1	0.7500 A325N	1	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T2 240.00-220.00	Flange	0.7500 A325N	6	0.7500 A325N	1	0.8000 A325N	8	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T3 220.00-208.00	Flange	0.7500 A325N	8	0.7500 A325N	1	0.8000 A325N	0	1.0000 A325N	8	1.0000 A325N	8	1.0000 A325N	0	1.0000 A325N	0
T4 200.00-180.00	Flange	1.0000 A325N	6	0.7500 A325N	1	0.8880 A325N	0	1.0800 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T5 180.00-160.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	8	1.0000 A325N	0
T6 160.00-140.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.0808 A325N	0	1.0008 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T7 140.00-120.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0008 A325N	0	1.0800 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T8 120.00-100.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0008 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T9 100.00-80.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0008 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T10 80.00-60.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T11 60.00-40.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T12 40.00-20.00	Flange	1.0000 A325N	12	0.8750 A325N	1	0.0000 A325N	8	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0000 A325N	0
T13 20.00-0.00	Flange	1.0000 F1554-105	12	0.8750 A325N	1	0.0000 A325N	0	1.8000 A325N	0	1.0000 A325N	0	1.0000 A325N	0	1.0008 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Tower Elevation ft	Leg: Net Width Deduct in	U	Diagonal: Net Width Deduct in	U	Top Girt: Net Width Deduct in	U	Bottom Girt: Net Width Deduct in	U	Mid Girt: Net Width Deduct in	U	Long Horizontal: Net Width Deduct in	U	Short Horizontal: Net Width Deduct in	U
T1 255.00-240.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 240.80-220.88	0.0008	1	0.0800	0.75	0.0080	0.75	0.0000	0.75	0.0800	0.75	0.0000	0.75	0.0000	0.75
T3 220.80-200.00	0.0800	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0800	0.75	0.0000	0.75	0.0080	0.75
T4 200.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.8800	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 180.00-160.00	0.0000	1	0.0800	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 140.80-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 120.80-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0800	0.75	0.0000	0.75	0.0000	0.75
T9 100.80-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 88.00-60.00	0.0880	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0080	0.75	0.0000	0.75
T11 68.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0800	0.75	0.0000	0.75
T13 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation	Connection Offsets: Diagonal: Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	K-Bracing: Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 255.88-240.00	5.0000	5.0000	5.0000	5.8000	0.0000	0.0800	0.0000	0.0000
T2 240.00-220.00	5.0000	5.0000	5.0000	5.8000	0.0000	0.0000	0.0000	0.0000
T3 220.00-200.00	5.0000	6.2500	5.0000	6.2500	0.0000	0.0800	0.0000	0.0088
T4 200.00-180.80	5.8000	6.2500	5.0000	6.2500	0.0000	0.0000	0.0000	0.0080
T5 180.80-160.80	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0800
T6 160.00-140.00	5.0000	10.7500	5.0000	10.7500	0.0000	0.0000	0.0000	0.0800
T7 148.00-120.00	5.0000	11.5000	5.0000	11.5000	0.0000	0.0000	0.0000	0.0800
T8 120.00-100.00	5.0000	11.5000	5.0008	11.5000	0.0000	0.8000	0.0000	0.0800

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (From FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	C	No	Ar (CaAa)	255.00 - 0.00	3.0008	0	1	1	8.3750	0.3750		0.22
Lighting power cord	B	No	Ar (CaAa)	255.00 - 0.00	0.5000	0.5	1	1	0.2008 8.0000	0.8700		0.15
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	230.00 - 0.80	1.0000	0	18	18	1.0200 1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	220.00 - 0.00	1.0000	0	36	18	1.0200 1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	B	No	Ar (CaAa)	250.00 - 220.00	1.0000	0	18	18	1.0200 1.0000	1.9800		0.82
LDF7-50A (1-5/8 FOAM)	A	No	Ar (CaAa)	240.00 - 0.00	1.0000	0	18	18	1.0200 1.0008	1.9800		0.82
Feedline Ladder (Af)	B	No	Af (CaAa)	250.00 - 0.80	1.0008	0	1	1	3.0080	3.0000		8.48
Feedline Ladder (Af)	A	No	Af (CaAa)	240.00 - 0.00	1.0000	0	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	C	No	Af (CaAa)	230.00 - 0.00	1.0000	0	1	1	3.0080	3.0000		8.40

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
T1	255.00-240.00	A	0.080	0.000	0.008	0.008	0.00
		B	0.080	0.000	41.945	0.000	0.23
		C	0.008	0.000	8.563	0.000	0.80
T2	240.00-220.00	A	0.008	0.000	81.280	0.800	0.46
		B	0.000	0.000	83.020	0.000	0.47
		C	0.008	0.000	41.390	0.800	0.24
T3	220.00-208.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.380	0.080	0.76
		C	0.000	0.000	82.038	0.000	0.47
T4	200.00-180.00	A	0.880	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.008	0.76
		C	0.008	0.000	82.838	0.000	0.47
T5	180.00-160.00	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.300	0.800	0.76
		C	0.080	0.000	82.030	0.000	0.47
T6	160.00-140.80	A	0.000	0.000	81.280	0.000	0.46
		B	0.000	0.000	154.308	0.000	0.76
		C	0.000	0.000	82.030	0.008	0.47
T7	140.00-120.80	A	0.000	0.000	81.280	0.008	0.46
		B	0.000	0.000	154.308	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T8	120.80-100.00	A	0.800	0.000	81.288	0.008	0.46
		B	0.800	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47
T9	100.00-80.00	A	0.088	0.000	81.288	0.008	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.080	0.000	82.030	0.008	0.47
T10	80.00-60.00	A	0.000	0.000	81.288	0.000	0.46
		B	0.000	0.000	154.308	0.800	0.76
		C	0.008	0.000	82.030	0.000	0.47
T11	60.00-40.00	A	0.000	0.008	81.288	0.000	0.46
		B	0.000	0.000	154.300	0.008	0.76
		C	0.008	0.000	82.038	0.000	0.47

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T12	40.00-28.88	A	0.800	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	28.00-0.00	A	0.000	0.000	81.280	0.800	0.46
		B	0.000	0.000	154.300	0.000	0.76
		C	0.000	0.000	82.030	0.000	0.47

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	255.00-240.00	A	1.835	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	86.643	0.000	1.46
		C		0.000	0.000	6.067	0.880	8.08
T2	240.88-220.00	A	1.821	0.000	0.000	159.539	0.000	2.72
		B		0.000	0.000	168.565	0.000	2.85
		C		0.000	0.000	87.885	0.000	1.46
T3	220.00-280.00	A	1.805	0.000	0.800	159.383	0.800	2.70
		B		0.000	0.000	169.267	0.000	4.00
		C		0.000	0.000	167.253	0.800	2.81
T4	200.00-180.00	A	1.787	0.000	0.000	159.213	0.800	2.68
		B		0.000	0.000	169.021	0.000	3.98
		C		0.000	0.000	167.111	0.000	2.78
T5	180.00-160.00	A	1.767	0.000	0.000	159.026	0.000	2.66
		B		0.000	0.000	168.751	0.000	3.95
		C		0.000	0.000	166.845	0.000	2.76
T6	160.00-140.08	A	1.745	0.000	0.000	158.818	0.800	2.64
		B		0.000	0.000	168.450	0.000	3.92
		C		0.000	0.000	166.549	0.000	2.73
T7	140.00-120.00	A	1.720	0.000	0.000	158.583	0.000	2.61
		B		0.000	0.000	168.110	0.000	3.89
		C		0.000	0.880	166.215	0.000	2.70
T8	120.00-100.80	A	1.692	0.000	0.000	158.314	0.000	2.58
		B		0.000	0.000	167.721	0.000	3.86
		C		0.000	0.000	165.832	0.000	2.67
T9	100.00-80.00	A	1.658	0.000	0.000	157.996	0.000	2.54
		B		0.000	0.000	167.261	0.800	3.81
		C		0.000	0.000	165.379	0.000	2.63
T10	80.00-60.00	A	1.617	0.000	0.000	157.608	0.000	2.49
		B		0.000	0.000	166.698	0.000	3.75
		C		0.000	0.000	164.826	0.000	2.58
T11	60.00-40.00	A	1.564	0.000	0.000	157.103	0.000	2.44
		B		0.000	0.000	165.967	0.000	3.70
		C		0.000	0.000	164.107	0.000	2.51
T12	40.00-20.00	A	1.486	0.000	0.000	156.369	0.000	2.35
		B		0.000	0.800	164.903	0.000	3.60
		C		0.000	0.000	163.062	0.800	2.42
T13	20.00-0.00	A	1.331	0.000	0.000	154.914	0.080	2.18
		B		0.000	0.000	162.795	0.000	3.41
		C		0.000	0.000	160.989	0.000	2.24

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
T1	255.00-240.80	3.8894	-1.5587	2.6602	-0.9106
T2	240.00-220.80	0.0536	-0.8083	0.1374	-0.5968
T3	220.80-200.80	1.0027	-0.5163	0.2184	0.1162
T4	200.00-180.00	1.2415	-0.6358	0.2501	0.1605
T5	180.00-160.00	1.4829	-0.7569	0.2730	0.1921
T6	160.00-140.00	1.7342	-0.8830	0.3126	0.2339
T7	140.00-120.00	1.9991	-1.0160	0.3541	0.2768
T8	120.00-100.00	2.2423	-1.1380	0.3903	0.3151
T9	100.80-80.00	2.4944	-1.2646	0.4252	0.3517
T10	80.00-60.00	2.7111	-1.3732	0.4551	0.3832
T11	60.00-40.00	2.9562	-1.4962	0.4839	0.4125
T12	40.08-20.80	3.1735	-1.6052	0.5057	0.4334
T13	20.80-0.00	3.4132	-1.7255	0.5106	0.4331

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	Safety Line 3/8	240.00 - 255.00	0.6000	0.5788
T1	2	Lighting power cord	240.00 - 255.00	0.6000	0.5788
T1	5	LDF7-50A (1-5/8 FOAM)	240.00 - 250.00	0.6000	0.5788
T1	7	Feedline Ladder (Af)	248.80 - 250.00	1.0000	1.0000
T2	1	Safety Line 3/8	220.80 - 240.80	0.6000	0.5829
T2	2	Lighting power cord	228.00 - 240.00	0.6080	0.5829
T2	3	LDF7-50A (1-5/8 FOAM)	220.00 - 230.00	0.6000	0.5829
T2	5	LDF7-50A (1-5/8 FOAM)	220.80 - 240.00	0.6000	0.5829
T2	6	LDF7-50A (1-5/8 FOAM)	220.00 - 240.00	0.6000	0.5829
T2	7	Feedline Ladder (Af)	220.00 - 240.00	1.0000	1.0000
T2	8	Feedline Ladder (Af)	220.00 - 240.00	1.0000	1.0000
T2	9	Feedline Ladder (Af)	220.88 - 230.00	1.0000	1.0000
T3	1	Safety Line 3/8	200.00 - 220.00	0.6000	0.6000
T3	2	Lighting power cord	200.00 - 220.00	0.6000	0.6000
T3	3	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.6000
T3	4	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.6000
T3	6	LDF7-50A (1-5/8 FOAM)	200.00 - 220.00	0.6000	0.6008
T3	7	Feedline Ladder (Af)	200.00 - 220.00	1.0000	1.0000
T3	8	Feedline Ladder (Af)	200.00 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	9	Feedline Ladder (Af)	220.00 - 220.00	1.0000	1.0000
T4	1	Safety Line 3/8	180.00 - 200.00	0.6000	0.6000
T4	2	Lighting power cord	180.00 - 200.80	0.6000	0.6000
T4	3	LDF7-50A (1-5/8 FOAM)	180.00 - 200.00	0.6000	0.6000
T4	4	LDF7-58A (1-5/8 FOAM)	180.00 - 200.00	0.6000	0.6000
T4	6	LDF7-50A (1-5/8 FOAM)	180.00 - 200.00	0.6000	0.6000
T4	7	Feedline Ladder (Af)	180.00 - 208.00	1.0000	1.0000
T4	8	Feedline Ladder (Af)	180.00 - 200.00	1.0000	1.0000
T4	9	Feedline Ladder (Af)	180.00 - 200.00	1.0000	1.0000
T5	1	Safety Line 3/8	160.00 - 180.00	0.6000	0.5885
T5	2	Lighting power cord	160.00 - 188.00	0.6000	0.5885
T5	3	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.5885
T5	4	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.5885
T5	6	LDF7-50A (1-5/8 FOAM)	160.00 - 180.00	0.6000	0.5885
T5	7	Feedline Ladder (Af)	160.00 - 180.00	1.0000	1.0000
T5	8	Feedline Ladder (Af)	160.00 - 188.00	1.0008	1.0000
T5	9	Feedline Ladder (Af)	160.08 - 180.80	1.0000	1.0000
T6	1	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T6	2	Lighting power cord	140.80 - 160.00	0.6000	0.6000
T6	3	LDF7-50A (1-5/8 FOAM)	140.08 - 160.00	0.6000	0.6000
T6	4	LDF7-50A (1-5/8 FOAM)	140.80 - 160.00	0.6000	0.6000
T6	6	LDF7-50A (1-5/8 FOAM)	140.00 - 160.00	0.6800	0.6000
T6	7	Feedline Ladder (Af)	140.00 - 160.08	1.0008	1.0008
T6	8	Feedline Ladder (Af)	140.00 - 168.80	1.0000	1.8000
T6	9	Feedline Ladder (Af)	148.08 - 160.00	1.0000	1.0000
T7	1	Safety Line 3/8	128.00 - 140.00	0.6800	0.6000
T7	2	Lighting power cord	120.00 - 140.00	0.6000	0.6000
T7	3	LDF7-50A (1-5/8 FOAM)	120.00 - 140.08	0.6808	0.6008
T7	4	LDF7-50A (1-5/8 FOAM)	120.00 - 140.80	0.6000	0.6000
T7	6	LDF7-50A (1-5/8 FOAM)	120.00 - 140.00	0.6000	0.6000
T7	7	Feedline Ladder (Af)	120.00 -	1.0008	1.0008

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	8	Feedline Ladder (Af)	140.00 - 140.00	1.0000	1.0000
T7	9	Feedline Ladder (Af)	128.80 - 140.00	1.8000	1.8000
T8	1	Safety Line 3/8	100.00 - 120.00	0.6008	0.6000
T8	2	Lighting power cord	100.00 - 120.00	0.6800	0.6000
T8	3	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T8	4	LDF7-58A (1-5/8 FOAM)	100.00 - 120.80	0.6000	0.6000
T8	6	LDF7-50A (1-5/8 FOAM)	100.00 - 120.00	0.6000	0.6000
T8	7	Feedline Ladder (Af)	100.00 - 120.08	1.0000	1.0000
T8	8	Feedline Ladder (Af)	100.00 - 120.00	1.0000	1.0000
T8	9	Feedline Ladder (Af)	100.00 - 120.00	1.0800	1.0000
T9	1	Safety Line 3/8	88.00 - 108.80	0.6000	0.6000
T9	2	Lighting power cord	80.00 - 100.00	0.6000	0.6000
T9	3	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T9	4	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T9	6	LDF7-50A (1-5/8 FOAM)	80.00 - 100.00	0.6000	0.6000
T9	7	Feedline Ladder (Af)	80.00 - 108.00	1.0880	1.0008
T9	8	Feedline Ladder (Af)	80.00 - 100.00	1.0000	1.0000
T9	9	Feedline Ladder (Af)	80.00 - 100.00	1.8080	1.0000
T10	1	Safety Line 3/8	60.00 - 80.80	0.6000	0.6008
T10	2	Lighting power cord	60.00 - 80.00	0.6000	0.6008
T10	3	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T10	4	LDF7-50A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T10	6	LDF7-58A (1-5/8 FOAM)	60.00 - 80.00	0.6000	0.6000
T10	7	Feedline Ladder (Af)	60.08 - 80.00	1.0808	1.0000
T10	8	Feedline Ladder (Af)	60.08 - 80.08	1.0800	1.0000
T10	9	Feedline Ladder (Af)	60.00 - 80.00	1.0800	1.0000
T11	1	Safety Line 3/8	40.08 - 60.00	0.6000	0.6000
T11	2	Lighting power cord	40.00 - 68.00	0.6000	0.6000
T11	3	LDF7-50A (1-5/8 FOAM)	40.00 - 68.80	0.6000	0.6008
T11	4	LDF7-50A (1-5/8 FOAM)	40.80 - 60.00	0.6008	0.6000
T11	6	LDF7-50A (1-5/8 FOAM)	40.00 - 60.00	0.6000	0.6000
T11	7	Feedline Ladder (Af)	40.00 - 60.80	1.8000	1.0000
T11	8	Feedline Ladder (Af)	40.00 - 60.00	1.8800	1.0000
T11	9	Feedline Ladder (Af)	40.00 - 60.00	1.0008	1.0000
T12	1	Safety Line 3/8	20.00 - 40.00	0.6000	0.6008
T12	2	Lighting power cord	20.80 - 40.88	0.6000	0.6000
T12	3	LDF7-58A (1-5/8 FOAM)	20.00 - 40.80	0.6000	0.6000
T12	4	LDF7-50A (1-5/8 FOAM)	20.00 - 40.00	0.6000	0.6000
T12	6	LDF7-50A (1-5/8 FOAM)	20.80 - 40.00	0.6000	0.6000
T12	7	Feedline Ladder (Af)	20.00 - 40.00	1.0000	1.0008
T12	8	Feedline Ladder (Af)	20.08 - 40.88	1.0000	1.0000
T12	9	Feedline Ladder (Af)	20.08 - 40.08	1.0000	1.0000
T13	1	Safety Line 3/8	0.08 - 20.00	0.6088	0.6000
T13	2	Lighting power cord	0.00 - 20.00	0.6000	0.6000
T13	3	LDF7-50A (1-5/8 FOAM)	8.80 - 20.00	0.6000	0.6008
T13	4	LDF7-50A (1-5/8 FOAM)	0.00 - 20.08	0.6800	0.6000
T13	6	LDF7-50A (1-5/8 FOAM)	8.80 - 20.00	0.6088	0.6000
T13	7	Feedline Ladder (Af)	0.00 - 20.08	1.0000	1.0008
T13	8	Feedline Ladder (Af)	0.08 - 20.80	1.0800	1.0000
T13	9	Feedline Ladder (Af)	0.00 - 20.00	1.0008	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Beacon	A	From Leg	8.08	0.0008		255.00	No Ice	2.40	2.40	0.07
			8.88				1/2" Ice	2.67	2.67	0.18
			4.39				1" Ice	2.96	2.96	0.12
Beacon Extender (4') 803062	A	From Leg	8.08	0.0008		255.00	No Ice	1.11	1.11	0.03
			0.80				1/2" Ice	1.32	1.32	0.04
			2.21				1" Ice	1.54	1.53	0.05
5/8" x 18' lightning rod	C	From Leg	0.00	8.0000		255.80	No Ice	0.63	0.63	0.02
			0.00				1/2" Ice	1.63	1.63	0.03
			4.00				1" Ice	2.63	2.63	0.04
ATC Loading	C	None		0.0000		250.88	No Ice	115.00	115.00	2.00
							1/2" Ice	135.00	135.00	3.00
							1" Ice	155.80	155.00	4.00
ATC Loading	C	None		0.0000		240.00	No Ice	115.00	115.00	2.00
							1/2" Ice	135.00	135.00	3.00
							1" Ice	155.00	155.00	4.00
ATC Loading	C	None		0.0000		238.00	No Ice	115.00	115.00	2.00
							1/2" Ice	135.00	135.00	3.00
							1" Ice	155.00	155.00	4.00
ATC Loading	C	None		0.0080		220.00	No Ice	115.00	115.00	2.00
							1/2" Ice	135.00	135.00	3.00
							1" Ice	155.08	155.00	4.00

Truss-Leg Properties

Section Designation	Area in^2	Area Ice in^2	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in^2
#12ZG -1.75" - 1.00" conn.-HBD-Trans (Pirod 229388)	2200.6087	5808.4093	0.84	2.27	7.6418	20.1681	7.2158
#12ZG -1.75" - 1.08" conn.-HBD-Trans (Pirod 229588)	2200.6087	5796.0560	8.84	2.26	7.6418	20.1252	7.2158
#12ZG -2.00" - 8.875" conn.-HBD-Trans (Pirod 288332)	2321.4820	5854.1205	0.99	2.29	8.0607	20.3268	9.4248
#12ZG -2.25" - 0.875" conn. (Pirod 208334)	2457.8620	5910.1026	1.17	2.31	8.5315	20.5212	11.9282
#12ZG -2.25" -	2457.0620	5891.2118	1.17	2.38	8.5315	20.4556	11.9282

Section Designation	Area in^2	Area Ice in^2	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in^2
0.875" conn. (Pirod 208334)							
#12ZG - 2.50" - 8.875" conn. (Pirod 208335)	2597.2622	5940.0820	1.37	2.31	9.0183	28.6253	14.7262
#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	2597.2622	5918.8109	1.37	2.28	9.8183	20.5209	14.7262
#12ZG - 2.75" - 8.875" conn. (Pirod 208337)	2816.7341	5938.2486	1.63	2.28	9.7883	20.6189	17.8187
#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	2816.7341	5851.3735	1.63	2.19	9.7883	20.3173	17.8187

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 255.00-240.00	247.50	1.532	27	78.594	A	6.589	7.188	7.188	52.17	0.000	0.000
					B	6.589	7.188		52.17	41.945	0.000
					C	6.589	7.188		52.17	0.563	0.000
T2 240.00-220.08	230.00	1.508	27	107.500	A	7.169	15.008	15.000	67.66	81.288	0.000
					B	7.169	15.800		67.66	83.020	0.000
					C	7.169	15.008		67.66	41.390	0.000
T3 220.00-200.80	210.80	1.48	26	129.283	A	7.669	18.574	18.574	70.78	81.280	0.000
					B	7.669	18.574		70.78	154.308	0.000
					C	7.669	18.574		70.78	82.038	0.000
T4 200.80-180.00	190.00	1.449	26	171.055	A	11.361	22.120	22.120	66.07	81.280	0.000
					B	11.361	22.120		66.07	154.388	0.000
					C	11.361	22.120		66.07	82.030	0.000
T5 180.80-160.00	170.00	1.415	25	222.945	A	12.313	25.512	25.512	67.45	81.288	0.000
					B	12.313	25.512		67.45	154.380	0.000
					C	12.313	25.512		67.45	82.030	0.000
T6 160.80-140.88	150.80	1.378	24	262.945	A	13.727	25.512	25.512	65.02	81.280	0.000
					B	13.727	25.512		65.02	154.308	0.000
					C	13.727	25.512		65.02	82.030	0.000
T7 140.88-120.00	130.88	1.337	24	303.362	A	11.332	26.914	26.914	70.37	81.288	0.000
					B	11.332	26.914		70.37	154.300	0.000
					C	11.332	26.914		70.37	82.038	0.000
T8 120.00-100.00	110.00	1.291	23	343.780	A	11.896	28.486	28.486	78.54	81.280	0.000
					B	11.896	28.486		70.54	154.300	0.000
					C	11.896	28.486		70.54	82.030	0.000
T9 100.80-80.00	90.00	1.238	22	383.788	A	12.514	28.486	28.486	69.48	81.280	0.000
					B	12.514	28.486		69.48	154.300	0.000
					C	12.514	28.486		69.48	82.030	0.000
T10 80.00-60.80	70.00	1.174	21	424.197	A	15.375	30.111	30.111	66.20	81.280	0.000
					B	15.375	30.111		66.20	154.300	0.000
					C	15.375	30.111		66.20	82.030	0.000
T11 60.00-40.88	50.00	1.094	19	464.197	A	16.198	30.111	30.111	65.02	81.280	0.000
					B	16.198	30.111		65.82	154.380	0.000
					C	16.198	30.111		65.02	82.030	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T12 48.00-28.88	38.00	0.982	17	504.614	A	17.068	32.655	32.655	65.68	81.280	0.000
					B	17.860	32.655		65.68	154.300	0.000
					C	17.060	32.655		65.68	82.038	0.000
T13 28.00-0.80	18.00	0.85	15	544.614	A	17.958	32.655	32.655	64.52	81.288	8.000
					B	17.958	32.655		64.52	154.308	0.000
					C	17.958	32.655		64.52	82.830	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 255.88-240.00	247.50	1.532	3	1.8348	83.181	A	6.589	28.451	16.362	46.70	0.000	0.000
						B	6.589	28.451		46.70	86.643	0.000
						C	6.589	28.451		46.70	6.067	0.000
T2 240.00-220.00	238.00	1.508	3	1.8214	113.571	A	7.169	40.280	27.143	57.30	159.539	8.000
						B	7.169	48.200		57.30	168.565	8.000
						C	7.169	40.208		57.30	87.805	0.000
T3 220.88-200.88	218.00	1.48	3	1.8049	135.307	A	7.669	44.478	30.627	58.74	159.383	8.000
						B	7.669	44.470		58.74	169.267	0.000
						C	7.669	44.470		58.74	167.353	0.000
T4 200.00-180.00	190.08	1.449	3	1.7870	177.019	A	11.361	50.294	34.053	55.23	159.213	0.000
						B	11.361	50.294		55.23	169.821	0.000
						C	11.361	50.294		55.23	167.111	0.000
T5 180.00-160.00	170.00	1.415	3	1.7672	228.843	A	12.313	81.846	67.339	71.52	159.026	8.000
						B	12.313	81.846		71.52	168.751	0.000
						C	12.313	81.846		71.52	166.845	8.000
T6 160.00-140.00	150.00	1.378	3	1.7452	268.770	A	13.727	83.167	67.196	69.35	158.818	0.000
						B	13.727	83.167		69.35	168.450	8.000
						C	13.727	83.167		69.35	166.549	8.000
T7 140.08-120.08	130.08	1.337	3	1.7204	309.104	A	11.332	80.866	67.869	73.61	158.583	0.000
						B	11.332	80.866		73.61	168.110	8.000
						C	11.332	80.866		73.61	166.215	8.000
T8 120.00-100.00	118.88	1.291	3	1.6919	349.426	A	11.896	81.935	68.518	73.02	158.314	8.000
						B	11.896	81.935		73.02	167.721	8.000
						C	11.896	81.935		73.02	165.032	0.000
T9 100.00-80.00	98.00	1.238	2	1.6503	389.314	A	12.514	82.133	68.299	72.16	157.996	8.000
						B	12.514	82.133		72.16	167.261	8.000
						C	12.514	82.133		72.16	163.379	0.000
T10 80.00-60.80	70.00	1.174	2	1.6171	429.594	A	15.375	83.073	68.065	69.95	157.688	8.000
						B	15.375	83.073		69.95	166.698	8.000
						C	15.375	83.073		69.95	164.826	0.000
T11 60.80-40.88	50.80	1.094	2	1.5636	469.416	A	16.198	82.989	68.517	69.08	157.103	8.000
						B	16.198	82.989		69.08	165.967	0.000
						C	16.198	82.989		69.08	164.107	8.000
T12 40.80-20.00	38.80	8.982	2	1.4858	509.573	A	17.068	83.329	68.844	68.58	156.369	8.000
						B	17.060	83.329		68.58	164.903	8.000
						C	17.068	83.329		68.58	163.862	0.000
T13 20.00-0.08	10.00	0.85	2	1.3312	549.057	A	17.958	81.497	67.037	68.21	154.914	8.000
						B	17.958	81.497		68.21	162.795	8.000
						C	17.958	81.497		68.21	160.989	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 255.00-248.00	247.50	1.532	12	78.594	A	6.589	7.188	7.188	52.17	0.000	0.000
					B	6.589	7.188		52.17	41.945	8.000
					C	6.589	7.188		52.17	0.563	8.000
T2 248.00-228.88	230.00	1.508	12	187.500	A	7.169	15.000	15.000	67.66	81.288	0.000
					B	7.169	15.008		67.66	83.020	0.000
					C	7.169	15.080		67.66	41.390	0.000
T3 220.00-208.08	210.88	1.48	12	129.283	A	7.669	18.574	18.574	70.78	81.280	0.000
					B	7.669	18.574		70.78	154.308	0.000
					C	7.669	18.574		70.78	82.038	0.000
T4 200.80-180.00	190.00	1.449	11	171.055	A	11.361	22.120	22.120	66.07	81.280	0.000
					B	11.361	22.120		66.87	154.388	0.000
					C	11.361	22.128		66.07	82.030	0.000
T5 180.08-168.08	170.00	1.415	11	222.945	A	12.313	25.512	25.512	67.45	81.288	0.000
					B	12.313	25.512		67.45	154.380	0.000
					C	12.313	25.512		67.45	82.038	0.000
T6 160.80-140.00	150.80	1.378	11	262.945	A	13.727	25.512	25.512	65.02	81.280	0.000
					B	13.727	25.512		65.82	154.380	0.000
					C	13.727	25.512		65.02	82.030	0.000
T7 140.00-120.00	130.80	1.337	10	303.362	A	11.332	26.914	26.914	70.37	81.280	0.000
					B	11.332	26.914		70.37	154.388	0.000
					C	11.332	26.914		70.37	82.838	8.000
T8 120.08-100.80	110.00	1.291	10	343.780	A	11.896	28.486	28.486	70.54	81.288	0.000
					B	11.896	28.486		70.54	154.380	0.000
					C	11.896	28.486		70.54	82.038	0.000
T9 100.80-80.80	90.80	1.238	10	383.788	A	12.514	28.486	28.486	69.48	81.280	0.000
					B	12.514	28.486		69.48	154.300	0.000
					C	12.514	28.486		69.48	82.038	0.000
T10 80.08-60.80	70.00	1.174	9	424.197	A	15.375	30.111	30.111	66.20	81.280	0.000
					B	15.375	30.111		66.28	154.300	0.808
					C	15.375	30.111		66.20	82.030	0.080
T11 60.80-40.80	58.08	1.094	9	464.197	A	16.198	30.111	30.111	65.02	81.280	0.000
					B	16.198	30.111		65.02	154.300	0.000
					C	16.198	38.111		65.02	82.038	0.880
T12 40.88-20.88	30.00	0.982	8	504.614	A	17.060	32.655	32.655	65.68	81.280	0.080
					B	17.060	32.655		65.68	154.300	0.080
					C	17.060	32.655		65.68	82.030	0.008
T13 20.00-0.08	10.80	0.85	7	544.614	A	17.958	32.655	32.655	64.52	81.280	0.080
					B	17.958	32.655		64.52	154.300	0.000
					C	17.958	32.655		64.52	82.030	8.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	z ft	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1 255.00-248.08	0.24	8.49	A	0.175	2.681	27	1	1	10.690	1.26	84.88	B
			B	0.175	2.681		1	1	10.698			
			C	0.175	2.681		1	1	10.690			
T2	1.17	1.01	A	0.206	2.575	27	1	1	15.243	3.06	152.98	B

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
240.00-220.00			B	0.206	2.575		1	1	15.243			
			C	0.206	2.575		1	1	15.243			
T3	1.69	1.28	A	0.203	2.586	26	1	1	16.962	4.25	212.27	B
220.80-200.00			B	0.203	2.586		1	1	16.962			
			C	0.203	2.586		1	1	16.962			
T4	1.69	1.73	A	0.196	2.61	26	1	1	21.545	4.43	221.27	B
200.08-180.00			B	0.196	2.61		1	1	21.545			
			C	0.196	2.61		1	1	21.545			
T5	1.69	3.09	A	0.17	2.7	25	1	1	23.257	4.46	223.11	B
180.00-160.00			B	0.17	2.7		1	1	23.257			
			C	0.17	2.7		1	1	23.257			
T6	1.69	3.15	A	0.149	2.774	24	1	1	24.399	4.45	222.35	B
160.00-140.00			B	0.149	2.774		1	1	24.399			
			C	0.149	2.774		1	1	24.399			
T7	1.69	4.03	A	0.126	2.861	24	1	1	22.284	4.24	211.82	B
140.80-120.00			B	0.126	2.861		1	1	22.284			
			C	0.126	2.861		1	1	22.284			
T8	1.69	4.62	A	0.117	2.895	23	1	1	23.373	4.17	208.27	B
120.00-100.80			B	0.117	2.895		1	1	23.373			
			C	0.117	2.895		1	1	23.373			
T9	1.69	4.68	A	0.107	2.937	22	1	1	23.853	4.04	201.87	B
100.80-80.00			B	0.107	2.937		1	1	23.853			
			C	0.107	2.937		1	1	23.853			
T10	1.69	6.01	A	0.107	2.935	21	1	1	27.367	4.81	200.58	B
80.08-60.00			B	0.107	2.935		1	1	27.367			
			C	0.107	2.935		1	1	27.367			
T11	1.69	6.11	A	0.1	2.965	19	1	1	28.890	3.78	189.22	B
60.80-40.00			B	0.1	2.965		1	1	28.090			
			C	0.1	2.965		1	1	28.090			
T12	1.69	7.02	A	0.099	2.97	17	1	1	29.941	3.48	174.87	B
40.08-20.00			B	0.099	2.97		1	1	29.941			
			C	0.099	2.97		1	1	29.941			
T13	1.69	7.13	A	0.093	2.993	15	1	1	30.760	3.05	152.63	B
20.00-0.80			B	0.093	2.993		1	1	30.760			
			C	0.093	2.993		1	1	30.760			
Sum Weight:	20.02	50.34						OTM	6150.73 kip-ft	48.67		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	0.49	A	0.175	2.681	27	0.8	1	9.372	1.18	78.60	C
255.00-248.00			B	0.175	2.681		0.8	1	9.372			
			C	0.175	2.681		0.8	1	9.372			
T2	1.17	1.01	A	0.206	2.575	27	0.8	1	13.810	2.98	148.81	C
240.00-220.00			B	0.206	2.575		0.8	1	13.810			
			C	0.206	2.575		0.8	1	13.810			
T3	1.69	1.28	A	0.203	2.586	26	0.8	1	15.428	4.16	207.87	C
220.00-200.00			B	0.203	2.586		0.8	1	15.428			
			C	0.203	2.586		0.8	1	15.428			
T4	1.69	1.73	A	0.196	2.61	26	0.8	1	19.273	4.30	214.83	C

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
200.00-180.00			B	0.196	2.61		0.8	1	19.273			
			C	0.196	2.61		0.8	1	19.273			
T3	1.69	3.09	A	0.17	2.7	25	0.8	1	20.794	4.32	216.06	C
180.00-160.00			B	0.17	2.7		0.8	1	20.794			
			C	0.17	2.7		0.8	1	20.794			
T6	1.69	3.15	A	0.149	2.774	24	0.8	1	21.654	4.29	214.49	C
160.00-140.00			B	0.149	2.774		0.8	1	21.654			
			C	0.149	2.774		0.8	1	21.654			
T7	1.69	4.03	A	0.126	2.861	24	0.8	1	20.018	4.11	205.32	C
140.00-120.00			B	0.126	2.861		0.8	1	20.018			
			C	0.126	2.861		0.8	1	20.018			
T8	1.69	4.62	A	0.117	2.895	23	0.8	1	20.993	4.03	201.61	C
120.00-100.80			B	0.117	2.895		0.8	1	20.993			
			C	0.117	2.895		0.8	1	20.993			
T9	1.69	4.68	A	0.187	2.937	22	0.8	1	21.350	3.90	195.05	C
100.08-80.00			B	8.187	2.937		0.8	1	21.358			
			C	0.107	2.937		0.8	1	21.350			
T10	1.69	6.01	A	0.107	2.935	21	0.8	1	24.292	3.85	192.56	C
80.00-60.80			B	0.107	2.935		0.8	1	24.292			
			C	0.107	2.935		0.8	1	24.292			
T11	1.69	6.11	A	0.1	2.965	19	0.8	1	24.851	3.63	181.35	C
60.00-40.00			B	0.1	2.965		0.8	1	24.851			
			C	0.1	2.965		0.8	1	24.851			
T12	1.69	7.02	A	0.099	2.97	17	0.8	1	26.529	3.33	166.61	C
40.00-20.00			B	8.099	2.97		0.8	1	26.529			
			C	0.099	2.97		0.8	1	26.529			
T13	1.69	7.13	A	0.093	2.993	15	0.8	1	27.168	2.92	145.78	C
20.08-0.00			B	8.093	2.993		0.8	1	27.168			
			C	0.093	2.993		0.8	1	27.168			
Sum Weight:	20.02	58.34						OTM	5952.35 kip-ft	46.99		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	0.49	A	0.175	2.681	27	0.85	1	9.781	1.20	79.95	C
255.00-248.00			B	0.175	2.681		0.85	1	9.701			
			C	0.175	2.681		0.85	1	9.701			
T2	1.17	1.01	A	0.206	2.575	27	0.85	1	14.168	3.25	162.41	C
240.00-220.00			B	0.206	2.575		0.85	1	14.168			
			C	0.206	2.575		0.85	1	14.168			
T3	1.69	1.28	A	0.203	2.586	26	0.85	1	15.811	3.81	190.73	C
220.00-208.00			B	8.283	2.586		0.85	1	15.811			
			C	0.203	2.586		0.85	1	15.811			
T4	1.69	1.73	A	0.196	2.61	26	0.85	1	19.841	3.97	198.58	C
200.08-180.00			B	0.196	2.61		0.85	1	19.843			
			C	0.196	2.61		0.85	1	19.841			
T5	1.69	3.09	A	0.17	2.7	25	0.85	1	21.410	4.01	200.37	C
180.00-160.00			B	8.17	2.7		0.85	1	21.410			
			C	0.17	2.7		0.85	1	21.418			
T6	1.69	3.15	A	0.149	2.774	24	0.85	1	22.340	3.99	199.46	C

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
168.80-140.00			B	8.149	2.774		0.85	1	22.340			
			C	0.149	2.774		0.85	1	22.348			
T7	1.69	4.03	A	0.126	2.861	24	0.85	1	20.585	3.81	190.46	C
140.88-120.00			B	0.126	2.861		8.85	1	20.585			
			C	0.126	2.861		0.85	1	20.585			
T8	1.69	4.62	A	0.117	2.895	23	0.85	1	21.588	3.75	187.35	C
120.00-108.80			B	0.117	2.895		0.85	1	21.588			
			C	0.117	2.895		0.85	1	21.588			
T9	1.69	4.68	A	8.107	2.937	22	0.85	1	21.976	3.63	181.49	C
100.88-80.00			B	8.187	2.937		0.85	1	21.976			
			C	0.107	2.937		0.85	1	21.976			
T10	1.69	6.81	A	0.107	2.935	21	0.85	1	25.861	3.60	180.07	C
80.00-60.00			B	8.107	2.935		0.85	1	25.061			
			C	0.107	2.935		0.85	1	25.061			
T11	1.69	6.11	A	0.1	2.965	19	8.85	1	25.661	3.40	169.83	C
68.00-48.80			B	0.1	2.965		0.85	1	25.661			
			C	0.1	2.965		0.85	1	25.661			
T12	1.69	7.02	A	8.099	2.97	17	0.85	1	27.382	3.13	156.37	C
40.00-20.00			B	0.099	2.97		0.85	1	27.382			
			C	8.899	2.97		0.85	1	27.382			
T13	1.69	7.13	A	0.093	2.993	15	0.85	1	28.866	2.74	137.01	C
20.08-8.00			B	0.093	2.993		0.85	1	28.066			
			C	0.093	2.993		0.85	1	28.066			
Sum Weight:	20.02	50.34						OTM	5656.39 kip-ft	44.28		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	1.54	2.22	A	8.421	2.023	3	1	1	24.959	0.27	18.23	B
255.00-248.08			B	0.421	2.023		1	1	24.959			
			C	8.421	2.823		1	1	24.959			
T2	7.03	3.19	A	0.417	2.031	3	1	1	33.049	0.60	29.94	B
240.88-220.00			B	8.417	2.831		1	1	33.049			
			C	0.417	2.031		1	1	33.849			
T3	9.51	3.66	A	0.385	2.094	3	1	1	35.686	8.68	34.28	C
220.08-280.00			B	8.385	2.094		1	1	35.686			
			C	8.385	2.894		1	1	35.686			
T4	9.45	4.73	A	0.348	2.175	3	1	1	42.313	8.71	35.51	C
280.08-180.00			B	8.348	2.175		1	1	42.313			
			C	0.348	2.175		1	1	42.313			
T5	9.37	11.83	A	0.411	2.842	3	1	1	64.799	0.78	39.02	C
180.00-160.00			B	0.411	2.842		1	1	64.799			
			C	0.411	2.842		1	1	64.799			
T6	9.29	12.85	A	0.361	2.147	3	1	1	65.295	0.78	39.18	C
168.00-140.08			B	8.361	2.147		1	1	65.295			
			C	0.361	2.147		1	1	65.295			
T7	9.21	13.12	A	8.298	2.381	3	1	1	59.722	0.75	37.62	C
140.00-128.00			B	0.298	2.301		1	1	59.722			
			C	0.298	2.301		1	1	59.722			
T8	9.10	13.84	A	8.269	2.383	3	1	1	60.219	0.74	36.89	C

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
120.80-100.00			B	0.269	2.383		1	1	60.219			
			C	0.269	2.383		1	1	60.219			
T9	8.98	13.98	A	0.243	2.458	2	1	1	60.425	8.72	35.78	C
100.00-80.00			B	0.243	2.458		1	1	60.425			
			C	0.243	2.458		1	1	60.425			
T10	8.83	15.65	A	0.229	2.501	2	1	1	63.573	0.70	34.85	C
80.00-68.00			B	0.229	2.501		1	1	63.573			
			C	0.229	2.501		1	1	63.573			
T11	8.64	15.70	A	0.211	2.539	2	1	1	64.045	8.66	32.77	C
60.00-40.00			B	0.211	2.559		1	1	64.045			
			C	0.211	2.559		1	1	64.045			
T12	8.37	16.56	A	0.197	2.606	2	1	1	64.888	8.59	29.67	C
40.88-20.00			B	0.197	2.606		1	1	64.888			
			C	0.197	2.606		1	1	64.888			
T13	7.83	16.22	A	0.181	2.66	2	1	1	64.528	0.51	25.54	C
20.00-0.00			B	0.181	2.66		1	1	64.528			
			C	0.181	2.66		1	1	64.528			
Sum Weight:	107.17	142.66			21A$_E$ limit			OTM	1082.05 kip-ft	8.49		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	ϵ	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	1.54	2.22	A	8.421	2.023	3	0.8	1	23.641	0.27	17.78	C
255.80-240.80			B	0.421	2.023		0.8	1	23.641			
			C	8.421	2.823		0.8	1	23.641			
T2	7.03	3.19	A	0.417	2.031	3	0.8	1	31.616	0.60	29.92	C
240.00-228.00			B	0.417	2.031		0.8	1	31.616			
			C	0.417	2.831		0.8	1	31.616			
T3	9.51	3.66	A	0.385	2.094	3	0.8	1	34.152	8.68	33.80	B
220.08-200.00			B	0.385	2.094		0.8	1	34.152			
			C	0.385	2.094		0.8	1	34.152			
T4	9.45	4.73	A	0.348	2.175	3	0.8	1	40.041	8.70	34.92	B
200.88-180.08			B	0.348	2.175		8.8	1	40.041			
			C	8.348	2.175		0.8	1	40.041			
T5	9.37	11.83	A	0.411	2.042	3	8.8	1	62.336	0.77	38.43	B
180.08-168.08			B	0.411	2.042		0.8	1	62.336			
			C	0.411	2.842		0.8	1	62.336			
T6	9.29	12.05	A	0.361	2.147	3	8.8	1	62.549	0.77	38.50	B
160.00-140.00			B	0.361	2.147		0.8	1	62.549			
			C	0.361	2.147		0.8	1	62.549			
T7	9.21	13.12	A	0.298	2.301	3	8.8	1	57.455	0.74	37.84	B
140.80-128.00			B	0.298	2.301		0.8	1	57.455			
			C	0.298	2.381		8.8	1	57.455			
T8	9.10	13.84	A	0.269	2.383	3	0.8	1	57.840	0.73	36.28	B
120.00-100.08			B	0.269	2.383		0.8	1	57.840			
			C	0.269	2.383		0.8	1	57.840			
T9	8.98	13.90	A	0.243	2.458	2	0.8	1	57.923	0.70	35.15	B
100.00-80.00			B	0.243	2.458		8.8	1	57.923			
			C	0.243	2.458		0.8	1	57.923			
T10	8.83	15.65	A	0.229	2.581	2	0.8	1	60.498	0.68	34.18	B

Section Elevation ft	Add Weight K	Self Weight K	Face	α	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
80.00-60.00			B	0.229	2.501		8.8	1	60.498			
			C	0.229	2.581		0.8	1	60.498			
T11	8.64	15.70	A	0.211	2.559	2	8.8	1	60.806	0.64	32.01	B
60.00-40.08			B	8.211	2.559		0.8	1	60.806			
			C	0.211	2.559		8.8	1	60.806			
T12	8.37	16.56	A	0.197	2.606	2	8.8	1	61.476	0.58	28.94	B
40.00-20.00			B	0.197	2.606		8.8	1	61.476			
			C	8.197	2.606		0.8	1	61.476			
T13	7.83	16.22	A	0.181	2.66	2	0.8	1	60.936	0.50	24.86	B
20.00-0.00			B	0.181	2.66		8.8	1	60.936			
			C	0.181	2.66		8.8	1	60.936			
Sum Weight:	107.17	142.66						OTM	1065.95 kip-ft	8.35		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	α	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	1.54	2.22	A	0.421	2.023	3	0.85	1	23.971	0.24	16.33	C
255.00-240.00			B	0.421	2.023		8.85	1	23.971			
			C	0.421	2.023		8.85	1	23.971			
T2	7.03	3.19	A	8.417	2.031	3	0.85	1	31.974	8.60	29.94	C
240.00-220.80			B	8.417	2.031		0.85	1	31.974			
			C	0.417	2.031		0.85	1	31.974			
T3	9.51	3.66	A	8.385	2.894	3	0.85	1	34.536	0.68	34.04	B
228.00-200.00			B	0.385	2.094		0.85	1	34.536			
			C	0.385	2.094		8.85	1	34.536			
T4	9.45	4.73	A	0.348	2.175	3	0.85	1	40.609	0.78	35.20	B
200.00-180.00			B	8.348	2.175		0.85	1	40.689			
			C	0.348	2.175		0.85	1	40.609			
T5	9.37	11.83	A	8.411	2.042	3	0.85	1	62.932	8.77	38.71	B
180.00-160.00			B	0.411	2.042		0.85	1	62.952			
			C	0.411	2.042		8.85	1	62.952			
T6	9.29	12.85	A	8.361	2.147	3	8.85	1	63.236	0.78	38.88	B
160.00-140.00			B	0.361	2.147		0.85	1	63.236			
			C	8.361	2.147		0.85	1	63.236			
T7	9.21	13.12	A	8.298	2.301	3	0.85	1	58.822	0.75	37.31	B
140.00-120.00			B	0.298	2.301		0.85	1	58.022			
			C	0.298	2.301		8.85	1	58.022			
T8	9.18	13.84	A	0.269	2.383	3	0.85	1	58.434	8.73	36.55	B
120.00-108.00			B	8.269	2.383		0.85	1	58.434			
			C	8.269	2.383		8.85	1	58.434			
T9	8.98	13.90	A	8.243	2.438	2	0.85	1	58.548	8.71	35.42	B
100.00-80.00			B	8.243	2.458		0.85	1	58.548			
			C	0.243	2.458		0.85	1	58.548			
T10	8.83	15.65	A	0.229	2.501	2	0.85	1	61.267	8.69	34.39	B
80.00-68.00			B	8.229	2.501		8.85	1	61.267			
			C	0.229	2.501		8.85	1	61.267			
T11	8.64	15.70	A	8.211	2.559	2	0.85	1	61.616	0.65	32.30	B
60.00-40.00			B	0.211	2.559		0.85	1	61.616			
			C	0.211	2.559		8.85	1	61.616			
T12	8.37	16.56	A	8.197	2.606	2	8.85	1	62.329	8.58	29.21	B

Section Elevation ft	Add Weight K	Self Weight K	Face	α	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
40.00-20.00			B	8.197	2.606		8.85	1	62.329			
			C	0.197	2.606		0.85	1	62.329			
T13	7.83	16.22	A	0.181	2.66	2	8.85	1	61.834	8.50	25.11	B
20.00-0.00			B	8.181	2.66		8.85	1	61.834			
			C	8.181	2.66		0.85	1	61.834			
Sum Weight:	107.17	142.66			$*2.1A_E$ limit			OTM	1067.25 kip-ft	8.35		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	α	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	0.49	A	0.175	2.681	12	1	1	10.690	0.56	37.33	B
255.00-240.00			B	0.175	2.681		1	1	10.690			
			C	0.175	2.681		1	1	10.690			
T2	1.17	1.01	A	8.206	2.575	12	1	1	15.243	1.36	67.99	B
240.00-220.08			B	0.206	2.575		1	1	15.243			
			C	8.206	2.575		1	1	15.243			
T3	1.69	1.28	A	0.203	2.586	12	1	1	16.962	1.89	94.34	B
228.80-206.08			B	0.203	2.586		1	1	16.962			
			C	0.203	2.586		1	1	16.962			
T4	1.69	1.73	A	0.196	2.61	11	1	1	21.545	1.97	98.34	B
200.00-180.00			B	8.196	2.61		1	1	21.545			
			C	8.196	2.61		1	1	21.545			
T5	1.69	3.89	A	0.17	2.7	11	1	1	23.257	1.98	99.16	B
188.80-160.00			B	0.17	2.7		1	1	23.257			
			C	0.17	2.7		1	1	23.257			
T6	1.69	3.15	A	0.149	2.774	11	1	1	24.399	1.98	98.82	B
160.80-140.08			B	0.149	2.774		1	1	24.399			
			C	0.149	2.774		1	1	24.399			
T7	1.69	4.03	A	0.126	2.861	10	1	1	22.264	1.88	94.14	B
140.00-120.80			B	8.126	2.861		1	1	22.284			
			C	8.126	2.861		1	1	22.284			
T8	1.69	4.62	A	0.117	2.895	10	1	1	23.373	1.85	92.56	B
120.00-100.00			B	8.117	2.895		1	1	23.373			
			C	8.117	2.895		1	1	23.373			
T9	1.69	4.68	A	8.107	2.937	10	1	1	23.853	1.79	89.72	B
100.00-80.08			B	8.107	2.937		1	1	23.853			
			C	8.107	2.937		1	1	23.853			
T10	1.69	6.81	A	8.107	2.935	9	1	1	27.367	1.78	89.11	B
80.00-60.08			B	8.107	2.935		1	1	27.367			
			C	0.187	2.935		1	1	27.367			
T11	1.69	6.11	A	8.1	2.965	9	1	1	28.890	1.68	84.18	B
60.00-40.88			B	8.1	2.965		1	1	28.090			
			C	0.1	2.965		1	1	28.090			
T12	1.69	7.02	A	8.099	2.97	8	1	1	29.941	1.55	77.36	B
40.80-20.00			B	0.099	2.97		1	1	29.941			
			C	0.099	2.97		1	1	29.941			
T13	1.69	7.13	A	8.093	2.993	7	1	1	30.768	1.36	67.83	B
28.00-8.08			B	0.893	2.993		1	1	30.760			
			C	0.093	2.993		1	1	30.760			
Sum Weight:	20.82	50.34						OTM	2733.66	21.63		

Section Elevation ft	Add Weight K	Self Weight K	Face	α	C_f	q_z psf	D_f	D_a	A_E ft² kip-ft	F K	w plf	Ctrl. Face

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	α	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	0.49	A	0.175	2.681	12	0.8	1	9.372	0.52	34.93	C
255.00-240.08			B	8.175	2.681		0.8	1	9.372			
			C	0.175	2.681		0.8	1	9.372			
T2	1.17	1.81	A	8.206	2.575	12	0.8	1	13.818	1.32	66.14	C
240.00-220.08			B	0.206	2.575		0.8	1	13.810			
			C	0.206	2.575		8.8	1	13.818			
T3	1.69	1.28	A	0.203	2.586	12	0.8	1	15.428	1.85	92.39	C
220.00-200.00			B	8.203	2.586		0.8	1	15.428			
			C	0.203	2.586		8.8	1	15.428			
T4	1.69	1.73	A	0.196	2.61	11	8.8	1	19.273	1.91	95.48	C
200.00-180.88			B	0.196	2.61		0.8	1	19.273			
			C	8.196	2.61		0.8	1	19.273			
T5	1.69	3.89	A	8.17	2.7	11	0.8	1	20.794	1.92	96.03	C
180.00-160.00			B	8.17	2.7		8.8	1	20.794			
			C	0.17	2.7		8.8	1	20.794			
T6	1.69	3.15	A	0.149	2.774	11	0.8	1	21.654	1.91	95.33	C
160.00-140.00			B	0.149	2.774		0.8	1	21.654			
			C	0.149	2.774		0.8	1	21.654			
T7	1.69	4.03	A	0.126	2.861	18	0.8	1	20.018	1.83	91.26	C
140.00-120.88			B	0.126	2.861		8.8	1	28.818			
			C	0.126	2.861		0.8	1	20.018			
T8	1.69	4.62	A	8.117	2.895	18	0.8	1	20.993	1.79	89.60	C
120.08-100.08			B	8.117	2.895		8.8	1	20.993			
			C	0.117	2.895		0.8	1	20.993			
T9	1.69	4.68	A	8.107	2.937	10	0.8	1	21.358	1.73	86.69	C
100.80-80.08			B	0.107	2.937		8.8	1	21.350			
			C	0.107	2.937		0.8	1	21.358			
T10	1.69	6.01	A	0.107	2.935	9	0.8	1	24.292	1.71	85.58	C
80.00-60.08			B	0.107	2.935		0.8	1	24.292			
			C	0.107	2.935		0.8	1	24.292			
T11	1.69	6.11	A	8.1	2.965	9	0.8	1	24.851	1.61	80.60	C
60.00-40.00			B	0.1	2.965		0.8	1	24.851			
			C	0.1	2.965		8.8	1	24.851			
T12	1.69	7.02	A	8.899	2.97	8	8.8	1	26.529	1.48	74.05	C
40.00-20.00			B	0.099	2.97		0.8	1	26.529			
			C	0.099	2.97		8.8	1	26.529			
T13	1.69	7.13	A	0.093	2.993	7	0.8	1	27.168	1.30	64.79	C
20.00-0.00			B	8.893	2.993		0.8	1	27.168			
			C	0.093	2.993		8.8	1	27.168			
Sum Weight:	20.02	50.34						OTM	2645.49 kip-ft	20.88		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	α	C_f	q_z psf	D_f	D_a	A_E ft²	F K	w plf	Ctrl. Face
T1	0.24	0.49	A	0.175	2.681	12	0.85	1	9.701	0.53	35.33	C
255.00-240.00			B	8.175	2.681		8.85	1	9.701			
			C	8.175	2.681		0.85	1	9.701			
T2	1.17	1.01	A	0.206	2.575	12	8.85	1	14.168	1.44	72.18	C
248.00-220.80			B	0.206	2.575		8.85	1	14.168			
			C	0.206	2.575		8.85	1	14.168			
T3	1.69	1.28	A	0.203	2.586	12	8.85	1	15.811	1.78	84.77	C
220.00-200.08			B	8.203	2.586		0.85	1	15.811			
			C	0.203	2.586		0.85	1	15.811			
T4	1.69	1.73	A	8.196	2.61	11	0.85	1	19.841	1.77	88.26	C
200.00-180.00			B	8.196	2.61		0.85	1	19.841			
			C	0.196	2.61		8.85	1	19.841			
T5	1.69	3.09	A	0.17	2.7	11	0.85	1	21.418	1.78	89.05	C
180.00-160.08			B	0.17	2.7		8.85	1	21.410			
			C	0.17	2.7		8.85	1	21.418			
T6	1.69	3.15	A	0.149	2.774	11	0.85	1	22.340	1.77	88.65	C
160.00-140.08			B	8.149	2.774		0.85	1	22.348			
			C	0.149	2.774		0.85	1	22.348			
T7	1.69	4.03	A	0.126	2.861	10	0.85	1	20.583	1.69	84.65	C
140.80-128.00			B	0.126	2.861		0.85	1	20.585			
			C	8.126	2.861		0.85	1	20.585			
T8	1.69	4.62	A	0.117	2.895	18	8.85	1	21.588	1.67	83.27	C
128.00-100.00			B	0.117	2.895		0.85	1	21.588			
			C	8.117	2.895		0.85	1	21.588			
T9	1.69	4.68	A	8.107	2.937	10	0.85	1	21.976	1.61	80.66	C
108.80-80.80			B	0.107	2.937		8.85	1	21.976			
			C	0.107	2.937		0.85	1	21.976			
T10	1.69	6.81	A	0.107	2.935	9	0.85	1	25.061	1.60	80.03	C
80.80-60.00			B	0.107	2.935		8.85	1	25.861			
			C	8.107	2.935		0.85	1	25.861			
T11	1.69	6.11	A	8.1	2.965	9	8.85	1	25.661	1.51	75.48	C
60.00-40.00			B	8.1	2.965		0.85	1	25.661			
			C	0.1	2.965		0.85	1	25.661			
T12	1.69	7.82	A	8.099	2.97	8	0.85	1	27.382	1.39	69.58	C
40.00-20.00			B	0.099	2.97		0.85	1	27.382			
			C	0.099	2.97		0.85	1	27.382			
T13	1.69	7.13	A	0.093	2.993	7	0.85	1	28.066	1.22	60.89	C
20.00-8.08			B	0.093	2.993		8.85	1	28.086			
			C	0.093	2.993		0.85	1	28.866			
Sum Weight:	20.02	50.34						OTM	2513.95 kip-ft	19.68		

Mast Vectors - No Ice

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_z K	V_x K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
T1	255.00-240.08	0	Wind Normal	1.02	0.00	-1.02	-253.33	-0.33	0.26
		30	Wind 90	1.20	0.60	-1.04	-257.22	-148.73	0.19
		60	Wind 60	1.18	1.02	-0.59	-146.87	-253.83	0.02
		90	Wind 90	1.20	1.20	0.00	-0.18	-297.14	-0.16

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_s K	V_i K	OTM_s kip-ft	OTM_i kip-ft	Torque kip-ft
		120	Wind Normal	1.82	0.89	0.51	126.39	-219.56	-0.25
		150	Wind 90	0.74	0.37	0.64	158.99	-92.23	-8.21
		188	Wind 60	0.94	0.08	8.94	232.91	-0.33	-0.24
		210	Wind 90	1.78	-0.60	1.04	256.86	148.87	-0.19
		240	Wind Normal	1.26	-1.09	0.63	155.75	269.74	-0.82
		278	Wind 90	1.20	-1.20	0.00	-0.18	296.47	0.16
		300	Wind 60	0.94	-0.82	-0.47	-116.72	201.53	0.23
		338	Wind 90	8.74	-0.37	-0.64	-159.35	91.56	0.21
T2	240.80-220.08	0	Wind Normal	2.83	0.00	-2.83	-650.37	-0.01	0.01
		38	Wind 90	2.80	1.48	-2.42	-557.79	-321.84	-0.08
		68	Wind 68	2.98	2.58	-1.49	-342.63	-592.83	-0.17
		90	Wind 90	3.25	3.25	0.08	-0.36	-747.08	-0.22
		128	Wind Normal	3.86	2.65	1.53	351.58	-689.45	-0.19
		150	Wind 90	2.88	1.40	2.42	557.06	-321.84	-8.11
		180	Wind 68	2.74	8.00	2.74	638.45	-0.01	-0.01
		210	Wind 90	2.88	-1.40	2.42	557.06	321.82	8.08
		240	Wind Normal	3.06	-2.65	1.53	351.50	609.44	0.17
		278	Wind 90	3.25	-3.25	0.80	-0.36	747.07	0.22
		300	Wind 60	2.98	-2.58	-1.49	-342.63	592.82	0.18
		330	Wind 90	2.80	-1.40	-2.42	-557.79	321.82	0.11
T3	228.00-200.00	0	Wind Normal	3.51	0.00	-3.51	-736.58	-0.56	8.29
		38	Wind 90	3.81	1.91	-3.30	-694.83	-401.08	0.19
		60	Wind 68	4.16	3.60	-2.08	-436.83	-756.64	8.02
		90	Wind 90	3.81	3.81	0.00	-8.38	-881.61	-0.16
		120	Wind Normal	3.51	3.04	1.75	367.83	-638.19	-0.28
		150	Wind 98	3.50	1.75	3.03	636.98	-367.97	-0.33
		188	Wind 68	3.42	0.08	3.42	717.51	-0.56	-0.29
		210	Wind 98	3.81	-1.91	3.30	693.42	399.97	-0.19
		248	Wind Normal	4.25	-3.68	2.12	445.45	771.52	-0.82
		270	Wind 90	3.81	-3.81	0.08	-0.30	808.49	0.16
		300	Wind 60	3.42	-2.96	-1.71	-359.21	621.08	0.27
		330	Wind 90	3.50	-1.75	-3.03	-636.69	366.86	0.33
T4	200.00-180.00	0	Wind Normal	3.70	0.88	-3.70	-703.69	-0.71	0.38
		30	Wind 90	3.97	1.99	-3.44	-653.90	-378.01	0.25
		60	Wind 68	4.38	3.72	-2.15	-408.57	-787.71	8.03
		90	Wind 90	3.97	3.97	8.00	-0.38	-755.32	-0.21
		128	Wind Normal	3.78	3.21	1.85	351.27	-689.79	-0.36
		150	Wind 90	3.66	1.83	3.17	602.33	-348.68	-0.43
		188	Wind 68	3.57	8.08	3.57	678.46	-0.71	-0.37
		218	Wind 90	3.97	-1.99	3.44	653.13	376.68	-0.25
		248	Wind Normal	4.43	-3.83	2.21	420.03	727.47	-0.03
		270	Wind 90	3.97	-3.97	0.00	-0.38	753.90	8.21
		308	Wind 68	3.57	-3.09	-1.79	-339.81	587.19	0.35
		330	Wind 98	3.66	-1.83	-3.17	-603.09	347.27	0.43
T5	180.88-160.08	0	Wind Normal	3.76	0.08	-3.76	-638.83	-0.86	0.46
		30	Wind 90	4.81	2.98	-3.47	-590.46	-341.49	0.30
		68	Wind 68	4.32	3.74	-2.16	-367.77	-637.84	8.03
		90	Wind 90	4.81	4.01	0.80	-0.46	-682.13	-0.25
		128	Wind Normal	3.76	3.25	1.88	318.72	-553.78	-0.44
		158	Wind 90	3.71	1.85	3.21	545.13	-315.86	-0.51
		180	Wind 60	3.61	0.00	3.61	613.93	-0.86	-8.45
		218	Wind 90	4.01	-2.08	3.47	589.53	339.78	-0.38
		248	Wind Normal	4.46	-3.86	2.23	378.82	656.08	-0.03
		270	Wind 90	4.01	-4.81	0.80	-0.46	680.41	0.25
		308	Wind 68	3.61	-3.13	-1.81	-307.66	531.23	0.42
		330	Wind 90	3.71	-1.85	-3.21	-546.86	314.14	8.51
T6	160.80-140.80	8	Wind Normal	3.76	0.00	-3.76	-564.38	-1.01	0.54
		30	Wind 90	3.99	1.99	-3.45	-518.76	-308.28	0.35
		68	Wind 68	4.29	3.72	-2.14	-322.28	-558.27	0.84
		90	Wind 90	3.99	3.99	0.88	-8.58	-599.39	-0.29
		120	Wind Normal	3.76	3.25	1.88	281.33	-489.23	-8.51

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_s K	V_i K	OTM_s kip-ft	OTM_i kip-ft	Torque kip-ft
		158	Wind 90	3.78	1.85	3.20	479.50	-278.17	-0.68
		188	Wind 60	3.60	0.88	3.68	539.61	-1.01	-0.52
		210	Wind 90	3.99	-1.99	3.45	517.66	298.18	-0.35
		240	Wind Normal	4.45	-3.85	2.22	332.98	576.68	-0.04
		270	Wind 90	3.99	-3.99	0.88	-0.35	597.37	0.29
		308	Wind 68	3.60	-3.12	-1.80	-270.63	466.78	0.49
		330	Wind 90	3.70	-1.85	-3.20	-480.68	276.15	0.60
T7	148.00-120.08	0	Wind Normal	3.57	0.08	-3.57	-464.49	-1.16	8.59
		30	Wind 90	3.81	1.90	-3.38	-429.47	-248.76	0.39
		60	Wind 68	4.11	3.56	-2.05	-267.55	-483.48	8.04
		90	Wind 90	3.81	3.81	8.88	-0.63	-496.35	-0.32
		120	Wind Normal	3.57	3.89	1.78	231.31	-402.88	-0.56
		158	Wind 90	3.52	1.76	3.05	396.13	-230.23	-0.66
		188	Wind 60	3.44	8.88	3.44	446.34	-1.16	-0.57
		218	Wind 90	3.81	-1.90	3.30	428.22	246.44	-0.39
		248	Wind Normal	4.24	-3.67	2.12	274.74	475.79	-0.04
		278	Wind 90	3.81	-3.81	0.00	-0.63	494.03	0.32
		308	Wind 68	3.44	-2.98	-1.72	-224.11	385.93	0.54
		338	Wind 90	3.52	-1.76	-3.85	-397.39	227.91	0.66
T8	120.80-100.00	8	Wind Normal	3.52	0.08	-3.52	-387.93	-1.31	0.66
		38	Wind 90	3.75	1.87	-3.25	-357.66	-207.40	0.43
		60	Wind 60	4.83	3.49	-2.82	-222.47	-385.42	0.05
		90	Wind 98	3.75	3.75	0.80	-0.71	-413.48	-0.36
		120	Wind Normal	3.52	3.05	1.76	192.90	-336.65	-0.62
		150	Wind 98	3.47	1.74	3.01	330.03	-192.26	-0.73
		188	Wind 60	3.39	8.88	3.39	371.86	-1.31	-0.63
		210	Wind 90	3.75	-1.87	3.25	356.34	204.77	-0.43
		248	Wind Normal	4.17	-3.61	2.08	228.39	395.49	-8.05
		278	Wind 90	3.75	-3.75	0.88	-0.71	410.86	0.36
		308	Wind 68	3.39	-2.93	-1.69	-186.99	321.34	0.59
		338	Wind 90	3.47	-1.74	-3.81	-331.44	189.64	0.73
T9	100.80-80.08	0	Wind Normal	3.42	0.00	-3.42	-308.49	-1.46	0.71
		38	Wind 98	3.63	1.81	-3.14	-283.71	-164.81	0.46
		68	Wind 68	3.90	3.38	-1.95	-176.34	-305.52	0.05
		90	Wind 90	3.63	3.63	8.00	-0.79	-328.15	-0.38
		128	Wind Normal	3.42	2.96	1.71	153.06	-267.94	-0.67
		150	Wind 90	3.37	1.68	2.92	261.57	-152.94	-0.78
		188	Wind 60	3.28	0.88	3.28	294.64	-1.46	-0.68
		210	Wind 90	3.63	-1.81	3.14	282.13	161.88	-0.46
		248	Wind Normal	4.84	-3.58	2.02	188.89	313.22	-8.05
		278	Wind 90	3.63	-3.63	0.80	-0.79	325.23	0.38
		308	Wind 68	3.28	-2.84	-1.64	-148.50	254.39	0.64
		330	Wind 90	3.37	-1.68	-2.92	-263.15	150.81	0.78
T10	80.00-60.88	8	Wind Normal	3.42	0.08	-3.42	-240.51	-1.61	0.77
		38	Wind 90	3.60	1.88	-3.12	-219.28	-127.66	0.50
		60	Wind 68	3.85	3.34	-1.93	-135.66	-235.08	0.05
		90	Wind 90	3.60	3.68	0.80	-0.87	-253.71	-0.41
		128	Wind Normal	3.42	2.96	1.71	118.95	-209.15	-0.73
		150	Wind 90	3.36	1.68	2.90	202.29	-118.91	-0.85
		180	Wind 60	3.26	0.00	3.26	227.66	-1.61	-8.74
		210	Wind 98	3.68	-1.88	3.12	217.46	124.44	-8.58
		240	Wind Normal	4.81	-3.47	2.81	139.48	241.48	-0.86
		270	Wind 98	3.68	-3.60	0.88	-0.87	250.49	0.41
		308	Wind 68	3.26	-2.83	-1.63	-115.13	196.38	0.69
		338	Wind 90	3.35	-1.68	-2.90	-204.03	115.68	0.85
T11	60.00-40.00	0	Wind Normal	3.24	0.00	-3.24	-162.84	-1.76	0.80
		30	Wind 90	3.40	1.78	-2.94	-148.83	-86.68	0.51
		60	Wind 60	3.63	3.14	-1.81	-91.62	-158.81	8.06
		90	Wind 98	3.40	3.48	0.88	-0.95	-171.59	-0.42
		120	Wind Normal	3.24	2.88	1.62	80.08	-141.97	-8.75
		158	Wind 98	3.16	1.58	2.74	136.03	-80.85	-0.87

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_s K	V_i K	OTM_s kip-ft	OTM_i kip-ft	Torque kip-ft
		180	Wind 60	3.08	0.00	3.08	153.07	-1.76	-8.76
		210	Wind 90	3.40	-1.70	2.94	146.13	83.15	-0.51
		240	Wind Normal	3.78	-3.28	1.89	93.66	162.10	-0.06
		270	Wind 90	3.40	-3.40	0.88	-0.95	168.87	8.42
		308	Wind 60	3.08	-2.67	-1.54	-77.96	131.63	0.71
		330	Wind 90	3.16	-1.58	-2.74	-137.93	77.32	0.87
T12	40.00-20.00	0	Wind Normal	2.99	0.00	-2.99	-90.75	-1.91	0.79
		38	Wind 90	3.13	1.56	-2.71	-82.28	-48.82	8.51
		60	Wind 60	3.33	2.89	-1.67	-51.02	-88.49	0.05
		90	Wind 90	3.13	3.13	8.08	-1.03	-95.73	-0.42
		128	Wind Normal	2.99	2.59	1.50	43.83	-79.61	-0.74
		150	Wind 90	2.92	1.46	2.53	74.78	-45.68	-0.86
		180	Wind 60	2.84	0.80	2.84	84.21	-1.91	-0.75
		210	Wind 90	3.13	-1.56	2.71	80.22	45.80	-0.51
		240	Wind Normal	3.48	-3.02	1.74	51.19	88.54	-8.86
		278	Wind 90	3.13	-3.13	0.08	-1.03	91.91	0.42
		300	Wind 60	2.84	-2.46	-4.42	-43.65	71.91	8.78
		330	Wind 90	2.92	-1.46	-2.53	-76.84	41.86	0.86
T13	28.00-0.80	0	Wind Normal	2.63	8.00	-2.63	-27.39	-2.06	0.75
		30	Wind 90	2.74	1.37	-2.37	-24.84	-13.77	8.48
		60	Wind 60	2.92	2.53	-1.46	-15.69	-27.31	0.05
		90	Wind 98	2.74	2.74	0.00	-1.11	-29.47	-0.39
		128	Wind Normal	2.63	2.28	1.31	12.83	-24.82	-0.70
		150	Wind 90	2.56	1.28	2.22	21.05	-14.86	-0.81
		180	Wind 60	2.49	0.00	2.49	23.80	-2.06	-8.71
		210	Wind 90	2.74	-1.37	2.37	22.62	11.64	-0.48
		240	Wind Normal	3.85	-2.64	1.53	14.15	24.37	-8.85
		270	Wind 90	2.74	-2.74	0.00	-1.11	25.34	0.39
		300	Wind 68	2.49	-2.16	-1.25	-13.57	19.51	0.66
		338	Wind 90	2.56	-1.28	-2.22	-23.27	18.73	0.81

Mast Totals - No Ice

Wind Azimuth °	V_s K	V_i K	OTM_s kip-ft	OTM_i kip-ft	Torque kip-ft
0	0.00	-41.36	-5229.50	-14.76	7.03
30	21.92	-37.96	-4817.35	-2791.25	4.48
68	40.69	-23.49	-2984.58	-5169.65	0.31
90	44.28	0.80	-8.33	-5671.15	-4.00
120	36.82	20.80	2629.12	-4582.94	-6.78
158	20.23	35.04	4400.98	-2560.47	-7.75
180	8.80	39.68	5014.46	-14.76	-6.72
210	-21.92	37.96	4800.69	2761.73	-4.48
240	-42.15	24.33	3067.04	5311.93	-0.33
278	-44.28	0.00	-8.33	5641.63	4.00
308	-34.56	-19.95	-2546.38	4381.63	6.48
338	-20.23	-35.04	-4417.64	2530.96	7.75

Mast Vectors - With Ice

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_s K	V_i K	OTM_s kip-ft	OTM_i kip-ft	Torque kip-ft
T1	255.00-240.88	8	Wind Normal	0.20	0.00	-0.20	-51.08	-2.16	0.04
		38	Wind 90	0.24	0.12	-0.21	-53.34	-32.46	0.04
		60	Wind 60	0.27	0.23	-0.13	-33.85	-59.32	8.81
		90	Wind 90	0.24	0.24	0.00	-0.84	-62.77	-0.02
		120	Wind Normal	0.20	0.18	0.10	24.27	-45.66	-8.04
		150	Wind 90	0.17	0.09	0.15	36.53	-23.73	-0.04
		180	Wind 68	0.28	0.08	0.20	47.71	-2.16	-0.04
		210	Wind 90	0.24	-0.12	0.21	51.65	28.13	-0.04
		240	Wind Normal	0.27	-0.24	0.14	33.00	56.47	-0.01
		270	Wind 90	0.24	-0.24	0.80	-0.84	58.46	0.02
		300	Wind 60	0.20	-0.17	-0.10	-25.12	39.89	0.03
		330	Wind 90	0.17	-0.09	-0.15	-38.21	19.42	0.04
T2	240.80-220.00	0	Wind Normal	0.54	0.88	-0.54	-125.08	-0.32	0.01
		30	Wind 90	0.55	0.28	-0.48	-112.12	-63.98	-0.01
		68	Wind 68	0.60	0.52	-0.30	-70.67	-119.51	-0.82
		90	Wind 90	0.60	0.60	0.00	-1.85	-138.03	-8.83
		120	Wind Normal	0.60	0.52	0.30	67.01	-119.58	-0.03
		150	Wind 90	0.55	0.28	0.48	108.42	-63.98	-0.82
		180	Wind 60	0.53	0.00	0.53	119.69	-0.32	-0.01
		210	Wind 90	0.55	-0.28	0.48	108.42	63.35	0.01
		240	Wind Normal	0.60	-0.52	0.38	67.01	118.95	0.82
		270	Wind 90	0.60	-0.60	0.08	-1.85	137.48	0.03
		300	Wind 60	0.60	-0.52	-0.30	-70.67	118.88	0.03
		330	Wind 90	0.55	-0.28	-0.48	-112.12	63.35	0.02
T3	220.00-208.00	8	Wind Normal	0.68	0.00	-0.68	-144.56	-2.67	8.81
		30	Wind 90	0.67	0.34	-0.58	-123.24	-73.29	0.81
		60	Wind 60	0.67	0.58	-0.33	-71.84	-124.13	8.01
		90	Wind 90	0.67	0.67	0.00	-0.92	-143.91	0.81
		120	Wind Normal	0.68	0.59	0.34	70.89	-127.07	-0.08
		150	Wind 98	0.68	0.34	0.59	122.89	-74.16	-0.81
		180	Wind 60	0.68	0.00	0.68	141.85	-2.67	-0.01
		210	Wind 90	0.67	-0.34	0.58	121.39	67.94	-0.01
		240	Wind Normal	0.68	-0.59	0.34	78.83	120.22	-0.01
		270	Wind 90	0.67	-0.67	0.88	-0.92	138.96	-8.81
		300	Wind 60	0.68	-0.59	-0.34	-71.91	120.28	0.00
		330	Wind 90	0.68	-0.34	-0.59	-124.74	68.81	0.81
T4	200.00-188.00	8	Wind Normal	0.71	0.00	-0.71	-136.89	-3.37	0.01
		30	Wind 90	0.70	8.35	-0.68	-115.66	-69.49	0.82
		60	Wind 68	0.69	0.68	-0.35	-66.72	-116.95	0.02
		90	Wind 90	0.78	0.70	8.00	-1.14	-135.60	0.01
		120	Wind Normal	0.71	0.62	0.36	66.33	-120.24	0.08
		150	Wind 90	0.70	0.35	0.61	114.70	-70.25	-0.81
		180	Wind 68	0.78	0.00	0.70	131.54	-3.37	-0.01
		210	Wind 90	0.78	-0.35	0.60	113.37	62.74	-0.02
		240	Wind Normal	0.70	-0.61	0.35	65.57	112.17	-0.02
		270	Wind 90	0.70	-0.78	0.00	-1.14	128.86	-0.01
		308	Wind 60	0.70	-0.60	-0.35	-67.49	111.54	-0.00
		330	Wind 90	0.70	-0.35	-0.61	-116.99	63.51	0.01
T5	180.00-168.00	0	Wind Normal	0.78	8.80	-0.78	-134.84	-4.86	0.02
		38	Wind 90	0.77	0.38	-0.66	-114.20	-69.21	0.02
		60	Wind 60	0.76	0.66	-0.38	-66.04	-116.08	0.02
		90	Wind 90	0.77	8.77	0.00	-1.37	-134.35	0.01
		120	Wind Normal	0.78	0.68	0.39	64.97	-118.96	0.00
		150	Wind 90	0.77	8.39	0.67	112.61	-69.86	-0.01
		180	Wind 60	0.77	0.00	0.77	129.30	-4.06	-0.02
		210	Wind 90	0.77	-0.38	0.66	111.47	61.08	-0.82
		248	Wind Normal	0.77	-0.67	8.39	64.31	109.70	-0.02
		278	Wind 90	0.77	-0.77	0.88	-1.37	126.22	-0.01
		300	Wind 60	0.77	-0.67	-0.38	-66.70	109.09	-0.00
		330	Wind 90	0.77	-0.39	-0.67	-115.34	61.74	0.01
T6	160.00-140.00	0	Wind Normal	0.78	8.00	-0.78	-119.13	-4.75	0.02

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_a K	V_s K	OTM_a kip-ft	OTM_s kip-ft	Torque kip-ft
		38	Wind 90	8.77	8.38	-0.67	-101.40	-62.37	0.02
		60	Wind 60	0.76	0.66	-0.38	-58.77	-183.78	0.02
		90	Wind 98	8.77	0.77	0.00	-1.59	-119.99	8.01
		120	Wind Normal	0.78	0.68	0.39	57.17	-106.53	0.00
		150	Wind 90	0.78	8.39	8.67	99.21	-62.95	-0.01
		188	Wind 68	0.77	8.00	8.77	113.91	-4.75	-0.02
		210	Wind 90	8.77	-0.38	0.67	98.21	52.87	-0.83
		240	Wind Normal	0.78	-0.67	0.39	56.60	96.84	-0.82
		270	Wind 90	8.77	-0.77	0.00	-1.59	110.50	-0.01
		300	Wind 60	0.77	-0.67	-0.39	-59.35	95.28	-0.80
		330	Wind 90	0.78	-0.39	-0.67	-102.40	53.45	8.01
T7	148.00-120.00	0	Wind Normal	0.75	8.08	-0.75	-99.64	-1.42	8.02
		38	Wind 90	0.74	8.37	-0.64	-85.80	-53.44	8.03
		60	Wind 68	0.73	0.64	-0.37	-49.50	-87.99	8.83
		90	Wind 90	0.74	8.74	8.80	-1.83	-101.46	8.02
		120	Wind Normal	0.75	0.65	8.38	47.88	-90.13	8.00
		150	Wind 90	0.75	8.37	0.65	82.18	-53.93	-0.01
		180	Wind 60	0.74	0.00	0.74	94.48	-1.42	-0.02
		218	Wind 90	0.74	-0.37	0.64	81.34	42.60	-0.03
		248	Wind Normal	8.74	-0.65	8.37	46.59	78.45	-8.03
		270	Wind 90	0.74	-0.74	8.00	-1.83	90.61	-0.02
		300	Wind 60	0.74	-0.64	-0.37	-49.98	77.98	-0.00
		330	Wind 90	0.75	-0.37	-0.65	-85.84	43.08	8.01
T8	120.00-108.00	0	Wind Normal	0.74	8.80	-0.74	-83.23	-6.09	8.82
		30	Wind 90	8.72	8.36	-0.63	-71.03	-45.90	8.83
		60	Wind 68	0.72	0.62	-0.36	-41.58	-74.52	0.83
		98	Wind 90	0.72	0.72	8.00	-2.07	-85.71	8.02
		120	Wind Normal	0.74	0.64	0.37	38.51	-76.37	8.80
		150	Wind 90	0.73	8.37	8.63	67.57	-46.38	-0.01
		180	Wind 68	0.73	0.00	8.73	77.75	-6.09	-8.02
		218	Wind 90	0.72	-0.36	8.63	66.89	33.72	-0.83
		240	Wind Normal	8.73	-0.63	8.37	38.11	63.51	-8.03
		270	Wind 90	8.72	-0.72	8.00	-2.07	73.54	-0.82
		308	Wind 68	8.73	-0.63	-0.36	-41.98	63.84	-0.08
		330	Wind 90	0.73	-0.37	-0.63	-71.71	34.12	8.01
T9	108.00-88.00	8	Wind Normal	0.72	0.00	-0.72	-66.73	-6.74	0.83
		38	Wind 90	0.70	0.35	-0.61	-57.08	-38.31	0.03
		60	Wind 60	0.78	0.60	-0.35	-33.64	-60.99	0.03
		90	Wind 90	8.70	0.70	8.80	-2.32	-69.88	0.02
		120	Wind Normal	0.72	0.62	0.36	29.88	-62.52	0.01
		150	Wind 90	8.71	8.35	8.61	52.90	-38.62	-0.81
		180	Wind 68	0.70	0.08	0.70	60.95	-6.74	-0.02
		218	Wind 90	0.70	-0.35	0.61	52.36	24.83	-0.83
		240	Wind Normal	0.71	-0.61	8.35	29.57	48.56	-0.03
		278	Wind 90	8.70	-0.78	0.00	-2.32	56.48	-0.02
		308	Wind 60	0.78	-0.61	-0.35	-33.96	48.85	-0.01
		338	Wind 90	0.71	-0.35	-0.61	-57.54	25.14	8.81
T10	88.00-68.00	0	Wind Normal	8.70	0.08	-0.70	-51.37	-7.37	0.03
		38	Wind 90	0.68	0.34	-0.59	-43.89	-31.22	0.03
		60	Wind 60	0.68	0.58	-0.34	-26.22	-48.32	0.83
		90	Wind 90	0.68	0.68	0.00	-2.59	-55.07	0.02
		120	Wind Normal	0.78	0.60	0.35	23.81	-49.62	0.01
		150	Wind 90	0.69	0.34	0.60	39.11	-31.45	-0.01
		180	Wind 60	0.68	0.00	0.68	45.15	-7.37	-0.03
		210	Wind 90	0.68	-0.34	0.59	38.72	16.47	-0.83
		240	Wind Normal	0.69	-0.60	0.35	21.58	34.48	-0.03
		270	Wind 90	0.68	-0.68	0.88	-2.59	40.32	-0.82
		300	Wind 60	0.68	-0.59	-0.34	-26.45	33.97	-0.81
		330	Wind 90	0.69	-0.34	-0.60	-44.29	16.78	0.81
T11	68.00-48.00	8	Wind Normal	0.66	0.00	-0.66	-35.63	-7.98	0.83
		30	Wind 90	0.64	0.32	-0.55	-30.58	-23.98	0.83

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_a K	V_s K	OTM_a kip-ft	OTM_s kip-ft	Torque kip-ft
		68	Wind 60	8.63	0.55	-0.32	-18.72	-35.44	8.83
		90	Wind 90	8.64	0.64	0.80	-2.87	-39.98	0.02
		120	Wind Normal	8.66	0.57	0.33	13.51	-36.36	8.01
		150	Wind 90	0.63	0.32	0.56	25.18	-24.13	-0.01
		180	Wind 68	8.64	0.08	0.64	29.14	-7.98	-8.03
		210	Wind 90	8.64	-0.32	8.55	24.84	8.02	-8.83
		240	Wind Normal	0.65	-0.56	0.32	13.36	20.13	-0.83
		270	Wind 90	8.64	-0.64	8.00	-2.87	24.82	-0.82
		300	Wind 60	0.64	-0.55	-0.32	-18.87	19.74	-0.81
		330	Wind 90	0.65	-0.32	-0.56	-38.84	8.17	0.01
T12	40.00-20.88	0	Wind Normal	0.59	8.00	-0.59	-20.99	-8.54	8.83
		30	Wind 90	0.58	8.29	-0.50	-18.22	-17.22	0.03
		60	Wind 68	0.57	0.58	-0.29	-11.79	-31.43	0.83
		90	Wind 90	0.58	0.58	0.00	-3.19	-25.90	0.02
		120	Wind Normal	0.59	0.51	8.30	5.72	-23.95	0.81
		150	Wind 90	0.58	8.29	0.51	12.00	-17.38	-0.81
		180	Wind 68	0.58	8.08	0.58	14.18	-8.54	-8.02
		210	Wind 90	0.58	-0.29	0.50	11.85	8.14	-0.03
		240	Wind Normal	0.59	-0.51	0.29	5.63	6.74	-0.83
		270	Wind 90	0.58	-0.58	0.80	-3.19	8.83	-8.02
		300	Wind 60	0.58	-0.58	-0.29	-11.87	6.50	-0.01
		330	Wind 90	0.58	-0.29	-0.51	-18.37	0.23	8.01
T13	20.00-0.00	0	Wind Normal	0.51	0.00	-0.51	-8.70	-8.96	0.82
		30	Wind 90	0.50	0.25	-0.43	-7.90	-11.45	0.03
		60	Wind 68	0.49	0.43	-0.25	-6.05	-13.23	0.83
		90	Wind 90	0.58	0.58	8.00	-3.59	-13.94	0.02
		120	Wind Normal	0.51	0.44	0.26	-1.83	-13.39	0.81
		150	Wind 90	0.58	0.25	0.43	0.76	-11.47	-0.01
		180	Wind 68	0.58	0.00	0.58	1.38	-8.96	-0.02
		210	Wind 90	0.50	-0.25	0.43	0.72	-6.47	-8.03
		240	Wind Normal	0.51	-0.44	0.25	-1.06	-4.58	-0.83
		270	Wind 90	0.50	-0.50	0.88	-3.59	-3.99	-0.82
		300	Wind 60	0.50	-0.43	-0.25	-6.08	-4.66	-0.00
		330	Wind 90	0.50	-0.25	-0.43	-7.94	-6.45	8.01

Mast Totals - With Ice

Wind Azimuth °	V_a K	V_s K	OTM_a kip-ft	OTM_s kip-ft	Torque kip-ft
0	0.00	-8.36	-1076.27	-68.43	0.29
30	4.13	-7.16	-933.56	-592.31	0.32
60	7.16	-4.13	-534.60	-983.69	0.26
90	8.31	8.00	-26.17	-1126.58	0.13
128	7.29	4.21	506.13	-990.39	-8.02
158	4.13	7.16	873.98	-588.13	-0.17
180	8.00	8.21	1006.23	-68.43	-0.28
218	-4.13	7.16	881.22	455.45	-0.32
240	-7.29	4.21	518.31	860.77	-8.27
278	-8.31	0.00	-26.17	989.72	-0.13
308	-7.17	-4.14	-550.42	839.59	0.02
338	-4.13	-7.16	-926.32	451.27	0.17

Mast Vectors - Service

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_a K	V_s K	OTM_a kip-ft	OTM_s kip-ft	Torque kip-ft
T1	255.80-240.08	8	Wind Normal	0.45	0.00	-0.45	-112.69	-0.33	8.12
		30	Wind 90	8.53	8.27	-0.46	-114.42	-66.29	8.08
		60	Wind 60	0.52	0.45	-0.26	-65.82	-112.64	8.01
		90	Wind 90	0.53	0.53	0.00	-0.18	-132.25	-0.07
		120	Wind Normal	0.45	0.39	8.23	36.88	-97.77	-0.11
		150	Wind 90	8.33	0.17	0.29	78.36	-41.17	-0.10
		180	Wind 60	0.42	0.00	0.42	103.41	-8.33	-0.11
		210	Wind 90	8.53	-0.27	8.46	114.06	65.63	-0.08
		240	Wind Normal	0.56	-0.48	0.28	69.12	119.70	-8.81
		270	Wind 90	0.53	-0.53	8.00	-0.18	131.58	8.07
		300	Wind 60	0.42	-0.36	-0.21	-51.98	89.38	8.10
		330	Wind 90	8.33	-0.17	-0.29	-78.92	48.51	8.18
T2	240.80-220.00	8	Wind Normal	1.26	0.00	-1.26	-289.26	-0.81	8.81
		38	Wind 90	1.24	8.62	-1.88	-248.11	-143.84	-8.84
		60	Wind 60	1.32	1.15	-0.68	-152.48	-263.49	-8.07
		90	Wind 90	1.44	1.44	0.00	-0.36	-332.04	-0.10
		120	Wind Normal	1.36	1.18	8.68	156.82	-278.87	-8.88
		150	Wind 90	1.24	0.62	1.08	247.38	-143.04	-0.05
		180	Wind 68	1.22	8.88	1.22	280.00	-0.81	-0.11
		210	Wind 90	1.24	-0.62	1.88	247.38	143.83	8.84
		240	Wind Normal	1.36	-1.18	8.68	156.82	270.86	8.08
		270	Wind 90	1.44	-1.44	8.08	-0.36	332.83	0.10
		300	Wind 60	1.32	-1.15	-0.66	-152.48	263.47	0.08
		330	Wind 90	1.24	-0.62	-1.08	-248.11	143.83	8.05
T3	220.00-200.08	0	Wind Normal	1.36	8.00	-1.36	-327.54	-0.56	8.13
		30	Wind 90	1.70	0.85	-1.47	-308.63	-178.57	8.09
		60	Wind 60	1.85	1.60	-0.92	-194.31	-336.60	8.01
		98	Wind 90	1.70	1.70	8.08	-0.30	-356.58	-8.07
		120	Wind Normal	1.96	1.35	0.78	163.31	-263.95	-0.12
		150	Wind 90	1.56	0.78	1.35	282.53	-163.85	-8.13
		188	Wind 68	1.52	0.08	1.52	318.72	-0.56	-8.13
		218	Wind 90	1.70	-0.85	1.47	388.02	177.45	-0.09
		240	Wind Normal	1.89	-1.63	0.94	197.81	342.59	-8.81
		270	Wind 90	1.70	-1.70	0.00	-0.38	355.46	8.87
		300	Wind 60	1.52	-1.32	-0.76	-159.82	275.73	8.12
		330	Wind 90	1.56	-0.78	-1.35	-283.14	162.74	8.15
T4	208.80-180.00	0	Wind Normal	1.65	8.08	-1.65	-31.96	-0.71	8.17
		30	Wind 90	1.77	0.88	-1.53	-298.83	-168.40	8.11
		60	Wind 60	1.91	1.65	-0.95	-181.80	-314.93	8.01
		90	Wind 90	1.77	1.77	8.08	-0.38	-336.09	-0.09
		120	Wind Normal	1.65	1.42	8.82	153.91	-271.41	-8.16
		150	Wind 90	1.63	0.81	1.41	267.49	-155.36	-8.19
		188	Wind 60	1.59	0.88	1.59	301.32	-0.71	-0.16
		218	Wind 90	1.77	-0.88	1.53	290.07	166.98	-0.11
		248	Wind Normal	1.97	-1.70	0.98	186.47	322.93	-8.01
		270	Wind 90	1.77	-1.77	8.08	-8.38	334.67	0.89
		308	Wind 60	1.59	-1.38	-0.79	-151.24	260.58	8.16
		330	Wind 90	1.63	-0.81	-1.41	-268.26	153.95	8.19
T5	188.80-160.00	0	Wind Normal	1.67	0.00	-1.67	-284.18	-0.86	8.21
		38	Wind 90	1.78	8.89	-1.54	-262.69	-152.25	8.13
		60	Wind 60	1.92	1.66	-0.96	-163.71	-283.61	8.01
		90	Wind 90	1.78	1.78	8.00	-0.46	-303.63	-0.11
		120	Wind Normal	1.67	1.45	8.83	141.39	-246.57	-0.19
		150	Wind 90	1.65	0.82	1.43	242.02	-140.86	-0.25
		180	Wind 60	1.61	8.08	1.61	272.68	-0.86	-0.20
		210	Wind 90	1.78	-0.89	1.54	261.76	150.53	-8.13
		240	Wind Normal	1.98	-1.72	8.99	168.11	291.12	-0.01
		270	Wind 90	1.78	-1.78	0.00	-0.46	301.93	0.11

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_a K	V_s K	OTM_a kip-ft	OTM_s kip-ft	Torque kip-ft
		300	Wind 60	1.61	-1.39	-0.80	-137.80	233.62	8.19
		330	Wind 90	1.65	-0.82	-1.43	-242.95	139.14	8.23
T6	168.88-140.08	8	Wind Normal	1.67	8.88	-1.67	-251.18	-1.81	8.24
		38	Wind 90	1.77	8.89	-1.54	-230.86	-133.98	8.16
		68	Wind 60	1.91	1.65	-0.95	-143.54	-248.68	8.02
		90	Wind 90	1.77	1.77	8.00	-0.55	-266.95	-8.13
		120	Wind Normal	1.67	1.45	8.84	124.73	-218.00	-0.23
		150	Wind 90	1.64	8.82	1.42	212.81	-124.19	-0.27
		188	Wind 60	1.68	8.08	1.68	239.53	-1.81	-0.23
		218	Wind 90	1.77	-0.89	1.54	229.77	131.96	-8.16
		240	Wind Normal	1.98	-1.71	8.99	147.69	255.74	8.02
		278	Wind 90	1.77	-1.77	8.08	-8.55	264.94	0.12
		300	Wind 68	1.68	-1.39	-0.80	-120.58	206.90	0.22
		330	Wind 90	1.64	-0.82	-1.42	-213.98	122.17	0.27
T7	148.88-120.08	0	Wind Normal	1.59	8.80	-1.59	-286.79	-1.16	8.26
		38	Wind 90	1.69	0.85	-1.47	-191.23	-111.20	8.17
		68	Wind 60	1.83	1.58	-0.91	-119.26	-206.64	0.82
		90	Wind 90	1.69	1.69	0.00	-8.63	-221.25	-0.14
		120	Wind Normal	1.59	1.37	0.79	182.45	-179.70	-0.25
		158	Wind 90	1.57	8.78	1.36	175.71	-102.97	-0.29
		180	Wind 68	1.53	8.88	1.53	198.03	-1.16	-8.23
		218	Wind 90	1.69	-0.85	1.47	189.97	108.88	-0.17
		248	Wind Normal	1.88	-1.63	0.94	121.76	218.82	-8.02
		270	Wind 90	1.69	-1.69	0.00	-8.63	218.92	0.14
		308	Wind 60	1.53	-1.32	-0.76	-99.95	170.88	8.24
		330	Wind 90	1.57	-0.78	-1.36	-176.96	100.65	8.29
T8	120.00-108.08	0	Wind Normal	1.56	8.08	-1.56	-172.81	-1.31	8.29
		30	Wind 90	1.67	0.83	-1.44	-159.33	-92.90	8.19
		60	Wind 60	1.79	1.55	-0.90	-99.27	-172.83	8.03
		90	Wind 90	1.67	1.67	8.00	-0.71	-184.58	-0.16
		120	Wind Normal	1.56	1.35	0.78	85.34	-158.35	-0.27
		150	Wind 90	1.54	0.77	1.34	146.29	-86.18	-0.32
		180	Wind 60	1.51	8.00	1.51	164.88	-1.31	-0.28
		210	Wind 90	1.67	-0.83	1.44	157.04	90.28	-0.19
		240	Wind Normal	1.83	-1.60	8.93	101.11	175.85	-0.02
		278	Wind 90	1.67	-1.67	8.00	-0.71	181.88	0.16
		300	Wind 68	1.51	-1.38	-0.75	-83.58	142.09	8.26
		330	Wind 90	1.54	-0.77	-1.34	-147.70	83.56	8.32
T9	100.00-80.80	0	Wind Normal	1.52	8.00	-1.52	-137.54	-1.46	8.32
		38	Wind 90	1.61	0.81	-1.40	-126.15	-74.06	8.21
		60	Wind 60	1.73	1.50	-0.87	-78.81	-136.60	8.02
		90	Wind 90	1.61	1.61	8.08	-0.79	-146.66	-0.17
		120	Wind Normal	1.52	1.32	8.76	67.59	-119.90	-0.30
		150	Wind 90	1.50	0.75	1.30	115.82	-68.78	-8.35
		188	Wind 60	1.46	8.00	1.46	138.51	-1.46	-0.38
		218	Wind 90	1.61	-0.81	1.40	124.95	71.14	-0.21
		240	Wind Normal	1.79	-1.55	8.90	79.96	138.40	-8.02
		270	Wind 90	1.61	-1.61	8.00	-0.79	143.73	0.17
		300	Wind 60	1.46	-1.26	-0.73	-66.44	112.25	8.28
		330	Wind 90	1.50	-0.75	-1.30	-117.39	65.86	8.35
T10	80.00-60.88	0	Wind Normal	1.52	8.88	-1.52	-107.38	-1.61	8.34
		30	Wind 90	1.60	0.80	-1.39	-97.90	-57.63	8.22
		60	Wind 68	1.71	1.48	-0.86	-68.78	-105.38	8.02
		90	Wind 90	1.60	1.60	8.00	-0.87	-113.66	-8.18
		128	Wind Normal	1.52	1.32	0.76	52.38	-93.85	-0.32
		150	Wind 90	1.49	8.74	1.29	89.42	-53.74	-0.38
		180	Wind 68	1.45	0.00	1.45	108.70	-1.61	-0.33
		218	Wind 90	1.60	-0.80	1.39	96.16	54.41	-0.22
		240	Wind Normal	1.78	-1.54	8.89	61.51	106.43	-0.02
		270	Wind 90	1.60	-1.60	0.00	-0.87	110.43	0.18
		300	Wind 60	1.45	-1.26	-0.73	-51.65	86.35	8.31

Section No.	Section Elevation ft	Wind Azimuth °	Directionality	F K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
T11	60.00-48.08	330	Wind 90	1.49	-0.74	-1.29	-91.16	50.52	0.38
		0	Wind Normal	1.44	8.88	-1.44	-72.90	-1.76	0.35
		30	Wind 90	1.51	0.75	-1.31	-66.32	-39.58	8.23
		60	Wind 60	1.61	1.40	-0.81	-41.25	-71.56	8.82
		90	Wind 90	1.51	1.51	0.00	-8.95	-77.24	-0.19
		128	Wind Normal	1.44	1.25	0.72	35.03	-64.88	-8.33
		150	Wind 90	1.41	8.70	1.22	59.93	-36.91	-0.39
		180	Wind 60	1.37	0.80	1.37	67.50	-1.76	-0.34
		210	Wind 90	1.51	-0.75	1.31	64.42	35.98	-0.23
		248	Wind Normal	1.68	-1.46	0.84	41.10	71.07	-0.03
		270	Wind 90	1.51	-1.51	0.00	-0.95	73.72	8.19
		300	Wind 60	1.37	-1.19	-0.68	-35.18	57.52	0.32
		330	Wind 90	1.41	-0.70	-1.22	-61.83	33.39	8.39
T12	48.00-28.08	0	Wind Normal	1.33	0.00	-1.33	-48.91	-1.91	0.35
		38	Wind 90	1.39	0.69	-1.20	-37.14	-22.76	0.23
		60	Wind 60	1.48	1.28	-0.74	-22.25	-40.39	0.82
		90	Wind 90	1.39	1.39	0.00	-1.03	-43.61	-0.19
		120	Wind Normal	1.33	1.15	0.66	18.91	-36.45	-0.33
		150	Wind 90	1.30	0.65	1.12	32.66	-21.37	-0.38
		180	Wind 60	1.26	0.00	1.26	36.86	-1.91	-8.33
		218	Wind 90	1.39	-0.69	1.20	35.88	18.94	-0.23
		240	Wind Normal	1.55	-1.34	0.77	22.18	38.29	-0.03
		270	Wind 90	1.39	-1.39	0.00	-1.03	39.78	0.19
		300	Wind 60	1.26	-1.09	-0.63	-19.97	30.90	0.31
		330	Wind 90	1.30	-0.65	-1.12	-34.73	17.54	8.38
T13	28.00-0.00	0	Wind Normal	1.17	0.00	-1.17	-12.79	-2.06	8.33
		30	Wind 90	1.22	0.61	-1.05	-11.66	-8.15	0.21
		60	Wind 60	1.30	1.12	-0.65	-7.59	-13.29	8.02
		90	Wind 90	1.22	1.22	0.00	-1.11	-14.24	-0.18
		120	Wind Normal	1.17	1.01	0.58	4.73	-12.18	-0.31
		150	Wind 90	1.14	0.57	0.99	8.74	-7.75	-0.36
		188	Wind 60	1.11	0.00	1.11	9.96	-2.06	-0.31
		210	Wind 90	1.22	-0.61	1.05	9.43	4.03	-0.21
		240	Wind Normal	1.36	-1.17	0.68	5.67	9.69	-0.02
		270	Wind 90	1.22	-1.22	0.00	-1.11	10.12	0.18
		300	Wind 60	1.11	-0.96	-0.55	-6.65	7.52	0.30
		330	Wind 90	1.14	-0.57	-0.99	-18.96	3.62	0.36

Mast Totals - Service

Wind Azimuth °	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.00	-18.38	-2328.85	-14.76	3.13
30	9.74	-16.87	-2145.67	-1248.75	1.99
60	18.08	-10.44	-1331.07	-2305.82	0.14
90	19.68	8.00	-8.33	-2528.71	-1.78
120	16.01	9.24	1163.87	-2045.06	-3.01
150	8.99	15.57	1951.36	-1146.19	-3.44
180	0.00	17.63	2224.02	-14.76	-2.99
210	-9.74	16.87	2129.81	1219.24	-1.99
240	-18.73	10.81	1358.30	2252.66	-0.15
270	-19.68	0.00	-8.33	2499.19	1.78
300	-15.36	-8.87	-1136.44	1939.19	2.88
330	-8.99	-15.57	-1968.02	1116.67	3.44

Discrete Appurtenance Pressures - No Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	Offset$_x$ ft	Offset$_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Beacon	8.0000	0.07	0.00	-2.89	259.39	1.547	27	2.40	2.40
Beacon Extender (4') 803862	0.8000	0.03	8.00	-2.89	257.21	1.544	27	1.11	1.11
5/8" x 10' lightning rod	240.0000	0.82	-2.50	1.44	259.00	1.546	27	0.63	0.63
ATC Loading	0.0008	2.00	0.00	0.00	250.88	1.535	27	115.00	115.00
ATC Loading	0.0008	2.80	0.00	0.00	240.00	1.522	27	115.00	115.00
ATC Loading	0.0000	2.00	8.00	0.00	230.08	1.508	27	115.00	115.00
ATC Loading	0.0008	2.00	0.80	0.00	220.00	1.494	26	115.00	115.00
	Sum Weight:	8.13							

Discrete Appurtenance Vectors - No Ice

Beacon - Elevation 259.39 - From Leg A

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.06	0.00	0.00	-0.06	-14.64	0.00	0.00
38	0.05	0.03	0.03	-0.05	-12.70	-7.21	-0.08
68	0.03	0.05	0.05	-0.03	-7.42	-12.49	-0.14
90	0.00	0.06	0.06	0.00	-0.21	-14.43	-0.16
120	0.03	0.05	0.05	8.03	7.00	-12.49	-0.14
158	0.05	0.03	0.03	0.05	12.28	-7.21	-0.08
180	0.06	0.00	0.00	0.06	14.22	8.00	0.00
210	0.05	0.03	-0.03	0.05	12.28	7.21	0.08
248	0.03	0.85	-0.05	8.03	7.00	12.49	0.14
270	0.00	0.06	-0.06	0.00	-0.21	14.43	0.16
300	0.03	0.05	-0.05	-0.03	-7.42	12.49	0.14
330	0.05	0.03	-0.03	-0.05	-12.70	7.21	0.08

Beacon Extender (4') 893062 - Elevation 237.31 - From Leg A

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.03	0.00	0.00	-0.03	-6.69	0.00	0.00
30	0.02	8.01	0.01	-0.02	-5.81	-3.30	-0.04
60	8.01	0.02	0.02	-0.01	-3.39	-5.72	-0.06
90	0.00	0.03	0.03	0.00	-0.09	-6.60	-0.07
120	0.01	0.02	0.02	0.01	3.22	-5.72	-0.06
150	0.02	0.01	8.01	0.02	5.63	-3.30	-0.04
180	0.03	0.00	0.00	0.03	6.52	0.00	0.00
210	0.02	0.01	-0.01	0.02	5.63	3.30	8.04
240	0.01	8.02	-0.02	0.01	3.22	5.72	0.06
270	0.00	0.03	-0.03	8.00	-0.09	6.60	0.07
300	0.01	8.82	-0.02	-0.01	-3.39	5.72	0.06
330	0.02	0.01	-0.81	-0.02	-5.81	3.30	0.04

5/8" x 10' lightning rod - Elevation 230 - From Leg C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.01	0.01	8.00	-0.01	-3.72	0.06	-0.04
38	0.01	0.01	0.01	-0.01	-3.21	-1.82	-0.02
60	0.01	0.00	0.01	-0.01	-1.84	-3.19	0.00
90	0.01	0.01	0.01	0.00	0.03	-3.69	8.82
120	0.01	0.01	0.01	8.01	1.91	-3.19	0.04
150	8.00	0.01	0.01	0.01	3.28	-1.82	0.04
180	0.01	0.01	0.00	0.01	3.78	8.06	8.04
210	0.01	0.01	-0.01	0.01	3.28	1.93	0.02
240	0.01	0.00	-0.01	0.01	1.91	3.31	0.00
270	0.01	0.01	-0.01	0.00	0.03	3.81	-0.02
300	0.81	0.01	-0.01	-0.01	-1.84	3.31	-0.04
330	8.00	0.01	-0.01	-0.01	-3.21	1.93	-0.04

ATC Loading - Elevation 230 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	2.64	8.00	0.00	-2.64	-661.12	0.00	0.00
30	2.64	8.00	1.32	-2.29	-572.55	-330.56	0.80
60	2.64	8.00	2.29	-1.32	-330.56	-572.55	0.00
90	2.64	0.00	2.64	0.00	8.00	-661.12	0.00
120	2.64	0.00	2.29	1.32	330.56	-572.55	0.80
150	2.64	0.00	1.32	2.29	572.55	-330.56	0.00
180	2.64	0.00	0.00	2.64	661.12	0.80	0.00
210	2.64	0.00	-1.32	2.29	572.55	330.56	0.00
240	2.64	0.00	-2.29	1.32	330.56	572.55	0.00
270	2.64	0.00	-2.64	0.00	8.00	661.12	0.00
300	2.64	0.00	-2.29	-1.32	-330.56	572.55	0.08
330	2.64	0.00	-1.32	-2.29	-572.55	330.56	0.00

ATC Loading - Elevation 240 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	2.62	0.00	8.00	-2.62	-629.24	8.00	0.00
30	2.62	0.00	1.31	-2.27	-544.94	-314.62	8.00
60	2.62	0.00	2.27	-1.31	-314.62	-544.94	0.00
90	2.62	0.00	2.62	0.00	0.00	-629.24	0.00
120	2.62	0.00	2.27	1.31	314.62	-544.94	0.00
150	2.62	0.00	1.31	2.27	544.94	-314.62	0.00
180	2.62	0.00	0.00	2.62	629.24	0.00	8.00
210	2.62	0.00	-1.31	2.27	544.94	314.62	0.00
240	2.62	0.00	-2.27	1.31	314.62	544.94	0.00
270	2.62	0.00	-2.62	0.00	0.00	629.24	0.00
308	2.62	8.00	-2.27	-1.31	-314.62	544.94	0.88
330	2.62	0.00	-1.31	-2.27	-544.94	314.62	0.00

ATC Loading - Elevation 250 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	2.60	0.00	8.00	-2.60	-597.65	0.00	0.00
30	2.60	0.00	1.30	-2.25	-517.58	-298.82	8.00
60	2.60	0.00	2.25	-1.30	-298.82	-517.58	0.00
90	2.60	0.00	2.60	0.00	8.00	-597.65	0.80

ATC Loading - Elevation 230 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
120	2.60	0.00	2.25	1.30	298.82	-517.58	0.00
150	2.60	0.00	1.30	2.25	517.58	-298.82	0.00
180	2.60	0.00	0.80	2.60	597.65	0.00	0.00
210	2.60	0.00	-1.30	2.25	517.58	298.82	0.00
240	2.60	0.00	-2.25	1.30	298.82	517.58	0.00
270	2.60	0.00	-2.60	0.00	0.00	597.65	0.80
300	2.60	0.00	-2.25	-1.30	-298.82	517.58	0.00
330	2.60	0.00	-1.30	-2.25	-517.58	298.82	0.00

ATC Loading - Elevation 270 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	2.57	0.00	0.00	-2.57	-566.34	0.00	8.00
30	2.57	0.00	1.29	-2.23	-490.46	-283.17	0.00
60	2.57	0.00	2.23	-1.29	-283.17	-490.46	8.00
90	2.57	0.00	2.57	0.00	0.00	-566.34	0.00
120	2.57	0.00	2.23	1.29	283.17	-490.46	0.00
150	2.57	0.00	1.29	2.23	490.46	-283.17	0.00
180	2.57	0.00	0.00	2.57	566.34	0.80	0.00
210	2.57	0.00	-1.29	2.23	490.46	283.17	0.00
240	2.57	0.00	-2.23	1.29	283.17	490.46	0.00
270	2.57	0.00	-2.57	0.00	8.00	566.34	0.00
300	2.57	0.00	-2.23	-1.29	-283.17	490.46	0.08
330	2.57	0.00	-1.29	-2.23	-490.46	283.17	0.00

Discrete Appurtenance Totals - No Ice

Wind Azimuth °	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.00	-10.53	-2479.39	0.06	-0.04
38	5.27	-9.12	-2147.25	-1239.51	-0.14
60	9.12	-5.27	-1239.83	-2146.93	-0.20
90	10.53	8.00	-0.26	-2479.07	-0.21
120	9.12	5.27	1239.30	-2146.93	-8.17
150	5.27	9.12	2146.73	-1239.51	-0.08
180	0.00	10.53	2478.87	0.06	0.04
210	-5.27	9.12	2146.73	1239.62	0.14
240	-9.12	5.27	1239.30	2147.05	0.20
270	-10.53	0.00	-0.26	2479.19	0.21
300	-9.12	-5.27	-1239.83	2147.05	0.17
338	-5.27	-9.12	-2147.25	1239.62	0.08

Discrete Appurtenance Pressures - With Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	Offset$_x$ ft	Offset$_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_i in
Beacon	0.0000	0.16	0.00	-2.89	259.39	1.547	3	3.40	3.40	1.8403

Description	Aiming Azimuth °	Weight K	Offset$_x$ ft	Offset$_z$ ft	z ft	K_a	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	I_x in
Beacon Extender (4') 803062	0.0000	0.07	0.00	-2.89	257.21	1.544	3	1.88	1.88	1.8403
5/8" x 10' lightning rod	240.0000	0.08	-2.50	1.44	259.00	1.546	3	4.31	4.31	1.8403
ATC Loading	0.0000	5.67	0.00	0.88	250.80	1.535	3	108.47	108.47	1.8367
ATC Loading	0.0000	5.66	0.00	0.00	240.88	1.522	3	108.17	108.17	1.8292
ATC Loading	0.0000	5.64	0.00	0.00	230.00	1.508	3	107.86	107.86	1.8214
ATC Loading	0.0000	5.63	0.00	0.00	220.00	1.494	3	107.53	107.53	1.8134
	Sum Weight:	22.91								

Discrete Appurtenance Vectors - With Ice

Beacon - Elevation 258.39 - From Leg A

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.01	0.00	0.00	-0.01	-2.74	0.00	0.00
30	0.01	0.00	0.00	-0.01	-2.43	-1.13	-0.01
60	0.00	0.01	0.01	-0.00	-1.60	-1.96	-0.02
90	0.00	0.01	0.01	0.00	-0.47	-2.27	-0.03
120	0.00	0.01	0.01	0.00	0.67	-1.96	-0.02
150	0.01	0.00	0.00	0.01	1.50	-1.13	-0.01
180	0.01	0.00	0.00	0.01	1.88	0.00	0.00
210	0.01	0.00	-0.00	0.01	1.50	1.13	0.01
240	0.00	0.01	-0.01	0.00	0.67	1.96	0.02
270	0.00	0.01	-0.01	0.00	-0.47	2.27	0.03
300	0.00	0.01	-0.01	-0.00	-1.60	1.96	0.02
330	0.01	0.00	-0.00	-0.01	-2.43	1.13	0.01

Beacon Extender (4') 803062 - Elevation 257.21 - From Leg A

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.00	0.00	0.00	-0.00	-1.44	0.00	0.00
30	0.00	0.00	0.00	-0.00	-1.27	-0.62	-0.01
60	0.00	0.00	0.00	-0.00	-0.82	-1.08	-0.01
90	0.00	0.00	0.00	0.00	-0.19	-1.24	-0.01
120	0.00	0.00	0.00	0.00	0.43	-1.08	-0.01
150	0.00	0.00	0.00	0.00	0.89	-0.62	-0.01
180	0.00	0.00	0.00	0.00	1.05	0.00	0.00
210	0.00	0.00	-0.00	0.00	0.89	0.62	0.01
240	0.00	0.00	-0.00	0.00	0.43	1.08	0.01
270	0.00	0.00	-0.00	0.00	-0.19	1.24	0.01
300	0.00	0.00	-0.00	-0.00	-0.82	1.08	0.01
330	0.00	0.00	-0.00	-0.00	-1.27	0.62	0.01

3/8" x 10' lightning rod - Elevation 219 - From Leg C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.01	0.01	0.00	-0.01	-2.73	0.20	-0.03
30	0.01	0.01	0.01	-0.01	-2.37	-1.23	-0.02
60	0.01	0.01	0.01	-0.01	-1.32	-2.28	0.00
90	0.01	0.01	0.01	0.00	0.12	-2.67	0.02

3/8" x 10' lightning rod - Elevation 219 - From Leg C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
120	0.01	0.01	0.01	0.01	1.55	-2.28	0.03
150	0.00	0.01	0.01	0.01	2.60	-1.23	0.03
180	0.01	0.01	0.00	0.01	2.99	0.20	0.03
210	0.01	0.01	-0.01	0.01	2.60	1.64	0.02
240	0.01	0.00	-0.01	0.01	1.55	2.69	0.00
270	0.01	0.01	-0.01	0.00	0.12	3.08	-0.02
300	0.01	0.01	-0.01	-0.01	-1.32	2.69	-0.03
330	0.00	0.01	-0.01	-0.01	-2.37	1.64	-0.03

ATC Loading - Elevation 210 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.48	0.00	0.00	-0.48	-120.39	0.00	0.00
30	0.48	0.00	0.24	-0.42	-104.26	-60.19	0.00
60	0.48	0.00	0.42	-0.24	-60.19	-104.26	0.00
90	0.48	0.00	0.48	0.00	0.00	-120.39	0.00
120	0.48	0.00	0.42	0.24	60.19	-104.26	0.00
150	0.48	0.00	0.24	0.42	104.26	-60.19	0.00
180	0.48	0.00	0.00	0.48	120.39	0.00	0.00
210	0.48	0.00	-0.24	0.42	104.26	60.19	0.00
240	0.48	0.00	-0.42	0.24	60.19	104.26	0.00
270	0.48	0.00	-0.48	0.00	0.00	120.39	0.00
300	0.48	0.00	-0.42	-0.24	-60.19	104.26	0.00
330	0.48	0.00	-0.24	-0.42	-104.26	60.19	0.00

ATC Loading - Elevation 240 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.48	0.00	0.00	-0.48	-114.48	0.00	0.00
30	0.48	0.00	0.24	-0.41	-99.07	-57.20	0.00
60	0.48	0.00	0.41	-0.24	-57.20	-99.07	0.00
90	0.48	0.00	0.48	0.00	0.00	-114.48	0.00
120	0.48	0.00	0.41	0.24	57.20	-99.07	0.00
150	0.48	0.00	0.24	0.41	99.07	-57.20	0.00
180	0.48	0.00	0.00	0.48	114.48	0.00	0.00
210	0.48	0.00	-0.24	0.41	99.07	57.20	0.00
240	0.48	0.00	-0.41	0.24	57.20	99.07	0.00
270	0.48	0.00	-0.48	0.00	0.00	114.48	0.00
300	0.48	0.00	-0.41	-0.24	-57.20	99.07	0.00
330	0.48	0.00	-0.24	-0.41	-99.07	57.20	0.00

ATC Loading - Elevation 210 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.47	0.00	0.00	-0.47	-108.48	0.00	0.00
30	0.47	0.00	0.24	-0.41	-93.94	-54.24	0.00
60	0.47	0.00	0.41	-0.24	-54.24	-93.94	0.00
90	0.47	0.00	0.47	0.00	0.00	-108.48	0.00
120	0.47	0.00	0.41	0.24	54.24	-93.94	0.00
150	0.47	0.00	0.24	0.41	93.94	-54.24	0.00
180	0.47	0.00	0.00	0.47	108.48	0.00	0.00

ATC Loading - Elevation 210 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
210	0.47	0.00	-0.24	0.41	93.94	54.24	0.00
240	0.47	0.00	-0.41	0.24	54.24	93.94	0.00
270	0.47	0.00	-0.47	0.00	0.00	108.48	0.00
300	0.47	0.00	-0.41	-0.24	-54.24	93.94	0.00
330	0.47	0.00	-0.24	-0.41	-93.94	54.24	0.00

ATC Loading - Elevation 220 - None C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.47	0.00	0.00	-0.47	-182.62	0.00	0.00
30	0.47	0.00	0.23	-0.40	-88.87	-51.31	0.00
60	0.47	0.00	0.40	-0.23	-51.31	-88.87	0.00
90	0.47	0.00	0.47	0.00	0.00	-102.62	0.00
120	0.47	0.00	0.40	0.23	51.31	-88.87	0.00
150	0.47	0.00	0.23	0.40	88.87	-51.31	0.00
180	0.47	0.00	0.00	0.47	102.62	0.00	0.00
210	0.47	0.00	-0.23	0.40	88.87	51.31	0.00
240	0.47	0.00	-0.40	0.23	51.31	88.87	0.00
270	0.47	0.00	-0.47	0.00	0.00	102.62	0.00
300	0.47	0.00	-0.40	-0.23	-51.31	88.87	0.00
330	0.47	0.00	-0.23	-0.40	-88.87	51.31	0.00

Discrete Appurtenance Totals - With Ice

Wind Azimuth °	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.00	-1.92	-452.80	0.28	-0.03
30	0.96	-1.66	-392.21	-225.93	-0.04
60	1.66	-0.96	-226.67	-391.47	-0.03
90	1.92	0.00	-0.54	-452.86	-0.02
120	1.66	0.96	225.59	-391.47	-0.01
150	0.96	1.66	391.13	-225.93	0.01
180	0.00	1.92	451.72	0.20	0.03
210	-0.96	1.66	391.13	226.34	0.04
240	-1.66	0.96	225.59	391.87	0.03
270	-1.92	0.00	-0.54	452.47	0.02
300	-1.66	-0.96	-226.67	391.87	0.01
330	-0.96	-1.66	-392.21	226.34	-0.01

Discrete Appurtenance Pressures - Service $G_H = 0.850$

Description	Aiming Azimuth °	Weight K	Offset$_x$ ft	Offset$_z$ ft	z ft	K_a	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Beacon	0.0000	0.07	0.00	-2.89	259.39	1.547	12	2.40	2.40
Beacon Extender (4') 803062	0.0000	0.03	0.00	-2.89	257.21	1.544	12	1.11	1.11
5/8" x 10' lightning rod	240.0000	0.02	-2.50	1.44	259.00	1.546	12	0.63	0.63

Description	Aiming Azimuth °	Weight K	Offset$_x$ ft	Offset$_z$ ft	z ft	K_a	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
ATC Loading	0.0000	2.08	0.00	0.88	250.08	1.535	12	115.00	115.00
ATC Loading	0.0000	2.00	0.00	0.00	240.00	1.522	12	115.00	115.00
ATC Loading	0.0000	2.00	0.00	0.00	230.00	1.508	12	115.00	115.00
ATC Loading	0.0000	2.80	0.00	0.88	228.00	1.494	12	115.00	115.00
	Sum Weight:	8.13							

Discrete Appurtenance Vectors - Service

Beacon - Elevation 258.39 - From Leg A

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.02	0.00	0.00	-0.02	-4.62	0.00	0.00
30	0.02	0.01	0.01	-0.02	-3.76	-3.21	-0.04
60	0.01	0.02	0.02	-0.01	-3.42	-5.55	-0.06
90	0.00	0.02	0.02	0.00	-0.21	-6.41	-0.07
120	0.01	0.02	0.02	0.01	3.00	-5.55	-0.06
150	0.02	0.01	0.01	0.02	5.34	-3.21	-0.04
180	0.02	0.00	0.00	0.02	6.20	0.00	0.00
210	0.02	0.01	-0.01	0.02	5.34	3.21	0.04
240	0.01	0.02	-0.02	0.01	3.00	5.55	0.06
270	0.00	0.02	-0.02	0.00	-0.21	6.41	0.07
300	0.01	0.02	-0.02	-0.01	-3.42	5.55	0.06
330	0.02	0.01	-0.01	-0.02	-5.76	3.21	0.04

Beacon Extender (4') 803062 - Elevation 257.21 - From Leg A

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.01	0.00	0.00	-0.01	-3.02	0.00	0.00
30	0.01	0.01	0.01	-0.01	-2.63	-1.47	-0.02
60	0.01	0.01	0.01	-0.01	-1.55	-2.54	-0.03
90	0.00	0.01	0.01	0.00	-0.09	-2.94	-0.03
120	0.01	0.01	0.01	0.01	1.38	-2.54	-0.03
150	0.01	0.01	0.01	0.01	2.46	-1.47	-0.02
180	0.01	0.00	0.00	0.01	2.85	0.00	0.00
210	0.01	0.01	-0.01	0.01	2.46	1.47	0.02
240	0.01	0.01	-0.01	0.01	1.38	2.54	0.03
270	0.00	0.01	-0.01	0.00	-0.09	2.94	0.03
300	0.01	0.01	-0.01	-0.01	-1.55	2.54	0.03
330	0.01	0.01	-0.01	-0.01	-2.63	1.47	0.02

3/8" x 10' lightning rod - Elevation 219 - From Leg C

Wind Azimuth °	F_x K	F_z K	V_x K	V_z K	OTM_x kip-ft	OTM_z kip-ft	Torque kip-ft
0	0.00	0.01	0.00	-0.01	-1.63	0.06	-0.02
30	0.01	0.00	0.00	-0.01	-1.41	-0.78	-0.01
60	0.01	0.00	0.01	-0.00	-0.80	-1.39	0.00
90	0.01	0.00	0.01	0.00	0.03	-1.61	0.01
120	0.00	0.01	0.01	0.00	0.87	-1.39	0.02
150	0.00	0.01	0.00	0.01	1.48	-0.78	0.02
180	0.00	0.01	0.00	0.01	1.70	0.06	0.02

3/8" x 10' Ballasting rod - Elevation 239 - From Leg C

Wind Azimuth °	F_a K	F_s K	V_a K	V_s K	OTM_s kip-ft	OTM_a kip-ft	Torque kip-ft
218	0.81	0.00	-0.00	0.81	1.48	0.89	0.01
240	0.01	0.00	-0.81	0.00	0.87	1.50	0.00
270	0.01	0.00	-0.81	0.00	0.03	1.72	-0.01
300	0.00	0.01	-0.01	-0.00	-0.80	1.50	-0.02
330	0.00	0.81	-0.00	-0.01	-1.41	0.89	-0.02

ATC Loading - Elevation 210 - None C

Wind Azimuth °	F_a K	F_s K	V_a K	V_s K	OTM_s kip-ft	OTM_a kip-ft	Torque kip-ft
8	1.18	0.00	0.00	-1.18	-293.83	0.00	0.00
30	1.18	0.00	0.59	-1.02	-254.47	-146.92	0.00
60	1.18	0.00	1.02	-0.59	-146.92	-254.47	0.00
90	1.18	0.00	1.18	0.00	0.00	-293.83	0.00
120	1.18	0.00	1.02	0.59	146.92	-254.47	0.00
150	1.18	0.00	0.59	1.02	254.47	-146.92	0.00
180	1.18	0.00	0.00	1.18	293.83	0.00	0.00
210	1.18	0.00	-0.59	1.02	254.47	146.92	0.00
240	1.18	0.00	-1.02	0.59	146.92	254.47	0.00
270	1.18	0.00	-1.18	0.00	0.00	293.83	0.00
300	1.18	0.00	-1.02	-0.59	-146.92	254.47	0.00
330	1.18	0.00	-0.59	-1.02	-254.47	146.92	0.00

ATC Loading - Elevation 240 - None C

Wind Azimuth °	F_a K	F_s K	V_a K	V_s K	OTM_s kip-ft	OTM_a kip-ft	Torque kip-ft
0	1.17	0.00	0.00	-1.17	-279.66	0.00	0.00
30	1.17	0.00	0.58	-1.01	-242.20	-139.83	0.00
60	1.17	0.00	1.01	-0.58	-139.83	-242.20	0.00
90	1.17	0.00	1.17	0.00	0.00	-279.66	0.00
120	1.17	0.00	1.01	0.58	139.83	-242.20	0.00
150	1.17	0.00	0.58	1.01	242.20	-139.83	0.00
180	1.17	0.00	0.00	1.17	279.66	0.00	0.00
210	1.17	0.00	-0.58	1.01	242.20	139.83	0.00
240	1.17	0.00	-1.01	0.58	139.83	242.20	0.00
270	1.17	0.00	-1.17	0.00	0.00	279.66	0.00
300	1.17	0.00	-1.01	-0.58	-139.83	242.20	0.00
330	1.17	0.00	-0.58	-1.01	-242.20	139.83	0.00

ATC Loading - Elevation 210 - None C

Wind Azimuth °	F_a K	F_s K	V_a K	V_s K	OTM_s kip-ft	OTM_a kip-ft	Torque kip-ft
8	1.15	0.00	0.00	-1.15	-265.62	0.00	0.00
30	1.15	0.00	0.58	-1.00	-230.03	-132.81	0.00
60	1.15	0.00	1.00	-0.58	-132.81	-230.03	0.00
90	1.15	0.00	1.15	0.00	0.00	-265.62	0.00
120	1.15	0.00	1.00	0.58	132.81	-230.03	0.00
150	1.15	0.00	0.58	1.00	230.03	-132.81	0.00
180	1.15	0.00	0.00	1.15	265.62	0.00	0.00
210	1.15	0.00	-0.58	1.00	230.03	132.81	0.00
240	1.15	0.00	-1.00	0.58	132.81	230.03	0.00
270	1.15	0.00	-1.15	0.00	0.00	265.62	0.00

ATC Loading - Elevation 210 - None C

Wind Azimuth °	F_a K	F_s K	V_a K	V_s K	OTM_s kip-ft	OTM_a kip-ft	Torque kip-ft
300	1.15	0.00	-1.00	-0.58	-132.81	230.03	0.00
330	1.15	0.00	-0.58	-1.00	-230.03	132.81	0.00

ATC Loading - Elevation 220 - None C

Wind Azimuth °	F_a K	F_s K	V_a K	V_s K	OTM_s kip-ft	OTM_a kip-ft	Torque kip-ft
0	1.14	0.00	0.00	-1.14	-251.71	0.00	0.00
30	1.14	0.00	0.57	-0.99	-217.98	-125.85	0.00
60	1.14	0.00	0.99	-0.57	-125.85	-217.98	0.00
90	1.14	0.00	1.14	0.00	0.00	-251.71	0.00
120	1.14	0.00	0.99	0.57	125.85	-217.98	0.00
150	1.14	0.00	0.57	0.99	217.98	-125.85	0.00
180	1.14	0.00	0.00	1.14	251.71	0.00	0.00
210	1.14	0.00	-0.57	0.99	217.98	125.85	0.00
240	1.14	0.00	-0.99	0.57	125.85	217.98	0.00
270	1.14	0.00	-1.14	0.00	0.00	251.71	0.00
300	1.14	0.00	-0.99	-0.57	-125.85	217.98	0.00
330	1.14	0.00	-0.57	-0.99	-217.98	125.85	0.00

Discrete Appurtenance Totals - Service

Wind Azimuth °	V_a K	V_s K	OTM_s kip-ft	OTM_a kip-ft	Torque kip-ft
0	0.00	-1.68	-1102.10	0.06	-0.02
30	2.34	-4.05	-954.48	-550.86	-0.06
60	4.05	-2.34	-551.18	-954.36	-0.09
90	4.68	0.00	-0.26	-1181.78	-0.18
120	4.05	2.34	538.65	-954.16	-0.07
150	2.34	4.05	953.95	-550.86	-0.03
180	0.00	4.68	1101.57	0.06	0.02
210	-2.34	4.05	953.95	550.98	0.06
240	-4.05	2.34	538.65	954.28	0.09
270	-4.68	0.00	-0.26	1181.89	0.10
300	-4.05	-2.34	-551.18	954.28	0.07
330	-2.34	-4.05	-954.48	550.98	0.02

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	36.09					
Bracing Weight	14.25					
Total Member Self-Weight	50.34			-8.59	-14.70	
Total Weight	78.48			-8.59	-14.70	
Wind 0 deg - No Ice		0.00	-51.89	-7708.89	-14.70	7.00
Wind 30 deg - No Ice		27.18	-47.08	-6964.60	-4030.76	4.34

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 60 deg - No Ice		49.81	-28.76	-4224.33	-7316.58	0.11
Wind 90 deg - No Ice		54.82	0.80	-8.59	-8150.22	-4.22
Wind 120 deg - No Ice		45.14	26.06	3868.42	-6729.88	-6.95
Wind 158 deg - No Ice		25.50	44.16	6547.71	-3799.98	-7.82
Wind 180 deg - No Ice		0.00	50.21	7493.33	-14.70	-6.69
Wind 210 deg - No Ice		-27.18	47.88	6947.42	4001.35	-4.34
Wind 240 deg - No Ice		-51.27	29.60	4306.34	7458.98	-0.13
Wind 278 deg - No Ice		-54.82	0.00	-8.59	8120.82	4.22
Wind 300 deg - No Ice		-43.69	-25.22	-3786.41	6528.67	6.65
Wind 330 deg - No Ice		-25.50	-44.16	-6564.89	3770.58	7.82
Member Ice	92.32					
Total Weight Ice	272.74			-26.71	-68.23	
Wind 0 deg - Ice		0.00	-10.28	-1529.07	-68.23	0.26
Wind 30 deg - Ice		5.09	-8.82	-1325.77	-818.24	0.29
Wind 60 deg - Ice		8.83	-5.10	-781.27	-1375.16	0.23
Wind 90 deg - Ice		10.23	0.00	-26.71	-1578.64	0.11
Wind 128 deg - Ice		8.96	5.17	731.72	-1381.86	-0.03
Wind 150 deg - Ice		5.09	8.82	1265.11	-814.86	-0.16
Wind 180 deg - Ice		0.00	10.13	1457.95	-68.23	-0.25
Wind 210 deg - Ice		-5.09	8.82	1272.35	681.79	-0.29
Wind 240 deg - Ice		-8.95	5.17	725.90	1252.65	-0.23
Wind 270 deg - Ice		-10.23	0.00	-26.71	1442.19	-0.11
Wind 300 deg - Ice		-8.83	-5.10	-777.09	1231.46	0.03
Wind 330 deg - Ice		-5.09	-8.82	-1318.53	677.61	0.16
Total Weight	78.48			-8.59	-14.70	
Wind 0 deg - Service		0.00	-23.06	-3422.62	0.06	3.11
Wind 30 deg - Service		12.08	-20.93	-3091.82	-1784.86	1.93
Wind 60 deg - Service		22.14	-12.78	-1873.93	-3245.22	0.05
Wind 90 deg - Service		24.36	0.00	-0.26	-3615.73	-1.87
Wind 120 deg - Service		20.06	11.58	1722.85	-2984.47	-3.89
Wind 150 deg - Service		11.33	19.63	2913.65	-1682.29	-3.48
Wind 188 deg - Service		0.00	22.32	3333.92	0.06	-2.97
Wind 210 deg - Service		-12.88	20.93	3091.30	1784.97	-1.93
Wind 248 deg - Service		-22.79	13.16	1917.48	3321.69	-0.06
Wind 270 deg - Service		-24.26	0.00	-0.26	3615.83	1.87
Wind 308 deg - Service		-19.42	-11.21	-1679.29	2908.22	2.96
Wind 330 deg - Service		-11.33	-19.63	-2914.17	1682.40	3.48

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 38 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 188 deg - No Ice

Comb. No.	Description
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 248 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 338 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 188 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	235 - 240	Leg	Max Tension	7	9.63	8.22	-0.12
			Max. Compression	2	-11.95	0.81	-0.25
			Max. Mx	8	-1.27	0.35	0.02
			Max. My	14	-6.26	0.06	8.34
			Max. Vy	8	1.41	-0.17	-0.86
			Max. Vx	2	-1.42	0.01	0.21
		Diagonal	Max Tension	24	3.16	0.00	0.00
			Max. Compression	12	-2.89	0.00	0.00
			Max. Mx	6	-0.92	0.04	-0.00
			Max. My	12	-2.83	-0.00	0.01
			Max. Vy	36	-0.02	0.02	-0.00
			Max. Vx	12	0.00	-0.00	0.01
		Top Girt	Max Tension	15	0.47	0.00	0.00
			Max. Compression	2	-0.57	0.00	0.00
			Max. Mx	26	-0.02	-0.04	8.08
			Max. My	10	0.11	0.00	-0.00
			Max. Vy	26	-0.03	8.80	8.08

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	10	0.00	0.00	0.00
T2	240 - 220	Leg	Max Tension	7	65.54	8.22	-0.13
			Max. Compression	2	-71.69	0.03	1.30
			Max. Mx	8	34.26	-2.31	0.26
			Max. My	14	39.27	-0.01	-2.44
			Max. Vy	20	1.21	-0.75	0.04
			Max. Vx	14	-1.17	-0.07	0.74
		Diagonal	Max Tension	24	18.87	0.06	0.00
			Max. Compression	24	-11.42	0.00	0.00
			Max. Mx	5	-3.98	-0.06	0.00
			Max. My	8	-11.07	-0.05	0.02
			Max. Vy	27	-0.02	0.04	0.08
			Max. Vx	18	-0.00	0.00	8.08
T3	220 - 200	Leg	Max Tension	7	135.33	0.08	-0.01
			Max. Compression	2	-145.88	2.32	-0.82
			Max. Mx	18	-99.53	3.68	-0.01
			Max. My	8	-4.72	-0.00	2.42
			Max. Vy	18	-0.98	3.68	-0.01
			Max. Vx	16	0.89	0.83	-1.41
		Diagonal	Max Tension	12	8.38	0.00	0.00
			Max. Compression	12	-8.79	0.00	0.00
			Max. Mx	5	-4.48	-0.08	-0.00
			Max. My	24	-8.73	-0.04	-0.02
			Max. Vy	27	-0.03	0.03	8.00
			Max. Vx	24	0.00	0.00	0.08
T4	200 - 180	Leg	Max Tension	7	190.99	-3.31	-0.80
			Max. Compression	2	-205.45	-4.35	-0.02
			Max. Mx	2	-205.45	-4.35	-0.02
			Max. My	8	-6.17	-0.05	2.43
			Max. Vy	2	1.26	3.60	-0.01
			Max. Vx	4	-0.48	0.86	-1.17
		Diagonal	Max Tension	12	8.98	0.00	0.00
			Max. Compression	12	-9.07	0.00	0.00
			Max. Mx	4	3.76	0.18	-0.00
			Max. My	24	-8.99	-0.06	-0.03
			Max. Vy	27	-0.04	8.05	-0.88
			Max. Vx	24	0.81	0.00	0.08
T5	180 - 160	Leg	Max Tension	7	232.03	-5.19	-0.01
			Max. Compression	2	-249.27	11.15	-0.05
			Max. Mx	2	-225.41	16.50	-0.06
			Max. My	8	-8.94	-0.29	11.54
			Max. Vy	18	-2.63	16.49	-0.02
			Max. Vx	8	-1.54	0.17	10.84
		Diagonal	Max Tension	13	9.30	0.00	0.00
			Max. Compression	12	-10.37	0.00	0.00
			Max. Mx	2	6.15	0.13	-0.00
			Max. My	31	0.29	0.07	0.01
			Max. Vy	31	-0.05	0.09	-0.01
			Max. Vx	31	-0.00	0.00	0.00
T6	160 - 140	Leg	Max Tension	7	280.13	-4.96	-0.01
			Max. Compression	2	-302.71	8.98	-0.13
			Max. Mx	2	-274.91	15.80	-0.04
			Max. My	8	-11.13	-0.41	11.70
			Max. Vy	18	-1.61	15.78	-0.01
			Max. Vx	8	-1.12	-0.41	11.70
		Diagonal	Max Tension	10	10.18	0.00	0.00
			Max. Compression	10	-10.34	0.00	0.00
			Max. Mx	6	7.29	0.14	0.00
			Max. My	24	-9.77	-0.06	-0.04
			Max. Vy	29	0.06	0.08	-0.01
			Max. Vx	24	0.01	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T7	140 - 120	Leg	Max Tension	7	307.05	4.13	-0.01
			Max. Compression	2	-330.86	21.87	-0.19
			Max. Mx	18	-330.81	21.89	-0.81
			Max. My	8	-12.68	0.28	12.64
			Max. Vy	18	-1.53	21.89	-0.81
			Max. Vx	16	-0.75	0.28	12.61
		Diagonal	Max Tension	23	15.82	8.00	0.00
			Max. Compression	18	-17.76	0.00	8.00
			Max. Mx	6	15.36	-0.27	-0.81
			Max. My	24	-15.75	0.06	0.07
			Max. Vy	29	-0.10	-0.25	-0.05
			Max. Vx	29	-0.01	0.00	0.00
T8	120 - 100	Leg	Max Tension	7	355.51	8.03	-0.81
			Max. Compression	2	-385.93	20.13	-0.19
			Max. Mx	19	-380.23	20.17	-0.01
			Max. My	8	-16.04	-0.38	11.25
			Max. Vy	18	-1.68	20.16	-0.81
			Max. Vx	10	-0.40	-10.46	10.41
		Diagonal	Max Tension	18	14.72	0.00	0.00
			Max. Compression	12	-15.66	0.08	8.08
			Max. Mx	29	1.54	-0.38	-0.05
			Max. My	38	0.84	-0.30	0.06
			Max. Vy	29	-8.12	-0.38	-0.85
			Max. Vx	38	0.01	0.00	8.00
T9	100 - 80	Leg	Max Tension	7	391.78	0.74	-0.01
			Max. Compression	2	-427.71	20.13	-0.20
			Max. Mx	18	-426.69	20.15	-0.00
			Max. My	8	-17.75	0.43	10.21
			Max. Vy	19	-1.30	20.04	-0.00
			Max. Vx	16	-0.67	8.43	10.20
		Diagonal	Max Tension	23	14.83	0.00	0.00
			Max. Compression	18	-16.54	0.00	8.00
			Max. Mx	29	1.04	-0.34	-0.06
			Max. My	28	1.32	-0.31	8.06
			Max. Vy	29	-0.13	-0.34	-0.06
			Max. Vx	32	-0.01	0.00	0.00
T10	80 - 60	Leg	Max Tension	7	433.34	2.99	-0.00
			Max. Compression	2	-476.12	16.07	-0.15
			Max. Mx	22	427.27	-16.36	-0.17
			Max. My	4	-21.27	-0.54	-13.81
			Max. Vy	22	1.24	-16.36	-0.17
			Max. Vx	16	-0.68	-0.54	13.79
		Diagonal	Max Tension	12	14.83	0.00	8.00
			Max. Compression	12	-16.17	0.08	0.00
			Max. Mx	29	0.82	-0.52	-0.08
			Max. My	27	-0.60	-0.51	0.08
			Max. Vy	29	-0.19	-0.53	-0.08
			Max. Vx	27	0.01	0.00	0.08
T11	60 - 40	Leg	Max Tension	7	468.32	0.94	-0.08
			Max. Compression	2	-517.78	18.86	-0.15
			Max. Mx	18	-516.58	18.88	0.00
			Max. My	24	-21.18	-0.78	6.63
			Max. Vy	18	-1.27	18.88	0.00
			Max. Vx	4	-0.26	-0.76	-6.55
		Diagonal	Max Tension	23	15.86	0.08	0.00
			Max. Compression	18	-17.53	0.00	0.00
			Max. Mx	29	1.77	-0.56	-0.09
			Max. My	28	1.86	-0.58	0.09
			Max. Vy	29	-0.20	-0.56	-0.09
			Max. Vx	29	0.01	0.00	0.00
T12	40 - 20	Leg	Max Tension	7	507.91	8.74	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	2	-565.30	13.19	-0.12
			Max. Mx	22	499.71	-14.15	-0.15
			Max. My	4	-27.94	-0.74	-12.39
			Max. Vy	22	1.01	-14.15	-0.15
			Max. Vx	4	1.13	-0.74	-12.39
		Diagonal	Max Tension	18	16.17	0.00	0.00
			Max. Compression	12	-16.38	0.00	0.00
			Max. Mx	29	-0.05	-0.68	0.10
			Max. My	22	-16.09	-0.24	0.10
			Max. Vy	29	-0.22	-0.68	0.10
			Max. Vx	29	0.01	0.00	8.00
T13	20 - 8	Leg	Max Tension	7	538.52	-1.18	-0.00
			Max. Compression	2	-602.63	9.20	-0.09
			Max. Mx	18	-601.26	9.22	-0.00
			Max. My	24	-27.83	-1.06	11.90
			Max. Vy	18	-0.64	9.22	-0.00
			Max. Vx	4	-0.73	-1.04	-11.87
		Diagonal	Max Tension	15	17.55	0.00	0.00
			Max. Compression	2	-19.64	0.80	0.00
			Max. Mx	30	2.52	-0.65	-0.18
			Max. My	31	2.00	-0.65	-0.10
			Max. Vy	30	-0.22	-0.65	-0.10
			Max. Vx	31	-0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	18	624.83	53.39	-30.82
	Max. H_x	18	624.83	53.39	-30.82
	Max. H_z	7	-556.85	-48.42	27.95
	Min. Vert	7	-556.85	-48.42	27.95
	Min. H_x	7	-556.85	-48.42	27.95
	Min. H_z	18	624.83	53.39	-30.82
Leg B	Max. Vert	10	626.15	-53.29	-31.06
	Max. H_x	23	-555.86	48.29	28.14
	Max. H_z	23	-555.88	48.29	28.14
	Min. Vert	23	-555.86	48.29	28.14
	Min. H_x	10	626.15	-53.29	-31.06
	Min. H_z	10	626.15	-53.29	-31.86
Leg A	Max. Vert	2	626.16	0.25	61.68
	Max. H_x	21	23.97	3.53	1.62
	Max. H_z	2	626.16	8.25	61.68
	Min. Vert	13	-555.86	-0.22	-55.89
	Min. H_x	9	23.97	-3.53	1.62
	Min. H_z	13	-555.86	-0.22	-55.89

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear, K	Shear, K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft

Load Combination	Vertical K	Shear, K	Shear, K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	78.48	-8.08	0.00	-8.54	-14.64	-0.08
1.2 Dead+1.6 Wind 0 deg - No Ice	94.18	-0.00	-94.72	-13907.16	-17.85	11.36
0.9 Dead+1.6 Wind 8 deg - No Ice	70.63	-0.00	-94.72	-13881.66	-13.39	11.32
1.2 Dead+1.6 Wind 30 deg - No Ice	94.18	43.85	-75.96	-11356.55	-6570.91	7.27
0.9 Dead+1.6 Wind 30 deg - No Ice	70.63	43.85	-75.91	-11334.52	-6555.10	7.25
1.2 Dead+1.6 Wind 60 deg - No Ice	94.18	79.70	-46.02	-6799.55	-11776.85	0.16
0.9 Dead+1.6 Wind 60 deg - No Ice	70.63	79.70	-46.02	-6785.66	-11752.85	0.17
1.2 Dead+1.6 Wind 90 deg - No Ice	94.18	87.71	0.08	-12.58	-13120.39	-7.10
0.9 Dead+1.6 Wind 90 deg - No Ice	70.63	87.70	0.00	-9.85	-13093.45	-7.07
1.2 Dead+1.6 Wind 120 deg - No Ice	94.18	82.03	47.36	6937.87	-12052.79	-11.30
0.9 Dead+1.6 Wind 120 deg - No Ice	70.63	82.03	47.36	6929.04	-12028.51	-11.26
1.2 Dead+1.6 Wind 150 deg - No Ice	94.18	43.85	75.96	11337.84	-6567.40	-12.47
0.9 Dead+1.6 Wind 150 deg - No Ice	70.63	43.85	75.95	11328.91	-6551.79	-12.43
1.2 Dead+1.6 Wind 180 deg - No Ice	94.18	-0.00	92.03	13567.90	-17.85	-10.86
0.9 Dead+1.6 Wind 180 deg - No Ice	70.63	-8.08	92.83	13547.94	-13.39	-10.82
1.2 Dead+1.6 Wind 210 deg - No Ice	94.18	-43.85	75.96	11337.91	6531.74	-7.27
0.9 Dead+1.6 Wind 218 deg - No Ice	70.63	-43.85	75.95	11320.98	6525.06	-7.25
1.2 Dead+1.6 Wind 240 deg - No Ice	94.18	-82.03	47.36	6937.95	12017.23	-0.18
0.9 Dead+1.6 Wind 240 deg - No Ice	70.63	-82.83	47.36	6929.12	12001.87	-0.19
1.2 Dead+1.6 Wind 270 deg - No Ice	94.18	-87.71	0.00	-12.59	13084.90	7.18
0.9 Dead+1.6 Wind 278 deg - No Ice	70.63	-87.70	0.00	-9.86	13066.87	7.07
1.2 Dead+1.6 Wind 300 deg - No Ice	94.18	-79.70	-46.02	-6799.65	11741.32	18.82
0.9 Dead+1.6 Wind 308 deg - No Ice	70.63	-79.70	-46.02	-6785.75	11726.23	10.77
1.2 Dead+1.6 Wind 338 deg - No Ice	94.18	-43.85	-75.96	-11356.65	6535.28	12.47
0.9 Dead+1.6 Wind 338 deg - No Ice	70.63	-43.85	-75.95	-11334.62	6528.39	12.43
1.2 Dead+1.0 Ice+1.8 Temp	288.44	-0.88	0.08	-28.85	-72.12	-0.08
1.2 Dead+1.8 Wind 0 deg+1.0 Ice+1.0 Temp	288.44	-0.00	-10.41	-1397.30	-72.69	0.34
1.2 Dead+1.8 Wind 30 deg+1.0 Ice+1.8 Temp	288.44	5.15	-8.92	-1374.10	-849.21	0.34
1.2 Dead+1.8 Wind 60 deg+1.0 Ice+1.0 Temp	288.44	8.89	-5.13	-805.03	-1416.58	0.23
1.2 Dead+1.8 Wind 90 deg+1.0 Ice+1.0 Temp	288.44	10.31	8.00	-29.14	-1625.72	0.07
1.2 Dead+1.8 Wind 120 deg+1.0 Ice+1.0 Temp	288.44	9.02	5.21	754.94	-1430.76	-0.10
1.2 Dead+1.0 Wind 150	288.44	5.15	8.92	1315.82	-849.20	-0.23

Load Combination	Vertical K	Shear$_x$ K	Shear$_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+1.8 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	288.44	-8.00	10.27	1522.48	-72.69	-0.34
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	288.44	-5.15	8.92	1315.71	703.75	-0.34
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	288.44	-9.02	5.21	754.87	1285.26	-0.24
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	288.44	-10.30	8.88	-29.15	1480.21	-0.07
1.2 Dead+1.0 Wind 300 deg+1.8 Ice+1.0 Temp	288.44	-8.89	-5.13	-804.95	1271.86	0.10
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	288.44	-5.15	-8.92	-1374.10	703.83	0.25
Dead+Wind 0 deg - Service	78.48	-8.00	-26.31	-3864.93	-14.78	3.15
Dead+Wind 30 deg - Service	78.48	12.18	-21.10	-3157.25	-1832.63	t.96
Dead+Wind 60 deg - Service	78.48	22.14	-12.78	-1892.50	-3277.71	0.05
Dead+Wind 90 deg - Service	78.48	24.36	0.00	-8.65	-3650.47	-1.91
Dead+Wind 120 deg - Service	78.48	22.79	13.16	1919.50	-3354.42	-3.13
Dead+Wind 150 deg - Service	78.48	12.18	21.10	3139.97	-1832.62	-3.51
Dead+Wind 180 deg - Service	78.48	-8.08	25.56	3759.07	-14.78	-3.01
Dead+Wind 210 deg - Service	78.48	-12.18	21.18	3139.97	1803.06	-1.96
Dead+Wind 240 deg - Service	78.48	-22.79	13.16	1919.50	3324.87	-0.05
Dead+Wind 270 deg - Service	78.48	-24.36	0.00	-8.66	3628.92	1.91
Dead+Wind 300 deg - Service	78.48	-22.14	-12.78	-1892.51	3248.16	3.88
Dead+Wind 330 deg - Service	78.48	-12.18	-21.10	-3157.25	1803.08	3.51

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-78.48	0.00	0.00	78.48	-0.08	0.000%
2	0.00	-94.18	-94.72	0.80	94.18	94.72	0.003%
3	0.00	-70.63	-94.72	8.80	70.63	94.72	0.003%
4	43.85	-94.18	-75.96	-43.85	94.18	75.96	0.801%
5	43.85	-70.63	-75.96	-43.85	70.63	75.95	0.003%
6	79.70	-94.18	-46.02	-79.70	94.18	46.02	0.001%
7	79.78	-70.63	-46.02	-79.70	70.63	46.02	0.801%
8	87.71	-94.18	0.00	-87.71	94.18	-0.00	0.001%
9	87.71	-70.63	0.00	-87.70	78.63	-0.00	0.803%
10	82.03	-94.18	47.36	-82.03	94.18	-47.36	0.003%
11	82.03	-70.63	47.36	-82.83	70.63	-47.36	8.003%
12	43.85	-94.18	75.96	-43.85	94.18	-75.96	0.001%
13	43.85	-70.63	75.96	-43.85	70.63	-75.95	0.003%
14	0.00	-94.18	92.03	8.08	94.18	-92.83	0.001%
15	0.00	-70.63	92.03	8.88	70.63	-92.83	0.001%
16	-43.85	-94.18	75.96	43.85	94.18	-75.96	8.001%
17	-43.85	-70.63	75.96	43.85	70.63	-75.95	0.003%
18	-82.03	-94.18	47.36	82.03	94.18	-47.36	0.003%
19	-82.03	-70.63	47.36	82.83	70.63	-47.36	0.003%
20	-87.71	-94.18	0.00	87.71	94.18	-0.88	0.001%
21	-87.71	-70.63	0.00	87.70	78.63	-0.08	0.003%
22	-79.70	-94.18	-46.82	79.70	94.18	46.02	0.001%
23	-79.70	-70.63	-46.02	79.70	70.63	46.82	0.001%
24	-43.85	-94.18	-75.96	43.85	94.18	75.96	0.001%
25	-43.85	-78.63	-75.96	43.85	70.63	75.95	0.003%
26	0.00	-288.44	0.00	0.08	288.44	-0.08	0.000%
27	0.00	-288.44	-10.41	0.00	288.44	18.it	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
28	5.15	-288.44	-8.93	-5.15	288.44	8.92	8.000%
29	8.89	-288.44	-5.13	-8.89	288.44	5.13	0.000%
30	10.31	-288.44	0.00	-10.31	288.44	-0.00	0.000%
31	9.82	-288.44	5.21	-9.02	288.44	-5.21	0.000%
32	5.15	-288.44	8.93	-5.15	288.44	-8.92	0.000%
33	0.00	-288.44	10.27	0.08	288.44	-10.27	0.000%
34	-5.15	-288.44	8.93	5.15	288.44	-8.92	0.000%
35	-9.02	-288.44	5.21	9.82	288.44	-5.21	0.000%
36	-10.31	-288.44	0.00	10.30	288.44	-0.00	0.000%
37	-8.89	-288.44	-5.13	8.89	288.44	5.13	0.000%
38	-5.15	-288.44	-8.92	5.15	288.44	8.92	0.000%
39	0.00	-78.48	-26.31	0.00	78.48	26.31	0.001%
40	12.18	-78.48	-21.10	-12.18	78.48	21.10	0.001%
41	22.14	-78.48	-12.78	-22.14	78.48	12.78	0.001%
42	24.36	-78.48	0.00	-24.36	78.48	-0.00	0.001%
43	22.79	-78.48	13.16	-22.79	78.48	-13.16	0.001%
44	12.18	-78.48	21.18	-12.18	78.48	-21.10	0.881%
45	-0.00	-78.48	25.56	0.00	78.48	-25.56	8.801%
46	-12.18	-78.48	21.18	12.18	78.48	-21.10	0.801%
47	-22.79	-78.48	13.16	22.79	78.48	-13.16	0.881%
48	-24.36	-78.48	0.80	24.36	78.48	-0.80	0.001%
49	-22.14	-78.48	-12.78	22.14	78.48	12.78	0.001%
50	-12.18	-78.48	-21.10	12.18	78.48	21.10	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	7	0.00000001	0.00012222
2	Yes	12	0.00005123	0.00014648
3	Yes	12	8.00004614	0.00013282
4	Yes	13	8.00008001	0.00005528
5	Yes	12	0.00005094	0.00014516
6	Yes	13	0.00000001	0.88005880
7	Yes	13	0.00000001	0.88005344
8	Yes	13	0.00000001	0.00005519
9	Yes	12	0.00005094	0.00814516
10	Yes	12	8.00005123	8.00014647
tt	Yes	t2	0.88004614	0.00013281
12	Yes	13	0.8000000t	0.80005516
13	Yes	12	0.00005092	0.88814510
14	Yes	13	8.00008001	0.00005879
15	Yes	13	0.00000001	8.00005343
16	Yes	13	0.00000001	8.80005518
17	Yes	12	0.00005093	0.80014514
18	Yes	12	0.00005123	0.08814647
19	Yes	12	8.00004614	0.00013281
20	Yes	13	8.00008001	0.00005519
21	Yes	12	0.00005094	0.88014515
22	Yes	13	0.00000001	0.88005880
23	Yes	13	0.00000001	0.88005344
24	Yes	13	0.00000001	0.08005517
25	Yes	12	8.00005092	0.00014512
26	Yes	9	0.00008001	0.00011598
27	Yes	13	0.00000001	8.00005601
28	Yes	13	0.00000001	0.00003680

29	Yes	13	0.00000001	0.00005763
38	Yes	13	0.0000000t	0.00005687
31	Yes	13	0.00000001	0.00005614
32	Yes	13	0.00000001	0.00005494
33	Yes	12	0.00000001	0.00014951
34	Yes	12	0.00000001	0.00814577
35	Yes	12	0.00000001	0.00014585
36	Yes	12	0.00000001	0.00014551
37	Yes	12	0.00000001	8.00014908
38	Yes	13	0.00000001	0.00005477
39	Yes	12	0.00000001	0.00014294
40	Yes	12	0.00000001	0.00014671
41	Yes	12	0.00000001	0.00014900
42	Yes	12	0.00000001	0.00014669
43	Yes	12	0.00000001	0.00014289
44	Yes	12	0.00000001	0.00014657
45	Yes	12	0.00000001	0.00014887
46	Yes	12	0.00000001	0.00014658
47	Yes	12	0.0000000t	0.00014283
48	Yes	12	0.00000001	0.00014662
49	Yes	12	0.00000001	0.00014893
50	Yes	12	0.00000001	0.00014664

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	255 - 240	13.261	39	0.5345	0.0138
T2	240 - 220	11.589	39	0.5262	0.0122
T3	220 - 200	9.314	39	0.4725	0.0091
T4	200 - 180	7.318	39	0.3978	0.0065
T5	180 - 160	5.753	39	0.3239	0.0052
T6	160 - 140	4.323	39	0.2719	0.0041
T7	140 - t20	3.179	39	0.2149	0.0032
T8	120 - 100	2.241	39	0.1725	0.0024
T9	100 - 80	1.507	39	0.1381	0.0018
T10	80 - 60	0.937	39	0.1034	0.0012
T11	60 - 40	0.521	39	0.0748	0.0009
T12	40 - 20	0.238	39	0.0465	0.0006
T13	20 - 0	0.060	39	0.0229	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
255.00	Beacon	39	13.261	0.5345	0.8128	83697
250.00	ATC Loading	39	12.708	0.5337	0.0133	83697
240.00	ATC Loading	39	11.589	0.5262	0.0122	33732
230.00	ATC Loading	39	10.442	0.5045	0.0107	61833
220.00	ATC Loading	39	9.314	8.4725	0.0091	15406

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	255 - 240	47.658	2	1.9189	0.0500
T2	240 - 220	41.653	2	1.8903	0.0441
T3	220 - 200	33.480	2	1.6983	0.0330
T4	200 - 180	26.308	2	t.4301	0.0236
T5	180 - 160	20.681	2	1.1643	0.0186
T6	t60 - 140	15.542	2	0.9772	0.0147
T7	140 - 120	11.430	2	0.7724	0.0113
T8	120 - 100	8.061	2	0.6202	0.0085
T9	100 - 80	5.421	2	0.4967	0.0063
T10	80 - 60	3.369	2	0.3719	0.0043
T11	60 - 40	1.873	2	0.2691	0.0032
T12	40 - 20	0.856	2	0.1672	0.0021
T13	20 - 0	0.217	2	0.0824	0.0010

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
255.00	Beacon	2	47.658	1.9189	0.0500	23462
250.00	ATC Loading	2	45.673	1.9163	0.0482	23462
240.00	ATC Loading	2	41.653	1.8903	0.0441	9466
230.00	ATC Loading	2	37.534	1.8129	0.0388	17530
220.00	ATC Loading	2	33.480	1.6983	0.0330	4300

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	255	Leg	A325N	0.7500	4	2.41	29.82	0.081	✓	1	Bolt Tension
		Diagonal	A325N	0.7508	1	3.16	10.44	0.303	✓	t	Member Bearing
		Top Girt	A325N	0.7500	1	0.47	10.77	0.043	✓	1	Member Bearing
T2	240	Leg	A325N	0.7500	6	10.92	29.82	0.366	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	1	10.87	14.36	0.757	✓	1	Gusset Bearing
T3	220	Leg	A325N	0.7500	8	16.92	29.82	0.567	✓	1	Bolt Tension
		Diagonal	A325N	8.7580	1	8.79	15.66	0.561	✓	t	Member Bearing
T4	200	Leg	A325N	t.0000	6	31.83	53.81	0.600	✓	1	Bolt Tension
		Diagonal	A325N	0.7500	t	9.07	15.66	0.579	✓	1	Member Bearing
T5	180	Leg	A325N	1.0008	6	38.67	53.01	0.729	✓	1	Bolt Tension
		Diagonal	A325N	1.0000	t	9.30	15.83	0.587	✓	1	Member Bearing

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
T6	160	Leg	A325N	1.0000	6	46.69	53.01	0.881 ✓	1	Bolt Tension
		Diagonal	A325N	1.0000	1	10.18	15.83	0.643 ✓	1	Member Bearing
T7	140	Leg	A325N	1.0000	12	25.59	53.01	0.483 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	15.82	31.32	0.505 ✓	1	Member Bearing
T8	120	Leg	A325N	1.0000	12	29.63	53.01	0.559 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	14.72	31.32	0.470 ✓	1	Member Bearing
T9	108	Leg	A325N	1.0000	12	32.65	53.01	0.616 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	14.83	31.32	0.473 ✓	1	Member Bearing
T10	88	Leg	A325N	1.0000	12	36.11	53.81	0.671 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	14.83	41.76	0.355 ✓	1	Member Bearing
T11	68	Leg	A325N	1.0000	12	39.03	53.81	0.726 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	15.86	41.76	0.380 ✓	1	Member Bearing
T12	48	Leg	A325N	1.0000	12	42.33	53.81	0.798 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	16.17	41.76	0.387 ✓	1	Member Bearing
T13	20	Leg	F1554-Gr 105	1.0000	12	44.88	55.22	0.813 ✓	1	Bolt Tension
		Diagonal	A325N	0.8750	1	17.55	41.76	0.420 ✓	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	255 - 248	P- 2.50" - 0.75" conn.-15' -C-(Pirod 226169)	15.00	4.86	61.6 K=1.00	1.7040	-11.95	58.12	0.206 [1] ✓
T2	248 - 220	P- 4.00"- 0.75" conn.-20' -C-Trans-6B-4B-(Pirod 226184)	28.00	6.67	53.8 K=1.88	3.1741	-71.69	116.32	0.616 [1] ✓
T3	228 - 200	P- 5.00"- 0.75" conn.-Trans-20' -C-(Pirod 226200)	28.03	6.68	42.7 K=1.00	4.2999	-145.88	169.37	0.861 [1] ✓
T4	200 - 168	P- 6.00"- 0.75" conn.-HBD-Trans-28' -C-(Pirod 229377)	28.83	6.68	35.7 K=1.88	5.5813	-205.45	228.83	0.898 [1] ✓
T5	180 - 168	#12ZG -1.75" - 1.00" conn.-HBD-Trans (Pirod 229588)	20.03	10.02	30.4 K=1.08	7.2158	-249.27	383.46	0.821 [1] ✓
T6	160 - 148	#12ZG -1.75" - 1.00" conn.-HBD-Trans (Pirod 229588)	20.83	10.02	38.4 K=1.00	7.2158	-302.71	383.46	0.998 [1] ✓
T7	140 - 128	#12ZG -2.00" - 8.875" conn.-HBD-Trans (Pirod	28.03	20.03	48.8 K=1.00	9.4248	-330.86	356.29	0.929 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
		208332)							
T8	128 - 108	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	28.03	20.03	48.8 K=1.00	11.9282	-385.93	451.15	0.855 [1] ✓
T9	108 - 80	#12ZG -2.25" - 0.875" conn. (Pirod 208334)	20.83	20.83	48.8 K=1.00	11.9282	-427.71	451.15	0.948 [1] ✓
T10	80 - 60	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.83	20.03	48.7 K=1.00	14.7262	-476.12	557.27	0.854 [1] ✓
T11	60 - 48	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	20.03	20.03	48.7 K=1.00	14.7262	-517.78	557.27	0.929 [1] ✓
T12	40 - 20	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	28.83	20.03	48.6 K=1.08	17.8187	-565.30	674.68	0.838 [1] ✓
T13	20 - 0	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	28.03	20.03	48.6 K=1.08	17.8187	-602.63	674.68	0.893 [1] ✓

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	KL/r	ϕP_n K	A in²	V_u K	ϕV_n K	Stress Ratio
T5	188 - 168	0.5	1.40	94.1	324.71	0.1963	2.63	4.63	0.567 ✓
T6	168 - 148	0.5	1.40	94.1	324.71	0.1963	1.61	4.63	0.347 ✓
T7	148 - 128	0.5	1.39	93.2	424.12	0.1963	1.53	4.67	0.327 ✓
T8	128 - 108	0.5	1.38	92.4	536.77	0.1963	1.68	4.71	0.357 ✓
T9	108 - 80	0.5	1.38	92.4	536.77	0.1963	1.30	4.71	0.276 ✓
T10	88 - 60	0.5	1.36	91.6	662.68	0.1963	1.24	4.75	0.261 ✓
T11	60 - 48	0.5	1.36	91.6	662.68	0.1963	1.27	4.75	0.267 ✓
T12	48 - 20	0.625	1.35	72.6	801.84	0.3068	1.19	8.74	0.149 ✓
T13	20 - 8	0.625	1.35	72.6	801.84	0.3068	8.72	8.74	0.995 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	255 - 248	L2x2x1/8	5.80	2.71	91.4 K=1.12	0.4844	-2.89	9.92	0.291 [1] ✓
T2	240 - 220	L2x2x3/16	7.17	3.40	107.6	0.7150	-11.42	12.59	0.907 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
					K=1.84				✓
T3	228 - 200	L2x2x3/16	8.11	4.87	123.9 K=1.88	0.7158	-8.43	10.32	0.816 [1] ✓
T4	200 - 180	L2 1/2x2 1/2x3/16	9.60	4.88	117.2 K=1.84	0.9020	-9.07	14.17	0.640 [1] ✓
T5	188 - 160	L3x3x3/16	12.65	6.43	129.5 K=1.00	1.0900	-10.37	14.54	0.713 [1] ✓
T6	160 - 148	L3x3x3/16	14.18	7.14	143.8 K=1.08	1.0908	-10.24	11.92	0.859 [1] ✓
T7	148 - 128	2L3x3x3/16	22.66	11.95	152.8 K=1.08	2.1880	-17.76	21.10	0.842 [1] ✓
T8	128 - 108	2L3x3x3/16	23.79	12.45	159.1 K=1.80	2.1800	-15.66	19.45	0.805 [1] ✓
T9	108 - 88	2L3x3x3/16	25.83	13.02	166.4 K=1.00	2.1808	-16.54	17.79	0.930 [1] ✓
T10	88 - 68	2L3 1/2x3 1/2x1/4	26.36	13.65	150.1 K=1.08	3.3758	-16.17	33.85	0.478 [1] ✓
T11	60 - 48	2L3 1/2x3 1/2x1/4	27.77	14.33	157.5 K=1.00	3.3750	-17.53	30.72	0.571 [1] ✓
T12	48 - 20	2L3 1/2x3 1/2x1/4	29.25	15.04	165.4 K=1.08	3.3750	-16.30	27.86	0.585 [1] ✓
T13	20 - 0	2L3 1/2x3 1/2x1/4	30.78	15.80	173.7 K=1.00	3.3750	-19.64	25.27	0.777 [1] ✓

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	255 - 248	L2x2x3/16	5.00	4.47	136.1 K=1.08	0.7150	-0.57	8.72	0.065 [1] ✓

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	255 - 248	P- 2.50" - 0.75" conn.-15' -C-(Pirod 226169)	15.00	4.86	61.6	1.7040	9.63	76.68	0.126 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	240 - 220	P- 4.00"- 0.75" conn.-20' -C-Trans-6B-4B-(Pirod 226184)	28.00	6.67	53.8	3.1741	65.54	142.83	0.459 [1] ✓
T3	228 - 208	P- 5.00"- 0.75" conn.-Trans-20' -C-(Pirod 226200)	20.03	6.68	42.7	4.2999	135.33	193.49	0.699 [1] ✓
T4	200 - 188	P- 6.00"- 0.75" conn.-HBD-Trans-20' -C-(Pirod 229377)	20.03	6.68	35.7	5.5813	190.99	251.16	0.760 [1] ✓
T5	188 - 160	#12ZG -1.75" - 1.00" conn.-HBD-Trans (Pirod 229588)	20.03	10.02	30.4	7.2158	232.03	324.71	0.715 [1] ✓
T6	168 - 140	#12ZG -1.75" - 1.00" conn.-HBD-Trans (Pirod 229588)	20.83	10.02	30.4	7.2158	280.13	324.71	0.863 [1] ✓
T7	148 - 120	#12ZG -2.00" - 8.875" conn.-HBD-Trans (Pirod 208332)	20.83	20.83	48.8	9.4248	307.05	424.12	0.724 [1] ✓
T8	120 - 108	#12ZG -2.25" - 8.875" conn. (Pirod 208334)	20.83	20.03	48.8	11.9282	355.51	536.77	0.662 [1] ✓
T9	100 - 80	#12ZG -2.25" - 8.875" conn. (Pirod 208334)	28.03	20.83	48.8	11.9282	391.78	536.77	0.730 [1] ✓
T10	80 - 60	#12ZG - 2.50" - 8.875" conn. (Pirod 208335)	20.03	20.03	48.7	14.7262	433.34	662.68	0.654 [1] ✓
T11	68 - 40	#12ZG - 2.50" - 8.875" conn. (Pirod 208335)	20.03	20.03	48.7	14.7262	468.32	662.68	0.707 [1] ✓
T12	40 - 20	#12ZG - 2.75" - 8.875" conn. (Pirod 208337)	20.03	20.03	48.6	17.8187	507.91	801.84	0.633 [1] ✓
T13	20 - 8	#12ZG - 2.75" - 8.875" conn. (Pirod 208337)	20.03	20.03	48.6	17.8187	538.52	801.84	0.672 [1] ✓

[1] P_u / ϕP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L_d ft	KL/r	ϕP_n K	A in²	V_u K	ϕV_n K	Stress Ratio
T5	188 - 168	0.5	1.40	94.1	324.71	0.1963	2.63	4.63	0.567 ✓
T6	168 - 148	0.5	1.40	94.1	324.71	0.1963	1.61	4.63	0.347 ✓
T7	148 - 128	0.5	1.39	93.2	424.12	0.1963	1.53	4.67	0.327 ✓
T8	128 - 108	0.5	1.38	92.4	536.77	0.1963	1.68	4.71	0.357 ✓
T9	108 - 88	0.5	1.38	92.4	536.77	0.1963	1.30	4.71	0.276 ✓
T10	88 - 68	0.5	1.36	91.6	662.68	0.1963	1.24	4.75	0.261 ✓
T11	60 - 48	0.5	1.36	91.6	662.68	0.1963	1.27	4.75	0.267 ✓
T12	40 - 28	0.625	1.35	72.6	801.84	0.3068	1.19	8.74	0.149 ✓

Section No.	Elevation ft	Diagonal Size	L_d ft	KL/r	ϕP_n K	A in²	V_u K	ϕV_n K	Stress Ratio
T13	20 - 0	0.625	1.35	72.6	801.84	0.3868	0.72	8.74	0.095 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $P_u/\phi P_n$
T1	255 - 240	L2x2x1/8	5.80	2.71	55.5	0.2813	3.16	12.23	0.258 [1] ✓
T2	240 - 228	L2x2x3/16	7.17	3.40	69.7	0.4132	10.87	17.97	0.605 [1] ✓
T3	228 - 200	L2x2x3/16	7.66	3.85	78.6	0.4132	8.38	17.97	0.466 [1] ✓
T4	200 - 180	L2 1/2x2 1/2x3/16	9.60	4.88	76.9	0.5535	8.98	24.08	0.373 [1] ✓
T5	180 - 160	L3x3x3/16	12.65	6.43	84.7	0.6593	9.30	28.68	0.324 [1] ✓
T6	160 - 140	L3x3x3/16	14.10	7.14	93.7	0.6593	10.18	28.68	0.355 [1] ✓
T7	140 - 120	2L3x3x3/16	22.66	11.95	155.2	1.3537	15.82	58.89	0.269 [1] ✓
T8	120 - 100	2L3x3x3/16	23.79	12.45	161.5	1.3537	14.72	58.89	0.250 [1] ✓
T9	100 - 80	2L3x3x3/16	25.83	13.82	168.8	1.3537	14.83	58.89	0.252 [1] ✓
T10	80 - 60	2L3 1/2x3 1/2x1/4	26.36	13.65	152.1	2.1563	14.83	93.80	0.158 [1] ✓
T11	60 - 40	2L3 1/2x3 1/2x1/4	27.77	14.33	159.6	2.1563	15.86	93.88	0.169 [1] ✓
T12	40 - 20	2L3 1/2x3 1/2x1/4	29.25	15.84	167.5	2.1563	16.17	93.80	0.172 [1] ✓
T13	20 - 0	2L3 1/2x3 1/2x1/4	38.78	15.80	175.8	2.1563	17.55	93.80	0.187 [1] ✓

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	KL/r	A in²	P_u K	ϕP_n K	Ratio $P_u/\phi P_n$
T1	255 - 240	L2x2x3/16	5.00	4.47	92.6	0.4132	0.47	17.97	0.026 [1] ✓

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	255 - 240	Leg	P- 2.50" - 0.75" conn.-15' -C-(Pirod 226169)	3	-11.95	58.12	20.6	Pass
T2	240 - 220	Leg	P- 4.88"- 0.75" conn.-20' -C-Trans-6B-4B-(Pirod 226184)	27	-71.69	116.32	61.6	Pass
T3	228 - 280	Leg	P- 5.90"- 0.75" conn.-Trans-20' -C-(Pirod 226208)	48	-145.88	169.37	86.1	Pass
T4	200 - 180	Leg	P- 6.00"- 8.75" conn.-HBD-Trans-20' -C-(Pirod 229177)	69	-205.45	228.83	89.8	Pass
T5	180 - 160	Leg	#12ZG -1.75" - 1.80" conn.-HBD-Trans (Pirod 229588)	90	-249.27	303.46	82.1	Pass
T6	160 - 140	Leg	#12ZG -1.75" - 1.80" conn.-HBD-Trans (Pirod 229588)	105	-302.71	303.46	99.8	Pass
T7	140 - 120	Leg	#12ZG -2.00" - 8.875" conn.-HBD-Trans (Pirod 208332)	120	-330.86	356.29	92.9	Pass
T8	120 - 100	Leg	#12ZG -2.25" - 8.875" conn. (Pirod 208334)	129	-385.93	451.15	85.5	Pass
T9	100 - 80	Leg	#12ZG - 2.25" - 8.875" conn. (Pirod 208334)	138	-427.71	451.15	94.8	Pass
T10	80 - 60	Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	147	-476.12	557.27	85.4	Pass
T11	60 - 40	Leg	#12ZG - 2.50" - 0.875" conn. (Pirod 208335)	156	-517.78	557.27	92.9	Pass
T12	40 - 20	Leg	#12ZG - 2.75" - 8.875" conn. (Pirod 208337)	165	-565.30	674.68	83.8	Pass
T13	20 - 0	Leg	#12ZG - 2.75" - 0.875" conn. (Pirod 208337)	174	-602.63	674.68	89.3	Pass
T1	255 - 248	Diagonal	L2x2x1/8	9	-2.89	9.92	29.1 30.3 (b)	Pass
T2	248 - 220	Diagonal	L2x2x3/16	31	-11.42	12.59	90.7	Pass
T3	220 - 280	Diagonal	L2x2x3/16	51	-8.43	10.32	81.6	Pass
T4	200 - 180	Diagonal	L2 1/2x2 1/2x3/16	72	-9.07	14.17	64.0	Pass
T5	180 - 160	Diagonal	L3x3x3/16	93	-10.37	14.54	71.3	Pass
T6	160 - 140	Diagonal	L3x3x3/16	109	-10.24	11.92	85.9	Pass
T7	140 - 120	Diagonal	2L3 x3x3/16	123	-17.76	21.10	84.2	Pass
T8	120 - 100	Diagonal	2L3 x3x3/16	132	-15.66	19.45	80.5	Pass
T9	100 - 80	Diagonal	2L3 x3x3/16	141	-16.54	17.79	93.0	Pass
T10	80 - 60	Diagonal	2L3 1/2x3 1/2x1/4	150	-16.17	33.85	47.8	Pass
T11	60 - 40	Diagonal	2L3 1/2x3 1/2x1/4	159	-17.53	30.72	57.1	Pass
T12	40 - 20	Diagonal	2L3 1/2x3 1/2x1/4	168	-16.30	27.86	58.5	Pass
T13	20 - 0	Diagonal	2L3 1/2x3 1/2x1/4	178	-19.64	25.27	77.7	Pass
T1	255 - 240	Top Girt	L2x2x3/16	4	-0.57	8.72	6.5	Pass
							Summary	
							Leg (T6)	99.8 Pass
							Diagonal (T9)	93.0 Pass
							Top Girt (T1)	6.5 Pass
							Bolt Checks	88.1 Pass
							RATING =	99.8 Pass

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Structural Analysis Report

Structure	:	**255 ft Self Supported Tower**
ATC Site Name	:	**McHenry KY, KY**
ATC Site Number	:	**281331**
Engineering Number	:	**541913E2**
Proposed Carrier	:	**Operations Structural**
Carrier Site Name	:	**N/A**
Carrier Site Number	:	**N/A**
Site Location	:	**TBD** **MC Henry, KY 42354-9739** **37.382419,-86.922281**
County	:	**Ohio**
Date	:	**August 23, 2013**
Max Usage	:	**103%**
Result	:	**Pass**

Christopher Jolly
Project Engineer

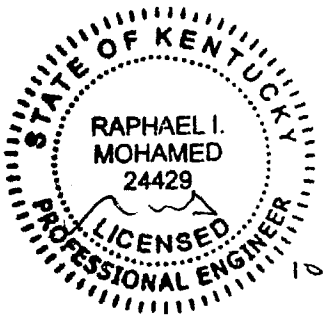

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Table of Contents

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 255 ft self supported tower to reflect the current state of loading.

Supporting Documents

Tower Drawings	Valmont Drawing # 249472, dated July 31, 2013

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	90 mph (3-Second Gust)
Basic Wind Speed w/ Ice:	30 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2006 IBC / 2007 Kentucky Building Code
Structure Class:	II
Exposure Category:	C
Topographic Category:	1

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact me via email at christopher.jolly@americantower.com or call 919-466-5007.

Existing and Reserved Equipment

Mount Elev.[1] (ft)	Qty.	Antenna	Mount Type	Coax (in)	Carrier
No Existing Equipment Were Used In This Analysis					

Proposed Equipment

Elevation[1] (ft)		Qty.	Antenna/Mount Type	Coax (in)	Carrier
Mount	RAD				
250.0	250.0	1	115 sq. ft. w/o ice & 10% increase per ¼" ice for icing condition	(18) 1 5/8	Future Carriers
240.0	240.0	1	115 sq. ft. w/o ice & 10% increase per ¼" ice for icing condition	(18) 1 5/8	
230.0	230.0	1	115 sq. ft. w/o ice & 10% increase per ¼" ice for icing condition	(18) 1 5/8	
220.0	220.0	1	115 sq. ft. w/o ice & 10% increase per ¼" ice for icing condition	(18) 1 5/8	

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

The analysis is based upon the following coax distribution:

Face A: (18) 1 5/8" coax to the 240' elevation with a total of (18) coax lines exposed to the wind.

Face B: (18) 1 5/8" coax to the 250' elevation & (18) 1 5/8" coax to the 220' elevation stack 18-on-18 with a total of (18) coax lines exposed to the wind.

Face C: (18) 1 5/8" coax to the 230' elevation with a total of (18) coax lines exposed to the wind.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	99%	Pass
Diagonals	103%	Pass
Horizontals	9%	Pass
Anchor Bolts	63%	Pass
Leg Bolts	87%	Pass

Foundations

Reaction Component	Analysis Reactions
Uplift (Kips)	543.3
Axial (Kips)	611.4
Shear (Kips)	57.8

New foundations will be designed to support the proposed structure based on the site specific soil report.

Deflection, Twist and Sway*

Antenna Elevation (ft)	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
250.0	1.038	0.022	0.566

***Deflection, Twist and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

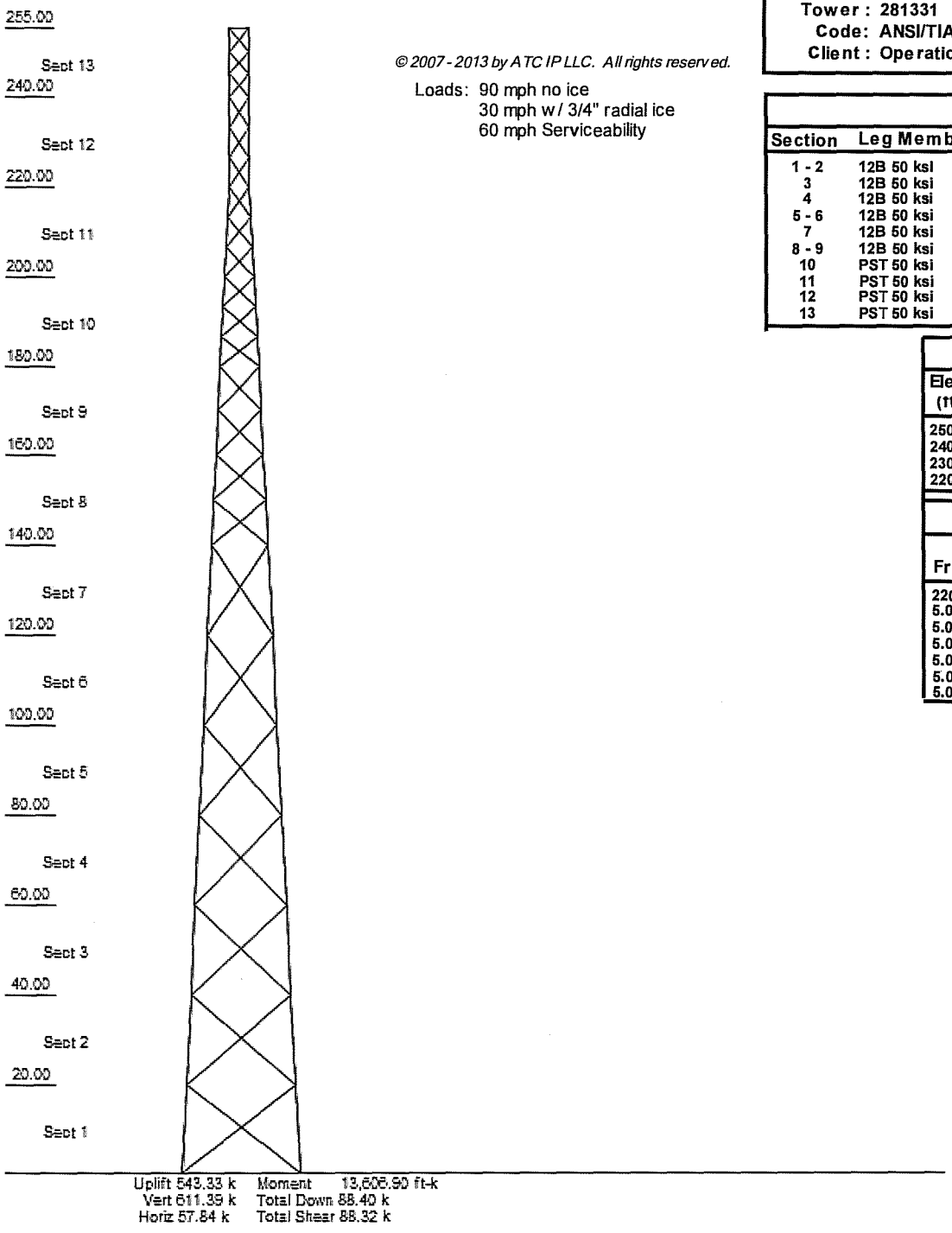
-- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.

-- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Tower Services, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Tower Services, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



Loads: 90 mph no ice
30 mph w / 3/4" radial ice
60 mph Serviceability

Job Information

Tower : 281331	Location : McHenry KY, KY	
Code: ANSI/TIA-222 Rev G	Shape : Triangle	Base Width : 27.00 ft
Client : Operations Structural		Top Width : 5.00 ft

Sections Properties

Section	Leg Members		Diagonal Members	Horizontal Members
1 - 2	12B 50 ksi	12" BD 2.75"	DAE 36 ksi 3.5X3.5X0.25	
3	12B 50 ksi	12" BD 2.5"	DAE 36 ksi 3.5X3.5X0.25	
4	12B 50 ksi	12" BD 2.5"	DAE 36 ksi 3X3X0.1875	
5 - 6	12B 50 ksi	12"BD 2.25"	DAE 36 ksi 3X3X0.1875	
7	12B 50 ksi	12"BD 2"	DAE 36 ksi 3X3X0.1875	
8 - 9	12B 50 ksi	12"BD 1.75"	SAE 36 ksi 3X3X0.1875	
10	PST 50 ksi	6" DIA PIPE	SAE 36 ksi 2.5X2.5X0.1875	
11	PST 50 ksi	5" DIA PIPE	SAE 36 ksi 2X2X0.1875	
12	PST 50 ksi	4" DIA PIPE	SAE 36 ksi 2X2X0.1875	
13	PST 50 ksi	2-1/2" DIA PIPE	SAE 36 ksi 2X2X0.125	SAE 36 ksi 2X2X0.1875

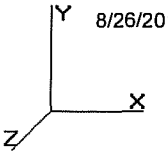
Discrete Appurtenance

Elev (ft)	Type	Qty	Description
250.00	Other	1	115 Sq. Ft. and 135 Sq. Ft
240.00	Other	1	115 Sq. Ft. and 135 Sq. Ft
230.00	Other	1	115 Sq. Ft. and 135 Sq. Ft
220.00	Other	1	115 Sq. Ft. and 135 Sq. Ft

Linear Appurtenance

Elev (ft) From	To	Qty	Description
220.000	250.00	18	1 5/8" Coax
5.000	250.00	1	Waveguide
5.000	240.00	1	Waveguide
5.000	240.00	18	1 5/8" Coax
5.000	230.00	1	Waveguide
5.000	230.00	18	1 5/8" Coax
5.000	220.00	36	1 5/8" Coax

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Section Forces

LoadCase 1.2D + 1.6W Normal

90.00 mph Normal to Face with No Ice

Gust Response Factor : 0.85
Dead Load Factor : 1.20
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	27.00	7.60	7.19	0.00	0.19	2.64	1.00	1.00	0.00	11.72	31.37	0.00	857.7	0.0	1,133.98	858.54	1,992.53
12	230.0	26.58	7.94	15.00	0.00	0.21	2.55	1.00	1.00	0.00	14.75	113.76	0.00	2,461.7	0.0	1,360.44	3,105.7	4,466.16
11	210.0	26.08	8.50	18.57	0.00	0.21	2.56	1.00	1.00	0.00	16.88	159.10	0.00	3,376.7	0.0	1,535.73	4,793.1	6,328.85
10	190.0	25.53	12.35	22.12	0.00	0.20	2.59	1.00	1.00	0.00	22.23	159.10	0.00	3,908.1	0.0	2,000.40	4,693.1	6,693.59
9	170.0	24.94	13.68	18.83	0.00	0.16	2.75	1.00	1.00	0.00	21.61	159.10	0.00	5,150.7	0.0	2,017.96	4,584.5	6,602.52
8	150.0	24.30	15.14	18.83	0.00	0.14	2.82	1.00	1.00	0.00	22.89	159.10	0.00	5,229.6	0.0	2,135.04	4,465.3	6,600.38
7	130.0	23.57	11.92	22.04	0.00	0.12	2.90	1.00	1.00	0.00	20.79	159.10	0.00	6,471.1	0.0	1,931.93	4,332.8	6,264.75
6	110.0	22.76	12.51	23.64	0.00	0.11	2.93	1.00	1.00	0.00	21.95	159.10	0.00	7,184.2	0.0	1,989.13	4,183.0	6,172.21
5	90.00	21.82	13.15	23.64	0.00	0.10	2.97	1.00	1.00	0.00	22.48	159.10	0.00	7,253.4	0.0	1,979.66	4,010.0	5,989.71
4	70.00	20.69	13.83	25.51	0.00	0.10	2.98	1.00	1.00	0.00	23.85	159.10	0.00	8,120.2	0.0	2,002.34	3,803.4	5,805.74
3	50.00	19.28	16.96	25.51	0.00	0.09	2.99	1.00	1.00	0.00	26.97	159.10	0.00	9,092.6	0.0	2,113.79	3,543.3	5,657.09
2	30.00	17.31	17.83	27.10	0.00	0.09	3.00	1.00	1.00	0.00	28.43	159.10	0.00	10,011.9	0.0	2,008.52	3,182.0	5,190.54
1	10.00	14.98	18.74	27.10	0.00	0.09	3.02	1.00	1.00	0.00	29.28	119.33	0.00	9,680.0	0.0	1,802.74	2,065.1	3,867.93
														78,798.0	0.0			71,631.98

LoadCase 1.2D + 1.6W 60 deg

90.00 mph 60 deg with No Ice

Gust Response Factor : 0.85
Dead Load Factor : 1.20
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	27.00	7.60	7.19	0.00	0.19	2.64	0.80	1.00	0.00	10.20	31.37	0.00	857.7	0.0	986.83	858.54	1,845.38
12	230.0	26.58	7.94	15.00	0.00	0.21	2.55	0.80	1.00	0.00	13.16	113.76	0.00	2,461.7	0.0	1,213.87	3,105.7	4,319.59
11	210.0	26.08	8.50	18.57	0.00	0.21	2.56	0.80	1.00	0.00	15.18	159.10	0.00	3,376.7	0.0	1,381.06	4,793.1	6,174.18
10	190.0	25.53	12.35	22.12	0.00	0.20	2.59	0.80	1.00	0.00	19.76	159.10	0.00	3,908.1	0.0	1,778.11	4,693.1	6,471.29
9	170.0	24.94	13.68	18.83	0.00	0.16	2.75	0.80	1.00	0.00	18.88	159.10	0.00	5,150.7	0.0	1,762.52	4,584.5	6,347.08
8	150.0	24.30	15.14	18.83	0.00	0.14	2.82	0.80	1.00	0.00	19.86	159.10	0.00	5,229.6	0.0	1,852.67	4,465.3	6,318.01
7	130.0	23.57	11.92	22.04	0.00	0.12	2.90	0.80	1.00	0.00	18.41	159.10	0.00	6,471.1	0.0	1,710.35	4,332.8	6,043.17
6	110.0	22.76	12.51	23.64	0.00	0.11	2.93	0.80	1.00	0.00	19.44	159.10	0.00	7,184.2	0.0	1,762.27	4,183.0	5,945.36
5	90.00	21.82	13.15	23.64	0.00	0.10	2.97	0.80	1.00	0.00	19.85	159.10	0.00	7,253.4	0.0	1,748.02	4,010.0	5,758.07
4	70.00	20.69	13.83	25.51	0.00	0.10	2.98	0.80	1.00	0.00	21.09	159.10	0.00	8,120.2	0.0	1,770.19	3,803.4	5,573.59
3	50.00	19.28	16.96	25.51	0.00	0.09	2.99	0.80	1.00	0.00	23.58	159.10	0.00	9,092.6	0.0	1,847.90	3,543.3	5,391.20
2	30.00	17.31	17.83	27.10	0.00	0.09	3.00	0.80	1.00	0.00	24.87	159.10	0.00	10,011.9	0.0	1,756.57	3,182.0	4,938.59
1	10.00	14.98	18.74	27.10	0.00	0.09	3.02	0.80	1.00	0.00	25.54	119.33	0.00	9,680.0	0.0	1,571.98	2,065.1	3,637.17
														78,798.0	0.0			68,762.67

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1

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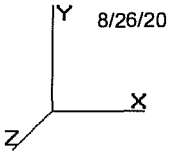


Section Forces

LoadCase 1.2D + 1.6W 90 deg

90.00 mph 90 deg with No Ice

Gust Response Factor : 0.85
Dead Load Factor : 1.20
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	27.00	7.60	7.19	0.00	0.19	2.64	0.85	1.00	0.00	10.58	31.37	0.00	857.7	0.0	1,023.62	858.54	1,882.16
12	230.0	26.58	7.94	15.00	0.00	0.21	2.55	0.85	1.00	0.00	13.56	113.76	0.00	2,461.7	0.0	1,250.51	3,105.7	4,356.24
11	210.0	26.08	8.50	18.57	0.00	0.21	2.56	0.85	1.00	0.00	15.61	159.10	0.00	3,376.7	0.0	1,419.73	4,793.1	6,212.84
10	190.0	25.53	12.35	22.12	0.00	0.20	2.59	0.85	1.00	0.00	20.38	159.10	0.00	3,908.1	0.0	1,833.68	4,693.1	6,526.86
9	170.0	24.94	13.68	18.83	0.00	0.16	2.75	0.85	1.00	0.00	19.56	159.10	0.00	5,150.7	0.0	1,826.38	4,584.5	6,410.94
8	150.0	24.30	15.14	18.83	0.00	0.14	2.82	0.85	1.00	0.00	20.62	159.10	0.00	5,229.6	0.0	1,923.26	4,465.3	6,388.60
7	130.0	23.57	11.92	22.04	0.00	0.12	2.90	0.85	1.00	0.00	19.01	159.10	0.00	6,471.1	0.0	1,765.74	4,332.8	6,098.56
6	110.0	22.76	12.51	23.64	0.00	0.11	2.93	0.85	1.00	0.00	20.07	159.10	0.00	7,184.2	0.0	1,818.99	4,183.0	6,002.07
5	90.00	21.82	13.15	23.64	0.00	0.10	2.97	0.85	1.00	0.00	20.50	159.10	0.00	7,253.4	0.0	1,805.93	4,010.0	5,815.98
4	70.00	20.69	13.83	25.51	0.00	0.10	2.98	0.85	1.00	0.00	21.78	159.10	0.00	8,120.2	0.0	1,828.23	3,803.4	5,631.63
3	50.00	19.28	16.96	25.51	0.00	0.09	2.99	0.85	1.00	0.00	24.43	159.10	0.00	9,092.6	0.0	1,914.37	3,543.3	5,457.67
2	30.00	17.31	17.83	27.10	0.00	0.09	3.00	0.85	1.00	0.00	25.76	159.10	0.00	10,011.9	0.0	1,819.56	3,182.0	5,001.57
1	10.00	14.98	18.74	27.10	0.00	0.09	3.02	0.85	1.00	0.00	26.47	119.33	0.00	9,680.0	0.0	1,629.67	2,065.1	3,694.86
														78,798.0	0.0			69,480.00

LoadCase 0.9D + 1.6W Normal

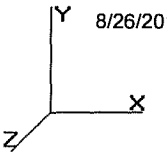
90.00 mph Normal to Face with No Ice (Reduced DL)

Gust Response Factor : 0.85
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	27.00	7.60	7.19	0.00	0.19	2.64	1.00	1.00	0.00	11.72	31.37	0.00	643.3	0.0	1,133.98	858.54	1,992.53
12	230.0	26.58	7.94	15.00	0.00	0.21	2.55	1.00	1.00	0.00	14.75	113.76	0.00	1,846.3	0.0	1,360.44	3,105.7	4,466.16
11	210.0	26.08	8.50	18.57	0.00	0.21	2.56	1.00	1.00	0.00	16.88	159.10	0.00	2,532.5	0.0	1,535.73	4,793.1	6,328.85
10	190.0	25.53	12.35	22.12	0.00	0.20	2.59	1.00	1.00	0.00	22.23	159.10	0.00	2,931.1	0.0	2,000.40	4,693.1	6,693.59
9	170.0	24.94	13.68	18.83	0.00	0.16	2.75	1.00	1.00	0.00	21.61	159.10	0.00	3,863.0	0.0	2,017.96	4,584.5	6,602.52
8	150.0	24.30	15.14	18.83	0.00	0.14	2.82	1.00	1.00	0.00	22.89	159.10	0.00	3,922.2	0.0	2,135.04	4,465.3	6,600.38
7	130.0	23.57	11.92	22.04	0.00	0.12	2.90	1.00	1.00	0.00	20.79	159.10	0.00	4,853.3	0.0	1,931.93	4,332.8	6,264.75
6	110.0	22.76	12.51	23.64	0.00	0.11	2.93	1.00	1.00	0.00	21.95	159.10	0.00	5,388.2	0.0	1,989.13	4,183.0	6,172.21
5	90.00	21.82	13.15	23.64	0.00	0.10	2.97	1.00	1.00	0.00	22.48	159.10	0.00	5,440.0	0.0	1,979.66	4,010.0	5,989.71
4	70.00	20.69	13.83	25.51	0.00	0.10	2.98	1.00	1.00	0.00	23.85	159.10	0.00	6,090.2	0.0	2,002.34	3,803.4	5,805.74
3	50.00	19.28	16.96	25.51	0.00	0.09	2.99	1.00	1.00	0.00	26.97	159.10	0.00	6,819.4	0.0	2,113.79	3,543.3	5,657.09
2	30.00	17.31	17.83	27.10	0.00	0.09	3.00	1.00	1.00	0.00	28.43	159.10	0.00	7,508.9	0.0	2,008.52	3,182.0	5,190.54
1	10.00	14.98	18.74	27.10	0.00	0.09	3.02	1.00	1.00	0.00	29.28	119.33	0.00	7,260.0	0.0	1,802.74	2,065.1	3,867.93
														59,098.5	0.0			71,631.98

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Section Forces

LoadCase 0.9D + 1.6W 60 deg

90.00 mph 60 deg with No Ice (Reduced DL)

Gust Response Factor : 0.85
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	27.00	7.60	7.19	0.00	0.19	2.64	0.80	1.00	0.00	10.20	31.37	0.00	643.3	0.0	986.83	858.54	1,845.38
12	230.0	26.58	7.94	15.00	0.00	0.21	2.55	0.80	1.00	0.00	13.16	113.76	0.00	1,846.3	0.0	1,213.87	3,105.7	4,319.59
11	210.0	26.08	8.50	18.57	0.00	0.21	2.56	0.80	1.00	0.00	15.18	159.10	0.00	2,532.5	0.0	1,381.06	4,793.1	6,174.18
10	190.0	25.53	12.35	22.12	0.00	0.20	2.59	0.80	1.00	0.00	19.76	159.10	0.00	2,931.1	0.0	1,778.11	4,693.1	6,471.29
9	170.0	24.94	13.68	18.83	0.00	0.16	2.75	0.80	1.00	0.00	18.88	159.10	0.00	3,863.0	0.0	1,762.52	4,584.5	6,347.08
8	150.0	24.30	15.14	18.83	0.00	0.14	2.82	0.80	1.00	0.00	19.86	159.10	0.00	3,922.2	0.0	1,852.67	4,465.3	6,318.01
7	130.0	23.57	11.92	22.04	0.00	0.12	2.90	0.80	1.00	0.00	18.41	159.10	0.00	4,853.3	0.0	1,710.35	4,332.8	6,043.17
6	110.0	22.76	12.51	23.64	0.00	0.11	2.93	0.80	1.00	0.00	19.44	159.10	0.00	5,388.2	0.0	1,762.27	4,183.0	5,945.36
5	90.00	21.82	13.15	23.64	0.00	0.10	2.97	0.80	1.00	0.00	19.85	159.10	0.00	5,440.0	0.0	1,748.02	4,010.0	5,758.07
4	70.00	20.69	13.83	25.51	0.00	0.10	2.98	0.80	1.00	0.00	21.09	159.10	0.00	6,090.2	0.0	1,770.19	3,803.4	5,573.59
3	50.00	19.28	16.96	25.51	0.00	0.09	2.99	0.80	1.00	0.00	23.58	159.10	0.00	6,819.4	0.0	1,847.90	3,543.3	5,391.20
2	30.00	17.31	17.83	27.10	0.00	0.09	3.00	0.80	1.00	0.00	24.87	159.10	0.00	7,508.9	0.0	1,756.57	3,182.0	4,938.59
1	10.00	14.98	18.74	27.10	0.00	0.09	3.02	0.80	1.00	0.00	25.54	119.33	0.00	7,260.0	0.0	1,571.98	2,065.1	3,637.17
														59,098.5	0.0			68,762.67

LoadCase 0.9D + 1.6W 90 deg

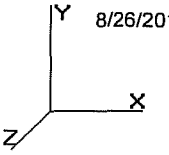
90.00 mph 90 deg with No Ice (Reduced DL)

Gust Response Factor : 0.85
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	27.00	7.60	7.19	0.00	0.19	2.64	0.85	1.00	0.00	10.58	31.37	0.00	643.3	0.0	1,023.62	858.54	1,882.16
12	230.0	26.58	7.94	15.00	0.00	0.21	2.55	0.85	1.00	0.00	13.56	113.76	0.00	1,846.3	0.0	1,250.51	3,105.7	4,356.24
11	210.0	26.08	8.50	18.57	0.00	0.21	2.56	0.85	1.00	0.00	15.61	159.10	0.00	2,532.5	0.0	1,419.73	4,793.1	6,212.84
10	190.0	25.53	12.35	22.12	0.00	0.20	2.59	0.85	1.00	0.00	20.38	159.10	0.00	2,931.1	0.0	1,833.68	4,693.1	6,526.86
9	170.0	24.94	13.68	18.83	0.00	0.16	2.75	0.85	1.00	0.00	19.56	159.10	0.00	3,863.0	0.0	1,826.38	4,584.5	6,410.94
8	150.0	24.30	15.14	18.83	0.00	0.14	2.82	0.85	1.00	0.00	20.62	159.10	0.00	3,922.2	0.0	1,923.26	4,465.3	6,388.60
7	130.0	23.57	11.92	22.04	0.00	0.12	2.90	0.85	1.00	0.00	19.01	159.10	0.00	4,853.3	0.0	1,765.74	4,332.8	6,098.56
6	110.0	22.76	12.51	23.64	0.00	0.11	2.93	0.85	1.00	0.00	20.07	159.10	0.00	5,388.2	0.0	1,818.99	4,183.0	6,002.07
5	90.00	21.82	13.15	23.64	0.00	0.10	2.97	0.85	1.00	0.00	20.50	159.10	0.00	5,440.0	0.0	1,805.93	4,010.0	5,815.98
4	70.00	20.69	13.83	25.51	0.00	0.10	2.98	0.85	1.00	0.00	21.78	159.10	0.00	6,090.2	0.0	1,828.23	3,803.4	5,631.63
3	50.00	19.28	16.96	25.51	0.00	0.09	2.99	0.85	1.00	0.00	24.43	159.10	0.00	6,819.4	0.0	1,914.37	3,543.3	5,457.67
2	30.00	17.31	17.83	27.10	0.00	0.09	3.00	0.85	1.00	0.00	25.76	159.10	0.00	7,508.9	0.0	1,819.56	3,182.0	5,001.57
1	10.00	14.98	18.74	27.10	0.00	0.09	3.02	0.85	1.00	0.00	26.47	119.33	0.00	7,260.0	0.0	1,629.67	2,065.1	3,694.86
														59,098.5	0.0			69,480.00

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Section Forces

LoadCase 1.2D + 1.0Di + 1.0Wi Normal — 30.00 mph Normal with 0.75 in Radial Ice

Gust Response Factor : 0.85
Dead Load Factor : 1.20
Wind Load Factor : 1.00
Ice Dead Load Factor : 1.00
Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	3.00	7.60	30.86	23.68	0.46	1.95	1.00	1.00	1.83	28.14	34.42	55.05	4,142.8	3,285.1	140.17	152.33	292.50
12	230.0	2.95	7.94	42.32	27.32	0.44	1.99	1.00	1.00	1.82	35.69	128.94	164.42	11,822.9	9,361.2	177.95	464.82	598.78
11	210.0	2.90	8.50	46.84	28.26	0.41	2.05	1.00	1.00	1.80	38.49	183.17	73.40	13,685.2	10,308.	193.98	446.59	640.56
10	190.0	2.84	12.35	52.68	30.56	0.37	2.13	1.00	1.00	1.79	45.16	182.93	73.28	14,751.6	10,843.	232.20	443.05	675.25
9	170.0	2.77	13.68	47.30	28.47	0.28	2.34	1.00	1.00	1.77	41.77	182.66	73.15	15,846.0	10,695.	230.41	431.82	662.23
8	150.0	2.70	15.14	48.67	29.84	0.25	2.44	1.00	1.00	1.75	43.60	182.37	73.00	16,014.7	10,785.	243.88	419.53	663.41
7	130.0	2.62	11.92	47.53	25.49	0.20	2.59	1.00	1.00	1.72	39.23	182.04	72.84	17,767.6	11,296.	226.64	405.92	632.56
6	110.0	2.53	12.51	49.39	25.75	0.18	2.65	1.00	1.00	1.69	40.75	181.66	72.65	18,515.4	11,331.	232.32	390.61	622.92
5	90.00	2.42	13.15	49.59	25.95	0.17	2.71	1.00	1.00	1.66	41.38	181.21	72.42	18,537.1	11,283.	231.31	373.00	604.31
4	70.00	2.30	13.83	51.56	26.05	0.16	2.75	1.00	1.00	1.62	43.12	180.66	72.15	19,385.9	11,265.	231.60	352.08	583.69
3	50.00	2.14	16.96	51.45	25.94	0.15	2.77	1.00	1.00	1.56	46.16	179.95	71.79	20,531.6	11,439.	233.12	325.96	559.08
2	30.00	1.92	17.83	52.49	25.40	0.14	2.80	1.00	1.00	1.49	47.58	178.91	71.27	21,216.8	11,204.	218.18	290.05	508.23
1	10.00	1.66	18.74	50.54	23.45	0.13	2.85	1.00	1.00	1.33	47.33	132.64	52.68	18,441.7	8,761.6	190.95	184.80	375.76
														210,659.3	131,861.			7,419.28

** = Section Force Exceeds Solidity Ratio Criteria

LoadCase 1.2D + 1.0Di + 1.0Wi 60 deg — 30.00 mph 60 deg with 0.75 In Radial Ice

Gust Response Factor : 0.85
Dead Load Factor : 1.20
Wind Load Factor : 1.00
Ice Dead Load Factor : 1.00
Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	3.00	7.60	30.86	23.68	0.46	1.95	0.80	1.00	1.83	26.62	34.42	55.05	4,142.8	3,285.1	132.60	152.33	284.93
12	230.0	2.95	7.94	42.32	27.32	0.44	1.99	0.80	1.00	1.82	34.10	128.94	164.42	11,822.9	9,361.2	170.03	464.82	598.78
11	210.0	2.90	8.50	46.84	28.26	0.41	2.05	0.80	1.00	1.80	36.79	183.17	73.40	13,685.2	10,308.	185.41	446.59	631.99
10	190.0	2.84	12.35	52.68	30.56	0.37	2.13	0.80	1.00	1.79	42.69	182.93	73.28	14,751.6	10,843.	219.49	443.05	662.54
9	170.0	2.77	13.68	47.30	28.47	0.28	2.34	0.80	1.00	1.77	39.03	182.66	73.15	15,846.0	10,695.	215.32	431.82	647.14
8	150.0	2.70	15.14	48.67	29.84	0.25	2.44	0.80	1.00	1.75	40.58	182.37	73.00	16,014.7	10,785.	226.95	419.53	646.48
7	130.0	2.62	11.92	47.53	25.49	0.20	2.59	0.80	1.00	1.72	36.85	182.04	72.84	17,767.6	11,296.	212.86	405.92	618.79
6	110.0	2.53	12.51	49.39	25.75	0.18	2.65	0.80	1.00	1.69	38.25	181.66	72.65	18,515.4	11,331.	218.05	390.61	608.66
5	90.00	2.42	13.15	49.59	25.95	0.17	2.71	0.80	1.00	1.66	38.75	181.21	72.42	18,537.1	11,283.	216.61	373.00	589.61
4	70.00	2.30	13.83	51.56	26.05	0.16	2.75	0.80	1.00	1.62	40.36	180.66	72.15	19,385.9	11,265.	216.75	352.08	568.84
3	50.00	2.14	16.96	51.45	25.94	0.15	2.77	0.80	1.00	1.56	42.77	179.95	71.79	20,531.6	11,439.	215.98	325.96	541.94
2	30.00	1.92	17.83	52.49	25.40	0.14	2.80	0.80	1.00	1.49	44.01	178.91	71.27	21,216.8	11,204.	201.82	290.05	491.88
1	10.00	1.66	18.74	50.54	23.45	0.13	2.85	0.80	1.00	1.33	43.59	132.64	52.68	18,441.7	8,761.6	175.83	184.80	360.63
														210,659.3	131,861.			7,252.19

** = Section Force Exceeds Solidity Ratio Criteria

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1

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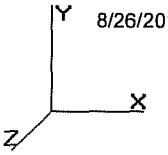


Section Forces

LoadCase 1.2D + 1.0Di + 1.0Wi 90 deg — 30.00 mph 90 deg with 0.75 in Radial Ice

Gust Response Factor : 0.85
Dead Load Factor : 1.20
Wind Load Factor : 1.00
Ice Dead Load Factor : 1.00
Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	3.00	7.60	30.86	23.68	0.46	1.95	0.85	1.00	1.83	27.00	34.42	55.05	4,142.8	3,285.1	134.49	152.33	286.82
12	230.0	2.95	7.94	42.32	27.32	0.44	1.99	0.85	1.00	1.82	34.50	128.94	164.42	11,822.9	9,361.2	172.01	464.82	598.78
11	210.0	2.90	8.50	46.84	28.26	0.41	2.05	0.85	1.00	1.80	37.21	183.17	73.40	13,685.2	10,308.	187.55	446.59	634.14
10	190.0	2.84	12.35	52.68	30.56	0.37	2.13	0.85	1.00	1.79	43.30	182.93	73.28	14,751.6	10,843.	222.67	443.05	665.72
9	170.0	2.77	13.68	47.30	28.47	0.28	2.34	0.85	1.00	1.77	39.72	182.66	73.15	15,846.0	10,695.	219.09	431.82	650.91
8	150.0	2.70	15.14	48.67	29.84	0.25	2.44	0.85	1.00	1.75	41.33	182.37	73.00	16,014.7	10,785.	231.18	419.53	650.71
7	130.0	2.62	11.92	47.53	25.49	0.20	2.59	0.85	1.00	1.72	37.44	182.04	72.84	17,767.6	11,296.	216.31	405.92	622.23
6	110.0	2.53	12.51	49.39	25.75	0.18	2.65	0.85	1.00	1.69	38.87	181.66	72.65	18,515.4	11,331.	221.62	390.61	612.22
5	90.00	2.42	13.15	49.59	25.95	0.17	2.71	0.85	1.00	1.66	39.41	181.21	72.42	18,537.1	11,283.	220.29	373.00	593.28
4	70.00	2.30	13.83	51.56	26.05	0.16	2.75	0.85	1.00	1.62	41.05	180.66	72.15	19,385.9	11,265.	220.46	352.08	572.55
3	50.00	2.14	16.96	51.45	25.94	0.15	2.77	0.85	1.00	1.56	43.61	179.95	71.79	20,531.6	11,439.	220.26	325.96	546.23
2	30.00	1.92	17.83	52.49	25.40	0.14	2.80	0.85	1.00	1.49	44.90	178.91	71.27	21,216.8	11,204.	205.91	290.05	495.97
1	10.00	1.66	18.74	50.54	23.45	0.13	2.85	0.85	1.00	1.33	44.52	132.64	52.68	18,441.7	8,761.6	179.61	184.80	364.41
														210,659.3	131,861.			7,293.96

** = Section Force Exceeds Solidity Ratio Criteria

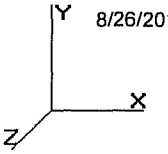
LoadCase 1.0D + 1.0W Service Normal — Serviceability - 60.00 Wind Normal

Gust Response Factor : 0.85
Dead Load Factor : 1.00
Wind Load Factor : 1.00
Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	12.00	7.60	7.19	0.00	0.19	2.64	1.00	1.00	0.00	11.72	31.37	0.00	714.8	0.0	314.99	238.48	553.48
12	230.0	11.81	7.94	15.00	0.00	0.21	2.55	1.00	1.00	0.00	16.60	113.76	0.00	2,051.4	0.0	425.34	862.70	1,288.04
11	210.0	11.59	8.50	18.57	0.00	0.21	2.56	1.00	1.00	0.00	16.88	159.10	0.00	2,813.9	0.0	426.59	1,331.4	1,758.01
10	190.0	11.35	12.35	22.12	0.00	0.20	2.59	1.00	1.00	0.00	22.23	159.10	0.00	3,256.8	0.0	555.67	1,303.6	1,859.33
9	170.0	11.09	13.68	18.83	0.00	0.16	2.75	1.00	1.00	0.00	21.61	159.10	0.00	4,292.3	0.0	560.54	1,273.4	1,834.03
8	150.0	10.80	15.14	18.83	0.00	0.14	2.82	1.00	1.00	0.00	22.89	159.10	0.00	4,358.0	0.0	593.07	1,240.3	1,833.44
7	130.0	10.48	11.92	22.04	0.00	0.12	2.90	1.00	1.00	0.00	20.79	159.10	0.00	5,392.6	0.0	536.65	1,203.5	1,740.21
6	110.0	10.12	12.51	23.64	0.00	0.11	2.93	1.00	1.00	0.00	21.95	159.10	0.00	5,986.9	0.0	552.54	1,161.9	1,714.50
5	90.00	9.70	13.15	23.64	0.00	0.10	2.97	1.00	1.00	0.00	22.48	159.10	0.00	6,044.5	0.0	549.91	1,113.9	1,663.81
4	70.00	9.20	13.83	25.51	0.00	0.10	2.98	1.00	1.00	0.00	23.85	159.10	0.00	6,766.9	0.0	556.21	1,056.5	1,612.71
3	50.00	8.57	16.96	25.51	0.00	0.09	2.99	1.00	1.00	0.00	26.97	159.10	0.00	7,577.1	0.0	587.16	984.25	1,571.41
2	30.00	7.69	17.83	27.10	0.00	0.09	3.00	1.00	1.00	0.00	28.43	159.10	0.00	8,343.2	0.0	557.92	883.89	1,441.82
1	10.00	6.66	18.74	27.10	0.00	0.09	3.02	1.00	1.00	0.00	29.28	119.33	0.00	8,066.7	0.0	500.76	573.66	1,074.43
														65,665.0	0.0			19,945.21

** = Section Force Exceeds Solidity Ratio Criteria

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Section Forces

LoadCase 1.0D + 1.0W Service 60 deg — **Serviceability - 60.00 Wind 60 deg**

Gust Response Factor : 0.85
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	12.00	7.60	7.19	0.00	0.19	2.64	0.80	1.00	0.00	10.20	31.37	0.00	714.8	0.0	274.12	238.48	512.60
12	230.0	11.81	7.94	15.00	0.00	0.21	2.55	0.80	1.00	0.00	15.01	113.76	0.00	2,051.4	0.0	384.62	862.70	1,247.32
11	210.0	11.59	8.50	18.57	0.00	0.21	2.56	0.80	1.00	0.00	15.18	159.10	0.00	2,813.9	0.0	383.63	1,331.4	1,715.05
10	190.0	11.35	12.35	22.12	0.00	0.20	2.59	0.80	1.00	0.00	19.76	159.10	0.00	3,256.8	0.0	493.92	1,303.6	1,797.58
9	170.0	11.09	13.68	18.83	0.00	0.16	2.75	0.80	1.00	0.00	18.88	159.10	0.00	4,292.3	0.0	489.59	1,273.4	1,763.08
8	150.0	10.80	15.14	18.83	0.00	0.14	2.82	0.80	1.00	0.00	19.86	159.10	0.00	4,358.0	0.0	514.63	1,240.3	1,755.00
7	130.0	10.48	11.92	22.04	0.00	0.12	2.90	0.80	1.00	0.00	18.41	159.10	0.00	5,392.6	0.0	475.10	1,203.5	1,678.66
6	110.0	10.12	12.51	23.64	0.00	0.11	2.93	0.80	1.00	0.00	19.44	159.10	0.00	5,986.9	0.0	489.52	1,161.9	1,651.49
5	90.00	9.70	13.15	23.64	0.00	0.10	2.97	0.80	1.00	0.00	19.85	159.10	0.00	6,044.5	0.0	485.56	1,113.9	1,599.46
4	70.00	9.20	13.83	25.51	0.00	0.10	2.98	0.80	1.00	0.00	21.09	159.10	0.00	6,766.9	0.0	491.72	1,056.5	1,548.22
3	50.00	8.57	16.96	25.51	0.00	0.09	2.99	0.80	1.00	0.00	23.58	159.10	0.00	7,577.1	0.0	513.31	984.25	1,497.56
2	30.00	7.69	17.83	27.10	0.00	0.09	3.00	0.80	1.00	0.00	24.87	159.10	0.00	8,343.2	0.0	487.94	883.89	1,371.83
1	10.00	6.66	18.74	27.10	0.00	0.09	3.02	0.80	1.00	0.00	25.54	119.33	0.00	8,066.7	0.0	436.66	573.66	1,010.32
														65,665.0	0.0			19,148.18

** = Section Force Exceeds Solidity Ratio Criteria

LoadCase 1.0D + 1.0W Service 90 deg — **Serviceability - 60.00 Wind 90 deg**

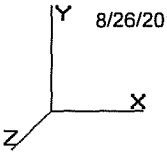
Gust Response Factor : 0.85
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Wind Importance Factor : 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
13	247.5	12.00	7.60	7.19	0.00	0.19	2.64	0.85	1.00	0.00	10.58	31.37	0.00	714.8	0.0	284.34	238.48	522.82
12	230.0	11.81	7.94	15.00	0.00	0.21	2.55	0.85	1.00	0.00	15.41	113.76	0.00	2,051.4	0.0	394.80	862.70	1,257.50
11	210.0	11.59	8.50	18.57	0.00	0.21	2.56	0.85	1.00	0.00	15.61	159.10	0.00	2,813.9	0.0	394.37	1,331.4	1,725.79
10	190.0	11.35	12.35	22.12	0.00	0.20	2.59	0.85	1.00	0.00	20.38	159.10	0.00	3,256.8	0.0	509.36	1,303.6	1,813.02
9	170.0	11.09	13.68	18.83	0.00	0.16	2.75	0.85	1.00	0.00	19.56	159.10	0.00	4,292.3	0.0	507.33	1,273.4	1,780.82
8	150.0	10.80	15.14	18.83	0.00	0.14	2.82	0.85	1.00	0.00	20.62	159.10	0.00	4,358.0	0.0	534.24	1,240.3	1,774.61
7	130.0	10.48	11.92	22.04	0.00	0.12	2.90	0.85	1.00	0.00	19.01	159.10	0.00	5,392.6	0.0	490.48	1,203.5	1,694.04
6	110.0	10.12	12.51	23.64	0.00	0.11	2.93	0.85	1.00	0.00	20.07	159.10	0.00	5,986.9	0.0	505.27	1,161.9	1,667.24
5	90.00	9.70	13.15	23.64	0.00	0.10	2.97	0.85	1.00	0.00	20.50	159.10	0.00	6,044.5	0.0	501.65	1,113.9	1,615.55
4	70.00	9.20	13.83	25.51	0.00	0.10	2.98	0.85	1.00	0.00	21.78	159.10	0.00	6,766.9	0.0	507.84	1,056.5	1,564.34
3	50.00	8.57	16.96	25.51	0.00	0.09	2.99	0.85	1.00	0.00	24.43	159.10	0.00	7,577.1	0.0	531.77	984.25	1,516.02
2	30.00	7.69	17.83	27.10	0.00	0.09	3.00	0.85	1.00	0.00	25.76	159.10	0.00	8,343.2	0.0	505.43	883.89	1,389.33
1	10.00	6.66	18.74	27.10	0.00	0.09	3.02	0.85	1.00	0.00	26.47	119.33	0.00	8,066.7	0.0	452.69	573.66	1,026.35
														65,665.0	0.0			19,347.44

** = Section Force Exceeds Solidity Ratio Criteria

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Tower Loading

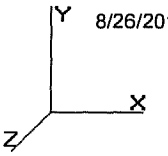
Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (ft)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
250.0	115 Sq. Ft. and 135 Sq. Ft	1	2000.00	115.00	5669.67	199.40	0.000	0.000	0.000	1.00	1.00	0.000
240.0	115 Sq. Ft. and 135 Sq. Ft	1	2000.00	115.00	5642.86	198.78	0.000	0.000	0.000	1.00	1.00	0.000
230.0	115 Sq. Ft. and 135 Sq. Ft	1	2000.00	115.00	5642.86	198.78	0.000	0.000	0.000	1.00	1.00	0.000
220.0	115 Sq. Ft. and 135 Sq. Ft	1	2000.00	115.00	5609.87	198.02	0.000	0.000	0.000	1.00	1.00	0.000
	Totals	4	8000.00		22565.27					Number of Appurtenances : 4		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
5.00	250.0	Waveguide	1	2.00	6.00	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
220.0	250.0	1 5/8" Coax	18	1.98	0.82	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
5.00	240.0	1 5/8" Coax	18	1.98	0.82	0	Lin App	Cluster	18.41	N	1.00	1.00	0.00
5.00	240.0	Waveguide	1	2.00	6.00	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
5.00	230.0	1 5/8" Coax	18	1.98	0.82	0	Lin App	Cluster	18.41	N	1.00	1.00	0.00
5.00	230.0	Waveguide	1	2.00	6.00	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
5.00	220.0	1 5/8" Coax	36	1.98	0.82	50	Lin App	Block	0.00	N	1.00	1.00	0.00

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Force/Stress Summary

Section: 1 U-27 — Bot Elev (ft): 0.00 — Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12" BD 2.75"	-590.35	1.2D + 1.6W	20.03	100	100	100	0.0	0.0	675.10	0	0	0.00	0.00	87	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3.5X3.5X0.25	-16.72	1.2D + 1.6W	32.80	48	48	24	180.7	36.0	23.38	2	2	48.70	48.72	71	Member Y

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12" BD 2.75"	521.41	1.2D + 1.6W 60	50	65	801.80	0	0	0.00	0.00	65	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3.5X3.5X0.25	14.80	1.2D + 1.6W 60	36	58	93.96	2	2	0.00	48.72	15	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	512.44	0.9D + 1.6W 60	0.00	0	0	
Top Compression	576.09	1.2D + 1.6W	0.00	0		
Bot Tension	546.66	0.9D + 1.6W 60	872.28	63	12	1" F1554-105
Bot Compression	612.04	1.2D + 1.6W	0.00	0		

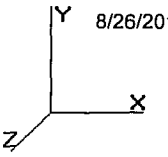
Section: 2 U-25 — Bot Elev (ft): 20.00 — Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12" BD 2.75"	-558.34	1.2D + 1.6W	20.03	100	100	100	0.0	0.0	675.10	0	0	0.00	0.00	82	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3.5X3.5X0.25	-16.37	1.2D + 1.6W 90	31.24	48	48	24	172.1	36.0	25.77	2	2	48.70	48.72	63	Member Y

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12" BD 2.75"	498.63	0.9D + 1.6W 60	50	65	801.80	0	0	0.00	0.00	62	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3.5X3.5X0.25	15.47	1.2D + 1.6W	36	58	93.96	2	2	0.00	48.72	16	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	477.90	0.9D + 1.6W 60	0.00	0	0	
Top Compression	537.40	1.2D + 1.6W	0.00	0		
Bot Tension	512.44	0.9D + 1.6W 60	654.24	78	12	1 A325
Bot Compression	576.09	1.2D + 1.6W	0.00	0		

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Force/Stress Summary

Section: 3 U-23 Bot Elev (ft): 40.00 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12" BD 2.5"	-512.61	1.2D + 1.6W	20.03	100	100	100	0.0	0.0	557.60	0	0	0.00	0.00	91	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3.5X3.5X0.25	-17.15	1.2D + 1.6W 90	29.73	48	48	24	163.8	36.0	28.45	2	2	48.70	48.72	60	Member Y

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12" BD 2.5"	461.40	0.9D + 1.6W 60	50	65	662.70	0	0	0.00	0.00	69	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3.5X3.5X0.25	15.68	1.2D + 1.6W 90	36	58	93.96	2	2	0.00	48.72	16	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	442.71	0.9D + 1.6W 60	0.00	0	0	
Top Compression	494.81	1.2D + 1.6W	0.00	0		
Bot Tension	477.90	0.9D + 1.6W 60	654.24	73	12	1 A325
Bot Compression	537.40	1.2D + 1.6W	0.00	0		

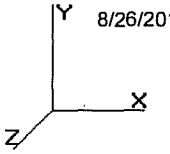
Section: 4 U-21 Bot Elev (ft): 60.00 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12" BD 2.5"	-472.95	1.2D + 1.6W	20.03	100	100	100	0.0	0.0	557.60	0	0	0.00	0.00	84	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	-16.33	0.9D + 1.6W 90	28.29	48	48	23	176.4	36.0	15.83	2	2	48.70	36.54	103	Member Y

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12" BD 2.5"	427.84	0.9D + 1.6W 60	50	65	662.70	0	0	0.00	0.00	64	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	15.34	1.2D + 1.6W 90	36	58	58.89	2	2	0.00	36.54	26	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	406.52	0.9D + 1.6W 60	0.00	0	0	
Top Compression	451.79	1.2D + 1.6W	0.00	0		
Bot Tension	442.71	0.9D + 1.6W 60	654.24	68	12	1 A325
Bot Compression	494.81	1.2D + 1.6W	0.00	0		

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Force/Stress Summary

Section: 5 U-19 Bot Elev (ft): 80.00 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12"BD 2.25"	-426.07	1.2D + 1.6W	20.03	100	100	100	0.0	0.0	451.40	0	0	0.00	0.00	94	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	-16.53	1.2D + 1.6W 90	26.91	48	48	24	171.8	36.0	16.68	2	2	48.70	36.54	99	Member Y

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12"BD 2.25"	388.01	0.9D + 1.6W 60	50	65	536.80	0	0	0.00	0.00	72	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	15.12	1.2D + 1.6W 90	36	58	58.89	2	2	0.00	36.54	25	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	368.29	0.9D + 1.6W 60	0.00	0	0	
Top Compression	407.36	1.2D + 1.6W	0.00	0		
Bot Tension	406.52	0.9D + 1.6W 60	654.24	62	12	1 A325
Bot Compression	451.79	1.2D + 1.6W	0.00	0		

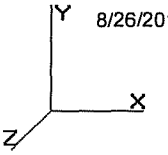
Section: 6 U-17 Bot Elev (ft): 100.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12"BD 2.25"	-384.51	1.2D + 1.6W	20.03	100	100	100	0.0	0.0	451.40	0	0	0.00	0.00	85	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	-16.40	1.2D + 1.6W 90	25.61	49	49	24	165.0	36.0	18.08	2	2	48.70	36.54	90	Member Y

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12"BD 2.25"	348.94	1.2D + 1.6W 60	50	65	536.80	0	0	0.00	0.00	65	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	15.32	1.2D + 1.6W 90	36	58	58.89	2	2	0.00	36.54	26	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	327.60	0.9D + 1.6W 60	0.00	0	0	
Top Compression	360.67	1.2D + 1.6W	0.00	0		
Bot Tension	368.29	0.9D + 1.6W 60	654.24	56	12	1 A325
Bot Compression	407.36	1.2D + 1.6W	0.00	0		

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Force/Stress Summary

Section: 7 U-15 Bot Elev (ft): 120.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12"BD 2"	-330.67	1.2D + 1.6W	20.03	100	100	100	0.0	0.0	356.50	0	0	0.00	0.00	92	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	-17.29	1.2D + 1.6W	24.42	49	49	24	157.3	36.0	19.90	2	2	48.70	36.54	86	Member Y

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12"BD 2"	302.80	1.2D + 1.6W 60	50	65	424.10	0	0	0.00	0.00	71	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG DAE - 3X3X0.1875	15.48	1.2D + 1.6W 60	36	58	58.89	2	2	0.00	36.54	26	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	284.52	0.9D + 1.6W 60	0.00	0	0	
Top Compression	312.22	1.2D + 1.6W	0.00	0		
Bot Tension	327.60	0.9D + 1.6W 60	654.24	50	12	1 A325
Bot Compression	360.67	1.2D + 1.6W	0.00	0		

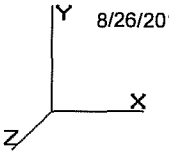
Section: 8 U-13 Bot Elev (ft): 140.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12"BD 1.75"	-300.56	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	300.70	0	0	0.00	0.00	99	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.1875	-10.19	1.2D + 1.6W 90	16.01	45	45	45	145.1	36.0	11.70	1	1	31.81	20.88	87	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12"BD 1.75"	277.28	0.9D + 1.6W 60	50	65	324.70	0	0	0.00	0.00	85	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.1875	10.04	1.2D + 1.6W 90	36	58	28.68	1	1	0.00	20.88	35	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	241.91	0.9D + 1.6W 60	0.00	0	0	
Top Compression	263.03	1.2D + 1.6W	0.00	0		
Bot Tension	284.52	0.9D + 1.6W 60	327.12	87	6	1 A325
Bot Compression	312.22	1.2D + 1.6W	0.00	0		

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Force/Stress Summary

Section: 9 U-11 Bot Elev (ft): 160.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG 12B - 12"BD 1.75"	-250.07	1.2D + 1.6W	10.02	100	100	100	0.0	0.0	300.70	0	0	0.00	0.00	83	User Input
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.1875	-10.38	1.2D + 1.6W 90	14.50	45	45	45	131.4	36.0	14.23	1	1	31.81	20.88	72	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG 12B - 12"BD 1.75"	231.33	0.9D + 1.6W 60	50	65	324.70	0	0	0.00	0.00	71	User Input
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.1875	9.88	1.2D + 1.6W 90	36	58	28.68	1	1	0.00	20.88	34	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	195.67	0.9D + 1.6W 60	0.00	0	0	
Top Compression	212.48	1.2D + 1.6W	0.00	0		
Bot Tension	241.91	0.9D + 1.6W 60	327.12	74	6	1 A325
Bot Compression	263.03	1.2D + 1.6W	0.00	0		

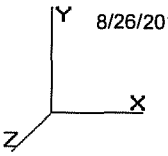
Section: 10 V-9 Bot Elev (ft): 180.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 6" DIA PIPE	-203.77	1.2D + 1.6W	6.68	100	100	100	35.6	50.0	228.86	0	0	0.00	0.00	89	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.1875	-7.99	1.2D + 1.6W 90	10.93	44	44	44	117.5	36.0	14.13	1	1	17.89	15.66	56	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PST - 6" DIA PIPE	188.91	0.9D + 1.6W 60	50	65	251.10	0	0	0.00	0.00	75	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2.5X2.5X0.1875	7.97	1.2D + 1.6W 90	36	58	24.08	1	1	0.00	15.66	33	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	143.87	0.9D + 1.6W 60	0.00	0	0	
Top Compression	156.52	1.2D + 1.6W	0.00	0		
Bot Tension	195.67	0.9D + 1.6W 60	327.12	60	6	1 A325
Bot Compression	212.48	1.2D + 1.6W	0.00	0		

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Force/Stress Summary

Section: 11 V-7 Bot Elev (ft): 200.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 5" DIA PIPE	-145.74	1.2D + 1.6W	6.68	100	100	100	42.6	50.0	169.43	0	0	0.00	0.00	86	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2X2X0.1875	-8.38	1.2D + 1.6W 90	9.430	44	44	44	126.4	36.0	9.99	1	1	17.89	15.66	83	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PST - 5" DIA PIPE	133.77	1.2D + 1.6W 60	50	65	193.50	0	0	0.00	0.00	69	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2X2X0.1875	8.84	1.2D + 1.6W 90	36	58	17.97	1	1	0.00	15.66	49	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	78.34	0.9D + 1.6W 60	0.00	0	0	
Top Compression	87.89	1.2D + 1.6W	0.00	0		
Bot Tension	143.87	0.9D + 1.6W 60	240.80	60	8	3/4 A325
Bot Compression	156.52	1.2D + 1.6W	0.00	0		

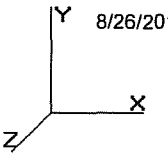
Section: 12 V-5 Bot Elev (ft): 220.0 Height (ft): 20.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 4" DIA PIPE	-70.07	1.2D + 1.6W	6.67	100	100	100	53.0	50.0	116.18	0	0	0.00	0.00	60	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2X2X0.1875	-10.70	1.2D + 1.6W 90	8.333	44	44	44	113.8	36.0	11.72	1	1	17.89	15.66	91	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PST - 4" DIA PIPE	63.23	0.9D + 1.6W 60	50	65	142.65	0	0	0.00	0.00	44	Member
HORIZ	0.00		0	0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 2X2X0.1875	10.42	1.2D + 1.6W 90	36	58	17.97	1	1	0.00	15.66	57	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	12.78	0.9D + 1.6W 60	0.00	0	0	
Top Compression	16.70	1.2D + 1.6W	0.00	0		
Bot Tension	78.34	0.9D + 1.6W 60	180.60	43	6	3/4 A325
Bot Compression	87.89	1.2D + 1.6W	0.00	0		

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1



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Force/Stress Summary

Section: 13 V-5 Bot Elev (ft): 240.0 Height (ft): 15.000

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	phi Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 2-1/2" DIA PIP	-11.77	1.2D + 1.6W	5.00	100	100	100	63.4	50.0	57.18	0	0	0.00	0.00	20	Member X
HORIZ SAE - 2X2X0.1875	-0.66	1.2D + 1.6W	5.000	100	100	100	152.3	36.0	6.97	1	1	17.89	15.66	9	Member Z
DIAG SAE - 2X2X0.125	-2.94	1.2D + 1.6W 90	7.071	44	44	44	100.4	36.0	9.15	1	1	17.89	10.44	32	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Fu (ksi)	phit Pn (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PST - 2-1/2" DIA PIP	9.37	1.2D + 1.6W 60	50	65	76.68	0	0	0.00	0.00	12	Member
HORIZ SAE - 2X2X0.1875	0.62	1.2D + 1.6W 60	36	58	17.97	1	1	0.00	15.66	3	Member
DIAG SAE - 2X2X0.125	3.03	1.2D + 1.6W 90	36	58	12.09	1	1	0.00	10.44	25	Member

Max Splice Forces	Force (kip)	Load Case	Capacity (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	0.46	1.2D + 1.0Di +	0.00	0		
Bot Tension	12.78	0.9D + 1.6W 60	120.40	11	4	3/4 A325
Bot Compression	16.70	1.2D + 1.6W	0.00	0		

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1

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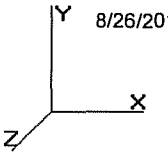

Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
1.0D + 1.0W Service 90 deg	1b	-10.10	-112.73	-5.38	
	1a	-13.08	161.84	7.10	
	1	-0.78	24.56	-1.72	
1.0D + 1.0W Service 60 deg	1b	-11.56	-132.89	-6.67	
	1a	-8.35	103.28	4.05	
	1	-0.67	103.28	-9.26	
1.0D + 1.0W Service Normal	1b	-4.90	-56.33	-3.64	
	1a	4.90	-56.33	-3.64	
	1	0.00	186.32	-17.28	
1.2D + 1.0Di + 1.0Wi 90 deg	1b	-1.78	22.49	-0.89	
	1a	-7.27	134.06	4.06	
	1	-0.23	78.27	-3.17	
1.2D + 1.0Di + 1.0Wi 60 deg	1b	-2.39	14.07	-1.38	
	1a	-5.41	110.38	2.90	
	1	-0.20	110.37	-6.13	
1.2D + 1.0Di + 1.0Wi Normal	1b	0.24	45.75	-0.10	
	1a	-0.24	45.75	-0.10	
	1	0.00	143.32	-9.20	
0.9D + 1.6W 90 deg	1b	-40.46	-470.95	-21.77	
	1a	-42.87	515.12	23.08	
	1	-2.84	22.12	-1.31	
0.9D + 1.6W 60 deg	1b	-45.72	-543.33	-26.39	
	1a	-25.84	304.82	12.09	
	1	-2.45	304.82	-28.43	
0.9D + 1.6W Normal	1b	-21.80	-268.39	-15.50	
	1a	21.80	-268.39	-15.50	
	1	0.00	603.07	-57.31	
1.2D + 1.6W 90 deg	1b	-40.01	-464.39	-21.52	
	1a	-43.33	523.30	23.35	
	1	-2.82	29.49	-1.83	
1.2D + 1.6W 60 deg	1b	-45.28	-536.90	-26.14	
	1a	-26.29	312.65	12.36	
	1	-2.44	312.65	-28.95	
1.2D + 1.6W Normal	1b	-21.36	-261.49	-15.24	
	1a	21.36	-261.49	-15.24	
	1	0.00	611.39	-57.84	

Max Uplift:	543.33 (kip)	Moment:	13,606.90 (ft-kip)	1.2D + 1.6W Normal
Max Down:	611.39 (kip)	Total Down:	88.40 (kip)	
Max Shear:	57.84 (kip)	Total Shear:	88.32 (kip)	

Site Number:	**281331**
Location:	**McHenry KY, KY**
Code:	**ANSI/TIA-222 Rev G**
Struct Class :	**II**
Exposure :	**C**
Topo :	**1**

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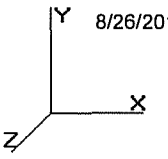

Site Number: 281331
Location: McHenry KY, KY
Code: ANSI/TIA-222 Rev G
Struct Class : II
Exposure : C
Topo : 1

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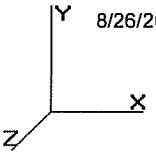
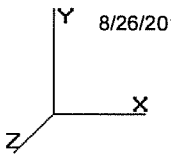


Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
Serviceability - 60.00 Wind 60 deg	220.00	0.7344	0.0219	0.5022
	226.67	0.7945	0.0219	0.5292
	240.00	0.9202	0.0218	0.5507
	250.00	1.0163	0.0216	0.5558
Serviceability - 60.00 Wind 90 deg	220.00	0.7381	0.0127	0.5061
	226.67	0.7986	0.0127	0.5311
	240.00	0.9250	0.0126	0.5539
	250.00	1.0216	0.0126	0.5608
Serviceability - 60.00 Wind Normal	220.00	0.7502	0.0223	0.5122
	226.67	0.8118	0.0222	0.5405
	240.00	0.9397	0.0222	0.5602
	250.00	1.0377	0.0221	0.5662
30.00 mph 60 deg with 0.75 in Radial Ice	220.00	0.3135	0.0094	0.2227
	226.67	0.3396	0.0094	0.2345
	240.00	0.3956	0.0093	0.2471
	250.00	0.4388	0.0092	0.2484
30.00 mph 90 deg with 0.75 in Radial Ice	220.00	0.3141	0.0054	0.2234
	226.67	0.3407	0.0054	0.2373
	240.00	0.3965	0.0054	0.2477
	250.00	0.4396	0.0053	0.2496
30.00 mph Normal with 0.75 in Radial Ice	220.00	0.3160	0.0095	0.2249
	226.67	0.3431	0.0095	0.2396
	240.00	0.3991	0.0094	0.2489
	250.00	0.4424	0.0093	0.2493
90.00 mph 60 deg with No Ice (Reduced DL)	220.00	2.6383	0.0789	1.8026
	226.67	2.8545	0.0795	1.8999
	240.00	3.3039	0.0789	1.9749
	250.00	3.6487	0.0784	1.9944
90.00 mph 60 deg with No Ice	220.00	2.6453	0.0792	1.8086
	226.67	2.8622	0.0798	1.9063
	240.00	3.3133	0.0791	1.9819
	250.00	3.6593	0.0787	2.0014
90.00 mph 90 deg with No Ice (Reduced DL)	220.00	2.6485	0.0458	1.8134
	226.67	2.8649	0.0464	1.9014
	240.00	3.3170	0.0458	1.9851
	250.00	3.6631	0.0459	2.0099
90.00 mph 90 deg with No Ice	220.00	2.6555	0.0460	1.8195
	226.67	2.8726	0.0466	1.9081
	240.00	3.3264	0.0460	1.9921
	250.00	3.6737	0.0461	2.0170
90.00 mph Normal to Face with No Ice (Reduced DL)	220.00	2.6880	0.0804	1.8319
	226.67	2.9064	0.0798	1.9330
	240.00	3.3665	0.0803	2.0064
	250.00	3.7172	0.0805	2.0270
90.00 mph Normal to Face with No Ice	220.00	2.6951	0.0807	1.8382
	226.67	2.9143	0.0800	1.9398
	240.00	3.3759	0.0806	2.0133
	250.00	3.7279	0.0808	2.0340

Site Number:	281331
Location:	McHenry KY, KY
Code:	ANSI/TIA-222 Rev G
Struct Class :	II
Exposure :	C
Topo :	1



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AMERICAN TOWER®
CORPORATION
ATC TOWER SERVICES, INC.
8505 FREEPORT PARKWAY
SUITE 135
IRVING, TX 75063
PHONE: (972) 999-8900 / FAX: (972) 999-8940

281331 - MCHENRY KY, KY

PROJECT DESCRIPTION

PROPOSED NEW FOUNDATION DESIGN FOR A 255' "VALMONT" SELF-SUPPORTING TOWER.

AS-BUILT SIGN-OFF		
OESCRIPTION	SIGNATURE	OATE
CONTRACTOR NAME		
CONTRACTOR REPRESENTATIVE (PRINT NAME)		
CONTRACTOR REPRESENTATIVE (SIGNATURE)		
REOEVELOPMENT P.M. (PRINT NAME)		
REOEVELOPMENT P.M. (SIGNATURE)		

PROJECT SUMMARY

ATC PROJECT NUMBER: 54191373

CUSTOMER: OPERATIONS STRUCTURAL

CUSTOMER SITE NUMBER: N/A

CUSTOMER SITE NAME: N/A

SITE ADDRESS: TBD
MC HENRY, KY 42354-9739

DATE: 10/03/13

REVISION: 0

STATE OF KENTUCKY
RAPHAEL I. MOHAMED
24429
LICENSED PROFESSIONAL ENGINEER

10/16/13

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the state of Kentucky.

SHEET	SHEET TITLE	REV.
BOM	BILL OF MATERIALS (1 PAGE)	0
IGN	IBC GENERAL NOTES	0
A-1	PIER AND MAT FOUNOATION OETAILS	0
A-RL	BAR LIST FOR REINFORCING STEEL ANO GENERAL NOTES	0

BILL OF MATERIALS

QUANTITY REQUIRED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTION	LENGTH	SHEET LIST	PIECE WEIGHT	WEIGHT (lb)	NOTES
			MATERIAL & HARDWARE					
39	39	-	#5 REBARS, GRADE 60	10'-5 1/2"	A-1, A-RL	10.9	425	
54	54	-	#9 REBARS, GRADE 60	7'-3 1/2"	A-1, A-RL	24.8	1339	
152	152	-	#9 REBARS, GRADE 60	37'-6"	A-1, A-RL	127.5	19380	

TOTAL WEIGHT (lb) = 21,144

PAGE 1 OF 1

AMERICAN TOWER®
ATC TOWER SERVICES, INC.
8505 FREEPORT PARKWAY
SUITE 135
IRVING, TX 75063
PHONE: (972) 999-8900
FAX: (972) 999-8940
NYSE AMT

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	DH	10-03-13

ATC SITE NUMBER:
281331

ATC SITE NAME:
MCHENRY KY, KY

SITE ADDRESS:
MC HENRY, KY 42354-9739

STATE OF KENTUCKY
RAPHAEL I. MOHAMED
24429
LICENSED PROFESSIONAL ENGINEER
10/16/13

DRAWN BY:	DH
APPROVED BY:	
DATE DRAWN:	10-03-13
JOB NO:	54191373

SHEET TITLE:
BILL OF MATERIALS

SHEET NUMBER:	REV. #
BOM	0

GENERAL

1. ALL METHODS, MATERIALS AND WORKMANSHIP SHALL FOLLOW THE DICTATES OF GOOD CONSTRUCTION PRACTICE.
2. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TOWER AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD IMMEDIATELY OF ANY INSTALLATION INTERFERENCES. ALL NEW WORK SHALL ACCOMMODATE EXISTING CONDITIONS. DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS SHALL FOLLOW SIMILAR DETAILS FOR THIS JOB.
4. ANY SUBSTITUTIONS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS, AND SHOULD BE SIMILAR TO THOSE SHOWN. ALL SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
5. ANY MANUFACTURED DESIGN ELEMENTS MUST CONFORM TO THE REQUIREMENTS OF THESE NOTES AND SPECIFICATIONS AND SHOULD BE SIMILAR TO THOSE SHOWN. THESE DESIGN ELEMENTS MUST BE STAMPED BY AN ENGINEER PROFESSIONALLY REGISTERED IN THE STATE OF THE PROJECT, AND SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION.
6. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LOCAL CODES AND OSHA SAFETY REGULATIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, ETC. NECESSARY, PER TIA-1019-A-2011, TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.
6. CONTRACTOR'S PROPOSED INSTALLATION SHALL NOT INTERFERE, NOR DENY ACCESS TO, ANY EXISTING OPERATIONAL AND SAFETY EQUIPMENT.

STRUCTURAL STEEL

1. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS, LATEST EDITION.
2. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
3. ALL U-BOLTS SHALL BE ASTM A307 OR EQUIVALENT, WITH LOCKING DEVICE, UNLESS NOTED OTHERWISE.
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH.
5. ALL FIELD CUT SURFACES AND FIELD DRILLED HOLES SHALL BE REPAIRED WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A760 AND MANUFACTURERS RECOMMENDATIONS.
6. ALL FIELD DRILLED HOLES TO BE USED FOR FIELD BOLTING INSTALLATION SHALL BE STANDARD HOLES, AS DEFINED BY AISC, UNLESS NOTED OTHERWISE.

WELDING

1. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
2. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE (100% IF REJECTABLE DEFECTS ARE FOUND) TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
3. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
4. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
5. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
6. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING 1/2" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A760 AND MANUFACTURERS RECOMMENDATIONS.

BOLT TIGHTENING PROCEDURE

1. STRUCTURAL CONNECTIONS TO BE ASSEMBLED AND INSPECTED IN ACCORDANCE WITH RCSC-2004 (SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS.)
2. TIGHTEN FLANGE BOLTS BY AISC "TURN-OF-THE-NUT" METHOD, USING THE CHART BELOW:

BOLT LENGTHS UP TO AND INCLUDING FOUR DIAMETERS

1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
7/8"	BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1"	BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS UP TO AND INCLUDING 4.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS UP TO AND INCLUDING 5.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS UP TO AND INCLUDING 5.5 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS UP TO AND INCLUDING 6.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT

BOLT LENGTHS OVER FOUR DIAMETERS BUT NOT EXCEEDING EIGHT DIAMETERS

1/2"	BOLTS 2.25 TO 4.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
5/8"	BOLTS 2.75 TO 5.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
3/4"	BOLTS 3.25 TO 6.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
7/8"	BOLTS 3.75 TO 7.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1"	BOLTS 4.25 TO 8.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/8"	BOLTS 4.75 TO 9.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/4"	BOLTS 5.25 TO 10.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-3/8"	BOLTS 5.75 TO 11.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT
1-1/2"	BOLTS 6.25 TO 12.0 INCH LENGTH	+1/2 TURN BEYOND SNUG TIGHT

3. SPLICE BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 6.2.1 OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS", LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:

   FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 6.2.1 THROUGH 8.2.4.

   6.2.1 TURN-OF-NUT PRETENSIONING
   BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1, UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.

4. ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

   ALL BOLT HOLES SHALL BE ALIGNED TO PERMIT INSERTION OF THE BOLTS WITHOUT UNDUE DAMAGE TO THE THREADS. BOLTS SHALL BE PLACED IN ALL HOLES WITH WASHERS POSITIONED AS REQUIRED AND NUTS THREADED TO COMPLETE THE ASSEMBLY. COMPACTING THE JOINT TO THE SNUG-TIGHT CONDITION SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT. THE SNUG-TIGHTENED CONDITION IS THE TIGHTNESS THAT IS ATTAINED WITH A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER USING AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.

PAINT

1. AS REQUIRED, CLEAN AND PAINT PROPOSED STEEL ACCORDING TO FAA ADVISORY CIRCULAR AC 70/7460-1K.

APPLICABLE CODES AND STANDARDS

1. ANSI/TIA: STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES, 222-G EDITION.
2. 2006 INTERNATIONAL BUILDING CODE.
3. 2007 KENTUCKY BUILDING CODE.
4. ACI 316: AMERICAN CONCRETE INSTITUTE, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, 318-05.
5. CRSI: CONCRETE REINFORCING STEEL INSTITUTE, MANUAL OF STANDARD PRACTICE, LATEST EDITION.
8. AISC: AMERICAN INSTITUTE OF STEEL CONSTRUCTION, MANUAL OF STEEL CONSTRUCTION, LATEST EDITION.
7. AWS: AMERICAN WELDING SOCIETY D1.1, STRUCTURAL WELDING CODE, LATEST EDITION.

SUMMARY OF SPECIAL INSPECTIONS

VERIFICATION AND INSPECTION TASK	CONTINUOUS	PERIODIC
1. VERIFY PLACEMENT LOCATIONS AND PLUMBNESS, CONFIRM ELEMENT DIAMETERS, BELL DIAMETERS (IF APPLICABLE), LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE) AND ADEQUATE END-BEARING STRATA CAPACITY. RECORD CONCRETE OR GROUT VOLUMES.	X	–
2. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT.	–	X
3. INSPECTION OF BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED.	X	–
4. VERIFYING USE OF REQUIRED DESIGN MIX.	–	X
5. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	–

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ATC TOWER SERVICES, INC.
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NYSE AMT

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	DH	10-03-13

ATC SITE NUMBER:
281331

ATC SITE NAME:
MCHENRY KY, KY

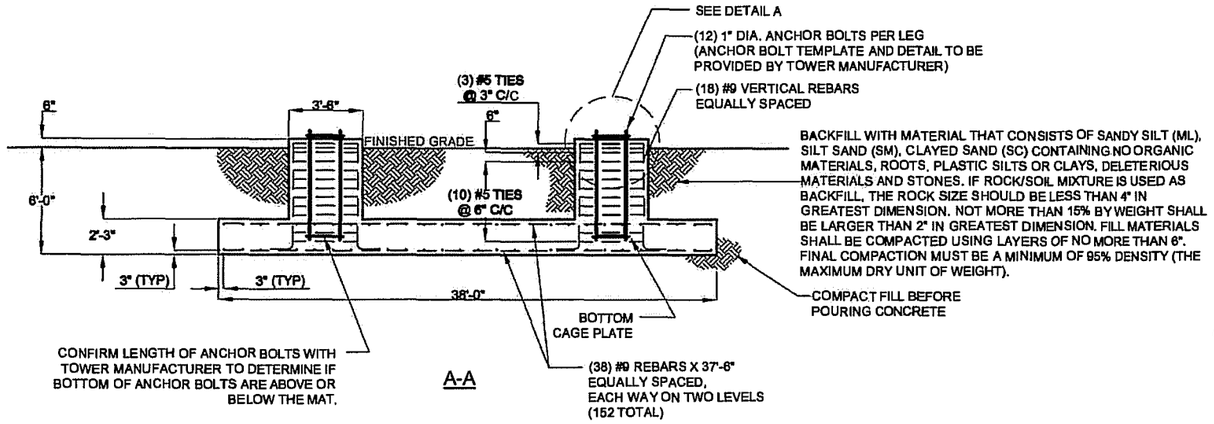
SITE ADDRESS:
MC HENRY, KY 42354-9739

STATE OF KENTUCKY
RAPHAEL I. MOHAMED
24429
LICENSED PROFESSIONAL ENGINEER
10/16/13

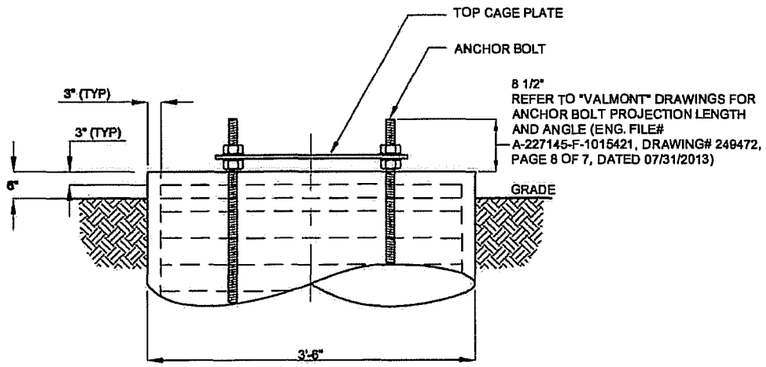
DRAWN BY:	DH
APPROVED BY:	
DATE DRAWN:	10-03-13
JOB NO:	54191373

SHEET TITLE:
IBC GENERAL NOTES

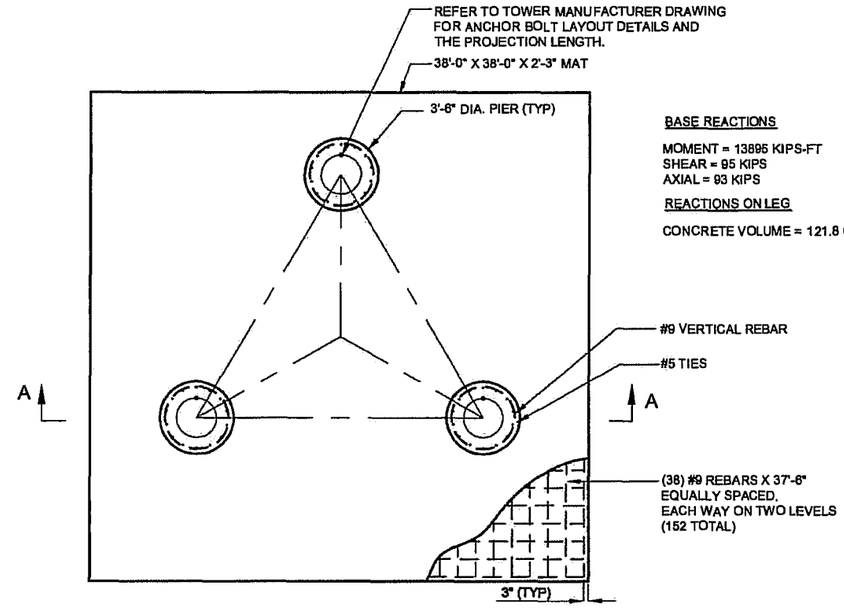
SHEET NUMBER:	REV. #
IGN	0



A-A



DETAIL A



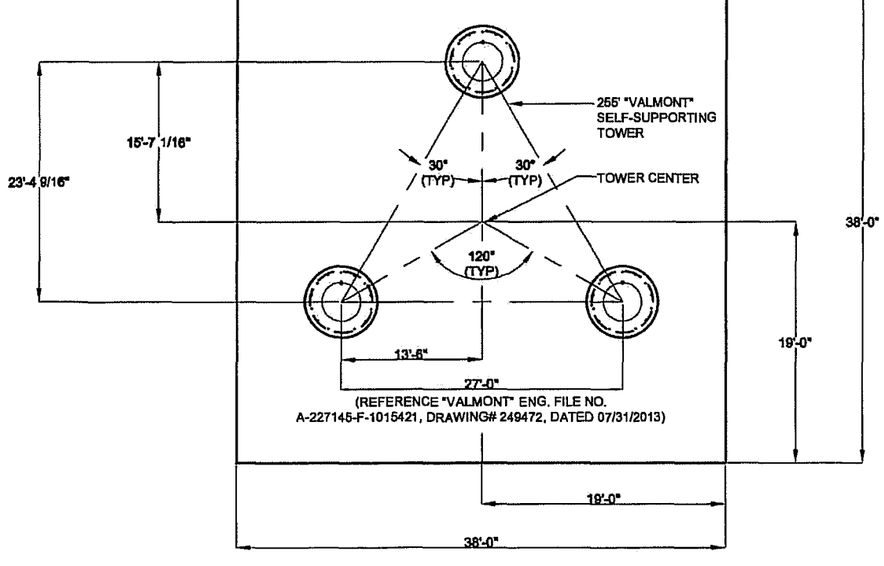
PLAN VIEW

BASE REACTIONS

MOMENT = 13895 KIPS-FT
SHEAR = 95 KIPS
AXIAL = 93 KIPS

REACTIONS ON LEG

CONCRETE VOLUME = 121.8 CUBIC YARDS



FOUNDATION LAYOUT

NOTES

1. PROPOSED NEW FOUNDATION DESIGN FOR A "VALMONT" 255' SELF-SUPPORTING TOWER (ENG. FILE NO. A-227145-F-1015421, DRAWING# 249472, DATED 07/31/2013). REFERENCE TOWER MANUFACTURER DRAWINGS FOR ANCHOR BOLT INSTALLATION REQUIREMENTS.
2. PROPOSED NEW FOUNDATION DESIGN REACTIONS WERE OBTAINED FROM TOWER MANUFACTURER DESIGN DRAWINGS (ENG. FILE NO. A-227145-F-1015421, DRAWING# 249472, DATED 07/31/2013).
3. PROPOSED NEW FOUNDATION DESIGN WAS BASED ON SOIL REPORT PROVIDED BY "FSTAN LAND SURVEYORS & CONSULTING ENGINEERS" WITH PROJECT# 13-8629, DATED 08/18/2013. REFERENCE THE SOIL REPORT FOR ADDITIONAL CONSIDERATIONS AND REQUIREMENTS.
4. IF THE SOIL PARAMETERS ENCOUNTERED DURING CONSTRUCTION ARE SIGNIFICANTLY DIFFERENT FROM WHAT WERE INDICATED IN THE SOIL REPORT, PLEASE REPORT FINDINGS TO ATC ENGINEERING FOR FURTHER INSTRUCTION.
5. CONCRETE SLUMP: 2"~4"
8. FOUNDATION BASE SHOULD REST ON FIRM AND LEVELED SURFACE.
7. ELEVATION AT THE TOPS OF ALL THREE PIERS TO BE WITHIN ± 1/4" OF EACH OTHER.

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NYSE AMT

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	DH	10-03-13

ATC SITE NUMBER:
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MC HENRY, KY 42354-9739

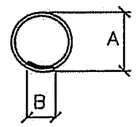
STATE OF KENTUCKY
RAPHAEL I. MOHAMED
24429
LICENSED
PROFESSIONAL ENGINEER
10/16/13

DRAWN BY:	DH
APPROVED BY:	
DATE DRAWN:	10-03-13
JOB NO:	54191373

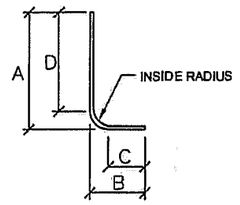
SHEET TITLE:
PIER AND MAT FOUNDATION DETAILS

SHEET NUMBER:	REV. #
A-1	0

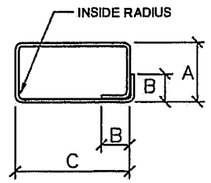
QTY REQ'D	REBAR SIZE	LENGTH	TOTAL WEIGHT (LBS)	TYPE	BENDING DIAGRAM
-	-	-	-	ROUND TIE	A: 3'-0", B: 1'-2"
39	#5	10'-5 1/2"	425		



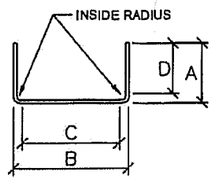
QTY REQ'D	REBAR SIZE	LENGTH	TOTAL WEIGHT (LBS)	TYPE	A	B	C	D	INSIDE RADIUS
-	-	-	-	90° BEND VERTICAL	5'-9"	1'-9 5/8"	1'-4"	5'-3 1/2"	4-1/2"
54	#9	7'-3 1/2"	1339						



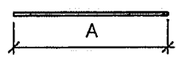
QTY REQ'D	REBAR SIZE	LENGTH	TOTAL WEIGHT (LBS)	TYPE	A	B	C	INSIDE RAD.
-	-	-	-	SQUARE OR RECTANGULAR TIE				



QTY REQ'D	REBAR SIZE	LENGTH	TOTAL WEIGHT (LBS)	TYPE	A	B	C	D	INSIDE RADIUS
-	-	-	-	U-SHAPE 90° BEND					



QTY REQ'D	REBAR SIZE	LENGTH	TOTAL WEIGHT (LBS)	TYPE	A
-	-	-	-	STRAIGHT	
152	#9	37'-6"	19380		37'-6"



GENERAL FOUNDATION CONSTRUCTION NOTES

1. ALL REBAR (HORIZONTAL & VERTICAL) SHALL BE SECURELY WIRE TIED TO PREVENT DISPLACEMENT DURING POURING OF CONCRETE.
2. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS AND A MAXIMUM W/CM RATIO NOT EXCEEDING 0.45.
3. REINFORCED CONCRETE CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH ACI STANDARDS 318.
4. MINIMUM CONCRETE COVER OVER REBAR IS 3".
5. BACKFILL SHALL BE SELECTED MATERIAL, WELL COMPACTED IN LAYERS NOT EXCEEDING 12".
6. BACKFILL SHALL BE PLACED SO AS TO PREVENT ACCUMULATION OF WATER AROUND THE FOUNDATION.
7. REINFORCING MATERIAL SHALL BE IN ACCORDANCE WITH ASTM SPECIFICATION A615-85.
8. ALL REBAR TO BE GRADE 60 (UNLESS NOTED).

FOUNDATION AND ANCHOR TOLERANCES

1. VERTICAL EMBEDMENTS OUT OF PLUMB: 1.0 DEGREE.
2. DRILLED FOUNDATION OUT OF PLUMB: 1.0 DEGREE.
3. DEPTH OF FOUNDATION: PLUS 3" (76mm) OR MINUS 0".
4. PROJECTIONS OF EMBEDMENTS: PLUS OR MINUS 1/4" (6mm).
5. CONCRETE DIMENSIONS: PLUS OR MINUS 1" (25mm).
6. REINFORCING STEEL PLACEMENT: PLUS OR MINUS 1/2" INCLUDING CONCRETE COVER.
7. TOP LEVELS OF ALL THREE PIERS FROM EACH OTHER: PLUS OR MINUS 1/4"
8. FOLLOWING ARE THE MINIMUM OVERLAP LENGTHS OF REBARS IF REQUIRED:
   - #6 BARS = 2'-0"
   - #8 BARS = 2'-8"
   - #9 BARS = 3'-0"
   - #10 BARS = 3'-8"
   - #11 BARS = 4'-0"

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NYSE AMT

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	JL	9/18/13
1			
2			
3			
4			

ATC SITE NUMBER:
280358

ATC SITE NAME:
PILOT RILEY NC, NC

SITE ADDRESS:
PERRY RD
ZEBULON, NC 27597-6316

STATE OF KENTUCKY
RAPHAEL I. MOHAMED
24429
LICENSED PROFESSIONAL ENGINEER
10/16/13
NC COA P-1177

DRAWN BY:	JL
APPROVED BY:	RAM
DATE DRAWN:	9/18/13
JOB NO:	54498071A

SHEET TITLE:
BAR LIST FOR REINFORCING STEEL AND GENERAL NOTES

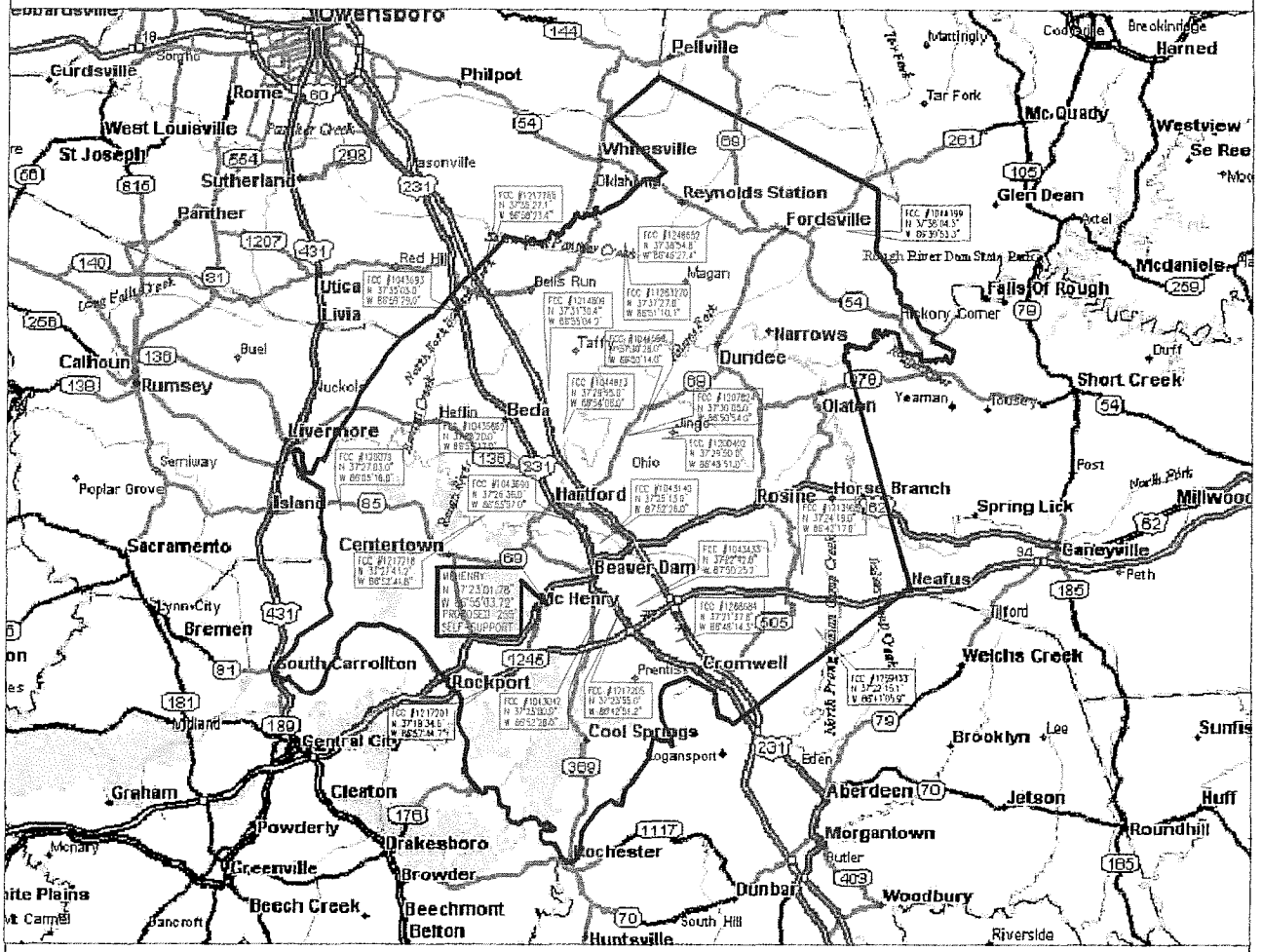
SHEET NUMBER:	REV. #
A-RL	0

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

OHIO COUNTY, KENTUCKY
AT&T SITE NAME: MCHENRY
TOWER LOCATION EXHIBIT

N
W E
S

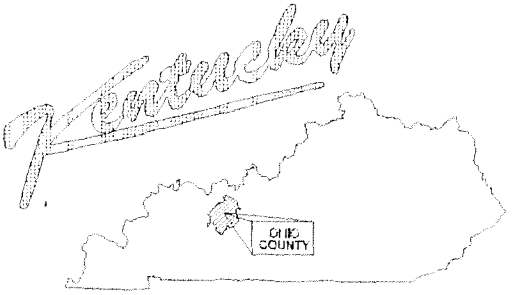
TOWERS DEPICTED ARE ALL KNOWN CONSTRUCTED TOWER SITES REGISTERED WITH THE FEDERAL COMMUNICATIONS COMMISSION IN OHIO COUNTY, KENTUCKY



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

AUGUST 29, 2013
FSTAN PROJECT NO. 13-8705

Registrator #	Status	File #	Owner Name
1043642	Constructed	A0656813	KENTUCKY RSA 3 CELLULAR GENERAL PARTNERSHIP DBA BLUEGRASS CELLULAR
1043140	Constructed	A0789326	Time Warner Cable Midwest LLC
1043433	Constructed	A0796260	New Cingular Wireless PCS, LLC
1043462	Constructed	A0826104	Kenergy Corporation
1043390	Constructed	A0651408	STARLIGHT BROADCASTING CO., INC.
1043693	Constructed	A0651409	STARLIGHT BROADCASTING CO., INC.
1044199	Constructed	A0796358	New Cingular Wireless PCS, LLC
1044826	Constructed	A0665797	Midwestern Gas Transmission
1044883	Constructed	A0547069	KENTUCKY, COMMONWEALTH OF DBA KY EMERGENCY WARNING SYSTEM KEWS
1200407	Constructed	A0134745	Big Rivers Electric Corporation
1200799	Constructed	A0136857	Big Rivers Electric Corporation
1207824	Constructed	A0105365	Ford Communication
1213965	Constructed	A0797276	New Cingular Wireless PCS, LLC
1214606	Constructed	A0797289	New Cingular Wireless PCS, LLC
1217201	Constructed	A0719510	CROWN COMMUNICATION LLC
1217205	Constructed	A0719513	CROWN COMMUNICATION LLC
1217218	Constructed	A0719516	CROWN COMMUNICATION LLC
1217766	Constructed	A0719541	CROWN COMMUNICATION LLC
1240852	Constructed	A0788811	New Cingular Wireless PCS, LLC
1259133	Constructed	A0550691	Tower Acquisition, LLC
1269834	Constructed	A0784106	Newberry Broadcasting, Inc.
1284270	Constructed	A0788127	OHIO COUNTY AIRPORT



FSTAN

P.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) 636-5763

EXHIBIT E
CO-LOCATION REPORT

281331 McHenry

TAX INFO

Parcel # 118-112, 118-113, & 118-115

93 Pearl Lane

Beaver Dam, KY 42320

There are no FCC registered structures within the search area or within an additional one mile radius.
Search Ring Center: **37.382583 N, -86.920722 W**

SUMMARY OF CHOSEN SITE

Within the search ring there are no existing structures to be noted. The search ring is comprised of mainly rural residential neighborhoods. The area chosen is close to the top of the hill and the furthest away from the existing houses in the area and has natural screening in all directions. This parcel was chosen as it had an existing access off of the road and was within the search ring. Power and telephone facilities are located nearby. Ohio County, KY has no zoning or permitting requirements.

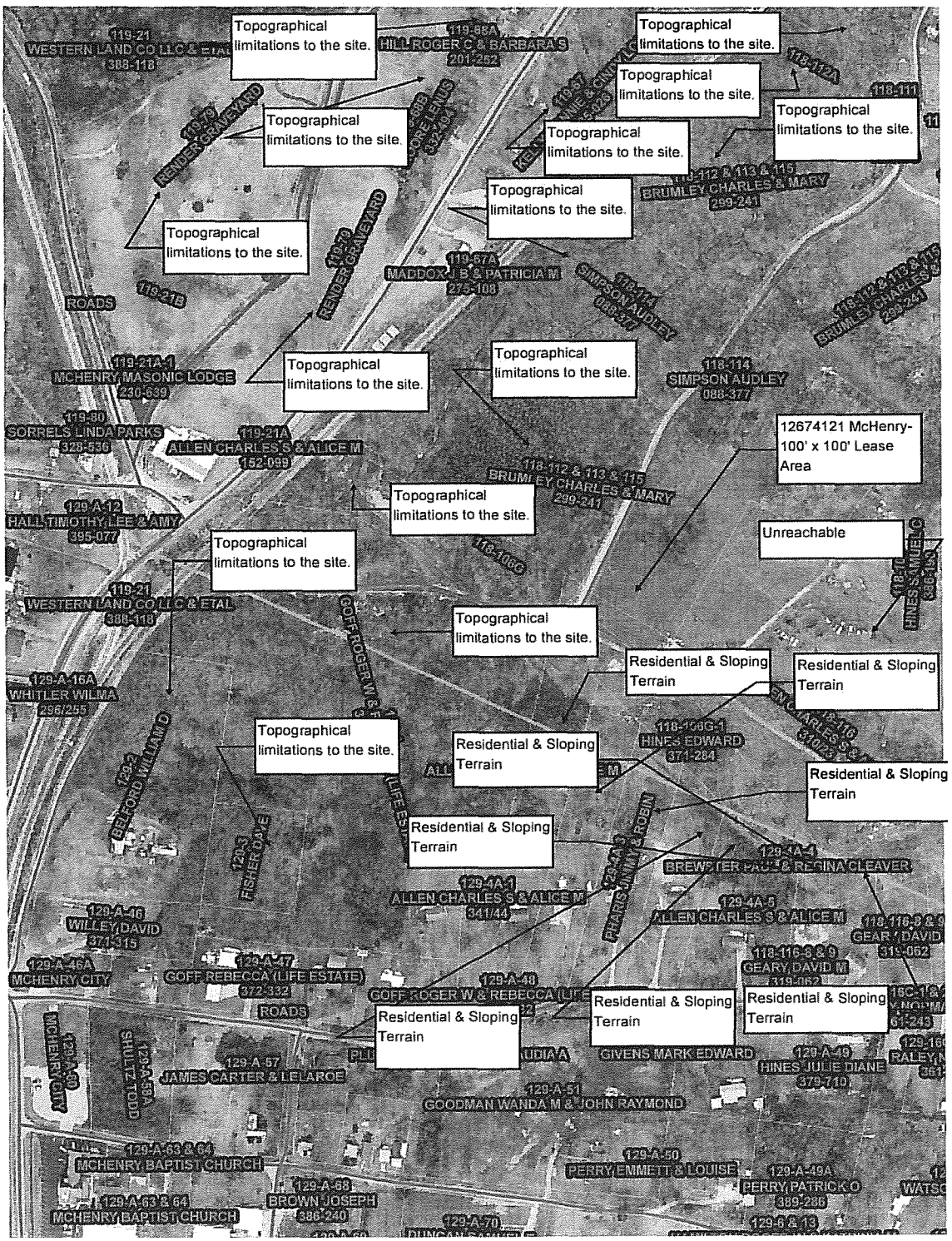
This site meets RF objectives. The landlord owns most of the Search Ring. The closest house to the proposed location is owned by the landlord and they want to have the site on their property. Below is a map of the search ring identifying Candidate A. Brian Ramirez- Site Acquisition

Brian K Ramirez
10/19/13

SITE SKETCH

AERIAL SHOWING SURROUNDING AREA

PLAT W/ NOTES


Topographical limitations to the site.
Topographical limitations to the site.
Topographical limitations to the site.
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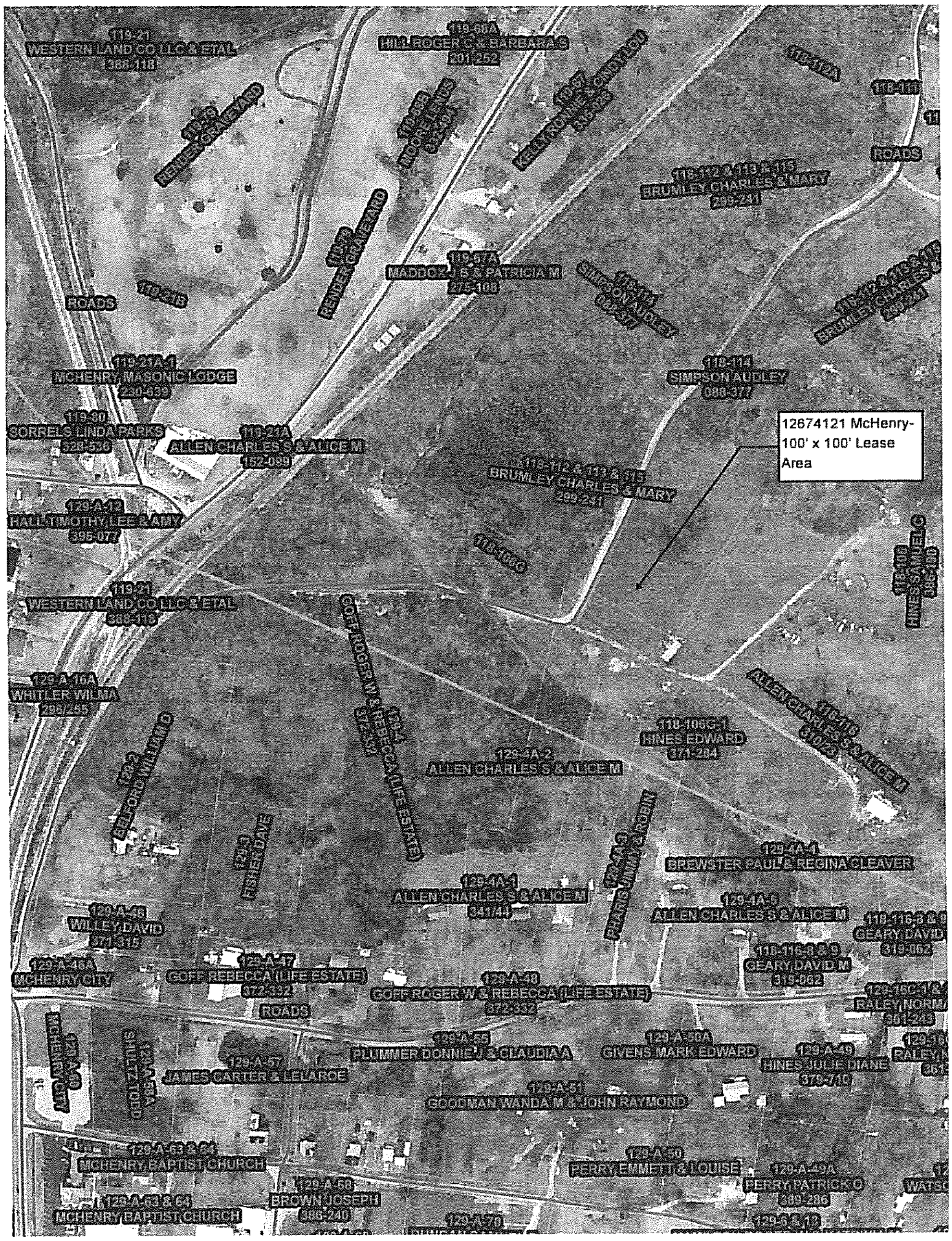
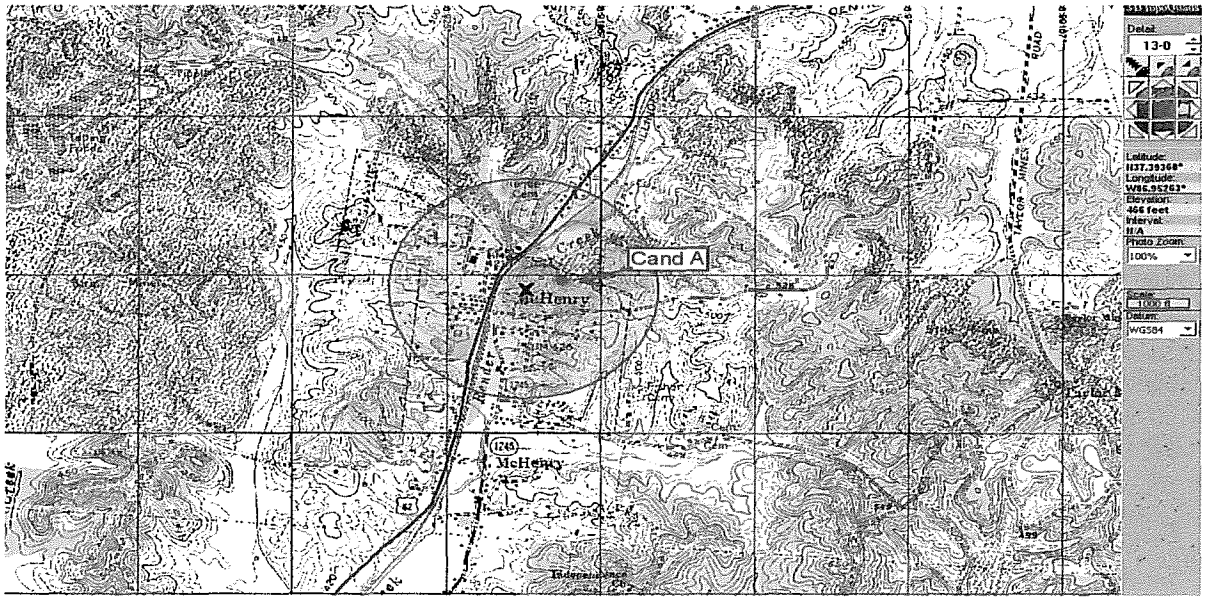
12674121 McHenry-100' x 100' Lease Area
Unreachable
Residential & Sloping Terrain
Residential & Sloping Terrain
Residential & Sloping Terrain
Residential & Sloping Terrain
Residential & Sloping Terrain
Residential & Sloping Terrain
Residential & Sloping Terrain
Residential & Sloping Terrain
119-21 WESTERN LAND CO LLC & ETAL 388-118
119-68A HILL ROGER C & BARBARA S 201-252
118-112A
118-111
110-70 RENDER GRAVEYARD
110-69 MORELLI LEIDS 352-104
110-7 MEES CONNY C 243-
118-112 & 113 & 115 BRUMLEY CHARLES & MARY 299-241
119-67A MADDOX J B & PATRICIA M 275-108
118-114 SIMPSON AUDLEY 088-377
ROADS
119-21B
119-21A-1 MCHENRY MASONIC LODGE 230-639
119-80 SORRELS LINDA PARKS 328-536
119-21A ALLEN CHARLES S & ALICE M 152-099
129-A-12 HALL TIMOTHY LEE & AMY 395-077
118-106C
118-1 HINES SHIRLEY 379-
129-A-16A WHITLER WILMA 296/255
118-106G-1 HINES EDWARD 371-284
123-3 BEDFORD WILLARD D
123-2 FISHER DAVE
LIFE ESTATE
129-4A-1 BREWSTER PAUL & REGINA CLEAVER
129-4A-1 ALLEN CHARLES S & ALICE M 341/44
129-4A-5 ALLEN CHARLES S & ALICE M
129-A-16 WILLEY DAVID 371-315
118-116-3 & 9 GEARY DAVID M 319-062
129-A-16A MCHENRY CITY
129-A-47 GOFF REBECCA (LIFE ESTATE) 372-332
129-A-48 GOFF ROGER W & REBECCA (LIFE
ROADS
MCHENRY AVE
129-A-58A SHULTZ TODD
129-A-57 JAMES CARTER & LELARGE
GIVENS MARK EDWARD
129-A-49 HINES JULIE DIANE 379-719
129-A-51 GOODMAN WANDA M & JOHN RAYMOND
129-A-63 & 64 MCHENRY BAPTIST CHURCH
129-A-50 PERRY EMMETT & LOUISE
129-A-49A PERRY PATRICK O 389-286
129-A-63 & 64 MCHENRY BAPTIST CHURCH
129-A-66 BROWN JOSEPH 386-240
129-A-70
129-6 & 13

PLAT

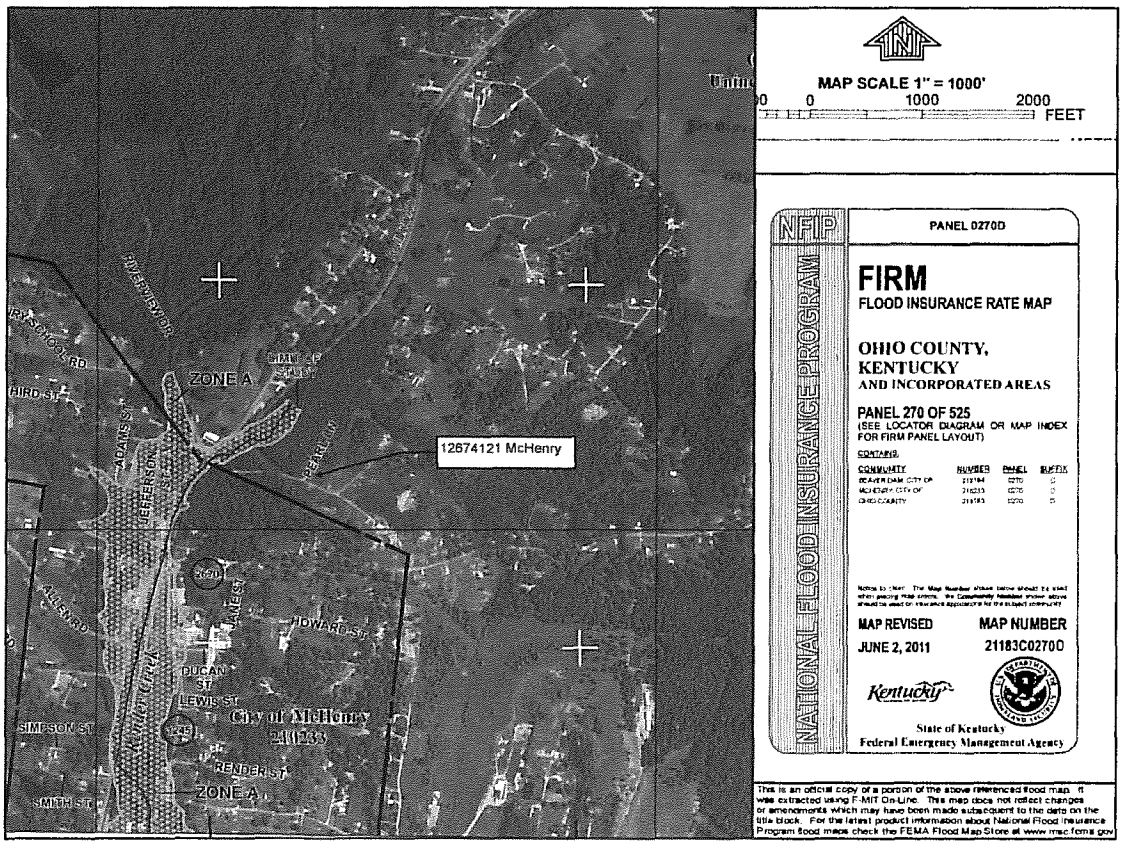

119-21
WESTERN LAND CO LLC & ETAL
388-118
119-68A
HILL ROGER C & BARBARA S
201-252
ROADS
118-112 & 113 & 115
BRUMLEY CHARLES & MARY
299-241
119-67A
MADDOX J B & PATRICIA M
275-108
119-21A-1
MCHENRY MASONIC LODGE
230-639
118-114
SIMPSON AUDLEY
088-377
12674121 McHenry-
100' x 100' Lease
Area
119-80
SORRELS LINDA PARKS
328-536
119-21A
ALLEN CHARLES S & ALICE M
152-099
129-A-12
HALL TIMOTHY LEE & AMY
395-077
118-106C
129-A-16A
WHITLER WILMA
296/255
118-106C-1
HINES EDWARD
371-284
129-4A-2
ALLEN CHARLES S & ALICE M
129-4A-4
BREWSTER PAUL & REGINA CLEAVER
129-4A-1
ALLEN CHARLES S & ALICE M
341/44
129-4A-5
ALLEN CHARLES S & ALICE M
129-A-46
WILLEY DAVID
371-315
118-116-8 & 9
GEARY DAVID M
319-062
129-A-46A
MCHENRY CITY
129-A-47
GOFF REBECCA (LIFE ESTATE)
372-332
129-A-48
GOFF ROGER W & REBECCA (LIFE ESTATE)
372-332
129-A-55
PLUMMER DONNIE J & CLAUDIA A
129-A-50A
GIVENS MARK EDWARD
129-A-49
HINES JULIE DIANE
379-710
129-A-57
JAMES CARTER & LELAROE
129-A-51
GOODMAN WANDA M & JOHN RAYMOND
129-A-53 & 64
MCHENRY BAPTIST CHURCH
129-A-50
PERRY EMMETT & LOUISE
129-A-49A
PERRY PATRICK O
389-286
129-A-68
BROWN JOSEPH
386-240

TOPO MAP



McHenry 37.382583 -86.920722

FEMA MAP



DEED (2 Pages)

BOOK 249
PAGE 241

93 Pearl Lane

DEED OF CORRECTION

WHEREAS, Lora Moore did, by Deed dated July 10, 1991, sell and convey certain property therein described to Charles Brumley and Mary Brumley, his wife, which Deed is recorded in Deed Book 277 at Page 674, Ohio County Clerk's Office, and

WHEREAS, one parcel of the land in said Deed is incorrectly described because it contains erroneous survey calls and for the purpose of correcting the description of Tract I of Parcel C of said Deed, **NOW THEREFORE**, this Deed of Correction, made and entered into this 16 day of October, 1995, by and between LORA MOORE, a widow, McHenry, Kentucky 42354, **GRANTOR**, and CHARLES BRUMLEY and MARY BRUMLEY, his wife, 93 Pearl Lane, Beaver Dam, Kentucky 42320, **GRANTEES**:

W I T N E S S E T H:

THAT FOR AND IN CONSIDERATION of the purchase money previously paid, and in order to correct the description of Tract I of Parcel C in Deed Book 277 at Page 674 of record in the Office of the Ohio County Clerk, the receipt and sufficiency of which is hereby acknowledged, the GRANTOR has bargained and sold and does by these presents transfer, alien, grant, sell and convey unto the said Grantees, for and during their joint lives with the remainder in fee simple to the survivor of them, his or her heirs and assigns forever, the following real estate, situate and lying in Ohio County, Kentucky, and more particularly described as follows, to-wit:

Beginning at iron stake at the I.C. Rail Road Company right away corner to Dan Moore and with his line, thence S. 66-15 E. 1185 feet to iron stake S. 23-45 W. 181 feet to iron stake corner to Kenneth Phipps, thence with his line N. 66-30 W. 1238 feet to an iron stake at the I.C. Rail Road right away, thence with right of way N. 35-25 E. 190 feet to the beginning containing 4 acres more or less. Part of Parcel 68-B.

LODGED FOR RECORD
OCT 23 1995
2:30 PM
LESSIE R. JOHNSON
CLERK

TO HAVE AND TO HOLD the above described property together with all the appurtenances and privileges thereunto belonging unto the Grantees, for and during their joint lives with remainder in fee simple to the survivor of them, his or her heirs and assigns forever, with Covenant of **GENERAL WARRANTY OF TITLE**.

BOOK 299
PAGE 242

By their signatures hereon, the Grantor and Grantees hereby join in the execution of hereof in order to ratify and confirm the corrected description of the property conveyed herein, and to correct the description of Tract I of Parcel C in the Deed to Charles Brumley and Mary Brumley, his wife by Deed from Lora Moore, a widow, dated July 10, 1991, and recorded in Deed Book 277 at Page 674, which parcel was incorrectly described therein and is correctly described Herein and they certify no additional sum of money was paid for this Deed. The Grantees sign this deed solely to comply with the consideration certification required by KRS Chapter 382 and for no other purpose.

IN TESTIMONY WHEREOF, witness the signatures of the Grantor, and the Grantees, this the day and year first above written.

GRANTOR:

Lora Moore.

LORA MOORE, a widow

FILED FOR RECORD
This 23 day of Oct 1995 at
9:30 O'Clock A. M. and recorded in Deed
Book No. 299 at page 241-242
Attest Lessie R. Johnson, Clerk
By D.C

GRANTEES:

Charles Brumley
CHARLES BRUMLEY

Mary Brumley
MARY BRUMLEY, his wife

STATE OF KENTUCKY
COUNTY OF OHIO

Acknowledged and sworn to before me this 16th day of October, 1995, by LORA MOORE, a widow.

Teresa A Hoots
NOTARY PUBLIC

My commission expires: 4-23-96.

STATE OF KENTUCKY
COUNTY OF OHIO

Acknowledged and sworn to before me this 23 day of October, 1995, by CHARLES BRUMLEY and MARY BRUMLEY, his wife.

NOTARY PUBLIC

My commission expires: July 26, 1997.

I certify this instrument was prepared by E. Glenn Miller, Attorney at Law, P.O. Box 83, Fleener Building, Hartford, Kentucky.

E. Glenn Miller
E. GLENN MILLER

PARCEL INFORMATION

Ohio COUNTY PVA OFFICE
301 Main Street
Hartford, Kentucky 42347

Wednesday, May 01, 2013

Name and Address BRUMLEY CHARLES & MARY
93 PEARL LANE
BEAVER DAM KY 42320

Map Number	118-112 & 113 & 115
Property Address	PEARL LN 93
Description	MODULAR/27.75 AC/MTL BLDG
District	County
Class	Farm
Acres	27.75

Land	$114,600
Improvements	$0
Land and Improvements	$114,600
Exemption	$36,000
Taxable Value	$78,600
Fair Cash Value	$132,600
Deed Number	299-241
Sale Date	
Previous Owner	

_____

Authorized Signature

PICTURES (on following pages)

Looking NORTH at Site

Looking SOUTH at Site

Looking EAST at Site

Looking WEST at Site

Looking NORTH from Site

Looking SOUTH from Site

Looking EAST from Site

Looking WEST from Site

Proposed Access Road

View of Lease Area

Power

Telco

EXHIBIT F
FAA

Federal Aviation Administration

Due to a government shutdown the Federal Aviation Administration (FAA) Obstruction Evaluation Group (OEG) is currently closed. This closure prevents us from processing any new or previously submitted applications for off-airport filings under 14 CFR Part 77. Upon returning the FAA OEG staff will process applications in order based on the date they were filed.

Pending a formal determination, all submittals should be considered a hazard to air navigation until [illegible] have a valid FAA issued determination, and you are failing to have a NOTAM issued, please call: (202) 267-9354.

« OE/AAA

Form 7460-1 for ASN: 2013-ASO-7493-OE

For information only.
This proposal has not yet been studied. Study outcomes will be posted at a later date.
Public comments are not requested, and will not be considered at this time.

Overview

Study (ASN): 2013-ASO-7493-OE
Prior Study:
Status: Work In Progress
Received Date: 08/27/2013
Entered Date: 08/27/2013
Map: View Map

Construction Info

Notice Of: CONSTR
Duration: PERM (Months: 0 Days: 0)
Work Schedule:

Structure Summary

Structure Type: Antenna Tower
Structure Name: MCHENRY KY (281331)
FCC Number:

Structure Details

Latitude (NAD 83): 37° 23' 01.78" N
Longitude (NAD 83): 86° 55' 03.72" W
Datum: NAD 83
City: MC HENRY
State: KY
Nearest County: Ohio

Height and Elevation

	Proposed
Site Elevation:	441
Structure Height:	265
Total Height (AMSL):	706

Frequencies

Low Freq	High Freq	Unit	ERP	Unit
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 TRANSPORTATION CABINET

KENTUCKY AIRPORT ZONING COMMISSION

APPLICATION FOR PERMIT TO CONSTRUCT OR ALTER A STRUCTURE

APPLICANT (*name*) American Towers, Inc	**PHONE** (781) 926-7126	**FAX**	**KY AERONAUTICAL STUDY #**	
ADDRESS (*street*) 10 Presidential Way	**CITY** Woburn		**STATE** MA	**ZIP** 01801
APPLICANT'S REPRESENTATIVE (*name*)	**PHONE**	**FAX**		
ADDRESS (*street*)	**CITY**		**STATE**	**ZIP**
APPLICATION FOR ☒ New Construction ☐ Alteration ☐ Existing **DURATION** ☐ Permanent ☐ Temporary (*months* *days*)			**WORK SCHEDULE** Start End	
TYPE ☐ Crane ☐ Building ☒ Antenna Tower ☐ Power Line ☐ Water Tank ☐ Landfill ☐ Other	**MARKING/ PAINTING/ LIGHTING PREFERRED** ☐ Red Lights & Paint ☐ White- medium intensity ☐ White- high intensity ☒ Dual- red & medium intensity white ☐ Dual- red & high intensity white ☐ Other			
LATITUDE 37°23'1.78"	**LONGITUDE** 86°55'3.72"		**DATUM** ☒ NAD83 ☐ NAD27 ☐ Other	
NEAREST KENTUCKY City MCHENRY County OHIO	**NEAREST KENTUCKY PUBLIC USE OR MILITARY AIRPORT**			
SITE ELEVATION (AMSL, *feet*) 441	**TOTAL STRUCTURE HEIGHT** (AGL, *feet*) 265		**CURRENT** (*FAA aeronautical study #*) 2013-ASO-7493-OE	
OVERALL HEIGHT (*site elevation plus total structure height, feet*) 706			**PREVIOUS** (*FAA aeronautical study #*)	
DISTANCE (*from nearest Kentucky public use or Military airport to structure*)			**PREVIOUS** (*KY aeronautical study #*)	
DIRECTION (*from nearest Kentucky public use or Military airport to structure*)				

DESCRIPTION OF LOCATION (*Attach USGS 7.5 minute quadrangle map or an airport layout drawing with the precise site marked and any certified survey.*)
Please see attached map

DESCRIPTION OF PROPOSAL
Proposed tower

FAA Form 7460-1 (*Has the "Notice of Construction or Alteration" been filed with the Federal Aviation Administration?*)
☐ No ☒ Yes, when? 08/27/2013

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.*)
PENALITIES (*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.*)

NAME	**TITLE**	**SIGNATURE**	**DATE**
Katie Miller	Compliance	Katie Miller	08/27/2013

COMMISSION ACTION

☐ Chairperson, KAZC
☐ Administrator, KAZC

☐ Approved **SIGNATURE** **DATE**
☐ Disapproved

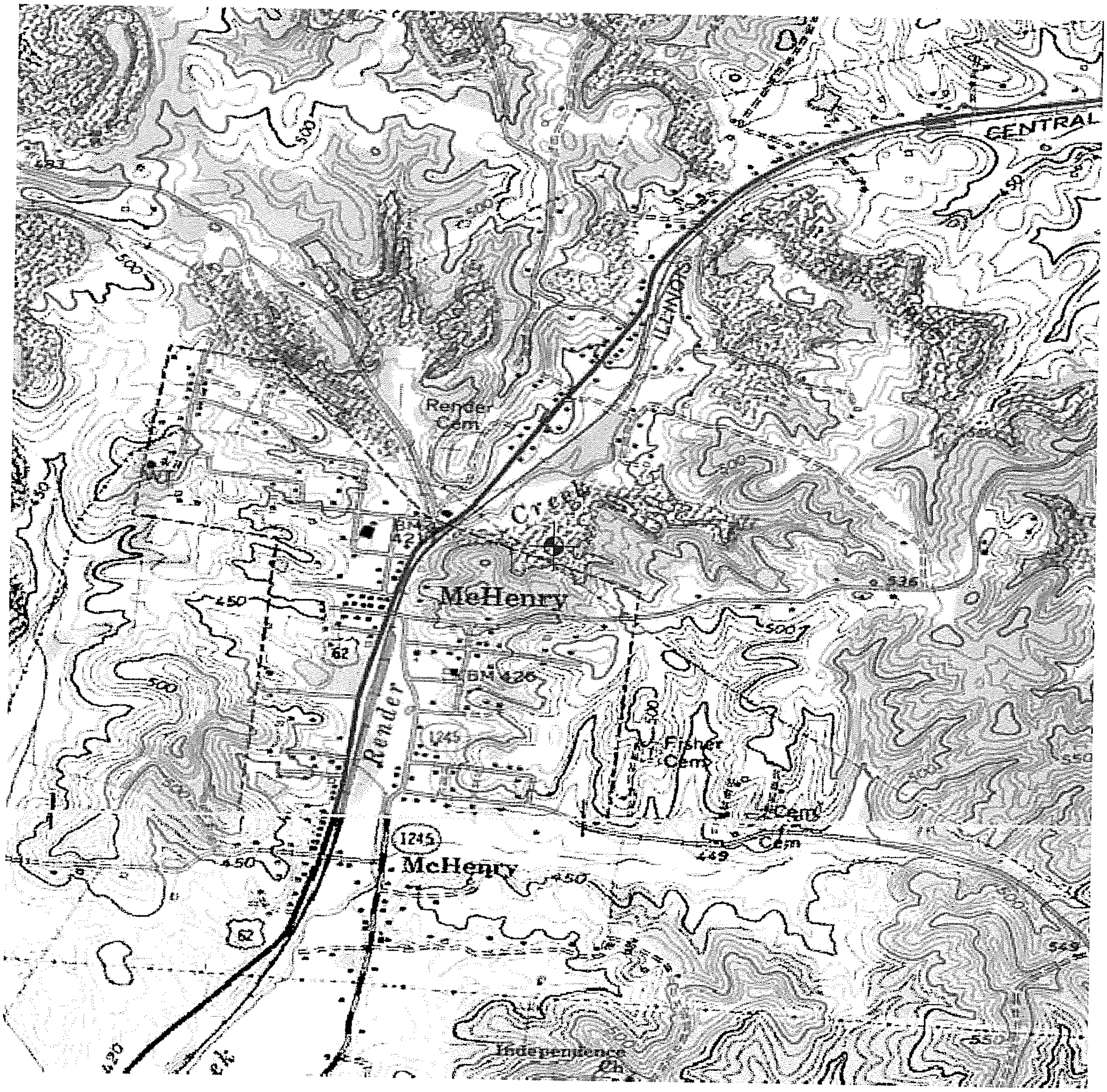

CENTRAL
ILLINOIS
Render Cem
Creek
McHenry
62
BM 426
Render
1245
Fisher Cem
Cem
Cem
449
McHenry
450
500
550
536
Independence Ch

EXHIBIT H
GEOTECHNICAL REPORT

Land Surveyors & Consulting Engineers

GEOTECHNICAL FOUNDATION DESIGN

Proposed McHenry Tower
N37° 23' 01.78" W86° 55' 03.72"
93 Pearl Lane,
Beaver Dam, Ohio County, Kentucky
FStan Project No. 13-8630; AT&T NSB No. 143428; ATC No. 281331

FStan Land Surveyors &
Consulting Engineers
426 East Warnock Street
Louisville, KY 40217
Phone: (502) 636-5111
Fax: (502) 636-5263

Prepared For:

Ms. Melissa Brofford
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

Date: August 18, 2013
Revised: October 31, 2013

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

August 18, 2013

Ms. Melissa Brofford
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

Re: Geotechnical Engineering Study
Proposed 255-foot Self-support Tower with a 10-foot Lightning Arrestor
American Tower Corporation Site Name: McHenry
N37° 23' 01.78" W86° 55' 03.72"
93 Pearl Lane, Beaver Dam, Ohio County, Kentucky
FStan Project No. 13-8630; AT&T NSB No. 143428; ATC No. 281331

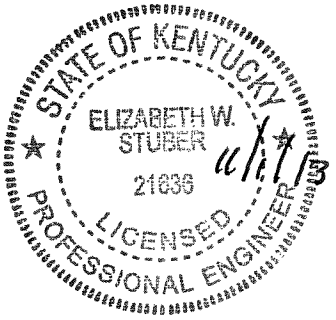
Dear Ms. Brofford:

Transmitted herewith is our geotechnical engineering report for the referenced project. This report contains recommendations to aid design and construction of the tower foundations based on our report of the soil conditions given under the cover of FStan 12-8629.

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. Melissa Brofford

426 E Warnock St PO Box 17546 Louisville, KY 40217
Phone: (502) 636-5111 (502) 635-5866 Fax: (502) 636-5263

LETTER OF TRANSMITTAL

TABLE OF CONTENTS

APPENDIX

GEOTECHNICAL ENGINEERING INVESTIGATION
American Tower Corporation Site Name: McHenry
N37° 23' 01.78" W86° 55' 03.72"
93 Pearl Lane, Beaver Dam, Ohio County, Kentucky
FStan Project No. 13-8630; AT&T NSB No. 143428; ATC No. 281331

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 255 feet tall self-support communications tower with a 10 foot lightning arrestor on property owned by Charles and Mary Brumley, located at N37° 23' 01.78" W86° 55' 03.72", 93 Pearl Lane, Beaver Dam, Ohio County, Kentucky. The proposed lease area will be 100 feet x 100 feet with an access area to the northwest between the site and Pearl Lane. The site is located on a hilltop that is currently being used as a pasture. A 30 foot road right-of-way has been established by record plat to the southwest with electric transmission lines further southwest. The topographical site relief within the lease area is about 7 feet. The elevation of the site is approximately 441 feet msl. Surface water runoff is directed by the topography toward the northwest. 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 255 feet tall with a 10 foot lightning arrestor. We have assumed the following structural information:

- Compression (per leg) = 400 kips
- Uplift (Per Leg) = 300 kips
- Total shear = 40 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.

Site Geology

The Hartford, Kentucky Geologic Quadrangle map indicates that the Pennsylvanian aged Carbondale Formations underlay the site. These formations consist of sandstone, shale, siltstone, coal and limestone. The Carbondale formation is also known to be karst with sinkhole, joints and an uneven bedrock surface. No sinkholes were noted on the 7.5-minute topographic map at the site or within one-half mile of the site. The site is also located in the Western Kentucky Coal Fields and strip mining was noted very near the site. Oil and gas wells and cave formations are numerous Ohio County.

3. 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.

3.1 Tower

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

3.1.1 Drilled Piers

Drilled piers that bear in the weathered shale or siltstone bedrock below a depth of about 20 feet can be designed for a net allowable end bearing pressure of 20,000 pounds per square foot (psf). However, this value should be reduced to 10,000 psf below a depth of 35 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 40 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, Ø, degrees**	**Total Unit Weight, pcf**	**Allowable Passive Soil Pressure, psf/one foot of depth**	**Allowable Side Friction, psf**
0 – 20	1,000	0	120	750 + 40D	200
20 – 35	10,000	0	135	7,500 + 45(D-20)	2500
35 - 40	5,000	0	135	3,500 + 45(D-35)	1200

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.

3.1.2 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 shale. A net allowable bearing pressure of up to 1,500 pounds per square foot may be used. This value 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 clay soil. The friction value can be increased to 0.45 between the concrete and limestone bedrock. 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.

3.2 Equipment Building

The equipment building may be supported on shallow spread footings bearing in the shallow weathered shale or silty clay and designed for a net allowable soil pressure of 1,000 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.

3.3 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.

4 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.

4.1 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.

- Provide a minimum drilled shaft diameter of 36 inches to reasonably enter the drilled shaft excavation for cleaning, bottom preparation and inspection.

- 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.

- Inspect the drilled shaft excavation after the bottom of the hole is leveled, cleaned of any mud or extraneous material, and dewatered.

- 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.

4.2 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.

4.3 Construction Dewatering

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.

5 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.

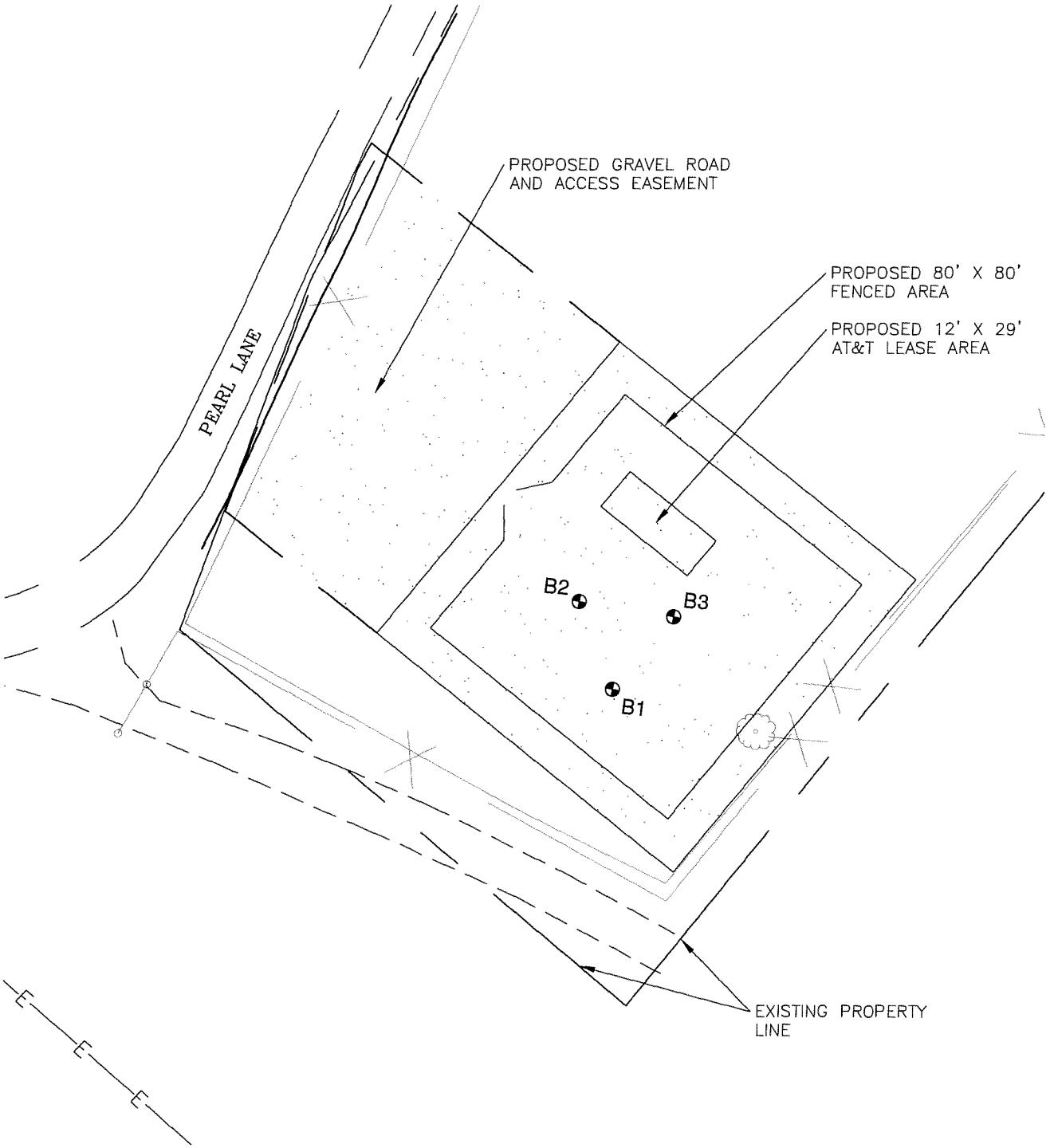
The nature and extent of variation and change in the subsurface conditions at the site may not become evident until the course of construction. Construction monitoring by the geotechnical engineer or a representative is therefore considered necessary to verify the subsurface conditions and to check that 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: MCHENRY
PROPOSED 255' SELF-SUPPORT TOWER
WITH 10' LIGHTING ARRESTOR

NOT TO SCALE

FSTAN PROJECT #:
13-8630

DATE:
08-18-13

FSTan
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T. Alan Neal Company
Land Surveyors and Consulting Engineers
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Phone: (502) 635-5866 (502) 636-5111
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P.O. Box 17546
Louisville, KY 40217
502-636-5111
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Geotechnical Boring Log

Boring No: **B-1**

Client: American Tower Corporation	Project Number: 13-8629
Project: Proposed McHenry Tower	Drilling Firm: Hoosier Drilling
Location: N37° 23' 01.78"/W86° 55' 03.72"	Project Manager: Beth Stuber
Date Started: 8/12/2013	Total Depth of Boring: 40 ft
Date Completed: 8/12/2013	NA on rods
Boring Method: HSA-Manual Hamer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Material Description	Depth Scale ft	Sample Data No.	Type	Blows	Rec. %	PP tsf	W %	Remarks
	SILTY CLAY (CL) - stiff, reddish brown with some rock fragments		1	SS	4-5-6	100			
3.5	highly weathered black SHALE wtih trace coal		2	SS	3-3-3	100			
6.0	SILTY CLAY (CL) - soft, wet, brown with black nodes	5	3	SS	2-2-3	100			
			4	SS	1-2-2	100			
		10							
			5	SS	2-3-3	100			
		15							
18.5	SHALE - highly weathered, gray with trace coal		6	SS	1-2-3	78			
		20							
25.0	SILTSTONE - hard, slightly weathered, light gray		18	SS	50	0			
		25	7	RC		80			RQD=57%
		30							
	- soft to medium hard with thin mud seams	35	8	RC		95			RQD=33%
40.0	Bottom of Boring at 40 ft	40							

GEOTECHNICAL BORING LOG 13-8629.GPJ FSTAN.GDT 11/1/13

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Geotechnical Boring Log

Boring No: **B-2**

Client: American Tower Corporation	Project Number: 13-8629
Project: Proposed McHenry Tower	Drilling Firm: Hoosier Drilling
Location: N37° 23' 01.78"/W86° 55' 03.72"	Project Manager: Beth Stuber
Date Started: 8/12/2013	Total Depth of Boring: 15 ft
Date Completed: 8/12/2013	NA on rods
Boring Method: HSA-Manual Hamer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Material Description	Sample No.	Type	Blows	Rec. %	PP tsf	W %	Remarks
	SILTY CLAY (CL) - medium stiff, reddish brown with some clay shale and sandstone	1	SS	4-4-5	100			
3.5	highly weathered black SHALE wtih trace coal	2	SS	3-3-4	100			
6.0	SILTY CLAY (CL) - soft to medium stiff, very moist, reddish brown with some rock fragments	3	SS	2-3-4	100			
		4	SS	2-2-2	100			
		5	SS	3-2-3	100			
15.0	Bottom of Boring at 15 ft							

Depth Scale ft: 5, 10, 15, 20, 25, 30, 35, 40

GEOTECHNICAL BORING LOG 13-8629.GPJ FSTAN.GDT 11/1/13

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

Geotechnical Boring Log

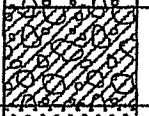
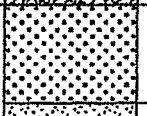
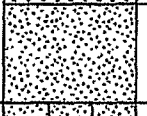
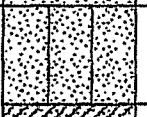
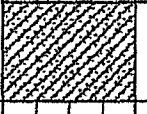
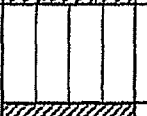
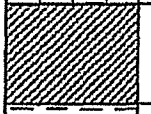
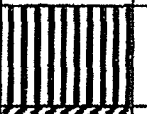
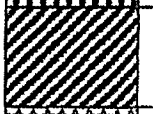
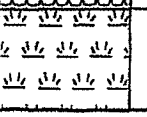
Boring No: **B-3**

Client: American Tower Corporation	Project Number: 13-8629
Project: Proposed McHenry Tower	Drilling Firm: Hoosier Drilling
Location: N37° 23' 01.78"/W86° 55' 03.72"	Project Manager: Beth Stuber
Date Started: 8/12/2013	Total Depth of Boring: 15 ft
Date Completed: 8/12/2013	NA on rods
Boring Method: HSA-Manual Hamer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Material Description	Depth Scale ft	Sample Data No.	Type	Blows	Rec. %	PP tsf	W %	Remarks
	SILTY CLAY (CL) - medium stiff, reddish brown with some clay shale and sandstone		1	SS	5-4-5	100			
3.5	highly weathered black SHALE wtih trace coal		2	SS	4-4-3	100			
6.0	SILTY CLAY (CL) - soft to medium stiff, very moist, reddish brown with some rock fragments		3	SS	3-3-3	100			
			4	SS	2-2-3	100			
			5	SS	3-3-3	100			
15.0	Bottom of Boring at 15 ft								

GEOTECHNICAL BORING LOG 13-8629.GPJ FSTAN.GDT 11/1/13

SOIL CLASSIFICATION CHART

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

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Land Surveyors & Consulting Engineers

GEOTECHNICAL SOIL ANALYSIS STUDY

Proposed McHenry Tower
N37° 23' 01.78" W86° 55' 03.72"
93 Pearl Lane,
Beaver Dam, Ohio County, Kentucky
FStan Project No. 13-8629; AT&T NSB No. 143428; ATC No. 281331

FStan Land Surveyors & Consulting Engineers
426 East Warnock Street
Louisville, KY 40217
Phone: (502) 636-5111
Fax: (502) 636-5263

Prepared For:

Ms. Melissa Brofford
American Tower Corporation
10 Presidental Way
Woburn, MA 01801

Date: August 18, 2013
Revised: October 31, 2013

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

August 18, 2013

Ms. Melissa Brofford
American Tower Corporation
10 Presidential Way
Woburn, MA 01801

Re: Geotechnical Engineering Study
Proposed 255-foot Self-support Tower with a 10-foot Lightning Arrestor
American Tower Corporation Site Name: McHenry
N37° 23' 01.78" W86° 55' 03.72"
93 Pearl Lane, Beaver Dam, Ohio County, Kentucky
FStan Project No. 13-8629; AT&T NSB No. 143428; ATC No. 281331

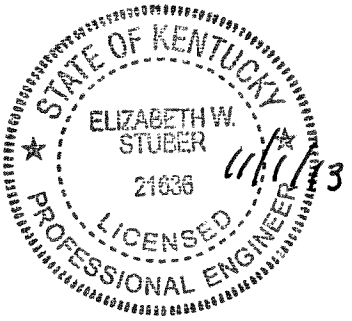
Dear Ms. Brofford:

Transmitted herewith is our geotechnical engineering report for the referenced project. This report contains our findings, an engineering interpretation of these findings.

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. Melissa Brofford

426 E Warnock St PO Box 17546 Louisville, KY 40217
Phone: (502) 636-5111 (502) 635-5866 Fax: (502) 636-5263

LETTER OF TRANSMITTAL

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APPENDIX

BORING LOCATION PLAN
GEOTECHNICAL BORING LOG
SOIL SAMPLE CLASSIFICATION

GEOTECHNICAL ENGINEERING INVESTIGATION
American Tower Corporation Site Name: McHenry
N37° 23' 01.78" W86° 55' 03.72"
93 Pearl Lane, Beaver Dam, Ohio County, Kentucky
FStan Project No. 13-8629; AT&T NSB No. 143428; ATC No. 281331

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.

2. PROJECT CHARACTERISTICS

American Tower Corporation is proposing to construct a 255 feet tall self-support communications tower with a 10 foot lightning arrestor on property owned by Charles and Mary Brumley, located at N37° 23' 01.78" W86° 55' 03.72", 93 Pearl Lane, Beaver Dam, Ohio County, Kentucky.

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. Borings 2 and 3 were terminated at the scheduled depth of 15 feet. Boring 1 encountered auger refusal at 18.5 below the existing ground surface. A sample of the refusal material was cored in Boring 1 from 25 to 40 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.

Site Geology

The Hartford, Kentucky Geologic Quadrangle map indicates that the Pennsylvanian aged Carbondale Formations underlay the site. These formations consist of sandstone, shale, siltstone, coal and limestone. The Carbondale formation is also known to be karst with sinkhole, joints and an uneven bedrock surface. No sinkholes were noted on the 7.5-minute topographic map at the site or within one-half mile of the site. The site is also located in the Western Kentucky Coal Fields and strip mining was noted very near the site. Oil and gas wells and cave formations are numerous in Ohio County.

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 with the exception of a highly weathered shale layer from about 3.5 to 6 feet in each of the borings. The SPT N-values in the clayey soils ranged from 4 to 11 blows per foot indicating a soft to medium stiff consistency. Borings 2 and 3 were terminated in the silty clay at the scheduled depth of 15 feet. Boring 1 encountered highly weathered shale at about 18.5 feet and met with auger refusal at about 25 feet. 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 25 to 40 feet below the ground surface in Boring 1. Siltstone that was hard, slightly weathered was encountered. At about 35 feet, the rock was much softer and contained mud seams. The core run was terminated at 40 ft. The recoveries of the rock cores were

80 to 95 percent and the RQD values ranged from 33 to 57 percent. These values generally represent fair to good 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 "C". 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 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

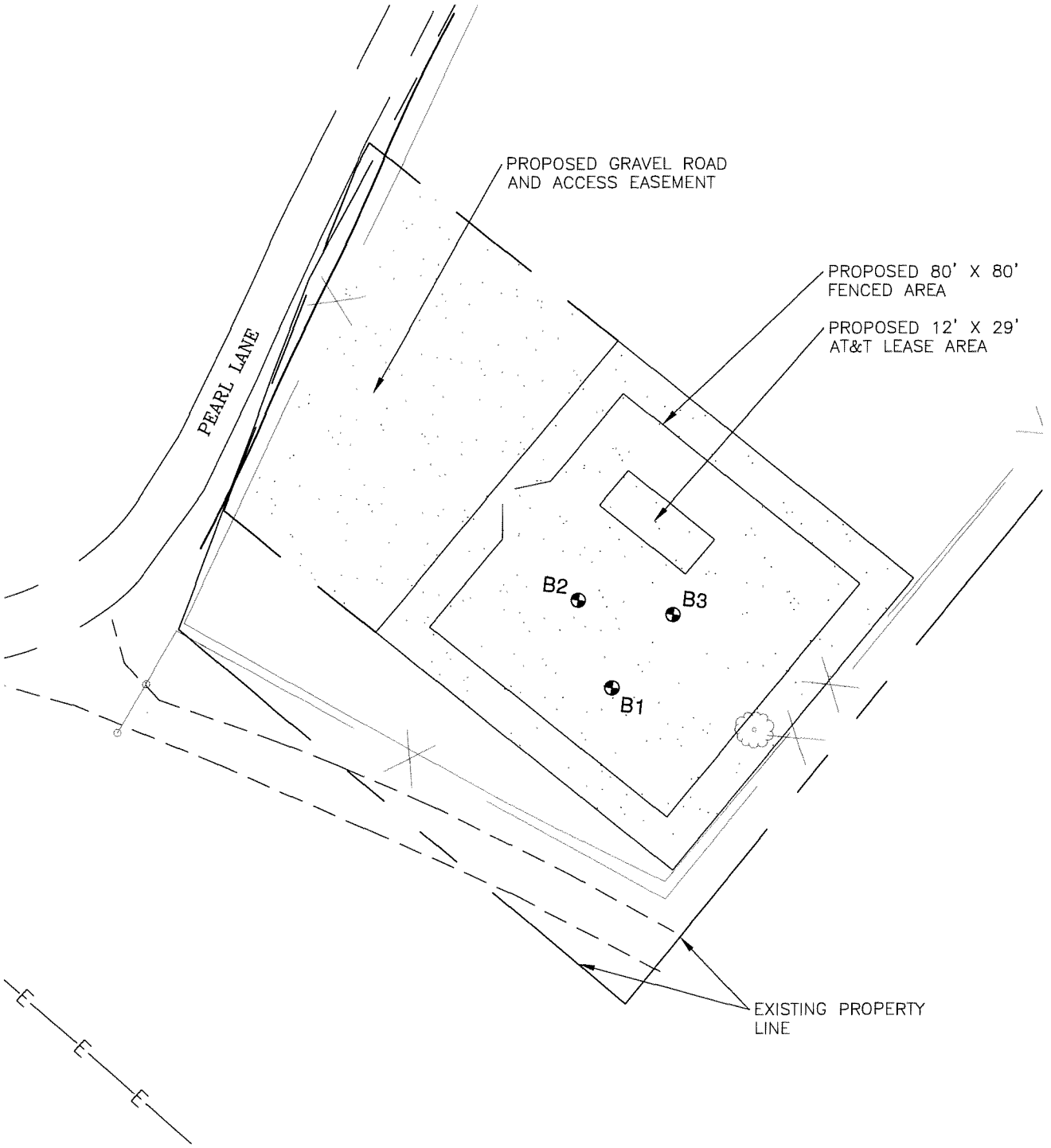
and to check that the soils connected construction phases are properly completed. If significant variations or changes are in evidence, it may then be necessary to reevaluate the recommendations of this report. Furthermore, if the project characteristics are altered significantly from those discussed 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: MCHENRY
PROPOSED 255' SELF-SUPPORT TOWER
WITH 10' LIGHTING ARRESTOR

NOT TO SCALE

FSTAN PROJECT #:
13-8629

DATE:
08-18-13

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Geotechnical Boring Log

Boring No: **B-1**

Client: American Tower Corporation	Project Number: 13-8629
Project: Proposed McHenry Tower	Drilling Firm: Hoosier Drilling
Location: N37° 23' 01.78"/W86° 55' 03.72"	Project Manager: Beth Stuber
Date Started: 8/12/2013	Total Depth of Boring: 40 ft
Date Completed: 8/12/2013	NA on rods
Boring Method: HSA-Manual Hamer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Material Description	Depth Scale ft	Sample Data No.	Type	Blows	Rec. %	PP tsf	W %	Remarks
	SILTY CLAY (CL) - stiff, reddish brown with some rock fragments		1	SS	4-5-6	100			
3.5	highly weathered black SHALE wtih trace coal		2	SS	3-3-3	100			
6.0	SILTY CLAY (CL) - soft, wet, brown with black nodes	5	3	SS	2-2-3	100			
			4	SS	1-2-2	100			
		10							
			5	SS	2-3-3	100			
		15							
18.5	SHALE - highly weathered, gray with trace coal		6	SS	1-2-3	78			
		20							
25.0	SILTSTONE - hard, slightly weathered, light gray		18	SS	50	0			
		25	7	RC		80			RQD=57%
		30							
	- soft to medium hard with thin mud seams	35	8	RC		95			RQD=33%
40.0	Bottom of Boring at 40 ft	40							

GEOTECHNICAL BORING LOG 13-8629.GPJ FSTAN.GDT 10/31/13

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502-636-5263

Geotechnical Boring Log

Boring No: **B-2**

Client: American Tower Corporation	Project Number: 13-8629
Project: Proposed McHenry Tower	Drilling Firm: Hoosier Drilling
Location: N37° 23' 01.78"/W86° 55' 03.72"	Project Manager: Beth Stuber
Date Started: 8/12/2013	Total Depth of Boring: 15 ft
Date Completed: 8/12/2013	NA on rods
Boring Method: HSA-Manual Hamer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Material Description	Sample No.	Type	Blows	Rec. %	PP tsf	W %	Remarks
	SILTY CLAY (CL) - medium stiff, reddish brown with some clay shale and sandstone	1	SS	4-4-5	100			
3.5	highly weathered black SHALE wtih trace coal	2	SS	3-3-4	100			
6.0	SILTY CLAY (CL) - soft to medium stiff, very moist, reddish brown with some rock fragments	3	SS	2-3-4	100			
		4	SS	2-2-2	100			
		5	SS	3-2-3	100			
15.0	Bottom of Boring at 15 ft							

Depth Scale ft: 5, 10, 15, 20, 25, 30, 35, 40

GEOTECHNICAL BORING LOG 13-8629.GPJ FSTAN.GDT 10/31/13

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502-636-5111
502-636-5263

Geotechnical Boring Log

Boring No: **B-3**

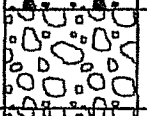
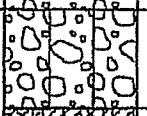
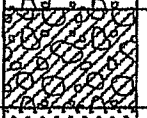
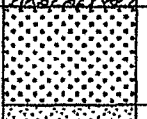
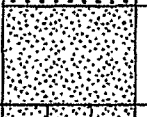
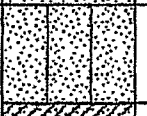
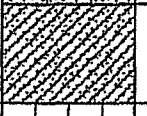
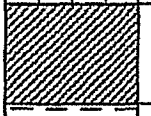
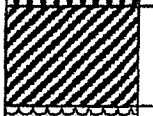
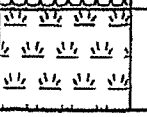
Client: American Tower Corporation	Project Number: 13-8629
Project: Proposed McHenry Tower	Drilling Firm: Hoosier Drilling
Location: N37° 23' 01.78"/W86° 55' 03.72"	Project Manager: Beth Stuber
Date Started: 8/12/2013	Total Depth of Boring: 15 ft
Date Completed: 8/12/2013	NA on rods
Boring Method: HSA-Manual Hamer	DRY at completion
Surface Elevation: NA	NA NA hours after completion

Layer Depth ft	Material Description	Sample No.	Type	Blows	Rec. %	PP tsf	W %	Remarks
	SILTY CLAY (CL) - medium stiff, reddish brown with some clay shale and sandstone	1	SS	5-4-5	100			
3.5	highly weathered black SHALE wtih trace coal	2	SS	4-4-3	100			
6.0	SILTY CLAY (CL) - soft to medium stiff, very moist, reddish brown with some rock fragments	3	SS	3-3-3	100			
		4	SS	2-2-3	100			
		5	SS	3-3-3	100			
15.0	Bottom of Boring at 15 ft							

Depth Scale ft: 5, 10, 15, 20, 25, 30, 35, 40

GEOTECHNICAL BORING LOG 13-8629.GPJ FSTAN.GDT 10/31/13

SOIL CLASSIFICATION CHART

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

1. Beginning at the Ohio County Judge Executive's office located at 130 E. Washington Street, Hartford, KY 42347, head southwest toward Cs-1046.
2. Turn left onto South Main Street / US-231 South and travel approximately 4.0 miles.
3. Turn right onto US-62 West/ West 1st Street and travel approximately 2.6 miles.
4. Turn left onto Render Spur Road and travel approximately 0.1 miles.
5. Take a right onto Cr-1338/Pearl Lane.
6. After traveling approximately 0.3 miles, your destination will be on the left. The address is 93 Pearl Lane, Beaver Dam, KY 42320.
7. The site coordinates are
    a. 37 deg 23 min 01.78 sec N
    b. 86 deg 55 min 03.72 sec W

Prepared by:
Robert W. Grant
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

Site Name: McHenry KY
Site Number: 281331

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 Ohio, 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:*** Charles Brumley and Mary Brumley

(d) ***Notice Address of Landlord:*** 93 Pearl Lane
Beaver Dam, KY 42320

(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)

(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 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 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] 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).

(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.

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.

(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.

(e) 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.

(f) 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**

(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, invites 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]er 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.

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.

(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

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.

(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.

(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

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] 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.

(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: McHenry
Site Number: 281331

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

[INSERT OWNER AND STATE APPROPRIATE SIGNATURE BLOCKS, CONFORMING WITH THE STATE'S REQUIREMENT FOR WITNESSES.]

LANDLORD:

Charles Brumley and Mary Brumley

Name: Charles Brumley

Date: 6-20-13

Name: Mary Brumley

Date: 6-20-13

Site Name: McHenry
Site Number: 281331

Acknowledgements

STATE OF KENTUCKY
COUNTY OF OHIO

I, a Notary Public of the County and State aforesaid, certify that Charles Brumley and Mary Brumley came before me this day and acknowledged the execution of the foregoing instrument.

Witness my hand and official stamp or seal, this 20 day of June, 2013.

[Affix Notary Seal]

APRIL WILSON NOTARY PUBLIC ID NO. 485858 MY COMMISSION EXPIRES 5-3-16 STATE AT LARGE, KY.

April Wilson
Notary Public
My commission expires:
May 3, 2016

AMERICAN TOWER:

American Towers LLC, a Delaware limited liability company

By: _____
Name:
Title:

Date: _____

COMMONWEALTH OF MASSACHUSETTS)
) ss:
COUNTY OF MIDDLESEX)

On the ____ day of _____, 2013, the undersigned notary public, personally appeared _____, proved to me through satisfactory evidence of identification, which were ***personally known***, to be the person who name is signed on the preceding or attached document, and acknowledged that he/she signed it voluntarily for its stated purpose, as _____, of American Towers LLC, before me.

_____
Notary Public
My Commission Expires:

Site Name: McHenry KY
Site Number: 281331

AMERICAN TOWER:

American Towers LLC, a Delaware limited liability company d/b/a Delaware American Towers LLC

By: _____

Name: Shawn Lanier
Title: Vice President Legal

Date: 8-8-2013

COMMONWEALTH OF MASSACHUSETTS)
) ss:
COUNTY OF MIDDLESEX)

On the 1st day of August, 2013 the undersigned notary public, personally appeared Shawn Lanier, proved to me through satisfactory evidence of identification, which were ***personally known***, to be the person who name is signed on the preceding or attached document, and acknowledged that he/she signed it voluntarily for its stated purpose, as Vice President Legal, of American Towers LLC a Delaware limited liability company d/b/a Delaware American Towers LLC, before me.

_____
Notary Public
My Commission Expires:

LESLIE R. CORBIN
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
May 28, 2020

Site Name: McHenry
Site Number: 281331

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: McHenry
Site Number: 281331

EXHIBIT A

DESCRIPTION OR DEPICTION OF PROPERTY

The Property is described and/or depicted as follows:

SITE: McHENRY
DATE: 06.27.13

This is a description for American Tower Corporation, of a lease area to be located on the property of Charles & Mary Brumley, which is further described as follows:

LEASE AREA

Beginning at an existing iron rod found at the south west corner of a 30' Roadway found in Plat Cabinet E, Slide 75 of the Office of the Clerk, Ohio County Kentucky; said Plat being the property conveyed to Charles and Mary Brumley in Deed Book 299, Page 241 in the aforesaid clerk's office; thence traversing said Roadway and Property S88°58'36"E-51.51' to a set #5 iron road with cap #3282 and the True Point Of Beginning of the proposed Lease Area; thence N39°11'19"E-100.00' to a set #5 iron road with cap #3282; thence S50°48'41"E-100.00' to a set #5 iron road with cap #3282; thence S39°11'19"W-100.00' to a set #5 iron road with cap #3282; thence N50°48'41"W-100.00' to the point of beginning, containing 10,000 square feet as per survey by FStan Land Surveyors & Consulting Engineers, Frank L Sellinger, II, surveyor, dated June 18th, 2013.

VARIABLE WIDTH ACCESS & UTILITY EASEMENT

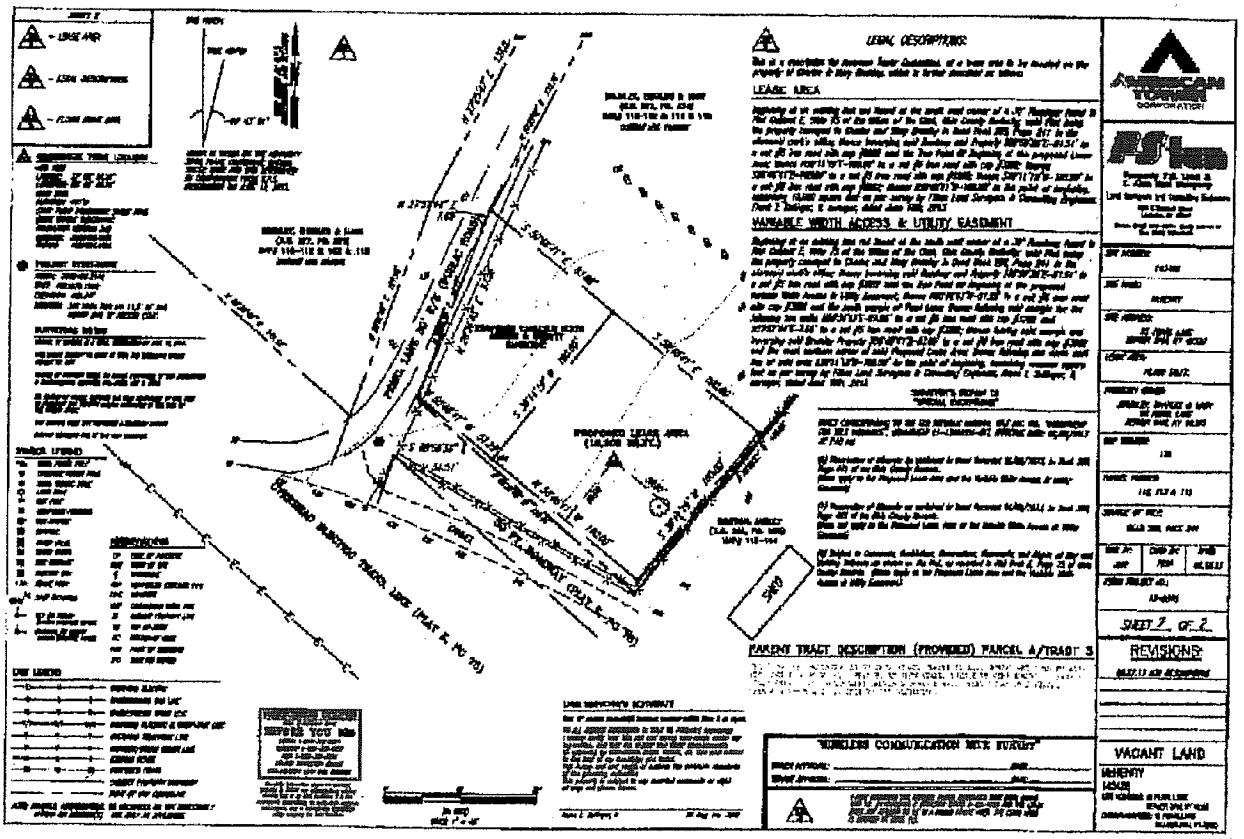
Beginning at an existing iron rod found at the south west corner of a 30' Roadway found in Plat Cabinet E, Slide 75 of the Office of the Clerk, Ohio County Kentucky; said Plat being the property conveyed to Charles and Mary Brumley in Deed Book 299, Page 241 in the aforesaid clerk's office; thence traversing said Roadway and Property S88°58'36"E-51.51' to a set #5 iron road with cap #3282 and the True Point Of Beginning of the proposed Variable Width Access & Utility Easement; thence N50°48'41"W-51.22' to a set #5 iron road with cap #3282 and the south margin of Pearl Lane; thence following said margin for the following two calls: N20°34'43"E-97.56' to a set #5 iron road with cap #3282 and N27°57'44"E-7.69' to a set #5 iron road with cap #3282; thence leaving said margin and traversing said Brumley Property S50°48'41"E-83.85' to a set #5 iron road with cap #3282 and the most northern corner of said Proposed Lease Area; thence following the north west line of said area S39°11'19"W-100.00' to the point of beginning, containing 6801.9 square feet as per survey by FStan Land Surveyors & Consulting Engineers, Frank L Sellinger, II, surveyor, dated June 18th, 2013.

Site Name: McHenry
Site Number: 281331

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: McHenry
Site Number: 281331

EXHIBIT C

MEMORANDUM OF LEASE

[see following pages]

EXHIBIT K
NOTIFICATION LISTING

McHenry Landowner Notice Listing

Edward Hines
PO Box 139
McHenry, KY 42354

Roger W. & Rebecca Goff (Life Estate)
Jackie Goff & Rodney Goff & Cynthia P.
2416 Highland Dr.
Beaver Dam, KY 42320

Charles S. & Alice M. Allen
PO Box 157
McHenry, KY 42354

Paul Brewster & Regina Cleaver
2272 Highland Dr.
Beaver Dam, KY 42320

Jimmy & Robin Pharis
2292 Highland Dr.
Beaver Dam, KY 42320

Samuel C. Hines
445 3rd St.
McHenry, KY 42354

Audley Simpson
c/o Nora M. Crew
2731 Teresa St.
Portage, IN 46368

Charles & Mary Brumley
93 Pearl Lane
Beaver Dam, KY 42320

EXHIBIT L
COPY OF PROPERTY OWNER NOTIFICATION

PIKE
LEGAL

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: McHenry

Dear Landowner:

New Cingular Wireless PCS, LLC, a Delaware limited liability company, d/b/a AT&T Mobility has filed an application with the Kentucky Public Service Commission ("PSC") to construct a new wireless communications facility on a site located at 93 Pearl Lane, Beaver Dam, KY 42320 (37°23'01.78" North latitude, 86°55'03.72" West longitude). The proposed facility will include a 255-foot tall antenna tower, plus a 10-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 Ohio 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 2013-00386 in any correspondence sent in connection with this matter.

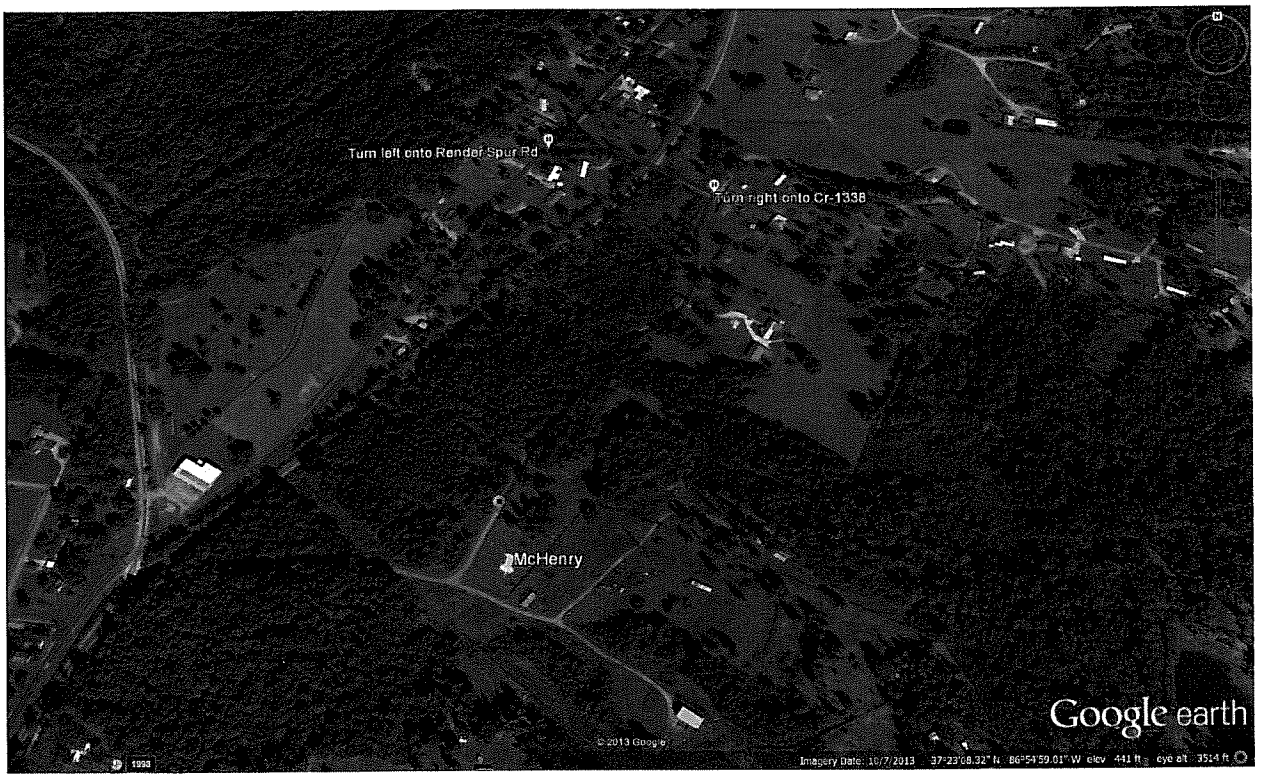
We have attached a map showing the site location for the proposed tower. AT&T Mobility's radio frequency engineers assisted in selecting the proposed site for the facility, and they have determined it is the proper location and elevation needed to provide quality service to wireless customers in the 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 the Proposed Tower Site

1. Beginning at the Ohio County Judge Executive's office located at 130 E. Washington Street, Hartford, KY 42347, head southwest toward Cs-1046.
2. Turn left onto South Main Street / US-231 South and travel approximately 4.0 miles.
3. Turn right onto US-62 West/ West 1st Street and travel approximately 2.6 miles.
4. Turn left onto Render Spur Road and travel approximately 0.1 miles.
5. Take a right onto Cr-1338/Pearl Lane.
6. After traveling approximately 0.3 miles, your destination will be on the left. The address is 93 Pearl Lane, Beaver Dam, KY 42320.
7. The site coordinates are
    a. 37 deg 23 min 01.78 sec N
    b. 86 deg 55 min 03.72 sec W



Prepared by:
Robert W. Grant
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 M
COPY OF COUNTY JUDGE/EXECUTIVE NOTICE

PIKE
LEGAL

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. David Johnston
Ohio County Judge Executive
Ohio County Community Center
130 East Washington Street
Hartford, KY 42347

RE: Notice of Proposal to Construct Wireless Communications Facility
Kentucky Public Service Commission Docket No. 2013-00386
Site Name: McHenry

Dear Judge Johnston:

New Cingular Wireless PCS, LLC, a Delaware limited liability company, d/b/a AT&T Mobility has filed an application with the Kentucky Public Service Commission ("PSC") to construct a new wireless communications facility on a site located at 93 Pearl Lane, Beaver Dam, KY 42320 (37°23'01.78" North latitude, 86°55'03.72" West longitude). The proposed facility will include a 255-foot tall antenna tower, plus a 10-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 2013-00386 in any correspondence sent in connection with this matter.

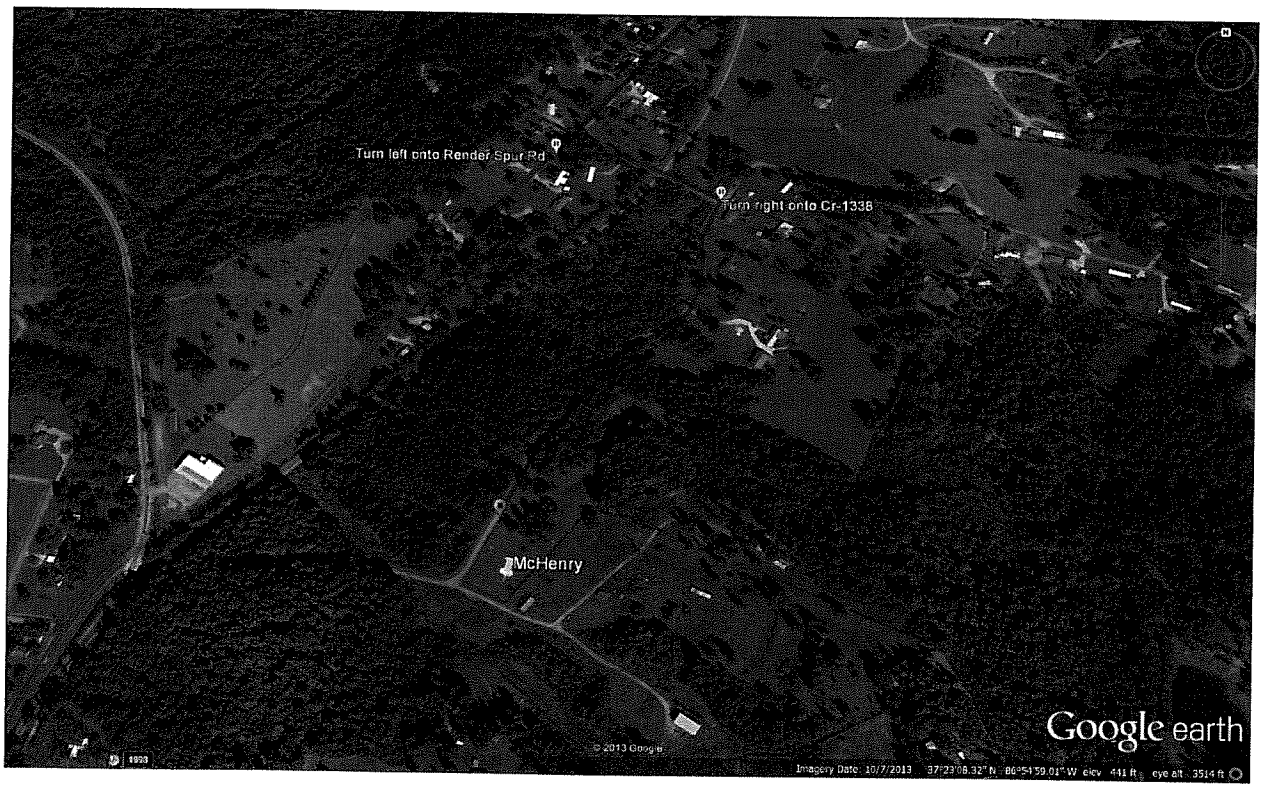
We have attached a map showing the site location for the proposed tower. AT&T Mobility's radio frequency engineers assisted in selecting the proposed site for the facility, and they have determined it is the proper location and elevation needed to provide quality service to wireless customers in the area. Please feel free to contact us with any comments or questions you may have.

Sincerely,

David A. Pike
Attorney for AT&T Mobility
enclosure

Driving Directions to the Proposed Tower Site

1. Beginning at the Ohio County Judge Executive's office located at 130 E. Washington Street, Hartford, KY 42347, head southwest toward Cs-1046.
2. Turn left onto South Main Street / US-231 South and travel approximately 4.0 miles.
3. Turn right onto US-62 West/ West 1st Street and travel approximately 2.6 miles.
4. Turn left onto Render Spur Road and travel approximately 0.1 miles.
5. Take a right onto Cr-1338/Pearl Lane.
6. After traveling approximately 0.3 miles, your destination will be on the left. The address is 93 Pearl Lane, Beaver Dam, KY 42320.
7. The site coordinates are
    a. 37 deg 23 min 01.78 sec N
    b. 86 deg 55 min 03.72 sec W



Prepared by:
Robert W. Grant
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 N
COPY OF POSTED NOTICES

SITE NAME: MCHENRY
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. 2013-00386 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. 2013-00386 in your correspondence.

PIKE LEGAL

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 TELEFAX: 270-298-9572

Ohio County Times News
Attn: Sarah Carroll
Advertising Manager
314 Main Street
PO Box 226 Hartford, KY 42347

RE: Legal Notice Advertisement
Site Name: McHenry

Dear Ms. Carroll:

Please publish the following legal notice advertisement in the next edition of the *Ohio County Times News*:

NOTICE

New Cingular Wireless PCS, LLC, a Delaware limited liability company, d/b/a AT&T Mobility has filed an application with the Kentucky Public Service Commission ("PSC") to construct a new wireless communications facility on a site located at 93 Pearl Lane, Beaver Dam, KY 42320 (37°23'01.78" North latitude, 86°55'03.72" West longitude). 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 2013-00386 in any correspondence sent in connection with this matter.

After this advertisement have been published, please forward a tearsheet copy, affidavit of publication, and invoice to Pike Legal Group, PLLC, P. O. Box 369, Shepherdsville, KY 40165. Please call me at (800) 516-4293 if you have any questions. Thank you for your assistance.

Sincerely,

Robert W. Grant
Pike Legal Group, PLLC

EXHIBIT O
COPY OF RADIO FREQUENCY DESIGN SEARCH AREA

AERIAL SHOWING SURROUNDING AREA