

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

RECEIVED
AUG 24 2016
PUBLIC SERVICE
COMMISSION

In the matter of:

THE APPLICATION OF EAST KENTUCKY NETWORK)
LIMITED LIABILITY COMPANY FOR THE ISSUANCE)
OF A CERTIFICATE OF PUBLIC CONVENIENCE AND) CASE NO. 2016-00261
NECESSITY TO CONSTRUCT A TOWER IN KNOX)
COUNTY, KENTUCKY.)

East Kentucky Network, LLC d/b/a Appalachian Wireless, was granted authorization to provide Personal Communications Service (“PCS”) in the Corbin, KY Basic Trading Area (BTA098) by the Federal Communications Commission (FCC). The FCC license is included as Exhibit 1. East Kentucky Network, LLC merger documents were filed with the Commission on February 2, 2001 in Case No. 2001-022. East Kentucky Network, LLC is a Kentucky limited liability company that was organized on June 16, 1998. East Kentucky Network, LLC is in good standing with the state of Kentucky.

In an effort to improve service in Knox County, pursuant to KRS 278.020 Subsection 1 and 807 KAR 5:001, East Kentucky Network, LLC is seeking the Commission’s approval to construct a 300 foot self-supporting tower on a tract of land located near 343 EC Messer Drive, Barbourville, Knox County, Kentucky (36°52’22.7405”N 83°51’58.6245”W). A map and detailed directions to the site can be found in Exhibit 7.

Exhibit 2 is a list of all Property owners according to the Property Valuation Administrator’s record who own property within 500 feet of the proposed Tower and all property owners that own property contiguous to the property upon which construction is proposed in accordance with the Property Valuation Administrator’s record.

Pursuant to 807 KAR 5:063 Section 1(1)(l), Section 1(m) and Section 2, all affected property owners according to the Property Valuation Administrator's record who own property within 500 feet of the proposed Tower or contiguous to the property upon which construction is proposed were notified by certified mail return receipt requested of East Kentucky Network, LLC's proposed construction and informed of their right to intervene. They were given the docket number under which this application is filed. Enclosed in Exhibit 2 is a copy of that notification.

Knox County has no formal local planning unit. In absence of this unit, the Knox County Judge Executive's office was notified by certified mail, return receipt requested of East Kentucky Network, LLC's proposal and informed of their right to intervene. They were given the docket number under which this application is filed. Enclosed in Exhibit 3 is a copy of that notification.

Notice of the location of the proposed construction was published in the Barbourville Mountain Advocate, August 25, 2016, edition. Enclosed is a copy of that notice in Exhibit 3. The Barbourville Mountain Advocate is the newspaper with the largest circulation in Knox County.

A geologist was employed to determine soil and rock types and to ascertain the distance to solid bedrock. The geotechnical report is enclosed as Exhibit 4.

A copy of the tower design information is enclosed as Exhibit 5. The proposed tower has been designed by engineers at World Tower and will be constructed under their supervision. Their qualifications are evidenced in Exhibit 5 by the seal and signature of the registered professional engineer responsible for this project.

The tower will be erected by S & S Tower Services of St. Albans, West Virginia. S & S Tower Services has vast experience in the erection of communications towers.

FAA and Kentucky Airport Zoning Commission applications are included as Exhibit 6.

No Federal Communications Commission approval is required prior to construction of this facility. Once service is established from this tower we must immediately notify the Federal

Communications Commission of its operation. Prior approval is needed only if the proposed facility increases the size of the cellular geographic service area. This cell site will not expand the cellular geographic service area.

East Kentucky Network, LLC will finance the subject Construction with earned surplus in its General Fund.

Estimated Cost of Construction	\$ 350,000.00
Annual Operation Expense of Tower	\$ 12,500.00

Two notice signs meeting the requirements prescribed by 807 KAR 5:063, Section 1(2), measuring at least two (2) feet in height and four (4) feet in width and containing all required language in letters of required height, have been posted, one at a visible location on the proposed site and one on the nearest public road. The two signs were posted on August 10, 2016, and will remain posted for at least two weeks after filing of this application as specified.

Enclosed in Exhibit 8 is a copy of East Kentucky Network, LLC's Memorandum of Lease for the site location along with a lot description.

The proposed construction site is on a mountaintop some feet from the nearest structure.

Due to the steep hillside surrounding the proposed site, the property in close proximity is unsuitable for any type of development. East Kentucky Network, LLC's operation will not affect the use of nearby land nor its value. No more suitable site exists in the area. A copy of the search area map is enclosed in Exhibit 7. No other tower capable of supporting East Kentucky Network, LLC's load exists in the general area; therefore, there is no opportunity for co-location of our facilities with anyone else.

Enclosed, and filed as Exhibit 9 is a survey of the proposed tower site signed by a Kentucky registered professional engineer.

Exhibit 11 contains a vertical sketch of the tower supplied by James W. Caudill, Kentucky registered professional engineer.

WHEREFORE, Applicant, having met the requirements of KRS 278.020(1), 278.650, 278.665, and all applicable rules and regulations of the PSC, respectfully requests that the PSC accept the foregoing Application for filing and grant a Certificate of Public Convenience and Necessity to construct and operate the proposed tower.

The foregoing document was prepared by Cindy McCarty, Staff Attorney for East Kentucky Network, LLC d/b/a Appalachian Wireless. All related questions or correspondence concerning this filing should be mailed to East Kentucky Network, LLC d/b/a/ Appalachian Wireless, 101 Technology Trail, Ivel, KY 41642.

SUBMITTED BY: Lynn Haney DATE: 8/22/16
Lynn Haney, Regulatory Compliance Director

APPROVED BY: W.A. Gillum DATE: 8/22/2016
W.A. Gillum, General Manager

ATTORNEY: Cindy McCarty DATE: 8/22/2016
Hon. Cindy McCarty, Attorney

CONTACT INFORMATION:

W.A. Gillum, General Manager
Phone: (606) 477-2355, Ext. 111
Email: wagillum@ekn.com

Lynn Haney, Regulatory Compliance Director
Phone: (606) 477-2355, Ext. 1007
Email: lhaney@ekn.com

Cindy McCarty, Attorney
Phone: (606) 477-2355, Ext. 1006
Email: cmccarty@ekn.com

Mailing Address:

**East Kentucky Network, LLC
d/b/a Appalachian Wireless
101 Technology Trail
Ivel, KY 41642**

1	FCC License
2	Copies of Cell Site Notices to Land Owners
3	Notification of County Judge Executive and Newspaper Advertisement
4	Universal Soil Bearing Analysis
5	Tower Design
6	FAA and KAZC Applications
7	Driving Directions from County Court House and Map to Suitable Scale
8	Memorandum of Lease for Proposed Site with Legal Description
9	Survey of Site Signed/Sealed by Professional Engineer Registered in State of Kentucky
10	Site Survey Map with Property Owners Identified in Accordance with PVA of County
11	Vertical Profile Sketch of Proposed Tower
12	

ULS License

PCS Broadband License - WQHG464 - East Kentucky Network, LLC d/b/a Appalachian Wireless

Call Sign	WQHG464	Radio Service	CW - PCS Broadband
Status	Active	Auth Type	Regular

Market

Market	BTA098 - Corbin, KY	Channel Block	F
Submarket	0	Associated Frequencies (MHz)	001890.00000000-001895.00000000-001970.00000000-001975.00000000

Dates

Grant	07/23/2007	Expiration	07/23/2017
Effective	11/11/2009	Cancellation	

Buildout Deadlines

1st	07/23/2012	2nd	
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Notification Dates

1st	05/24/2012	2nd	
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Licensee

FRN	0001786607	Type	Limited Liability Company
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Licensee

East Kentucky Network, LLC d/b/a Appalachian Wireless 101 Technology Trail Ivel, KY 41642 ATTN Gerald Robinette, Manager	P:(606)477-2355 F:(606)874-7551
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Contact

Lukas, Nace, Gutierrez & Sachs, LLP Pamela L Gist Esq 8300 Greensboro Drive McLean, VA 22102	P:(703)584-8665 F:(703)584-8695 E:pgist@fcclaw.com
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Ownership and Qualifications

Radio Service Type	Fixed, Mobile		
Regulatory Status	Common Carrier, Non-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

EXHIBIT II: LIST OF PROPERTY OWNERS:

Statement Pursuant to Section 1 (1) (I) 807 KAR 5:063

Section 1 (1)(I) 1. The following is a list of every property owner who according to property valuation administrator's records, owns property within 500 feet of the proposed tower and each have been: notified by certified mail, return receipt requested, of the proposed construction,

Section 1 (1)(I) 2. Every person listed below who, according to the property valuation administrator's records, owns property within 500 feet of the proposed tower has been: Given the Commission docket number under which the application will be processed: and

Section 1 (1)(I) 3. Every person listed below who, according to property valuation administrator's records owns property within 500 feet of the proposed tower has been: Informed of his right to request intervention.

Section 2. If the construction is proposed for an area outside the incorporated boundaries of a city, the application shall state that public notices required by Section 1(1)(L) have been sent to every person who, according to the property valuation administrator, owns property contiguous to the property upon which the construction is proposed

LIST OF PROPERTY OWNERS

David Wayne Miller
107 Pitzer Street
Barbourville, KY 40906

Sprinkles and Sons
PO Box 1447
Barbourville, KY 40906

Imogene and Donnie Logan
PO Box 73
Barbourville, KY 40906

Perry Robert Partin
PO Box 1611
Barbourville, KY 40906

Dennis and Clara Frederick
PO Box 237
Heidrick, KY 40949

EAST KENTUCKY NETWORK
101 TECHNOLOGY TRAIL
IVEL, KY 41642
PHONE: (606) 874-7550
(606) 874-7551



VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

August 24, 2016

David Wayne Miller
107 Pitzer Street
Barbourville, KY 40906

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2016-00261)

East Kentucky Network, LLC d/b/a Appalachian Wireless has applied to the Public Service Commission of Kentucky for a Certificate of Public Convenience and Necessity to construct and operate a new facility to provide cellular telecommunications service in Knox County. The facility will include a 300-foot self-supporting tower with attached antennas extending upwards, and an equipment shelter located on a tract of land near 343 EC Messer Dr., Barbourville, Knox County, Kentucky. A map showing the location of the proposed new facility is enclosed. This notice is being sent to you because you may own property within a 500' radius of the proposed tower or own property contiguous to the property upon which construction is proposed.

The Commission invites your comments regarding the proposed construction. You also have the right to intervene in this matter. The Commission must receive your initial communication within 20 days of the date of this letter as shown above.

Your comments and request for intervention should be addressed to: Executive Director's Office, Public Service Commission of Kentucky, P.O. Box 615, Frankfort, KY 40602. Please refer to Case No. 2016-00261 in your correspondence.

If you have any questions for East Kentucky Network, LLC, please direct them to my attention at the following address: East Kentucky Network, LLC, 101 Technology Trail, Ivel, KY 41642 or call me at 606-477-2355, Ext. 1007.

Sincerely,

A handwritten signature in cursive script that reads "Lynn Haney".

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1

EAST KENTUCKY NETWORK
101 TECHNOLOGY TRAIL
IVEL, KY 41642
PHONE: (606) 874-7550
 (606) 874-7551



VIA: U.S. CERTIFIED MAIL

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August 24, 2016

Sprinkles and Sons
PO Box 1447
Barbourville, KY 40906

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Sincerely,

A handwritten signature in black ink that reads "Lynn Haney". The signature is written in a cursive, flowing style.

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1

EAST KENTUCKY NETWORK
101 TECHNOLOGY TRAIL
IVEL, KY 41642
PHONE: (606) 874-7550
(606) 874-7551

EAST KENTUCKY
NETWORK



VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

August 24, 2016

Imogene and Donnie Logan
PO Box 73
Barbourville, KY 40906

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Sincerely,

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1

EAST KENTUCKY NETWORK
101 TECHNOLOGY TRAIL
IVEL, KY 41642
PHONE: (606) 874-7550
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EAST KENTUCKY
NETWORK



VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

August 24, 2016

Perry Robert Partin
PO Box 1611
Barbourville, KY 40906

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Sincerely,

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1



VIA: U.S. CERTIFIED MAIL

PUBLIC NOTICE

August 24, 2016

Dennis and Clara Frederick
PO Box 237
Heidrick, KY 40949

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2016-00261)

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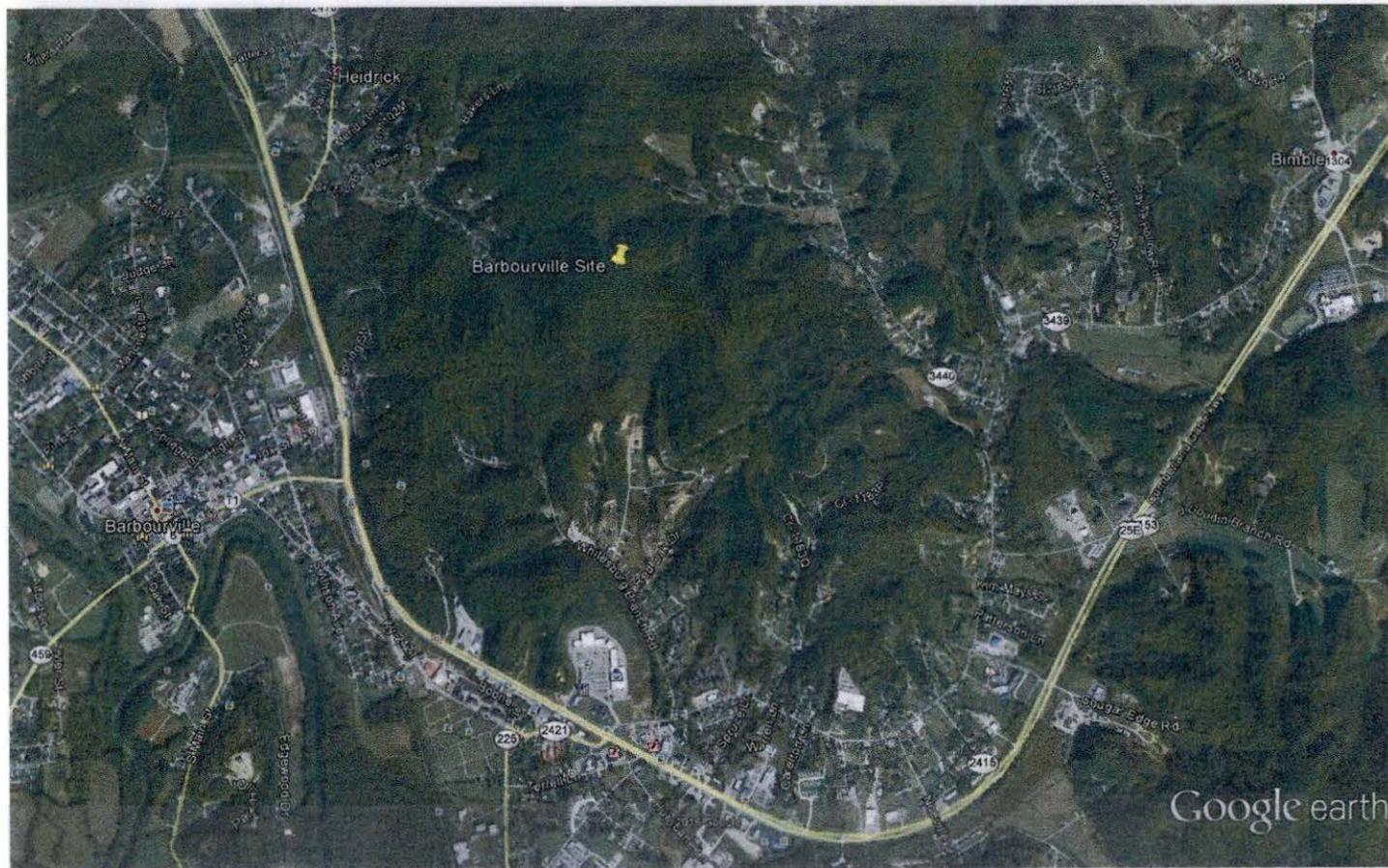
If you have any questions for East Kentucky Network, LLC, please direct them to my attention at the following address: East Kentucky Network, LLC, 101 Technology Trail, Ivel, KY 41642 or call me at 606-477-2355, Ext. 1007.

Sincerely,

A handwritten signature in cursive script that reads "Lynn Haney".

Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1

Appalachian Wireless Location Map



Site Name

Barbourville Site

Location

343 E. C. Messer Drive Barbourville, KY.

GPS Location

N 36 52 22.7405

W 83 51 58.6245

EAST KENTUCKY NETWORK
101 TECHNOLOGY TRAIL
IVEL, KY 41642
PHONE: (606) 874-7550
(606) 874-7551

EAST KENTUCKY
NETWORK



VIA: U.S. CERTIFIED MAIL

August 24, 2016

J.M. Hall
P.O. Box 173
Barbourville, KY 40906

RE: Public Notice-Public Service Commission of Kentucky (Case No. 2016-00261)

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The Commission invites your comments regarding the proposed construction. You also have the right to intervene in this matter. The Commission must receive your initial communication within 20 days of the date of this letter as shown above.

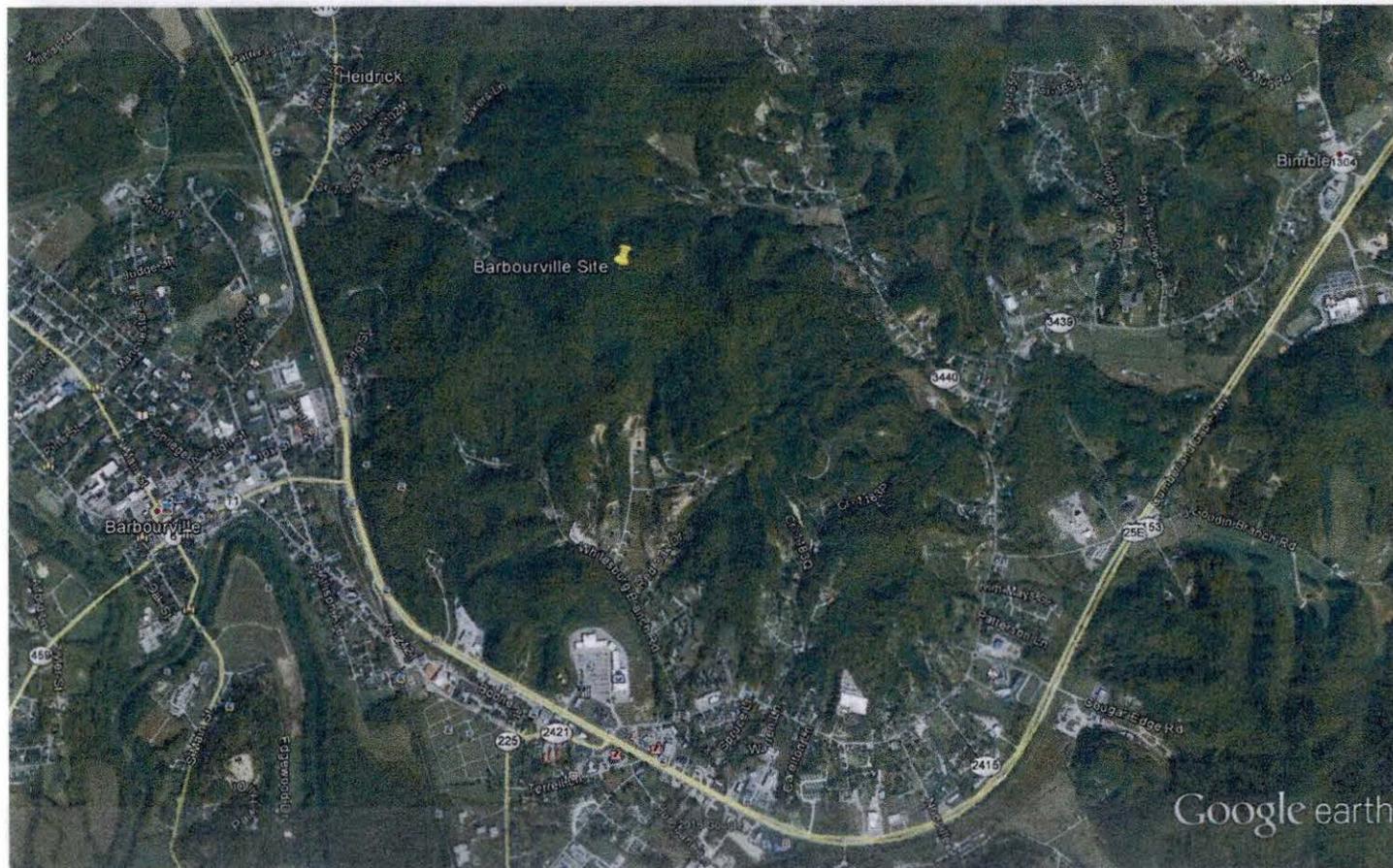
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Lynn Haney, CPA
Regulatory Compliance Director
Enclosure 1

Appalachian Wireless Location Map



Site Name

Barbourville Site

Location

343 E. C. Messer Drive Barbourville, KY.

GPS Location

N 36 52 22.7405

W 83 51 58.6245

dba Appalachian Wireless
101 Technology Trail
Ivel, KY 41642
Phone: 606-477-2355
Fax: 606-791-2225

EAST KENTUCKY
NETWORK



To: Barbourville Mountain Advocate
Attn: Classifieds

From: Krystal Branham
Staff Attorney

Email: news@mountainadvocate.com

Date: August 18, 2016

Re: PUBLIC NOTICE ADVERTISEMENT

Pages: 1

Please place the following Public Notice Advertisement in the Barbourville Mountain Advocate to be ran on August 25, 2016.

PUBLIC NOTICE:

RE: Public Service Commission of Kentucky (CASE NO. 2016-00261)

Public Notice is hereby given that East Kentucky Network, LLC, dba Appalachian Wireless has applied to the Kentucky Public Service Commission to construct a cellular telecommunications tower on a tract of land located near 343 EC Messer Drive, Barbourville, Kentucky. The proposed tower will be a 300 foot self-supporting tower with attached antennas. If you would like to respond to this notice, please contact the Executive Director, Public Service Commission, 211 Sower Boulevard, PO Box 615, Frankfort, Kentucky 40602. Please refer to Case No. 2016-00261.

If you have any questions about the placement of the above mentioned notice, please call me at 606-477-2375, ext. 1009.

Thank you,

Krystal Branham
Staff Attorney

The message above and the information contained in the documents transmitted are confidential and intended only for the person(s) named above. Dissemination, distribution or copying of this communication by anyone other than the person(s) named above is prohibited. If you have received this communication in error, please notify us immediately by telephone and return the original message to us at the address listed above via regular mail. Thank you.

**APPALACHIAN WIRELESS
Geotechnical Investigation on the
Barbourville Site
Knox County, Kentucky
ERMC² Project No. 165-000-0024**

PREPARED FOR:
Appalachian Wireless.
101 Technology Trail
Ivel, Kentucky 41642

PREPARED BY:
Richard Dirk Smith PE, PLS
General Manager Appalachian Region
**ENVIRONMENTAL RESOURCES MANAGEMENT
CONSULTING COMPANY**
230 Swartz Drive
Hazard, Kentucky 41701


[Handwritten Signature], 20215, July 28th 2016.



EXECUTIVE SUMMARY

- 1.0 INTRODUCTION**
- 2.0 PROJECT DESCRIPTION**
- 3.0 SITE DESCRIPTION**
 - 3.1 GENERAL INFORMATION
 - 3.2 SURFACE MINING
 - 3.3 UNDERGROUND MINING
- 4.0 FIELD EXPLORATION**
 - 4.1 SITE INFORMATION
 - 4.2 TRENCHING AND FIELD OBSERVATIONS
 - 4.3 GROUNDWATER
 - 4.4 SEISMIC SITE CLASSIFICATION
- 5.0 DISCUSSION AND RECOMMENDATIONS**
 - 5.1 GENERAL
 - 5.2 FOUNDATIONS
 - 5.3 SUBSIDENCE
 - 5.4 SHALLOW FOUNDATIONS
- 6.0 DISCUSSION AND RECOMMENDATIONS**
 - 6.1 SUBSURFACE INVESTIGATION
 - 6.2 LABORATORY AND FIELD TESTING
 - 6.3 ANALYSIS AND RECOMMENDATIONS
 - 6.4 CONSTRUCTION MONITORING
 - 6.5 GENERAL

SPECIFICATIONS

- I - GENERAL**
- II – ENGINEERED FILL BENEATH STRUCTURES**
- III – GUIDELINES FOR EXCAVATIONS AND TRENCHING**
- IV – GENERAL CONCRETE SPECIFICATIONS**

APPENDIX A – SEISMIC

APPENDIX B – PHOTOGRAPHS

APPENDIX C – MAPS

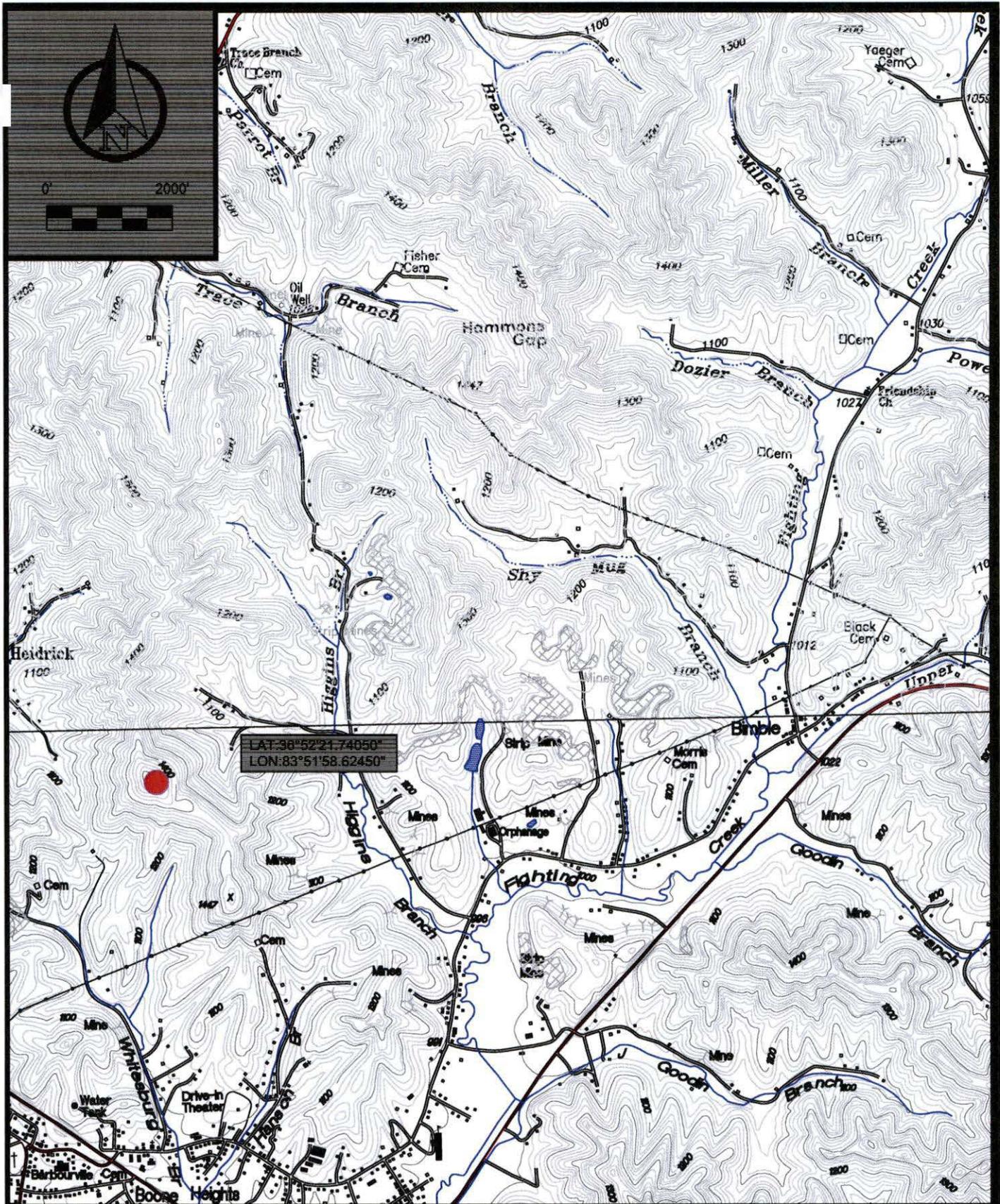


EXECUTIVE SUMMARY

- A geotechnical investigation has been performed on the Barbourville Tower site, located near Barbourville, in Knox County, Kentucky. This site is not readily accessible. A location map is shown in Figure 1 of this report. Trenching was conducted with hand tools and visual inspections were used to determine the lithology and type of materials immediately below the proposed tower site. The following geotechnical considerations were identified:
- This area is forested. The site has not been previously disturbed. Sandstone was encountered approximately 2 ft. to 4 ft. below the ground surface at estimated proposed tower pad.
- The bearing capacities of this sandstone unit is estimated to be 8 **tsf**.
- The 2015 International Building Code seismic site classification for this site is A.
- Close monitoring of the construction operations discussed herein will be critical in achieving the design subgrade support. We therefore recommend that ERMC² be retained to monitor this portion of the work.

This executive summary is included to provide a general overview of the project and should not be relied upon except for the purpose it was prepared. Please rely on the complete report for the information on the findings, recommendation and all other concerns.





Drawn:	Date: 8/5/16
Job:	Scale: 1"=2000'
Drawing: Site Locations Map Quad	

BARBOURVILLE SITE
APPALACHIAN WIRELESS
SITE LOCATION MAP
FIGURE 1



921 Beasley Street, Suite 145
 Lexington, KY 40509
 (859)381-1000
 engineering@ermc2.us

1. INTRODUCTION

Environmental Resources Management Consultant Company (ERMC²) was retained by Mr. Marty Thacker of Appalachian Wireless to prepare a geotechnical engineering report for the proposed tower site located on the Barbourville property. A site location map is shown in Figure No. 1.

Holes were created with hand tools and visual inspections were used to determine the lithology and type of materials immediately below the proposed tower site. The purpose of these services is to provide information and geotechnical engineering recommendations relative to subsurface conditions, earthwork, seismic considerations, groundwater conditions and foundation design.

2.0 PROJECT DESCRIPTION

The proposed communication facility will consist of a self-supporting tower of undetermined height and ancillary support areas. We estimate the construction area to be approximately 40.5 ft. x 40.5 ft. Based upon information provided, we estimate the structural loads will be similar to the following conditions:

CONDITION	LOAD
Total Shear	40 Kips
Axial Load	50 Kips

We anticipate that overturning will govern the structural design. If the loadings are significantly different than these expected values, ERMC² should be notified to re-evaluate the recommendations provided in this report.



3.0 SITE DESCRIPTION & HISTORICAL MINING

3.1 GENERAL INFORMATION

The site location is near the peak of an undisturbed ridge in Knox County Kentucky. The current surface elevation is approximately 1520 ft. Research on the historical mining was conducted by obtaining previous mine license maps from the "Kentucky Mine Mapping Information System" (KMMIS). Other sources such as interviews with former mine personnel and historic photographs were also used to try to better determine to what extents and which seams were taken.

3.2 SURFACE MINING

One historical mine surface mining map from the Kentucky Division of Mine Safety, Kentucky Mine Mapping was found near this site. Joe Asher Coal Company conducted mining approximately 900 ft east of this site in the Jellico and Blue Gem seams. No other visible indications of surface mining disturbance were noted in our field visits. This mining should have no impact on the proposed tower site.

3.3 UNDERGROUND MINING

ErMC² reviewed available historical underground mine maps from the Kentucky Division of Mine Safety, Kentucky Mine Mapping Information System ("KMMIS"). Several underground mines were found in the vicinity in the review of the historical mine maps at KMMIS. These underground mining activities were conducted in the Blue Gem Coal Seams.

The Blue Gem Seam is at an approximate elevation of 1100 ft. which is roughly 500 below the proposed towers site. Two underground mines were developed in the vicinity of this proposed site. Rouse Coal conducted mining approximately 2,300 ft. South East of the site and E. J. Enterprises conducted mining approximately 1170 ft. east of the site. No other underground mining information was found by our research.

Analysis of aerial maps and field investigations did not yield any evidence that previous underground mining has resulted in potential surface impacts from subsidence.





LAT: 36°52'21.74050"
 LON: 83°51'58.62450"

Drawn:	Date: 8/5/16
Job:	Scale: 1"=2000'
Drawing: GQ LOCATION MAP	

BARBOURVILLE SITE
APPALACHIAN WIRELESS
GQ LOCATION MAP
FIGURE 2



921 Beasley Street, Suite 145
 Lexington, KY 40509
 (859)381-1000
 engineering@ermc2.us

4.0 FIELD EXPLORATION

4.1 SITE INFORMATION

The proposed site is located on an undisturbed ridge line in Knox County, Kentucky. The proposed site lies within the Founts Quad and is located near Barbourville, East of Highway 11. The site is in a wooded area and is not readily accessible by conventional exploratory equipment. An estimated pad location was determined based upon the information provided. The dimensions provided for the footer are 40.5 x 40.5 ft. with the bottom of the proposed footer at an elevation of 1503.0 ft.

4.2 TRENCHING AND FIELD OBSERVATIONS

Due to terrain conditions this site is not readily accessible by standard drilling and other exploratory equipment. This investigation was limited to hand trenching and visual inspections of rock outcrop formations at this site.

Five holes were created around the expected limits of the proposed foundation area. At each location, sandstone was reached at a depth of approximately 24 inches below the surface. The upper 6 inches of soil are dark/rich soil. The remaining soils are comprised of clays and weathered sandstone. Visual inspection revealed various sandstone outcrops located an elevation of 1514 ft. The sandstone was layered in various areas, as well as shown a solid unit. There were several large sandstone boulders/fragments scattered along the surface near the tower site. Sandstone was encountered in all excavations down to an elevation of 1498.5 ft.

4.3 GROUNDWATER

Groundwater flow in Eastern Kentucky is characterized by water flowing through a system of internal fractures that lead to an alluvial aquifer near the bottom of valley floors. Large, defined aquifers other than the alluvium are not common, especially in higher elevations such as where this tower site is proposed. Therefore, groundwater should not be a concern in this area. During trenching activities, no groundwater resources were observed.



4.4 SEISMIC SITE CLASSIFICATION

Based on the encountered soil conditions at the project site, the site classification was determined to be "Site Class A- Hard Rock" per the 2015 Kentucky Building Code. In addition, a S_{DS} coefficient of 0.139g was calculated, and a S_{D1} coefficient of 0.055g was also calculated for design based on the aforementioned building code.

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 GENERAL

The structure will be a self-supporting free standing tower. Due to wind loading, lattice tower foundations can experience both vertical loads and horizontal loads. The vertical loads act in both an upward and downward direction as the tower attempts to overturn and can act in any directions.

5.2 FOUNDATIONS

It is our understanding that the foundations for these structures can be designed to bear on low bearing pressure soils. This report demonstrates the different expected bearing capacities based upon the type of material encountered from the boring logs and sampling taken at the site.

The approximate surface elevation of the site is 1518 ft. Approximately 24 inches of topsoil, clay soil and weathered sandstone is present at this site that is immediately above a sandstone formation which has a minimum thickness of approximately 20 ft.

5.3 SUBSIDENCE

Based upon our research there has been historical underground mining in or near the area. The nearest mining was conducted in the Blue Gem coal seam at an elevation of approximately 1100 feet, or 500 feet below the tower site. The nearest mining is located on the eastern side of the ridgeline, approximately 1170 feet from the tower location. Visual inspection of the area, as well as review of aerial



photographs/elevation data did not reveal any evidence of existing subsidence impacts on this proposed site.

Prior to construction of the foundations it is recommended that a visual inspection be conducted of the subgrade by the owner's engineer to insure no subsidence is visible. If significant subsidence features are encountered the geotechnical engineer should be contacted so that field conditions can be examined and recommendations revised if necessary. If minor cracking is noted they should be filled with 4000 psi. concrete.

5.4 SHALLOW FOUNDATIONS

We recommend a single spread footer foundation on competent rock. Based upon the site information drawing provided by our client the expected base of the tower pad will be at an elevation of 1503 ft. Field investigations found a sandstone unit of a minimum of 20 feet in thickness down to an elevation of approximately 1498.5 ft. This sandstone should provide a bearing capacity of 8 tsf.

It is furthermore recommended that the slabs-on-grade be supported on 4 to 6-inch layer of relatively clean granular material such as sand and gravel or crushed stone. This is to help distribute concentrated loads and equalize moisture conditions beneath the slab. Proper drainage must be incorporated into this granular layer to preclude future wet areas in the finished slab-on-grade. However, all topsoil and/or other deleterious materials encountered during site preparation must be removed and replaced with 4000 psi concrete. Provided that a minimum of 4 inches of granular material is placed below the new slab-on-grade, a modulus of subgrade reaction (k30) of 100 lbs/cu. in. can be used for design of the slabs.

6.0 WARRANTY

Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. No other warranty, express or implied, is made.

While the services of ERMC² are a valuable and integral part of the design and construction teams, we do not warrant, guarantee, or insure the quality or



completeness of services provided by other members of those teams, the quality, completeness, or satisfactory performance of construction plans and specifications which we have not prepared, nor the ultimate performance of building site materials.

6.1 SUBSURFACE EXPLORATION

Subsurface exploration is normally accomplished by test borings, although test pits are sometimes employed. The method of determining the boring location and the surface elevation at the boring is noted in the report, and is presented on the Boring Location Plan or on the boring log. The location and elevation of the boring should be considered accurate only to the degree inherent with the method used.

The boring log includes sampling information, description of the materials recovered, approximate depth of boundaries between soil and rock strata and groundwater data. The boring log represents conditions specifically at the location and time the boring was made. The boundaries between different soil strata are indicated at specific depths; however, these depths are in fact approximate and are somewhat dependent upon the frequency of sampling (The transition between soil strata is often gradual). Free groundwater level readings are made at the times and under conditions stated on the boring logs (Groundwater levels change with time and season). The borehole does not always remain open sufficiently long for the measured water level to coincide with the groundwater table.

6.2 LABORATORY AND FIELD TESTS

Laboratory and field tests are performed in accordance with specific ASTM standards unless otherwise indicated. All determinations included in a given ASTM standard are not always required and performed. Each test report indicates the measurements and determinations actually made.

6.3 ANALYSIS AND RECOMMENDATIONS

The geotechnical report is prepared primarily to aid in the engineering design of site work and structural foundations. Although the information in the report is expected to be sufficient for these purposes, it is not intended to determine the cost of construction or to stand alone as a construction specification.



Our engineering report recommendations are based primarily on data from test borings made at the locations shown on a boring location drawing included. Soil variations may exist between borings and these variations may not become evident until construction. If significant variations are then noted, the geotechnical engineer should be contacted so that field conditions can be examined and recommendations revised if necessary.

The geotechnical engineering report states our understanding as to the location, dimensions and structural features proposed for the site. Any significant changes in the nature, design, or location of the site improvements MUST be communicated to the geotechnical engineer such that the geotechnical analysis, conclusions, and recommendations can be appropriately adjusted. The geotechnical engineer should be given the opportunity to review all drawings that have been prepared based on their recommendations.

6.4 CONSTRUCTION MONITORING

Construction monitoring is a vital element of complete geotechnical services. The field engineer/inspector is the owner's "representative" observing the work of the contractor, performing tests as required in the specifications, and reporting data developed from such tests and observations. The field engineer or inspector does not direct the contractor's construction means, methods, operations or personnel. The field inspector/engineer does not interfere with the relationship between the owner and the contractor and, except as an observer, does not become a substitute owner on site. The field inspector/engineer is responsible for his own safety but has no responsibility for the safety of other personnel at the site. The field inspector/engineer is an important member of a team whose responsibility is to watch and test the work being done and report to the owner whether that work is being carried out in general conformance with the plans and specifications.

6.5 GENERAL

The scope of our services did not include an environmental assessment for the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater or air, on, within or beyond the site studied. Any statements in the report



or on the boring logs regarding odors, staining of soils or other unusual items or conditions observed are strictly for the information of our client.

To evaluate the site for possible environmental liabilities, we recommend an environmental assessment, consisting of a detailed site reconnaissance, a record review, and report of findings. Additional subsurface drilling and samplings, including groundwater sampling, may be required

This report has been prepared for the exclusive use of Appalachian Wireless, for specific application to the proposed cellular tower located on the Barbourville site in Knox County, Kentucky. Specific design and construction recommendations have been provided in the various sections of the report. The report shall, therefore, be used in its entirety. This report is not a bidding document and shall not be used for that purpose. Anyone reviewing this report must interpret and draw their own conclusions regarding specific construction techniques and methods chosen. ERMC² is not responsible for the independent conclusions, opinions or recommendations made by others based on the field exploratory and laboratory test data presented in this report.



SPECIFICATIONS

I – GENERAL

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to latest edition unless otherwise noted.

1.1.1 ASTM D-698-70 (Method C) "Standard Test Methods for Moisture, Density Relations of Soils and Soil Aggregate Mixtures Using 5.5-lb (2.5 kg.) Rammer and 12-inch (305-mm) Drop".

1.1.2 ASTM D-2922 "Standard Test Method for Density of Soil and Soil Aggregate in Place by Nuclear methods (Shallow Depth)".

1.1.3 ASTM D-1556 "Standard Test Method for Density of Soil in place by the Sand-Cone Method".

1.2 DEFINITIONS

1.2.1 Owner - In these specifications the word "Owner" shall mean Appalachian Wireless.

1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Owner designated engineer.

1.2.3 Design Engineer - In these specifications the words "Design Engineer" shall mean mean the Owner designated design engineer.

1.2.4 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any work under the terms of these specifications.

1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated representative.

1.2.6 As Directed - In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.



2.0 GENERAL CONDITIONS

- 2.1** The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein.

This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications.

This work is to be accomplished under the observation of the Owner or his designated representative.

- 2.2** Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including, without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site; and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner should be notified immediately. The material which the Contractor believes to be a changed condition should not be disturbed so that the owner can investigate the condition.

- 2.3** The construction shall be performed under the direction of an experienced engineer who is familiar with the design plan.



II - ENGINEERED FILL BENEATH STRUCTURES CLEARING AND GRADING SPECIFICATIONS

1.0 GENERAL CONDITIONS

The Contractor shall furnish all labor, materials, and equipment, and perform all work and services necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction and grading as shown on the plans and as described therein.

This work shall consist of all clearing and grading, removal of existing structures unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications.

This work is to be accomplished under the constant and continuous supervision of the Owner or his designated representative.

In these specifications the terms "approved" and "as directed" shall refer to directions to the Contractor from the Owner or his designated representative.

2.0 SUBSURFACE CONDITIONS

Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site; and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work. Borings and/or soil investigations shall have been made. Results of these borings and studies will be made available by the Owner to the Contractor upon his request, but the Owner is not responsible for any interpretations or conclusions with respect thereto made by the Contractor on the basis of such information, and the Owner further has no responsibility for the accuracy of the borings and the soil investigations.

If conditions other than those indicated are discovered by the Contractor, the Owner should be notified immediately. The material which the Contractor believes to be a changed condition should not be disturbed so that the Owner can investigate the condition.

3.0 SITE PREPARATION

Within the specified areas, all trees, brush, stumps, logs, tree roots, and structures scheduled for demolition shall be removed and disposed of.

All cut and fill areas shall be properly stripped. Topsoil will be removed to its full depth and stockpiled for use in finish grading. Any rubbish, organic and other objectionable soils, and other deleterious material shall be disposed of off the site, or as directed by the Owner or his designated representative if on site disposal is provided. In no case



shall such objectionable material be allowed in or under the fill unless specifically authorized in writing.

Prior to the addition of fill, the original ground shall be compacted to job specifications as outlined below. Special notice shall be given to the proposed fill area at this time. If wet spots, spongy conditions, or groundwater seepage is found, corrective measures must be taken before the placement of fill.

4.0 FORMATION OF FILL AREAS

Fills shall be formed of satisfactory materials placed in successive horizontal layers of not more than eight (8) inches in loose depth for the full width of the cross-section. The depth of lift may be increased if the Contractor can demonstrate the ability to compact a larger lift. If compaction is accomplished using hand-tamping equipment, lifts will be limited to 4-inch loose lifts. Engineered fill placed below the structure bearing elevation shall be compacted to at least 95% of the maximum dry unit weight with a moisture content within 2% of the optimum moisture content as determined by the modified Proctor test. The top size of the material placed shall not exceed 4 inches.

All material entering the fill shall be free of organic matter such as leaves, grass, roots, and other objectionable material.

The operations on earth work shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing weather, or other unsatisfactory conditions. The Contractor shall keep the work areas graded to provide the drainage at all times.

The fill material shall be of the proper moisture content before compaction efforts are started. Wetting or drying of the material and manipulation to secure a uniform moisture content throughout the layer shall be required. Should the material be too wet to permit proper compaction or rolling, all work thus affected shall be delayed until the material has dried to the required moisture content. The moisture content of the fill material should be no more than two (2) percentage points higher or lower than optimum unless otherwise authorized. Sprinkling shall be done with equipment that will satisfactorily distribute the water over the disced area. Any areas inaccessible to a roller shall be consolidated and compacted by mechanical tampers. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay or other chunky soil material will be broken up into small particles and become incorporated with the other material in the layer.

In the construction of filled areas, starting layers shall be placed in the deepest portion of the fill, and as placement progresses, additional layers shall be constructed in horizontal planes. Original slopes shall be continuously, vertically benched to provide horizontal fill planes. The size of the benches shall be formed so that the base of the bench is horizontal and the back of the bench is vertical. As many benches as are necessary to bring the site to final grade shall be constructed. Filling operations shall begin on the lowest bench, with the fill being placed in horizontal eight (8) inch thick loose lifts unless otherwise authorized. The filling shall progress in this manner until the entire first bench has been filled, before any fill is placed on the succeeding



benches. Proper drainage shall be maintained at all times during benching and filling of the benches, to insure that all water is drained away from the fill area.

Frozen material shall not be placed in the fill nor shall the fill be placed upon frozen material.

The Contractor shall be responsible for the stability of all fills made under the contract, and shall replace any portion, which in the opinion of the Owner or his designated representative, has become displaced due to carelessness or negligence on the part of the Contractor. Fill damaged by inclement weather shall be repaired at the Contractor's expense.

5.0 SLOPE RATIO AND STORM WATER RUN-OFF

Slopes shall not be greater than 2 (horizontal) to 1 (vertical) in both cut and fill, or as illustrated on the construction drawings. Excavations shall be constructed in accordance with all Federal, State and local codes relative to slope geometry.

6.0 GRADING

The Contractor shall furnish, operate, and maintain such equipment as is necessary to construct uniform layers, and control smoothness of grade for maximum compaction and drainage.

7.0 COMPACTING

The compaction equipment shall be approved equipment of such design, weight, and quantity to obtain the required density in accordance with these specifications.

8.0 TESTING AND INSPECTION SERVICES

Testing and inspection services will be provided by the Owner.



III GUIDELINES FOR EXCAVATIONS AND TRENCHES

The following represents some general guidelines relative to the design and construction of excavations and trenches. It must be emphasized that these guidelines are not intended to represent a "safety plan," but rather are presented herein to provide general guidance with regard to the design characteristics and safety measures for excavations and trenches.

1. Check with the following utilities prior to breaking ground:

- Sewer
- Telephone
- Fuel
- Electric
- Water
- Gas
- Cable

When utility companies or owners do not respond to your request within 48 hours, the contractor may only then proceed provided the contractor does so with caution by using detection equipment or other acceptable means to locate utility installations.

Once the excavation is open, the contractor should protect and support the exposed underground utilities or remove installations to safeguard workers and prevent damage to exposed utilities.

2. Access and egress ramps must be designed by a "competent person" and structural ramps used for equipment must be designed by a "competent person" with qualified knowledge in structural design. In addition:

- Ramps must be secured to prevent displacement;
- Ramps used in lieu of steps must have cleats to prevent slipping; and
- Trenching excavations four feet or greater in depth must have a stairway, ladder, ramps or other safe means to egress with lateral travel no more than 25 feet.

3. Workers must be provided with reflector garments, such as warning orange or red vests, when exposed to vehicular traffic.

4. Contractors must not allow workers to work under or near equipment when there is danger of falling debris, spillage or equipment-related injuries.



5. Mobile equipment, operating adjacent to an open excavation or approaching the edge of an excavation, must have one of the following when the operator's view is obstructed:
 - Warning System
 - Mechanical Signals
 - Barricades
 - Stop Logs
 - Hand Signals
6. The contractor must check the atmosphere for hazardous gases and oxygen deficiencies when excavating four feet or greater around landfills, or when hazardous substances are stored nearby, and when the contractor expects there could be any exposure to the workers.
7. When hazardous atmospheric conditions exist, or when conditions could change, the contractor must make emergency rescue equipment readily available including breathing apparatus, safety harnesses with life lines and a basket stretcher.
8. When workers enter bell-bottom pier holes or other deep and confined excavations, the worker must wear (at all times while performing work in the confined space) a separate life line attached to a harness. The line must be attended by someone above while work is being performed. The worker must check for hazardous atmospheric conditions prior to entry.
9. The contractor must ensure that water does not accumulate in open excavations and must inspect the excavation prior to allowing workers to re-enter after heavy rains.
10. Adjacent structures (buildings, walls, etc.) must be supported or secured to prevent worker exposure to unsafe conditions and damage to existing structures.
11. A registered professional engineer must approve operations when a contractor underpins existing structures to ensure worker safety and prevent damage to existing structures.
12. Workers must not be exposed to loose soil and rock or materials in and around excavations. Materials, such as removed soil and rock, must not be stored closer than two feet from the edge of the excavation.
13. Daily inspections of the excavation, the adjacent areas and protective systems must be made by a "competent person" for evidence of possible cave-ins, indications of failure of protective systems, hazardous atmospheres or other hazardous conditions. The "competent person" must stop work immediately



and remove workers from the excavation when conditions change and pose a threat to their safety.

- 14.** Workers must not be exposed to fall hazards associated with excavations. Protective walkways or bridges with standard guard rails must be provided.
- 15.** All wells, pits, shafts etc. must be barricaded or covered. After completion of work, all wells, pits, shafts etc. must be backfilled.



IV - GENERAL CONCRETE SPECIFICATIONS

1.0 GENERAL

It is the intent of this specification to secure, for every part of the work, concrete of homogenous structure which, when hardened, will have the required strength and resistance to weathering. To this end, the limiting values of concrete and the requirements hereinafter specified must be met. Standard tests of the cement, aggregates, concrete and reinforcement will be made by the Owner as it sees fit. The Contractor shall furnish the material for all required samples plus such labor as required to obtain samples. The Contractor shall provide to authorized representatives of the Owner, convenient access to all parts of the work of all concreting operations for the purpose of sampling and inspection.

2.0 SCOPE

Contractor shall furnish all materials, labor, services, transportation, tools, equipment, and related items required to complete work indicated on the drawings and/or specified.

Unless otherwise noted or as modified by more stringent requirements specified herein, all plain and reinforced concrete work shall be performed in full compliance with applicable requirements of the Building Code Requirements for Reinforced Concrete ACI 318.

Contractor shall obtain Owner's approval of all subgrades, footing bottoms, forms, and reinforcement just prior to placing concrete.

Contractor shall coordinate the work specified in this section with that specified in other sections so that all anchors, pipes and other embedded items are properly installed before concrete is placed.

Contractor shall clean all exposed concrete surfaces and obtain approval of Owner for method of cleaning.

3.0 MATERIALS

All materials shall be of the respective quality specified herein, delivered, stored, and handled as to prevent inclusion of foreign matter and damage by dampness or breakage. Packaged material shall be stored in original container until ready for use. Materials showing evidence of dampness or other damage may be rejected.

A. Fine and Coarse Aggregates: Coarse and fine aggregates shall conform to ASTM Specification C33. The maximum size of aggregate shall not be larger than one-fifth (1/5) of the narrowest dimensions between forms, or larger than three fourths (3/4) of the minimum clear spacing between reinforcement.

1. Fine Aggregate: Sand shall be composed essentially of clean, hard, strong, durable grains free of structurally weak grains,



organic matter, loam, clay, silt, salt, mica or other fine materials that may effect bonding of the cement paste.

2. Coarse Aggregate: Cement concrete shall consist of crushed rock or screened gravel and shall be composed essentially of clean, hard, strong and impermeable particles, resistant to wear and frost and free from deleterious amounts of organic matter, loam, clay, salts, mica, and soft, thin, elongated, laminated or disintegrated stone, and shall be inert to water and cement.
- B. Portland Cement: Portland cement shall conform to ASTM Specification C150. Type I or Type II Portland Cement shall be used provided that they are not intermixed during any one batch. Type II Portland Cement shall not be used unless indicated on the plans.
- C. Water: Water for mixing and curing shall be clean, fresh, and free from deleterious materials.
- D. Metal Reinforcement: Rebar shall be Grade 60 and with deformations conforming to ASTH Specification A305. Welded wire mesh shall conform to W4 x W4 size and be of Grade 60 steel.
- E. Admixtures: Except as herein noted, admixtures shall not be used.
1. Under adverse weather conditions only retarding or accelerating agents containing no chloride may be used.
 2. Air-Entraining Agent shall be used for all concrete will give an entrained air range of not less than 4 percent but no greater than 8 percent in the finished product. Under no circumstances shall the air-entraining be interground with cement.
 3. Approval in writing shall be required from Owner prior to the use of any admixture.

4.0 FORM

Forms shall be constructed with proper shoring and cross-bracing, safeguarding the total structure and specifically lateral stability and sufficiently strong to stand vibrations of concrete and to carry, without appreciable deflection or displacement, all dead and live loads to which they may be subjected.

5.0 INSERTS, ETC.

Anchors, bolts, dowels, conduit, waterstops, vent pipes and other similar built-in or concreted-in items shall be properly located, accurately positioned and secured. The Contractor shall cooperate in placing of such items with other contractors who require a fastening device for their work and he shall maintain them in proper location during the progress of his work.



6.0 REINFORCEMENT

Reinforcement at the time concrete is placed shall be free from rust, scale or other coatings that will destroy or reduce the bond.

Reinforcement shall be accurately placed and securely tied at intersections and shall be securely held in position during the placing of concrete by pacers, chairs, or other approved supports.

The reinforcement of foundations, footings and other principal structural members in which the concrete is deposited against the ground shall not have less than three (3) inches of concrete between it and the ground contact surface. If concrete surfaces after removal of the forms are to be exposed to the weather or to be in contact with the ground or rock, reinforcement shall be protected with not less than two (2) inches of concrete,

7.0 CONCRETE

Concrete for the various parts of the work shall be of 4000 pounds per square inch compressive strength with a minimum 28-day cure. Contractor is responsible to provide a mix of not less than 6 bags of cement per yard of concrete and not more than 7 gallons of water per bag of cement, producing a minimum slump of 2-1/2 inches and a maximum slump of 4-1/2 inches. Concrete that exceeds the above range of maximum or minimum slump requirements may be rejected by the Owner. All concrete shall be air-entrained. Contractors are required to furnish the name or names of the company(s) that will be providing the mix. The Owner reserves the right to disapprove any concrete supplier that has been known to supply an undesirable material to the Owner on previous occasions.

8.0 DEPOSITING CONCRETE

4.1. Preparation for Placing Concrete: Before depositing concrete, the Contractor shall:

1. Remove from space to be occupied by concrete all debris, including snow, ice, and water unless otherwise permitted by Owner.
2. Provide diversion, satisfactory to Owner, of any flow of water to an excavation so as to avoid washing the freshly deposited concrete.
3. Coat the forms prior to placing of reinforcing steel as required in form work.
4. Secure firmly in correct position, all reinforcement and other items to be encased and remove therefrom all coating including ice and frost.

B. Transportation of Concrete from Batch Plant: The concrete shall be delivered to the site of the work and discharge shall be completed within 90 minutes after addition of the cement and water to the



aggregates. Each batch of concrete delivered at the job site shall be accompanied by a time slip issued at the batching plant, bearing the time of charging of the mixer drum with the cement and aggregates.

- C. Transporting of Concrete from Mixer to Place of Final Deposit:
Transportation shall be done as rapidly as practical by means which shall prevent the separation or loss of the ingredients. If chutes are used, they shall be at a slope not flatter than one vertical to two horizontal. Buggies or carts shall be equipped with pneumatic rubber tires or surfaces of runways shall be sufficiently smooth or both so as not to cause separation or segregation of concrete ingredients. Concrete shall not be allowed to drop freely more than 4 feet. Where greater drops are required, canvas "elephant trunks" or galvanized iron chutes equipped with suitable hopper heads shall be employed and a sufficient number placed to insure that the concrete may be effectively compacted into horizontal layers not exceeding 12 inches in thickness with minimum lateral movements.
- D. Depositing of Concrete: Depositing of concrete shall:
1. Proceed continuously after once starting until reaching the end of a section of construction joint location shown on the drawings, or as approved by the Owner. The operations shall be conducted so that no concrete is deposited on concrete sufficiently hardened to cause formation of seams, and planes of weakness.
 2. Be as near as practical to its final position in the forms.
 3. Proceed so as to maintain constantly a top surface which is approximately level.
 4. Be placed before initial set has occurred, and in no event after it has contained its water content for more than 90 minutes.
 5. Be thoroughly worked and compacted by means of suitable tools to provide impermeability, durability and strength and shall be thoroughly worked around reinforcements and embedded items and into corners of forms and so as to be free from voids, pockets or honeycombing. Particular care shall be taken to provide impermeability.
- E. Vibration Equipment: Vibration equipment shall be of the appropriate type and shall, at all times, be adequate in number of units and power of each unit to properly consolidate all concrete.
- F. Monolithic Pours: Proper delivery of concrete shall be the Contractor's responsibility in order to make a mono-lithic pour without delays and changes of cold joints.



9.0 CURING

All concrete work shall be protected from injurious action by the sun, rain, flowing water, frost and other injury and shall be covered with plastic after application of curing compound for three (3) days on pours located above ground.

Contractor shall not remove any formwork for a minimum period of 24 hours after a concrete pour without written approval of the Owner.

10.0 CONCRETE FINISHES

Finishes of all exposed concrete shall be free of defects which impair its durability or adversely affect its appearance. All such surfaces when stripped, shall be uniform in appearance and any surfaces displaying any deviations from adjacent uniform surfaces shall be rejected and subject to removal.

Finished work shall be level and plumb, true to lines, and dimensions. Finished plane surfaces shall be smooth, and as nearly perfect as practical; however deviations from a true plane shall not exceed 1/8 inch when measured from a 6-foot straight edge placed against the surface to any point on the surface and under the straight edge.

All exposed surfaces shall have defects corrected, protrusions removed, and holes filled.



APPENDIX A SEISMIC DATA



USGS Design Maps Summary Report

User-Specified Input

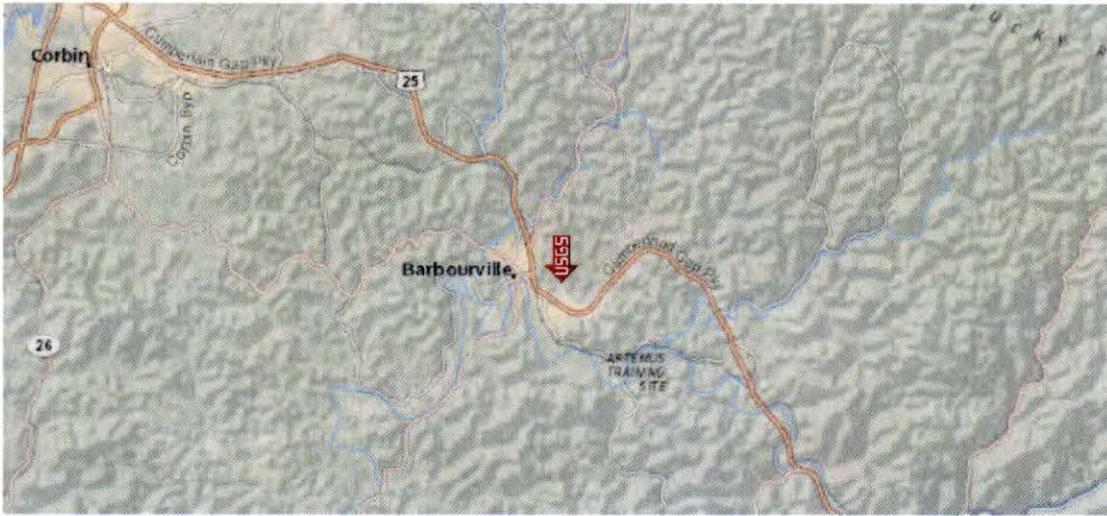
Report Title **Barboursville Site**
 Thu August 4, 2016 16:23:20 UTC

Building Code Reference Document **2012/2015 International Building Code**
 (which utilizes USGS hazard data available in 2008)

Site Coordinates **36.87298°N, 83.86628°W**

Site Soil Classification **Site Class A - "Hard Rock"**

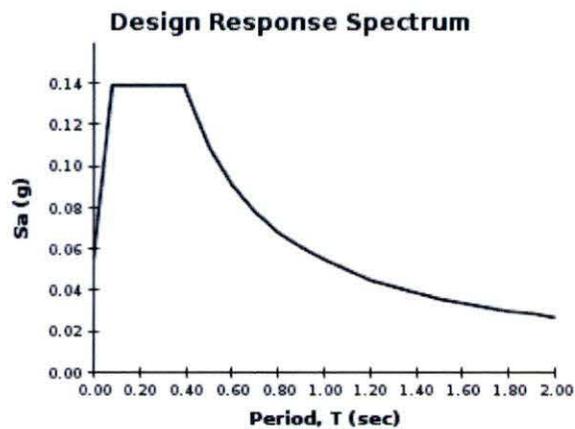
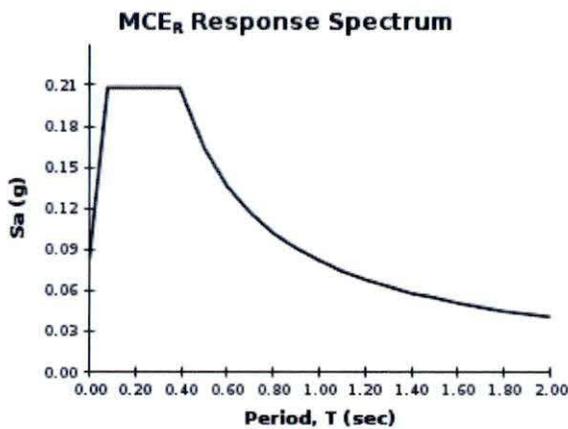
Risk Category **IV (e.g. essential facilities)**



USGS-Provided Output

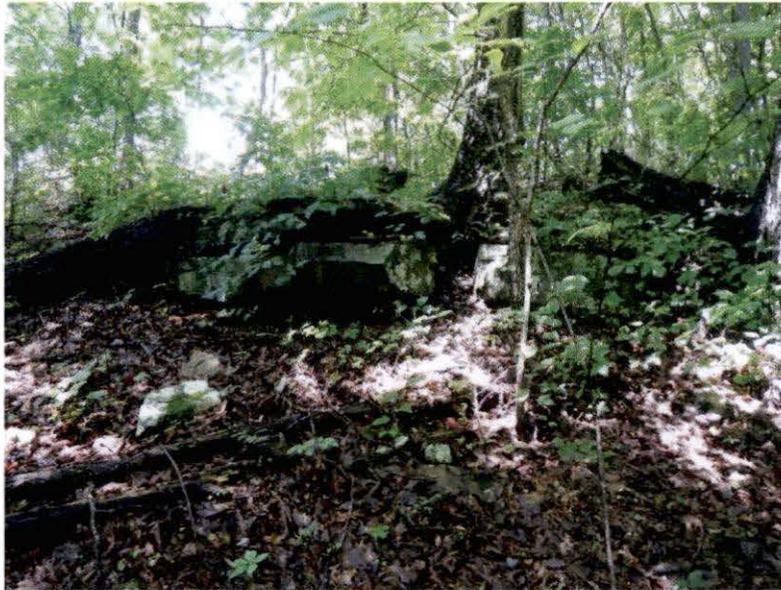
$S_S = 0.260 \text{ g}$	$S_{MS} = 0.208 \text{ g}$	$S_{DS} = 0.139 \text{ g}$
$S_1 = 0.102 \text{ g}$	$S_{M1} = 0.082 \text{ g}$	$S_{D1} = 0.055 \text{ g}$

For information on how the S_S and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.



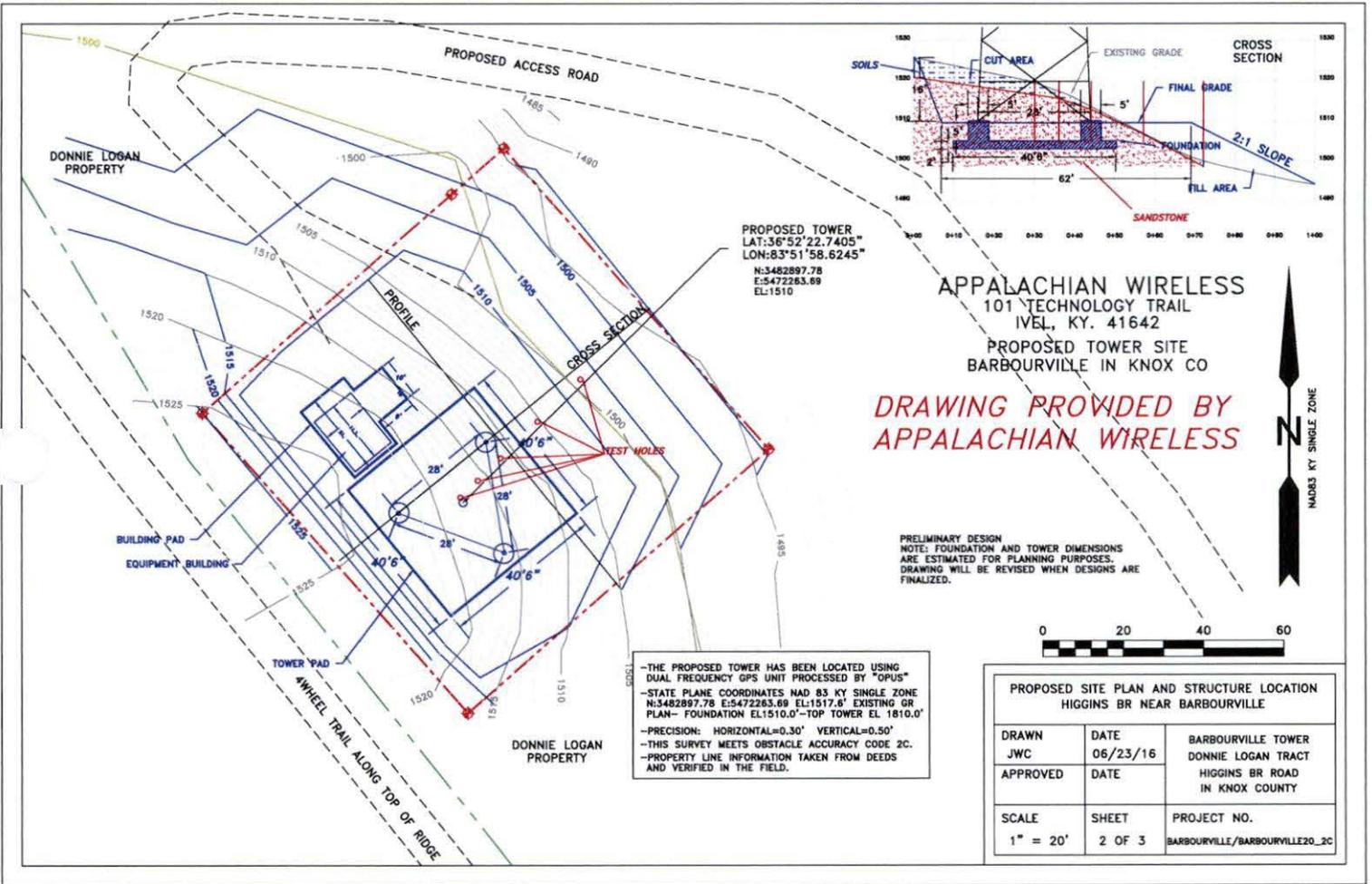
Although this information is a product of the U.S. Geological Survey, we provide no warranty, expressed or implied, as to the accuracy of the data contained therein. This tool is not a substitute for technical subject-matter knowledge.

APPENDIX B PHOTOS



APPENDIX C MAPS





PROPOSED TOWER
 LAT: 36°52'22.7405"
 LON: 83°51'58.6245"
 N: 3482897.78
 E: 5472263.69
 EL: 1510

APPALACHIAN WIRELESS
 101 TECHNOLOGY TRAIL
 IVEL, KY. 41642
 PROPOSED TOWER SITE
 BARBOURVILLE IN KNOX CO

*DRAWING PROVIDED BY
 APPALACHIAN WIRELESS*

PRELIMINARY DESIGN
 NOTE: FOUNDATION AND TOWER DIMENSIONS
 ARE ESTIMATED FOR PLANNING PURPOSES.
 DRAWING WILL BE REVISED WHEN DESIGNS ARE
 FINALIZED.



-THE PROPOSED TOWER HAS BEEN LOCATED USING
 DUAL FREQUENCY GPS UNIT PROCESSED BY "OPUS"
 -STATE PLANE COORDINATES NAD 83 KY SINGLE ZONE
 N: 3482897.78 E: 5472263.69 EL: 1517.6' EXISTING GR
 PLAN- FOUNDATION EL: 1510.0'-TOP TOWER EL: 1810.0'
 -PRECISION: HORIZONTAL=0.30' VERTICAL=0.50'
 -THIS SURVEY MEETS OBSTACLE ACCURACY CODE 2C.
 -PROPERTY LINE INFORMATION TAKEN FROM DEEDS
 AND VERIFIED IN THE FIELD.

PROPOSED SITE PLAN AND STRUCTURE LOCATION HIGGINS BR NEAR BARBOURVILLE		
DRAWN JWC	DATE 06/23/16	BARBOURVILLE TOWER DONNIE LOGAN TRACT
APPROVED	DATE	HIGGINS BR ROAD IN KNOX COUNTY
SCALE 1" = 20'	SHEET 2 OF 3	PROJECT NO. BARBOURVILLE/BARBOURVILLE20_2C

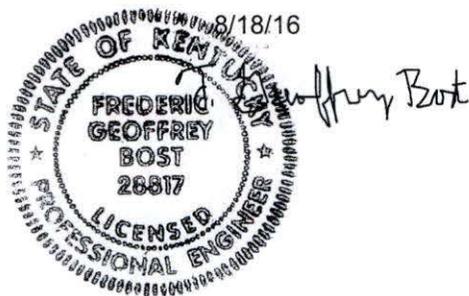




World Tower
COMPANY, INC.

1213 Compressor Drive
P.O. Box 508
Mayfield, KY 42066
270-247-3642
FAX: 270-247-0909
E-mail: worldtower@worldtower.com
Web: www.worldtower.com

300' MODEL WSST TOWER
FOR: APPALACHIAN WIRELESS
SITE: BARBOURVILLE
KNOX COUNTY, KY
DESIGN PACKAGE



Fabrication, Installation, and Maintenance of TV, AM, FM, & Wireless Communications Towers

GENERAL NOTES

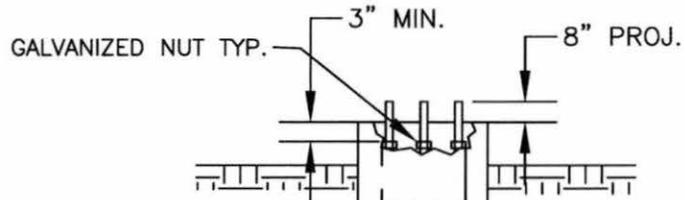
1. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISION OF THE AMERICAN WELDING SOCIETY AWS. D 1.1.
2. TOWER AND ALL FABRICATED ACCESSORIES ARE HOT-DIP GALVANIZED.
3. ALL BOLTS SHALL BE GALVANIZED ACCORDING TO THE STANDARD SPECIFICATION FOR ZINC COATING OF IRON AND STEEL HARDWARE ASTM A153.
4. LEG STEEL IS 50 KSI MIN YIELD SOLID ROUND OR PIPE AND BRACING STEEL IS 36 KSI MIN YIELD SOLID ROUND OR STRUCTURAL ANGLE.
5. ALL STRUCTURAL BOLTS ARE ASTM A325.
6. TOWER SHOULD BE INSPECTED IN ACCORDANCE WITH TIA-222-G EVERY 5 YEARS.
7. TOWER INSPECTION SHOULD ONLY BE PERFORMED BY EXPERIENCED QUALIFIED PERSONNEL. FOR ASSISTANCE IN PROPER MAINTENANCE OF YOUR TOWER, CALL WORLD TOWER AT 270-247-3642.



WORLD TOWER

TITLE: 300' MODEL WSST TOWER
FOR: APPALACHIAN WIRELESS
SITE: BARBOURVILLE
KNOX COUNTY, KY

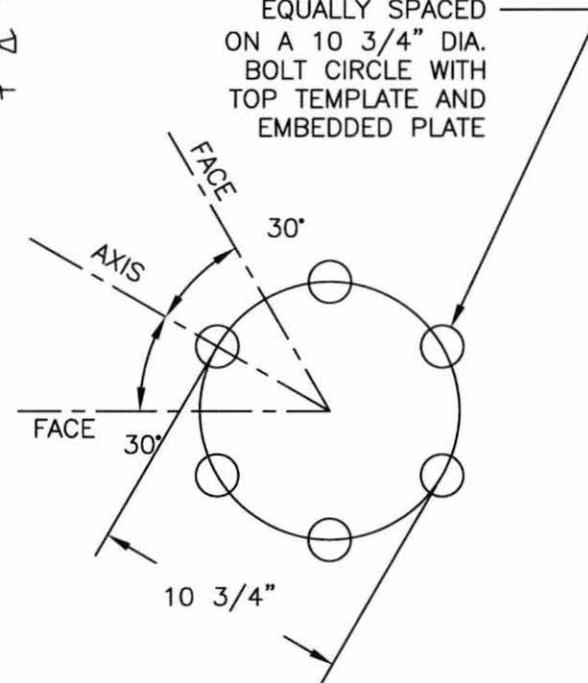
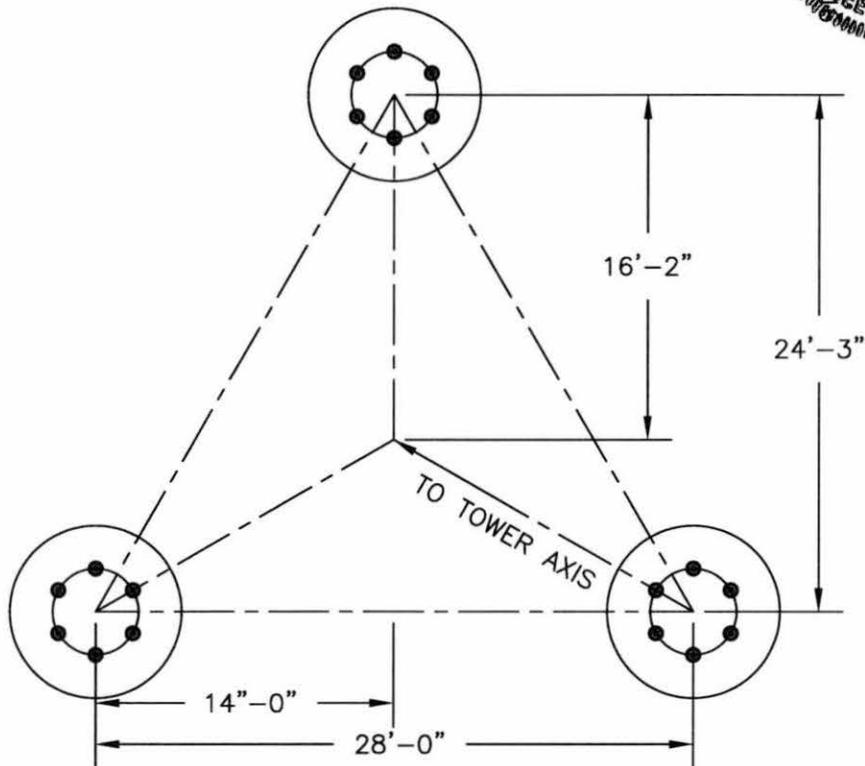
SCALE	DWN.	LKG	CKD.	DATE 8-18-16
FILE	DWG. NO.			Q16532N



PIER ELEVATION



ANCHOR BOLTS
 (6) 1 1/2" ϕ X 72"
 (ASTM A354 GR. BC)
 EQUALLY SPACED
 ON A 10 3/4" DIA.
 BOLT CIRCLE WITH
 TOP TEMPLATE AND
 EMBEDDED PLATE

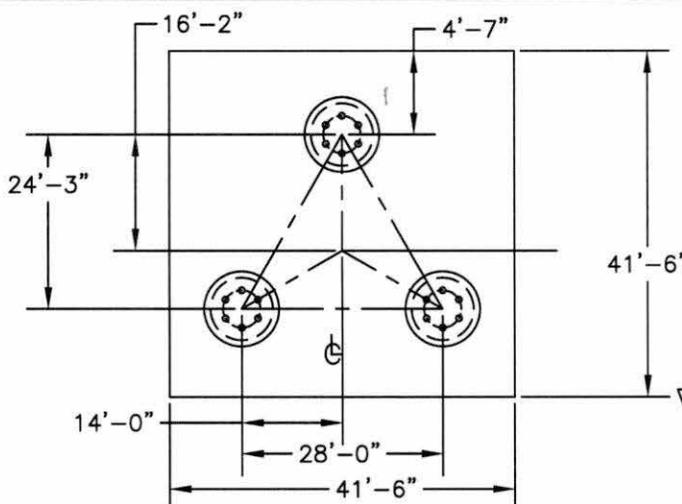


TITLE:

300' MODEL WSST TOWER
 FOR: APPALACHIAN WIRELESS
 SITE: BARBOURVILLE
 KNOX COUNTY, KY

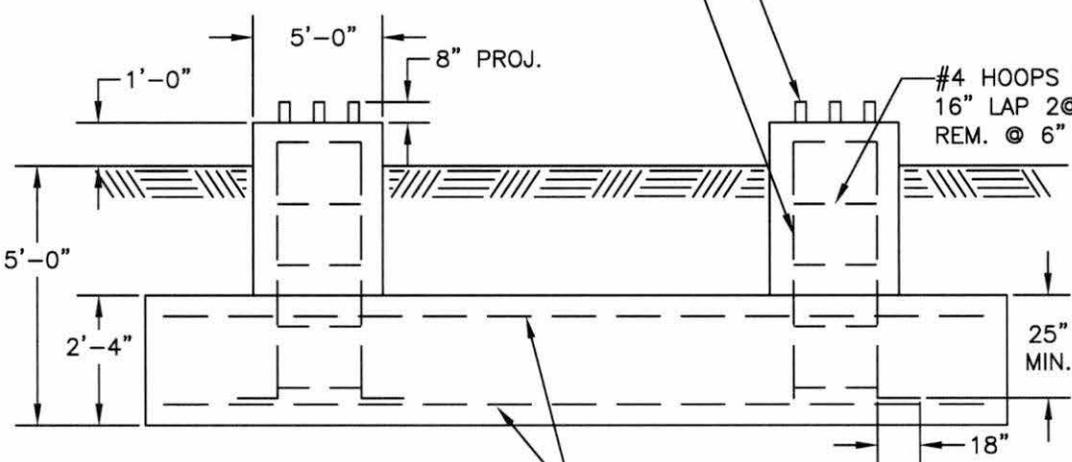
WORLD TOWER

SCALE	NONE	DWN.	LKG	CKD.	DATE 8-18-16
FILE				DWG. NO.	Q16532AB



156.8 CU. YDS.
CONCRETE REQ'D.

BASE REACTIONS	
OTM:	16290.0 FT. KIPS
COMP.	707.0 KIPS
UPLIFT	601.0 KIPS
SHEAR (3 LEGS)	119.0 KIPS
WT. NO ICE	107.0 KIPS
WT. 3/4" ICE	364.0 KIPS



20 #8 VERT. REBARS
WITH 90° A.C.I. BEND
AT BOTTOM

ANCHOR BOLTS
EMBEDDED PLATE AT BOTTOM

42-#11 REBARS
EACH WAY TOP AND BOTTOM
(168 TOTAL)



GENERAL NOTES

1. CONCRETE TO HAVE 4000 PSI MIN. COMPRESSIVE STRENGTH AFTER 28 DAYS.
2. ALL REINFORCEMENT STEEL IS DEFORMED AND MEETS THE STRENGTH REQUIREMENTS OF ASTM A615 GRADE 60.
3. EMBEDDED STEEL TO HAVE 3" MIN. CONCRETE COVER.
4. FOUNDATION DESIGN IS BASED ON CUSTOMER SUPPLIED SOIL DATA FROM ERM2 DATED JULY 28, 2016.

TITLE: FOUNDATION DETAIL
300' WSST TOWER
FOR: APPALACHIAN WIRELESS
SITE: BARBOURVILLE
KNOX COUNTY, KY

WORLD TOWER

SCALE	NONE	DWN.	LKG	CKD.	DATE	8-18-16
FILE				DWG. NO.	Q16532F	



KENTUCKY AIRPORT ZONING COMMISSION

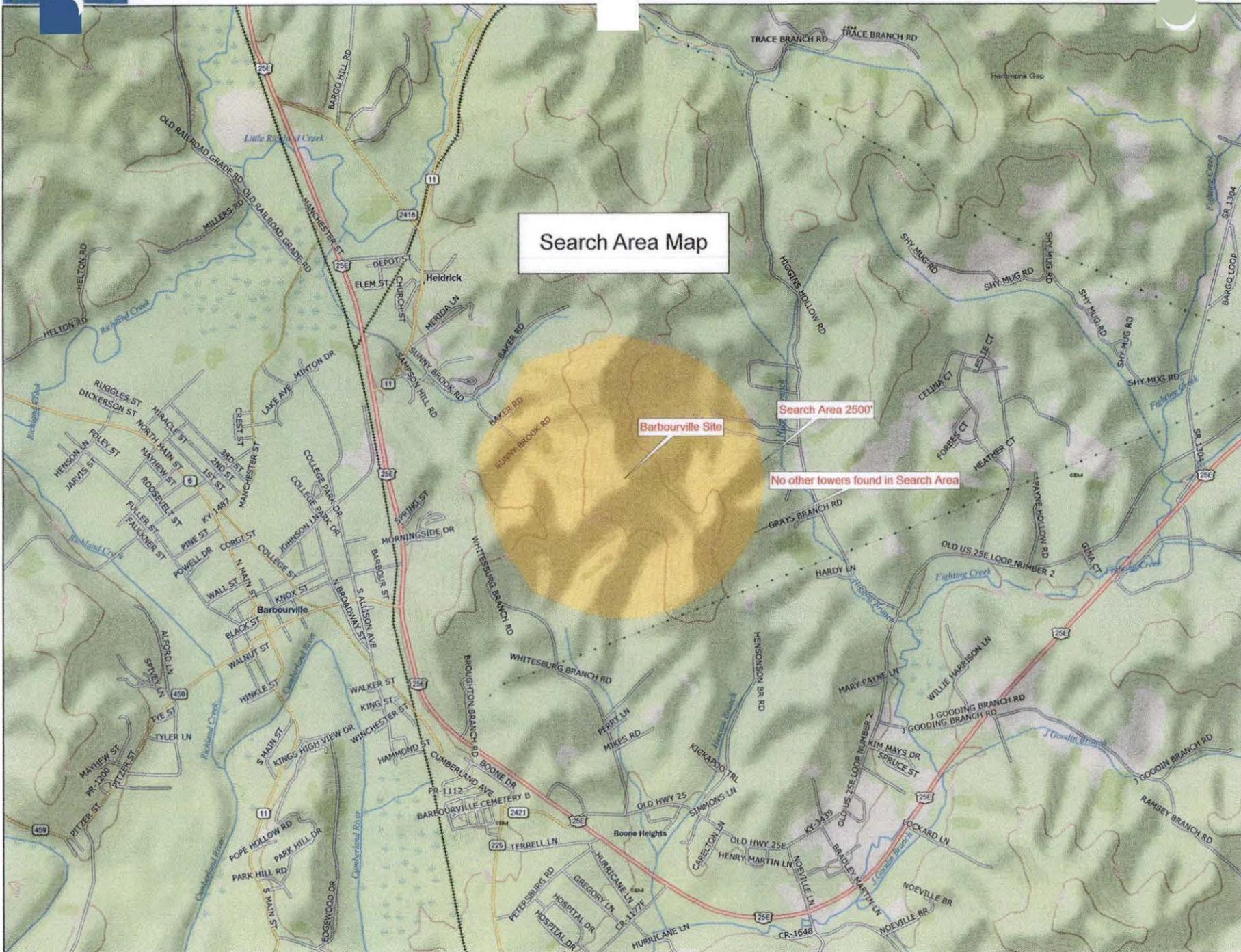
APPLICATION FOR PERMIT TO CONSTRUCT OR ALTER A STRUCTURE

APPLICANT (name) East Kentucky Network, LLC c/o LNGS		PHONE 703-584-8667	FAX 703-584-8692	KY AERONAUTICAL STUDY #	
ADDRESS (street) 8300 Greensboro Dr, #1200		CITY McLean		STATE VA	ZIP 22102
APPLICANT'S REPRESENTATIVE (name) Ali Kuzehkanani		PHONE 703-584-8667	FAX 703-584-8692		
ADDRESS (street) 8300 Greensboro Dr, #1200		CITY McLean		STATE VA	ZIP 22102
APPLICATION FOR <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Alteration <input type="checkbox"/> Existing				WORK SCHEDULE	
DURATION <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary (months days)				Start 08/10/16 End 08/20/16	
TYPE <input type="checkbox"/> Crane <input type="checkbox"/> Building <input checked="" type="checkbox"/> Antenna Tower <input type="checkbox"/> Power Line <input type="checkbox"/> Water Tank <input type="checkbox"/> Landfill <input type="checkbox"/> Other		MARKING/PAINTING/LIGHTING PREFERRED <input type="checkbox"/> Red Lights & Paint <input type="checkbox"/> White- medium intensity <input type="checkbox"/> White- high intensity <input checked="" type="checkbox"/> Dual- red & medium intensity white <input type="checkbox"/> Dual- red & high intensity white <input type="checkbox"/> Other			
LATITUDE 36°52'22.74"		LONGITUDE 83°51'58.62"		DATUM <input checked="" type="checkbox"/> NAD83 <input type="checkbox"/> NAD27 <input type="checkbox"/> Other	
NEAREST KENTUCKY City Barbourville County Knox		NEAREST KENTUCKY PUBLIC USE OR MILITARY AIRPORT London-Corbin Airport-Magee Field			
SITE ELEVATION (AMSL, feet) 1510		TOTAL STRUCTURE HEIGHT (AGL, feet) 310		CURRENT (FAA aeronautical study #)	
OVERALL HEIGHT (site elevation plus total structure height, feet) 1820				PREVIOUS (FAA aeronautical study #)	
DISTANCE (from nearest Kentucky public use or Military airport to structure) 18.8 mi				PREVIOUS (KY aeronautical study #)	
DIRECTION (from nearest Kentucky public use or Military airport to structure) NW					
DESCRIPTION OF LOCATION (Attach USGS 7.5 minute quadrangle map or an airport layout drawing with the precise site marked and any certified survey.) Approx. 0.8 mi east of Barbourville (Knox), KY					
DESCRIPTION OF PROPOSAL A new 300' tower with top-mounted antennas (overall height of 310' AGL)					
FAA Form 7460-1 (Has the "Notice of Construction or Alteration" been filed with the Federal Aviation Administration?) <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, when? 06/28/16					
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.)					
PENALTIES (Persons failing to comply with KRS 183.861 to 183.990 and 602 KAR 050 are liable for fines and/or imprisonment as set forth in KRS 183.990(3). Noncompliance with FAA regulations may result in further penalties.)					
NAME Ali Kuzehkanani	TITLE Dir of Engineering	SIGNATURE 		DATE 06/28/16	
COMMISSION ACTION					
<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved					
SIGNATURE			DATE		

Driving Directions for Barbourville

Starting in front of the Knox County courthouse in Barbourville, KY. From Courthouse Square turn right onto Knox Street. Drive 0.4 miles to the intersection of US 25E and turn right. Drive 1 mile and turn left onto KY 3439. Travel 1.6 miles and turn left onto KY 3440. Drive 0.6 miles and turn left onto Caribou Drive or Old E C Messer Drive. Drive 0.2 miles to the gate on the left. Here a sign will be posted. Continue through the gate and drive approximately 3,200 feet to the site. Here there will be a sign posted, also. You will have arrived.

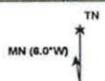
Prepared By:
Daryl Bartley
Appalachian Wireless
606-477-2355



Data use subject to license.

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www.delorme.com



Scale 1 : 28,125



1" = 2,343.8 ft Data Zoom 13-3

MEMORANDUM OF LEASE

THIS MEMORANDUM OF LEASE is made and entered into on this 6th day of May, 2016, with a commencement date of May 1, 2016, by and between Donnie Logan and Imogene Logan, husband and wife, with an address of P.O. Box 73, Barbourville, Kentucky 40906, hereinafter referred to as "Lessors", and East Kentucky Network, LLC d/b/a Appalachian Wireless, a Kentucky limited liability company, with a mailing address of 101 Technology Trail, Ivel, Kentucky, 41642, hereinafter referred to as "Lessee."

WITNESSETH

1. **Demised Premises.** For good and valuable consideration, Lessors leased to Lessee, and Lessee has leased from Lessors that certain tract of real estate located in Knox County, Kentucky, and being a portion of the same land conveyed to Lessors by Deed dated March 3, 2005, and recorded on March 4, 2005, in Deed Book 347, Page 643, in the Knox County Clerk's Office and also a portion of the same land conveyed to Lessors by Deed dated April 24, 2013, and recorded on April 29, 2013 in Deed Book 398, Page 254. Said property is more particularly described in the description attached hereto and made a part hereof as Exhibit A and the plat attached hereto and made a part hereof as Exhibit B, prepared by James W. Caudill, Licensed Professional Land Surveyor (hereinafter referred to as the "Premises"). Lessors warrant and represent that they have not provided permission or consent for any oil and gas lessee or any other person or entity to use the Premises for any operations or any purposes whatsoever. The Lessors have also granted unto Lessee full and complete rights of ingress, egress and regress to and from

the Premises over Lessors' property and other associated rights for installation of utilities and for maintenance.

2. **Term.** The initial term of the Lease is for a period of five (5) years from the commencement date set forth above.

3. **Option to Renew.** Lessee has the right and option to renew the Lease for an additional seven (7) terms of five (5) years each.

4. **Binding Effect.** All of the terms, conditions, and covenants hereof shall be binding and inure to the benefit of the parties and their respective heirs, representatives, successors, and assigns.

5. **Purpose.** This Memorandum of Lease is prepared solely for the purpose of recordation, and is not intended to, nor shall it be deemed to, modify any of the terms and conditions set forth in the Lease, nor to construe any of the rights, duties or responsibilities of Lessors and Lessee. In the event of any conflict between the terms and conditions of this Memorandum and the terms and conditions of the Lease, the terms and conditions of the Lease shall supersede and control.

IN WITNESS WHEREOF, Lessors and Lessee have caused their names to be signed hereto, as of the day and year first above written.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

LESSORS:

DONNIE LOGAN

Donnie Logan

IMOGENE LOGAN

Imogene Logan

COMMONWEALTH OF KENTUCKY
COUNTY OF Knox

The foregoing instrument was acknowledged before me on this 6th day of May, 2016, by DONNIE LOGAN and IMOGENE LOGAN, Lessors.

Jane Miller
Notary Public

My Commission Expires 11/06/18

LESSEE:

EAST KENTUCKY NETWORK, LLC D/B/A
APPALACHIAN WIRELESS

W A Gillum

By: W.A. Gillum

Its: CEO/ General Manager

COMMONWEALTH OF KENTUCKY
COUNTY OF Floyd

The foregoing instrument was acknowledged before me on this 0th day of May, 2016, by W.A. Gillum, CEO/General Manager of East Kentucky Network, LLC d/b/a Appalachian Wireless, Lessee.

Raina L. Helton
Notary Public

My Commission Expires Feb 6, 2020



This instrument was prepared by:

Cindy D. McCarty
Cindy D. McCarty, Attorney at Law
101 Technology Trail
Ivel, Kentucky 41642

LOT DESCRIPTION

Property of
Imogene & Donnie Logan
PO Box 73
Barbourville, Ky 40906
Higgins Branch of Fighting Creek
April 21, 2016

A portion of the property lying west of Higgin Branch road in Knox County of Kentucky, on ridge between Higgins Branch and Whitesburg Branch of Fighting Creek Being a part of the same land conveyed by deed from Kathleen Gray to Imogene Logan and Donnie Logan, by Deed dated March 3, 2005 and recorded in Deed Book 347 Page 643 of the Knox county Court Clerk, and a part of the same land conveyed by deed from Natasha Collette Gray to Imogene Logan and Donnie Logan by Deed dated April 24, 2013 and recorded in Deed Book 398 Page 254 of the Knox county Court Clerk.

Unless stated otherwise, any monument referred to herein as "set iron pin with cap" is a set 1/2" diameter rebar, at least eighteen (18") in length, with a plastic cap stamped "LS-2259". All bearings stated herein are referred to NAD83, KY single zone of the Kentucky state plane system. This survey preformed by James W. Caudill, LS2259, on April 21, 2016.

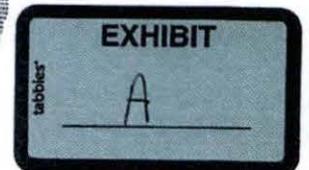
Lot 1A

Beginning on a set iron pin with cap marked ls2259 on top of a high knob, said point being approximate 12 feet northeast of the property line between Imogene & Donnie Logan and Mountain Equipment Co, Inc. Book 227 Page 246; thence severing the land of Imogene & Donnie Logan running around the edge of the ridge North 41 deg 31 min 12 sec West, 40.57 feet to a set iron pin with cap marked ls2259; thence running down the hill North 48 deg 40 min 52 sec East, 82.57 feet to a set iron pin with cap marked ls2259, North 48 deg 25 min 20 sec East, 17.34 feet to a set iron pin with cap marked ls2259; thence running around the hillside South 41 deg 21 min 27 sec East, 100.11 feet to a set iron pin with cap marked ls2259; thence running up the hill South 48 deg 48 min 28 sec West, 99.84 feet to a set iron pin with cap marked ls2259 near the top of the ridge; thence with the edge of the top of the ridge North 41 deg 18 min 01 sec West, 59.14 feet to the beginning. Containing a calculated area of 9976 sq ft or 0.23 acres.

To be included with Lot1A is an access right of way from Higgins Branch Road to the lot; being where the existing access road is now located up to the gas well, and a new section of access road to be constructed from the gas well to the proposed tower lot.

This survey was performed on April 21, 2016 by James W. Caudill, a Kentucky Licensed Professional Land Surveyor No. 2259.

James W. Caudill
James W. Caudill, PLS #2259
4-21-16



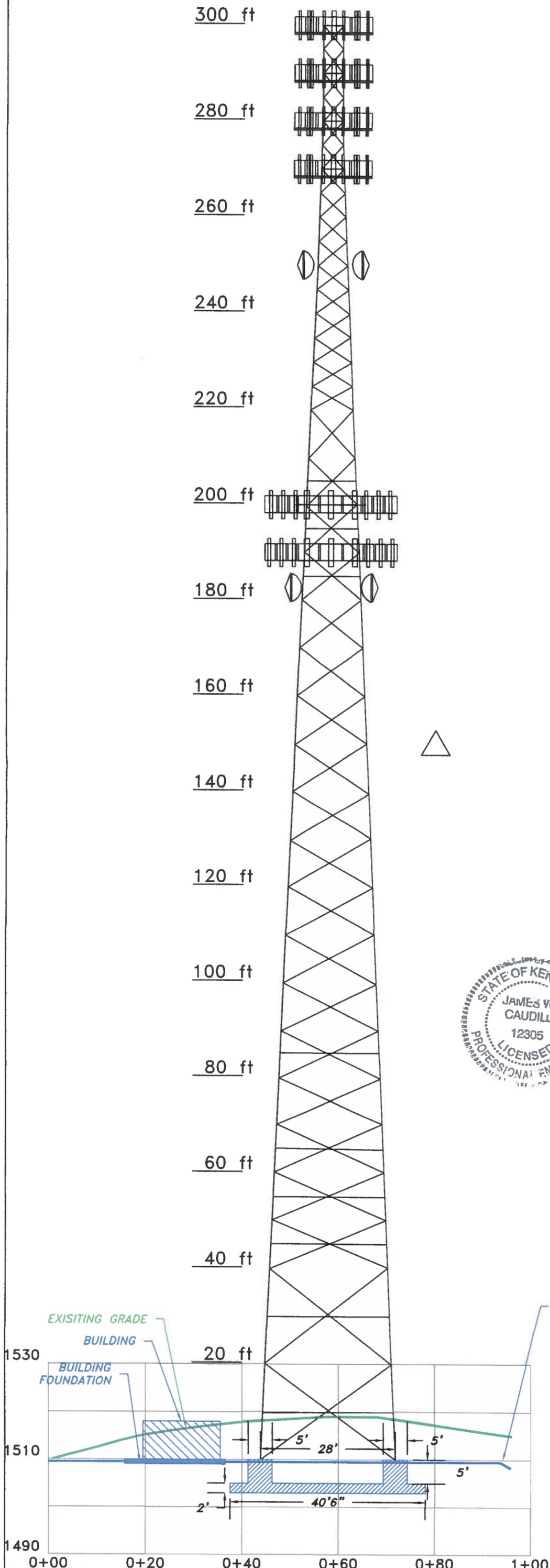
Application
CONTAINS
LARGE OR OVERSIZED
MAP(S)

RECEIVED ON:
8/24/2016

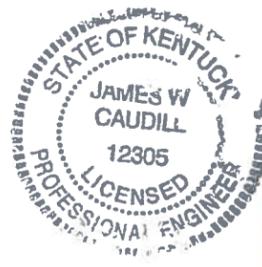
APPALACHIAN WIRELESS

101 TECHNOLOGY TRAIL
IVEL, KY. 41642

PROPOSED TOWER SITE
BARBOURVILLE IN KNOX COUNTY



PROFILE WITH TOWER



THIS IS A VERTICAL PROFILE SKETCH OF THE TOWER INDICATING THE PROPOSED ANTENNA AND DISH ELEVATIONS. NO DESIGN CRITERIA WAS CONSIDERED IN THE PREPARATION OF THIS DRAWING.

James W. Caudill 12305 6-23-16
 JAMES W. CAUDILL PE #. DATE

NOTE: SEE FOUNDATION DRAWINGS FOR DETAILS

06/23/2016

SCALE 1" = 20'



FINAL GRADE

PROPOSED SITE PLAN AND STRUCTURE LOCATION BARBOURVILLE TOWER APPALACHIAN WIRELESS

DRAWN JWC	DATE 06/23/16	BARBOURVILLE TOWER SITE OFF HIGGINS BRANCH RD. LOGAN PROPERTY NEAR BARBOURVILLE IN KNOX COUNTY, KY
APPROVED	DATE	
SCALE 1" = 20'	SHEET 3 OF 3	PROJECT NO. BARBOURVILLE/BVPRO20